

## **ATTACHMENT 5: WATER LEVEL MEASUREMENTS**

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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 1<sup>st</sup> Quarter 2018. Water level measurements were recorded before the sampling event on January 22, 2018 for the relatively shallow standpipe monitoring wells and for the Westbay™ multiport wells. Water level measurements were recorded after the sampling event on February 2, 2018 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-4, MW-11, MW-12, MW-17, MW-23, and MW-24, were not accessible during the collection of pre-sampling groundwater elevations. Therefore, the groundwater elevation collected prior to sampling on January 22 (MW-4), January 31 (MW-11), January 30 (MW-12), January 25 (MW-17), January 31 (MW-23), and January 26 (MW-24) will be used for groundwater elevation contouring.

## WELL GAUGING DATA

Project # 180122-HH1 Date 01/22/18 Client Tirewater

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 or TOC
MW-1	4	1235					31.23	Ded pump	
MW-5	4	1418					116.32	Ded pump	
MW-6	4	1338					223.11	Ded pump	
MW-7	4	1400					256.45	267.52	
MW-8	4	0917					183.00	Ded pump	
MW-9	4	1242					229.7	Ded pump	
MW-10	4	1433					130.44	Ded pump	
MW-13	4	0855					225.35	234.65	
MW-15	4	1411					36.12	Ded pump	
MW-16	4	1316					276.74	284.75	

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

WELL ID: MW-3  
 DATE: 01/22/15  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1100.34  
 WEATHER: Clear  
 DTW - 174.55

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO. EMS2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Holmes  
 ATM. PRESSURE (Palm): (start) 14.15 (finish) 14.23  
 Temp: 20.10°C 19.79°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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	653	650	222.67	229.47	222.67	21.76	496.74	156.26	653	1255
4	558	556	181.42	189.42	181.42	22.37	399.73	158.27	558	1257
3	346	343	89.24	97.70	89.24	21.99	192.75	153.25	346	1300
2	252	250	48.34	56.75	48.34	21.00	98.28	153.72	252	1302
1	172	170	14.27	23.82	14.27	19.88	22.31	149.69	172	1303

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-4  
 DATE: 01/30/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1082.84  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoare  
 ATM. PRESSURE (Patm): (start) 14.17 (finish) 14.19  
 Temp: 18.34°C 19.31°C

DTW - 151.56

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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (°C)				
5	513	510	172.15	179.27	172.15	21.32	380.89	132.11	513	0731
4	392	389	119.41	126.86	119.41	21.56	259.98	132.02	392	0733
3	322	319	88.87	96.51	88.87	21.05	189.96	132.04	322	0736
2	240	238	53.05	60.91	53.05	20.50	107.83	132.17	240	0738
1	150	148	14.29	23.66	14.29	19.13	21.89	128.11	150	0740

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-11  
 DATE: 01/31/18  
 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. HOUM  
 ATM. PRESSURE (Patm): (start) 14.05 (finish) 14.07  
 Temp: 26.98°C 20.31°C

DTW - 173.83'

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	639	637	215.67	199.93	215.67	219.3	428.83	210.17	639	1124
4	524	522	166.11	165.22	166.11	21.74	348.75	175.25	524	1126
3	429	427	125.16	121.05	125.16	20.97	246.85	182.15	429	1128
2	259	257	51.40	49.40	51.40	19.34	81.55	177.45	259	1130
1	149	147	14.13	20.24	14.13	18.45	14.28	134.72	149	1132

Comments: Collar Detect is 6" above sample port  
 Port 3 - slow filler

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

WELL ID: MW-12  
 DATE: 01/30/18  
 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) 14.17 (finish) 14.18  
 Temp: 20.25°C 20.31°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	548	547	195.04	178.53	195.04	20.65	379.18	168.82	548	1042
4	436	434	146.32	130.88	146.32	20.95	283.09	152.91	436	1044
3	323	321	97.04	88.22	97.04	19.85	170.83	152.17	323	1046
2	243	242	62.10	53.96	62.10	18.91	91.80	151.20	243	1048
1	140	138	17.09	14.23	17.09	18.09	0.14	139.86	140	1050

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-14  
 DATE: 01/22/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1173.47  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO. EMS2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoarns  
 ATM. PRESSURE (Patm): (start) 14.17 (finish) 14.20  
 Temp: 16.46°C 19.81°C

DTW - 193.22'

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	540	538	165.86	159.18	165.86	18.79	334.54	205.46	540	0916
4	456	454	122.47	122.74	122.47	19.57	250.47	205.53	456	0918
3	382	381	97.16	90.62	97.16	19.73	176.37	205.63	382	0920
2	277	274	51.43	44.90	51.43	19.52	70.89	206.11	277	0922
1	207	205	20.88	14.48	20.88	19.29	0.72	206.28	207	0924

