SUSANA MARTINEZ
Governor

JOHN A. SANCHEZ
Lieutenant Governor

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

DAVE MARTIN
Secretary

BUTCH TONGATE
Deputy Secretary

THOMAS SKIBITSKI
Acting Director
Resource Protection Division

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

February 22, 2013

Colonel John Kubinec
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: RADIUS OF INFLUENCE TESTING AT BULK FUELS FACILITY SPILL, SOLID WASTE MANAGEMENT UNITS ST-106 AND SS-111, OCTOBER 2012
KIRTLAND AIR FORCE BASE
EPA ID# NM9570024423
HWB-KAFB-MISC

Dear Colonel Kubinec and Mr. Pike:

The New Mexico Environment Department (NMED) has discovered that the U. S. Air Force (Permittee) is currently conducting, or has conducted, a radius of influence (ROI) test of the newly installed soil vapor extraction (SVE) system at the Bulk Fuels Facility (Solid Waste Management Units ST-106 and SS-111). A work plan for the test was not received, reviewed or approved by NMED; therefore, any test is being, or was, conducted by the Permittee at risk. Enclosed with this letter is guidance regarding data collection and submittals for SVE ROI test reports and work plans.

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

Sincerely,

John E. Kieling
Chief
Hazardous Waste Bureau

cc: T. Skibitski, NMED RPD
D. Cobrain, NMED HWB
W. Moats, NMED HWB
W. McDonald, NMED HWB
S. Brandwein, NMED HWB
J. Schoeppner, NMED GWQB
S. Reuter, NMED PSTB
B. Gallegos, AEHD
F. Shean, ABCWUA
L. King, EPA-Region 6 (6PD-N)

File: KAFB 2013 and Reading

SVE Pilot Testing Reporting Requirements Guidance

This document comprises NMED-PSTB staff guidance and is intended to be modified, as appropriate, based on site-specific conditions.

The Field Data Sheet should include the following:

Recorded/Measured data:

Date
Time
Elapsed Time
Screened intervals for both the test well and the observation wells
Depth to water and depth to NAPL (if present) in test well at start of pilot test and end of pilot test.
Ambient Temperature
Well effluent temperature
Vacuum at Blower Inlet if performing a multi-well SVE pilot test
Test well vacuum
Test well effluent flow
Flow at inlet of blower
Dilution air contribution flow via subtracting the measured test well effluent flow from the flow that was measured at the inlet of the blower.

All flow values must be reported in scfm. The Field Data Sheet should be used to record the raw measurements made from flow meters such as differential pressure across pitot tube or orifice plate, absolute atmospheric pressure, gas temperature at the flow meter, gas density (considering hydrocarbon concentration) and pipe geometry. The observed, recorded field data should be used to report flow values in SCFM.

Barometric pressure reported in absolute atmospheric air pressure or upper air sounding at the site surface elevation. Barometric pressure should not be reported as a value corrected to sea level as commonly shown on aneroid barometers or weather forecasting reports.

Well effluent VOCs concentrations by field instrument – as well, note the time and location of samples taken for lab analysis of VOC concentrations.

Well effluent fixed gas concentrations by field instrument – as well, note the time and location of samples taken for lab analysis of relevant fixed gas concentrations.

Well effluent vapor % Lower Explosive Limit (%LEL)

Measured vacuum response at observation wells

Volume and composition (water/NAPL) of accumulated liquids (if applicable)

Include date and results of last known calibration on instruments

Nominal inside diameter and materials of piping used in pilot test, especially at sampling and measurement locations. Include length of straight run pipe up- and downstream of flow meters.

Comments –observations noted during pilot test

Provide an example of the flow rate calculation including a description of the parameters.

Provide an example of hydrocarbon recovery rate (lbs/hr) calculation for each test well.

Graphs of SVE Pilot Test Data (for each test well) :

Well effluent hydrocarbon concentration data based on field instrument measurements versus time

Well effluent GRO hydrocarbon concentrations based on lab analysis versus time using field instrument measurements to interpolate between lab samples if there is a good correlation between lab data and field measurements.

Relevant individual well effluent fixed gas concentrations versus time

Applied vacuum versus time

Flow rate versus applied vacuum

Vacuum response at observation wells depicting vacuum vs. distance from the test well or a graph of normalized vacuum vs. distance from the test well.

