BEFORE THE ENVIRONMENT DEPARTMENT
STATE OF NEW MEXICO

CURE's findings of fact / conclusion of law

| | | |
|---|---|---|
| IN THE MATTER OF THE DRAFT FINAL PERMIT FOR THE TRIASSIC PARK WASTE DISPOSAL FACILITY U.S. EPA NO. NM0001002484 | ) ) ) ) ) | No. HRM 01-02(P) |

**CONSERVATIVE USE OF RESOURCES AND ENVIRONMENT'S PROPOSED DECISION**

## I. Introduction

Conservative Use of Resources and Environment (hereinafter "CURE") and its members, including Victor Blair, Jimi Gadzia, Deborah Petrone and Michael Porter, request that the Secretary of the Environment Department enter the following findings of fact, conclusions of law, and decision.

## II. Findings of Fact

1. Gandy Marley, Inc. (the "Applicant") filed an Application (the "Application") for the Triassic Park Waste Disposal Facility (the "facility") to receive authorization to dispose of hazardous waste.

2. A public hearing was conducted in this matter by Hearing Officer Felicia Orth from October 15 -19, 2001. Witnesses and evidence were presented by the Applicant, the New Mexico Environment Department (the "Department"), CURE, Citizens For Alternatives To Radioactive Dumping ("CARD"), Forest Guardians, Dr. Allen Squire, and Dr. Linda Squire. In

addition, residents of the community testified on their own behalf and on behalf of their families.

**A. The Facility**

3. The proposed facility is classified as a hazardous waste treatment, storage, and disposal facility under the New Mexico Hazardous Waste Act ("HWA") and the Resource Conservation and Recovery Act, Subtitle C ("RCRA"). Fact Sheet, Intent to Issue a Permit for the Operation of A Hazardous Waste Treatment, Storage and Disposal Facility under the New Mexico Hazardous Waste Act, Triassic Park Waste Disposal Facility, Chaves County, New Mexico, 1 (August 27, 2001).

4. This is the first and only application for a RCRA Subtitle C hazardous waste disposal site in the state. Paul Robinson, TR p1140 lines 3-8. As such, the Department has never approved a groundwater monitoring waiver, a closure plan, a post-closure plan, or a financial assurance plan for a RCRA subtitle C hazardous waste disposal facility before.

5. The facility will be located in Sections 17 and 18 of Township 11 South, Range 31 East on 480 acres of land in Chaves County. The facility will be approximately 43 miles east of Roswell. Id.

6. The Application is for Phase I of the proposed facility (and Phase IA of the landfill). Applicant's engineering drawings include Phases I, II, and III. See, Draft Permit Att. L1.

7. In addition to hazardous waste generated within the United States, the Applicant proposes to accept waste generated by United States corporations operating outside of the United States. Patrick Corser, TR p218 lines 9-24.

8. The Department is concerned about the lack of specificity of waste generated outside the United States in terms of who can and cannot ship that waste. Constance Walker, TR p847

lines 8-24.

9. Chaves County has a 47.9% minority population. Deborah Reade, TR 716 lines 5-6.

10. Dexter and Hagerman (towns near the proposed facility) have a 72.6% and a 64.1% minority populations, respectively. Reade, TR p716 lines 7-13.

11. Chaves County has a 23.1% poverty rate compared to a 19.3% average poverty rate statewide. Reade, TR p719 lines 1-3.

12. The Applicant will use at least 42 acre feet of water per year to operate the facility. Mark Marley, TR p1012 lines 16-18.

13. Mr. Mark Marley does not know how much more water will be required for dust suppression or for vegetation for the landfill cover. M. Marley, TR p1012 lines 19-24.

14. At the date of the hearing, Mr. Marley was unaware of any water rights dedicated to the operation of the facility. M. Marley, TR p1013 lines 19-22.

**B. CURE and Its Members**

15. CURE is an association of concerned citizens opposed to hazardous waste and nuclear waste dumps in the Southwest. Conservative Use of Resources and Environment Response To Applicant's Motion To Strike Entry of Appearance of Cure, 1.

16. CURE members include, but are not limited to, Jimi Gadzia, Holly Harris-Schott, Michael Porter, Elisabeth Price, Deborah Petrone, Librado de la O and Victor Blair. Transcript ("TR") pg 339, 363, 366, 401, 408, 427; Conservative Use of Resources' Notice of Intent To Present Technical And Environmental Testimony, And Request For An Interpreter, 1.

17. Ms. Gadzia is a citizen of Roswell, New Mexico. Gadzia, TR p339 lines 24-25.

18. As a layman struggling to understand these proceedings, Ms. Gadzia has also

30. Mr. Porter found OSHA reports of deaths and fines imposed on Gandy Corp. ( a parallel company) for failure to follow work rules. He is concerned that those reports may indicate a trend about the way the proposed facility will be operated. Porter, TR p390 lines 8-18.

31. Ms. Price is specifically concerned with the facility's security. Elisabeth Price, TR p402 lines 11-12. Ms. Price is worried about the potential for an intentional spill of hazardous waste. Price, TR p402 line 9, p403 lines 8-25.

32. Trucks transporting hazardous waste to the facility will pass in front of her house. Price, TR p402 lines 11-12.

33. Ms. Petrone has been intimidated on several occasions during this facility permit process.

34. She was present at the July 17, 2001 meeting at the Roswell Sally Port Inn when the Applicant questioned CURE's right to disseminate their opinions and group information. TR pp 1120-1121.

35. Prior to this meeting, Ms. Petrone received an e-mail from Mr. Robert Marley questioning her right to protest the construction of the facility. The e-mail was signed "Chavez County Citizen." TR p1122-1123.

36. Ms. Petrone is concerned, after listening to Mr. Larry Gandy's testimony, that the Applicant does not have the experience and knowledge sufficient to operate the facility. TR p 4-10 lines 4-7. She is also concerned about the health effects the hazardous wastes the facility proposes to accept and recognizes there is no guarantee that air and water will not be polluted. P411 lines 20-25, p412 lines 1-2.

37. Mr. de la O lives in Hagerman, New Mexico. He is concerned for his family's health

and safety. TR p428 line 22-24.

38. Mr. de la O attended a public information meeting in Hagerman but did not understand because the Applicant would not give a presentation in Spanish. TR p429 lines 11-12. He left the meeting with others attending the meeting before the question and answer period because he could not understand. TR p431 lines 9-13.

39. Mr. de la O never had a chance to read the draft permit or to understand what the applicant was proposing because he does not know how to read. TR p429 lines 20-22.

**C. Contingency Plan and Emergency Preparedness**

40. The emergency coordinator needs to know what wastes are being accepted at the facility, and must have the ability to assess possible hazards to human health that may be caused by a hazardous waste spill. June Dreith, TR p874 lines 2-8, p880 lines 16-24.

41. Mr. Larry Gandy is the only designated Emergency Coordinator for the facility. Larry Gandy, TR p260 lines 8-16.

42. Mr. Gandy does not know the names of the hazardous wastes the facility will accept and does not know the physical effects of those wastes on human health. L. Gandy, TR p261-263.

43. In addition, Mr. Gandy does not know who is on the local emergency planning committee for Chaves County. L. Gandy, TR p265 lines 22-24.

44. Attachment C3 of the draft permit is vague and not well worded. The contingency plan does not include arrangements made with local emergency response teams. Dreith, TR p877 lines 16-20.

45. The State proposes a permit condition requiring the Applicant to provide the

applicable arrangements because those arrangements are not in the current contingency plan. Dreith, TR p877 lines 20-25.

46. The State had asked the Applicant to address these deficiencies in 1997. Fax: Part B Permit Application Deficiency Comments Rough Draft, January 22, 1997, Ar/Invoice Number 97-002.

**D. Personal Disclosure Statements**

47. The Applicant, its officers, directors, partners and shareholders, failed to update the Personal Disclosure statements before the close of the hearing. These individuals failed to update, among other disclosure requirements, driver's license information, automobile registration information, and personal loan information. See, e.g., Larry Gandy, TR pp267 to –269; Dale Gandy, TR pp 269 to –274.

48. After the close of the hearing, the Applicant provided additional information to the State regarding OSHA actions against the Applicant. Fax: Disclosure Statement portions claimed confidential; OSHA actions against Gandy Corp., November 29, 2001.

49. A citation and notification of penalty was issued on June 10, 1988 to Gandy Corporation for serious violations. Id..

50. These violations included failure to prepare written procedures covering safe use of respirators in dangerous atmospheres, assignment of employees to clean an oil field stock tank without a program for the use of respirators, and the use of air line respirators by employees in atmospheres immediately hazardous to life or health without safety harnesses and safety lines. Id..

**E. Meteorology and Toxicology**

51. The facility area has ten inches of rain a year. Albert Westerman, TR p121 lines 18-20.

52. No action the Applicant might take would reduce the dust in this area to zero. Westerman, TR p121 lines 18-20.

53. The Applicant did not look at the impacts of air emissions on wildlife. Westerman, TR p114 lines 23-24.

54. Assuming PCBs or PPBs migrated off the facility site, very low levels of those chemicals would result in impacts on cattle. The PCBs and PPBs accumulate in the cattle and later appear in the dairy cows' milk.. Westerman, TR p116 lines 21-25. The results of these studies are from cattle that accumulate PCBs and PPBs in their feed. Westerman, TR p117 lines 2-4.

55. Very subtle changes in metals could interfere with other trace minerals in cattle feed. Linda Squire, TR p771 lines 23-25.

56. The dairy industry has worked hard to convey the image of milk and dairy products as clean, nutritious food. Allen Squire, TR p762 lines 13-20.

57. Any report involving dairy cow exposure to toxic waste, no matter how minute or whether by air or water or feed, could have a drastically negative impact on consumer confidence. A. Squire, TR p762 lines 13-20.

58. Any rumors of contamination, whether true or false, impacts the dairy industry. The dairy industry is no different than the apple industry was when it was impacted by Alar. A. Squire, TR p772 lines 4-10.

**F. The Lesser Prairie Chicken and the Sand Dune Lizard**

59. Dr. Jim Bailey has a bachelors degree in forestry and a PhD in wildlife ecology from the State University of New York. Dr. Bailey worked as a research biologist for the Illinois Natural History Survey and has served in faculty positions at the University of Montana and Colorado State University. Bailey, TR p577 lines 10-20. In addition, Dr. Bailey worked for the New Mexico Department of Game and Fish. During his employ with that department, Dr. Bailey oversaw the status review of the Lesser Prairie Chicken in New Mexico. Bailey, TR p578 lines 18-23. This position required Dr. Bailey to review all the information that was available on the status of the Lesser Prairie Chicken and threats to that species in New Mexico. Dr. Bailey and Dr. Williams also have a paper in press on the status of the Lesser Prairie Chicken in New Mexico in 1999. Dr. Bailey has also conducted a field survey of the status of nesting habitat for Lesser Prairie Chickens in Southeast and East Central New Mexico. Bailey, TR p589 lines 1-14.

60. Dr. Bailey is an expert on the Lesser Prairie Chicken in New Mexico.

61. The Lesser Prairie Chicken is a candidate species for listing under the Endangered Species Act. Merino, TR p70 lines 5-7.

62. The "warranted but excluded" category means that sufficient information exists to consider listing the Lesser Prairie Chicken as threatened or endangered but that, according to the Fish and Wildlife Service, there are other priority species. Merino, TR p70 lines 9-18.

63. The New Mexico Game and Fish Department has recommended listing the Lesser Prairie Chicken as a threatened species three times between October and November, 1999. The recommendation was withdrawn in November 1999, but a status investigation is ongoing. Jim Bailey, TR p579 lines 6-13.

64. The Lesser Prairie Chicken is almost gone from about 56% of its historic range in New Mexico. The Lesser Prairie Chicken is doing more poorly in the facility area than the species is doing in other places in New Mexico. Bailey, TR p580 lines 1-21, p581 lines 10-24.

65. Dr. Jose Merino visited the facility in August or September for two to three hours. Joe Merino, TR p81 lines 2, 7.

66. The Lesser Prairie Chicken mating season is from March to June. Bailey, TR p588 lines 1-3).

67. During the breeding season, when the Lesser Prairie Chickens gather, the males display and make calls or cackles that attract female birds to the lek sites. Bailey, TR p586 lines 19-25; Merino TR p84 lines 1-12.

68. Noise may interfere with this breeding behavior. Id..

69. Most nests are located within two miles of the lek site, but the Lesser Prairie Chicken may nest up to eight miles from a lek site. Merino, TR p83 lines 3-6; Bailey, TR p584 lines 1-3.

70. Some literature indicates the Lesser Prairie Chicken winters up to five miles from the lek sites and disperse again up to eight miles. Bailey, TR p584 lines 4-9.

71. Shinnery-Oak is one of the major vegetation species at the proposed facility site. Shinnery-Oak is associated with Lesser Prairie Chicken habitat. Merino, TR p81 lines 12-18.

72. Dr. Merino testified that the elements required for Lesser Prairie Chicken habitat are missing from the facility because bluestem grasses have been grazed down. Merino, TR p82 lines 5-8.

73. Dr. Merino also testified that it is possible to rehabilitate Lesser Prairie Chicken habitat that has been over-grazed. Merino, TR p82 line 11. Dr. Jim Bailey concurs with this

testimony. Bailey, TR p585 lines 8-12.

74. Lesser Prairie Chickens use degraded habitat with a reasonable abundance of Shinnery-Oak remaining as brood habitat. This type of habitat would also be important as wintering habitat. Bailey, TR p584 lines 17-25, p585 lines 1-2.

75.The Lesser Prairie Chicken has been declining due to cumulative effects of habitat loss, habitat degradation, and habitat fragmentation. Bailey p585 lines 19-25.

76. Although a 480 acre project is rather minuscule compared to the remaining occupied range of the Lesser Prairie Chicken, one might also say the same of any project in the last 100 years that has contributed to the decline of the Lesser Prairie Chicken. Bailey, TR p590 lines 6-10.

77. To the extent that Shinnery-Oak and grassland habitat is impacted by this project, potential or existing habitat for the Lesser Prairie Chicken will be eliminated. Bailey, TR p586 lines 13-18.

78. To avoid potential impacts on the Lesser Prairie Chicken, Dr. Bailey recommends locating any facility structures as far east as possible. Bailey, TR p600 lines 21-25.

79. Dr. Bailey also recommends that restrictions be placed on facility hours of operation during the breeding season to decrease the impact of the facility on the Lesser Prairie Chicken. Bailey, TR p588 lines 1-4).

80. The Applicant is committed to work through the appropriate process with the U.S. Fish and Wildlife Service with respect to consultation processes for the Lesser Prairie Chicken and the Sand Dune Lizard.

81. The Applicant is committed to implementing the New Mexico Game and Fish

Department recommendations. Patrick Corser, TR p216 lines 10-19.

82. These recommendations include, but may not be limited to: (1) going through the appropriate consultation processes with the U.S. Fish and Wildlife Service; Corser, TR p 216 lines 16-20; (2) construction of an exclosure fence around evaporation ponds, contaminated water basins, stormwater detention basins and dust control water basins with metal flashing around the base of the fences; Merino, TR p76 lines 1-9; (3) as possible, relocate any hazardous waste storage facilities planned for construction within sand dune/shinnery oak habitats; Merino, TR p76 lines 17-20; (4) ensuring that construction activities occur outside the general migratory bird nesting season for March through August or that areas proposed for construction be surveyed and avoided if necessary until nesting is complete; Fish and Wildlife Service Cons. #2-22-01-I-700, October 12, 2001, comments received October 15, 2001; and (5) conduct surveys for mountain plovers between May 1 and June 15; Id..

83. The Applicant is also willing to mitigate the impacts of noise if noise were to impact Lesser Prairie Chickens. Merino, TR p84 lines 1-12.

**G. Groundwater Monitoring Waiver**

84. George Rice has a bachelors degree and a masters degree in Hydrology. Mr. Rice has over fifteen years experience in hazardous waste investigations. This experience includes work as the principal hydrologist responsible for the hydrologic characterization of low-level radioactive and hazardous waste sites and work in contaminant transport modeling and waste repository design. Mr. Rice was a Field Methods Instructor and taught environmental field techniques to Air Force personnel on monitor well design, monitor well construction, sampling program design, and groundwater sampling techniques. Mr. Rice has designed and installed

monitor well networks; designed, performed and analyzed aquifer tests; designed and installed vadose zone monitoring networks; and designed and conducted groundwater sampling programs. In addition, Mr. Rice has published several articles including topics such as the reduction in uncertainty in the geologic setting performance measure, and evaluation of groundwater characterization and modeling. Conservative Use of Resources' Notice of Intent To Present Technical And Environmental Testimony.

85. Mr. Rice is qualified to testify on issues concerning but not limited to hydrology, groundwater monitoring systems, vadose zone monitoring systems and hydrologic characterization of hazardous waste sites.

86. The lateral lithology at the facility site consists of channel, overbank, channel and overbank. Jim Bonner, TR 159 lines 8-22.

87. An aquifer is defined as a saturated zone from which water can be withdrawn in economic quantities. George Rice, TR p499 lines 5-16.

88. Groundwater monitoring systems monitor liquids moving as saturated flow in the subsurface. Groundwater monitoring systems may be used to determine the direction of flow, the flow rate, and water quality. Rice, TR 437 lines 6-11.

89. The Groundwater Monitoring System typically consists of monitor wells. Rice, TR 437 lines 6-11.

90. Vadose Zone Monitoring Systems are designed to monitor liquids moving as unsaturated flow in the subsurface. Rice, TR p437 lines 17-25.

91. Unsaturated flow liquids are held by capillary forces. These liquids will not enter a monitor well or pipe, and will not emerge at a spring. Rice, TR p437 lines 17-25.

92. A Vadose Zone Monitoring System requires specialized devices to monitor unsaturated flow movements. This type of system typically consists of suction lysimeters and neutron probe access tubes. Rice, TR p438 lines 1-13.

93. These instruments are installed by placing a series of holes or trenches immediately below and along the sides of the landfill. Rice, p449 lines 1-4.

94. The Applicant is proposing a monitoring system consisting of shallow wells to monitor the alluvial aquifer and the contact between the Upper and Lower Dockum units. The Applicant also proposes one stack of three sumps in the landfill. Corser, TR p196 lines 14-25.

95. Sumps like those the Applicant has proposed cannot detect unsaturated flow. Rice, TR p479 lines 1-7.

96. The monitoring system Applicant proposes does not fit the generally accepted definition of Vadose Zone Monitoring. Rice p447 lines 4-10.

97. The landfill liners will only last 50 to 100 years. Corser, TR p235.

98. This assumes the liners are installed properly. The majority of liners and covers do eventually leak. Rice p444 lines 11-25.

99. Liners leak because of manufacturing defects and installation defects like rips or tears. Liners are also susceptible to becoming brittle and cracking. When placed on a slope as contemplated by the Applicant, liners stretch and can get stress tears. Rice, TR p445 lines 6-23.

100. Stresses can result from consolidation or settlement of waste in the landfill. Corser, TR p232 lines 20-23.

101. Excessive stresses can accelerate micro-fractures in the liner which can tend to degrade and thin the liner. Corser, TR p233, lines 18-23.

102. The HDPE liners proposed by the Applicant are also susceptible to attack by many of the chemicals the Applicant proposes to accept. Rice, p445 lines 23-25.

103. If there is a leak in the landfill, leachate would initially flow as unsaturated flow. Leachate may pool when it encounters zones of lower permeability. Rice, TR p540 lines 15-24.

104. The Applicant proposes to place the stack of sumps where leaks will most likely occur. Rice, TR p541 lines 9-18.

105. The sumps will occupy an area of about 2,500 square feet. Rice, TR p571 lines 19 25.

106. The total area of Phase I is thirty to forty acres or approximately 1.6 million square feet. Rice, TR p572 lines 1-10.

