TP 2-15-02 02-005

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 COMMENTS ON HEARING OFFICER'S REPORT AND HEARING OFFICER'S PROPOSED FINDINGS OF FACT AND CONCLUSIONS OF LAW

I. Introduction

Conservative Use of Resources and Environment and its members (hereinafter "CURE"), including Victor Blair, Jimi Gadzia, Deborah Petrone and Michael Porter, are filing these comments pursuant to the Hearing Officer's Order.

First, the Hearing Officer's Report and Hearing Officer's Proposed Findings of Fact and Conclusions of Law incorrectly state that the Applicant Gandy Marley, Inc. (hereinafter "the Applicant") and the Hazardous Waste Bureau of the New Mexico Environment Department (hereinafter the "Bureau") met their burden of proof or presented evidence adequate to support issuance of the permit. The Hearing Officer's proposed findings of fact inadequately reflect the evidence presented and not rebutted, and this lack of detail not only pervades the Summary of Testimony in the Hearing Officer's Report, but the proposed conclusions of law, and the Hearing Officer's Recommendation as well.

The permit should be denied because the Bureau and the Applicant failed to show that the Financial Assurance, closure, and post-closure plans are adequate absent specific conditions that are absent from the Hearing Officer's submittals to Secretary of Environment Peter Maggiore and because the Bureau and the Applicant failed to show the Groundwater Monitoring Waiver should have been granted absent specific conditions neither the Applicant, the Bureau, or the Hearing Officer propose . CURE, on the other hand, met their burden of going forward with unrebutted evidence showing deficiencies in the following four areas.

(1) The application does not comply with the requirements of 40 CFR 264.142 governing the financial assurance for the proposed facility;

(2) The Applicant has not demonstrated compliance with the requirements of 40 CFR 263.111 and 40 CFR 264.310 concerning closure and post-closure care of the proposed facility;

(3) The groundwater monitoring variance granted to the Applicant by the Bureau should be denied because that variance does not meet the requirements of 40 CFR 264.90; and

(4) The Bureau and the Applicant have, and will continue, to violate the right of the public to participate effectively in this proceeding if this permit is not denied, or in the alternative, if the permit is not granted with specific conditions protective of the public's right to participate.

Nonetheless, if the permit is granted, the Hearing Officer's recommendations that additional monitoring wells to verify the hydraulic conductivity used to model transport within the aquifer, that a deep vadose zone monitoring well, and that an additional monitoring well to the north of the facility be installed should be implemented. Moreover, as is consistent with the expert evidence presented by CURE, the deep vadose zone monitoring well should be cored

throughout its length, hydraulic testing and chemical analysis of water samples in each well containing sufficient amounts of water should be conducted, and additional angle coring should be required. In addition, the Applicant should be required to install suction lysimeters and neutron access probes. The results of all required testing should be available to the public for comment, and an opportunity to cross-examine the Bureau and the Applicant prior to any Bureau action should be afforded.

Second, CURE respectfully suggests several non-substantive changes and clarifications of the Hearing Officer's Report and Hearing Officer's Proposed Findings of Fact and Conclusions of Law.

II. CURE Met Its Burden of Going Forward With Evidence In Support Of Their Contentions That the Permit Does Not Comply With the Regulations Governing Financial Assurance, Closure, Post-Closure, Groundwater Monitoring Variances, Or the Public's Right to Fully Participate In The Permit Process.

In these proceedings, because evidence introduced by CURE, including the inadequacy of the financial assurance, closure and post-closure plans and the inadequacy of the Applicant's groundwater monitoring variance application, was not rebutted by the Applicant or the Bureau, CURE met their burden of going forward with evidence showing why the draft permit should not be issued, or alternatively, should be issued only with certain conditions.

> The Applicant or Petitioner has the burden of proof that a permit, license, or variance should be issued and not denied. This burden does not shift. The Division has the burden of proof for a challenged condition of a permit or license which the Department has proposed. Any person who contends that a permit condition is inadequate, improper, or invalid, or who proposes to include a permit condition shall have the burden of going forward to present an affirmative case on the challenged condition.

