Former Fort Ord Operable Unit 2 Data and Status

HTW BCT Meeting, November 14, 2018

Table 1: OU2 GWTP Statistics as of October 31, 2018

Monthly Statistics	Volume Treated (gallons)	Average Flow (gallons per minute)	Percent of Time Online	COC Mass Removed (pounds)
October 2018	6,953,131	156	35.5	0.42
Total since October 1995	7.435 billion			840

Table 2: October 2018 – OU2 Analytical Results at TS-OU2-INJ

COC	Discharge Limit (µg/L)	Analytical Results (µg/L)
		Not Sampled
1,1-dichloroethane (1,1-DCA)	5.0*	NS
1,2-dichloroethane (1,2-DCA)	0.5	NS
1,2-dichloropropane (1,2-DCP)	0.5	NS
Benzene	0.5	NS
Carbon tetrachloride (CT)	0.5	NS
Chloroform	2.0*	NS
Cis-1,2-dichloroethene (cis-1,2-DCE)	6.0*	NS
Methylene Chloride	0.5	NS
Tetrachloroethene (PCE)	0.5	NS
Trichloroethene (TCE)	0.5	NS
Vinyl chloride (VC)	0.1	NS

Notes:
COC: chemical of concern
µg/L: micrograms per liter
ND: The analyte was not detected above the limit of detection (LOD).
NS: not sampled.
J: Estimated results below the limit of quantitation (LOQ).
TS-OU2-INJ: Injection point of compliance, the OU2 effluent pipeline.
*Discharge limits for low carbon affinity compounds were increased to the Aquifer Cleanup Level (ACL).
Results in **bold** and shaded are concentrations above the ACL
Results in gray are ND

October 2018 Key Events for OU2

- October 12: Shut down the OU2 GWTP at 8:03 am for start of transition period.

- October 30: MCWD contractor second attempt to redevelop MW-OU2-42-180 (damaged in June and surface completion replaced); still blocked above screen interval. Some pieces of PVC removed.

November 2018 Key Events for OU2

- Work with JV on transition period activities.

December 2018 Key Events for OU2

- Work with JV on transition period activities.

- Dec 10-14: Fourth Quarter 2018 GWMP
    - Initial sampling of new monitoring well MW-OU2-83-A.
    - Initial sampling of new extraction wells and new GWTP.
    - PFOA/PFOS sampling at 12 monitoring wells and the new GWTP.

January 2019 Key Events for OU2

- Prepare for GWTP decommissioning.

- Prepare for 2019 decommissioning of two OU2 A-Aquifer monitoring wells: MW-OU2-20-A and MW-OU2-41-A.

Ahtna

Table 3. OU2 A-Aquifer Select Extraction/Monitoring Well Data

OU2 Hydraulic Zone[1]	Well Identification[2]	Select COC Concentrations (µg/L)									
		2Q 2018					3Q 2018				
		TCE	PCE	1,1-DCA	1,2-DCA	VC	TCE	PCE	1,1-DCA	1,2-DCA	VC
	ACL:	5.0	3.0	5.0	0.5	0.1	5.0	3.0	5.0	0.5	0.1
1	EW-OU2-16-A	2.7	2.6	6.4	2.0	0.62	3.1	2.7	7.5	2.4	0.96
1	MW-OU2-02-A	0.15 J	2.6	6.6	1.3	8.4	0.11 J	2.7	6.1	1.2	10.7
1	MW-OU2-44-A	6.8	8.8	17.9	5.1	0.77	6.2	8.6	18.8	4.2	0.72
1	MW-OU2-73-A	ND (0.25)	1.1	7.8 J+	1.3	10.0	ND (0.25)	1.7	5.7	0.91	10.3
2	EW-OU2-15-A	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.05)	0.32 J	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.05)
2	MW-OU2-27-A	0.11 J	3.8	0.30 J	ND (0.25)	ND (0.05)	ND (0.25)	4.0	0.27 J	ND (0.25)	ND (0.05)
3	EW-OU2-09-A	0.22 J	0.26 J	0.12 J	0.29 J	0.099 J	NS	NS	NS	NS	NS
3	EW-OU2-10-A	2.0	1.1	0.85	1.0	0.080 J	1.6	1.0	0.68	0.78	ND (0.05)
3	EW-OU2-12-A	7.5	4.4	6.8	1.8	0.11	7.9	4.4	6.3	1.9	0.12
3	EW-OU2-13-A	7.0	2.4	1.8	3.6	ND (0.05)	6.6	2.3	1.7	3.3	ND (0.05)
3	MW-OU2-25-A	0.54	0.23 J	0.23 J	0.15 J	ND (0.05)	0.63	0.25 J	0.30 J	0.28 J	ND (0.05)
4	EW-OU2-04-A	1.3	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.05)	1.3	ND (0.25)	ND (0.25)	ND (0.25)	ND (0.05)
4	EW-OU2-05-A	4.8	0.28 J	0.30 J	ND (0.25)	ND (0.05)	4.4	0.27 J	0.27 J	ND (0.25)	ND (0.05)
4	EW-OU2-06-A	3.1	0.33 J	0.18 J	ND (0.25)	ND (0.05)	2.8	0.30 J	0.15 J	ND (0.25)	ND (0.05)
4	MW-OU2-40-A	4.6	0.44 J	0.35 J	0.11 J	ND (0.05)	5.6	0.43 J	0.31 J	ND (0.25)	ND (0.05)
5	MW-OU2-04-A	4.1	0.62	0.37 J+	0.18 J+	ND (0.05)	2.6	0.71	0.50	0.34 J	ND (0.05)
5	MW-OU2-06AR	0.89	0.15 J	0.12 J	0.22 J	ND (0.05)	1.5	0.25 J	0.25 J	0.32 J	ND (0.05)
5	MW-OU2-08-A	8.5	6.9	29.4	1.3	0.65	8.8	8.9	31	1.3	0.69
5	MW-OU2-75-A	3.5	7.0	7.2	ND (0.25)	0.082 J	3.7	6.6	7.3	ND (0.25)	ND (0.05)
5	MW-OU2-81-A	10.7	12.1	4.2	0.18 J	ND (0.05)	7.7	12.8	3.9	0.21 J	ND (0.05)
5	MW-BW-50-A	NS	NS	NS	NS	NS	1.3	3.3	1.9	ND (0.25)	ND (0.05)

