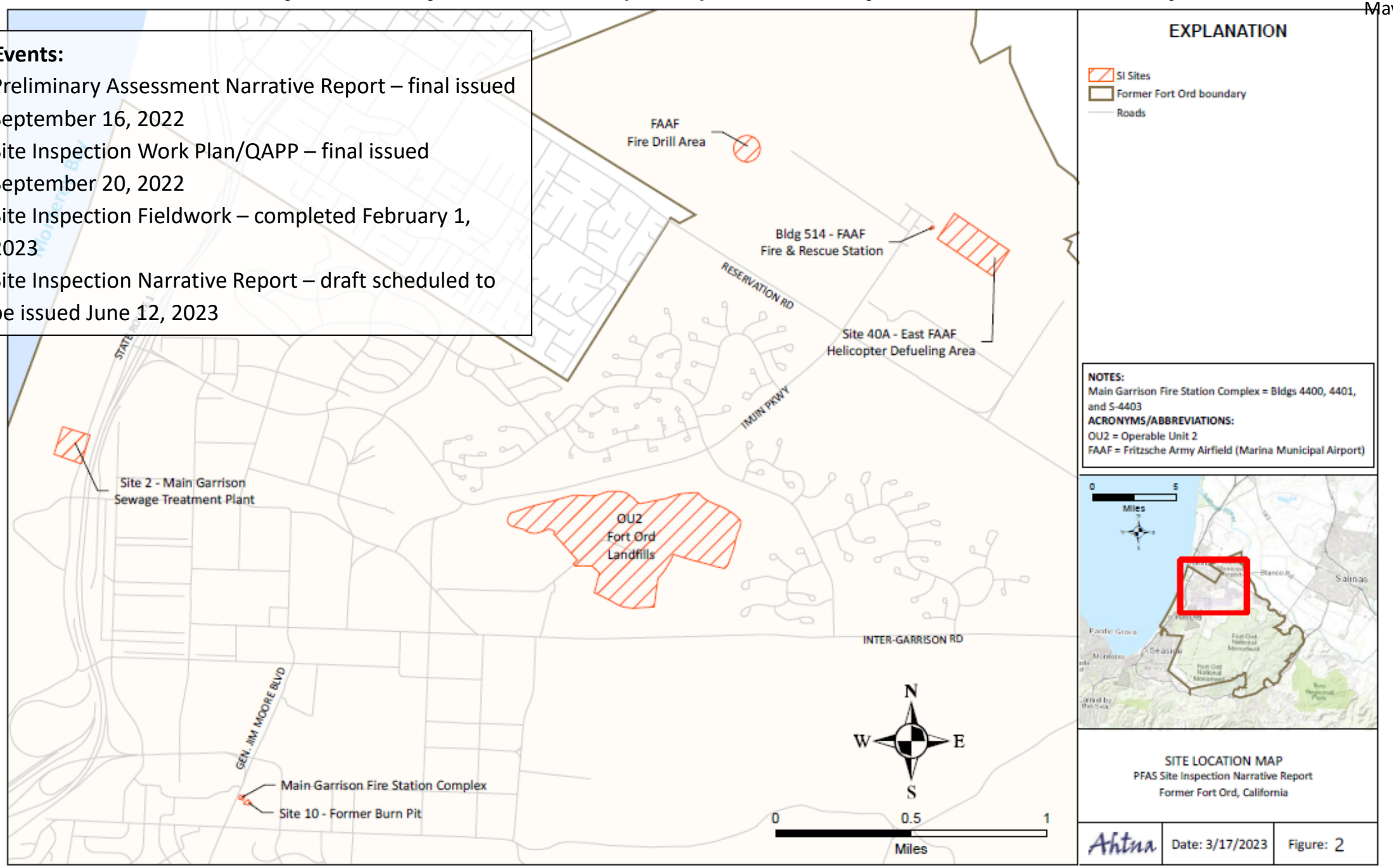
Per- and Polyfluoroalkyl Substances (PFAS) Preliminary Assessment/Site Inspection

Key Events:

- Preliminary Assessment Narrative Report – final issued September 16, 2022
- Site Inspection Work Plan/QAPP – final issued September 20, 2022
- Site Inspection Fieldwork – completed February 1, 2023
- Site Inspection Narrative Report – draft scheduled to be issued June 12, 2023



Per- and Polyfluoroalkyl Substances (PFAS) Preliminary Assessment/Site Inspection

Table 1: Screening Levels for PFAS in Soil and Groundwater

Compound	Residential Scenario PSLs/RSLs				Industrial/Commercial Composite Worker PSLs/RSLs	
	Tap Water (µg/L)		Soil (µg/kg)		Soil (µg/kg)	
	HQ = 1.0	HQ = 0.1	HQ = 1.0	HQ = 0.1	HQ = 1.0	HQ = 0.1
Perfluorooctanesulfonic acid (PFOS)	0.04	0.004	130	13	1,600	160
Perfluorooctanoic acid (PFOA)	0.06	0.006	190	19	2,500	250
Perfluorobutanesulfonic acid (PFBS)	6.01	0.601	19,000	1,900	250,000	25,000
Perfluorononanoic acid (PFNA)	0.059	0.006	190	19	2,500	250
Perfluorohexanesulfonic acid (PFHxS)	0.394	0.039	1,300	130	16,000	1,600
Hexafluoropropylene oxide dimer acid (HFPO-DA)	0.06	0.006	230	23	3,500	350

Notes:
µg/kg = micrograms per kilogram
µg/L = micrograms per liter
HQ = Hazard Quotient
PSL = Project Screening Level
RSL = Regional Screening Level
Tap Water PSLs/RSLs applied to groundwater potentially used as drinking water.
PSLs/RSLs based on residential and industrial/commercial worker receptor scenarios for either direct ingestion of groundwater (residential scenario only) or incidental ingestion of soil (both residential and composite worker scenarios).
If multiple PFAS are encountered at a site, a 0.1 factor is applied to the screening level.

