Former Fort Ord Operable Unit Carbon Tetrachloride Plume Data and Status

HTW BCT, October 27, 2023

Remedial Summary

- **A-Aquifer:**
  - **8 COCs:** 1,1-DCE; Total 1,2-DCE; CT; chloroform; methylene chloride; PCE; TCE; and VC.
  - **Remediation:** EISB.
- **Upper 180-Foot Aquifer:**
  - **1 COC:** CT
  - **Remediation:** Pump and treat with GAC at OU2 GWTP since 2011. Operation split the single plume in half. However, CT never detected above the ACL at EW-OU2-09-180.
- **Lower 180-Foot Aquifer:**
  - **2 COCs:** 1,2-DCA and CT. TCE monitored also.
  - **Remediation:** MNA with supply wellhead treatment contingency.
- **Monitoring:** Quarterly groundwater monitoring and reporting, including annual 3Q monitoring and reports. Described in the most recent Groundwater QAPP.

July-Oct Key Events

- June 28: EW-OU2-09-180 offline due to failed pump.
- Aug 14-18: Third Quarter 2023 Annual Groundwater Monitoring Program.
- Oct 11: replaced failed flowmeter at EW-OU2-09-180.
- Oct 30: Replace failed pump in EW-OU2-09-180.

Future Key Events

- Oct: Decommission one well (MW-OU2-68-180) and steel conductor pipe.
- Nov: Install three monitoring wells in A-Aquifer Hydraulic Zone 2 (work plan/QAPP draft final).
- Install three monitoring wells in the A-Aquifer Hydraulic Zone 5 (work plan final).
- Install one extraction well in the Upper 180-Foot Aquifer (work plan/QAPP in progress).

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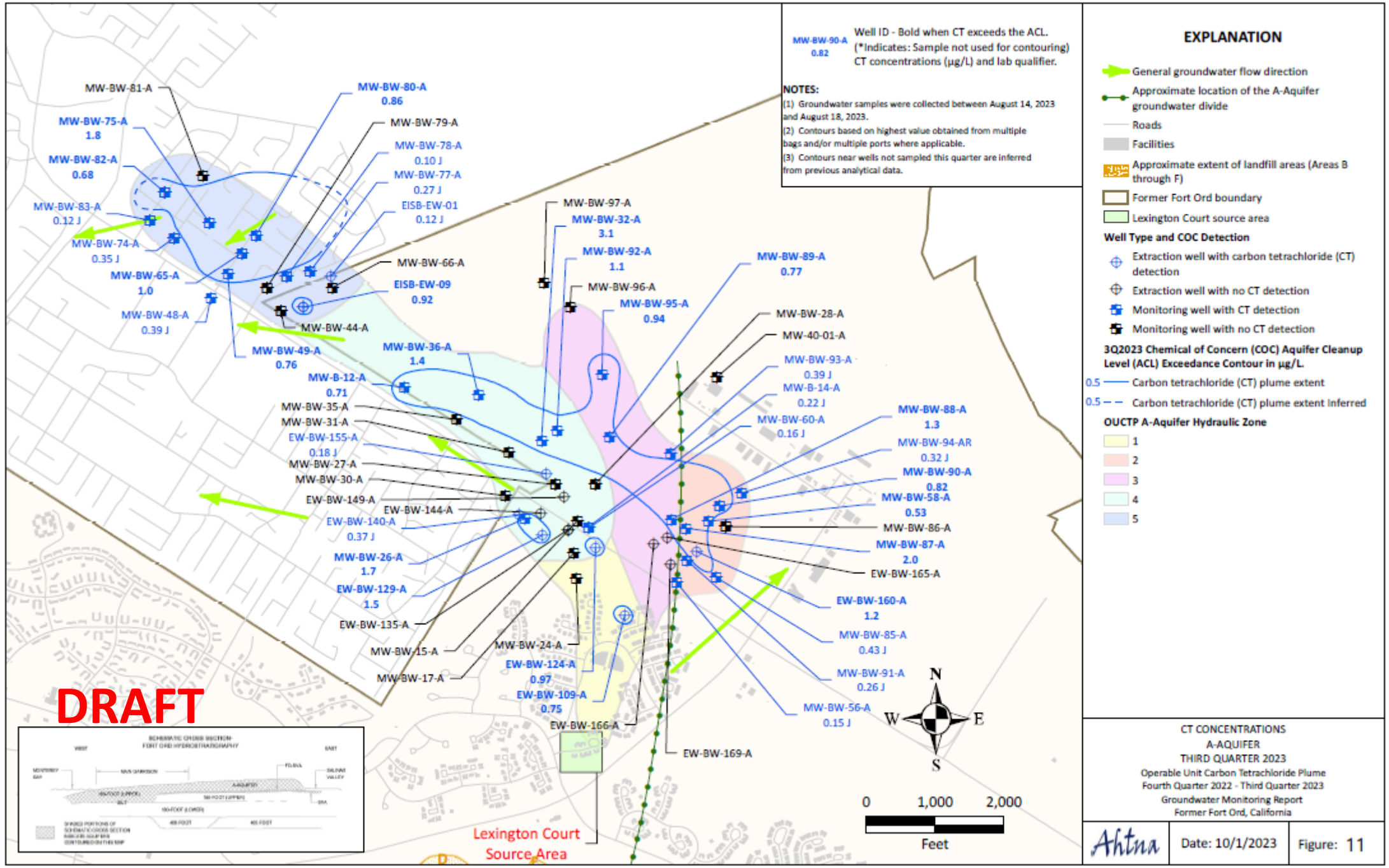
MW-BW-90-A
0.82
Well ID - Bold when CT exceeds the ACL.
(*Indicates: Sample not used for contouring)
CT concentrations (µg/L) and lab qualifier.
NOTES:
(1) Groundwater samples were collected between August 14, 2023 and August 18, 2023.
(2) Contours based on highest value obtained from multiple bags and/or multiple ports where applicable.
(3) Contours near wells not sampled this quarter are inferred from previous analytical data.
EXPLANATION
General groundwater flow direction
Approximate location of the A-Aquifer groundwater divide
Roads
Facilities
Approximate extent of landfill areas (Areas B through F)
Former Fort Ord boundary
Lexington Court source area
Well Type and COC Detection
Extraction well with carbon tetrachloride (CT) detection
Extraction well with no CT detection
Monitoring well with CT detection
Monitoring well with no CT detection
3Q2023 Chemical of Concern (COC) Aquifer Cleanup Level (ACL) Exceedance Contour in µg/L.
0.5 Carbon tetrachloride (CT) plume extent
0.5 Carbon tetrachloride (CT) plume extent inferred
OUCTP A-Aquifer Hydraulic Zone
1
2
3
4
5
MW-BW-81-A
MW-BW-80-A 0.86
MW-BW-75-A 1.8
MW-BW-79-A
MW-BW-82-A 0.68
MW-BW-78-A 0.10 J
MW-BW-77-A 0.27 J
MW-BW-83-A 0.12 J
EISB-EW-01 0.12 J
MW-BW-74-A 0.35 J
MW-BW-66-A
MW-BW-65-A 1.0
EISB-EW-09 0.92
MW-BW-48-A 0.39 J
MW-BW-44-A
MW-BW-49-A 0.76
MW-BW-36-A 1.4
MW-B-12-A 0.71
MW-BW-35-A
MW-BW-31-A
EW-BW-155-A 0.18 J
MW-BW-27-A
MW-BW-30-A
EW-BW-149-A
EW-BW-144-A
EW-BW-140-A 0.37 J
MW-BW-26-A 1.7
EW-BW-129-A 1.5
EW-BW-135-A
MW-BW-15-A
MW-BW-17-A
MW-BW-97-A
MW-BW-32-A 3.1
MW-BW-92-A 1.1
MW-BW-96-A
MW-BW-95-A 0.94
MW-BW-89-A 0.77
MW-BW-28-A
MW-40-01-A
MW-BW-93-A 0.39 J
MW-B-14-A 0.22 J
MW-BW-60-A 0.16 J
MW-BW-88-A 1.3
MW-BW-94-AR 0.32 J
MW-BW-90-A 0.82
MW-BW-58-A 0.53
MW-BW-86-A
MW-BW-87-A 2.0
EW-BW-165-A
EW-BW-160-A 1.2
MW-BW-85-A 0.43 J
MW-BW-91-A 0.26 J
MW-BW-56-A 0.15 J
MW-BW-24-A
EW-BW-124-A 0.97
EW-BW-109-A 0.75
EW-BW-166-A
EW-BW-169-A
Lexington Court Source Area
DRAFT
N
W
E
S
0
1,000
2,000
Feet
CT CONCENTRATIONS
A-AQUIFER
THIRD QUARTER 2023
Operable Unit Carbon Tetrachloride Plume
Fourth Quarter 2022 - Third Quarter 2023
Groundwater Monitoring Report
Former Fort Ord, California
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Date: 10/1/2023
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GWM COC Summary