20 NMAC 1.4.IV.401.A. The Applicant and the Bureau failed to meet their burdens of proof as to several aspects of the financial assurance, closure and post-closure plans, as well as with aspects of the groundwater monitoring variance. Also, although CURE agrees that if the permit is granted, the Applicant should provide additional details regarding erosion control and revegetation, and that the Applicant should install additional monitoring wells for further study of the area hydrology, other conditions are necessary to protect human health and the environment.

A. The Application Does Not Comply With the Regulations' Financial Assurance Requirements, and additional conditions beyond those proposed by the Hearing Officer Should Be Added to the Hearing Officer's Proposed Findings of Fact and Conclusions of Law and the Hearing Officer's Report.

CURE presented expert testimony concerning the financial assurance, the Applicant's failure to include all necessary costs and necessary indirect costs, noted the Applicant's absence of proof that it could obtain the necessary financial assurance, and expert testimony on the Applicant's and the Bureau's failure to base the proposed financial assurance on sound methodology. The Hearing Officer accepted CURE's expert testimony given by Paul Robinson regarding inadequate erosion control and revegetation, but failed to take into account Mr. Robinson's testimony on indirect costs associated with the cost of water, and the cost of non-hazardous waste disposal.

The Hearing Officer also failed to take into account the possibility that the Applicant would be unable to dispose of hazardous waste at the facility, as may be the case in the event that the facility ceases operation prematurely, such as may result from bankruptcy, foreclosure, or unforeseen market conditions during the implementation of the closure plan. In addition, the

cost to the state of New Mexico of calling in the bond and arranging for and monitoring contractors was left out of the financial assurance. This testimony was overlooked and contradicts the Hearing Officer's reasons for not recommending changes to the financial assurance required by the permit.

The following elements of Mr. Robinson's testimony that the Hearing Officer overlooked and that contradict the reasons for not recommending changes to the financial assurance should therefore be added to the Hearing Officer's Proposed Finding of Fact and Conclusions of Law.

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 specify 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.
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> The Regulations also provide that:
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> 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. This regulation relates to the question of on-site disposal of either hazardous or solid wastes. Because the record does not show that the Applicant

has made the requisite demonstration that on-site disposal capacity will exist at all times over the life of the facility, the Applicant must therefore provide for closure with costs that include off-site disposal transportation fees.

2. **Paul Robinson presented expert testimony concerning deficiencies in the proposed financial assurance, closure, and post-closure plans.**

Mr. Paul Robinson testified at the hearing in this matter and he is well qualified to evaluate financial assurance, closure and post-closure information. Indeed, the Hearing Officer relied on Mr. Robinson's testimony as a basis for recommending that the Applicant provide additional information on its proposed erosion control and revegetation plan. 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.

3. **Contrary to the Hearing Officer's Report, the proposed financial assurance does not include all necessary costs.**

As Mr. Robinson testified, the Applicant's financial assurance estimates (and those of the Bureau) do not include the full range of activities and costs necessary to accomplish the required

performance standards. Robinson, TR 669, lines 14-16. The Hearing Officer concluded that CURE did not meet its burden in challenging NMED's determination to impose the permit condition requiring additional amounts of financial assurance. The Hearing Officer's Proposed Findings of Fact and Conclusions of Law include general statements that the Bureau never told the Applicant it would have to ship wastes off site during closure (Hearing Officer's Proposed Findings of Fact and Conclusions of Law p57 para. 28), and that Mr. Cobrain established unit costs for non-landfill cap items like demolition through a survey and experience (Id. at p58, para. 36). These findings, however, do not support the Hearing Officer's conclusion and the conclusion ignores other evidence presented by Mr. Robinson that contradicts the facts the Hearing Officer relies on.

While some indirect costs Mr. Robinson referred to in his testimony may be included in the information on which unit costs were determined, even the Hearing Officer indicated in her report that not all of these costs were included. See, Hearing Officer's Report at 101. For example, Mr. Robinson testified that 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 cost, costs associated with water are not addressed in a direct or indirect way. Robinson, TR 700, lines 15-25. Without a water use strategy and water acquisition and distribution costs, the closure plan is incomplete and should be rejected unless conditions which would fully remedy that deficiency are required. Lack of water is a significant inhibitor toward establishing a vegetation cover necessary to prevent erosion. These needs were unrebutted yet unacknowledged by the Hearing Officer.

