Luke Air Force Base PFAS Response

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AFCEC/CZOW/Nellis ISS
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Agenda

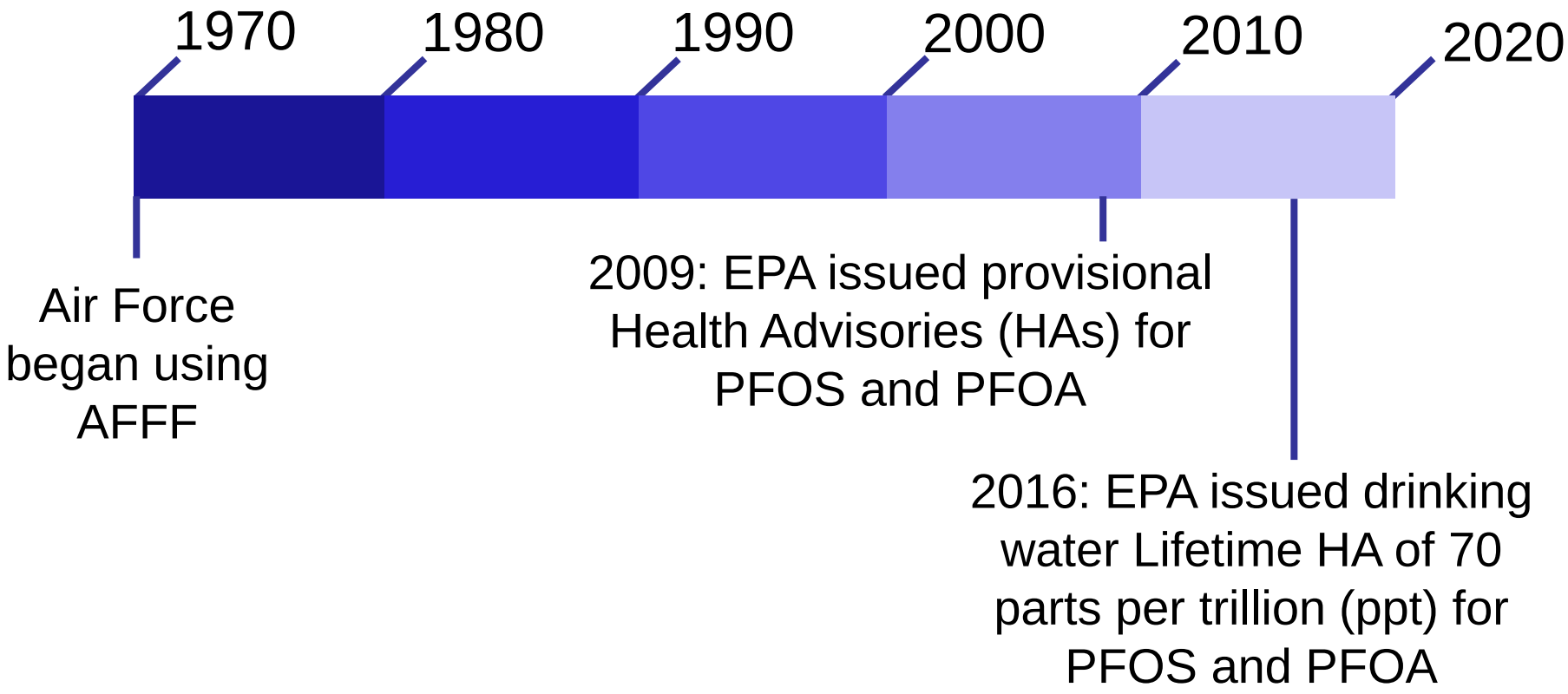
- What are PFAS?
- CERCLA
- Air Force Response
  - Identify
  - Respond
  - Prevent
- Investigations at Luke AFB
  - Basewide Preliminary Assessment and Site Inspection
  - Off-Base Drinking Well Sampling
  - Remedial Investigation
  - Off-Base Groundwater Results and Next Steps

What are PFAS?

