

HGL Update
Fort Ord Operable Unit (OU) – 1 On-Post Groundwater Remediation
Marina, California
10:00 a.m., 20 September 2013

Treatment Plant Operations

The Northwest Treatment System (NWTS) operated nearly continuously from 2 August 2013 through 16 September 2013. The system was shut down for approximately 12 hours on 13 August when a mouse short-circuited the high high-water alarm in the containment sump. Extraction wells EW-OU1-60-A, EW-OU1-66-A, and MW-OU1-87-A are operating and total pumping averaged 29.7 gallons per minute. Since system startup in 2006, the NWTS has pumped approximately 201 million gallons of groundwater and removed approximately 6.0 pounds of total volatile organic compounds, primarily trichloroethene (TCE).

An estimated 0.05 pound of TCE has been removed since the NWTS 27 March 2013 sampling event. The most recent performance monitoring samples were collected on 26 June 2013 from the following extraction well and two monitoring wells:

MW-OU1-87-A

MW-OU1-61-A

MW-OU1-88-A

Groundwater Quality Data

Validated sampling results from the June 2013 sampling event are presented in attached Tables 1A and 1B for extraction well MW-OU1-87-A. The observed TCE concentration trend in wells MW-OU1-61-A and MW-OU1-88-A is shown on Figures 1a and 1b. Figure 2 shows the TCE concentration contours based on the validated June 2013 data. This information was presented and discussed in previous Base Closure Team (BCT) meetings and is included herein for ease of reference.

Reporting/Federal Facility Agreement Schedule

All scheduled submittals have been made for primary and secondary deliverables. The status of submitted and anticipated reports for 2012 and 2013 is summarized in Table 2. HGL also updated the treatment system Operations and Maintenance Manual to describe changes made to system operation and equipment since 2010.

Weed Control and Rare Plant Monitoring

University of California Santa Cruz staff completed the weed control activities scheduled for 2013.

Action Items:

Groundwater Sampling:

The September sampling network shown in Table 3 and on Figure 2 was approved by the regulatory agencies after the August 2013 BCT meeting. The September sampling will include the currently operating extraction wells along the northwest boundary, extraction wells MW-OU1-87-A and EW-

OU1-71-A in the central Fort Ord Natural Reserve and selected monitoring wells. Samples were collected on 18 and 19 September.

Ongoing:

- Submit draft minutes for previous BCT meeting(s) — complete.
- Submit final minutes for previous BCT meeting(s) — complete. Final meeting minutes for August were submitted on 9 September.
- Prepare update for the next BCT meeting — in progress.

**Fort Ord HTW BCT Meeting
Marina, California
20 September 2013**

**HGL Update
OU-1 On-Post Groundwater Remediation**

ATTACHMENT 1

Reference Table(s) and Figure(s)

Table 1A
TCE in OU-1 FONR Groundwater Remediation System – Performance Monitoring
BCT Meeting for Former Fort Ord – 20 September 2013

