

ATTACHMENT 4: FIELD LOGS

This attachment contains the groundwater sample collection field logs for the relatively shallow standpipe monitoring wells (MW-3, MW-5 through MW-8, 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 3rd Quarter 2019 sampling event was conducted by Blaine Tech Services, Inc.

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-3
 SAMPLING DATE(S): 07/24/19
 LOCATION: SPL
 WATER LEVEL INSIDE CASING: 184.39
 ATM. PRESSURE (PSI): (Start) 14.08 (Finish) 14.10

PROBE TYPE: Westbay
 SERIAL NO.: 2502
 PROJECT: SPL
 OPERATOR(S): T. Hays
 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
4	1	✓	✓	✓	✓	✓	181.38	✓	193.60	✓	193.60	✓	181.38	26.5	739	7.34	106	mail 6.575	236	0735	MW-3- 4 4
3	1	✓	✓	✓	✓	✓	89.02	✓	102.01	✓	102.01	✓	89.02	22.9	621	7.36	21	6.59	242	0800	MW-3-3
	2	✓	✓	✓	✓	✓	89.01	✓	101.92	✓	101.92	✓	89.01								
2	1	✓	✓	✓	✓	✓	48.04	✓	62.68	✓	62.68	✓	48.04	21.6	574	7.82	7	7.05	243	0840	MW-3-2

Comments: DWP-2-3619 @ MW-3-3 @ 0810

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-4
 SAMPLING DATE(S) 07/29/19
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 154.42
 ATM. PRESSURE (PSI): (Start) 14.12 (Finish) 14.13

PROBE TYPE Westbay
 SERIAL NO. 2508
 PROJECT: JPL
 OPERATOR(S) L. Hoan
 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) mg/L	ORP (mv)	Sample Time	Sample ID
3	1	✓	✓	✓	✓	✓	89.45	✓	101.28	✓	101.28	✓	89.45	19.1	1026	7.44	42	6.35	29	0815	MW-4-3
	2	✓	✓	✓	✓	✓	89.41	✓	101.40	✓	101.40	✓	89.41								
2	1	✓	✓	✓	✓	✓	53.59	✓	66.50	✓	66.50	✓	53.59	19.2	990	7.39	14	6.10	202	0850	MW-4-2
	2	✓	✓	✓	✓	✓	53.58	✓	66.51	✓	66.51	✓	53.58								
1	1	✓	✓	✓	✓	✓	14.07	✓	33.95	✓	33.95	✓	14.07	19.0	327	7.11	9	6.15	164	0930	MW-4-1
	2	✓	✓	✓	✓	✓	14.11	✓	33.94	✓	33.94	✓	14.11								

Comments: _____

WELL MONITORING DATA SHEET

Project #: 190719-HA1	Site: JPL
Sampler: HA	Date: 07/31/19
Well I.D.: MW-5	Well Diameter: 2 3 4 6 8
Total Well Depth (TD): 140.00	Depth to Water (DTW): 96.20
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]: 104.96	

Purge Method: Bailer Disposable Bailer Positive Air Displacement Electric Submersible **Water** **Ded 2" Rediflo pump** Extraction Pump Other _____

Sampling Method: Bailer Disposable Bailer Extraction Port **Dedicated Tubing** Other: _____

28.5 (Gals.) X 3 = 85.5 Gals.
 I 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 (°F)	pH	Cond. (mS/cm or μ S/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP(mV)	Gals. Removed	DTW Observations
0825	63.2	7.50	277	1	1.97	190	14	96.49
0832	63.1	7.89	261	1	1.85	201	28	96.55
0839	62.9	7.81	349	1	1.73	193	42	96.58
0846	62.7	7.77	346	1	1.70	190	56	96.59
0853	62.5	7.73	344	1	1.65	188	70	96.60
0901	62.4	7.71	342	1	1.63	186	86	96.61

Did well dewater? Yes **No** Gallons actually evacuated: 86

Sampling Date: 07/31/19 Sampling Time: 0905 Depth to Water: 96.61

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

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 #: <u>190719-HH1</u>	Site: <u>JPL</u>
Sampler: <u>HH</u>	Date: <u>07/31/19</u>
Well I.D.: <u>MW-6</u>	Well Diameter: 2 3 <u>(4)</u> 6 8 <u> </u>
Total Well Depth (TD): <u>239.00</u>	Depth to Water (DTW): <u>216.78</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>221.22</u>	

