



HARGIS + ASSOCIATES, INC.
HYDROGEOLOGY • ENGINEERING

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November 1, 2011

VIA FEDERAL EXPRESS STANDARD

Mr. William Jeffers
Hazardous Substances Engineer
CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF TOXIC SUBSTANCES CONTROL
Southern California Region
1011 North Grandview Avenue
Glendale, CA 91201

Re: Data Submittal for Groundwater Monitoring and Groundwater Extraction
and Treatment Pilot Testing, Third Quarter 2011, Raytheon Company (Former
Hughes Aircraft Company Facility), 1901 West Malvern Avenue, Fullerton, California

Dear Mr. Jeffers:

This letter has been prepared for the submittal of groundwater monitoring and groundwater treatment pilot testing data collected during the third quarter 2011 for the former Raytheon Company site located at 1901 West Malvern Avenue, Fullerton, California (the Site) (Figure 1). Groundwater monitoring activities were completed in general accordance with the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC)-approved Groundwater Monitoring Workplan and Sampling and Analysis Plan (GMWPSAP) and subsequent addenda (DTSC, 2003 and 2011; Hargis + Associates, Inc. [H+A], 2003, 2011a, and 2011b). Groundwater treatment pilot testing continued throughout the third quarter 2011 in general accordance with the DTSC-approved Groundwater Extraction and Treatment Pilot Testing, Corrective Measures Study Workplan Addendum No. 4a (DTSC, 2009; H+A, 2009a and 2009b). The results of the third quarter 2011 quarterly groundwater monitoring and pilot groundwater extraction and treatment system (GETS) operation from July through September 2011 are included in this data submittal.

GROUNDWATER MONITORING

Groundwater monitoring consists of measuring groundwater levels and collecting groundwater samples from monitor wells and piezometers at the Site (Figure 2). Quarterly water level measurements and groundwater samples were collected in August 2011 at all monitor wells and piezometers in general accordance with the GMWPSAP and Addendum No.1 (Table 1).

Water Level Measurement and Groundwater Sample Collection

Groundwater monitoring included water level measurements in all Site monitor wells, piezometers, and extraction wells (Figures 2 and 3). Water levels were measured on August 1, 2011 (Table 2).

Groundwater samples were collected during the period from August 2 through August 5, 2011 (Appendix A). Analytical results are summarized in Table 3 and provided in Appendix B. Additional groundwater monitoring was conducted as part of routine operation and monitoring of the pilot GETS. A summary of the pilot GETS operation and monitoring is provided separately below.

Original and field-duplicate groundwater samples were analyzed by Advanced Technology Laboratories, Inc., Signal Hill, California (ATL) (Appendix B). Laboratory-split groundwater samples were analyzed by

Other Offices:
Mesa, AZ
Tucson, AZ

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Exova, formerly Bodycote Testing Group, Santa Fe Springs, California (Appendix B). Chain-of-custody documentation was enclosed with each sample shipment. Results of groundwater sample volatile organic compound (VOC) and 1,4-dioxane analyses have been summarized (Table 3).

Quality Assurance/Quality Control

Quality assurance/quality control (QA/QC) samples collected in August 2011 consisted of trip blanks, equipment rinsate blanks, field duplicates, and laboratory split samples. Trip blanks and the water used to collect the equipment rinsate blanks were provided by ATL. Field duplicate and/or laboratory split samples were collected for analysis of VOCs and 1,4-dioxane from monitor wells MW-21, MW-29, and MW-30B in August 2011 (Table 3). The relative percent difference was calculated between the results of each field duplicate and each laboratory split sample with its corresponding original sample. This data quality assessment indicated that all QA/QC results for groundwater samples are within acceptable criteria, with the following exceptions:

- The relative percent difference (RPD) between the original and laboratory split sample results for 1,1,2-trichloroethane (1,1,2-TCA) and trichloroethene (TCE) in the groundwater samples collected from extraction well MW-21 in August 2011 exceeded acceptance criteria. Therefore, the detections of 1,1,2-TCA and TCE in the original, field-duplicate, and laboratory split samples are qualified as estimated "E" (Table 3; Appendix B).
- The RPD between the original and laboratory split sample results for 1,4-dioxane in the groundwater samples collected from monitor well MW-29 in August 2011 exceeded acceptance criteria. Therefore, the detection of 1,4-dioxane in the original, field duplicate, and laboratory split samples are qualified as estimated "E" (Table 3; Appendix B).
- The RPD between the original and laboratory split sample results for 1,1-dichloroethene (1,1-DCE) in groundwater samples collected from monitor well MW-30B in August 2011 exceeded acceptance criteria. Therefore, the detection of 1,1-DCE in the original, field duplicate, and laboratory split samples are qualified as estimated "E" (Table 3; Appendix B).

There were no detections of VOCs or 1,4-dioxane in the trip and/or laboratory method blanks analyzed with groundwater samples collected during the August 2011 groundwater monitoring event (Table 3; Appendix B).

The data quality assessment also included review of laboratory QA/QC results. Laboratory QA/QC results are within acceptable criteria with the following exceptions:

- 1,4-Dioxane results for monitor well MW-34B and extraction wells MW-21 and EW-01 were above quantitation range, therefore values for these samples are approximated by the lab, "E". ATL reported, due to isotope dilution these samples could not be diluted within linear range without diluting out the 1,4-dioxane d-8 internal standard. A 30,000 parts per billion dioxane standard was run on the analytical instrument and the recovery was 88 percent.

GROUNDWATER EXTRACTION AND TREATMENT PILOT STUDY

This section summarizes the pilot GETS operation within the three-month period of monitoring conducted during the third quarter of 2011. The pilot GETS consists of three groundwater extraction wells, the treatment system, and the disposal system; however, the current phase of pilot testing is operating using one extraction well (EW-02). The treatment system processes extracted groundwater through an advanced oxidation unit that utilizes ozone and hydrogen peroxide (HiPOx), followed by a granular

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activated carbon polish prior to disposal to the sanitary sewer. A graphical representation of the system operational time in relation to water level measurements at current extraction well EW-02 and the previously utilized extraction wells EW-01 and MW-21 has been provided (Figure 4).

Initial startup of the pilot GETS took place on Tuesday, July 8, 2008. From July 2008 through November 2009, the pilot GETS was operated with extraction wells EW-01 and MW-21 operating at approximately 10 gallons per minute (gpm) each. Pilot GETS expansion took place between November 2009 and March 2010 in order to incorporate recently installed extraction well EW-02 into the extraction well network. The system maximum flowrate was also increased from 20 gpm to 50 gpm. Beginning in March 2010, the pilot GETS was operated at 50 gpm, entirely from extraction well EW-02.

During the third quarter 2011, the pilot GETS was operational approximately 83 percent of the available runtime and approximately 4,997,843 gallons of groundwater were treated and discharged to the sanitary sewer (Table 4). The average monthly discharge flowrate to the sanitary sewer during July 2011 through September 2011 was approximately 37.7 gpm. Since startup of the pilot GETS, approximately 38,871,705 gallons of groundwater have been treated at an average flowrate of 22.7 gpm through the end of September 2011 (Table 4).

Current monthly and quarterly pilot GETS monitoring activities include collecting samples from extraction wells in addition to collecting samples at treatment system sampling ports: Influent (extraction well EW-02 wellhead when it is the only extraction well operating), Post Particulate Filter, Post HiPOx Oxidation, Carbon Breakthrough, and Carbon Effluent (Tables 5 and 6; Figure 5). Samples collected during these activities were sent to ATL. Analytical results of the treatment system samples have been summarized (Table 6; Appendix B).

The pilot GETS system was shut down for expansion from approximately October 2009 to March 2010. The expansion was completed and extraction and treatment of groundwater resumed in March 2010. The pilot GETS was restarted on March 22, 2010 with extraction and treatment of groundwater from extraction well EW-02 at a rate of approximately 50 gpm. Extraction wells EW-01 and MW-21 are on standby for the current phase of pilot testing, but may be used for future phases of pilot testing or as part of a full-scale pump and treat system.

The pilot GETS continues to remove VOCs and 1,4-dioxane from extracted groundwater. The HiPOx ozone/peroxide advanced oxidation and carbon adsorption treatment units effectively removed VOCs from extracted groundwater. Breakthrough of low-level detections of VOCs was not observed in the third quarter 2011 monitoring samples with the exception of detections of 1,1-dichloroethane (1,1-DCA) at concentrations ranging from 0.72 micrograms per liter (ug/L) to 0.81 ug/l, which are just above the laboratory reporting limit, but below the pilot GETS permitted sewer discharge limit (Table 6). The effluent sample collected from the HiPOx advanced oxidation treatment unit contained low-level detections of bromate, a secondary by-product, during operations in the third quarter 2011. Carbon adsorption does not effectively remove this compound; however, this compound was detected at concentrations below the pilot GETS permitted sewer discharge limit. The operation of the advanced oxidation system continues to be optimized in an attempt to minimize the formation of bromate (Figures 5 and 6).

During the third quarter of 2011, the pilot GETS removed approximately 3.6 pounds of VOCs and 0.8 pound of 1,4-dioxane from extracted groundwater. Since startup of the pilot GETS in July 2008, approximately 88.7 pounds of VOCs and 15.6 pounds of 1,4-dioxane have been removed from groundwater through September 2011 (Figure 7).



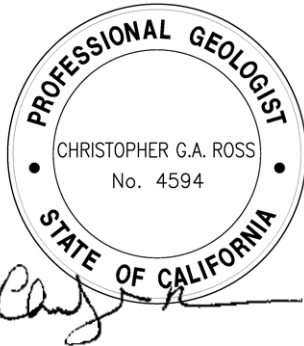
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If you have any questions or require additional information, please contact us at 858-455-6500.

Sincerely,

HARGIS + ASSOCIATES, INC.



Christopher G.A. Ross, PG 4594, CHG 221
Principal Hydrogeologist

CGAR/SPN/AMB/MER/ama



Steven P. Netto, PG 8030, CHG 872
Senior Hydrogeologist

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REFERENCES

California Environmental Protection Agency, Department of Toxic Substances Control (DTSC), 2003. Letter to P. Brewer, Raytheon Systems Company, from A. Plaza, DTSC, re Review of Additional Groundwater Assessment Workplan and Groundwater Monitoring Workplan and Sampling and Analysis Plan. May 20, 2003.

