HTW BCT Meeting Agenda

Wednesday, October 22, 2014 at 1:30 p.m.
Fort Ord BRAC Conference Room

Item	Action	Comment
Community Relations	**Status Update**	
BCT Minutes	**Status Update**	- OU1 - Basewide
OU1 Groundwater Remediation	**Status Update**	- OU1 Exit Strategy
OU2 and 2/12 Treatment Systems	**Status Update**	- Soil Vapor - Treatment Plant Relocation - OU2 Treated GW Reuse
Other Groundwater Issues	**Status Update**	- OUCTP Evaluation
OU2 Landfill	**Status Update**	- Operations & Maintenance - Closure
Basewide Range Assessment	**Status Update**	- Lead Re-evaluation
Site 39 Remediation	**Status Update**	- Habitat Restoration
FFA Schedule	**Status Update**	- Document Schedule
Calendar Update	**Update**	- Next meeting: Thursday 11/13 @ 1:30 pm

U.S. Army Community Outreach Update

Long Term Actions Underway:

1. Develop report: Analysis of 2013-2014 Community Involvement Program and Analysis of 2013 Community Survey Results. Draft report to be issued December 2014.

Recent Activities:

1. 24SEP Monterey County Weekly internet blog/article: "Army grant will fund new treatment system for polluted Fort Ord groundwater"
2. 26SEP KAZU National Public Radio broadcast and accompanying internet article "Fort Ord 20 Year Later"
3. Provided 2OCT Fort Ord Cleanup radio interview and tour for KAZU National Public Radio specific to munitions
4. 9OCT Sent letter offering munitions safety training to local schools for Fall semester.

Upcoming Activities:

1. 25OCT Co-sponsor and participate in National Public Lands Day for the Fort Ord National Monument.
2. 6NOV Participant in 16th Annual Central Coast Invasive Weed Symposium (formerly "War on Weeds") – includes Fort Ord tour
3. 13NOV Provide BLM Area B, MRS-16 presentation to Fort Friends
4. 17NOV Provide Fort Ord cleanup tour for York School Math and Science faculty and staff
5. 25NOV Provide Fort Ord cleanup tour for Naval Postgraduate School class, IT 1500
6. December Begin updates of groundwater fact sheets
7. 21FEB Community Involvement Workshop (Topics: Groundwater, Landfill, Site 39, ESCA)
8. 24FEB Technical Review Committee (Topics; Groundwater, Landfill, Site 39, ESCA)
9. April: Earth Day information booths at Presidio of Monterey, California State University Monterey Bay, Naval Postgraduate School
10. 16-19APR Information Booth at the Sea Otter Classic

STATUS: RESPONSE to COMMUNITY COMMENTS (RTC)

AR Number	Title/Subject	Status
BW-2721.3	Comments submitted by Fort Ord Environmental Justice Network on the Draft Remedial Investigation / Feasibility Study Addendum for Sites 2/12	In progress
BW-2721.2	Comments submitted by Shea Homes on the Draft Remedial Investigation / Feasibility Study Addendum for Sites 2/12	In progress
BW-2674.2	Comments submitted by Mike Weaver, Fort Ord Community Advisory Group - on the Draft Technical Memorandum Evaluation of Lead Concentrations at Selected Sites, Former Fort Ord, California	In progress
ESCA-0267.2	Comments submitted by community member, Gail Youngblood, on the Group 2 Proposed Plan, CSUMB Off-Campus MRA, FORA ESCA RP	In Progress/Part of CSUMB Off-Campus Group 2ROD Responsiveness Summary
ESCA-0267.3	Comments submitted by community group member Mike Weaver, Fort Ord Community Advisory Group, on the Group 2 Proposed Plan, CSUMB Off-Campus MRA, FORA ESCA RP - at the June 19, 2013 public meeting	In Progress/Part of CSUMB Off-Campus Group 2 ROD Responsiveness Summary
OE-0793.4	Comments submitted by community member, Mike Weaver, Fort Ord Community Advisory Group, on the Group 2 Proposed Plan, CSUMB Off-Campus MRA, FORA ESCA RP	In Progress/Part of MRS-34 ROD Responsiveness Summary

Former Fort Ord – Operable Unit (OU)-1 Status Update
Groundwater Remediation, Well Destruction, and Treatment Plant Decommissioning
Marina, California
Base Closure Team Meeting
22 October 2014

OU-1 On-Post Activities for September 2014

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		Sean McStay, UCSC	
Steve Sterling, DTSC			
X = attended in person or by telephone; blank indicates absent from the meeting			

[1]Chenega 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 reported the Northwest Treatment System (NWTS) operated continuously from 2 September 2014 through 14 October 2014. Extraction wells EW-OU1-60-A and EW-OU1-66-A were operating and total pumping from those wells is approximately 11.4 gallons per minute. EW-OU1-71-A, MW-OU1-87-A, and IW-OU1-10-A were temporarily restarted on 1 September 2014 to collect performance monitoring samples on 2 September 2014. Once samples were collected, EW-OU1-71-A, MW-OU1-87-A, and IW-OU1-10-A were shutdown.

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). An estimated 0.15 pound of TCE has been removed since the NWTS 18 September 2013 sampling event.

At approximately 1 a.m. on 15 September the system shut down because the PG&E meter apparently short-circuited, thereby cutting power to the NWTS. PG&E will investigate and make necessary repairs but power was not restored as of mid-afternoon on 16 October. After power is restored we will determine if there was any damage to the NWTS electrical equipment and/or process control system. We will discuss the timetable for restarting the NWTS during the meeting.

OU-1 Groundwater Quality Data

In accordance with the Uniform Federal Policy (UFP)-Quality Assurance Project Plan (QAPP), HGL collected the following samples from monitoring wells and the NWTS on 2 September 2014:

EW-OU1-60-A	MW-OU1-58-A	PZ-OU1-49-A1	EW-OU1-53-A
EW-OU1-66-A	MW-OU1-57-A	MW-OU1-88-A	NWTS-Influent
EW-OU1-71-A	MW-OU1-61-A	MW-OU1-26-A	NWTS Midpoint
MW-OU1-87-A	EW-OU1-72-A	PZ-OU1-10-A1	NWTS Effluent
IW-OU1-10-A	MW-OU1-86-A	EW-OU1-52-A	

Unvalidated sampling results were presented and discussed at the September BCT meeting. Validated results have since been received and the results were unchanged. The validated results showed that TCE concentrations did not exceed the Aquifer Cleanup Level (ACL) of 5.0 micrograms per liter (μg/L) in any of the samples collected. The highest TCE concentration, 4.7 μg/L, was detected in the samples collected from wells MW-OU1-61-A and MW-OU1-88-A. Tables 1A and 1B show the validated TCE and cis-1,2-dichloroethene concentrations, respectively, found in the extraction wells and treatment system. All validated TCE results from the September 2014 sampling event are presented on Table 2. A Figure showing the September 2014 TCE concentrations is included for reference in Attachment 1. The next planned sampling event is in December 2014.

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 3. The regulatory agencies indicated that the Draft Well Destruction and Treatment Plant Demolition Completion Report was accepted as written and there were no public comments by the response deadline. Therefore the Draft is accepted as Final. Replacement pages were distributed on 25 September 2014, to indicate this change and to include copies of approved well destruction permits that were omitted from the Appendix. The Draft OU-1 Exit Strategy Technical Memorandum will be submitted for regulatory agency review on 17 October 2014.

OU-1 Weed Control and Rare Plant Monitoring

The U.S. Fish and Wildlife Service required that the third year of rare plant monitoring be completed at the former well destruction sites and this survey was completed between 25 April 2014 and 02 May 2014. Additional monitoring was performed in May and June during the well destruction effort at well sites destroyed within the Fort Ord Natural Reserve (FONR). The 2014 FONR Impact Assessment and Habitat and Rare Plant Species Survey Results Report was submitted to the Army for distribution on 10 October 2014.

Site Exit/Closure Strategy

Based on data from the September sampling event, 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.

An OU-1 Exit Strategy Technical Memorandum is being prepared to present the case for OU-1 closure based on cleanup progress to date. The technical memorandum includes recommendations for performing attainment monitoring that incorporate existing data to the maximum extent. Selected pre-draft excerpts from the technical memorandum are included as Attachment 2 to facilitate discussion during the BCT meeting.

Well Destruction and Treatment Plant Demolition

As discussed at previous meetings, the right of entry (ROE) for the Armstrong Ranch property has not yet been obtained—consequently the timetable for destroying these 14 wells and removing approximately 1,500 feet of associated pipeline remains uncertain. Figure 1 in Attachment 1 shows the locations of the destroyed wells within OU-1. The Draft Well Destruction and Treatment Plant Demolition Completion Report was submitted on 11 August 2014 for regulatory agency and public review. No comments were received, therefore, the Draft is accepted as Final. Replacement pages were distributed on 25 September 2014.

Action Items:

- The Army will pursue ROE agreements for Armstrong Ranch.
- HGL will respond to regulatory agency and public comments on Draft OU-1 Exit Strategy Technical Memorandum

Ongoing:

- Submit draft minutes for previous BCT meeting(s)—complete through August 2014.
- Submit approved final minutes for previous BCT meeting(s) — complete through August 2014.

Fort Ord HTW BCT Meeting
22 October 2014

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 – 22 October 2014

	FONR Extraction Well (listed from south to north)										Boundary Extraction Well (from west to east)								NWTS					
Began:	**Nov-10**		**Oct-07**								**Jul-06**													
Date	**IW-10**		**MW-87**		**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		1.5		--		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:

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 for Former Fort Ord – 22 October 2014

	FONR Extraction Well (listed from south to north)										Boundary Extraction Well (from west to east)										NWTS					
Began:	**Nov-10**		**Oct-07**								**Jul-06**															
Date	**IW-10**		**MW-87**		**EW-71**		**MW-85**		**MW-46AD**		**EW-63**		**EW-60**		**EW-66**		**EW-62**		**INFLUENT**		**MIDPOINT**		**EFFLUENT**	
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				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
Validated OU-1 Sampling Results for September 2014

Sample Point	Location	TCE	
		µg/L	Qualifier
Treatment plant			
NWTS-Influent	Treatment Plant	1.0	
NWTS-Midpoint	Treatment Plant	0.41	J
NWTS-Effluent	Treatment Plant	ND	
Extraction wells			
EW-OU1-60-A*	NW Boundary	0.25	J
EW-OU1-66-A*	NW Boundary	0.26	J
EW-OU1-71-A*	Central FONR	0.88	
MW-OU1-87-A*	Central FONR	4.2	
IW-OU1-10-A*	Central FONR	2.2	
Monitoring wells			
MW-OU1-58-A	NW Boundary	ND	
MW-OU1-57-A	NW Boundary	ND	
MW-OU1-61-A	NW Boundary	4.7	
MW-OU1-61-A	Duplicate	4.0	
EW-OU1-72-A	Central FONR	0.78	
MW-OU1-86-A	Central FONR	0.42	J
PZ-OU1-49-A1	Central FONR	1.2	
MW-OU1-88-A	Central FONR	4.7	
MW-OU1-26-A	Central FONR	2.7	
PZ-OU1-10-A1	Central FONR	2.4	
EW-OU1-52-A	Central FONR	2.9	
EW-OU1-53-A	Central FONR	1.9	

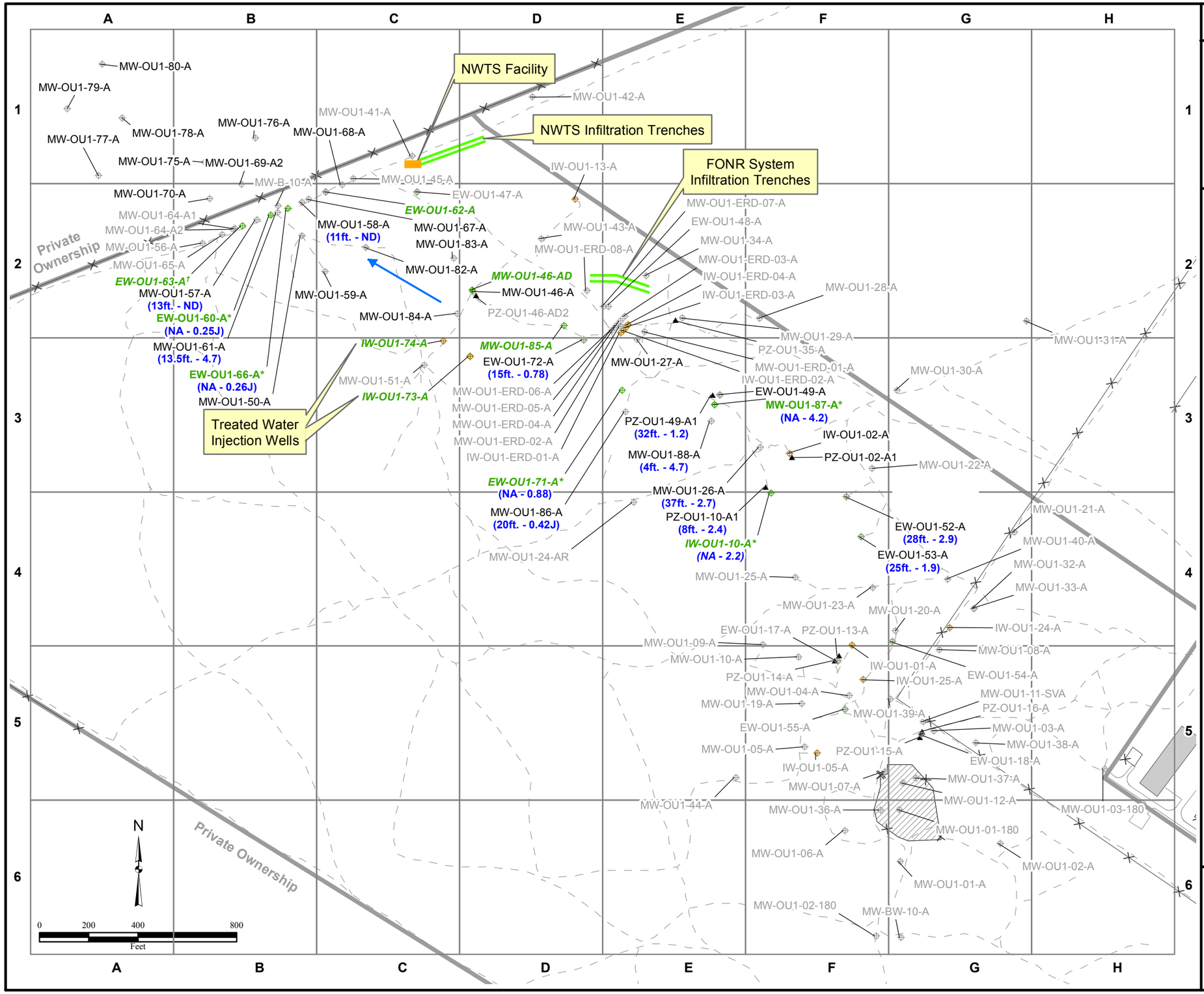
* Operating extraction well - samples collected from port on discharge pipe.
µg/L = micrograms per liter
FONR = Fort Ord Natural Reserve
ND = nondetect
TCE = trichloroethene

Table 3
Current Deliverable Schedule
Former Fort Ord, Marina, CA – 22 October 2014

Deliverable Title	Submittal	Review Comments Due	Status/Remarks
Primary Deliverables			
Final UFP-QAPP	May 2014	Received	Submitted 29 May 2014
Secondary Deliverables			
Final 2014 Semiannual Groundwater Monitoring Report	June 2014	August 2014[1]	Submitted 25 June 2014
Draft 2014 Annual Groundwater Monitoring Report	November 2014	December 2014	In progress.
Draft Exit Strategy Technical Memorandum	October 2014	December 2014	In progress
Site Safety and Health Plan Update	September 2014	TBD	
UFP-QAPP 2014 Update	TBD	TBD	To be scheduled after determination of cleanup verification sampling requirements
Completed Recent Submittals			
Preliminary Draft Health & Safety Plan – OU-1 O&M / LTM	5 November 2013	19 November 2013	Army comments addressed
Draft 2013 Annual and 3rd Quarter Groundwater Monitoring Report	January 2014	March 2014	Submitted 17 January 2014.
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
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

[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 1
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-OU1-61-A — Location with September 2014 TCE Concentrations at or above ACL (5 µg/L)
- (13.5ft. - 13) — September 2014 TCE Result (µg/L); Sample Elevation (feet above mean sea level)
- 5 — TCE contour based on September 2014 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\OU-1 Exit Startegy Technical Memorandum\ Fig. 1-1 FONR A-Aquifer TCE Groundwater Concentration.mxd
9/26/2014 SS
Source: HGL

HGL HydroGeoLogic, Inc

Fort Ord HTW BCT Meeting
22 October 2014

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

ATTACHMENT 2

Pre-Draft Sections of Exit Strategy Technical Memorandum

PRELIMINARY DRAFT TECHNICAL MEMORANDUM
OPERABLE UNIT 1 EXIT STRATEGY
FORMER FORT ORD, CALIFORNIA

Introduction

HydroGeoLogic, Inc. (HGL) has prepared this technical memorandum on behalf of the U.S. Army Corps of Engineers, Sacramento District to develop an exit strategy to reach final site closeout of Operable Unit (OU)-1. Based on the results of the September 2014 groundwater sampling event, cleanup objectives and human health risks levels identified in the Record of Decision (ROD) have been achieved and remediation activities are complete. This technical memorandum also includes a verification sampling program that will be conducted to verify that the ROD cleanup goals are met following the termination of the groundwater extraction and treatment operation.

