

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 fourth quarter 2017. Water level measurements were recorded before the sampling event on October 13, 2017 for the relatively shallow standpipe monitoring wells and for the Westbay™ multiport wells. Water level measurements were recorded after the sampling event on October 27, 2017 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: MW-19 was not accessible during the collection of pre-sampling groundwater elevations. Therefore, the groundwater elevation collected prior to sampling on October 16 for MW-19 will be used for groundwater elevation contouring.

WELL GAUGING DATA

Project # 171013-HA1 Date 10/15/17 Client Tidewater

Site 4800 Oak Grove, Pasadena, CA

Well ID	Well Size (in.)	Time Gauged	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	
MW-1	4	1037					38.91	Dec pump	↓	
MW-5	4	1300					113.89	Dec pump		
MW-6	4	1245					226.30	Dec pump		
MW-7	4	1411					252.76	267.55		
MW-8	4	1332					179.32	Dec pump		
MW-9	4	1035					31.77	Dec pump		
MW-10	4	1256					129.43	Dec pump		
MW-13	4	0627					223.65	234.65		
MW-15	4	0635					43.82	Dec pump		
MW-16	4	1402					275.10	284.78		↓

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

WELL ID: MW-3
 DATE: 10/13/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1100.34
 WEATHER: Clear
 DTW - 175.55

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Henry
 ATM. PRESSURE (Patm): (start) 14.14 (finish) 14.15
 Temp: 20.59 20.33°C

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	653	650	222.35	229.25	222.35	21.45	496.25877	156.74	653	1049
4	558	556	181.13	188.73	181.13	22.06	402.77913	155.22	558	1051
3	346	343	88.92	97.13	88.92	21.77	191.45793	154.54	346	1053
2	252	250	48.01	56.95	48.01	21.14	98.76267	153.24	252	1055
1	172	170	14.23	25.09	14.23	20.04	25.26165	146.74	172	1056

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-4
 DATE: 10/13/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1082.84
 WEATHER: Clear
 DTW - 152.20'

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EM52502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hocus
 ATM. PRESSURE (Patm): (start) 14.05 (finish) 14.10
 Temp: 15.65°C 17.31°C

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	513	511	171.70	179.35	171.90	18.39	381.3471	131.65	513	0651
4	392	389	119.04	126.95	119.04	19.61	260.4603	131.54	392	0653
3	322	319	88.52	96.61	88.52	19.99	190.46592	131.53	322	0654
2	240	238	52.79	61.16	52.79	20.00	108.68277	131.32	240	0655
1	150	148	14.20	24.87	14.20	19.37	24.96174	125.04	150	0656

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-11
 DATE: 10/13/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1139.3
 WEATHER: Clear
 DTW - 171.20

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO. FM22502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 19.05 (finish) 14.08
 Temp: 24.45°C 23.45°C

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	637	216.25	199.23	216.25	23.08	427.21	211.79	639	1316
4	524	522	166.94	164.01	166.94	22.62	345.96	178.04	524	1318
3	429	427	126.15	120.58	126.15	21.82	245.76	183.24	429	1320
2	259	257	52.41	49.91	52.41	20.52	82.73	176.27	259	1322
1	149	147	19.17	22.44	19.17	19.59	19.36	129.64	149	1323

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-12

PROBE TYPE Westbay Sampler 0-500psi

DATE: 10/13/17

SERIAL NO. EMS2502

LOCATION: JPL

PROJECT JPL Pasadena

ELEV. TOP OF WESTBAY CASING 1102.14

OPERATOR(S) T. Hoang

WEATHER: Clear

ATM. PRESSURE (Patm): (start) 14.11 (finish) 14.13

PTW - 134.70

Temp: 16.61°C 17.09°C

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	548	547	194.67 196	176.85	194.67	18.87	375.44118	172.56	548	0711
4	436	434	145.94	136.44	145.94	19.70	282.21531	153.78	436	0712
3	323	322	96.88	88.47	96.88	19.35	171.54852	151.45	323	0714
2	243	242	62.03	54.49	62.03	18.84	93.15666	149.84	243	0715
1	140	139	17.06	14.17	17.06	18.34	0.13842	139.86	140	0716

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-14
 DATE: 10/13/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 1173.47
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoover
 ATM. PRESSURE (Patm): (start) 14.06 (finish) 14.09
 Temp: 25.46 °C 22.31 °C

DTW - 192.97'