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-17  
 DATE: 01/25/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 1191.21  
 WEATHER: Clear  
DTW - 208.26

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EJMS 4700  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoang  
 ATM. PRESSURE (Patm): (start) 14.19 (finish) 14.22  
 Temp: 14.61°C 15.05°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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	726	724	241.16	215.20	241.16	19.43	463.73	262.27	726	0727
4	582	581	178.50	158.15	178.50	19.00	332.12	249.88	582	0729
3	468	466	129.28	108.09	129.28	18.92	216.63	251.37	468	0730
2	370	368	86.61	67.97	86.61	18.14	124.07	245.93	370	0731
1	250	249	34.44	16.12	34.44	17.62	4.45	245.55	250	0733

Comments: Collar Detect is 6" above sample port



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

WELL ID: MW-18  
 DATE: 01/22/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1225.41  
 WEATHER: Clear  
 DTW - 294.40'

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoang  
 ATM. PRESSURE (Palm): (start) 14.12 (finish) 14.13  
 Temp: 17.55°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	684	681	184.18	184.03	184.18	19.60	391.98	292.02	684	1214
4	564	561	132.09	133.91	132.09	20.22	276.36	287.64	564	1216
3	424	422	71.20	74.85	71.20	19.54	140.10	283.90	424	1219
2	330	328	30.24	34.10	30.24	18.54	46.09	283.91	330	1221
1	270	268	14.27	14.28	14.27	17.70	0.37	269.63	270	1223

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-19  
 DATE: 01/22/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1142.94  
 WEATHER: Clear  
 DTW - 138.64

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoang  
 ATM. PRESSURE (Palm): (start) 74.17 (finish) 14.19  
 Temp: 17.52 18.05°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	498	446	170.31	142.67	170.31	18.46	296.45	201.55	498	1132
4	444	442	146.76	119.32	146.76	18.96	242.58	201.42	444	1135
3	392	389	124.29	99.01	124.29	19.05	195.73	196.27	392	1138
2	314	312	90.31	64.77	90.31	19.03	116.73	197.27	314	1140
1	242	240	59.23	33.63	59.23	18.84	44.89	197.11	242	1142

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-20  
 DATE: 01/22/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING: 1165.05  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoang  
 ATM. PRESSURE (Patm): (start) 14.20 (finish) 14.18  
 Temp: 19.83°C 18.59°C

DTW - 239.80'

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (°C)				
5	900	896	301.86	305.75	301.86	21.23	672.61	227.39	900	1103
4	700	696	214.99	213.11	214.99	21.93	458.89	241.11	700	1105
3	562	560	154.92	154.14	154.92	21.35	322.84	239.16	562	1107
2	392	391	81.12	82.04	81.12	19.80	156.51	235.49	392	1110
1	230	228	14.27	14.25	14.27	18.27	0.12	229.88	230	1112

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-21  
 DATE: 01/22/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1059.10  
 WEATHER: Clear  
 DTW - 116.05'

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoang  
 ATM. PRESSURE (Palm): (start) 14.23 (finish) 14.24  
 Temp: 18.50°C 19.11°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	372	370	126.48	133.58	126.48	19.02	275.34	96.66	372	0945
4	310	309	99.47	106.73	99.47	19.39	213.40	96.60	310	0947
3	240	239	69.47	76.82	69.47	19.35	144.40	95.60	240	0949
2	161	160	35.05	42.53	35.05	19.09	65.29	95.71	161	0951
1	90	89	14.30	14.28	14.30	18.92	0.12	89.88	90	0953

Comments: Collar Detect is 2' above sample port

(7 tubes @ MW-21-5 when sampling)



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

WELL ID: MW-23  
 DATE: 01/31/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING: 1108.84  
 WEATHER: Clear  
DTU - 127.75'

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Huang  
 ATM. PRESSURE (Patm): (start) 74.11 (finish) 14.13  
 Temp: 15.92°C 18.51°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	542	540	194.25	180.88	194.25	20.44	384.74	157.26	542	0745
4	445	443	152.22	137.71	152.22	21.02	287.45	157.55	445	0748
3	319	318	97.60	86.87	97.60	20.78	167.86	151.14	319	0750
2	254	252	69.35	58.68	69.35	20.11	102.82	151.18	254	0752
1	174	173	34.56	24.69	34.56	19.76	24.41	149.59	174	0754

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-24  
 DATE: 01/26/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1200.94  
 WEATHER: Clear  
 DTW-210.65

