



**DEPARTMENT OF THE AIR FORCE  
AIR FORCE CIVIL ENGINEER CENTER  
INSTALLATION SUPPORT SECTION  
EDWARDS AIR FORCE BASE, CALIFORNIA**

21 November 2019

MEMORANDUM FOR DISTRIBUTION

FROM: AFCEC/CZOW  
120 North Rosamond Boulevard  
Edwards AFB CA 93524

SUBJECT: Minutes of the Edwards Air Force Base (AFB) Restoration Advisory Board (RAB)  
Meeting, 16 May 2019

1. Time: 5:31 p.m.
2. Place: Rosamond, California
3. Chairman: Mr. Bruce Davies, Public Co-chair and North Edwards Public Representative
4. The following RAB members were present:

<u>Name</u>	<u>Position</u>
Ms. Ericka Buckreis	Boron Public Representative
Mr. Kevin Depies	California Environmental Protection Agency (Cal/EPA) Department of Toxic Substances Control (DTSC) RPM
Mr. William Gaddis	Rosamond Public Representative
Ms. Amanda Lopez	Lahontan Regional Water Quality Control Board (LRWQCB) RPM
Mr. Alonzo Poach	LRWQCB RPM
Mr. Paul Schiff	Edwards AFB RPM
Mr. Otto Zahn	Edwards AFB Main Base Test Wing Public Representative

5. The following members were absent:

<u>Name</u>	<u>Position</u>
Mr. Richard Francis	United States Environmental Protection Agency (U.S. EPA) RPM
Dr. Joseph Mabry	Air Force Research Laboratory, Detachment 7 (AFRL) Public Representative
Mr. Raj Malhi	Lancaster Public Representative (Alternate)
Dr. David Smith	Air Force Co-chair
Ms. Alexia Svejda	California City Public Representative
Ms. Angela Underwood- Jacobs	Lancaster Public Representative
Mr. Victor Yaw	Mojave Public Representative
Vacant	Edwards AFB Base Housing Public Representative

Vacant	Edwards AFB North Base Public Representative
Vacant	Edwards AFB South Base Public Representative
Vacant	National Aeronautics and Space Administration (NASA) Armstrong Public Representative

6. The following advisors were present:

<u>Name</u>	<u>Organization</u>
Mr. Joe Dunwoody	Air Force Civil Engineer Center (AFCEC)/Installation Support Section-West (CZOW)
Mr. Gary Hatch	412th Test Wing Public Affairs
Mr. Michael Rohall	AFCEC/CZOW
Mr. Herb Roraback	412th Civil Engineer Group, Environmental Management
Dr. Nash Saleh	AFCEC/CZOW
Ms. Julia Tseng	AFCEC/CZOW

7. Others present were as follows:

<u>Name</u>	<u>Organization</u>
Mr. Ranney Adams	Public
Ms. Claudia Basura	BB&E
Mr. Rick Buckreis	Public
Ms. Jennifer Correa	Media Fusion
Ms. Maribel Harms	BB&E
Mr. John Joyce	Rosamond News
Mr. John Perry	Media Fusion
Ms. Leilani Richardson	BB&E (Recorder)
Ms. Jena Romo	Media Fusion
Mr. Dennis Shoffner	Rosamond Municipal Advisory Council

8. Mr. Davies read the *Statement of Purpose and Conduct*.

9. There were no new RAB members to introduce.

10. Mr. Davies presented the 15 November 2018 RAB meeting minutes for acceptance. The RAB accepted the minutes as presented.

11. New Business—*Environmental Restoration Program (ERP) Update* (Attachment 1).

a. Mr. Schiff said the Air Force respectfully requests that the public representatives sign a consent form officially granting the Air Force permission to publicize their contact information, including personal cell phone numbers and personal e-mail addresses, if necessary. He explained that public representatives need to provide contact information so that community members may contact them outside of the semiannual meetings. The Air Force publicizes the representatives' contact information on the RAB's Facebook website and the *Report to Stakeholders* newsletter to facilitate communication between the public and the RAB.

i. Mr. Schiff said the Air Force will follow up with the absent public representatives to obtain their signed consent forms, and he asked those present to provide their signed forms at the end of the meeting.

ii. Mr. Depies asked whether the public representatives are obligated to provide their contact information as RAB members. Mr. Hatch explained that public representatives are notified during the application process that they need to provide a phone number and e-mail address that will be publicized.

b. Mr. Schiff reported the status of two formal ongoing disputes at Edwards AFB.

(1) The South AFRL Explanation of Significant Differences (ESD) dispute is still awaiting a final decision from the U.S. EPA Headquarters Administrator regarding the selection of a perchloroethene (PCE) toxicity value. In March 2019, senior leadership from the Air Force and regulatory agencies met with the U.S. EPA Headquarters Administrator in Washington, D.C., to present their positions on the issue.

(2) The AFRL Arroyos Record of Decision (ROD) dispute also includes an issue about the cancer risk level that determines when action is necessary. Mr. Schiff reported that the Remedial Project Managers (RPMs) are finalizing a joint agency document titled “Proposed Path for Evaluating and Managing Vapor Intrusion (VI) Risk for Buildings,” which is specific to AFRL buildings included in the proposed ROD under dispute. He said the RPMs will submit recommendations to their respective Dispute Resolution Committee (DRC) members for consideration. Mr. Depies noted that the Arroyos ROD dispute was placed on hold because the agencies have been waiting on resolution of the South AFRL ESD dispute. He said the PCE toxicity value is another factor in the Arroyos ROD dispute.

c. Mr. Schiff briefed on emerging contaminants called perfluoroalkyl and polyfluoroalkyl substances (PFAS), which are present at locations across the nation that used aqueous film-forming foam (AFFF) for fire-fighting efforts. He said the Air Force evaluated wells in two AFFF areas on base—ERP Site 14 at South Base and Fire Station #5 at North Base—as part of a Site Inspection (SI) Addendum effort. The effort will determine whether there are any complete pathways to drinking water receptors. A draft sampling work plan is expected to be submitted to the regulators in the summer of 2019. Mr. Depies commented that supply wells have already been sampled and did not contain any PFAS. Mr. Schiff said that statement is true for on-base supply wells; he cannot speak to the off-base wells. Mr. Depies said he thought off-base wells were covered by the Unregulated Contaminant Monitoring Rule (UCMR), and Mr. Poach said the rule’s applicability is based on the number of connections or size of the water company. Mr. Schiff noted that the base tested their wells more than once and there have been no detections of PFAS in the production wells.

d. Mr. Schiff presented the progress of the base’s cleanup program, highlighting restoration activities performed within the last 6 months.

