

LANL Renewal Permit (November 2010)

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1. Open Burn

Public comment

The Department has received numerous comments both for and against the Department permitting the open burn process. Approximately 1,400 individuals registered their opposition to continued open burning, principally by signing petitions or submitting a form letter. Approximately 140 individuals registered their support.

Against:

The principal objection to open burning is that the use of unconfined burning to treat high explosives results in uncontrolled releases to the atmosphere. Citizens have cited unacceptable risks to wildlife, public health, and the environment. Commenters point out that open burning is particularly objectionable to persons with allergies or other sensitivities to airborne pollutants.

Those opposed to open burning suggest that alternative treatment methods to open burning exist that would be more protective of human health and the environment. These individuals generally support requiring the Permittees to utilize a confined burn facility as an alternative to open burning.

Pro:

The principal argument in support of issuing the open burn permit is that disallowing open burning of HE would prevent or curtail important defense and national security missions at LANL. Commenters suggest that denying the open burn permit has direct and important impacts on homeland security, aviation security, terrorism prevention and response, military effectiveness and safety, and nuclear weapons policy. They suggest that national security is paramount, and environmental protection comes second.

Another concern regarding the denial is a perceived increased risk to the public and occupational risks if the explosive wastes are alternatively required to be transported on public highways to an off-site facility. These comments state generally that burning HE and HE-containing items in a controlled, remote part of LANL is far safer than requiring additional handling and shipping of these materials to another site.

Supporters suggest that the Department's evaluation of the LANL risk assessment documents lacks clarity with respect to what level of risk is deemed acceptable. Many supporters question the Department's protection of a small population of "neither threatened nor endangered deer mice."

Some supporters suggest that the quantity of emissions from LANL's open burn activities are negligible relative to the amount of pollution emitted by fireplaces and internal combustion engines in this state.

Supporters frequently suggest that the Department appears to be motivated by political rather than technical factors in issuing its intent to deny and that the Department's permitting policy is inappropriately tied to public opinion. Some supporters suggest that denial of the OB permit means lost jobs and revenue for New Mexico.

The Permittees object to the Department's proposal to deny their request for a permit to treat high explosive hazardous waste by open burning at TA-16. The Permittees provided considerable testimony at the hearing asserting that their high explosive open burning process is safe and had they been provided the opportunity they could have demonstrated the accuracy of this proposal.

The Permittees argue that the Department did not give them notice that a more refined analysis, based on the lowest-observed adverse effect level ("LOAEL") would be necessary. They then suggest that the Department proposes to deny the permit based on grounds that, as a consequence, were unknown to them.

The Permittees assert that the Department issued the Notice of Intent to Deny based on the results of the air modeling that was flawed in various respects, showed a potential risk from only one of the burn units, and that it used ammonium perchlorate as a surrogate. The Permittees further argue that the risk analysis based on soil sampling is "flawed" because past burn activities are not necessarily representative of future burn activities.

The Permittees make two procedural arguments. First, they contend that the Department failed to complete a technical review of the permit application, in particular the January 2010 risk assessment. Second, the Permittees contend that the Department "refused" to consider the second revision of the risk assessment, which the Permittees submitted for the record on May 6, 2010 during the hearing. The Permittees argue this refusal deprives them of their due process rights. In support of their contention, the Permittees state that the Department's expert "was directed to 'not review'" the submitted revised risk assessment.

The Permittees next argue that the Department's proposal to deny the permit based on public opposition is "unreasonable." The Permittees contend that the "unsubstantiated public opinion" would not alone support permit denial. Finally, the Permittees contend that the Department's proposal to deny the open burn permit based on possible alternatives to open burning is "unreasonable" and "not based on substantial evidence."

Department response

The Department's denial of the Permittees' application for a permit to open burn hazardous wastes is due principally to an apparent unacceptably high ecological risk to small animal biota as described above, and the Permittees' failure to address this risk and resolve the uncertainties in the assessment in their application. Documentation, provided by the Permittees just prior to and during the hearing and asserted by the Permittees to demonstrate that these risks were inappropriately determined and that procedures could be put in place to minimize or eliminate the creation of additional contaminants of concern, was provided too late. The Department's denial also is in part due to considerable public opposition to open burning and the Permittees' incomplete evaluation of alternatives to the process.

The Department upholds its February 2, 2010 intent to deny the application for open burning fundamentally because the Department can only act on information in the record at the time that it makes the determination. The Department cannot act on, other than through denial, unfounded assertions, speculation, or reports and analysis and tests done that have never been submitted for consideration. At some point, over the years of looking at the application, and trying to work with the Permittees to obtain those materials, the Department has to make a determination. The Department clearly cannot use for its determination information or tests that were submitted after the determination was made. Clearly, the revised risk assessment and thermal data submitted by the Permittees on March 19, 2010 had not been reviewed by the Department by February 2, 2010, the date the Bureau was done drafting the Permit and put its decision forward. Critical technical information needs to be in the application and it needs to be in the administrative record.

Nevertheless, the ecological risk assessments that the Permittees prepared showed elevated risk levels for certain indicator species. The elevated risk levels were expressed as hazard index ratios greater than 1.0. As a matter of agency policy, the Department applies a target level for ecological risk of no greater than 1.0. The Department has established this target level for all hazardous waste facilities in the State and the Department established this target level in the March 1, 2005 Consent Order.

The Permittees contend that “[b]ased on EPA guidance, typically a hazard index of 1 to 10 may not indicate adverse effects to organisms, while ratios less than 3 are conservatively acknowledged to not indicate adverse effects to organisms.” The Permittees attribute this statement to EPA. However, they also referenced a 1983 published paper written by Dourson and Stara, two EPA employees. The Dourson and Stara paper contains a significant caveat: “[This article] has not been subject to [EPA’s] required peer and administrative review and, therefore, does not necessarily reflect the view of the Agency and no official endorsement should be inferred.” The statement attributed to EPA is not based on EPA guidance. And it is contrary to the Department’s written, consistently-applied policy.

Regarding the Permittees argument that the Department did not give them notice that a more refined analysis based on the lowest-observed adverse effect level (“LOAEL”) is necessary, the Permittees mischaracterize the significance of a LOAEL analysis. The Department does not deny the permit based on the lack of a LOAEL analysis. The Department denied the permit because the screening risk assessment shows an elevated ecological risk, one that exceeds the Department’s target risk levels. A more refined risk assessment, such as one that uses a LOAEL analysis, might well show a lower ecological risk level. If the NOAEL-based assessment results

in a hazard quotient greater than the target level of 1.0, additional refinements are needed. Typically, a less conservative toxicity reference value based on the LOAEL is applied.

The Permittees had every opportunity and reason to perform a more refined site-specific risk assessment that utilizes the LOAEL in the risk calculation. The Permittees were made aware long before the hearing of the need for a LOAEL analysis or the need for further refinement of the risk assessment because the laboratory was provided with advance copies of drafts of the Fact Sheet for the July 6, 2009 permit. That Fact Sheet says "a risk assessment [referring to a risk assessment on the open burning units at 388 and 399] must include a statistically appropriate number of soil samples and may either confirm or refute the screening levels assessment's prediction of an unacceptable level of risk to biotic receptors. Such a risk assessment has not been conducted." This language suggests that the screening level assessment showed that there may be unacceptable risk and that a more refined risk assessment needs to be done. Subsequent to that, this issue of a more refined risk assessment was discussed with the Permittees on July, August, and November of 2009. On January 13, 2010 the Department informed the Permittees in clear and uncertain language that we intended to deny the permit because the risk assessment was equivocal and the Department must err on the side of the protection of human health and the environment. Finally, the February 2, 2010 Fact Sheet presents performing a LOAEL analysis as being a possible way of refining the risk assessment. The normal procedure when a screening level risk assessment fails is to perform a more refined or a site-specific analysis. There are a number of ways to do that and utilizing a LOAEL is one way. This process of regulator-regulatee communication is typical of the permit application process. It was the responsibility of the Permittees to prepare a risk assessment, refined as necessary, to demonstrate that open burning could be conducted without creating an elevated risk to humans or to ecological receptors, and to include that risk assessment in their permit application. They did not do so.

The Department has other concerns regarding the Permittees' January 8, 2010 risk assessment besides the lack of a LOAEL analysis. That assessment does not consider spatial analysis or the patterns of concentrations of contaminants on the ground and their coincidence and co-location with predicted patterns from the laboratory's air model. That assessment does not address whether or not the contamination is due to historical practices near the burn sites.

Regarding the Permittees' assertion that the Department issued the Notice of Intent to Deny based on the results of the air modeling and that the Department's air modeling was flawed, while these arguments are not well-founded on their merits, they are largely beside the point. The Department and the Permittees did not rely on the air modeling to reach the conclusion that open burning at TA-16 would create elevated risk. The Department used the modeling as a first step to conclude that there was a potential for elevated risk, and more importantly, to assess the depositional pattern of contaminants. In evaluating the ecological risk, however, the Department, and the Permittees, relied on the actual data from the chemical analysis of soil samples taken from the TA-16 burn grounds.

Regarding the Permittees' argument that the risk analysis based on soil sampling is "flawed" because past burn activities are not necessarily representative of future burn activities, the Permittees' have failed to demonstrate how open burn activities will change from the past to the future. The Department remains concerned that, from an emissions standpoint, the materials proposed to be burned might be capable of generating dioxins and furans through the treatment process of burning. The Permittees' Thermal Data Collection Report presented March 19, 2010 has some issues that the Department might have been able to resolve had there been time to

perform a detailed review, *e.g.*, there is only temperature data from TA-16-388 and there is no data from TA-16-399.

Regarding the Permittees' contention that the Department "refused" to consider the second revision of the risk assessment, the Permittees do not mention that the expert had been handed the document during her cross-examination at the hearing and had been given the opportunity to review it during a one-hour recess in the midst of her cross-examination. That witness testified that the document requires a thorough reading and review before concluding any technical decision. The Permittees further state that the Department's testimony on whether the Department would consider the revised risk assessment "was conflicting and inconsistent." On the one hand, according to the Permittees, the Department testified that the Bureau could not consider information submitted after the Notice of Intent to Deny, while on the other hand the Department testified that the Department would consider all public comments submitted during the comment period. The Department did not consider the revised risk assessment when it issued the proposed Notice of Intent to Deny on February 2, 2010 because the Permittees had not then submitted the document. There was nothing inconsistent, conflicting, or at all incorrect in the Department's testimony. And, more to the point, there was no denial of due process.

Regarding the Permittees' argument that the Department's proposal to deny the permit based on public opposition is "unreasonable," in support of their argument, they minimize the public opposition as consisting of form letters and a petition; as making no reference "to studies, monitoring, modeling or any other factual support"; and as being uninformed because the risk assessment showed no potential for adverse effects to human health.

Of course, the Department has not relied on public opposition alone. The primary basis for the denial is the elevated ecological risk. But public opposition is nevertheless an important consideration. The Department Secretary is required by law to "give due consideration and the weight he [or] she deems appropriate to all comments received during a public comment period." As the New Mexico Supreme Court recently stated, the courts have "emphasized that legislative policy favors the public's ability to participate meaningfully in the landfill permitting process." The courts have also "recognized the importance of vindicating the general public's right to participate in the permitting process and the important interest in insuring that modifications to a landfill permit do not adversely affect the quality of life of the surrounding community." And the courts "have protected and promoted the role of public input in the Department's decision to issue a permit." Although the court was discussing a landfill permit, its observations are equally compelling here.

Regarding the Permittees' contention that the Department's proposal to deny the open burn permit based on possible alternatives to open burning is "unreasonable" and "not based on substantial evidence," this consideration was not the primary basis for the denial. But the lack of an up-to-date analysis of alternatives to open burning, and the likely existence of such alternatives, is nevertheless an important consideration.

The Permittees did not satisfactorily demonstrate to the Department by the time decisions had to be made on February 2, 2010 that a viable alternative for the proposed OB wastes or a portion of the wastes does not exist. In fact, it was revealed to the Department at the hearing that a large percent of the proposed wastes could be shipped off-site. At the hearing a LANL witness testified that the maximum quantity of high explosive wastes that could be burned at TA-16

could be reduced to 6,000. This limit was not part of the permit application nor was it proposed in any document submitted subsequent to the permit application.

Regarding confined burning of high explosive waste, the Department would prefer this technology and the associated capability of controlling and monitoring emissions to the atmosphere. The Department believes that confined burn boxes are available for small scale explosions involving small amounts of waste and that these units cannot accommodate large pieces of HE contaminated equipment, *e.g.*, vents or duct work.