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	540	538	165.78	156.69	165.78	22.24	329.04741	210.95	540	1227
4	456	454	129.27	120.47	129.27	21.98	245.48787	210.51	456	1229
3	382	381	97.93	88.41	97.93	21.10	171.52545	210.47	382	1231
2	277	274	51.30	42.94	51.30	20.56	66.62616	210.37	277	1233
1	207	205	20.82	14.15	20.82	20.13	0.20763	206.79	207	1235

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-17

PROBE TYPE Westbay Sampler 0-500psi

DATE: 10/23/17

SERIAL NO. EMS 2502

LOCATION: JPL

PROJECT JPL Pasadena

ELEV. TOP OF WESTBAY CASING 1191.21

OPERATOR(S) T. Hoang

WEATHER: Clear

ATM. PRESSURE (Patm): (start) 14.06 (finish) 14.09

DTW - 208.20'

Temp: 20.12°C 18.35°C

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	726	723	239.19	207.10	239.19	19.60	445.34	280.66	726	0946
4	582	581	177.78	149.54	177.78	19.53	312.55	269.45	582	0948
3	468	466	176.94 127.46	106.90	176.94 127.46	18.86	214.18	253.82	468	0950
2	370	367	85.01	67.58	85.01	18.17	123.47	246.53	370	0952
1	250	248	32.80	19.82	32.80	17.26	13.29	236.71	250	0954

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-18
 DATE: 10/13/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1225.41
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.07 (finish) 14.10
 Temp: 18.95°C 19.66°C

DTW - 294.40

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	184.10	178.92	184.10	20.19	380.30895	303.69	684	1011
4	564	561	131.93	130.11	131.93	20.58	267.70428	296.30	564	1013
3	424	422	71.13	75.46	71.13	19.81	141.62673	282.37	424	1015
2	330	327	30.20	36.63	30.20	18.80	52.04592	277.95	330	1017
1	270	268	14.20	14.21	14.20	17.95	0.32298	269.68	270	1019

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-19
 DATE: 10/16/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1142.94
 WEATHER: Clear
 DTW - 138.11

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoover
 ATM. PRESSURE (Patm): (start) 14.07 (finish) 14.11
 Temp: 32.84°C 21.33°C

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	498	496	170.41	138.21	170.41	22.84	286.39098	211.61	498	1205
4	444	442	147.84 146.97	114.94	147.84 146.97	20.57	232.70709	211.29	444	1207
3	392	389	124.46	98.16	124.46	20.24	193.99563	198.00	392	1209
2	314	311	90.56	64.51	90.56	19.84	116.36508	197.63	314	1210
1	242	240	59.27	34.67	59.27	19.31	47.5242	194.48	242	1211

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-20
 DATE: 10/13/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1165.05
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.09 (finish) 14.12
 Temp: 18.07°C 19.73°C

DTW - 239.73

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) $P(ft) = (P_2 - P_{atm}) * 2.307 \text{ ft/psi}$	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	301.56	306.66	301.56	21.23	674.95899	225.04	900	0839
4	700	696	214.71	210.86	214.71	22.03	453.94839	246.05	700	0841
3	562	558	154.88	150.97	154.88	21.35	315.78216	246.22	562	0843
2	392	389	80.90	82.74	80.90	19.92	158.37555	233.62	392	0845
1	230	228	14.21	16.17	14.21	18.08	4.79856	225.20	230	0847

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-21
 DATE: 10/13/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1059.10
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO. EMS2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.14 (finish) 14.17
 Temp: 22.56°C 20.89°C

DTW - 116.13

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	372	370	126.31	132.47	126.31	21.80	272.98731	99.01	372	1157
4	310	309	99.38	105.62	99.38	21.34	211.04436	98.96	310	1159
3	240	239	69.34	75.80	69.34	20.83	142.24962	97.75	240	1201
2	161	160	34.89	41.72	34.89	20.27	63.62706	97.37	161	1203
1	90	89	14.19	14.19	14.19	19.91	0.11535	89.88	90	1204

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-22
 DATE: 10/13/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1176.98
 WEATHER: Clear
DTW - 174.50

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoan
 ATM. PRESSURE (Patm): (start) 19.02 (finish) 14.07
 Temp: 17.23°C 17.69°C

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	194.15	170.35	194.15	19.54	360.65331	227.35	588	0802
4	467	465	141.77	119.67	141.77	20.62	243.73455	223.27	467	0804
3	389	387	107.95	88.53	107.95	20.81	171.89457	217.11	389	0806
2	329	327	81.98	67.50	81.98	20.67	111.84336	217.16	329	0808
1	245	243	45.02	26.53	45.02	20.33	28.86057	216.14	245	0810

