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CERTIFIED MAIL – RETURN RECEIPT REQUESTED

April 5, 2007

David Gregory, Federal Project Director
Department of Energy
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David McInroy
Remediation Services Deputy Project Director
Los Alamos National Security, LLC
P.O. Box 1663, Mail Stop J591
Los Alamos, New Mexico 87545

RE: WELL EVALUATIONS FOR INTERMEDIATE AND REGIONAL WELLS
LOS ALAMOS NATIONAL LABORATORY
EPA ID# NM0890010515
HWB-LANL: GW-MISC

Dear Messrs. Gregory and McInroy:

The purpose of this letter is to express the New Mexico Environment Department's (Department's) serious concerns about the state of the groundwater monitoring network at the Los Alamos National Laboratory (LANL), and how deficiencies in the network and in the monitoring conducted by Los Alamos National Security, LLC, and the U.S. Department of Energy (collectively, the Permittees) will likely affect your organizations' ability to meet cleanup milestones in the March 1, 2005 Order on Consent (Order). The Department's concerns are borne from well-documented problems the Permittees have experienced in the placement, drilling, construction, development, and sampling of its wells. Groundwater monitoring beyond reproach is crucial not only to protection of this vital resource, but also to the remedy selection process for the larger solid waste management units the Permittees must address to stay in compliance with the Order. Compliance with closure and post-closure care requirements also hinge on reliable and defensible groundwater data.

To achieve the objectives and meet the milestones in the Order and to provide effective detection and compliance monitoring for hazardous waste management units, the Permittees must make a much greater effort to address this problem. Concomitantly, the Permittees must accelerate the

timeline under which they are operating with respect to evaluating monitoring wells for their ability to detect contaminants that may reach or have reached intermediate and regional groundwater beneath the facility. The Department's dissatisfaction with the Permittees' pace compels us to impose the requirements herein to ensure timely establishment of effective groundwater monitoring capabilities in specific areas where remedy and closure activities are imminent. These areas include Technical Areas (TA) -50, -54, and the Los Alamos-Pueblo Canyon (including TA-21) watershed. The Department expects similar consideration for the 260 Outfall and Mortandad Canyon well evaluations that were required by the Department in letters dated November 29, 2006 and February 23, 2007, respectively.

Well Evaluations

The Permittees must evaluate all intermediate and regional groundwater monitoring wells in the subject areas for their potential value as a component in a groundwater monitoring network. The evaluations must assess each well's construction and location, paying particular attention to a well's, or group of wells', ability to yield samples capable of detecting contaminants of concern released from waste management units. To the extent possible, wells should double as compliance monitoring points; the evaluations should consider this. Factors to consider in the evaluations, and for groundwater monitoring network design, include, but are not limited to:

1. well construction (e.g., excessive screen lengths, excessive filter pack length, damaged casing or screen);
2. seal integrity between water bearing intervals, including influences from annular seal material;
3. spatial distribution of wells relative to groundwater flow, including any pumping influences;
4. well location and distribution relative to potential contaminant sources, including influences on groundwater flow direction and groundwater velocity from municipal supply wells;
5. location of screened interval relative to hydrostratigraphic units monitored and the hydrologic properties of those units;
6. influences on groundwater flow by geologic structures such as faults, folds, and fracture zones;
7. influences from chemical, mineralogical, and physical impacts resulting from the use of drilling fluids and inadequate well development. The Permittees should incorporate the results from Well Screen Analysis Report, as appropriate; and
8. remedies under consideration for the area (e.g., pump and treat, natural attenuation).

The Department expects the evaluations for each area (e.g., TA-54) to include recommendations regarding the design of the groundwater monitoring network for the area, and where appropriate, the relevant watershed(s). The recommendations must: 1) identify any gaps in well coverage of groundwater zones (both laterally and vertically), 2) propose locations for additional monitoring wells, 3) identify the target hydrostratigraphic units, 4) identify wells and well screens that may

pose a pathway for contaminant migration, 5) identify wells that are unusable or irreparable, 6) include plans to isolate or plug and abandon wells, well screens, or both, 7) recommend reduced functions (e.g., use for water level measurements only) for some well screens in some wells, and 9) identify any available wells suitable for monitoring releases from permitted or interim status waste management units.

As remedies are evaluated, selected, and implemented, additional groundwater monitoring needs may be identified that are specific to the remedy requirements. These wells may be installed as part of the implementation of a remedy, closure plan implementation, or more expeditiously, if required or approved by the Department. Again, the Department encourages the Permittees to use wells for multiple purposes (e.g., detection monitoring for remedies; compliance monitoring for hazardous waste management units; investigation of nature and extent of contamination), where appropriate.

The evaluations must utilize all groundwater monitoring and water level information available, including the results of the most recent approved Well Screen Analysis Report. Justification must be provided if the most recent data used in the well assessment is older than six months from the date of receipt of this letter, or if there are intervals of greater than six months between the collection of samples for the data sets used. The evaluation shall provide recommendations concerning well rehabilitation, well replacement, sampling system replacement, and installation of additional wells within the areas previously identified.

TA-54

The Department is particularly concerned that not enough wells are currently available for regional groundwater monitoring at TA-54. Problems with three of the existing wells (R-20, R-22, R-32) severely limit their usefulness to support remedy selections, post-closure monitoring, or both. Moreover, the Permittees' plans to address some of the monitoring problems (e.g., rehabilitation; reduced monitoring function), while appropriate in many cases, will further reduce the existing wells' ability to produce adequate, relevant, and timely data. To expedite progress, and improve the chances that the Permittees will be able to meet relevant Order milestones, the Department imposes the following specific requirements for these three wells.