(1) Referring to Slide 10 of Attachment 1, Mr. Gaddis asked Mr. Schiff to provide an example of the groundwater issues that the Operable Unit (OU) 1/8 Technical Working Group (TWG) are working to resolve. Referring to the OU1/8 plume map on Slide 9, Mr. Schiff

explained that the TWG is evaluating the groundwater contaminant plume to ensure sufficient characterization and determine whether additional wells need to be installed for better coverage of the plume.

(a) Mr. Depies added that the Air Force collaborates with the regulatory agencies during the planning stage to identify data gaps and optimal locations for additional well installations, which facilitates the program's document review and production process.

(b) Mr. Poach commented that some of the groundwater issues discussed by the TWG are administrative, such as moving sites back into the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). He explained that the TWG decided to transfer Site 21 to CERCLA because the site contains a fuel plume that sits in the middle of a larger solvent plume. Mr. Poach said the Air Force also installed additional wells to help delineate the downgradient extent of the South and North OU1 plumes.

(2) Mr. Schiff reported that the Air Force collected indoor air samples in Building 1807 in November 2018, February, and May 2019 to ensure the heating, ventilation, and air conditioning (HVAC) system is mitigating indoor air trichloroethene (TCE) concentrations below action levels. He said the 15 November 2018 and 28 February 2019 quarterly indoor air sampling results confirmed that TCE levels are below all action levels with the HVAC system running 24 hours a day and 7 days week. Mr. Depies explained that the HVAC system is basically suppressing vapor intrusion from the sub-surface beneath the building. Mr. Schiff briefed that, since the quarterly sampling results have shown the HVAC system is effectively mitigating the indoor air, the path forward is to start sampling Building 1807 on a semiannual basis. He said the next sampling event is planned for November 2019, and the Air Force plans to continue semiannual sampling unless results indicate more frequent monitoring is necessary.

(3) Referring to Slide 14 of Attachment 1, Mr. Gaddis asked which regulatory agencies receive the Annual Remedial Action Status Reports (ARASRs) for Sites 5/14, 76, and 86. Mr. Depies said the reports are submitted to the U.S. EPA, DTSC, and the Water Board for review. Mr. Gaddis asked what type of feedback the regulators have provided. Mr. Schiff responded that the Air Force and regulatory agencies meet every 6 weeks to discuss issues on any site within the program, and the Air Force responds to regulatory comments on the reports. Mr. Depies said he believes most of the regulatory comments on the ARASRs involved very minor issues that were easily resolved. Mr. Schiff noted that the Air Force also issues Five-Year Reviews (FYRs) on post-ROD sites to ensure the cleanup remedies in place are still protective of human health and the environment.

(4) Referring to Slide 24 of Attachment 1, Mr. Gaddis asked Mr. Schiff to define the "long-screen well work plan" that the Air Force is drafting for OU6 NASA Armstrong. Mr. Schiff explained that the Air Force installed long-screen wells at OU6 for injection treatment purposes, and there is uncertainty about whether the long screens are creating a situation in which contaminated groundwater from higher depths is potentially migrating to deeper depths. He said the Air Force and regulatory agencies are evaluating whether they need to install packers to segregate the two zones.

(a) Mr. Depies explained that they do not want to permanently abandon the long-screen wells because they may be necessary for future cleanup efforts. He confirmed that the Air Force and regulatory agencies are evaluating whether the long-screen wells are serving as conduits for contaminant migration into deeper depths and they are identifying methods to temporarily plug the wells.

(b) Mr. Schiff said they are also evaluating long-screen wells at Site 25. He noted that the total length of screen in long-screen wells can be up to 100 feet. Mr. Depies added that monitoring well screens are typically 10 to 20 feet in length. He said the Air Force and regulatory agencies have already determined that the Site 25 long-screen wells are serving as conduits for groundwater contamination, and the TWG is brainstorming how to temporarily plug up the wells so that they are still usable in the future.

(5) Referring to Slide 26 of Attachment 1, Mr. Depies noted that some of the OU7 Basewide Miscellaneous sites include landfills that the Air Force inherited from previous owners and former shooting ranges. Mr. Schiff noted that there are no groundwater concerns at any of the seven sites; all of the contamination is contained within soil. He said the Air Force can provide more in-depth details at a future meeting, if any of the board members are interested.

(6) Mr. Schiff briefed the schedule for the Multisite FYR that reviewed cleanup remedies at OU2 Sites 5/14, 76, and 86; OU7 Site 3; and OU7 Chemical Warfare Materiel Site 442 to determine whether they remain protective of human health and the environment. The Air Force is awaiting comments from the regulatory agencies on the draft FYR report, and a final report is expected to be available for the public in mid-summer 2019. Mr. Schiff said the U.S. EPA will issue a protectiveness determination based on the FYR report.

(7) Mr. Schiff reported that initial results from a soil vapor extraction (SVE) treatability study conducted at the Site 25 source area were encouraging. The study started in December 2018 and will continue until the Site 25 TWG has sufficient data to determine the effectiveness of an SVE system at the site.

(8) Referring to Slide 37 in Attachment 1, Mr. Depies noted that the Air Force performed a surface clearance of Military Munitions Response Program (MMRP) Site AL505-2, which is located near Boron, California.

(9) Mr. Davies asked what type of groundwater contaminants are being analyzed in off-base wells, like the ones near the northern base boundary. Mr. Schiff said he is unsure of the state's groundwater sampling requirements for private residences. Mr. Poach said the state requirements vary depending on the size of the water system and the number of connections to the system. Mr. Davies asked for the specific contaminants that are being analyzed in a typical water test. Mr. Schiff explained that there are different analyses a laboratory can perform, depending on what is requested. Mr. Depies said solvents are typically sampled periodically, depending on the requirements; however, PFAS are emerging contaminants that are not necessarily analyzed as part of typical sampling requirements. He said the Air Force plans to sample the on-base wells along the northern base boundary as part of the PFAS SI Addendum effort. Mr. Schiff referred to Slide 20 of Attachment 1, which showed a close-up plume map of OU5/10 North Base, and Mr. Davies identified the location of two off-base wells he knows of immediately outside the base

boundary. Mr. Depies said the area Mr. Davies highlighted is not believed to be downgradient of the PFAS source at the North Base AFFF site. Mr. Poach commented that the current OU5/10 North Base contaminant plumes are well delineated and have not migrated off the base. Mr. Depies clarified that the contaminant plumes for volatile organic compounds (VOCs) and perchlorate are well delineated at OU5/10 North Base. He said the Air Force prioritized sampling the North Base boundary wells because of a potential for PFAS to impact off-base wells.