107. The chance that all leachate would flow to the sump is extremely low. Rice, TR p544 lines 13-16.

108. Leakage will most likely occur first as unsaturated flow. Compared to the proposed landfill, this leakage would be like taking an eyedropper full of water and squeezing a few drops onto a sponge. Initially, the leachate under the landfill will be held by capillary forces. Rice, p1148 lines 10-15.

109. To detect flow as early as possible, the Applicant would install a system capable of detecting unsaturated flow. Rice, p1149 lines 1-2.

110. The Applicant has not done the necessary hydrologic investigations to determine whether a groundwater monitoring variance is warranted. Rice p439 lines 18-25.

111. To adequately characterize groundwater conditions, one must know whether groundwater exists under water table or confined conditions, whether any fast flow paths exist,

and one must have good estimates of the parameters that control the rate at which groundwater will move. Rice, TR p449 lines 7-16.

112. Mr. Bonner testified the Applicant did not find any saturation in the 480 acre project area. Bonner, TR p130 lines 15-20.

113. When the Applicant did not find anything to characterize as an aquifer in the Upper Dockum, it decided the Lower Dockum 600 feet below the proposed facility was the uppermost aquifer. Bonner, TR p140 lines 1-6.

114. Mr. Bonner also testified that the nearest saturated portion of the Upper Dockum toward the NE is WW-1. Bonner, TR p157 lines 19-23.

115. Mr. Bonner stated that there was a possibility of the water in WW-1 coming from the Lower Dockum as well as perched water in the Upper Dockum. Bonner, TR 154 lines 14-18.

116. Mr. Bonner also testified that the water found in WW-2 was coming from the Lower Dockum. Bonner, TR p154 lines 20-23.

117. Mr. Stephen Pullen stated he believed the water level at WW-2 was above where the Department believes the Santa Rosa to be because of hydrostatic head. Stephen Pullen, TR p814 lines 7-9.

118. However, the Applicant has no evidence to show that it reached the Santa Rosa equivlalent in WW-2. Rice, TR p456 lines 12-17.

119. Nor does the Applicant have evidence to show where the water found in WW-1 came from. Rice, TR p457 lines 10-20.

120. A typical monitor well is designed to determine properties of a particular hydrologic unit. Other units are sealed off so one might tell if there is water in a particular unit.

Rice, TR 454 lines 23-25, p455 lines 3-17.

121. The Applicant did not do this and cannot tell where the water in WW-2 or WW-1 is coming from. Rice, TR pp456 lines 22-25.

122. The Applicant thinks it reached the Santa Rosa Equivalent in WW-2, but does not have evidence to show where the water from WW-2 was entering that monitoring well. Rice, TR p456 lines 12-17; see, also, Steve Pullen, TR p813 lines 20-25.

123. The water level in WW-2 was reported at 460 feet and at 158 feet. This indicates the water may be close to the contact point between the Upper and Lower Dockum because comparable water levels were found in WW-1. Rice,TR p505 lines 1-25.

124. The Applicant asserts that when the air rotary drill used to drill WW-1 and WW-2 hits water, the dust stops. However, there was dust all the way to the bottom of WW-1. Rice, p458 lines 2-7.

125. Applicant, in its Response to Notice of Deficiency for Triassic Park Part B Permit Application, February 14, 1996, writes that rotary air drilling may prevent water from immediately entering the borehole. As a result, water may not be recognizable until the borehole is allowed to sit for one to two hours. Response to Notice of Deficiency for Triassic Park Part B Permit Application, February 15, 1996, AR 96-012.

126. In that same document, Applicant implies that water was not detected at borehole PB-27 due to the use of air rotary drilling. Id..

127. This contradicts Applicant's statement that air rotary drilling was used because that process easily detects groundwater. See, e.g., Triassic Park video; Gandy Marley, Inc., 2000; *Revision Section 3 for Permit Application Volume I, Groundwater Protection*, August 2000, pp3-

11.

128. In addition, WW-1 was drilled to 820 feet and there is no information in the Applicant's materials indicating that the Applicant believes it encountered the Santa Rosa equivalent. Rice, TR p1155 lines 22-24, p1156 lines 1-2.

129. WW-1 and WW-2 are the only two bore holes the Applicant drilled in the saturated portion of the Lower Dockum. Rice, TR p457 lines 3-9.

130. There are no borings between WW-1 and the site boundary. Rice, TR p1156 lines 18.

131. The Applicant knows water exists at WW-1. The next nearest boring – PB 47 – is 1000 feet inside the property boundary. Boring PB-47 is dry. Rice, TR p1157 lines 1-9.

132. When Mr. Rice visited the proposed facility site, he and Mr. Larry Gandy measured the distance of WW-1 to the property corner at approximately 0.15 miles. Rice, TR p441 lines 11-25, p442 lines 1-3.

133. Mr. Bonner testified the distance from the property corner to WW-1 was between a quarter mile and 800 feet. Bonner, TR p1056 lines 9-13, p1067 lines 5-9.

134. Mr. Bonner also testified that the distance from WW-1 to the outer edge of Phase IA is a little under 4,000 feet. Bonner, TR p1057 lines 3-13.

135. Mr. Bonner then testified the distance between the corner of the landfill and WW-1 is 3,450 feet. Bonner, TR p1075 lines 1-2.

136. The Applicant does not know how far away the saturated zones in the Upper Dockum are from the facility. Rice, TR p449 lines 21-23.

137. Most drill holes were in the southern portion of the property where the landfill is

proposed. At the Department's request, the Applicant drilled holes in the northern part of the property where some operational facilities are proposed. Bonner, TR p139 lines 6-21.

138. The Applicant used oil well logs to discern the stratigraphy of the Lower Dockum. Bonner TR p160 lines 16-25.

139. The Applicant did not drill through the Lower Dockum. Id..

140. With the information available to the Applicant, the Applicant cannot determine the depth to groundwater in the Lower Dockum. Rice, TR p450 lines 3-12.

141. There is some water moving west from the Ogallala Aquifer in the Upper Dockum. According to Mr. Bonner, this has been occurring for "a good bit of time." Bonner, TR p162 lines 5-13.

142. Mr. Bonner testified that although more water is flowing in, the water is in "some sort of equilibrium." Bonner, TR p162 lines 5-13.

143. This water is probably not evaporating. (WW-1 water was found at approximately 150 feet below the surface.) Rice, p452 lines 12-25.

144. Mr. Bonner testified that wells where water was discovered contained water with an excess of 10,000 parts per million (ppm) total dissolved solids (TDS). Bonner, TR p141.

145. PB-14, another boring in the Upper Dockum, was about 100 feet deep and 400 feet west of the landfill. Water was found in PB-14 at 42 feet. Rice, p473 lines 18-25.

146. The Applicant does not know why there is water at PB-14. Rice, TR p474 lines 6-7.

147. The TDS of the water at PB-14 is a little under 5,000 ppm. Rice, TR p474 lines 1-5.

148. Mr. Pullen testified that a small amount of water might significantly dilute the water in PB-14. Pullen, TR p819 lines 10-13. Mr. Pullen further testified that a small amount of

leachate might affect the water in PB-14 as well. Pullen, TR p819 lines 18-19.

149. Mr. Pullen testified that the issue of whether the Upper or Lower Dockum is the uppermost aquifer is irrelevant because the Applicant modeled both travel times to show that the Applicant could meet the requirements for a groundwater monitoring waiver. Pullen, TR p806 lines 20-25.

150. The Applicant estimated travel time to the saturated portion of the Upper Dockum at 3,600 years; 7,900 years; and at 3.4 billion years. Rice, TR p461 lines 3-14.

151. The Applicant estimated travel time to the saturated portion of the Lower Dockum between 1,600 years and four million years. Rice, TR p461 lines 20-25.

152. All of these estimates are unreliable because the Applicant has not investigated the existence of fast flow paths like fractures and channels. Rice, TR p440, lines 17-21, p450 lines 3-12.

153. The Applicant knows there are streambeds or channels beneath the facility. There are no guarantees that there are no fractures beneath, or near, the proposed facility because the investigations necessary to determine the presence of fractures have not been conducted. Rice, TR p463, p464 lines 2-4.

154. Mr. Bonner testified that there is a possibility the Applicant missed some fractures because it did not do slant drilling to test for fractures. Bonner, TR p171 lines 8-12.

155. Mr. Patrick Corser also testified that the Applicant did not take into account flow through fractures when completing the MULTIMED model. Corser, TR p1031 lines 22-25.

156. The Applicant conducted air drilling and air drilling does not show fractures. Bonner, TR p178 lines 3-12.

157. The Applicant believes it hit the Santa Rosa when it lost circulation during drilling. Rice, TR p1165 lines 1-5.

158. The most common explanation for losing circulation, however, is contacting an area that has a larger volume due to the presence of voids (e.g. fractures, cavities). Id..

159. The Applicant did not measure field, or bulk, hydraulic conductivities. Rice, TR p442 lines 11-25.

160. Rather than conducting pumped aquifer tests or slug tests, the Applicant measured conductivity based on core hole samples. Rice, TR p442 lines 11-25.

161. Core samples are small and easily miss high conductivity features like fractures or sand stringers. Rice, TR p443 lines 11-18.

162. Most professionals agree that core samples underestimate the permeability of a unit. Id..

163. Corky Glenn, a well-driller who has worked in the Caprock area, believes there may be fractures beneath the facility. Mr. Glenn has noted rig chattering when drilling wells in the general area of the facility. Mr. Glenn believes the chattering is an indication of contacting an area with fractures. Rice, TR p464 lines 9-25.

164. Appendix G, cross section 3.3 shows PB-14. The contact between the Lower and Upper Dockum is a straight line and then jumps down about 50 feet. This could indicate a fault or an incised channel. This is also the point at which the Applicant found a great deal of water. Rice, TR p1150 lines 10-22.

165. Slant drilling or angle coring is the best chance the Applicant has of intercepting fractures. Rice, TR p462 lines 22-25.

166. If there are fractures beneath the site, it is unlikely that overburden pressure may act to close those fractures because one finds fractures hundreds of feet beneath the surface. Overburden pressure does not preclude the existence of open fractures. Rice, TR p553, lines 10-14.

167. Darcy's Law is a part of what goes into the mathematics the MULTIMED model is based on. Rice, TR p516 lines 12-14.

168. The MULTIMED model is a saturated/unsaturated contaminant transport code. GR TR p516 lines 1-11.

169. Unlike the MULTIMED model, Darcy's Law does not calculate contaminant transport. GR p520 lines 22-25. Hydrologists use Darcy's Law to calculate groundwater (or liquid) flow rates. Rice, R p466 lines 1-3.

170. Mr. Rice testified that Darcy's Law calculations are consistent with the regulatory requirements that the rate of liquid migration be maximized. Rice, TR p522 lines 2-5.

171. The most important factor in the MULTIMED and Darcy's Law calculations is the hydraulic conductivity. Rice, TR p520 lines 1-4.

172. In Darcy's Law, the higher the hydraulic conductivity, the faster the flow. The lower the effective porosity, the higher the liquid flow rate is, and the higher the gradient, the higher the flow rate. Rice p466 lines 20-25, p267 lines 467 lines 2-4.

173. The Applicant used a hydraulic conductivity of one foot per year, a 48 percent porosity, and a hydraulic gradient of about one percent. Rice, TR p467 lines 14-18.

174. Mr. Rice testified Mr. Corser's MULTIMED calculations were incorrect because the table with the MULTIMED calculations Applicant used to estimate contaminant travel time

states the maximum hydraulic conductivity was used and lists a corresponding number. That number is less than the average hydraulic conductivity. Rice, TR p1158 lines 1-5.

175. The hydraulic conductivity the Applicant used is not the most conservative estimate. Rice, TR p469 lines 5-24.

176. Mr. Pullen testified that the Applicant must use a reasonable number when calculating hydraulic conductivity. Pullen, TR p820 lines 1-3.

177. Mr. Pullen also testified that the highest value would be unreasonable if the value were for a sandstone lithology associated with a very circuitous lens of sandstone. Pullen, TR p820 lines 5-12.

178. After looking at figure 3-12 (App. G cross-section 3.3) showing a north/south cross section, Mr. Pullen agreed that the cross sections showed a continuous, uninterrupted pathway of about 3,000 feet in the higher permeability units along the contact between the Upper and Lower Dockum. Pullen, p823 lines 2-4.

179. This is likely a pathway along which leachate could travel. Rice, TR p1150 lines 2-9.

180. When obtaining core samples to ascertain the hydraulic conductivity, the Applicant tried to model different pressures based on where the core was pulled from. If there was a void space that was subjected to artificial pressure, the Applicant may have reduced the permeability. The Applicant recognized this and stated that those results probably underestimated hydraulic conductivity. Rice, TR p524 lines 11-23.

181. Mr. George Rice testified he used the highest hydraulic conductivity reported by the Applicant in calculating the travel time for liquid migration. Rice, TR p573 lines 22-25.

182. Mr. Rices believes it is likely that even higher hydraulic conductivities exist at and near the site. Rice, TR p573 lines 22-25.

183. Mr. Rice also testified that he used the lowest porosity the Applicant reported to increase the rate of groundwater flow. Rice, TR p470 lines 21-25.

184. In completing his calculations using Darcy's Law, Mr. Rice noted that the gradient at the contact between the Upper and Lower Dockum slopes primarily to the east and northeast. In some cases, the gradient slopes to the west. Rice, TR p495 lines 11-24.

185. The gradient varies between one and eight percent. Id..

186. According to Mr. Rice's calculation, liquid would migrate 1000 feet in 108 years. Rice, TR p471 lines 12-14.

187. Mr. Rice assumed saturated numbers for an unsaturated zone in his calculations to maximize the rate of liquid migration. Rice, TR p533 lines 15-25.

188. Use of the MULTIMED model is inappropriate because the Applicant does not have the information necessary to perform realistic modeling. Rice, p561 lines 6-8.

189. The applicant made borings in the north, in the east and several in the west. Mr. Rice testified he would also drill a boring through all the layers on the property. Rice, TR p497 lines 12-25.

190. This would not create a pathway for leachate because the Applicant would drill in the west, upgradient of the landfill. When the Applicant was finished, it would grout and seal the hole. Rice, TR p497 lines 12-25, p498 lines 1-9, 16-22.

191. The Applicant used a leachate infiltration rate of .42 inches per year. This rate was

derived from a study done on open range land where most water is lost to evapotransiration. Rice, TR 472 lines 10-21.

192. This is an inappropriate rate to use underneath a landfill where liquids are not going to be affected by evapotranspiration. Rice, TR p472 lines 10-21.

193. The Applicant will be placing intermediate cover and water over the waste to prevent erosion and dust. Corser, TR p248 lines 2-6. In addition, the sludge from the evaporite pond that will be placed in the landfill will have a higher moisture content than a dry soil. Corser, TR p249 lines 12-18.

**H. Closure, Post-closure and Financial Assurance**

194. Mr. Paul Robinson testified at the hearing in this matter. Mr. Robinson taught environmental evaluation methods and environmental assessment and policy classes at the University of New Mexico between 1983 and 1997. Robinson, TR p640 lines 10-14. In addition, Mr. Robinson was previously involved in permit proceedings dealing with the permitting of solid waste facilities under RCRA subtitle D. Robinson, TR p1146 lines 18-24. Mr. Robinson has performed technical services for an applicant who proposed to build a solid waste facility and reviewed the specifications for the liner for that applicant. Robinson, TR p673 lines 4-5. In addition, Mr. Robinson has participated in RCRA permit hearings for LANL, Kirtland Air Force Base and Sandia National Laboratories. Robinson, TR p674 lines 10-14.

195. Based on Mr. Robinson's experience detailed above, Mr. Robinson is well qualified to testify on issues pertaining to closure and post-closure standards as well as on financial assurance.

196. Since the Applicant is proposing the first hazardous waste disposal facility of its

kind in New Mexico, Mr. Robinson compared the Applicant's application and draft permit to other New Mexico closure and financial assurance programs. Robinson, TR p641 lines 3-8.

197. Many of the principles that apply in mining sites and solid waste sites— including but not limited to the proper installation of liners and function of liners—are the same principles that apply in this instance. Robinson, TR p710 lines 15-25.

198. The management of slope and precipitation to address erosion at mining and solid waste sites are also comparable to this instance. Robinson, TR p710 lines 1-2.

199. Closure and post-closure plans are fundamental aspects of an effective operating plan for a waste facility. Robinson, TR p642 lines 13-19.

200. The life of the hazard is one of the critical determining factors in how long a management strategy should be effective. Id..

201. The Applicant's closure and post-closure plans are the first plans for a hazardous waste disposal facility. Robinson, TR p643 lines 3-7.

202. There is no basis in this instance for limiting the anticipated post-closure period to thirty years because there is nothing 30 years about the life of the hazardous wastes or risk for potential releases. Robinson, TR p644 lines 16-21.

203. The Secretary of the Environment may extend the post-closure care period at the end of the thirty-year period. Cobrain, TR p896 lines 7-16.

204. There is no guarantee that the liner will not leak. Corser, TR p229.

205. Geomembranes such as those proposed for the facility landfill liners have only come into common use in the last 20 to 30 years. Corser, TR p236 lines 1-3.

206. The tests performed to determine how long a liner or cover will last were simulated

over a period of months. Corser, TR p229 lines 17-24.

207. The Applicant does not provide for the runoff control and surface erosion as described in the application as a need to be addressed. Robinson, TR p650 lines 1-4.

208. Phase I is only a small part of the landfill described in Attachment L1 Drawing 22. Robinson, TR p649 lines 9-25.

209. There are no surface water diversion ditches described in that drawing. Robinson, TR p649 lines 9-25.

210. Drawing 22 only indicates ditches around the perimeter of the cover. Corser, p249 lines 12-18.

211. The access road ditch shown on Att. L1 Drawing 22 is for the access road and does not address surface water diversion or water management on the cover itself. Robinson, TR p697 lines 4-12.

212. The typical practice of spacing surface water diversions is to locate them every 150 to 300 feet on the contours in order to prevent gullies from forming and to prevent long run-off flow paths. Robinson, TR p698 lines 2-6.

213. Surface water ditches are critical especially when, as the Applicant proposes, there will be a soft cover like soil and vegetation as opposed to a riprap or rock cover that is less susceptible to erosion. Robinson, TR p650 lines 15-21.

214. There is very little attention given in the application and draft permit to the erosion processes in the area in which the facility is located in. There is almost no attention given to the extensive range-land record of soil erosion in the application or draft permit. Robinson, TR p653 lines 19-23.

215. A comparison of the erosion calculations and ditch design would be part of the evaluation to determine the adequacy of the ditch collection system, but would not be the only part. Robinson, TR p698 lines 18-22.

216. The main risk involved with the closure plan is long-term erosion of the landfill cover. Robinson, TR p653 lines 24-25.

217. The application and draft permit do not address erosion in the facility area in a manner that defines the risk as a matter of climate condition or geomorphic change, and does not identify performance standards for the cover. This is a measure of the poor quality of the closure plan. Robinson, TR p654 lines 1-10.

218. Based on closure needs at the site, the revegetation plan must contain a standard of durability needed as a long-term erosion resistance effectiveness measure. Robinson, TR p652 lines 18-20.

219. As written, the revegetation performance standard and plan are shallow and lacking in detail. Robinson, TR p652 lines 15-22.

220. Information regarding possible reseeding on the cover is not addressed in the draft permit. Reseeding is only addressed in one of the Applicant's later submittals. Corser, TR p232 lines 2-10.

