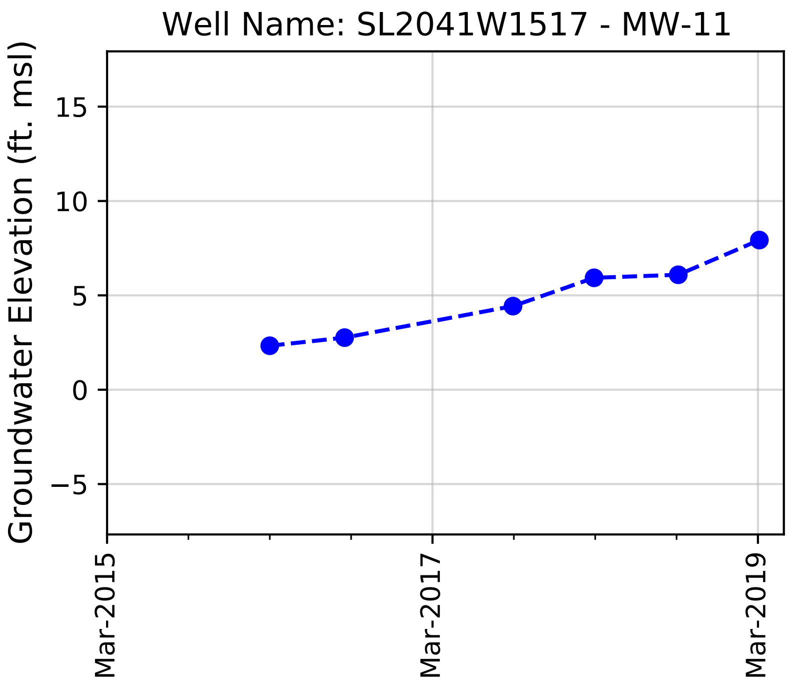
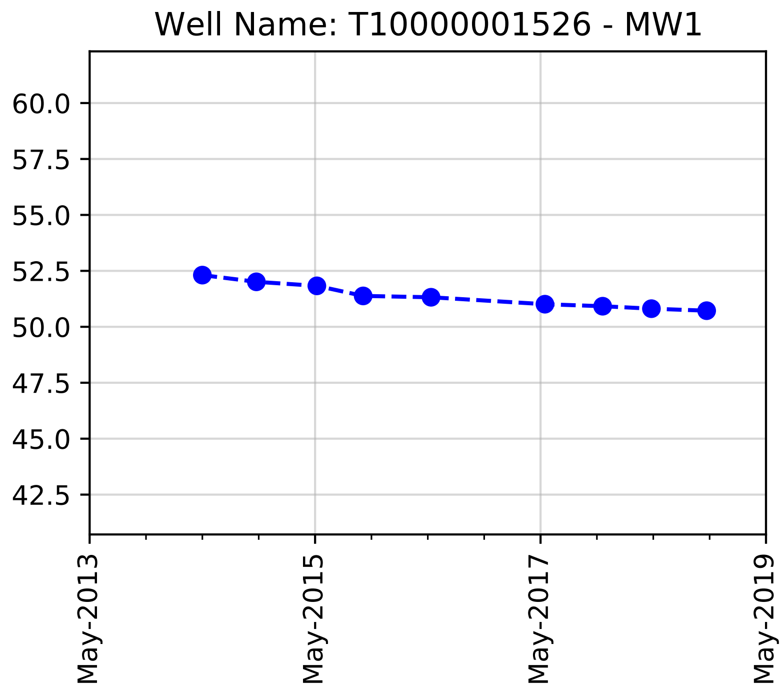
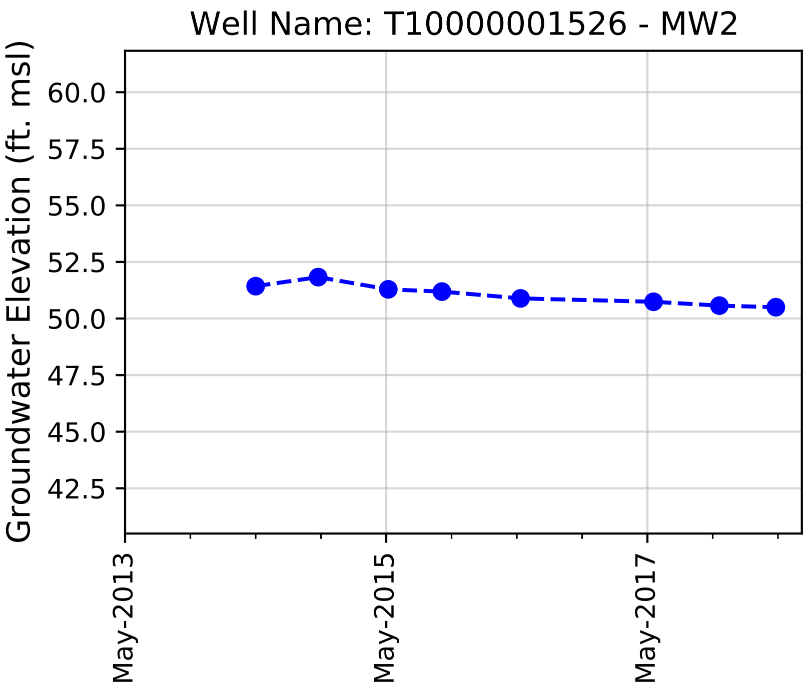
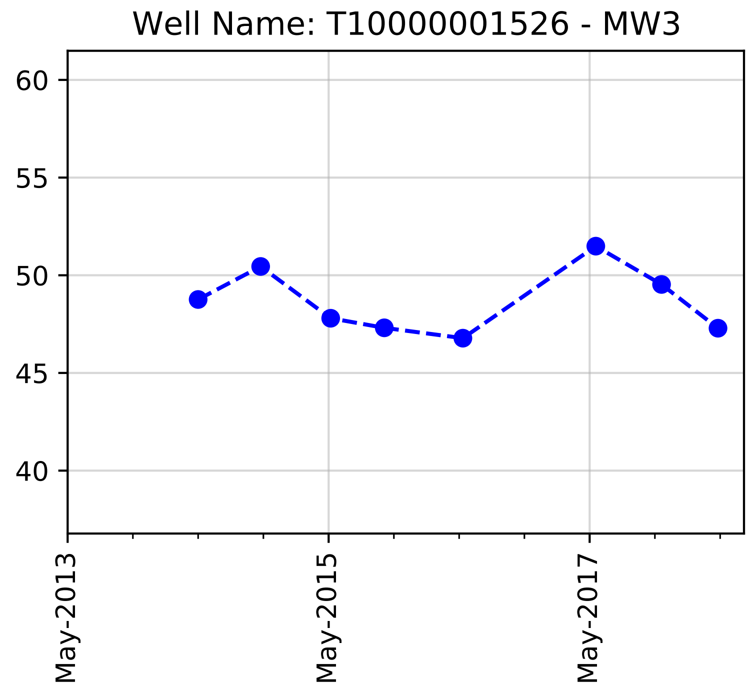
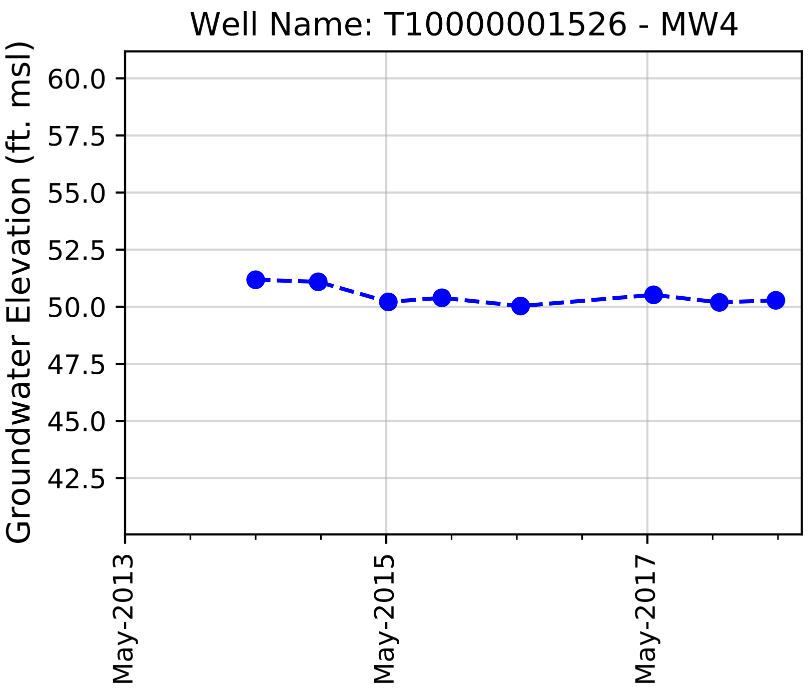
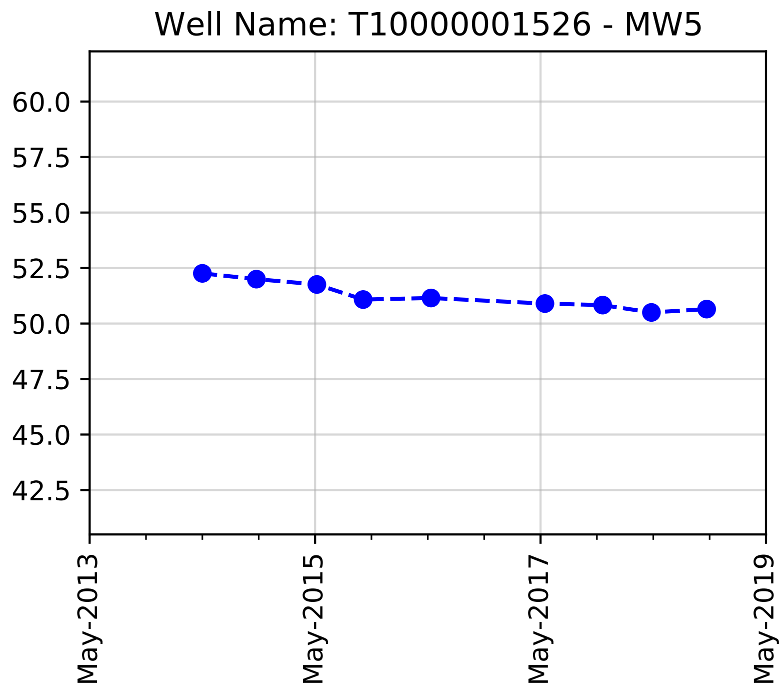

Well Name: SL2041W1517 - MW-11
Groundwater Elevation (ft. msl)
15
10
5
0
−5
Mar-2015
Mar-2017
Mar-2019

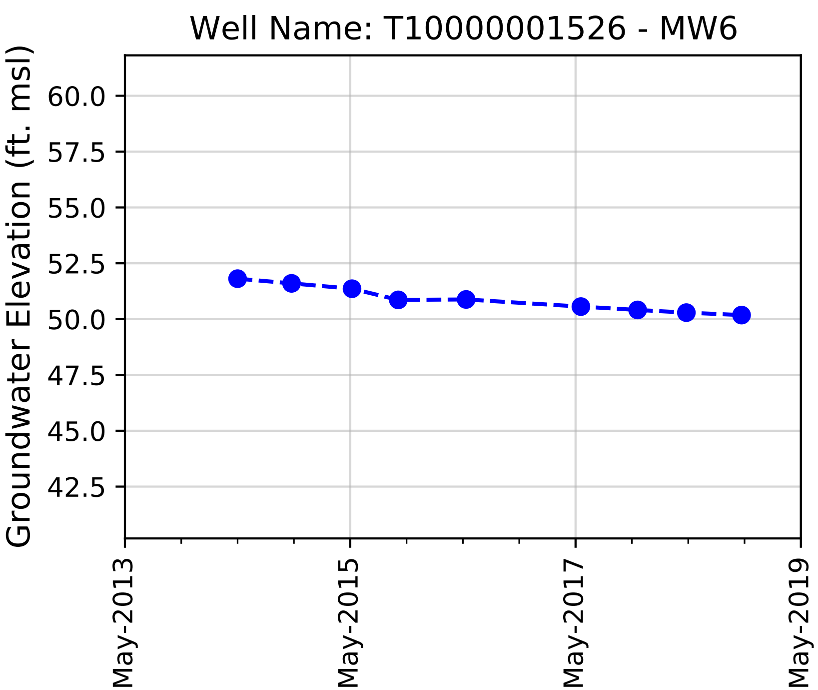

Well Name: T10000001526 - MW1
60.0
57.5
55.0
52.5
50.0
47.5
45.0
42.5
May-2013
May-2015
May-2017
May-2019

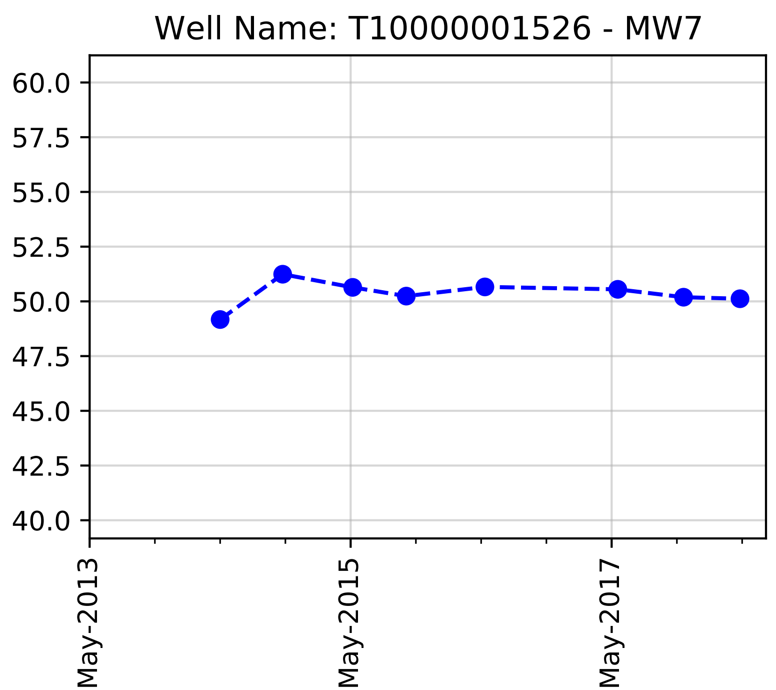

Well Name: T10000001526 - MW2
Groundwater Elevation (ft. msl)
60.0
57.5
55.0
52.5
50.0
47.5
45.0
42.5
May-2013
May-2015
May-2017

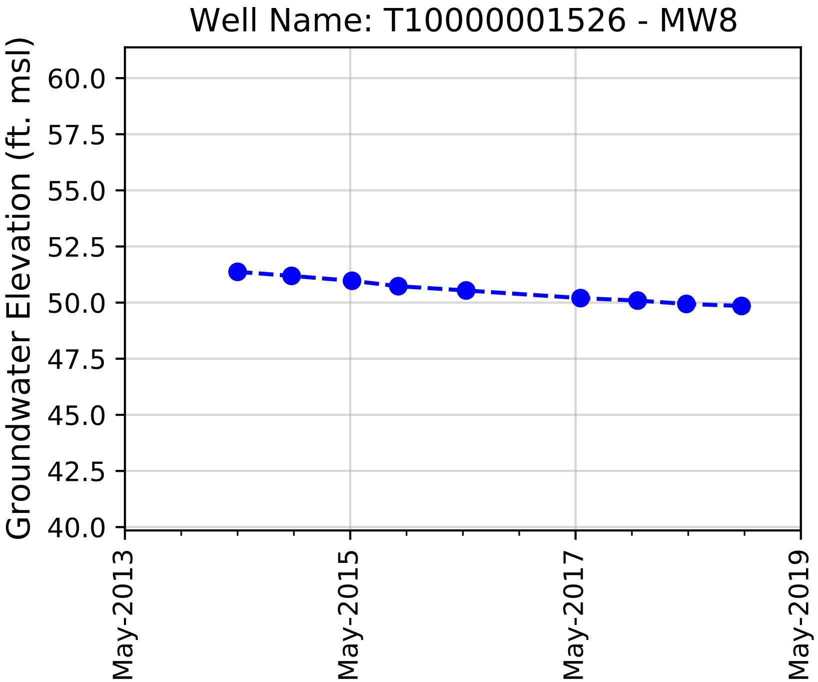

Well Name: T10000001526 - MW3
60
55
50
45
40
May-2013
May-2015
May-2017

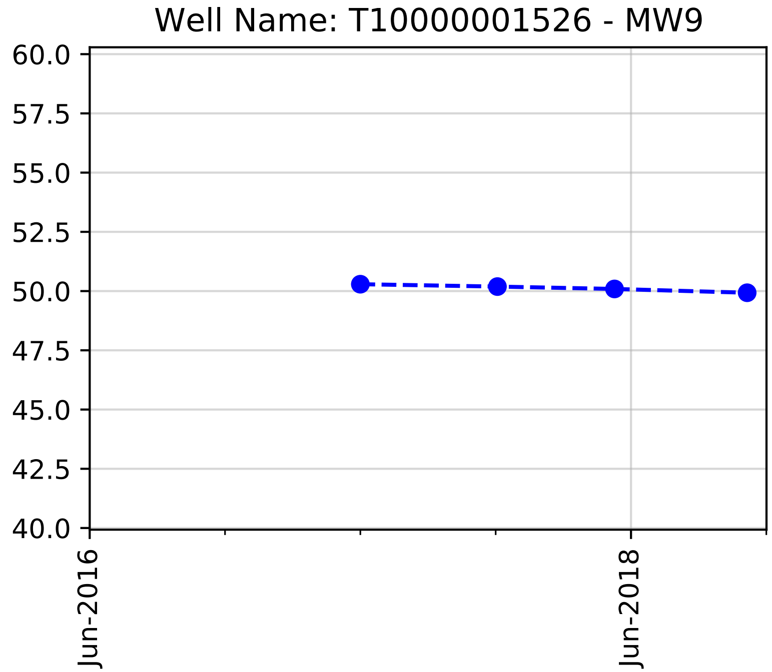

Well Name: T10000001526 - MW4
Groundwater Elevation (ft. msl)
60.0
57.5
55.0
52.5
50.0
47.5
45.0
42.5
May-2013
May-2015
May-2017

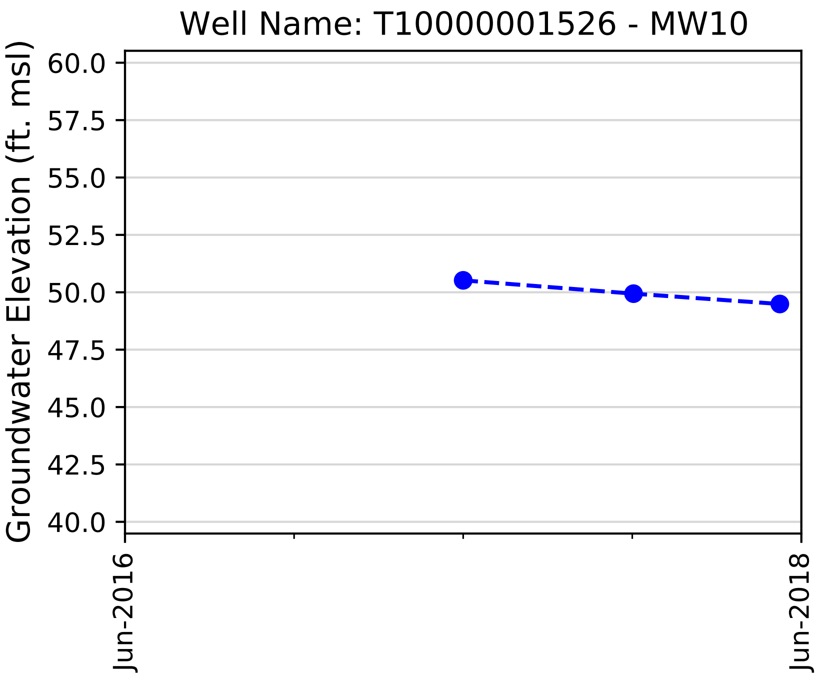

Well Name: T10000001526 - MW5
60.0
57.5
55.0
52.5
50.0
47.5
45.0
42.5
May-2013
May-2015
May-2017
May-2019

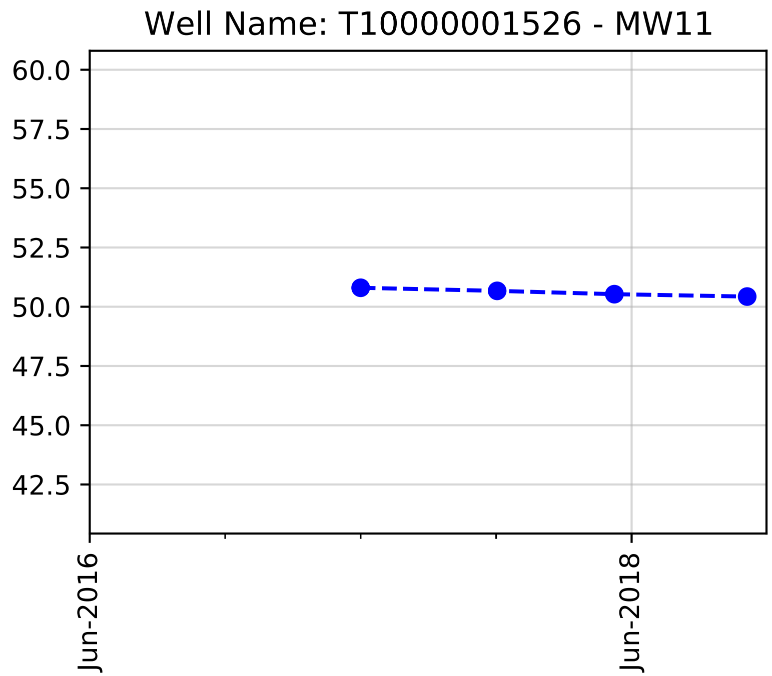

Well Name: T10000001526 - MW6
Groundwater Elevation (ft. msl)
60.0
57.5
55.0
52.5
50.0
47.5
45.0
42.5
May-2013
May-2015
May-2017
May-2019

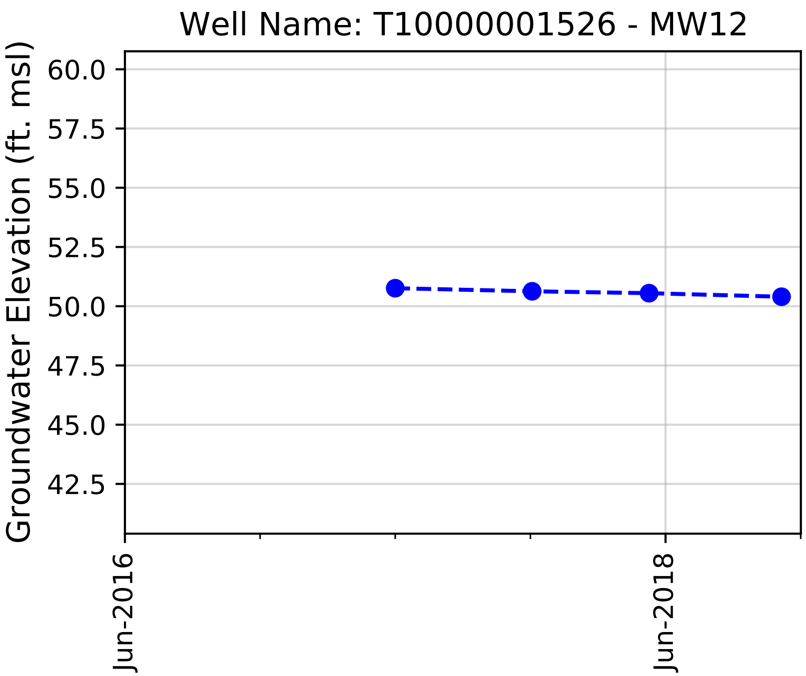

Well Name: T10000001526 - MW7
60.0
57.5
55.0
52.5
50.0
47.5
45.0
42.5
40.0
May-2013
May-2015
May-2017

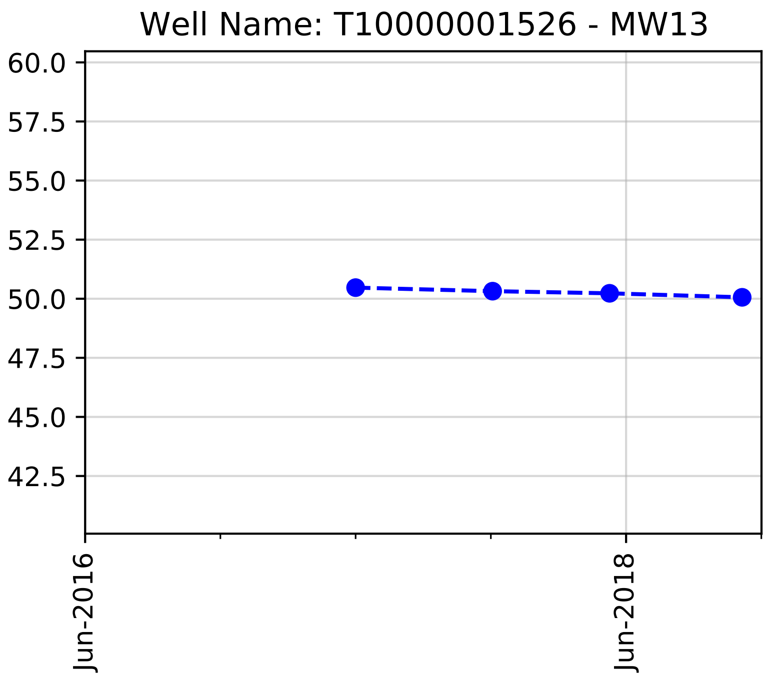

Well Name: T10000001526 - MW8
Groundwater Elevation (ft. msl)
60.0
57.5
55.0
52.5
50.0
47.5
45.0
42.5
40.0
May-2013
May-2015
May-2017
May-2019

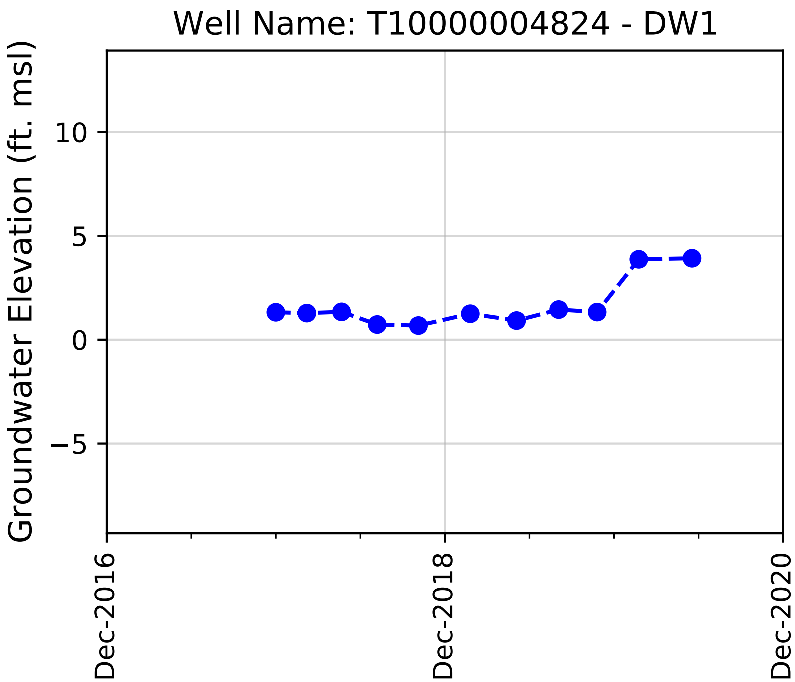

Well Name: T10000001526 - MW9
60.0
57.5
55.0
52.5
50.0
47.5
45.0
42.5
40.0
Jun-2016
Jun-2018

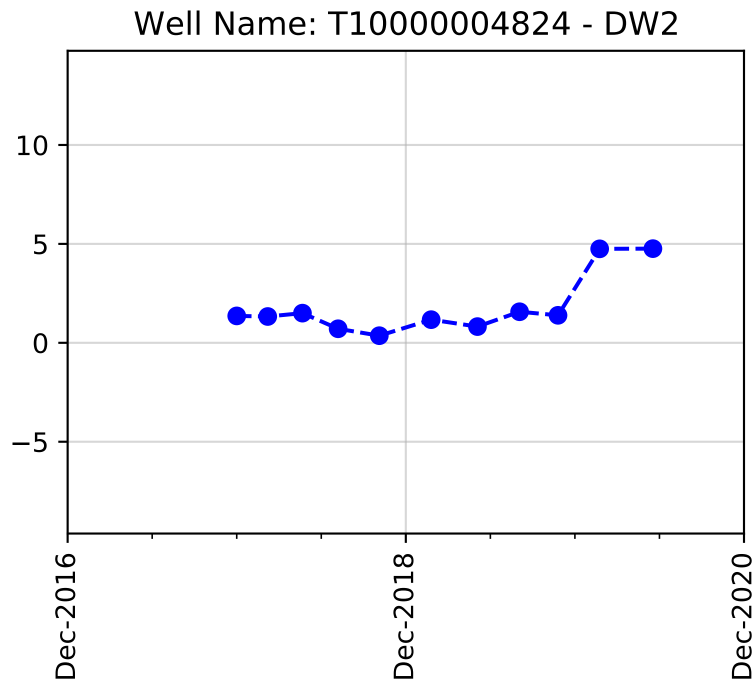

Well Name: T10000001526 - MW10
Groundwater Elevation (ft. msl)
60.0
57.5
55.0
52.5
50.0
47.5
45.0
42.5
40.0
Jun-2016
Jun-2018

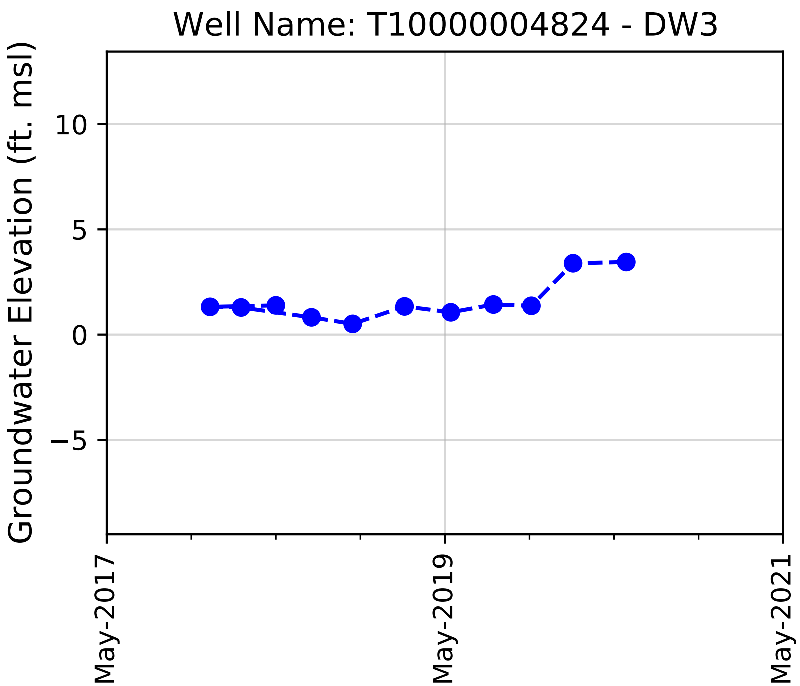

Well Name: T10000001526 - MW11
60.0
57.5
55.0
52.5
50.0
47.5
45.0
42.5
Jun-2016
Jun-2018

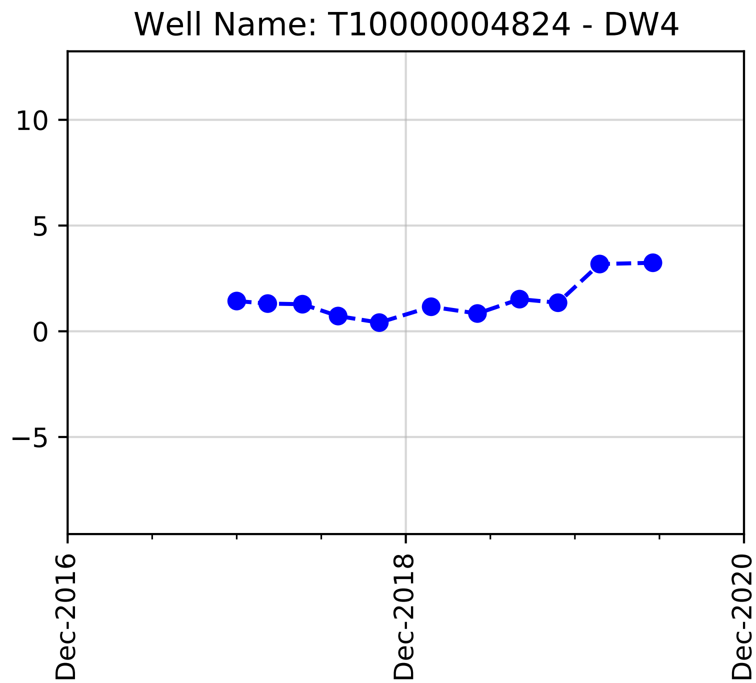

Well Name: T10000001526 - MW12
Groundwater Elevation (ft. msl)
60.0
57.5
55.0
52.5
50.0
47.5
45.0
42.5
Jun-2016
Jun-2018

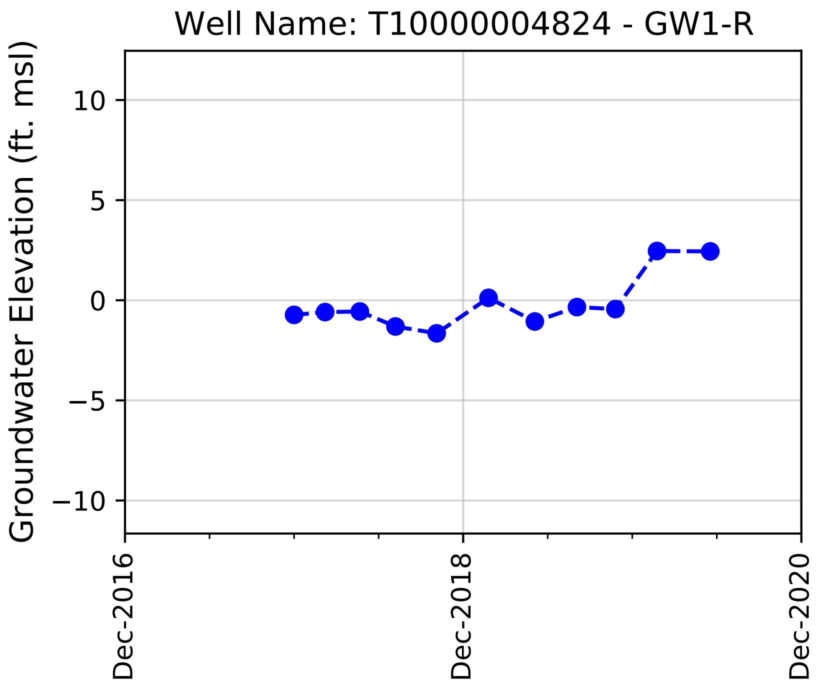

Well Name: T10000001526 - MW13
60.0
57.5
55.0
52.5
50.0
47.5
45.0
42.5
Jun-2016
Jun-2018

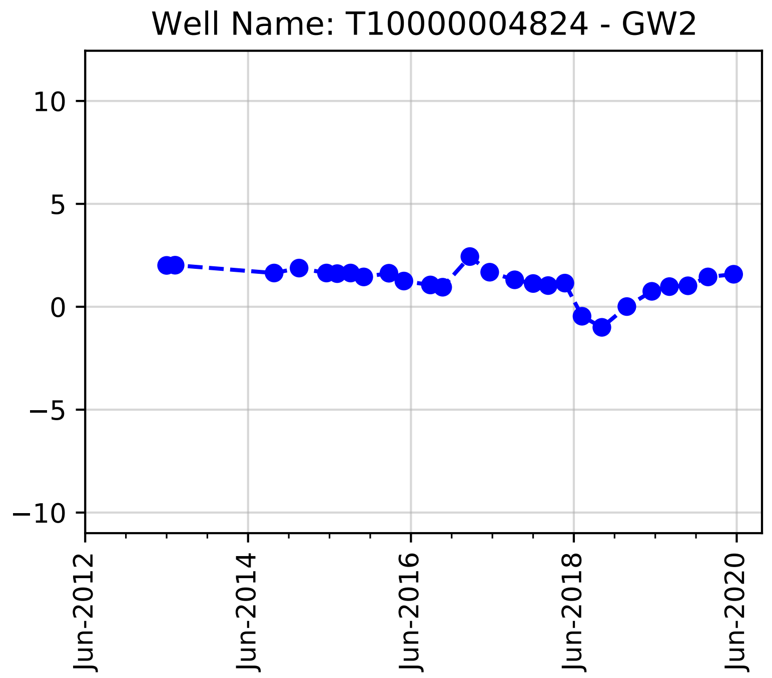

Well Name: T10000004824 - DW1
Groundwater Elevation (ft. msl)
10
5
0
−5
Dec-2016
Dec-2018
Dec-2020

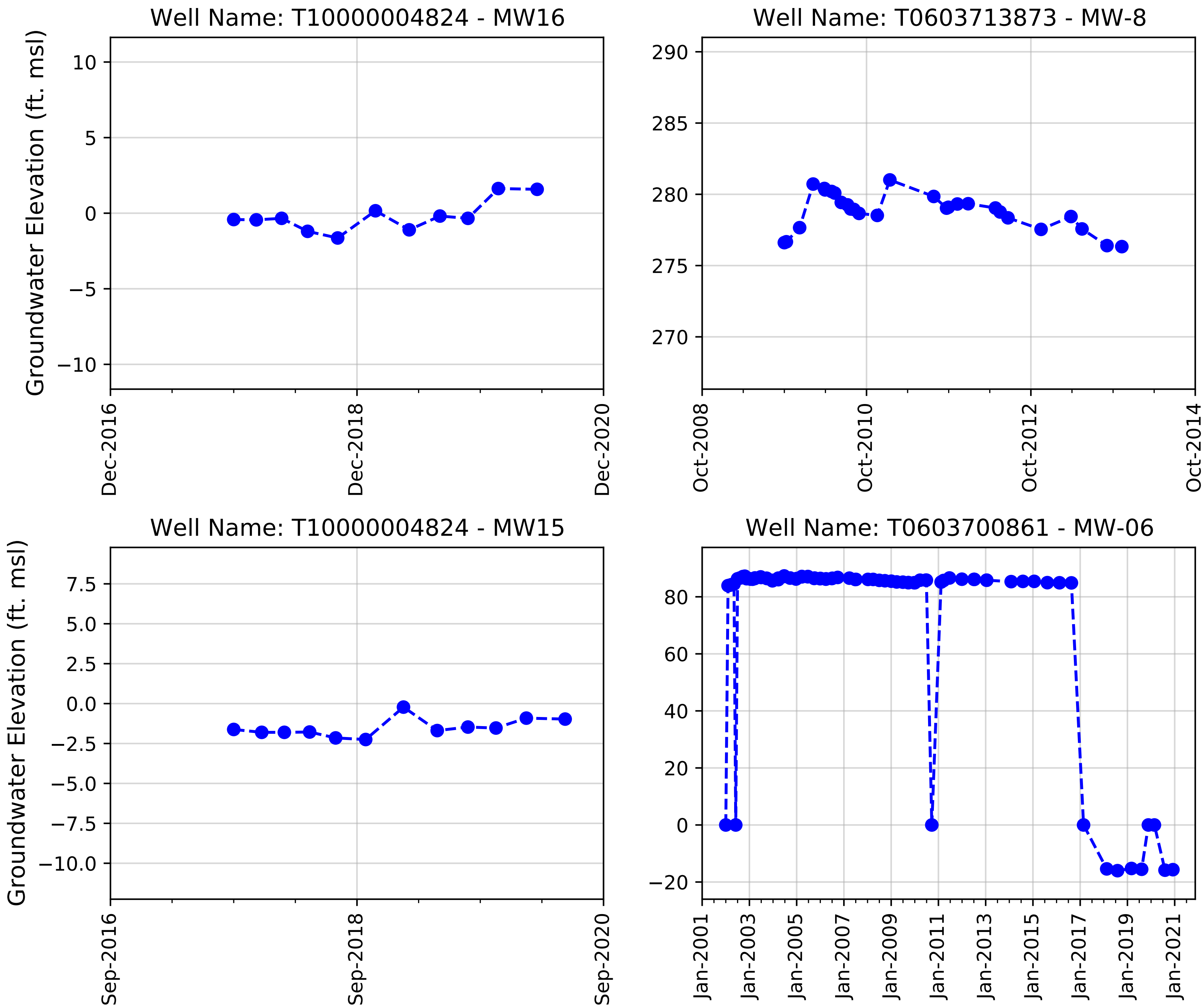

Well Name: T10000004824 - DW2
10
5
0
−5
Dec-2016
Dec-2018
Dec-2020

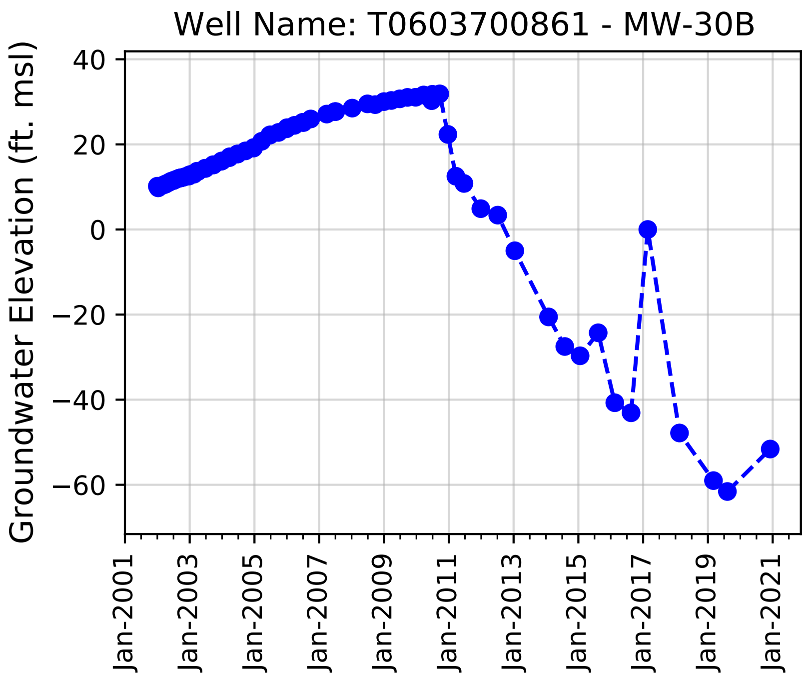

Well Name: T10000004824 - DW3
Groundwater Elevation (ft. msl)
10
5
0
−5
May-2017
May-2019
May-2021

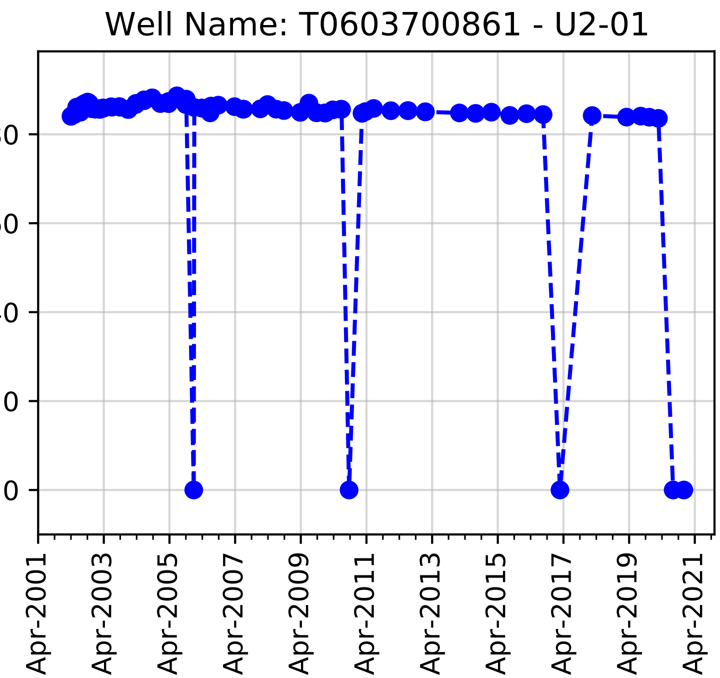

Well Name: T10000004824 - DW4
10
5
0
−5
Dec-2016
Dec-2018
Dec-2020

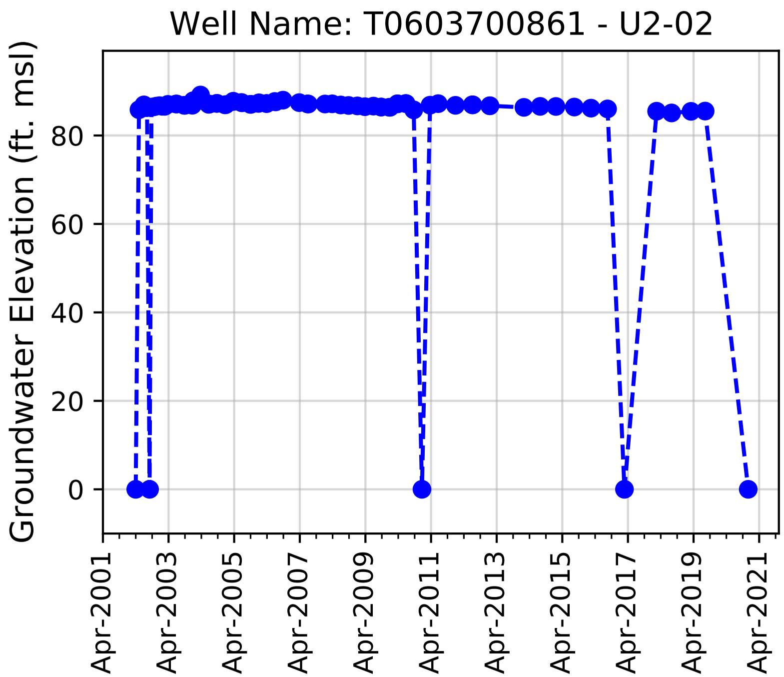

Well Name: T10000004824 - GW1-R
Groundwater Elevation (ft. msl)
10
5
0
−5
−10
Dec-2016
Dec-2018
Dec-2020

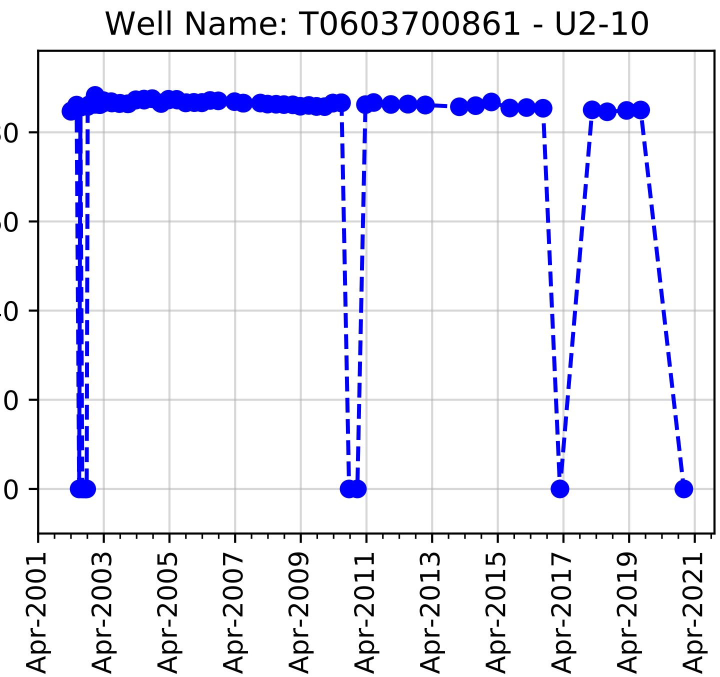

Well Name: T10000004824 - GW2
10
5
0
−5
−10
Jun-2012
Jun-2014
Jun-2016
Jun-2018
Jun-2020

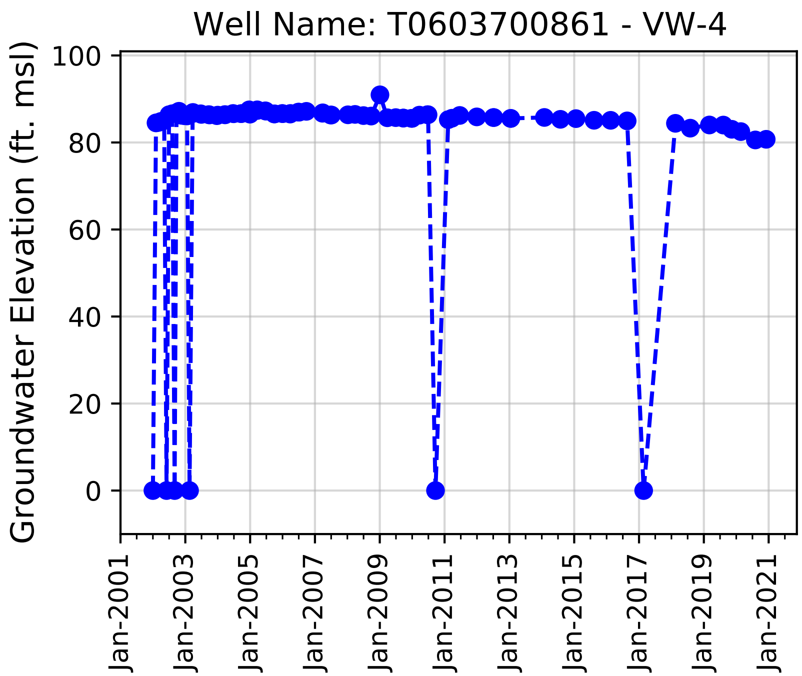

Well Name: T10000004824 - MW16
Well Name: T0603713873 - MW-8
Well Name: T10000004824 - MW15
Well Name: T0603700861 - MW-06
Groundwater Elevation (ft. msl)
Groundwater Elevation (ft. msl)
Dec-2016
Dec-2018
Dec-2020
Oct-2008
Oct-2010
Oct-2012
Oct-2014
Sep-2016
Sep-2018
Sep-2020
Jan-2001
Jan-2003
Jan-2005
Jan-2007
Jan-2009
Jan-2011
Jan-2013
Jan-2015
Jan-2017
Jan-2019
Jan-2021

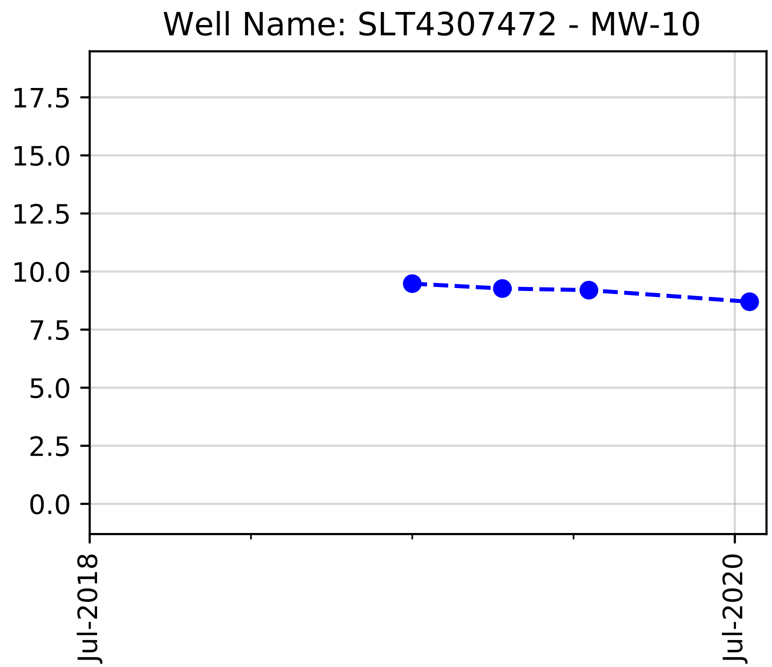

Well Name: T0603700861 - MW-30B
Groundwater Elevation (ft. msl)
40
20
0
−20
−40
−60
Jan-2001
Jan-2003
Jan-2005
Jan-2007
Jan-2009
Jan-2011
Jan-2013
Jan-2015
Jan-2017
Jan-2019
Jan-2021

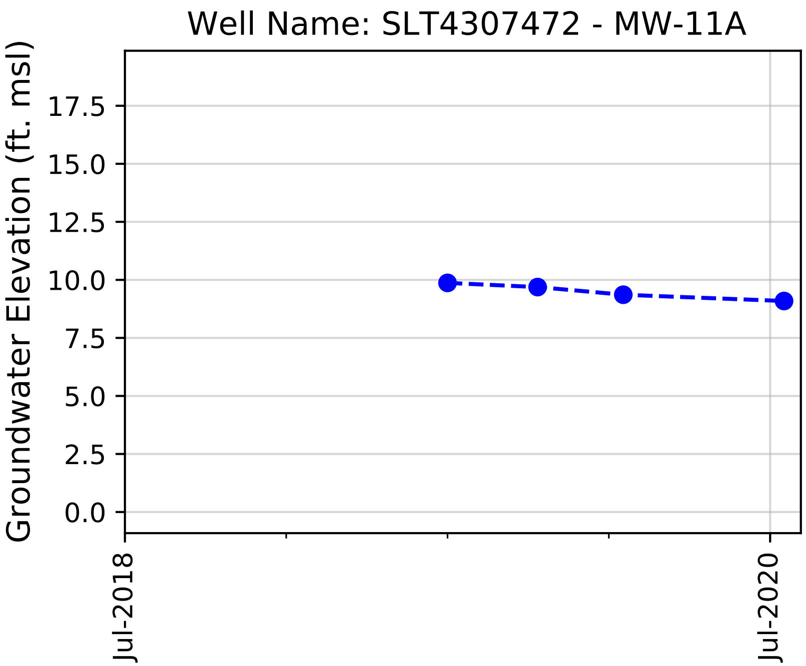

Well Name: T0603700861 - U2-01
80
60
40
20
0
Apr-2001
Apr-2003
Apr-2005
Apr-2007
Apr-2009
Apr-2011
Apr-2013
Apr-2015
Apr-2017
Apr-2019
Apr-2021

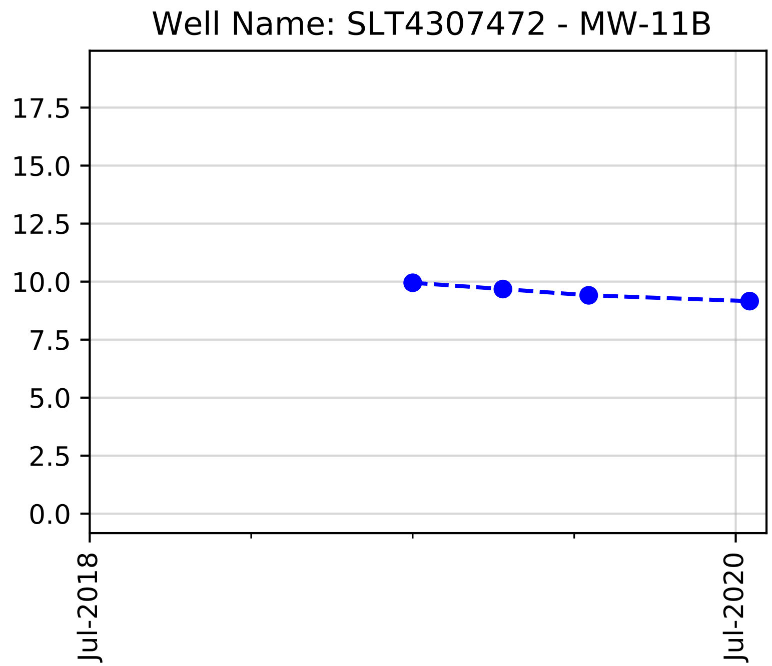

Well Name: T0603700861 - U2-02
Groundwater Elevation (ft. msl)
80
60
40
20
0
Apr-2001
Apr-2003
Apr-2005
Apr-2007
Apr-2009
Apr-2011
Apr-2013
Apr-2015
Apr-2017
Apr-2019
Apr-2021

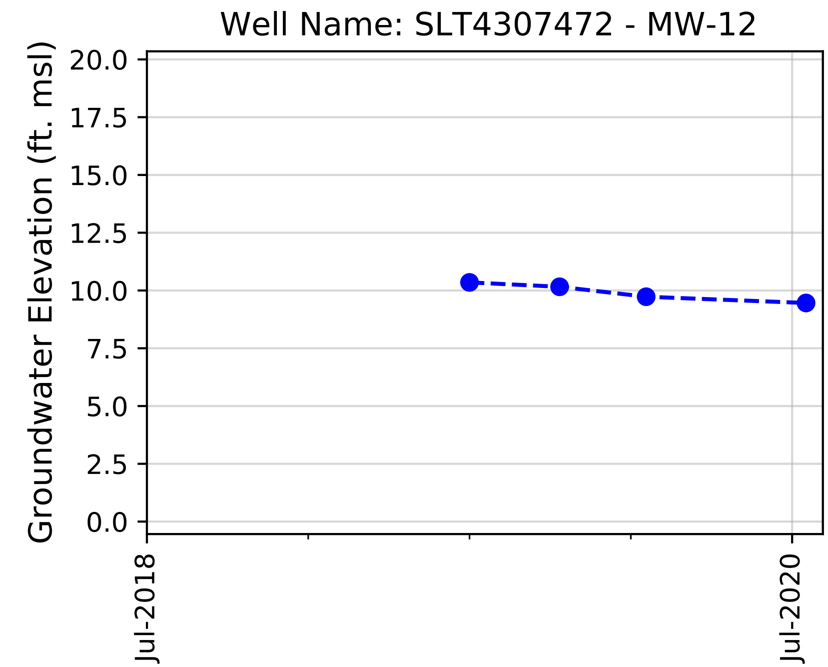

Well Name: T0603700861 - U2-10
80
60
40
20
0
Apr-2001
Apr-2003
Apr-2005
Apr-2007
Apr-2009
Apr-2011
Apr-2013
Apr-2015
Apr-2017
Apr-2019
Apr-2021

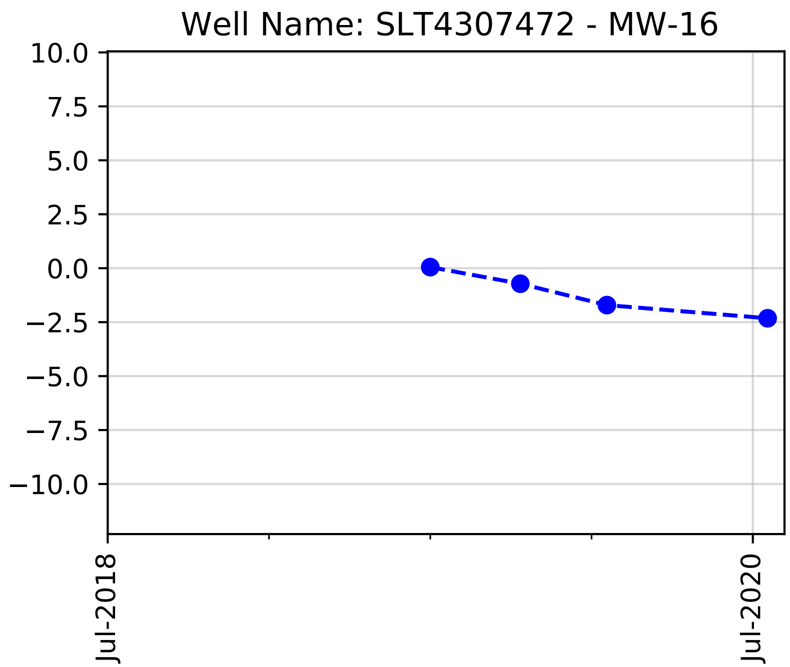

Well Name: T0603700861 - VW-4
Groundwater Elevation (ft. msl)
100
80
60
40
20
0
Jan-2001
Jan-2003
Jan-2005
Jan-2007
Jan-2009
Jan-2011
Jan-2013
Jan-2015
Jan-2017
Jan-2019
Jan-2021

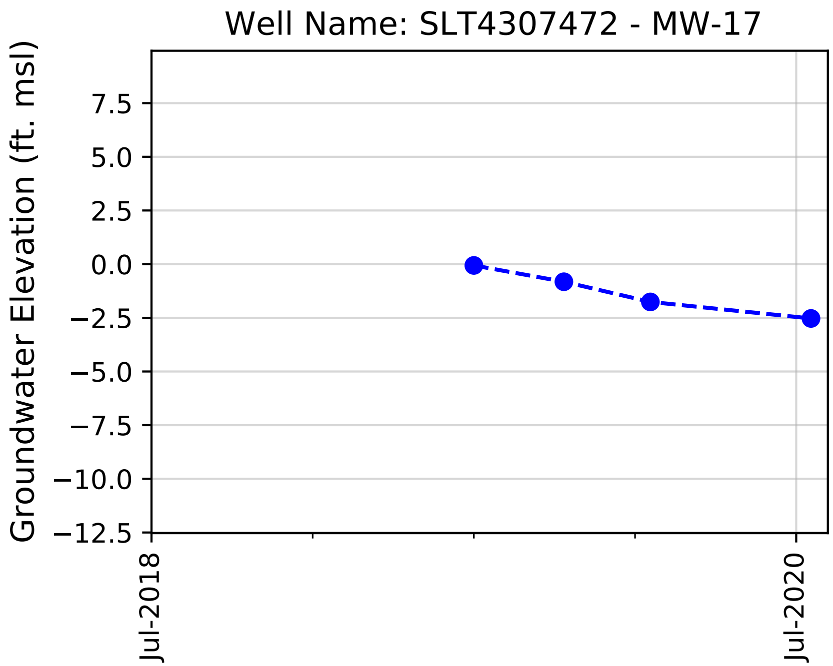

Well Name: SLT4307472 - MW-10
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Jul-2018
Jul-2020

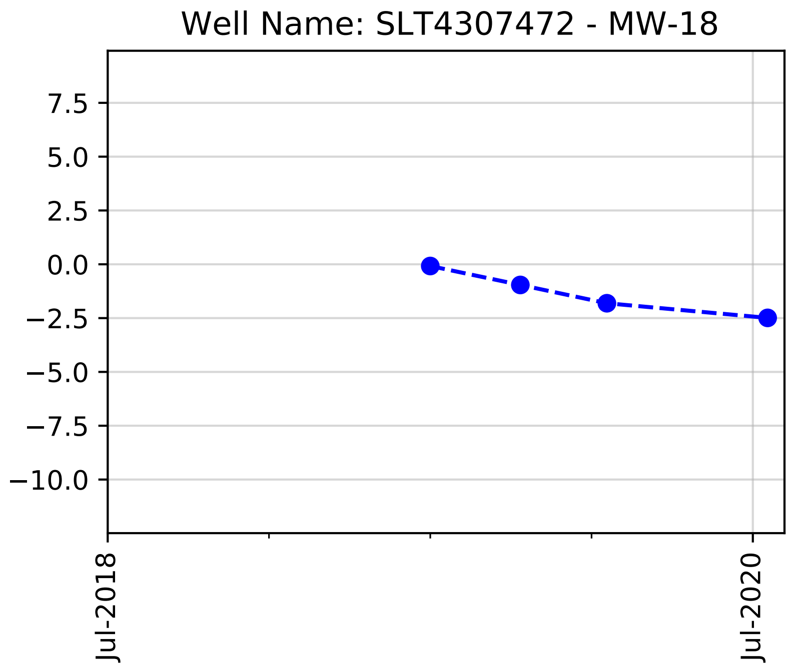

Well Name: SLT4307472 - MW-11A
Groundwater Elevation (ft. msl)
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Jul-2018
Jul-2020

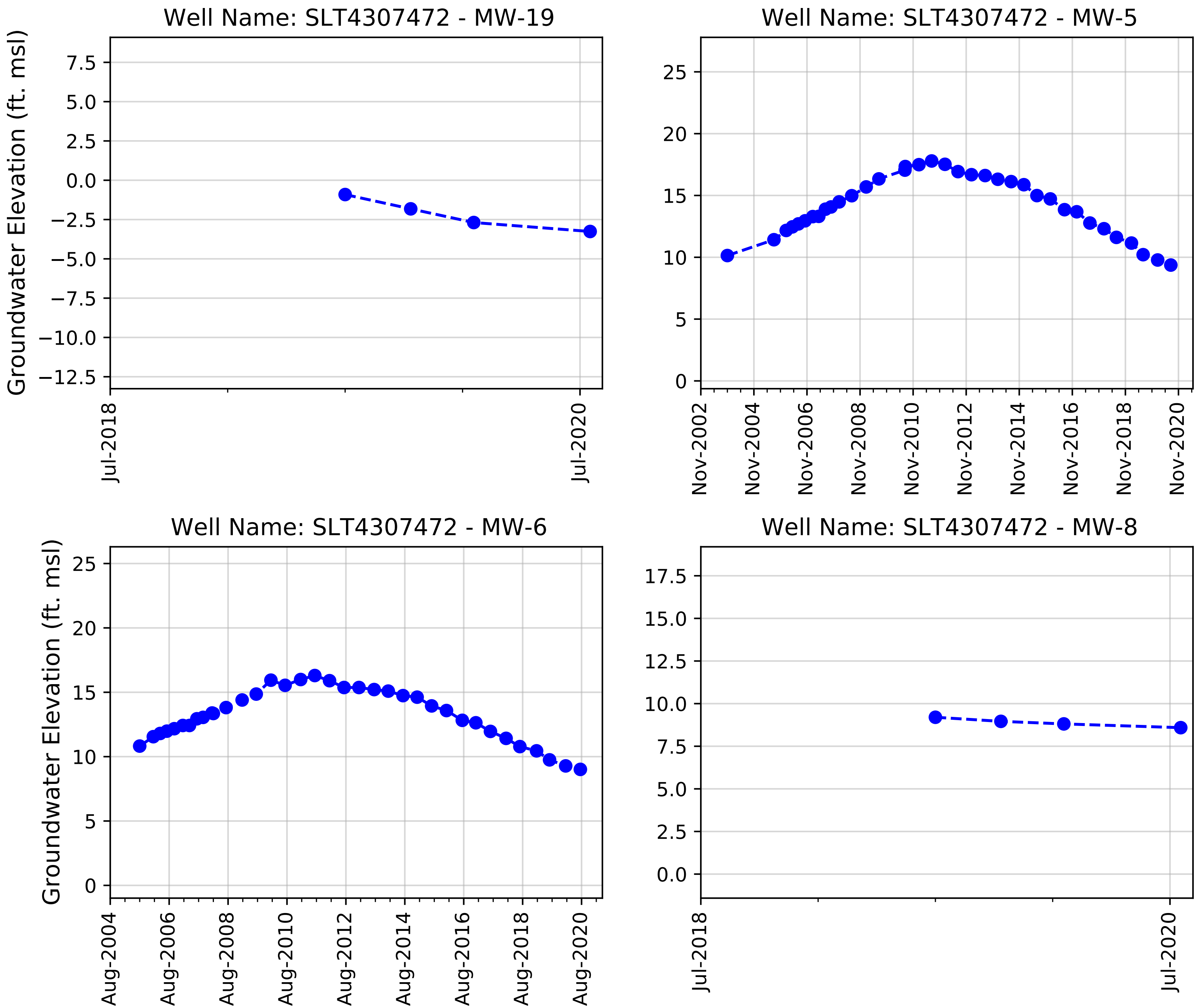

Well Name: SLT4307472 - MW-11B
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Jul-2018
Jul-2020

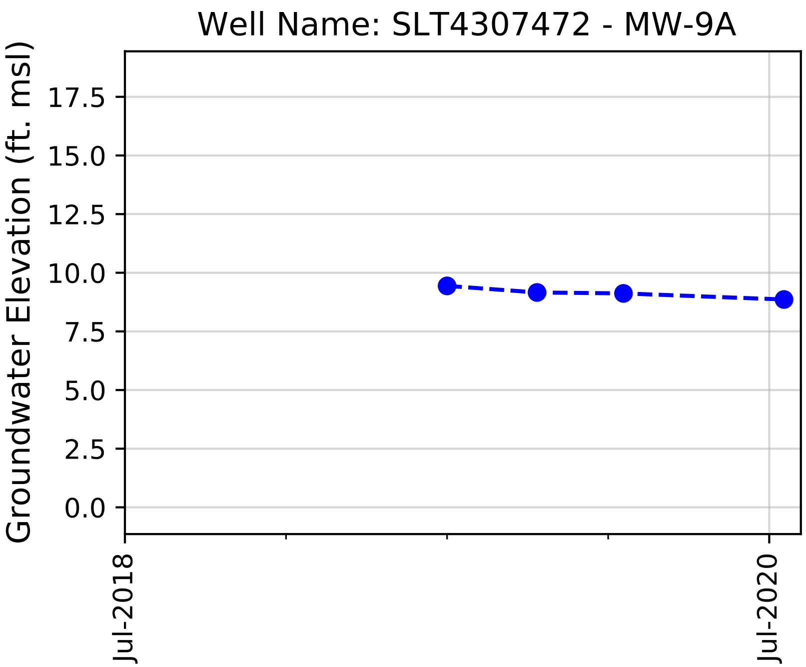

Well Name: SLT4307472 - MW-12
Groundwater Elevation (ft. msl)
20.0
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Jul-2018
Jul-2020

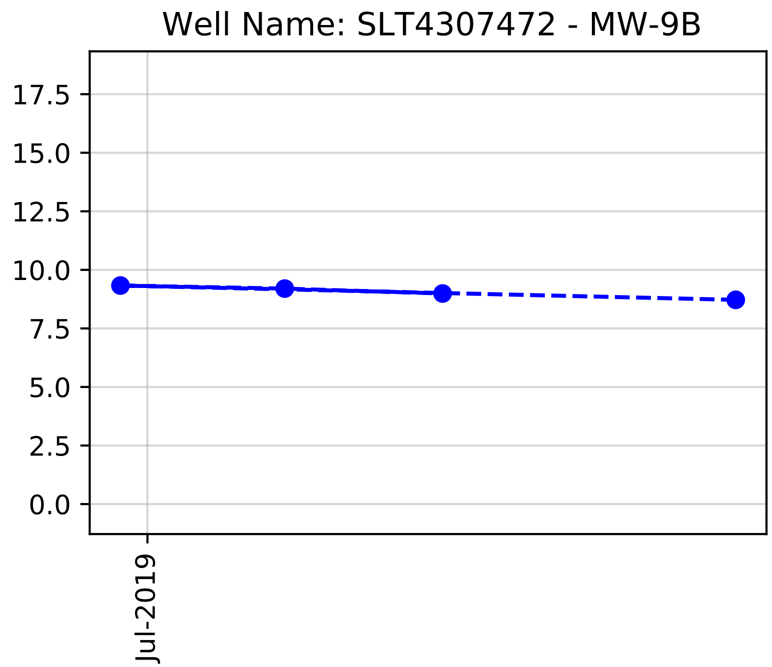

Well Name: SLT4307472 - MW-16
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
Jul-2018
Jul-2020

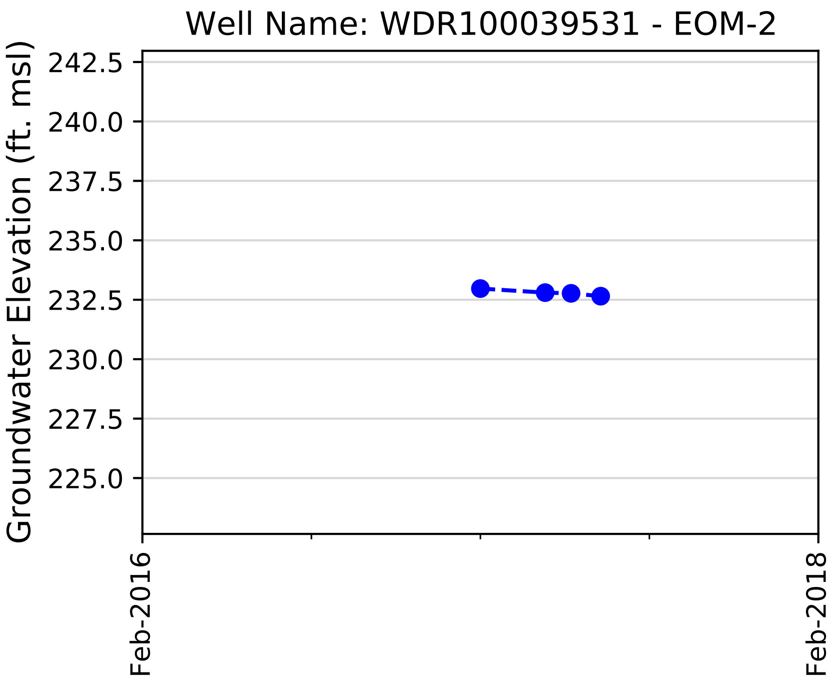

Well Name: SLT4307472 - MW-17
Groundwater Elevation (ft. msl)
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−12.5
Jul-2018
Jul-2020

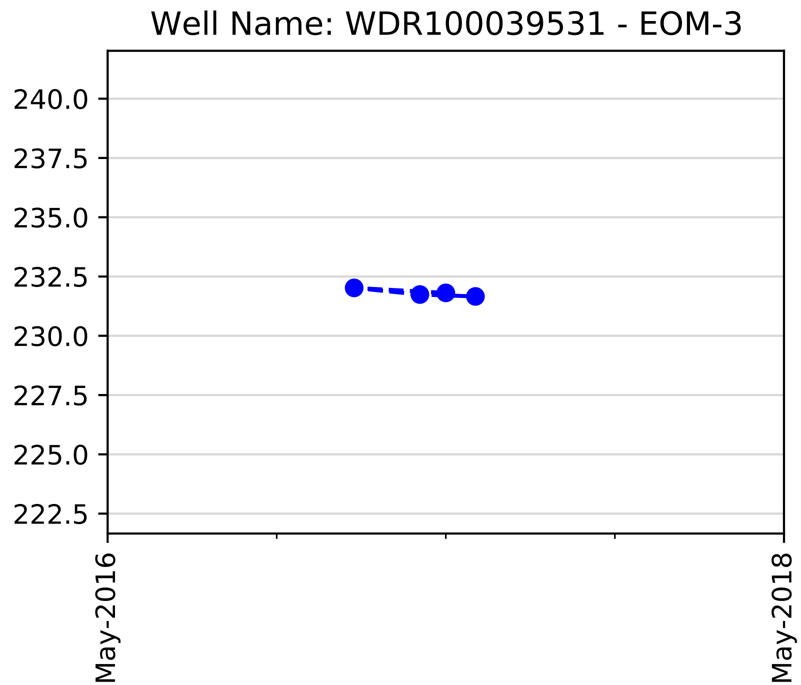

Well Name: SLT4307472 - MW-18
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
Jul-2018
Jul-2020

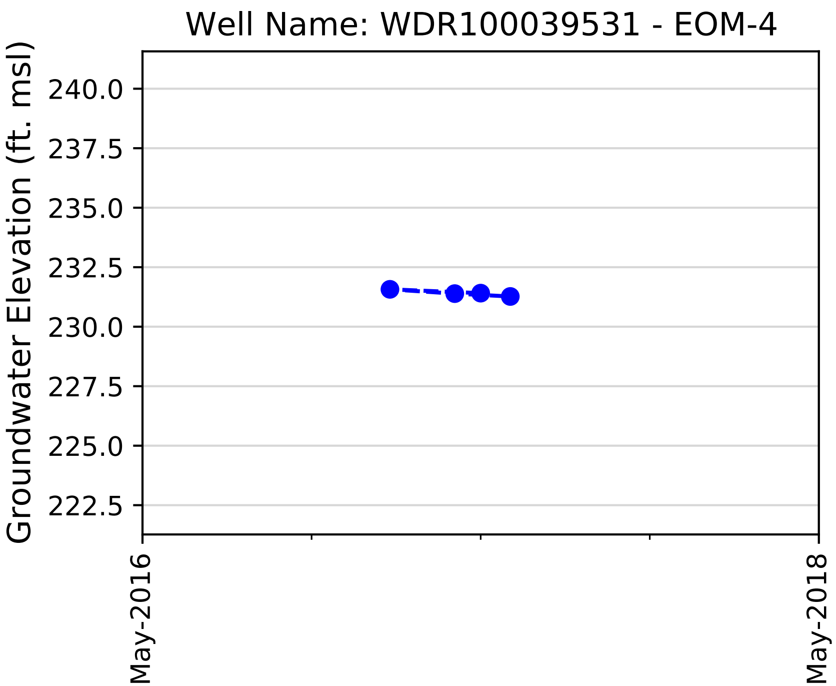

Well Name: SLT4307472 - MW-19
Groundwater Elevation (ft. msl)
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−12.5
Jul-2018
Jul-2020
Well Name: SLT4307472 - MW-5
25
20
15
10
5
0
Nov-2002
Nov-2004
Nov-2006
Nov-2008
Nov-2010
Nov-2012
Nov-2014
Nov-2016
Nov-2018
Nov-2020
Well Name: SLT4307472 - MW-6
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
Aug-2004
Aug-2006
Aug-2008
Aug-2010
Aug-2012
Aug-2014
Aug-2016
Aug-2018
Aug-2020
Well Name: SLT4307472 - MW-8
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Jul-2018
Jul-2020

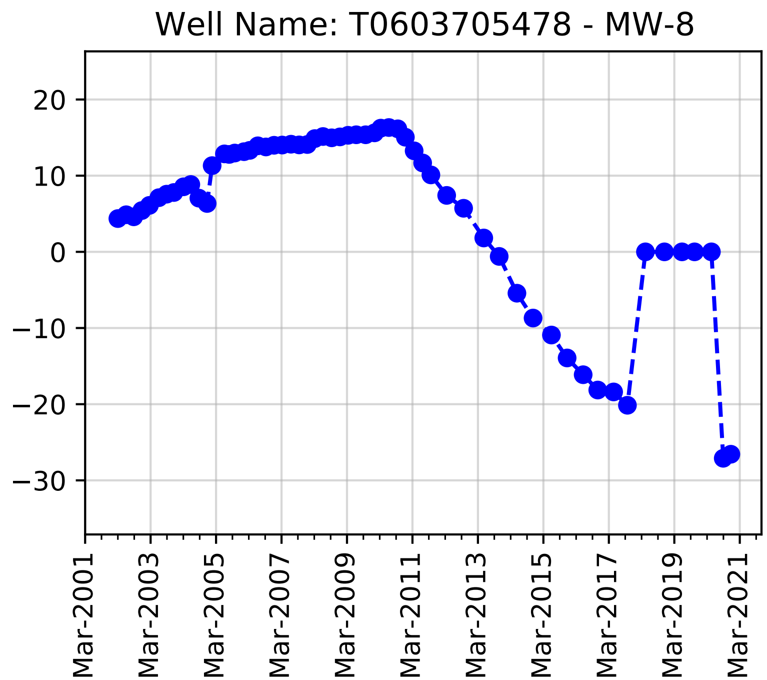

Well Name: SLT4307472 - MW-9A
Groundwater Elevation (ft. msl)
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Jul-2018
Jul-2020

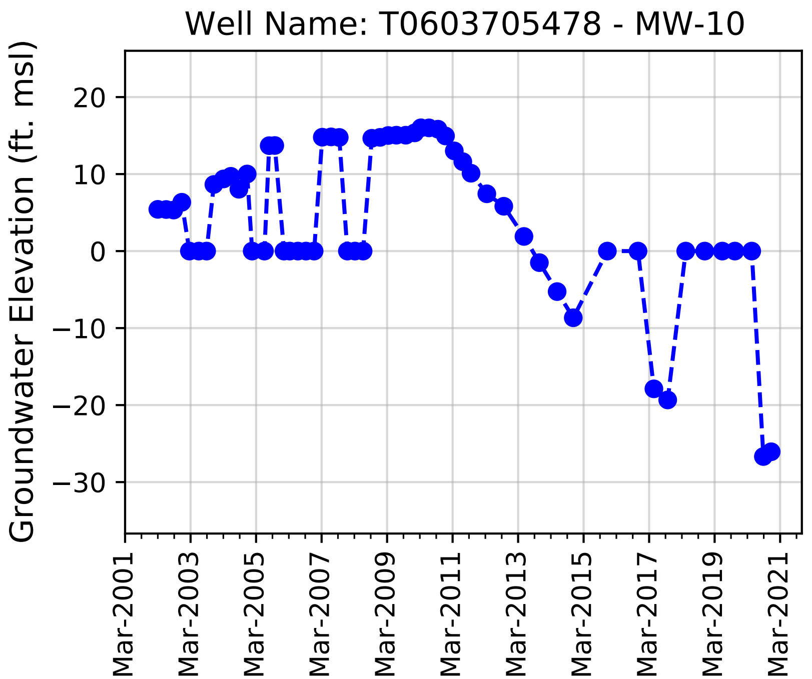

Well Name: SLT4307472 - MW-9B
17.5
15.0
12.5
10.0
7.5
5.0
2.5
0.0
Jul-2019

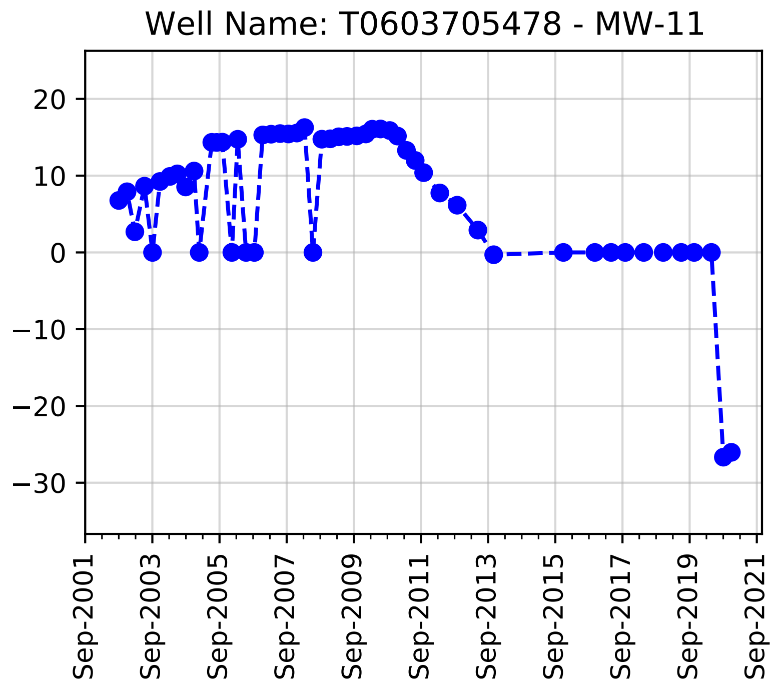

Well Name: WDR100039531 - EOM-2
Groundwater Elevation (ft. msl)
242.5
240.0
237.5
235.0
232.5
230.0
227.5
225.0
Feb-2016
Feb-2018

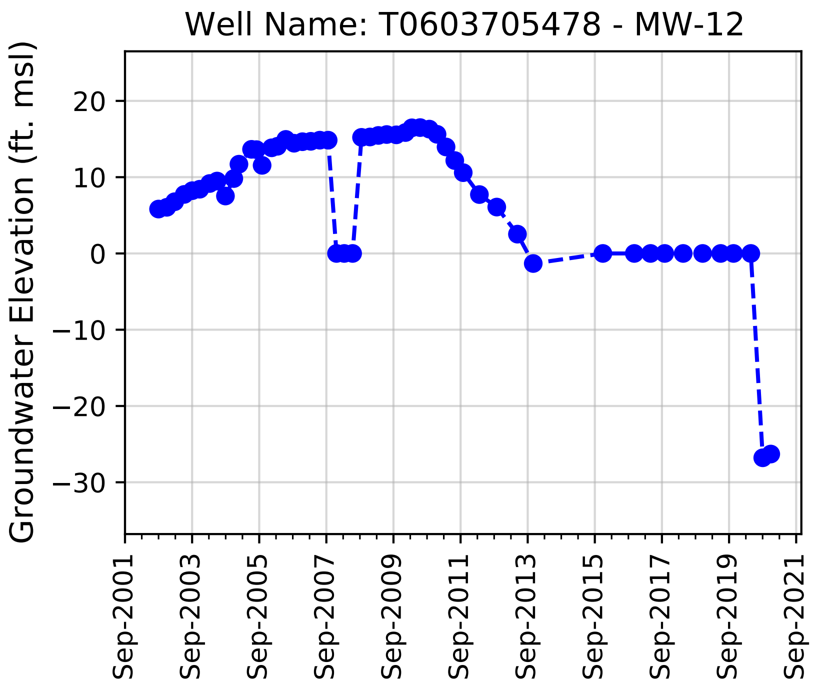

Well Name: WDR100039531 - EOM-3
240.0
237.5
235.0
232.5
230.0
227.5
225.0
222.5
May-2016
May-2018

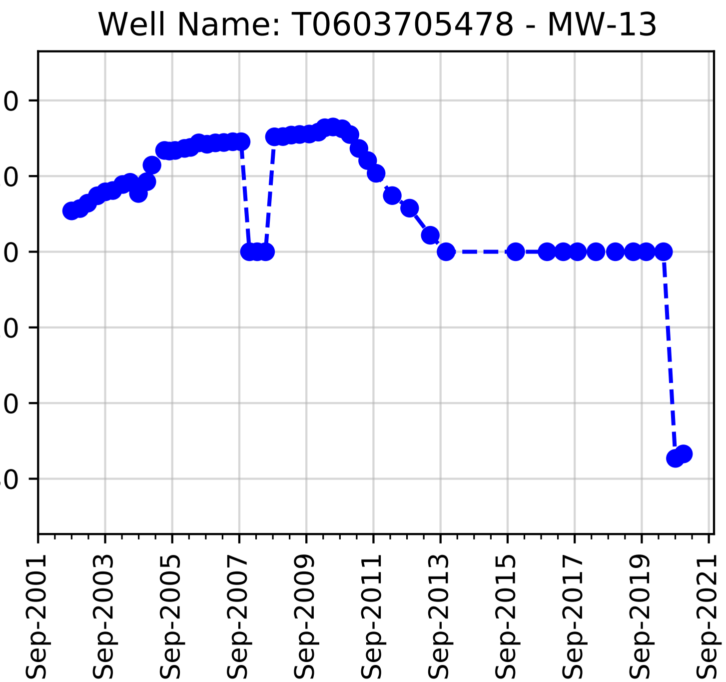

Well Name: WDR100039531 - EOM-4
Groundwater Elevation (ft. msl)
240.0
237.5
235.0
232.5
230.0
227.5
225.0
222.5
May-2016
May-2018


Well Name: T0603705478 - MW-8
20
10
0
−10
−20
−30
Mar-2001
Mar-2003
Mar-2005
Mar-2007
Mar-2009
Mar-2011
Mar-2013
Mar-2015
Mar-2017
Mar-2019
Mar-2021


Well Name: T0603705478 - MW-10
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
−30
Mar-2001
Mar-2003
Mar-2005
Mar-2007
Mar-2009
Mar-2011
Mar-2013
Mar-2015
Mar-2017
Mar-2019
Mar-2021


Well Name: T0603705478 - MW-11
20
10
0
−10
−20
−30
Sep-2001
Sep-2003
Sep-2005
Sep-2007
Sep-2009
Sep-2011
Sep-2013
Sep-2015
Sep-2017
Sep-2019
Sep-2021


Well Name: T0603705478 - MW-12
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
−30
Sep-2001
Sep-2003
Sep-2005
Sep-2007
Sep-2009
Sep-2011
Sep-2013
Sep-2015
Sep-2017
Sep-2019
Sep-2021


Well Name: T0603705478 - MW-13
20
10
0
−10
−20
−30
Sep-2001
Sep-2003
Sep-2005
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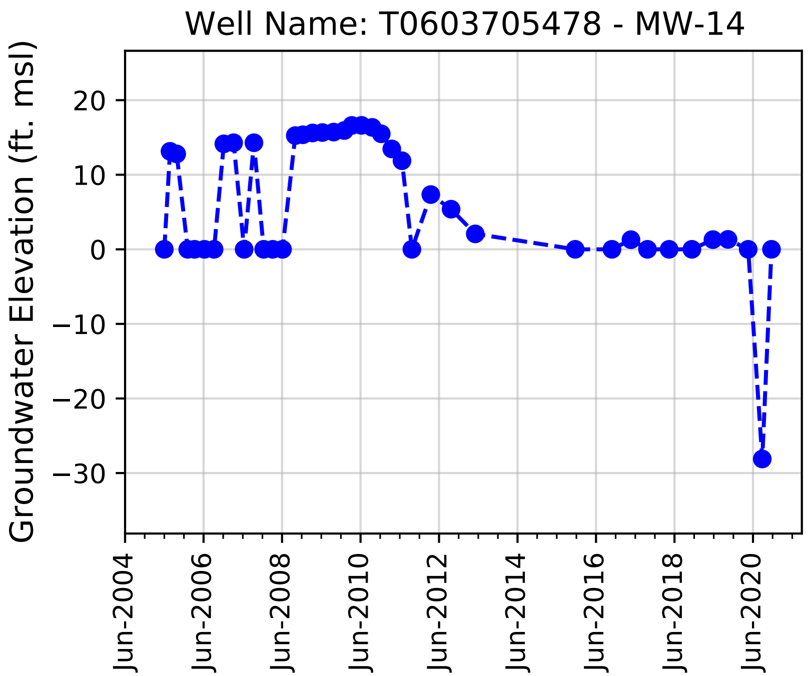
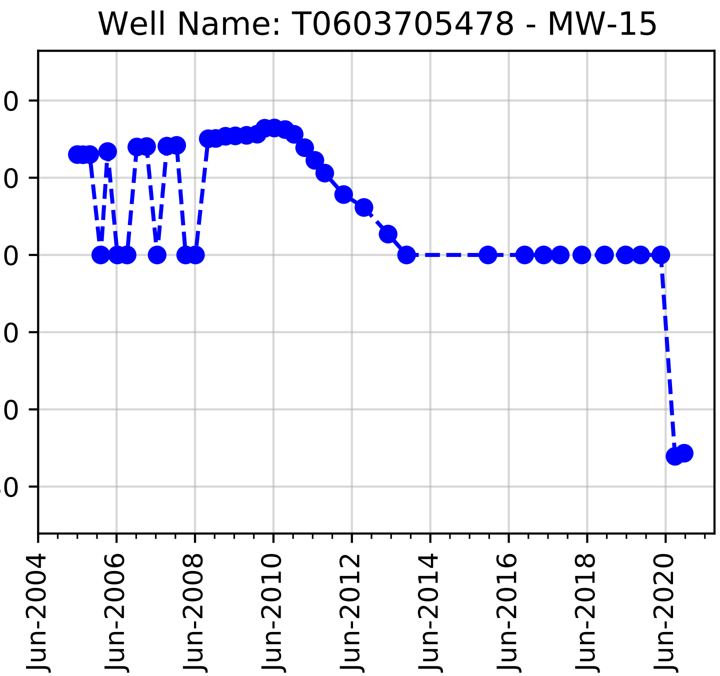
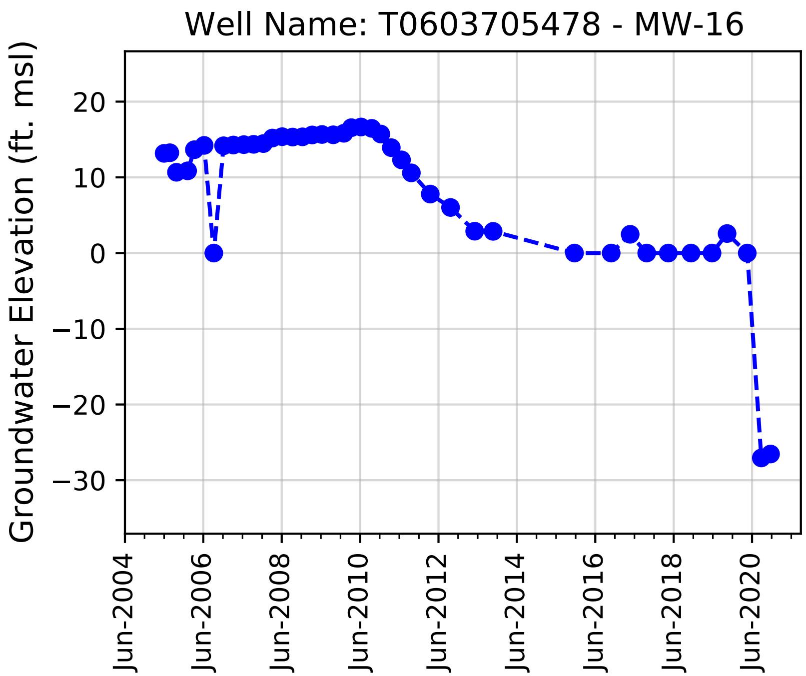
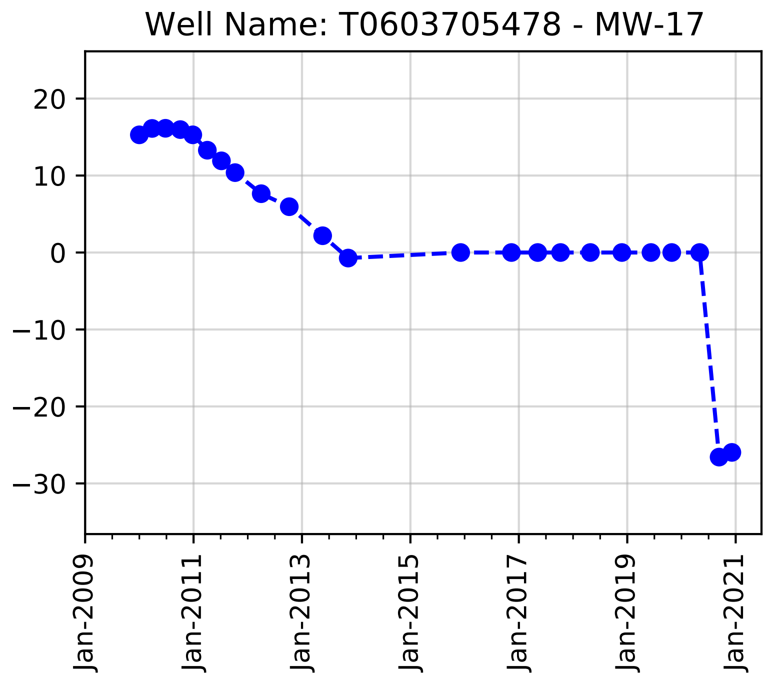
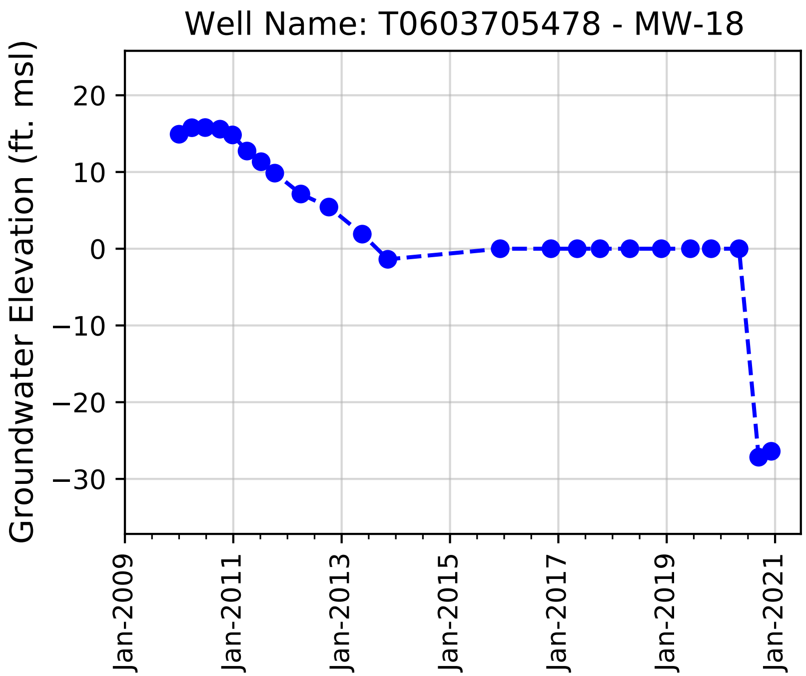
Sep-2009
Sep-2011
Sep-2013
Sep-2015
Sep-2017
Sep-2019
Sep-2021

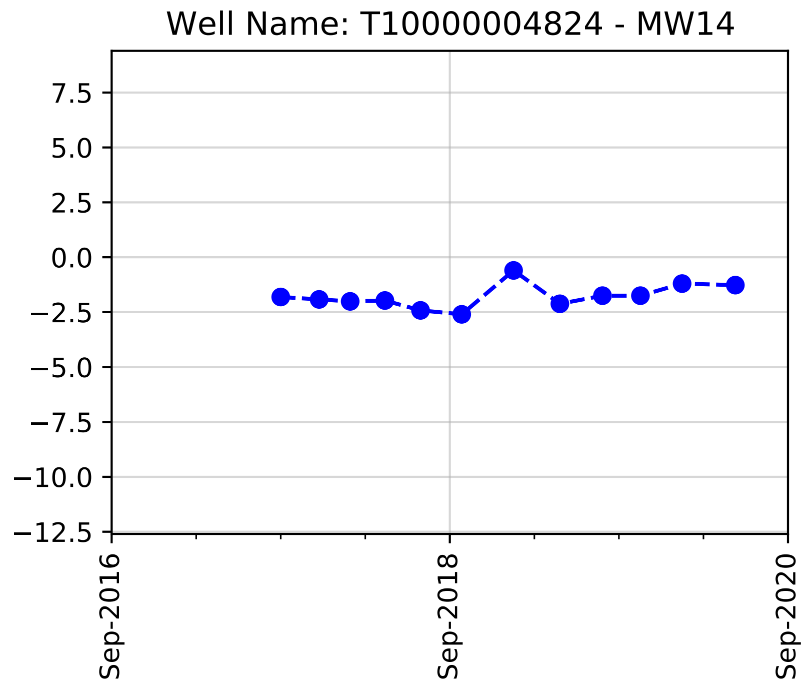

Well Name: T0603705478 - MW-14
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
−30
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016
Jun-2018
Jun-2020

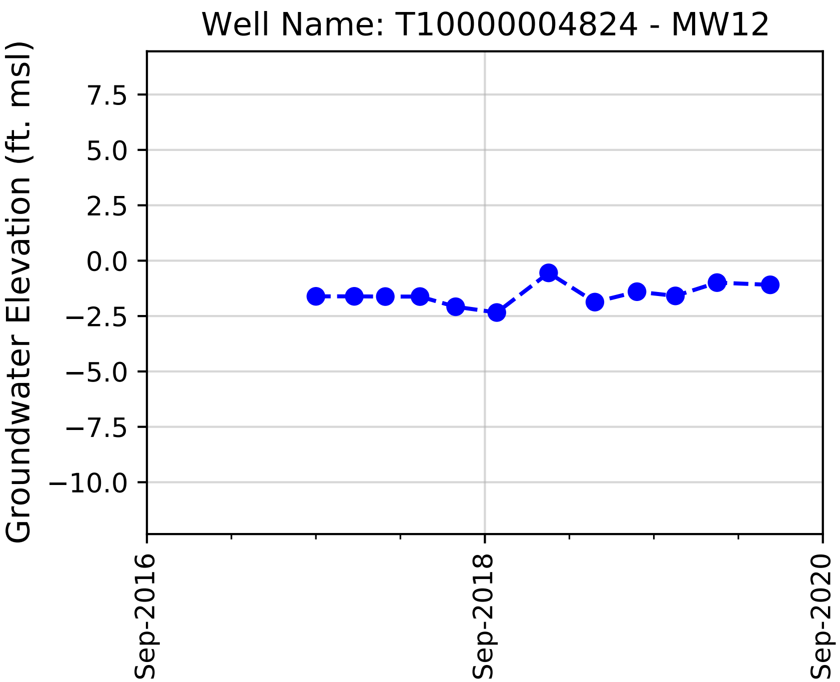

Well Name: T0603705478 - MW-15
20
10
0
−10
−20
−30
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016
Jun-2018
Jun-2020

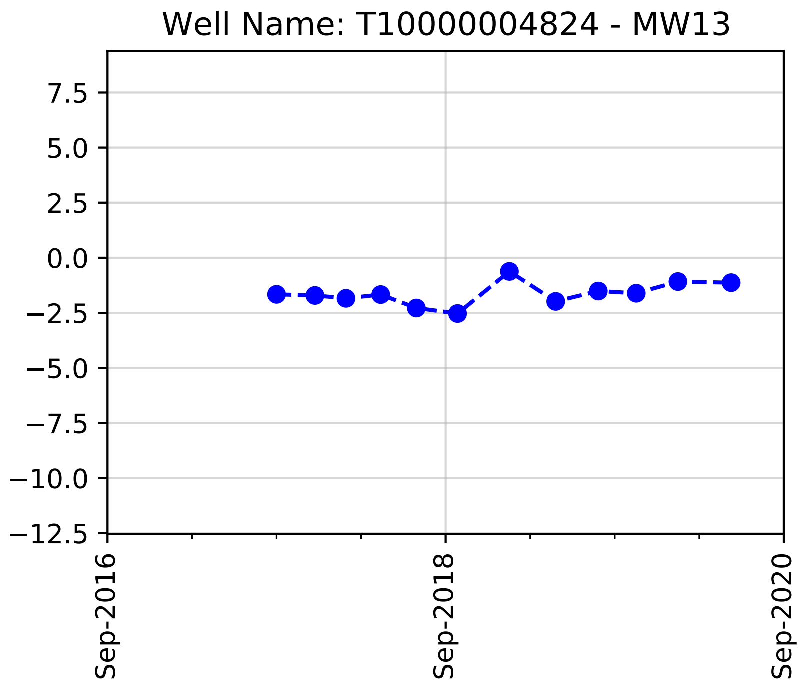

Well Name: T0603705478 - MW-16
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
−30
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016
Jun-2018
Jun-2020

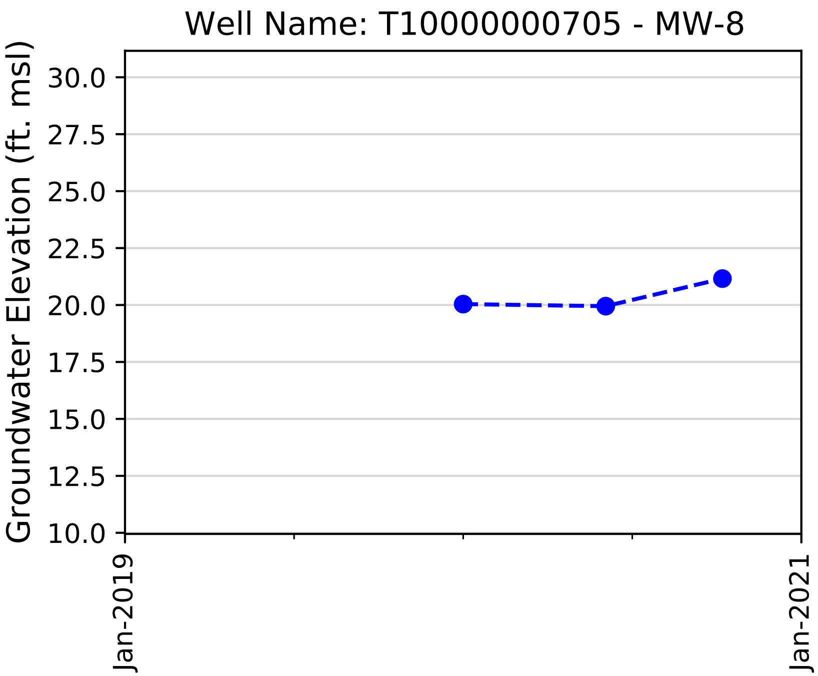

Well Name: T0603705478 - MW-17
20
10
0
−10
−20
−30
Jan-2009
Jan-2011
Jan-2013
Jan-2015
Jan-2017
Jan-2019
Jan-2021

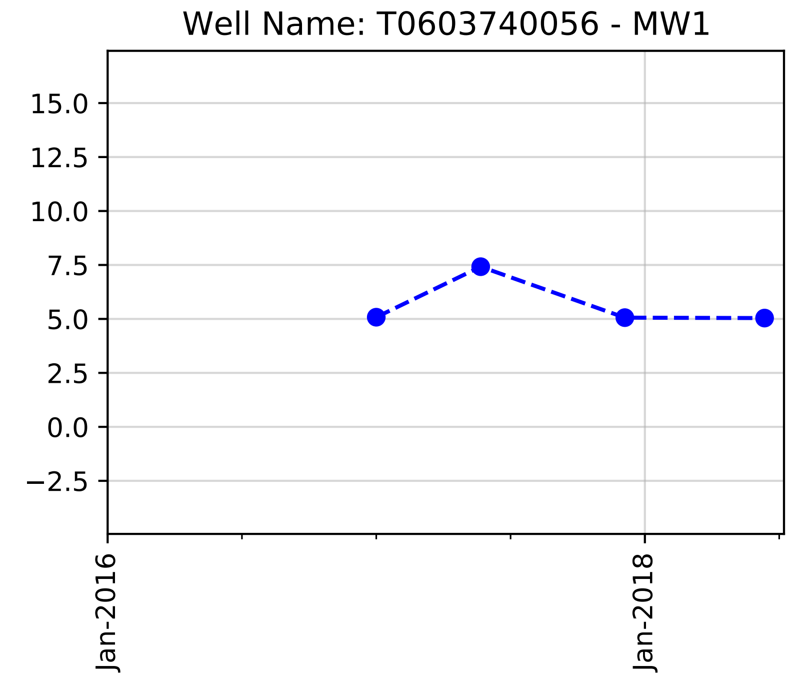

Well Name: T0603705478 - MW-18
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
−30
Jan-2009
Jan-2011
Jan-2013
Jan-2015
Jan-2017
Jan-2019
Jan-2021

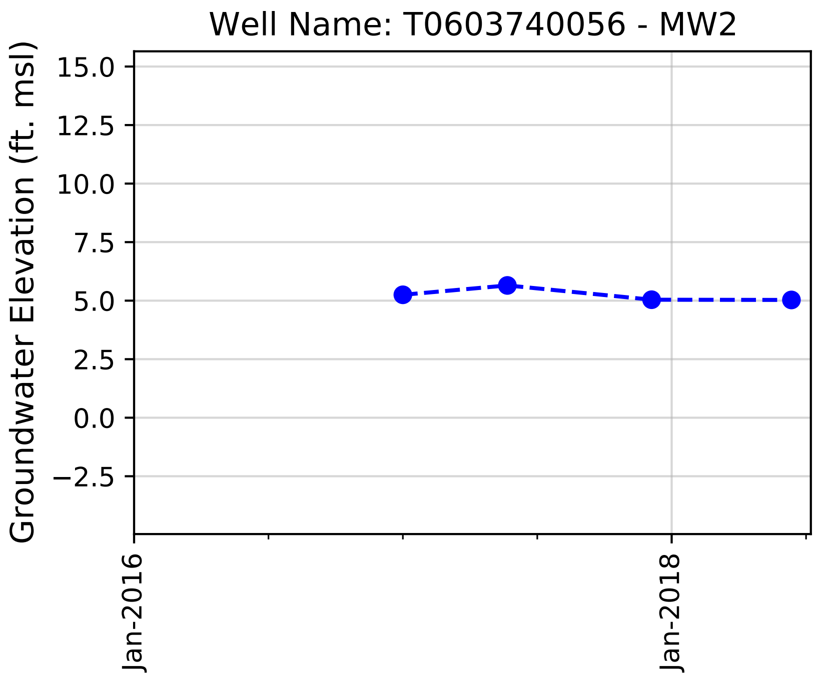

Well Name: T10000004824 - MW14
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−12.5
Sep-2016
Sep-2018
Sep-2020

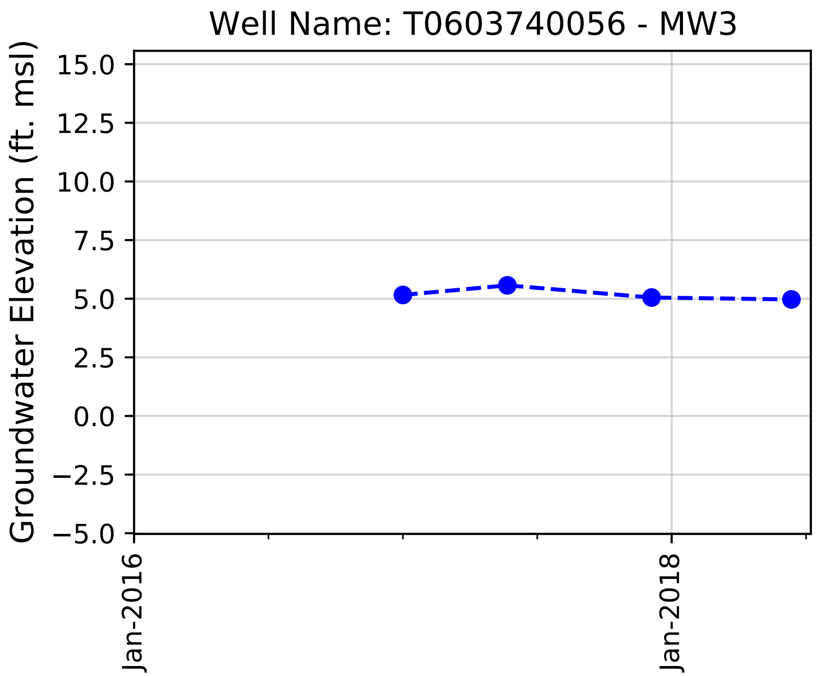

Well Name: T10000004824 - MW12
Groundwater Elevation (ft. msl)
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
Sep-2016
Sep-2018
Sep-2020

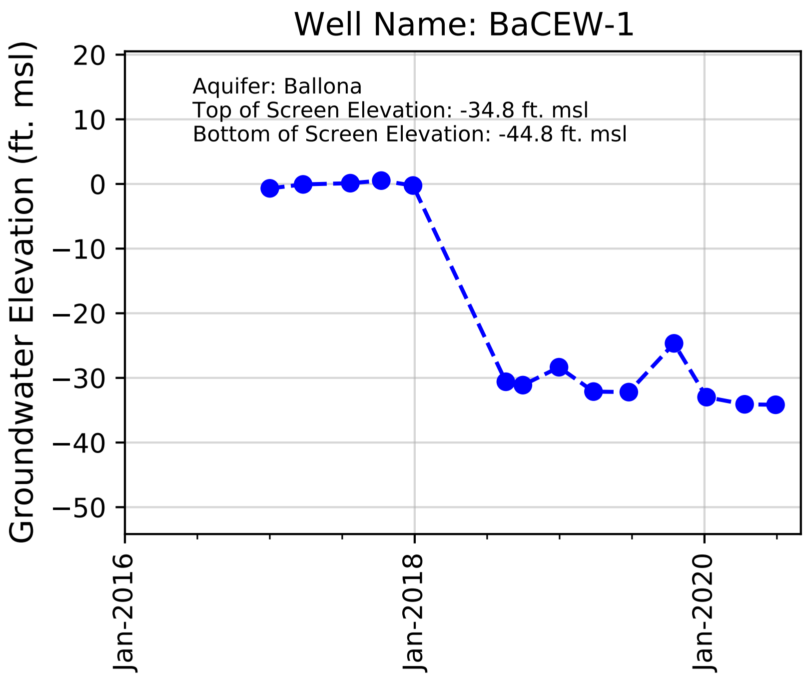

Well Name: T10000004824 - MW13
7.5
5.0
2.5
0.0
−2.5
−5.0
−7.5
−10.0
−12.5
Sep-2016
Sep-2018
Sep-2020

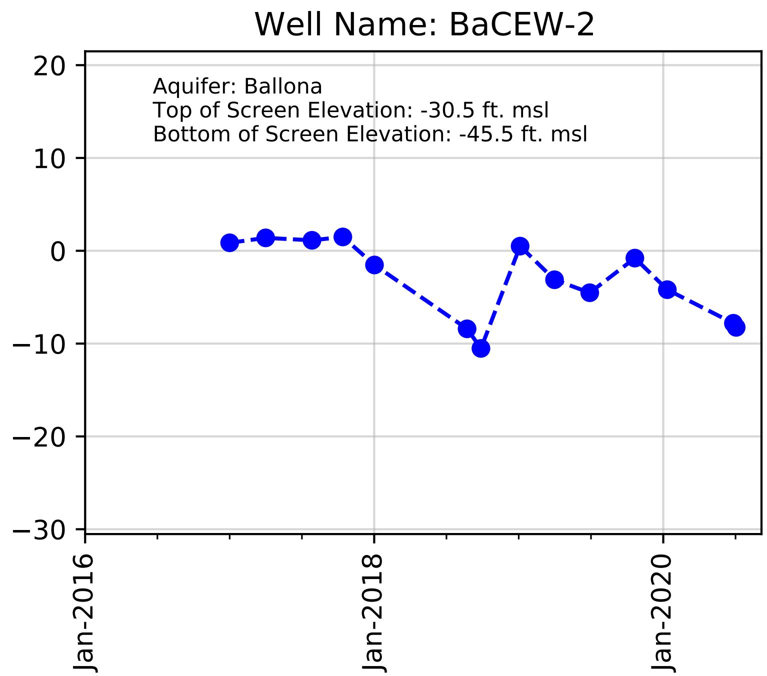

Well Name: T10000000705 - MW-8
Groundwater Elevation (ft. msl)
30.0
27.5
25.0
22.5
20.0
17.5
15.0
12.5
10.0
Jan-2019
Jan-2021

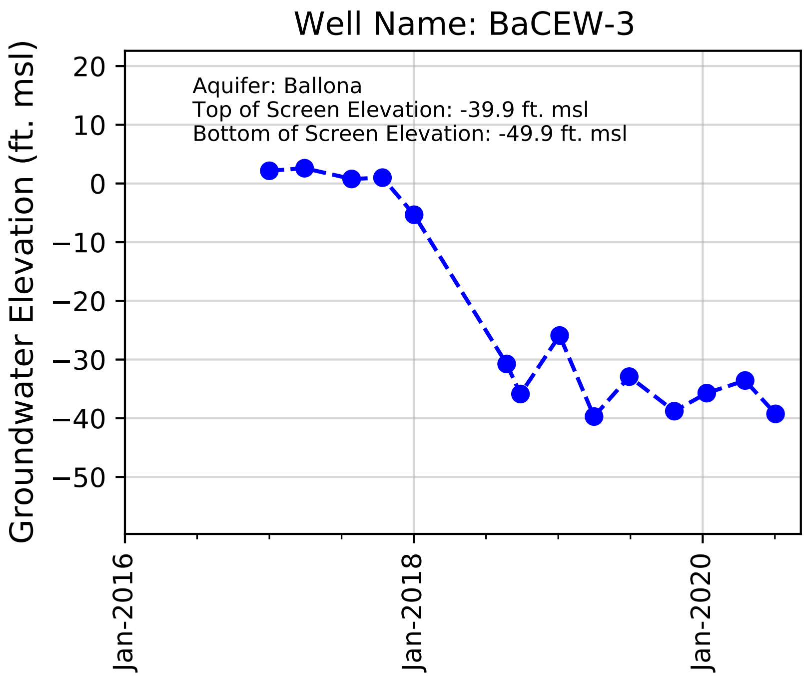

Well Name: T0603740056 - MW1
15.0
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
Jan-2016
Jan-2018

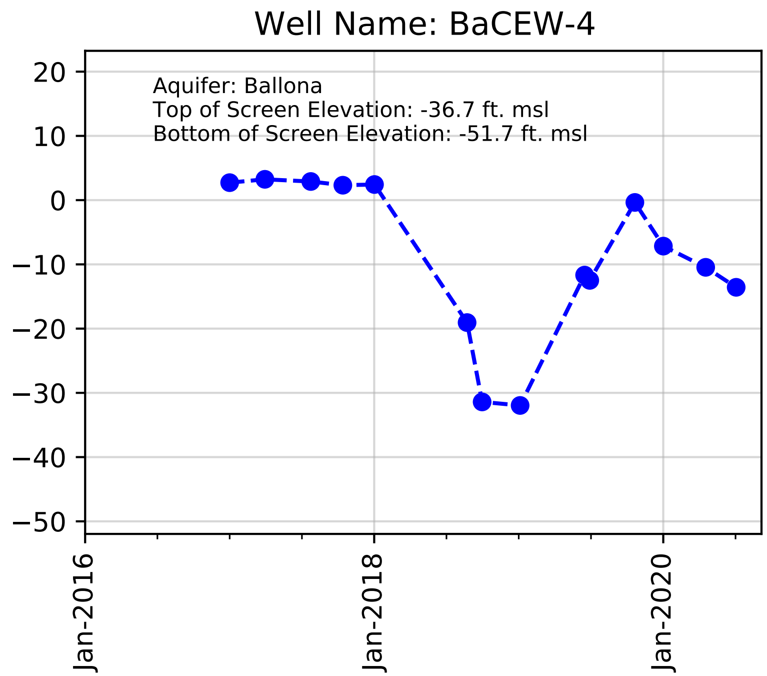

Well Name: T0603740056 - MW2
Groundwater Elevation (ft. msl)
15.0
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
Jan-2016
Jan-2018

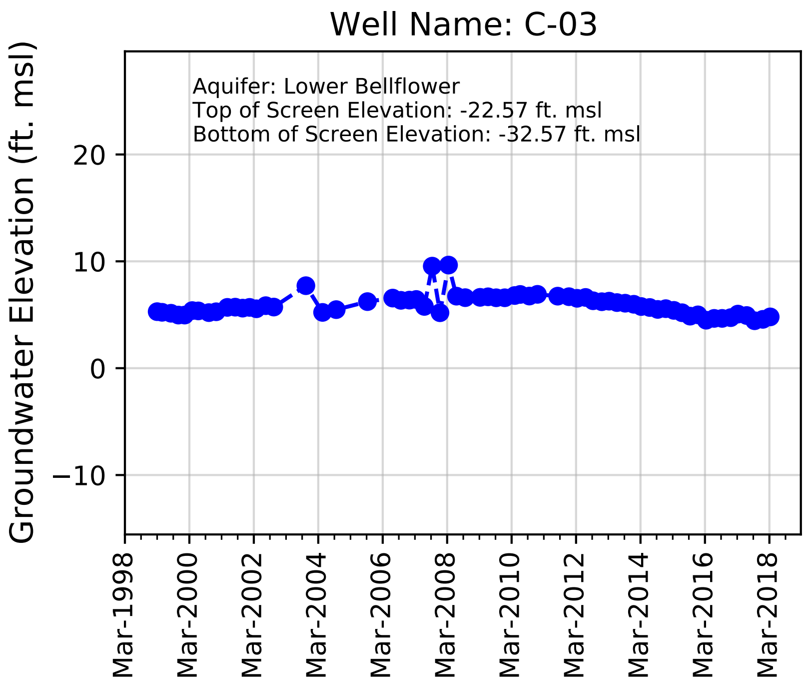

Well Name: T0603740056 - MW3
Groundwater Elevation (ft. msl)
15.0
12.5
10.0
7.5
5.0
2.5
0.0
−2.5
−5.0
Jan-2016
Jan-2018

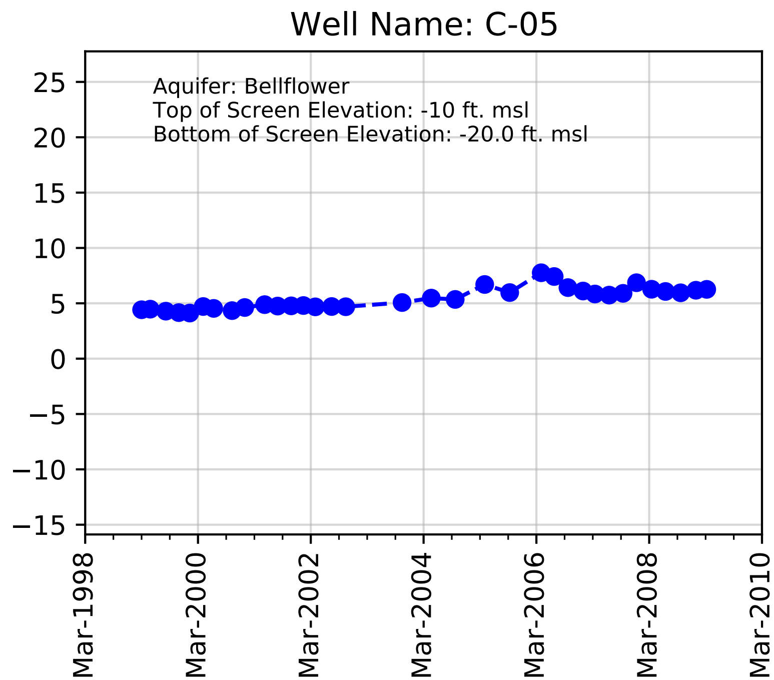

Well Name: BaCEW-1
Aquifer: Ballona
Top of Screen Elevation: -34.8 ft. msl
Bottom of Screen Elevation: -44.8 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
−30
−40
−50
Jan-2016
Jan-2018
Jan-2020

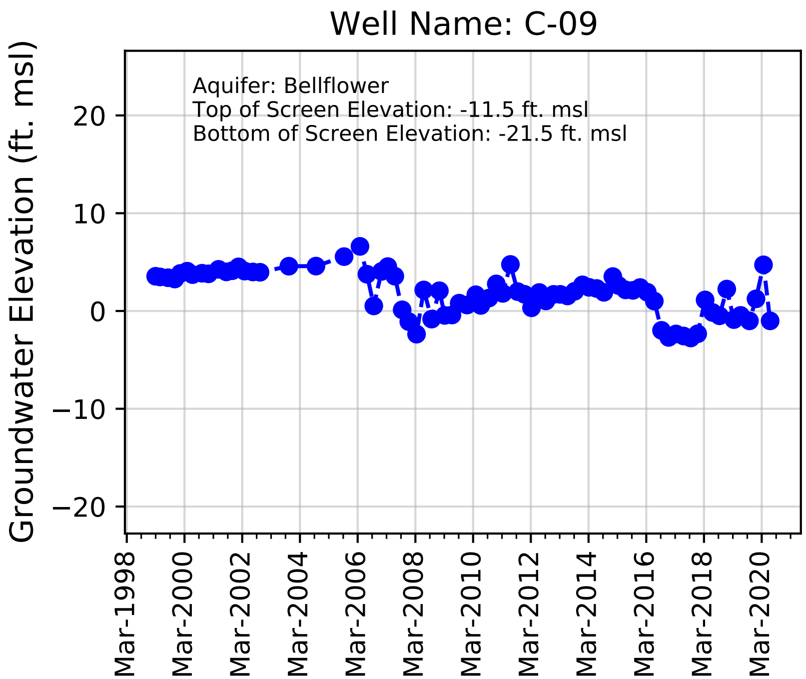

Well Name: BaCEW-2
Aquifer: Ballona
Top of Screen Elevation: -30.5 ft. msl
Bottom of Screen Elevation: -45.5 ft. msl
20
10
0
−10
−20
−30
Jan-2016
Jan-2018
Jan-2020

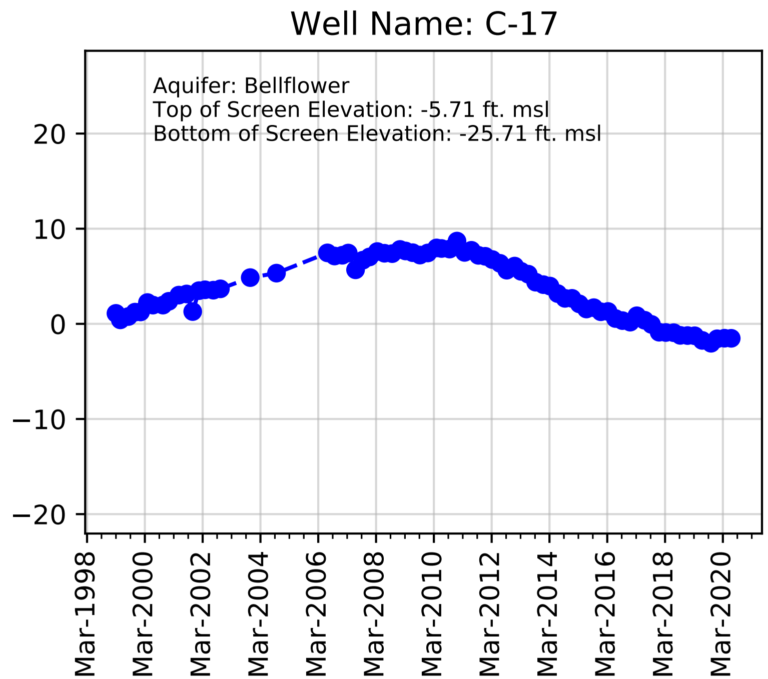

Well Name: BaCEW-3
Aquifer: Ballona
Top of Screen Elevation: -39.9 ft. msl
Bottom of Screen Elevation: -49.9 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
−30
−40
−50
Jan-2016
Jan-2018
Jan-2020

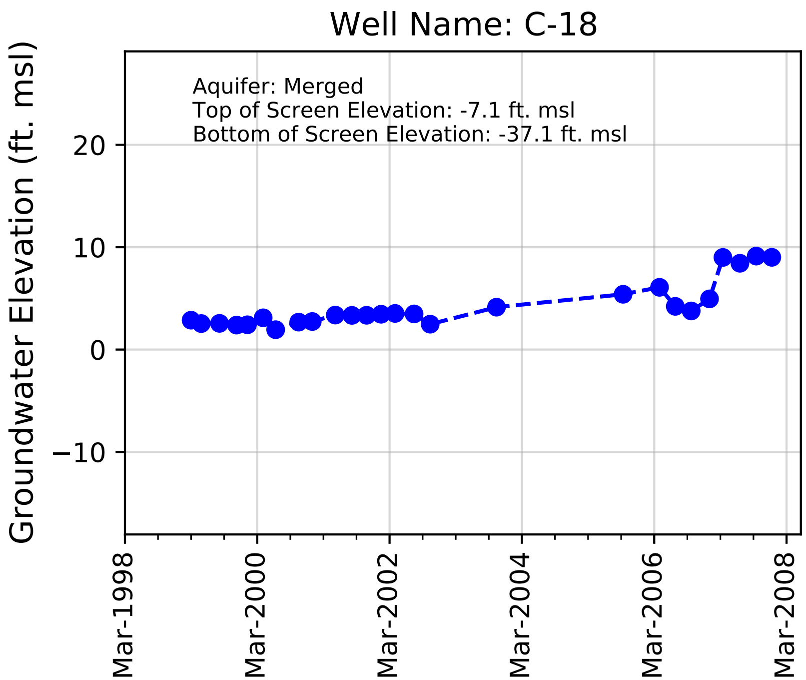

Well Name: BaCEW-4
Aquifer: Ballona
Top of Screen Elevation: -36.7 ft. msl
Bottom of Screen Elevation: -51.7 ft. msl
20
10
0
−10
−20
−30
−40
−50
Jan-2016
Jan-2018
Jan-2020

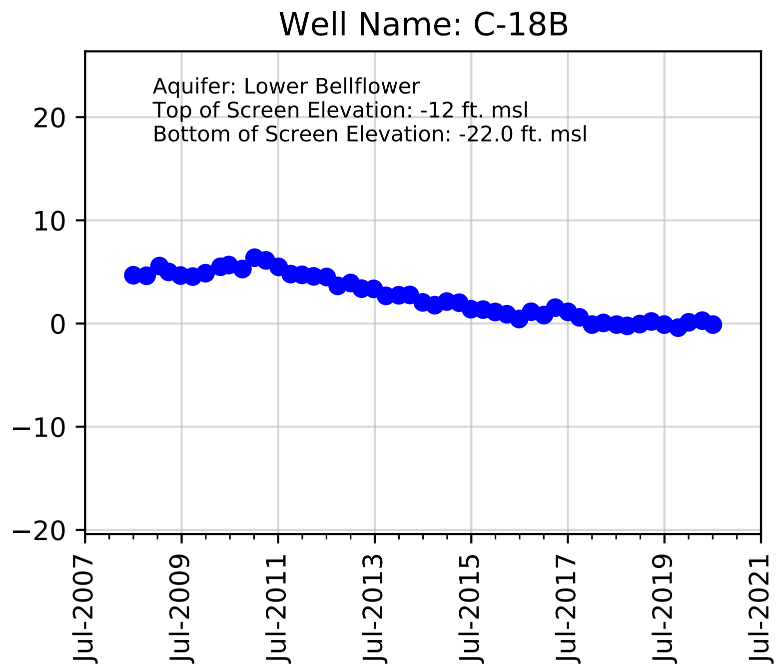

Well Name: C-03
Aquifer: Lower Bellflower
Top of Screen Elevation: -22.57 ft. msl
Bottom of Screen Elevation: -32.57 ft. msl
Groundwater Elevation (ft. msl)

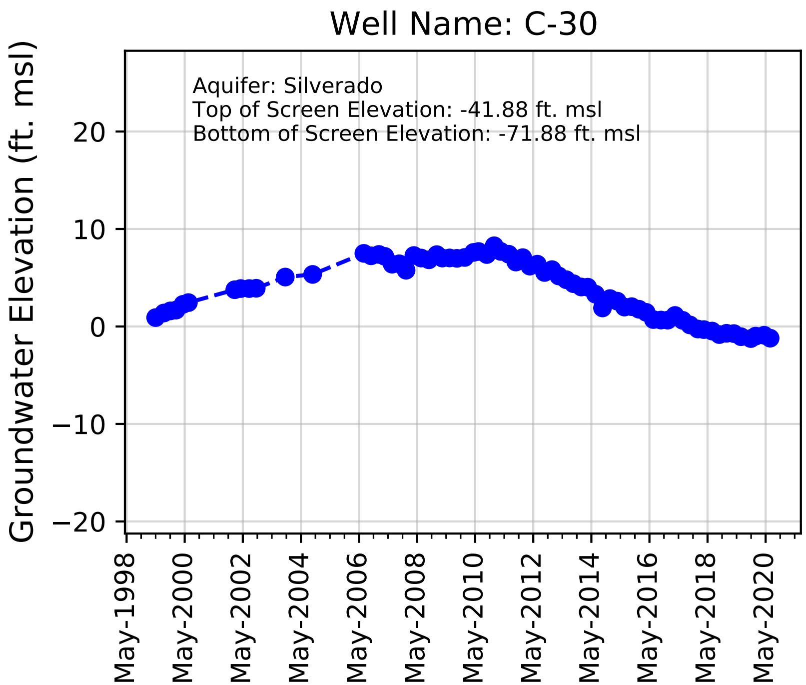

Well Name: C-05
Aquifer: Bellflower
Top of Screen Elevation: -10 ft. msl
Bottom of Screen Elevation: -20.0 ft. msl

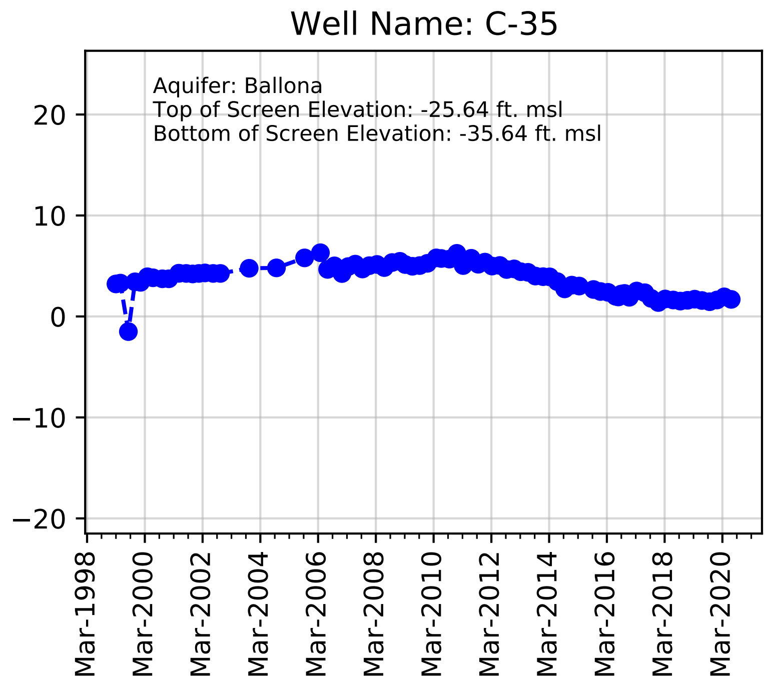

Well Name: C-09
Aquifer: Bellflower
Top of Screen Elevation: -11.5 ft. msl
Bottom of Screen Elevation: -21.5 ft. msl
Groundwater Elevation (ft. msl)

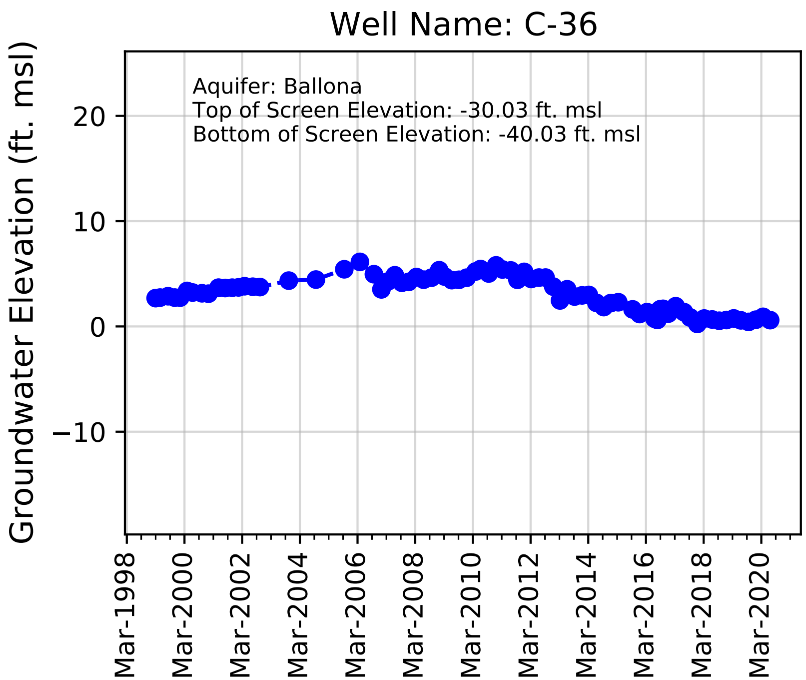

Well Name: C-17
Aquifer: Bellflower
Top of Screen Elevation: -5.71 ft. msl
Bottom of Screen Elevation: -25.71 ft. msl

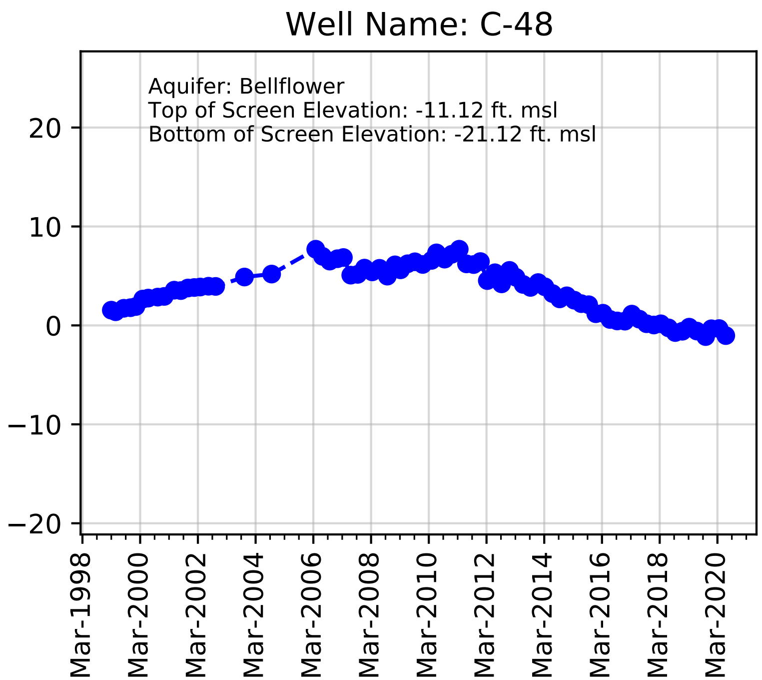

Well Name: C-18
Aquifer: Merged
Top of Screen Elevation: -7.1 ft. msl
Bottom of Screen Elevation: -37.1 ft. msl
Groundwater Elevation (ft. msl)

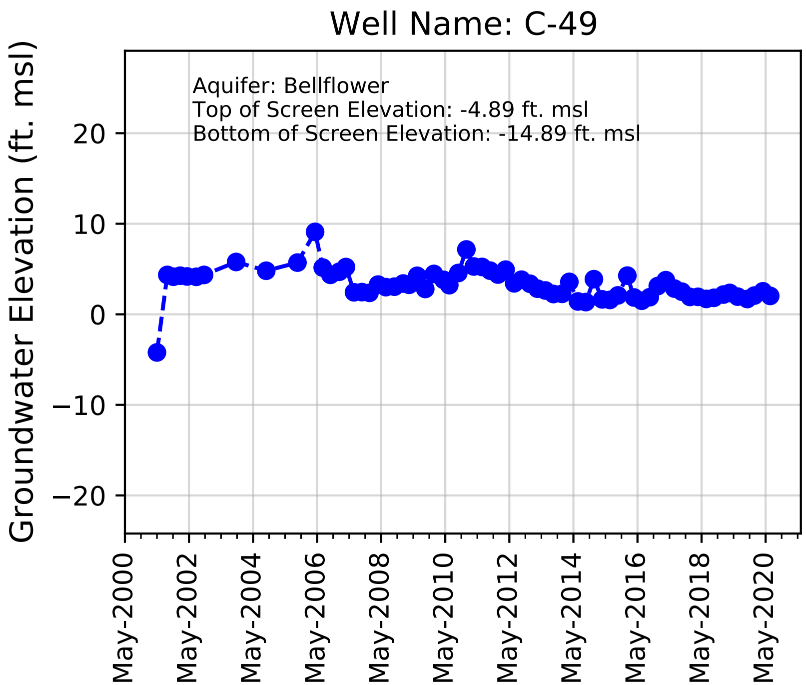

Well Name: C-18B
Aquifer: Lower Bellflower
Top of Screen Elevation: -12 ft. msl
Bottom of Screen Elevation: -22.0 ft. msl

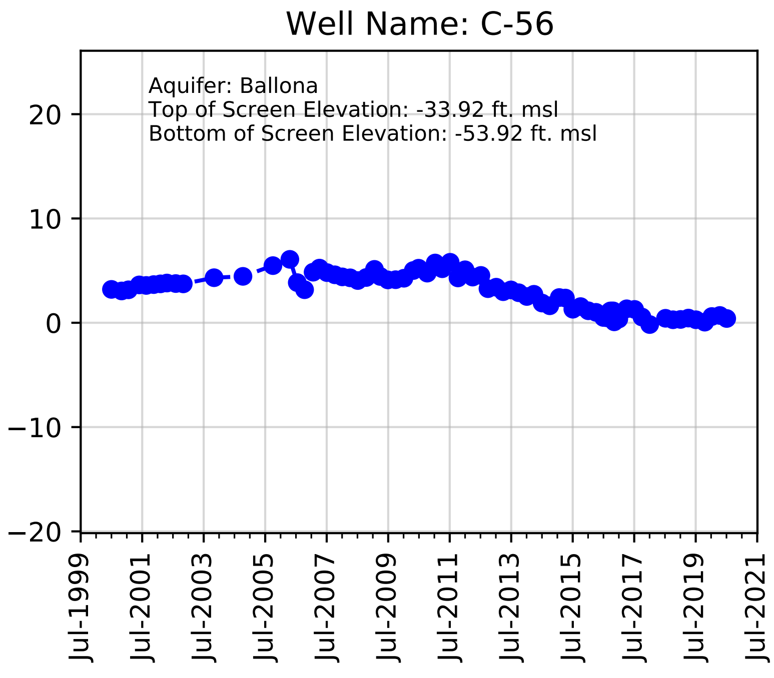

Well Name: C-30
Aquifer: Silverado
Top of Screen Elevation: -41.88 ft. msl
Bottom of Screen Elevation: -71.88 ft. msl
Groundwater Elevation (ft. msl)

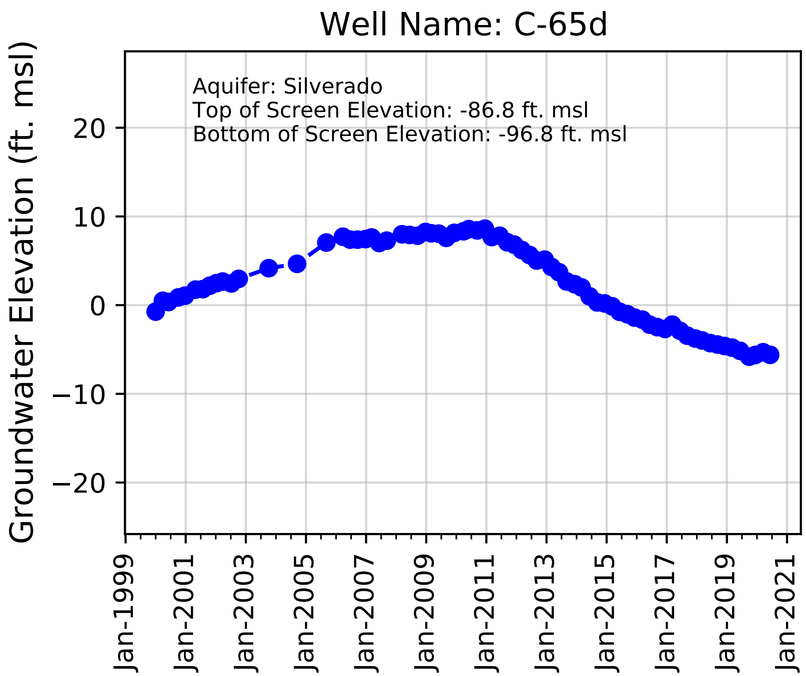

Well Name: C-35
Aquifer: Ballona
Top of Screen Elevation: -25.64 ft. msl
Bottom of Screen Elevation: -35.64 ft. msl

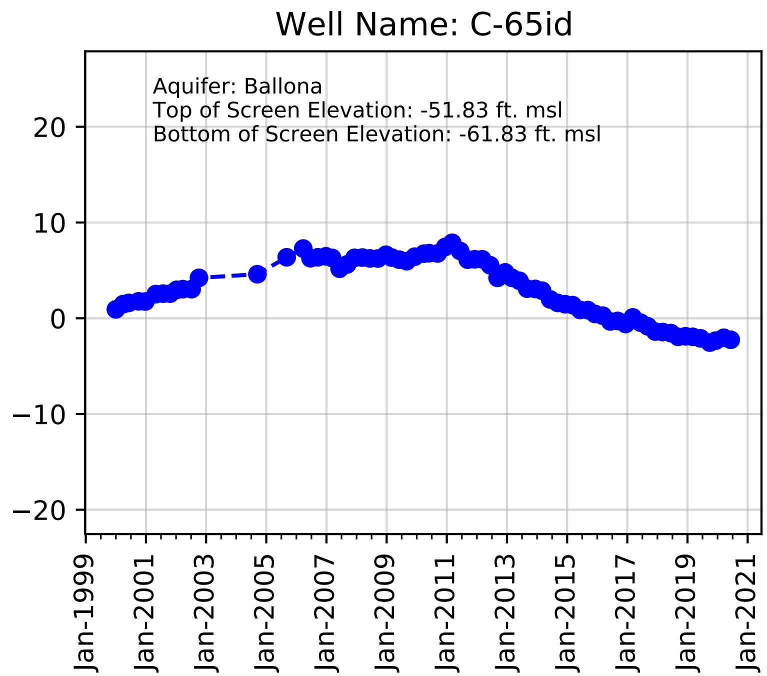

Well Name: C-36
Aquifer: Ballona
Top of Screen Elevation: -30.03 ft. msl
Bottom of Screen Elevation: -40.03 ft. msl
Groundwater Elevation (ft. msl)

