



Former Fort Ord Monterey County California

Per- and Polyfluoroalkyl Substances (PFAS)

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Ahtna

PFAS Background

- Resistant to heat, water, and oil originally developed in the 1930s.
- Included in many consumer and industrial products by the 1950s
- 1970s – DoD began using Aqueous Film-Forming Foam (AFFF) that contained PFAS because it quickly extinguishes petroleum-based fires.
- Found in people, the environment, and wildlife and do not break down easily.
- Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) – historically the most widely-used throughout the United States.
- 2016 – USEPA established lifetime health advisory levels for PFOS and PFOA in drinking water <https://www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos>.

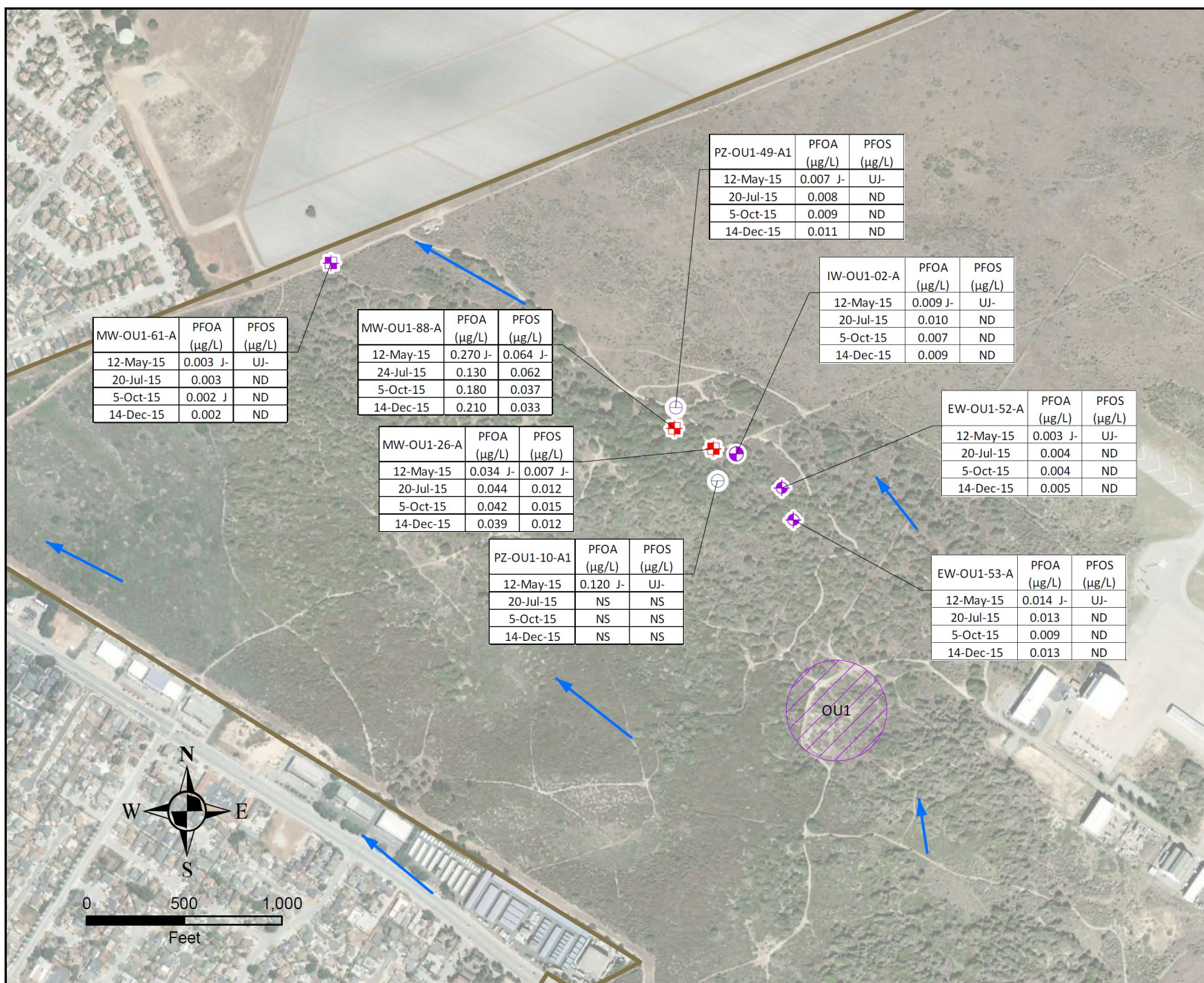


Army PFAS Investigations at the former Fort Ord



The Army conducted investigations to assess for the presence of PFOA and PFOS in groundwater at Operable Unit 1 (OU1) and Operable Unit 2 (OU2).

