

**Bureau of Reclamation Static GPS Survey for Subsidence Monitoring  
Central Valley California**

Constrained Adj - December 2014												Dec - Dec Annual Subsidence (feet)				
PT	NAD 83 (2007) CA Zone 4 - US Feet		NAVD 88	Desc	NAVD 1988 Elevation of Monitoring Point (feet)						Dec-11	Dec-12	Dec-13	Dec-11	Jul-13	
	Northing	Easting	Elev		Dec-11	Jul-12	Dec-12	Jul-13	Dec-13	Jul-14	Dec-14	Dec-12	Dec-13	Dec-14	Dec-14	Jul-14
29	2255715.28	6232765.40	278.56	NOTARB		279.25	279.20	279.08	278.93	278.68	278.56		-0.27	-0.37	-0.32	-0.41
62	2138252.57	6339533.11	288.79	HPGN 06 06		288.85	288.87	288.77	288.81	288.82	288.79		-0.06	-0.02	-0.04	0.06
63	2068328.39	6163767.98	329.06	HPGN 06 07		329.95	329.99	329.67	329.51	329.02	329.06		-0.48	-0.45	-0.47	-0.65
101	2213141.14	6133281.40	141.31	X 989	141.80	141.66	141.72	141.55	141.48	141.33	141.31	-0.08	-0.24	-0.17	-0.16	-0.21
108	2342536.72	6022775.76	78.89	SSH	79.14				78.92	79.07	78.89			-0.03	-0.08	
119	2420921.56	6035543.29	111.13	109.28	111.28	111.11	111.14	111.05	110.98	111.13	111.13	-0.13	-0.16	0.14	-0.05	0.09
120	2246626.02	6356803.74	606.58	604.164	606.68				606.61	606.67	606.58			-0.03	-0.03	
121	2244410.15	6123306.25	128.64	375 USE	129.76	129.52	129.41	129.09	128.93	128.70	128.64	-0.35	-0.47	-0.29	-0.37	-0.38
122	2166402.67	6153888.63	167.72	ALEX 5	168.00	167.91	168.00	167.87	167.83	167.70	167.72	0.00	-0.17	-0.11	-0.09	-0.17
123	2232691.15	6167201.66	161.53	WES	162.66	162.40	162.35	162.14	161.84	161.63	161.53	-0.31	-0.51	-0.31	-0.38	-0.52
124	2280839.09	6138903.32	148.09	D 158 RESET	149.56	149.34	149.32	148.90	148.68	148.22	148.09	-0.25	-0.64	-0.59	-0.49	-0.68
125	2185890.19	6122120.10	183.88	DWIGHT	184.18	184.07	184.13	184.03	183.97	183.86	183.88	-0.05	-0.16	-0.09	-0.10	-0.17
126	2355392.82	6132094.71	167.35	E1420	167.38	167.29	167.29	167.29	167.17	167.28	167.35	-0.08	-0.12	0.18	-0.01	-0.01
127	2195250.71	6199772.78	182.53	USHER	182.87	182.90	182.82	182.74	182.64	182.50	182.53	-0.05	-0.18	-0.11	-0.12	-0.24
128	2114491.84	6074855.74	619.30	F 928	619.26	619.26	619.26	619.26	619.26	619.26	619.30	0.00	0.00	0.04	0.01	0.00
129	2198475.33	6133714.12	145.99	FIREPORT	146.36	146.28	146.29	146.18	146.07	145.96	145.99	-0.07	-0.22	-0.08	-0.13	-0.22
130	2365903.83	6000988.76	73.21	FREMONT	73.31	73.26	73.25	73.17	73.05	73.33	73.21	-0.05	-0.20	0.16	-0.03	0.16
131	2332746.43	6191751.96	243.07	G 706 RESET	243.12	243.12	243.14	243.17	243.09	243.11	243.07	0.02	-0.05	-0.02	-0.02	-0.06
132	2249201.53	6122773.90	125.73	G 990	127.14	126.86	126.77	126.30	126.17	125.84	125.73	-0.37	-0.60	-0.44	-0.47	-0.46
133	2273311.31	6111332.10	121.07	H 1235 RESET	122.28	122.16	121.94	121.66	121.33	121.26	121.07	-0.33	-0.61	-0.26	-0.40	-0.41
134	2202620.34	6330007.67	289.96	H41-1941	290.00	289.94	289.92	289.84	289.92	290.02	289.96	-0.08	0.00	0.04	-0.01	0.18