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Per- and Polyfluoroalkyl Substances (PFAS) Preliminary Assessment/Site Inspection

Table 2: Quality Control and IDW Analytical Results

Samples	PFOA	PFNA	PFBS	PFHxS	PFOS	HFPO-DA	Other PFAS Detected
Equipment and Field Blanks	ND	ND	ND	ND	ND	ND	0
Potable water (OU2 GWTP)	ND	ND	ND	ND	ND	ND	0
IDW Stockpile 1 (soil from all other sites)	1.4 µg/kg	1.2 µg/kg	ND	1.7 µg/kg	31.9 J µg/kg	ND	12
IDW Stockpile 2 (soil from MW-10-07-180)	ND	ND	ND	ND	ND	ND	0
IDW (soil from MW-40A-01-A)	ND	ND	ND	ND	ND	ND	0

Notes:
µg/kg = micrograms per kilogram
If multiple PFAS are encountered at a site, a 0.1 factor is applied to the screening level.

PFOS exceeds residential scenario soil PSL/RSL at HQ = 0.1
No further action required for disposal at OU2 Landfills

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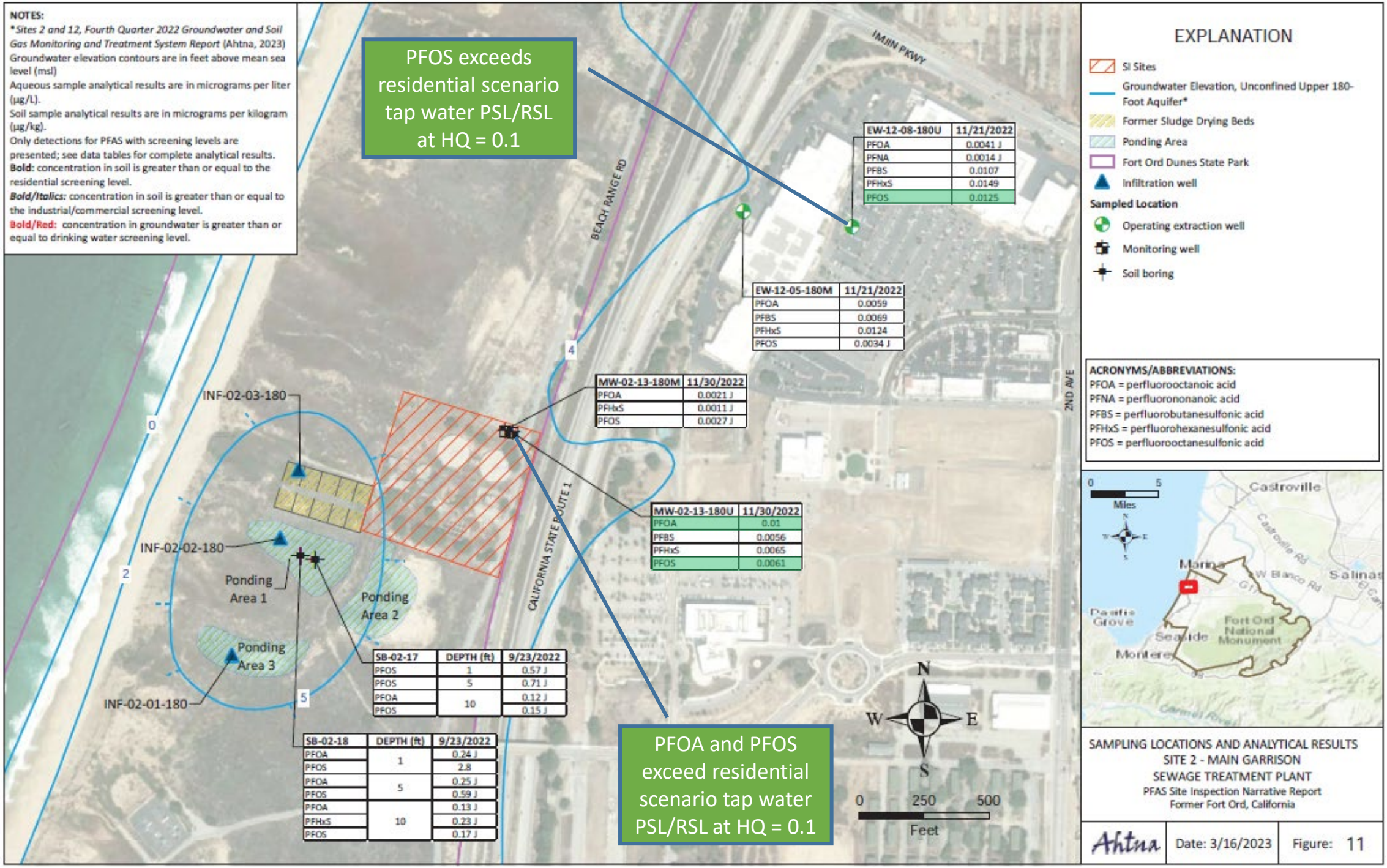
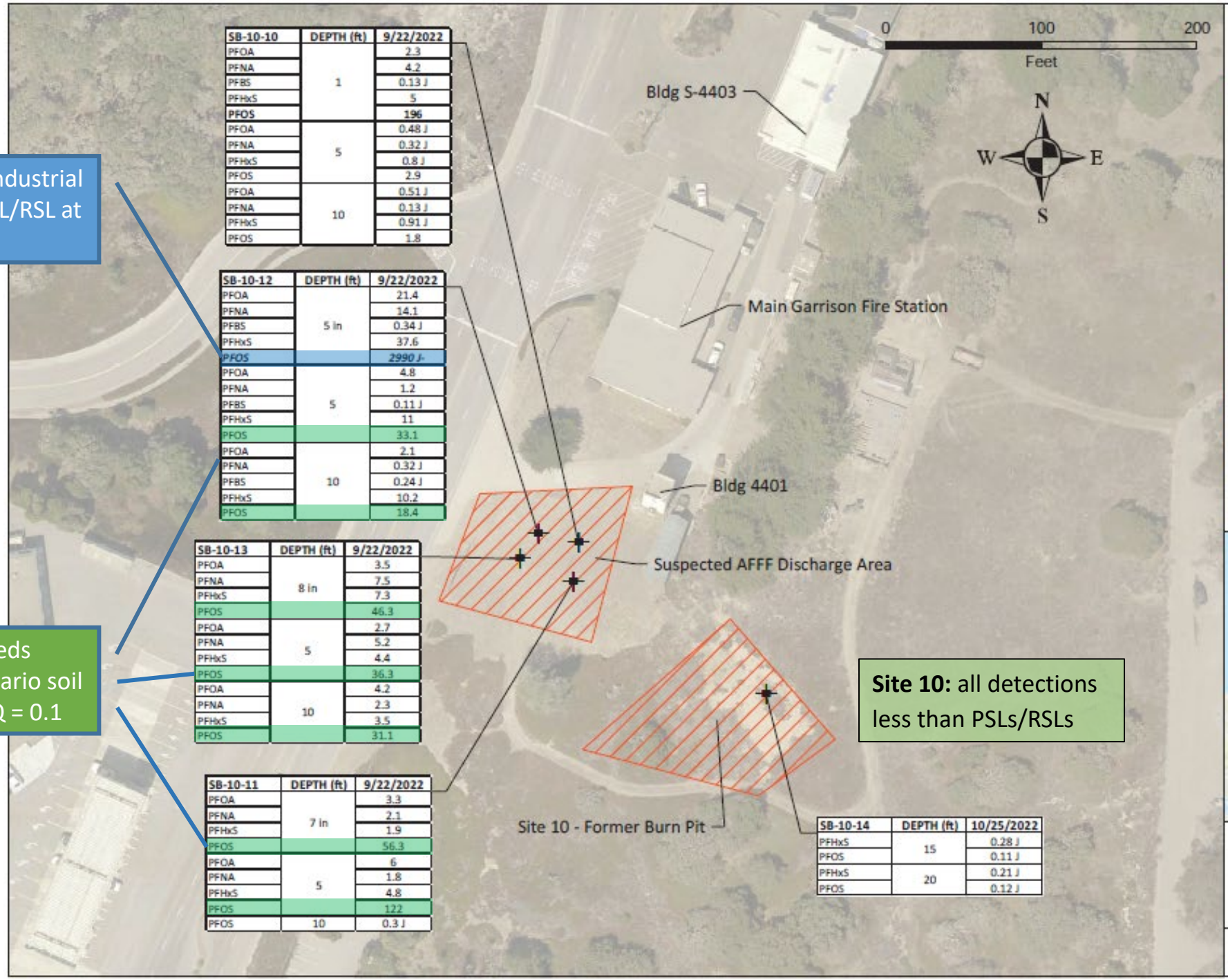
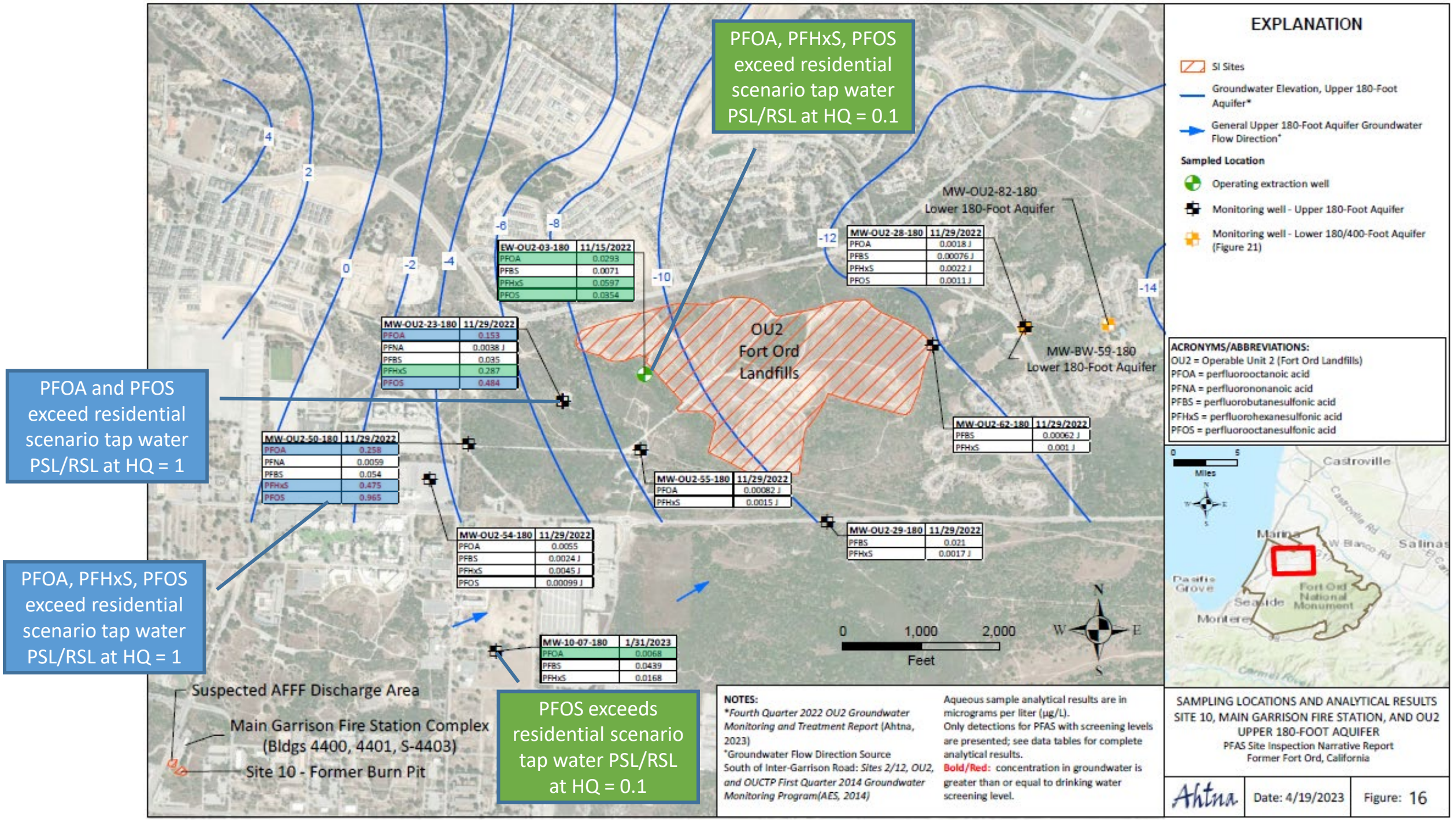
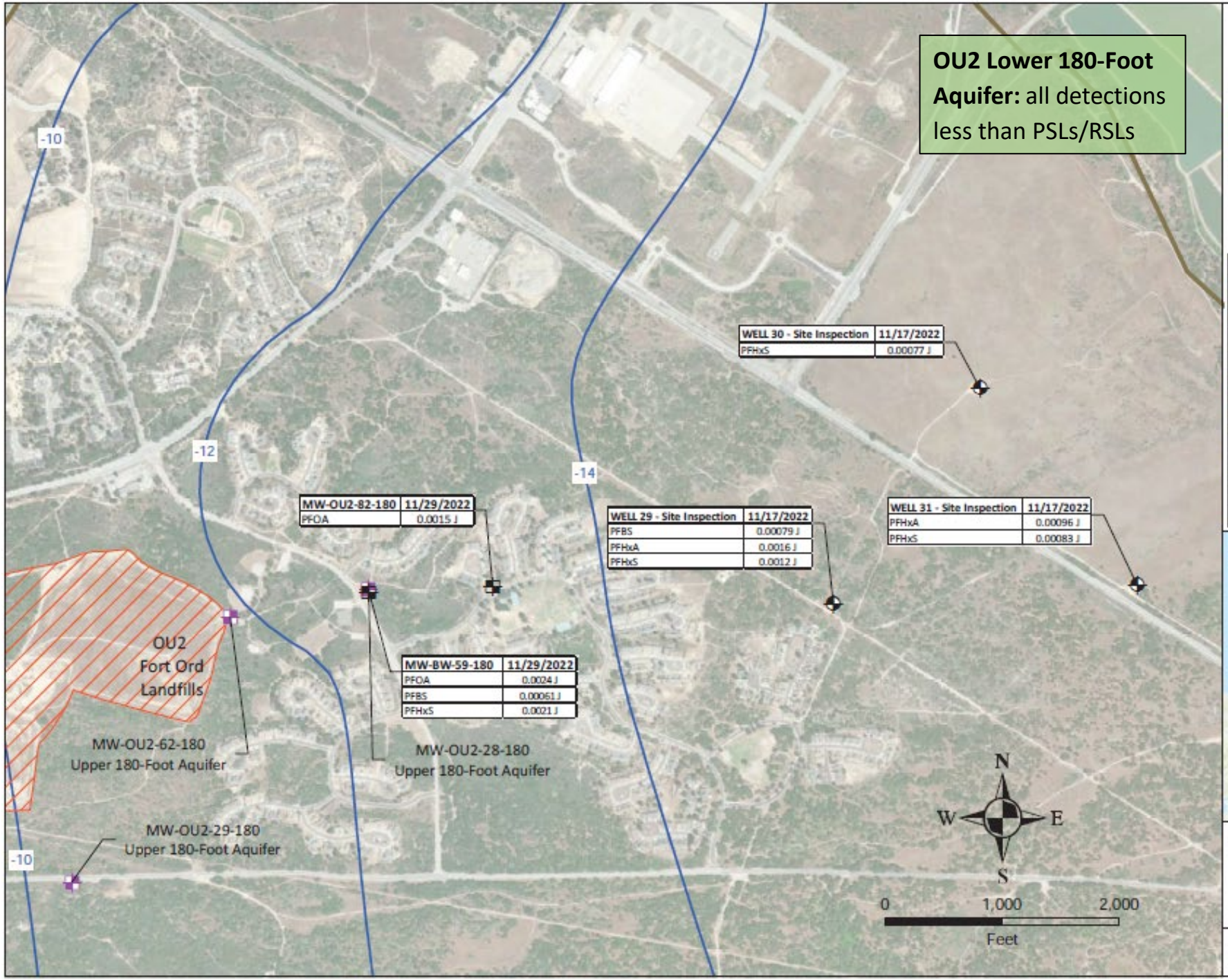

