

ATTACHMENT 4: FIELD LOGS

This attachment contains the groundwater sample collection field logs for the relatively shallow standpipe monitoring wells (MW-1, MW-5 through MW-10, MW-13, MW-15, and MW-16), as well as the field data sheets for the Westbay™ multiport wells (MW-3, MW-4, MW-11, MW-12, MW-14, and MW-17 through MW-26). Groundwater sample collection for the 4th Quarter 2013 sampling event was conducted by Blaine Tech Services, Inc.

Note: no samples were collected from MW-9 during the fourth quarter 2013 sampling event because the well was inaccessible due to JPL parking structure construction activities.

WELL MONITORING DATA SHEET

Project #: <u>131018-AW1</u>	Site: <u>JPL</u>
Sampler: <u>AW</u>	Gauging Date: <u>10-31-13</u>
Well I.D.: <u>MW-1</u>	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth (TD): <u>120'</u>	Depth to Water (DTW): <u>29.85</u>
Depth to Free Product: _____	Thickness of Free Product (feet): _____
Referenced to: <u>PVC</u> Grade	Flow Cell Type <u>YSI-15556</u>
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>47.88</u>	

Purge Method:	Water	Sampling Method:
Disposable Bailer	2" Rediflo pump	Disposable Bailer
Positive Air Displacement	Extraction Pump	Extraction Port
Electric Submersible	Other: <u>Dedicated RFZ</u>	Dedicated <u>Tubing</u>
Flow Rate = <u>4 gpm</u>		Other: _____
Start Purge Date = <u>10-31-13</u>	<u>Pump @ 90'</u>	

58.6 (Gals.) X <u>3</u> = <u>175.8</u> Gals.		
Case Volume	Specified Volumes	Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

Time	Temp (°C)	pH	Cond. (mS or μS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	DTW
1224	16.69	6.39	549	2	0.68	67.4	28	30.18
1231	16.71	6.43	550	2	0.64	20.1	59	30.29
239	16.77	6.59	550	2	0.61	-19.7	87	30.36
246	16.77	6.72	550	2	0.49	-30.9	116	30.41
254	16.80	6.80	550	2	0.36	-37.0	144	30.51
302	16.78	6.82	550	2	0.29	-41.1	176	30.62

Did well dewater? Yes No Gallons actually evacuated: 176

Sampling Date: 10-31-13 Sampling Time: 1305 Depth to Water: 30.62

Sample I.D.: MW-1 Laboratory: BC Labs

Analyzed for: See COC (MS/MSD) Other: _____

EB I.D. (if applicable): _____ @ _____ Time Duplicate I.D. (if applicable): _____

FB I.D. (if applicable): _____ @ _____ Time Analyzed for: _____

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: <u>131018-AW1</u>	Site: <u>JPL</u>
Sampler: <u>AW</u>	Gauging Date: <u>10-31-13</u>
Well I.D.: <u>MW-5</u>	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth (TD): <u>140</u>	Depth to Water (DTW): <u>108.87</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	Flow Cell Type <u>YSI-</u>
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>115.09</u>	

Purge Method:	Water	Sampling Method:
Disposable Bailer	2" Rediflo pump	Disposable Bailer
Positive Air Displacement	Extraction Pump	Extraction Port
Electric Submersible	Other: <u>Dedicated RFZ</u>	Dedicated Tubing
		Other:

Flow Rate = 3 gpm
 Start Purge Date = 10-31-13

20.2 (Gals.) X <u>3</u>	=	60.6 Gals.
Case Volume	Specified Volumes	Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

Time	Temp (°C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	DTW
1331	14.87	6.65	449	4	1.72	67.4	12	109.26
1334	14.86	6.52	449	4	1.68	69.4	21	109.24
1337	14.86	6.44	449	2	1.65	68.6	31	109.23
1340	14.86	6.41	448	2	1.64	67.4	41	109.27
1344	14.86	6.40	449	2	1.61	69.4	51	109.28
1347	14.86	6.40	449	2	1.59	69.7	61	109.27

Did well dewater? Yes No Gallons actually evacuated: 61

Sampling Date: 10-31-13 Sampling Time: 1350 Depth to Water: 109.27

Sample I.D.: MW-5 Laboratory: BC Labs

Analyzed for: See COC Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

FB I.D. (if applicable): @ Time Analyzed for:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 131018-AW1	Site: JPL
Sampler: AW	Gauging Date: 10-31-13
Well I.D.: MW-6	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth (TD): 245	Depth to Water (DTW): 212.51
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	Flow Cell Type <u>YSI-556</u>
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 219.00	

Purge Method: Waterra Sampling Method:
 Disposable Bailer 2" Rediflo pump Disposable Bailer
 Positive Air Displacement Extraction Pump Extraction Port
 Electric Submersible Other: dedicated RF2 Dedicated Tubing

Flow Rate = 2 gpm
 Start Purge Date = 10-31-13 Pump @ 230
21.2 (Gals.) X 3 = 63.6 Gals.
 Case Volume Specified Volumes Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

Time	Temp (°C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	DTW
0751	20.47	6.63	1300	3	8.21	119.7	14	212.89
0756	20.44	6.62	1280	3	8.20	119.1	24	212.95
0801	20.45	6.61	1276	3	8.13	120.0	34	213.00
0806	20.45	6.60	1267	2	8.18	121.1	44	213.03
0811	20.47	6.60	1260	2	8.19	121.9	54	213.04
0816	20.47	6.60	1259	2	8.16	122.9	64	213.06

Did well dewater? Yes No Gallons actually evacuated: 64

Sampling Date: 10-31-13 Sampling Time: 0820 Depth to Water: 213.06

Sample I.D.: MW-6 Laboratory: BC Labs

Analyzed for: See C.O.C. Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

FB I.D. (if applicable): @ Time Analyzed for:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 131018-AW1	Site: JPL
Sampler: AW	Gauging Date: 10-30-13
Well I.D.: MW-7	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth (TD): 275	Depth to Water (DTW): 248.16
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	Flow Cell Type YSI-SSC
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 253.53	

Purge Method: Waterra Sampling Method:

Disposable Bailer 2" Rediflo pump Disposable Bailer
 Positive Air Displacement Extraction Pump Extraction Port
 Electric Submersible Other Dedicated PFZ Dedicated Tubing
Other:

Flow Rate = 1 gpm
 Start Purge Date = 10-30-13 Pump @ 265

<u>17.5</u> (Gals.) X	<u>3</u>	<u>= 52.5</u> Gals.
1 Case Volume	Specified Volumes	Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

Time	Temp (°C)	pH	Cond. (mS or μ S)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	DTW
1435	24.70	6.98	716	6	4.05	114.6	9	248.31
1444	24.79	6.98	717	4	3.68	110.6	18	248.31
1453	24.86	6.98	717	8	3.48	104.1	27	248.31
1502	24.91	6.98	717	8	3.34	103.0	36	248.31
1511	24.93	6.98	716	7	3.30	100.6	45	248.31
1520	24.98	6.97	716	7	3.26	100.2	54	248.31

Did well dewater? Yes No Gallons actually evacuated: 54

Sampling Date: 10-30-13 Sampling Time: 1525 Depth to Water: 248.31

Sample I.D.: MW-7 Laboratory: BC Labs

Analyzed for: See C.O.C. Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

FB I.D. (if applicable): @ Time Analyzed for:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 131018-AW1	Site: JPL
Sampler: AW	Gauging Date: 10-30-13
Well I.D.: MW-8	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth (TD): 205	Depth to Water (DTW): 174.42
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	Flow Cell Type YSI-556
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 180.53	

Purge Method:	Water	Sampling Method:
Disposable Bailer	2" Rediflo pump	Disposable Bailer
Positive Air Displacement	Extraction Pump	Extraction Port
Electric Submersible	Other <u>Dedicated RF2</u>	Dedicated Tubing
		Other:

Flow Rate = 2 gpm

Start Purge Date = 10-30-13 Pump @ 195'

19.9 (Gals.) X <u>3</u>	= <u>59.7</u> Gals.	
Case Volume	Specified Volumes	Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

Time	Temp (°C)	pH	Cond. (mS or <u>µS</u>)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	DTW
1247	17.22	6.62	446	3	5.34	145.7	10	174.52
1252	17.29	6.61	449	2	5.21	146.4	20	174.52
1257	17.32	6.64	449	2	4.98	146.1	30	174.52
1302	17.32	6.66	449	2	4.94	147.2	40	174.52
1307	17.32	6.67	450	2	4.92	149.6	50	174.52
1312	17.32	6.69	450	2	4.90	150.6	60	174.52

Did well dewater? Yes No Gallons actually evacuated: 60

Sampling Date: 10-30-13 Sampling Time: 1315 Depth to Water: 174.52

Sample I.D.: MW-8 Laboratory: BC Labs

Analyzed for: _____ Other: _____

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable): DUP-5-4013 @ 1325

FB I.D. (if applicable): @ Time Analyzed for: _____

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: <u>131018-AW1</u>	Site: <u>JPL</u>
Sampler: <u>AW</u>	Gauging Date: <u>10-18-13</u>
Well I.D.: <u>MW-9</u>	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth (TD): <u> </u>	Depth to Water (DTW): <u>21.40</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	Flow Cell Type
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u> </u>	

Purge Method:	Water	Sampling Method:
 Disposable Bailer Positive Air Displacement Electric Submersible 	 2" Rediflo pump Extraction Pump Other 	 Disposable Bailer Extraction Port Dedicated Tubing Other:

Flow Rate= _____

Start Purge Date= _____

_____ (Gals.) X _____ = _____ Gals.

1 Case Volume Specified Volumes Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

Time	Temp (°)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	DTW
- Unable to access well to sample due to the on site construction activities of JPL parking structure								
- No Sample Collected								

Did well dewater? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Gallons actually evacuated: _____	
Sampling Date: _____	Sampling Time: _____	Depth to Water: _____
Sample I.D.: _____	Laboratory: _____	
Analyzed for: _____	Other: _____	
EB I.D. (if applicable): _____ @ _____ Time	Duplicate I.D. (if applicable): _____	
FB I.D. (if applicable): _____ @ _____ Time	Analyzed for: _____	
D.O. (if req'd):	Pre-purge: _____ mg/L	Post-purge: _____ mg/L
O.R.P. (if req'd):	Pre-purge: _____ mV	Post-purge: _____ mV

WELL MONITORING DATA SHEET

Project #: 131018-AW1	Site: JPL
Sampler: AW	Gauging Date: 10-31-13
Well I.D.: MW-10	Well Diameter: 2 3 (4) 6 8
Total Well Depth (TD): 155	Depth to Water (DTW): 121.82
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (PVC) Grade	Flow Cell Type Y51-SSC
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 128.45	

Purge Method: Waterra Sampling Method:
 Disposable Bailer 2" Rediflo pump Disposable Bailer
 Positive Air Displacement Extraction Pump Extraction Port
 Electric Submersible Other Dedicated RF2 Dedicated Tubing

Flow Rate = 3 gpm
 Start Purge Date = 10-31-13 Pump @ 140
 21.6 (Gals.) X 3 = 64.8 Gals.
 Case Volume Specified Volumes Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

Time	Temp (°C)	pH	Cond. (mS or (µS))	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	DTW
1411	19.91	6.72	1313	2	6.12	92.6	12	122.99
1414	19.93	6.63	1323	2	6.47	90.1	22	123.21
1418	19.91	6.62	1326	2	6.52	91.4	33	123.32
1421	19.92	6.61	1328	2	6.56	92.6	44	123.28
1425	19.93	6.61	1328	2	6.58	94.1	55	123.32
1428	19.92	6.61	1330	2	6.59	95.4	66	123.30

Did well dewater? Yes No Gallons actually evacuated: 66

Sampling Date: 10-31-13 Sampling Time: 1430 Depth to Water:

Sample I.D.: MW-10 Laboratory: BC Labs

Analyzed for: See COC. Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable): DUPE-8-4013 1440

FB I.D. (if applicable): @ Time Analyzed for:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: <u>131018-AW1</u>	Site: <u>JPL</u>
Sampler: <u>AW</u>	Gauging Date: <u>10-30-13</u>
Well I.D.: <u>MW-13</u>	Well Diameter: 2 3 <u>(4)</u> 6 8
Total Well Depth (TD): <u>235</u>	Depth to Water (DTW): <u>217.00</u>
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: <u>PVC</u> Grade	Flow Cell Type <u>YSI-556</u>
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: <u>220.60</u>	

Purge Method:	Waterra	Sampling Method:
Disposable Bailer	2" Rediflo pump	Disposable Bailer
Positive Air Displacement	Extraction Pump	Extraction Port
Electric Submersible	Other <u>Dedicated RF2</u>	Dedicated Tubing
		Other:

Flow Rate = 0.5
 Start Purge Date = 10-30-13 Pump @ 220'
11.7 (Gals.) X 3 = 35.1 Gals.
 Case Volume Specified Volumes Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

Time	Temp (°C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	DTW
3852	24.82	7.27	823	26	5.97	89.4	6	217.24
3910	25.34	7.26	815	23	5.88	81.4	12	217.26
3922	25.28	7.695	812	13	5.71	80.3	18 18	217.26
3934	25.34	7.34	816	8	5.75	81.1	24	217.26
3946	25.31	6.84	814	7	5.60	85.4	30	217.26
3958	25.05	6.86	813	6	5.57	85.1	36	217.26

Did well dewater? Yes No Gallons actually evacuated: 36

Sampling Date: 10-30-13 Sampling Time: 1000 Depth to Water: 217.26

Sample I.D.: MW-13 Laboratory: BC Labs

Analyzed for: See COC Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable):

FB I.D. (if applicable): @ Time Analyzed for:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
D.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 131018-1w1	Site: JPL
Sampler: AZ	Gauging Date: 10-30-13
Well I.D.: MW-15	Well Diameter: 2 3 4 6 8
Total Well Depth (TD): 74	Depth to Water (DTW): 33.93
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type: VSI-556
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 41.94	

Purge Method:	Water	Sampling Method:
Disposable Bailer	2" Rediflo pump	Disposable Bailer
Positive Air Displacement	Extraction Pump	Extraction Port
Electric Submersible	Other: Dedicated RF2	Dedicated Tubing
		Other:

Flow Rate = 3 gpm
 Start Purge Date = 10-30-13 Pump @ 54'

26.1 (Gals.) X <u>3</u>	= <u>78.3</u> Gals.	
Case Volume	Specified Volumes	Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

Time	Temp (°C)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	DTW
1339	17.09	6.78	537	1	0.44	108.6	14	34.53
1343	17.09	6.79	538	1	0.38	103.0	27	34.63
1347	17.09	6.80	537	1	0.35	100.3	40	34.69
1352	17.08	6.82	537	1	0.32	96.9	53	34.71
1356	17.08	6.84	538	1	0.32	94.6	66	34.72
1400	17.08	6.87	538	1	0.31	95.3	79	34.73

Did well dewater? Yes No Gallons actually evacuated: 79

Sampling Date: 10-30-13 Sampling Time: 1405 Depth to Water: 34.73

Sample I.D.: MW-15 Laboratory: BC Labs

Analyzed for: See COC Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable): DUPE-6-4Q13 @ 11:15

FB I.D. (if applicable): @ Time Analyzed for:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WELL MONITORING DATA SHEET

Project #: 131018-AW1	Site: JPL
Sampler: AW	Gauging Date: 10-31-13
Well I.D.: MW-16	Well Diameter: 2 3 4 6 8
Total Well Depth (TD): 285	Depth to Water (DTW): 212.5(AW) 268.92
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: PVC Grade	Flow Cell Type YSI-556
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]:	

Purge Method: <input checked="" type="checkbox"/> Disposable Bailer <input type="checkbox"/> Positive Air Displacement <input type="checkbox"/> Electric Submersible	Waterra <input type="checkbox"/> 2" Rediflo pump <input type="checkbox"/> Extraction Pump Other:	Sampling Method: <input checked="" type="checkbox"/> Disposable Bailer <input type="checkbox"/> Extraction Port <input type="checkbox"/> Dedicated Tubing Other:
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Flow Rate= _____

Start Purge Date= _____ Pump @ 265'

(Gals.) X _____ = _____ Gals.		
Case Volume	Specified Volumes	Calculated Volume

Well Diameter	Multiplier	Well Diameter	Multiplier
1"	0.04	4"	0.65
2"	0.16	6"	1.47
3"	0.37	Other	radius ² * 0.163

