



Meeting Date: March 22, 2017
Staff Contact: Rick Shean, Water Quality Hydrologist

TITLE: OB-17-2 – Status Update for the Kirtland Air Force Base Bulk Fuels Facility Fuel Leak Corrective Action Activities

SUMMARY:

The New Mexico Environment Department (NMED) released their “2017 Strategic Plan” for the Kirtland Air Force Base (KAFB) Bulk Fuels Facility (BFF) Leak earlier this year, incorporating three strategies to protect the Water Authority’s drinking water supply in the area of the contamination plume. The strategies include implementing a robust monitoring and wellhead protection program, deploying multiple cleanup strategies simultaneously and sequentially, and to meet or exceed all requirements for public involvement.

The Air Force and NMED recently announced that “capture” of the dissolved phase EDB plume has been demonstrated through water-level and plume concentration data collected during 2016. AFCEC’s contractor, EA Engineering, performed an evaluation on the data following a U.S. Environmental Protection Agency protocol for capture data analyses, concluding that the existing capture wells are effectively influencing the EDB plume to move toward the extraction wells and away from the Water Authority’s production wells. This is despite the forced temporary shut-down of one of the extraction wells due to biofouling. As of mid-March, over 150 million gallons of EDB contaminated water have been treated through the groundwater treatment facility (GWTS).

Also, an additional extraction well will be made operational this year, making a total of four operating cleanup wells sending water to the recently expanded GWTS for treatment. Additional interim measures will be implemented this year that will address the concentrated contamination below the source of the leak, including an in situ biodegradation pilot test of the remediation of EDB in the light nonaqueous phase plume below KAFB, and bioventing that will address the residual fuel in the vadose zone.

In addition, the U.S. Air Force Civil Engineering Center (AFCEC) and Kirtland Air Force Base (KAFB) recently submitted a Resource Conservation and Recovery Act (RCRA) Facility Investigation Report, or RFI, to NMED for approval. The RFI, outlines the nature and extent of the contamination at the KAFB BFF Site, will be followed by a RFI addendum to be submitted in 2018. Approval of the RFI and Addendum, if granted by NMED, will transition the corrective action activities to a “Corrective Measures Evaluation” Phase.

FISCAL IMPACT:

None

Kirtland Air Force Base Fuel Leak Cleanup

Presenters: Diane Agnew, NMED
Kathryn Lynnes, Air Force



**WUA Governing Board
Project Update
March 22, 2017**



A Partnership for Success

A collaborative technical team is solving the complex hydrogeologic and engineering challenges posed by the fuel leak with support from Albuquerque's neighborhood groups



**Westside Coalition
Neighborhood Assoc.**



Sundance
Consulting Inc.



US Army Corps of Engineers



**Siesta Hills
Neighborhood Assoc.**

**ABQ City Council
District 6 Coalition of
Neighborhood Assocs.**



**Elder Homestead
Neighborhood Assoc.**



Christ United Methodist Church

HAWLEY GEOMATTERS

Thomson and Associates

**Citizen Action
New Mexico**

2016 Strategic Plan

New Mexico Environment Department (NMED) Final 2016 Strategic Plan is available online (www.env.nm.gov/kafbfuelplume/kafb-fuel-plume-documents/)

Goal: Protect Albuquerque's aquifer and drinking water supply wells in the area of the fuel leak

Strategies to Achieve the Goal:

1. Implement a robust site monitoring & wellhead protection program
2. Characterize and remediate Light Non-Aqueous Phase Liquid (LNAPL), impacted soil, and associated dissolved phases in the source area
3. Collapse the dissolved ethylene dibromide (EDB) plume
4. Meet or exceed all requirements for providing public comment, information and involvement

2016 Strategic Plan Highlights

Strategy #1 Highlights:

- Quarterly monitoring of monitoring well network shows a relatively stable plume
- Sentinel wells show no detections of EDB
- Monthly testing of drinking water supply wells show no detections of any EDB

Strategy #2 Highlights:

- Work plan approval of LNAPL interim measure for in situ bioremediation
- Working group discussions to evaluate data and scope 2017 pilot tests and LNAPL continuous coring locations

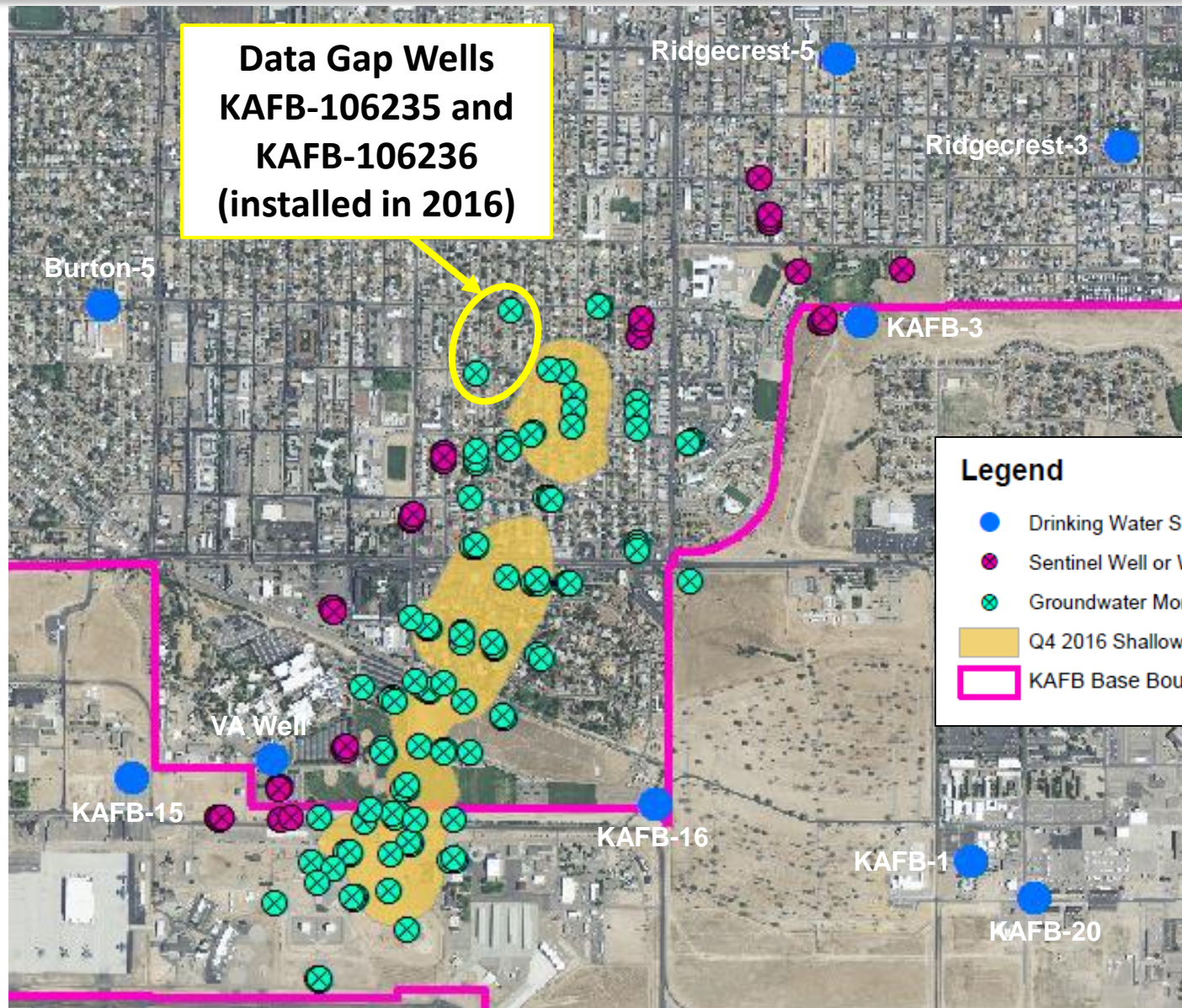
Strategy #3 Highlights:

- Treated groundwater contains no detectable fuel constituents
- Expanded groundwater treatment system (GWTS) capacity to 800 gallons per minute (gpm)
- 2-3 extraction wells operational throughout 2016

Strategy #4 Highlights:

- NMED and the Air Force conducted a total of 20 presentations or outreach events

Site Monitoring & Wellhead Protection

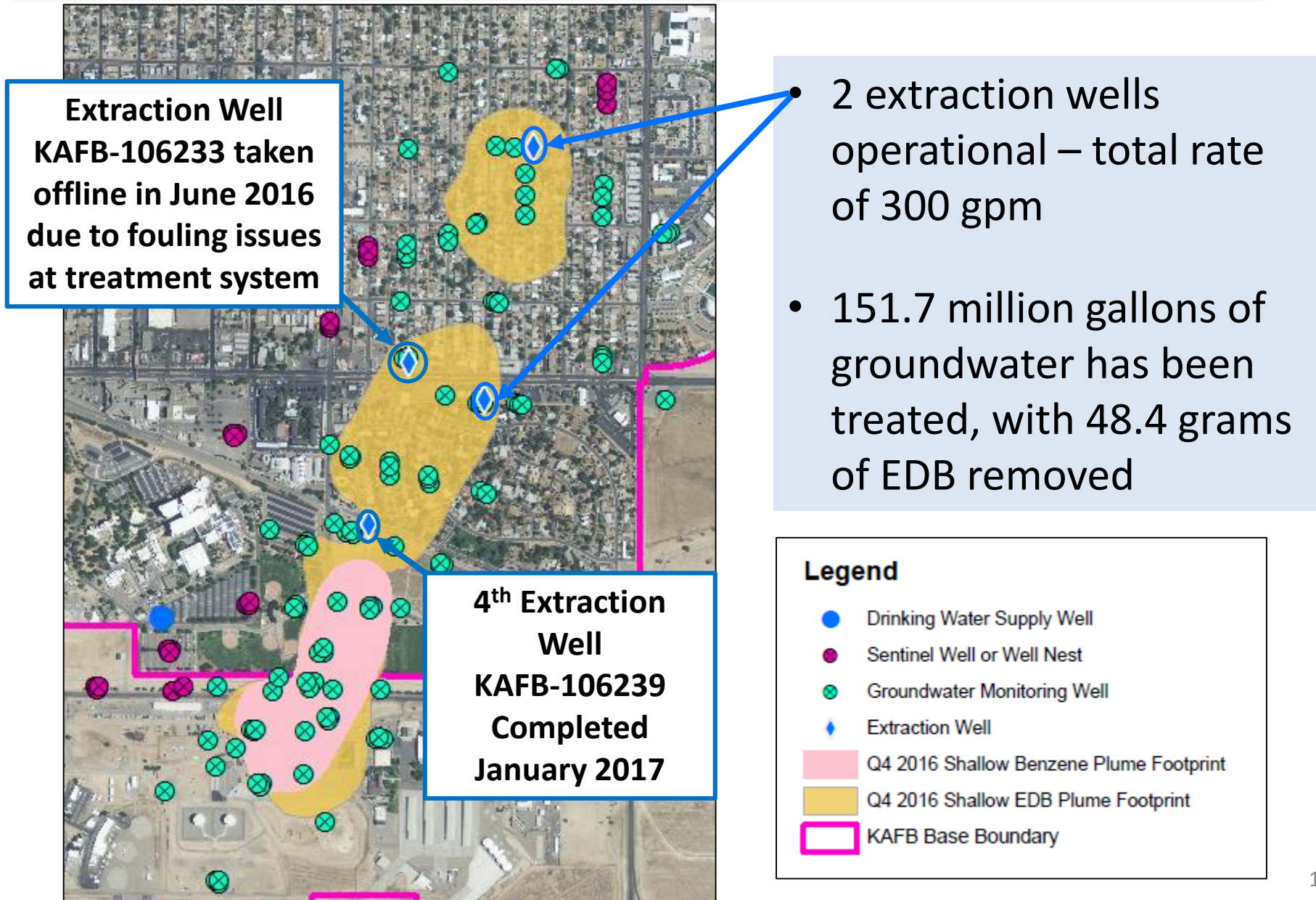