135	2280213.52	6203601.88	235.74	HPGN CA 06 03	236.72	236.60	236.54	236.38	236.27	235.85	235.74	-0.17	-0.27	-0.53	-0.33	-0.53
137	2271706.39	6053044.21	100.67	HPGN CA 10 01	101.05	101.03	100.96	100.90	100.87	100.75	100.67	-0.09	-0.09	-0.20	-0.13	-0.15
138	2423374.10	5929562.70	239.10	HPGN CA 10 04	239.11	239.11	239.07	239.01	238.86	239.27	239.10	-0.04	-0.21	0.24	0.00	0.26
139	2099649.67	6250235.13	186.32	HPGN D CA 06 NF	186.99	186.81	186.89	186.64	186.56	186.33	186.32	-0.10	-0.33	-0.24	-0.22	-0.31
140	2172846.92	6309610.40	292.36	HPGN D CA 06 QF	292.41	292.34	292.41	292.32	292.37	292.40	292.36	0.00	-0.04	-0.01	-0.01	0.08
141	2207496.67	6274591.84	285.19	HPGN D CA 06 RF	285.41	285.29	285.29	285.27	285.24	285.16	285.19	-0.12	-0.05	-0.05	-0.07	-0.11
142	2239184.34	6329798.09	430.28	HPGN D CA 06 RG	430.40	430.38	430.31	430.31	430.36	430.38	430.28	-0.09	0.05	-0.08	-0.04	0.07
143	2282575.56	6342236.55	1107.05	HPGN D CA 06 SG	1107.19				1107.12	1107.17	1107.05			-0.08	-0.05	
144	2221992.41	6029550.86	314.18	HPGN D CA 10 BK	314.24	314.31	314.27	314.26	314.21	314.10	314.18	0.03	-0.06	-0.03	-0.02	-0.16
145	2199134.53	6397420.51	494.10	J 1233	494.09	494.09	494.09	494.09	494.09	494.09	494.10	0.00	0.00	0.01	0.00	0.00
146	2275034.32	5961519.30	285.34	K 361	285.34	285.41	285.34	285.34	285.34	285.34	285.34	0.00	0.00	0.00	0.00	0.00
147	2238612.25	6104481.38	123.80	KELLIE	124.22	124.14	124.07	123.94	123.91	123.85	123.80	-0.14	-0.16	-0.11	-0.14	-0.08
148	2392467.52	6061625.67	134.23	LIVINGSTON RESET	134.38	134.21	134.21	134.17	134.06	134.23	134.23	-0.17	-0.14	0.17	-0.05	0.06
150	2376151.72	5971948.22	97.17	NEWMAN NW BASE	97.26				97.08	97.30	97.17			0.09	-0.03	
152	2322364.18	6025789.08	84.54	SALT RM1	84.68	84.67	84.61	84.65	84.51	84.66	84.54	-0.07	-0.10	0.03	-0.05	0.00
153	2183877.29	6142113.66	154.47	SHAWN	154.69	154.67	154.70	154.63	154.55	154.46	154.47	0.01	-0.15	-0.08	-0.07	-0.17
154	2149040.19	6261382.80	229.90	SPEAK AZ MK	229.94	229.84	229.90	229.84	229.78	229.77	229.90	-0.04	-0.12	0.12	-0.01	-0.07
155	2319104.58	6078482.29	110.17	T 987 CADWR	110.75	110.70	110.49	110.51	110.42	110.24	110.17	-0.26	-0.07	-0.25	-0.19	-0.27
156	2292291.98	6098548.60	112.13	W 990 CADWR	113.56	113.20	113.01	112.64	112.54	112.17	112.13	-0.55	-0.47	-0.41	-0.48	-0.47
157	2263167.61	6102759.17	114.32	WILLIAM 3	114.88	114.83	114.71	114.58	114.50	114.37	114.32	-0.17	-0.21	-0.18	-0.19	-0.21
158	2198310.22	6154768.98	150.28	RBF1026	150.68	150.60	150.66	150.55	150.45	150.30	150.28	-0.02	-0.21	-0.17	-0.13	-0.25
159	2186287.77	6159874.99	151.45	RBF 1027	151.74	151.67	151.75	151.64	151.57	151.44	151.45	0.01	-0.18	-0.12	-0.10	-0.19
160R	2184391.40	6227465.35	215.68	RBF 1047 RESET	214.36	214.27	214.31	214.24	214.13	214.00	214.02	-0.05	-0.18	-0.11	-0.11	-0.25