In addition, the Bureau estimates that ten percent of the waste generated from

dismantlement would be hazardous waste. The Bureau 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 Bureau calls in the bond or surety for the proposed facility and does not want to either modify or revise the permit to dispose of hazardous waste or face other liabilities which may be associated with state 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. The need to include these costs was not rebutted by either the Applicant or the Bureau.

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. Moreover, neither the Applicant nor the Bureau contradicted the testimony given by Mr. Robinson that if the facility were abandoned or prematurely closed, that the Applicant (or in the absence of the Applicant, the Bureau), would not be able to dispose of waste at the site and that if this were to occur, there would be additional transportation and disposal costs.

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

The proposed financial assurance also does not take into account several indirect costs. Reference to these deficiencies are also missing from the Hearing Officer's report and should be included in the Proposed Findings of Fact and Conclusions of Law. For example, 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 Bureau 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 Bureau 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 Bureau in other situations are for the direct costs of construction. Indirect costs are in addition to direct costs and include profit,[1] insurance, mobilization, demobilization, engineering and construction administration. Robinson, TR 1136, lines 13-24. Here, the Bureau has listed indirect costs for construction of the proposed facility's cover as ten percent.[2] 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.

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[1] 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.

[2] Mr. Cobrain, who prepared the Bureau'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 Bureau supervision cost, but there is no reference to indirect costs. Robinson, TR 1145, lines 3-6. The ten percent supervision cost should be included as an indirect cost for all phases of the closure plan to cover contract management, contractor oversight and monitoring. The Bureau's failure to include this cost in other areas indicates the Bureau's failure to recognize that supervision is a necessary cost category for the state for all third party contractor activities.

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 Bureau 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 Bureau should, however, have that amount available in case it is needed to cover costs. Robinson, TR 711, lines 1-13. Mr. Robinson was unable to be more specific as to what the bond should be because of inadequate information and a lack of clarity in the information provided.

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. The Hearing Officer's Report recognizes this, and the Hearing Officer believes there is no requirement that a financial assurance mechanism be identified prior to the permit being issued. This deficiency, however, is not protective of health or the environment.

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. Although this information is not specifically required under applicable regulations, 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. The Applicant should also indicate whether the financial assurance at the amounts needed would be available from providers. Robinson, TR

1133, lines 6-16. At the very least, the Applicant should show that it is capable of obtaining the financial assurance in the amount required by the permit.

6. **The proposed financial assurance is not based on sound methodology and these deficiencies should be reflected in the Proposed Findings of Fact and Conclusions of Law.**

There are serious flaws in the methodology used by the Applicant and the Bureau to arrive at the proposed financial assurance that are not, but should be, reflected in the Hearing Officer's Proposed Findings of Fact and Conclusions of Law. 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 Bureau 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 Bureau. 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 attributes of plants

to be used for revegetation 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.

Fourth, 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.

Finally, the Hearing Officer believes that because the Applicant and the Bureau both obtained estimates and because the methods used by the Applicant and the Bureau did not produce "grossly different results," the estimates are acceptable. However, the Hearing Officer overlooks the initial difference of over one million dollars between the Applicant's and the Bureau's estimates. This large difference was only reconciled *after* the hearing at which Mr. Paul Robinson testified about that topic. Further, the Bureau failed to get specifications for its estimates, and the "estimates" provided by the Applicant are admittedly interested third-party bids. The cost estimates obtained by the Bureau are unverifiable, and the cost estimates obtained from the Applicant are interested party bids. Both are less reliable than estimates from industry guide handbooks.