NOTES:
*Sites 2 and 12, Fourth Quarter 2022 Groundwater and Soil Gas Monitoring and Treatment System Report (Ahtna, 2023)
Groundwater elevation contours are in feet above mean sea level (msl)
Aqueous sample analytical results are in micrograms per liter (µg/L).
Soil sample analytical results are in micrograms per kilogram (µg/kg).
Only detections for PFAS with screening levels are presented; see data tables for complete analytical results.
Bold: concentration in soil is greater than or equal to the residential screening level.
Bold/Italics: concentration in soil is greater than or equal to the industrial/commercial screening level.
Bold/Red: concentration in groundwater is greater than or equal to drinking water screening level.
PFOS exceeds residential scenario tap water PSL/RSL at HQ = 0.1
IMJIN PKWY
BEACH RANGE RD
CALIFORNIA STATE ROUTE 1
2ND AVE
EW-12-08-180U 11/21/2022
PFOA 0.0041 J
PFNA 0.0014 J
PFBS 0.0107
PFHxS 0.0149
PFOS 0.0125
EW-12-05-180M 11/21/2022
PFOA 0.0059
PFBS 0.0069
PFHxS 0.0124
PFOS 0.0034 J
MW-02-13-180M 11/30/2022
PFOA 0.0021 J
PFHxS 0.0011 J
PFOS 0.0027 J
MW-02-13-180U 11/30/2022
PFOA 0.01
PFBS 0.0056
PFHxS 0.0065
PFOS 0.0061
INF-02-03-180
INF-02-02-180
INF-02-01-180
Ponding Area 1
Ponding Area 2
Ponding Area 3
0
2
4
5
SB-02-17 DEPTH (ft) 9/23/2022
PFOS 1 0.57 J
PFOS 5 0.71 J
PFOA 10 0.12 J
PFOS 0.15 J
SB-02-18 DEPTH (ft) 9/23/2022
PFOA 1 0.24 J
PFOS 2.8
PFOA 5 0.25 J
PFOS 0.59 J
PFOA 10 0.13 J
PFHxS 0.23 J
PFOS 0.17 J
PFOA and PFOS exceed residential scenario tap water PSL/RSL at HQ = 0.1
N
W
E
S
0 250 500
Feet
EXPLANATION
SI Sites
Groundwater Elevation, Unconfined Upper 180-Foot Aquifer*
Former Sludge Drying Beds
Ponding Area
Fort Ord Dunes State Park
Infiltration well
Sampled Location
Operating extraction well
Monitoring well
Soil boring
ACRONYMS/ABBREVIATIONS:
PFOA = perfluorooctanoic acid
PFNA = perfluorononanoic acid
PFBS = perfluorobutanesulfonic acid
PFHxS = perfluorohexanesulfonic acid
PFOS = perfluorooctanesulfonic acid
0 5
Miles
Castroville
Marina
Salinas
Seaside
Monterey
Fort Ord National Monument
SAMPLING LOCATIONS AND ANALYTICAL RESULTS
SITE 2 - MAIN GARRISON
SEWAGE TREATMENT PLANT
PFAS Site Inspection Narrative Report
Former Fort Ord, California
Ahtna
Date: 3/16/2023
Figure: 11