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	Northing	Easting			Dec-11	Jul-12	Dec-12	Jul-13	Dec-13	Jul-14						Dec-14	
162	2284179.44	6121191.39	120.52	RBF 1057	121.97	121.66	121.50	121.00	120.83	120.53	120.52	-0.46	-0.67	-0.31	-0.48	-0.47	
170	2335285.42	6066327.01	98.22	4S3					98.31	98.35	98.22			-0.09	-0.09		
1007R	2224869.04	6157684.93	146.65	RBF 1007 RESET		147.34	147.34	147.18	146.97	146.69	146.65		-0.37	-0.32	-0.35	-0.50	
1009	2233366.81	6122386.67	128.77	RBF 1009		129.36	129.34	129.17	129.04	128.80	128.77		-0.30	-0.27	-0.29	-0.37	
1053R	2241368.26	6157691.78	153.35	RBF 1053 RESET		146.98	146.70	146.33	146.06	145.65	145.47		-0.64	-0.59	-0.61	-0.68	
1054R	2248691.71	6157718.27	151.09	RBF 1054 RESET		150.53	150.34	149.85	149.59	149.08	148.91		-0.48	-0.68	-0.71	-0.77	
1055R	2265037.63	6131551.61	126.85	1005 RESECT		129.16	128.91	128.46	128.07	127.68	127.48		0.62	-0.59	-0.71	-0.78	
1108	2361312.01	6086633.87	123.75	R940 RESET		123.74	123.76	123.73	123.63	123.74	123.75		-0.13	0.12	-0.01	0.01	
2062	2239271.48	6146221.45	140.63	Y 549		141.28	141.29	141.07	140.95	140.65	140.63		-0.34	-0.32	-0.33	-0.42	
2065	2322679.38	6128257.40	145.32	W 938 RESET		145.96	145.99	145.68	145.55	145.36	145.32		-0.44	-0.23	-0.33	-0.32	
2076	2280427.65	6163347.90	180.08	F 158 RESET 1967		180.85	180.80	180.57	180.44	180.19	180.08		-0.36	-0.36	-0.36	-0.38	
2107	2099695.65	6220352.71	175.58	MARTIN 2008		176.04	176.11	175.88	175.78	175.52	175.58		-0.33	-0.20	-0.26	-0.36	
2147	2062741.55	6223016.01	195.88	BURNSIDE		196.58	196.63	196.37	196.27	195.94	195.88		-0.36	-0.39	-0.38	-0.43	
2149	2115864.75	6175004.35	165.43	MURIETTA		165.85	165.89	165.73	165.62	165.47	165.43		-0.26	-0.19	-0.23	-0.25	
2160	2078118.28	6305388.30	232.68	BLYTHE		232.89	232.91	232.67	232.76	232.71	232.68		-0.15	-0.08	-0.12	0.04	
2348	2256684.58	6084032.51	113.08	HARMON		113.41	113.33	113.19	113.16	113.06	113.08		-0.17	-0.08	-0.12	-0.13	
2362	2256922.85	6143246.21	148.47	DWR 154.33		149.73	149.57	149.18	149.02	148.65	148.47		-0.55	-0.55	-0.55	-0.53	
2378	2256382.22	6184306.58	181.42	MELISSA		182.46	182.41	182.13	181.96	181.59	181.42		-0.45	-0.54	-0.49	-0.54	
2448	2061261.09	6266141.21	198.43	V513		199.15	199.18	198.89	198.84	198.51	198.43		-0.34	-0.41	-0.37	-0.38	
2562	2232976.80	6129496.50	133.03	HETFIELD		133.66	133.59	133.43	133.29	133.11	133.03		-0.30	-0.26	-0.28	-0.32	
AA4259	2405239.00	6241496.56	1289.24	HPGN D CA 10 FP					1289.23	1289.27	1289.24			0.01	0.01		
AC5729	2273179.47	6009947.67	137.88	X1235					137.99	137.96	137.88			-0.11	-0.11		
DH6665R	2197051.31	6077377.00	190.73	MATTHEW					189.93	189.77	189.85			-0.08	-0.08		
DH6671	2143813.41	6133818.67	233.61	PEYTON					233.74	233.55	233.61			-0.13	-0.13		
GT1871	2143787.79	6458478.53	506.66	KAKTUS					506.65	506.77	506.66			0.01	0.01		
GU0278	2172507.74	6031179.35	704.71	J 1074					704.60	704.50	704.71			0.11	0.11		
GU0492	2082514.88	6102978.85	1103.53	L 928					1103.60	1103.50	1103.53			-0.07	-0.07		
HS2494	2343309.21	5956829.33	183.32	57.95 USBR					183.24	183.47	183.32			0.08	0.08		

-0.15 Shorter Duration (Calculation starts with first December occupation)

GPS observation point moved out of road for safety July 2014. Elevations adjusted to original point via levels. See below for Deltas to apply

- BM 160R add -1.663 to GPS Elevation for Final Elevation
- BM 1053R add -7.877 to GPS Elevation for Final Elevation
- BM 1054R add -2.177 to GPS Elevation for Final Elevation
- BM 1055R add +0.633 to GPS Elevation for Final Elevation

DH6665 was flooded out during Dec Survey, an eccentric point (DH6665R) was set and a level loop run to DH6665 when it dried out in January.

Delta elevation from DH6665R to DH6665 = -0.8719 feet