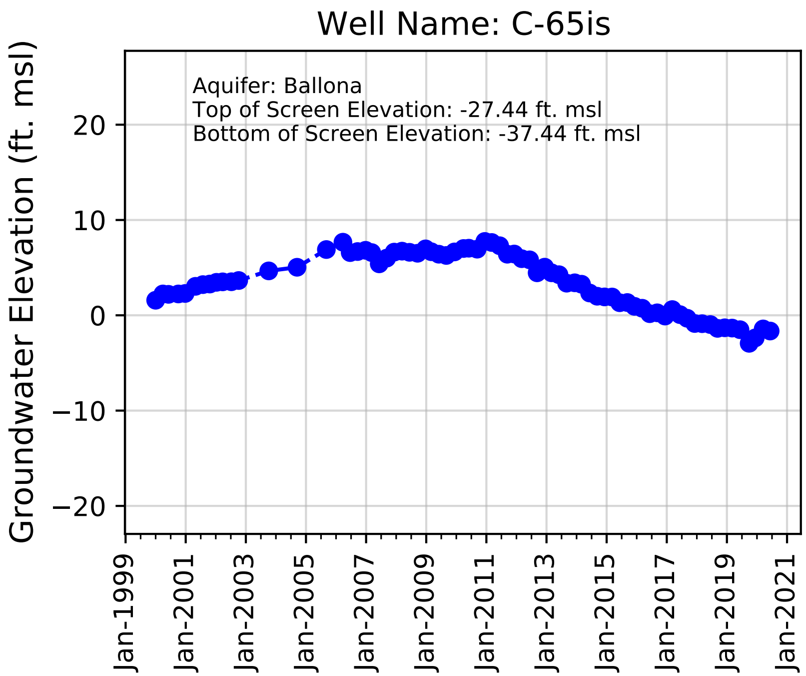

Well Name: C-48
Aquifer: Bellflower
Top of Screen Elevation: -11.12 ft. msl
Bottom of Screen Elevation: -21.12 ft. msl

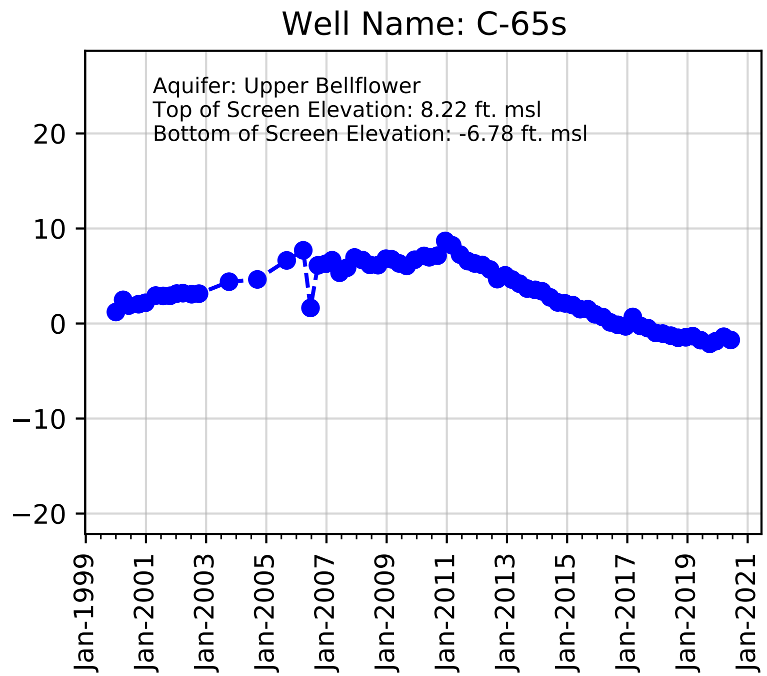

Well Name: C-49
Aquifer: Bellflower
Top of Screen Elevation: -4.89 ft. msl
Bottom of Screen Elevation: -14.89 ft. msl
Groundwater Elevation (ft. msl)

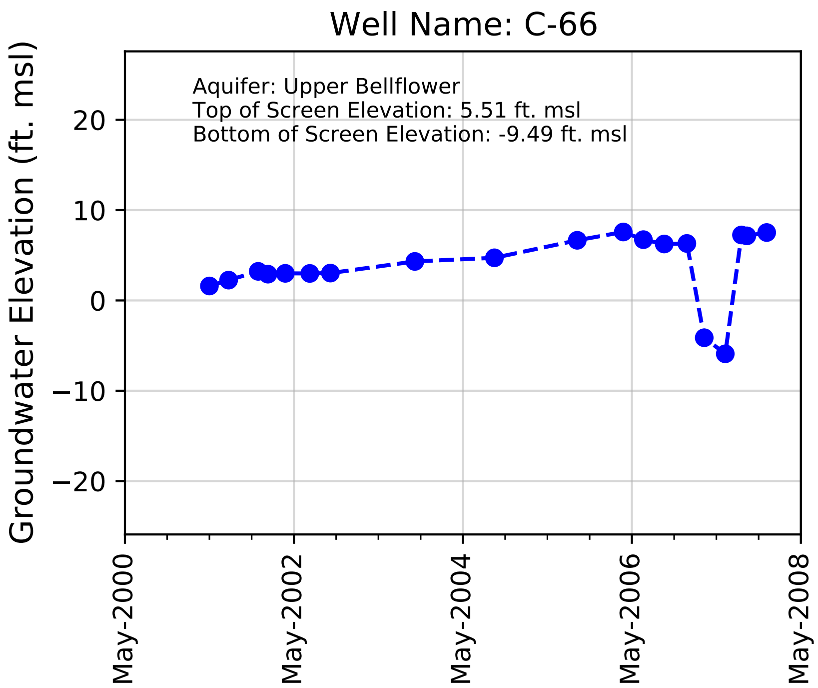

Well Name: C-56
Aquifer: Ballona
Top of Screen Elevation: -33.92 ft. msl
Bottom of Screen Elevation: -53.92 ft. msl

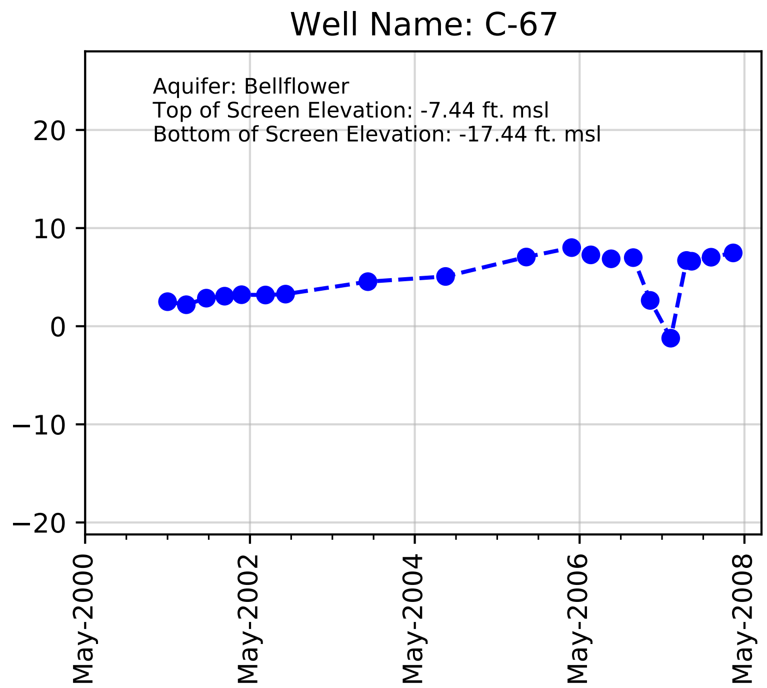

Well Name: C-65d
Aquifer: Silverado
Top of Screen Elevation: -86.8 ft. msl
Bottom of Screen Elevation: -96.8 ft. msl
Groundwater Elevation (ft. msl)

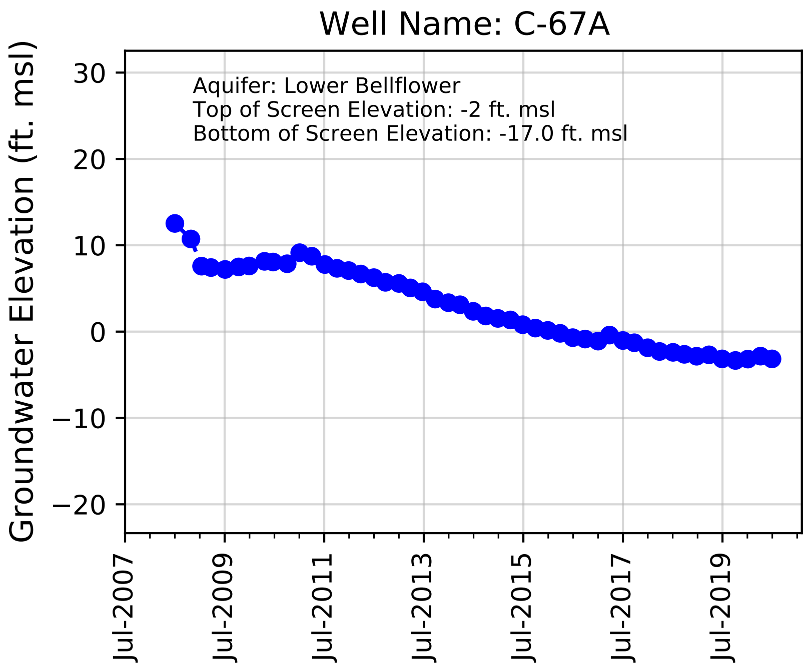

Well Name: C-65id
Aquifer: Ballona
Top of Screen Elevation: -51.83 ft. msl
Bottom of Screen Elevation: -61.83 ft. msl

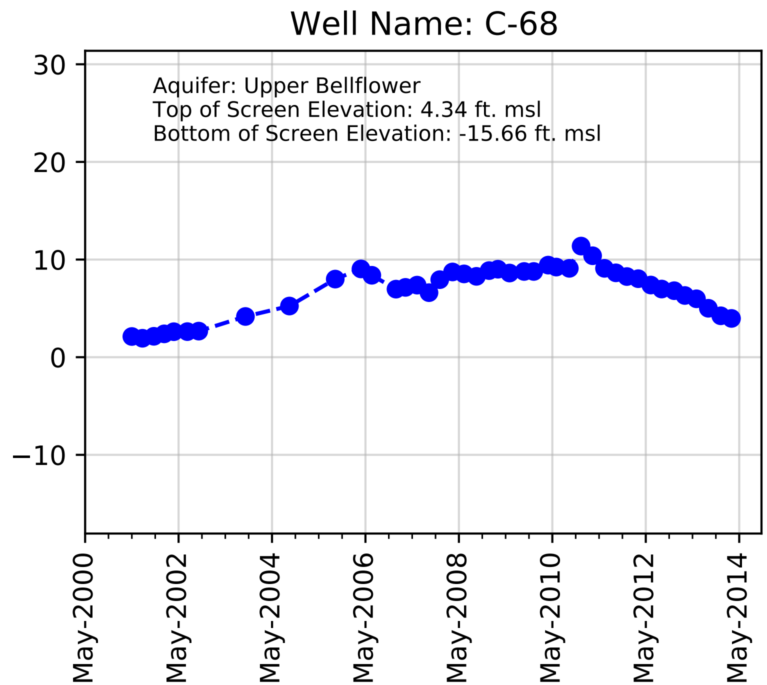

Well Name: C-65is
Aquifer: Ballona
Top of Screen Elevation: -27.44 ft. msl
Bottom of Screen Elevation: -37.44 ft. msl
Groundwater Elevation (ft. msl)

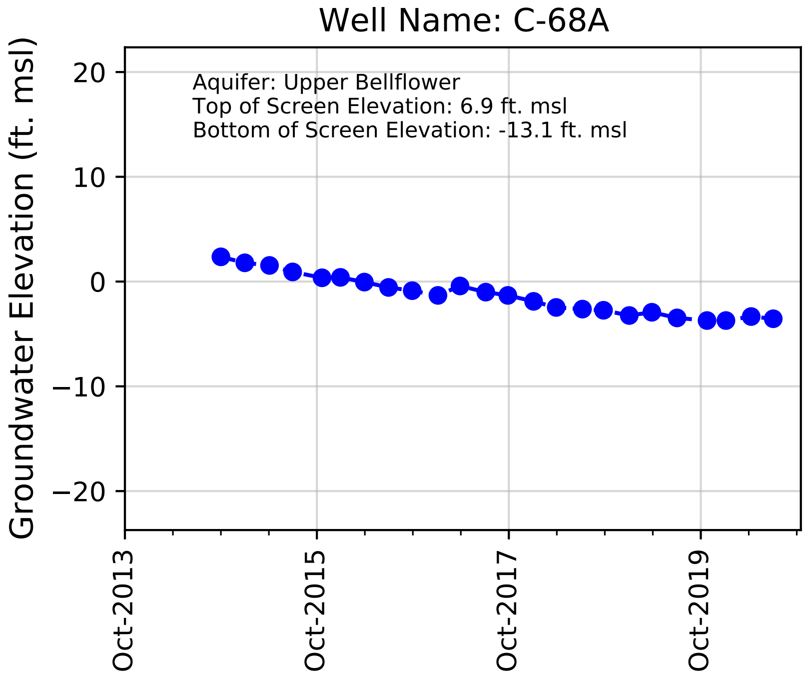

Well Name: C-65s
Aquifer: Upper Bellflower
Top of Screen Elevation: 8.22 ft. msl
Bottom of Screen Elevation: -6.78 ft. msl

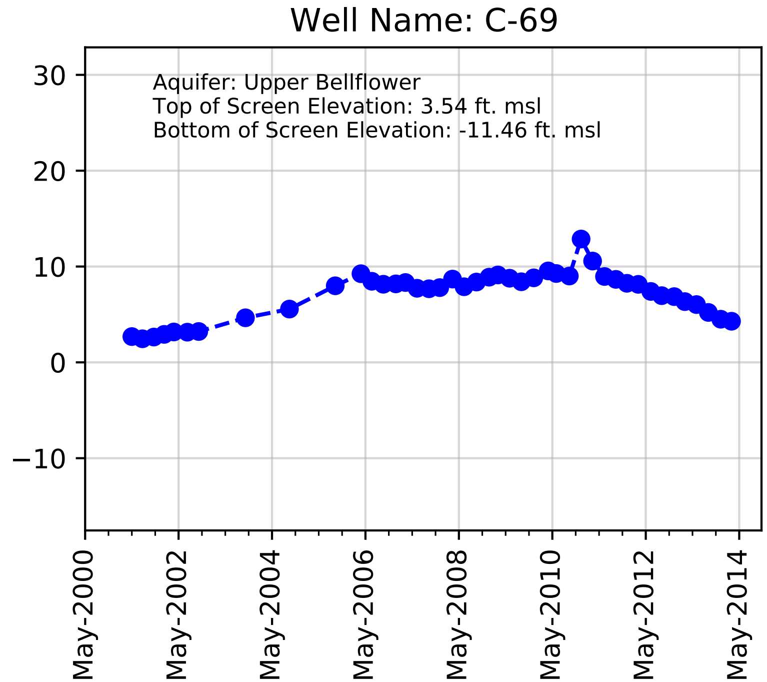

Well Name: C-66
Aquifer: Upper Bellflower
Top of Screen Elevation: 5.51 ft. msl
Bottom of Screen Elevation: -9.49 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
May-2000
May-2002
May-2004
May-2006
May-2008

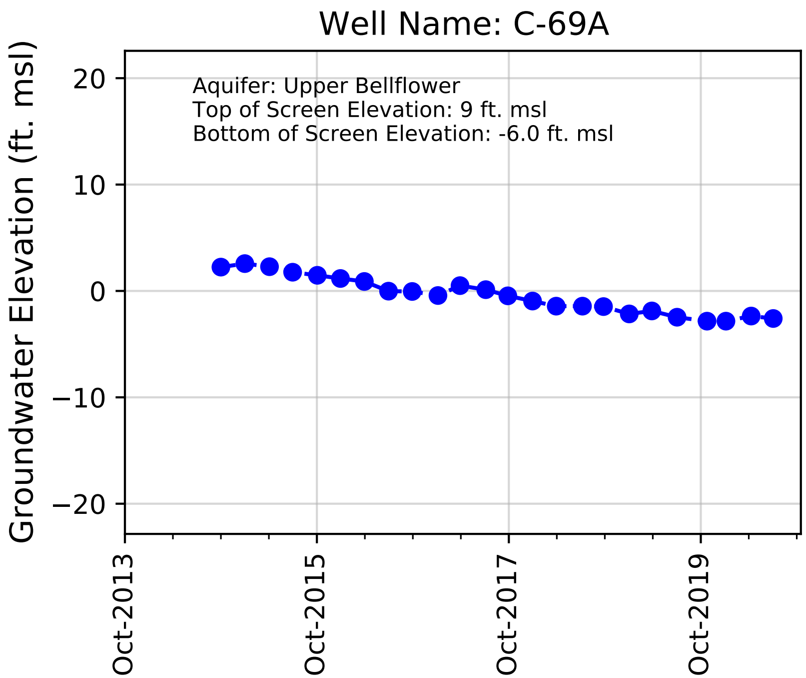

Well Name: C-67
Aquifer: Bellflower
Top of Screen Elevation: -7.44 ft. msl
Bottom of Screen Elevation: -17.44 ft. msl
20
10
0
−10
−20
May-2000
May-2002
May-2004
May-2006
May-2008

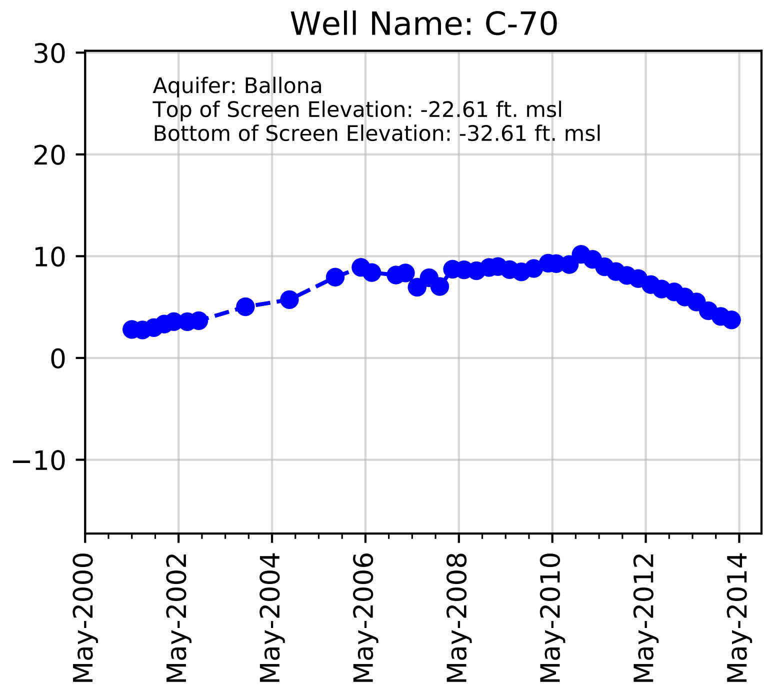

Well Name: C-67A
Aquifer: Lower Bellflower
Top of Screen Elevation: -2 ft. msl
Bottom of Screen Elevation: -17.0 ft. msl
Groundwater Elevation (ft. msl)
30
20
10
0
−10
−20
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019

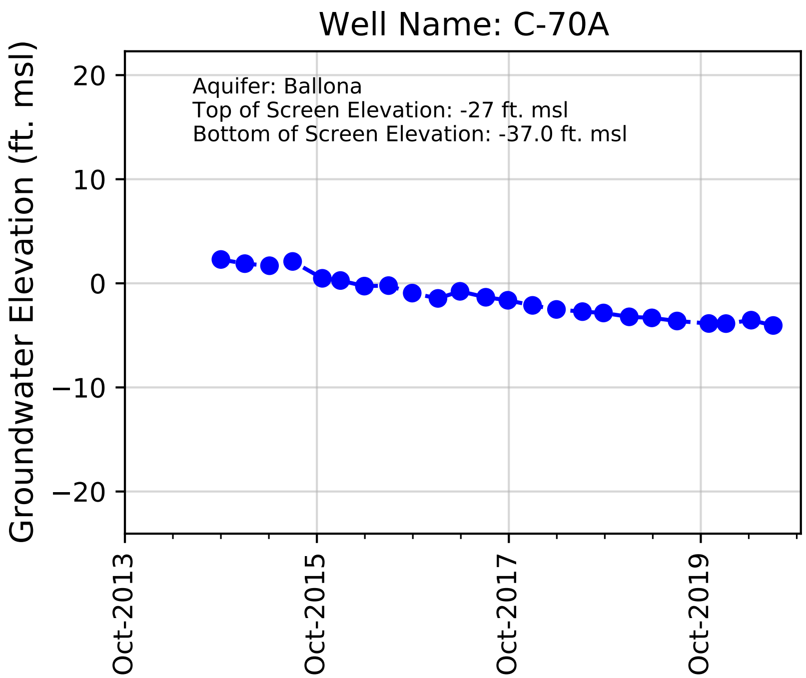

Well Name: C-68
Aquifer: Upper Bellflower
Top of Screen Elevation: 4.34 ft. msl
Bottom of Screen Elevation: -15.66 ft. msl
30
20
10
0
−10
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014

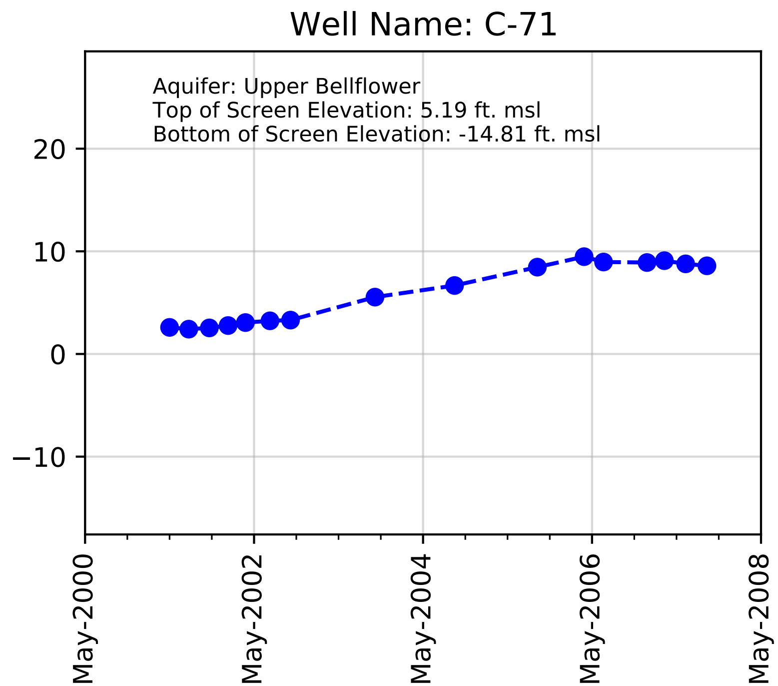

Well Name: C-68A
Aquifer: Upper Bellflower
Top of Screen Elevation: 6.9 ft. msl
Bottom of Screen Elevation: -13.1 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Oct-2013
Oct-2015
Oct-2017
Oct-2019

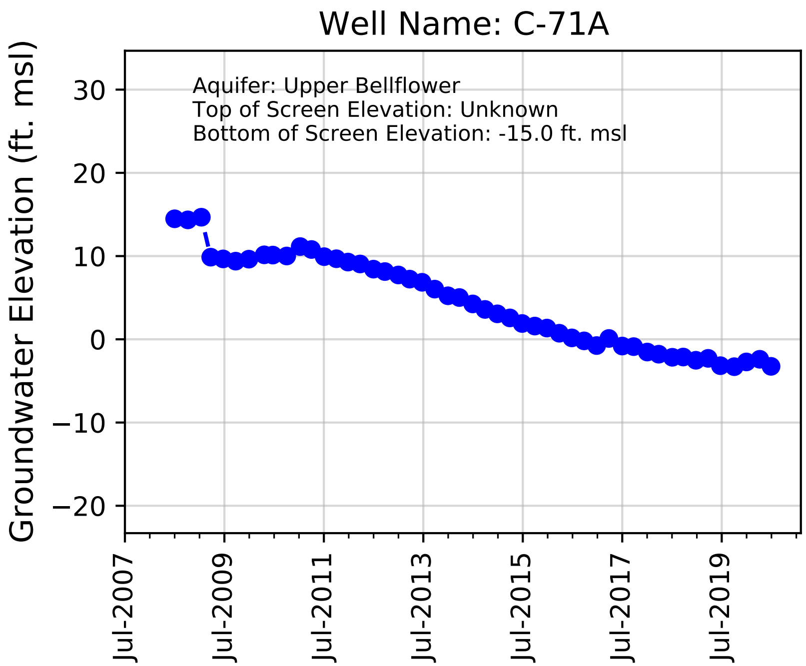

Well Name: C-69
Aquifer: Upper Bellflower
Top of Screen Elevation: 3.54 ft. msl
Bottom of Screen Elevation: -11.46 ft. msl
30
20
10
0
−10
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014

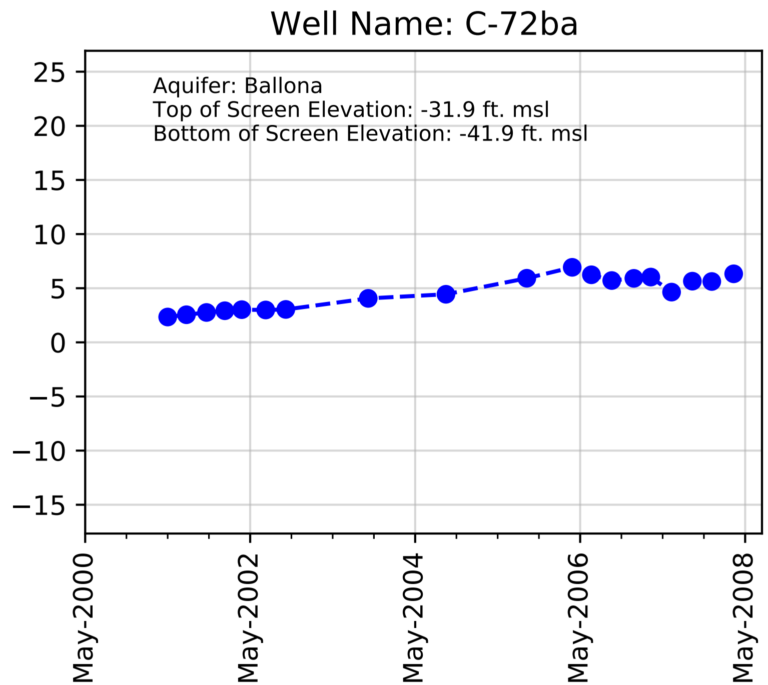

Well Name: C-69A
Aquifer: Upper Bellflower
Top of Screen Elevation: 9 ft. msl
Bottom of Screen Elevation: -6.0 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Oct-2013
Oct-2015
Oct-2017
Oct-2019

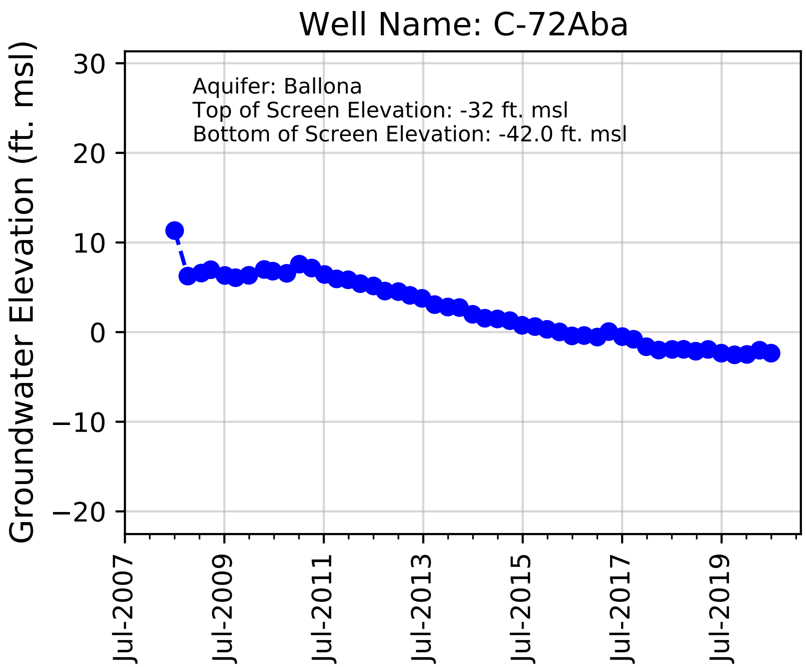

Well Name: C-70
Aquifer: Ballona
Top of Screen Elevation: -22.61 ft. msl
Bottom of Screen Elevation: -32.61 ft. msl
30
20
10
0
−10
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014

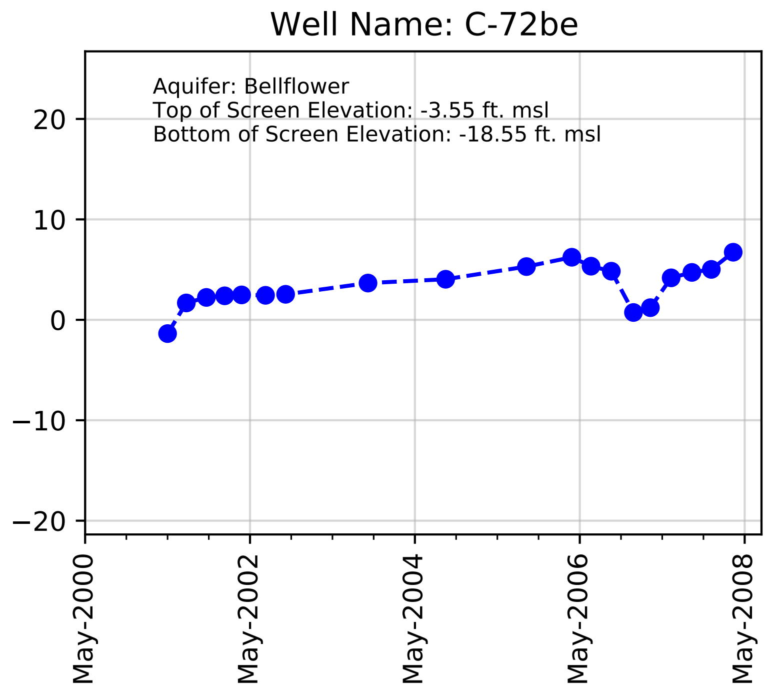

Well Name: C-70A
Aquifer: Ballona
Top of Screen Elevation: -27 ft. msl
Bottom of Screen Elevation: -37.0 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Oct-2013
Oct-2015
Oct-2017
Oct-2019

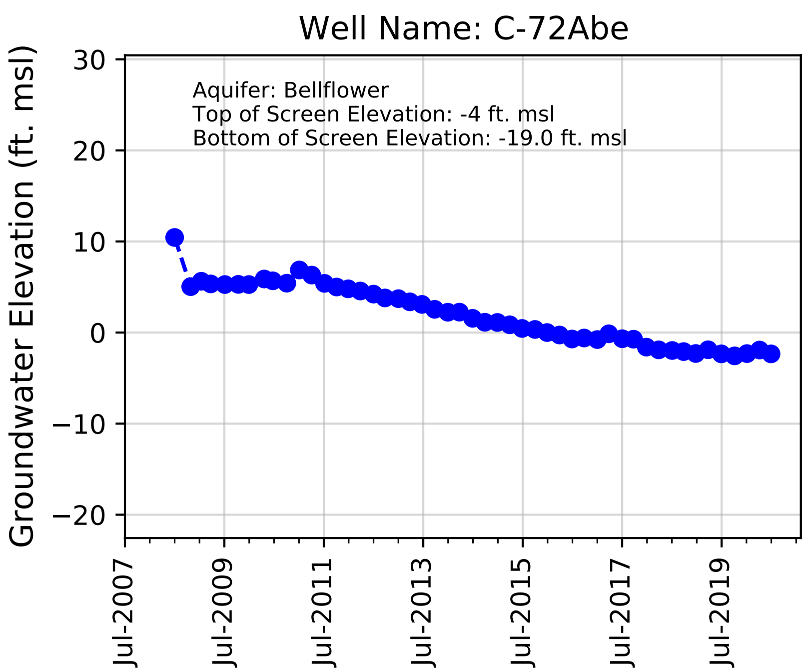

Well Name: C-71
Aquifer: Upper Bellflower
Top of Screen Elevation: 5.19 ft. msl
Bottom of Screen Elevation: -14.81 ft. msl
20
10
0
−10
May-2000
May-2002
May-2004
May-2006
May-2008

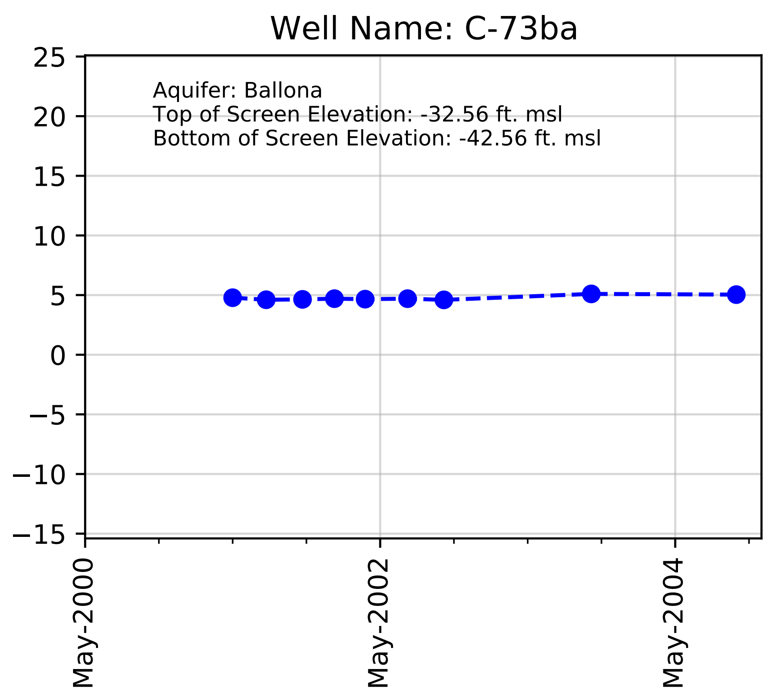

Well Name: C-71A
Aquifer: Upper Bellflower
Top of Screen Elevation: Unknown
Bottom of Screen Elevation: -15.0 ft. msl
Groundwater Elevation (ft. msl)
30
20
10
0
−10
−20
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019

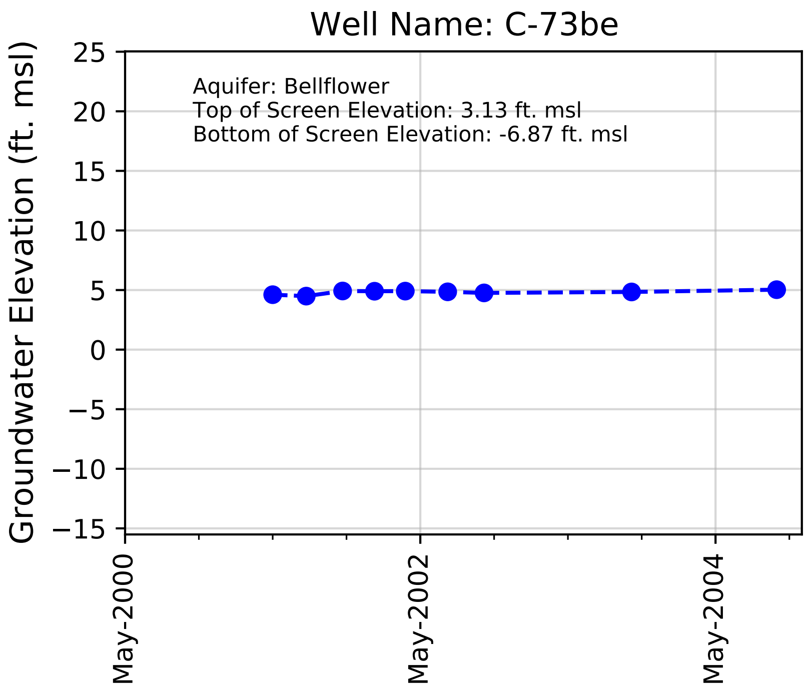

Well Name: C-72ba
Aquifer: Ballona
Top of Screen Elevation: -31.9 ft. msl
Bottom of Screen Elevation: -41.9 ft. msl
25
20
15
10
5
0
−5
−10
−15
May-2000
May-2002
May-2004
May-2006
May-2008

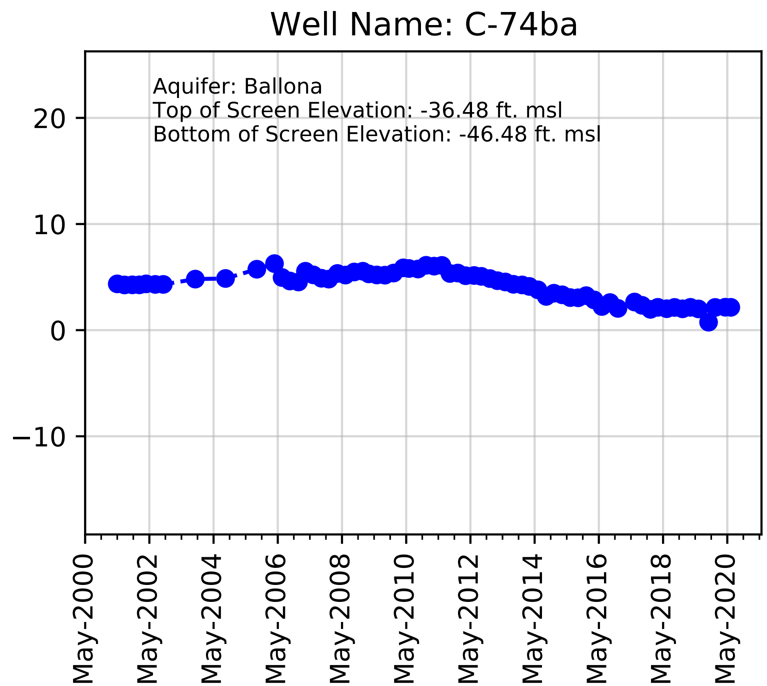

Well Name: C-72Aba
Aquifer: Ballona
Top of Screen Elevation: -32 ft. msl
Bottom of Screen Elevation: -42.0 ft. msl
Groundwater Elevation (ft. msl)
30
20
10
0
−10
−20
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019

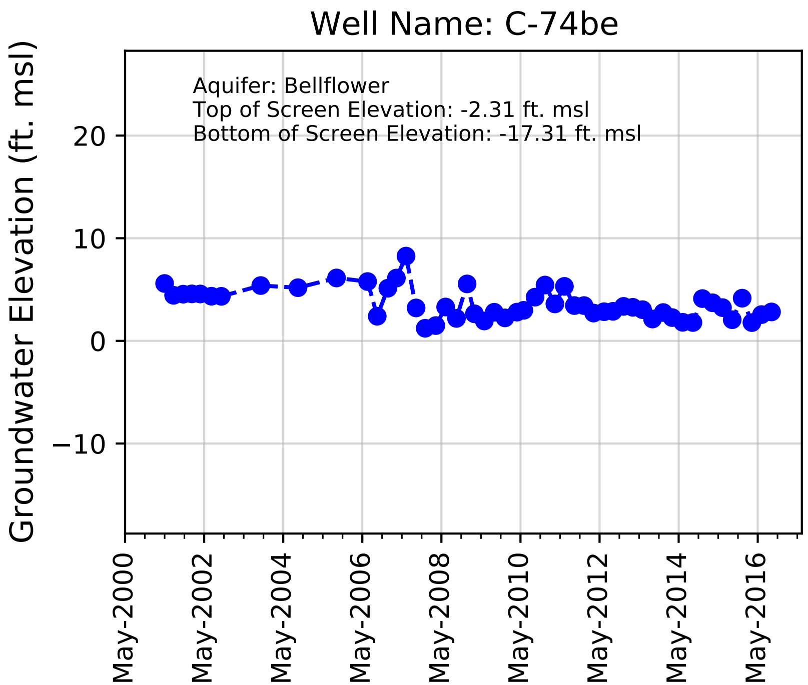

Well Name: C-72be
Aquifer: Bellflower
Top of Screen Elevation: -3.55 ft. msl
Bottom of Screen Elevation: -18.55 ft. msl
20
10
0
−10
−20
May-2000
May-2002
May-2004
May-2006
May-2008

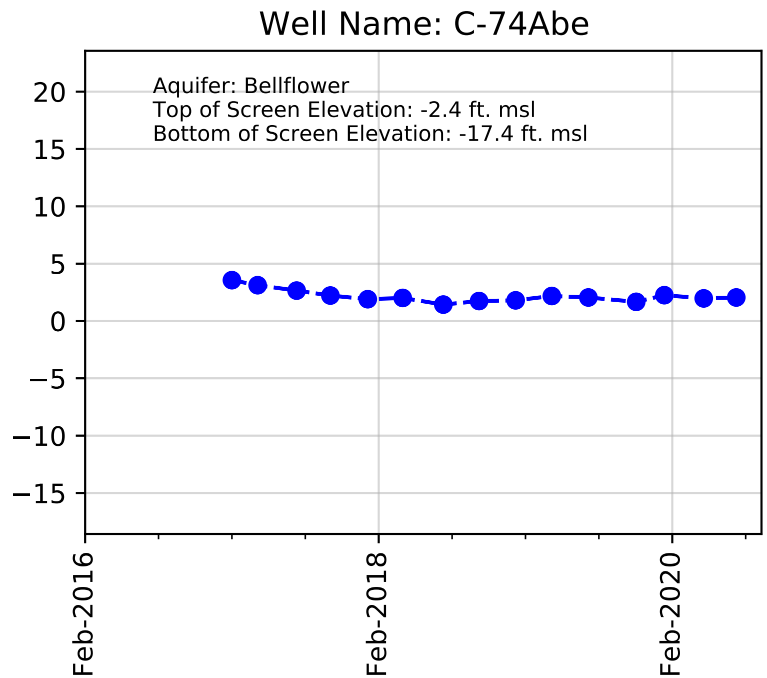

Well Name: C-72Abe
Aquifer: Bellflower
Top of Screen Elevation: -4 ft. msl
Bottom of Screen Elevation: -19.0 ft. msl
Groundwater Elevation (ft. msl)
30
20
10
0
−10
−20
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019

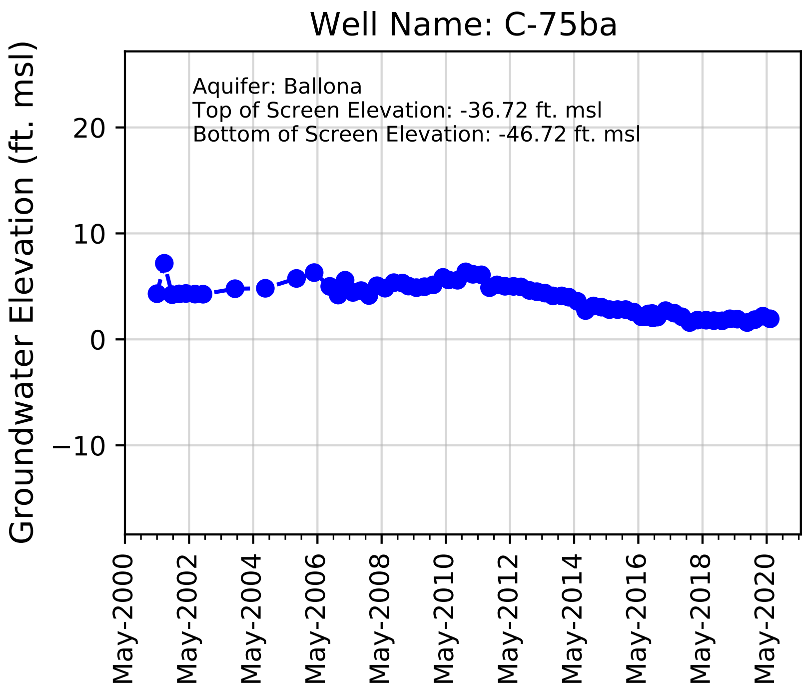

Well Name: C-73ba
Aquifer: Ballona
Top of Screen Elevation: -32.56 ft. msl
Bottom of Screen Elevation: -42.56 ft. msl
25
20
15
10
5
0
−5
−10
−15
May-2000
May-2002
May-2004

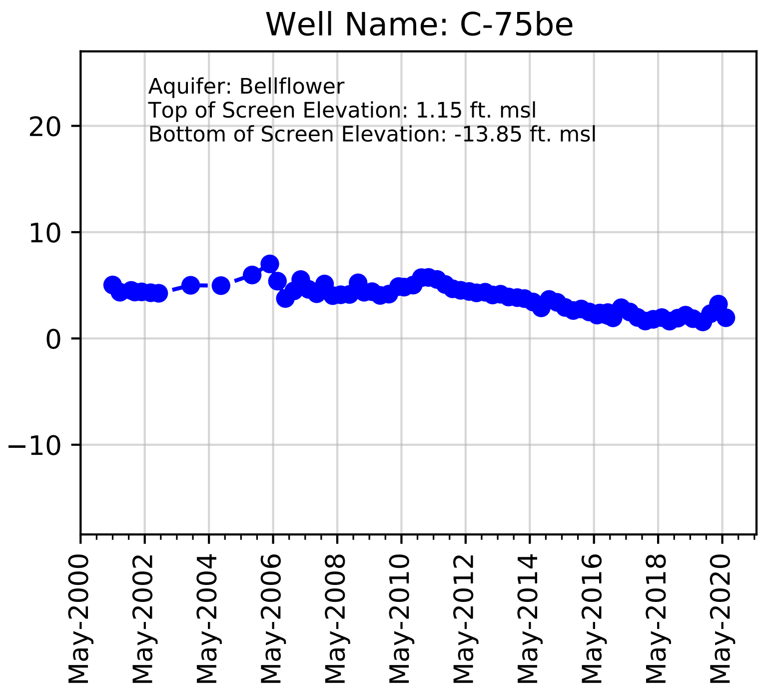

Well Name: C-73be
Aquifer: Bellflower
Top of Screen Elevation: 3.13 ft. msl
Bottom of Screen Elevation: -6.87 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
May-2000
May-2002
May-2004

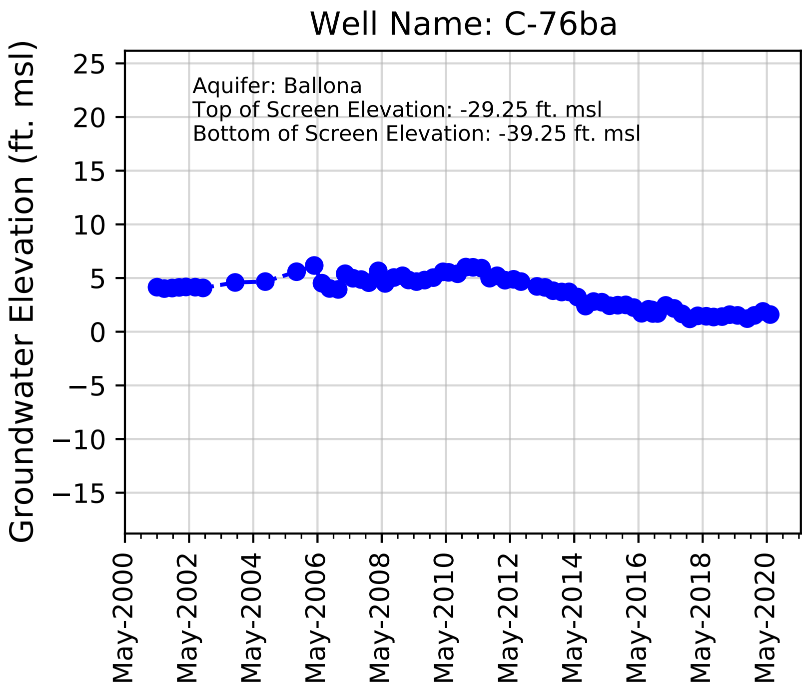

Well Name: C-74ba
Aquifer: Ballona
Top of Screen Elevation: -36.48 ft. msl
Bottom of Screen Elevation: -46.48 ft. msl
20
10
0
−10
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014
May-2016
May-2018
May-2020

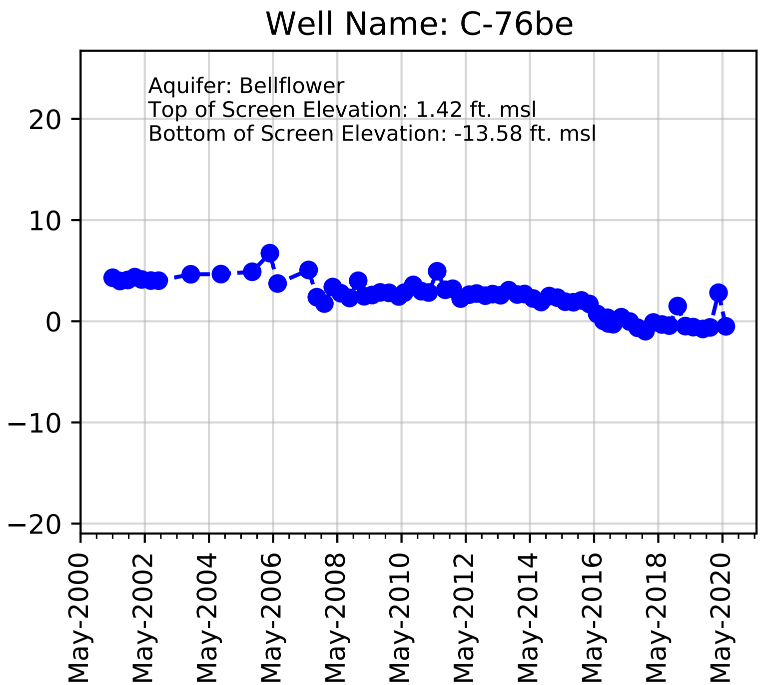

Well Name: C-74be
Aquifer: Bellflower
Top of Screen Elevation: -2.31 ft. msl
Bottom of Screen Elevation: -17.31 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014
May-2016

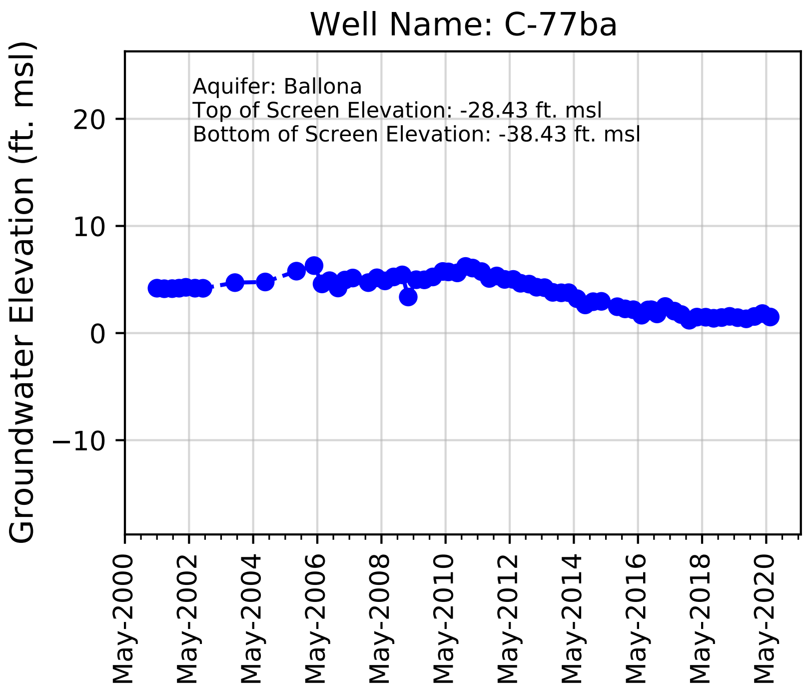

Well Name: C-74Abe
Aquifer: Bellflower
Top of Screen Elevation: -2.4 ft. msl
Bottom of Screen Elevation: -17.4 ft. msl
20
15
10
5
0
−5
−10
−15
Feb-2016
Feb-2018
Feb-2020

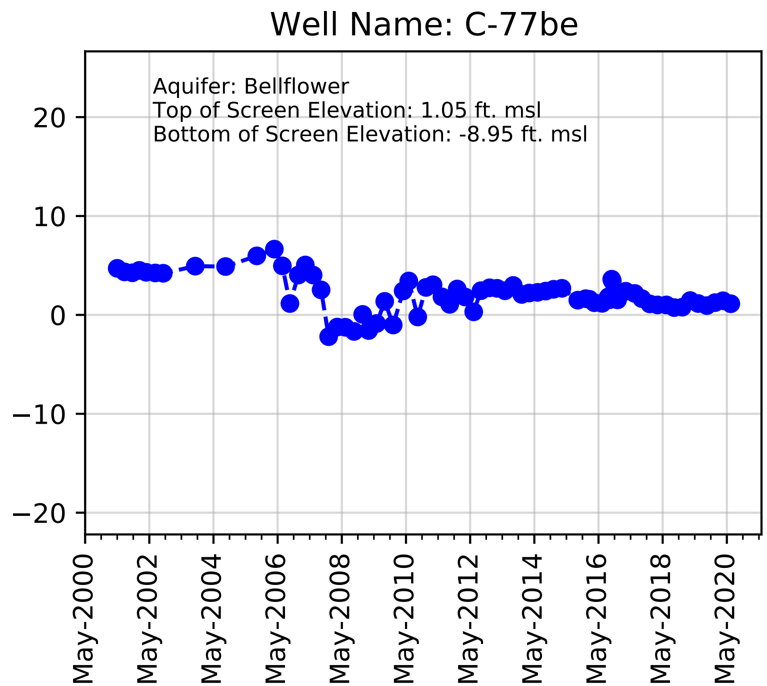

Well Name: C-75ba
Aquifer: Ballona
Top of Screen Elevation: -36.72 ft. msl
Bottom of Screen Elevation: -46.72 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014
May-2016
May-2018
May-2020

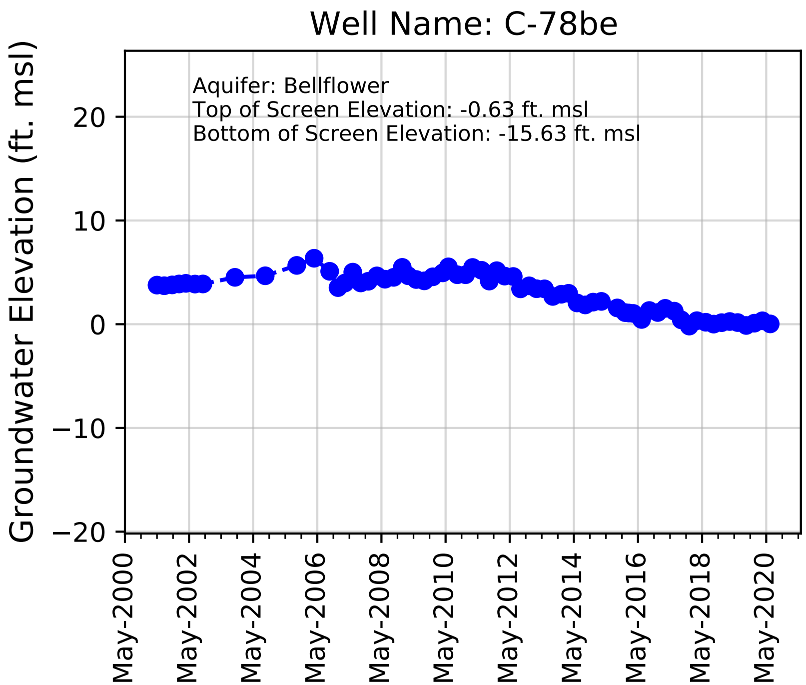

Well Name: C-75be
Aquifer: Bellflower
Top of Screen Elevation: 1.15 ft. msl
Bottom of Screen Elevation: -13.85 ft. msl
20
10
0
−10
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014
May-2016
May-2018
May-2020

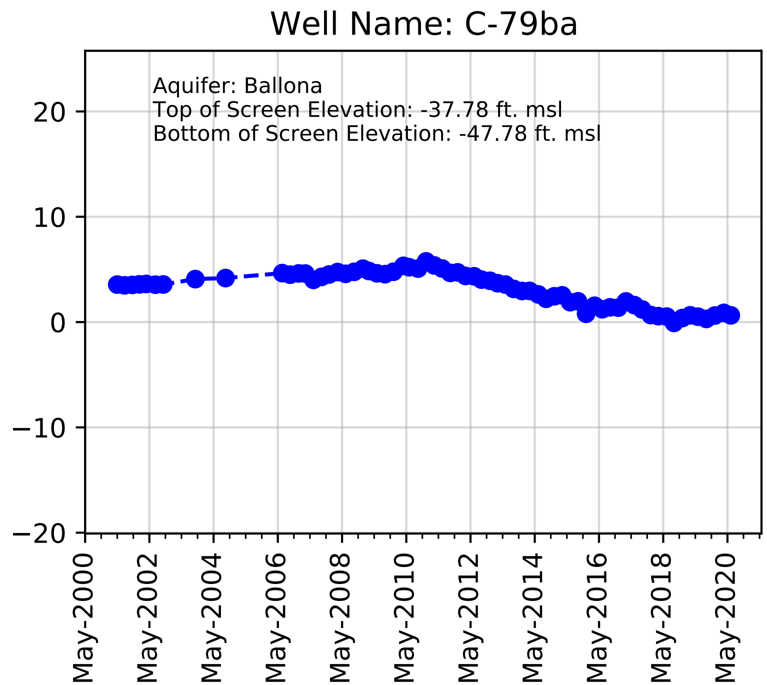

Well Name: C-76ba
Aquifer: Ballona
Top of Screen Elevation: -29.25 ft. msl
Bottom of Screen Elevation: -39.25 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014
May-2016
May-2018
May-2020


Well Name: C-76be
Aquifer: Bellflower
Top of Screen Elevation: 1.42 ft. msl
Bottom of Screen Elevation: -13.58 ft. msl
20
10
0
−10
−20
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014
May-2016
May-2018
May-2020

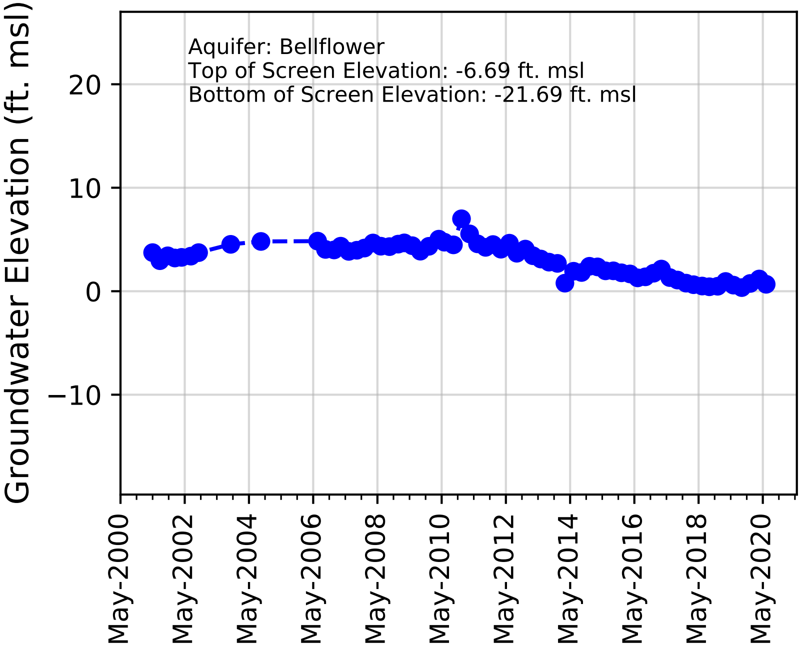

Well Name: C-77ba
Aquifer: Ballona
Top of Screen Elevation: -28.43 ft. msl
Bottom of Screen Elevation: -38.43 ft. msl
Groundwater Elevation (ft. msl)


Well Name: C-77be
Aquifer: Bellflower
Top of Screen Elevation: 1.05 ft. msl
Bottom of Screen Elevation: -8.95 ft. msl

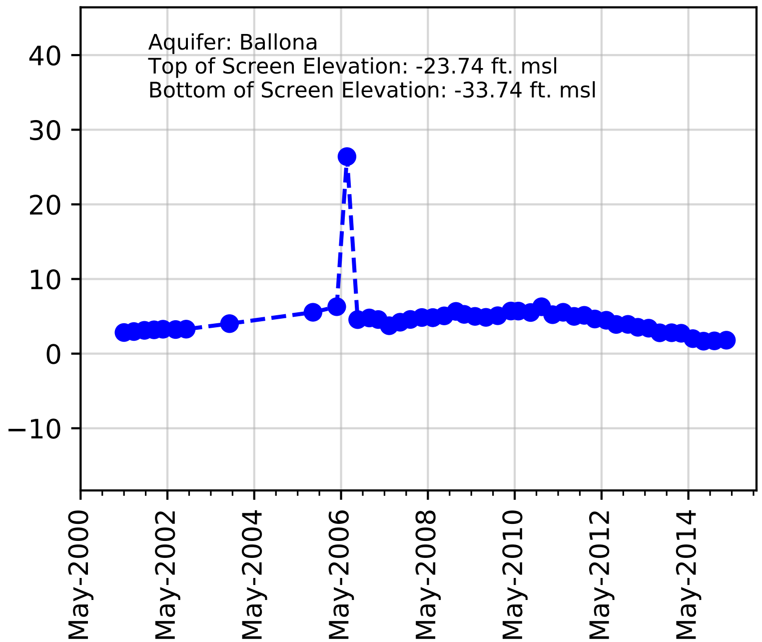

Well Name: C-78be
Aquifer: Bellflower
Top of Screen Elevation: -0.63 ft. msl
Bottom of Screen Elevation: -15.63 ft. msl
Groundwater Elevation (ft. msl)


Well Name: C-79ba
Aquifer: Ballona
Top of Screen Elevation: -37.78 ft. msl
Bottom of Screen Elevation: -47.78 ft. msl

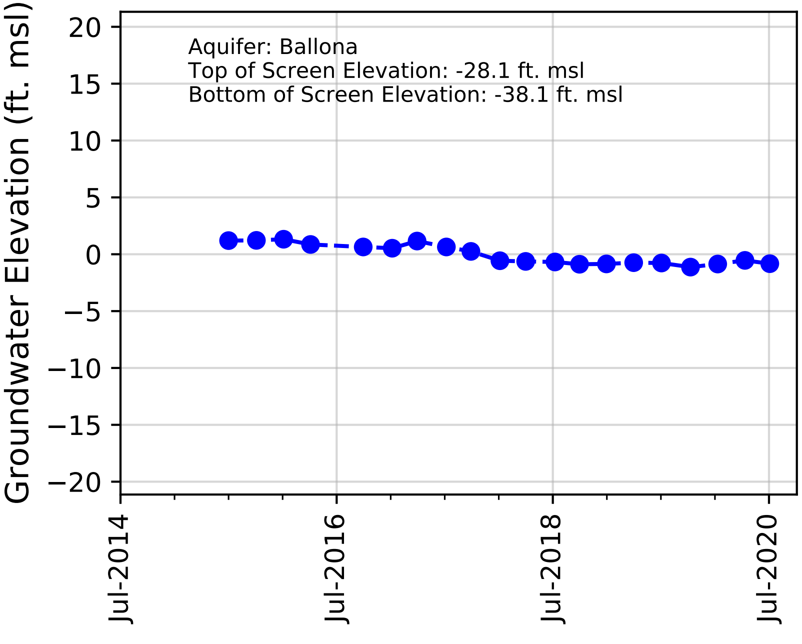
Well Name: C-79be



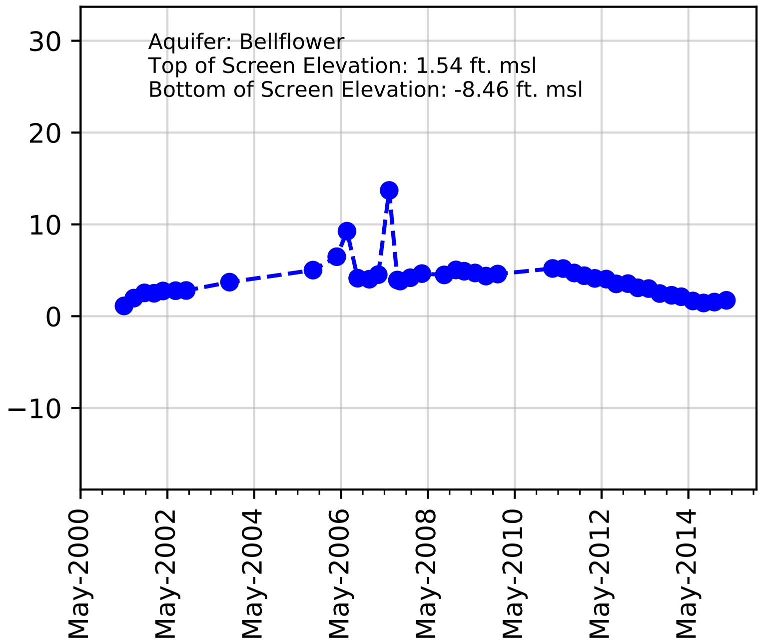
Well Name: C-80ba

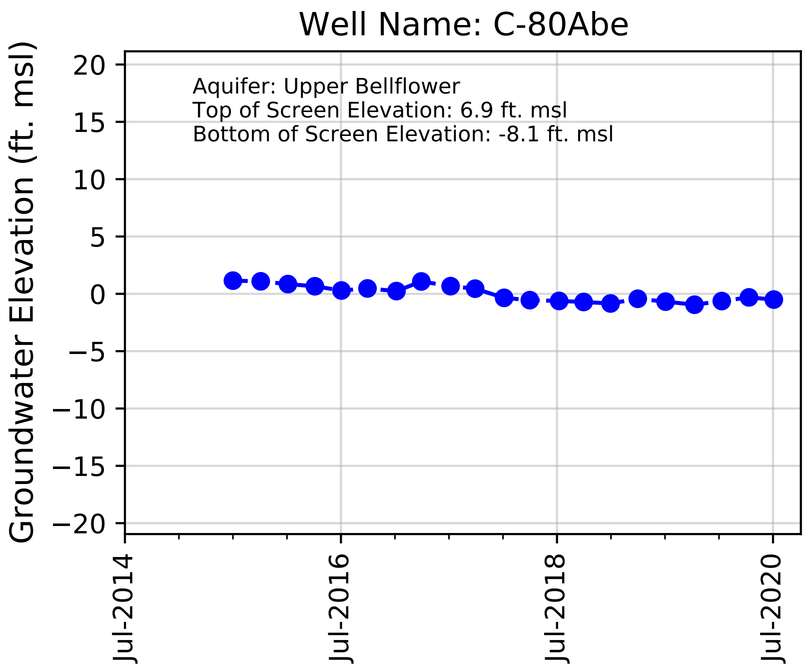


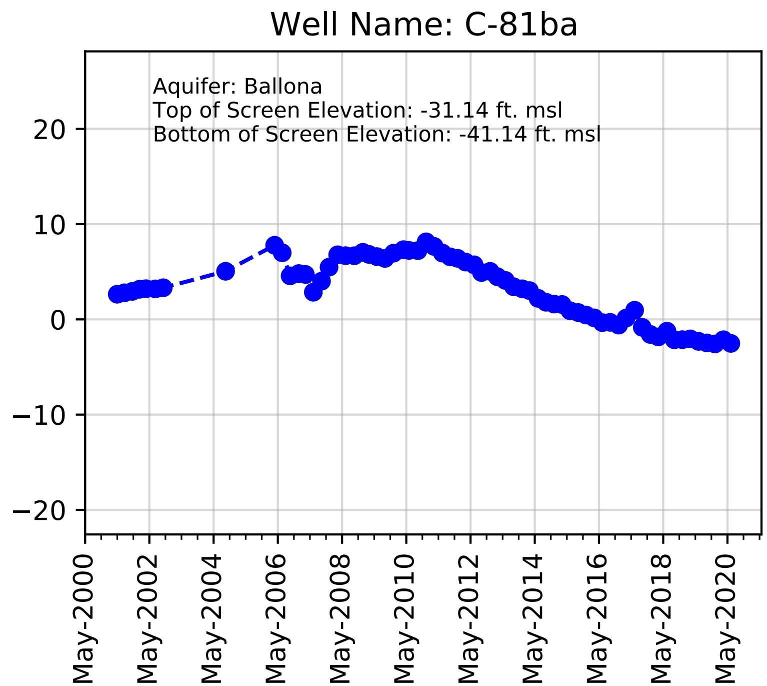
Well Name: C-80Aba

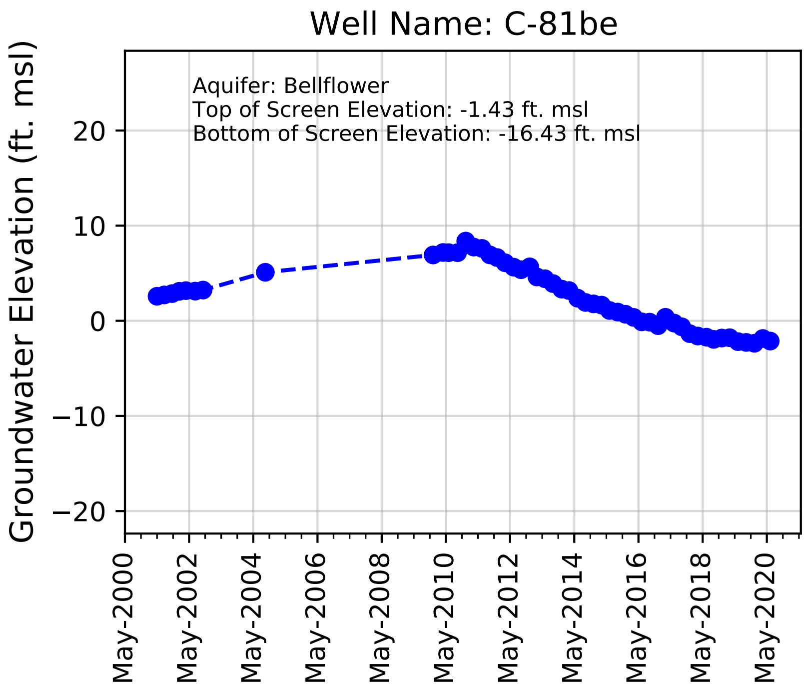


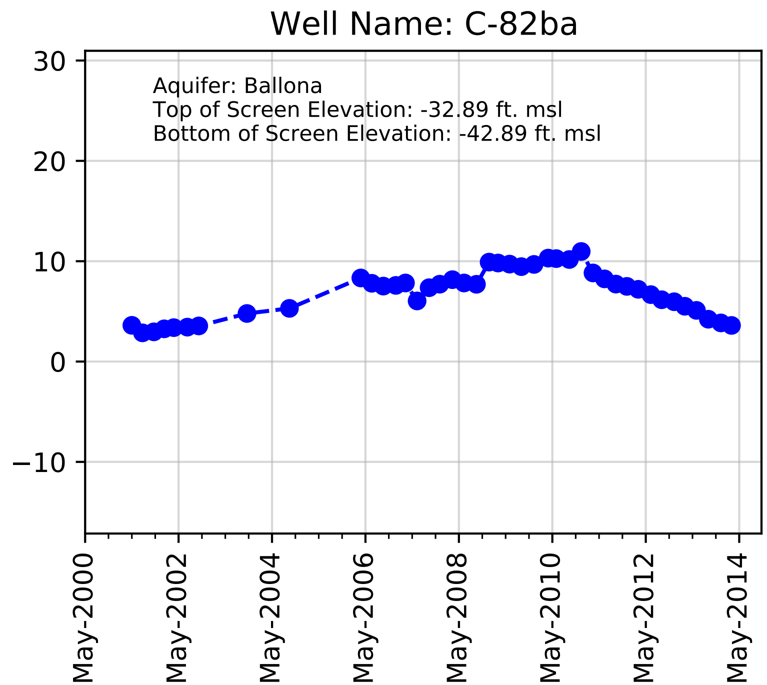
Well Name: C-80be

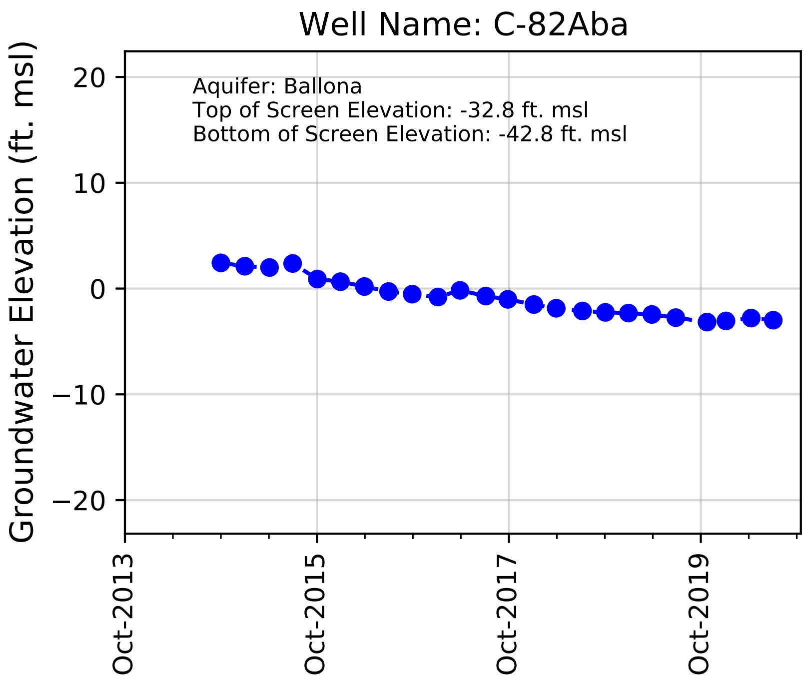


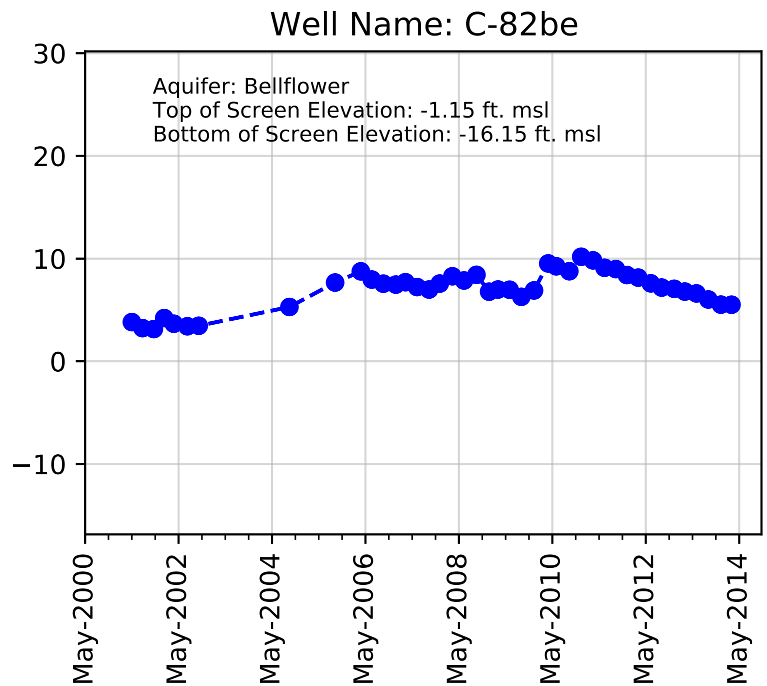

Well Name: C-80Abe
Aquifer: Upper Bellflower
Top of Screen Elevation: 6.9 ft. msl
Bottom of Screen Elevation: -8.1 ft. msl
Groundwater Elevation (ft. msl)
Jul-2014
Jul-2016
Jul-2018
Jul-2020

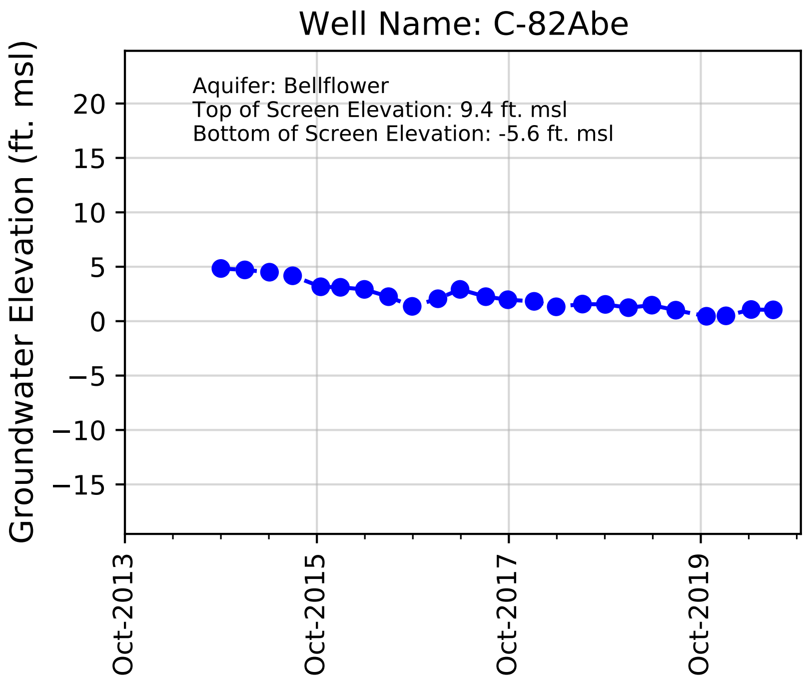

Well Name: C-81ba
Aquifer: Ballona
Top of Screen Elevation: -31.14 ft. msl
Bottom of Screen Elevation: -41.14 ft. msl
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014
May-2016
May-2018
May-2020

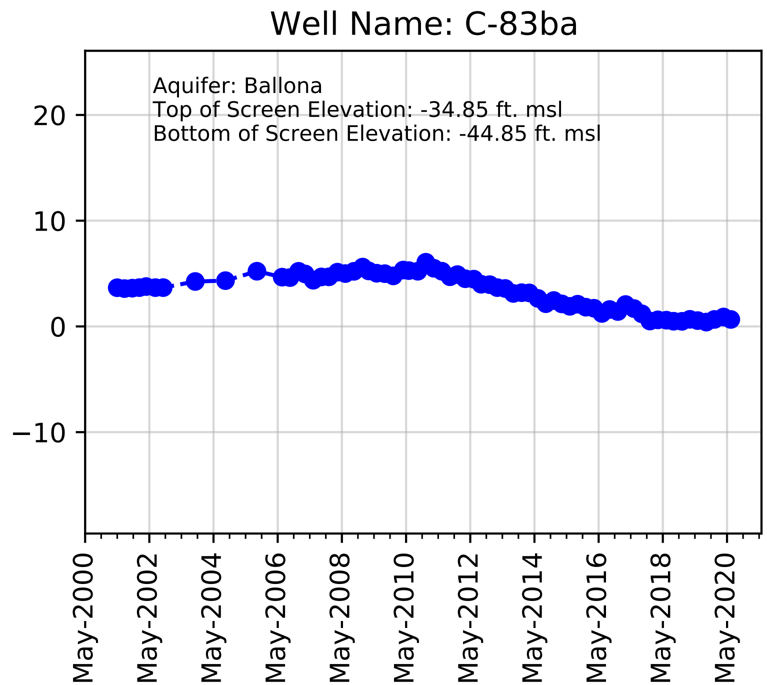

Well Name: C-81be
Aquifer: Bellflower
Top of Screen Elevation: -1.43 ft. msl
Bottom of Screen Elevation: -16.43 ft. msl
Groundwater Elevation (ft. msl)
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014
May-2016
May-2018
May-2020


Well Name: C-82ba
Aquifer: Ballona
Top of Screen Elevation: -32.89 ft. msl
Bottom of Screen Elevation: -42.89 ft. msl
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014


Well Name: C-82Aba
Aquifer: Ballona
Top of Screen Elevation: -32.8 ft. msl
Bottom of Screen Elevation: -42.8 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Oct-2013
Oct-2015
Oct-2017
Oct-2019


Well Name: C-82be
Aquifer: Bellflower
Top of Screen Elevation: -1.15 ft. msl
Bottom of Screen Elevation: -16.15 ft. msl
30
20
10
0
−10
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014


Well Name: C-82Abe
Aquifer: Bellflower
Top of Screen Elevation: 9.4 ft. msl
Bottom of Screen Elevation: -5.6 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Oct-2013
Oct-2015
Oct-2017
Oct-2019


Well Name: C-83ba
Aquifer: Ballona
Top of Screen Elevation: -34.85 ft. msl
Bottom of Screen Elevation: -44.85 ft. msl
20
10
0
−10
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
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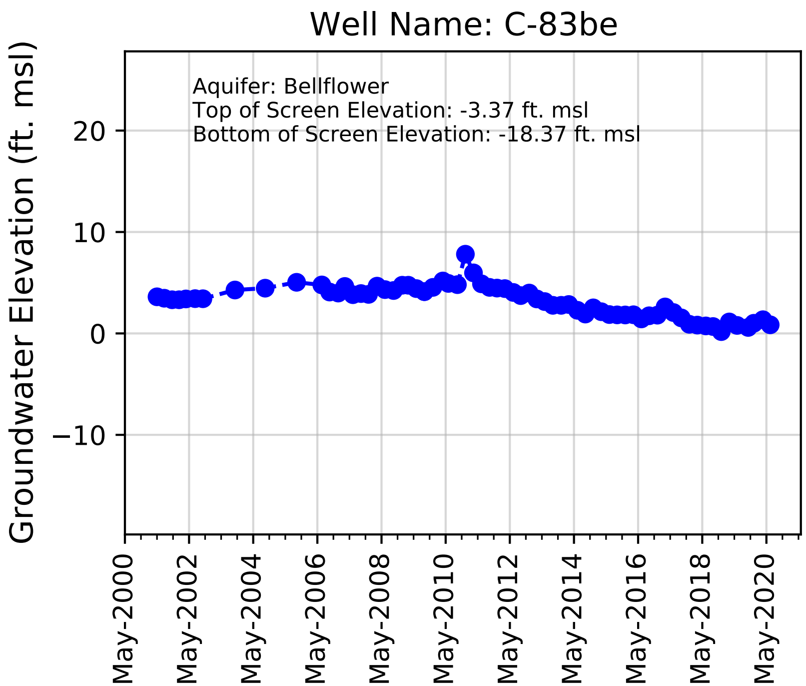
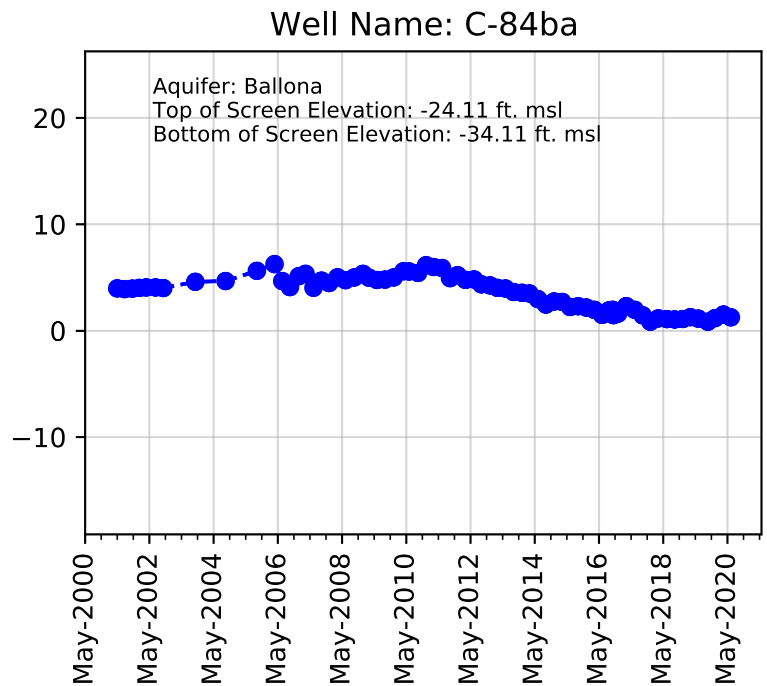
May-2016
May-2018
May-2020


Well Name: C-83be
Aquifer: Bellflower
Top of Screen Elevation: -3.37 ft. msl
Bottom of Screen Elevation: -18.37 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014
May-2016
May-2018
May-2020


Well Name: C-84ba
Aquifer: Ballona
Top of Screen Elevation: -24.11 ft. msl
Bottom of Screen Elevation: -34.11 ft. msl
20
10
0
−10
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
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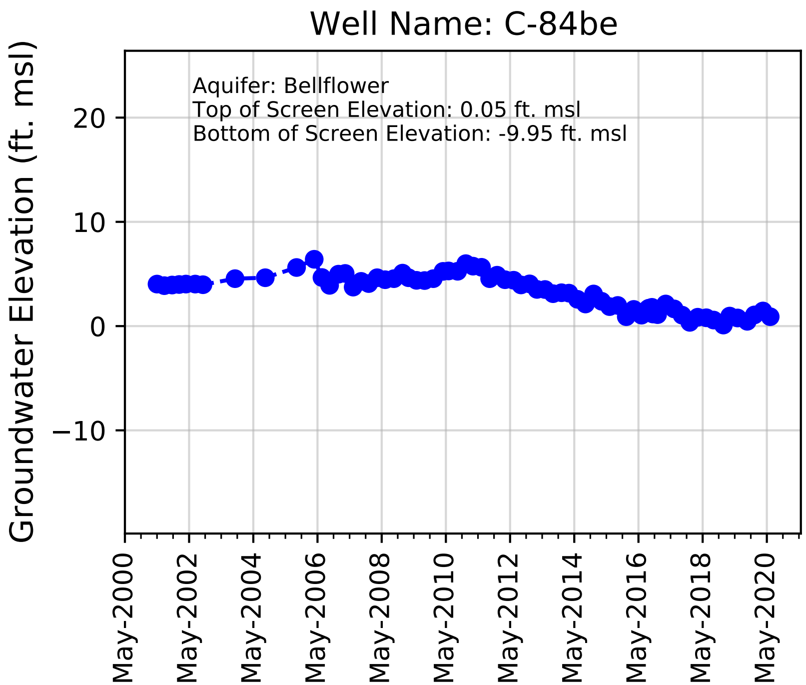
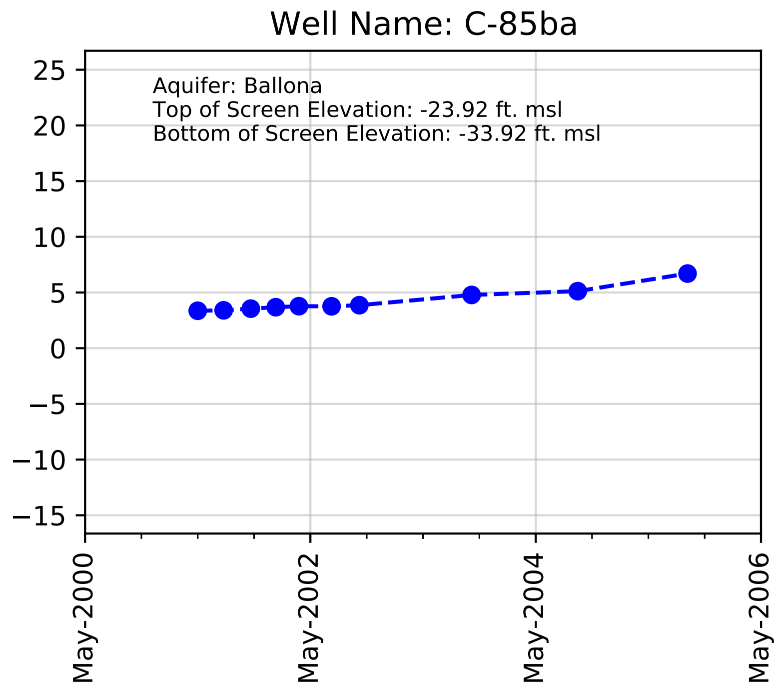
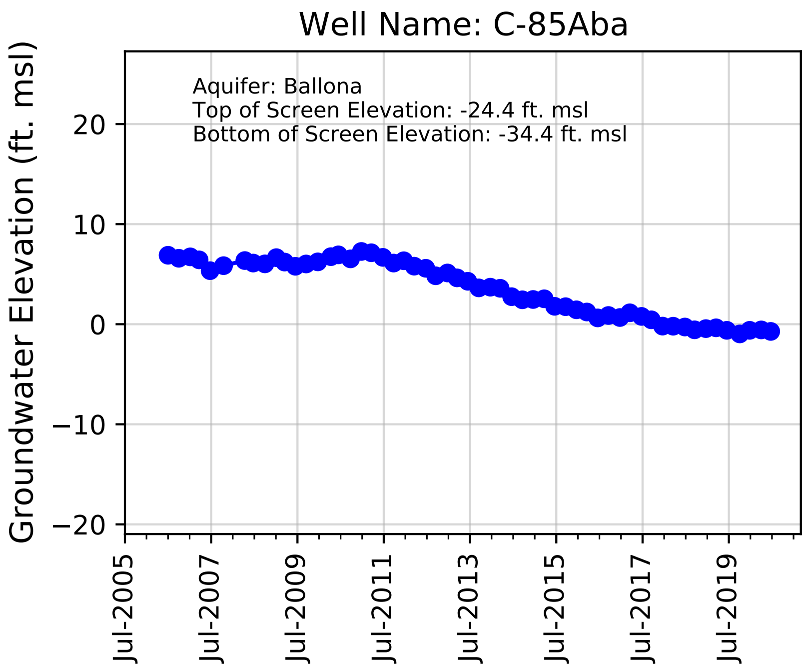
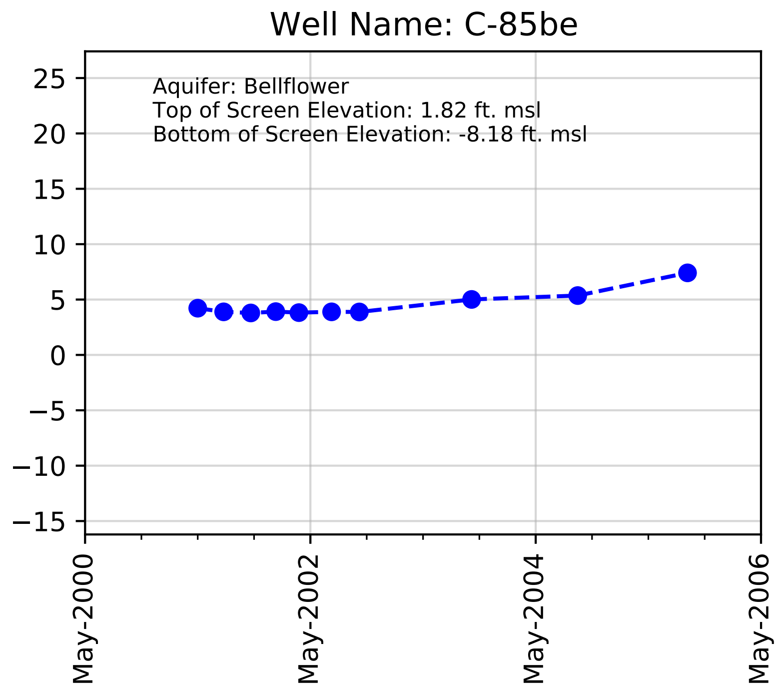
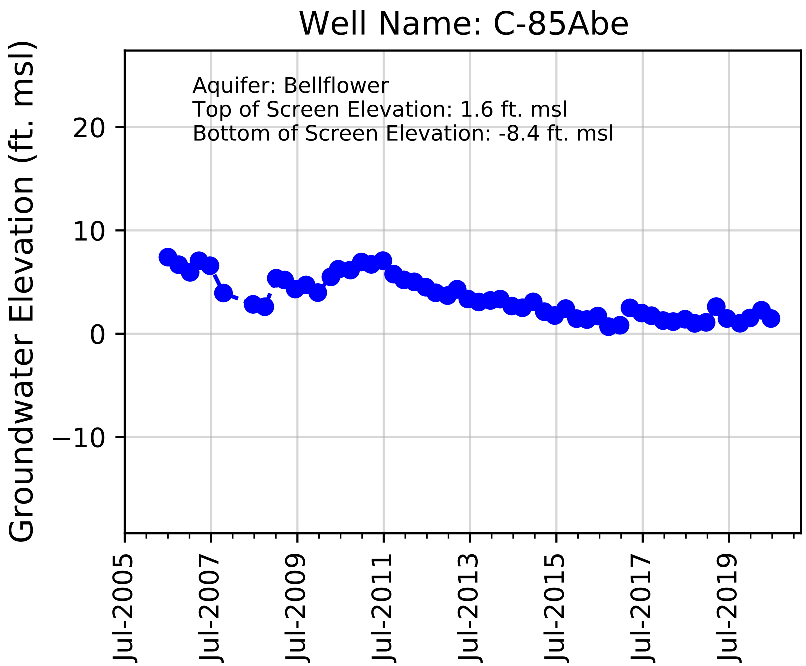
May-2016
May-2018
May-2020

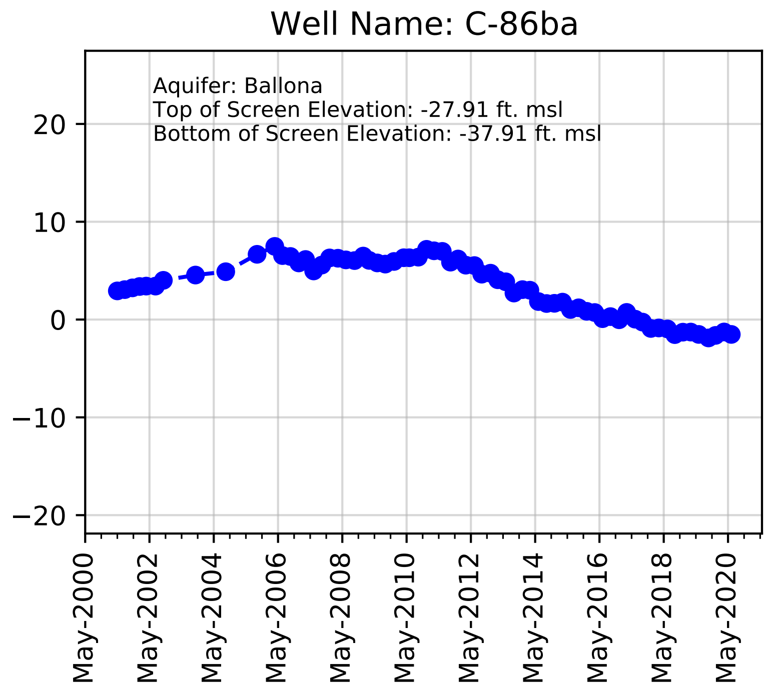

Well Name: C-84be
Aquifer: Bellflower
Top of Screen Elevation: 0.05 ft. msl
Bottom of Screen Elevation: -9.95 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014
May-2016
May-2018
May-2020


Well Name: C-85ba
Aquifer: Ballona
Top of Screen Elevation: -23.92 ft. msl
Bottom of Screen Elevation: -33.92 ft. msl
25
20
15
10
5
0
−5
−10
−15
May-2000
May-2002
May-2004
May-2006

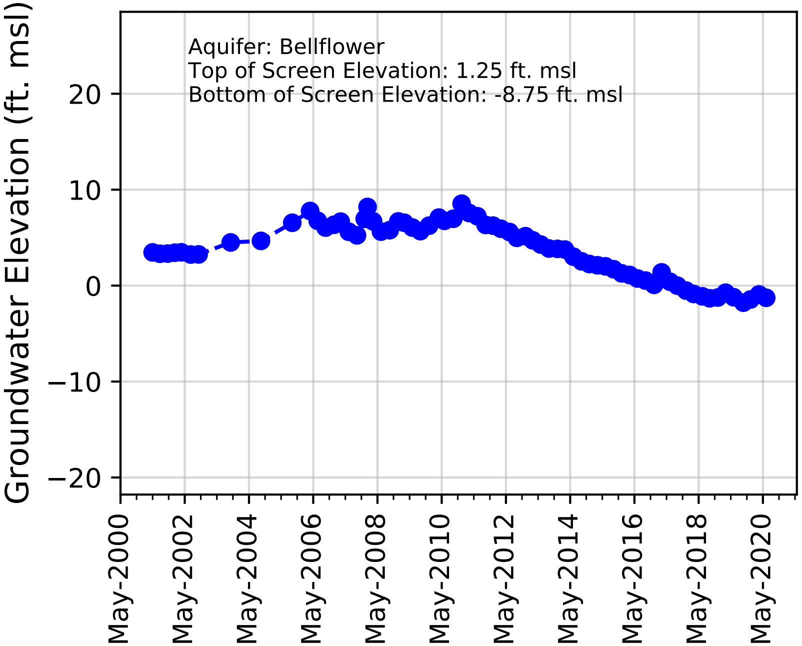

Well Name: C-85Aba
Aquifer: Ballona
Top of Screen Elevation: -24.4 ft. msl
Bottom of Screen Elevation: -34.4 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Jul-2005
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019


Well Name: C-85be
Aquifer: Bellflower
Top of Screen Elevation: 1.82 ft. msl
Bottom of Screen Elevation: -8.18 ft. msl
25
20
15
10
5
0
−5
−10
−15
May-2000
May-2002
May-2004
May-2006

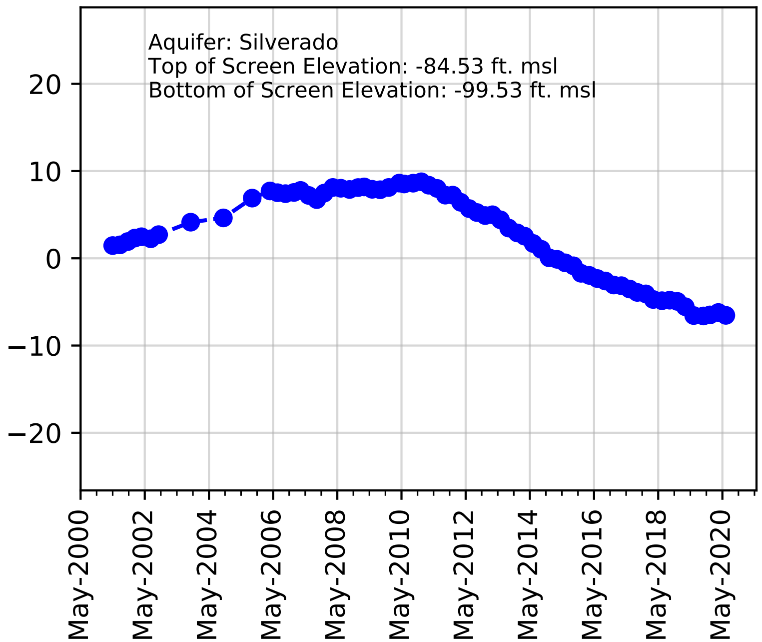

Well Name: C-85Abe
Aquifer: Bellflower
Top of Screen Elevation: 1.6 ft. msl
Bottom of Screen Elevation: -8.4 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Jul-2005
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019


Well Name: C-86ba
Aquifer: Ballona
Top of Screen Elevation: -27.91 ft. msl
Bottom of Screen Elevation: -37.91 ft. msl
20
10
0
−10
−20
May-2000
May-2002
May-2004
May-2006
May-2008
May-2010
May-2012
May-2014
May-2016
May-2018
May-2020

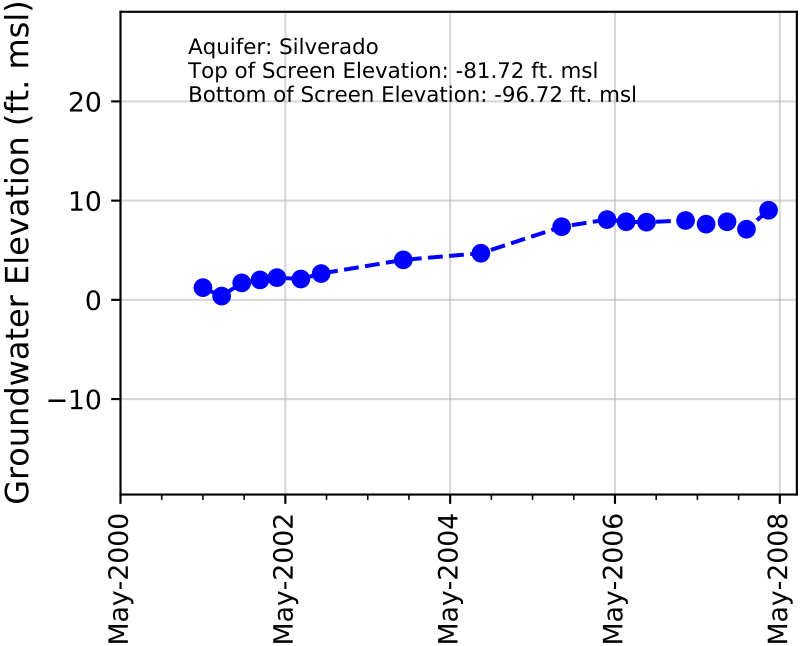
Well Name: C-86be



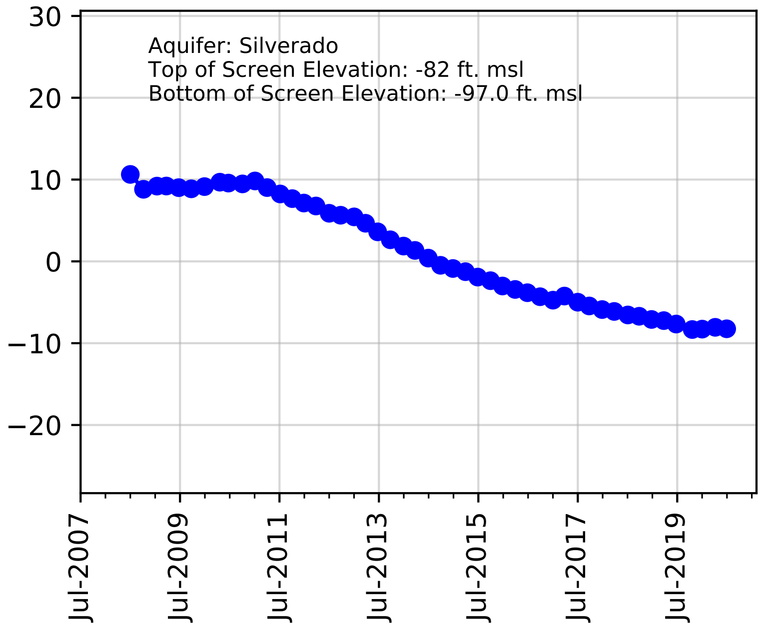
Well Name: C-87

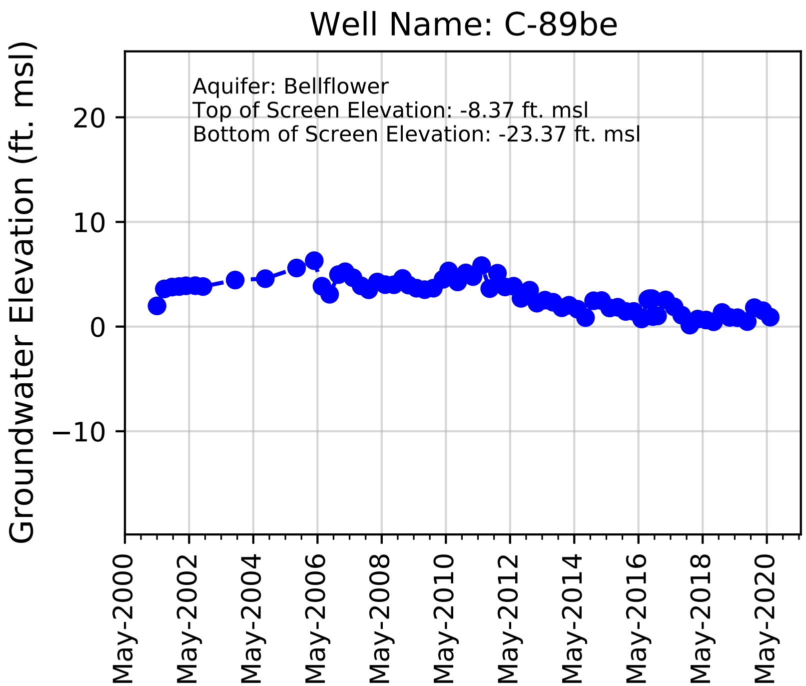


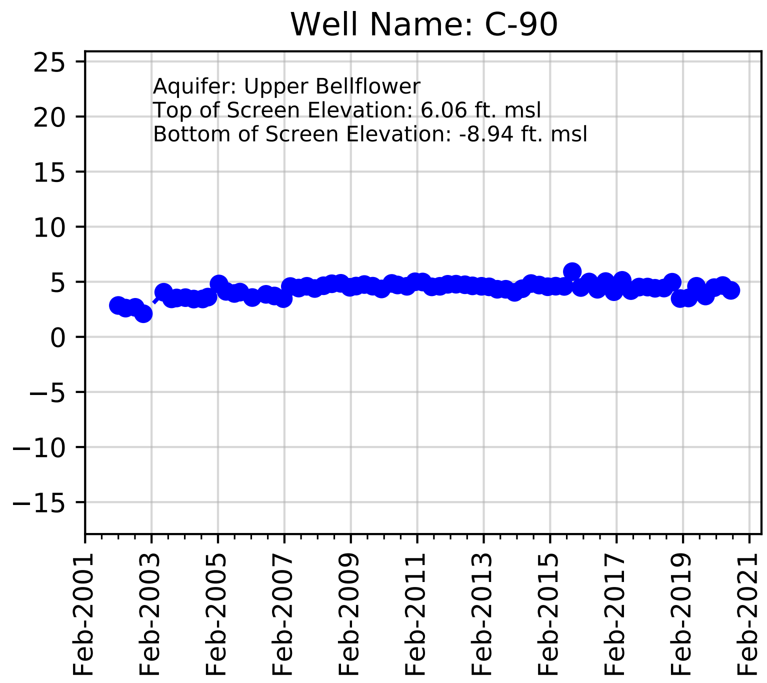
Well Name: C-88

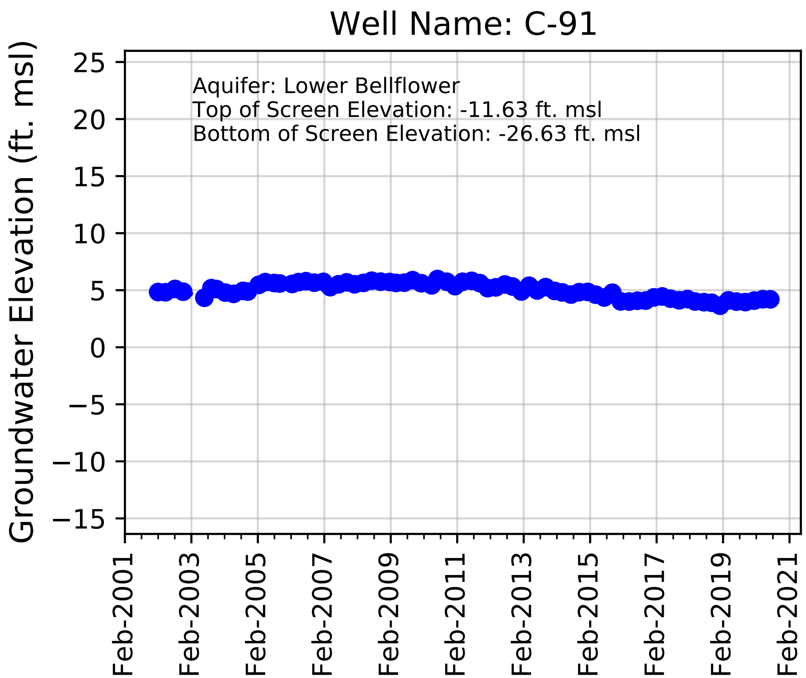


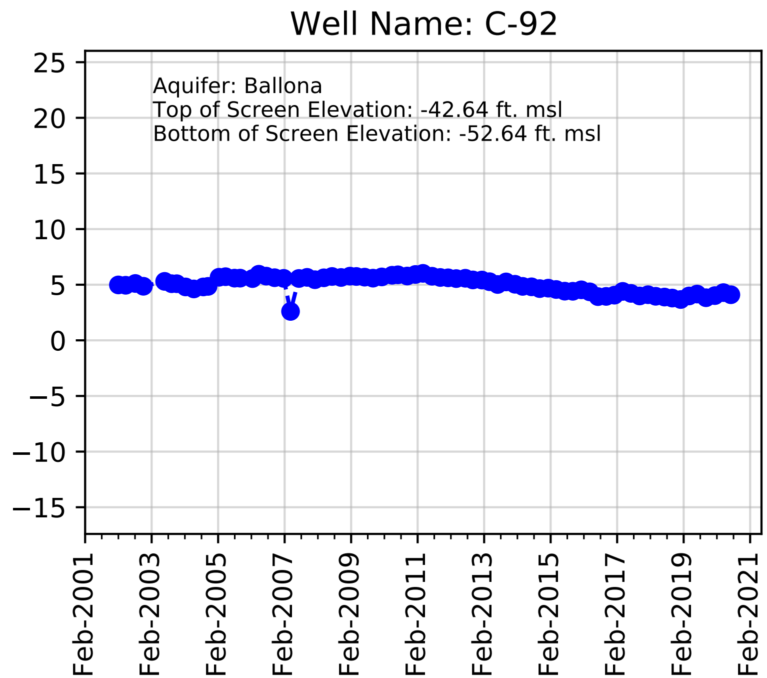
Well Name: C-88A

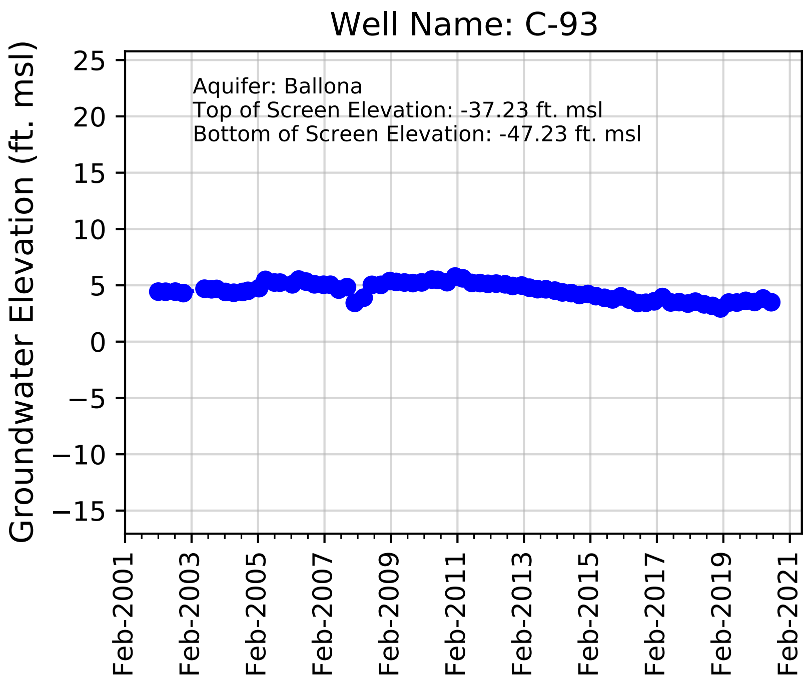


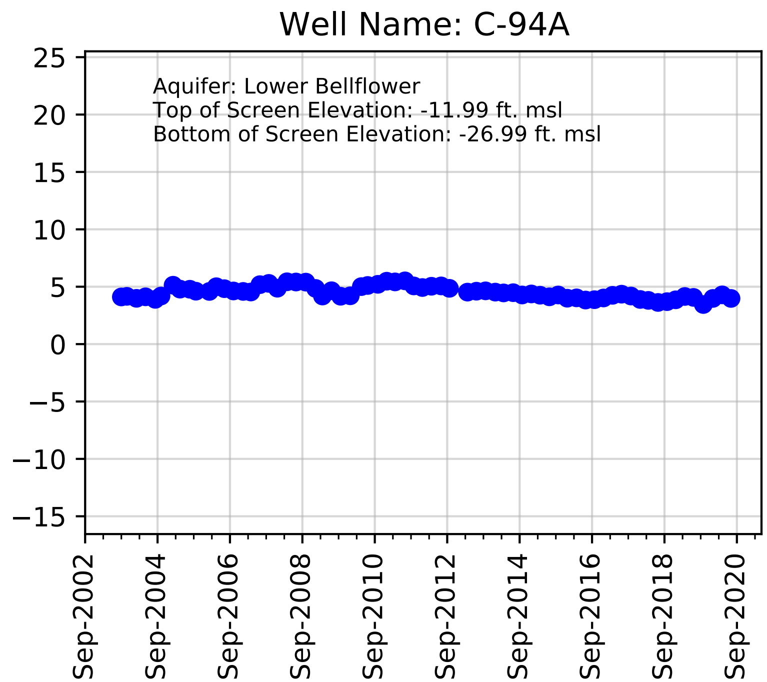

Well Name: C-89be
Aquifer: Bellflower
Top of Screen Elevation: -8.37 ft. msl
Bottom of Screen Elevation: -23.37 ft. msl
Groundwater Elevation (ft. msl)

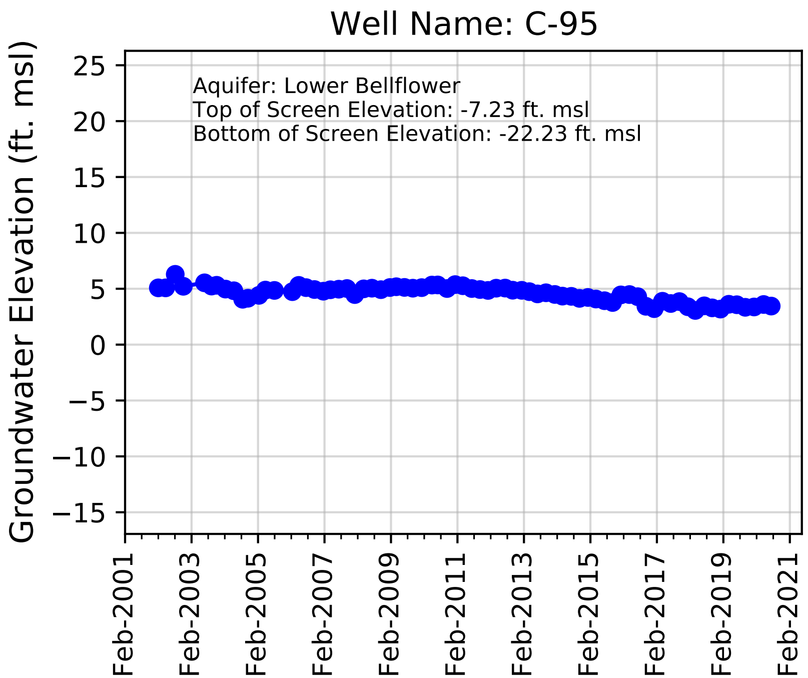

Well Name: C-90
Aquifer: Upper Bellflower
Top of Screen Elevation: 6.06 ft. msl
Bottom of Screen Elevation: -8.94 ft. msl

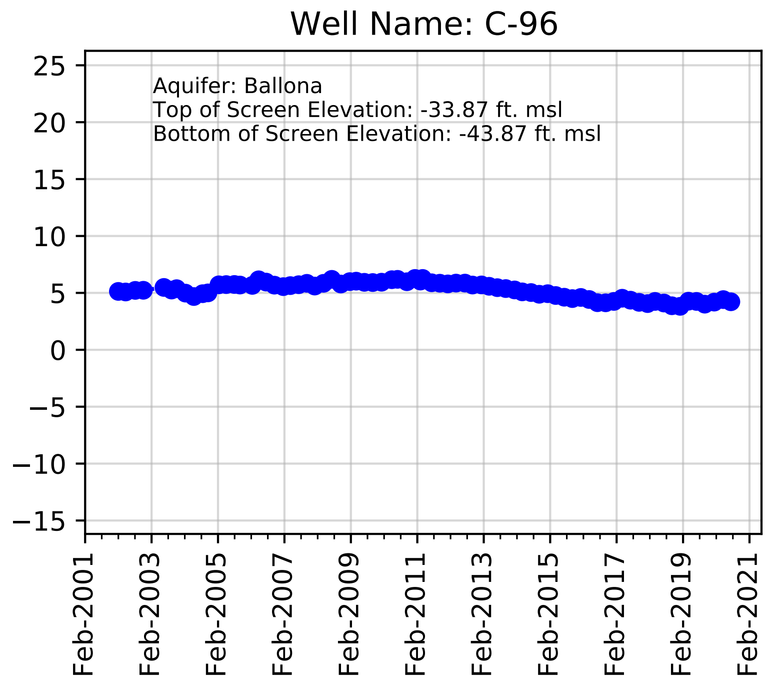

Well Name: C-91
Aquifer: Lower Bellflower
Top of Screen Elevation: -11.63 ft. msl
Bottom of Screen Elevation: -26.63 ft. msl
Groundwater Elevation (ft. msl)

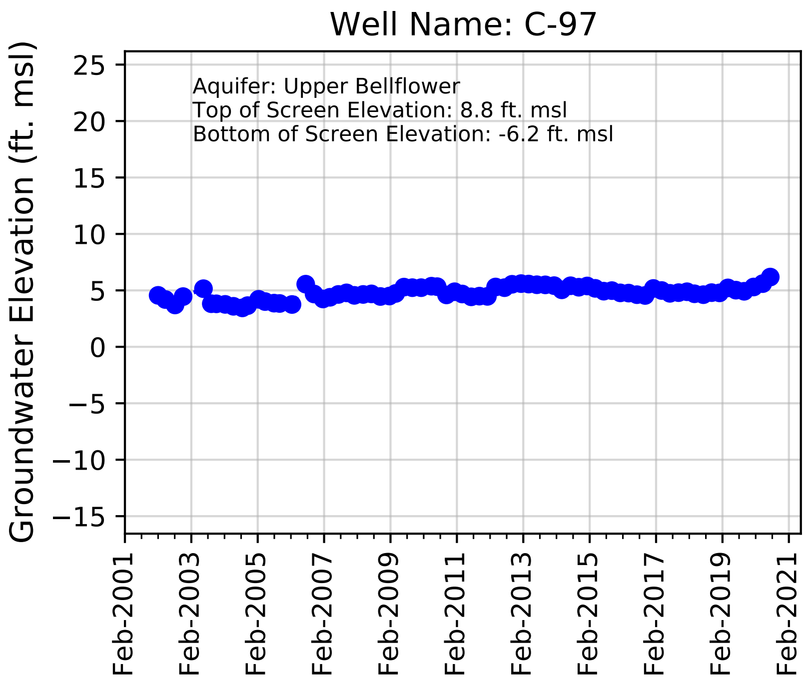

Well Name: C-92
Aquifer: Ballona
Top of Screen Elevation: -42.64 ft. msl
Bottom of Screen Elevation: -52.64 ft. msl

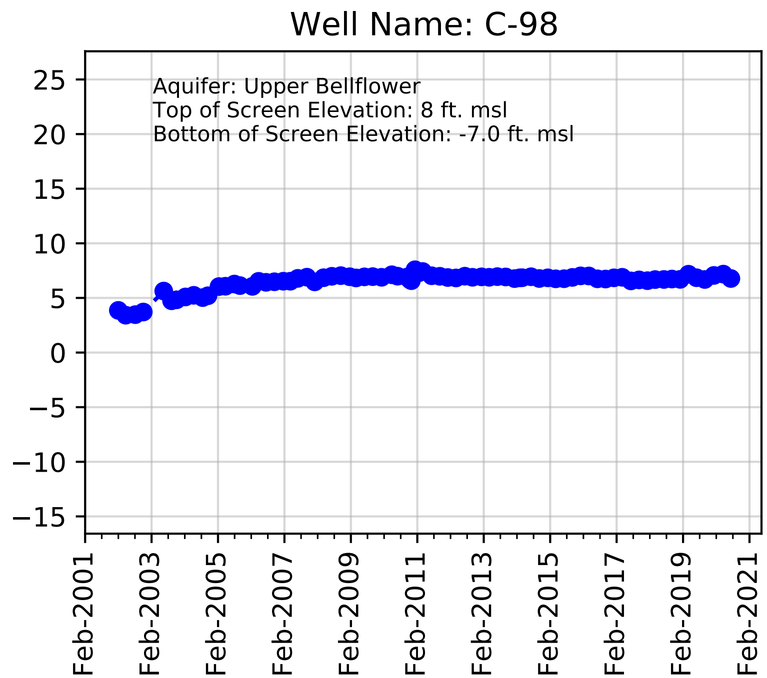

Well Name: C-93
Aquifer: Ballona
Top of Screen Elevation: -37.23 ft. msl
Bottom of Screen Elevation: -47.23 ft. msl
Groundwater Elevation (ft. msl)

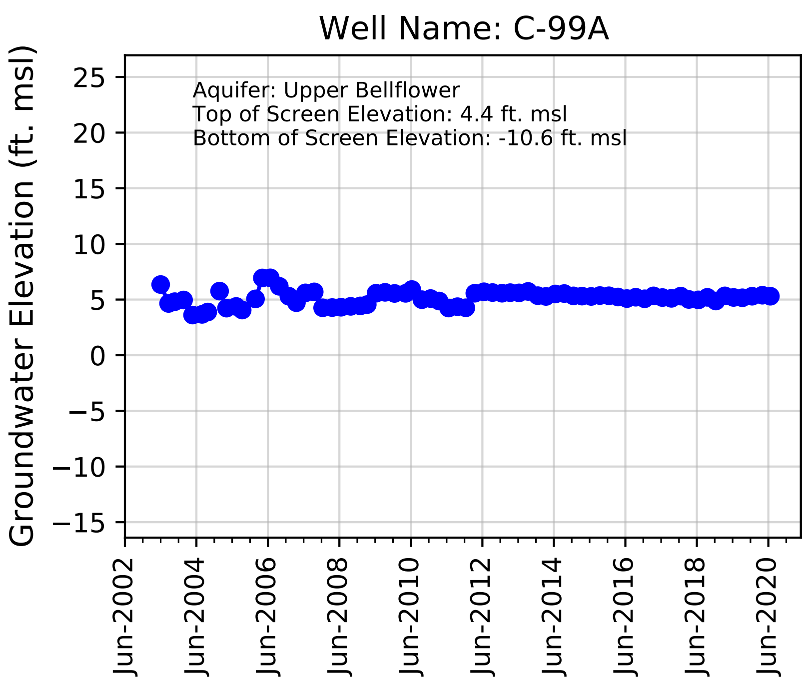

Well Name: C-94A
Aquifer: Lower Bellflower
Top of Screen Elevation: -11.99 ft. msl
Bottom of Screen Elevation: -26.99 ft. msl

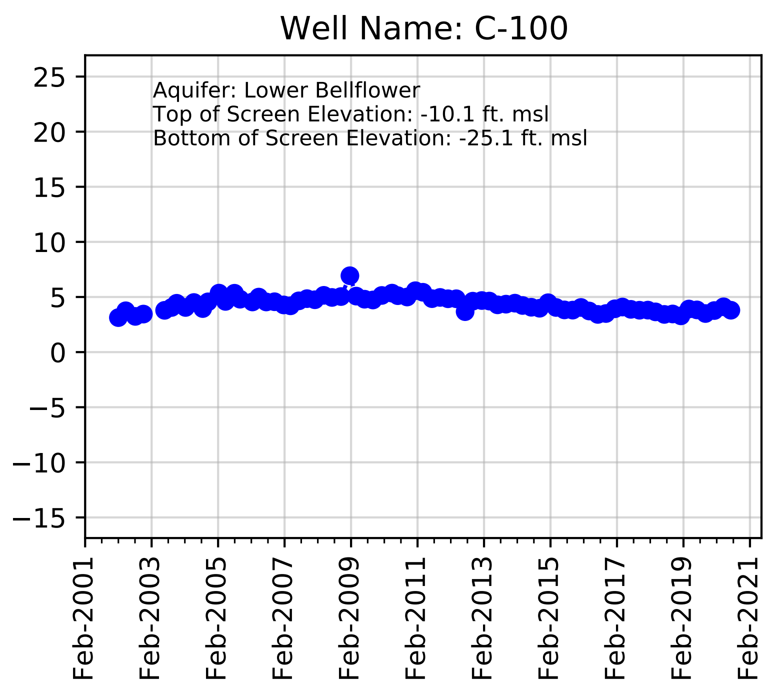

Well Name: C-95
Aquifer: Lower Bellflower
Top of Screen Elevation: -7.23 ft. msl
Bottom of Screen Elevation: -22.23 ft. msl
Groundwater Elevation (ft. msl)

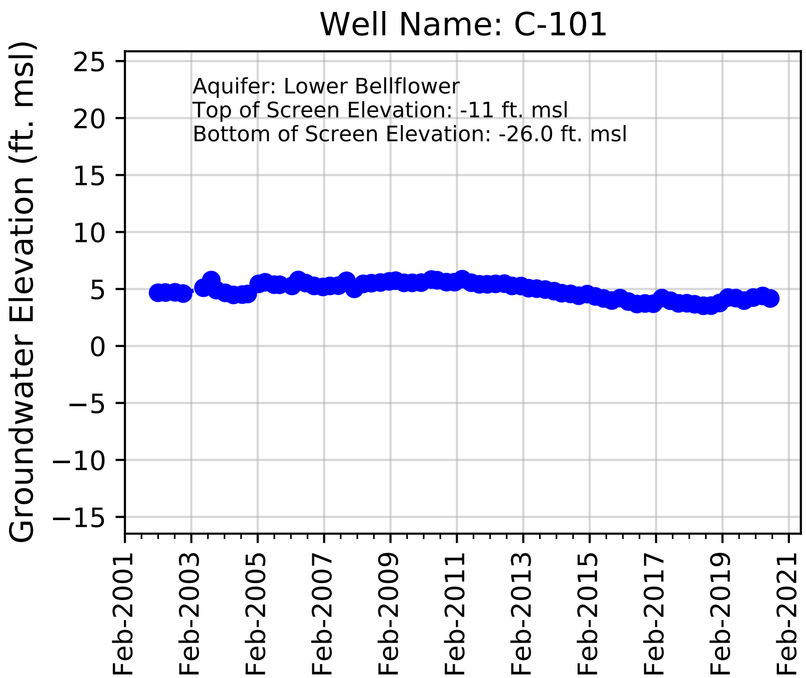

Well Name: C-96
Aquifer: Ballona
Top of Screen Elevation: -33.87 ft. msl
Bottom of Screen Elevation: -43.87 ft. msl

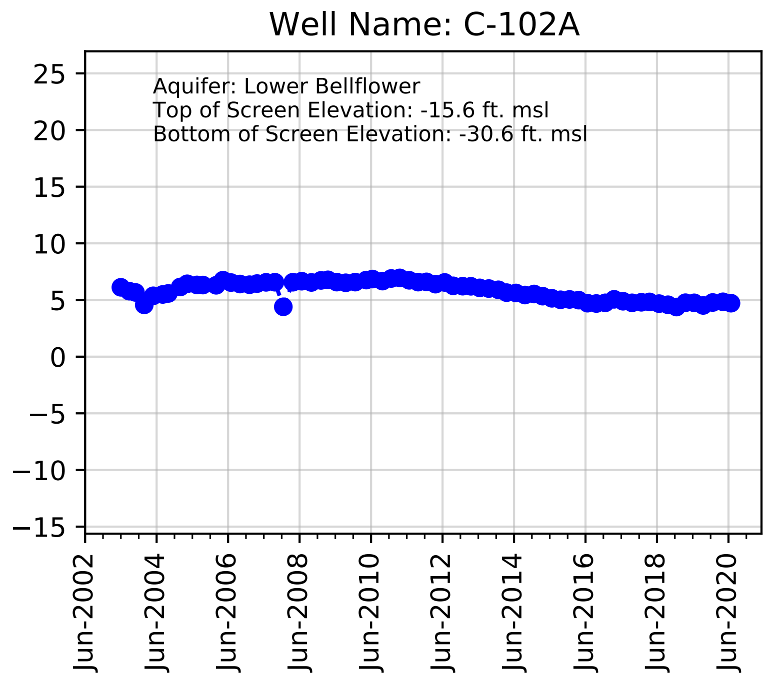

Well Name: C-97
Aquifer: Upper Bellflower
Top of Screen Elevation: 8.8 ft. msl
Bottom of Screen Elevation: -6.2 ft. msl
Groundwater Elevation (ft. msl)

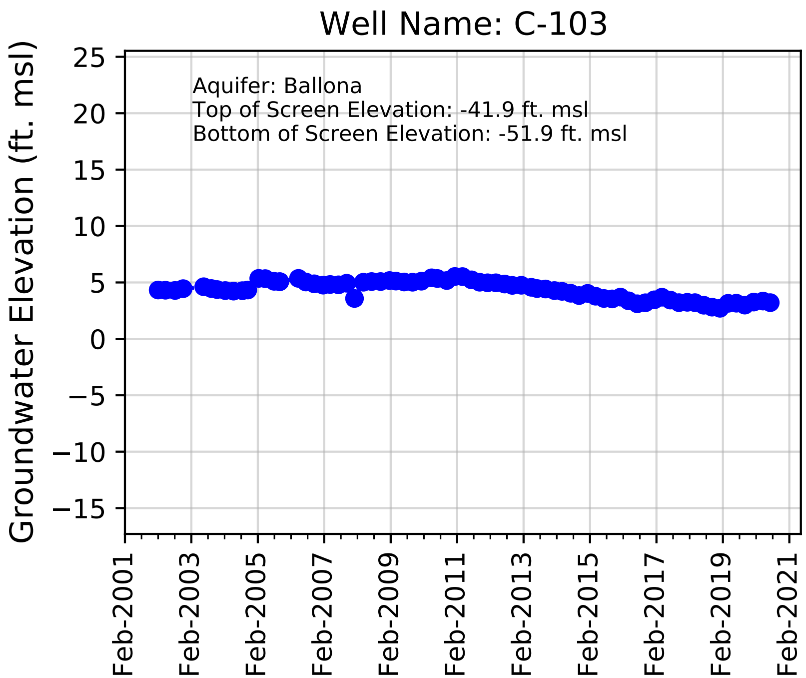

Well Name: C-98
Aquifer: Upper Bellflower
Top of Screen Elevation: 8 ft. msl
Bottom of Screen Elevation: -7.0 ft. msl

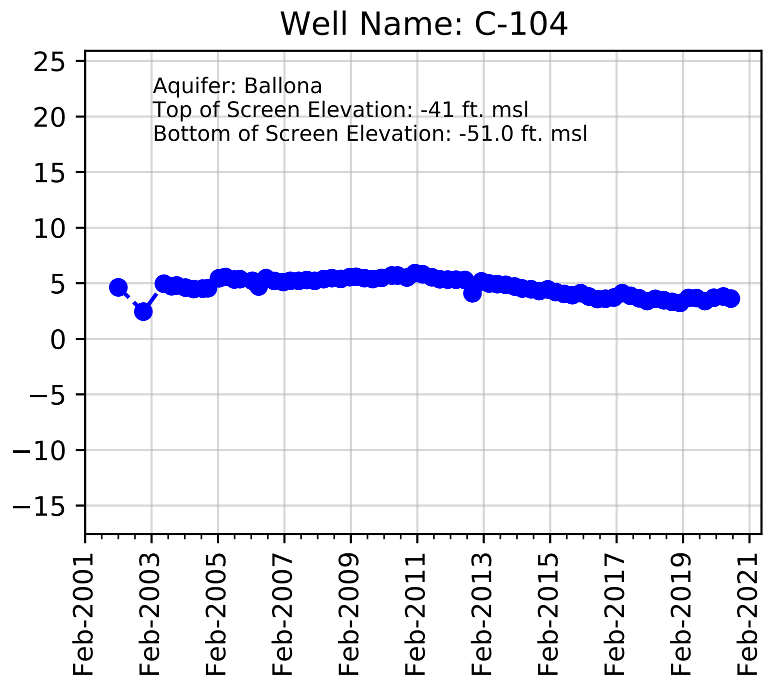

Well Name: C-99A
Aquifer: Upper Bellflower
Top of Screen Elevation: 4.4 ft. msl
Bottom of Screen Elevation: -10.6 ft. msl
Groundwater Elevation (ft. msl)

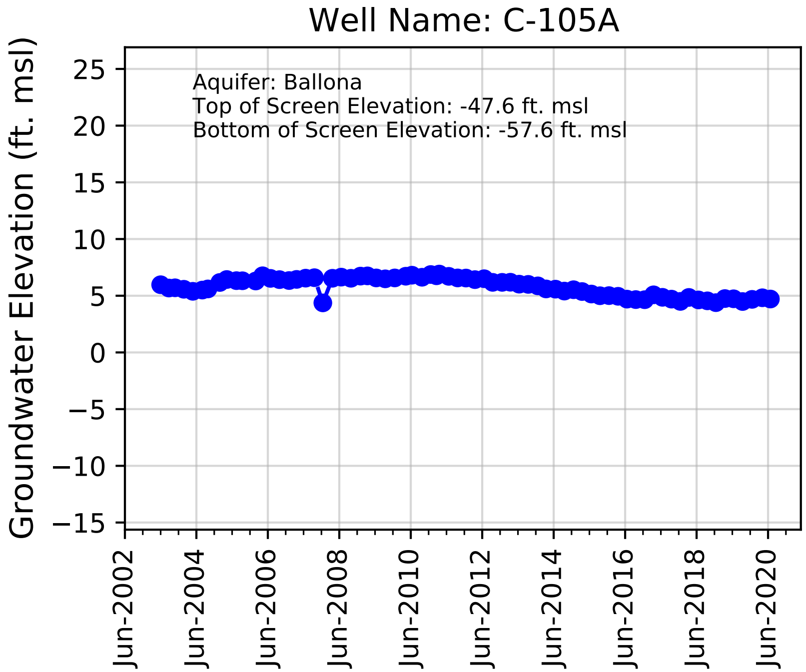

Well Name: C-100
Aquifer: Lower Bellflower
Top of Screen Elevation: -10.1 ft. msl
Bottom of Screen Elevation: -25.1 ft. msl

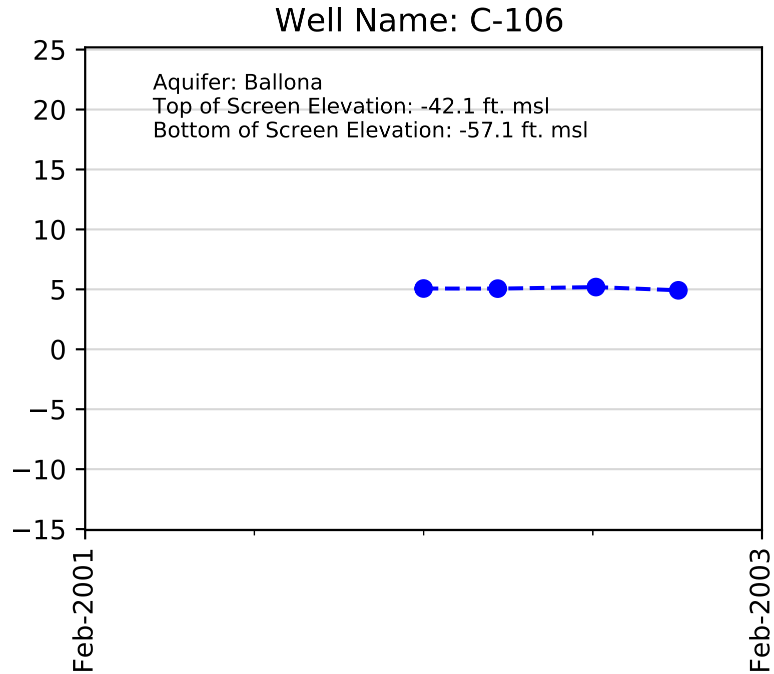

Well Name: C-101
Aquifer: Lower Bellflower
Top of Screen Elevation: -11 ft. msl
Bottom of Screen Elevation: -26.0 ft. msl
Groundwater Elevation (ft. msl)

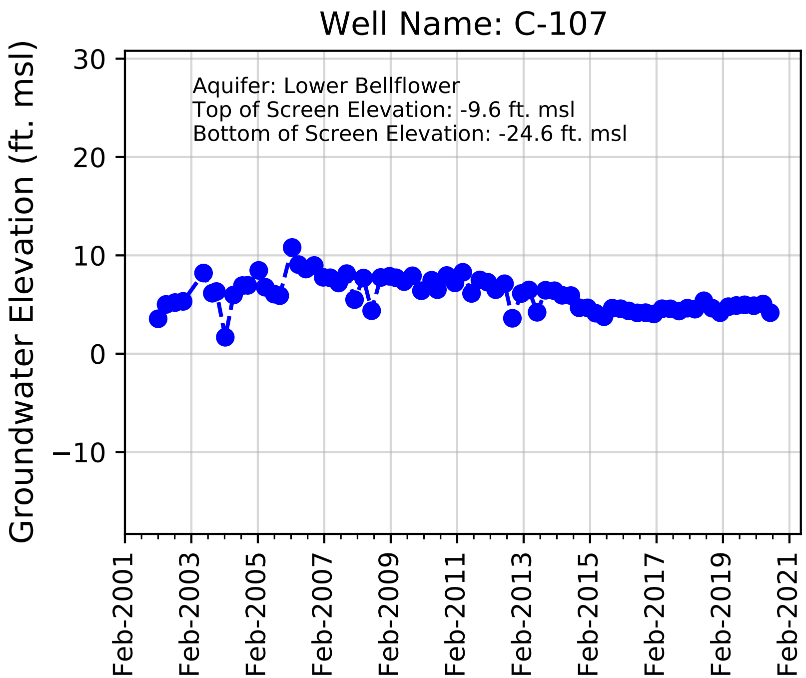

Well Name: C-102A
Aquifer: Lower Bellflower
Top of Screen Elevation: -15.6 ft. msl
Bottom of Screen Elevation: -30.6 ft. msl

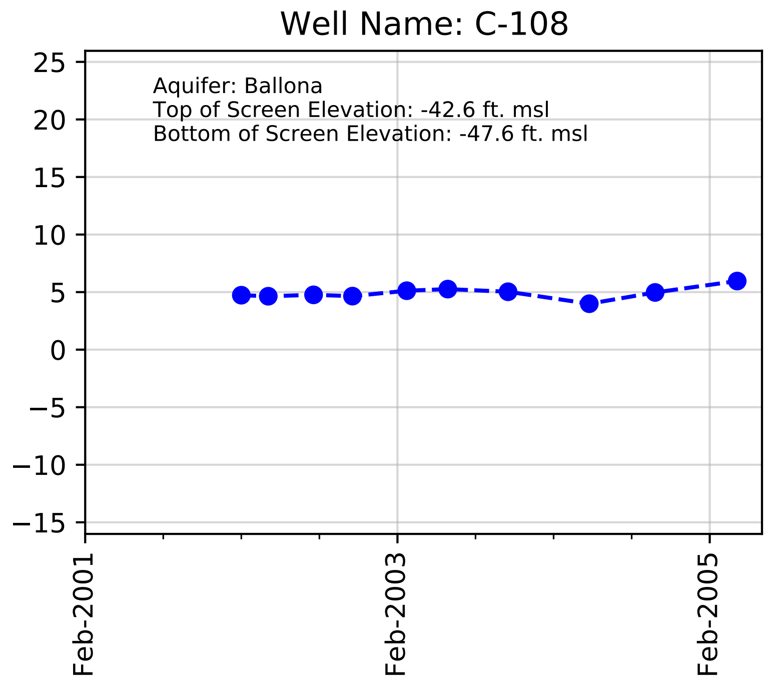

Well Name: C-103
Aquifer: Ballona
Top of Screen Elevation: -41.9 ft. msl
Bottom of Screen Elevation: -51.9 ft. msl
Groundwater Elevation (ft. msl)

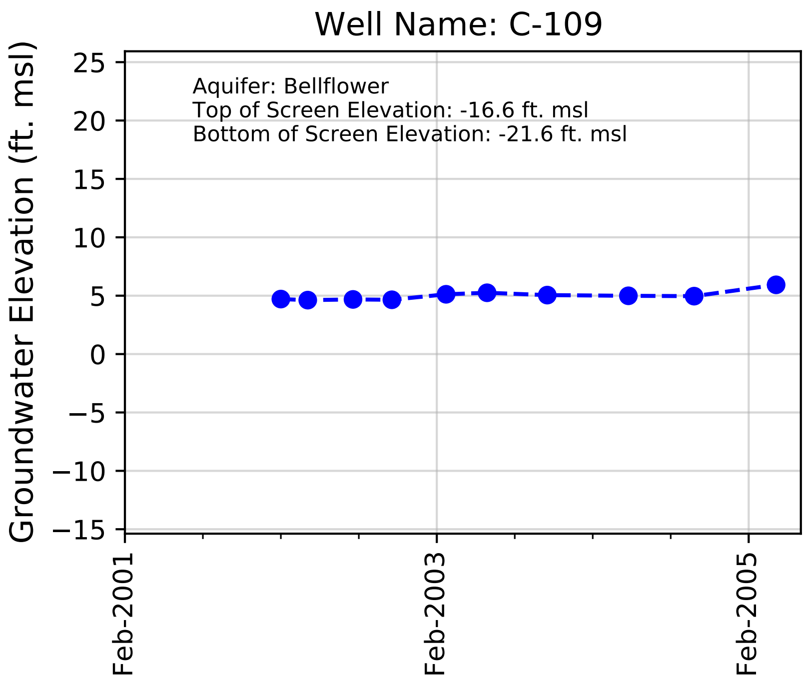

Well Name: C-104
Aquifer: Ballona
Top of Screen Elevation: -41 ft. msl
Bottom of Screen Elevation: -51.0 ft. msl

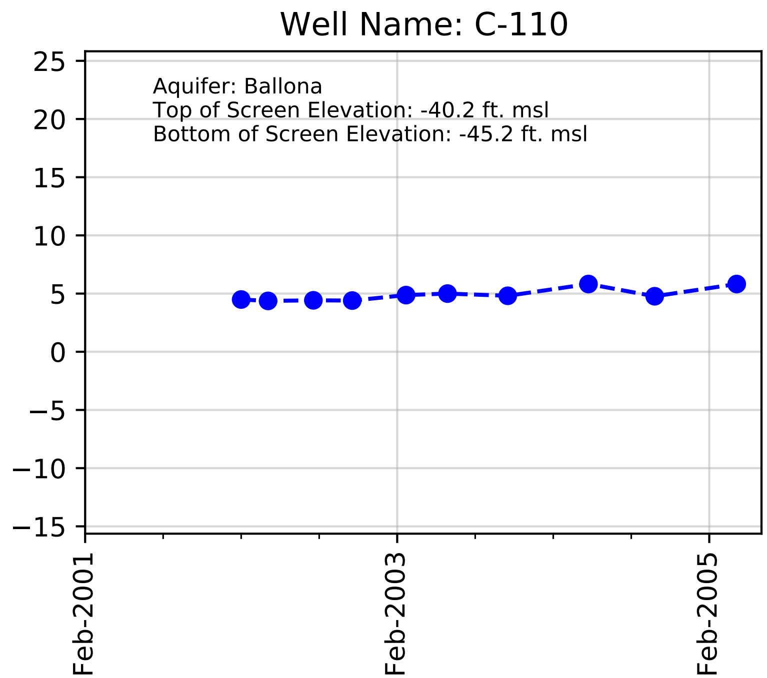

Well Name: C-105A
Aquifer: Ballona
Top of Screen Elevation: -47.6 ft. msl
Bottom of Screen Elevation: -57.6 ft. msl
Groundwater Elevation (ft. msl)