ROD Cleanup Goals

Several statements in the ROD are relevant to determining when the cleanup goals have been met for OU-1:

- The following excerpt is from Section 2.5 of the ROD:

  > 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 contaminants present within these units. The risks are described in Section 2.7.

- The following excerpts are from Section 2.7.2 of the ROD:

  > A post cleanup human health risk assessment (HHRA) was performed for the groundwater at the FDA…Although it is unlikely that onsite groundwater will be used as a drinking water source, 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 [National Contingency Plan] 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.

In the first paragraph above, "FDA" refers to the Fire Drill Area, the OU-1 contaminant of concern (COC) source area.

- The following excerpts are from Section 2.9 of the ROD:

> 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 rationale expressed throughout the ROD is that the Aquifer Cleanup Levels (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) MCLs for each of the COCs were established as target ACL values that would be used to determine when remediation is complete.

ROD Cleanup Goals Achieved in OU-1

Results of the September 2014 sampling event indicate that all ACLs established for OU-1 have been met. Historical groundwater sampling results from the OU-1 groundwater long term monitoring (LTM) network are summarized in Table 1. The data in Table 1 is organized by well function with extraction wells presented first, followed by the treatment plant samples and then the monitoring well data. As shown in Table 1, trichloroethene (TCE) is the only COC that has exceeded the ACL within the OU-1 LTM network since March 2008. TCE concentrations did not exceed the ACL of 5.0 micrograms per liter (μg/L) in any of the samples collected in September 2014. The maximum TCE concentration detected during the September 2014 sampling effort was 4.7 μg/L in wells MW-OU1-61-A and MW-OU1-88-A. The September 2014 sampling results for TCE are also presented graphically on Figure 1.

In Table 1 the "MW-" prefix for monitoring wells, "EW-" prefix for extraction wells, and "IW-" prefix for injection wells do not correspond to well function in all cases. The boundaries of the contaminated groundwater zone in OU-1 were refined as the remedial design progressed. The evaluation of design alternatives showed that the most effective OU-1 remedy required that some wells be used for different purposes than originally intended. Consequently, some wells that were intended and named as monitoring wells when constructed became extraction wells in the final remedial design, specifically MW-OU1-46-AD, MW-OU1-85-A, and MW-OU1-87-A. Conversely, well EW-OU1-72-A is used only for monitoring groundwater quality. Several wells were named as potential injection well sites but only two, IW-OU1-73-A and IW-OU1-74-A, were connected to the Northwest Treatment System

(NWTS) for this purpose. The rest of the "IW-" prefix wells are used only for monitoring groundwater quality, with one exception: well IW-OU1-10-A was converted to an extraction well in October 2010.

The decreasing TCE concentration throughout OU-1 has resulted in a corresponding decrease in the amount of total volatile organic compounds, primarily TCE, being removed by the active extraction wells each year. For example, at the two extraction wells located near MW-OU1-61-A (one of the two wells with residual TCE concentrations of 4.7 μg/L), TCE has not been detected above 0.5 μg/L since September 2011. The ACL for TCE (5.0 μg/L) is 10 times greater than the maximum detected TCE concentration at these wells during this interval. TCE concentrations have not exceeded the ACL in any extraction well since March 2013.

Human Health Risk Calculations

To verify that current site conditions are protective of site receptors and allow for future beneficial use to occur, human health risks were calculated based on exposure to site groundwater using the most recent sample results from September 2014. The excess carcinogenic human health risk corresponding to the September 2014 sampling results is 1 x 10^{-5} (calculations are presented in Attachment A). For these calculations, the detected TCE concentration of 4.7 μg/L was used as the TCE exposure point concentration (EPC) and the limit of detection (LOD) was used as the EPC for the nine COCs that were not detected or were detected below their reporting limit. The excess carcinogenic human health risk under current conditions is less than the 3 x 10^{-5} value in the ROD corresponding to attainment of the ACLs.

In addition to risks associated with current site conditions, the maximum concentration of TCE that would result in a cumulative cancer risk equal to that established in the ROD (3 x 10^{-5}) was calculated. The resulting concentration, 6.5 μg/L, will be useful during verification sampling to evaluate whether unacceptable risks occur if the TCE concentration increases during the verification period. In calculating the maximum acceptable TCE concentration, the LODs were used as the EPCs for the remaining nine COCs. The following provides additional details regarding the risk calculations conducted in support of this evaluation.

Exposure Assumptions and Toxicity Assessment

Exposure assumptions were obtained in accordance with EPA Risk Assessment Guidance for Superfund (RAGS) Guidance and incorporate the exposure factor revisions issued by EPA in February 2014 (EPA, 2014). All exposure assumptions (ingestion rate, exposure duration, etc.) are summarized in Tables A.1.1 and A.1.2 of Attachment A. Toxicity values were obtained in accordance with the Office of Solid Waste and Emergency Response Directive 9285.7-53 (EPA, 2003) and are summarized in Tables A.1.3, A.1.4, A.1.5, and A.1.6 of Attachment A. Toxicity values for the dermal exposure route were estimated from the oral reference doses and cancer slope factors in accordance with RAGS, Part E (EPA, 2004). Exposure parameters and toxicity values used for all risk scenarios are provided in Attachment A.1.

Risk Characterization

The cancer risk estimates for the child and adult resident receptors presented in the ROD considered only the ingestion and dermal contact exposure pathways. The ROD identified the cumulative cancer risk associated with exposure to the ten COCs at the ACLs to be 3×10^{-5}. The ROD did not consider potential non-cancer effects of the COCs.

Current risk assessment guidance requires evaluation of the inhalation exposure pathway in addition to the ingestion and dermal contact pathways. In addition, current guidance also requires the evaluation of cancer risks using the age-adjusted resident receptor. For comparison purposes, the cumulative cancer risks and non-cancer hazards associated with residential exposure to groundwater were calculated using both the ACLs (Attachment A.2) and the September 2014 sampling results (Attachment A.3). The results are summarized below:

Exhibit 1

Inputs to Risk Calculations	Cumulative Cancer Risk (Age-Adjusted Resident)	Cumulative Non-Cancer Hazard Index (Child Resident)	Cumulative Non-Cancer Hazard Index (Adult Resident)	Attachment A Reference
ACLs	$3x10^{-5}$	3	2	Tables A.2.4, A.2.5, A.2.6
September 2014 Sampling Results	$1x10^{-5}$	2	1	Tables A.3.4, A.3.5, A.3.6

As indicated above, the overall cumulative cancer risk and non-cancer hazard indices using the September 2014 sampling results are all below the corresponding risks based on the use of ACLs, indicating that current conditions meet or exceed risk-reduction objectives that are consistent with the ROD.

Risk calculations used to estimate the maximum allowable TCE concentrations that would be equivalent to the ACL-based risk levels are presented in Attachment A.4. In these calculations, LODs were used for the remaining nine COCs to calculate the cumulative cancer risk. The maximum TCE concentration that would result in a cumulative cancer risk and a non-cancer hazard index consistent with those calculated for the ACLs is 6.5 μg/L. Based on these calculations, as long as the TCE concentration is less than 6.5 μg/L and no additional COCs are detected during verification sampling, site risks would be equivalent to those associated with the ACLs. TCE concentrations at OU-1 have been below this equivalent concentration since December 2013, when the highest concentration detected was 6.3 μg/L in monitoring well MW-OU1-61-A. This analysis may be used during the verification sampling phase to evaluate the need for additional verification sampling, or further response actions, as appropriate, based on results of initial verification sampling.

Remediation and Health Risk Summary

As outlined above, all ten COCs were below ACLs during the September 2014 sampling event, indicating remediation is complete at OU-1. To verify that current site conditions are protective of site receptors, human health risks were calculated based on exposure to site groundwater using the most recent sample results (from September 2014). The associated cancer and non-cancer risks were below target levels and the risk levels established in the ROD, further indicating that current groundwater does not pose a threat to future site receptors.

The human health risk calculations, described above, demonstrate that current site conditions do not pose a threat to future site receptors. Assuming the remaining nine COCs remain at non-detect levels, a TCE concentration of 6.5 μg/L was calculated to be the maximum TCE concentration at which site risks remain consistent with the revised ROD risk calculations. This concentration will be useful within the verification sampling period to evaluate whether unacceptable risks occur if an increase of TCE is observed.

No future or threatened releases exist from the source area that would potentially impact these risk calculations. The results of the 1993 Remediation Confirmation Study field investigation and subsequent risk assessment indicated that the chemicals remaining in soil do not present an unacceptable risk to human health or to ecological receptors under the proposed land use and do not threaten groundwater quality; therefore, the ROD states that soil remediation at OU-1 is considered complete, and no further action is required (U.S. Army, 1995).

In addition, the Rebound Evaluation Report (HGL, 2011) evaluated TCE concentrations in monitoring wells in the source area based on 18 months of monitoring after remediation pumping in the source area was terminated. The rebound evaluation sampling results did not show a significant rebound, and the regulatory agencies concurred with the report conclusion that remediation was complete in the capture zone of the original groundwater treatment system (HGL, 2011).

Based on the fact that no risk was identified for future site receptors and no additional contaminant sources exist within the source area, the requirements of the OU-1 ROD have been met and remediation of OU-1 groundwater may be considered complete.

Exit Strategy

The proposed exit strategy actions will be performed in the order presented below and are summarized as follows:

1. Suspend operation of the current pump and treat system.
2. Initiate periodic verification sampling (described below).
3. Decommission the NWTS (including well abandonment) upon successful, approved completion of the verification sampling.
4. Prepare site closure documents upon successful completion of the verification sampling and NWTS decommissioning.

Exit Strategy Implementation

If the proposed exit strategy is approved and implemented, remedial pumping and groundwater treatment operations for OU-1 groundwater will be discontinued in November 2014. To ensure that the remediation goals are met after the groundwater extraction and treatment operation is discontinued, verification sampling will be initiated as described below.

There are 27 remaining monitoring wells or piezometers within OU-1. For 19 of these monitoring wells or piezometers, past sample results or other factors indicate that no further monitoring is needed to verify that remediation is complete. The relevant sampling results or factors are summarized in Table 2. Where sample results are used to justify no further monitoring, there have been at least 4 consecutive sample results below the ACL for all COCs.

The proposed verification monitoring well network, consisting of eight monitoring wells, is presented in Table 3 and shown on Figure 2. A statistical analysis using the Mann-Kendall method (discussed below) was performed for the wells in Table 3 and none of these wells showed an increasing trend for TCE. The verification wells were selected based on the following criteria:

1. One or more of the 4 most recent consecutive samples has exceeded the ACL. One or two additional samples will be collected as needed to show a minimum of 4 consecutive samples with COC concentrations lees than their respective ACL. This criteria applies to the following wells:

MW-OU1-52-A	MW-OU1-53-A	MW-OU1-61-A
MW-OU1-88-A	PZ-OU1-10-A1	

2. The well is located along the historic main axis of plume migration and the most recent sample showed TCE present and greater than 1 μg/L. The 4 most recent consecutive samples at these wells has been less than the ACL, however, a confirmation sample after pumping has ceased is included in the verification program. This criteria applies to the following wells:

IW-OU1-02-A	MW-OU1-26-A	PZ-OU1-49-A1

Based on historical sample results below the ACL, only one or two additional rounds of sampling are potentially required at seven of the eight monitoring wells. A minimum of four sampling events are proposed at well MW-OU1-61-A because all samples from this well (except one sample in 2006—see Table 1) showed TCE concentrations exceeded the ACL until the September 2014 sample event. Although the last three sample events at MW-OU1-88-A have shown TCE concentrations below the ACL, two additional samples are proposed. The rationale for the additional sample is that the TCE concentration has been only slightly below the ACL in the last three samples. The proposed sampling frequency for each well in the verification monitoring network is presented in Table 3.

TCE concentration trend graphs for the eight monitoring wells to be included in the verification monitoring well network are presented in Attachment B. Statistical analyses (Mann-Kendall) were conducted on analytical data from these eight monitoring wells to determine whether TCE concentrations are statistically decreasing, increasing, or indeterminate. As shown in Attachment C, TCE concentrations are statistically decreasing in monitoring wells MW-OU1-26-A, PZ-OU1-49-A1, EW-OU1-53-A, and MW-OU1-88-A. Although the TCE concentrations in the remaining four monitoring wells (IW-OU1-02-A, PZ-OU1-10-A1, EW-OU1-52-A, MW-OU1-61-A) appear to be trending lower (as shown in Attachment B), the Mann-Kendall analysis did not have sufficient evidence at present to show a statistically significant trend in TCE concentrations. None of the eight wells in the verification monitoring network was shown to have an increasing TCE concentration trend.

Verification sampling will be conducted on a bi-monthly basis beginning in December 2014 and samples will be analyzed for the 10 identified site COCs. If COCs in all wells within the verification monitoring well network are below the ACLs for four consecutive sampling events and TCE concentration trends are not increasing, remediation will be determined to be complete. If one or more samples contain COC(s) exceeding the ACL(s), the data will be reviewed to determine if verification sampling period should be extended or if additional treatment actions are warranted. Once the remediation is determined to be complete, the site closure process will be initiated, including decommissioning the treatment facility and abandoning the OU-1 monitoring and extraction wells and piezometers and preparation of site closure documents.

REFERENCES

HydroGeoLogic (HGL), 2011. Final Rebound Evaluation Report Operable Unit 1, Fritzsche Army Airfield Fire Drill Area, Former Fort Ord, California. September. Administrative Record Series Number OU1-559*.

U.S. Army, 1995. Record of Decision, Operable Unit 1, Fritzsche Army Airfield Fire Drill Area, Fort Ord, California. July. Administrative Record Series Number OU1-362*.

U.S. Environmental Protection Agency (EPA), 2003. Human Health Toxicity Values in Superfund Risk Assessments. OSWER Directive 9285.7-53. December.