Table 4. OU2 Upper 180-Foot Select Extraction/Monitoring Well Data

OU2 Hydraulic Zone[1]	Well Identification[2]	TCE Concentration (µg/L)	
		2Q 2018	3Q 2018
	ACL:	5.0	
6	EW-OU2-03-180	10.0	8.1
6	MW-OU2-50-180	11.1	10.0
7	EW-OU2-06-180	5.4	5.2
7	MW-OU2-81-180	6.3	6.3
7	MW-OU2-44-180	15.7	14.4
9	EW-OU2-01-180	6.1	4.6
9	MW-OU2-06-180R2	2.4	2.0
9	MW-OU2-43-180	2.9	1.8

Notes:
ACL: Aquifer Cleanup Level
COC: chemical of concern
1,2-DCA: 1,2-dichloroethane
TCE: trichloroethene
PCE: tetrachloroethene
1,1-DCA: 1,1-dichloroethane
µg/L: micrograms per liter
NS: not sampled
ND: The analyte was not detected above the detection limit.
J: Estimated result with a high (+) or low (-) bias.
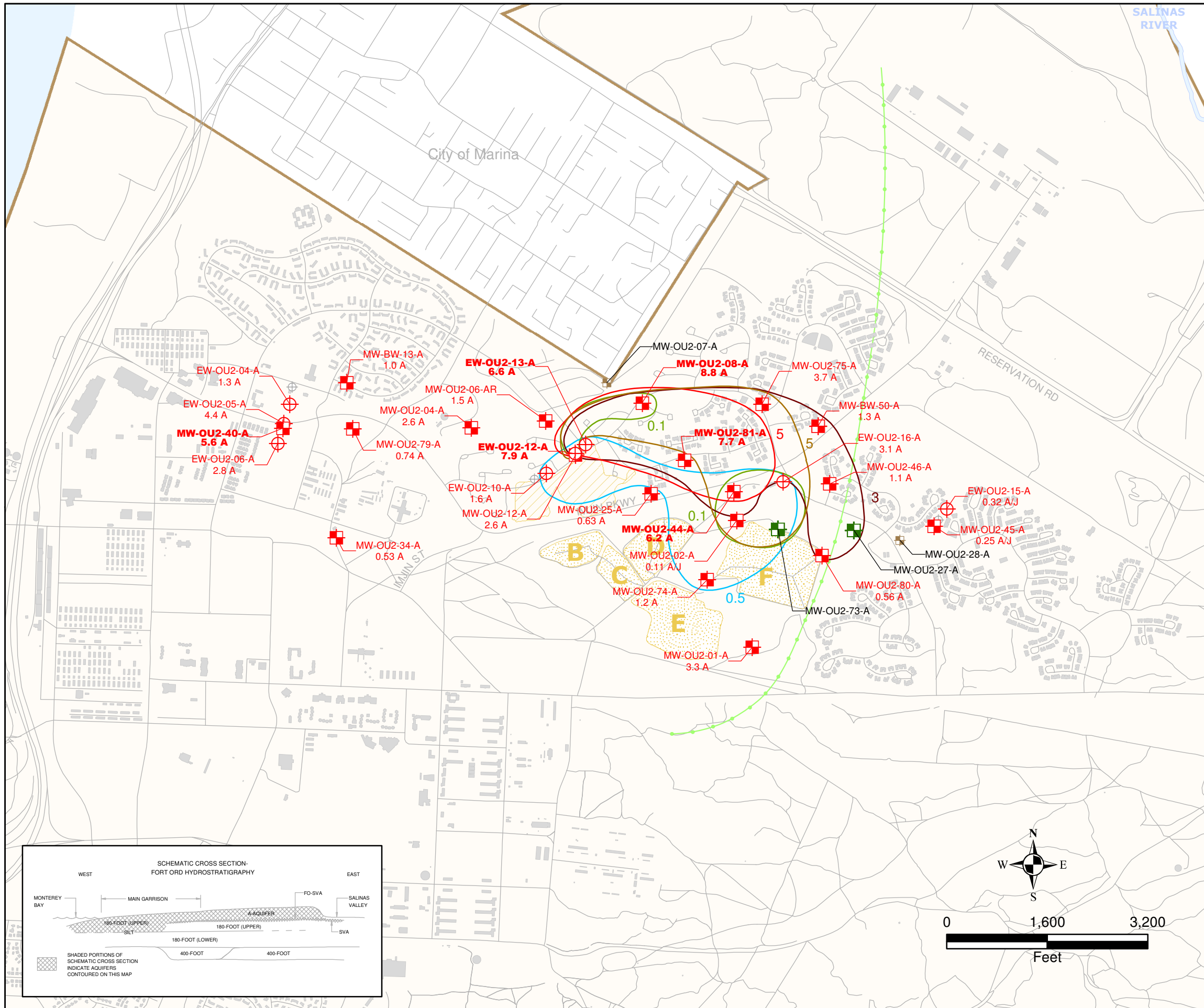[1] Hydraulic zones are identified in the Groundwater QAPP.
[2] Extraction wells not listed have met the QAPP decision rules to no longer operate.
Results in **bold** and shaded are concentrations above the ACL
Results in gray are ND
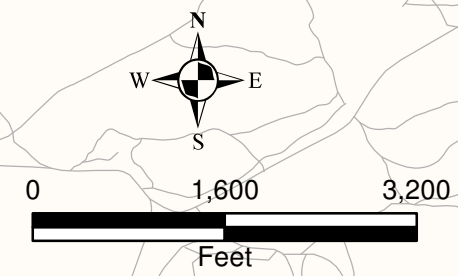Results in brackets from a second deeper passive diffusion bag
