

**Former Williams Air Force Base (AFB)
Restoration Advisory Board (RAB)
Meeting Minutes**

**March 24, 2015, 6 p.m.
Arizona State University Polytechnic Campus
Cooley Ballroom
5999 S. Backus Mall
Mesa, AZ**

Attendees:

<i>Name</i>	<i>Organization</i>
Ms. Cathy Jerrard	Air Force Civil Engineer Center (AFCEC)/Base Realignment and Closure (BRAC) Environmental Coordinator (BEC)/Air Force Co-chair
Mr. Len Fuchs	RAB Community Co-Chair/Gilbert resident
Ms. Linda Geissinger	AFCEC, Public Affairs
Mr. Scott Johnston	Sytsma Group, Public Affairs support contractor
Mr. Brian Sytsma	Sytsma Group, Public Affairs support contractor
Mr. Geoff Watkin	Cherokee Nation Technology Solutions, AFCEC technical support contractor
Mr. Everett Wessner	AMEC/Foster Wheeler, AFCEC remediation contractor
Mr. Don Smallbeck	AMEC/Foster Wheeler, AFCEC remediation contractor
Ms. Carolyn d’Almeida	RAB member/U.S. Environmental Protection Agency (USEPA), Region 9, Remedial Project Manager (RPM)
Ms. Beverly Selvage	RAB member/Mesa resident
Mr. Leo Pessin	Gilbert resident
Ms. Wendy Flood	Arizona Department of Environmental Quality (ADEQ)
Mr. Wayne Miller	RAB member/Arizona Department of Environmental Quality (ADEQ), RPM
Mr. Steve Willis	UXO Pro, Arizona Department of Environmental Quality (ADEQ) contractor
Mr. Thom Schuett	Promanage, LLC
Mr. Dale Anderson	RAB member/Gila River Indian Community
Mr. James Holt	RAB member/Queen Creek resident
Mr. Glenn Stark	Gila River Indian Community
Ms. Eva Davis	U.S. Environmental Protection Agency (USEPA), Kerr Laboratory
Mr. Steven Hunter	Arizona State University, Assoc. Dir. Environ. Health and Safety
Mr. John Herrera	Arizona State University, Assoc. Dir. Facilities Management Residential Facilities
Mr. Ben Mitsuda	Arizona State University, Associate General Counsel
Ms. Mary Reker	RAB member, Phoenix-Mesa Gateway Airport, Environmental and Archaeological Coordinator

Mr. Len Fuchs called the meeting to order at 6 p.m. and reminded everyone to please provide his or her contact information on the sign-in sheet (Attachment 2). The 16 Sept. 2014 RAB minutes were approved. Mr. Fuchs invited each person to go around the room and introduce themselves.

Ms. Cathy Jerrard thanked everyone for coming and thanked those who attended the “Full Steam Ahead” event earlier in the afternoon at ST012. Ms. Jerrard then introduced Mr. Wessner.

Site Status Updates

Mr. Wessner presented summary status updates for Sites FT002, LF004, ST012, SS017 and ST035; see attached slides (Attachment 1) for more information. RAB and community discussions for the summary updates are presented below.

FT002 Former Fire Training Area No. 2

Mr. Wessner provided site background and updates for remedy status and the path forward. Mr. Wessner stated the contaminants of concern (COCs) at this site are benzene, chloroform, and 1,4-dichlorobenzene. An Operable Unit (OU)-3 Record of Decision (ROD) was put in place in 1996 for soil. A bioventing remedy was implemented, but it was not effective. Additional petroleum related soil contamination was found during sampling completed in 2013. Remediation wells and equipment were installed in May 2014 to address the remaining contamination with soil vapor extraction (SVE). The system at the site consists of one nested SVE well with three screen intervals. The wells were commissioned and operations began in June 2014. Contaminated vapors are extracted from the subsurface and treated. To date, a majority of the contamination has been removed.

The system will remain in operation through March until the most recent analytical results from February 2015 are received and reviewed. If the data indicates soil vapor goals have been met, the system would be shut down and the rebound testing phase would be implemented. If the rebound testing data indicates soil vapor goals have not been met, the system would continue to operate. If the contaminants remain below soil vapor goals following rebound testing, a closure report will be submitted to the regulatory agencies.

Questions asked during FT002 presentation:

Mr. James Holt asked if the graph for benzene (shown on pg. 12 of the attached slides) is available for the other contaminants and whether the other contaminants show a similar curve.

Mr. Smallbeck responded there are graphs for the other contaminants, and the curves are similar although perhaps not as steep since benzene is the most volatile (most readily extracted) contaminant. Mr. Smallbeck stated the reason the graph for benzene is shown is because it is the only carcinogen at the site and is the remediation driver from a risk perspective.

LF004, Former Solid Waste Landfill

Mr. Wessner provided site background, a groundwater monitoring update, a remedy status update, and path forward for LF004. Contaminants of concern are dieldrin and beryllium in the surface soil and trichloroethene (TCE) and tetrachloroethene (PCE) in the groundwater and soil gas. The site has a flat, eastward gradient from west to east for groundwater flow. Monitoring from May 2014 to November 2014 shows the TCE and PCE groundwater contaminant plumes have remained consistent and well defined. The remedy for the site is In-Well Air Stripping (IWAS), SVE and oxidant injection. System construction is complete and treatment operations have commenced. The system is anticipated to operate through September 2017. The IWAS system for remediating the groundwater has removed 4.19 pounds of TCE and PCE. One of the IWAS wells (RW1) will be used for oxidant injection in March 2015. The SVE system operating at the former Aboveground Storage Tank (AST) area currently has five wells in operation and has removed an estimated 50.51 pounds of TCE and PCE as soil gas from the subsurface.

The Southern Area Remediation IWAS system is injecting oxidant with groundwater recirculation. There has been an approximately 50% reduction in the groundwater PCE concentrations from this activity. The SVE system has had 99% operational uptime since startup and has removed 17.9 pounds of TCE and PCE as soil gas from the subsurface. The system will continue to operate with additional oxidant injections in other areas as necessary. The SVE system will be expanded to target areas where soil gas concentrations remain above cleanup goals.

Questions asked during LF004 presentation:

Ms. Wendy Flood asked what the depth of the contamination is because it looks like it is in the thousands of feet on the graph.

Mr. Smallbeck responded it is in the hundreds not thousands of feet. The slides show the elevations of groundwater monitoring results but shallow groundwater is at about 130-140 feet below ground surface and the soil gas is located from 25-125 feet below ground surface.

ST012, Former Liquid Fuels Storage Operation

A video presenting the successful implementation of the Steam Enhanced Extraction system was presented to the RAB. Mr. Wessner presented slides summarizing remedy, how the remedy works, cleanup status and the path forward. Mr. Wessner stated the first phase of startup was to establish hydraulic control of the site, followed by steam injection and extraction. Steam injection wells will continue to be brought on line and the volume of steam injected will continue to be increased based on operational data. Through February 2015, the average groundwater extraction rate was 86 gallons per minute and the average steam injection rate was 23,000 pounds per hour.

Mr. Wessner stated that condensate production indicating steam breakthrough was observed at the first extraction well (LSZ6) on February 4, 2015.

Mr. Wessner stated the data shows increased mass removal over time. Non-aqueous phase liquid (NAPL) recovery continues with 205,000 pounds (31,000 gallons) removed to date. NAPL removal is expected to increase significantly when boiler maintenance activities are complete. Mr. Wessner stated the SVE system on the site has been operating at 99% uptime from October through December 2014 Removing 12,500 pounds (1,900 gallons) of petroleum hydrocarbons from 8 operating wells. The SVE system is nearing 300,000 gallons of petroleum hydrocarbons removed from vapors in the soil zone above the water table. Five new SVE wells were installed in September 2014 to replace SVE wells that required capping during the SEE process. It is expected that as the aquifer is heated with steam, SVE removal of soil gas from the subsurface will improve.

Questions asked during ST012 presentation:

Mr. Holt stated that Step 3 (slide 40) indicates a revision and asked why it was revised.

Mr. Wessner responded that each step in the steam injection phase was initially identified and described in the remedial action work plan, however, depending on the operating conditions observed, the steps may need to be modified.

Mr. Holt asked if the plan is to always add more steam to the injection wells?

Mr. Wessner responded yes. The intent has always been to ramp up the operation; the incremental adding of steam injection wells is absolutely part of the process.

Mr. Holt stated that steam in the extraction well is a good thing.

Mr. Wessner responded yes it is.

Mr. Holt asked if steam in the extraction well means it has already shoved everything else out.

Mr. Smallbeck responded that theoretically it means the whole area is heated up between the injection point and where the well is extracting water that is boiling. Steam has broken through and whatever fuel trapped in the soil matrix has been affected. The majority of the fuel product trapped there would have been liberated, either as a vapor or fuel/water mixture or free product.

Mr. Leo Pessin asked what was meant by the Cobble Zone. Mr. Smallbeck described the Cobble Zone as a layer where rocks were encountered.

Mr. Holt asked what the gap was (slide 46) in the water extraction by zone graphic.

Mr. Smallbeck stated the extraction system was shutdown for a short period of time to perform activities such as carbon change outs and boiler maintenance. The steam injection was reduced because we were extracting less groundwater. A certain level of steam injection was maintained to keep the steam bubble

beneath the surface intact. The objective was to prevent the steam bubble from collapsing on itself.

Ms. Flood asked why the 7 deep SVE wells were disconnected so quickly (slide 50)?

Mr. Smallbeck responded it was because those wells would have interfered with the SEE system.

Mr. Holt asked if SVE is operating above the area where steam injection is.

Mr. Smallbeck responded that SVE is operating in a particular portion of the site, which is within the steam injection area. Some of the SVE wells were installed (completed) near the groundwater table and would have served as conduits during steam injection. Those deep SVE wells were closed and replaced with similar wells that were not screened as deep. The new SVE wells can extract soil vapor and not be affected by the steam injection process.

SS017, Old Pesticide/Paint Shop

Mr. Wessner summarized the slides presenting the site background, groundwater monitoring update, and the path forward. Mr. Wessner stated groundwater flow continues to be to the east and dieldrin exceeded the EPA RSL at 3 wells in Aug. 2014 (the same wells as Aug. 2013 and 2012). The next monitoring event is in Aug. 2015. Mr. Wessner stated that a dispute process including the AF, ADEQ and EPA is progressing to determine the final remedy for the site.

Questions asked during SS017 presentation:

There were none.

ST035, Former Building 760 Underground Storage Tanks (USTs)

Mr. Wessner summarized the slides presenting the site background, contaminants, status of cleanup actions, groundwater and soil gas sampling results, and the path forward. Mr. Wessner stated that an SVE system was installed and operated for 3 years to treat contamination in the subsurface soil. Operating data indicated that the soil cleanup goals have been achieved for the soil. The SVE system was shut down in December 2013 to perform a rebound test. Mr. Wessner stated that monitoring of the soil vapor for rebound testing indicated that the soil cleanup goals have been achieved. Risk evaluations are being performed to assess if residual contamination is protective of site receptors and to assess any impact to groundwater. 1,2-DCA was the main COC exceedance in groundwater for 2014. Five wells had detections higher than the action level of 5 micrograms per liter for 1,2-DCA. Groundwater monitoring will continue at the site until site closure is achieved.

Questions asked during ST035 presentation:

Ms. Flood asked if Picacho Hall was a dormitory or classrooms.

Mr. Smallbeck responded that it is a classroom building for engineering.

Mr. Holt asked how much deeper is well (B760-RWD) than the other wells?

Mr. Smallbeck responded it is about 20 feet deeper.

Mr. Anderson said he assumed there would be modeling for indoor vapor intrusion and asked if there was actual testing of indoor vapor.

Mr. Wessner responded that right now there is no data to support performing actual testing of indoor air.

Mr. Anderson stated that there are occupied buildings right on top of the site and it would be wise to do some protective sampling just to confirm the model.

Mr. Watkin responded that the building was constructed when the remediation was on going and was designed to have positive pressure that would prevent vapor intrusion.

Mr. Anderson stated that we have been fighting the indoor air issues for a long time and he recommends direct testing of the building.

Munitions Response Site XU403 Area 1

Ms. Jerrard provided a summary briefing for Munitions Response Site XU403 Area 1. Ms. Jerrard stated there were no chemical agents found during the clearance. Ms. Jerrard stated that the work at the site was completed last summer and reports are in production. The reports document all aspects of the work that

was completed, including the geophysics and archeological monitoring. The first two reports (Site Inspection Report and Archeological Monitoring Report) will probably be issued to the regulatory agencies in April 2015. The final two reports (After Action Report and No Further Action submittal) will follow later in the summer.

Questions asked during Munitions Response Site XU403 Area 1 update:

Mr. Holt asked if that is the area west of Sossaman. He stated he thinks there is a company called Arizona Pipe Line that was doing some excavation south of there along Sossaman Rd. He saw something on the news where they had to stop because they found some munitions down around the intersection of Sossaman Rd. and Pecos Rd.

Ms. Jerrard said she was not aware of that, but the initial investigation conducted a few years ago included a buffer area south and east of the site and nothing was found.

RAB adjournment

Ms. Linda Geissinger gave a presentation on the process of RAB adjournment (Attachment 1). The presentation focused on the steps and requirements that must be met to achieve RAB adjournment. She also discussed many options for continued communication following adjournment.

Questions asked during RAB adjournment:

Mr. Leo Pessin stated that many people no longer subscribe to print newspapers. He recommended that the public notices be broadcast on public radio or commercial radio and copies placed in libraries within Maricopa County.

Ms. Geissinger responded certainly.

Ms. Flood asked how big the Williams mailing list is.

Mr. Johnston responded the mailing list includes well over 200 people, agencies and media outlets.

Ms. Flood asked out of the criteria for adjournment is it that one of these has to be met or do they all have to met? What exactly is going to be the main driver? Or is that something we have to discuss at the next meeting?

Ms. Geissinger responded that all of the criteria do not have to be met. Any of the criteria can trigger adjournment discussion. In general, at Restoration Advisory Boards across the Department of Defense, when all of the Records of Decision are complete, and as all of the land is transferred, RABs typically find that interest dwindles. The attendance and concern from the community declines. At that time it is incumbent on the Air Force to evaluate whether the RAB served its purpose. With feedback from the community and regulatory agencies, a decision can be made about the lifecycle of the RAB.

Ms. Flood asked if that is how it will be worded in the future notices and/or at the next meeting?

Ms. Geissinger responded that she is open to feedback about how to put the topic on the agenda.

Meeting Wrap-up

Action items from meeting:

- Provide response to community member regarding recommendation to sample indoor air at Site ST035.
- Look into the Arizona Pipeline news story to determine if it was associated with Site XU403.
- Consider providing public notices in places (libraries, radio broadcast) other than print newspapers.

Mr. Fuchs asked for agenda items for the next RAB and further discussion of RAB adjournment was identified as an item. That concluded the information portion of the evening.

Mr. Fuchs adjourned the meeting at 7:13 p.m.

The next Williams RAB meeting is scheduled for Tuesday, September 15, 2015 at 7 p.m. at the Arizona State University Polytechnic Campus.

Attachments:

1. March 24, 2015 RAB meeting slide handout
2. Sign in sheet

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Former Williams AFB Restoration Advisory Board (RAB)



24 March 2015

Arizona State Polytechnic Campus
Cooley Ballroom (ASU Student Union Building)
7171 E. Sonoran Arroyo Mall Rd.
Mesa, AZ

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Welcome & Introductions



Presented by:
Mr. Len Fuchs / Ms. Catherine Jerrard,
RAB Community Co-Chairs
and Scott Johnston



Welcome & Introductions

- Mr. Len Fuchs, RAB Community Co-Chair
- Ms. Catherine Jerrard, Air Force Civil Engineer Center (AFCEC), Project Manager/Base Environmental Coordinator (BEC) and RAB Co-Chair
- Ms. Carolyn d'Almeida, Project Manager, U.S. Environmental Protection Agency (EPA), Region 9
- Mr. Wayne Miller, Project Manager, Arizona Department of Environmental Quality (ADEQ)



Agenda

<u>Time</u>	<u>Topic</u>	<u>Presenter</u>
6:00 PM	<u>RAB Meeting Convenes</u> <ul style="list-style-type: none">• Welcome and Introductions• Community Co-chair Remarks• Review September 2014 Meeting Minutes and Action Items	Mr. Len Fuchs Ms. Catherine Jerrard Mr. Scott Johnston
6:15-7:30 PM	<u>Program Updates</u> FT002 Status Update <ul style="list-style-type: none">• Remedial Action Update LF004 Status Update <ul style="list-style-type: none">• Remedial Action Update ST012 Status Update <ul style="list-style-type: none">• Remedial Action Update	Ms. Catherine Jerrard Mr. Everett Wessner



Agenda Continued

<u>Time</u>	<u>Topic</u>	<u>Presenter</u>
6:15-7:30 PM	<u>Program Updates <i>continued</i></u> SS017 Status Update <ul style="list-style-type: none">• Aug 2014 Groundwater (GW) Results• Path Forward ST035 Status Update <ul style="list-style-type: none">• Aug and Nov 2014 GW Results• Rebound Testing Results• Path Forward Munitions Response Site XU 403 Area 1 <ul style="list-style-type: none">• Remedial Action Update	Mr. Everett Wessner Ms. Catherine Jerrard
7:30-7:45 PM	<u>Meeting wrap-up</u> <ul style="list-style-type: none">• RAB adjournment process• Review action items for next meeting• Call for agenda items for next meeting• Propose next RAB meeting – 15 Sep 2015	Ms. Catherine Jerrard
7:45 PM	Adjourn	Mr. Len Fuchs

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Program Updates, FT002, LF004, ST012, SS017, and ST035, Munitions Response Site XU 403 Area 1

Presented by:
Mr. Everett Wessner, Amec Foster Wheeler
Ms. Catherine Jerrard, AFCEC

Headquarters U.S. Air Force

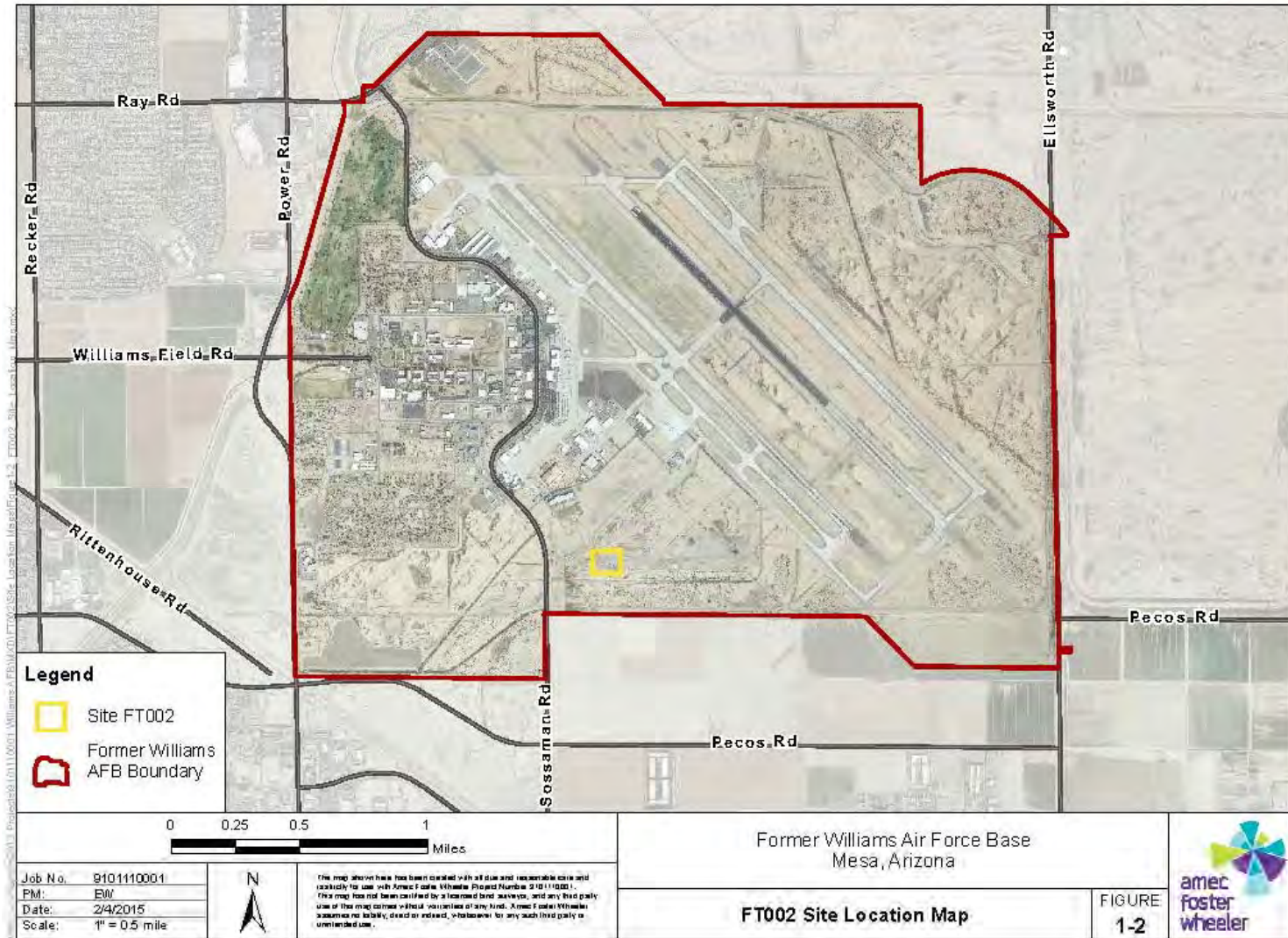
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SITE FT002, FIRE TRAINING AREA REMEDIAL ACTION