Began: Date	FONR Extraction Well (listed from south to north)					Boundary Extraction Well (from west to east)				NWTS			
	Nov-10	Oct-07				Jul-06				INFLUENT	MIDPOINT	EFFLUENT	
	IW-10	MW-87	EW-71	MW-85	MW-46AD	EW-63	EW-60	EW-66	EW-62				
TCE (µg/L)													
11/9/07	Used as monitoring well until pump installed in October 2010. Pumping began 03 November 2010.	16	13	19	14	ND	ND	1.7	ND	11	ND	ND	
1/18/08		11	11	8.9	8.2	ND	ND	1.2	ND	6.0	ND	ND	
3/18/08		11	14	6.7	5.8	ND	0.29	1.5	ND	5.6	ND	ND	
5/27/08		9.7	18	2.5	6.1	ND	ND	1.8	ND	3.9	ND	ND	
7/21/08		9.1	14	4.4	3.4	ND	0.78	1.4	ND	3.6	ND	ND	
9/29/08		9.3	J 15	J 4.3	J 2.9	J ND	0.90	J 1.7	J ND	3.8	J 0.19	J ND	
12/1/08		5.8	11	2.6	1.6	ND	0.82	0.91	ND	2.7	0.35	J ND	
1/26/09		5.9	10	2.2	1.2	ND	0.48	J 0.78	ND	2.4	ND	ND	
3/9/09		5.8	9.9	2.1	1.2	ND	0.95	0.86	ND	2.7	ND	ND	
6/11/09		6.9	11	2.4	1.5	ND	0.88	1.7	ND	2.6	0.14	J ND	
9/15/09		6.8	9.4	1.7	0.78	ND	inactive	1.1	0.036	J 2.3	0.35	J ND	
12/14/09		6.9	7.5	0.84	not sampled	not sampled	inactive	0.94	not sampled	2.3	0.65	J ND	
3/22/10		7.2	8.5	0.62	0.55	inactive	ND	0.90	inactive	2.3	ND	ND	
6/21/10		7.4	6.5	0.90	0.40	J inactive	0.86	0.58	inactive	2.1	ND	ND	
9/20/10		7.7	6.6	0.83	0.35	J discontinued	0.63	0.49	J inactive	2.3	not sampled	ND	
12/16/10		5.2	6.9	5.2	0.58	0.28	J discontinued	0.72	0.42	J inactive	2.6	0.18	J ND
3/7/11		5.1	6.0	4.6	0.55	0.60	discontinued	0.87	0.42	J inactive	2.5	0.59	ND
6/7/11		4.2	6.1	4.0	0.78	0.63	discontinued	0.76	0.36	J inactive	2.6	1.0	ND
9/20/11		4.5	6.2	4.2	1.10	0.38	J discontinued	0.57	0.36	J inactive	2.5	1.7	ND
12/7/11		3.8	5.1	3.7	not sampled		discontinued	inactive	0.27	J inactive	1.8	2.1	0.13
3/15/12	3.7	5.5	3.8	0.70	0.23	J discontinued	inactive	0.38	J inactive	0.81	0.32	J ND	
9/25/12	--	5.3	4.4	--	--	discontinued	inactive	0.19	J inactive	1.8	0.72	J ND	
1/8/13	--	5.4	--	--	--	discontinued	ND	0.19	J inactive	1.54	--	ND	
3/27/13	--	4.8	--	--	--	discontinued	ND	0.23	J inactive	1.48	--	ND	
6/26/13	--	4.4	--	--	--	discontinued	--	--	J inactive	1.90	--	ND	
9/18/13	awaiting laboratory results												
Notes:		Italics (if used) indicate data not yet validated					Bold font indicates concentration > ACL						
ACL - aquifer cleanup level		-- - Not sampled											
µg/L - micrograms per liter													
J - Data qualified as estimated		Blue font indicates the concentration is calculated using the weighted average of the active pumping wells.											
ND - nondetect													
TCE - trichloroethene													
FONR - Fort Ord Natural Reserve													
NWTS - Northwest Treatment System													

Table 1B
cis-1,2-DCE in OU-1 FONR Groundwater Remediation System – Performance Monitoring
BCT Meeting for Former Fort Ord – 20 September 2013