It has not been demonstrated to the Department that these large pieces of equipment could not be either transported to another treatment facility, either in their present form or in a way in which they're desensitized or stabilized, and they must be treated onsite. Another limitation on confined burn units is its ability to treat particular types of explosive wastes due to the availability of oxygen needed to completely destroy those wastes.

The Permittees assert that the high-explosive waste currently treated at the open burn units cannot be safely transported on roads and that U.S. Department of Transportation regulations prohibit such transport for that reason. The Department disagrees with that assertion. High explosive transportation risks are not addressed in New Mexico's Hazardous Waste Act and Hazardous Waste Regulations and are therefore beyond the Department's authority to regulate, however the Department believes that the transportation of stabilized high-explosives is allowed under the Department of Transportation regulations outlined in 49 CFR. The explosive waste generated at LANL would be shippable as long as it was stabilized properly as a D003 EPA Hazardous Waste. In fact, all reactive wastes that are treated at TA-16 are transported from the point of generation to the treatment units by vehicle, albeit not on public roads. The Permittees have not provided any information in their permit application or in any supplemental material demonstrating that the wastes generated at LANL for treatment at TA-16 should be not considered stable, or cannot be stabilized, and are therefore unsafe for transport.

The stability of explosive wastes generated at LANL and treated at TA-16 can be stabilized depending on the form of the explosive and other factors. RDX, by itself and in combination with other materials, can be stabilized, but the Department has not been provided with information about what steps the laboratory takes to stabilize these wastes. These explosives are generally manufactured to be stable to be able to be transported, and these types of substances are frequently transported on public highways. These compounds are generally designed to be transported, to be safe, and they generally need an ignition source other than simply transporting them to cause a burn or a detonation.

National Security/Economics: The Department understands that LANL's explosive research program has national security and economic ramifications. However, national security and economics are not factors addressed in hazardous waste permitting under New Mexico's Hazardous Waste Act and Hazardous Waste Regulations.

Changed Permit provisions

None.

2. Information Repository

Public Comment

The Department received numerous comments regarding an information repository at LANL associated with its hazardous waste operations. Approximately 120 commenters, including the U.S. EPA, support a permit requirement that LANL establish both a physical and electronic repository. The Permittees and three commenters suggest that the electronic repository should suffice.

Proponents of both a physical and electronic repository often reference the U.S. EPA's enhanced public participation guidelines calling for early, often, meaningful and continuous public involvement. Inclusion of a physical repository is argued to be an act of restorative justice and a means to meet the needs of all communities, including both urban and rural communities and future generations. "A basic tenet of democracy is transparency and all community members should have access to the information needed to make informed comment and decisions."

Comment in support for having an information repository containing paper copies of relevant documents generally requests that the repository be located in the Espanola Valley, preferably at Northern New Mexico College. These commenters explain that they live in a community that is directly affected by experiments performed at LANL and that they are very concerned about the environmental health risk associated with these activities. They explain that their concern stems principally from a lack of information about LANL and their inability to understand the many technical and legal issues associated with LANL's hazardous waste management and cleanup.

Comment justifying a physical information repository often refers to difficulties associated with an electronic repository, particularly difficulties operating and getting access to computers and the internet. These commenters reference their concerned neighbors that cannot afford computers or have had difficulties obtaining access to computers at area libraries, or simply lack the technical skills to access an electronic repository. One commenter states "it is a form of disrespect to people who have maintained the land for generations to impose this technology on them without helping them." Another commenter points out that most people in Northern New Mexico do not have broadband internet access.

Commenters propose that Northern New Mexico College is the appropriate location for a physical information repository. They argue that a physical information repository at an institute of high learning would facilitate participation and meaningful involvement and provide a place for individual, student, and community learning and research about LANL's hazardous waste operations. Commenters propose that the physical repository have an on-site staff trained in its maintenance and able to assist local citizens in their quest for information. The physical repository should include "permit documents, maps, regulations and any equipment necessary to download, print and/or copy the information."

Comment arguing that the information repository should be limited to an electronic repository references the timeliness of adding documents to such a repository and the ability to ensure it is not tampered with and remains accurate. Support for limiting the repository to an electronic

form refers to the unnecessary consumption of physical resources associated with a physical repository, particularly the necessary paper and the fuel needed to transport people to the repository. Supporters of an electronic repository point out that access to such a repository is preferable for working people because it is available 24/7. It is the Permittees' position that a virtual repository will provide the most accessibility and will support the goals of transparency and providing information to the public.

Commenters propose that the information repository contain historical documents associated with hazardous waste at LANL and corrective actions documents, including those associated with the March 2005 Compliance Order on Consent.

One commenter points out that "66 percent of residents of Rio Arriba speak a language other than English" and suggests that the repository should be available in the appropriate languages of the impacted communities as requested.

Department Response

The Department is committed to issuing hazardous waste permits in a context of transparency and public participation. To accomplish this, the Department has encouraged the Permittees to collaborate with interested parties to determine an effective and reasonable information repository.

The Department considers an electronic information repository in comparison to a physical repository to be more readily accessible and therefore more likely to be utilized, and that an electronic information repository will engage the maximum number of interested persons. The Department has found that there are more than 1,000 computers available for public use in connecting to the Internet at locations in northern New Mexico. Such computer access, together with privately owned computers, provides many more points of access to the information repository than would be given by a single physical office. The Department considers the permit requirements associated with an electronic information repository to be easier to enforce because the Department can get access to an internet-based information repository at any time.

The Department nevertheless also supports a physical repository, as has been expressed by most commenters on this issue. The Renewal Permit provides for the permittees to have both a physical information repository containing paper documents and an electronic information repository accessible through the Internet.

The Department does have some reservations about a physical repository. The Department's experience is that physical information repositories are often incomplete and the documents are difficult to retrieve. Physical repository documents and maps are susceptible to theft and tampering and they impose a burden on third parties to ensure that documents are not removed or altered. All in all, physical repositories are shown not to work very well.

At the hearing the Department heard for the first time from an official that of Northern New Mexico College that the College supports locating the IR at its facility. The Department considers Northern New Mexico College an appropriate location for this physical repository. The Department also understands that many commenters have expressed a vision for Northern New Mexico College that is something broader than just information under the permit or an information repository, that it would support environmental education efforts throughout Northern New Mexico.

As stated above, the Renewal Permit requires the Permittees inform the Department within 180 days of the effective date of the permit of the location, nature and normal business hours of the physical information repository. That provision works both ways. One, it gives the Permittees time to work out these details with the college or perhaps, if that falls through, with another entity that might house the physical repository, as well as providing time to have discussions with the Department or with other parties who have an interest in such a physical repository.

In any event, the Department maintains a physical copy of documents in the information repository in its Administrative Record, which is also available for public access at the Environment Department, Hazardous Waste Bureau office

Changed Permit provisions

1.10 INFORMATION REPOSITORY

The Permittees shall establish both an electronic Information Repository (IR) accessible through the internet on the Permittees' environmental web site and a physical IR containing paper documents. (See 40 CFR § 124.33(d))

The Permittees shall ensure that the electronic and physical IRs contain, unless specified otherwise, the following documents:

- (1) The Permittees' Part A and Part B Permit Applications associated with the permit renewal;
- (2) A link to this Permit as it appears on the Department's website (electronic IR only);
- (3) Permit modification requests associated with this Permit submitted pursuant to 40 CFR § 270.42 and any associated Department responses;
- (4) The Waste Minimization Report submitted pursuant to Permit Section 2.9;
- (5) The Biennial Report submitted pursuant to Permit Section 2.12.5;
- (6) Corrective action documents submitted pursuant to Permit Part 11;
- (7) Notices of deficiency or disapproval (NODs), NOD responses, final approval letters, and Department directions associated with the documents identified in Paragraphs 1, 3 and 6, above; and
- (8) Notices of violation (NOV), administrative compliance orders, responses required by the Department, and Department directions associated with this Permit.

(See 40 CFR § 124.33(c))

Within 180 days of the effective date of this Permit, the Permittees shall establish the electronic IR, and inform the Department of the location, nature, and normal business hours of the physical IR. (See 40 CFR §§124.33 and 270.30(m)).

The Permittees shall add new documents to the IRs within ten days after the documents are submitted to, or received from, the Department. (See 40 CFR § 124.33(f))

The Permittees shall inform the public of the existence of each ~~the~~ IRs by the following methods:

- (9) written notice to all individuals on the facility mailing list 30 days after the IR becomes operational;
- (10) public notice in area newspapers, including the *Santa Fe New Mexican*, the *Albuquerque Journal*, the *Rio Grande Sun*, the *Taos News*, and the *Los Alamos Monitor* when the IR becomes operational;
- (11) continuous notice on the Permittees' environmental home page of the existence of the IRs; and
- (12) in the public notice for any of the Permittees' requested permit modifications.

(See 40 CFR § 124.33(e))

The Permittees shall ensure that the electronic IR includes an electronic index of the documents contained in the IR that identifies each ~~all~~ document by titles, publications dates, authors, and any identification number, such as a Los Alamos Unrestricted Release (LAUR) numbers, ~~where applicable~~. The Permittees shall ensure that all-any documents maintained in the electronic IR are searchable by title, date, author, identification number, and individual words and phrases, and that all such documents are printable.

The Permittees shall conduct annual training to inform inexperienced computer users of how they can access and utilize the electronic IR. The Permittees shall inform the public of this training 30 days prior to the training by methods specified in Permit Section 1.10(9) through (11). The Permittees shall document the training content and all efforts to inform the public in the Facility Operating Record.

3. Public Participation

Public Comment

Almost all comment regarding public participation generally suggests that the permit include specific, detailed, and mandatory requirements for the Department, DOE, and LANL to consistently and without fail to provide enhanced participation for timely, continuous, and meaningful contact with the public regarding hazardous waste management at LANL. Some comment suggests that to date the Department, DOE and LANL have been very lax in fulfilling these public participation requirements. One commenter states “there is a perception that government agencies ‘go through the motions’ of asking for and receiving public comment and opinions but that those comments and opinions are disregarded and big business interests prevail.”

Many commenters suggest the permit must address public participation with the Consent Order and the corrective action process associated with Areas G, H, and L.

Department Response

The public's participation in LANL's hazardous waste management activities has been, and will likely continue to be, significant. The Department concurs with the principle premise of the comment and includes in the Renewal Permit the numerous requirements referenced above to make public participation early, often, meaningful and continuous. The Department is committed to issuing hazardous waste permits in a context of transparency and public participation.

Several provisions in the Renewal Permit are not specifically based in RCRA or the HWA but serve to address concerns of nearby communities. For instance, there is a requirement for a Community Relations Plan and an Information Repository. Members of the public may receive e-mail notification of occurrences or notices of interest made to the Department under the Permit. Sampling data from environmental media investigations are to be made public through the Risk Analysis Communication Evaluation Reduction (RACER) data base. Based on public concerns there is notice to the Department of the prospective transfer of land that is subject to the Permit.

Furthermore, the Environment Department received a great deal of public comment expressing opposition to open burning of hazardous wastes at TA-16. During the 2009 public comment period on the revised draft permit, the Department received approximately 1,400 public comments opposing open burning. The Department must consider those public comments, both under its regulations, and it also must consider public opposition under the recent New Mexico Supreme Court decision in Colonias Development Council versus Rhino Environmental.

Permit Section 1.12 requires the Permittees to develop a community relations plan. This permit section is more comprehensive than most other New Mexico hazardous waste facility permit requirements regarding community relations plans. For example, within 180 days of the effective date of the permit, LANL must submit this document to the Department. It is one of the few documents submitted to the Department that is not subject to the Department's approval. The permit requires the Permittees to seek out input from the public, including local governments and pueblos, about what should be in the community relations plan, how these organizations can be better involved in the implementation of the permit, how they can be better informed about activities that LANL undertakes in relation to the permit, and what LANL can do to facilitate that involvement in an ongoing basis. Not only must LANL seek out that input, they must document that they received that input and they must put documentation of that input into their facility operating record. This permit section requires the Permittees to update the plan every year at which time LANL must ask the communities, the interested parties, and the pueblos, again how they can be better informed. Again, all input LANL receives must be documented in the facility operating record and it must be posted on their website for everybody to see. Through this process the Department will know what input was accepted and rejected by LANL and may better be able to facilitate community relations.

The Department is committed to conducting government-to-government consultation on matters of hazardous waste regulation at LANL that are of interest to affected pueblos. Such consultation is in keeping with the January 17, 2003 *Statement of Policy and Process* executed by Governor Richardson and reaffirmed in Executive Order No. 2005-004. DOE, as a federal agency, will continue to communicate with tribes and pueblos on a government-to-government basis in the same manner that state agencies do.