221. Vegetation growth needs to be measured in terms of the initial establishment of the vegetation pattern, germination rates, growth rates of species, numbers of planted species and numbers of planted species versus naturally seeded or weed species. Robinson, TR p652 lines 23-25, p653 lines 1-4.

222. Mr. Corser testified that soil removed from the landfill will be stockpiled on-site

for use on the cap. Corser, TR p1042 lines 23-25.

223.The draft permit Attachment O describes vegetative cover with a minimum thickness of 2.5 feet and a final upper slope of between three and five percent. The cover is designed to function with minimum maintenance. Robinson, TR p645 lines 1-11.

224. The 2.5 foot soil cover required by the permit is less than the 3.5 foot soil cover currently being applied at a number of other sites that contain potentially hazardous materials disposed of in permanent, soil-covered, near surface waste units in New Mexico. Robinson, TR p647 lines 21-25.

225. The basis for specifying soil cover and costs included the general reference to the use of the specifications in the drawings and application. Those drawings do not have a specific cover design for Phase I only. Robinson, TR p1130 lines 19-25.

226. Mr. Corser did not state whether the topsoil or upper horizons of the soil which might be excavated were going to be separated from other non-growth media soils and managed or maintained in some manner which preserves the soil properties. Robinson, TR p1131 lines 14-18.

226.There is no attention given to the quality of the soil cap necessary to establish amd sustain the vegetative portion of the cover, nor is there any indication of whether appropriate soil types are available on site. Robinson, TR p1131 lines 7-12.

228. The application, draft permit and supporting documents do not discuss nutrient availability, organic material content, microbiological characteristics, salinity, or other attributes that would affect whether the soil is suitable for growing whatever vegetation species are planted. Robinson, TR p647 lines 2-11.

229. The draft permit requires that the vegetative cover provide a substrate for plant growth. There is no discussion of what this term means. Robinson, TR p646 lines 21-23.

230. The vegetation information provided by the Applicant through Montgomery Watson does not include any planned maintenance and does not specify replanting where there are inadequate vegetation survival rates. Robinson, TR p704 lines 18-25.

231. No financial assurance mechanism was selected as part of the permit application. Corser, TR p207 lines 14-19.

232. There is also no representation of what financial assurance instruments might be appropriate or available to the Applicant given the Applicant's structure and financial capacity. Robinson, TR p654 lines 20-25, p655 line 1.

233. The principles involved in the financial assurance plans of mining and solid waste sites are applicable to the Applicant's financial assurance plan. Robinson, TR p710.

234. The Applicant is required to provide sufficient financial assurance to cover the costs of closure and post-closure care of the facility if, for some reason, the Applicant is unable to fulfill the statutory and regulatory requirements. David Cobrain, TR p895 lines 1-16.

235. The Applicant should identify a proposed financial assurance mechanism and indicate whether the financial assurance at the amounts needed would be available from providers. Robinson, TR p1133 lines 6-16.

236. The Department's and the Applicant's financial assurance estimates do not support the full range of activities necessary to accomplish the required performance standards. Robinson, TR p669 lines 14-16.

237. If closure were necessary and was done under financial assurance, there

would be substantial construction associated with the closure work assuming the facility had received waste for a period of time. Robinson, TR p1134 lines 9-19.

238. There would be a range of services necessary. Contractors licensed in specific areas of work would conduct those services. Robinson, TR p1135 lines 15-18.

239. Typically, cost estimates are not compiled based on bids solicited. They are compiled from information provided by construction companies rather than standard industry cost estimate publications. Robinson, TR p1135 lines 15-18.

240. The cost estimates provided to both NMED and the Applicant's contractors are based on a very brief description of the proposed closure activity rather than a set of design and construction specifications, as would be the case with a formal construction cost estimate or bid. Paul Robinson, December 4, 2001 (comments on documents provided to CURE the previous week).

241. The financial cost estimates compiled for use by the Department in other situations are for the direct costs of construction. Indirect costs are in addition to direct costs and include profit, insurance, mobilization, demobilization, engineering and construction administration. Robinson, TR p1136 lines 13-24.

242. David Cobrain conducted a survey of New Mexico Contractors, the EPA, the Utah Department of Environmental Quality, and two hazardous waste landfills to estimate unit costs for cap construction for the Department. Cobrain, TR p901 lines 6-19.

243. Mr. Cobrain did not include insurance as a line item cost. The insurance costs are assumed by the contractors or bidding parties. Cobrain, TR p904 lines 22-25.

244. The State would require proof of insurance or any contractor that the Department

contracts with to perform work. Cobrain, TR p922 lines 1-3.

245. Indirect costs for construction of the landfill cover are listed as ten percent. All other indirect costs in the draft permit are listed at 25 percent. Robinson, TR, p690 lines 9-14.

246. The indirect costs for the landfill cover should be at least 25 percent. Id..

247. Administrative costs of 25 to 33 percent would involve insurance, profit costs and expenses, and supervision or administrative services. These costs are based on mining and solid waste financial assurance plans. Robinson, TR p690 lines 9-14, p1141 lines 21-23.

248. The five percent administrative costs identified by Mr. Cobrain in his testimony are overly optimistic based on past agency experience with contracting management. Robinson, TR p1132 lines10-18.

249. In addition, procurement for the Department may present difficulties beyond transaction costs. Robinson, TR p692 lines 12-16.

250. Mr. Robinson would not advise the state to pay 25 percent in indirect costs to a contractor. The Department, should, however, have that amount available in case it is needed to cover costs. Robinson, TR p711 lines 1-13.

251. Mr. Cobrain did not differentiate between direct and indirect costs in the same manner the Applicant or Mr. Robinson did. Robinson, TR p1128 lines 13-19.

252. Mr. Cobrain did not ask the contractors he contacted to specify vegetative cover planting or plant attributes in their cost estimates. Cobrain, TR p922 lines 18-21.

253. Mr. Cobrain did not specify the origin of material for a cover in his request for estimates. Cobrain, TR p923 lines 3-6.

254. Mr. Cobrain received estimates for cap construction ranging in price between

$2.00 per square foot and $5.74 per square foot. Cobrain, TR p909 lines 8-17; LF Cap, October 24, 2001. (Mr. Cobrain provided this document after the close of the hearing.)

255. Mr. Cobrain dropped the $5.74 estimate, averaged the estimates, and subtracted $0.68 to arrive at an average estimate of $2.27 per square foot. LF Cap, October 24, 2001.

256. The cost estimates Mr. Cobrain gathered do not assume the cap is made from material on-site. Cobrain, TR p921 lines 3-7.

257.The estimates assumed a project area of ten to twenty acres. LF Cap, October 24, 2001.

258. Phase I – the project landfill area – is 30 to 40 acres. Rice, TR p571.

259. LF Cap, the document provided by Mr. Cobrain, asks the companies providing estimates to assume construction of storm-water and erosion control measures. The storm-water and erosion control measures are not specified. LF Cap, October 24, 2001.

260. LF Cap also asks the companies providing estimates to assume guaranteed revegetation.

261. There is no explanation of what guaranteed revegetation means. LF Cap, October 24, 2001.

262. LF Cap further states that seeds will be spread during the storm season. LF cap does not include any information that seeding during storm season would be effective. LF Cap, October 24, 2001.

263. LF Cap additionally cites the cost of range restoration. LF Cap, October 24, 2001. The draft permit and application do not state that the landfill cover is to be restored to range vegetation standards. LF Cap, October 24, 2001.

264. "PO" did not respond to Mr. Cobrain's inquiry of whether "PO's" estimate included the change in revegetation price. LF Cap, October 24, 2001.

265. This price may be different if the revegetation price was not reflected in "PO's" estimate. If PO's price is higher, the average estimate would also be higher.

266. The Applicant hired Mr. Corser. Mr. Corser prepared the Applicant's estimates for cap construction based on experience Mr. Corser has with construction of similar facilities elsewhere in the United States. Corser, TR p1048 lines 9-14.

267. The estimates the Applicant used are interested third party bids. The estimates Applicant used are not independent third party bids. Cobrain, TR p927 lines 9-23.

268. Where the Applicant's cost estimates do not specifically separate profit, the draft permit and supporting documents should discuss how profit is accounted for in the estimates. Robinson, TR p1144 lines 1-5.

269. Neither the Department nor the Applicant used verifiable sources of independent engineering construction costs like industry cost estimation guidebooks or heavy equipment cost estimation handbooks. Robinson, TR p1129 liens 14-18.

270. The cost estimates to decontaminate buildings and equipment is listed with a ten percent Department supervision cost, but does not reference indirect costs. Robinson, TR p1145 lines 3-6.

271. Mr. Cobrain did testify that indirect costs were incorporated in his estimates, but there is no quantitative material available to verify this assertion with. Robinson, TR p1145 lines 19-24.

272. Materials disposed of during facility closure would need to be disposed of at a

permitted and operating facility. Were the Applicant to discontinue operation for any number of reasons, the Applicant may not be able to dispose of waste at the facility. Robinson, TR p679 lines 1-14.

273. If the Department calls in the bond or surety for the facility and does not want to have contractors disposing of waste on the facility site, the waste would need to be transported to another licensed facility. This will involve a transportation cost. Robinson, TR p667 lines 18-25.

274. The Applicant may only use costs for on-site disposal of the hazardous waste during closure if the Applicant can demonstrate that onsite disposal capacity will exist at all times over the life of the facility. Robinson, TR p681 lines 23-25, p682 lines 1-2.

275. While the engineering drawings provided by Applicant show several phases of the facility, this permit is for Phase I only. See, Draft Permit, Attachment L1.

276. The Applicant has not shown that Phase I will have the capacity at all times over the life of the facility to accept waste during closure. Robinson, TR p682 lines 11-22.

277. Water is needed to successfully complete revegetation at the site. Robinson, TR p700 lines 15-25.

278. The cost of water is indicated as a very significant site cost. Other than identifying that water will be a significant cost, costs associated with water are not addressed in a direct or indirect way. Robinson, TR p700 lines 15-25.

279.The Department estimates that ten percent of the waste from dismantlement (ten percent of the waste generated) would be hazardous waste. The Department does not indicate costs for disposal of non-hazardous material. . Robinson, TR p664 lines 1-9.

280. The Department also assumes a zero cost for disposing of non-hazardous material.

281. The Applicant does not have a solid waste permit.

282. Costs for the management of contaminated soil and non-contaminated soil should be considered for the drum unit as well as every other unit. Robinson, TR p666 lines 1-4.

283. The hazardous waste content of these units is not acknowledged in the draft permit or supporting documents and is treated as a 0 cost. Robinson, TR p666 lines 1-4.

284. The activity of disposing of the soils will involve on-site cost activities. Liners in stabilization basins or tanks and the mixing equipment will be contaminated with some hazardous constituents. All of these will involve cost and cost is not included. Robinson, TR p665, lines 18-19, p666 lines 21-24.

**I. Extensions of Time**

285. The Hearing Officer extended the post-submittals filing deadline three times because of submittals made by the Applicant after the close of the hearing, and because of documents provided by the Department and previously unavailable.

286. These extensions of time were not accompanied by corresponding opportunities for the parties to present testimony, or to cross-examine the Department or the Applicant regarding those documents.

## III. Conclusions of Law

1. The New Mexico Hazardous Waste Act, 1978 NMSA §§ 74-4-1, et seq. (hereinafter "the Act"), the New Mexico Environmental Procedure Regulations and the New Mexico Hazardous Waste Regulations (hereinafter "the Regulations") provide for participation by affected groups and individuals in proceedings involving applications for hazardous waste

disposal facilities. 1978 NMSA § 74-4-2; 20 NMAC 1.4.I.106, 20 NMAC 4.1.901.

2. In order to obtain approval of the Application, Applicant is required to demonstrate that the hazardous waste disposal facility will comply with the Act and the Regulations and that the permit should be issued. This burden does not shift. 20 NMAC 1.4.IV.401.A.

3. Among other requirements, the Applicant must show that the facility is protective of human health and the environment. See, 1978 NMSA Section 74-4-2; 40 CFR 264.111.

4. The Applicant was also required to present expert testimony to support its positions on questions which laymen would not be able to decide without technical assistance of a person knowledgeable about the subject because of his skill, training, or experience. See, New Mexico Savings & Loan Association v. United States Fidelity and Guaranty Company, 454 F.2d 328 (10th Cir. 1972).

5. To testify as an expert on a subject, a witness must demonstrate sufficient knowledge of experience in that area. Reid v. Brown, 56 N.M. 65, 240 P.2d 213 (1952), and must give a satisfactory explanation of the basis for his conclusion in order for the conclusion to be competent evidence. Four Hills Country Club v. Bernalillo County Property Tax Protes Board, 94 N.M. 709, 616 P.2d 616 (Ct. App. 1979); Smith v. Klebanoff, 84 N.M. 50, 499 P.2d 368 (Ct. App.), cert. Denied, 84 N.M. 37, 499 P.2d 355 (1972).

6. The Department has the burden of proof for the challenged conditions of the proposed permit. 20 NMAC 1.4.IV.401.A.

7. The Applicant violated the public's right to participate by failing to submit updated personal disclosure statements with information that was available before the hearing.

8. The draft permit does not comply with the requirement of 40 CFR 264.51 that the

Contingency Plan minimize hazards to human health or the environment.

9. The draft permit does not comply with the requirement of 40 CFR 264.52 that "the plan must describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate services."

10. The findings of fact do not indicate that the application or the Applicant's witnesses identified specific local police departments, fire departments or other local emergency responders, and did not identify any agreements with those agencies.

11. The application should be denied because the plan does not describe any arrangements agreed to by State or local emergency response teams, local police departments, fire departments, hospitals, or contractors.

12. In the alternative, the application should not be granted without the arrangements with the groups listed in 10. and 11. above in place.

13. The Applicant's Emergency Coordinator cannot comply with the requirement of 40 CFR 264.56 that the emergency coordinator be able identify to immediately identify the character of any released materials and that the emergency coordinator be able to assess possible hazards to human health or the environment that may result from a release.

14. The Application should be denied because the Applicant has not demonstrated the knowledge and ability to operate the landfill in accordance with the Act and Regulations.

15. In the alternative, the application should be granted only with the stipulations that the emergency coordinator will demonstrate the ability to assess the character of any released materials prior to the Applicant accepting waste, that the emergency coordinator demonstrate he is able to assess possible hazards to human health prior to the Applicant accepting waste, and that

the public will have the opportunity to review and comment on the emergency coordinator's preparedness.

16. In order for the Applicant to obtain a Groundwater Monitoring Variance the Applicant is required to provide to a reasonable degree of certainty that hazardous constituents will not migrate beyond the outer containment layer before the end of the post-closure care period. 40 CFR 264.90(b)(2)(vii).

17. The Department must find that there is no potential for migration of liquid from the facility to the uppermost aquifer during the active life of the facility and the post-closure care period of the facility. 40 CFR 264.90(b)(4).

18. 40 CFR 264.90(b)(4) also requires that the Applicant consider migration of liquid. "In order to provide an adequate margin of safety in the prediction of potential migration of liquid, the [Applicant] must base any predictions made under this paragraph on assumptions that maximize the rate of liquid migration." 40 CFR 264.90 (b)(4).

19. There are no requirements listed in the New Mexico Hazardous Waste Act or applicable regulations that require the use of the MULTIMED model in determining travel time or liquid migration.

20. 40 CFR 264.90 does not define a vadose zone monitoring system, but 40 CFR 264.278 relating to Land Treatment, requires the owner or operator of a Land Treatment facility to install soil cores and soil-pore liquid monitoring devices such as lysimeters to monitor the unsaturated zone.

21. The Applicant's Groundwater Monitoring Variance should be denied because the Applicant has not performed the necessary investigations to determine where the uppermost

aquifer is.

22. The Applicant's Groundwater Monitoring Variance should be denied because the Applicant has not completed the necessary investigations to determine how far, both horizontally and vertically groundwater is in the Upper and Lower Dockum from the facility.

23. The Applicant's Groundwater Monitoring Variance should be denied because the Applicant does not know whether the Lower Dockum is a confined unit.

24. The Applicant's Groundwater Monitoring Variance should be denied because the Applicant has not done the necessary investigations to determine whether there are fast flow paths that would increase rate of liquid migration.

25. The Applicant's Groundwater Monitoring Variance should be denied because the Applicant and the Department did not use the highest reported hydraulic conductivity and does not know the nearest location of groundwater to the facility. The Applicant and the Department therefore did not base their presumptions of liquid migration on the assumptions that would maximize the rate of liquid migration.

26. The Applicant's Groundwater Monitoring Variance should be denied because the Applicant, without having the evidence to show the location of the nearest aquifer, has proposed a groundwater monitoring system and called it a Vadose Zone Monitoring System.

27. The Applicant will attempt to monitor saturated flow that may form in the vadose zone, but the Applicant will not monitor unsaturated flow in the vadose zone.

28. In the alternative, the application should only be granted after the Applicant has:

a. completed angle coring to determine that fractures or other fast flow paths are not present;

b. drilled additional bore holes between PB-47 and WW-1 to determine the exact location of groundwater between those two points and to determine that those bore holes indicate groundwater is no closer to the site than previously described;

c. drilled additional monitoring wells and target specific units the Applicant or the State suspects to be the source of water by sealing other units;

d. drilled upgradient of the landfill through all layers on the facility site;

e. completed additional investigations to determine how far saturated zones are from the facility both horizontally and vertically;

f. calculated the liquid migration rate using the highest reported value for hydraulic conductivity;

g. agreed to install, monitor and maintain a vadose zone monitoring system consisting of lysimeters and tensiometers or neutron probe access tubes immediately below and along the sides of the landfill; and

h. performed a series of aquifer tests in the Upper and Lower Dockum units to determine the full range of hydraulic conductivities within each unit.

i. Submitted reports both providing and analyzing the data gathered from the above listed activities.

29. After the Applicant complies with the requirements in 29. above, the public shall have adequate time for an opportunity for public comment on the technical reports before their acceptance as complete, adequate, or approvable by the Department.

30. All activities identified in 29. Above should also be complete prior to the initiation of

construction activities.

31. The Applicant "must close the facility in a manner that minimizes the need for further maintenance; and controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere." 40 CFR 264.111.

32. The application should be denied because the Applicant has failed to provide adequate surface water diversion and management strategies to minimize the need for future maintenance or to prevent the need for future maintenance, or to prevent releases over the life of the hazardous wastes.

33. In the alternative, the application should only be granted provided that the Applicant install surface drainage ditches and other works at regular intervals on the landfill cover, and that the Applicant amend the application to include a design for surface water diversion systems.

34. The public should have an opportunity to comment on the revisions in 33. Prior to their acceptance as adequate or approvable by the Department.

35. The Applicant must have a detailed written estimate in current dollars of the cost of closing the facility at the point in the facility's active life when the extent and manner of its operation would make closure the most expensive.

36. The Applicant may use costs for onsite disposal of hazardous waste if the applicant can demonstrate that onsite disposal capacity will exist at all times over the life of the facility. 40 CFR 264.142.

37. The application should be denied because the financial assurance estimates do not

support the full range of activities necessary to accomplish the performance standards required at a time when closure would be the most expensive.

38. The application should be denied because the Applicant has not shown that onsite disposal capacity will exist at all times over the life of the facility. The costs for off-site disposal would be higher and these costs are not discussed in the Applicant's cursory estimates for the facility closure.

39. In the alternative, the application should only be granted if the Applicant can demonstrate and guarantee that on-site disposal capacity will exist at all times over the life of the facility.

40. The Applicant must cover the facility landfill with a final cover designed and constructed to provide long-term minimization of migration of liquids. The cover must also function with minimum maintenance. 40 CFR 264.310.

