

HGL Update
Fort Ord Operable Unit (OU) – 1 On-Post Groundwater Remediation
Marina, California
10:00 a.m., 13 November 2013

Treatment Plant Operations

The Northwest Treatment System (NWTS) operated continuously from 3 October 2013 through 6 November 2013. Extraction wells EW-OU1-60-A, EW-OU1-66-A, and MW-OU1-87-A have operated continuously. Extraction well IW-OU1-10-A was restarted on 14 October and will be run intermittently (along with currently idled extraction well MW-OU1-46-A) over the next few months to maintain operability and provide additional data during the next sampling event to monitor overall performance. Total pumping from the NWTS from inception through 6 November was approximately 2,310,000 gallons.

HydroGeoLogic, Inc. (HGL) was informed by Pacific Gas & Electric's subcontractor Diversified Utility Services Incorporated (DUSI) that the transformer pole at the NWTS was to be replaced on 6 November. Consequently, the NWTS plant was shut down at 0900 on that day. However, at 1000 DUSI called to say the transformer pole replacement was rescheduled. HGL restarted the NWTS at 1030 and will coordinate with DUSI to shut down the NWTS before the transformer pole replacement currently scheduled for 13 November.

Since system startup in 2006, the NWTS has removed approximately 6.0 pounds of total volatile organic compounds, primarily trichloroethene (TCE). An estimated 0.13 pound of TCE has been removed in 2013. The most recent system performance monitoring samples were collected on 18 September 2013 from the following extraction wells:

EW-OU1-71-A MW-OU1-87-A EW-OU1-66-A EW-OU1-61-A

Sample results from these wells and the monitoring wells sampled on 18 – 19 September 2013 are discussed in the following section.

Groundwater Quality Data

There were no changes to the TCE concentrations reported in previous meetings for the preliminary, unvalidated sampling results from the September 2013 sampling event. The preliminary results showed several detections of cis-1,2-dichloroethene as estimated values (J flag) at concentrations below the reporting limit of 0.5 micrograms per liter ($\mu\text{g/L}$). However, the validation process revised these values to be nondetect because cis-1,2-dichloroethene was detected in the trip blank at 0.13 J $\mu\text{g/L}$. The validated results are presented in attached Tables 1A and 1B for the extraction wells listed previously.

The observed TCE concentration trend in extraction well EW-OU1-71-A decreased to 1.9 $\mu\text{g/L}$ from 4.4 $\mu\text{g/L}$ in the previous sample collected a year ago. As shown in Table 1A, the TCE concentration in the other extraction wells sampled increased by 0.1 $\mu\text{g/L}$ to 0.3 $\mu\text{g/L}$ since the previous sample. These minimal increases indicate essentially stable conditions since the last sampling events in March and June of 2013.

The validated analytical results from the monitoring well samples showed that only TCE and chloroform were detected in any sample. The maximum chloroform concentration was 0.19 J $\mu\text{g/L}$. As discussed in the previous Base Closure Team (BCT) meeting, TCE concentrations were very similar to the previous result at each well and varied within $\pm 1 \mu\text{g/L}$. MW-OU1-61-A and MW-OU1-88-A continue to be the only two wells where the TCE concentration exceeded the Aquifer Cleanup Level (ACL) of 5 $\mu\text{g/L}$. In September, the TCE concentration at MW-OU1-61-A declined to 6.7 $\mu\text{g/L}$ while MW-OU1-88-A rose slightly to 6.4 $\mu\text{g/L}$.

Figure 1 shows the TCE concentration contours based on the validated September 2013 data. Based on the recent sampling results, HGL recommends collecting the following samples in December 2013:

- Monitoring wells MW-OU1-88-A and MW-OU1-61-A
- Extraction wells MW-OU1-87-A and IW-OU1-10-A (restarted on 14 October 2013)

Well Destruction and Former OU-1 Treatment Plant Demolition

The preliminary draft work plan for the destruction of selected monitoring wells and for the former OU-1 source area and off-Post treatment systems was submitted for Army review. Field work is expected to begin next spring in accordance with the schedule constraints of the Habitat Management Plan and after regulatory agency approval of the final work plan.

Reporting/Federal Facility Agreement Schedule

All scheduled submittals have been made for primary and secondary deliverables. The status of submitted and anticipated reports for 2012 and 2013 is summarized in Table 2. HGL is preparing the 2013 Annual and Third Quarter Groundwater Monitoring Report for Army review. No comments were received on the 2013 First Quarter Groundwater Monitoring Report and the relevant discussions therein will be incorporated into the annual report without change.