PFOS exceeds industrial scenario soil PSL/RSL at HQ = 1
PFOS exceeds residential scenario soil PSL/RSL at HQ = 0.1
SB-10-10 | DEPTH (ft) | 9/22/2022
PFOA | 1 | 2.3
PFNA | | 4.2
PFBS | | 0.13 J
PFHxS | | 5
PFOS | | 196
PFOA | 5 | 0.48 J
PFNA | | 0.32 J
PFHxS | | 0.8 J
PFOS | | 2.9
PFOA | 10 | 0.51 J
PFNA | | 0.13 J
PFHxS | | 0.91 J
PFOS | | 1.8
SB-10-12 | DEPTH (ft) | 9/22/2022
PFOA | 5 in | 21.4
PFNA | | 14.1
PFBS | | 0.34 J
PFHxS | | 37.6
PFOS | | 2990 J-
PFOA | 5 | 4.8
PFNA | | 1.2
PFBS | | 0.11 J
PFHxS | | 11
PFOS | | 33.1
PFOA | 10 | 2.1
PFNA | | 0.32 J
PFBS | | 0.24 J
PFHxS | | 10.2
PFOS | | 18.4
SB-10-13 | DEPTH (ft) | 9/22/2022
PFOA | 8 in | 3.5
PFNA | | 7.5
PFHxS | | 7.3
PFOS | | 46.3
PFOA | 5 | 2.7
PFNA | | 5.2
PFHxS | | 4.4
PFOS | | 36.3
PFOA | 10 | 4.2
PFNA | | 2.3
PFHxS | | 3.5
PFOS | | 31.1
SB-10-11 | DEPTH (ft) | 9/22/2022
PFOA | 7 in | 3.3
PFNA | | 2.1
PFHxS | | 1.9
PFOS | | 56.3
PFOA | 5 | 6
PFNA | | 1.8
PFHxS | | 4.8
PFOS | | 122
PFOS | 10 | 0.3 J
SB-10-14 | DEPTH (ft) | 10/25/2022
PFHxS | 15 | 0.28 J
PFOS | | 0.11 J
PFHxS | 20 | 0.21 J
PFOS | | 0.12 J
Bldg S-4403
Main Garrison Fire Station
Bldg 4401
Suspected AFFF Discharge Area
Site 10 - Former Burn Pit
Site 10: all detections less than PSLs/RSLs
0 100 200
Feet
N
W E
S
EXPLANATION
SI Sites
Sampled Location
Soil boring
NOTES:
Soil sample analytical results are in micrograms per kilogram (µg/kg).
Only detections for PFAS with screening levels are presented; see data tables for complete analytical results.
Bold: concentration in soil is greater than or equal to the residential screening level.
Bold/Italics: concentration in soil is greater than or equal to the industrial/commercial screening level.
ACRONYMS/ABBREVIATIONS:
PFOA = perfluorooctanoic acid
PFNA = perfluorononanoic acid
PFBS = perfluorobutanesulfonic acid
PFHxS = perfluorohexanesulfonic acid
PFOS = perfluorooctanesulfonic acid
AFFF = Aqueous Film Forming Foam
0 5
Miles
Castroville
Marina
Salinas
Seaside
Monterey
Fort Ord National Monument
SAMPLING LOCATIONS AND ANALYTICAL RESULTS
SITE 10 AND MAIN GARRISON FIRE STATION
PFAS Site Inspection Narrative Report
Former Fort Ord, California
Ahtna
Date: 3/15/2023
Figure: 17