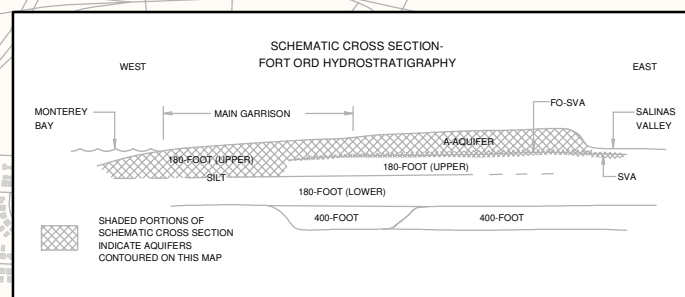
Ahtna

SALINAS RIVER

City of Marina

RESERVATION RD

MW-OU2-07-A

MW-BW-13-A
1.0 A

EW-OU2-04-A
1.3 A

EW-OU2-05-A
4.4 A

MW-OU2-40-A
5.6 A

EW-OU2-06-A
2.8 A

EW-OU2-13-A
6.6 A

MW-OU2-06-AR
1.5 A

MW-OU2-04-A
2.6 A

MW-OU2-79-A
0.74 A

EW-OU2-12-A
7.9 A

EW-OU2-10-A
1.6 A

MW-OU2-12-A
2.6 A

MW-OU2-34-A
0.53 A

MW-OU2-25-A
0.63 A

MW-OU2-08-A
8.8 A

MW-OU2-75-A
3.7 A

MW-OU2-81-A
7.7 A

MW-BW-50-A
1.3 A

EW-OU2-16-A
3.1 A

MW-OU2-46-A
1.1 A

EW-OU2-15-A
0.32 A/J

MW-OU2-45-A
0.25 A/J

MW-OU2-28-A

MW-OU2-27-A

MW-OU2-44-A
6.2 A

MW-OU2-02-A
0.11 A/J

MW-OU2-74-A
1.2 A

MW-OU2-80-A
0.56 A

MW-OU2-73-A

MW-OU2-01-A
3.3 A

B C D E F

5   5   3   0.1   0.1   0.5

MAIN ST

RKWY

EXPLANATION

Monitoring Well with TCE Detection

Extraction Well with TCE Detection

MW-OU2-46-A
1.1 A
Well ID - Bold When ACL Exceeded
(* Indicates: Sample result not used for contouring)

TCE Concentration (µg/L) and validation/lab qualifier.
Bold when concentration exceeds the ACL.