Began:	FONR Extraction Well (listed from south to north)					Boundary Extraction Well (from west to east)				NWTS								
	Nov-10	Oct-07				Jul-06				INFLUENT	MIDPOINT	EFFLUENT						
Date	IW-10	MW-87	EW-71	MW-85	MW-46AD	EW-63	EW-60	EW-66	EW-62									
cis-1,2-DCE (µg/L)																		
11/09/07	Used as monitoring well until pump installed in October 2010. Pumping began 03 November 2010.	1.9	1.6	2.3	1.70	ND	ND	ND	ND	1.3	ND	ND						
01/18/08		1.20	1.40	1.00	1.20	ND	ND	0.11	ND	0.66	ND	ND						
03/18/08		1.20	1.50	0.74	0.63	ND	ND	ND	ND	0.59	0.11	ND						
05/27/08		0.88	2.10	0.26	0.74	ND	ND	ND	ND	0.36	0.21	ND						
07/21/08		0.80	1.50	0.52	0.37	ND	ND	ND	ND	0.41	0.34	ND						
09/29/08		0.99	1.60	0.54	0.30	ND	ND	0.13	ND	0.42	0.42	0.12						
12/01/08		0.67	1.30	0.33	0.21	J	ND	ND	ND	ND	0.27	J	0.37	J	0.19	J		
01/26/09		0.63	1.20	0.29	J	0.12	J	ND	ND	ND	ND	0.26	J	0.24	J	ND		
03/09/09		0.62	1.20	0.29	J	0.13	J	ND	ND	ND	ND	0.23	J	0.26	J	ND		
06/11/09		0.71	1.10	0.30	J	0.13	J	ND	ND	0.14	J	ND	0.24	J	0.28	J	ND	
09/15/09		0.80	1.00	0.22	J	0.08	J	ND	inactive	0.03	J	ND	0.22	J	0.37	J	0.03	J
12/14/09		0.67	0.65	0.10	J	not sampled	not sampled	inactive	ND	J	not sampled	0.21	J	0.30	J	0.11	J	
03/22/10		0.67	0.79	ND	ND	inactive	ND	ND	inactive	0.20	J	0.11	J	0.13	J	ND		
06/21/10		0.67	0.53	0.14	J	ND	inactive	ND	ND	inactive	0.20	J	0.23	J	ND			
9/20/10		0.66	0.46	J	ND	ND	discontinued	ND	ND	inactive	0.23	J	not sampled	ND				
12/16/10		0.55	0.66	0.35	J	ND	J	ND	discontinued	ND	ND	inactive	0.27	J	0.28	J	ND	
3/7/11	0.37	J	0.52	0.28	J	0.11	J	ND	discontinued	ND	ND	inactive	0.23	J	0.30	J	ND	
6/7/11	0.35	J	0.55	0.29	J	ND	ND	discontinued	ND	ND	inactive	0.18	J	0.31	J	0.15	J	
9/20/11	0.25	J	0.46	J	0.21	J	ND	ND	discontinued	ND	ND	inactive	0.17	J	0.19	J	0.30	J
12/7/11	0.27	J	0.48	J	0.19	J	not sampled	discontinued	inactive	ND	inactive	0.16	J	0.17	J	0.23	J	
3/15/12	0.15	J	0.40	J	0.22	J	0.15	J	ND	discontinued	inactive	ND	inactive	ND	0.24	J	ND	
9/25/12	--	J	0.39	J	0.23	J	--	--	discontinued	inactive	ND	inactive	ND	0.24	J	ND		
1/8/13	--	J	0.35	J	--	--	--	--	discontinued	ND	ND	inactive	0.12	--	--			
3/27/13	--	J	0.34	J	--	--	--	--	discontinued	ND	ND	inactive	0.12	--	--			
6/26/13	--	J	0.31	J	--	--	--	--	discontinued	--	--	inactive	0.27	--	--			
9/18/13	<i>awaiting laboratory results</i>																	
		Italics (if used) indicate data not yet validated					Bold font indicates concentration > ACL											
Notes:																		
ACL - aquifer cleanup level				--- Not sampled														
µg/L - micrograms per liter																		
J - Data qualified as estimated				Blue font indicates the concentration is calculated using the weighted average of the active pumping wells.														
ND - nondetect																		
DCE - dichloroethene																		
FONR - Fort Ord Natural Reserve																		
NWTS - Northwest Treatment System																		

Table 2
Current Deliverable Schedule
BCT Meeting for Former Fort Ord, Marina, CA – 20 September 2013