Time	Temp (°)	pH	Cond. (mS or µS)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	DTW
	25.8	7.5						
11:26	25.8	7.56	766	7	7.04	658	—	

Did well dewater? Yes No Gallons actually evacuated: _____

Sampling Date: 10-31-13 Sampling Time: 1115 Depth to Water: 268.92

Sample I.D.: MW-16-grab Laboratory: BC Labs

Analyzed for: see COC Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable): DUPE-7-4013 @ 1125

FB I.D. (if applicable): @ Time Analyzed for:

D.O. (if req'd):	Pre-purge:	mg/L	Post-purge:	mg/L
O.R.P. (if req'd):	Pre-purge:	mV	Post-purge:	mV

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-3
 SAMPLING DATE(S): 10-29-13
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 176.68'
 ATM. PRESSURE (PSI): (Start) 14.08 (Finish) 14.04
18.76°C 16.73°C

PROBE TYPE: Sampler 0-500psi
 SERIAL NO.: EM52502
 PROJECT: JPL, Pasadena
 OPERATOR(S): AWolff
 WEATHER: cloudy

Port Number	Run Number	Surface Function Tests / Position Sampler (probe in top of collar) / (lower probe to port)					Sample Collection Checks (probe at sampling port in MP casing)						Field Parameters					Sample			
		Arm out/ Land Probe	Shoe Out/ Close Valve/ Check Vacuum	Open Valve/ Apply Vacuum (5 psi)	Close Valve/ Shoe In/ Arm In	Locate Port/ Arm Out/ Land Probe	Pressure in MP Casing (psi)	Shoe Out	Port Pressure (psi)	Open Valve	Port Pressure (psi)	Close Valve/ Shoe In	Pressure in MP Casing (psi)	Sample Temp (°C)	SC (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (ppm)	ORP (mV)	Sample Time	Sample
5	1	✓	✓	✓	✓	✓	225.51	✓	225.60	✓	225.61	✓	225.51	17.0	485	8.02	167	8.15	140	1100	MW-3-5
4	1	✓	✓	✓	✓	✓	184.12	✓	184.78	✓	184.77	✓	184.16	17.4	458	8.21	44	7.44	138	1140	MW-3-4
3	1	✓	✓	✓	✓	✓	91.78	✓	93.42	✓	93.42	✓	91.79	16.8	464	8.23	10	8.12	147	1210	MW-3-3
2	1	✓	✓	✓	✓	✓	50.82	✓	56.72	✓	56.72	✓	50.82	16.8	477	8.14	20	7.42	138	1235	MW-3-2
1	1	✓	✓	✓	✓	✓	14.91	✓	25.68	✓	25.68	✓	14.91	16.3	461	8.14	29	5.70	149	1300	MW-3-1
	2	✓	✓	✓	✓	✓	14.18	✓	25.88	✓	25.86	✓	14.18								

Comments: _____

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-11
 SAMPLING DATE(S): 10-24-13
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 176.69
 ATM. PRESSURE (PSI): (Start) 14.04 (Finish) 14.06
16.06 18.89

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL, Pasadena
 OPERATOR(S): W. Waiff
 WEATHER: Clear

Port Number	Run Number	Probe to Top Collar	Surface Function Tests / Position Sampler (probe in top of collar) / (lower probe to port)					Sample Collection Checks (probe at sampling port in MP casing)						Field Parameters					Sample		
		Arm out/ Land Probe	Shoe Out/ Close Valve/ Check Vacuum	Open Valve/ Apply Vacuum (5 psi)	Close Valve/ Shoe In/ Arm In	Locate Port/ Arm Out/ Land Probe	Pressure in MP Casing (psi)	Shoe Out	Port Pressure (psi)	Open Valve	Port Pressure (psi)	Close Valve/ Shoe In	Pressure in MP Casing (psi)	Sample Temp (°C)	SC (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (ppm)	ORP (mV)	Sample Time	Sample!
5	1	✓	✓	✓	✓	✓	218.87	✓	198.09	✓	147.98	✓	218.86	13.8	325	8.43	21	7.49	164	0735	MW-11-5
4	1	✓	✓	✓	✓	✓	168.36	✓	164.33	✓	164.31	✓	168.29	14.4	204	8.68	4	7.06	-91	0815	MW-11-4
3	1	✓	✓	✓	✓	✓	127.33	✓	121.64	✓	121.39	✓	127.33	14.4	393	8.35	9	6.48	107	0850	MW-11-3
2	1	✓	✓	✓	✓	✓	53.47	✓	51.74	✓	51.69	✓	53.47	15.2	427	8.28	8	5.95	481	0920	MW-11-2
1	1	✓	✓	✓	✓	✓	14.13	✓	24.70	✓	24.69	✓	14.13	15.3	305	8.27	9	6.51	145	0950	MW-11-1
	2	✓	✓	✓	✓	✓	14.13	✓	24.69	✓	24.70	✓	14.13								

Comments: TB-7-10/29/13 EB-7-10/29/13
0700 0705

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-12
 SAMPLING DATE(S): 10-21-13
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 107.16
 ATM. PRESSURE (PSI): (Start) 14.10 (Finish) 14.00
17.50°C 17.86°C

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: FMS2502
 PROJECT: JPL, Pasadena
 OPERATOR(S): A. Waiff
 WEATHER: Clear

Port Number	Run Number	Probe to Top Collar	Surface Function Tests / Position Sampler (probe in top of collar) / (lower probe to port)					Sample Collection Checks (probe at sampling port in MP casing)						Field Parameters					Sample		
		Arm out / Land Probe	Shoe Out / Close Valve / Check Vacuum	Open Valve / Apply Vacuum (5 psi)	Close Valve / Shoe In / Arm In	Locate Port / Arm Out / Land Probe	Pressure in MP Casing (psi)	Shoe Out	Port Pressure (psi)	Open Valve	Port Pressure (psi)	Close Valve / Shoe In	Pressure in MP Casing (psi)	Sample Temp (°C)	SC (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (ppm)	ORP (mV)	Sample Time	Sample ID
5	1	✓	✓	✓	✓	✓	210.51	✓	175.72	✓	175.68	✓	210.51	15.4	466	8.37	18	7.62	86	0820	MW-12-5
4	1	✓	✓	✓	✓	✓	161.78	✓	136.57	✓	136.47	✓	161.78	16.5	491	8.17	8	6.99	100	0900	MW-12-4
3	1	✓	✓	✓	✓	✓	112.49	✓	89.50	✓	89.48	✓	112.49	17.2	446	8.34	4	6.58	10	0935	MW-12-3
2	1	✓	✓	✓	✓	✓	77.66	✓	55.89	✓	55.86	✓	77.67	17.8	544	8.07	5	6.23	17	1010	MW-12-2
1	2	✓	✓	✓	✓	✓	32.66	✓	15.96	✓	15.92	✓	32.66	18.5	472	8.34	83	6.45	127	1040	MW-12-1
							31.06	✓	15.94	✓	15.89	✓	31.07								

Comments: MS/MSD @ Port 1 SB-1-10/21/13 EB-1-10/21/13 TB-1-10/21/13
0730 0735 0700

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-18
 SAMPLING DATE(S): 10-28-13
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 297.08
 ATM. PRESSURE (PSI): (Start) 13.97 (Finish) 13.98
17.48°C 17.40°C

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EM52502
 PROJECT: JPL, Pasadena
 OPERATOR(S): twolf
 WEATHER: Overcast

Port Number	Run Number	Probe to Top Collar	Surface Function Tests / Position Sampler (probe in top of collar) / (lower probe to port)				Sample Collection Checks (probe at sampling port in MP casing)						Field Parameters					Sample			
		Arm out / Land Probe	Shoe Out / Close Valve / Check Vacuum	Open Valve / Apply Vacuum (5 psi)	Close Valve / Shoe In / Arm In	Locate Port / Arm Out / Land Probe	Pressure in MP Casing (psi)	Shoe Out	Port Pressure (psi)	Open Valve	Port Pressure (psi)	Close Valve / Shoe In	Pressure in MP Casing (psi)	Sample Temp (°C)	SC (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (ppm)	ORP (mV)	Sample Time	Sample ID
5	1	✓	✓	✓	✓	✓	188.73	✓	180.48	✓	180.43	✓	188.72	17.0	313	8.68	4	0.01	93	1100	MW-18-5
4	1	✓	✓	✓	✓	✓	136.60	✓	129.92	✓	129.92	✓	136.61	16.5	400	8.35	4	2.09	52	1140	MW-18-4
3	1	✓	✓	✓	✓	✓	75.47	✓	74.82	✓	74.83	✓	75.48	17.2	521	8.25	2	8.18	140	1210	MW-18-3
	2	✓	✓	✓	✓	✓	73.02	✓	74.81	✓	74.81	✓	73.01								
2	1	✓	✓	✓	✓	✓	34.47	✓	37.01	✓	37.01	✓	34.46	16.4	424	8.23	9	0.36	177	1300	MW-18-2
1	1	✓	✓	✓	✓	✓	14.08	✓	14.11	✓	14.08	✓	14.09	Port not producing any water Port is dry. No sample collected							MW-18-1

Comments: Level IV + MS/MSD @ Port 3

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-19
 SAMPLING DATE(S): 10-22-13
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 135.30'
 ATM. PRESSURE (PSI): (Start) 14.02 (Finish) 14.04
24.01° 16.73°

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EM52502
 PROJECT: JPL Pasadena
 OPERATOR(S): KWalt
 WEATHER: Clear

Port Number	Run Number	Probe to Top Collar	Surface Function Tests / Position Sampler (probe in top of collar) / (lower probe to port)				Sample Collection Checks (probe at sampling port in MP casing)						Field Parameters					Sample			
		Arm out/ Land Probe	Shoe Out/ Close Valve/ Check Vacuum	Open Valve/ Apply Vacuum (0 psi)	Close Valve/ Shoe In/ Arm In	Locate Port/ Arm Out/ Land Probe	Pressure in MP Casing (psi)	Shoe Out	Port Pressure (psi)	Open Valve	Port Pressure (psi)	Close Valve/ Shoe In	Pressure in MP Casing (psi)	Sample Temp (°C)	SC (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (ppm)	ORP (mV)	Sample Time	Sample ID
5	1	✓	✓	✓	✓	✓	173.10	✓	136.81	✓	136.83	✓	173.12	21.3	627	8.15	3	7.60	120	1150	MW-19-5
4	1	✓	✓	✓	✓	✓	149.61	✓	113.52	✓	113.51	✓	149.63	21.4	628	8.15	3	7.81	123	1230	MW-19-4
3	1	✓	✓	✓	✓	✓	127.10	✓	99.53	✓	99.59	✓	127.10	21.7	670	8.01	4	7.49	141	1305	MW-19-3
2	1	✓	✓	✓	✓	✓	93.21	✓	65.92	✓	65.91	✓	93.19	21.2	1626	7.79	20	6.90	153	1335	MW-19-2
1	1	✓	✓	✓	✓	✓	61.91	✓	36.82	✓	36.83	✓	61.91	21.1	466	8.06	6.5	6.92	152	1400	MW-19-1
	2	✓	✓	✓	✓	✓	60.82	✓	36.80	✓	36.81	✓	60.84								

Comments: Level 1H @ Port 5+3 MS/MSD @ Port 1

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-20
 SAMPLING DATE(S): 10-22-13
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 192.33
 ATM. PRESSURE (PSI): (Start) 14.06 (Finish) 14.06
14.52°C 18.44°C

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EMS2502
 PROJECT: JPL, Pasadena
 OPERATOR(S): Arwaif
 WEATHER: Clear

Port Number	Run Number	Surface Function Tests / Position Sampler (probe in top of collar) / (lower probe to port)						Sample Collection Checks (probe at sampling port in MP casing)						Field Parameters					Sample		
		Arm out / Land Probe	Shoe Out/ Close Valve/ Check Vacuum	Open Valve/ Apply Vacuum (5 psi)	Close Valve/ Shoe In/ Arm In	Locate Port/ Arm Out/ Land Probe	Pressure in MP Casing (psi)	Shoe Out	Port Pressure (psi)	Open Valve	Port Pressure (psi)	Close Valve/ Shoe In	Pressure in MP Casing (psi)	Sample Temp (°C)	SC (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (ppm)	ORP (mV)	Sample Time	Sample ID
5	1	✓	✓	✓	✓	✓	322.67	✓	310.07	✓	310.06	✓	322.69	14.4	281	8.90	7	8.39	-84	0740	MW-20-5
4	1	✓	✓	✓	✓	✓	236.10	✓	214.29	✓	214.25	✓	236.10	15.5	312	8.81	4	7.06	-105	0820	MW-20-4
	2	✓	✓	✓	✓	✓	236.12	✓	214.30	✓	214.27	✓	236.12								
3	1	✓	✓	✓	✓	✓	176.31	✓	155.32	✓	155.30	✓	176.29	17.1	327	9.17	3	7.37	-99	0920	MW-20-3
2	1	✓	✓	✓	✓	✓	102.11	✓	86.60	✓	86.60	✓	102.12	17.8	456	8.32	4	7.14	50	0955	MW-20-2
	2	✓	✓	✓	✓	✓	101.94	✓	86.60	✓	86.60	✓	101.94								
1	1	✓	✓	✓	✓	✓	32.14	✓	16.50	✓	16.38	✓	32.14	18.8	538	8.25	4	6.04	-31	1040	MW-20-1

Comments: TIB-2-10/22/13 0700 EB-2-10/22/13 0710 DUPE @ Port 1 = DUPE-1-40-13 MS/MSD @ Port 2
DUPE @ Port 4 = DUPE-1-40-13
0830

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-21
 SAMPLING DATE(S) 10-25-13
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 117.67
 ATM. PRESSURE (PSI): (Start) 14.14 (Finish) 14.13
16.91°C 21.68°C

PROBE TYPE Sampler 0-500 psi
 SERIAL NO. EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S) A. Wolff
 WEATHER Overcast

Port Number	Run Number	Probe to Top Collar	Surface Function Tests / Position Sampler (probe in top of collar) / (lower probe to port)				Sample Collection Checks (probe at sampling port in MP casing)						Field Parameters					Sample			
		Arm out / Land Probe	Shoe Out / Close Valve / Check Vacuum	Open Valve / Apply Vacuum (5 psi)	Close Valve / Shoe In / Arm In	Locate Port / Arm Out / Land Probe	Pressure in MP Casing (psi)	Shoe Out	Port Pressure (psi)	Open Valve	Port Pressure (psi)	Close Valve / Shoe In	Pressure in MP Casing (psi)	Sample Temp (°C)	SC (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (ppm)	ORP (mV)	Sample Time	Sample ID
5	1	✓	✓	✓	✓	✓	129.69	✓	137.39	✓	137.39	✓	129.69	18.6	874	8.06	3	7.13	67	1020	MW-21-5
4	1	✓	✓	✓	✓	✓	102.41	✓	110.51	✓	110.50	✓	102.39	19.3	844	7.80	5	6.55	72	1055	MW-21-5
3	1	✓	✓	✓	✓	✓	72.49	✓	80.67	✓	80.66	✓	72.48	18.8	1262	7.97	3	5.10	66	1120	MW-21-3
2	1	✓	✓	✓	✓	✓	38.28	✓	46.60	✓	46.60	✓	38.30	19.9	1365	7.55	2	7.83	81	1145	MW-21-2
	2	✓	✓	✓	✓	✓	38.27	✓	46.59	✓	46.60	✓	38.26								
1	1	✓	✓	✓	✓	✓	14.20	✓	15.47	✓	15.47	✓	14.20	20.9	1076	6.53	2	6.05	116	1225	MW-21-1

Comments: MS/MSD @ Port 2

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-24
 SAMPLING DATE(S): 10-24-13
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 202.86
 ATM. PRESSURE (PSI): (Start) 14.07 (Finish) 13.99
18.33^{°C} 21.97^{°C}

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EMS2502
 PROJECT: JPL Pasadena
 OPERATOR(S): A. Wolff
 WEATHER: Overcast

