

**Former Fort Ord Operable Unit (OU)-1 – Base Closure Team (BCT) Meeting
Status Update
Groundwater Remediation, Well Destruction, and Treatment Plant Decommissioning
Marina, California
17 March 2015**

OU-1 On-Post Activities for February 2015

Prepared by HydroGeoLogic, Inc., Roy Evans, Project Manager

Attendees: (to be revised after meeting)

Individual	Attended?	Individual	Attended?
James Specht, USACE		Grant Himebaugh, RWQCB	
Teresa Rodgers, USACE		Edward Ticken, AMEC	
Alex Kan, USACE		Jeff Fenton, AMEC	
Bonnie McNeil, USACE		Derek Lieberman, Ahtna	
Cory Koger, USACE		Brad Clark, Ahtna	
William Collins, BRAC		Holly Dillon, Ahtna	
Tom Ghigliotto, Chenega ¹		Kevin Ghalambor, Burleson	
Melissa Broadston, Chenega ¹		Peter Kelsall, CB&I	
Bart Kowalski, Chenega ¹		Steve Crane, Gilbane	
Cary Stiebel, Chenega ¹		Erin Caruso, Gilbane	
Lewis Mitani, EPA		Lindsay Alexander, Gilbane	
Martin Hausladen, EPA		Larry Friend, Gilbane	
Kimberly Gettman, DTSC		Kevin Siemann, Gilbane	
Franklin Mark, DTSC		Roy Evans, HGL	
Min Wu, Ph.D., DTSC		Kevin Wierengo, HGL	
Edward Walker, DTSC		Gage Dayton, Ph.D., UCSC	
Steve Sterling, DTSC			
X = attended in person or by telephone; blank indicates absent from the meeting			

¹Chenega staff supporting the BRAC
Ahtna = Ahtna Engineering Services
BRAC = Base Realignment and Closure Fort Ord Office
CB&I = Chicago Bridge & Iron, Inc.
DTSC = California Department of Toxic Substances Control

EPA = U.S. Environmental Protection Agency
HGL = HydroGeoLogic, Inc.
RWQCB = Regional Water Quality Control Board
UCSC = University of California, Santa Cruz
USACE = U.S. Army Corps of Engineers

OU-1 Treatment Plant Operations

HGL informed the Base Closure Team (BCT) at the October BCT meeting that the Northwest Treatment System (NWTs) shut down on 15 October 2014. As agreed at that meeting, the plant will remain offline pending review of the results from the December sampling event. PG&E re-connected power to the system on 16 January 2015. HGL attempted to restart the system after power was restored. The programmable logic control system appears to be undamaged but the variable frequency drive (VFD) for the transfer pump (connecting the influent holding tank to the treatment vessels) is inoperable. HGL is working with the Army to adjust the current contract

to obtain the necessary replacement parts. After the transfer pump VFD is replaced, HGL will determine if there was any other damage and make necessary repairs to restore operability.

HGL was on site on 25 February 2015 to inspect the NWTS. There was minimal rainfall in February and therefore no significant accumulation in the NWTS containment basin.

Since system startup in 2006, the NWTS has pumped approximately 212 million gallons of groundwater and removed approximately 6.0 pounds of total volatile organic compounds, primarily trichloroethene (TCE).

OU-1 Groundwater Quality Data

HGL collected samples from monitoring wells MW-OU1-61-A and MW-OU1-88-A on 22 December 2014. The validated December results confirmed the preliminary results without qualifiers. TCE concentrations did not exceed the Aquifer Cleanup Level (ACL) of 5.0 micrograms per liter ($\mu\text{g/L}$) in any of the samples collected. The December TCE concentrations are:

- MW-OU1-61-A = 4.2 $\mu\text{g/L}$ (Duplicate sample = 4.6 $\mu\text{g/L}$)
- MW-OU1-88-A = 4.1 $\mu\text{g/L}$

Tables 1A and 1B show the validated TCE and cis-1,2-dichloroethene concentrations, respectively, found in the extraction wells and treatment system in the September 2014 sampling event. Figure 5.2 from the 2014 Annual Groundwater Monitoring Report shows the September 2014 TCE concentrations and is included for reference in Attachment 1. The next planned sampling event is scheduled for March or April 2015, depending on resolution of comments on the Exit Strategy Technical Memorandum (ESTM) and agency review/approval of the updated Uniform Federal Policy (UFP) - Quality Assurance Project Plan (QAPP).

