

**SUBJECT: HTW – BCT Meeting**  
**September 22, 2010**  
**10:00 a.m. BRAC Conference Room**

✓	Name	Organization	Phone	E-mail address
✓	Franklin Mark	DTSC	916/255-3584	FMark@dtsc.ca.gov
✓	Steve Sterling	DTSC	916/255-3739	SSterlin@dtsc.ca.gov
✓	Martin Hausladen	U.S. EPA	415/972-3007	Hausladen.martin@epamail.epa.gov
	Lewis Mitani	U.S. EPA	415/972-3032	Mitani.lewis@epa.gov
DHA	Grant Himebaugh	RWQCB	805/542-4636	Ghimebaugh@waterboards.ca.gov
am	Bill Mabey	TechLaw Inc	415/281-8730	bmabey@techlawinc.com
MY	Gail Youngblood	Fort Ord BRAC	831/242-7918	gail.youngblood@us.army.mil
DJL	Derek Lieberman	Ahtna	831/242-4873	dliberman@ahtnaes.com
WKC	Bill Collins	Fort Ord BRAC	831/242-7920	William.K.Collins@us.army.mil
	Rob Robinson	Fort Ord BRAC	831/242-7900	clinton.w.robinson@us.army.mil
DS	David Eisen	COE	831/393-9692	David.Eisen@usace.army.mil
	Mark Eldridge	AEC	410/436-6325	Mark.h.eldridge@us.army.mil
PHOWE	Peter Kelsall	Shaw E&I	831/883-5810 ext. 810	Peter.Kelsall@shawgrp.com
ESK	David Kelly	Shaw E&I	925/288-2321	David.kelly@shawgrp.com
✓	Jen Moser	GEM/Shaw E&I	831/883-5812	Jen.moser@shawgrp.com
	Eric Schmidt	Shaw E&I	831/883-5809	Eric.Schmidt@shawgrp.com
CS	Ed Ticken	MACTEC E&C	707/793-3882	ejticken@mactec.com
✓	Marc Edwards	COE	831/242-4828	Marc.A.Edwards@usace.army.mil
	Michael Taraszki	MACTEC E&C	510/628-3222	mdtaraski@mactec.com

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✓	Name	Organization	Phone	E-mail address
	Chuck Holman	Ahtna	916/372-2000	cholman@ahтнаes.com
	Kelly O'Meara	Ahtna	916/372-2000	komeara@ahтнаes.com
	Christopher Prescott	USACE	916/557-7227	Christopher.E.Prescott@usace.army.mil
MB	Melissa Broadston	Fort Ord BRAC	831/393-1284	Melissa.broadston@us.army.mil
✓	Roy Evans	HGL	303/984-1167 xt. 5	revans@hgl.com
✓	Peter Kelsal			
✓	Steve Sterling			
✓	Frank Mark			
✓	Midell Mahal	HGL		
✓	Jeff Fenton			

**HTW BCT Meeting Agenda**  
September 22, 2010 at 10:00 AM

<b>Item</b>	<b>Action</b>	<b>Comment</b>
<b>OU1 Groundwater Remediation</b>	<b>Status Update</b>	<b>HGL</b>
<b>OU1 Off-Site</b>	<b>Status Update</b>	
<b>OU2 and 2/12 Treatment Systems</b>	<b>Status Update</b>	
<b>Other Groundwater Issues</b>	<b>Status Update</b>	
<b>OUCTP</b>	<b>Status Update</b>	
<b>OU2 Landfill</b>	<b>Status Update</b>	
<b>FFA Schedule</b>	<b>Update</b>	

Combined MR and HTW – 11:30 AM

<b>Site 39 Remediation</b>	<b>Update</b>	
<b>Property Transfer</b>	<b>Update</b>	
<b>Community Relations</b>		
<b>Calendars/ Next BCT Meeting</b>	<b>Schedule</b>	

# Site 39 Remedial Action Status Update 09/21/2010

## Ongoing Documents

- Issue Appendix SSWP (FWV) for HA 28 for Agency review.

## Ongoing Engineering Activities

- None

## Construction Activities

### Site 39

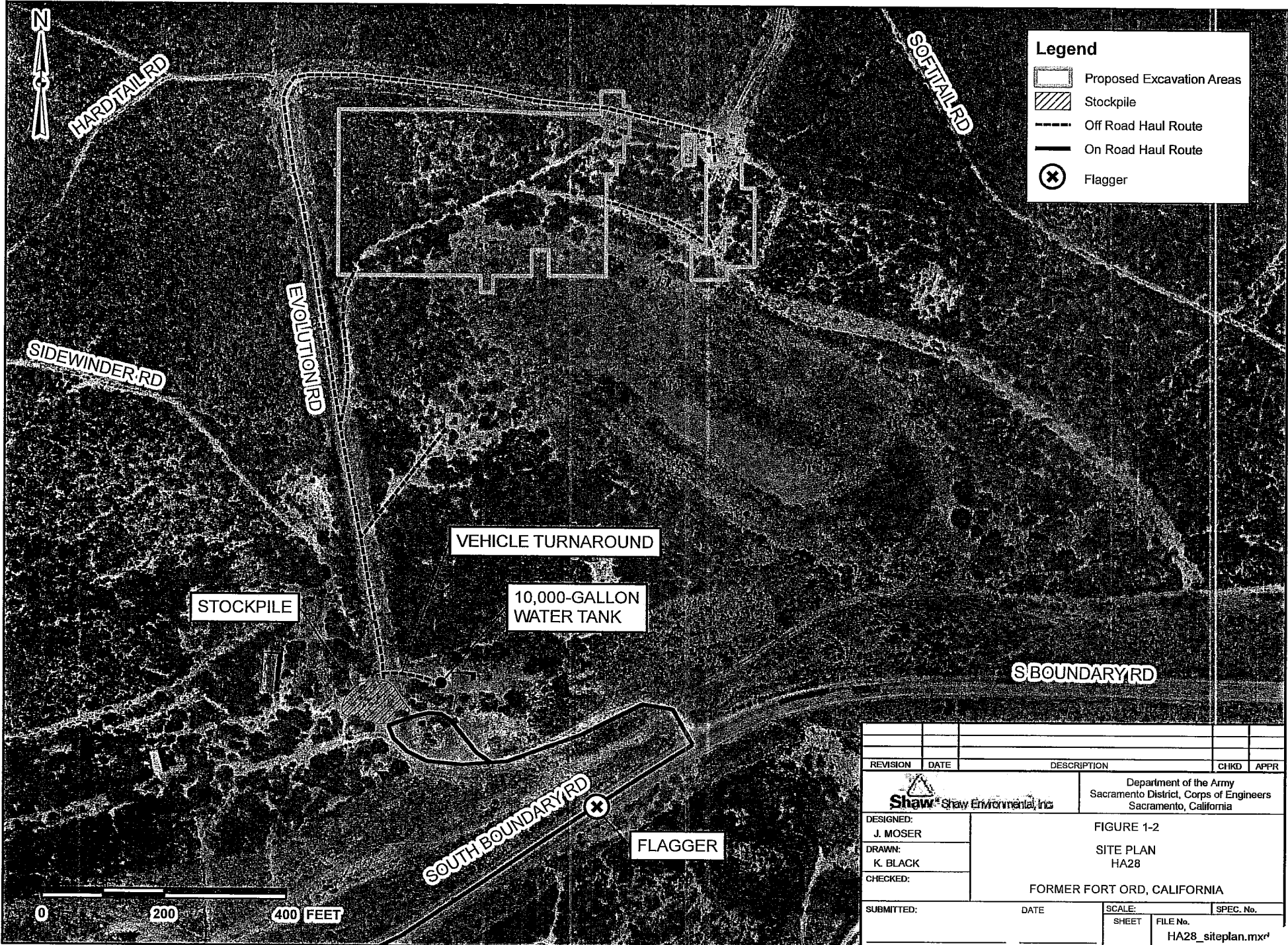
- Surveying, bio clearance, and mowing/limbing
  - Completed HAs 27, 27A, 29, 33, 36, 43, 18, 22, 23, 19, 26, 48, 26, and 44
  - Continue at HAs 39/40 and 28
- Excavation
  - Completed HAs 27, 27A, 29, 33, 36, 43, 23, 22, 18, 19, and 48
  - Completed HA 26 on 9/2
  - Completed one over-ex at 26 based on received results
  - Completed HA 44 on 9/8
  - Started HA 39/40 on 9/16
  - Planning for HA 28
- Sampling
  - Completed HAs 27, 27A, 29, 33, 43, 22, 23, 18, 36, 19, and 48
  - Completed HAs 26 and 44 – waiting for analytical results
- QC Seeding
  - Recovered all 16 seeds placed to date
  - Place two seeds at HA 39/40
  - Place two seeds at HA 28
- Pre-remediation Subsurface Removal
  - HA 26 complete
  - Start HA 28 on 9/27
- Regrading
  - Completed HAs 27, 43, 33, 22, 23, 27A, 18, 29, and 36
  - Start HA 19
- Post-remediation DGM Survey of New Surface
  - DGM and reacquisition completed HAs 27, 43, 33, 22, 23, 27A, 18, 29, and 36
  - Started HA 19 on 9/20
- Post-remediation Subsurface Removal of New Surface
  - Completed HAs 27A and 36
  - Evaluation of DGM data
  - Continue subsurface removal
- Site Restoration after Subsurface Removal
  - Planning and site evaluation

### OU2 Landfills






- Completed Phases 1 and 2 vegetative layer removal
- Placed soil from HA 27, 27A, 29, 33, 36, 22, 23, 43, 18, 19, 48, 26, and 44
- Implement erosion control measures, as needed
- Completed moving 12,000cy soil into Area E and stockpile base rock


## Technical Memorandum

Tech Memos (TM) will present analytical results with the objective of receiving preliminary concurrence from Agencies that remediation is complete and acceptable and re-contouring/ restoration can occur. (see attached table).



**Legend**

-  Proposed Excavation Areas
-  Stockpile
-  Off Road Haul Route
-  On Road Haul Route
-  Flagger

REVISION	DATE	DESCRIPTION	CHKD	APPR
		Department of the Army Sacramento District, Corps of Engineers Sacramento, California		
DESIGNED:	FIGURE 1-2 SITE PLAN HA28 FORMER FORT ORD, CALIFORNIA			
J. MOSER				
DRAWN:				
K. BLACK				
CHECKED:				
SUBMITTED:	DATE	SCALE:	SPEC. No.	
			SHEET	FILE No. HA28_siteplan.mxd

### Technical Memorandum Status Update

HA	Issued to Army for review	Issued to Agencies for review	Comments		
			EPA	DTSC	RWQCB
27	3/12	3/18, 4/12	5/5, add BU	3/22, 5/5	5/4, No Comment
22	4/12	4/12	5/5, No Comment	Ok at BCT	No Comment
43	4/20	4/20	5/5, No Comment	Ok at BCT	4/21, No Comment
36	4/23	4/26, 5/21	5/6, terminology	5/17, 5/26, No Comment	4/26, No Comment
23	5/17	6/4	Ok at BCT	7/13, typo, no comment	6/7, No Comment
33	6/4	6/22	7/6, no comment	7/13, no comment	No Comment
27A	7/1	7/6	ok at BCT, 7/14	7/21, no comment	No Comment
29	7/7	7/12	7/22, no comment	8/6, calc comment, ok	No Comment
18	7/9	7/12	7/22, no comment	7/22, typo, 7/27 no add comment	No Comment
19	8/20	8/23	8/26, no comment	9/8, 9/15 No comments	No Comment
48					
44					
26					
39/40					
28					

**Site 39 Remediation  
Excavated Volume  
(as of 9/20/2010)**

Summary						
Historical Area	FS Total Plan (bank cy)	Actual Plan To Date (bank cy)	% FS Total Plan To Date	OX/SP To Date (bank cy)	Total To Date (bank cy)	Remediation Status
18	2,730	2,730	100%		2,730	complete
18 OVEREX				20	20	complete
22	80	100	100%		100	complete
23	440	440	100%		440	complete
27	120	120	100%		120	complete
27A	1,030	1,030	100%		1,030	complete
27A OVEREX				470	470	complete
27A STOCKPILE				240	240	complete
29	2,580	2,580	100%		2,580	complete
29 OVEREX				330	330	complete
29 STOCKPILE				280	280	complete
33	20	20	100%		20	complete
36	2,750	2,580	100%		2,580	complete
36 OVEREX				40	40	complete
43	150	150	100%		150	complete
19	26,510	26,510	100%		26,510	complete
19 OVEREX		40		40	40	complete
26	24,760	24,760	100%		24,760	
26 OVEREX				70	70	
AUSTIN STOCKPILE						
48	140	140	100%		140	complete
44	3,340	3,340	100%		3,340	complete
44 OVEREX				230	230	
44 STOCKPILE				140	140	
39/40	6,520	6,520	10%		650	
28	6,920	6,920	0%		-	
<b>Total</b>	<b>78,990</b>	<b>77,930</b>	<b>86%</b>	<b>1,360</b>	<b>67,010</b>	

