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

**OU-1 On-Post Activities for January 2015**

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

**Attendees: (to be revised after meeting)**

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

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

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

There was minimal rainfall in January and therefore no significant accumulation in the NWTS containment basin. HGL inspected the NWTS and / or performed repairs / testing on 8, 16, and 26 through 28 January 2015.

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

**OU-1 Groundwater Quality Data**

HGL collected samples from monitoring wells MW-OU1-61-A and MW-OU1-88-A on 22 December 2014. The validated December results confirmed the preliminary results without qualifies. 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 December TCE concentrations are:

- MW-OU1-61-A = 4.2 µg/L (Duplicate sample= 4.6 µg/L)
- MW-OU1-88-A = 4.1 µg/L

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

**Reporting/Federal Facility Agreement Schedule**

All scheduled submittals have been made for primary and secondary deliverables. The status of submitted and anticipated reports for 2014 is summarized in Table 2. The Draft 2014 Annual Groundwater Monitoring Report was accepted as Final by the regulatory agencies without comment—and no comments were received from the public.

The Draft Exit Strategy Technical Memorandum was submitted on 26 December and is discussed separately in this update. A revision providing flexibility in selecting the analytical method and replacing low flow sampling with the Hydrasleeve™ method was distributed to the regulatory agencies by email on 14 January.

**OU-1 Weed Control and Rare Plant Monitoring**

The 2014 Fort Ord Natural Reserve Impact Assessment and Habitat and Rare Plant Species Survey Results Report was submitted to the Army for distribution on 10 October 2014. HGL presented the findings of this report to the U.S. Fish and Wildlife Service (USFWS) on 27 January 2015.

**Site Exit/Closure Strategy**

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

The Draft OU-1 Exit Strategy Technical Memorandum (ESTM) describes the proposed attainment sampling well location network and sampling schedule for the chemicals of concern identified in the ROD and for emerging contaminants perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). During conversations with potential analytical laboratories after the Draft was submitted, it was determined that other sampling and analytical methods may provide equivalent or more accurate results. The revision submitted on 14 January 2015 allowed flexibility to consider HPLC/MS methodology (EPA Method 537, SW-846 Method 8321, or an equivalent method) with method detection limits less than the PHA concentrations. The selected method will be determined in consultation with the analytical laboratory and the Army and with the approval of the regulatory agencies.

Many impeller or bladder pumps used in low-flow sampling contain internal components made with fluoropolymers such as Teflon® and Viton®. Sample tubing is often coated with PFAS-containing materials as well. Thus, there is the potential to introduce fluoropolymer contamination to the samples that could then be incorrectly attributed to the OU-1 site, especially at the low concentration levels that will be used in reporting these compounds. HydraSleeve™ samplers are made from 4-mil polyethylene that are uncoated. Consequently, the revision submitted on 14 January specified using the HydraSleeve™ sampling technique to minimize the potential for false positive analytical results. This method is also more efficient and more directly comparable than low flow sampling methods to the passive diffusion bag method that has been employed at OU-1 for more than a decade.

Agency and public comments on the Draft ESTM are due by 24 February 2015.

**Well Destruction and Treatment Plant Demolition**

Well destruction within OU-1 is complete pending review of attainment monitoring results.

**Action Items:**

- HGL will respond to agency and public comments on the draft OU-1 Exit Strategy Technical Memorandum.

**Ongoing:**

- Submit draft minutes for previous BCT meeting(s)—draft minutes for October through November 2014 were accepted without comment. Thus far, DTSC and EPA approved the draft January 2015 minutes without comment.
- Submit approved final minutes for previous BCT meeting(s) — complete through December 2014.

**Fort Ord HTW BCT Meeting**
**20 February 2015**

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

# ATTACHMENT 1

## Reference Table(s) and Figure(s)

**Table 1A**
**TCE in OU-1 FONR Groundwater Remediation System – Performance Monitoring**
**BCT for Former Fort Ord – 20 February 2015**