_____, 2009. Letter to P. Brewer, Raytheon Systems Company, from W. Jeffers, DTSC, re Conditional Approval of Groundwater Extraction and Treatment System Pilot Testing, Corrective Measures Study Workplan Addendum No. 4A, Raytheon Company (Former Hughes Aircraft Company), 1901 West Malvern Avenue, Fullerton, California. June 1, 2009.

_____, 2011. Email from W. Jeffers, DTSC, re: Conditional Approval of Addendum No. 1 to the Ground Water Monitoring Work Plan, Raytheon Fullerton, dated June 7, 2011.

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_____, 2009b. Letter to W. Jeffers, DTSC, from C. Ross and S. Netto, H+A, re Response to DTSC Comments to Addendums to Workplans. July 27, 2009.

_____, 2011a. Letter to W. Jeffers, DTSC, re: Addendum No. 1 to the *Groundwater Monitoring Work Plan and Sampling and Analysis Plan (Revision 1.0)*, by Hargis + Associates, Inc., dated April 25, 2003, for the Raytheon Company, (Former Hughes Aircraft Company), 1901 West Malvern Avenue, Fullerton, California. February 11, 2011.

_____, 2011b. Letter to W. Jeffers, DTSC, re: Amendment A, Addendum No. 1 to the *Groundwater Monitoring Work Plan and Sampling and Analysis Plan (Revision 1.0)*, by Hargis + Associates, Inc., dated April 25, 2003, for the Raytheon Company, (Former Hughes Aircraft Company), 1901 West Malvern Avenue, Fullerton, California. June 16, 2011.

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- Table 4. Pilot Groundwater Extraction and Treatment System Operational Summary
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- Table 6. Summary of Select Compounds Detected in Pilot Groundwater Extraction and Treatment System Samples, Third Quarter 2011

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- Figure 3. Water Level and Water Quality, Unit B, August 2011
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- Figure 5. 1,1-Dichloroethylene and 1,4-Dioxane in Extraction Wells EW-01, MW-21, and EW-02
- Figure 6. 1,4-Dioxane and Bromate in Influent and Post-Ox. Samples
- Figure 7. Pilot Groundwater Extraction and Treatment System Mass Removal

Appendices

- Appendix A. Groundwater Sampling Field Forms (Provided on CD only)
- Appendix B. Laboratory Analytical Reports (Provided on CD only)

cc w/encl: (1 copy w-CD)

Mr. Paul Pongetti, Department of Toxic Substances Control, Cypress
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Ms. Tizita Bekele, PE, Department of Toxic Substances Control, Cypress
Ms. Joan Lyle, City of Buena Park

TABLE 1
GROUNDWATER MONITORING PROGRAM

WELL IDENTIFIER	HYDROGEOLOGIC ZONE	SAMPLING FREQUENCY			
		QUARTERLY FEB, MAY, AUG, NOV	SEMIANNUAL FEBRUARY, AUGUST	ANNUAL FEBRUARY	BIENNIAL FEB (EVEN YEARS)
P-07	Perched			VOCs; 1,4-Dioxane	
P-09	Perched			VOCs; 1,4-Dioxane	
MW-35A	Other	VOCs; 1,4-Dioxane			
MW-17	A	PIEZOMETER - WATER LEVEL MEASUREMENT ONLY			
MW-18	A		VOCs; 1,4-Dioxane		
MW-19	A				VOCs
MW-22	A				VOCs; 1,4-Dioxane
MW-23	A				VOCs
MW-34A	A	VOCs; 1,4-Dioxane			
MW-35B	A	VOCs; 1,4-Dioxane			
MW-13	AB			VOCs; 1,4-Dioxane	
MW-15	AB		VOCs		
MW-26A	AB	PIEZOMETER - WATER LEVEL MEASUREMENT ONLY			
MW-26B	AB	PIEZOMETER - WATER LEVEL MEASUREMENT ONLY			
MW-32A	AB	VOCs; 1,4-Dioxane			
EW-01	B	VOCs; 1,4-Dioxane			
EW-02*	B	VOCs; 1,4-Dioxane			
MW-16	B		VOCs; 1,4-Dioxane		
MW-26C	B	VOCs; 1,4-Dioxane			
MW-27	B			VOCs; 1,4-Dioxane	
MW-28	B	VOCs; 1,4-Dioxane			
MW-29	B	VOCs; 1,4-Dioxane			
MW-30A	B	VOCs; 1,4-Dioxane			
MW-31	B	VOCs; 1,4-Dioxane			
MW-32B	B	VOCs; 1,4-Dioxane			
MW-33	B	VOCs; 1,4-Dioxane			
MW-34B	B	VOCs; 1,4-Dioxane			
MW-35C	B	VOCs; 1,4-Dioxane			
MW-21	BC	VOCs; 1,4-Dioxane			
MW-08	BC	VOCs; 1,4-Dioxane			
MW-30B	BC	VOCs; 1,4-Dioxane			
MW-34C	BC	VOCs; 1,4-Dioxane			
MW-09	C		VOCs; 1,4-Dioxane		
MW-24	C			VOCs; 1,4-Dioxane	
MW-32C	C	VOCs; 1,4-Dioxane			
MW-06	D			VOCs	
MW-20	D		VOCs; 1,4-Dioxane		
MW-25	D	WATER LEVEL MEASUREMENT ONLY			

FOOTNOTES

* = Extraction Well monitored monthly as part of the Groundwater Extraction and Treatment System Pilot Testing
VOC = Volatile organic compound

TABLE 2
GROUNDWATER LEVELS
THIRD QUARTER 2011

Well Identifier	Date Measured	Reference Point Elevation (a) (feet msl)	Depth to Water (feet bls)	Water Level Elevation (feet msl)	Remediation System On
Regional Groundwater System Monitor and Extraction Wells					
MW-06	08/01/11	184.70	160.31	24.39	
MW-08	08/01/11	155.91	139.94	15.97	
	08/05/11	155.91	139.80	16.11	
MW-09	08/01/11	180.10	161.84	18.26	
MW-13	08/01/11	142.19	127.15	15.04	
MW-15	08/01/11	144.92	141.00	3.92	
	08/05/11	144.92	140.61	4.31	
MW-16	08/01/11	142.73	130.92	11.81	
	08/05/11	142.73	131.23	11.50	
MW-17	08/01/11	142.66	127.11	15.55	
MW-18	08/01/11	142.11	127.20	14.91	
MW-19	08/01/11	142.72	127.06	15.66	
MW-20	08/01/11	184.19	156.84	27.35	
MW-21	08/01/11	141.18	123.72	17.46	
	08/05/11	141.18	123.64	17.54	
MW-22	08/01/11	138.65	123.01	15.64	
MW-23	08/01/11	137.33	122.97	14.36	
	08/05/11	137.33	123.90	13.43	
MW-24	08/01/11	142.83	124.12	18.71	
	08/05/11	142.83	123.84	18.99	
MW-25	08/01/11	142.64	120.05	22.59	
MW-26A	08/01/11	137.04	125.09	11.95	
MW-26B	08/01/11	137.05	132.83	4.22	
	08/05/11	137.05	132.55	4.50	
MW-26C	08/01/11	137.22	127.39	9.83	
	08/05/11	137.22	127.92	9.30	
MW-27	08/01/11	137.16	126.64	10.52	
	08/05/11	137.16	127.08	10.08	
MW-28	08/01/11	140.77	131.02	9.75	
	08/05/11	140.77	131.37	9.40	
MW-29	08/01/11	142.34	134.23	8.11	
	08/05/11	142.34	134.61	7.73	
MW-30A	08/01/11	129.44	121.07	8.37	
	08/05/11	129.44	121.58	7.86	
MW-30B	08/01/11	129.39	118.29	11.10	
	08/05/11	129.39	119.13	10.26	

TABLE 2
GROUNDWATER LEVELS
THIRD QUARTER 2011

Well Identifier	Date Measured	Reference Point Elevation (a) (feet msl)	Depth to Water (feet bls)	Water Level Elevation (feet msl)	Remediation System On
<u>Regional Groundwater System Monitor and Extraction Wells (continued)</u>					
MW-31	08/01/11	119.60	110.28	9.32	
	08/05/11	119.60	111.32	8.28	
MW-32A	08/01/11	92.88	87.56	5.32	
MW-32B	08/01/11	92.89	86.35	6.54	
MW-32C	08/01/11	92.88	74.40	18.48	
MW-33	08/01/11	83.19	82.56	0.63	
MW-34A	08/01/11	153.25	143.63	9.62	
MW-34B	08/01/11	153.11	147.20	5.91	
MW-34C	08/01/11	153.29	146.36	6.93	
MW-35A	08/01/11	93.57	75.29	18.28	
MW-35B	08/01/11	93.56	82.78	10.78	
MW-35C	08/01/11	93.55	86.38	7.17	
EW-01	08/01/11	141.07	128.94	12.13	
	08/05/11	141.07	129.27	11.80	
EW-02	07/02/11	132.97	127.73	5.24	Pilot GETS
	08/01/11	132.97	130.41	2.56	Pilot GETS
	08/05/11	132.97	130.83	2.14	Pilot GETS
	09/09/11	132.97	131.13	1.84	Pilot GETS
<u>Perched Zone Water Levels</u>					
P-07	08/01/11	142.31	111.31	31.00	
P-09	08/01/11	183.86	120.48	63.38	

FOOTNOTES

(a) Reference point elevations are relative to City of Fullerton datum.