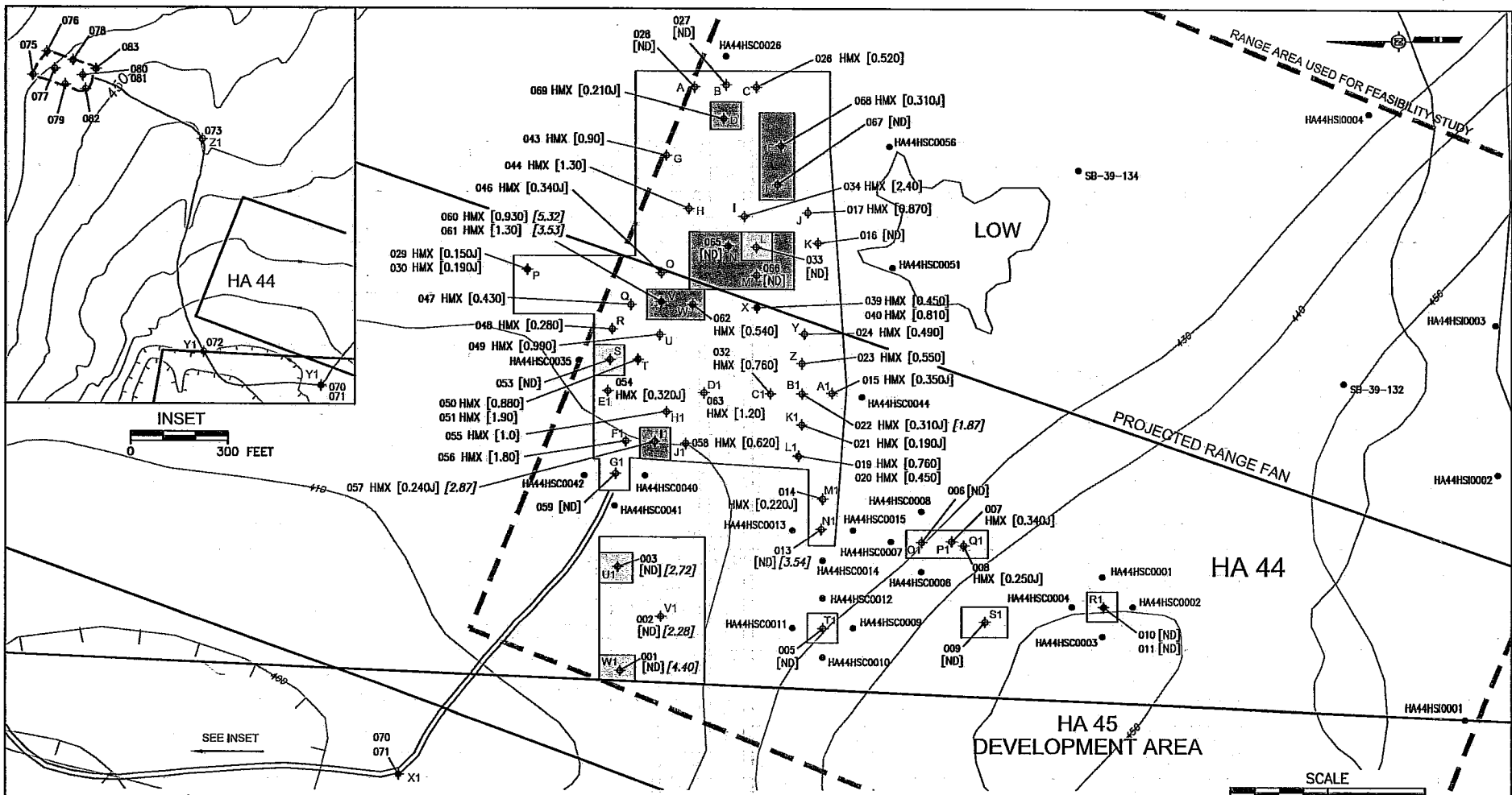
Note:

$$\% \text{ FS Total Plan To Date} = \frac{\text{Total To Date (including OX/SP)}}{\text{FS Total Plan}}$$

**Site 39 MEC/MD Found**

No.	Munitions Response Site	Burn Unit	Historical Area	Date	Item	Description	Step	Type
1	MRS-BLM	1	27	11/04/09	Grenade, hand, practice, M69	Excavation	1	MD
2	MRS-BLM	5	29	11/23/09	Projectile, 40mm, practice, M781	Excavation	1	MD
3	MRS-BLM	5	29	11/23/09	Cartridge, 40mm, practice, M781	Stockpile	5	DMM
4	MRS-BLM	3	23	12/22/09	Grenade, hand, smoke, M18 series	mowing/Excavation	1	DMM
5	MRS-BLM	5	29	12/29/09	Cartridge, 40mm, practice, M781	Stockpile	5	DMM
6	MRS-BLM	5	29	12/29/09	Cartridge, 40mm, practice, M781	Stockpile	5	DMM
7	MRS-BLM	21	36	01/11/10	Projectile, 40mm, practice, M407A1	Outside remediation	NA	MD
8	MRS-BLM	21	36	01/14/10	Grenade, hand, smoke, white phosphorous, M34	Stockpile	5	MD
9	MRS-BLM	21	36	01/27/10	Igniter, time fuse, blasting, M2	Excavation	1	MD
10	MRS-BLM	21	36	01/28/10	Grenade, hand, smoke, white phosphorous, M34	Excavation	1	MD
11	MRS-BLM	3	23	02/17/10	Cartridge, 40mm, practice, M781	Excavation	1	DMM
12	MRS-BLM	Watkins Gate	18	03/04/10	Grenade, hand, training, MK1A1	Excavation	1	MD
13	MRS-BLM	2	26	07/12/10	Grenade, hand, practice, M69	Excavation	1	MD
14	MRS-BLM	2	26	07/12/10	Signal, illumination, ground, M125 series	Excavation	1	MD
15	MRS-BLM	2	26	07/12/10	Projectile, 60mm, mortar, illumination, M83 series	Excavation	1	MD
16	MRS-BLM	2	26	08/04/10	Projectile, 37mm, AP-T, M51 series (2)	Excavation	1	MD
17	MRS-BLM	2	26	08/05/10	Projectile, 37mm, AP-T, M51 series (2)	Excavation	1	MD
18	MRS-BLM	2	26	08/05/10	Projectile, 37mm, AP-T, M51 series (3)	Stockpile	3	MD
19	MRS-BLM	2	26	08/09/10	Projectile, 37mm, AP-T, M51 series	Excavation	1	MD
20	MRS-BLM	Ranges 43-48	44	08/09/10	Projectile, 40mm, practice, M407A1	Excavation	3	UXO
21	MRS-BLM	2	26	08/10/10	Projectile, 37mm, AP-T, M51 series	Excavation	1	MD
22	MRS-BLM	2	26	08/11/10	Projectile, 37mm, AP-T, M51 series	Excavation	1	MD
23	MRS-BLM	2	26	08/12/10	Projectile, 37mm, AP-T, M51 series (2)	Excavation	1	MD
24	MRS-BLM	2	26	08/17/10	Projectile, 37mm, AP-T, M51 series (4)	Excavation	1	MD
25	MRS-BLM	2	26	08/19/10	Projectile, 37mm, AP-T, M51 series (2)	Excavation	1	MD
26	MRS-BLM	2	26	08/23/10	Projectile, 37mm, AP-T, M51 series	Excavation	1	MD
27	MRS-BLM	Ranges 43-48	44	09/02/10	Projectile, 40mm, practice, M407A1 (2)	Excavation/Screening	3	MPPEH
28	MRS-BLM	Ranges 43-48	44	09/02/10	Projectile, 40mm, high explosive dual-purpose,	Excavation/Screening	3	MPPEH
29	MRS-BLM	Ranges 43-48	44	09/02/10	Ordnance components (fuzes, 40mm frag ball)	Excavation/Screening	3	MPPEH
31	MRS-BLM	22	39/40	09/21/10	Rocket, Practice, 3.5-inch M29A2	Excavation	1	MPPEH





- SOIL SAMPLE LOCATION
  - ◆ CONFIRMATION SAMPLE LOCATION
  - ◆ CONFIRMATION SAMPLE LOCATION WITH FIELD DUPLICATE
- [4.40] LEAD RESULTS (mg/kg)
- HMX [0.340J] EXPLOSIVES CONCENTRATION (mg/kg)
- A SEE TABLE 1, HA 44 RANGE-WIDE WEIGHTED AVERAGE

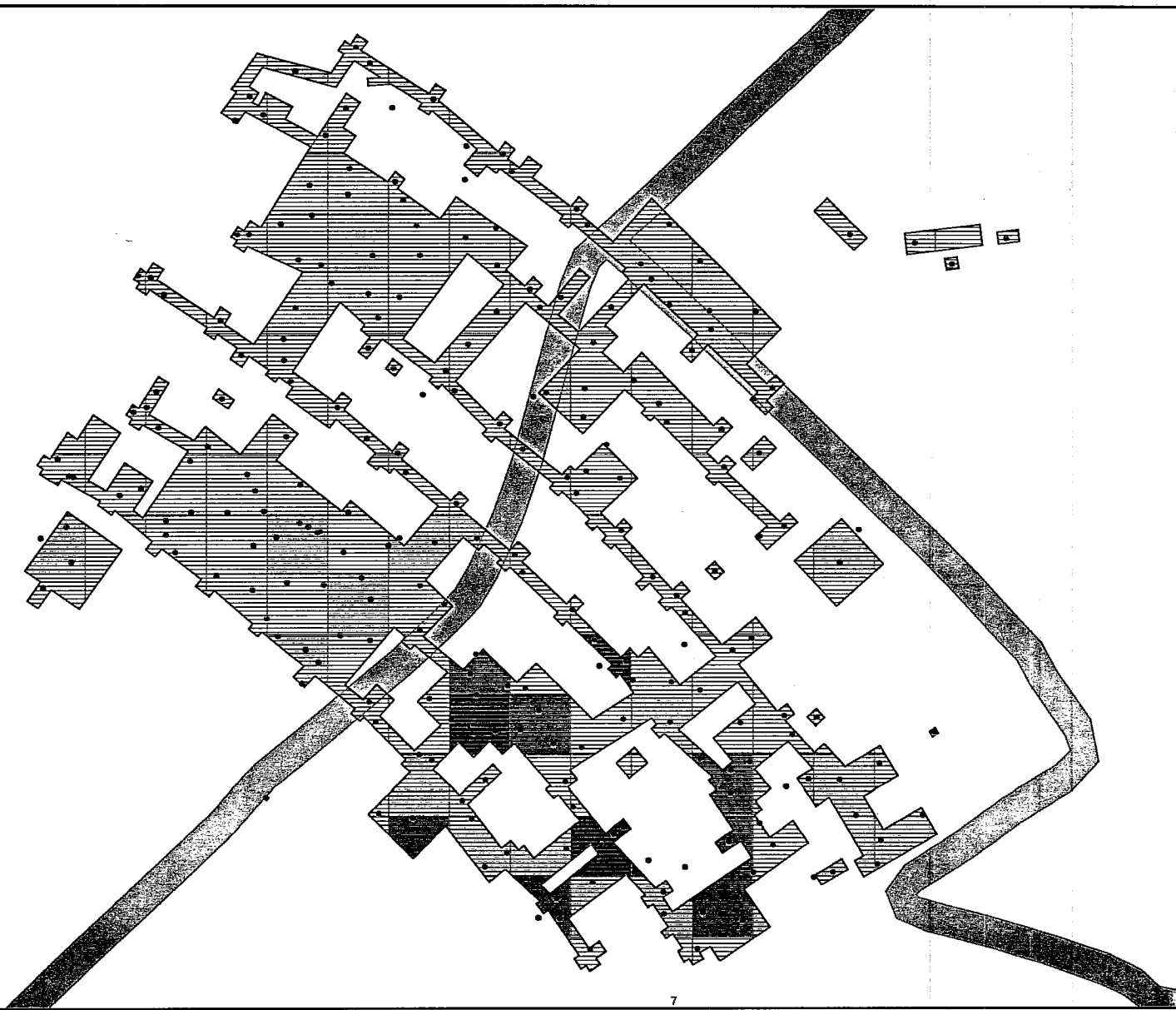
- HAUL ROUTE
- AREA EXCAVATED TO 1 FT. DEPTH
- ▨ AREA EXCAVATED TO 2 FT. DEPTH
- ▩ AREA EXCAVATED TO 3 FT. DEPTH
- ▧ AREA EXCAVATED TO 3.5 FT. DEPTH
- SOIL STOCKPILE LOCATION

- HABITAT QUALITY DESIGNATION:
- LOW
  - MEDIUM
  - HIGH
  - VERY HIGH








- NOTES:
- CHARACTERIZATION SAMPLE LOCATIONS ARE IDENTIFIED HERE BY STATION NAME. SEE TABLE 1 FOR SAMPLE NUMBER.
  - CONFIRMATION SAMPLE LOCATIONS ARE IDENTIFIED HERE BY SAMPLE NUMBER. FOR CLARITY, PREFIX HA44-0 IS NOT SHOWN.

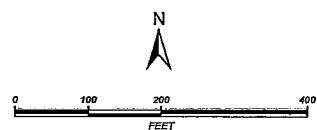
SCALE  
0 80 160 FEET

		DEPARTMENT OF THE ARMY SACRAMENTO DISTRICT, CORPS OF ENGINEERS SACRAMENTO, CALIFORNIA	
DESIGNED: A. MOSER	FIGURE 1 CONFIRMATION SAMPLING RESULTS HA 44		
DRAWN: K. BLACK	FORMER FORT ORD, CALIFORNIA		
CHECKED:	DATE APPROVED:	FILE No.	HA44_excav_confirm





**LEGEND**

- Confirmation Sample Location (Lab Results Received)
- Confirmation Sample Location (No Lab Results)
-  Excavation Complete (13.9 acres)
-  No MD
-  < 32 Lbs MD
-  32 - 75 Lbs MD
-  75 - 225 Lbs MD
-  > 225 Lbs MD
-  Permanent Fuel Break



Projection: NAD\_1983\_StatePlane\_California\_IV\_FIPS\_0404\_Feet

Data presented on map are current as of the date below. Data have not undergone a quality control review and therefore, are subject to change.

 U.S. ARMY CORPS OF ENGINEERS SACRAMENTO DISTRICT		
FIGURE NUMBER	FORMER FORT ORD HA26 Lead Remediation Tracking as of 09-15-2010	
N/A		
 Shaw Environmental, Inc.		
REV.	PROJECT NUMBER	FILE NAME
	846075	SEE FOOTER

**OU2 Landfills  
Status Update  
09/22/2010**

**Ongoing Documents**

- Issued 2009 Annual OU2 Landfills Report for USACE review

**Recently Completed Activities**

- Quarterly TTU maintenance/inspection

**Planned and Ongoing Activities**

- Implement erosion control measures, as needed
- Haul and place soil from Site 39 Range Remediation at Area E vertical expansion
- Conduct Annual TTU Source Testing
- Conduct Annual VOC sampling
- Conduct Quarterly methane monitoring

**Thermal Treatment Unit  
Operation Summary  
2007 - 2010**

<b>TREATMENT SYSTEM OPERATION SUMMARY</b>	
<b>Treatment System Start Date:</b>	6/4/2001
<b>TTU Start Date:</b>	4/4/2006
<b>Last Reading Date/Time:</b>	9/10/2010 15:30
<b>Historical through 2009 (TTU only):</b>	
Total TTU Hours:	32,808
Total TTU Hours Operated:	14,292
% TTU Operation:	43.6%
Total Pounds of Methane Removed:	1,802,161
Total Pounds of VOCs Removed:	202
<b>Current Year 2010</b>	
Total Hours:	6,312
Total Hours Operated:	1795
% TTU Operation:	28.4%
Total Pounds of Methane Removed:	156,520
<b>Cumulative:</b>	
% TTU Operation:	41.1%
Total Pounds of Methane Removed:	1,958,681