Well	Required Action	Screens for continued monitoring	Screens to isolate or abandon	Rationale
R-20	Remove passive sampling system and install active sampling system	#1, #2	#3	This action will allow continued monitoring of two zones where toluene has been detected, until the location and depth of a replacement well(s) can be identified and installed. Replacement and/or additional wells replacing screen #3 or to monitor other zones should be identified in the evaluation for TA-54. The well is located near production well PM-2 and is possibly located appropriately to serve as a sentry well to detect releases from TA-54 Material Disposal Areas. Installation of an active sampling system may improve groundwater sample quality.
R-22	Remove passive sampling system and install active sampling system	#2, #3	#1, #4, #5	The well is located adjacent to TA-54 and will be useful until the evaluation for TA-54 is submitted. Prior to isolation of screen #5, the Permittees must pump and sample the zone to identify whether the tritium is present in this interval or may have been introduced during well drilling and construction. Currently, screen 5 indicates the presence of tritium more than 500 feet below the water table. Replacement of the sampling system may change some details of the well evaluation. Installation of an active sampling system may improve groundwater sample quality.
R-32	Remove passive sampling system and install active sampling system	#1	#2	Located adjacent to TA-54 and will be useful at least until such time the evaluation is submitted. Replacement of sampling system may change the conclusions of the well evaluation. Installation of an active sampling system may improve groundwater sample quality.

R-25

Progress toward identifying the ultimate fate of well R-25 is unacceptable. The R-25 location is nevertheless important because it provides the best information regarding the extent of contamination in the intermediate water-bearing zones. The Department therefore imposes the following requirements for R-25. The location and design of wells targeting equivalent intervals of the R-25 screens to be isolated or abandoned must be approved by the Department prior to installation.

Well	Required Action	Screens for Continued Monitoring	Screens to Isolate or Abandon	Rationale
R-25	NMED requires that the Westbay sampling system be maintained and that screens #1, #2, #3, #4, and #5 remain isolated and no longer be used for groundwater sample collection. In the interim, CdV-16-2(i)r will suffice to monitor the top of the perched aquifer observed at R-25.	#6, # 7, #8	#1, #2, #3, #4, #5, #9	The required actions stem from: speculation by the Permittees that nickel and chromium detections represent leaching of stainless steel well casing in screens #1 and #2, severe damage to screens (#3 and #9), other construction problems (e.g., tremie pipe), and indications from the Permittees that removal of the sampling system may damage the well even more, making rehabilitation impossible. In the interim, R-25 may be used for water level measurements.

General Requirements

Prior to installation of any new sampling systems in the existing wells, the well screens must be redeveloped following the guidelines in section X.C.5 of the Order, using a combination of methods (rather than pumping alone) to more vigorously rehabilitate the specific screens. For example, to make redevelopment more effective the wells must be pumped concurrently with surging or jetting to remove as much suspended material as possible. Samples must also be collected both prior to removal of the passive sampling systems and following the installation of the active sampling systems for comparison purposes. Any redevelopment necessary to remove possible water introduced during removal and the installation of new sampling systems must also be accomplished prior to sampling. Every precaution must be made to isolate the individual screened intervals to minimize any communication and cross-contamination between the intervals while the well is open during these activities.

Schedule

The evaluations and the plan for proposed replacement wells at R-25 must adhere to an aggressive schedule to facilitate meeting the Order milestones. The Department therefore imposes the following schedule:

- R-25 – Plan for screen isolation/abandonment and well replacement; Due June 30, 2007
- TA-54 – Well evaluation and network recommendations; Due July 31, 2007

- TA-54 – Plan for screen isolation/abandonment and sampling system replacement; Due September 30, 2007.
- TA-50 – Well evaluation and network recommendations; Due August 31, 2007
- Los Alamos-Pueblo Canyon (TA-21) – Well evaluation and network recommendations; Due December 30, 2007

The documents called for in this letter do not have prescribed formats in Section XI of the Order. The Permittees must therefore submit outlines of the evaluations and the R-25 well replacement proposal at least 60 days before their due date. The Department commits to reviewing and responding to the proposed formats within 10 business days of receipt of each format proposal.

As you know, the Order has ambitious, but negotiated, cleanup goals. The Department remains committed to following the schedule agreed to by both parties in the Order. We believe the Permittees share this commitment, and fulfillment of the requirements set forth in this letter will advance our mutual interests in this regard. Unfortunately, the failure of the Permittees to consider realistic investigation scenarios and remediation alternatives for budgeting purposes has contributed to the delays in remedy selection that now seem inevitable. Until reliable long-term groundwater monitoring networks are in place, remedy selections will be limited to more conservative alternatives to ensure protection of human health, the environment, and the vital groundwater resource beneath the Pajarito Plateau. The Department acknowledges that the scope of work outlined above may be beyond that budgeted by DOE for this and future federal fiscal years. Nevertheless, the Department expects that the Permittees will actively seek the funding necessary to execute the actions called for in this letter so that compliance with the Order is achieved.

Should you have any questions please contact me at (505) 476-6016 or John Young of my staff at (505) 476-6038.

Sincerely,

James Bearzi
Chief
Hazardous Waste Bureau

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File: Reading and '07 LANL General