



SUSANA MARTINEZ
Governor
JOHN A. SANCHEZ
Lieutenant Governor

NEW MEXICO
ENVIRONMENT DEPARTMENT



2905 Rodeo Park Drive East, Building 1
Santa Fe, New Mexico 87505-6303
Phone (505) 476-6000 Fax (505) 476-6030
www.env.nm.gov

RYAN FLYNN
Cabinet Secretary
BUTCH TONGATE
Deputy Secretary

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

August 21, 2015

Ms. DeAnna Rothhaupt
Chief, Holloman AFB Environmental
49 CES/CEIE
550 Tabosa Avenue
Holloman AFB, NM 88330-8261

**RE: DISAPPROVAL
FINAL NITRATE CHARACTERIZATION STUDY REPORT, JANUARY 2014
HOLLOMAN AIR FORCE BASE, EPA ID # NM6572124422
HWB-HAFB-14-001**

Dear Ms. Rothhaupt:

The New Mexico Environment Department (NMED) is reviewing the Holloman Air Force Base (the Permittee) *Final Nitrate Characterization Study Report*, dated January 2014 (the Report). The purpose of the study is to establish screening background concentrations for various nitrogen-bearing compounds (nitrate, nitrite, ammonia, and total Kjeldahl nitrogen) in groundwater and soil at the Facility. In reviewing the report thus far, the NMED has identified missing information and deficiencies which need to be addressed before the review can be completed. The NMED's concerns are set forth in the following comments.

1. As presented in Table 5 of the Report, the Permittee proposes that the background screening concentration for nitrate be set at 37.77 milligrams per liter (mg/L), which exceeds the New Mexico Water Quality Control Commission standard and the U.S. Environmental Protection Agency Maximum Contaminant Level for nitrate (both set at 10 mg/L). NMED cannot accept such a screening background concentration unless the Permittee demonstrates that it is based on water quality data that are representative of natural conditions. To assist with this demonstration, the Permittee must:
 - a. Collect groundwater samples at all 24 background monitoring wells (MWs) and analyze them for perchlorate. Appreciable concentrations of perchlorate in association with nitrate could suggest an anthropogenic source for both compounds.

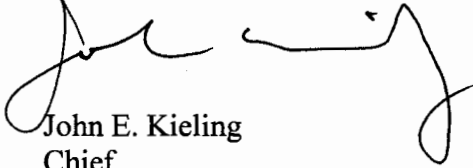
- b. Collect groundwater samples at all 24 MWs and analyze them for stable isotopes of nitrogen and oxygen (specifically $^{15}\text{N}/^{14}\text{N}$ and $^{18}\text{O}/^{16}\text{O}$). The data, in the form of $\delta^{15}\text{N}$ and $\delta^{18}\text{O}$, must be plotted on a graph similar to the one shown on Figure 1 (enclosed with this letter) to support interpretation of the data.
2. In Section 1.4 of the Report, the Permittee states that “In addition, there are numerous active and inactive septic/leachfield systems and sites used for sewage disposal (e.g. DP-30/SD-33 disposal pits), located throughout HAFB which may have also contributed anthropogenic releases of nitrogen compounds to the environment. However, sites/buildings which have septic/leachfield systems or were used for sewage disposal areas are being investigated under separate contracts”.
The locations of active and inactive septic/leachfield systems and sites used for sewage disposal are of paramount importance in conducting a background study for nitrate and other nitrogen-bearing compounds. All such features located throughout the Facility must be shown on a map in conjunction with the locations of the 24 MWs, along with any other sites where a nitrogen-bearing substance is known to have been or potentially was or is being released into the environment. The map must be included in the revised Report. NMED acknowledges that the locations of the septic systems were provided in a document submitted by the Permittee in 2007. However, these locations must be shown in the Report for future reference.
3. Regarding source area OT-04 (see Figure 2-8), the direction of groundwater flow (shown as north-northeast on the figure) is opposite of that for the regional groundwater as shown on Figure 2-7. Additionally, the water table between wells MW-04-03 and MW-04-04 is essentially flat; whereas, it dips steeply between wells MW-04-02 and MW-04-03. Furthermore, as shown on Table 2-3 of the Report, the water table elevation at well NSA04-MW01 (not used to construct Figure 2-8) is lower than that at well MW-04-02, suggesting groundwater flow to the south. Due to such unusual or conflicting data, the direction of groundwater flow at site OT-04 must be confirmed via the installation of additional wells, or through resurveying the existing wells and re-measuring the depth to water to check for errors in the reported water table elevations, or both. The Permittee must resurvey the wells at the site to verify the accuracy of the measuring points in order to establish, with reasonable confidence, the direction of groundwater flow at site OT-04. The results of this effort must be included in the revised Report, including any necessary corrections to Figure 2-8.

