



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

21 November 2024

MEMORANDUM FOR DISTRIBUTION

FROM: AFCEC/CZOW
120 North Rosamond Boulevard
Edwards Air Force Base, California 93524

SUBJECT: Edwards AFB Restoration Advisory Board (RAB) Meeting Minutes – 16 May 2024

1. Time: 5:30 p.m.
2. Place: Comfort Inn, 1385 State Highway 58, Mojave, CA 93501
3. Chairman: Victor Yaw, Public Co-Chair and Mojave Public Representative
4. The following RAB members were present:

| <u>Name</u> | <u>Position</u> |
|---------------------|--|
| Mr. Mark Allen | California Environmental Protection Agency (Cal/EPA) Lahontan Regional Water Quality Control Board (LRWQCB) Remedial Project Manager (RPM) |
| Mr. Ethan Finkel | United States Environmental Protection Agency (U.S. EPA) RPM |
| Mr. William Gaddis | Rosamond Public Representative |
| Mr. Mohamed Ibrahim | U.S. EPA RPM |
| Mr. Bruce Lewis | Cal/EPA Department of Toxic Substances Control (DTSC) RPM |
| Col Joel Purcell | Air Force Co-Chair |
| Mr. Dante Rodriguez | U.S. EPA RPM |
| Mr. Paul Schiff | Edwards AFB RPM |
| Mr. David Soltis | Base Housing Public Representative |
| Mr. Toufic Zeidan | Cal/EPA LRWQCB RPM |

5. The following RAB members were absent:

| <u>Name</u> | <u>Position</u> |
|--------------------|--|
| Mr. Darrell Dorris | Alternate Lancaster Public Representative |
| Dr. Joseph Mabry | Air Force Research Laboratory (AFRL) Public Representative |
| Mr. Raj Malhi | Primary Lancaster Public Representative |
| Ms. Alexia Svejda | California City Public Representative |
| Vacant | Boron Public Representative |
| Vacant | Edwards AFB North Base Public Representative |
| Vacant | Edwards AFB South Base Public Representative |
| Vacant | Main Base Test Wing Public Representative |
| Vacant | National Aeronautics and Space Administration (NASA) Armstrong Flight Research Center (AFRC) Public Representative |
| Vacant | North Edwards Public Representative |

6. The following advisors were present:

| <u>Name</u> | <u>Organization</u> |
|-------------------------|---|
| Mr. Joe Dunwoody | Air Force Civil Engineer Center (AFCEC)/Environmental Management Directorate, Operations Division, West Branch (CZOW) |
| Mr. Gary Hatch | 412th Test Wing Public Affairs |
| Ms. Angelica Jackson | NASA AFRC Environmental |
| Mr. David Liu | NASA AFRC Environmental |
| Mr. Gregory Neate | AFCEC/CZOW |
| Mr. Tom Rademacher | 412th Civil Engineer Group Environmental Management |
| Ms. Leilani Richardson | AFCEC/CZOW |
| Mr. Dale Riedel | 412th Test Wing Judge Advocate |
| Ms. Julia Tseng | AFCEC/CZOW |
| Ms. Jeanette Van Norden | AFCEC/CZOW |

7. Others present were as follows:

| <u>Name</u> | <u>Organization</u> |
|-----------------------|-----------------------------|
| Mr. Matthew Froelich | Cherokee Federal |
| Ms. Lindsey Iniguez | Media Fusion |
| Ms. Belinda Martinez | Cherokee Federal (Recorder) |
| Ms. Alexis McCadney | Public |
| Mr. Joshua McClanahan | Media Fusion |
| Ms. Thelma Valle | Cherokee Federal |

8. Mr. Yaw called the meeting to order and read the *Statement of Purpose and Conduct*.

9. Mr. Schiff introduced two new RAB members: Mr. Lewis, Cal/EPA DTSC RPM, and Mr. Allen, Cal/EPA LRWQCB RPM.

10. Mr. Yaw presented the 16 November 2023 RAB Meeting Minutes for acceptance. The RAB members accepted the minutes as presented.

11. New Business – Environmental Restoration Program (ERP) Update (see attachment).

a. Mr. Schiff provided an overview of the ERP activities that occurred at Edwards AFB since the November 2023 RAB Meeting.

(1) Mr. Schiff noted the base ERP follows the phases of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), also known as Superfund. The chronological phases of a cleanup site are as follows: identification, involves conducting a Preliminary Assessment and Site Inspection (PA/SI); investigation, includes Remedial Investigation (RI) and Feasibility Study (FS); selection, a Proposed Plan (PP) and Record of Decision (ROD) are presented; cleanup, involves completing a Remedial Design/Remedial Action (RD/RA) or Operations and Maintenance (O&M); and closeout of a site.

(2) Mr. Schiff discussed the Perfluoroalkyl and Polyfluoroalkyl Substances (PFAS) program and the RI efforts underway for Aqueous Film-Forming Foam (AFFF) areas. Mr. Schiff said that the Phase I RI consists of three field events. In November 2021, Field Event #1 was completed, and groundwater monitoring sampling was performed at 162 existing monitoring wells. In November 2023, Field Event #2 was completed, including the installation of 54 new monitoring wells, completion of 71 soil borings and sampling of 340 monitoring wells. Starting in January 2024, Field Event #3 is still underway and includes the installation of 39 new monitoring wells and sampling of 97 soil borings and 435 groundwater monitoring wells.

(a) Mr. Schiff announced that on 10 April 2024, the U.S. EPA issued final maximum contaminant levels (MCLs) for several PFAS chemicals in drinking water. Although MCLs are generally for drinking water providers, Mr. Schiff explained how the MCL rule impacts the cleanup program. He said the Department of Defense (DoD) will implement these standards in all DoD-owned drinking water systems. MCLs also serve as cleanup standards and can be used as a risk trigger level to take short-term actions under CERCLA. Edwards AFB will continue conducting PFAS RIs and characterize groundwater contamination plumes after the MCLs are promulgated or enforced. Mr. Schiff noted that Edwards currently does not have any known on- or off-base impacts from PFAS.

(b) Mr. Schiff discussed the Smoldering Combustion Demonstration Project which was funded by the Air Force to test how effectively PFAS-impacted soil can be treated. On 15 April 2024, approximately 100 cubic meters of soil from three on-base PFAS sites were excavated. The smoldering combustion technology uses carbon-fueled flameless, exothermic reaction to destroy PFAS. Mr. Schiff noted that the project is expected to be finished by mid-May 2024, and the results will advance Air Force and industry knowledge of PFAS cleanup.

(c) Mr. Schiff stated a PA effort is underway across the Air Force to understand potential releases of PFAS from past and present sources other than AFFF. A draft of the Due Diligence for Supplemental PFAS Sources Report is anticipated to be submitted to regulatory agencies for review in the fall of 2024.

(3) Mr. Schiff discussed that Technical Working Group (TWG) meetings for Operable Unit (OU) 1/8 Main Base continue being held to resolve issues for incorporation into the FS Addendum. The Draft Phase II Comprehensive Vapor Intrusion (VI) Report was submitted for regulatory review on 27 November 2023. The Air Force is preparing responses to the regulatory agencies' comments on the Draft OU1/8 Groundwater Modeling Report. Additionally, it is expected that the OU1/8 Soil and Groundwater Investigation Report will be submitted to regulatory agencies for review in May 2024.

(a) Mr. Schiff said the Air Force received semiannual indoor air results from the 11 November 2023 sampling event at Building 1807. The results confirmed that Trichloroethene (TCE) levels are below all action levels with the heating, ventilation and air conditioning operating continuously. The Final Building 1807 Indoor Air Monitoring Report for November 2022 through May 2023 was distributed to the regulators on 20 March 2024. Mr. Schiff stated that the most recent semiannual sampling event was completed on 8 May 2024.

(4) Mr. Schiff reviewed activities from OU2 South Base.

(a) Sites 81 and 102 are former skeet sites that have been covered with crushed concrete as an interim removal action. A Draft Sites 81/102 Confirmation Sampling Work Plan is expected to be submitted to regulatory agencies in May 2024. The results will be used for updated human health and ecological risk assessments to evaluate the effectiveness of the interim removal action.

(b) The Air Force is currently in the process of drafting a supplemental FS to address carbon tetrachloride at Site 5. A carbon tetrachloride plume was discovered after remedies selected in the 2009 OU2 South Base ROD were implemented.

(c) The groundwater extraction and treatment system (GETS) and bio-sparging (PHOSter™) system continue to operate at Sites 5/14; and sampling for PFAS will continue at the Site 14 GETS. Annual Remedial Action Status Reports (ARASRs) documenting post-ROD activities at Sites 5/14 are submitted to regulatory agencies for review and eventually uploaded to the Administrative Record (AR). Mr. Schiff noted the installation of downgradient monitoring well 14-MW67. The installation of a new air compressor for the PHOSter™ system and the excavation and recompacting of the area around injection well 14-IW07 is underway.