bls = Below land surface

msl = Mean sea level

Pilot GETS = Pilot Groundwater Extraction and Treatment System On

TABLE 3

**PREVALENT VOLATILE ORGANIC COMPOUNDS AND 1,4-DIOXANE IN GROUNDWATER
THIRD QUARTER 2011**

		Concentration (micrograms per liter)														
		VOLATILE ORGANIC COMPOUNDS (FEDERAL MCL/CALIFORNIA MCL)													Semi-VOCs	
Well Identifier / Sample Identifier	Date Sampled	QA Code	Benzene (5/1)	Carbon Tetrachloride (5/0.5)	Chloroform (80/80)	1,1-DCA (~1/5)	1,2-DCA (~1/5)	1,1-DCE (7/6)	cis-1,2-DCE (70/6)	PCE (5/5)	1,1,1-TCA (200/200)	1,1,2-TCA (5/5)	TCE (5/5)	TCFM (~1/150)	Toulene	1,4-DIOXANE (3*/1**)
Regional Groundwater System Monitor and Extraction Wells																
MW-08	08/02/11	ORG	0.64	< 0.50	0.86	< 0.50	< 0.50	190	13	< 0.50	< 0.50	< 0.50	480	< 0.50	< 0.50	0.69
Historical High/Low													HIGH			
MW-08 Historical Range***			< 0.50 - 0.95	< 0.50	< 0.50 - 0.76	< 0.50 - 5.1	< 0.50 - 0.99	< 0.50 - 500	< 0.50 - 10	< 0.50 - 1.3	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - 230	< 0.50 - 1.0	< 0.50	< 0.5 - 130
MW-09	08/02/11	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.59
Historical High/Low																LOW
MW-09 Historical Range***			< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - 0.79	< 0.50 - < 5.0	< 0.50 - 4.9	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - 0.96	< 0.50 - 5.3	< 0.50	< 2.0 - 52 E
MW-15	08/02/11	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	3.9	7.7	< 0.50	NA
MW-15 Historical Range***			< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - 12	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - < 5.0	< 0.50 - 7.8	< 0.50 - 20	< 0.50	< 0.50 - < 2.0
MW-16	08/05/11	ORG	< 1.0	< 1.0	< 1.0	8.9	1.5	910	< 1.0	1.1	3.6	2.9	5.3	< 1.0	< 0.50	260
Historical High/Low													HIGH			
MW-16 Historical Range***			< 0.50 - < 5.0	< 0.50 - 0.58	< 0.50 - 1.1	< 0.50 - 18	< 0.50 - 4.5	49 - 1,900 E	< 0.50 - 0.57	< 0.50 - 2.9	< 0.50 - 28 E	< 0.50 - 10	< 0.50 - 4.9	< 0.50 - < 5.0	< 0.50	< 2.0 - 440
MW-18	08/03/11	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	2.8	< 0.50	< 0.20
MW-18 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 - 0.51	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 - 6.3	< 0.50	< 0.50 - 7.7 E
MW-20	08/05/11	ORG	< 0.50	< 0.50	0.59	< 0.50	< 0.50	0.80	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.80
MW-20 Historical Range***			< 0.50	< 0.50	< 0.50 - 0.78	< 0.50	< 0.50	< 0.50 - 82	< 0.50	< 0.50	< 0.50 - 0.63	< 0.50	< 0.50	< 0.50 - 0.58	< 0.50	< 0.50 - 3.9
MW-21	08/02/11	ORG	< 5.0	< 5.0	< 5.0	34	< 5.0	2,400	< 5.0	5.6	< 5.0	11 E	24 E	< 5.0	< 5.0	360 "E"
MW-2100	08/02/11	FD	< 2.5	< 2.5	< 2.5	34	4.4	2,000	< 2.5	5.4	< 2.5	11 E	23 E	< 2.5	< 2.5	340 "E"
MW-21	08/02/11	SPT	< 1.0	< 1.0	2	22	3	1,800	< 1.0	4	< 1.0	8 E	17 E	< 1.0	< 1.0	430
MW-21 Historical Range***			< 0.50 - < 25	< 0.50 - 1.9	< 0.50 - 4.6	< 0.50 - 71	< 0.50 - 8.9	200 - 4,900	< 0.50 - 2.4	< 0.50 - 12	< 0.50 - 2.0	< 0.50 - 27	< 0.50 - 46	< 0.50 - 0.53	< 0.50 - < 25	11 - 1,100
MW-26C	08/04/11	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	9.7	0.34
MW-26C Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 1.7	< 0.50	< 0.50 - 120	< 0.50	< 0.50 - 0.79	< 0.50	< 0.50 - 0.77	< 0.50	< 0.50	< 0.50 - 22	< 0.20 - 55 E
MW-28	08/05/11	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.7	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.53
MW-28 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 0.94	< 0.50	1.6 - 76 E	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.49 - 19
MW-29	08/05/11	ORG	< 0.50	< 0.50	0.63	3.6	0.55	330	0.61	0.87	< 0.50	0.76	5.6	1.2	< 0.50	45 E
MW-2900	08/05/11	FD	< 0.50	< 0.50	0.62	3.6	0.54	370	0.57	0.84	< 0.50	0.75	5.7	1.2	< 0.50	54 E
MW-29	08/05/11	SPT	< 1.0	< 1.0	< 1.0	2	< 1.0	270	< 1.0	< 1.0	< 1.0	< 1.0	4	< 1.0	< 1.0	82 E
Historical High/Low					HIGH				HIGH			HIGH	HIGH			
MW-29 Historical Range***			< 0.50 - < 1.0	< 0.50 - < 1.0	< 0.50 - 0.62	1 - 5.2	< 0.50 - 1.0	99 - 550	< 0.50 - < 1.0	< 0.50 - 1.5	< 0.50 - < 1.0	< 0.50 - 1.9	0.58 - 4.5	< 0.50 - 0.81	< 0.50	29 - 110
MW-30A	08/05/11	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.93	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
MW-30A Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 3	< 0.50 - 0.67	< 0.50 - 290	< 0.50	< 0.50 - 0.58	< 0.50	< 0.50 - 1.1	< 0.50 - 0.72	< 0.50	< 0.50	0.21 - 110
MW-30B	08/05/11	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	18 E	5.6	< 0.50	< 0.50	< 0.50	87	< 0.50	4.5	< 0.20
MW-3000B	08/05/11	FD	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	19 E	5.6	< 0.50	< 0.50	< 0.50	87	< 0.50	4.7	< 0.20
MW-30B	08/05/11	SPT	< 1	< 1	< 1	< 1	< 1	10 E	3	< 1	< 1	< 1	73	< 1	3	< 1
Note: Freon 113 was detected in the split sample collected at MW-30B on 8/05/11 at 2 ug/l.																
Historical High/Low								HIGH	HIGH						HIGH	LOW
MW-30B Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50 - 14	< 0.50 - 4.3	< 0.50	< 0.50	< 0.50	< 0.50 - 87	< 0.50	< 0.50 - 3.5	0.56 - 28 E

TABLE 3

**PREVALENT VOLATILE ORGANIC COMPOUNDS AND 1,4-DIOXANE IN GROUNDWATER
THIRD QUARTER 2011**

.....Concentration (micrograms per liter).....																
VOLATILE ORGANIC COMPOUNDS (FEDERAL MCL/CALIFORNIA MCL)															Semi-VOCs	
Well Identifier / Sample Identifier	Date Sampled	QA Code	Benzene (5/1)	Carbon Tetrachloride (5/0.5)	Chloroform (80/80)	1,1-DCA (-/5)	1,2-DCA (-/5)	1,1-DCE (7/6)	cis-1,2-DCE (70/6)	PCE (5/5)	1,1,1-TCA (200/200)	1,1,2-TCA (5/5)	TCE (5/5)	TCFM (-/150)	Toluene	1,4-DIOXANE (3*/1**)
Regional Groundwater System Monitor and Extraction Wells (cont'd)																
MW-31	08/05/11	ORG	< 0.50	< 0.50	< 0.50	0.69	< 0.50	93	< 0.50	< 0.50	< 0.50	< 0.50	6.9	< 0.50	< 0.50	1.1
MW-31 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 3.6	< 0.50	25 - 430	< 0.50 - 1.2	< 0.50	< 0.50	< 0.50	2.2 - 17	< 0.50	< 0.50 - 0.83	0.25 - 7
MW-32A	08/03/11	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
Historical High/Low																LOW
MW-32A Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 2.0 - 0.57
MW-32B	08/03/11	ORG	< 0.50	< 0.50	< 0.50	0.70	< 0.50	77	5.6	< 0.50	< 0.50	< 0.50	54	< 0.50	< 0.50	2.5
MW-32B Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 0.50	< 0.50	16 - 58	1.9 - 5.7	< 0.50	< 0.50	< 0.50	24 - 63	< 0.50	< 0.50	0.49 - 3.0
MW-32C	08/03/11	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-32C Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50		< 2.0 - 1.0
MW-33	08/04/11	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	5.7	< 0.50	< 0.50	< 0.50	< 0.50	1.3	< 0.50	< 0.50	< 0.20
MW-33 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	4.4 - 12	< 0.50	< 0.50	< 0.50	< 0.50	0.55 - 1.6	< 0.50	< 0.50 - 1.4	< 0.20 - < 2.0
MW-34A	08/04/11	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.63	0.68	< 0.20
MW-34A Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	1.0 - 1.6	< 0.50 - 2.8	< 0.20 - < 2.0
MW-34B	08/04/11	ORG	< 0.50	< 0.50	< 0.50	4.8	0.71	410	< 0.50	< 0.50	< 0.50	1.2	0.65	< 0.50	1.5	84 "E"
Historical High/Low							HIGH									HIGH
MW-34B Historical Range***			< 0.50 - < 1.0	< 0.50 - < 1.0	< 0.50 - < 1.0	< 0.50 - 5.1	< 0.50 - < 1.0	20 - 560	< 0.50 - < 1.0	< 0.50 - < 1.0	< 0.50 - < 1.0	< 0.50 - 1.3	< 0.50 - 1.6	< 0.50 - < 1.0	< 0.50 - 2.6	4.1 - 75
MW-34C	08/04/11	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	9.6	< 0.20
Historical High/Low															HIGH	
MW-34C Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	0.50 - 9.0	< 0.20 - < 2.0
MW-35A	08/04/11	ORG	< 0.50	< 0.50	14	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-35A Historical Range***			< 0.50	< 0.50	11 - 67	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20 - < 2.0
MW-35B	08/04/11	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-35B Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20 - < 2.0
MW-35C	08/04/11	ORG	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
MW-35C Historical Range***			< 0.50	< 0.50	< 0.50 - 120	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20 - < 2.0
EW-01	08/02/11	ORG	< 0.50	< 0.50	< 0.50	3.1	0.61	370	< 0.50	0.67	< 0.50	1.4	0.55	< 0.50	< 0.50	80 "E"
EW-01 Historical Range***			< 0.50 - 2	< 0.50 - 0.55	< 0.50 - 1.2	< 0.50 - 16	< 0.50 - 4.2	< 0.50 - 1,600	< 0.50 - 0.52	< 0.50 - 3.3	< 0.50 - < 2.5	< 0.50 - 10	< 0.50 - 2.8	< 0.50 - < 5.0	< 0.50 - 4.6	5.1 - 710
EW-02	07/02/11	ORG	< 0.50	< 0.50	< 0.50	0.73	< 0.50	87	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	18
EW-02	08/01/11	ORG	< 0.50	< 0.50	< 0.50	0.91	< 0.50	75	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	21
EW-02	09/09/11	ORG	< 0.50	< 0.50	< 0.50	0.82	< 0.50	90	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	20
Historical High/Low																
EW-02 Historical Range***			< 0.50	< 0.50	< 0.50	< 0.50 - 1.5	< 0.50	52 - 160	< 0.50	< 0.50	< 0.50	< 0.50 - 0.59	< 0.50	< 0.50	< 0.50 - 0.85	16 - 48