Site FT002 Location Map





Site FT002 Site Background

- **Fire protection training activities (1958-1991)**
- **Soil chemicals of concern (COCs): benzene, chloroform, 1,4-dichlorobenzene**
- **No evidence of GW impact**
- **Operable Unit (OU)-3 Record of Decision (ROD) 1996; Soil Remedy (bioventing) implemented in 1996-1997**
- **Until cleanup levels are achieved, Declaration of Environmental Use Restriction (2008) will remain in place to prohibit residential use and require soil management below 5 feet (ft)**



Site FT002 - Soil Vapor Extraction (SVE) System Update

System Description

- One nested SVE well with three screen intervals - shallow (S) 14-39 ft, middle (M) 42-57 ft, and deep (D) 60-75 ft
- Treatment system: Combination thermal oxidizer (for concentrations exceeding 2000 parts per million by volume [ppmv]) and electric catalytic oxidizer (for concentrations less than 2000 ppmv)
- Treatment system operation commenced on 2 Jun 2014





Site FT002

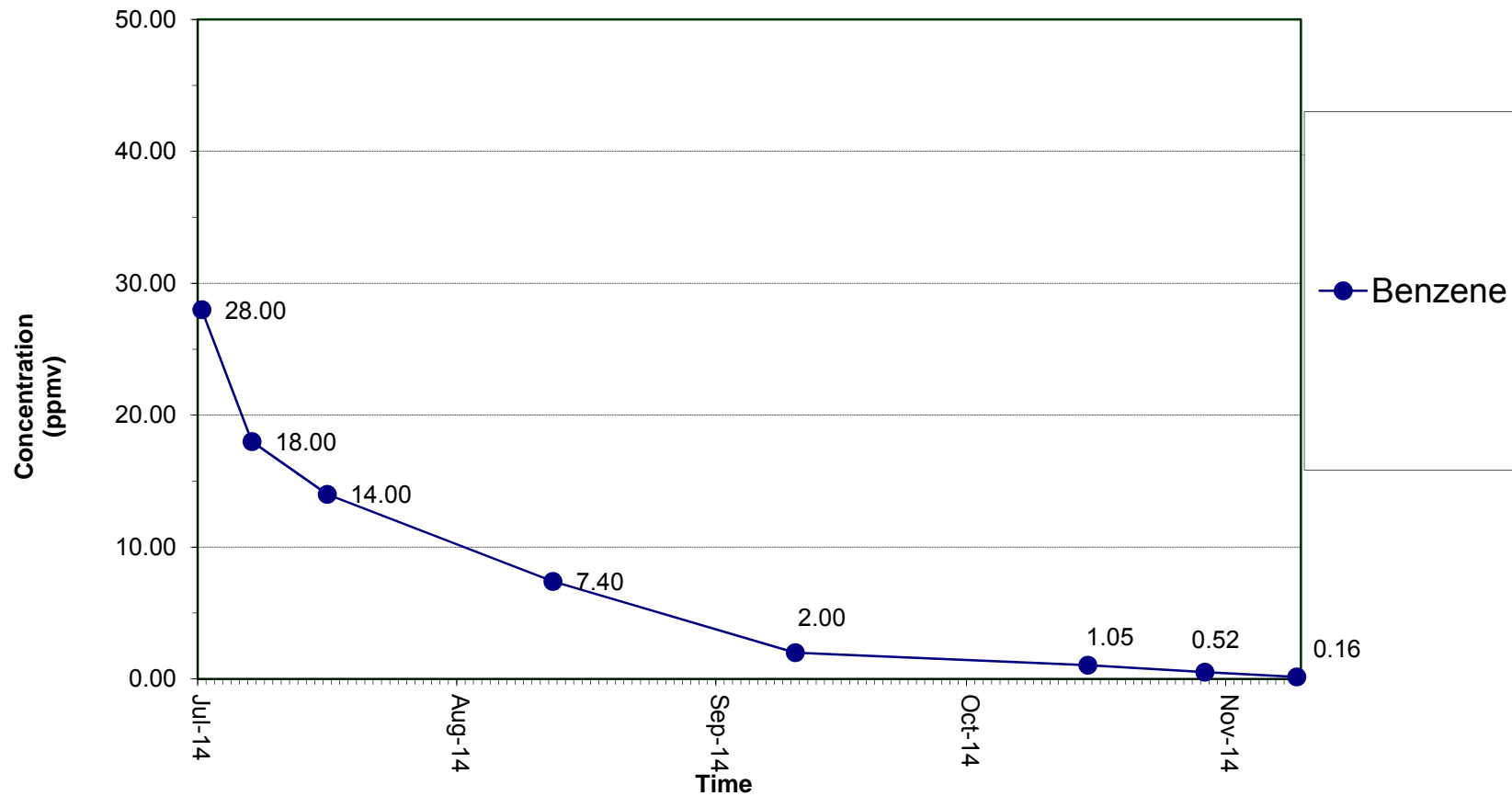
Estimated COC Mass Removal

Volatile Organic Compound	Estimated pre-SVE mass in soil as total pounds	Mass removed through 2/13/15 as total pounds
Benzene	40-45	33.6
Toluene	750	574
Ethylbenzene	300	160
Xylene	1700	763
Total Trimethylbenzene	800	107



Site FT002 SVE System Performance – Benzene

Figure 3-3
Site FT002 SVE-1M
Benzene Concentrations vs Time





Site FT002 Path Forward

- **Continue SVE operation through Mar until analytical results for Feb 2015 are received and reviewed. Based on results, SVE may continue or the system shut down and the rebound testing phase implemented.**
- **If contaminant concentrations at monitoring points remain above screening levels, then continue SVE operation.**
- **If contaminant concentrations at monitoring points are below their respective screening levels, proceed to rebound testing.**

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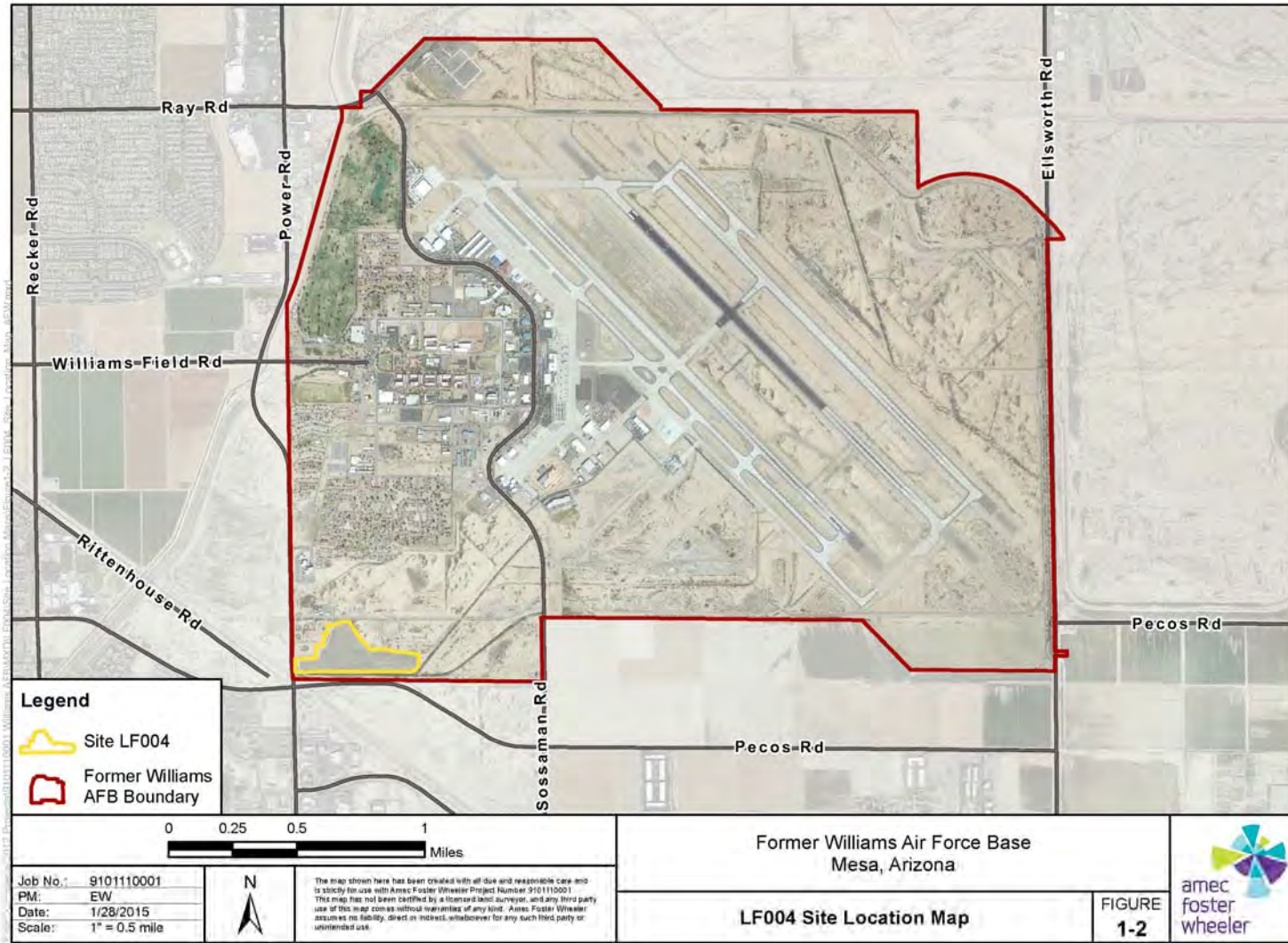


***SITE LF004,
LANDFILL***

REMEDIAL ACTION



Site LF004 Site Location Map





Site LF004 Site Background

■ Landfill

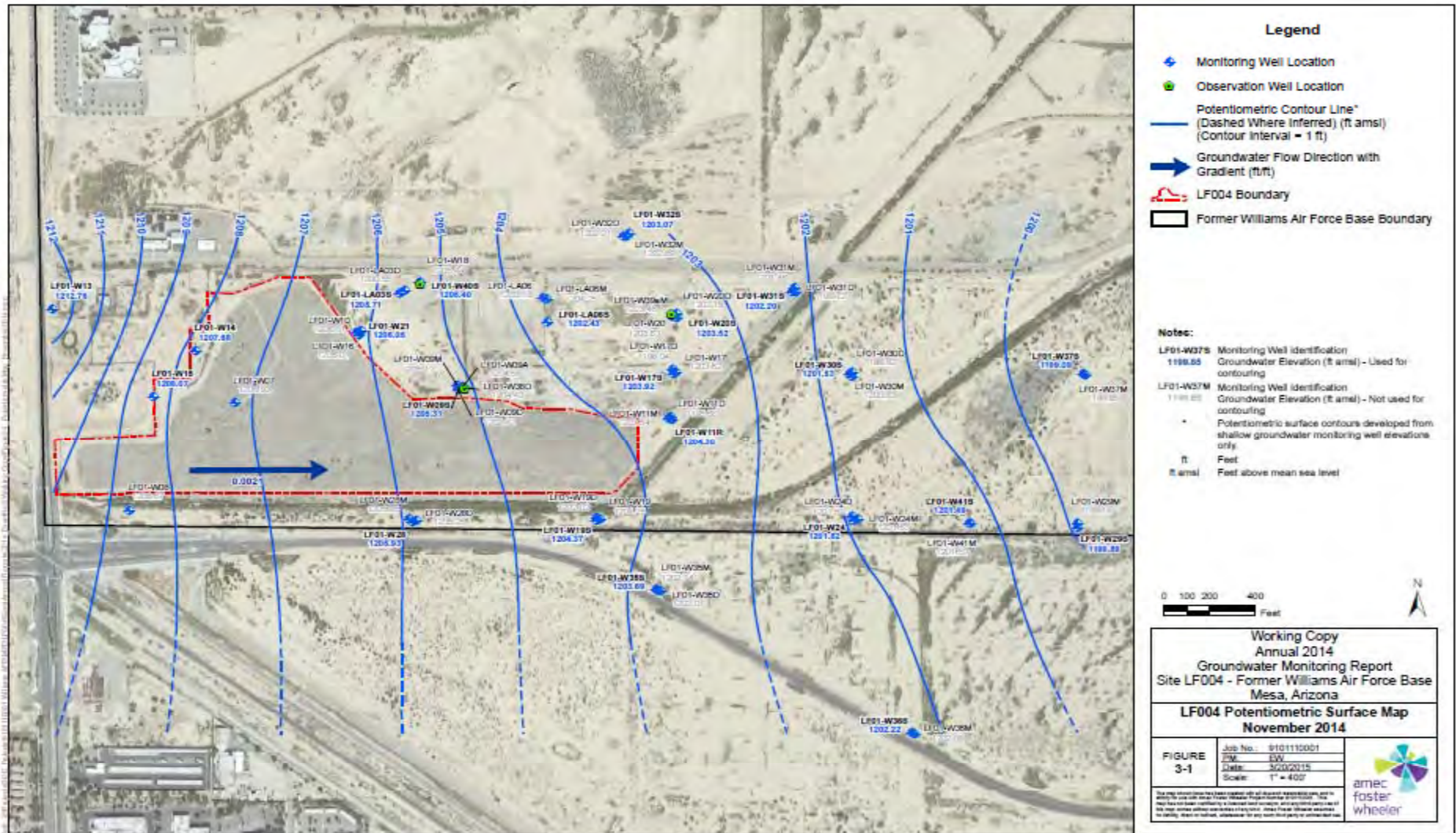
- Former solid waste landfill
- Operated from 1941 to 1976
- Closed in 1995 with a permeable soil cap (OU-1 ROD 1994)
- Rising GW table
- Ongoing semiannual GW monitoring
- 2014 ROD Amendment remedy –
In Well Air Stripping (IWAS) and Oxidation for GW; SVE for soil gas)

■ COCs

- Dieldrin & beryllium in surface soil
- Trichloroethene (TCE) & tetrachloroethene (PCE) in GW & soil gas