Monitoring Well with COC ACL
Exceedance (not TCE)

Extraction Well with COC ACL
Exceedance (not TCE)

Monitoring Well TCE Not Detected, and No Other
COC ACL Exceedances

Extraction Well TCE Not Detected, and No Other
COC ACL Exceedances

Monitoring Well Not Sampled This Quarter

Extraction Well Not Sampled This Quarter

Chemical of Concern (COC) Aquifer Cleanup Level (ACL)
Exceedance Contour in µg/L

5 Tricholorethene (TCE)

3 Tetrachloroethene (PCE)

5 1,1-Dichloroethane (1,1-DCA)

0.5 1,2-Dichloroethane (1,2-DCA)

0.1 Vinyl chloride (VC)

Approximate Extent of Landfill Areas

OU2 Landfill Areas B through F

Area A (clean closed)

Approximate Location of a Groundwater Divide
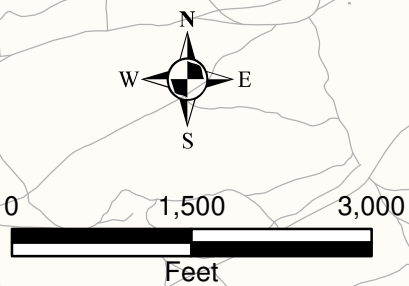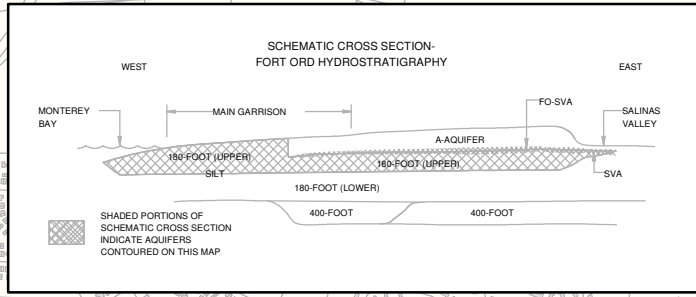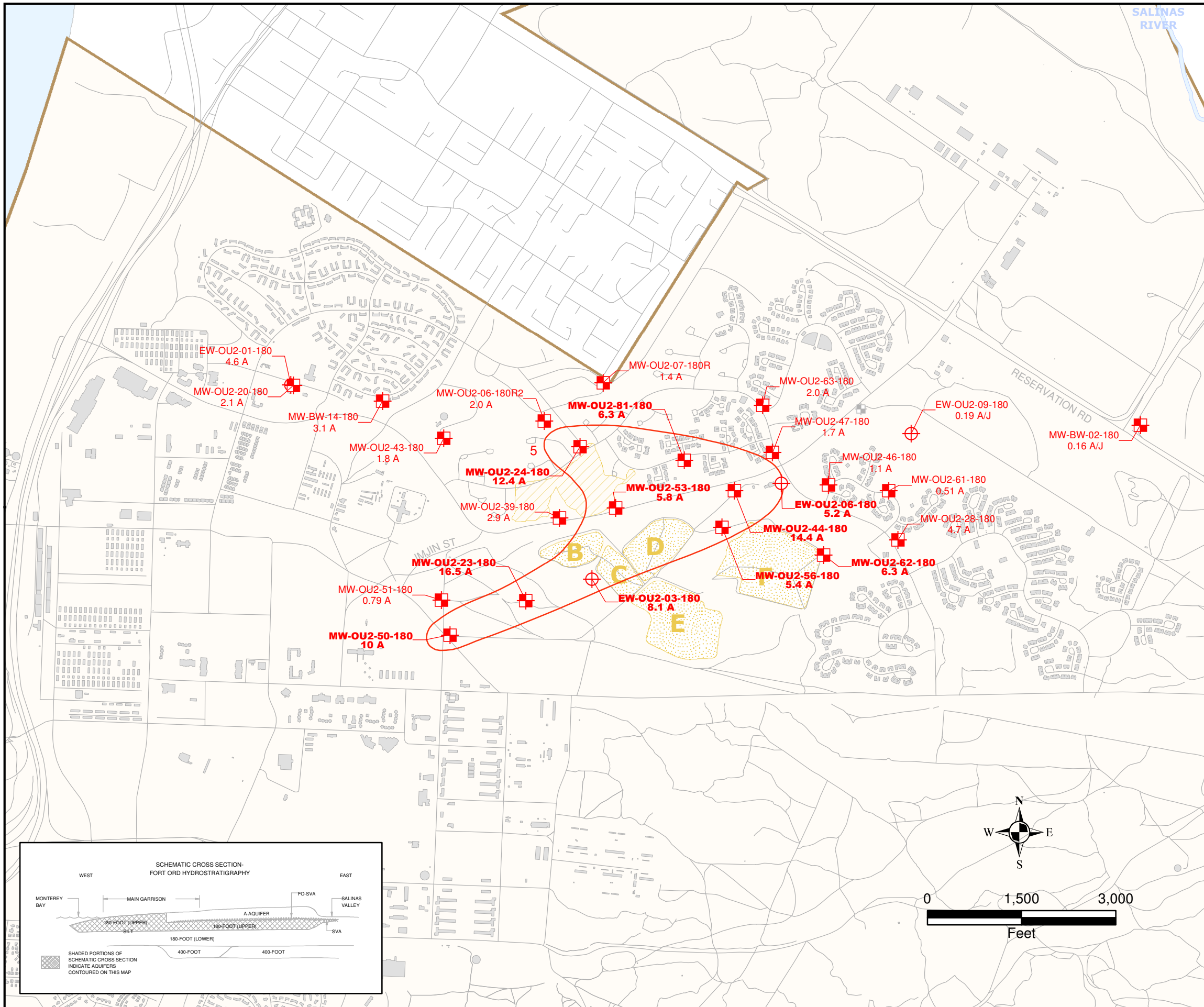
Roads