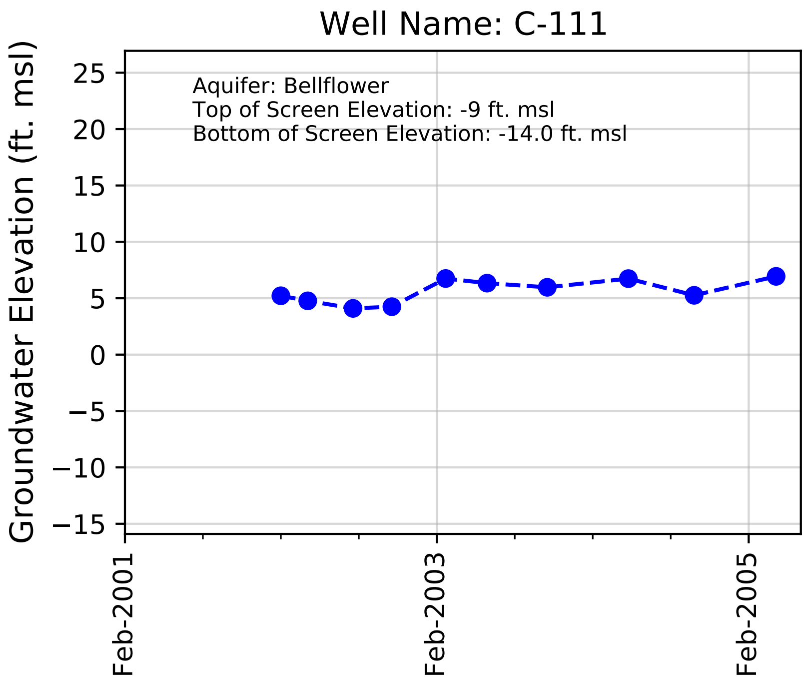

Well Name: C-106
Aquifer: Ballona
Top of Screen Elevation: -42.1 ft. msl
Bottom of Screen Elevation: -57.1 ft. msl

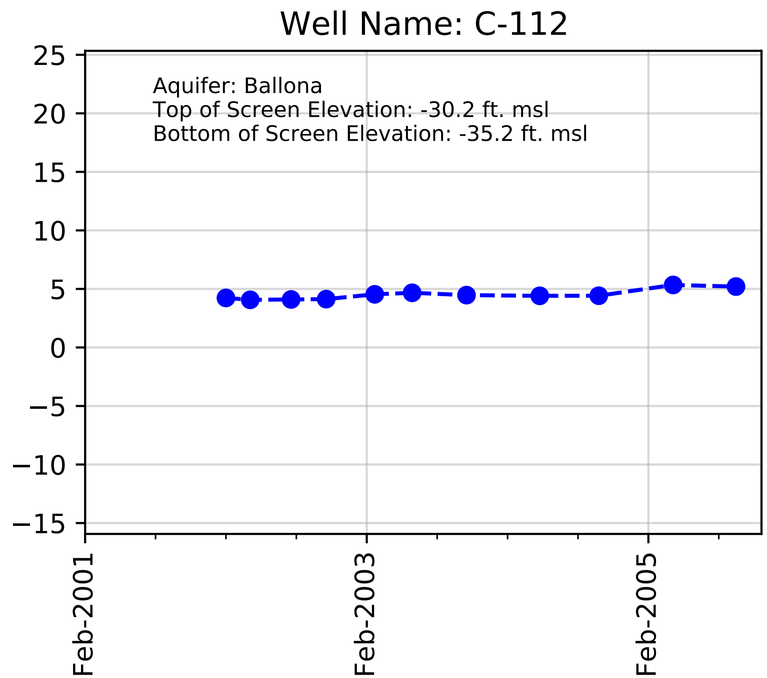

Well Name: C-107
Aquifer: Lower Bellflower
Top of Screen Elevation: -9.6 ft. msl
Bottom of Screen Elevation: -24.6 ft. msl
Groundwater Elevation (ft. msl)

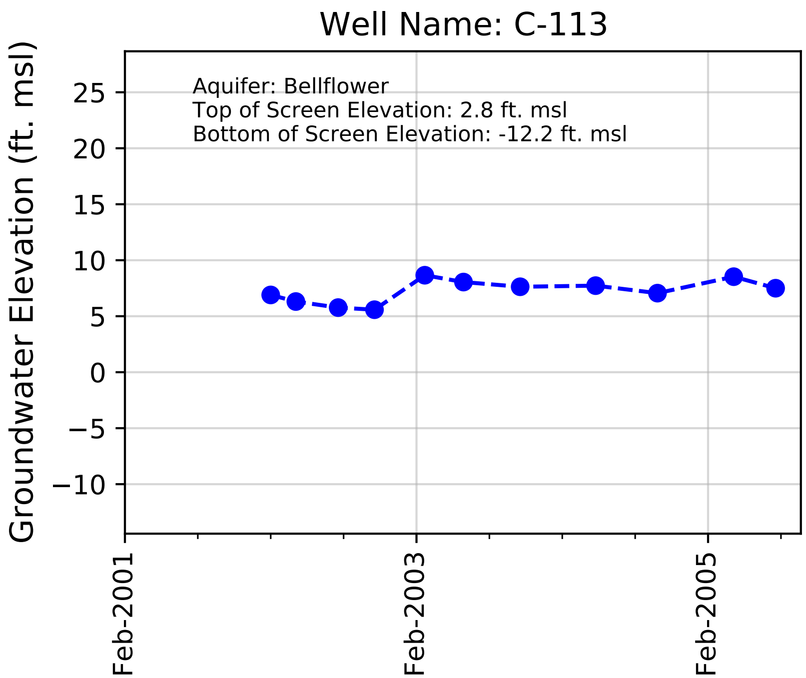

Well Name: C-108
Aquifer: Ballona
Top of Screen Elevation: -42.6 ft. msl
Bottom of Screen Elevation: -47.6 ft. msl

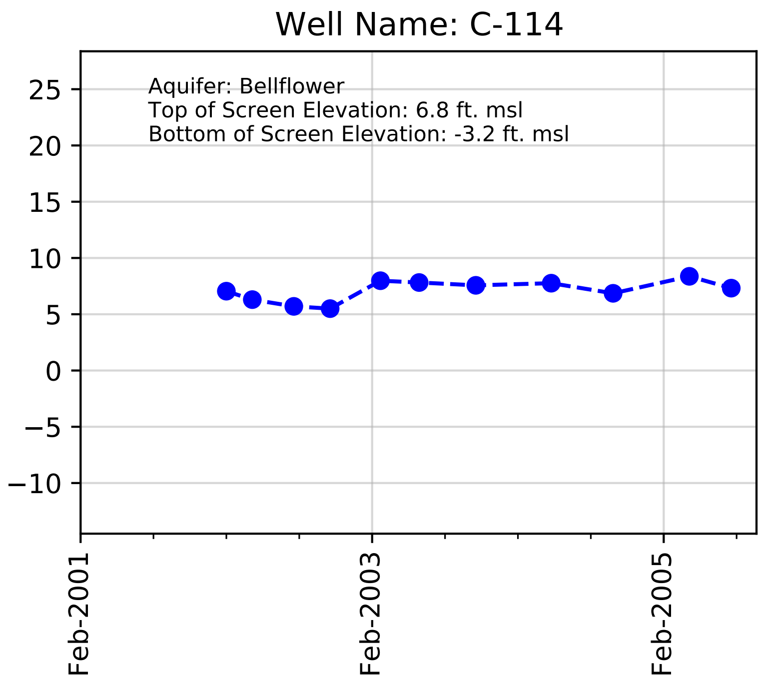

Well Name: C-109
Aquifer: Bellflower
Top of Screen Elevation: -16.6 ft. msl
Bottom of Screen Elevation: -21.6 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Feb-2001
Feb-2003
Feb-2005

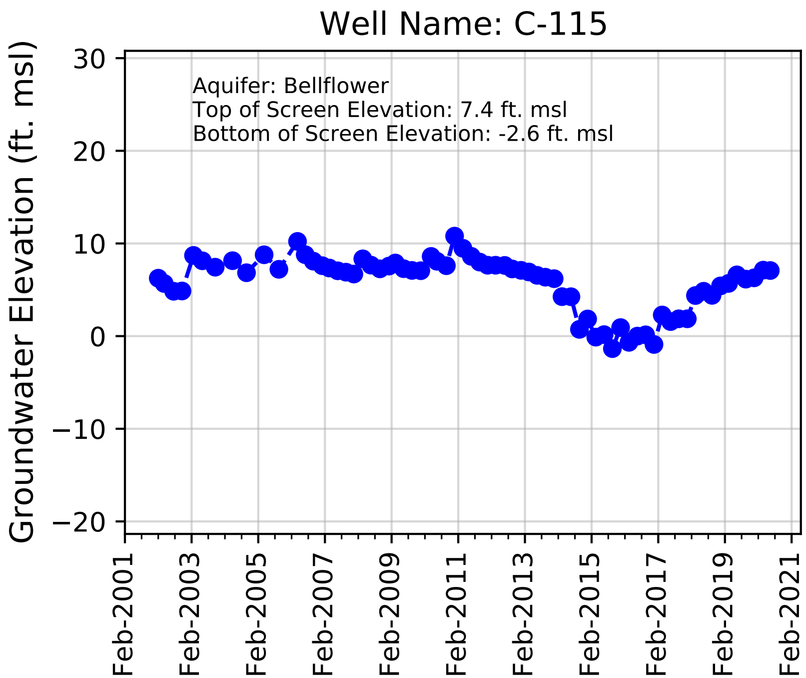

Well Name: C-110
Aquifer: Ballona
Top of Screen Elevation: -40.2 ft. msl
Bottom of Screen Elevation: -45.2 ft. msl
25
20
15
10
5
0
−5
−10
−15
Feb-2001
Feb-2003
Feb-2005

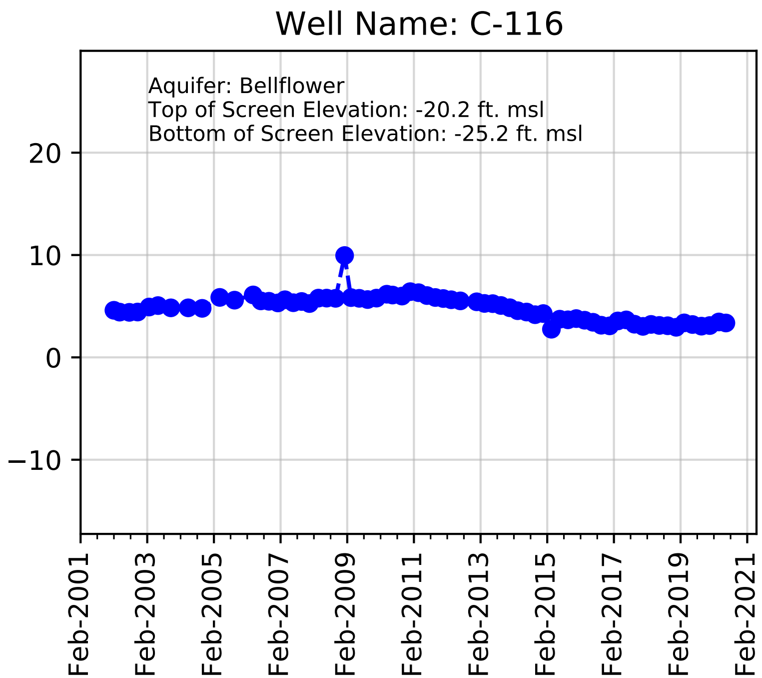

Well Name: C-111
Aquifer: Bellflower
Top of Screen Elevation: -9 ft. msl
Bottom of Screen Elevation: -14.0 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Feb-2001
Feb-2003
Feb-2005

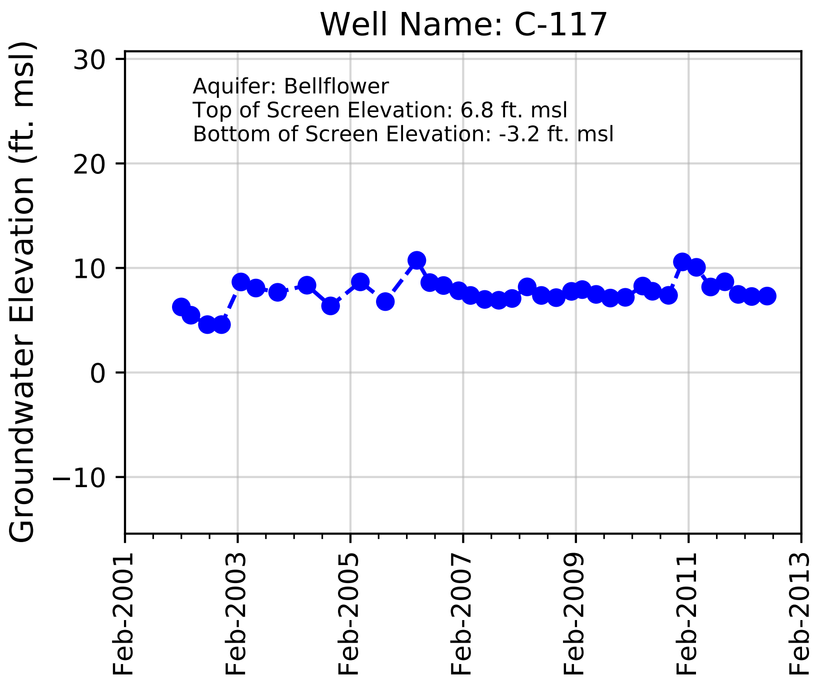

Well Name: C-112
Aquifer: Ballona
Top of Screen Elevation: -30.2 ft. msl
Bottom of Screen Elevation: -35.2 ft. msl
25
20
15
10
5
0
−5
−10
−15
Feb-2001
Feb-2003
Feb-2005

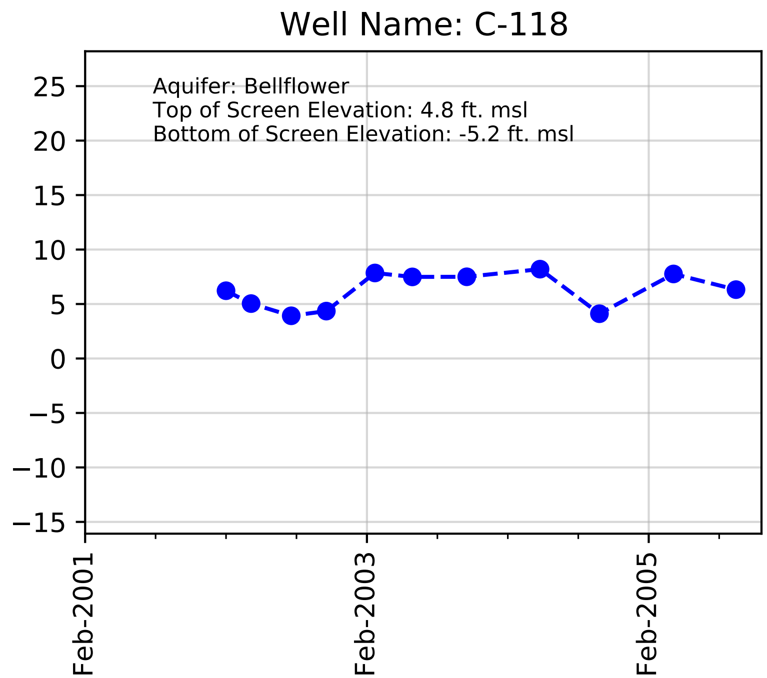

Well Name: C-113
Groundwater Elevation (ft. msl)
Aquifer: Bellflower
Top of Screen Elevation: 2.8 ft. msl
Bottom of Screen Elevation: -12.2 ft. msl
Feb-2001
Feb-2003
Feb-2005

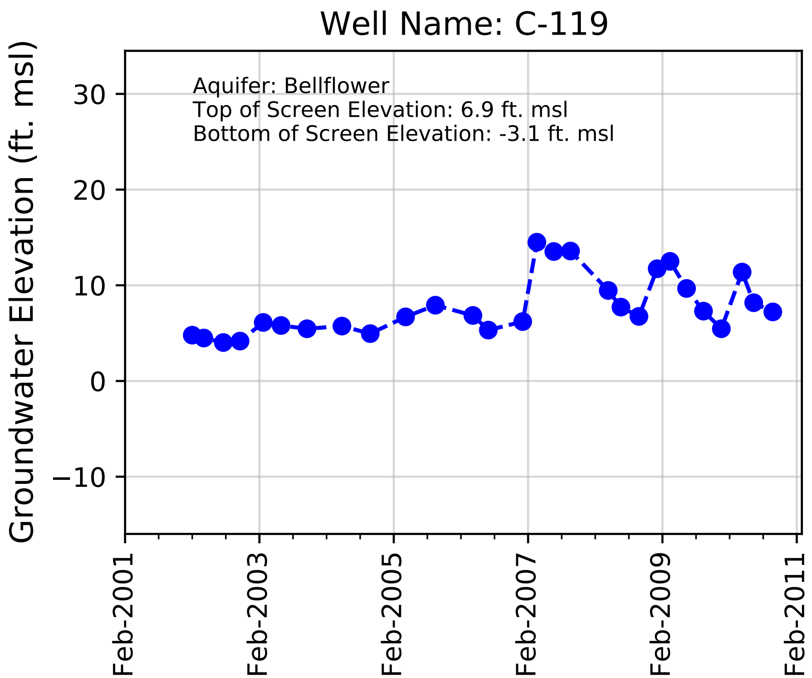

Well Name: C-114
Aquifer: Bellflower
Top of Screen Elevation: 6.8 ft. msl
Bottom of Screen Elevation: -3.2 ft. msl
Feb-2001
Feb-2003
Feb-2005

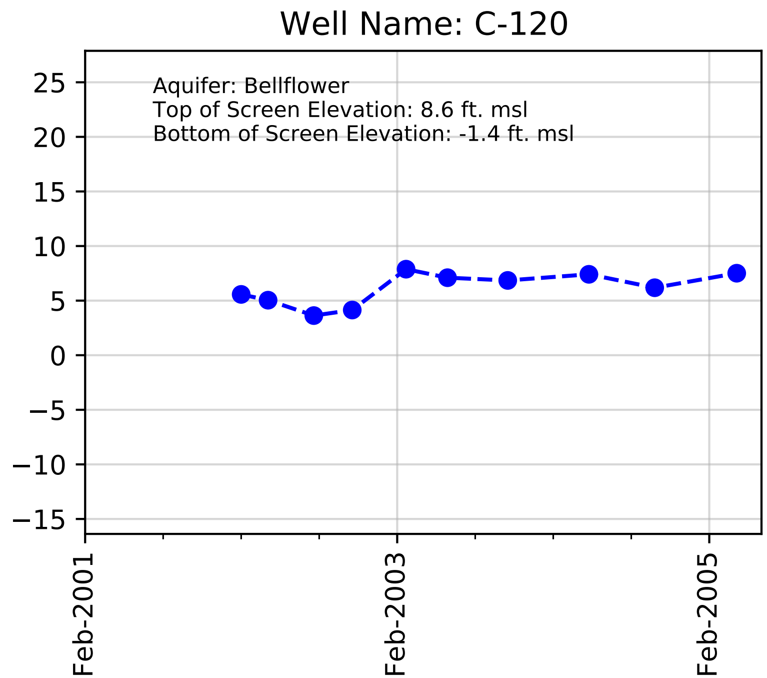

Well Name: C-115
Groundwater Elevation (ft. msl)
Aquifer: Bellflower
Top of Screen Elevation: 7.4 ft. msl
Bottom of Screen Elevation: -2.6 ft. msl

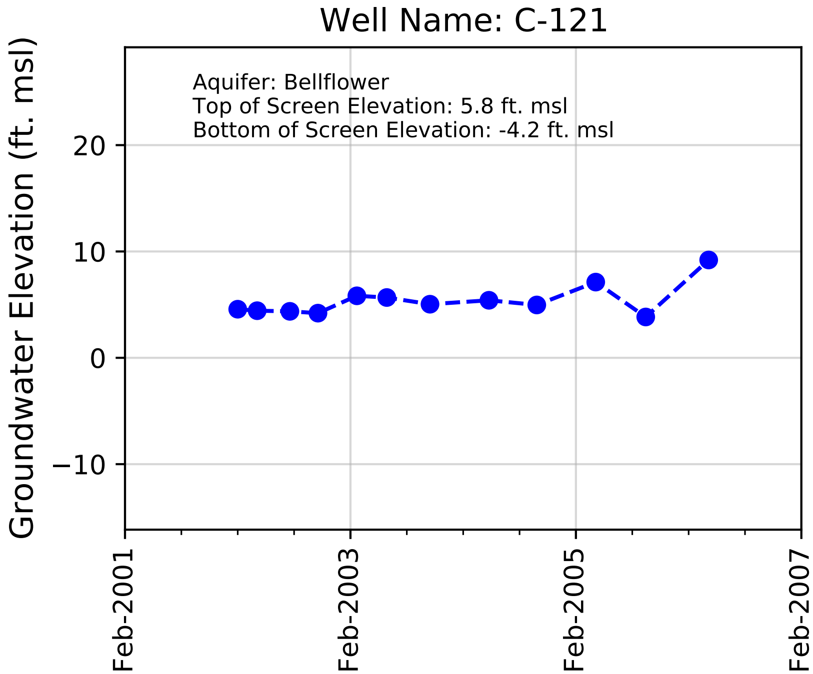

Well Name: C-116
Aquifer: Bellflower
Top of Screen Elevation: -20.2 ft. msl
Bottom of Screen Elevation: -25.2 ft. msl

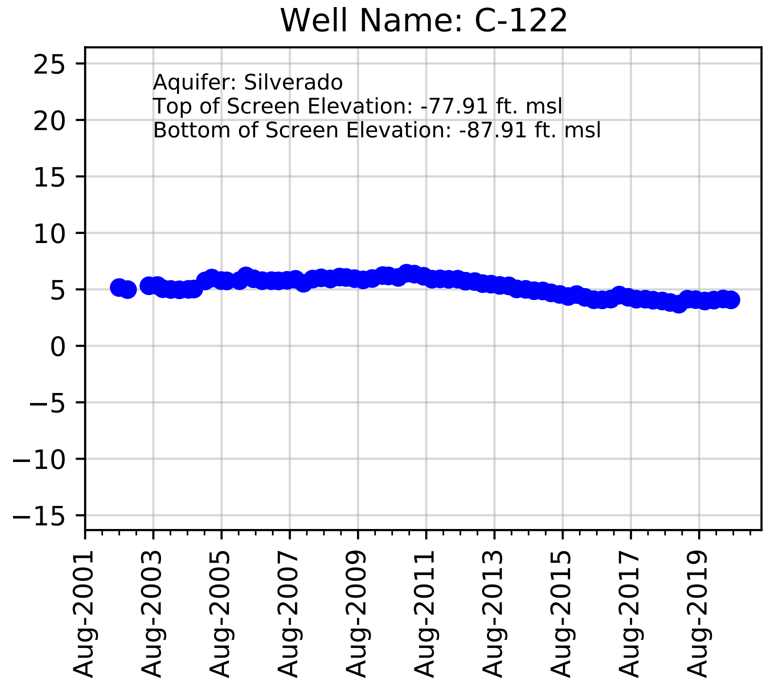

Well Name: C-117
Aquifer: Bellflower
Top of Screen Elevation: 6.8 ft. msl
Bottom of Screen Elevation: -3.2 ft. msl
Groundwater Elevation (ft. msl)
30
20
10
0
−10
Feb-2001
Feb-2003
Feb-2005
Feb-2007
Feb-2009
Feb-2011
Feb-2013

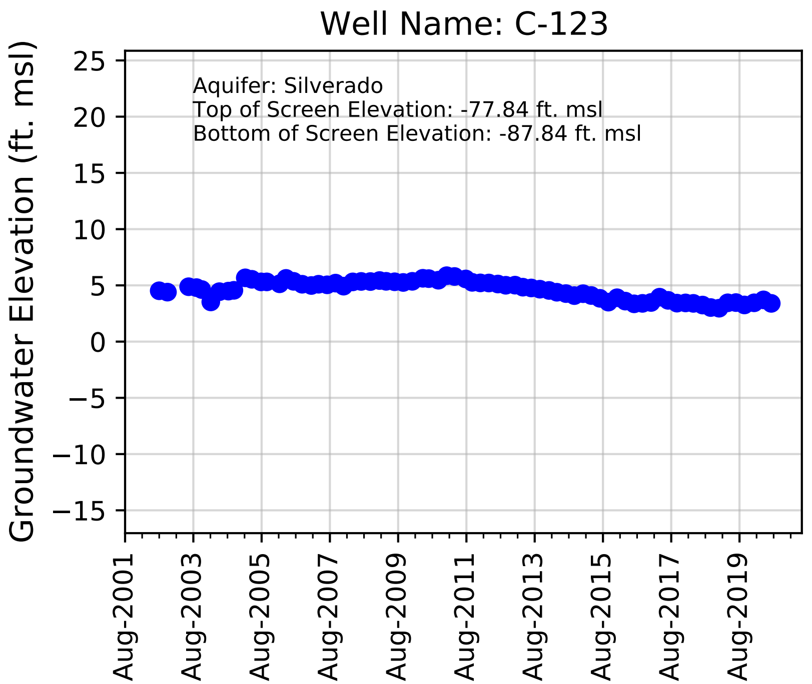

Well Name: C-118
Aquifer: Bellflower
Top of Screen Elevation: 4.8 ft. msl
Bottom of Screen Elevation: -5.2 ft. msl
25
20
15
10
5
0
−5
−10
−15
Feb-2001
Feb-2003
Feb-2005

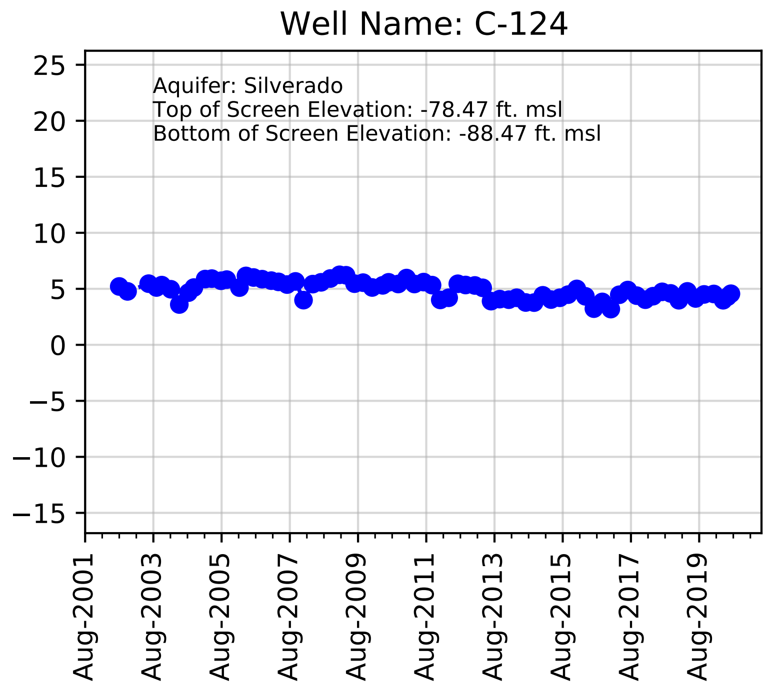

Well Name: C-119
Aquifer: Bellflower
Top of Screen Elevation: 6.9 ft. msl
Bottom of Screen Elevation: -3.1 ft. msl
Groundwater Elevation (ft. msl)
30
20
10
0
−10
Feb-2001
Feb-2003
Feb-2005
Feb-2007
Feb-2009
Feb-2011

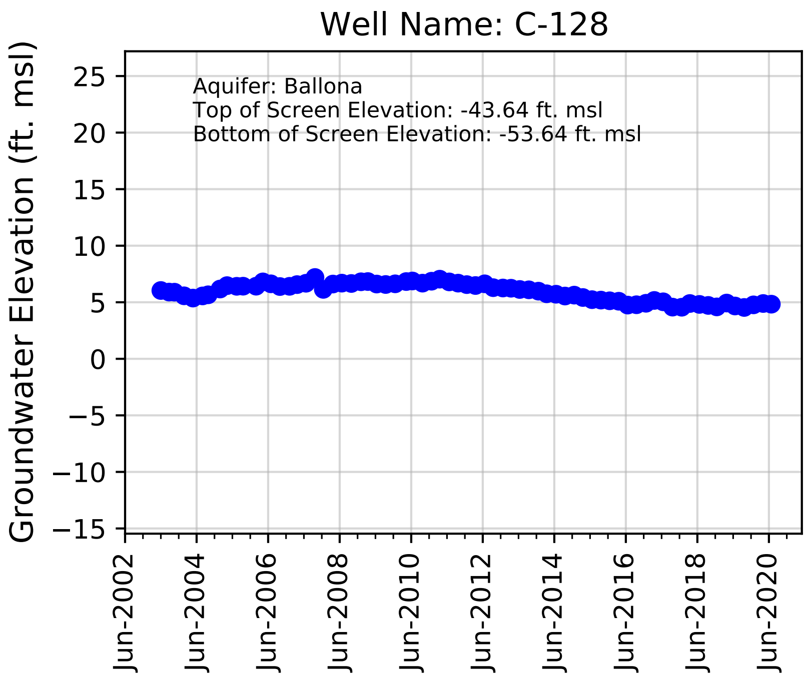

Well Name: C-120
Aquifer: Bellflower
Top of Screen Elevation: 8.6 ft. msl
Bottom of Screen Elevation: -1.4 ft. msl
25
20
15
10
5
0
−5
−10
−15
Feb-2001
Feb-2003
Feb-2005

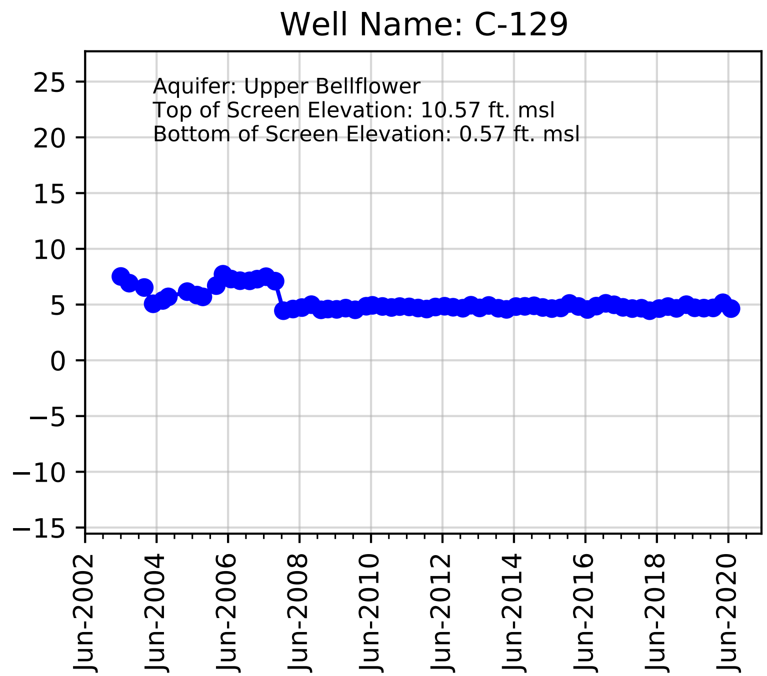

Well Name: C-121
Aquifer: Bellflower
Top of Screen Elevation: 5.8 ft. msl
Bottom of Screen Elevation: -4.2 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Feb-2001
Feb-2003
Feb-2005
Feb-2007

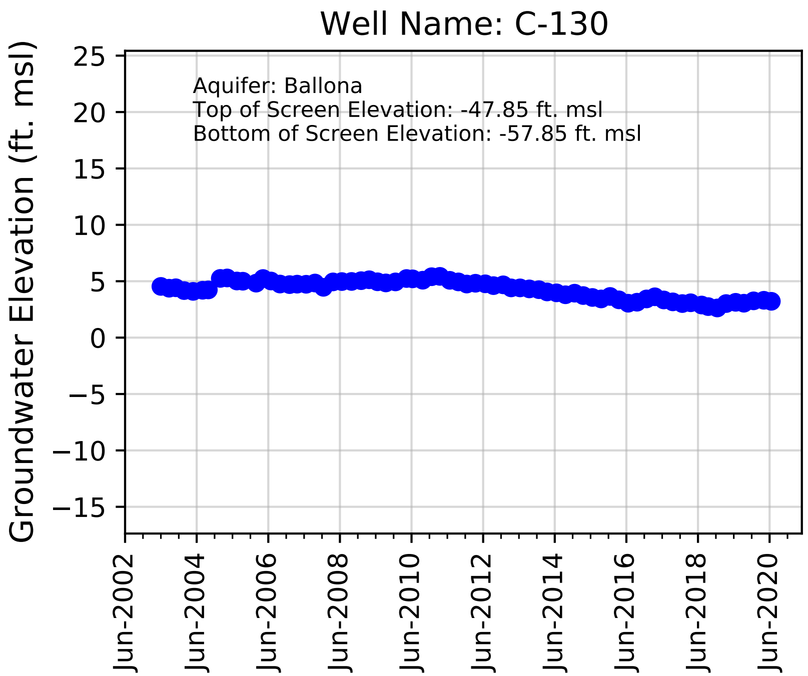

Well Name: C-122
Aquifer: Silverado
Top of Screen Elevation: -77.91 ft. msl
Bottom of Screen Elevation: -87.91 ft. msl
25
20
15
10
5
0
−5
−10
−15
Aug-2001
Aug-2003
Aug-2005
Aug-2007
Aug-2009
Aug-2011
Aug-2013
Aug-2015
Aug-2017
Aug-2019

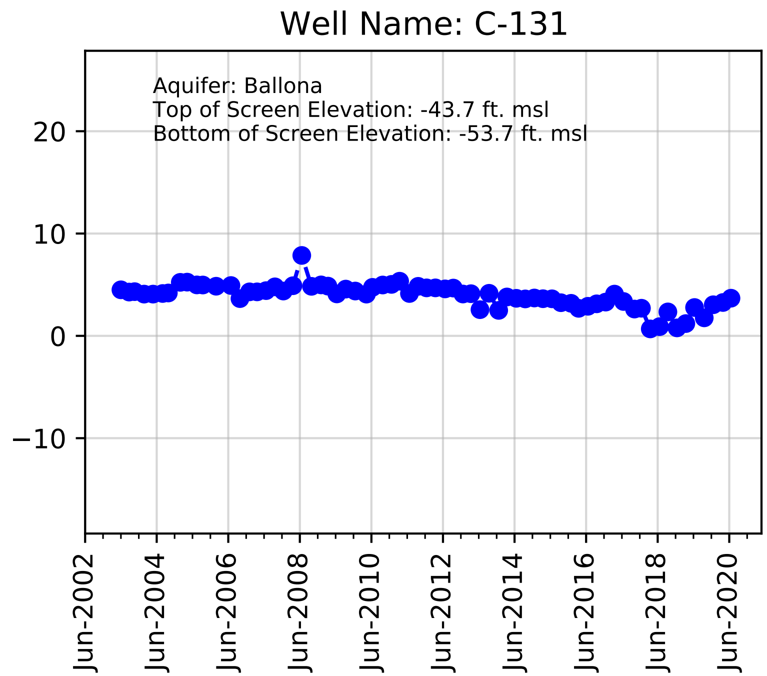

Well Name: C-123
Aquifer: Silverado
Top of Screen Elevation: -77.84 ft. msl
Bottom of Screen Elevation: -87.84 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Aug-2001
Aug-2003
Aug-2005
Aug-2007
Aug-2009
Aug-2011
Aug-2013
Aug-2015
Aug-2017
Aug-2019

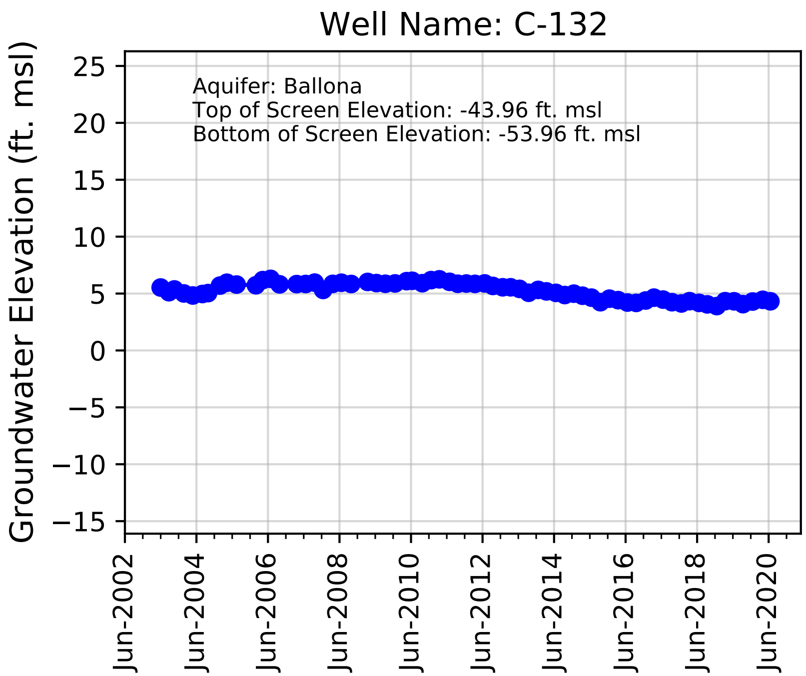

Well Name: C-124
Aquifer: Silverado
Top of Screen Elevation: -78.47 ft. msl
Bottom of Screen Elevation: -88.47 ft. msl
25
20
15
10
5
0
−5
−10
−15
Aug-2001
Aug-2003
Aug-2005
Aug-2007
Aug-2009
Aug-2011
Aug-2013
Aug-2015
Aug-2017
Aug-2019

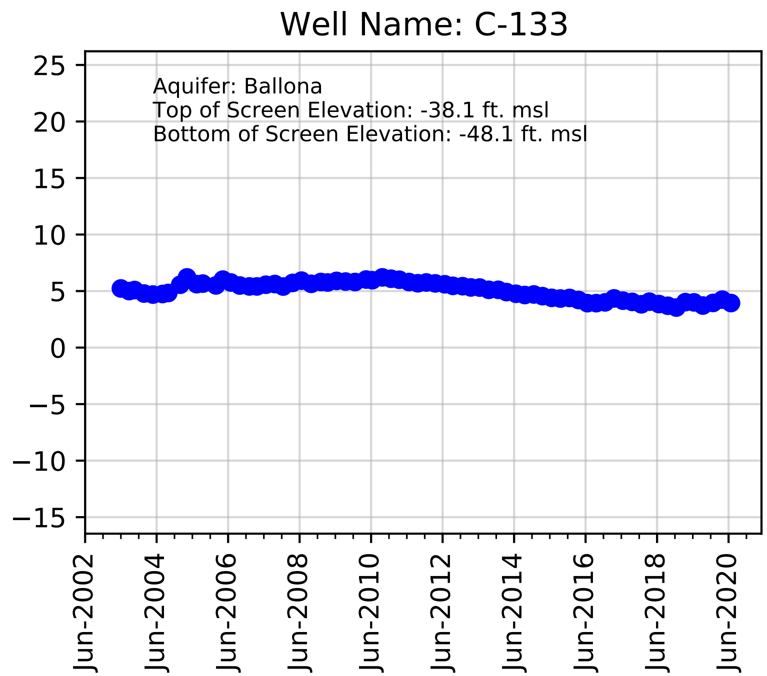

Well Name: C-128
Aquifer: Ballona
Top of Screen Elevation: -43.64 ft. msl
Bottom of Screen Elevation: -53.64 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016
Jun-2018
Jun-2020

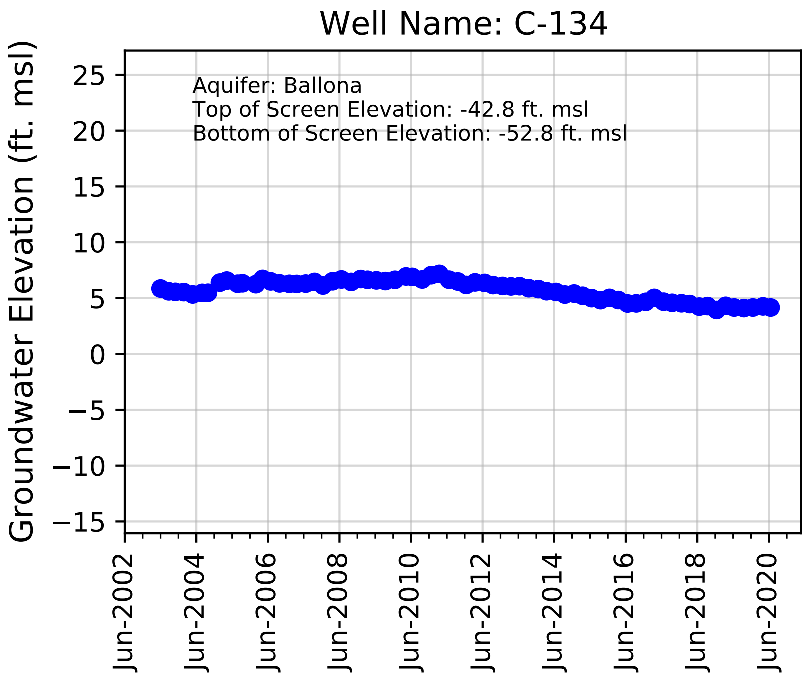

Well Name: C-129
Aquifer: Upper Bellflower
Top of Screen Elevation: 10.57 ft. msl
Bottom of Screen Elevation: 0.57 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016
Jun-2018
Jun-2020

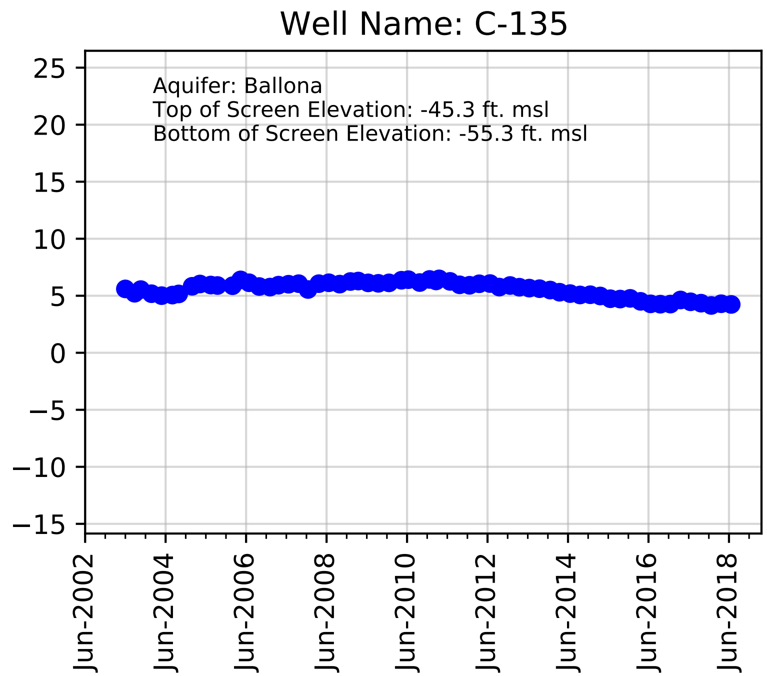

Well Name: C-130
Aquifer: Ballona
Top of Screen Elevation: -47.85 ft. msl
Bottom of Screen Elevation: -57.85 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016
Jun-2018
Jun-2020


Well Name: C-131
Aquifer: Ballona
Top of Screen Elevation: -43.7 ft. msl
Bottom of Screen Elevation: -53.7 ft. msl
20
10
0
−10
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016
Jun-2018
Jun-2020


Well Name: C-132
Aquifer: Ballona
Top of Screen Elevation: -43.96 ft. msl
Bottom of Screen Elevation: -53.96 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016
Jun-2018
Jun-2020


Well Name: C-133
Aquifer: Ballona
Top of Screen Elevation: -38.1 ft. msl
Bottom of Screen Elevation: -48.1 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016
Jun-2018
Jun-2020


Well Name: C-134
Aquifer: Ballona
Top of Screen Elevation: -42.8 ft. msl
Bottom of Screen Elevation: -52.8 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016
Jun-2018
Jun-2020


Well Name: C-135
Aquifer: Ballona
Top of Screen Elevation: -45.3 ft. msl
Bottom of Screen Elevation: -55.3 ft. msl
25
20
15
10
5
0
−5
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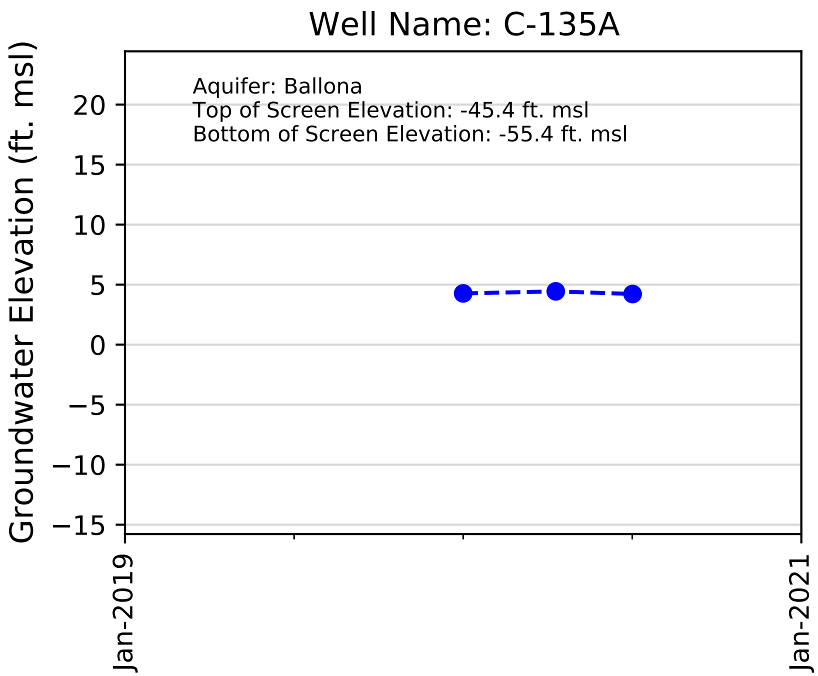
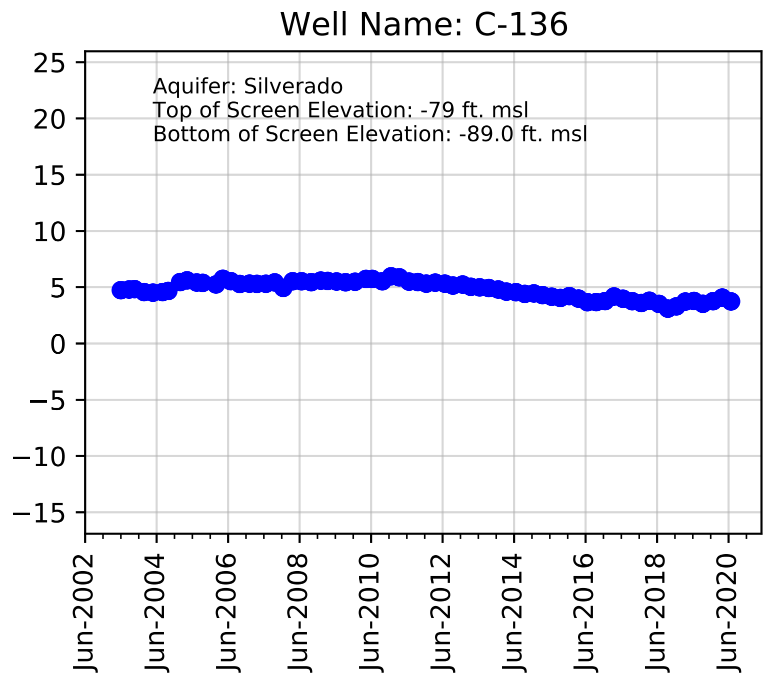
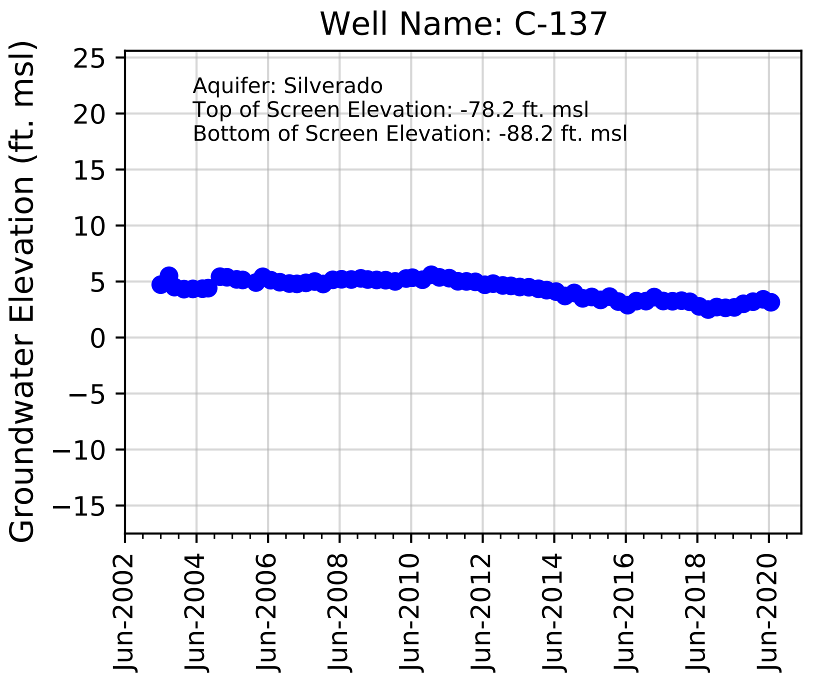
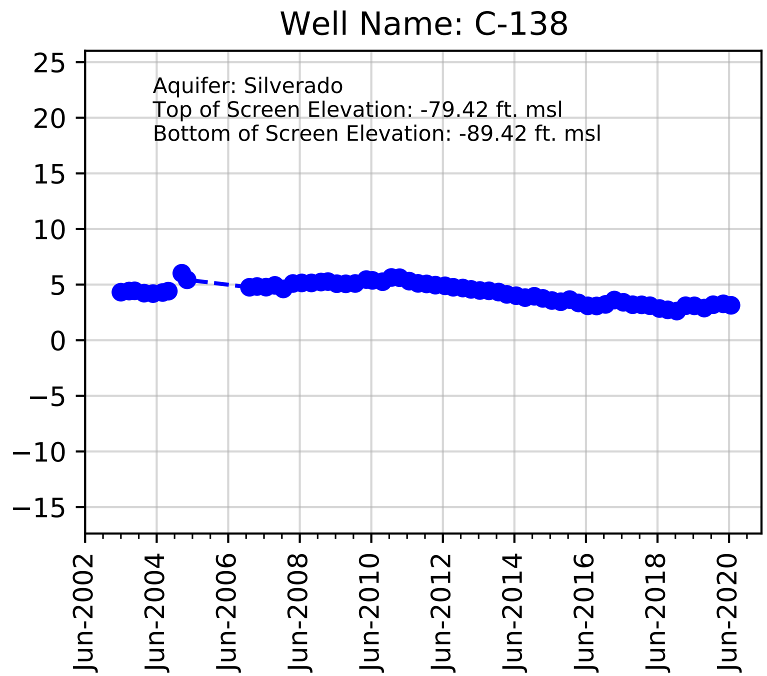
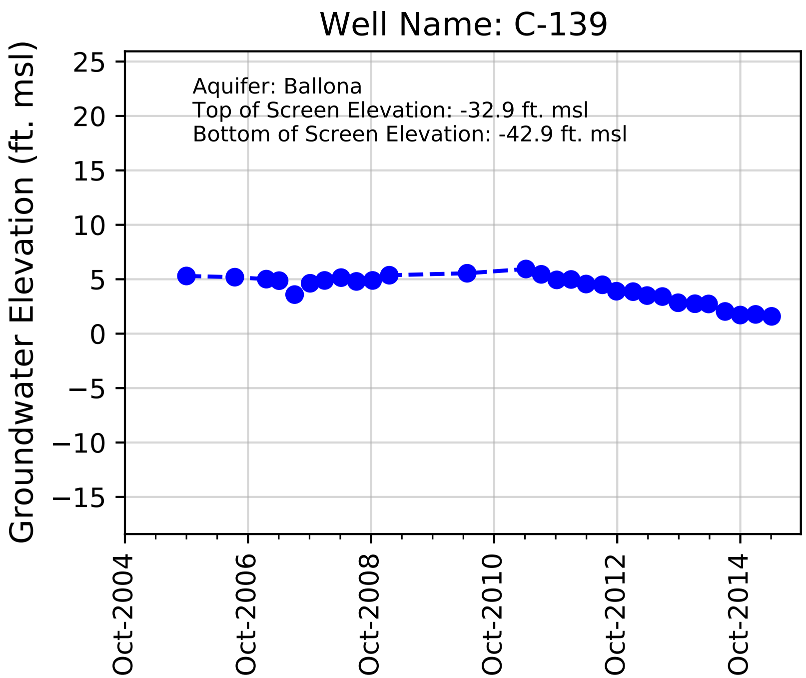
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016
Jun-2018

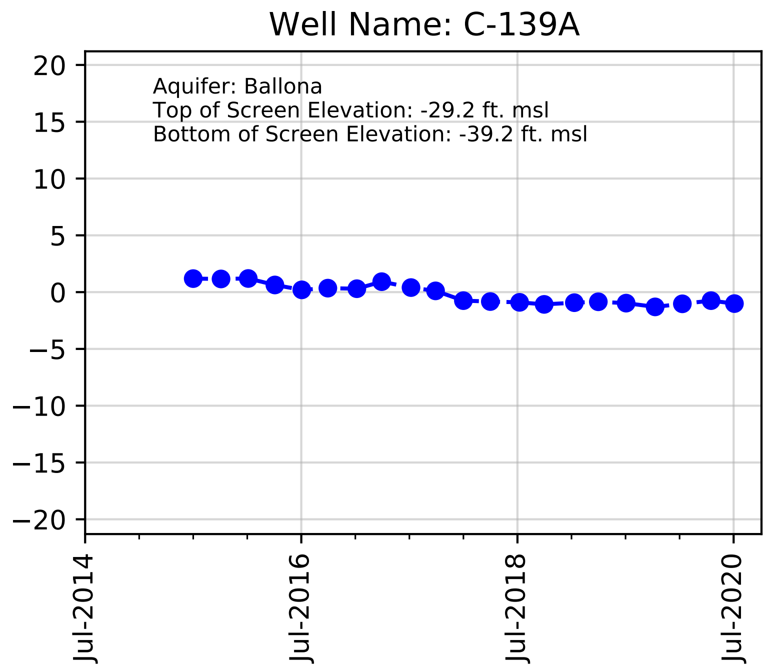

Well Name: C-135A
Aquifer: Ballona
Top of Screen Elevation: -45.4 ft. msl
Bottom of Screen Elevation: -55.4 ft. msl
Groundwater Elevation (ft. msl)
Jan-2019
Jan-2021

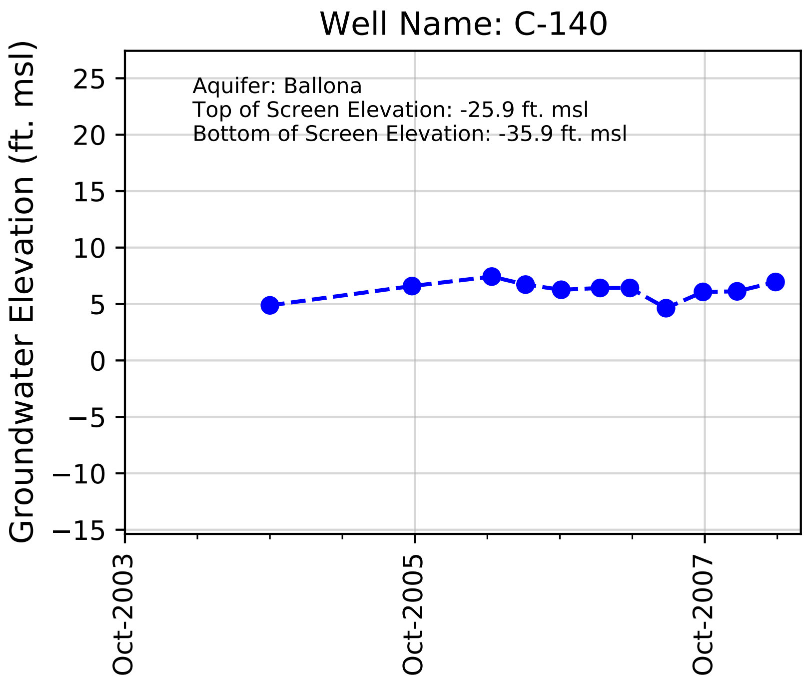

Well Name: C-136
Aquifer: Silverado
Top of Screen Elevation: -79 ft. msl
Bottom of Screen Elevation: -89.0 ft. msl

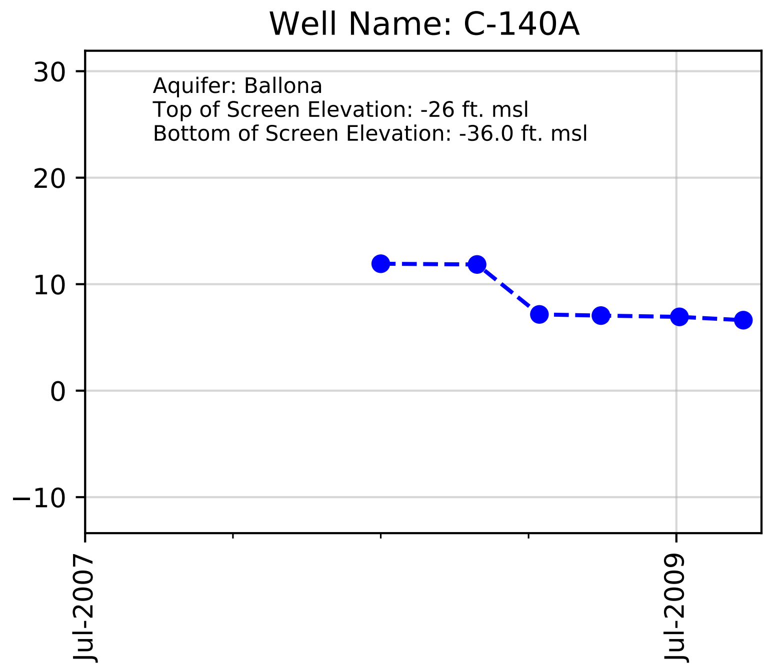

Well Name: C-137
Aquifer: Silverado
Top of Screen Elevation: -78.2 ft. msl
Bottom of Screen Elevation: -88.2 ft. msl
Groundwater Elevation (ft. msl)

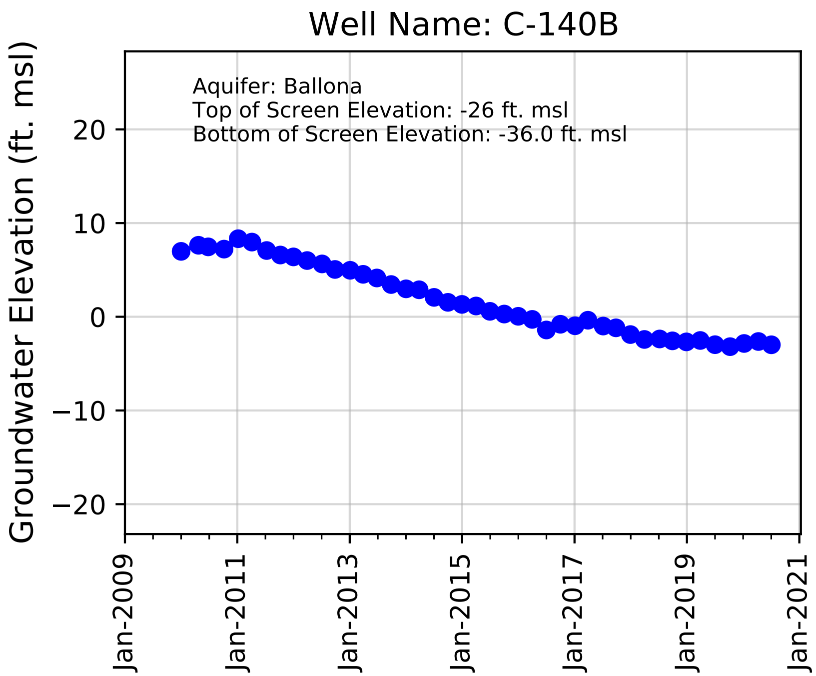

Well Name: C-138
Aquifer: Silverado
Top of Screen Elevation: -79.42 ft. msl
Bottom of Screen Elevation: -89.42 ft. msl

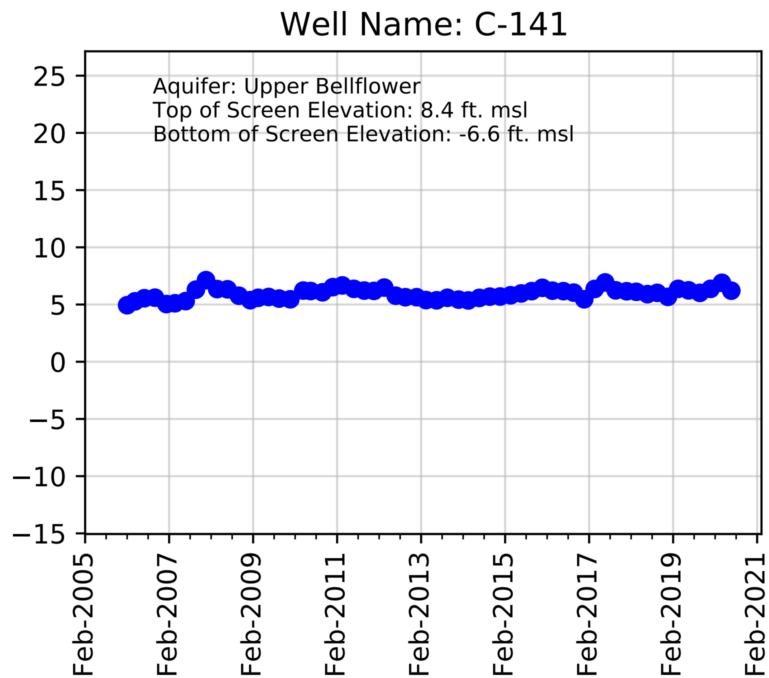

Well Name: C-139
Aquifer: Ballona
Top of Screen Elevation: -32.9 ft. msl
Bottom of Screen Elevation: -42.9 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Oct-2004
Oct-2006
Oct-2008
Oct-2010
Oct-2012
Oct-2014

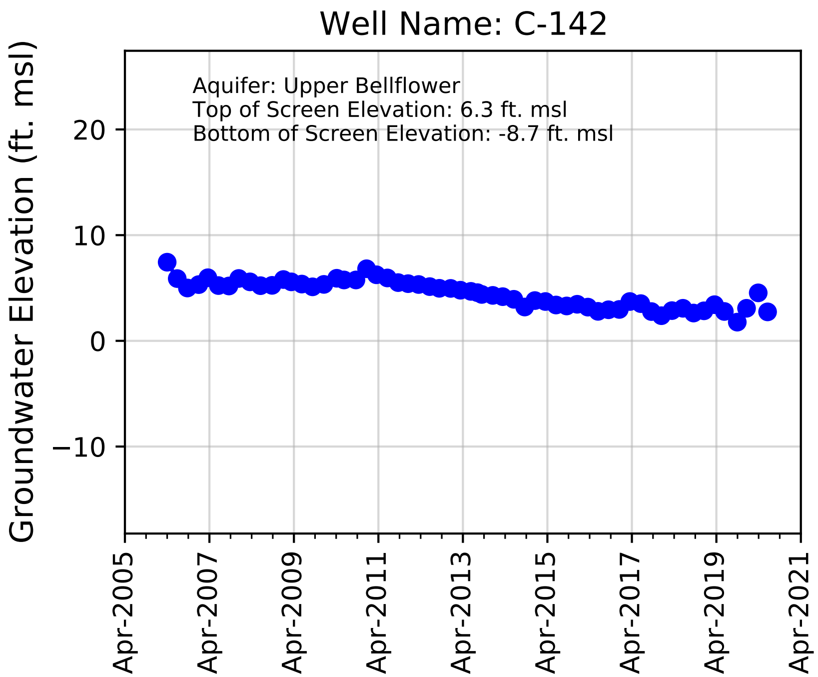

Well Name: C-139A
Aquifer: Ballona
Top of Screen Elevation: -29.2 ft. msl
Bottom of Screen Elevation: -39.2 ft. msl
20
15
10
5
0
−5
−10
−15
−20
Jul-2014
Jul-2016
Jul-2018
Jul-2020

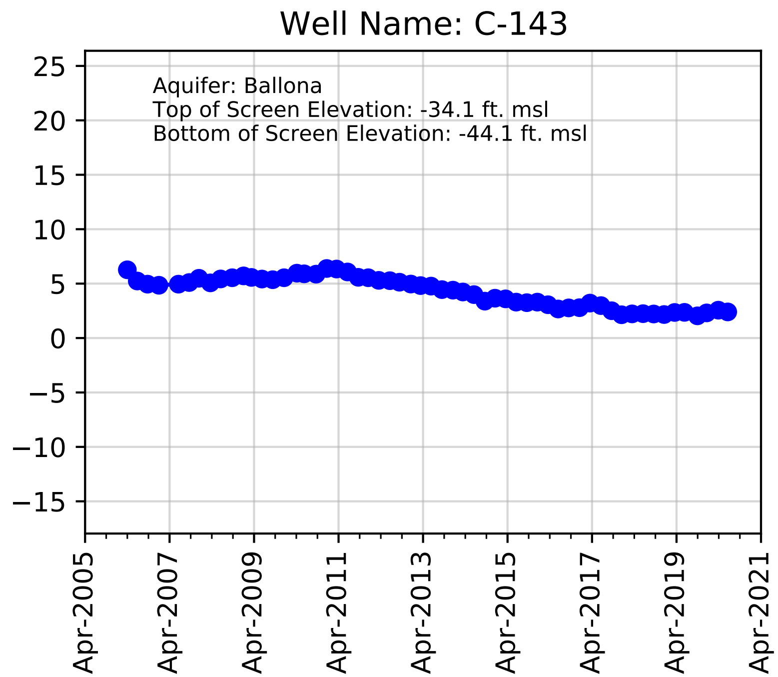

Well Name: C-140
Aquifer: Ballona
Top of Screen Elevation: -25.9 ft. msl
Bottom of Screen Elevation: -35.9 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Oct-2003
Oct-2005
Oct-2007

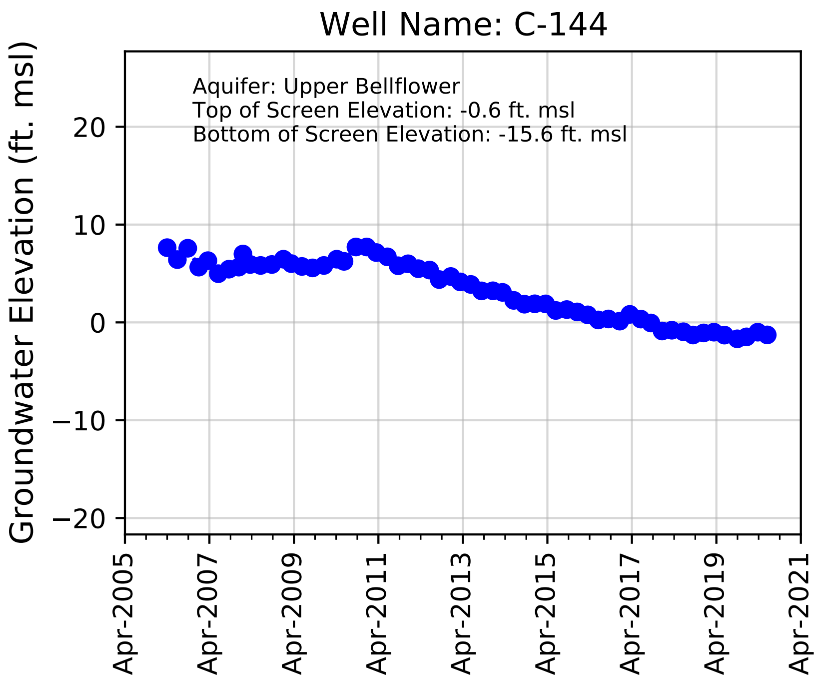

Well Name: C-140A
Aquifer: Ballona
Top of Screen Elevation: -26 ft. msl
Bottom of Screen Elevation: -36.0 ft. msl
30
20
10
0
−10
Jul-2007
Jul-2009

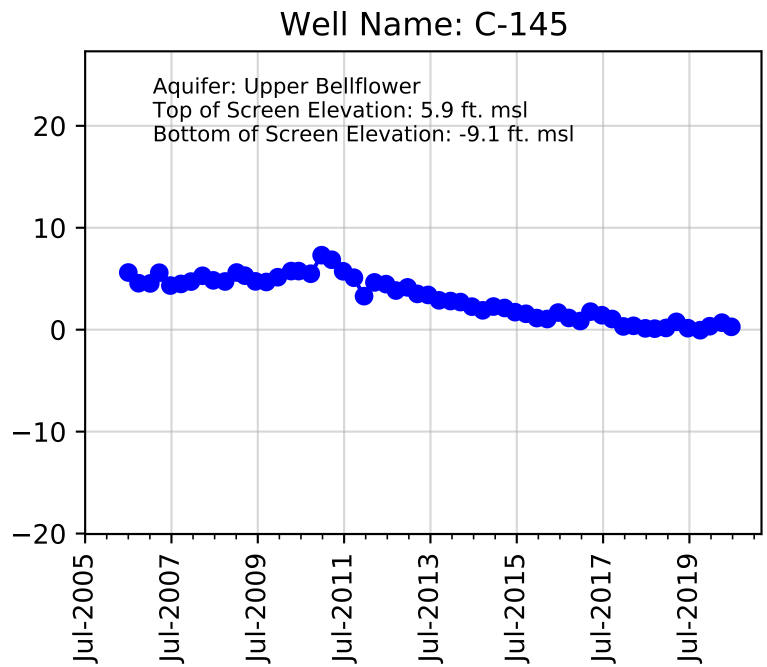

Well Name: C-140B
Aquifer: Ballona
Top of Screen Elevation: -26 ft. msl
Bottom of Screen Elevation: -36.0 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Jan-2009
Jan-2011
Jan-2013
Jan-2015
Jan-2017
Jan-2019
Jan-2021

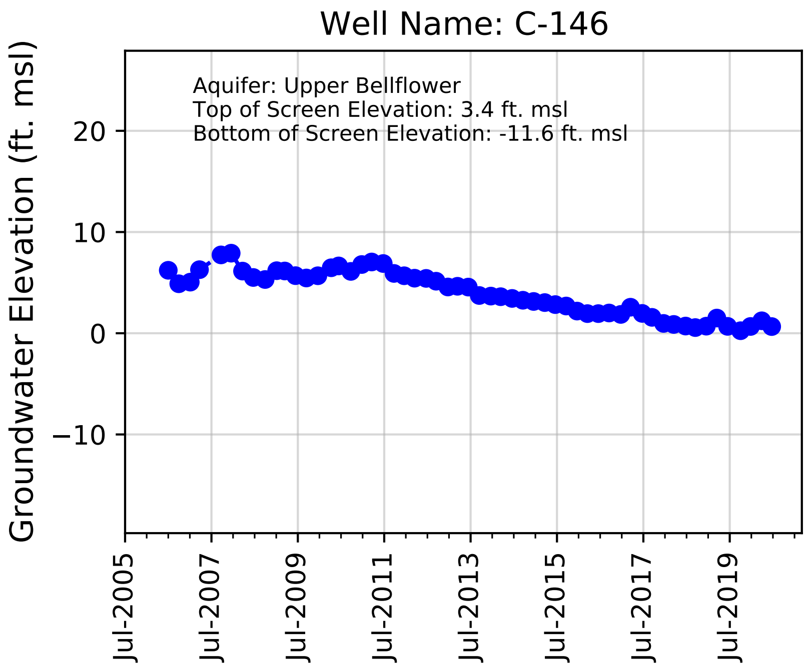

Well Name: C-141
Aquifer: Upper Bellflower
Top of Screen Elevation: 8.4 ft. msl
Bottom of Screen Elevation: -6.6 ft. msl
25
20
15
10
5
0
−5
−10
−15
Feb-2005
Feb-2007
Feb-2009
Feb-2011
Feb-2013
Feb-2015
Feb-2017
Feb-2019
Feb-2021

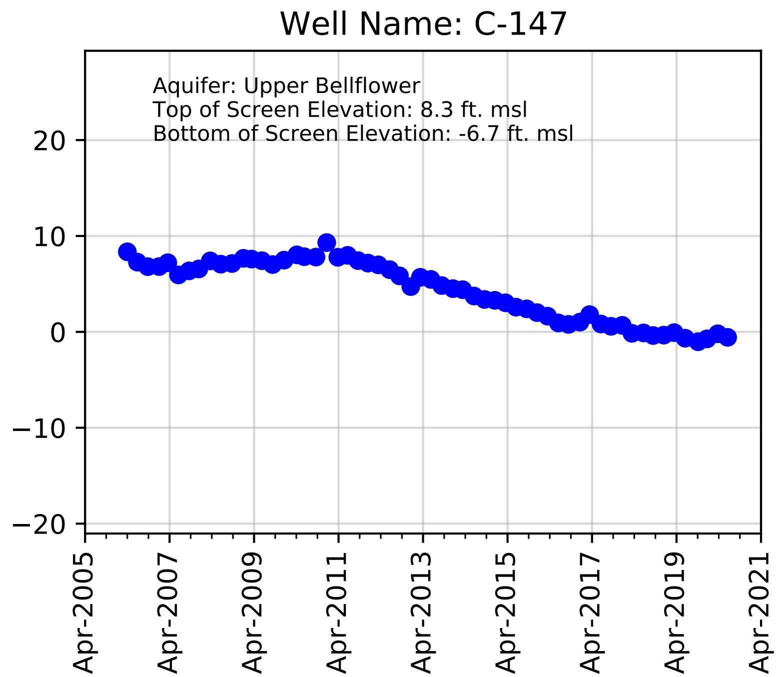

Well Name: C-142
Aquifer: Upper Bellflower
Top of Screen Elevation: 6.3 ft. msl
Bottom of Screen Elevation: -8.7 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Apr-2005
Apr-2007
Apr-2009
Apr-2011
Apr-2013
Apr-2015
Apr-2017
Apr-2019
Apr-2021

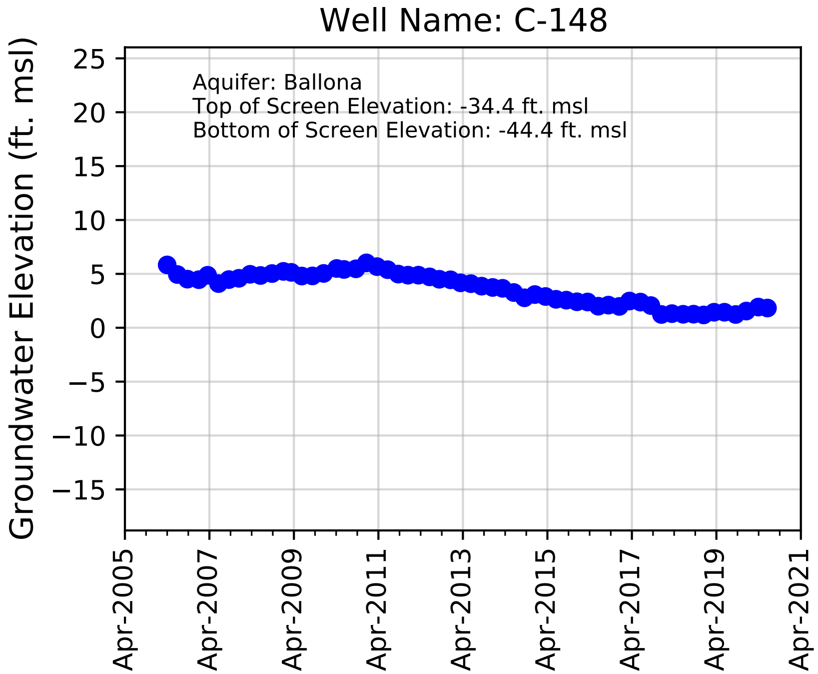

Well Name: C-143
Aquifer: Ballona
Top of Screen Elevation: -34.1 ft. msl
Bottom of Screen Elevation: -44.1 ft. msl
25
20
15
10
5
0
−5
−10
−15
Apr-2005
Apr-2007
Apr-2009
Apr-2011
Apr-2013
Apr-2015
Apr-2017
Apr-2019
Apr-2021

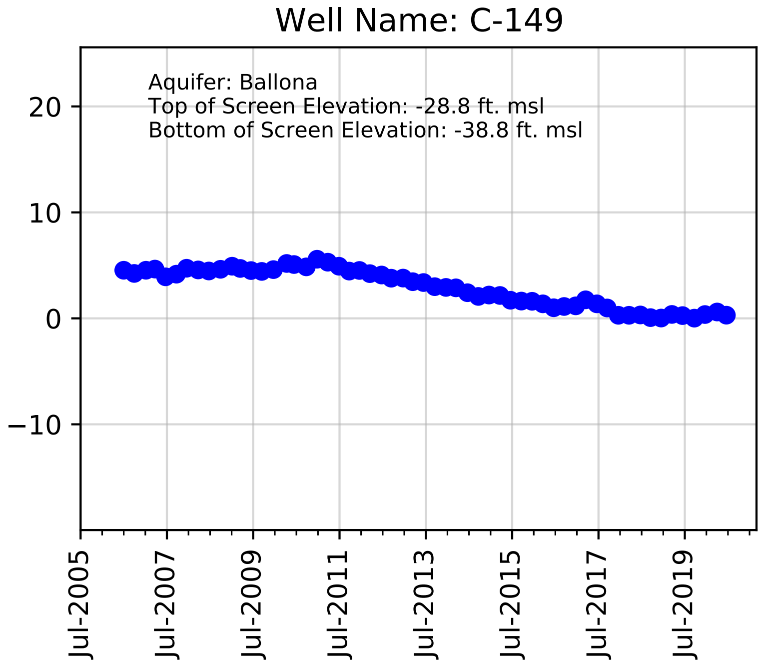

Well Name: C-144
Aquifer: Upper Bellflower
Top of Screen Elevation: -0.6 ft. msl
Bottom of Screen Elevation: -15.6 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Apr-2005
Apr-2007
Apr-2009
Apr-2011
Apr-2013
Apr-2015
Apr-2017
Apr-2019
Apr-2021

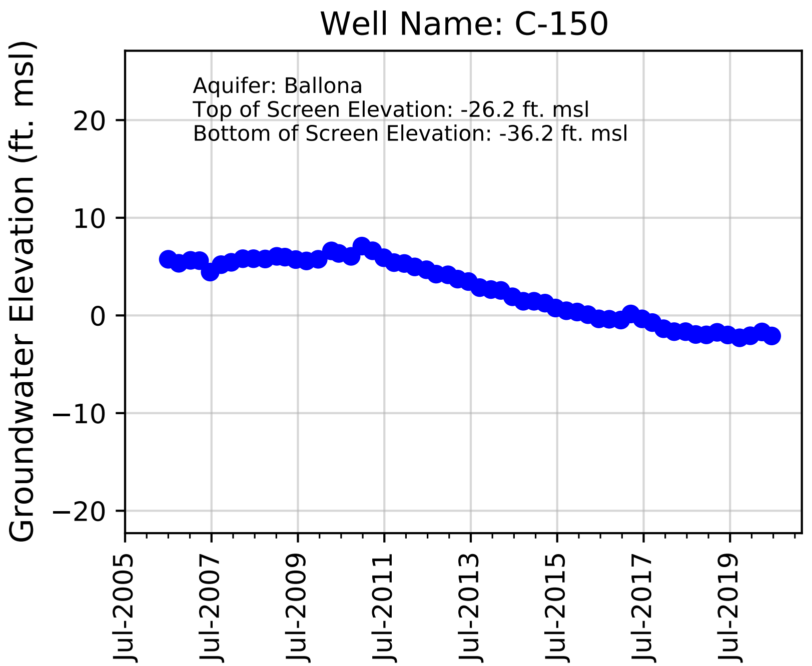

Well Name: C-145
Aquifer: Upper Bellflower
Top of Screen Elevation: 5.9 ft. msl
Bottom of Screen Elevation: -9.1 ft. msl
20
10
0
−10
−20
Jul-2005
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019

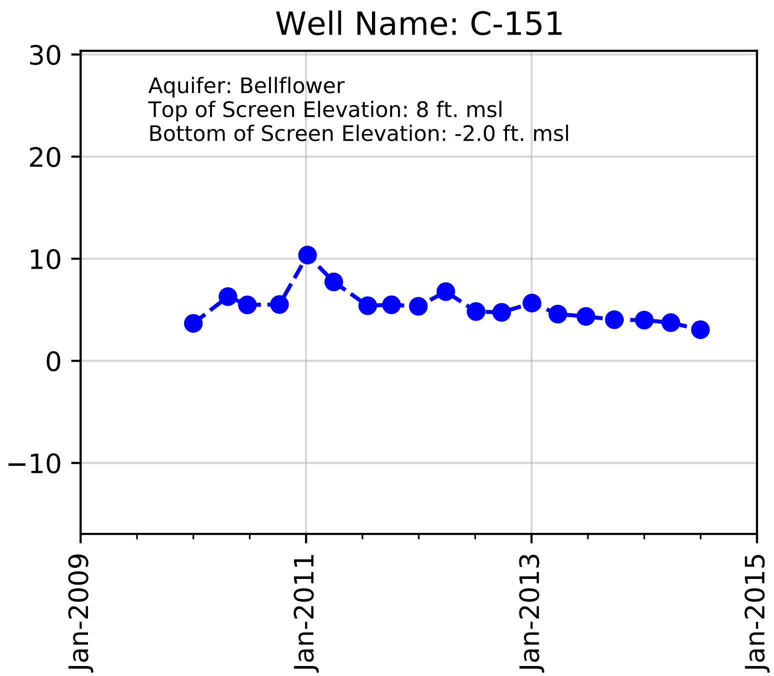

Well Name: C-146
Aquifer: Upper Bellflower
Top of Screen Elevation: 3.4 ft. msl
Bottom of Screen Elevation: -11.6 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Jul-2005
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019

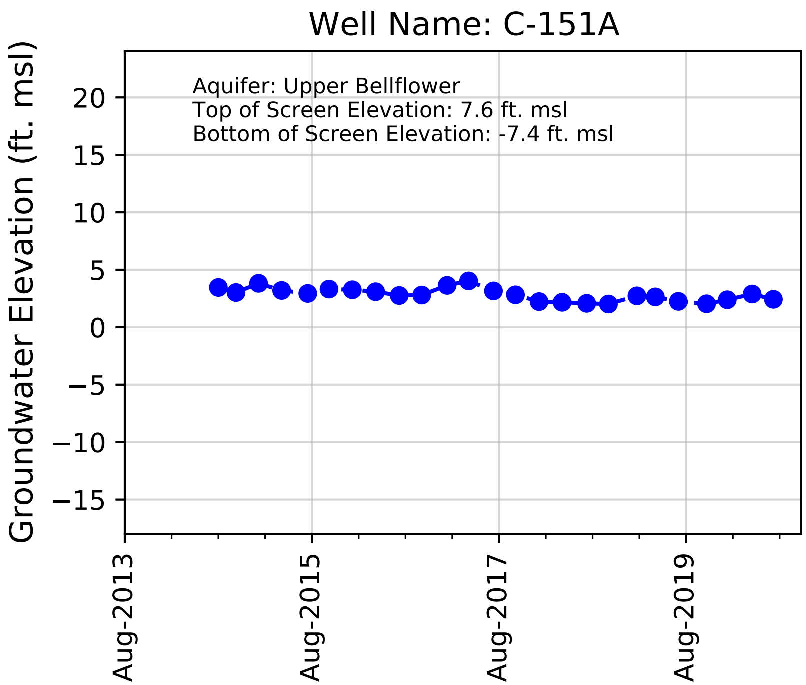

Well Name: C-147
Aquifer: Upper Bellflower
Top of Screen Elevation: 8.3 ft. msl
Bottom of Screen Elevation: -6.7 ft. msl
20
10
0
−10
−20
Apr-2005
Apr-2007
Apr-2009
Apr-2011
Apr-2013
Apr-2015
Apr-2017
Apr-2019
Apr-2021

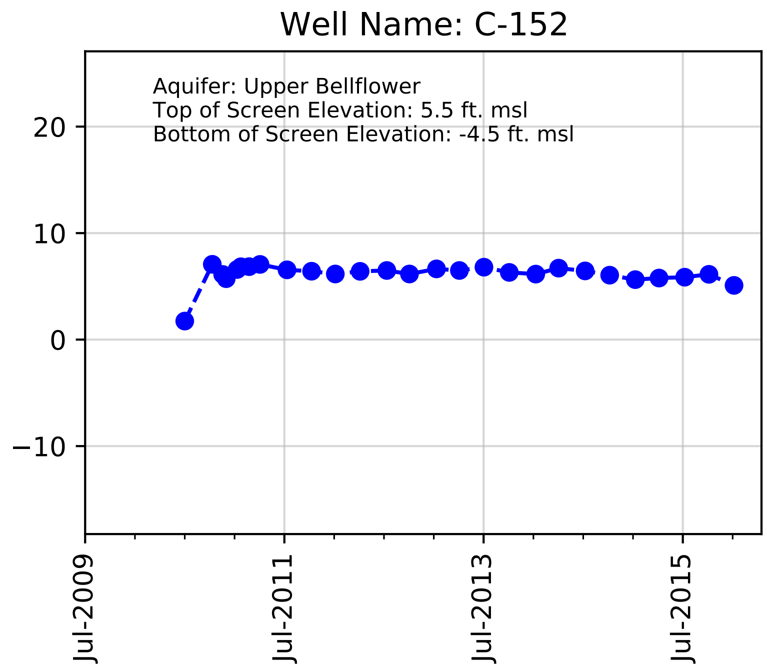

Well Name: C-148
Aquifer: Ballona
Top of Screen Elevation: -34.4 ft. msl
Bottom of Screen Elevation: -44.4 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Apr-2005
Apr-2007
Apr-2009
Apr-2011
Apr-2013
Apr-2015
Apr-2017
Apr-2019
Apr-2021

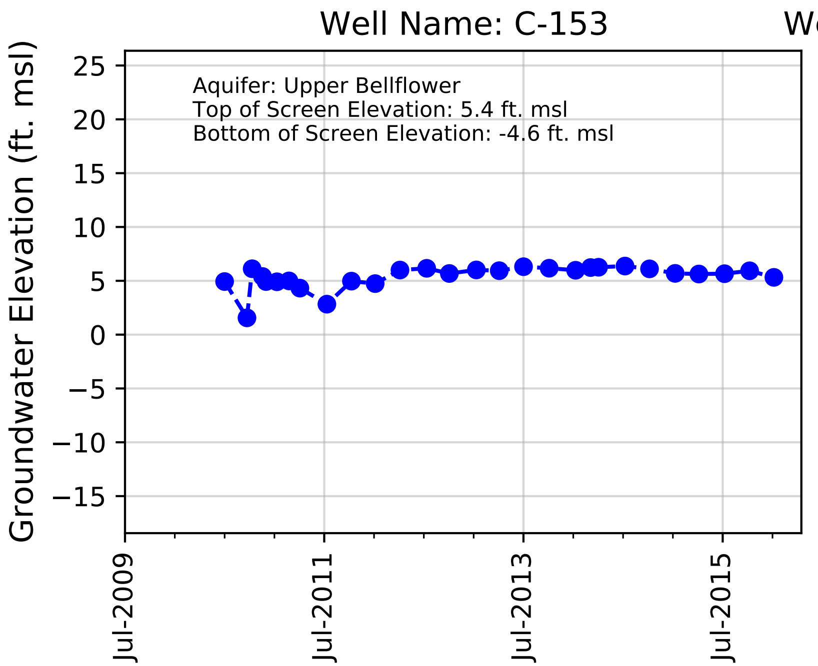

Well Name: C-149
Aquifer: Ballona
Top of Screen Elevation: -28.8 ft. msl
Bottom of Screen Elevation: -38.8 ft. msl
20
10
0
−10
Jul-2005
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019

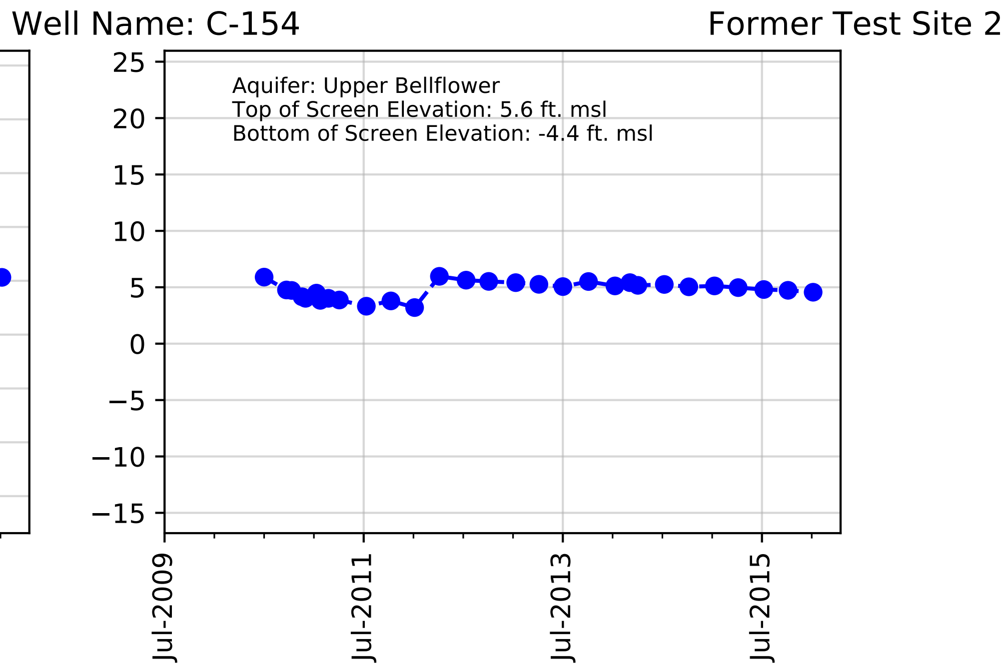

Well Name: C-150
Aquifer: Ballona
Top of Screen Elevation: -26.2 ft. msl
Bottom of Screen Elevation: -36.2 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Jul-2005
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019

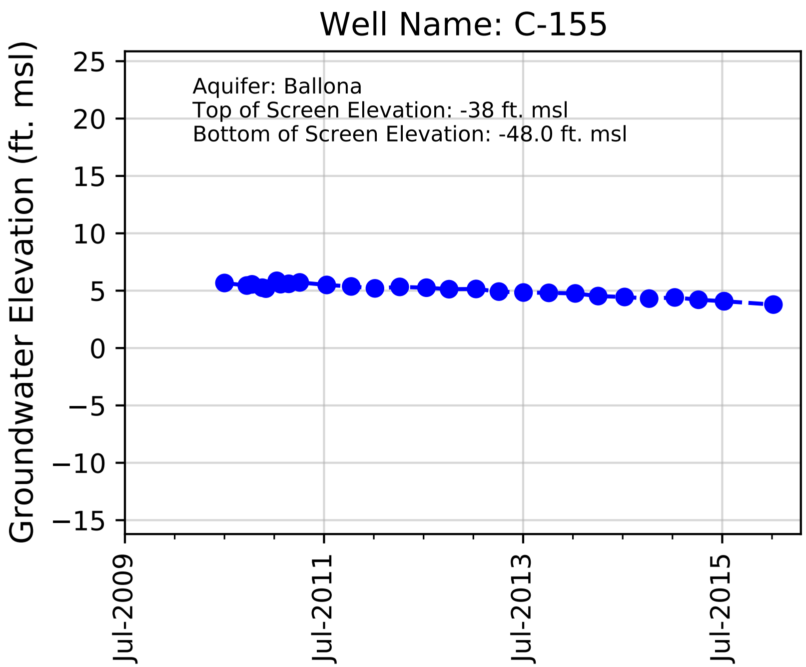

Well Name: C-151
Aquifer: Bellflower
Top of Screen Elevation: 8 ft. msl
Bottom of Screen Elevation: -2.0 ft. msl
30
20
10
0
−10
Jan-2009
Jan-2011
Jan-2013
Jan-2015

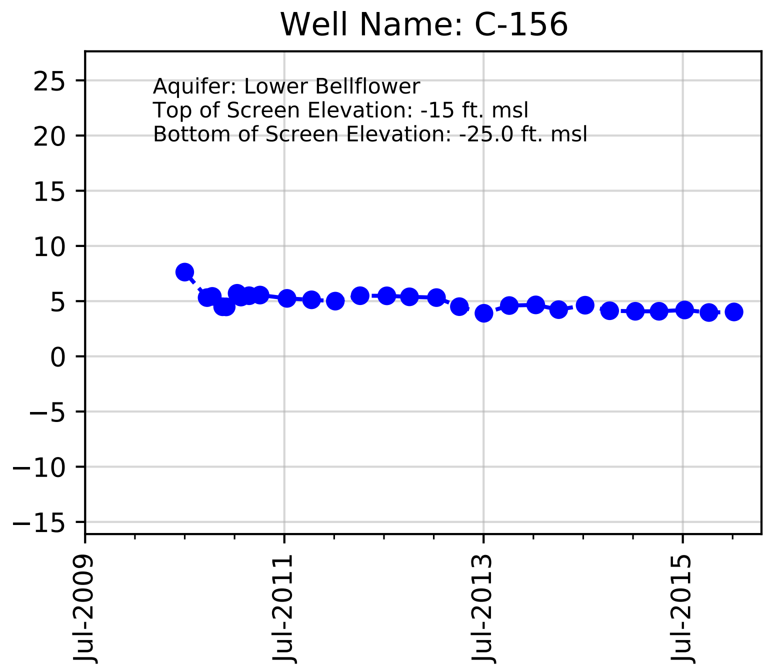

Well Name: C-151A
Aquifer: Upper Bellflower
Top of Screen Elevation: 7.6 ft. msl
Bottom of Screen Elevation: -7.4 ft. msl
Groundwater Elevation (ft. msl)
Aug-2013
Aug-2015
Aug-2017
Aug-2019

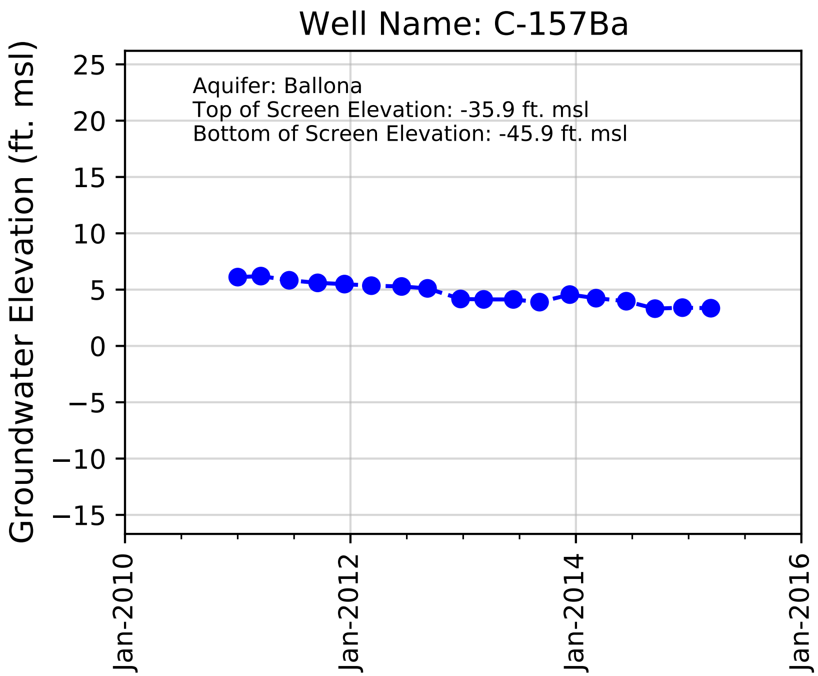

Well Name: C-152
Aquifer: Upper Bellflower
Top of Screen Elevation: 5.5 ft. msl
Bottom of Screen Elevation: -4.5 ft. msl
Jul-2009
Jul-2011
Jul-2013
Jul-2015

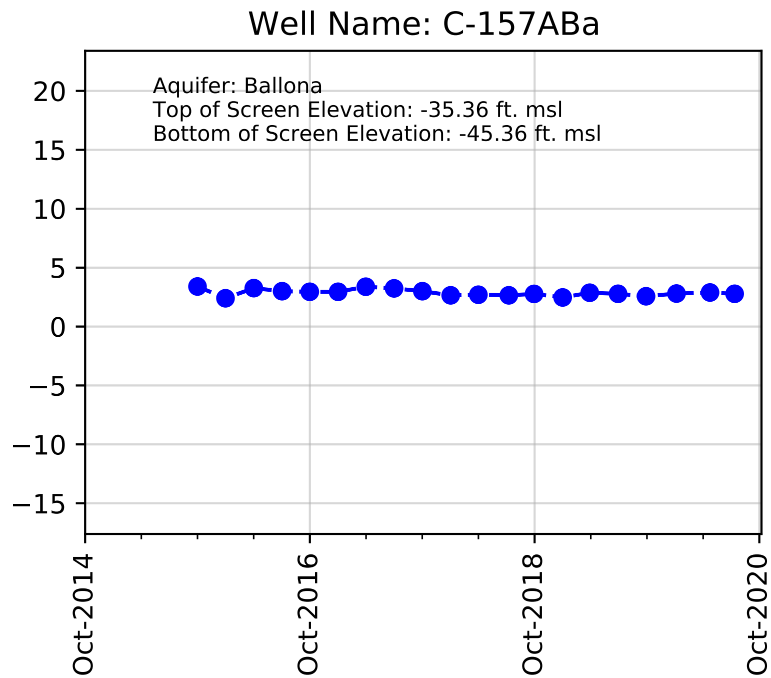

Well Name: C-153
Aquifer: Upper Bellflower
Top of Screen Elevation: 5.4 ft. msl
Bottom of Screen Elevation: -4.6 ft. msl
Groundwater Elevation (ft. msl)
Jul-2009
Jul-2011
Jul-2013
Jul-2015

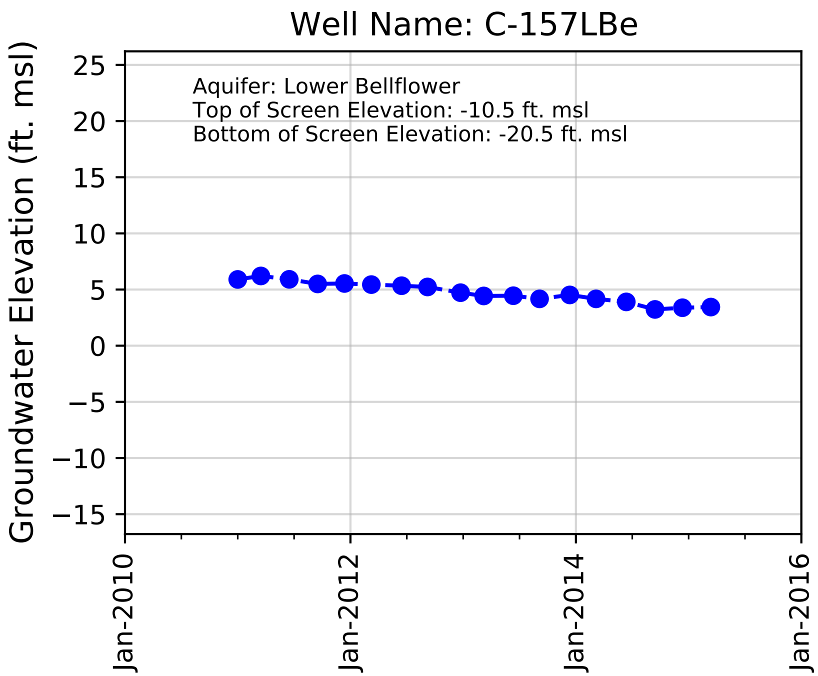

Well Name: C-154
Former Test Site 2
Aquifer: Upper Bellflower
Top of Screen Elevation: 5.6 ft. msl
Bottom of Screen Elevation: -4.4 ft. msl
Jul-2009
Jul-2011
Jul-2013
Jul-2015

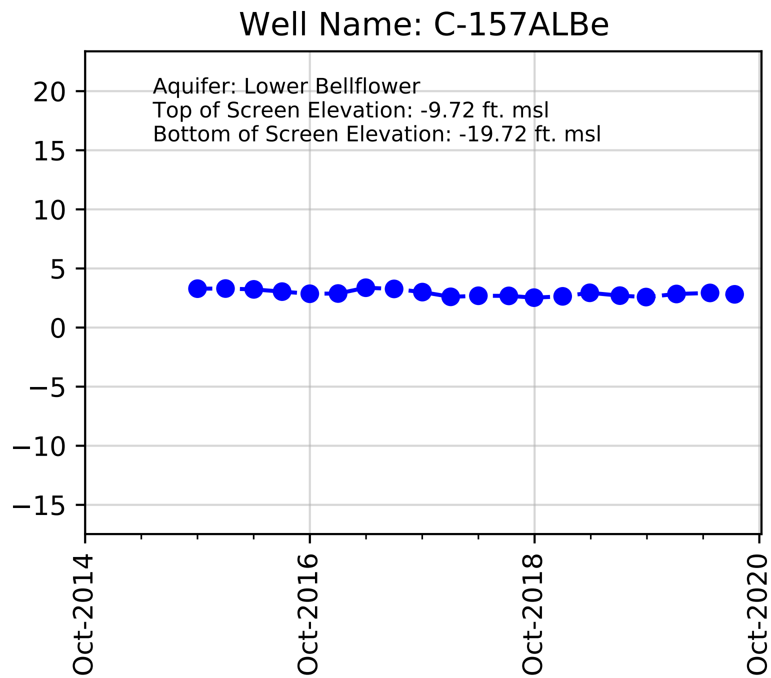

Well Name: C-155
Aquifer: Ballona
Top of Screen Elevation: -38 ft. msl
Bottom of Screen Elevation: -48.0 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jul-2009
Jul-2011
Jul-2013
Jul-2015

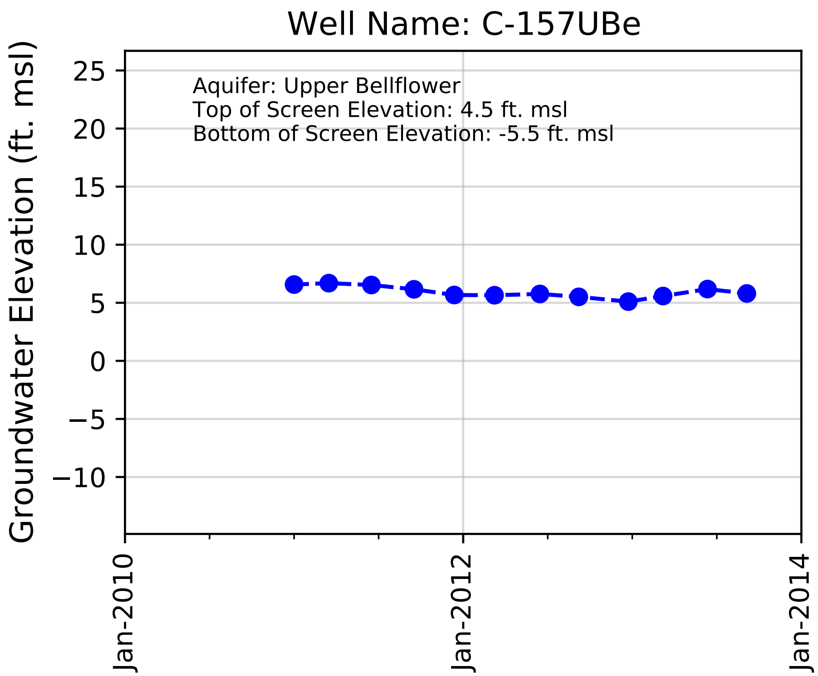

Well Name: C-156
Aquifer: Lower Bellflower
Top of Screen Elevation: -15 ft. msl
Bottom of Screen Elevation: -25.0 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jul-2009
Jul-2011
Jul-2013
Jul-2015

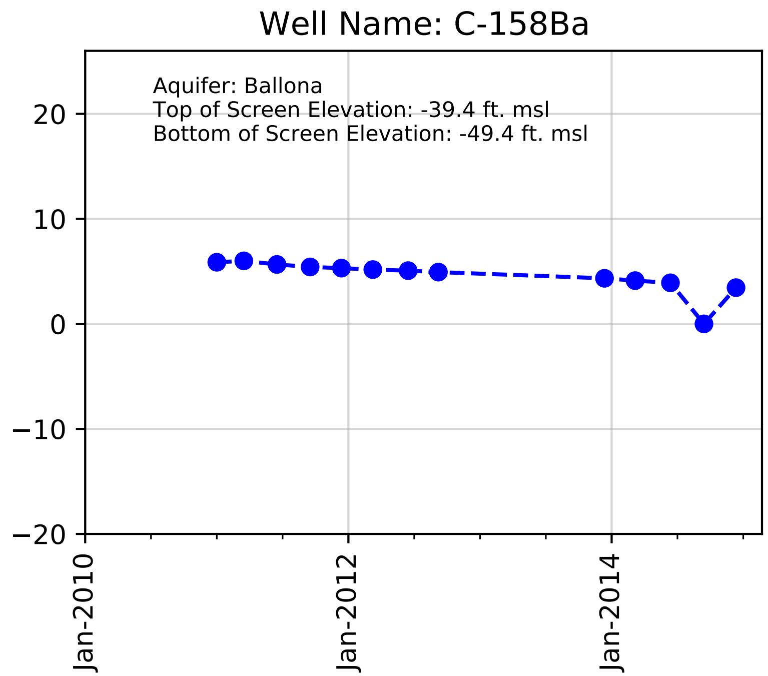

Well Name: C-157Ba
Aquifer: Ballona
Top of Screen Elevation: -35.9 ft. msl
Bottom of Screen Elevation: -45.9 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jan-2010
Jan-2012
Jan-2014
Jan-2016

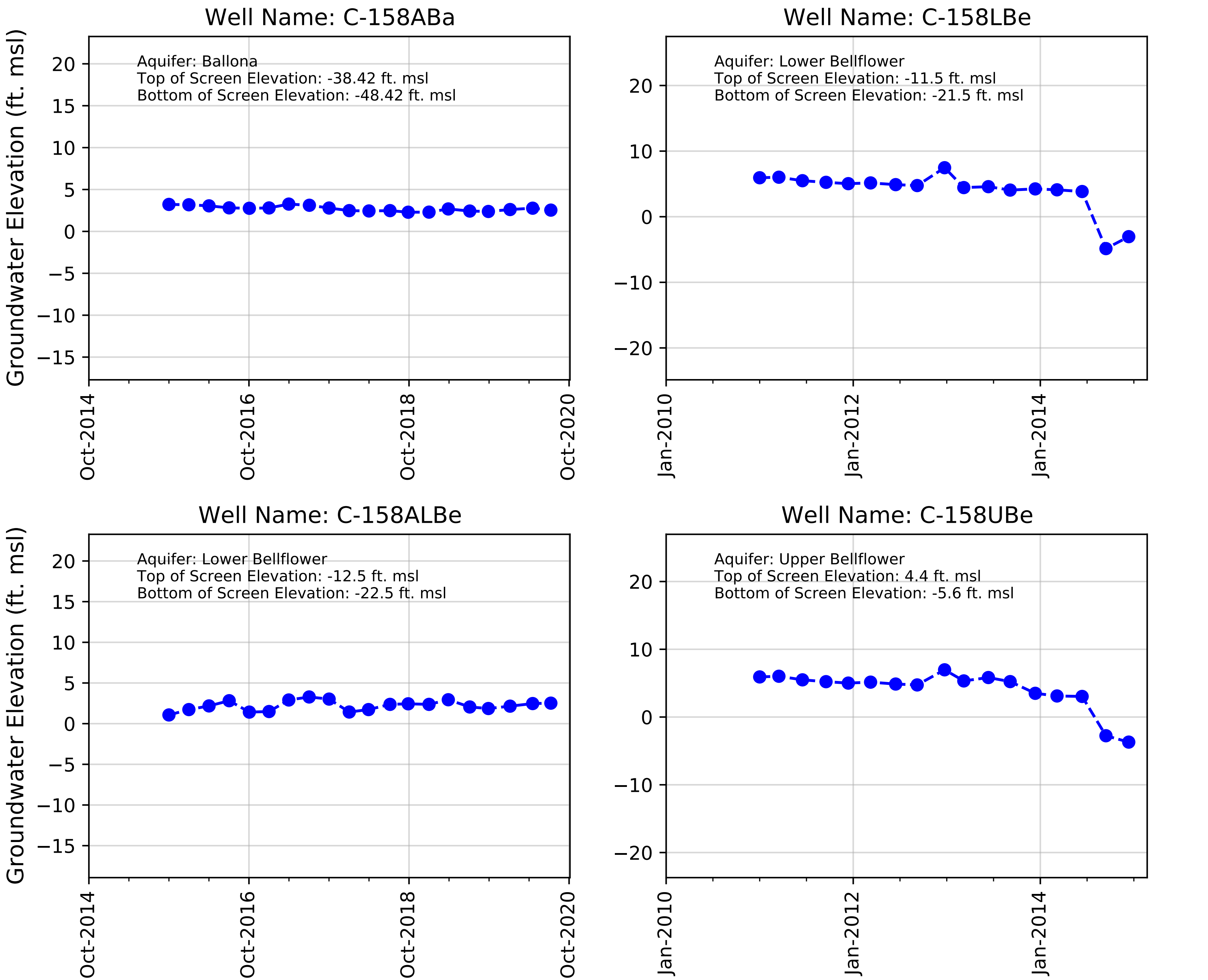

Well Name: C-157ABa
Aquifer: Ballona
Top of Screen Elevation: -35.36 ft. msl
Bottom of Screen Elevation: -45.36 ft. msl
20
15
10
5
0
−5
−10
−15
Oct-2014
Oct-2016
Oct-2018
Oct-2020


Well Name: C-157LBe
Aquifer: Lower Bellflower
Top of Screen Elevation: -10.5 ft. msl
Bottom of Screen Elevation: -20.5 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jan-2010
Jan-2012
Jan-2014
Jan-2016

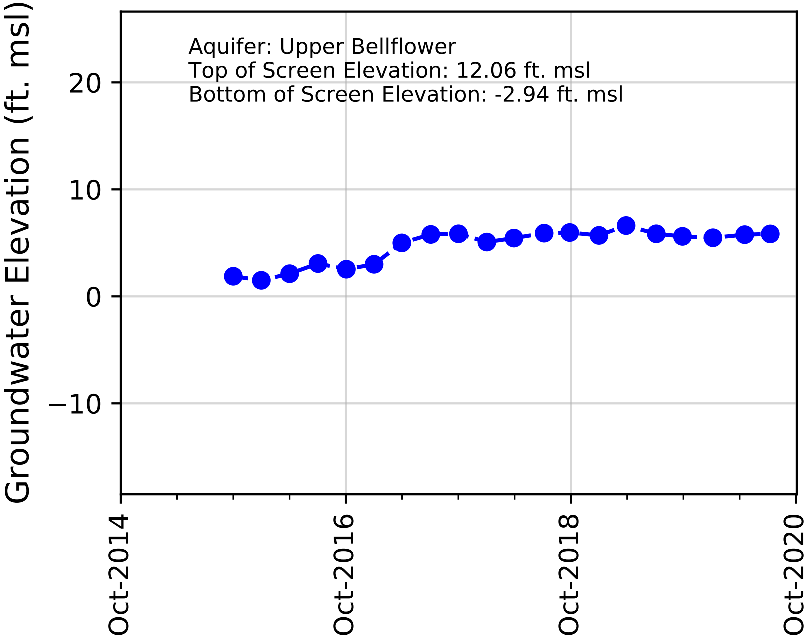

Well Name: C-157ALBe
Aquifer: Lower Bellflower
Top of Screen Elevation: -9.72 ft. msl
Bottom of Screen Elevation: -19.72 ft. msl
20
15
10
5
0
−5
−10
−15
Oct-2014
Oct-2016
Oct-2018
Oct-2020


Well Name: C-157UBe
Aquifer: Upper Bellflower
Top of Screen Elevation: 4.5 ft. msl
Bottom of Screen Elevation: -5.5 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
Jan-2010
Jan-2012
Jan-2014

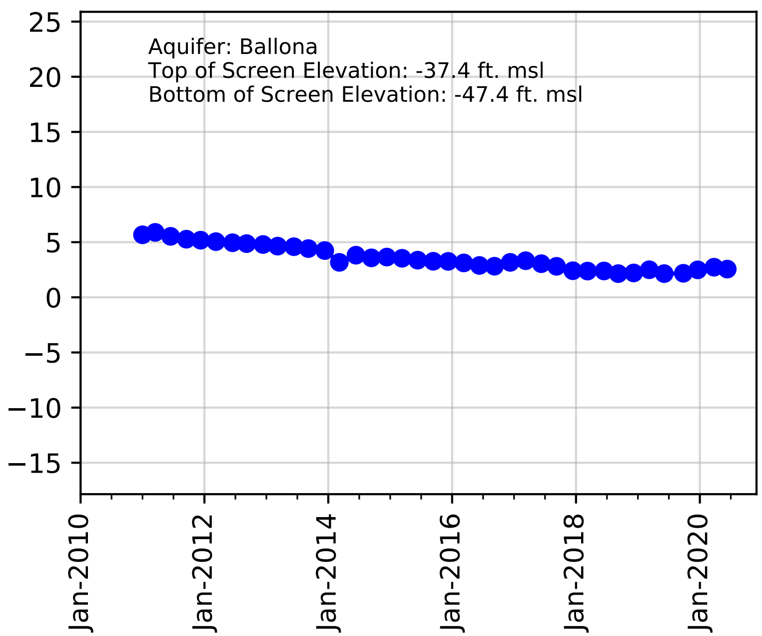

Well Name: C-158Ba
Aquifer: Ballona
Top of Screen Elevation: -39.4 ft. msl
Bottom of Screen Elevation: -49.4 ft. msl
20
10
0
−10
−20
Jan-2010
Jan-2012
Jan-2014


Well Name: C-158ABa
Aquifer: Ballona
Top of Screen Elevation: -38.42 ft. msl
Bottom of Screen Elevation: -48.42 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Oct-2014
Oct-2016
Oct-2018
Oct-2020
Well Name: C-158LBe
Aquifer: Lower Bellflower
Top of Screen Elevation: -11.5 ft. msl
Bottom of Screen Elevation: -21.5 ft. msl
20
10
0
−10
−20
Jan-2010
Jan-2012
Jan-2014
Well Name: C-158ALBe
Aquifer: Lower Bellflower
Top of Screen Elevation: -12.5 ft. msl
Bottom of Screen Elevation: -22.5 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Oct-2014
Oct-2016
Oct-2018
Oct-2020
Well Name: C-158UBe
Aquifer: Upper Bellflower
Top of Screen Elevation: 4.4 ft. msl
Bottom of Screen Elevation: -5.6 ft. msl
20
10
0
−10
−20
Jan-2010
Jan-2012
Jan-2014

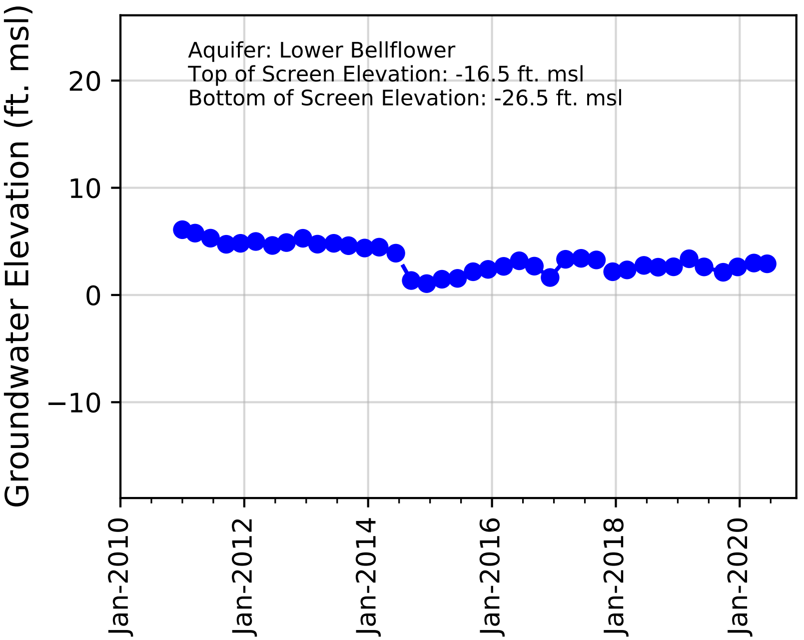
Well Name: C-158AUBe



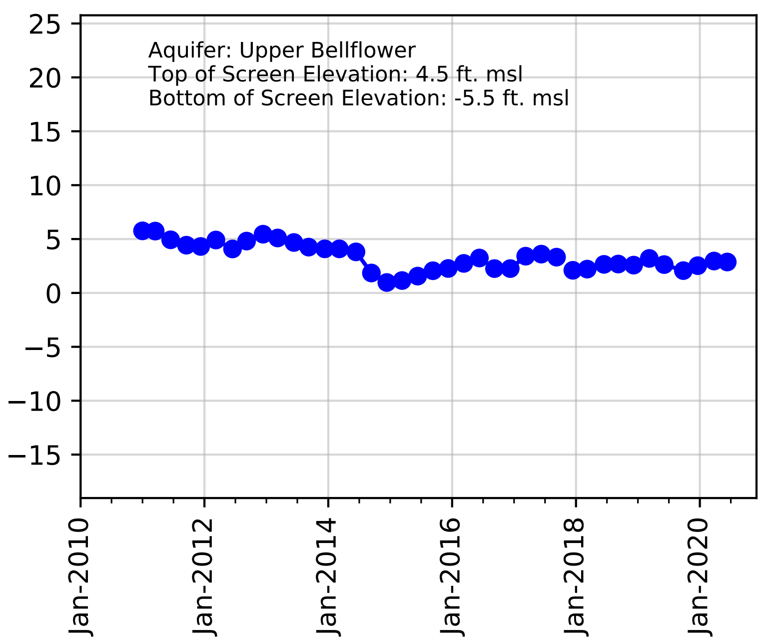
Well Name: C-159Ba



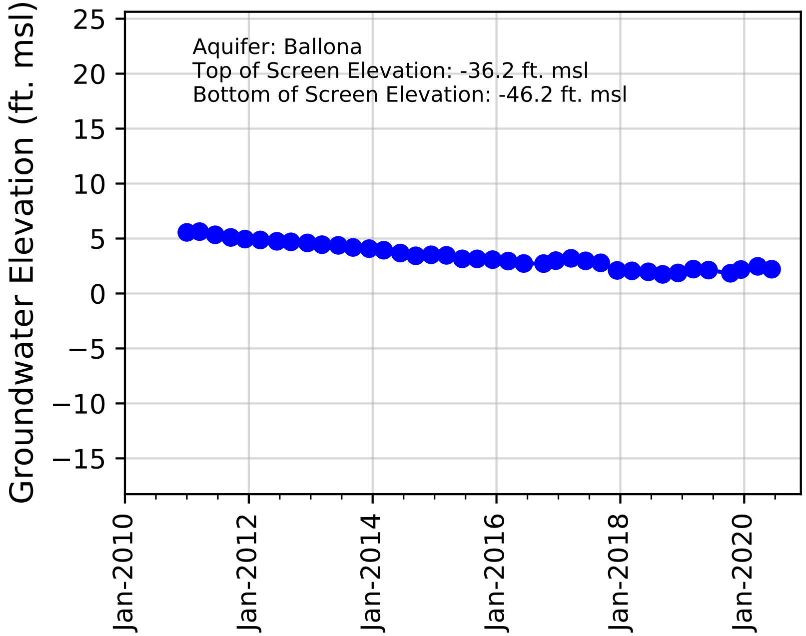
Well Name: C-159LBe



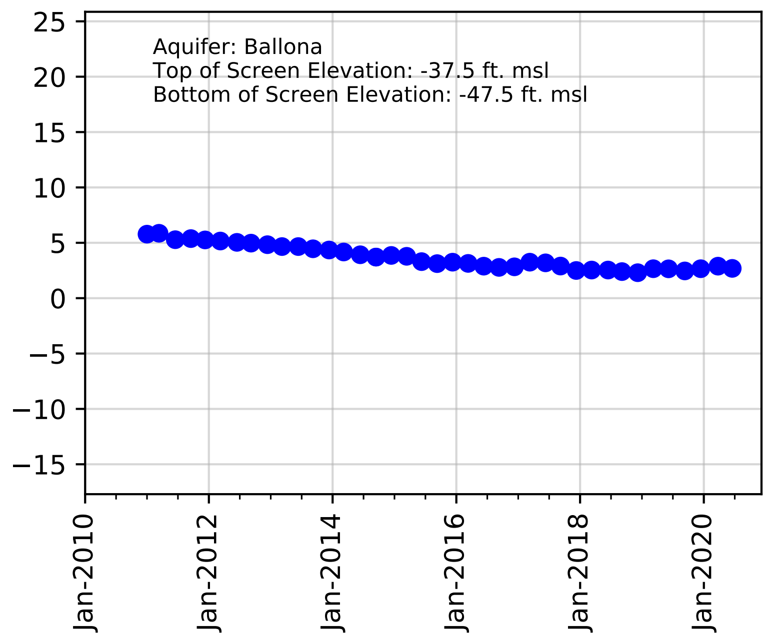
Well Name: C-159UBe



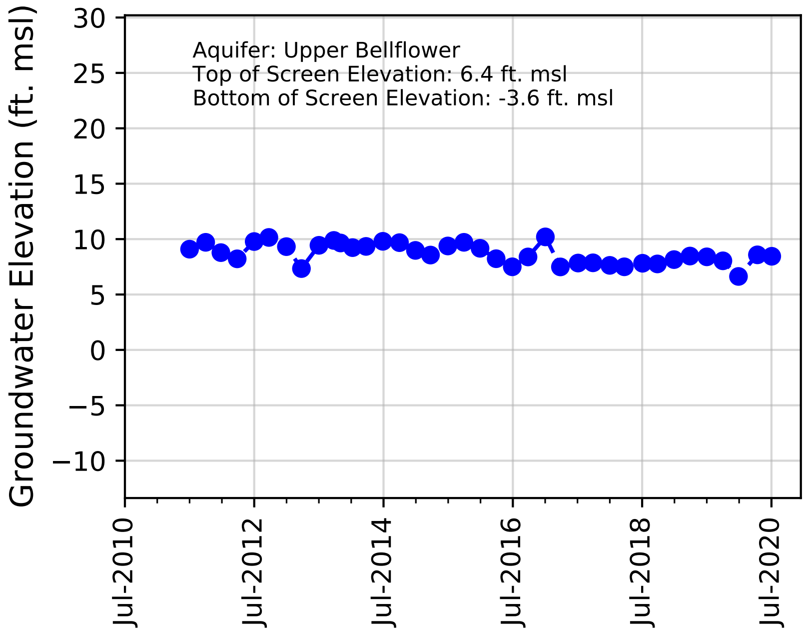
Well Name: C-160Ba



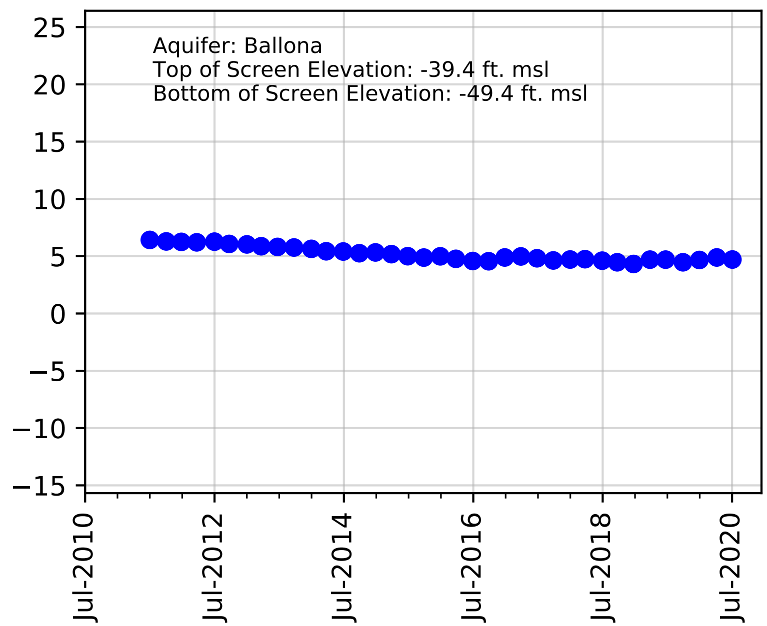
Well Name: C-161Ba

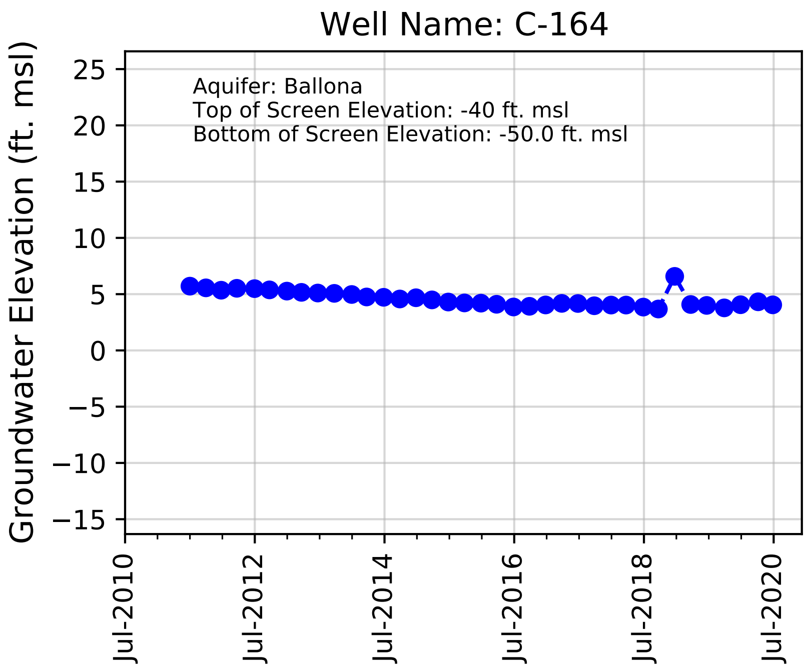


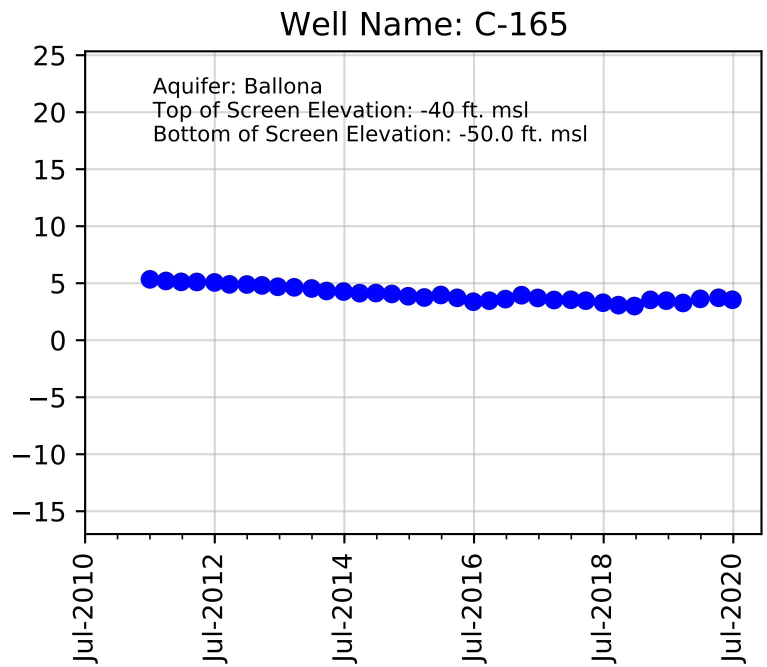
Well Name: C-162 Phase I Residential

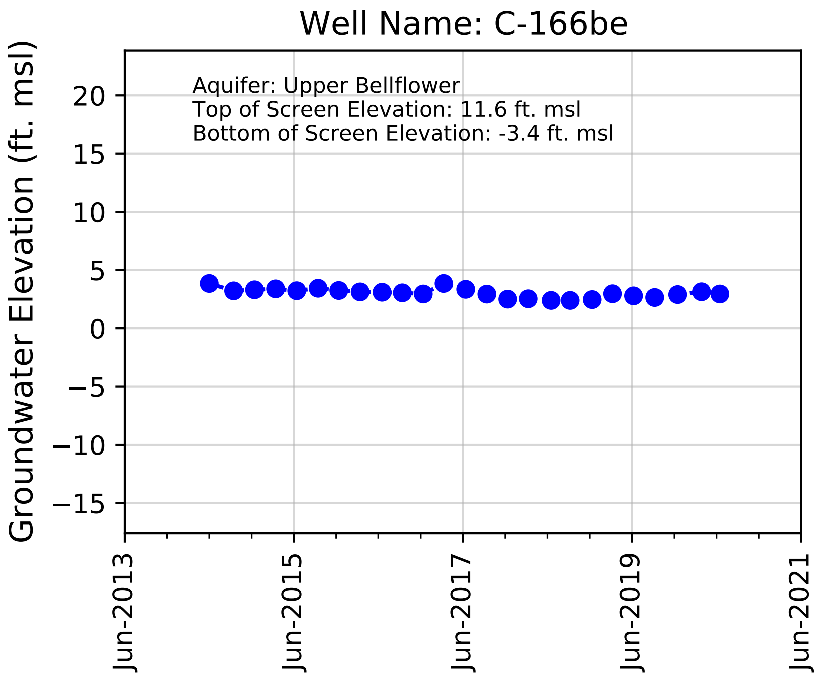


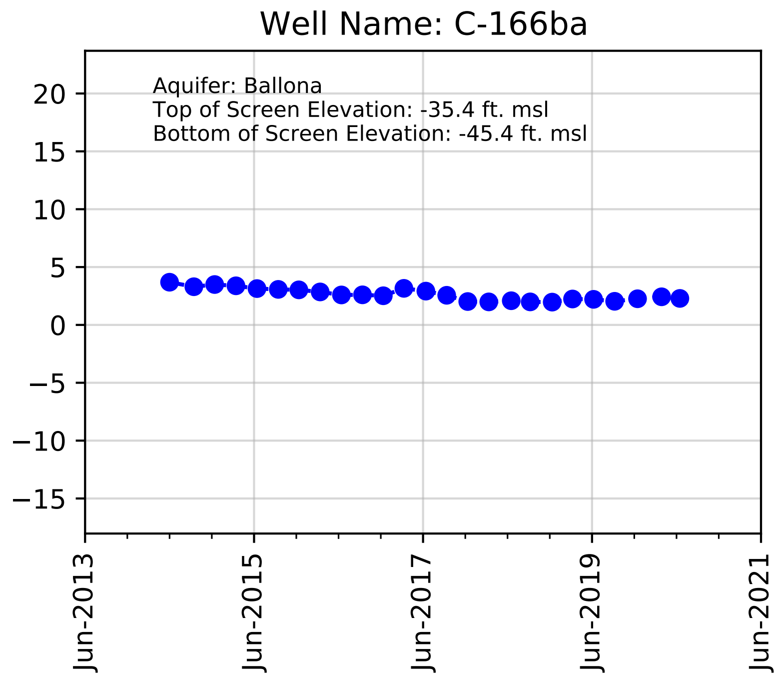
Well Name: C-163 Phase I Residential

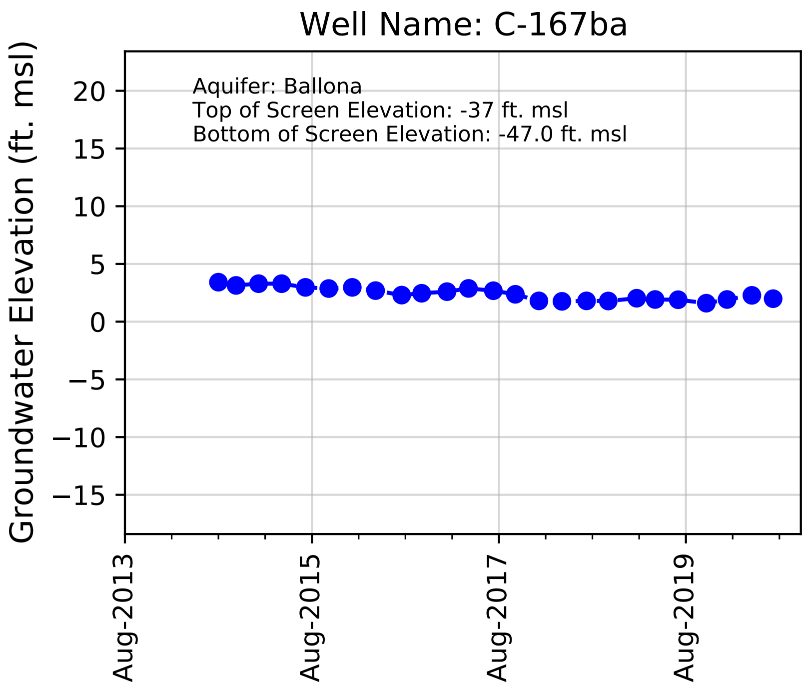


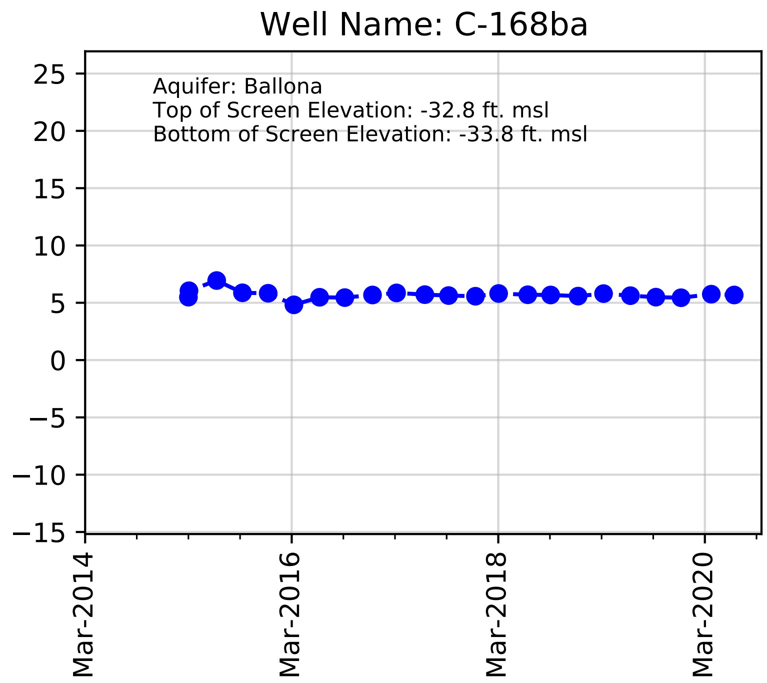

Well Name: C-164
Aquifer: Ballona
Top of Screen Elevation: -40 ft. msl
Bottom of Screen Elevation: -50.0 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jul-2010
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

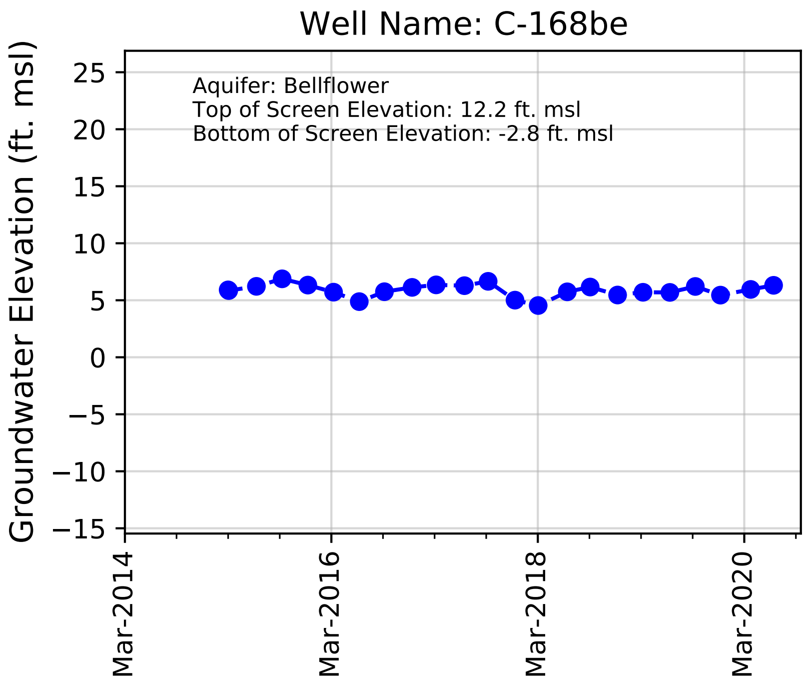

Well Name: C-165
Aquifer: Ballona
Top of Screen Elevation: -40 ft. msl
Bottom of Screen Elevation: -50.0 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jul-2010
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

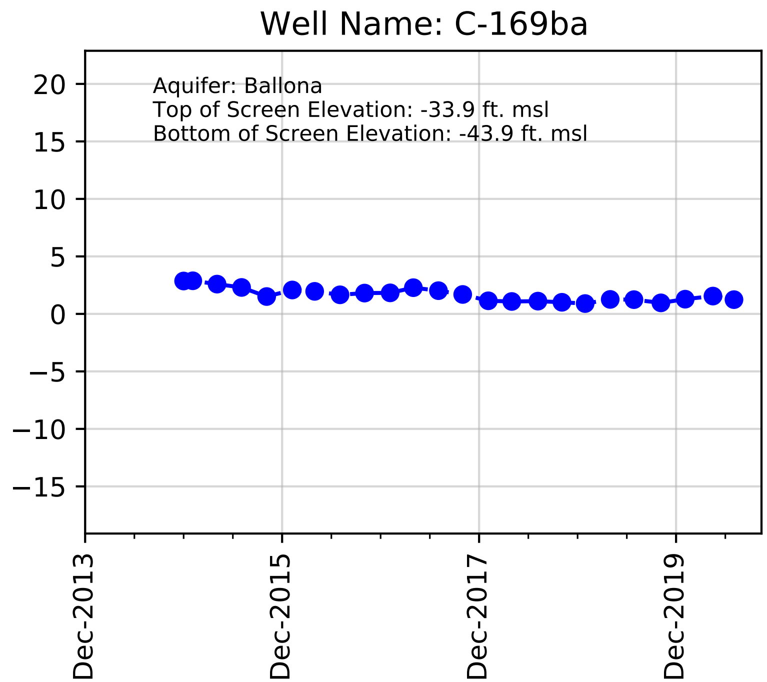

Well Name: C-166be
Aquifer: Upper Bellflower
Top of Screen Elevation: 11.6 ft. msl
Bottom of Screen Elevation: -3.4 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Jun-2013
Jun-2015
Jun-2017
Jun-2019
Jun-2021

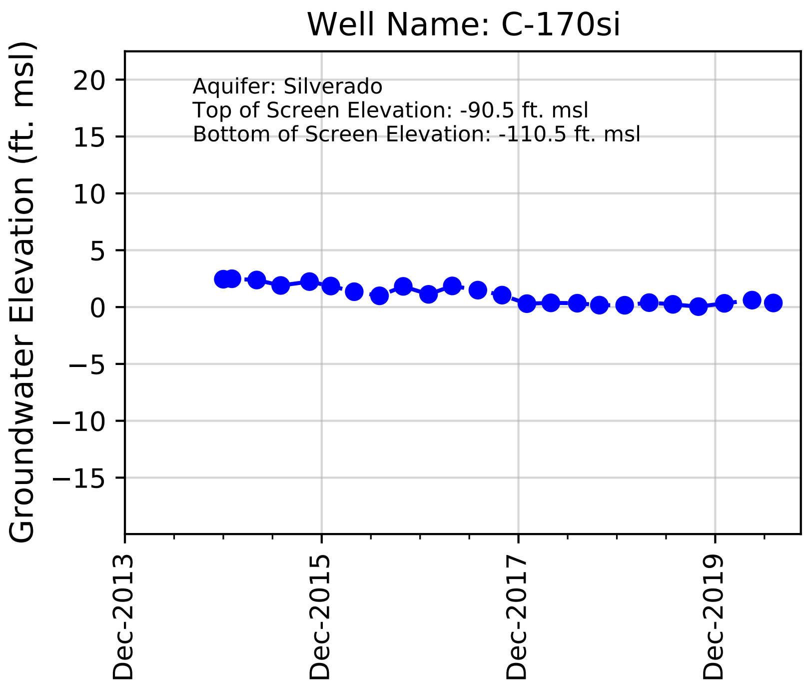

Well Name: C-166ba
Aquifer: Ballona
Top of Screen Elevation: -35.4 ft. msl
Bottom of Screen Elevation: -45.4 ft. msl
20
15
10
5
0
−5
−10
−15
Jun-2013
Jun-2015
Jun-2017
Jun-2019
Jun-2021


Well Name: C-167ba
Aquifer: Ballona
Top of Screen Elevation: -37 ft. msl
Bottom of Screen Elevation: -47.0 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Aug-2013
Aug-2015
Aug-2017
Aug-2019


Well Name: C-168ba
Aquifer: Ballona
Top of Screen Elevation: -32.8 ft. msl
Bottom of Screen Elevation: -33.8 ft. msl
25
20
15
10
5
0
−5
−10
−15
Mar-2014
Mar-2016
Mar-2018
Mar-2020


Well Name: C-168be
Aquifer: Bellflower
Top of Screen Elevation: 12.2 ft. msl
Bottom of Screen Elevation: -2.8 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Mar-2014
Mar-2016
Mar-2018
Mar-2020


Well Name: C-169ba
Aquifer: Ballona
Top of Screen Elevation: -33.9 ft. msl
Bottom of Screen Elevation: -43.9 ft. msl
20
15
10
5
0
−5
−10
−15
Dec-2013
Dec-2015
Dec-2017
Dec-2019


Well Name: C-170si
Aquifer: Silverado
Top of Screen Elevation: -90.5 ft. msl
Bottom of Screen Elevation: -110.5 ft. msl
Groundwater Elevation (ft. msl)
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15
10
5
0
−5
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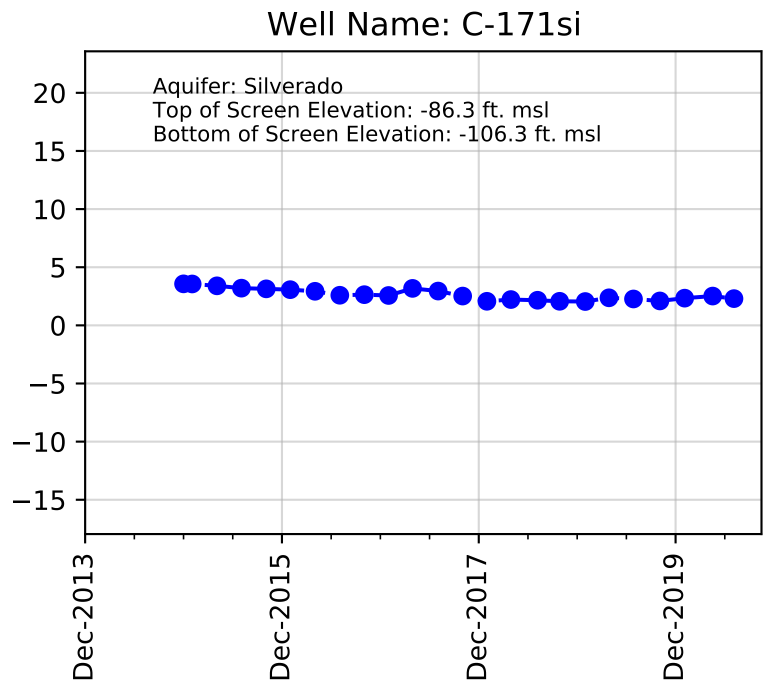
Dec-2013
Dec-2015
Dec-2017
Dec-2019