TABLE 3

**PREVALENT VOLATILE ORGANIC COMPOUNDS AND 1,4-DIOXANE IN GROUNDWATER
THIRD QUARTER 2011**

.....Concentration (micrograms per liter).....																
VOLATILE ORGANIC COMPOUNDS (FEDERAL MCL/CALIFORNIA MCL)															Semi-VOCs	
Well Identifier / Sample Identifier	Date Sampled	QA Code	Benzene (5/1)	Carbon Tetrachloride (5/0.5)	Chloroform (80/80)	1,1-DCA (-/5)	1,2-DCA (-/5)	1,1-DCE (7/6)	cis-1,2-DCE (70/6)	PCE (5/5)	1,1,1-TCA (200/200)	1,1,2-TCA (5/5)	TCE (5/5)	TCFM (-/150)	Toulene	1,4-DIOXANE (3*/1**)
QUALITY ASSURANCE/QUALITY CONTROL SAMPLES - THIRD QUARTER 2011																
TB-080211	8/2/2011	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-080211A	8/2/2011	TB	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	NA
TB-080311	8/3/2011	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
RB080311	8/3/2011	RB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
TB-080411	8/4/2011	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-080411A	8/4/2011	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA
TB-080411	8/5/2011	TB	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	NA
RB-080511	8/5/2011	RB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.20
TB-090911	9/9/2011	TB	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NA

NOTE: Detections are shown in **BOLD** type.

FOOTNOTES

1,1-DCA = 1,1-Dichloroethane
 1,2-DCA = 1,2-Dichloroethane
 1,1-DCE = 1,1-Dichloroethene
 cis-1,2-DCE = cis-1,2-Dichloroethene
 PCE = Tetrachloroethene
 1,1,1-TCA = 1,1,1-Trichloroethane
 1,1,2-TCA = 1,1,2-Trichloroethane
 TCE = Trichloroethene
 TCFM = Trichlorofluoromethane
 (<) = Less than; the value is the Limit of Detection for that compound
 * = 1,4-Dioxane Action Level of 3 ug/l
 ** = California Notification Level for 1,4-Dioxane of 1 ug/l
 *** = Historical Range determined using original samples exclusively

Semi-VOCs = Semivolatile organic compounds

E = Data qualified as Estimated in accordance with quality control criteria.
 "E" = Value above quantitative range in accordance with laboratory quality control criteria
 NA = Not analyzed for constituent
 FD = Field duplicate sample
 ORG = Original sample
 QA = Quality Assurance
 RB = Rinsate blank sample
 SPT = Split sample
 TB = Trip blank sample
 ug/l = Micrograms per liter
 MCL = Maximum contaminant level
 (-) = Not promulgated

TABLE 4
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM OPERATIONAL SUMMARY

OPERATIONAL PERIOD (MONTH/QUARTER/YEAR)	WELLFIELD PRODUCTION ^(a) (gallons)	AVERAGE DISCHARGE RATE ^(b) (gpm)	AVERAGE OPERATIONAL DISCHARGE RATE ^(c) (gpm)	OPERATIONAL HOURS DURING OPERATIONAL PERIOD	HOURS IN OPERATIONAL PERIOD	% OPERATIONAL
2008^(d)	3,659,562	13.8	18.2	3,358	4,416	76%
2009	5,787,848	11.0	18.1	5,319	8,760	61%
2010	14,295,261	27.2	46.4	5,131	8,760	59%
Jan-11	1,925,903	43.1	44.9	715	744	96%
Feb-11	1,710,464	42.4	49.9	571	672	85%
Mar-11	1,799,420	40.3	44.3	677	744	91%
1Q2011	5,435,788	41.9	46.2	1,963	2,160	91%
Apr-11	1,887,147	43.7	47.6	661	720	92%
May-11	1,284,643	28.8	46.1	464	744	62%
Jun-11	1,523,613	35.3	45.9	554	720	77%
2Q2011	4,695,404	35.8	46.6	1,679	2,184	77%
Jul-11	1,573,420	35.2	45.9	572	744	77%
Aug-11	1,476,104	33.1	45.6	540	744	73%
Sep-11	1,948,319	45.1	45.3	717	720	100%
3Q2011	4,997,843	37.7	45.6	1,828	2,208	83%
SINCE INCEPTION	38,871,705	22.7	33.6	19,278	28,488	68%

Notes:

(a) Based on Effluent totalizer readings from CEFF.

(b) Total volume of water treated during the operational period divided by the total number of minutes in that operational period.

(c) Total volume of water treated during the operational period divided by the minutes of operation in that operational period.

(d) Operational period beginning 7/1/2008 (first month of system operation).

gpm = gallons per minute

Refer to previous quarterly reports for detail of 2008 thru 2010 operational summary

Treatment of groundwater from EW-02 initiated in 2010

TABLE 5
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SAMPLING SCHEDULE

				SAMPLE FREQUENCY AND LOCATION																
				Daily Samples ¹ : Days 1-5					Weekly Samples ¹ : Weeks 1-4					Monthly Samples: Week 5+						Quarterly Samples: Week 1+
				Extraction Well head (EW-02) ²	Post-Filter (PF)	Post-Oxidation (POX)	Carbon Breakthrough (CBT) ³	Post-Carbon (CEFF)	Extraction Well head (EW-02) ²	Post-Filter (PF)	Post-Oxidation (POX)	Carbon Breakthrough (CBT) ³	Post-Carbon (CEFF)	Extraction Well head (EW-02) ²	Post-Filter (PF)	Post-Oxidation (POX)	Carbon Breakthrough (CBT) ³	Post-Carbon (CEFF)	Extraction Well head (EW-02) ²	Post-Oxidation (POX)
COMPOUND(S) / CONSTITUENT	ANALYTICAL METHOD	SAMPLE CONTAINER	REPORTING DETECTION LIMITS (milligrams per liter)																	
COMPOUNDS/CONSTITUENTS NORMALLY REQUIRED AS PART OF NPDES OR WDR PERMITS, PURSUANT TO CRWQCB REGION 8 ORDER NO. R8-2003-0085																				
Volatile Organic Compounds	8260B	QAPP ⁴	QAPP ⁴	X		X	X	X		X		X	X	X		X				
1,4-Dioxane	8270 Modified	QAPP ⁴	QAPP ⁴	X		X				X		X				X				
Total Suspended Solids	160.2	8-oz poly	10	(a)	(a)										X	X				
Total Dissolved Solids	160.1	QAPP ⁴	QAPP ⁴	(a)											X		X			
SELECTED METALS																				
Iron, Manganese, Calcium, Sodium, Magnesium	6010B	QAPP ⁴	QAPP ⁴	(a)													X			
Selenium	6010B	QAPP ⁴	QAPP ⁴														X			
SELECTED INORGANIC CONSTITUENTS																				
Hydroxide Alkalinity	310.1	QAPP ⁴	QAPP ⁴	(a)													X			
Bicarbonate Alkalinity	310.1	QAPP ⁴	QAPP ⁴	(a)													X			
Carbonate Alkalinity	310.1	QAPP ⁴	QAPP ⁴	(a)													X			
Total Alkalinity	310.1	QAPP ⁴	QAPP ⁴	(a)													X			
BROMATE EVALUATION																				
Bromate	317	125-ml poly	0.0005	X		X		X		X		X		X		X				
Bromide	300	8-oz poly	0.05	X		X		X		X		X		X		X				
OTHER CONSTITUENTS/COMPOUNDS																				
Total Organic Carbon	9060	60 ml poly, H2SO4	3	(a)													X			
Chloride, Sulfate, Nitrate, Nitrite, and Phosphate	300	1-Liter Poly	Varies 1 to 3	(a)													X			
Chemical Oxygen Demand	410.4	1-L glass, HCl	5	(a)													X			
Field Parameters																				
Dissolve Oxygen (DO)	N/A	N/A	N/A	X		X		X		X		X		X		X				
Electrical Conductance (EC)	N/A	N/A	N/A	X		X		X		X		X		X		X				
Redox Potential	N/A	N/A	N/A	X		X		X		X		X		X		X				
Temperature	N/A	N/A	N/A	X		X	X	X	X	X		X		X	X	X				
pH	N/A	N/A	N/A	X		X		X		X		X		X	X	X				
Turbidity	N/A	N/A	N/A	X	X					X	X			X	X					
Flow-Meter	N/A	N/A	N/A	X					X					X						

FOOTNOTES

- (a) Only one sample to be collected during sampling period.
1. Daily and weekly samples collected during the first month of operation will be repeated after major modifications to system equipment or operating parameters, as detailed in the Workplan.
2. If more than one extraction well is in operation, combined influent samples will be collected in addition to extraction wellhead samples, with the same sampling schedule as the extraction wellheads.
3. Carbon breakthrough will be collected from the effluent of the first carbon unit in series; when breakthrough of the first unit is detected, the breakthrough sample will be collected from the effluent of the second carbon unit in series.
4. QAPP, Quality Assurance Project Plan, Appendix B of Additional Groundwater Assessment Workplan, Hargis + Associates, Inc., April 25, 2003.