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hays  
 ATM. PRESSURE (Patm): (start) 14.11 (finish) 14.12  
 Temp: 14.31°C 18.39°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	678	675	218.00	200.05	218.00	22.28	428.96	249.04	678	1035
4	554	551	165.07	147.83	165.07	22.01	308.49	245.51	554	1036
3	435	433	113.63	97.41	113.63	21.60	192.17	242.83	435	1038
2	373	371	86.47	70.23	86.47	21.66	129.47	243.53	373	1039
1	279	277	45.73	29.31	45.73	22.07	35.07	243.93	279	1040

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-25  
 DATE: 8/22/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 934.53  
 WEATHER: Clear  
DTW-244.45'

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2802  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hawkins  
 ATM. PRESSURE (Palm): (start) 14.26 (finish) 14.28  
 Temp: 16.89°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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	713	710	218.08	215.69	218.08	19.32	464.70	248.30	713	1033
4	633	630	183.53	181.73	183.53	20.32	386.35	246.65	633	1035
3	503	501	127.42	125.94	127.42	20.47	257.65	245.35	503	1037
2	423	421	92.76	91.23	92.76	20.34	177.57	245.43	423	1039
1	358	356	64.37	62.75	64.37	20.18	111.87	246.13	358	1041

Comments: Collar Detect is 2' below sample port



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

WELL ID: MW-26  
 DATE: 01/22/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1059.08  
 WEATHER:

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoams  
 ATM. PRESSURE (Patm): (start) 14.18 (finish) 14.17  
 Temp: 16.91°C 18.90°C

DTW - 66.18'

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
2	215	211	78.53	56.45	78.53	19.21	97.52	117.48	215	1320
1	135	131	43.67	31.45	43.67	19.10	16.77	118.23	135	1322

Comments: Collar Detect is 2' below sample port

## WELL GAUGING DATA

Project # 180122-HH1 Date 02/02/18 Client Tidewater

Site JPL, Pasadena

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 ( <u>TOG</u> )
MW-1	4	0920					28.46	Ded pump	↓
MW-5	4	1237					116.35	Ded pump	
MW-6	4	1135					223.10	Ded pump	
MW-7	4	1402					256.42	Ded pump	
MW-8	4	1146					183.10	Ded pump	
MW-9	4	0924					21.10	Ded pump	
MW-10	4	1243					130.49	Ded pump	
MW-13	4	1140					225.40	Ded pump 231.69	
MW-15	4	1152					36.20	Ded pump	
MW-16	4	1407					277.02	289.75	

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

WELL ID: MW-3  
 DATE: 02/02/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 1100.34  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. FMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoams  
 ATM. PRESSURE (Patm): (start) 74.17 (finish) 14.19

DTW - 174.88

Temp: 19.71°C 19.85°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (°C)				
5	653	650	112.27	231.09	222.27	22.53	500.43	152.57	653	0943
4	558	550	181.54	190.41	181.54	22.84	407.74	150.26	558	0945
3	346	343	89.34	99.20	89.34	22.27	196.16	149.84	346	0947
2	252	250	46.47	58.24	48.47	21.69	101.67	150.33	252	0949
1	172	170	14.27	23.91	14.27	20.46	22.47	149.53	172	0951

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-4  
 DATE: 02/02/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1082.84  
 WEATHER: Clear  
DTW - 151.59

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Howard  
 ATM. PRESSURE (Patm): (start) 14.15 (finish) 14.17  
 Temp: 23.41°C 22.86°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (°C)				
5	513	510	171.90	179.72	171.90	21.7	381.97	131.03	513	1233
4	392	389	119.31	127.32	119.31	21.49	261.08	130.92	392	1235
3	322	319	88.83	96.99	88.83	21.40	191.11	130.89	322	1237
2	240	230	53.07	61.24	53.07	21.03	108.87	131.13	240	1239
1	150	140	14.24	25.64	14.26	20.23	21.89	128.11	150	1241

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-11  
 DATE: 02/02/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING: 1139.3  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoang  
 ATM. PRESSURE (Patm): (start) 14.13 (finish) 14.15  
 Temp: 23.10°C 20.33°C

DTW - 173.86

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	639	637	214.77	203.46	214.77	22.01	436.78	202.22	639	1313
4	524	522	165.42	165.57	165.42	22.15	349.37	174.63	524	1315
3	429	427	124.38	121.95	124.38	21.37	248.74	180.26	429	1317
2	259	257	50.85	49.96	50.85	20.39	82.66	176.34	259	1318
1	149	147	14.23	20.27	14.23	19.25	14.16	134.84	149	1320