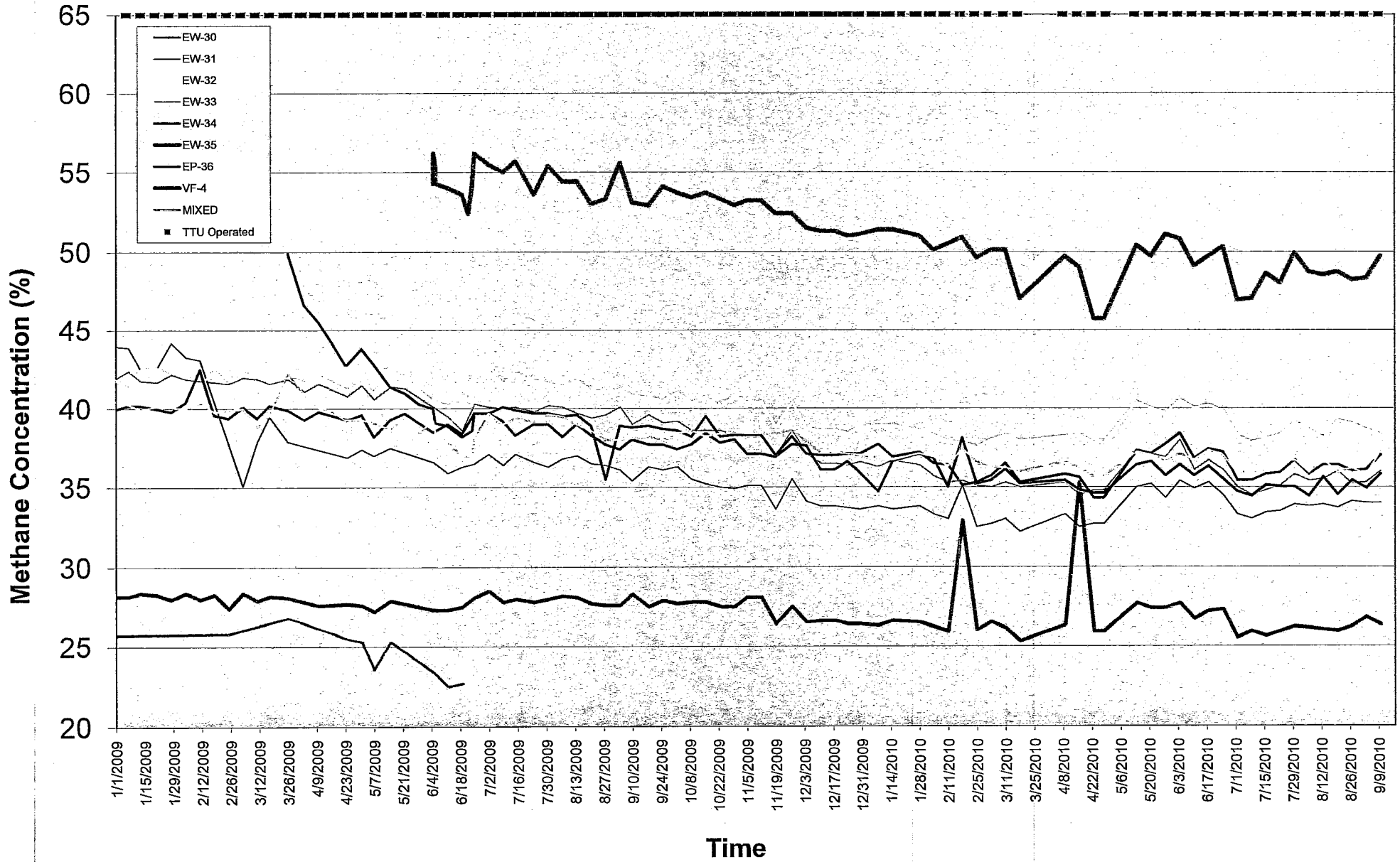
	Total Pounds Removed	Pounds/week
Pounds of Methane Removed (2007)	540,920	10,374
Pounds of Methane Removed (2008)	293,169	5,622
Pounds of Methane Removed (2009)	455,507	8,736
Pounds of Methane Removed (2010)	156,520	4,166

<b>EXTRACTION SYSTEM (2010)</b>					
Location	Last Instantaneous Methane Reading (%)	Last Instantaneous Flow Rate Reading (scfm)	Current Methane Removal Rate (lbs/day)	2010 % Operation	2010 Methane Removed (Lbs)
<b>Area E</b>					
EP-36	35.8	22	464.6	27.3	31801
<b>Area F</b>					
EW-31	34	2	40.1	27.3	8289
EW-32	38.3	14	316.3	26.5	22900
EW-33	36	17	361.0	27.3	26393
EW-34	37	22	480.1	27.3	40678
VF-4	49.7	3	87.9	27.3	9288
<b>Area D</b>					
EW-35	26.3	2	31.0	27.3	6443

**Notes:**

1. TTU shut down from 3/19 thru 4/6 to allow LFG rebound.
2. TTU O&M performed from on 4/20-21
3. TTU shut down from 4/30 thru 5/11 to allow LFG rebound.

**Methane Concentration vs. Time  
(after 01-01-2009)  
Interior Extraction System**



# OPERABLE UNIT CARBON TETRACHLORIDE PLUME A-AQUIFER REMEDIAL ACTION

STATUS – September 22, 2010

## FIELD WORK

- Final RA Work Plan/RD (Appendix A – A-Aquifer) complete – August 28.
- Installation and development of wells at Areas 1A and 1B complete – January 16
- Installation of process equipment at Area 1A complete – July 10.
- Baseline sampling at Area 1A complete – August 12.
- Start-up testing at Area 1A complete – September 4.
- Installation and development of wells at Area 1C complete – September 4.
- Substrate injection at Area 1A initiated – September 14.
- Substrate injection at Area 1A completed – October 8.
- Groundwater recirculation at Area 1A completed – November 12.
- Installation of process equipment at Area 1B complete – January 6.
- Installation and development of new well at Area 1C complete – January 29.
- Start-up testing at Area 1B complete – February 26.
- Substrate injection at Area 1B initiated – March 2.
- Installation and development of wells at Areas 2A and 2B complete – March 23.
- Substrate injection at Area 1B completed – May 6.
- Groundwater recirculation at Area 1B completed – June 16.
- Issued technical memorandum for post-treatment and long-term monitoring at Deployment Area 1A – June 3.
- Baseline biological survey in FONR South Reserve – April-June 2010.
- Installation of process equipment at Area 1C complete – July 28.
- Final RAWP Appendix B – Upper 180-Foot Aquifer – July 16.
- Draft Final RAWP Appendix C – Lower 180-Foot Aquifer – August 2. Comments due September 9.
- Substrate injection at Area 1C initiated – August 5.

## SCHEDULE

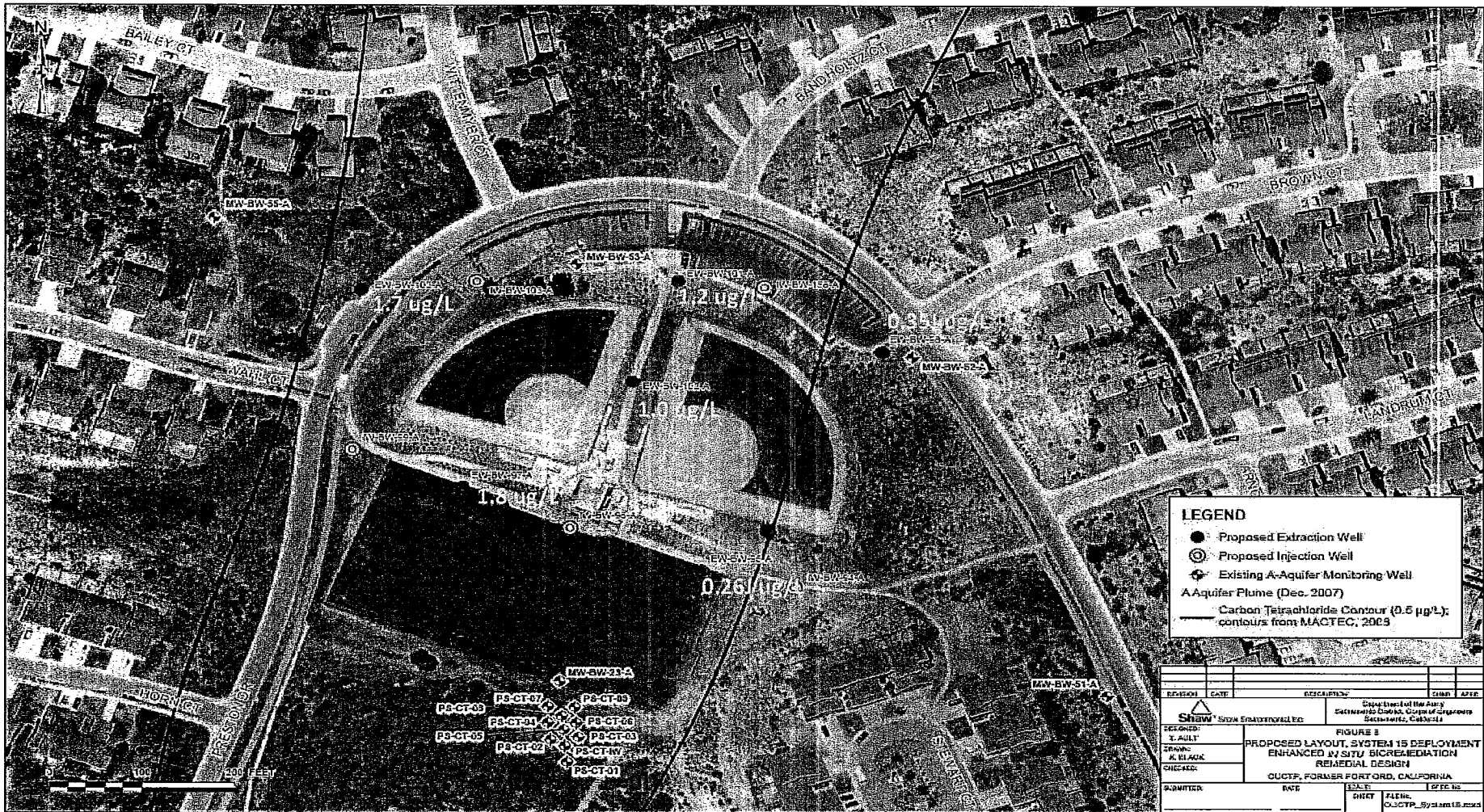
- Subsequent quarterly monitoring for EISB pilot study conducted under Groundwater Monitoring Program.
- Groundwater monitoring ongoing at Area 1B through September 24.
- Substrate injection at Area 1C completed – September 22. Recirculating groundwater.
- Installation of process equipment at Area 2A ongoing.
- Installation of extraction well in Upper 180-Foot Aquifer complete. Addressing well development.

## DATA (Preliminary)

- Preliminary EISB data for Area 1B and Area 1C.

## PROBLEMS/CHANGES

- FWV TII-142 issued to provide analytical requirements for methods not included in the CDQMP (metabolic acids [EPA 300.0M], dissolved gases [RSK-175], and total heterotrophic anaerobic bacteria [SM9215B]).
- During installation of extraction well EW-BW-143-A, the auger ceased and broke below ground surface. Auger was above the bentonite seal and approximately 20 feet below ground surface. Auger was grouted in place and is not expected to impact EISB or monitoring activities.
- Following installation of extraction well EW-BW-142-A the well was driven over. The well was video logged and a failure in the well casing was observed at approximately 8 feet bgs. Well repair completed March 4.
- For Area 1C, a new formulation of substrate is being used that includes a mixture of fatty acids (lactate, propionate, acetate, etc.) and carbohydrates proven to enhance reductive dechlorination better than sodium lactate.
- During well development for the Upper 180-Foot extraction well EW-OU2-09-180, low production rates were observed. Evaluating methods to recondition/redevelop well to improve production.



Baseline Sample  
Carbon Tetrachloride Concentrations









Method<sup>a</sup>

Sample ID	Method <sup>a</sup>	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A	EW-BW-97-A
Well Type		extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction
Date		Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 17	Week 21	Week 26
		5/5/2010	5/12/2010	5/19/2010	5/26/2010	6/2/2010	6/9/2010	6/16/2010	6/30/2010	7/28/2010	8/31/2010
well flowrate (operating)		5.7	4.6	5.9	2.6	2.2	5.3	3.3	0.0	0.0	0.0
alkalinity (CaCO <sub>3</sub> total)	HACH <sup>b</sup>	65 mg/L	67 mg/L	83 mg/L	95 mg/L	110 mg/L	123 mg/L	129 mg/L	141 mg/L	124 mg/L	146 mg/L
pH	meter <sup>c</sup>	6.54	6.60	6.64	6.73	6.67	6.73	6.50	6.50	6.64	6.50
dissolved oxygen	meter <sup>c</sup>	10.27 ppm	6.89 ppm	5.55 ppm	3.67 ppm	3.43 ppm	2.92 ppm	6.3 ppm	2.15 ppm	0 ppm	1.83 ppm
oxidation reduction potential	meter <sup>c</sup>	128 mV	56 mV	71 mV	3 mV	-45 mV	-32 mV	-71 mV	-110 mV	-66 mV	-36 mV
conductivity	meter <sup>c</sup>	53.5 mS/cm	65.5 mS/cm	64 mS/cm	69.7 mS/cm	71.3 mS/cm	74.5 mS/cm	78 mS/cm	97.1 mS/cm	108 mS/cm	99.9 mS/cm
turbidity	meter <sup>c</sup>	25 NTU	28 NTU	12 NTU	11 NTU	5 NTU	45 NTU	253 NTU	16 NTU	163 NTU	2.1 NTU
temperature	meter <sup>c</sup>	17.5 °C	17.6 °C	17.9 °C	19 °C	18.8 °C	18.7 °C	19.1 °C	17.9 °C	20.8 °C	19.5 °C
nitrate	300.0					6570 µg/L			4360 µg/L	6520 µg/L	5320 µg/L
nitrite	300.0					<100 µg/L			67.1J µg/L	<100 µg/L	<100 µg/L
sulfate	300.0					29500 µg/L			26900 µg/L	52700 µg/L	37000 µg/L
ortho-phosphate	300.0										
dissolved iron	6010B					110J µg/L			1960 µg/L	1760 µg/L	3200 µg/L
manganese	6010B					512 µg/L			1750 µg/L	699 µg/L	1580 µg/L
arsenic	6010B					<10 µg/L			<10 µg/L	<10 µg/L	6.28J µg/L
methane	RSK 175 <sup>d</sup>										
ethane	RSK 175 <sup>d</sup>										
lactate	300.0M										
propionate	300.0M										
acetate	300.0M										
carbon tetrachloride	8260B					1.5 µg/L			0.67 µg/L	0.43J µg/L	0.71 µg/L
chloroform	8260B					0.32J µg/L			<0.5 µg/L	<0.5 µg/L	0.24J µg/L
dichloromethane	8260B					<5.0 µg/L			<5.0 µg/L	<5.0 µg/L	<5.0 µg/L
chloromethane	8260B					<1.0 µg/L			<1.0 µg/L	<1.0 µg/L	<1.0 µg/L
trichloroethene	8260B					0.46J µg/L			0.49J µg/L		0.34J µg/L
methyl tert-butyl ether	8260B					1.6 µg/L			1.0J µg/L	0.40J µg/L	1.4 µg/L
acetone	8260B					10 µg/L			14 µg/L		
2-butanone	8260B					10J µg/L			15J µg/L		
carbon disulfide	8260B								0.45J µg/L		0.24J µg/L