Table 1: OUCTP GWM Summary – A-Aquifer

Quarter	1,1-DCE	T 1,2-DCE	CT	Chloroform	Methylene Chloride	PCE	TCE	VC
2023-3Q	ND	<ACL	**>ACL**	<ACL	ND	<ACL	<ACL	ND
2023-2Q	ND	<ACL	**>ACL**	<ACL	ND	<ACL	<ACL	ND
2023-1Q	ND	<ACL	**>ACL**	**>ACL**	ND	<ACL	<ACL	ND
2022-4Q	ND	<ACL	**>ACL**	=ACL	<ACL	ND	<ACL	ND
Max COC/ACL Ratio	-	-	**18**	**1.5**	-	-	-	-
Hydraulic Zone	-	-	**5**	**4**	-	-	-	-

Notes:
*Preliminary data
>: greater than
<: less than
ACL: Aquifer Cleanup Level
1,1-DCE: 1,1-dichloroethene
T 1,2-DCE: total 1,2-dichloroethene
1,2-DCA: 1,2-dichloroethane
CT: carbon tetrachloride
TCE: trichloroethene
PCE: tetrachloroethene
VC: vinyl chloride
ND: The analyte was not detected above the detection limit.

Table 2: OUCTP GWM Summary – Upper 180-Foot Aquifer

Quarter	CT
2023-3Q	**>ACL**
2023-2Q	**>ACL**
2023-1Q	**>ACL**
2022-4Q	**>ACL**
Max COC/ACL Ratio	**15**
Hydraulic Zone	**6**

Table 3: OUCTP GWM Summary – Lower 180-Foot Aquifer

Quarter	CT	TCE	1,2-DCA
2023-3Q	**>ACL**	<MCL	ND
2023-2Q	**>ACL**	**>MCL**	ND
2023-1Q	**>ACL**	**>MCL**	ND
2022-4Q	**>ACL**	<MCL	ND
Max COC/ACL Ratio	**8.6**	**2.0**	-
Hydraulic Zone	**7**	**N/A**	-

2 COCs in the A-Aquifer, 1 in the Upper 180-Foot Aquifer, and 2 in the Lower 180-Foot Aquifer above the ACLs.

No change in max COC/ACL since 2023-2Q.