12. Opportunity for Public Comment—Mr. Hatch reported that no public comment cards were received.

13. Old Business—*Status of RAB Vacancies.*

a. Mr. Hatch welcomed Ms. Buckreis back to the RAB. He explained that, since she no longer works at Environmental Management, there is no longer a potential conflict of interest for her to be a board member.

b. Mr. Hatch noted that two new public representatives were unable to attend today's meeting: Ms. Svejda, California City primary public representative; and Ms. Underwood-Jacobs, Lancaster primary public representative. He announced that the term of service for Mr. Yaw, Mojave primary public representative, was recently renewed for another 2 years.

c. Mr. Hatch reported that there are four vacancies on the board, specifically public representative positions for North Base, South Base, NASA Armstrong, and Base Housing. He said filling the vacancy at North Base will continue to be difficult because there are only a few organizations and they are isolated from one another.

d. Mr. Hatch said he has received at least two inquiries about the Base Housing vacancy, which he will address once he is back in the office. He said the Air Force distributed vacancy flyers around the base and are planning to run another round of vacancy advertisements in the local newspapers.

14. Reports from Public Representatives.

a. Mr. Gaddis, Rosamond, said he spoke with Mr. Shoffner and Mr. Joyce about ways to increase the publicity of the semiannual RAB meetings. He said he owes feedback to the Rosamond Municipal Advisory Council, specifically an update about the ERP at Edwards AFB. Mr. Gaddis noted that he generally receives little interest from the Rosamond community, which he attributes to the fact that Rosamond is located 15 to 20 miles away from any of the base's groundwater contamination. He said he has emphasized in the past that the cleanup program does matter because many Rosamond residents work on base where groundwater contaminants may be present. Mr. Gaddis noted that Ms. Rebecca Hobbs, who recently retired, was very helpful in providing him with information for the community. He reiterated that he is overdue in providing an update to Rosamond constituents.

b. Ms. Buckreis, Boron, did not have any comments.

c. Mr. Zahn, Main Base Test Wing, had nothing to add.

d. Mr. Davies, North Edwards, announced that he will be retiring soon and moving out of the local area. He said it has been an honor and a pleasure to serve on the board, and he sees good work that needs to be done to keep the public safe. Mr. Davies said he has great confidence that the work is being accomplished and the RAB tracks the progress to help keep the public informed. He said he is working on trying to identify a replacement for his position before he leaves. On behalf of the Air Force, Mr. Schiff thanked Mr. Davies for his support to the program and said he appreciates Mr. Davies co-chairing the RAB over the years.

15. Reports from RPMs.

- a. Mr. Poach, Cal/EPA LRWQCB, had nothing to report.
- b. Ms. Lopez, Cal/EPA LRWQCB, did not have any additional comments.

c. Mr. Depies, Cal/EPA DTSC, reported that his agency is developing a frequently-asked-questions sheet on the new state toxicity criteria rule. He said he will announce when the sheet is available for the public. Mr. Depies noted that the sheet was written primarily for toxicologists, but he hopes the information will help the public better understand clean-up levels.

- d. Mr. Schiff, Edwards AFB, did not have any further comments.

16. The next RAB meeting is proposed for 21 November 2019 in North Edwards.

17. The meeting was adjourned at 6:39 p.m.

<b>//Original signed by//</b>	<b>//Retired//</b>
<hr/> DAVID G. SMITH, NH-IV, DAF Air Force Co-chair Restoration Advisory Board	<hr/> BRUCE H. DAVIES Public Co-chair Restoration Advisory Board

Attachment:  
 Environmental Restoration Program Update for Edwards Air Force Base, CA

DISTRIBUTION:  
 AFCEC  
 412 TW/DS/JA/PAE/SE  
 412 AMDS/SGPB  
 AFRL  
 RAB Members  
 Cal/EPA DTSC  
 Cal/EPA LRWQCB  
 U.S. EPA

# Air Force Civil Engineer Center



## Environmental Restoration Program Update for Edwards AFB, California

Paul Schiff  
AFCEC/CZOW  
16 May 2019

*Battle Ready...Built Right!*

1



## List of Acronyms



- AFRL = Air Force Research Laboratory, Detachment 7
- AFFF = aqueous film-forming foam
- CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
- CT = carbon tetrachloride
- DTSC = Dept. of Toxic Substances Control
- ESD = Explanation of Significant Differences
- FS = Feasibility Study
- FYR = Five-Year Review
- HVAC = heating, ventilation, and air conditioning
- MMRP = Military Munitions Response Program
- OU = Operable Unit
- PFAS = perfluoroalkyl and polyfluoroalkyl substances
- RAB = Restoration Advisory Board
- ROD = Record of Decision
- SEC = Senior Executive Committee
- SI = Site Inspection
- SVE = soil vapor extraction
- TCE = trichloroethene
- TWG = technical working group
- VI = vapor intrusion

2



## Contact Release Forms



- **Public representatives should be available to community members outside of the semiannual Restoration Advisory Board (RAB) meetings**
  - To facilitate availability, the Air Force publishes each representative's contact information on the RAB's Facebook page and Report to Stakeholders newsletter
  - Please sign the form (in your folder) to officially grant the Air Force permission to publicize your contact information, including personal cell phone numbers and personal e-mail addresses

3



## Status of Formal Disputes



- **South Air Force Research Laboratory, Detachment 7 (AFRL) Explanation of Significant Differences (ESD)**
  - Dispute invoked by California's Dept. of Toxic Substances Control (DTSC) in August 2014
  - DTSC finalized Toxicity Criteria for Human Health Risk Assessment Regulation in September 2018
    - Applicability to Edwards is pending
  - In March 2019, Senior Executive Committee (SEC) members met to brief the current U.S. EPA Headquarters Administrator on the dispute
    - Awaiting final decision from U.S. EPA Headquarters Administrator regarding the selection of a perchloroethene (PCE) toxicity value to be used in the South AFRL ESD

4



## Status of Formal Disputes



- **AFRL Arroyos Record of Decision (ROD)**
  - **Dispute invoked by the U.S. EPA and DTSC in November 2014**
  - **As of April 2019, one issue remains unresolved**
    - Air Force and regulatory Remedial Project Managers still finalizing “Proposed Path for Evaluating and Managing Vapor Intrusion Risks for Buildings,” which is specific to buildings within the Arroyos