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-12  
 DATE: 02/02/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1102.14  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: FMS2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoang  
 ATM. PRESSURE (P<sub>atm</sub>): (start) 14.13 (finish) 14.15  
 Temp: 26.31°C 24.39°C

DTW = 134.78

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	548	547	194.62	181.89	194.62	24.22	387.02	160.98	548	1207
4	436	434	145.96	138.43	145.96	23.21	286.76	149.24	436	1209
3	323	321	96.69	89.82	96.69	21.74	172.31	150.69	323	1211
2	243	242	61.81	54.33	61.81	20.62	92.74	150.26	243	1212
1	140	138	17.03	14.23	17.03	19.61	0.23	139.77	140	1214

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-14  
 DATE: 02/02/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1173.47  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoang  
 ATM. PRESSURE (Palm): (start) 74.18 (finish) 74.19  
 Temp: 21.39°C 20.35°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	540	530	166.32	159.04	166.32	23.23	334.19	205.81	540	1124
4	456	450	129.75	122.64	129.75	22.07	250.22	205.78	456	1126
3	382	381	97.49	90.55	97.49	21.03	176.19	205.81	382	1128
2	277	274	51.91	44.84	51.91	20.47	70.73	206.27	277	1130
1	207	205	21.33	14.44	21.33	20.07	0.60	206.40	207	1132

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-17  
 DATE: 02/02/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING: 1191.21  
 WEATHER: Clear

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

DTW-208.29

Temp: 16.56°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	726	724	239.28	209.24	239.28	19.40	450.14	275.86	726	0829
4	582	581	176.92	155.33	176.92	19.59	325.77	256.23	582	0831
3	468	466	127.40	106.57	127.40	16.92	213.28	254.72	468	0833
2	370	368	85.12	67.32	85.12	18.01	122.73	247.27	370	0835
1	250	249	33.67	15.84	33.67	18.92	3.97	246.03	250	0837

Comments: Collar Detect is 6" above sample port



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

WELL ID: MW-18  
 DATE: 02/02/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 1225.41  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. H. Huns  
 ATM. PRESSURE (Patm): (start) 14.80 (finish) 14.19  
 Temp: 17.05°C 17.91°C

DTW -294.41

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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	684	681	184.30	180.70	184.30	19.63	384.12	299.88	684	0900
4	564	561	132.30	132.10	132.30	20.21	272.00	292.00	564	0902
3	424	422	71.95	75.59	71.35	19.69	141.63	282.37	424	0904
2	330	332	30.30	34.05	30.30	10.60	45.79	284.21	330	0906
1	270	266	14.25	14.21	14.25	10.18	0.02	269.98	270	0908

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-19  
 DATE: 02/02/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1142.94  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hwang  
 ATM. PRESSURE (Patm): (start) 14.16 (finish) 14.18  
 Temp: 21.52 20.39°C

DTW - 135.64

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (°C)				
5	498	496	170.53	141.02	170.53	20.13	294.51	203.49	498	1013
4	444	442	146.39	116.45	146.39	19.99	240.60	203.40	444	1015
3	392	389	123.77	98.71	123.77	19.77	195.06	196.94	392	1017
2	314	312	89.96	64.61	89.96	19.63	116.39	197.61	314	1019
1	242	240	59.73	33.61	59.73	19.12	44.87	197.13	242	1021

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-20  
 DATE: 02/02/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1165.05  
 WEATHER: Clear

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO. EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. HOWNS  
 ATM. PRESSURE (Palm): (start) 14.15 (finish) 14.16  
 Temp: 16.91°C 18.05°C

DTW - 239.83

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) P(ft)=(P2-Palm)*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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	900	894	302.16	305.44	302.16	19.50	672.01	227.99	900	0753
4	700	696	215.11	<del>211.63</del> 211.63	215.11	21.14	455.59	244.41	700	0755
3	562	560	154.93	149.54	154.93	21.06	312.34	249.66	562	0757
2	392	391	81.14	80.97	81.14	19.91	154.15	237.85	392	0759
1	230	220	14.25	14.20	14.25	18.41	0.12	229.88	230	0801

Comments: Collar Detect is 6" above sample port

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

WELL ID: MW-21  
 DATE: 02/02/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1059.10  
 WEATHER: PTW-116.08'

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO.: EMS 2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoang  
 ATM. PRESSURE (Patm): (start) 14.20 (finish) 14.22  
 Temp: 25.21°C 22.31°C