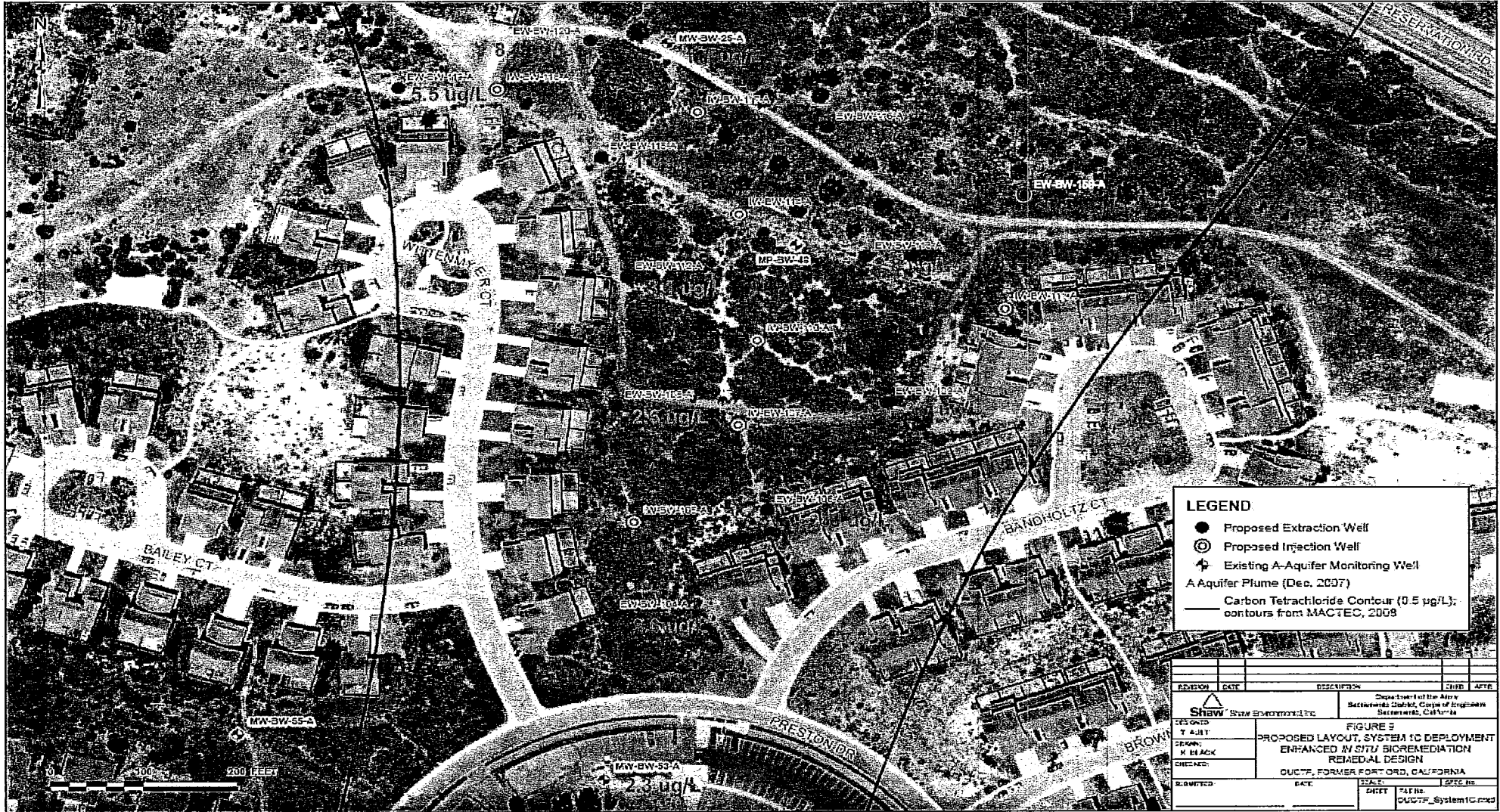
Method<sup>a</sup>

Sample ID		EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A	EW-BW-100-A
Well Type		extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction
Date		baseline	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8
		1/28/2010	3/3/2010	3/10/2010	3/17/2010	3/24/2010	3/31/2010	4/7/2010	4/14/2010	4/21/2010	4/28/2010
well flowrate (operating)		NA	7.0	7.2	7.3	7.4	7.2	6.3	6.3	6.2	2.8
alkalinity (CaCO <sub>3</sub> total)	HACH <sup>b</sup>	75 mg/L	64 mg/L	70 mg/L	68 mg/L	67 mg/L	75 mg/L	85 mg/L	97 mg/L	107 mg/L	120 mg/L
pH	meter <sup>c</sup>	6.46	6.52	6.53	6.51	6.64	6.56	6.64	6.70	6.75	6.80
dissolved oxygen	meter <sup>c</sup>	9.09 ppm	9.05 ppm	9.46 ppm	9.51 ppm	7.56 ppm	8.43 ppm	9.05 ppm	7.36 ppm	5.84 ppm	7.07 ppm
oxidation reduction potential	meter <sup>c</sup>	189 mV	176 mV	179 mV	137 mV	140 mV	67 mV	-26 mV	-42 mV	-41 mV	-47 mV
conductivity	meter <sup>c</sup>	93.5 mS/cm	73.1 mS/cm	71.6 mS/cm	70.5 mS/cm	72 mS/cm	71.4 mS/cm	74.8 mS/cm	81.1 mS/cm	84.3 mS/cm	89.3 mS/cm
turbidity	meter <sup>c</sup>	48 NTU	4 NTU	31 NTU	12 NTU	23 NTU	15 NTU	12 NTU	13 NTU	18 NTU	11 NTU
temperture	meter <sup>c</sup>	17.7 °C	17.6 °C	17.9 °C	17.9 °C	17.9 °C	17.6 °C	18.0 °C	18.2 °C	17.5 °C	18.6 °C
nitrate	300.0	18400(18400) µg/L				12300 µg/L		11400 µg/L			7810 µg/L
nitrite	300.0	<100(<100) µg/L				<100 µg/L		<100 µg/L			<100 µg/L
sulfate	300.0	44400(44300) µg/L				33700 µg/L		32600 µg/L			31100 µg/L
ortho-phosphate	300.0	<500(<500) µg/L									
dissolved iron	6010B	<200 µg/L				<200 µg/L		<200 µg/L			118J µg/L
manganese	6010B	6.25J µg/L				<10 µg/L		261 µg/L			1310 µg/L
arsenic	6010B	<10 µg/L				<10 µg/L		<10 µg/L			<10 µg/L
methane	RSK 175 <sup>d</sup>	<2.0 µg/L									
ethane	RSK 175 <sup>d</sup>	<2.0 µg/L									
lactate	300.0M	<100 µg/L									
propionate	300.0M	<100 µg/L									
acetate	300.0M	<100 µg/L									
carbon tetrachloride	8260B	1.7 µg/L				1.4 µg/L		1.6 µg/L			1.5 µg/L
chloroform	8260B	<0.5 µg/L				0.20J µg/L		0.26J µg/L			0.30J µg/L
dichloromethane	8260B	<5.0 µg/L				<5.0 µg/L		<5.0 µg/L			<5.0 µg/L
chloromethane	8260B	<1.0 µg/L				<1.0 µg/L		<1.0 µg/L			<1.0 µg/L
acetone	8260B	11 µg/L									11 µg/L
2-butanone	8260B										18J µg/L
trichloroethene	8260B	0.23J µg/L				0.57 µg/L		0.76 µg/L			0.67 µg/L
carbon disulfide	8260B							0.20J µg/L			0.27J µg/L





Sample ID	Method <sup>a</sup>	EW-BW-101-A	EW-BW-101-A	EW-BW-101-A	EW-BW-101-A	EW-BW-101-A	EW-BW-101-A	EW-BW-101-A	EW-BW-101-A	EW-BW-101-A	
Well Type		extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	
Date		Week 9	Week 10	Week 11	Week 12	Week 13	Week 14	Week 15	Week 17	Week 21	
		5/5/2010	5/12/2010	5/19/2010	5/26/2010	6/2/2010	6/9/2010	6/16/2010	6/30/2010	7/28/2010	
		Week 26									
		8/31/2010									
well flowrate (operating)		5.5	4.6	5.7	2.2	0+	7.0	2.3	0.0	0.0	0.0
alkalinity (CaCO <sub>3</sub> total)	HACH <sup>b</sup>	220 mg/L	230 mg/L	248 mg/L	258 mg/L	300 mg/L	282 mg/L	284 mg/L	415 mg/L	415 mg/L	410 mg/L
pH	meter <sup>c</sup>	6.61	6.62	6.60	6.60	6.56	6.58	6.30	6.30	6.47	6.40
dissolved oxygen	meter <sup>c</sup>	2.48 ppm	2.32 ppm	2.05 ppm	1.62 ppm	0 ppm	2.5 ppm	5 ppm	0.73 ppm	3.85 ppm	0.13 ppm
oxidation reduction potential	meter <sup>c</sup>	-65 mV	-40 mV	-56 mV	-107 mV	-139 mV	-68 mV	-87 mV	-226 mV	-143 mV	-232 mV
conductivity	meter <sup>c</sup>	91.2 mS/cm	117 mS/cm	115 mS/cm	119 mS/cm	127 mS/cm	127 mS/cm	140 mS/cm	183 mS/cm	173 mS/cm	141 mS/cm
turbidity	meter <sup>c</sup>	10 NTU	12 NTU	10 NTU	98 NTU	24 NTU	3 NTU	58 NTU	137 NTU	88 NTU	300 NTU
temperature	meter <sup>c</sup>	18.8 °C	18.7 °C	18.3 °C	18.9 °C	21.5 °C	18.4 °C	19.4 °C	19.1 °C	26 °C	18.6 °C
nitrate	300.0					<100 µg/L			<100 µg/L	<100 µg/L	<100 µg/L
nitrite	300.0					<100 µg/L			<100 µg/L	<100 µg/L	<100 µg/L
sulfate	300.0					18800 µg/L			2200 µg/L	5190 µg/L	8250 µg/L
ortho-phosphate	300.0										
dissolved iron	6010B					1080 µg/L			4750 µg/L	6600 µg/L	7740 µg/L
manganese	6010B					4170 µg/L			9270 µg/L	7990 µg/L	7030 µg/L
arsenic	6010B					<10 µg/L			12.5 µg/L	15.5 µg/L	13.3 µg/L
methane	RSK 175 <sup>d</sup>										
ethane	RSK 175 <sup>d</sup>										
lactate	300.0M	<	<	<	<	<	<	<	<100 µg/L	<	<200 µg/L
propionate	300.0M	<	<	<	<	<	<	<	325000 µg/L		138000 µg/L
acetate	300.0M	<	<	<	<	<	<	<	319000 µg/L		143000 µg/L
carbon tetrachloride	8260B					0.55 µg/L			<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
chloroform	8260B					<0.5 µg/L			<0.5 µg/L	<0.5 µg/L	<0.5 µg/L
dichloromethane	8260B					<5.0 µg/L			0.81J µg/L	<5.0 µg/L	<5.0 µg/L
chloromethane	8260B					<1.0 µg/L			<1.0 µg/L	<1.0 µg/L	<1.0 µg/L
trichloroethene	8260B					0.52 µg/L			0.58 µg/L	0.42J µg/L	0.45J µg/L
acetone	8260B					24 µg/L			21 µg/L	17 µg/L	15 µg/L
2-butanone	8260B					66 µg/L			58 µg/L	44 µg/L	39 µg/L
carbon disulfide	8260B					1.3 µg/L			1.5 µg/L	0.97J µg/L	0.92J µg/L
methyl tert-butyl ether	8260B					0.21J µg/L			0.31J µg/L	0.28J µg/L	0.24J µg/L



Baseline Sample Results  
Carbon Tetrachloride Detections



Summary of Enhanced *In situ* Bioremediation - Deployment Area 1C  
Baseline Analytical Results