- OU1 includes former Fire Drill Area operated from the 1960s to the 1980s where AFFF was used by the fire department during training exercises.
 - Four groundwater monitoring events for PFOA/PFOS completed in 2015 at eight wells.
 - Concentrations of PFOA exceeded USEPA health advisory level at two of the eight wells sampled.
- OU2 includes a landfill operated from the 1950s to the 1980s and may have received waste materials containing PFAS.
 - One groundwater monitoring event for PFOA/PFOS completed in 2019 at twelve wells.
 - Concentrations of PFOA and PFOS exceeded USEPA health advisory level at one of the twelve wells sampled.



EXPLANATION

- Secondary Assessment Sites
- General Groundwater Flow Direction, A-Aquifer*
- Former Fort Ord Boundary

Well type & detected concentrations in µg/L of PFOA or PFOS

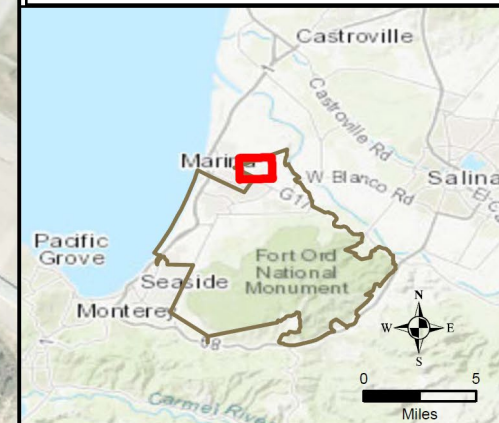
- Monitoring Well: Concentration above USEPA health advisory level and DoD screening level
- Piezometer: Concentration above USEPA health advisory level and below DoD Screening level

Concentrations below USEPA health advisory level and DoD screening level

- Monitoring Well
- Extraction Well
- Injection Well
- Piezometer

NOTES:

*Fourth Quarter 2019 - Third Quarter 2020 OU2 Remedy Monitoring and Operations and Maintenance (Ahtna, 2021)
OU1 = Operable Unit 1
PFOA (perfluorooctanoic acid)
PFOS (Perfluorooctane sulfonate)
The USEPA lifetime health advisory (HA) levels for PFOA and PFOS in drinking water are 0.07 micrograms per liter (µg/L). When both PFOA and PFOS are detected, the combined concentrations of PFOA and PFOS are compared with the 0.07 µg/L HA level (USEPA, 2016).
The DoD tap water screening levels for PFOA and PFOS are 0.40 µg/L; however, if multiple PFAS are encountered at a site, a 0.1 factor is applied and the screening levels for PFOA and PFOS individually are 0.04 µg/L.