5



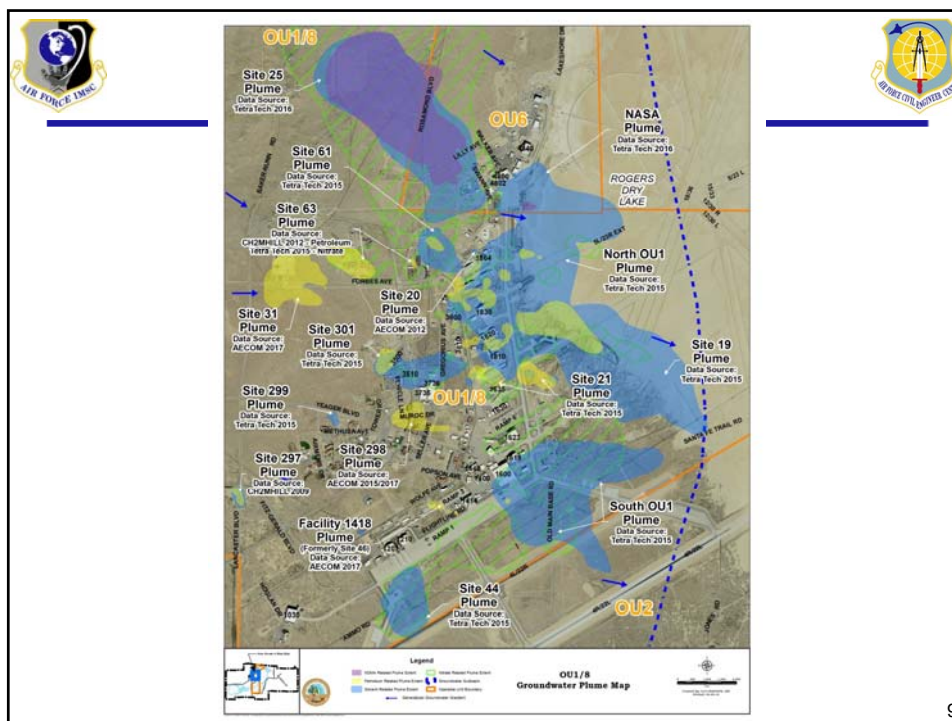
## Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS)




- **Site Inspection (SI) Addendum effort underway**
  - **In March 2019, completed an evaluation of wells at two aqueous film-forming foam (AFFF) areas in order to prepare a sampling work plan**
    - Site 14 (South Base)
    - Fire Station #5 (North Base)
  - **Objective is to determine whether any potential complete pathways to drinking water receptors exist**
  - **Draft sampling work plan expected to be submitted to the regulators mid-summer 2019**

6






9



## OU1/8 Main Base (Pre-ROD)



---

- **Held OU1/8 Technical Working Group (TWG) meetings to resolve several issues for incorporation into the Feasibility Study (FS) Addendum**
  - Vapor intrusion (VI) assessments of buildings
  - Groundwater issues
  - Data gaps

10



## OU1/8 Main Base (Pre-ROD)

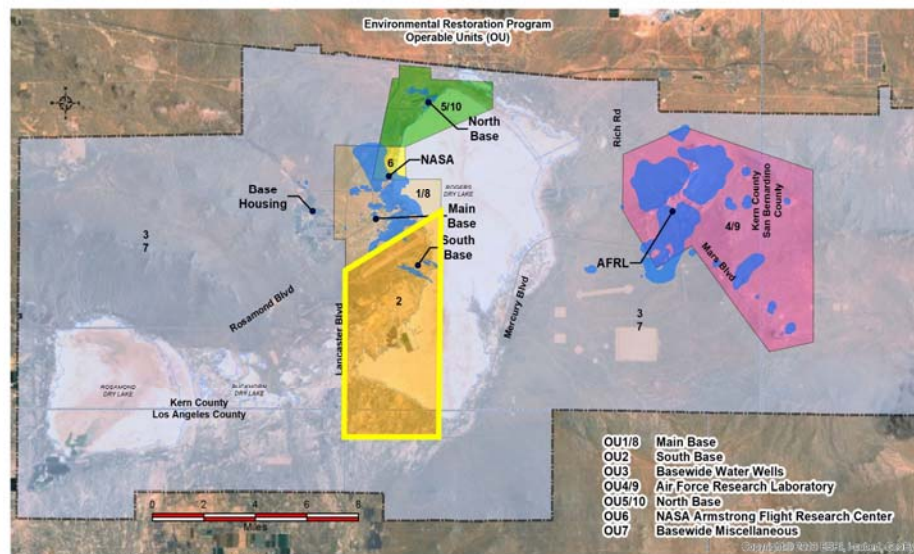


- **Building 1807**
  - Indoor air sampling occurred quarterly in November 2018, February, and May 2019 to ensure new heating, ventilation, and air conditioning (HVAC) is mitigating indoor air trichloroethene (TCE) concentrations below action levels
  - 15 November 2018 and 28 February 2019 quarterly indoor air sampling results confirmed that TCE levels are below all action levels with new HVAC operating continuously (i.e., 24/7)
  - Path Forward: Indoor air sampling frequency will change from quarterly to semiannually. Next sampling event will be in November 2019