Purge Method: Bailer Dec Water
 Disposable Bailer 2" Rediflo pump
 Positive Air Displacement Extraction Pump
 Electric Submersible Other _____

Sampling Method: Bailer
 Disposable Bailer
 Extraction Port
 Dedicated Tubing
 Other: _____

<u>14.5</u> (Gals.) X	<u>3</u>	=	<u>43.5</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 (°F)	pH	Cond. (mS/cm or <u>µS/cm</u>)	Turbidity (NTUs)	D.O. (mg/L)	ORP(mV)	Gals. Removed	DTW Observations
0945	70.9	7.49	910	22	1.51	189	6	216.90
0948	71.1	7.45	919	17	1.30	175	12	216.97
0951	71.4	7.42	935	15	1.24	173	18	216.99
0954	71.5	7.41	940	13	1.22	170	24	217.01
0957	71.7	7.40	943	12	1.20	168	30	217.01
1004	71.8	7.39	940	12	1.18	165	44	217.02

Did well dewater? Yes (No) Gallons actually evacuated: 44

Sampling Date: 07/31/19 Sampling Time: 1005 Depth to Water: 217.02

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

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 #: 190719-H111	Site: JPL
Sampler: HH	Date: 08/01/19
Well I.D.: MW-7	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth (TD): 267.35	Depth to Water (DTW): 236.46
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]: 242.63	

Purge Method: Bailer Disposable Bailer Positive Air Displacement Electric Submersible 2" Rediflo pump Waterra Extraction Pump Other

Sampling Method: Bailer Disposable Bailer Extraction Port Dedicated Tubing Other:

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

20.1 (Gals.) X 3 = 60.3 Gals.
 1 Case Volume Specified Volumes Calculated Volume

Time	Temp (°F)	pH	Cond. (mS/cm or <u>µS/cm</u>)	Turbidity (NTUs)	D.O. (mg/L)	ORP(mV)	Gals. Removed	PTW Observations
0945	74.1	7.46	712	16	3.18	104	10	236.89
0950	76.3	7.31	725	10	2.89	101	20	237.10
0955	76.9	7.29	729	8	2.75	99	30	237.12
1000	77.1	7.27	731	7	2.73	96	40	237.14
1005	77.2	7.26	730	7	2.71	94	50	237.15
1010	77.3	7.24	729	7	2.69	93	61	237.16

Did well dewater? Yes No Gallons actually evacuated: 61

Sampling Date: 08/01/19 Sampling Time: 1015 Depth to Water: 237.16

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

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 #: 190719-HH1	Site: JPL
Sampler: HH	Date: 08/01/19
Well I.D.: MW-8	Well Diameter: 2 3 (4) 6 8
Total Well Depth (TD): 205.00	Depth to Water (DTW): 161.03
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]: 169.82	

Purge Method: Bailer Disposable Bailer Positive Air Displacement Electric Submersible

Water: 2" Rediflo pump Extraction Pump Other _____

Sampling Method: Bailer Disposable Bailer Extraction Port Dedicated Tubing

Other: _____

$$28.6 \text{ (Gals.)} \times 3 = 85.8 \text{ Gals.}$$
 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 (°F)	pH	Cond. (mS/cm or <u>µS/cm</u>)	Turbidity (NTUs)	D.O. (mg/L)	ORP(mV)	Gals. Removed	PTW Observations
1201	64.8	8.15	469	6	2.83	136	14	161.34
1208	66.9	7.40	465	5	2.32	106	28	161.50
1215	67.3	7.31	461	4	2.24	103	42	161.57
1222	67.2	7.27	462	4	2.21	102	56	161.60
1229	67.1	7.25	460	3	2.19	100	70	161.62
1238	67.1	7.23	461	3	2.15	98	86	161.63