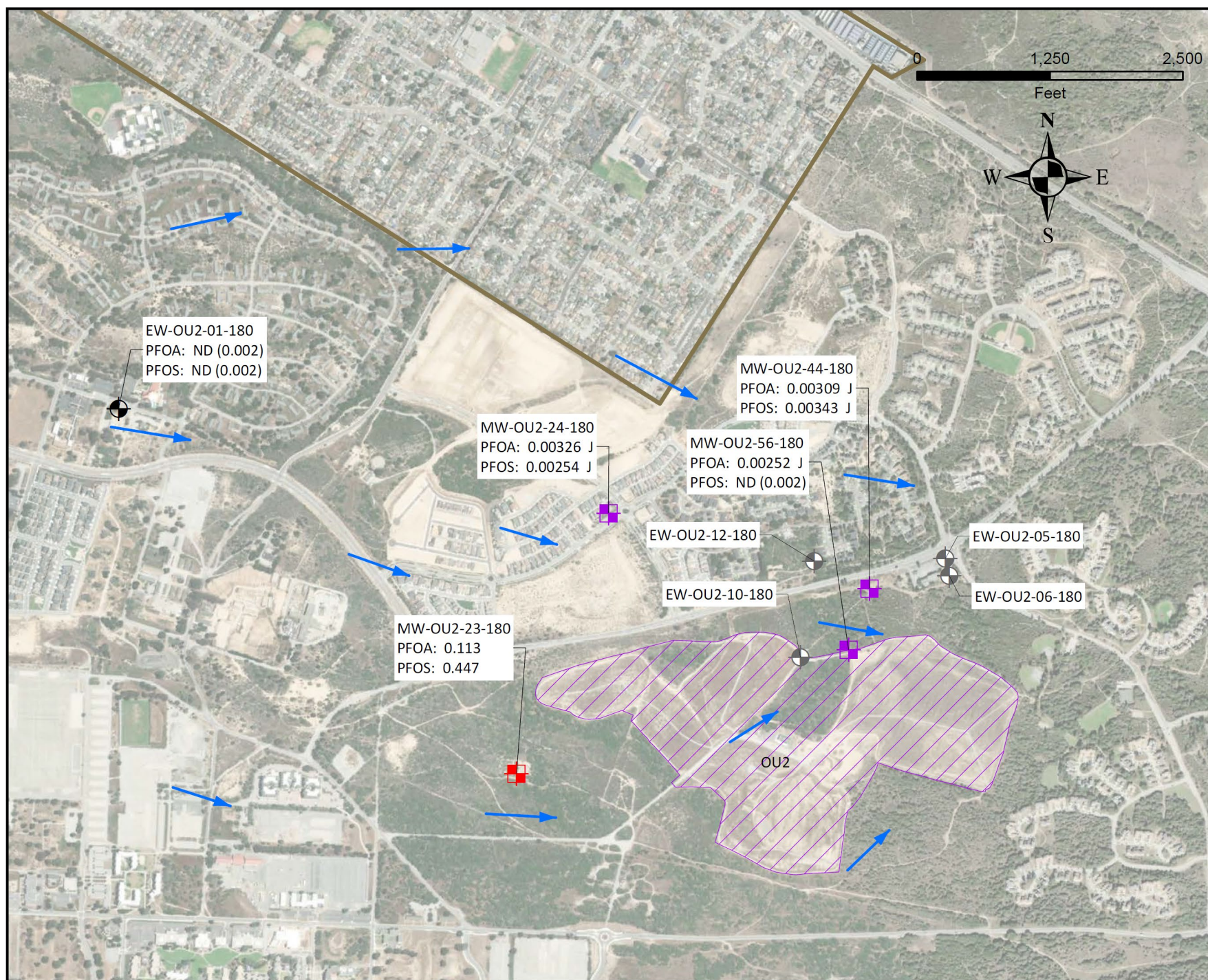


GROUNDWATER MONITORING
ANALYTICAL RESULTS AT OU1
A-AQUIFER, 2015
PFAS PA Narrative Report
Former Fort Ord, California

Ahtna

Date: 6/7/2021

Figure: 19

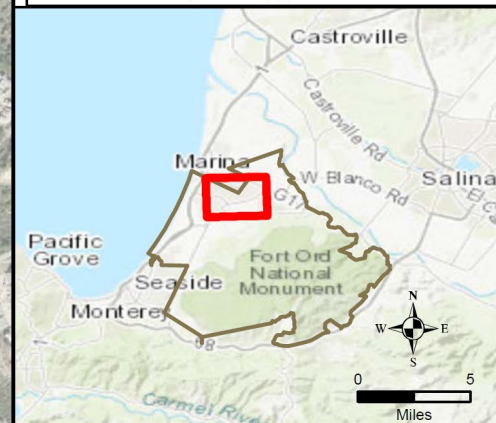


EXPLANATION

- Secondary Assessment Sites
- General Groundwater Flow Direction, Upper 180-Foot Aquifer*
- Former Fort Ord Boundary
- Well Type and PFOA/PFOS results in $\mu\text{g/L}$**
 - Monitoring Well - detected concentrations of PFOA or PFOS are below USEPA health advisory level and DoD screening level
 - Monitoring Well - detected concentrations of PFOA or PFOS are above USEPA health advisory and above DoD screening level
 - Extraction Well - PFOA and PFOS not detected
 - Extraction Well - PFOA and PFOS not sampled

NOTES:

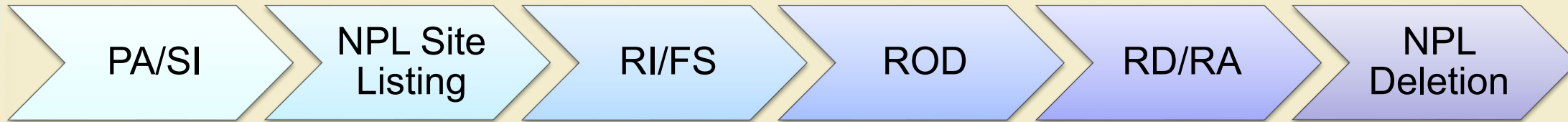
*Fourth Quarter 2019 - Third Quarter 2020 OU2 Remedy Monitoring and Operations and Maintenance (Ahtna, 2021)
OU2 = Operable Unit 2
PFOA (perfluorooctanoic acid)
PFOS (Perfluorooctane sulfonate)
The USEPA lifetime health advisory (HA) levels for PFOA and PFOS in drinking water are 0.07 micrograms per liter ($\mu\text{g/L}$). When both PFOA and PFOS are detected, the combined concentrations of PFOA and PFOS are compared with the 0.07 $\mu\text{g/L}$ HA level (USEPA, 2016).
The DoD tap water screening levels for PFOA and PFOS are 0.40 $\mu\text{g/L}$; however, if multiple PFAS are encountered at a site, a 0.1 factor is applied and the screening levels for PFOA and PFOS individually are 0.04 $\mu\text{g/L}$.



GROUNDWATER MONITORING
ANALYTICAL RESULTS AT OU2
UPPER 180-FOOT AQUIFER, 2019
PFAS PA Narrative Report
Former Fort Ord, California

PFAS Preliminary Assessment/Site Inspection (PA/SI) at the former Fort Ord

The Army follows the CERCLA (Superfund) process to fully investigate releases, prioritize responses, and determine appropriate cleanup actions based on risk.