Facilities

Former Fort Ord Boundary

NOTES:

(1) Samples were collected between August 28 and 31, 2018.

(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 based on highest value obtained from multiple
bags where applicable.

(4) Contours near wells not sampled this quarter are inferred
from previous analytical data.

N W E S

0 1,600 3,200
Feet

SCHEMATIC CROSS SECTION-
FORT ORD HYDROSTRATIGRAPHY

WEST   EAST

MONTEREY   FO-SVA
BAY   SALINAS
         MAIN GARRISON   VALLEY
                    A-AQUIFER
180-FOOT (UPPER)
SILT   180-FOOT (UPPER)
         180-FOOT (LOWER)   SVA
400-FOOT (LOWER)   400-FOOT

SHADED PORTIONS OF
SCHEMATIC CROSS SECTION
INDICATE AQUIFERS
CONTOURED ON THIS MAP

TCE CONCENTRATIONS AND OTHER COC ACL EXCEEDANCES
A-AQUIFER
THIRD QUARTER 2018
Operable Unit 2 Fourth Quarter 2017 - Third Quarter 2018
Groundwater Monitoring and Treatment System Report
Former Fort Ord, California

wood.

| By: TJH | Project No. 8418191360 |
| Date: 10/08/2018 | Figure 14 |

EXPLANATION

- Monitoring Well with TCE Detection
- Extraction Well with TCE Detection

MW-BW-02-180
0.16 A/J

Well ID - Bold When ACL Exceeded
(* Indicates: Sample result not used for contouring)

TCE concentration (μg/L) and validation/lab qualifier.
Bold when concentration exceeds the ACL.

- Monitoring Well TCE Not Detected, and No Other COC ACL Exceedances
- Extraction Well TCE Not Detected, and No Other COC ACL Exceedances
- Monitoring Well Not Sampled This Quarter
- Extraction Well Not Sampled This Quarter

Chemical of Concern (COC) Aquifer Cleanup Level (ACL)
Exceedance Contour in μg/L

5 —— Tricholorethene (TCE)

Approximate extent of Fort Ord Landfill Areas

- OU2 Landfill Areas B through F
- Area A (clean closed)
- Roads
- Facilities
- Former Fort Ord Boundary

NOTES:

(1) Samples were collected between August 28 to 31, 2018.

(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 based on highest value obtained from multiple bags where applicable.

(4) Contours near wells not sampled this quarter are inferred from previous analytical data.