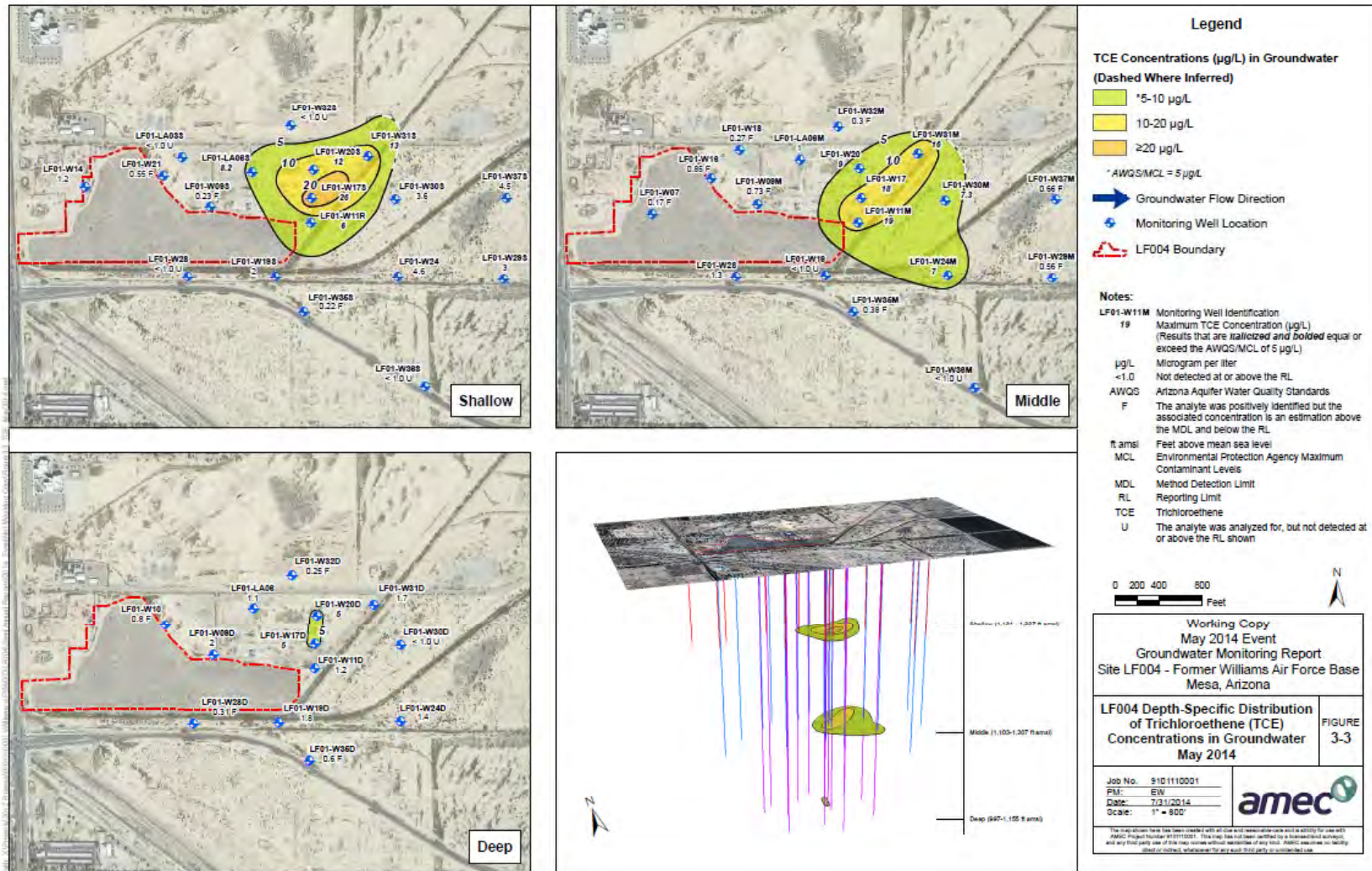


Site LF004 GW Monitoring Update Flow Direction - November 2014





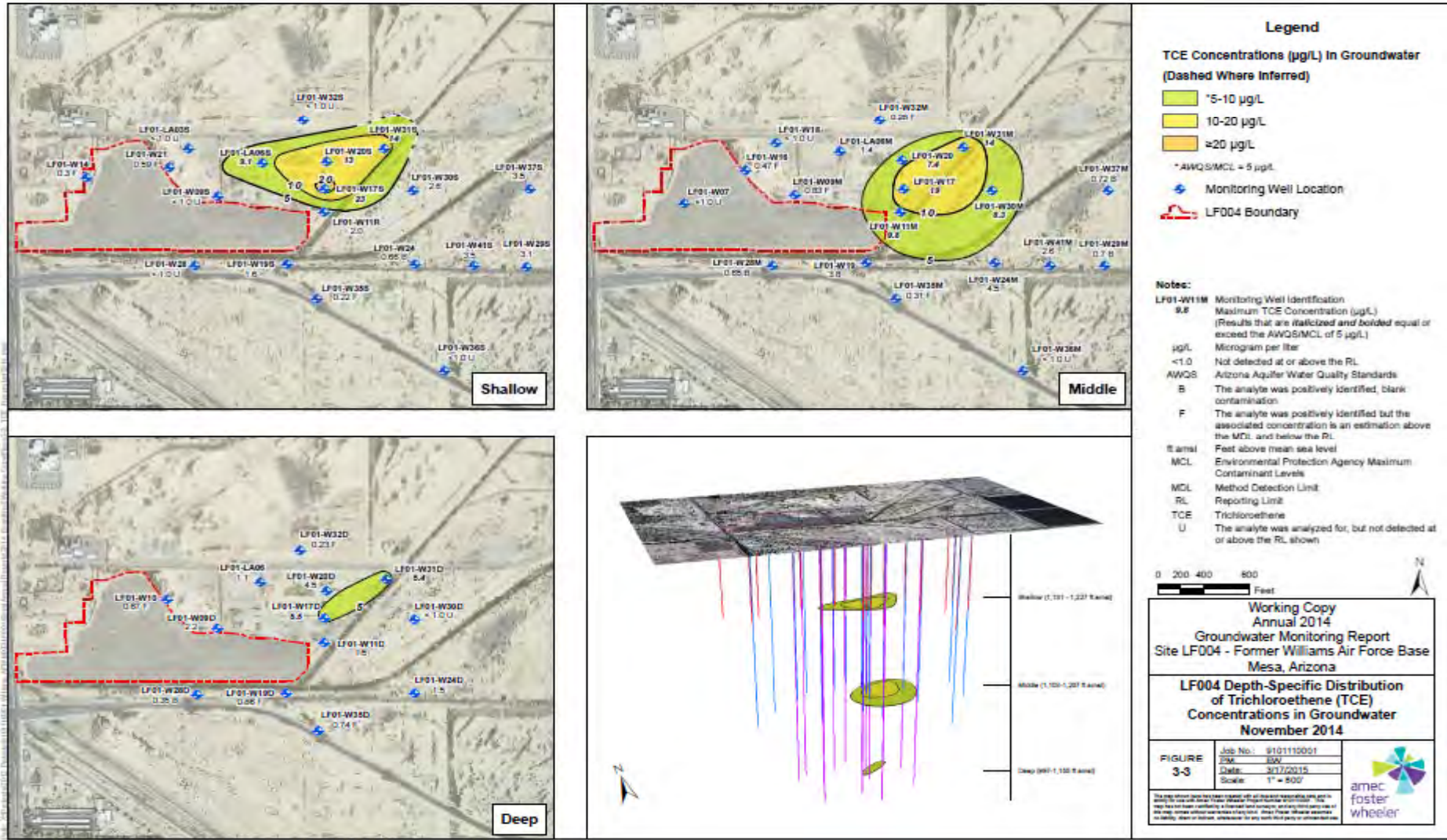
Site LF004 GW Monitoring Update TCE Isoconcentration Map - May 2014





Site LF004 GW Monitoring Update

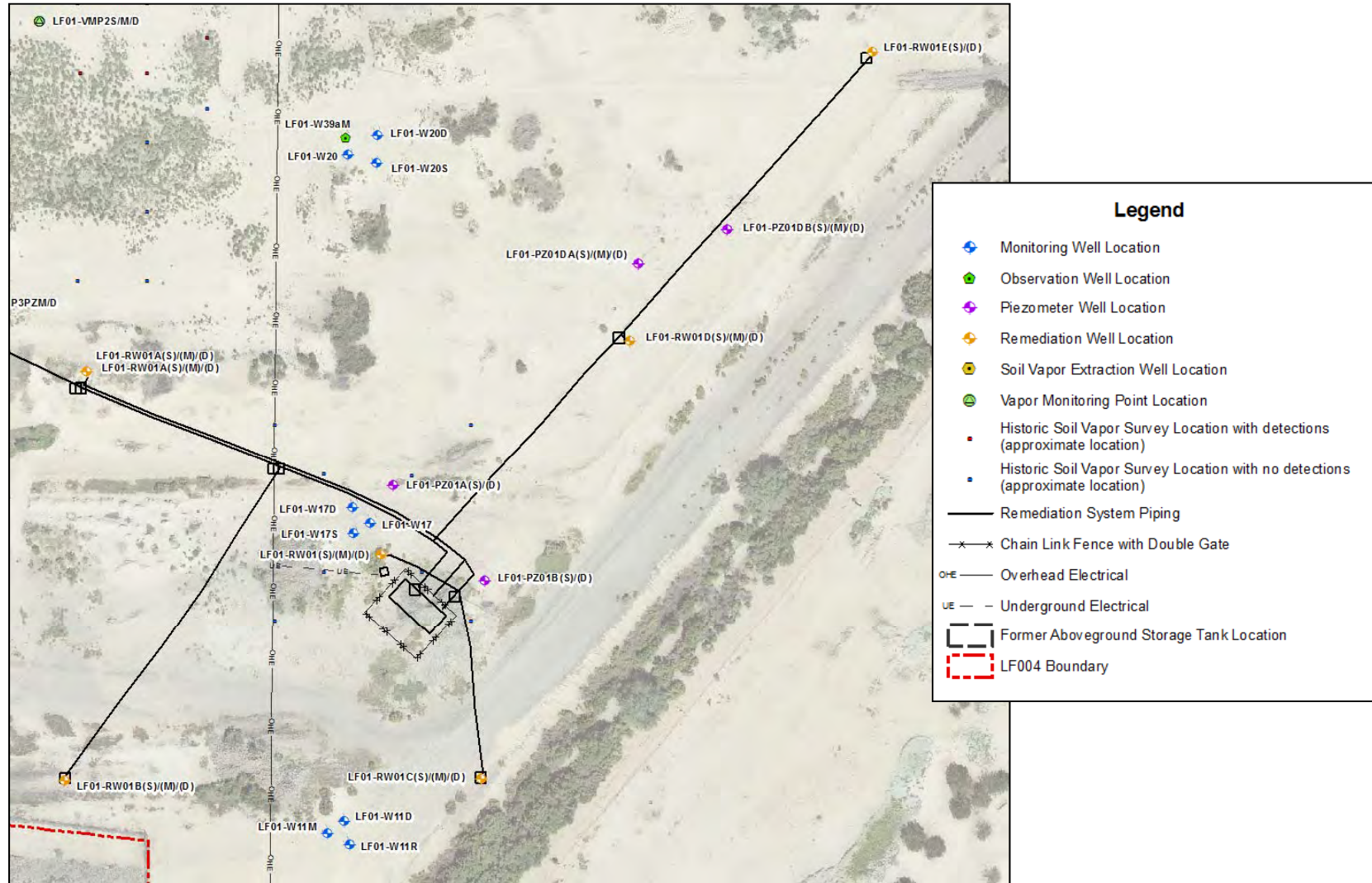
TCE Isoconcentration Map - November 2014





Site LF004

LF01-W17 Area IWAS System Update



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Site LF004

LF01-W17 Area IWAS System Update

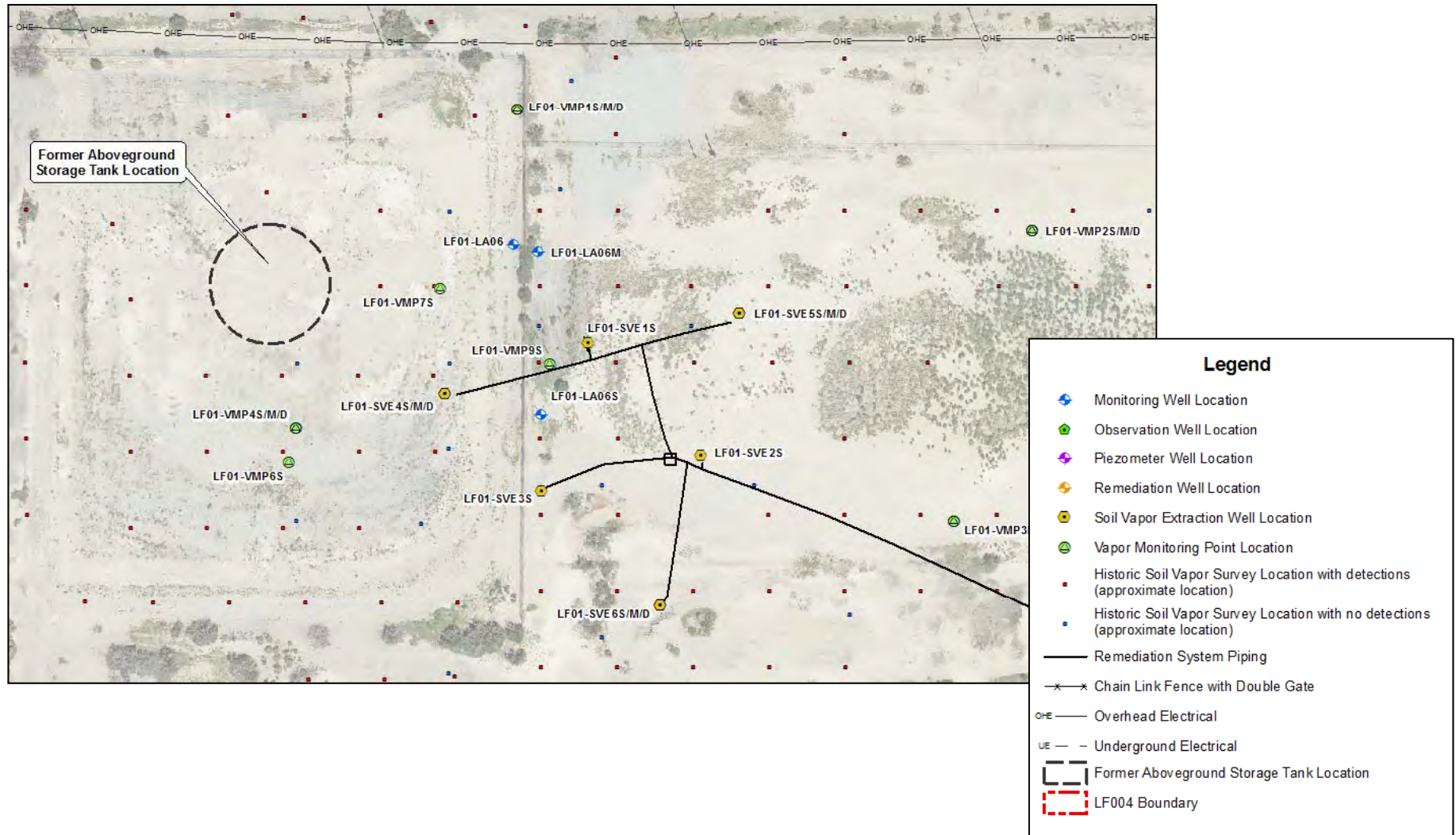
Operations Summary through 8 Mar 2015

- Began operation 29 Aug 2014
- Approximate 93% quarterly operational uptime
- Estimated 4.19 pounds of TCE and PCE removed by vapor extraction
- All remediation wells operating (GW pumping, air sparging, and vapor extraction) except for RW-1 (no vapor extraction)
- Maintenance to remove accumulation of scaling on air sparge nozzles and well screens completed for RW01
- Oxidant injection will begin at RW01 in Mar 2015





Site LF004 Former Aboveground Storage Tank (AST) SVE System Update





Site LF004

Former AST SVE System Update

Operations Summary through 8 Mar 2015

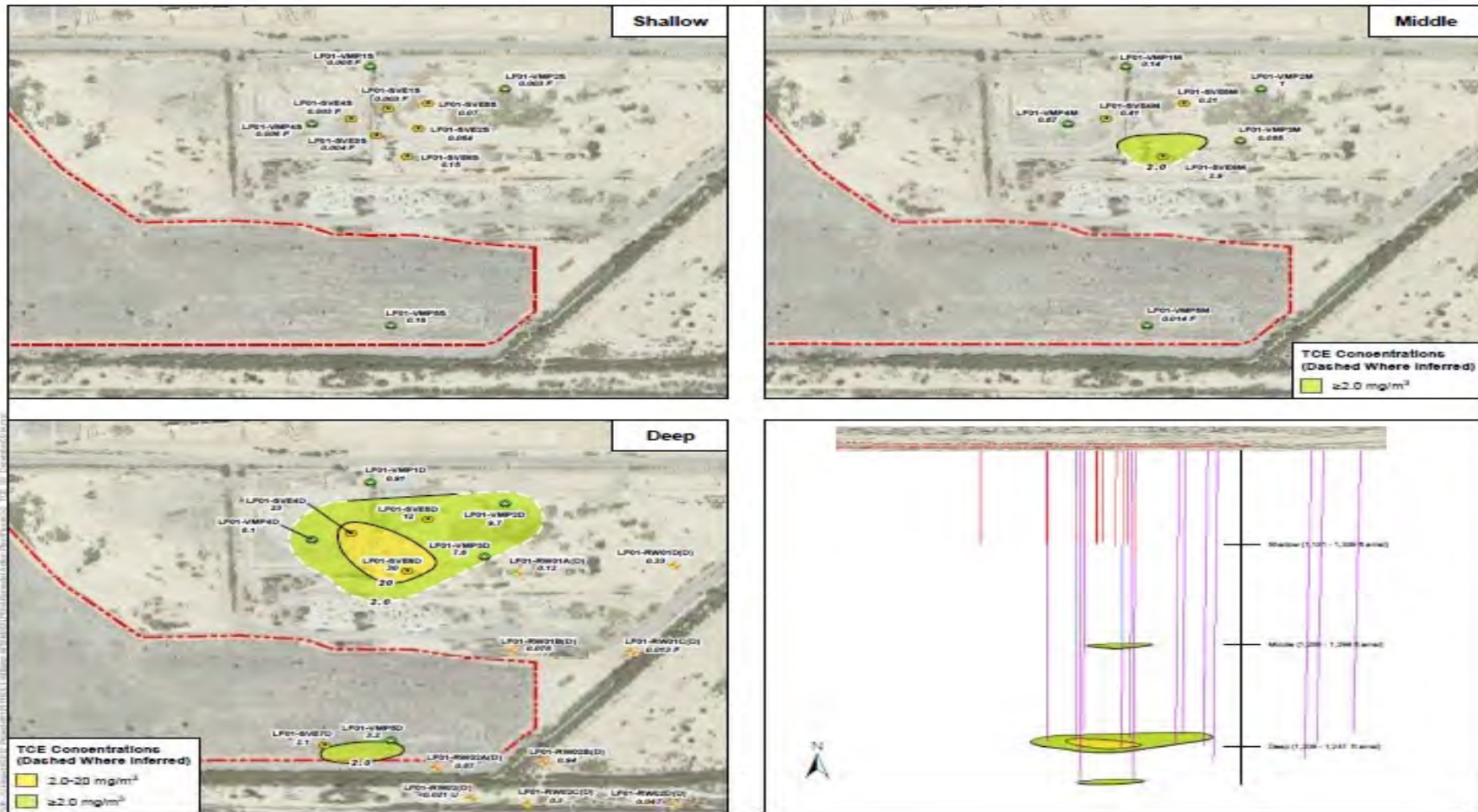
- Began operation 9 Sep 2014
- Approximate 97% quarterly operational uptime
- Estimated 50.51 pounds of TCE and PCE removed
- Five wells currently operational (4S/M/D, 5M/D, 6D); highest TCE and PCE concentrations in deeper SVE wells
- Based on quarterly performance sampling results, connect VMP-2 to SVE system for additional soil gas treatment in March