Port Number	Run Number	Probe to Top Collar	Surface Function Tests / Position Sampler (probe in top of collar) / (lower probe to port)					Sample Collection Checks (probe at sampling port in MP casing)						Field Parameters					Sample		
		Arm out / Land Probe	Shoe Out / Close Valve / Check Vacuum	Open Valve / Apply Vacuum (5 psi)	Close Valve / Shoe In / Arm In	Locate Port / Arm Out / Land Probe	Pressure in MP Casing (psi)	Shoe Out	Port Pressure (psi)	Open Valve	Port Pressure (psi)	Close Valve / Shoe In	Pressure in MP Casing (psi)	Sample Temp (°C)	SC (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (ppm)	ORP (mV)	Sample Time	Sample ID
5	1	✓	✓	✓	✓	✓	221.79	✓	189.46	✓	189.44	✓	221.76	20.1	439	8.27	9	7.56	143	1025	MW-24-5
4	1	✓	✓	✓	✓	✓	108.01	✓	142.20	✓	142.21	✓	108.00	20.3	250	9.22	4	5.00	-11	1100	MW-24-4
3	1	✓	✓	✓	✓	✓	116.44	✓	97.13	✓	97.12	✓	116.43	21.2	468	8.43	4	4.94	-21	1130	MW-24-3
2	1	✓	✓	✓	✓	✓	89.72	✓	71.13	✓	71.12	✓	89.74	23.2	565	8.05	2	7.39	84	1200	MW-24-2
	2	✓	✓	✓	✓	✓	88.96	✓	71.13	✓	71.13	✓	88.94					5.81			
1	1	✓	✓	✓	✓	✓	48.89	✓	33.14	✓	33.13	✓	48.92	23.2	663	8.06	4	5.81	10	1245	MW-24-1

Comments: MS/MSD + Level IV @ Port 2

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-25
 SAMPLING DATE(S) 10-25-13
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 258.61
 ATM. PRESSURE (PSI): (Start) 14.23 (Finish) 14.20
18.95°C 19.03°C

PROBE TYPE Sampler 0-500 psi
 SERIAL NO. EMS2502
 PROJECT: JPL, Pasadena
 OPERATOR(S) AW/FF
 WEATHER Overcast

Port Number	Run Number	Probe to Top Collar	Surface Function Tests / Position Sampler (probe in top of collar) / (lower probe to port)				Sample Collection Checks (probe at sampling port in MP casing)						Field Parameters					Sample			
		Arm out / Land Probe	Shoe Out / Close Valve / Check Vacuum	Open Valve / Apply Vacuum (5 psi)	Close Valve / Shoe In / Arm In	Locate Port / Arm Out / Land Probe	Pressure in MP Casing (psi)	Shoe Out	Port Pressure (psi)	Open Valve	Port Pressure (psi)	Close Valve / Shoe In	Pressure in MP Casing (psi)	Sample Temp (°C)	SC (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (ppm)	ORP (mV)	Sample Time	Sample ID
3	1	✓	✓	✓	✓	✓	215.62	✓	219.18	✓	219.18	✓	215.62	16.9	501	9.62	4	6.53	-198	0650	MW-25-5
4	1	✓	✓	✓	✓	✓	181.04	✓	185.36	✓	185.34	✓	181.04	10.2	781	8.14	0	6.52	-3.7	08725	MW-25-4
3	1	✓	✓	✓	✓	✓	124.70	✓	129.89	✓	129.83	✓	124.67	16.0	745	9.14	2	7.08	72	0755	MW-25-3
2	1	✓	✓	✓	✓	✓	89.86	✓	95.24	✓	95.24	✓	89.90	16.9	701	9.12	3	5.17	6.4	0820	MW-25-2
	2	✓	✓	✓	✓	✓	89.91	✓	95.24	✓	95.24	✓	89.93								
1	1	✓	✓	✓	✓	✓	61.64	✓	66.92	✓	66.90	✓	61.64	17.5	863	7.90	14	5.79	47	0910	MW-25-1

Comments: TR-5-10/25/13 SB-2-10/25/13 EB-5-10/25/13 Level IV + DUP @ Port 2: DUPE-4-4Q13
0600 0610 0615 0830

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-26
 SAMPLING DATE(S): 10-24-13
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 70.40
 ATM. PRESSURE (PSI): (Start) 14.68 (Finish) 14.07
22.89°C 20.72°C

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EM32502
 PROJECT: JPL, Pasadena
 OPERATOR(S): AW/DF
 WEATHER: Clear

Port Number	Run Number	Probe to Top Collar	Surface Function Tests / Position Sampler (probe in top of collar) / (lower probe to port)				Sample Collection Checks (probe at sampling port in MP casing)						Field Parameters					Sample			
		Arm out / Land Probe	Shoe Out / Close Valve / Check Vacuum	Open Valve / Apply Vacuum (6 psi)	Close Valve / Shoe In / Arm In	Locate Port / Arm Out / Land Probe	Pressure in MP Casing (psi)	Shoe Out	Port Pressure (psi)	Open Valve	Port Pressure (psi)	Close Valve / Shoe In	Pressure in MP Casing (psi)	Sample Temp (°C)	SC (µS/cm)	pH	Turbidity (NTU)	Dissolved Oxygen (ppm)	ORP (mV)	Sample Time	Sample ID
2	1	✓	✓	✓	✓	✓	80.13	✓	61.14	✓	61.10	✓	80.14	21.2	870	8.09	13	5.22	135	1340	MW-26-2
1	1	✓	✓	✓	✓	✓	45.62	✓	27.21	✓	27.16	✓	45.60	20.5	894	8.02	65	6.40	148	1410	MW-26-1
	2	✓	✓	✓	✓	✓	45.59	✓	27.20	✓	27.14	✓	45.60								

Comments: DUPE @ Port 1 = DUPE-3-4013
1420

ATTACHMENT 5: WATER LEVEL MEASUREMENTS

This attachment contains water level measurements for the JPL relatively shallow standpipe monitoring wells (MW-1, MW-5 through MW-10, MW-13, MW-15, and MW-16) and the Westbay™ multiport wells (MW-3, MW-4, MW-11, MW-12, MW-14, and MW-17 through MW-26) obtained during the 4th Quarter 2013. Water level measurements were recorded before the sampling event on October 18, 2013 (October 24, 2013 for well MW-22) for the relatively shallow standpipe monitoring wells and for the Westbay™ multiport wells. Water level measurements were recorded after the sampling event on November 1, 2013 for the relatively shallow standpipe monitoring wells and the Westbay™ multiport wells. Water levels for the shallow wells were measured using a Solinst™ water level meter. In the deep multiport wells, the hydraulic head at each sampling port was measured with a Westbay™ MOSDAX sampling probe. Water level measurements were conducted by Blaine Tech Services, Inc.

Note: no water levels were collected for wells MW-4 and MW-1 on November 1, 2013 during the fourth quarter 2013 sampling event because the wells were inaccessible due to JPL parking structure construction activities.

WELL GAUGING DATA

Project # 131018-AW1 Date 10-18-13 Client Battelle

Site JPL, Pasadena

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-1	1110	4					30.11	Pump QED		
MW-5	0708	4					106.68			
MW-6	1021	4					210.62			
MW-7	0901	4					246.34			
MW-8	0940	4					172.47			
MW-9	1114	4					21.40			
MW-10	0710 4m	4					119.34			
MW-13	0824	4					215.24			
MW-15	0947	4					34.07			
MW-16	0631	4					267.38	↓	↓	

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-3
 DATE: 10/18/13
 LOCATION: SPL
 ELEV. TOP OF WASTBAY CASING: 1100.34
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: Ems 2502
 PROJECT: SPL, Pasadena
 OPERATOR(S): A. Wolff
 ATM. PRESSURE (Patm): (start) 14.11 (finish) 14.15
 Temp (°C) 21.95 19.12

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (°C)				
5	653	648	224.87	226.77	224.87	21.73	490.01	162.39	653	1128
4	558	554	183.62	186.22	183.62	22.06	397.06	160.94	558	1130
3	346	346	91.42	95.08	91.42	21.37	186.80	159.20	346	1133
2	252	251	50.53	57.35	50.53	20.92	99.75	152.25	252	1134
1	172	171	15.72	26.37	15.72	19.94	28.28	143.72	172	1135

Comments: Collar checked 2" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-4
 DATE: 10/18/13
 LOCATION: SPL
 ELEV. TOP OF WASTBAY CASING: 1082.84
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 PSI
 SERIAL NO.: EMS 2502
 PROJECT: SPL Pasadena
 OPERATOR(S): A Wolff
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.18
 Temp (°C) 15.06 17.81

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (°C)				
5	513	512	182.68	180.36	182.68	17.33	383.56	129.44	513	0740
4	392	391	130.04	127.98	130.04	18.54	262.72	129.28	392	0741
3	322	321	99.61	97.64	99.61	19.07	192.73	129.27	322	0742
2	240	239	63.89	62.73	63.89	19.37	112.19	127.81	240	0743
1	150	150	24.60	27.71	24.60	18.94	31.40	118.60	150	0744

Comments: Collar detect is 2' above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MLW-11
 DATE: 10/18/13
 LOCATION: SPI
 ELEV. TOP OF WASTBAY CASING: 1139.30
 WEATHER: clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EMS 2502
 PROJECT: SPI Pasadena
 OPERATOR(S): A Wolf
 ATM. PRESSURE (Patm): (start) 14.12 (finish) 14.12
 Temp (°C) 15.73 17.97

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (°C)				
5	639	636	214.17	198.59	214.17	18.22	425.57	213.43	639	0837
4	524	521	164.64	164.58	164.64	19.29	347.11	174.89	524	0838
3	429	426	123.72	122.16	123.72	18.48	249.25	179.75	429	0845
2	259	256	50.16	52.35	50.16	18.90	88.20	170.80	259	0843
1	149	147	14.23	24.77	14.23	18.32	24.57	124.43	149	0846

Comments: Collar defect 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-12
 DATE: 10/18/13
 LOCATION: SPL
 ELEV. TOP OF WASTBAY CASING: 1102.14
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EMS 2502
 PROJECT: SPL Pasadena
 OPERATOR(S): A wolf
 ATM. PRESSURE (Patm): (start) 14.16 (finish) 14.16
 Temp (°C) 14.40 17.43

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (°C)				
5	548	546	206.71	175.80	206.71	16.93	372.90	175.10	548	0801
4	436	434	158.11	136.64	158.11	18.04	282.56	153.44	436	0802
3	323	322	108.90	89.66	108.90	18.35	174.18	148.82	323	0803
2	243	242	74.01	56.10	74.01	18.22	96.76	146.24	243	0804
1	140	139	29.11	16.25	29.11	17.95	4.82	135.18	140	0805

Comments: Collar detect 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: mw-14
 DATE: 10/18/13
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING: 1173.47
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: Fms 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): A wolf
 ATM. PRESSURE (Patm): (start) 14.09 (finish) 14.12
 Temp (°C) 21.76 19.81

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) $P(ft) = (P2 - Patm) * 2.307$ ft/psi)	Depth to Water Outside Port (ft) DTW = Dp - P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (°C)				
5	540	538	184.24	163.56	184.24	21.25	344.83	195.17	540	1002
4	456	454	147.72	127.31	147.72	21.32	261.27	194.73	456	1003
3	382	380	115.69	95.27	115.69	21.84	187.28	194.72	382	1004
2	277	276	69.84	49.73	69.84	20.60	82.22	194.78	277	1005
1	207	206	39.41	19.83	39.41	20.14	13.24	193.76	207	1006

Comments: Collar detect 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-17
 DATE: 10/18/13
 LOCATION: 572
 ELEV. TOP OF WESTBAY CASING: 1191.71
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: Emv 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): A Wolff
 ATM. PRESSURE (Patm): (start) 14.07 (finish) 14.10
 Temp (°C) 21.58 17.35

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (°C)				
5	726	724	240.44	209.54	240.44	20.53	450.95	275.05	726	1152
4	582	580	178.16	149.41	178.16	20.39	312.23	269.77	582	1154
3	468	466	128.64	106.30	128.64	19.82	212.77	255.23	468	1155
2	370	368	86.14	67.13	86.14	19.04	122.41	247.59	370	1156
1	250	248	33.91	19.71	33.91	18.05	13.01	236.99	250	1157

Comments: Collar detect 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-18
 DATE: 10/18/13
 LOCATION: SP2
 ELEV. TOP OF WESTBAY CASING: 1225.41
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 PSI
 SERIAL NO.: Emo 2502
 PROJECT: SPL, Pasadena
 OPERATOR(S): A Wolf
 ATM. PRESSURE (Patm): (start) 14.86 (finish) 14.08
 Temp (°C) 20.82 17.72

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (°C)				
5	684	681	184.99	180.95	184.99	20.67	385.02	298.98	684	12/11
4	564	562	132.89	130.73	132.89	20.88	269.16	294.84	564	12/13
3	424	422	72.02	75.58	72.02	20.18	141.93	282.07	424	12/14
2	330	328	31.10	37.68	31.10	19.30	54.49	275.51	330	12/15
1	270	268	14.23	14.19	14.23	18.42	0.30	269.70	270	12/16

Comments: Collar detect is 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-19
 DATE: 10/18/13
 LOCATION: SPL
 ELEV. TOP OF WASTBAY CASING: 1142.94
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: Ems 2582
 PROJECT: SPL, Pasadena
 OPERATOR(S): A. Wolff
 ATM. PRESSURE (Patm): (start) 14.06 (finish) 14.12
 Temp (°C) 25.60 18.38

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) $P(ft) = (P2 - Patm) * 2.307$ ft/psi	Depth to Water Outside Port (ft) DTW = Dp - P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (°C)				
5	498	496	171.44	137.10	171.44	21.64	283.85	214.15	498	1055
4	444	442	148.04	113.81	148.04	21.10	230.12	213.88	444	1056
3	392	390	125.48	99.87	125.48	20.77	197.96	194.04	392	1057
2	314	312	91.62	66.24	91.62	20.47	120.38	193.62	314	1058
1	242	240	60.34	37.11	60.34	19.99	53.18	188.82	242	1059

Comments: Collar detect 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-20
 DATE: 10/18/13
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING: 1165.05
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): A Wolff
 ATM. PRESSURE (Patm): (start) 14.12 (finish) 14.11
 Temp (°C) 23.90 18.33

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (°C)				
5	900	896	321.07	316.31	321.07	22.17	683.31	216.69	900	1233
4	700	696	234.61	214.48	234.61	22.79	462.23	237.77	700	1237
3	502	559	174.92	153.72	174.92	22.13	322.06	239.44	502	1238
2	392	389	101.02	86.78	101.02	20.83	167.63	204.37	392	1239
1	230	227	30.66	16.79	30.66	19.29	61.6	223.04	230	1240

Comments: Collar detect 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-21
 DATE: 10/18/13
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING: 1059.10
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: Emu 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): A Wolff
 ATM. PRESSURE (Patm): (start) 14.13 (finish) 14.12
 Temp (°C) 23.53 19.96

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (°C)				
5	372	372	125.64	137.83	125.64	22.26	285.38	86.62	372	1350
4	310	310	98.86	110.97	98.86	21.76	223.41	86.59	310	1351
3	240	240	68.63	81.12	68.63	21.24	154.55	85.45	240	1352
2	161	162	34.19	46.99	34.19	20.61	75.81	85.19	161	1353
1	90	90	14.20	15.91	14.20	20.21	4.11	85.09	90	1354

Comments: Collar leaked 2' above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-22
 DATE: 10-24-13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1176.98
 WEATHER: Overcast

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL, Pasadena
 OPERATOR(S): KWIFF
 ATM. PRESSURE (Patm): (start) 14.06 (finish) 19.84"

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	588	586	202.01	168.93	202.01	21.73	357.29	230.71	588	0704
4	467	464	149.88	120.17	149.88	22.01	244.80	222.20	467	0719
3	389	387	116.01	92.00	116.01	21.79	179.81	209.19	389	0721
2	329	328	89.94	65.81	89.94	21.34	119.39	209.61	329	0722
1	245	245	53.82	30.41	53.82	20.43	37.72	207.28	245	0724

Comments: Collar defect is 1' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-23
 DATE: 10/18/13
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING: 1108.84
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: Ems 2502
 PROJECT: JPL, Pasadena
 OPERATOR(S): A Wolff
 ATM. PRESSURE (Patm): (start) 14.02 (finish) 14.11
 Temp (°C) 19.30 19.66

