Kirtland Air Force Base
Fuel Leak Cleanup

Project Status Update
ABCWUA Board
June 22, 2016

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

US Army Corps of Engineers

Elder Homestead Neighborhood Assoc.

Siesta Hills Neighborhood Assoc.

ABQ City Council District 6 Coalition of Neighborhood Assocs.

Christ United Methodist Church

HAWLEY GEOMATTERS

Thomson and Associates

2016 Strategic Plan

New Mexico Environment Department (NMED) Final 2016 Strategic Plan is available online: **http://www.nmenv.state.nm.us**

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

Current Timeline

2015 | we are here | 2016 | 2017

Site Assessment and Characterization

RFI

Corrective Measures Evaluation

Drilling

Drilling

Drilling

Site Soil and Groundwater Monitoring Program

INTERIM CLEANUP MEASURES

SVE Operation

CSI

Bioventing Pilot Test

EDB Plume Collapse (Groundwater Treatment System)

LNAPL Lab Tests

CSI

LNAPL Enhanced Bioremediation Pilot Test

Site Permitting

Public Meetings, Field Trips, and Outreach

CSI - Complex Site Initiative • EDB - Ethylene Dibromide • LNAPL - Light Non-Aqueous Phase Liquid • RFI - RCRA Facility Investigation Report • SVE - Soil Vapor Extraction

Project Progress Report

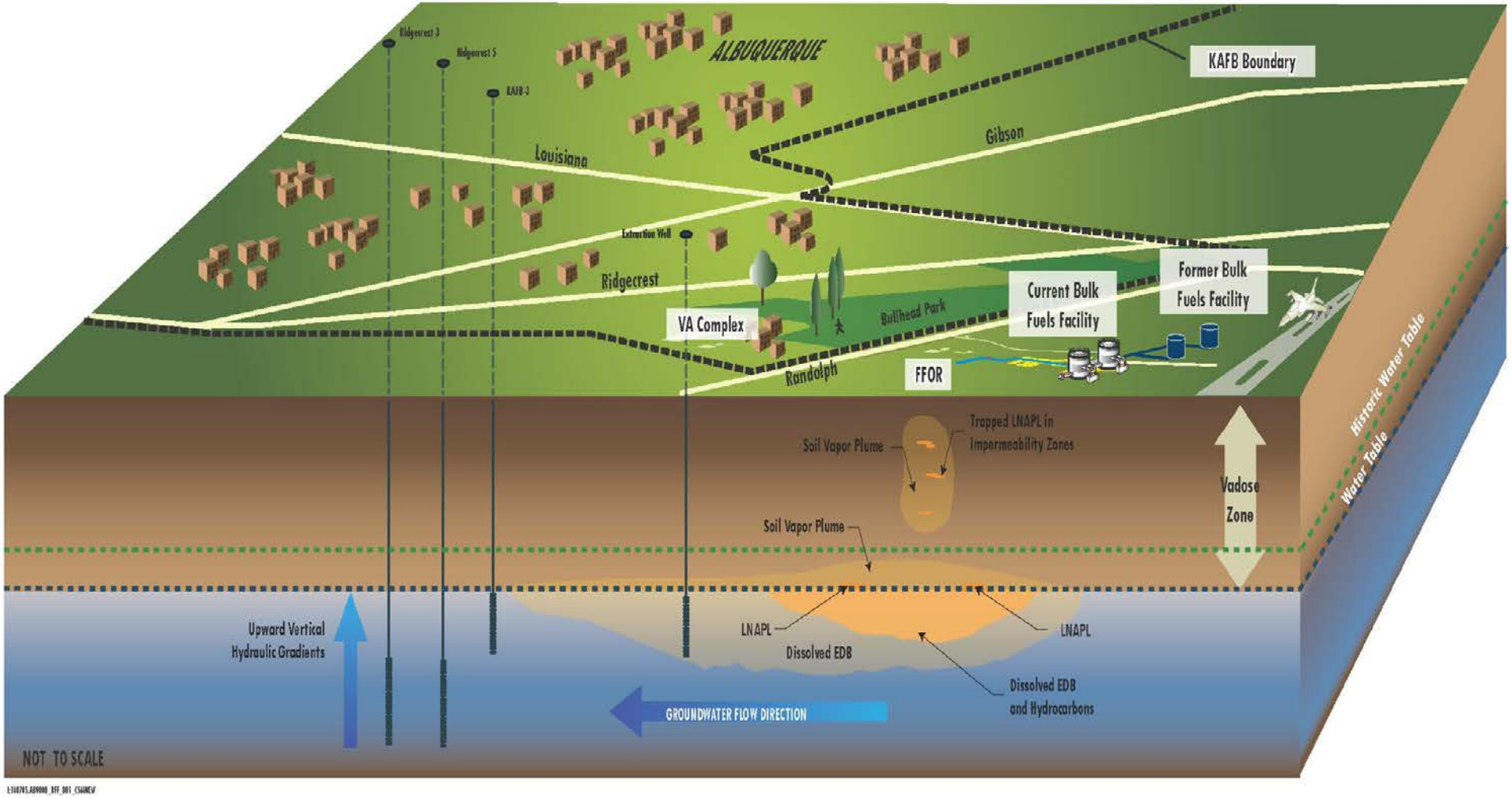
- Full-scale groundwater treatment system (GWTS) began operation in December 2015
- Second and 3rd extraction wells also began operation at 400 gallons per minute in December 2015
- Gravity fed injection well pilot test at KAFB-7 started in February 2016