7. **The Hearing Officer's recommendations to add language requiring the installation of surface drainage ditches and the supplementation of the revegetation plan should be supplemented with additional findings of fact and conditions.**

CURE supports the Hearing Officer's recommendations to add language requiring both the installation of surface drainage ditches and the supplementation of the revegetation plan. These recommendations are based CURE's expert witness Paul Robinson and additional points from his testimony are necessary to adequately support the Hearing Officer's recommendations. These additions include more detailed findings of fact relating to CURE's expert testimony on issues of revegetation and erosion control, as well as the addition of deadlines for compliance with the Hearing Officer's recommendations and the opportunity for public involvement. The following proposed facts and law are necessary to support the Hearing Officer's Proposed Findings of Fact and Conclusions of Law and the Hearing Officer's Report on revegetation and erosion control.

a. 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. In addition to his qualifications noted above, 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 in fact 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.[3] Robinson, TR 644, lines 16-21.

[3] David Cobrain, who testified for the Bureau, confirmed that the Department Secretary may extend the post-closure care period at the end of the 30 year period. Testimony of David

The following findings of fact should therefore be included in the Hearing Officer's Proposed Findings of Fact and Conclusions of Law:

1. 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.

2. 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.

b. <u>The Application does not propose adequate measures for control of erosion.</u>

The Hearing Officer relied on Mr. Robinson's testimony and agreed that the permit lacks specific performance standards for the cover. The deficiencies noted by the Hearing Officer in the Hearing Officer's Report are not reflected in the Hearing Officer's Proposed Findings of Fact and Conclusions of Law. The specific findings of fact Mr. Robinson testified about are

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Cobrain (hereinafter "Cobrain"), TR 896, lines 7-16.

necessary to support the Hearing Officer's Report.

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 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 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.

The following findings of fact should therefore be included in the Hearing Officer's Proposed Findings of Fact and Conclusions of Law:

1. 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.

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

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

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

5. 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.

6. 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.

7. 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.

8. 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.

9. 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.

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

11. 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.

c. 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. While the Hearing Officer agreed the permit section on revegetation should be more specific, the Hearing Officer's Proposed Findings

of Fact and Conclusions of Law do not support the Hearing Officer's recommendations.

In his testimony, Mr. Robinson 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.

The following findings of fact should therefore be included in the Hearing Officer's Proposed Findings of Fact and Conclusions of Law:

1. 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.

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

3. 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.

4. 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.

d. <u>The Application and Draft Permit do not propose adequate treatment of soil to be used for the Triassic Park cover.</u>

The Hearing Officer also agreed the permit section on soil cover and treatment should be more specific, but the Hearing Officer's Proposed Findings of Fact and Conclusions of Law do

not support the Hearing Officer's recommendations.

Mr. Robinson 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-growing 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.

The following findings of fact should therefore be included in the Hearing Officer's Proposed Findings of Fact and Conclusions of Law:

1. 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.

2.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.

3. 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.

4. 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.

5. 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.

6. There is no attention given to the quality of the soil cap necessary to establish and 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.

7. 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.

8. 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.

9. 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.

e. **The Application and Draft Permit should be denied because of these deficiencies, or in the alternative, additional conditions should be imposed on the Applicant.**

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.

In the alternative, the Hearing Officer's recommendations to supplement the erosion control and revegetation plan should be implemented with a deadline by which both conditions must be met. The information submitted should also be subject to public review and comment.

8. Conclusion

The testimony pertaining to these deficiencies was not rebutted by the Bureau or by the Applicant. There is no question that significant amounts of water are needed, that the possibility of premature closure exists, that the proposed facility will initially be 30 to 40 acres instead of 10 to 20 acres, and that the methods both the Bureau and the Applicant used in estimating the costs for the hazardous waste landfill are not verifiable. 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.

B. CURE's Unrebutted Expert Testimony -- Including Commonly Accepted Definitions of Groundwater Monitoring Systems, Vadose Zone Monitoring Systems, the Applicant's Failure to Use the Highest Hydraulic Conductivity, Fast Flow Paths, And the Most Effective Tests For Determining the Presence of Fractures – Illustrates That the Groundwater Monitoring Variance Granted to the Applicant by the Bureau Violates the Regulations.

The evidence presented by George Rice on behalf of CURE including definitions of groundwater and vadose zone monitoring systems, fast flow paths, and effective tests used to determine the presence of fractures or fast flow paths is uncontroverted and should therefore be adopted in the Hearing Officer's Proposed Findings of Facts and Conclusions of Law.

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 Bureau 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. In the alternative, the variance should only be granted with conditions in addition to those proposed by the Hearing Officer.

