KAFB Fuel Release and Groundwater Contamination

James P. Bearzi, Chief

Hazardous Waste Bureau

New Mexico Environment Department

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http://www.nmenv.state.nm.us/hwb/

KAFB Bulk Fuels Facility

Fuel Storage and Distribution System

- **2.1 and 4.2 million gallon tanks**
  - **Stored jet fuel of various make-ups**
- **Installed in 1952**
- **In process of being replaced**
- **Ancillary piping is mostly underground**
- **Former Fuel Offloading Rack**

Aerial Photograph of Bulk Fuels Facility

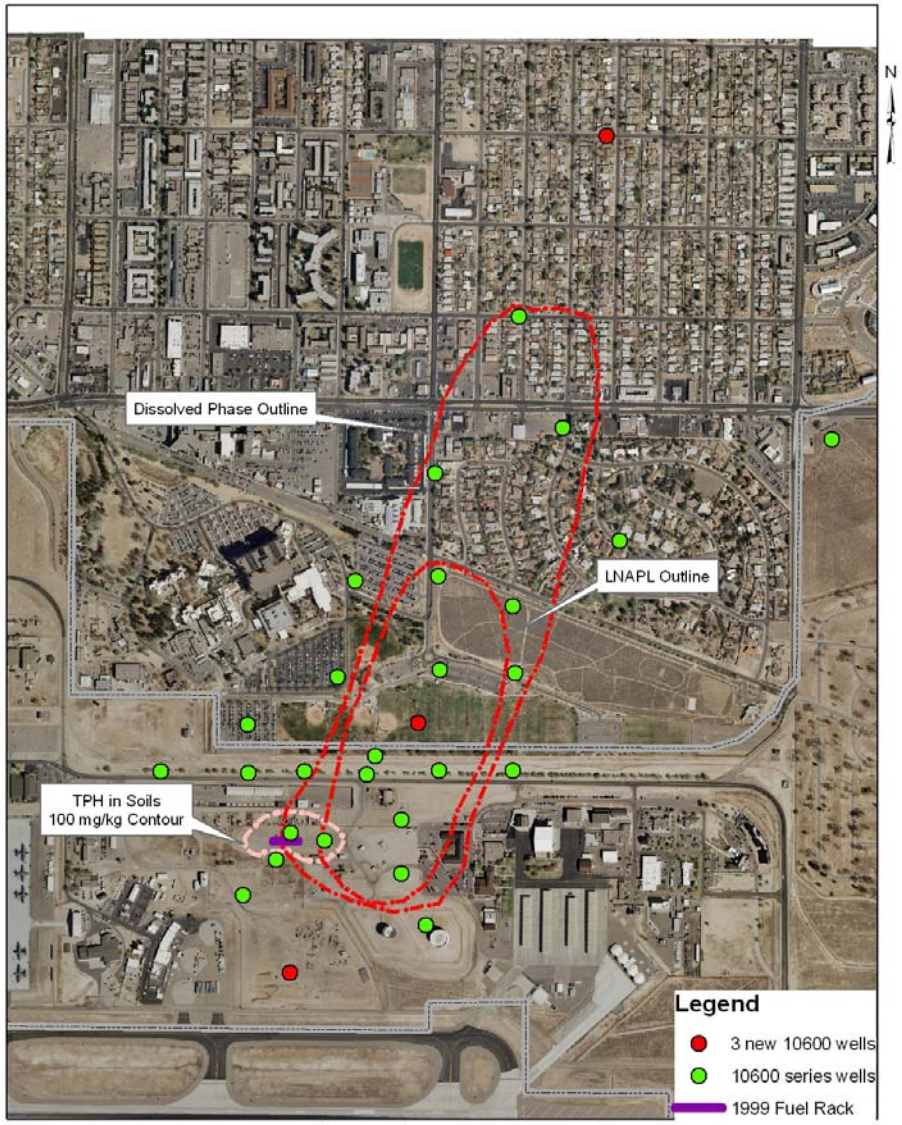
The Problem

- **For decades, millions of gallons of jet fuel have leaked into the ground seeping hundreds of feet**
- **Fuel is floating on groundwater (depth 500 feet), extending north 0.5 miles.**
- **Fuel dissolved in groundwater extends another 0.5 miles north**
- **Contamination is migrating toward water-supply wells**
  - **Water Utility Authority**
  - **KAFB**
  - **VA Hospital**

