Update on Water Authority Activities and the Independent Conceptual Site Model and Plume Containment for the KAFB Bulk Fuel Facility Site

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Albuquerque Bernalillo County
Water Utility Authority

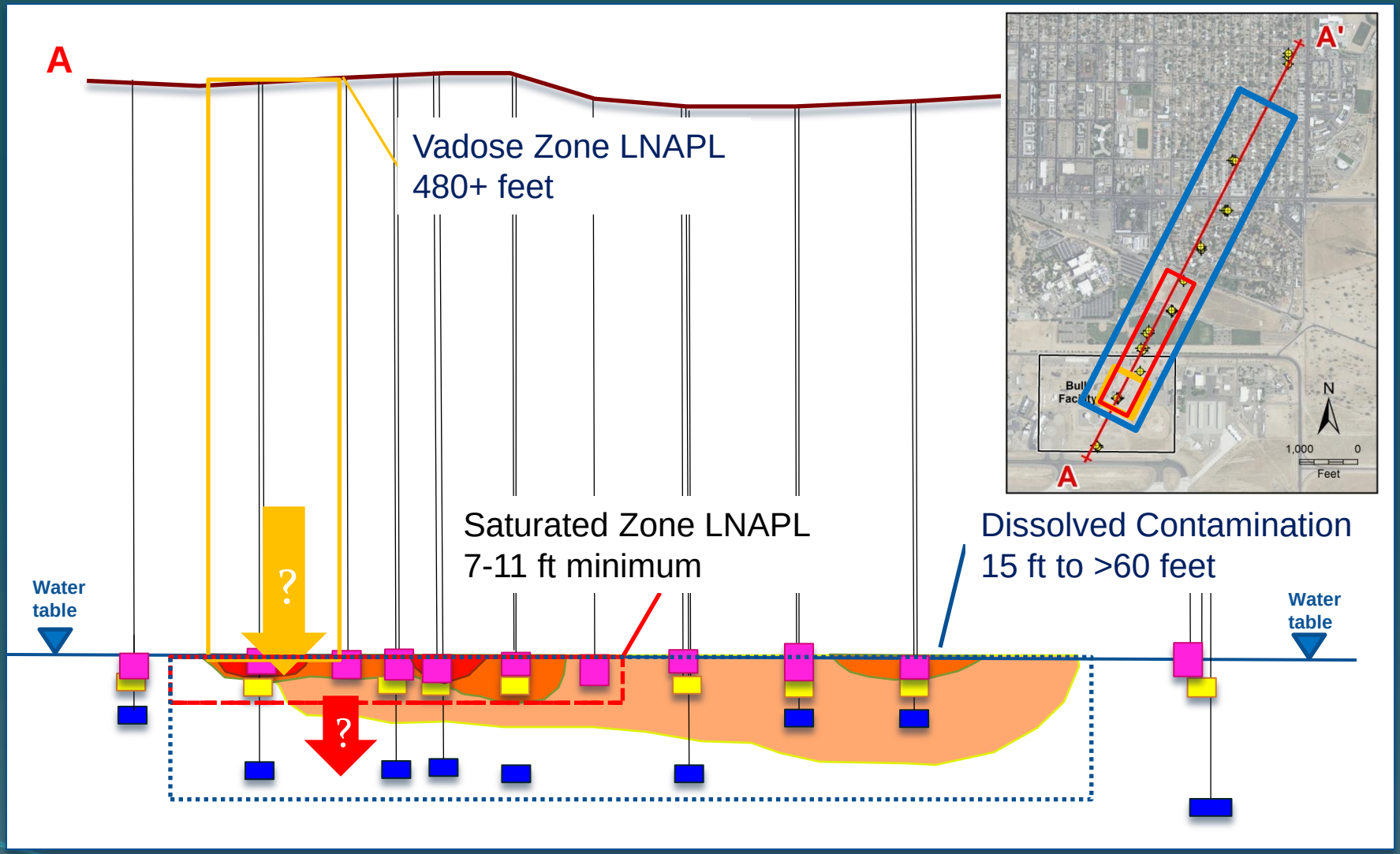
Water Authority Activity Status

- Ongoing discussions with Air Force Civil Engineering Center (AFCEC) on the Contingency plan.
- Reviewing and providing input on Interim Measure proposal documents prepared by KAFB contractor.
- Preparing Independent Conceptual Site Model (CSM) and conceptual remediation plan with Water Authority consultant.
- Collaborating with the New Mexico Environment Department (NMED) and other stakeholders in Interim Measure / Remediation Plan Discussions.