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. Furthermore, the Hearing Officer and the Bureau relied on Mr. Rice's testimony for recommending additional monitoring wells.

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. Mr. Rice offered unrebutted testimony on the commonly accepted definitions of aquifers, groundwater monitoring systems and vadose zone monitoring systems that shows the Applicant has not proposed a vadose zone monitoring system or even a monitoring system capable of detecting early leaks.

During the hearing held in this matter, George Rice testified about commonly accepted definitions of aquifers, groundwater monitoring systems and vadose zone monitoring systems. The Applicant and the Bureau did not contest these definitions during the hearing. In fact, the Bureau, in its post-hearing submittals and comments noted that the "terminology used in the

Triassic Park Permit is unconventional." New Mexico Environment Department Proposed Findings of Fact and Conclusions of Law, App. I, Res. No. R117. Both the Bureau and the Applicant continually asserted, without directly addressing the fact that what both call a "vadose zone monitoring system" is actually a "groundwater monitoring system," that the monitoring system the Applicant proposed was protective of human health and the environment. In reality, the Applicant's monitoring system will not monitor unsaturated flow, and may not detect saturated flow from the landfill.

a. <u>The definitions of groundwater and vadose zone monitoring systems are not contested.</u>

The monitoring system the Applicant proposes does not fit the generally accepted definition of vadose zone monitoring system, and because the Bureau granted the groundwater monitoring variance based on the condition that the Applicant implement a vadose zone monitoring system, the variance should not be granted or, in the alternative, granted only with conditions beyond those recommended by the Hearing Officer.

Mr. Rice testified, and his testimony was unrebutted, that an aquifer is defined as a saturated zone from which water can be withdrawn in economic quantities. George Rice, TR 499 lines 5-16. Groundwater monitoring systems are intended to monitor the uppermost aquifer by monitoring liquids moving as saturated flow in the subsurface. These systems may be used to determine the direction of flow, the flow rate, and water quality. Rice, TR 437 lines 6-11. The groundwater monitoring system typically consists of monitor wells. <u>Id</u>.

In contrast, vadose zone monitoring systems are designed to monitor liquids moving as unsaturated flow in the subsurface. Rice, TR 437 lines 17-25. 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. Id. 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 438 lines 1-13. These types of 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.

b. The Applicant's proposed monitoring system will not detect unsaturated flow, which is the most likely flow to occur first, and it may not detect saturated flow.

The Hearing Officer states she understands Mr. Rice's testimony and further states that accurate release detection is crucial. The Hearing Officer believes the monitoring wells will be the most likely system to detect a leak in the landfill, but failed to take into account the placement of the wells and sumps, and further relied on an unexplained statement by the Bureau in making her recommendation.

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.

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.

Further, the liners that the Applicant proposes to use will only last a maximum of 50 to 100 years assuming that they are installed properly. Rice, TR 444, lines 11-25. 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. If some leachate ever reached the sump, it would only enter the sump as saturated flow. The sumps and wells the Applicant proposes are therefore part of a groundwater monitoring system.

Finally, if the Applicant, as the Hearing Officer reports, is committed to implementing a vadose zone monitoring system, and because Mr. Rice's definitions of groundwater monitoring and vadose zone monitoring systems were not contested, then the Applicant should be required to install suction lysimeters and neutron probe access tubes. The Bureau's only testimony regarding the use of these instruments was given by Steve Pullen. Mr. Pullen's testimony against the reliability of suction lysimeters and neutron probe access tubes should be discounted because he did not explain his testimony or discuss the basis of his testimony.4

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4 Applicable federal regulations do not define "vadose zone monitoring." However, 40

4. **Mr. Rice's testimony about the importance of hydraulic conductivity in calculating the maximum rate of liquid migration should be adopted in the Hearing Officer's Proposed Findings of Fact and Conclusions of Law.**

The Applicant and the Bureau both agreed that the Applicant used an average hydraulic conductivity figure, not the highest hydraulic conductivity, for its calculations. As a result, the Applicant did not calculate the maximum rate of liquid migration. Although the Bureau and the Hearing Officer recommend additional monitoring wells that may be used to determine the actual hydraulic conductivity, this information will come too late for the public, other parties and the Bureau to use in evaluating the validity of the Applicant's hydrology investigations. The following evidence should be included with the Hearing Officer's Proposed Findings of Fact and Conclusions of Law to reflect the true nature of the Applicant's calculations.