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) $P(ft) = (P2 - Patm) * 2.307$ ft/psi)	Depth to Water Outside Port (ft) DTW = Dp - P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (°C)				
5	542	540	202.96	182.03	202.96	19.88	387.60	154.40	542	0648
4	445	444	161.04	140.29	161.04	20.45	291.30	153.70	445	0649
3	319	318	106.36	90.04	106.36	20.54	175.38	143.62	319	0650
2	254	254	78.21	61.93	78.21	20.40	110.53	143.47	254	0651
1	174	175	44.33	38.89	44.33	19.98	38.92	135.08	174	0652

Comments: Collar detect is 1' above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-24
 DATE: 10/18/13
 LOCATION: SPL
 ELEV. TOP OF WASTBAY CASING: 1200.94
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EMS 2502
 PROJECT: SPL, Pasadena
 OPERATOR(S): A Wolff
 ATM. PRESSURE (Patm): (start) 14.11 (finish) 14.12

Temp (°C) 17.72 21.74

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (°C)				
5	678	676	222.34	195.37	222.34	20.97	418.17	259.83	678	0921
4	554	551	167.81	146.07	167.81	21.29	304.43	249.57	554	0922
3	435	432	116.08	98.84	116.08	21.36	195.47	239.53	435	0923
2	373	370	89.46	72.43	89.46	21.38	139.54	238.46	373	0924
1	279	277	48.63	33.61	48.63	21.45	44.99	234.01	279	0925

Comments: Collar detect 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MLW-25
 DATE: 10/18/13
 LOCATION: SP2
 ELEV. TOP OF WASTBAY CASING: 934.53
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EMS 7507
 PROJECT: JPL Pasadena
 OPERATOR(S): A Wolf
 ATM. PRESSURE (Patm): (start) 14.71 (finish) 14.20
 Temp (°C) 24.26 20.58

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (°C)				
5	713	709	211.67	219.08	211.67	22.95	472.64	240.36	713	1326
4	633	630	177.32	185.25	177.32	22.34	394.59	238.41	633	1328
3	503	500	121.06	129.72	121.06	21.96	266.48	236.52	503	1329
2	423	420	86.34	95.16	86.34	21.56	186.75	236.25	423	1330
1	358	355	58.11	66.82	58.11	21.21	121.37	236.63	358	1331

Comments: collar detect 2' above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-26
 DATE: 10/18/13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1059.08
 WEATHER: Clear

PROBE TYPE: Sumpor 0-580psi
 SERIAL NO.: Ems 2582
 PROJECT: JPL Pasadena
 OPERATOR(S): A Wolf
 ATM. PRESSURE (Patm): (start) 14.16 (finish) 14.16
 Temp(°C) 24.23 20.99

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) $P(ft) = (P2 - Patm) * 2.307$ ft/psi	Depth to Water Outside Port (ft) DTW = Dp - P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (°C)				
2	215	212	76.64	61.61	76.64	23.00	109.47	105.53	215	1306
1	135	132	41.82	27.42	41.82	21.78	30.59	104.41	135	1307

Comments: Collar detect 2' below port

WELL GAUGING DATA

Project # 131018-KW1 Date 11-1-13 Client Battelle

Site JPL, Pasadena

Well ID	Time	Well Size (in.)	Sheen / Odor	Depth to Immiscible Liquid (ft.)	Thickness of Immiscible Liquid (ft.)	Volume of Immiscibles Removed (ml)	Depth to water (ft.)	Depth to well bottom (ft.)	Survey Point: TOB or TOC	Notes
MW-1	0953	4					29.82	Pump		
MW-5	0705	4					108.83			
MW-6	0854	4					211.92			
MW-7	0752	4					248.21			
MW-8	0743	4					174.72			
MW-9	1000	4					21.02 1000.00			
MW-10	0657	4					123.02			
MW-13	0824	4					217.11			
MW-15	0733	4					33.87			
MW-16	1240	4					268.97 211.92	↓	↓	

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-3
 DATE: 11-1-13
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING: 1100.34
 WEATHER: Clear

PROBE TYPE: Sampler 0-530 psi
 SERIAL NO.: Ems 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): A Wolf
 ATM. PRESSURE (Patm): (start) 14.08 (finish) 14.17
 Temp °C 18.84 18.74

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (°C)				
5	653	651	221.77	225.26	221.77	19.90	486.96	166.04	653	1013
4	558	556	180.46	184.62	180.46	20.53	393.21	164.79	558	1014
3	346	344	88.28	93.02	88.28	20.74	181.88	144.12	346	1015
2	252	251	47.34	56.63	47.34	20.45	97.93	154.07	252	1016
1	172	171	14.28	25.56	14.28	19.60	26.25	145.75	172	1017

Comments: Collar detect 2' above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-4
 DATE: 11-1-13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING _____
 WEATHER: _____

PROBE TYPE _____
 SERIAL NO. _____
 PROJECT JPL Pasadena
 OPERATOR(S) Twoiff
 ATM. PRESSURE (Patm): (start) _____ (finish) _____

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
	- Unable to access well due to onsite construction of JPL parking structure									
	- No Profile Collected									

Comments: _____

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-12
 DATE: 11-1-13
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING _____
 WEATHER: _____

PROBE TYPE _____
 SERIAL NO. _____
 PROJECT JPL, Pasadena
 OPERATOR(S) A. Wolff
 ATM. PRESSURE (Patm): (start) _____ (finish) _____

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
	- Unable to access well due to on site construction of JPL parking structure									
	- No Profile Collected									

Comments: _____

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-14
 DATE: 11-1-13
 LOCATION: SPL
 ELEV. TOP OF WESTBAY CASING: 1173.47
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: Ems 2582
 PROJECT: SPL Pasadena
 OPERATOR(S): A Wolff
 ATM. PRESSURE (Patm): (start) 14.16 (finish) 14.14
 Temp °C 18.77 19.37

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (oC)				
5	540	539	184.18	163.97	184.18	19.86	345.61	194.39	540	0837
4	456	455	147.76	127.63	147.76	20.19	261.78	194.22	456	0838
3	382	381	115.41	95.51	115.41	20.13	187.67	194.33	382	0839
2	277	277	69.72	49.83	69.72	19.88	82.29	194.71	277	0840
1	207	207	39.19	19.48	39.19	19.63	12.27	194.73	207	0841

Comments: Collar detect 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-17
 DATE: 11-1-13
 LOCATION: SPL
 ELEV. TOP OF WESTBAY CASING: 1191.21
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: Ems 2802
 PROJECT: SPL Pasadena
 OPERATOR(S): A Wolff
 ATM. PRESSURE (Patm): (start) 14.12 (finish) 14.14
 Temp °C 19.07 16.99

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (°C)				
5	726	726	241.21 241.21	206.99	241.21	19.57	444.95	281.05	726	1034
4	582	580	178.03	147.88	178.03	19.75	308.58	273.42	582	1035
3	468	466	128.47	105.12	128.47	19.76	209.94	258.06	468	1036
2	370	368	86.04	66.24	86.04	18.60	120.24	249.76	370	1037
1	250	249	33.90	18.81	33.90	17.765	10.82	239.18	250	1038

Comments: Collar detect @ 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-18
 DATE: 11-1-13
 LOCATION: SPL
 ELEV. TOP OF WESTBAY CASING: 1225.41
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 PSI
 SERIAL NO.: EMB 2502
 PROJECT: SPL Pasadena
 OPERATOR(S): A. Wall
 ATM. PRESSURE (Patm): (start) 14.08 (finish) 14.10
 Temp °C: 21.10 (70.8)

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	684	681	184.97	129.44	184.97	20.76	301.49	302.51	684	1057
4	564	561	132.85	129.32	132.85	20.89	265.86	298.14	564	1058
3	424	421	72.02	74.77	72.02	20.36	140.01	283.99	424	1059
2	330	327	31.10	36.93	31.10	19.21	52.71	277.29	330	1100
1	270	268	14.23	14.21	14.23	18.47	0.30	269.70	270	1101

Comments: Collar detect is 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-19
 DATE: 11-1-13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1142.94
 WEATHER: Clear

PROBE TYPE: Sampler
 SERIAL NO.: EmS 2602
 PROJECT: JPL Pasadena
 OPERATOR(S): A. Wolff
 ATM. PRESSURE (Patm): (start) 14.16 (finish) 14.18
 Temp °C 18.58 17.78

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (°C)				
5	498	496	171.60	135.44	171.60	18.64	279.79	218.21	498	0937
4	444	442	148.21	112.18	148.21	18.84	226.13	217.87	444	0938
3	392	390	125.59	99.04	125.59	18.92	195.82	196.18	392	0939
2	314	312	91.71	65.44	91.71	18.98	118.30	195.70	314	0940
1	242	240	60.49	36.32	60.49	18.77	51.12	190.88	242	0941

Comments: Collar depth 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-20
 DATE: 11-1-13
 LOCATION: SPL
 ELEV. TOP OF WASTBAY CASING: 1165.05
 WEATHER: clear

PROBE TYPE: Stimpert 0-500 psi
 SERIAL NO.: EMS 2502
 PROJECT: SPL Pasadena
 OPERATOR(S): A. Waft
 ATM. PRESSURE (Patm): (start) 14.12 (finish) 14.13
 Temp: 24.24 18.26

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (oC)				
5	900	897	321.12	309.55	321.12	22.43	681.56	218.44	900	1120
4	700	697	234.48	213.38	234.48	22.66	459.69	240.31	700	1121
3	562	556	174.67	156.83	174.67	22.00	329.23	232.77	562	1122
2	372	390	101.04	86.73	101.04	20.79	147.51	204.49	372	1123
1	230	228	35.64	16.44	35.64	19.20	5.35	224.65	230	1125

Comments: Collar detect 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-22
 DATE: 10-11-13
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING: 1176.98
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EMS-2502
 PROJECT: JPL Pasadena
 OPERATOR(S): A Wolff
 ATM. PRESSURE (Patm): (start) 14.13 (finish) 14.13
 Temp °C: 19.36 20.11

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ₂ O Inside Casing	Trans. Temp. (oC)				
5	588	586	260.31	178.67	200.31	20.41	379.59	200.41	588	0614
4	467	466	147.96	126.49	147.96	20.99	259.21	207.79	467	0615
3	389	389	114.14	92.82	114.14	20.95	181.54	207.46	389	0616
2	329	329	88.08	66.60	88.08	20.69	121.05	207.95	329	0617
1	245	245	51.19	30.13	51.19	20.48	34.91	208.09	245	0618

Comments: Cellar detect is 11" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-23
 DATE: 11-1-13
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING: 1105.84
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL, Pasadena
 OPERATOR(S): A Wolf
 ATM. PRESSURE (Patm): (start) 14.70 (finish) 14.18
 Temp °C 16.37 19.54

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	542	540	202.71	186.51	202.71	18.10	383.68	158.52	542	0643
4	445	444	160.67	139.10	160.67	19.04	288.14	156.86	445	0644
3	319	318	106.18	89.54	106.18	19.56	173.81	145.19	319	0645
2	254	253	78.01	61.36	78.01	19.66	108.80	145.20	254	0646
1	174	173	43.21	27.94	43.21	19.62	31.70	142.30	174	0647

Comments: Collar detect is 11" above sample port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MLW-11
 DATE: 11-1-13
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1139.30
 WEATHER: Clear

PROBE TYPE: Sampler 0-520psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): A Wolff
 ATM. PRESSURE (Patm): (start) 14.11 (finish) 14.14
 Temp °C 15.0 17.97

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	639	635	213.44	196.50	213.44	18.17	420.77	218.23	639	0716
4	524	520	164.03	163.08	164.03	19.34	343.67	180.33	524	0717
3	429	426	123.16	121.01	123.16	19.31	246.62	182.38	429	0718
2	259	256	49.51	51.53	49.51	19.02	86.33	172.67	259	0719
1	149	147	14.24	24.77	14.24	18.34	24.59	124.41	149	0720

Comments: Collar detect 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-24
 DATE: 10th 11-13
 LOCATION: SPL
 ELEV. TOP OF WASTBAY CASING: 1200.94
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EMS 2502
 PROJECT: SPL, Pasadena
 OPERATOR(S): A Wolf
 ATM. PRESSURE (Patm): (start) 14.13 (finish) 14.14
 Temp oc 14.65 21.24

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	678	673	220.03	193.24	220.03	18.38	414.36	263.64	678	0807
4	554	550	166.46	144.83	166.46	19.58	301.52	252.48	554	0808
3	435	431	114.89	98.24	114.89	20.12	194.04	240.96	435	0809
2	373	370	87.97	71.71	87.97	20.49	132.04	240.16	373	0810
1	279	276	47.24	32.74	47.24	20.71	42.93	236.07	279	0811

Comments:

Collar detect 6" above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

WELL ID: MW-25
 DATE: 11-1-13
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING: 934.53
 WEATHER: Clear

PROBE TYPE: Sampler 0-530 psi
 SERIAL NO.: Ems 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): A Wolfe
 ATM. PRESSURE (Patm): (start) 14.20 (finish) 14.23
 Temp: 23.18 20.33

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
5	713	710	211.78	219.24	211.78	22.32	473.03	239.97	713	1208
4	633	631	177.39	185.44	177.39	22.33	395.05	237.95	633	1209
3	503	501	121.12	129.88	121.12	21.95	266.87	236.13	503	1210
2	423	421	86.42	95.33	86.42	21.52	187.17	235.63	423	1211
1	358	356	58.08	66.99	58.08	21.15	121.79	236.21	358	1212

Comments: Cellar detect 2' above port

**WESTBAY™ GROUNDWATER MONITORING WELL
WATER LEVEL MEASUREMENT LOG SHEET**

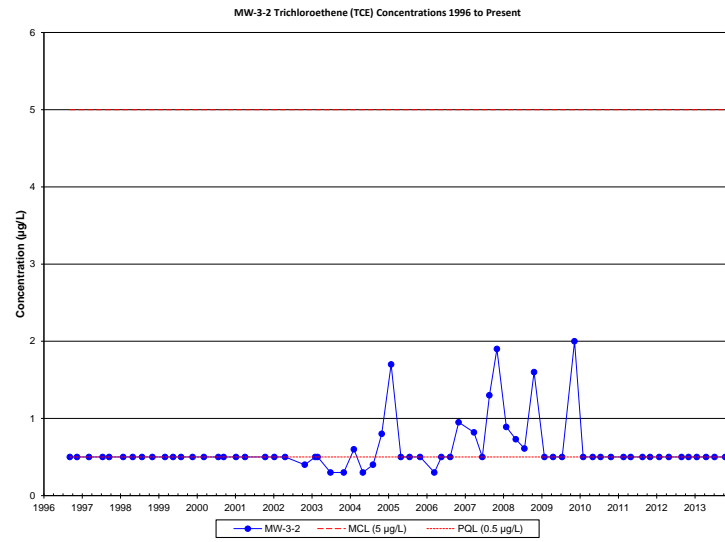
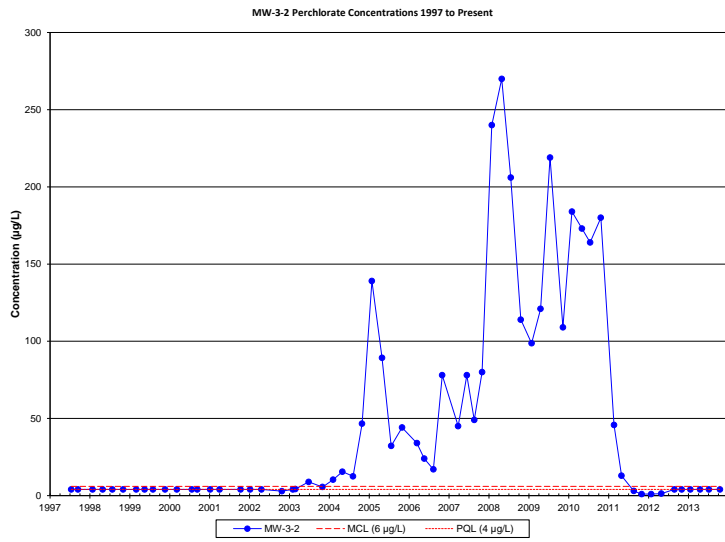
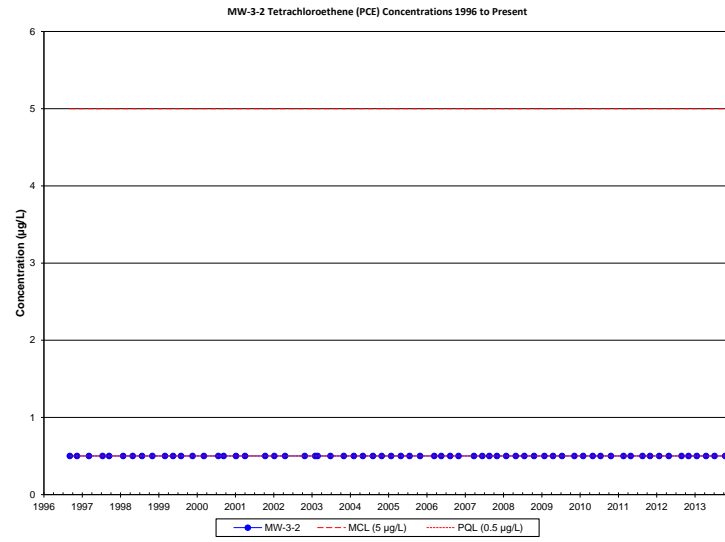
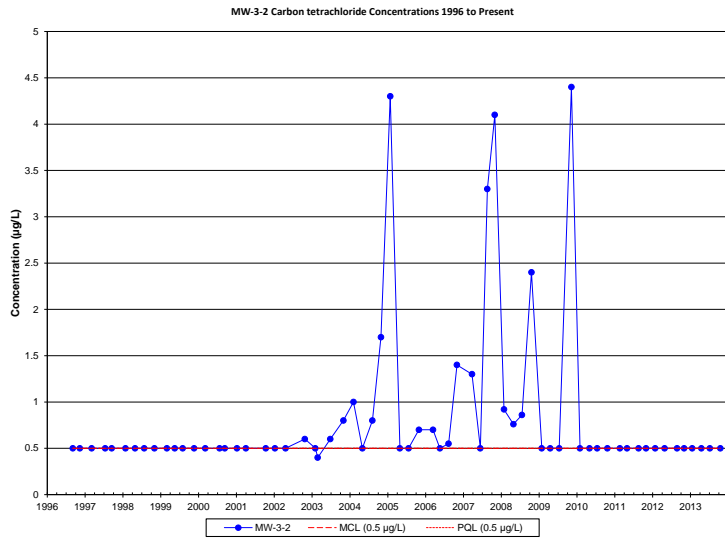
WELL ID: MW-26
 DATE: 11-1-13
 LOCATION: JPL
 ELEV. TOP OF WASTBAY CASING: 1059.08
 WEATHER: Clear