EDB Plume Data Gap Wells

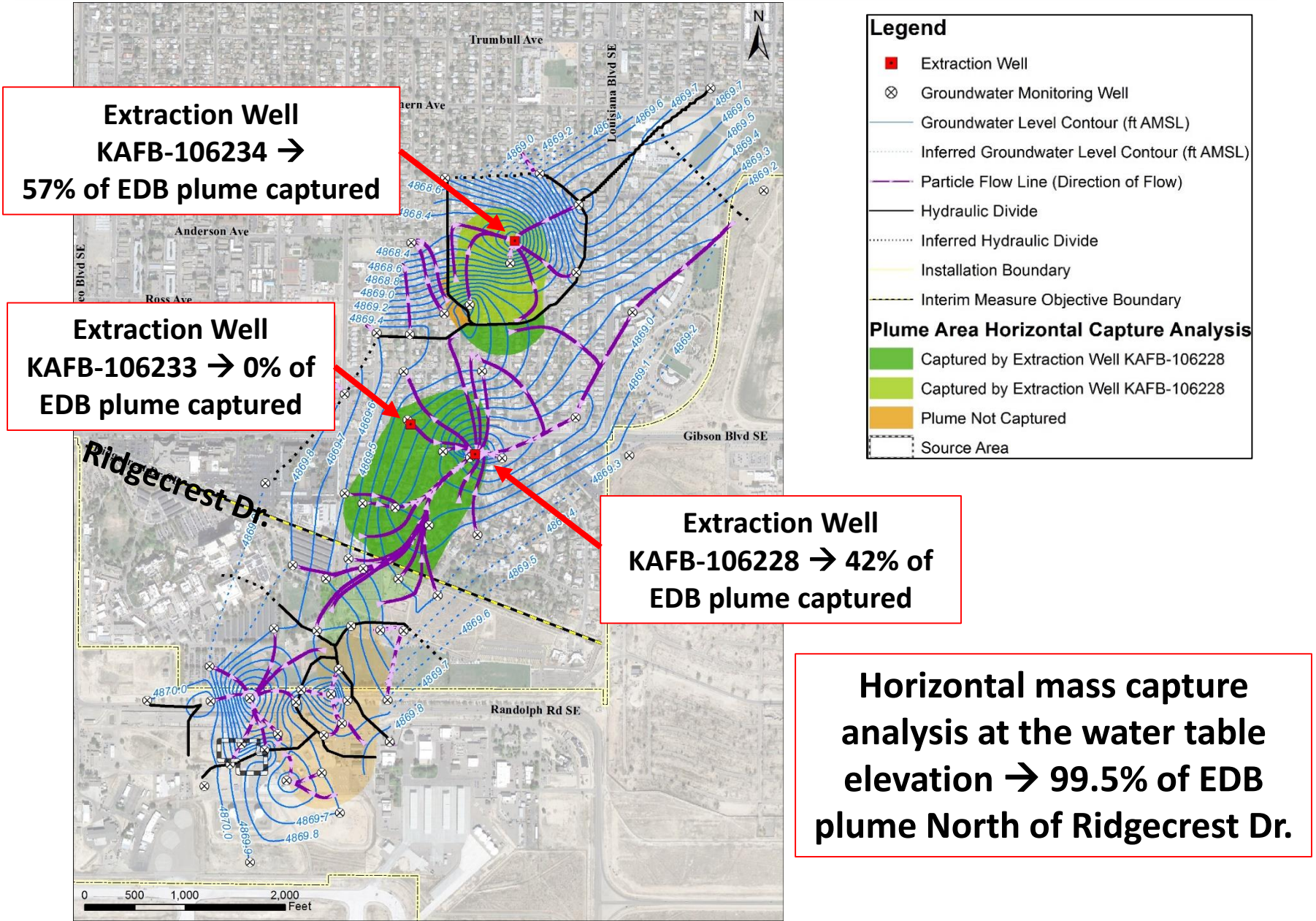
- Installed two data gap groundwater monitoring wells nests
- Nested well design provides:
 - Better vertical definition
 - Reduced impact to neighborhoods
 - Installation of “contingency well” to account for continued rising water table
- 1st samples collected January 2017; no EDB was detected