The Problem

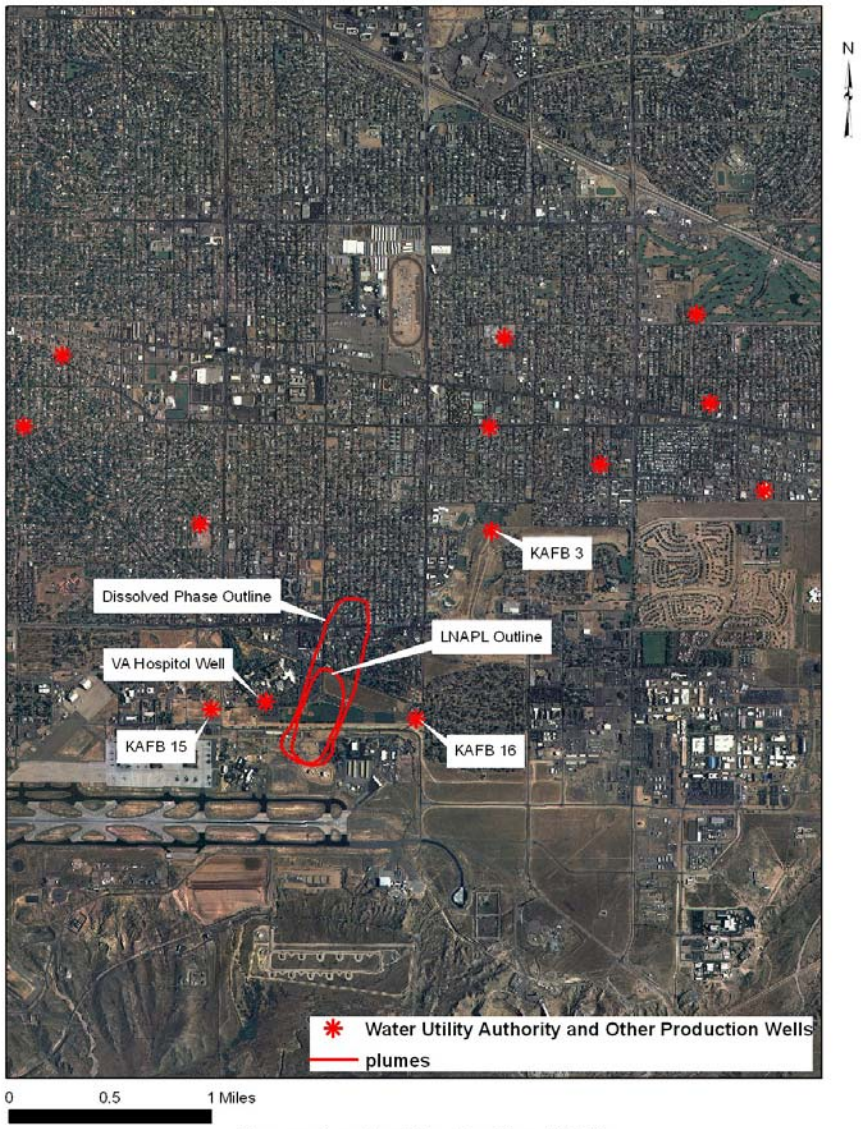
- **Leak at Former Fuel Offloading Rack discovered 10 years ago**
- **Floating Fuel plume discovered 3 years ago**
- **Very little information about**
  - **Extent of contamination**
  - **Migration direction and speed**
  - **Potential source areas**

Existing Groundwater Monitoring Wells



Approximate Location of
Groundwater Monitoring Wells

Plume Locations Relative to Production Wells



Groundwater Production Wells

NMED's Response to the Problem

- **Direct action under Hazardous Waste Act and KAFB's Hazardous Waste Permit**
- **April 2, 2010 – NMED directed KAFB to:**
  - **Continue existing efforts**
  - **Submit Plan to remove floating fuel**
  - **Submit Plan to investigate source areas**
  - **Submit Plan to define extent of contaminated groundwater**
- **All work informs the final cleanup strategy**
- **Public awareness and participation**

