

Fort Ord Operable Unit 1 Meeting Minutes
Groundwater Remediation, Well Destruction, and Treatment Plant Decommissioning
Marina, California
Base Closure Team Meeting
1:30 p.m., 19 March 2014
Prepared by HydroGeoLogic, Inc.

Attendees:

Individual	Attended?	Individual	Attended?
James Specht, USACE		Edward Ticken, AMEC	X
Teresa Rodgers, USACE		Jeff Fenton, AMEC	X
Chris Goddard, USACE	X	Derek Lieberman, Ahtna	X
Alex Kan, USACE	X	Peter Kelsall, CB&I	X
Bonnie McNeil, USACE		Steve Crane, ITSI/Gilbane	X
William Collins, BRAC	X	Erin Caruso, ITSI/Gilbane	X
Melissa Broadston, Chenega ¹	X	Larry Friend, ITSI/Gilbane	X
Marc Edwards, Chenega ¹	X	Kevin Ghalambor, Burleson	X
Bart Kowalski, Chenega ¹	X	Roy Evans, HGL	X
Lewis Mitani, EPA	X	Kevin Wierengo, HGL	X
Martin Hausladen, EPA	X		
Franklin Mark, DTSC	X		
Min Wu, PhD, DTSC	X		
Grant Himebaugh, RWQCB	X		
X = attended in person or by telephone; blank indicates absent from the meeting			

- $\mu\text{g/L}$ micrograms per liter
- ACL Aquifer cleanup level
- Ahtna Ahtna Engineering Services
- BCT Base closure team
- BRAC Base Realignment and Closure Fort Ord Office
- CB&I Chicago Bridge & Iron, Inc.
- COC Chemical of concern
- DTSC California Department of Toxic Substances Control
- EPA United States Environmental Protection Agency
- HGL HydroGeoLogic, Inc.
- NWTS Northwest Treatment System
- QAPP Quality Assurance Project Plan
- ROD Record of Decision
- RWQCB Regional Water Quality Control Board
- TCE trichloroethene
- UFP Uniform Federal Policy
- USACE U.S. Army Corps of Engineers
- ¹Chenega staff supporting the BRAC

OU-1 Treatment Plant Operations

The Northwest Treatment System (NWTS) operated nearly continuously from 29 January 2014 through 10 March 2014. The system shut down for approximately 14.75 hours on 28 February 2014 and 15.5 hours between March 9 and 10, 2014. On both occasions, the system shutdown was due to a PG&E power failure in the Marina Airport area.

Extraction wells EW-OU1-60-A, EW-OU1-66-A, and MW-OU1-87-A are operating, and total pumping from those wells is approximately 19 gallons per minute. Extraction well IW-OU1-10-A was shut down on 2 January 2014. IW-OU1-10-A may be run intermittently, along with extraction well MW-OU1-46-A, to maintain operability and to provide additional data to monitor overall performance. Since system startup in 2006, the NWTS has pumped approximately 208 million gallons of groundwater and removed approximately 6.0 pounds of total volatile organic compounds, primarily trichloroethene (TCE). An estimated 0.08 pound of TCE has been removed since the NWTS 18 September 2013 sampling event.

OU-1 Groundwater Quality Data

HydroGeoLogic, Inc. (HGL) collected the following samples from monitoring wells and the NWTS in December 2013:

- Extraction wells (results are shown in Attachment 1) MW-OU1-87-A and IW-OU1-10-A (restarted on 14 October 2013 and shut down on 02 January 2014), and
- Monitoring wells MW-OU1-88-A and MW-OU1-61-A.