41. The Applicant's inadequate surface water diversion and erosion management strategies do not ensure only a minimum degree of cover maintenance will be needed.

42. The application should be denied because the Applicant does not have a closure or post-closure plan that discusses with adequate detail the design and maintenance of the vegetative cover.

43. In the alternative, the application should only be granted it the Applicant provides additional details regarding:

a. vegetation patterns, germination rates, growth rates of species, numbers of planted species versus naturally seeded or weed species; and

b. whether on-site material provides suitable growth medium for successful

vegetation establishment in volumes necessary to fully comply with closure plan requirements.

c. The Applicant should also be required to:

1. increase indirect and administrative costs; and
2. base cost estimates on an industry accepted estimating handbook or tool.

44. The Department may request additional information from applicant to clarify, modify or supplement previously submitted material. 40 CFR 124.3(c).

45. The Department should require the Applicant identify a proposed financial assurance mechanism and require the Applicant to indicate whether the amount of financial assurance needed would be available from the providers. This information should then be available to the public for review and comment prior to approval by the Department.

46. In the alternative, the application should be denied because the Applicant has not shown it can obtain adequate financial assurance. Likewise, the application should be denied because the public has not had an opportunity to review and comment on the Applicant's ability to obtain adequate financial assurance.

47. The extensions of time granted by the Hearing Officer in this matter for the filing of closing arguments and proposed findings of fact and conclusions of law have not cured the violation of the New Mexico Administrative Code providing the public with equal opportunities to participate.

## IV. Decision

The Application filed by the Applicant is denied; or

Alternatively, the Application filed by the Applicant is granted subject to the following conditions:

1. The Applicant must, according to recommendations made by the US Fish and Wildlife Service and the New Mexico Fish and Game Department, install an exclosure fence of flashing metal around the base of the chain-link fence to prevent Sand Dune Lizards from entering the facility.

2. The Applicant must relocate any storage facilities planned in Sand Dune or Shinnery-Oak habitat to another area.

3. From March 1 to June 15, the Applicant will restrict noise from one hour before sunrise to one hour after sunrise to prevent facility operations from interfering with the Lesser Prairie Chicken during breeding season.

4. The Applicant must prepare its emergency coordinators to adequately perform their responsibilities and provide documentation of this training to the public.

5. The Applicant must conduct angle coring to determine whether fractures exist at or near the facility.

6. The Applicant must perform a series of aquifer tests in the Upper and Lower Dockum units to determine the full range of hydraulic conductivities within each unit.

7. The Applicant will conduct additional investigations including drilling bore holes between PB-47 and WW-1, drilling additional monitoring wells which target specific units and seal other units, and drill upgradient of the landfill through all geologic layers on the facility to gather additional information on where the saturated zones are horizontally and vertically compared to the facility.

8. The Applicant will install lysimeters and neutron probe access tubes immediately below and along the sides of the landfill.

9. The Applicant will maintain on-site disposal capacity will exist at all times until the facility is closed.

10. The Applicant will provide additional detail regarding vegetation patterns, germination rates, growth rates of species, numbers of planted species, and whether on-site material provides suitable growth medium for successful vegetation establishment.

a. If on-site suitable growth medium for successful vegetation does not exist, the Applicant will increase the appropriate cost estimates to ensure the ability of a third party to provide suitable growth medium.

11. The Applicant shall provide closure and post-closure costs estimates which add indirect costs of 25 percent and administrative costs of ten percent to direct costs estimates as revised.

12. The public shall have an opportunity to review and comment on the required documentation prior to acceptance as adequate or complete by the Department.

13. The parties shall have an opportunity to present evidence and cross-examine the Department and the Applicant on documents submitted, or not available until after, the hearing in this matter.

14. All of the above required actions and submittals should be provided on a specific compliance schedule approved by the parties.

Dated: December 17, 2001.

NEW MEXICO
ENVIRONMENTAL LAW CENTER

Heather L. Green
Eric D. Jantz
Douglas Meiklejohn
1405 Luisa Street, Suite 5
Santa Fe, N.M. 87505
Telephone: (505) 989-9022
Facsimile: (505) 989-3769
Attorneys for CURE and its members

```
------------------------------------------------------------------------------

Unit Serial No: 823938                      Version: 02.46

Network Address:  00:40:af:64:94:10

Network Topology: Ethernet                  Connector: RJ45

Network Speed: 10 Megabits

Novell Network Information                  enabled
    Print Server Name: RDP_823938
    Password Defined: No
    Preferred Server Name not defined
    Directory Services Context not defined
    Frame Type: 802.2 On 802.3

Peer-to-Peer Information                    enabled
    Frame Type: 802.2 On 802.3
    Network ID: 0 h

TCP/IP Network Information                  enabled
    Frame Type: Ethernet II                 Protocol Address: Not Configured
    Subnet Mask: 255.0.0.0                  Default Gateway:  0.0.0.0

AppleTalk Network Information               enabled
    Frame Type: 802.2 SNAP On 802.3
    Protocol Address: Net Number 65384        Node Number 224  Socket Number 129
    Preferred AppleTalk Zone:               Default Zone

--  ------------------------------------------------------------------------

Novell inactive

Peer-to-Peer Connection Information
    Printer Name: RDP_823938

AppleTalk Connection Information
    AppleTalk Printer Name: RDP_823938

TCP/IP Connection Information
    Port Number : 10001

------------------------------------------------------------------------------
```


BEFORE THE ENVIRONMENT DEPARTMENT

STATE OF NEW MEXICO

| | | |
|---|---|---|
| IN THE MATTER OF THE DRAFT FINAL PERMIT FOR THE TRIASSIC PARK WASTE DISPOSAL FACILITY U.S. EPA NO. NM0001002484 | ) ) ) ) ) | No. HRM 01-02(P) |

**CONSERVATIVE USE OF RESOURCES AND ENVIRONMENT'S CLOSING ARGUMENT**

Introduction

Conservative Use of Resources and Environment (hereinafter "CURE") and its members, including Victor Blair, Jimi Gadzia, Deborah Petrone and Michael Porter, are filing this Closing Argument pursuant to Rule 501 of the New Mexico Environment Department's Procedural Rules, 20 NMAC 1.4 (hereinafter "the Rules") and the Hearing Officer's several orders establishing the date by which the parties are to file their closing arguments and proposed findings of fact and conclusions of law.

Cure is involved in this matter because it and its members would be directly affected by the proposed Triassic Park waste disposal facility (hereinafter "Triassic Park" or "the proposed facility") and they therefore would be affected by the permit that the Applicant Gandy-Marley corporation (hereinafter "Gandy-Marley" or "the Applicant") seeks for Triassic Park.

The New Mexico Environment Department (hereinafter "the Department") should deny the application ("the Application") filed by Gandy-Marley for a permit for Triassic Park. The burden of proof in this matter is on Gandy-Marley, but Gandy-Marley has not demonstrated that

Triassic Park will comply with the requirements of the New Mexico Hazardous Waste Act, NMSA 1978 §§ 74-4-1, et seq. (hereinafter "the Act") and the New Mexico Hazardous Waste Regulations, 20 NMAC 4.1 (hereinafter "the Regulations") in the following six areas.

First, the Application does not comply with the requirements of 40 CFR 264.142 governing the financial assurance for the proposed facility.

Second, Gandy-Marley has not demonstrated compliance with the requirements of 40 CFR 264.111 and 40 CFR 264.310 concerning closure and post-closure care of the proposed facility.

Third, Gandy-Marley has not complied with the requirements of 40 CFR 264.51 through 40 CFR 264.56 governing the development and implementation of a contingency plan and emergency procedures for the proposed facility.

Fourth, Gandy-Marley has not demonstrated the knowledge and ability to operate the proposed facility in accordance with the Act and the Regulations.

Fifth, the Department and Gandy-Marley have violated the right of the public to participate effectively in this proceeding.

Sixth, the ground water monitoring variance granted to Gandy-Marley by the Hazardous Waste Bureau of the Department (hereinafter "the Bureau") should be denied because that variance does not meet the requirements of 40 CFR 264.90.

These deficiencies are demonstrated by the evidence, and the lack of evidence, presented concerning these points in the Application and in the draft permit proposed by the Department (hereinafter "the Draft Permit").

Alternatively, if the Department approves the Application the Department should include

in the permit the conditions specified by CURE and its members below in order to address the deficiencies in the Application that can be remedied by conditions. In addition, any approval of the Application should include a requirement that the Applicant comply with the conditions that the Applicant has indicated it will put in place to protect the lesser prairie chicken and the sand dune lizard.

Argument

I. CURE and its members are parties with standing in this proceeding.

A. The Act and Regulations provide for participation by affected groups and individuals in proceedings covering applications for hazardous waste facility permits.

The Act was enacted to deal with the issues of generation and disposal of hazardous waste in the state. The purposes of the Act are:

> to help ensure the maintenance of the quality of the state's environment; to confer optimum health, safety, comfort and economic and social well-being on its inhabitants; and to protect the proper utilization of its lands.

NMSA 1978 §74-4-2.

The Act therefore seeks not only to protect the environment but to safeguard the public health, safety, and welfare. In addition, the Act's provisions on Department decisions on applications for hazardous waste facility permits provide for opportunities for participation in permitting decisions by members of the public. Section 74-4-4.2 NMSA 1978 of the Act states that no ruling shall be made on the issuance of a permit without an opportunity for a public hearing at which:

> all interested persons shall be given a reasonable chance to submit data, views or arguments orally or in writing and to examine witnesses testifying at the hearing ...

This emphasis on public participation is also the basis of the Regulations' provisions concerning public hearings on applications for permits. Those hearings are to be held publicly, in Santa Fe or the area that would be affected by the facility, and to provide a reasonable opportunity to be heard for all persons who wish to speak on the issue. 20 NMAC 4.1.F.

B. CURE consists of individuals who would be affected by the proposed facility and by Gandy-Marley's effort to obtain a hazardous waste facility permit.

CURE is an organization of individuals who are opposed to hazardous and nuclear waste facilities in the Southwest. Conservative Use of Resources and Environment's Response To Applicant's Motion To Strike Entry of Appearance of Cure, 1. CURE members include, but are not limited to, Jimi Gadzia, Holly Harris-Schott, Micahel Porter, Elisabeth Price, Deborah Petrone, Librado de la O and Victor Blair. Transcript (hereinafter "TR") 339, 363, 366, 401, 408, 427; Conservative Use of Resources' Notice of Intent To Present Technical And Environmental Testimony, And Request For An Interpreter, 1.

Ms. Gadzia is a citizen of Roswell, New Mexico. Testimony of Jimi Gadzia (hereinafter "Gadzia"), TR 339, lines 24-25. She is concerned about the proposed facility because her children attend school along the routes that would be used to transport hazardous waste to Triassic Park. Gadzia, TR 347, lines 17-19; TR 348, lines 1-6; TR 352, lines 21-22. Trucks transporting hazardous waste will have to travel to US Highway 380 by going east through Roswell or west through Tatum. There are no alternate routes. Gadzia, TR 346, lines 22-25. Ms. Gadzia and her family are also concerned about the impact of the proposed facility on the value of their property. They are pecan farmers, and they fear that there would be a negative stigma on the area if there is a hazardous waste facility, and that the presence of such a facility

would have an adverse effect on the value of surrounding properties. Gadzia, TR 345, lines 15-22.

Ms. Gadzia is also concerned that the Applicant is not adequately prepared to operate a hazardous waste disposal facility and that the Department staff are too few to adequately monitor the facility and the facility's closure. Gadzia, TR 350, line 25; TR 351, lines 1-14. She is concerned as well that the revegetation plan specified in Gandy-Marley's documents and in the draft permit will result in an exposed area subject to continued erosion. Gadzia, TR 349, lines 13-17.

Holly Harris-Schott is concerned about the impact of Triassic Park on her family, including her eighteen-month old girl. Testimony of Holly Harris-Schott (hereinafter "Harris-Schott"), TR 364, lines 21-25. Ms. Schott is particularly concerned that if there were a transportation accident involving hazardous waste, the emergency response time would be too slow in the rural area around the facility. Harris-Schott, TR 365, lines 6-16.

Michael Porter is concerned that the Department has made little or no attempt to assess the economic impact of the proposed facility on the surrounding area. Testimony of Michael Porter (hereinafter "Porter"), TR 371, lines 12-17. For example, he is concerned that the taxpayers will bear the costs related to increased truck traffic, municipal and volunteer fire, police and other emergency response teams. Porter, TR 372, lines 2-9. Mr. Porter also is concerned about the manner in which Triassic Park would be operated because he found OSHA reports of deaths and fines imposed on Gandy Corp. (a parallel company) for failure to follow work rules. He is concerned that those reports may indicate a trend about the way the proposed facility will be operated. Porter, TR 390, lines 8-18.

Elisabeth Price is specifically concerned with the transportation of hazardous waste and with the inadequate security proposed for Triassic Park. Trucks transporting hazardous waste to the facility will pass in front of her house. Testimony of Elisabeth Price (hereinafter "Price"), TR 402 lines 11-12. Ms. Price is also concerned over the potential for an intentional spill of hazardous waste. Price, TR 402 line 9, 403 lines 8-25.

Deborah Petrone is concerned, after listening to Mr. Larry Gandy's testimony, that the Applicant does not have adequate experience and knowledge to operate Triassic Park. Testimony of Deborah Petrone (hereinafter "Petrone"), TR 4-10, lines 4-7. She is also concerned about the health effects of the hazardous wastes that would be accepted at Triassic Park, and about the Applicant's refusal to guarantee that the proposed facility will not pollute air and water. Petrone, TR 411, lines 20-25; TR 412, lines 1-2.

Librado de la O lives in Hagerman, New Mexico. He is concerned about the impact of the proposed facility on his family's health and safety. Testimony of Librado de la O (hereinafter "de la O"), TR 428, lines 22-24. He has not had an opportunity to determine the details of the proposed facility because information has not been made available to him in a form that he could understand. He attended a public information meeting in Hagerman but did not understand the information provided because the Applicant would not give a presentation in Spanish. de la O, TR 429, lines 11-12. Mr. de la O and others left the meeting before the question and answer period; Mr. de la O left because he could not understand. de la O, TR 431, lines 9-13. Mr. de la O never had a chance to read the draft permit or to understand what the Applicant was proposing because he does not know how to read. de la O, TR 429, lines 20-22.

These members of CURE are "interested persons" as that term is used in NMSA 1978

§74-4-4.2 of the Act, and their views therefore must be considered by the Department when it determines whether to grant the permit sought by Gandy-Marley. 20 NMAC 4.1.901.A(5), (7). In addition, their interest in the proposed facility provides them and CURE with standing in this proceeding.

II. The burden of proof in this proceeding is on Gandy-Marley.

In order to obtain approval of the Application, Gandy-Marley is required to demonstrate that the proposed facility will comply with the requirements of the Act and Regulations. The burden is on Gandy-Marley except as to conditions proposed by other parties. The requirement that Gandy-Marley demonstrate compliance arises from three sources.

First, the Act and the Regulations indicate that in order to obtain a permit the Applicant must demonstrate that proposed facility will be protective of human health and the environment. See NMSA 1978 §74-4-2; 40 CFR 264.111. Second, the Rules provide that to obtain approval of the Application, Gandy-Marley must demonstrate that Triassic Park will comply with the Act and Regulations, and that this burden of proof does not shift. 20 NMAC 1.4.IV.401.A. Finally, as the New Mexico Supreme Court pointed out in International Minerals and Chemical Corporation v. New Mexico Public Service Commission, 81 N.M. 280, 466 P.2d 557 (1970):

> the courts have uniformly imposed on administrative agencies the customary common-law rule that the moving party has the burden of proof.

81 N.M. 283. In this case, Gandy-Marley is the moving party because it is seeking a permit for the proposed facility, and the burden of proof therefore is on Gandy-Marley.

Finally, Rule 401.A also provides that the Department and CURE have the burden of proof as to any conditions that they propose for the permit. 20 NMAC 1.4.IV.401.A.

This means that Gandy-Marley had to prove by evidence that a rational person would normally rely on to draw a conclusion that the permit for the landfill should be renewed. Empire West Companies, Inc. v. Albuquerque Testing Laboratories, Inc., 110 N.M. 790, 800 P.2d 725 (1990). It also means that Gandy-Marley is required to present expert testimony to support its positions on questions which laymen would not be able to decide without the technical assistance of a person knowledgeable about the subject because of his skill, training, or experience. See New Mexico Savings & Loan Association v. United States Fidelity and Guaranty Company, 454 F.2d 328 (10th Cir. 1972). Moreover, to testify as an expert on a subject, a witness must demonstrate sufficient knowledge or experience in that area. Reid v. Brown, 56 N.M. 65, 240 P.2d 213 (1952). The witness must also give a satisfactory explanation of the basis for his conclusion in order for the conclusion to be competent evidence. Four Hills Country Club v. Bernalillo County Property Tax Protest Board, 94 N.M. 709, 616 P.2d 422 (Ct. App. 1979); Smith v. Klebanoff, 84 N.M. 50, 499 P.2d 368, (Ct. App.), cert. denied, 84 N.M. 37, 499 P.2d 355 (1972)).

III. The proposed facility does not comply with the Act and the Regulations.

A. The Application does not comply with the Regulations' requirements for closure of the proposed facility.

The Regulations mandate that the proposed facility must be closed in a manner that

> minimizes the need for further maintenance; and controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters of to the atmosphere.

40 CFR 264.111. The Application for Triassic Park does not meet these requirements because it

does not provide for adequate revegetation or for control of erosion.

1. CURE presented expert testimony concerning the issues of revegetation and erosion control.

CURE presented testimony on the Application's proposal for closure by Paul Robinson, who is well qualified to address this issue. Mr. Robinson has provided testimony in permit proceedings dealing with the permitting of solid waste facilities under subtitle D of the Resource Conservation and Recovery Act (hereinafter "RCRA"). Testimony of Paul Robinson (hereinafter "Robinson"), TR 1146, lines 18-24. He also has performed technical services for an applicant who proposed to build a solid waste facility and reviewed the specifications for the liner for that applicant. Robinson, TR 673, lines 4-5. In addition, Mr. Robinson has participated in RCRA permit hearings for Los Alamos National Laboratory, Kirtland Air Force Base and Sandia National Laboratories. Robinson, TR 674, lines 10-14. Finally, Mr. Robinson taught environmental evaluation methods and environmental assessment and policy classes at the University of New Mexico between 1983 and 1997. Robinson, TR 640, lines 10-14.

In addition to his qualifications, Mr. Robinson reviewed and evaluated the proposed closure of Triassic Park according to appropriate standards. Because Triassic Park would be the first hazardous waste disposal facility of its kind in New Mexico, Mr. Robinson compared the Applicant's application and draft permit to other New Mexico closure programs. Robinson, TR 641, lines 3-8. Many of the principles that apply in mining sites and solid waste sites— including but not limited to the proper installation of liners and function of liners—are the same principles that apply in this instance. Robinson, TR 710, lines 15-25. The management of slope and precipitation to address erosion at mining and solid waste sites are also comparable to the Triassic

Park situation. Robinson, TR 710, lines 1-2.

Mr. Robinson testified that closure and post-closure plans are fundamental aspects of an effective operating plan for a waste facility, and that the life of the hazard is one of the critical determining factors in how long a management strategy should be effective. Robinson, TR 642, lines 13-19. He also pointed out that the Applicant's closure and post-closure plans are the first plans for a hazardous waste disposal facility in New Mexico. Robinson, TR 643, lines 3-7. He indicated as well that there is no basis for limiting the anticipated post-closure period to 30 years in this matter because there is nothing limiting the life of the hazardous wastes or risk for potential releases to 30 years.[1] Robinson, TR 644, lines 16-21.