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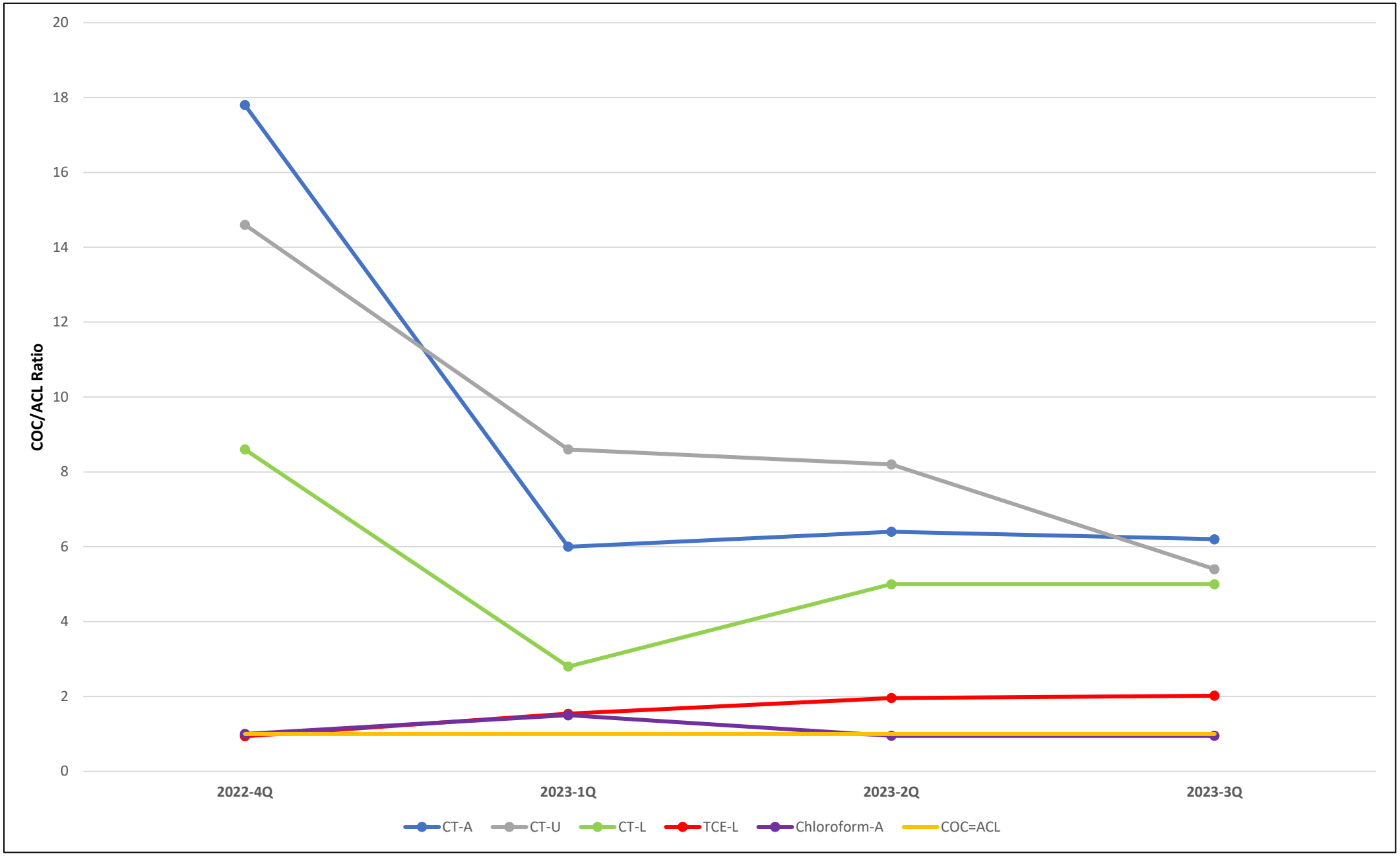
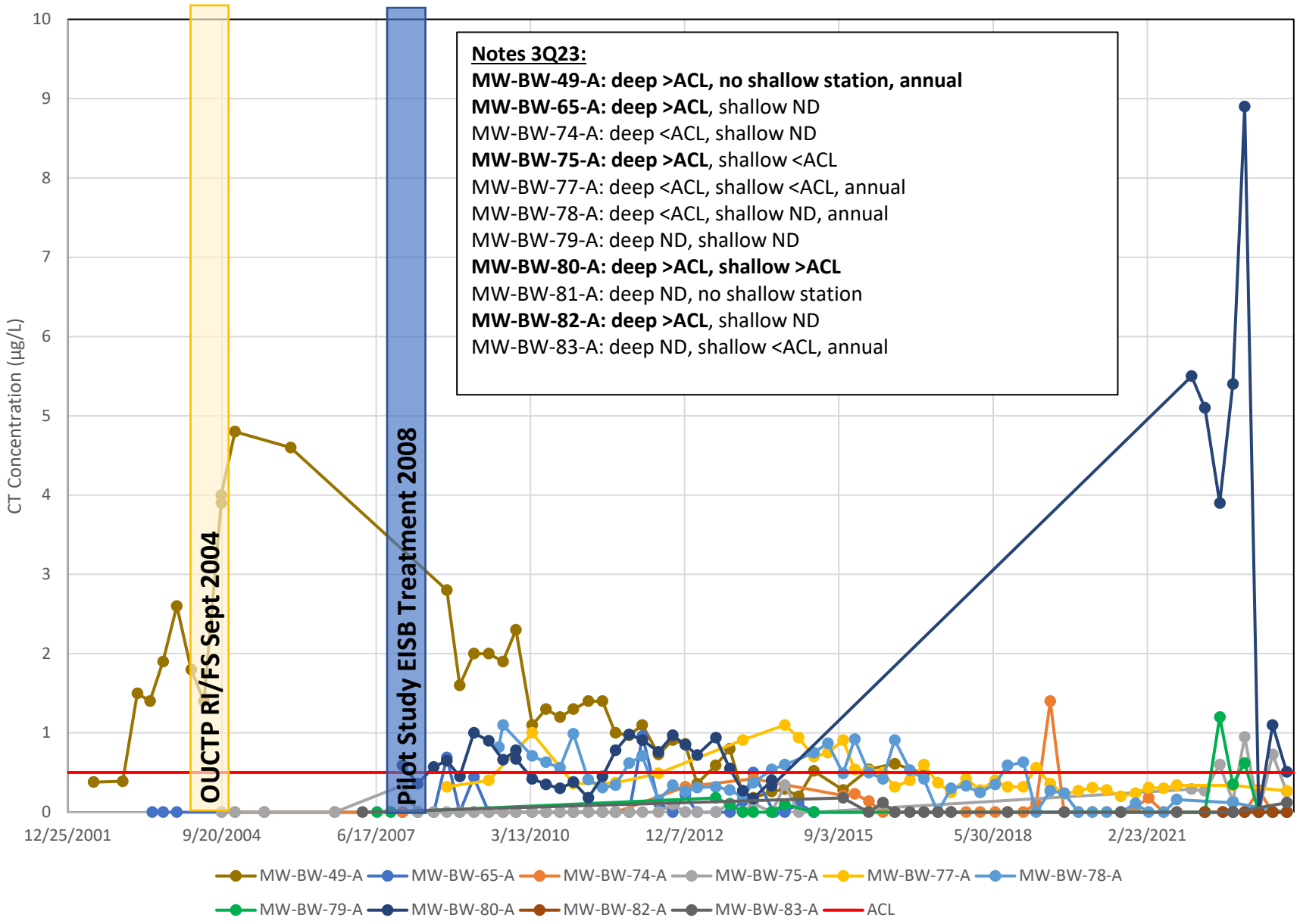