First, Mr. Rice reviewed the information provided by the Applicant for its ground water monitoring waiver. 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.

Second, Mr. Rice 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

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CFR 264.278 relating to Land Treatment requires the use of a vadose zone monitoring system and defines this system as soil-pore liquid monitoring devices such as lysimeters to monitor the

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.

Finally, in addressing this issue for the Bureau, 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), and noted that cross-sections provided by the Applicant illustrated a pathway of at least 3,000 feet in the higher permeability units along

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unsaturated zone.

the contact between the Upper and Lower Dockum. (Pullen, TR 823 lines 2-4). He did not explain how his approach could be consistent with the requirement of the Regulations.

5. The Hearing Officer's recommendation to install additional monitoring wells should be supported by corresponding facts in the Hearing Officer's Proposed Findings of Fact and Conclusions of Law.

The Applicant did not present information demonstrating that it knows where the closest groundwater to the facility is or that it can predict the shortest time that it would take leachate to reach groundwater. These facts are not reflected in the Hearing Officer's Report and should be added to the Hearing Officer's Proposed Findings of Fact and Conclusions of Law to support the Hearing Officer's recommendation. In addition to the Hearing Officer's recommendation for additional monitoring wells, any water found in the four wells should be subject to hydraulic testing and chemical analyses.

a. Additional facts should be added to the Hearing Officer's proposed findings of fact and conclusions of law.

George Rice testified that the Applicant has not done the necessary hydrologic investigations to determine whether a groundwater 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 Bureau'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

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[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.

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 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

The Bureau 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 groundwater in the Upper Dockum and Lower Dockum formations 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.

b. <u>If the groundwater monitoring variance is not denied, additional conditions should be recommended.</u>

In the event that the groundwater monitoring variance is not denied, CURE supports the Hearing Officer's recommendation for additional monitoring wells. In addition to this recommendation, hydraulic testing and chemical analyses of water samples should be required in each well where a sufficient amount of water is encountered. In addition, the vertical well into the Lower Dockum should be cored throughout its length, and the core should be available for examination by the public.

6. 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 evidence presented both by Mr. Rice and by the Applicant show that the Applicant's estimates 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. See Rice, TR 440 lines 17-21, 450 lines 3-12; Corser, TR 1031, lines 22-25. Although the Hearing Officer and the Bureau propose additional monitoring wells in part to determine whether there are fractures or fast flow paths, the following additional findings of fact and conclusions of law should be added to the Hearing Officer's Report to support her recommendations.

a. The Applicant Provided Cross Sections With Evidence of fractures and admits it may have missed fractures or fast flow paths because the Applicant did not conduct angle coring.

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.

The following findings of fact should therefore be included in the Hearing Officer's Proposed Findings of Fact and Conclusions of Law:

1. 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.

2. 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.

3. 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.

4. 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.

5. 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.

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

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

8. 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..

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

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

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

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

13. 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.

14. 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.

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

16. 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.

b. In addition to the monitoring wells recommended by the Hearing Officer, angle coring should also be conducted and the results of both subject to review and comment by the public.

The Applicant 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 liquid

migration. In order to determine the presence of such features, the Applicant should be required to conduct slant drilling or angle coring. As with the vertical well, the angled hole should be cored throughout its length, and the core should be available for examination. The results of both should be available to the public and a chance to comment on the results and cross-examine the Applicant and the Bureau should be afforded.