Purpose of Conceptual Plan

- Prepare a conceptual remediation plan for dissolved ethylene dibromide (EDB) plume (preliminary).
  - Demonstrate the most effective site for remediation (potential Interim measure).
  - Demonstrate that capturing of EDB plume to prevent further migration can be done effectively.

Contaminant Domains



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Identified Data Gaps

- LNAPL in vadose zone
  - Limited LNAPL saturation and chemical data for soil
    - Migrating LNAPL
    - Mass of LNAPL and EDB above the water table
- LNAPL below the water table
  - Mass below the current water table
  - Mass below the water table in the future
    - 2-3 feet rise per year
- NMED currently reviewing Resource Conservation and Recovery Act Final Investigation report submitted Mar. 31, 2014.

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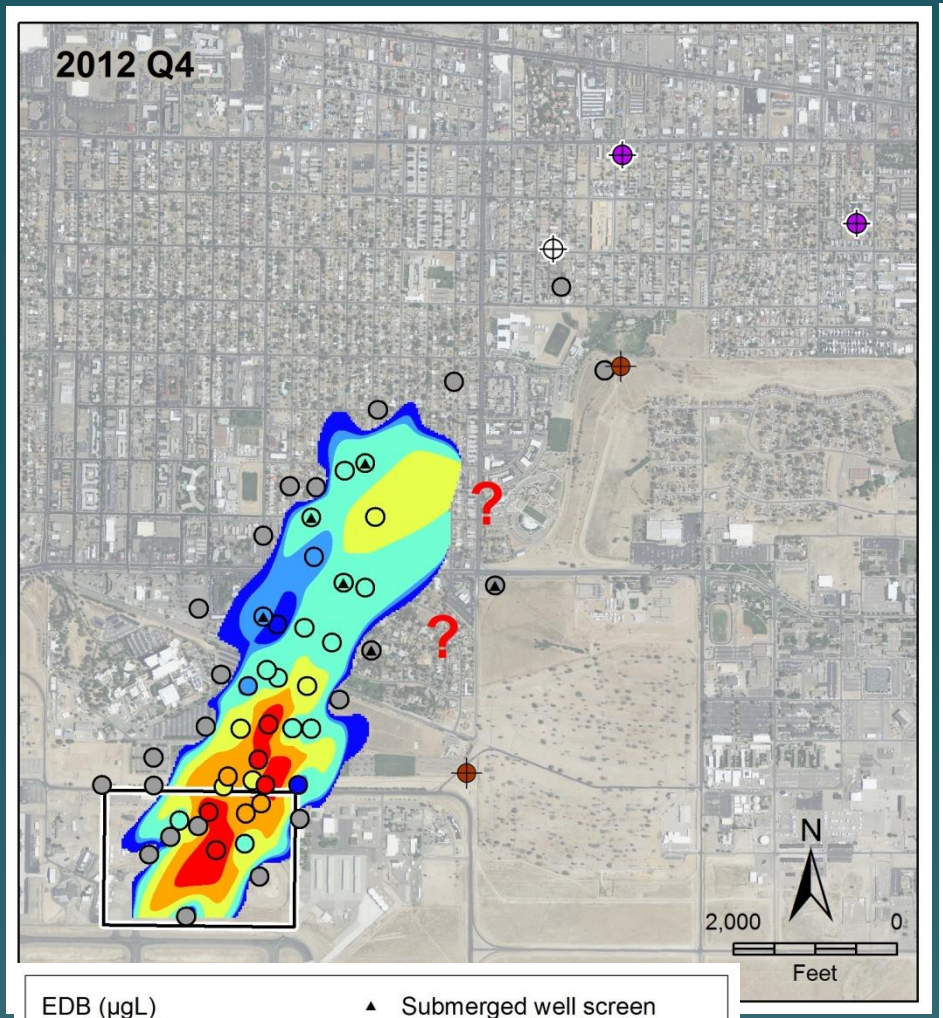
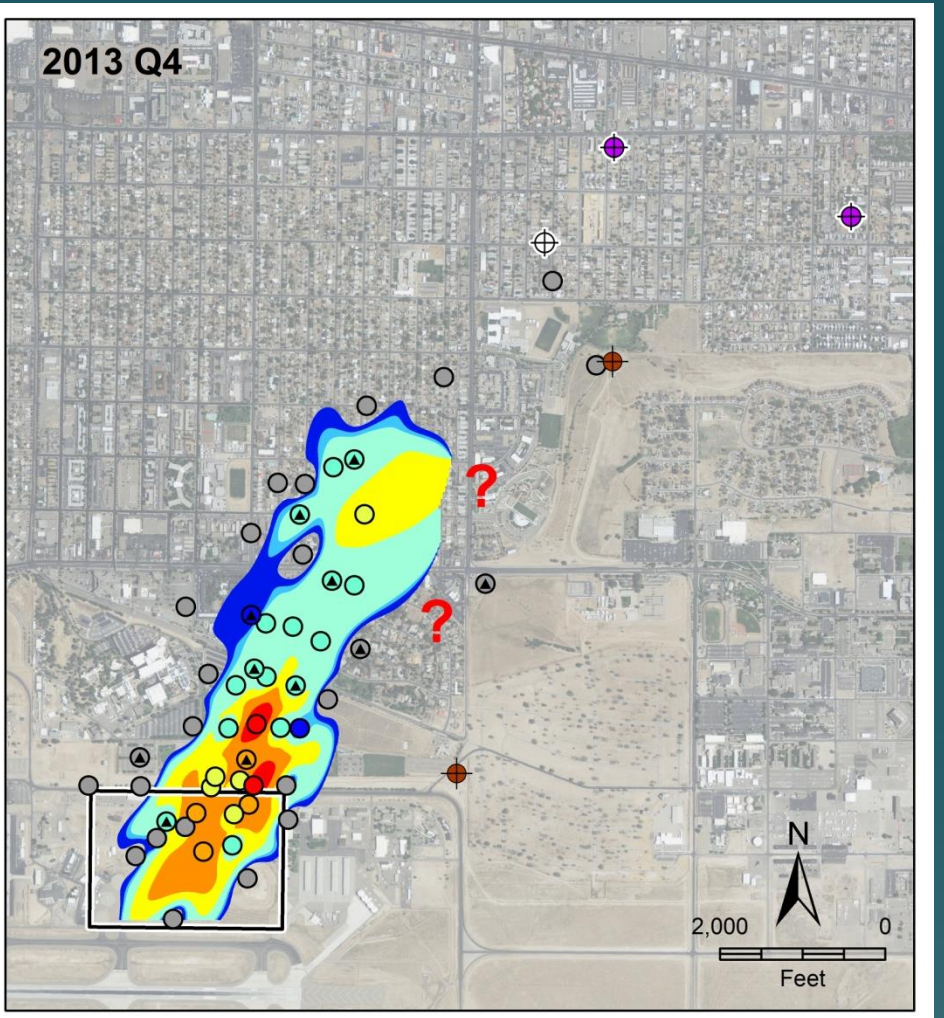
Shallow Dissolved Contamination