Deliverable Title	Submittal Due	Review Comments Due	Status/Remarks
<i>Primary Deliverables</i>			
Draft 2013 Annual and 3rd Quarter Groundwater Monitoring Report			Samples to be collected in September
<i>Secondary Deliverables</i>			
None scheduled			
<i>Completed Recent Submittals</i>			
Final Memorandum for Record for Optimizing Remediation Pumping	March 2012	February 2012	Accepted as final during July 2012 BCT meeting.
Final IW-OU1-10-A Construction Report	March 2012	NA	Submitted 30 March 2012.
Final Operable Unit 1 Well Destruction Report	March 2012	NA	Submitted 30 March 2012.
Draft Five Year Review Report	March 2012	May 2012	Army submitted 30 March 2012.
Draft 2011 Annual and 3rd Quarter Groundwater Monitoring Report	May 2012	July 2012	Submitted 17 May 2012.
2012 First Quarter Groundwater Monitoring Report	May 2012	August 2012	Submitted 29 May 2012.
Draft 2007 Annual and 4th Quarter Groundwater Monitoring Report	June 2012	August 2012	Submitted 13 June 2012. No comments.
Draft Final Five Year Review Report	July 2012	September 2012	Submitted to Army 26 June 2012.
Final 2011 Annual and 3rd Quarter Groundwater Monitoring Report	July 2012	NA	Submitted 25 July 2012. No comments.
IW-OU1-74-A Vandalism Report	July 2012	NA	Submitted 25 July 2012.
Final 2007 Annual and 4th Quarter Groundwater Monitoring Report	September 2012	NA	Submitted 26 September 2012. No comments.
Final Five Year Review Report	September 2012	NA	Text for final version sent to Army on 08 August 2012
Draft 2012 Annual and 3rd Quarter Groundwater Monitoring Report	December 2012	NA	Submitted 31 December 2012. Waiting for agency comments.
2012 FONR Impact Report	February 2012	NA	Submitted 05 February 2012.
Final 2012 Annual and 3rd Quarter Groundwater Monitoring Report	March 2013	NA	Submitted 21 March 2013.
2013 First Quarter Groundwater Monitoring Report	June 2013	August 2013	Submitted 1 July 2013.

Table 3
OU-1 Sampling Schedule for 2013

Sample Point	Location	Original March	Revised March	Revised June*	Previous September	Revised September
NWTS-Influent	Treatment Plant	x	---	---	TBD	--
NWTS-Midpoint	Treatment Plant	x	---	---	TBD	--
NWTS-Effluent	Treatment Plant	x	x	---	x	x
EW-OU1-60-A***	NW Boundary	x	x	---	TBD	x
EW-OU1-66-A***	NW Boundary	x	x	---	TBD	x
MW-OU1-87-A***	Central FONR	---	x	x	x	x
EW-OU1-71-A***	Central FONR	---	---	---	TBD	x
MW-OU1-70-A	NW Boundary	x	x	---	x	x
MW-OU1-69-A2	NW Boundary	x	x	---	x	x
MW-OU1-58-A	NW Boundary	x	x**	---	TBD	--
MW-OU1-57-A	NW Boundary	x	x**	---	TBD	--
MW-OU1-61-A	NW Boundary	x	x	x	x	x
EW-OU1-72-A	Central FONR	x	---	---	TBD	x
MW-OU1-86-A	Central FONR	x	---	---	TBD	Replace with MW-OU1-50-A
PZ-OU1-49-A1	Central FONR	x	---	---	TBD	x
MW-OU1-88-A	Central FONR	x	x	x	x	x
MW-OU1-26-A	Central FONR	---	---	---	x	x
PZ-OU1-10-A1	Central FONR	---	---	---	TBD	x
EW-OU1-52-A	Central FONR	---	---	---	TBD	x

* No sampling was originally scheduled for June 2013. This is an additional event.