- **Perfluoroalkyl substances: a group of man-made chemicals used to make fluoropolymer coatings and products that resist heat, oils, stains, and water.**
  - **Persistent chemicals that do not break down**
  - **PFOS and PFOA were initially of concern**
  - **PFBS, PFBA, PFNA, PFHxS, PFHxA, and HFPO-DA have recently also garnered attention**
- **They are used in many industrial and consumer products:**
  - **Nonstick cookware**
  - **Some food packaging**
  - **Firefighting agent, Aqueous Film Forming Foam (AFFF)**

What are PFAS?

AFFF has been widely used to extinguish petroleum fires at civilian and military airports across the US



Legal Authority

Under CERCLA (Comprehensive Environmental Response, Compensation and Liability Act), PFOS/PFOA are "**pollutants or contaminants**" that "**may present an imminent and substantial danger to the public health or welfare**."

- The Air Force is authorized to investigate and execute response actions under CERCLA.

Air Force Response

The Air Force is using a three-step approach to assess the potential for PFOS/PFOA contamination of drinking water and respond appropriately.

1. Identify
- Determine potential AFFF releases
- Verify releases through sampling
- Determine if contaminant pathways to drinking water (DW) exist

2. Respond
- PFOS/PFOA > 70 ppt, provide alternate DW supply
- If PFOS/PFOA < 70 ppt, establish monitoring schedule

3. Prevent
- Legacy AFFF disposal
- Transition to new AFFF
- Retrofit fire vehicles

Air Force Response
Identify

IDENTIFY:

Preliminary Assessment
A base-wide records review identifies fire training areas, crash sites and other areas at installations where AFFF may have been released.

Site Inspection
AFCEC conducts groundwater, surface water, soil and sediment sampling to verify releases, map contamination and identify potential pathways to drinking water.

If SI sampling indicates potential pathways to drinking water supplies, AFCEC expands the SI footprint and may test public water systems and private wells.

Once SI is complete, AFCEC determines if investigation yielded adequate data to fully map contamination or if more investigation work is needed.

Remedial Investigation
Additional sampling and investigation is performed to fully map contamination.

Air Force Response
Respond

RESPOND:

Response Actions

When AFCEC determines PFOS/PFOA levels exceed 70 ppt in drinking water, the Air Force will take measures to reduce risk and, if needed, provide an alternate drinking water source, like bottled water, until a permanent solution is in place.

Current Drinking Water Status

- **To date, the Air Force and ADEQ have sampled all private and municipal wells or distribution points within a 4-mile radius of Luke AFB.**
- **Any exceedances of 70 ppt have been addressed, ensuring no one in the community is being provided water with PFOS and/or PFOA over 70 ppt.**

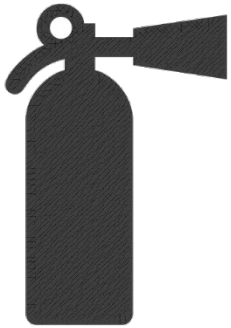
Air Force Response
Prevent

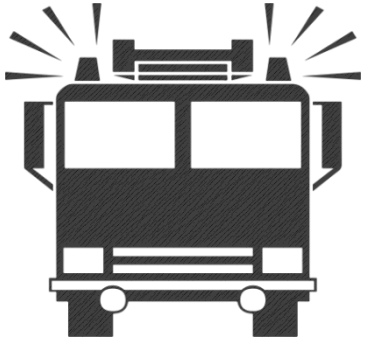
PREVENT:

Legacy AFFF Disposal: The Air Force is eliminating legacy AFFF through incineration at authorized disposal facilities.

AFFF Replacement: AFCEC is replacing legacy AFFF in fire vehicles, stockpiles and hangar systems with more environmentally responsible formulations.

Retrofit fire vehicles: AFCEC is retrofitting fire vehicles with an ecologic system that prevents foam discharge during equipment testing.