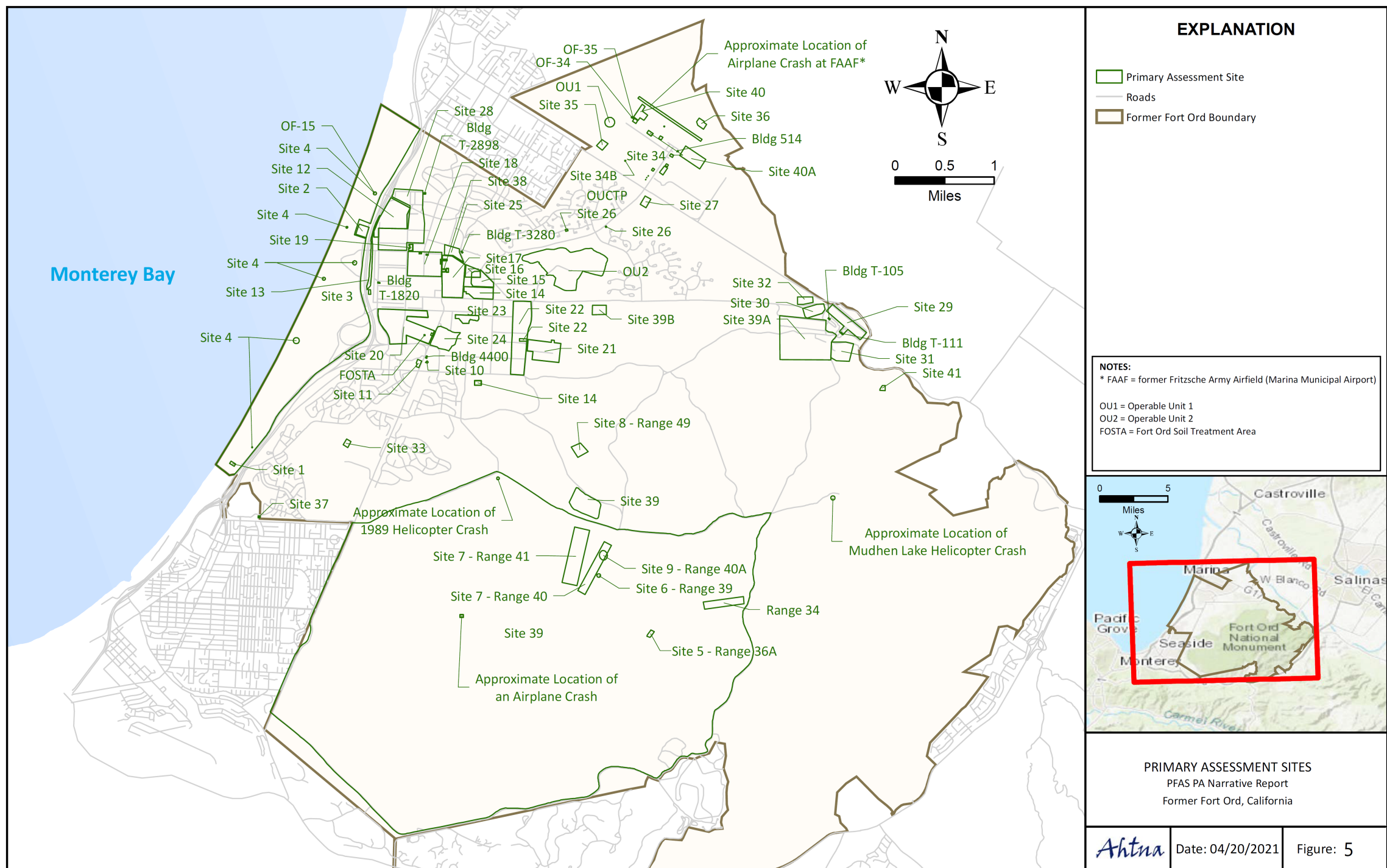
- In 2021, the Army reviewed historical activities at former Fort Ord sites for potential releases of PFAS in a PA.
- Draft PA Narrative Report available at https://docs.fortordcleanup.com/ar_pdfs/AR-BW-2904//BW-2904.pdf.
- Results indicate limited historical use of PFAS-containing material.
- Further investigation in an SI is recommended for six sites.

PFAS PA Site Assessment Process

PA Primary Assessment: review of historical records to determine if uses listed below occurred while Fort Ord was still an active Army facility; 103 sites were evaluated.