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-23
 DATE: 10/13/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1108.84
 WEATHER: Clear
 DTW - 126.90'

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.13 (finish) 14.14
 Temp: 16.05°C 18.11°C

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	539	194.20	179.88	194.20	18.71	382.38525	159.61	542	0733
4	445	443	152.25	137.95	152.25	19.77	285.65274	159.35	445	0735
3	319	317	97.82	86.40	97.82	20.16	166.72689	152.27	319	0737
2	254	252	69.62	58.33	69.62	20.08	101.9694	152.03	254	0739
1	174	172	34.77	24.84	34.77	19.83	24.70797	149.29	174	0741

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-24
 DATE: 10/13/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1200.94
 WEATHER: Clear
 DTW-210.40

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoans
 ATM. PRESSURE (Patm): (start) 14.05 (finish) 14.07
 Temp: 22.16°C 22.09°C

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	675	216.78	194.70	216.78	22.52	416.75955	261.24	678	1345
4	554	551	163.24	144.21	163.24	22.47	300.27912	253.72	554	1347
3	435	433	111.49	95.82	111.49	22.24	188.64339	246.36	435	1349
2	373	371	84.65	69.28	84.65	22.06	127.41561	245.58	373	1350
1	279	277	44.08	30.58	44.08	22.12	38.13471	240.87	279	1352

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-25
 DATE: 10/13/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 934.53
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. HOCURY
 ATM. PRESSURE (Patm): (start) 14.21 (finish) 14.20

DTW - ~~244.10~~ 244.30

Temp: 17.89°C 20.01°C

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	218.10	205.96	218.10	19.89	442.36725	270.63	713	0918
4	633	630	183.61	170.57	183.61	20.63	360.72252	272.28	633	0920
3	503	501	127.39	118.05	127.39	20.70	239.55888	263.44	503	0922
2	423	421	92.71	87.51	92.71	20.47	169.1031	253.90	423	0924
1	358	356	64.42	61.23	64.42	20.25	108.47514	249.52	358	0926

Comments: Collar Detect is 2' below sample port

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

WELL ID: MW-26
 DATE: 10/13/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1059.08
 WEATHER: clear
 DTW - 66.20

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.16 (finish) 14.18
 Temp: 21.50 20.54°C

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	211	78.40	58.02	78.40	21.14	101.18502	113.81	215	1127
1	135	131	43.58	23.79	43.58	20.12	22.21641	112.78	135	1130

Comments: Collar Detect is 2' below sample port

WELL GAUGING DATA

Project # 171013-HH1 Date 10/27/17 Client Tidelwater

Site 4800 Oak Ave, Pasadena, CA

Well ID	Well Size (in.)	Time Gauged	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 of <u>TOO</u>
MW-1	4	0849					410.21	Deed pump	↓
MW-5	4	1205					115.90	Deed pump	
MW-6	4	1034					227.81	Deed pump	
MW-7	4	1435					253.91	267.52	
MW-8	4	1311					181.31	Deed pump	
MW-9	4	0852					33.40	Deed pump	
MW-10	4	1157					131.30	Deed pump	
MW-13	4	1323					226.04	231.67	
MW-15	4	1302					45.12	Deed pump	
MW-16	4	1455					278.62	284.75	

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

WELL ID: MW-3
 DATE: 10/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1100.34
 WEATHER: Clear
 DTW - 174.90'

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.11
 Temp: 20.59°C 20.10°C

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	653	650	222.54	228.82	222.54	21.88	480.87108	172.13	653	0906
4	558	556	181.31	187.93	181.31	22.38	385.75347	172.25	558	0908
3	346	344	89.12	96.37	89.12	22.05	173.07114	172.93	346	0910
2	252	250	48.20	56.16	48.20	21.46	78.6687	173.33	252	0911
1	172	170	14.20	24.23	14.20	20.39	0.2307	171.77	172	0913

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-4

PROBE TYPE Westbay Sampler 0-500psi

DATE: 10/27/17

SERIAL NO. EMS 2502

LOCATION: JPL

PROJECT JPL Pasadena

ELEV. TOP OF WASTBAY CASING 1082.84

OPERATOR(S) T. Hoang

WEATHER: Clear

ATM. PRESSURE (Patm): (start) 14.09 (finish) 14.10

PTW - 152.24'