Extracted and treated 72.5 million gallons of ethlyene dibromide (EDB)-contaminated groundwater and removed 24.9 grams of EDB.

Project Progress Report

- Technical working groups met in January and April 2016 with a particular focus on groundwater and EDB plume collapse
- In situ respiration and rebound testing continues in the vadose zone or soil layers
- The Air Force has started work on the RCRA Facility Investigation Report (RFI) to be submitted in Fall 2016
- Groundwater and soil vapor monitoring is ongoing

Conceptual Site Model Based on Current Data



Understanding Risk

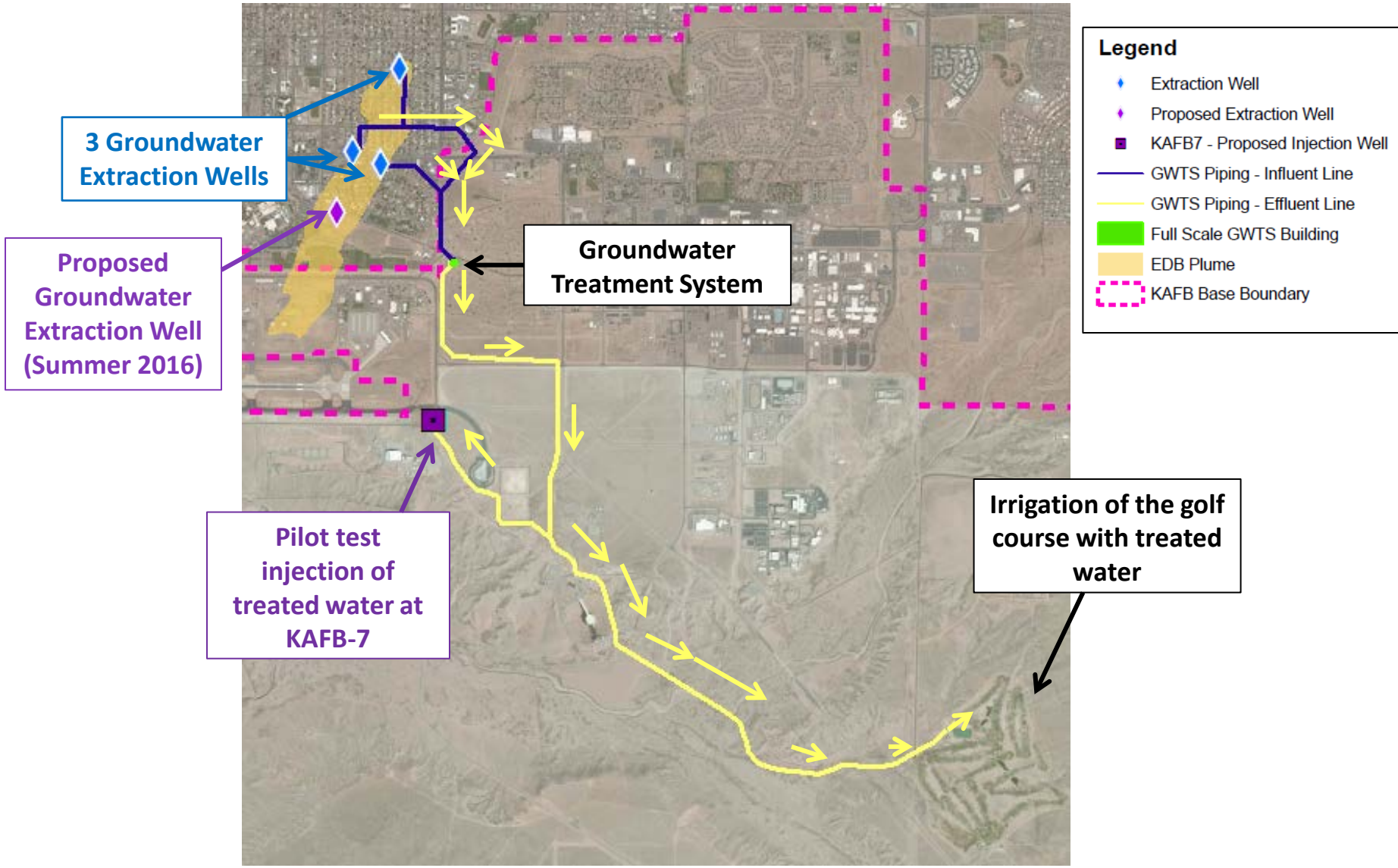
- Current monitoring data, along with historical records that help to identify contaminants, are used to determine human exposure and risk
- Pathway to receptor (human health or the environment) → Potential Risk
- Data evaluation, as well as identification of receptors and pathways is part of a Risk Assessment
- NMED Risk Assessment Guidance (July 2015) provides a road map for the Air Force
- If necessary, as new data is collected, the risk is reevaluated

Potential Exposure Pathway	Risk Level	Explanation
Drinking Water		**Drinking water provided by the Albuquerque Bernalillo County Water Utility Authority (ABCWUA) continues to be free of any detectable fuel contamination and is safe for all uses.** Public drinking water wells near the groundwater contamination plume are tested monthly, and show no detections of any fuel compounds. Sentinel wells, which are monitoring wells located between the drinking water wells and the contamination plume, are tested quarterly and show no detections.
Surface Soil		**Surface soil contamination never migrated off of Kirtland.** Surface soil contamination has only occurred at the Kirtland Air Force Base Bulk Fuels Facility (BFF) industrial area which is not accessible to the general public. Contaminated soil has been excavated and removed for off-site disposal.
Surface Water		**There is no pathway for contaminants to enter surface water.**
Vapor Intrusion		**Homes and businesses are not at risk for vapor contamination.** There is no off-Base surface or near-surface soil contamination, and groundwater contaminants are too deep, to allow vapors to enter homes and buildings.
Garden Vegetables		**There is no risk of contamination to garden vegetables.** ABCWUA water is safe for irrigation. There is no off-Base surface soil contamination, and vapors from groundwater are too deep, for fuel to contaminate garden vegetables.
Recreational Activities		**There is no risk of contamination to people enjoying recreational activities in Bullhead Park or in the Dog Park.** Reclaimed ABCWUA water is used to irrigate the parks. There is no off-Base surface soil contamination, and vapors from groundwater are too deep, to pose a risk to people in the park areas.