EPA, 2004. Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), Final. Office of Superfund Remediation and Technology Innovation. EPA/540/R/99/005. July.

EPA, 2014. Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors. OSWER Directive 9200.1-120.

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TABLES

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Table 2
Wells Excluded from the Verification Monitoring Well Network
OU-1, Former Fort Ord, California

Existing Monitoring Well Identification	Year Installed	Sample Results Summary	Most Recent TCE Concentration			Initial Sample	Total Number of Samples Collected	Number Samples with TCE > ACL
			µg/L	Qualifier	Sample Date			
Verification Complete Based on Previous Sampling								
EW-OU1-49-A	2004	Sampling was suspended in 2008 due to the proximity to PZ-OU1-49-A1 (these locations are 30 feet apart), which consistently had higher TCE concentrations than EW-OU1-49-A. PZ-OU1-49-A1 is included in the verification network.	8.5		3/14/2007	3/15/2006	6	6
EW-OU1-72-A	2006	Last 11 samples ND or < 1 µg/L.	0.78		9/2/2014	11/8/2006	16	3
IW-OU1-73-A	2006	Injection well installed outside of the TCE plume.	NA		NA	NA	NA	NA
IW-OU1-74-A	2006	Injection well installed outside of the TCE plume.	NA		NA	NA	NA	NA
MW-OU1-27-A	1998	Samples have been < ACL and < 1 µg/L since 2008.	0.33	J	3/8/2011	6/7/2006	11	3
MW-OU1-46-A	2001	Well does not fully penetrate A-Aquifer.	NA		NA	NA	NA	NA
MW-OU1-50-A	2004	Samples have been ND since March 2010.	ND		9/18/2013	5/18/2006	30	16
MW-OU1-56-A	2004	All COCs have been ND or < RL in all historical samples.	ND		5/22/2007	3/16/2006	10	0
MW-OU1-57-A	2004	All COCs have been ND since January 2007.	ND		9/2/2014	3/16/2006	34	8
MW-OU1-58-A	2004	All COCs have been ND or < RL since June 2008.	0.15	J	1/8/2013	5/18/2006	34	0
MW-OU1-59-A	2004	Quarterly sampling from 2006 through 2008 contained all ND results.	ND		9/30/2008	3/16/2006	8	0
MW-OU1-67-A	2006	Decreasing trend observed since March 2007.	0.63		9/20/2011	5/18/2006	22	0
MW-OU1-68-A	2006	Last 15 samples have been ND (2006 through 2009).	ND		3/10/2009	5/18/2006	20	0
MW-OU1-82-A	2006	Last 9 samples have been < 1.4 µg/L .	0.61		9/22/2011	11/8/2006	15	0
MW-OU1-83-A	2006	Last 6 samples have been ND or < RL (2008 through 2011).	0.15	J	9/22/2011	11/8/2006	12	0
MW-OU1-84-A	2006	Last 5 samples have been ND (2008 through 2011).	ND		9/22/2011	11/8/2006	12	4
MW-OU1-86-A	2006	Last 5 samples have been < 1 µg/L.	0.42	J	9/2/2014	11/7/2006	19	0
PZ-OU1-02-A1	2004	Piezometer adjacent to IW-OU1-02-A.	NA		NA	NA	NA	NA
PZ-OU1-46-AD2	2005	Piezometer at extraction well MW-OU1-46-AD.	NA		NA	NA	NA	NA

Notes:

µg/L = micrograms per liter
< = less than
> = greater than
ACL = Aquifer Cleanup Level
COC = contaminant of concern
EW = extraction well
IW = injection well
J = Data qualified as estimated.
MW = monitoring well
NA = not available, location has not been sampled
ND = nondetect
OU1 = Operable Unit 1
PZ = piezometer
RL = reporting limit
TCE = trichloroethene

Table 3
Verification Monitoring Well Network
OU-1, Former Fort Ord, California

Existing Monitoring Well Identification	Year Installed	Sample Results Summary	Most Recent TCE Concentration			Proposed Verification Sampling			
			µg/L	Qualifier	Sample Date	December 2014	February 2015	April 2015	June 2015
Proposed Monitoring Well Verification Network									
EW-OU1-52-A	2004	Last 3 samples < ACL (collected in 2012, 2013, & 2014)	2.9		09/02/2014		X		
EW-OU1-53-A	2004	Last 2 samples <ACL (collected in 2012 & 2014)	1.9		09/02/2014	X	X		
IW-OU1-02-A	2004	Last 5 consecutive samples < ACL (collected in 2010 & 2011)	3.8		09/21/2011		X		
MW-OU1-26-A	1998	Last 5 consecutive samples < ACL (collected in 2010 & 2011)	2.7		09/02/2014		X		
MW-OU1-61-A	2006	Last sample collected was < ACL	4.7		09/02/2014	X	X	X	X
MW-OU1-88-A	2006	Last 3 samples below the ACL (4.5 µg/L - 4.7 µg/L)	4.7		09/02/2014	X	X		
PZ-OU1-10-A1	2005	Last 3 samples < ACL (collected in 2012, 2013, & 2014)	2.4		09/02/2014		X		
PZ-OU1-49-A1	2004	Last 11 Consecutive samples< ACL (collected in 2012, 2013, & 2014). Note: Located next to EW-OU1-49-A - see Table 2.	1.2		09/02/2014		X		

Notes:
< = less than
µg/L = micrograms per liter
ACL = Aquifer Cleanup Level
EW = extraction well
IW = injection well
MW = monitoring well
OU1 = Operable Unit 1
PZ = piezometer
TCE = trichloroethene

FIGURES

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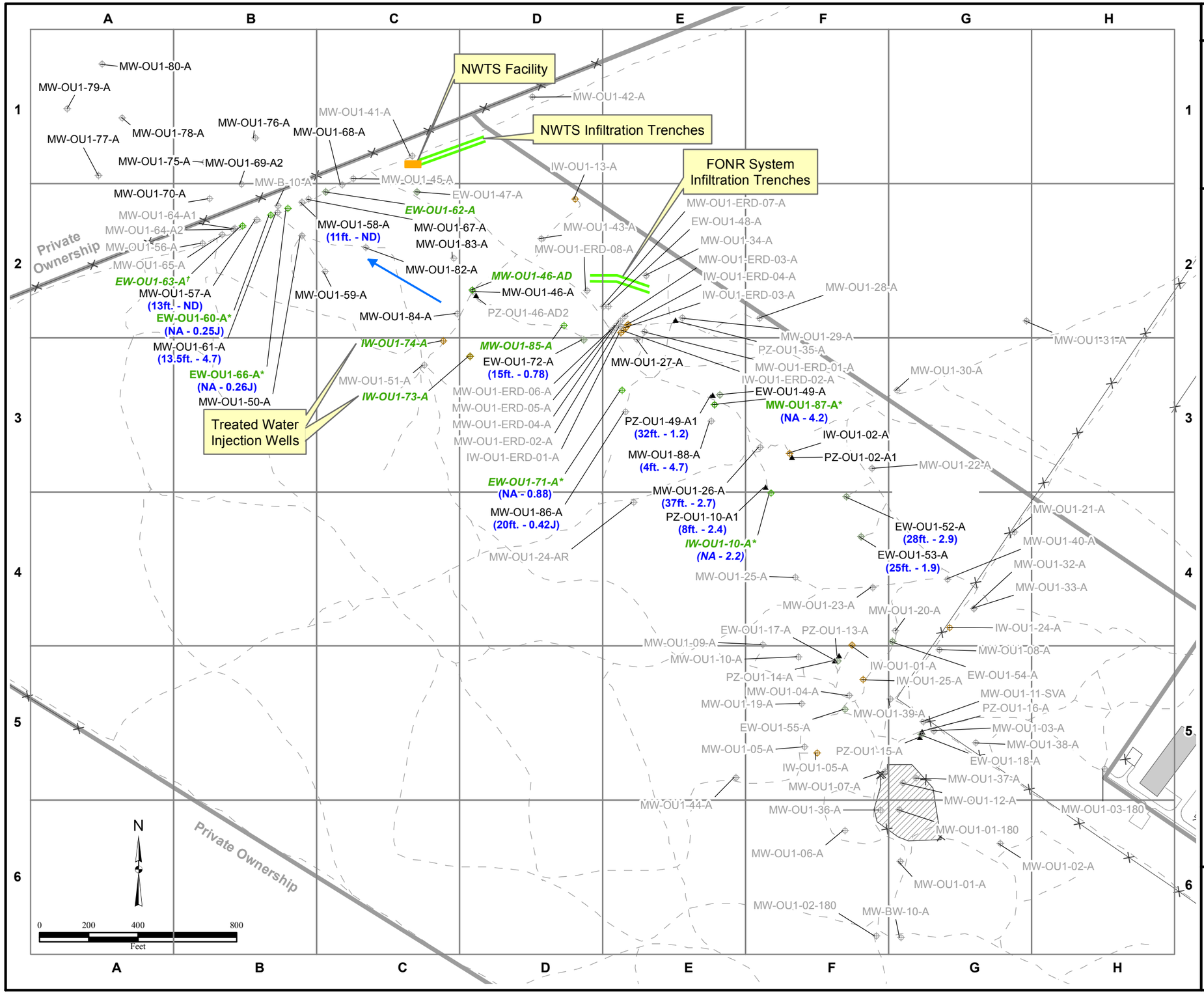
Figure 1
OU-1 FONR A-Aquifer
TCE Concentration in Groundwater
September 2014
Former Fort Ord, CA



Legend

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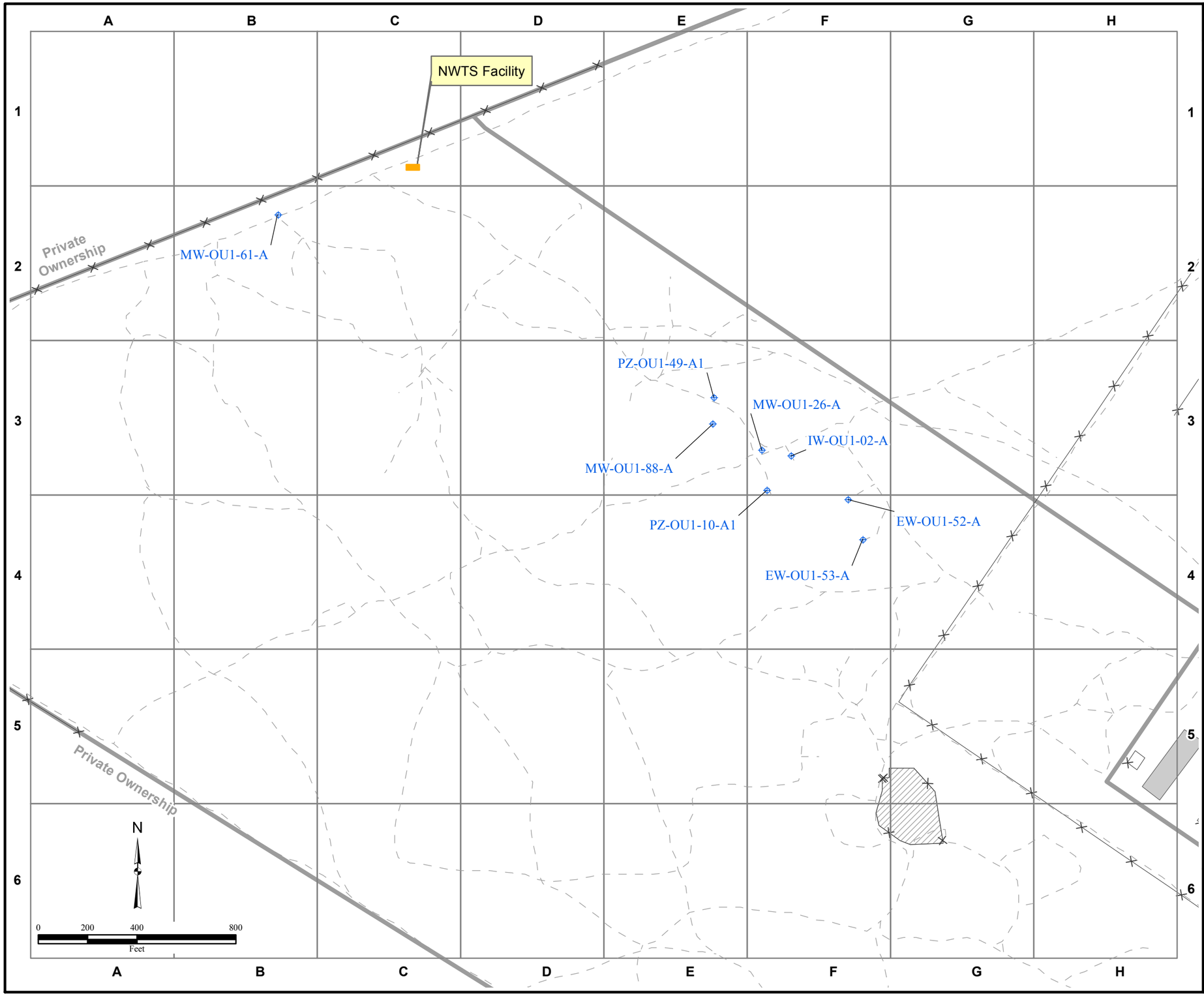
\\gst-srv-01\HGLGIS\Ft_Ord_MSIW\OU-1 Exit Startegy Technical Memorandum\ Fig. 1-1 FONR A-Aquifer TCE Groundwater Concentration.mxd
9/26/2014 SS
Source: HGL

HGL HydroGeoLogic, Inc

Figure 2
OU-1 Monitoring Well Verification Network Location
Former Fort Ord, CA



Legend

- Well
- Trail/Unimproved Road
- Fence
- Property Boundary
- Building
- Former Fire Drill Area

Note:
NWTS = Northwest Treatment System

\\gst-srv-01\HGLGIS\Ft_Ord_MSW\OU-1 Exit Startegy Technical Memorandum
Fig. 1-2 OU-1 Monitoring Well Verification Network Location.mxd
9/25/2014 SS
Source: HGL

HGL HydroGeoLogic, Inc

BRA and Lead Evaluation Status
Fort Ord HTW BCT
22 October 2014

Basewide Range Assessment

- Draft TM recommending no further sampling for Unit 6 was released on July 22, 2014. DTSC comments received and draft responses provided to the agencies.
- A preliminary draft BRA sampling plan for Units 10, 7, and 33 was submitted on September 9, 2014. Army asked to revise and submit after submittal of BRA QAPP.
- Performed BRA site reconnaissance in Unit 2.

Lead Evaluation Technical Memorandum

- The Army met with DTSC and EPA toxicologists. ITSI Gilbane prepared background information for HA 18 and HA 23 and USACE prepared hazard indexes in response to comments received. Response to comments sent to EPA and DTSC on 21 July 2014.
- Ongoing discussions with US Army ELD and discussions with DTSC toxicologist.

OU2 Landfills and TTU
Operation and Maintenance
Status Update
October 22, 2014

Landfill Maintenance

- Monterey County inspection 8/19/14 – no issues.
- Routine landfill maintenance ongoing – minor erosion repairs, brush and weed removal, mowing.

TTU Operations/Landfill Gas Monitoring

- Operating every other week since 2/6/12 (approx. 90 hrs in each 2 week cycle).
- Methane concentration at TTU approx. 38%, declining slowly.
- No operational problems.
- TTU source testing completed 6/5/14 by Best Environmental; results similar to previous years
- Annual VOCs monitoring completed 6/5/14; some results attached:
    - Total VOCs at TTU combined influent
    - OU2 COCs at TTU combined influent
    - Vinyl chloride in probe SGP 4E-12
- Last quarterly perimeter probe monitoring completed week of 9/22/14
- Replacement ring for top of TTU stack has been procured. Installation to be scheduled pending procurement of a welder.