Temp: 27.08°C 22.45°C

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	513	511	171.77	178.57	171.77	25.00	379.45536	133.54	513	1215
4	392	389	119.06	126.13	119.06	24.06	258.47628	133.52	392	1217
3	322	319	88.58	95.79	88.58	23.25	188.4819	133.52	322	1219
2	240	238	52.86	60.30	52.86	22.36	106.60647	133.39	240	1221
1	150	148	14.17	23.91	14.17	21.41	22.65474	127.35	150	1223

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-11
 DATE: 10/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1139.3
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoans
 ATM. PRESSURE (Patm): (start) 14.07 (finish) 14.09

PTW-171.24

Temp: 27.33°C 23.46°C

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	637	215.32	198.41	215.32	25.52	425.27	213.73	639	1336
4	524	522	165.85	163.24	165.85	24.18	344.14	179.86	524	1338
3	429	427	125.05	119.83	125.05	22.48	243.99	185.01	429	1340
2	259	257	51.25	49.08	51.25	20.67	80.77	178.23	259	1341
1	149	147	14.12	21.83	14.12	19.69	17.90	131.10	149	1343

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-12
 DATE: 10/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 1102.14
 WEATHER: Clear
 DTW - 134.75'

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hoang
 ATM. PRESSURE (Patm): (start) 14.11 (finish) 14.13
 Temp: 22.22°C 20.86°C

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	548	547	194.61	176.10	194.61	21.52	373.71093	174.29	548	1241
4	436	434	145.97	135.69	145.97	21.56	280.48506	155.51	436	1243
3	323	321	96.73	87.67	96.73	20.81	169.70292	153.30	323	1245
2	243	241	62.02	53.63	62.02	19.95	91.17264	151.83	243	1247
1	140	139	17.05	14.16	17.05	19.16	0.11535	139.88	140	1249

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-14
 DATE: 10/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1173.47
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.07 (finish) 14.09

DTW - 193.10'

Temp: 25.80°C 20.89°C

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	588	165.73	156.04	165.73	23.92	327.52479	212.48	540	1047
4	456	454	129.29	119.83	129.29	22.81	243.98832	212.01	456	1049
3	382	380	97.03	87.76	97.03	21.27	170.00283	212.00	382	1051
2	277	275	51.35	42.29	51.35	20.62	65.10354	211.90	277	1052
1	207	205	20.70	14.14	20.70	19.97	0.16149	206.84	207	1054

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-17
 DATE: 10/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1191.21
 WEATHER: Clear
 DTW - 208.32

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.07 (finish) 14.06
 Temp: 17.47°C 16.66°C

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	726	723	239.17	205.97	239.17	18.29	442.78	283.22	726	0802
4	582	580	176.86	148.90	176.86	18.95	311.12	270.88	582	0804
3	468	466	127.42	106.13	127.42	18.51	212.45	255.55	468	0806
2	370	368	84.96	66.82	84.96	17.73	121.76	248.24	370	0808
1	250	248	32.73	18.97	32.73	16.73	11.37	238.63	250	0810

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-18
 DATE: 10/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1225.41
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO. EMS2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoary
 ATM. PRESSURE (Patm): (start) 14.05 (finish) 14.05
 Temp: 17.77°C 18.31°C

DTW - 294.45'

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	184.05	178.09	184.05	19.47	378.44028	305.56	684	0826
4	564	561	131.97	124.39	131.97	20.15	266.08938	297.91	564	0828
3	424	421	71.12	74.09	71.12	19.48	139.89648	284.10	424	0830
2	330	327	30.17	35.86	30.17	18.31	50.31567	279.68	330	0831
1	270	268	14.21	14.17	14.21	17.76	0.27684	269.72	270	0833

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-19
 DATE: 10/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING 1142.94
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi
 SERIAL NO. EMS2502
 PROJECT JPL Pasadena
 OPERATOR(S) T. Hagan
 ATM. PRESSURE (Patm): (start) 14.03 (finish) 14.05
 Temp: 17.12°C 18.11°C

DTW - 138.50'

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	498	496	170.20	137.67	170.20	18.00	285.23748	212.76	498	0740
4	444	442	146.77	114.38	146.77	18.62	231.50745	212.49	444	0742
3	392	389	124.24	97.70	124.24	18.86	193.02669	198.97	392	0744
2	314	311	90.46	64.01	90.46	18.93	115.30386	198.70	314	0746
1	242	240	60.00	34.09	60.00	18.53	46.27842	195.72	242	0747
			59.15 ^m		59.15 ^m					