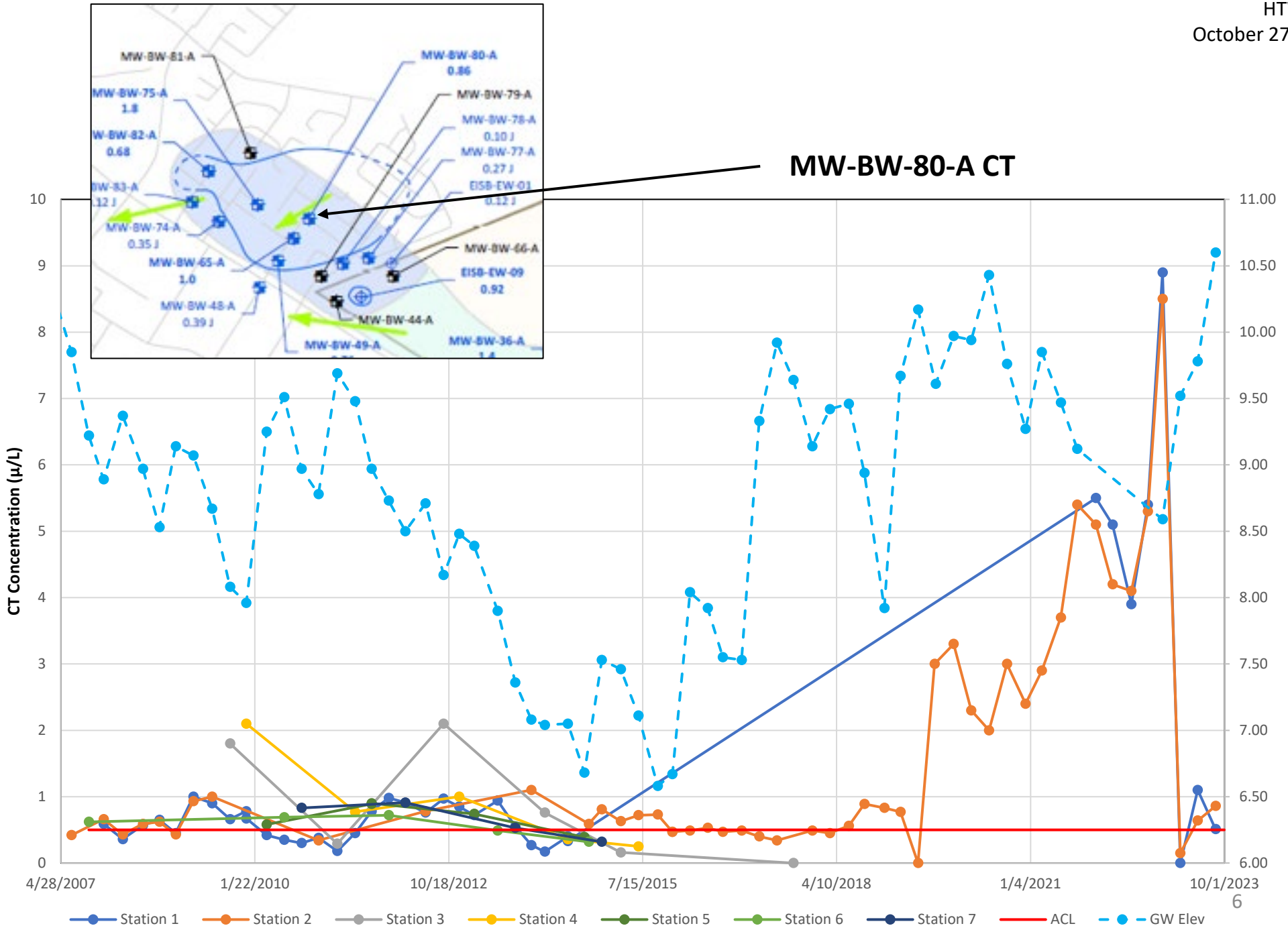
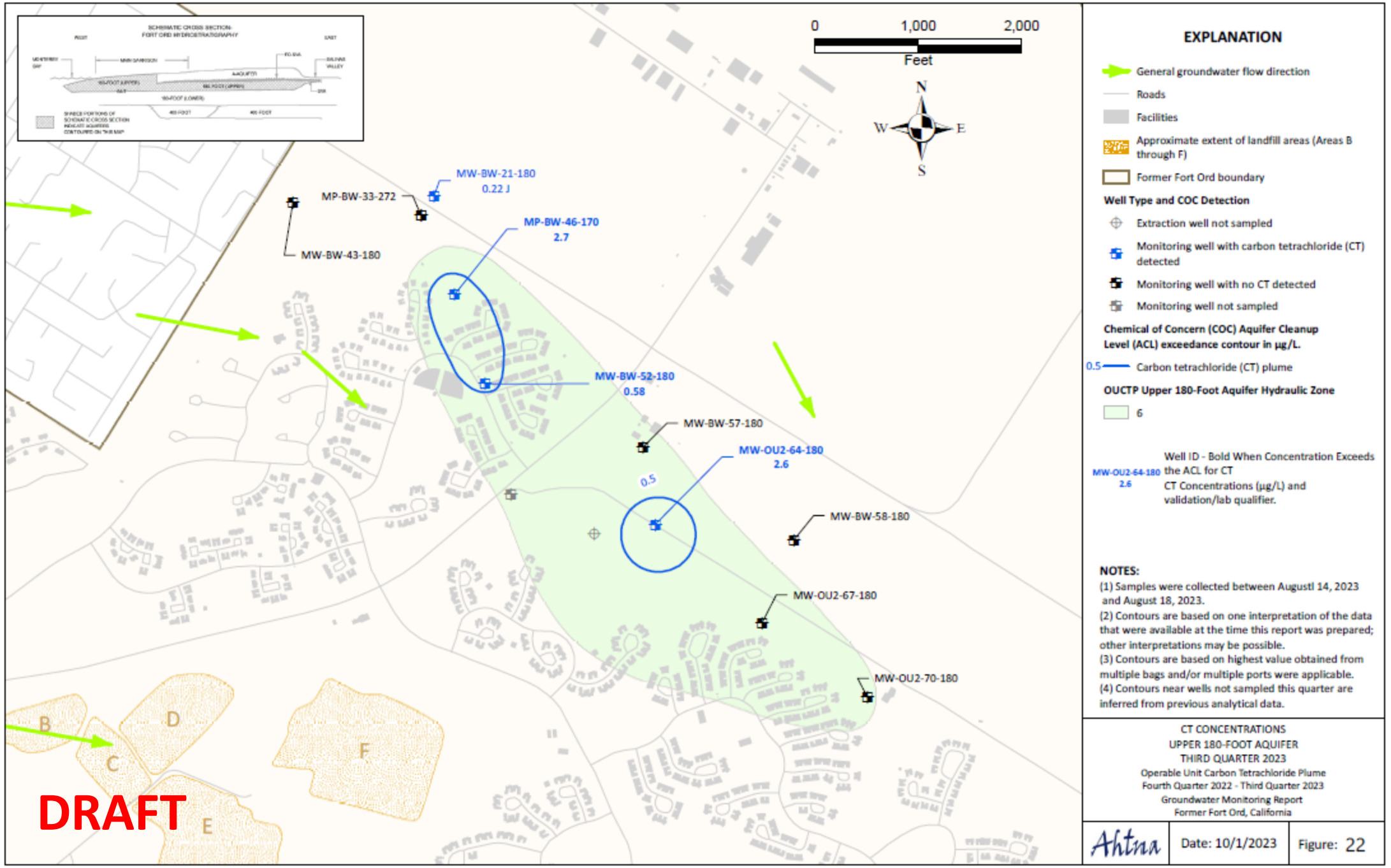
Max Quarterly COC/ACL Ratio Trend