Did well dewater? Yes No Gallons actually evacuated: 86

Sampling Date: 08/01/19 Sampling Time: 1240 Depth to Water: 161.63

Sample I.D.: MW8 Laboratory: BC

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 #: 1907A-HH	Site: JPL
Sampler: HH	Date: 08/01/19
Well I.D.: MW-10	Well Diameter: 2 3 (4) 6 8
Total Well Depth (TD): 155.00	Depth to Water (DTW): 115.44
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]: 123.35	

Purge Method: Bailer Disposable Bailer Positive Air Displacement Electric Submersible Water 2" Rediflo pump Extraction Pump Other _____

Sampling Method: Bailer Disposable Bailer Extraction Port Dedicated Tubing Other: _____

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

25.8 (Gals.) X 3 = 77.4 Gals.
 1 Case Volume Specified Volumes Calculated Volume

Time	Temp (°F)	pH	Cond. (mS/cm or µS/cm)	Turbidity (NTUs)	D.O. (mg/L)	ORP(mV)	Gals. Removed	DTW Observations
0711	66.3	7.69	539	13	4.61	98	13	115.79
0717	68.1	7.60	543	10	4.53	101	26	115.93
0724	68.6	7.57	544	8	4.35	103	39	116.04
0730	68.9	7.55	547	6	4.29	105	52	116.06
0736	68.8	7.53	545	5	4.26	103	65	116.08
0743	68.7	7.52	543	5	4.24	102	78	116.09

Did well dewater? Yes No Gallons actually evacuated: 78

Sampling Date: 08/01/19 Sampling Time: 0745 Depth to Water: 116.09

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

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

**WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET**

WELL ID: MW-11
 SAMPLING DATE(S): 07/26/19
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 168.88
 ATM. PRESSURE (PSI): (Start) 14.12 (Finish) 14.14

PROBE TYPE: Westbay
 SERIAL NO.: 2508
 PROJECT: JPL
 OPERATOR(S): T. Hacy
 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) mg/L	ORP (mv)	Sample Time	Sample ID
4	1	✓	✓	✓	✓	✓	169.86	✓	167.93	✓	167.93	✓	169.86	26.4	365	7.75	1	7.05	-38	1130	MW-11-4
3	1	✓	✓	✓	✓	✓	128.46	✓	125.33	✓	125.33	✓	128.46	27.3	397	7.64	7	6.33	195	1200	MW-11-3
	2	✓	✓	✓	✓	✓	128.35	✓	125.34	✓	125.34	✓	128.35								
2	1	✓	✓	✓	✓	✓	54.55	✓	56.19	✓	56.19	✓	54.55	28.8	477	8.06	3	6.01	157	1245	MW-11-2
	2	✓	✓	✓	✓	✓	54.56	✓	56.18	✓	56.18	✓	54.56								
1	1	✓	✓	✓	✓	✓	14.13	✓	27.46	✓	27.46	✓	14.13	27.5	1032	8.20	2	5.75	182	1315	MW-11-1
	2	✓	✓	✓	✓	✓	14.12	✓	27.47	✓	27.47	✓	14.12								

Comments: _____

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-12
 SAMPLING DATE(S) 07/29/19
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 130.89
 ATM. PRESSURE (PSI): (Start) 14.07 (Finish) 14.09

PROBE TYPE Westbay
 SERIAL NO. 2508
 PROJECT: JPL
 OPERATOR(S) J. Hays
 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 (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)
5	1	✓	✓	✓	✓	✓	149.09	✓178.21	✓178.21	✓199.09	19.8	452	7.58	7	5.73	177	1015	MW-12-5	
4	1	✓	✓	✓	✓	✓	150.35	✓140.31	✓140.31	✓150.35	19.7	470	7.66	4	6.01	176	1045	MW-12-4	
3	1	✓	✓	✓	✓	✓	100.49	✓93.59	✓93.59	✓100.49	20.5	461	7.79	3	5.73	177	1115	MW-12-3	
	2	✓	✓	✓	✓	✓	100.47	✓93.57	✓93.57	✓100.47									
2	1	✓	✓	✓	✓	✓	65.47	✓60.44	✓60.44	✓65.47	21.1	540	7.68	2	5.85	151	1200	MW-12-2	
	2	✓	✓	✓	✓	✓	65.43	✓60.42	✓60.42	✓65.43									
1	1	✓	✓	✓	✓	✓	20.19	✓24.49	✓24.49	✓20.19	21.2	385	7.55	3	6.02	156	1230	MW-12-1	
	2	✓	✓	✓	✓	✓	20.22	✓24.50	✓24.50	✓20.22									