2. The Application does not propose adequate measures for control of erosion.

Mr. Robinson testified to several deficiencies in the Application's plans for closure of the proposed facility. First, the Applicant has not provided for the runoff control and surface erosion as described in the Application as a need to be addressed. Robinson, TR 650, lines 1-4. As Mr. Robinson pointed out, the Phase I described for Triassic Park is only a small part of the proposed facility described in Attachment L1 Drawing 22. There are no surface water diversion ditches described in that drawing (Robinson, TR 649, lines 9-25), and the access road ditch shown on Attachment L1 Drawing 22 is for the access road and does not address surface water diversion or water management on the cover itself. Robinson, TR 697 lines 4-12. This deficiency was confirmed by Patrick Corser, a witness for Gandy-Marley, who testified that Drawing 22 only

[1] David Cobrain, who testified for the Department, confirmed that the Department Secretary may extend the post-closure care period at the end of the 30 year period. Testimony of David Cobrain (hereinafter "Cobrain"), TR 896, lines 7-16.

indicates ditches around the perimeter of the cover. Testimony of Patrick Corser (hereinafter "Corser"), TR 249, lines12-18.

Mr. Robinson testified that it is a typical practice is to locate surface water diversions every 150 to 300 feet on the contours in order to prevent gullies from forming and to prevent long run-off flow paths. Robinson, TR 698, lines 2-6. He explained as well that surface water ditches are critical especially when, as the Applicant proposes, there will be a soft cover like soil and vegetation as opposed to a riprap or rock cover that is less susceptible to erosion. Robinson, TR 650, lines 15-21.

Mr. Robinson also pointed out that very little attention is given in the Application and the Draft Permit to the erosion processes in the area where the facility is located. Specifically, neither the Application nor the Draft Permit gives attention to the extensive range-land record of soil erosion in the vicinity of the proposed facility. Robinson, TR 653, lines 19-23. He also testified that a comparison of the erosion calculations and ditch design would be part of the evaluation to determine the adequacy of the ditch collection system, but would not be the only part. Robinson, TR 698, lines 18-22.

On the basis of this analysis, Mr. Robinson concluded that the risk posed by the closure plan is long-term erosion of the cover for the proposed facility. Neither the Application nor the Draft Permit addresses erosion in the facility area in a manner that defines the risk as a matter of climate condition or geomorphic change, and neither identifies performance standards for the cover. Robinson, TR 654, lines 1-10.

3. The Application and Draft Permit do not provide for adequate revegetation.

Mr. Robinson also addressed the deficiencies in the Application and the Draft Permit's proposals for revegetation as part of the closure plan. He pointed out that based upon the needs at the site, the revegetation plan must contain a standard of durability, and concluded that, as written, the revegetation performance standard and plan are inappropriate because they lack the necessary detail. Robinson, TR 652, lines 15-22. In particular, he stated that vegetation growth needs to be measured in terms of the initial establishment of the vegetation pattern, germination rates, growth rates of species, numbers of planted species and numbers of planted species versus naturally seeded species. Robinson, TR 652, lines 23-25, 653, lines 1-4.

Mr. Robinson also indicated that the Application and the Draft Permit are deficient because they do not address either the quality of the soil cap necessary to establish a vegetative portion of the cover or whether appropriate soil types are available on site. Robinson, TR 1131, lines 7-12. The Application and Draft Permit are also lacking because they do not discuss nutrient availability, organic material content, microbiological characteristics, salinity, or other attributes that would affect whether the soil is suitable for growing whatever vegetation species are planted. Robinson, TR 647, lines 2-11.

Mr. Robinson pointed out as well that the vegetation information provided by the Applicant through the Montgomery-Watson report does not include any planned maintenance and does not specify replanting where there are inadequate vegetation survival rates. Robinson, TR 704, lines 18-25. The Draft Permit is also unclear because it requires that the vegetative cover provide a "substrate" for plant growth without defining what that term means. Robinson, TR 646

lines 21-23.

Finally, many of the deficiencies in the Application and the Draft Permit pertaining to the revegetation of the proposed facility cover were confirmed by Patrick Corser, who testified for the Applicant. Mr. Corser stated that information regarding possible reseeding on the cover is not addressed in the Draft Permit, but is addressed only in one of the Applicant's later submittals. Corser, TR 232, lines 2-10.

4. The Application and Draft Permit do not propose adequate treatment of soil to be used for the Triassic Park cover.

Mr. Robinson also identified serious deficiencies in the proposals by the Application and the Draft Permit for the treatment of soil to be used for the proposed facility cover. The drawings that provide the basis for specifying soil cover reference the use of the specifications in the drawings in the Application, but those drawings do not have a specific cover design for Phase I only. Robinson, TR 1130, lines 19-25. In addition, Mr. Corser, who testified that soil removed from the facility will be stockpiled on site for use in the cap (Corser, TR 1042, lines 23-25), did not state whether the topsoil or upper horizons of the soil which might be excavated were going to be separated from other non-going media soils and managed or maintained in some manner which preserves the soil properties. Robinson, TR 1131, lines 14-18. Mr. Robinson pointed out as well that the Draft Permit Attachment O describes vegetative cover with a minimum soil thickness of 2.5 feet but that this is less than the 3.5 foot cover currently being applied at a number of other sites in New Mexico. Robinson, TR 647,lines 21-25.

5. The Application should be denied because of these deficiencies.

These deficiencies in the proposed closure plans for Triassic Park violate the requirements

of 40 CFR 264.111 of the Regulations. Because it lacks the necessary information about erosion prevention, about revegetation, and about soil to be used for the cap, the Application does not demonstrate that the proposed closure plans "minimize the need for further maintenance", or that they eliminate, to any extent, "post-closure escape of hazardous waste, hazardous constituents, leachate, contaminated run-off, or hazardous waste decomposition products to the ground or surface waters or to the atmosphere". The Application therefore should be denied.

6. Alternatively, if the Application is granted, it must include conditions to remedy these deficiencies.

Because these deficiencies violate the applicable requirements of the Regulations, the Applicant should be granted a permit only if it includes conditions that address these deficiencies. Specifically, the permit must require that the Applicant install surface drainage ditches and other works sufficient to prevent erosion. The permit should require that surface water diversions be located every 150 to 300 feet on the contours in order to prevent gullies from forming and to prevent long run-off flow paths. The permit also should require that the Applicant prepare a plan for adequate revegetation and a plan setting forth the treatment of the soil to be used in the proposed facility cover.

B. The Application does not comply with the Regulations' financial assurance requirements.

1. The Regulations require detailed estimates of the most expensive closure of the facility by a third party.

The Regulations require that the Applicant provide a "detailed written estimate, in current dollars, of the cost of closing the facility". Moreover the Regulations specifiy that:

> (1) The estimate must equal the cost of final closure at the point in the facility's active life when the extent and manner of its operation would make

closure the most expensive, as indicated by its closure plan; and

(2) The closure cost estimate must be based on the costs to the owner or operator of hiring a third party to close the facility.

The Regulations also provide that:

The owner or operator may use costs for on-site disposal if he can demonstrate that on-site disposal capacity will exist at all times over the life of the facility.

40 CFR 264.142(a).

The mandate that the Applicant provide sufficient financial assurance to cover the costs of closure and post-closure care of the facility if, for some reason, the Applicant is unable to fulfill the statutory and regulatory requirements was confirmed by David Cobrain in his testimony. Cobrain TR 895, lines 1-16. The Applicant has not provided this information for Triassic Park.

2. CURE presented expert analysis concerning the proposed financial assurance.

CURE presented an analysis by Paul Robinson of the financial assurance provided by the Applicant. Mr. Robinson is qualified to evaluate the financial assurance information because of his experience with other RCRA sites outlined above and because of his experience evaluating financial assurances for such sites and for mining operations. As he pointed out, the principles that apply to other RCRA sites and mining sites are the same principles that should be used to evaluate the proposed financial assurance for Triassic Park.

3. The proposed financial assurance does not include all necessary costs.

As Mr. Robinson testified, the Applicant's financial assurance estimates (and those of the Department) do not include the full range of activities and costs necessary to accomplish the required performance standards. Robinson, TR 669, lines 14-16. For example, water is needed to successfully complete revegetation at the site. The cost of water is indicated as a very

significant site cost. Other than identifying that water will be a significant coast, costs associated with water are not addressed in a direct or indirect way. Robinson, TR 700, lines 15-25. In addition, the Department estimates that ten percent of the waste generated from dismantlement would be hazardous waste. The Department does not indicate costs for disposal of non-hazardous material, even though this cost must be taken into account because the proposed facility would not have a permit for disposal of such material. Robinson, TR 664, lines 1-9.

Furthermore, materials disposed of during facility closure would need to be disposed of at a permitted and operating facility. Were the Applicant to discontinue operation for any number of reasons, the Applicant may not be able to dispose of waste at the facility. Robinson, TR 679, lines 1-14. If the Department calls in the bond or surety for the proposed facility and does not want to have contractors disposing of waste on the proposed facility site, the waste would need to be transported to another licensed facility. This will involve a transportation cost (Robinson, TR 667, lines 18-25), which is not provided in the financial assurance.

Another set of costs that was not included in the financial assurance is the costs for the management of contaminated soil and non-contaminated soil for the drum unit as well as every other unit. The hazardous waste content of these units is not acknowledged in the Draft Permit or supporting documents and is treated as a zero cost. Robinson, TR 666 lines 1-4. The activity of disposing of the soils will involve on-site cost activities. Liners in stabilization basins or tanks and the mixing equipment will be contaminated with some hazardous constituents. All of these activities will involve costs, but those costs are not included. Robinson, TR 665, lines 18-19; 666, lines 21-24.

Finally, the Applicant may only use costs for on-site disposal of the hazardous waste

during closure if the Applicant can demonstrate that onsite disposal capacity will exist at all times over the life of the facility. Robinson, TR 681, lines 23-25; 682, lines 1-2. Although the engineering drawings provided by Applicant show several phases of the facility, this permit is for Phase I only. See, Draft Permit, Attachment L1. The Applicant has not shown that Phase I will have the capacity at all times over the life of the facility to accept waste during closure. Robinson, TR 682, lines 11-22.

4. The proposed financial assurance does not include necessary indirect costs.

The proposed financial assurance also does not take into account several indirect costs. If reclamation is necessary and is done under financial assurance, there would be substantial construction associated with the closure work assuming the facility had received waste for a period of time. Robinson, TR 1134, lines 9-19. There would be a range of services necessary, and contractors licensed in specific areas of work would conduct those services. Robinson, TR 1135 lines 15-18.

These contractors would have costs that were not included in the proposed financial assurance. Mr. Cobrain testified that the State of New Mexico would require proof of insurance for any contractor that the Department contracts with to perform work. Cobrain, TR 922, lines 1-3. Despite that, and despite the fact that the insurance costs are assumed by the contractors or bidding parties, Mr. Cobrain did not include insurance costs as a line item. Cobrain, TR 904, lines 22-25.

The appropriate way for the Department to estimate costs is to use industry accepted costs, not to solicit bids. Robinson, TR 1135, lines 15-18. The financial cost estimates compiled for use by the Department in other situations are for the direct costs of construction. Indirect

costs are in addition to direct costs and include profit,[2] insurance, mobilization, demobilization, engineering and construction administration. Robinson, TR 1136, lines 13-24. Here, the Department has listed indirect costs for construction of the proposed facilitiy's cover as ten percent.[3] All other indirect costs in the Draft Permit are listed at 25 percent. The indirect costs for the Triassic Park cover should be at least 25 percent. Robinson, TR 690, lines 9-14. Administrative costs of 25 to 33 percent would cover insurance, profit costs and expenses, and supervision or administrative services. These costs are based on mining and solid waste financial assurance plans. Robinson, TR 690, lines 9-14; 1141, lines 21-23. The five percent administrative costs identified by Mr. Cobrain in his testimony are overly optimistic based on past agency experience with contracting management. Robinson, TR 1132, lines 10-18. In addition, procurement for the Department may present difficulties beyond transaction costs. Robinson, TR 692, lines 12-16. Mr. Robinson would not advise the state to pay 25 percent in indirect costs to a contractor. The Department, should, however, have that amount available in case it is needed to cover costs. Robinson, TR 711, lines 1-13.

---

[2] The Applicant's cost estimates do not specifically separate profit for all costs; in those instances, the Draft Permit and supporting documents should have, but did not, discuss how profit was used in the estimates. Robinson, TR 1144, lines 1-5.

[3] Mr. Cobrain, who prepared the Department's financial assurance calculations, did not differentiate between direct and indirect costs in the same manner the Applicant or Mr. Robinson did. Robinson, TR 1128, lines 13-19. In addition, although Mr. Cobrain testified that indirect costs were incorporated in his estimates, there is no quantitative material available with which to verify this assertion. Robinson, TR 1145, lines 19-24. For example, the cost estimates to decontaminate buildings and equipment is listed with a ten percent Department supervision cost, but there is no reference to indirect costs. Robinson, TR 1145, lines 3-6.

5. Neither the Application nor the Draft Permit sets forth a proposed financial assurance mechanism.

No financial assurance mechanism was selected as part of the permit application. Corser, TR 207, lines 14-19. There is also no representation of what financial assurance instruments might be appropriate or available to the Applicant given the Applicant's structure and financial capacity. Robinson, TR 654, lines 20-25; 655, line 1. In order for the Hearing Officer and participants in the proceeding to be able to evaluate the proposed financial assurance, the Applicant should identify a proposed financial assurance mechanism and indicate whether the financial assurance at the amounts needed would be available from providers. Robinson, TR 1133, lines 6-16.

6. The proposed financial assurance is not based on sound methodology.

There are serious flaws in the methodology used by the Applicant and the Department to arrive at the proposed financial assurance. First, the estimates for the financial assurance assumed a project area of ten to twenty acres (LF Cap, October 24, 1), but Phase I - the proposed facility for which a permit is sought - is 30 to 40 acres. Testimony of George Rice (hereinafter "Rice"). TR 571, lines 19-25; TR 572, lines 1-10.

Second, neither the Department nor the Applicant used verifiable sources of independent engineering construction costs like industry cost estimation guidebooks or heavy equipment cost estimation handbooks. Robinson, TR 1129, lines 14-18. David Cobrain conducted a survey of New Mexico Contractors, the EPA, the Utah Department of Environmental Quality, and two hazardous waste landfills to estimate unit costs for cap construction for the Department. Cobrain, TR 901, lines 6-19. Mr. Corser, who prepared the Applicant's estimates for cap construction,

testified that he did so on the basis of the experience he has had with construction of similar facilities elsewhere in the United States. Corser, TR 1048, lines 9-14. The estimates that he used, however, are bids from interested parties. The estimates the Applicant used are not independent third party bids. Cobrain, TR 927, lines 9-23.

Third, the financial assurance specifications are unclear in several important respects. For example, Mr. Cobrain did not ask the contractors he contacted to specify plant attributes in their cost estimates. Cobrain, TR 922, lines 18-21. Mr. Cobrain also did not specify the origin of material for a cover in his request for estimates. Cobrain, TR 923, lines 3-6. In addition, LF Cap, the document provided by Mr. Cobrain, asks the companies providing estimates to assume construction of storm-water and erosion control measures, but the storm-water and erosion control measures are not specified. LF Cap, October 24, 2001. LF Cap also asks the companies providing estimates to assume guaranteed revegetation, but there is no explanation of what guaranteed revegetation means. LF Cap, October 24, 2001. LF Cap further states that seeds will be spread during the storm season, but LF cap does not include any information that seeding during storm season would be effective. LF Cap, October 24, 2001.

LF Cap also cites the cost of range restoration (LF Cap, October 24, 2001), but neither the Draft Permit nor the Application states that the proposed facility cover is to be restored to range vegetation standards. LF Cap, October 24, 2001. In addition, "PO" (one of the companies responding to Mr. Cobrain's inquiry) did not indicate whether its estimate included the change in revegetation price. LF Cap, October 24, 2001. This price may be different if the revegetation price was not reflected in the estimate. If PO's price is higher, the average of the estimates obtained by Mr. Cobrain would also be higher.

Finally, the process that Mr. Cobrain used to arrive at the average of the estimates that he obtained skewed that average to a lower figure than it should have been. Mr. Cobrain received estimates for cap construction ranging in price between $2.00 per square foot and $5.74 per square foot. Cobrain, TR 909, lines 8-17; LF Cap, October 24, 2001. He dropped the $5.74 estimate, averaged the estimates, and subtracted $0.68 to arrive at an average estimate of $2.27 per square foot. LF Cap, October 24, 2001. Mr. Cobrain testified that he dropped the $5.74 figure because he assumed that it was based on a misunderstanding, but he never verified that assumption. Cobrain, TR 919, lines 15-25; TR 920, line 1. He also did not explain why he subtracted $0.68 in his calculations.

7. The Application should be denied because of these deficiencies in the proposed financial assurance; alternatively, the Application should be granted only if these deficiencies are remedied.

These deficiencies in the proposed financial assurance mechanism for Triassic Park violate the requirements of the Act and the Regulations, and the Application therefore should be denied. Alternatively, the Application should be granted only if these deficiencies are remedied. If a permit is granted, it therefore should require that a new financial assurance be calculated, that the new financial assurance cover all appropriate costs, and that the new financial assurance be based upon appropriate methodology.

Specifically, the estimates for the new financial assurance must take into account all direct costs that were not included in the proposed financial assurance, such as the cost of water for revegetation and the cost of disposal of non-hazardous material. The estimates for the new financial assurance also must take into account all indirect costs that were not covered in the proposed financial assurance. These include insurance, profits, insurance, mobilization,

demobilization, engineering and construction administration.

The new financial assurance also must be based on sound methodology. It must address an area of 30 - 40 acres, and must use verifiable sources of independent engineering construction costs like industry cost estimation guidebooks or heavy equipment cost estimation handbooks, not estimates from interested parties. In addition, the financial assurance specifications must be clarified concerning matters such as plant attributes, the origin of material for a cover, and storm-water and erosion control measures as well as revegetation measures.

C. The Department and the Applicant have deprived several members of CURE and other members of the public of their right to meaningful participation in this proceeding.

1. The Regulations require that there be opportunities for public involvement.

The Regulations set forth extensive requirements for providing notice to the public when the Department is considering an application for a permit for a proposed hazardous waste facility such as Triassic Park. The purpose of these requirements is to enable interested persons to obtain information about the facility that is proposed and to participate in proceedings to determine whether a permit should be issued. For example, 20 NMAC 4.1.901.A sets forth extensive requirements for providing public notice when the Department is considering issuance of a permit for a facility. The Regulation specifies the media in which announcements are to be made, and mandates that the announcements provide information about the process by which the Department will make its decision and the procedures that should be used to become involved in that process. In addition, 20 NMAC 4.1.901.D mandates the issuance of a fact sheet for every draft permit, and requires that the fact sheet describe the facility, the waste to be disposed of at the facility, the procedures to be used to determine whether a permit will be issued, the means by which people

may comment on the draft permit and by which they may become involved, and the means by which to request a public hearing on the proposed permit.

The point of these requirements is to provide members of the public with information so that they can participate meaningfully in the process by which the Department makes its decision. In this matter, however, both the Department and the Applicant have prevented that participation, particularly by members of the public who neither speak nor read English.

2. The procedures used by the Applicant and the Department prior to the public hearing have prevented members of CURE and the public from being able to participate meaningfully in the process.