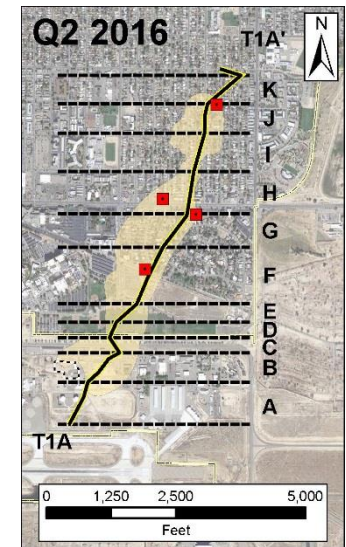
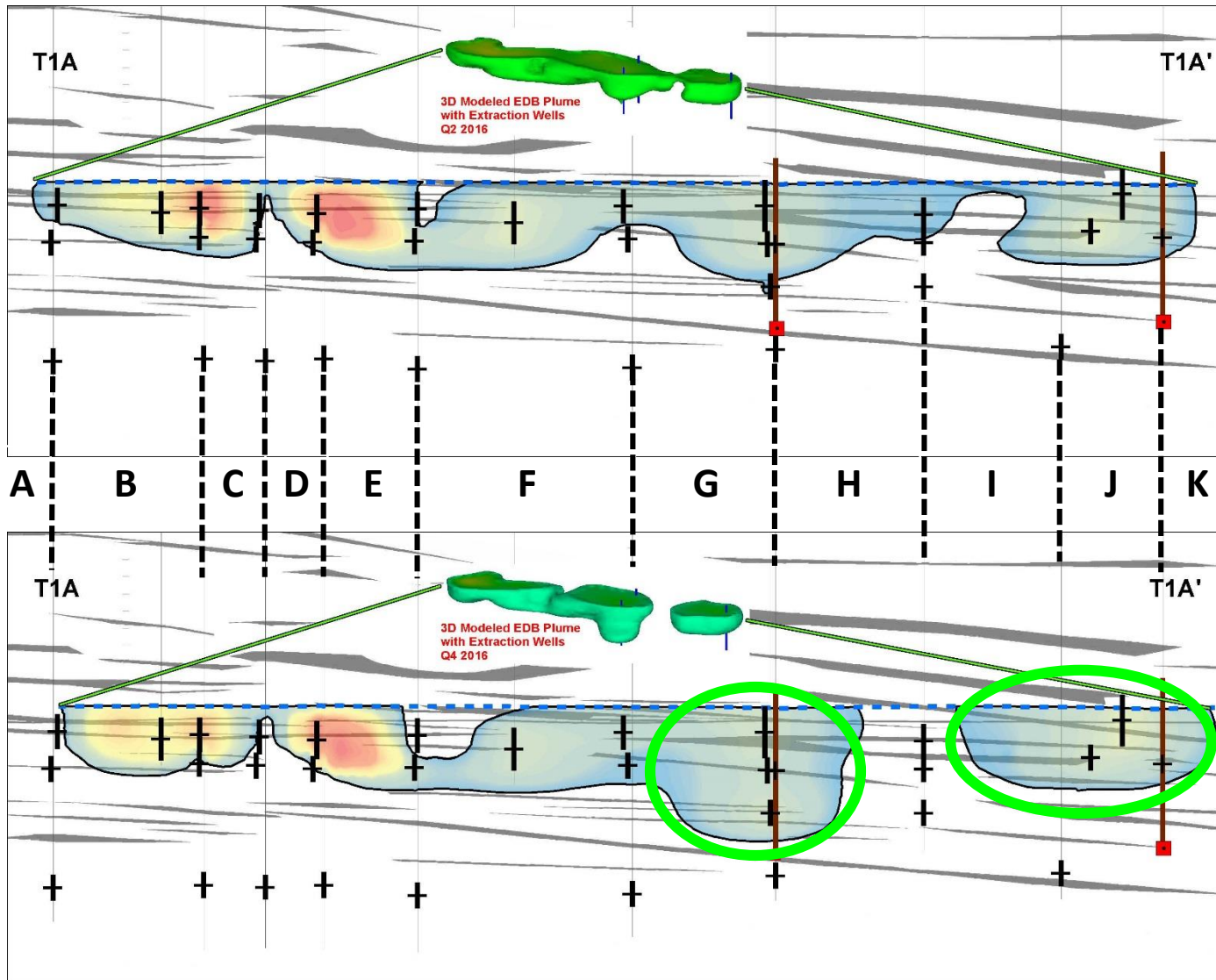
EDB Plume Collapse