Reporting/Federal Facility Agreement Schedule

All scheduled submittals have been made for primary and secondary deliverables. The status of submitted and anticipated reports for 2014 is summarized in Table 2. The Draft 2014 Annual Groundwater Monitoring Report was accepted as Final by the regulatory agencies without comment—and no comments were received from the public. The Draft Exit Strategy Technical Memorandum and update to the UFP-QAPP are discussed separately.

OU-1 Weed Control and Rare Plant Monitoring

HGL will coordinate with the Base Realignment and Closure office biologist and University of California at Santa Cruz staff to initiate the 2015 rare plant survey.

Site Exit/Closure Strategy

Based on data from the validated September and December 2014 sampling events, TCE concentrations have met the aquifer cleanup level at all OU-1 monitoring wells. The exit strategy is based on demonstrating that the cleanup objectives of the Record of Decision (ROD) regarding human health protectiveness have been met and, therefore, the ROD cleanup goals have been attained. The human health risk corresponding to Chemical of Concern concentrations observed

at the site have met the human health protectiveness objectives for several years. The Draft OU-1 ESTM describes the proposed attainment sampling well location network and sampling schedule for the chemicals of concern identified in the ROD and for emerging contaminants perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS).

Agency comments on the Draft ESTM were received on 20 February 2015—no public comments were submitted. HGL prepared responses to the comments and submitted them for agency review.

UFP-QAPP Update

HGL and the Army will update the UFP-QAPP to incorporate the attainment monitoring program and the additional laboratory analysis for PFOA/PFOS. A preliminary draft of the UFP-QAPP was submitted for Army review on 26 February 2015 and a Draft will be submitted for agency review in March. As noted during the February BCT meeting, the Army requests that comments be provided as soon as possible within the review period to facilitate the start of attainment monitoring.

Well Destruction and Treatment Plant Demolition

Well destruction within OU-1 is complete pending review of attainment monitoring results. This topic will be deleted from future BCT updates.

Action Items:

- HGL will submit the Draft Final ESTM and Draft UFP-QAPP update in March.

Ongoing:

- Submit draft minutes for previous BCT meeting(s)—draft minutes for February 2015 were submitted on 13 March 2015.
- Submit approved final minutes for previous BCT meeting(s) — complete through January 2015.

**Fort Ord HTW BCT Meeting
17 March 2015**

**Fort Ord Operable Unit 1
Groundwater Remediation, Well Destruction, and Treatment Plant Decommissioning**

ATTACHMENT 1

Reference Table(s) and Figure(s)

Table 1A
TCE in OU-1 FONR Groundwater Remediation System – Performance Monitoring
BCT for Former Fort Ord – 17 March 2015

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		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		not sampled		discontinued		inactive		0.27	J	inactive		1.8		2.1		0.13	J
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		1.5		--		ND	
3/27/13	--	4.8		--		--		--		discontinued		ND		0.23	J	inactive		1.5		--		ND	
6/26/13	--	4.4		--		--		--		discontinued		--		--		inactive		1.7		--		ND	
9/18/13	--	4.7		1.9		--		--		discontinued		0.17	J	0.31	J	inactive		2.0		--		ND	
12/17/13	2.8	4.2		--		--		--		discontinued		--		--		inactive		2.1		--		--	
3/27/14	--	3.4	A	0.89	A	--		--		discontinued		0.22	J/A	0.29	J/A	inactive		1.7		0.92	J/A	ND	A
6/27/14	--	3.7		--		--		--		discontinued		--		--		inactive		0.28		0.39	J	ND	
9/2/14	2.2	4.2		0.88		--		--		discontinued		0.25	J	0.26	J	inactive		1.0		0.41	J	ND	

Notes:

ACL - aquifer cleanup level

ND - nondetect

Italics (if used) indicate data not yet validated

-- - Not sampled

TCE - trichloroethene

µg/L - micrograms per liter

NWTS - Northwest Treatment System

Bold font indicates concentration > ACL

J - Data qualified as estimated

FONR - Fort Ord Natural Reserve

Blue font indicates the concentration is calculated using the weighted average of the active pumping wells.