PFOA, PFHxS, PFOS exceed residential scenario tap water PSL/RSL at HQ = 0.1
PFOA and PFOS exceed residential scenario tap water PSL/RSL at HQ = 1
PFOA, PFHxS, PFOS exceed residential scenario tap water PSL/RSL at HQ = 1
PFOS exceeds residential scenario tap water PSL/RSL at HQ = 0.1
EXPLANATION
SI Sites
Groundwater Elevation, Upper 180-Foot Aquifer*
General Upper 180-Foot Aquifer Groundwater Flow Direction*
Sampled Location
Operating extraction well
Monitoring well - Upper 180-Foot Aquifer
Monitoring well - Lower 180/400-Foot Aquifer (Figure 21)
OU2 Fort Ord Landfills
MW-OU2-82-180 Lower 180-Foot Aquifer
MW-BW-59-180 Lower 180-Foot Aquifer
EW-OU2-03-180 11/15/2022 PFOA 0.0293 PFBS 0.0071 PFHxS 0.0597 PFOS 0.0354
MW-OU2-28-180 11/29/2022 PFOA 0.0018 J PFBS 0.00076 J PFHxS 0.0022 J PFOS 0.0011 J
MW-OU2-23-180 11/29/2022 PFOA 0.153 PFNA 0.0038 J PFBS 0.035 PFHxS 0.287 PFOS 0.484
MW-OU2-50-180 11/29/2022 PFOA 0.258 PFNA 0.0059 PFBS 0.054 PFHxS 0.475 PFOS 0.965
MW-OU2-62-180 11/29/2022 PFBS 0.00062 J PFHxS 0.001 J
MW-OU2-55-180 11/29/2022 PFOA 0.00082 J PFHxS 0.0015 J
MW-OU2-29-180 11/29/2022 PFBS 0.021 PFHxS 0.0017 J
MW-OU2-54-180 11/29/2022 PFOA 0.0055 PFBS 0.0024 J PFHxS 0.0045 J PFOS 0.00099 J
MW-10-07-180 1/31/2023 PFOA 0.0068 PFBS 0.0439 PFHxS 0.0168
Suspected AFFF Discharge Area
Main Garrison Fire Station Complex (Bldgs 4400, 4401, S-4403)
Site 10 - Former Burn Pit
0 1,000 2,000 Feet
N W E S
ACRONYMS/ABBREVIATIONS:
OU2 = Operable Unit 2 (Fort Ord Landfills)
PFOA = perfluorooctanoic acid
PFNA = perfluorononanoic acid
PFBS = perfluorobutanesulfonic acid
PFHxS = perfluorohexanesulfonic acid
PFOS = perfluorooctanesulfonic acid
0 5 Miles
Castroville
Marina
Salinas
Seaside
Monterey
Fort Ord National Monument
NOTES:
*Fourth Quarter 2022 OU2 Groundwater Monitoring and Treatment Report (Ahtna, 2023)
*Groundwater Flow Direction Source South of Inter-Garrison Road: Sites 2/12, OU2, and OUCTP First Quarter 2014 Groundwater Monitoring Program(AES, 2014)
Aqueous sample analytical results are in micrograms per liter (µg/L).
Only detections for PFAS with screening levels are presented; see data tables for complete analytical results.
Bold/Red: concentration in groundwater is greater than or equal to drinking water screening level.
SAMPLING LOCATIONS AND ANALYTICAL RESULTS SITE 10, MAIN GARRISON FIRE STATION, AND OU2 UPPER 180-FOOT AQUIFER
PFAS Site Inspection Narrative Report
Former Fort Ord, California
Ahtna
Date: 4/19/2023
Figure: 16



EXPLANATION

- Groundwater elevation, Lower 180/400-Foot Aquifer*
- SI Sites
- Former Fort Ord Boundary

Sampled Location

- Marina Coast Water District Supply well
- Monitoring well - Lower 180-Foot Aquifer
- Monitoring well - Upper 180-foot aquifer (Figure 20)

NOTES:

**Operable Unit Carbon Tetrachloride Plume Fourth Quarter 2022 Groundwater Monitoring Report* (Ahtna, 2023)

Aqueous sample analytical results are in micrograms per liter (µg/L).

Only detections for PFAS with screening levels are presented; see data tables for complete analytical results.

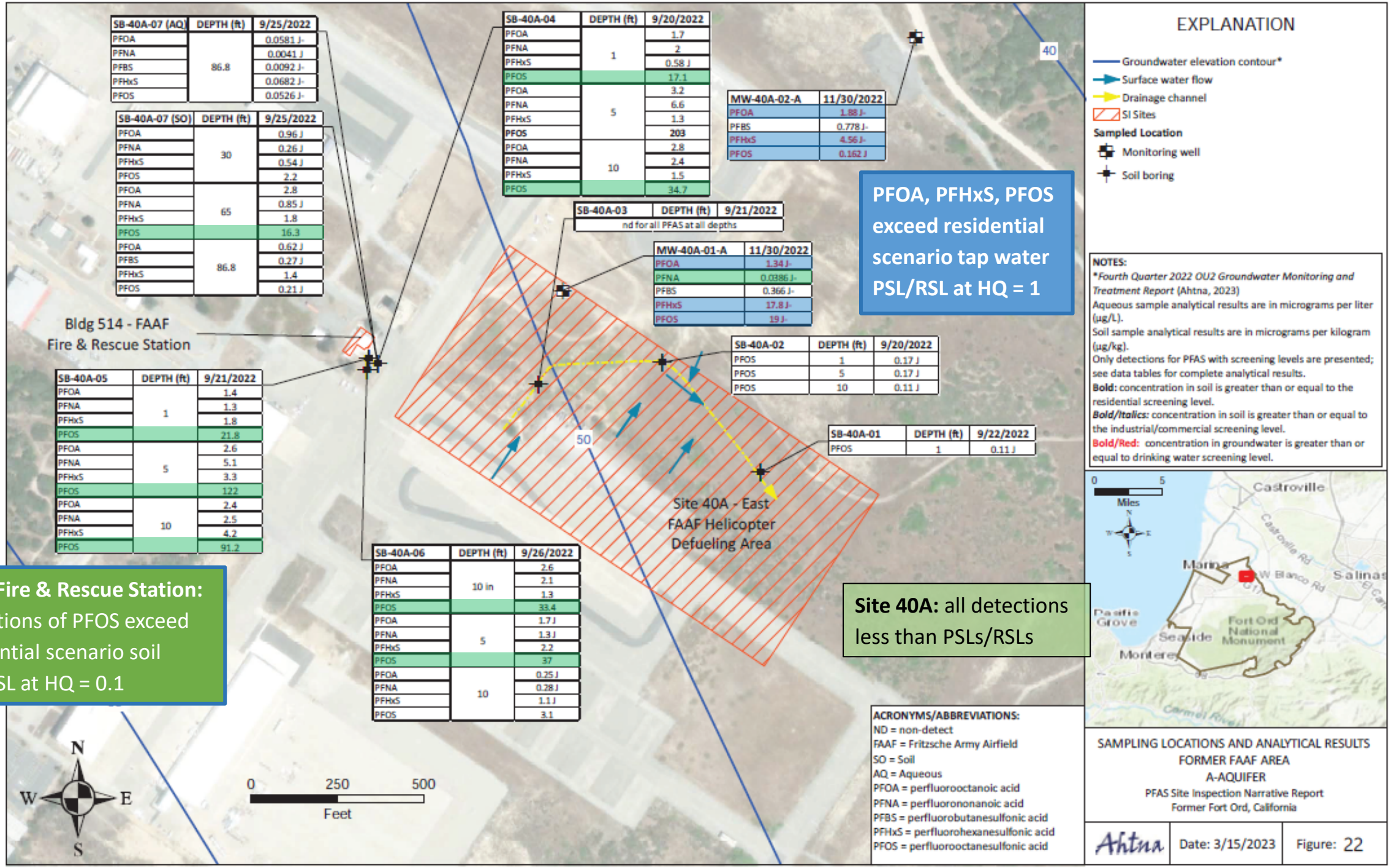
Bold/Red: concentration in groundwater is greater than or equal to drinking water screening level.

