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**CERTIFIED MAIL – RETURN RECEIPT REQUESTED**

August 3, 2017

Colonel Richard W. Gibbs  
 Base Commander  
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 2000 Wyoming Blvd SE  
 Kirtland AFB, NM 87117-5606

Lieutenant Colonel Wayne J. Acosta  
 Civil Engineer Office  
 377 Civil Engineering Division  
 2050 Wyoming Blvd SE, Suite 116  
 Kirtland AFB, NM 87117-5270

**RE: RESOURCE CONSERVATION AND RECOVERY ACT INVESTIGATION REPORT  
 BULK FUELS FACILITY SPILL  
 SOLID WASTE MANAGEMENT UNIT ST-106/SS-111  
 KIRTLAND AIR FORCE BASE  
 EPA ID# NM9570024423, HWB-KAFB-MISC**

Dear Colonel Gibbs and Lt. Colonel Acosta:

The New Mexico Environment Department (“NMED”) has received the U.S. Air Force’s (“Permittee”) *Resource Conservation and Recovery Act Facility Investigation Report* (“Report”) dated January 20, 2017. This Report summarizes the investigation of fuel releases at the Bulk Fuels Facility (“BFF”) as well as a summary of interim measures performed between November 11, 1999 and December 31, 2015.

NMED’s review of the Report is ongoing but has progressed sufficiently to identify three major areas of concern. Given the nature of the issues, NMED thinks it is prudent to bring the issues to the Permittee’s attention before a final review of the Report is completed so that the Permittee can begin work immediately. The following three issues must be addressed by the Permittee as an addendum to the Report:



1. Incomplete characterization of the dissolved-phase groundwater plume(s) – Water conservation efforts taken by the Albuquerque Bernalillo County Water Utility Authority (“WUA”), along with use of the Rio Grande as a source of drinking water via the San Juan Chama surface water project, has resulted in the decreased pumping of some WUA water supply wells and the continuous rise of the water table in the BFF project area. As presented in the June 2017 hydrogeology working group meeting, the rate of the water table rise has accelerated from 2-3 feet per year to nearly five feet in the past six-months. As a result, all but nine of the 62 shallow, water-table wells have submerged well screens. In some cases, the shallow, water-table wells are submerged by as much as 20 feet. Groundwater monitoring wells screened across the water table are required so that accurate water-quality and water-level conditions can be measured for the uppermost portion of the aquifer.
2. Technically incomplete and biased estimates of concentration trends and degradation rates – The Report states that there are decreasing concentration trends in the dissolved-phase benzene and ethylene dibromide (“EDB”) plumes. The statistical analysis of concentration trends, as presented in Appendix T of the Report, uses all data available between Quarter 1 (“Q1”) 2011 and Quarter 4 (“Q4”) 2015 and fails to correct the dataset for samples collected from wells where an interim measure (e.g., bioslurping) was either ongoing or potentially influencing conditions at the well. Additionally, the Report fails to discuss potential contributing factors to concentration trends (e.g., rising water table) in a significant manner and in some cases completely ignores the other processes that may be occurring in the plumes that contribute to either decreasing or increasing concentration trends.

The Report also includes estimated rates of degradation for benzene and EDB, presented in Appendix T. The data used to estimate the half-life of benzene and EDB for a given well uses all samples collected between Q1 2011 and Q4 2015. This dataset has not been corrected to eliminate data collected during the operation of an interim measure (e.g., bioslurping) at or near a well. Additionally, the evaluation does not eliminate data where LNAPL is measured in the well or at concentrations greater than or equal to the effective solubility of the contaminant. Finally, the evaluation does not address data collected after a well screen was submerged or how this may impact the estimated rates. The combination of all of these factors results in a biased half-life for benzene and EDB.

3. Incomplete delineation of vertical and horizontal extent of light non-aqueous phase liquid (“LNAPL”) – The Report states that the site investigation activities have adequately defined the horizontal and vertical extent of LNAPL. The lines of evidence presented in the Report are limited to measured LNAPL thickness and soil vapor measurements. The Report fails to evaluate and discuss the occurrence of benzene and EDB concentrations equal to or greater than their respective effective solubility. Additionally, the horizontal extent of LNAPL cannot be delineated from measured LNAPL thicknesses as the rising water table has “trapped” LNAPL within the aquifer. The migration of LNAPL from the source area had begun before the groundwater monitoring well network extended north of the Base boundary. It is possible that as LNAPL was released from underground piping

in the source area and as the LNAPL came into contact with groundwater that it migrated downgradient (northward) even as the water table was dropping, creating a dynamic distribution of LNAPL horizontally as the water table decreased and LNAPL continued migrating.

The Report erroneously concludes that groundwater concentrations indicate that the LNAPL is at equilibrium with groundwater. Groundwater concentrations for benzene and EDB indicate the ongoing presence of a submerged LNAPL source contributing to the dissolved-phase plumes for these constituents. The Q4 2015 groundwater data show six wells within the source area with benzene concentrations greater than the site-specific effective solubility of benzene. A comparison of the Q4 2015 groundwater benzene concentrations to the Q4 2016 groundwater benzene concentrations not only demonstrates the persistence of LNAPL, as indicated by the exceedances of benzene effective solubility, but do so by as much as 95%. In Q4 2016, wells that had previously been below the effective solubility for benzene in Q4 2015 are significantly above it in Q4 2016. For example, well KAFB-1066 has a benzene concentration of 108 µg/L in Q4 2015 (Table X of the Report) and in Q4 2016 the benzene concentration is 2,300 µg/L.

NMED acknowledges the Permittee has submitted a work plan, dated June 21, 2017, for the collection of continuous cores to look at the vertical and horizontal extent of LNAPL at the BFF site. The planned coring locations and depths will need to be evaluated considering the findings in NMED's review-to-date of the Report.

NMED requests that the Air Force participate in a series of technical working groups to discuss the issues outlined in this letter. The primary objective of the technical working group meetings will be to scope and coordinate how these issues will be resolved and the Report appropriately amended. The Permittee must submit a work plan for NMED review and approval within 60 days of the technical working group conclusion.

If you have any questions regarding this letter, please contact Diane Agnew at (505) 222-9555.

Sincerely,



Juan Carlos "J.C." Borrego  
Deputy Secretary  
Environment Department

cc: Col. M. Harner, KAFB  
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File: KAFB 2017 Bulk Fuels Facility Spill