Permit Section 1.13 requires the Permittees to give interested members of the public notification by electronic mail upon the occurrence of certain notices made to the Department through the course of LANL's implementation of the permit. These notifications run the gamut from operational notices to certain corrective actions that the permittees might conduct under the permit to requests for variances from certain provisions under the permit. Interested persons would need to know that this e-mail notification exists. The laboratory has certain permit responsibilities to inform the public of this opportunity. Persons who are interested in these notifications would indicate so through the Permittees' website, providing their e-mail address and requesting e-mail notification. When specific events occur, the Permittees would have seven days to provide notification of that event electronically to the interested persons and they would have to provide an electronic link to associated documents. There are 18 such events and associated notifications in the permit for which the laboratory must provide electronic notification. A similar provision in the Waste Isolation Pilot Plant (WIPP) hazardous waste permit has proven very effective at keeping the public informed and often helps the Department make better decisions because it gets better input from the public.

Permit Section 1.10 requires the Permittees to establish an electronic information repository. The comments and responses associated with the information repository are addressed elsewhere in this response document.

RACER refers to Risk Analysis Communication Evaluation Reduction, a publicly accessible database of environmental data pertinent to LANL and environs though the internet. The RACER web site is administered and maintained by the New Mexico Community Foundation, and can be accessed at: <http://www.racernm.com>. Permit Section 1.10.1 provides that each month the Permittees must enter into the RACER database all data from sampling of environmental media conducted under the Proposed Permit that are entered into LANL databases. This time period begins when data is added to the Permittees' databases. It may take considerably longer than one month between collecting a sample, having it analyzed, verifying that analysis, and finally placing that data in a LANL database. These data are not associated with hazardous waste characterization.

From July 2008 to March 2009 the Department hosted a series of "Listening Sessions" to better understand northern New Mexico residents' issues and perceptions regarding LANL. The intent of the sessions was to provide a forum for the public to express their concerns and perceptions and for the Department to listen. The Department believes that by listening to what people had to say, the Department would often be better able to answer questions and to address communities' interests in Department regulatory actions at LANL.

The Department maintains an administrative record associated with LANL hazardous waste permitting activities. This record is available for the public to review during normal business hours. The record contains all documents associated with the Renewal Permit, including but not limited to permit applications, past permits, correspondence between the Permittees and the Department, public comments, and reference documents.

Changed Permit provisions

Other than the changes made in the Permit to information repository requirements, the Department has not made other alterations regarding public participation.

4. Environmental Justice

Public Comment

The Department has received numerous comments regarding environmental justice or injustice related to LANL operations in general and its hazardous waste operations in particular. Environmental justice claims range from New Mexico being a nuclear sacrifice zone, there being a high incidence of cancer in communities surrounding LANL, Native Americans' loss of traditional life styles, and the need to translate associated documents into the languages of impacted communities. However, the majority of environmental justice comments relate to the public's difficulty in participation in LANL's hazardous waste activity and the need for a physical information repository. These comments generally suggest that people of color, lower socioeconomic status, or both, do not have the necessary computer resources to access information regarding LANL's hazardous wastes through an electronic information repository and therefore a physical repository at NNMC would have a positive impact on participation and meaningful involvement.

Commenters suggest that the federal government, specifically the Department of Energy, has targeted New Mexico as a place where the activities of the "nuclear weapons complex ... have a free run" because the concerns of the Hispanic and Native American people who live here can be ignored. Other commenters plea that government officials must understand the high rates of cancer that we have in our communities, that we're affected by many of the things that go on at Los Alamos, and that Los Alamos and the state must study this situation.

Commenters state that the traditional and spiritual ways of life in indigenous nations near Los Alamos have been interrupted historically for centuries without compensation or protective measures, much less nation-to-nation diplomacy. Other commenters suggest that language is an issue with the recent census reporting that 66 percent of residents of Rio Arriba speak a language other than English. One commenter suggests "the repository should be available in the appropriate languages of the impacted communities ..."

Finally, commenters suggest that the government, both state and federal, doesn't listen to the needs of the community and instead dictates those needs. "[T]he community has historically at these meetings come and told you what they want, but you have consistently come and told us what we need."

Department Response

The Department is keenly aware that communities of color and minority or socioeconomically disadvantaged populations are living in the vicinity of LANL. We take it as our responsibility, to the extent practical and within the bounds of the law, to protect the interests of people in those communities. In so doing, we have paid attention to both New Mexico's and the EPA's environmental justice guidance and we have met the requirements under the Governor's Executive Environmental Justice Order during the development of the Renewal Permit. That Order requires utilization of available environmental and public health data to evaluate any potential incremental adverse impacts to low-income communities and communities of color from the management of hazardous wastes. The Department used these data and other information to establish the environmental performance standards in the Renewal Permit that ensure that there are no unacceptable risks to *any* population from the management of the hazardous wastes. Because there are no adverse human health or environmental impacts at the

LANL facility boundary, there cannot be any disparate impacts to any particular segment of the public beyond the facility boundary.

We have specifically incorporated the following concepts in our public involvement activities:

- 1) Meaningful outreach and public participation early and throughout the decision-making process is critical to identify and resolve issues, and also to assure proper consideration of public concerns.
- 2) Ensure that decision-making processes are open and accessible to all interested groups, including those with limited financial and technical resources, English proficiency, and/or past experience participating in environmental decision-making.
- 3) Full engagement of as many members of the affected community as possible in the discussions and decisions made regarding issues in their community.

As EPA has advised, the Department has sought to tap community views and concerns early in the permitting process. Notices and letters to interested persons are issued in Spanish as well as English. We conducted many listening sessions throughout northern New Mexico promptly after the first draft permit was made public, and after issuance of the Revised Draft Permit we held a large public meeting near Española. We have included representatives of minority communities in discussions of contested permit terms. The Department frequently consults with representatives of affected pueblos, including the San Ildefonso and Santa Clara Pueblos, on a government-to-government basis. Further, there are specific provisions in the Renewal Permit that enable affected communities to participate in the administration of the Permit. Many of the items about which e-mail notice would be given are also occasions for comment or participation by the public.

As New Mexico's guidance advises, the Department has considered impacts to vulnerable populations. When performing air dispersion models and risk assessments associated with the proposed open burning operations, the Department prohibits unacceptable exposures to all populations, including vulnerable populations outside the facility boundary. The Department carefully considers groundwater water quality impacts from all hazardous waste operations and past releases to ensure the availability of the resource to all populations. The Department has included a waste minimization requirement in the Renewal Permit. The Renewal Permit includes terms that require the Permittees provide information on hazardous releases from the facility and other exposures and risks to impacted communities.

Many of the comments regarding environmental justice involve topics that are outside the scope of the hazardous waste permit and the Department's regulatory authority. The Department does not have authority to direct the DOE's mission at LANL nor does it have authority regarding the environmental management of radionuclides. New Mexico's Environment Department is not responsible for, nor does it have any knowledge of, the existence of high rates of cancer in communities surrounding LANL that can be directly attributed to LANL. Regarding the suggestion to translate all documents in the information repository into the languages spoken by affected communities, the Department strives to translate all applicable documents and meetings, but given the voluminous amount of documentation associated with LANL's hazardous waste program, the multiple languages spoke in the affected communities, the limited resources to perform the translations, and the apparent satisfaction of the affected communities with documents in English, the Department is not requiring all documents in the information

repository be translated. The Department has historically, and will in the future, through the information repository, the community relations plan, fact sheets and public notices associated with particular actions, e-mail notifications, and listening sessions, listen to all interested parties.

Finally, the majority of the actions addressed by the Renewal Permit are ongoing actions previously authorized under interim status at 40 CFR Part 265. The Renewal Permit significantly increases the protective requirements associated with these actions. Though these actions have been occurring for a considerable period, the Department has no plausible evidence that the facility's hazardous waste operations has had, or will have, a disproportionate impact on a minority or low-income segment of the community.

Changed Permit provisions

None

5. Emergency Preparedness

Public Comment

Several commenter raised concerns regarding LANL's emergency preparedness and whether the facility should be allowed to manage hazardous waste in light of several recent revelations. "Over the past 10 years, serious deficiencies in the DOE/LANL Emergency Management and Response Division have been found by several government auditing agencies, including the DOE Inspector General, the Government Accountability Office and the Defense Nuclear Facility Safety Board. The expert reports described serious problems with LANL fire protection before the Cerro Grande Fire of 2000. Now new expert reports describe the ongoing failure to provide fire protection." The commenters continue, "I object to NMED allowing DOE/LANL to continue to manage hazardous waste without meeting the emergency management, planning, preparedness and response requirements. NMED must conduct a full investigation into the recommendations of the expert reports and require their implementation before the permit is finalized for the 26 hazardous waste management units."

One commenter defends LANL's fire protection program and explains that recent audits findings have little relevance to the hazardous waste operations. "The Fire Department is a separate entity from the Laboratory. The DOE/Laboratory has an agreement with them to provide assistance in a time of need. Training is provided to the Fire Department to better enable them to be safely responsive to any emergencies anywhere within the Laboratory. The waste management operations represent only a very small component of that responsibility."

Department Response

Permit Section 2.10, *Preparedness and Prevention*, satisfies the regulations by requiring the Permittees to maintain and operate the permitted units in a manner that minimizes the possibility of a fire, explosion, or release of hazardous constituent to the environment or that otherwise might threaten human health. The Permit Section requires maintenance of specific emergency equipment, requires each permitted unit to have fire water at an adequate pressure and volume, requires equipment to mitigate impacts of a power outage, requires maintenance of an environmental monitoring network to detect releases, requires testing and maintenance of emergency response equipment, requires that during hazardous waste management activities all personnel have access to an internal and external alarm or emergency communication device without entering another building, and requires the Permittees to maintain agreements with local

emergency response authorities. Permit Section 2.11, *Contingency Plan*, outlines all necessary procedures to respond to an emergency at a hazardous waste management unit. During the hearing the Department argued for a new permit condition that would require LANL to ensure that emergency responders are at all times aware of the hazardous they face when responding to emergencies at hazardous waste management units.

During the hearing LANL witnesses testified that LANL has addressed most of the internal audit findings and corrected deficiencies. Witnesses testified that LANL has made improvements in hazardous survey process, improved the hazard assessment process, addressed training and qualifications of responsible individuals, and completed a cooperative agreement with the Los Alamos County. Witnesses testified that “LANL has increased its ER budget by 45% and its personnel by 20 to 25 percent, constructed a new Emergency Operations Center, and purchased new equipment. The Los Alamos Fire Department is classified highest in ISO (Insurance Service Office) rating and the Baseline Needs Assessment (BNA) establishes that LANL has sufficient personnel. The Baseline Needs Assessment suggests that 24 people are necessary and LANL funds the LAFD to have 37.” A LANL witness testified, “LANL has the equipment and the capability to perform the actions specified in the Permit.”

The Permittees have demonstrated compliance with all specific 40 CFR Part 264 Subpart C requirements for hazardous waste emergency preparedness and prevention and therefore the Department cannot deny the permit for commenter’s claims that there may be problems “somewhere at the Facility.” Furthermore, the commenters have not provided “expert reports” describing threats to the Permittees’ waste management practices.

Changed Permit provisions

Permit Section 2.10.5, *Arrangements with Local Authorities*, has been altered as follows:

The Permittees shall maintain its preparedness and prevention agreement with the Los Alamos County Emergency Management and Response Office and support agreements with the Los Alamos County Fire Department, the Los Alamos County Police Department, and the Los Alamos Medical Center (*see* 40 CFR § 264.37).

The Permittees shall provide the Chief of the Los Alamos Fire Department (LAFD) with information that would ensure that emergency response personnel are at all times familiar with the potential hazards in performing their duties associated with the hazardous wastes at LANL’s permitted hazardous waste management units. This information shall be specific to each permitted unit and at a minimum include:

- (1) Waste types, e.g., ignitable, reactive, corrosive;
- (2) Waste names that identify principle hazardous chemical constituents;
- (3) Approximate quantities of each waste type; and
- (4) General location of waste types.

The Permittees’ Primary Emergency Manager identified in Attachment D (*Contingency Plan*) shall annually sign a certification stating that the LAFD has been provided with this information

to the satisfaction of the Chief of the LAFD. These certification statements shall be maintained in the Facility Operating Record.