PFAS Response at Luke AFB

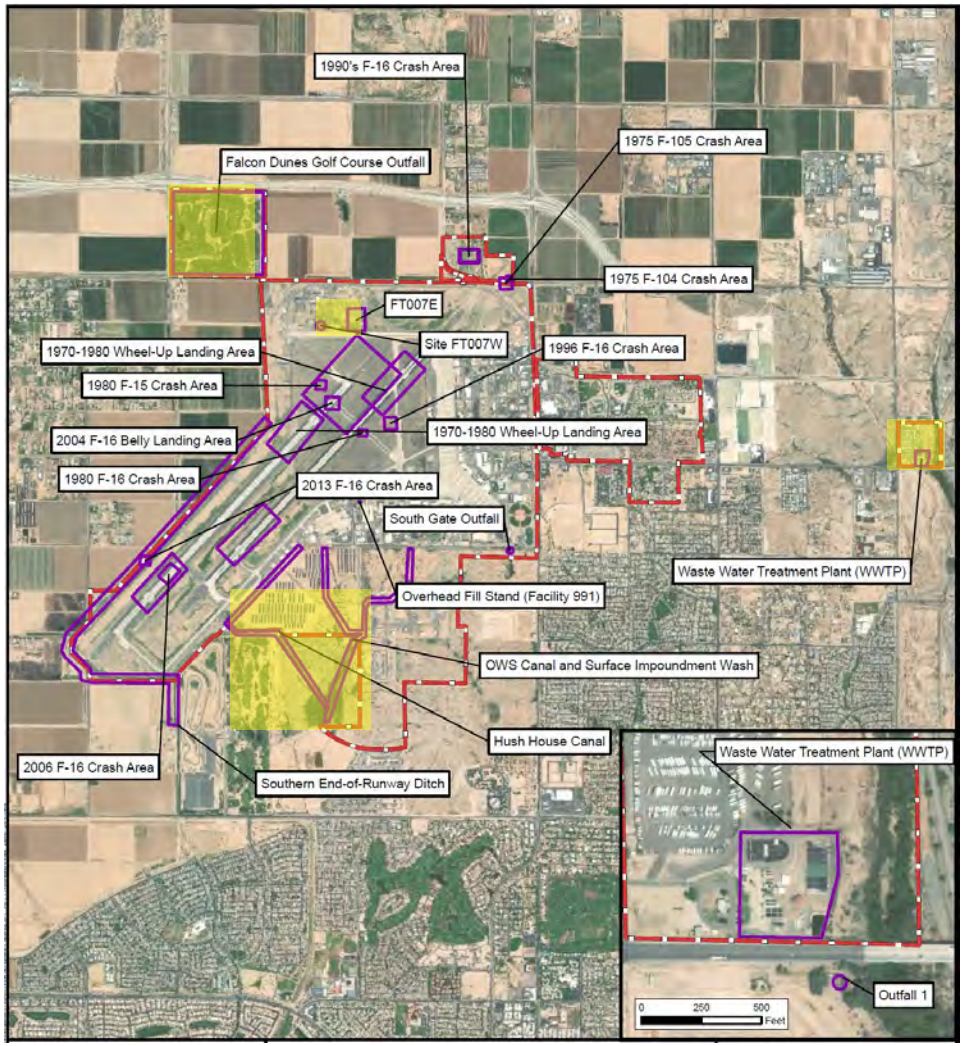
2015: Preliminary Assessment

- Records review and personnel interviews

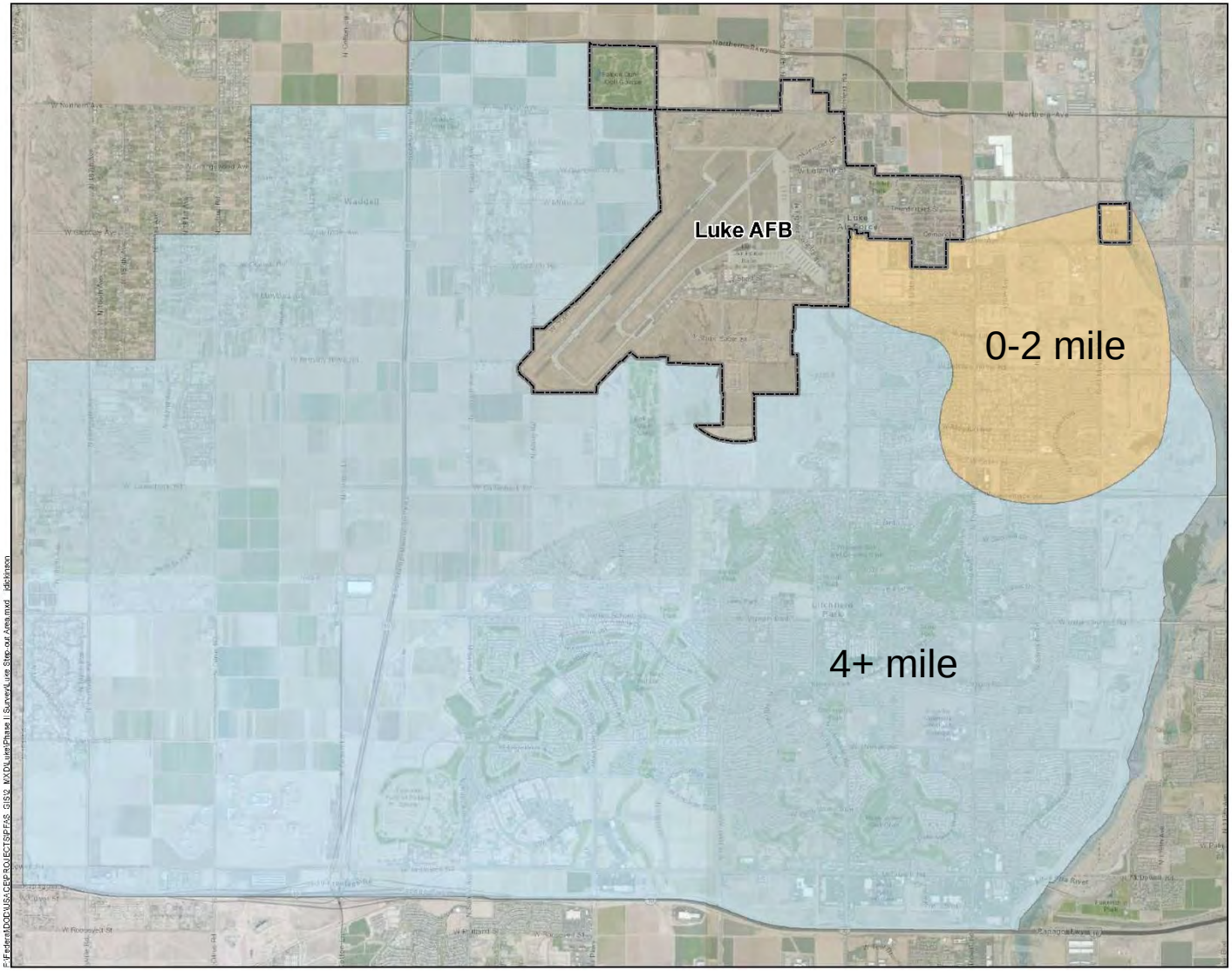
2018: Site Inspection

- Samples collected from areas identified in the PA
- Four areas advance to the Remedial Investigation (RI) phase:
  - Fire training area
  - Surface Water Features
  - Wastewater Treatment Plant
  - Golf Course
- Off-base impacts to groundwater were identified at that time

Site Inspection Areas



Luke AFB Off-Base Sampling
Drinking Water Wells



Luke AFB Boundary
Sampling Area 2019-2021
Expanded Sampling Area 2021

Map Date: 6/7/2021

N

0 4,000 8,000
Feet

1 inch = 4,000 feet

Figure 1
Luke AFB
Step-Out Focus Area
Off-Base Drinking Water Site Inspection
Maricopa County, Arizona

Luke AFB Off-Base Sampling
Private Drinking Wells

- **Sampling occurred Apr 2019 to Aug 2021**
- **Three step-out sampling events, 25 drinking wells sampled**
  - **Two residential wells within 1 mile south of the Wastewater Treatment Plant (WWTP) were above 70 ppt (627 and 611 ppt PFOS+PFOA)**
  - **One residential well within 1- 2 miles south of the WWTP was above 70 ppt (95 ppt PFOS+PFOA)**
    - **Bottled water provided within 48 hours of receiving results**
    - **All properties are now connected to local municipal water supply**
  - **The 22 other private drinking wells sampled were non-detect**
- **Sampling result letters sent to all private well owners**
- **All sampling results shared with state and federal regulators**