EDB (µgL)
- 0.013 - 0.050
- 0.051 - 0.100
- 0.101 - 1.000
- 1.001 - 10.000
- 10.001 - 100.000
- 100.001 - 1000.000
- Non-detect

- Submerged well screen
- Bulk Fuels Facility
- KAFB water supply well
- Trumbull monitoring well
- Ridgecrest water supply well

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Additional Data Gaps

- Dissolved contamination
  - EDB plume extent still not fully delineated
    - Deep monitoring well network is insufficient
  - Dissolved plumes are not stable
    - Source mass is likely increasing
    - Long-term monitoring required to show plume changes
  - Rising water table moves the plume up away from the existing well screens
    - Some shallow wells no longer monitor the higher concentration plume
  - No aquifer test near downgradient edge of plume

Independent Remediation Plan

- Looking at remediation of all contaminant domains
- Evaluating different remedial alternatives to contain and remove dissolved EDB approaching Ridgecrest well field
- Preliminary results for capturing and treating dissolved EDB
- Collaborating with NMED and stakeholders on development of remedial options.

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Indep. Remediation Plan Cont.

- Assumptions
  - Used available data for hydraulic properties
    - Used conservative estimate of hydraulic conductivity
  - Groundwater flow is driven by regional gradient
  - No contaminant contribution from source area
- Preliminary results
  - 7 capture wells
    - 60 gallons per minute (gpm) – 420 gpm total
    - Ridgecrest well field – up to 3,000 gpm per well
    - Domestic household well – 5 gpm

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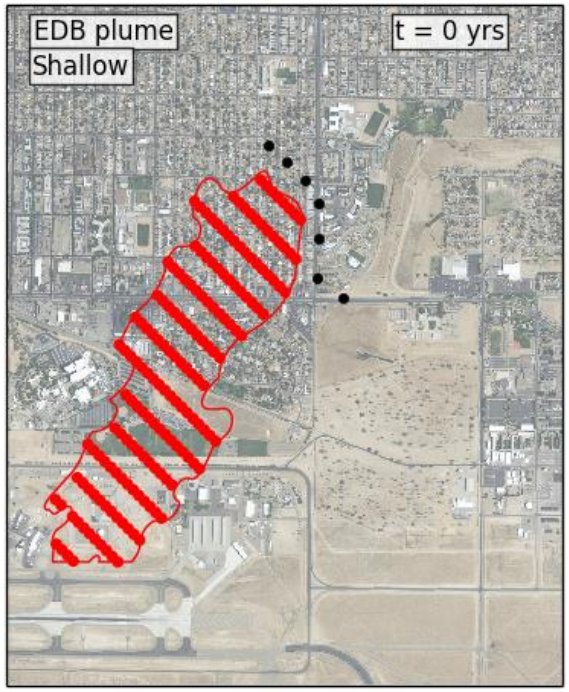
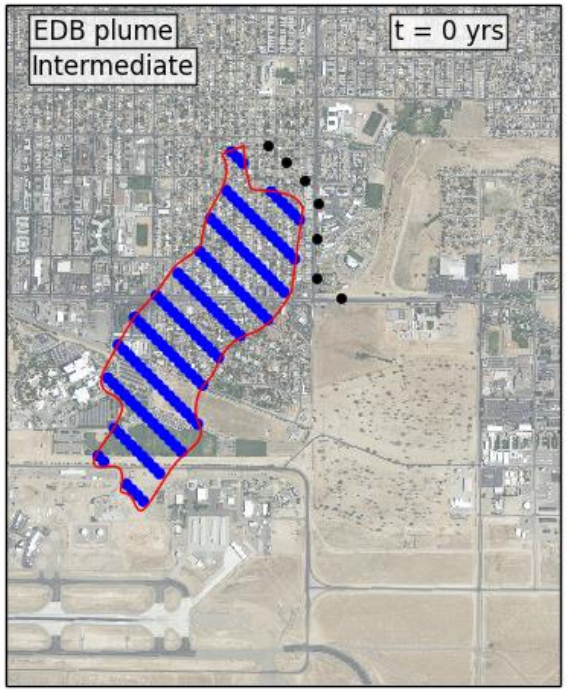
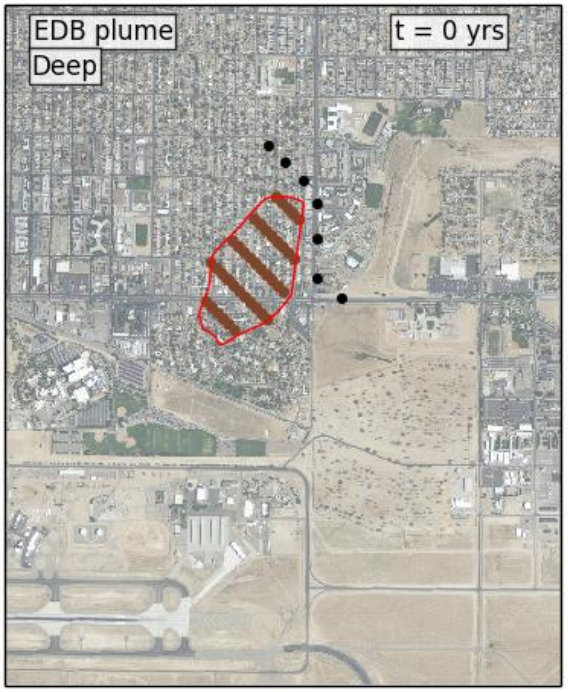
Modeling Plume Capture







Plume Capture Model

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Independent CSM / Remediation Plan Conclusions

- CSM shows critical data gaps still exist.
- Slow progress in development of containment / remediation plan for downgradient dissolved phase EDB plume – primary threat to production wells.
- Water Authority urged to determine what activities could be performed to protect production wells.
- Not a final remedy proposal, but demonstration that the EDB plume can be contained by manageable efforts.
- Continued collaboration with NMED and stakeholders key to development of successful solutions.

Questions?