6. Seismic Hazard

Public Comment

Numerous commenters suggest the Department should not allow further hazardous waste operations without requiring a reliable network of seismometers to accurately monitor the seismic hazard. Commenters cite the 2007 report as the basis for their suggestion, referring to the report's reference to an estimated 50% increase to the previously estimated seismic hazard at LANL, the lack of a reliable network of seismic instruments (seismometers) to accurately monitor the seismic hazard from ground motions, and the fact that the current network consists of only seismometers at three locations that are not kept in calibration.

Department Response

The Permittees have demonstrated compliance with all specific 40 CFR Part 264 Subpart C requirements for seismic location standards for new hazardous waste management units and therefore the Department cannot deny the permit for commenter's claims associated with the 2007 Report.

NMED has reviewed the Permittees' seismic studies associated with the permitted units, specifically studies of past faulting on the Pajarito Plateau and the 2007 Probabilistic Seismic Hazard Assessment. Commenters state that the 2007 report identified areas of investigation concerning seismic hazards, and the investigations are not being conducted. It is true that the report recommends further studies, stating that the "results of such studies will aid in refining specific seismic source and site parameters ... and reduce their associated uncertainties." This is only to say that new data will lead to better projections of the probability of seismic activity. Such projections are not used in applying 40 CFR § 264.18(a).

Regarding commenter statements that the 2007 report noted DOE's failure to install and operate a network of seismometers to monitor ground motion and that the three current seismometers are not kept in calibration; there is a network, the Los Alamos Seismic Network, with seven operating stations.

EPA has acknowledged that 40 CFR § 264.18(a) addresses only part of the risk of seismic activity, *i.e.*, site impacts due to surface displacement, but not ground motion. EPA stated that "few data exist that relate ground motion dynamics to adequacy of engineering design for various types of hazardous waste facilities." Thus, EPA could not support a criterion based on potential ground motion.

Several provisions of the Proposed Permit were written in the interest of safety in event of seismic activity. Stacking of containers is limited to a height of three containers. Containers that are stacked must be placed on pallets and the layers secured with banding to make a rigid unit, resistant to toppling. Containers may not be stored closer than five feet from a wall or building to reduce the chance of damage in case a wall fell. Furthermore, the Department is aware that the Permittees consider seismic hazards in internal requirements for mixed waste, as specified in multiple Document(s) of Safety Analysis that require reinforcement of structures and limits on quantities of mixed waste that may be stored in a particular location.

Changed Permit provisions

None

7. Open Detonation Units

Public Comment

One commenter recommends that after the draft permit is final/effective that the open detonation units be added expeditiously to the permit.

Department Response

The Department concurs with the comment, has drafted the Renewal Permit compliance schedule considering the need to expeditiously address the interim status open detonation units, and anticipates submitting draft closure plans or operating conditions through a permit modification for public comment in an expedited manner.

Changed Permit provisions

None

8. Regulated Units/Alternative Requirements

Public Comment

The Department has received numerous comments regarding the Renewal Permit's use of the terms "*regulated unit*" and "*alternative requirements*." The Permittees and other commenters have different, often conflicting concerns regarding the use of the term *regulated unit* in the Renewal Permit. The Permittees oppose the designation of the entirety of MDAs G, H, and L as regulated units. The Permittees instead argue that the regulated units at Areas G, H and L are a few discreet disposal pits, impoundments, and shafts. Other commenters suggest the designation of MDAs G, H, and L as regulated units and the Department's associated use of alternative requirements through the Consent Order for groundwater monitoring and closure is inappropriate. Some commenters object to the Renewal Permit's reliance on "alternative requirements" for groundwater protection and propose that the Permittees should strictly comply with the groundwater requirements of 40 CFR Part 264, Sections 90 through 101. Many of the same commenters suggest the Department has been generally unlawful in its management of LANL's regulated units by not requiring immediate closure of regulated units that in the past lost interim status and by proposing to regulate the closure of the units through the Consent Order instead of under the more strict Part B permit requirements. Some commenters suggest the Renewal Permit inappropriately does not identify and address all regulated units at LANL.

The Permittees oppose the designation of the entirety of "material disposal areas G, H, L" as regulated units because it is inconsistent with the applicable regulatory requirements and is inconsistent with the history of the facility and the CO. They attempt to justify their position by explaining that each material disposal area is made up of all the associated SWMUs and AOCs in that area, providing MDA G as an example stating that the MDA consists of all the subsurface SWMUs and AOCs at Area G.

"Based on the definition in 40 CFR § 264.90, the only regulated units at TA-54 are Shaft 124 and Pit 29 at Area G, Shaft 9 at Area H, and a number of shafts and surface impoundments at Area L because these are the only discrete units that accepted

hazardous waste after July 26, 1982. Pursuant to regulatory requirements and the intent to close those units under RCRA, LANL has consistently submitted closure plans that have identified the pits and shafts as discrete hazardous waste units. All of the other units at TA-54, including MDAs G, H, and L, have been identified as SWMUs by both LANL and NMED. The LANL SWMU report, required by EPA, and Module VIII to the current RCRA Permit, identified the units that had received hazardous waste before 1982 and mixed waste before 1990 as solid waste management units subject to corrective action. The Consent Order removed all the corrective action requirements for the SWMUs and AOCs from the current Permit to place them in a separate enforceable document (the Consent Order). Corrective action for the SWMUs is to be completed under the Consent Order.

Areas G, H and L contain SWMUs, AOCs and regulated units. 40 CFR § 264.110(c) allows alternative closure for regulated units “situated among” SWMUs and AOCs as long as the alternative requirements are set out in a permit or in an enforceable document. The regulated units (as identified above) in Areas G, H and L are co-located or situated among SWMUs and AOCs and the Consent Order is an enforceable document. NMED has agreed that alternative closure is applicable to the regulated units.

Section 9.3 states that the closure of the regulated units will be done under the Consent Order using alternative closure requirements in accordance with 40 CFR 264.110(c). In order to be consistent with the Consent Order and the administrative record, the regulated units should be specifically identified as Shaft 124 and Pit 29 at Area G, Shaft 9 at Area H and Shafts 1, 13-17, 19-34 and Impoundments B and D at Area L. The specifically identified regulated units are situated among SWMUs and AOCs at Areas G, H, and L and are thus eligible for alternative closure.”

Some commenters express a general objection to the Renewal Permit’s reliance on "alternative requirements" for groundwater protection. They reference reports from Environmental Protection Agency (EPA), the DOE Inspector General, and the National Academy of Sciences (NAS) they claim describe major problems in the LANL groundwater protection practices and lack of compliance with the regulations. These commenters claim that the 2007 NAS *Final Report on LANL Groundwater Protection Practices* identifies nine MDAs as having significant potential for groundwater contamination with radionuclides. These commenters claim that this Report suggests there is also potential for groundwater contamination by hazardous contaminants regulated by the Department. These commenters propose that “to protect our precious drinking water, the Department must require the Permittees to strictly comply with the groundwater requirements of 40 CFR Part 264, Sections 90 through 101.”

As an example of how "alternative requirements" have not worked, commenters refer to the “dangerous and fast-moving hexavalent chromium ... discovered in the regional aquifer over 5 years ago in wells directly west of the Buckman wells.”

Many commenters request that the Department require the Permittees to implement a new system of wells for sampling and measuring the ground water contaminants that will be effective in overcoming the many current problems perceived by the technical testimony presented at the permit hearing by a witness.

Some commenters express a general objection to the Renewal Permit’s reliance on alternative requirements in the Consent Order for closure of the regulated units in lieu of closure plans.

These commenters explain that because the regulated units G, H and L lost interim status and did not comply with the Part B permitting requirement to have closure plans, they should have been closed immediately under 40 CFR Part 264 Subpart G and are operating illegally. These commenters point to Draft Permit, Table J-1, *Active Portion of the Facility*, listing TA-54 Areas G, H, and L as active landfills (code 080) and as regulated units, but stating "Unit[s] not permitted to receive hazardous waste." "This indicates that [MDAs G, H, and L] are illegally carrying on operations without having met Part B requirements to be permitted, without submitting a closure plan and post closure permit application and [have] disposed of hazardous waste at the unit[s] without a RCRA permit for [their] active life."

These commenters object to the Department's reliance on alternative requirements in the Consent Order for closure of the regulated units in part because of a perceived inability for the public to comment on the closure processes. Furthermore, when the Department released the Consent Order for public comment the Department did not announce that those requirements would be used in place of the closure and groundwater monitoring requirements of the permit.

Few commenters suggest that the Renewal Permit does not contain all regulated units that operated at LANL. Specifically mentioned are MDAs A, B, C, P, T, U, V, and SWMU 16-021(c).

Department Response

The Department identifies particular units in the Renewal Permit as *regulated units* principally to ensure that the applicable units are properly closed under 40 CFR Part 264 Subpart G and, if necessary, undergo post-closure care. MDAs G, H and L are landfills as defined at 40 CFR § 260.10, and because they are landfills they are subject to the closure and postclosure standards at 40 CFR § 264.110(b)(1). Because MDAs G, H, and L are landfills that received hazardous waste after July 26, 1982 they are regulated units. Establishing that MDAs G, H, and L are regulated units is crucial for the application of "alternative requirements."

The Department disagrees with the Permittees' assertion that the regulated units are specific pits, shafts or trenches at Areas G, H and L. The basis of this assertion is that all other trenches, pits and shafts did not receive hazardous waste after July 26, 1982. The permitting history shows that G, H and L are, in their entirety, single units, and that the three units are, in fact, regulated units. In their original November 1980 permit application to obtain interim status and for several years thereafter, the Permittees referred to MDAs G, H, and L each as individual waste management units. In its correspondence with the Permittees, the Department has consistently taken the position that MDAs G, H, and L are each regulated units, subject to closure in their entirety.

The November 19, 1980 Part A permit application includes maps that covered MDAs G and L and the location of MDA H. The Permittees stated in their cover letter,

"It is our interpretation of RCRA regulations that disposal may occur anywhere at TA-54 and still be part of an existing disposal facility."

Thus, the Permittees sought to obtain interim status for all of TA-54. The initial Part A showed 100 acre-feet of disposal (D80) capacity. The Permittees' maps showed the existing and future pits and shafts: pits 1 through 38, trenches A through H, and outlines of shaft fields.

The Department advised the Permittees that they are required to have a closure plan that identifies the steps to completely or partially close the facility in a June 22, 1984 Notice of Violation. This letter noted that:

“LANL’s intent has consistently been to obtain interim status for 100 acres of TA-54, including all of Areas G and L . . .”

In a letter dated September 7, 1984, the Department also noted:

“Therefore, LANL’s closure plan for Area G must address both the area set aside primarily for non-radioactive waste and the larger area set aside primarily for radioactive waste but which also contains regulated hazardous chemical waste as well.”

In April 1985 the Permittees submitted a revised Part A permit application, stating:

“The Permit request is being dropped for the following facilities:

TA-54, Area G – No longer used for non-radioactive waste disposal

TA-54, Area L – Surface impoundment not used in lieu of treatment tanks”

Thus, the Permittees withdrew their application for disposal at MDAs G and L. No disposal processes were shown on the revised Part A. The Department inquired specifically what 100 acre disposal area was covered by the previous Part A and asked for a closure plan for MDA G in a letter dated April 10, 1985. In a letter dated June 7, 1985, the Permittees responded that Area G is 63 acres and would be closed out for RCRA wastes under interim status. The map accompanying the letter shows that the remaining 37 acres, said to have interim status, include MDA H.

On September 13, 1985, the Department advised the Permittees that the closure plans for TA-54 should describe partial closure for each landfill cell as well as groundwater monitoring, indicating again that the Department regarded the MDAs themselves as disposal units. On September 27, 1985 the Permittees submitted a new closure plan for MDAs G and L. The Permittees accepted the obligation to close the entirety of MDA G:

“Burial facilities include pits and shafts, all of varying dimensions. Certain radioactive mixed and nonradioactive hazardous chemical wastes have been buried along with the radioactive wastes at Area G. Area G is a waste disposal facility operated under a Resource Conservation and Recovery act (RCRA) Part A permit. A Part B permit is not being sought for this facility and Area G will be closed under interim authority.

The active portion of the site comprises a total area of 63 acres. Burial facilities within the area include pits, shafts, trenches, and pads, all of varying dimensions. The facility has only been used for pit and shaft disposal of regulated wastes.”

The permitting history shows that MDAs G, H and L are in their entirety single units and that the three units are, in fact, regulated units that must be closed in accordance with the regulations.