Sample ID	Method <sup>a</sup>	EW-BW-104-A	EW-BW-106-A	EW-BW-108-A	EW-BW-109-A	EW-BW-112-A	EW-BW-113-A	MW-BW-115-A	EW-BW-116-A	EW-BW-119-A	EW-BW-120-A	EW-BW-159-A	MW-BW-25-A	MW-BW-53-A
Well Type		extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	extraction	monitoring	monitoring
Date		8/5/2010	8/5/2010	8/4/2010	8/4/2010	8/4/2010	8/5/2010	8/3/2010	8/3/2010	8/3/2010	8/3/2010	8/2/2010	8/6/2010	8/4/2010 <sup>d</sup>
Depth to Water		87.00 ft bgs	91.00 ft bgs	71.55 ft bgs	81.65 ft bgs	68.55 ft bgs	80.30 ft bgs	68.60 ft bgs	78.18 ft bgs	65.50 ft bgs	68.10 ft bgs	85.26 ft bgs	72.61 ft bgs	100.71 ft bgs
alkalinity (CaCO <sub>3</sub> total)	HACH <sup>b</sup>	108 mg/L	82 mg/L	106 mg/L	114 mg/L	138 mg/L	74 mg/L	85 mg/L	76 mg/L	54 mg/L	87 mg/L	54 mg/L	65 mg/L	65 mg/L
pH	meter <sup>c</sup>	6.18	6.95	6.66	6.56	6.82	6.22	6.70	6.78	6.07	6.69	5.97	6.52	6.65
dissolved oxygen	meter <sup>c</sup>	7.46 ppm	9.82 ppm	8.45 ppm	9.38 ppm	8.85 ppm	10.23 ppm	10 ppm	9.68 ppm	10.59 ppm	10.14 ppm	9.58 ppm	11.10 ppm	10.42 ppm
oxidation reduction potential	meter <sup>c</sup>	135 mV	119 mV	141 mV	136 mV	111 mV	125 mV	154 mV	79 mV	203 mV	111 mV	238 mV	258 mV	259 mV
conductivity	meter <sup>c</sup>	80.8 mS/cm	73.9 mS/cm	75.3 mS/cm	83 mS/cm	72.6 mS/cm	71.2 mS/cm	67.6 mS/cm	77.5 mS/cm	64.9 mS/cm	62.8 mS/cm	59.1 mS/cm	62 mS/cm	65.3 mS/cm
turbidity	meter <sup>c</sup>	301 NTU	100 NTU	136 NTU	90 NTU	300 NTU	48 NTU	127 NTU	250 NTU	440 NTU	240 NTU	222 NTU	143 NTU	99 NTU
temperature	meter <sup>c</sup>	15.6 °C	16.1 °C	15.5 °C	16.5 °C	15.6 °C	14.3 °C	15.3 °C	16.7 °C	16.9 °C	15.3 °C	16.3 °C	15.3 °C	16 °C
nitrate	300.0	6300 µg/L	9260 µg/L	4620(4630) µg/L	8250 µg/L	2750 µg/L	5640 µg/L	4510 µg/L	4940 µg/L	6170 µg/L	3790 µg/L	3110 µg/L	4840(4860) µg/L	7500 µg/L
nitrite	300.0	<100 µg/L	<100 µg/L	<100(<100) µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100(<100) µg/L	<100 µg/L
sulfate	300.0	38600 µg/L	35700 µg/L	25600(25500) µg/L	18400 µg/L	13200 µg/L	39900 µg/L	20100 µg/L	20400 µg/L	12900 µg/L	32200 µg/L	35200 µg/L	24300(24300) µg/L	24100 µg/L
ortho-phosphate	300.0													
dissolved iron	6010B	113J µg/L	<200 µg/L	<200 µg/L	64.1J µg/L	75.1J µg/L	404 µg/L	45.8J µg/L	214 µg/L	<200 µg/L	77.5J µg/L	<200 µg/L	<200 µg/L	<200 µg/L
manganese	6010B	46.2 µg/L	48.4 µg/L	55.5 µg/L	69 µg/L	101 µg/L	148 µg/L	19.4 µg/L	62.3 µg/L	5.18J µg/L	12.3 µg/L	12.3 µg/L	<10 µg/L	<10 µg/L
arsenic	6010B	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L	<10 µg/L
methane	RSK 175 <sup>d</sup>		<2.0 µg/L		<2.0 µg/L	<2.0 µg/L								
ethane	RSK 175 <sup>d</sup>		<2.0 µg/L		<2.0 µg/L	<2.0 µg/L								
lactate	300.0M	<100 µg/L	<100 µg/L	<100(<100) µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	100(<100) µg/L	<100(<100) µg/L	
propionate	300.0M	<100 µg/L	<100 µg/L	<100(<100) µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	100(<100) µg/L	<100(<100) µg/L	
acetate	300.0M	<100 µg/L	<100 µg/L	<100(<100) µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	<100 µg/L	100(<100) µg/L	<100(<100) µg/L	
carbon tetrachloride	8260B	2.0 µg/L	0.28J µg/L	2.6 µg/L	3.7 µg/L	3.1 µg/L	2.8 µg/L	4.1 µg/L	2.5 µg/L	5.5 µg/L	8.4 µg/L	<0.5 µg/L	1.1 µg/L	2.3 µg/L
chloroform	8260B	0.35J µg/L	<0.5 µg/L	0.52 µg/L	0.61 µg/L	0.7 µg/L	0.38J µg/L	0.51 µg/L	0.36J µg/L	0.49J µg/L	0.97 µg/L	<0.5 µg/L	<0.5 µg/L	0.34J µg/L
dichloromethane	8260B	<5.0 µg/L	<5.0 µg/L	<5.0 µg/L	<5.0 µg/L	<5.0 µg/L	<5.0 µg/L	<5.0 µg/L	<5.0 µg/L	<5.0 µg/L	<5.0 µg/L	<5.0 µg/L	<5.0 µg/L	<5.0 µg/L
chloromethane	8260B	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L	<1.0 µg/L
bromofom	8260B													
dibromochloromethane	8260B									0.33J µg/L		0.41J µg/L		
trichloroethene	8260B	1.1 µg/L		0.92 µg/L	0.98 µg/L	1.3 µg/L	0.29J µg/L	1.2 µg/L		0.75 µg/L	2.2 µg/L			0.68 µg/L
total organic carbon	415.1												0.687J mg/L	
anaerobic heterotrophs	SM9215B <sup>e</sup>												1 x 10 <sup>5</sup> cfu/mL	

<sup>1</sup> Laboratory samples collected on 7/28/2010 as part of Deployment Area 1B Performance Monitoring.

Detections are bolded.

J qualifier indicates that the associated numeric value is an estimate.

<sup>a</sup> U.S. Environmental Protection Agency Test Methods for Evaluating Solid Waste, SW-846, Upats III

<sup>b</sup> HACH Alkalinity Test Kit Model AL-DT

<sup>c</sup> Horiba U10 Handheld Water Quality Meter

<sup>d</sup> R. S. Kerr Standard Operating Procedures, Dissolved Methane by EPA SOP 175, Revision 0

<sup>e</sup> Standard Methods for Evaluation of Water and Wastewater, 18<sup>th</sup> Edition.

cfu/mL denotes colony forming units per milliliter.

°C denotes degrees Celsius.

ft bgs denotes feet below ground surface.

µg/L denotes micrograms per liter.

µS/cm denotes microsiemens per centimeter.

mg/L denotes milligrams per liter.

mV denotes millivolts.

NTU denotes number of turbidity units.

ppm denotes parts per million.

Area 1C OUCTP EISB  
System Operation  
Preliminary Data Summary

System Start Date: 8/12/2010

Date:

8/12/2010  
0 day

8/18/2010  
6 day

Extraction Well	Model Flowrate (gallons per minute)	Instantaneous		Instantaneous	
		Total Flow (gallons)	Flowrate (gallons per minute)	Total Flow (gallons)	Flowrate (gallons per minute)
EW-BW-104-A	8.1	0	8.6	74,593	7.5
EW-BW-106-A	16	0	15.7	133,508	15.9
EW-BW-108-A	21.6	0	20.6	176,121	20.7
EW-BW-109-A	16	0	13.7	177,387	14.0
EW-BW-112-A	13.9	0	13.4	115,246	13.5
EW-BW-113-A	11.3	0	10.2	84,775	8.8
EW-BW-115-A	16.3	0	16.0	140,480	16.3
EW-BW-116-A	9.1	0	8.8	76,702	8.8
EW-BW-119-A	10.5	0	9.3	79,567	8.9
EW-BW-120-A	17.5	0	18.0	154,914	17.9
EW-BW-159-A	8.6	0	8.4	71,683	8.3
<b>Total</b>	<b>148.9</b>	<b>0</b>	<b>143.7</b>	<b>1,284,978</b>	<b>140.6</b>
<b>Total Flow</b>				<b>1,157,544</b>	<b>134</b>

Injection Well	Model Flowrate (gallons per minute)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 0 (gallons)	Substrate Injection Rate on 8/12 (gallons per hour)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 6 (gallons)	Substrate Injection Rate 8/12 through 8/18 (gallons per hour)
P-301				0	14.37			265	14.37
IW-BW-107-A	18.3	0	23.8	0	12.40	186,943	20.8	230	12.40
P-302				0	12.40			230	12.40
IW-BW-110-A	24.2	0	15.1	0	15.82	183,099	19.4	293	15.82
P-303				0	15.82			293	15.82
IW-BW-111-A	21	0	17.8	0	13.95	152,317	17.8	258	13.95
P-305				0	13.95			258	13.95
IW-BW-114-A	22.7	0	13.5	0	15.04	135,780	18.8	278	15.04
P-304				0	15.04			278	15.04
IW-BW-117-A	21.2	0	16.2	0	14.07	134,842	16.6	261	14.07
P-306				0	14.07			261	14.07
IW-BW-118-A	21.4	0	15.4	0	12.45	132,726	16.1	231	12.45
P-307				0	12.45			231	12.45
<b>Total</b>	<b>150.2</b>	<b>0</b>	<b>127.1</b>	<b>0</b>	<b></b>	<b>1,128,184</b>	<b>128.0</b>	<b>1815</b>	<b></b>

Area 1C OUCTP EISB  
System Operation  
Preliminary Data Summary

System Start Date:

Date: 8/25/2010  
13 day

9/1/2010  
20 day

9/8/2010  
27 day

Extraction Well	8/25/2010 13 day		9/1/2010 20 day		9/8/2010 27 day	
	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
EW-BW-104-A	150,551	7.4	219,452	7.5	282,338	7.2
EW-BW-106-A	293,889	15.9	441,822	12.9	736,599	13.0
EW-BW-108-A	383,882	20.4	573,165	20.0	553,001	18.9
EW-BW-109-A	260,136	14.1	389,255	13.8	510,683	14.3
EW-BW-112-A	250,824	13.5	375,215	13.2	486,371	13.0
EW-BW-113-A	175,412	9.1	258,861	9.2	335,649	8.8
EW-BW-115-A	303,540	16.0	450,829	15.7	583,000	15.4
EW-BW-116-A	164,302	8.9	245,437	8.6	318,383	8.6
EW-BW-119-A	161,678	8.0	234,996	7.9	300,332	6.9
EW-BW-120-A	335,539	17.8	498,760	17.5	646,672	17.1
EW-BW-159-A	152,070	7.9	225,392	7.8	291,962	7.9
<b>Total</b>	<b>2,631,623</b>	<b>139.0</b>	<b>3,913,194</b>	<b>134.1</b>	<b>5,044,990</b>	<b>131.1</b>
<b>Total Flow</b>	<b>2,505,012</b>	<b>134</b>	<b>3,729,100</b>	<b>128</b>	<b>4,776,472</b>	<b>111</b>

Injection Well	8/25/2010 13 day		9/1/2010 20 day		9/8/2010 27 day	
	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
IW-BW-105-A	393,440	19.8	593,426	18.3	763,273	23
P-301						
IW-BW-107-A	386,307	18.0	540,036	22.6	685,407	17.7
P-302						
IW-BW-110-A	382,555	20.1	567,026	22.8	755,423	16.6
P-303						
IW-BW-111-A	335,741	18.4	516,725	17.3	692,956	20.8
P-305						
IW-BW-114-A	327,587	19.1	508,719	16.6	686,711	20.8
P-304						
IW-BW-117-A	296,130	15.2	415,364	10.3	478,499	5.2
P-306						
IW-BW-118-A	297,716	16.2	438,593	15.2	535,616	10.2
P-307						
<b>Total</b>	<b>2,419,456</b>	<b>126.8</b>	<b>3,579,889</b>	<b>123.1</b>	<b>4,597,885</b>	<b>114.3</b>
<b>Estimated Substrate Injected Day 13</b>						
<b>Substrate Injection Rate 3/17</b>						
<b>Estimated Substrate Injected Day 20</b>						
<b>Substrate Injection Rate 9/1</b>						
<b>Estimated Substrate Injected Day 27</b>						
<b>Substrate Injection Rate 9/8</b>						
<b>Total</b>						

System Start Date:

Date: 9/15/2010  
34 day

Extraction Well	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)
EW-BW-104-A	348,679	8.0
EW-BW-106-A	644,136	12.8
EW-BW-108-A	872,424	17.2
EW-BW-109-A	628,624	13.8
EW-BW-112-A	592,006	12.4
EW-BW-113-A	407,997	8.1
EW-BW-115-A	708,147	14.7
EW-BW-116-A	390,906	9.0
EW-BW-119-A	350,121	8.9
EW-BW-120-A	781,454	15.5
EW-BW-159-A	357,583	7.6
<b>Total</b>	<b>6,082,077</b>	<b>128.0</b>

**Total Flow** 5,594,405 120

Injection Well	Total Flow (gallons)	Instantaneous Flowrate (gallons per minute)	Estimated Substrate Injected Day 34 (gallons)	Substrate Injection Rate 9/15 (gallons per hour)
IW-BW-105-A	902,623	19.2		
P-301			1518	14.20
IW-BW-107-A	759,386	8		
P-302			1334	12.37
IW-BW-110-A	867,555	14.9		
P-303			1677	15.80
IW-BW-111-A	856,511	9.9		
P-305			1574	15.12
IW-BW-114-A	847,175	14.2		
P-304			1534	14.08
IW-BW-117-A	537,037	13.1		
P-306			1505	14.07
IW-BW-118-A	605,648	10.2		
P-307			1337	12.45
<b>Total</b>	<b>5,375,935</b>	<b>89.5</b>	<b>10480</b>	

Sample ID	Method <sup>a</sup>	EW-BW-104-A	EW-BW-104-A	EW-BW-104-A	EW-BW-104-A	EW-BW-104-A	EW-BW-104-A	EW-BW-104-A
Well Type		extraction baseline	extraction Week 0	extraction Week 1	extraction Week 2	extraction Week 3	extraction Week 4	extraction Week 5
Date		8/5/2010	8/12/2010	8/18/2010	8/25/2010	9/1/2010	9/8/2010	9/15/2010
well flowrate (operating)		NA	9.6	7.5	7.4	7.5	7.2	8.0
alkalinity (CaCO <sub>3</sub> total)	HACH <sup>b</sup>	108 mg/L	104 mg/L	103 mg/L	98 mg/L	75 mg/L	88 mg/L	81 mg/L
pH	meter <sup>c</sup>	6.18	6.40	6.40	6.40	6.40	6.40	6.50
dissolved oxygen	meter <sup>c</sup>	7.46 ppm	8.42 ppm	9.02 ppm	9.04 ppm	9.47 ppm	9.26 ppm	9.97 ppm
oxidation reduction potential	meter <sup>c</sup>	135 mV	156 mV	174 mV	165 mV	149 mV	162 mV	147 mV
conductivity	meter <sup>c</sup>	80.8 mS/cm	86 mS/cm	89.3 mS/cm	88.4 mS/cm	85.2 mS/cm	86.9 mS/cm	88 mS/cm
turbidity	meter <sup>c</sup>	301 NTU	47 NTU	137 NTU	180 NTU	60 NTU	169 NTU	35 NTU
temperature	meter <sup>c</sup>	15.6 °C	17.7 °C	17.9 °C	18 °C	18 °C	17.8 °C	17.8 °C
nitrate	300.0	6300 µg/L						µg/L
nitrite	300.0	<100 µg/L						µg/L
sulfate	300.0	38600 µg/L						µg/L
ortho-phosphate	300.0							
dissolved iron	6010B	113J µg/L						µg/L
manganese	6010B	46.2 µg/L						µg/L
arsenic	6010B	<10 µg/L						µg/L
methane	RSK 175 <sup>d</sup>							
ethane	RSK 175 <sup>d</sup>							
lactate	300.0M	<100 µg/L						
propionate	300.0M	<100 µg/L						
acetate	300.0M	<100 µg/L						
carbon tetrachloride	8260B	2 µg/L						µg/L
chloroform	8260B	0.35J µg/L						µg/L
dichloromethane	8260B	<5.0 µg/L						µg/L
chloromethane	8260B	<1.0 µg/L						µg/L
trichloroethene	8260B	1.1 µg/L						µg/L

