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CERTIFIED MAIL - RETURN RECEIPT REQUESTED

May 23, 2013

Colonel John Kubinec
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John Pike
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RE: DISAPPROVAL
PHASE II REMEDIATION INTERIM MEASURES PLAN, SOIL-VAPOR EXTRACTION TREATMENT SYSTEM DESIGN, BULK FUELS FACILITY SPILL, SOLID WASTE MANAGEMENT UNITS ST-106 AND SS-111, KIRTLAND AIR FORCE BASE, ALBUQUERQUE, NEW MEXICO, DECEMBER 2012
KIRTLAND AIR FORCE BASE, EPA ID# NM9570024423
HWB-KAFB-12-024

Dear Colonel Kubinec and Mr. Pike:

The New Mexico Environment Department (NMED) has received the U. S. Air Force (Permittee) document titled *Phase II Remediation Interim Measures Plan, Soil-Vapor Extraction Treatment System Design, Bulk Fuels Facility Spill, Solid Waste Management Units ST-106 and SS-111*, dated December 2012, hereinafter referred to as the Work Plan. Several deficiencies have been identified concerning the Work Plan, which are described in the comments below.

GENERAL COMMENTS

1. **Interim Remediation Objectives.** On pg. 2-1, Section 2.1, the first paragraph states that the primary element of this interim measure is to increase hydrocarbon removal, as well as to replace the existing Internal Combustion Engine (ICE) Soil-Vapor Extraction (SVE) systems. NMED's primary concern is increasing the rate of extraction and treatment of

hydrocarbon vapors from the subsurface. Since the Work Plan was submitted, a SVE system equipped with a CATOX unit to treat the extracted hydrocarbon vapor has been installed at the Bulk Fuels Facility.

On pg. 3-2, Section 3.2, Performance Base Criteria, it is stated that "the SVE system is expected to operate at near maximum capacity while being monitored and optimized...." Both of these sections reference the design capacity of 2,200 pounds per day of hydrocarbon removal based on the CATOX system capacity, or 90 pounds per hour (as also reported on the Figure 2-4 schedule).

Based on a rough calculation of the former hydrocarbon removal rate using the ICE SVE systems, derived from the total gallons removed and duration of operation reported on page 1-4, previous removal rates from individual ICE systems ranged from 14 to 20 pounds per hour. Therefore, the four ICE SVE systems combined extracted approximately 69 pounds per hour.

On June 11, 2012, NMED approved the document *Soil-Vapor Extraction System Components Partial Design Interim Measures Work Plan Addendum*, May 2012, which included a proposed dual thermal/catalytic oxidizer (THERMOX/CATOX). The dual unit could operate in the THERMOX mode while hydrocarbon-vapor concentrations were high, and be switched to CATOX mode when the concentrations eventually decreased to lower levels. The THERMOX mode is capable of treating hydrocarbons at a significantly higher rate than the CATOX mode. However, the approved dual thermal/catalytic oxidizer was not installed and a simpler CATOX unit substituted in its place. This substitution of treatment technology was made without consulting with the NMED Hazardous Waste Bureau.

Provide, in a revised Work Plan, additional detail on the advantages of using the lower-treatment-rate CATOX unit since the magnitude of the hydrocarbon removal and treatment rate was not significantly increased over that of the combined ICE SVE systems. In addition, provide an estimate of the time that would be required to fully remediate the soil-vapor contamination at the Bulk Fuels Facility utilizing the installed CATOX unit. Explain the approach to be used to design the full SVE remediation system using existing data and the data anticipated to be acquired from operation of the current SVE system and provide a time estimate for acquisition of sufficient data to design a robust SVE remediation system that will be part of the final remedy. As part of the explanation, provide all calculations, data, and assumptions that will be used to assess the performance of the current system and to design the final SVE remediation system.

In NMED's letter to the Permittee on April 2, 2010, the Permittee was directed to provide an estimate of the amount of fuel that exists within the vadose zone as sorbed or residual, liquid, or as vapor. The Permittee has not yet provided this information. This information is essential for selection of a final remedy. Additionally, in accordance with Permit Section 6.2.2.2.5.1 of the Permittee's Hazardous Waste Treatment Facility Operating Permit, a remedy alternative must, among other requirements, attain cleanup standards within a reasonable time frame. Therefore, the final SVE remediation system must be

capable of completing remediation of the vadose zone in a reasonable time frame including but not limited to the use of additional SVE treatment capacity at the Bulk Fuels Facility, as necessary, including use of thermal oxidizers, to provide for increased hydrocarbon extraction and treatment rates.

2. **Section 1.3.3.1 Vadose zone conceptual transport model, and Figure 1-5**. Operation of the CATOX unit requires dilution of the extracted hydrocarbon vapor with fresh air. Explain in the revised Work Plan how the amount of fresh air used to dilute the vapor will be measured and recorded.

3. Include in the revised Work Plan a provision to submit a report describing the SVE treatment system, including modifications made to the system as a result of these comments and as-built drawings of the entire system. Include in these provisions a schedule for when the report will be submitted to the NMED and a list of the proposed contents of the report.