The Permittee shall submit the revised Report to NMED on or before **November 13, 2015** in the form of two paper copies and one electronic copy (in MS Word/ Excel™ format).

Ms. Rothhaupt
August 21, 2015
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If you have any questions regarding this matter, please contact Mr. David Strasser of my staff at (505) 222-9526.

Sincerely,

A handwritten signature in black ink, appearing to read "John E. Kieling". The signature is fluid and cursive, with a large initial "J" and "K".

John E. Kieling
Chief
Hazardous Waste Bureau

cc: D. Cobrain, NMED HWB
W. Moats, NMED HWB
C. Amindyas, NMED HWB
D. Strasser, NMED HWB
C. Hendrickson, EPA-Region 6 (6PD-N)
L. King, EPA-Region 6 (6PD-N)

File: HAFB 2015 and Reading
HAFB-14-001

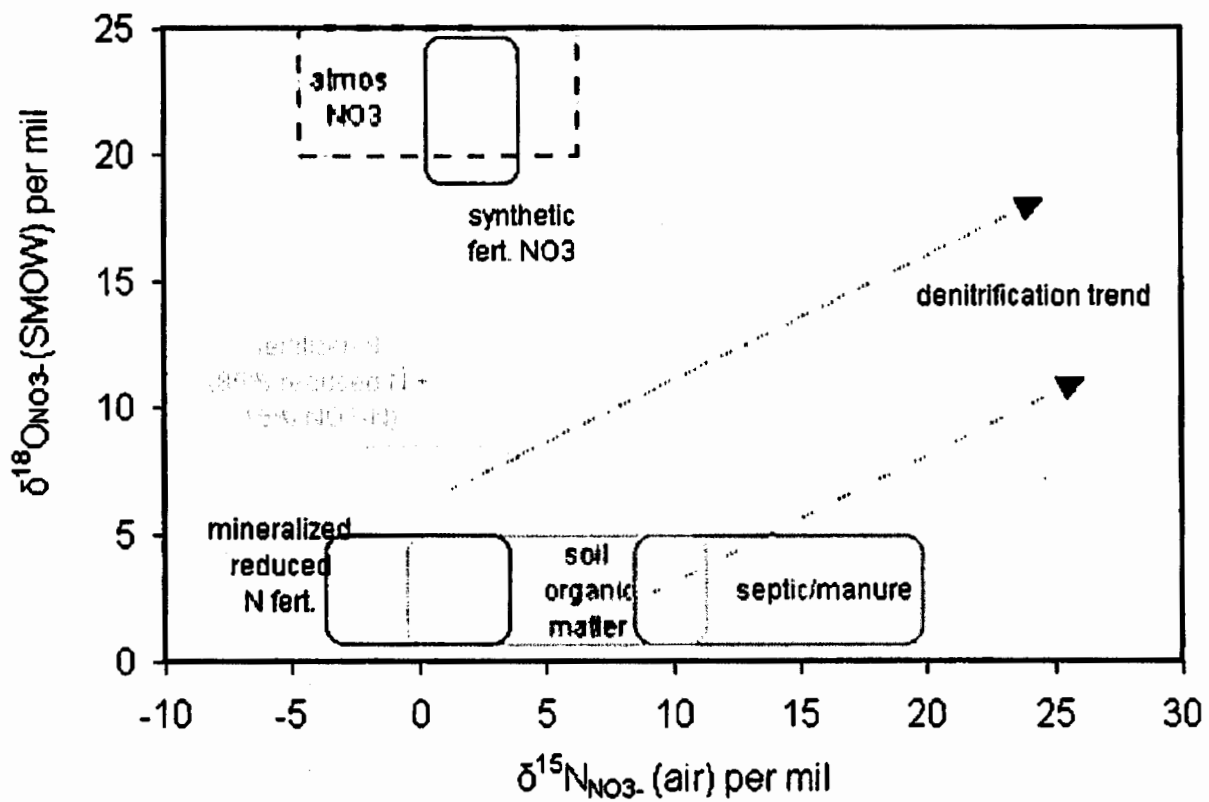


Figure 1. Crossplot of typical $\delta^{18}\text{O}_{\text{NO}_3^-}$ and $\delta^{15}\text{N}_{\text{NO}_3^-}$ values for different nitrate sources and the trend of isotopic compositions obtained due to denitrification processes (modified from Clark and Fritz, 1997).