Plume Capture Update



Plume Reduction Analysis



Data Demonstrates

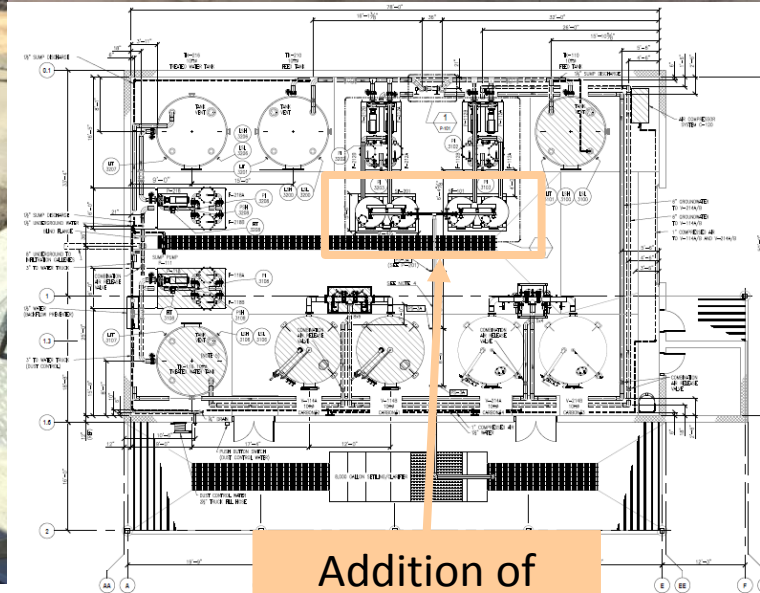
- EDB mass is moving towards extraction wells
- Increased mass concentrations at extraction wells