- Fire training areas (FTAs)
- AFFF storage locations (e.g., fire stations)
- Aircraft crash sites where AFFF may have been applied for fire control
- Aviation hangars and other buildings or fuel storage areas where AFFF was used in the fire suppression system and where a release may have occurred
- Other aviation assets (runways, fuel farms, defueling areas) where fuel- or petroleum-based fires may have occurred and AFFF may have been applied
- Landfills and waste disposal areas where PFAS-containing materials may have been disposed
- Wastewater treatment plants that may have received liquid effluents from facilities that used or disposed of PFAS
- AFFF firefighting equipment testing and washout discharge locations



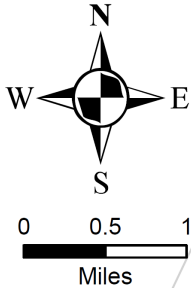
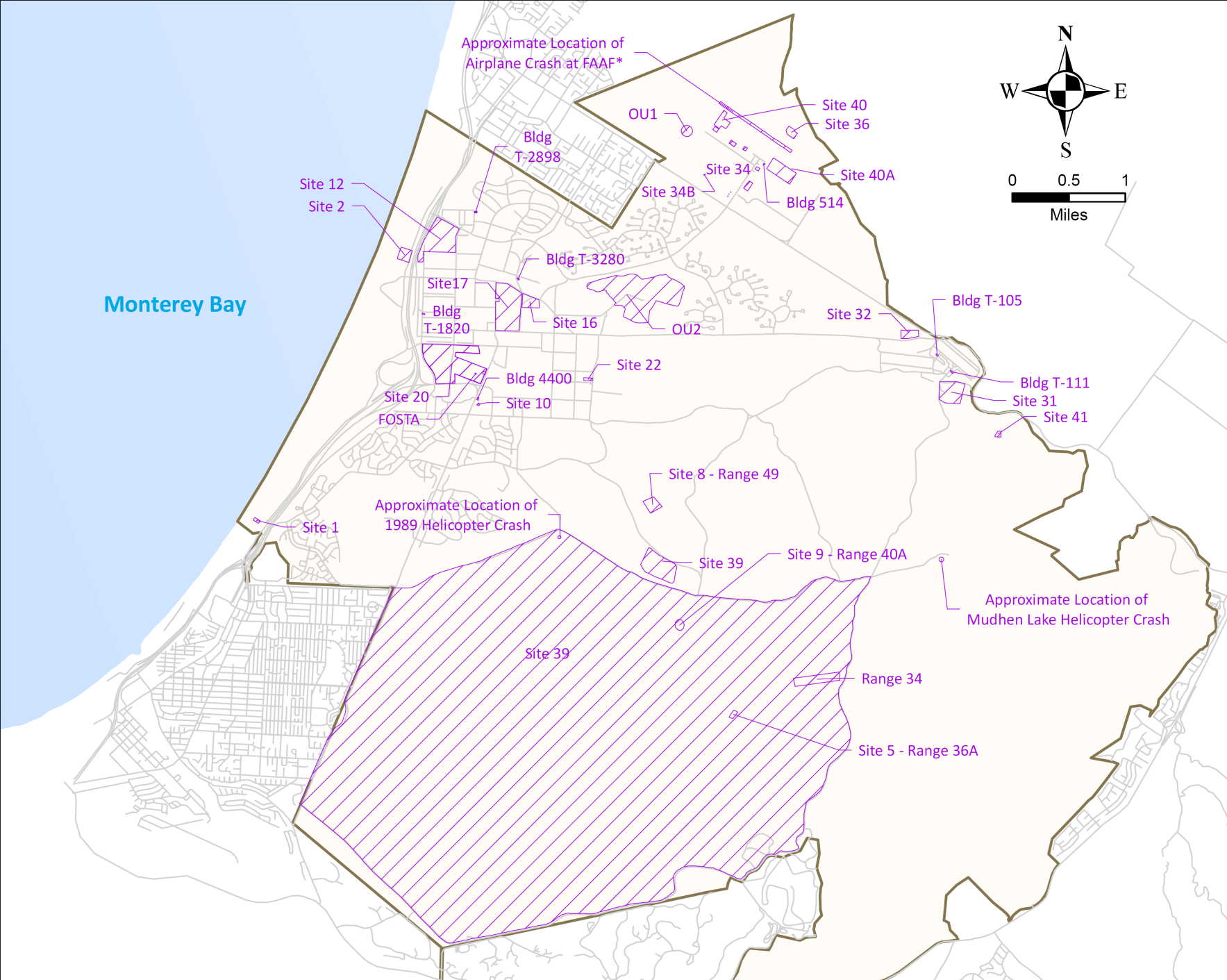


PFAS PA/SI at the former Fort Ord

Secondary Assessment:

- 39 sites advanced to secondary assessment.
- Secondary records review.
- Site reconnaissance.
- Interviews with personnel either currently or formerly employed at Fort Ord.
- Evaluated to determine if a release of PFAS at the site was probable.



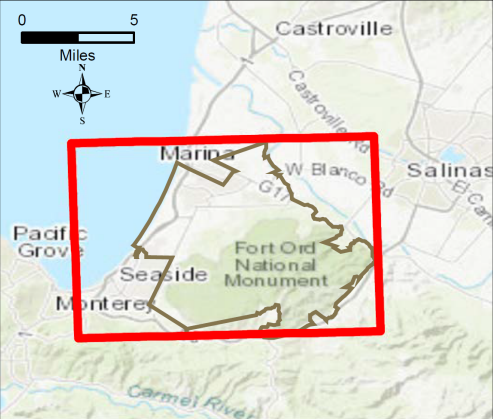


EXPLANATION

- Secondary Assessment Site
- Former Fort Ord Boundary
- Roads

NOTES:
 * FAAF = former Fritzsche Army Airfield (Marina Municipal Airport)