CRWQCB = California Regional Water Quality Control Board, Santa Ana Region

NPDES = National Pollutant Discharge Elimination System

WDR = Waste Discharge Requirement

TABLE 6
SUMMARY OF SELECT COMPOUNDS DETECTED IN
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SAMPLES
THIRD QUARTER 2011

Compound	Date	Units	MW-21	EW-01	EW-02	INF*	PF	POX	CBT	CEFF
1,1,2-Trichloroethane (5 ug/L MCL)	07/02/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
	08/01/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
	08/02/11	ug/l	11	1.4	--	--	--	--	--	--
	09/09/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
1,1-Dichloroethane (5 ug/L MCL)	07/02/11	ug/l	--	--	0.73	--	--	0.58	0.71	0.80
	08/01/11	ug/l	--	--	0.91	--	--	0.66	0.72	0.81
	08/02/11	ug/l	34	3.1	--	--	--	--	--	--
	09/09/11	ug/l	--	--	0.82	--	--	0.61	0.64	0.72
1,1-Dichloroethene (6 ug/L MCL)	07/02/11	ug/l	--	--	87	--	--	< 0.50	< 0.50	< 0.50
	08/01/11	ug/l	--	--	75	--	--	< 0.50	< 0.50	< 0.50
	08/02/11	ug/l	2400	370	--	--	--	--	--	--
	09/09/11	ug/l	--	--	90	--	--	< 0.50	< 0.50	< 0.50
1,2-Dichloroethane (0.5 ug/L MCL)	07/02/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
	08/01/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
	08/02/11	ug/l	< 5.0	0.61	--	--	--	--	--	--
	09/09/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
cis-1,2-Dichloroethene (6 ug/L MCL)	07/02/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
	08/01/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
	08/02/11	ug/l	< 0.50	< 0.50	--	--	--	--	--	--
	09/09/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
Tetrachloroethene (5 ug/L MCL)	07/02/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
	08/01/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
	08/02/11	ug/l	5.6	0.67	--	--	--	--	--	--
	09/09/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
Trichloroethene (5 ug/L MCL)	07/02/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
	08/01/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
	08/02/11	ug/l	24	0.55	--	--	--	--	--	--
	09/09/11	ug/l	--	--	< 0.50	--	--	< 0.50	< 0.50	< 0.50
1,4-Dioxane (1 ug/L California Notification Level)	07/02/11	ug/l	--	--	18	--	--	0.46	--	--
	08/01/11	ug/l	--	--	21	--	--	0.56	--	--
	08/02/11	ug/l	360	80	--	--	--	--	--	--
	09/09/11	ug/l	--	--	20	--	--	0.49	--	--
Bromide	07/02/11	ug/l	--	--	640	--	--	650	--	640
	08/01/11	ug/l	--	--	2,300	--	--	2,300	--	2,300
	09/09/11	ug/l	--	--	480	--	--	500	--	520
Bromate (10 ug/L MCL)	07/02/11	ug/l	--	--	< 0.5	--	--	6.5	--	4.1
	08/01/11	ug/l	--	--	< 0.5	--	--	6.4	--	5.5
	09/09/11	ug/l	--	--	< 0.5	--	--	8.1	--	11.9

TABLE 6
SUMMARY OF SELECT COMPOUNDS DETECTED IN
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM SAMPLES
THIRD QUARTER 2011

Compound	Date	Units	MW-21	EW-01	EW-02	INF*	PF	POX	CBT	CEFF
Total Non-Filterable Residue	07/02/11	mg/l	--	--	< 10	--	< 10	--	--	--
	08/01/11	mg/l	--	--	< 10	--	< 10	--	--	--
	09/09/11	mg/l	--	--	< 10	--	< 10	--	--	--
Total Filterable Residue (500 mg/L MCL)	07/02/11	mg/l	--	--	650	--	--	630	--	640
	08/01/11	mg/l	--	--	640	--	--	650	--	650
	09/09/11	mg/l	--	--	670	--	--	670	--	660
Dissolved Calcium	09/09/11	mg/l	--	--	90	--	--	--	--	--
Dissolved Iron	09/09/11	mg/l	--	--	< 0.50	--	--	--	--	--
Dissolved Magnesium	09/09/11	mg/l	--	--	28	--	--	--	--	--
Dissolved Manganese	09/09/11	mg/l	--	--	< 0.50	--	--	--	--	--
Dissolved Selenium (0.05 mg/L MCL)	09/09/11	mg/l	--	--	< 0.010	--	--	--	--	--
Alkalinity, Bicarbonate (As CaCO ₃)	09/09/11	mg/l	--	--	230	--	--	--	--	--
Alkalinity, Carbonate (As CaCO ₃)	09/09/11	mg/l	--	--	< 5.0	--	--	--	--	--
Alkalinity, Hydroxide (As CaCO ₃)	09/09/11	mg/l	--	--	< 5.0	--	--	--	--	--
Alkalinity, Total (As CaCO ₃)	09/09/11	mg/l	--	--	230	--	--	--	--	--
Chemical Oxygen Demand	09/09/11	mg/l	--	--	9.0	--	--	38	--	--
Organic Carbon, Total	09/09/11	mg/l	--	--	< 3.0	--	--	< 3.0	--	--
Chloride	09/09/11	mg/l	--	--	110	--	--	110	--	--
Sulfate	09/09/11	mg/l	--	--	130	--	--	140	--	--
Nitrate	09/09/11	mg/l	--	--	5.6	--	--	5.6	--	--
Nitrite	09/09/11	mg/l	--	--	< 0.10	--	--	< 0.10	--	--
Phosphate	09/09/11	mg/l	--	--	< 0.050	--	--	< 0.050	--	--

FOOTNOTES

MCL = Maximum Contaminant Level or Drinking Water Action Level, if applicable

ug/l = Micrograms per liter

mg/l = Milligrams per liter

(--) = Not scheduled for performance monitoring

(<) = Less than; the numerical value is the Limit of Detection for that compound

INF* = Influent (same as EW-02, when active)

PF = Post Particulate Filter

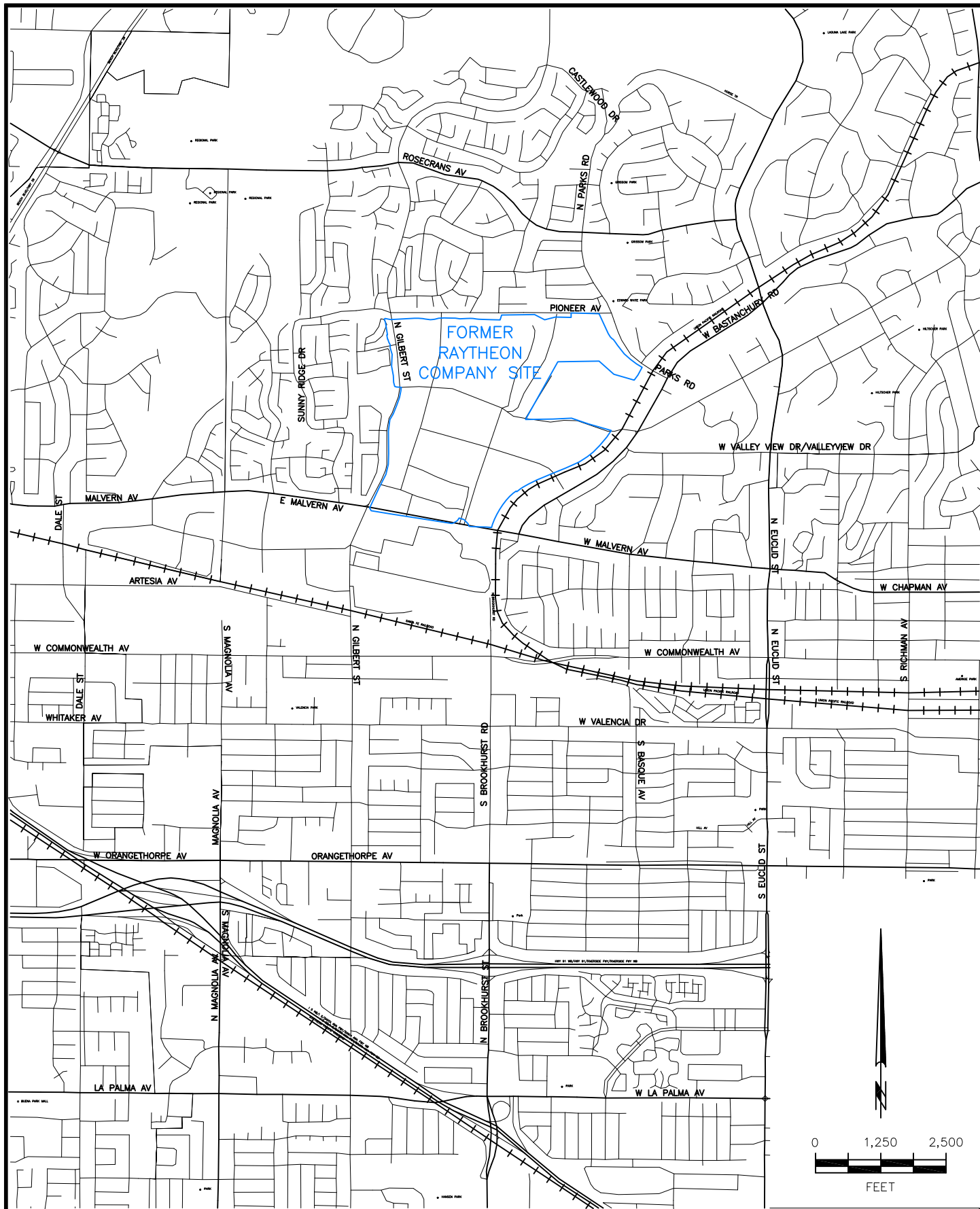
POX = Post Hipox Oxidation

CBT = Carbon Breakthrough

CEFF = Carbon Effluent

CaCO₃ = Calcium carbonate

May 11, 2011 - 10:09am ADE - T: \2011\500-599\532 Raytheon\Hydrogeology\H+A Base\Maps\410-8281.dwg