Well Name: C-171si
Aquifer: Silverado
Top of Screen Elevation: -86.3 ft. msl
Bottom of Screen Elevation: -106.3 ft. msl
20
15
10
5
0
−5
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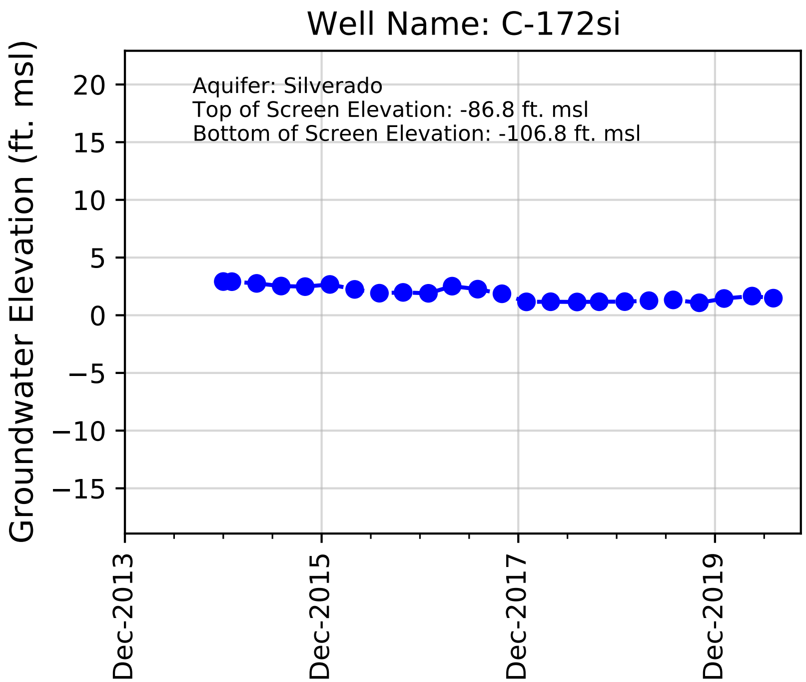
Dec-2013
Dec-2015
Dec-2017
Dec-2019


Well Name: C-172si
Aquifer: Silverado
Top of Screen Elevation: -86.8 ft. msl
Bottom of Screen Elevation: -106.8 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
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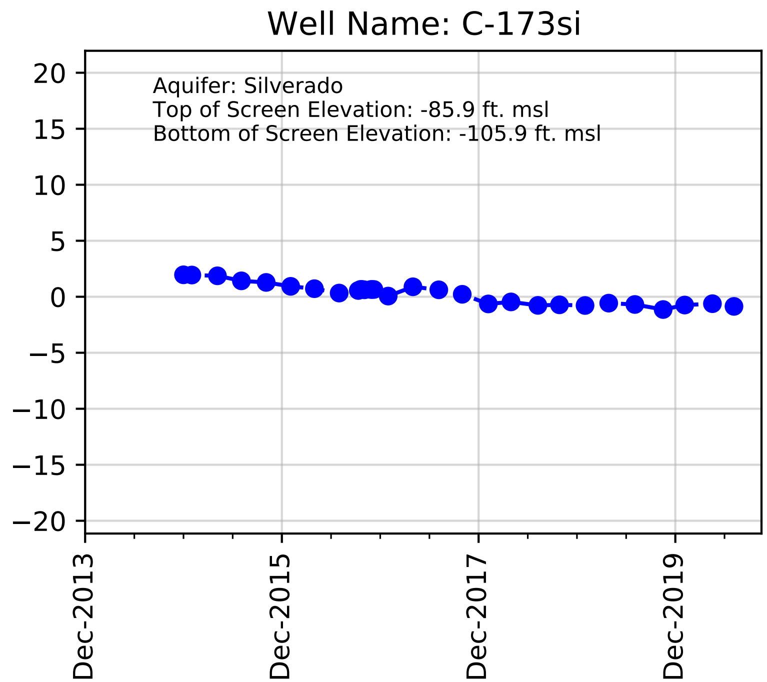
−15
Dec-2013
Dec-2015
Dec-2017
Dec-2019


Well Name: C-173si
Aquifer: Silverado
Top of Screen Elevation: -85.9 ft. msl
Bottom of Screen Elevation: -105.9 ft. msl
20
15
10
5
0
−5
−10
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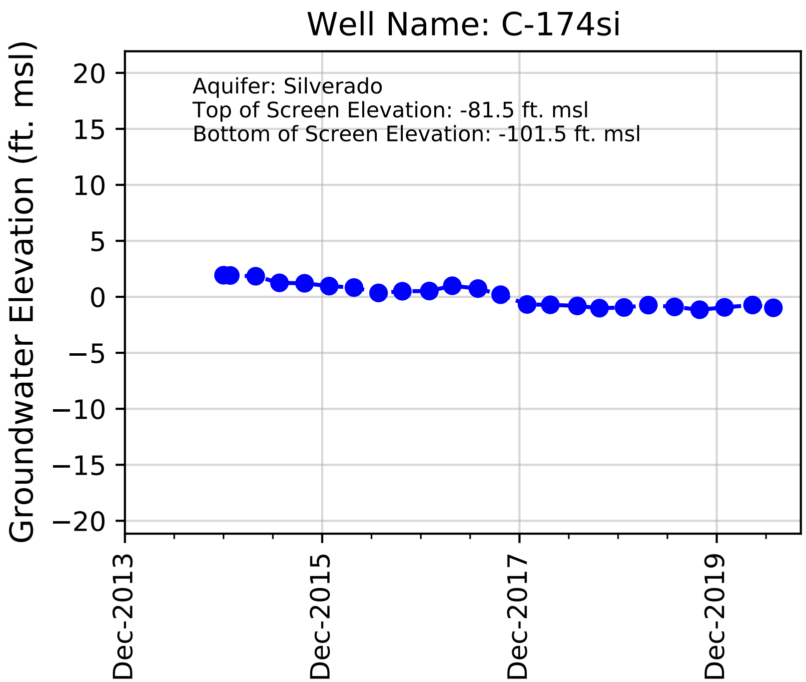
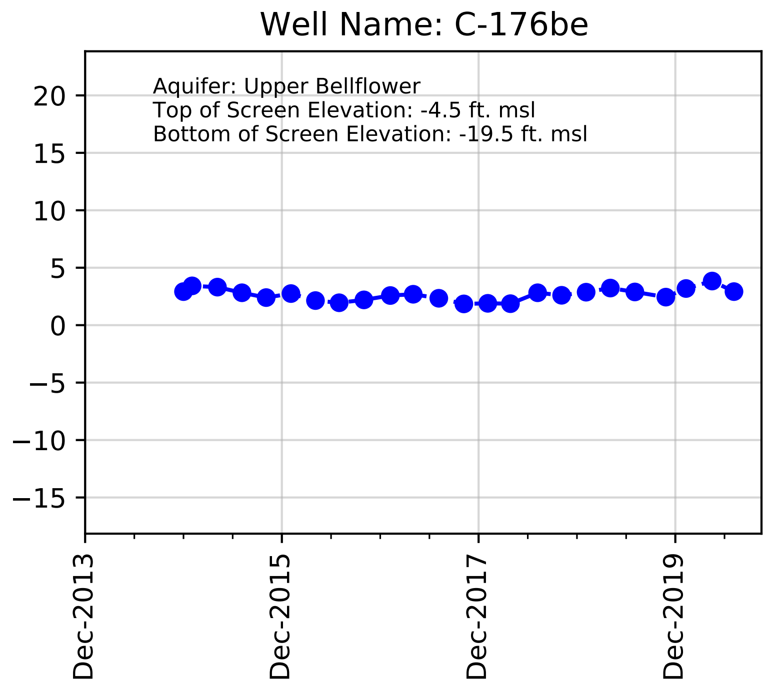
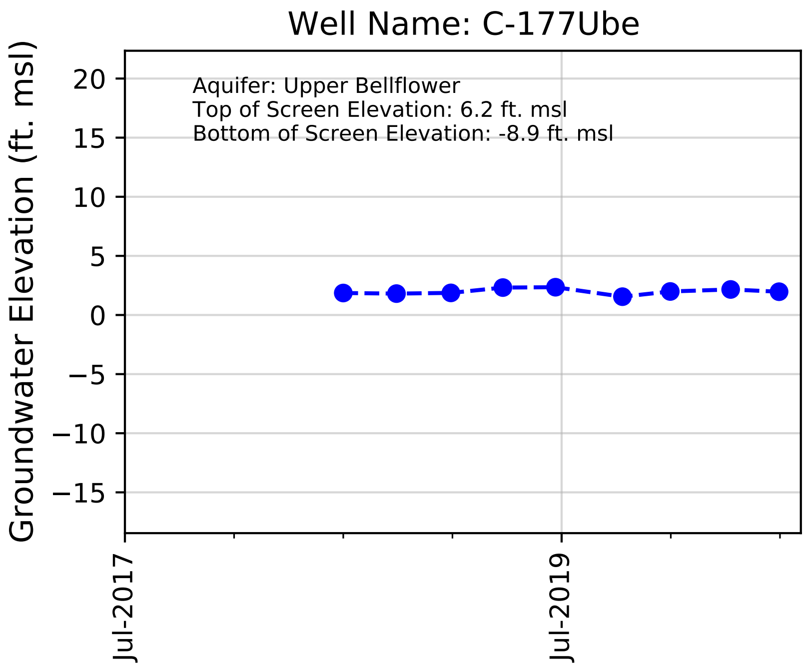
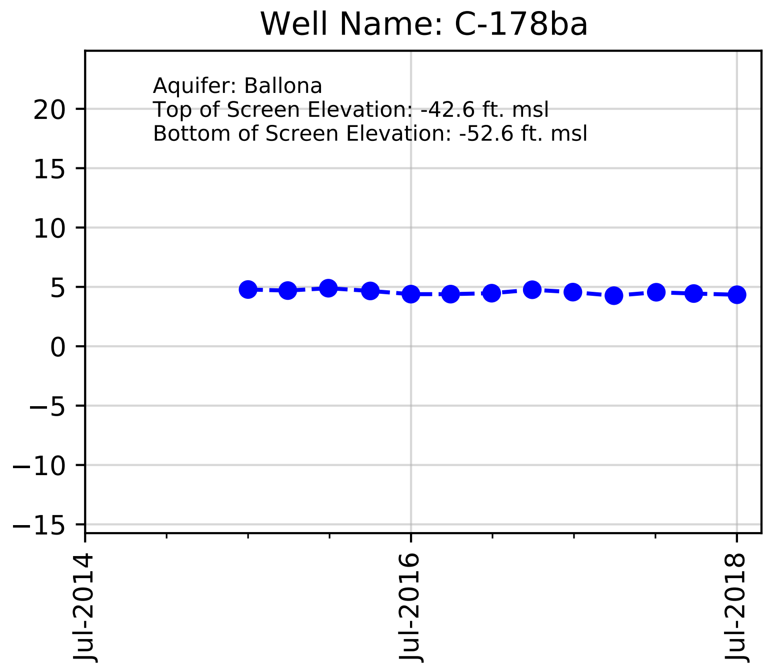
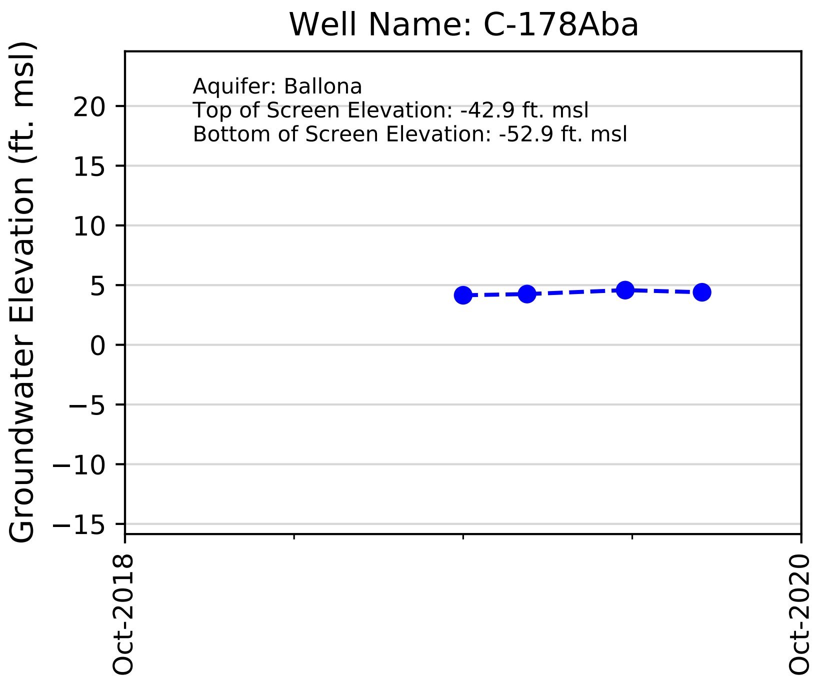
Dec-2013
Dec-2015
Dec-2017
Dec-2019

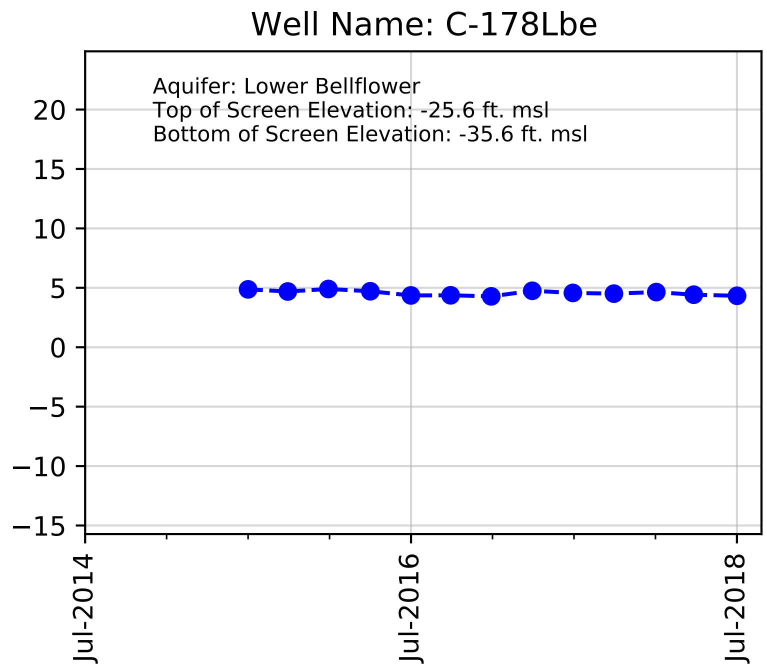

Well Name: C-174si
Aquifer: Silverado
Top of Screen Elevation: -81.5 ft. msl
Bottom of Screen Elevation: -101.5 ft. msl
Groundwater Elevation (ft. msl)
Dec-2013
Dec-2015
Dec-2017
Dec-2019

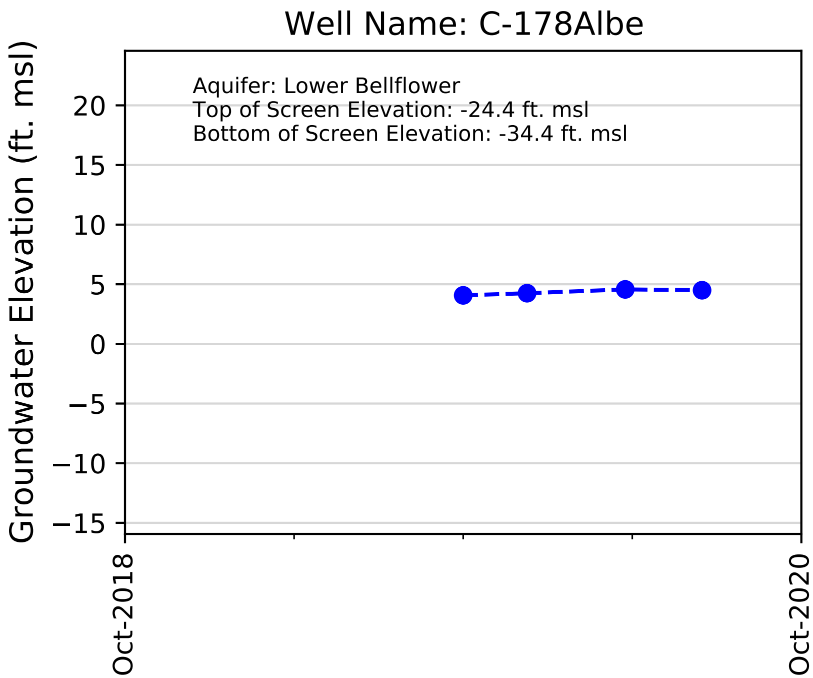

Well Name: C-176be
Aquifer: Upper Bellflower
Top of Screen Elevation: -4.5 ft. msl
Bottom of Screen Elevation: -19.5 ft. msl
Dec-2013
Dec-2015
Dec-2017
Dec-2019

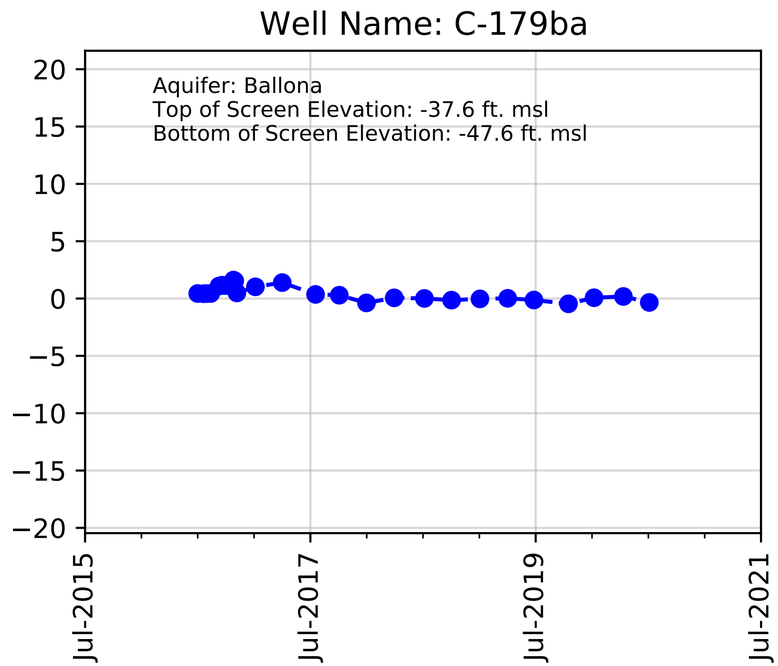

Well Name: C-177Ube
Aquifer: Upper Bellflower
Top of Screen Elevation: 6.2 ft. msl
Bottom of Screen Elevation: -8.9 ft. msl
Groundwater Elevation (ft. msl)
Jul-2017
Jul-2019

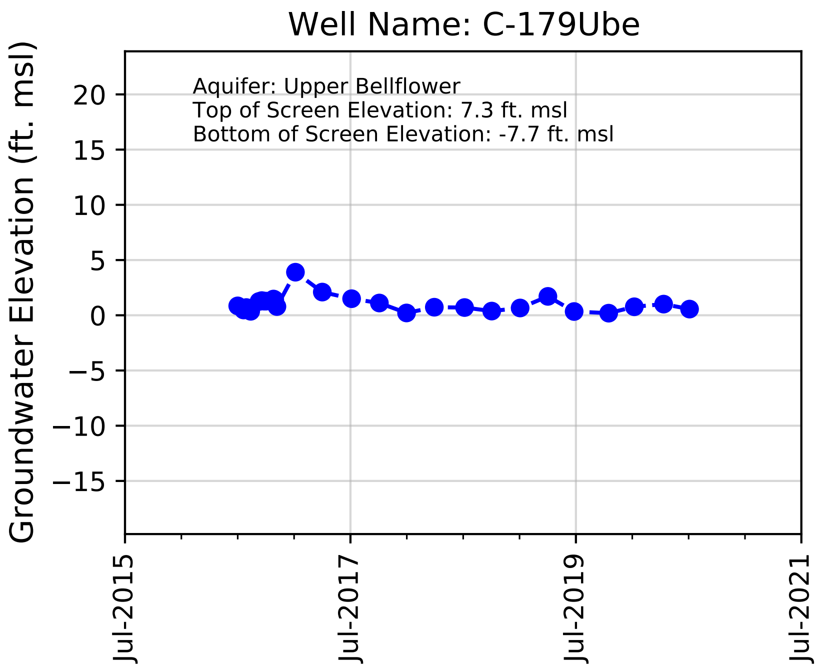

Well Name: C-178ba
Aquifer: Ballona
Top of Screen Elevation: -42.6 ft. msl
Bottom of Screen Elevation: -52.6 ft. msl
Jul-2014
Jul-2016
Jul-2018

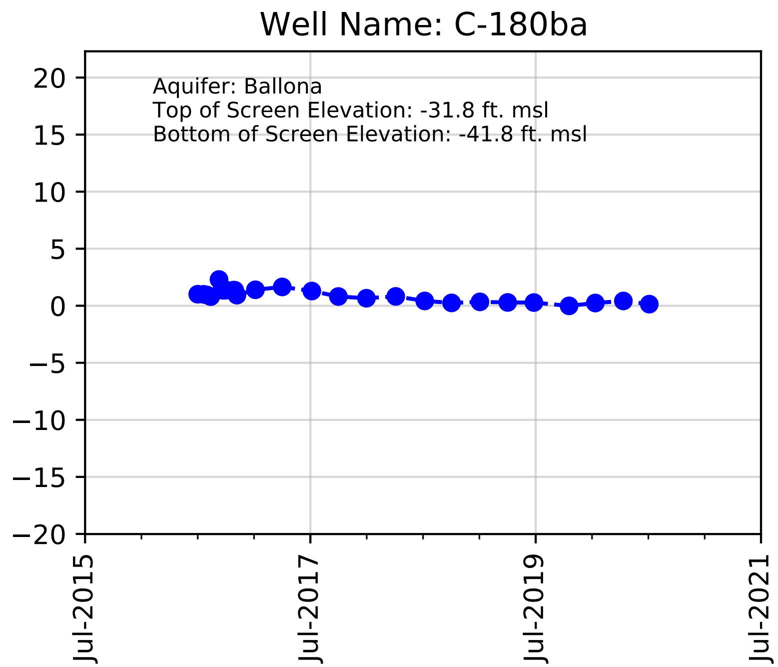

Well Name: C-178Aba
Groundwater Elevation (ft. msl)
Aquifer: Ballona
Top of Screen Elevation: -42.9 ft. msl
Bottom of Screen Elevation: -52.9 ft. msl
Oct-2018
Oct-2020

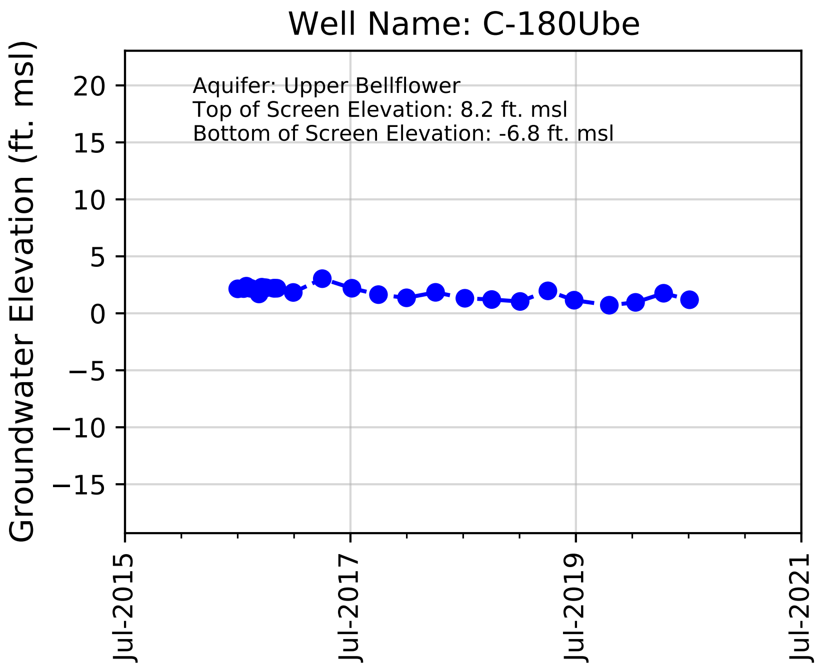

Well Name: C-178Lbe
Aquifer: Lower Bellflower
Top of Screen Elevation: -25.6 ft. msl
Bottom of Screen Elevation: -35.6 ft. msl
Jul-2014
Jul-2016
Jul-2018

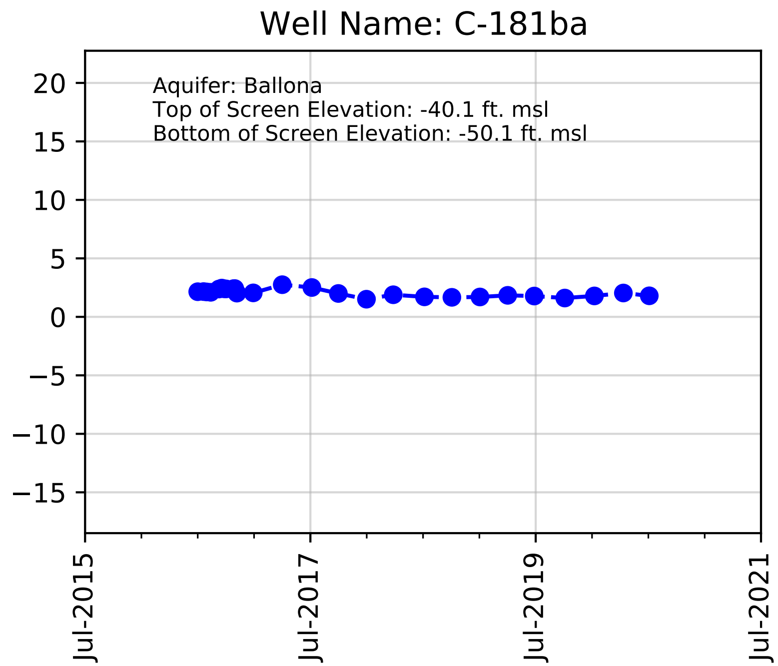

Well Name: C-178Albe
Groundwater Elevation (ft. msl)
Aquifer: Lower Bellflower
Top of Screen Elevation: -24.4 ft. msl
Bottom of Screen Elevation: -34.4 ft. msl
Oct-2018
Oct-2020

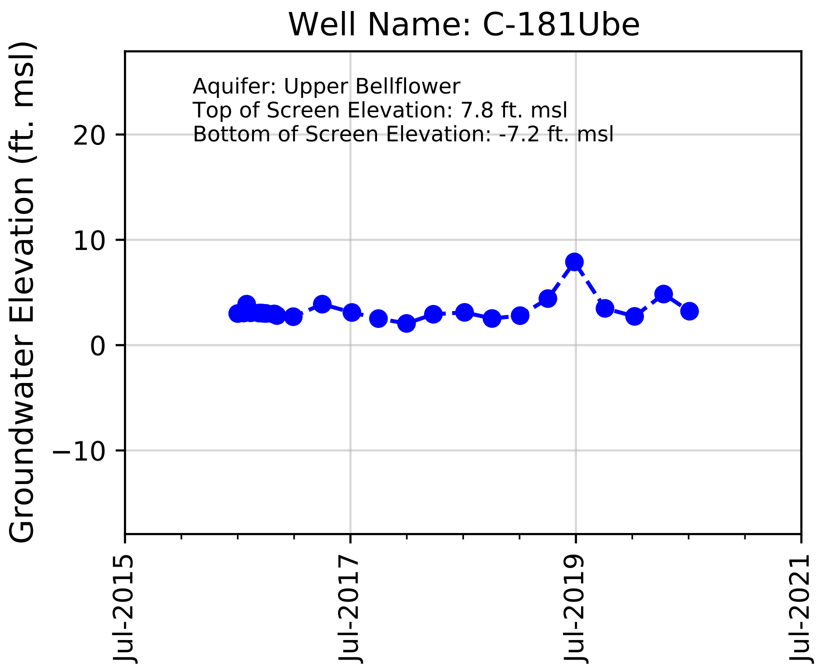

Well Name: C-179ba
Aquifer: Ballona
Top of Screen Elevation: -37.6 ft. msl
Bottom of Screen Elevation: -47.6 ft. msl
Jul-2015
Jul-2017
Jul-2019
Jul-2021

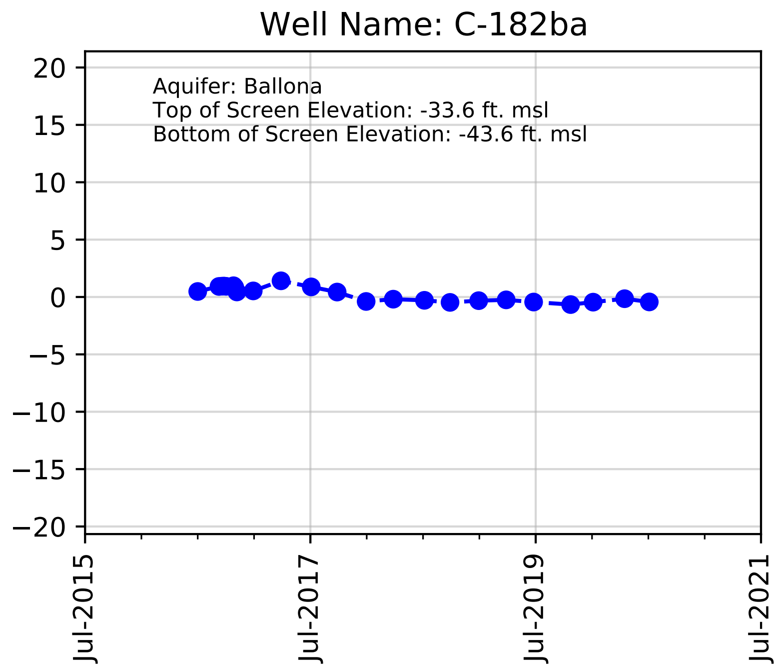

Well Name: C-179Ube
Aquifer: Upper Bellflower
Top of Screen Elevation: 7.3 ft. msl
Bottom of Screen Elevation: -7.7 ft. msl
Groundwater Elevation (ft. msl)
Jul-2015
Jul-2017
Jul-2019
Jul-2021


Well Name: C-180ba
Aquifer: Ballona
Top of Screen Elevation: -31.8 ft. msl
Bottom of Screen Elevation: -41.8 ft. msl
Jul-2015
Jul-2017
Jul-2019
Jul-2021


Well Name: C-180Ube
Aquifer: Upper Bellflower
Top of Screen Elevation: 8.2 ft. msl
Bottom of Screen Elevation: -6.8 ft. msl
Groundwater Elevation (ft. msl)
Jul-2015
Jul-2017
Jul-2019
Jul-2021


Well Name: C-181ba
Aquifer: Ballona
Top of Screen Elevation: -40.1 ft. msl
Bottom of Screen Elevation: -50.1 ft. msl
Jul-2015
Jul-2017
Jul-2019
Jul-2021


Well Name: C-181Ube
Aquifer: Upper Bellflower
Top of Screen Elevation: 7.8 ft. msl
Bottom of Screen Elevation: -7.2 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Jul-2015
Jul-2017
Jul-2019
Jul-2021


Well Name: C-182ba
Aquifer: Ballona
Top of Screen Elevation: -33.6 ft. msl
Bottom of Screen Elevation: -43.6 ft. msl
20
15
10
5
0
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−10
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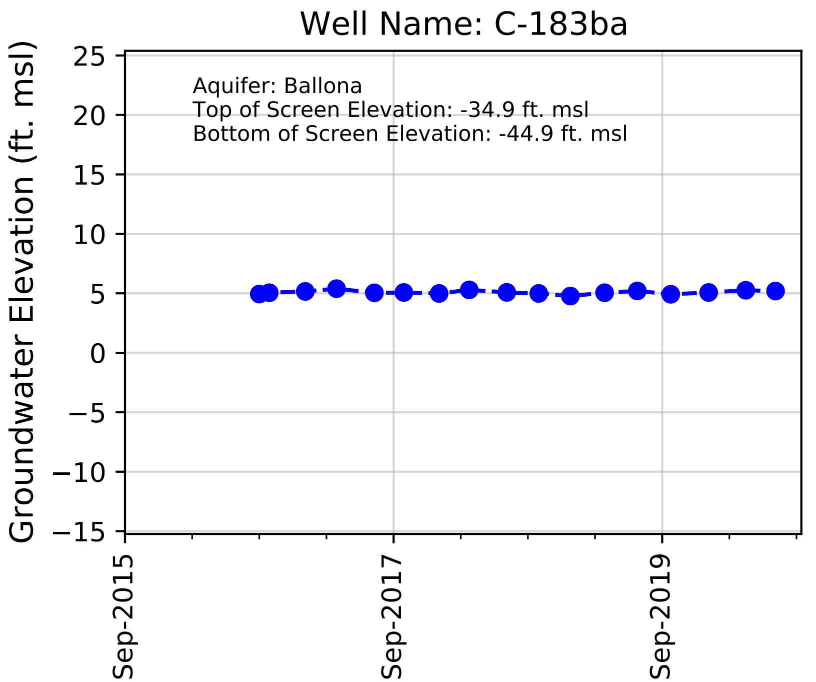
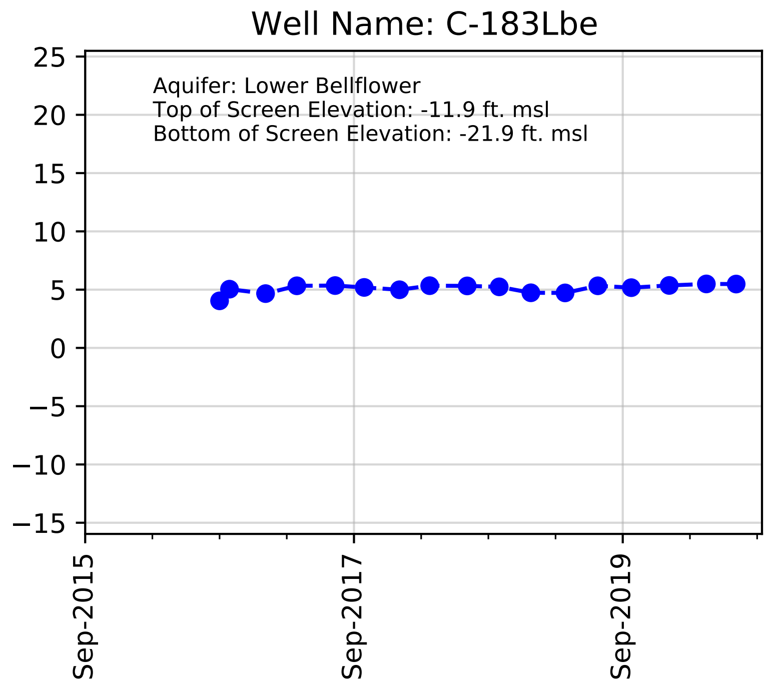
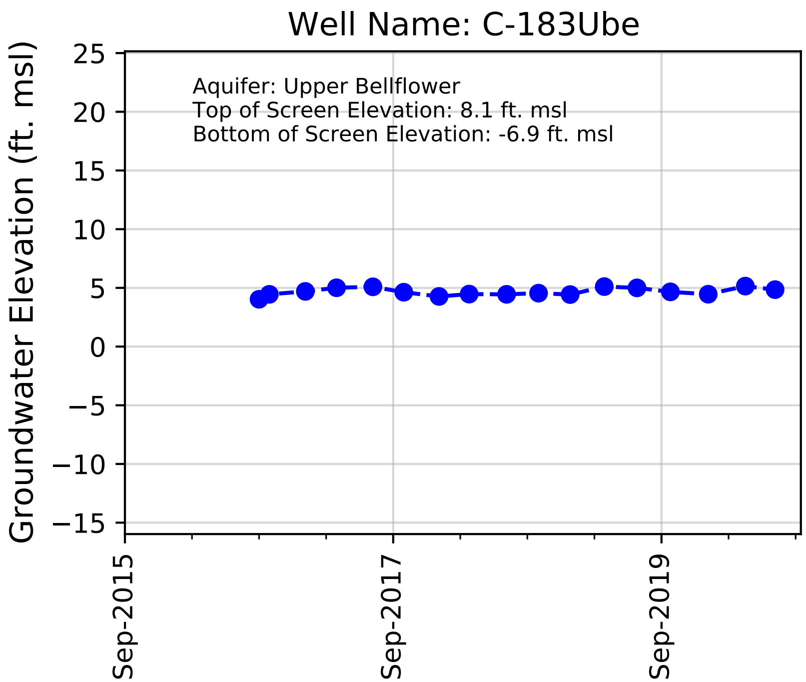
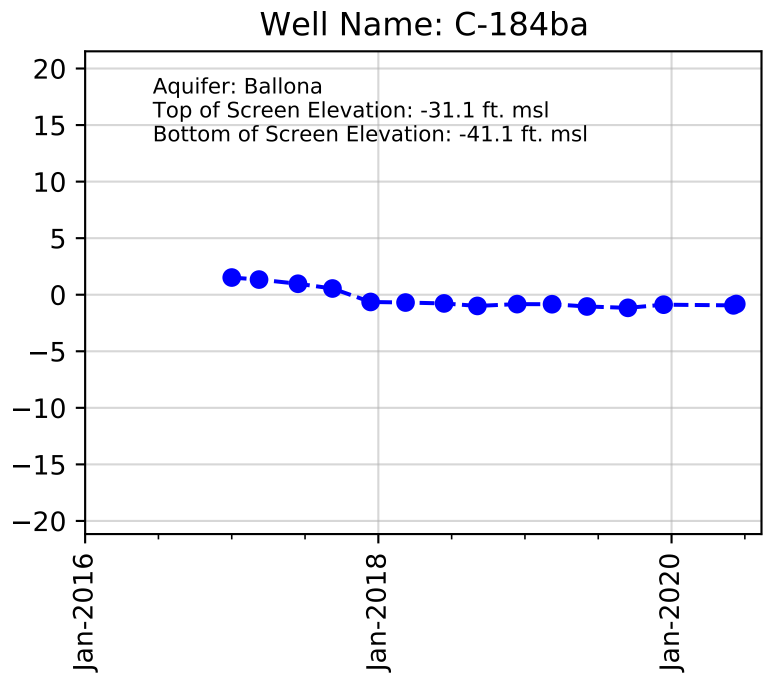
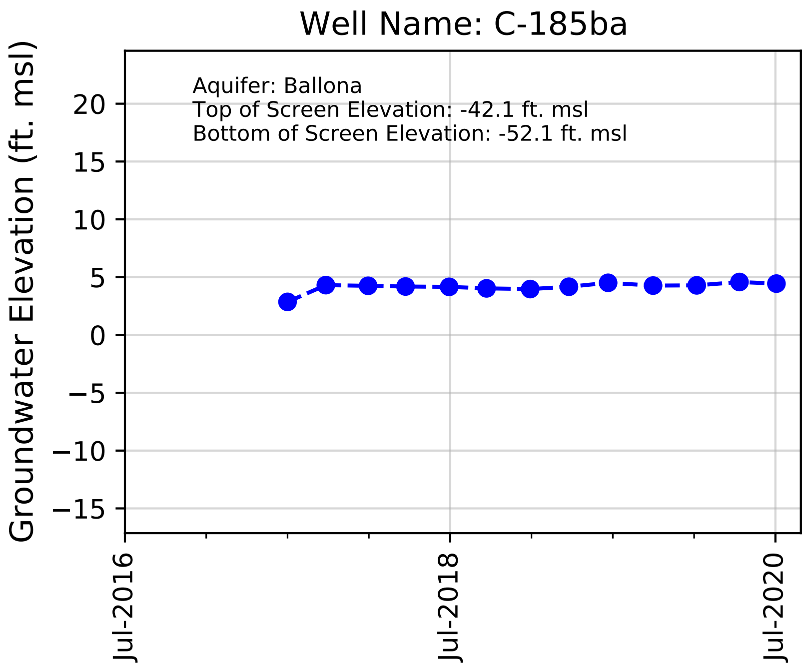
−20
Jul-2015
Jul-2017
Jul-2019
Jul-2021

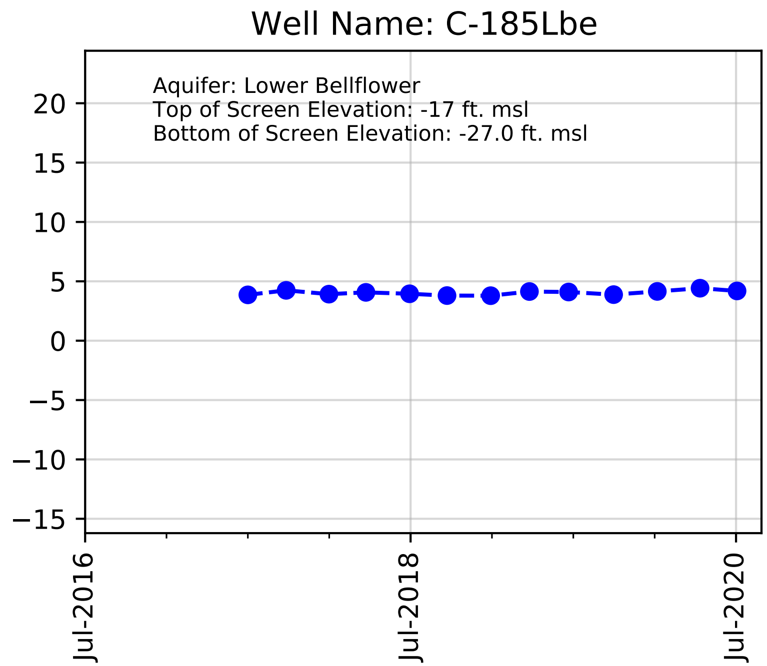

Well Name: C-183ba
Aquifer: Ballona
Top of Screen Elevation: -34.9 ft. msl
Bottom of Screen Elevation: -44.9 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Sep-2015
Sep-2017
Sep-2019

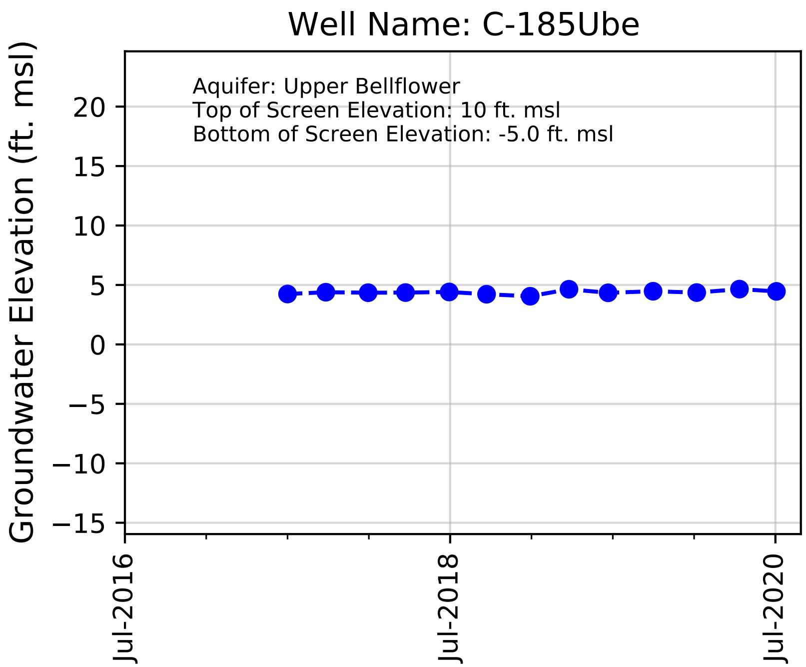

Well Name: C-183Lbe
Aquifer: Lower Bellflower
Top of Screen Elevation: -11.9 ft. msl
Bottom of Screen Elevation: -21.9 ft. msl
25
20
15
10
5
0
−5
−10
−15
Sep-2015
Sep-2017
Sep-2019

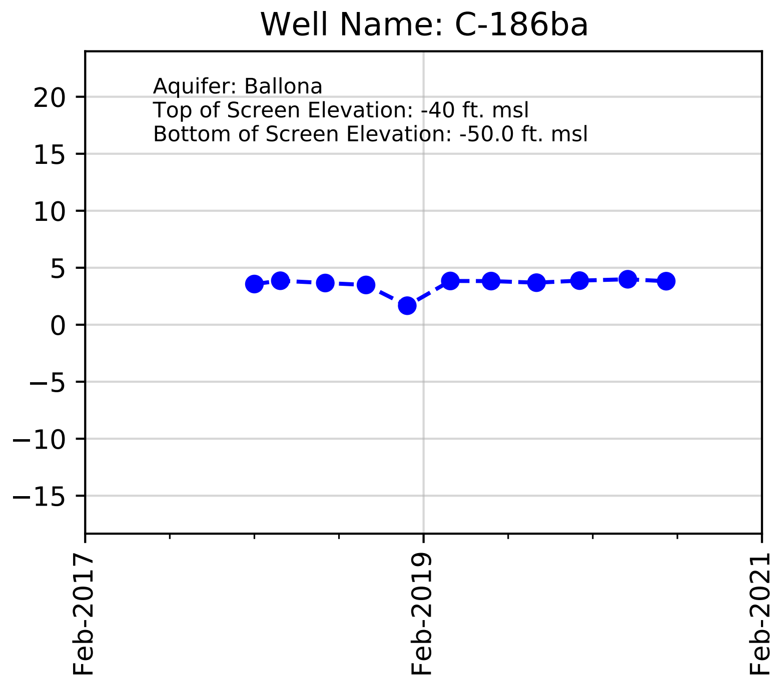

Well Name: C-183Ube
Aquifer: Upper Bellflower
Top of Screen Elevation: 8.1 ft. msl
Bottom of Screen Elevation: -6.9 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Sep-2015
Sep-2017
Sep-2019

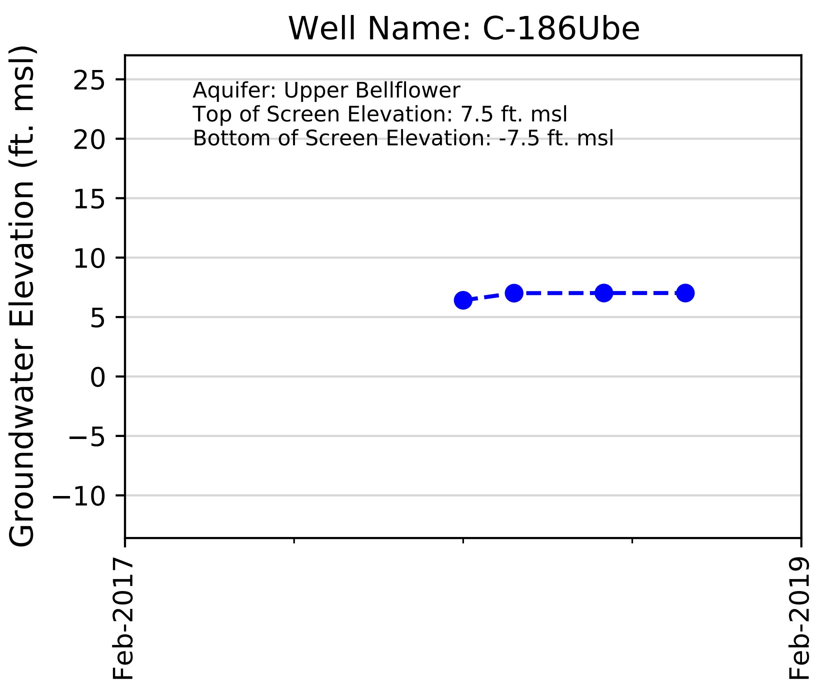

Well Name: C-184ba
Aquifer: Ballona
Top of Screen Elevation: -31.1 ft. msl
Bottom of Screen Elevation: -41.1 ft. msl
20
15
10
5
0
−5
−10
−15
−20
Jan-2016
Jan-2018
Jan-2020

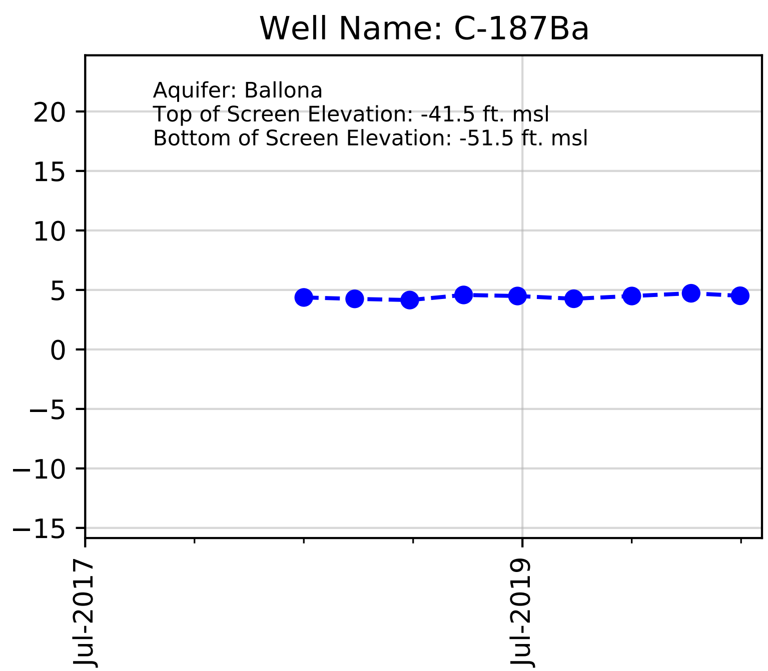

Well Name: C-185ba
Aquifer: Ballona
Top of Screen Elevation: -42.1 ft. msl
Bottom of Screen Elevation: -52.1 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Jul-2016
Jul-2018
Jul-2020

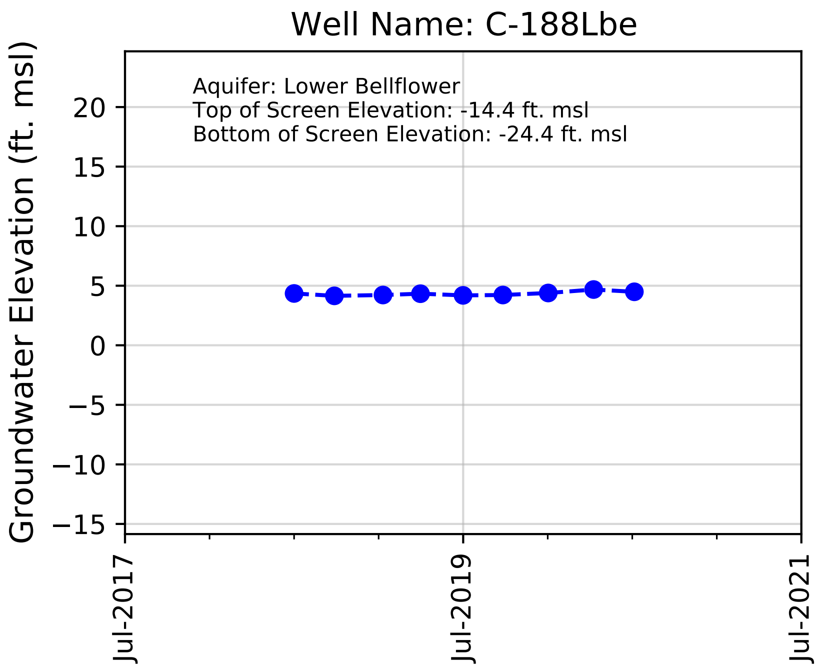

Well Name: C-185Lbe
Aquifer: Lower Bellflower
Top of Screen Elevation: -17 ft. msl
Bottom of Screen Elevation: -27.0 ft. msl
20
15
10
5
0
−5
−10
−15
Jul-2016
Jul-2018
Jul-2020

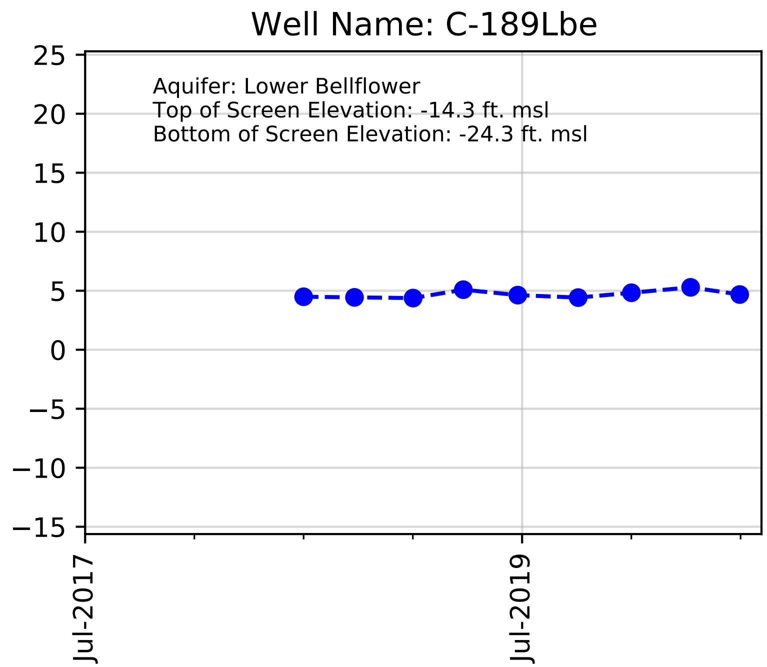

Well Name: C-185Ube
Aquifer: Upper Bellflower
Top of Screen Elevation: 10 ft. msl
Bottom of Screen Elevation: -5.0 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Jul-2016
Jul-2018
Jul-2020

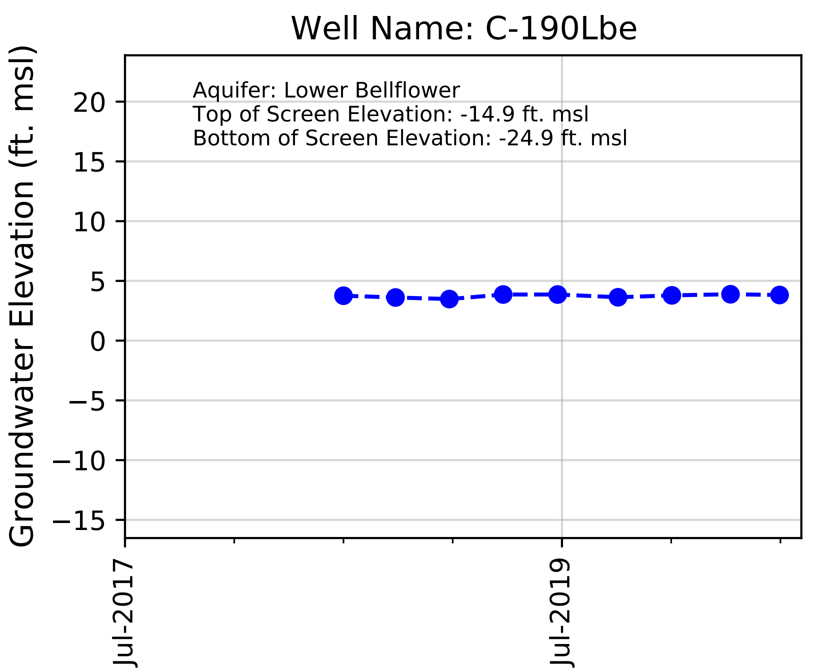

Well Name: C-186ba
Aquifer: Ballona
Top of Screen Elevation: -40 ft. msl
Bottom of Screen Elevation: -50.0 ft. msl
20
15
10
5
0
−5
−10
−15
Feb-2017
Feb-2019
Feb-2021

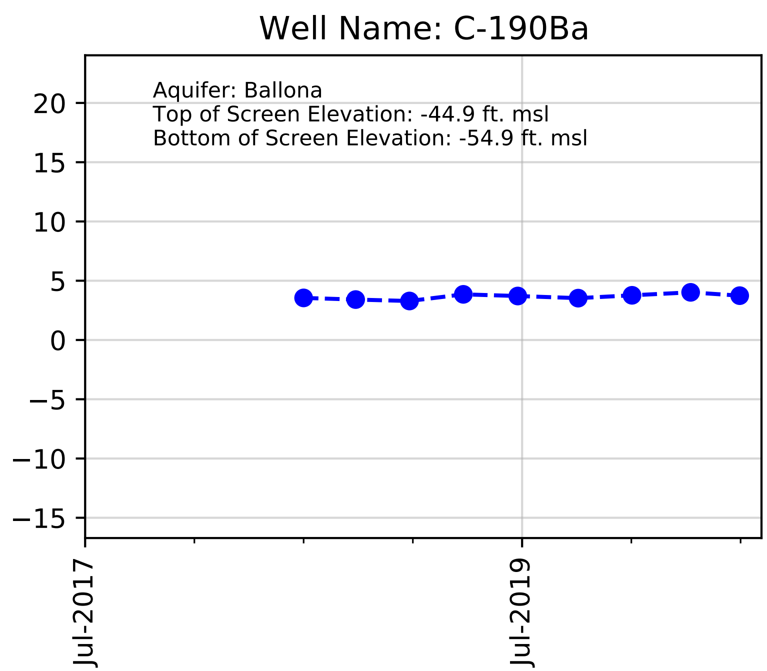

Well Name: C-186Ube
Aquifer: Upper Bellflower
Top of Screen Elevation: 7.5 ft. msl
Bottom of Screen Elevation: -7.5 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
Feb-2017
Feb-2019

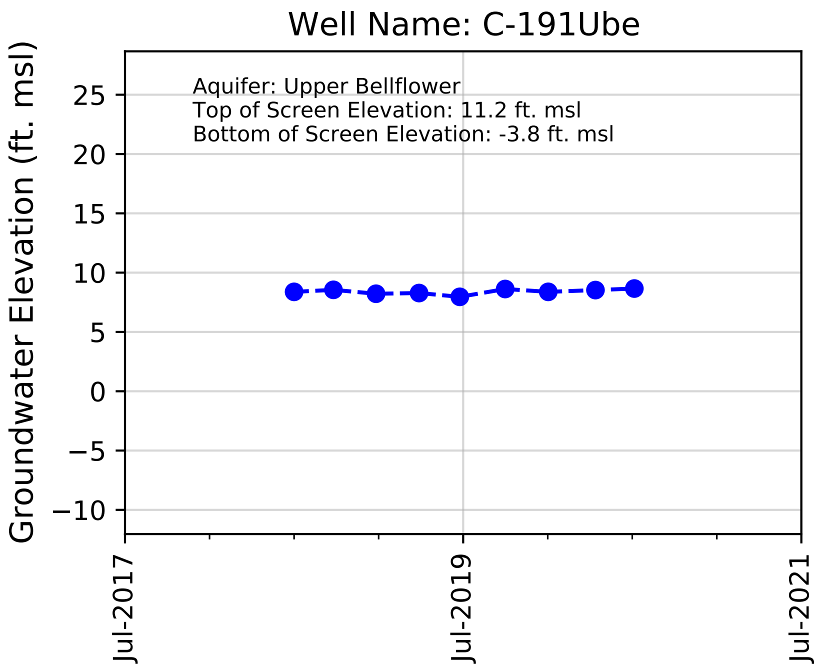

Well Name: C-187Ba
Aquifer: Ballona
Top of Screen Elevation: -41.5 ft. msl
Bottom of Screen Elevation: -51.5 ft. msl
20
15
10
5
0
−5
−10
−15
Jul-2017
Jul-2019

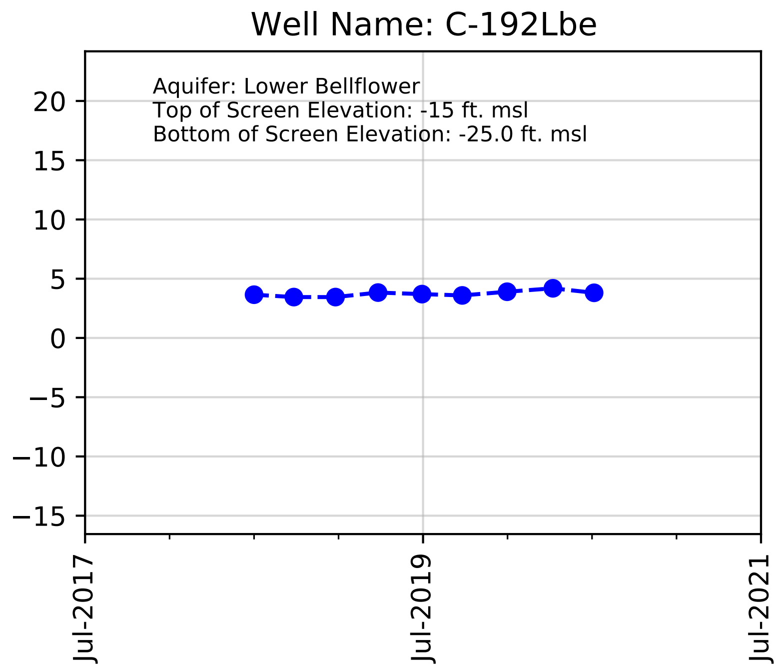

Well Name: C-188Lbe
Aquifer: Lower Bellflower
Top of Screen Elevation: -14.4 ft. msl
Bottom of Screen Elevation: -24.4 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Jul-2017
Jul-2019
Jul-2021


Well Name: C-189Lbe
Aquifer: Lower Bellflower
Top of Screen Elevation: -14.3 ft. msl
Bottom of Screen Elevation: -24.3 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jul-2017
Jul-2019


Well Name: C-190Lbe
Aquifer: Lower Bellflower
Top of Screen Elevation: -14.9 ft. msl
Bottom of Screen Elevation: -24.9 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Jul-2017
Jul-2019


Well Name: C-190Ba
Aquifer: Ballona
Top of Screen Elevation: -44.9 ft. msl
Bottom of Screen Elevation: -54.9 ft. msl
20
15
10
5
0
−5
−10
−15
Jul-2017
Jul-2019


Well Name: C-191Ube
Aquifer: Upper Bellflower
Top of Screen Elevation: 11.2 ft. msl
Bottom of Screen Elevation: -3.8 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
Jul-2017
Jul-2019
Jul-2021


Well Name: C-192Lbe
Aquifer: Lower Bellflower
Top of Screen Elevation: -15 ft. msl
Bottom of Screen Elevation: -25.0 ft. msl
20
15
10
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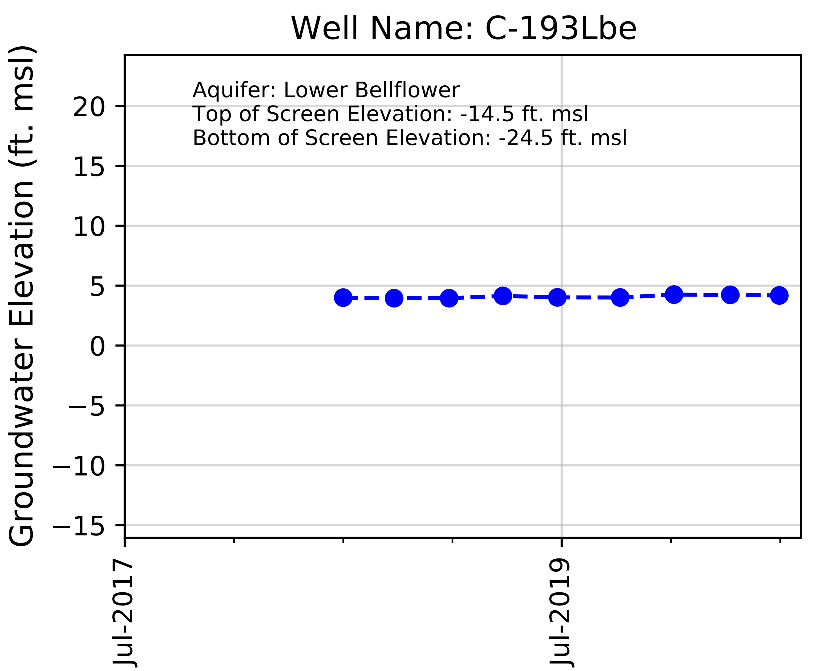
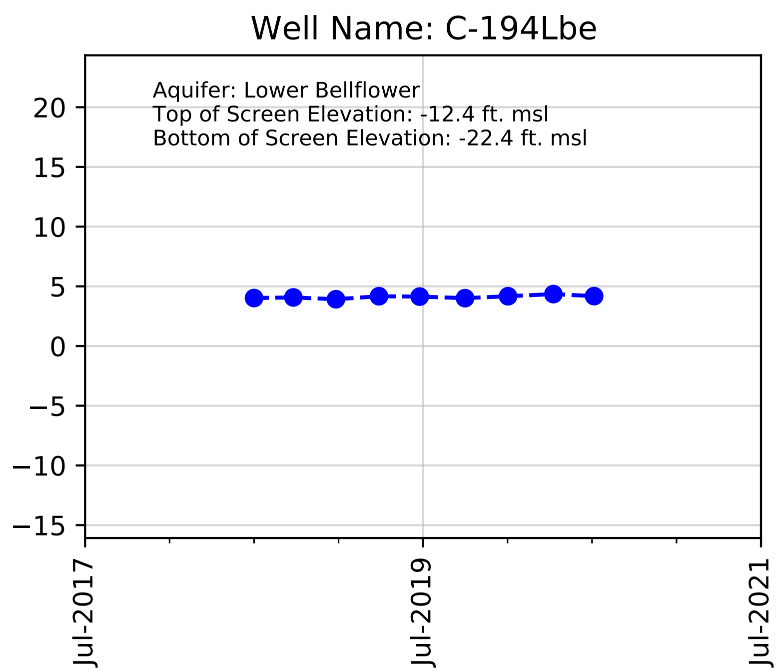
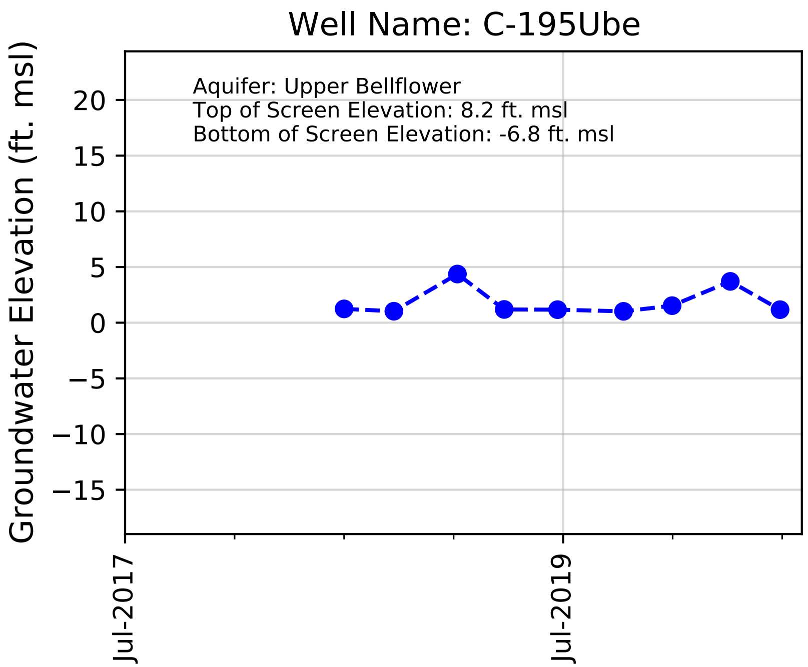
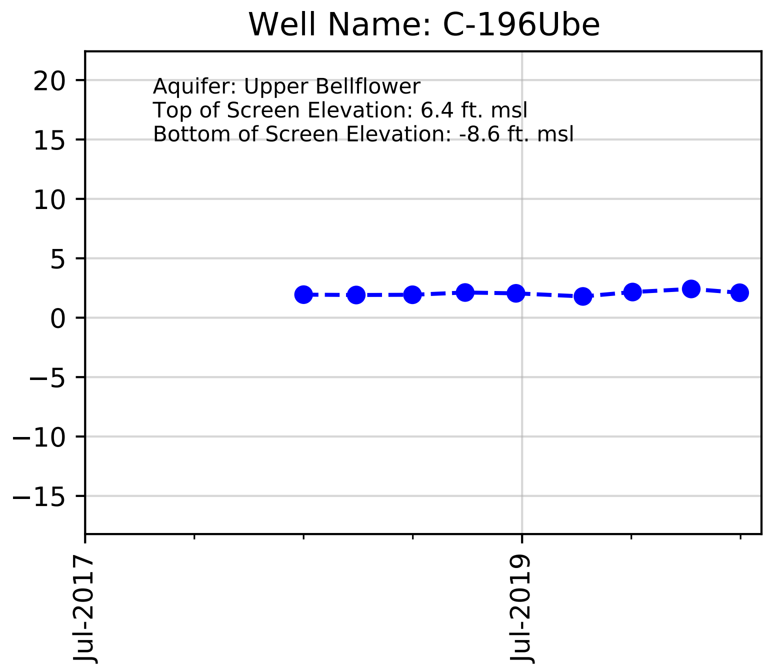
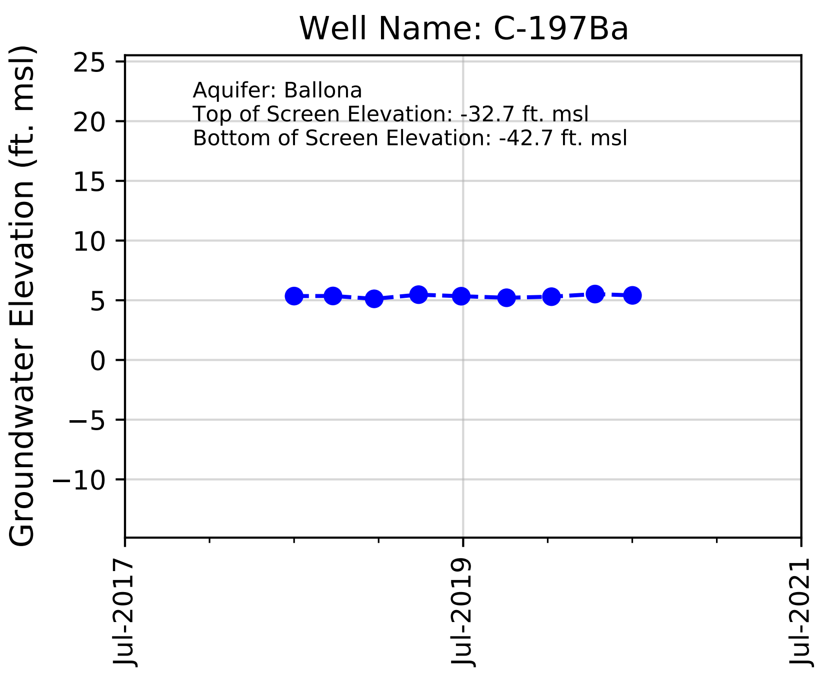
Jul-2017
Jul-2019
Jul-2021

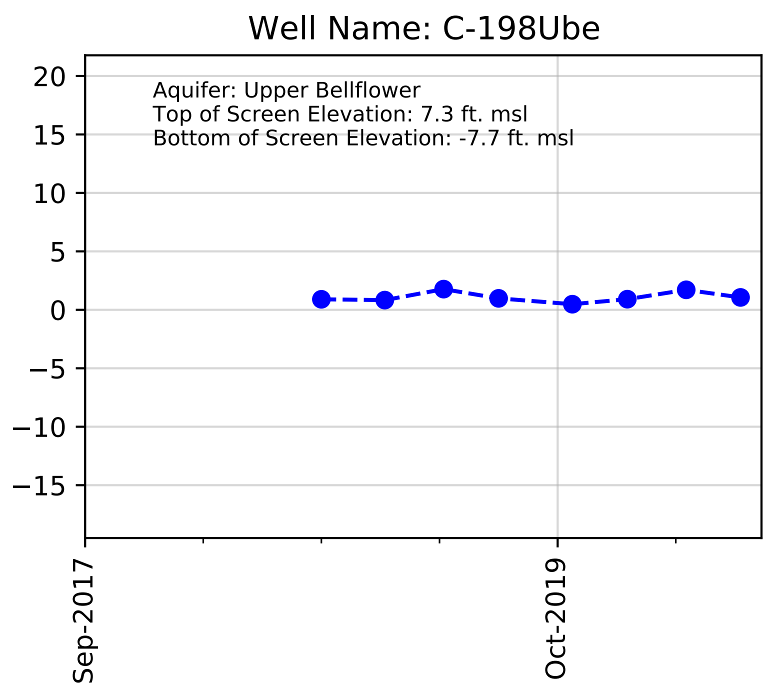

Well Name: C-193Lbe
Aquifer: Lower Bellflower
Top of Screen Elevation: -14.5 ft. msl
Bottom of Screen Elevation: -24.5 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Jul-2017
Jul-2019

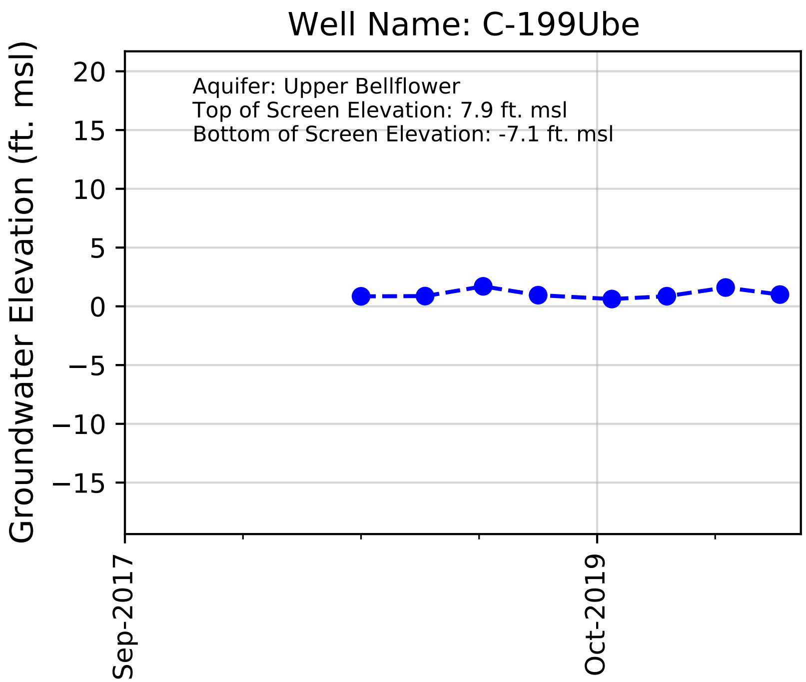

Well Name: C-194Lbe
Aquifer: Lower Bellflower
Top of Screen Elevation: -12.4 ft. msl
Bottom of Screen Elevation: -22.4 ft. msl
20
15
10
5
0
−5
−10
−15
Jul-2017
Jul-2019
Jul-2021

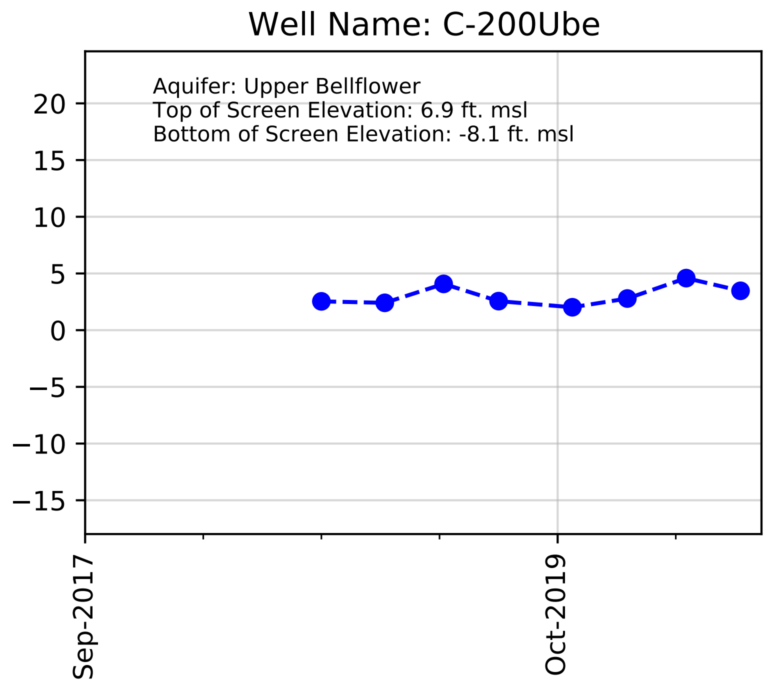

Well Name: C-195Ube
Aquifer: Upper Bellflower
Top of Screen Elevation: 8.2 ft. msl
Bottom of Screen Elevation: -6.8 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Jul-2017
Jul-2019

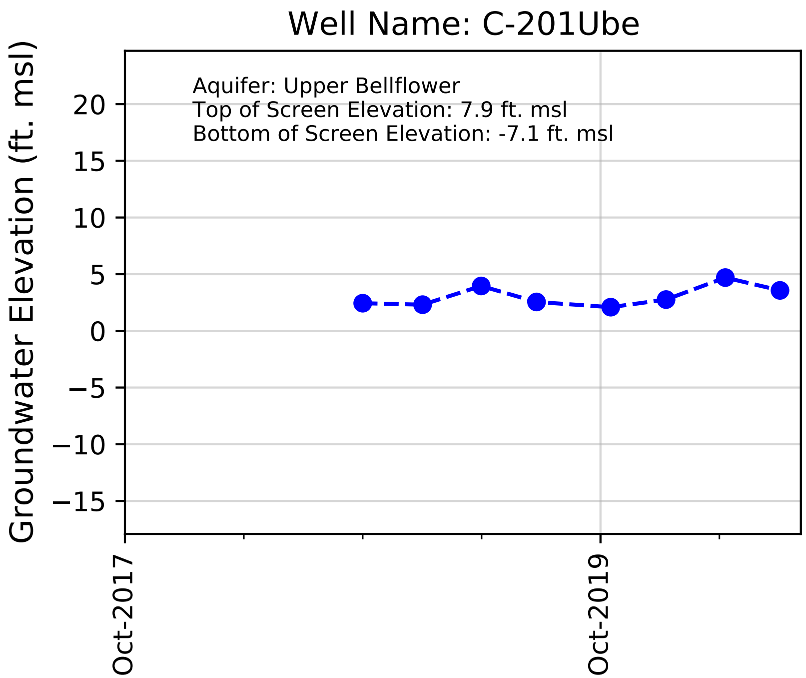

Well Name: C-196Ube
Aquifer: Upper Bellflower
Top of Screen Elevation: 6.4 ft. msl
Bottom of Screen Elevation: -8.6 ft. msl
20
15
10
5
0
−5
−10
−15
Jul-2017
Jul-2019

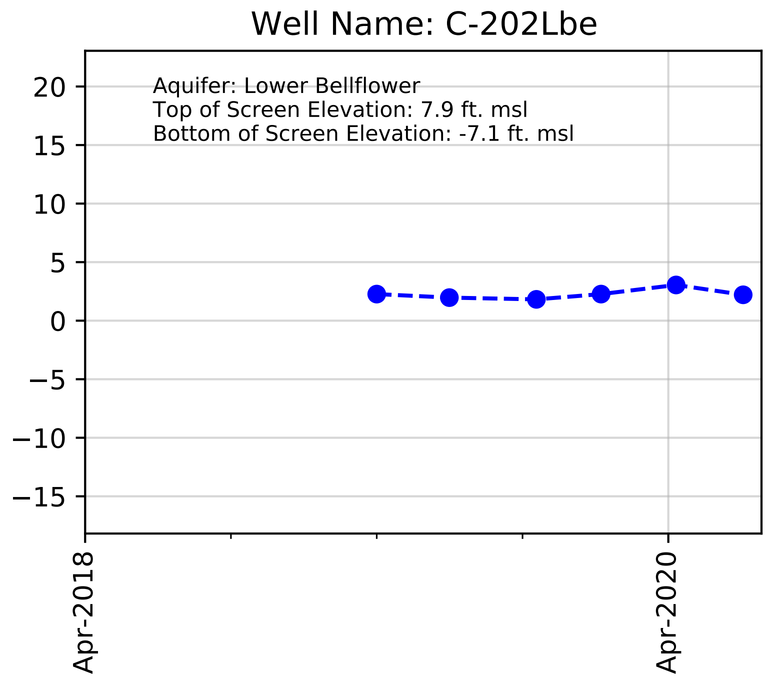

Well Name: C-197Ba
Aquifer: Ballona
Top of Screen Elevation: -32.7 ft. msl
Bottom of Screen Elevation: -42.7 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
Jul-2017
Jul-2019
Jul-2021

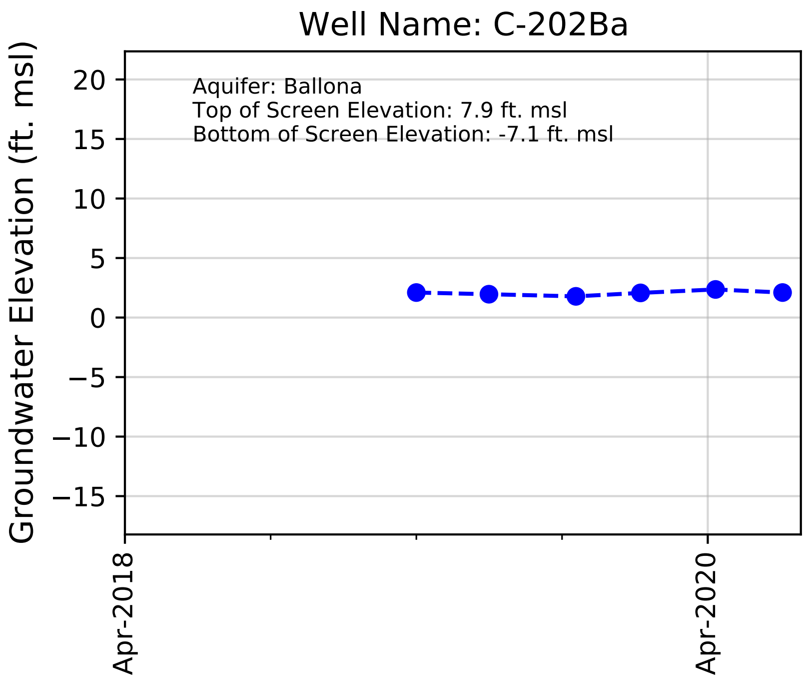

Well Name: C-198Ube
Aquifer: Upper Bellflower
Top of Screen Elevation: 7.3 ft. msl
Bottom of Screen Elevation: -7.7 ft. msl
20
15
10
5
0
−5
−10
−15
Sep-2017
Oct-2019

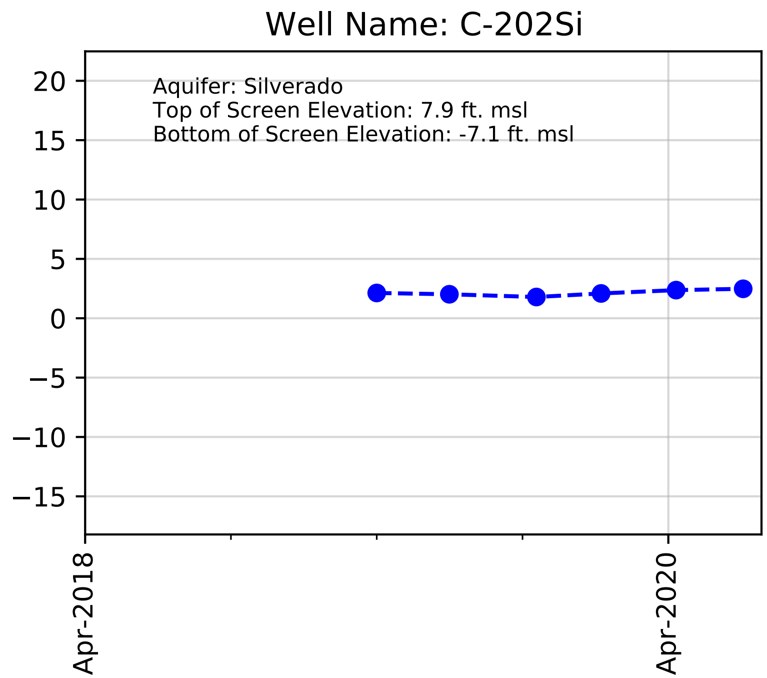

Well Name: C-199Ube
Aquifer: Upper Bellflower
Top of Screen Elevation: 7.9 ft. msl
Bottom of Screen Elevation: -7.1 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Sep-2017
Oct-2019

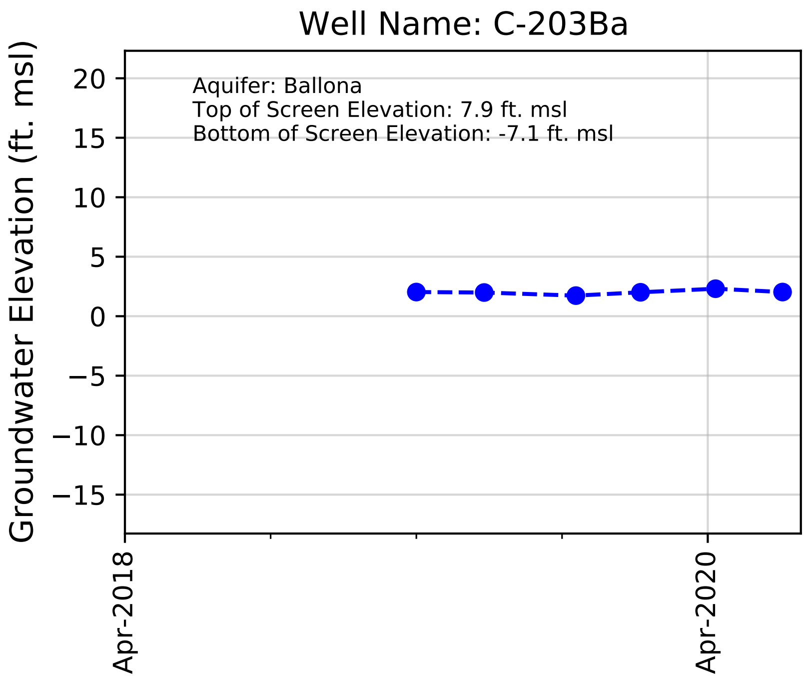

Well Name: C-200Ube
Aquifer: Upper Bellflower
Top of Screen Elevation: 6.9 ft. msl
Bottom of Screen Elevation: -8.1 ft. msl
20
15
10
5
0
−5
−10
−15
Sep-2017
Oct-2019

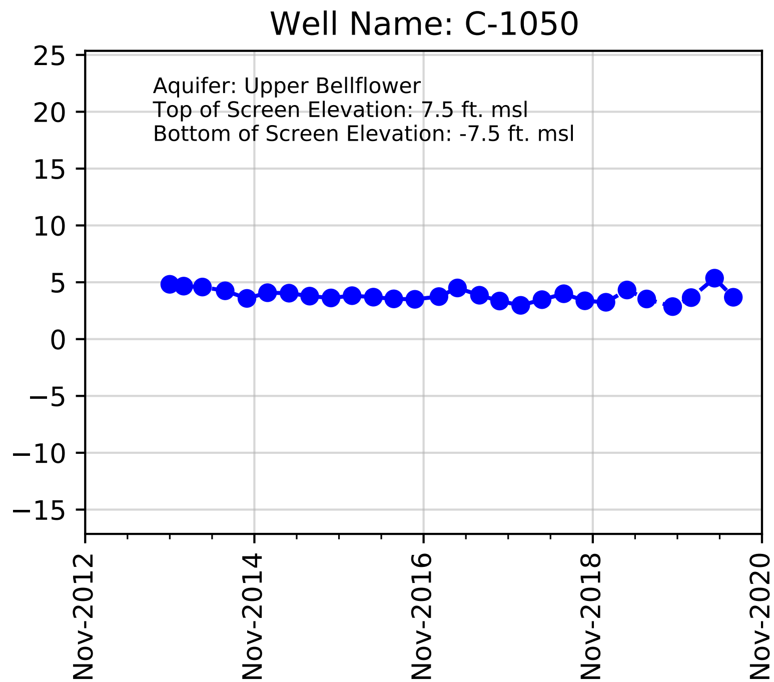

Well Name: C-201Ube
Aquifer: Upper Bellflower
Top of Screen Elevation: 7.9 ft. msl
Bottom of Screen Elevation: -7.1 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Oct-2017
Oct-2019


Well Name: C-202Lbe
Aquifer: Lower Bellflower
Top of Screen Elevation: 7.9 ft. msl
Bottom of Screen Elevation: -7.1 ft. msl
20
15
10
5
0
−5
−10
−15
Apr-2018
Apr-2020

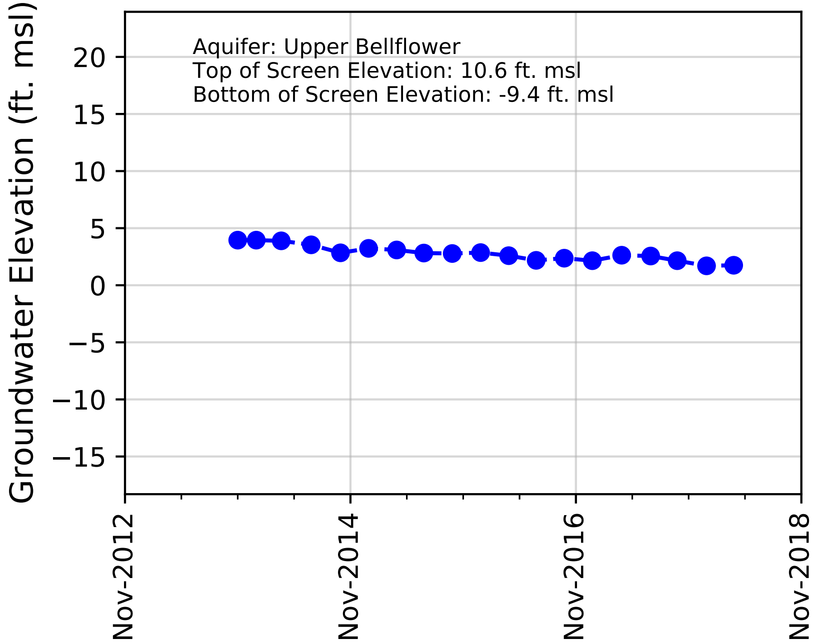

Well Name: C-202Ba
Aquifer: Ballona
Top of Screen Elevation: 7.9 ft. msl
Bottom of Screen Elevation: -7.1 ft. msl
Groundwater Elevation (ft. msl)
Apr-2018
Apr-2020


Well Name: C-202Si
Aquifer: Silverado
Top of Screen Elevation: 7.9 ft. msl
Bottom of Screen Elevation: -7.1 ft. msl
Apr-2018
Apr-2020

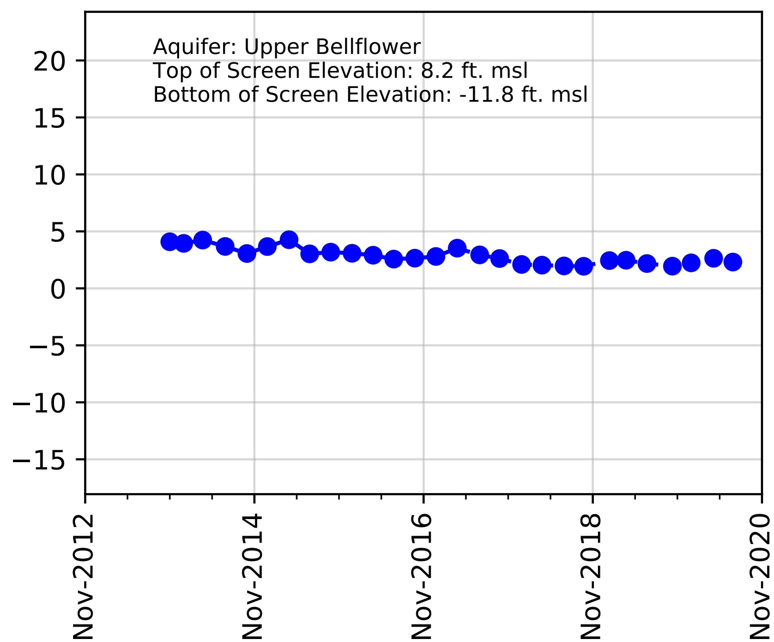

Well Name: C-203Ba
Aquifer: Ballona
Top of Screen Elevation: 7.9 ft. msl
Bottom of Screen Elevation: -7.1 ft. msl
Groundwater Elevation (ft. msl)
Apr-2018
Apr-2020


Well Name: C-1050
Aquifer: Upper Bellflower
Top of Screen Elevation: 7.5 ft. msl
Bottom of Screen Elevation: -7.5 ft. msl
Nov-2012
Nov-2014
Nov-2016
Nov-2018
Nov-2020

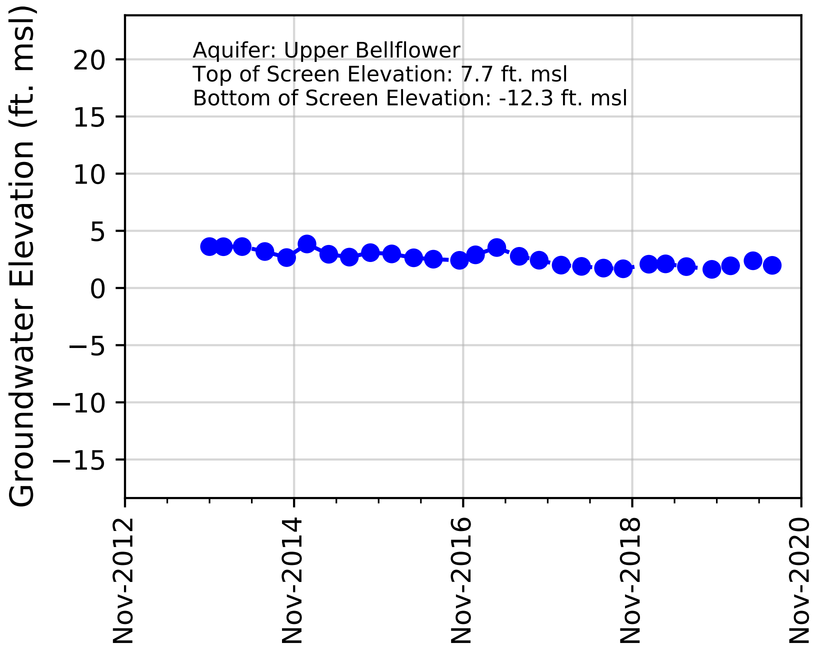
Well Name: C-1068



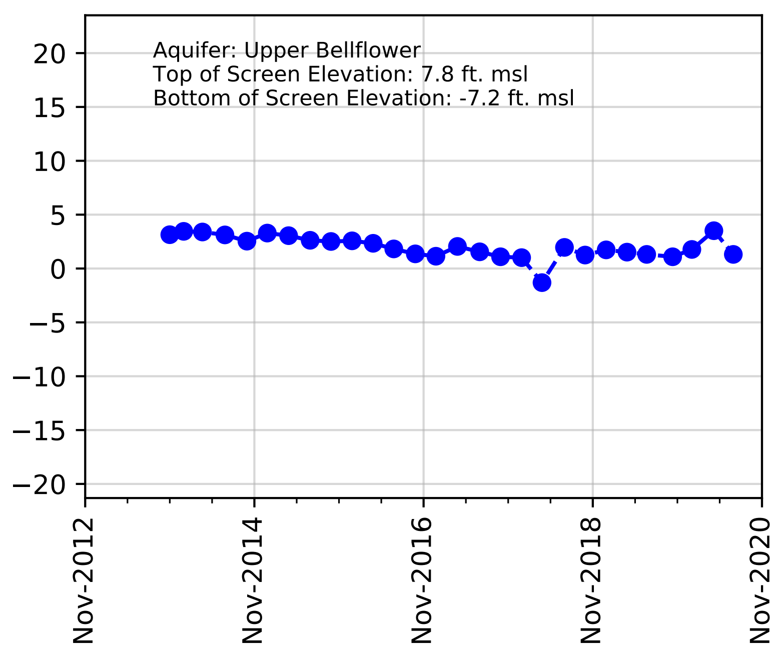
Well Name: C-1070

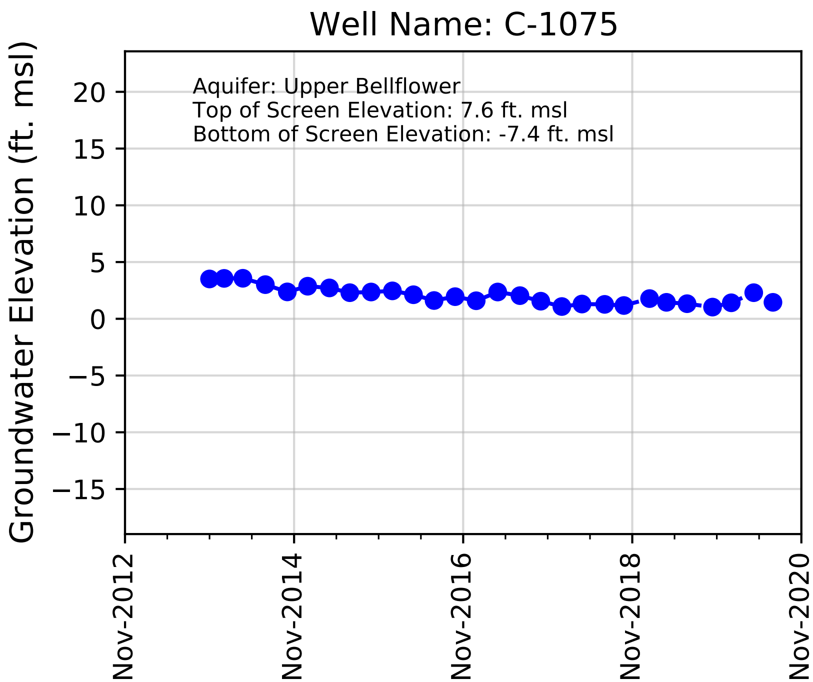


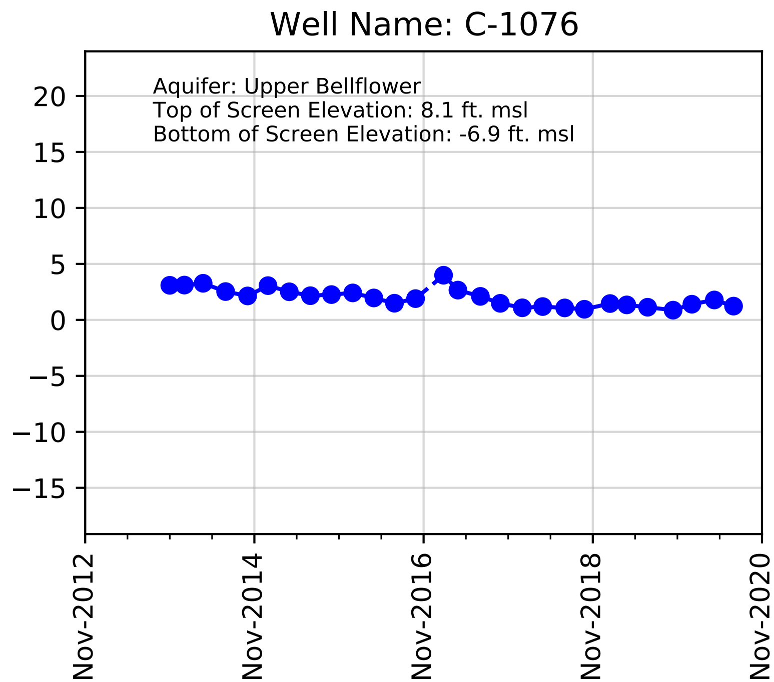
Well Name: C-1072

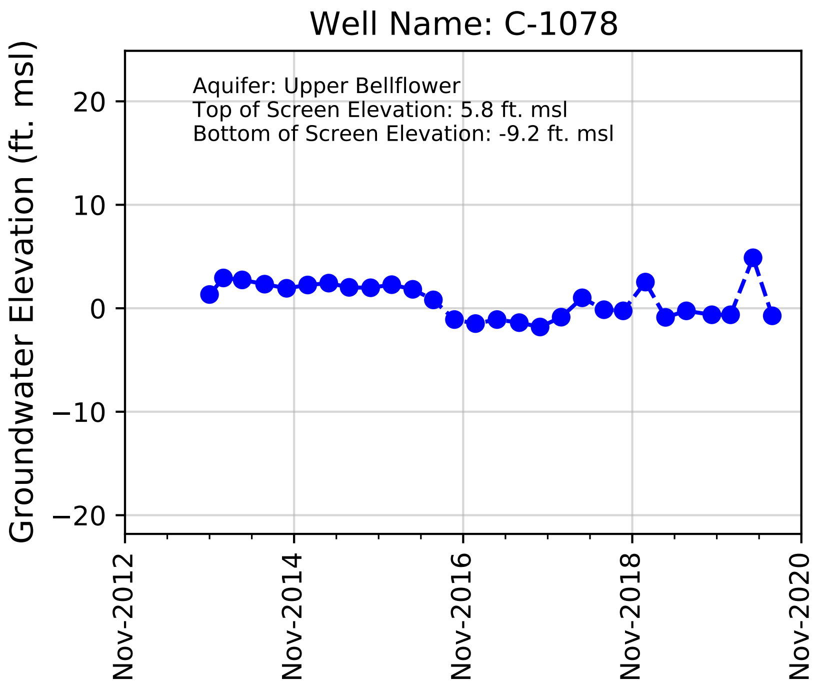


Well Name: C-1073




Well Name: C-1075
Aquifer: Upper Bellflower
Top of Screen Elevation: 7.6 ft. msl
Bottom of Screen Elevation: -7.4 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Nov-2012
Nov-2014
Nov-2016
Nov-2018
Nov-2020


Well Name: C-1076
Aquifer: Upper Bellflower
Top of Screen Elevation: 8.1 ft. msl
Bottom of Screen Elevation: -6.9 ft. msl
20
15
10
5
0
−5
−10
−15
Nov-2012
Nov-2014
Nov-2016
Nov-2018
Nov-2020


Well Name: C-1078
Aquifer: Upper Bellflower
Top of Screen Elevation: 5.8 ft. msl
Bottom of Screen Elevation: -9.2 ft. msl
Groundwater Elevation (ft. msl)
20
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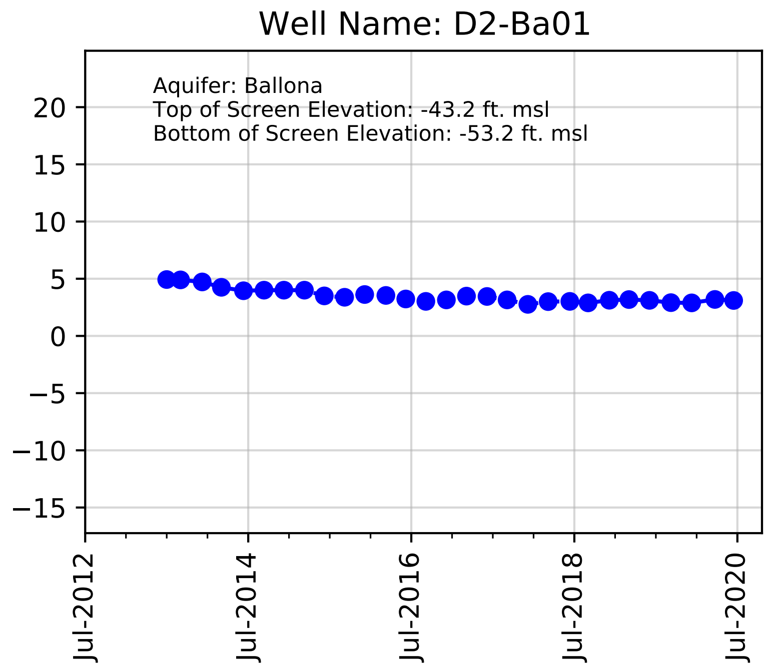
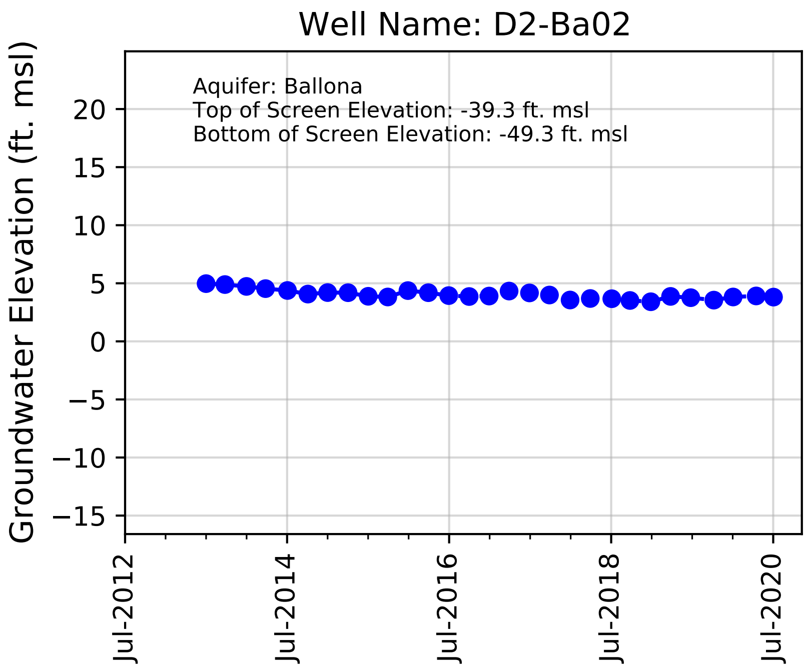
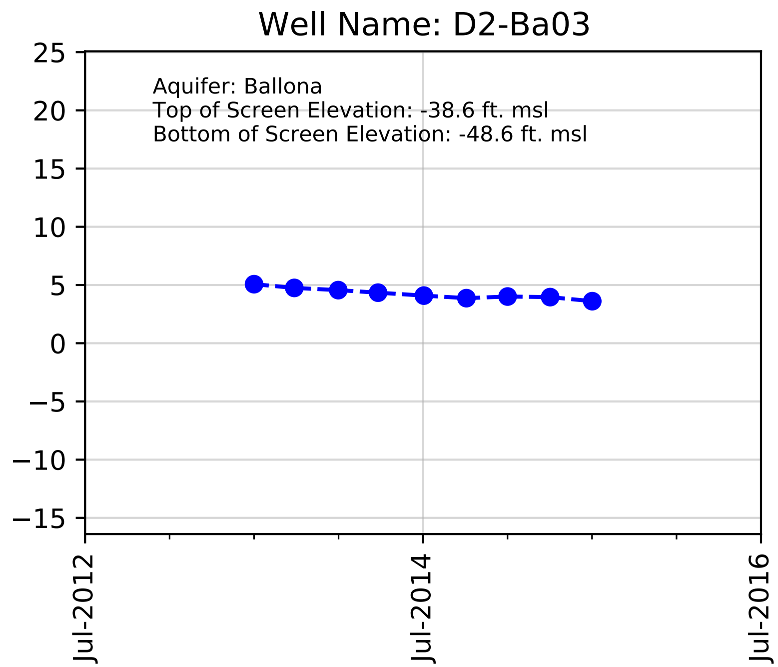
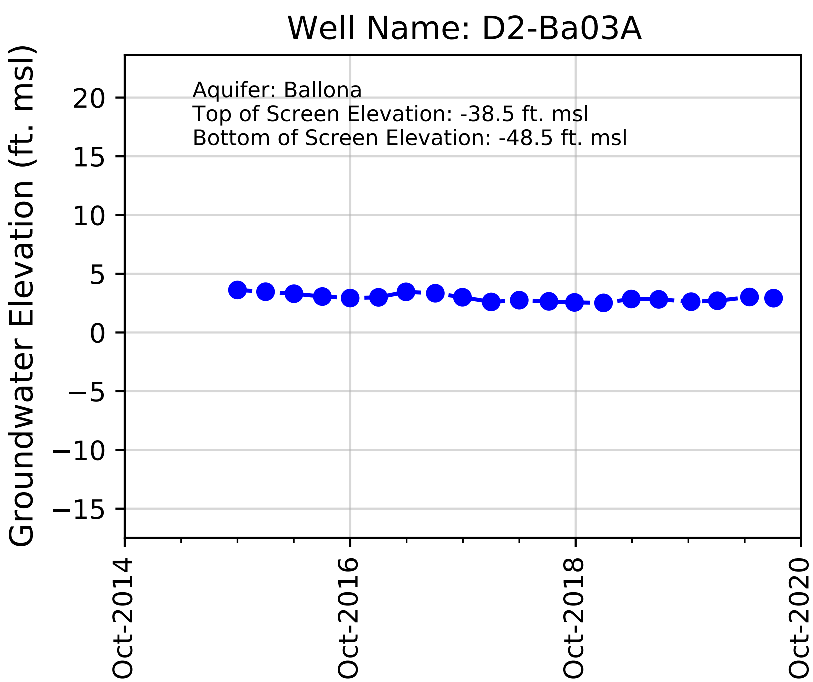
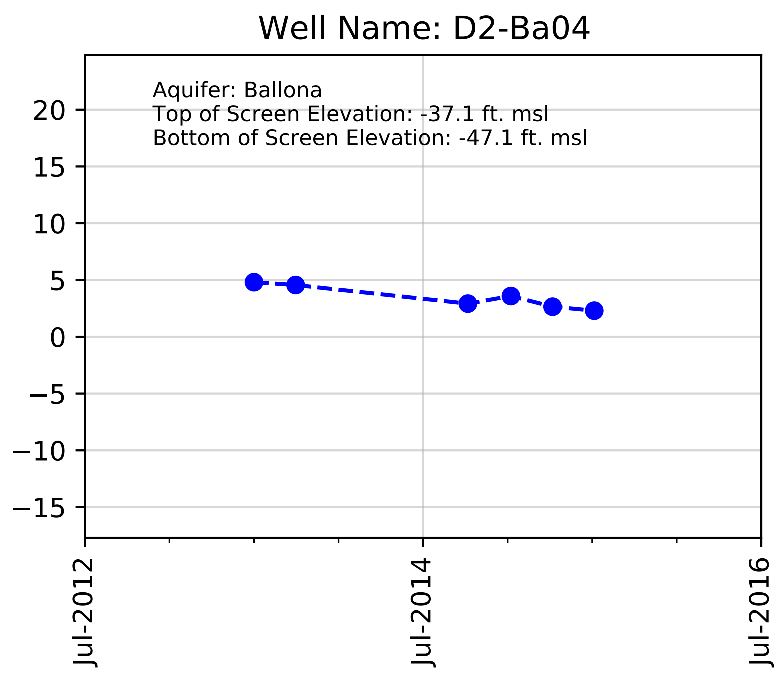
Nov-2012
Nov-2014
Nov-2016
Nov-2018
Nov-2020

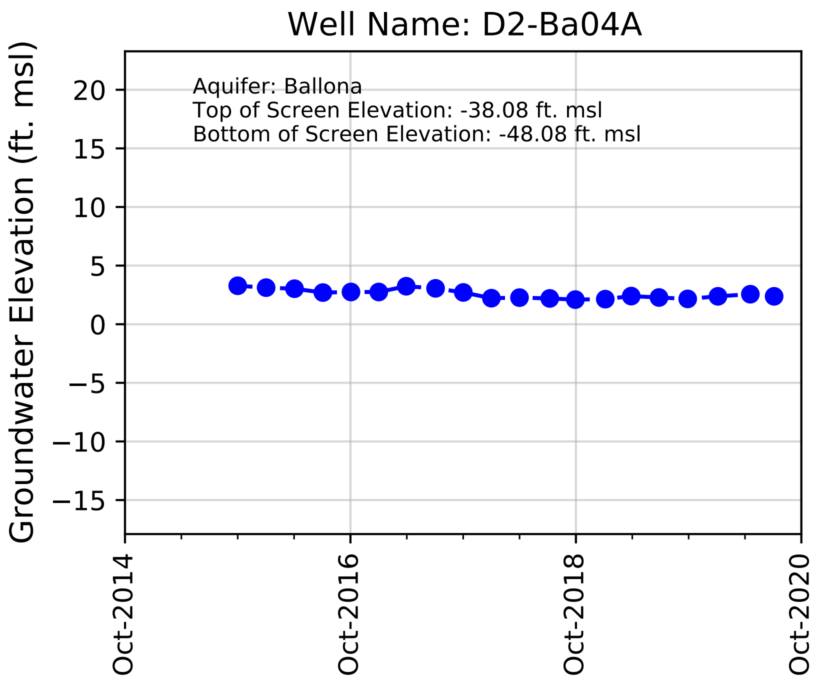

Well Name: D2-Ba01
Aquifer: Ballona
Top of Screen Elevation: -43.2 ft. msl
Bottom of Screen Elevation: -53.2 ft. msl
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

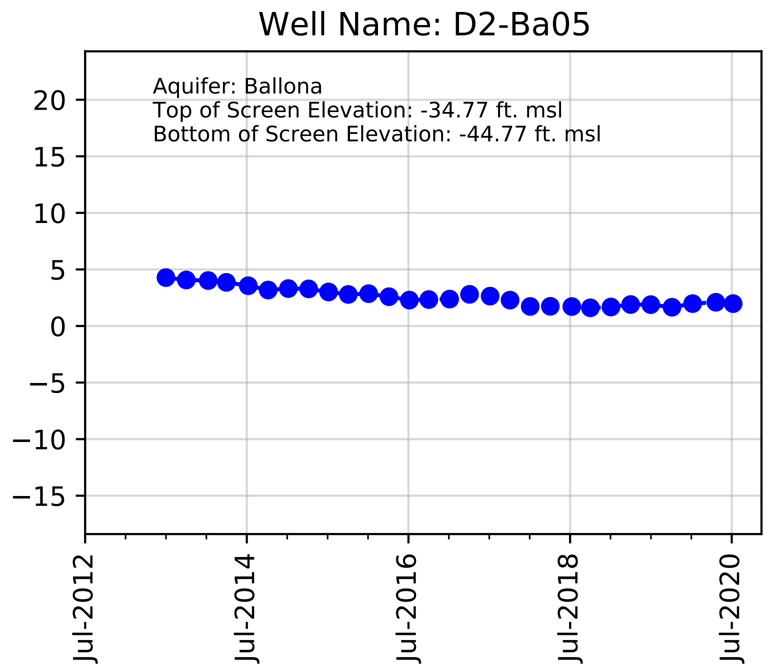

Well Name: D2-Ba02
Aquifer: Ballona
Top of Screen Elevation: -39.3 ft. msl
Bottom of Screen Elevation: -49.3 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

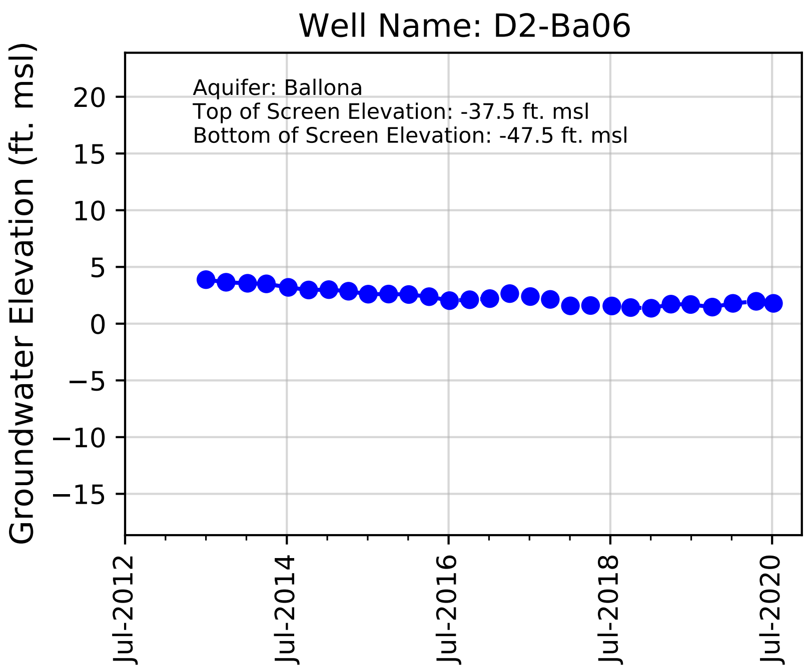

Well Name: D2-Ba03
Aquifer: Ballona
Top of Screen Elevation: -38.6 ft. msl
Bottom of Screen Elevation: -48.6 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016

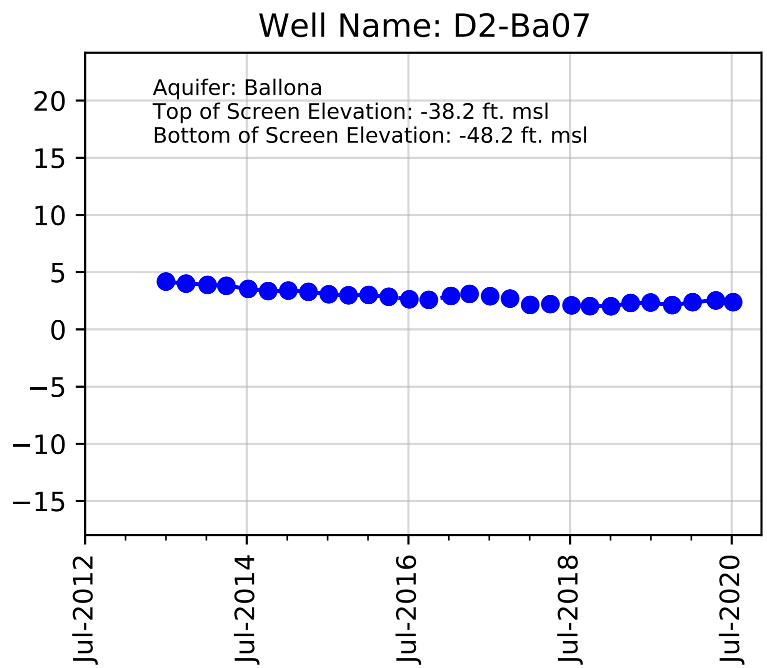

Well Name: D2-Ba03A
Aquifer: Ballona
Top of Screen Elevation: -38.5 ft. msl
Bottom of Screen Elevation: -48.5 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Oct-2014
Oct-2016
Oct-2018
Oct-2020


Well Name: D2-Ba04
Aquifer: Ballona
Top of Screen Elevation: -37.1 ft. msl
Bottom of Screen Elevation: -47.1 ft. msl
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016


Well Name: D2-Ba04A
Aquifer: Ballona
Top of Screen Elevation: -38.08 ft. msl
Bottom of Screen Elevation: -48.08 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Oct-2014
Oct-2016
Oct-2018
Oct-2020


Well Name: D2-Ba05
Aquifer: Ballona
Top of Screen Elevation: -34.77 ft. msl
Bottom of Screen Elevation: -44.77 ft. msl
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020


Well Name: D2-Ba06
Aquifer: Ballona
Top of Screen Elevation: -37.5 ft. msl
Bottom of Screen Elevation: -47.5 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020


Well Name: D2-Ba07
Aquifer: Ballona
Top of Screen Elevation: -38.2 ft. msl
Bottom of Screen Elevation: -48.2 ft. msl
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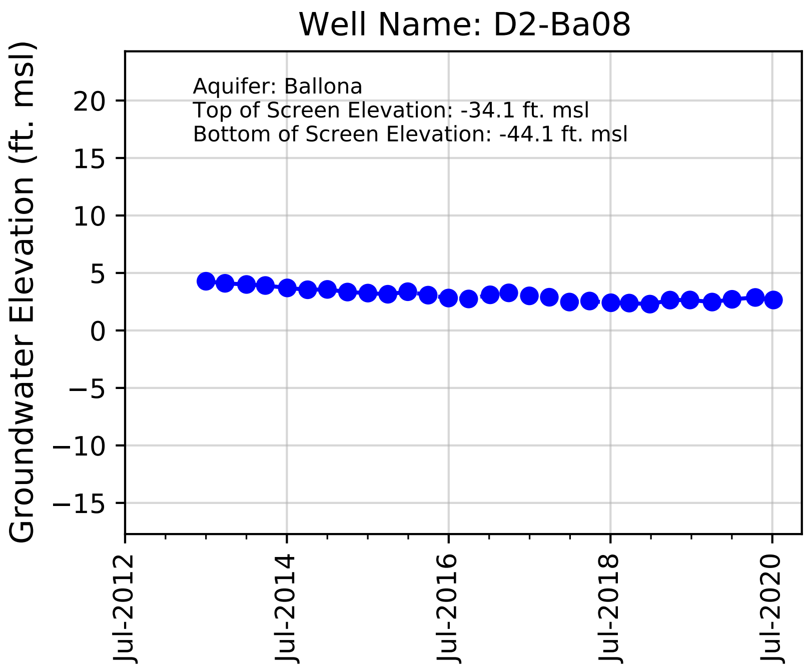
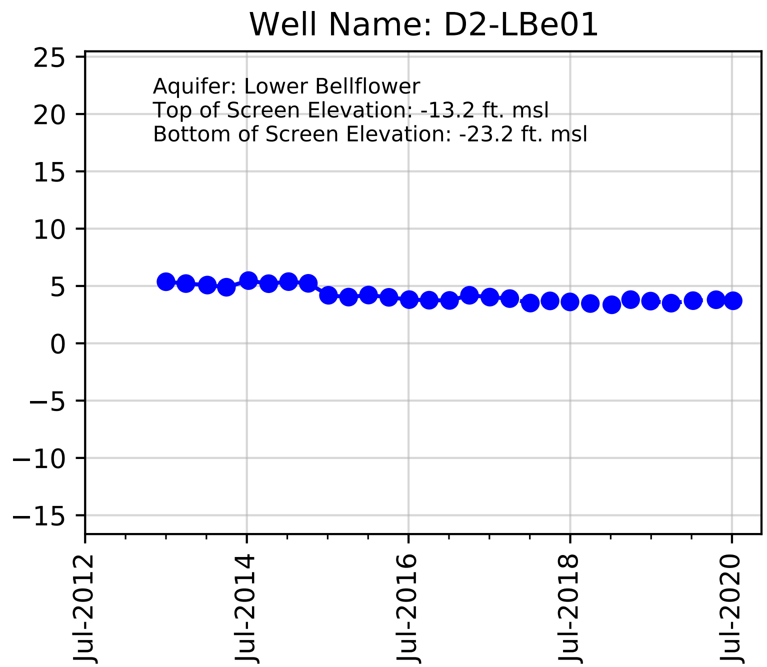
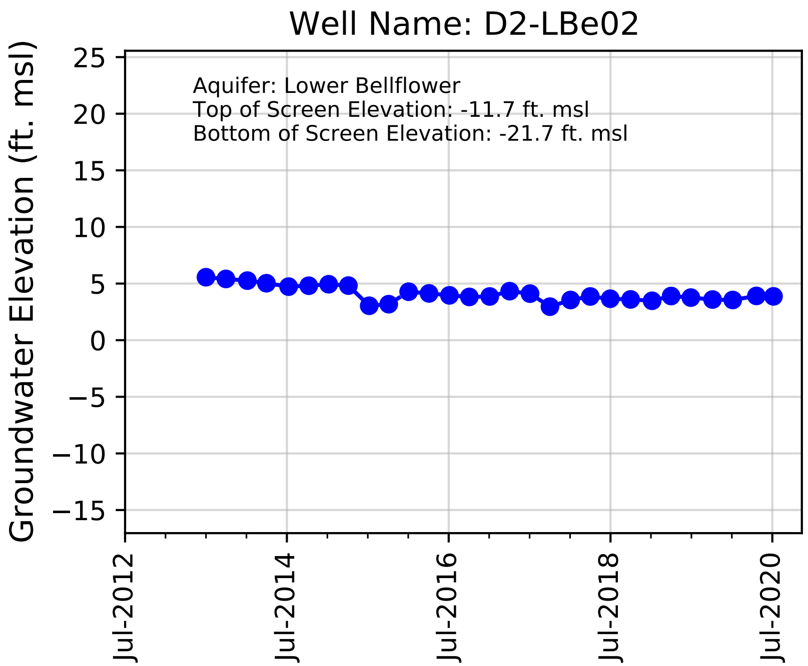
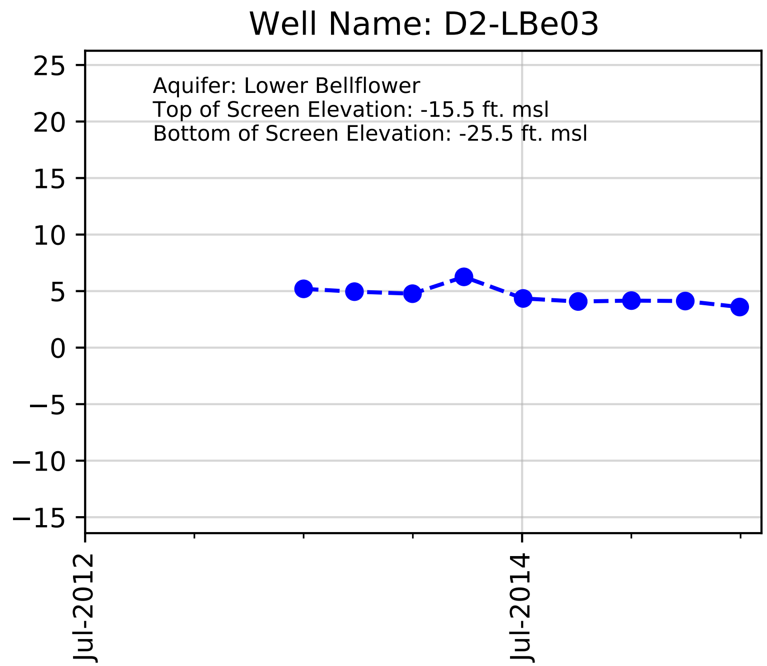
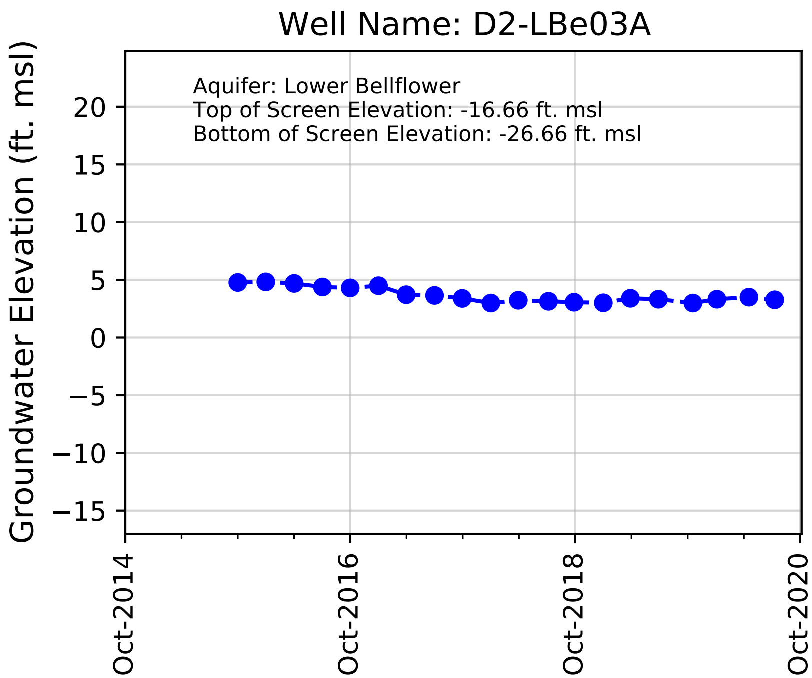
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

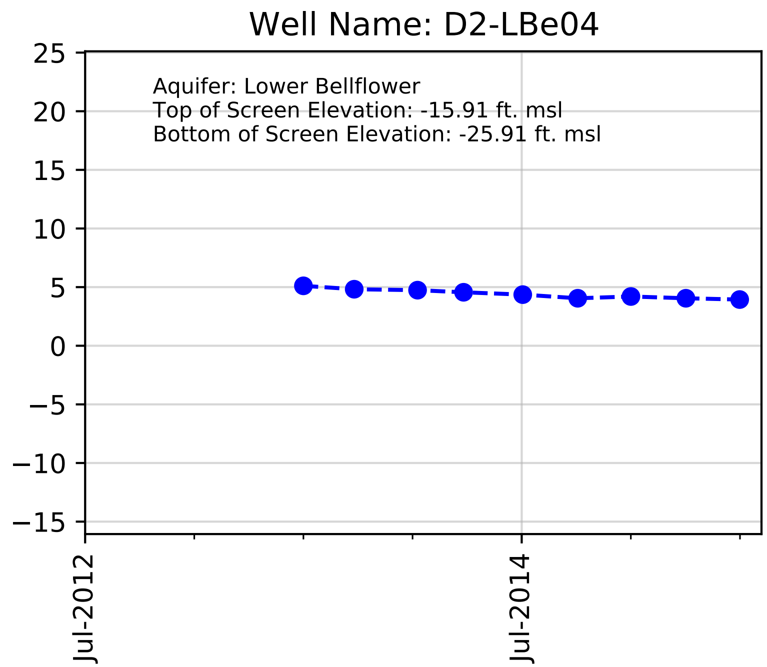

Well Name: D2-Ba08
Aquifer: Ballona
Top of Screen Elevation: -34.1 ft. msl
Bottom of Screen Elevation: -44.1 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

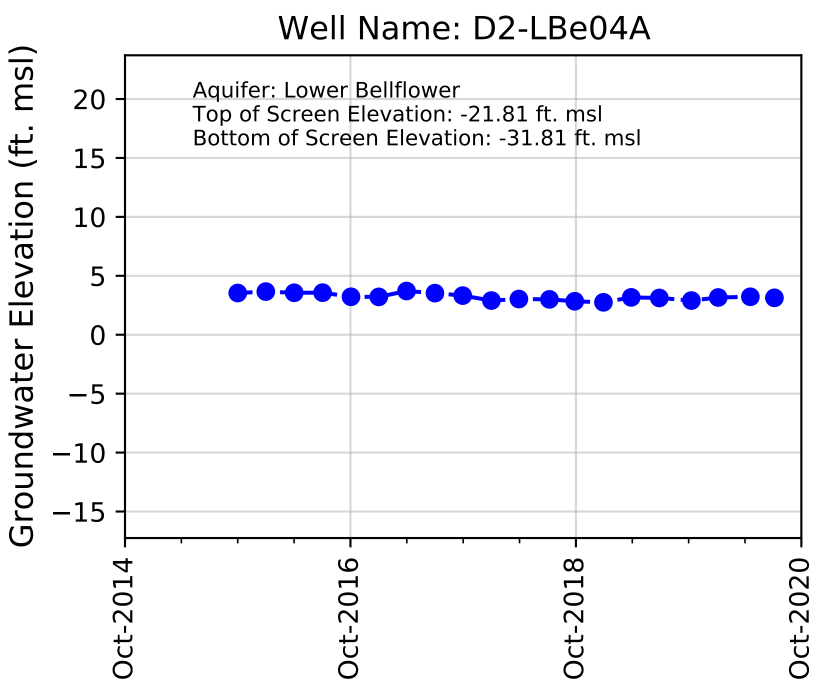

Well Name: D2-LBe01
Aquifer: Lower Bellflower
Top of Screen Elevation: -13.2 ft. msl
Bottom of Screen Elevation: -23.2 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

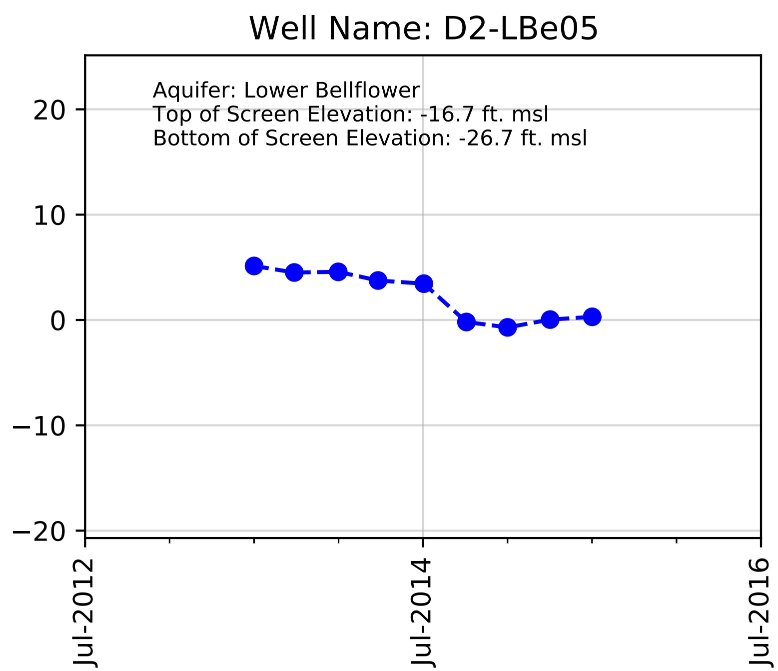

Well Name: D2-LBe02
Aquifer: Lower Bellflower
Top of Screen Elevation: -11.7 ft. msl
Bottom of Screen Elevation: -21.7 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

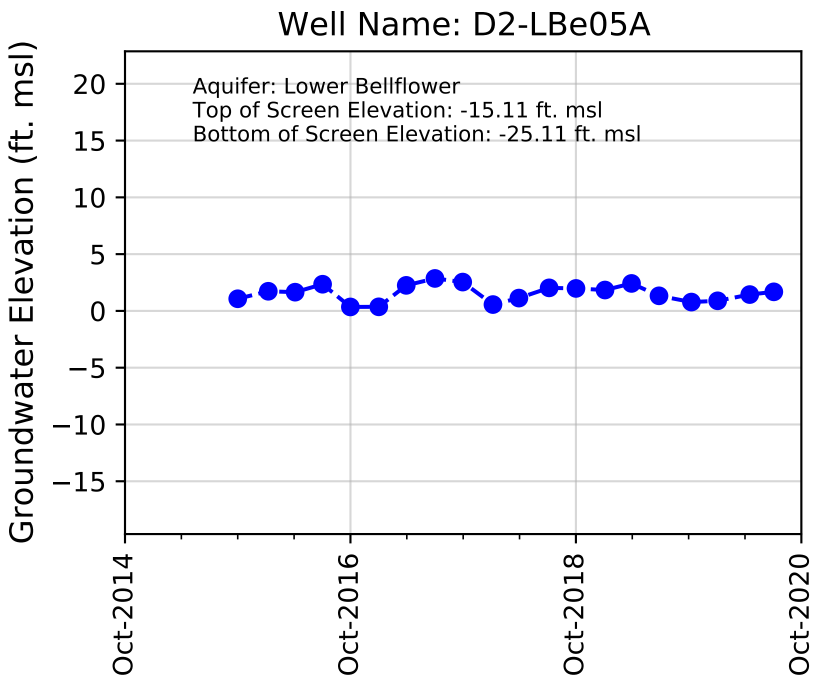

Well Name: D2-LBe03
Aquifer: Lower Bellflower
Top of Screen Elevation: -15.5 ft. msl
Bottom of Screen Elevation: -25.5 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014


Well Name: D2-LBe03A
Aquifer: Lower Bellflower
Top of Screen Elevation: -16.66 ft. msl
Bottom of Screen Elevation: -26.66 ft. msl
Groundwater Elevation (ft. msl)
Oct-2014
Oct-2016
Oct-2018
Oct-2020


Well Name: D2-LBe04
Aquifer: Lower Bellflower
Top of Screen Elevation: -15.91 ft. msl
Bottom of Screen Elevation: -25.91 ft. msl
Jul-2012
Jul-2014


Well Name: D2-LBe04A
Aquifer: Lower Bellflower
Top of Screen Elevation: -21.81 ft. msl
Bottom of Screen Elevation: -31.81 ft. msl
Groundwater Elevation (ft. msl)
Oct-2014
Oct-2016
Oct-2018
Oct-2020


Well Name: D2-LBe05
Aquifer: Lower Bellflower
Top of Screen Elevation: -16.7 ft. msl
Bottom of Screen Elevation: -26.7 ft. msl
Jul-2012
Jul-2014
Jul-2016


Well Name: D2-LBe05A
Aquifer: Lower Bellflower
Top of Screen Elevation: -15.11 ft. msl
Bottom of Screen Elevation: -25.11 ft. msl
Groundwater Elevation (ft. msl)
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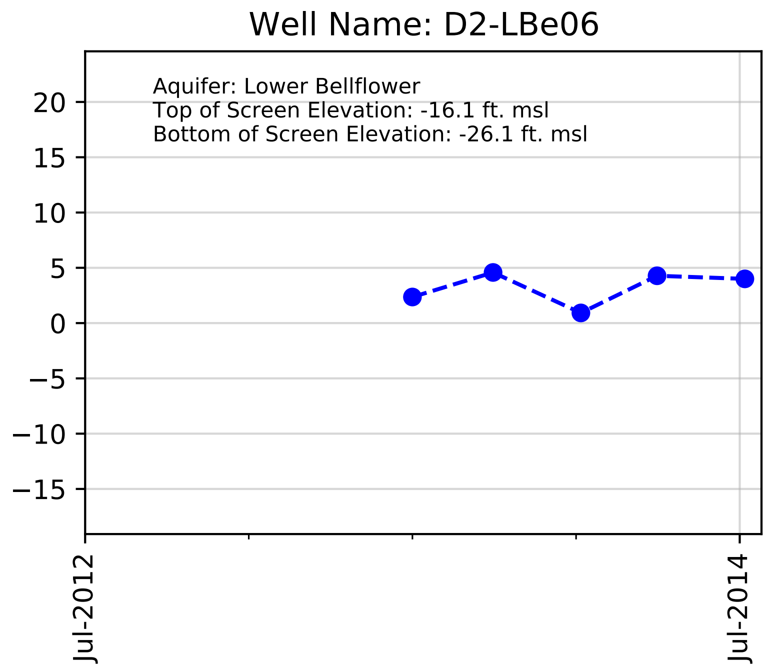
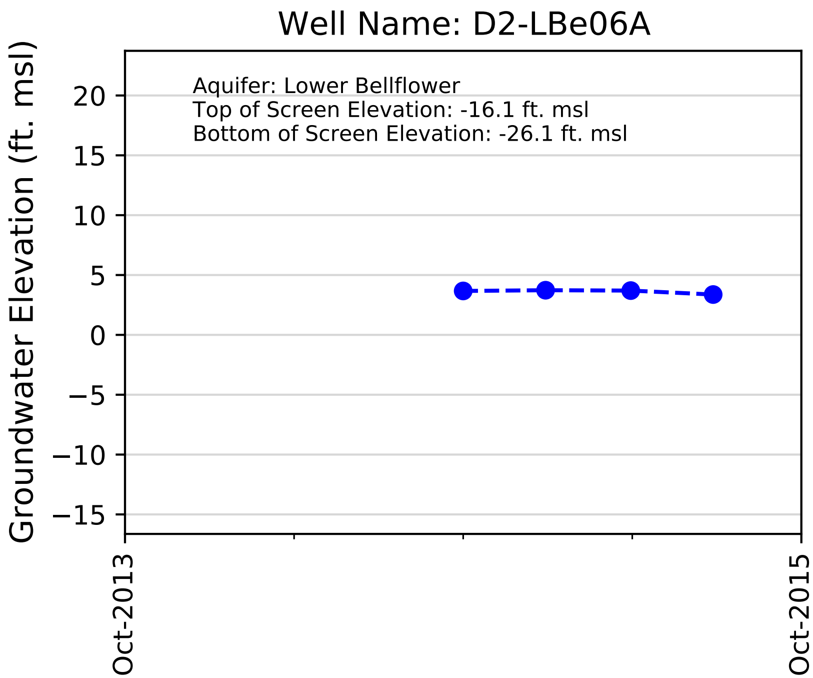
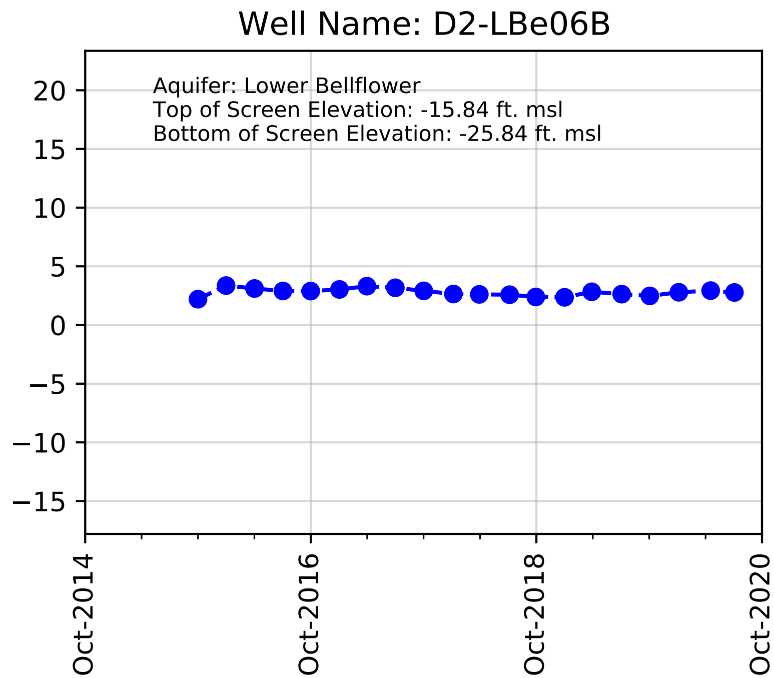
15
10
5
0
−5
−10
−15
Oct-2014
Oct-2016
Oct-2018
Oct-2020


Well Name: D2-LBe06
Aquifer: Lower Bellflower
Top of Screen Elevation: -16.1 ft. msl
Bottom of Screen Elevation: -26.1 ft. msl
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014


Well Name: D2-LBe06A
Aquifer: Lower Bellflower
Top of Screen Elevation: -16.1 ft. msl
Bottom of Screen Elevation: -26.1 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Oct-2013
Oct-2015


Well Name: D2-LBe06B
Aquifer: Lower Bellflower
Top of Screen Elevation: -15.84 ft. msl
Bottom of Screen Elevation: -25.84 ft. msl
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15
10
5
0
−5
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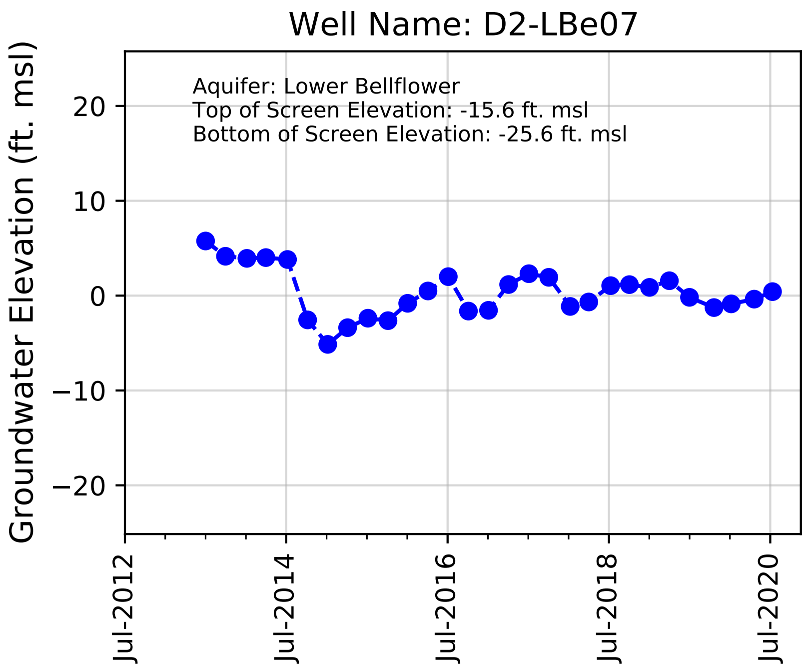
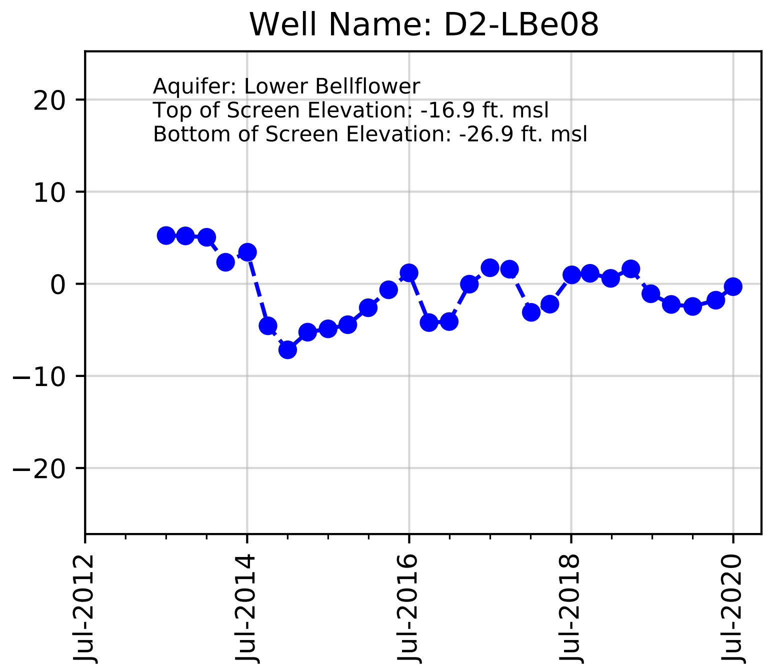
−15
Oct-2014
Oct-2016
Oct-2018
Oct-2020


