NEW MEXICO
ENVIRONMENT DEPARTMENT

Hazardous Waste Bureau

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

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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

August 12, 2011

Mr. David Scruggs, Chief
Environmental Restoration Program
49 CES/CEVR
550 Tabosa Ave.
Holloman AFB, NM 88330-8458

SUBJECT: PARTIAL APPROVAL
BASEWIDE BACKGROUND STUDY REPORT, JANUARY, 2009
HOLLOMAN AIR FORCE BASE, EPA ID# NM6572124422
HWB-HAFB-09-004

Dear Mr. Scruggs:

The New Mexico Environment Department (NMED) has reviewed the United States Air Force's (Permittee's) *Basewide Background Study Report*, originally submitted January 2009. The report was subsequently revised in October 2009 (submitted December 7, 2009) in response to the NMED's May 4, 2009, Notice of Disapproval (NOD), and revised again March 10, 2011; April 1, 2011; and July 2011 in response to a NOD issued October 28, 2010. Based on review of the subject report and its revisions, this letter sets forth the approved background levels for naturally occurring constituents at Holloman Air Force Base (HAFB) in soil, and for naturally occurring constituents in unfiltered (total) and filtered (dissolved) groundwater. This is a partial approval of the subject report as NMED is not approving background levels for radiochemical constituents in which resolution of various technical issues is still pending.

The background levels approved in this letter are based in part on the Permittee's conclusion that soil and groundwater constituents are adequately represented as single populations at HAFB. However, there is some evidence that multiple populations for some constituents may exist at HAFB. Further, the variability of the sample data is large for many constituents in both soil and groundwater. Thus, NMED reserves the right to require a local background investigation should there be evidence of a significantly different background population for a given constituent at a

particular Solid Waste Management Unit (SWMU) or Area of Concern (AOC).

With regard to the approved background levels, sporadic data representing environmental samples and that exceed an approved background level do not necessarily mean that contamination is present at a SWMU or AOC. Such data should trigger additional evaluation of site conditions to determine if contamination is actually present, particularly the need to evaluate carefully the magnitude of the data and their spatial distribution. Further sampling and analysis of environmental media may also be needed at a SWMU or AOC to confirm or disprove the presence of contamination.

Additionally, comparison to NMED soil screening levels or assessing risk by other methods do not need to be done for a given constituent at a given site if the maximum analytical result for the constituent does not exceed the approved background level for the constituent. In other words, if the maximum concentration of a constituent does not exceed the approved background level for the constituent, the analytical results for that particular constituent do not need to be carried forward into a risk assessment for the site.

Sporadic data that exceed an approved background level but are found not to be representative of contaminated conditions also do not need to be carried forward into a risk assessment for the site, provided NMED agrees with the Permittee that such data are not representative of contaminated conditions.

Approved Background Levels for Soil

The background levels approved for soil apply to all depths, regardless of whether soil is saturated or unsaturated with groundwater, and are found in Table 1 of this letter. Some of the approved background levels are rounded up to the next highest tenth of a concentration unit from that proposed by the Permittee.

Table 1 – Approved Background Levels for Constituents in Soil

Soil Constituent	Approved Background Level	Unit	Remarks
Aluminum	13,722	mg/kg	
Antimony	1.6	mg/kg	
Arsenic	3.7	mg/kg	
Barium	169.3	mg/kg	
Beryllium	1.6	mg/kg	
Cadmium	0.3	mg/kg	
Calcium	317,332	mg/kg	
Chromium	25	mg/kg	
Cobalt	7.7	mg/kg	
Copper	13	mg/kg	
Iron	23,049	mg/kg	
Lead	10.9	mg/kg	
Magnesium	16,991	mg/kg	
Manganese	393	mg/kg	

Mercury	10.8	µg/kg	
Nickel	17.4	mg/kg	
Potassium	5,077	mg/kg	
Selenium	1.4	mg/kg	
Silver	1.1	mg/kg	
Sodium	5,196	mg/kg	
Thallium	1.3	mg/kg	
Tin	2.1	mg/kg	
Vanadium	42.6	mg/kg	
Zinc	54.6	mg/kg	
Carbon-14	None		Pending resolution of technical matters
Radium-226	None		Pending resolution of technical matters
Radium-228	None		Pending resolution of technical matters
Lead-210	None		Pending resolution of technical matters
Thorium-228	None		Pending resolution of technical matters
Thorium-230	None		Pending resolution of technical matters
Thorium-232	None		Pending resolution of technical matters
Uranium-234	None		Pending resolution of technical matters
Uranium-235/236	None		Pending resolution of technical matters
Uranium-238	None		Pending resolution of technical matters
Total Uranium	2.5	µg/g	

Approved Background Levels for Constituents in Groundwater

The approved background levels for groundwater constituents are found in Tables 2 and 3 of this letter, for unfiltered (total) and filtered (dissolved) constituents in groundwater, respectively. Some of the approved background levels are rounded up to the next highest tenth of a concentration unit from that proposed by the Permittee. Sampling and analysis of groundwater conducted under the Permittee's Hazardous Waste Operating Permit generally requires the collection of unfiltered water samples.