(d) Mr. Schiff said the In Situ Chemical Oxidation (ISCO) treatment process at Site 76 continues operating. A forthcoming ISCO injection will include six new injection wells and three new monitoring wells. Site 76 ARASRs are submitted to the regulators for review and eventually uploaded on the AR.

(e) The bio-sparging (PHOSter™) system at Site 86 continues operating. Mr. Schiff stated maintenance to install a new air compressor for the PHOSter™ system was completed. Site 86 ARASRs are submitted to the regulators for review and eventually uploaded on the AR.

(f) For Site 29, Mr. Schiff said the Revised Remedial Action Work Plan is expected to be submitted to regulatory agencies in the fall of 2024. Then in the winter of 2024, the landfill cover construction is anticipated to begin.

(5) Mr. Schiff said a 2024 groundwater monitoring event occurred in all four groundwater areas of OU4/9 Air Force Research Laboratory (AFRL). The post-ROD areas at South AFRL and AFRL Soil and Debris Sites have Land Use Controls (LUCs) in place as part of their cleanup remedies. The South AFRL also has a soil vapor extraction system that continues to operate near Building 8595 to mitigate potential VI. The Air Force is collaborating with the regulators to address potential data gaps in the South AFRL monitoring well network at deeper depths.

(a) The Air Force is working on the AFRL Arroyos ROD. Mr. Schiff said the Air Force, regulatory staff and legal counsels continue to meet to resolve the last few remaining items of disagreement. Mr. Schiff said when a Draft Final ROD is agreed-to by all parties, the Air Force will prepare and publish a new AFRL Arroyos PP, announce availability of the PP for public comment and conduct a PP public meeting. The public comments will be incorporated and then the Air Force will issue a Final AFRL Arroyos ROD.

(b) Mr. Schiff said 16 groundwater monitoring wells were installed at OU4/9 Northeast AFRL from January through April 2024. The Air Force also conducted an indoor air sampling event at occupied Northeast AFRL buildings from February through March 2024.

(c) At OU4/9 Mars Blvd, 10 groundwater monitoring wells were installed from January through April 2024 and an indoor air sampling event at occupied buildings occurred from February through March 2024.

(6) Mr. Schiff said a Revised Draft OU5/10 FS is expected to be submitted to the regulatory agencies by the summer of 2024. The Site 285 interim treatment system was installed in 2002 and continues to operate.

(7) Mr. Schiff discussed that OU6 NASA Armstrong has an annual groundwater monitoring event planned for July through August 2024, sampling 98 monitoring wells. The data collected will evaluate contaminant concentration trends throughout the plume and ISCO performance in treatment areas. Mr. Schiff also noted that NASA began its own agency-wide PFAS PA/SI effort in 2019; the PA was completed in 2021 and the SI was completed in 2023. NASA is proceeding with a Phase I RI, which anticipates the first field event in the summer or fall of 2024 to sample 74 monitoring wells. The results will be used to update the conceptual site model. The Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) was submitted for regulatory review and a UFP-QAPP addenda will be prepared for future field events.

(8) Mr. Schiff reviewed activities from OU7 Basewide Miscellaneous. It is anticipated that a soil gas sampling report for OU7 sites will be submitted to regulatory agencies for review by the summer of 2024.

(9) For OU7 Site 3, the landfill cap was completed. From January through March 2024, hydroseeding was applied and fence installation was completed. Repairs to a portion of the cap are currently underway due to the damage caused by the significant rainfall in February 2024. In March 2024, the semiannual groundwater and landfill gas sampling and the semiannual LUC inspection were completed.

(10) Mr. Schiff explained as of May 2023, vegetation at OU7 Chemical Warfare Materiel Site 442 has been identified as “stressed or dead” during the semiannual inspection for multiple years. Re-seeding and revegetation efforts were performed in December 2022 at Site 442 Areas 1, 2, and 3. In January 2024, the semiannual inspection included vegetation surveys indicating 12 percent coverage at Area 1, 25 percent coverage at Area 2, and 20 percent coverage at Area 3. Additional revegetation activities, including a new vegetation plan, and a targeted revegetation effort are in process to achieve vegetation coverage per the O&M Plan Addendum.

(11) For Site 25, Mr. Schiff said the Air Force anticipates submitting a Revised Draft Site 25 FS in the winter of 2024. Simultaneously, the Air Force is developing an updated three-dimensional groundwater model for remedy development to address regulatory comments. A Draft Site 25 Phytoremediation Treatability Study Report is anticipated to be submitted to regulatory agencies for review in the summer of 2024.

(12) Mr. Schiff concluded by discussing the Military Munitions Response Program (MMRP). In January 2024, the Air Force submitted responses to regulatory comments on the Draft ROD and is currently resolving regulatory comments for incorporation into the Draft Final ROD, which is anticipated for submittal to regulatory agencies in the summer of 2024. Mr. Schiff also mentioned that solar developer preconstruction activities are anticipated to begin in May 2024 at MMRP Site AL505-2.

(13) Mr. Schiff asked the RAB members whether there were any questions or comments. Mr. Yaw asked about the total number of ERP wells at Edwards AFB. Mr. Schiff responded that there are approximately 3,000 wells.

12. Opportunity for Public Comment – Mr. Hatch reported no public comments or questions had been submitted.

13. Old Business – Status of RAB Vacancies.

a. Mr. Hatch reported there are six public representative vacancies. Two vacancies are for the off-base communities of Boron and North Edwards, while four are for the on-base communities of Main Base, NASA Armstrong, South Base and North Base. Mr. Hatch said vacancy notices are advertised periodically in local newspapers and quarterly via basewide email. Additionally, the January 2024 Report to Stakeholders (RTS) newsletter is anticipated to inform the public about the current vacancies and is pending to be finalized for distribution. Mr. Hatch informed the RAB members that an advertisement was posted at NASA Armstrong's internal website resulting in an application submission for the NASA vacancy. The application will be forwarded to NASA to proceed with the nomination of a potential new RAB member.

14. Reports from Public Representatives.

a. Mr. Gaddis, Rosamond, said he had no comments or concerns brought to his attention by his community. He mentioned that he participated in the November 2023 RAB Tour where he was able to visit Site 25, Site 3 and other areas in North Base. He said he always appreciates the opportunity to tour the environmental cleanup sites.

b. Mr. Soltis, Base Housing, had no updates.

c. Mr. Yaw, Public Co-Chair and Mojave Public Representative, reported he attends and participates in various meetings in his community, talks to people in his local chamber and distributes RAB meeting flyers to keep his community updated on environmental activities.

15. Reports from RPMs.

a. Mr. Zeidan, Cal/EPA LRWQCB, had no comments.

b. Mr. Allen, Cal/EPA LRWQCB, had no comments.

c. Mr. Lewis, Cal/EPA DTSC, had no comments.

d. Mr. Finkel, U.S. EPA, had no comments.

e. Mr. Rodriguez, U.S. EPA, said he was impressed by the Site 3 landfill team and it was a honor to see the progress and completion of the landfill cap.

f. Mr. Ibrahim, U.S. EPA, had a few comments. He provided a reminder that the U.S. EPA finalized MCLs in drinking water. He mentioned that Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonic (PFOS) Acid were listed as hazardous substances, which would be regulated under CERCLA. Additionally, the U.S. EPA has updated guidance for the disposal of PFAS under three general methods, which include landfill, injection and thermal destruction. Test methods for PFAS were also finalized, which includes U.S. EPA Methods 1633 and 1621.

g. Col Purcell, Air Force Co-Chair, introduced himself as the Edwards AFB 412th Civil Engineer Group Commander. He noted that he has been at Edwards AFB for 10 months and is replacing Col Matthew Caspers as the Air Force Co-Chair. Col Purcell said he looks forward to working with the regulatory agencies, public representatives and local community. He praised and thanked Mr. Yaw and Mr. Schiff for their dedication and the knowledge they bring to program.

h. Mr. Schiff, Edwards AFB RPM, reminded the RAB members that tours can be coordinated any time one is requested.