CT Shallow Stations: City of Marina HZ 5




MW-BW-80-A CT
MW-BW-81-A
MW-BW-80-A
0.86
MW-BW-75-A
1.8
MW-BW-79-A
W-BW-82-A
0.68
MW-BW-78-A
0.10 J
MW-BW-77-A
0.27 J
EISB-EW-01
0.12 J
BW-83-A
12 J
MW-BW-74-A
0.35 J
MW-BW-66-A
MW-BW-65-A
1.0
EISB-EW-09
0.92
MW-BW-48-A
0.39 J
MW-BW-44-A
MW-BW-49-A
MW-BW-36-A
CT Concentration (µ/L)
10
9
8
7
6
5
4
3
2
1
0
11.00
10.50
10.00
9.50
9.00
8.50
8.00
7.50
7.00
6.50
6.00
4/28/2007
1/22/2010
10/18/2012
7/15/2015
4/10/2018
1/4/2021
10/1/2023
Station 1
Station 2
Station 3
Station 4
Station 5
Station 6
Station 7
ACL
GW Elev


0
1,000
2,000
Feet
N
W
E
S
MW-BW-21-180
0.22 J
MP-BW-33-272
MW-BW-43-180
MP-BW-46-170
2.7
MW-BW-52-180
0.58
MW-BW-57-180
MW-OU2-64-180
2.6
0.5
MW-BW-58-180
MW-OU2-67-180
MW-OU2-70-180
B
C
D
E
F
DRAFT
EXPLANATION
General groundwater flow direction
Roads
Facilities
Approximate extent of landfill areas (Areas B through F)
Former Fort Ord boundary
Well Type and COC Detection
Extraction well not sampled
Monitoring well with carbon tetrachloride (CT) detected
Monitoring well with no CT detected
Monitoring well not sampled
Chemical of Concern (COC) Aquifer Cleanup Level (ACL) exceedance contour in µg/L.
0.5
Carbon tetrachloride (CT) plume
OUCTP Upper 180-Foot Aquifer Hydraulic Zone
6
MW-OU2-64-180
2.6
Well ID - Bold When Concentration Exceeds the ACL for CT
CT Concentrations (µg/L) and validation/lab qualifier.
NOTES:
(1) Samples were collected between Augustl 14, 2023 and August 18, 2023.
(2) Contours are based on one interpretation of the data that were available at the time this report was prepared; other interpretations may be possible.
(3) Contours are based on highest value obtained from multiple bags and/or multiple ports were applicable.
(4) Contours near wells not sampled this quarter are inferred from previous analytical data.
CT CONCENTRATIONS
UPPER 180-FOOT AQUIFER
THIRD QUARTER 2023
Operable Unit Carbon Tetrachloride Plume
Fourth Quarter 2022 - Third Quarter 2023
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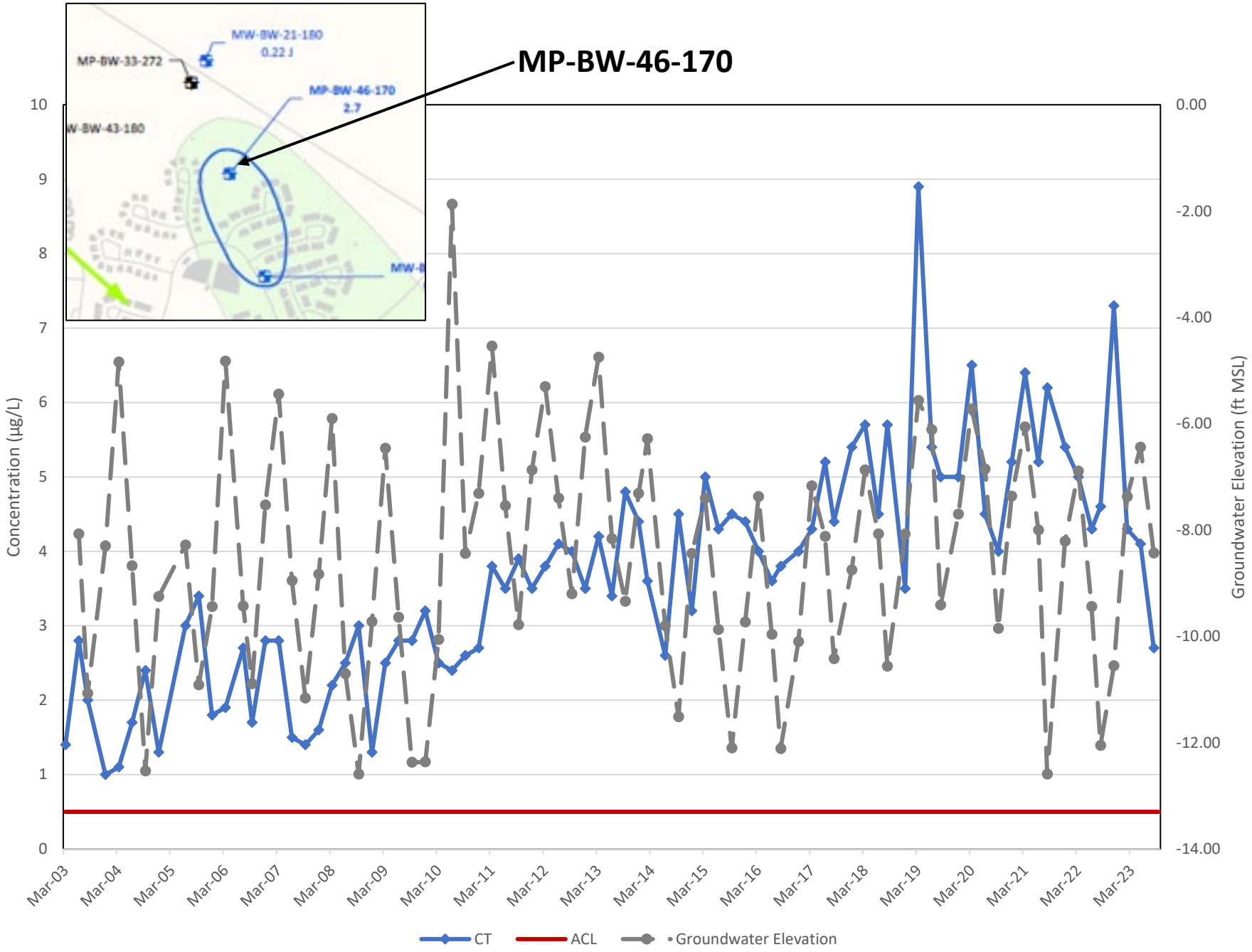
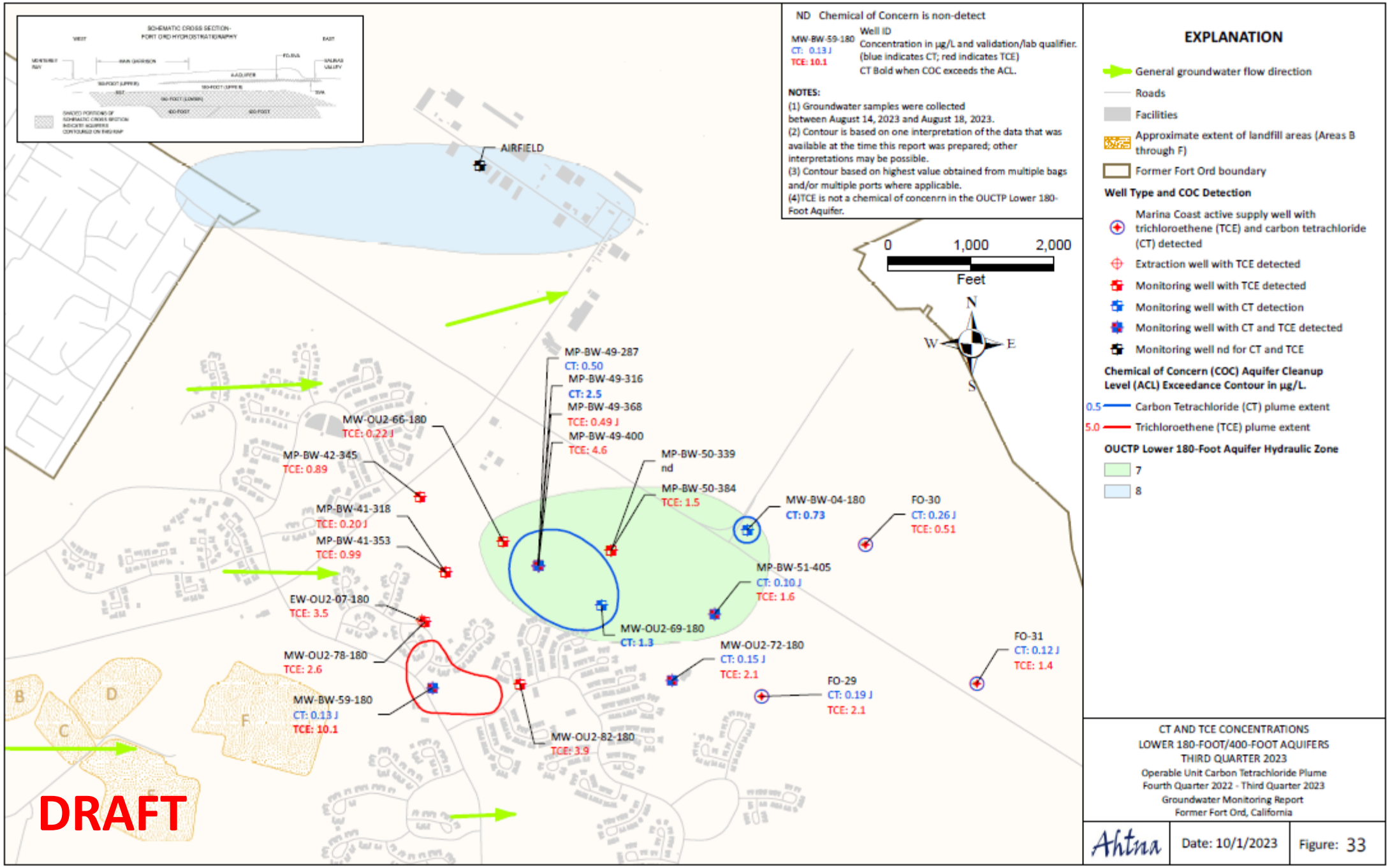
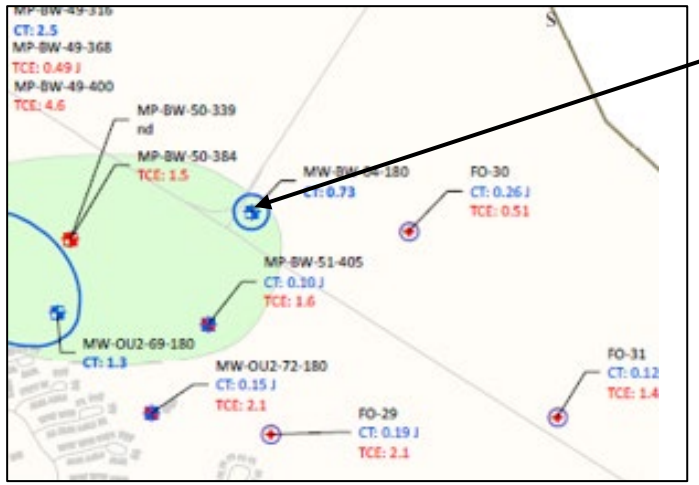

