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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

August 12, 2009

Kimberly A. Davis
Acting Manager
Sandia Site Office/NNSA
U.S. Department of Energy
P. O. Box 5400, MS 0184
Albuquerque, NM 87185-5400

Francis B. Nimick
Deputy Director
Nuclear Energy & Global Securities Technologies
Sandia National Laboratories
P. O. Box 5800, MS 0701
Albuquerque, NM 87185

RE: NOTICE OF DISAPPROVAL: RESPONSE TO THE NOTICE OF DISAPPROVAL FOR THE TIJERAS ARROYO GROUNDWATER INVESTIGATION REPORT, FEBRUARY 2009
SANDIA NATIONAL LABORATORIES, EPA ID# NM5890110518
SNL-05-028

Dear Ms. Davis and Mr. Nimick:

The New Mexico Environment Department (NMED) has reviewed the subject Notice of Disapproval (NOD) Response, which addresses deficiencies in the *Tijeras Arroyo Groundwater Investigation Report* (TAG IR), November 2005. NMED has determined that the TAG IR cannot be approved at this time, as revisions are necessary. The U. S. Department of Energy and Sandia Corporation (the "Permittees") are required to address the following deficiencies before the NMED can make a final determination.

GENERAL COMMENTS:

1. **General Comment #2**
   Several inconsistencies occur within the data listed in Tables A-1 and B-1. A comparison of these data reveal discrepancies between groundwater elevations listed in Table A-1 (Column 4) and calculated groundwater elevations. Specifically, groundwater elevations were calculated using the depth to water (Table A-1, column 3) and the top of casing

elevation (Table B-1, Column 5) for each well. The two sets of groundwater elevations vary from 0.08 ft to 1 ft at five wells that include Eubank-1, KAFB-0504, KAFB-3392, TJA-2, and TJA-5. The Permittees must explain the discrepancies and submit revised tables to correct the erroneous data.

Additionally, the data provided in Table B-1 do not correspond to the data shown in TAG IR Figure 3.1.3-5, "TAG Hydrologic Section." According to Table B-1, well completion data are unavailable for well KAFB-0506. However, TAG IR Figure 3.1.3-5 depicts well KAFB-0506 with its ground surface elevation, screened interval, and bottom of casing, indicating the availability of well completion data for well KAFB-0506. The Permittees must explain this discrepancy and provide the missing data in a revised Table B-1.

SPECIFIC COMMENTS:

2. **Specific Comment #17: Section 2.9.3, page 2-43, Figure 2.9.3-1 and Section 2.9.8, page 2-44, Figure 2.9.3-2**

Comparison of soil vapor well sampling port data and perched aquifer groundwater elevation data reveals two issues. First, according to perched aquifer groundwater elevations shown in revised Figures 2.9.3-1 and 2.9.3-2, the deepest soil vapor sampling port resides at or below the potentiometric surface of the perched aquifer for soil vapor well 46-VW-02. Table 1 (below) lists data from the revised figures and data published in the SNL document *Compilation of Monitoring Well Construction Diagrams Contained in the SNL/ER Project Well Database* (February 2004). According to the revised figures, the water table of the perched aquifer occurs at approximately 5,080 feet above mean sea level (FAMSL) at this soil vapor well. Table 1 (below) indicates the deepest sampling port of soil vapor well 46-VW-01 has an elevation of 5,048.51 FAMSL, which is below the water table of the perched aquifer.

Table 1. Soil vapor sample elevation vs. Potentiometric surface elevation

Soil Vapor Wells	46-VW-02	Units
Depth of Deepest Sampling Port [1]	296	ft bgs
Protective Casing Elevation [2]	5344.51	FAMSL
Calculated Deepest Sampling Port Elevation [3]	5048.51	FAMSL
Nearest Perched Aquifer Contour Line Elevation [1]	5080	FAMSL

ABBREVIATIONS
bgs = below ground surface
FAMSL = feet above mean sea level
ft = feet

FOOTNOTES
[1] Revised Figures 2.9.3-1 and 2.9.3-2
[2] *Compilation of Monitoring Well Construction Diagrams Contained in the SNL/ER Project Well Database*, Sandia National Laboratories, February 2004.
[3] Calculation: Protective Casing Elevation - Deepest Sample Depth = Deepest Sample Elevation

The Permittees must explain how the elevation of the deepest sample port was determined and whether the deepest sample port occurs below the perched aquifer potentiometric surface.

Related to the first issue, the TAG IR states in Section 2.9.3, "[i]n past attempts to sample soil-vapor wells 46-VW-02 and 227-VW-01, the deepest sampling port in each well could not be sampled. It is believed that these deep sampling ports are located within or near the capillary fringe, with the hydrostatic pressure being too great to allow vapor sampling [page 2-36, third paragraph, first two sentences]." The Permittees must explain this statement by elaborating upon the relationship between hydrostatic pressure and soil vapor sampling.