(June 2016)

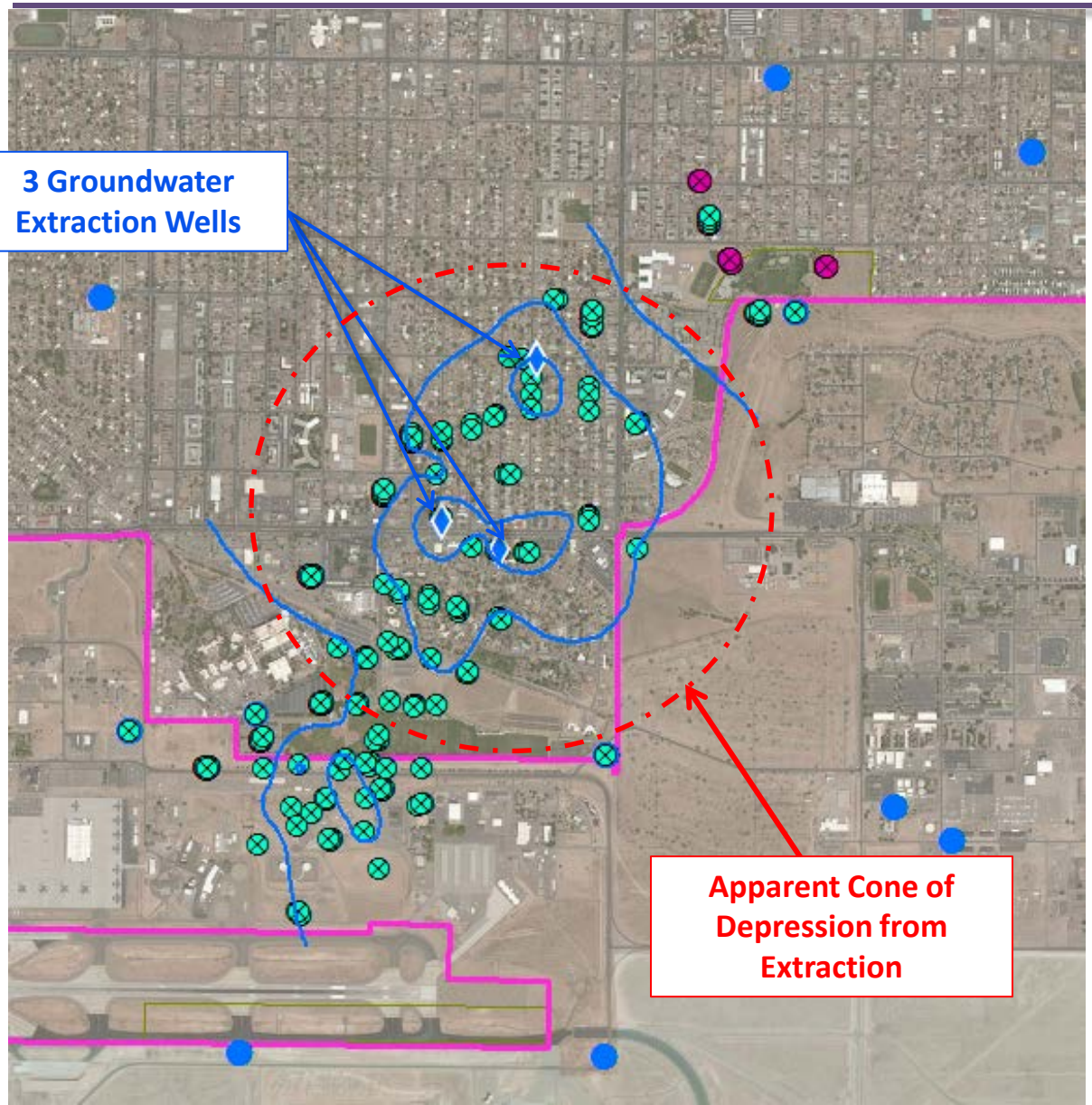
Safe	**Use Caution**	**Unsafe**

EDB Plume Collapse



Groundwater Treatment Facility

2nd Quarter 2016 Groundwater Levels Evidence of success



- The apparent cone of depression from the first three extraction wells indicates successful removal of EDB-contaminated groundwater.
- Plume collapse will be confirmed with EDB concentration trends.

What's in Store for 2016?

- Drilling and installation of data gap groundwater monitoring wells (Summer 2016)
- Aquifer testing of 2nd and 3rd extraction wells (late-Summer 2016)
- Drilling, installation, and testing of 4th extraction well, south of Gibson (Summer/Fall 2016)
- Expansion of groundwater treatment system to increase treatment capacity (Fall/Winter 2016)

What's in Store for 2016?

- In Situ Anaerobic Degradation Pilot Test Work Plan (Summer 2016)
- Drilling, installation, and operation of the In Situ Anaerobic Degradation Pilot Test in on-Base source area
- Bioventing Pilot Test Work Plan (late-Fall/Winter 2016)
- Continuous soil coring in source area (Winter 2016)
- Technical working group meetings to optimize soil vapor sampling program, locate groundwater injection wells, and advance cleanup using current data (Summer/Fall/Winter 2016)

2016 Public Outreach

Date	Description
January 12, 2016	**Kirtland Partnership Committee (KPC)** Joint Air Force/NMED presentation to the KPC providing a project update.
February 24, 2016	**Highland High School Advanced Placement (AP) Chemistry and AP Environmental Science** Joint NMED/Air Force presentation to Highland High School AP Chemistry and AP Environmental Science students. Chemistry students designed a laboratory experiment to evaluate filter media for contaminant removal. Students presented at the April 19, 2016 Public Meeting poster session.