OU2 Landfill Closure

- Draft Final Construction QC/QA Report, Area E, Phase I, OU2 Landfills issued Final 10/9/14.

Thermal Treatment Unit
Operation Summary
2006 - 2014

TREATMENT SYSTEM OPERATION SUMMARY	
Treatment System Start Date:	**6/4/2001**
TTU Start Date:	**4/4/2006**
Last Reading Date/Time:	**9/25/2014 17:49**
Historical through 2013 (TTU only):	
Total TTU Hours:	**67,872**
Total TTU Hours Operated:	**23,903**
% TTU Operation:	**35.2%**
Total Pounds of Methane Removed:	**2,638,229**
Current Year 2014:	
Total Hours:	**6,744**
Total Hours Operated:	**1556**
% TTU Operation:	**23%**
Total Pounds of Methane Removed:	**138,279**
Cumulative (since TTU startup in 2006):	
% TTU Operation:	**34.1%**
Total Pounds of Methane Removed:	**2,776,508**

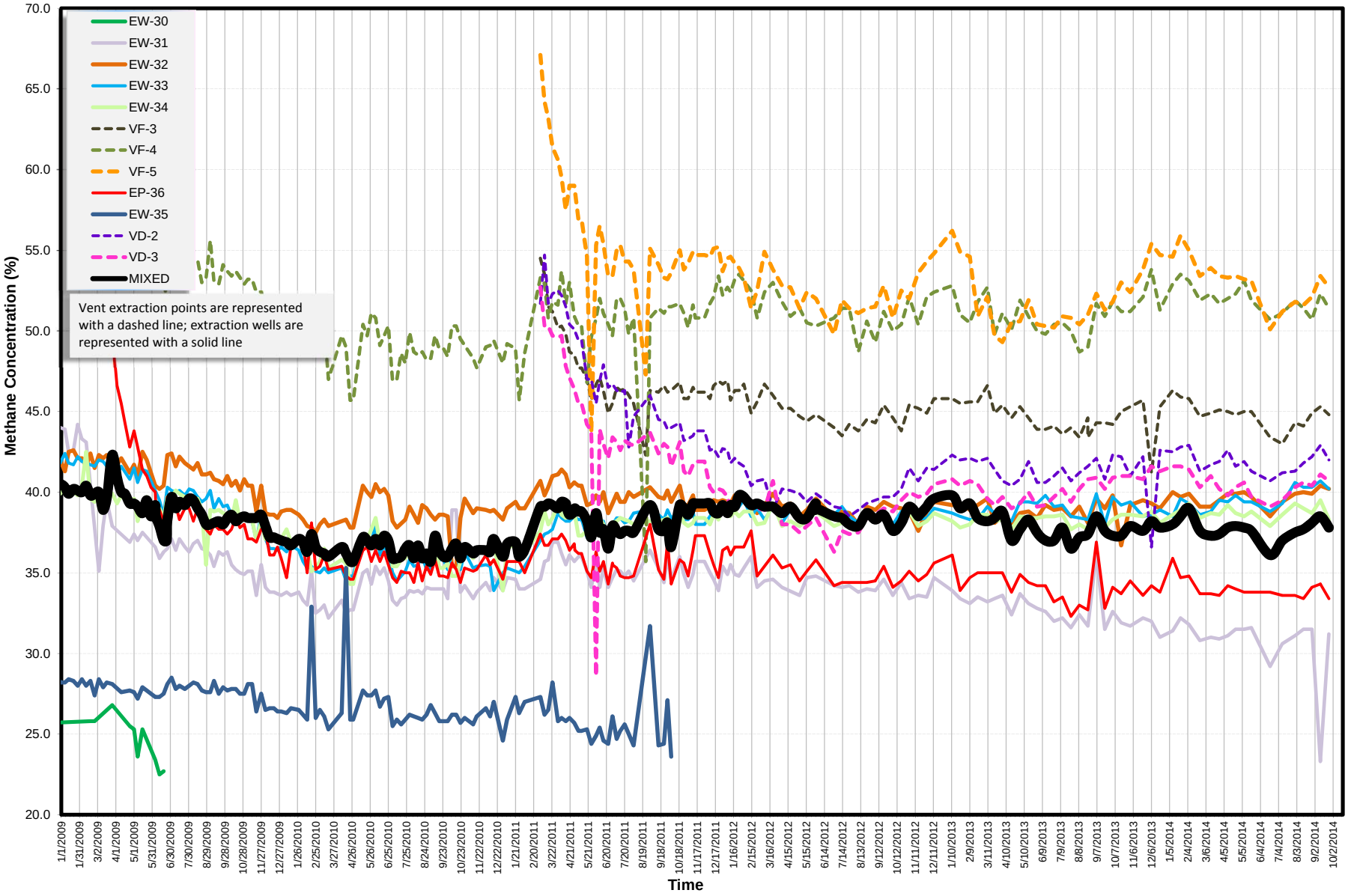
	Total Pounds Removed	Pounds/week
Pounds of Methane Removed (2007)	**532,181**	**10,206**
Pounds of Methane Removed (2008)	**288,433**	**5,532**
Pounds of Methane Removed (2009)	**448,148**	**8,595**
Pounds of Methane Removed (2010)	**212,684**	**4,079**
Pounds of Methane Removed (2011)	**228,085**	**4,374**
Pounds of Methane Removed (2012)	**229,400**	**4,399**
Pounds of Methane Removed (2013)	**187,782**	**3,601**
Pounds of Methane Removed (2014)	**138,279**	**3,445**

	Total Pounds COCs Removed
2007	**6.2**
2008	**3.1**
2009	**3.4**
2010	**1.4**
2011	**1.4**
2012	**1.2**
2013	**1.1**
2014	**0.7**

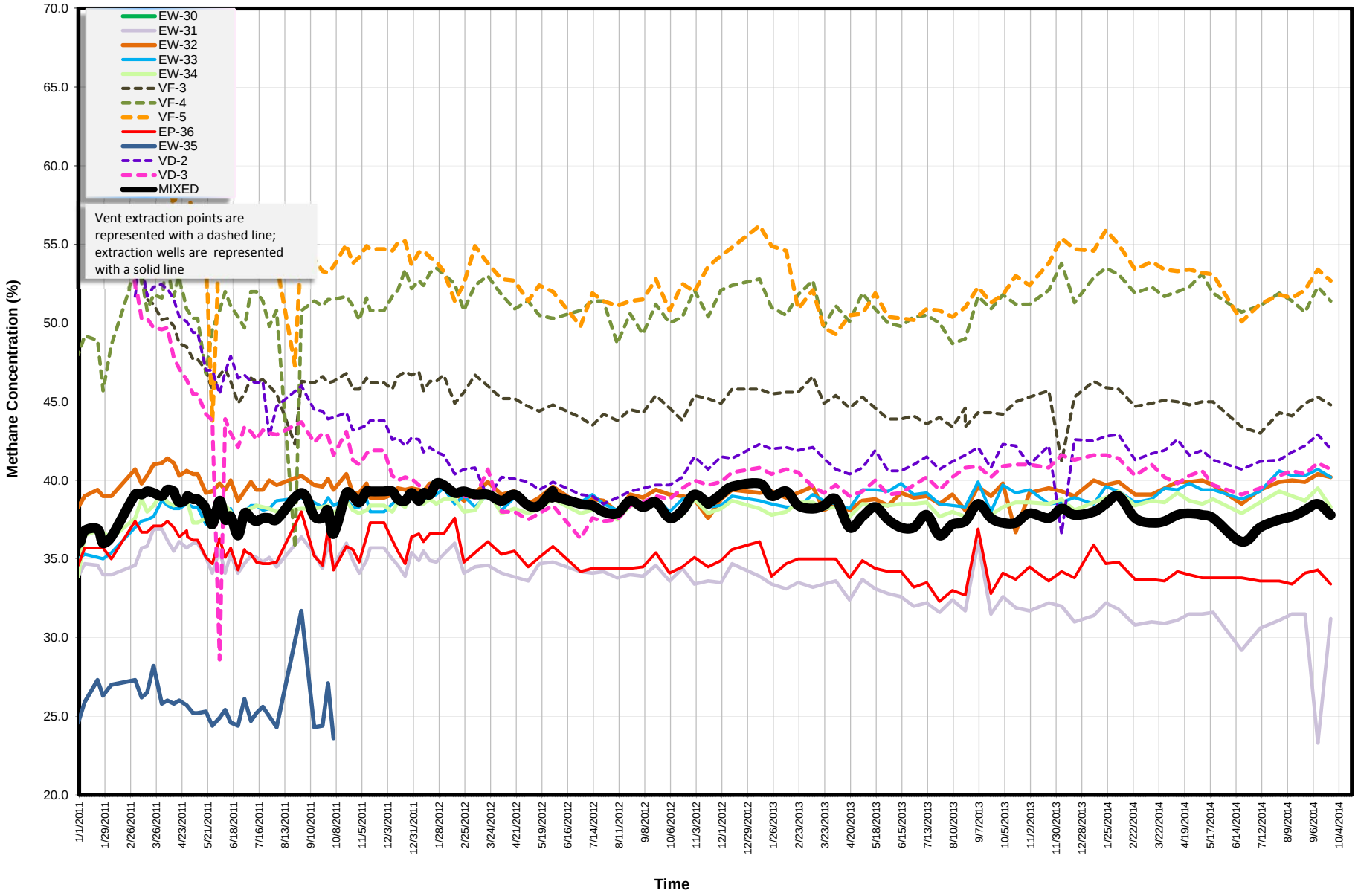
EXTRACTION SYSTEM (2014)

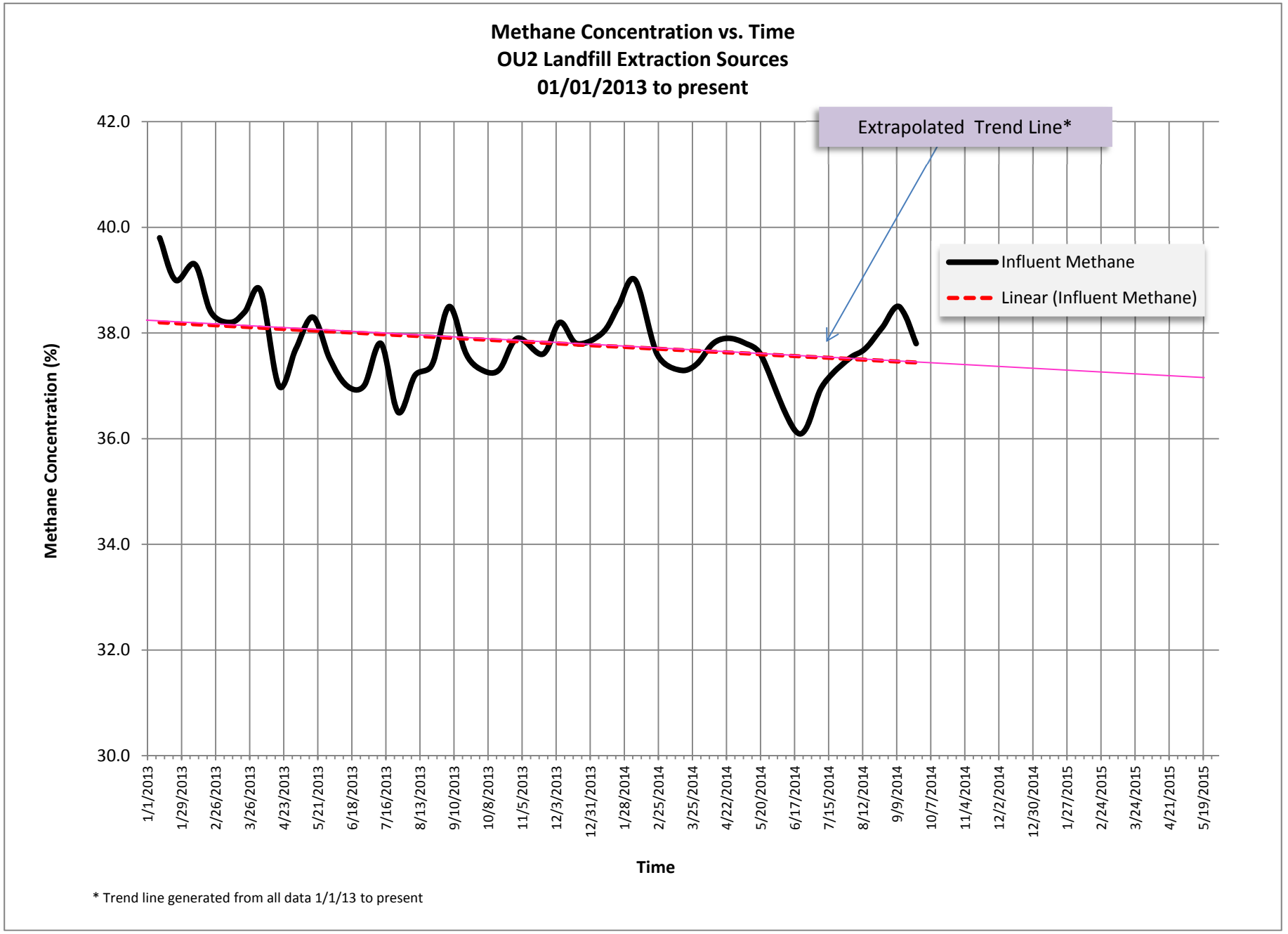
Location	Last Instantaneous Methane Reading (%)	Last Instantaneous Flow Rate Reading (scfm)	Current Methane Removal Rate (lbs/day)	2014 % Operation	2014 Methane Removed (Lbs)	% Contribution of Each Extraction Source
Area E						
EP-36	33.4	25.0	493	23	32454	22%
Area F						
EW-31	31.2	15.0	276	23	17642	12%
EW-32	40.2	15.0	356	24	23372	16%
EW-33	40.2	12.0	285	23	18198	12%
EW-34	38.3	21.0	474	23	32810	22%
VF-3	44.8	5.0	132	23	6438	4%
VF-4	51.4	5.0	152	23	5616	4%
VF-5	52.7	5.0	155	23	6135	4%
Area D						
EW-35	32.6	0.0	0	0	0	0%
VD-2	42.0	3.0	74	23	2354	2%
VD-3	40.7	3.0	72	23	2163	1%
MIXED						
MIXED	37.8	96.0	2140	23	138279	100%