3. **Specific Comment #20: Section 3.1.3.2 , page 3-3, Figure 3.1.3-1**
In process of revising Figure 3.1.3-1, the labels for the West Sandia Fault, the Sandia Fault, the Tijeras Fault, and Manzano Base were removed. Additionally, the boundary line between southern Albuquerque and northern Isleta Pueblo is absent suggesting that Isleta Pueblo land abuts the western side of Kirtland Air Force Base (KAFB), where McCormick Ranch is actually located. To maintain consistency with TAG IR Section 3.1.3.2 and TAG IR Figure 3.3.5-2, the Permittees must modify revised Figure 3.1.3-1, as follows:
    - Add a label for the West Sandia Fault and restore the phrase "deeper than perched system."
    - Revise the West Sandia Fault line to reflect that its location is approximate.
    - Add a label for the Sandia Fault.
    - Add a label for the Tijeras Fault.
    - Add a label for the Coyote Fault.
    - Add a label for the Manzano Base.
    - Extend the Isleta Pueblo boundary line to the west.

    The Permittees must submit the revised figure to the NMED.

4. **Specific Comment #22: Section 3.1.3.3, page 3-7, Figure 3.1.3-3 and Section 3.3.4.1, page 3-20, 1st paragraph, last two sentences**
Specific Comment #23: Section 3.1.3.3, page 3-8, Figure 3.1.3-4
Two key issues arise from Specific Comments #22 and #23 of the NMED's August 1, 2008 NOD and the Permittees' response to both comments. Specific Comment #22 focused on the regional aquifer, and Specific Comment #23 focused on the perched aquifer. The first of the two issues addresses the construction of current water level maps for both the regional aquifer (Specific Comment #22) and the perched aquifer (Specific Comment #23). The second issue addresses data quality.

    Issue #1: Current water level maps

    In the first NOD dated August 1, 2008, NMED requested in Specific Comments #22 and #23 that the Permittees submit new potentiometric surface maps for the regional and perched aquifers using concurrent contemporaneous water levels newly obtained

for the TAG wells. NMED also requested that the new maps depict those wells that were excluded due to "anomalous" groundwater elevations.

The Permittees provided new maps, in response to Specific Comments #22 and #23 of the August 1, 2008 NOD. Examination of the new maps raises new questions:

- In the written response to both Specific Comment #22, the Permittees indicated that one regional well (KAFB-0615) was not used for contouring because its water level elevation significantly differs from surrounding wells. The Permittees explain that the anomaly may be due to the West Sandia Fault, which lies between the excluded regional well (KAFB-0615) and the nearest TAG monitoring well (KAFB-0616), possibly affecting regional water levels. However, the map does not show the West Sandia Fault.
- The submitted figures remain limited to wells designated for TAG despite the existence of additional surrounding monitoring wells that may further understanding of the groundwater systems. For example, different configurations of the regional, perched, and intermediate or merging aquifer systems are evident upon inclusion of water level data from eleven KAFB wells (KAFB-0611, KAFB-0612, KAFB-0613, KAFB-0617, KAFB-0618, KAFB-0619, KAFB-0620, KAFB-0621, KAFB-0622, KAFB-0623, and KAFB-0624). While these eleven wells are not specifically TAG wells, their proximity to TAG wells makes them useful for defining the groundwater systems. Inclusion of these wells will require cooperation using the negotiated agreements of the TAG High Performing Team (HPT).

To further the understanding of the groundwater aquifer systems, the Permittees must revise the water table maps for the regional and perched aquifers. The revisions must include:

- The West Sandia Fault;
- The eleven additional KAFB wells ((KAFB-0611, KAFB-0612, KAFB-0613, KAFB-0617, KAFB-0618, KAFB-0619, KAFB-0620, KAFB-0621, KAFB-0622, KAFB-0623, and KAFB-0624); and
- Reinterpretation of all groundwater systems, as necessary.

The Permittees must resubmit all figures to the NMED.

Issue #2: Data quality

In the first NOD dated August 1, 2008, NMED requested that the Permittees explain the discrepancies between groundwater elevation data provided in electronic format on March 10, 2008 and the water levels shown in two TAG IR figures (Figures 3.1.3-3 and 3.1.3-4).

In response to the first paragraph of Specific Comment #22 of the August 1, 2008 NOD, the Permittees stated:

> "Please disregard the March 2008 data informally transmitted to the NMED by SNL/NM ER staff. At the time of the request, it was unclear why NMED

required that data and it was thought that only general water level trends were of interest. The data that were readily available in the electronic format requested by NMED had not been through a quality assurance check. This data set does not supersede the data provided in the TAG IR."

The Permittees' response to Specific Comment #22 indicated this response also applied to Specific Comment #23.

Due to the discrepancy between informal data and published data, the Permittees must provide a groundwater elevation data set, from well installation to the present, in electronic format for all TAG monitoring wells and the eleven additional KAFB wells (KAFB-0611, KAFB-0612, KAFB-0613, KAFB-0617, KAFB-0618, KAFB-0619, KAFB-0620, KAFB-0621, KAFB-0622, KAFB-0623, and KAFB-0624). The data provided in the electronic submittal must undergo "a quality assurance check" and be true and accurate, to best of the Permittees' knowledge. The Permittees' must submit the data set on a CD. In the interest of maximizing the use of both NMED's and the Permittees' limited resources, NMED urges the Permittees not to submit unreliable data.

The Permittees must submit the required information no later than October 22, 2009. The response must be in the form of two hard copies and two CDs compatible with Microsoft Word and Microsoft Excel, as appropriate.

If you have any questions regarding this Notice of Disapproval or if you would like to discuss the comments prior to your response, please contact Dezbah Tso of my staff at (505) 222-9528, or at the above letterhead address.

Sincerely,

James P. Bearzi
Chief
Hazardous Waste Bureau

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