Current and Recent Investigation and Remediation Efforts

- **On the Base, 4 Soil Vapor Extraction (SVE) Units operating intermittently**
  - **About 300,000 gallons of fuel extracted**
- **Installation of 3 more groundwater monitoring wells**
- **Submittal of 3 plans to NMED for review and approval**
  - **“Interim Measures” to remove floating fuel**
  - **Investigation plans for source areas and groundwater**

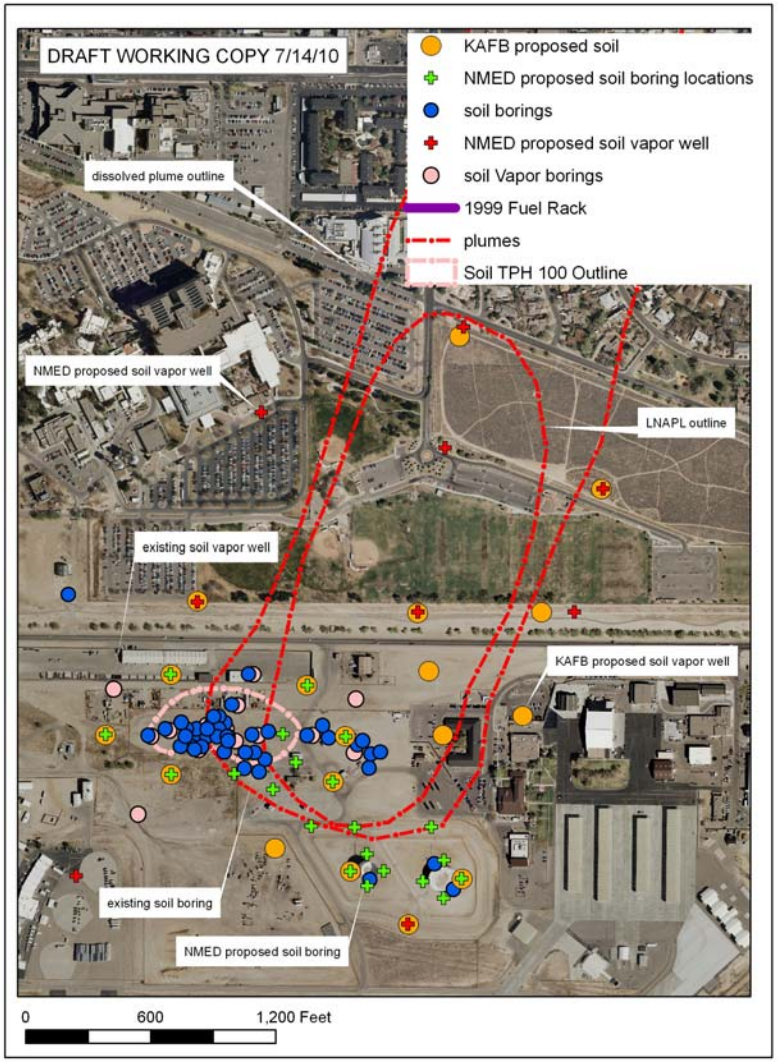
What the Air Force Needs to Do

- **Continue operation of SVE Units**
  - **Improve operational continuity**
- **Continue sampling and monitoring of existing wells**
- **Execute NMED's direction on the 3 plans**
- **Execute NMED's immediate actions**

Source Area Investigation Plan

- **Complete characterization of tank farm and Former Fuel Offloading Rack**
- **Characterize area along piping**
- **Find connections between source(s) and groundwater**
- **Complete characterization of soil-gas plume**
- **New boreholes for soil sampling from surface to groundwater**
- **New soil-gas monitoring wells at different depths**
- **Excavate contaminated soil to 20 feet**