Table 1B
cis-1,2-DCE in OU-1 FONR Groundwater Remediation System – Performance Monitoring
BCT for Former Fort Ord – 17 March 2015

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																
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	
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		ND		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	--		0.39	J	0.23	J	--		--		discontinued		inactive		ND		inactive		ND		0.24	J	ND		
1/8/13	--		0.35	J	--		--		--		discontinued		ND		ND		inactive		0.12		--		--		
3/27/13	--		0.34	J	--		--		--		discontinued		ND		ND		inactive		0.12		--		--		
6/26/13	--		0.31	J	--		--		--		discontinued		--		--		inactive		0.27		--		--		
9/18/13	--		ND		ND		--		--		discontinued		ND		ND		inactive		ND		--		ND		
12/17/13	ND		0.19	J	--		--		--		discontinued		--		--		inactive		0.23		--		--		
3/27/14	--		0.16	J/A	--		--		--		discontinued		ND	A	ND	A	inactive		0.21		ND	A	ND	A	
6/27/14	--		ND		--		--		--		discontinued		--		--		inactive		ND		0.43	J	0.17	J	
9/2/14	ND		0.21	J	ND		--		--		discontinued		ND		ND		inactive		ND		0.48	J	ND		

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

ND - nondetect

TCE - trichloroethene

NWTS - Northwest Treatment System

FONR - Fort Ord Natural Reserve

NA - Not Available

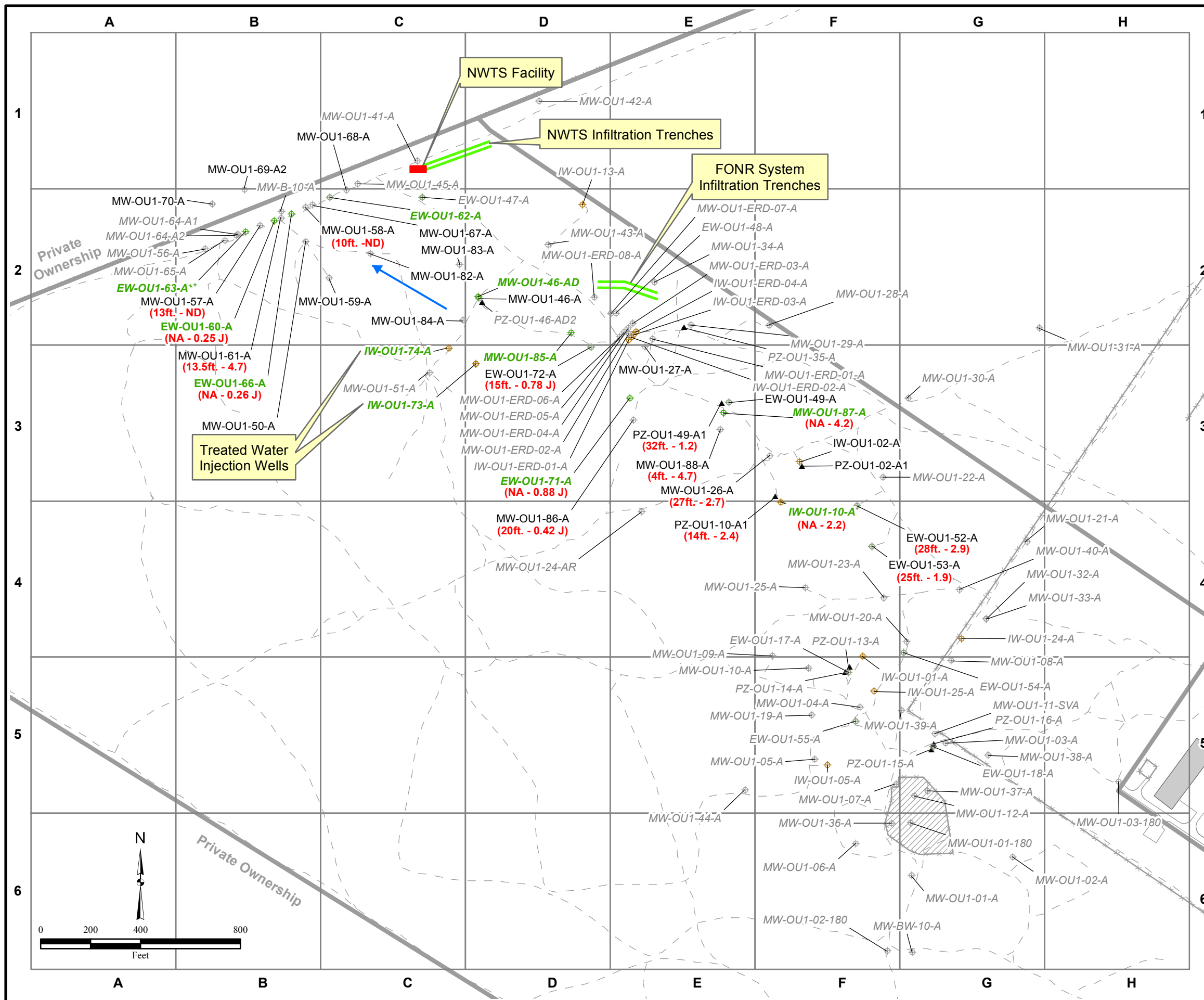
Blue font indicates the concentration is calculated using the weighted average of the active pumping wells.

