Albuquerque Bernalillo County
Water Utility Authority

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August 13, 2021

Roberto Maestas
Acting Hazardous Waste Bureau Chief
New Mexico Environment Department
PO Box 5469
Santa Fe, NM 87502-5469

Re: Opposition to U.S. Air Force request to cease groundwater modeling of the Kirtland Air Force Base Bulk Fuels Facility jet fuel leak groundwater contamination

Dear Mr. Maestas,

The Water Authority wishes to express its firm opposition to the U.S. Air Force's proposal, outlined in a June 25, 2021 request to NMED, to cease semiannual groundwater modeling as part of cleanup operations for the Kirtland Air Force Base Bulk Fuels Facility (BFF) leak.

The modeling in question provides critical information needed to evaluate performance of the Air Force's pump-and-treat system (the "interim measure") intended to remove ethylene dibromide (EDB) from the affected groundwater. Without it, the Air Force cannot show that contamination has ceased migrating toward the Water Authority's well field.

The Air Force claims that modeling is no longer necessary because of reductions in detected concentrations of EDB in groundwater monitoring wells, and further suggests that the site's hydraulic parameters are now so well-understood that a simplified evaluation methodology would be sufficient. The Water Authority is extremely concerned that fuel remains to be cleaned up and, due to the complex hydraulic properties of the aquifer, modeling is necessary to properly evaluate cleanup activities.

With respect to reductions in detected concentrations of EDB in the groundwater monitoring wells, the Water Authority made its position clear in its June 2020 technical memo to NMED detailing multiple serious concerns with sampling techniques and water quality reporting. These include concerns with the Air Force reporting EDB detections below the Environmental Protection Agency (EPA) Maximum Contaminant Level (MCL) as non-detect in communications with the public; the use of passive sampling that has not been approved by NMED for use throughout the site, noting that passive sampling has been seen to yield discrepancies of 35 percent or more as compared with low-flow sampling; and lowering the sampling location within the well screen,

resulting in samples being collected from an area likely to be below the EDB plume. Because of the uncertainty introduced by these questionable methodologies, they cannot be relied on to accurately predict EDB mitigation – or the ability of the pump-and-treat interim measure – to protect Water Authority wells. This compounds the problem of data gaps in our understanding of the aquifer at this location—some of which the Water Authority, on its own initiative, is attempting fill via the construction of an additional monitoring well to be paid for by a $770,000 FY21 capital outlay supported by the New Mexico State Legislature. Construction is scheduled for completion in December of this year, to be followed by sampling and analysis using techniques with detection limits well below the MCL. Comparison of test results will also allow evaluation of KAFB sampling methodologies.

Regarding the hydraulic properties of the aquifer at the BFF site, many unknowns still exist that can affect our understanding of the interim measure's effectiveness. This has been a topic of discussion during numerous modeling working group meetings. In fact, studies in the project area show that there is significant variability in the parameters that have the most impact on hydraulic conditions, highlighting the need for advanced fate and transport modeling to predict groundwater movement: hydraulic conductivity, specific storage, horizontal and vertical anisotropy, and effective porosity. For example, hydraulic conductivity can range from 0.5 feet per day (ft/day) to 150 ft/day, depending on where in the Santa Fe Group deposit flow is occurring (United States Geological Survey [USGS], 2019). We have observed in the numerous modeling efforts at the BFF site that groundwater models are sensitive to the values assumed for hydraulic parameters and therefore, a uniform value cannot be assumed across the entire plume. Given the complexity of the hydrogeology and plume dynamics, groundwater modeling is imperative, especially with water supply wells in such close proximity.

Finally, the Air Force implies in their request that their current model cannot take into account actual pumping rates for the interim measure. This does not mean that groundwater modeling is ineffective, however – only that the Air Force should utilize a more effective model (specifically, the one developed by the Air Force's contractor in 2016 and/or the USGS 2019 model, with updates to incorporate data from the operation of the pump-and-treat system).

The Water Authority cautions against making any decisions on the basis of the current groundwater monitoring network, or the information provided by current groundwater modeling assumptions and results. Moreover, we ask the NMED to postpone any decisions regarding discontinuation of groundwater modeling until a technical working group (TWG) can be convened to assess the merit of the request -- and the effectiveness of groundwater monitoring at the site.

Without comprehensive sampling and groundwater modeling, we cannot be certain how well the pump-and-treat system is actually capturing EDB – or how well it is preventing the migration of contamination toward drinking water supply wells.

Sincerely,

Elizabeth Anderson, PE
Chief Planning Officer
Albuquerque Bernalillo County Water Utility Authority

Reference:

United States Geological Survey, 2019. *Hydrogeologic Framework and Delineation of Transient Areas Contributing Recharge and Zones of Contribution to Selected Wells in the Upper Santa Fe Group Aquifer, Southeastern Albuquerque, New Mexico, 1900-2050*. Scientific Investigations Report 2019-5052. July.

Attachment(s):

Water Authority Technical Memo on the *Kirtland Air Force Base Bulk Fuels Facility Numerical Flow Model* (Dated: 11/2/2018).

Water Authority Technical Memo on *Analysis of Groundwater Monitoring with Passive Diffusion Samplers* (Dated: 11/19/2020).

Cc:

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Lane Andress, PG, New Mexico Environment Department
Ryan Wortman, Kirtland Installation Support Section
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