Weed Control and Rare Plant Monitoring

University of California Santa Cruz staff are working on the report describing the weed control activities performed in 2013.

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

The existing QAPP for OU-1 is being updated to reflect the UFP format.

Action Items:

Ongoing:

- Submit draft minutes for previous BCT meeting(s) — complete.
- Submit final minutes for previous BCT meeting(s) — Draft September minutes are in regulatory review. Draft October minutes are being prepared for distribution.
- Prepare update for the next BCT meeting — to be done.

**Fort Ord HTW BCT Meeting
Marina, California
13 November 2013**

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

ATTACHMENT 1

Reference Table(s) and Figure(s)

Table 1A
TCE in OU-1 FONR Groundwater Remediation System – Performance Monitoring
BCT Meeting for Former Fort Ord – 13 November 2013

| Began: Date | FONR Extraction Well (listed from south to north) | | | | | Boundary Extraction Well (from west to east) | | | | | NWTS | | | | | | |
|-----------------------------------|---|--|------------|------------|-------------|--|---|--------------|-------------|------------|-------------|-------------|-------------|------|------|----|----|
| | Nov-10 | Oct-07 | | | | Jul-06 | | | | INFLUENT | MIDPOINT | EFFLUENT | | | | | |
| | IW-10 | MW-87 | EW-71 | MW-85 | MW-46AD | EW-63 | EW-60 | EW-66 | EW-62 | | | | | | | | |
| TCE (µg/L) | | | | | | | | | | | | | | | | | |
| 11/9/07 | Used as monitoring well until pump installed in October 2010. Pumping began 03 November 2010. | 16 | 13 | 19 | 14 | ND | ND | 1.7 | ND | 11 | ND | ND | | | | | |
| 1/18/08 | | 11 | 11 | 8.9 | 8.2 | ND | ND | 1.2 | ND | 6.0 | ND | ND | | | | | |
| 3/18/08 | | 11 | 14 | 6.7 | 5.8 | ND | 0.29 | 1.5 | ND | 5.6 | ND | ND | | | | | |
| 5/27/08 | | 9.7 | 18 | 2.5 | 6.1 | ND | ND | 1.8 | ND | 3.9 | ND | ND | | | | | |
| 7/21/08 | | 9.1 | 14 | 4.4 | 3.4 | ND | 0.78 | 1.4 | ND | 3.6 | ND | ND | | | | | |
| 9/29/08 | | 9.3 | 15 | 4.3 | 2.9 | J | ND | 0.90 | J | 1.7 | J | ND | 3.8 | J | 0.19 | J | ND |
| 12/1/08 | | 5.8 | 11 | 2.6 | 1.6 | ND | 0.82 | 0.91 | ND | 2.7 | 0.35 | J | ND | | | | |
| 1/26/09 | | 5.9 | 10 | 2.2 | 1.2 | ND | 0.48 | J | 0.78 | ND | 2.4 | ND | ND | | | | |
| 3/9/09 | | 5.8 | 9.9 | 2.1 | 1.2 | ND | 0.95 | 0.86 | ND | 2.7 | ND | ND | | | | | |
| 6/11/09 | | 6.9 | 11 | 2.4 | 1.5 | ND | 0.88 | 1.7 | ND | 2.6 | 0.14 | J | ND | | | | |
| 9/15/09 | | 6.8 | 9.4 | 1.7 | 0.78 | ND | inactive | 1.1 | 0.036 | J | 2.3 | 0.35 | J | ND | | | |
| 12/14/09 | | 6.9 | 7.5 | 0.84 | not sampled | not sampled | inactive | 0.94 | not sampled | 2.3 | 0.65 | J | ND | | | | |
| 3/22/10 | | 7.2 | 8.5 | 0.62 | 0.55 | inactive | ND | 0.90 | inactive | 2.3 | ND | ND | | | | | |
| 6/21/10 | | 7.4 | 6.5 | 0.90 | 0.40 | J | inactive | 0.86 | 0.58 | inactive | 2.1 | ND | ND | | | | |
| 9/20/10 | | 7.7 | 6.6 | 0.83 | 0.35 | J | discontinued | 0.63 | 0.49 | J | inactive | 2.3 | not sampled | ND | | | |
| 12/16/10 | | 5.2 | 6.9 | 5.2 | 0.58 | 0.28 | J | discontinued | 0.72 | 0.42 | J | inactive | 2.6 | 0.18 | J | ND | |
| 3/7/11 | | 5.1 | 6.0 | 4.6 | 0.55 | 0.60 | discontinued | 0.87 | 0.42 | J | inactive | 2.5 | 0.59 | ND | | | |
| 6/7/11 | | 4.2 | 6.1 | 4.0 | 0.78 | 0.63 | discontinued | 0.76 | 0.36 | J | inactive | 2.6 | 1.0 | ND | | | |
| 9/20/11 | | 4.5 | 6.2 | 4.2 | 1.10 | 0.38 | J | discontinued | 0.57 | 0.36 | J | inactive | 2.5 | 1.7 | ND | | |
| 12/7/11 | | 3.8 | 5.1 | 3.7 | not sampled | | discontinued | inactive | 0.27 | J | inactive | 1.8 | 2.1 | 0.13 | J | | |
| 3/15/12 | 3.7 | 5.5 | 3.8 | 0.70 | 0.23 | J | discontinued | inactive | 0.38 | J | inactive | 0.81 | 0.32 | J | ND | | |
| 9/25/12 | -- | 5.3 | 4.4 | -- | -- | discontinued | inactive | 0.19 | J | inactive | 1.8 | 0.72 | J | ND | | | |
| 1/8/13 | -- | 5.4 | -- | -- | -- | discontinued | ND | 0.19 | J | inactive | 1.54 | -- | ND | | | | |
| 3/27/13 | -- | 4.8 | -- | -- | -- | discontinued | ND | 0.23 | J | inactive | 1.48 | -- | ND | | | | |
| 6/26/13 | -- | 4.4 | -- | -- | -- | discontinued | -- | -- | J | inactive | 1.90 | -- | ND | | | | |
| 9/18/13 | -- | 4.7 | 1.9 | -- | -- | discontinued | 0.17 | J | 0.31 | J | inactive | 2.00 | -- | ND | | | |
| | | Italics (if used) indicate data not yet validated | | | | | Bold font indicates concentration > ACL | | | | | | | | | | |
| Notes: | | | | | | | | | | | | | | | | | |
| ACL - aquifer cleanup level | -- - Not sampled | | | | | | | | | | | | | | | | |
| µg/L - micrograms per liter | | | | | | | | | | | | | | | | | |
| J - Data qualified as estimated | Blue font indicates the concentration is calculated using the weighted average of the active pumping wells. | | | | | | | | | | | | | | | | |
| ND - nondetect | | | | | | | | | | | | | | | | | |
| TCE - trichloroethene | | | | | | | | | | | | | | | | | |
| FONR - Fort Ord Natural Reserve | | | | | | | | | | | | | | | | | |
| NWTS - Northwest Treatment System | | | | | | | | | | | | | | | | | |