Unvalidated sampling results were presented and discussed at the January Base Closure Team (BCT) meeting. Validated results have been received and the results were unchanged. TCE concentrations were very similar to the previous result at each well and varied within ± 1 micrograms per liter ($\mu\text{g/L}$). MW-OU1-61-A and MW-OU1-88-A remain the only two wells where the TCE concentrations exceed the Aquifer Cleanup Level (ACL) of $5 \mu\text{g/L}$. TCE was the only chemical with a concentration that exceeded the laboratory reporting limit of $0.5 \mu\text{g/L}$, and it was detected in each well. Concentrations of cis-1,2-dichloroethene were detected in three of the four wells, and chloroform was detected in two. The validated sampling results for the NWTS are presented in attached Tables 1A and 1B. Figure 1 presents the TCE concentration contours based on the validated September 2013 data from the annual OU-1 groundwater monitoring event. The December data would not alter the TCE concentration contours shown thereon.

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. EPA, DTSC, and RWQCB informed the group that they had no comments on the Draft OU-1 2013 Annual and Third Quarter Groundwater Monitoring Report and the Draft Well Destruction and Former

OU-1 Treatment Plant Decommissioning Work Plan. There were no public comments on these submittals. Consequently, HGL will proceed to submit the final versions of these documents.

Weed Control and Rare Plant Monitoring

The 2013 Rare Plant Survey and Habitat Impact Report was submitted to the U.S. Army and the University of California-Santa Cruz on 24 February 2014.

Uniform Federal Policy (UFP)-Quality Assurance Project Plan (QAPP)

The Draft UFP-QAPP for OU-1 was submitted 04 March 2014. The chemistry, reporting, and quality control elements of the UFP-QAPP differed from those in the current QAPP only to reflect implementation of the DoD Quality Systems Manual for Environmental Laboratories, Version 5.0. The update is focused on integrating the current OU-1 QAPP into the Fort Ord-wide UFP-QAPP used to support the other Fort Ord operable units.

Site Exit/Closure Strategy

TCE concentrations have met or are approaching the ACL at all OU-1 monitoring wells. Attachment 2 presents an overview of a possible exit/closure strategy for discussion. The strategy outlines the case for demonstrating that the cleanup objectives of the Record of Decision (ROD) have been met and for conducting groundwater sampling to demonstrate attainment of the cleanup goals. The exit/closure strategy is consistent with EPA's most recent draft guidance regarding groundwater monitoring requirements for site closure.

Well Destruction and Treatment Plant Demolition

The Fort Ord BRAC office determined that snowy plover nesting season schedule constraints do not apply to the wells to be destroyed on California State Park land. The well destruction permits will be provided to the Army for signature and submittal next week. HGL will coordinate with the Army to provide property owner notifications. The well destruction effort is scheduled to begin in May 2014.

OU-1 Remediation Complete Status

Based on the information presented in Attachment 2, HGL proposed that the OU-1 remediation effort has met the requirements of the ROD for groundwater cleanup. Therefore, the remediation effort is complete and verification monitoring could be implemented. The regulatory agencies and the Army agreed that the information presented in Attachment 2 provided a strong case for ending the remediation effort. The human health risk goal specified in the ROD is much higher than the human health risk corresponding to current OU-1 concentrations for the chemicals of concern (COC). However, it was noted that the TCE concentration at two wells still exceeded the ACL specified in the ROD. Consequently, it is not clear if the senior management at each agency would concur that remediation is complete. It was agreed that the Army would revise the format of Attachment 2 and incorporate additional TCE concentration trend and history information. Upon completing that effort, the

Army will formally submit the revised proposal to the regulatory agencies and seek concurrence that the OU-1 groundwater cleanup is complete.

The revised proposal will include a description of the past soil remedy, completion of the rebound study, and the stability of the remediation effectiveness. The only remaining COC source is from re-dissolving from plume contact areas. The revised proposal will describe the results of the long term monitoring to demonstrate how long the ROD cleanup health risk goals have been functionally attained.

Other

- Lewis Mitani should receive copies of all OU-1 submittals. However, EPA stated that they will not comment on OU-1 documents and will defer to DTSC until further notice.