As was pointed out at page six above, Librado de la O is a member of CURE who lives in Hagerman, New Mexico. Although he has concerns about the effects that Triassic Park would have on his family, (de la O, TR 428, lines 22-24), Mr. de la O has not been able to learn the details of the proposed facility's operation because information has not been made available to him in Spanish. He attempted to learn about the facility at a public information meeting in Hagerman, but the meeting was not informative because the Applicant would not give a presentation in Spanish. de la O, TR 429, lines 11-12. Since he does not know how to read, Mr. de la O has not had an opportunity to read the Draft Permit or to understand what Gandy-Marley is proposing. de la O, TR 429, lines 20-22.

Mr. de la O and members of the public who do not speak and read English were not provided with the information required by the Regulations prior to the public hearing. Their only opportunities to learn in Spanish about the proposed facility were at the hearing and at a meeting held on October 25, 2001 after the hearing was concluded. That is not consistent with the requirements of the Regulations.

In addition, other members of CURE and of the public did not have opportunities that they should have had to learn about the proposed facility. Jimi Gadzia testified that at the public meeting held in May, 2001, representatives of Gandy-Marley were not able to answer questions about the facility. Gadzia, TR 342, lines 16-21. Ms. Gadzia also stated in her testimony that she was threatened with arrest when she was trying to share her views of the proposed facility with members of the public. Gadzia, TR 1114, lines 14-18. Finally, members of CURE and of the public were all denied the opportunity that they should have had to review the Applicant's personal disclosure statements prior to the public hearing. Testimony elicited from Larry Gandy and Dale Gandy during the hearing demonstrated that their personal disclosure statements contained information that was out of date and inaccurate. See, e.g., testimony of Larry Gandy, TR 267-269, and testimony of Dale Gandy, TR 269-274.

3. The submission of information after the public hearing has deprived members of CURE and the public from being able to address that information.

In addition, as is indicated by the attached copies of a letter dated November 7, 2001 from counsel for the Applicant to counsel for the Department (Exhibit 1) and a letter dated November 29, 2001 (with attachments) from Steve Pullen of the Department to the other parties (Exhibit 2), the Applicant has continued to provide information to the Department. The Department also has produced information that was not previously accessible to the parties. One example of this information is the Applicant's Response to Notice of Deficiency for Triassic Park Part B Permit Application, February 14, 1996, a copy of which is attached as Exhibit 3. All of this is information that should have been presented prior to the public hearing, and the failure of the Applicant and the Department to make it available then violates the right of CURE, its members,

and other concerned individuals and organizations to review it, cross-examine the Applicant's and the Department's witnesses about it, and to present arguments based on it.

Moreover, these violations are not cured by the Hearing Officer's several extensions of time for the filing of closing arguments and proposed findings of fact and conclusions of law. Although the Hearing Officer's extensions of time have provided the parties with time in which to examine the documents in question, those extensions have not provided the parties with any opportunity to cross examine the Applicant or the Department about the information that has been provided, or to present evidence concerning that information.

This right of CURE, its members, and other parties to cross-examine the Applicant and the Department about these new items is important. As was pointed out above, one of the new documents is the Applicant's Response to Notice of Deficiency for Triassic Park Part B Permit Application, February 14, 1996 (Exhibit 3). In that document, the Applicant asserted that rotary air drilling may prevent water from entering a borehole immediately and that water may therefore not be "recognizable" until the borehole is allowed to "sit" for one to two hours. This assertion contradicts the Applicant's own statement that when an air rotary drill such as that used to drill well WW-1 hits water, the dust stops. See Rice, 458, lines 2-7.

As another example, the personal disclosure form completed by Michael Marley which was sent to the parties by Stephen Pullen with his letter of November 29, 2001 indicates that Gandy Corporation was issued a citation by the Occupational Health and Safety Bureau of the New Mexico Environmental Improvement Division in 1988. CURE, its members, and other parties should have had an opportunity to cross examine the Applicant about the basis for the citation, who was involved in the conduct that lead to issuance of the citation, and whether there

have been other citations or incidents involving similar issues. Evidence on all of those matters could be relevant to an argument that the Applicant is not qualified to operate the proposed facility safely or in accordance with the Act and the Regulations.[4]

D. The Applicant has not complied with the requirements of the Act and the Regulations governing the proposed facility contingency plan and emergency coordinator.

1. The Regulations require establishment of an emergency plan and emergency response coordinator for the proposed facility.

The Regulations mandate that there be a contingency plan and an emergency response coordinator for the proposed facility, and set forth the standards that the plan and the coordinator must meet. Specifically, 40 CFR 264.51(a) requires that "[e]ach owner or operator must have a contingency plan for his facility". 40 CFR 264.52 further indicates that the contingency plan must:

> describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services.

Finally, 40 CFR 264.55 requires that there be an emergency coordinator, and that the coordinator:

> must be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of the waste handled, the location of all records within the facility, and the facility layout.

Neither the contingency plan nor the emergency coordinator for the proposed facility meets these

---

[4] Another example of a document that should have been made available to CURE, its members, and other members of the public prior to the public hearing is the February 4, 1999 memorandum from Cornelius Amindyas of Triassic Park to Gregory Lewis, the Director of the Water & Waste Management Division of the Department, a copy of which is attached as Exhibit 4. This document has been part of the Department confidential file on this matter and was only released into the non-confidential file after the public hearing. CURE, its members, and members of the public therefore had no access to it prior to the hearing.

requirements.

2. The Applicant has not complied with the Regulations' requirements.

Despite the Regulations' specific requirements for arrangements with local emergency response teams, June Dreith of the Department testified that although the Draft Permit contains a requirement that the Applicant make arrangements with local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services, the contingency plan for the proposed facility does not include those arrangements. Testimony of June Dreith (hereinafter "Dreith"), TR 877, lines 16-25. In addition, the contingency plan that is set forth as Attachment C3 to the Draft Permit is vague and subject to misinterpretation. Id.

Ms. Dreith also testified for the Department that the emergency coordinator needs to know what wastes are being accepted at the facility, and must have the ability to assess possible hazards to human health that may be caused by a hazardous waste spill. Dreith, TR 874, lines 2-8, 880, lines 16-24. Those standards are not met by the designated emergency coordinator for Triassic Park, however.

Larry Gandy is the only designated emergency coordinator for the proposed facility. Testimony of Larry Gandy (hereinafter "L. Gandy"), TR 260, line 8-16. As he indicated in his testimony, however, Larry Gandy does not know the names of the hazardous wastes the facility will accept and does not know the physical effects of those wastes on human health. L. Gandy TR 261-263. He also does not know who is on the local emergency planning committee for Chaves County. L. Gandy, TR 265, lines 22-24. Although these deficiencies were originally raised by the Department in 1997, they still have not been addressed. Part B Permit Application

Deficiency Comments Rough Draft, Correspondence Report document #97-002.

3. The Application should be denied or granted only with conditions to address these deficiencies.

The Applicant's failure to address the emergency planning requirements of the Regulations mandates denial of the Application. In the alternative, if the Application is granted, the permit should require that the Applicant make the arrangements with local police and fire departments and emergency planning organizations required by the Regulations. The permit also should mandate that Larry Gandy become familiar with the subjects that he is required to know and that he be prepared to address any emergency that arises at the proposed facility.

E. The Applicant has not demonstrated that it has the knowledge or experience to operate the proposed facility in compliance with the Act and the Regulations.

1. The Act and the Regulations mandate that the Applicant be able to operate the proposed facility.

The Act and the Regulations indicate that the applicant for a permit must be able to operate a facility in accordance with their substantive requirements. The Act provides that a permit shall be issued if the applicant has met the requirements of the Regulations. NMSA 1978 §74-4-4.1.C. The Regulations make proper operation and maintenance of a facility a condition of all permits. 40 CFR 270.30(e). In this matter, there has been no demonstration that Gandy-Marley has the knowledge or experience to operate the proposed facility in accordance with the Act and the Regulations.

2. The Application should be denied because there is no evidence that the Applicant can operate Triassic Park.

The Application for the proposed facility was put together and presented by various individuals and entities who were acting as consultants for Gandy-Marley, but there was no

indication that any of them would operate the proposed facility. On the contrary, Patrick Corser, who was the only witness presented by Gandy-Marley who was asked about his continuing role, indicated that he would not have such a role with the proposed facility. Corser , TR 1033, lines 19-22. Moreover, none of the principals in Gandy-Marley provided any information to the effect that they have the knowledge or experience necessary to operate the proposed facility, and the lack of knowledge evidenced by Larry Gandy, the Gandy-Marley emergency coordinator, indicates that he at least does not have that knowledge or experience. See L. Gandy, TR 261-265.

For these reasons, the Application should be denied. Alternatively, if the Application is granted, the permit should include a condition specifying that Triassic Park may receive waste only if Gandy-Marley either acquires the necessary expertise to operate it in accordance with the Act and the Regulations or hires that expertise.

F. The ground water monitoring variance granted to the Applicant by the Department violates the Regulations.

1. The Regulations set forth specific requirements that must be met for a variance from the requirement of ground water monitoring.

The Regulations provide that an applicant for a hazardous waste facility permit can obtain a variance from the Regulations' ground water monitoring requirements, but only if the applicant meets certain standards. First, the applicant must demonstrate that there is no potential for migration of liquid from the facility to the uppermost aquifer during the active life of the facility and the post-closure care period for the facility. 40 CFR 264.90(b)(4). The same section specifies that:

In order to provide an adequate margin of safety in the prediction of potential

migration of liquid, the owner or operator must base any predictions made under this paragraph on assumptions that maximize the rate of liquid migration.

In addition, 40 CFR 264.90(b)(2)(vii) requires that the applicant demonstrate and the Department find, to a reasonable degree of certainty, that the facility

> will not allow hazardous constituents to migrate beyond the outer containment layer prior to the end of the the sic post-closure care period.

Gandy-Marley has not met either of these requirements, and the ground water monitoring variance that it seeks therefore should not be granted.

2. CURE presented expert testimony concerning the Applicant's proposed ground water monitoring variance.

George Rice, who testified for CURE concerning the Applicant's proposed ground water monitoring variance, has significant expertise in hydrologic investigations and in characterization of sites for waste and hazardous waste facilities.

Mr. Rice has a bachelors degree and a masters degree in hydrology. He also has worked for more than 15 years on investigations and characterizations of the hydrology of sites being used or proposed to be used for solid waste and hazardous waste landfills. He has been the principal hydrologist responsible for the characterization of sites for disposal of low-level radioactive wastes and hazardous wastes. He has worked as well on the design of waste repositories and on contaminant transport modeling. In addition, Mr. Rice has designed and installed vadose zone monitoring networks and monitoring well networks. He also has designed and conducted ground water sampling programs, and designed, performed, and analyzed aquifer tests. See resume of George Rice, attached as exhibit 2 to CURE's Notice of Intent to Present Technical and Environmental Testimony dated September 21, 2001.

Mr. Rice's experience includes as well his work as a Field Methods Instructor, and his instruction of Air Force personnel on monitor well design and construction and on design of ground water sampling programs and techniques. Finally, he has authored several publications addressing topics such as uncertainties in performance measures in geologic settings and evaluation of ground water characterization and modeling. Id.

Mr. Rice therefore is well qualified to address the Applicant's proposed ground water monitoring variance and the other hydrologic issues posed by Triassic Park.

3. The ground water monitoring variance should be denied because the predictions made by the Applicant and the Department are not based on the maximum rate of liquid migration.

There are three major respects in which the Applicant and the Department failed to comply with the requirement that they use predictions that maximize the rate of liquid migration. First, the Applicant's own calculations indicate that the Applicant used an average rate of hydraulic conductivity, not the maximum rate. Second, the Applicant has not demonstrated that it knows where the nearest ground water to the proposed facility is, and the Applicant therefore has not shown that its calculations are based on the fastest time in which leachate might reach ground water. Third, the Applicant has not demonstrated that there are no fast flow features such as fractures that would lead to a more rapid rate of leachate flow.

a. The Applicant used an average hydraulic conductivity figure, not the highest hydraulic conductivity, for its calculations.

The information provided by the Applicant for its ground water monitoring waiver was reviewed for CURE by Mr. Rice. He explained that Darcy's Law is one part of the mathematical equations in the MULTIMED model that was used by the Applicant to predict the rate of leachate

flow. Rice, TR 516, lines 12-14. Mr. Rice also pointed out that the MULTIMED model is a saturated/unsaturated code for determining contaminant transport. Rice, TR 516, lines 1-11. He stated as well that unlike the MULTIMED model, Darcy's Law does not calculate contaminant transport (Rice TR 520, lines 22-25), and that Darcy's Law is used to calculate ground water (or liquid) flow rates. Rice, TR 466, lines 1-3.

Mr. Rice also explained that the most important factor in the MULTIMED and Darcy's Law calculations is the hydraulic conductivity. Rice, TR 520, lines 1-4. He pointed out that in Darcy's Law, the speed of flow is increased by higher hydraulic conductivity, by lower effective porosity, and by higher gradient. Rice TR 466, lines 20-25, 267, lines 467 lines 2-4.

Mr. Rice testified that the Applicant used a hydraulic conductivity of one foot per year, a 48 percent porosity, and a hydraulic gradient of about one percent. Rice, TR 467, lines 14-18. Mr. Rice also stated that the table showing the Applicant's MULTIMED calculations states that the maximum hydraulic conductivity was used and lists a corresponding number, but that in fact that number is less than the average hydraulic conductivity. Rice, TR 1158, lines 1-5. Mr. Rice also noted that when the Applicant obtained core samples to ascertain hydraulic conductivity, the Applicant tried to model different pressures based on the source of the core sample. He stated as well that if the Applicant did this in a void space that was subject to artificial pressure, the result may have been a reduced permeability. He also pointed out that the Applicant recognized this and stated that those results probably underestimated hydraulic conductivity. Rice, TR 524, lines 11-23. Mr. Rice concluded that the hydraulic conductivity the Applicant used is not the most conservative estimate. Rice, TR 469, lines 5-24.

In addressing this issue for the Department, Stephen Pullen acknowledged that the

Applicant did not use the highest hydraulic conductivity. Mr. Pullen testified that the Applicant must use a reasonable number when calculating hydraulic conductivity. Testimony of Stephen Pullen (hereinafter "Pullen") TR 820, lines 1-3. Mr. Pullen also testified that the highest value would be unreasonable if the value were for a sandstone lithology associated with a very circuitous lens of sandstone (Pullen, TR 820, lines 5-12), but he did not explain how his approach could be consistent with the requirement of the Regulations.

b. The Applicant did not present information demonstrating that it knows where the closest ground water to the facility is or that it can predict the shortest time that it would take leachate to reach ground water.

George Rice testified that the Applicant has not done the necessary hydrologic investigations to determine whether a ground water monitoring variance is warranted. Rice 439, lines 18-25. He pointed out that in order to adequately characterize groundwater conditions, one must know whether ground water exists under water table or confined conditions and whether any fast flow paths exist; he also testified that one must have good estimates of the parameters that control the rate at which ground water will move. Rice, TR 449, lines 7-16.

Jim Bonner testified the Applicant did not find any saturation in the 480 acre project area. Testimony of Jim Bonner (hereinafter "Bonner"), TR 130, lines 15-20. He also stated that when the Applicant did not find anything to characterize as an aquifer in the Upper Dockum, it assumed that the Lower Dockum 600 feet below the proposed facility is the uppermost aquifer. Bonner, TR 140, lines 1-6.

Mr. Rice pointed out, however, that the Applicant did not conduct an adequate investigation of the 480 acre project area. Most of the holes drilled by the Applicant were in the

southern portion of the property where the proposed facility would be located. In addition, at the Department's request, the Applicant drilled holes in the northern part of the property where some operational facilities are proposed. Bonner, TR 139, lines 6-21. The Applicant used oil well logs to discern the stratigraphy of the Lower Dockum,[5] but did not drill through the Lower Dockum. Bonner, TR 160, lines 16-25. Because it did not investigate all of the project area or drill through the Lower Dockum,[6] the Applicant does not have adequate information to determine the depth to groundwater in the Lower Dockum. Rice, TR 450, lines 3-12.

The Applicant also did not present adequate information to determine where the nearest ground water is located in formations other than the Lower Dockum. WW-1 and WW-2 are the only two bore holes the Applicant drilled in the saturated portion of the Lower Dockum. Rice, TR p457 lines 3-9. Mr. Bonner testified that the nearest saturated portion of the Upper Dockum toward the NE is WW-1. Bonner, TR 157, lines 19-23. Mr. Bonner also stated that there was a possibility of the water in WW-1 coming from the Lower Dockum as well as from perched water in the Upper Dockum. Bonner, TR 154, lines 14-18. However, because of the way that WW-1 was drilled, the Applicant has no evidence to show where the water found in WW-1 came from. Rice, TR 456, lines 12-17.

Mr. Rice testified that a typical monitor well is designed to determine properties of a particular hydrologic unit. In such a well, other hydrologic units are sealed off so that one can

---

[5] WW-1 and WW-2 are the only two bore holes the Applicant drilled in the saturated portion of the Lower Dockum. Rice, TR 457, lines 3-9.

[6] Mr. Rice responded to the concern expressed by Mr. Bonner that drilling through the Lower Dockum could create a pathway for leachate. Bonner, TR 160, lines 16-25. Mr. Rice pointed out that a well could be drilled upgradient of the proposed facility, and grouted and sealed to prevent it from becoming a pathway. Rice, TR 497, lines 12-25; 498, lines 1-9, 16-22.

determine whether there is water in the unit in question. Rice, TR 454, lines 23-25; 455, lines 3-17. The Applicant did not do this and therefore cannot tell where the water in WW-1 is coming from. Rice, TR 457, lines 10-20. In addition, the Applicant asserted that when the air rotary drill used to drill WW-1 hits water, the dust stops, but there was dust all the way to the bottom of WW-1. Rice, 458, lines 2-7. In addition, the Applicant's assertion is belied by the Applicant's own statement that rotary air drilling may prevent water from entering a borehole immediately and that water may therefore not be "recognizable" until the borehole is allowed to "sit" for one to two hours. Applicant's Response to Comment 82 of the Notice of Deficiency for Triassic Park Permit Application, February 14, 1996. Moreover, although WW-1 was drilled to 820 feet, there is no information in the Applicant's materials to indicate that the Applicant believes it encountered the equivalent of the Santa Rosa formation. Rice, TR 1155, lines 22-24; 1156 lines 1-2.

The deficiency in the drilling of WW-1 was repeated in the drilling of WW-2, thereby preventing the Applicant from determining the source of water in that well. Like WW-1, WW-2 was not screened only in one hydrologic unit with other units sealed off so that the well can be used to determine whether the subject unit is providing water. Rice, TR 456, lines 22-25. In addition, Mr. Pullen stated he believed the water level at WW-2 was above where the Department believes the Santa Rosa formation to be located because of hydrostatic head (Pullen, TR 814, lines 7-9), but the Applicant has no evidence to show that it reached the Santa Rosa equivalent in WW-2. Rice, TR 456, lines 12-17.

In addition, the Applicant does not know how far away the saturated zones in the Upper Dockum are from the facility. Rice, TR 449, lines 21-23. Moreover, there is some water moving west from the Ogallala Aquifer in the Upper Dockum. According to Mr. Bonner, this has been

occurring for "a good bit of time". Mr. Bonner also testified that although more water is flowing in, the water is "in some sort of equilibrium". Bonner, TR 162, lines 5-13. It is not likely, however, that this water is evaporating. Rice, TR 452, lines 12-25.

The Applicant also does not have sufficient information concerning the location of ground water formations other than the Upper Dockum and Lower Dockum to determine the time that it would take for leachate to reach them. For example, there are no borings between WW-1 and the site boundary. Rice, TR 1156, lines 18-24. The Applicant knows water exists at WW-1, but has not investigated the area between it and the property boundary. The next nearest boring – PB 47 – is 1000 feet inside the property boundary, and it is dry. Rice, TR 1157 lines 4-9.