Method<sup>a</sup>

Sample ID		EW-BW-109-A	EW-BW-109-A	EW-BW-109-A	EW-BW-109-A	EW-BW-109-A	EW-BW-109-A	EW-BW-109-A
Well Type		extraction	extraction	extraction	extraction	extraction	extraction	extraction
Date		baseline	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5
		8/4/2010	8/12/2010	8/18/2010	8/25/2010	9/1/2010	9/8/2010	9/15/2010
well flowrate (operating)		NA	13.7	14.0	14.1	13.8	14.3	6.3
alkalinity (CaCO <sub>3</sub> total)	HACH <sup>b</sup>	114 mg/L	99 mg/L	94 mg/L	96 mg/L	104 mg/L	93 mg/L	101 mg/L
pH	meter <sup>c</sup>	6.56	6.30	5.90	6.40	6.30	6.30	6.40
dissolved oxygen	meter <sup>c</sup>	9.38 ppm	9.01 ppm	10.27 ppm	9.72 ppm	9.04 ppm	9.7 ppm	9.7 ppm
oxidation reduction potential	meter <sup>c</sup>	136 mV	157 mV	183 mV	170 mV	165 mV	171 mV	140 mV
conductivity	meter <sup>c</sup>	83 mS/cm	91.1 mS/cm	95 mS/cm	91.4 mS/cm	91.1 mS/cm	95.1 mS/cm	93.3 mS/cm
turbidity	meter <sup>c</sup>	90 NTU	17 NTU	0 NTU	0 NTU	4.6 NTU	1 NTU	14.2 NTU
temperture	meter <sup>c</sup>	16.5 °C	17.7 °C	17.8 °C	17.8 °C	17.8 °C	17.7 °C	17.7 °C
nitrate	300.0	8250 µg/L						µg/l
nitrite	300.0	<100 µg/L						µg/l
sulfate	300.0	18400 µg/L						µg/l
ortho-phosphate	300.0							
dissolved iron	6010B	64.1J µg/L						µg/l
manganese	6010B	69 µg/L						µg/l
arsenic	6010B	<10 µg/L						µg/l
methane	RSK 175 <sup>d</sup>	<2.0 µg/L						
ethane	RSK 175 <sup>d</sup>	<2.0 µg/L						
lactate	300.0M	<100 µg/L						
propionate	300.0M	<100 µg/L						
acetate	300.0M	<100 µg/L						
carbon tetrachloride	8260B	3.7 µg/L						µg/l
chloroform	8260B	0.61 µg/L						µg/l
dichloromethane	8260B	<5.0 µg/L						µg/l
chloromethane	8260B	<1.0 µg/L						µg/l
trichloroethene	8260B	0.98 µg/L						

Method<sup>a</sup>

Sample ID	Method <sup>a</sup>	EW-BW-112-A	EW-BW-112-A	EW-BW-112-A	EW-BW-112-A	EW-BW-112-A	EW-BW-112-A	EW-BW-112-A
Well Type		extraction	extraction	extraction	extraction	extraction	extraction	extraction
Date		baseline	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5
		8/4/2010	8/12/2010	8/18/2010	8/25/2010	9/1/2010	9/8/2010	9/15/2010
well flowrate (operating)		NA	13.4	13.5	13.5	13.2	13.0	12.4
alkalinity (CaCO <sub>3</sub> total)	HACH <sup>b</sup>	138 mg/L	123 mg/L	106 mg/L	105 mg/L	120 mg/L	103 mg/L	114 mg/L
pH	meter <sup>c</sup>	6.82	6.50	6.10	6.40	6.50	6.40	6.50
dissolved oxygen	meter <sup>c</sup>	8.65 ppm	9.04 ppm	10.12 ppm	9.13 ppm	8.9 ppm	9.64 ppm	10.4 ppm
oxidation reduction potential	meter <sup>c</sup>	111 mV	150 mV	177 mV	169 mV	157 mV	158 mV	117 mV
conductivity	meter <sup>c</sup>	72.6 mS/cm	78.3 mS/cm	81.5 mS/cm	77.5 mS/cm	77.3 mS/cm	79.8 mS/cm	80.2 mS/cm
turbidity	meter <sup>c</sup>	300 NTU	192 NTU	93.4 NTU	134 NTU	62 NTU	36 NTU	142 NTU
temperature	meter <sup>c</sup>	15.6 °C	17 °C	17.4 °C	18 °C	17.8 °C	17.2 °C	17.1 °C
nitrate	300.0	2750 µg/L						µg/L
nitrite	300.0	<100 µg/L						µg/L
sulfate	300.0	13200 µg/L						µg/L
ortho-phosphate	300.0							
dissolved iron	6010B	75.1J µg/L						µg/L
manganese	6010B	101 µg/L						µg/L
arsenic	6010B	<10 µg/L						µg/L
methane	RSK 175 <sup>d</sup>	<2.0 µg/L						
ethane	RSK 175 <sup>d</sup>	<2.0 µg/L						
lactate	300.0M	<100 µg/L						
propionate	300.0M	<100 µg/L						
acetate	300.0M	<100 µg/L						
carbon tetrachloride	8260B	3.1 µg/L						µg/L
chloroform	8260B	0.7 µg/L						µg/L
dichloromethane	8260B	<5.0 µg/L						µg/L
chloromethane	8260B	<1.0 µg/L						µg/L
trichloroethene	8260B	1.3 µg/L						

Method<sup>a</sup>

Sample ID		EW-BW-119-A	EW-BW-119-A	EW-BW-119-A	EW-BW-119-A	EW-BW-119-A	EW-BW-119-A	EW-BW-119-A
Well Type		extraction	extraction	extraction	extraction	extraction	extraction	extraction
Date		baseline	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5
		8/3/2010	8/12/2010	8/19/2010	8/26/2010	9/2/2010	9/8/2010	9/16/2010
well flowrate (operating)		NA	9.3	8.8	8.0	7.7	6.4	8.9
alkalinity (CaCO <sub>3</sub> total)	HACH <sup>b</sup>	54 mg/L	52 mg/L	59 mg/L	51 mg/L	54 mg/L	67 mg/L	58 mg/L
pH	meter <sup>c</sup>	6.07	6.30	6.30	6.30	6.40	6.40	6.30
dissolved oxygen	meter <sup>c</sup>	10.59 ppm	8.7 ppm	9.33 ppm	9.16 ppm	9.6 ppm	7.69 ppm	5.73 ppm
oxidation reduction potential	meter <sup>c</sup>	203 mV	179 mV	183 mV	166 mV	169 mV	159 mV	33 mV
conductivity	meter <sup>c</sup>	64.9 mS/cm	76.3 mS/cm	80.4 mS/cm	80.9 mS/cm	76.6 mS/cm	81.8 mS/cm	88 mS/cm
turbidity	meter <sup>c</sup>	440 NTU	4 NTU	6.5 NTU	0 NTU	0 NTU	6.2 NTU	2 NTU
temperature	meter <sup>c</sup>	16.9 °C	19.5 °C	18.2 °C	17.9 °C	18.4 °C	18.2 °C	18.1 °C
nitrate	300.0	6170 µg/L						µg/L
nitrite	300.0	<100 µg/L						µg/L
sulfate	300.0	12900 µg/L						µg/L
ortho-phosphate	300.0							
dissolved iron	6010B	<200 µg/L						µg/L
manganese	6010B	5.18J µg/L						µg/L
arsenic	6010B	<10 µg/L						µg/L
methane	RSK 175 <sup>d</sup>							
ethane	RSK 175 <sup>d</sup>							
lactate	300.0M	<100 µg/L						
propionate	300.0M	<100 µg/L						
acetate	300.0M	<100 µg/L						
carbon tetrachloride	8260B	5.5 µg/L						µg/L
chloroform	8260B	0.49J µg/L						µg/L
dichloromethane	8260B	<5.0 µg/L						µg/L
chloromethane	8260B	<1.0 µg/L						µg/L
dibromochloromethane	8260B	0.33J µg/L						
trichloroethene	8260B	0.75 µg/L						



Sample ID	Method <sup>a</sup>	MW-BW-25-A	MW-BW-25-A	MW-BW-25-A	MW-BW-25-A	MW-BW-25-A	MW-BW-25-A	MW-BW-25-A
Well Type		monitoring	monitoring	monitoring	monitoring	monitoring	monitoring	monitoring
Date		baseline	Week 0	Week 1	Week 2	Week 3	Week 4	Week 5
		8/6/2010	8/12/2010	8/19/2010	8/26/2010	9/2/2010	9/8/2010	9/16/2010
well flowrate (operating)		NA	NA	NA	NA	NA	NA	NA
alkalinity (CaCO <sub>3</sub> total)	HACH <sup>b</sup>	65 mg/L	48 mg/L	46 mg/L	42 mg/L	42 mg/L	43 mg/L	44 mg/L
pH	meter <sup>c</sup>	6.52	6.20	6.30	6.20	6.30	6.30	6.20
dissolved oxygen	meter <sup>c</sup>	11.10 ppm	9.10 ppm	9.06 ppm	9.06 ppm	9.29 ppm	8.88 ppm	9.00 ppm
oxidation reduction potential	meter <sup>c</sup>	258 mV	181 mV	178 mV	194 mV	175 mV	175 mV	178 mV
conductivity	meter <sup>c</sup>	62 mS/cm	77.8 mS/cm	68.4 mS/cm	68.9 mS/cm	65.6 mS/cm	68.1 mS/cm	67.5 mS/cm
turbidity	meter <sup>c</sup>	143 NTU	3 NTU	5 NTU	4 NTU	11.8 NTU	4.9 NTU	10 NTU
temperature	meter <sup>c</sup>	15.3 °C	17.9 °C	18.6 °C	18.4 °C	18.5 °C	18.5 °C	18.5 °C
nitrate	300.0	4840(4860) µg/L		4640(4660) µg/L		µg/L	µg/L	µg/L
nitrite	300.0	<100(<100) µg/L		<100(<100) µg/L		µg/L	µg/L	µg/L
sulfate	300.0	24300(24300) µg/L		23900(23800) µg/L		µg/L	µg/L	µg/L
ortho-phosphate	300.0							
dissolved iron	6010B	<200 µg/L		<200 µg/L		µg/L	µg/L	µg/L
manganese	6010B	<10 µg/L		<10 µg/L		µg/L	µg/L	µg/L
arsenic	6010B	<10 µg/L		<10 µg/L		µg/L	µg/L	µg/L
methane	RSK 175 <sup>d</sup>							
ethane	RSK 175 <sup>d</sup>							
lactate	300.0M	<100(<100) µg/L						µg/L
propionate	300.0M	<100(<100) µg/L						µg/L
acetate	300.0M	<100(<100) µg/L						µg/L
carbon tetrachloride	8260B	1.1 µg/L		0.67 µg/L		µg/L	µg/L	µg/L
chloroform	8260B	<0.5 µg/L		<0.5 µg/L		µg/L	µg/L	µg/L
dichloromethane	8260B	<5.0 µg/L		<5.0 µg/L		µg/L	µg/L	µg/L
chloromethane	8260B	<1.0 µg/L		<1.0 µg/L		µg/L	µg/L	µg/L



## Former Fort Ord Groundwater Treatment Systems Operational Data and Status

**BRAC Cleanup Team Meeting, September 22, 2010**

**Table 1:** OU2 and Sites 2/12 GWTP Treatment Statistics, as of August 31, 2010.

Monthly Statistics	Volume Treated (gallons)	Average Flow (gallons.per.minute)	Percent of Time Online	COC Mass Removed (lbs.)
<b>OU2</b>				
August 2010	35,895,340	804	100.0	3.26
Total since October 1995	4.970 billion			664.17
<b>Sites 2/12</b>				
August 2010	9,876,700	221	100.0	0.98
Total since June 1999	1.363 billion			427.34

**Table 2:** OU2 and Sites 2/12 GWTP Calendar of Events, as of August 31, 2010.

Key Events for OU2 and Sites 2/12 for August 2010						
<p><b>There were 68 USAN Notices transmitted to Ahtna August 1-31, 2010. One of these alerts required the personal attention of the Senior GWTP Operator.</b></p>						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
8	9	10	11 Replaced failed pumps in EW-OU2-10-A and EW-OU2-12-A.	12	13	14
15	16 New pump in EW- OU2-10-A offline, will not restart. Scheduled site visit by pump contractor.	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

**Table 3: August 2010 - OU2 Analytical Results at TS-OU2-INJ**

COC	Discharge Limit (µg/L)	Sample Date/ Analytical Results
		8/16/10
1,1-DCA	5.0*	0.30
1,2-DCA	0.50	ND
1,2-DCP	0.50	ND
Benzene	0.50	ND
Carbon Tetrachloride	0.50	ND
Chloroform	2.0*	ND
cis-1,2-DCE	6.0*	ND
Methylene Chloride	0.50	ND
PCE	0.50	ND
TCE	0.50	ND
Vinyl Chloride	0.10	ND

**Table 4: August 2010 - Sites 2/12 Analytical Results at TS-212-INJ**

COC	Discharge Limit (µg/L) ‡	Sample Date/ Analytical Results
		8/12/10
1,1-DCE	6.0	ND
1,2-DCA	0.50	ND
1,3-DCP †	0.50	ND
Chloroform	2.0	ND
cis-1,2 DCE	6.0	ND
PCE	3.0	ND
TCE	5.0	ND
Vinyl Chloride	0.10	ND

**NOTES:**

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

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

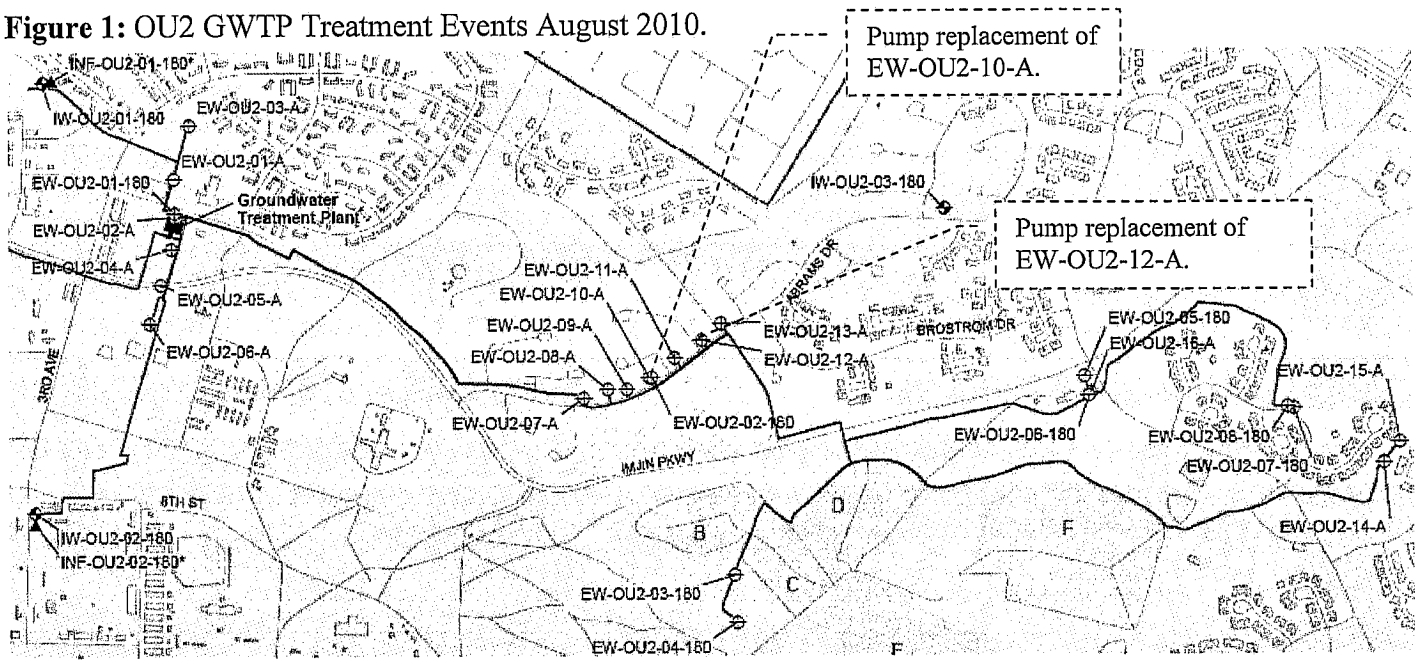
‡ Discharge limits are the ACLs for injection over the plume.