Well labels on map:

- EW-OU2-01-180 4.6 A
- MW-OU2-20-180 2.1 A
- MW-BW-14-180 3.1 A
- MW-OU2-06-180R2 2.0 A
- MW-OU2-07-180R 1.4 A
- MW-OU2-63-180 2.0 A
- EW-OU2-09-180 0.19 A/J
- MW-BW-02-180 0.16 A/J
- MW-OU2-81-180 6.3 A
- MW-OU2-47-180 1.7 A
- MW-OU2-43-180 1.8 A
- MW-OU2-24-180 12.4 A
- MW-OU2-53-180 5.8 A
- MW-OU2-46-180 1.1 A
- MW-OU2-61-180 0.51 A
- MW-OU2-39-180 2.9 A
- EW-OU2-06-180 5.2 A
- MW-OU2-44-180 14.4 A
- MW-OU2-28-180 4.7 A
- MW-OU2-23-180 16.5 A
- MW-OU2-62-180 6.3 A
- MW-OU2-56-180 5.4 A
- MW-OU2-51-180 0.79 A
- EW-OU2-03-180 8.1 A
- MW-OU2-50-180 10 A

SALINAS RIVER
RESERVATION RD
IMJIN ST

Landfill areas labeled: B, C, D, E, F

**SCHEMATIC CROSS SECTION-
FORT ORD HYDROSTRATIGRAPHY**

WEST — EAST
MONTEREY BAY — MAIN GARRISON — FO-SVA — SALINAS VALLEY
180-FOOT (UPPER) — A-AQUIFER
SILT — SVA
180-FOOT (LOWER) — 400-FOOT
400-FOOT

SHADED PORTIONS OF SCHEMATIC CROSS SECTION INDICATE AQUIFERS CONTOURED ON THIS MAP

0   1,500   3,000
Feet

Thursday, September 27, 2018 3:44:42 PM   thomas.hunt
P:\8418191360_FortOrd\GIS3\Q18\OU2_GMTSR\Figure24_TCE-COC_OU2-U180_18Q3.mxd

TCE CONCENTRATIONS AND OTHER COC ACL EXCEEDANCES
UPPER 180-FOOT AQUIFER
THIRD QUARTER 2018
Operable Unit 2 Fourth Quarter 2017 - Third Quarter 2018
Groundwater Monitoring and Treatment System Report
Former Fort Ord, California

wood.

By: TJH
Date: 09/27/2018

Project No. 8418191360

Figure **24**

Table 5. OU2 Proposed Schedule Changes to the QAPP (effective 2018-4Q)

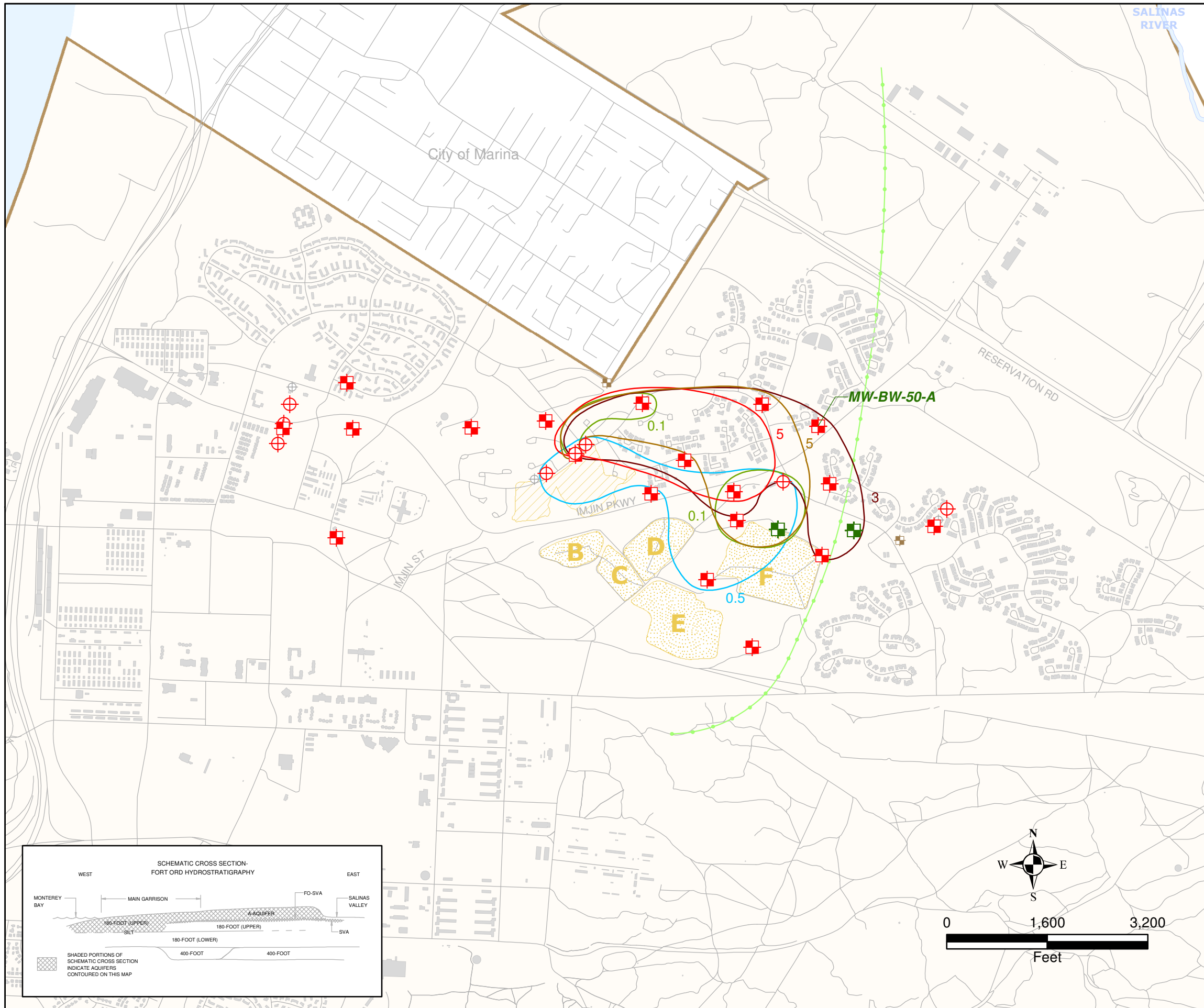| Well Identification	Current Schedule	Proposed Schedule	Primary COC
MW-BW-50-A	A	Q^1	PCE

