

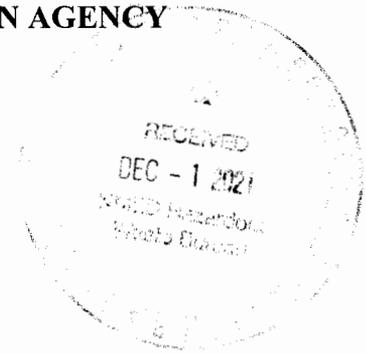
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**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**REGION 6**

**1201 Elm Street, Suite 500  
Dallas, Texas 75270-2102**



*Transmitted via email*

November 22, 2021

Mr. Ben Wear  
Environmental Scientist Supervisor  
Hazardous Waste Bureau  
New Mexico Environmental Department  
2905 Rodeo Park Drive East, Building 1  
Santa Fe, NM 87505-6313  
(505) 690-6662

RE: *Work Plan for Shallow Soil Vapor Sampling, Bulk Fuels Facility, Solid Waste Management Units ST-106/SS-111, May 2021  
Kirtland Air Force Base, New Mexico  
EPA ID #NM9570024423*

Dear Mr. Wear:

The United States Environmental Protection Agency (EPA) has reviewed the *Work Plan for Shallow Soil Vapor Sampling, Bulk Fuels Facility, Solid Waste Management Units ST-106/SS-111*, that I received on October 26, 2021, via an attachment to your email. This Work Plan describes the investigative approach to assess the current nature and extent of shallow soil vapor off-base.

**General Comments:**

1. EPA provided general comments December 30, 2020 on the November 2019 Kirtland AFB (KAFB) Soil Vapor Sampling Work Plan, KAFB's revised Conceptual Shallow Soil Gas Sampling Proposal by Noblis, dated February 2021, and KAFB's May 2021 Soil Vapor Sampling Work Plan. These comments are still applicable to the investigation of the potential VI pathway north of the base.
2. EPA has also reviewed NMEDs comments on the May 2021 Draft Work Plan and concur with their conclusions and recommendations.

KAFB5073



3. EPA considers a comprehensive CSM essential to response action development, selection, and implementation. The CSM is a primary project planning and management tool, and as such, the CSM should incorporate all that is known about the site's current and potential future environmental conditions and uses, noting that it will evolve and mature over the project's life cycle. A realistic CSM accurately portrays critical conditions that affect the success of response actions, and at a scale that addresses heterogeneity. It is expected that this Vapor Intrusion CSM will build on the previous CSMs and present known and potential source areas, transport mechanisms, pathways, and exposure routes and receptors.

**Specific Comments:**

1. Three purge volumes of the sampling train are both recommended by EPA and state agencies. It is considered to be an industry standard.

EPA Region 4. 2010. Soil Gas Sampling Operating Procedure states "it is necessary to remove all stagnant or ambient air from the sample string. This volume, equal to approximately three times the volume of the sample string, should be estimated or calculated" ...

ASTM. 2012. Standard Practice for Active Soil Gas Sampling in the Vadose Zone for Vapor Intrusion Evaluations, D7663-12 (Reapproved 2018) defines "*dead volume, n*—the total air-filled internal volume of the sampling system; *purge volume, n*—the amount of air removed from the sampling system prior to the start of sample collection. This is usually referred to in number of dead volumes." Regarding dead volume it states "It is recommended that a minimum of three (3) dead volumes be purged from the sampling system immediately prior to sample collection."

CalEPA. 2015. Advisory – Active Soil Gas Investigations states "The purpose of purging is to remove stagnant air from the sampling system so that representative samples can be collected from the subsurface. A default of three purge volumes should be used. Purge volume testing is no longer recommended."

2. The proper flow/purge rate recommended by EPA is 200 to 500 ml/min, but no more than 1,500 ml/min. EPA agrees with Comment 21, made by NMED, that the proposed purge rate of 0.75 cubic feet per minute is too high.

EPA ORD. July 2007. Final Project Report for the Development of an Active Soil Gas Sampling Method provides three experiments investigating the relationship between purge rate and measured VOC concentrations. Purge rates of the three experiments ranged from 100 to 2,000 ml/min. The findings of the report state "Based on the data from this investigation, it appears that purge rates of 200 to 500 ml/min should be recommended."

EPA ERT SOP 2042. June 1996. Soil Gas Sampling recommends "The approximate sampling time for a 6-liter canister is 20 minutes." Which equates out to around 300 ml/min.

3. EPA recommends conducting leak testing each time a soil gas sample is taken from each individual SVMP.

EPA Region 5. March 2020. Vapor Intrusion Handbook states EPA “recommends leak testing to assess the integrity of the sampling assembly by providing quantitative proof that breakthrough of air is not occurring into the sub-slab sampling port, sampling train, or sampling medium... samplers should conduct leak testing each time a soil gas or sub-slab sample is collected. The acceptable range of leakage should be documented in the SAP and communicated to field staff prior to site activities.”

If you have any questions regarding this comment letter, please contact me via telephone at 214-665-7124, or via e-mail at [mckinney.lucas@epa.gov](mailto:mckinney.lucas@epa.gov).

Sincerely,

*Lucas McKinney*

Lucas McKinney

Project Manager

cc: Dave Cobrain, NMED

Laurie King, EPA

Rick Ehrhart, EPA