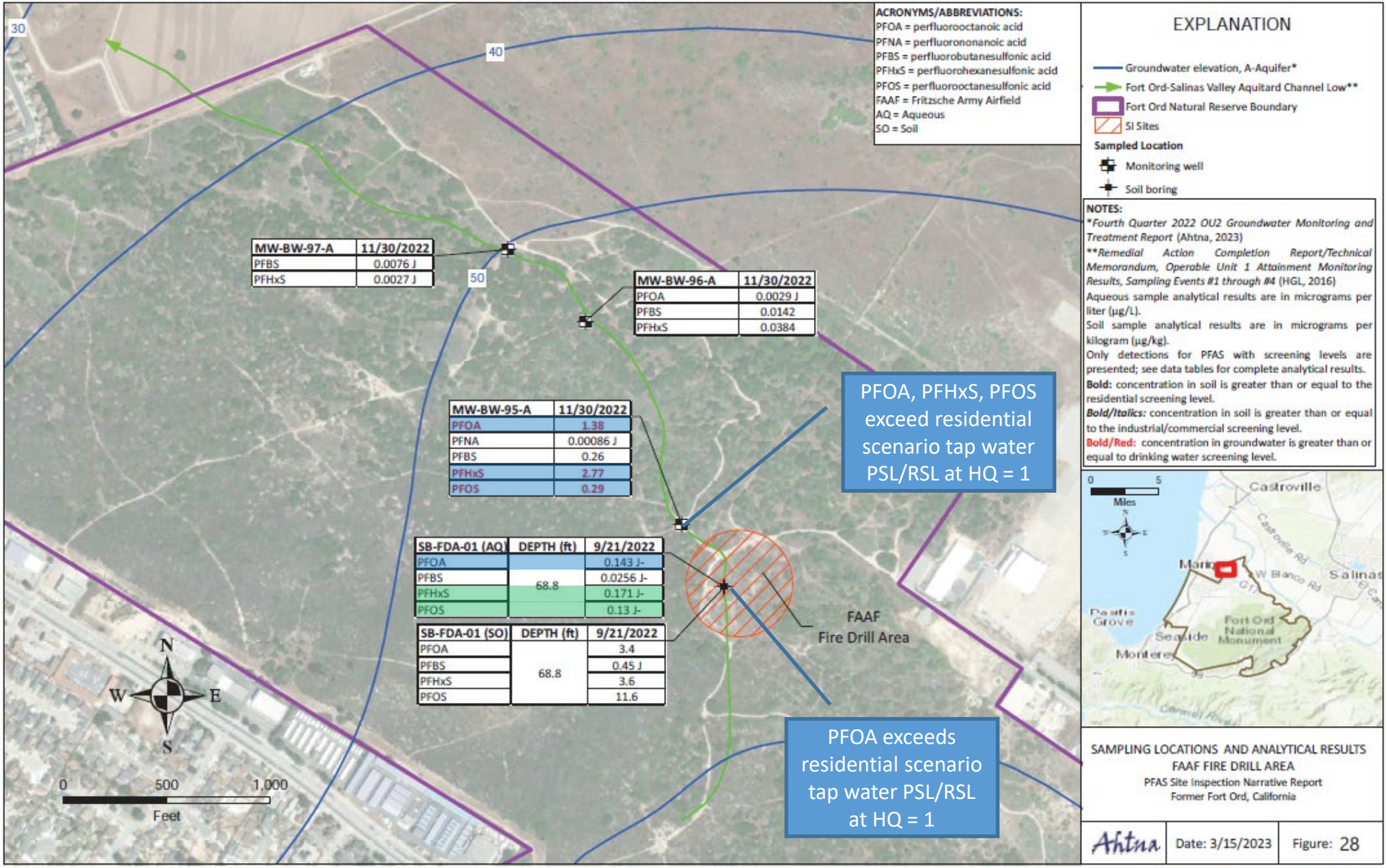
ACRONYMS/ABBREVIATIONS:

OU2 = Operable Unit 2 (Fort Ord Landfills)
PFOA = perfluorooctanoic acid
PFNA = perfluorononanoic acid
PFBS = perfluorobutanesulfonic acid
PFHxA = perfluorohexanoic acid
PFHxS = perfluorohexanesulfonic acid

SAMPLING LOCATIONS AND ANALYTICAL RESULTS
OU2
LOWER 180/400-FOOT AQUIFERS
PFAS Site Inspection Narrative Report
Former Fort Ord, California