Notes:
^{1} If an annual well monitoring result shows a detection of a COC greater than its ACL, then the well monitoring frequency may be increased to quarterly.
A: annual
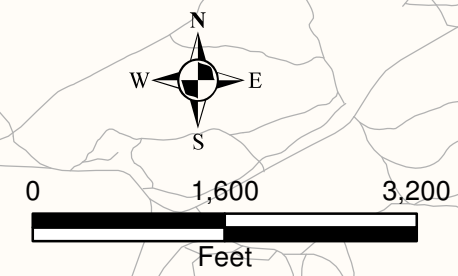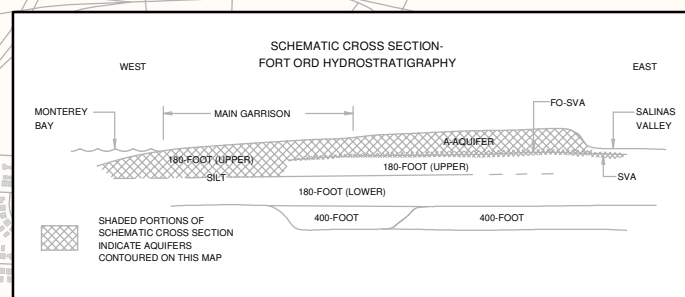PCE: tetrachloroethene
Q: quarterly

SALINAS RIVER

City of Marina

RESERVATION RD

MW-BW-50-A

MW-BW-50-A

5

5

5

3

0.1

0.1

0.1

0.5

0.5

IMJIN PKWY

IMJIN ST

MAIN ST

B

C

D

E

F

EXPLANATION

◻ Monitoring Well with TCE Detection

⊕ Extraction Well with TCE Detection

MW-BW-50-A   Meets decision criteria to increase sampling frequency from annual sampling to quarterly as defined in Volume I, Appendix A of the Final Revision 6 QAPP (Army, 2018).

◻ Monitoring Well with COC ACL Exceedance (not TCE)

⊕ Extraction Well with COC ACL Exceedance (not TCE)

◻ Monitoring Well TCE Not Detected, and No Other COC ACL Exceedances

⊕ Extraction Well TCE Not Detected, and No Other COC ACL Exceedances

◻ Monitoring Well Not Sampled This Quarter

⊕ Extraction Well Not Sampled This Quarter

Chemical of Concern (COC) Aquifer Cleanup Level (ACL)
Exceedance Contour in µg/L

5 ——— Tricholorethene (TCE)

3 ——— Tetrachloroethene (PCE)

5 ——— 1,1-Dichloroethane (1,1-DCA)

0.5 ——— 1,2-Dichloroethane (1,2-DCA)

0.1 ——— Vinyl chloride (VC)

Approximate Extent of Landfill Areas

▨ OU2 Landfill Areas B through F

▨ Area A (clean closed)

•••• Approximate Location of a Groundwater Divide

Roads

Facilities

Former Fort Ord Boundary

NOTES:

(1) Samples were collected between August 28 and 31, 2018.

(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 based on highest value obtained from multiple bags where applicable.

(4) Contours near wells not sampled this quarter are inferred from previous analytical data.