As another example, PB-14, another boring in the Upper Dockum, was about 100 feet deep and 400 feet west of the landfill. Water was found in PB-14 at 42 feet. Rice, TR 473, lines 18-25. The Applicant does not know why there is water at PB-14. Rice, TR 474, lines 6-7. Mr. Pullen testified that a small amount of water might significantly dilute the water in PB-14. Pullen, TR 819, lines 10-13. Mr. Pullen further testified that a small amount of leachate might affect the water in PB-14 as well. Pullen, TR 819, lines 18-19.

c. The Applicant has not conducted an adequate investigation to determine whether there are fast flow pathways that would decrease the time required for leachate to reach ground water.

The estimates made by the Applicant of the time required for leachate to reach ground water are inaccurate because the Applicant has not investigated the existence of fast flow paths like fractures and channels. Rice, TR 440, lines 17-21; 450 lines 3-12. In addition, Mr. Corser testified that the Applicant did not take into account flow through fractures when completing the MULTIMED model. Corser, TR 1031, lines 22-25.

The Applicant knows there are streambeds or channels beneath the facility. There are no guarantees that there are no fractures beneath, or near, the proposed facility because the investigations to determine the presence of fractures have not been conducted. Rice, TR 463, 464 lines 2-4. Moreover, Corky Glenn, a well-driller who has worked in the Caprock area, believes there may be fractures beneath the facility. Mr. Glenn has noted rig chattering when drilling wells in the general area of the facility. The chattering is an indication of contacting an area with fractures. Rice, TR 464, lines 9-25.

Appendix G, cross section 3.3 shows PB-14. The contact between the Lower and Upper Dockum is a straight line and then jumps down about 50 feet. This could indicate a fault or an incised channel. This is also the point at which the Applicant found a great deal of water. Rice, TR 1150, lines 10-22.

Mr. Bonner testified that there is a possibility the Applicant missed some fractures because it did not do slant drilling to test for fractures. Bonner, TR 171, lines 8-12. Slant drilling or angle coring is the best chance the Applicant has of intercepting fractures. Rice, TR 462, lines 22-25. The Applicant conducted air drilling and air drilling does not show fractures. Bonner, TR 178, lines 3-12. The Applicant believes it hit the Santa Rosa when it lost circulation during drilling, but the most common explanation for losing circulation is contacting an area that has a large volume, such as a fracture. Rice, TR 1165, lines 1-5.

The Applicant also did not measure field or bulk hydraulic conductivities. Rather than conducting pumped aquifer tests or slug tests, the Applicant measured conductivity based on core hole samples. Rice, TR 442, lines 11-25. Core samples only measure small samples and can easily miss high conductivity features like fractures or sand stringers. Most professionals agree

that core samples underestimate the permeability of a unit. Rice, TR 443, lines 11-18.

Finally, after looking at figure 3-12 (App. G cross-section 3.3) showing a north/south cross section, Mr. Pullen noted that the cross sections showed a continuous, uninterrupted pathway of about 3,000 feet in the higher permeability units along the contact between the Upper and Lower Dockum. Pullen, TR 823, lines 2-4. This is likely the pathway along which leachate could travel. Rice, TR 1150, lines 2-9.

4. The ground water monitoring variance sought by the Applicant should be denied because the Applicant has not demonstrated to a reasonable certainty that leachate will not migrate from the proposed facility to ground water during the life of the facility and the post-closure period.

The Applicant's effort to demonstrate that the proposed facility will not contaminate ground water during the life of the facility and the post-closure period is also flawed for three additional reasons. First, the Applicant has not proposed a system of monitoring that will detect unsaturated flow. Second, the Applicant's infiltration rate for the proposed facility is not realistic. Third, the Applicant's liner design for the proposed facility is not likely to intercept leachate that leaks from the facility.

a. The Applicant's proposed monitoring system will not detect unsaturated flow, which is the most likely flow to occur first.

If there is a leak in the landfill, leachate would initially flow as unsaturated flow. When the leachate hit something less permeable, or a fast flow path, it would pool. Rice, TR 540 lines 15-24. To detect flow as early as possible, the Applicant therefore should install a system capable of detecting unsaturated flow. Rice, 1149, lines 1-2. The system proposed by the Applicant, however, is not capable of doing so.

Ground water monitoring systems monitor liquids moving as saturated flow in the

subsurface. In addition, a ground water monitoring system monitors the direction of flow, the flow rate and water quality. This type of system typically consists of monitor wells. Rice, TR 437 lines 6-14. Vadose zone monitoring systems are designed to monitor liquids moving as unsaturated flow in the subsurface. These liquids are held by capillary forces. These liquids will not enter a monitor well or pipe, and will not emerge at a spring. A vadose zone monitoring system requires specialized devices to monitor unsaturated flow movements. This type of system typically consists of suction lysimeters and neutron access tubes or probes.[7] Rice, TR 437, lines 17-25; 438, lines 1-13. These instruments are installed by placing a series of holes or trenches immediately below and along the sides of the landfill. Rice, TR 449, lines 1-4.

The Applicant is proposing a monitoring system consisting of shallow wells to monitor the alluvial aquifer and the contact between the Upper and Lower Dockums. The Applicant also proposes one stack of three sumps in Phase IA of the landfill. Corser, TR 196 lines 14-25. Sumps like those the Applicant has proposed cannot detect unsaturated flow. Rice, TR 479 lines 1-7. The monitoring system Applicant proposes does not fit the generally accepted definition of vadose zone monitoring. Rice 447 lines 4-10. The Applicant has proposed a ground water monitoring system and called it a vadose zone monitoring system. The proposed system will not monitor the unsaturated, or vadose, zone beneath the facility.

b. The Applicant's infiltration rate for the proposed facility is not realistic.

The Applicant used an infiltration rate for leachate of .42 inches per year. This rate was

---

[7] Although 40 CFR 264.90 does not define a vadose zone monitoring system, 40 CFR 264.278 relating to land treatment, requires the owner or operator of a land treatment facility to install soil cores and soil-pore liquid monitoring devices such as lysimeters to monitor the unsaturated zone.

derived from a study done on open range land where most water is lost to evapotranspiration. This is an inappropriate rate to use underneath a landfill where liquids are not going to be affected by evapotranspiration. Rice, TR 472 lines 10-21. The leachate infiltration rate therefore should have been higher.

In addition, the amount of leachate that will be generated may be higher than that predicted by the Applicant. The Applicant will be placing intermediate cover and water over the waste to prevent erosion and dust. Corser, TR 248, lines 2-6. In addition, the sludge from the evaporation pond that will be placed in the landfill will have a higher moisture content than a dry soil. Corser, TR 249, lines 12-18.

c. The liner for the proposed facility is not likely to intercept leachate leaking from the facility.

The liners that the Applicant proposes to use will only last a maximum of 50 to 100 years assuming that they are installed properly. The majority of liners and covers do eventually leak.[8] Rice TR 444, lines 11-25. Liners leak because of manufacturing defects and installation defects like rips or tears. Liners are also susceptible to becoming brittle and cracking. When placed on a slope as contemplated by the Applicant, liners stretch and can tear because of stress. Stresses can result from consolidation or settlement of waste in the landfill. Corser, TR 232 lines 20-23. The HDPE liners proposed by the Applicant are also susceptible to attack by many of the chemicals the Applicant proposes to accept. Rice, TR 445, lines 6-25.

---

[8] Mr. Corser admitted that there is no guarantee that the cover liner will not leak. Corser, TR 229, lines 2-4. He also stated that geomembranes such as those proposed for the facility landfill liners have only come into common use in the last 20 to 30 years (Corser, TR 236, lines 1-3), and that the tests performed to determine how long a liner or cover will last were simulated over a period of months. Corser, TR 229, lines 17-24.

In order to intercept leachate from the proposed facility, the Applicant proposes to place the stack of sumps where leaks will most likely occur. Rice, TR 541, lines 9-18. The sumps, however, may intercept a total area of only about 2,500 square feet. The total area of Phase I is thirty to forty acres or approximately 1.6 million square feet. Rice, TR 571, lines19-25; 572, lines 1-10. The chance that all leachate would flow to a sump therefore is extremely low. Rice, TR 544, lines 13-16.

5. The ground water monitoring variance granted to the Applicant and the Application therefore should be denied, or the Application should be granted only with a condition requiring establishment of ground water and vadose zone monitoring systems.

Because the Applicant has not met the Regulations' requirements for a ground water monitoring variance, that variance and the Application should be denied. Alternatively, if the Application is granted, it should include conditions designed to require the Applicant to provide the mandated protection for ground water. These conditions should include the following.

First, the Applicant must determine where the nearest ground water to the proposed facility is and calculate realistically how long it would take leachate from the proposed facility to reach that ground water. In order to make this determination, the Applicant should be required to investigate all of the project area, and specifically to drill through the Lower Dockum to determine the depth to ground water in that formation. The Applicant also should be required to drill its investigative wells in a manner that will yield information about the properties of particular hydrologic units.

The Applicant should be required as well to recalculate the rate of liquid migration using the maximum rate of hydraulic conductivity rather than the average rate of hydraulic conductivity

that the Applicant used. In addition, the Applicant also should be required to conduct an investigation that will determine whether there are fast flow features such as fractures that would lead to a more rapid rate of leachate. In order to determine the presence of such features, the Applicant should be required to conduct slant drilling or angle coring. In order to make accurate determinations of hydraulic conductivities, the Applicant also should be required to measure field or bulk hydraulic conductivities. The Applicant should be required as well to recalculate the amount of leachate that is likely to be generated, given that the Applicant will be placing intermediate cover and water over the waste to prevent erosion and dust and that the sludge from the evaporation pond that will be placed in the landfill will have a higher moisture content than a dry soil. The Applicant also should be required to calculate a realistic rate of leachate infiltration, taking into account that the leachate will be flowing beneath a landfill where there will be no evapotranspiration.

Second, the Applicant should be required to install both a ground water monitoring system that will detect liquids moving as saturated flow and a vadose zone monitoring system that will detect liquids moving as unsaturated flow. The ground water monitoring system should consist of monitor wells. The vadose zone monitoring system should consist of suction lysimeters and neutron access tubes or probes. These instruments should be installed by placing a series of holes or trenches immediately below and along the sides of the landfill.

IV. The Applicant should be required to implement measures to protect the lesser prairie chicken and the sand dune lizard.

The New Mexico Game and Fish Department has recommended listing the lesser prairie chicken as a threatened species three times between October and November, 1999. The

recommendation was withdrawn in November 1999, but a status investigation is ongoing. Testimony of Jim Bailey (hereinafter "Bailey"), TR 579 lines 6-13. 35. The lesser prairie chicken also is a candidate species for listing under the federal Endangered Species Act. Testimony of Jose Merino, (hereinafter "Merino") TR 70, lines 5-7. The prairie chicken is listed as being "warranted but excluded", which means that sufficient information exists to consider listing it as threatened or endangered but that, according to the U.S. Fish and Wildlife Service, there are other priority species. Merino, TR 70 lines 9-18. The lesser prairie chicken is almost gone from about 56% of its historic range in New Mexico. The bird also is doing more poorly in the facility area than the species is doing in other places in New Mexico. Bailey, TR 580 lines 1-21, 581 lines 10-24.

Shinnery-oak, which is one of the major vegetation species at the proposed facility site, is associated with lesser prairie chicken habitat. Merino, TR 81 lines 12-18. The elements required for lesser prairie chicken habitat are missing from the facility because bluestem grasses have been grazed down. Merino, TR 82 lines 5-8. It is possible, however, to rehabilitate lesser prairie chicken habitat that has been over-grazed. Merino, TR 82 line 11; Bailey, TR 585 lines 8-12. Finally, lesser prairie chickens use degraded habitat with a reasonable abundance of shinnery-oak remaining as brood habitat. This type of habitat would also be important as wintering habitat. Bailey, TR 584 lines 17-25, 585 lines 1-2.

During the lesser prairie chicken's mating season, which is from March to June (Bailey, TR 588 lines 1-3), the males of the species display and make calls or cackles that attract female birds to the lek sites. Noise may interfere with this breeding behavior. Bailey, TR 586 lines 19-25; Merino TR 84 lines 1-12.

To avoid potential impacts on the lesser prairie chicken, any facility structures should be located as far east as possible. Bailey, TR 600 lines 21-25. In addition, restrictions should be placed on facility hours of operation during the breeding season to decrease the impact of the facility on the Lesser Prairie Chicken. Bailey, TR 588 lines 1-4).

The Applicant is committed to work through the appropriate process with the U.S. Fish and Wildlife Service with respect to consultation for the lesser prairie chicken and the sand dune lizard. The Applicant is likewise committed to implementing the New Mexico Game and Fish Department recommendations for these species (Corser, TR 216 lines 10-19), which include constructing an exclosure fence in order to keep sand dune lizards out of the proposed project area. September 20, 2001 letter from Tod W. Stevenson, Chief of the Conservation Services Division of the New Mexico Department of Game and Fish to Steve Pullen, Hazardous Waste Bureau of the New Mexico Environment Department, (Exhibit 5) pages 1-2. Finally, the Applicant is willing to mitigate the impacts of noise if noise were to impact lesser prairie chickens. Merino, TR 84 lines 1-12.1.

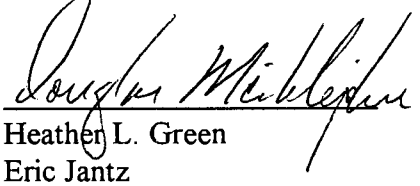
For these reasons, if a permit is issued for the proposed facility, it should include the following conditions. First, the Applicant should build any structures as far east as possible. Second, the Applicant must install an exclosure fence of flashing metal around the base of the chain-link fence to prevent sand dune lizards from entering the facility. Third, from March first to June 15th of each year, the Applicant will restrict noise from one hour before sunrise to one hour after sunrise in order to prevent operations of the proposed facility from interfering with the lesser prairie chicken during its breeding season.

## Conclusion

The Application does not comply with the Act and the Regulations. It therefore should be denied. If the Application is granted, the permit should include the conditions outlined above to address the problems with the landfill and the deficiencies in the Application.Finally, the permit should mandate that all of these features and designs be approved by the Department, and that members of the public be given an opportunity to cross-examine the Applicant, present evidence, and comment on those features and designs before the Department makes its decision to approve or disapprove them.

Dated: December 17, 2001.

NEW MEXICO
ENVIRONMENTAL LAW CENTER



Heather L. Green
Eric Jantz
Douglas Meiklejohn
Douglas Wolf
1405 Luisa Street, Suite 5
Santa Fe, N.M. 87505
Telephone: (505) 989-9022
Facsimile: (505) 989-3769

Attorneys for CURE and its individual members

# RESPONSE to NOTICE OF DEFICIENCY for TRIASSIC PARK PART B PERMIT APPLICATION

2/15/94 AR# 94-012

The following technical comments and questions from the Hazardous and Radioactive Materials Bureau (HRMB), New Mexico Environment Department (NMED), relate to the Gandy Marley, Inc. "Response to Notice of Deficiency" dated September 29, 1995. The "ITEM" numbers below match the item numbers used in the August 1995 Notice of Deficiency.

AR95-02

8/8/95 - AR95-02

**ITEM**

**Comment to 36** The response is inadequate. Although the potential for gas generation in the landfill may be limited, NMED is still interested in how any gas generated will be detected and removed.

**Response:** Two important issues associated with gas generation and release are meeting air quality standards and gas buildup beneath the final cover.

During the operational phase of the facility, periodic checks will be made within the landfill to detect the presence of hazardous gases and volatile organics to verify PPE and respiratory protection levels. This testing will be conducted in addition to the fingerprint testing conducted on incoming waste. The data from both tests will be implemented to reduce the generation and/or release of these gases to levels which meet prescribed regulatory air quality standards.

Prior to closure of the landfill facility, an assessment will be made of the landfill waste's gas generating potential. This assessment will be based on review of fingerprint test data and data gathered in the landfill during operation of the facility. If, based on this assessment, it is concluded that gas generation and release following closure will not meet regulatory air quality standards or may result in gas build-ups beneath the barrier layer of the cover, then provisions will be made to collect and monitor gas generation and release during the postclosure period. There are a number of gas collection and monitoring design approaches developed in the municipal waste industry which could easily be incorporated into the landfill cover.

**Comment to 82** The response is inconsistent with the data provided in the permit application. On July 17, 1994, borehole 14o was drilled to a depth of 100 feet. No groundwater was recorded on the lithology log. The



EXHIBIT 3

geophysical log, run on July 17, indicated water in the bottom 9 feet of the borehole. Whether this water is groundwater (i.e., it was present but undetected during the drilling of the borehole or it entered the borehole via the subsurface following the rainstorm on July 17) or water that entered the borehole as surface runoff during the rainstorm is unresolved.

Borehole 14, located approximately 400 feet west of borehole 14o, was also drilled to a depth of 100 feet (on July 14, 1994) and, according to the lithology log, encountered no groundwater. The geophysical log (run on July 15) recorded 38 feet of water in the borehole. Evidently there is groundwater in this area and it is possible that the water found in borehole 14o is groundwater.

**Response:** The origin of fluid observed in the bottom of borehole 14o apparently requires additional explanation. It is true that borehole 14 (as described on page 3-18 of the permit application) did encounter some "stratigraphically trapped" groundwater. This borehole (and all others in this evaluation program) was drilled using rotary air techniques. The high pressure injection air associated with this drilling technique, when encountering small amounts of groundwater, will prevent this fluid from immediately entering the borehole. The drill cutting samples did not indicate the presence of groundwater. Only after the borehole had been allowed to "sit" for 1-2 hours was the groundwater recognizable. When it did enter the borehole, it rose (equilibrated) to the level of the sand (aquifer) from which it originated.

Because of the identification of groundwater in borehole 14, an offset (borehole 14o) was completed 400 feet to the east (down-gradient). This borehole location was in addition to those pre-approved by the NMED, but it was important to determine the potential extent of groundwater saturation. Borehole 14o was drilled to a depth of 100 feet.

There appears to be some confusion in definitions between depth drilled, depth logged and the actual total depth of the hole. When drilling with mud, it is possible to condition the drill hole walls so that essentially the entire depth can be logged. However, with rotary air techniques, hole conditioning is not possible and considerable side wall material will collapse into the hole. As indicated on the borehole 14o log header sheet, the bottom depth logged, as measured by the trace of the dry neutron log, was 94.5 feet. Considering the location of the neutron detector on the probe, the

total depth of this hole would have been 95.5 feet. The rest of the hole had filled up with drill cuttings.

The top of the fluid was observed to be at a depth of 92.0 feet, indicating a maximum apparent concentration of 3.5 feet (not 9.0 feet). This is an apparent concentration because a 2.25 inch probe will displace approximately one-half of the volume of the hole. Regardless of all of these factors, there is approximately one gallon of fluid in the bottom of this borehole.

This fluid did not migrate upward through several hundred feet of Lower Dockum mudstones. This borehole and nine others (see NOD response) were cased and monitored in order to see if groundwater later entered these holes. It did not. Because of the fact that the water level never rose to the depth of the bottom of the sand in the hole (36.0 feet), it is believed that this sand was not the source of the water. As described in the NOD response, there was a heavy rainfall when this hole was being completed and it is believed that surface runoff entered the drill hole. Eventually, this fluid was absorbed into the side walls of the borehole.

**Comment to 86** The response is inadequate because it does not address the disappearance of the 9 feet of water in borehole 14o.