C. <u>The Bureau and the Applicant are depriving CURE and other members of the public of their right to meaningful participation in this proceeding.</u>

The Regulations require that there be opportunities for public involvement. The Regulations set forth extensive requirements for providing notice to the public when the Bureau 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 Bureau 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 Bureau 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 Bureau makes its decision. In this matter, however, both the Bureau and the Applicant have prevented that participation, particularly by members of the public who neither speak nor read English. By failing to deny an inadequate application for a hazardous waste disposal permit, and then by imposing conditions for additional study or the submission of additional information without an opportunity for the public to review and comment on the new information, the Bureau is denying CURE and other members of the public their right to meaningfully participate in the process and to ensure that their health and the environment are protected. This is specifically a problem with respect to the additional monitoring wells, information on the revegetation plan and erosion control, and the allowance of the Applicant to submit evidence that it is prepared to effectively cope with emergencies under its contingency plan only a short time before the facility opens.7

III. CURE Proposes Several Non-Substantive Changes for Purposes of Clarification.

To prevent future confusion and to clarify the points made in the Hearing Officer's Report and the Hearing Officer's Findings of Fact and Conclusions of Law, CURE respectfully suggest minor changes to those documents. First, the minor errors included in the Hearing Officer's Proposed Findings of Fact and Conclusions of Law include the following. The section titled "Description of the Proposed Triassic Park Facility And Site" does not contain any

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7 The permit requires the Applicant to contact emergency responders and initiate the training process no later than fifteen days prior to acceptance of waste. The Applicant should be required to provide the critical emergency response information at least 45 days before the

proposed facts clarifying that this permit is a permit for Phase I of three phases contemplated by the Applicant. Nor does that section contain a statement that this is the first and only application for a RCRA Subtitle C hazardous waste disposal site in New Mexico. TR p1140 lines 3-8. As such, the Bureau 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. These facts clarify what the permit is being issued for and are pertinent to the application of the applicable regulations.

Page 1, paragraph 2 states "the facility will accept polychlorinated biphenyl (PCB) wastes that are not regulated by Toxic Substances Control Act (TSCA)." The proposed facility will also accept other wastes and a statement to that effect should be added to clarify that the Applicant will be accepting more than PCB wastes not regulated by TSCA. "[C]ompromised" on page 4, paragraph 16 should be "comprised." Page 20, paragraph 33 states that Bureau Exhibits iv. and v. are attached. These documents are not attached and those statements should be corrected. Because the Hearing Officer adopted in large part the New Mexico Environment Department's (hereinafter "Bureau") Proposed Findings of Fact and Conclusions of Law, it is unclear which "paragraph 12" is referenced on page 30, paragraph 17. There are two paragraphs numbered 20. The second paragraph should be re-numbered "21" "[W]ell" in paragraph 3, page 50 of the Hearing Officer's Report should be "wells."

Finally, the Hearing Officer's Proposed Findings of Fact and Conclusions of Law state on page 30, paragraph 16 that six criteria currently missing from the draft permit are necessary as a basis for evaluation of the completeness, accuracy and adequacy of acceptable knowledge for

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anticipated start up and have that information available to the public for comment and review.

waste analysis. However, the Hearing Officer's Report does not reflect this finding of fact and corresponding conclusion of law. A corresponding statement would be appropriate.

Second, CURE also suggest the following non-substantive changes to the Hearing Officer's Report. "[F]racture sand buried stream channels" on page 31, paragraph 1 should be "...fractures and buried stream channels." The statement "...the San Antonio landfill facility" on page 33, paragraph 5 should be "...a landfill in Mexia, Texas." Finally, "unsaturated flow [sic?] on page 35, paragraph 5 should be "saturated flow."

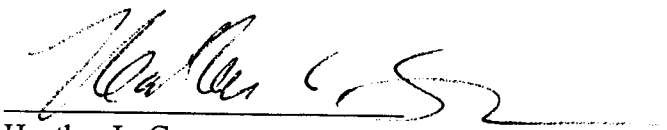
IV. Conclusion

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 Deparmtent, 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 Bureau makes its decision to approve or disapprove them.

Dated: February 15, 2001.

Respectfully Submitted,

NEW MEXICO
ENVIRONMENTAL LAW CENTER



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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)

CERTIFICATE OF SERVICE

I certify that on December 17, 2001 copies of Comments On Hearing Officer's Repoert And Hearing Officer's Proposed Findings Of Fact And Conclusions Of Law were served upon the following counsel of record and parties in the manner indicated:

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A copy of the foregoing was also hand delivered to Hearing Officer Felicia Orth.

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