16. The next RAB meeting is proposed for 21 November 2024 in Lancaster, California.

17. The meeting was adjourned at 6:50 p.m.

//Original signed by//

JOEL D. PURCELL, Colonel, USAF
Air Force Co-Chair
Restoration Advisory Board

//Original signed by//

VICTOR YAW
Public Co-Chair
Restoration Advisory Board

Attachment:

Environmental Restoration Program Update for Edwards AFB, California, 16 May 2024

DISTRIBUTION

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412 TW/CD/JA/PA/SE

412 OMRS/SGPB

AFRL

RAB Members

Cal/EPA DTSC

Cal/EPA LRWQCB

U.S. EPA

Air Force Installation & Mission Support Center



Environmental Restoration Program Update for Edwards AFB, California

Paul Schiff
AFCEC/CZOW
16 May 2024

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Acronyms



- 3-D = three-dimensional
- 3Rs = Recognize, Retreat, Report
- AFFF = aqueous film-forming foam
- AFRL = Air Force Research Laboratory, Detachment 7
- ARASR = Annual Remedial Action Status Report
- CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
- DAF = Department of the Air Force
- DoD = Department of Defense
- EPA = Environmental Protection Agency
- FS = Feasibility Study
- GETS = groundwater extraction and treatment system
- ISCO = In situ chemical oxidation
- LUC = Land Use Control
- MCL = maximum contaminant level
- MMRP = Military Munitions Response Program
- OU = Operable Unit
- PFAS = perfluoroalkyl and polyfluoroalkyl substances
- PA = Preliminary Assessment
- PP = Proposed Plan
- RI = Remedial Investigation
- ROD = Record of Decision
- SI = Site Inspection
- SVE = soil vapor extraction
- TCE = trichloroethene
- UFP-QAPP = Uniform Federal Policy-Quality Assurance Project Plan
- U.S. EPA = United States Environmental Protection Agency
- VI = vapor intrusion

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Environmental Restoration Program Staff



BASE REMEDIAL PROJECT
MANAGER

PAUL SCHIFF

ENVIRONMENTAL RESTORATION PROGRAM MANAGERS



CLAUDIA BASURA



JOE DUNWOODY



GREG NEATE



LEILANI RICHARDSON



JULIA TSENG



JEANETTE VAN NORDEN

IN-HOUSE CONTRACTOR SUPPORT



BELINDA MARTINEZ



PETER ROBLES JR.



THELMA VALLE



MATTHEW FROELICH

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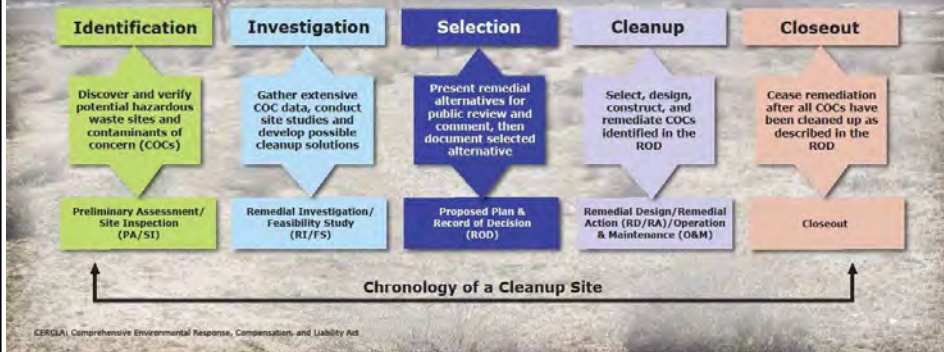
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Superfund Phases



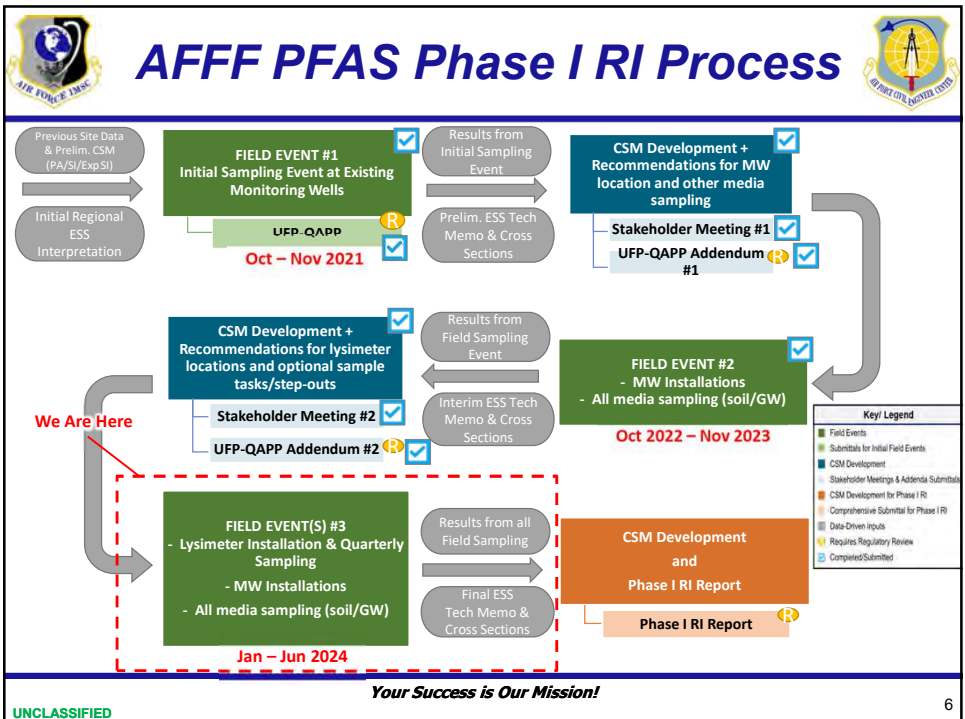
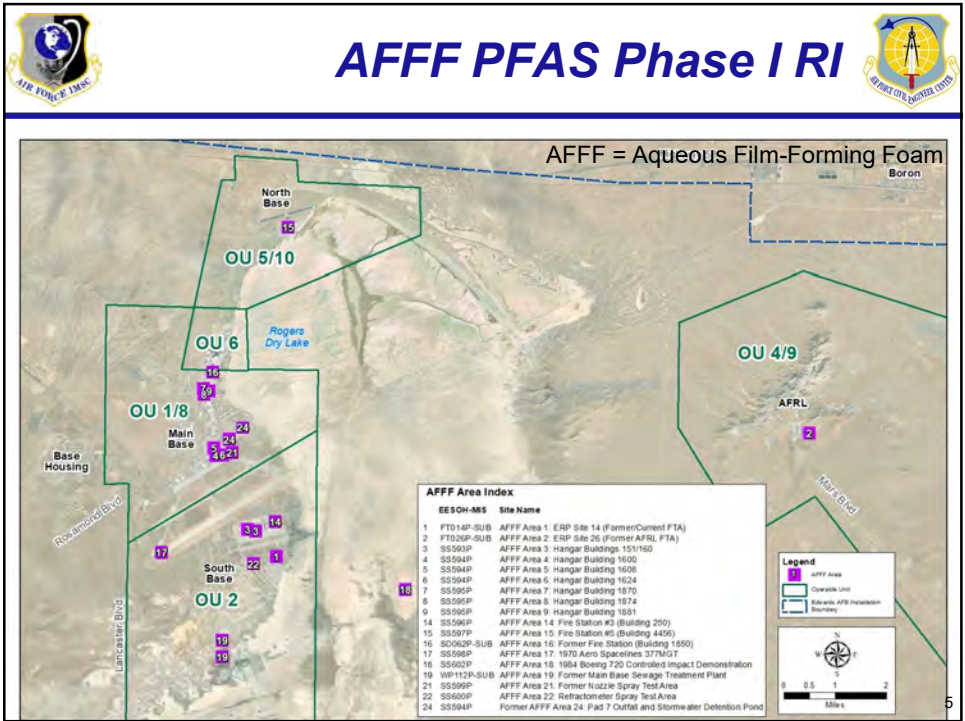
Phases of the Superfund (CERCLA) Process



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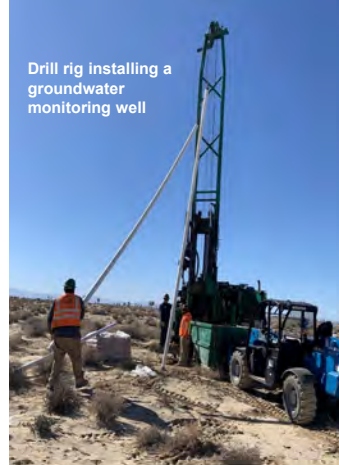
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AFFF PFAS Phase I RI



- Remedial Investigation (RI) effort underway
 - November 2021: Field Event #1 completed; groundwater sampling performed at 162 existing monitoring wells
 - November 2023: Field Event #2 completed; 54 new monitoring wells installed, 71 soil borings completed, and 340 monitoring wells sampled



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AFFF PFAS Phase I RI



- January 2024: Field Event #3 underway; installing 39 new monitoring wells (8 wells were moved from Field Event #2), sampling 97 soil borings (19 soil borings moved from Field Event #2), and sampling 396 existing and 39 new monitoring wells



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U.S. EPA MCLs



- The U.S. Environmental Protection Agency (U.S. EPA) issued final maximum contaminant levels (MCLs) on 10 April 2024 for several perfluoroalkyl and polyfluoroalkyl substances (PFAS) in drinking water. The Air Force is awaiting a holding statement from the Assistant Secretary of the Air Force for Installations, Environment, and Energy (and or Office of the Secretary of Defense)

In this final rule, U.S. EPA is setting limits for five individual PFAS: PFAO, PFOA, PFOS, PFNA, PFHxS, and HFPO-DA (known as GenX Chemicals). And the U.S. EPA is also setting a Hazard Index level for two or more of four PFAS as a mixture: PFNA, PFHxS, HFPO-DA, and PFBS.

| Chemical | Maximum Contaminant Level Goal (MCLG) | Maximum Contaminant Level (MCL) |
|--|---------------------------------------|---------------------------------|
| PFOA | 0 | 4.0 ppt |
| PFOS | 0 | 4.0 ppt |
| PFNA | 10 ppt | 10 ppt |
| PFHxS | 10 ppt | 10 ppt |
| HFPO-DA (GenX chemicals) | 10 ppt | 10 ppt |
| Mixture of two or more: PFNA, PFHxS, HFPO-DA, and PFBS | Hazard Index of 1 | Hazard Index of 1 |

Maximum Contaminant Level Goal (MCLG): The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.