Action Items

- The Army requested that the “Property Owner” label on the permit applications be changed to “Well Owner” before submittal. It was noted that the Army owns the wells but not the various properties. This action has been completed.
- HGL will send CD versions of the Well Destruction Work Plan and cover letters to Bart Kowalski to support property owner notifications.
- Prepare preliminary closure memo.

Ongoing

- Submit draft minutes for previous BCT meeting. This action is complete through February 2014.
- Submit approved final minutes for previous BCT meeting. This action is complete through February 2013.

**Fort Ord HTW BCT Meeting
19 March 2014**

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

ATTACHMENT 1

Table 1A

TCE in OU-1 FONR Groundwater Remediation System – Performance Monitoring
 BCT Meeting for Former Fort Ord – 19 March 2014

Began: Date	FONR Extraction Well (listed from south to north)					Boundary Extraction Well (from west to east)				NWTS			
	Nov-10 IW-10	MW-87	Oct-07 EW-71 MW-85		MW-46AD	EW-63	EW-60	EW-66	EW-62	INFLUENT	MIDPOINT	EFFLUENT	
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	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	1.54	--	ND	
3/27/13	-	4.8	--	--	--	discontinued	ND	0.23	J inactive	1.48	--	ND	
6/26/13	-	4.4	--	--	--	discontinued	--	--	inactive	1.90	--	ND	
9/18/13	-	4.7	1.9	--	--	discontinued	0.17	J 0.31	J inactive	2.00	--	ND	
12/17/13	2.8	4.2	--	--	--	discontinued	--	--	inactive	1.48	--	--	
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				
Blue font indicates the concentration is calculated using the weighted average of the active pumping wells.													

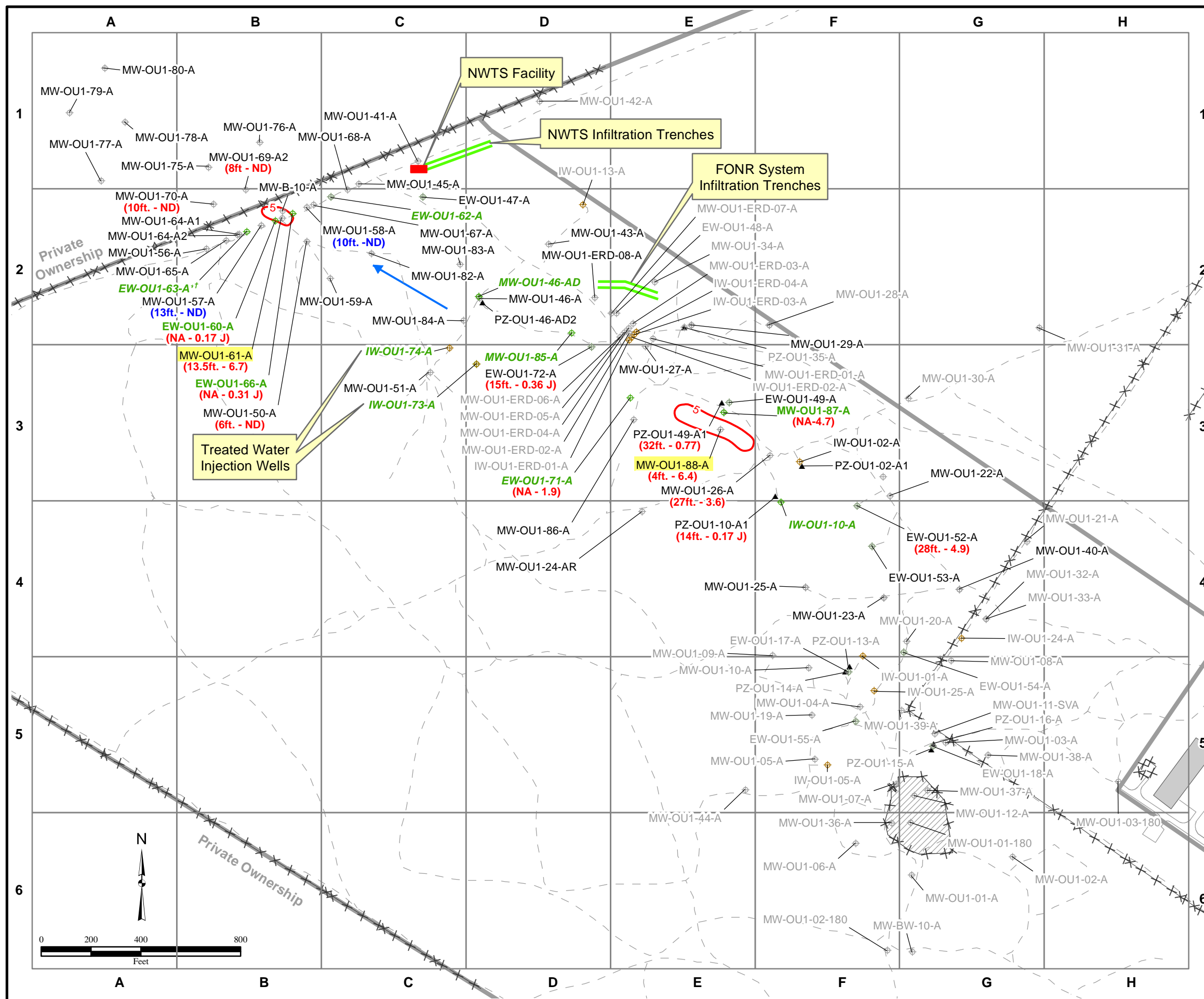
Table 1B
cis-1,2-DCE in OU-1 FONR Groundwater Remediation System – Performance Monitoring
BCT Meeting for Former Fort Ord – 19 March 2014