GWTS Expansion

2 New 20,000 pound granular activated carbon (GAC) Tanks added



Sacrificial anode added to extraction wells to prevent corrosion



Addition of Sand Filters Pre-Treatment

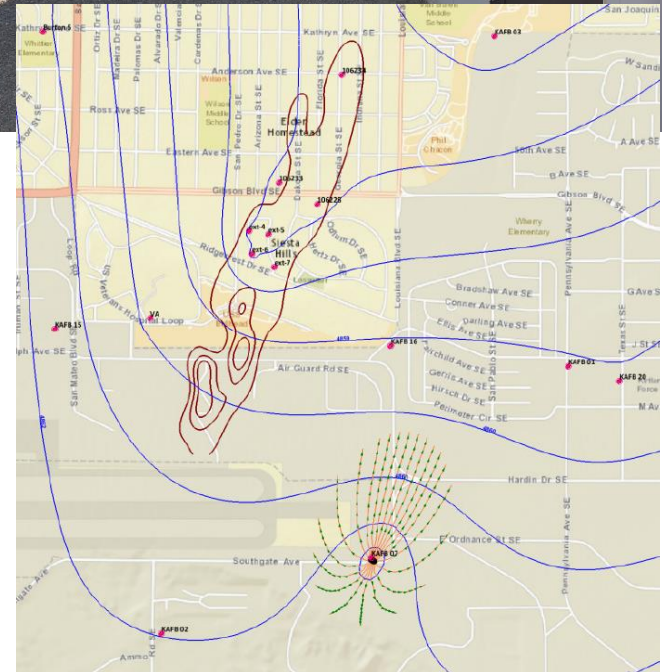


What's next for EDB Plume Collapse?

- Rehabilitate and redevelop extraction well KAFB-106233 on California St./Gibson Blvd.
- Design and construct conveyance pipeline from new extraction well KAFB-106239 on Ridgecrest Dr. to GWTS
- Operate GWTS with all 4 extraction wells
- Continue plume capture evaluation through tracking multiple lines of evidence which will feedback to GWTS operations

KAFB-7 Injection Pilot Test

- Pilot test gravity-fed injection at KAFB-7 from February 20 thru June 21, 2016
- No contaminants in treated effluent
- Initial vs. steady-state operations during injection
 - Groundwater rose with injection into KAFB-7
 - 2-14 feet vs 3-6 feet
- Minimal aquifer response to observation wells surrounding KAFB-7



UIC Discharge Permit

- Air Force has applied for a Class V Underground Injection Control (UIC) discharge permit from the NMED Ground Water Quality Bureau (GWQB) for KAFB-7 and up to four additional UIC wells
- Draft permit was out for public comment which ended on February 13, 2017 for 90-day public comment period
- Revised draft permit was streamlined and re-posted on March 3, 2017 for a additional 30-day public comment period
- Air Force is currently discharging to KAFB-7 under a Temporary Permission issued by the NMED GWQB

RFI Report

Air Force officially submitted the RFI Report on January 31, 2017:

- Describes nature and extent of contamination in the soil and groundwater
- Provides a comprehensive evaluation of site data from discovered release 1999 to December 2015
- Follows regulatory process to define nature and extent
- Presents data based on media (soil, vapor, and groundwater)
- Presents the conceptual site model (CSM) showing the fate and transport of contamination through media

RFI Key Findings

- Fuel contamination nature and extent has been defined for soil, soil vapor, and groundwater
- Underground pipelines associated with former offloading rack were the sources of the jet fuel release
- Data gaps that need to be resolved
 - EDB dissolved-phase plume delineation in the northwest toe of the plume
 - Vertical extent of the LNAPL

RFI Path Forward

- RFI Addendum Report expected 2018 to include:
 - Data from recently installed data gap groundwater monitoring wells
 - Continuous cores from source area to fill LNAPL data gap
- Risk assessment to be submitted as a separate document