OU1 = Operable Unit 1
 OU2 = Operable Unit 2
 FOSTA = Fort Ord Soil Treatment Area



SECONDARY ASSESSMENT SITES
 PFAS PA Narrative Report
 Former Fort Ord, California

PFAS PA/SI at the former Fort Ord

PA Tertiary Assessment:

Six sites advanced to tertiary assessment to determine:

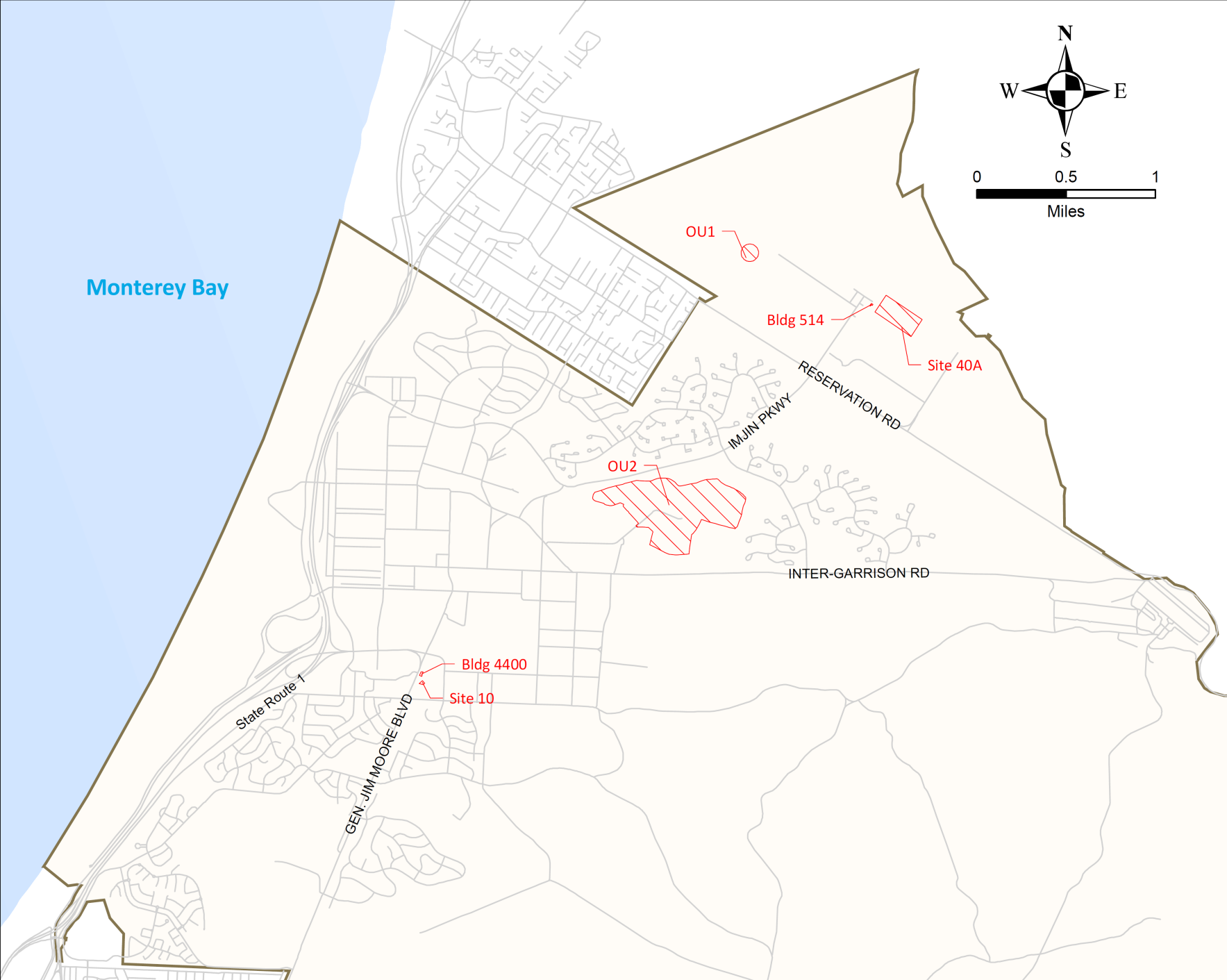
- Geology, hydrogeology, hydrology, and soil settings at each site
- Residential, commercial, and industrial populations on or near each site
- Private and municipal drinking water wells on or near each site
- Groundwater use on or near each site
- Fisheries and sensitive environments downstream of each site

Information used to develop a pathway and target assessment for each site.




- Pathway: the environmental medium through which a hazardous substance may threaten targets.
- Target: a physical or environmental receptor that is within the target distance limit for a particular pathway.