That the entirety of Areas G, H and L are regulated units is supported by a U.S. EPA interpretation that suggests that numerous unlined trenches within a landfill constitute a single unit. A July 26th, 1982 Federal Register states,

"[a] waste management unit is a contiguous area of land on which waste is placed. A waste management unit is the largest area in which is there a significant likelihood of

mixing of waste constituents in the same area. Today's regulations establish specific requirements for surface impoundments, waste piles, land treatment units and landfills. Generally, each of these four terms is synonymous with the concept of a waste management unit. Landfills may, however, present an exception to this general rule. Some landfills are designed as a series of adjacent trenches that are separately lined. In this situation, the term 'landfill' can refer to an entire set of trenches, yet each individual trench is a separate waste management unit under today's regulation."

Furthermore, using the regulatory definition of a *regulated unit* which references landfills receiving hazardous wastes after July 26, 1982, the regulatory definition of *hazardous waste management unit* which refers to the largest area in which there is significant likelihood of mixing hazardous waste constituents, and the fact that MDAs G, H, and L received hazardous waste after July 26, 1982, the MDAs are in their entirety regulated units.

The Permittees' comment that certain solid waste management units and areas of concern at TA-54 (which includes MDAs G, H, and L) have been identified and they argue that, therefore, each MDA cannot be a regulated unit. The identification of solid waste management units or areas of concern for purpose of corrective action does not bear upon the status of MDAs as regulated units. Likewise, the fact that the Consent Order states that corrective action under the Order will meet Subpart F requirements for corrective action takes nothing from the "regulated unit" definition.

Finally, the Permittees argue that they have submitted closure plans that identify this single pit and these two shafts as "discrete hazardous waste units" and others as solid waste management units, but, again, this does not mean that the MDAs are not "regulated units" under 40 CFR § 264.90(a)(2).

The Department's view is supported by the regulations and EPA's interpretation of those regulations, is consistent with various documents that the Permittees prepared and submitted to the Department in support of their initial permit application, and is the only practical approach to the closure of these units. Therefore, the Department considers the units in their entirety regulated units.

The Department agrees that the groundwater monitoring system at TA-54 is inadequate. However the Department is directing the Permittees to correct the deficiencies in the system, including the installation of several new monitoring wells. (See the Department's response to comments regarding groundwater protection below.) The Department disagrees that alternative requirements as allowed at 40 CFR § 264.90(f) do not protect groundwater. The Department is using the March 1, 2005 Compliance Order on Consent (Compliance Order or CO) as an alternative to the Renewal Permit to ensure that all current and potential releases from regulated units that do, or could, affect groundwater are fully investigated and monitored.

The Renewal Permit requires coordination of any corrective action with that conducted under the Consent Order. To accomplish this, a release from a hazardous waste management unit regulated by the Renewal Permit that combines or commingles with a release covered by the Consent Order is to be cleaned up under the requirements of the Consent Order.

Since MDAs G, H, and L are "regulated units" under 40 CFR § 264.90 they must satisfy the 40 CFR Part 264, Subpart F monitoring and response requirements. A landfill such as MDA G, which has adjacent unlined pits and trenches, constitutes a single unit. In such case, the

groundwater monitoring requirements of Subpart F apply to the entire landfill. Such a groundwater monitoring program includes means to detect, characterize, and respond to releases from the unit that threaten groundwater. Specifically, Subpart F states that the program must: (1) call for compliance monitoring whenever hazardous constituents are detected as shown by statistically significant evidence of contamination, (2) call for corrective action when the groundwater protection standard is exceeded as shown by statistically significant evidence of increased contamination, and (3) require a detection monitoring program. Monitoring must meet the standards of 40 CFR § 264.97, which calls for a system of wells that yield representative samples of background and affected water and detect migration from the regulated unit. Statistical methods to evaluate monitoring data are required. Further, if statistically significant evidence of contamination is present, Subpart F states that the owner/operator must notify the regulator, sample all monitoring wells, resample where contamination was detected, apply for a permit modification to establish a compliance monitoring program, and submit a feasibility plan for a corrective action program. Subpart F states that, if sampling indicates that concentration limits are exceeded, the owner/operator must notify the regulator, apply for a permit modification to establish a corrective action program, and submit a plan for groundwater monitoring (which may be based on compliance monitoring) that will demonstrate the effectiveness of the corrective action. The objective of corrective action is to bring regulated units into compliance with the groundwater protection standards specified in the Renewal Permit. Corrective action is carried out by removing the hazardous constituents or treating them in place.

In response to these Subpart F regulations, Permit Section 11.3.1 directs the Permittees to “conduct groundwater monitoring for each regulated unit” to enable early detection of contaminants and to notify the Department of “any new detections.” Prompt notice is to be given of:

1. detection of a hazardous constituent that is an organic compound in a spring or screened interval where it has not previously been detected,
2. detection of a hazardous constituent that is an inorganic compound at a concentration above background if such exceedance has not previously been detected,
3. detection of a hazardous constituent in a spring or screened interval that exceeds one-half the cleanup level, if that concentration has not previously been detected,
4. detection of perchlorate in a spring or screened interval at a concentration of 2µg/l if such concentration has not previously been detected,
5. detection of a hazardous constituent that is an inorganic compound in a spring or screened interval at a concentration more than two times background for the third consecutive sampling, and
6. detection of a hazardous constituent in a spring or screened interval at a concentration more than one-half the cleanup level, where the level has increased in three consecutive samples.

Furthermore, under Permit Section 11.3.1.2, detection of a concentration exceeding the cleanup levels in Section 11.4.1 requires the Permittees to give notice to the Department and to take “all steps necessary to contain or otherwise mitigate the release.”

The Department has concluded, particularly in light of its familiarity with the geology and hydrology of the Facility, that responses to monitoring data here may be specified as (a) reporting of detection of hazardous constituents not previously found, or not found in such concentrations, and (b) corrective action when a hazardous constituent is detected in excess of the cleanup level. Thus, the Renewal Permit skips the intermediate stage of compliance monitoring and calls for corrective action in response to any exceedance. This permit structure moves more quickly to corrective action for regulated units than the Subpart F regulations might require and, therefore, is similar in concept to the system required by Subpart F but clearly more protective.

Regarding the NAS report, the contents of report have little applicability to the current groundwater monitoring network at TA-54. NAS's evaluation of LANL's groundwater protection program was conducted during the time at which LANL was primarily characterizing the groundwater system beneath the facility, not designing or implementing a groundwater monitoring network as directed by the Consent Order. At the time of NAS's evaluation, groundwater characterization efforts were directed through LANL's Hydrogeologic Work Plan (HW Plan). Wells installed at or near TA-54 during implementation of the HW Plan were not drilled nor constructed per RCRA groundwater monitoring. Furthermore, NAS's evaluation was conducted at the time when only five regional aquifer characterization wells were installed at or near TA-54. Since the publication of the NAS Report, three of the five wells have undergone rehabilitation and/or redevelopment with the intent to transition the wells into viable groundwater monitoring points. Additionally, LANL has installed 13 new regional aquifer wells at TA-54 since the NAS Report was published. These new wells, including the previously mentioned five older wells, are currently being evaluated with respect to their ability to produce representative groundwater samples and associated analytical water-quality data. The question as to which wells will be incorporated into the TA-54 groundwater monitoring network has not been answered yet.

Additionally, other evaluations of LANL's groundwater protection program have been conducted. EPA submitted two memoranda specific to groundwater practices at LANL. The first memorandum addressed several issues specific to the viability of characterization wells to be used as monitoring wells. The second memorandum addressed LANL's Well Screen Analysis Report and Groundwater Background Investigation Report. The focus of the second memorandum was to review and comment on the referenced documents. As with the NAS document, these memoranda were composed at time when only characterization wells were installed at TA-54, not monitoring wells.

The Department considers Dr. Barcelona's testimony to be generally accurate; however, it was based on both incomplete and outdated information. The Department has required a significant amount of additional groundwater investigation at LANL since the data Dr. Barcelona relied upon was generated. This work is ongoing and therefore no final conclusions have been reached by the Department with regard to the adequacy of the groundwater monitoring network; however, the ongoing groundwater investigation and installation of additional groundwater monitoring wells will result in an adequate groundwater monitoring network

The Department disagrees that alternative closure requirements as set forth in the Consent Order are inappropriate. Because MDAs G, H and L are landfills they are subject to the closure and post-closure standards at 40 CFR Part 264 Subpart G, including ensuring protection of human health and the environment by controlling, minimizing, or eliminating the escape of the waste.

Closure must also minimize the need for further maintenance of controls. It does not matter whether or not MDAs G, H and L are regulated units with respect to whether or not closure and postclosure care standards apply; they are landfills, they must undergo closure, and if they are not clean closed they must undergo post-closure care as well. Furthermore, MDAs G, H, and L are situated among solid waste management units, a release of hazardous waste or hazardous constituents has occurred, and both the regulated units and one or more solid waste management units are likely to have contributed to the release. The Consent Order has been established to be an enforceable document and the alternative requirements specified in the Consent Order will protect human health and the environment and meet the closure performance standards. Because 40 CFR § 264.110(c) allows closure and post-closure provisions to be set out in an enforceable document, the Department has opted to use the Consent Order as the regulatory mechanism to achieve closure.

The regulatory requirements associated with the closure of a landfill require there be provisions to achieve the closure performance standards of the regulations. These include provisions for investigating the nature and extent of any release from the landfill and provisions to either remove or dispose in place the associated wastes. Under the Consent Order, the Department has determined that the Permittees have substantially fulfilled the requirements to investigate the nature and extent of any release to soils from MDAs G, H, and L. Though wastes placed in MDAs G, H, and L were originally not intended to be removed, the Permittees are required by the Consent Order to draft a Corrective Measures Evaluation (CME) report for each MDA that will be submitted for the Department's approval that includes an option to remove the wastes and minimize the need for long-term controls and post-closure care. When the Department determines that the groundwater associated with the units has been sufficiently investigated and there exists a sufficient groundwater monitoring network, the Permittees will be required to finalize the CME, the Department will choose one of the options with opportunity for public involvement, and then the Permittees will be required to produce a plan to execute that chosen option (Corrective Measures Implementation Work Plan) as required by the Consent Order. This Plan will be equivalent to a closure plan under the implementing regulations and Part 9 of the Renewal Permit. This CMI Work Plan will also be subject to public review and comment. One reason the Department opted to use the Consent Order to address the closure of the MDAs is because it does not make sense to break up the investigation and remedy selection for the MDAs and associated solid waste management units, and to conduct the cleanup work under two separate frameworks.

Renewal Permit Section 9.2.1(1) addresses the "clean" closure performance standards. The goal during a RCRA closure is to remove all wastes and all waste residues, or attain "clean" closure. Permit Section 9.2.2 contemplates that if clean closure isn't met LANL can do something else that may result in leaving waste in place. The Permittees would have to make a demonstration to the Department's satisfaction that they are not able to achieve clean closure. Further, the Permittees would have to demonstrate to the Department that they have the ability to control hazardous waste residues in any in any environmental media or on any surface so that an excess cancer incident that otherwise would not have happened is not exceeded for one in one-hundred thousand persons. The Permittees would also have to minimize the need for further maintenance and control and minimize the post-closure escape of any hazardous waste or waste residue. This is referred to as "post-closure care." These permit sections apply to the regulated units, *i.e.*, TA-54 Areas G, H, and L.

If the final corrective measure at the MDAs includes leaving wastes in place, the Corrective Measure Implementation Work Plan required by the Consent Order will address long-term maintenance and monitoring controls equivalent to those required in a post-closure plan under the implementing regulations and Part 10 of the Renewal Permit. Under this circumstance, upon completion of the closure requirements the Permittees are required to submit a Class 3 permit modification request to terminate closure and begin post-closure care. This too will be subject to public review and comment.

The public will have an opportunity to comment on the closure and groundwater monitoring requirements for each regulated unit at the following times; 1) when the Department proposes to approve the Corrective Measures Evaluation (CME) Report for a unit and selects a particular corrective measure, 2) when the Department proposes to approve the Corrective Measures Implementation ("CMI") Plan for a unit, and 3) should a unit progress to the point where it no longer requires regulatory oversight, the permit modification to designate the unit as corrective action completed.

When the Department released the Consent Order for public comment the Department did not announce that those requirements would be used in place of the closure and groundwater monitoring requirements of the permit. The laws and regulations do not require the Department to announce, at the time of issuance, that it intends to use the provisions of an enforceable cleanup document, such as the Consent Order, as alternative requirements. At the time the Department issued the Consent Order in March 2005 it had not yet determined that the Consent Order would serve that purpose. The Department recognized the appropriateness and the advantages of using alternative requirements only as it began drafting the Permit. Nevertheless, the public was given two opportunities to comment on the requirements in the Consent Order. First, on May 2, 2002, the Department released the draft imminent hazard order for public comment. Second, on September 1, 2004, before it signed the Consent Order, the Department released a draft of the document for public comment.