2017 Strategic Plan

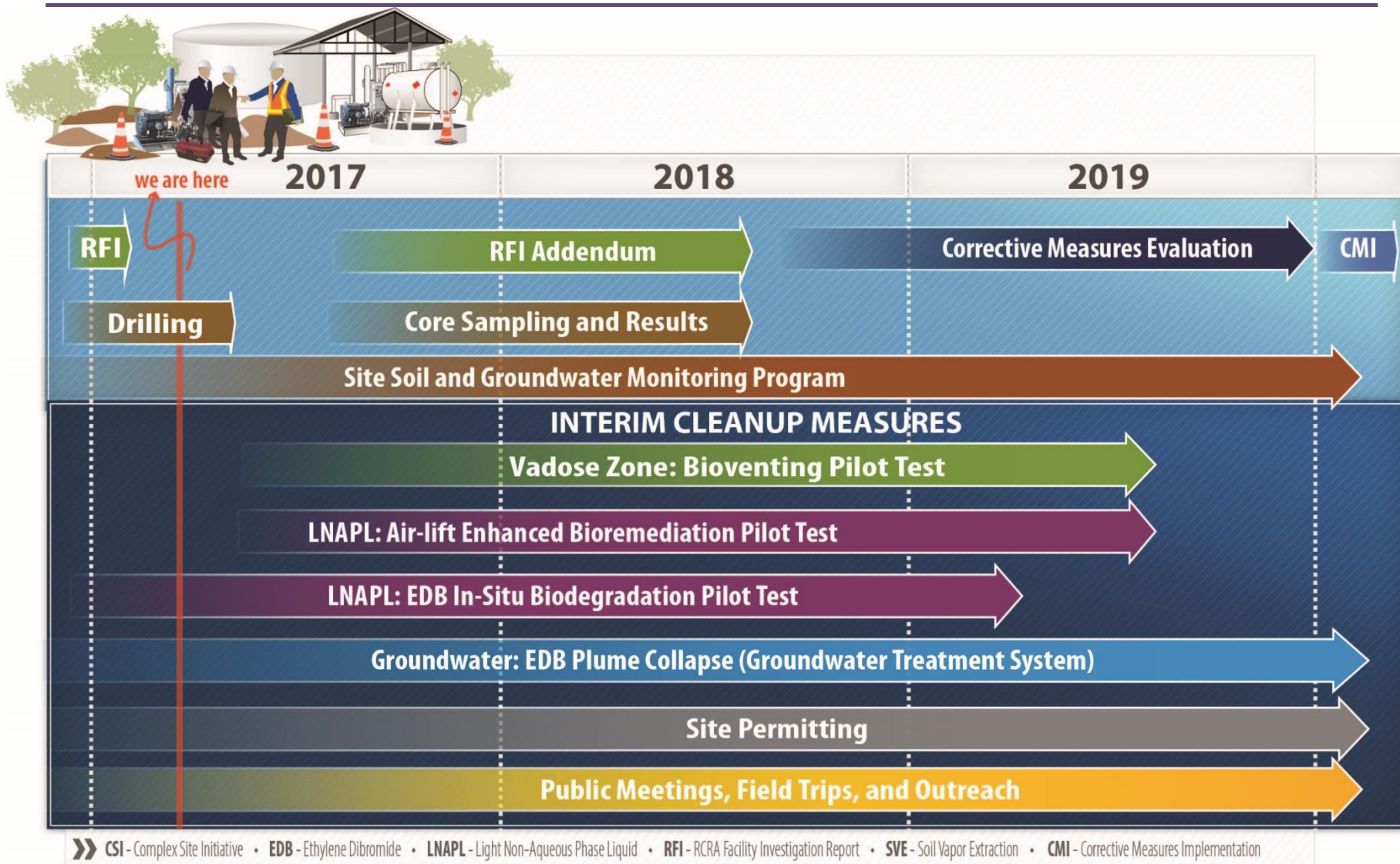
NMED Final 2017 Strategic Plan will be posted by the end March 2017 with comments received (www.env.nm.gov/kafbfuelplume)

Goal: Protect Albuquerque's aquifer and drinking water supply wells in the area of the fuel leak

Strategies to Achieve the Goal:

1. Implement a robust site monitoring & wellhead protection program
2. Deploy multiple cleanup strategies, both simultaneously and sequentially, to cleanup soil and groundwater
3. Meet or exceed all requirements for providing public comment, information and involvement

Current Project Timeline



What to expect in 2017?

- Continue monitoring soil vapor, groundwater, and drinking water supply wells including rising water levels
- Continue operations of the GWTS
- Obtain continuous cores from source area to address LNAPL data gaps
- Construct EDB in situ bioremediation pilot test
- Design and implement bioventing pilot test to target residual fuel hot spots in vadose zone
- Design and implement air-lift enhanced bioremediation pilot test
- Continued public outreach at public meetings, and with neighborhood associations and various community groups

QUESTIONS?

Field Trips



Well installation in neighborhoods



Source Area Cleanup



GWTS Operation & Expansion