<https://www.epa.gov/newsreleases/biden-harris-administration-finalizes-first-ever-national-drinking-water-standard>

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The Maximum Contaminant Level Rule



- The rule provides five years for regulated drinking water purveyors to comply with the MCL levels
- Department of Defense (DoD) will implement these standards at all DoD-owned drinking water systems
- MCLs are also used as cleanup standards, and can be used as a risk trigger level to take short-term actions (e.g., private drinking water well treatment), under the federal cleanup law, Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)
 - Department of the Air Force (DAF):
 - Is reviewing existing PFAS sampling results
 - Will be expanding existing cleanup investigations, and assess "background" levels of PFAS
 - Providing drinking water treatment for impacted off-base wells on prioritized basis, with focus on installing enduring solutions such as municipal connections or whole-house filters
 - Prioritizing locations where known levels of PFAS in drinking water from DAF activities are the highest

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Smoldering Combustion Demonstration Project Update



- Pilot test/demonstration of smoldering combustion technology to treat PFAS
- Uses carbon-fueled flameless, exothermic reaction to destroy PFAS in excavated soil
- System mobilized to Edwards in April 2024 and started treating approximately 100 cubic meters of soil from three on-base PFAS sites on 15 April 2024
- On-site test expected to be finished mid-May 2024
- Results will advance Air Force and industry PFAS cleanup knowledge base:
 - Technical report will be posted to Administrative Record
 - Article published in a peer-reviewed technical journal
 - Presented at industry technical forums in 2024-2025 timeframe



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Due Diligence for Supplemental PFAS Sources Report



- Preliminary Assessment (PA) effort underway across the Air Force
- Potential releases of PFAS deriving from past and present sources other than aqueous film-forming foam (AFFF)

| | |
|--|---|
| Wastewater Treatment Plants/Biosolids | Painting Stations |
| Landfills and Snowpack | Herbicides/Pesticides/Insecticide Use/Storage |
| Oil/Water Separators | Fogger Trucks |
| Sanitary/Storm Water Runoff | Textile Plants/Storage/Parachutes/Safety Wear |
| Carwashes and Dry Cleaners | Photolithography, Semiconductor Industry |
| Non-AFFF Foam Fire Suppression | Automotive/Hobby Shops/Motor Pool |
| Warehouses | Medical Clinics/Facilities |
| Landscaping Sheds | Marinas/Docks |
| Cleaning Supply Storage | Underground Wiring |
| Metal Finishing / Chrome and Electro Plating | Radar Domes |

- Report will be titled Due Diligence for Supplemental PFAS Sources
- Anticipate draft report to be submitted to regulatory agencies for review in the fall of 2024

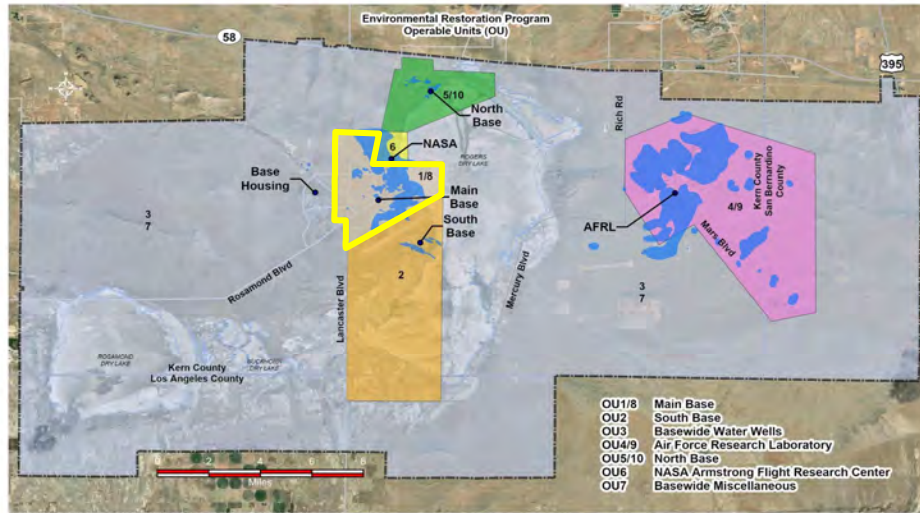
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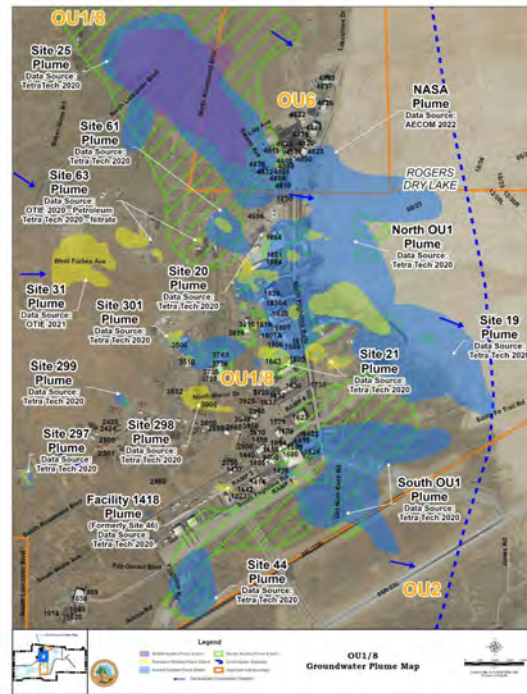
OU1/8 Main Base (Pre-ROD)



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OU1/8 Main Base (Pre-ROD)



- **Continue Operable Unit (OU) 1/8 Technical Working Group meetings to resolve issues for incorporation into the Feasibility Study (FS) Addendum**
 - **Vapor intrusion (VI)**
 - Submitted Draft Phase II Comprehensive VI Report 27 November 2023 for regulatory review
 - **Groundwater modeling/plume stability**
 - Regulatory agencies provided comments on Draft OU1/8 Groundwater Modeling Report; Air Force preparing responses
- **Groundwater and soil data gap investigation**
 - **Anticipate submitting the OU1/8 Soil and Groundwater Investigation Report in May 2024 for regulatory review**

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OU1/8 Main Base (Pre-ROD)



- **Building 1807**
 - **Semiannual indoor air sampling results from 11 November 2023 event confirmed that trichloroethene (TCE) levels are below all action levels with new heating, ventilation and air conditioning operating continuously (i.e., 24/7)**
 - **Final Building 1807 Indoor Air Monitoring Report for November 2022 through May 2023 distributed to regulators 20 March 2024**
 - **Indoor air sampling event completed 8 May 2024**

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OU1/8 Main Base (Pre-ROD)