PROBE TYPE: Sampler 0-500 psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): A Wolff
 ATM. PRESSURE (Patm): (start) 14.16 (finish) 14.18
 Temp: 25.08 21.57

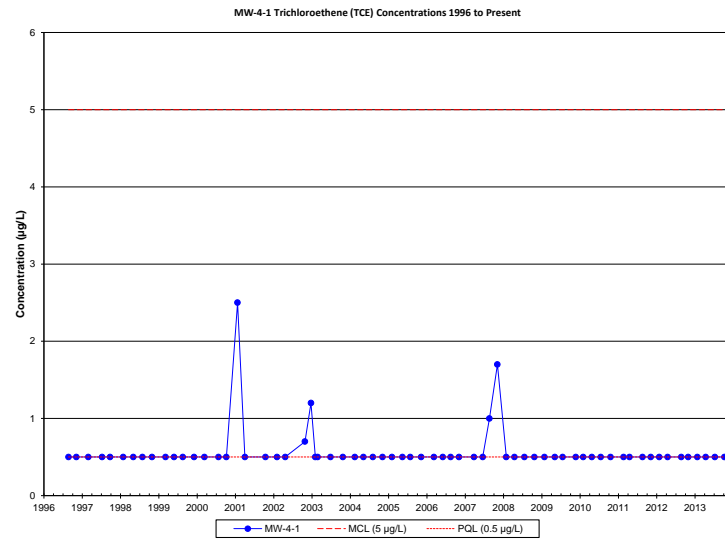
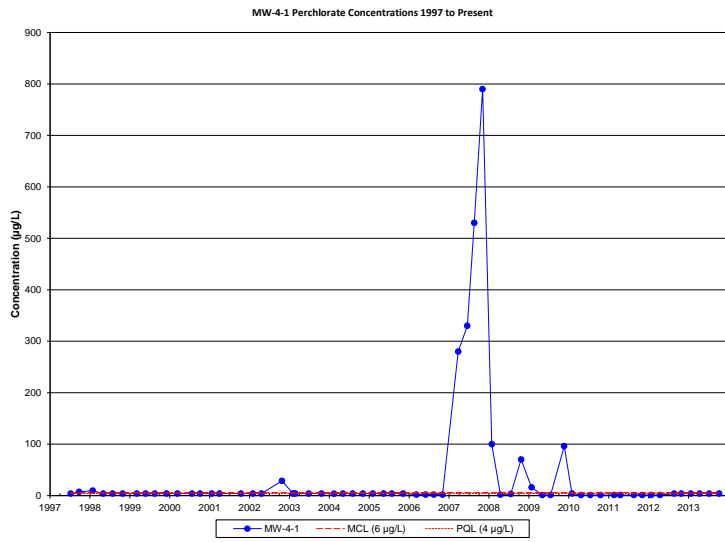
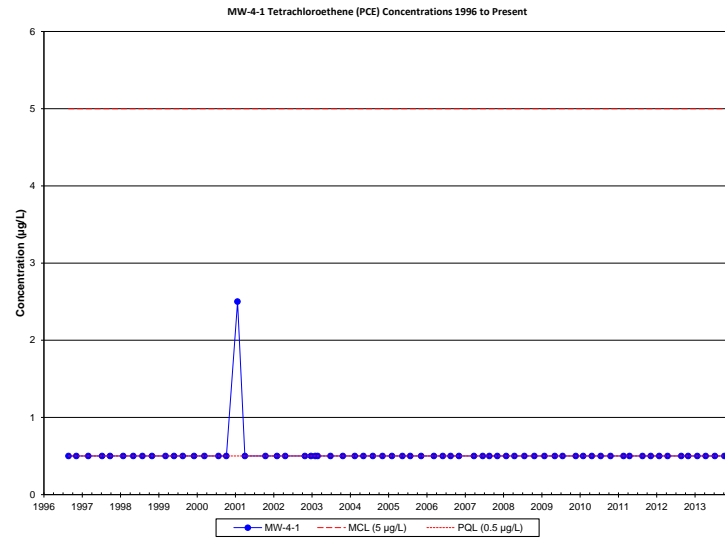
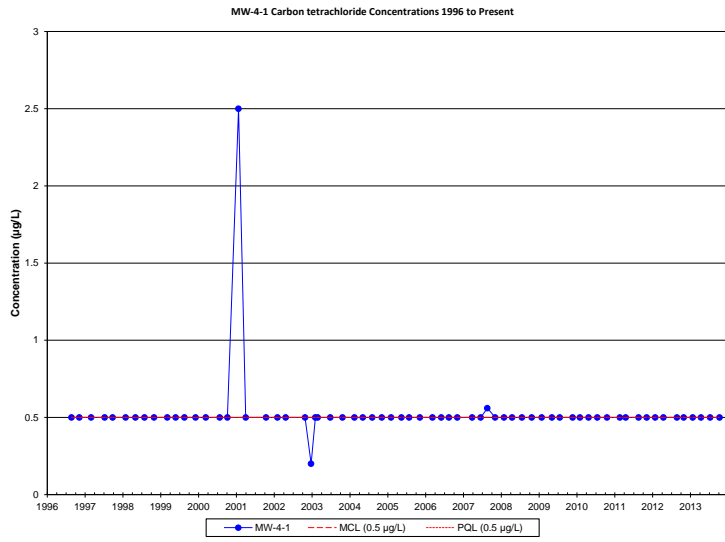
Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Patm)*2.307 ft/psi)	Depth to Water Outside Port (ft) DTW = Dp-P(ft)	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm ² Outside Casing P2	mH ² O Inside Casing	Trans. Temp. (oC)				
2	215	213	76.48	61.07	76.48	24.02	108.22	106.78	215	1150
1	135	132	41.69	26.96	41.69	22.83	29.53	105.47	135	1151

Comments: Collar detect 2' below port

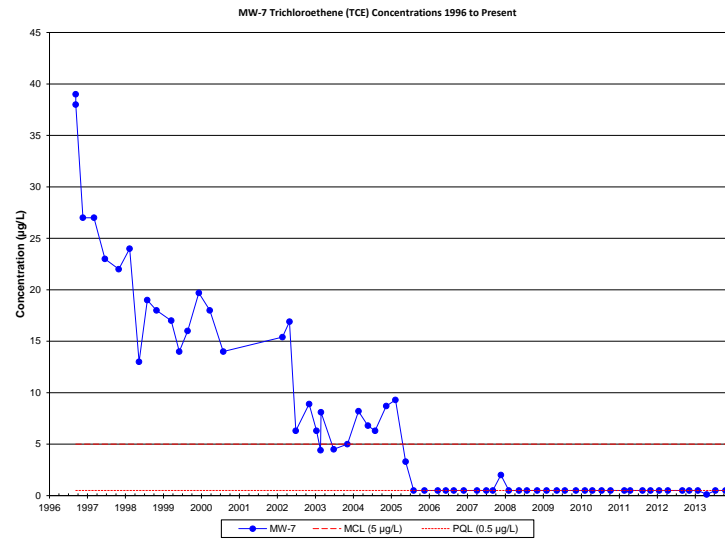
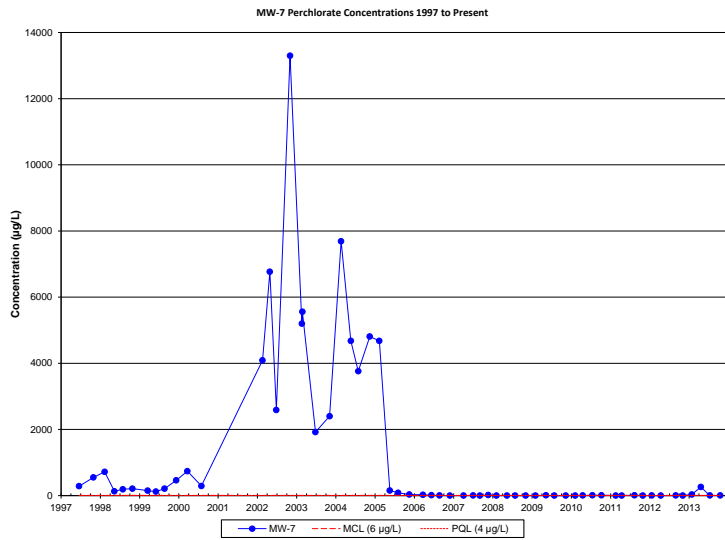
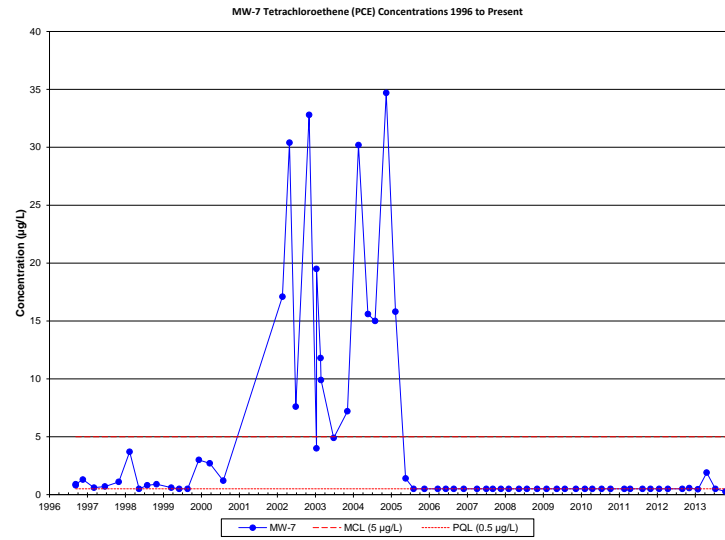
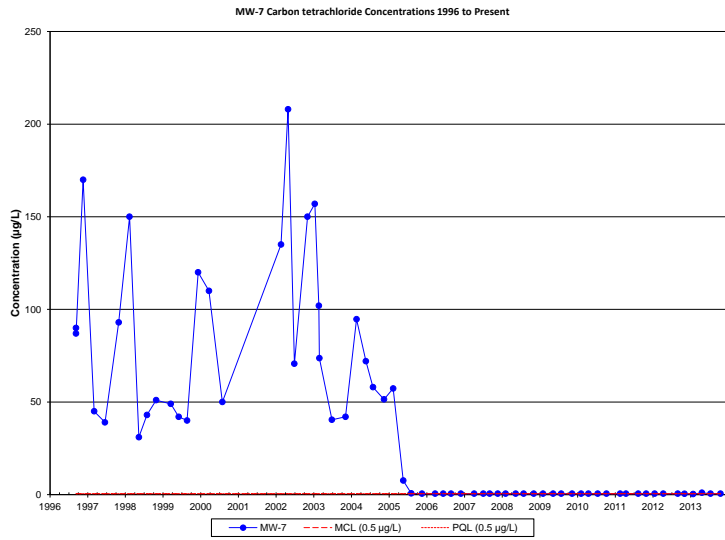
ATTACHMENT 6: TIME SERIES PLOTS



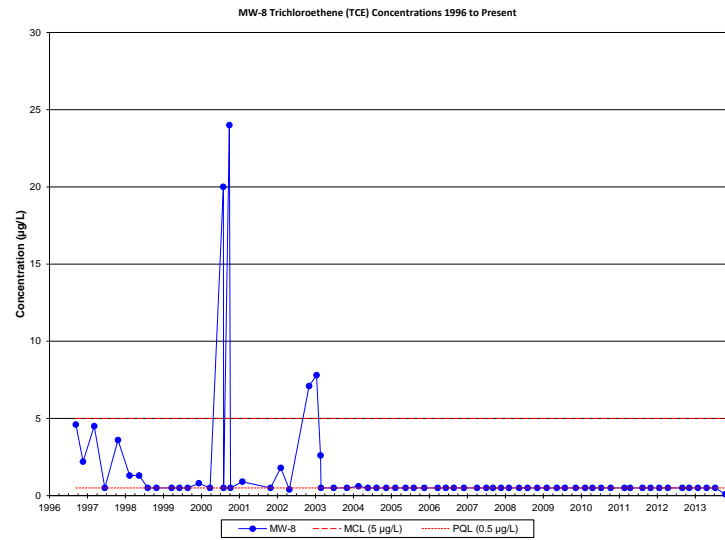
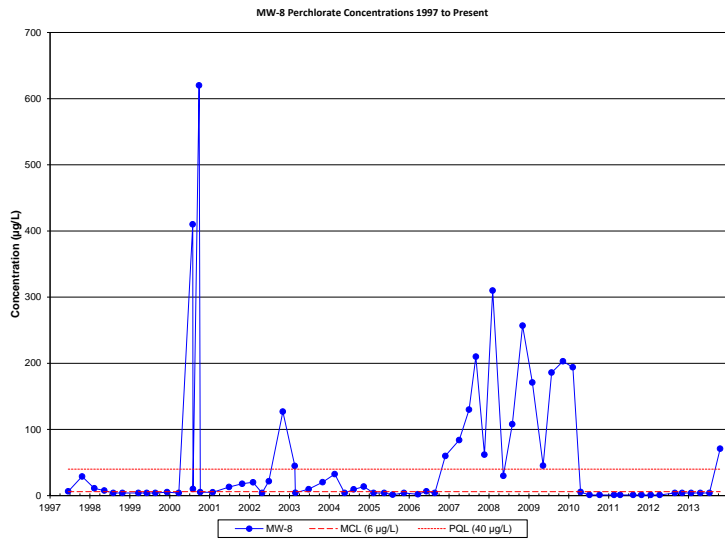
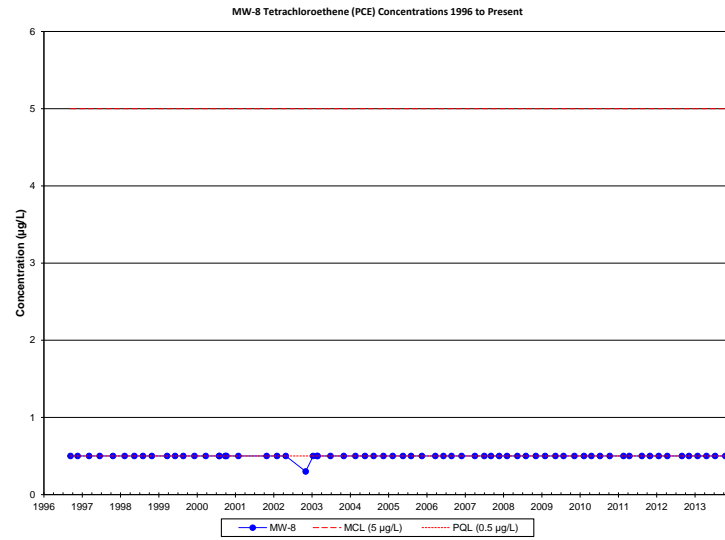
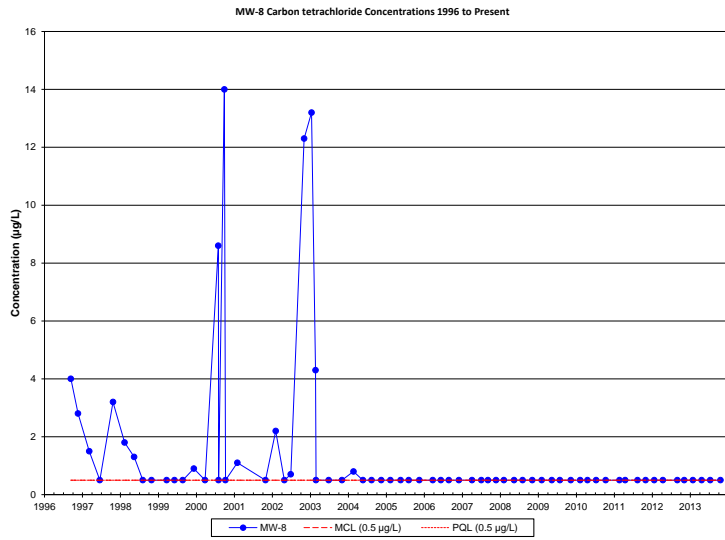
VOCs and Perchlorate Time Series Plots for MW-3-2