April 8, 2016	**New Mexico Geological Society Spring Meeting** Joint NMED/Air Force abstract with NMED presenting on site stratigraphy and migration of the EDB plume at the BFF site.
April 13, 2016	**New Mexico Tech Engineering Club** Joint NMED/Air Force presentation to undergraduate and graduate engineering students.
April 19, 2016	**Public meeting with poster session** Join NMED/Air Force poster session and project update presentation to the community.
April 23, 2016	**Public Field Trip** Joint NMED/Air Force technical field trip to tour the groundwater treatment facility and treated water discharge points for the EDB plume collapse interim measure.

Upcoming Public Outreach

Date	Description
July 14, 2016	**Public meeting with poster session** 5:00 – 6:00 p.m. Technical Workshop – Groundwater Modeling 5:30 – 6:00 p.m. Poster Session 6:00 – 8:30 p.m. Presentation with Q&A African American Performing Arts Center 310 San Pedro Dr NE, Albuquerque, NM 87108
July 12, 2016	**New Mexico Legislature, Radioactive, and Hazardous Materials Committee** Science and Engineering Center, University of New Mexico
July 16, 2016	**Listening Session with Elected Officials** 9:00 a.m. – 1:00 p.m. Cesar Chavez Community Center 7505 Kathryn Ave SE, Albuquerque, NM 87108
August 15, 2016	**Rotary Club of Albuquerque** 12:30 p.m. Presentation
October 2016	**Technical Workshop with the Public** Time and Location are TBD
November 10, 2016	**Public meeting with poster session** 5:30 – 6:00 p.m. Poster Session 6:00 – 8:30 p.m. Presentation with Q&A African American Performing Arts Center 310 San Pedro Dr NE, Albuquerque, NM 87108

QUESTIONS?