Summa canister used to sample outdoor air at Building 1807

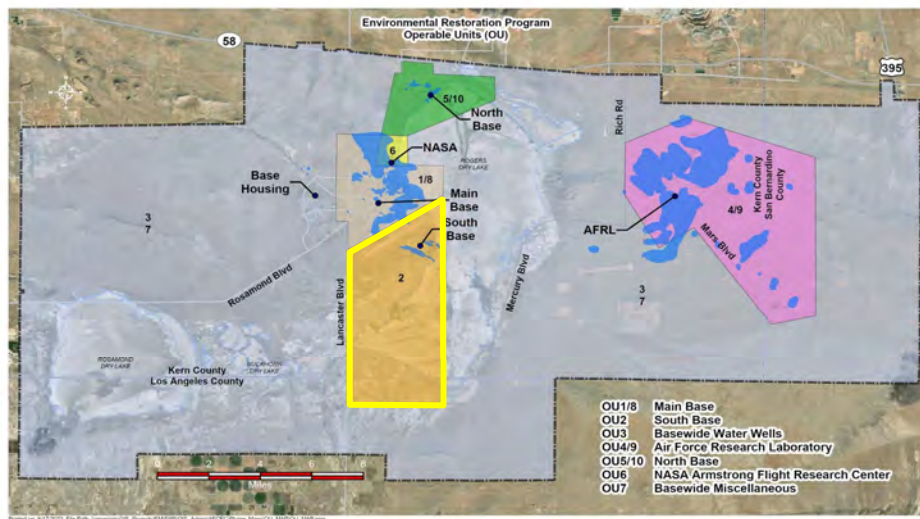
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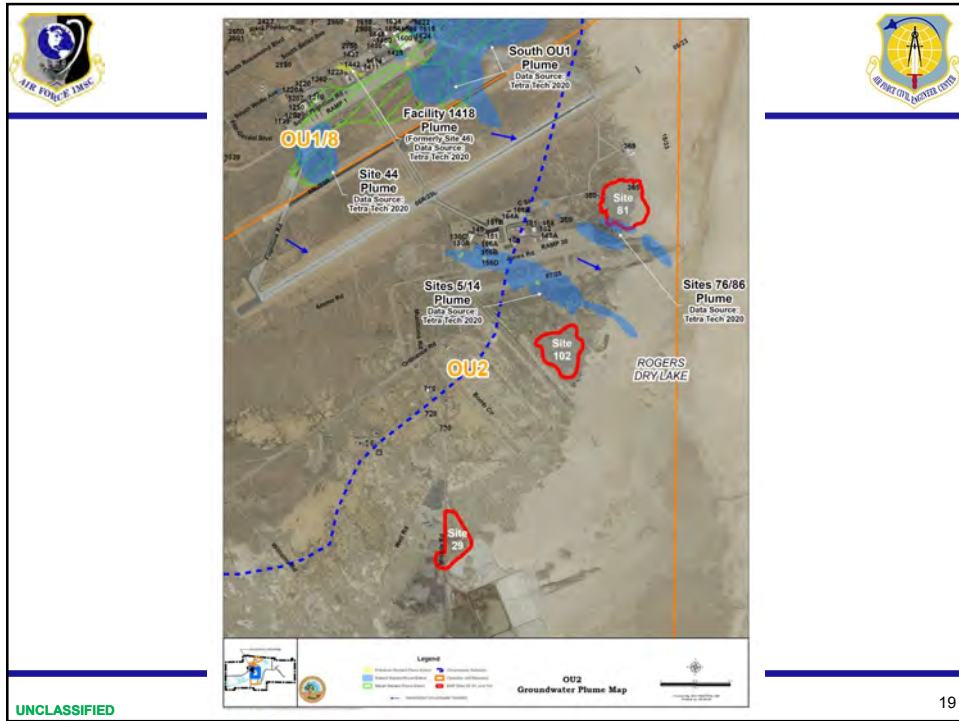
OU2 South Base (Pre- and Post-ROD)



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OU2 South Base (Pre-ROD)

- **Sites 81 and 102**
 - Anticipate submitting Draft Confirmation Sampling Work Plan to regulatory agencies in May 2024
 - Results will be used for updated human health and ecological risk assessments to evaluate the effectiveness of the interim removal action
- **Site 5 Carbon Tetrachloride Plume**
 - Drafting a supplemental FS to address carbon tetrachloride (likely used as a solvent)
 - Discovered after initiating remedies selected in the 2009 OU2 South Base Record of Decision (ROD)

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OU2 South Base (Post-ROD)



- **Sites 5/14**
 - Groundwater extraction and treatment system (GETS) continues to operate
 - Bio-sparging (PHOSter™) system continues to operate
 - Continue sampling for PFAS at the Site 14 GETS
 - Annual Remedial Action Status Reports (ARASRs) documenting post-ROD activities submitted to regulatory agencies for review and posted to Administrative Record
 - Installed downgradient monitoring well (14-MW67)
 - Install new air compressor for PHOSter™ system
 - Excavate and recompact area around injection well 14-IW07



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OU2 South Base (Post-ROD)



A P-80, B-25, and T-28—Test Pilot School curriculum aircraft—fly over the flight test operations building (early 1950s) at what is now called South Base

- **Site 76**
 - In situ chemical oxidation (ISCO) treatment process continues to operate
 - ARASRs submitted to regulators and posted on Administrative Record
 - ISCO injection to include 6 new injection wells and 3 new monitoring wells

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OU2 South Base (Post-ROD)



- **Site 86**
 - **Bio-sparging (PHOSter™) system continues to operate**
 - **ARASRs submitted to regulators and posted on Administrative Record**
 - Install new air compressor for PHOSter™ system



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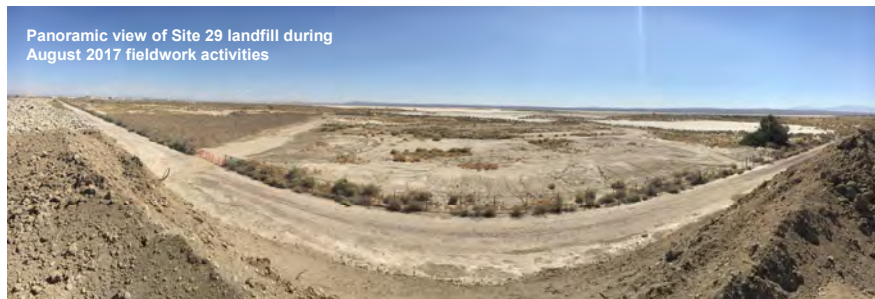
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OU2 South Base (Post-ROD)



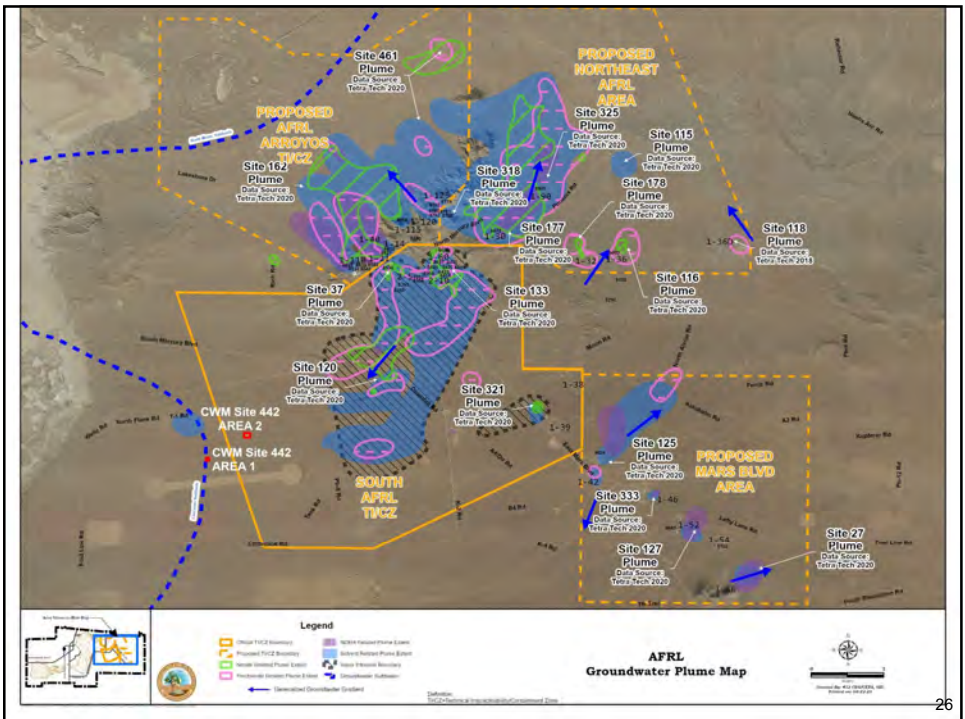
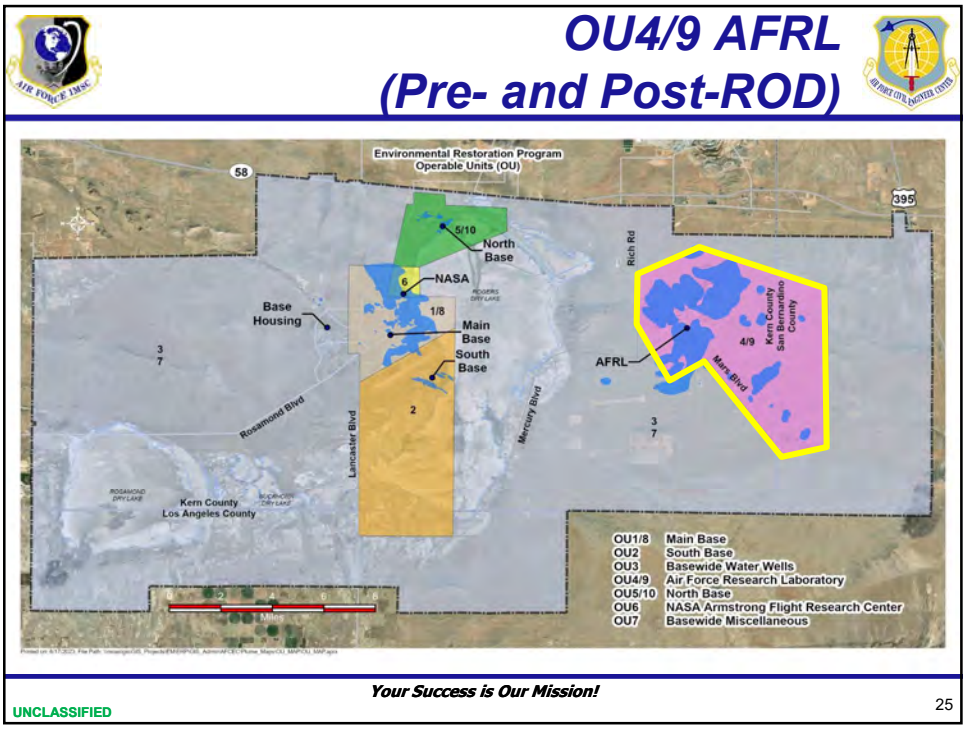
- **Site 29**
 - **Revised Remedial Action Work Plan expected to be submitted to regulatory agencies in the fall of 2024**
 - **Landfill cover construction anticipated to start in the winter of 2024**