MP-BW-46-170
MW-BW-21-180
0.22 J
MP-BW-33-272
MP-BW-46-170
2.7
Concentration (µg/L)
Groundwater Elevation (ft MSL)
0
1
2
3
4
5
6
7
8
9
10
0.00
-2.00
-4.00
-6.00
-8.00
-10.00
-12.00
-14.00
Mar-03
Mar-04
Mar-05
Mar-06
Mar-07
Mar-08
Mar-09
Mar-10
Mar-11
Mar-12
Mar-13
Mar-14
Mar-15
Mar-16
Mar-17
Mar-18
Mar-19
Mar-20
Mar-21
Mar-22
Mar-23
CT
ACL
Groundwater Elevation

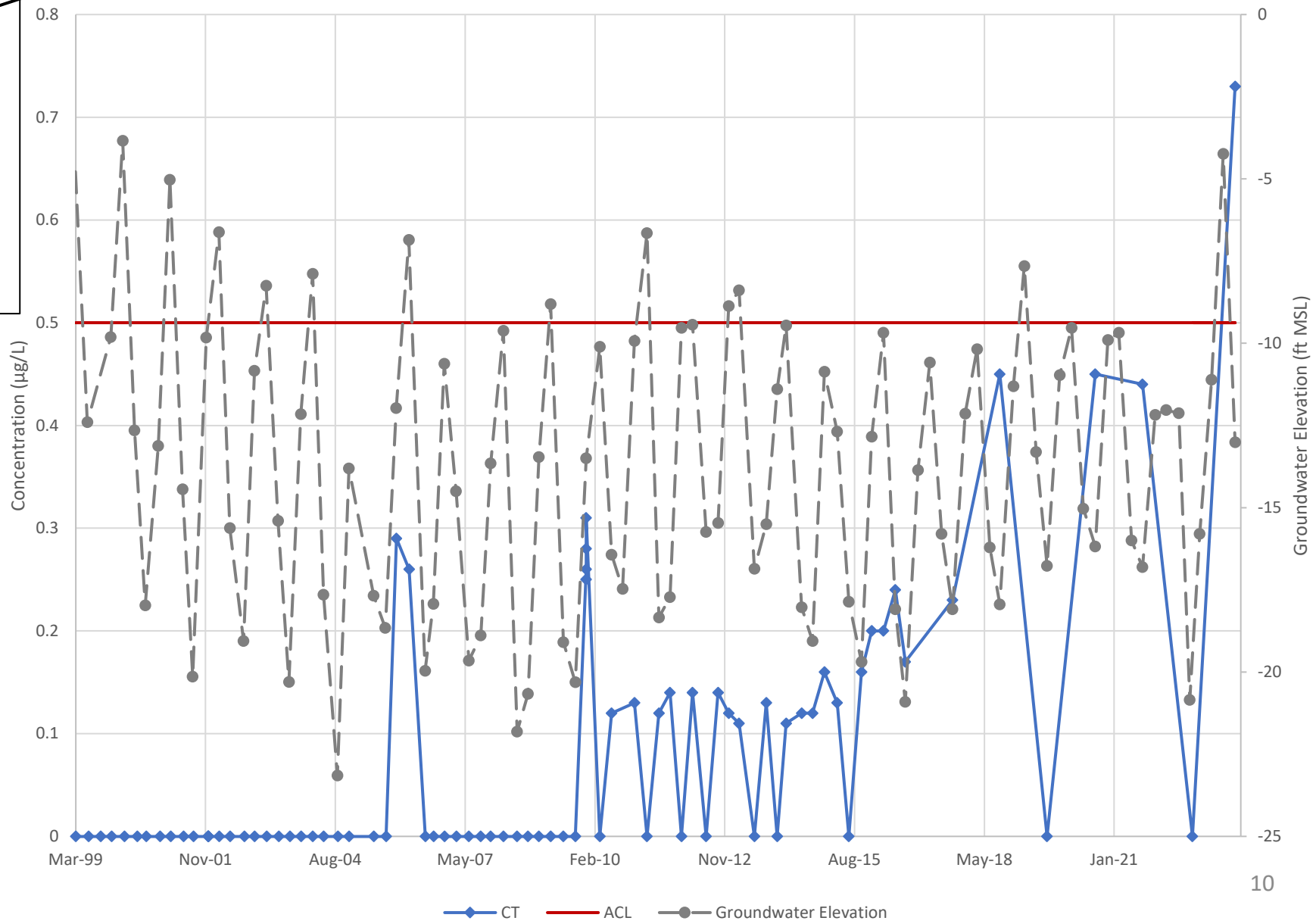


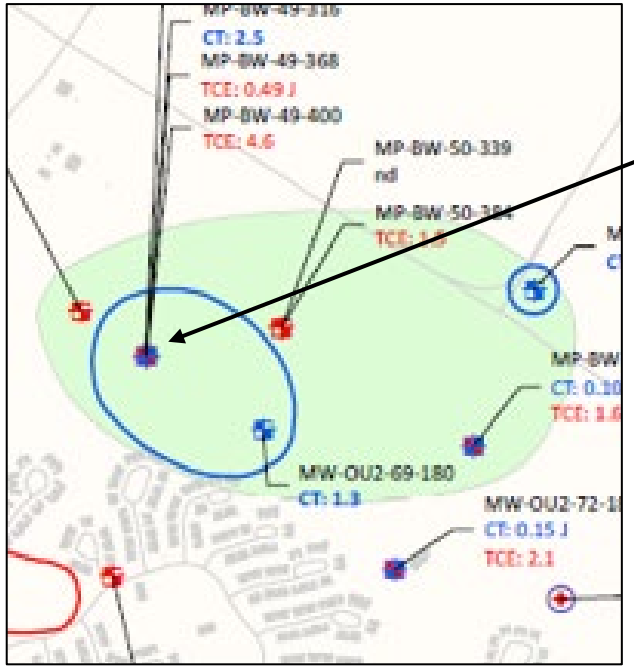
CT AND TCE CONCENTRATIONS
LOWER 180-FOOT/400-FOOT AQUIFERS
THIRD QUARTER 2023
Operable Unit Carbon Tetrachloride Plume
Fourth Quarter 2022 - Third Quarter 2023
Groundwater Monitoring Report
Former Fort Ord, California