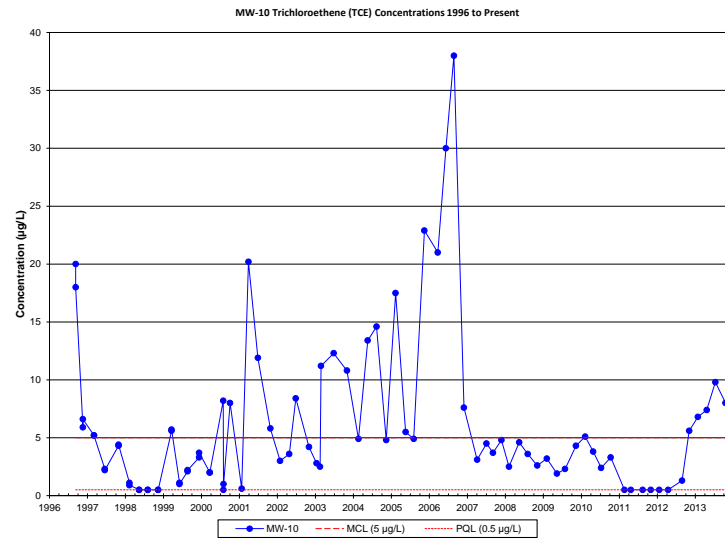
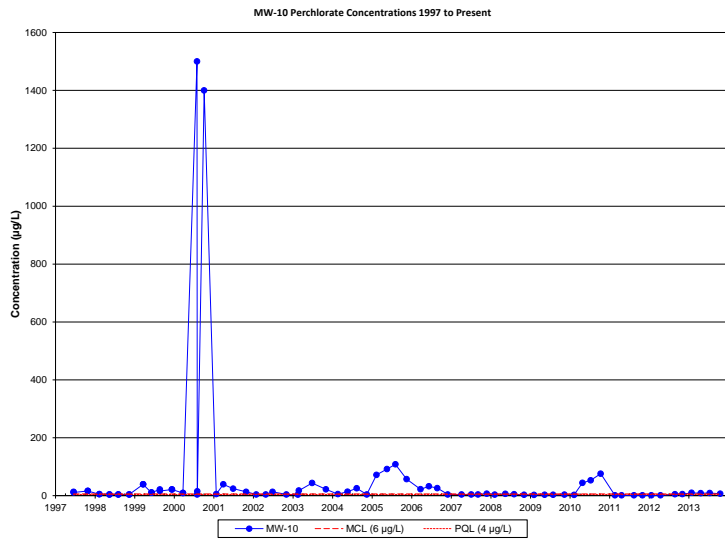
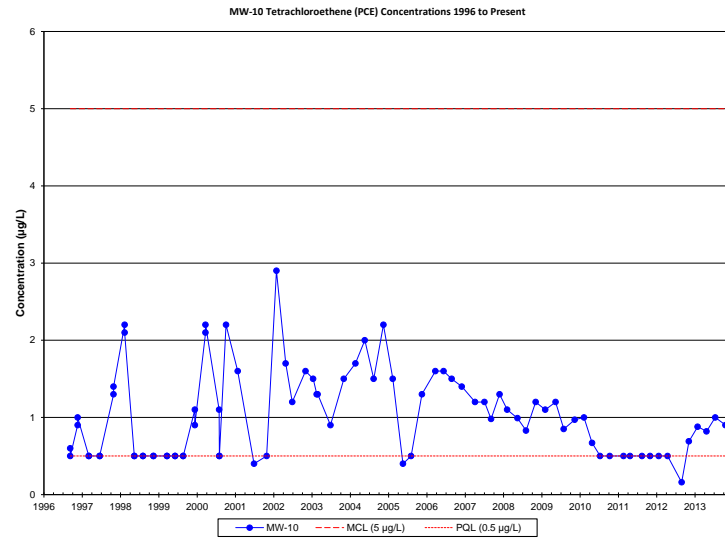
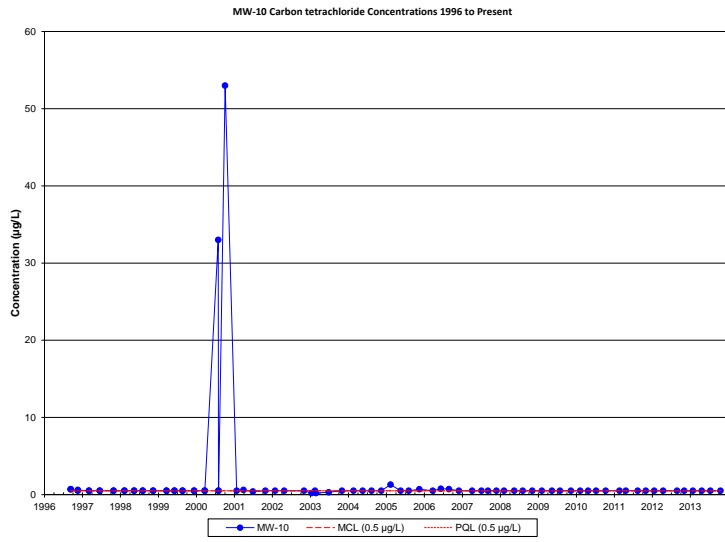
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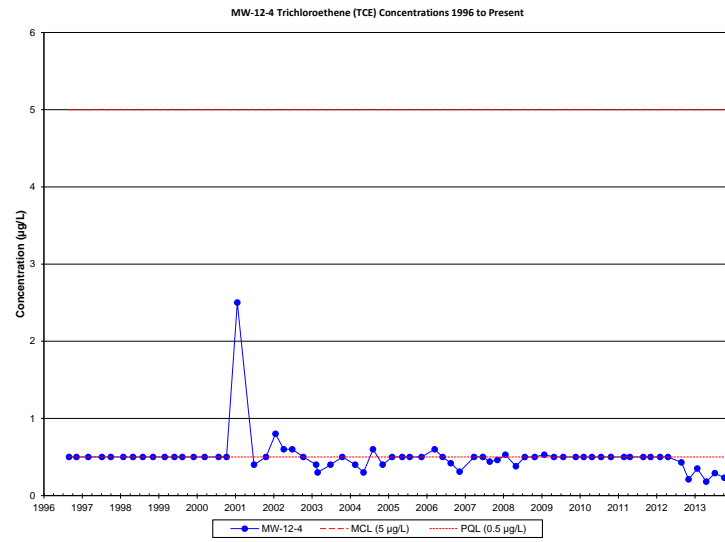
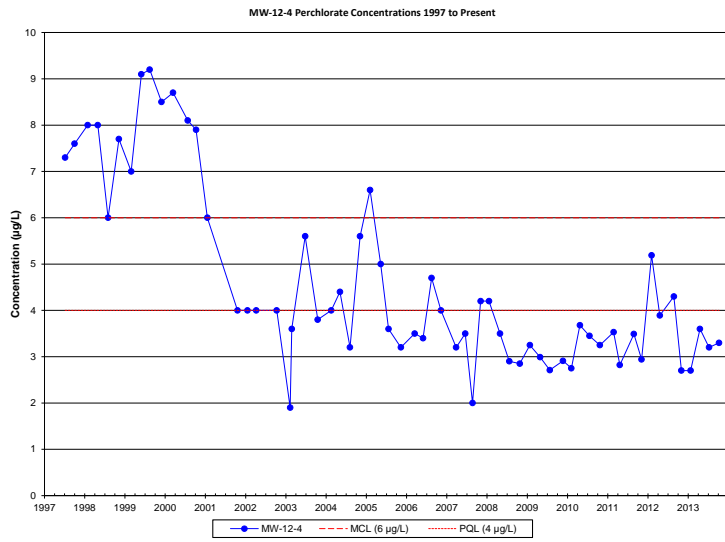
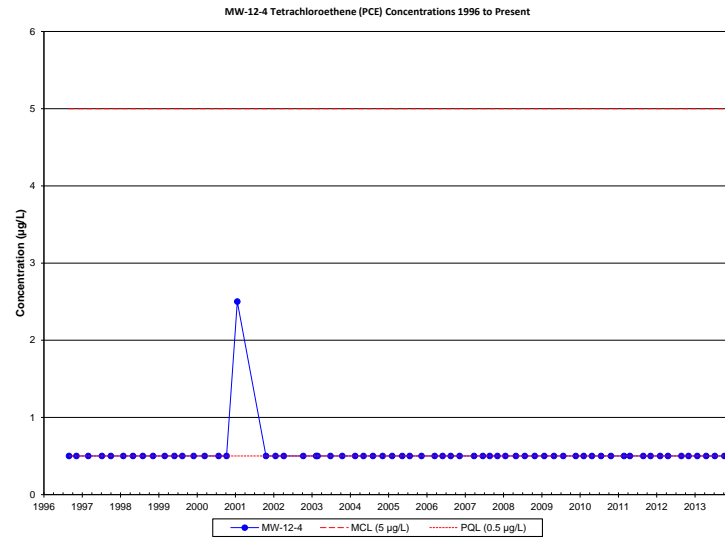
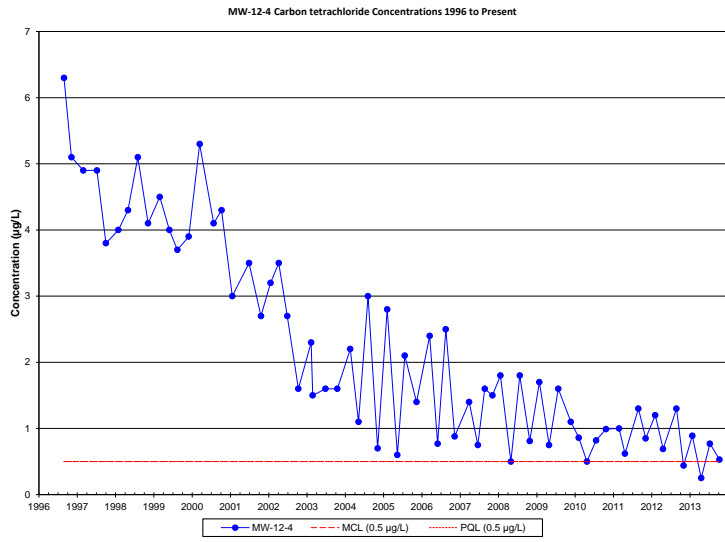
VOCs and Perchlorate Time Series Plots for MW-7



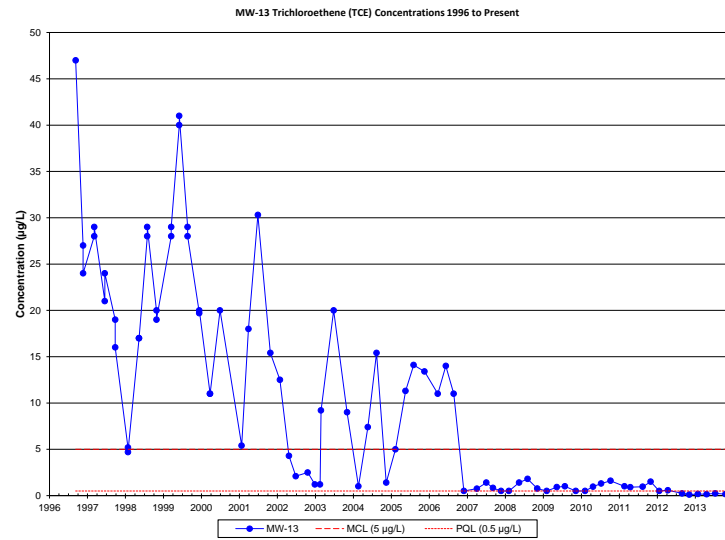
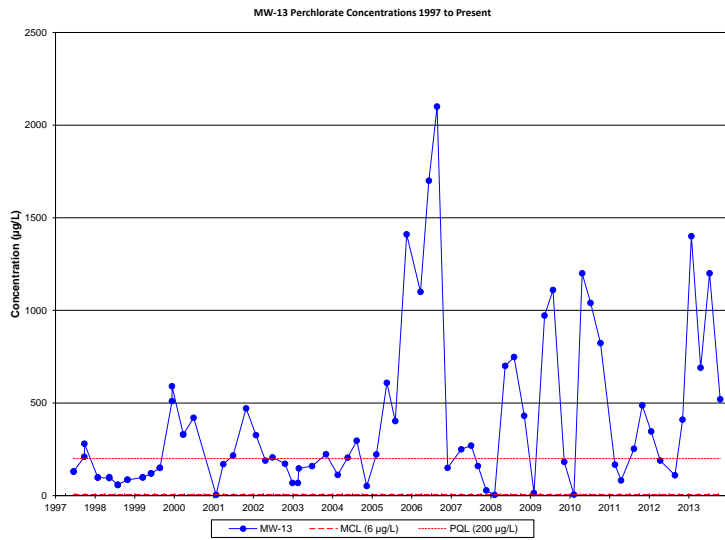
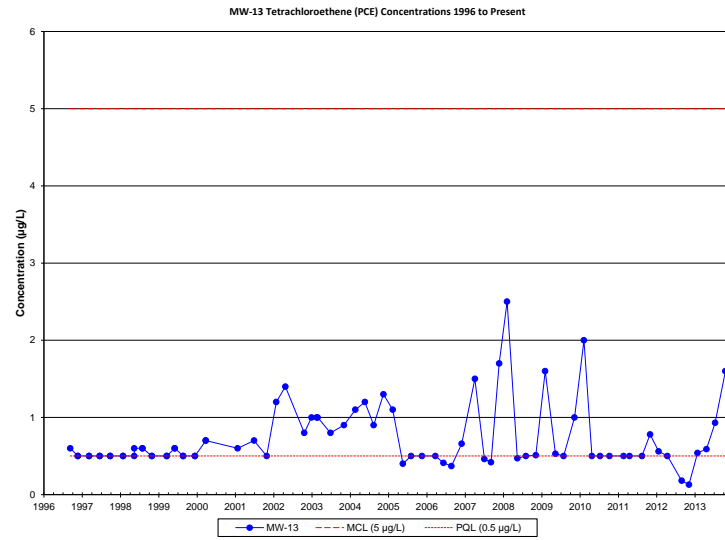
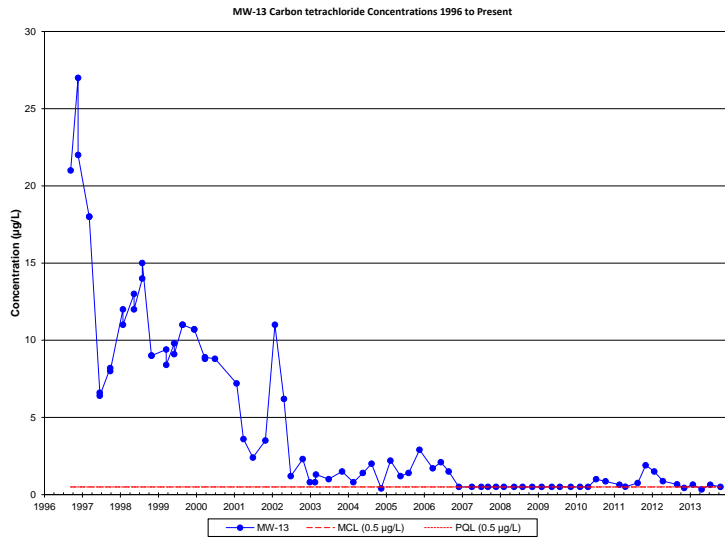
VOCs and Perchlorate Time Series Plots for MW-8