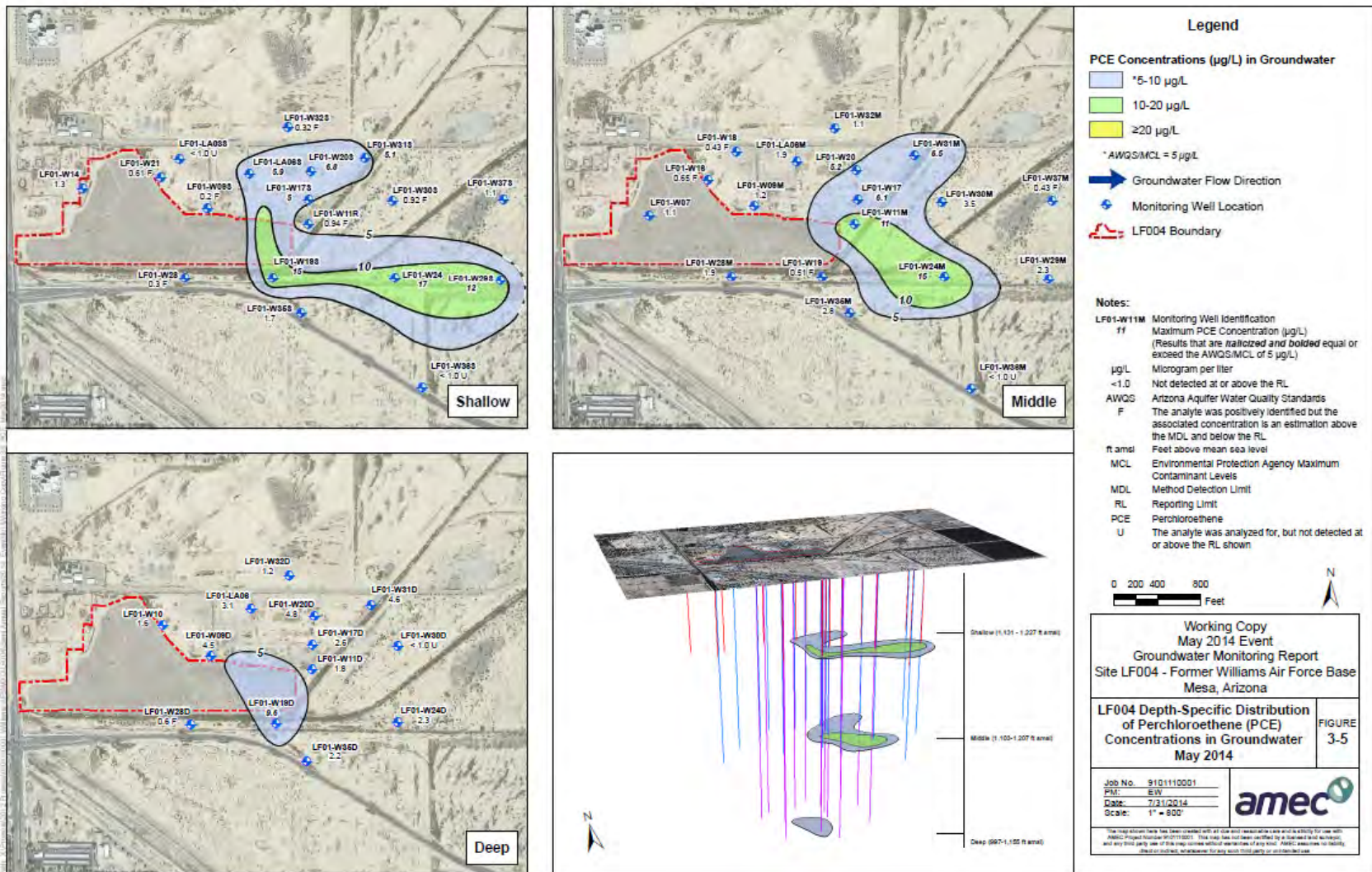
Site LF004 TCE Soil Vapor December 2014

After 3 Months of Operation





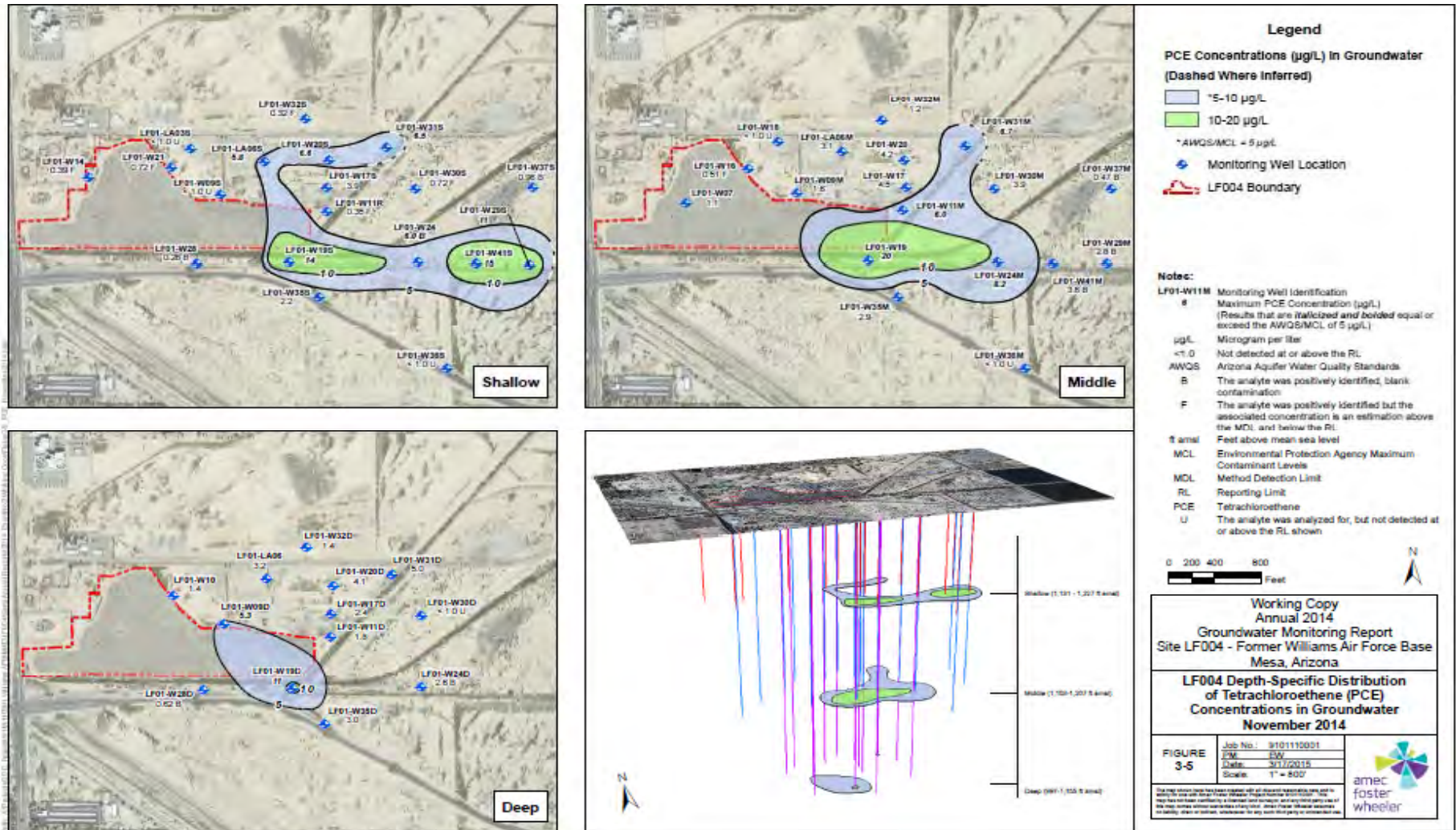
Site LF004 GW Monitoring Update PCE Isoconcentration Map – May 2014





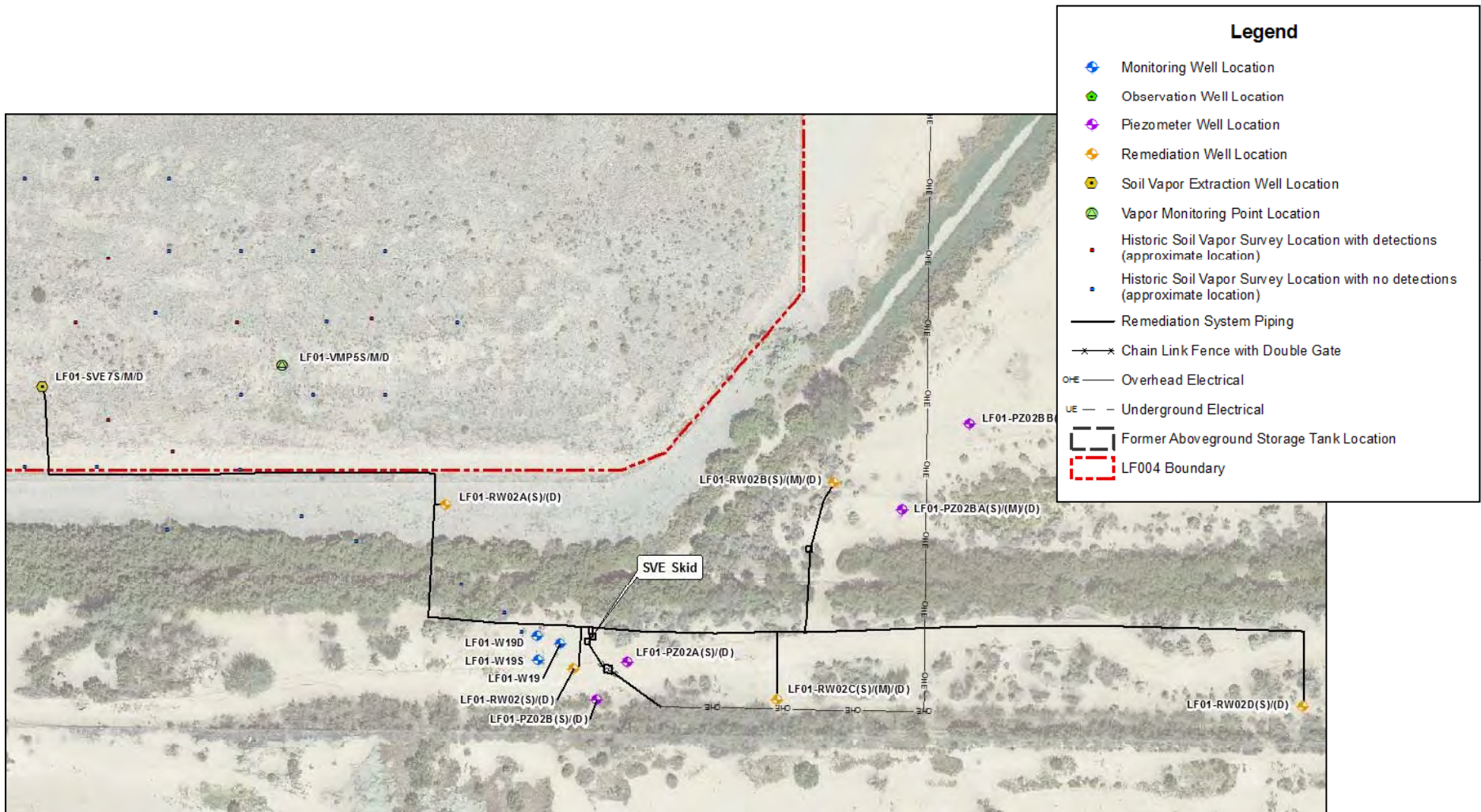
Site LF004 GW Monitoring Update

PCE Isoconcentration Map – November 2014





Site LF004 Southern Area Remediation Wells





Site LF004

Southern Area Remediation Wells

Activity Summary

- Batch oxidant injections at LF01-W24 wells were conducted on 12 and 15 Sep 2014. PCE concentrations (passive diffusion bag samples) were reduced by approximately 50% (17 parts per billion [ppb] May to 7 ppb Nov)
- Oxidant injection began at recirculation well RW02B on 06 Jan 2015. The presence of oxidant in the middle probe of PZ01BA and the shallow probe of PZ02BB indicates both vertical and horizontal dispersion into the aquifer.
- Additional oxidant injections planned for LF01-W19 in March
- Replace motor and reinstall pump at RW02C





Site LF004

Southeast Landfill SVE System Update

Operations Summary through 8 Mar 2015

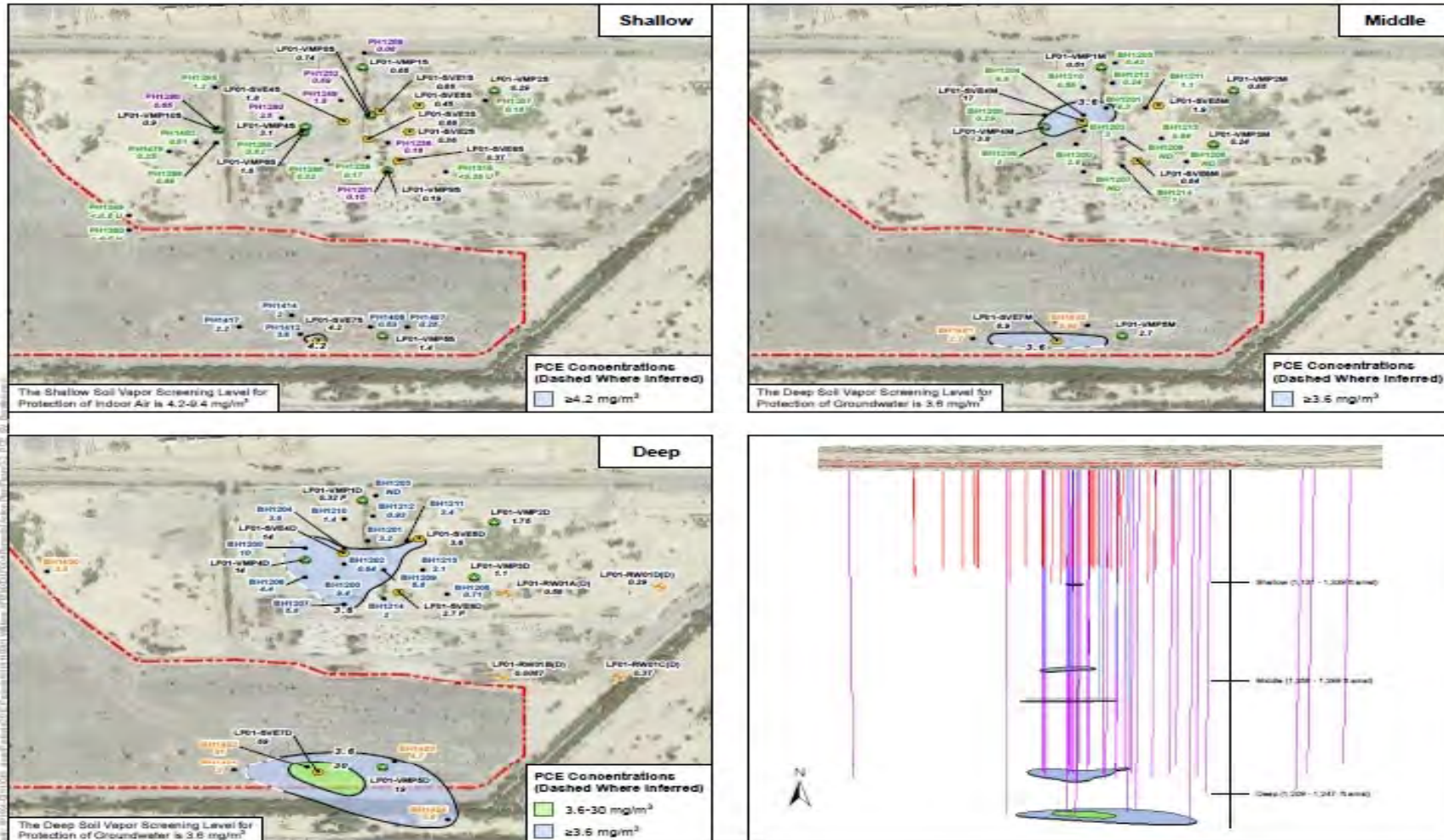
- Began operation 12 Sep 2014
- Approximate 99% operational uptime from startup
- Estimated 17.9 pounds of TCE and PCE removed
- Currently extracting from two deep vapor wells; shallow and middle intervals have negligible levels of soil gas





Site LF004 PCE Soil Vapor September 2014

Prior to Treatment





Site LF004 - Remediation System Recent and Upcoming Activities

- **Monthly oxidant injection GW monitoring event completed on 4-5 Feb 2015**
- **Quarterly remedial action GW monitoring event completed on 16-20 Feb 2015**
- **Quarterly soil vapor monitoring sampling event completed the week of 9 Feb 2015**
- **Continued operation of IWAS, SVE, and Southern Area remediation wells**
- **Oxidant injections at LF01-RW02B and LF01-RW01 will continue; oxidant injections planned to begin at LF01-RW01 in Mar 2015**
- **Connect VMP-2 to SVE in AST area in Mar 2015**

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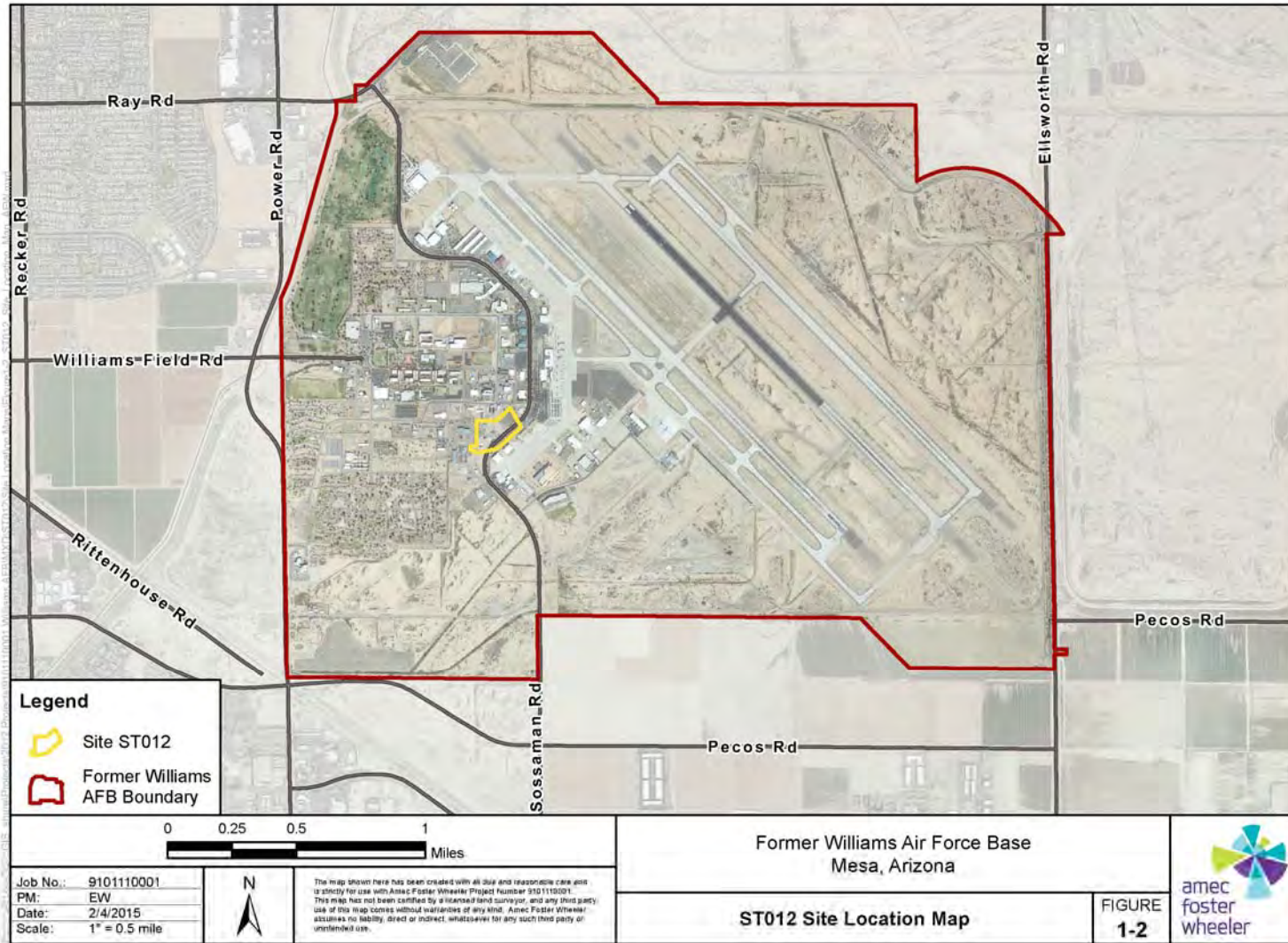


***SITE ST012,
FORMER LIQUID FUELS
STORAGE AREA***

REMEDIAL ACTION



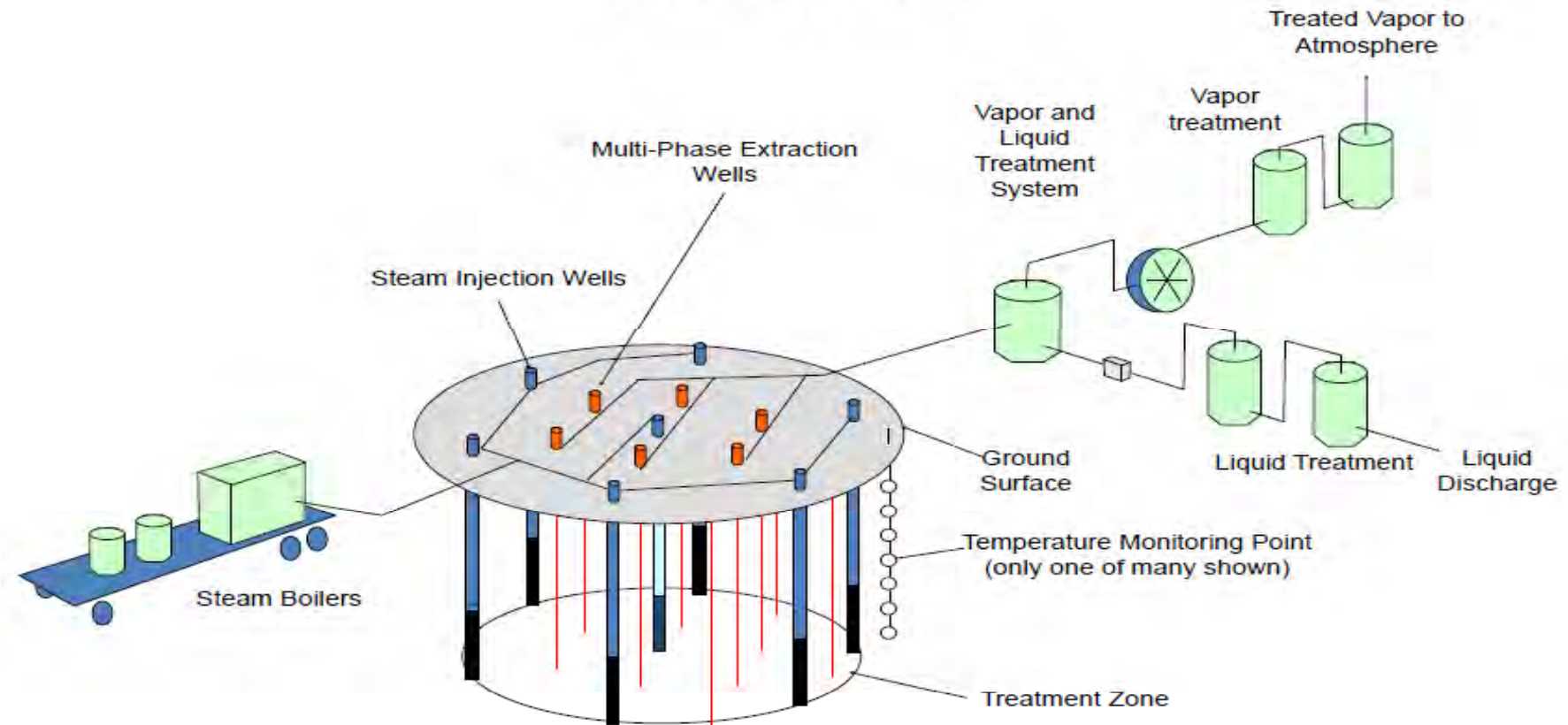
Site ST012 Site Location Map





Steam Enhanced Extraction (SEE) System Process

Steam Enhanced Extraction System Process Overview





ST012 Steam Injection Status



ST012 SEE OPERATIONAL PROGRESS

- **SEE Startup** **29 Sep**
- **Extraction Only Phase** **29 Sep – 15 Oct**
 - All Cobble Zone (CZ), Upper Water Bearing Zone (UWBZ), and Lower Saturated Zone (LSZ) Multi-phase Extraction (MPE) wells turned on
 - Extraction System Optimization/Troubleshooting
 - Perimeter Monitoring to Demonstrate Hydraulic Control
- **Steam Injection Step 1** **16 Oct – 3 Nov**
 - 9 Exterior LSZ wells
 - Perimeter and Temperature Monitoring for Effects
- **Steam Injection Step 2** **3 Nov – 4 Dec**
 - Same 9 Exterior LSZ wells from Step 1
 - Add 6 Interior LSZ wells
 - Perimeter and Temperature Monitoring for Effects