Flow in scfm versus time for each test well

Well effluent vapor temperature versus time

On-site absolute atmospheric air pressure versus time

On-site ambient temperature versus time

Maps:

Isopleths depicting vacuum responses:

Include isopleths for inferred no vacuum response; 0.1" H_2O; 1" H_2O, 3% applied vacuum; and others as appropriate.

Annotate with individual well vacuum response data.

Discussion of results of pilot tests describing efficacy of SVE as a remediation strategy for this site including recommendations on how to clean up the site in the most efficacious manner.

SVE Pilot Testing Workplan Guidance

This document is meant as NMED-PSTB staff guidance and is intended to be modified as appropriate.

SVE pilot test workplans should include the following:

- Brief narrative description of:
  - the intent/goal(s) of the pilot test
  - the pilot testing unit:
    - Blower specs (including brand, type, motor size, operational RPMs, and respective performance curves for vacuum operation)
    - Vapor treatment strategy
  - Instrumentation used to measure vacuum/pressure
    - manometers/U tubes or
    - vacuum/pressure gauges
  - Instrumentation typically used to measure flow include but is not limited to:
    - Pitot tube with a differential pressure gauge and chart or calculation as appropriate to convert to flow
    - Direct reading differential pressure flow meters (with readings in acfm) or
    - Variable area flow meters (e.g rotameters) that measure scfm directly
  - When selecting type of flow meter consider under what conditions it will be used (e.g. diurnal effects, moisture, high vacuum applications etc.) and its sensitivity to turbulence effects. The workplan should describe the limitations and advantages of using the selected flow meter and how the limitations will be corrected for when calculating the flow rate.
  - Instrumentation used to measure temperature
  - Instrumentation used to measure absolute pressure e.g. an altimeter (not an aneroid gauge that measures barometric pressure corrected to sea level)
  - Methodology for measuring concentrations of VOCs include a description of field screening and laboratory methodologies, frequency of sampling, sample collection protocol, and sampling locations. NMED-PSTB requires that Summa canisters be used when appropriate.
  - Methodology for measuring concentrations of fixed gases include same as described for VOCs above.
  - Pilot testing protocol:
    - Wells to be tested
    - Construction of new SVE test and observation well(s): including drilling methods and well materials.
    - Parameters to be measured including frequency and interval between recordings/measurements
    - Duration of pilot tests
    - Step testing description
    - Data recording/strategy (e.g. hand recording, data logger, etc.)
  - Supplemental fuel use information if appropriate
  - Health and safety planning with consideration to public safety and site security (including temporary fencing and lighting if appropriate).
- A Process and Instrumentation Diagram (P&ID) of pilot testing unit depicting the following:
  - Piping
  - Moisture/vapor separator tank
  - Blower

Vapor treatment
Sampling locations
Supplemental fuel source
Flow meters, vacuum and temperature gauges
Power source

Indicate on P&ID where measurements will be taken, including but not limited to the following:

Well effluent concentrations (field instrument measurements and bag or canister samples for lab analysis)

Temperature pre- extraction blower (well effluent temperature). Temperature should be taken where the flow and vacuum measurements are taken. Ideally temperature, flow and vacuum measurements should be taken at wellhead.

The limitations and advantages of the selected temperature gauge and its proposed location should be include, but not be limited to, a discussion of the following:

Diurnal effects
Extent of moisture in vapor stream
High vacuum SVE applications, which can cause upwelling and increase the relative humidity in vapor stream.

Test well effluent flow

Consider the sensitivity of the flow meter selected wrt turbulence effects relative to installation location

Test well vacuum
Dilution flow contribution
Applied vacuum at blower inlet if conducting a multi-well SVE pilot test.
Fixed gases effluent vapor concentrations

Plan view of the site depicting SVE test wells and observation wells.
Cross-section schematic depicting screened intervals for test well and observation wells in relation to the subsurface contamination and geology including current ground water levels.
Field Data Sheet (See SVE Pilot Testing Reporting Requirements guidance document for details.)
Statement of Qualifications of staff who will be performing the pilot test.
A list of the SVE references used to support the design and scope of the pilot test.