Luke AFB Off-Base Sampling
Utility Wells

- **Two public utilities present 0-2 mile south of the WWTP**
  - **Valley Utilities**
  - **Liberty Utilities**
- **Three filtration systems previously installed by Liberty to address PFOS and PFOA**
- **Identified history with Valley Utilities of PFAS exceedance from company sampling**
  - **Letter to customers pre-drafted and signed by commander in case of exceedance**
  - **Luke AFB was prepared with messaging for the community**
  - **Contract in place to distribute bottled water, if needed**
  - **Communication between all key partners!**

Luke AFB Off-Base Sampling
Utility Wells

- **Air Force sampled all municipal drinking water wells 0-2 miles south of the WWTP in early 2021**
- **Three Valley Utility wells and two distribution points were identified over 70 ppt PFOS and/or PFOA in late Feb 21**
  - **Bottled water service provided to community of ~5,000**
  - **Ion-Exchange filtration system installed to treat the impacted wells**
  - **System passed testing and community off bottled water by Aug 21**
- **All other utility wells within a 4-mile radius of Luke AFB were sampled by ADEQ and City of Avondale by July 2021**
  - **No additional exceedances identified**

Luke AFB Off-Base Sampling
Next Steps for Drinking Water

- **EPA lifetime HA for drinking water interim update Jun 22**
  - **PFOS 0.02 ppt; PFOA 0.004 ppt**
  - **Values below reporting level for most laboratories**
  - **DoD policy is to address exceedances of 70 ppt PFOS and PFOA**
- **EPA released draft Maximum Contaminant Levels (MCLs) Mar 23**
  - **PFOS and PFOA 4 ppt each**
  - **DoD awaiting final MCLs before taking action**
  - **Data review: 15 wells had either a PFOS or PFOA detection over 4 ppt, or a laboratory detection limit over 4 ppt**
- **EPA anticipates final MCL regulation by end of 2023**
  - **High volume of comments received; may be pushed into 2024**
  - **Primary standards usually go into effect three years after they are finalized**

Luke AFB
Remedial Investigation

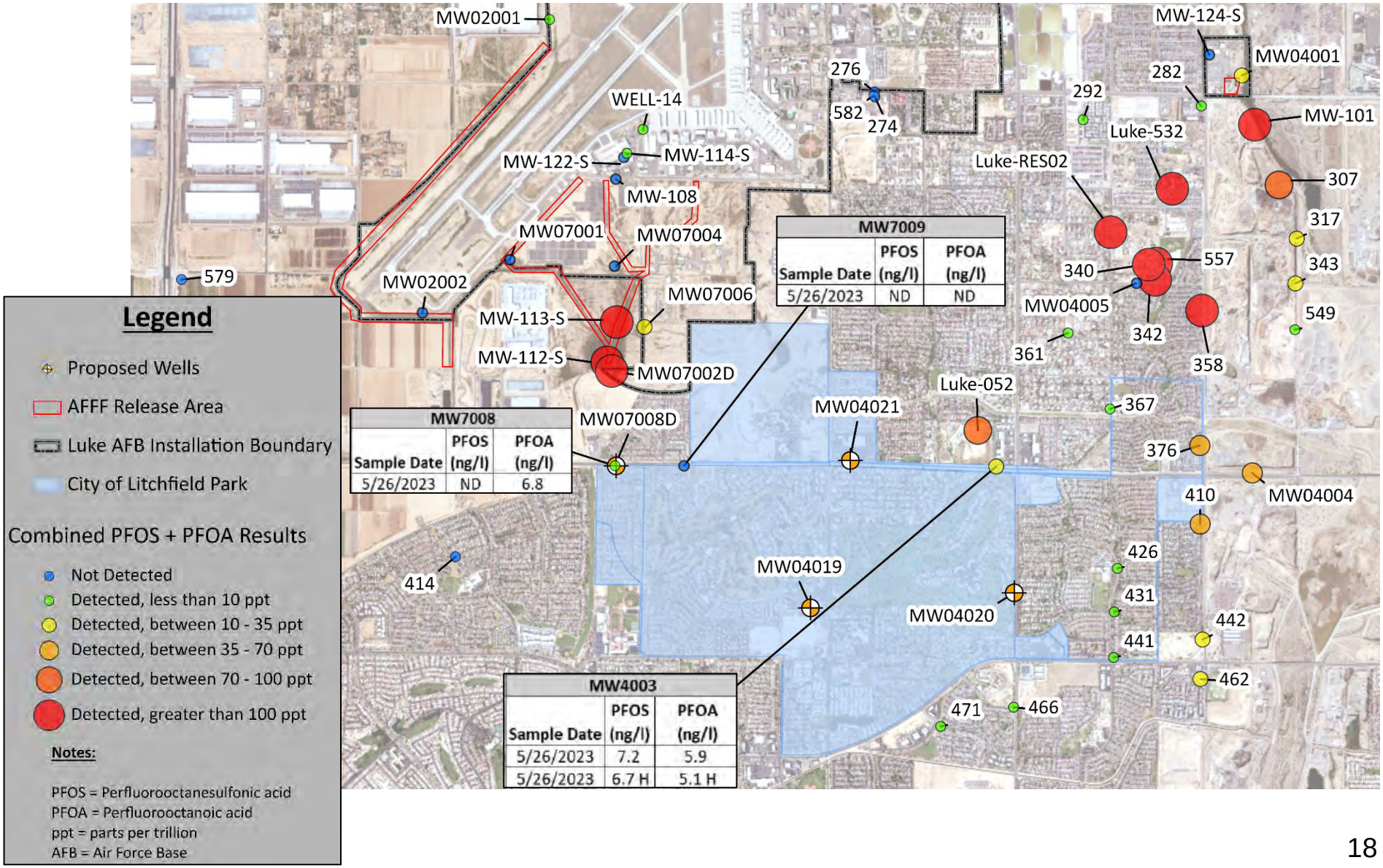
- **Remedial Investigation (RI) Contract Awarded Jul 2020**