ST012 SEE OPERATIONAL PROGRESS - CONTINUED

- **Steam Injection Step 3 – revised** **4 Dec – 22 Dec**
 - Same 15 LSZ wells from Step 2
 - Add 7 Exterior UWBZ wells
 - Perimeter and Temperature Monitoring for Effects

- **Liquid Treatment System Cleanouts/ Changeouts** **23 Dec – 5 Jan**
 - Accumulated biomass cleaned out of process tanks
 - Liquid carbon vessel changeout

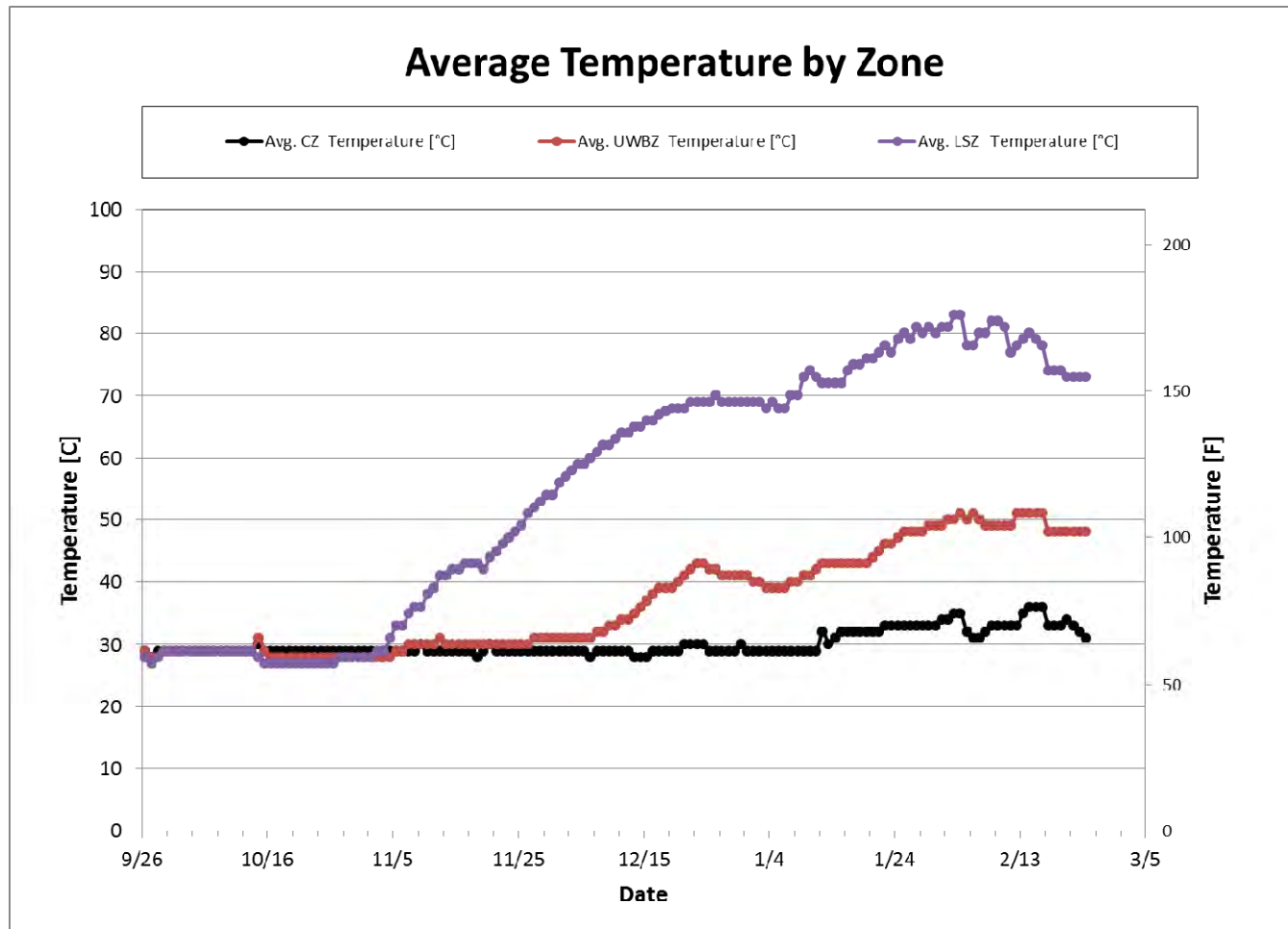
- **SEE System Operations** **6 Jan – 23 Feb**
 - Average liquid extraction rate of 86 gallons per minute
 - Average steam injection rates of 18,700 pounds per hour in the LSZ and 4,900 pounds per hour in the UWBZ
 - Twenty-one steam wells are currently online – injection rates at wells have varied due to boiler issues and for replacement MPE transition piece preventative



ST012 Steam Injection Influence at Temperature Monitoring Points



ST012 SEE CO-LOCATED TEMPERATURES AT EXTRACTION WELLS BY ZONE

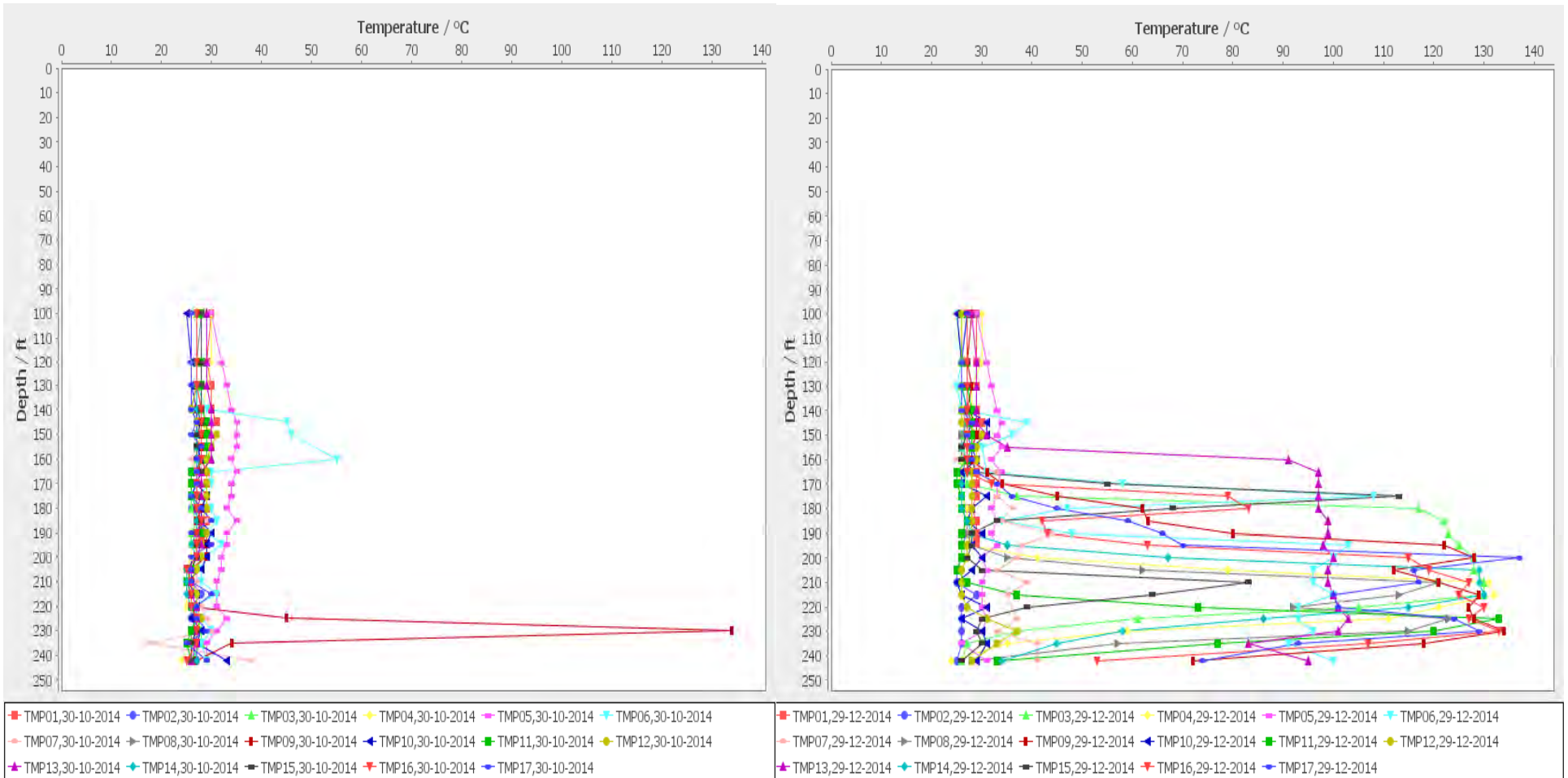




ST012 SEE SUBSURFACE TEMPERATURES

September 2014

December 2014



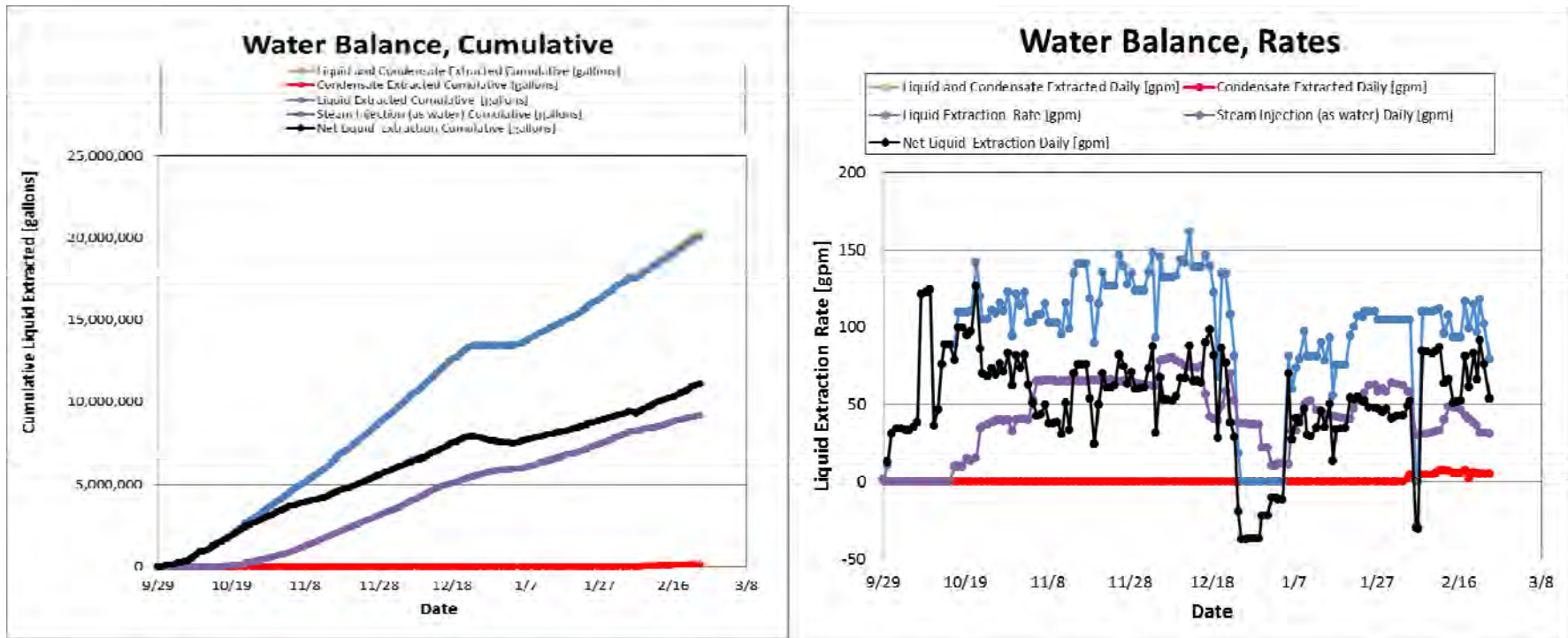
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ST012 Injection/Extraction Balance Status



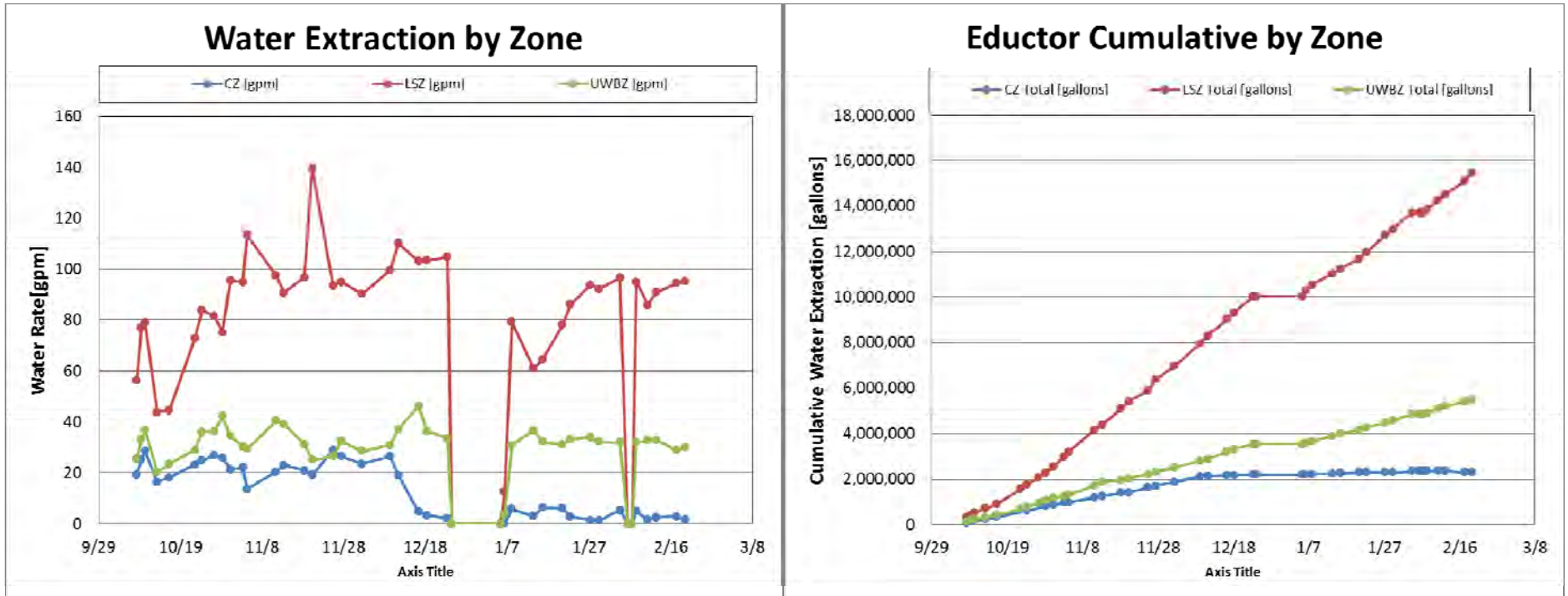
ST012 SEE SYSTEM WATER EXTRACTION BY ZONE



- Condensate production began on 4 February indicating steam breakthrough at the first extraction well (LSZ6)



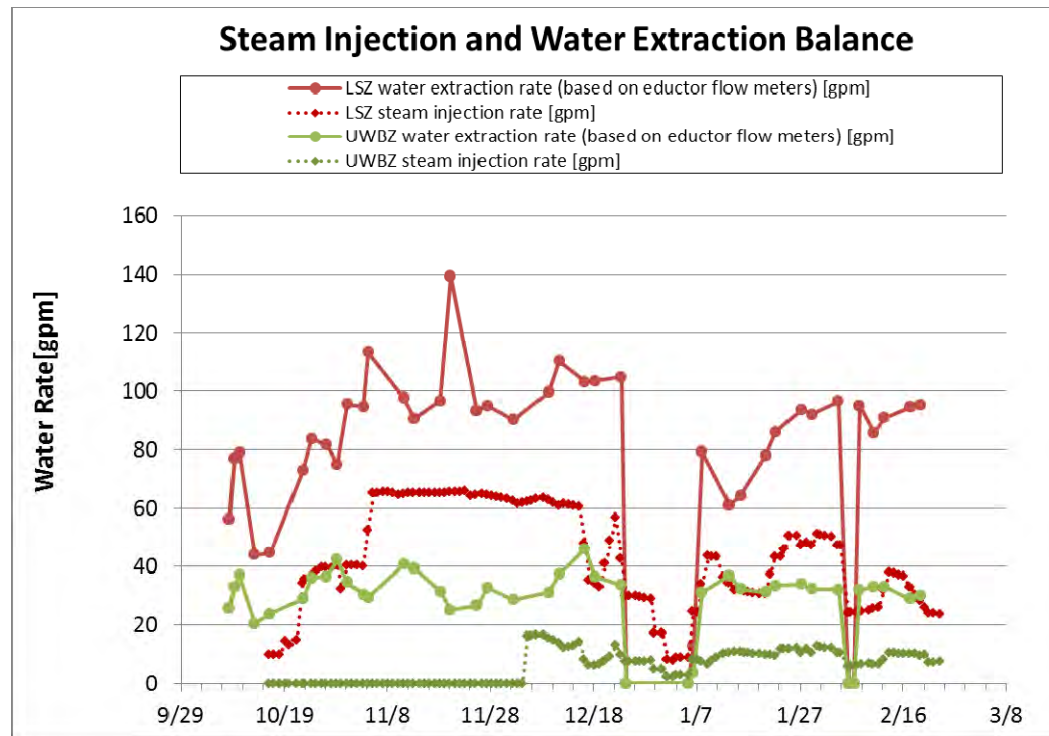
ST012 SEE SYSTEM WATER EXTRACTION BY ZONE



- Eductor extraction rates per zone are based on individual eductor feed and return meters