Comments: _____

WELL MONITORING DATA SHEET

Project #: 190719-1441	Site: SPL
Sampler: AH	Date: 07/31/19
Well I.D.: MW-13	Well Diameter: 2 3 <u>4</u> 6 8
Total Well Depth (TD): 234.65	Depth to Water (DTW): 209.65
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]: 213.85	

Purge Method: Bailer ~~Disposible Bailer~~ ~~Positive Air Displacement~~ ~~Electric Submersible~~ Water 2" Rediflo pump Extraction Pump Other _____

Sampling Method: Bailer Disposable Bailer Extraction Port Dedicated Tubing Other: _____

17	(Gals.) X	3	=	51	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* 0.163

Time	Temp (°F)	pH	Cond. (mS/cm or <u>µS/cm</u>)	Turbidity (NTUs)	D.O. (mg/L)	ORP(mV)	Gals. Removed	DTW Observations
0728	72.2	7.78	636	4	3.09	204	8	209.19
0732	73.1	7.68	573	1	2.60	197	16	209.30
0736	73.4	7.39	567	1	2.19	197	24	209.40
0740	73.6	7.37	563	1	2.15	193	32	209.45
0744	73.9	7.35	562	1	2.12	191	40	209.46
0750	73.7	7.34	560	1	2.10	189	52	209.47

Did well dewater? Yes No Gallons actually evacuated: 52

Sampling Date: 07/31/19 Sampling Time: 0751 Depth to Water: 209.47

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

Analyzed for: Se & 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

m c / m c n

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-14
 SAMPLING DATE(S): 07/23/19
 LOCATION: Pointe L. F.
 WATER LEVEL INSIDE CASING: 19255
 ATM. PRESSURE (PSI): (Start) 1396 (Finish) 1399

PROBE TYPE: Westbay
 SERIAL NO.: 2502
 PROJECT: JPL
 OPERATOR(S): T. Hoag
 WEATHER: cloudy

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	✓	✓	✓	✓	✓	168.76	✓	160.81	✓	160.81	✓	168.76	20.5	380	7.42	21	5.11 m3/L	231	0745	MW-14-5
4	1	✓	✓	✓	✓	✓	132.19	✓	124.69	✓	124.69	✓	132.19	21.4	633	7.29	5	9.85	220	0815	MW-14-4
	2	✓	✓	✓	✓	✓	132.10	✓	124.71	✓	124.71	✓	132.10								
3	1	✓	✓	✓	✓	✓	101.34	✓	92.67	✓	92.67	✓	101.34	22.5	1007	7.50	5	5.83	196	0850	MW-14-3
2	1	✓	✓	✓	✓	✓	55.54	✓	47.33	✓	47.33	✓	55.54	26.1	1151	7.45	2	5.90	194	0930	MW-14-2
1	1	✓	✓	✓	✓	✓	24.92	✓	17.29	✓	17.29	✓	24.92	27.1	833	7.58	2	6.04	145	1005	MW-14-1

Comments: was / msp @ MW-14-4

WELL MONITORING DATA SHEET

Project #: 190719-#441	Site: JPL
Sampler: AA	Date: 07/31/19
Well I.D.: MW-15	Well Diameter: 2 3 (4) 6 8
Total Well Depth (TD): 60.00	Depth to Water (DTW): 32.05
Depth to Free Product:	Thickness of Free Product (feet):
Referenced to: (RVC) Grade	Flow Cell Type: YSI 556
DTW with 80% Recharge [(Height of Water Column x 0.20) + DTW]: 37.64	

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

18.2 (Gals.) X	3	=	54.6 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 (°F)	pH	Cond. (mS/cm or <u>µS/cm</u>)	Turbidity (NTUs)	D.O. (mg/L)	ORP (mV)	Gals. Removed	DTW Observations
1130	67.8	7.94	451	20	2.49	170	10	32.19
1135	67.2	7.87	422	17	2.10	168	20	32.40
1140	67.5	7.83	415	15	2.05	163	30	32.49
1145	67.3	7.80	413	14	2.01	161	40	32.51
1150	67.6	7.78	410	13	1.95	160	50	32.53
1153	67.5	7.76	409	12	1.93	157	56	32.54