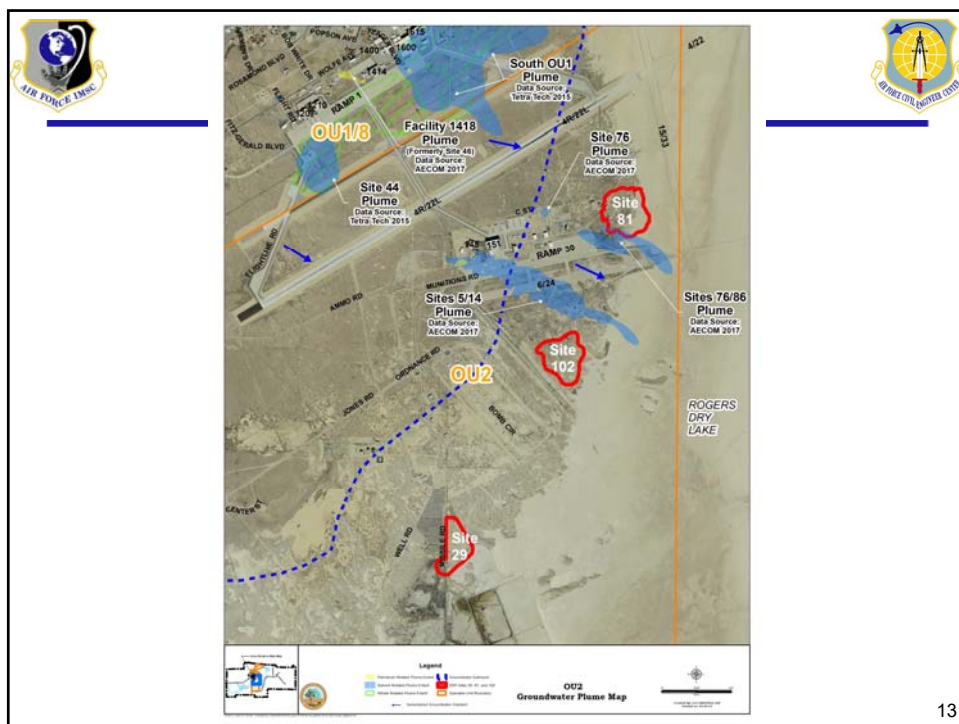
11



## OU2 South Base (Post-ROD)



12



13

## OU2 South Base (Post-ROD)

- **Sites 5/14, 76, and 86**
  - Treatment systems continue operating
  - Annual Remedial Action Status Reports submitted to the regulators
- **Sites 81 and 102**
  - A design is being implemented to cover both former skeet sites with crushed concrete

14



## OU2 South Base (Post-ROD)

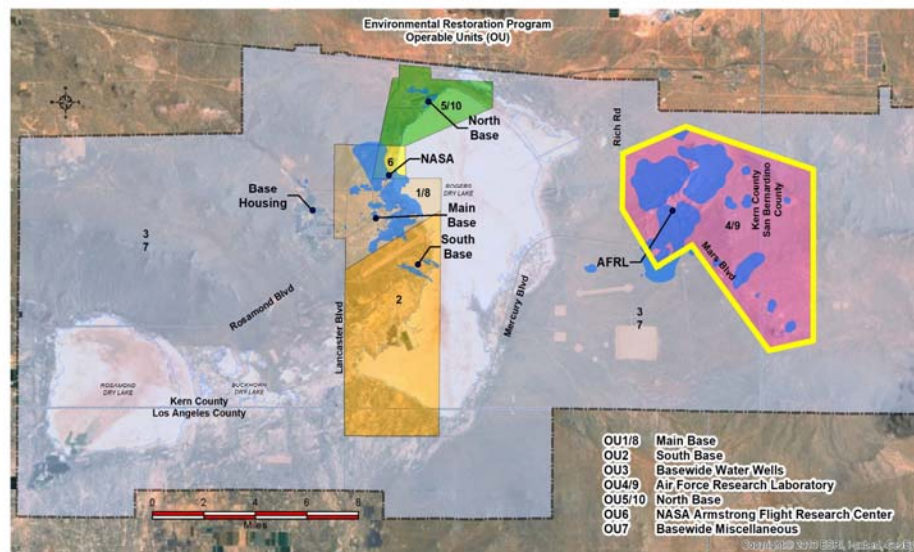


- **Site 5 Carbon Tetrachloride (CT) Plume Delineation**
  - Installed 13 groundwater wells in December 2018 to delineate and monitor CT in groundwater near Birk Flight Test Facility
  - Data will be used to generate a revised Site 5 CT Feasibility Study

15

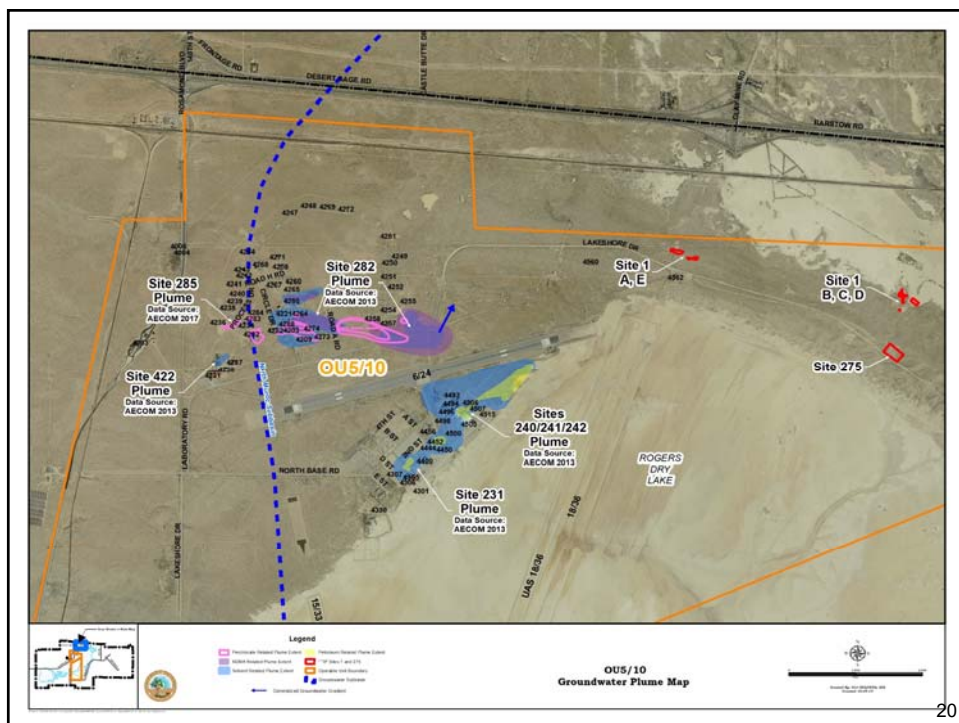


## OU4/9 AFRL (Pre- and Post-ROD)



16



[illegible]