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	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	ND	ND	
9/20/10		0.66	0.46	J	ND	ND	discontinued	ND	ND	inactive	0.23	J	not sampled	ND	ND	ND	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	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	--	0.39	J	0.23	J	--	--	discontinued	inactive	ND	inactive	ND	0.24	J	ND	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	ND		
12/17/13	ND	0.19	J	--	--	--	--	discontinued	--	--	inactive	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								
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, California – 19 March 2014

Deliverable Title	Submittal	Review Comments Due	Status/Remarks
<i>Primary Deliverables</i>			
Draft UFP-QAPP	March 2014	May 2014	Submitted 04 March 2014.
<i>Secondary Deliverables</i>			
Draft 2013 Annual and Third Quarter Groundwater Monitoring Report	January 2014	March 2014	Submitted 17 January 2014.
Draft Work Plan for Well Destruction and Treatment Plant Demolition	February 2014	April 2014	Submitted 11 February 2014. Approved by RWQCB.
Draft 2014 Semiannual Groundwater Monitoring Report	June 2014	August 2014	Sampling to be completed in March 2014.
Draft Well Destruction and Treatment Plant Demolition Completion Report	August 2014	September 2014	Fieldwork to be completed in June 2014.
Draft Health and Safety Plan – OU-1 O&M/LTM	February 2014	March 2014	In preparation.
<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.
Draft 2012 Annual and Third Quarter Groundwater Monitoring Report	December 2012	NA	Submitted 31 December 2012. Waiting for agency comments.
Final 2012 Annual and Third 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.
Preliminary Draft Work Plan for Well Destruction and Treatment Plant Demolition	5 November 2013	19 November 2013	Army comments addressed.
Preliminary Draft Health and Safety Plan – Well Destruction and Treatment Plant Demolition	5 November 2013	19 November 2013	Army comments addressed.
Preliminary Draft Health and Safety Plan – OU-1 O&M/LTM	5 November 2013	19 November 2013	Army comments addressed
Preliminary Draft 2013 Annual and Third Quarter Groundwater Monitoring Report	19 November 2013	19 December 2013	Army comments addressed.
Preliminary Draft UFP-QAPP	26 November 2013	10 December 2013	Army comments addressed.
Draft UFP-QAPP	March 2014	May 2014	Submitted 04 March 2014.
Draft Work Plan for Well Destruction and Treatment Plant Demolition	February 2014	April 2014	Submitted 11 February 2014.