Did well dewater? Yes No Gallons actually evacuated: 56

Sampling Date: 07/31/19 Sampling Time: 1155 Depth to Water: 32.54

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

Analyzed for: see C.O.C Other:

EB I.D. (if applicable): @ Time Duplicate I.D. (if applicable): DUP-7-3619 @ 1205

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-18
 SAMPLING DATE(S): 02/24/19
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 292.70
 ATM. PRESSURE (PSI): (Start) 13.99 (Finish) 14.02

PROBE TYPE: Westbay
 SERIAL NO.: 2502
 PROJECT: JPL
 OPERATOR(S): T. Hoan
 WEATHER: Clear / Hot

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) mg/L	ORP (mv)
5	1	✓	✓	✓	✓	✓	187.48	✓180.46	✓180.46	✓187.48	25.8	262	8.48	7	6.05	-21	1220	MW-18-5	
4	1	✓	✓	✓	✓	✓	136.81	✓132.26	✓132.26	✓136.81	25.5	396	8.97	4	6.33	177	1250	MW-18-4	
3	1	✓	✓	✓	✓	✓	75.67	✓80.61	✓80.61	✓75.67	24.1	500	8.55	3	5.95	170	1315	MW-18-3	
2	1	✓	✓	✓	✓	✓	34.61	✓43.38	✓43.38	✓34.61	24.5	475	8.60	3	6.04	158	1345	MW-18-2	
	2	✓	✓	✓	✓	✓	34.58	✓43.36	✓43.36	✓34.58									

Comments: PLP-3-3019 @ MW-18-2 @ 1355

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-19
 SAMPLING DATE(S) 07/22/19
 LOCATION: Pasadena City Yard (Water Plant)
 WATER LEVEL INSIDE CASING: 140.25
 ATM. PRESSURE (PSI): (Start) 1405 (Finish) 1407

PROBE TYPE Westbay
 SERIAL NO. 2502
 PROJECT: JPL
 OPERATOR(S) T. Hoan
 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) mg/L	ORP (mv)	Sample Time	Sample ID
5	1	✓	✓	✓	✓	✓	170.48	✓	141.78	✓	141.78	✓	170.48	29.8	608	7.74	3	6.05	83	1245	MW-19-5
4	1	✓	✓	✓	✓	✓	147.08	✓	118.50	✓	118.50	✓	147.08	35.5	648	8.05	2	6.11	101	1305	MW-19-4
3	1	✓	✓	✓	✓	✓	124.44	✓	102.71	✓	102.71	✓	124.44	24.2	799	7.98	2	5.83	118	1315	MW-19-3
2	1	✓	✓	✓	✓	✓	90.57	✓	69.22	✓	69.22	✓	90.57	19.9	1157	8.09	2	6.01	125	1415	MW-19-2
1	1	✓	✓	✓	✓	✓	59.47	✓	40.27	✓	40.27	✓	59.47	22.6	478	7.91	37	5.90	133	1430	MW-19-1

Comments: _____

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-20
 SAMPLING DATE(S) 07/22/19
 LOCATION: Church Park Rd, Lot 7
 WATER LEVEL INSIDE CASING: 231.58
 ATM. PRESSURE (PSI): (Start) 14.04 (Finish) 14.07

PROBE TYPE Westbay
 SERIAL NO. 2502
 PROJECT: JPL
 OPERATOR(S) J. Hoag
 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	✓	✓	✓	✓	✓	206.51	✓	309.44	✓	309.44	✓	306.51	21.4	294	8.16	5	5.85	-103	0830	MW-20-5
4	1	✓	✓	✓	✓	✓	219.15	✓	213.40	✓	213.40	✓	219.15	19.8	317	8.13	2	6.04	-105	0910	MW-20-4
3	1	✓	✓	✓	✓	✓	159.13	✓	153.02	✓	153.02	✓	159.13	21.9	339	8.52	2	5.71	-118	0945	MW-20-3
	2	✓	✓	✓	✓	✓	159.10	✓	152.99	✓	152.99	✓	159.10								
2	1	✓	✓	✓	✓	✓	84.83	✓	85.40	✓	85.40	✓	84.83	22.0	571	9.18	1	6.11	59	1045	MW-20-2
1	1	✓	✓	✓	✓	✓	14.15	✓	14.71	✓	14.71	✓	14.15	24.6	521	8.06	1	6.35	75	1115	MW-20-1