** As agreed at January 2013 Base Closure Team Meeting, these samples were collected in January.

*** Operating extraction well - samples collected from port on discharge pipe.

--- Not sampled

x Sample collected

TBD To be determined

FONR Fort Ord Natural Reserve

NW Northwest

Figure 1a: TCE Concentrations in MW-OU1-50-A & MW-OU1-61-A

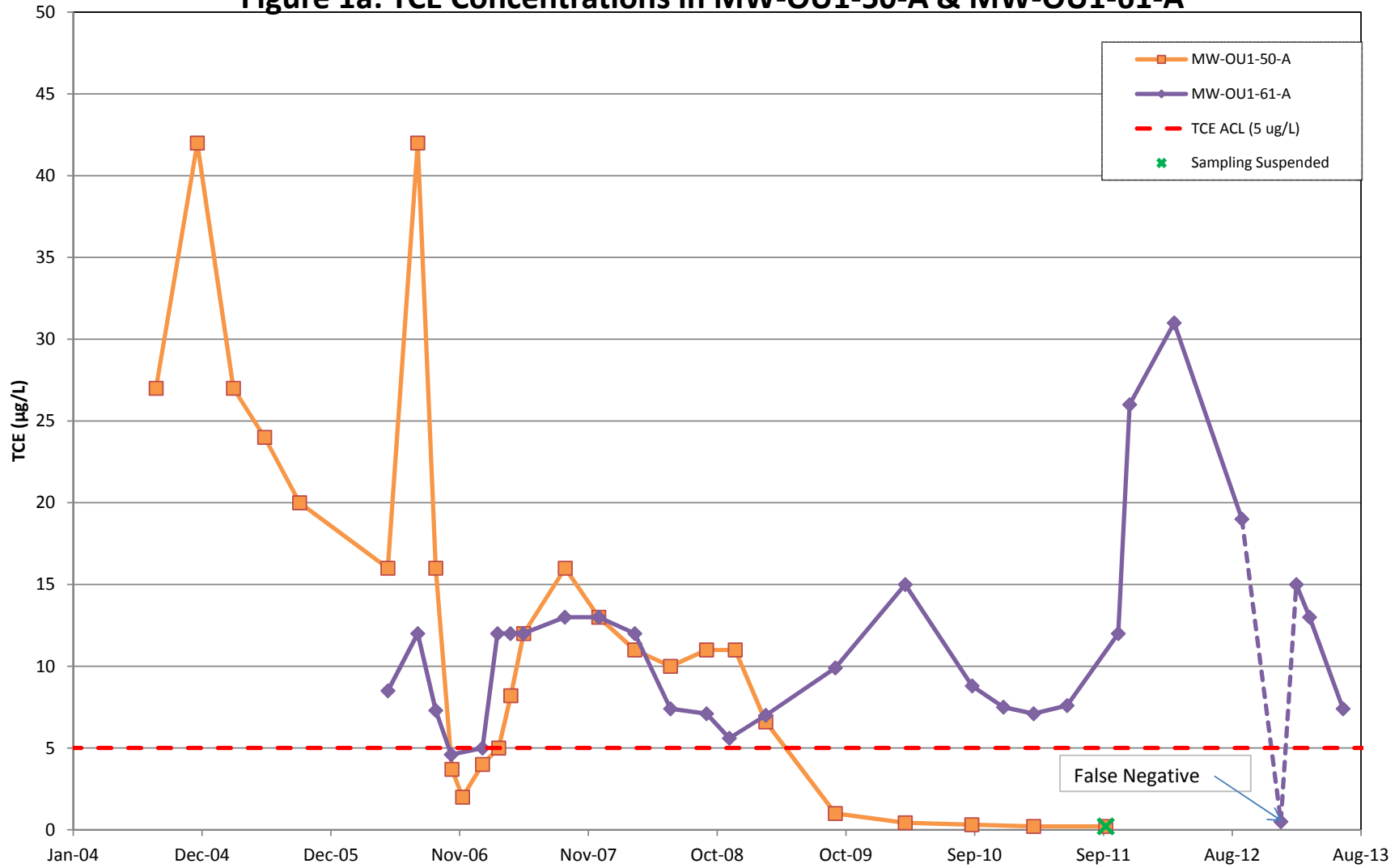


Figure 1b:TCE Concentrations in MW-OU1-88-A

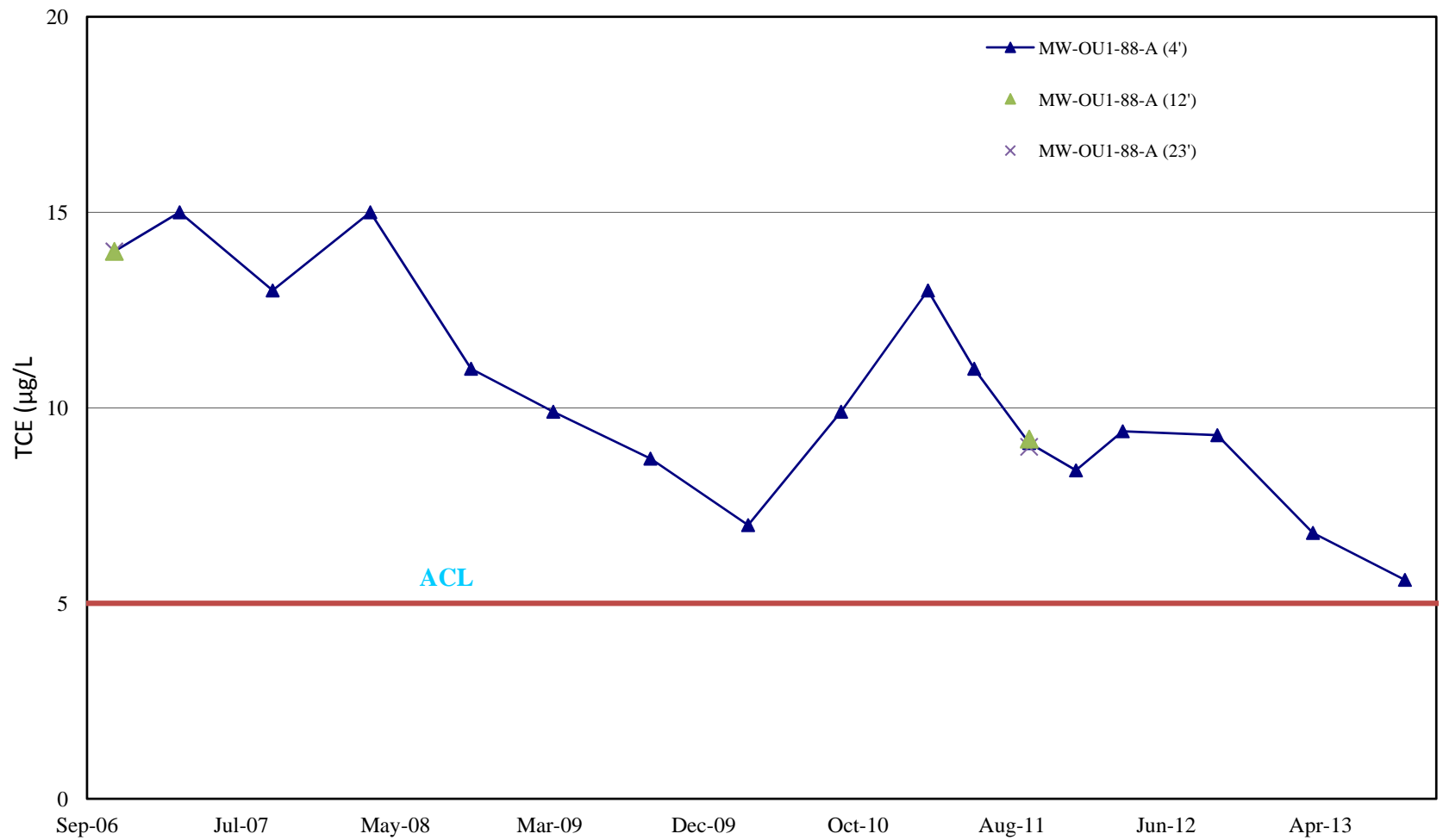
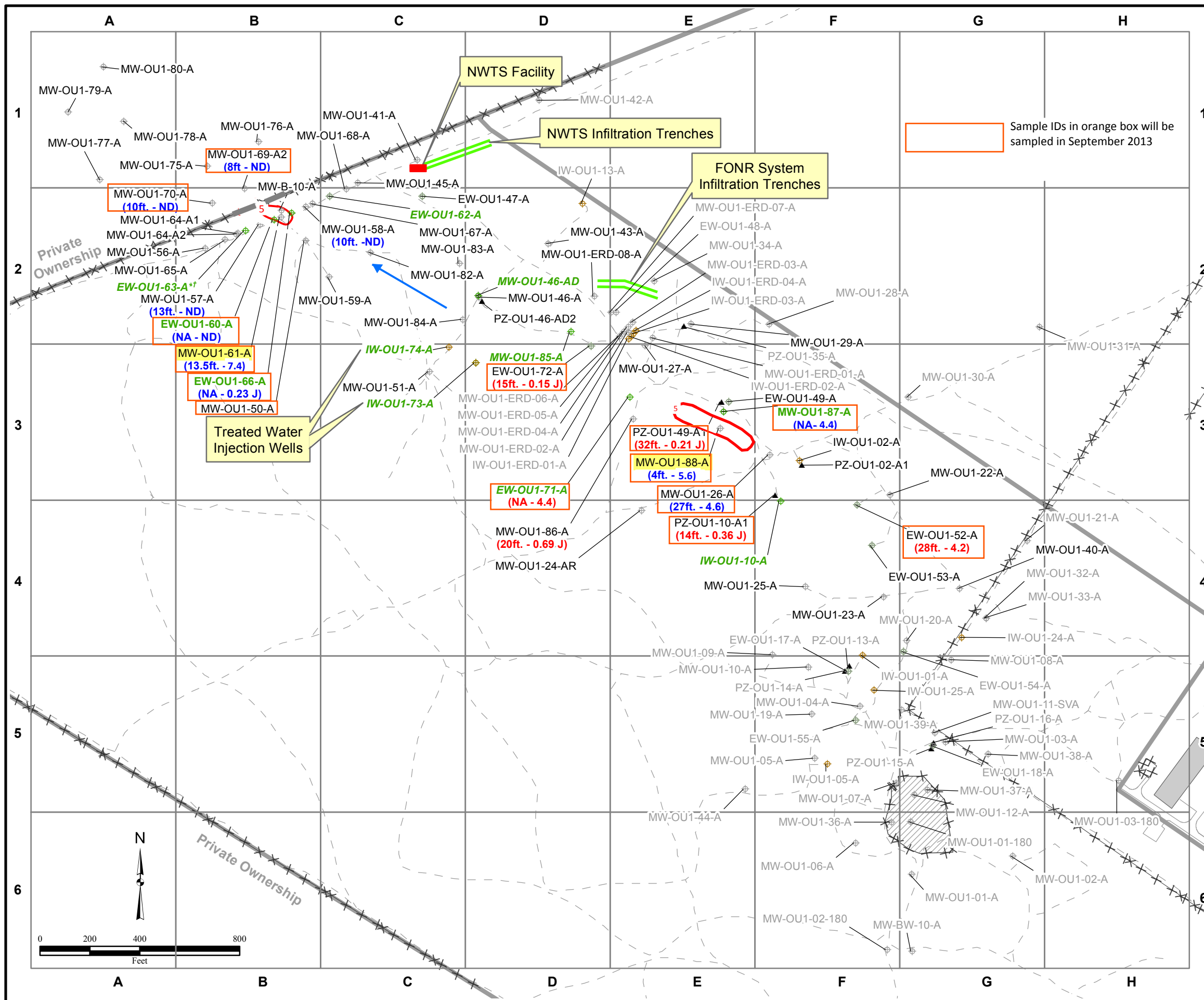