Parties to the hearing have not been deprived of due process of law. The public has been given multiple notices that the Department proposes to use the alternative requirements of the Consent Order in place of the groundwater monitoring and closure requirements in Subparts F and G, and an extensive opportunity to comment on that proposal. Alternative requirements were referenced the August 2007 draft permit, the July 2009 revised draft permit, and the February 2010 draft Permit. The Department invited the public to comment on each of these documents.

The Department disagrees that it has unlawfully managed closure of the MDAs G, H, and L. The Permittees have lawfully submitted numerous closure plans in TA-54 permit applications for limited pits, shafts, and trenches at Areas G, H, and L. This interpretation of the boundaries of the landfills and the scope of the submitted closure plans conflicts with the Department's interpretation of the units' boundaries and is one reason these units have not been permitted, apart from the Permittees' cessation of disposal activities at these areas.

Other MDAs that commenters suggest should be addressed as regulated units in the Renewal Permit either have been appropriately clean closed or never managed hazardous waste and are not subject to RCRA permitting. The "other regulated units" are referenced in the Revised Draft Permit for informational purposes only but are not regulated by the Permit. For example, TA-16 MDA P is referenced at Attachment J (*Hazardous Waste Management Units*), Table J-3 (*Closed Portion of the Facility not in Post-Closure Care*). MDA P was deemed clean-closed under

interim status by NMED on November 10, 2005 and is therefore appropriately referenced in the Permit.

Changed Permit provisions

None

9. Financial Assurance

Public Comment

Commenters both support and oppose NMED's imposition of financial assurance on the Permittee LANS.

Numerous commenters support NMED requiring LANS meet all financial assurance requirements for each of the 26 hazardous waste management units. "They (LANS) say they will have funding available in order to cleanup the contaminated facilities at LANL when they are done using them but we do not trust that they will do the cleanup without [financial assurance]." Commenters state "Permittee Los Alamos National Security, LLC (LANS), co-operator of LANL, meets the applicability requirements for financial assurance of 40 CFR § 264.140. As a matter of law, the permit must require financial assurance and Permittee LANS must meet those requirements."

The Permittees object to the financial assurance requirements. "NMED is improperly focusing on the status of the Permittees as either a Federal entity or a private entity rather than on the fact that LANL is a Federally-owned facility." The Permittees object to the financial assurance requirements on numerous grounds, including conflicts with EPA guidance, inconsistencies with Public Law 106-113, Section 220, and conflict with the 2005 Compliance Order. The Permittees further argue that the Department is incorrect in its assumption that closure of the TA-54 MDAs G, H, and L may be frustrated by funding shortfalls.

The Permittees point out that the EPA has consistently stated that the exemption for financial assurance applies to publicly-owned facilities, with the emphasis being on the ownership of the facility. "The Preamble to Subpart H states that publicly-owned facilities, meaning State and Federally-owned facilities are exempt from the financial assurance requirements." They emphasize that the EPA has stated that a private sector co-operator at a publicly owned facility is also exempt from the financial assurance requirements and that exempting private co-operators of publicly-owned facilities is consistent with the purpose of financial assurance and with the rationale for the exemption. "Because the State or Federal government is liable for closure and post-closure costs as an owner or operator of a publicly-owned facility, and because the rationale for the exemption is that the governments will have the necessary means to complete closure and post-closure care, there is no reason to require a private owner or operator to provide financial assurance."

The Permittees assert that the Renewal Permit is inconsistent with Public Law 106-113, Section 220, which states "[n]o form of financial responsibility requirement shall be imposed on the Federal Government or its contractors as to the operation of any waste management facility which is designed to manage transuranic waste material and is owned or operated by a department, agency, or instrumentality of the executive branch of the Federal Government ..."

The Permittees explain that portions of the LANL Facility that are governed by the RCRA

regulations are waste management facilities designed to manage TRU waste and therefore the exemption under Section 220 applies to those portions of the Facility and both DOE and LANS.

The Permittees assert that the Renewal Permit's financial assurance requirements conflict with the Consent Order because that Order specifically states that it is the sole mechanism and only enforceable document for establishing and enforcing corrective action requirements for SWMUs and AOCs at the Facility. "The provisions of Sections 2.13, 2.14, 2.15 and 2.16 of the revised draft Permit are inconsistent with the Consent Order because they create duplicative requirements and establish a second enforceable document for corrective action."

The Permittees' argument that the Department is incorrect in its assumption that closure of the TA-54 MDAs G, H, and L may be frustrated by funding shortfalls is based on the Consent Order having numerous mechanisms, "which NMED has shown that it is willing to use," to ensure that the requirements of the Consent Order are met. They point out that the Consent Order includes provisions for stipulated penalties and the Department has the authority to undertake enforcement action if it believes that DOE is not complying with the Consent Order.

Other commenters express concern that the closure cost estimates in the Renewal Permit are insufficient to cover the costs at closure.

Department Response

The Hearing Officer's Report regarding the Permittees' application for a hazardous waste facility permit for LANL dated October 7, 2010, determined that the Department has not met its burden of proof for imposing financial assurance requirements on LANS.

The Department concurs.

Changed Permit provisions

All references to financial assurance and associated cost estimates are removed from the Renewal Permit.

10. Groundwater Protection

Public Comment

Numerous commenters suggest that the Department ensure that groundwater, in addition to other environmental media, be fully and appropriately protected. These commenters point to the hydraulic connection between the groundwater below LANL and the Espanola Basin, the Rio Grande, and the water supply wells in Los Alamos County. These commenters reference contamination in the groundwater below LANL, including radionuclides and chromium, and the burial of large volumes of waste at LANL as circumstances highlighting the vulnerability of the resource and examples of why more characterization needs to be done. Commenters suggest the Department "judge the scientific basis and scope of LANL's current (interim) groundwater monitoring program and, in particular, if it is adequate to provide early warning and response to potential groundwater contamination from LANL operations." Commenters reference a report that states "it is technically feasible to monitor the groundwater [but] the efficacy of the monitoring system will have to be determined based on the analysis of the future data that will be obtained as the system is developed."

Numerous commenters express concern that contaminant transport pathways between the surface and groundwater at LANL are not sufficiently understood and that the groundwater monitoring system should be augmented to answer this question. Commenters reference a report that states “the pathways for transport of contaminants from their sources include four different hydrologic regimes:

- (1) surface streams and run-off;
- (2) near-surface groundwater in the canyon alluvium;
- (3) intermediate-perched groundwater in the unsaturated zone; and
- (4) a deep, regional aquifer.

Each of these regimes adds considerable uncertainty to the understanding of the overall system. Even with the best efforts to understand contaminant sources and pathways, the uncertainty will always be great.” “LANL should demonstrate better use of its current understanding of contaminant transport pathways in the design of its groundwater monitoring program.” Many commenters suggest that inter-watershed pathways are especially in need of study.

Some commenters suggest there should be a better understanding of LANL’s major source of groundwater contamination and whether these sources have been controlled. “Radioactive or chemically hazardous wastes disposed of on site at LANL are sources from which contaminants enter the soils, rocks, and groundwater.” One commenter refers to a report that explains that “liquid waste discharges, which LANL considers to be the source of the contamination currently detected in groundwater, are generally eliminated or controlled [but that] solid wastes in contaminants deemed by LANL to have less near-term potential to impact groundwater ... are not well inventoried or controlled.” These commenters suggest that selected sites should be characterized by field analysis when historical information is insufficient to determine quantities of major contaminants disposed, and that LANL should develop mass balance estimates of the quantities of disposed chemicals and radionuclides remaining in the surface soil and/or residing in the shallow alluvium, the vadose zone, and the regional aquifer.

Numerous commenters express concern about LANL’s groundwater monitoring wells, particularly the drilling fluids used and the need to rehabilitate “inappropriately constructed wells.” “Studies are necessary to authoritatively address concerns and uncertainties about how drilling and well completion processes might alter the native conditions around well screens and to ensure reliable monitoring activities in the future.”

Some commenters suggest that future characterization drilling and monitoring well drilling be done as separate tasks, that geophysical logs during drilling would increase confidence that well screens are installed to intercept a contaminant pathway, and that more large-scale pumping tests are needed to characterize the regional aquifer.

Numerous commenters suggest that monitoring wells at LANL are defective because of the use of inappropriate drilling agents. Commenters claim that drilling agents such as organic foam and bentonite clay contaminate the upper aquifer by creating a new chemistry that absorbs contaminants thereby preventing detection of wastes. Commenters suggest that the Department require LANL to install wells drilled only with air and shall not use organic foam drilling additives for any part of the borehole unless temporary or permanent casing is installed. “The use of organic foam or polymer drilling additives shall be only in borehole intervals where drilling only with air is not possible.” Other commenters suggest that drilling additives, for

example foaming agents, may be used in the drilling interval above the expected groundwater table. “In the last 100 to 150 feet above the water table and below the water table only municipal water may be used as a drilling additive.” One commenter suggests that LANL should be required to plan and carry out geochemical research on the interactive behavior of contaminants, materials introduced in drilling and well completion, and the geologic media. Commenters recognize that drilling with water and drilling with foam may prevent the detection of perched zones of saturation.

Commenters express concern about the inability to purge Westbay wells and suggest wells be constructed with one screened interval that targets a single saturated zone.

Commenters suggest that the results of analyzing groundwater samples often do not carry the proper qualifiers according to good quality control practices. “This especially applies to analytical results near or below the limits of practical quantitation and detection, near the natural background, or both.” Commenters reference a report that states “LANL is using good practices in terms of having the proper quality assurance and quality control plans and documentation in place, but falls short of consistently carrying out all the procedures cited in the plans.”

Department Response

The Department has required a significant amount of groundwater investigation at LANL, particularly in the vicinity of TA-54. This work is ongoing and therefore no final conclusions have been reached by the Department with regard to the adequacy of the groundwater monitoring network at the Facility: however, the ongoing groundwater investigation and installation of new monitoring wells will result in an adequate groundwater monitoring network. LANL is a large and complex facility where over 1,400 SWMUs and AOCs remain to be investigated and cleaned up, as necessary. As stated above, the investigation and cleanup are being conducted under the March 2005 Consent Order. The extent of groundwater contamination has not yet been defined in portions of the Facility and, therefore, a Facility-wide groundwater monitoring network is not yet complete.

The Interim Facility-wide Groundwater Monitoring Plan (IFGMP) is required under the Consent Order. The IFGMP is an interim monitoring plan which will remain in effect until an adequate long-term monitoring plan is approved by the Department for each watershed identified in the Consent Order. The watershed-specific long-term monitoring plans will include groundwater monitoring related to both corrective action and permitted activities. At this time the IFGMP includes wells that are currently available for use even as deficiencies are identified with individual well screens. Because the well network is still in the process of being established, even wells and well screens that are deficient are being utilized until suitable alternatives are put in place. The Department takes such deficiencies into consideration when evaluating groundwater data submitted by the Permittees.

The groundwater monitoring network at the LANL Facility is continually being modified as new information is obtained, as the quality of groundwater data is re-evaluated in light of new information, and as the characteristics and spatial extent of subsurface rock strata are better defined by additional subsurface investigations. The groundwater monitoring network at TA-54, where the regulated units are located, is still in the investigation stage, and the locations for additional detection monitoring wells are subject to change. The changes are related to new and sometimes unexpected subsurface conditions being encountered during investigation activities.

The Department has concluded, based on its familiarity with the geology and hydrology of the LANL Facility, that the permit will be fully protective if it requires: 1) monitoring pursuant to plans developed and applied under the Consent Order; 2) prompt reporting of detection of hazardous constituents not previously found, or not found in such concentrations; and 3) corrective action to contain or mitigate the release when a hazardous constituent is detected in excess of the cleanup level.

The Department agrees with many of the conclusions in the referenced National Academy of Sciences (NAS) Report; however the report is based on conditions at the time that the NAS conducted the evaluation. Since that time, the Permittees have installed, replaced and rehabilitated numerous wells completed in the intermediate perched aquifers and the regional aquifer at the Facility. The NAS report does not account for the additional groundwater characterization and actions taken to address deficient wells. For example, in February 2010 the Department directed LANL to conduct a reliability assessment of multi-screened wells that are still using Westbay system. Many of these wells require rehabilitation or conversion to a different sampling system.