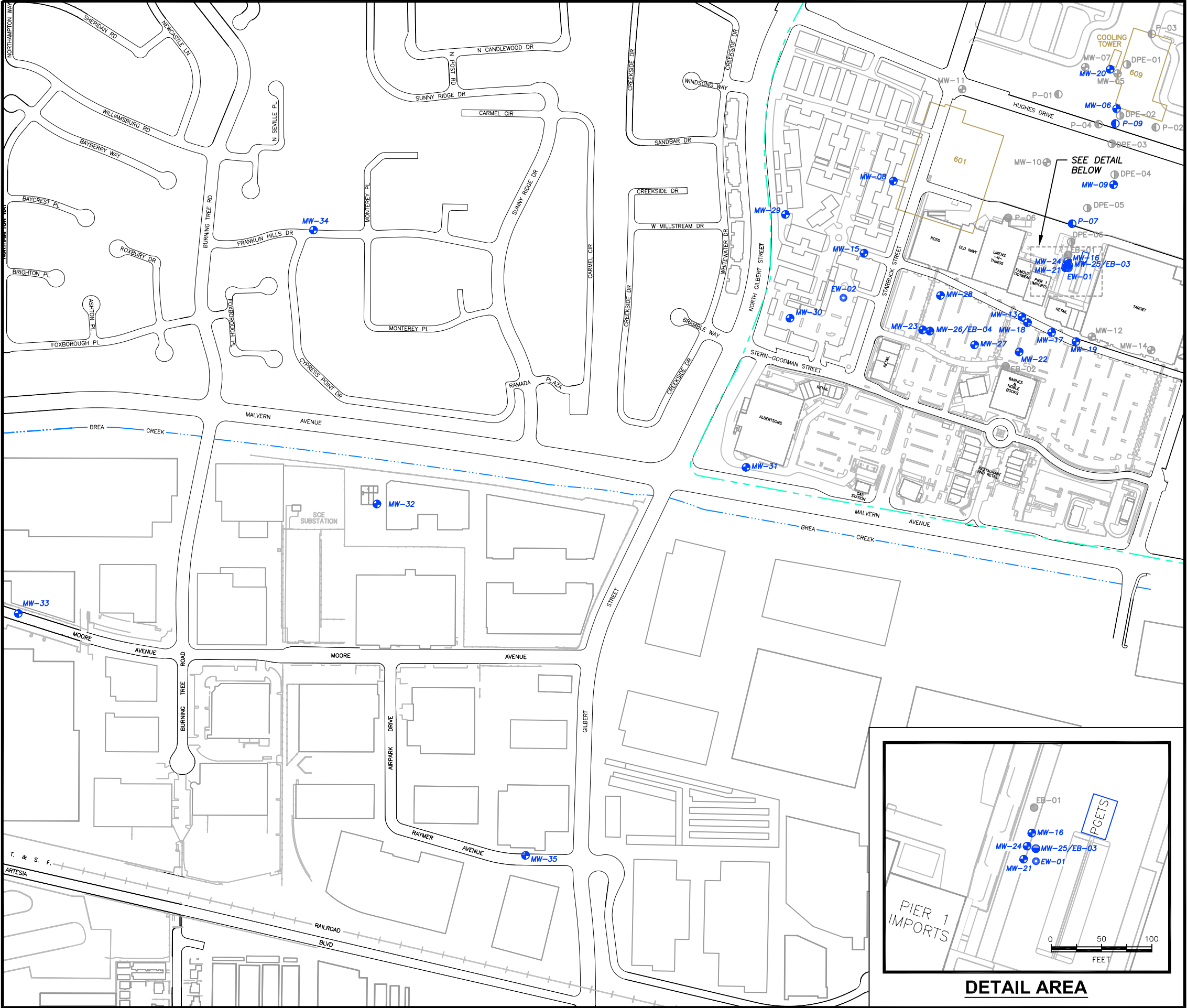


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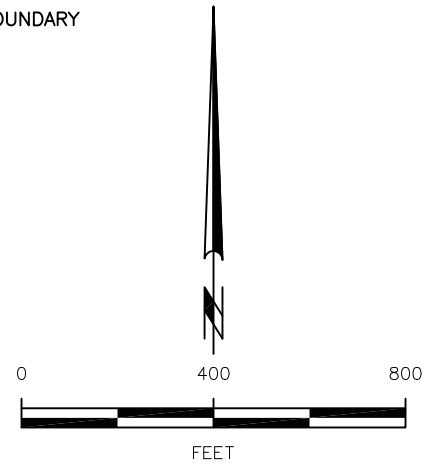
FIGURE 1. SITE LOCATION

May 11, 2011 - 10:13am ADE - T: \\2011\500-599\532 Raytheon\Hydrogeology\H+A BaseMaps\410-8269.dwg



EXPLANATION

- MW-09 GROUNDWATER MONITOR WELL
- MW-25 GROUNDWATER PIEZOMETER
- P-09 PERCHED ZONE PIEZOMETER
- EW-01 GROUNDWATER EXTRACTION WELL
- MW-10 FORMER GROUNDWATER MONITOR WELL (ABANDONED)
- P-04 FORMER PERCHED ZONE PIEZOMETER (ABANDONED)
- DPE-05 FORMER PERCHED ZONE DUAL-PHASE EXTRACTION WELL (ABANDONED)
- EB-01 FORMER GROUNDWATER ASSESSMENT SOIL BORING (ABANDONED)
- PGETS PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM FACILITY COMPOUND
- 609 FORMER RAYTHEON BUILDING, DEMOLISHED MID-2000
- CURRENT RESIDENTIAL AND COMMERCIAL BUILDINGS
- DRIVEWAYS, PARKING LOTS AND OTHER HARDSCAPE OF SITE RE-DEVELOPMENT
- SITE BOUNDARY



RAYTHEON COMPANY
FULLERTON, CALIFORNIA

WELL AND PIEZOMETER LOCATIONS

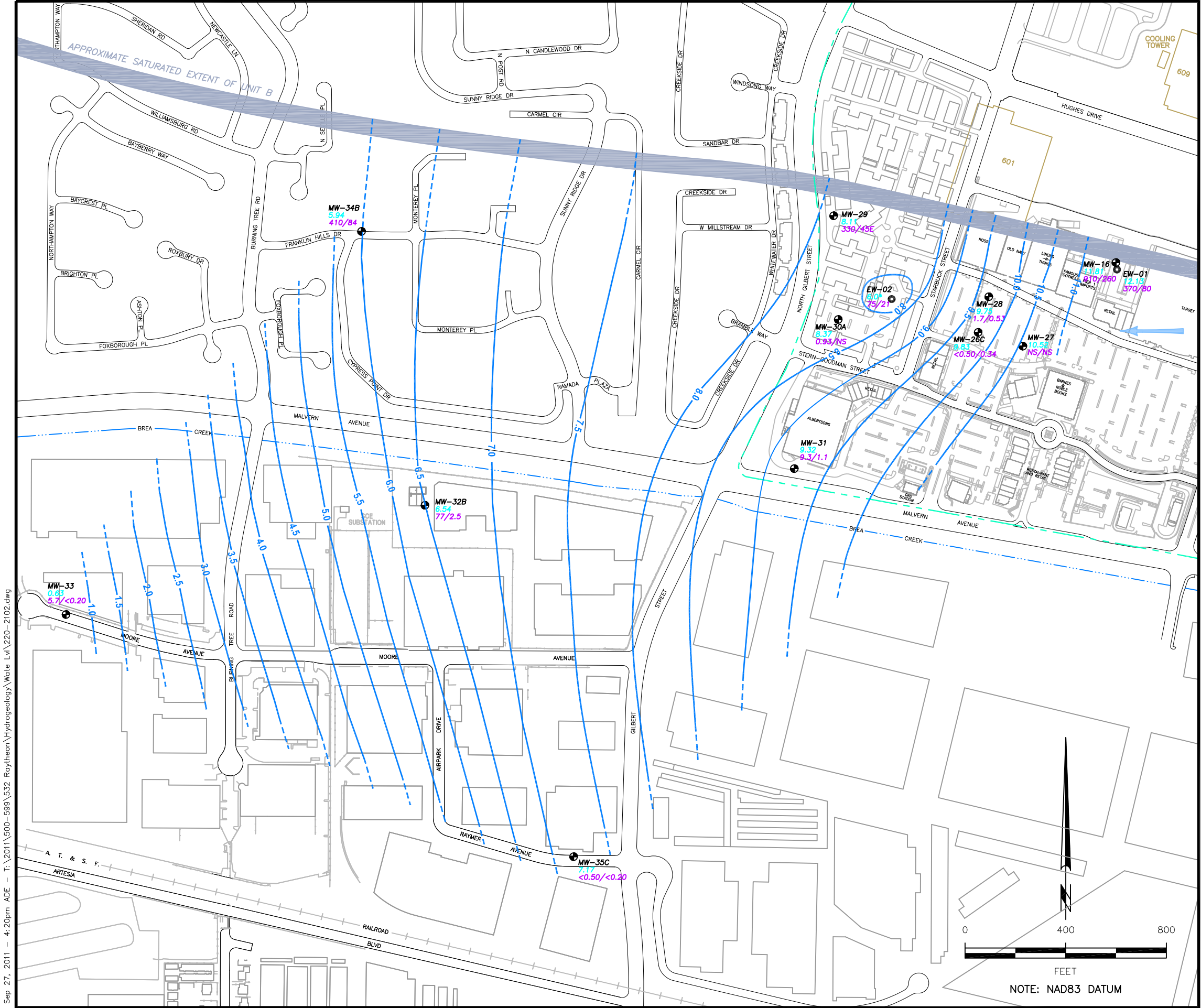
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05/11

FIGURE 2

PREP BY KSS REV BY SPN RPT NO. 532.31 410-8269 A

Sep 27, 2011 - 4:20pm ADE - T:\2011\500-599\532 Raytheon\Hydrogeology\Wate Lvl 220-2102.dwg