Table 2
Current Deliverable Schedule
Former Fort Ord, Marina, CA – 17 March 2015

Deliverable Title	Submittal	Review Comments Due	Status/Remarks
<i>Primary Deliverables</i>			
Final UFP-QAPP	May 2014	Received	Submitted 29 May 2014
<i>Secondary Deliverables</i>			
Draft 2014 Annual Groundwater Monitoring Report	December 2014	January 2015	Accepted as Final without Comment.
Draft Final Exit Strategy Technical Memorandum	March 2015	April 2015	Army requests early review if possible
Site Safety and Health Plan Update	March 2015	Not Applicable	Army review only
UFP-QAPP 2014 Update	March 2015	April 2015	Army requests early review if possible
<i>Completed Recent Submittals</i>			
Draft UFP-QAPP	March 2014	May 2014	Submitted 04 March 2014
Final 2013 Annual and 3rd Quarter Groundwater Monitoring Report	April 2014	NA	Submitted 04 April 2014
Final Work Plan for Well Destruction and Treatment Plant Demolition	April 2014	NA	Submitted 04 April 2014
Draft Health & Safety Plan – OU-1 O&M/LTM	May 2014	Received	Draft accepted as Final
Draft Well Destruction and Treatment Plant Demolition Completion Report	August 2014	September 2014	Draft accepted as Final Submitted 03 October 2014
Draft Exit Strategy Technical Memorandum	December 2014	February 2015	Comments received 20 February 2015

¹ The Semiannual Groundwater Monitoring Report is submitted as a final document but review comments are accepted. Any comments are addressed in the Annual Groundwater Monitoring Report.

Figure 5.2
OU-1 FONR A-Aquifer
TCE Concentration in Groundwater,
September 2014,
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-OU1-57-A Well ID
- (13.5ft. - 6.7) September 2014 TCE Result (µg/L)
- (NA - 0.26 J) Sample Elevation (ft amsl)
- - - Trail/Unimproved Road
- ×××× Fence
- Treated Water Infiltration Trench
- Property Boundary
- Building
- ▨ Former Fire Drill Area
- NWTS Facility

Notes:
 Wells for which no data are posted were not sampled.
 Well labels in **green** font indicate extraction or injection well.
Italicized font shows pumping suspended.
 ft amsl= feet above mean sea level
 µg/L=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
 J=Estimated value
 *=Indicates wells not used for contouring
 +=Indicates disconnected extraction well. No longer operable.

\\gst-srv-01\hglgis\Ft_Ord_MSIW\2014_Annual_GW_Monitoring\
 (5-02)TCE_2014-09.mxd
 12/8/2014 SS
 Source: HGL