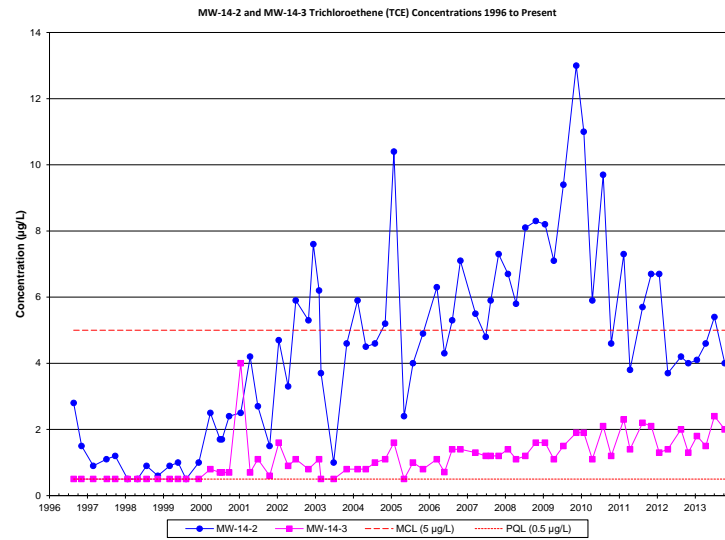
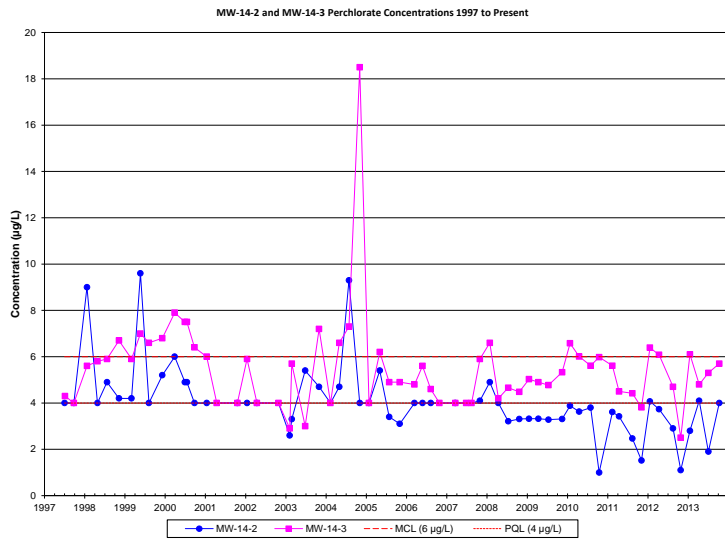
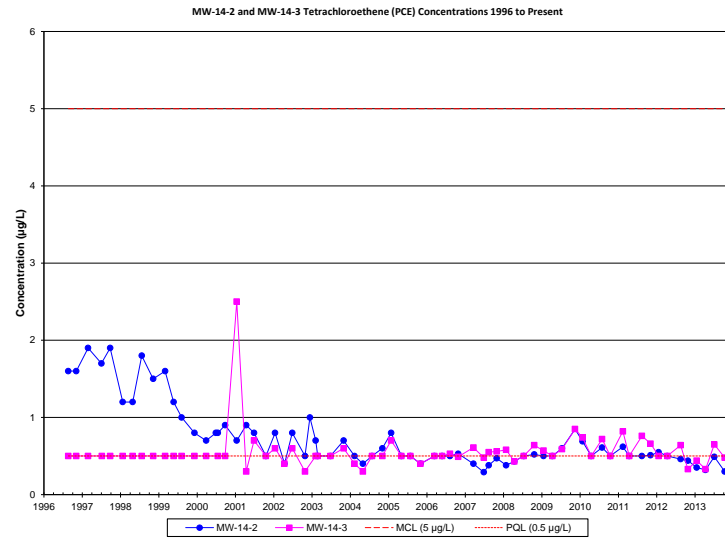
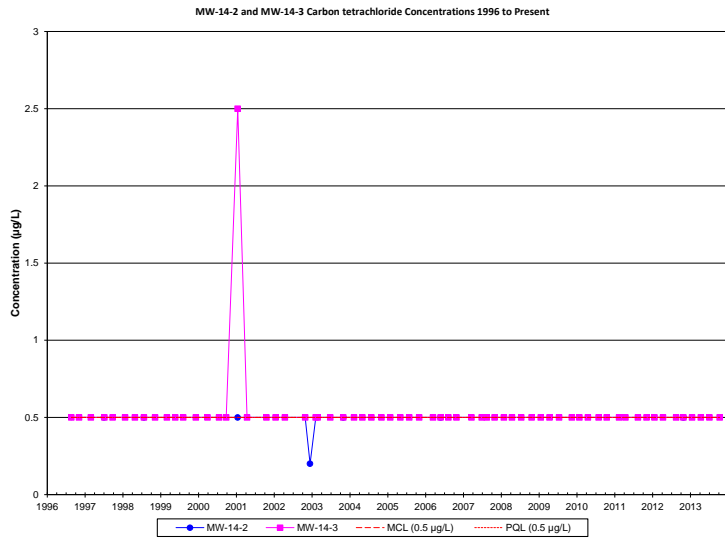
VOCs and Perchlorate Time Series Plots for MW-10



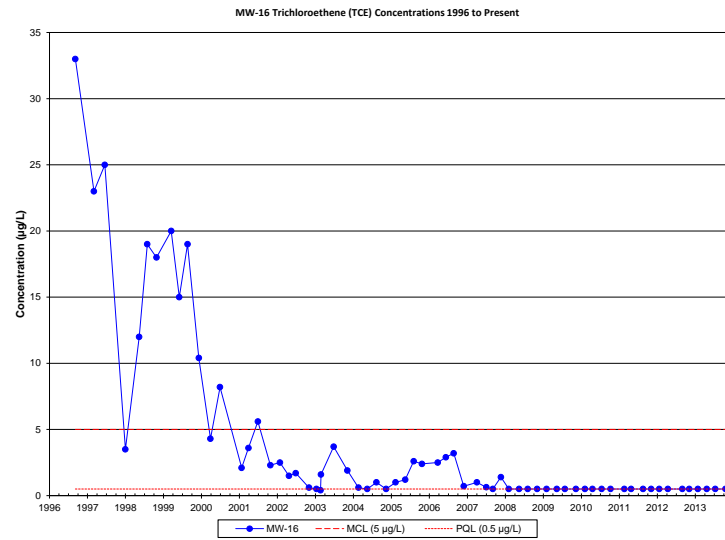
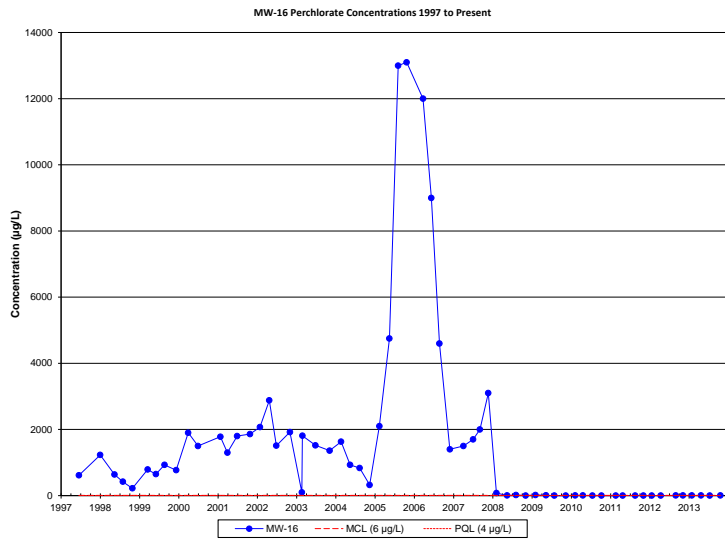
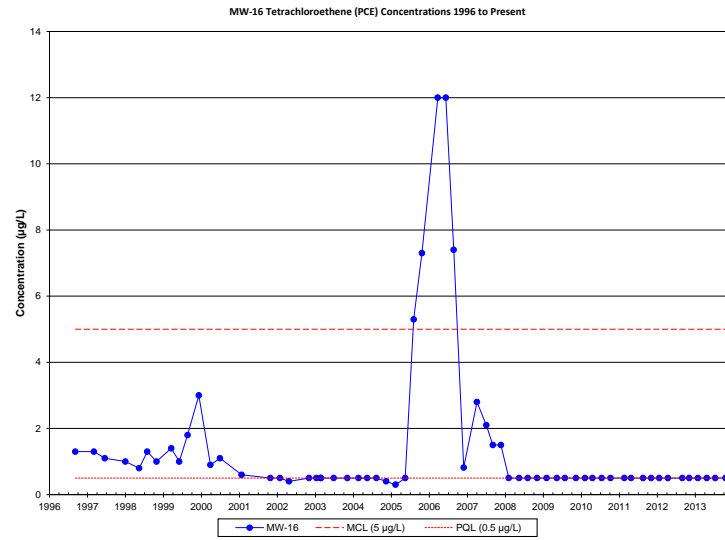
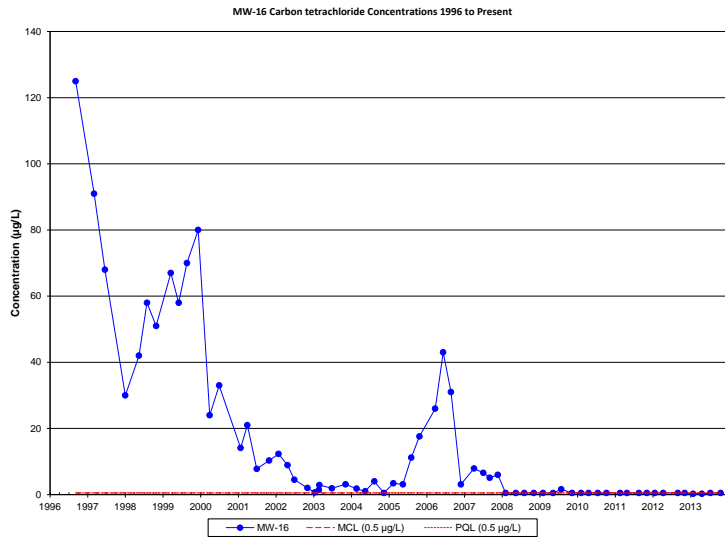
VOCs and Perchlorate Time Series Plots for MW-12-4



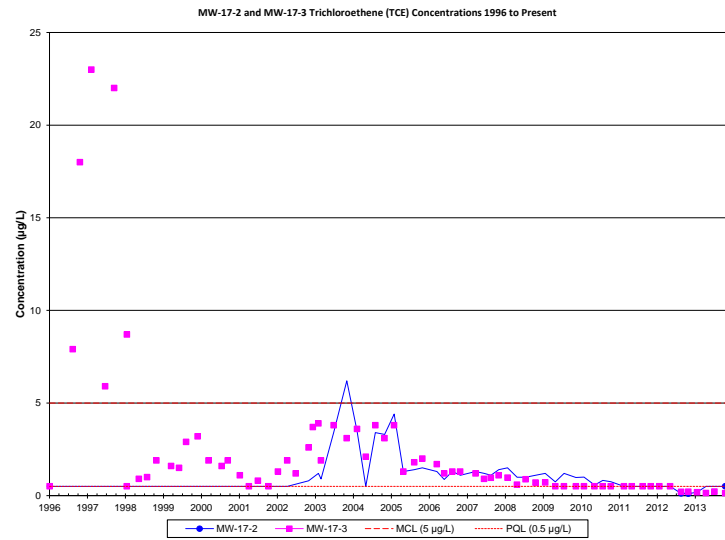
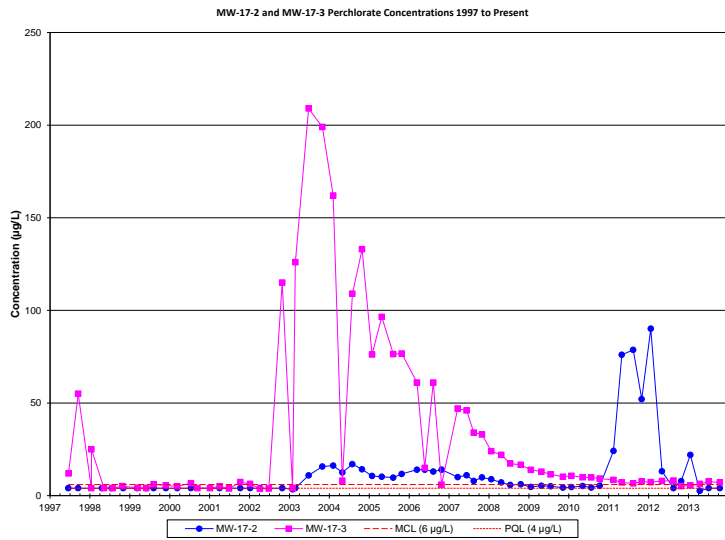
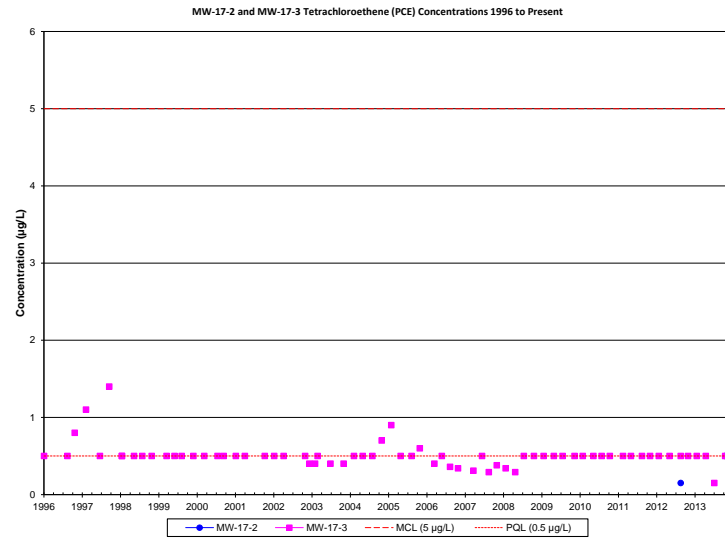
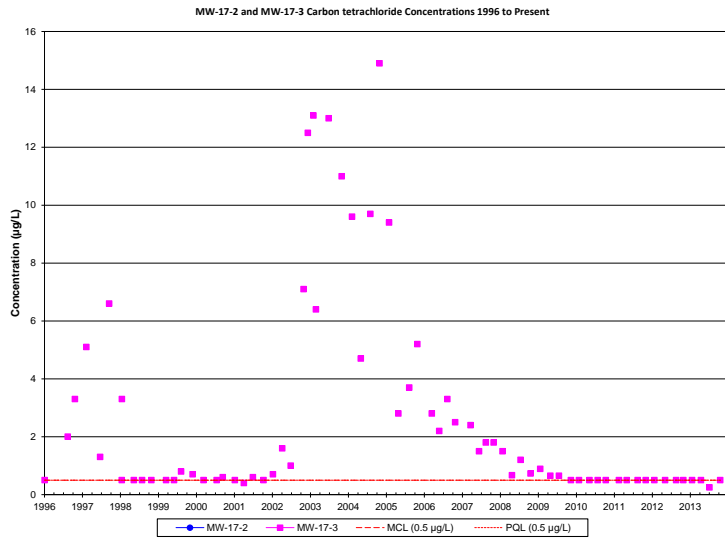
VOCs and Perchlorate Time Series Plots for MW-13