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

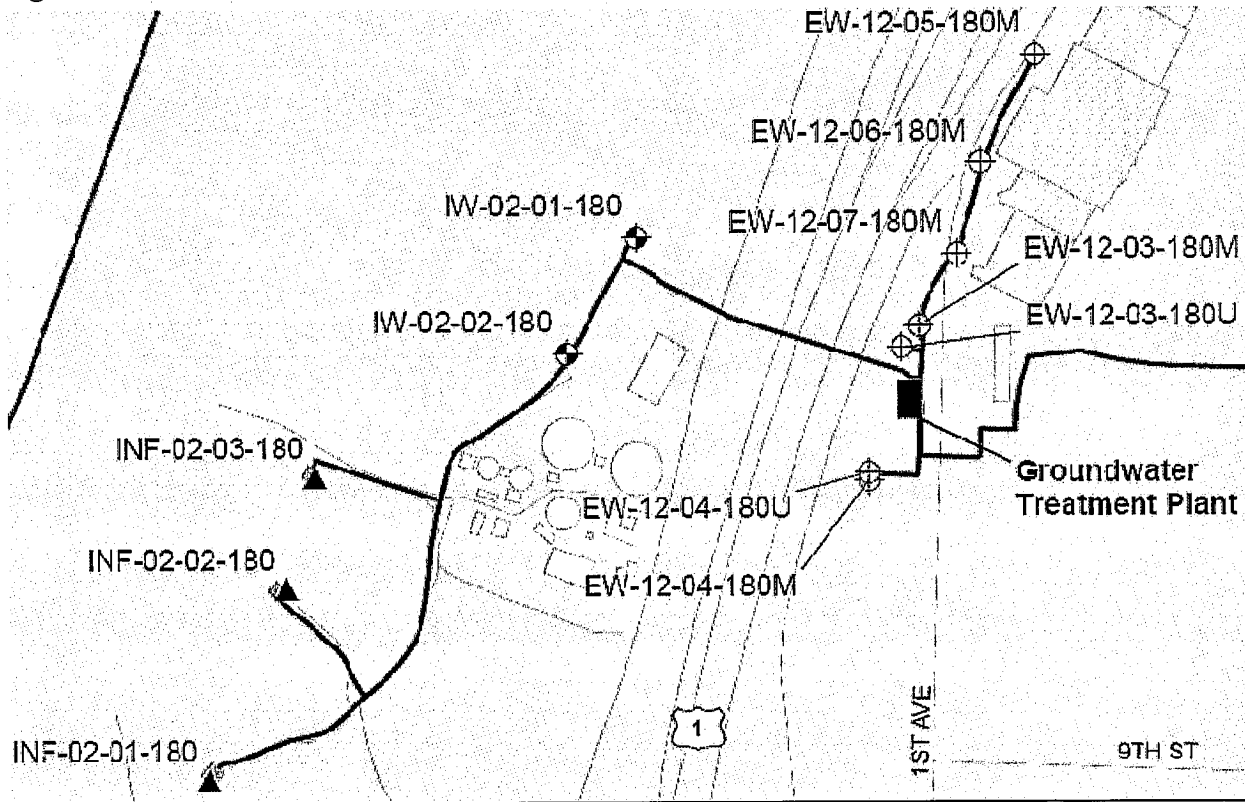
**Table 5: AES Document Submittals - Status Summary**

Document
No documents were submitted during the reporting period.

**Figure 1: OU2 GWTP Treatment Events August 2010.**



**Figure 2: Sites 2/12 GWTP Treatment Events August 2010.**





**Table 6: August 2010 OU2 and Sites 2/12 Extraction Well Status (as of August 31)**

Well Identification	% On	Avg. gpm	Total Gallons	% of Total	Comments	TCF (µg/L) 2010
<b>Site 12 Extraction Wells</b>						
EW-12-05-180M	99.9	83.8	3,741,700	37.9		4.6
EW-12-06-180M	97.5	77.8	3,474,100	35.2		8.4
EW-12-07-180M	0	0	0	0	COCs previously below ACLs, will restart pump	5.4
EW-12-03-180U	0	0	0	0	Well offline due to low concentrations	0.12
EW-12-03-180M	100	59.6	2,660,900	26.9		1.4
EW-12-04-180U	0	0	0	0	Well offline due to low concentrations	0.37
EW-12-04-180M	0	0	0	0	Pump removed, sampled with PDBs	0.69
<i>Total 2/12 gallons treated:</i>			<i>9,876,700</i>	<i>100.0</i>		
<b>OU2 Extraction Wells</b>						
<i>Western Network</i>						
EW-OU2-01-A	0	0	0	0	Well offline due to low concentrations	Not Sampled
EW-OU2-02-A	0	0	0	0	Well offline due to low concentrations	0.77
EW-OU2-03-A	0	0	0	0	Well offline due to low concentrations, sampled with PDBs	0.49
EW-OU2-04-A	97.2	47.3	2,111,480	5.9		1.1
EW-OU2-05-A	99.0	50.0	2,230,660	6.2		3.3
EW-OU2-06-A	99.0	36.9	1,649,270	4.6		4.9
EW-OU2-01-180	0	0	0	0	No pump in well, sampled with PDBs	7.8
<i>Total gallons extracted:</i>			<i>5,991,410</i>	<i>16.7</i>		
<i>Eastern Network</i>						
EW-OU2-07-A	0	0	8	0	Well offline due to low concentrations	ND
EW-OU2-08-A	95.7	20	876,640	2.4	Cycling due to low water level	0.56
EW-OU2-09-A	99.9	25	1,129,660	3.1	Cycling due to low water level, operating with new level settings	3.0
EW-OU2-10-A	10.5	1	25,320	0.1	Pump motor failure	Not Sampled
EW-OU2-11-A	0	0	0	0	Pump removed due to biofouling, screen damaged	Not Sampled
EW-OU2-12-A	61.7	8	374,780	1.0	Low yield; running at reduced capacity, pump replaced	9.1
EW-OU2-13-A	100	28	1,246,350	3.5		11.1
EW-OU2-02-180	99.3	110	4,898,880	13.6		9.5
<i>Total gallons extracted:</i>			<i>8,551,630</i>	<i>23.8</i>		
<i>Shoppette</i>						
EW-OU2-05-180	100	139	6,225,900	17.3		5.7
EW-OU2-06-180	91.0	121	5,388,300	15.0		5.3
EW-OU2-16-A	100	19	855,600	2.4	High drawdown, operating with new level settings	10.8
<i>Total gallons extracted:</i>			<i>12,469,600</i>	<i>34.7</i>		
<i>CSUMB</i>						
EW-OU2-14-A	100	22	997,500	2.8		0.91
EW-OU2-15-A	0	0	0	0	Well offline due to low concentrations	Not Sampled
<i>Total gallons extracted:</i>			<i>997,500</i>	<i>2.8</i>		
<i>Landfill</i>						
EW-OU2-03-180	100	130	5,807,000	16.2		30.0
EW-OU2-04-180	0	0	0	0	Well offline due to low concentrations	ND
<i>Total gallons extracted:</i>			<i>5,807,000</i>	<i>16.2</i>		
<i>Bunker Hill</i>						
EW-OU2-07-180	0	0	0	0	No pump in well, sampled with PDB	3.5
EW-OU2-08-180	86.6	47	2,078,000	5.8		0.90
<i>Total gallons extracted:</i>			<i>2,078,000</i>	<i>5.8</i>		
<i>Total OU2 gallons treated:</i>			<i>35,895,340</i>	<i>100.0</i>		

**OPERABLE UNIT 1  
OFF-SITE GROUNDWATER EXTRACTION PILOT STUDY**

**STATUS – September 22, 2010**

**FIELD WORK**

- Well construction complete – December 21, 2007
- Draft Final OU1 Pilot Study Work Plan distributed – April 22, 2008
- Baseline sampling and analysis – June 14, 2008
- System construction completed – July 16, 2008
- Monitoring well (City of Marina) installation – July 28, 2008
- System start-up – August 5, 2008
- Extraction Well EW-OU1-92-A shut off – December 11, 2008
- Field Work Variance (FWV) issued to document system shut-off – February 16, 2009
- Groundwater extraction system shut off and rebound testing initiated – February 17, 2009
- System restarted (EW-OU1-93-A operating) – April 7, 2009
- Second rebound study initiated – July 13, 2009 and completed March 22, 2010
- Carbon changeout of lead vessel as part of system mothballing – June 3, 2010
- System mothballing complete – June 7, 2010
- Quarterly sampling of monitoring and extraction wells – June 22, 2010.
- January to March 2010 Quarterly Report issued – August 6, 2010.

**SCHEDULE**

- April to June 2010 Quarterly Report to be issued September 2010.
- Issue Technical Memorandum with monitoring wells proposed for long-term monitoring – Issued for USACE Review August 31, 2010.

**DATA (Preliminary)**

- None.

**PROBLEMS/CHANGES**

- None.

**Figure 6**  
**OU-1 FONR**  
**TCE Concentrations in Groundwater**  
**March 2010**

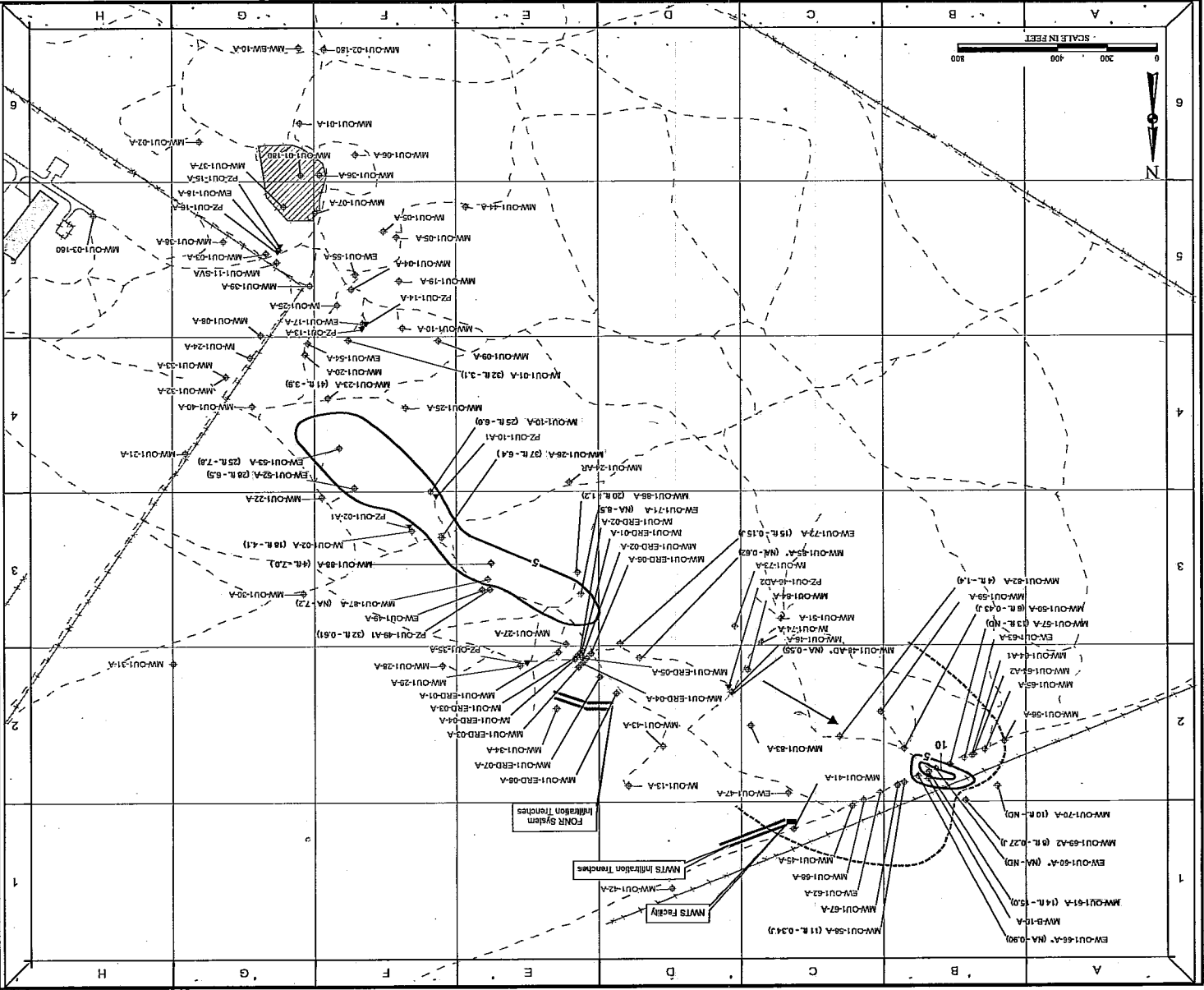
**Legend**

- Monitoring Well
- Extraction Well
- Injection Well
- Bold green font indicates active well
- Piezometer
- Locations With March 2010 TCE Concentration At Or Above ACTL (5 µg/L)
- TCE Contour (µg/L)
- Based on March 2010 Data
- Well ID
- March 2010 TCE Result (µg/L)
- Sample Elevation (feet above mean sea level)
- Trail/Unimproved Road
- Fence
- Treated Water Infiltration Trench
- Estimated Northwest Treatment System Capture Zone
- Former Fire Drill Area
- General Direction of Groundwater Flow

Notes:

- Units of TCE concentrations are in ppb
- ND = Non-detect
- NA = Depth is not applicable - sample is from pumping well
- J = Damaged Valve
- µg/L = Micrograms per liter
- Wells shown with an asterisk were not used to develop contour boundaries.
- Active extraction wells were generally not included because the data is not location-specific. Data from extraction wells EM-OUI-17-A and KM-OUI-187-A were used to infer the 5 µg/L TCE contour because the results at those wells suggest higher TCE concentrations nearby.
- Well names appearing in gray were not included in OUI-1 Groundwater Monitoring Program.
- Wells for which no data are posted were not sampled.

