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RYAN FLYNN
Cabinet Secretary-Designate
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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

May 30, 2014

Colonel Tom D. Miller
Base Commander
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2000 Wyoming 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: AIR SPARGE AND SOIL-VAPOR EXTRACTION
PILOT IMPLEMENTATION WORK PLAN
BULK FUELS FACILITY SPILL
SOLID WASTE MANAGEMENT UNITS ST-106 AND SS-111
KIRTLAND AIR FORCE BASE, EPA ID# NM9570024423,
HWB-KAFB-14-013**

Dear Colonel Miller and Mr. Pike:

The New Mexico Environment Department (NMED) has reviewed the U. S. Air Force's (Permittee) *Kirtland Air Force Base – Air Sparge and Soil-Vapor Extraction Pilot Implementation Work Plan* (Work Plan), for the Bulk Fuels Facility Spill, Solid Waste Management Units ST-106 and SS-111, dated May 16, 2014 and received on May 22, 2014. The Work Plan proposes the installation of a combination air sparge and soil vapor extraction (SVE) well for use in a pilot test of an air sparging system. This test will be used to evaluate the effectiveness of removal of dissolved phase constituents from the LNAPL such as ethylene dibromide (EDB) from groundwater. The proposed test will be conducted north of the location where benzene, toluene, ethylbenzene and total xylenes (BTEX) have been detected at concentrations exceeding cleanup levels. After discussions with the Permittee (and their contractor CB&I) in April 2014, NMED directed the Permittee to conduct this air sparging test in a letter dated April 24, 2014. The direction was based on work proposed by the Permittee during those discussions.

NMED approves the Work Plan with the following required modifications:



1. No basis is provided for the estimated reduction in concentrations of 40-80% of the dissolved phase constituent EDB from the LNAPL. The permittee shall provide the basis for calculations for this estimate.
2. The screened interval in the newly installed SVE well must be no more than 30 feet in length and extend to 10 feet above the water table.
3. Baseline vapor measurements of percent oxygen and carbon dioxide and VOCs from the well casing of the newly installed soil vapor extraction (SVE) well must be documented, after appropriate purging is conducted. In addition, the same measurements must be recorded from the SVE well after the proposed vacuum is applied but before air is injected into the newly installed sparge well.
4. Add gasoline-range organics (GRO) by modified EPA Method 8015 to the groundwater sample analytical suite for groundwater samples collected during system operation.
5. Document ambient air pressure/vacuum in the newly installed SVE well, prior to the start of any applied vacuum or air injection and include collection of barometric data for all monitoring events.
6. Document the injection pressure (sparge well) and applied vacuum (SVE well) during all monitoring events.
7. Collect all data that will be collected during baseline sampling 30 days after discontinuation of operation of the SVE/Sparge system pilot test.

After considerable discussion with the Permittee, CB&I, the U.S Army Corps of Engineers, the City of Albuquerque, the Veterans Administration and the Albuquerque Bernalillo County Water Utility Authority on May 28, 2014, the permittee provided assurances to NMED that the proposed pilot test would provide valid and useful data regarding the removal of dissolved phase constituents from the LNAPL such as EDB from groundwater. The primary concerns related to this pilot test that were discussed in the May 28 meeting are listed below.

Based on the well construction diagram and an estimated depth to groundwater provided in the Work Plan, the water table is approximately 3 feet above the top of the screen in well KAFB 10617. The Work Plan does not discuss the limitations on data collection related to this issue. This circumstance does not allow for monitoring of changes in the vadose zone related to injection of air at the sparge point (e.g., pressure changes) or changes in the composition of air (e.g., percent oxygen, percent carbon dioxide) in the vadose zone near the water table. This will preclude acquisition of data that could be used to determine the radius of influence of the sparge well and to design an air sparging remediation system. NMED notes that because the water table is above the top of the screened interval in well 10617, there is no assurance that the groundwater samples collected from the well will be representative of aquifer conditions. A monitoring well located no more than 20 feet down gradient from the proposed sparge/ soil vapor extraction (SVE) well that is screened across the water table would significantly improve the capability to monitor the effects of air sparging.

A review of EDB concentrations detected in monitoring well 10617 since 2010 range from approximately 1.1 to 1.3 micrograms per liter ($\mu\text{g}/\text{l}$) in 2010, 0.6 to 0.91 $\mu\text{g}/\text{l}$ (2011), 1-1.3 $\mu\text{g}/\text{l}$ (2012) and 0.43 to 0.91 $\mu\text{g}/\text{l}$ (2013). The elevation of the water table has generally increased over

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that same time period. These changes suggest that there may be some challenges to correlate a decrease in EDB concentrations to air sparging at this location.

The Work Plan discusses the possibility of pulsing the air sparging system if "it is determined that pulse operation may give better results." No criteria is provided related to the basis for such a decision; therefore, any proposal to pulse the air sparge system must be submitted in writing to NMED for approval no less than 15 days prior to the implementation of such pulsing of the system. A detailed rationale for the proposed pulsing must be included with the submittal.

The Permittee is hereby authorized to proceed with implementation of the Work Plan with the required modifications listed above and the condition that summaries of 1) all activities conducted, 2) field measurements and observations, and 3) available analytical results are provided by email on a monthly basis to NMED's Hazardous Waste Bureau by the 15th of each month beginning on July 15, 2014. It is noted that NMED does not agree with all assertions made by the Permittee in the Work Plan.

If you have any questions, please contact me at 505-827-2855.

Sincerely,



Tom Blaine, P.E.
Director
Environmental Health Division

cc: Col. J. Lanning, KAFB
D. Wilson, KAFB
B. Gallegos, AEHD
F. Shean, ABCWUA
L. King, EPA-Region 6 (6PD-N)

File: KAFB 2014 Bulk Fuels Facility Spill and Reading