Well Name: D2-LBe07
Aquifer: Lower Bellflower
Top of Screen Elevation: -15.6 ft. msl
Bottom of Screen Elevation: -25.6 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020


Well Name: D2-LBe08
Aquifer: Lower Bellflower
Top of Screen Elevation: -16.9 ft. msl
Bottom of Screen Elevation: -26.9 ft. msl
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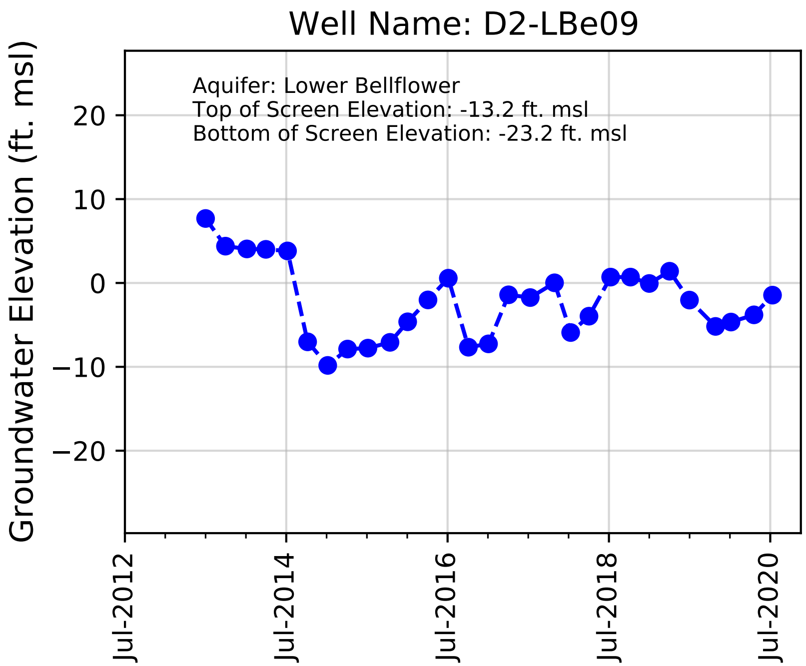
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020


Well Name: D2-LBe09
Aquifer: Lower Bellflower
Top of Screen Elevation: -13.2 ft. msl
Bottom of Screen Elevation: -23.2 ft. msl
Groundwater Elevation (ft. msl)
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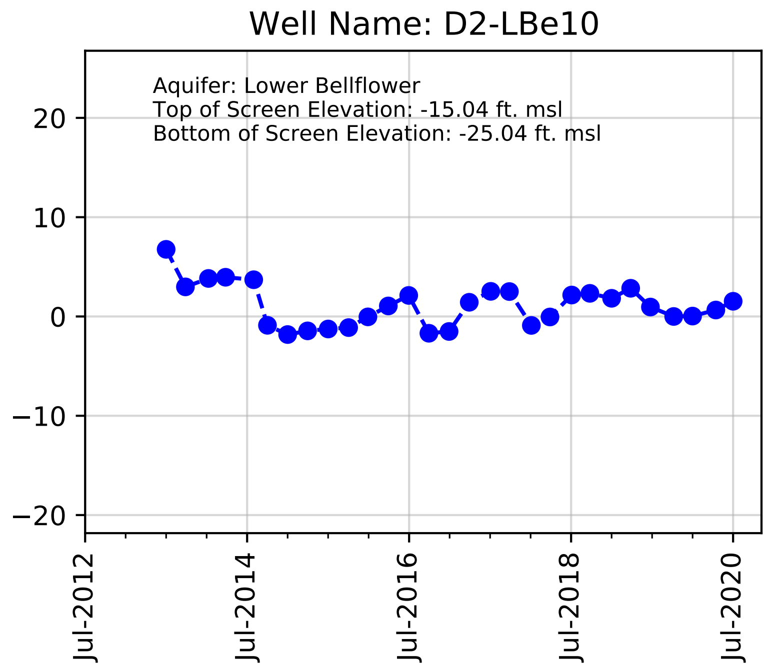
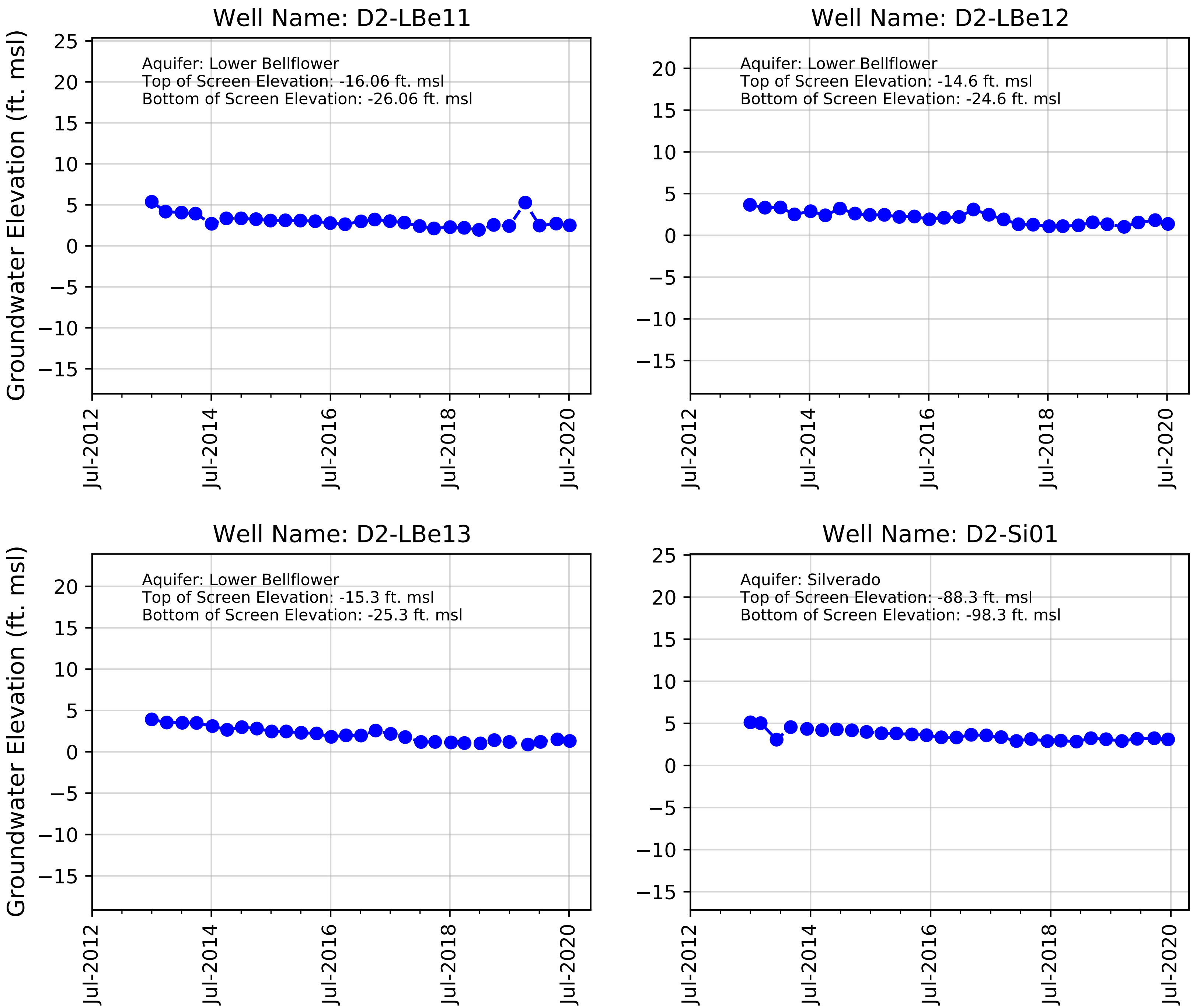
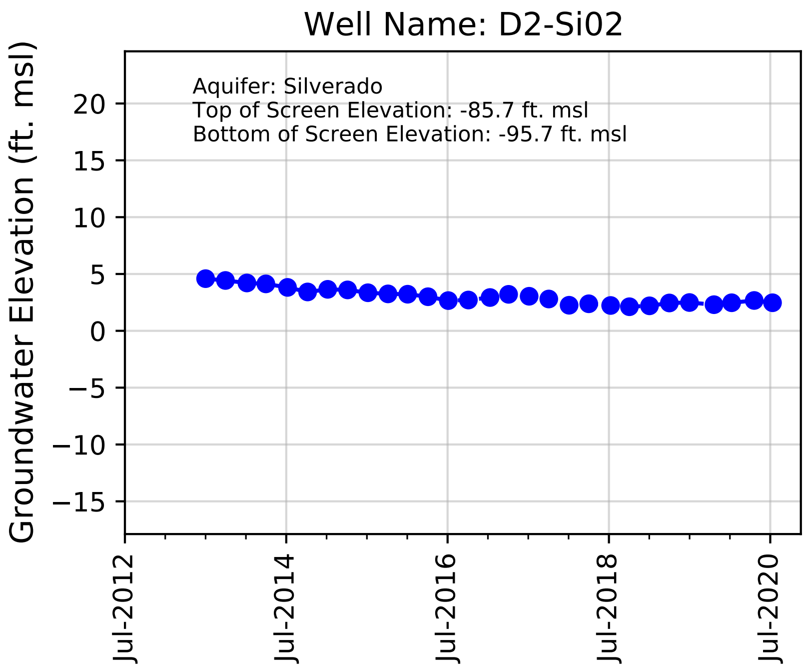
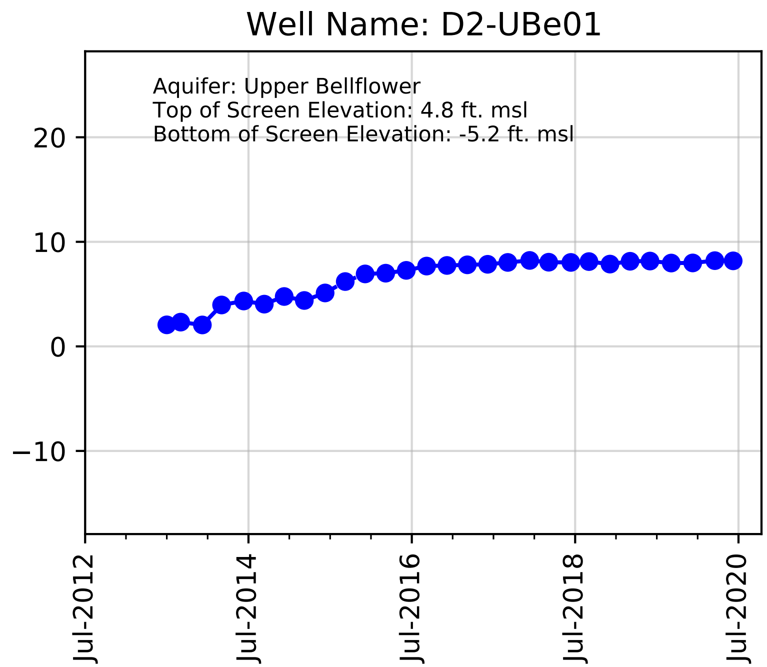
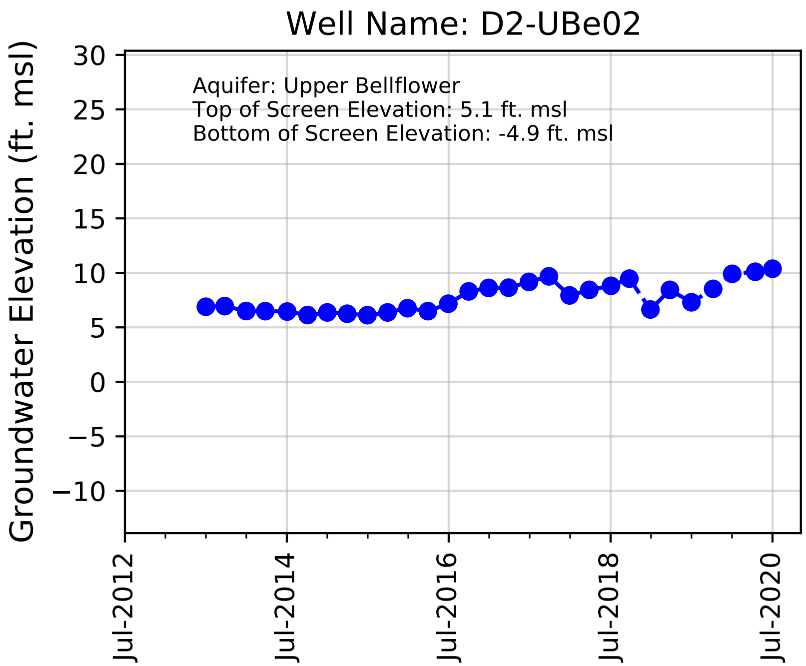
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

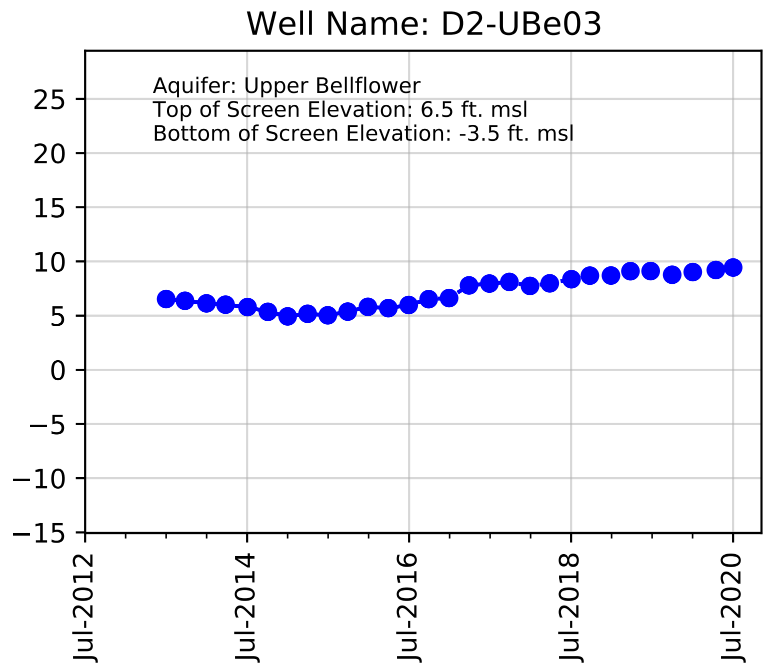

Well Name: D2-LBe10
Aquifer: Lower Bellflower
Top of Screen Elevation: -15.04 ft. msl
Bottom of Screen Elevation: -25.04 ft. msl
20
10
0
−10
−20
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020


Well Name: D2-LBe11
Aquifer: Lower Bellflower
Top of Screen Elevation: -16.06 ft. msl
Bottom of Screen Elevation: -26.06 ft. msl
Well Name: D2-LBe12
Aquifer: Lower Bellflower
Top of Screen Elevation: -14.6 ft. msl
Bottom of Screen Elevation: -24.6 ft. msl
Well Name: D2-LBe13
Aquifer: Lower Bellflower
Top of Screen Elevation: -15.3 ft. msl
Bottom of Screen Elevation: -25.3 ft. msl
Well Name: D2-Si01
Aquifer: Silverado
Top of Screen Elevation: -88.3 ft. msl
Bottom of Screen Elevation: -98.3 ft. msl
Groundwater Elevation (ft. msl)
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020


Well Name: D2-Si02
Aquifer: Silverado
Top of Screen Elevation: -85.7 ft. msl
Bottom of Screen Elevation: -95.7 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020


Well Name: D2-UBe01
Aquifer: Upper Bellflower
Top of Screen Elevation: 4.8 ft. msl
Bottom of Screen Elevation: -5.2 ft. msl
20
10
0
−10
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020


Well Name: D2-UBe02
Aquifer: Upper Bellflower
Top of Screen Elevation: 5.1 ft. msl
Bottom of Screen Elevation: -4.9 ft. msl
Groundwater Elevation (ft. msl)
30
25
20
15
10
5
0
−5
−10
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020


Well Name: D2-UBe03
Aquifer: Upper Bellflower
Top of Screen Elevation: 6.5 ft. msl
Bottom of Screen Elevation: -3.5 ft. msl
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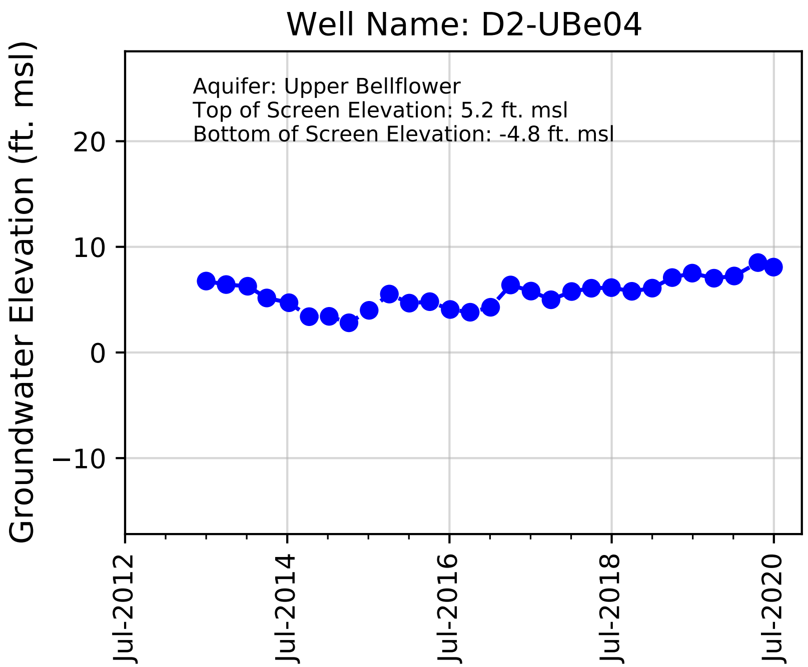
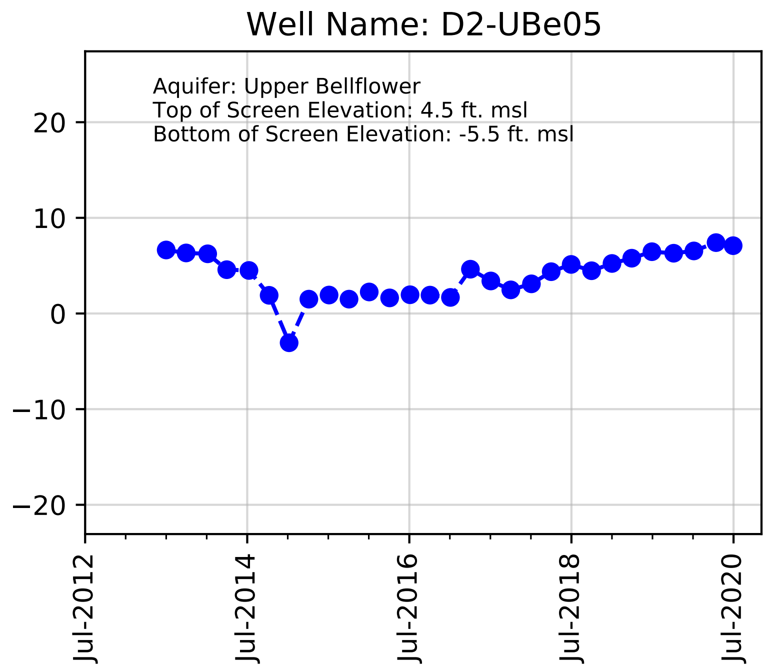
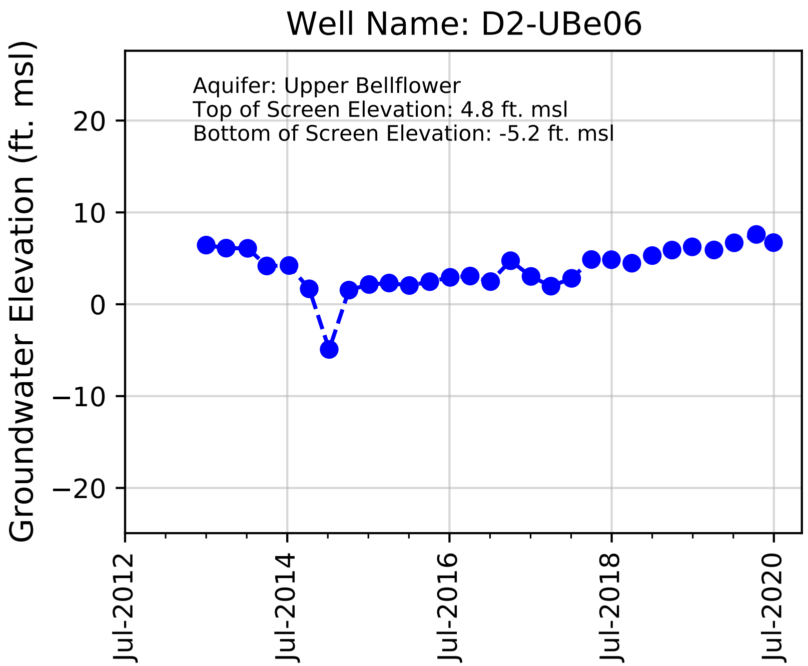
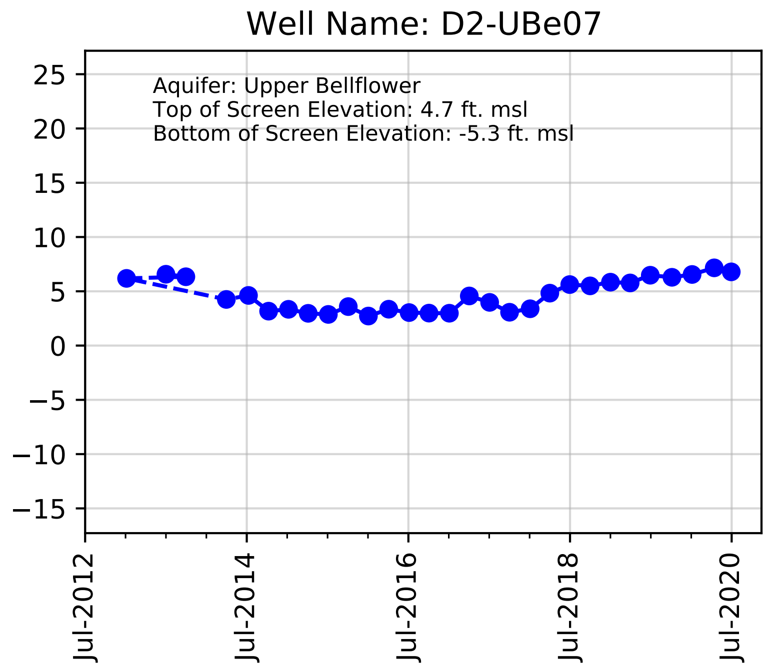
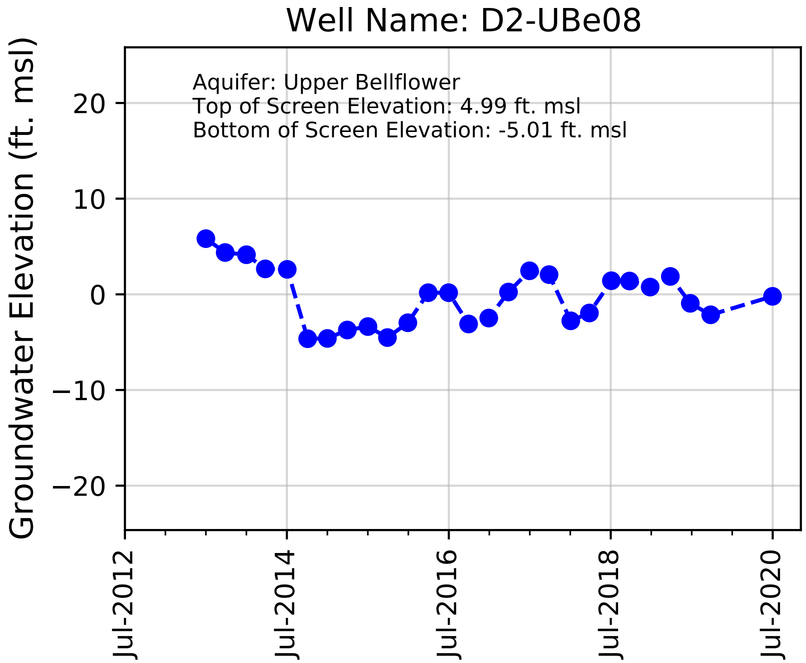
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

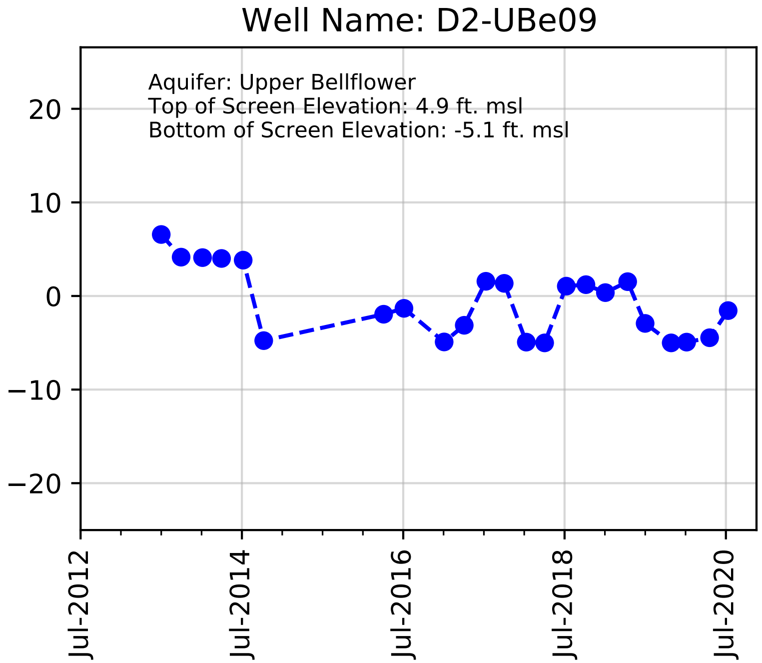

Well Name: D2-UBe04
Aquifer: Upper Bellflower
Top of Screen Elevation: 5.2 ft. msl
Bottom of Screen Elevation: -4.8 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

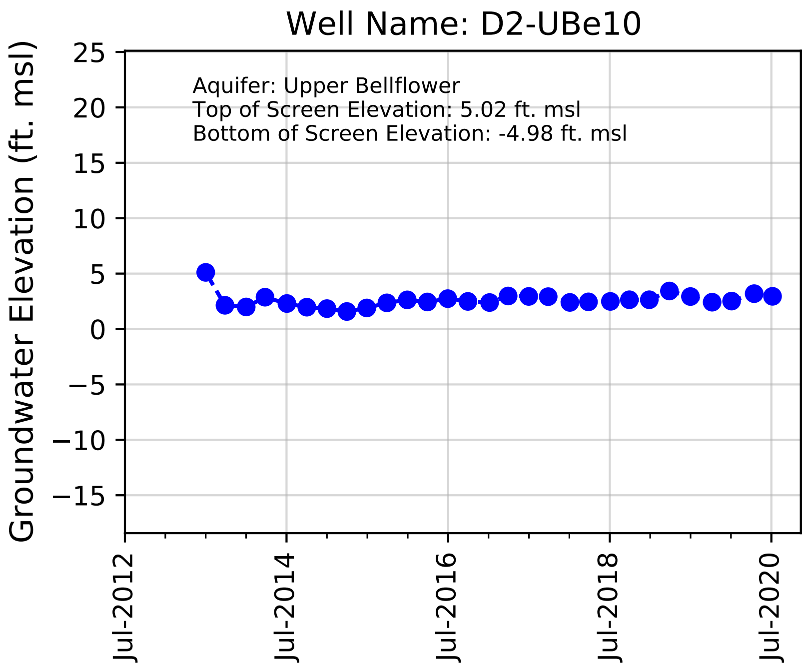

Well Name: D2-UBe05
Aquifer: Upper Bellflower
Top of Screen Elevation: 4.5 ft. msl
Bottom of Screen Elevation: -5.5 ft. msl
20
10
0
−10
−20
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

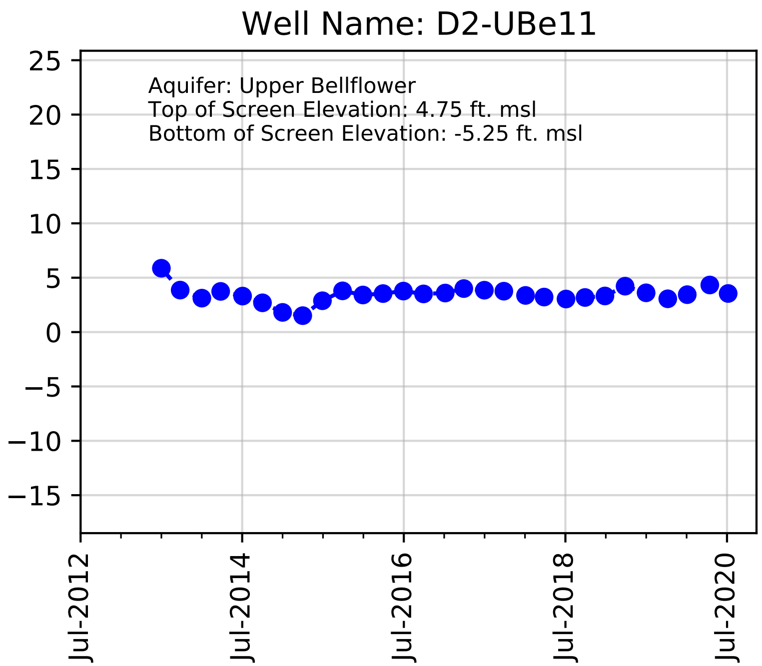

Well Name: D2-UBe06
Aquifer: Upper Bellflower
Top of Screen Elevation: 4.8 ft. msl
Bottom of Screen Elevation: -5.2 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

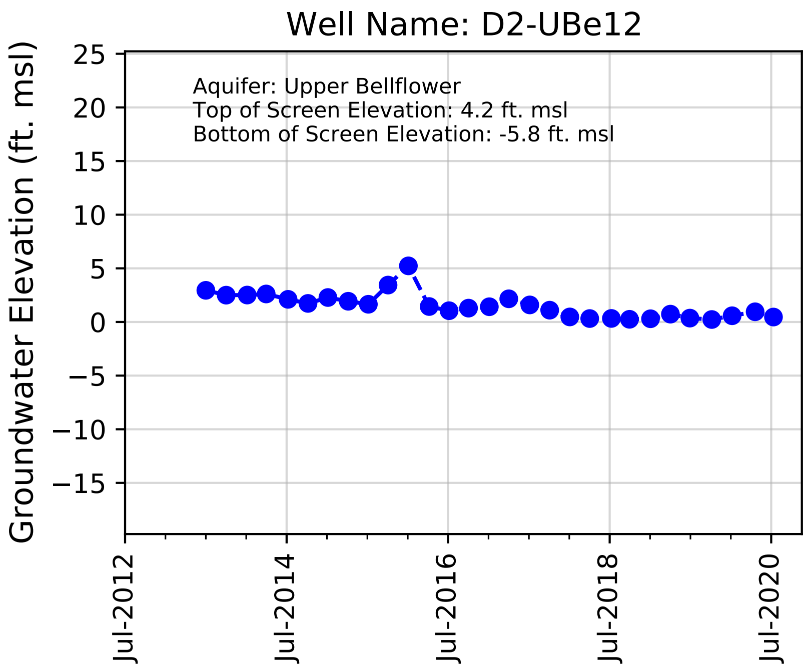

Well Name: D2-UBe07
Aquifer: Upper Bellflower
Top of Screen Elevation: 4.7 ft. msl
Bottom of Screen Elevation: -5.3 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

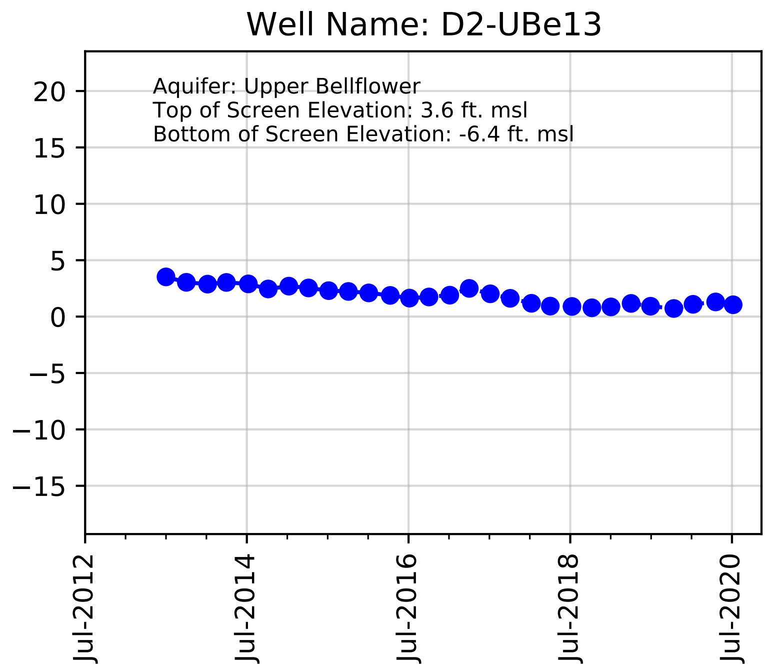

Well Name: D2-UBe08
Aquifer: Upper Bellflower
Top of Screen Elevation: 4.99 ft. msl
Bottom of Screen Elevation: -5.01 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

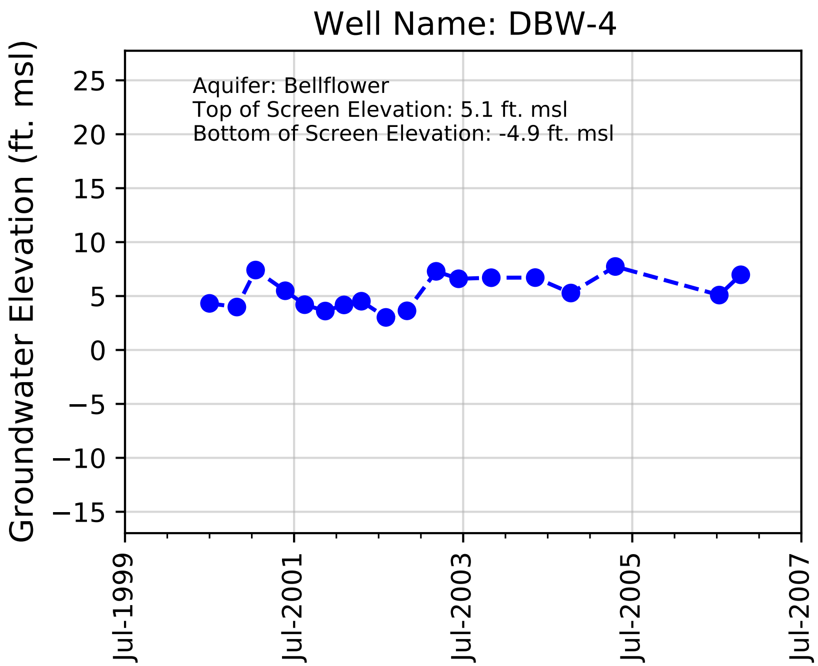

Well Name: D2-UBe09
Aquifer: Upper Bellflower
Top of Screen Elevation: 4.9 ft. msl
Bottom of Screen Elevation: -5.1 ft. msl
20
10
0
−10
−20
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

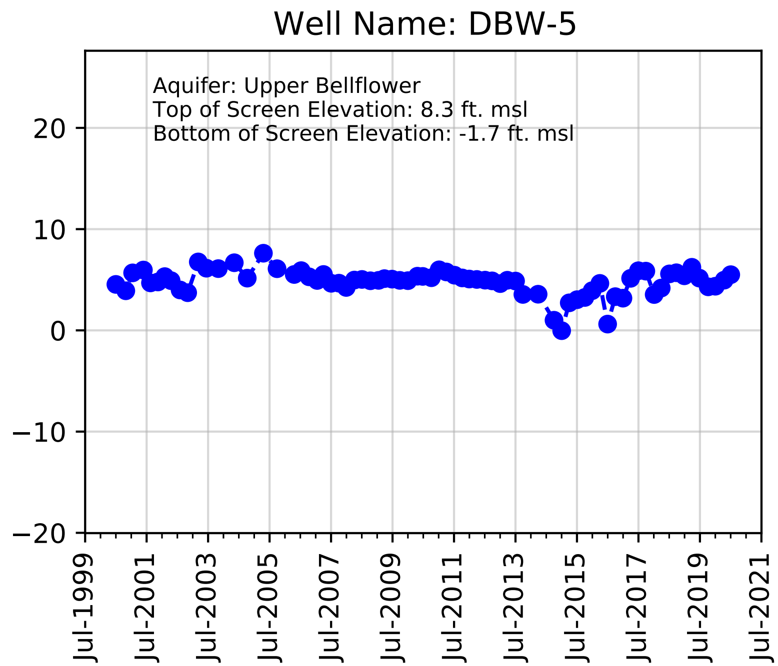

Well Name: D2-UBe10
Aquifer: Upper Bellflower
Top of Screen Elevation: 5.02 ft. msl
Bottom of Screen Elevation: -4.98 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

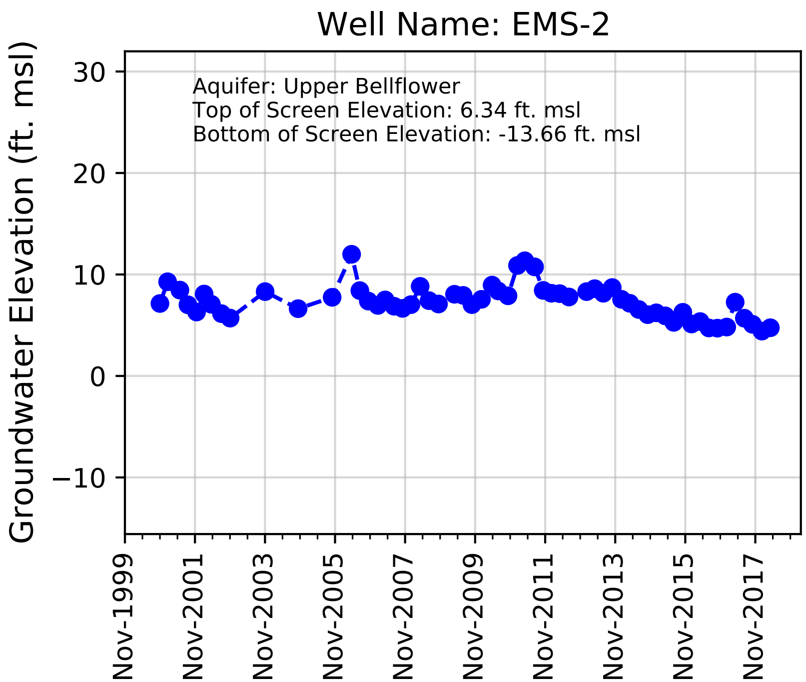

Well Name: D2-UBe11
Aquifer: Upper Bellflower
Top of Screen Elevation: 4.75 ft. msl
Bottom of Screen Elevation: -5.25 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

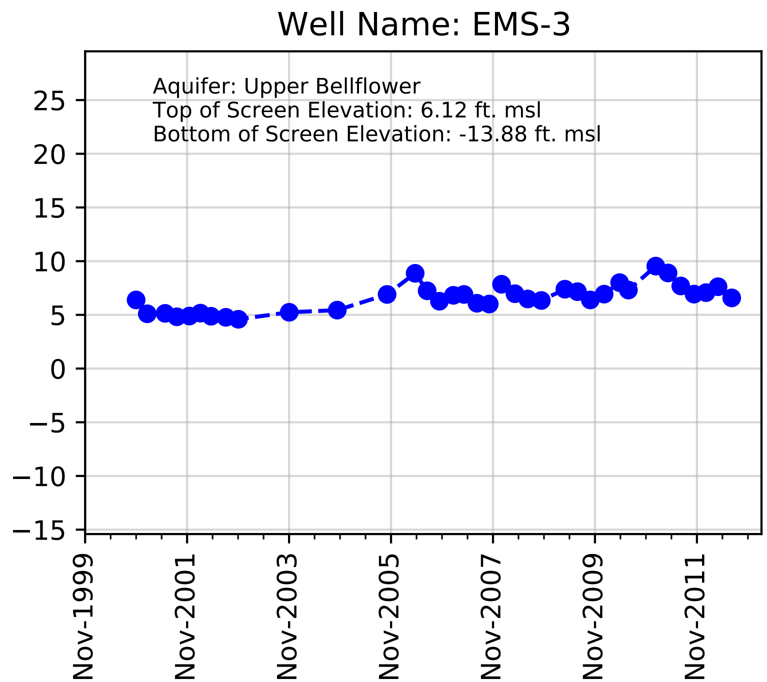

Well Name: D2-UBe12
Aquifer: Upper Bellflower
Top of Screen Elevation: 4.2 ft. msl
Bottom of Screen Elevation: -5.8 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

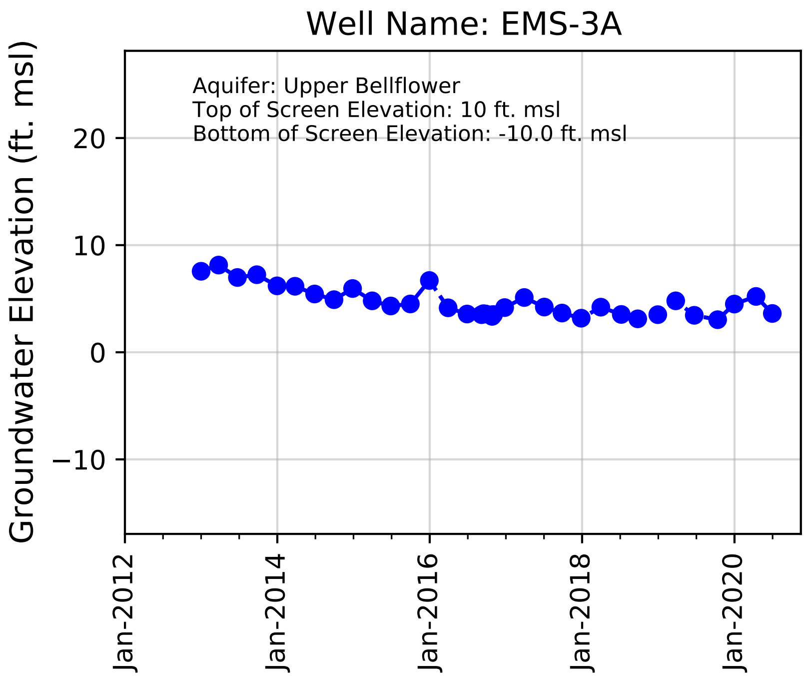

Well Name: D2-UBe13
Aquifer: Upper Bellflower
Top of Screen Elevation: 3.6 ft. msl
Bottom of Screen Elevation: -6.4 ft. msl
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

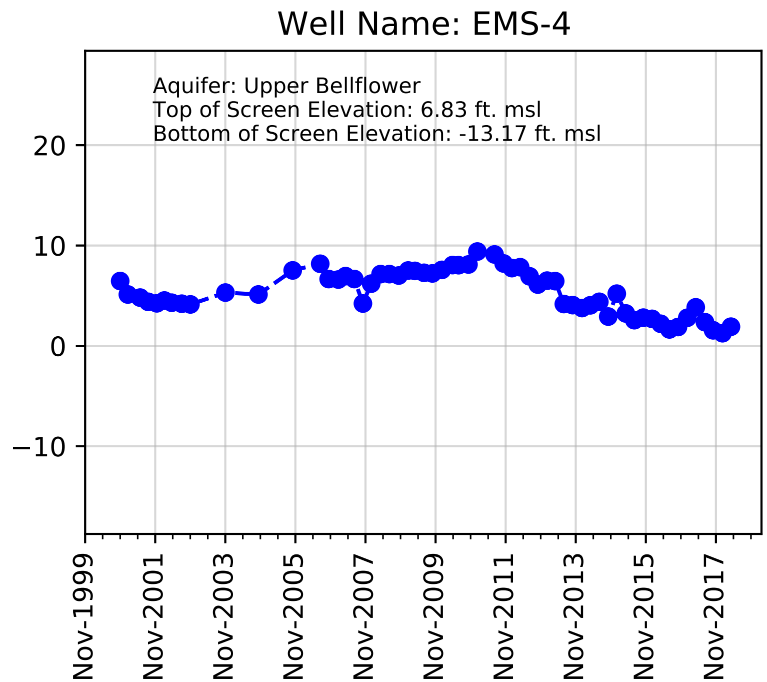

Well Name: DBW-4
Aquifer: Bellflower
Top of Screen Elevation: 5.1 ft. msl
Bottom of Screen Elevation: -4.9 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jul-1999
Jul-2001
Jul-2003
Jul-2005
Jul-2007

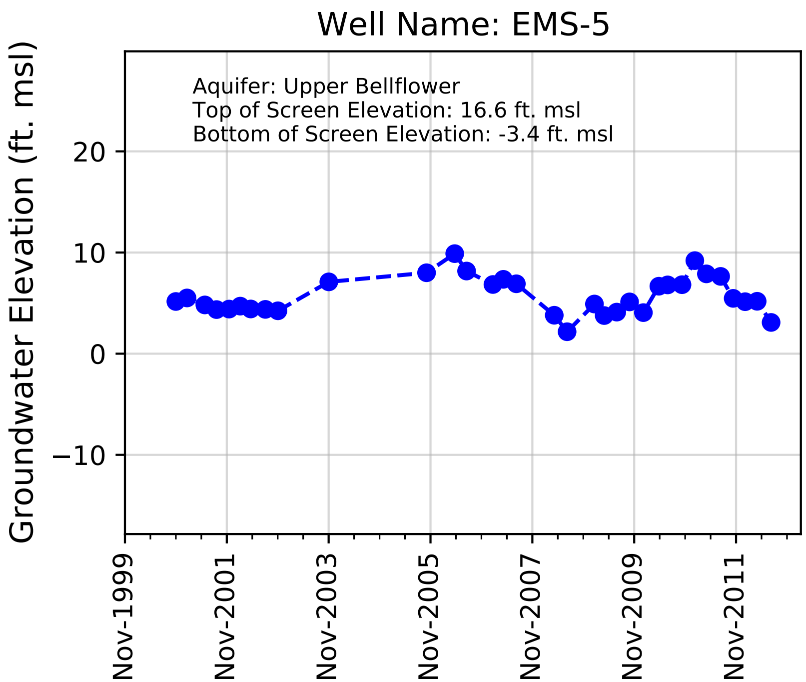

Well Name: DBW-5
Aquifer: Upper Bellflower
Top of Screen Elevation: 8.3 ft. msl
Bottom of Screen Elevation: -1.7 ft. msl
20
10
0
−10
−20
Jul-1999
Jul-2001
Jul-2003
Jul-2005
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019
Jul-2021

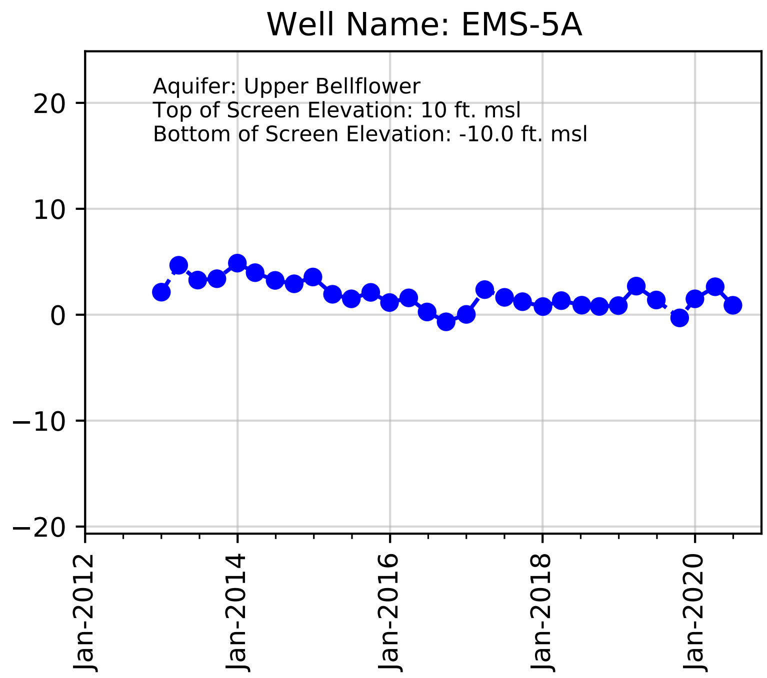

Well Name: EMS-2
Aquifer: Upper Bellflower
Top of Screen Elevation: 6.34 ft. msl
Bottom of Screen Elevation: -13.66 ft. msl
Groundwater Elevation (ft. msl)

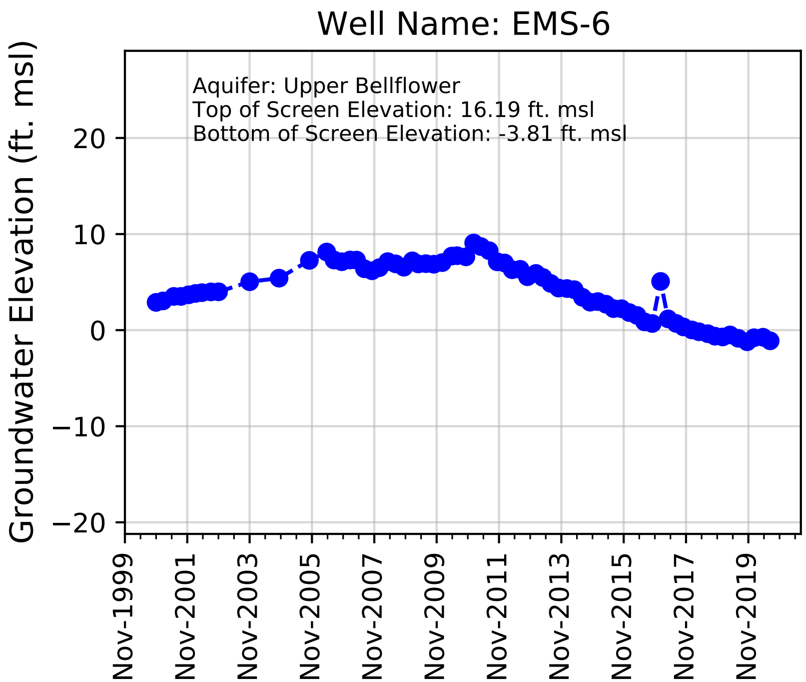

Well Name: EMS-3
Aquifer: Upper Bellflower
Top of Screen Elevation: 6.12 ft. msl
Bottom of Screen Elevation: -13.88 ft. msl

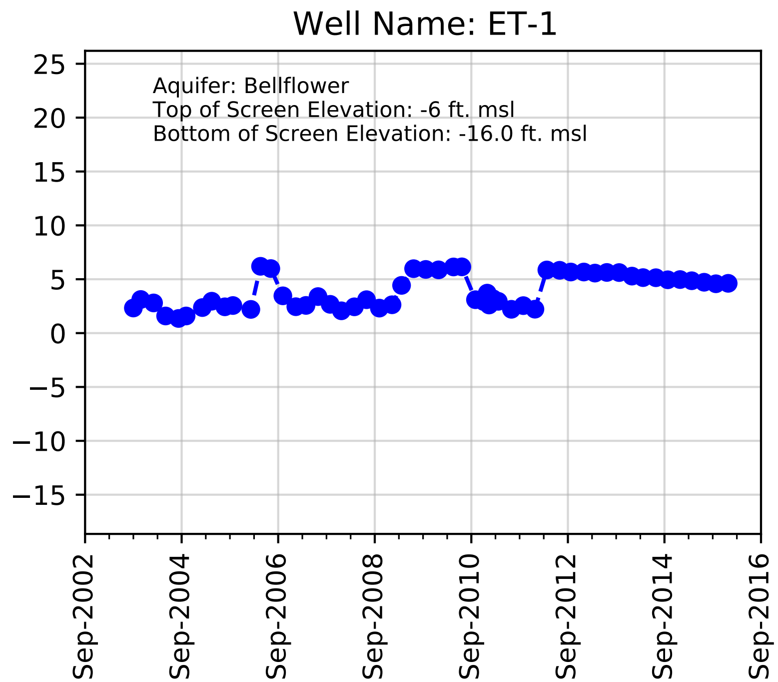

Well Name: EMS-3A
Aquifer: Upper Bellflower
Top of Screen Elevation: 10 ft. msl
Bottom of Screen Elevation: -10.0 ft. msl
Groundwater Elevation (ft. msl)

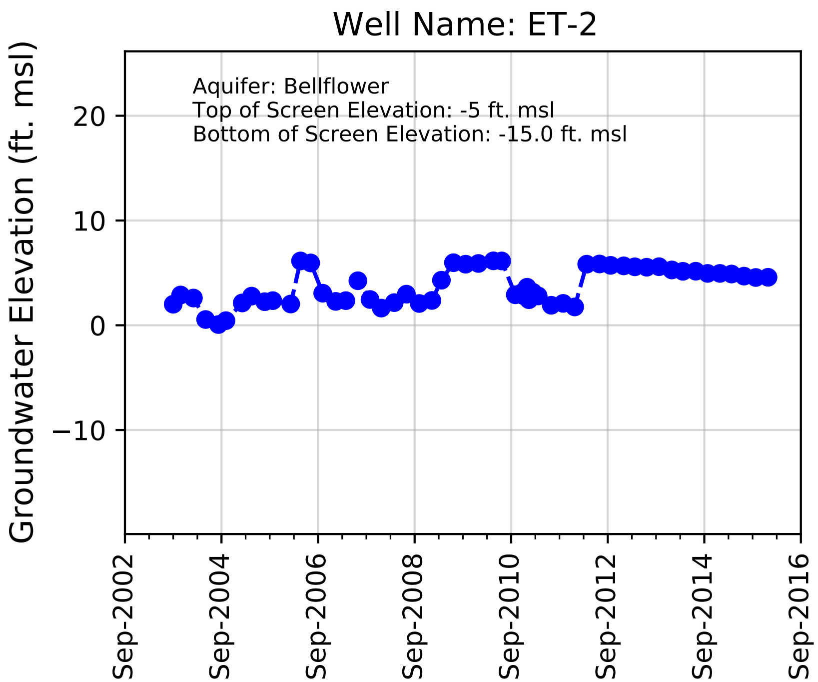

Well Name: EMS-4
Aquifer: Upper Bellflower
Top of Screen Elevation: 6.83 ft. msl
Bottom of Screen Elevation: -13.17 ft. msl

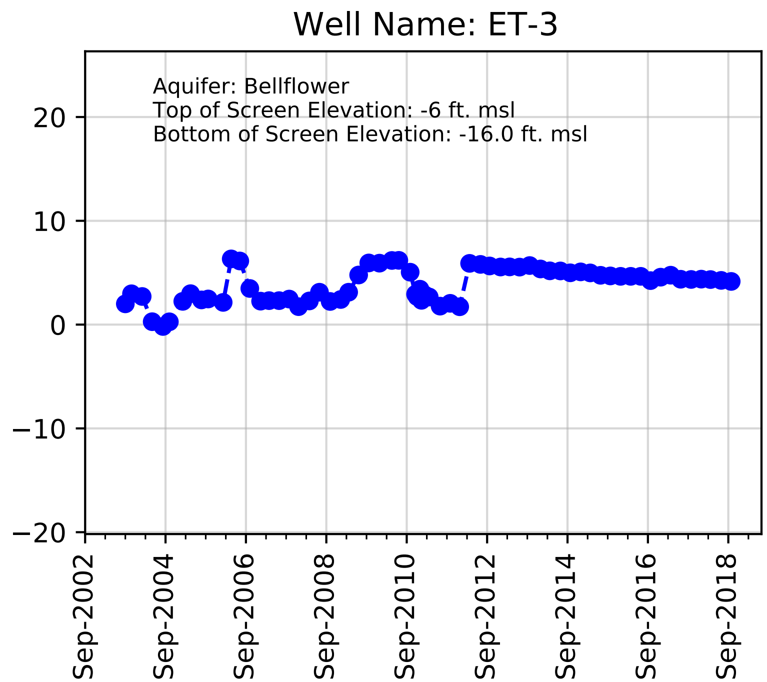

Well Name: EMS-5
Aquifer: Upper Bellflower
Top of Screen Elevation: 16.6 ft. msl
Bottom of Screen Elevation: -3.4 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Nov-1999
Nov-2001
Nov-2003
Nov-2005
Nov-2007
Nov-2009
Nov-2011

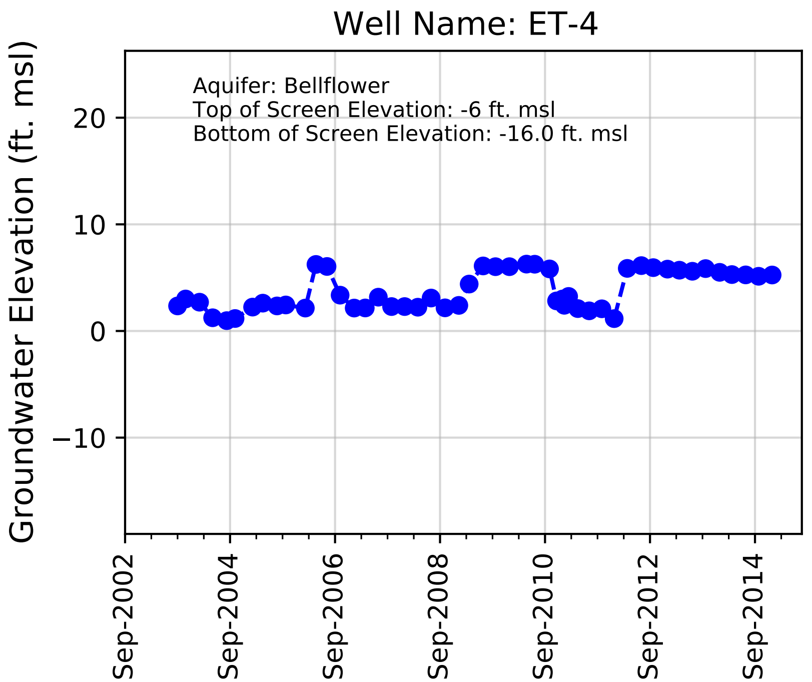

Well Name: EMS-5A
Aquifer: Upper Bellflower
Top of Screen Elevation: 10 ft. msl
Bottom of Screen Elevation: -10.0 ft. msl
20
10
0
−10
−20
Jan-2012
Jan-2014
Jan-2016
Jan-2018
Jan-2020

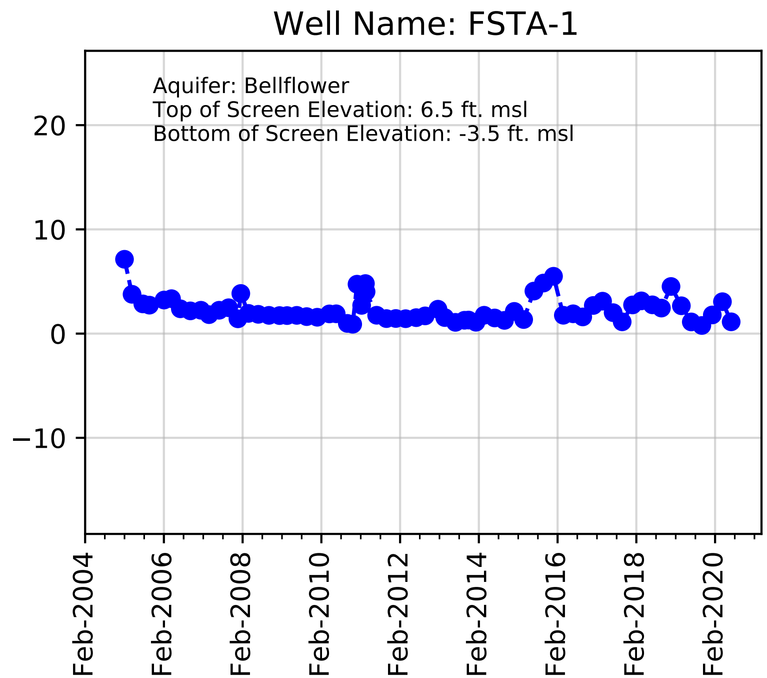

Well Name: EMS-6
Aquifer: Upper Bellflower
Top of Screen Elevation: 16.19 ft. msl
Bottom of Screen Elevation: -3.81 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Nov-1999
Nov-2001
Nov-2003
Nov-2005
Nov-2007
Nov-2009
Nov-2011
Nov-2013
Nov-2015
Nov-2017
Nov-2019

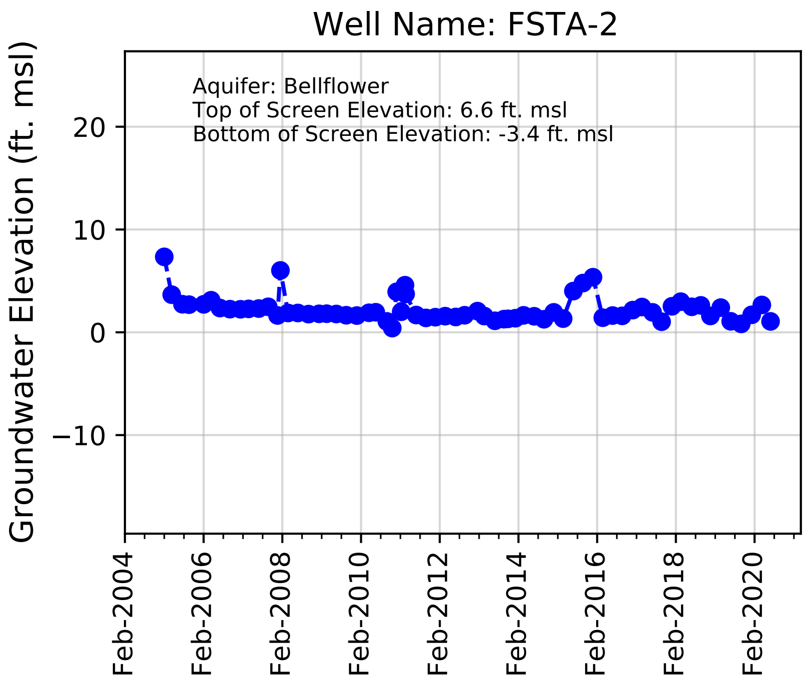

Well Name: ET-1
Aquifer: Bellflower
Top of Screen Elevation: -6 ft. msl
Bottom of Screen Elevation: -16.0 ft. msl
25
20
15
10
5
0
−5
−10
−15
Sep-2002
Sep-2004
Sep-2006
Sep-2008
Sep-2010
Sep-2012
Sep-2014
Sep-2016

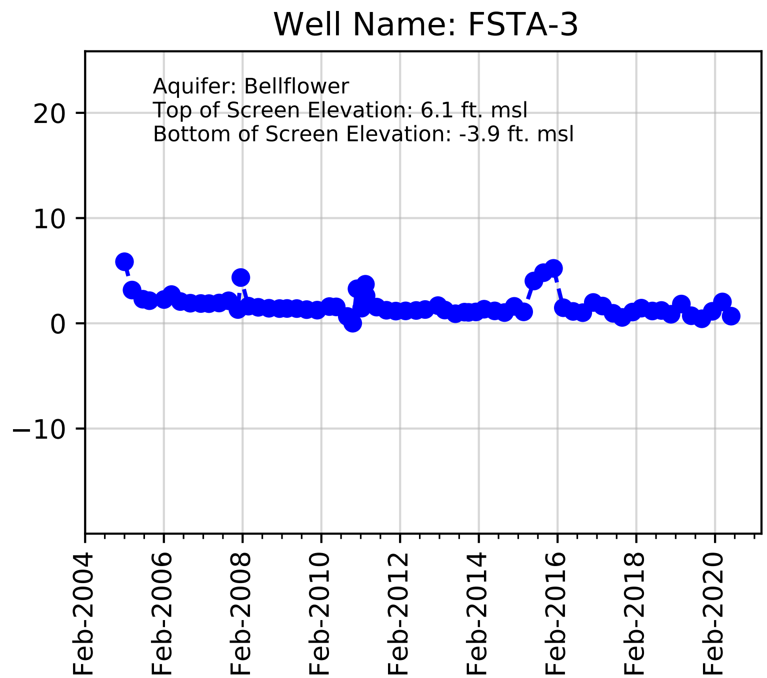

Well Name: ET-2
Aquifer: Bellflower
Top of Screen Elevation: -5 ft. msl
Bottom of Screen Elevation: -15.0 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Sep-2002
Sep-2004
Sep-2006
Sep-2008
Sep-2010
Sep-2012
Sep-2014
Sep-2016

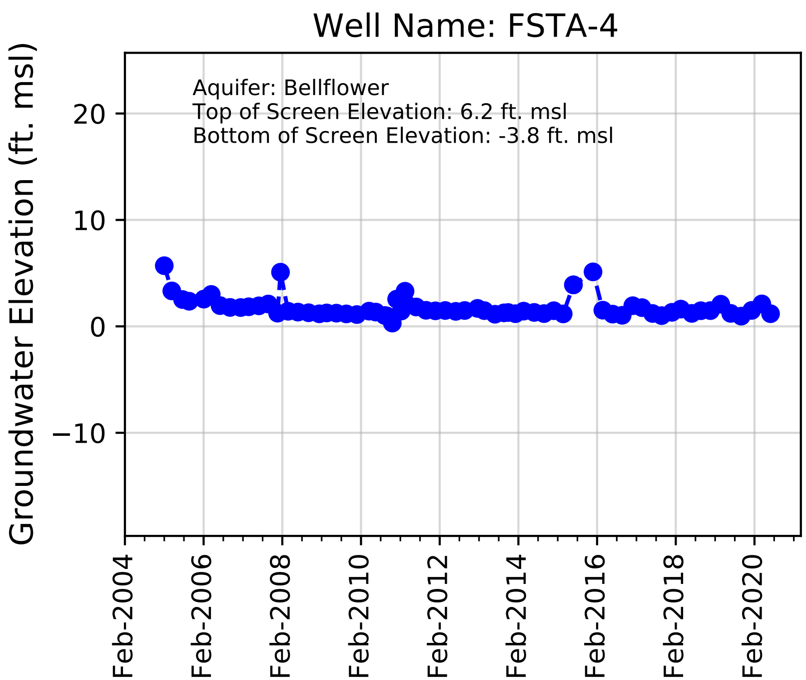

Well Name: ET-3
Aquifer: Bellflower
Top of Screen Elevation: -6 ft. msl
Bottom of Screen Elevation: -16.0 ft. msl
20
10
0
−10
−20
Sep-2002
Sep-2004
Sep-2006
Sep-2008
Sep-2010
Sep-2012
Sep-2014
Sep-2016
Sep-2018


Well Name: ET-4
Aquifer: Bellflower
Top of Screen Elevation: -6 ft. msl
Bottom of Screen Elevation: -16.0 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Sep-2002
Sep-2004
Sep-2006
Sep-2008
Sep-2010
Sep-2012
Sep-2014


Well Name: FSTA-1
Aquifer: Bellflower
Top of Screen Elevation: 6.5 ft. msl
Bottom of Screen Elevation: -3.5 ft. msl
20
10
0
−10
Feb-2004
Feb-2006
Feb-2008
Feb-2010
Feb-2012
Feb-2014
Feb-2016
Feb-2018
Feb-2020


Well Name: FSTA-2
Aquifer: Bellflower
Top of Screen Elevation: 6.6 ft. msl
Bottom of Screen Elevation: -3.4 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Feb-2004
Feb-2006
Feb-2008
Feb-2010
Feb-2012
Feb-2014
Feb-2016
Feb-2018
Feb-2020


Well Name: FSTA-3
Aquifer: Bellflower
Top of Screen Elevation: 6.1 ft. msl
Bottom of Screen Elevation: -3.9 ft. msl
20
10
0
−10
Feb-2004
Feb-2006
Feb-2008
Feb-2010
Feb-2012
Feb-2014
Feb-2016
Feb-2018
Feb-2020


Well Name: FSTA-4
Aquifer: Bellflower
Top of Screen Elevation: 6.2 ft. msl
Bottom of Screen Elevation: -3.8 ft. msl
Groundwater Elevation (ft. msl)
20
10
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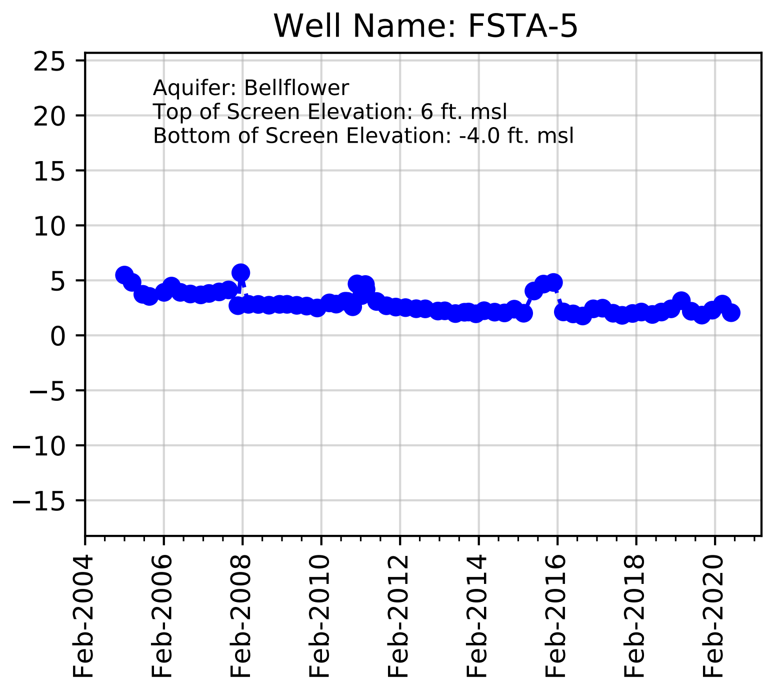
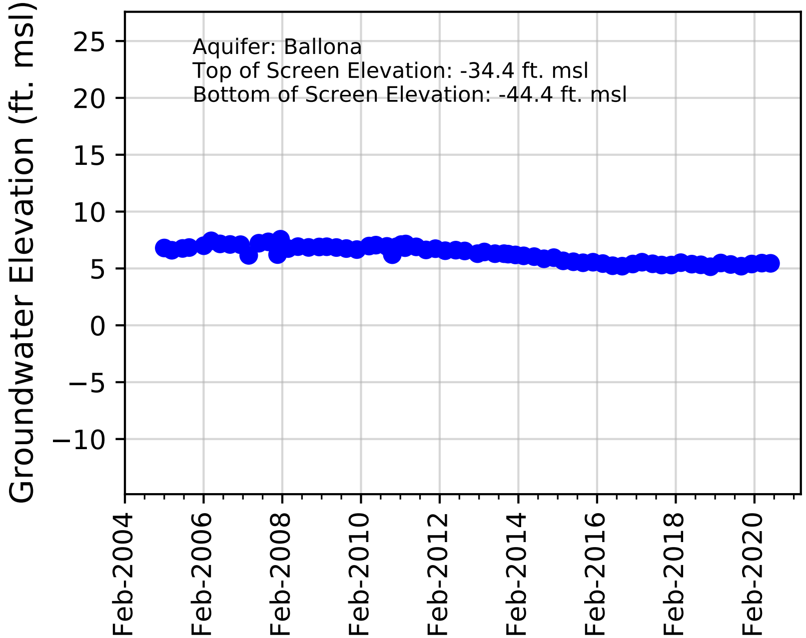
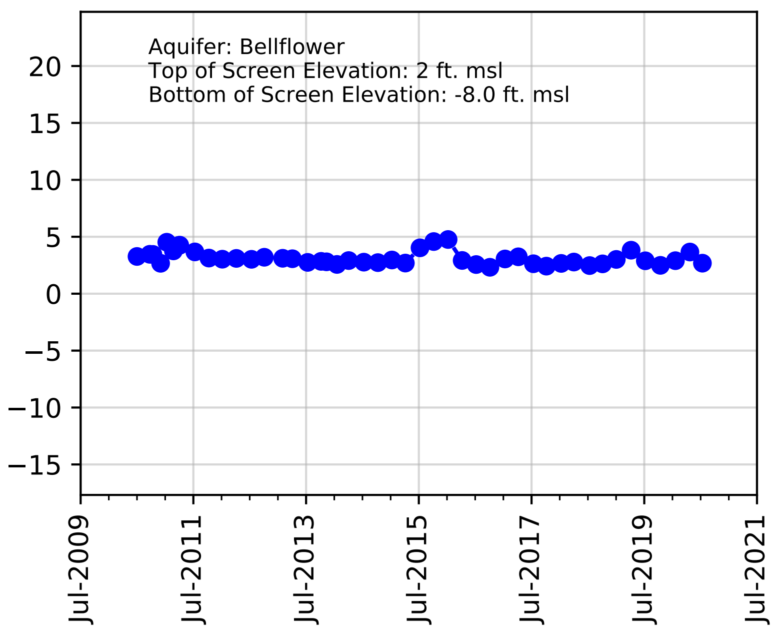
Feb-2004
Feb-2006
Feb-2008
Feb-2010
Feb-2012
Feb-2014
Feb-2016
Feb-2018
Feb-2020


Well Name: FSTA-5
Aquifer: Bellflower
Top of Screen Elevation: 6 ft. msl
Bottom of Screen Elevation: -4.0 ft. msl
25
20
15
10
5
0
−5
−10
−15
Feb-2004
Feb-2006
Feb-2008
Feb-2010
Feb-2012
Feb-2014
Feb-2016
Feb-2018
Feb-2020

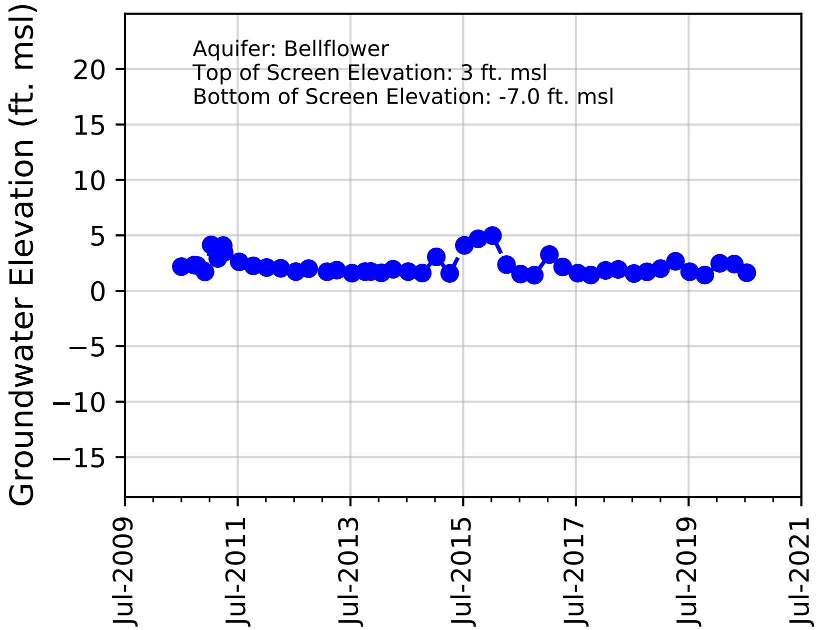
Well Name: FSTA-6



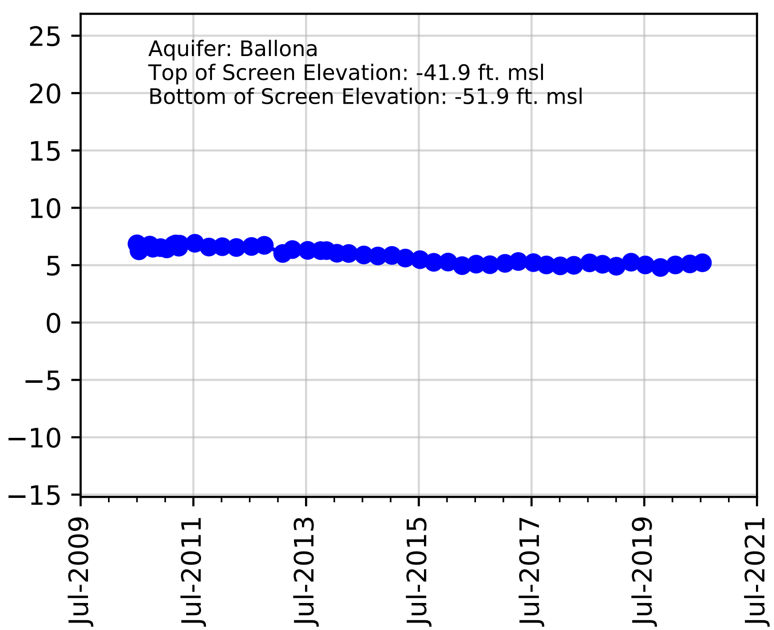
Well Name: FSTA-7

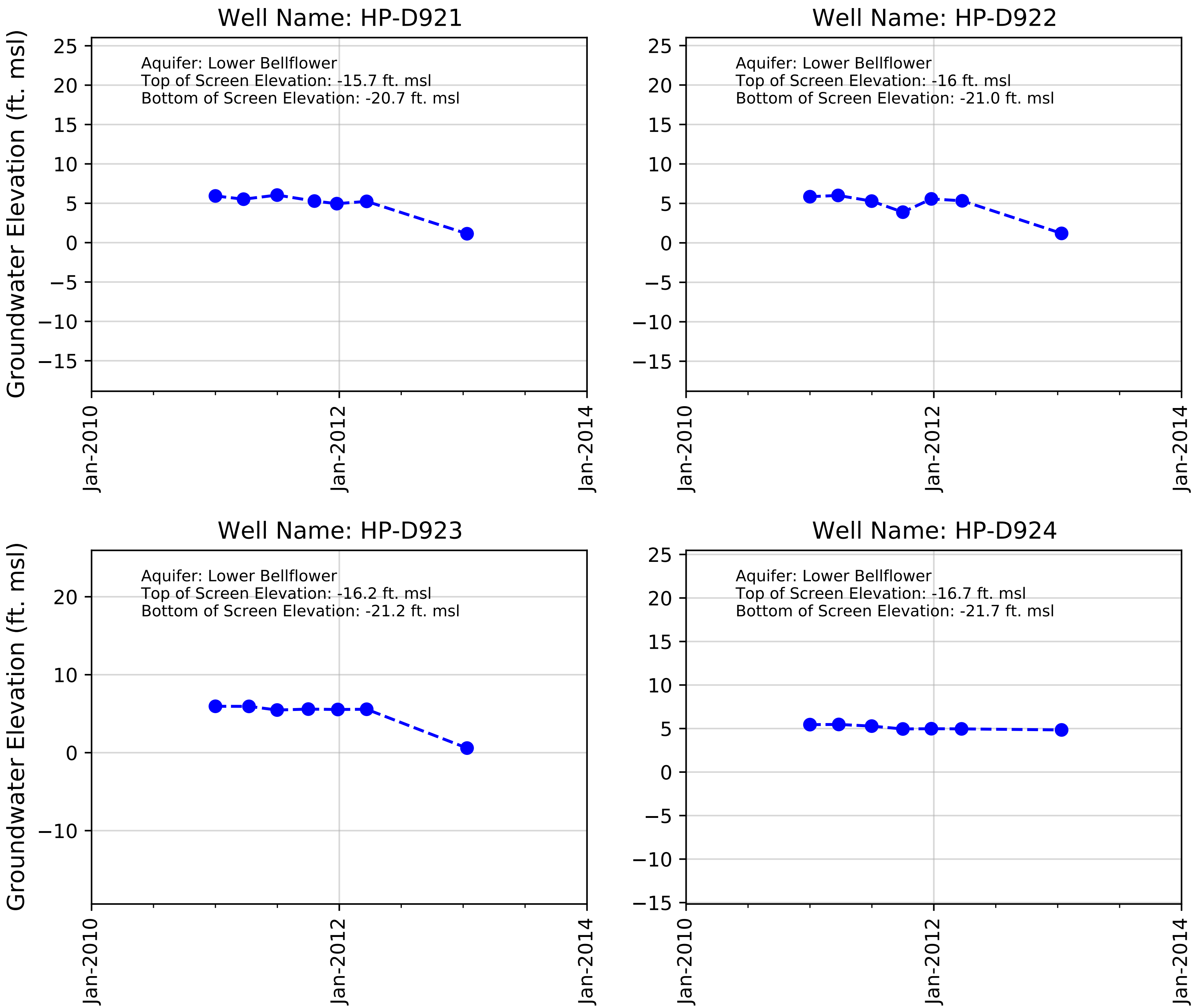


Well Name: FSTA-8

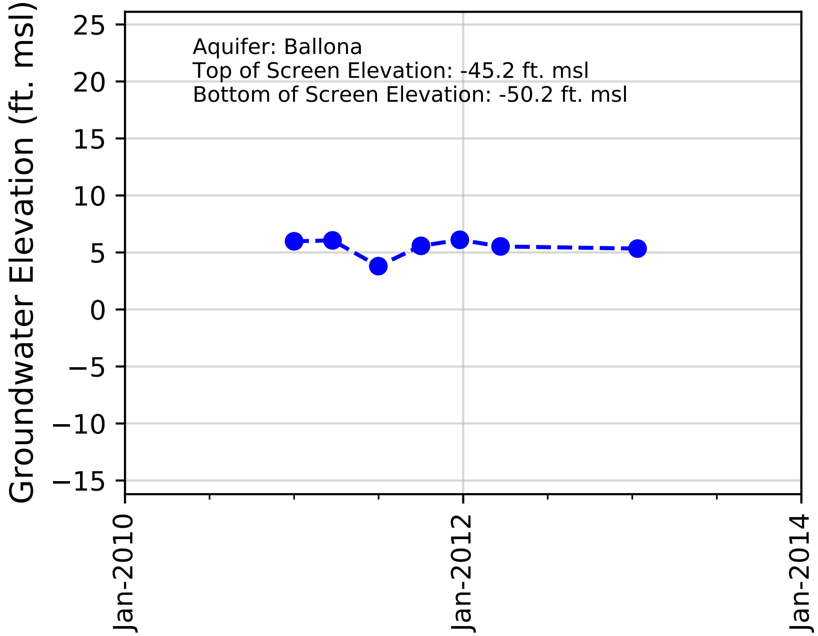


Well Name: FSTA-9

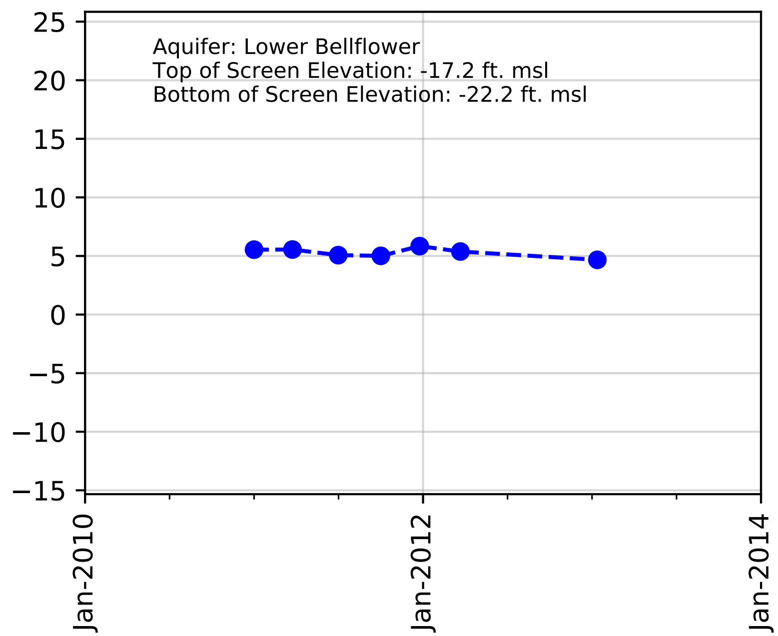



Well Name: HP-D921
Aquifer: Lower Bellflower
Top of Screen Elevation: -15.7 ft. msl
Bottom of Screen Elevation: -20.7 ft. msl
Well Name: HP-D922
Aquifer: Lower Bellflower
Top of Screen Elevation: -16 ft. msl
Bottom of Screen Elevation: -21.0 ft. msl
Well Name: HP-D923
Aquifer: Lower Bellflower
Top of Screen Elevation: -16.2 ft. msl
Bottom of Screen Elevation: -21.2 ft. msl
Well Name: HP-D924
Aquifer: Lower Bellflower
Top of Screen Elevation: -16.7 ft. msl
Bottom of Screen Elevation: -21.7 ft. msl
Groundwater Elevation (ft. msl)
Jan-2010
Jan-2012
Jan-2014

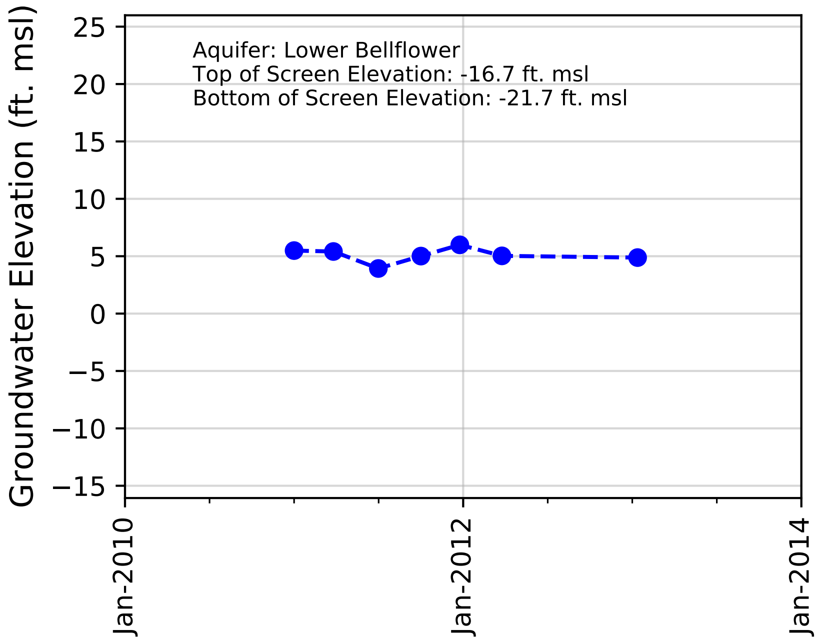
Well Name: HP-D925



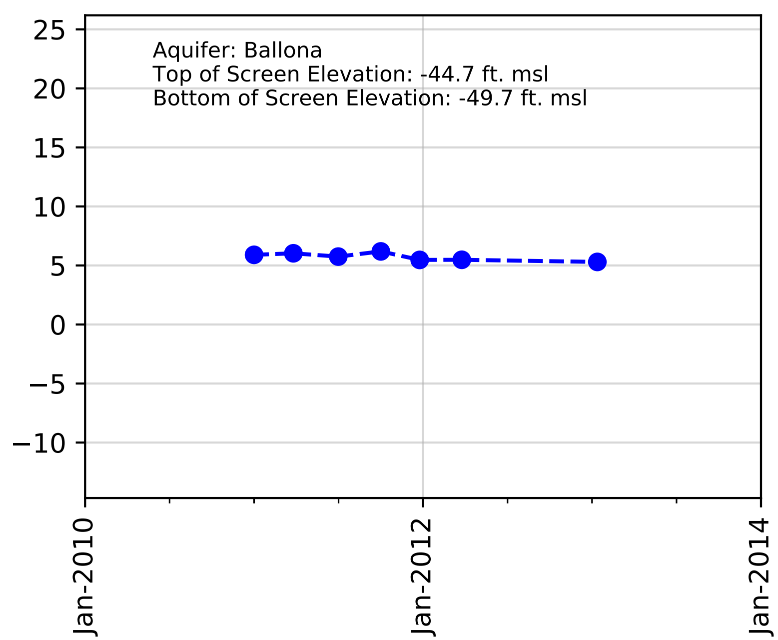
Well Name: HP-D926



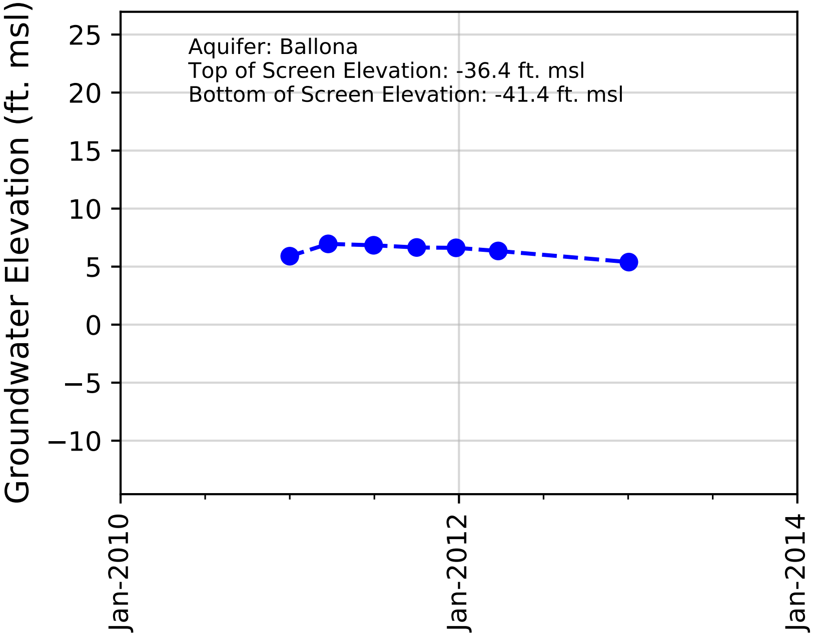
Well Name: HP-D927



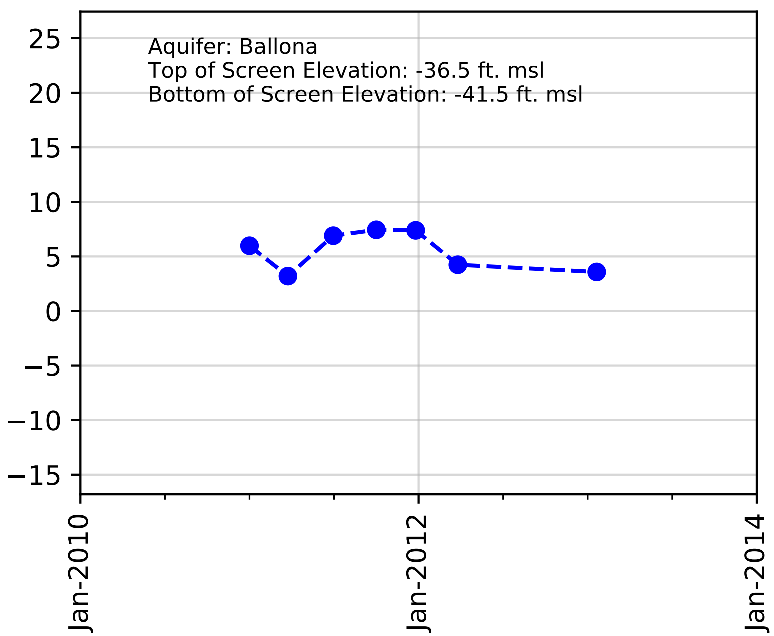
Well Name: HP-D928



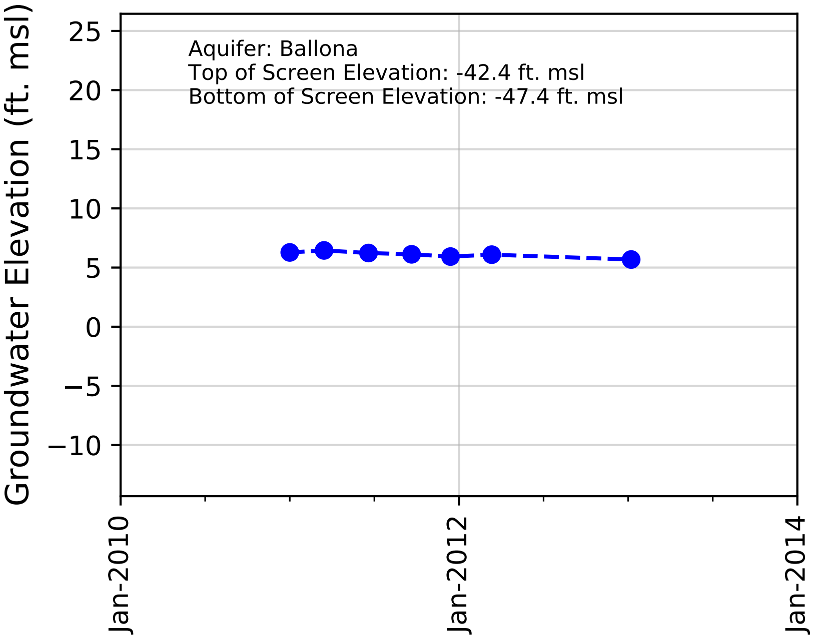
Well Name: HP-D929



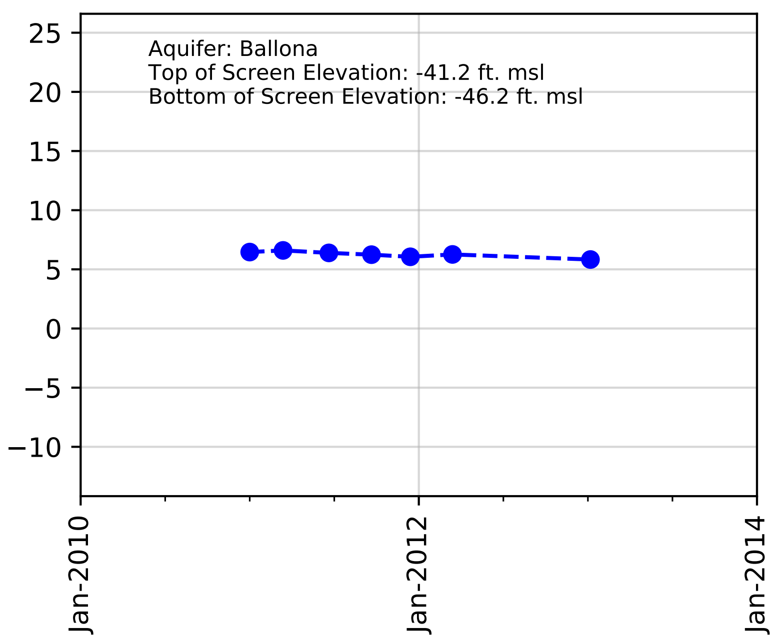
Well Name: HP-D930

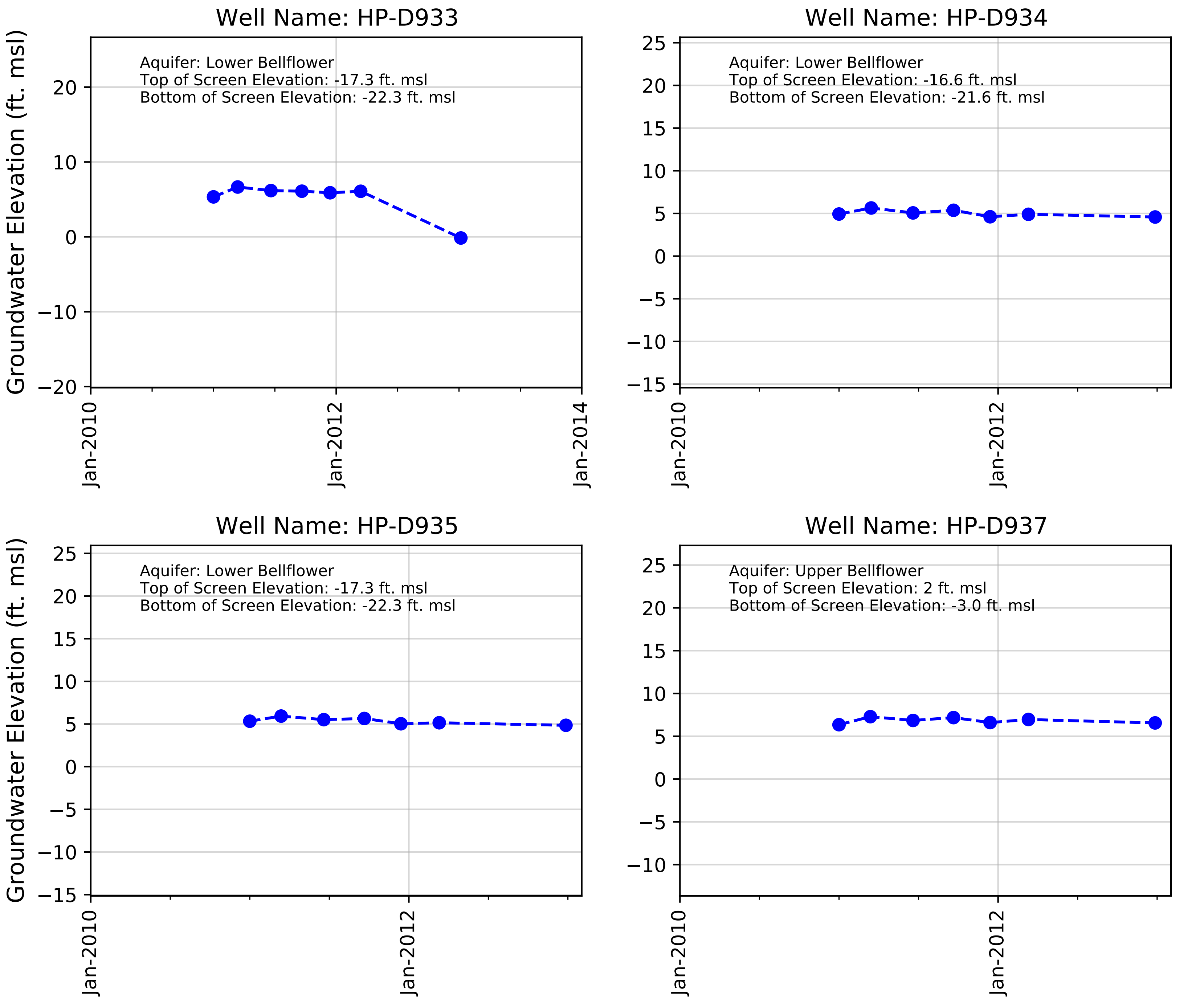


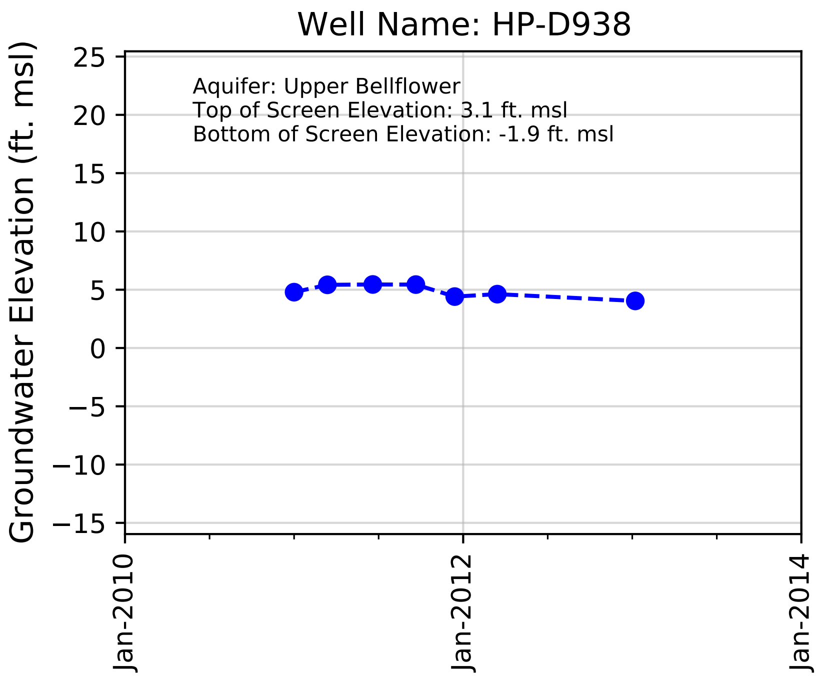
Well Name: HP-D931

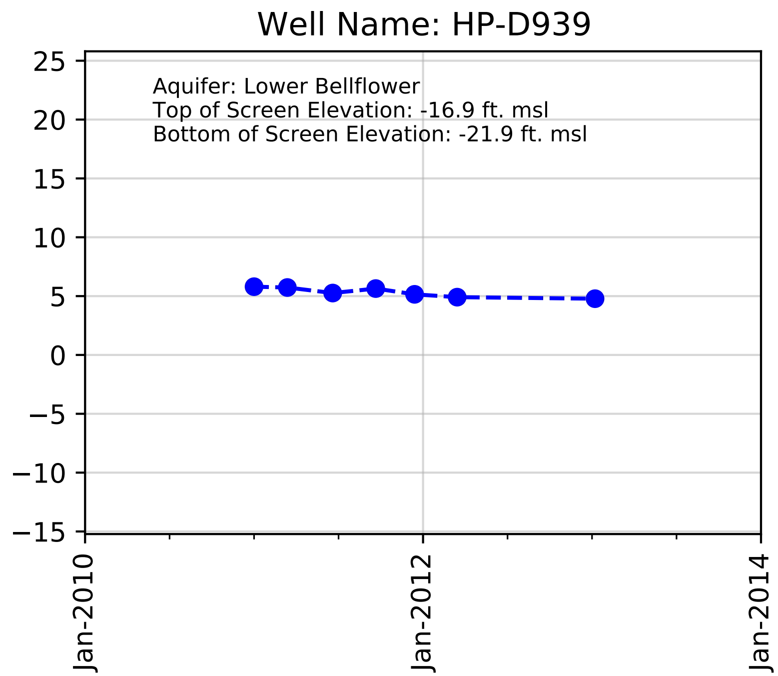


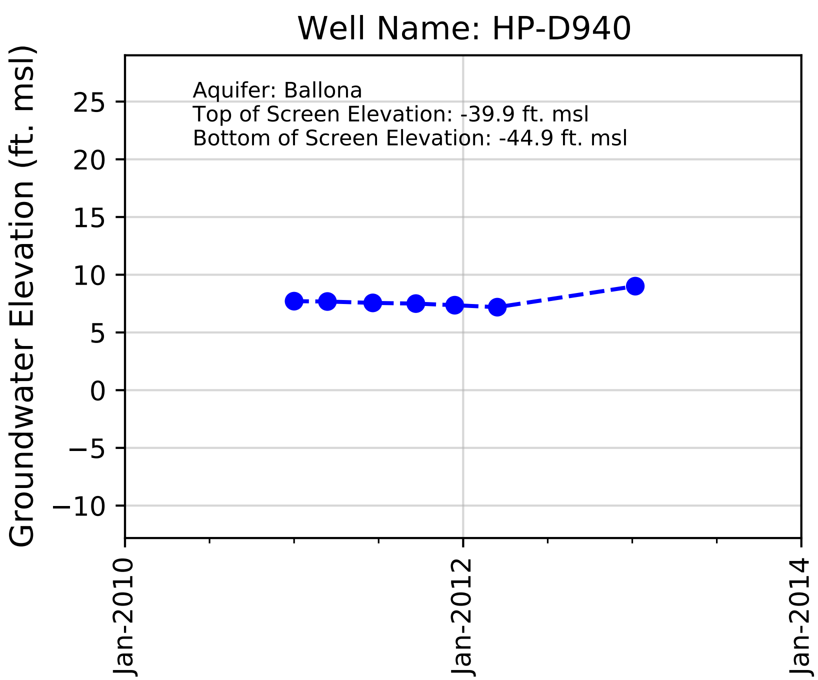
Well Name: HP-D932

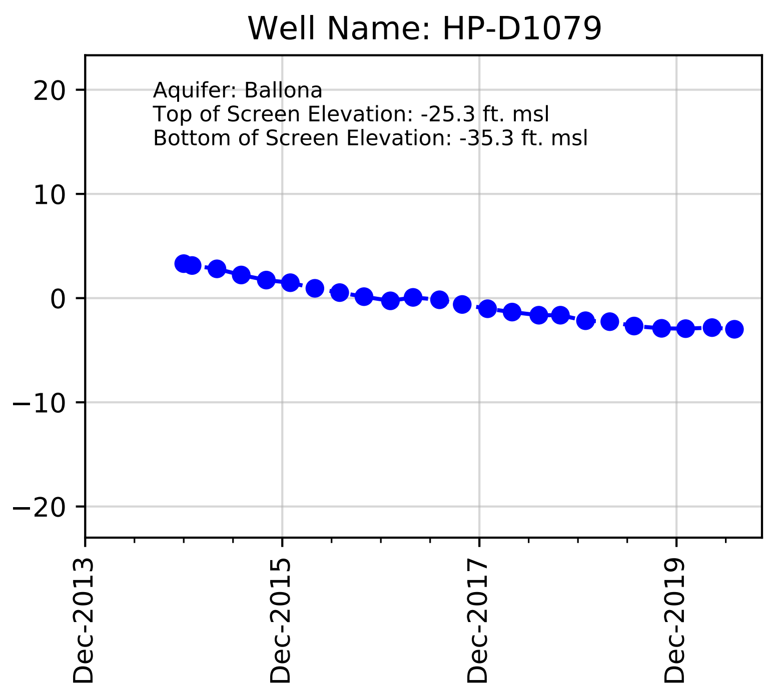


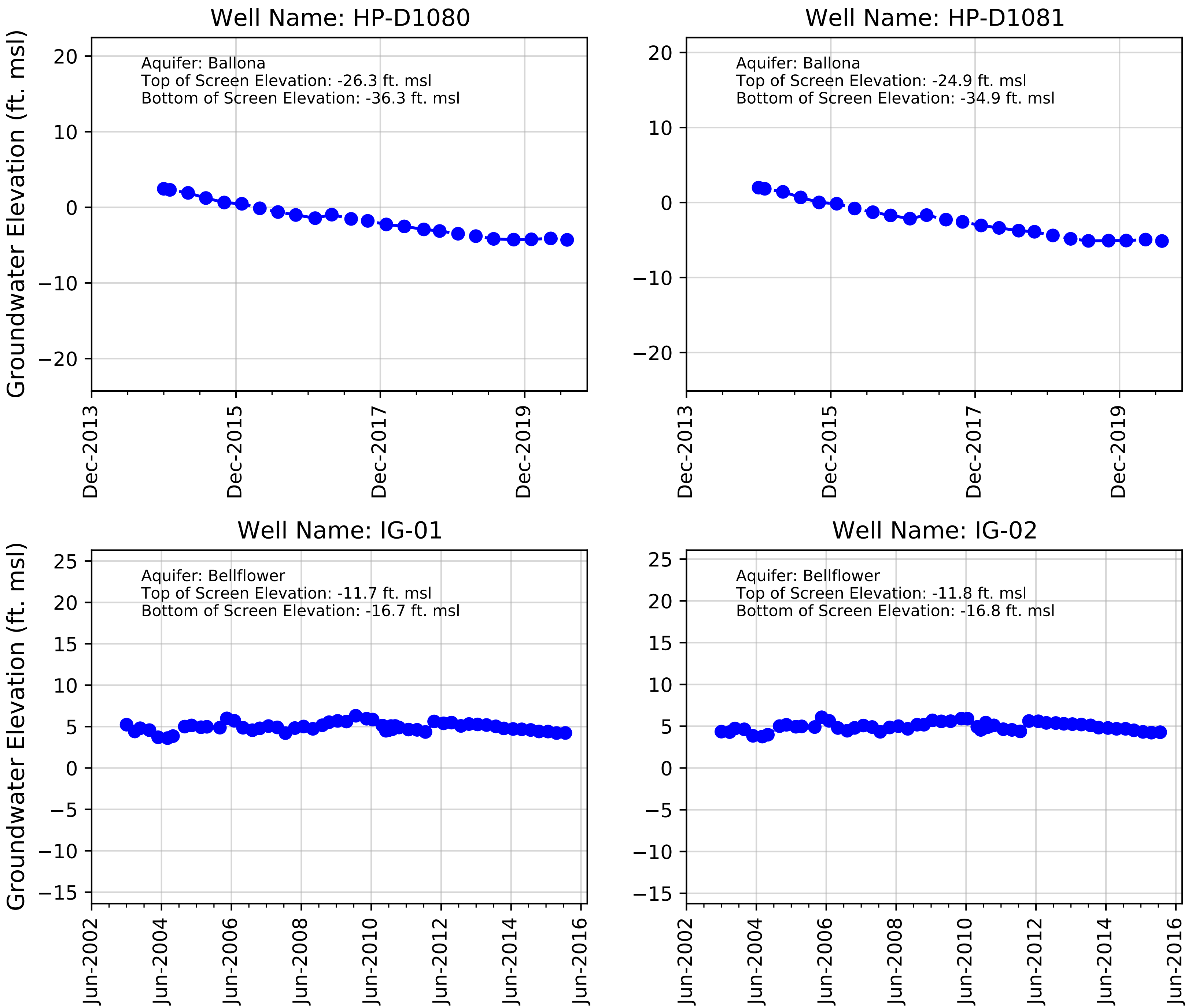

Well Name: HP-D933
Aquifer: Lower Bellflower
Top of Screen Elevation: -17.3 ft. msl
Bottom of Screen Elevation: -22.3 ft. msl
Well Name: HP-D934
Aquifer: Lower Bellflower
Top of Screen Elevation: -16.6 ft. msl
Bottom of Screen Elevation: -21.6 ft. msl
Well Name: HP-D935
Aquifer: Lower Bellflower
Top of Screen Elevation: -17.3 ft. msl
Bottom of Screen Elevation: -22.3 ft. msl
Well Name: HP-D937
Aquifer: Upper Bellflower
Top of Screen Elevation: 2 ft. msl
Bottom of Screen Elevation: -3.0 ft. msl
Groundwater Elevation (ft. msl)
Jan-2010
Jan-2012
Jan-2014

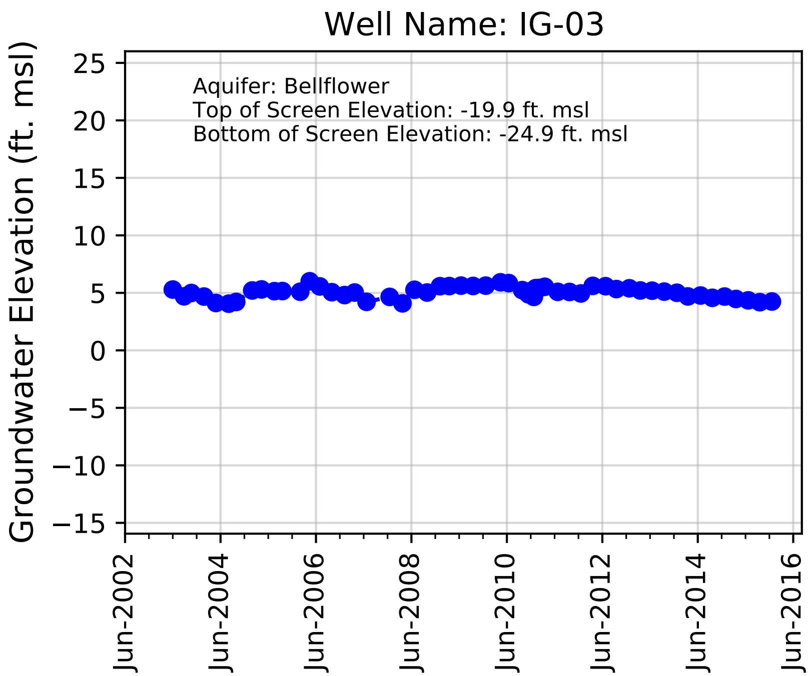

Well Name: HP-D938
Aquifer: Upper Bellflower
Top of Screen Elevation: 3.1 ft. msl
Bottom of Screen Elevation: -1.9 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jan-2010
Jan-2012
Jan-2014

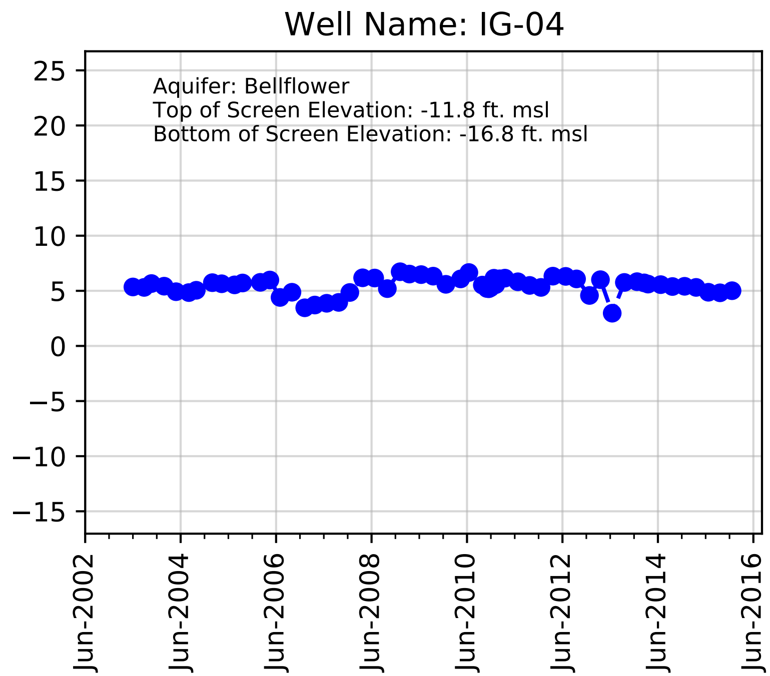

Well Name: HP-D939
Aquifer: Lower Bellflower
Top of Screen Elevation: -16.9 ft. msl
Bottom of Screen Elevation: -21.9 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jan-2010
Jan-2012
Jan-2014

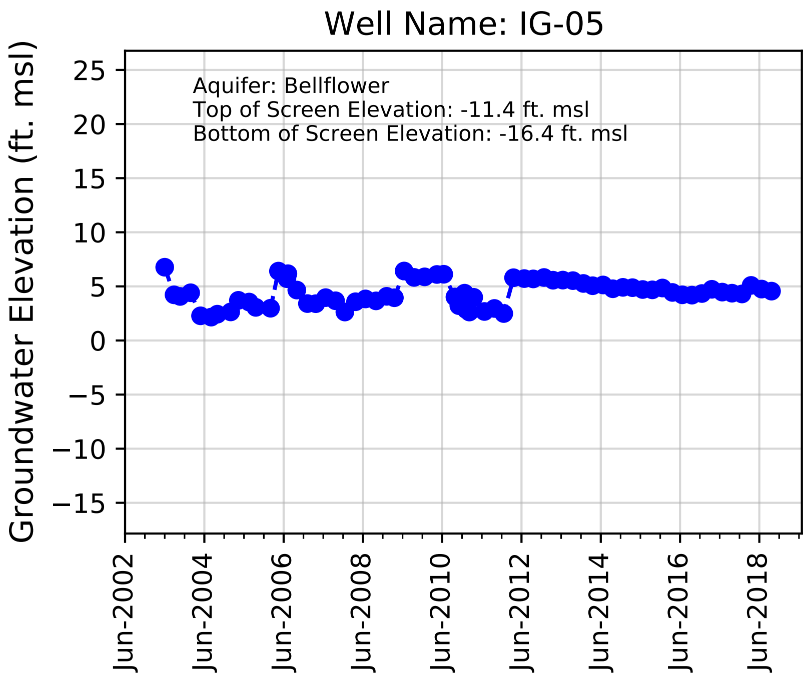

Well Name: HP-D940
Aquifer: Ballona
Top of Screen Elevation: -39.9 ft. msl
Bottom of Screen Elevation: -44.9 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
Jan-2010
Jan-2012
Jan-2014

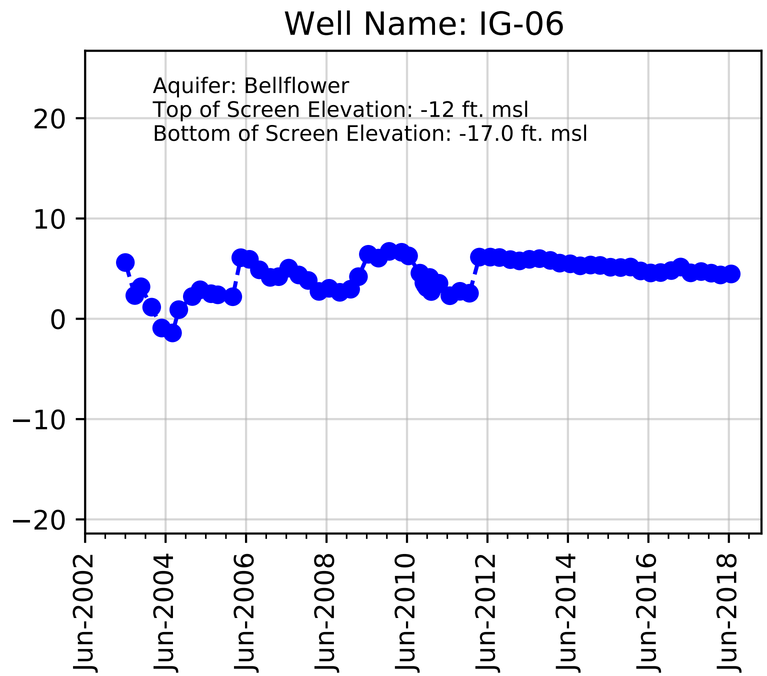

Well Name: HP-D1079
Aquifer: Ballona
Top of Screen Elevation: -25.3 ft. msl
Bottom of Screen Elevation: -35.3 ft. msl
20
10
0
−10
−20
Dec-2013
Dec-2015
Dec-2017
Dec-2019

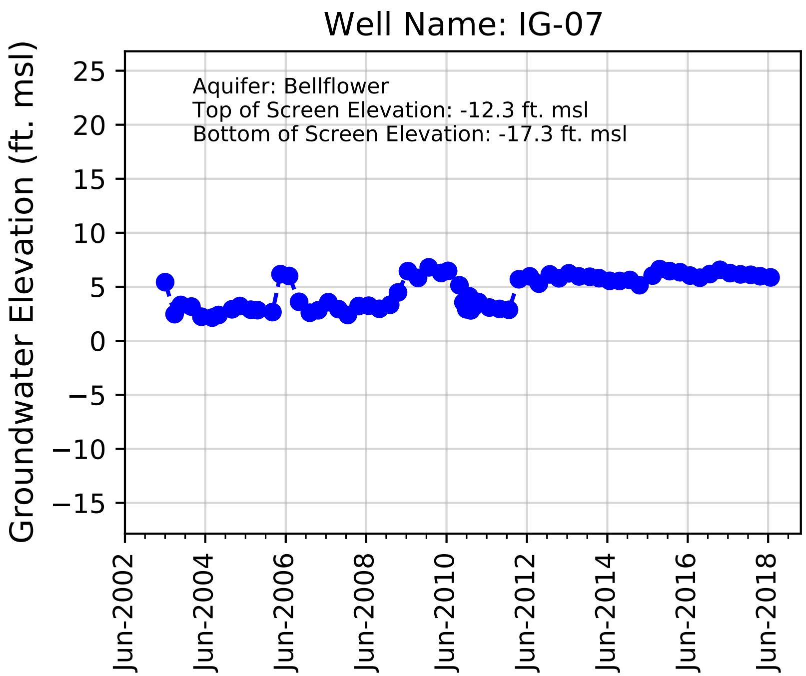

Well Name: HP-D1080
Aquifer: Ballona
Top of Screen Elevation: -26.3 ft. msl
Bottom of Screen Elevation: -36.3 ft. msl
Well Name: HP-D1081
Aquifer: Ballona
Top of Screen Elevation: -24.9 ft. msl
Bottom of Screen Elevation: -34.9 ft. msl
Well Name: IG-01
Aquifer: Bellflower
Top of Screen Elevation: -11.7 ft. msl
Bottom of Screen Elevation: -16.7 ft. msl
Well Name: IG-02
Aquifer: Bellflower
Top of Screen Elevation: -11.8 ft. msl
Bottom of Screen Elevation: -16.8 ft. msl
Groundwater Elevation (ft. msl)
Dec-2013
Dec-2015
Dec-2017
Dec-2019
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016

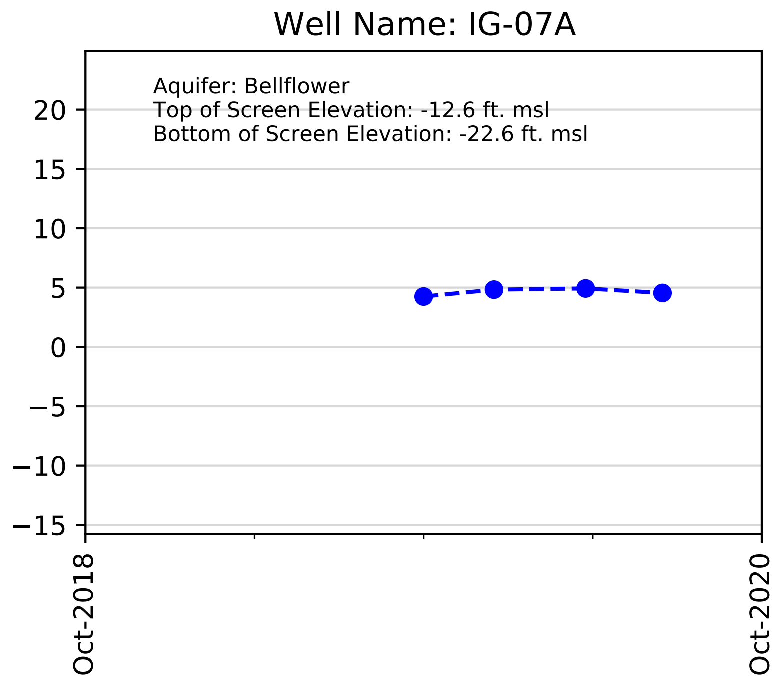

Well Name: IG-03
Aquifer: Bellflower
Top of Screen Elevation: -19.9 ft. msl
Bottom of Screen Elevation: -24.9 ft. msl
Groundwater Elevation (ft. msl)

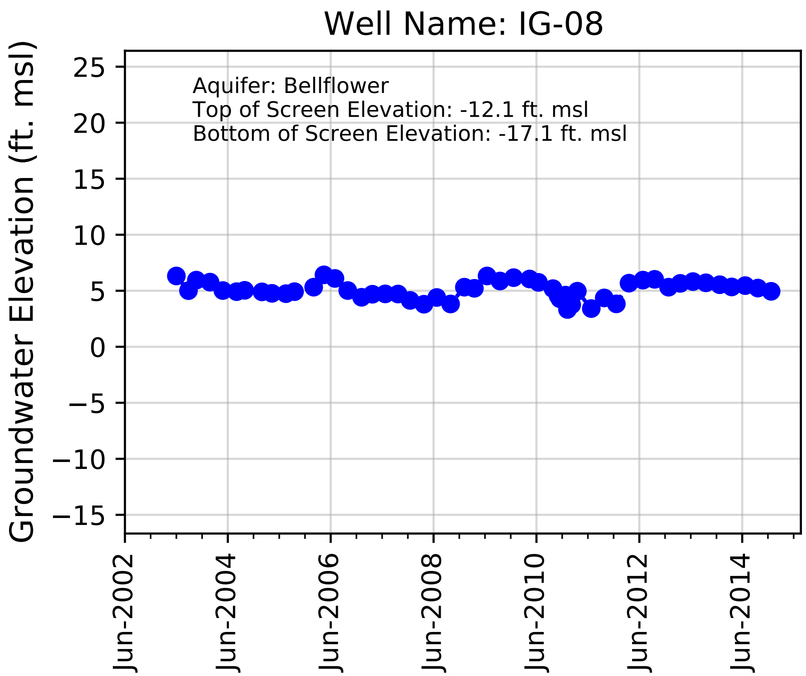

Well Name: IG-04
Aquifer: Bellflower
Top of Screen Elevation: -11.8 ft. msl
Bottom of Screen Elevation: -16.8 ft. msl

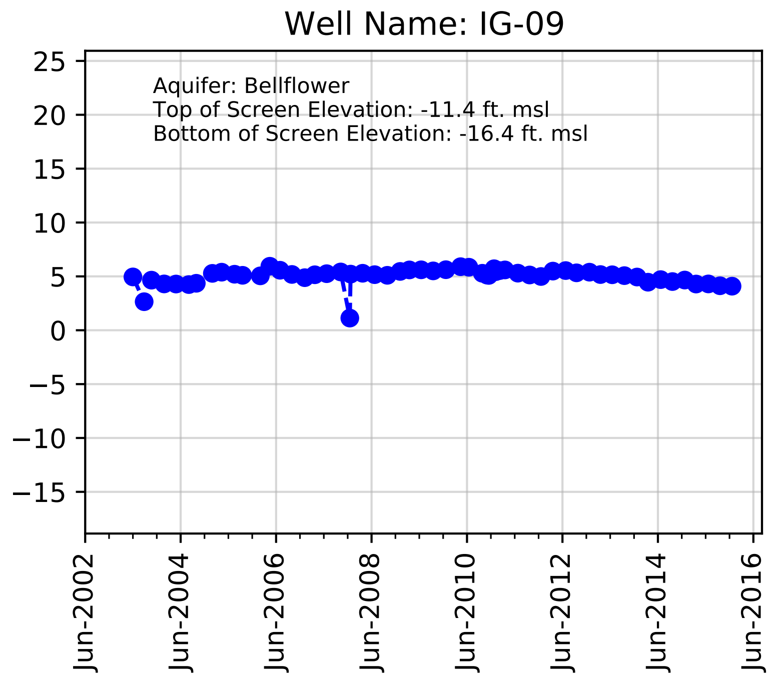

Well Name: IG-05
Aquifer: Bellflower
Top of Screen Elevation: -11.4 ft. msl
Bottom of Screen Elevation: -16.4 ft. msl
Groundwater Elevation (ft. msl)

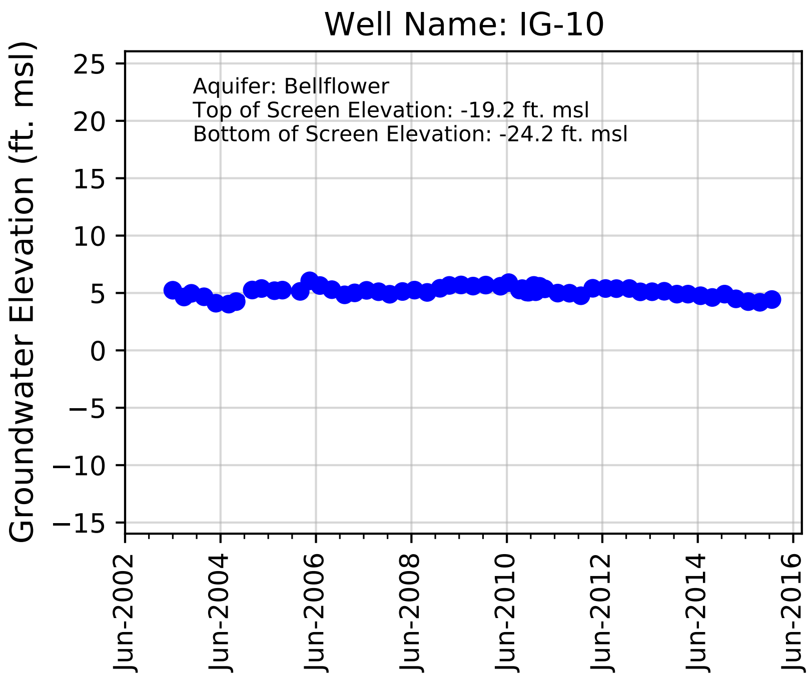

Well Name: IG-06
Aquifer: Bellflower
Top of Screen Elevation: -12 ft. msl
Bottom of Screen Elevation: -17.0 ft. msl

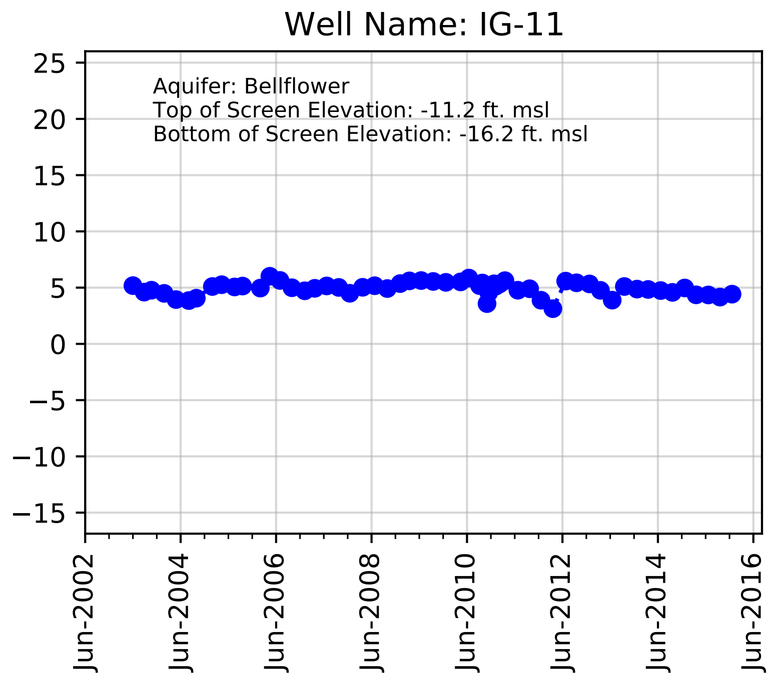

Well Name: IG-07
Aquifer: Bellflower
Top of Screen Elevation: -12.3 ft. msl
Bottom of Screen Elevation: -17.3 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016
Jun-2018

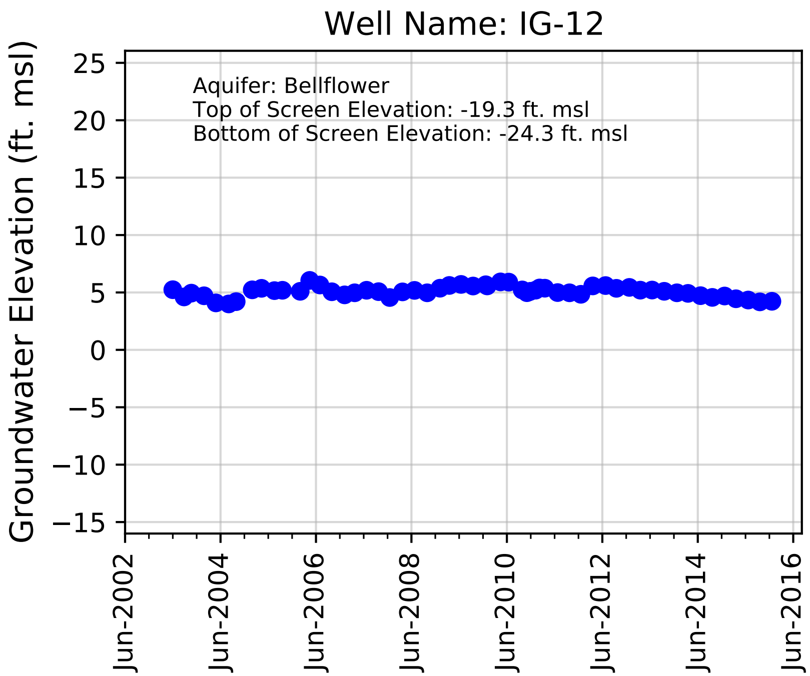

Well Name: IG-07A
Aquifer: Bellflower
Top of Screen Elevation: -12.6 ft. msl
Bottom of Screen Elevation: -22.6 ft. msl
20
15
10
5
0
−5
−10
−15
Oct-2018
Oct-2020

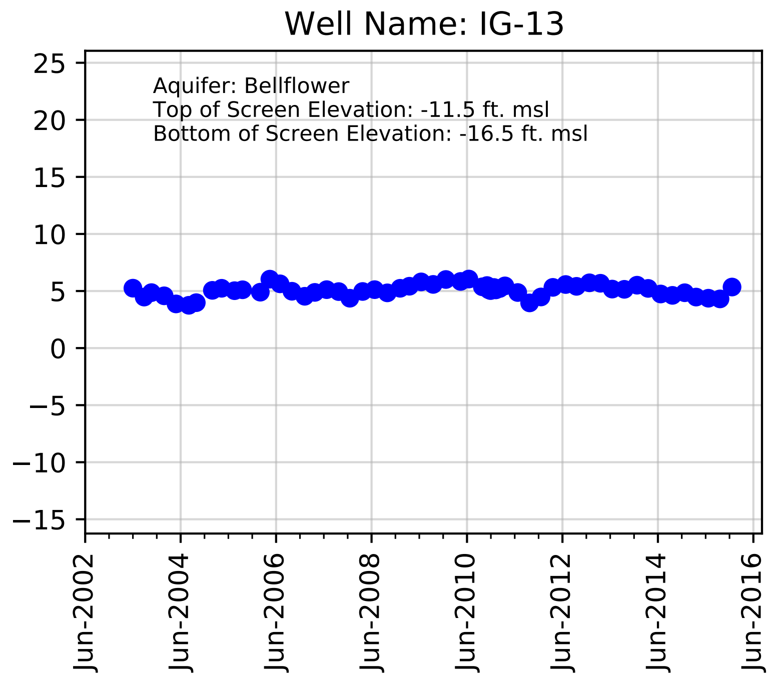

Well Name: IG-08
Aquifer: Bellflower
Top of Screen Elevation: -12.1 ft. msl
Bottom of Screen Elevation: -17.1 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014

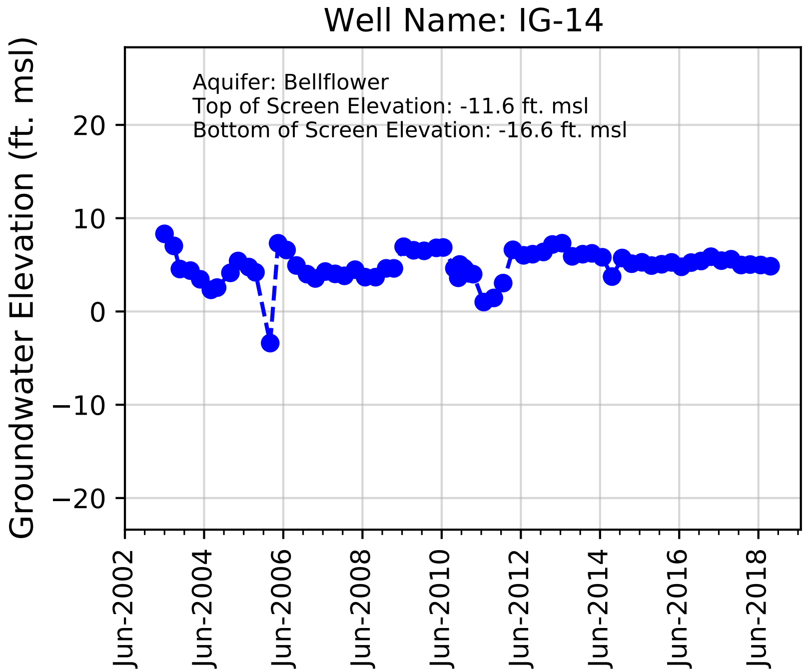

Well Name: IG-09
Aquifer: Bellflower
Top of Screen Elevation: -11.4 ft. msl
Bottom of Screen Elevation: -16.4 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016

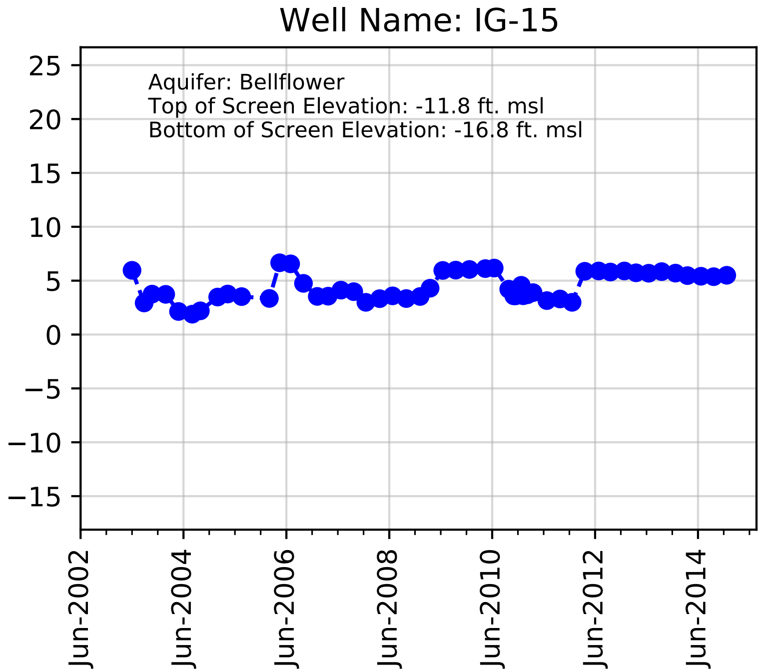

Well Name: IG-10
Aquifer: Bellflower
Top of Screen Elevation: -19.2 ft. msl
Bottom of Screen Elevation: -24.2 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016

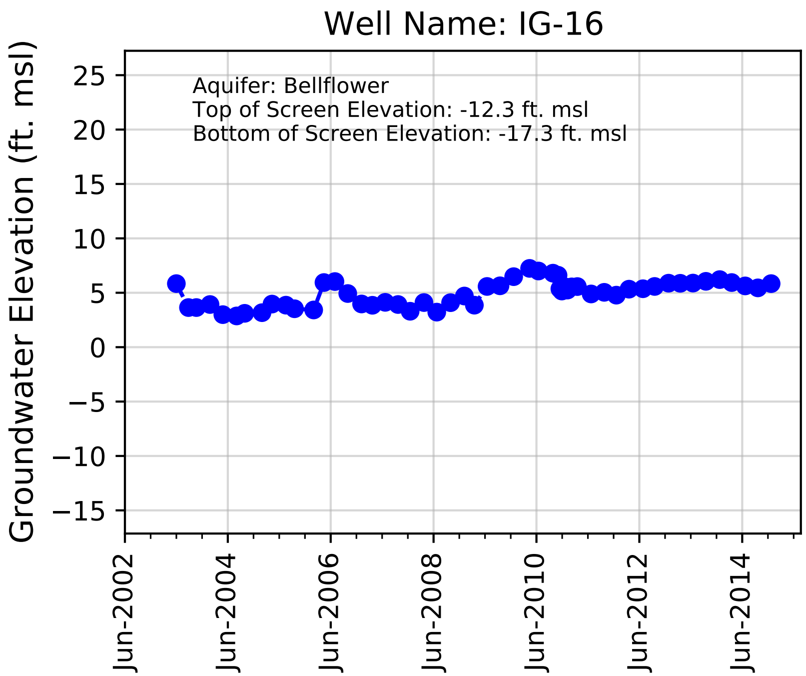

Well Name: IG-11
Aquifer: Bellflower
Top of Screen Elevation: -11.2 ft. msl
Bottom of Screen Elevation: -16.2 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016

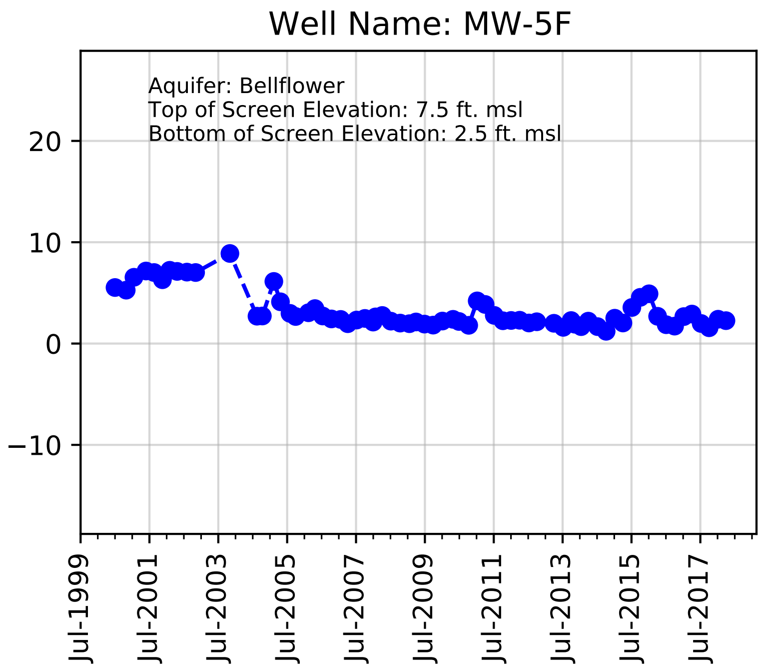

Well Name: IG-12
Aquifer: Bellflower
Top of Screen Elevation: -19.3 ft. msl
Bottom of Screen Elevation: -24.3 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016

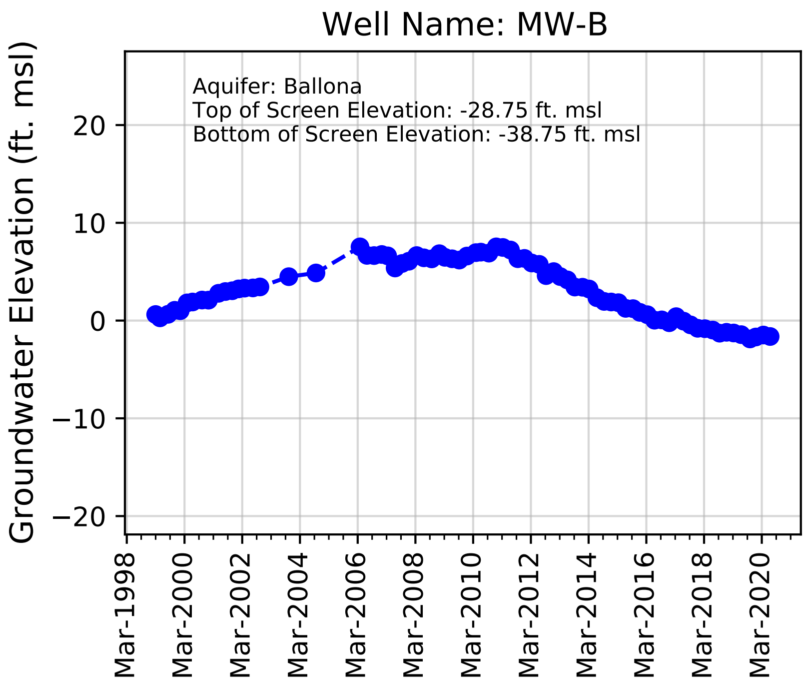

Well Name: IG-13
Aquifer: Bellflower
Top of Screen Elevation: -11.5 ft. msl
Bottom of Screen Elevation: -16.5 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016