Locations of Soil Borings and Soil-Gas Monitoring Wells

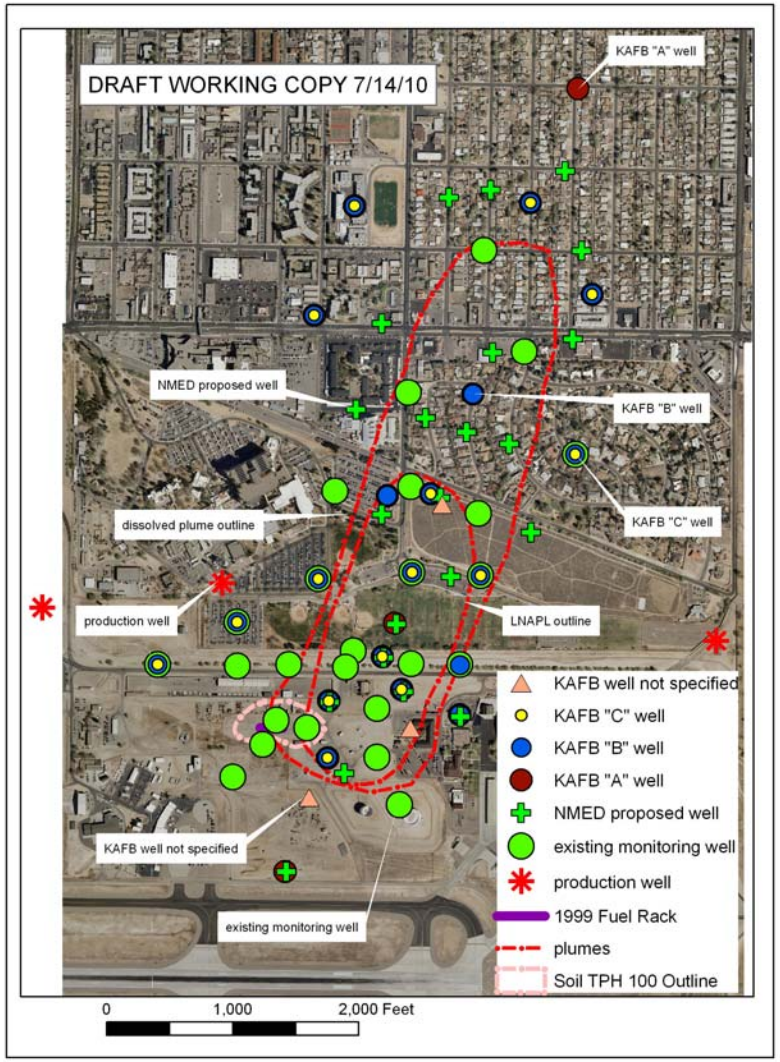


Soil Borings and Soil Vapor Wells

Groundwater Investigation

- **Install new monitoring wells**
- **At each location, install 3 cluster wells at different depths at and below water table**
- **Characterize geology and hydrology to understand flow direction and velocities (travel time)**
- **Geophysical assessment of existing and new wells**

Groundwater Monitoring Wells



Groundwater Monitoring Wells

The Near Future

- **NMED review of plans has 2 components**
  - **Immediate actions for Interim Measures**
    - **Install more SVE units**
    - **Establish inventory of spare parts**
    - **Excavate contamination to 20 feet to reduce risk**
    - **Install “early detection” groundwater monitoring wells**
    - **Compile existing data for comprehensive review and assessment**
    - **Borehole geophysics**
  - **Plan Revisions**
    - **Eliminate the waste and fluff**
    - **Provide project management plan with schedules**
    - **Establish quality control and quality assurance**
    - **Focus on quickly gathering relevant characterization information**
    - **Vertical extent must be defined and assessed**
    - **Many details concerning technical approach require revision**

Corrective Measures Evaluation

- **Required in NMED's April 2, 2010 direction**
- **Develop and report remedial alternatives to:**
  - **Effectively arrest and remediate contamination in source areas, groundwater, and floating fuel plume**
  - **Complete remediation in a reasonable time frame**
- **Public participation in remedy selection process**
- **NMED selects final remedy after considering public input**

Contact Information

- **James P. Bearzi**
  - **505.476.6016**
  - **james.bearzi@state.nm.us**

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