EXPLANATION

- MW-16 GROUNDWATER MONITOR WELL
- EW-01 GROUNDWATER EXTRACTION WELL
- 11.81 WATER LEVEL ELEVATION (FEET MEAN SEA LEVEL)
- 910/260 CONCENTRATION OF 1,1-DCE/1,4-DIOXANE IN GROUNDWATER (MICROGRAMS PER LITER)
- * EXTRACTION WELL EW-02 PUMPING DURING WATER LEVEL GAUGING; ESTIMATED WATER LEVEL BASED ON THIEM EQUATION
- < LESS THAN; VALUE IS THE LIMIT OF DETECTION
- NS NOT SAMPLED
- E DATA QUALIFIED AS ESTIMATED IN ACCORDANCE WITH QUALITY CONTROL CRITERIA
- 5.0 --- EQUAL WATER LEVEL ELEVATION CONTOUR, DASHED WHERE APPROXIMATE (FEET MEAN SEA LEVEL)
- 609 FORMER RAYTHEON BUILDING, DEMOLISHED MID-2000
- CURRENT RESIDENTIAL AND COMMERCIAL BUILDINGS
- DRIVEWAYS, PARKING LOTS AND OTHER HARDSCAPE OF SITE RE-DEVELOPMENT
- APPROXIMATE DIRECTION OF GROUNDWATER FLOW, AUGUST 2011