TTU Extraction Sources
OU2 Landfill
From 01/01/2009 to Present

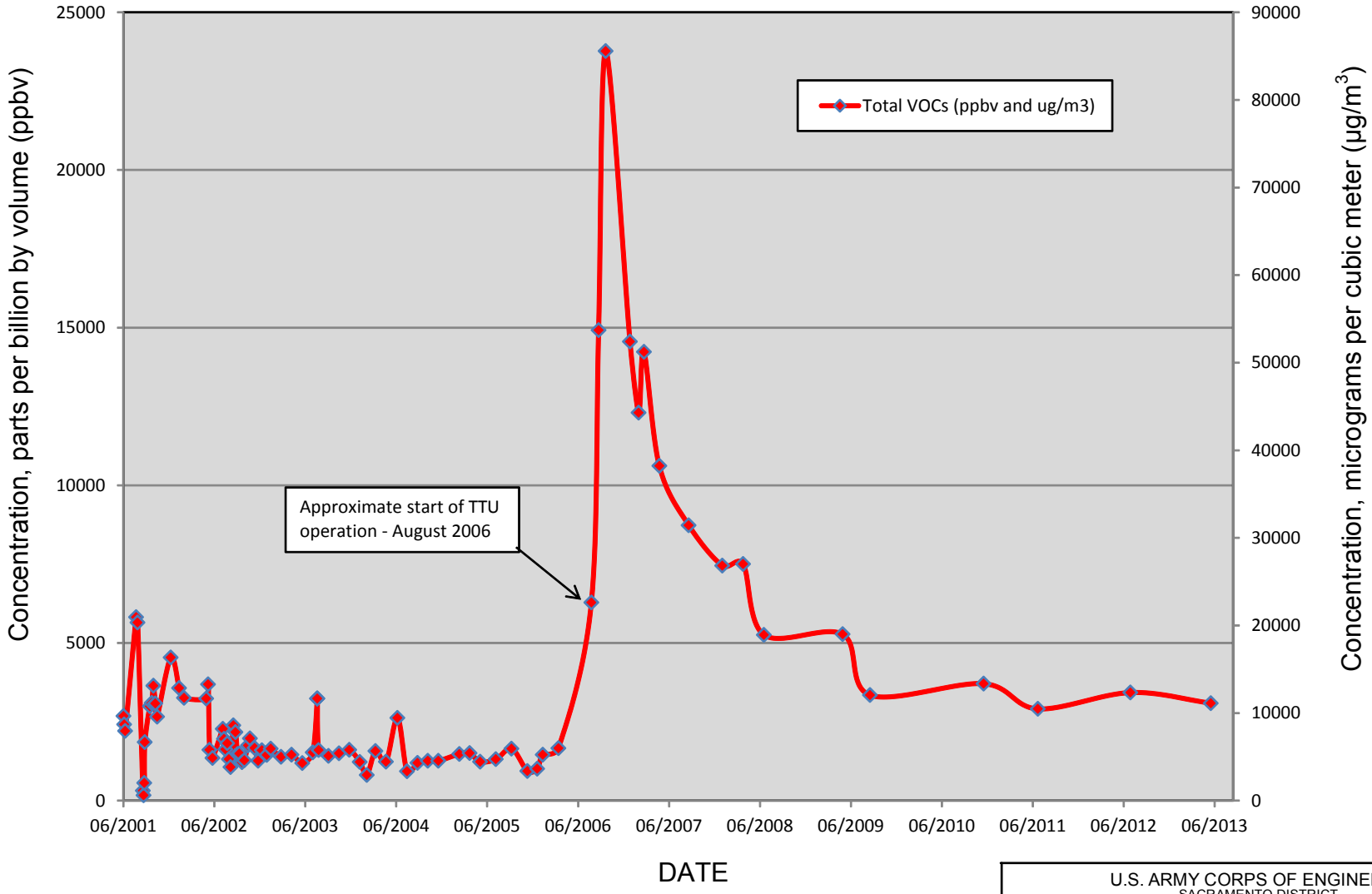


Methane Concentration vs. Time
OU2 Landfill Extraction Sources
1/1/2011 to present



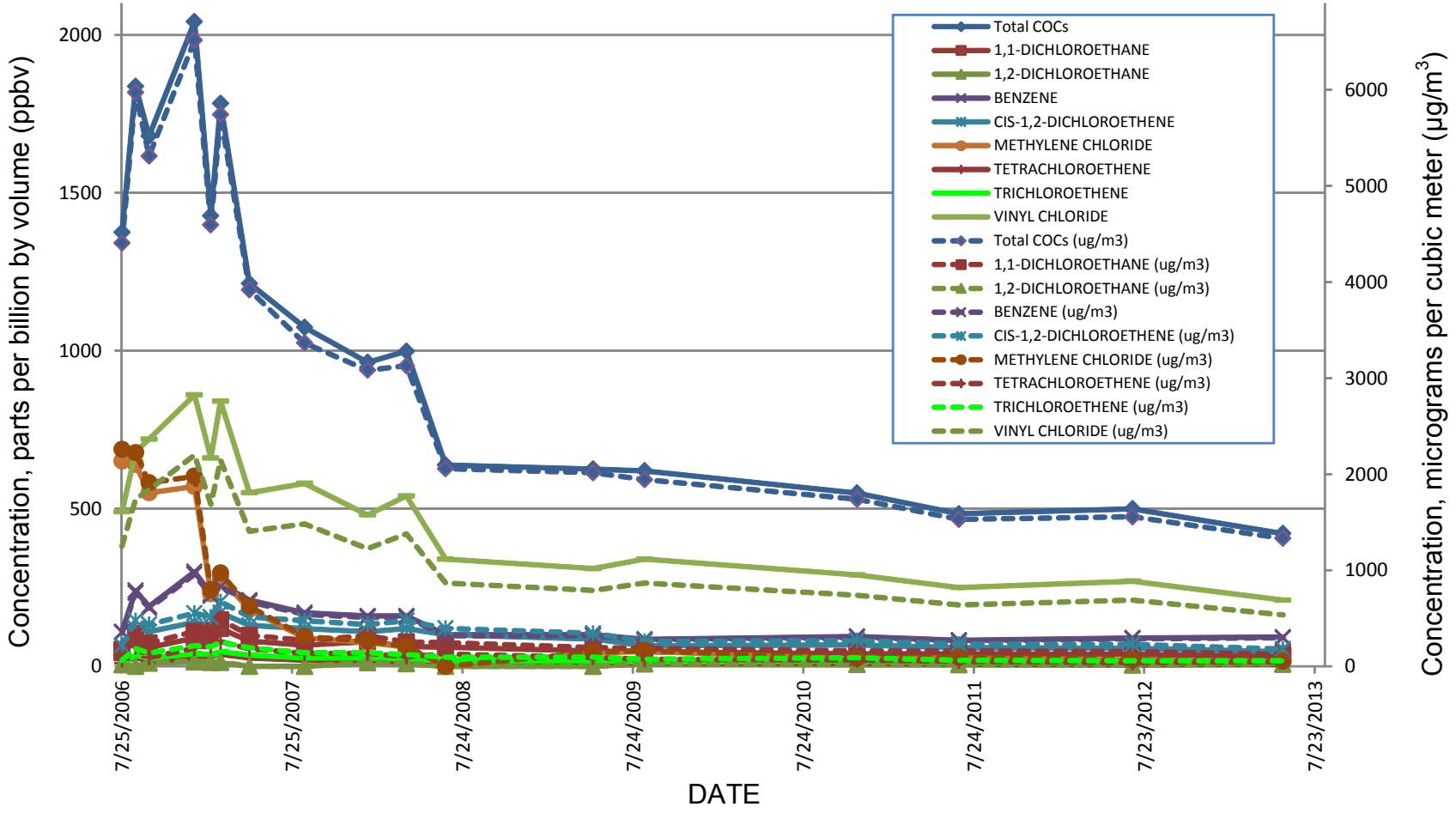


* Trend line generated from all data 1/1/13 to present



U.S. ARMY CORPS OF ENGINEERS SACRAMENTO DISTRICT		
FORMER FORT ORD		
FIGURE NUMBER	TOTAL VOC CONCENTRATION VS. TIME TREATMENT SYSTEMS INFLUENT	
Gilbane	CBI	
DATE	PROJECT NUMBER	FILE NAME
10/15/2014	141234	SEE FOOTER

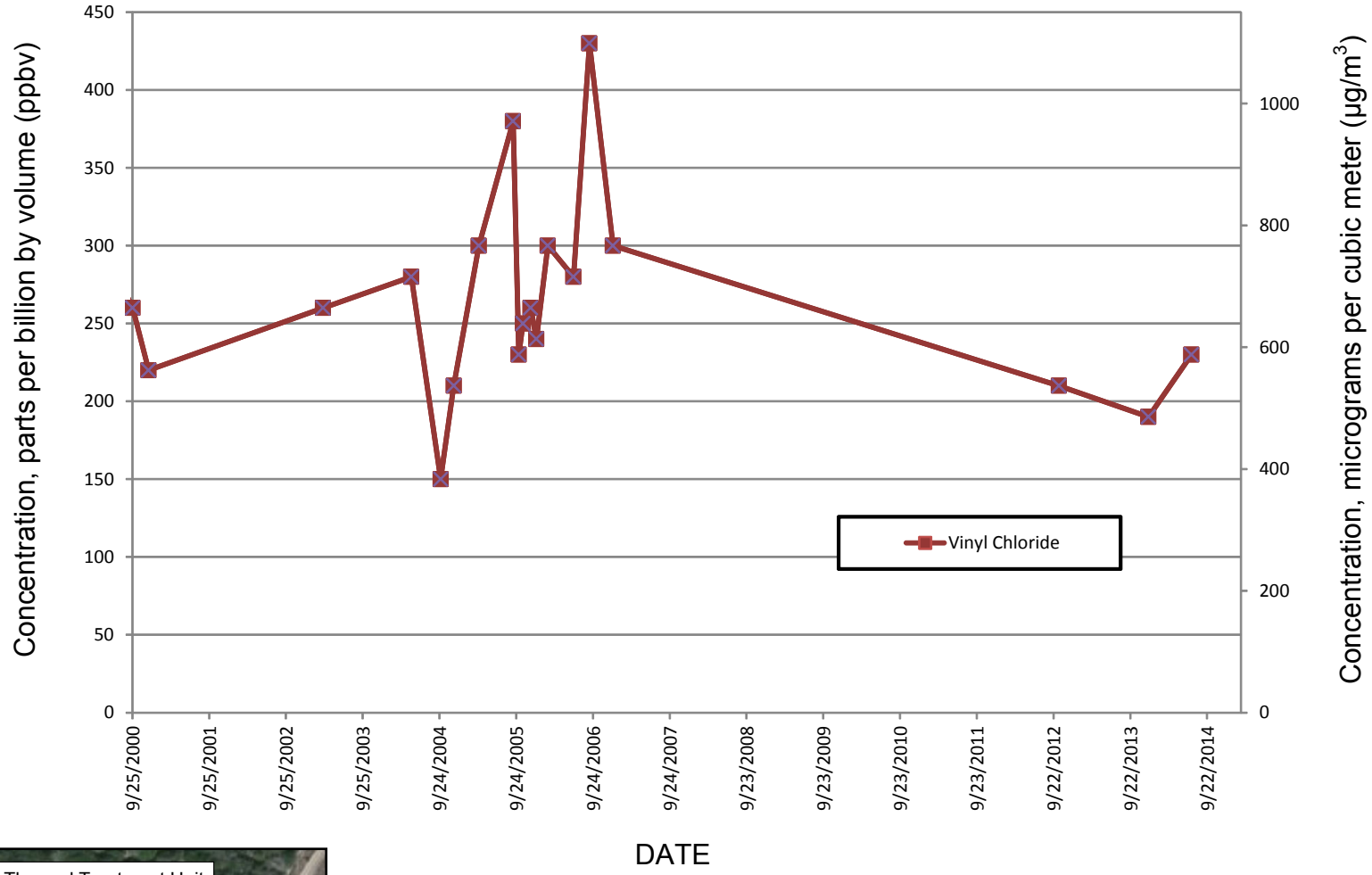
C:\GIS\Fort_Ord_GIS\LANDFILL\GIS_Documents\VOC_time_2014.mxd

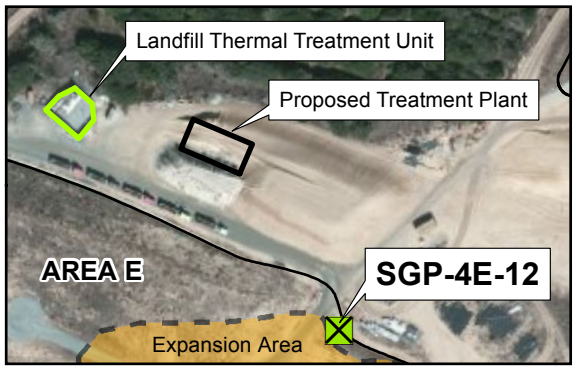


Note: Carbon Tetrachloride, Chloroform, and 1,2-Dichloropropane which are OU2 COCs are not presented on this figure. Carbon Tetrachloride concentrations were non-detect for all samples collected except one result which was estimated below the reporting limit. 1,2-Dichloropropane concentrations (6 total) were all low-level concentration at or estimated below the reporting limit (3 of 6). Chloroform was only detected in 4 samples collected on 2/1/2007, 7/15/2008, 4/30/2009, and 6/28/2012 at estimated concentrations below the reporting limit.

U.S. ARMY CORPS OF ENGINEERS SACRAMENTO DISTRICT		
FORMER FORT ORD		
FIGURE NUMBER	OU2 CHEMICALS OF CONCERN CONCENTRATION VS. TIME TTU INFLUENT MIXED PORT	
Gilbane	CBI	
DATE	PROJECT NUMBER	FILE NAME
10/15/2014	141234	SEE FOOTER

C:\GIS\Fort_Ord_GIS\LANDFILL\GIS_Documents\COCs_time_2014.mxd





U.S. ARMY CORPS OF ENGINEERS SACRAMENTO DISTRICT		
FORMER FORT ORD		
FIGURE NUMBER	VINYL CHLORIDE CONCENTRATION VS. TIME LANDFILL GAS PROBE SGP-4E-12	
Gilbane	CBI	
DATE	PROJECT NUMBER	FILE NAME
10/15/2014	141234	SEE FOOTER

Other Groundwater Issues
Fort Ord BCT Meeting
October 22, 2014

Third Quarter (Q3) Groundwater Data

- Validation of the Q3 data is in progress.
- The un-validated Q3 data will be submitted to the agencies prior to the November BCT meeting.
- Review of the third quarter sampling results is ongoing and a list of wells meeting the QAPP criteria for sample frequency reduction (or frequency increase) is being compiled. That list will be provided for your review at the November 13 BCT meeting.

Former Fort Ord Groundwater Treatment Systems
Operational Data and Status

BCT Meeting, October 22, 2014

Table 1: OU2 and Sites 2/12 GWTP Treatment Statistics as of September 30, 2014

Monthly Statistics	Volume Treated (gallons)	Average Flow (gallons per minute)	Percent of Time Online	COC Mass Removed (pounds)
OU2				
September 2014	25,939,900	600	100.0	1.7
Total since October 1995	6.360 Billion			766
Sites 2/12				
September 2014	7,236,800	168	100.0	0.41
Total since April 1999	1.773 Billion			466

Table 2: September 2014 – OU2 Analytical Results at TS-OU2-INJ

COC	Discharge Limit (µg/L)	Sample Date/ Analytical Results	
		9/10/2014	9/29/2014
1,1-DCA	5.0*	0.25	0.27
1,2-DCA	0.50	0.14	0.17
1,2-DCP	0.50	ND	ND
Benzene	0.50	ND	ND
CT	0.50	ND	ND
Chloroform	2.0*	0.21	0.24
cis-1,2-DCE	6.0*	0.52	0.62
Methylene Chloride	0.50	ND	ND
PCE	0.50	ND	ND
TCE	0.50	ND	ND
VC	0.10	ND	ND

NOTES:

* Discharge limits for low carbon affinity compounds were increased to the Aquifer Cleanup Level (ACL).

ND The analyte was not detected above the limit of quantitation.

NS Not sampled.

Table 3: September 2014 – Sites 2/12 Analytical Results at TS-212-INJ

COC	Discharge Limit (µg/L)‡	Sample Date / Analytical Results
		Not Sampled
1,1-DCE	6.0	NS
1,2-DCA	0.50	NS
1,3-DCP†	0.50	NS
Chloroform	2.0	NS
cis-1,2 DCE	6.0	NS
PCE	3.0	NS
TCE	5.0	NS
VC	0.10	NS

NOTES:

ND The analyte was not detected above the limit of quantitation.

NS not sampled.

† The reported value is the sum of both cis- and trans-isomers.

‡ Discharge limits are the ACLs for injection over the plume.