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-20
 DATE: 10/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1165.05
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO. EMS2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 74.65 (finish) 14.07
 Temp: 18.45°C 19.66°C

DTW - 239.76'

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	896	301.69	305.97	301.69	20.47	673.45944	226.54	900	0707
4	700	696	214.71	209.73	214.71	21.59	451.43376	248.57	700	0709
3	562	558	154.85	151.92	154.85	20.162	315.75909	246.24	562	0711
2	392	389	80.92	82.10	80.92	19.62	156.99135	235.01	392	0713
1	230	228	14.18	14.16	14.18	18.21	0.25377	229.75	230	0715

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-21
 DATE: 10/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1059.10
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO. EMS2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hwang
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.12

DTW - 116.22'

Temp: 22.29°C 21.59°C

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	370	126.29	131.77	126.29	21.41	271.46469	100.54	372	0958
4	310	309	99.30	104.92	99.30	21.12	209.52174	100.48	310	1000
3	240	239	69.25	75.09	69.25	20.56	140.70393	99.30	240	1002
2	161	160	34.84	41.00	34.84	20.06	62.0583	98.94	161	1004
1	90	89	14.17	14.14	14.17	19.65	0.09228	89.91	90	1005

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-22
 DATE: 10/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1176.98
 WEATHER: Clear
 DTW - 174.55

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.06 (finish) 14.08
 Temp: 22.91°C 22.75°C

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	192.70	169.62	192.70	22.34	358.87692	229.12	588	1113
4	467	465	140.35	118.96	140.35	22.35	242.0043	225.00	467	1115
3	389	387	106.56	87.81	106.56	21.72	170.14125	218.86	389	1117
2	329	327	80.53	61.75	80.53	21.46	110.02083	218.98	329	1119
1	245	243	43.55	25.70	43.55	21.00	26.85348	218.15	245	1121

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-23
 DATE: 10/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1108.84
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Harris
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.13
 Temp: 23.22°C 22.49°C

DTW - 26.95

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	539	194.26	179.20	194.26	22.65	380.8857	161.11	542	1138
4	445	443	152.28	137.21	152.28	22.47	284.01477	160.99	445	1140
3	319	317	97.66	85.65	97.66	21.80	165.06585	153.93	319	1142
2	254	252	69.45	57.56	69.45	21.32	100.26222	153.74	254	1144
1	174	172	34.70	24.00	34.70	20.74	22.8393	151.16	174	1146

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-24
 DATE: 10/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1200.94
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.07 (finish) 14.09

DTW - 210.47

Temp: 26.35°C 22.34°C

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	675	216.74	193.96	216.74	24.53	415.00623	262.99	678	1410
4	554	552	163.95	143.43	163.95	23.13	298.43352	255.57	554	1412
3	435	433	111.49	95.05	111.49	22.67	186.82086	248.18	435	1414
2	373	371	85.55	68.44	85.55	22.30	125.43159	247.57	373	1416
1	279	277	43.91	29.50	43.91	22.31	35.59701	243.40	279	1418

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-25
 DATE: 1/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 934.53
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO. EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 1411 (finish) 1413

DTW - 244.34

Temp: 24.40°C 20.83°C

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	711	217.99	205.63	217.99	22.50	441.83664	271.16	713	0638
4	633	631	183.53	170.21	183.53	22.36	360.1227	272.88	633	0639
3	503	501	127.35	117.77	127.35	21.69	239.14362	263.86	503	0641
2	423	421	92.52	87.24	92.52	21.24	168.71091	254.29	423	0643
1	358	356	64.26	60.98	64.26	20.91	108.12909	249.87	358	0644

Comments: Collar Detect is 2' below sample port

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

WELL ID: MW-26
 DATE: 10/27/17
 LOCATION: JPL
 ELEV. TOP OF WESTBAY CASING: 1059.08
 WEATHER: Clear
 DTW - 66.51'

PROBE TYPE: Westbay Sampler 0-500psi
 SERIAL NO.: EMS 2502
 PROJECT: JPL Pasadena
 OPERATOR(S): T. Hoang
 ATM. PRESSURE (Patm): (start) 14.12 (finish) 14.13
 Temp: 20.67°C 20.85°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) $P(ft) = (P2 - Patm) * 2.307 \text{ ft/psi}$	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	211	78.33	57.54	78.33	20.45	100.16994	114.83	215	0939
1	135	131	43.48	23.34	43.48	20.08	21.27054	113.73	135	0941

Comments: Collar Detect is 2' below sample port