Comments: TB-1-072219
MS/MSD @ MW-20-3

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-21
 SAMPLING DATE(S): 07/30/19
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 115.35
 ATM. PRESSURE (PSI): (Start) 14.10 (Finish) 14.12

PROBE TYPE: Westbay
 SERIAL NO.: EM2508
 PROJECT: JPL
 OPERATOR(S): J. Hoan
 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	✓	✓	✓	✓	✓	128.58	✓	136.51	✓	136.51	✓	128.58	22.2	879	7.57	2	5.66	203	0930	MW-21-5	
	2	✓	✓	✓	✓	✓	128.56	✓	136.52	✓	136.52	✓	128.56									
4	1	✓	✓	✓	✓	✓	101.54	✓	109.70	✓	109.70	✓	101.54	21.9	1018	7.95	3	6.05	225	1015	MW-21-4	
	2	✓	✓	✓	✓	✓	101.52	✓	109.68	✓	109.68	✓	101.52									
3	1	✓	✓	✓	✓	✓	71.44	✓	79.95	✓	79.95	✓	71.44	23.4	1190	7.73	2	6.33	210	1045	MW-21-3	
	2	✓	✓	✓	✓	✓	71.49	✓	79.93	✓	79.93	✓	71.49									
	3	✓	✓	✓	✓	✓	71.92	✓	79.92	✓	79.92	✓	71.52									
2	1	✓	✓	✓	✓	✓	38.02	✓	45.99	✓	45.99	✓	38.02	25.8	1308	7.58	2	6.15	186	1145	MW-21-2	
	2	✓	✓	✓	✓	✓	37.95	✓	45.96	✓	45.96	✓	37.95									
	3	✓	✓	✓	✓	✓	37.84	✓	45.97	✓	45.97	✓	37.89									
1	1	✓	✓	✓	✓	✓	14.12	✓	15.27	✓	15.27	✓	14.12	26.1	927	7.6	2	6.40	170	1400	MW-21-1	
	2	✓	✓	✓	✓	✓	14.12	✓	15.25	✓	15.25	✓	14.12									

Comments: PUP-5-3Q19 @ MW-21-3 @ 1055
PUP-6-3Q19 @ MW-21-2 @ 1155

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-22
 SAMPLING DATE(S): 07/25/19
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 196.35
 ATM. PRESSURE (PSI): (Start) 14.03 (Finish) 14.05

PROBE TYPE: Pressure Head
 SERIAL NO.: 2502
 PROJECT: JPL
 OPERATOR(S): T. Hagan
 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
3	1	✓	✓	✓	✓	✓	100.22	✓93.39	✓93.39	✓	100.22	21.8	547	8.33	3	6.05	189	0715	MW-22-3	
2	1	✓	✓	✓	✓	✓	74.18	✓67.43	✓67.43	✓	74.18	22.8	768	7.69	2	5.85	252	0800	MW-22-2	
	2	✓	✓	✓	✓	✓	74.09	✓67.41	✓67.41	✓	74.09									
1	1	✓	✓	✓	✓	✓	37.19	✓32.47	✓32.47	✓	37.19	22.3	931	7.88	2	6.06	232	0900	MW-22-1	

Comments: ms/mp @ mw-22-2

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-23
 SAMPLING DATE(S) 08/05/19
 LOCATION: JR2
 WATER LEVEL INSIDE CASING: 140.50
 ATM. PRESSURE (PSI): (Start) 14.09 (Finish) 14.11