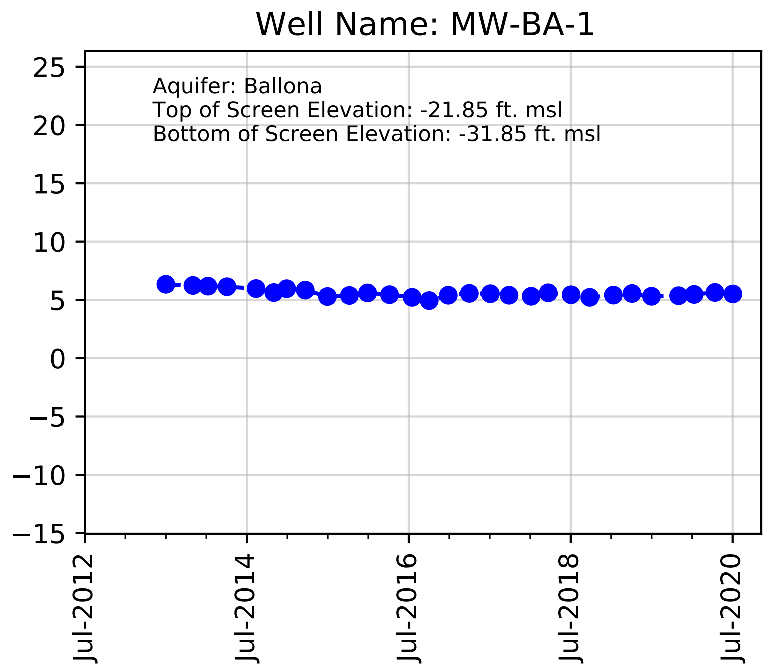

Well Name: IG-14
Aquifer: Bellflower
Top of Screen Elevation: -11.6 ft. msl
Bottom of Screen Elevation: -16.6 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014
Jun-2016
Jun-2018

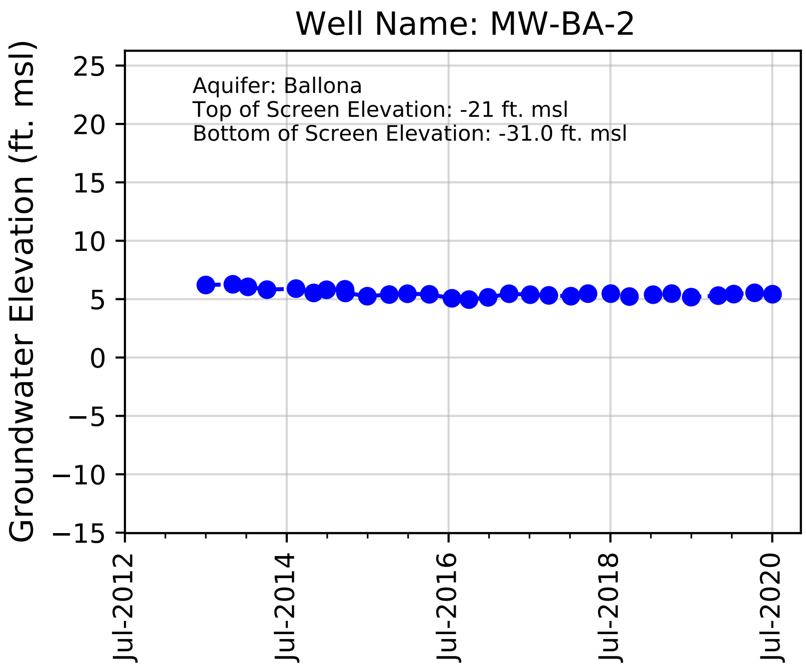

Well Name: IG-15
Aquifer: Bellflower
Top of Screen Elevation: -11.8 ft. msl
Bottom of Screen Elevation: -16.8 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014

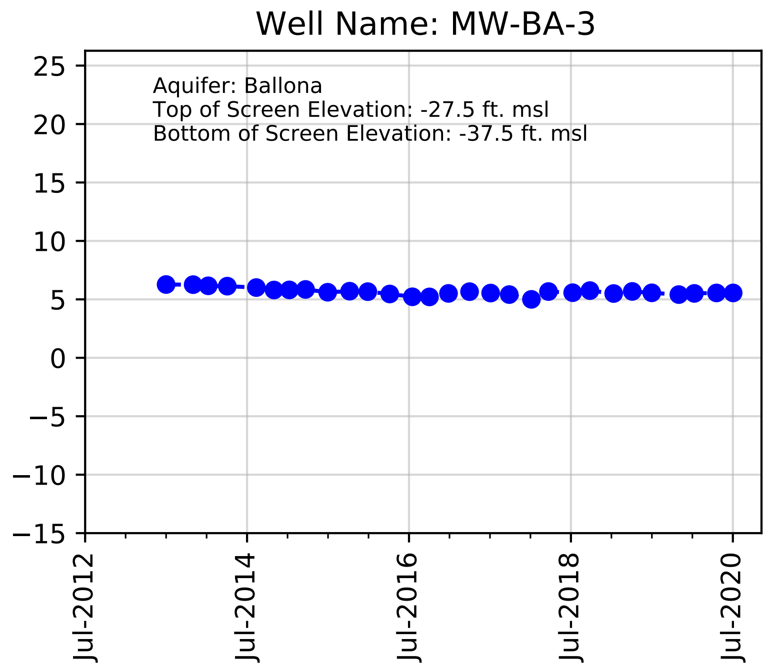

Well Name: IG-16
Aquifer: Bellflower
Top of Screen Elevation: -12.3 ft. msl
Bottom of Screen Elevation: -17.3 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014

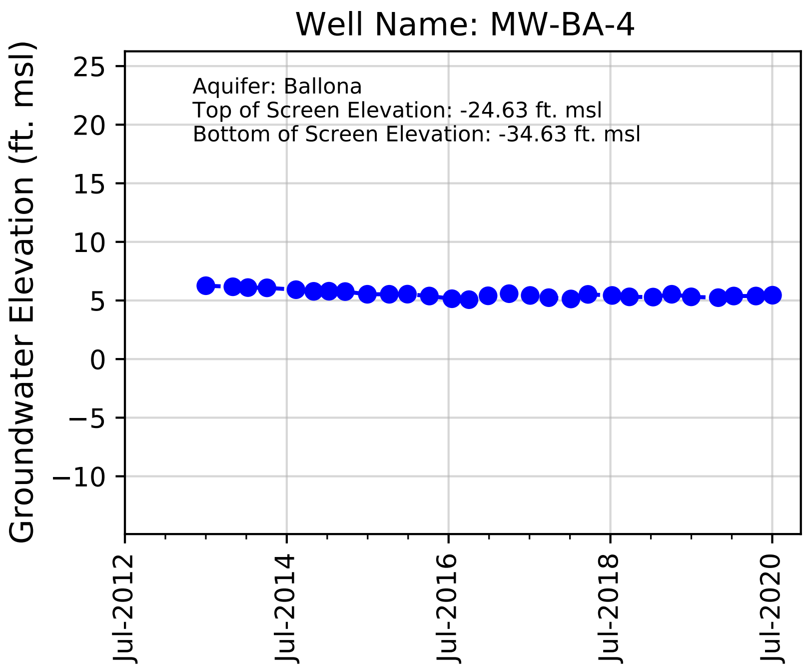

Well Name: MW-5F
Aquifer: Bellflower
Top of Screen Elevation: 7.5 ft. msl
Bottom of Screen Elevation: 2.5 ft. msl
20
10
0
−10
Jul-1999
Jul-2001
Jul-2003
Jul-2005
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017

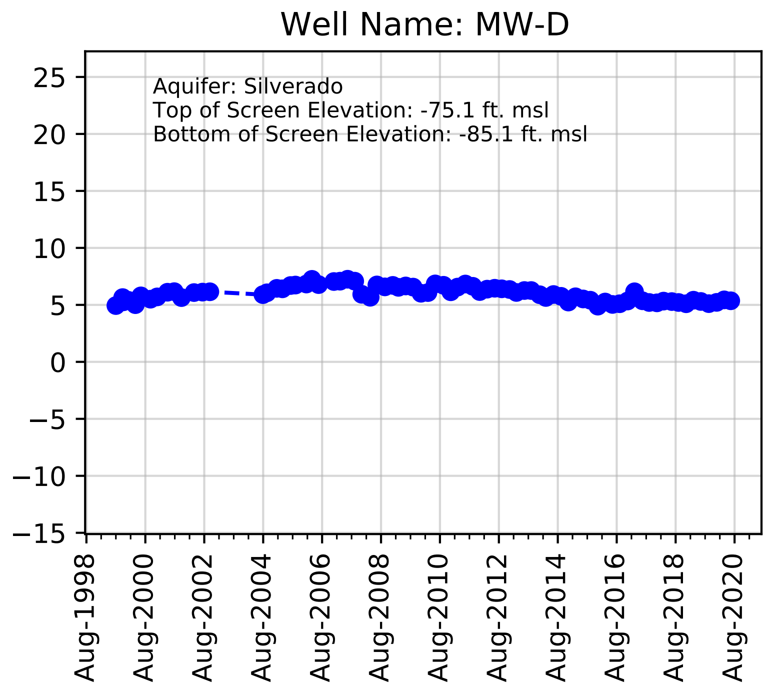

Well Name: MW-B
Aquifer: Ballona
Top of Screen Elevation: -28.75 ft. msl
Bottom of Screen Elevation: -38.75 ft. msl
Groundwater Elevation (ft. msl)

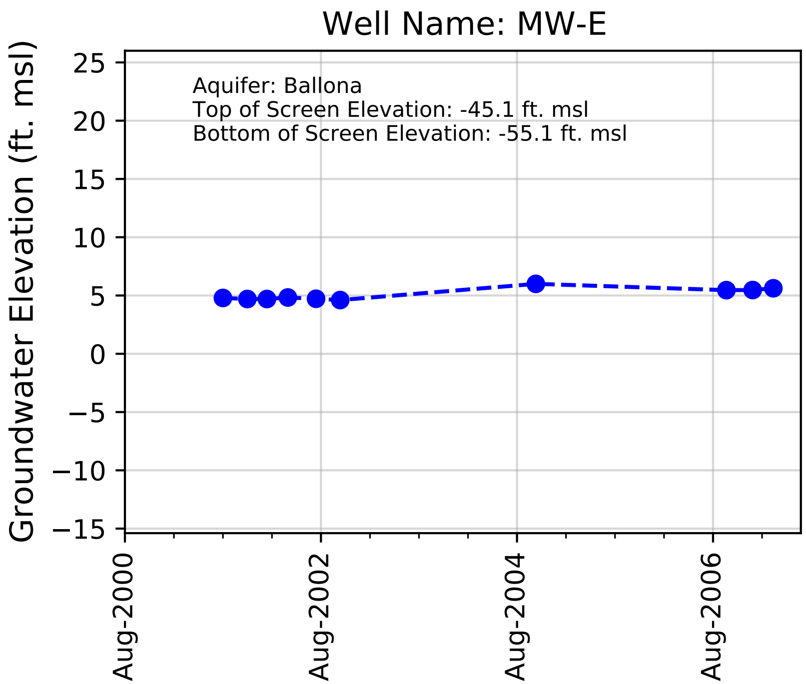

Well Name: MW-BA-1
Aquifer: Ballona
Top of Screen Elevation: -21.85 ft. msl
Bottom of Screen Elevation: -31.85 ft. msl

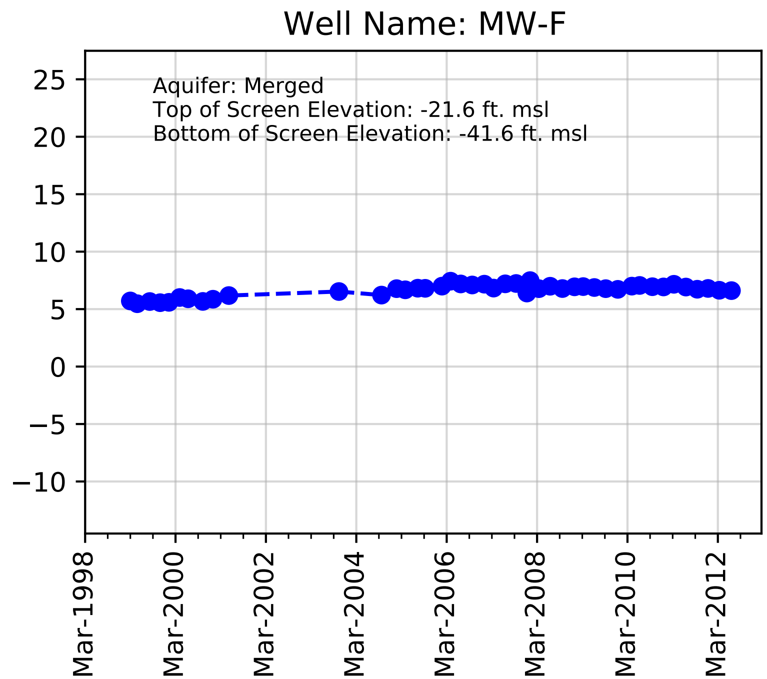

Well Name: MW-BA-2
Aquifer: Ballona
Top of Screen Elevation: -21 ft. msl
Bottom of Screen Elevation: -31.0 ft. msl
Groundwater Elevation (ft. msl)

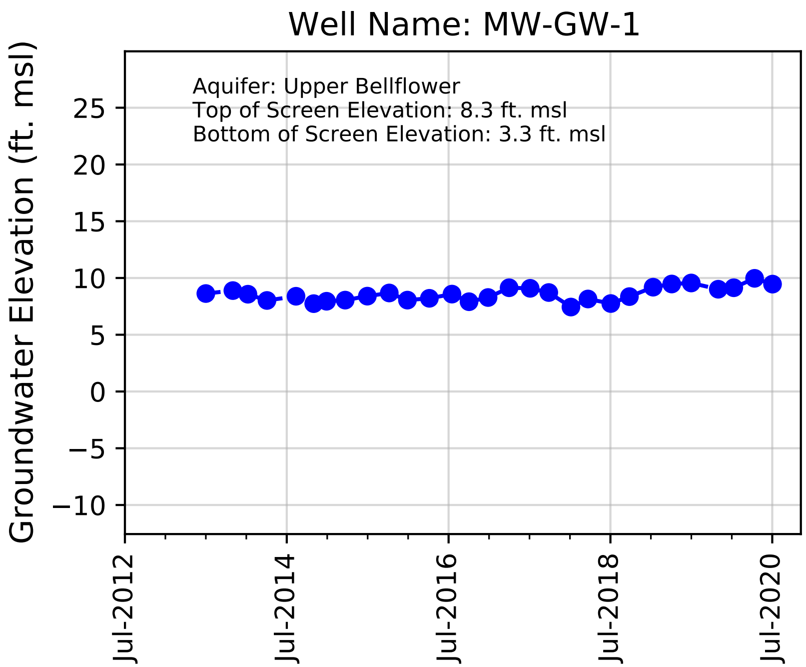

Well Name: MW-BA-3
Aquifer: Ballona
Top of Screen Elevation: -27.5 ft. msl
Bottom of Screen Elevation: -37.5 ft. msl

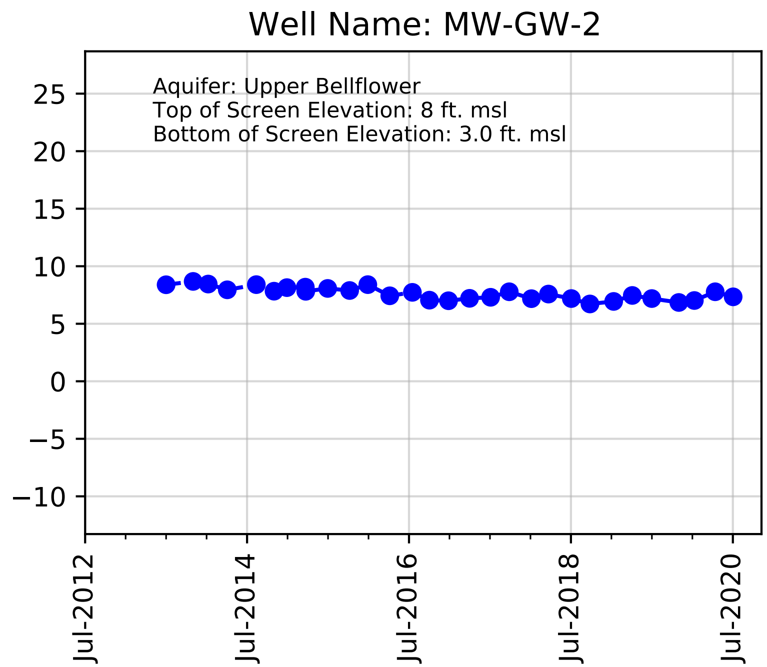

Well Name: MW-BA-4
Aquifer: Ballona
Top of Screen Elevation: -24.63 ft. msl
Bottom of Screen Elevation: -34.63 ft. msl
Groundwater Elevation (ft. msl)

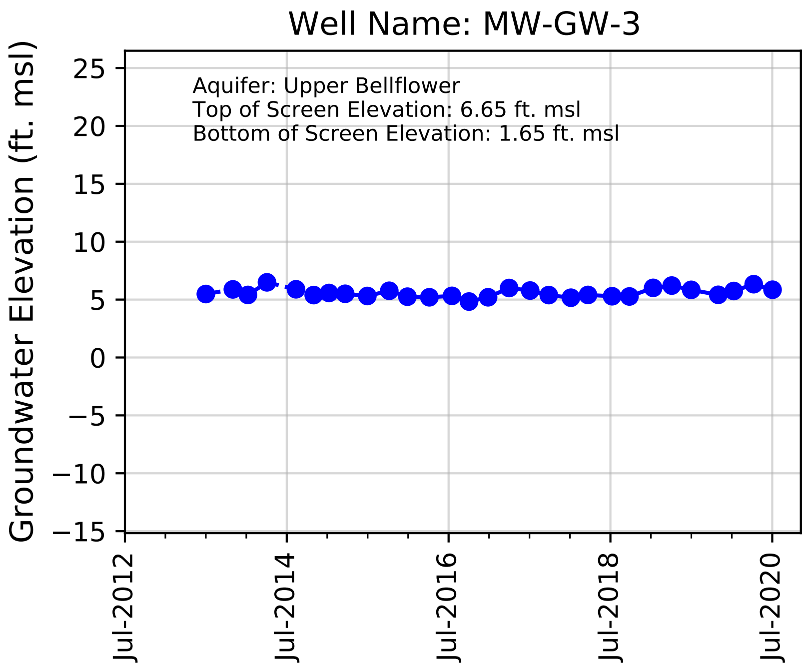

Well Name: MW-D
Aquifer: Silverado
Top of Screen Elevation: -75.1 ft. msl
Bottom of Screen Elevation: -85.1 ft. msl

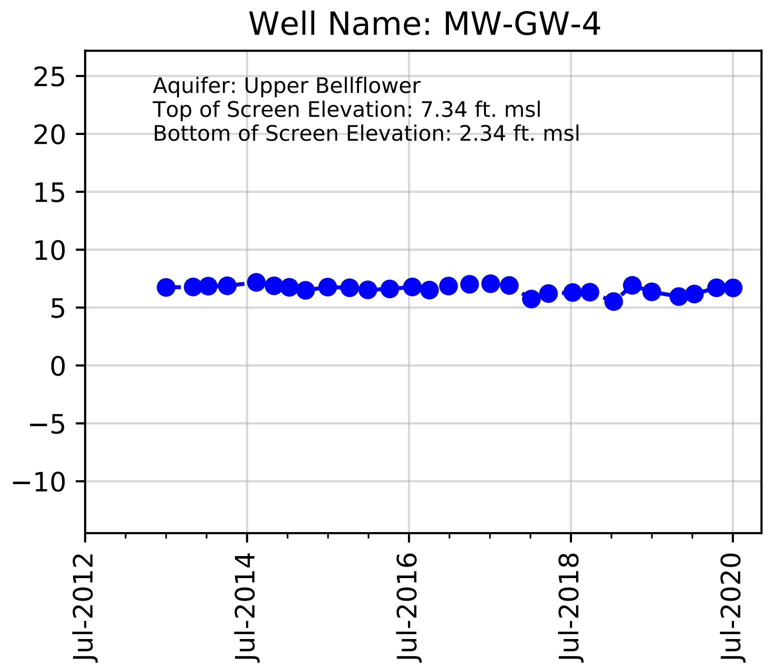

Well Name: MW-E
Aquifer: Ballona
Top of Screen Elevation: -45.1 ft. msl
Bottom of Screen Elevation: -55.1 ft. msl
Groundwater Elevation (ft. msl)

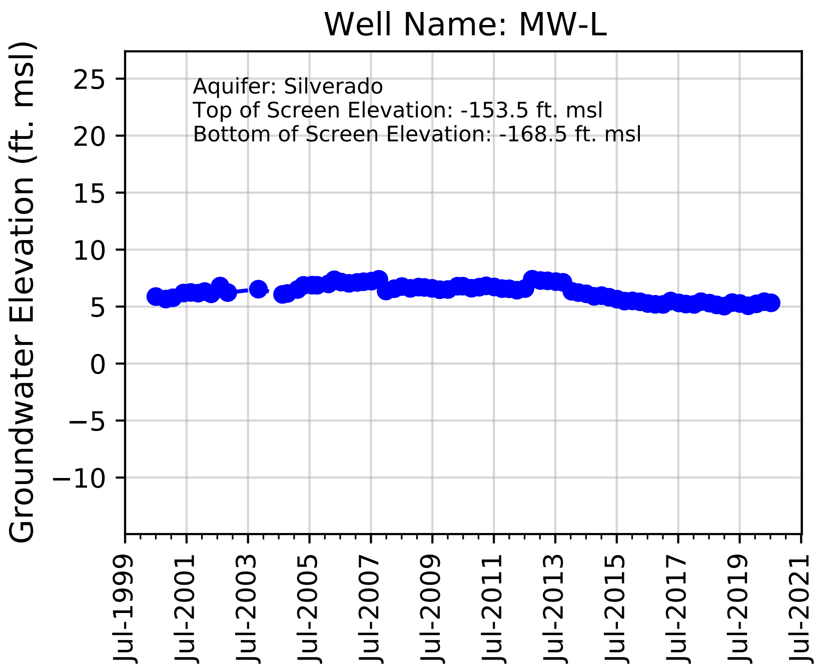

Well Name: MW-F
Aquifer: Merged
Top of Screen Elevation: -21.6 ft. msl
Bottom of Screen Elevation: -41.6 ft. msl

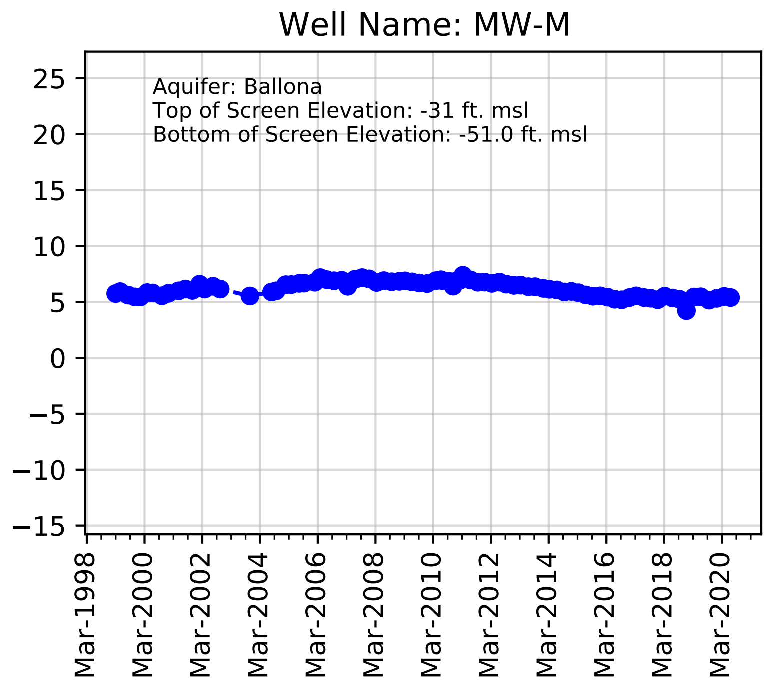

Well Name: MW-GW-1
Aquifer: Upper Bellflower
Top of Screen Elevation: 8.3 ft. msl
Bottom of Screen Elevation: 3.3 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

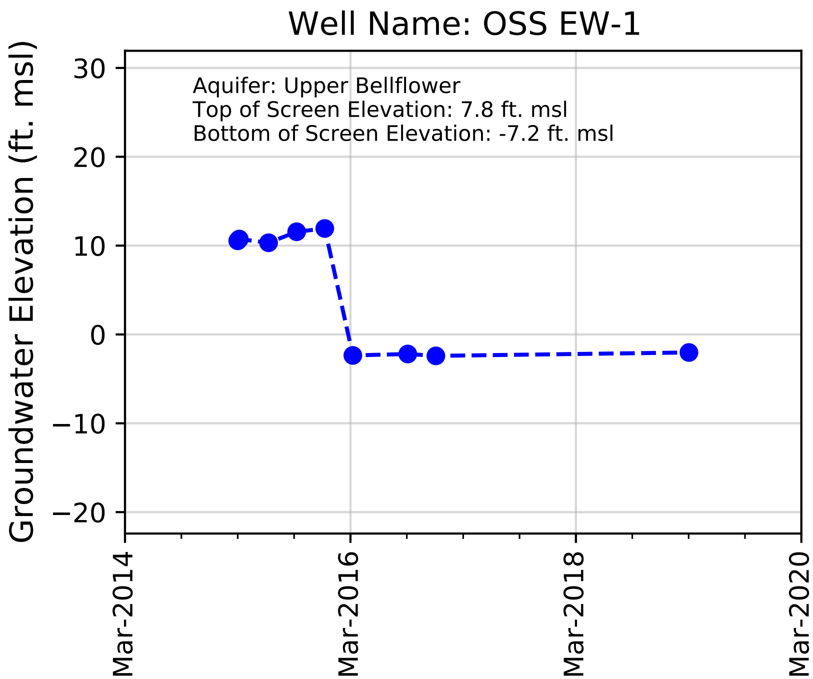

Well Name: MW-GW-2
Aquifer: Upper Bellflower
Top of Screen Elevation: 8 ft. msl
Bottom of Screen Elevation: 3.0 ft. msl
25
20
15
10
5
0
−5
−10
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

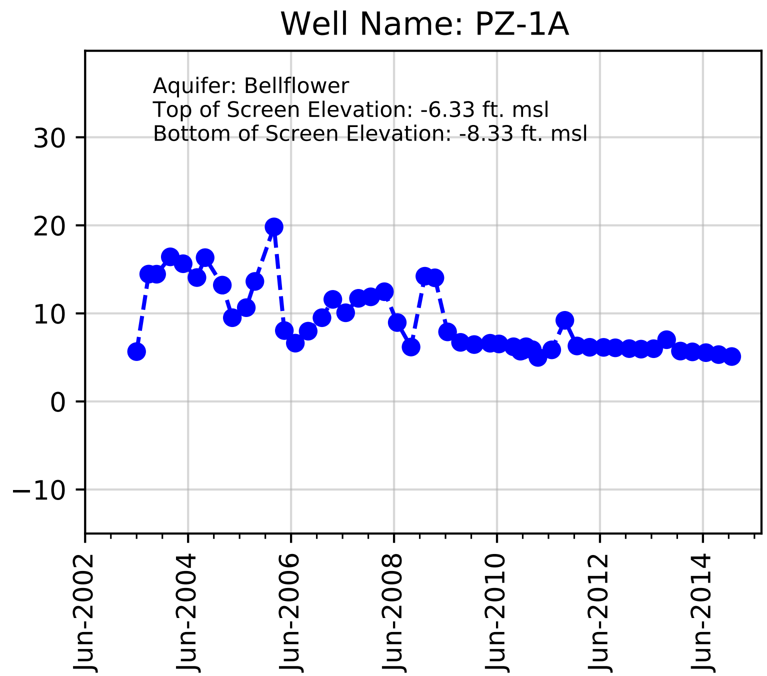

Well Name: MW-GW-3
Aquifer: Upper Bellflower
Top of Screen Elevation: 6.65 ft. msl
Bottom of Screen Elevation: 1.65 ft. msl
Groundwater Elevation (ft. msl)
25
20
15
10
5
0
−5
−10
−15
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

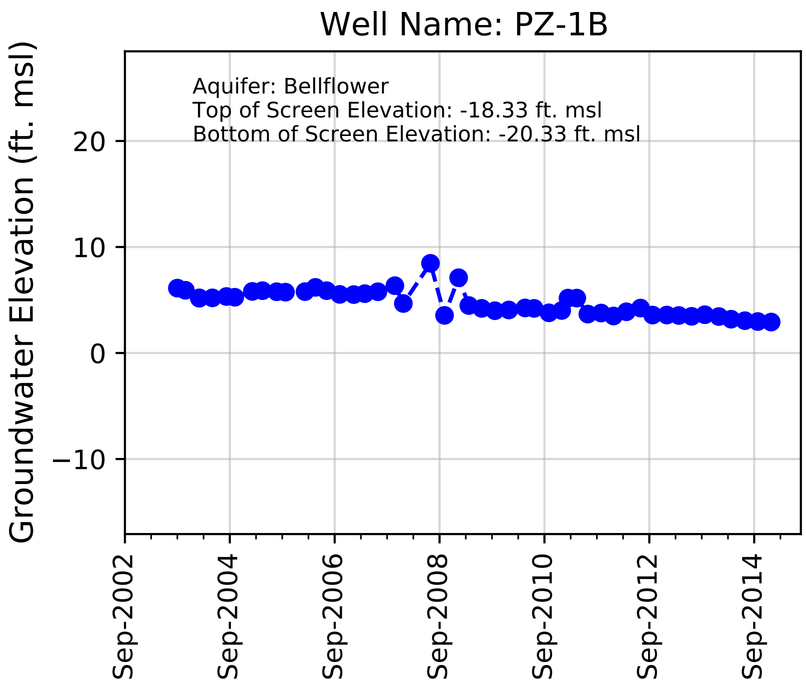

Well Name: MW-GW-4
Aquifer: Upper Bellflower
Top of Screen Elevation: 7.34 ft. msl
Bottom of Screen Elevation: 2.34 ft. msl
25
20
15
10
5
0
−5
−10
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

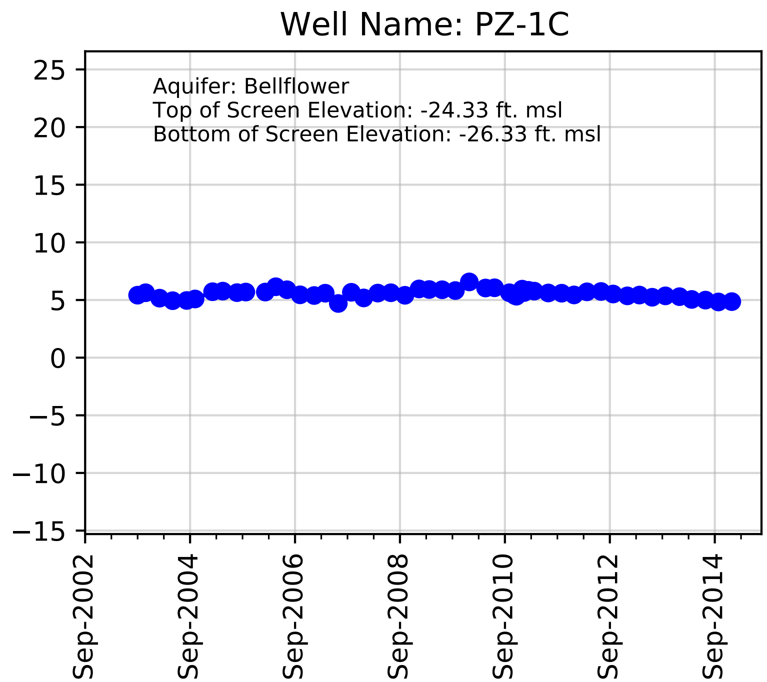

Well Name: MW-L
Aquifer: Silverado
Top of Screen Elevation: -153.5 ft. msl
Bottom of Screen Elevation: -168.5 ft. msl
Groundwater Elevation (ft. msl)

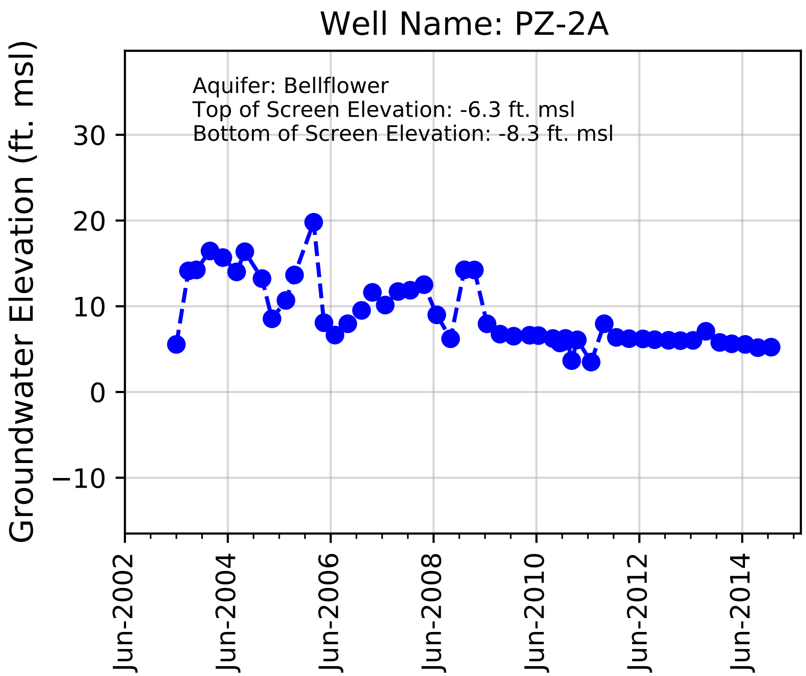

Well Name: MW-M
Aquifer: Ballona
Top of Screen Elevation: -31 ft. msl
Bottom of Screen Elevation: -51.0 ft. msl

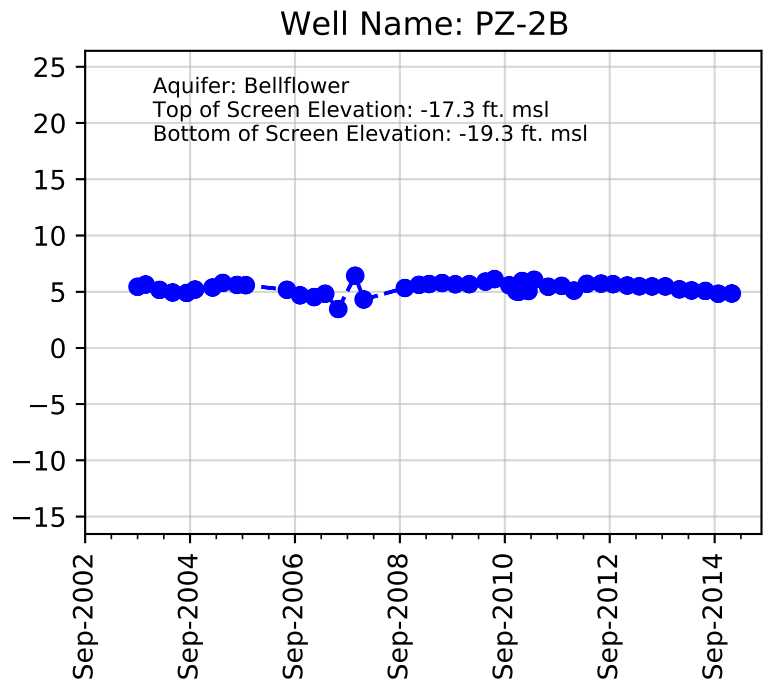

Well Name: OSS EW-1
Aquifer: Upper Bellflower
Top of Screen Elevation: 7.8 ft. msl
Bottom of Screen Elevation: -7.2 ft. msl
Groundwater Elevation (ft. msl)

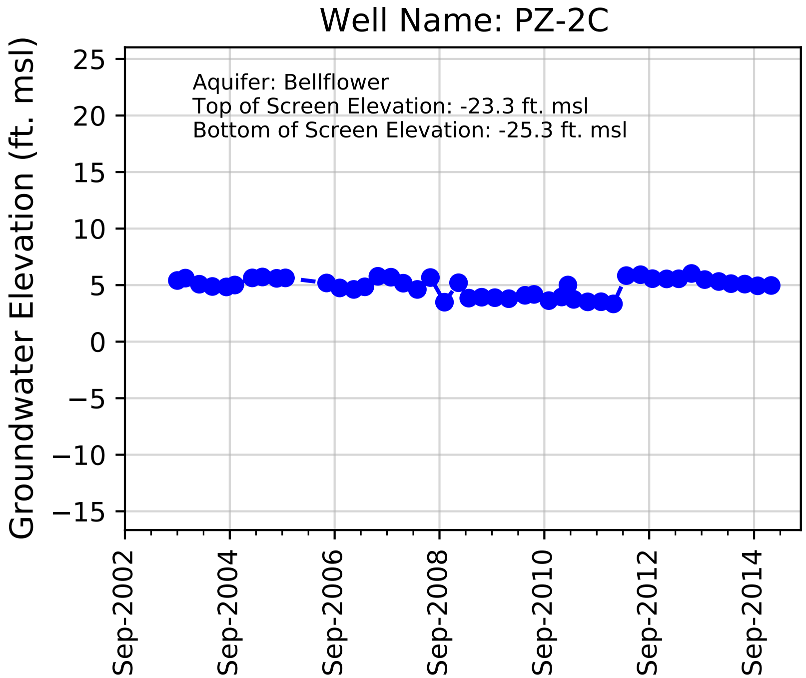

Well Name: PZ-1A
Aquifer: Bellflower
Top of Screen Elevation: -6.33 ft. msl
Bottom of Screen Elevation: -8.33 ft. msl

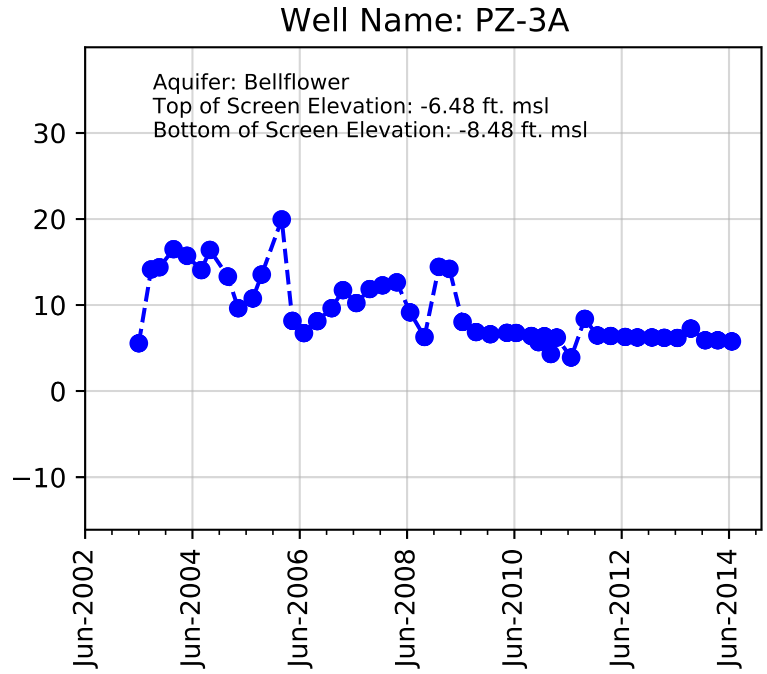

Well Name: PZ-1B
Aquifer: Bellflower
Top of Screen Elevation: -18.33 ft. msl
Bottom of Screen Elevation: -20.33 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Sep-2002
Sep-2004
Sep-2006
Sep-2008
Sep-2010
Sep-2012
Sep-2014

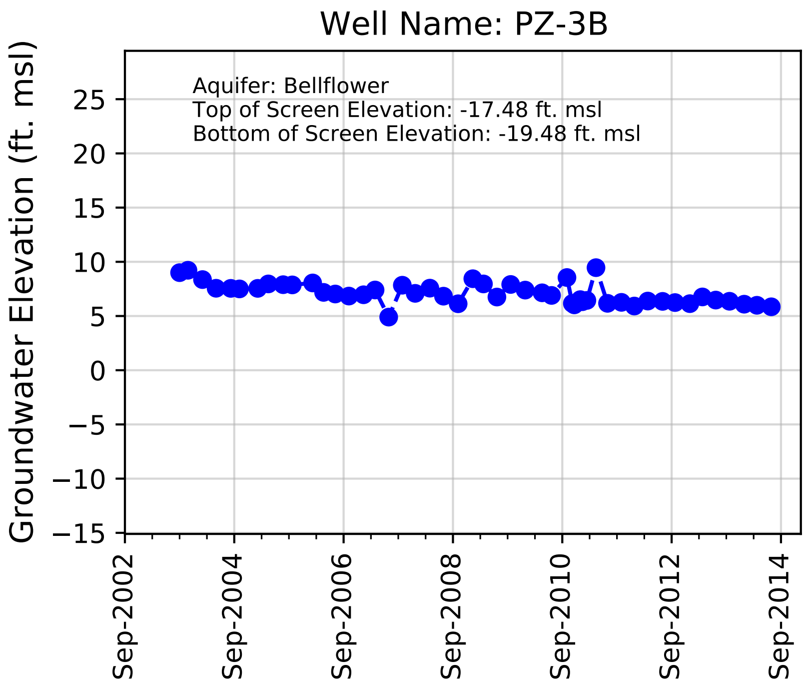

Well Name: PZ-1C
Aquifer: Bellflower
Top of Screen Elevation: -24.33 ft. msl
Bottom of Screen Elevation: -26.33 ft. msl
25
20
15
10
5
0
−5
−10
−15
Sep-2002
Sep-2004
Sep-2006
Sep-2008
Sep-2010
Sep-2012
Sep-2014

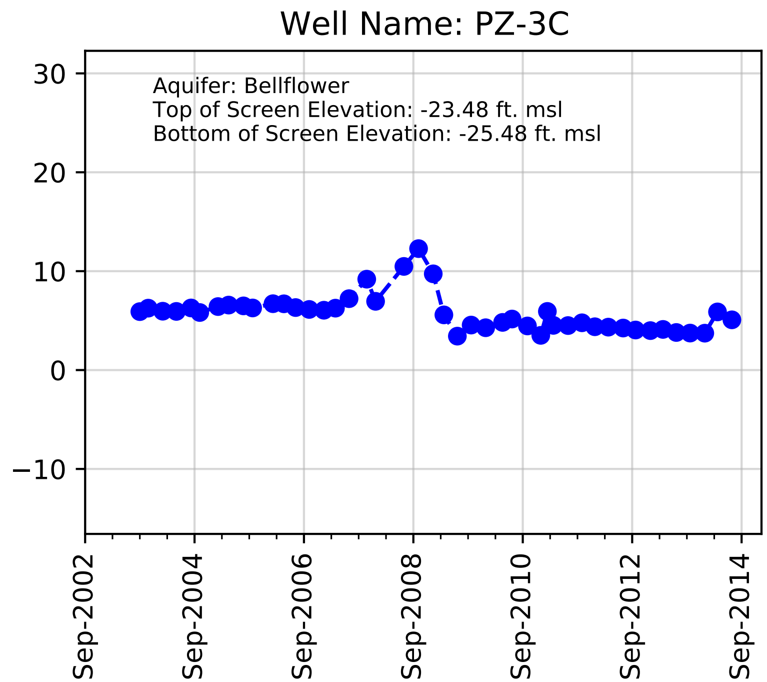

Well Name: PZ-2A
Aquifer: Bellflower
Top of Screen Elevation: -6.3 ft. msl
Bottom of Screen Elevation: -8.3 ft. msl
Groundwater Elevation (ft. msl)
30
20
10
0
−10
Jun-2002
Jun-2004
Jun-2006
Jun-2008
Jun-2010
Jun-2012
Jun-2014


Well Name: PZ-2B
Aquifer: Bellflower
Top of Screen Elevation: -17.3 ft. msl
Bottom of Screen Elevation: -19.3 ft. msl
25
20
15
10
5
0
−5
−10
−15
Sep-2002
Sep-2004
Sep-2006
Sep-2008
Sep-2010
Sep-2012
Sep-2014

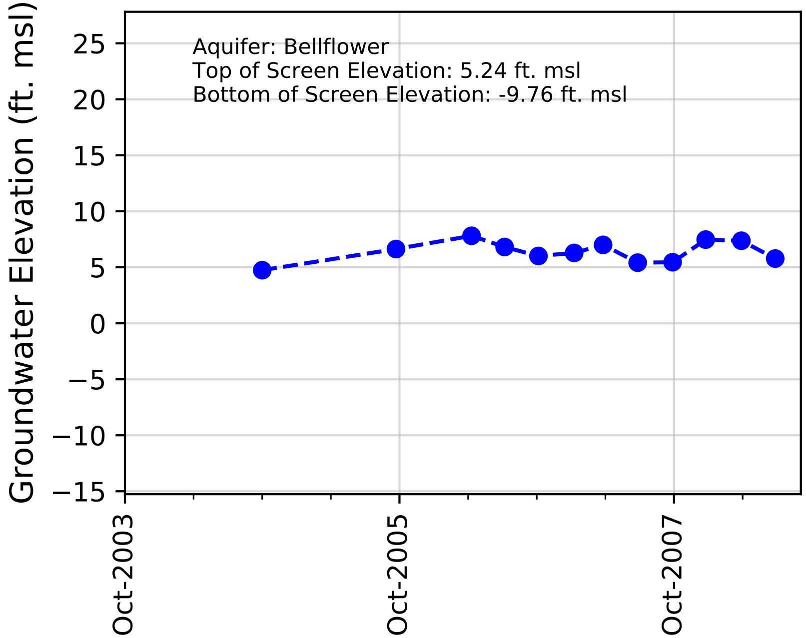

Well Name: PZ-2C
Aquifer: Bellflower
Top of Screen Elevation: -23.3 ft. msl
Bottom of Screen Elevation: -25.3 ft. msl
Groundwater Elevation (ft. msl)


Well Name: PZ-3A
Aquifer: Bellflower
Top of Screen Elevation: -6.48 ft. msl
Bottom of Screen Elevation: -8.48 ft. msl

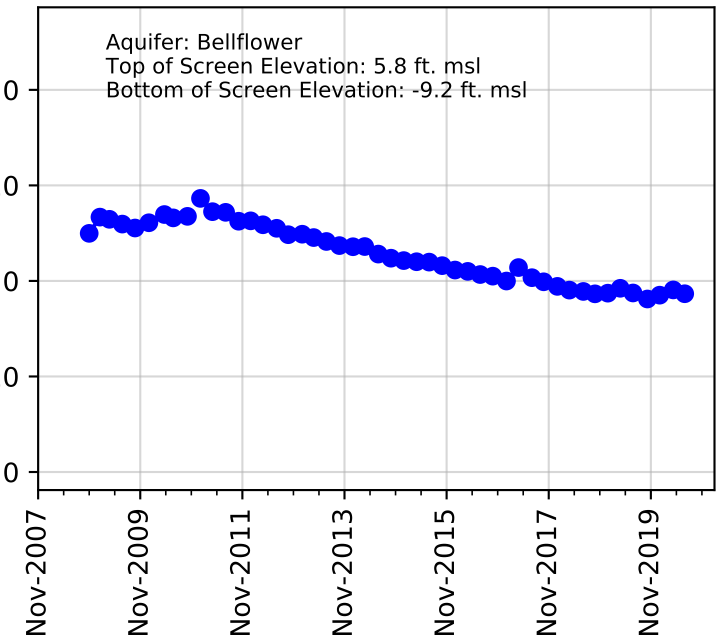

Well Name: PZ-3B
Aquifer: Bellflower
Top of Screen Elevation: -17.48 ft. msl
Bottom of Screen Elevation: -19.48 ft. msl
Groundwater Elevation (ft. msl)


Well Name: PZ-3C
Aquifer: Bellflower
Top of Screen Elevation: -23.48 ft. msl
Bottom of Screen Elevation: -25.48 ft. msl

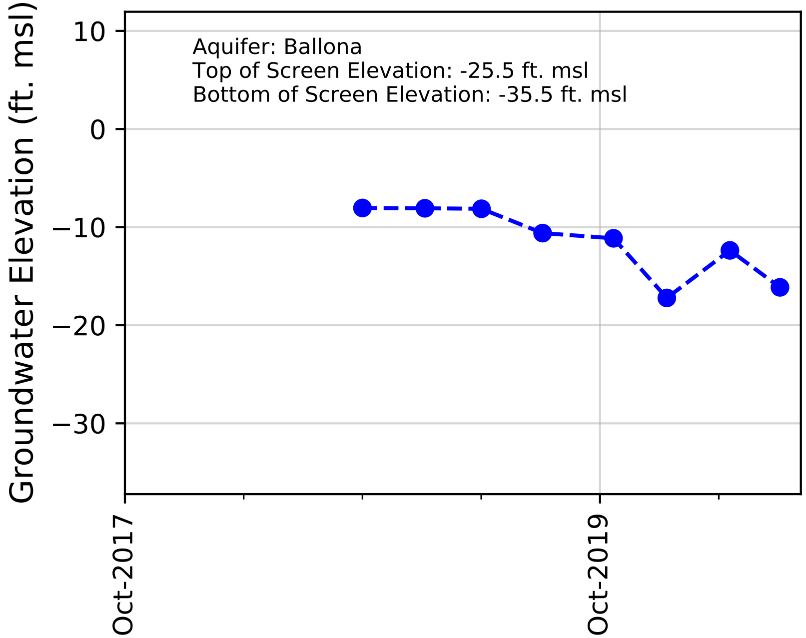
Well Name: SA1-1be



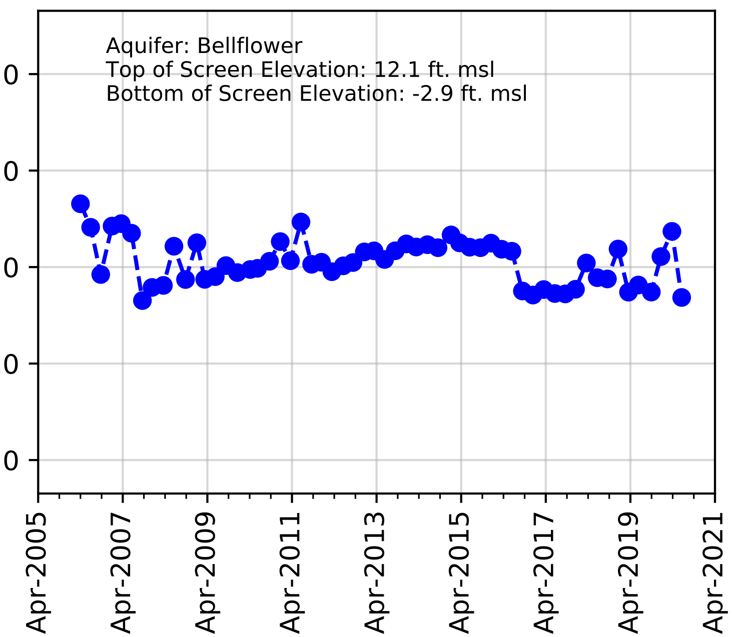
Well Name: SA1-1Abe

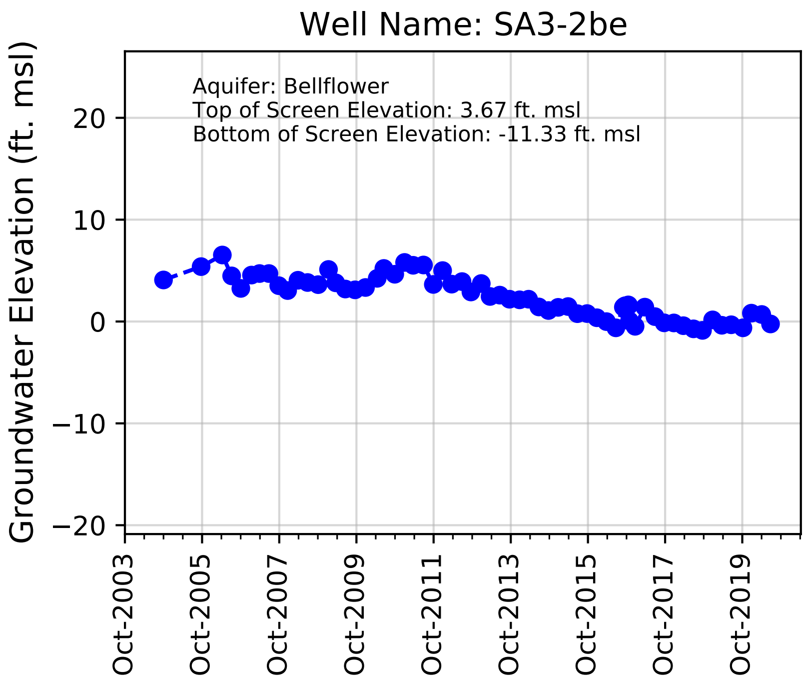


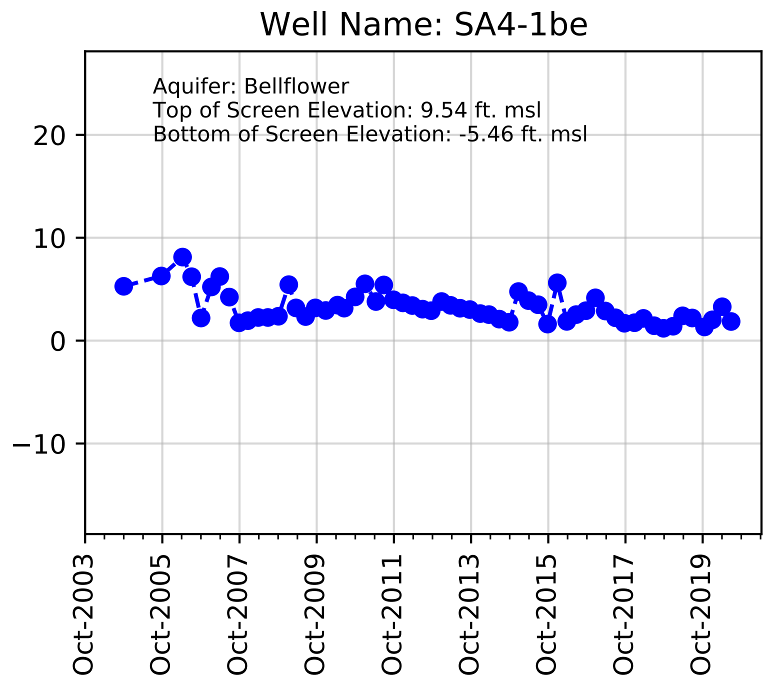
Well Name: SA1-RW2BA

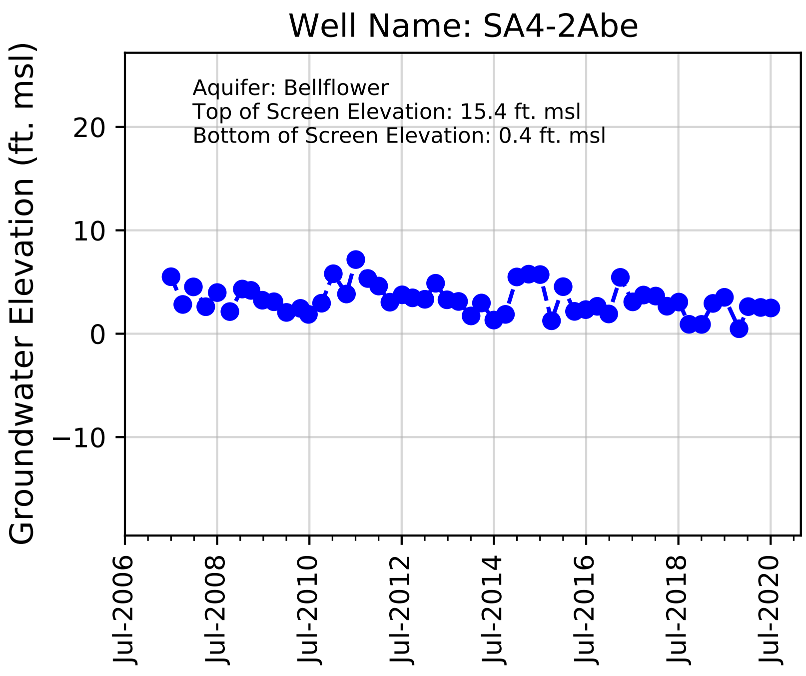


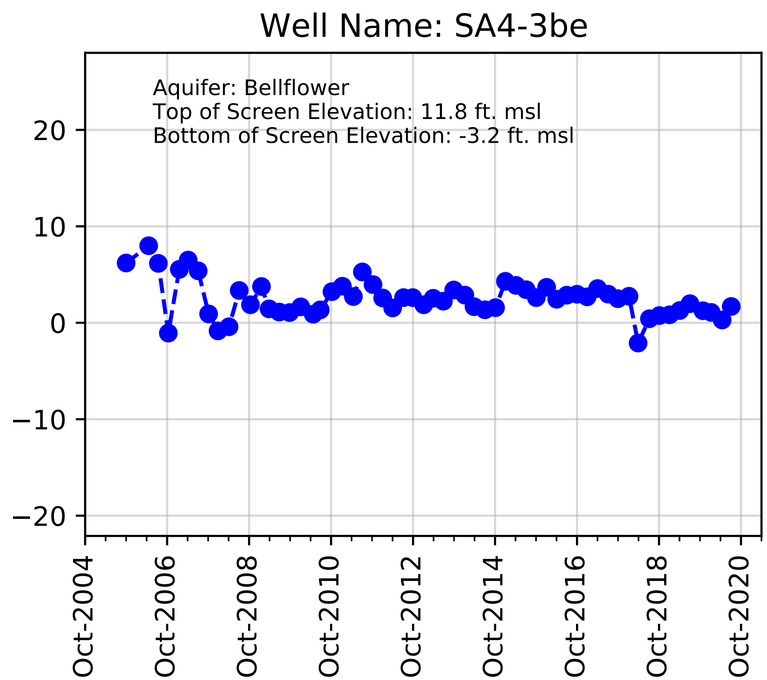
Well Name: SA2-1be

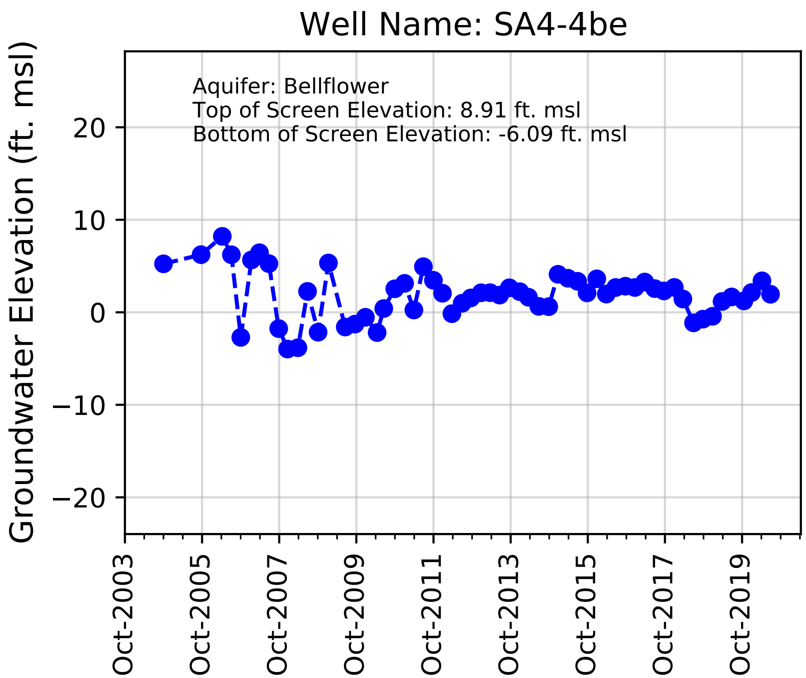


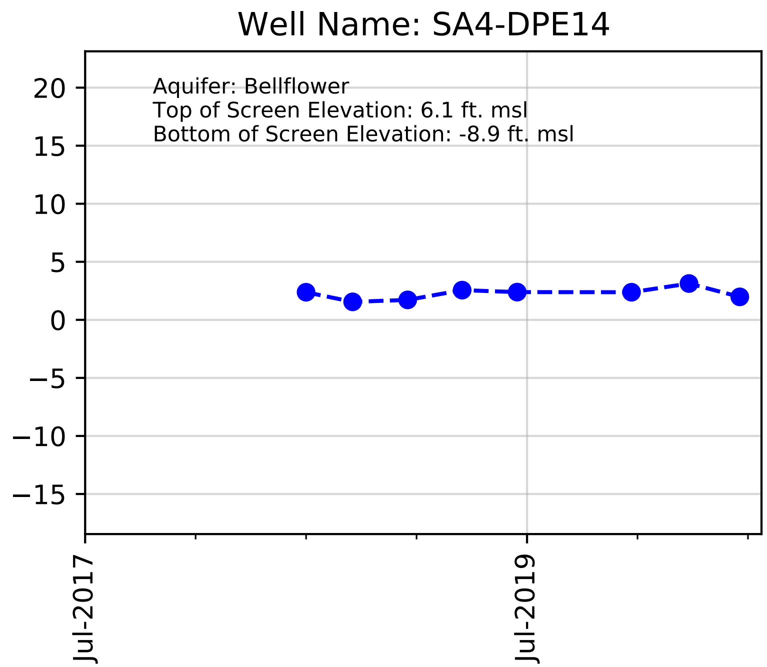

Well Name: SA3-2be
Aquifer: Bellflower
Top of Screen Elevation: 3.67 ft. msl
Bottom of Screen Elevation: -11.33 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Oct-2003
Oct-2005
Oct-2007
Oct-2009
Oct-2011
Oct-2013
Oct-2015
Oct-2017
Oct-2019

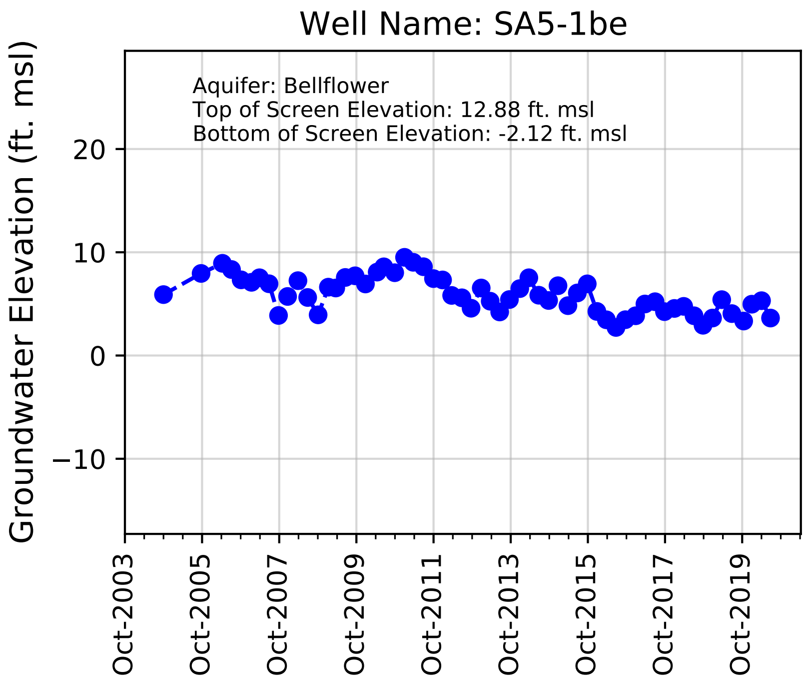

Well Name: SA4-1be
Aquifer: Bellflower
Top of Screen Elevation: 9.54 ft. msl
Bottom of Screen Elevation: -5.46 ft. msl
20
10
0
−10
Oct-2003
Oct-2005
Oct-2007
Oct-2009
Oct-2011
Oct-2013
Oct-2015
Oct-2017
Oct-2019

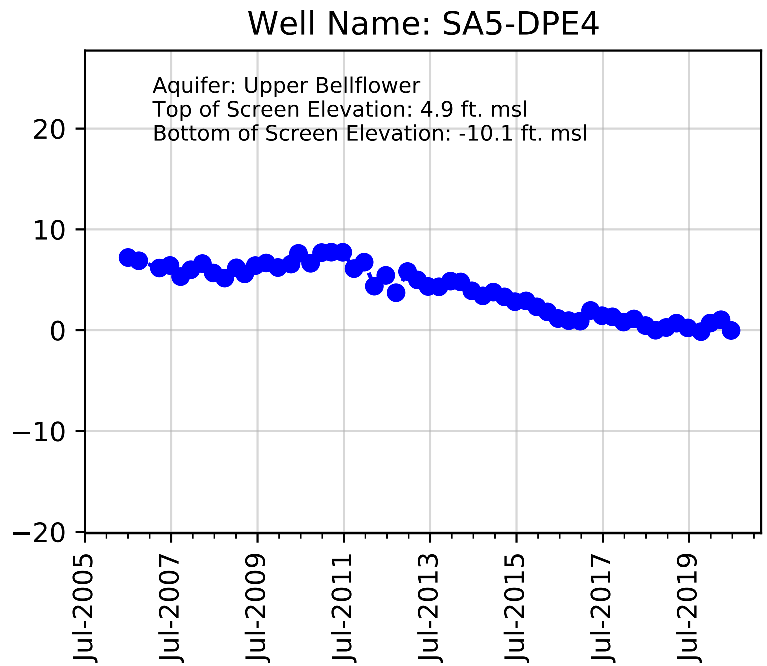

Well Name: SA4-2Abe
Aquifer: Bellflower
Top of Screen Elevation: 15.4 ft. msl
Bottom of Screen Elevation: 0.4 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Jul-2006
Jul-2008
Jul-2010
Jul-2012
Jul-2014
Jul-2016
Jul-2018
Jul-2020

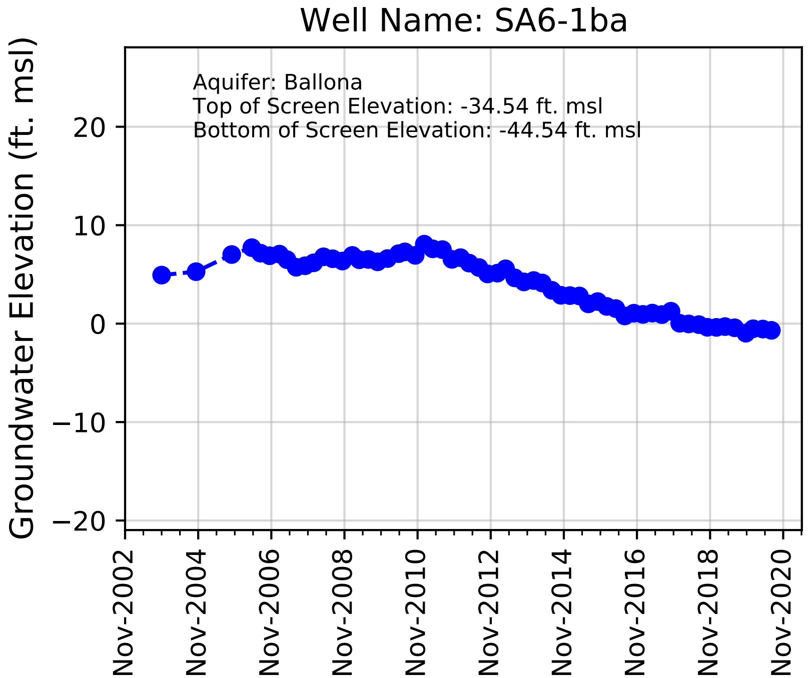

Well Name: SA4-3be
Aquifer: Bellflower
Top of Screen Elevation: 11.8 ft. msl
Bottom of Screen Elevation: -3.2 ft. msl
20
10
0
−10
−20
Oct-2004
Oct-2006
Oct-2008
Oct-2010
Oct-2012
Oct-2014
Oct-2016
Oct-2018
Oct-2020

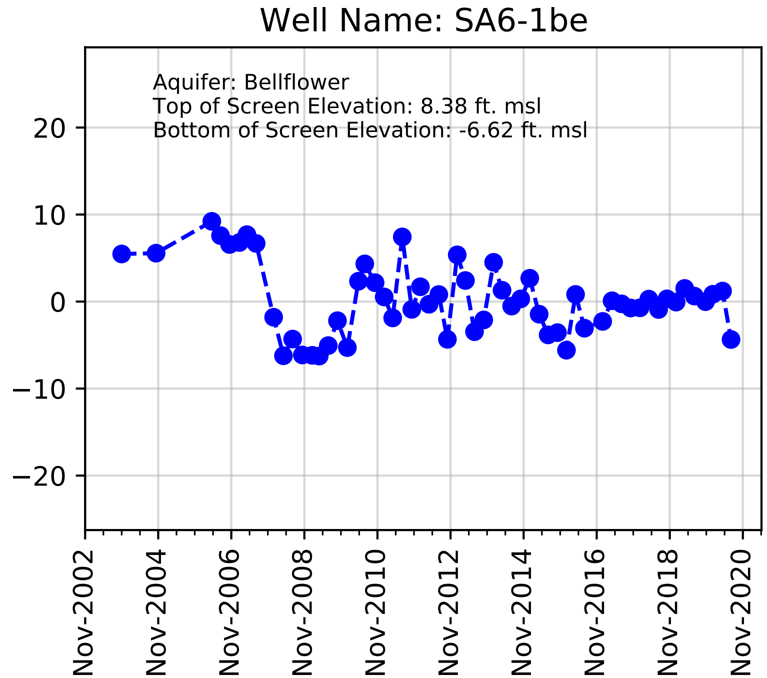

Well Name: SA4-4be
Aquifer: Bellflower
Top of Screen Elevation: 8.91 ft. msl
Bottom of Screen Elevation: -6.09 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Oct-2003
Oct-2005
Oct-2007
Oct-2009
Oct-2011
Oct-2013
Oct-2015
Oct-2017
Oct-2019

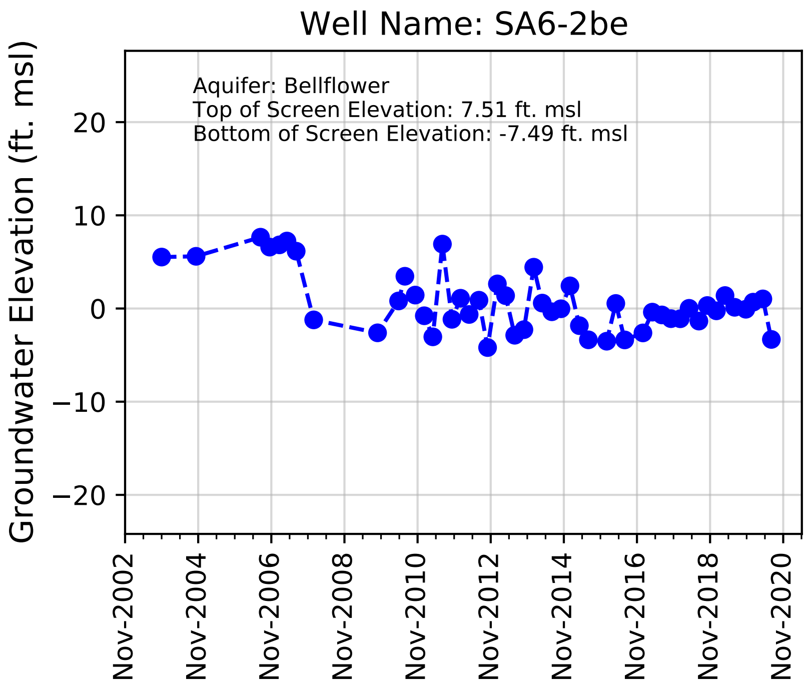

Well Name: SA4-DPE14
Aquifer: Bellflower
Top of Screen Elevation: 6.1 ft. msl
Bottom of Screen Elevation: -8.9 ft. msl
20
15
10
5
0
−5
−10
−15
Jul-2017
Jul-2019

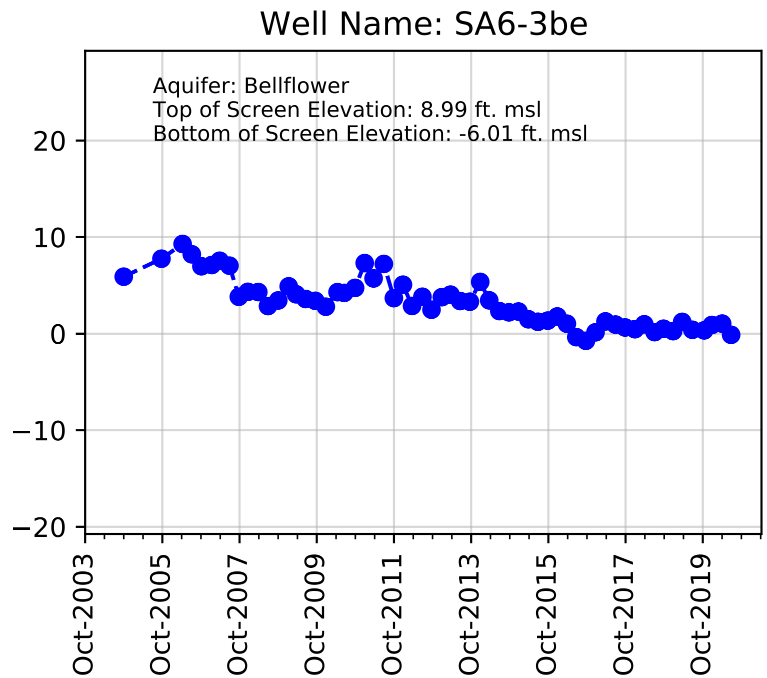

Well Name: SA5-1be
Aquifer: Bellflower
Top of Screen Elevation: 12.88 ft. msl
Bottom of Screen Elevation: -2.12 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Oct-2003
Oct-2005
Oct-2007
Oct-2009
Oct-2011
Oct-2013
Oct-2015
Oct-2017
Oct-2019

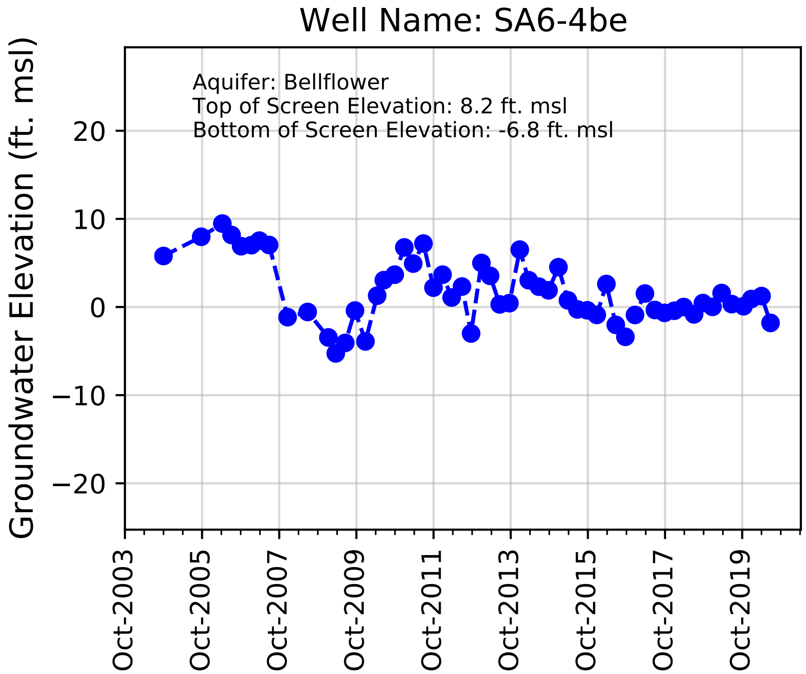

Well Name: SA5-DPE4
Aquifer: Upper Bellflower
Top of Screen Elevation: 4.9 ft. msl
Bottom of Screen Elevation: -10.1 ft. msl
20
10
0
−10
−20
Jul-2005
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019

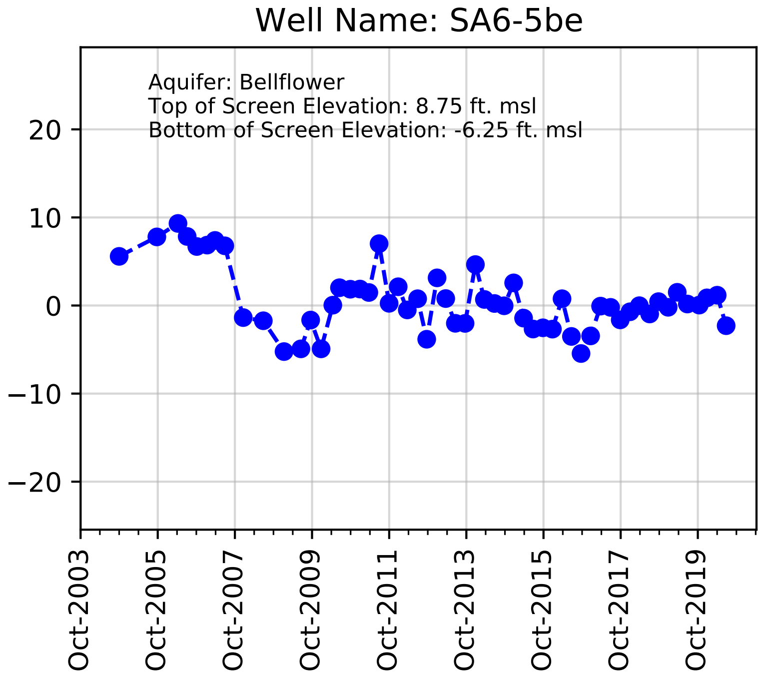

Well Name: SA6-1ba
Aquifer: Ballona
Top of Screen Elevation: -34.54 ft. msl
Bottom of Screen Elevation: -44.54 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Nov-2002
Nov-2004
Nov-2006
Nov-2008
Nov-2010
Nov-2012
Nov-2014
Nov-2016
Nov-2018
Nov-2020


Well Name: SA6-1be
Aquifer: Bellflower
Top of Screen Elevation: 8.38 ft. msl
Bottom of Screen Elevation: -6.62 ft. msl
20
10
0
−10
−20
Nov-2002
Nov-2004
Nov-2006
Nov-2008
Nov-2010
Nov-2012
Nov-2014
Nov-2016
Nov-2018
Nov-2020


Well Name: SA6-2be
Aquifer: Bellflower
Top of Screen Elevation: 7.51 ft. msl
Bottom of Screen Elevation: -7.49 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Nov-2002
Nov-2004
Nov-2006
Nov-2008
Nov-2010
Nov-2012
Nov-2014
Nov-2016
Nov-2018
Nov-2020


Well Name: SA6-3be
Aquifer: Bellflower
Top of Screen Elevation: 8.99 ft. msl
Bottom of Screen Elevation: -6.01 ft. msl
20
10
0
−10
−20
Oct-2003
Oct-2005
Oct-2007
Oct-2009
Oct-2011
Oct-2013
Oct-2015
Oct-2017
Oct-2019


Well Name: SA6-4be
Aquifer: Bellflower
Top of Screen Elevation: 8.2 ft. msl
Bottom of Screen Elevation: -6.8 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Oct-2003
Oct-2005
Oct-2007
Oct-2009
Oct-2011
Oct-2013
Oct-2015
Oct-2017
Oct-2019


Well Name: SA6-5be
Aquifer: Bellflower
Top of Screen Elevation: 8.75 ft. msl
Bottom of Screen Elevation: -6.25 ft. msl
20
10
0
−10
−20
Oct-2003
Oct-2005
Oct-2007
Oct-2009
Oct-2011
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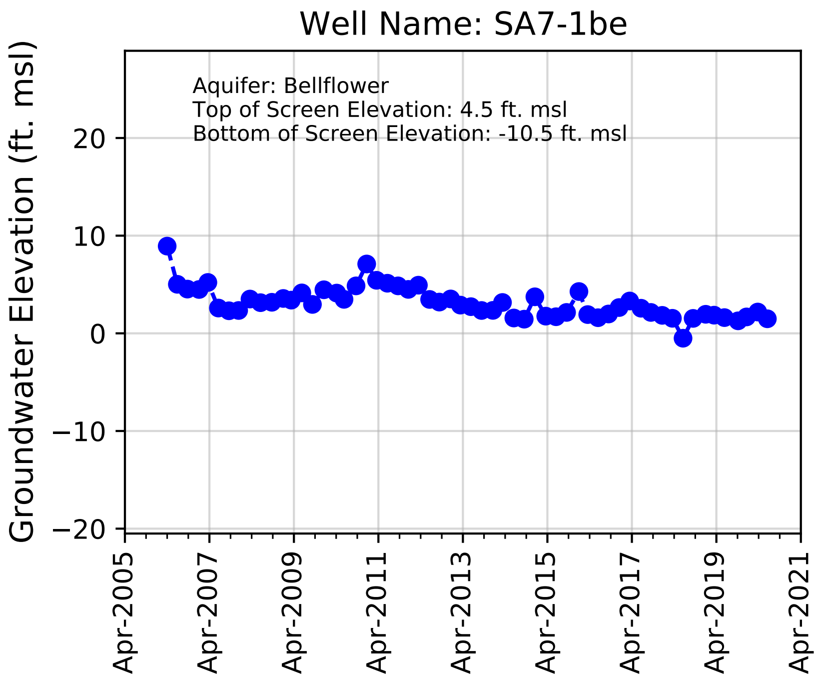
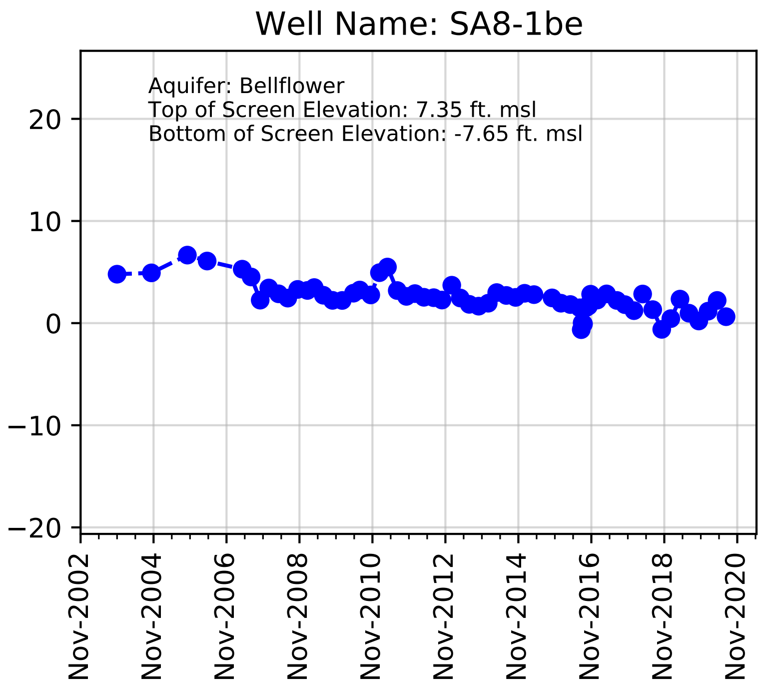
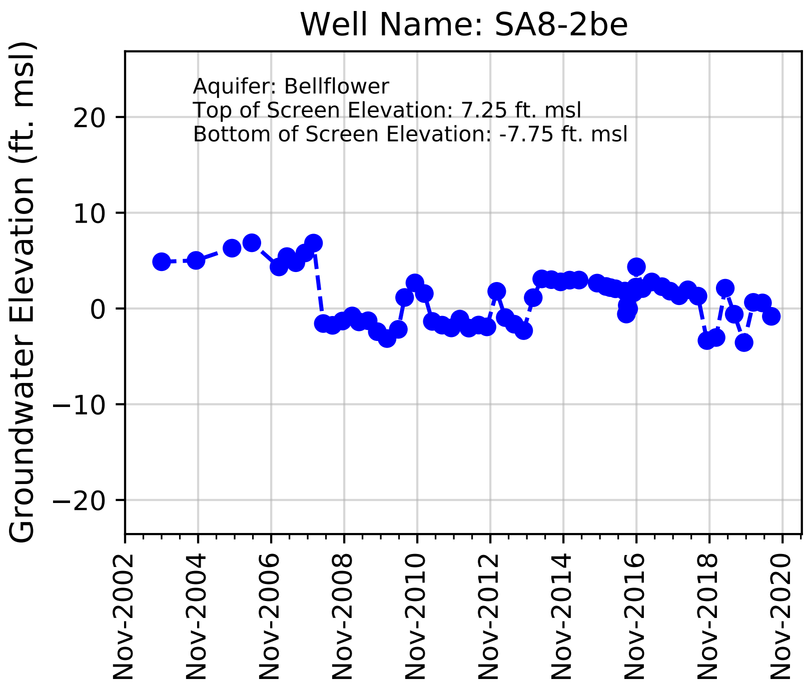
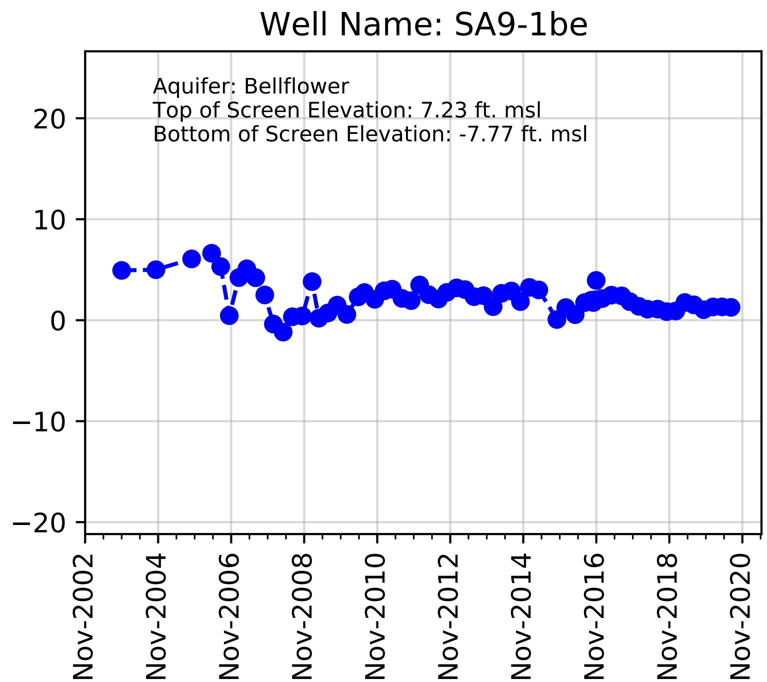
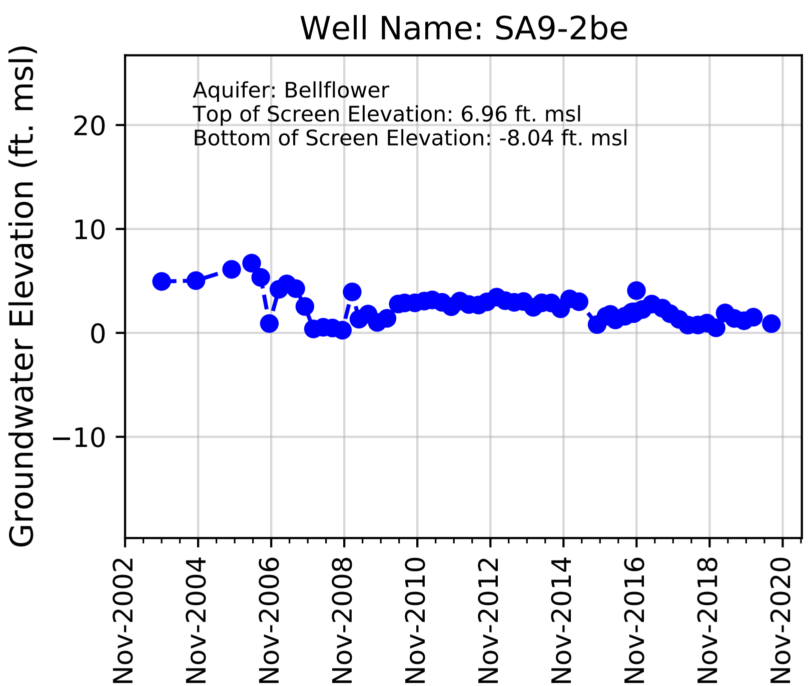
Oct-2015
Oct-2017
Oct-2019

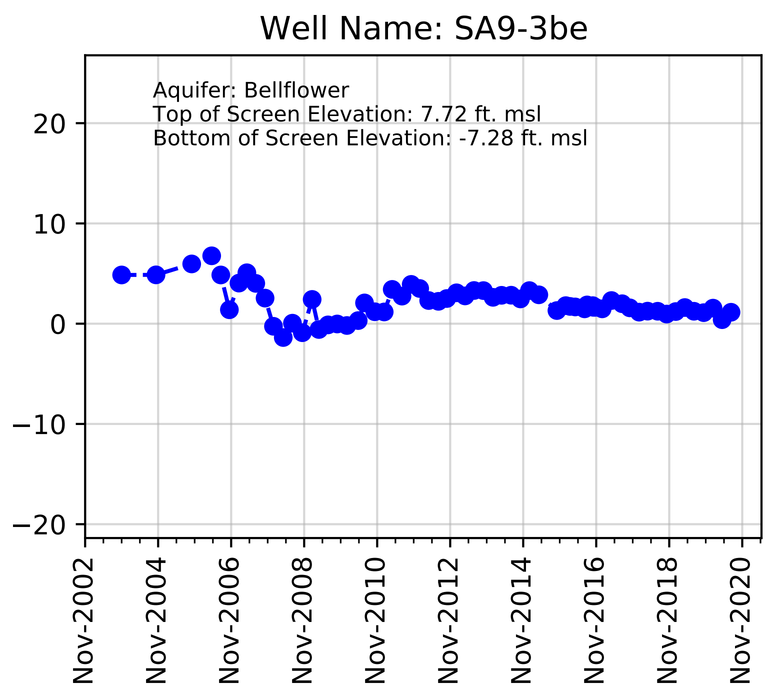

Well Name: SA7-1be
Aquifer: Bellflower
Top of Screen Elevation: 4.5 ft. msl
Bottom of Screen Elevation: -10.5 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Apr-2005
Apr-2007
Apr-2009
Apr-2011
Apr-2013
Apr-2015
Apr-2017
Apr-2019
Apr-2021

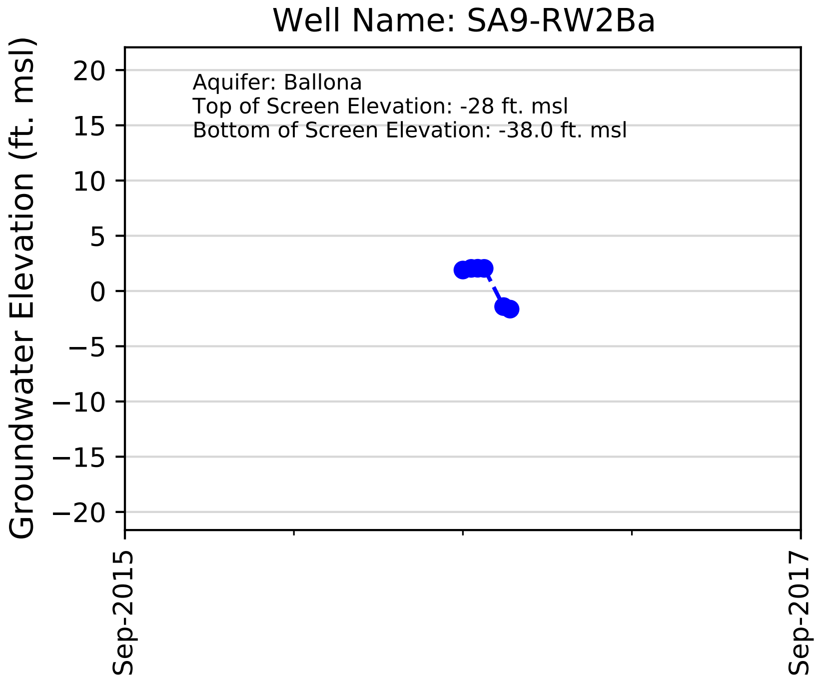

Well Name: SA8-1be
Aquifer: Bellflower
Top of Screen Elevation: 7.35 ft. msl
Bottom of Screen Elevation: -7.65 ft. msl
20
10
0
−10
−20
Nov-2002
Nov-2004
Nov-2006
Nov-2008
Nov-2010
Nov-2012
Nov-2014
Nov-2016
Nov-2018
Nov-2020

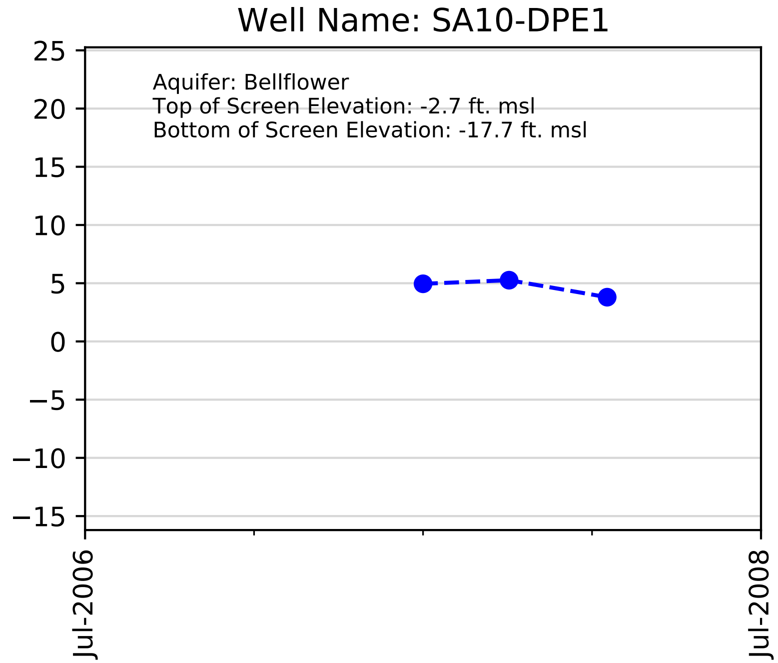

Well Name: SA8-2be
Aquifer: Bellflower
Top of Screen Elevation: 7.25 ft. msl
Bottom of Screen Elevation: -7.75 ft. msl
Groundwater Elevation (ft. msl)

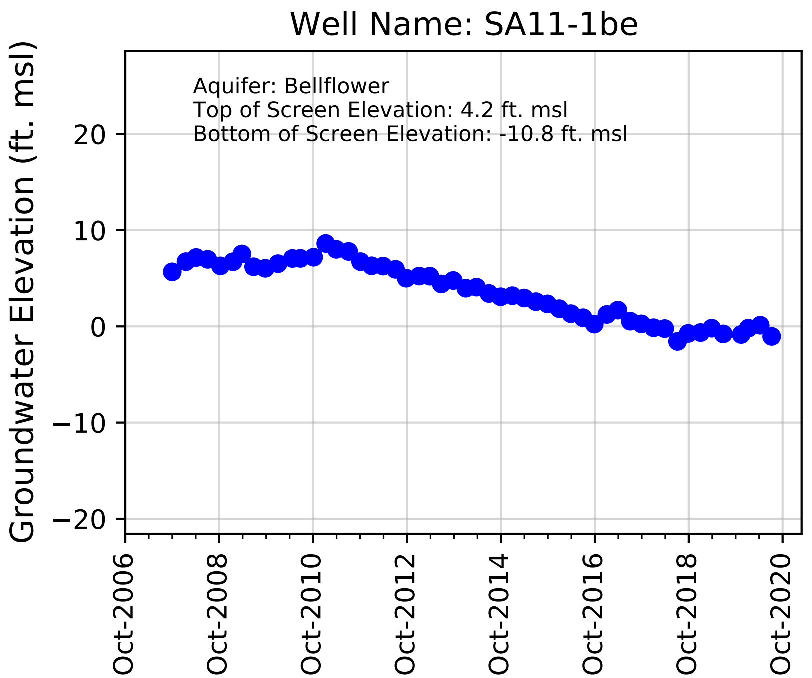

Well Name: SA9-1be
Aquifer: Bellflower
Top of Screen Elevation: 7.23 ft. msl
Bottom of Screen Elevation: -7.77 ft. msl

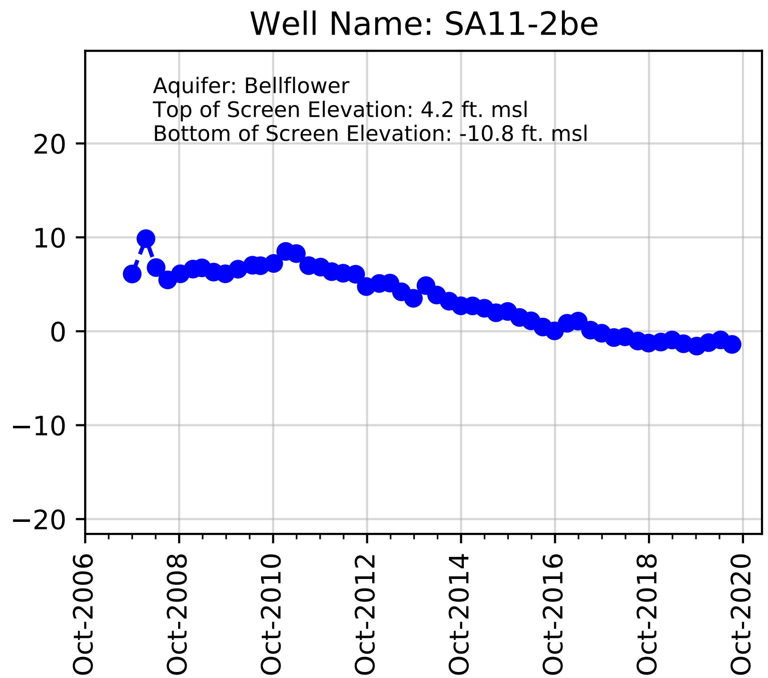

Well Name: SA9-2be
Aquifer: Bellflower
Top of Screen Elevation: 6.96 ft. msl
Bottom of Screen Elevation: -8.04 ft. msl
Groundwater Elevation (ft. msl)


Well Name: SA9-3be
Aquifer: Bellflower
Top of Screen Elevation: 7.72 ft. msl
Bottom of Screen Elevation: -7.28 ft. msl

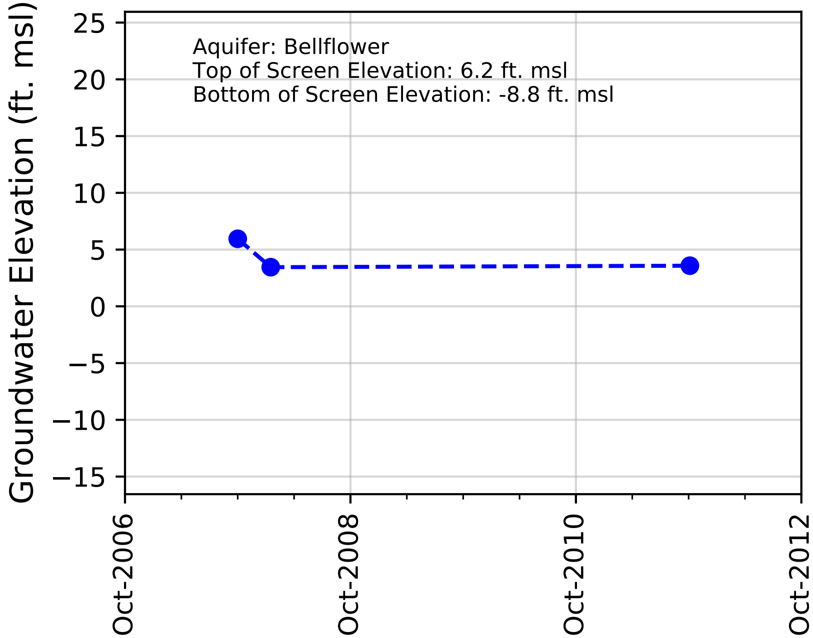

Well Name: SA9-RW2Ba
Aquifer: Ballona
Top of Screen Elevation: -28 ft. msl
Bottom of Screen Elevation: -38.0 ft. msl
Groundwater Elevation (ft. msl)
20
15
10
5
0
−5
−10
−15
−20
Sep-2015
Sep-2017


Well Name: SA10-DPE1
Aquifer: Bellflower
Top of Screen Elevation: -2.7 ft. msl
Bottom of Screen Elevation: -17.7 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jul-2006
Jul-2008

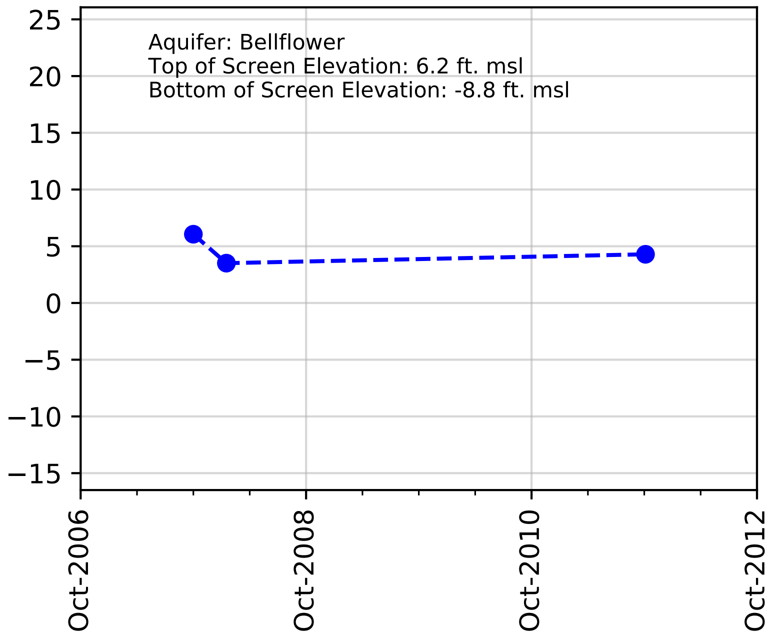

Well Name: SA11-1be
Aquifer: Bellflower
Top of Screen Elevation: 4.2 ft. msl
Bottom of Screen Elevation: -10.8 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Oct-2006
Oct-2008
Oct-2010
Oct-2012
Oct-2014
Oct-2016
Oct-2018
Oct-2020


Well Name: SA11-2be
Aquifer: Bellflower
Top of Screen Elevation: 4.2 ft. msl
Bottom of Screen Elevation: -10.8 ft. msl
20
10
0
−10
−20
Oct-2006
Oct-2008
Oct-2010
Oct-2012
Oct-2014
Oct-2016
Oct-2018
Oct-2020

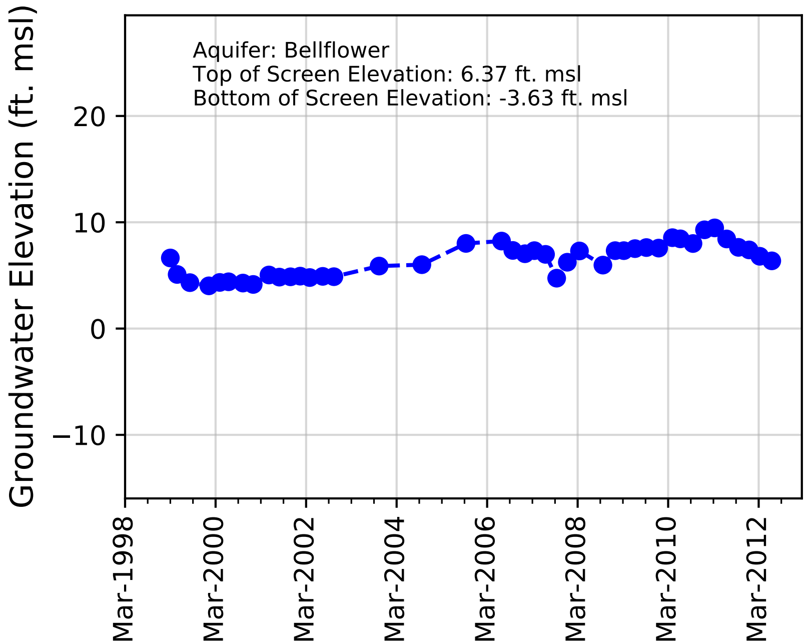
Well Name: SA11-RW1be



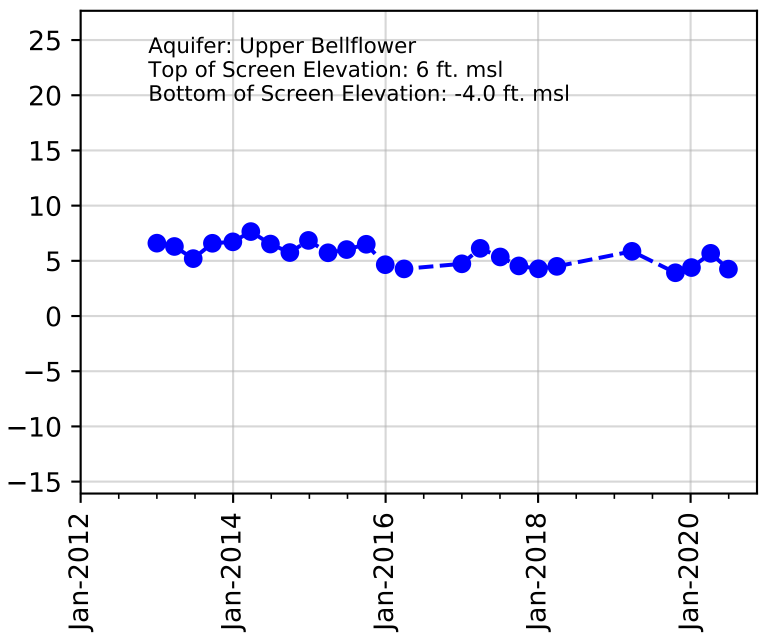
Well Name: SA11-RW2be

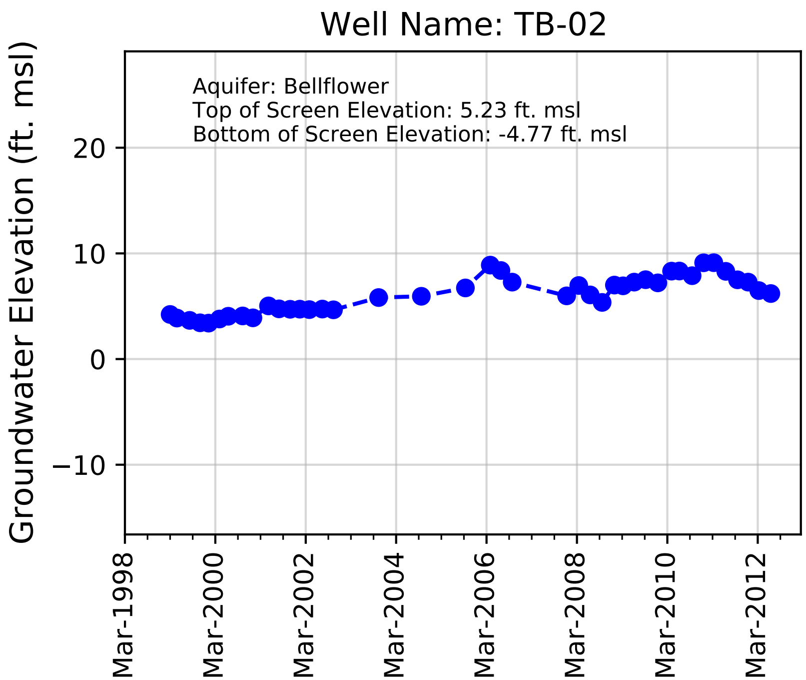


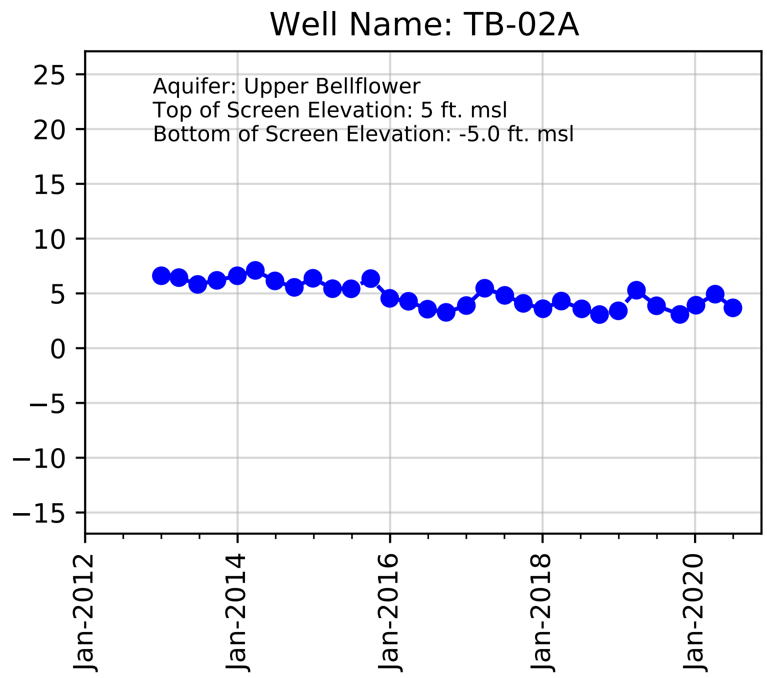
Well Name: TB-01

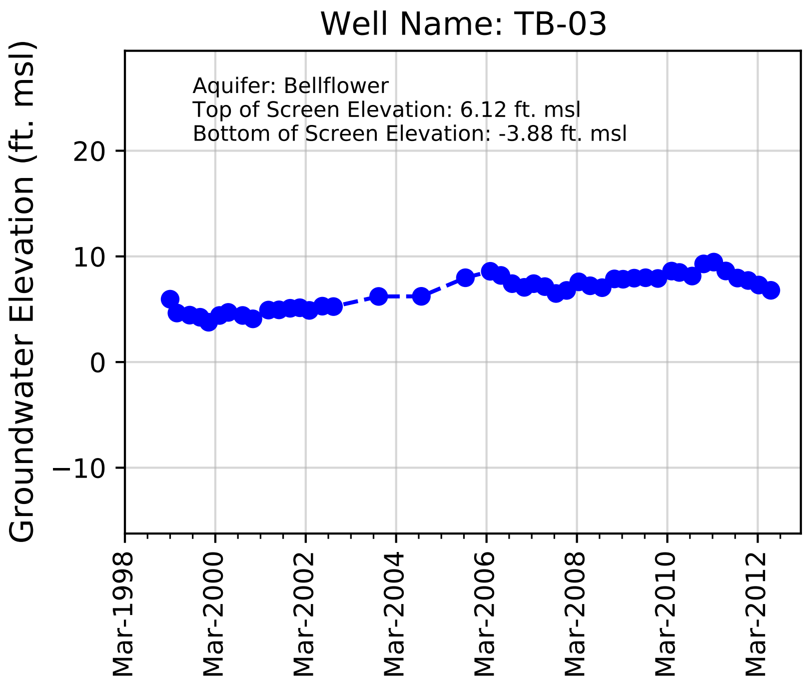


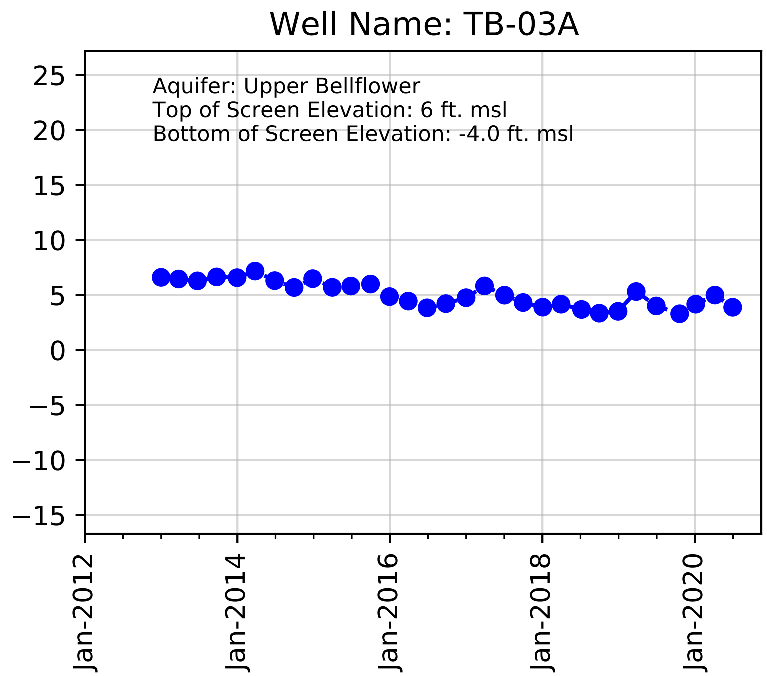
Well Name: TB-01A

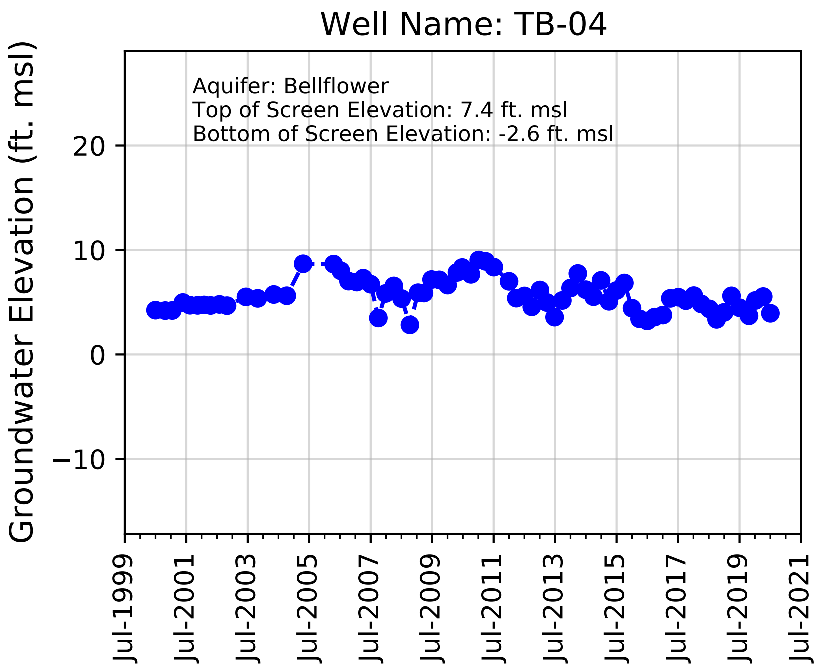


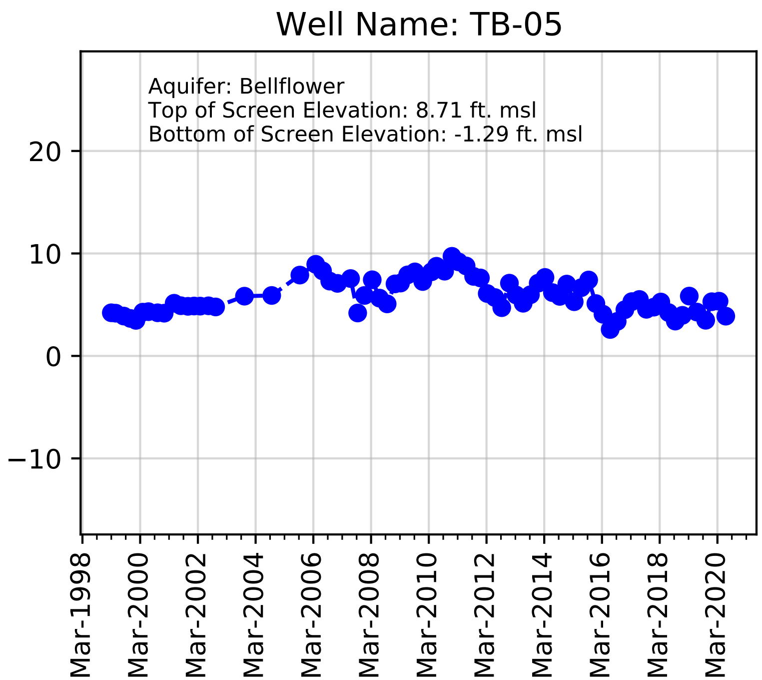

Well Name: TB-02
Aquifer: Bellflower
Top of Screen Elevation: 5.23 ft. msl
Bottom of Screen Elevation: -4.77 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Mar-1998
Mar-2000
Mar-2002
Mar-2004
Mar-2006
Mar-2008
Mar-2010
Mar-2012

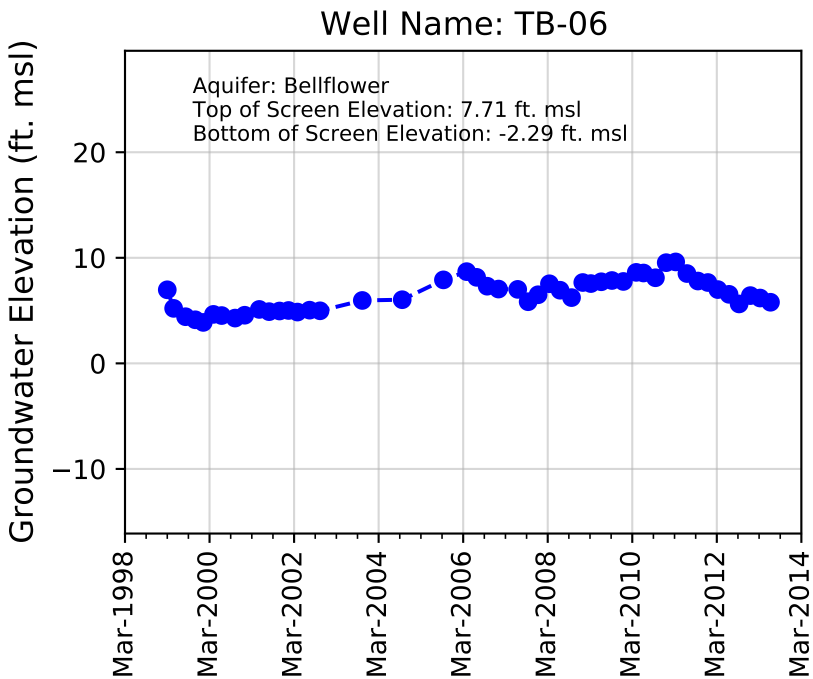

Well Name: TB-02A
Aquifer: Upper Bellflower
Top of Screen Elevation: 5 ft. msl
Bottom of Screen Elevation: -5.0 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jan-2012
Jan-2014
Jan-2016
Jan-2018
Jan-2020


Well Name: TB-03
Aquifer: Bellflower
Top of Screen Elevation: 6.12 ft. msl
Bottom of Screen Elevation: -3.88 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Mar-1998
Mar-2000
Mar-2002
Mar-2004
Mar-2006
Mar-2008
Mar-2010
Mar-2012


Well Name: TB-03A
Aquifer: Upper Bellflower
Top of Screen Elevation: 6 ft. msl
Bottom of Screen Elevation: -4.0 ft. msl
25
20
15
10
5
0
−5
−10
−15
Jan-2012
Jan-2014
Jan-2016
Jan-2018
Jan-2020


Well Name: TB-04
Aquifer: Bellflower
Top of Screen Elevation: 7.4 ft. msl
Bottom of Screen Elevation: -2.6 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Jul-1999
Jul-2001
Jul-2003
Jul-2005
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019
Jul-2021


Well Name: TB-05
Aquifer: Bellflower
Top of Screen Elevation: 8.71 ft. msl
Bottom of Screen Elevation: -1.29 ft. msl
20
10
0
−10
Mar-1998
Mar-2000
Mar-2002
Mar-2004
Mar-2006
Mar-2008
Mar-2010
Mar-2012
Mar-2014
Mar-2016
Mar-2018
Mar-2020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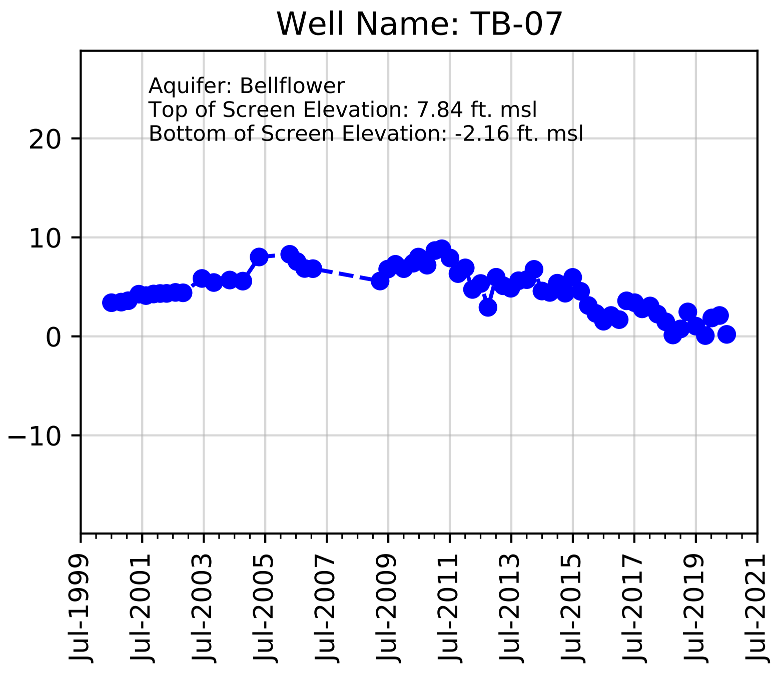
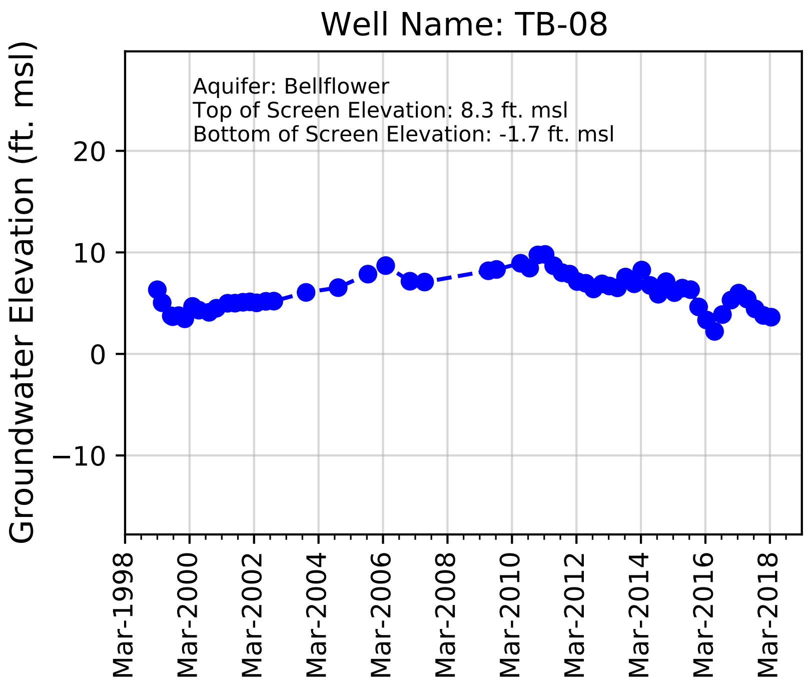
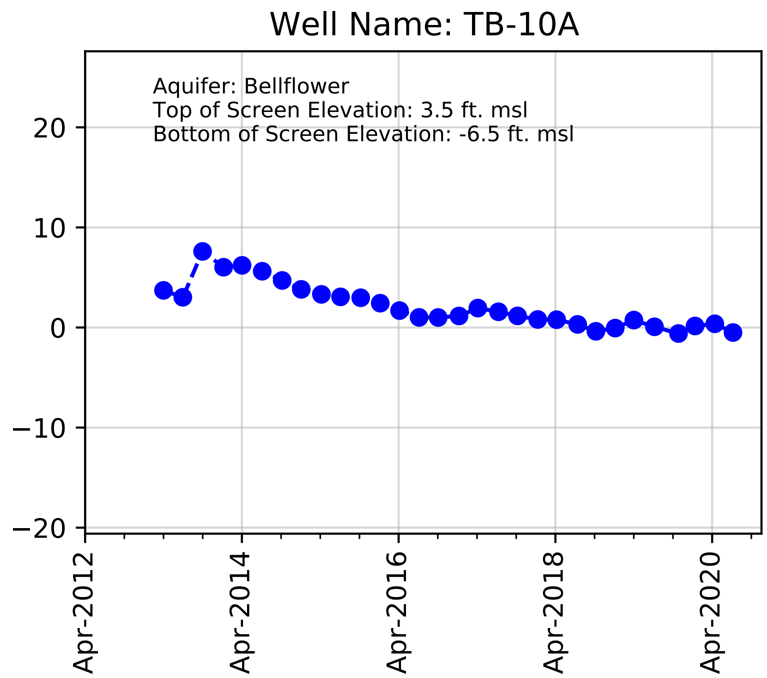
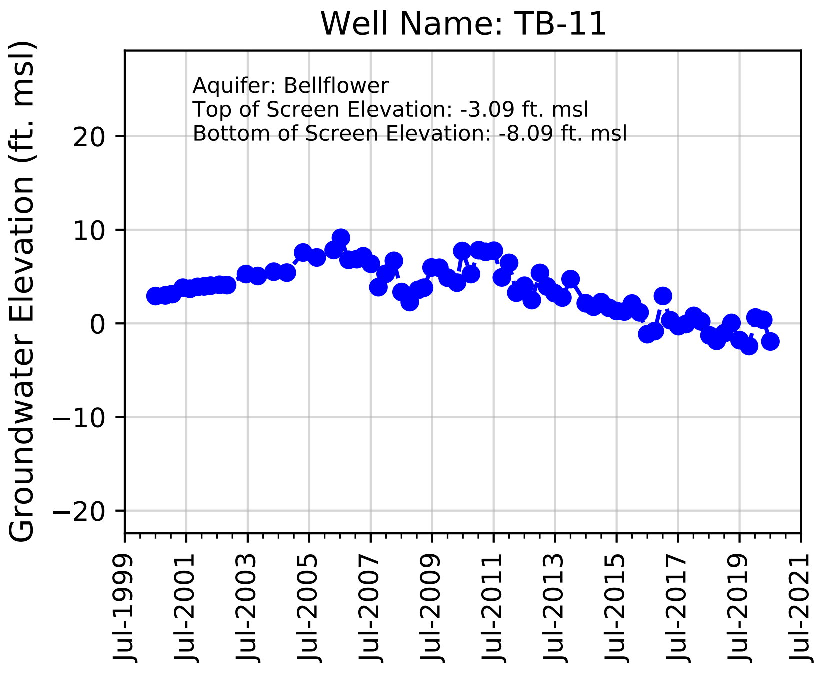
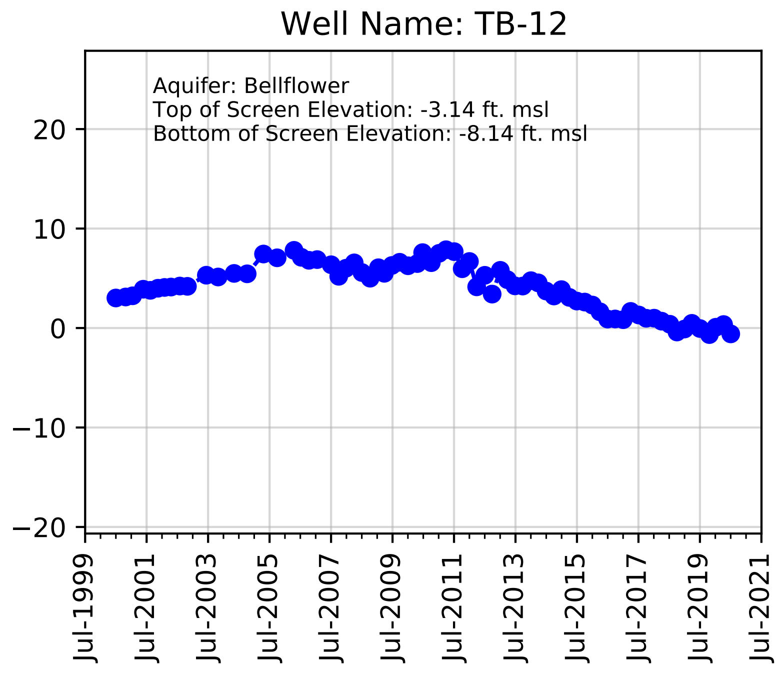
Bottom of Screen Elevation: -2.29 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Mar-1998
Mar-2000
Mar-2002
Mar-2004
Mar-2006
Mar-2008
Mar-2010
Mar-2012
Mar-2014


Well Name: TB-07
Aquifer: Bellflower
Top of Screen Elevation: 7.84 ft. msl
Bottom of Screen Elevation: -2.16 ft. msl
20
10
0
−10
Jul-1999
Jul-2001
Jul-2003
Jul-2005
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019
Jul-2021


Well Name: TB-08
Aquifer: Bellflower
Top of Screen Elevation: 8.3 ft. msl
Bottom of Screen Elevation: -1.7 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Mar-1998
Mar-2000
Mar-2002
Mar-2004
Mar-2006
Mar-2008
Mar-2010
Mar-2012
Mar-2014
Mar-2016
Mar-2018


Well Name: TB-10A
Aquifer: Bellflower
Top of Screen Elevation: 3.5 ft. msl
Bottom of Screen Elevation: -6.5 ft. msl
20
10
0
−10
−20
Apr-2012
Apr-2014
Apr-2016
Apr-2018
Apr-2020


Well Name: TB-11
Aquifer: Bellflower
Top of Screen Elevation: -3.09 ft. msl
Bottom of Screen Elevation: -8.09 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
−20
Jul-1999
Jul-2001
Jul-2003
Jul-2005
Jul-2007
Jul-2009
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019
Jul-2021


Well Name: TB-12
Aquifer: Bellflower
Top of Screen Elevation: -3.14 ft. msl
Bottom of Screen Elevation: -8.14 ft. msl
20
10
0
−10
−20
Jul-1999
Jul-2001
Jul-2003
Jul-2005
Jul-2007
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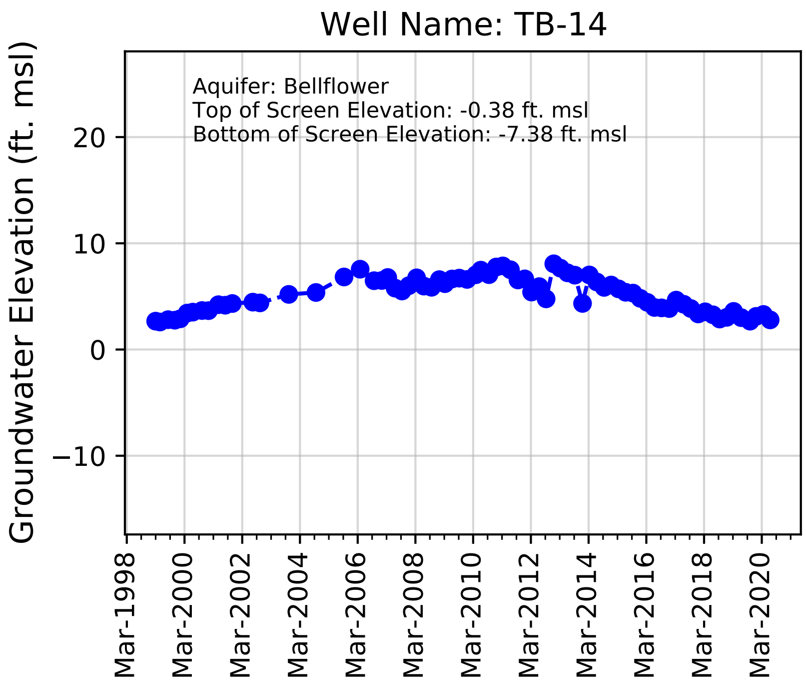
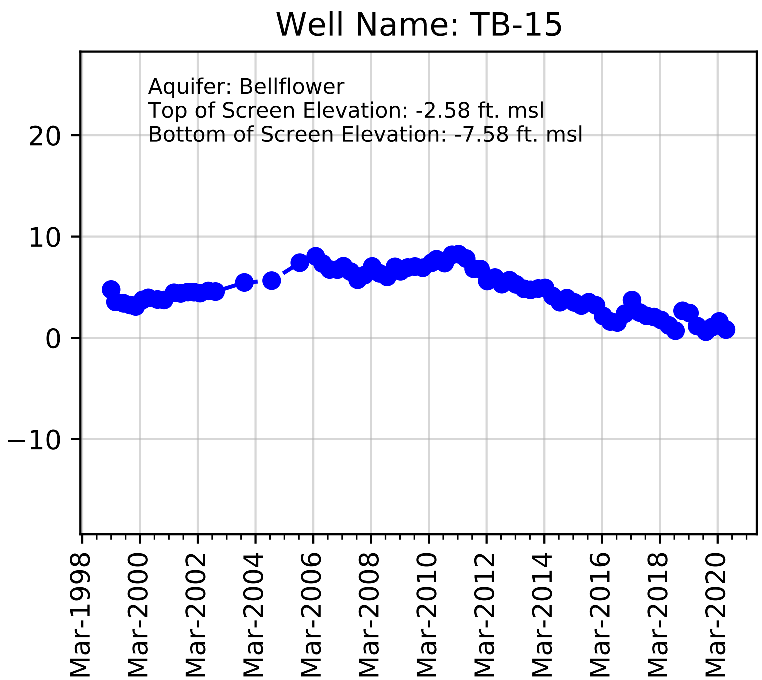
Jul-2011
Jul-2013
Jul-2015
Jul-2017
Jul-2019
Jul-2021


Well Name: TB-14
Aquifer: Bellflower
Top of Screen Elevation: -0.38 ft. msl
Bottom of Screen Elevation: -7.38 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Mar-1998
Mar-2000
Mar-2002
Mar-2004
Mar-2006
Mar-2008
Mar-2010
Mar-2012
Mar-2014
Mar-2016
Mar-2018
Mar-2020


Well Name: TB-15
Aquifer: Bellflower
Top of Screen Elevation: -2.58 ft. msl
Bottom of Screen Elevation: -7.58 ft. msl
20
10
0
−10
Mar-1998
Mar-2000
Mar-2002
Mar-2004
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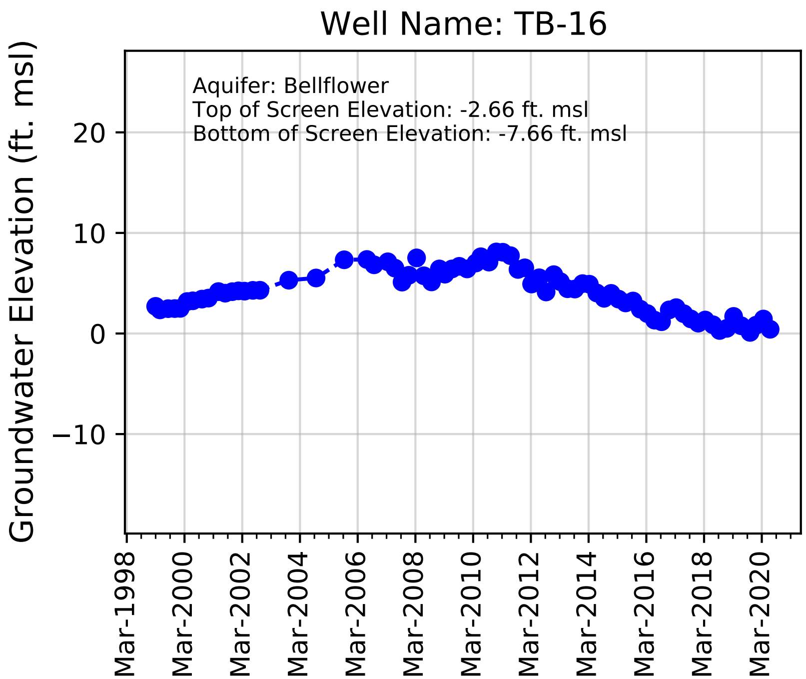
Mar-2014
Mar-2016
Mar-2018
Mar-2020


Well Name: TB-16
Aquifer: Bellflower
Top of Screen Elevation: -2.66 ft. msl
Bottom of Screen Elevation: -7.66 ft. msl
Groundwater Elevation (ft. msl)
20
10
0
−10
Mar-1998
Mar-2000
Mar-2002
Mar-2004
Mar-2006
Mar-2008
Mar-2010
Mar-2012
Mar-2014
Mar-2016
Mar-2018
Mar-2020

Appendix F

Technical Memorandum on Groundwater Modeling for the Santa Monica Subbasin Groundwater Sustainability Plan

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Torrance, California 90503 USA
424.275.4055

TECHNICAL MEMORANDUM ON GROUNDWATER MODELING FOR THE SANTA MONICA SUBBASIN GROUNDWATER SUSTAINABILITY PLAN

1.0 INTRODUCTION

The Sustainable Groundwater Management Act (SGMA) requires Groundwater Sustainability Plans (GSPs) to rely on the *"best available information and best available science"* (CCR 354.18(e)) to quantify the historical, current, and projected (CCR 354.18(c)) water budgets for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow. SGMA also requires GSPs to evaluate Sustainable Management Criteria (SMCs) and propose projects and management actions to achieve the sustainability goal for the basin. The assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones should be reasonable and supported by the best available information and best available science (CCR 355.4(b)(1)). Finally, the GSP is expected to identify data gaps, uncertainties, and future monitoring needs to eliminate the data gaps. Groundwater models consistent with the hydrogeologic conceptual model of the basin and developed and calibrated using basin-specific data can be key in meeting these objectives.

SGMA requires all Groundwater and surface water models used for a GSP to meet the following standards (CCR 352.4(f)):

(1) The model shall include publicly available supporting documentation.

(2) The model shall be based on field or laboratory measurements, or equivalent methods that justify the selected values, and calibrated against site specific field data.

(3) Groundwater and surface water models developed in support of a Plan after the effective date of these regulations shall consist of public domain opensource software.

This technical memorandum provides the documentation for the groundwater model used to support the GSP for the Santa Monica Subbasin. The groundwater model is based on the regional Los Angeles Coastal Plain Groundwater Model (LACPGM) developed by the United States Geologic Survey (Paulinski et al, 2020) and incorporates basin-specific groundwater data including geologic/lithologic data, geophysical data, water levels, and groundwater quality. The model not only covers the Santa Monica Subbasin, but extends across the greater Los Angeles

Coastal Plain groundwater basin, thus incorporating groundwater processes within the Santa Monica Subbasin and across the boundaries between the Subbasin and adjacent areas. The model includes key groundwater recharge and discharge processes and simulates three-dimensional transient groundwater levels and flows.

The LACPGM was updated based on recent basin-specific data and used to assess the historical and current water budget for the Subbasin. In addition, climate change and projections for future pumping were incorporated into the model to develop predictive scenarios to assess the future water budget and sustainable yield for the Subbasin. Sensitivity analysis was conducted to assess the uncertainty in key future water budget terms, especially the simulated flux across the western (seaward) boundary of the Subbasin.

2.0 SANTA MONICA BASIN DESCRIPTION

The Santa Monica Subbasin underlies the northwestern part of the Coastal Plain of Los Angeles Groundwater Basin. It is bounded by impermeable rocks of the Santa Monica Mountains on the north and by the Ballona escarpment on the south. The Subbasin extends from the Pacific Ocean on the west to the Inglewood fault on the east. Ballona Creek is the dominant hydrologic feature and drains surface waters to the Pacific Ocean. The Subbasin is bounded to the south by the West Coast Subbasin and to the east by the Hollywood and Central Subbasins.

The Los Angeles Basin has been broadly divided into structural blocks with boundaries defined by major fault zones (USGS 1965). The Subbasin straddles the Santa Monica Fault Zone, occupying the north part of the Southwestern Block and the southwestern part of the Northwestern Block (Figure 2-22; USGS 1965). North-south trending faults in the Subbasin include:

- the Newport-Inglewood Fault Zone, which forms the easter boundary of the subbasin and restricts flow to/from the Hollywood and Central subbasins. The Newport-Inglewood fault zone is a predominantly right lateral strike-slip fault system that cuts through the entire Los Angeles Coastal Plain. Although dominantly a strike-slip fault, the fault zone produces uplift and small-scale folds locally along its trend owing to localized complexities in the fault zone near the surface in the Los Angeles Basin. In the Santa Monica subbasin the fault zone causes localized uplift at the Baldwin Hills. The complicated nature of the fault zone and localized uplifts lends to variability in fault zone permeability along its strike.

- the Charnock Fault, which enters the Subbasin from the south and extends to just north of Ballona Creek. The depth and location of a fault in this area was previously inferred based on differences in water levels within the water-bearing units. Based on geologic and seismic data collected as part of the LACPGM study, the Charnock Fault is now identified within the much deeper bedrock units (Paulinski et al 2020).

- the Overland Avenue Fault, which runs roughly parallel to the Charnock fault extending from south of the Ballona Gap to Santa Monica Boulevard;

- and the Palos Verdes fault, which runs about two miles off-shore and generally parallels the Newport-Inglewood Fault Zone, forming the western boundary of the groundwater model.

East-west trending faults within the Subbasin include:

- the Santa Monica Fault Zone, which bisects the City of Santa Monica and extends east-west along the southern flank of the Santa Monica Mountains, extending about 25 miles eastward from the coast (Dolan and Pratt, 1997), terminating against the Newport Inglewood Fault Zone. The Santa Monica fault zone consists primarily of two strands, an inactive southern strand and an active northern strand. The fault zone is a steeply dipping reverse/left-lateral fault and cuts through all chronostratigraphic units older than the Mesa; as modeled it may have a combined vertical separation of as much as 4000 ft.

- the Anacapa-Dume Fault, extending off-shore in a general east-west direction from south of Port Hueneme in Ventura County to about two miles east of where it lies inland near Santa Monica Canyon;

- and the Brentwood Knoll/ Brentwood Fault - a northwest to west trending feature that parallels the Santa Monica Fault zone.

Holocene age alluvium forms much of the surficial deposits for the central part of the Subbasin and fills the Ballona gap, an erosional channel cutting into and across the Inglewood fault. These deposits include the clay-rich Bellflower aquiclude and underlying gravels of the Ballona aquifer (DWR 1961). Late Pleistocene alluvial sediments form much of the elevated plateau areas in the Subbasin and include older dune sands and the Lakewood Formation. The Lakewood Formation includes thin coarse-grained laterally discontinuous units in the Subbasin, not contiguous with the named aquifers of the Lakewood Formation elsewhere in the Los Angeles Basin. In general, groundwater supply wells are not screened within the Lakewood Formation in Subbasin. The Silverado aquifer within the early Pliestocene age San Pedro Formation is the main productive unit in the Subbasin in which the majority of the groundwater production wells in the basin are screened. Water bearing units below the San Pedro Formation include the Pliocene marine sediments of the Pico Formation, which are not widely produced (DWR 1961).

The primary source of recharge to the Silverado aquifer (the primary productive unit within the subbasin) is mountain front recharge from the Santa Monica Mountains to the north the Subbasin. The Subbasin is highly urbanized and little recharge occurs via direct infiltration of precipitation in the Subbasin boundaries.

Primary sources of groundwater discharge from the subbasin include groundwater production wells. Groundwater in the Santa Monica Basin moves mainly southward toward the Ballona gap, then flows toward to the ocean (DWR 1961). Under normal water level conditions, underflows are expected from the Santa Monica subbasin to the West Coast subbasin in the south. Relatively minor amounts of underflows are expected across the eastern boundary with the Hollywood and Central subbasin or the western boundary with the ocean.