Port No.	Depth to Meas. Port Valve (ft)		Pressure Readings (psi)				Pressure Head Outside Port (ft) $P(f) = (P2 - Patm) * 2.307 \text{ ft/psi}$	Depth to Water Outside Port (ft) $DTW = Dp - P(f)$	True Port Depth (Dp) (ft)	Time
	From Log (Dp)	From Cable	psi Inside Casing	kg/cm <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (°C)				
5	372	370	126.45	133.59	126.45	22.70	275.43	96.57	372	1059
4	310	309	99.51	106.72	99.51	22.01	213.44	96.56	310	1101
3	240	239	69.40	76.81	69.40	21.32	144.44	95.56	240	1103
2	161	160	35.08	42.57	35.08	20.45	65.45	95.55	161	1105
1	90	89	14.26	14.23	14.26	20.00	0.07	89.93	90	1108

Comments: Collar Detect is 2' above sample port

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

WELL ID: MW-22  
 DATE: 02/02/18  
 LOCATION: JPL  
 ELEV. TOP OF WASTBAY CASING 1176.98  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. \_\_\_\_\_  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. Hoang  
 ATM. PRESSURE (Patm): (start) \_\_\_\_\_ (finish) \_\_\_\_\_  
 Temp: \_\_\_\_\_

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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	588		- well Parked Over - Unable to Access -							
4	467									
3	389									
2	329									
1	245									

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-23  
 DATE: 02/02/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING: 1108.84  
 WEATHER: Clem

PROBE TYPE: Westbay Sampler 0-500psi  
 SERIAL NO. EMS2502  
 PROJECT: JPL Pasadena  
 OPERATOR(S): T. Hoang  
 ATM. PRESSURE (Patm): (start) 14.14 (finish) 14.16  
 Temp: 17.31°C 18.25°C

DTW - 127.80'

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 <sup>2</sup> Outside Casing P2	mH <sup>2</sup> O Inside Casing	Trans. Temp. (oC)				
5	542	540	194.06	181.04	194.06	21.91	386.88	155.12	542	1257
4	445	443	152.05	140.92	152.05	21.99	290.87	154.13	445	1259
3	319	318	97.52	97.26	97.52	21.60	168.69	150.31	319	1301
2	254	252	69.35	59.00	69.35	21.17	103.49	150.51	254	1303
1	174	173	34.54	24.70	34.54	20.63	24.36	149.64	174	1305

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-24  
 DATE: 02/02/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1200.94  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) T. HEWES  
 ATM. PRESSURE (Patm): (start) 14.10 (finish) 14.12  
 Temp: 22.90°C 21.39°C

DTW - 210.69

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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	678	675	216.56	197.99	216.56	22.81	424.23	253.77	678	1340
4	554	551	162.85	146.68	162.85	22.62	305.86	248.14	554	1350
3	435	433	111.33	96.54	111.33	22.77	190.19	244.81	435	1352
2	373	371	84.60	69.51	84.60	22.11	127.83	245.17	373	1354
1	279	277	44.61	60.59	44.61	22.69	107.25	171.75	279	1356

Comments: Collar Detect is 1' above sample port

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

WELL ID: MW-25  
 DATE: 02/02/18  
 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. Harris  
 ATM. PRESSURE (Patm): (start) 14.17 (finish) 14.21

DTW - 244.47'

Temp: 17.45°C 18.55°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
5	713	710	218.04	215.00	218.04	19.68	465.16	247.84	713	0718
4	633	630	183.60	181.85	183.60	20.50	386.84	246.16	633	0720
3	503	501	127.36	126.09	127.36	20.58	258.20	244.80	503	0722
2	423	421	92.67	91.31	92.67	20.45	177.96	245.04	423	0725
1	358	356	64.41	62.87	64.41	20.28	112.35	245.65	358	0727

Comments: Collar Detect is 2' below sample port



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

WELL ID: MW-26  
 DATE: 02/02/18  
 LOCATION: JPL  
 ELEV. TOP OF WESTBAY CASING 1059.08  
 WEATHER: Clear

PROBE TYPE Westbay Sampler 0-500psi  
 SERIAL NO. EMS2502  
 PROJECT JPL Pasadena  
 OPERATOR(S) J. Hoams  
 ATM. PRESSURE (Patm): (start) 14.22 (finish) 14.23

DTW - 66.19'

Temp: 21.19°C 22.05°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 <sup>2</sup> Outside Casing P2	mH <sub>2</sub> O Inside Casing	Trans. Temp. (oC)				
2	215	211	78.41	56.07	70.41	21.07	96.55	118.45	215	1037
1	135	131	43.64	21.31	43.04	20.41	16.36	118.64	135	1039

Comments: Collar Detect is 2' below sample port