## OU5/10 North Base (Pre-ROD)

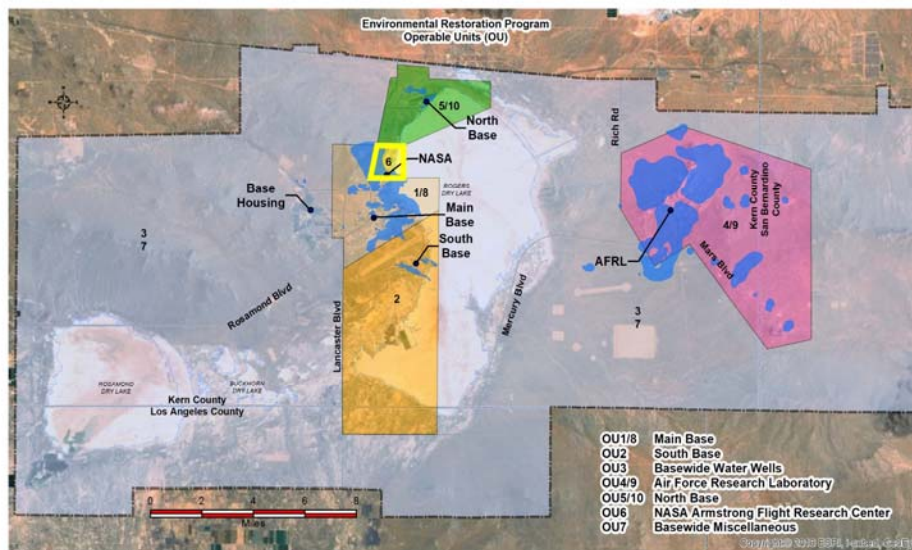


- Site 285 interim treatment system to address perchlorate in groundwater continues to operate
- Path Forward: Plan to submit Revised Draft OU5/10 FS Addendum to the regulators (date to be determined)

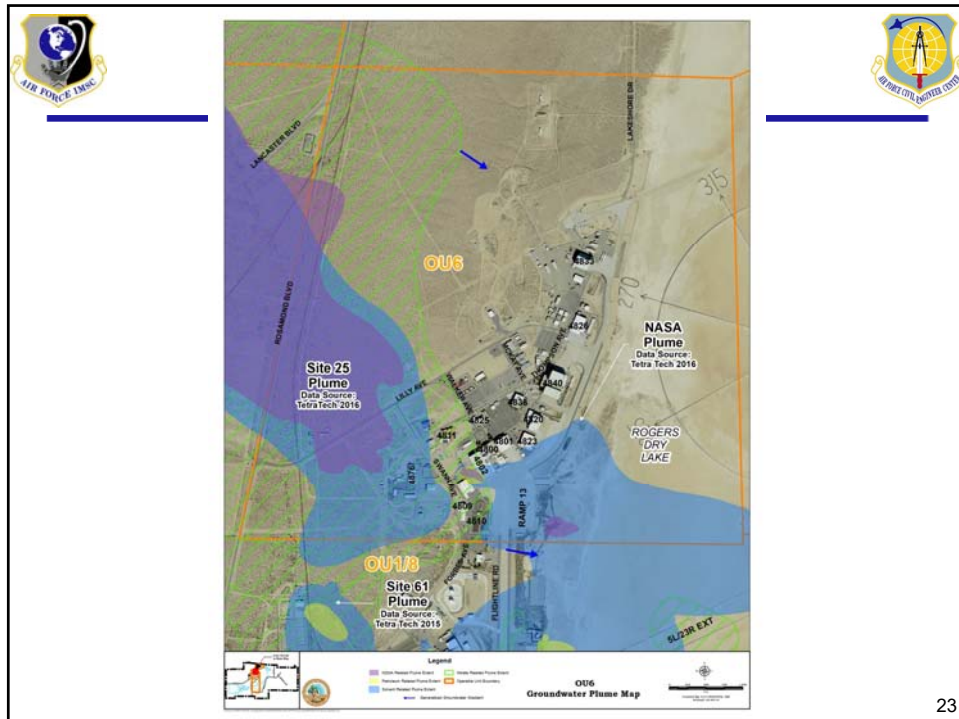
21



## OU6 NASA Armstrong (Post-ROD)



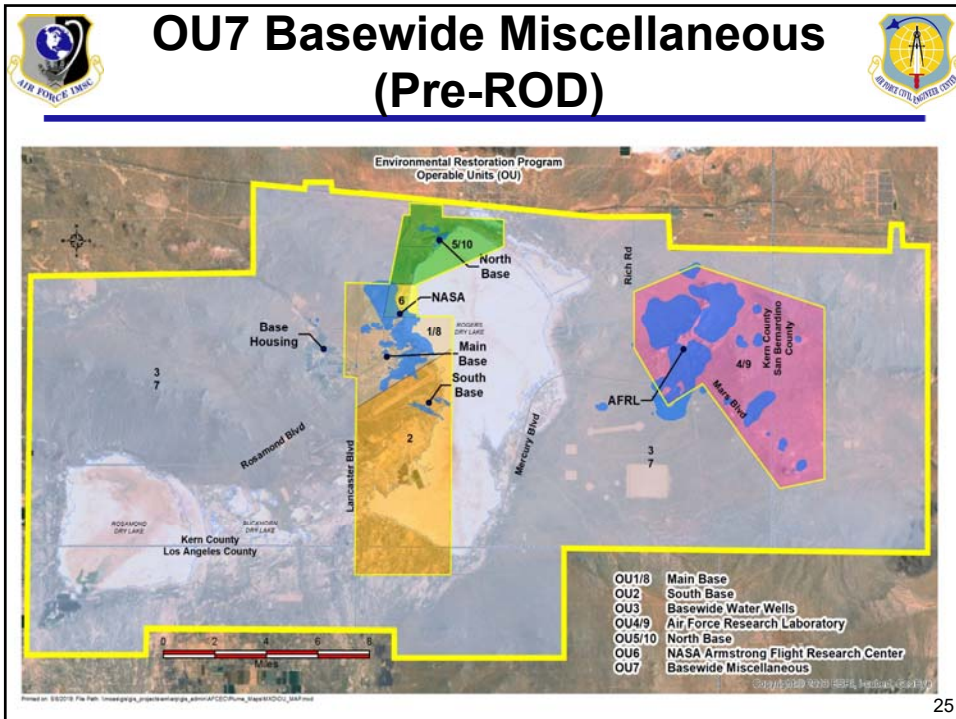
22




## OU6 NASA Armstrong (Post-ROD)

- Delineating the OU6 plume using 14 newly installed groundwater wells
- Drafting a groundwater monitoring work plan and a long-screen well work plan