Ahtna | Date: 10/1/2023 | Figure: 33

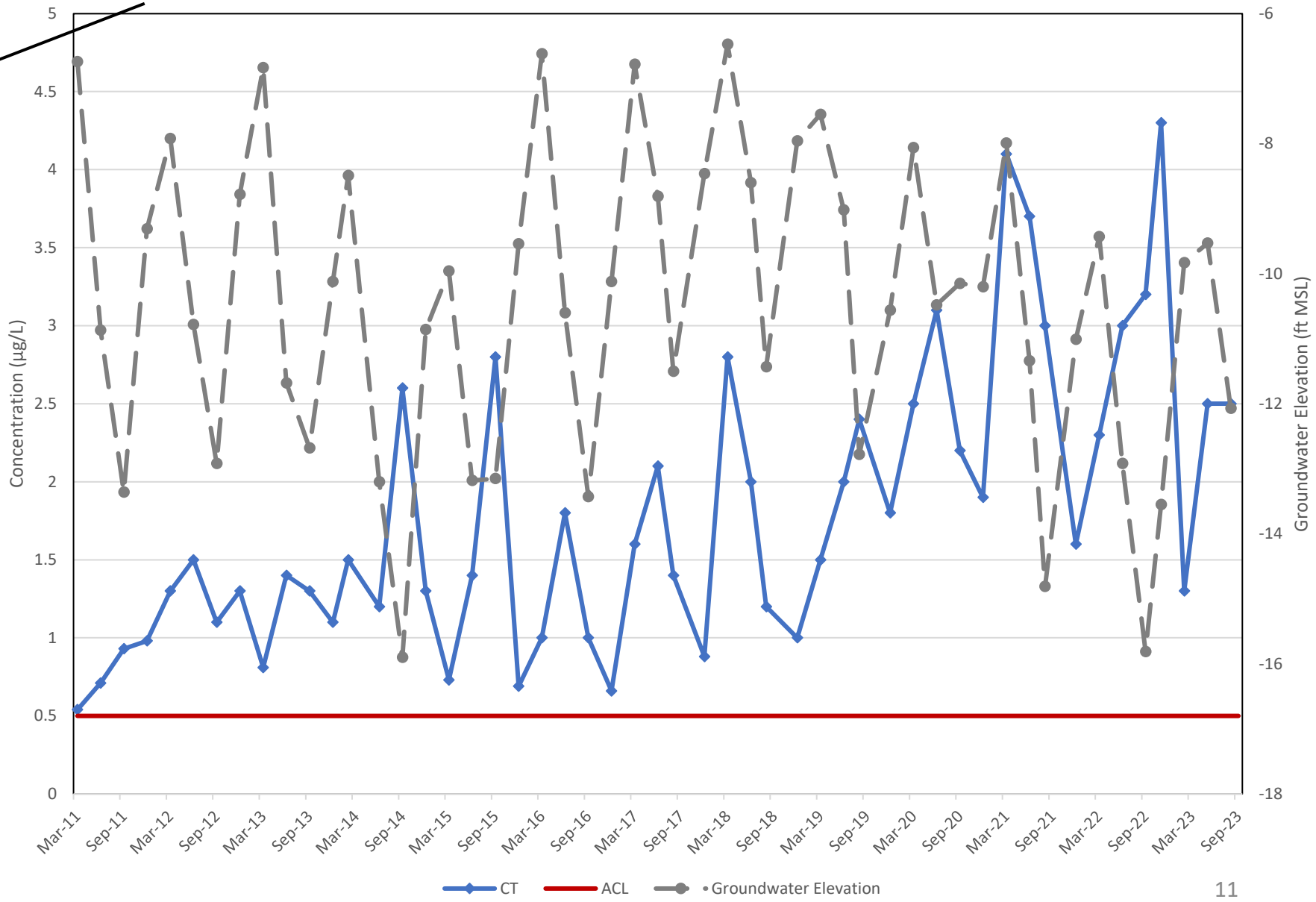

MP-BW-49-316
CT: 2.5
MP-BW-49-368
TCE: 0.49 J
MP-BW-49-400
TCE: 4.6
MP-BW-50-339
nd
MP-BW-50-384
TCE: 1.5
MW-BW-04-180
CT: 0.73
FO-30
CT: 0.26 J
TCE: 0.51
MP-BW-51-405
CT: 0.10 J
TCE: 1.6
MW-OU2-69-180
CT: 1.3
MW-OU2-72-180
CT: 0.15 J
TCE: 2.1
FO-29
CT: 0.19 J
TCE: 2.1
FO-31
CT: 0.12
TCE: 1.4

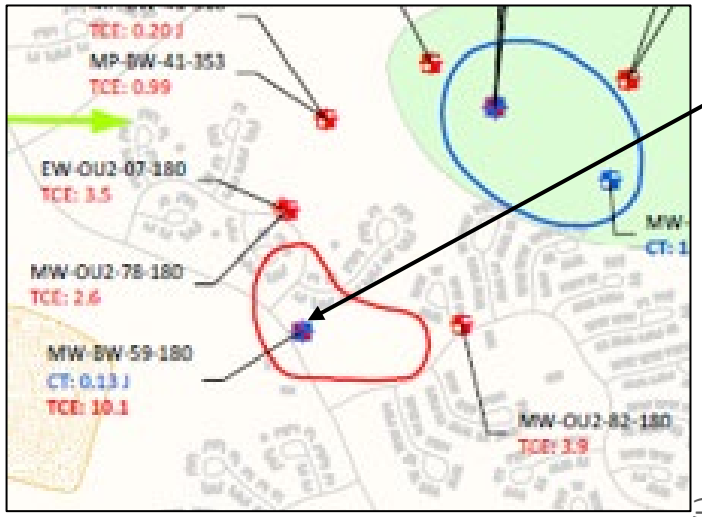
MW-BW-04-180


Concentration (µg/L)
Groundwater Elevation (ft MSL)
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
-5
-10
-15
-20
-25
Mar-99
Nov-01
Aug-04
May-07
Feb-10
Nov-12
Aug-15
May-18
Jan-21
CT
ACL
Groundwater Elevation