  The RI is a multi-year effort to collect data, characterize site conditions, determine nature and extent of PFAS, identify potential exposure pathways, and to collect data to support risk assessment for human health and the environment. The intent is to adequately characterize sites and evaluate data for possible remedial actions.

  - **Field Work began Apr 2021**
  - **Final Phase I report expected 2025/2026**

- **Following the EPA Regional Screening Levels (RSLs) updated May 2023**
  - **Now include eight PFAS compounds**
  - **4 ppt PFOS**
  - **6 ppt PFOA**

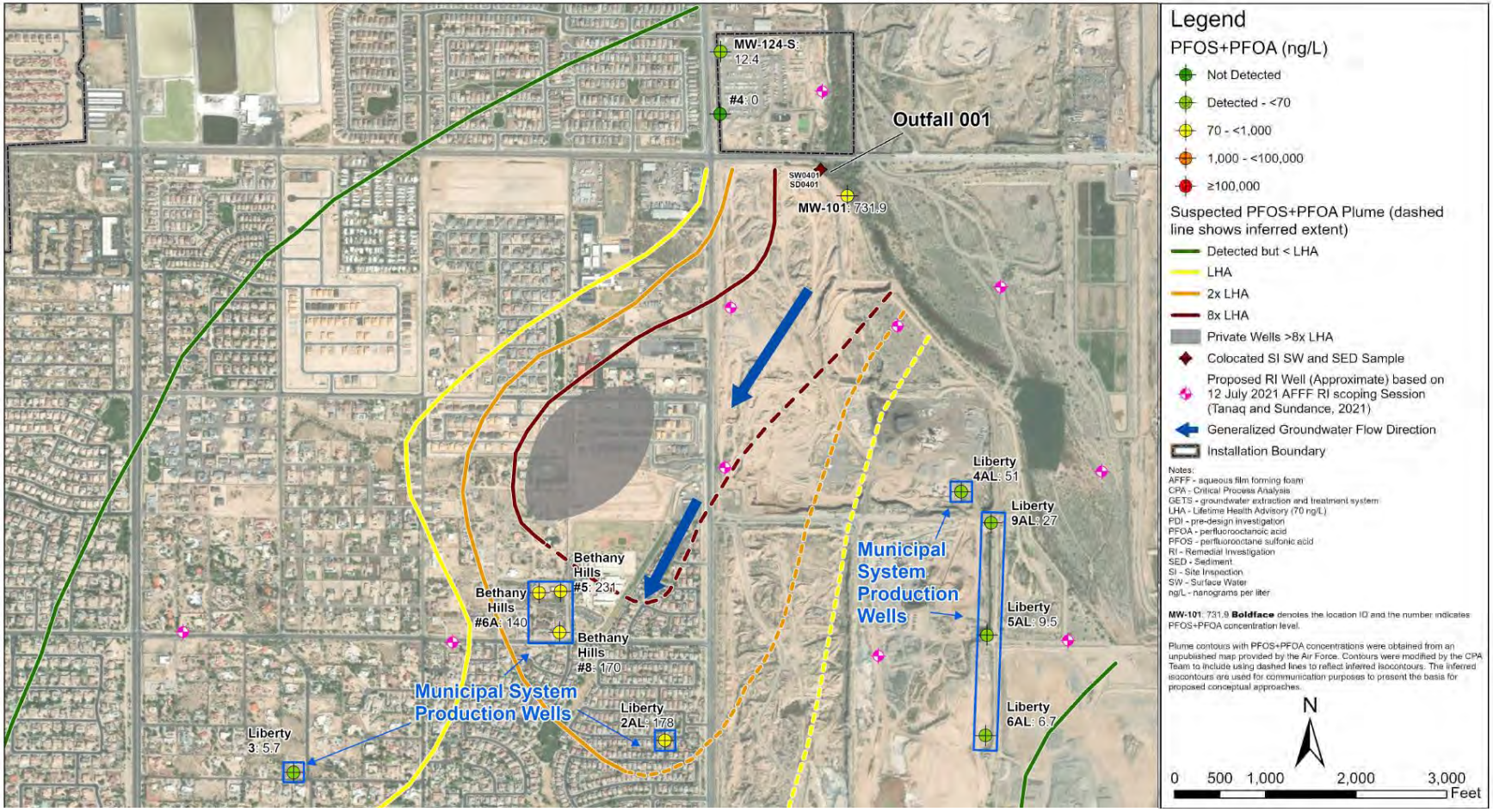
Luke AFB
Off-Base Groundwater Results



City of Litchfield Park
Groundwater Monitoring Wells

- **Monitoring wells**
  - **3 installed along north boundary of city in Spring 2023**
  - **4 more requested, to be installed this winter**
  - **Will be sampled up to twice per year**
- **At the conclusion of the Remedial Investigation (RI)**
  - **Wells that are no longer needed will be abandoned following appropriate Arizona Department of Water Resources procedures**
  - **Final Phase I RI Report will be public and available on the Air Force Administrative Record: ar.afcec-cloud.af.mil**

Luke AFB
Next Steps - Predesign Investigation



- **Air Force is proactively exploring groundwater remediation options**
- **Three-year project south of historic Wastewater Treatment Plant:**