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



- Annual groundwater monitoring in all areas
- Land Use Controls (LUCs) in place for post-ROD areas South Air Force Research Laboratory (AFRL) and AFRL Soil and Debris Sites
- South AFRL
 - Soil vapor extraction (SVE) system continues operating near Building 8595 to mitigate potential vapor intrusion
 - Working with regulators to address potential data gaps in well network at deeper depths



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OU4/9 AFRL Arroyos (Pre-ROD)



- AFRL Arroyos Record of Decision
 - Air Force and regulatory agency staff and legal counsels continue to meet to resolve last few remaining items of disagreement

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OU4/9 AFRL Arroyos (Pre-ROD)



- **AFRL Arroyos ROD (continued)**

- **When a Draft Final ROD is agreed-to by all parties, Air Force will:**

- Prepare and publish a new AFRL Arroyos Proposed Plan (PP), announce availability of the PP for public comment, and conduct a PP public meeting
- Incorporate public comments into and submit the Final AFRL Arroyos ROD



1962 F-1 engine test at Test Stand 1A

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OU4/9 Northeast AFRL (Pre-ROD)



- **January-April 2024: Installed 16 groundwater monitoring wells**
- **February-March 2024: Conducted indoor air sampling event at occupied buildings**

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OU4/9 Mars Blvd (Pre-ROD)



- January-April 2024: Installed 10 groundwater monitoring wells
- February-March 2024: Conducted indoor air sampling event at occupied buildings



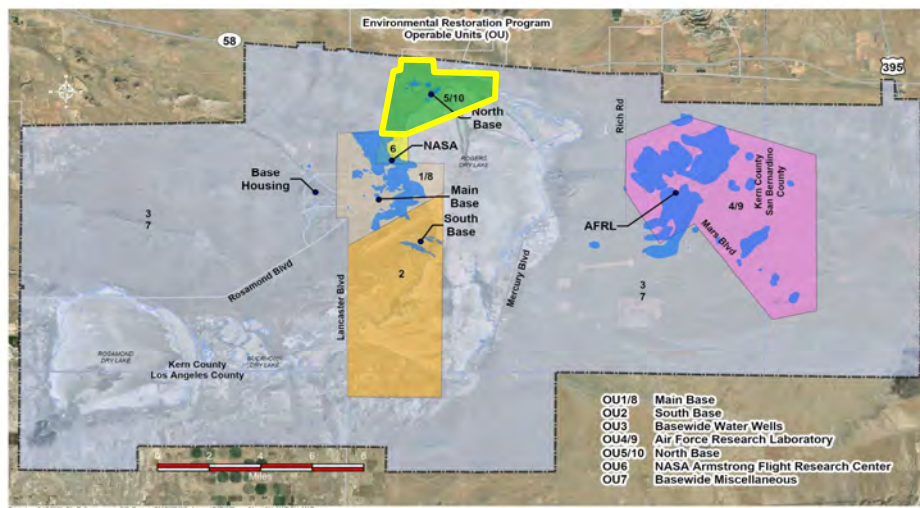
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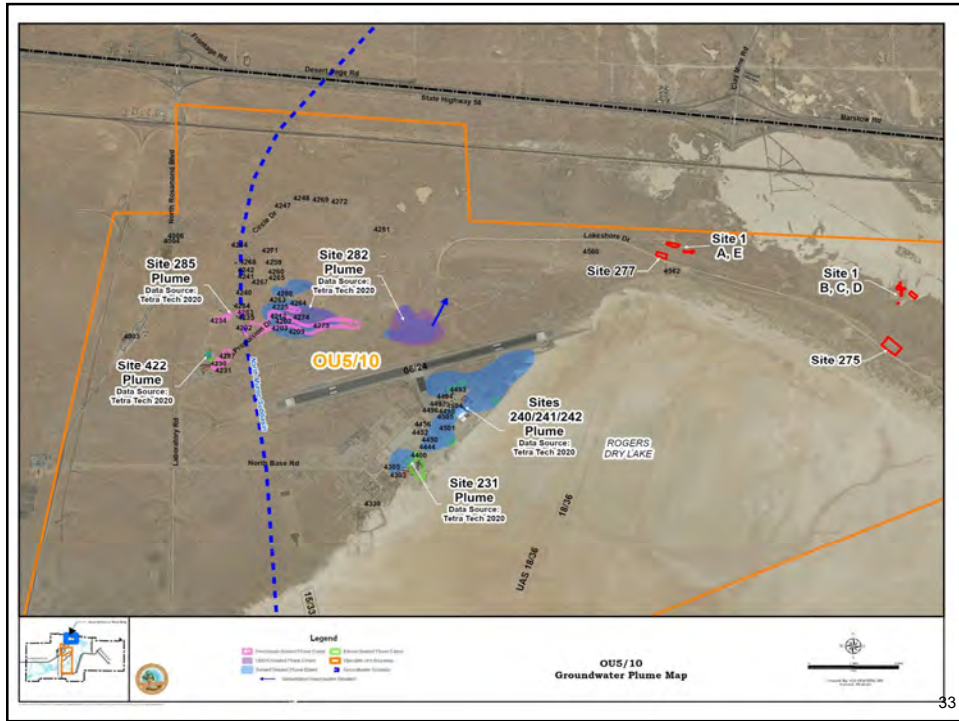
OU5/10 North Base (Pre-ROD)




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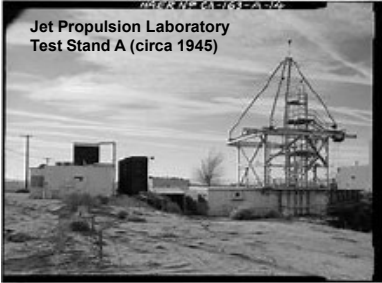
33




OU5/10 North Base (Pre-ROD)



- Summer 2024: Revised Draft OU5/10 FS expected to be submitted to regulatory agencies
- Site 285 Interim Treatment System continues to operate



Jet Propulsion Laboratory
Test Stand A (circa 1945)



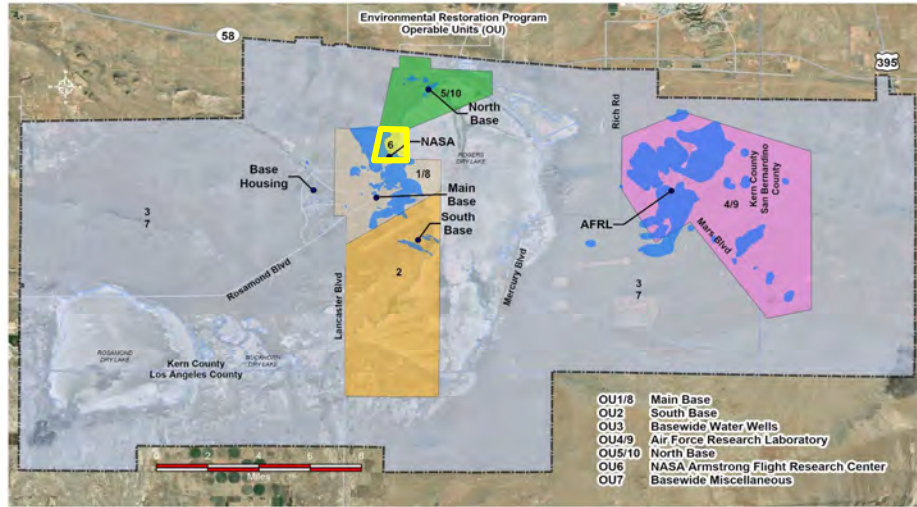
Site 285 interim treatment system

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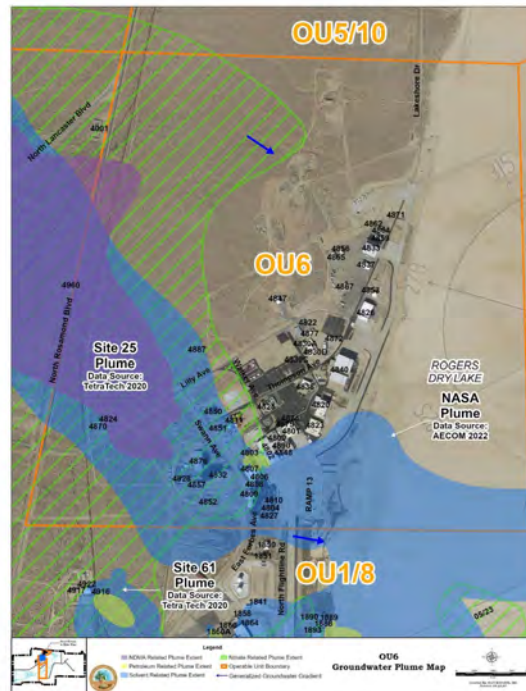
OU6 NASA Armstrong (Post-ROD)