Because of the complex hydrogeologic conditions at LANL, the Department has required the Permittees to characterize groundwater beneath the LANL Facility using an approach that is most likely to detect contaminants released by facility operations. Part of this approach includes installing wells at distances from regulated units that are greater than those specified in the regulations because of the possibility that contaminants may not migrate in a direct vertical path from the source to the regional aquifer. This approach is based on evidence from groundwater investigations conducted at other portions of the laboratory. An example of this characteristic of subsurface conditions is the presence of chromium in perched aquifer well SCI-2, while chromium is not detected in regional aquifer well R-43, installed adjacent to well SCI-2.

The Department has required the Permittees to install, replace or rehabilitate numerous wells completed in the intermediate perched aquifers and the regional aquifer at the Facility. Much of this work has been completed in the time period since the draft Permit was issued in 2007; however, groundwater characterization in the vicinity of TA-54 is not yet complete.

The NAS report references wells that were installed as part of LANL's groundwater characterization efforts that were conducted in accordance with their Hydrogeologic Work Plan (1998). As part of these efforts, a total of five regional aquifer characterization wells were installed at or near TA-54. These wells were not installed for contaminant detection or groundwater monitoring. Therefore, these wells have limited relevance to groundwater protection goals set forth by the March 1, 2005 Consent Order.

The wide assortment of drilling methods listed in the Renewal Permit allows flexibility to accommodate the highly variable subsurface conditions encountered beneath the Pajarito Plateau. Some of these methods, like hollow-stem auger or resonant sonic, do not require any drilling fluids, while others require air, water, or mud to remove drill cuttings from a borehole. Although any use of drilling fluids creates a potential for altering the natural properties of the subsurface formations, only the methods that use drilling fluids, like air or water, are suitable for installation of deep monitoring wells at LANL, because they can reach depths of 1000 feet or more below the ground surface and can accommodate the complex subsurface conditions at LANL.

The drilling method currently most often used for deep drilling at LANL, and which has been approved by the Department under the terms of the Consent Order, is fluid assisted air rotary, either with casing advance or open borehole, depending on the subsurface formations encountered during drilling. This drilling method strikes a good balance between maintaining borehole stability and providing an opportunity to detect perched intermediate groundwater zones. With that method, certain drilling additives, for example foaming agents, may be used in the drilling interval above the expected groundwater table. In the last 100 to 150 feet above the water table, and below the water table, only municipal water may be used as a drilling additive. Only under exceptional circumstances does the Department allow use of additional drilling additives or another drilling method that uses drilling fluids other than air. As stated above, Permit Section 11.11.2 establishes the general requirements for design and construction of groundwater monitoring wells and includes a requirement that monitoring wells must produce representative groundwater samples.

The wide assortment of drilling methods specified in the Proposed Permit also allows the Permittees to cope with even the most difficult drilling conditions without having to modify the Permit to include a suitable drilling method. The listing of a particular drilling method in the Renewal Permit does not mean that the Department recommends or endorses that particular method. On the contrary, the Renewal Permit specifically discourages the mud rotary method in Permit Section 11.11.2.3, despite its being listed as a drilling method available to the Permittees. The Department may also require additional sampling and testing to ensure that the collected data are not affected by residual drilling fluids under Permit Section 11.11.2.3.

Subsurface conditions beneath the Facility are varied and complex and create difficult drilling environment. The Department requires the Permittees to advance borings using hollow-stem auger and air rotary drilling methods to the extent possible. Where subsurface conditions preclude the use of these methods, the use of other drilling fluids, *e.g.*, potable water, foam, is allowed based on the circumstances. The Permittees are not allowed to use drilling fluids other than air at depths within less than 100 feet above the regional aquifer. This policy does not apply for groundwater perched in zones above the regional aquifer because the Permittees cannot anticipate where perched groundwater will be present. The Department requires the Permittees to evaluate the conditions where perched groundwater has been encountered and, if the zone has been irreparably effected by drilling fluids, to drill an additional well designed to intersect the perched groundwater using the same approach regarding the use of drilling fluids as that applied for regional aquifer wells.

NMED discourages the use of drilling fluids unless their use is unavoidable to complete drilling of a borehole. Permit Section 11.11.2.3 requires that “[i]f drilling fluids are used as part of well installation, the Permittees must demonstrate that all data acquired from the well is representative of existing subsurface conditions using methods approved by the Department. The Department may require additional sampling and testing periodically to ensure that the data collected is not affected by residual drilling fluids. The Permittees have installed wells where drilling fluids or well construction materials have entered screened intervals. Rehabilitation for some of these screened intervals is either ongoing or scheduled. In other cases, it has been determined that irreparable damage has occurred and the screens have been, or are scheduled to be abandoned. Examples where abandonment of well screens has been determined to be necessary include wells R-12, R-20, R-25 and R-32.

As stated above, Permit Section 11.11.1 allows two types of groundwater monitoring wells: single screened wells (containing one screened interval) and, with Department approval, double-screened wells (containing two screened intervals). Permit Section 11.11.3.2 provides details of construction for single-cased and double-cased wells. The Department allows double-screened wells because they provide twice as much contaminant transport information as single-screened wells installed in the same boreholes. Double-screened wells also allow measurement of vertical components of groundwater flow, thus providing information on the potential of migration of contaminants deeper into the aquifer.

The Renewal Permit's general requirements for design and construction of groundwater monitoring wells state that the selection of the drilling method is based on the site-specific geologic conditions and on the following factors:

- (1) drilling should be performed in a manner that minimizes impacts to the subsurface formations and avoids contamination and cross contamination (*i.e.*, among aquifers) of groundwater;
- (2) the drilling method should allow the collection of representative samples of subsurface formations and groundwater;
- (3) the drilling method should allow the proper location of screened interval(s) and the proper placement of a filter pack and annular sealants;
- (4) drilling fluids (which include air) should have minimal impact upon the subsurface formations and groundwater.

Regional monitoring wells at LANL are designed to monitor a productive zone closest to the water table. Under some circumstances, if the most productive geologic formation is substantially below the water table, a less-productive formation that is closer to the water table will be selected for screen placement. In double-screened wells, the second screen will be usually placed in the deeper, most productive formation.

The Renewal Permit's limitations on monitoring well construction materials establish that the preferred well construction material should be chemically inert, which means that it will not leach foreign constituents into groundwater or remove contaminants of interest from it. Other factors to consider include the structural strength of the material, length of time the monitoring well will be in service, and resistance of the material to chemical and microbiological corrosion. Generally, if the monitoring program requires the analysis of trace concentrations of organic constituents, stainless steel should be used. However, if the monitoring program requires only analyses of inorganic constituents, polyvinyl chloride (PVC) materials may be used. PVC should not be used for monitoring wells where trace concentrations of organic constituents will be analyzed due to its potential for sorption and leaching of organic contaminants. Permit Section 11.11.3.1 requires well construction materials be selected based on the type of contaminants of interest in groundwater and the geologic conditions at the site.

The Department allows for well screen and casing to be constructed of stainless steel. Due to structural strength requirements, stainless steel is the only viable option for deep monitoring wells at LANL. It is also the most suitable material for detection of trace concentrations of organic contaminants. Although stainless steel may corrode under certain geochemical and microbiological conditions and may absorb or leach some inorganic constituents, proper

sampling procedures can minimize the contact time between the water sample and the stainless steel screen and, therefore, can help to maintain representativeness of the samples.

The Renewal Permit's requirements regarding monitoring well development are incorporated to ensure the collection of representative groundwater samples. If the well contains drilling mud in the form of a mud cake, or formation soils that have not yet been removed, continuous flushing over a period of several days may be necessary to complete the well development. Permit Section 11.11.4 requires all monitoring wells be developed to create an effective filter pack around the well screen, correct damage to the formation caused by drilling, remove fine particles from the formation near the borehole, and assist in restoring the natural water quality of the aquifer in the vicinity of the well.

The Department agrees that exposure to radionuclides can present a threat to human health. The Renewal Permit does not address radionuclides except as it pertains to mixed hazardous waste.

Regarding quality control procedures, as stated above, Permit Section 11.10.3 through 11.10.3.5 require valid and accurate laboratory testing for determining whether concentrations of contaminants present in environmental media pose a threat to human health or the environment. Permit Section 11.10.3 requires that detection limits for each analytical method be less than applicable background, screening, and regulatory cleanup levels. Permit Section 11.10.3.1 requires the Permittees to meet minimum quality assurance and quality control (QA/QC) requirements for laboratories producing permit-related analytical data. Permit Section 11.10.3.4 requires the Permittees to implement procedures to ensure representativeness and comparability of analytical results following procedures specified in EPA and National Environmental Laboratory Accreditation Conference guidance. And Permit Section 11.10.3.5 requires the analytical laboratories to formally review and validate project analytical data. Finally, Permit Section 11.10.3.2 requires the Permittees to review project data to ensure compliance with applicable EPA and industry-accepted standards for preparing and evaluating QA/QC data.

Changed Permit provisions

None

11. Contractor Documents

Public Comment

Commenters request full access to parts of the administrative record that are currently unavailable, or were unavailable at one time. One commenter states:

“Because of the lack of availability of the full administrative record, the public is unable to adequately make *informed* comment on the LANL draft permit. Commenters requests that the NMED extend the public comment period for the LANL draft permit for at least 90 days after provision is made for furnishing the full administrative record for the LANL draft permit. Failure to furnish the full administrative record is not in accordance with due process requirements or public participation requirements of RCRA or NMAC.

Currently missing from the administrative record are “secret” technical documents held in the NMED HWB Library that are relevant to the LANL draft permit. One such document is a January 9, 2002 TechLaw Inc. report relevant to Material Disposal Area (MDA) G, TA-54 that discusses numerous other documents related to groundwater flow and radionuclide transport in the vadose zone beneath Area G. The report is

critical of the technical deficiency of a LANL computer code used for modeling of contaminant flow and transport through the complex geology associated with LANL. The code was apparently used by LANL but not subjected to a rigorous, independent review by the NMED.

Numerous and unknown other TechLaw, Inc. reports exist for LANL that have similarly been kept secret and that are not referenced or presented to the public for review within the administrative record. If a lawsuit were to be filed for the LANL draft permit, such secret documents, paid for by taxpayers funds, could be available under subpoena and discovery powers of the court and could result in great delay of the approval of the LANL draft permit if the permit were remanded for consideration of such secret reports.

Three significant technical reports issued by the Environmental Protection Agency (EPA) Kerr Laboratory regarding the reliability of the well monitoring network at LANL are not on the NMED website or included in the administrative record. Those reports should be considered within the permit as part of the administrative record just as were the National Academy of Science (NAS) reports. Those reports would also have bearing on the plans for monitoring wells that will be part of the post closure monitoring network and the use of alternative requirements.”

Department Response

The documents referred to and read into the record are not secret. The Department utilizes an internal deliberative process when responding to Permittee submittals; this process often uses outside technical experts, *e.g.*, contractors, on particular issues. In these deliberations, communications from contractors are evaluated by the Department and portions the Department considers pertinent and accurate are incorporated into responses to submittals. Other than one document considered attorney-client privileged and one document with confidential contractor cost information redacted from the document, the 123 documents referenced by the commenters are in fact subject to public inspection under the Inspection of Public Records Act. Interestingly, neither parties to the Hearing nor commenters argued that any of the 123 documents were relevant to the Permit or that the Renewal Permit should be altered based on those documents.

Regarding the EPA Kerr Laboratory reports pertaining to the reliability of the well monitoring network, if the reports were not submitted by the Permittees or other parties to the permit proceedings they would not necessarily be in the LANL administrative record. As a result of this comment the Department has placed the reports into the record.

Changed Permit provisions

None

12. RLWTF

Public Comment

The Permittees object to the inclusion of Renewal Permit Section 4.6 and propose that the Section be removed from the Permit. They suggest that the permit condition does not meet minimum legal criteria of permit regulations, is not supported by the record, and is an inappropriate condition to impose under RCRA permit regulations.

The Permittees state that “Section 270.32(b)(1) provides that the Department may impose permit conditions necessary to achieve compliance with RCRA regulations, including each of the applicable requirements specified in Parts 264 and 266 through 268,” and that the Department must cite an applicable regulatory requirement and must provide justification in the administrative record. They state that the Department provides no regulatory citation or support that the requirement is necessary to ensure compliance with a hazardous waste management requirement under parts 264, 266 or 268.

The Permittees further state that Section 260.10 does not distinguish between *intentional* and *non-intentional diversions* of treated wastewater and that these terms are undefined. They state that WWTU exemption does not limit how a facility may divert wastewater so long as it meets the requirements of § 260.10. “A facility can operate under the WWTU exemption so long as it uses tanks or tank systems to manage hazardous wastewater dedicated for use with an on-site wastewater treatment facility subject to an NPDES permit requirement.”