24



25

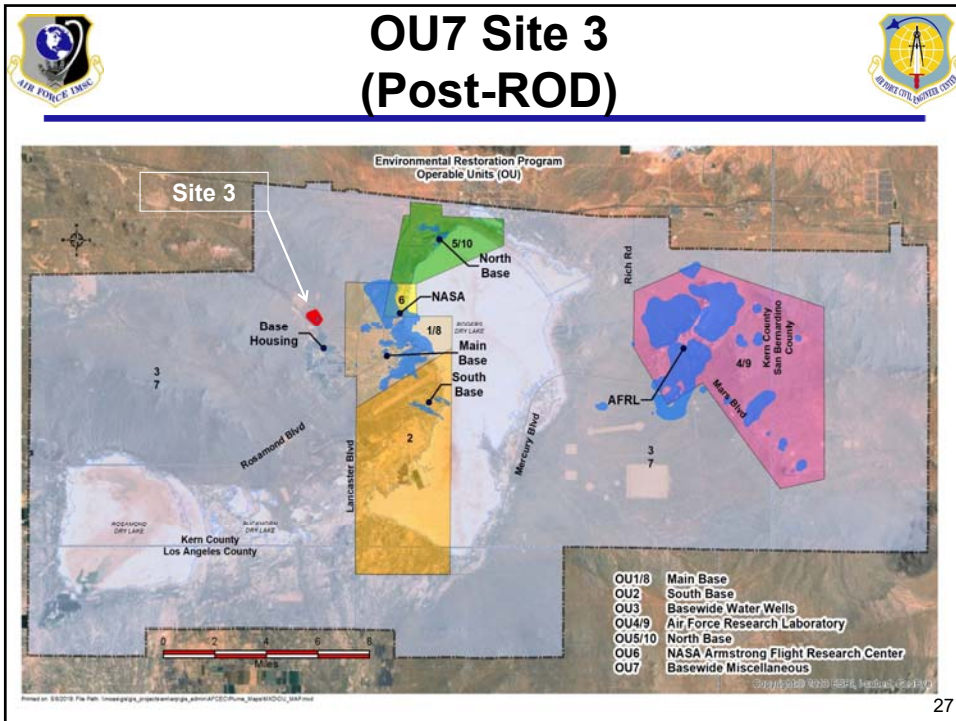


## OU7 Basewide Miscellaneous (Pre-ROD)



- Path Forward:** Plan to submit Draft Proposed Plan for Sites 267, 269, 272, 280, 292, 294, and 339 to the regulators (date to be determined)

26



27



28



## OU7 Site 3 (Post-ROD)



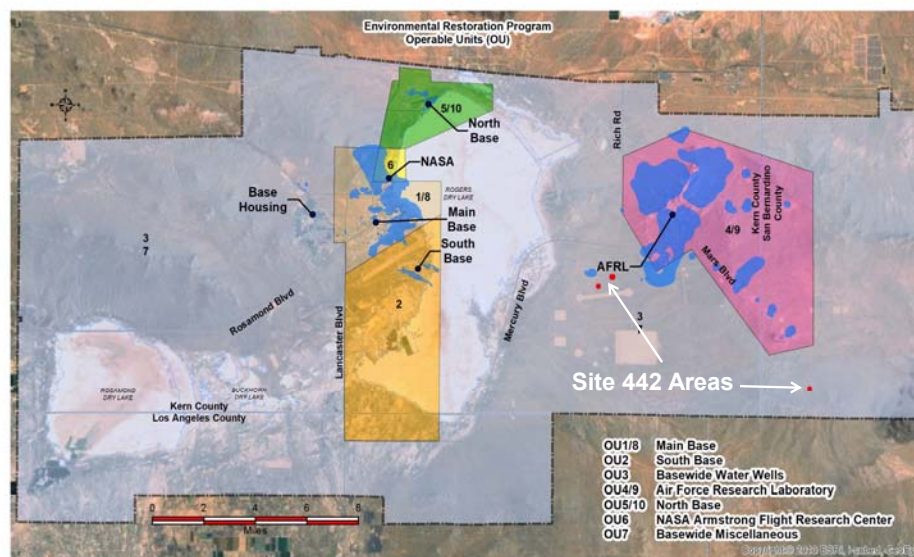
- Installation of the cover over the western portion of the landfill is underway
- Completed the fencing of the retention basin in late December 2018