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OU6 NASA Armstrong (Post-ROD)



- **Annual groundwater monitoring event planned**
 - **Schedule: July-August 2024**
 - **Scope: 98 monitoring wells (increased the monitoring well network for 2026 Five-Year Review)**
 - **Collect data to evaluate:**
 - Contaminant concentration trends throughout the plume
 - In situ chemical oxidation performance in treatment areas



Inspecting treatment well on lakebed during 2023 annual monitoring event

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OU6 NASA Armstrong PFAS Update



- **NASA began an agency-wide PFAS Preliminary Assessment/Site Inspection (PA/SI) in 2019**
 - PA completed in 2021 and SI completed in 2023
- **NASA proceeding with a Phase 1 RI**
 - **Uniform Federal Policy-Quality Assurance Project Plan (UFP-QAPP) in regulatory review**
 - **Summer/fall 2024: First field event will sample 74 monitoring wells**
 - Results will be used to update the conceptual site model
 - **UFP-QAPP addenda will be prepared for future field events**

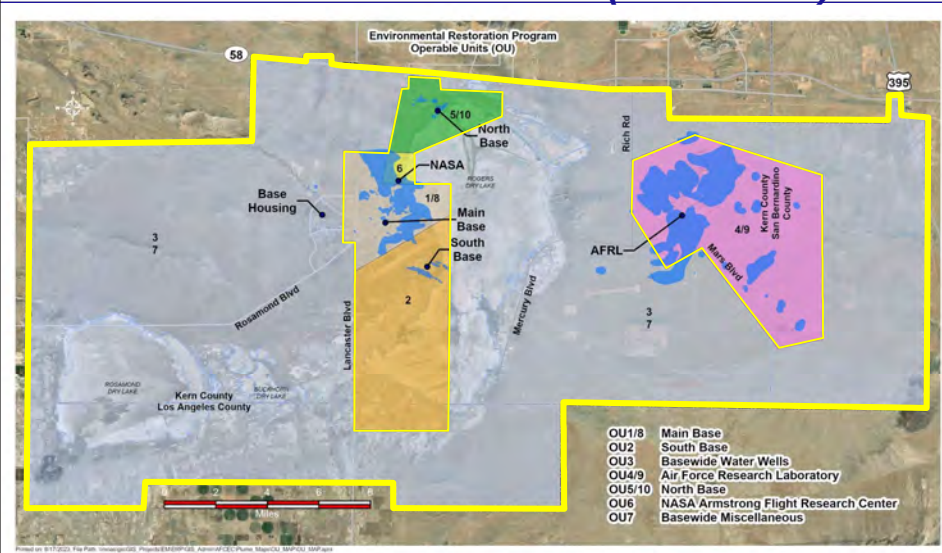
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OU7 Basewide Miscellaneous (Pre-ROD)



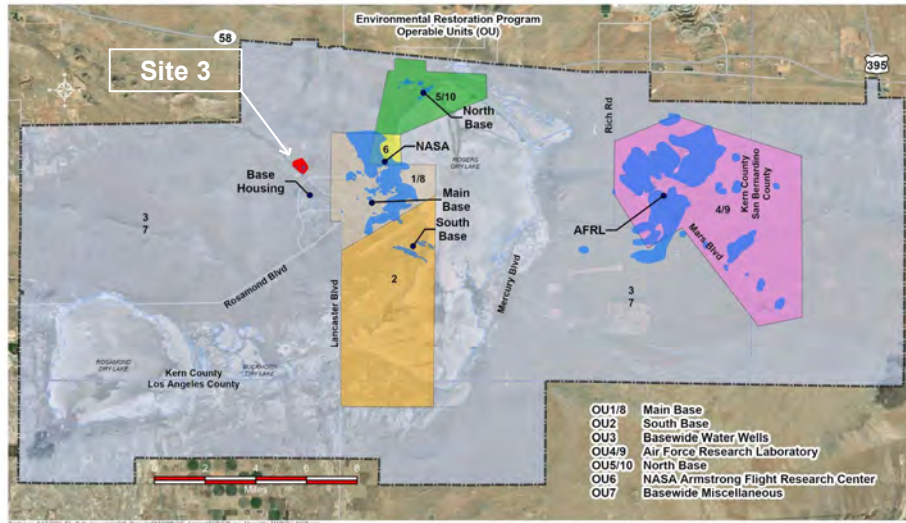
OU7 Basewide Miscellaneous (Pre-ROD)



- Soil gas sampling report anticipated to be submitted to regulatory agencies in the summer of 2024



OU7 Site 3 (Post-ROD)



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OU7 Site 3 (Post-ROD)



- Landfill cap completed
 - January-March 2024: Hydroseed was applied. Fence installation was completed
 - Approximately 1,000 linear feet of fence (including tortoise fence) was replaced
- Site 3 operations and maintenance
 - February 2024: Significant rainfall occurred (1.7 inches). Landfill inspection noted damage to portion of the cap
 - March 2024: Semiannual groundwater and landfill gas sampling. Semiannual LUC inspection



Hydroseeding operation



Fence installation

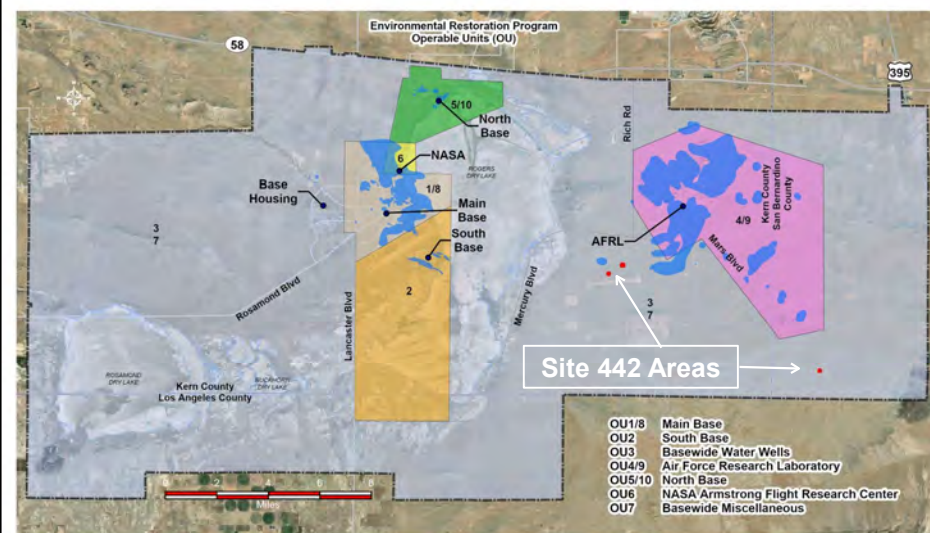
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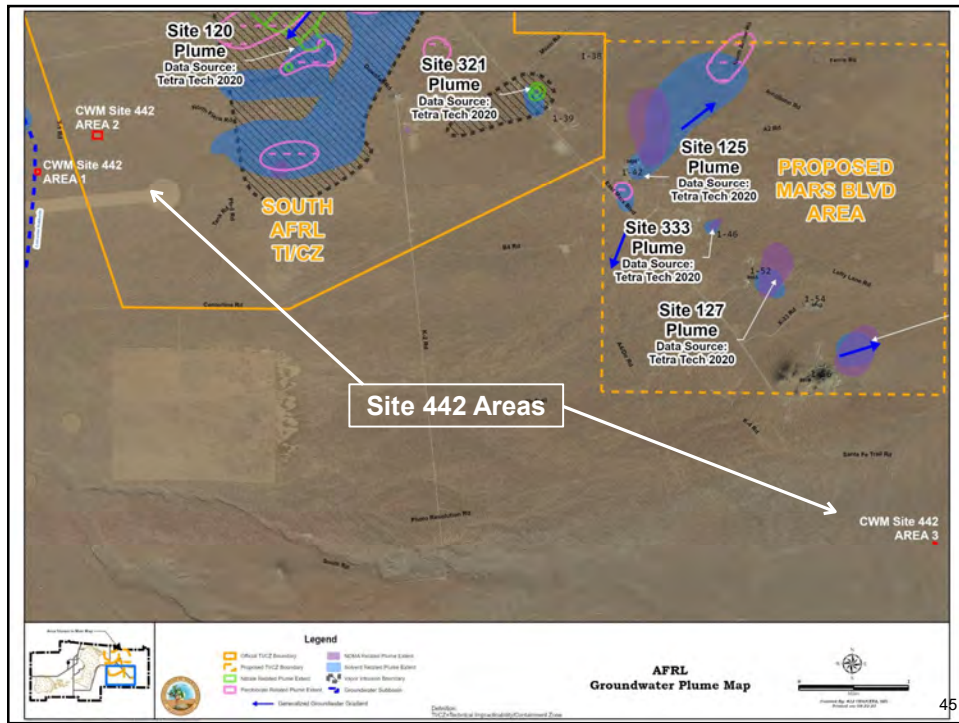
OU7 Chemical Warfare Materiel (Post-ROD)