Table 4: September 2014 Key Events for OU2 and Sites 2/12 GWTS						
Sunday	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
	1	**2**	**3**	**4**	**5**	**6**
7	**8**	**9**	**10** New SCADA server installed	**11**	**12**	**13** EW-OU2-02-A offline due to pump failure
14	**15** 2014-3Q Sampling Event began	**16**	**17**	**18**	**19** 2014-3Q Sampling Event completed	**20**
21	**22**	**23**	**24**	**25**	**26**	**27**
28	**29** EW-OU2-10-A offline due to pump failure	**30**				

October 2014 Scheduled Events for OU2 and Sites 2/12 GWTS

- GWTP sampling
- October 1: Install new motor starter and reset level switches at EW-OU2-12-A
- October 10: Install new pressure transducer in EW-OU2-16-A
- OU2 GWTP motor control center electrical inspection

Table 5: AES Document Submittals - Status Summary

No OU2 or Sites 2/12 O&M documents were submitted during the reporting period.

Table 6: September 2014 OU2 Extraction Well Status (as of September 30)

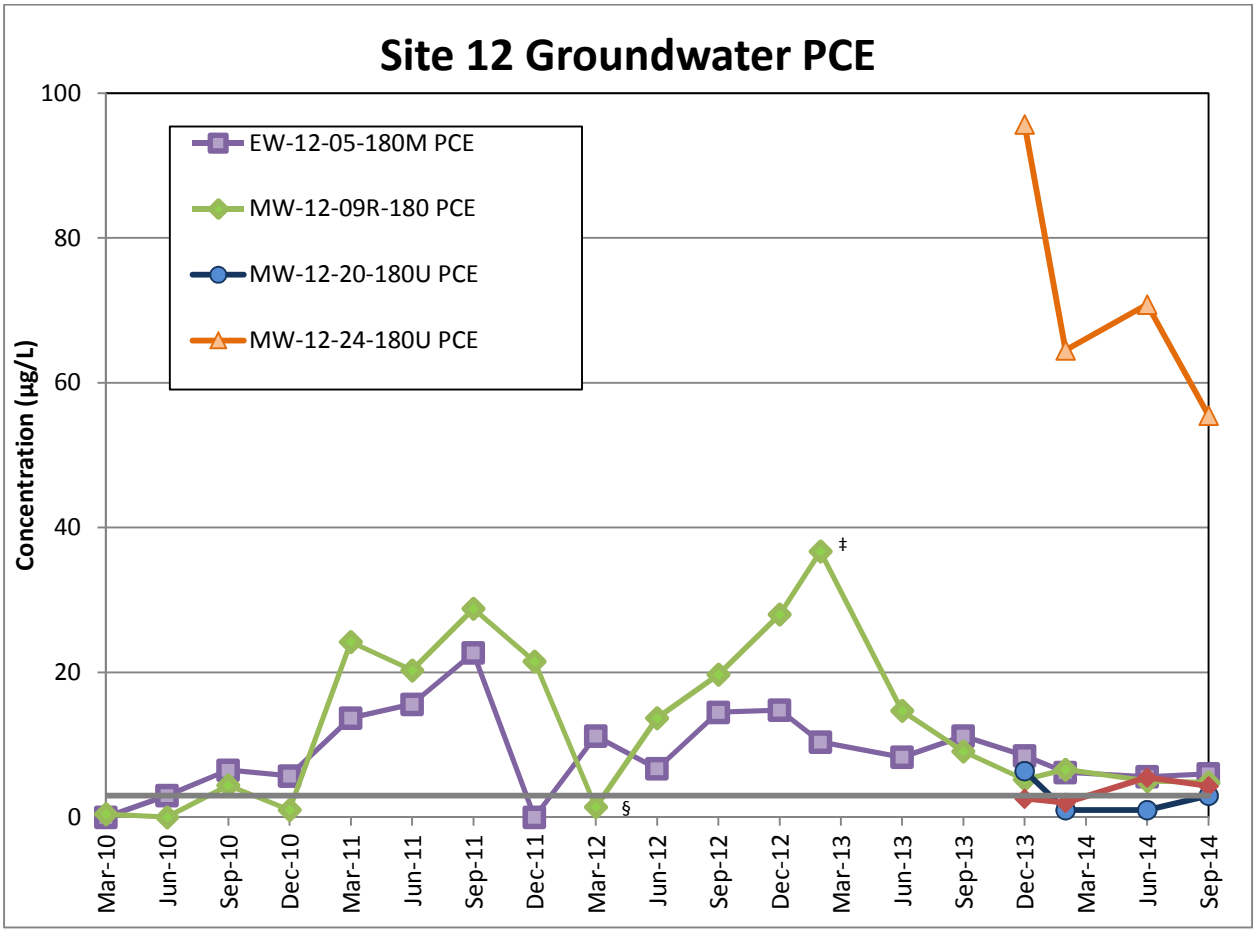
Well Identification	Comments	Select COC Concentrations (µg/L) 3Q 2014*				
		TCE	PCE	1,2-DCA	VC	CT
Western Network						
EW-OU2-01-A	Offline due to low concentrations, sampled with PDBs†	0.27	ND	ND	ND	ND
EW-OU2-02-A	Offline due to pump failure on 09/13/2014	Not Sampled				
EW-OU2-03-A	Offline due to low concentrations, sampled with PDBs‡	Not Sampled				
EW-OU2-04-A	Online to capture western TCE plume	1.4	ND	ND	ND	ND
EW-OU2-05-A	Adjacent to MW-OU2-40-A§	**5.0**	0.22	ND	ND	ND
EW-OU2-06-A	Adjacent to MW-OU2-40-A§	4.4	0.37	ND	ND	ND
EW-OU2-01-180	No pump in well, sampled with PDBs	**7.6**	ND	ND	ND	ND
Total gallons extracted: 6,456,010						
Eastern Network						
EW-OU2-07-A	Offline due to low concentrations‡	Not Sampled				
EW-OU2-08-A	Offline due to low concentrations‡	Not Sampled				
EW-OU2-09-A		0.88	0.55	**0.51**	ND	ND
EW-OU2-10-A	Offline due to pump failure on 09/29/2014	2.4	1.3	**0.94**	0.079	ND
EW-OU2-11-A	Offline due to biofouling, screen damaged, sampled with PDBs	0.92	0.65	ND	ND	ND
EW-OU2-12-A	Intermittent issues with starter motor failure (replaced 10/01/2014)	**11.1**	**3.3**	**0.53**	**0.18**	ND
EW-OU2-13-A		**9.1**	2.5	**2.4**	ND	ND
EW-OU2-02-180	Offline due to breach in well casing identified in August 2012	Not Sampled				
Total gallons extracted: 2,767,390						
Shoppette						
EW-OU2-05-180		**6.0**	0.50	ND	ND	ND
EW-OU2-06-180	Offline due to pump failure in February 2012	Not Sampled				
EW-OU2-16-A	Offline due to pump failure 5/17/14, replaced 8/5/14, failed pressure transducer	**7.4**	**4.3**	**1.5**	**0.67**	ND
Total gallons extracted: 6,769,000						
CSUMB						
EW-OU2-14-A	Previously offline due to low concentrations, online 7/14/14 due to 2014-2Q TCE results above ACL	1.1	0.33	ND	ND	ND
EW-OU2-15-A	Offline due to low concentrations, pump failure	Not Sampled				
Total gallons extracted: 609,500						
Landfill						
EW-OU2-03-180		**11.2**	0.59	ND	ND	0.20
EW-OU2-04-180	Offline due to low concentrations‡	Not Sampled				
Total gallons extracted: 7,183,000						
Bunker Hill						
EW-OU2-07-180	No pump in well, sampled with PDBs	1.9	1.1	ND	ND	ND
EW-OU2-08-180	Offline due to low concentrations	1.9	0.37	ND	ND	ND
EW-OU2-09-180	OUCTP Upper 180-Foot Aquifer remedy**	ND	0.17	ND	ND	0.16
Total gallons extracted: 2,155,000						
Total OU2 gallons treated: 25,939,900						

NOTES:
ND = The analyte was not detected above the limit of quantitation
* Concentrations in **bold** type is equal to or exceeds the ACL
† Sampled annually per QAPP decision rules
‡ Removed from the GWMP per QAPP decision rules
§ MW-OU2-40-A concentration of TCE = 15.8 µg/L (3Q2014)
** cis-1,2-DCE also detected at 1.3 µg/L (3Q2014)

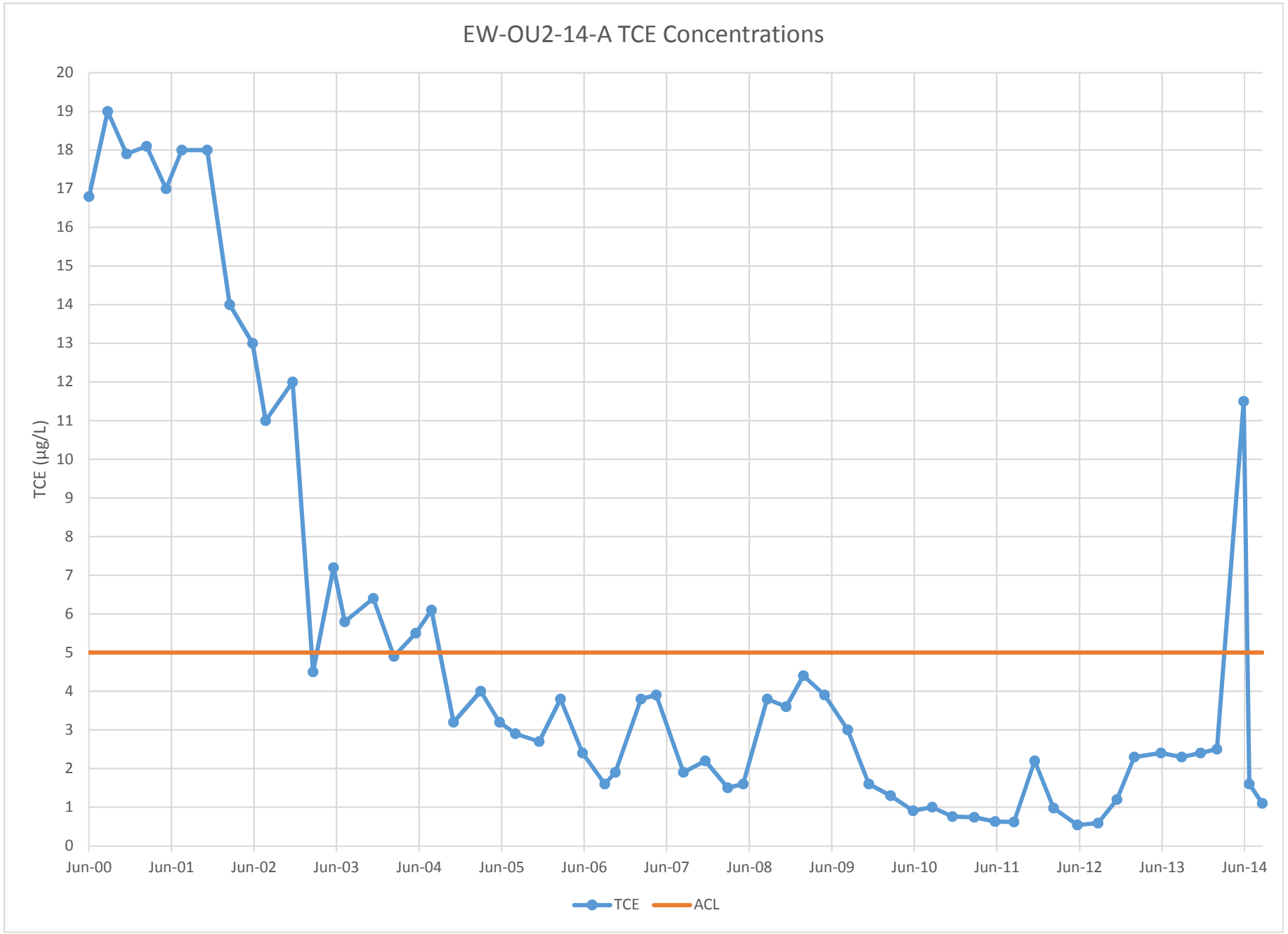
Table 7: September 2014 Sites 2/12 Extraction Well and Select Monitoring Well Status (as of September 30)

Well Identification	Comments	Select COC Concentrations (µg/L) 3Q 2014*			
		TCE	PCE	cis-1,2-DCE	VC
EW-12-05-180M		4.4	**6.0**	1.2	ND
EW-12-06-180M		2.6	0.48	0.86	ND
EW-12-07-180M	Offline due to low concentrations	3.3	0.70	1.00	ND
EW-12-03-180U	Offline due to low concentrations, sampled with PDBs†	0.41	ND	0.55	ND
EW-12-03-180M§	Offline due to low concentrations, sampled with PDBs	2.6	0.62	1.3	ND
EW-12-04-180U	Offline due to low concentrations, sample with PDBs†	1.1	0.15	0.50	ND
EW-12-04-180M	Offline due to low concentrations, sampled with PDBs‡	Not Sampled			
MW-12-09R-180	MW east of and upgradient from EW-12-05-180M	0.39	**4.8**	ND	ND
MW-12-14-180M	MW north of and upgradient from EW-12-05-180M	2.0	0.32	0.12	ND
MW-12-17-180U	New MW east of EW-12-06-180M	0.61	0.51	ND	ND
MW-12-20-180U	New MW northeast of MW-12-09R-180	0.27	**3.0**	ND	ND
MW-12-24-180U	New MW adjacent to MW-12-09R-180	3.3	**55.5**	ND	ND
MW-12-25-180U	New MW east of MW-12-09R-180	ND	**4.3**	ND	ND
MW-12-31-180M	New MW in TCE soil gas plume area	0.32	0.25	ND	ND
Total 2/12 Extraction Well gallons treated: 7,236,800					

NOTES:
ND = The analyte was not detected above the limit of quantitation
* Concentrations in **bold** type exceed the ACL
† Sampled annually per QAPP decision rules
‡ Removed from the GWMP per QAPP decision rules
§ Results from the 2Q2014 event, 3Q2014 results pending analysis



* The PCE detection from MW-12-09R-180 in March 2012 was flagged with a J- qualifier which indicates a low bias.
† The PCE detection from MW-12-09R-180 in March 2013 was flagged with a J+ qualifier which indicates a high bias.