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

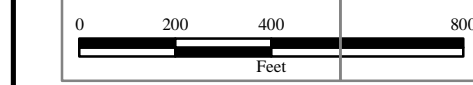


Legend

- ⊕ 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 March 2013 TCE Concentrations at or above ACL (5 µg/L)
- MW-OU1-57-A Well ID
- (13.5ft. - 6.7) September 2013 TCE Result (µg/L)
- Sample Elevation (feet above mean sea level)
- (13ft. - ND) Jan/Feb/March 2013 Latest TCE Result (µg/L)
- Sample Elevation (feet above mean sea level)
- 5 TCE contour based on September 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.

\\gst-srv-01\hglgis\Ft_Ord_MSIW\O&M_H10203\
(1)TCE_2013-09.mxd
11/12/2013 CNL
Source: HGL



**Fort Ord HTW BCT Meeting
19 March 2014**

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

ATTACHMENT 2

Potential OU-1 Exit/Closure Strategy

**Fort Ord HTW BCT Meeting
19 March 2014**

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

Attachment 2

Introduction

Groundwater sampling results from the Operable Unit 1 (OU-1) groundwater long term monitoring (LTM) network have shown the following:

- Since March 2008, trichloroethene (TCE) is the only chemical of concern (COC) that has exceeded the Aquifer Cleanup Level (ACL) specified in the Record of Decision (ROD).
- In 2013, the TCE concentrations measured in OU-1 groundwater exceeded the ACL at only two monitoring wells and are trending lower with time.
- The maximum TCE concentration detected during the December 2013 sampling effort was 6.3 micrograms per liter ($\mu\text{g/L}$) in well MW-OU1-61-A.

The decreasing TCE concentration throughout OU-1 groundwater has resulted in a corresponding decrease in the amount of total volatile organic compounds, primarily TCE, that is being removed by the active extraction wells each year. At the two extraction wells located near MW-OU1-61-A, for example, TCE has not been detected above $0.5 \mu\text{g/L}$ since September 2011—the ACL for TCE is 10 times greater ($5.0 \mu\text{g/L}$) than the maximum detected TCE concentration at these wells during that interval. These factors prompted the Army to assess the progress of the OU-1 groundwater cleanup in comparison to the groundwater cleanup goals identified in the ROD.

ROD Cleanup Goals

Several statements in the ROD are relevant to determining when the cleanup goals have been met:

- Section 2.5 states as follows:
 - The primary remedial objectives for the A-Aquifer are hydraulic control and containment of contaminated groundwater in the A-Aquifer, and extraction and treatment of groundwater exceeding aquifer cleanup levels. Remedial actions for these two components are intended to be final remedial solutions to risks posed by COCs present within these units. The risks are described in Section 2.7.
- Section 2.7.2 states as follows:
 - A post cleanup human health risk assessment (HHRA) was performed for the groundwater at the FDA [the Fire Drill Area is the OU-1 COC source area].

- The exposure pathway evaluated was a child and adult receptor that might be exposed to the COCS through ingestion of tapwater (groundwater).
- The resulting excess cancer risk estimated for site conditions at the time that Aquifer Cleanup Goals are achieved is 2×10^{-6} to 3×10^{-5} .
- These excess cancer risks are within the 10^{-4} to 10^{-6} identified in the NCP as acceptable residual risks for Federal Superfund sites.
- In summary, even if unlimited use occurred at this site, the resultant risks from exposure to soils and groundwater at remediation would be no greater than that described above for groundwater, and no institutional controls (i.e., deed restrictions) are needed. However, actual or threatened releases of hazardous substances for this site, if not addressed by continued implementation of the groundwater remedy, may present an imminent and substantial endangerment to public health, welfare, and the environment.
- Section 2.9 states as follows:
 - To protect human health and comply with federal and state applicable or relevant and appropriate requirements (ARARs), groundwater must be returned through cleanup to a condition that will allow beneficial uses to occur, including future potential use as a drinking water source, without unacceptable risks to the users. Thus, the remedial cleanup goals for groundwater include cleaning up the contaminated groundwater to at least maximum contaminant levels (MCLs), as shown on Table 1.
 - The estimated maximum total aggregate excess cancer risk for all chemicals at their respective remediation goals is 3×10^{-5} . This cumulative risk is within acceptable range, and is health protective.