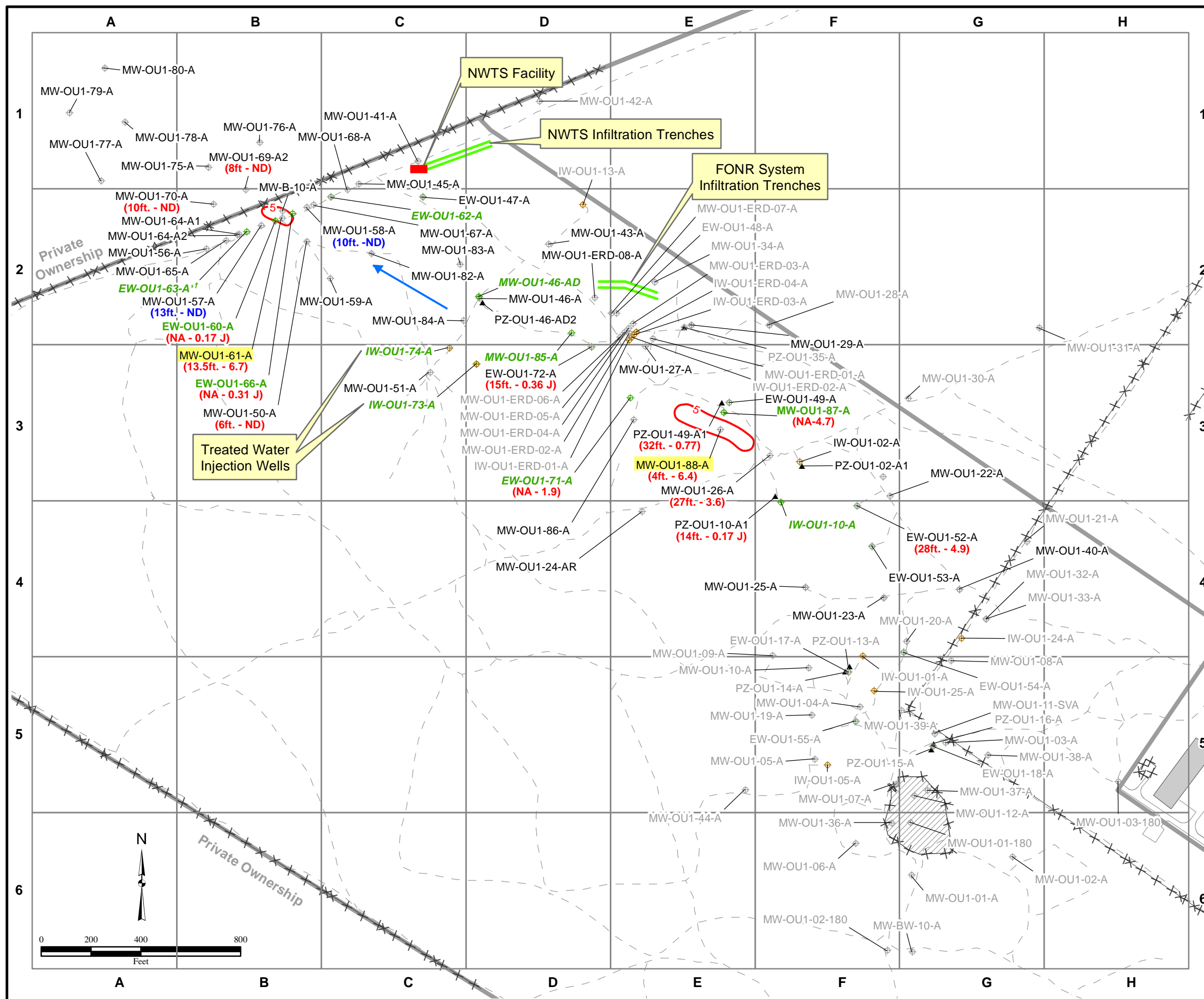
Table 1B
cis-1,2-DCE in OU-1 FONR Groundwater Remediation System – Performance Monitoring
BCT Meeting for Former Fort Ord – 13 November 2013