EW-OU2-14-A TCE Concentrations
TCE (µg/L)
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
Jun-00
Jun-01
Jun-02
Jun-03
Jun-04
Jun-05
Jun-06
Jun-07
Jun-08
Jun-09
Jun-10
Jun-11
Jun-12
Jun-13
Jun-14
TCE
ACL

Basewide RI/FS Addendum at Sites 2 and 12 Update, October 2014

Basewide RI/FS Addendum at Sites 2/12 Report

- Comment period on Draft ended October 8, 2014
- Comments received from:
  - USEPA (prepared by TechLaw)
  - DTSC Human and Ecological Risk Office (HERO)
  - DTSC Geologic Services Unit (GSU)
  - RWQCB
  - Shea Marina Village, LLC and Marina Community Partners, LLC with assistance from Erler & Kalinowski and Arnold & Porter
  - Fort Ord Environmental Justice Network
- Draft Final to be issued November 3, 2014
- Final to be issued January 9, 2015

Explanation of Significant Differences (ESD) to the Record of Decision, Basewide Remedial Investigation Sites

- ESD identifies soil vapor extraction and air sparging as enhancements to the existing groundwater remedy
- Preliminary Draft ESD reviewed by USACE
- Draft to be issued December 10, 2014 (after comment period on Draft Final RI/FS Addendum)

QAPP – Soil Gas Monitoring at Sites 2 and 12

- Appendix C to the Basewide HTW QAPP
- Preliminary Draft issued to Army October 3, 2014; comments requested by October 17, 2014
- Final to be issued by March 2015

	A	B	C	D	E	F	G	H	I	J
1	**Issue Year**	**Site**	**Document Title**	**Version**	**Issue Date**	**Comment Due Date**	**DocGroup**	**DocType**	**Author Org**	**Notes**
2	2014	Basewide	Accident Prevention Plan, Treatment Systems Operations and Maintenance, and Groundwater Monitoring at Operable Unit 2, Sites 2 and 12, and Operable Unit Carbon Tetrachloride Plume	DRAFT	*3-Sep-14*	3-Oct-14	Secondary	Internal	Ahtna	Received; Submit draft version to Army for review only
3	2014	Basewide	Accident Prevention Plan, Treatment Systems Operations and Maintenance, and Groundwater Monitoring at Operable Unit 2, Sites 2 and 12, and Operable Unit Carbon Tetrachloride Plume	FINAL	17-Oct-14	None	Secondary	Internal	Ahtna	When draft version is approved by the Army, submit only as Final
4	2014	Basewide	Explanation of Significant Differences No. 1, Basewide Remedial Investigation, Sites 2 and 12, Former Fort Ord, CA	PREDRAFT	*3-Sep-14*	18-Sep-14	Primary	Internal	Ahtna	Received
5	2014	Basewide	Explanation of Significant Differences No. 1, Basewide Remedial Investigation, Sites 2 and 12, Former Fort Ord, CA	DRAFT	**10-Dec-14**	9-Feb-15	Primary	Internal	Ahtna	New Day; Revised FFA schedule was sent to agencies on 10/1
6	2015	Basewide	Explanation of Significant Differences No. 1, Basewide Remedial Investigation, Sites 2 and 12, Former Fort Ord, CA	DRAFT FINAL	**5-Mar-15**	6-Apr-15	Primary	Internal	Ahtna	New Day; Revised FFA schedule was sent to agencies on 10/1
7	2015	Basewide	Explanation of Significant Differences No. 1, Basewide Remedial Investigation, Sites 2 and 12, Former Fort Ord, CA	FINAL	**1-May-15**	None	Primary	Internal	Ahtna	New Day; Revised FFA schedule was sent to agencies on 10/1
8	2014	OUCTP	Operable Unit Carbon Tetrachloride Plume A-Aquifer Remedy Evaluation Work Plan	PREDRAFT	*3-Sep-14*	17-Sep-14	Secondary	Internal	Ahtna	Received
9	2014	OUCTP	Operable Unit Carbon Tetrachloride Plume A-Aquifer Remedy Evaluation Work Plan	DRAFT	**31-Oct-14**	1-Dec-14	Secondary	External	Ahtna	New Day
10	2014	OUCTP	Operable Unit Carbon Tetrachloride Plume A-Aquifer Remedy Evaluation Work Plan	DRAFT FINAL	**2-Jan-15**	2-Feb-15	Secondary	External	Ahtna	New Day
11	2015	OUCTP	Operable Unit Carbon Tetrachloride Plume A-Aquifer Remedy Evaluation Work Plan	FINAL	**16-Feb-15**	None	Secondary	External	Ahtna	New Day
12	2014	Basewide	Quality Assurance Project Plan Appendix A, Revision 3, Groundwater Monitoring	PREDRAFT	7-Nov-14	23-Nov-14	Secondary	Internal	Ahtna	
13	2014	Basewide	Quality Assurance Project Plan Appendix A, Revision 3, Groundwater Monitoring	DRAFT	9-Dec-14	9-Jan-15	Secondary	External	Ahtna	
14	2014	Basewide	Quality Assurance Project Plan Appendix A, Revision 3, Groundwater Monitoring	DRAFT FINAL	11-Feb-15	16-Mar-15	Secondary	External	Ahtna	
15	2014	Basewide	Quality Assurance Project Plan Appendix A, Revision 3, Groundwater Monitoring	FINAL	31-Mar-15	None	Secondary	External	Ahtna	
16	2014	Basewide	Quality Assurance Project Plan Appendix C, Soil Gas Monitoring at Sites 2 and 12	PREDRAFT	*3-Oct-14*	17-Oct-14	Primary	Internal	Ahtna	Received
17	2014	Basewide	Quality Assurance Project Plan Appendix C, Soil Gas Monitoring at Sites 2 and 12	DRAFT	31-Oct-14	31-Dec-14	Primary	External	Ahtna	
18	2014	Basewide	Quality Assurance Project Plan Appendix C, Soil Gas Monitoring at Sites 2 and 12	DRAFT FINAL	30-Jan-15	2-Mar-15	Primary	External	Ahtna	
19	2014	Basewide	Quality Assurance Project Plan Appendix C, Soil Gas Monitoring at Sites 2 and 12	FINAL	16-Mar-15	None	Primary	External	Ahtna	
20	2015	RI Sites	Report, Remedial Investigation/Feasibility Study Addendum at Sites 2 and 12	DRAFT	*11-Aug-14*	8-Oct-14	Primary	External	Ahtna	Received
21	2014	RI Sites	Report, Remedial Investigation/Feasibility Study Addendum at Sites 2 and 12	DRAFT FINAL	**3-Nov-14**	3-Dec-14	Primary	External	Ahtna	New Day; Revised FFA schedule was sent to agencies on 10/1
22	2014	RI Sites	Report, Remedial Investigation/Feasibility Study Addendum at Sites 2 and 12	FINAL	**9-Jan-15**	None	Primary	External	Ahtna	New Day; Revised FFA schedule was sent to agencies on 10/1
23	2014	OU2	Operable Unit 2 Groundwater Monitoring and Treatment System Annual Report, October 2013 through September 2014	PREDRAFT	3-Dec-14	17-Dec-14	Secondary	Internal	Ahtna / AMEC	
24	2014	OU2	Operable Unit 2 Groundwater Monitoring and Treatment System Annual Report, October 2013 through September 2014	DRAFT	31-Dec-14	2-Feb-15	Secondary	External	Ahtna / AMEC	
25	2015	OU2	Operable Unit 2 Groundwater Monitoring and Treatment System Annual Report, October 2013 through September 2014	DRAFT FINAL	5-Mar-15	7-Apr-15	Secondary	External	Ahtna / AMEC	
26	2015	OU2	Operable Unit 2 Groundwater Monitoring and Treatment System Annual Report, October 2013 through September 2014	FINAL	21-Apr-15	None	Secondary	External	Ahtna / AMEC	
27	2014	OU2	Operable Unit 2 Groundwater Monitoring and Treatment System Quarterly Report, Second Quarter 2014	FINAL	31-Oct-14	None	Secondary	External	Ahtna / AMEC	
28	2014	OUCTP	Operable Unit Carbon Tetrachloride Plume Groundwater Monitoring Annual Report, October 2013 through September 2014	PREDRAFT	3-Dec-14	17-Dec-14	Secondary	Internal	Ahtna / AMEC	
29	2014	OUCTP	Operable Unit Carbon Tetrachloride Plume Groundwater Monitoring Annual Report, October 2013 through September 2014	DRAFT	31-Dec-14	2-Feb-15	Secondary	External	Ahtna / AMEC	
30	2015	OUCTP	Operable Unit Carbon Tetrachloride Plume Groundwater Monitoring Annual Report, October 2013 through September 2014	DRAFT FINAL	5-Mar-15	7-Apr-15	Secondary	External	Ahtna / AMEC	
31	2015	OUCTP	Operable Unit Carbon Tetrachloride Plume Groundwater Monitoring Annual Report, October 2013 through September 2014	FINAL	21-Apr-15	None	Secondary	External	Ahtna / AMEC	

	A	B	C	D	E	F	G	H	I	J
1	**Issue Year**	**Site**	**Document Title**	**Version**	**Issue Date**	**Comment Due Date**	**DocGroup**	**DocType**	**Author Org**	**Notes**
32	2014	OUCTP	Operable Unit Carbon Tetrachloride Plume Groundwater Monitoring Quarterly Report, Second Quarter 2014	FINAL	31-Oct-14	None	Secondary	External	Ahtna / AMEC	
33	2014	Basewide	Sites 2 and 12 Groundwater and Soil Vapor Monitoring and Treatment System Annual Report, October 2013 through September 2014	PREDRAFT	3-Dec-14	17-Dec-14	Secondary	Internal	Ahtna / AMEC	
34	2014	Basewide	Sites 2 and 12 Groundwater and Soil Vapor Monitoring and Treatment System Annual Report, October 2013 through September 2014	DRAFT	31-Dec-14	2-Feb-15	Secondary	External	Ahtna / AMEC	
35	2015	Basewide	Sites 2 and 12 Groundwater and Soil Vapor Monitoring and Treatment System Annual Report, October 2013 through September 2014	DRAFT FINAL	5-Mar-15	7-Apr-15	Secondary	External	Ahtna / AMEC	
36	2015	Basewide	Sites 2 and 12 Groundwater and Soil Vapor Monitoring and Treatment System Annual Report, October 2013 through September 2014	FINAL	21-Apr-15	None	Secondary	External	Ahtna / AMEC	
37	2014	Basewide	Sites 2 and 12 Groundwater and Soil Vapor Monitoring and Treatment System Quarterly Report, Second Quarter 2014	FINAL	31-Oct-14	None	Secondary	External	Ahtna / AMEC	
38	2014	Basewide	Analysis of the 2013 Community Survey and 2013-2014 Community Outreach Program, Fort Ord, California	DRAFT	30-Dec-14	31-Jan-14	Secondary	External	Fort Ord BRAC	
39	2014	OU1	2014 Annual and Third Quarter OU-1 Groundwater Monitoring Report	DRAFT	22-Dec-14	23-Jan-15	Secondary	External	HydroGeoLogic, Inc.	
40	2015	OU1	2014 Annual and Third Quarter OU-1 Groundwater Monitoring Report	DRAFT FINAL	8-Feb-15	10-Mar-15	Secondary	External	HydroGeoLogic, Inc.	
41	2015	OU1	2015 Semiannual OU-1 Groundwater Monitoring Report	FINAL	21-Jun-15	21-Jul-15	Secondary	External	HydroGeoLogic, Inc.	Comments accepted and incorporated in 2015 Annual OU-1 Groundwater Monitoring Report
42	2015	OU1	OU-1 Exit Strategy Technical Memorandum	PREDRAFT	*3-Oct-14*	10-Oct-14	Primary	External	HydroGeoLogic, Inc.	Received
43	2015	OU1	OU-1 Exit Strategy Technical Memorandum	DRAFT	TBD	TBD	Primary	External	HydroGeoLogic, Inc.	To be determined after the BCT meeting
44	2015	OU1	OU-1 Exit Strategy Technical Memorandum	DRAFT FINAL	TBD	TBD	Primary	External	HydroGeoLogic, Inc.	To be determined after the BCT meeting
45	2015	OU1	OU-1 Exit Strategy Technical Memorandum	FINAL	TBD	TBD	Primary	External	HydroGeoLogic, Inc.	To be determined after the BCT meeting
46	2015	OU1	OU-1 UFP-QAPP Update	DRAFT	TBD	TBD	Secondary	External	HydroGeoLogic, Inc.	
47	2015	OU1	OU-1 UFP-QAPP Update	DRAFT FINAL	TBD	TBD	Secondary	External	HydroGeoLogic, Inc.	
48	2014	OU1	Well Destruction and Former OU-1 Treatment Plant Decommissioning Completion Report Former Fort Ord, California	DRAFT	*11-Aug-14*	16-Sep-14	Secondary	External	HydroGeoLogic, Inc.	Received
49	2014	OU1	Well Destruction and Former OU-1 Treatment Plant Decommissioning Completion Report Former Fort Ord, California	DRAFT FINAL	*25-Sep-14*	22-Oct-14	Secondary	External	HydroGeoLogic, Inc.	Draft accepted as Final
50	2014	OU2	Construction QC and QA Report, OU2 Landfills, Area E Phase 1	DRAFT FINAL	*14-Jul-14*	14-Aug-14	Primary	External	ITSI Gilbane	Received
51	2014	OU2	Construction QC and QA Report, OU2 Landfills, Area E Phase 1	FINAL	*9-Oct-14*	None	Primary	External	ITSI Gilbane	Received
52	2014	OU2	Quality Assurance Project Plan, Superfund Response Actions, Former Fort Ord, California, Volume 2, OU2 Landfill, Appendix A	DRAFT FINAL	**31-Oct-14**	2-Nov-14	Primary	External	ITSI Gilbane	New Day; Will revise FFA schedule
53	2014	OU2	Quality Assurance Project Plan, Superfund Response Actions, Former Fort Ord, California, Volume 2, OU2 Landfill, Appendix A	FINAL	**15-Dec-14**	None	Primary	External	ITSI Gilbane	New Day; Will revise FFA schedule
54	2015	Basewide	Technical Memorandum Evaluation of Lead Concentrations at Selected Sites, Former Fort Ord, California	DRAFT FINAL	TBD	TBD	Secondary	External	ITSI Gilbane	
55	2015	Basewide	Technical Memorandum Evaluation of Lead Concentrations at Selected Sites, Former Fort Ord, California	FINAL	TBD	TBD	Secondary	External	ITSI Gilbane	
56	2014	RI Sites	Technical Memorandum, Basewide Range Assessment Investigation, Unit 6, Former Fort Ord, California	DRAFT	*22-Jul-14*	25-Aug-14	Secondary	External	ITSI Gilbane	Received
57	2014	RI Sites	Technical Memorandum, Basewide Range Assessment Investigation, Unit 6, Former Fort Ord, California	DRAFT FINAL	**31-Oct-14**	30-Nov-14	Secondary	External	ITSI Gilbane	New Day
58	2014	RI Sites	Technical Memorandum, Basewide Range Assessment Investigation, Unit 6, Former Fort Ord, California	FINAL	**31-Dec-14**	None	Secondary	External	ITSI Gilbane	New Day
59	2015	RI Sites	Technical Memorandum, Basewide Range Assessment Investigations, Units 7, 10, 33, Former Fort Ord, California	DRAFT	TBD	TBD	Secondary	External	ITSI Gilbane	Delayed until the Site 39 QAPP is approved
60	2015	RI Sites	Technical Memorandum, Basewide Range Assessment Investigations, Units 7, 10, 33, Former Fort Ord, California	DRAFT FINAL	TBD	TBD	Secondary	External	ITSI Gilbane	Delayed until the Site 39 QAPP is approved

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1	**Issue Year**	**Site**	**Document Title**	**Version**	**Issue Date**	**Comment Due Date**	**DocGroup**	**DocType**	**Author Org**	**Notes**
61	2015	RI Sites	Technical Memorandum, Basewide Range Assessment Investigations, Units 7, 10, 33, Former Fort Ord, California	FINAL	TBD	TBD	Secondary	External	ITSI Gilbane	Delayed until the Site 39 QAPP is approved
62	2014	RI Sites	Technical Memorandum, Basewide Range Assessment Investigations, Watkins Gate Burn Area, Former Fort Ord, California	DRAFT	30-Oct-14	2-Dec-14	Secondary	External	ITSI Gilbane	
63	2014	RI Sites	Technical Memorandum, Basewide Range Assessment Investigations, Watkins Gate Burn Area, Former Fort Ord, California	DRAFT FINAL	31-Dec-14	31-Jan-14	Secondary	External	ITSI Gilbane	