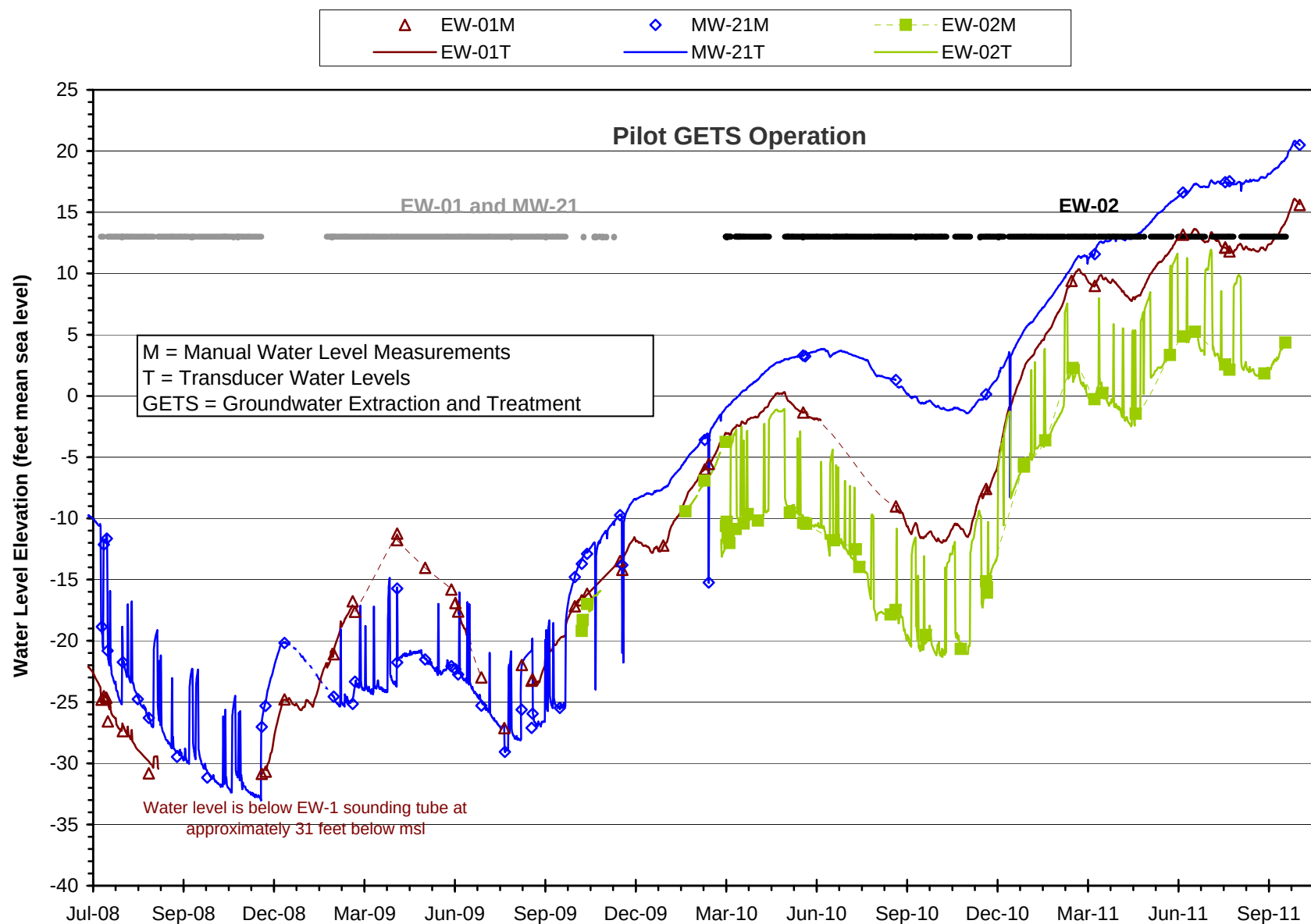


FIGURE 4.
PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM OPERATION
AND EXTRACTION WELL WATER LEVELS

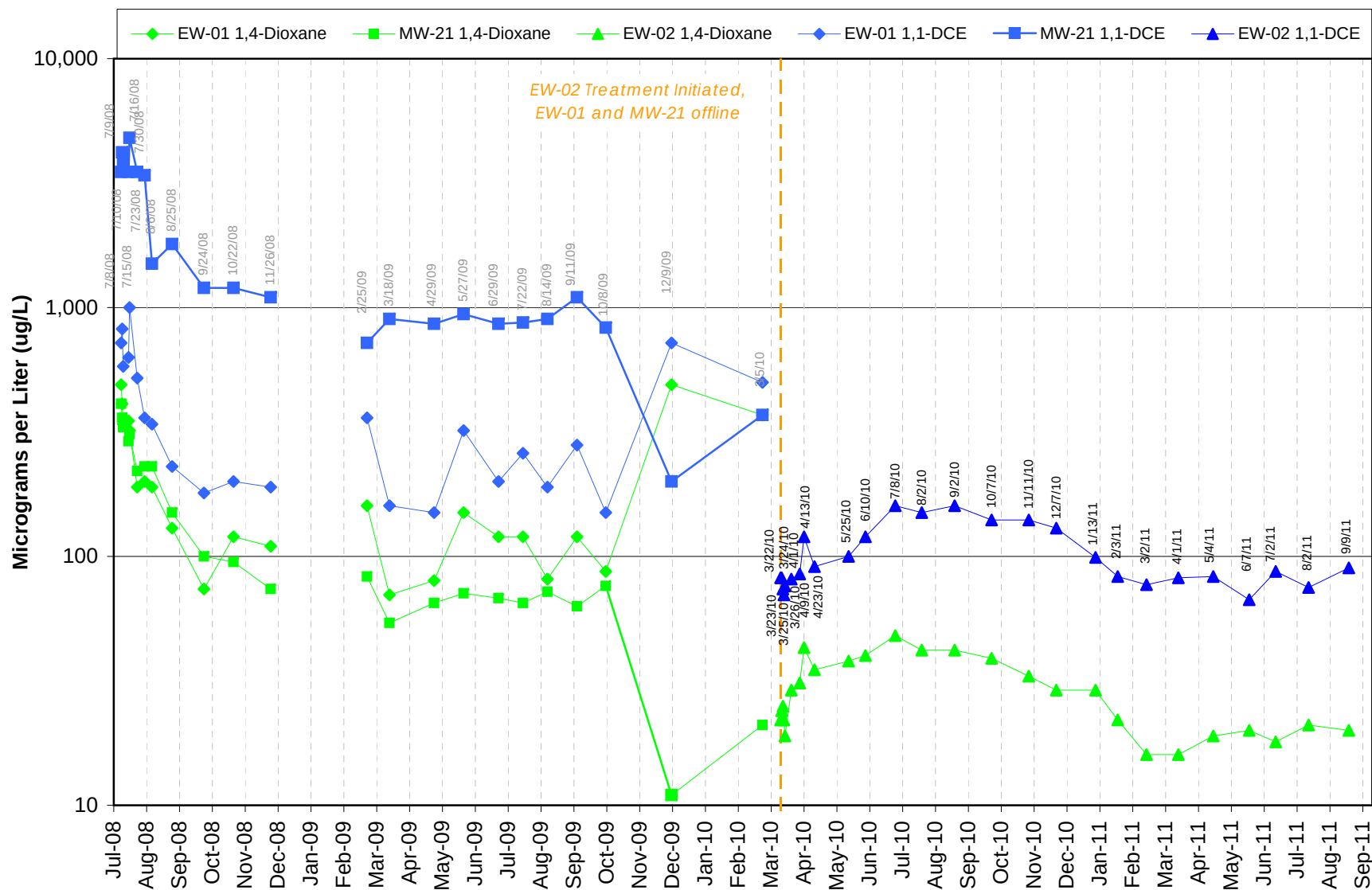


FIGURE 5.
1,1-DICHLOROETHYLENE AND 1,4-DIOXANE IN
EXTRACTION WELLS EW-01, MW-21, AND EW-02

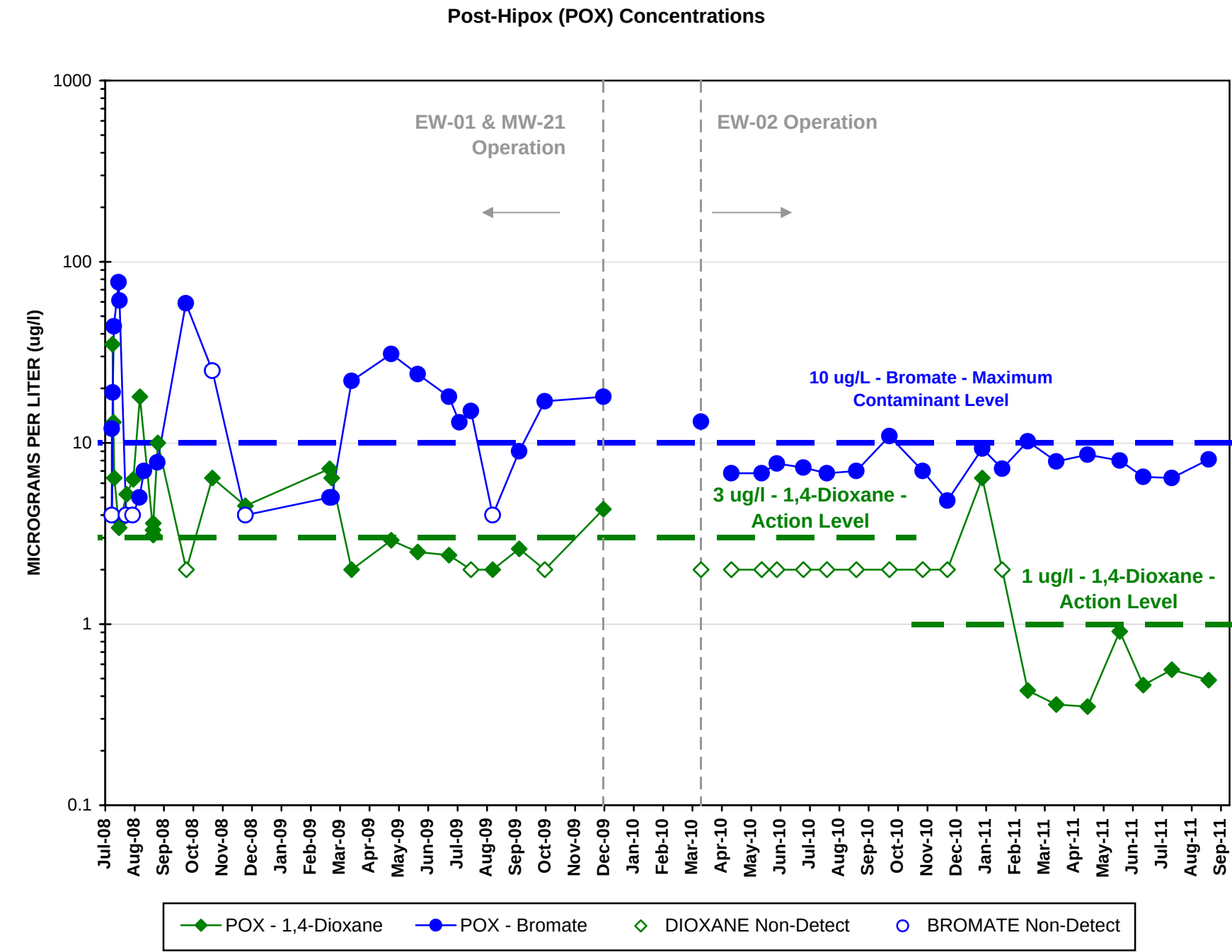
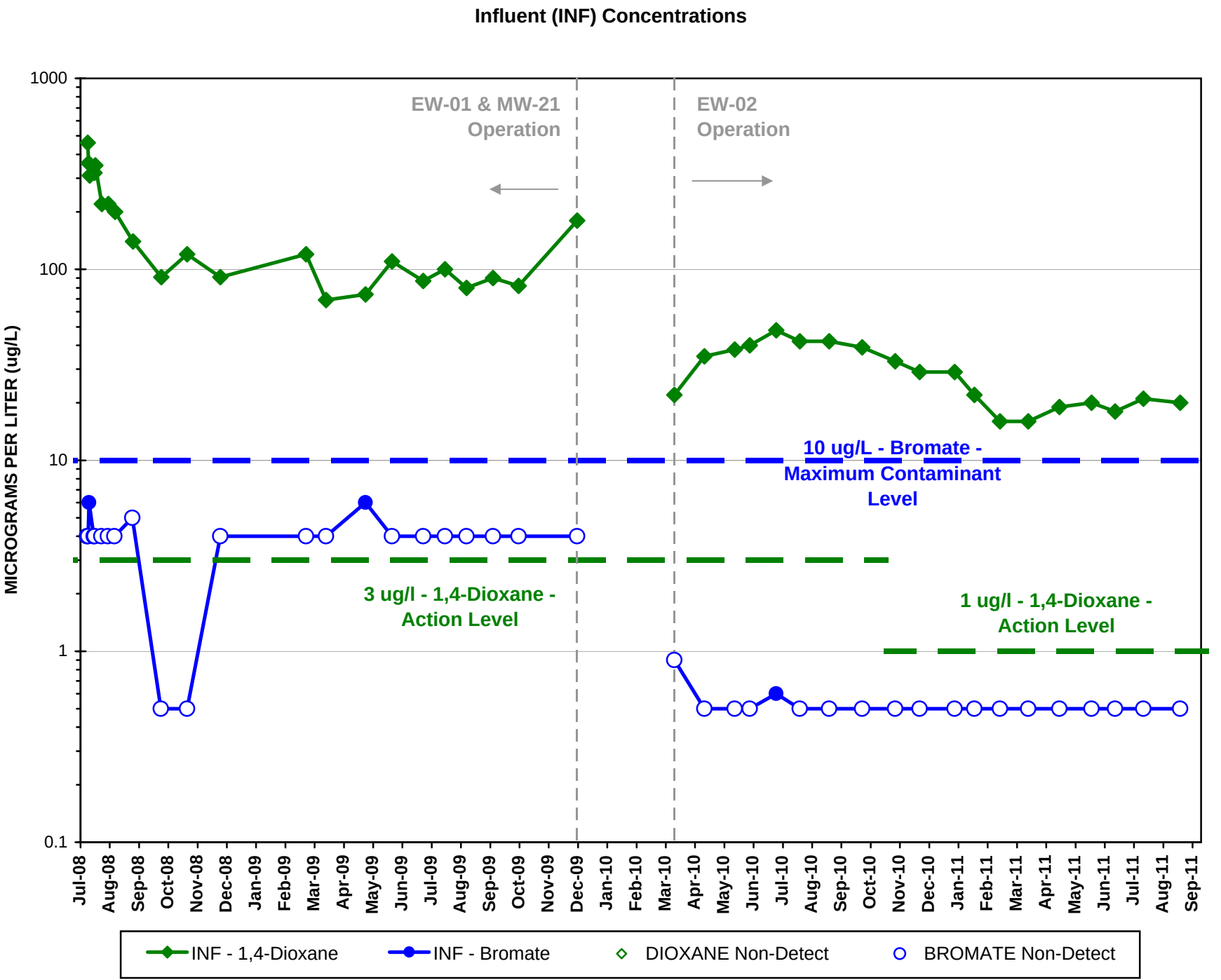


FIGURE 6.
1,4-DIOXANE AND BROMATE IN INFLUENT AND POST-OX. SAMPLES

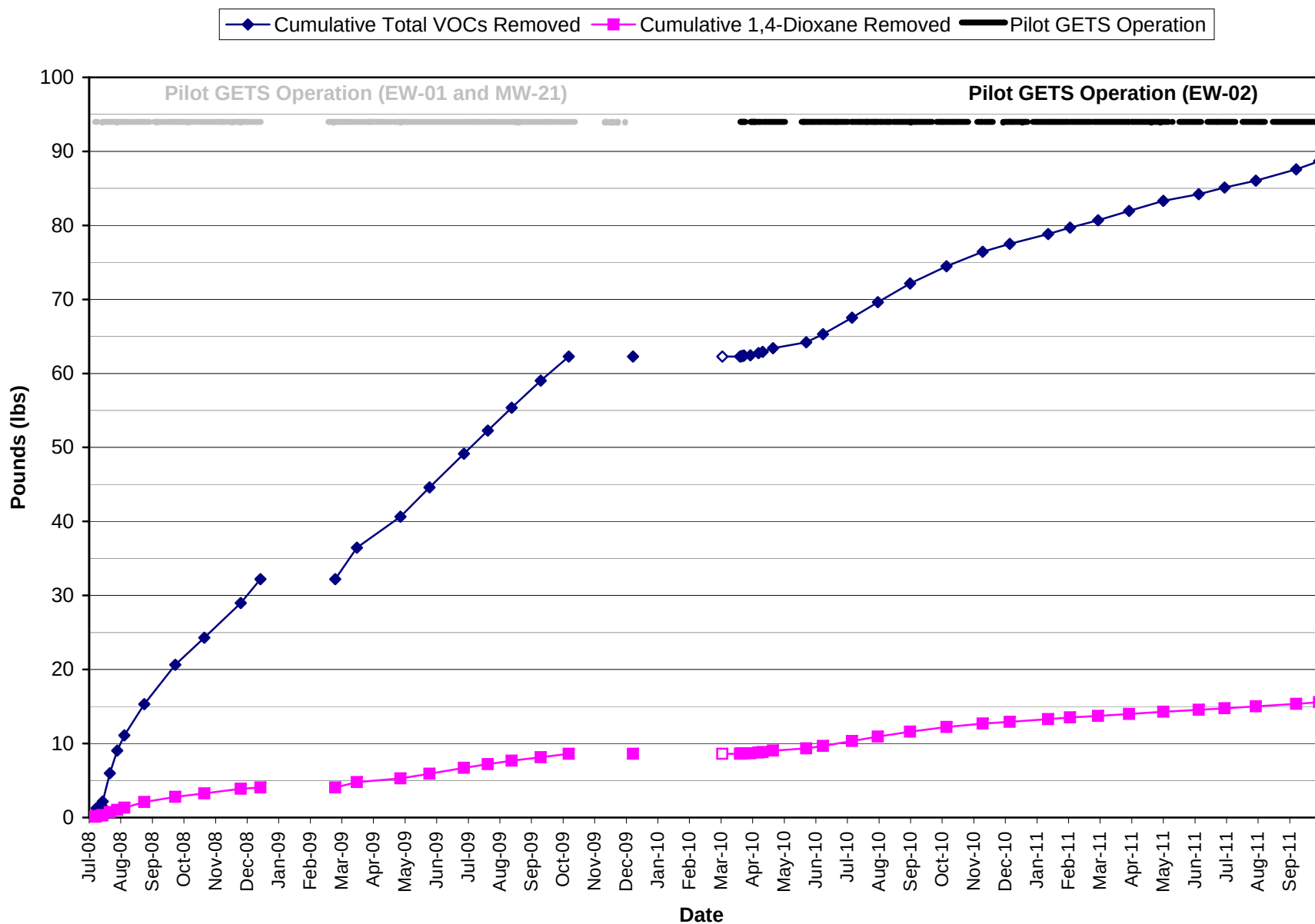


FIGURE 7.

PILOT GROUNDWATER EXTRACTION AND TREATMENT SYSTEM MASS REMOVAL