ST012 SEE SYSTEM INJECTION/EXTRACTION BALANCE

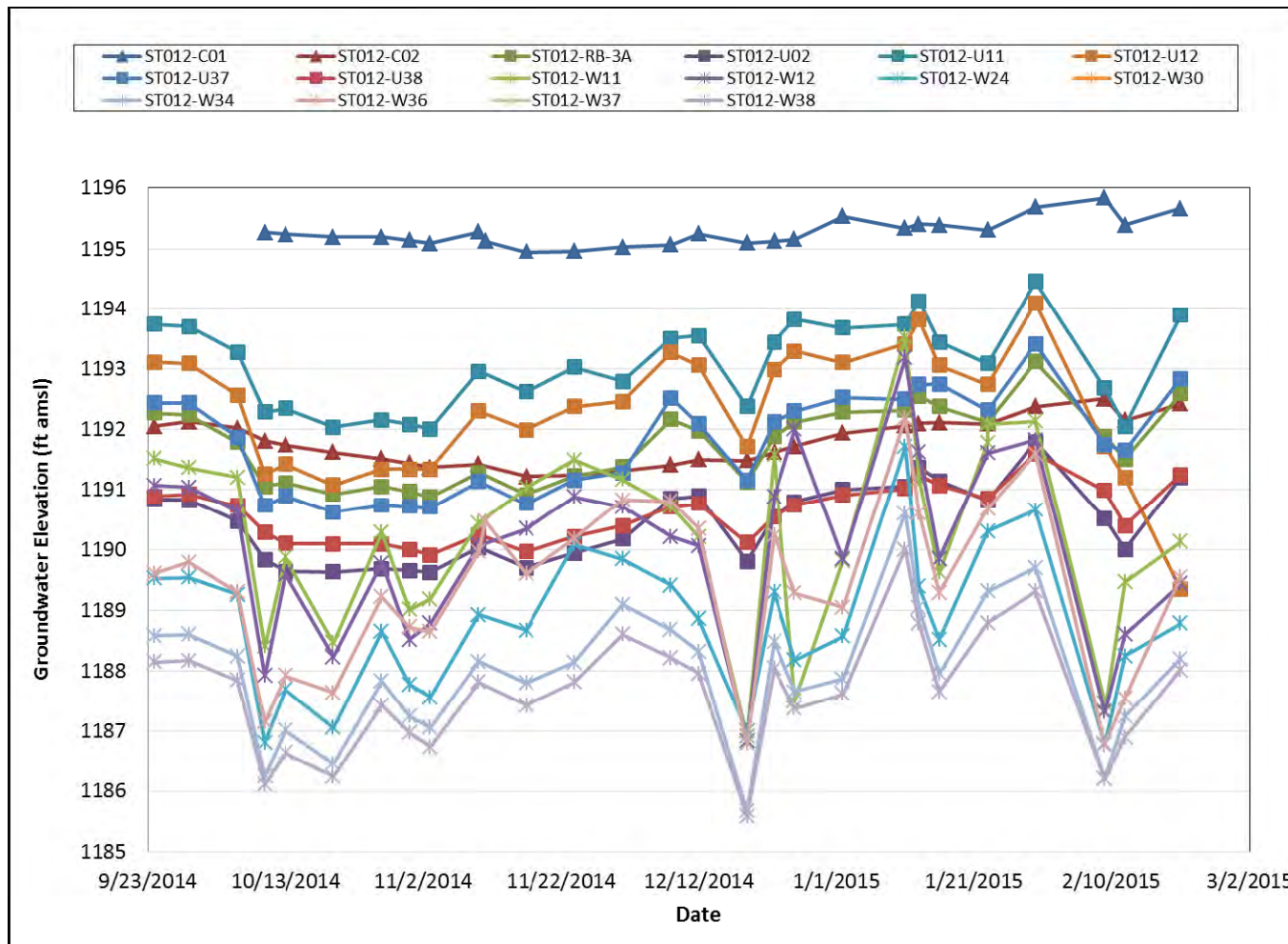


	CZ	UWBZ	LSZ
	[gallons]	[gallons]	[gallons]
Water extracted	2,300,000	5,499,000	15,463,000
Water injected (as steam)	0	1,108,000	8,075,000
Net extraction	2,300,000	4,391,000	7,388,000

- **Note: water extracted to date per zone is based on eductor individual meters**



ST012 SEE PERIMETER GW ELEVATIONS

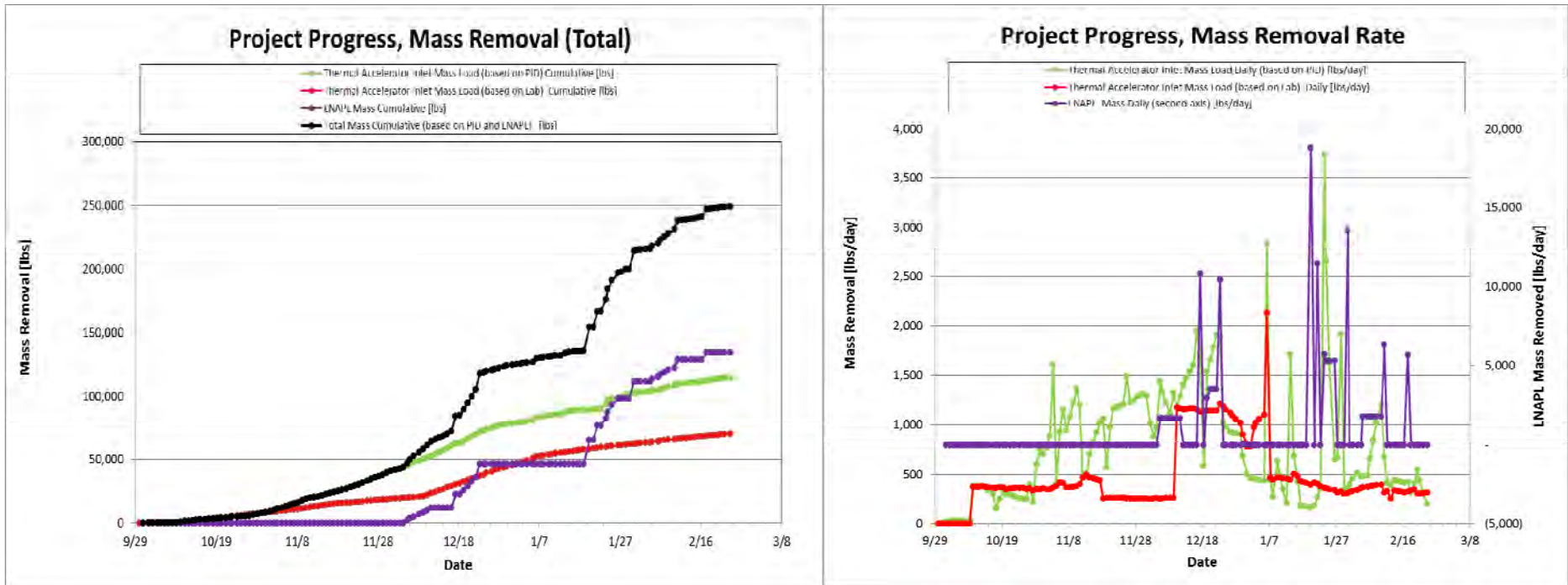


- Water level increases are temporary due to cycling of eductors skids and steam injection wells

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ST012 SEE SYSTEM MASS REMOVAL



- Non-aqueous phase liquid (NAPL) recovery continues
 - 205,000 pounds/31,000 gallons removed to date
- NAPL removal expected to increase significantly when maintenance activities are complete



Site ST012 SVE System Update

Jul – Sep 2014

- 39% operational uptime; Shut down during SEE construction
- Total petroleum hydrocarbon (TPH) removed – 8,070 pounds or 1,230 gallons
- 7 deep wells disconnected in Aug 2014

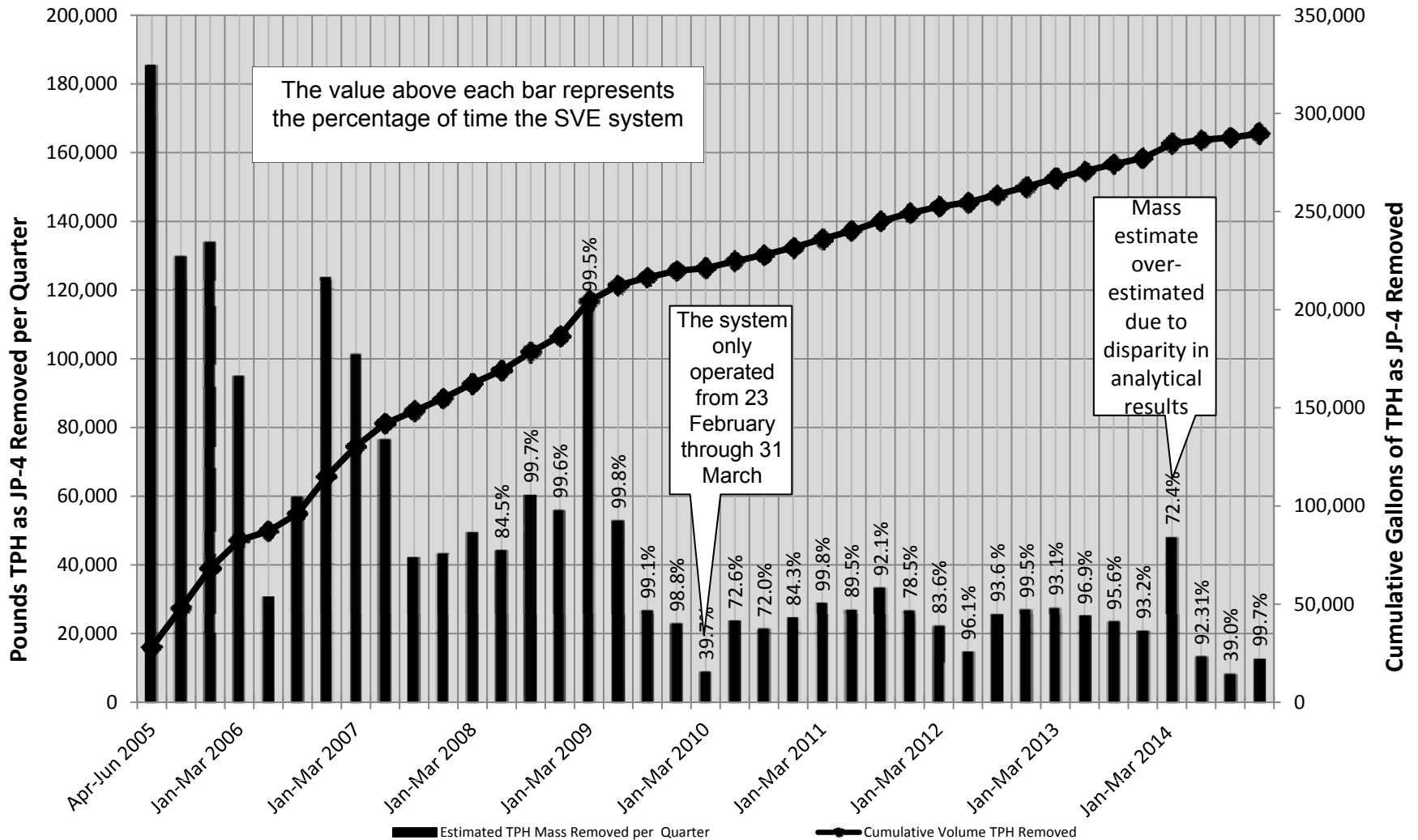
Oct – Dec 2014

- 99% operational uptime
- TPH removed – 12,500 pounds or 1,900 gallons
- 8 of 27 SVE wells operating
- 5 new wells added in Sept 2014





Site ST012 SVE System Performance





Site ST012 SVE System Summary

- **TPH removed through Dec 2014 – 290,000 gallons**
- **Next SVE performance monitoring – Mar 2015**
- **Mass removal for the SVE system is likely to increase during SEE operations.**

Headquarters U.S. Air Force

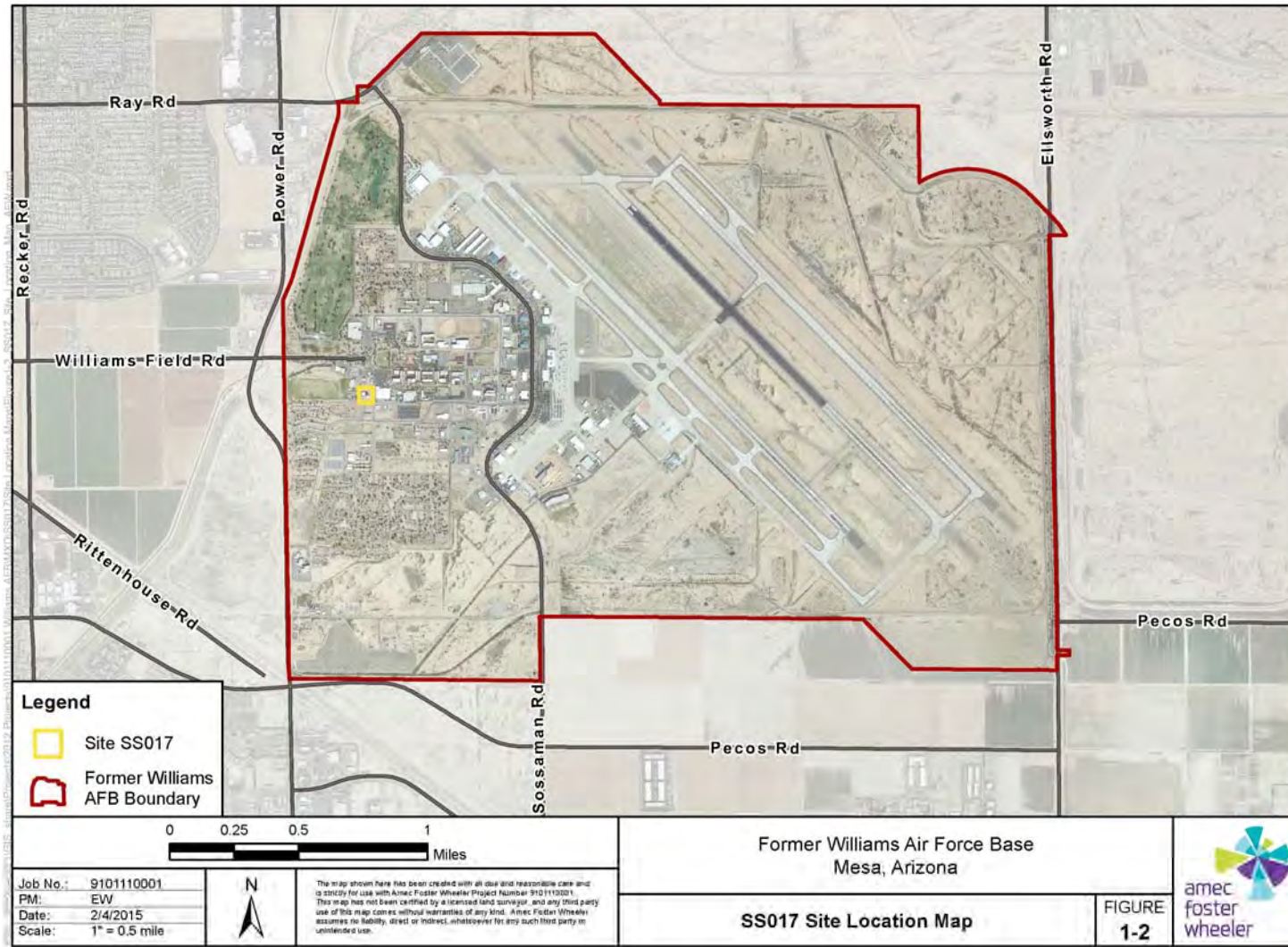
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**Site SS017,
Old Pesticide/Paint
Shop**



Site SS017 Site Location Map





Site SS017 Background

- **Old pesticide/paint shop**
- **Soil and GW COC - Dieldrin**
- **Removal action for soil completed in 2000**
- **Ongoing annual GW monitoring (Aug)**
- **EPA Regional Screening Level (RSL) (10^{-6} risk) for dieldrin increased from 0.0015 to 0.0017 micrograms per liter ($\mu\text{g/L}$) in May 2014**
- **New lab used in Aug 2014 (ALS) – Former lab (XENCO) did not renew DoD Cert**
- **ALS has lower Reporting Limits & Method Detection Limits than XENCO**



Site SS017

Aug 2013 & Aug 2014 GW Summary

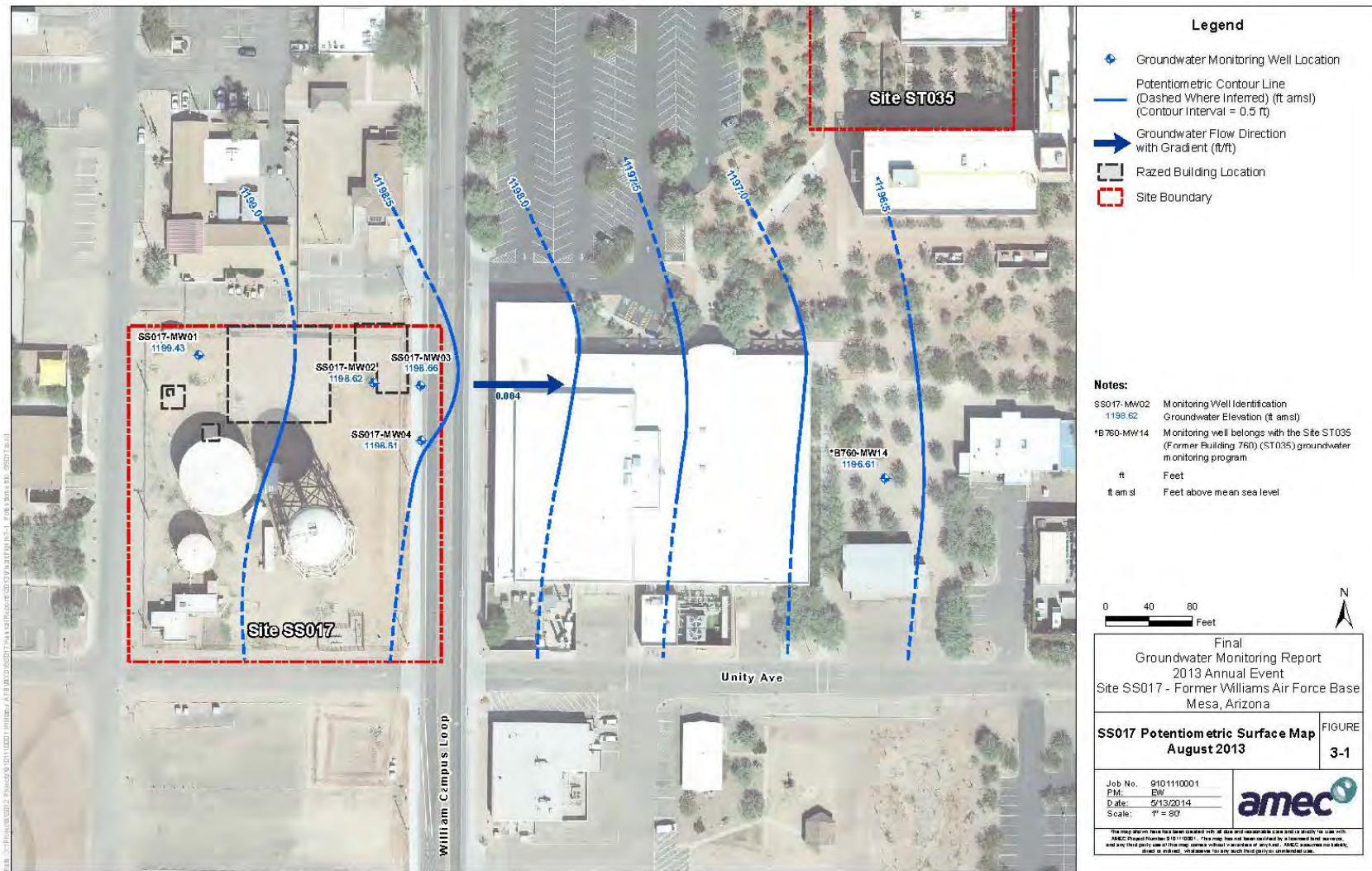
- **GW Flow Directions**
 - **Aug 2013 – due east**
 - **Aug 2014 – predominantly east**

- **Dieldrin exceeded the EPA RSL of 0.0017 µg/L in Aug 2014 at 3 wells (same wells as Aug 2013 & 2012)**
 - **MW02**
 - **MW03**
 - **MW04**