Figure 2
OU-1 FONR A-Aquifer
TCE Concentration in Groundwater
June 2013
Former Fort Ord, CA



Legend

- ⊕ Well
- ⊕ Extraction Well
- ⊕ Injection Well
- ▲ Piezometer or 2-Inch Well
- Groundwater Flow Direction
- ⊕ MW-OU1-21-A Well Destroyed
- MW-OU1-88-A Location with June 2013 TCE Concentrations at or above ACL (5 µg/L)
- MW-OU1-57-A Well ID
- (13ft. - ND) September 2012 TCE Result (µg/L)
- (13.5ft. - 13) Sample Elevation (feet above mean sea level)
- (13.5ft. - 13) 2013 TCE Result (µg/L)
- (13.5ft. - 13) Sample Elevation (feet above mean sea level)
- 5- TCE contour based on March 2013 Data
- - - Trail/Unimproved Road
- × Fence
- Treated Water Infiltration Trench
- Property Boundary
- Building
- ▨ Former Fire Drill Area

Notes:
 Units of TCE concentration are in micrograms per liter.
 FONR = Fort Ord Natural Reserve
 NWTS = Northwest Treatment System
 ACL = Aquifer Cleanup Level
 ND = nondetect
 NA = Depth is not applicable - sample is from pumping well
 µg/L = micrograms per liter
 Wells shown with an asterisk were not used to develop contour boundaries.
 Wells for which no data are posted were not sampled.
 J = Estimated value
 Green font indicates extraction or injection well.
 Italicized font shows pumping suspended.
 † = Disconnected extraction well. No longer operable.

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 (08)TCE_2013-03.mxd
 6/3/2013 CNL
 Source: HGL