SCHEMATIC CROSS SECTION-
FORT ORD HYDROSTRATIGRAPHY

WEST   EAST

MONTEREY BAY   MAIN GARRISON   FO-SVA   SALINAS VALLEY

180-FOOT (UPPER)   A-AQUIFER
SILT
180-FOOT (UPPER)
180-FOOT (LOWER)   SVA
400-FOOT   400-FOOT

SHADED PORTIONS OF SCHEMATIC CROSS SECTION INDICATE AQUIFERS CONTOURED ON THIS MAP

0   1,600   3,200
Feet

N
W   E
S

SAMPLE FREQUENCY CHANGES
OPERABLE UNIT 2
A-AQUIFER
Based on Data Collected through Third Quarter 2018
Former Fort Ord, California

wood.

By: TJH   Project No. 8418191360

Date: 10/30/2018   Figure **1**
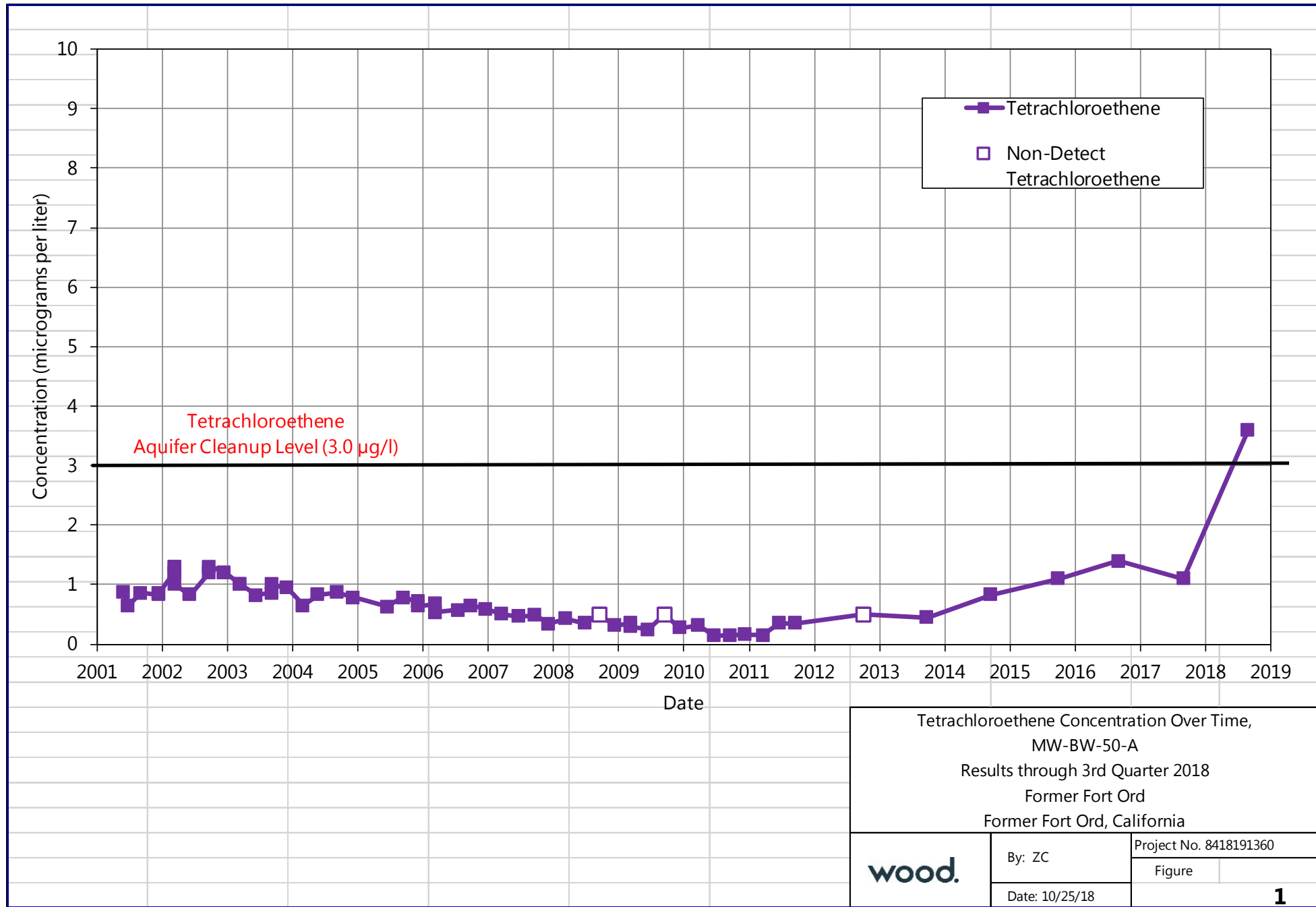
Tetrachloroethene Concentration Over Time, MW-BW-50-A — Former Fort Ord, OU2, HTW BCT, November 14, 2018