Marina Coast Water District supplies drinking water to the former Fort Ord and tests regularly – drinking water meets all state and federal requirements. Consumer confidence reports are available at:

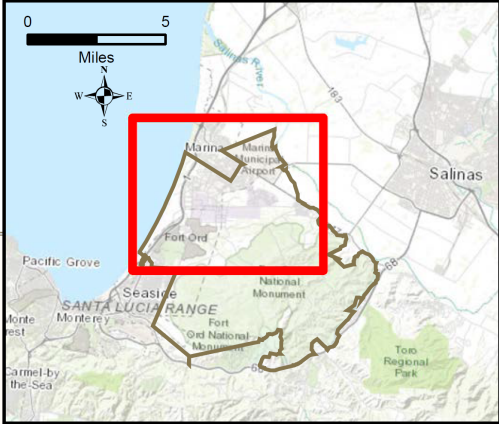
https://www.mcwd.org/docs/ccr/mcwd_ccr_2020_rev_English_Final.pdf



EXPLANATION

-  Tertiary Assessment Sites
-  Former Fort Ord Boundary
-  Roads

NOTES:
OU1 = Operable Unit 1
OU2 = Operable Unit 2



TERTIARY ASSESSMENT SITES
PFAS PA Narrative Report
Former Fort Ord, California

PFAS PA Tertiary Assessment

Site 10, Former Burn Pit

- Former FTA
- Historical use of AFFF for training and demonstration purposes
- Potential adverse effects on groundwater and drinking water supply



PFAS PA Tertiary Assessment

Site 40A, East FAAF Helicopter Defueling Area

- Former aviation asset
- Use of AFFF during a response to a fuel spill may have adversely affected soil and groundwater
- No pathway to drinking water supply

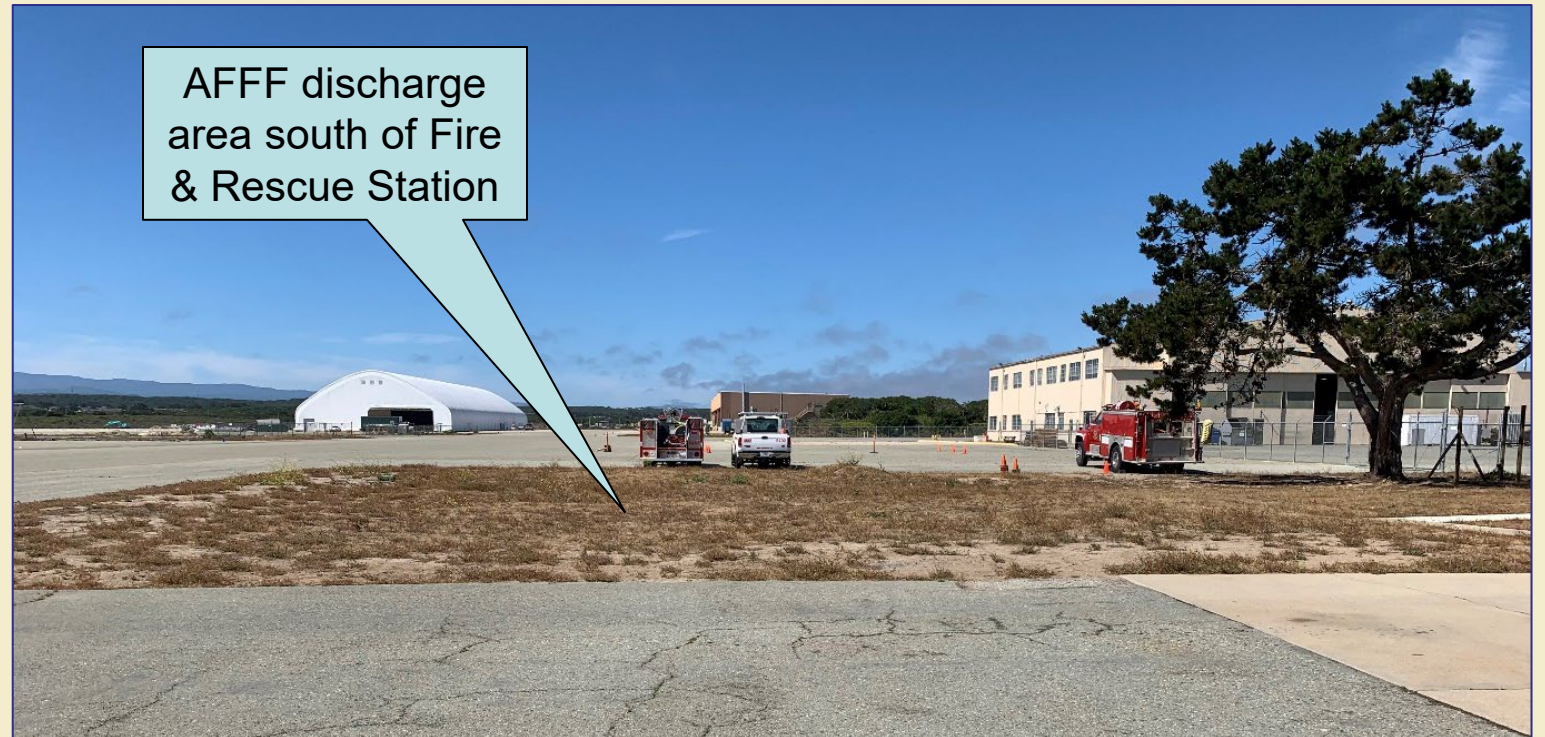


Drainage swale north of Site 40A

PFAS PA Tertiary Assessment

Building 514, FAAF Fire & Rescue Station

- Fire station
- Discharge of old or expired AFFF may have adversely affected soil and groundwater
- No pathway to drinking water supply



