NEW MEXICO
ENVIRONMENT DEPARTMENT

Environmental Health Division

Harold Runnels Building
1190 Saint Francis Drive (87505)
P.O. Box 5469, Santa Fe, NM 87502-5469
Phone (505) 827-0419 Fax (505) 827-0310
www.nmenv.state.nm.us

SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

RYAN FLYNN
Cabinet Secretary-Designate

BUTCH TONGATE
Deputy Secretary

TOM BLAINE, P.E.
Director
Environmental Health Division

April 4 2014

DRAFT

Colonel Tom D. Miller
Base Commander
377 ABW/CC
2000Wyoming Blvd. SE
Kirtland AFB, NM 87117-5606

John Pike
Director, Environmental Management Services
377 MSG
2050 Wyoming Blvd. SE, Suite 116
Kirtland AFB, NM 87117-5270

RE: WORK PLAN FOR SOIL VAPOR EXTRACTION SYSTEM UPGRADE
BULK FUELS FACILITY SPILL
SOLID WASTE MANAGEMENT UNITS ST-106 AND SS-111
KIRTLAND AIR FORCE BASE
EPA ID# NM9570024423, HWB-KAFB-14-MISC

Dear Colonel Miller and Mr. Pike:

The New Mexico Environment Department (NMED) has conducted discussions with the U. S. Air Force (Permittee) concerning interim measures to address light nonaqueous-phase liquids (LNAPL) and the generally co-located dissolved benzene, toluene, ethylbenzene and total xylenes (BTEX) plume in groundwater that resulted from the release of aviation gasoline and jet fuel in the vicinity of the former Bulk Fuels Loading Facility. An interim measure soil-vapor extraction (SVE) system consisting of two extraction wells, an associated blower and ancillary equipment and a catalytic oxidizer (CATOX) vapor treatment system began operation in the LNAPL/BTEX plume area in January 2013. The CATOX treatment system is designed to destroy approximately 90 pounds per hour (lbs/hr) of hydrocarbons and was reported by the Permittee, in a meeting at NMED's Albuquerque offices on March19, 2014, to be currently destroying approximately 70 lbs/hr.

The Permittee conducted SVE pilot testing to assess the potential for expanding the SVE system in the fall of 2013. NMED received the Permittee's *Soil-Vapor Extraction System Pilot Test Report, Bulk Fuels Facility Spill, Solid Waste Management Units ST-106 and SS-111Kirtland Air Force Base, New Mexico* (Report) on February 27, 2014. NMED conducted a preliminary review of the Report and issued a partial approval to the Permittee to connect three existing SVE

wells to the current SVE system. The addition of the wells expanded the aerial extent of applied vacuum in the vadose zone but did not increase the hydrocarbon treatment capability of the SVE system. The treatment capability of the SVE system, as it currently exists, precludes expansion of the SVE system to target portions of the vadose zone in the vicinity of the historic release that comprise the migration pathway from the release locations at or near the ground surface to the water table. The migration pathway contains the highest concentrations of hydrocarbons adsorbed to subsurface soils in the vadose zone and is therefore most likely to contain the highest concentrations of vapor-phase hydrocarbons and may be a continuing source of groundwater contamination. SVE is an effective measure to reduce hydrocarbon contaminant levels in the unsaturated zone by removal of volatile hydrocarbons and introduction of oxygen into the subsurface to promote aerobic degradation. The Report indicates that SVE will be effective in removing hydrocarbons from the vadose zone at the site of the Bulk Fuels Facility Spill.

In order to reduce fuels-related contamination in the vadose zone at a faster rate than is currently occurring, the Permittee must submit a work plan to upgrade the current SVE remediation system. The upgraded system must target those areas in the vadose zone where the highest hydrocarbon concentrations have historically been detected, which generally correspond to the migration pathway from the fuels releases at or just below the ground surface to the water table. The targeted extraction locations should correspond to the clay confining layer identified at a depth of approximately 250 feet below ground surface (bgs) beneath the vicinity of the former fuel offloading racks (FFOR) and also at the apparent location where the fuels reached the water table at depths greater than approximately 450 feet bgs east of the FFOR.

The work plan must propose to install at least two extraction wells at each location described above. If existing wells are located and screened in appropriate locations then those wells may be used in place of newly installed wells. SVE conducted at these locations will generate vapors containing higher hydrocarbon concentrations than the current SVE treatment system is capable of treating. Based on a review of historical data and using flow rates of 750 cubic feet per minute (cfm) per well that were achieved during the SVE pilot testing, extraction from the locations cited above would potentially generate a combined extraction rate of 1,200 pounds per hour (lbs/hr) of hydrocarbons. This hydrocarbon removal rate would require multiple treatment units in order to adequately treat that volume of extracted hydrocarbons to meet emissions limits. Use of treatment technologies other than the current CATOX technology currently in use may allow for a lower treatment system capacity. In addition, to facilitate the air permit process with the City of Albuquerque, the vapor treatment system must be capable of achieving a hydrocarbon destruction rate of 98% or greater.

The Permittee must submit a work plan that describes, in detail, the proposed expansion of the SVE system at the Bulk Fuels Facility Spill site as outlined above including a schedule for implementation of the upgrade. The schedule shall provide for the upgraded system to begin continuous operation no later than December 31, 2014. The work plan must include proposed well installation details, the proposed equipment and design of the SVE extraction and vapor treatment system including extraction capabilities (e.g., vacuums, flow rates) and hydrocarbon vapor treatment capacities (e.g., capacity in lbs/hr, percent destruction rates). In addition, the Permittee must begin the air permit process with the City of Albuquerque upon receipt of this letter. The Permittee must submit updates on its progress for obtaining the necessary permit by

email to NMED on the last day of each month beginning on April 30, 2014. The work plan must be submitted to NMED no later than **May 9, 2014**.

NMED may require testing of aerobic remediation technologies as interim measures at other locations in the vicinity of the Bulk Fuels Facility spill to evaluate their effectiveness as potential corrective measures.

Please contact me at (505) 827-2855 if you have questions.

Sincerely,

DRAFT

Tom Blaine, P.E.
Director
Environmental Health Division

cc: J. Kieling, NMED HWB
D. Cobrain, NMED HWB
S. Reuter, NMED PSTB
J. Lanning, KAFB
L. Bitner, KAFB
B. Gallegos, AEHD
F. Shean, ABCWUA
L. King, EPA-Region 6 (6PD-N)

File: KAFB 2014 Bulk Fuels Facility Spill - SWMUs ST-106 and SS-111