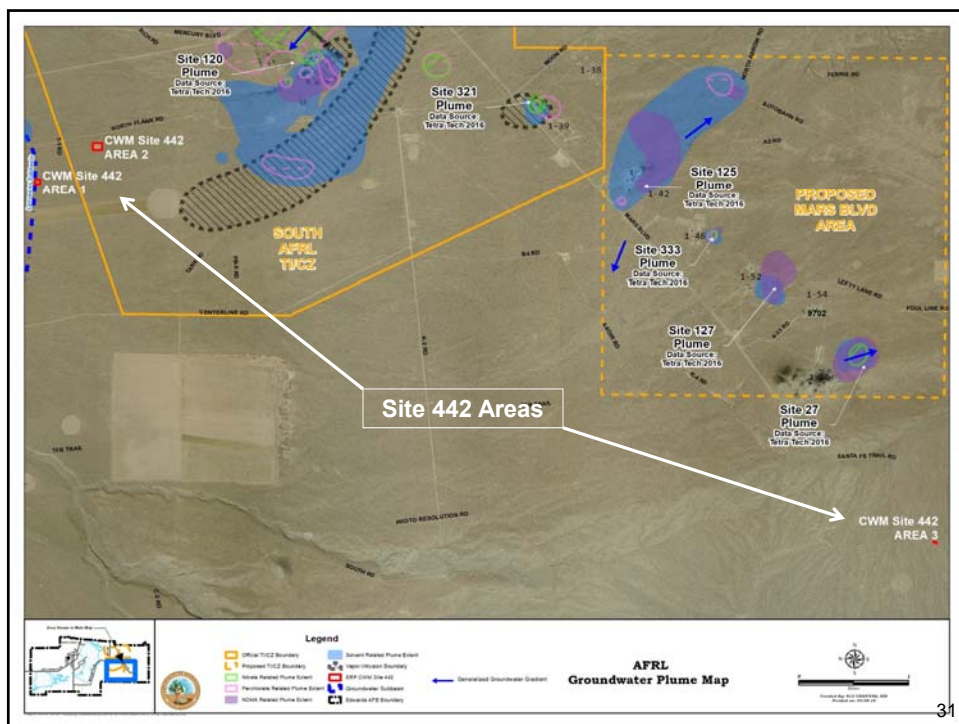
29




## OU7 Chemical Warfare Materiel (Post-ROD)




30



31



## OU7 Chemical Warfare Materiel (Post-ROD)



---

- **Annual Remedial Action Status Report submitted to the regulators**

32



## Schedule for Multisite FYR

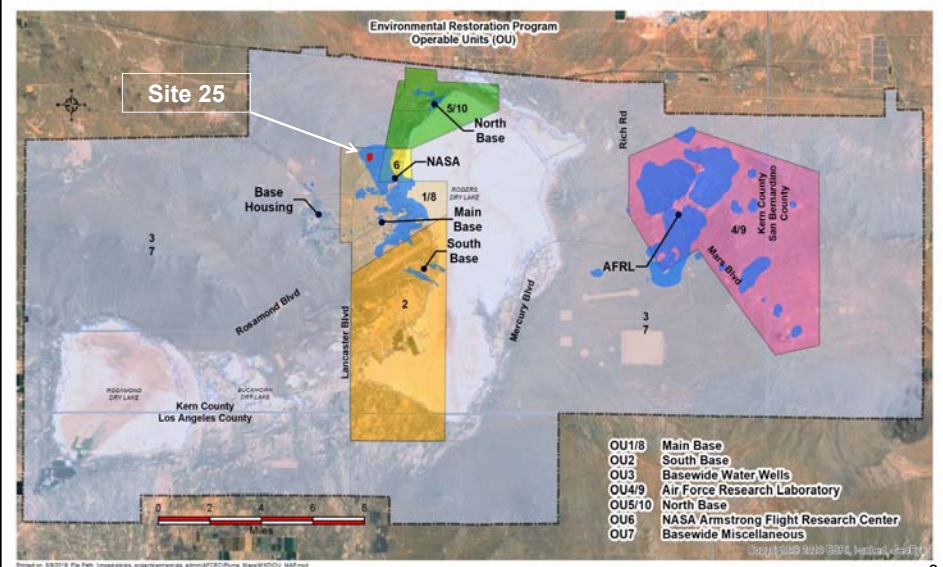


- **Multisite Five-Year Review (FYR)**
  - Reviews cleanup remedies at OU2 Sites 5/14, 76, and 86, OU7 Site 3, and OU7 Chemical Warfare Materiel Site 442 to determine whether they remain protective of human health and the environment
  - Awaiting comments from the regulators on the draft report
  - The final report is expected to be available to the public in mid-summer 2019

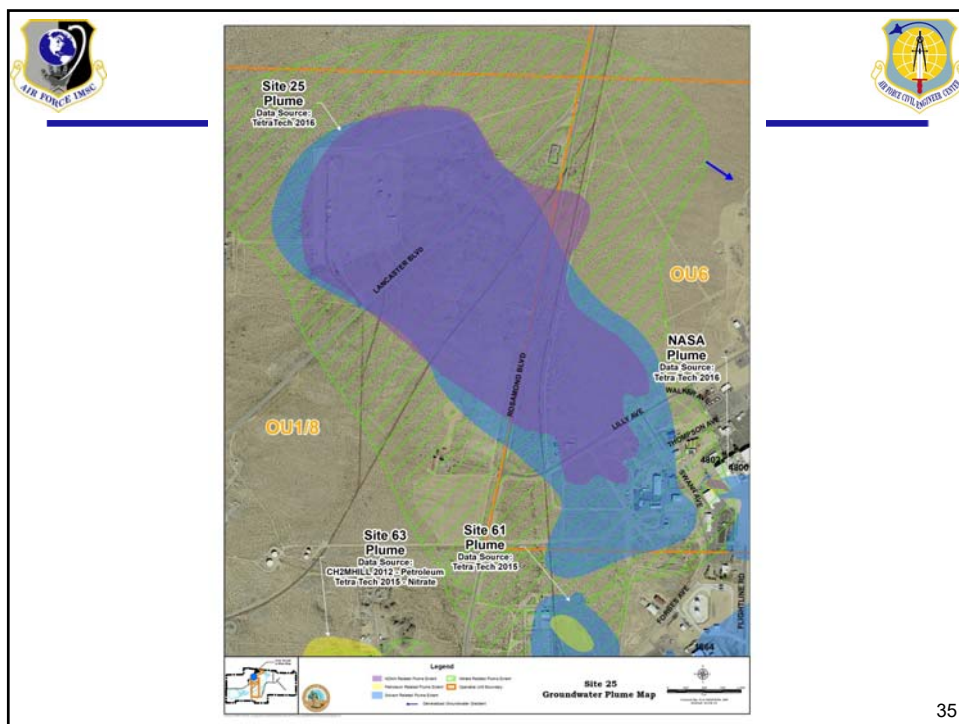
33



## Site 25 (Pre-ROD)



34



35

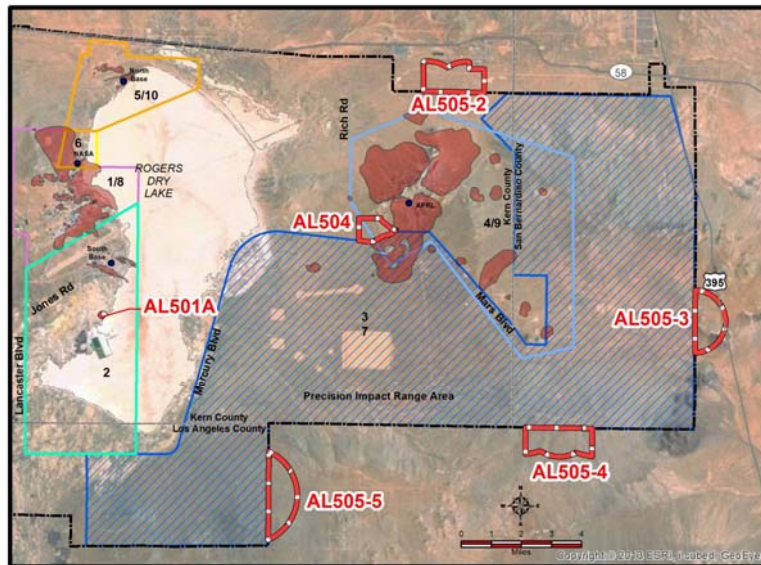
## Site 25 (Pre-ROD)

- **Site 25 TWG working on several data collection efforts to feed a revised Feasibility Study**
  - **Soil Vapor Extraction (SVE) Treatability Study in source area started early December 2018 and still operating**
    - Initial results were encouraging

36



## Military Munitions Response Program (MMRP) (Pre-ROD)



37



## MMRP (Pre-ROD)



- Site Inspection Report for AL505-3 and AL505-5, and Remedial Investigation/ Feasibility Study Report for AL501A, AL504, AL505-2, and AL505-4
  - Draft final reports were submitted to the regulators in March 2019

38

**Questions?**