PFAS PA Tertiary Assessment

Building 4400, Main Garrison Fire Station

- Fire station
- Discharge of old or expired AFFF may have adversely affected soil and groundwater
- Potential pathway to drinking water supply



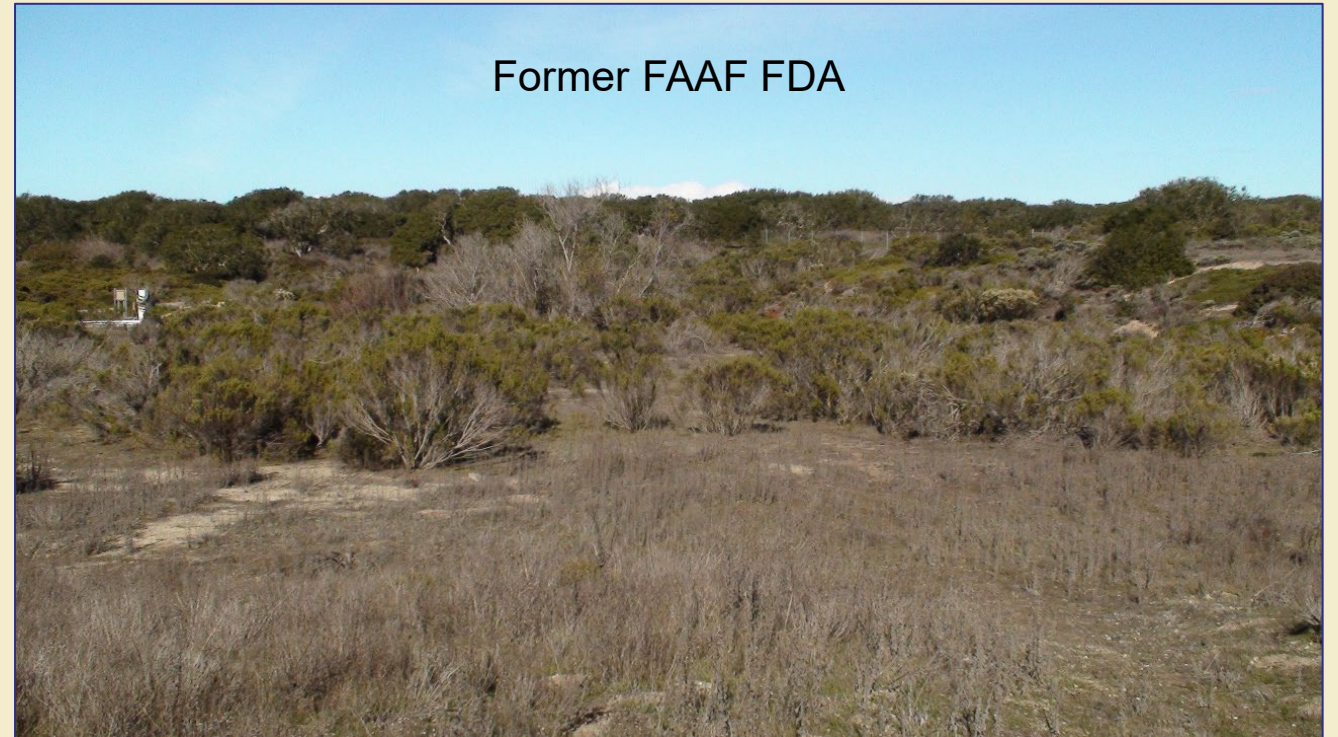
Building 4401 Hose Tower



PFAS PA Tertiary Assessment

FAAF Fire Drill Area

- Former FTA
- Historical use of AFFF for training purposes
- Potential adverse effects on groundwater
- No pathway to drinking water supply



PFAS PA Tertiary Assessment

Operable Unit 2

- Landfill
- Use of AFFF during responses to landfill fires and disposal of waste containing PFAS
- Potential adverse effects on groundwater and drinking water supply



For Additional Information

Visit the Army's website at:
www.fortordcleanup.com

Visit the Fort Ord Administrative Record at:
Building 4463 Gigling Road, Room 101
Ord Military Community
Seaside CA 93955
(831) 393-9693
adminrecord@fortordcleanup.com

Visit the MCWD website at:
www.mcwd.org

2020 Consumer Confidence Report is available at:
https://www.mcwd.org/docs/ccr/mcwd_ccr_2020_rev_English_Final.pdf