Limited depth-specific water level data exists in the Santa Monica subbasin. Based on observed water levels at Well 2S/15W-11F5 (2578X), screened at an intermediate depth interval (the Bent Spring sequence, discussed subsequently) in the central part of the Santa Monica Basin, water levels in the central part of the subbasin dropped from the mid-1950s to mid-1980s, probably in response to pumping from a nearby Santa Monica well field. Pumping from this well field was significantly reduced in the 1990s, resulting in the observed water-level rise in well 2578X. Observed water levels in Well 2S/15W-9N9 (2539L), screened in a deeper interval (the Pacific sequence, discussed subsequently) and located in the western part of the subbasin, were approximately 50 ft higher than those at 2578X during the 1970s and 1980s, indicating minimal hydraulic connection between the intermediate and deeper aquifer systems across the central and western parts of the Santa Monica Basin.

3.0 LOS ANGELES COASTAL PLAIN GROUNDWATER MODEL

The Los Angeles Coastal Plain Groundwater Model (LACPGM) is a MODFLOW-USG unstructured grid (Panday et al 2013) flow model developed by the USGS (Paulinski et al 2020). The LACPGM model area includes all the groundwater basins within the Los Angeles area – Santa Monica Basin, West Coast Basin, Central Basin, Hollywood Basin, as well as a portion of the Orange County Groundwater Basin (Figure 3.1). The model simulates natural recharge, managed recharge in the Los Angeles Forebay, pumping, and injection at the several seawater intrusion barrier projects. The model temporal simulation period covers the years 1971-2015.

3.1 Model Discretization

The LACPGM was developed based on a new geologic sequence stratigraphy model of the Los Angeles Coastal Plain (LACP). This new geologic sequence stratigraphy model represents a reevaluation of the stratigraphy and geologic structure of the LACP, using a comprehensive set of geologic, geophysical, water level and water quality data (Paulinski et al 2020). The LACPGM is vertically discretized in to 13 layers, with layer 1 representing an inactive layer that extends over the entire model grid, and layers 2-13 representing the LACP sequences. Layer 1 extends from land surface to 30 ft above land surface and is used to simulate areal recharge to the first active model layer. Layers 2 through 13 represent the following geologic sequences: Dominguez, Mesa, Pacific A, Pacific, Harbor, Bent Spring, Upper Wilmington A, Upper Wilmington B, Lower Wilmington, Long Beach A, Long Beach B, and the combined Long Beach BC and C aquifer systems. In the new sequence stratigraphy model for the LACP, spatial extent of the geologic sequences varies with several discontinuities and pinch-outs. The corresponding model layers generally follow the geologic sequence definition, and the respective model layer extends to cover the areas with a minimum 15ft thickness. Horizontally the model grid is discretized in to 256 rows and 312 columns that are uniform in size; each cell has a length and width of 1/8 mile (660 ft). Model layer extents and nodes are shown in Figures 3.2a – 3.2l.

Temporally, the LACPGM is discretized in to 180 quarterly stress periods to simulate the 45-year period from calendar year 1971 through calendar year 2015. Each stress period is discretized into five equal length time steps. Model boundary conditions and properties relevant to the Santa Monica Basin area are presented in the following section.

3.2 Santa Monica Basin Model Properties

The LACPGM material properties include horizontal and vertical hydraulic conductivity, specific yield, and specific storage. The USGS draft documentation (Paulinski et al 2020) describes the zonation for horizontal hydraulic conductivity, and the other hydraulic properties (Paulinski et al 2020, Figures D07, D08). Within each layer, the horizontal hydraulic conductivity zones were initially defined based on well-logs, regional depositional patterns, and known local variations. Zonations for other material properties used the horizontal hydraulic zones. Model calibration entailed modifying the properties assigned to these zones.

A unique feature of the LACPGM is the specification of hydraulic conductivity values for the model nodes. The horizontal and vertical hydraulic conductivities in the LACPGM are assigned to connections between nodes, instead of the conventional cell-based assignment. The primary reason for directly specifying node-node connections was to avoid modeling of intervening confining layers and reduce model runtime. In the LACPGM, each node in a layer has up to four horizontal connections to nodes within the same layer. At the edge of the model or sequence boundaries, a node may have only one horizontal connection to another node in the layer. For the purposes of evaluating model sensitivity to parameters in the Santa Monica Basin, described in a later section, the horizontal hydraulic conductivity zonations were delineated using the model input. The LACPGM node-node horizontal conductivities were averaged, and a single value was assigned to each node. Where a node has the same horizontal conductivity for all its connections, the calculated average is representative of the cell conductivity. Note this calculation is for visualization purposes only, to broadly identify zones with the same material properties. Figures 3.3a through 3.3g show the zones in model layers 2 through 8 respectively. Within the Santa Monica Basin, model layers 2 through 8 comprise boundary conditions and model inputs that most impact the Basin water budget.

3.3 Santa Monica Basin Model Packages

The LACPGM uses several MODFLOW-USG packages to model features within the Santa Monica Basin. These include the recharge (RCH), general head boundary (GHB), drain (DRN), connected linear network (CLN), and hydraulic flow barrier (HFB) packages.

The RCH package simulates spatially distributed and temporally varying areal recharge due to mountain-front recharge, precipitation, and urban irrigation. The RCH input combines all the individual components and is based on a watershed-scale, precipitation-runoff infiltration model developed for in parallel with the LACPGM (Hevesi and Johnson, 2016). Areal recharge varies throughout the model area, with the highest recharge generally occurring near the Santa Monica mountains and the hills bordering the model area to the north.

The GHB package was used to model nodes offshore underlying Pacific Ocean and the nodes underlying Marina del Rey. The model layer 3 representing Mesa sequence includes all the GHB nodes underlying Marina del Rey. Input for a GHB node includes a reference head and conductance value. The LACPGM offshore nodes were assigned a freshwater-equivalent head, calculated based on the node elevation and the relative density difference between seawater and freshwater.

The DRN package was used to model the Ballona Creek, and ephemeral streams (from runoff in the foothills) in the Santa Monica Mountains. The DRN nodes are associated with a drain elevation and drain conductance. Within the Santa Monica Basin, DRN cells are present in different model layers. Most of the drain outflows occur during the wet years, representing drainage of excess precipitation.

The HFB package is used to model the various faults identified in the revised LACP sequence stratigraphy model. Within the Santa Monica Basin, modeled faults include the Santa Monica Fault and the Newport-Inglewood Fault. The locations and areal extents of the flow barriers were identified from geological information or inferred from localized hydraulic-head (water-level) gradients. Longer HFBs were broken into segments and assigned different hydraulic-characteristic values for each segment. The Santa Monica Fault and Newport-Inglewood Fault are simulated as significant flow barriers in the deeper units. All the pumping wells in the LACPGM are modeled using the CLN package. Most of the pumping occurs from model layer 7 at the Charnock wellfield.

Figures 3.4a through 3.4g show the boundary conditions and modeled HFBs in layers 2 through 8 respectively.

Based on the LACPGM documentation, the GHB, DRN, HFB, model conductivity, and storage parameters were initially derived based on prior geologic knowledge, published literature, or previous models and subsequently calibrated together to match simulated and observed water levels as best as possible. Within the Santa Monica subbasin, 2578X and 2539L (discussed above) were key calibration wells. Simulated heads (screened in the Bent Spring sequence) reproduce the large fluctuations in water levels observed at well 2578X. Simulated heads at 2539L (screened in the Pacific sequence) stay within 25 ft of observed. The simulated difference in head between the Pacific and Bent Spring aquifer systems is within 10 ft of the measured differences as determined by comparing water levels in 2539L (Pacific sequence) and 2578X (Bent Spring sequence). Measured water levels in the Santa Monica Basin near the Santa Monica Mountains fluctuated seasonally by up to 150 ft. The model was not able to simulate this much fluctuation, possibly due to the complex geology along the Santa Monica Fault.

3.4 Santa Monica Basin Historical Water Budget

The LACPGM was updated recently by incorporating additional pumping datasets and subsequently used to compute 1980-2015 water budget components for the Santa Monica Basin. The water budget components include: total pumping, recharge, outflow to drain features, cross-basin flows to West Coast Basin, Central Basin, Hollywood Basin, outflow to the GHB cells, as well as change in storage. These water budget components are plotted in figures 3.5a through 3.5h respectively. In particular, Figure 3.5f representing inflows from the GHB shows that the LACPGM simulates increase in GHB inflows in response to increase in pumping over the period 2011-2015.

4.0 MODEL SENSITIVITY RUNS

To further evaluate the range in the GHB water budget components, model sensitivity runs were conducted. The sensitivity runs focused on parameters within the Santa Monica Basin and used a truncated simulation period (2011-2015) for shorter model runtimes. Parameters identified for sensitivity analysis included horizontal and vertical hydraulic conductivity within specific layers, and GHB node conductances for nodes underlying Marina del Rey. Hydraulic conductivity zones covering the area between GHB nodes and the pumping areas in model layers 3, 5, 7, and 8 were selected for the sensitivity analysis. These zones are shown in Figures 4.1a through 4.1d. For each zone, a set of sensitivity runs were conducted by varying the respective horizontal and vertical hydraulic conductivity values using a multiplication factor of 1.2 and 2. The Marina del Rey GHB cells in model layer 3 selected for the sensitivity analysis are shown in Figure 4.2. The GHB conductances were similarly varied using multiplication factors 0.1, 0.5, 1.2, 2.0 and 10. Results of the sensitivity runs showed that of all the parameters, the vertical hydraulic conductivity of model layer 7, and GHB conductances have the greatest impact on the water budget component representing GHB inflows. Plots of the simulated GHB water budget component for the GHB sensitivity runs are shown in Figure 4.3.

5.0 PREDICTIVE MODELING

5.1 Development of Precipitation Time Series

The California Water Commission's Water Storage Investment Program (WSIP) climate change datasets available from the DWR SGMA portal were downloaded for use in predictive simulations. The datasets includes all necessary climate, hydrology and water supply variables for the entire state and allows any agency to investigate any planning or management actions under projected climate change conditions.

The DWR climate change datasets include two future climate period conditions: one 2030 (near future) and three 2070 scenarios (late future). The latter consists of the central tendency of the ensemble of the general circulation models (GCMs), drier with extreme warming (2070 DEW) conditions and wetter with moderate warming (2070 WMW) conditions.

The climate change data falls into three categories. First, climatological data such as precipitation and reference evapotranspiration on a state-wide gridded basis; second, hydrological data such as unimpaired streamflow as point data; and third, Central Valley Project operations data. The latter are not relevant for the Santa Monica Basin. The Variable Infiltration Capacity (VIC) hydrological model's gridded precipitation and reference ET datasets are provided as monthly change-factor time-series from 1915 to 2011 (VIC simulation period) for the 2030 and 2070 future conditions over a 6 km-by-6 km grid resolution. Projected precipitation and reference ET can be used in groundwater models by multiplying the respective historical climatological data by the change-factor time-series identified for future conditions.

For the Santa Monica Basin predictive simulations using the LACPGM, only the projected precipitation climate change factors were used. Historical precipitation data from the Los Angeles Downtown station and the corresponding change-factors of the intersected VIC grid cell were used to develop recharge input for the predictive LACPGM models. This procedure is described in the following sections.

5.1.1 Weather Station Selection

The Los Angeles Downtown weather station USW00093134 (Figure 5.1) was selected for developing the precipitation time series since it has a long record for projection analysis.

Additionally, precipitation data from this weather station were used in the LACPGM study (Paulinski et al 2020) to develop a rainfall-recharge regression equation to estimate the LACPGM recharge input. Figure 5.2 shows the historical time-series of precipitation and the cumulative departure from the mean.

5.1.2 Analogous Water Years for 2012 – 2019 Period

As described in GSP regulations, a 50-year SGMA management horizon is required for water budget development. In this current study, the baseline period covering years 1959 – 2019 were used to calculate future precipitation change factors. Since the change-factors of the VIC gridded dataset extends only to 2011, analogous water years for year 2012 – 2019 were identified.

Analogous water years for 2012-2019 were identified using a standard Minimum Root Mean Square Error (RMSE) method. For each year within the 2012-2019 period, a time-series of the total squared difference of monthly precipitation data to each year in the historical period 1922-2011 was calculated to identify the year with minimum RMSE. The identified analogous years are shown in the table below.

Table 5.1: Analogous water year for 2012 – 2019

Water Year	Analogous Water Year
2012	1925
2013	2002
2014	1994
2015	1989
2016	1949
2017	2008
2018	1981
2019	1940

5.1.3 Climate Factor Time Series

The associated VIC grid cell with selected weather station number 10619 is shown in Figure 5.3. The time-series of change-factors under 2030 and 2070 scenario, for the grid cell are shown in Figure 5.4. The historical precipitation data from 1959-2019 is multiplied by the corresponding 2030 or 2070 change-factors from 1959-2019 to project the future precipitation data. As described above, the VIC change-factors are provided from 1915 – 2011. Climate change factors for 2012 to 2019 are determined using the analogous years method and appended to the VIC dataset.

5.2 Recharge Estimation

The LACPGM recharge input for the predictive models was calculated using the regression relationship developed by the USGS (Appendix 7 of Paulinski et al 2020). The regression relationship was developed for use in future water management scenarios identified in the LACPGM study (Chapter D of Paulinski et al 2020). The regression plot is reproduced in Figure 5.5. LACPGM recharge input for the predictive models is estimated using a piece-wise linear function of variable X, the weighted three quarters of precipitation data,

$$X = \text{Precip}\ (Q_i) + 0.59 * \text{Precip}\ (Q_{i-1}) + 0.35 * (Q_{i-2}) \qquad (1)$$

The piecewise linear function for estimating recharge (in acre-feet/year) uses one the following depending on the value of X:

$$\text{Recharge}\ (Q_i) = 108.93{*}X^2 + 144.63{*}X + 2865.5 \qquad X < 15\ \text{in/year} \qquad (2)$$

$$\text{Recharge}\ (Q_i) = 6429.3 * X - 69853 \qquad X \geq 15\ \text{inches/year} \qquad (3)$$

Figures 5.6a and 5.6b show the estimated recharge for Baseline, 2030s and 2070s climate scenarios. Figure 5.7 shows the difference of projected precipitation and baseline under 2030 and 2070 climate scenarios.

The estimated recharge was assigned to model cells based on the spatial distribution of historical average recharge. For each cell, a ratio of the average recharge from 1971 - 2015 to historical total recharge was determined, this ratio was used to distribute the estimated recharge for the predictive models.

5.3 Predictive Model Pumping

Pumping for the predictive model uses the historical model pumping from the last model stress period in 2015. Most of the wells in the model are not in the Santa Monica Basin area so their fluxes are left unchanged. The Santa Monica Basin area pumping was then adjusted to account for the City of Santa Monica's future plans. There are four main well fields (Figure 5.8) that are used in the predictive simulations: Olympic (containing wells Santa Monica-3 and Santa Monica-4), Arcadia Wells (containing Arcadia-4 and Arcadia-5), Charnock (containing Charnock-13, Charnock-15, Charnock-16, Charnock-18, Charnock-19, and Charnock-20), and Arcadia (containing Santa-Monica-1). It should be noted that Charnock 20 is a planned extraction location and was not included in the historical model. These wells account for a total of 9,000 AFY (5,580 gpm or 1,074,082 cfd). The City's plans include pumping of roughly 10,500 AFY with future recharge projects of 1,500 AFY which is reduced from the modeled pumping to result in the 9,000 AFY. Simulated pumping rates at the City's wells are shown in Table 5.2 below:

Table 5.2: Pumping rates for City of Santa Monica Wells

Well	Pumping Rate (AFY)
Arcadia-4	218
Arcadia-5	153
Charnock-13	1,102
Charnock-15	1,102
Charnock-16	1,102
Charnock-18	1,102
Charnock-19	1,102
Charnock-20	1,102
Santa Monica-1	403
Santa Monica-3	1,129
Santa Monica-4	484
Total	***9,000***

5.4 Predictive Model Sea Level Rise

The model incorporates general-head boundary (GHB) cells to represent water levels offshore and in the Marina Del Rey area. Predictive modeling must incorporate the possibility of sea level rise (SLR). Projections of 15 cm and 45 cm were used to represent 2030 and 2070 SLR scenarios, respectively. The projected values were converted to corresponding increase in the equivalent freshwater head. The boundary head of the GHB cells was increased by the respective increase in the freshwater equivalent head.

5.5 Predictive Model Water Budgets

Future water budget for the Baseline, 2030, and 2070 predictive models were computed for all the components. The 2030 and 2070 predictive model water budget components representing storage change, and inflows from the GHB nodes are plotted in Figures 5.9 and 5.10 respectively. The results show that the LACPGM predicts average inflow from the GHB cells of more than 1,500 AFY for both the 2030 and 2070 scenarios.

6.0 DISCUSSION

6.1 Model Uncertainty

The LACPGM is a regional scale model that simulates groundwater flow at the basin-scale using 1/8 x 1/8 mile grid spacing and quarterly stress periods. The LACPGM is calibrated using water level data from several monitoring wells spread over the model area, most of which are in the

Central and West-Coast Basins. No multi-level monitoring well data were available for calibration in the Santa Monica Basin. Within the Santa Monica Basin, historical model results indicate that water levels in the different model layers respond to pumping in the Charnock Wellfield, and impact the inflows and outflows across the Santa Monica Basin boundary. In particular, the historical model water budget component representing inflow from the Marina del Rey GHB cells are impacted by increase in pumping. To further evaluate the potential range of this water budget component, sensitivity runs were conducted using the 2011-2015 simulation period. The model sensitivity runs focused on hydraulic parameters within the Santa Monica Basin, including conductance of Marina del Rey GHB cells. The range of perturbation applied to the selected parameters impacted water levels in model cells near the GHB within a narrow range of 0-5 ft. The sensitivity runs showed that the GHB cell conductance and layer 7 vertical hydraulic conductivity have the biggest impact to the model water budget component representing inflow from the GHB cells. These results indicate the range of uncertainty in the selected model parameters, and their impact on the calculated water budget.

6.2 Data Gaps

The LACPGM regional-scale model was built using a new sequence stratigraphy geologic model of the Los Angeles Coastal Plain, and incorporates all available pumping, injection and recharge datasets. Nevertheless, data gaps exist in certain areas of the LACPGM, including the Santa Monica Basin. Currently there are no multi-level monitoring wells between the Marina del Rey area and the inland areas of the Basin, where most pumping occurs. As a result there are no water level and water quality data to comprehensively evaluate the potential for groundwater flow from the Marina del Rey area. This represents a significant data gap in conceptualizing groundwater flow beneath the Marina del Rey area and the potential for salt water intrusion due to inland groundwater gradients.

7.0 REFERENCES

Dolan, J.F. and Pratt, T.L., 1997, High-resolution seismic reflection profiling of the Santa Monica fault zone, west Los Angeles, California, Geophysical Research Letters, 24, 2051-2054.

Hevesi, J.A., and Johnson, T.D., 2016, Estimating spatially and temporally varying recharge and runoff from precipitation and urban irrigation in the Los Angeles Basin, California: U.S. Geological Survey Scientific Investigations Report 2016–5068, 192 p., http://dx.doi.org/10.3133/sir20165068.

Paulinski, S., Martin, P., Martin, D., Johnson, T, and Faunt, C., 2020, Development of a Groundwater-Simulation Model in the Los Angeles Coastal Plain, Los Angeles County, California, Chapter D: Development of a Groundwater-Simulation Model and Future Water-Management Scenarios, Draft Documentation, Received March 09, 2020.

FIGURES

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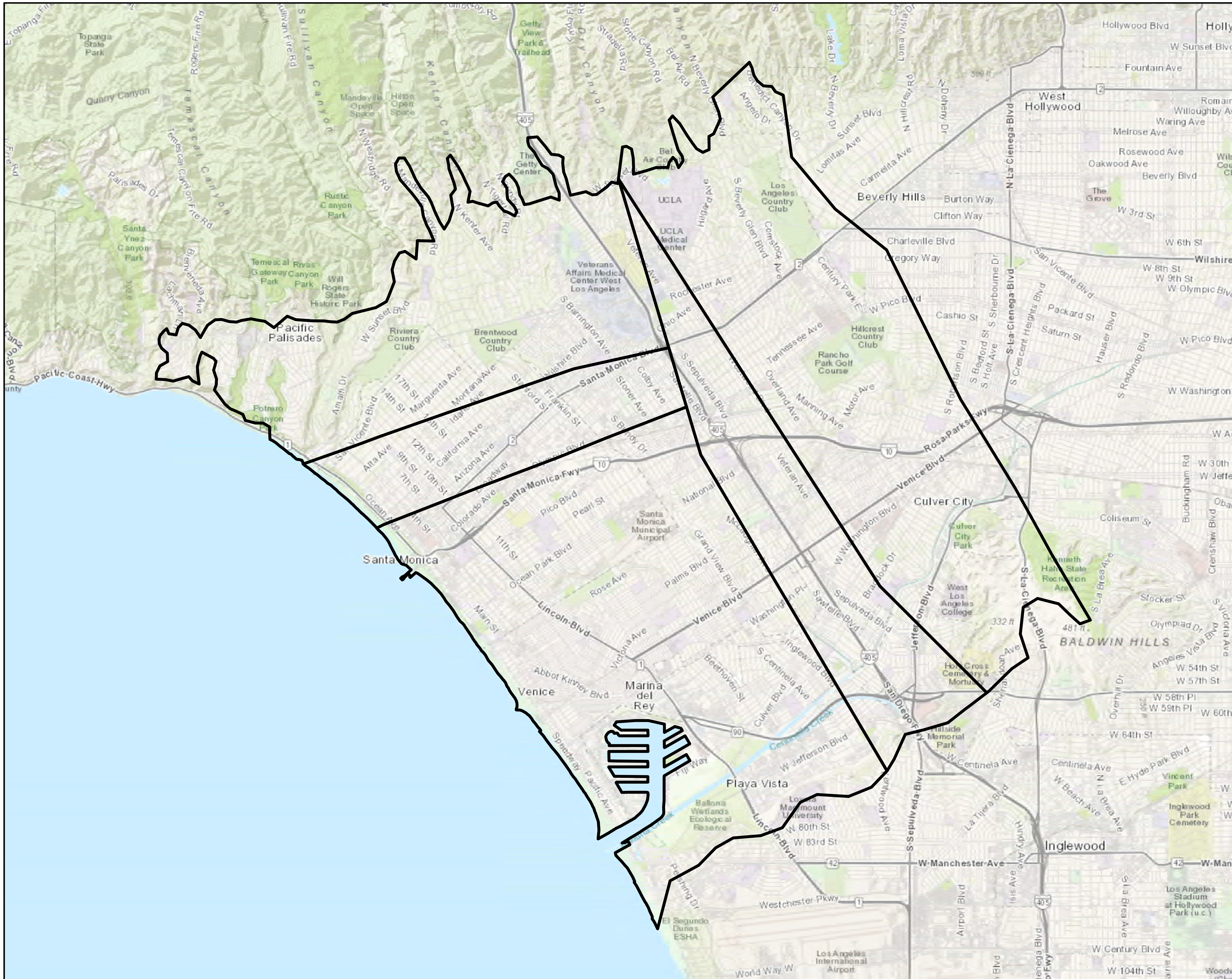

Figure 3.1
Santa Monica Basin Boundary

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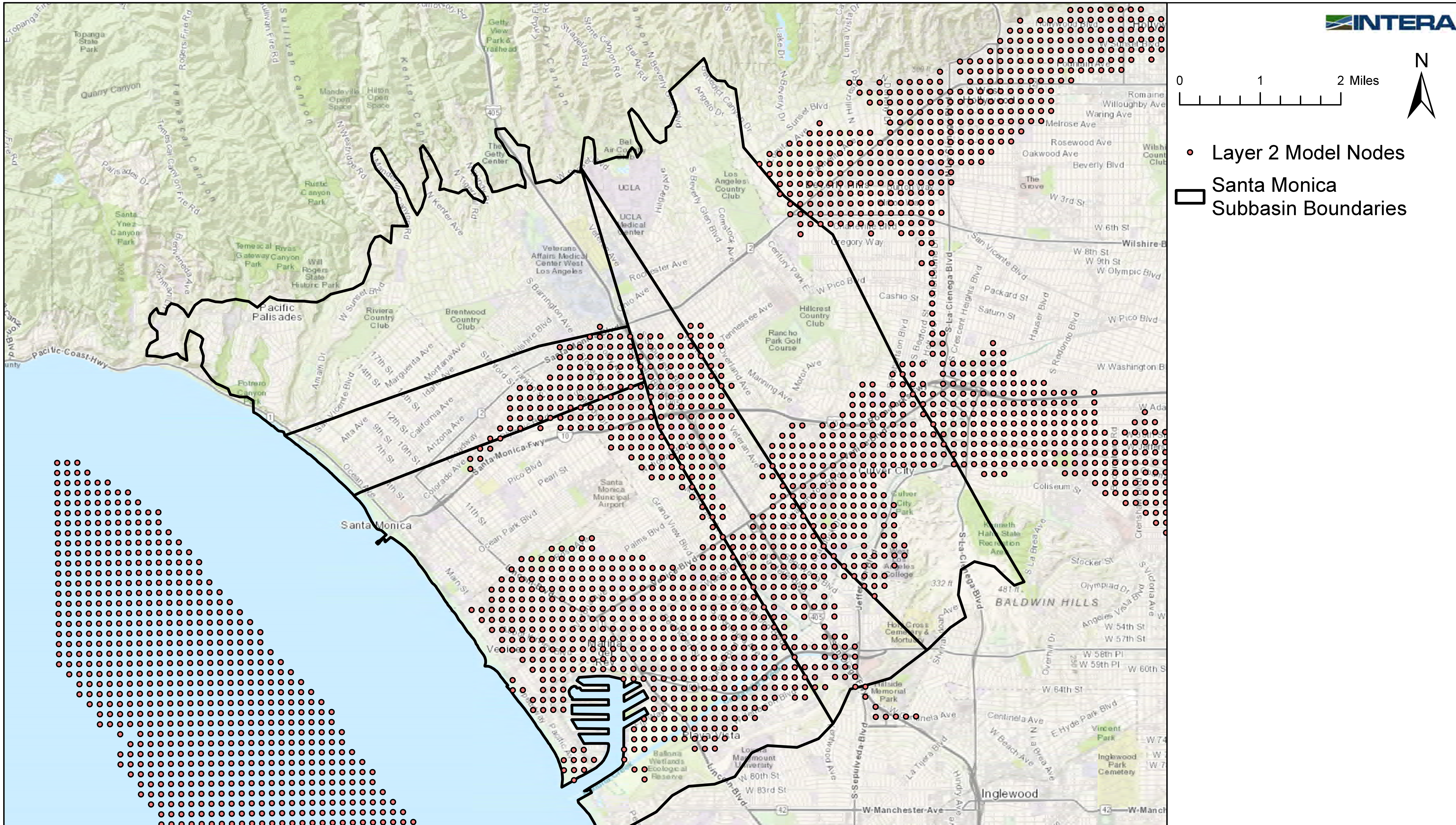

Figure 3.2a
Model Grid and Layer Extents
for Dominguez Sequence, Layer 2

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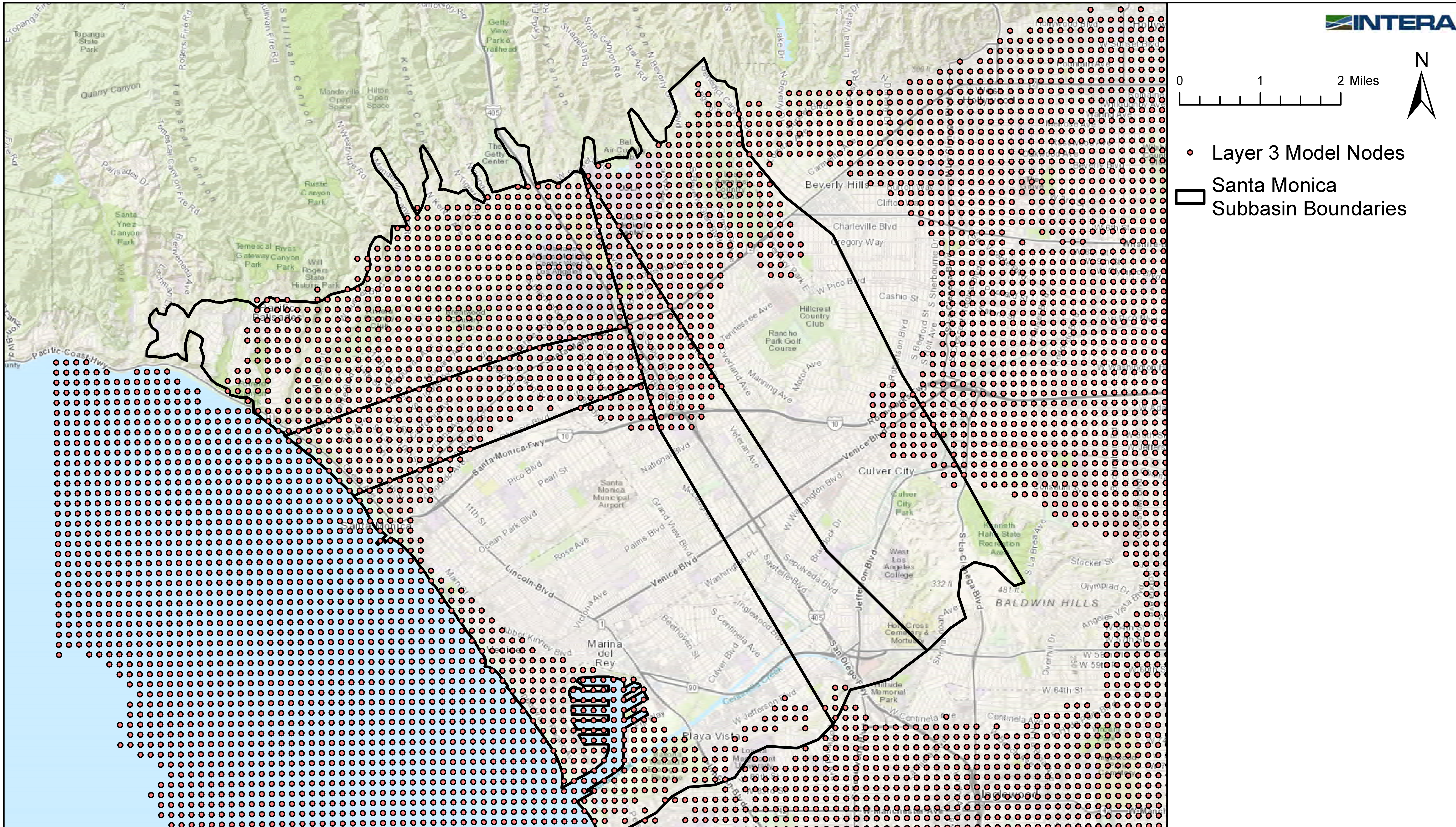
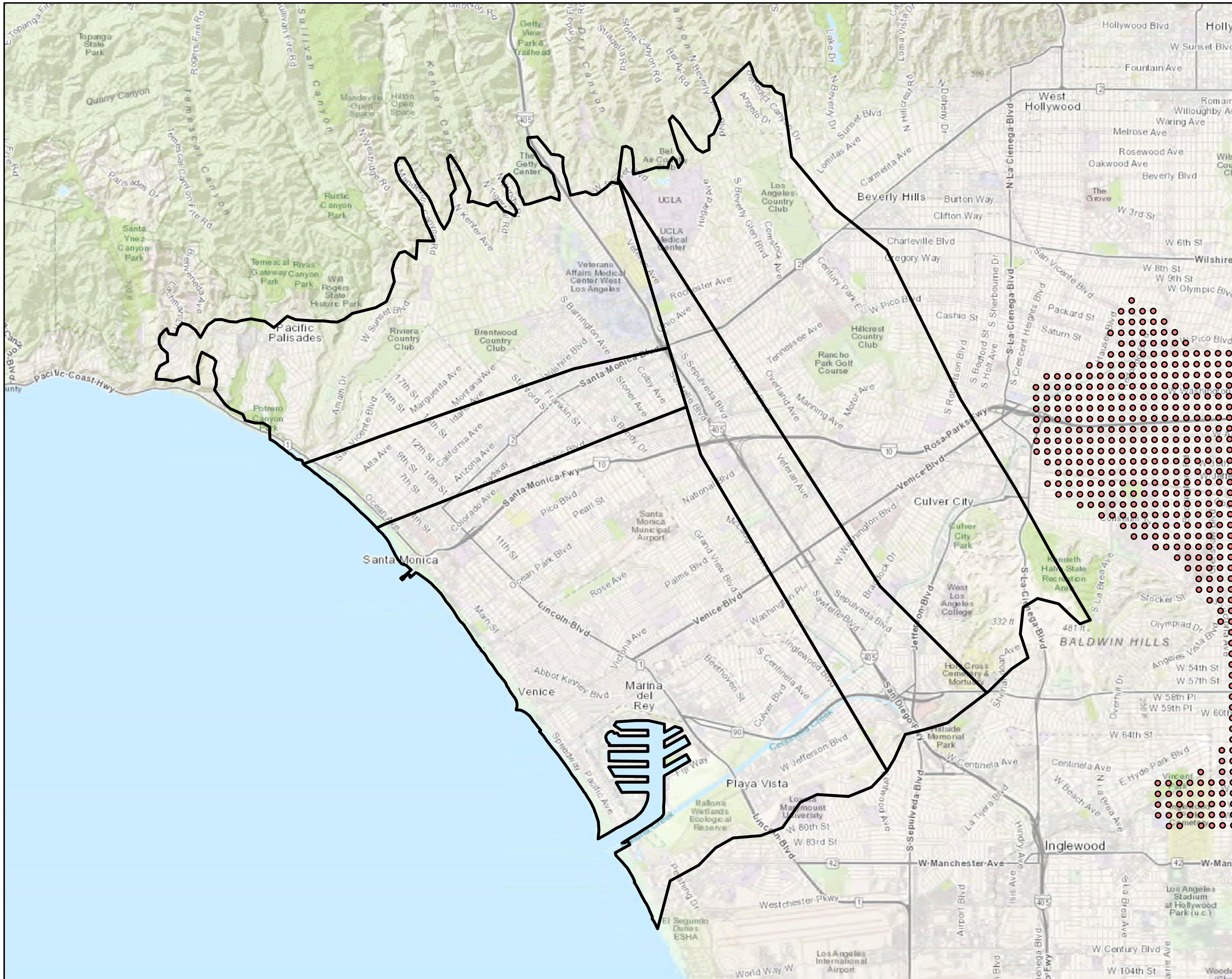


Figure 3.2b
Model Grid and Layer Extents
for Mesa Sequence, Layer 3



INTERA

0 1 2 Miles

N

- Layer 4 Model Nodes
- Santa Monica Subbasin Boundaries

Figure 3.2c
Model Grid and Layer Extents
for Pacific A Sequence, Layer 4

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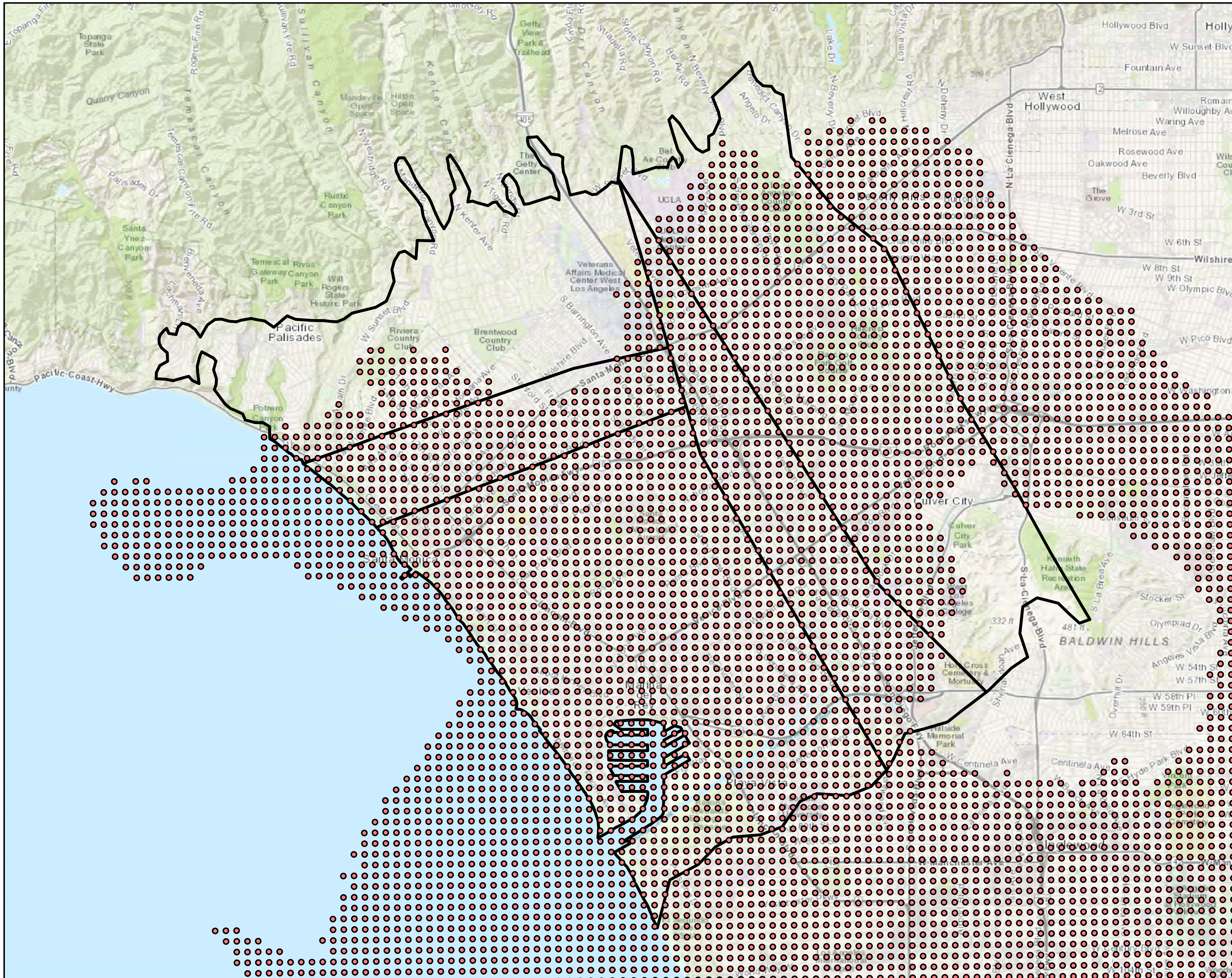

Figure 3.2d
Model Grid and Layer Extents
for Pacific Sequence, Layer 5

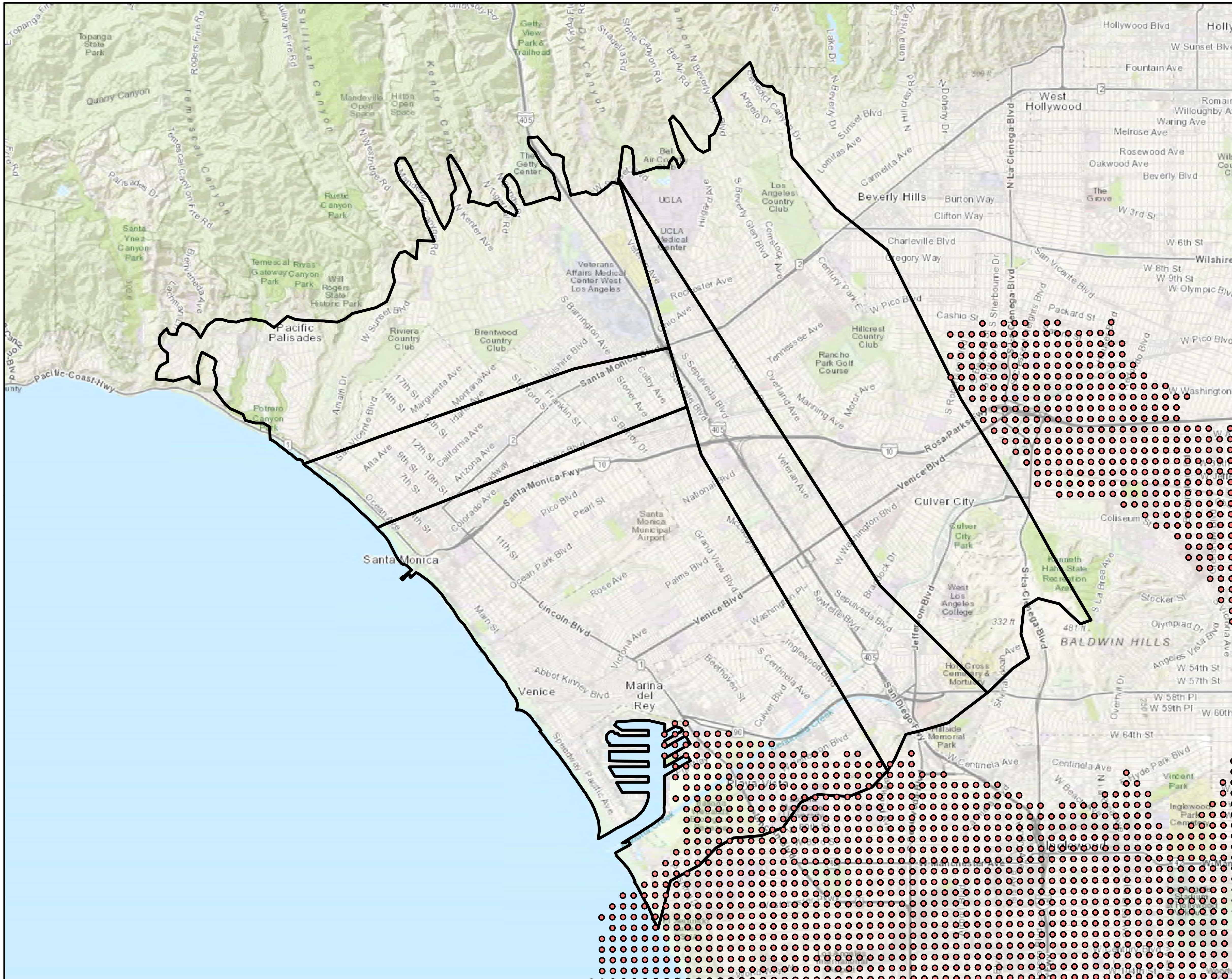

Figure 3.2e
Model Grid and Layer Extents
for Harbor Sequence, Layer 6

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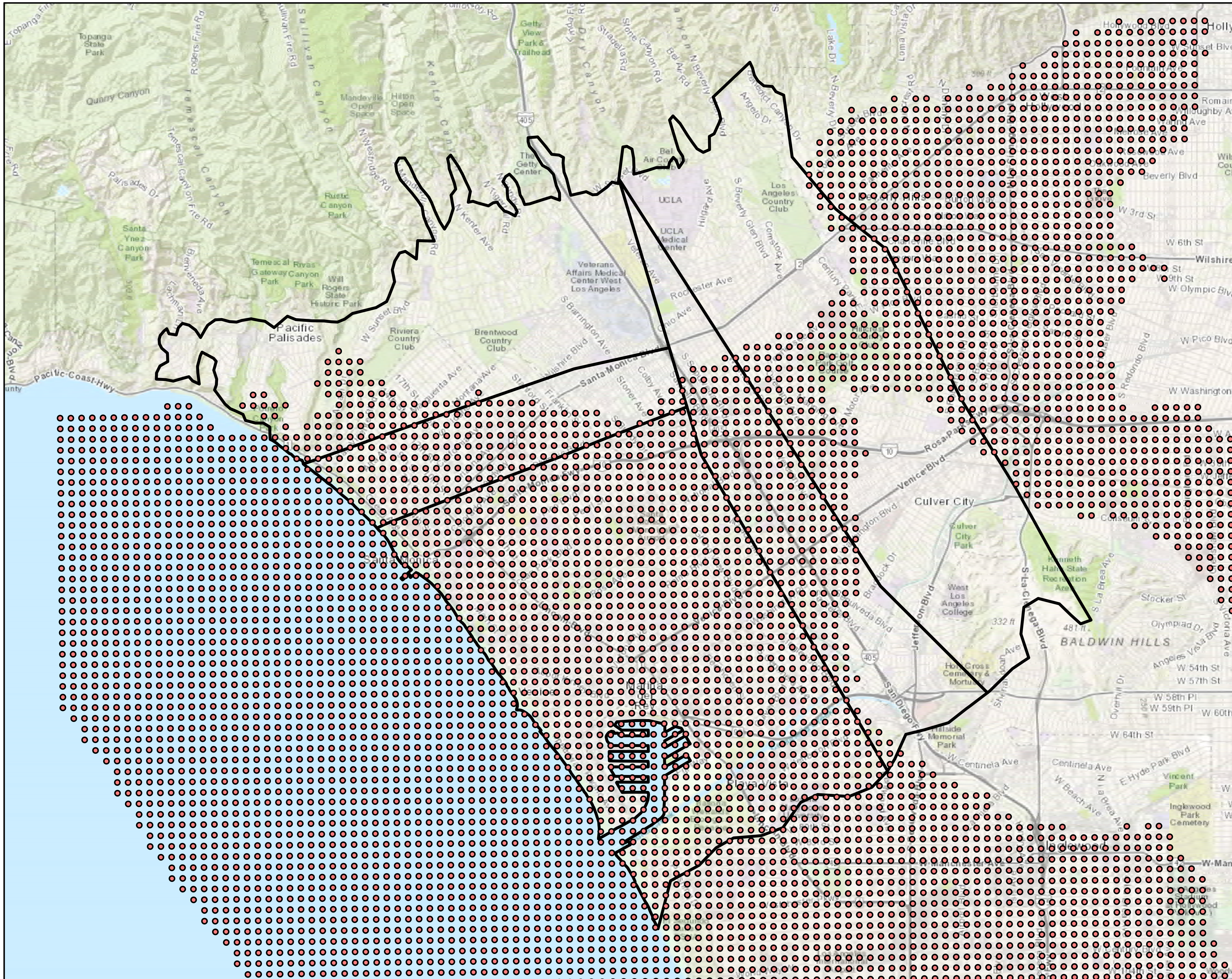

Figure 3.2f
Model Grid and Layer Extents
for Bent Spring Sequence, Layer 7

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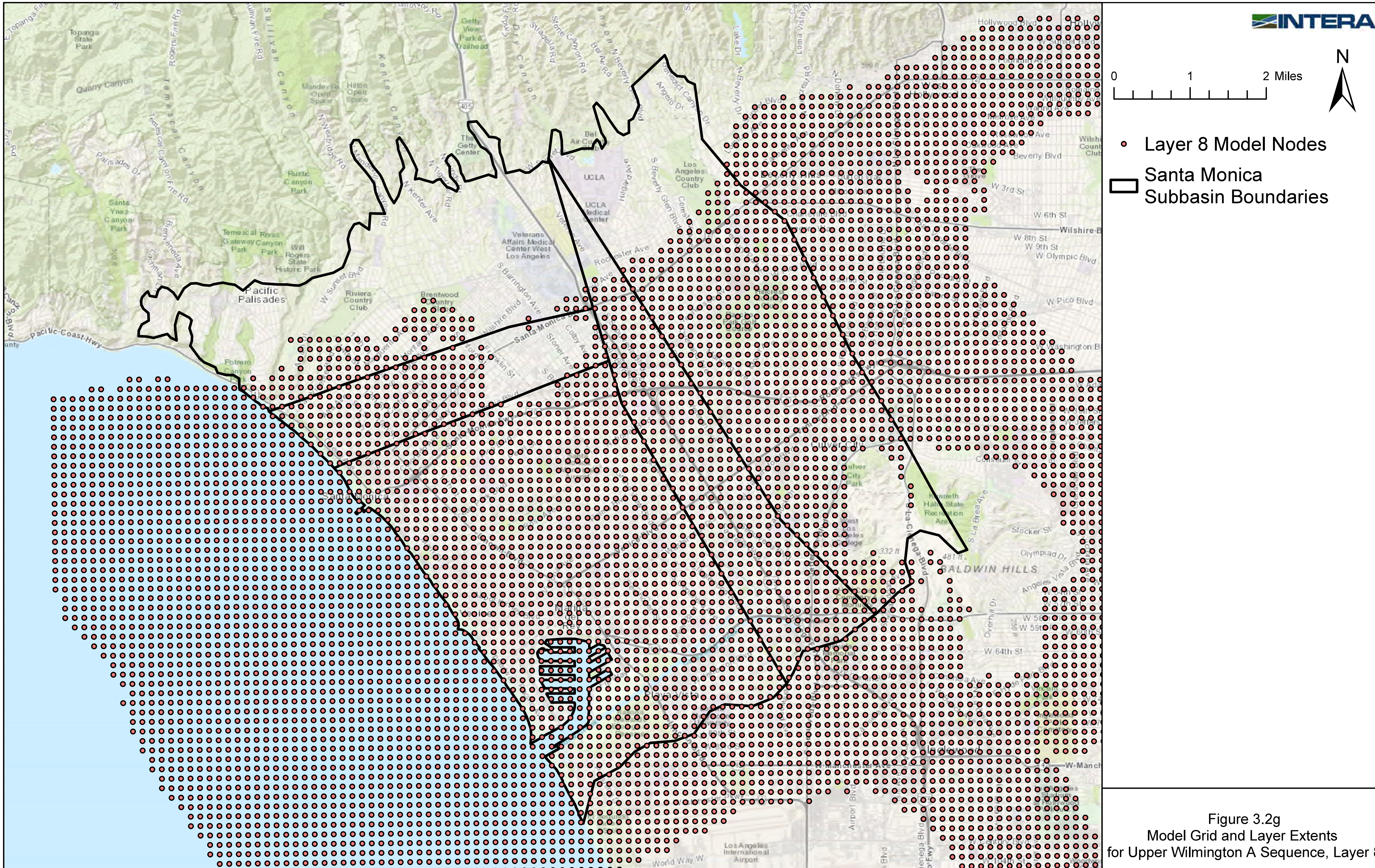

Figure 3.2g
Model Grid and Layer Extents
for Upper Wilmington A Sequence, Layer 8

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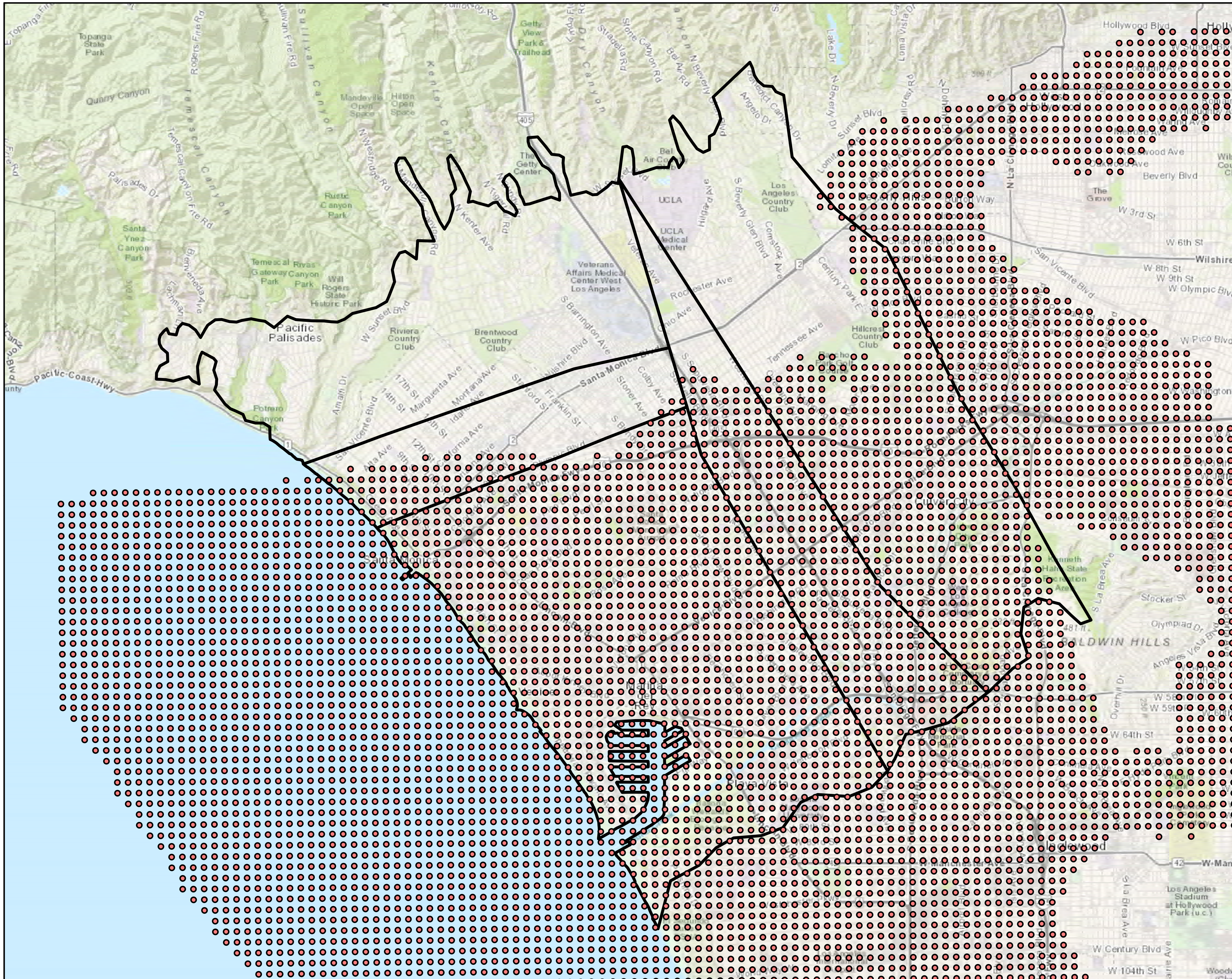

0 1 2 Miles

N

- Layer 9 Model Nodes
- Santa Monica Subbasin Boundaries

Figure 3.2h
Model Grid and Layer Extents
for Upper Wilmington B Sequence, Layer 9

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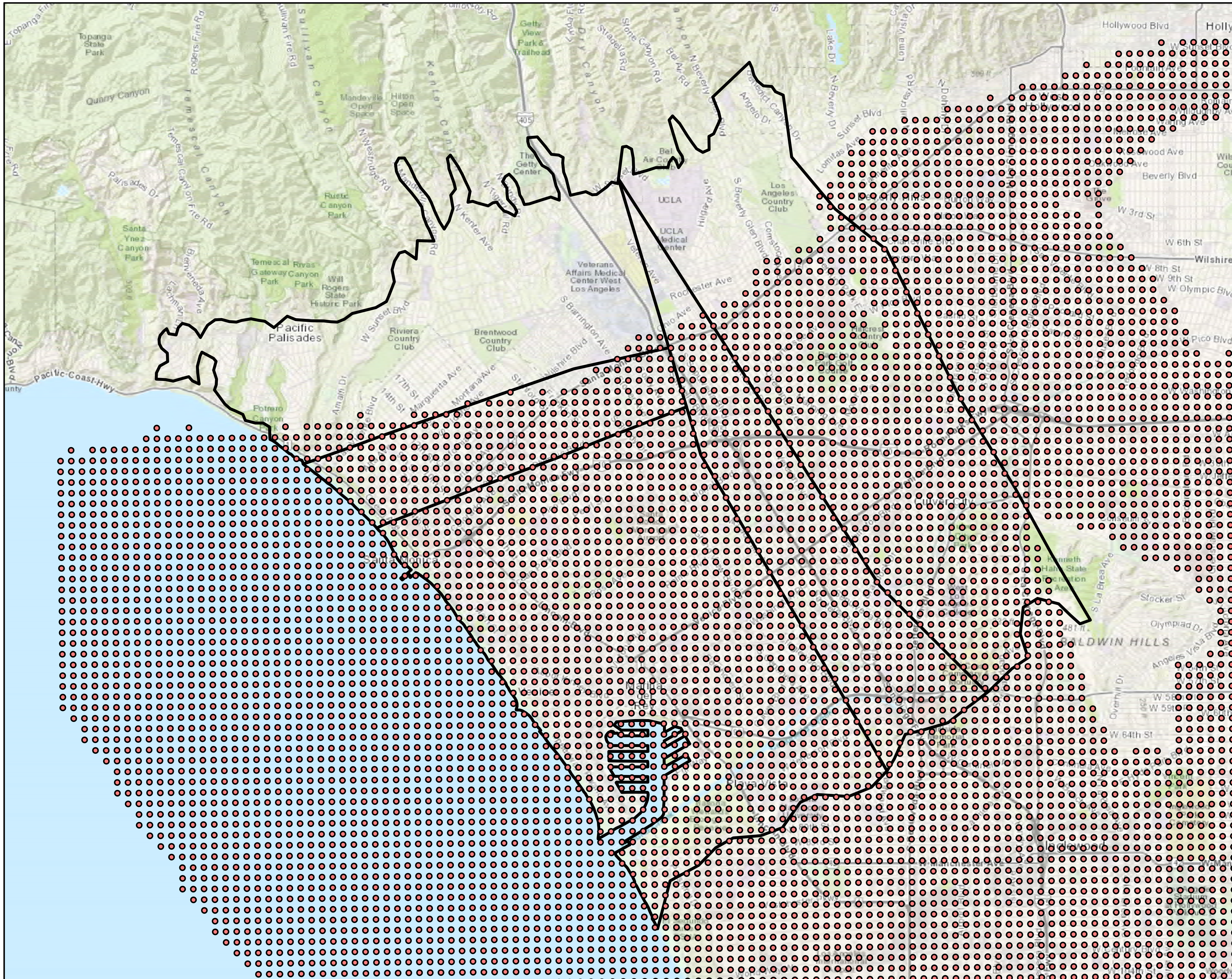

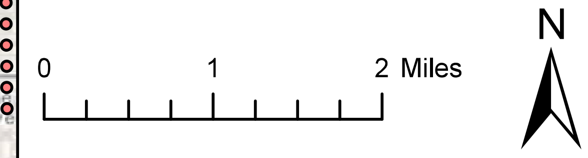

- Layer 10 Model Nodes
- Santa Monica Subbasin Boundaries

Figure 3.2i
Model Grid and Layer Extents
for Lower Wilmington Sequence, Layer 10

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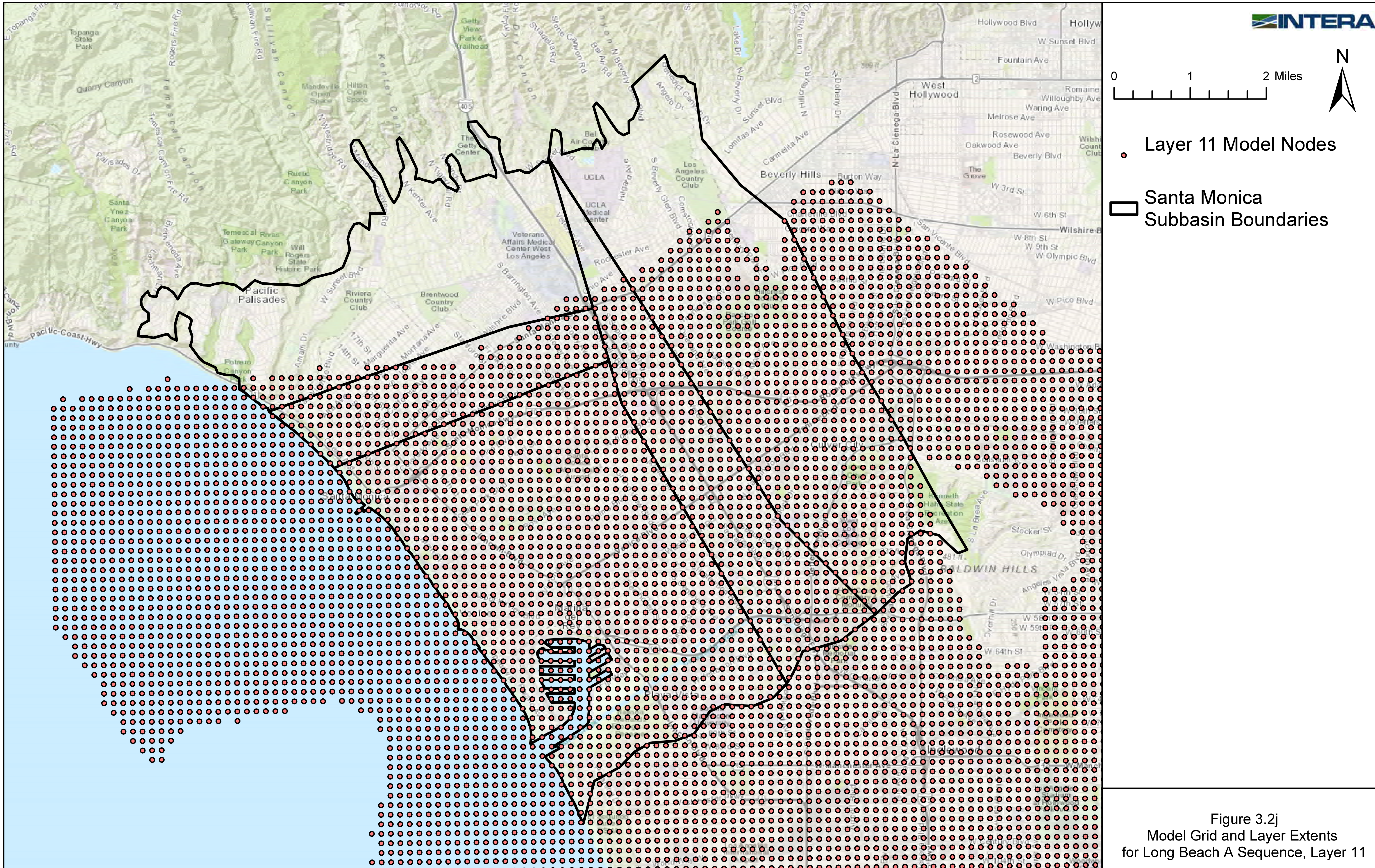
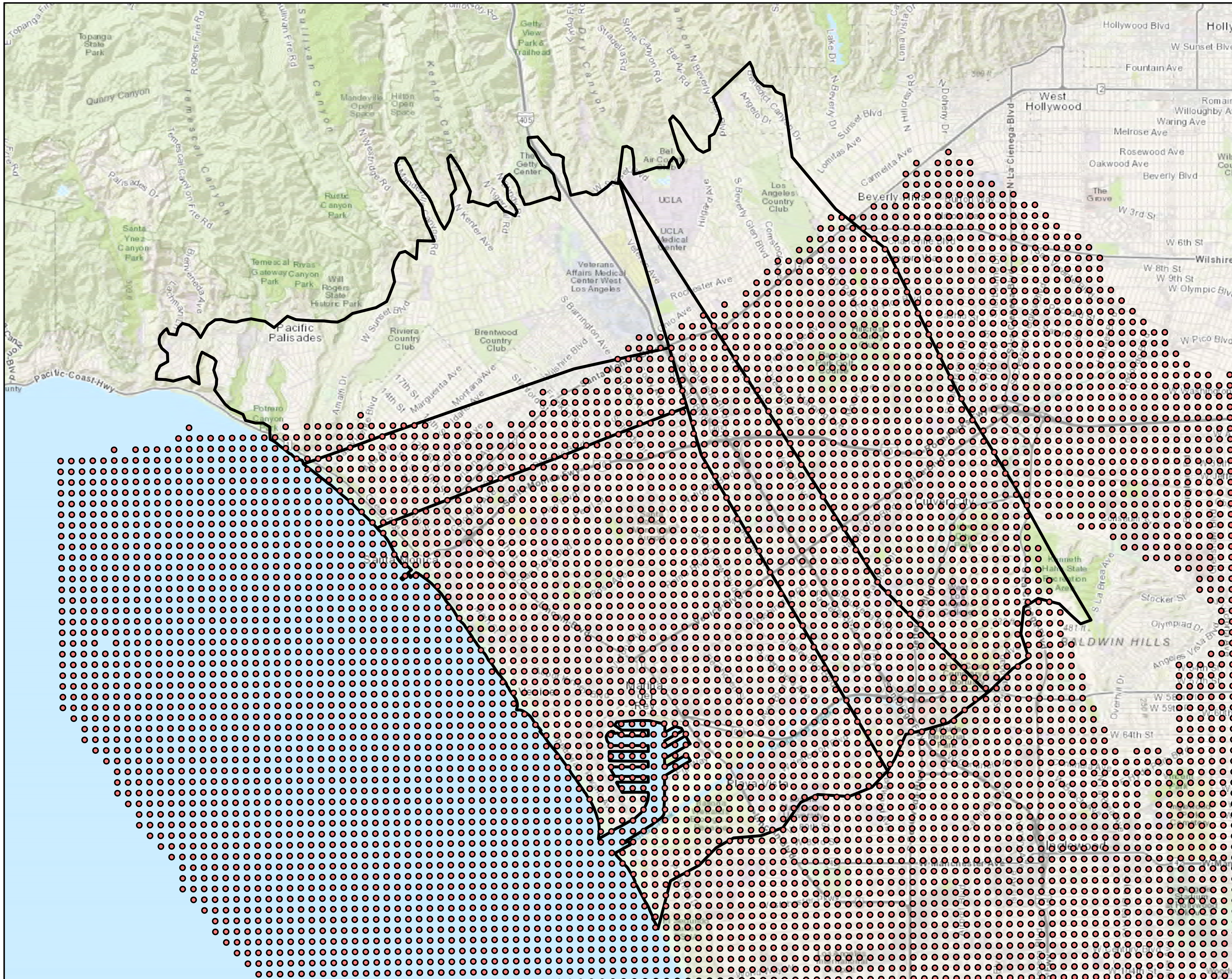


Figure 3.2j
Model Grid and Layer Extents
for Long Beach A Sequence, Layer 11



Layer 12 Model Nodes

Santa Monica Subbasin Boundaries

0 1 2 Miles

N

Figure 3.2k
Model Grid and Layer Extents
for Long Beach B Sequence, Layer 12

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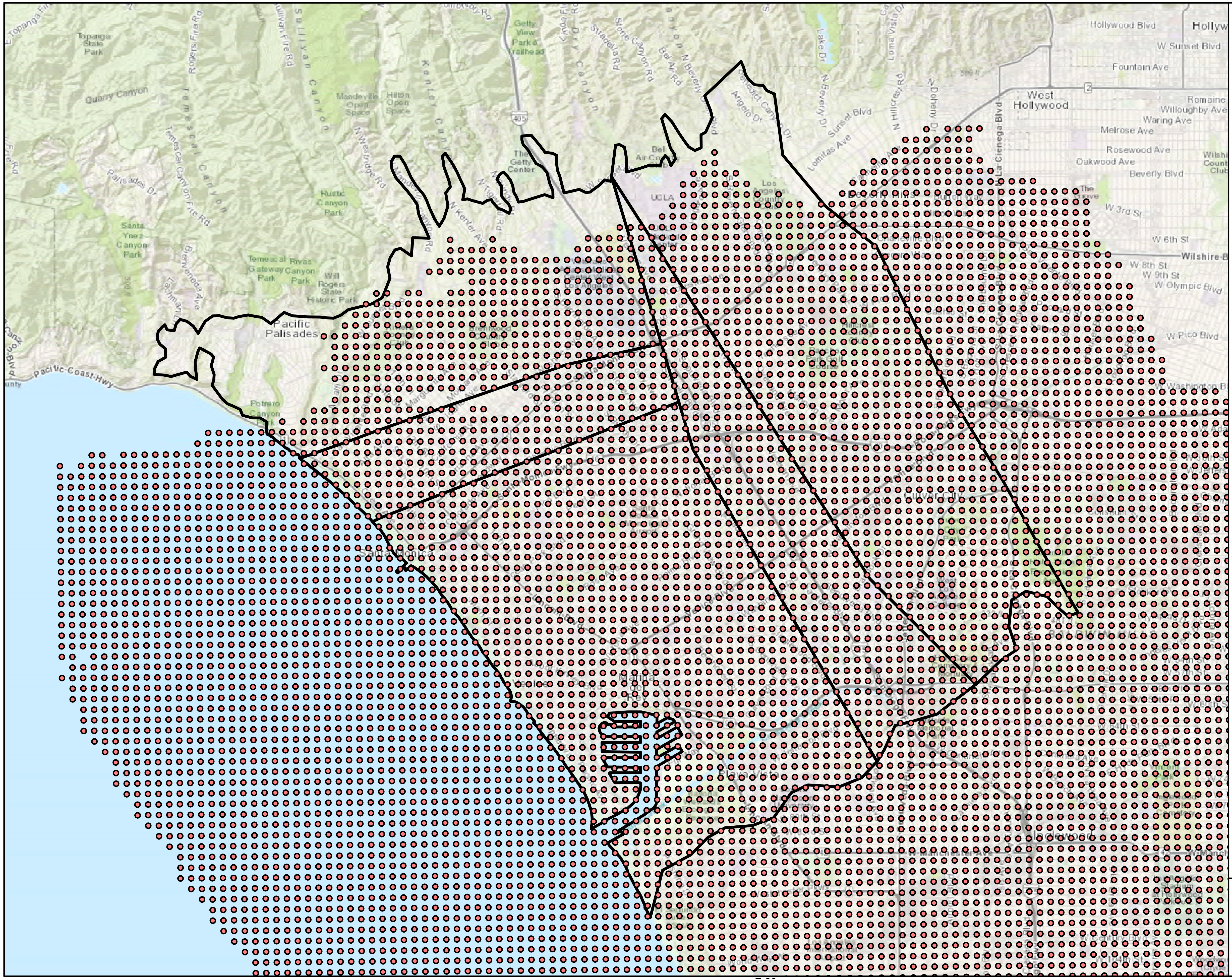

Figure 3.2I
Model Grid and Layer Extents for Long Beach BC and C Sequences, Layer 13

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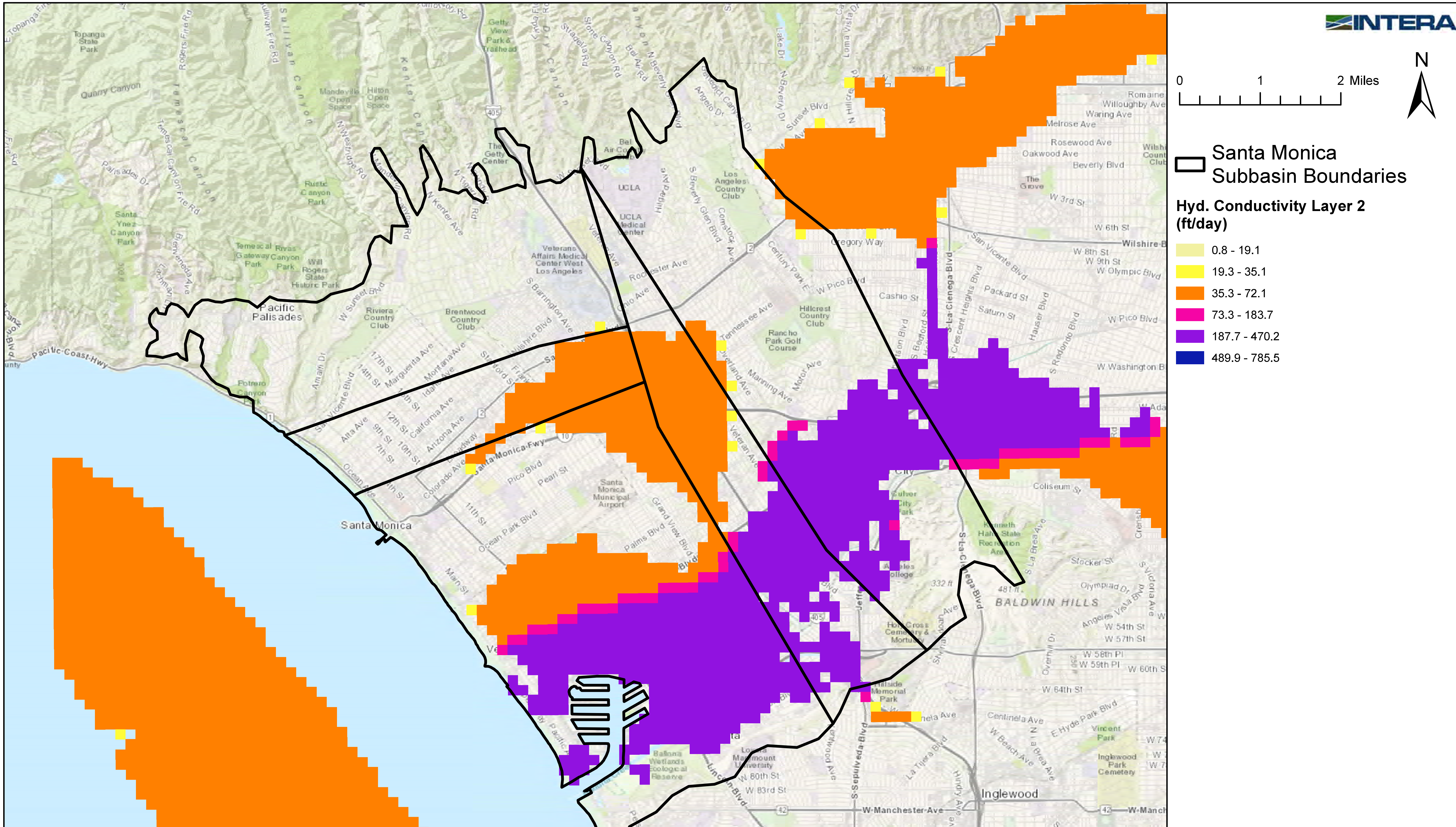

Figure 3.3a
Model Average Hydraulic Conductivity for Layer 2 (ft/day)

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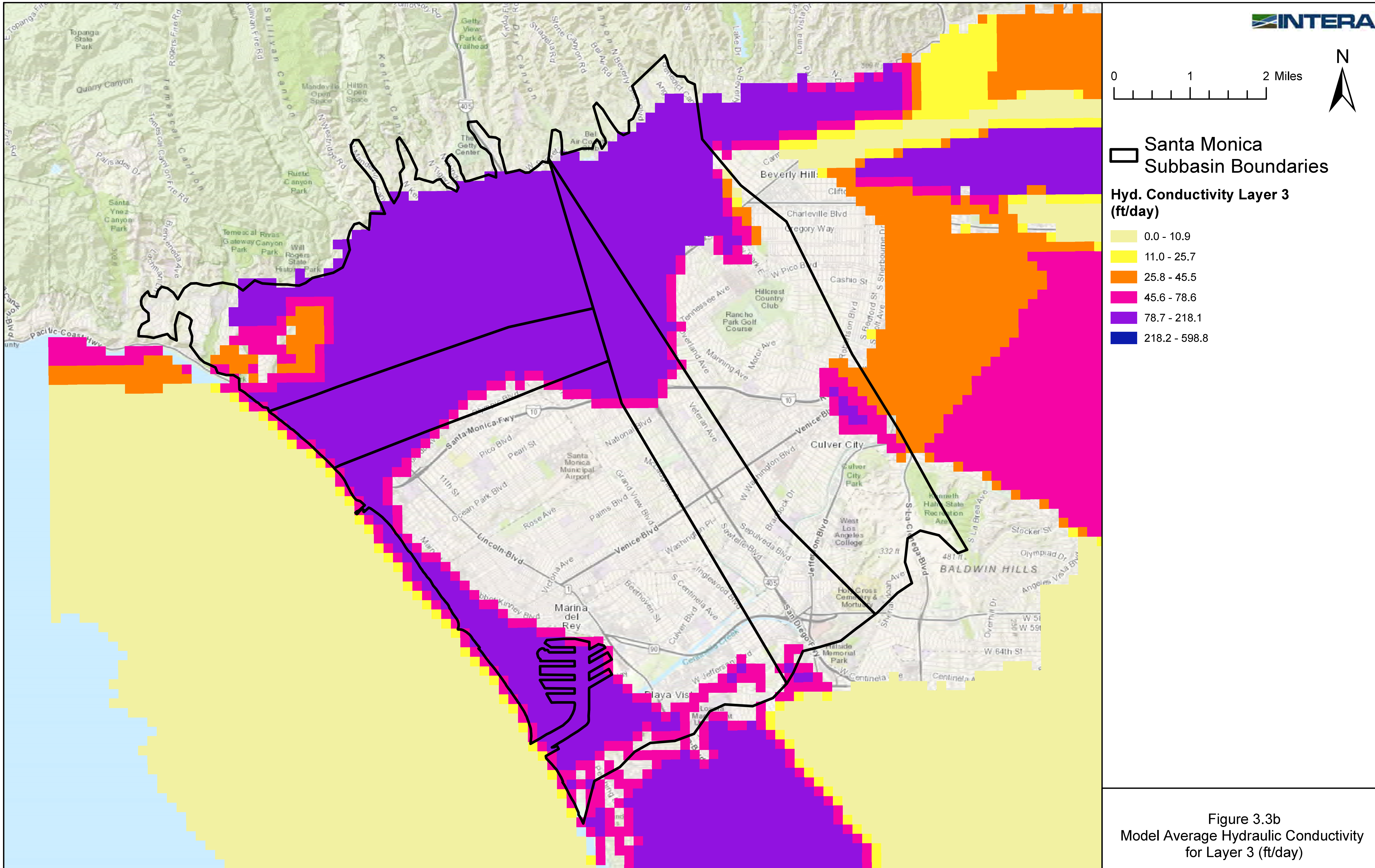

Figure 3.3b
Model Average Hydraulic Conductivity for Layer 3 (ft/day)

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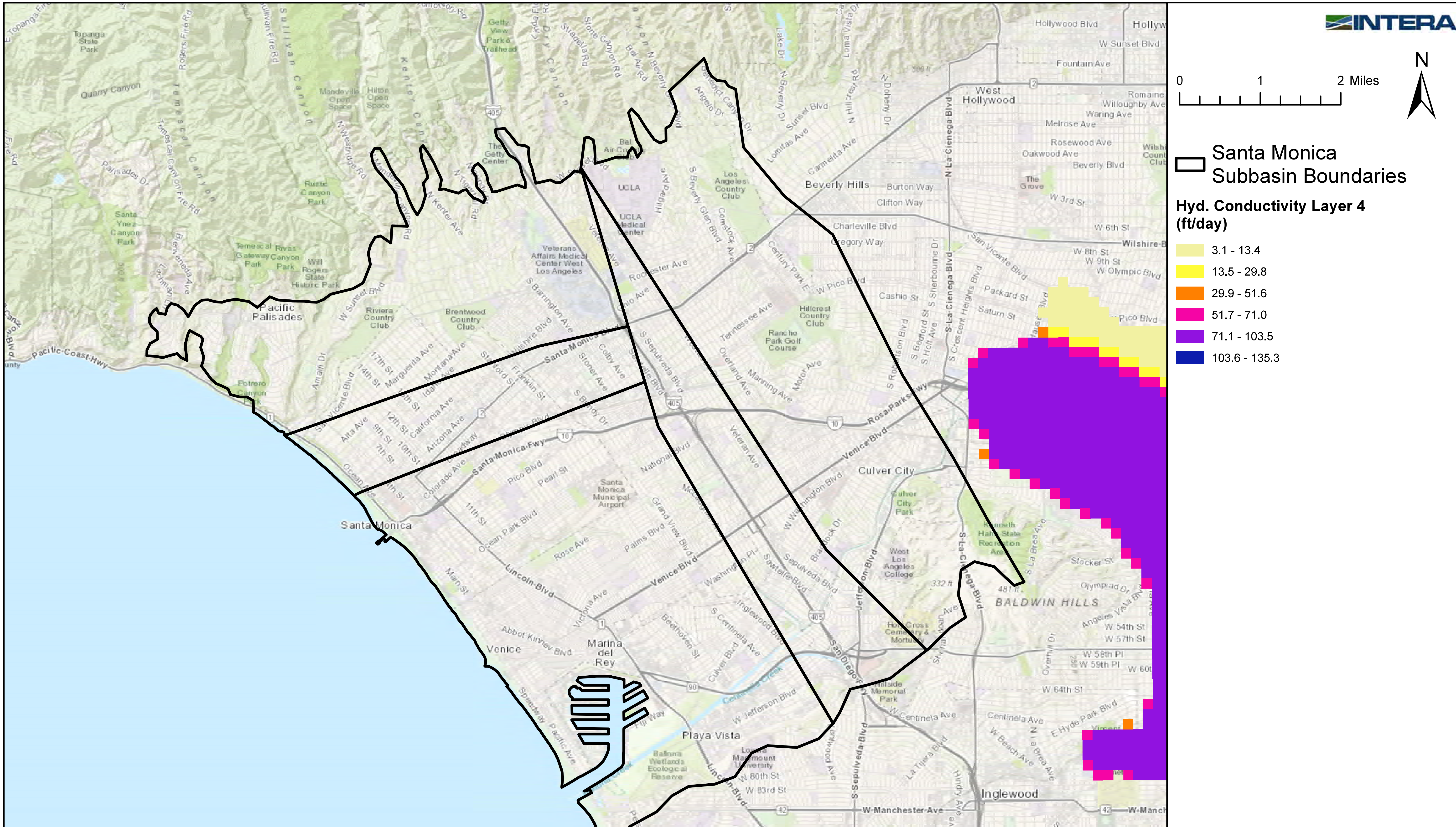

Figure 3.3c
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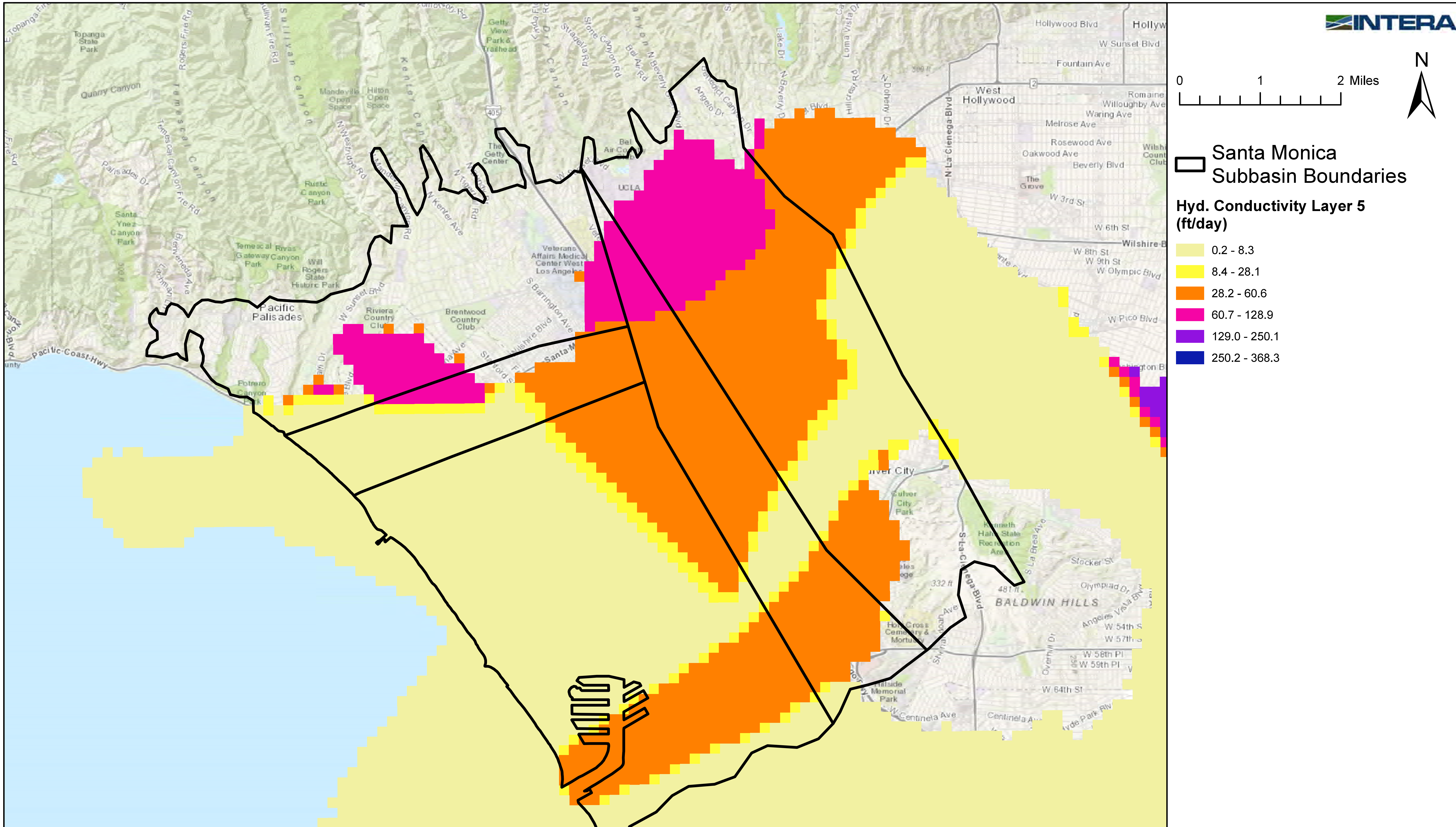

Figure 3.3d
Model Average Hydraulic Conductivity for Layer 5 (ft/day)

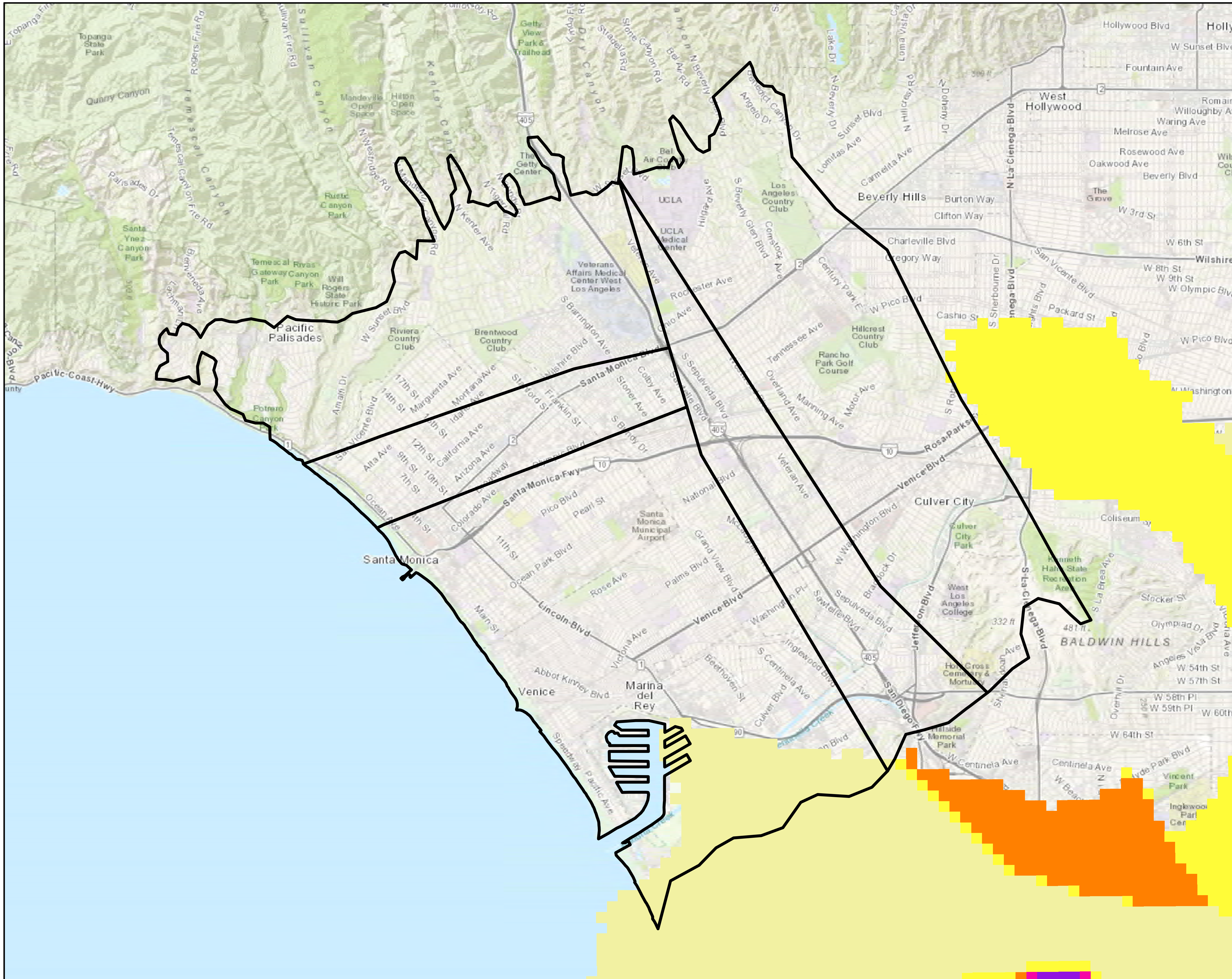

Figure 3.3e
Model Average Hydraulic Conductivity for Layer 6 (ft/day)

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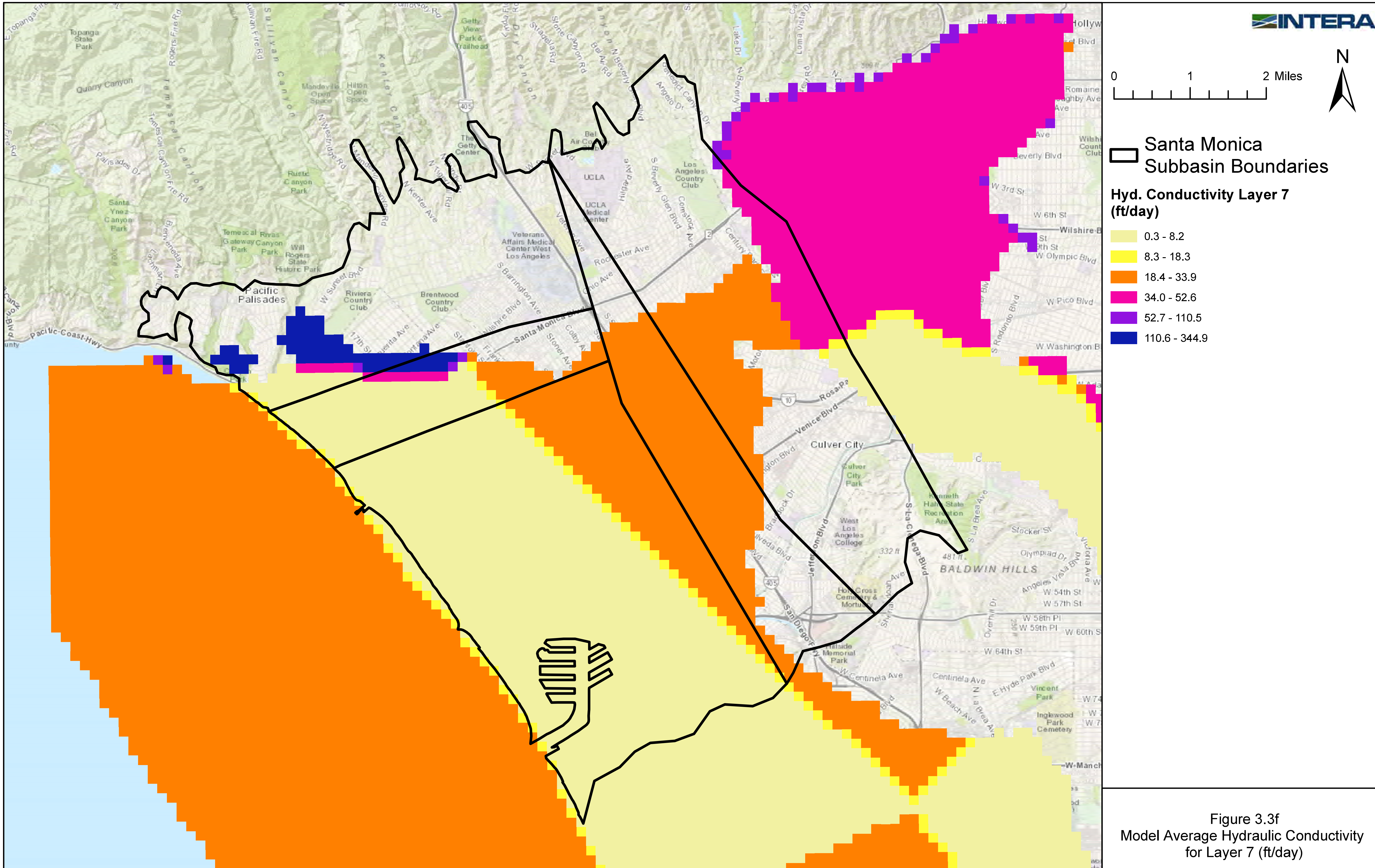

Figure 3.3f
Model Average Hydraulic Conductivity for Layer 7 (ft/day)

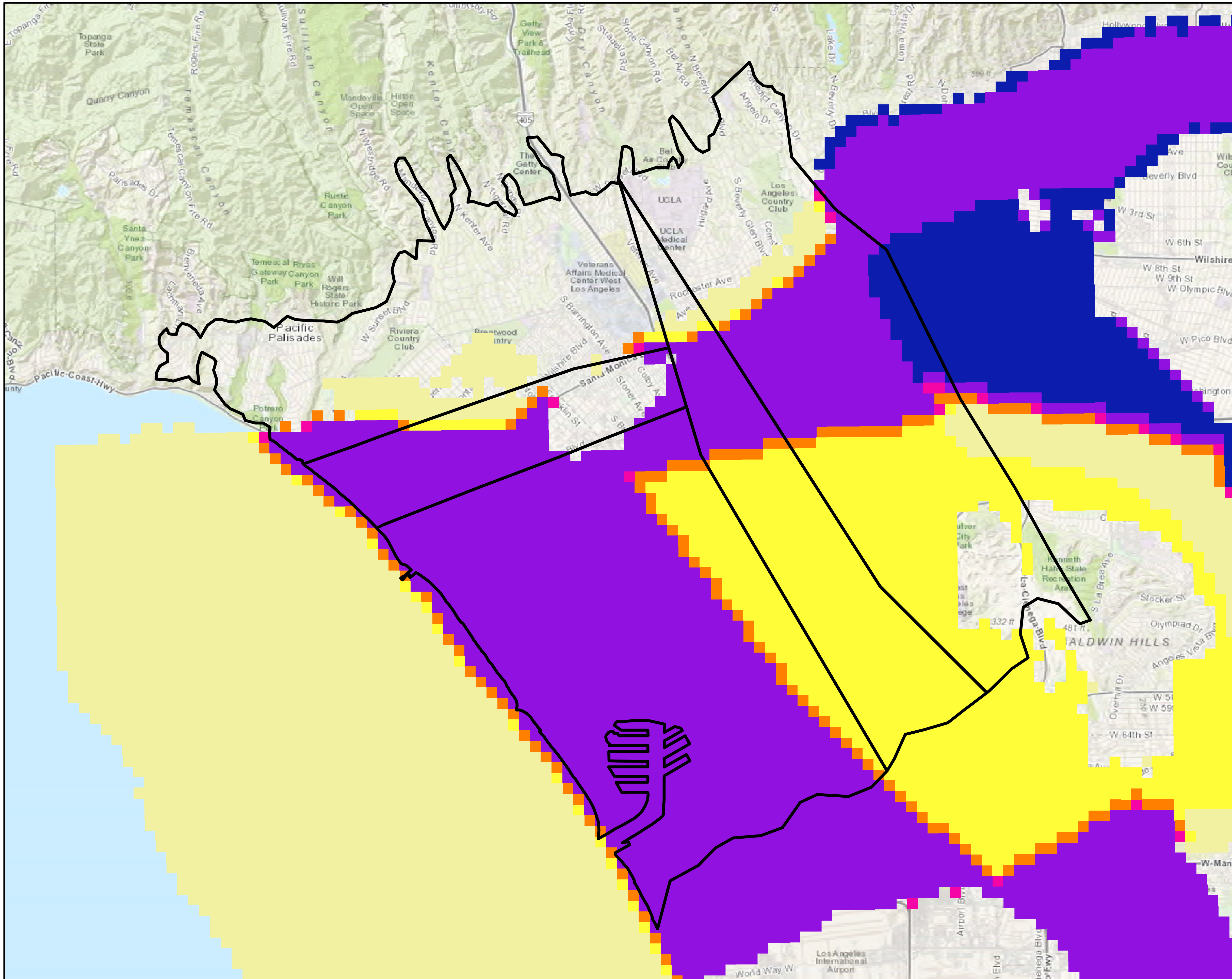

Figure 3.3g
Model Average Hydraulic Conductivity for Layer 8 (ft/day)

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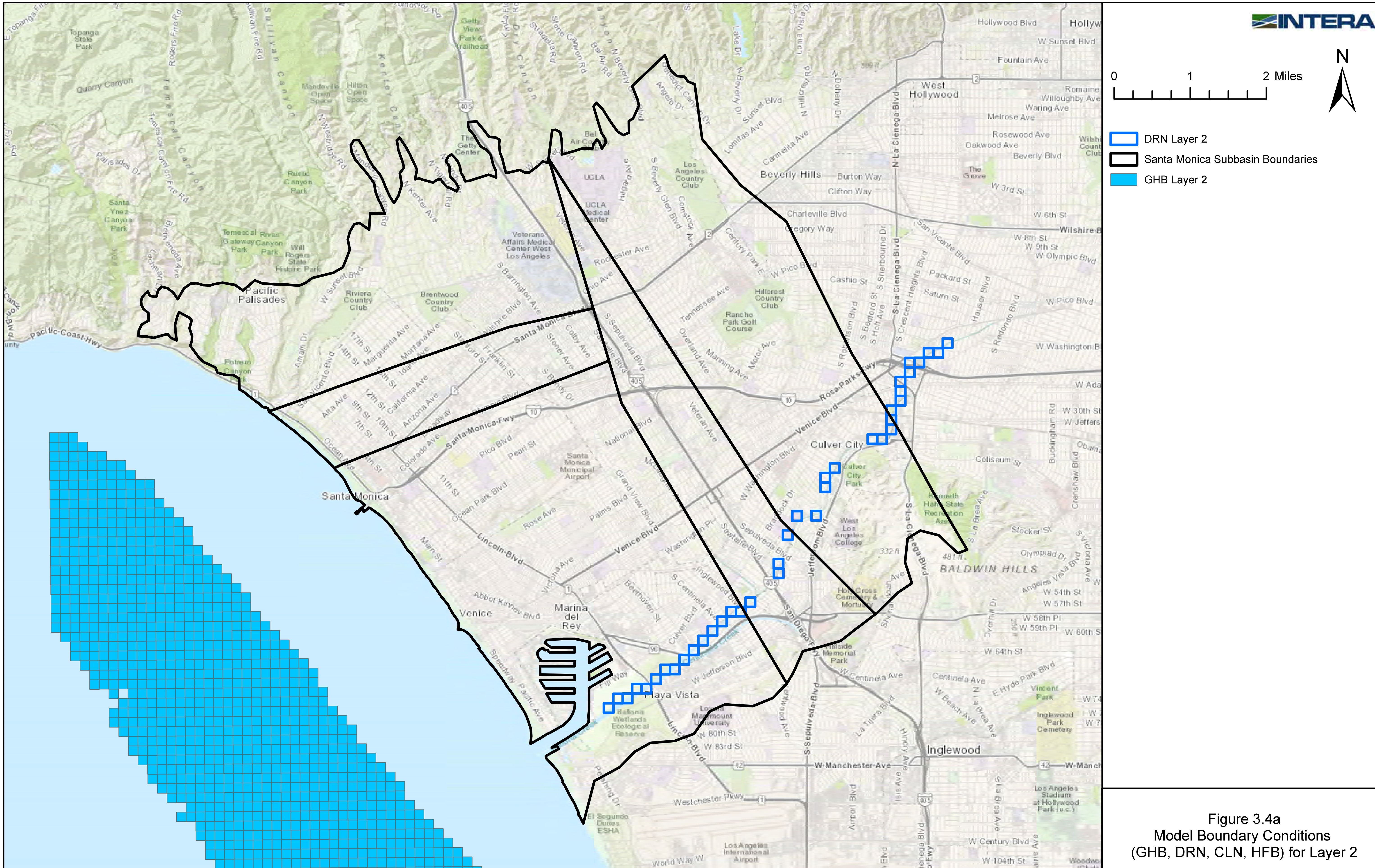

Figure 3.4a
Model Boundary Conditions
(GHB, DRN, CLN, HFB) for Layer 2

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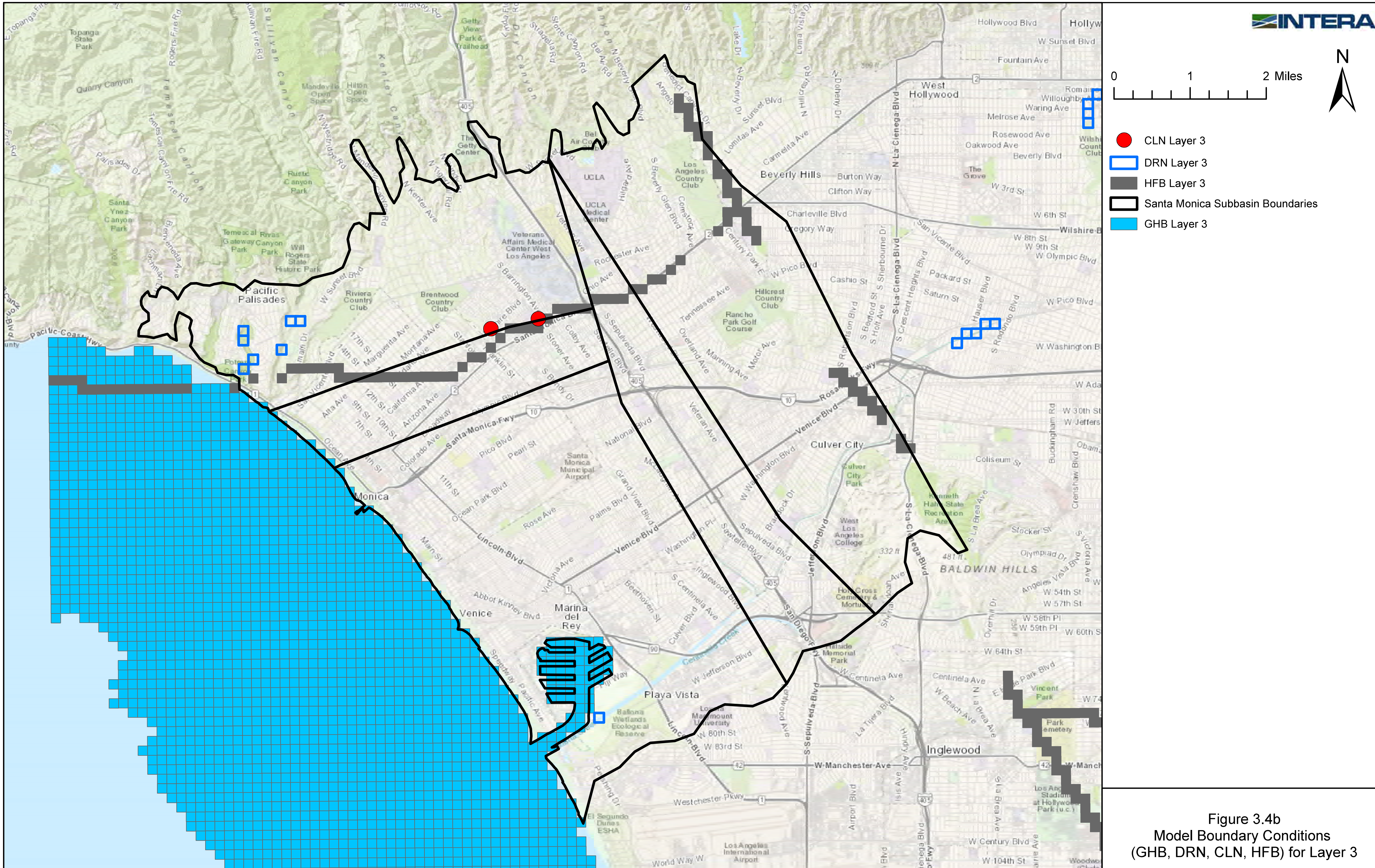

Figure 3.4b
Model Boundary Conditions
(GHB, DRN, CLN, HFB) for Layer 3

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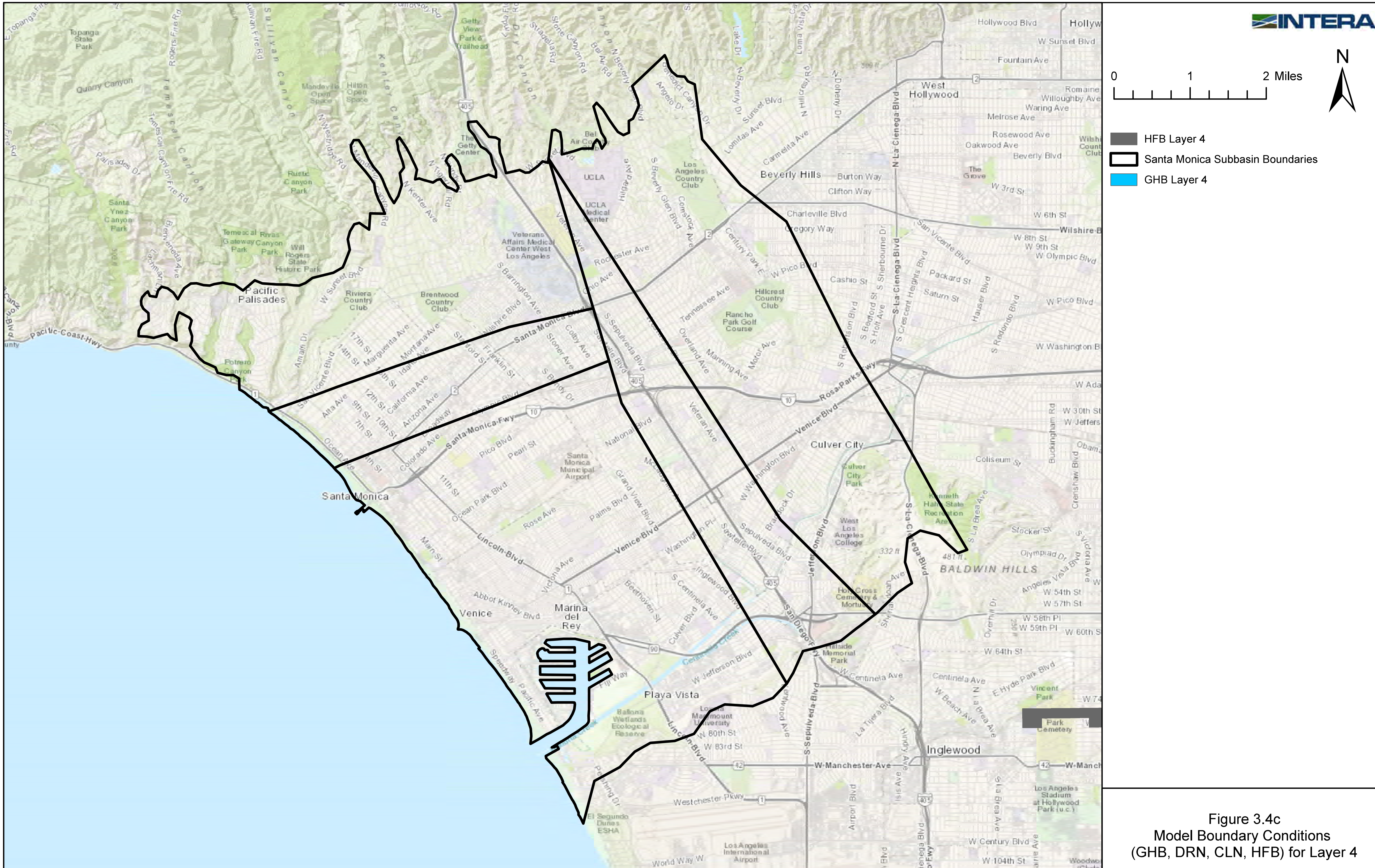

Figure 3.4c
Model Boundary Conditions
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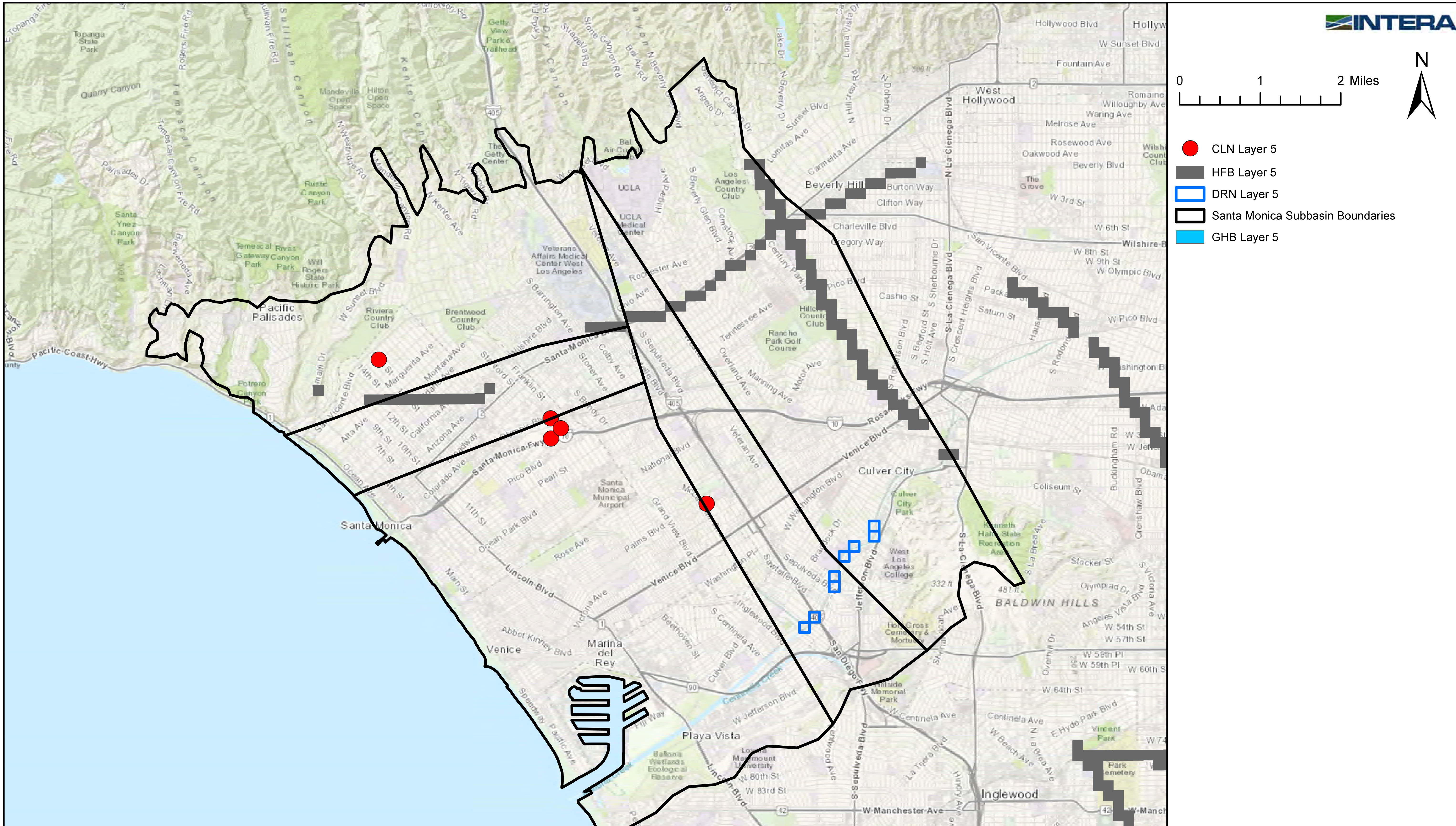

Figure 3.4d
Model Boundary Conditions
(GHB, DRN, CLN, HFB) for Layer 5

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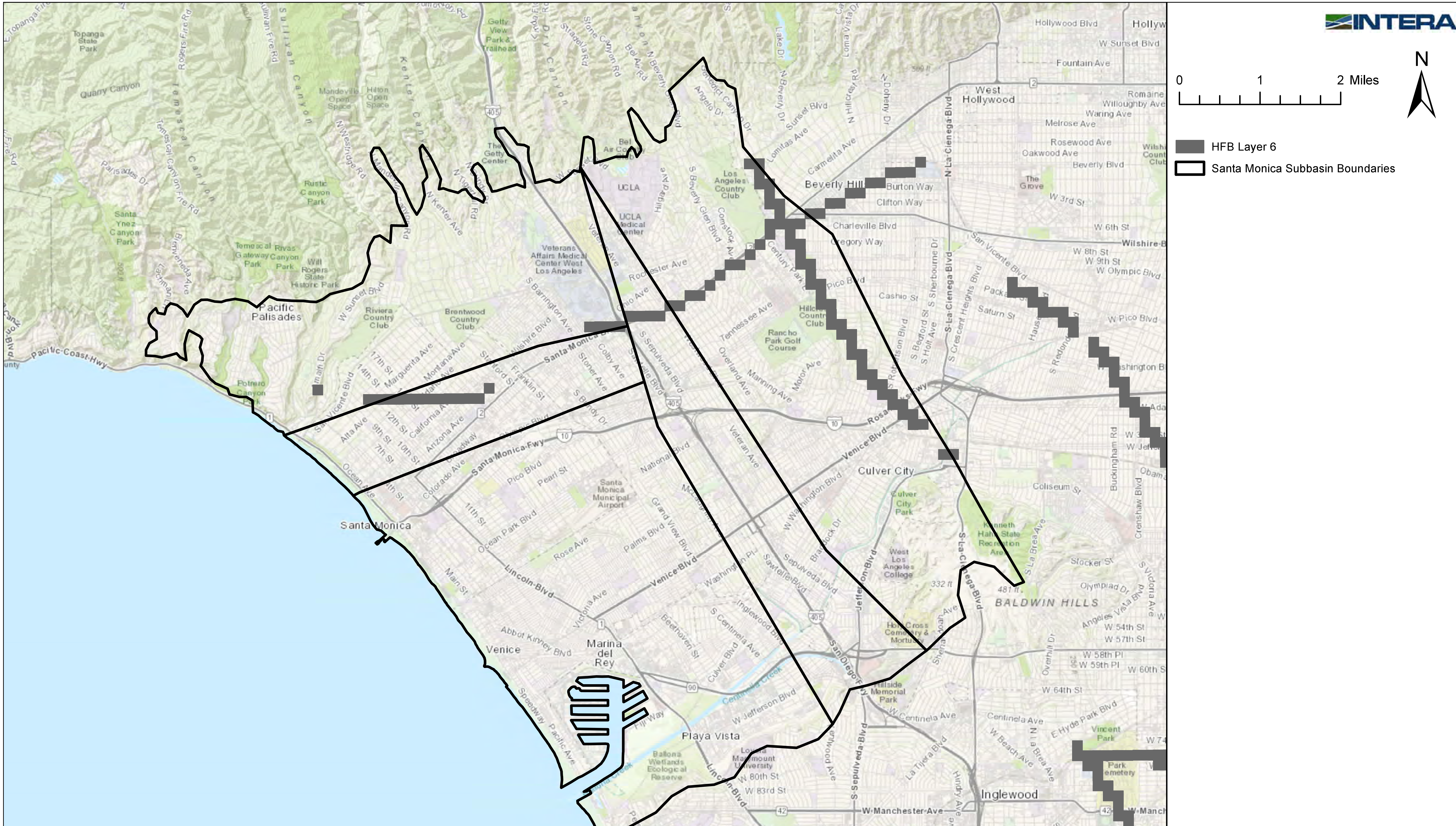

Figure 3.4e
Model Boundary Conditions
(GHB, DRN, CLN, HFB) for Layer 6

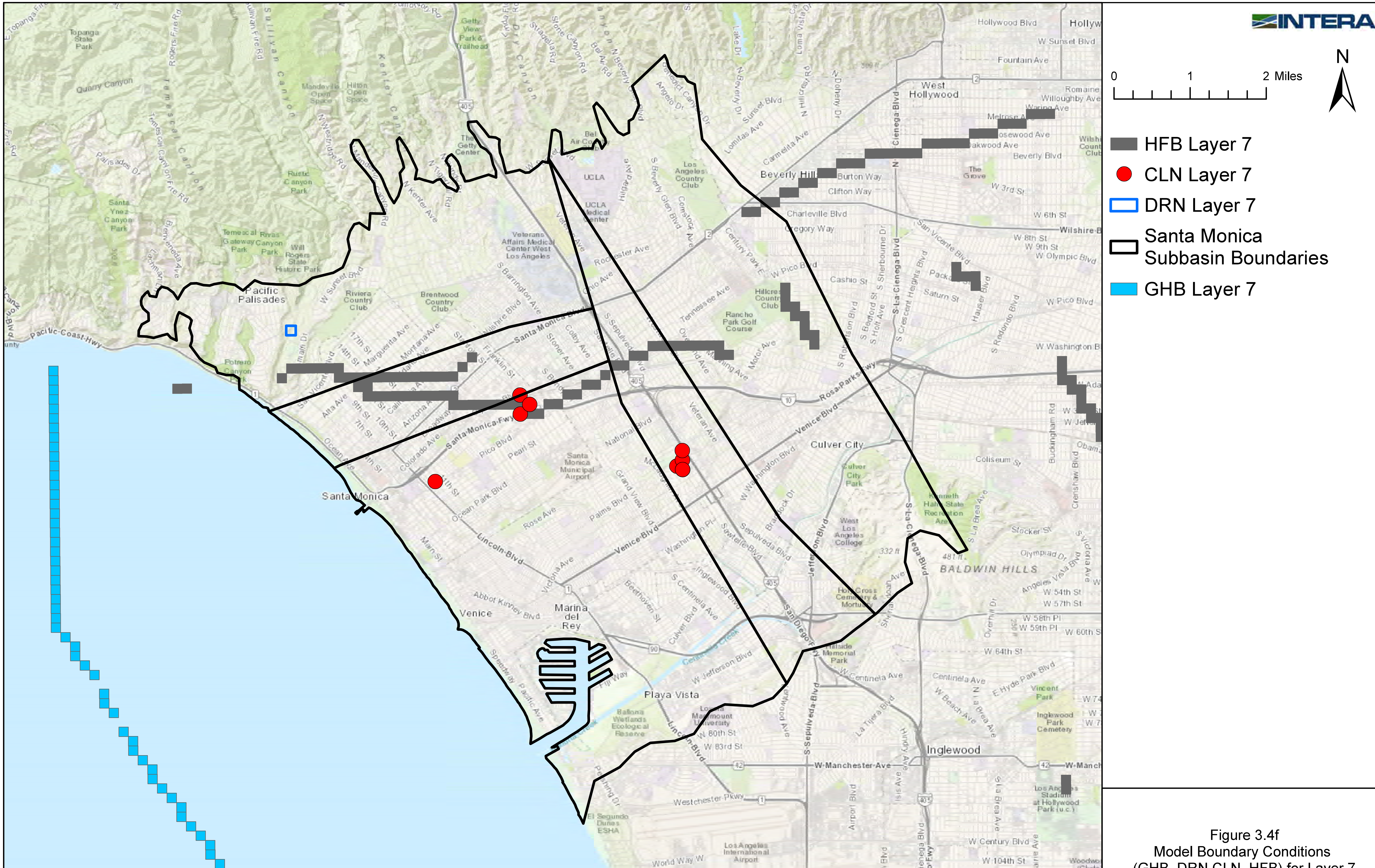

Figure 3.4f
Model Boundary Conditions
(GHB, DRN,CLN, HFB) for Layer 7

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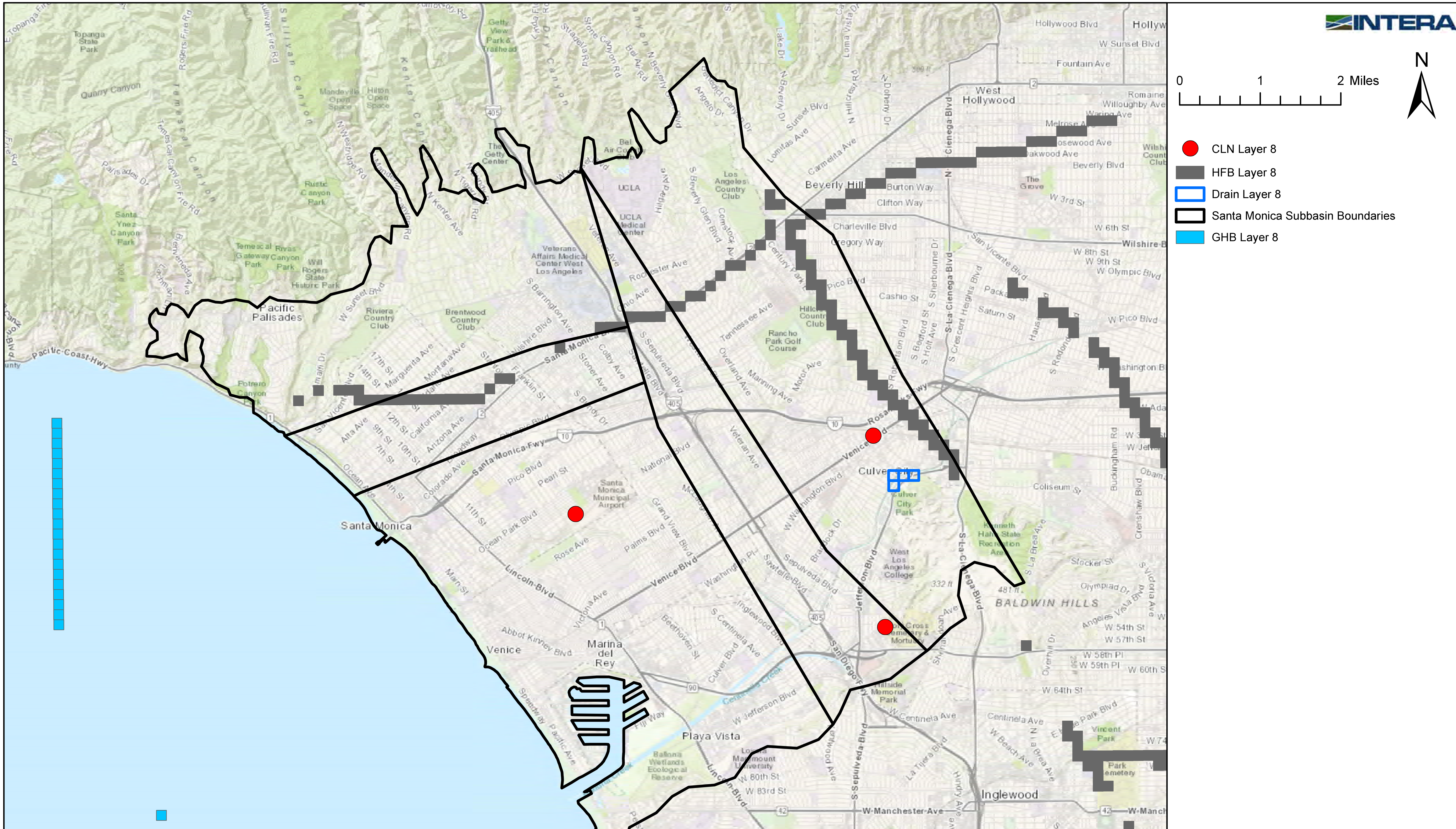

Figure 3.4g
Model Boundary Conditions
(GHB, DRN, CLN, HFB) for Layer 8

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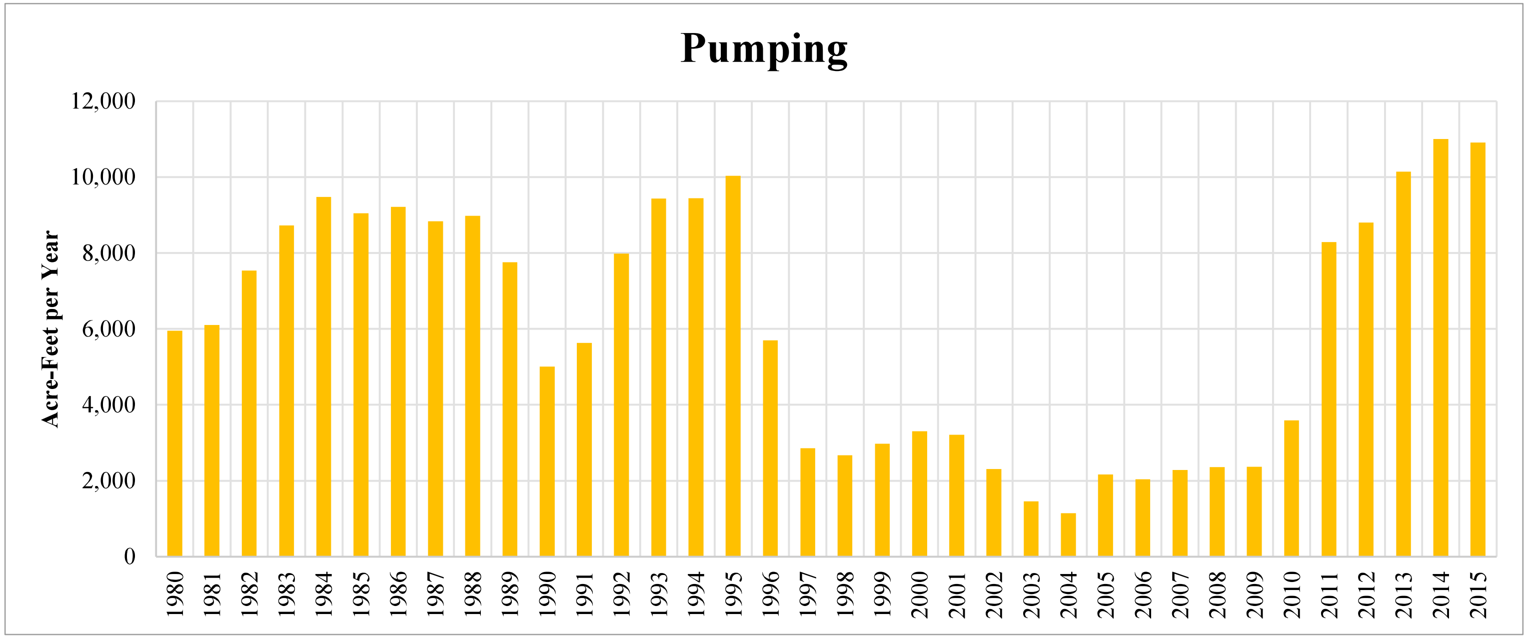


INTERA

Figure 3.5a:
Historical Model Pumping

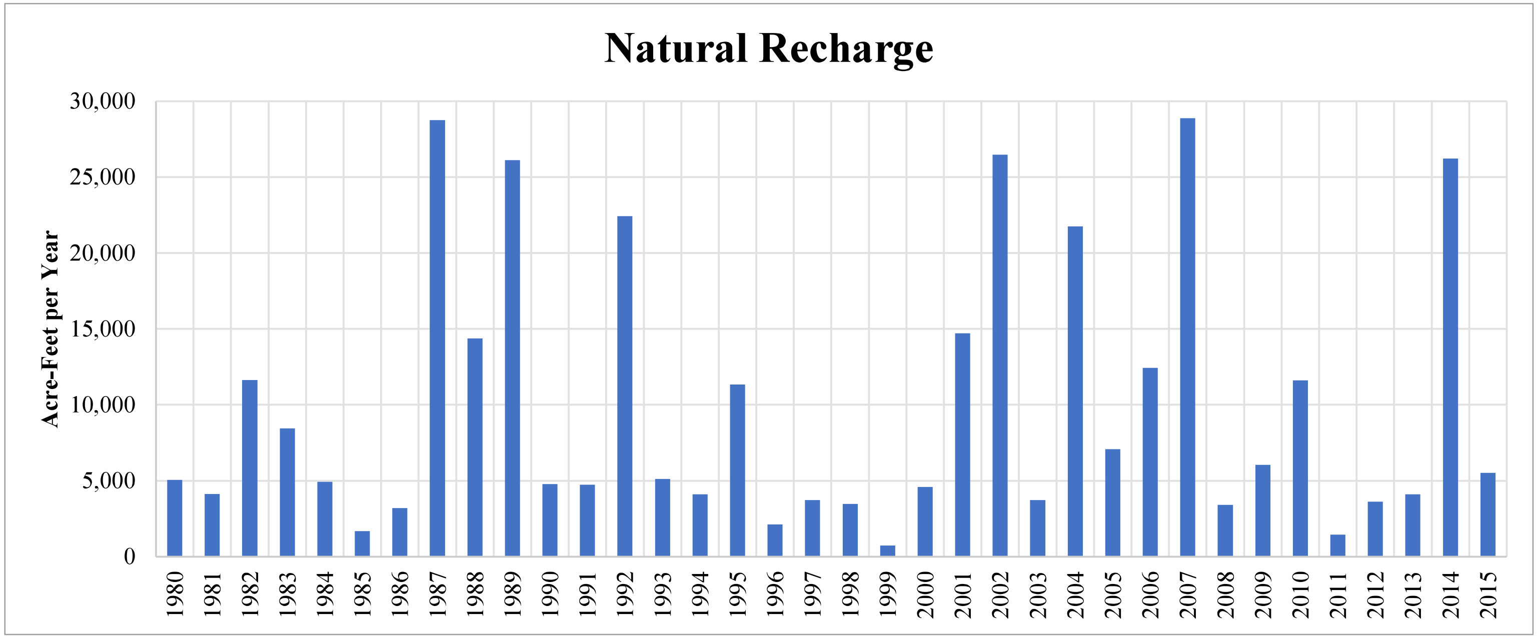


Figure 3.5b:
Historical Model Natural Recharge

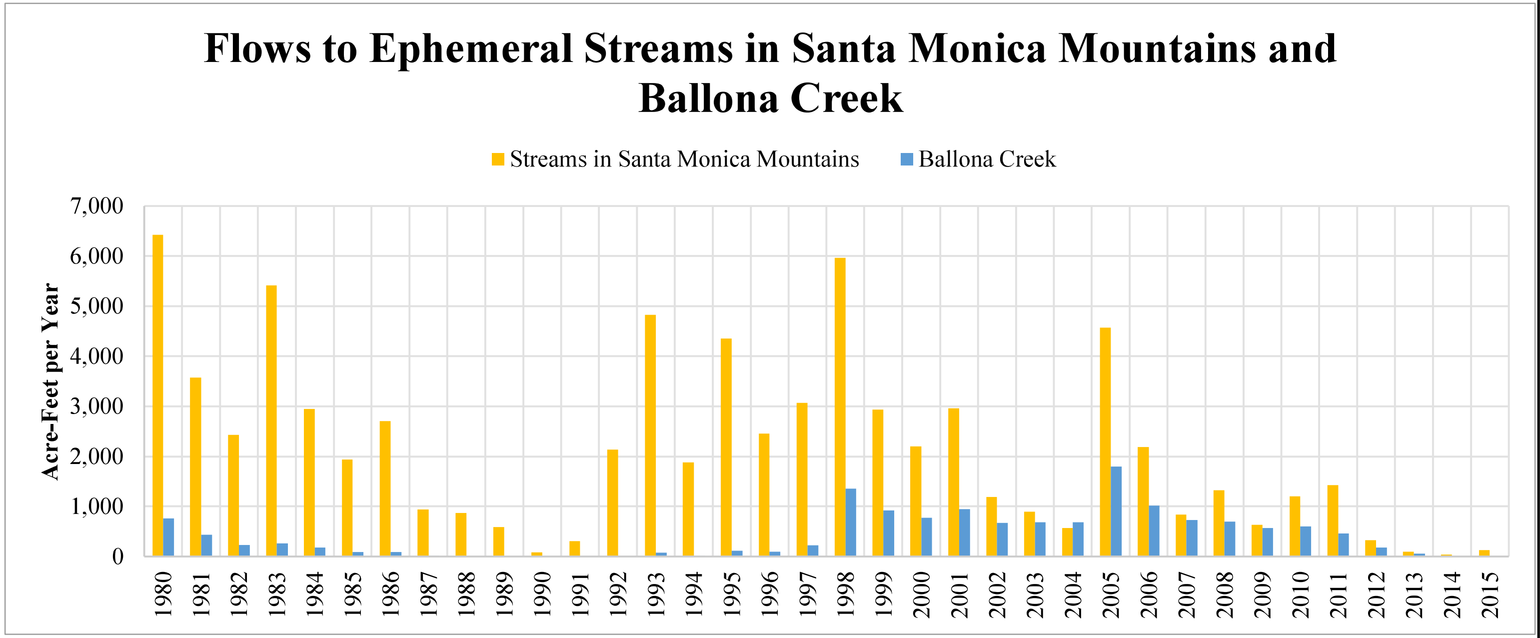


Figure 3.5c:
Historical Model Flows to Ephemeral Streams

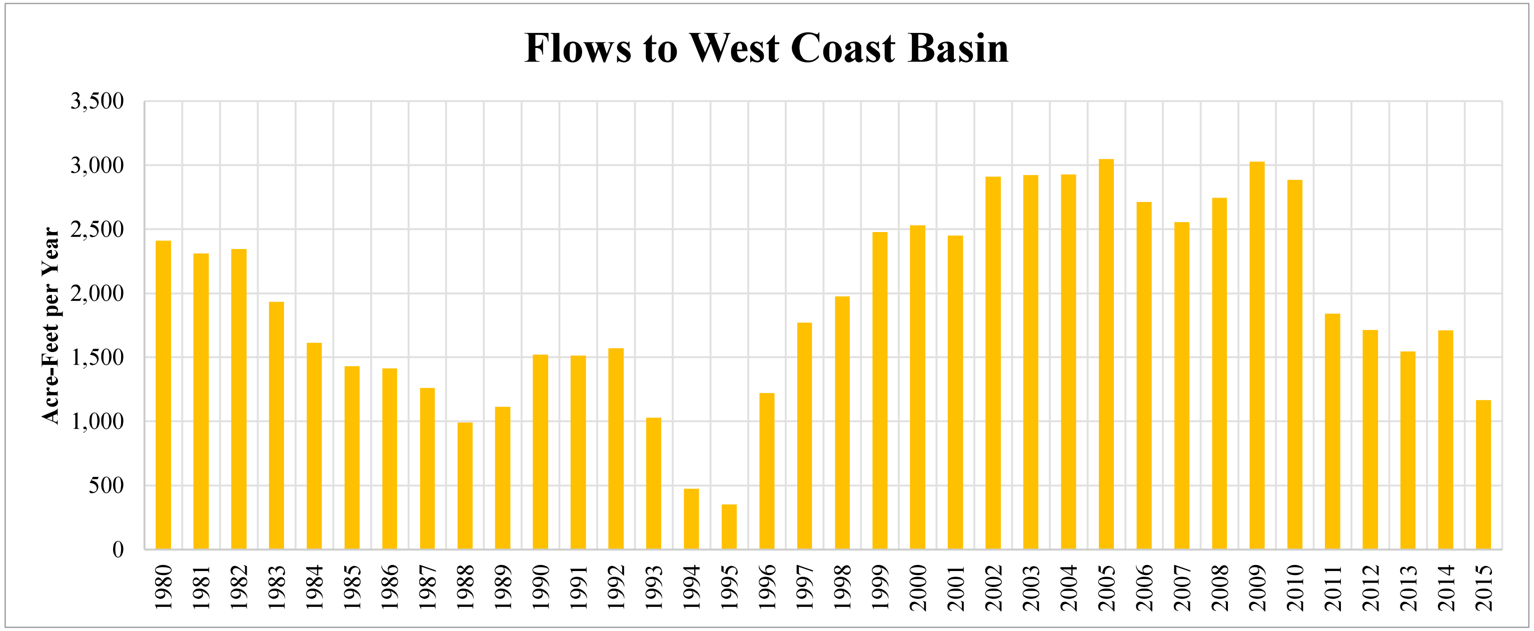


Figure 3.5d:
Historical Model Flows to West Coast Basin

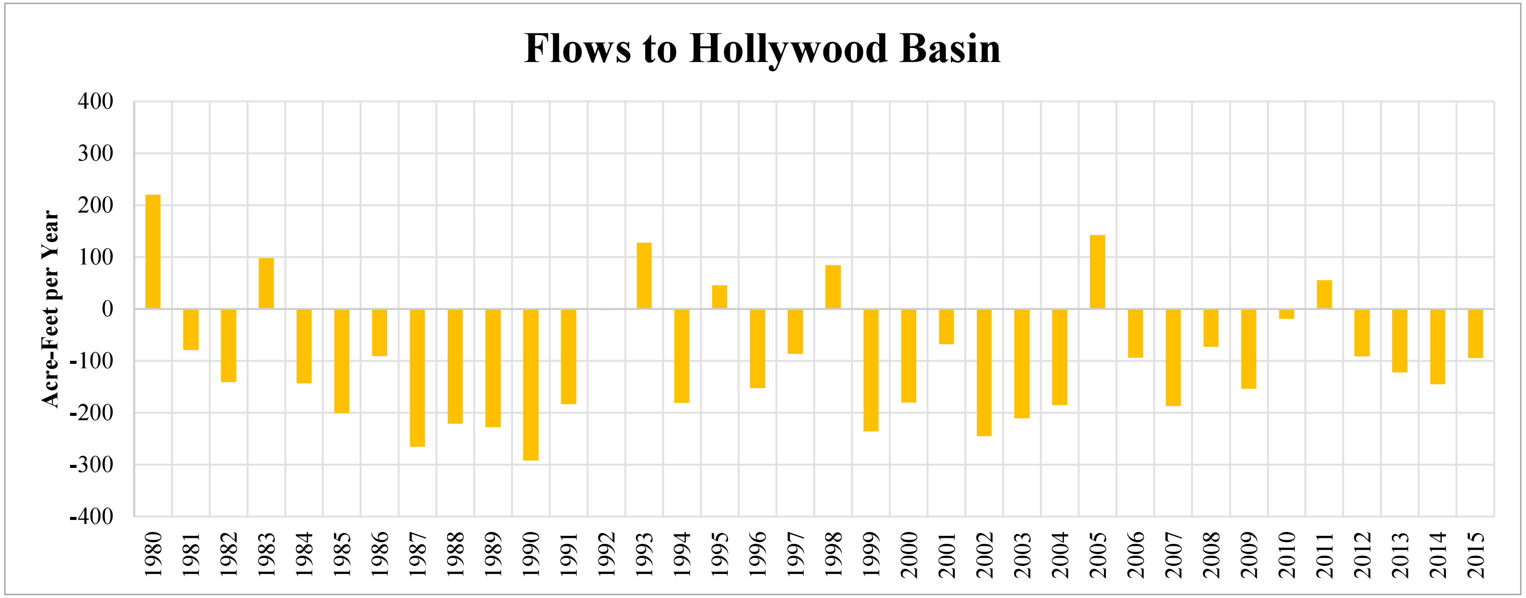
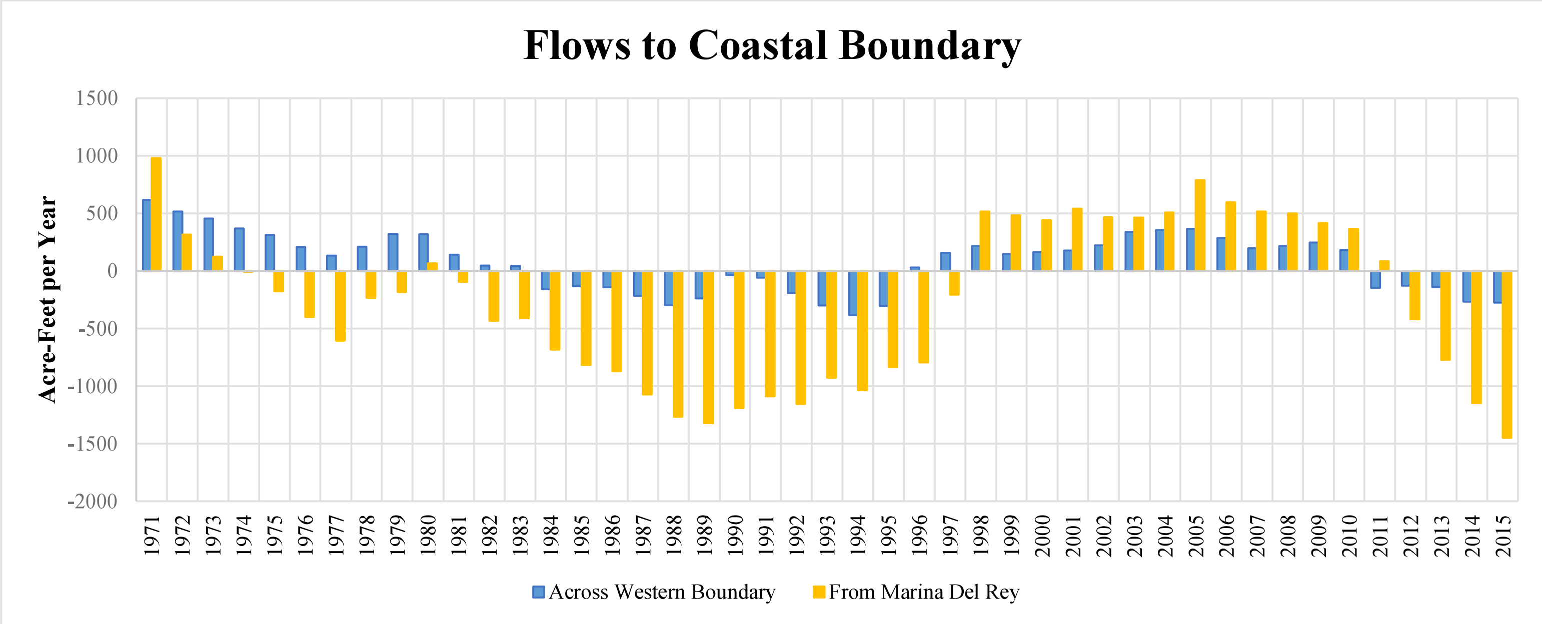