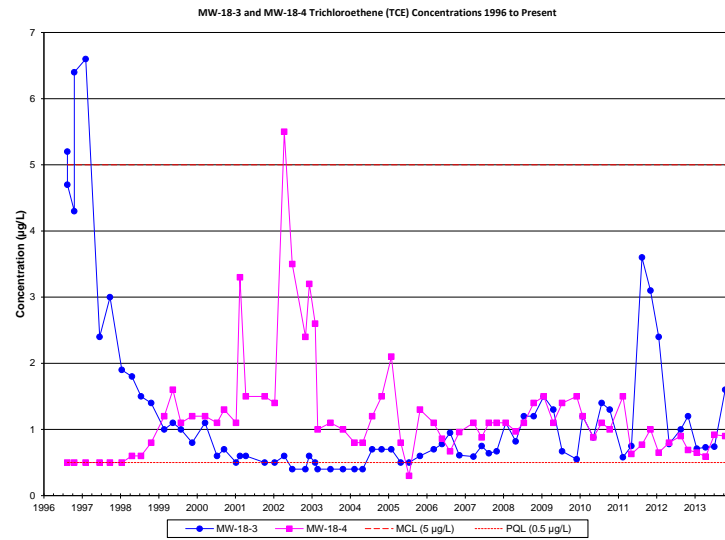
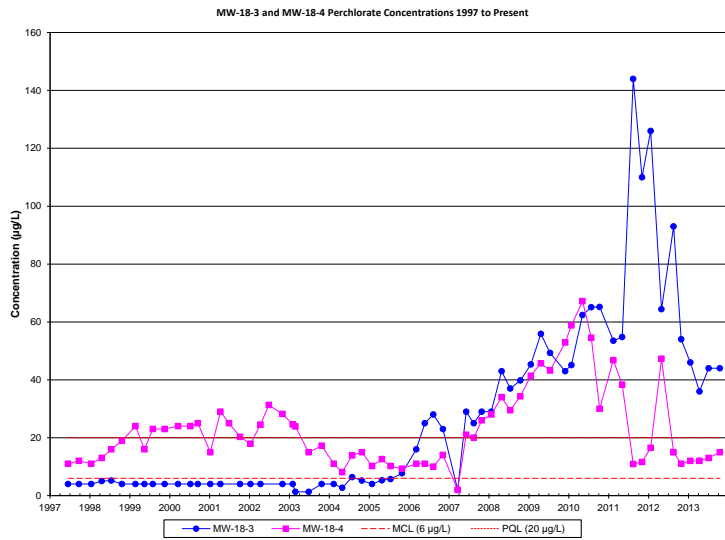
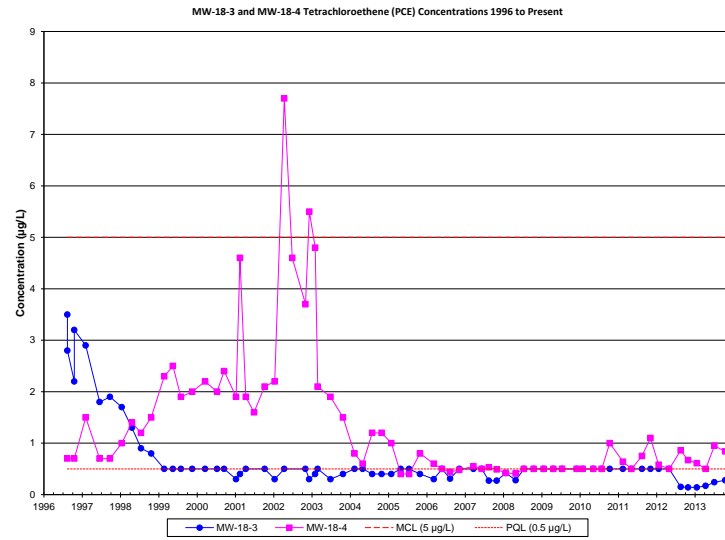
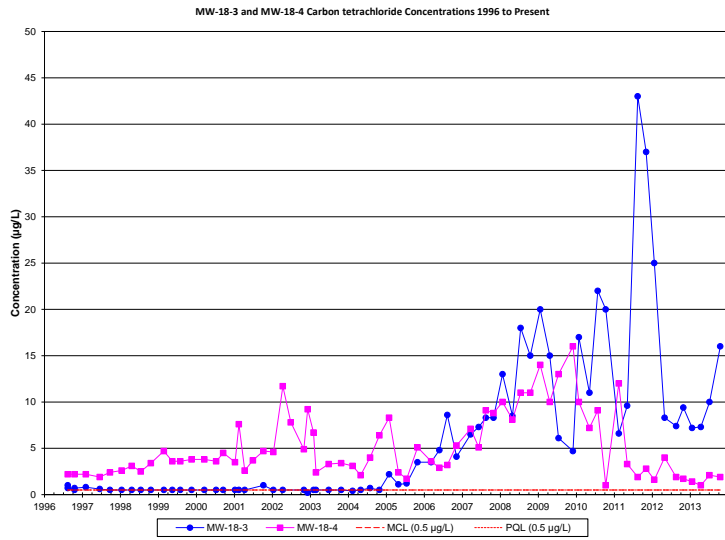
VOCs and Perchlorate Time Series Plots for MW-14-2 and MW-14-3



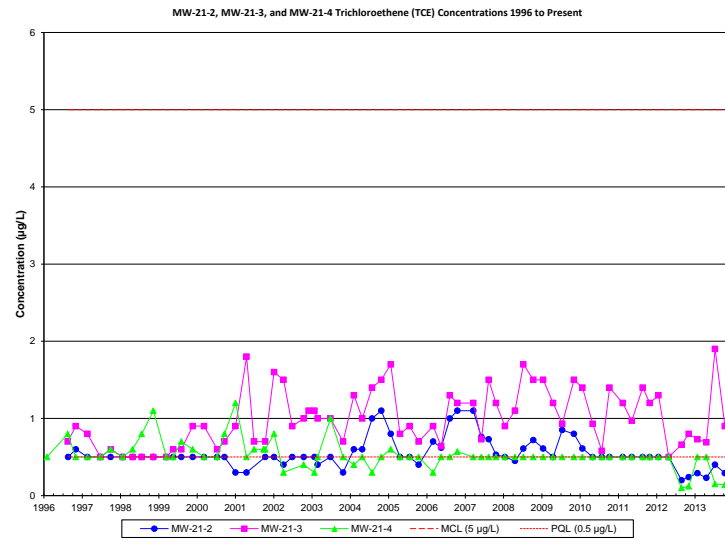
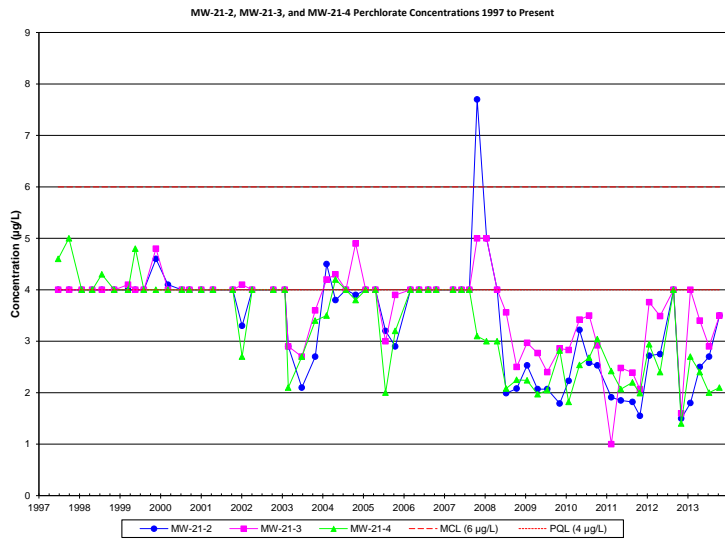
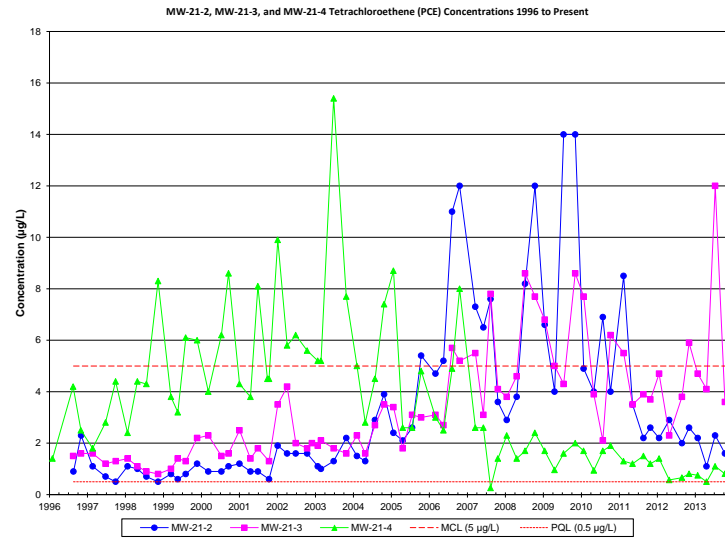
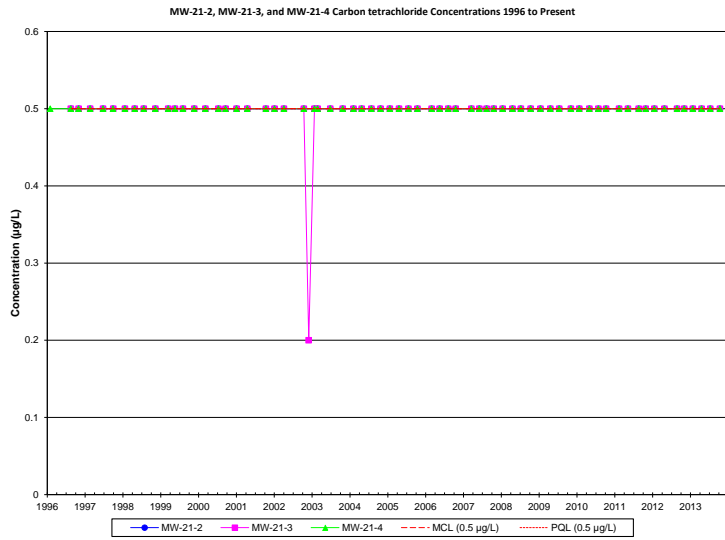
VOCs and Perchlorate Time Series Plots for MW-16



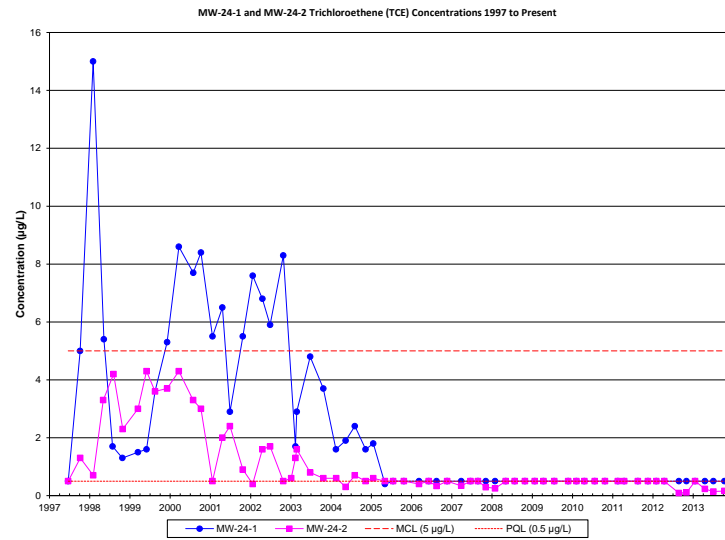
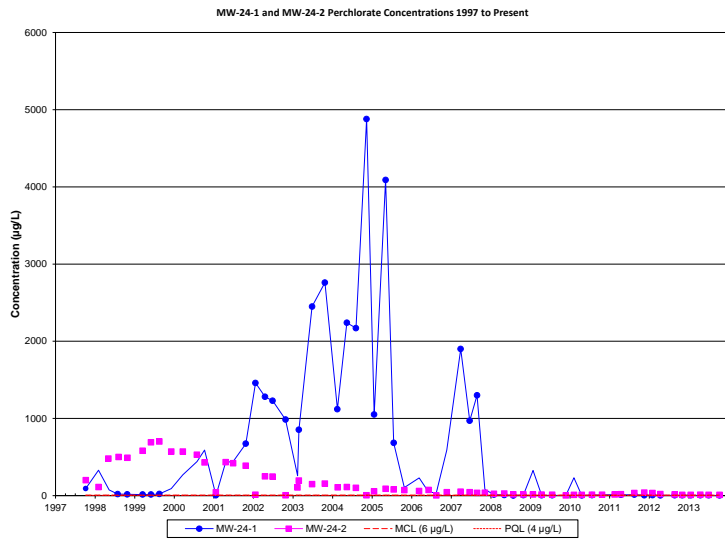
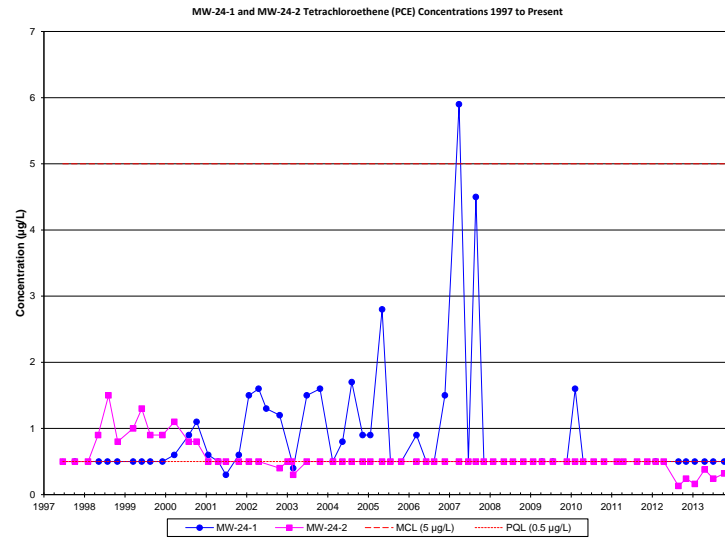
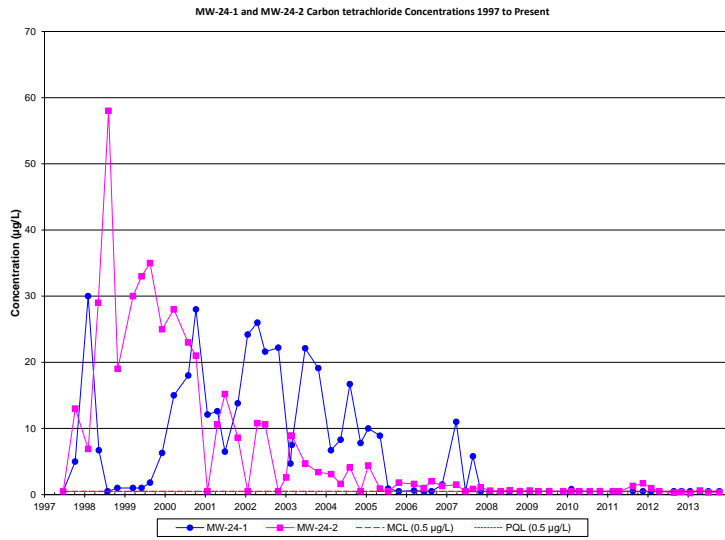
VOCs and Perchlorate Time Series Plots for MW-17-2 and MW-17-3



VOCs and Perchlorate Time Series Plots for MW-18-3 and MW-18-4



VOCs and Perchlorate Time Series Plots for MW-21-2 and MW-21-3 and MW-21-4



VOCs and Perchlorate Time Series Plots for MW-24-1 and MW-24-2