The last bullet time showing text extracted from Section 2.7.2 of the ROD includes the statement “However, actual or threatened releases of hazardous substances for this site, if not addressed...” There are no longer any threatened releases because soils and groundwater have been remediated in the source area.

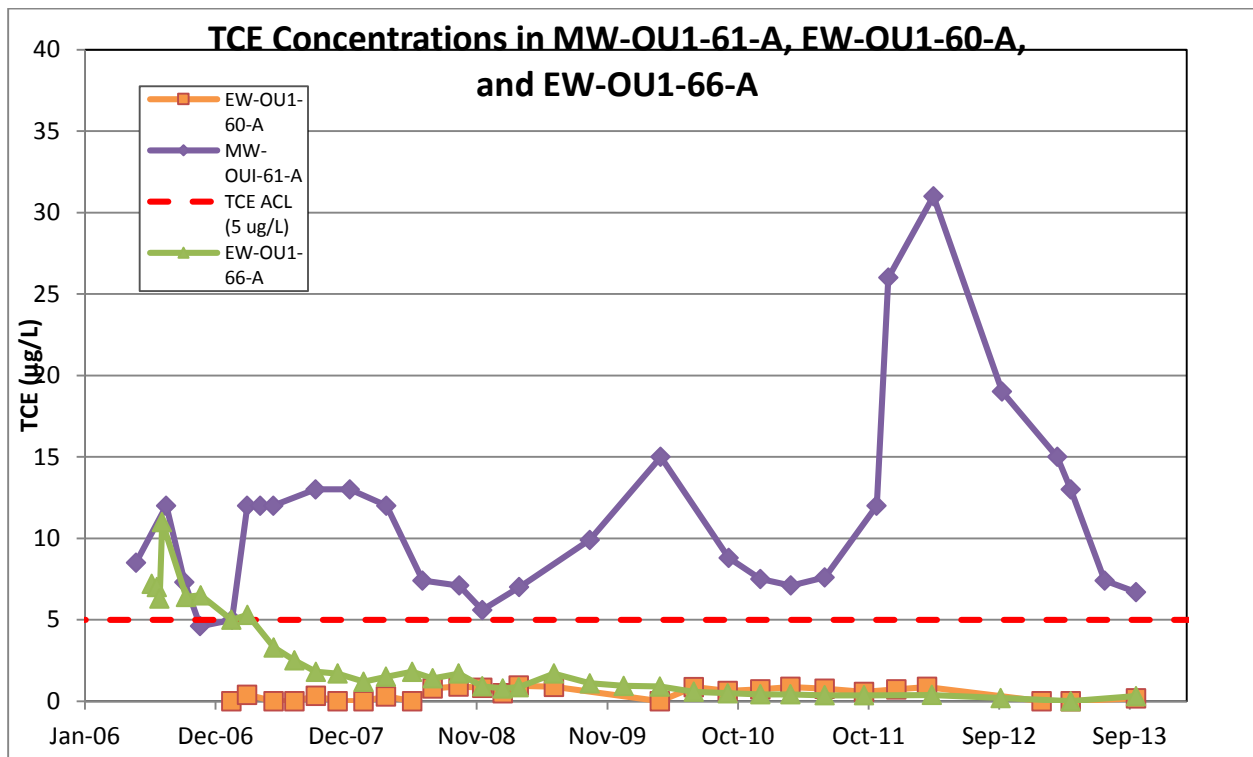
The rationale expressed throughout the ROD is that the ACLs were set to achieve a groundwater quality that would allow beneficial uses to occur, including future potential use of the groundwater as a drinking water source, without unacceptable risks to the users. The U.S. Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCLs) corresponding to the COCs were selected as target values that would accomplish this goal and indicate that remediation is complete.