| | 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 – 20 February 2015**

| | 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

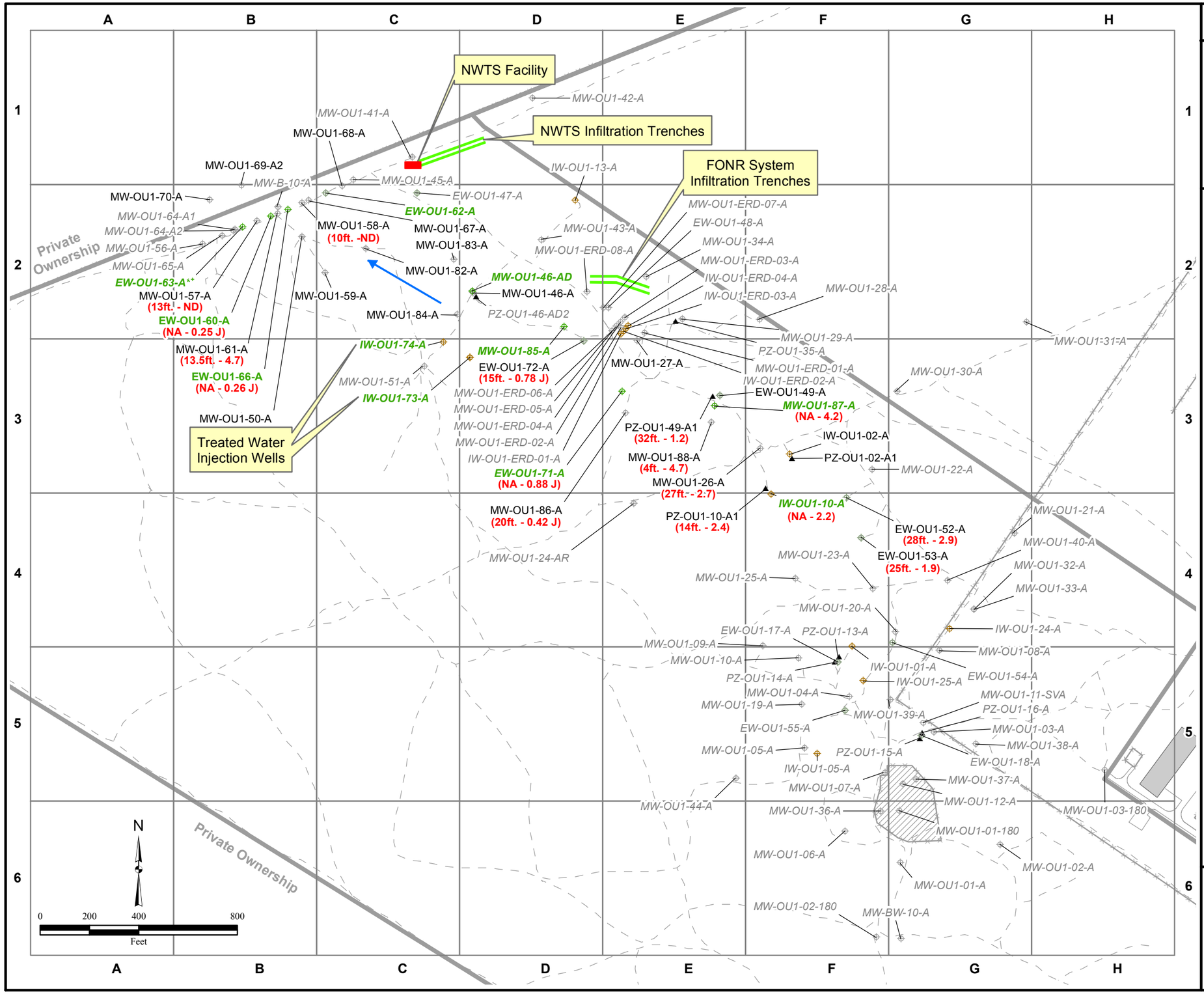
Blue font indicates the concentration is calculated using the weighted average of the active pumping wells.

**Table 2**
**Current Deliverable Schedule**
**Former Fort Ord, Marina, CA – 20 February 2015**

| Deliverable Title | Submittal | Review Comments Due | Status/Remarks |
|---|---|---|---|
| ***Primary Deliverables*** | | | |
| Final UFP-QAPP | May 2014 | Received | Submitted 29 May 2014 |
| ***Secondary Deliverables*** | | | |
| Draft 2014 Annual Groundwater Monitoring Report | December 2014 | January 2015 | Accepted as Final without Comment. |
| Draft Exit Strategy Technical Memorandum | December 2014 | February 2015 | Submitted 26 December 2014 (revision to last paragraph on page 12 was submitted on 14 January 2015) |
| Site Safety and Health Plan Update | September 2014 | TBD | To be scheduled after determination of cleanup attainment monitoring sampling requirements |
| UFP-QAPP 2014 Update | TBD | TBD | |
| ***Completed Recent Submittals*** | | | |
| Draft UFP-QAPP | March 2014 | May 2014 | Submitted 04 March 2014 |
| Final 2013 Annual and 3rd Quarter Groundwater Monitoring Report | April 2014 | NA | Submitted 04 April 2014 |
| Final Work Plan for Well Destruction and Treatment Plant Demolition | April 2014 | NA | Submitted 04 April 2014 |
| Draft Health & Safety Plan – OU-1 O&M/LTM | May 2014 | Received | Draft accepted as Final |
| Draft Well Destruction and Treatment Plant Demolition Completion Report | August 2014 | September 2014 | Draft accepted as Final Submitted 03 October 2014 |