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1	**Issue Year**	**Site**	**Document Title**	**Version**	**Issue Date**	**Comment Due Date**	**DocGroup**	**DocType**	**Author Org**	**Notes**
2	2014	OU2	Construction QC and QA Report, OU2 Landfills, Area E Phase 1	DRAFT FINAL	*14-Jul-14*	14-Aug-14	Primary	External	ITSI Gilbane	Received
3	2014	RI Sites	Technical Memorandum, Basewide Range Assessment Investigation, Unit 6, Former Fort Ord, California	DRAFT	*22-Jul-14*	25-Aug-14	Secondary	External	ITSI Gilbane	Received
4	2015	RI Sites	Report, Remedial Investigation/Feasibility Study Addendum at Sites 2 and 12	DRAFT	*11-Aug-14*	8-Oct-14	Primary	External	Ahtna	Received
5	2014	OU1	Well Destruction and Former OU-1 Treatment Plant Decommissioning Completion Report Former Fort Ord, California	DRAFT	*11-Aug-14*	16-Sep-14	Secondary	External	HydroGeoLogic, Inc.	Received
6	2014	Basewide	Accident Prevention Plan, Treatment Systems Operations and Maintenance, and Groundwater Monitoring at Operable Unit 2, Sites 2 and 12, and Operable Unit Carbon Tetrachloride Plume	DRAFT	*3-Sep-14*	3-Oct-14	Secondary	Internal	Ahtna	Received; Submit draft version to Army for review only
7	2014	Basewide	Explanation of Significant Differences No. 1, Basewide Remedial Investigation, Sites 2 and 12, Former Fort Ord, CA	PREDRAFT	*3-Sep-14*	18-Sep-14	Primary	Internal	Ahtna	Received
8	2014	OUCTP	Operable Unit Carbon Tetrachloride Plume A-Aquifer Remedy Evaluation Work Plan	PREDRAFT	*3-Sep-14*	17-Sep-14	Secondary	Internal	Ahtna	Received
9	2014	OU1	Well Destruction and Former OU-1 Treatment Plant Decommissioning Completion Report Former Fort Ord, California	DRAFT FINAL	*25-Sep-14*	22-Oct-14	Secondary	External	HydroGeoLogic, Inc.	Draft accepted as Final
10	2015	OU1	OU-1 Exit Strategy Technical Memorandum	PREDRAFT	*3-Oct-14*	10-Oct-14	Primary	External	HydroGeoLogic, Inc.	Received
11	2014	Basewide	Quality Assurance Project Plan Appendix C, Soil Gas Monitoring at Sites 2 and 12	PREDRAFT	*3-Oct-14*	17-Oct-14	Primary	Internal	Ahtna	Received
12	2014	OU2	Construction QC and QA Report, OU2 Landfills, Area E Phase 1	FINAL	*9-Oct-14*	None	Primary	External	ITSI Gilbane	Received
13	2014	Basewide	Accident Prevention Plan, Treatment Systems Operations and Maintenance, and Groundwater Monitoring at Operable Unit 2, Sites 2 and 12, and Operable Unit Carbon Tetrachloride Plume	FINAL	17-Oct-14	None	Secondary	Internal	Ahtna	When draft version is approved by the Army, submit only as Final
14	2014	RI Sites	Technical Memorandum, Basewide Range Assessment Investigations, Watkins Gate Burn Area, Former Fort Ord, California	DRAFT	30-Oct-14	2-Dec-14	Secondary	External	ITSI Gilbane	
15	2014	OU2	Operable Unit 2 Groundwater Monitoring and Treatment System Quarterly Report, Second Quarter 2014	FINAL	31-Oct-14	None	Secondary	External	Ahtna / AMEC	
16	2014	OUCTP	Operable Unit Carbon Tetrachloride Plume A-Aquifer Remedy Evaluation Work Plan	DRAFT	**31-Oct-14**	1-Dec-14	Secondary	External	Ahtna	New Day
17	2014	OUCTP	Operable Unit Carbon Tetrachloride Plume Groundwater Monitoring Quarterly Report, Second Quarter 2014	FINAL	31-Oct-14	None	Secondary	External	Ahtna / AMEC	
18	2014	Basewide	Quality Assurance Project Plan Appendix C, Soil Gas Monitoring at Sites 2 and 12	DRAFT	31-Oct-14	31-Dec-14	Primary	External	Ahtna	
19	2014	OU2	Quality Assurance Project Plan, Superfund Response Actions, Former Fort Ord, California, Volume 2, OU2 Landfill, Appendix A	DRAFT FINAL	**31-Oct-14**	2-Nov-14	Primary	External	ITSI Gilbane	New Day; Will revise FFA schedule
20	2014	Basewide	Sites 2 and 12 Groundwater and Soil Vapor Monitoring and Treatment System Quarterly Report, Second Quarter 2014	FINAL	31-Oct-14	None	Secondary	External	Ahtna / AMEC	
21	2014	RI Sites	Technical Memorandum, Basewide Range Assessment Investigation, Unit 6, Former Fort Ord, California	DRAFT FINAL	**31-Oct-14**	30-Nov-14	Secondary	External	ITSI Gilbane	New Day
22	2014	RI Sites	Report, Remedial Investigation/Feasibility Study Addendum at Sites 2 and 12	DRAFT FINAL	**3-Nov-14**	3-Dec-14	Primary	External	Ahtna	New Day; Revised FFA schedule was sent to agencies on 10/1
23	2014	Basewide	Quality Assurance Project Plan Appendix A, Revision 3, Groundwater Monitoring	PREDRAFT	7-Nov-14	23-Nov-14	Secondary	Internal	Ahtna	
24	2014	OU2	Operable Unit 2 Groundwater Monitoring and Treatment System Annual Report, October 2013 through September 2014	PREDRAFT	3-Dec-14	17-Dec-14	Secondary	Internal	Ahtna / AMEC	
25	2014	OUCTP	Operable Unit Carbon Tetrachloride Plume Groundwater Monitoring Annual Report, October 2013 through September 2014	PREDRAFT	3-Dec-14	17-Dec-14	Secondary	Internal	Ahtna / AMEC	
26	2014	Basewide	Sites 2 and 12 Groundwater and Soil Vapor Monitoring and Treatment System Annual Report, October 2013 through September 2014	PREDRAFT	3-Dec-14	17-Dec-14	Secondary	Internal	Ahtna / AMEC	
27	2014	Basewide	Quality Assurance Project Plan Appendix A, Revision 3, Groundwater Monitoring	DRAFT	9-Dec-14	9-Jan-15	Secondary	External	Ahtna	
28	2014	Basewide	Explanation of Significant Differences No. 1, Basewide Remedial Investigation, Sites 2 and 12, Former Fort Ord, CA	DRAFT	**10-Dec-14**	9-Feb-15	Primary	Internal	Ahtna	New Day; Revised FFA schedule was sent to agencies on 10/1
29	2014	OU2	Quality Assurance Project Plan, Superfund Response Actions, Former Fort Ord, California, Volume 2, OU2 Landfill, Appendix A	FINAL	**15-Dec-14**	None	Primary	External	ITSI Gilbane	New Day; Will revise FFA schedule
30	2014	OU1	2014 Annual and Third Quarter OU-1 Groundwater Monitoring Report	DRAFT	22-Dec-14	23-Jan-15	Secondary	External	HydroGeoLogic, Inc.	
31	2014	Basewide	Analysis of the 2013 Community Survey and 2013-2014 Community Outreach Program, Fort Ord, California	DRAFT	30-Dec-14	31-Jan-14	Secondary	External	Fort Ord BRAC	
32	2014	OU2	Operable Unit 2 Groundwater Monitoring and Treatment System Annual Report, October 2013 through September 2014	DRAFT	31-Dec-14	2-Feb-15	Secondary	External	Ahtna / AMEC	

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1	**Issue Year**	**Site**	**Document Title**	**Version**	**Issue Date**	**Comment Due Date**	**DocGroup**	**DocType**	**Author Org**	**Notes**
33	2014	OUCTP	Operable Unit Carbon Tetrachloride Plume Groundwater Monitoring Annual Report, October 2013 through September 2014	DRAFT	31-Dec-14	2-Feb-15	Secondary	External	Ahtna / AMEC	
34	2014	Basewide	Sites 2 and 12 Groundwater and Soil Vapor Monitoring and Treatment System Annual Report, October 2013 through September 2014	DRAFT	31-Dec-14	2-Feb-15	Secondary	External	Ahtna / AMEC	
35	2014	RI Sites	Technical Memorandum, Basewide Range Assessment Investigation, Unit 6, Former Fort Ord, California	FINAL	**31-Dec-14**	None	Secondary	External	ITSI Gilbane	New Day
36	2014	RI Sites	Technical Memorandum, Basewide Range Assessment Investigations, Watkins Gate Burn Area, Former Fort Ord, California	DRAFT FINAL	31-Dec-14	31-Jan-14	Secondary	External	ITSI Gilbane	
37	2014	OUCTP	Operable Unit Carbon Tetrachloride Plume A-Aquifer Remedy Evaluation Work Plan	DRAFT FINAL	**2-Jan-15**	2-Feb-15	Secondary	External	Ahtna	New Day
38	2014	RI Sites	Report, Remedial Investigation/Feasibility Study Addendum at Sites 2 and 12	FINAL	**9-Jan-15**	None	Primary	External	Ahtna	New Day; Revised FFA schedule was sent to agencies on 10/1
39	2014	Basewide	Quality Assurance Project Plan Appendix C, Soil Gas Monitoring at Sites 2 and 12	DRAFT FINAL	30-Jan-15	2-Mar-15	Primary	External	Ahtna	
40	2015	OU1	2014 Annual and Third Quarter OU-1 Groundwater Monitoring Report	DRAFT FINAL	8-Feb-15	10-Mar-15	Secondary	External	HydroGeoLogic, Inc.	
41	2014	Basewide	Quality Assurance Project Plan Appendix A, Revision 3, Groundwater Monitoring	DRAFT FINAL	11-Feb-15	16-Mar-15	Secondary	External	Ahtna	
42	2015	OUCTP	Operable Unit Carbon Tetrachloride Plume A-Aquifer Remedy Evaluation Work Plan	FINAL	**16-Feb-15**	None	Secondary	External	Ahtna	New Day
43	2015	Basewide	Explanation of Significant Differences No. 1, Basewide Remedial Investigation, Sites 2 and 12, Former Fort Ord, CA	DRAFT FINAL	**5-Mar-15**	6-Apr-15	Primary	Internal	Ahtna	New Day; Revised FFA schedule was sent to agencies on 10/1
44	2015	OU2	Operable Unit 2 Groundwater Monitoring and Treatment System Annual Report, October 2013 through September 2014	DRAFT FINAL	5-Mar-15	7-Apr-15	Secondary	External	Ahtna / AMEC	
45	2015	OUCTP	Operable Unit Carbon Tetrachloride Plume Groundwater Monitoring Annual Report, October 2013 through September 2014	DRAFT FINAL	5-Mar-15	7-Apr-15	Secondary	External	Ahtna / AMEC	
46	2015	Basewide	Sites 2 and 12 Groundwater and Soil Vapor Monitoring and Treatment System Annual Report, October 2013 through September 2014	DRAFT FINAL	5-Mar-15	7-Apr-15	Secondary	External	Ahtna / AMEC	
47	2014	Basewide	Quality Assurance Project Plan Appendix C, Soil Gas Monitoring at Sites 2 and 12	FINAL	16-Mar-15	None	Primary	External	Ahtna	
48	2014	Basewide	Quality Assurance Project Plan Appendix A, Revision 3, Groundwater Monitoring	FINAL	31-Mar-15	None	Secondary	External	Ahtna	
49	2015	OU2	Operable Unit 2 Groundwater Monitoring and Treatment System Annual Report, October 2013 through September 2014	FINAL	21-Apr-15	None	Secondary	External	Ahtna / AMEC	
50	2015	OUCTP	Operable Unit Carbon Tetrachloride Plume Groundwater Monitoring Annual Report, October 2013 through September 2014	FINAL	21-Apr-15	None	Secondary	External	Ahtna / AMEC	
51	2015	Basewide	Sites 2 and 12 Groundwater and Soil Vapor Monitoring and Treatment System Annual Report, October 2013 through September 2014	FINAL	21-Apr-15	None	Secondary	External	Ahtna / AMEC	
52	2015	Basewide	Explanation of Significant Differences No. 1, Basewide Remedial Investigation, Sites 2 and 12, Former Fort Ord, CA	FINAL	**1-May-15**	None	Primary	Internal	Ahtna	New Day; Revised FFA schedule was sent to agencies on 10/1
53	2015	OU1	2015 Semiannual OU-1 Groundwater Monitoring Report	FINAL	21-Jun-15	21-Jul-15	Secondary	External	HydroGeoLogic, Inc.	Comments accepted and incorporated in 2015 Annual OU-1 Groundwater Monitoring Report
54	2015	OU1	OU-1 Exit Strategy Technical Memorandum	DRAFT	TBD	TBD	Primary	External	HydroGeoLogic, Inc.	To be determined after the BCT meeting
55	2015	OU1	OU-1 Exit Strategy Technical Memorandum	DRAFT FINAL	TBD	TBD	Primary	External	HydroGeoLogic, Inc.	To be determined after the BCT meeting
56	2015	OU1	OU-1 Exit Strategy Technical Memorandum	FINAL	TBD	TBD	Primary	External	HydroGeoLogic, Inc.	To be determined after the BCT meeting
57	2015	OU1	OU-1 UFP-QAPP Update	DRAFT	TBD	TBD	Secondary	External	HydroGeoLogic, Inc.	
58	2015	OU1	OU-1 UFP-QAPP Update	DRAFT FINAL	TBD	TBD	Secondary	External	HydroGeoLogic, Inc.	
59	2015	Basewide	Technical Memorandum Evaluation of Lead Concentrations at Selected Sites, Former Fort Ord, California	DRAFT FINAL	TBD	TBD	Secondary	External	ITSI Gilbane	
60	2015	Basewide	Technical Memorandum Evaluation of Lead Concentrations at Selected Sites, Former Fort Ord, California	FINAL	TBD	TBD	Secondary	External	ITSI Gilbane	
61	2015	RI Sites	Technical Memorandum, Basewide Range Assessment Investigations, Units 7, 10, 33, Former Fort Ord, California	DRAFT	TBD	TBD	Secondary	External	ITSI Gilbane	Delayed until the Site 39 QAPP is approved

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1	**Issue Year**	**Site**	**Document Title**	**Version**	**Issue Date**	**Comment Due Date**	**DocGroup**	**DocType**	**Author Org**	**Notes**
62	2015	RI Sites	Technical Memorandum, Basewide Range Assessment Investigations, Units 7, 10, 33, Former Fort Ord, California	DRAFT FINAL	TBD	TBD	Secondary	External	ITSI Gilbane	Delayed until the Site 39 QAPP is approved
63	2015	RI Sites	Technical Memorandum, Basewide Range Assessment Investigations, Units 7, 10, 33, Former Fort Ord, California	FINAL	TBD	TBD	Secondary	External	ITSI Gilbane	Delayed until the Site 39 QAPP is approved

			OCTOBER			
Sunday	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
			1	2	3	4
5	6	7	8	9	10	11
12	13	14 HTW IPM (10am) MR IPM (130pm)	15 ESCA Reg Mtg (10-12)	16	17	18
19	20	21	22 MR BCT (10am) HTW BCT (130pm)	23	24	25
26	27	28	29	30	31	

			NOVEMBER			
Sunday	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
						1
2	3	4	5 MR IPM (10am) HTW IPM (130pm)	6	7	8
9	10	11 ESCA Reg Mtg (1pm)	12	13 MR BCT (10am) HTW BCT (1:30 pm)	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

			DECEMBER			
Sunday	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
	1	2	3	4	5	6
7	8	9 ESCA Reg Mtg (1pm)	10 MR IPM (10am) HTW IPM (130pm)	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

			JANUARY			
Sunday	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31