ROD Cleanup Goals Achieved in OU-1

If the current data were used to conduct the HHRA, TCE would very likely be the only COC to contribute an incremental cancer risk greater than 1×10^{-6} because the other nine COCs either have not been detected or have been found only at concentrations well below their corresponding ACLs. The parameters used in assessing TCE risk have grown more conservative since the ROD was established. Nonetheless, a preliminary estimate of the excess

cancer risk resulting from residential ingestion of groundwater containing TCE at 6.5 $\mu\text{g/L}$. TCE, which is slightly greater than the current maximum value detected in the December 2013 sampling, is 6×10^{-6} . This value is nearly an order of magnitude less than the risk level used in the ROD to define completion of the remedial action.

Site data also demonstrate that the OU-1 site cleanup meets the ROD goal that "... groundwater must be returned through cleanup to a condition that will allow beneficial uses to occur, including future potential use as a drinking water source, without unacceptable risks to the users." Well MW-OU1-61-A is located within approximately 100 feet or less of extraction wells EW-OU1-60-A and EW-OU1-66-A. These wells pump approximately 2 gallons per minute (gpm) and 13 gpm, respectively, and are representative of residential use scenarios for drinking water. As illustrated in the chart below, TCE has not been detected above 0.9 $\mu\text{g/L}$ in either extraction well since December 2009 and has not exceeded the drinking water MCL since early in 2007.



Furthermore, pumping from MW-OU1-61-A cannot be sustained for more than a few minutes without dewatering the well casing.

The assessment described above indicates that the OU-1 groundwater remediation effort has met the cleanup goals identified in the ROD. There could be objections to this conclusion based on the fact that two wells within the OU-1 LTM network had, as of the latest sampling event, TCE concentrations slightly above the ACL even though remediation has been defined as complete.

A counter argument to such an objection is that the ACLs were selected to achieve an acceptable risk to human health—in this case, an excess cancer risk of 3×10^{-5} or less—if the OU-1 groundwater were to be used as a residential water supply, even though such use is prohibited. However, the preliminary risk estimate described previously shows that meeting the ACLs at all wells is not necessary to meet the ROD goal of restoring the potential beneficial use of the aquifer as a drinking water source with a corresponding excess cancer risk of 3×10^{-5} . In fact, the current site condition corresponds to a cancer risk that is much less than that identified in the ROD when the ACLs are met. Furthermore, attainment monitoring will be performed to ensure that the remediation goal is met after the groundwater extraction and treatment operation is discontinued.

Potential Operable Unit 1 Closure Strategy

The above findings suggest that a potential closure strategy for OU-1 would be to perform the following actions:

- Update the HHRA to determine the current excess cancer risk and demonstrate that it is less than that used to define a completed remediation effort in the ROD.
- Demonstrate through site data that OU-1 groundwater could be used—theoretically, as such use is prohibited by regulation—for residential drinking water and would meet the MCL standards for the COCs.
- Show through individual well data analyses and subsequent attainment monitoring that COC concentrations will continue to meet ACLs.
- Summarize cleanup progress to date to show that there will be no future or “threatened” releases from the source area.
- Propose to the EPA, the California Department of Toxic Substances Control, and the California Regional Water Quality Control Board that the requirements of the OU-1 ROD have been met and that remediation is complete based on the available site evidence.
- Propose an attainment groundwater monitoring program to verify that remediation is complete.
- Initiate the proper actions to obtain the necessary approvals to close OU-1.

The Army requests input from the EPA, the California Department of Toxic Substances Control, and the California Regional Water Quality Control Board regarding the feasibility of the closure strategy described above.