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OU7 Chemical Warfare Materiel (Post-ROD)



- Vegetation has been identified as “stressed or dead” during the semiannual inspection for multiple years
- Re-seeding/revegetation effort performed in December 2022 at Site 442 Areas 1, 2, and 3
- January 2024 Semiannual Inspection included vegetation surveys
 - 12% coverage at Area 1
 - 25% coverage at Area 2
 - 20% coverage at Area 3
- Additional revegetation activities, including new vegetation plan, and targeted revegetation effort in process to achieve vegetation coverage per Operations and Maintenance Plan Addendum

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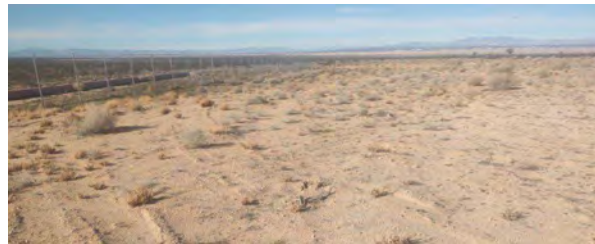


OU7 Chemical Warfare Materiel (Post-ROD)



Area 1 – view to west (January 2024)

Area 2 – view to northwest (January 2024)



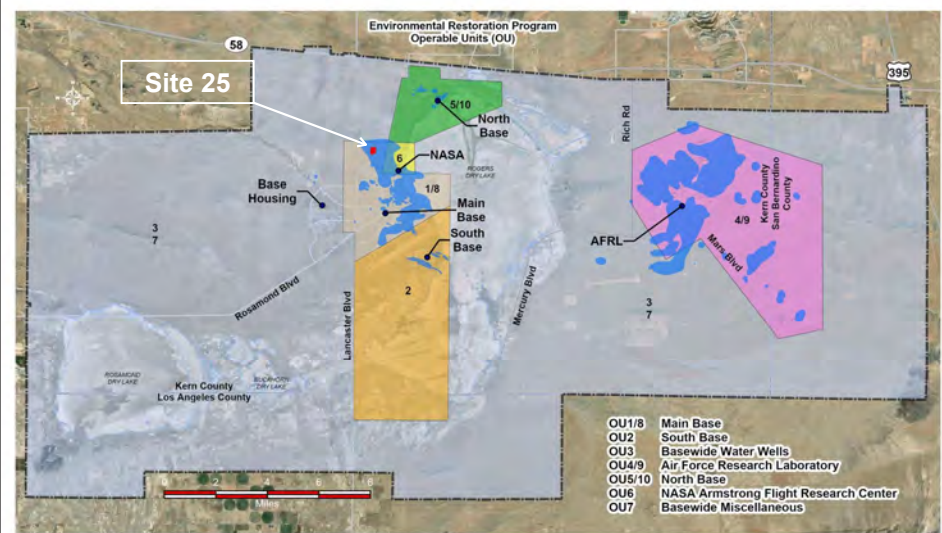
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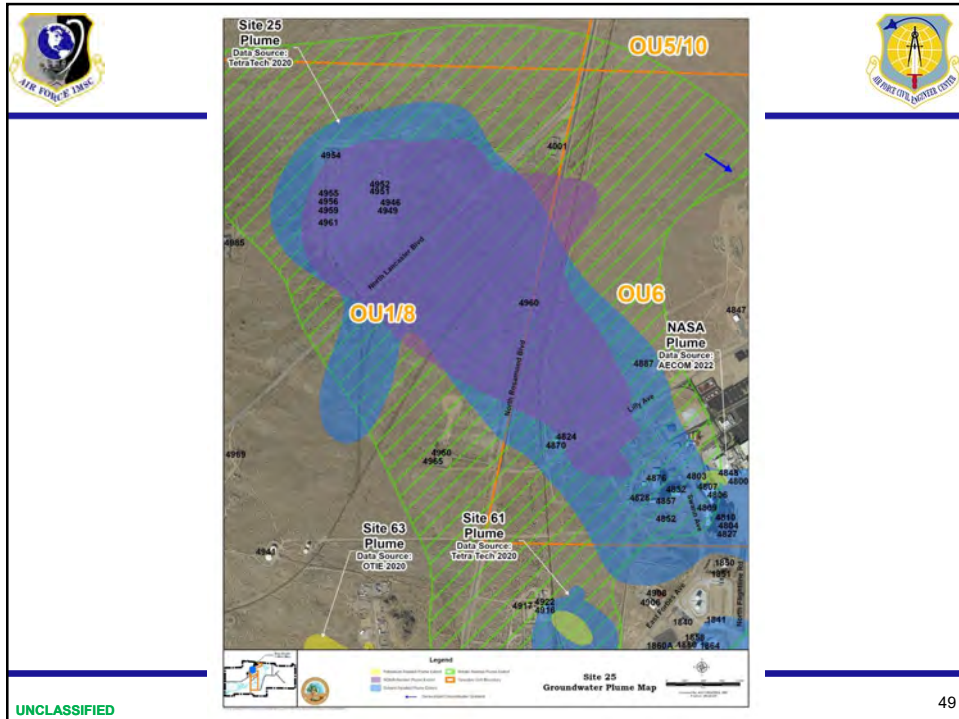
Site 25 (Pre-ROD)



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Site 25 (Pre-ROD)

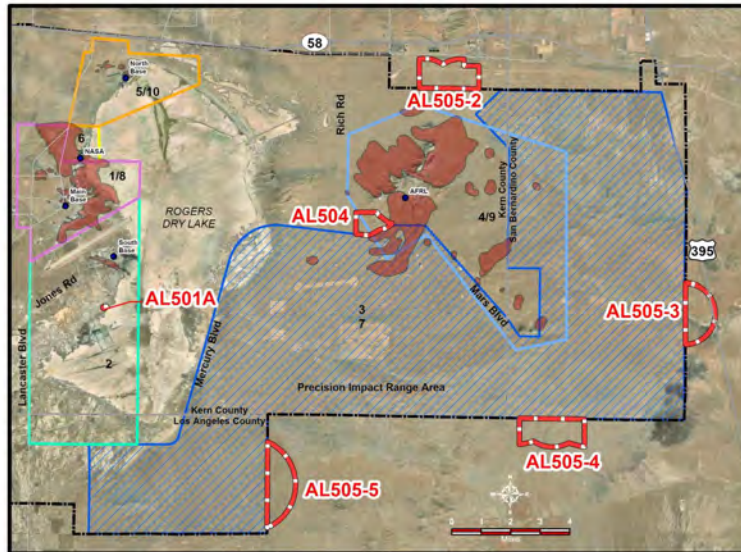
- Air Force anticipates submitting Revised Draft Site 25 FS in the winter of 2024
- Developing updated three-dimensional (3-D) groundwater model for remedy development to address regulatory comments
- Draft Phytoremediation Treatability Study Report anticipated to be submitted to regulatory agencies for review in the summer of 2024

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



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MMRP (Pre-ROD)



- **January 2024: Air Force submitted responses to regulatory comments on the Draft ROD**
 - Air Force is currently resolving regulatory comments for incorporation into Draft Final ROD, anticipated summer of 2024
- **May 2024: Solar developer preconstruction activities anticipated at AL505-2**



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MMRP 3Rs



Follow the 3Rs of Explosives Safety:

- **Recognize:**
when you may have encountered a munition and that munitions are dangerous.
- **Retreat:**
do not approach, touch, move or disturb it, but carefully leave the area.
- **Report:**
call 911 and advise the police of what you saw and where you saw it.

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