PROBE TYPE Westby
 SERIAL NO. 8508
 PROJECT: JPL
 OPERATOR(S) T. Hoag
 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
4	1	✓	✓	✓	✓	✓	147.17	✓141.12	✓141.12	✓	147.17	21.3	533	7.90	7	MSL 6.03	174	0830	MW-23-4	
3	1	✓	✓	✓	✓	✓	92.81	✓90.56	✓90.56	✓	92.81	21.5	547	8.38	3	5.85	184	0905	MW-23-3	
	2	✓	✓	✓	✓	✓	92.77	✓90.54	✓90.54	✓	92.77									
	3	✓	✓	✓	✓	✓	92.63	✓90.52	✓90.52	✓	92.63									
2	1	✓	✓	✓	✓	✓	64.53	✓62.67	✓62.67	✓	64.53	22.0	1100	7.90	3	5.90	191	1010	MW-23-2	
	2	✓	✓	✓	✓	✓	64.51	✓62.65	✓62.65	✓	64.51									
1	1	✓	✓	✓	✓	✓	29.87	✓30.16	✓30.16	✓	29.87	23.1	715	8.31	2	5.73	170	1110	MW-23-1	
	2	✓	✓	✓	✓	✓	29.83	✓30.13	✓30.13	✓	29.83									

Comments: _____

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-24
 SAMPLING DATE(S): 07/25/19
 LOCATION: JPL
 WATER LEVEL INSIDE CASING: 214.20
 ATM. PRESSURE (PSI): (Start) 14.03 (Finish) 14.05

PROBE TYPE: Westbay
 SERIAL NO.: 2502
 PROJECT: JPL
 OPERATOR(S): T. Hoag
 WEATHER: cloudy

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) mg/L	ORP (mv)	Sample Time	Sample ID
4	1	✓	✓	✓	✓	✓	162.94	✓	148.09	✓	148.08	✓	162.94	23.8	248	7.55	2	5.03	-31	0950	MW-24-4
3	1	✓	✓	✓	✓	✓	85.71 111.71	✓	101.01	✓	101.01	✓	111.71	23.0	535	7.34	5	6.09	133	1045	MW-24-3
2	1	✓	✓	✓	✓	✓	84.64	✓	75.26	✓	75.26	✓	84.64	23.4	506	7.70	3	5.95	189	1120	MW-24-2
1	1	✓	✓	✓	✓	✓	44.19	✓	35.75	✓	35.75	✓	44.19	21.0	652	7.89	1	6.11	177	1200	MW-24-1
	2	✓	✓	✓	✓	✓	44.13	✓	35.71	✓	35.71	✓	44.13								

Comments: dup-4-3219 @ MW-24-4 @ 1000

WESTBAY™ GROUNDWATER MONITORING WELL
FIELD DATA LOG SHEET

WELL ID: MW-25
 SAMPLING DATE(S): 7/23/19
 LOCATION: C1H 9ar 9
 WATER LEVEL INSIDE CASING: 245.42
 ATM. PRESSURE (PSI): (Start) 1412 (Finish) 1413

PROBE TYPE: Westbay
 SERIAL NO.: Ems 2502
 PROJECT: JPL
 OPERATOR(S): T. Hoas
 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) mg/L	ORP (mv)	Sample Time	Sample ID
5	1	✓	✓	✓	✓	✓	221.71	✓	213.37	✓	213.37	✓	221.71	25.6	367	8.20	1	6.25	-9.3	1145	MW-25-5
4	1	✓	✓	✓	✓	✓	187.23	✓	179.41	✓	179.41	✓	187.23	21.5	771	7.87	2	5.63	153	1225	MW-25-4
	2	✓	✓	✓	✓	✓	187.20	✓	179.40	✓	179.40	✓	187.20								
3	1	✓	✓	✓	✓	✓	130.40	✓	123.58	✓	123.58	✓	130.40	28.2	742	8.16	2	6.10	147	1320	MW-25-3
2	1	✓	✓	✓	✓	✓	95.91	✓	88.77	✓	88.77	✓	95.91	27.3	660	8.27	3	6.35	170	1400	MW-25-2
1	1	✓	✓	✓	✓	✓	67.60	✓	60.29	✓	60.29	✓	67.60	28.3	871	7.91	2	6.50	196	1435	MW-25-1

Comments: DUP-1-3619 @ MW-25-4 @ 1235