- **Next annual sampling event – Aug 2015**

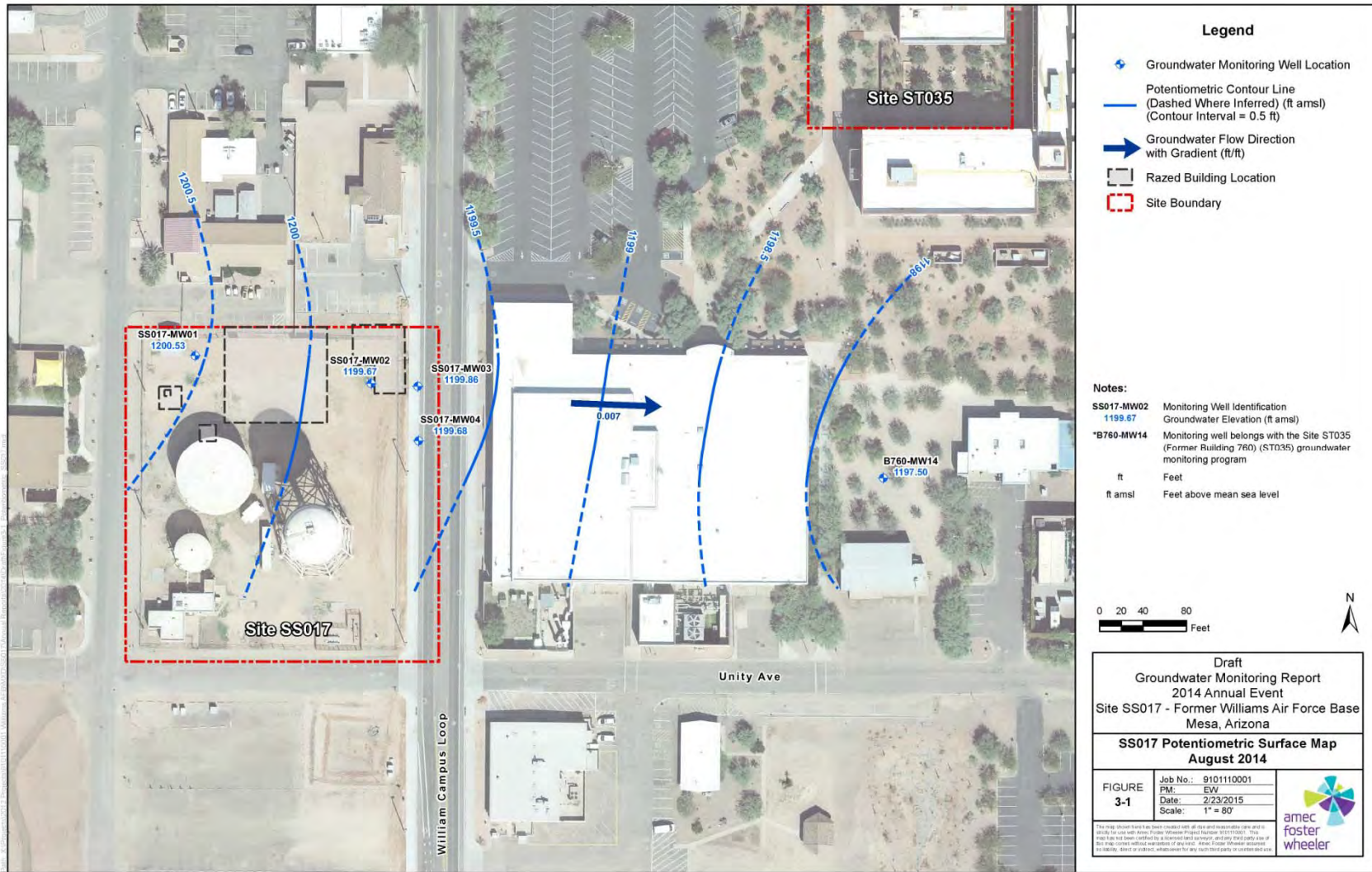


Site SS017 GW Monitoring Update Flow Direction - Aug 2013



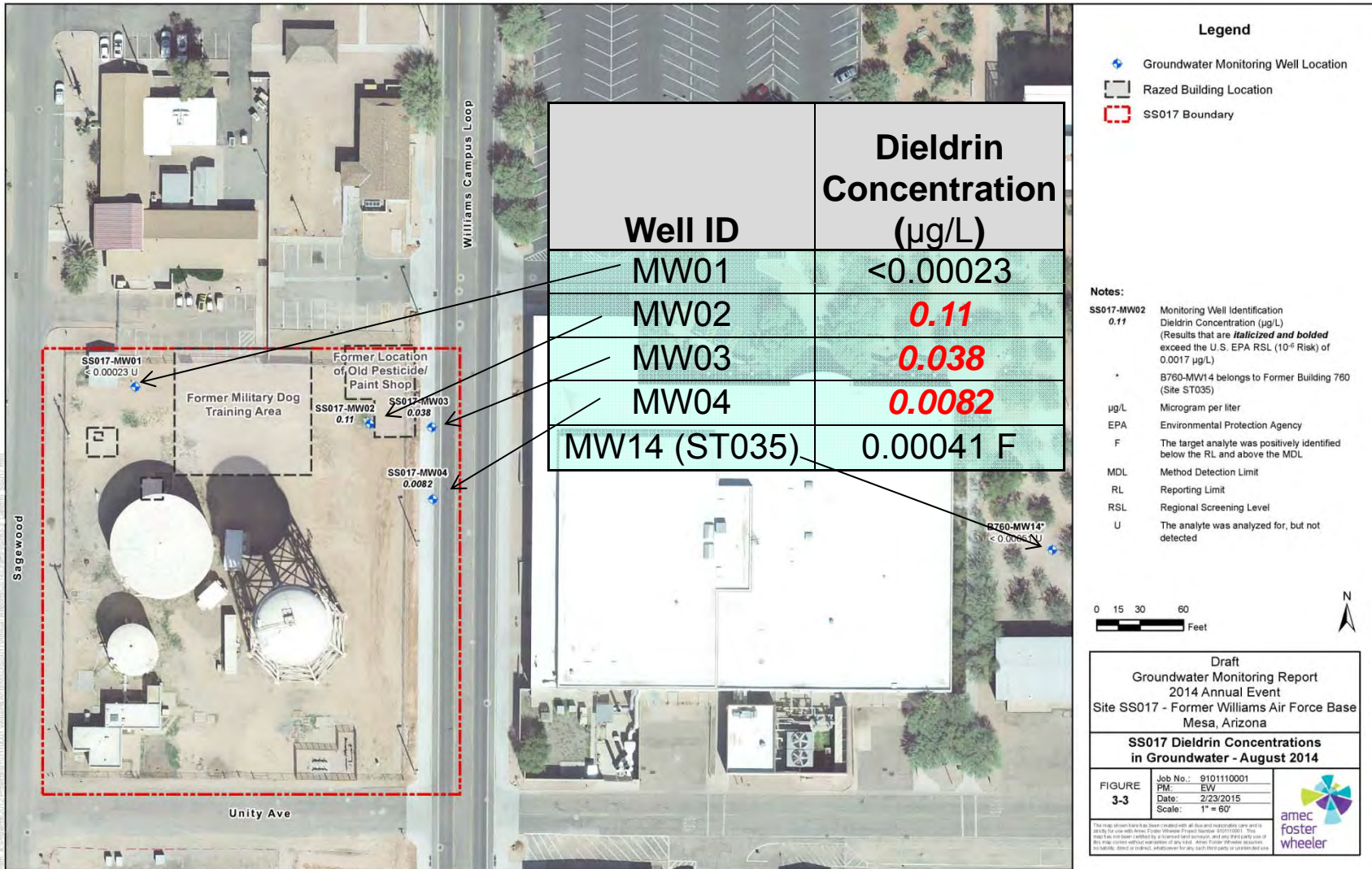


Site SS017 GW Monitoring Update Flow Direction - Aug 2014





Site SS017 GW Monitoring Update Dieldrin Results - Aug 2014





Site SS017 Path Forward

- **Final Supplemental Risk Assessment for Site SS017 - Sep 2014**
- **Air Force submitted 2014 Amended Proposed Plan with No Further Action as the preferred alternative at Site SS017 for regulatory agency review - Sep 2014**
- **Responses to regulatory agency comments and 2015 Draft Final Amended Proposed Plan submitted – Jan 2015**
- **Regulatory agencies disagree with No Further Action preferred alternative and invoked formal dispute resolution – 20 Feb 2015**
- **Dispute resolution will proceed in accordance with Federal Facility Agreement**
 - **Current Plan - Dispute Resolution Committee made up of senior Air Force and regulatory agency representatives will resolve or elevate by 13 Apr 2015**

Headquarters U.S. Air Force

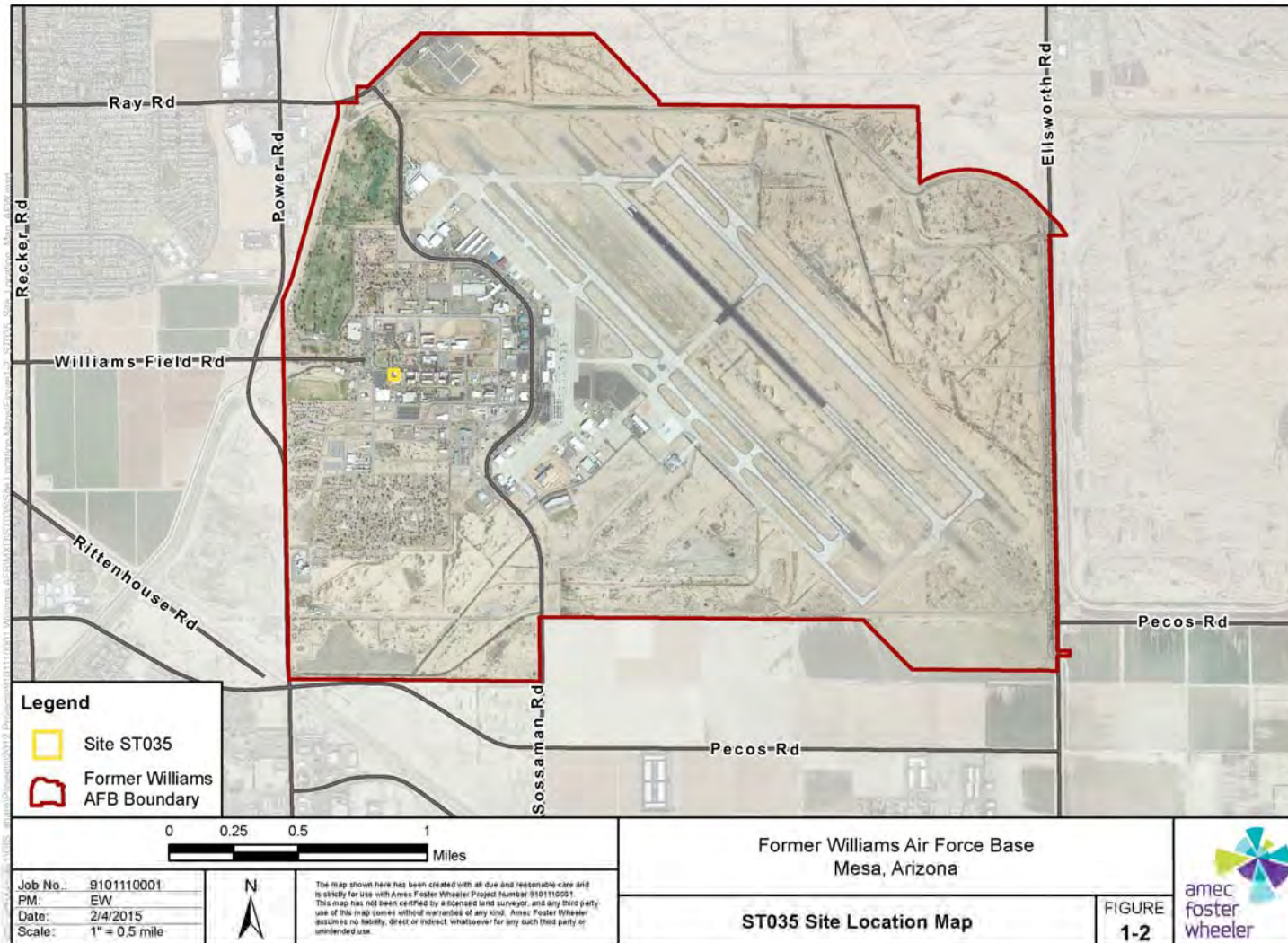
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**Site ST035,
Former Building 760
Underground
Storage Tanks
(USTs)**



Site ST035 Location Map





Site ST035 Site Background

- **Building 760 gas station & oil/water separator**
 - **Gas dispensing until 1986**
 - **Tank & dispensing equipment removed in 1993-1994**
 - **Oil/water separator removed in 1996**
- **Vadose zone soil COCs**
 - **Benzene**
 - **1,2-Dibromoethane (EDB)**
- **Groundwater COCs**
 - **Benzene, toluene, ethylbenzene, xylenes (BTEX)**
 - **EDB**
 - **Methyl tertiary butyl ether (MTBE)**
 - **1,2-Dichloroethane (DCA)**
- **SVE system to treat COCs in vadose zone soil shut down for rebound monitoring**
- **Site cleanup regulated by ADEQ under Leaking Underground Storage Tank (LUST) regulation (R18-12-263)**
- **Ongoing quarterly GW monitoring**



Site ST035 Well Location Map



Legend

- Nested Soil Vapor Extraction Well Location
- Nested Vapor Monitoring Point Location
- Remediation Well Location
- Groundwater Monitoring Well Location
- Decommissioned Groundwater Monitoring Well Location
- Approximate Location of Former Building 760
- Approximate Location of Former Underground Storage Tank
- Approximate Location of Former Below Grade Product Distribution Line

Notes:

- B760-MW10** Monitoring Well Identification
- B760-MW03** Decommissioned Monitoring Well Identification

0 35 70 140
Feet

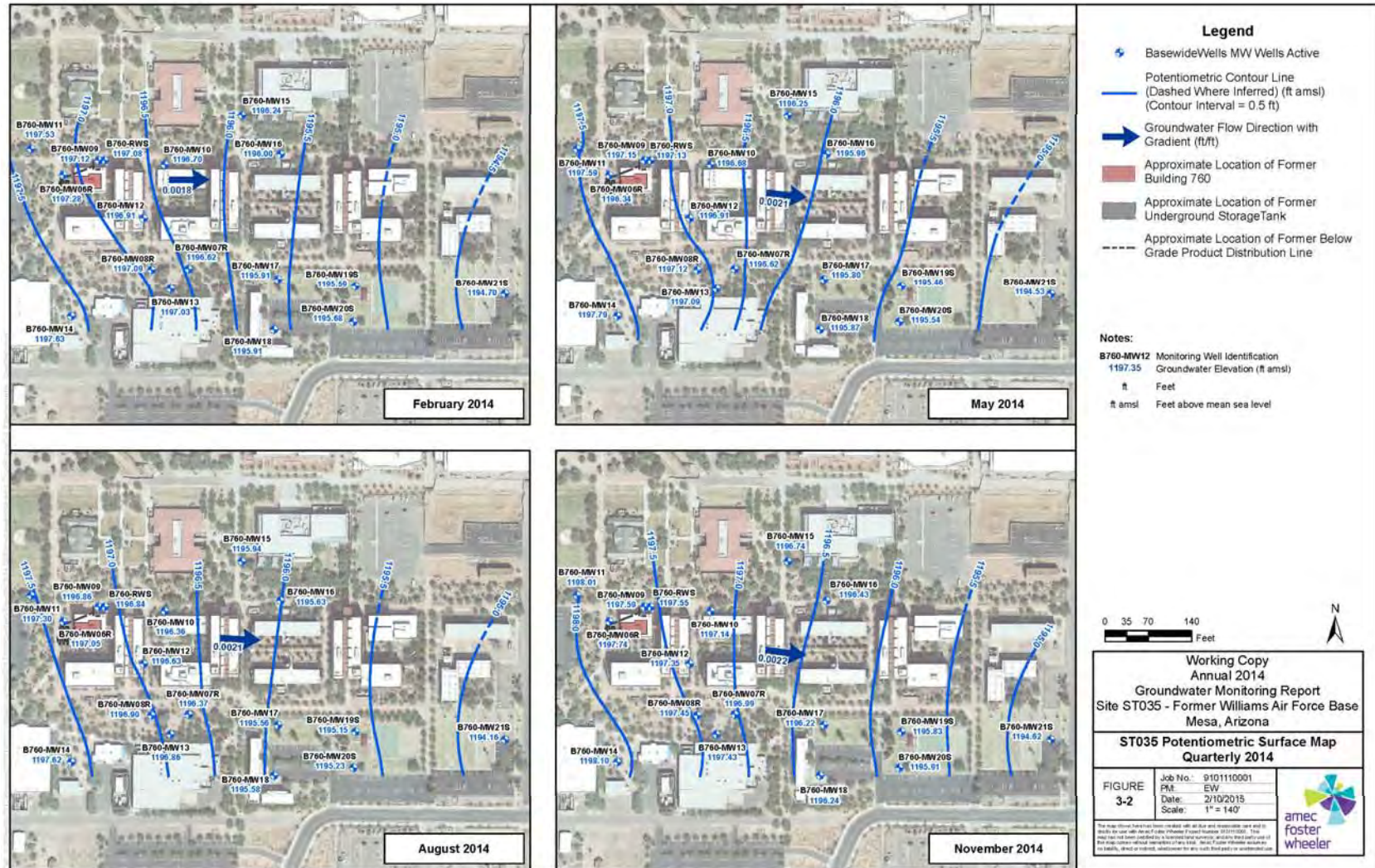
N

Working Copy Annual 2014 Groundwater Monitoring Report Site ST035 - Former Williams Air Force Base Mesa, Arizona	
ST035 Monitoring Well Location Map	
FIGURE 1-3	Job No.: 9101110001 PM: EW Date: 2/10/2015 Scale: 1" = 140'

The map shown here has been created with all data and information from the 1:50,000 scale map for use with Ames Foster Wheeler Project Number 9101110001. This map has not been certified by a licensed professional and any use of this map comes without warranty of any kind. Ames Foster Wheeler assumes no liability, direct or indirect, whatsoever for any such third party or unapproved use.