Source: HGL  
TCE in GW Mar. 2010  
07/19/10 GNL  
TCE in GW Mar. 2010 HGL



**HydroGeoLogic, Inc.**  
**Agenda & Notes**

Fort Ord Hazardous and Toxic Waste Base Closure Team (BCT) Meeting  
22 September 2010, 10:00 AM  
Monterey, California

**1. Groundwater Remediation System Update**

The Northwest Treatment System (NWTS) operated without interruption from 09 August through 20 September 2010. The injection pump did not operate during the weeks of 09 – 16 August and 23 – 30 August 2010. There is some concern that this pump may require extensive repair or replacement in the near future. During those periods when the injection pump failed, all treated water was recharged through the northwest infiltration trenches. From 16 August through 13 September 2010, the average pumping rate was 46 gallons per minute (gpm). Pumping from MW-OU1-46-AD and MW-OU1-85-A was reduced on 23 August to improve overall operating efficiency (trichloroethene [TCE] has been less than 1 microgram per liter [ $\mu\text{g/L}$ ] at both wells since December 2009). The pumping rate at MW-OU1-46-AD was subsequently increased to approximately 16 gpm the following week because the pump would not consistently operate at the reduced rate. MW-OU1-85-A is now pumping approximately 8.5 gpm (down from approximately 17 gpm).

On 01 September a minor leak was discovered in each of the two lead granular activated carbon (GAC) tanks (i.e., the northernmost pair, Units F-301A and F-302A). The units were isolated as a precaution although the leaks were not sufficient to cover the floor of the containment area. Since then, the remaining two GAC tanks (Units F-301B and F-302B) have been used to treat extracted groundwater. Repairs have been scheduled for 22 September. The regularly scheduled performance monitoring sampling effort was performed on 20 September 2010 and excluded the mid-point sample between the GAC units.

Thus far in 2010, the NWTS has removed approximately 0.35 pound of TCE. Since system start-up in 2006, the NWTS has removed approximately 4.8 pounds of total volatile organic compounds.

Extraction well EW-OU1-60-A operated continuously from the last BCT meeting (17 August) through 13 September. The average pumping rate was approximately 1.2 gpm. The well went off-line between 13 September and 20 September. Attempts will be made during the ongoing 2010 Third Quarter sampling effort (under way from 21 – 24 September) to restart the well and collect a water quality sample.

The most recent laboratory analytical results are presented in Table 1. Performance monitoring samples were collected on Monday, 20 September, and results will be presented when available. As illustrated in Table 1, TCE concentrations remained below 1  $\mu\text{g/L}$  at all extraction wells except MW-OU1-87-A and EW-OU1-71-A.

**2. Long-Term Monitoring (LTM) Update**

The validated data for the March 2010 sampling event showed no change from previously reported values. The preliminary draft figure showing TCE concentration contours for the 2010 First Quarter Groundwater Monitoring Report has been finalized and is attached for reference (Figure 6 from the 2010 First Quarter Groundwater Monitoring Report). The Third Quarter 2010 LTM effort is being conducted from 21 September – 24 September. Baseline samples to define the monitoring interval for performance sampling at future extraction well IW-OU1-10-A will also be collected during this time frame (as described in the *Draft Fort Ord Natural Reserve (FONR) Remediation System Expansion Design*



*Technical Memorandum* submitted on 17 September). A summary of historical sampling results from IW-OU1-10-A is attached for reference (see Attachment A).

### **3. Report Submittals**

Table 2 summarizes the status of scheduled reports through 2010. The 2010 First Quarter Groundwater Monitoring Report was submitted on 30 July. Comments are due at the end of September.

The *Draft Fort Ord Natural Reserve (FONR) Remediation System Expansion Design Technical Memorandum* was submitted on 17 September. The associated construction drawings for the proposed system expansion will be submitted by 24 September. As discussed in previous BCT meetings, HGL is requesting an expedited review of this memorandum within two to three weeks. We appreciate the cooperation extended by everyone in this regard.

### **4. Other**

#### **4a) *IW-OU1-10-A System Expansion***

HGL is preparing to mobilize in October to begin constructing facilities to initiate pumping from well IW-OU1-10-A. Construction will begin after the agencies review the Design Technical Memorandum submittal and any comments have been resolved. The tentative mobilization date is 11 October 2010. We expect construction to be completed within one month of start-up.

#### **4b) *Previous Meeting Minutes***

No comments were received on the Draft July 2010 BCT OU-1 meeting minutes and these minutes are now considered "Final." Draft meeting minutes for August will be submitted within the next two weeks.

There are no other planned agenda items.

**Table 1**  
**TCE and Cis-1,2-DCE in OU-1 FONR Groundwater Remediation System - Performance Monitoring**  
**BCT Meeting for Former Fort Ord, at Monterey CA - September 2010**

Sample Date	FONR Extraction Well (listed from south to north) Began Operation October 2007				Boundary Extraction Well (listed from west to east) Began Operation July 2006				NWTS		
	MW-87	EW-71	MW-85	MW-46AD	EW-63	EW-60	EW-66	EW-62	INFLUENT	MIDPOINT	EFFLUENT
	TCE (µg/L)										
11/9/2007	16	13	19	14	ND	ND	1.7	ND	11	ND	ND
1/18/2008	11	11	8.9	8.2	ND	ND	1.2	ND	6.0	ND	ND
3/18/2008	11	14	6.7	5.8	ND	0.29	1.5	ND	5.6	ND	ND
5/27/2008	9.7	18	2.5	6.1	ND	ND	1.8	ND	3.9	ND	ND
7/21/2008	9.1	14	4.4	3.4	ND	0.78	1.4	ND	3.6	ND	ND
9/29/2008	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
12/1/2008	5.8	11	2.6	1.6	ND	0.82	0.91	ND	2.7	0.35	J ND
1/26/2009	5.9	10	2.2	1.2	ND	0.48	J 0.78	ND	2.4	ND	ND
3/9/2009	5.8	9.9	2.1	1.2	ND	0.95	0.86	ND	2.7	ND	ND
6/11/2009	6.9	11	2.4	1.5	ND	0.88	1.7	ND	2.6	0.14	J ND
9/15/2009	6.8	9.4	1.7	0.78	ND	inactive	1.1	0.036	J 2.3	0.35	J ND
12/14/2009	6.9	7.5	0.84	not sampled	not sampled	inactive	0.94	not sampled	2.3	0.65	J ND
3/22/2010	7.2	8.5	0.62	0.55	inactive	ND	0.90	inactive	2.3	ND	ND
6/10/2010	7.4	6.5	0.90	0.40	J inactive	0.86	0.58	inactive	2.1	ND	ND
cis-1,2-DCE (µg/L)											
11/9/2007	1.9	1.6	2.3	1.70	ND	ND	ND	ND	1.3	ND	ND
1/18/2008	1.20	1.40	1.00	1.20	ND	ND	0.11	ND	0.66	ND	ND
3/18/2008	1.20	1.50	0.74	0.63	ND	ND	ND	ND	0.59	0.11	ND
5/27/2008	0.88	2.10	0.26	0.74	ND	ND	ND	ND	0.36	0.21	ND
7/21/2008	0.80	1.50	0.52	0.37	ND	ND	ND	ND	0.41	0.34	ND
9/29/2008	0.99	1.60	0.54	0.30	ND	ND	0.13	ND	0.42	0.42	0.12
12/1/2008	0.67	1.30	0.33	0.21	J ND	ND	ND	ND	0.27	J 0.37	J 0.19
1/26/2009	0.63	1.20	0.29	J 0.12	J ND	ND	ND	ND	0.26	J 0.24	J ND
3/9/2009	0.62	1.20	0.29	J 0.13	J ND	ND	ND	ND	0.23	J 0.26	J ND
6/11/2009	0.71	1.10	0.30	J 0.13	J ND	ND	0.14	J ND	0.24	J 0.28	J ND
9/15/2009	0.80	1.00	0.22	J 0.08	J ND	inactive	0.03	J ND	0.22	J 0.37	J 0.03
12/14/2009	0.67	0.65	0.10	J not sampled	not sampled	inactive	ND	J not sampled	0.21	J 0.30	J 0.11
3/22/2010	0.67	0.79	ND	ND	inactive	ND	ND	inactive	0.20	J 0.11	J 0.13
6/10/2010	0.67	0.53	0.14	J ND	inactive	ND	ND	inactive	0.20	J 0.23	J ND
<b>Italics (if used) indicate data not yet validated</b>					<b>Bold font indicates concentration &gt; ACL</b>						

**Table 2  
Current Deliverable Schedule  
IPM / BCT Meeting for Former Fort Ord, Marina CA –August 2010**

<b>Deliverable</b>	<b>Scheduled Submittal</b>	<b>Status / Remarks (Bold font indicates submittal)</b>
<i>Primary Deliverables</i>		
<b>None Scheduled for 2010</b>		
<i>Secondary Deliverables</i>		
Draft 2007 Annual and Fourth Quarter Groundwater Monitoring Report	August-2010	In Progress.
Agency Comments	October-2010	
Final 2007 Annual and Fourth Quarter Groundwater Monitoring Report	November-2010	
Agency Comments	NA	
<b>First Quarter 2009 Groundwater Monitoring Report</b>	<b>June-2009</b>	<b>Submitted 22 June 2009.</b>
Agency Comments	August-2009	No Comment.
<b>Draft 2009 Annual and Third Quarter Groundwater Monitoring Report</b>	<b>February-2010</b>	<b>Submitted 08 February 2009.</b>
Agency Comments	April-2010	Agencies approved changes to 2010 sample frequency - no other comments.
<b>Final 2009 Annual and Third Quarter Groundwater Monitoring Report</b>	<b>August-2010</b>	<b>Submitted 05 August 2010.</b>
Agency Comments	NA	<b>FOCAG comments addressed.</b>
<b>2010 First Quarter Groundwater Monitoring Report</b>	<b>July 2010</b>	<b>Submitted 30 July 2010.</b>
Agency Comments	September-2010	Comments to be addressed in Draft 2010 Annual Groundwater Monitoring Report.
Draft 2010 Annual and Third Quarter Groundwater Monitoring Report	November-2010	Sampling to be conducted in September.
Agency Comments	January-2011	
Final 2010 Annual and Third Quarter Groundwater Monitoring Report	February-2011	
Agency Comments	NA	
<b>Final Rebound Evaluation Report</b>	<b>August-2010</b>	<b>In Progress.</b>
Agency Comments	NA	
Draft Fort Ord Natural Reserve (FONR) Remediation System Expansion Design Technical Memorandum	September-2010	Submitted 17 September without construction drawings (to be submitted by 24 September)
Agency Comments	01 – 08 October	In Progress

**Bold** denotes completed submittals.

**Attachment A**  
**Previous Sample Results at Well IW-OU1-10-A**

Location Identification	Sample Date	Sample Depth <sup>1</sup> (feet)	Sample Elevation (feet msl)	1,1,1-TCA	1,1-DCA	1,1-DCE	1,2-DCA	1,2-DCE (total)	Benzene	Chloroform	MEK	PCE	TCE
ACL <sup>2</sup>				200	5.0	6.0	0.5	6.0	1.0	2.0	1900	5.0	5.0
RL <sup>3</sup>				0.5	0.5	0.5	0.5	0.5	0.5	0.5	2.0	0.5	0.5
IW-OU1-10-A	3/24/2005	102	43	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	ND A	2.3 A
		119	26	ND A	ND A	ND A	ND A	0.65 A	ND A	ND A	ND A	ND A	9.9 A
		131	14	ND A	ND A	ND A	ND A	0.60 A	ND A	ND A	ND A	ND A	8.7 A
		137	8	ND A	ND A	ND A	ND A	0.57 A	ND A	ND A	ND A	ND A	8.3 A
	6/17/2005	119	26	ND A	ND A	ND A	ND A	0.78 A	ND A	ND A	ND A	ND A	9.9 A
		137	8	ND A	ND A	ND A	ND A	0.72 A	ND A	ND A	ND A	ND A	8.9 A
	9/20/2005	119	26	ND A	ND A	ND A	ND A	0.70 A	ND A	ND A	ND A	ND A	8.8 A
	3/15/2006	119	23**	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.55 J/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	6.6 J/A
	6/29/2006	117	25**	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	0.41 J+/A	ND UJ/A	ND UJ/A	ND UJ/A	ND UJ/A	5.1 J+/A
	9/25/2006	117	25**	ND A	ND A	ND A	ND A	0.80 A	ND A	0.21 J/A	ND A	ND A	7.2 A
	12/6/2006	117	25**	ND A	ND A	ND A	ND A	0.68 A	ND A	0.16 J/A	ND A	ND UJ/A	5.9 A
	3/15/2007	117	25**	ND UJ-/A	ND UJ-/A	ND UJ-/A	ND UJ-/A	0.64 J-/A	ND UJ-/A	0.15 J-/A	ND A	ND UJ-/A	5.9 J-/A
	9/13/2007	117	25**	ND A	ND A	ND A	ND A	0.64 A	ND A	0.20 J/A	ND A	ND A	6.3 A
	3/20/2008	117	25**	ND A	ND A	ND A	ND A	0.81 A	ND A	ND A	ND A	ND A	8.9 A
	10/1/2008	117	25**	ND A	ND A	ND A	ND A	0.82 A	ND A	0.26 J/A	ND A	ND A	9.6 J/A
3/11/2009	117	25**	ND A	ND A	ND A	ND A	0.70 A	ND A	0.24 J/A	ND A	ND A	7.5 A	
9/16/2009	117	25**	ND A	0.068 J/A	ND A	ND A	1.135 J/A	0.011 J/A	0.33 J/A	ND A	ND A	8.2 A	
3/24/2010	117	25**	ND A	ND A	ND A	ND A	0.47 J/A	ND A	0.16 J/A	ND A	ND A	6.0 A	

Notes:

\*\* Change in Top Of Casing elevation

<sup>1</sup>A value indicates the depth a passive diffusion bag (PDB) sample was collected, 0 or - indicates another method of sampling was used.

<sup>2</sup>OU-1 Record of Decision (ROD) (July 25, 1995).

<sup>3</sup>Reporting limits (RL) per Final Sampling and Analysis Plan, July 2004 with the exception of February, March and April RLs (see Quarter 1, 2004 report).