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

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

| Deliverable Title | Submittal Due | Review Comments Due | Status/Remarks |
|---|----------------------|----------------------------|--|
| <i>Primary Deliverables</i> | | | |
| Draft 2013 Annual and 3rd Quarter Groundwater Monitoring Report | December 2013 | January 2014 | In progress. |
| Draft Well Destruction and Former OU-1 Treatment Plant Decommissioning Work Plan | December 2013 | January 2014 | In Army review. |
| <i>Secondary Deliverables</i> | | | |
| OU-1 UFP-QAPP | December 2013 | January 2014 | In progress. |
| <i>Completed Recent Submittals</i> | | | |
| Draft 2012 Annual and 3rd Quarter Groundwater Monitoring Report | December 2012 | NA | Submitted 31 December 2012. Waiting for agency comments. |
| 2012 FONR Impact Report | February 2012 | NA | Submitted 05 February 2012. |
| Final 2012 Annual and 3rd Quarter Groundwater Monitoring Report | March 2013 | NA | Submitted 21 March 2013. |
| 2013 First Quarter Groundwater Monitoring Report | June 2013 | August 2013 | Submitted 1 July 2013. |

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



Legend

- ⊕ Well
- ⊕ Extraction Well
- ⊕ Injection Well
- ▲ Piezometer or 2-Inch Well
- Groundwater Flow Direction
- ⊕ MW-OU1-21-A Well Destroyed
- ⊕ MW-OU1-88-A Location with March 2013 TCE Concentrations at or above ACL (5 µg/L)
- MW-OU1-57-A Well ID
- (13.5ft. - 6.7) September 2013 TCE Result (µg/L)
- Sample Elevation (feet above mean sea level)
- (13ft. - ND) Jan/Feb/March 2013 Latest TCE Result (µg/L)
- Sample Elevation (feet above mean sea level)
- 5 TCE contour based on September 2013 Data
- - - Trail/Unimproved Road
- × Fence
- Treated Water Infiltration Trench
- Property Boundary
- ▭ Building
- ▨ Former Fire Drill Area

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

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