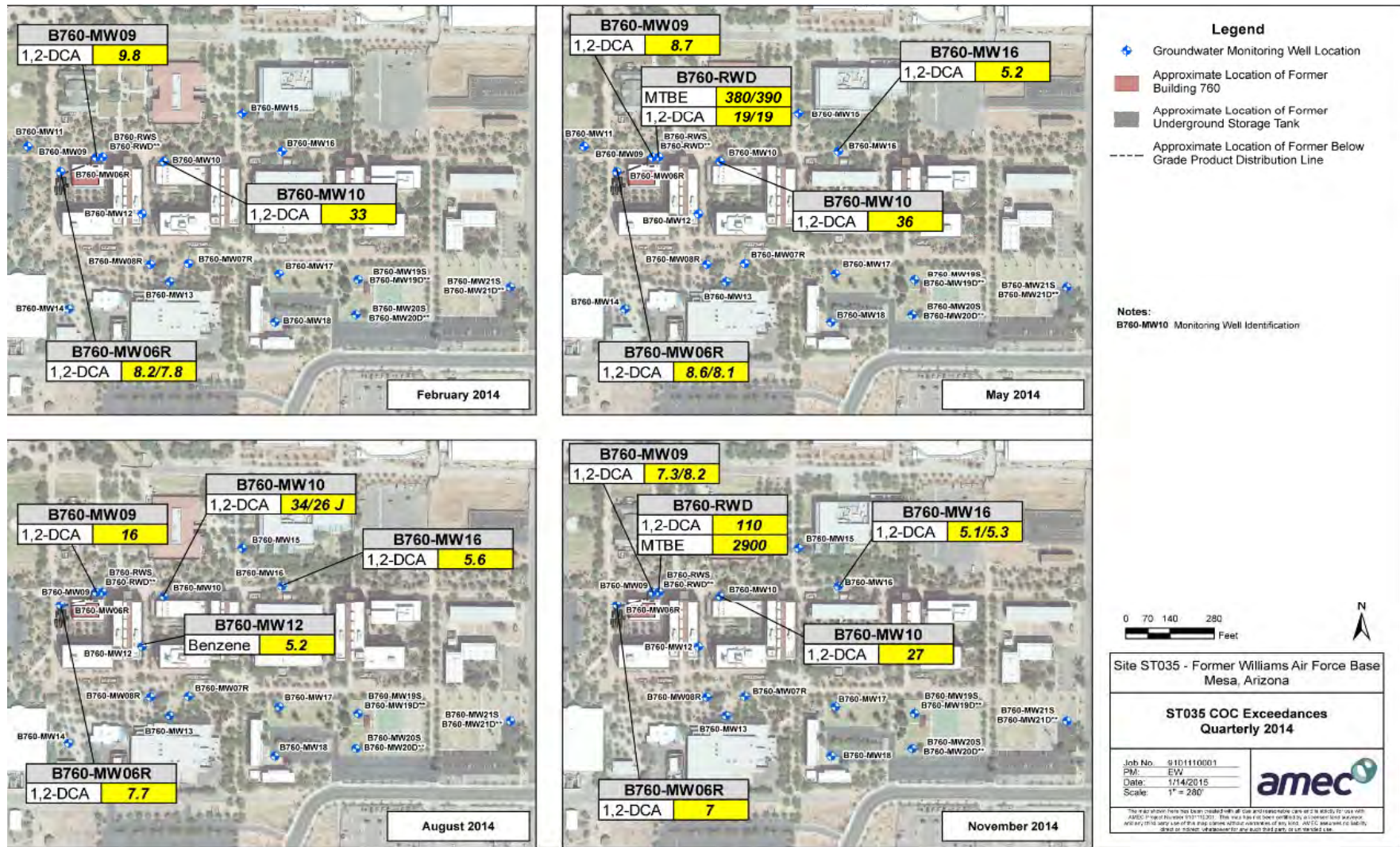


ST035 GW Flow Directions 2014





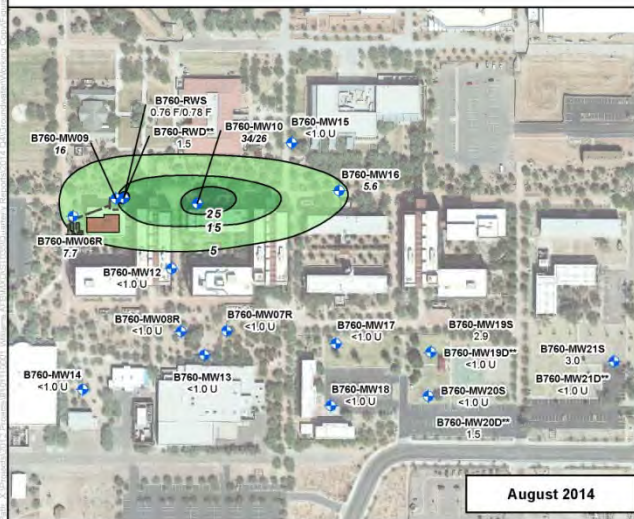
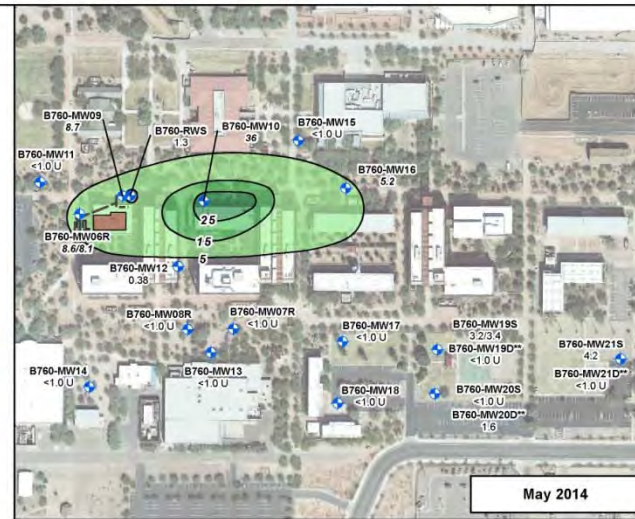
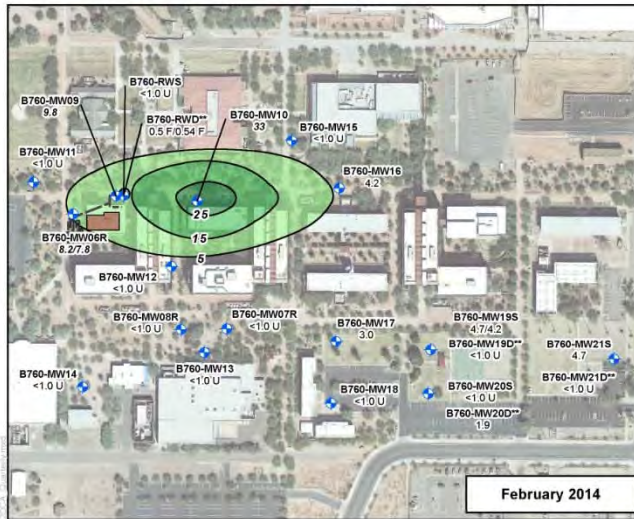
ST035 COC Exceedances 2014





Tier 1 Standard = 5 µg/L

ST035 1,2-DCA Exceedances 2014



Legend

1,2-DCA Concentrations (µg/L) in Groundwater

- 5-15
- 15-25
- ≥ 25

* ADEQ UST Tier 1 Corrective Action Standard = 5 µg/L

- Groundwater Monitoring Well Location
- Approximate Location of Former Building 760
- Approximate Location of Former Underground Storage Tank
- Approximate Location of Former Below Grade Product Distribution Line

Notes:

B760-MW10 Monitoring Well Identification

27 1,2-DCA Concentration (µg/L)
(Results that are **italicized and bolded** equal or exceed the ADEQ UST Tier 1 Corrective Action Standard of 5 µg/L)

7.3/8.2 Original/Duplicate Results

** Not used for isocentration mapping; wells are not representative of groundwater conditions

µg/L Microgram per liter

<1.0 Not detected at or above the RL

1,2-DCA 1,2-Dichloroethane

ADEQ Arizona Department of Environmental Quality

F The analyte was positively identified but the associated concentration is an estimation above the MDL and below the RL

MDL Method Detection Limit

RL Reporting Limit

U The analyte was analyzed for, but not detected at or above the RL shown

UST Underground Storage Tank

0 70 140 280 Feet

Working Copy
Annual 2014
Groundwater Monitoring Report
Site ST035 - Former Williams Air Force Base
Mesa, Arizona

ST035 1,2-DCA Concentrations in Groundwater Quarterly 2014

FIGURE 3-9	Job No.: 9101110001 PM: EW Date: 2/10/2015 Scale: 1" = 280'	amec foster wheeler
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The maps shown here have been created with all due and reasonable care and the quality of the data will depend on the reliability of the data provided. The user assumes all responsibility for the use of the information shown on these maps. The user agrees to hold amec, foster, wheeler and its employees harmless for any and all claims, damages, losses, and expenses, including reasonable attorneys' fees, arising out of or from the use of the information shown on these maps.



Site ST035 GW Monitoring Update 2014 Sampling Events

- 21 wells sampled each quarter
- GW flow direction predominately east
- Exceedances:

Event	1,2-DCA* No. of Wells >5 µg/L	MTBE** No. of Wells >94 µg/L	Benzene* No. of Wells > 5 µg/L
Feb 2014	3	0	0
May 2014	5	1	0
Aug 2014	4	0	1
Nov 2014	5	1	0

*Tier 1 Standard

**Corrective Action Standard



Site ST035

2014 Groundwater Summary

■ Benzene

- One well >Tier 1 Standard in Aug 2014 (B760-MW12)
- All other wells < Tier 1 Standard
- Concentrations in former source area have significantly decreased since SVE startup (2010)

■ Toluene, Xylenes, Ethylbenzene & EDB

- All wells < Tier 1 Standards

■ MTBE

- All wells < Corrective Action Standard, except B760-RWD (May 2014 = 390 µg/L; Nov 2014 = 2900 µg/L)
 - ❖ B760-RWD: Screened deeper than other wells (162-172 ft below ground surface)



Site ST035

2014 Groundwater Summary

■ 1,2-DCA

- Concentrations in former source area & immediate downgradient area have significantly decreased since August 2011
- Exceedances remain near former source area



ST035 SVE Rebound Test Evaluation of Test Results

- **Soil vapor monitoring has continued since SVE was shut down in Dec 2013**
- **Low site wide rebound in soil gas concentrations suggests the majority of contamination has been removed with SVE**
- **SVE-5D and SVE-5M TPH concentrations have stabilized suggesting the system is at equilibrium**
- **Risk evaluations being performed to assess whether extent of source removal is protective of site receptors:**
 - **Indoor air risk due to vapor intrusion**
 - **GW impact risk due to:**
 - ❖ **Soil leaching**
 - ❖ **Vapor migration**



ST035 SVE Rebound Test Vapor Intrusion Assessment

- **Johnson and Ettinger modeling conducted to evaluate vapor intrusion risk**
 - **Post-shutdown benzene concentrations at SVE-1D and SVE-5M did not exceed the 1E-06 threshold; post-shutdown benzene concentrations at VMP-2MS did not exceed 1E-06 threshold**
 - **EDB does not exceed 1E-05 threshold for post-shutdown samples.**



ST035 SVE Rebound Test Risk to Groundwater

- **ADEQ GW Protection Leaching Model used to estimate sorbed and dissolved phase concentrations**
 - **Sorbed phase concentrations are less than ADEQ Tier 1 Cleanup Standard for Soil Leachability**
 - **Estimates of dissolved phase concentrations suggest potential risk associated with benzene and EDB vapor concentrations**
- **Collected GW monitoring data indicate:**
 - **Benzene (with the exception of Aug 2014) and EDB concentrations have been less than Tier 1 Standards in source area wells since 2012**
 - **1,2-DCA and MTBE (primary contaminants observed in GW at elevated levels) are not present at concentrations in soil vapor that would exceed dissolved phase Tier 1 Standards**



ST035 Site Closure Path Forward

- **Conduct shallow soil vapor survey to confirm incomplete vapor intrusion pathway**
- **Assuming collected data demonstrate source has been adequately addressed and GW plume is stable; Achieve site closure per LUST regulations (R18-12-263.04 by preparation closure report to ADEQ)**
- **Continue routine GW monitoring (semi-annual) during closure report review and approval**

Headquarters U.S. Air Force

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Munitions Response Site XU 403 Area 1

Presented by:
Ms. Catherine Jerrard
AFCEC

Headquarters U.S. Air Force

Integrity - Service - Excellence



Meeting Wrap-Up

Presented by:
Mr. Len Fuchs/ Ms. Catherine Jerrard
RAB Community Co-Chairs
and Scott Johnston



Meeting Wrap-Up

- **RAB adjournment process**
- **Review action items**
- **Call for agenda items for next RAB meeting**
- **Next RAB meeting 15 Sep 2015**
- **Meeting adjourned**



RAB Adjourment

- **RAB adjourment can be considered if:**
 - **RODs are signed**
 - **Remedies are in place**
 - **RAB goals have been achieved**
 - **Land is transferred**
 - **No longer sufficient and sustained community interest**



RAB Adjourment

- **AFCEC BEC must consult with and consider all comments provided by:**

Community

RAB Members

EPA

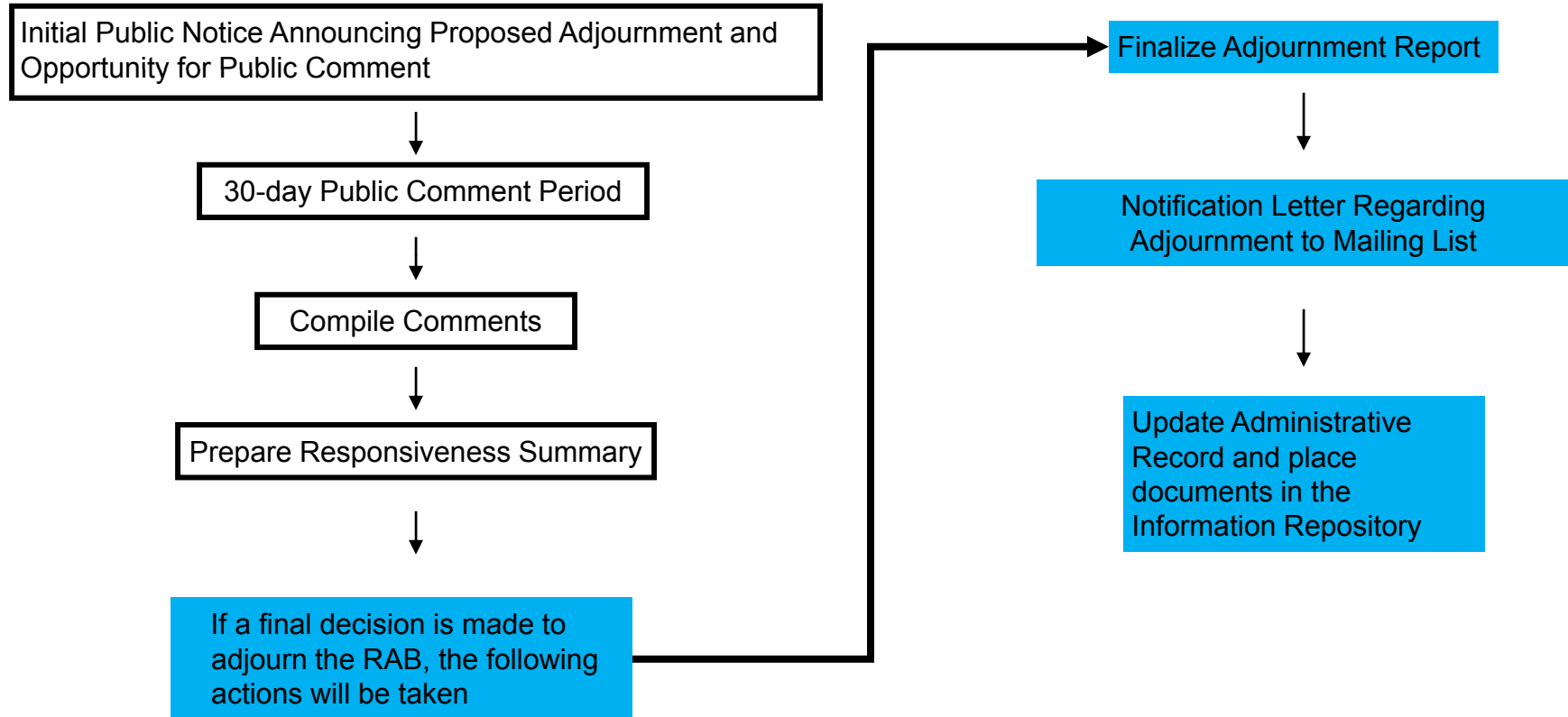
State and Local Government

- **AFCEC BEC must:**

- **Notify RAB members of the decision by letter and public through notice in a local newspaper.**
- **Describe other ongoing public involvement opportunities.**
- **Document rationale for adjournment in a memorandum for inclusion in the Administrative Record.**



Process for Adjourning the RAB





Requirements for Adjourning a RAB

RAB Rule (Section 202.10)	Proposed Williams Action Plan
<ul style="list-style-type: none">❑ Consult with EPA, state, tribes, RAB members, and the local community, as appropriate, regarding adjourning the RAB and consider all responses before making a final decision.	<ul style="list-style-type: none">✓ 24 Mar 2015 RAB meeting opens the adjournment discussion with RAB members and public.✓ Next RAB meeting (Sep 2015) discuss specific timeline for a RAB adjournment process<ul style="list-style-type: none">✓ Public Notice announcing proposed adjournment and opportunity for public comment.✓ 30-day public comment period✓ Option to adjourn as early as the March 2016 RAB meeting, or anytime thereafter, as determined to be appropriate, based on public input



Requirements

RAB Rule (Section 202.10)	Proposed Williams Action Plan
<ul style="list-style-type: none">❑ Document the rationale in a memorandum for inclusion in the Administrative Record, notify the public of the decision through written notice to the RAB members and through a publication of a notice in a local newspaper.❑ Describe other ongoing public involvement opportunities.	<ul style="list-style-type: none">✓ If the RAB elects to proceed with adjournment, a letter will notify members of the mailing list of the adjournment decision.✓ An adjournment report will document the rationale for adjournment. A copy of the adjournment report and all related documents will be added to the Administrative Record and placed in the Information Repository.✓ A public notice will inform the public of the Air Force's decision, and describe other public involvement opportunities for any future news related to Williams cleanup.



Continued Communications

- **Key things to consider regarding future communications:**
 - **Despite RAB adjournment, Air Force has a commitment to continue sharing information about any news related to the cleanup**
 - **Many other communication avenues will continue:**
 - **Website**
 - **Letters and calls from our BEC, Cathy Jerrard**
 - **Briefings to special interest groups or meetings with community officials**
 - **News Releases to local paper and Public Notices**
 - **Calls to former RAB members, as appropriate**

www.afcec.af.mil/brac/williams



Williams website


www.afcec.af.mil/brac/williams

U.S. Air Force Civil Engineer Center


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Former Williams Air Force Base, Mesa, Arizona [Closed 1993]



PHOENIX-MESA GATEWAY AIRPORT





WILLIAMS AIR FORCE BASE
REFITTED FOR SUCCESS

Refitted for Success In 1991, when the Base Realignment and Closure (BRAC) Commission announced that Williams Air Force Base in Mesa, Ariz. would close, the surrounding community feared it was a death knell for the region. [Full Story »](#)

Steaming toward clean at former Williams Air Force Base Until recently, the Air Force Civil Engineer Center estimated that completing the environmental cleanup at the Williams fuel storage area would take hundreds of years. [Full Story »](#)

Williams Today In 1991, the Air Force announced Williams Air Force Base would be closing. The State and local community feared for the 3,800 jobs and \$300 million economic impact that they would lose. [Full Story »](#)

Next RAB Meeting:

- Date: Tuesday, March 24, 2015
- Time: 6 p.m.
- Location: Arizona State University Polytechnic Campus
- Peralta Hall Room #130
- 7171 E. Sonoran Arroyo Mall
- Mesa, AZ 85212.

Announcements:

Full Steam Ahead
Air Force stakeholders to highlight a new removal technology at a former fuel cleanup site.

- Date: Tuesday, March 24, 2015
- Time: 4pm
- Parking for event: 6113 S. Kent St. Mesa, AZ 85212

Continuing to Serve...



Gilbert resident Lan Fuchs, the Community Co-Chair for the Restoration Advisory Board at the former Williams Air Force Base, stands in front of an environmental cleanup site at the former base. [Full Story »](#)

Recent News:

- Steam to force fuel from soil
- U.S. Air Force official explains steam-enhanced extraction

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- Steam Enhanced Extraction Groundwater Cleanup
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Williams

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7. Chanute AFB, Ill.
8. Eaker AFB, Ark.
9. England AFB, La.
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12. General Mitchell ARS, Wis.
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16. Grissom AFB, Ind.
17. Homestead AFB, Fla.
18. Kelly AFB, Texas
19. K.I. Sawyer AFB, Mich.
20. Kulis ANGB, Alaska
21. Loring AFB, Maine
22. Lowry AFB, Colo.
23. March AFB, Calif.
24. Mather AFB, Calif.
25. McClellan AFB, Calif.
26. Myrtle Beach AFB, S.C.
27. Newark AFB, Ohio
28. Norton AFB, Calif.
29. O'Hare ARS, Ill.
30. Onizuka AFS, Calif.
31. Ontario ANGB, Calif.
32. Pease AFB, N.H.
33. Plattsburgh AFB, N.Y.
34. Reese AFB, Texas
35. Richards-Gebaur AFB, Mo.
36. Rickenbacker ANGR, Ohio



Meeting Wrap-Up

- For questions contact

Catherine Jerrard or Linda Geissinger

Catherine.jerrard@us.af.mil

Linda.Geissinger@us.af.mil