SPECIFIC COMMENTS

1. **Pg. 2-1, Section 2.1 Phase II Remediation Interim Measure.** The second paragraph very briefly describes the CATOX off-gas treatment unit. Additional details were provided in vendor drawings. The CATOX vendor website (http://www.anguil.com/oxidizers/catalytic-recuperative.aspx) indicates that multiple catalyst options are available (such as pelletized, monolith, precious and base metals). Specify in the revised Work Plan the catalyst used and the rationale for using the specific catalyst.

2. **Pg. 3-1 and 3-2, Section 3.1 SVE Operational Approach**. This section lacks detail. In the first full paragraph on page 3-2, last sentence, additional details are needed concerning the Horiba instruments, as well as for monitoring parameters, frequencies, and locations. Pg. 3-3, first full paragraph references "Horiba THC monitors or equivalent…". Provide additional details related to the THC monitors. Appendix E, Systems Operations and Maintenance Manual, was not submitted with the Work Plan and details regarding system monitoring and maintenance are not available for review. Provide the O&M manual and revise the Work Plan accordingly.

3. **Pg. 3-3, Section 3.3 System Maintenance and Monitoring.** The last paragraph on this page indicates "An air emission monitoring report will be prepared for the client." This report also must be submitted to the NMED. Revise the Work Plan accordingly.

4. **Pg. 3-3 Section 3.3 System Maintenance and Monitoring last paragraph, first sentence.** A programmable logic controller (PLC) is mentioned on page 1-3, Section 1.1.1 as a component of the ICE SVE systems, but it is not described for the installed CATOX system until Section 3.3, where it is incidentally mentioned as recording important system data. Provide additional detailed description of the PLC. Revise the Work Plan accordingly.

5. **Figure 2-4 Process Flow Diagram/Appendix B Drawing P-1**. Regarding Streams 3 and 4, and Note 3, since there may be accumulations of condensate within the piping (which is lengthy), provide provisions in a revised Work Plan for condensate removal such that condensate does not flow back into the well.

6. **Figure 2-4 Process Flow Diagram/Appendix B Drawing P-1.** Regarding Stream No. 9 Condensate, "Note 4" should be on the line above for "Water Flow" rather than "Air Flow." Revise the Work Plan accordingly.

7. **Figure 2-4 Process Flow Diagram/Appendix B Drawing P-1.** Add sample ports at each extraction well (between each well and the dilution air stream) to assess contribution of each well towards total hydrocarbon removal (i.e. Total Hydrocarbons [ppmv] at Streams 1 and 2). Revise the Work Plan accordingly.

8. **Figure 2-4 Process Flow Diagram/Appendix B Drawing P-1.** Regarding Flow 9, indicate whether the temperature and pressure (T and P) gages are necessary for the condensate line between the pump and tank. Revise the Work Plan as appropriate.

9. **Figure 2-4 Process Flow Diagram/Appendix B Drawing P-1.** Regarding Streams 7 and 8, indicate if the flow rate of 1600 scfm, which is in excess of the blower rating (B-101; 1,200 scfm at 12" Hg vacuum) is appropriate; 1600 scfm also exceeds the pump curve data presented on the last page of Appendix F. Revise the Work Plan as appropriate.

10. **Appendix B Text, pg. B-1, 3rd paragraph.** Discuss in the revised Work Plan the operational or engineering safeguards against running the SVE blower with the CATOX unit not operating and the Stream 50 fresh air inlet in the default open position, which could result in discharge to the atmosphere of untreated hydrocarbon vapors.

11. **Appendix B Text, Pg. B-2, top paragraph.** Regarding the desired interlock of high temperature with the downstream side of the blower system, to accurately assess the blower temperature in the event of upset or overheating conditions a temperature gage should be added to the PID between the vacuum blower and the Stream 50 inlet air. Revise the Work Plan accordingly.

12. **Appendix B Text, Pg. B-3, first full paragraph.** The text describes safety features for shutdown of the CATOX burner in the event of a lack of flame or unacceptably weak flame in the burner. Indicate in a revised Work Plan provisions for shut down of the SVE blower to prevent discharge of contaminant vapors to the atmosphere.

13. **Appendix F Friction Loss Calculation, Section 3.2.** Explain how the Low Vacuum Flow Case 1 has higher flow and greater vacuum (1200 SCFM at 40 inches-Hg [should this be inches-water instead?]) than the High Vacuum Flow Case 2 (1000 SCFM at 11 inches Hg). Note that Attachment A describes Case 1 as 40 inches-water and Case 2 as 11 inches-Hg instead. Revise the Work Plan as appropriate.

14. **Section 400513 Pipelines, Process Piping.** This specification addresses above-ground HDPE piping. Sections 2.9.1 and 2.9.2 describe vacuum breakers and strainers, but none were noted in the drawings. Revise the Work Plan accordingly.

The Permittee shall submit to the NMED a revised Work Plan that corrects the above noted deficiencies no later than **June 28, 2013**. Once the Work Plan is approved, the Permittee must modify the installed SVE and treatment system as necessary to be consistent with the approved revised Work Plan.

Should you have any questions, please contact Mr. William Moats of my staff at (505) 222-9551.

Sincerely,

John E. Kieling
Chief
Hazardous Waste Bureau

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