Ahtna | Date: 3/16/2023 | Figure: 31


SB-40A-07 (AQ) | DEPTH (ft) | 9/25/2022
PFOA | 86.8 | 0.0581 J-
PFNA | | 0.0041 J
PFBS | | 0.0092 J-
PFHxS | | 0.0682 J-
PFOS | | 0.0526 J-
SB-40A-07 (SO) | DEPTH (ft) | 9/25/2022
PFOA | 30 | 0.96 J
PFNA | | 0.26 J
PFHxS | | 0.54 J
PFOS | | 2.2
PFOA | 65 | 2.8
PFNA | | 0.85 J
PFHxS | | 1.8
PFOS | | 16.3
PFOA | 86.8 | 0.62 J
PFBS | | 0.27 J
PFHxS | | 1.4
PFOS | | 0.21 J
SB-40A-04 | DEPTH (ft) | 9/20/2022
PFOA | 1 | 1.7
PFNA | | 2
PFHxS | | 0.58 J
PFOS | | 17.1
PFOA | 5 | 3.2
PFNA | | 6.6
PFHxS | | 1.3
PFOS | | 203
PFOA | 10 | 2.8
PFNA | | 2.4
PFHxS | | 1.5
PFOS | | 34.7
MW-40A-02-A | 11/30/2022
PFOA | 1.88 J-
PFBS | 0.778 J-
PFHxS | 4.56 J-
PFOS | 0.162 J
SB-40A-03 | DEPTH (ft) | 9/21/2022
nd for all PFAS at all depths
MW-40A-01-A | 11/30/2022
PFOA | 1.34 J-
PFNA | 0.0386 J-
PFBS | 0.366 J-
PFHxS | 17.8 J-
PFOS | 19 J-
SB-40A-02 | DEPTH (ft) | 9/20/2022
PFOS | 1 | 0.17 J
PFOS | 5 | 0.17 J
PFOS | 10 | 0.11 J
SB-40A-01 | DEPTH (ft) | 9/22/2022
PFOS | 1 | 0.11 J
SB-40A-05 | DEPTH (ft) | 9/21/2022
PFOA | 1 | 1.4
PFNA | | 1.3
PFHxS | | 1.8
PFOS | | 21.8
PFOA | 5 | 2.6
PFNA | | 5.1
PFHxS | | 3.3
PFOS | | 122
PFOA | 10 | 2.4
PFNA | | 2.5
PFHxS | | 4.2
PFOS | | 91.2
SB-40A-06 | DEPTH (ft) | 9/26/2022
PFOA | 10 in | 2.6
PFNA | | 2.1
PFHxS | | 1.3
PFOS | | 33.4
PFOA | 5 | 1.7 J
PFNA | | 1.3 J
PFHxS | | 2.2
PFOS | | 37
PFOA | 10 | 0.25 J
PFNA | | 0.28 J
PFHxS | | 1.1 J
PFOS | | 3.1
Bldg 514 - FAAF
Fire & Rescue Station
Site 40A - East
FAAF Helicopter
Defueling Area
40
50
PFOA, PFHxS, PFOS exceed residential scenario tap water PSL/RSL at HQ = 1
FAAF Fire & Rescue Station: Detections of PFOS exceed residential scenario soil PSL/RSL at HQ = 0.1
Site 40A: all detections less than PSLs/RSLs
N
W
E
S
0
250
500
Feet
EXPLANATION
Groundwater elevation contour*
Surface water flow
Drainage channel
SI Sites
Sampled Location
Monitoring well
Soil boring
NOTES:
*Fourth Quarter 2022 OU2 Groundwater Monitoring and Treatment Report (Ahtna, 2023)
Aqueous sample analytical results are in micrograms per liter (µg/L).
Soil sample analytical results are in micrograms per kilogram (µg/kg).
Only detections for PFAS with screening levels are presented; see data tables for complete analytical results.
Bold: concentration in soil is greater than or equal to the residential screening level.
Bold/Italics: concentration in soil is greater than or equal to the industrial/commercial screening level.
Bold/Red: concentration in groundwater is greater than or equal to drinking water screening level.
0
5
Miles
Castroville
Marina
Salinas
Pacific Grove
Seaside
Monterey
Fort Ord National Monument
W Blanco Rd
Castroville Rd
ACRONYMS/ABBREVIATIONS:
ND = non-detect
FAAF = Fritzsche Army Airfield
SO = Soil
AQ = Aqueous
PFOA = perfluorooctanoic acid
PFNA = perfluorononanoic acid
PFBS = perfluorobutanesulfonic acid
PFHxS = perfluorohexanesulfonic acid
PFOS = perfluorooctanesulfonic acid
SAMPLING LOCATIONS AND ANALYTICAL RESULTS
FORMER FAAF AREA
A-AQUIFER
PFAS Site Inspection Narrative Report
Former Fort Ord, California
Ahtna
Date: 3/15/2023
Figure: 22



ACRONYMS/ABBREVIATIONS:
PFOA = perfluorooctanoic acid
PFNA = perfluorononanoic acid
PFBS = perfluorobutanesulfonic acid
PFHxS = perfluorohexanesulfonic acid
PFOS = perfluorooctanesulfonic acid
FAAF = Fritzsche Army Airfield
AQ = Aqueous
SO = Soil

EXPLANATION

- Groundwater elevation, A-Aquifer*
- Fort Ord-Salinas Valley Aquitard Channel Low**
- Fort Ord Natural Reserve Boundary
- SI Sites

Sampled Location

- Monitoring well
- Soil boring

NOTES:

*_Fourth Quarter 2022 OU2 Groundwater Monitoring and Treatment Report_ (Ahtna, 2023)

**_Remedial Action Completion Report/Technical Memorandum, Operable Unit 1 Attainment Monitoring Results, Sampling Events #1 through #4_ (HGL, 2016)

Aqueous sample analytical results are in micrograms per liter (µg/L).

Soil sample analytical results are in micrograms per kilogram (µg/kg).

Only detections for PFAS with screening levels are presented; see data tables for complete analytical results.

Bold: concentration in soil is greater than or equal to the residential screening level.

Bold/Italics: concentration in soil is greater than or equal to the industrial/commercial screening level.

Bold/Red: concentration in groundwater is greater than or equal to drinking water screening level.

SAMPLING LOCATIONS AND ANALYTICAL RESULTS
FAAF FIRE DRILL AREA
PFAS Site Inspection Narrative Report
Former Fort Ord, California

Ahtna | Date: 3/15/2023 | Figure: 28