Whenever in the subject report a proposed background level for a constituent in groundwater exceeded a New Mexico Water Quality Control Commission (WQCC) Standard or an U. S. Environmental Protection Agency Maximum Contaminant Limit (MCL), the approved background level was generally set at the WQCC standard or MCL, whichever was the lowest value. Where groundwater monitoring or remediation is required at a SWMU or AOC and where the true background level for a given constituent is thought to be higher than a WQCC standard or MCL, the Permittee will need to demonstrate this fact based on the collection of empirical data from groundwater monitoring wells (background wells).

For chloride and sulfate, the analytical results for all samples in their respective data set exceeded secondary water quality standards as a result of high total dissolved solids which is a natural characteristic of groundwater at HAFB. In these cases, NMED approves the background levels for chloride and sulfate at the levels proposed by the Permittee even though these levels exceed the secondary standards.

The approved background level for tin was set to the maximum method detection limit (MDL) for both filtered and unfiltered samples. All samples contained tin at concentrations less than the maximum MDL.

The approved background levels for copper and zinc for filtered groundwater were set to the maximum value of their sample populations. The proposed values for these constituents were appreciably higher than those proposed for unfiltered groundwater samples – opposite of what should be the case.

Table 2 – Approved Background Levels for Unfiltered (Total) Constituents in Groundwater

Groundwater Constituent	Approved Background Level	Unit	Remarks
Aluminum	1043	µg/L	
Antimony	6	µg/L	Set at MCL
Arsenic	10	µg/L	Set at MCL
Barium	38	µg/L	
Beryllium	4	µg/L	Set at MCL
Cadmium	5	µg/L	Set at MCL
Calcium	1136664	µg/L	
Chromium	12	µg/L	
Cobalt	36	µg/L	
Copper	9.8	µg/L	
Iron	300	µg/L	Set at MCL
Lead	9	µg/L	
Magnesium	3692782	µg/L	
Manganese	50	µg/L	Set at MCL
Mercury	0.5	µg/L	
Nickel	22	µg/L	
Potassium	212144	µg/L	
Selenium	50	µg/L	Set at MCL
Silver	10	µg/L	
Sodium	20989585	µg/L	
Thallium	2	µg/L	Set at MCL
Tin	58	µg/L	Set at maximum MDL
Vanadium	90	µg/L	
Zinc	17	µg/L	
Carbon-14	None		Pending resolution of technical matters
Radium-226	None		Pending resolution of technical matters
Radium-228	None		Pending resolution of technical matters
Lead-210	None		Pending resolution of technical matters
Thorium-228	None		Pending resolution of technical matters
Thorium-230	None		Pending resolution of technical matters
Thorium-232	None		Pending resolution of technical matters
Uranium-234	None		Pending resolution of technical matters
Uranium-235/236	None		Pending resolution of technical matters
Uranium-238	None		Pending resolution of technical matters

Total Uranium	30	µg/L	Set at MCL
Alkalinity	387	µg/L	
Chloride	35040	µg/L	BG exceeds MCL and WQCC standard in all samples
Sulfate	17419	µg/L	BG exceeds MCL and WQCC standard in all samples
Sulfide	1	µg/L	

Table 3 – Approved Background Levels for Filtered (Dissolved) Constituents in Groundwater

Groundwater Constituent	Approved Background Level	Unit	Remarks
Aluminum	54	µg/L	
Antimony	6	µg/L	Set at MCL
Arsenic	10	µg/L	Set at MCL
Barium	30.2	µg/L	
Beryllium	1	µg/L	
Cadmium	2.5	µg/L	
Calcium	1151302	µg/L	
Chromium	2.5	µg/L	
Cobalt	2.6	µg/L	
Copper	22	µg/L	Set to maximum of sample population
Iron	65.6	µg/L	
Lead	9	µg/L	
Magnesium	3630927	µg/L	
Manganese	50	µg/L	Set to MCL
Mercury	0.2	µg/L	
Nickel	15.9	µg/L	
Potassium	120480	µg/L	
Selenium	25.3	µg/L	
Silver	10	µg/L	
Sodium	19972499	µg/L	
Thallium	2	µg/L	Set at MCL
Tin	58	µg/L	Set at maximum MDL
Vanadium	73.8	µg/L	
Zinc	23	µg/L	Set to maximum of sample population

HAFB is required to conduct an investigation of background and contaminant levels of nitrate (plus nitrite), nitrite, and ammonia in groundwater across the Facility as directed in NMED's letter of October 28, 2010. The work plan was supposed to be submitted by February 15, 2011, but it has not been submitted. The Permittee must respond in writing to the NMED by no later than **September 15, 2011**, providing a schedule for when the work plan will be submitted to the NMED.

If you have any questions regarding this matter, please contact Mr. William Moats of my staff at (505) 222-9551.
Sincerely,

John E. Kieling
Acting Chief
Hazardous Waste Bureau

cc: W. Moats, NMED HWB
C. Amindyas, NMED HWB
D. Strasser, NMED HWB
B. Salem, NMED HWB
S. Brandwein, NMED HWB
L. King, EPA, Region 6 (6PD-F)
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