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

# Figure 5.2
# OU-1 FONR A-Aquifer TCE Concentration in Groundwater, September 2014, Former Fort Ord, CA




## Legend

- Well
- Extraction Well
- Injection Well
- Piezometer or 2-Inch Well
- Groundwater Flow Direction
- *MW-OU1-21-A* Well Destroyed
- MW-OU1-57-A Well ID
- (13.5ft. - 6.7) September 2014 TCE Result (µg/L)
- Sample Elevation (ft amsl)
- Trail/Unimproved Road
- Fence
- Treated Water Infiltration Trench
- Property Boundary
- Building
- Former Fire Drill Area
- NWTS Facility

Notes:
Wells for which no data are posted were not sampled.
Well labels in green font indicate extraction or injection well.
*Italicized* font shows pumping suspended.
ft amsl= feet above mean sea level
µg/L=micrograms per liter
Units of TCE concentration are in µg/L
FONR=Fort Ord Natural Reserve
NWTS=Northwest Treatment System
ACL=Aquifer Cleanup Level
ND=nondetect
NA=Depth is not applicable - sample is from pumping well
J=Estimated value
*=Indicates wells not used for contouring
+=Indicates disconnected extraction well. No longer operable.

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

HGL HydroGeoLogic, Inc

**Fort Ord HTW BCT Meeting**
**20 February 2015**

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

## ATTACHMENT 2

## Correction to the OU-1 UFPP-QAPP

In 2006, the Annual and Fourth Quarter Groundwater Monitoring Report Operable Unit 1 (AR# OU1-553D) recommended that duplicate samples be collected at a frequency of 5 percent or 1 duplicate for every 20 environmental samples. Supporting data for this recommendation was provided in Section 7.6 of the 2006 groundwater monitoring report and is attached for reference. The regulatory agencies approved this recommendation and duplicate samples have been collected at a frequency of 1 duplicate for every 20 environmental samples since 2007. This duplicate sampling frequency will be continued through the attainment monitoring period. The duplicate sampling frequency specified in the UFPP-QAPP (AR #OU1-606A) approved in May 2014 was incorrectly stated as 10 percent—this will be corrected in the UFPP-QAPP Update, currently in preparation.

## 7.6 FIELD DUPLICATE QUALITY CONTROL SAMPLES

Duplicate samples have been collected during the quarterly monitoring program at a minimum frequency of 10 percent in accordance with the Final SAP (HGL, 2004). There was excellent agreement between the 40 pairs of parent and the duplicate samples collected during 2006. The percentage differed between the two sample results for TCE by more than 10 percent in only five of the 40 sample pairs. In each of these five samples, however, both the parent and duplicate samples showed that TCE was present at less than 5.0 µg/L and the relatively lower concentrations contributed to the higher percentage difference. The maximum percentage difference in TCE results, a value of 17.3 percent, for example, was for sample results of 0.52 µg/L and 0.43 µg/L (both estimated values were below the analytical reporting limit).

The difference between TCE results in absolute terms was greater than 0.3 µg/L in only seven cases, with a maximum difference of 2.0 µg/L.

| | | |
|---|---|---|
| PZ-OUl-49-Al-94 | Fourth quarter | 20 µg/L vs. 22 µg/L |
| MW-OUl-88-A.:.122 | Fourth quarter | 14 µg/L vs. 15 µg/L |
| MW-OUl-57-A-91 | Third quarter | 11 µg/L vs. 12 µg/L |
| PZ-OUl-49-Al-94 | Third quarter | 16 µg/L vs. 17 µg/L |
| MW-OUl-46-AD-121 | Third quarter | 25 µg/L vs. 24 µg/L |
| MW-OUl-04-A-105 | Second quarter | 4.8 µg/L vs. 4.0 µg/L |
| MW-OUl-26-A-93 | First quarter | 13 µg/L vs. 12 µg/L |

The only other VOCs detected in the 40 duplicate pairs were cis-1,2-DCE, MEK, and chloroform. These compounds were detected far-less frequently than TCE but showed even closer agreement. The maximum difference between the parent and duplicate samples was 0.1 µg/L for cis-1,2-DCE; 0.5 µg/L for MEK and 0.05 µg/L for chloroform.

There has been excellent agreement between the parent and field duplicate samples throughout the LTM program. Results from the 2005 field duplicate program, for example, were very similar to those for 2006 with all 25 field duplicates showing differences less .than 13 percent with only one pair showing concentration value difference between parent and duplicate analyses greater than 2.0 µg/L. Results for sample MW-OUl-46-AD-121 in the second quarter revealed 39 µg/L in the parent versus 34 µg/L in the duplicate.

The consistent close agreement between field duplicate results has continually demonstrated the accuracy of the sample collection methods and field procedures. Within the FONR, the VOC plume boundary is well-defined by historic data and the well network. The need for frequent field duplicates as a quality control check is therefore diminished. Consequently, HGL recommends that the frequency for collecting field duplicate sample be modified to collect a minimum of one field duplicate per twenty environmental samples, a percentage of 5 percent in comparison to the previous 10 percent.