**Response:** See response to 82.

**Comment to 89** The response, while it answers NOD Comment 89, raises another question. Plate 3-8 is cited in the response as an example of facies change from siltstone/sandstone, near the site of the proposed landfill, to mudstone 1,000 feet downgradient to the east. On the contrary, Plate 3-8 shows the siltstone/sandstone beds at the proposed landfill boundary to extend beyond the easternmost borehole. How is this geologic setting capable of retarding migration of contaminants from the landfill to groundwater east of the site?

**Response:** Upper Dockum sediments were deposited in a fluvial environment. As such, individual beds of sandstones, siltstones, and mudstones are very discontinuous. Plate 3-8 illustrates this discontinuous nature of individual lithologies or facies changes.

Unsaturated flow modeling referenced in NOD Response 90 and the Waiver Justification Document took no credit for these facies changes. It was assumed the lateral migration would take place entirely within the siltstone/sandstone lithology (permeability - 1.22 X 10-5 cm/s). This geologic setting is ideal for retarding lateral

migration of contaminants because of the low permeability of the sediments and the fact that they are unsaturated. There is very little lateral hydraulic head generated from the landfill, and unsaturated flow modeling estimated a 3.4-billion-year travel time to reach a point 2,500 feet down-gradient.

**Comment to 91** Subsurface evaluation done during July 1995 has shown the lack of groundwater in the Upper Dockum in the eastern part of the proposed facility; however, the existence and location of groundwater in the west half of the proposed facility is unresolved (cf. Item 82 above).

**Response:** See response to 82.

**Comment to 94** Part of the reply reads "One well will be constructed with a 5-foot screen extending from the base of the Lower Dockum." Should this read "Upper Dockum"?

**Response:** It should read "One well will be constructed with a 5-foot screen extending from the base of the Upper Dockum".

**Comment to 99** The July 1995 drilling program found the Upper/Lower Dockum contact 84 feet below ground level in PB-36 (the borehole located at the proposed landfill's east slope). The base of the landfill will be in Lower Dockum sediments if the landfill is excavated to 100 feet as planned. The slope of the landfill will rest on Upper Dockum siltstones and sandstones and, since these will permit contaminant migration from the landfill to groundwater east of the facility, a double liner system will be required on the slopes, as well as on the floor, of the landfill.

**Response:** This comment is noted and does not appear to require a response. This issue is addressed in detail in the Waiver Justification Document and in summary in the above response to comment 89.

**Comment to 100** The response states that locations of the initial shallow drill holes are shown on Plate 3-7. They are not. Please correct the Plate. Also, Plate 3-7 includes several boreholes labeled "Drill Hole" and one labeled "Oil Well." Are the drill holes abandoned oil tests? Are any of them producing or abandoned water wells? If any are/were water wells, please provide the depth and quality of water and the formation name of the aquifer.

**Response:** The three initial shallow drilling areas are illustrated in Figure 3-9 of the permit application and they will be added to Plate 3-7. The "drill

holes" shown on the USGS topographic map on Plate 3-7 are abandoned oil tests. In sections 22 and 23, T11S, R31E water is currently being produced from abondoned oil tests. The State Engineer's office lists the depth of the production as 100 feet and 120 feet, respectively. The blue "triangles" on Plate 3-7 are water wells within a 3-mile radiu of the proposed facility and were obtained from the State Engineer's office. A listing of the wells and depths will accompany Plate 3-7.

**Comment to 103** The geophysical and lithology logs for PB-27 indicate siltstone/sandstone is present from a depth of 70 feet to total depth at 200 feet. Groundwater has been found both upgradient and downgradient from this borehole. Can GMI suggest an explanation for the lack of groundwater in PB-27?

The last part of the response for this comment reads "The location of WW-2 is SWSE Section 19, T11S, R31E. The geophysical log and lithology log will be changed to reflect this." The geophysical log needs to be corrected; the lithology log does not. Also, Figure 3-13 and Plate 3-7 need to be corrected because WW-2 is shown in the SESW of Section 19 on both maps.

**Response:** As described in Response 82, 86 and 91, due to the air rotary drilling techniques used on this project, the low permeability of the sediments and the small amount of groundwater, fluids are not immediately recognizable in these boreholes. This borehole was logged immediately after it was completed and it is possible that groundwater had not yet entered the hole. Due to its stratigraphic position, it is assumed that the lower portion of the borehole would be saturated.

Also attached is a corrected log header sheet for WW-2 and a revised Figure 3-13 and Plate 3-7 showing the location for WW-2 to be in SWSE Section 19, T11S, R31E.

**Additional Comment #1 -** The corrected Plate 3-1, included in the NOD Response, shows vertical groundwater flow from the Ogallala Formation into and through the Upper Dockum. Please provide an explanation for how vertical flow may occur through the Upper Dockum mudstones and claystones (which are found interbedded with the siltstones and sandstones).

**Response:** It is unlikely that vertical groundwater flow occurs through Upper Dockum mudstones and claystones. The permit application (page 3-17) describes the presence of springs at the contact of the Ogallala and the Upper Dockum where downward-migrating groundwater meets impermeable Upper Dockum clays and are diverted to the surface. It is important to remember, however, that these mudstones and claystones were deposited in a fluvial environment and are very discontinuous. Where this same downward-migrating groundwater encounters more permeable sediments, it infiltrates into and migrates through the Upper Dockum.

**Additional Comment #2 -** Figure 3-13 and Plate 3-7, which were included with the NOD Response, show the location of a drill hole between PB-14 and PB-32 immediately west of the facility boundary. Does this drill hole exist?

**Response:** There is no borehole between PB-14 and PB-32. Figure 3-11 of the permit application is the detailed map showing borehole locations for this close-spaced drilling. Figure 3-13 and Plate 3-7 will be revised to reflect the borehole locations as shown on this figure.

AR 97-010

2/21/97

E. GROUNDWATER MONITORING

E-1 Exemption from Groundwater Protection Requirements: 270.14(c)

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

E-1b Landfill: 264.90(b)(2)

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

E-1c No Migration: 264.90(b)(4)

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

E-3 General Hydrogeologic Information: 270.14(c)(2)

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

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

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

- The permit application concludes (section 3.7) that the sediments of the Upper Dockum underlying the site are unsaturated and that detailed drilling within the site boundary has encountered no

groundwater. However, the drilling programs implemented in 1993 and 1994 were confined to shallow depths (100 feet below ground surface) in the vicinity of the proposed facility. The lithologic information and the cores collected for geotechnical information were limited to this depth. Boring PB-36, described in section 3.7.2.2 and plotted on Plate 3-8 (but not labeled on any map), is apparently the only drill hole deeper than 100 feet and less than 1,000 feet from the facility boundary. Only two more holes, PB-37 and PB-38, are both deeper than 100 feet and less than 2,500 feet from the facility boundary. These facts indicate that the data submitted with the application do not adequately support a conclusion that the Upper Dockum is unsaturated, or that the Lower Dockum is unsaturated above the confined basal sand unit, throughout the area beneath the facility. Section 3.5.3.1 states that drilling at the site has delineated two distinct units of the Dockum sediments with a total thickness of 1,175 feet, the Upper Dockum (475 feet thick) and the Lower Dockum (700 feet thick). Section 3.8 states that the projected depth to the Upper Dockum/Lower Dockum contact is between 100 and 500 feet. Thus, the scouring and pinching-out of fluvial sediments on top of the Lower Dockum may not have been adequately characterized beneath the proposed landfill, even though section 3.5.3.1 states unequivocally that the Upper Dockum is not more than 100 feet thick within the proposed facility boundary. The permit application should provide confirmatory investigative data, e.g., cores across the Upper/Lower Dockum boundary and from below 100 feet, or additional detailed interpretation of the geophysical logs. This additional information is necessary to demonstrate that the Lower Dockum/Upper Dockum contact is less than 100 feet deep, and that both units are unsaturated above the basal sandstone.

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

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

- Section 3.5 concludes that the Santa Rosa Sandstone, the lowermost Triassic depositional unit and a major aquifer, is not present at the proposed site. However, no data to demonstrate this contention is

provided in the application. Figure 3-6, which is presented to support the statement, does not show that the Santa Rosa Sandstone is not present at the site, it only indicates that there is relatively less sand at the proposed site when compared to surrounding areas. The conclusion that the Santa Rosa is not present appears to be a weakly supported assumption.

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

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

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

- Section 3.6 of the permit application indicates that there is a stock water pond (the "Red Tank") within the proposed facility boundary and several additional tanks on adjacent lands. The permit application does not discuss the effect, if any, of the proposed facility on these tanks, and particularly on the tank located within the facility boundary. Data pertaining to these tank systems must be provided in the application including the size of the pipes, depth below ground surface, and locations of these pipes relative to the proposed landfill. There is also a strong possibility that the shallow soil in the vicinity of the Red Tank is saturated as a result of infiltration from the pond, although the application states that it is clay lined. The application must accurately characterize the shallow subsurface conditions immediately below and adjacent to the Red Tank, which is immediately adjacent to the proposed landfill. The application must also resolve an inconsistency regarding the

source of water in the Red Tank. Section 3.6.1 implies that it is fed from three wells on the Marley Ranch. However, section 3.7.2.1 states that it is filled from springs in the Upper Dockum. Revise the application to specifically identify the source(s) and locations of the sources of water which feed the Red Tank. The volumes of water placed in this pond (monthly, if possible) should also be indicated.

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

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

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

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

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

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

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

M E M O R A N D U M

To: Gregory J. Lewis, Director, Water & Waste Management Division, NMED

Through: Benito Garcia, Chief, HRMB BG

Through: Robert "Stu" Dinwiddie, RCRA Permits Program Manager, HRMB

Through: Steve Pullen & Stephanie Kruse, Supervisors, HRMB

From: CA Cornelius Amindyas, Environmental Specialist (Triassic Park Facility Manager), HRMB

Subject: Briefing on the Triassic Park Waste Disposal Facility Permit

Date: February 4, 1999

The Hazardous and Radioactive Materials Bureau (HRMB) received a Permit Application for a RCRA Subtitle C hazardous waste disposal facility, the first in New Mexico, in November of 1994. The proposed Triassic Park Hazardous Waste Disposal Facility is located 42 miles east of Roswell. The 480 acre facility will accept off-site waste for storage, treatment (by evaporation and stabilization), and disposal into a 100 acre landfill. To date, all commercial disposal of hazardous waste generated in New Mexico has occurred outside the State. Because New Mexico does not have authorization for 40 CFR 264, Subpart CC (*Air Emission Standards for Tanks, Surface Impoundments, and Containers*), the Permit must be issued jointly by New Mexico and the EPA.

The Facility owners may request the addition of low level radioactive waste disposal a couple of years after Permit issuance.

The Permit applicants are Mr. Dale Gandy and Mr. Robert (Bob) Marley from Tatum, New Mexico. Mr. Gandy is in the business of disposing of oil field waste and currently has a disposal Permit through the Oil Conservation Division of the New Mexico Energy, Minerals, and Natural Resources Department. Mr. Marley is a rancher. Both individuals formed the Gandy Marley Corporation, and are co-owners of the proposed Triassic Park Waste Disposal Facility. Mr. Ken Schultz serves as Coordinator for the Permit Application.

A chronology of the permitting process to date for the Facility is attached as Table 1. The attached Table 2 presents the estimated time to draft Permit issuance.

[redacted]

EXHIBIT
tabbies 4



[redacted]

TABLE 1: CHRONOLOGY OF THE TRIASSIC PARK PERMITTING PROCESS THROUGH JANUARY 1999.

| | |
|---|---|
| 11/17/94 | Gandy Marley, Inc. (GMI) submitted a RCRA Permit Application. |
| 3/1/95 | NRMB determined after review, that the Application was administratively complete, and billed Gandy Marley, Inc. $46,000.00 Permit application processing fees. |
| 5/24/95 | NRMB completed the RCRA Facility Assessment study. |
| 4/4/96 | NRMB promulgated a draft Permit and began a 45 day Public Comment period. Many written comments were received from the concerned public. A public hearing was requested. |
| 4/9/97 | NRMB rescinded the draft Permit because of the public comments and the fact that the engineering drawings and designs submitted were incomplete. |
| 12/15/97 | NRMB received the Revised Permit Application. |
| 4/6/98 | NRMB resumed Permit Application review and hired a contractor (TechLaw) to review and evaluate the engineering designs and drawings. |
| 10/7/98 | NRMB informed Gandy Marley Inc., that their Permit application was administratively complete. |
| 10/29/98 | NMED re-contracted with TechLaw, Inc., for further review of engineering designs and drawings. |
| 11/12/98 | NMED received revised Permit application. |
| 1/6/99 | Revised Permit application sent to TechLaw for review by professional engineer. |

TABLE 2: ESTIMATED TI. TO PERMIT ISSUANCE FOR THE TRI IC PARK WASTE DISPOSAL FACILITY:

| ACTION | RESPONSIBLE PARTY | ESTIMATED (IDEAL) COMPLETION TIME |
|---|---|---|
| Review & evaluate engineering designs and drawings | TechLaw, Inc. | 2/15/99 |
| Draft Permit | Stephanie Kruse | Ongoing to 6/30/99 |
| Conduct peer review | Stephanie Kruse, Steve Pullen, Carl Will | Ongoing to 6/30/99 |
| Conduct review of ground water monitoring equivalency demonstration; draft Module on vadose zone monitoring. | Steve Pullen | Ongoing to 6/30/99 |
| Write and send Request for Supplementary Information (RSI) to Gandy Marley, Inc. (GMI). | Cornelius Amindyas | 2/12/99 |
| Review and send TechLaw's Comments as part of RSI to Gandy Marley Inc., with a 30 day deadline for response. | -"- | 2/26/99 |
| Review GMI's responses[1] and issue a Notice of Deficiency if necessary to GMI with a 30-day deadline. | -"- | 4/26/99 |
| Issue a groundwater monitoring equivalency demonstration approval. | Director, HWMD | 6/30/99 |
| Monitor permitting process. Send a letter of technical completeness to Gandy Marley. | Robert "Stu" Dinwiddie | 6/30/99 |
| Finalize draft Permit. | Cornelius Amindyas | 7/30/99 |
| Review of draft Permit. | Stu Dinwiddie | 8/30/99 |
| Review draft Permit. | Nick Persampieri, OGC | 9/30/99 |
| Review draft Permit. | Benito Garcia | 10/30/99 |
| Review draft Permit and co- [illegible] | [illegible] | [illegible] |
| Issue 45day public notice | [illegible] | [illegible] |

[1] If NMED decides that TechLaw should review the engineering drawings submitted in response to the RSI, the time frame may be extended accordingly.

SEP 22 2

September 20, 2001

Mr. Steve Pullen
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303



Re: Triassic Park Hazardous Waste Facility Draft Permit
Hearing Docket Number HRM 01-02 (P)
NMGF Doc. No.7629

Dear Mr. Pullen,

The Department of Game and Fish (Department) has reviewed the Draft Permit (Permit) for the proposed Triassic Park Waste Disposal Facility (Facility), 43 miles east of Roswell, Chaves County. The Department provides the following recommendations to mitigate potential impacts of construction and operation of the facility to wildlife species of concern.

As mentioned in the Permit, the ferruginous hawk occurs in the area, as do other raptors, passerine birds, and waterfowl species during migration. The permit commits to using bird netting to preclude access of birds to evaporation ponds. We recommend that netting also be used over any other open storage facilities that contain hazardous liquid wastes that could be accessed by birds or bats, and that the netting be regularly inspected and maintained throughout the life of the Facility.

It is our understanding from discussions with you that a six-foot chainlink fence, with three strands of barbed wire on top, will be constructed around evaporation ponds, contaminated water basins, stormwater detention basins, and dust control water basins, to preclude access to hazardous wastes and plastic-lined water sources by wildlife and unauthorized humans.

Charles Painter, nongame biologist of my staff, met with Mr. Larry Gandy, the landowner and project proponent, on 19 September 2001 to investigate the possible occurrence of the state-listed sand dune lizard (*Sceloporus arenicolus*) at the site and possible mitigation strategies. The western edge of the proposed facility site was found to be within occupied sand dune lizard habitat; therefore, we make the following recommendations:

1. Construct an exclosure fence of metal flashing around the base of the 6-foot chainlink fence that will be constructed around evaporation ponds, contaminated water basins, stormwater detention basins, and dust control water basins. This exclosure fence should be constructed

of solid metal and not synthetic materials, such as silt fence, due to the synthetic material's relatively short effective life and maintenance requirements.

2. The metal flashing exclosure should be constructed to protrude a minimum of 18-inches above ground, and a minimum of 10-inches below ground.
3. The exclosure fence should be regularly maintained to provide a minimum of 18-inches above ground.
4. If possible, relocate any hazardous waste storage facilities planned for construction within sand dune/shinnery oak habitats, to another area within the site.

Permit Attachment A, "Site Environment" (p.3), states:

> "One bird species, the ferruginous hawk (*Buteo regalis)*, is classified as a Category 2 candidate for listing as threatened or endangered by the United States Fish and Wildlife Service of the U.S. Department of Interior. Currently, it is not listed. No other documented species in the area of the proposed Facility site are federally protected or candidates for federal protection".

However, the lesser prairie chicken (*Tympanuchus pallidicinctus*) is currently a candidate for federal listing under the category of Warranted but Precluded, has been studied for state-listing by the Department, and is known to have occurred in the vicinity of the Facility. Although not acknowledged as occurring within the proposed project site, the Department believes that the implementation of fencing and bird netting mitigation measures already committed to in the Permit and recommended in these comments will be sufficient to protect the lesser prairie chicken from impacts associated with this project.

The Department appreciates the opportunity to comment on this project. Should you have any questions regarding our comments, please contact Habitat Specialists Alexa Sandoval at 434-1024, or Mark Watson at 476-8115.

Sincerely,

Tod W. Stevenson

Tod W. Stevenson, Chief
Conservation Services Division

TWS/AS/MLW

CC: Joy Nicholopoulos (Ecological Services Field Supervisor, USFWS)
Scott Brown (Assistant Director, NMGF)
Bill Hays (Conservation Services Asst. Div. Chief, NMGF)
Charlie Painter (Nongame Biologist, NMGF)
Alexa Sandoval (Southeast Area Habitat Specialist, NMGF)
Mark Watson (Conservation Services Habitat Specialist, NMGF)


**STATE OF NEW MEXICO**
**BEFORE THE SECRETARY OF ENVIRONMENT**

IN THE MATTER OF THE DRAFT FINAL
PERMIT FOR THE TRIASSIC PARK WASTE
DISPOSAL FACILITY
U.S. EPA NO NM0001002484 NO. HRM 01-02 (P)

## CERTIFICATE OF SERVICE

I hereby certify that a copy of the Triassic Park Hazardous Waste Facility Draft Permit Hearing Docket Number HRM 01-02 (P) NMGF Doc. N. 7629 has been sent via regular mail to the following on September 21, 2001:

Pete Domenici, Jr.
Dolan & Domenici
6100 Seagull NE, Suite 205
Albuquerque, NM 87109

Heather Green
Douglas Meiklejohn
New Mexico Environmental Law Center
Attorneys for CURE
1405 Luisa St. Suite 5
Santa Fe, NM 87505

I hereby certify that a copy of the Triassic Park Hazardous Waste Facility Draft Permit Hearing Docket Number HRM 01-02 (P) NMGF Doc. N. 7629 has been sent via hand delivered to the following on September 21, 2001:

Clay Clarke
Susan McMichael
Charles de Saillan
Assistant General Counsel
New Mexico Environment Department
1190 St. Francis Drive N-4050
Santa Fe, New Mexico 87505

Carolyn Vigil

Carolyn Vigil, Hearing Clerk
1190 St. Francis Drive, N-4050
Santa Fe, New Mexico 87504
(505) 827-2839 Phone
(505) 827-2855 Fax