  - **Assess surface water and groundwater movement in the area**
  - **Will inform on possible pump-and-treat system in this area**

Air Force Communication
PFAS Strategy

- **Key Messages:**
  - **PFOS/PFOA is a national issue that needs national solutions**
  - **Air Force is taking aggressive action to identify & respond to Drinking Water over 70 parts per trillion for PFOS/PFOA impacted by Air Force mission**
  - **Air Force is committed to the CERCLA clean-up process; this may result in a range of response & clean-up actions prioritized within the Air Force Environmental Restoration Account program**
  - **Air Force is committed to the health and safety of our Airmen, their families, and the communities in which we serve**
  - **Air Force is proud to be a leader in response to PFOS/PFOA; We will continue to work with stakeholders to protect human health & our environment**

Contacts

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- **Arizona Department of Environmental Quality**
  - Karen Shanafelt, Drinking Water Unit Manager: Shanafelt.karen@azdeq.gov
- **Arizona Department of Health Services**
  - Mya Davis, Environmental Health Program Manager: office 480-670-1833
- **Agency for Toxic Substances and Disease Registry (ATSDR)**
  - Benjamin Gerhardstein, Region 9: fty9@cdc.gov, office 415-947-4316
  - https://www.atsdr.cdc.gov/pfas/index.html
- **Administrative Record: ar.afcec-cloud.af.mil**

Questions?