The Permittees claim that the Department’s position that the WWTU exemption would not be lost so long as EPA states unambiguously that the new configuration would be regulated by the EPA and meets the definition of a WWTU under § 260.10 goes far beyond the scope of EPA rules at § 260.10. They state that the applicability of the WWTU exemption does not require EPA to determine whether or not a unit meets the criteria of § 260.10.

The Permittees claim that the Permit Condition’s prohibition on the acceptance of listed hazardous wastes is an attempt to prescribe an operational requirement at the RLWTF, unrelated to ensuring compliance with part 264 standards. They explain that the RLWTF does not currently accept listed hazardous wastes due to its internal waste acceptance procedures and the fact that the treatment systems at the RLWTF are not configured to treat listed hazardous wastes. “The WWTU exemption allows treatment of listed hazardous wastes (§ 261.3) and does not prohibit a facility from treating listed hazardous waste.”

Finally the Permittees claim that the permit condition as written applies to “all treated wastewater,” which is broader than RCRA authority which applies by definition to *hazardous* wastewater (§ 260.10). “The WWTU exemption applies to hazardous wastes treated in tanks. Non-hazardous wastewaters are not regulated by RCRA.”

Department Response

The regulation exempting a wastewater treatment unit from regulation under RCRA requires that the exempted unit discharge treated wastewater exclusively through the regulated outfall and that diversion to other points of discharge voids the exemption. A consequence of the Permittees’ intentional failure to comply with this requirement, *e.g.*, the Permittees route wastewater to a location other than the outfall, is that the wastewater treatment unit exemption under 40 CFR § 264.1(g)(6) no longer applies to the RLWTF.

The Permittees have advised the Department that in the past they have diverted treated wastewater to other locations, namely, impoundments at TA-53. As a condition to maintaining the exemption, the Department has added the requirement that all discharges of treated wastewater must flow through the Clean Water Act outfall or otherwise as required or permitted by a Clean Water Act permit. The Permittees have advised that in the future they plan to direct treated wastewater to uses such as cooling of equipment and that they also plan to discharge such treated wastewater to certain evaporation tanks to reduce outfall discharges. The Department

would agree that the exemption would not be lost in such circumstances, so long as EPA, the issuer of the Clean Water Act permit, states unambiguously that the new configuration would be regulated by EPA as part of the Permittees' Clean Water Act compliance and meets the definition contained in 40 CFR §§ 264.1(g)(6) and 260.10. Further, the exemption would not be lost if another discharge point were used by inadvertence, such as when a leak developed, but the intentional diversion of treated wastewater voids the exemption.

The state and federal regulations create an exemption for the owner or operator of a wastewater treatment unit as defined in 40 CFR 260.10. That section defines a wastewater treatment unit as a device with three regulatory components. One, it has to be part of a wastewater treatment facility that is subject to regulation under either Section 402 or 307(b) of the Clean Water Act. Two, it has to receive and treat or store an influent wastewater that is a hazardous waste as defined in 40 CFR 261.3, or that generates and accumulates a wastewater treatment sludge that is also a hazardous waste, or it treats or stores a wastewater treatment sludge which is a waste as defined in 261.3. Third, it also needs to meet the definition of a tank or tank system in 260.10 of this chapter. The Radioactive Liquid Waste Treatment Facility at TA-50 meets these criteria.

To be a wastewater treatment unit it has to have a single discharge. The Clean Water Act permit does not so much regulate the wastewater treatment units or the treatment works, as it regulates the outfall. A CWA permit is really a performance-based permit that only regulates the quality of the effluent that comes out the outfall.

To be exempt from the Hazardous Waste Act the unit must be fully covered under the Clean Water Act, not intermittently so. As EPA stated "[t]he underlying assumption used in justifying the wastewater treatment unit exemption was that tanks used to handle hazardous wastewaters at these facilities would be provided with EPA oversight under the Clean Water Act, thereby ensuring no significant decrease in environmental control afforded at these facilities." So EPA construes the exemption to require that the wastewater treatment unit discharge treats wastewater exclusively through the Clean Water Act regulated outfall and that diversion to other points of discharge voids the exemption. This is because discharge to other points of discharge would have no regulation. The Department agrees with EPA's interpretation of the exemption.

The Permittees have advised the Department that in the past they've diverted treated wastewater to tanks at TA-53. TA-53 is approximately 1.7 miles across two canyons (Mortandad and Sandia Canyon) from TA-50. There is not a direct road. To drive to TA-53 one must drive up Pajarito Road, cross the mesa, and drive down East Jemez Road. Because the Permittees have diverted wastewater to other units where they further treat this hazardous waste, Permit Section 4.6 that requires that all discharges of treated wastewater flow through the Clean Water Act outfall.

Further, Permit Section 4.6 prohibits listed wastes from being treated at the Radioactive Liquid Waste Treatment Facility. There are numerous reasons for this. First, the prohibition simply corresponds to the present practice as described by the Permittees in their response at Exhibit 82. The Department is only describing the unit as it has been described to it. This is a reasonable limitation on the management of hazardous waste in a unit that has been allowed by broad exemption. Second, the Radioactive Liquid Waste Treatment Facility does not receive listed wastes because the treatment would not remove the listing of hazardous waste, and any subsequent management of the waste except through the designated outfall would be subject to RCRA. In the event that the laboratory was to divert listed wastes to the TA-53 evaporation tanks or anywhere else, they would be treating hazardous wastes.

Permit Section 4.6 is include in part so that the Permittees do not fall into a compliance trap where they are allowed to do something that would clearly set up an enforcement action. In a response to the Department calling in a permit for the RLWTF the Permittees responded that it is its opinion that the regulations do allow an exemption under the circumstances and a permit application is not required.

Permit Section 4.6 is a compromise position between the Department's call-in for a RCRA permit for the RLWTF and LANL's position that they should be able to proceed under business-as-usual, which is what was in their response. The restrictions on the RLWTF put the Permittees on notice that these past practices of diversion of wastewater to the TA-53 must end, and if they don't, they must submit a RCRA permit application for the RLWTF as required by the call-in letter. This compromised position is a way to ensure that the laboratory continues to use the RLWTF, they continue to enjoy the broad exemption under RCRA, and yet the Department is satisfied that there won't be any gap in regulations as occurred with the diversion to the TA-53 evaporation tanks.

Changed Permit provisions

None

13. Relationship between the Permit and the Consent Order

Public Comment

One commenter suggests that Permit Part 11, *Corrective Action*, should be removed from the permit and instead, the Department should rely on the corrective action procedures specified in the Consent Order.

“A great deal of time and effort has been expended on this issue [corrective action at TA-54 MDAs] and since no permit is being applied for or issued for these units, the issue should be left to corrective action under the Consent Order.

When the Consent Order expires then the future monitoring and any other activities tied to those units should be rolled into a post closure care permit that can be worked out at that time and amended to the current permit. With the corrective action yet undecided and the full investigation yet incomplete it is non productive to consider post closure care at this point. It would appear to be more productive for NMED to develop a technical guidance document that provides facilities an outline of how the regulator will apply corrective action to those sites where it is applicable.

If the Consent Order is a good example then it could be used as boiler plate for such an endeavor. The document could be tailored to meet specific sites with unique circumstances but it would go a long ways to making this process consistent. It would also have the benefit of making it possible to refer to sections in that document rather than putting in long sections in a permit. Since the permit can not change the Consent Order, there are no units in the permit that require corrective action, and the public is unable to alter the language that comes from the Consent Order (prohibits public input as required for permitting activities), I submit that this section should be removed from the permit and maintained in the Consent Order.”

Another commenter believes that the Permit would address the closure and post-closure of all RCRA regulated units and that the Compliance Order on Consent would address the SWMUs

and AOCs. “The permit indicates in this section [Section 9.3] that the consent order is where the closure and post-closure care requirements for the Material Disposal Areas will be addressed. However, in Section 9.5 the permit requires a closure certification report for all permitted units.”

Department Response

The Renewal Permit must have a section that outlines the requirements for corrective action for releases. The previous LANL Hazardous Waste Facility Permit had such requirements and so too must the Renewal Permit, be it for a limited number of release scenarios. The procedures for corrective action in the Renewal Permit are the same as those used for corrective action under the Consent Order and both documents substantially conform to the requirements at 40 CFR Part 264 Subpart F.

"Corrective action" is a term that is used to describe what a permittee must do in response to a release to an environmental media, regardless of when a release happened. For example, a permittee must conduct an investigation of the nature and extent of contamination and submit a report on that investigation. If that investigation reveals that corrective action is needed because there is known or possible future harm to human health or the environment, the corrective action process dictates that a corrective measures evaluation report that examines the range of remedial alternatives be submitted to the regulatory authority. The regulatory authority then determines the appropriate remedial alternative and the permittee must submit a corrective measures implementation plan that prescribes how to execute that remedy. The Renewal Permit and the Consent Order have similar procedures to accomplish this corrective action process.

The Consent Order is strictly concerned with corrective action. The Consent Order addresses existing releases, sometimes referred to as legacy sites, throughout LANL and not necessarily at hazardous waste management units. The Consent Order also addresses new releases at non-hazardous waste management units or at sites referred to as solid waste management units (SWMUs) or areas of concern (AOCs). To date LANL has completed corrective action under the Consent Order or under the previous Hazardous Waste Facility Permit at approximately 1400 sites (see the list of sites identified for informational purposes only at Renewal Permit Attachment K, Table K-1). LANL must complete corrective action under the Consent Order at approximately 750 sites (see the list of sites identified for informational purposed only at Table K-3).

Corrective action under the Renewal Permit, at Part 11, is forward-looking. That is, it is concerned with releases that may occur in the future. There are four circumstances that cause corrective action to occur under the Permit and not under the Consent Order. These circumstances are listed at Permit Section 11.2 and in the Consent Order at Section III.W.1. They are: 1) new releases of hazardous waste or hazardous constituents from hazardous waste management units at the facility; (2) the closure and postclosure care requirements, as they apply to hazardous waste management units at the facility; (3) implementation of controls, including long-term monitoring, for any SWMU on the Permit's Corrective Action Complete With Controls list; and (4) any releases of hazardous waste or hazardous constituents that occur after the date on which this consent order terminates. The Department expects that whatever corrective action the Permittees conduct under the Renewal Permit will be very limited.

The Renewal Permit and Consent Order language concerning corrective action is largely the same. Nevertheless, commenters point out that the Renewal Permit uses the term “hazardous waste management unit” where the Consent Order uses the term “operating unit.” The

Department incorporates the term *hazardous waste management unit* into the Renewal Permit because it is defined in the regulations at 40 CFR § 260.10 and is used throughout the Permit. In drafting the Consent Order the Department meant the term *operating unit* to have the same definition at § 260.10 so considers the Renewal Permit's use of the term *hazardous waste management unit* an improvement.

A major difference between the Consent Order and the Renewal Permit regarding corrective action concerns the enforcement procedure. The enforcement procedures in the Consent Order reflect the specific provisions under the Hazardous Waste Act for enforcement of orders. In addition, the Consent Order has stipulated penalties that cannot be incorporated through a permit. Stipulated penalties can only be through an agreed-upon document.

The relationship between the Renewal Permit and the Consent Order, specifically how the two documents address corrective action and closure at TA-54 MDAs G, H, and L, *i.e.*, the regulated units, is addressed above under the topic "regulated units/alternative requirements." As stated above, the Department is using the Consent Order as an alternative to the Renewal Permit to address corrective action and closure at the regulated units because, as allowed by the regulations, a release from a hazardous waste management unit regulated by the Renewal Permit that combines or commingles with a release covered by the Consent Order is most appropriately cleaned up under the requirements of the Consent Order.

It must be understood that when a release has occurred, the processes of investigating the nature and extent of that release and determining of how to remedy that release are the same in both the corrective action and closure procedures. It must also be understood that the Consent Order's cleanup levels and the Permit's closure performance standards are identical.

Though the Consent Order addresses remedy selection, that remedy may include long-term maintenance and monitoring, *i.e.* post-closure care. Post-closure care will require a permit and those permit requirements will be incorporated into the Renewal Permit.

Finally, Permit Section 11.1 states "[n]othing in this Permit Part shall be construed to constitute a change to the Consent Order." That is, the Renewal Permit cannot be used to alter or change the Consent Order, and the due process requirements in the Consent Order are preserved.

Changed Permit provisions

None