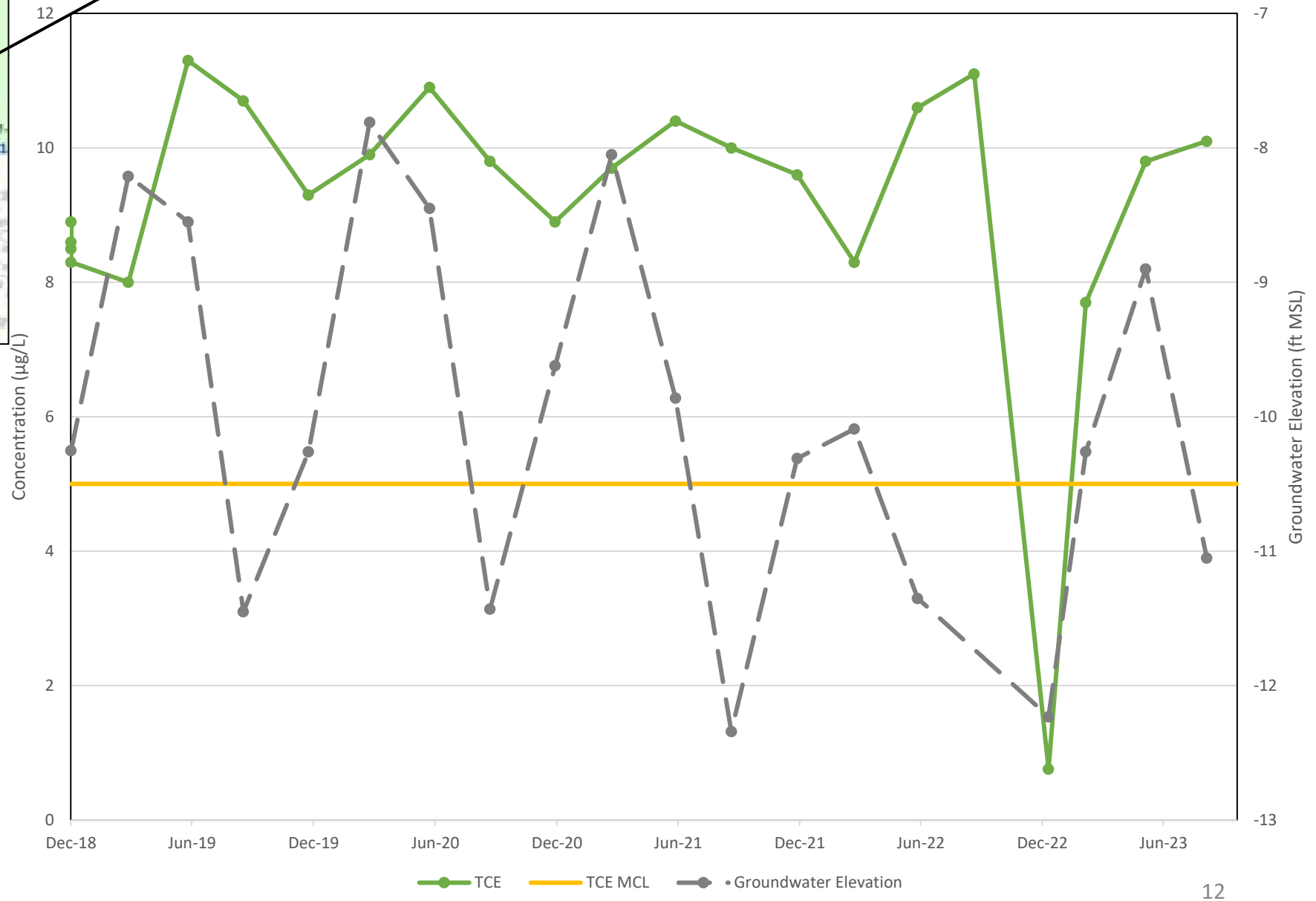

CT: 2.5
MP-BW-49-368
TCE: 0.49 J
MP-BW-49-400
TCE: 4.6
MP-BW-50-339
nd
MW-OU2-69-180
CT: 1.3
CT: 0.15 J
TCE: 2.1

MP-BW-49-316

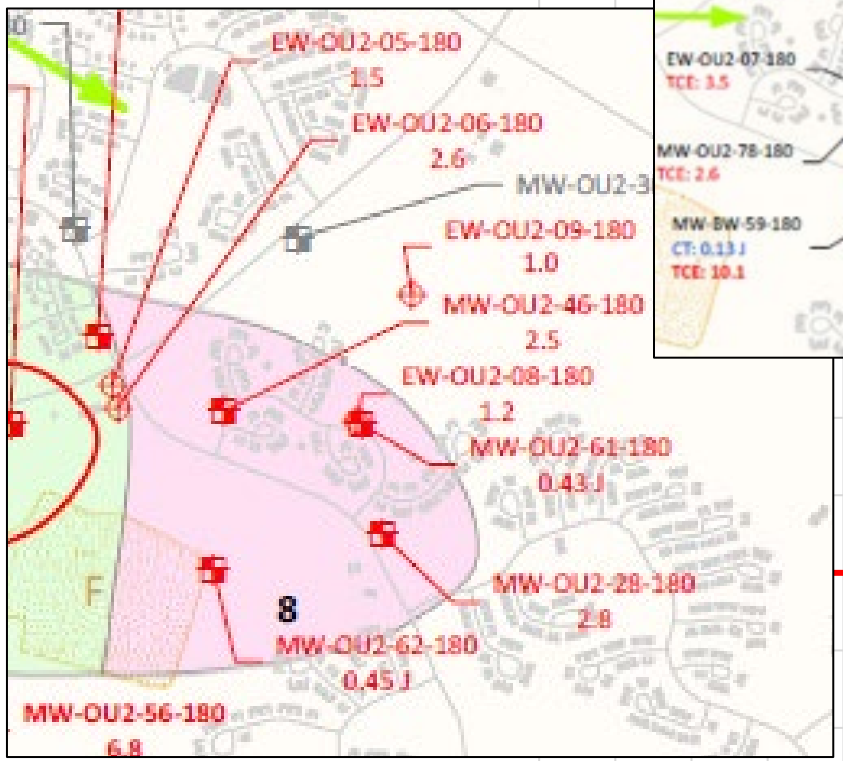

Concentration (µg/L)
Groundwater Elevation (ft MSL)
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
-6
-8
-10
-12
-14
-16
-18
Mar-11
Sep-11
Mar-12
Sep-12
Mar-13
Sep-13
Mar-14
Sep-14
Mar-15
Sep-15
Mar-16
Sep-16
Mar-17
Sep-17
Mar-18
Sep-18
Mar-19
Sep-19
Mar-20
Sep-20
Mar-21
Sep-21
Mar-22
Sep-22
Mar-23
Sep-23
CT
ACL
Groundwater Elevation

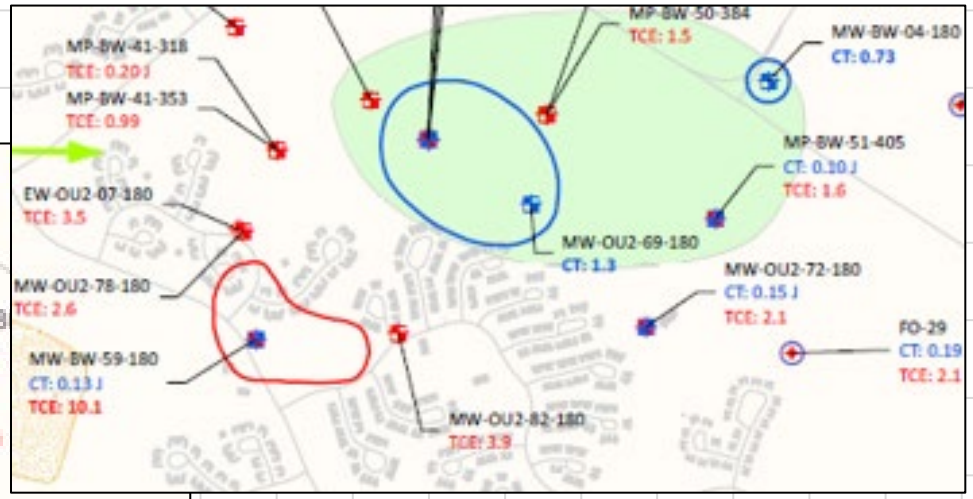

TCE: 0.20 J
MP-BW-41-353
TCE: 0.99
EW-OU2-07-180
TCE: 3.5
MW-OU2-78-180
TCE: 2.6
MW-BW-59-180
CT: 0.13 J
TCE: 10.1
MW-OU2-82-180
TCE: 3.9

MW-BW-59-180


Concentration (µg/L)
Groundwater Elevation (ft MSL)
0
2
4
6
8
10
12
-7
-8
-9
-10
-11
-12
-13
Dec-18
Jun-19
Dec-19
Jun-20
Dec-20
Jun-21
Dec-21
Jun-22
Dec-22
Jun-23
TCE
TCE MCL
Groundwater Elevation

TCE in the Lower 180-Foot Aquifer





Recommended Changes to the OUCTP GWMP

A-Aquifer

Three wells increase to quarterly monitoring (MW-B-12-A, MW-BW-49-A, and MW-BW-58-A).

Two wells reduce to annual monitoring (EISB-EW-01 and MW-B-14-A).

Three wells remove from monitoring (EW-BW-169-A, MW-BW-15-A, and MW-BW-56-A).

Upper 180-Foot Aquifer

None

Lower 180-Foot Aquifer

MW-BW-04-180 increase to quarterly monitoring.