Figure 3.5e:
Historical Model Flows to Hollywood Basin



INTERA

Figure 3.5h:
Historical Model Flows to Coastal Boundary

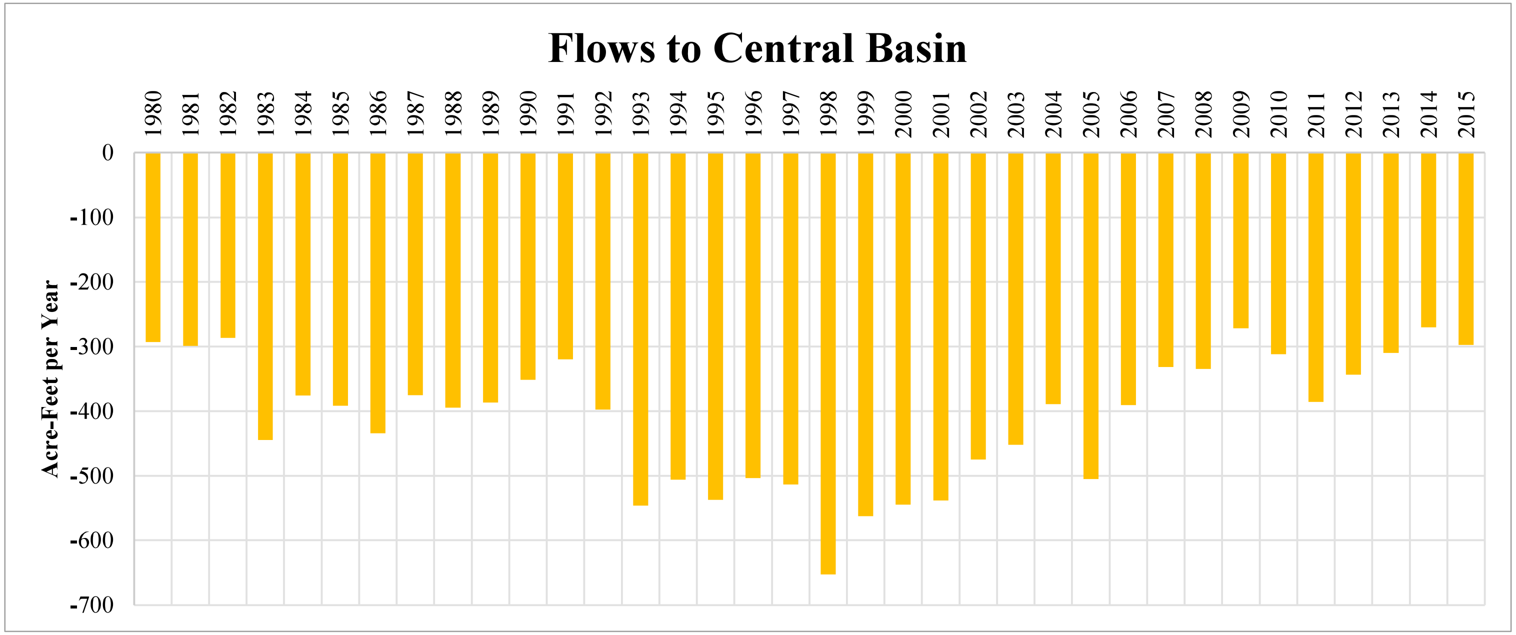
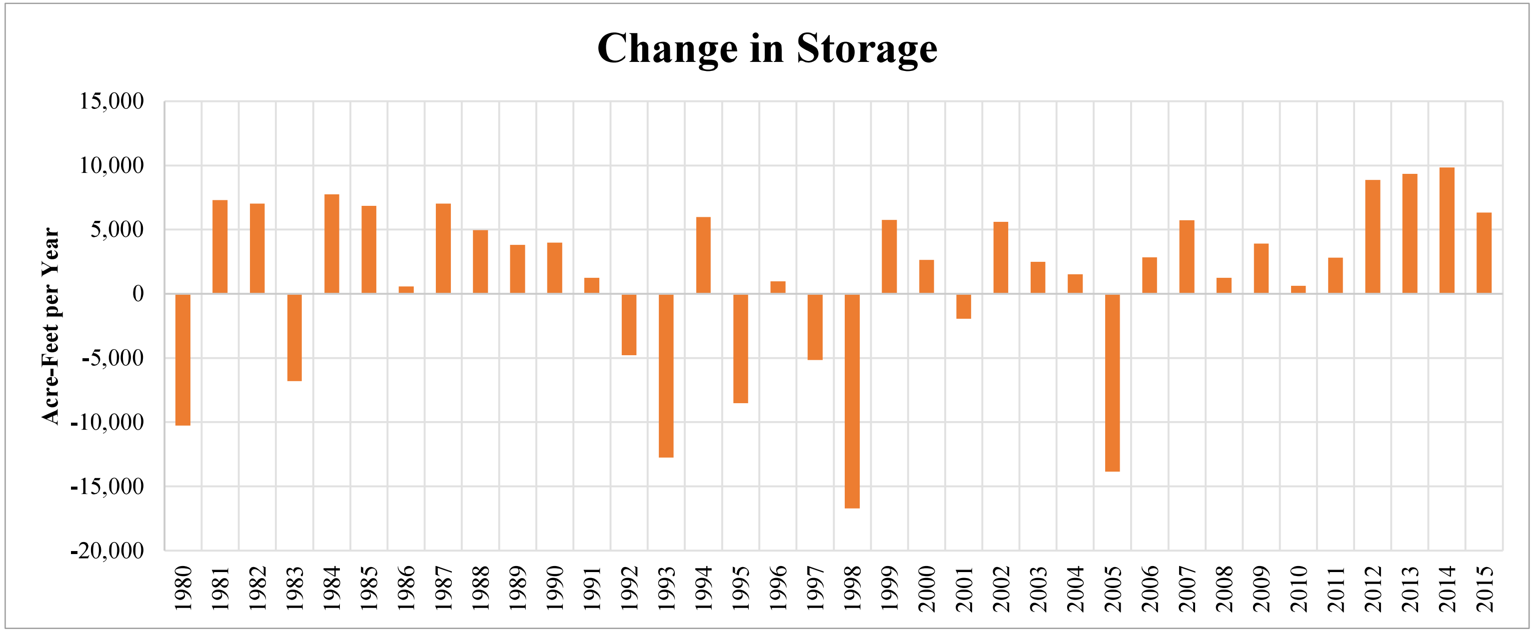


Figure 3.5g:
Historical Model Flows to Central Basin



INTERA

Figure 3.5h:
Historical Model Change in Storage

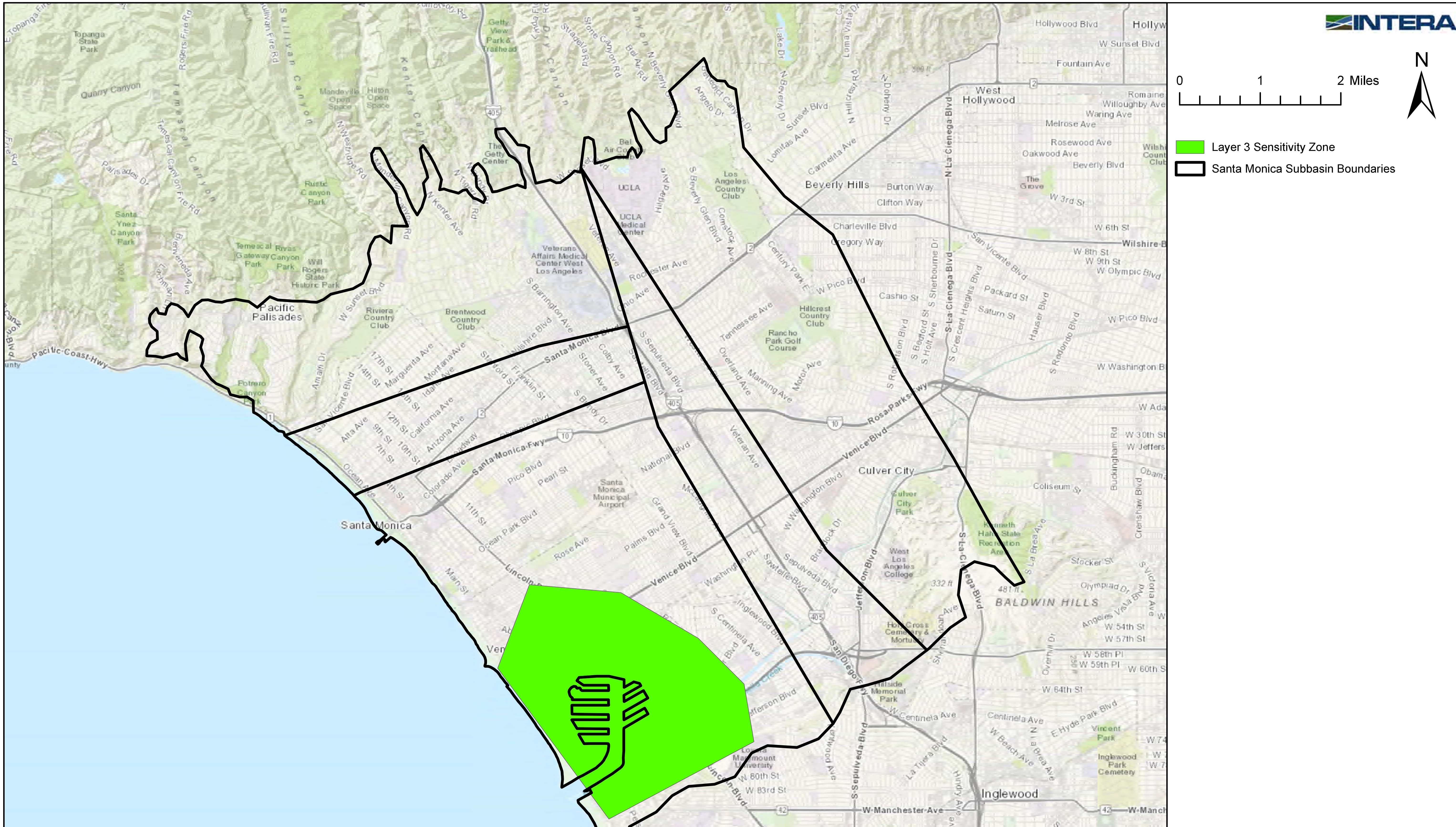


Figure 4.1a
Hydraulic Conductivity Zones in Layer 3

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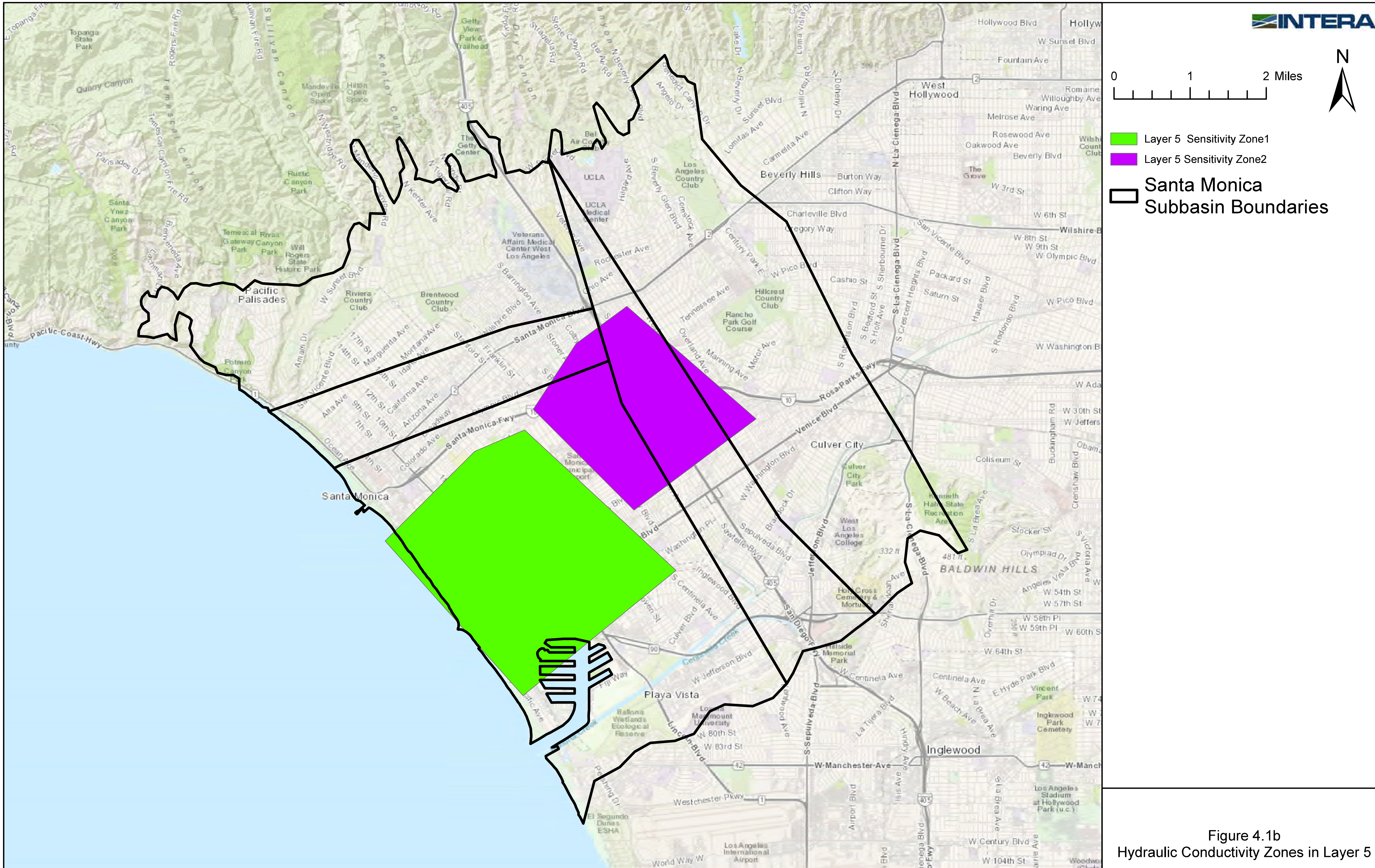

Figure 4.1b
Hydraulic Conductivity Zones in Layer 5

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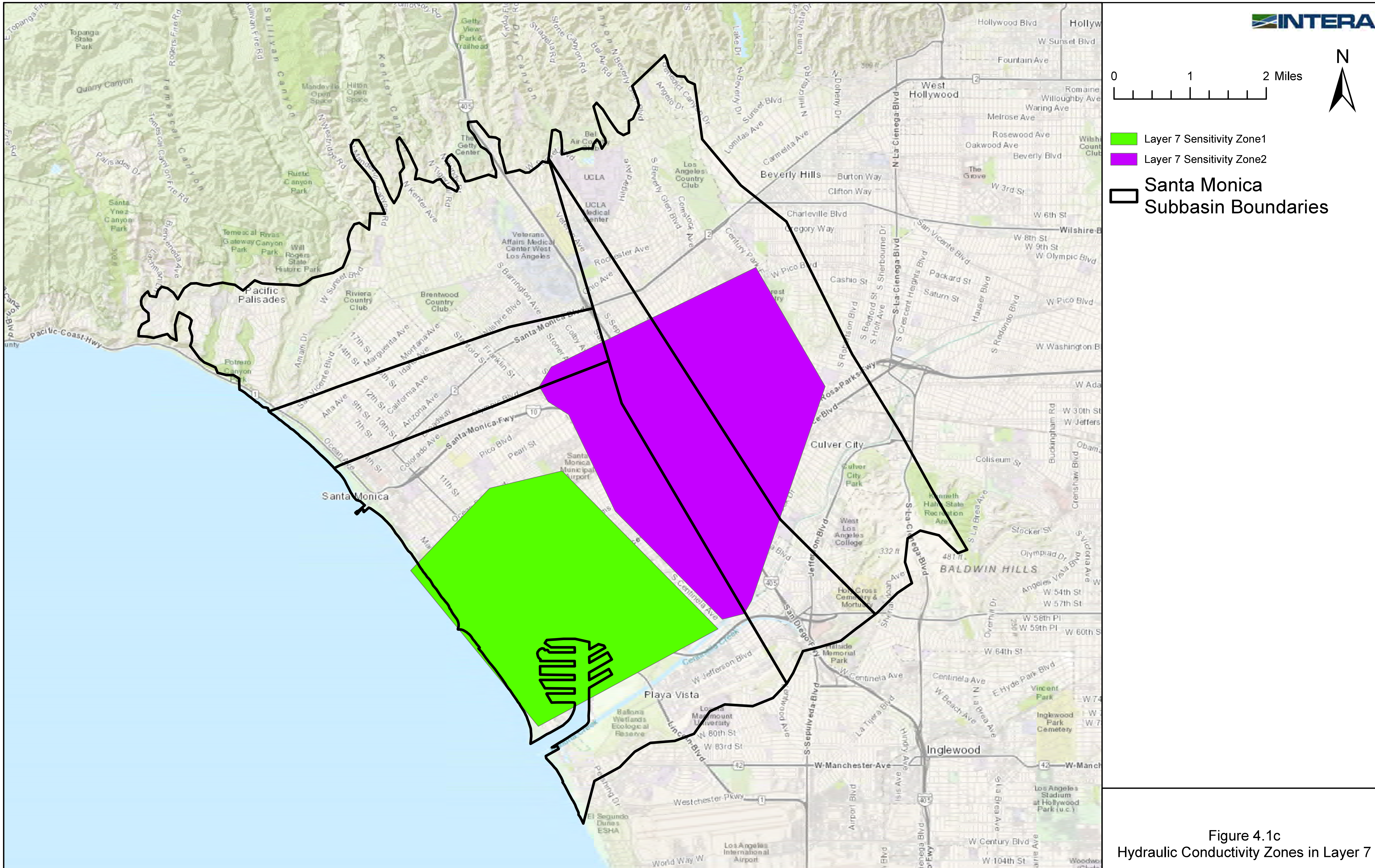

Figure 4.1c
Hydraulic Conductivity Zones in Layer 7

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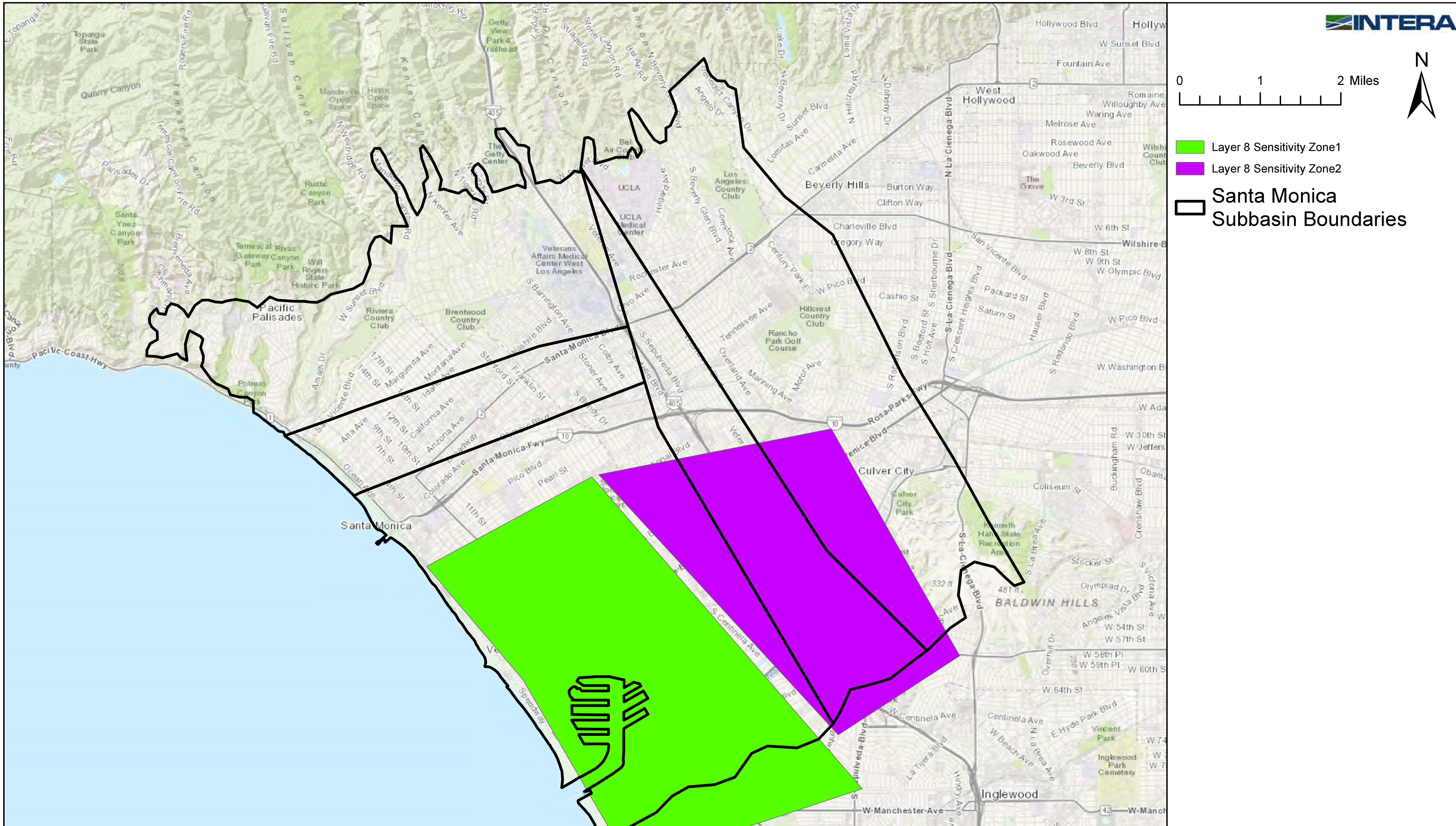

Figure 4.1d
Hydraulic Conductivity Zones in Layer 8

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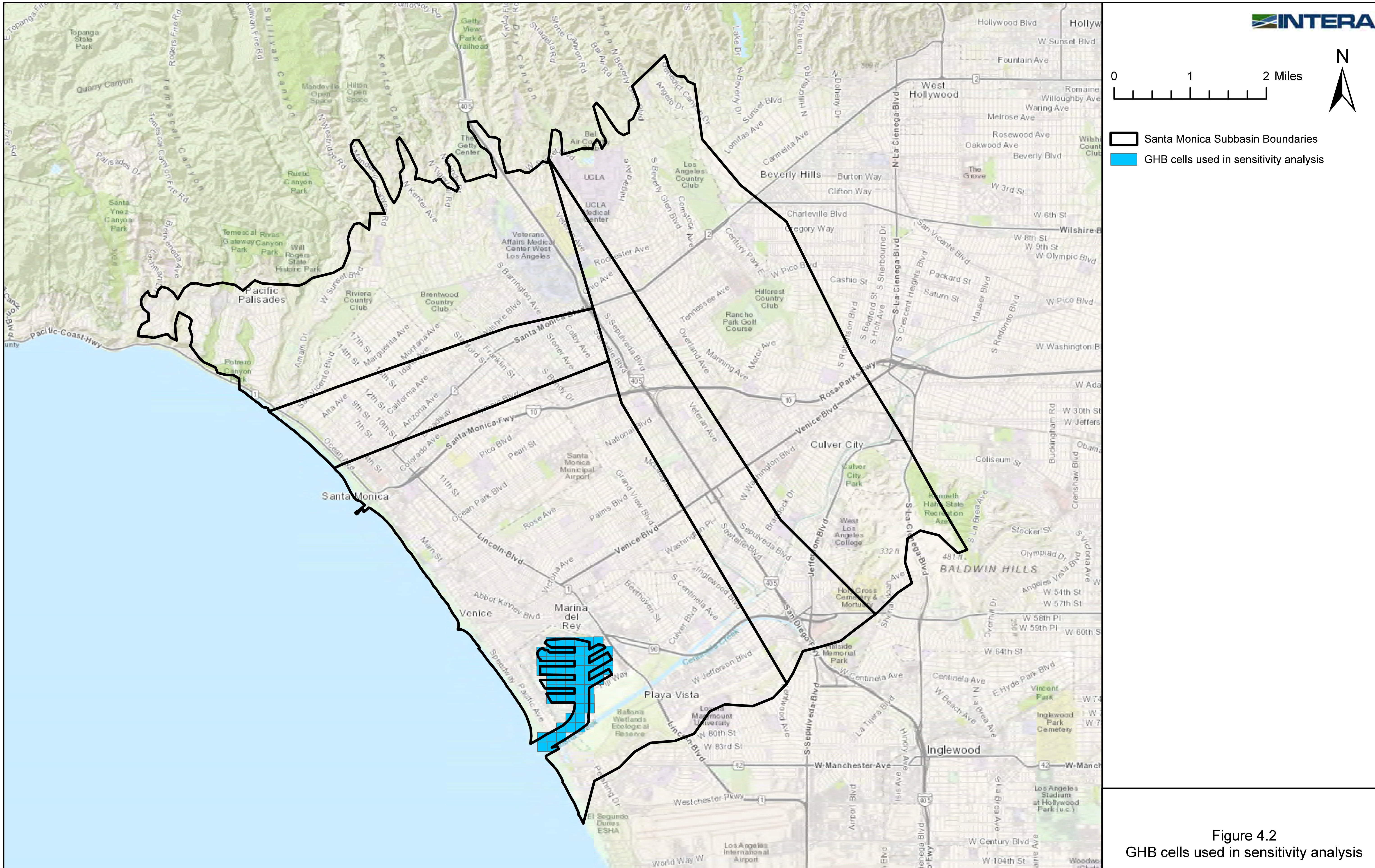

Figure 4.2
GHB cells used in sensitivity analysis

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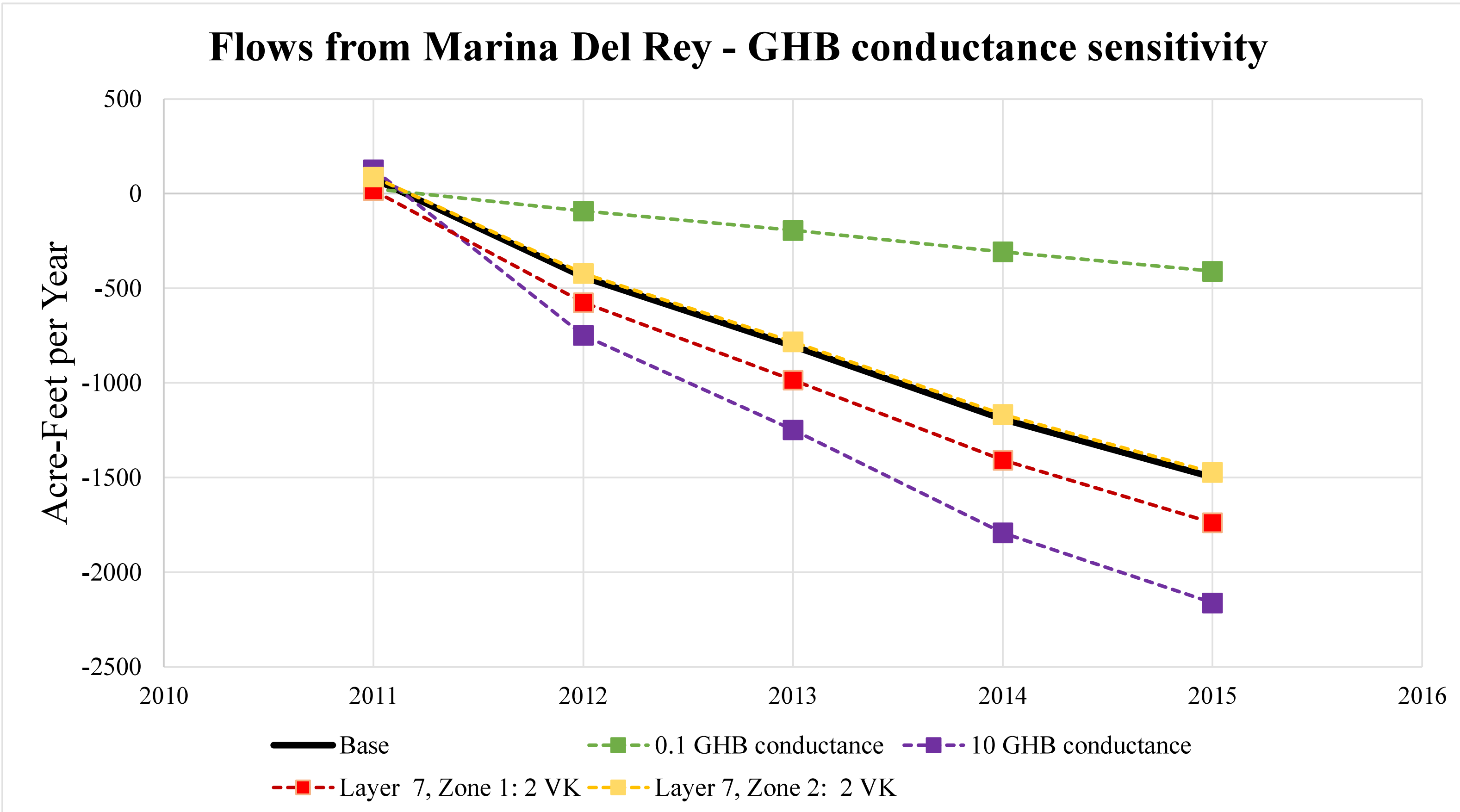


Figure 4.3:
Summary of Sensitivity Runs

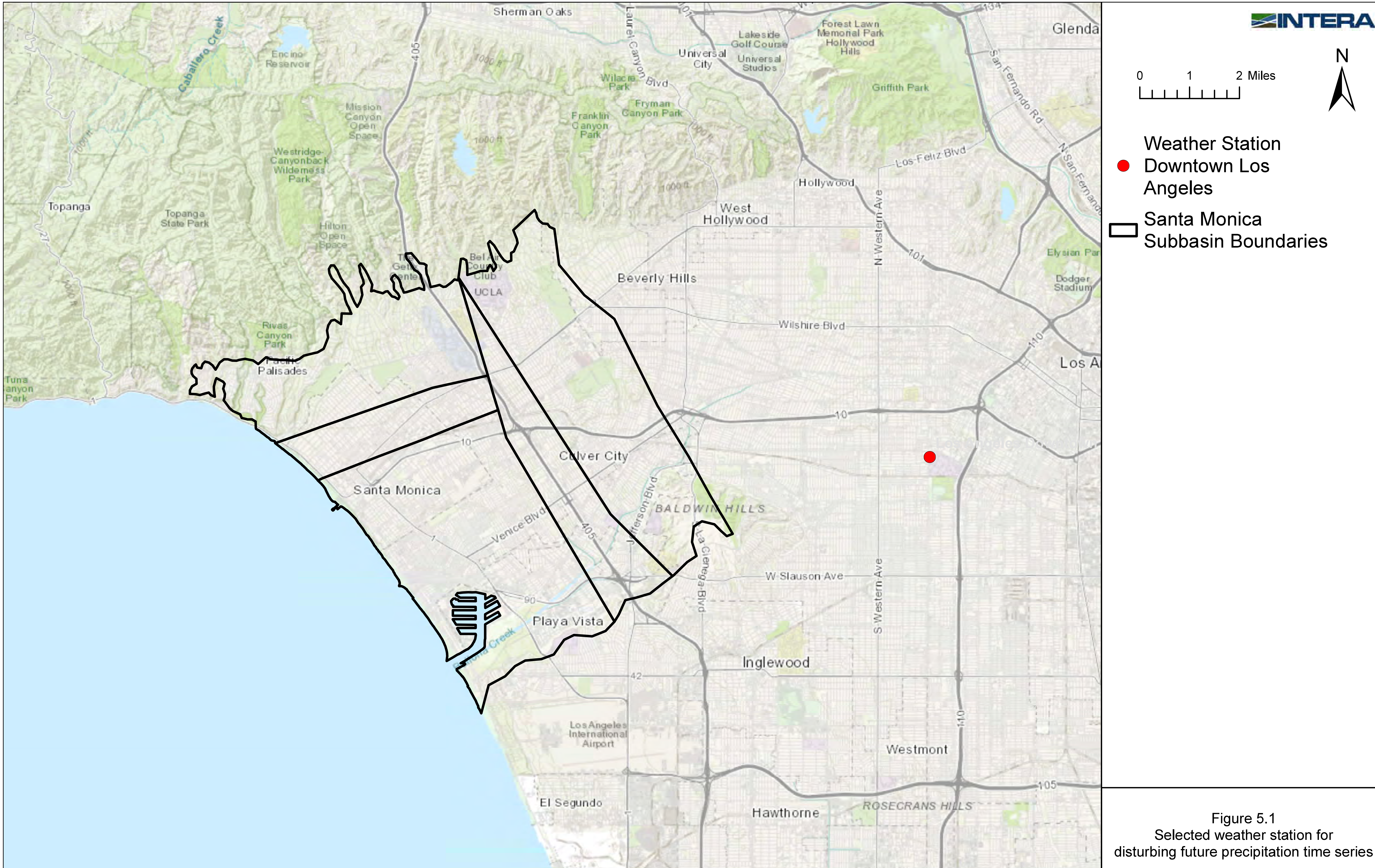


Figure 5.1
Selected weather station for disturbing future precipitation time series

FILE: S:\LAX\DUDEK.C001.SMBGSA\GIS\LACPGM_USG_TM_figures_5.1.mxd 4/19/2021

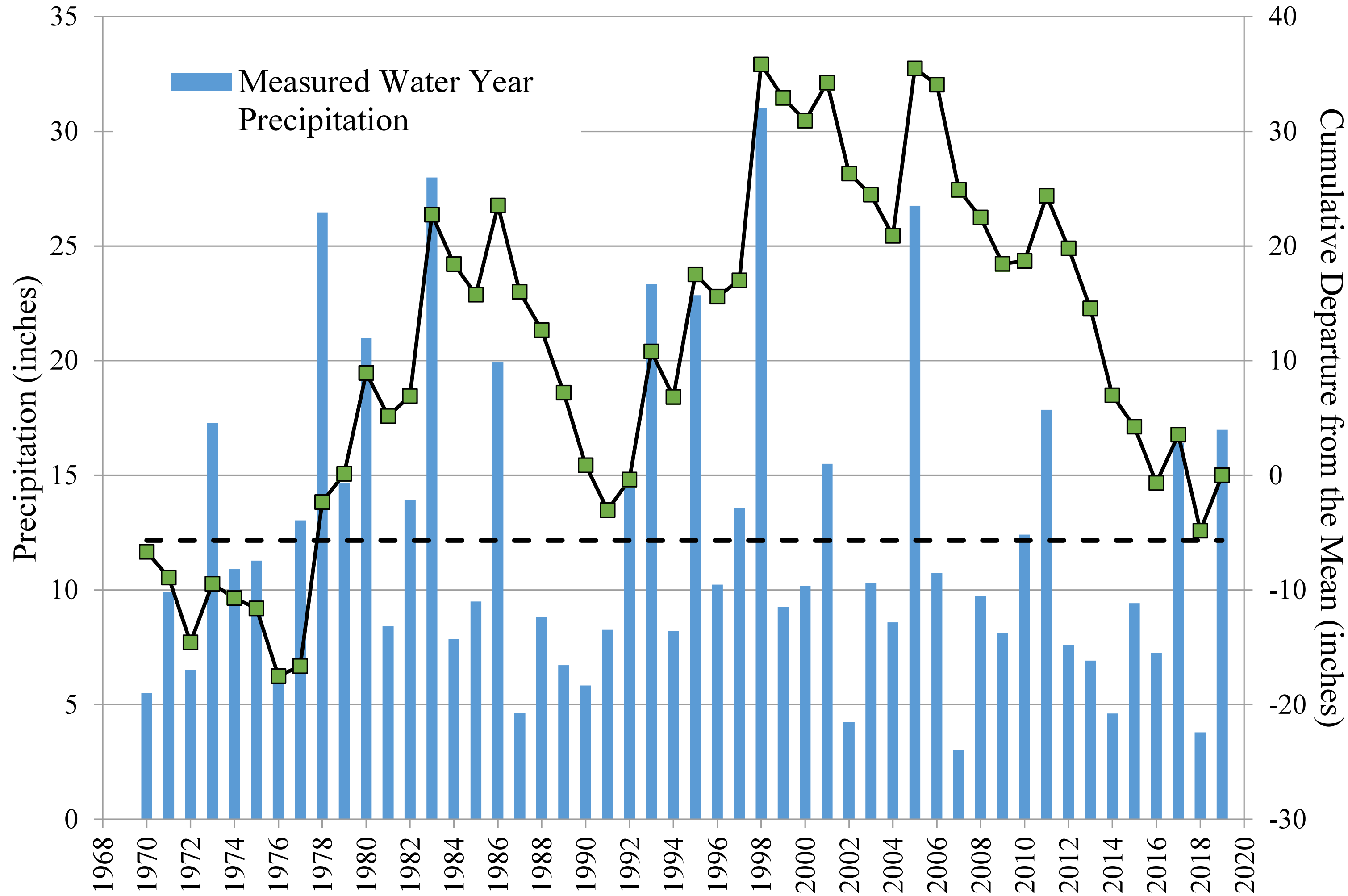


Figure 5.2:
Historical precipitation time series for Downtown Los Angeles station

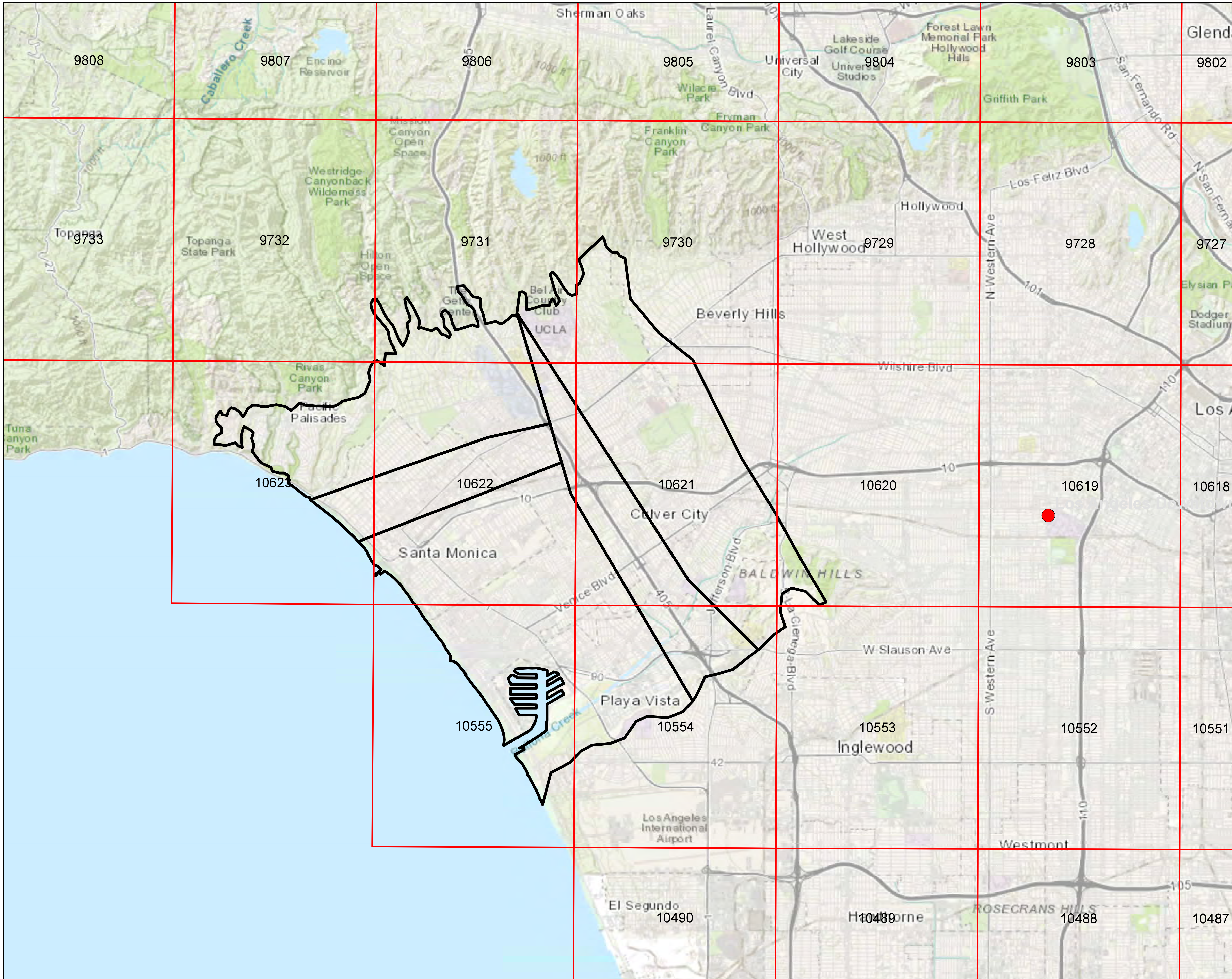


Figure 5.3
Associated VIC grid cell with selected weather station

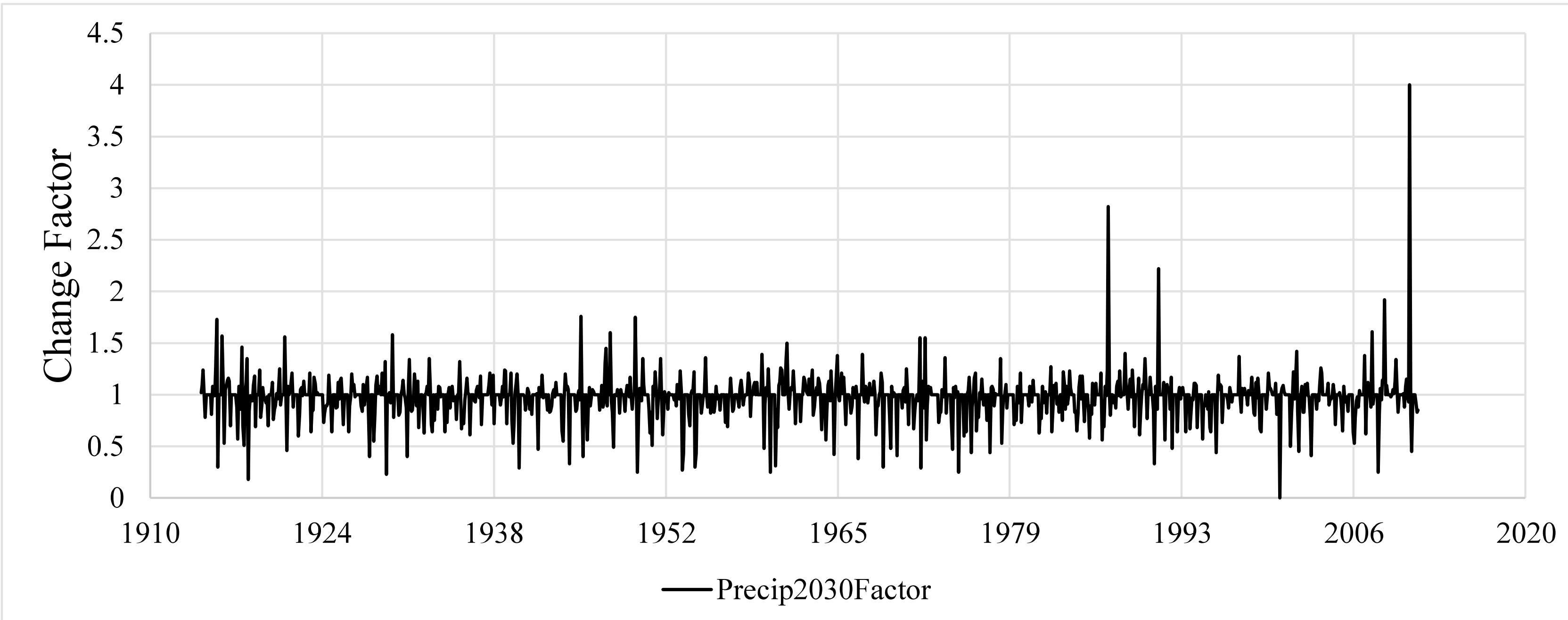


Figure 5.4a:
Precipitation climate factors for 2030

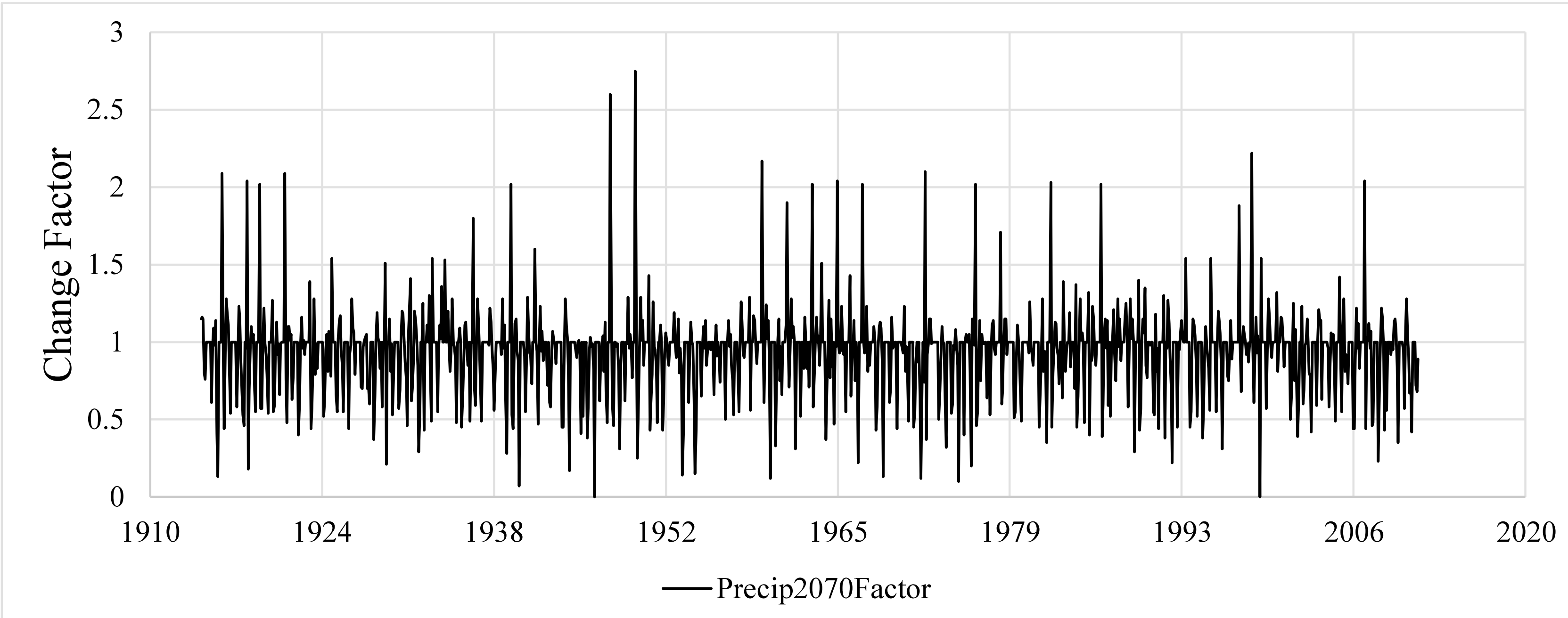
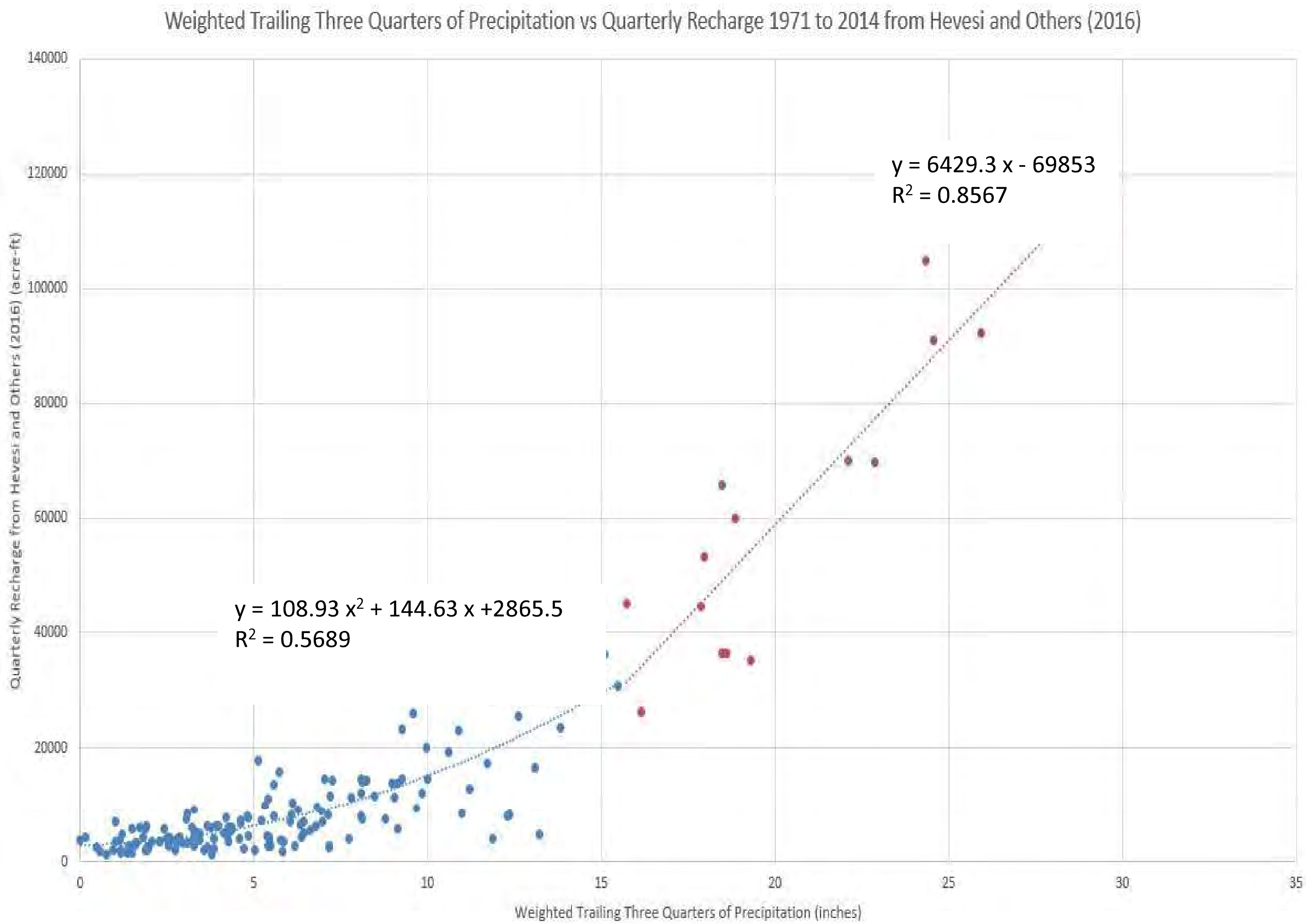


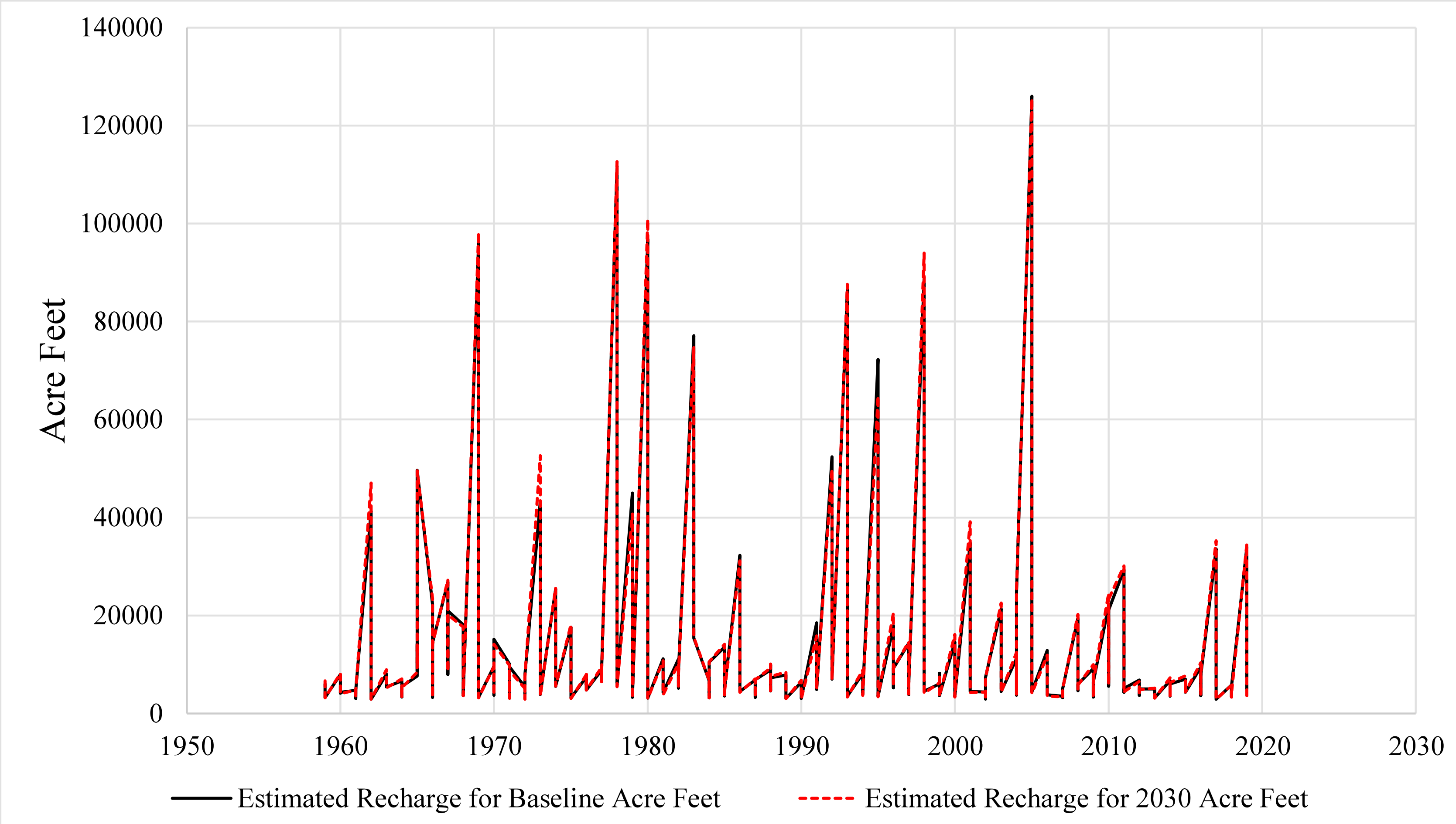
Figure 5.4b:
Precipitation climate factors for 2070



From Appendix 7: Rainfall-recharge Analysis

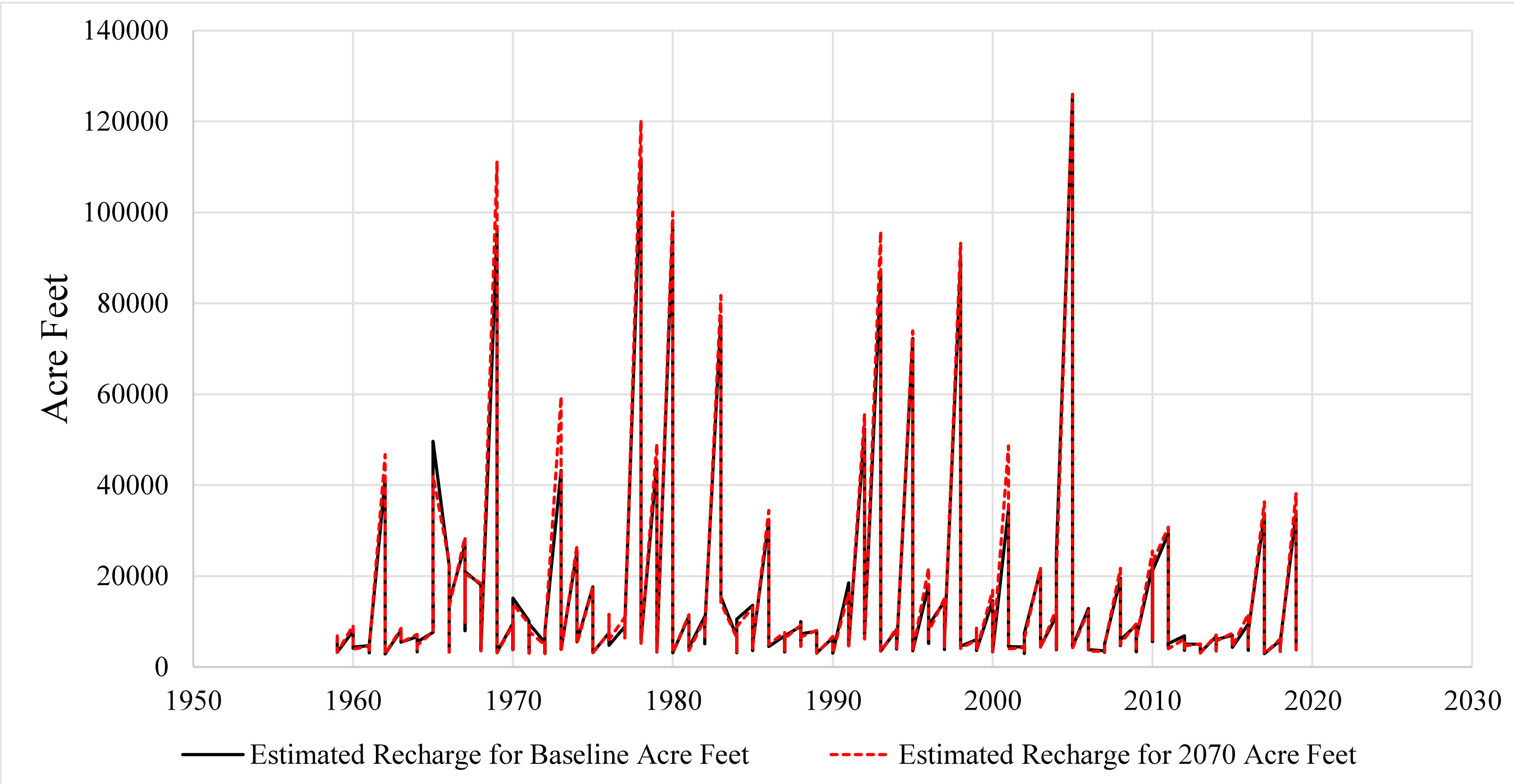
INTERA

Figure 5.5:
Precipitation - Recharge regression relationship



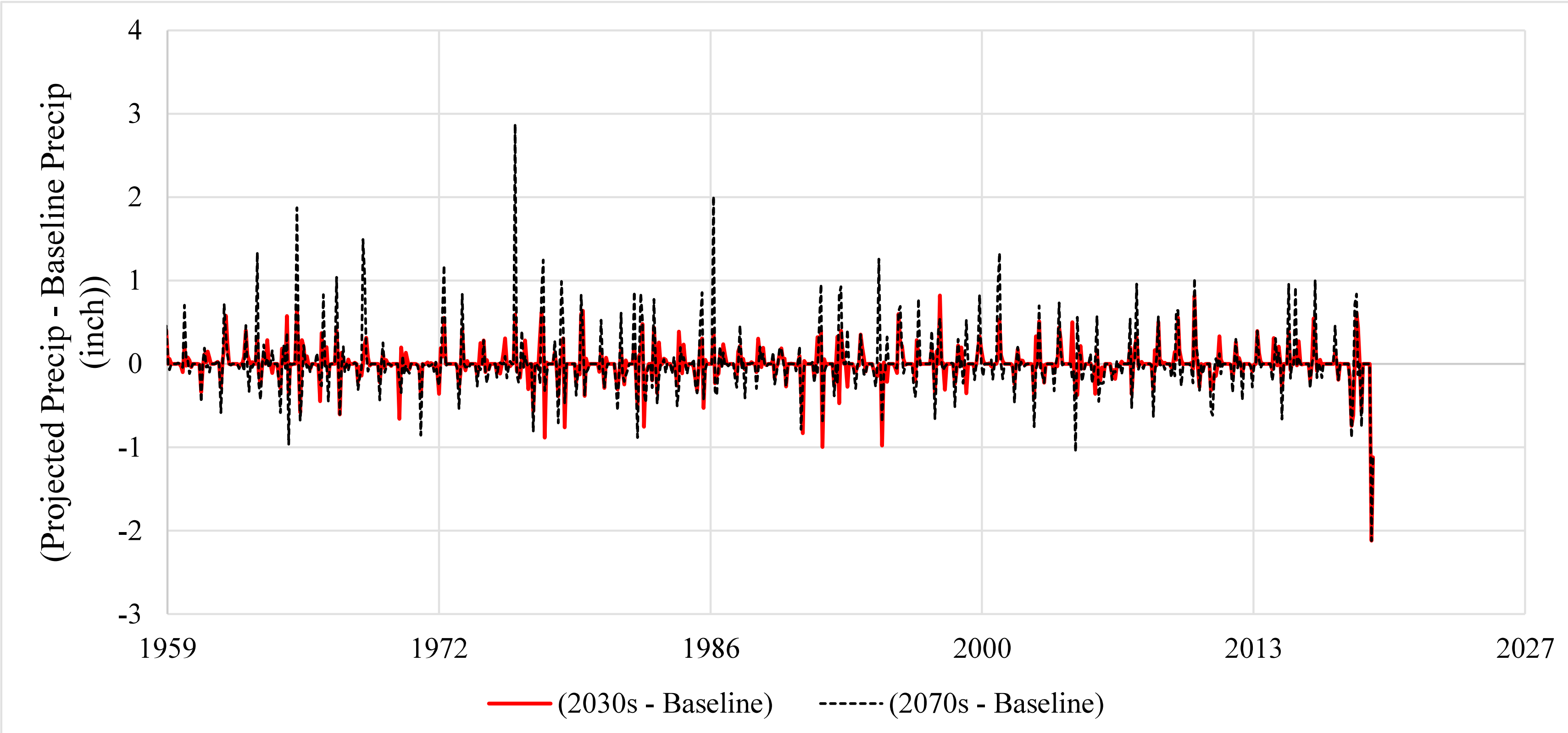
INTERA

Figure 5.6a:
Comparing estimated recharge for Baseline and 2030s condition



INTERA

Figure 5.6b:
Comparing estimated recharge for Baseline and 2070s condition



INTERA

Figure 5.7:
Comparing difference between projected precipitation and baseline for 2030 and 2070

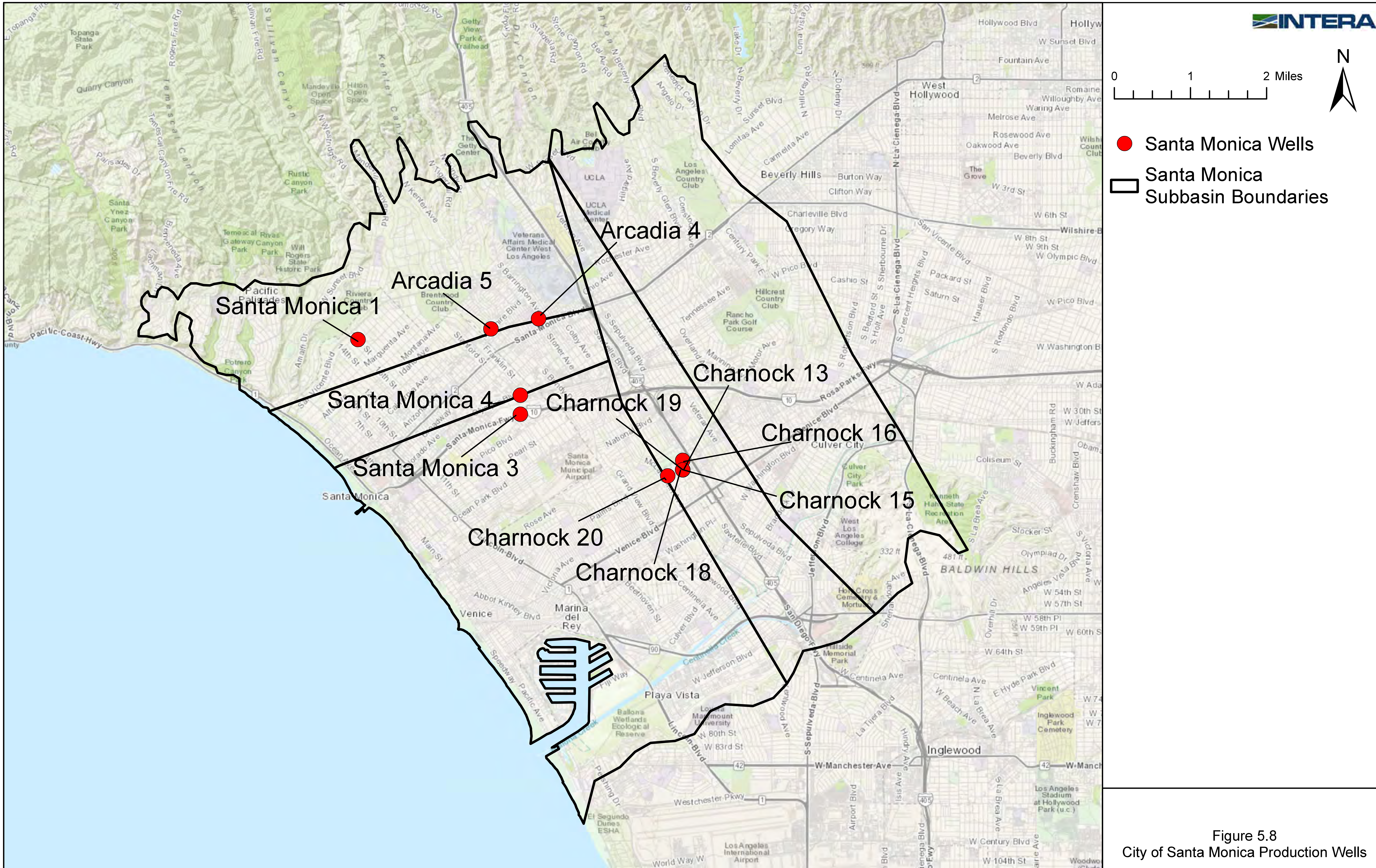


Figure 5.8
City of Santa Monica Production Wells

FILE: S:\LAX\DUDEK.C001.SMBGSA\GIS\LACPGM_USG_TM_figures_Tempcopy.mxd 4/15/2021

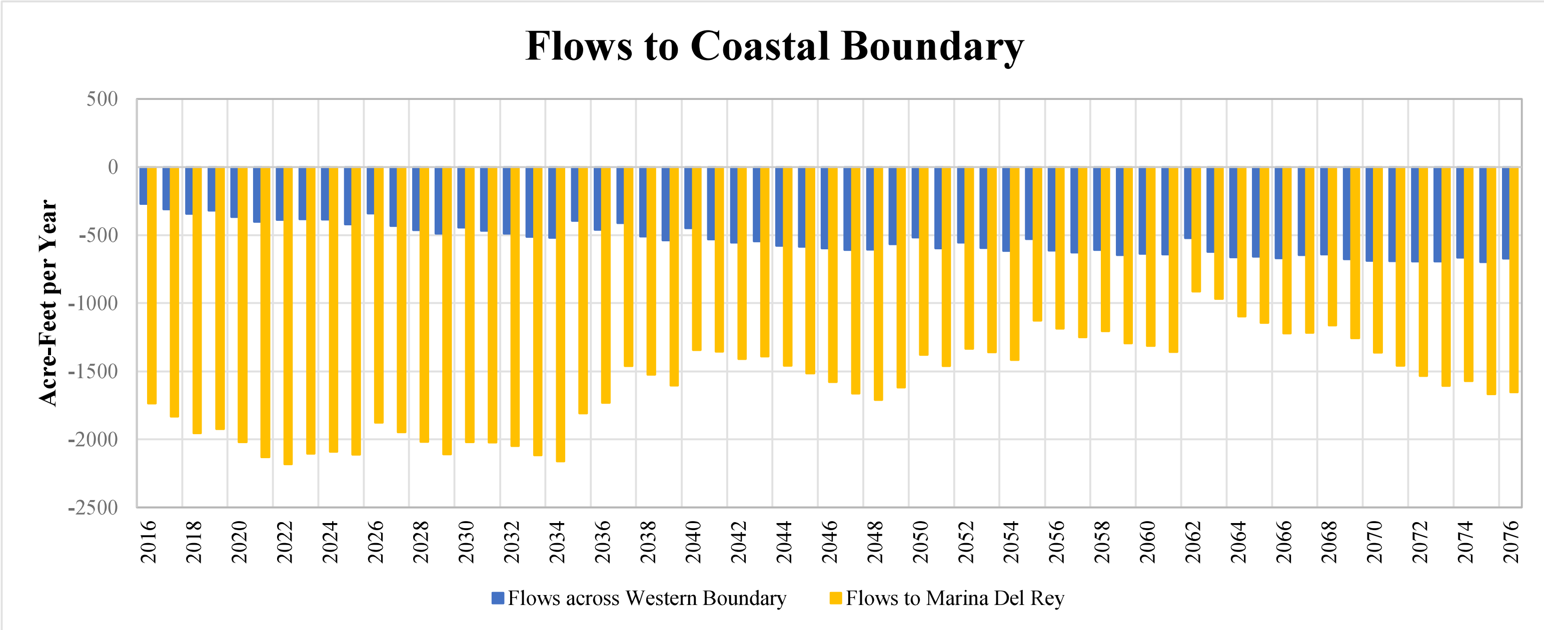
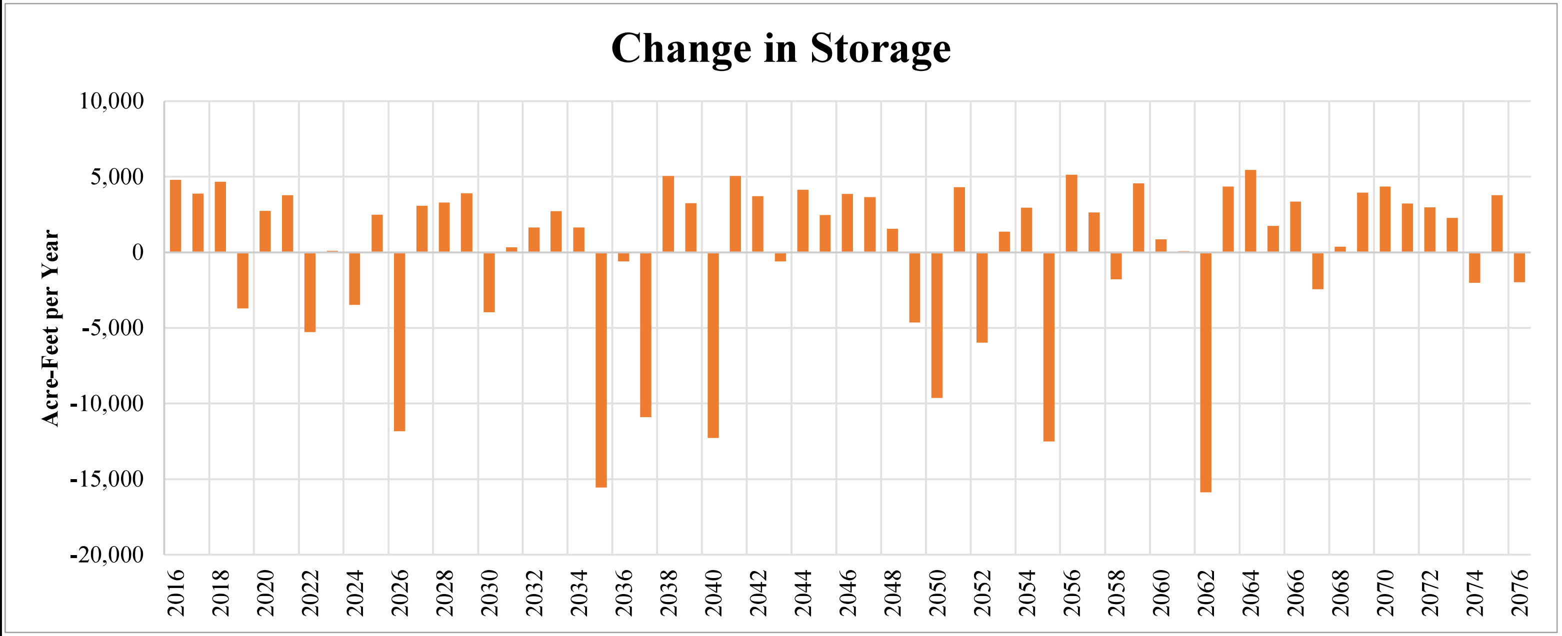


Figure 5.9a:
Predictive Model - 2030 Scenario:
Flows to Coastal Boundary



INTERA

Figure 5.9b:
Predictive Model - 2030 Scenario:
Change in Storage

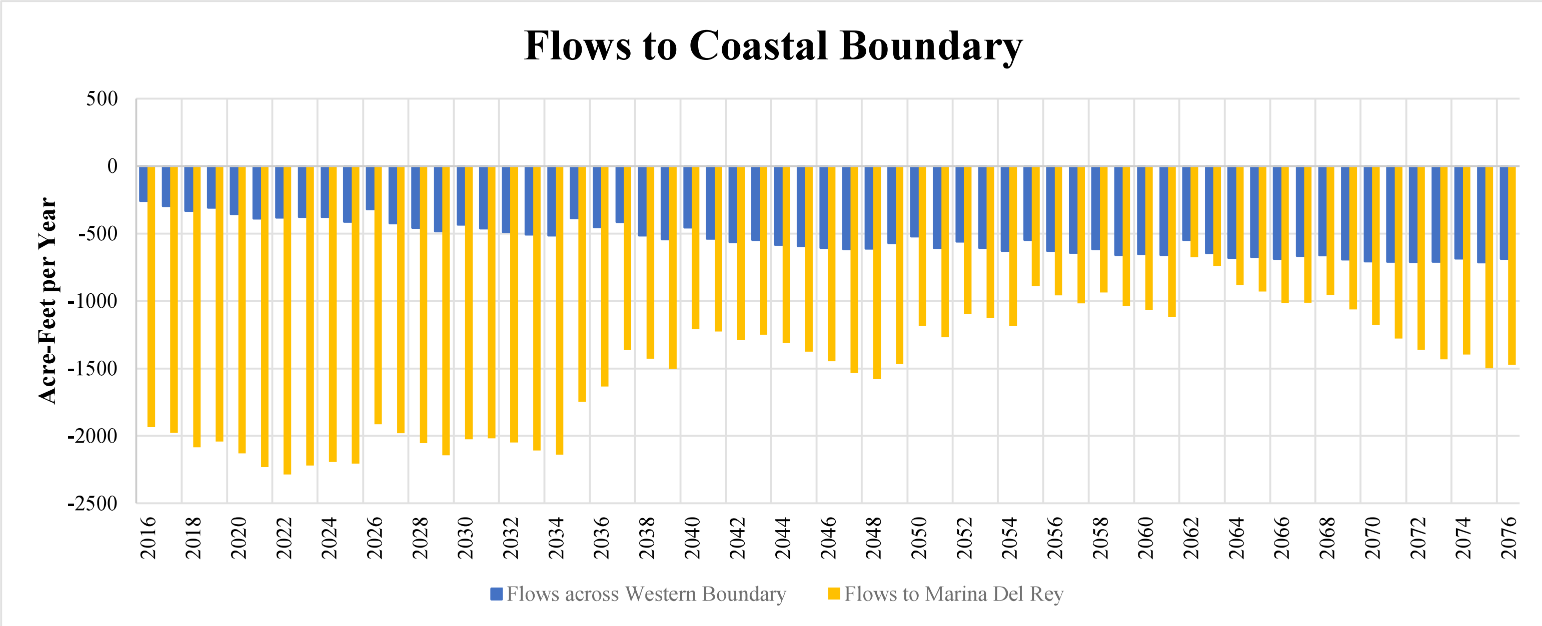
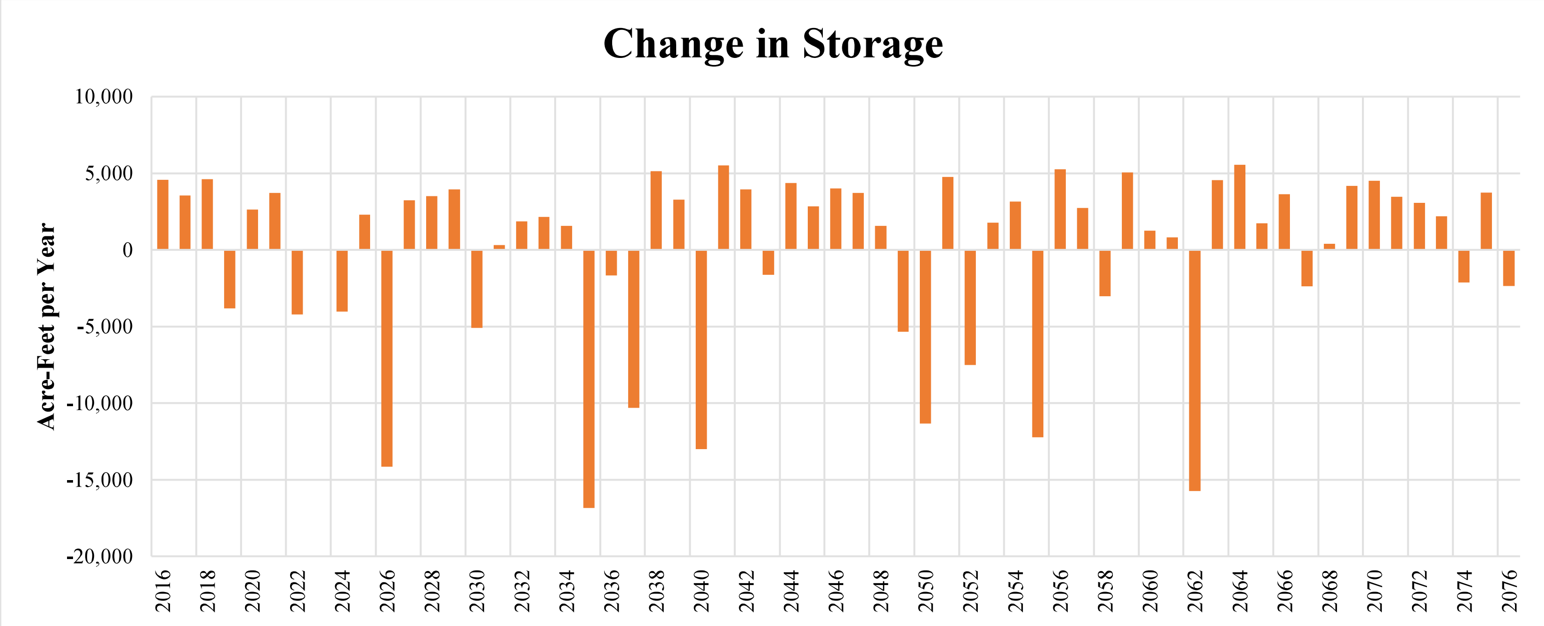


Figure 5.10a:
Predictive Model - 2070 Scenario:
Flows to Coastal Boundary



INTERA

Figure 5.10b:
Predictive Model - 2070 Scenario:
Change in Storage

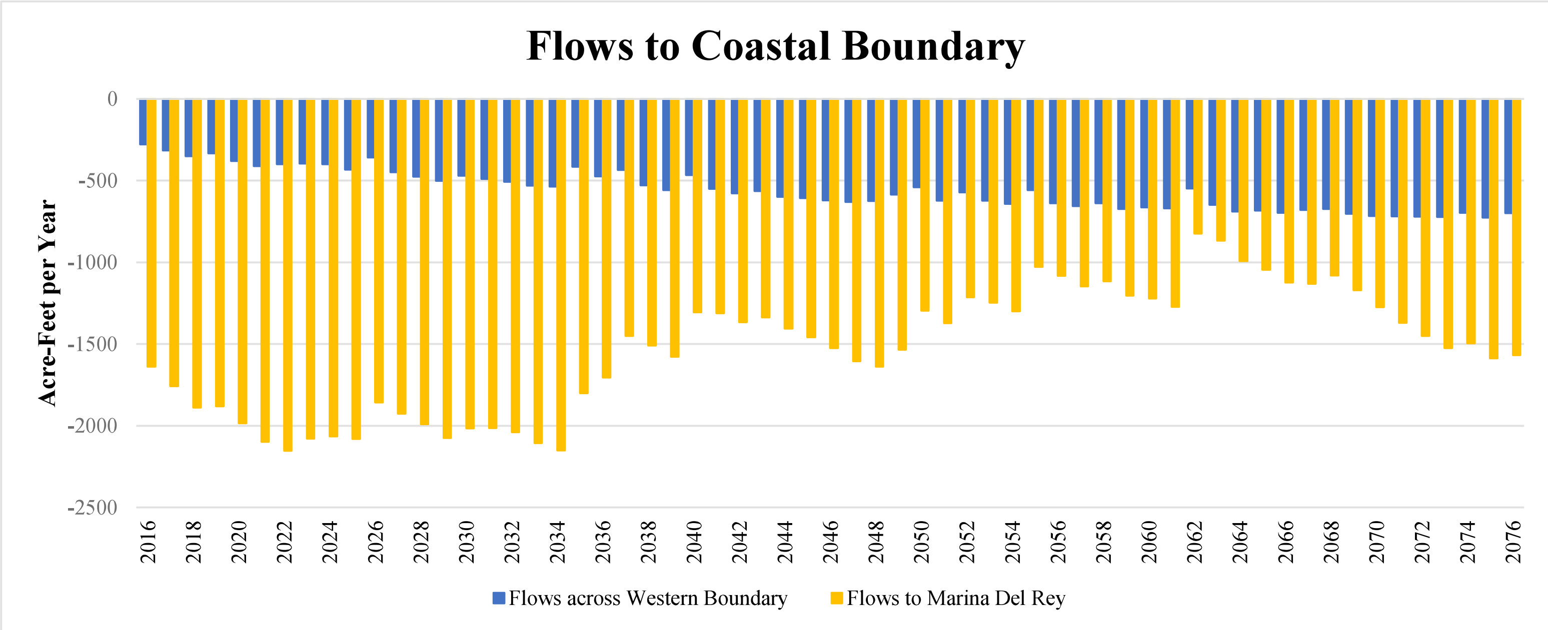


Figure 5.11a:
Predictive Model - Baseline Scenario:
Flows to Coastal Boundary

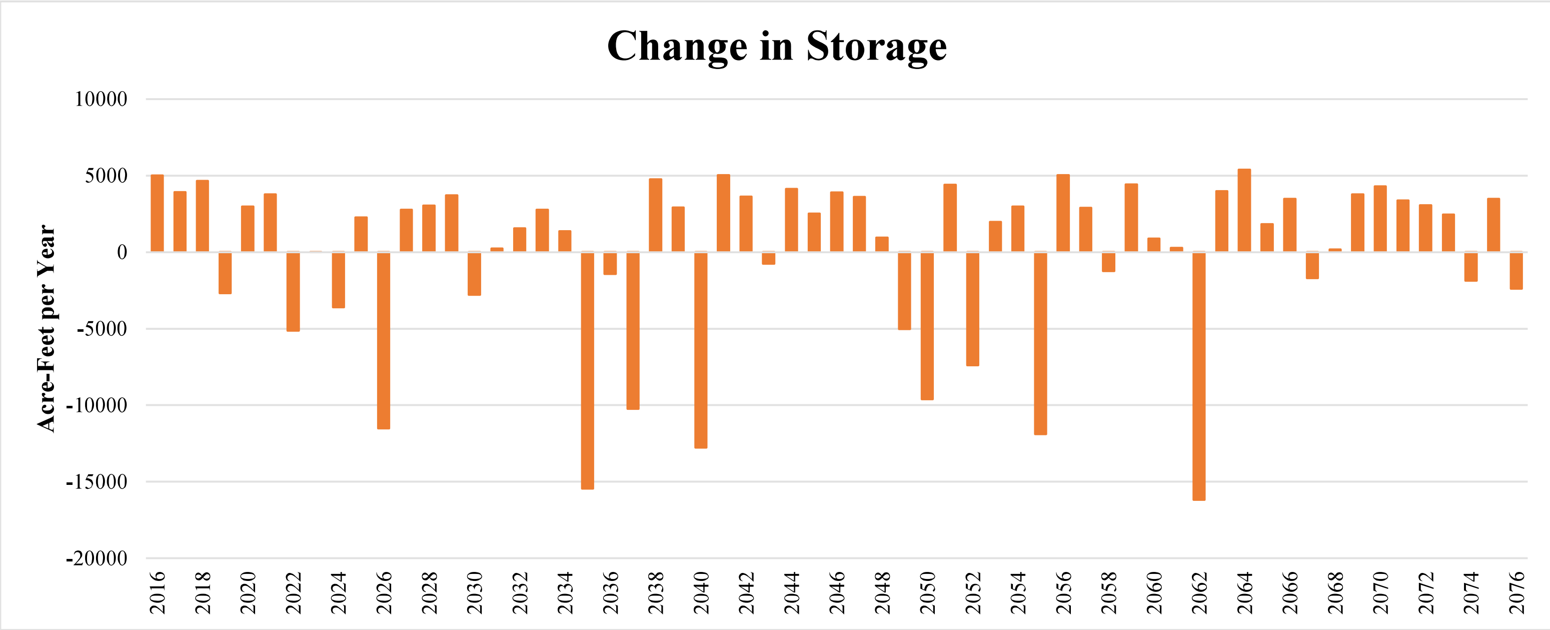


Figure 5.11b:
Predictive Model - Baseline Scenario:
Change in Storage

Appendix G

Playa Vista Groundwater Quality

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
Ballona Aquifer							
C-104	33.973570	-118.421362	9/22/2003	Western	250	0.11 U	18
C-104	33.973570	-118.421362	11/12/2003	Western	200	0.22 U	4.6
C-104	33.973570	-118.421362	2/13/2004	Western	230	0.11 U	11
C-104	33.973570	-118.421362	5/21/2004	Western	220	0.11 U	23
C-104	33.973570	-118.421362	8/27/2004	Western	150	0.11 U	17
C-104	33.973570	-118.421362	10/22/2004	Western	210	0.22 U	22
C-104	33.973570	-118.421362	2/28/2005	Western	206	0.1 U	22
C-104	33.973570	-118.421362	5/5/2005	Western	222	0.1 U	10
C-104	33.973570	-118.421362	8/12/2005	Western	220	0.1 U	2
C-104	33.973570	-118.421362	10/13/2005	Western	219	0.1 U	6
C-104	33.973570	-118.421362	5/19/2006	Western	202	0.04 J	4.2
C-104	33.973570	-118.421362	11/13/2006	Western	201	0.1 U	10.9
C-104	33.973570	-118.421362	4/25/2007	Western	194	0.1 U	16.1
C-104	33.973570	-118.421362	10/23/2007	Western	201	0.1 U	5.6
C-104	33.973570	-118.421362	4/23/2008	Western	192	0.17	26.8
C-104	33.973570	-118.421362	11/4/2008	Western	274	0.1 U	105
C-104	33.973570	-118.421362	4/15/2009	Western	193	0.038 J	29.2
C-104	33.973570	-118.421362	10/15/2009	Western	164	0.018 J	37
C-104	33.973570	-118.421362	5/19/2010	Western	187	0.047 J	18.9
C-104	33.973570	-118.421362	10/26/2010	Western	164	0.026 J	27.2
C-104	33.973570	-118.421362	4/14/2011	Western	157	0.1 U	18
C-104	33.973570	-118.421362	10/27/2011	Western	154	0.1 U	28.4
C-104	33.973570	-118.421362	4/19/2012	Western	170	0.07 J	28.6
C-104	33.973570	-118.421362	11/1/2012	Western	186	0.1 U	15.6
C-104	33.973570	-118.421362	4/19/2013	Western	139	0.19	30.3
C-104	33.973570	-118.421362	11/7/2013	Western	148	0.1 U	1
C-104	33.973570	-118.421362	4/16/2014	Western	142	0.1 U	19.8
C-104	33.973570	-118.421362	11/6/2014	Western	160	0.1 U	18
C-104	33.973570	-118.421362	4/23/2015	Western	180	0.1 U	19
C-104	33.973570	-118.421362	10/28/2015	Western	170	0.1 U	12
C-104	33.973570	-118.421362	4/27/2016	Western	190	0.1 U	9.6
C-104	33.973570	-118.421362	11/3/2016	Western	190	0.1 U	16
C-104	33.973570	-118.421362	4/13/2017	Western	190	0.1 U	17
C-104	33.973570	-118.421362	11/7/2017	Western	180	0.1 U	12
C-104	33.973570	-118.421362	5/14/2018	Western	230	0.1 U	2.1
C-104	33.973570	-118.421362	11/14/2018	Western	230	0.1 U	16
C-104	33.973570	-118.421362	5/1/2019	Western	240	0.1 U	27
C-104	33.973570	-118.421362	11/25/2019	Western	220	0.1 U	3.3
C-104	33.973570	-118.421362	11/24/2020	Western	210	0.1 U	14
C-105A	33.972056	-118.420747	9/16/2003	Western	130	0.11 U	3.2
C-105A	33.972056	-118.420747	11/14/2003	Western	140	0.11 U	1.5
C-105A	33.972056	-118.420747	2/18/2004	Western	140	0.11 U	0.87
C-105A	33.972056	-118.420747	5/17/2004	Western	150	0.11 U	6.2
C-105A	33.972056	-118.420747	8/27/2004	Western	150	0.11 U	1.8
C-105A	33.972056	-118.420747	10/28/2004	Western	150	0.11 U	1.4
C-105A	33.972056	-118.420747	2/25/2005	Western	159	0.1 U	10
C-105A	33.972056	-118.420747	5/2/2005	Western	174	0.1 U	15

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-105A	33.972056	-118.420747	8/11/2005	Western	172	0.1 U	37
C-105A	33.972056	-118.420747	10/12/2005	Western	168	0.2 U	42
C-105A	33.972056	-118.420747	5/22/2006	Western	162	0.1 U	11.5
C-105A	33.972056	-118.420747	11/13/2006	Western	157	0.1 U	25.5
C-105A	33.972056	-118.420747	4/25/2007	Western	150	0.1 U	22
C-105A	33.972056	-118.420747	10/23/2007	Western	138	0.1 U	7
C-105A	33.972056	-118.420747	10/23/2007	Western	139	0.1 U	7.3
C-105A	33.972056	-118.420747	4/23/2008	Western	149	0.1 U	20.3
C-105A	33.972056	-118.420747	10/23/2008	Western	252	0.1 U	16.9
C-105A	33.972056	-118.420747	4/15/2009	Western	162	0.047 J	16.8
C-105A	33.972056	-118.420747	10/15/2009	Western	146	0.016 J	12.5
C-105A	33.972056	-118.420747	5/18/2010	Western	170	0.025 J	5.63
C-105A	33.972056	-118.420747	10/26/2010	Western	149	0.021 J	9.55
C-105A	33.972056	-118.420747	4/15/2011	Western	139	0.114	10.1
C-105A	33.972056	-118.420747	10/26/2011	Western	158	0.1 U	9.55
C-105A	33.972056	-118.420747	4/19/2012	Western	166	0.08 J	9.6
C-105A	33.972056	-118.420747	10/16/2012	Western	165	0.1 U	9.15
C-105A	33.972056	-118.420747	4/22/2013	Western	136	0.12	1.99
C-105A	33.972056	-118.420747	11/13/2013	Western	111	0.1 U	7.72
C-105A	33.972056	-118.420747	4/21/2014	Western	129	0.1 U	1.22
C-105A	33.972056	-118.420747	11/12/2014	Western	140	0.1 U	4.1
C-105A	33.972056	-118.420747	5/11/2015	Western	160	0.1 U	3.5
C-105A	33.972056	-118.420747	10/28/2015	Western	160	0.1 U	4.3
C-105A	33.972056	-118.420747	4/25/2016	Western	160	0.1 U	3.2
C-105A	33.972056	-118.420747	11/9/2016	Western	---	0.1 U	4.9
C-105A	33.972056	-118.420747	5/2/2017	Western	150	0.1 U	4.1
C-105A	33.972056	-118.420747	11/2/2017	Western	160	0.1 U	4.4
C-105A	33.972056	-118.420747	5/16/2018	Western	140	0.1 U	3.7
C-105A	33.972056	-118.420747	11/15/2018	Western	150	0.1 U	3.2
C-105A	33.972056	-118.420747	5/8/2019	Western	150	0.1 U	3.3
C-105A	33.972056	-118.420747	12/3/2019	Western	160	0.1 U	2.1
C-105A	33.972056	-118.420747	11/18/2020	Western	150	0.1 U	1.7
C-128	33.971511	-118.421209	11/18/2003	Western	95	0.11 U	0.54
C-128	33.971511	-118.421209	2/20/2004	Western	100	0.11 U	0.5 U
C-128	33.971511	-118.421209	5/24/2004	Western	110	0.11 U	1.1
C-128	33.971511	-118.421209	8/26/2004	Western	100	0.11 U	0.55
C-128	33.971511	-118.421209	10/22/2004	Western	100	0.11 U	0.9
C-128	33.971511	-118.421209	2/17/2005	Western	121	0.1 U	1 U
C-128	33.971511	-118.421209	5/4/2005	Western	116	0.1 U	1 U
C-128	33.971511	-118.421209	8/10/2005	Western	113	0.1 U	1
C-128	33.971511	-118.421209	11/3/2005	Western	124	0.1 U	2 U
C-128	33.971511	-118.421209	2/24/2006	Western	107	0.1 U	1.5
C-128	33.971511	-118.421209	5/22/2006	Western	117	0.1 U	1.7
C-128	33.971511	-118.421209	8/3/2006	Western	122	0.1 U	8.6
C-128	33.971511	-118.421209	11/2/2006	Western	112	0.1 U	1.4
C-128	33.971511	-118.421209	2/14/2007	Western	111	0.1 U	2.4
C-128	33.971511	-118.421209	4/19/2007	Western	105	0.1 U	1.4
C-128	33.971511	-118.421209	8/3/2007	Western	101	0.1 U	1 U

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-128	33.971511	-118.421209	10/23/2007	Western	102	0.1 U	1 U
C-128	33.971511	-118.421209	1/22/2008	Western	106	0.1 U	1
C-128	33.971511	-118.421209	4/17/2008	Western	104	0.1 U	1.9
C-128	33.971511	-118.421209	7/21/2008	Western	107	0.1 U	1 U
C-128	33.971511	-118.421209	10/23/2008	Western	160	0.1 U	2.3
C-128	33.971511	-118.421209	2/9/2009	Western	94.4	0.099 U	1
C-128	33.971511	-118.421209	4/15/2009	Western	111	0.043 J	2.1
C-128	33.971511	-118.421209	10/22/2009	Western	119	0.029 J	1.29
C-128	33.971511	-118.421209	1/21/2010	Western	69.9	0.056 J	22.2
C-128	33.971511	-118.421209	5/19/2010	Western	150	0.061 J	8.2
C-128	33.971511	-118.421209	7/15/2010	Western	112	0.1 U	1.27
C-128	33.971511	-118.421209	11/1/2010	Western	109	0.1 U	1.88
C-128	33.971511	-118.421209	1/27/2011	Western	122	0.018 J	1.09
C-128	33.971511	-118.421209	4/15/2011	Western	116	0.117	6.18
C-128	33.971511	-118.421209	10/27/2011	Western	116	0.07 J	1.2
C-128	33.971511	-118.421209	1/23/2012	Western	130	0.19	2.94
C-128	33.971511	-118.421209	4/26/2012	Western	122	0.1 U	2.41
C-128	33.971511	-118.421209	8/1/2012	Western	124	0.1 UJ	8.81
C-128	33.971511	-118.421209	10/31/2012	Western	169	0.1 U	1.38
C-128	33.971511	-118.421209	1/31/2013	Western	124	0.1 U	7.37
C-128	33.971511	-118.421209	4/23/2013	Western	121	0.16	3.9
C-128	33.971511	-118.421209	8/1/2013	Western	119	0.1 U	2.88
C-128	33.971511	-118.421209	11/22/2013	Western	95.3	0.12	3.31
C-128	33.971511	-118.421209	2/7/2014	Western	127	0.1 U	3.65
C-128	33.971511	-118.421209	4/23/2014	Western	117	0.1 U	1.22
C-128	33.971511	-118.421209	11/10/2014	Western	130	0.1 U	1.1
C-128	33.971511	-118.421209	1/21/2015	Western	130	0.1 U	1.1
C-128	33.971511	-118.421209	5/11/2015	Western	150	0.1 U	2.7
C-128	33.971511	-118.421209	7/29/2015	Western	150	0.027 J	0.94 J
C-128	33.971511	-118.421209	10/28/2015	Western	160	0.1 U	0.77 J
C-128	33.971511	-118.421209	2/1/2016	Western	160	0.1 U	1.9
C-128	33.971511	-118.421209	5/3/2016	Western	160	0.1 U	1.4
C-128	33.971511	-118.421209	8/2/2016	Western	140	0.1 U	0.77 J
C-128	33.971511	-118.421209	11/2/2016	Western	---	0.1 U	0.84 J
C-128	33.971511	-118.421209	2/1/2017	Western	150	0.1 U	0.85 J
C-128	33.971511	-118.421209	5/11/2017	Western	150	0.1 U	1.1
C-128	33.971511	-118.421209	11/2/2017	Western	150	0.1 U	0.87 J
C-128	33.971511	-118.421209	5/24/2018	Western	150	0.1 U	1
C-128	33.971511	-118.421209	11/16/2018	Western	140	0.1 U	0.88 J
C-128	33.971511	-118.421209	5/9/2019	Western	130	0.1 U	0.64 J
C-128	33.971511	-118.421209	12/3/2019	Western	150	0.1 U	1
C-131	33.975253	-118.421873	5/4/2015	Western	210	0.1 U	20
C-131	33.975253	-118.421873	7/23/2015	Western	190	0.1 U	7.9
C-131	33.975253	-118.421873	10/21/2015	Western	200	0.1 U	10
C-131	33.975253	-118.421873	1/18/2016	Western	220	0.1 U	33
C-131	33.975253	-118.421873	7/25/2016	Western	200	0.1 U	49
C-131	33.975253	-118.421873	11/9/2016	Western	---	0.1 U	29
C-131	33.975253	-118.421873	1/25/2017	Western	190	0.1 U	9.4

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-131	33.975253	-118.421873	5/2/2017	Western	190	0.1 U	5.8
C-131	33.975253	-118.421873	10/26/2017	Western	200	0.1 U	15
C-131	33.975253	-118.421873	5/22/2018	Western	190	0.1 U	29
C-131	33.975253	-118.421873	10/23/2018	Western	180	0.1 U	14
C-131	33.975253	-118.421873	5/2/2019	Western	190	0.1 U	14
C-131	33.975253	-118.421873	11/8/2019	Western	170	0.1 U	22
C-131	33.975253	-118.421873	11/9/2020	Western	200	0.1 U	24
C-132	33.972208	-118.423360	5/5/2015	Western	180	0.1 U	0.29 J
C-132	33.972208	-118.423360	7/28/2015	Western	170	0.1 U	1 U
C-132	33.972208	-118.423360	10/20/2015	Western	160	0.1 U	0.68 J
C-132	33.972208	-118.423360	1/19/2016	Western	180	0.1 U	1 U
C-132	33.972208	-118.423360	7/26/2016	Western	180	0.1 U	1 U
C-132	33.972208	-118.423360	11/4/2016	Western	---	0.1 U	1 U
C-132	33.972208	-118.423360	1/25/2017	Western	160	0.1 U	0.27 J
C-132	33.972208	-118.423360	5/2/2017	Western	160	0.1 U	1 U
C-132	33.972208	-118.423360	10/31/2017	Western	170	0.1 U	1 U
C-132	33.972208	-118.423360	5/21/2018	Western	170	0.1 U	0.38 J
C-132	33.972208	-118.423360	11/6/2018	Western	170	0.19	1 U
C-132	33.972208	-118.423360	5/6/2019	Western	150	0.1 U	1 U
C-132	33.972208	-118.423360	10/22/2019	Western	160	0.1 U	1 U
C-132	33.972208	-118.423360	11/10/2020	Western	140	0.1 U	0.31 J
C-132	33.972208	-118.423360	11/10/2020	Western	140	0.1 U	0.38 J
C-133	33.972939	-118.422381	11/14/2003	Western	200	0.11 U	2.4
C-133	33.972939	-118.422381	2/18/2004	Western	180	0.11 U	0.5 U
C-133	33.972939	-118.422381	5/20/2004	Western	210	0.11 U	1.2
C-133	33.972939	-118.422381	8/20/2004	Western	210	0.11 U	0.95
C-133	33.972939	-118.422381	10/22/2004	Western	200	0.11 U	0.5 U
C-133	33.972939	-118.422381	2/25/2005	Western	207	0.1 U	1 U
C-133	33.972939	-118.422381	5/9/2005	Western	208	0.1 U	1 U
C-133	33.972939	-118.422381	8/15/2005	Western	195	0.1 U	0.6 J
C-133	33.972939	-118.422381	10/24/2005	Western	206	0.1 U	1 U
C-133	33.972939	-118.422381	2/23/2006	Western	206	0.1 U	5.5
C-133	33.972939	-118.422381	5/22/2006	Western	217	0.1 U	12.8
C-133	33.972939	-118.422381	8/7/2006	Western	231	0.08 J	29.4
C-133	33.972939	-118.422381	11/9/2006	Western	209	0.1 U	9.1
C-133	33.972939	-118.422381	4/25/2007	Western	204	0.1 U	5.9
C-133	33.972939	-118.422381	8/1/2007	Western	210	0.1 U	1.3
C-133	33.972939	-118.422381	10/23/2007	Western	203	0.1 U	4.9
C-133	33.972939	-118.422381	1/18/2008	Western	203	0.1 U	8.9
C-133	33.972939	-118.422381	4/15/2008	Western	193	0.1 U	1.1
C-133	33.972939	-118.422381	7/15/2008	Western	193	0.1 U	1 U
C-133	33.972939	-118.422381	10/23/2008	Western	304	0.1 U	1.4
C-133	33.972939	-118.422381	2/5/2009	Western	172	0.034 J	12
C-133	33.972939	-118.422381	4/16/2009	Western	248	0.045 J	3.6
C-133	33.972939	-118.422381	10/20/2009	Western	203	0.023 J	13.2
C-133	33.972939	-118.422381	1/21/2010	Western	188	0.1 U	22.8
C-133	33.972939	-118.422381	5/18/2010	Western	192	0.027 J	12.7
C-133	33.972939	-118.422381	7/13/2010	Western	191	0.1 U	12.3

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-133	33.972939	-118.422381	10/27/2010	Western	170	0.027 J	7.71
C-133	33.972939	-118.422381	10/27/2010	Western	160	0.021 J	6.92
C-133	33.972939	-118.422381	1/26/2011	Western	157	0.1 U	4.52
C-133	33.972939	-118.422381	4/14/2011	Western	135	0.159	7.5
C-133	33.972939	-118.422381	10/27/2011	Western	142	0.1 U	5.96
C-133	33.972939	-118.422381	1/25/2012	Western	145	0.08 J	3.41
C-133	33.972939	-118.422381	4/19/2012	Western	171	0.1	15.7
C-133	33.972939	-118.422381	7/25/2012	Western	185	0.14	16.1
C-133	33.972939	-118.422381	11/1/2012	Western	217	0.1 U	17.8
C-133	33.972939	-118.422381	1/23/2013	Western	180	0.1 U	13.9
C-133	33.972939	-118.422381	4/22/2013	Western	152	0.18	11.3
C-133	33.972939	-118.422381	7/23/2013	Western	180	0.1 U	12.2
C-133	33.972939	-118.422381	11/7/2013	Western	157	0.1 U	10.5
C-133	33.972939	-118.422381	2/7/2014	Western	171	0.1 U	7.73
C-133	33.972939	-118.422381	4/21/2014	Western	158	0.1 U	12.5
C-133	33.972939	-118.422381	7/28/2014	Western	152	0.1 U	13.1
C-133	33.972939	-118.422381	11/10/2014	Western	180	0.1 U	3.9
C-133	33.972939	-118.422381	1/21/2015	Western	180	0.1 U	3.7
C-133	33.972939	-118.422381	5/12/2015	Western	200	0.1 U	12
C-133	33.972939	-118.422381	10/23/2015	Western	210	0.1 U	17
C-133	33.972939	-118.422381	4/28/2016	Western	190	0.1 U	13
C-133	33.972939	-118.422381	11/9/2016	Western	---	0.1 U	15
C-133	33.972939	-118.422381	4/12/2017	Western	180	0.1 U	11
C-133	33.972939	-118.422381	11/6/2017	Western	180	0.1 U	15
C-133	33.972939	-118.422381	5/18/2018	Western	170	0.1 U	13
C-133	33.972939	-118.422381	11/14/2018	Western	170	0.1 U	13
C-133	33.972939	-118.422381	4/30/2019	Western	160	0.1 U	1.2
C-133	33.972939	-118.422381	10/22/2019	Western	170	0.1 U	13
C-133	33.972939	-118.422381	11/5/2020	Western	160	0.1 U	12
C-134	33.973175	-118.421249	11/18/2003	Western	160	0.11 U	6.4
C-134	33.973175	-118.421249	2/18/2004	Western	150	0.11 U	5.8
C-134	33.973175	-118.421249	5/19/2004	Western	150	0.11 U	4
C-134	33.973175	-118.421249	8/27/2004	Western	150	0.11 U	7
C-134	33.973175	-118.421249	10/21/2004	Western	160	0.11 U	1
C-134	33.973175	-118.421249	2/28/2005	Western	161	0.1 U	33
C-134	33.973175	-118.421249	5/9/2005	Western	157	0.1 U	8
C-134	33.973175	-118.421249	8/15/2005	Western	136	0.1 U	11
C-134	33.973175	-118.421249	10/14/2005	Western	158	0.1 U	17
C-134	33.973175	-118.421249	2/23/2006	Western	150	0.1 U	30.5
C-134	33.973175	-118.421249	5/24/2006	Western	145	0.1 U	31.3
C-134	33.973175	-118.421249	8/7/2006	Western	168	1.2	32.3
C-134	33.973175	-118.421249	11/3/2006	Western	163	0.1 U	27.1
C-134	33.973175	-118.421249	2/13/2007	Western	169	0.1 U	19.6
C-134	33.973175	-118.421249	4/18/2007	Western	165	0.1 U	16.8
C-134	33.973175	-118.421249	8/1/2007	Western	166	0.1 U	29.5
C-134	33.973175	-118.421249	11/6/2007	Western	173	0.1 U	5.2
C-134	33.973175	-118.421249	1/17/2008	Western	176	0.1 U	14.5
C-134	33.973175	-118.421249	4/17/2008	Western	172	0.1 U	28.1

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-134	33.973175	-118.421249	7/15/2008	Western	171	0.1 U	7.2
C-134	33.973175	-118.421249	10/29/2008	Western	156	0.1 U	16.1
C-134	33.973175	-118.421249	2/10/2009	Western	163	0.032 J	18.4
C-134	33.973175	-118.421249	4/17/2009	Western	168	0.047 J	19.7
C-134	33.973175	-118.421249	10/14/2009	Western	188	0.1 U	10.8
C-134	33.973175	-118.421249	1/12/2010	Western	164	0.023 J	17.3
C-134	33.973175	-118.421249	5/19/2010	Western	191	0.066 J	17.3
C-134	33.973175	-118.421249	7/15/2010	Western	102	0.016 J	7.47
C-134	33.973175	-118.421249	11/2/2010	Western	161	0.069 J	7.64
C-134	33.973175	-118.421249	1/21/2011	Western	165	0.069 J	29.7
C-134	33.973175	-118.421249	4/27/2011	Western	144	0.07 J	25.3
C-134	33.973175	-118.421249	11/7/2011	Western	163	0.1 U	24.6
C-134	33.973175	-118.421249	1/23/2012	Western	168	0.2	11.2
C-134	33.973175	-118.421249	4/26/2012	Western	155	0.1	25
C-134	33.973175	-118.421249	7/24/2012	Western	160	0.1	25.3
C-134	33.973175	-118.421249	10/24/2012	Western	151	0.31	6.58
C-134	33.973175	-118.421249	1/30/2013	Western	155	0.07 J	3.84
C-134	33.973175	-118.421249	4/24/2013	Western	145	0.15	6.56
C-134	33.973175	-118.421249	7/30/2013	Western	146	0.1 U	7.43
C-134	33.973175	-118.421249	11/12/2013	Western	131	0.09 J	14.6
C-134	33.973175	-118.421249	2/4/2014	Western	159	0.1 U	20
C-134	33.973175	-118.421249	4/22/2014	Western	131	0.1 U	1 U
C-134	33.973175	-118.421249	8/5/2014	Western	129	0.1 U	18.2
C-134	33.973175	-118.421249	11/12/2014	Western	150	0.1 U	6.9
C-134	33.973175	-118.421249	1/22/2015	Western	150	0.1 U	15
C-134	33.973175	-118.421249	5/12/2015	Western	140	0.1 U	20
C-134	33.973175	-118.421249	11/3/2015	Western	150	0.17	22
C-134	33.973175	-118.421249	1/26/2016	Western	160	0.1 U	19
C-134	33.973175	-118.421249	5/5/2016	Western	160	0.1 U	1.8
C-134	33.973175	-118.421249	7/28/2016	Western	160	0.1 U	2.4
C-134	33.973175	-118.421249	11/9/2016	Western	---	0.1 U	1.9
C-134	33.973175	-118.421249	2/2/2017	Western	150	0.1 U	9.3
C-134	33.973175	-118.421249	4/13/2017	Western	150	0.1 U	0.98 J
C-134	33.973175	-118.421249	11/7/2017	Western	160	0.1 U	9.8
C-134	33.973175	-118.421249	5/23/2018	Western	160	0.1 U	2.6
C-134	33.973175	-118.421249	11/19/2018	Western	150	0.1 U	5.1
C-134	33.973175	-118.421249	5/13/2019	Western	160	0.1 U	3.6
C-134	33.973175	-118.421249	11/25/2019	Western	140	0.1 U	1.6
C-134	33.973175	-118.421249	11/24/2020	Western	130	0.1 U	1.5
C-135	33.972427	-118.421757	2/2/2015	Western	130	0.1 U	2.5
C-135	33.972427	-118.421757	7/29/2015	Western	120	0.1 U	1.4
C-135	33.972427	-118.421757	10/20/2015	Western	130	0.1 U	1.3
C-135	33.972427	-118.421757	1/19/2016	Western	140	0.1 U	1.2
C-135	33.972427	-118.421757	5/3/2016	Western	140	0.1 U	1.4
C-135	33.972427	-118.421757	7/26/2016	Western	140	0.1 U	0.64 J
C-135	33.972427	-118.421757	11/4/2016	Western	---	0.1 U	1.4
C-135	33.972427	-118.421757	1/30/2017	Western	130	0.1 U	2.2
C-135	33.972427	-118.421757	4/14/2017	Western	150	0.1 U	1.6

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-135	33.972427	-118.421757	7/13/2017	Western	130	0.1 U	1.4
C-135	33.972427	-118.421757	11/7/2017	Western	140	0.1 U	2.7
C-135	33.972427	-118.421757	1/31/2018	Western	140	0.1 U	1.2
C-135	33.972427	-118.421757	5/23/2018	Western	140	0.1 U	1.5
C-135	33.972427	-118.421757	7/26/2018	Western	140	0.1 U	1.8
C-135A	33.972445	-118.420909	11/8/2019	Western	130	0.1 U	2.3
C-135A	33.972445	-118.420909	11/11/2020	Western	130	0.1 U	1.1
C-139	33.981527	-118.407985	10/26/2005	Eastern	357	0.1 U	787
C-139	33.981527	-118.407985	5/15/2006	Eastern	161	0.72	278
C-139	33.981527	-118.407985	2/12/2007	Eastern	424	0.1 U	750
C-139	33.981527	-118.407985	4/19/2007	Eastern	431	0.1 U	762
C-139	33.981527	-118.407985	11/1/2007	Eastern	443	0.1 U	746
C-139	33.981527	-118.407985	1/14/2008	Eastern	408	0.1 UJ	713
C-139	33.981527	-118.407985	10/23/2009	Eastern	447	0.02 J	778
C-139	33.981527	-118.407985	10/19/2010	Eastern	374	0.044 J	792
C-139	33.981527	-118.407985	10/25/2011	Eastern	305	0.1	632
C-139	33.981527	-118.407985	10/15/2012	Eastern	390	0.08 J	720
C-139	33.981527	-118.407985	10/23/2013	Eastern	283	0.1 U	892
C-139	33.981527	-118.407985	10/16/2014	Eastern	320	0.1 U	870
C-139A	33.981525	-118.408034	11/16/2015	Eastern	290	0.1 U	770
C-139A	33.981525	-118.408034	10/20/2016	Eastern	320	0.1 U	750
C-139A	33.981525	-118.408034	10/23/2017	Eastern	310	0.1 U	670
C-139A	33.981525	-118.408034	11/26/2018	Eastern	300	0.1 U	640
C-139A	33.981525	-118.408034	10/21/2019	Eastern	280	0.1 U	610
C-139A	33.981525	-118.408034	10/27/2020	Eastern	290	0.1 U	610
C-140	33.983060	-118.405222	10/26/2004	Eastern	790	0.55 U	730
C-140	33.983060	-118.405222	10/26/2005	Eastern	755	0.1 U	877
C-140	33.983060	-118.405222	5/11/2006	Eastern	786	0.1 U	914
C-140	33.983060	-118.405222	11/8/2006	Eastern	648	0.1 U	911
C-140	33.983060	-118.405222	2/7/2007	Eastern	619	0.1 U	921
C-140	33.983060	-118.405222	4/30/2007	Eastern	566	0.1 U	938
C-140	33.983060	-118.405222	10/30/2007	Eastern	635	0.1 U	985
C-140	33.983060	-118.405222	1/14/2008	Eastern	604	0.1 U	918
C-140A	33.983295	-118.404962	11/6/2008	Eastern	572	0.1 U	1060
C-140A	33.983295	-118.404962	2/10/2009	Eastern	292	0.07 J	818
C-140A	33.983295	-118.404962	10/21/2009	Eastern	673	0.02 J	1080
C-140B	33.983268	-118.404948	1/21/2010	Eastern	127	0.1 U	198
C-140B	33.983268	-118.404948	10/21/2010	Eastern	590	0.054 J	953
C-140B	33.983268	-118.404948	11/2/2011	Eastern	572	0.07 J	931
C-140B	33.983268	-118.404948	10/15/2012	Eastern	554	0.1 U	715
C-140B	33.983268	-118.404948	10/24/2013	Eastern	520	0.1 U	753
C-140B	33.983268	-118.404948	10/20/2014	Eastern	500	0.1 U	870
C-140B	33.983268	-118.404948	11/6/2015	Eastern	330	0.1 U	1200
C-140B	33.983268	-118.404948	10/20/2016	Eastern	340	0.1 U	1200
C-140B	33.983268	-118.404948	10/23/2017	Eastern	340	0.1 U	1100
C-140B	33.983268	-118.404948	10/22/2018	Eastern	360	0.1 U	1100
C-140B	33.983268	-118.404948	11/6/2019	Eastern	400	0.1 U	910
C-140B	33.983268	-118.404948	11/4/2020	Eastern	400	0.1 U	950

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-149	33.981188	-118.410492	10/29/2015	Eastern	270	0.1 U	640
C-149	33.981188	-118.410492	10/29/2015	Eastern	280	0.1 U	670
C-149	33.981188	-118.410492	10/21/2016	Eastern	290	0.1 U	590
C-149	33.981188	-118.410492	10/21/2016	Eastern	300	0.1 U	600
C-149	33.981188	-118.410492	10/12/2017	Eastern	280	0.1 U	530
C-149	33.981188	-118.410492	10/12/2017	Eastern	260	0.1 U	490
C-149	33.981188	-118.410492	10/22/2018	Eastern	210	0.1 U	470
C-149	33.981188	-118.410492	10/22/2018	Eastern	210	0.1 U	470
C-149	33.981188	-118.410492	11/6/2019	Eastern	220	0.1 U	420
C-149	33.981188	-118.410492	11/6/2019	Eastern	220	0.1 U	420
C-149	33.981188	-118.410492	11/2/2020	Eastern	240	0.1 U	400
C-149	33.981188	-118.410492	11/2/2020	Eastern	240	0.1 U	400
C-150	33.982968	-118.407328	10/29/2015	Eastern	490	0.1 U	890
C-150	33.982968	-118.407328	10/21/2016	Eastern	490	0.1 U	820
C-150	33.982968	-118.407328	11/2/2017	Eastern	470	0.1 U	760
C-150	33.982968	-118.407328	10/30/2018	Eastern	440	0.1 U	620
C-150	33.982968	-118.407328	10/22/2019	Eastern	410	0.1 U	600
C-150	33.982968	-118.407328	11/2/2020	Eastern	400	0.1 U	570
C-157Aba	33.975617	-118.413986	11/13/2015	Central	100	0.1 U	180
C-157Aba	33.975617	-118.413986	11/1/2016	Central	110	0.1 U	150
C-157Aba	33.975617	-118.413986	10/30/2017	Central	100	0.1 U	140
C-157Aba	33.975617	-118.413986	11/1/2018	Central	110	0.1 U	150
C-157Aba	33.975617	-118.413986	11/22/2019	Central	110	0.1 U	150
C-157Aba	33.975617	-118.413986	11/23/2020	Central	93	0.1 U	140
C-157Ba	33.975538	-118.414047	7/28/2013	Central	101	0.1 U	176
C-157Ba	33.975538	-118.414047	1/24/2014	Central	94.9	0.1 U	173
C-158Aba	33.976165	-118.414148	11/16/2015	Central	98	0.1 U	180
C-158Aba	33.976165	-118.414148	11/16/2015	Central	100	0.1 U	190
C-158Aba	33.976165	-118.414148	11/15/2016	Central	100	0.1 U	190
C-158Aba	33.976165	-118.414148	10/25/2017	Central	68	0.07 J	110
C-158Aba	33.976165	-118.414148	11/6/2018	Central	110	0.1 U	140
C-158Aba	33.976165	-118.414148	11/22/2019	Central	100	0.1 U	140
C-158Aba	33.976165	-118.414148	11/23/2020	Central	93	0.1 U	130
C-158Ba	33.976135	-118.414377	1/27/2014	Central	112	0.1 U	145
C-159Ba	33.976719	-118.414803	7/15/2013	Central	145	0.1 U	204
C-159Ba	33.976719	-118.414803	7/15/2013	Central	142	0.07 J	204
C-159Ba	33.976719	-118.414803	1/27/2014	Central	128	0.1 U	164
C-159Ba	33.976719	-118.414803	1/27/2014	Central	127	0.1 U	163
C-159Ba	33.976719	-118.414803	11/12/2015	Central	150	0.1 U	140
C-159Ba	33.976719	-118.414803	10/28/2016	Central	150	0.1 U	120
C-159Ba	33.976719	-118.414803	10/30/2017	Central	130	0.1 U	130
C-159Ba	33.976719	-118.414803	11/1/2018	Central	130	0.1 U	130
C-159Ba	33.976719	-118.414803	11/7/2019	Central	130	0.1 U	140
C-159Ba	33.976719	-118.414803	11/5/2020	Central	110	0.1 U	120
C-160Ba	33.977420	-118.415317	7/11/2013	Central	145	0.1 U	203
C-160Ba	33.977420	-118.415317	1/27/2014	Central	130	0.1 U	162
C-160Ba	33.977420	-118.415317	11/9/2015	Central	140	0.1 U	150
C-160Ba	33.977420	-118.415317	10/31/2016	Central	140	0.1 U	150

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-160Ba	33.977420	-118.415317	10/18/2017	Central	130	0.1 U	150
C-160Ba	33.977420	-118.415317	11/8/2018	Central	150	0.1 U	160
C-160Ba	33.977420	-118.415317	11/7/2019	Central	150	0.1 U	140
C-160Ba	33.977420	-118.415317	11/4/2020	Central	120	0.1 U	140
C-161Ba	33.975887	-118.416376	7/15/2013	Central	155	0.1 U	148
C-161Ba	33.975887	-118.416376	1/28/2014	Central	140	0.1 U	156
C-161Ba	33.975887	-118.416376	11/10/2015	Central	150	0.1 U	130
C-161Ba	33.975887	-118.416376	11/2/2016	Central	---	0.1 U	---
C-161Ba	33.975887	-118.416376	10/30/2017	Central	120	0.1 U	130
C-161Ba	33.975887	-118.416376	11/12/2018	Central	120	0.1 U	140
C-161Ba	33.975887	-118.416376	12/3/2019	Central	98	0.1 U	140
C-161Ba	33.975887	-118.416376	11/20/2020	Central	110	0.1 U	160
C-169Ba	33.979697	-118.412270	11/17/2015	Central	170	0.1 U	440
C-169Ba	33.979697	-118.412270	10/26/2016	Central	170	0.1 U	420
C-178Aba	33.972367	-118.420330	10/30/2019	Western	160	0.1 U	4
C-178Aba	33.972367	-118.420330	11/18/2020	Western	150	0.1 U	12
C-178Ba	33.972368	-118.420385	8/3/2015	Western	140	0.1 U	1.4
C-178Ba	33.972368	-118.420385	11/20/2015	Western	150	0.1 U	1
C-178Ba	33.972368	-118.420385	11/20/2015	Western	160	0.1 U	3.9
C-178Ba	33.972368	-118.420385	1/28/2016	Western	160	0.1 U	0.86 J
C-178Ba	33.972368	-118.420385	4/25/2016	Western	150	0.1 U	0.98 J
C-178Ba	33.972368	-118.420385	4/25/2016	Western	150	0.1 U	1.3
C-178Ba	33.972368	-118.420385	8/8/2016	Western	150	0.1 U	1.5
C-178Ba	33.972368	-118.420385	11/10/2016	Western	---	0.1 U	1.3
C-178Ba	33.972368	-118.420385	2/2/2017	Western	150	0.1 U	1.5
C-178Ba	33.972368	-118.420385	4/14/2017	Western	160	0.1 U	11
C-178Ba	33.972368	-118.420385	7/13/2017	Western	140	0.1 U	1.1
C-178Ba	33.972368	-118.420385	11/6/2017	Western	160	0.1 U	11
C-178Ba	33.972368	-118.420385	1/29/2018	Western	150	0.1 U	1.7
C-178Ba	33.972368	-118.420385	1/29/2018	Western	160	0.1 U	7.2
C-178Ba	33.972368	-118.420385	5/21/2018	Western	160	0.1 U	12
C-178Ba	33.972368	-118.420385	5/21/2018	Western	160	0.1 U	12
C-178Ba	33.972368	-118.420385	7/25/2018	Western	150	0.1 U	10
C-178Ba	33.972368	-118.420385	7/25/2018	Western	150	0.1 U	10
C-180ba	33.977729	-118.406037	9/12/2018	Eastern	200	0.1 U	340
C-180ba	33.977729	-118.406037	11/13/2018	Eastern	200	0.1 U	320
C-180ba	33.977729	-118.406037	1/24/2019	Eastern	200	0.1 U	320
C-180ba	33.977729	-118.406037	4/23/2019	Eastern	170	0.1 U	280
C-180ba	33.977729	-118.406037	7/16/2019	Eastern	140	0.1 U	300
C-180ba	33.977729	-118.406037	10/24/2019	Eastern	160	0.1 U	290
C-180ba	33.977729	-118.406037	2/4/2020	Eastern	160	0.1 U	290
C-180ba	33.977729	-118.406037	2/4/2020	Eastern	160	0.1 U	290
C-180ba	33.977729	-118.406037	5/6/2020	Eastern	180	0.1 U	310
C-180ba	33.977729	-118.406037	7/21/2020	Eastern	170	0.1 U	280
C-180ba	33.977729	-118.406037	10/21/2020	Eastern	160	0.1 U	290
C-185ba	33.972739	-118.420538	7/18/2017	Western	140	0.1 U	6.9
C-185ba	33.972739	-118.420538	11/8/2017	Western	140	0.1 U	3
C-185ba	33.972739	-118.420538	11/8/2017	Western	150	0.1 U	3

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-185ba	33.972739	-118.420538	1/31/2018	Western	150	0.1 U	1.3
C-185ba	33.972739	-118.420538	5/14/2018	Western	150	0.1 U	1.4
C-185ba	33.972739	-118.420538	5/14/2018	Western	140	0.1 U	0.86 J
C-185ba	33.972739	-118.420538	7/30/2018	Western	140	0.1 U	0.85 J
C-185ba	33.972739	-118.420538	11/9/2018	Western	150	0.1 U	1.1
C-185ba	33.972739	-118.420538	11/9/2018	Western	150	0.1 U	1.1
C-185ba	33.972739	-118.420538	1/23/2019	Western	160	0.1 U	1.1
C-185ba	33.972739	-118.420538	5/1/2019	Western	130	0.1 U	1.4
C-185ba	33.972739	-118.420538	5/1/2019	Western	130	0.1 U	1.6
C-185ba	33.972739	-118.420538	7/18/2019	Western	130	0.1 U	0.76 J
C-185ba	33.972739	-118.420538	11/27/2019	Western	130	0.1 UJ	7.4
C-185ba	33.972739	-118.420538	11/24/2020	Western	130	0.1 U	3
C-186ba	33.973369	-118.420711	2/6/2018	Western	380	0.1 U	5.6
C-186ba	33.973369	-118.420711	5/23/2018	Western	320	0.1 U	3.5
C-186ba	33.973369	-118.420711	8/1/2018	Western	350	0.1 U	2.4
C-186ba	33.973369	-118.420711	11/15/2018	Western	300	0.1 U	1.3
C-186ba	33.973369	-118.420711	1/28/2019	Western	300	0.1 U	0.73 J
C-186ba	33.973369	-118.420711	5/2/2019	Western	290	0.1 U	2.5
C-186ba	33.973369	-118.420711	7/18/2019	Western	260	0.1 U	21
C-186ba	33.973369	-118.420711	11/27/2019	Western	220	0.1 UJ	2.8
C-186ba	33.973369	-118.420711	11/24/2020	Western	220	0.1 U	1.5
C-190ba	33.972861	-118.422269	5/21/2018	Western	170	0.1 U	0.96 J
C-190ba	33.972861	-118.422269	7/26/2018	Western	160	0.1 U	1 U
C-190ba	33.972861	-118.422269	11/8/2018	Western	170	0.1 U	1 U
C-190ba	33.972861	-118.422269	4/30/2019	Western	160	0.1 U	0.86 J
C-190ba	33.972861	-118.422269	4/30/2019	Western	160	0.1 U	1 U
C-190ba	33.972861	-118.422269	11/21/2019	Western	160	0.1 U	1 U
C-190ba	33.972861	-118.422269	11/16/2020	Western	160	0.1 U	0.29 J
C-197ba	33.969161	-118.422826	6/8/2018	Western	120	0.1 U	61
C-197ba	33.969161	-118.422826	8/2/2018	Western	130	0.1 U	51
C-197ba	33.969161	-118.422826	8/2/2018	Western	130	0.1 U	51
C-197ba	33.969161	-118.422826	11/21/2018	Western	120	0.1 U	38
C-197ba	33.969161	-118.422826	5/9/2019	Western	110	0.1 U	12
C-197ba	33.969161	-118.422826	11/13/2019	Western	110	0.1 U	14
C-197ba	33.969161	-118.422826	11/13/2019	Western	110	0.1 U	13
C-197ba	33.969161	-118.422826	11/11/2020	Western	100	0.1 U	23
C-197ba	33.969161	-118.422826	11/11/2020	Western	99	0.1 U	17
C-36	33.977906	-118.407731	11/6/2004	Eastern	310	0.11 U	780
C-36	33.977906	-118.407731	10/23/2005	Eastern	260	0.1 U	535
C-36	33.977906	-118.407731	5/10/2006	Eastern	278	0.1 U	569
C-36	33.977906	-118.407731	10/24/2006	Eastern	334	0.1 U	823
C-36	33.977906	-118.407731	4/24/2007	Eastern	333	0.1 U	770
C-36	33.977906	-118.407731	10/22/2007	Eastern	214	0.1 U	548
C-36	33.977906	-118.407731	10/22/2007	Eastern	214	0.1 U	546
C-36	33.977906	-118.407731	11/3/2008	Eastern	284	0.1 U	885
C-36	33.977906	-118.407731	10/14/2009	Eastern	236	0.016 J	619
C-36	33.977906	-118.407731	10/18/2010	Eastern	198	0.033 J	611
C-36	33.977906	-118.407731	10/20/2011	Eastern	253	0.07 J	669

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-36	33.977906	-118.407731	10/9/2012	Eastern	187	0.1 U	666
C-36	33.977906	-118.407731	10/9/2013	Eastern	176	0.16	623
C-36	33.977906	-118.407731	10/14/2014	Eastern	150	0.1 U	700
C-36	33.977906	-118.407731	11/10/2015	Eastern	1 U	0.1 U	490
C-36	33.977906	-118.407731	11/10/2015	Eastern	1 U	0.1 U	470
C-36	33.977906	-118.407731	10/14/2016	Eastern	120	0.1 U	380
C-36	33.977906	-118.407731	10/16/2017	Eastern	110	0.1 U	270
C-36	33.977906	-118.407731	10/11/2018	Eastern	92	0.1 U	210
C-36	33.977906	-118.407731	12/4/2019	Eastern	85	0.1 U	190
C-36	33.977906	-118.407731	10/16/2020	Eastern	84	0.1 U	180
C-56	33.978375	-118.407978	10/27/2004	Eastern	270	0.22 U	600
C-56	33.978375	-118.407978	10/19/2005	Eastern	305	0.1 U	733
C-56	33.978375	-118.407978	5/8/2006	Eastern	317	0.1 U	718
C-56	33.978375	-118.407978	11/6/2006	Eastern	270	0.1 U	645
C-56	33.978375	-118.407978	10/17/2007	Eastern	296	0.1 U	715
C-56	33.978375	-118.407978	11/3/2008	Eastern	344	0.1 U	1020
C-56	33.978375	-118.407978	10/14/2009	Eastern	207	0.018 J	564
C-56	33.978375	-118.407978	11/1/2010	Eastern	143	0.046 J	385
C-56	33.978375	-118.407978	10/17/2011	Eastern	172	0.09 J	518
C-56	33.978375	-118.407978	10/11/2012	Eastern	158	0.1 U	568
C-56	33.978375	-118.407978	11/4/2013	Eastern	150	0.1 U	512
C-56	33.978375	-118.407978	10/14/2014	Eastern	120	0.1 U	480
C-56	33.978375	-118.407978	10/29/2015	Eastern	110	0.1 U	400
C-56	33.978375	-118.407978	10/12/2016	Eastern	98	0.1 U	270
C-56	33.978375	-118.407978	11/9/2017	Eastern	98	0.1 U	260
C-56	33.978375	-118.407978	10/23/2018	Eastern	92	0.1 U	250
C-56	33.978375	-118.407978	10/31/2019	Eastern	88	0.1 U	220
C-56	33.978375	-118.407978	11/3/2020	Eastern	81	0.1 U	190
C-72Aba	33.982447	-118.406675	11/5/2008	Eastern	524	0.1 U	1070
C-72Aba	33.982447	-118.406675	10/21/2009	Eastern	559	1.65	959
C-72Aba	33.982447	-118.406675	10/21/2010	Eastern	495	0.051 J	862
C-72Aba	33.982447	-118.406675	10/26/2011	Eastern	493	0.07 J	840
C-72Aba	33.982447	-118.406675	10/24/2012	Eastern	503	0.2	770
C-72Aba	33.982447	-118.406675	10/24/2013	Eastern	494	0.1 U	858
C-72Aba	33.982447	-118.406675	10/20/2014	Eastern	530	0.1 U	900
C-72Aba	33.982447	-118.406675	11/11/2015	Eastern	570	0.1 U	1000
C-72Aba	33.982447	-118.406675	10/21/2016	Eastern	470	0.1 U	900
C-72Aba	33.982447	-118.406675	10/25/2017	Eastern	440	0.1 U	860
C-72Aba	33.982447	-118.406675	11/5/2018	Eastern	380	0.1 U	840
C-72Aba	33.982447	-118.406675	11/4/2019	Eastern	300	0.1 U	710
C-72Aba	33.982447	-118.406675	11/4/2020	Eastern	310	0.1 U	710
C-72Aba	33.982447	-118.406675	11/4/2020	Eastern	320	0.1 U	710
C-72ba	33.982395	-118.406640	10/26/2004	Eastern	640	0.55 U	630
C-72ba	33.982395	-118.406640	10/27/2005	Eastern	550	0.1 U	766
C-72ba	33.982395	-118.406640	5/11/2006	Eastern	518	0.1 U	803
C-72ba	33.982395	-118.406640	5/11/2006	Eastern	523	0.1 U	823
C-72ba	33.982395	-118.406640	11/8/2006	Eastern	483	0.1 U	950
C-72ba	33.982395	-118.406640	4/30/2007	Eastern	451	0.1 U	1030

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-72ba	33.982395	-118.406640	10/30/2007	Eastern	561	0.1 U	1070
C-75ba	33.977026	-118.409761	11/3/2004	Central	180	0.11 U	500
C-75ba	33.977026	-118.409761	10/21/2005	Central	176	0.1 U	474
C-75ba	33.977026	-118.409761	5/11/2006	Central	175	0.1 U	440
C-75ba	33.977026	-118.409761	10/24/2006	Central	162	0.1 U	464
C-75ba	33.977026	-118.409761	5/3/2007	Central	145	0.1 U	387
C-75ba	33.977026	-118.409761	10/17/2007	Central	150	0.1 U	384
C-75ba	33.977026	-118.409761	10/17/2007	Central	151	0.1 U	389
C-75ba	33.977026	-118.409761	11/5/2008	Central	137	0.1 U	286
C-75ba	33.977026	-118.409761	10/6/2009	Central	129	0.023 J	269
C-75ba	33.977026	-118.409761	10/18/2010	Central	125	0.043 J	234
C-75ba	33.977026	-118.409761	10/18/2011	Central	115	0.08 J	222
C-75ba	33.977026	-118.409761	10/11/2012	Central	209	0.07 J	190
C-75ba	33.977026	-118.409761	11/1/2013	Central	80.4	3.23	193
C-75ba	33.977026	-118.409761	10/20/2014	Central	94	0.1 U	180
C-75ba	33.977026	-118.409761	11/5/2015	Central	94	0.1 U	190
C-75ba	33.977026	-118.409761	10/14/2016	Central	88	0.1 U	180
C-75ba	33.977026	-118.409761	10/19/2017	Central	94	0.1 U	170
C-75ba	33.977026	-118.409761	10/29/2018	Central	97	0.1 U	180
C-75ba	33.977026	-118.409761	10/25/2019	Central	94	0.1 U	170
C-75ba	33.977026	-118.409761	10/22/2020	Central	99	0.1 U	170
C-76ba	33.977755	-118.409561	11/5/2004	Central	84	0.11 U	220
C-76ba	33.977755	-118.409561	10/11/2005	Central	184	0.1 U	539
C-76ba	33.977755	-118.409561	5/5/2006	Central	189	0.1 U	551
C-76ba	33.977755	-118.409561	10/25/2006	Central	183	0.1 U	462
C-76ba	33.977755	-118.409561	5/2/2007	Central	173	0.1 U	451
C-76ba	33.977755	-118.409561	10/22/2007	Central	148	0.1 U	445
C-76ba	33.977755	-118.409561	11/3/2008	Central	194	0.1 U	610
C-76ba	33.977755	-118.409561	10/13/2009	Central	162	0.016 J	546
C-76ba	33.977755	-118.409561	10/20/2010	Central	106	0.079 J	371
C-76ba	33.977755	-118.409561	10/17/2011	Central	98.4	0.06 J	367
C-76ba	33.977755	-118.409561	10/11/2012	Central	106	0.1 U	246
C-76ba	33.977755	-118.409561	11/1/2013	Central	111	0.1 U	216
C-76ba	33.977755	-118.409561	10/14/2014	Central	110	0.1 U	230
C-76ba	33.977755	-118.409561	11/5/2015	Central	100	0.1 U	210
C-76ba	33.977755	-118.409561	10/14/2016	Central	98	0.1 U	210
C-76ba	33.977755	-118.409561	10/14/2016	Central	98	0.1 U	200
C-76ba	33.977755	-118.409561	10/18/2017	Central	90	0.1 U	190
C-76ba	33.977755	-118.409561	10/25/2018	Central	85	0.1 U	170
C-76ba	33.977755	-118.409561	10/29/2019	Central	100	0.1 U	190
C-76ba	33.977755	-118.409561	10/29/2020	Central	99	0.1 U	170
C-77ba	33.977390	-118.408900	11/6/2004	Central	180	0.11 U	490
C-77ba	33.977390	-118.408900	11/2/2005	Central	152	0.1 U	423
C-77ba	33.977390	-118.408900	5/9/2006	Central	158	0.1 U	457
C-77ba	33.977390	-118.408900	5/9/2006	Central	160	0.1 U	460
C-77ba	33.977390	-118.408900	10/24/2006	Central	130	0.1 U	392
C-77ba	33.977390	-118.408900	4/27/2007	Central	108	0.1 U	410
C-77ba	33.977390	-118.408900	10/16/2007	Central	101	0.1 U	433

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-77ba	33.977390	-118.408900	11/3/2008	Central	129	0.1 U	611
C-77ba	33.977390	-118.408900	10/12/2009	Central	96.9	0.02 J	948
C-77ba	33.977390	-118.408900	10/18/2010	Central	93.2	0.052 J	332
C-77ba	33.977390	-118.408900	10/20/2011	Central	94	0.1 U	377
C-77ba	33.977390	-118.408900	10/9/2012	Central	94	0.09 J	297
C-77ba	33.977390	-118.408900	10/9/2012	Central	93.8	0.07 J	296
C-77ba	33.977390	-118.408900	10/9/2013	Central	78.7	0.13	276
C-77ba	33.977390	-118.408900	10/9/2013	Central	80.3	0.15	283
C-77ba	33.977390	-118.408900	10/15/2014	Central	98	0.1 U	390
C-77ba	33.977390	-118.408900	10/15/2014	Central	98	0.1 U	390
C-77ba	33.977390	-118.408900	11/9/2015	Central	88	0.1 U	330
C-77ba	33.977390	-118.408900	10/14/2016	Central	110	0.1 U	310
C-77ba	33.977390	-118.408900	10/12/2017	Central	100	0.1 U	260
C-77ba	33.977390	-118.408900	10/10/2018	Central	82	0.1 U	200
C-77ba	33.977390	-118.408900	12/4/2019	Central	84	0.1 U	180
C-77ba	33.977390	-118.408900	10/16/2020	Central	99	0.1 U	170
C-79ba	33.980371	-118.410411	10/26/2004	Eastern	300	0.22 U	660
C-79ba	33.980371	-118.410411	10/27/2005	Eastern	247	0.1 U	653
C-79ba	33.980371	-118.410411	5/15/2006	Eastern	252	0.1 U	654
C-79ba	33.980371	-118.410411	11/14/2006	Eastern	262	0.1 U	642
C-79ba	33.980371	-118.410411	5/4/2007	Eastern	251	0.1 U	641
C-79ba	33.980371	-118.410411	10/31/2007	Eastern	253	0.1 U	644
C-79ba	33.980371	-118.410411	11/5/2008	Eastern	239	0.1 U	654
C-79ba	33.980371	-118.410411	10/12/2009	Eastern	284	0.027 J	616
C-79ba	33.980371	-118.410411	10/18/2010	Eastern	260	0.044 J	616
C-79ba	33.980371	-118.410411	10/27/2011	Eastern	217	0.06 J	511
C-79ba	33.980371	-118.410411	10/27/2011	Eastern	217	0.07 J	502
C-79ba	33.980371	-118.410411	11/1/2012	Eastern	309	0.1 U	644
C-79ba	33.980371	-118.410411	11/13/2013	Eastern	179	0.1 U	484
C-79ba	33.980371	-118.410411	10/30/2014	Eastern	210	0.026 J	560
C-79ba	33.980371	-118.410411	11/4/2015	Eastern	140	0.1 U	410
C-79ba	33.980371	-118.410411	10/26/2016	Eastern	180	0.1 U	610
C-79ba	33.980371	-118.410411	10/12/2017	Eastern	180	0.1 U	590
C-79ba	33.980371	-118.410411	11/5/2018	Eastern	160	0.1 U	520
C-79ba	33.980371	-118.410411	11/5/2019	Eastern	22	0.1 U	59
C-79ba	33.980371	-118.410411	11/11/2020	Eastern	130	0.1 U	440
C-80Aba	33.980567	-118.407575	11/16/2015	Eastern	240	0.1 U	900
C-80Aba	33.980567	-118.407575	11/17/2016	Eastern	300	0.1 U	820
C-80Aba	33.980567	-118.407575	10/23/2017	Eastern	240	0.1 U	690
C-80Aba	33.980567	-118.407575	11/20/2018	Eastern	230	0.1 U	570
C-80Aba	33.980567	-118.407575	10/21/2019	Eastern	230	0.1 U	450
C-80Aba	33.980567	-118.407575	10/27/2020	Eastern	190	0.1 U	310
C-80Ba	33.980630	-118.407620	10/26/2004	Eastern	310	0.55 U	1100
C-80Ba	33.980630	-118.407620	10/26/2005	Eastern	326	0.1 U	824
C-80Ba	33.980630	-118.407620	5/15/2006	Eastern	346	0.1 U	801
C-80Ba	33.980630	-118.407620	11/10/2006	Eastern	310	0.1 U	926
C-80Ba	33.980630	-118.407620	4/19/2007	Eastern	328	0.1 U	885
C-80Ba	33.980630	-118.407620	10/31/2007	Eastern	280	0.1 U	883

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-80Ba	33.980630	-118.407620	10/28/2008	Eastern	218	0.1 U	806
C-80Ba	33.980630	-118.407620	10/12/2009	Eastern	253	0.17	841
C-80Ba	33.980630	-118.407620	10/19/2010	Eastern	192	0.14	769
C-80Ba	33.980630	-118.407620	10/25/2011	Eastern	173	0.07 J	671
C-80Ba	33.980630	-118.407620	10/24/2012	Eastern	199	0.12	785
C-80Ba	33.980630	-118.407620	10/23/2013	Eastern	191	0.1 U	926
C-80Ba	33.980630	-118.407620	10/16/2014	Eastern	220	0.1 U	910
C-81ba	33.981348	-118.405313	11/4/2004	Eastern	250	0.22 U	930
C-81ba	33.981348	-118.405313	11/1/2005	Eastern	144	0.1 U	1540
C-81ba	33.981348	-118.405313	5/12/2006	Eastern	167	0.1 U	1500
C-81ba	33.981348	-118.405313	11/14/2006	Eastern	222	0.1 U	1410
C-81ba	33.981348	-118.405313	11/14/2006	Eastern	226	0.1 U	1410
C-81ba	33.981348	-118.405313	4/19/2007	Eastern	312	0.1 U	1210
C-81ba	33.981348	-118.405313	10/30/2007	Eastern	345	0.1 U	1040
C-81ba	33.981348	-118.405313	11/5/2008	Eastern	335	0.1 U	982
C-81ba	33.981348	-118.405313	10/12/2009	Eastern	371	0.047 J	914
C-81ba	33.981348	-118.405313	10/19/2010	Eastern	300	0.016 J	914
C-81ba	33.981348	-118.405313	10/19/2011	Eastern	315	0.09 J	1060
C-81ba	33.981348	-118.405313	10/24/2012	Eastern	333	0.53	893
C-81ba	33.981348	-118.405313	11/1/2013	Eastern	268	0.1 U	1030
C-81ba	33.981348	-118.405313	10/29/2014	Eastern	200	0.1 U	1400
C-81ba	33.981348	-118.405313	11/10/2015	Eastern	1 U	0.07 J	1 U
C-81ba	33.981348	-118.405313	10/21/2016	Eastern	290	0.1 U	1300
C-81ba	33.981348	-118.405313	10/26/2017	Eastern	190	0.14	1200
C-81ba	33.981348	-118.405313	10/31/2018	Eastern	230	0.1 U	1200
C-81ba	33.981348	-118.405313	12/2/2019	Eastern	160	0.1 U	1000
C-81ba	33.981348	-118.405313	11/18/2020	Eastern	200	0.1 U	1000
C-82Aba	33.981387	-118.403422	10/20/2014	Eastern	140	0.1 U	660
C-82Aba	33.981387	-118.403422	11/10/2015	Eastern	140	0.1 U	390
C-82Aba	33.981387	-118.403422	10/20/2016	Eastern	170	0.1 U	400
C-82Aba	33.981387	-118.403422	10/11/2017	Eastern	140	0.1 U	320
C-82Aba	33.981387	-118.403422	10/18/2018	Eastern	150	0.1 U	330
C-82Aba	33.981387	-118.403422	11/5/2019	Eastern	130	0.1 U	360
C-82Aba	33.981387	-118.403422	10/26/2020	Eastern	140	0.1 U	450
C-82ba	33.981391	-118.403393	11/4/2004	Eastern	460	0.55 U	720
C-82ba	33.981391	-118.403393	11/4/2004	Eastern	450	0.55 U	730
C-82ba	33.981391	-118.403393	11/3/2005	Eastern	465	0.1 U	772
C-82ba	33.981391	-118.403393	5/10/2006	Eastern	480	0.1 U	817
C-82ba	33.981391	-118.403393	5/10/2006	Eastern	487	0.1 U	824
C-82ba	33.981391	-118.403393	11/16/2006	Eastern	401	0.1 U	832
C-82ba	33.981391	-118.403393	4/30/2007	Eastern	369	0.1 U	851
C-82ba	33.981391	-118.403393	10/31/2007	Eastern	308	0.1 U	1030
C-82ba	33.981391	-118.403393	11/7/2008	Eastern	193	0.1 U	945
C-82ba	33.981391	-118.403393	10/12/2009	Eastern	205	0.029 J	920
C-82ba	33.981391	-118.403393	10/18/2010	Eastern	147	0.042 J	750
C-82ba	33.981391	-118.403393	10/25/2011	Eastern	162	0.06 J	558
C-82ba	33.981391	-118.403393	10/22/2012	Eastern	187	0.1 U	678
C-82ba	33.981391	-118.403393	10/30/2013	Eastern	131	---	707

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-83ba	33.979515	-118.409258	10/26/2004	Eastern	310	0.55 U	590
C-83ba	33.979515	-118.409258	10/26/2004	Eastern	310	0.55 U	640
C-83ba	33.979515	-118.409258	11/2/2005	Eastern	253	0.1 U	636
C-83ba	33.979515	-118.409258	5/24/2006	Eastern	232	0.1 U	599
C-83ba	33.979515	-118.409258	11/15/2006	Eastern	301	0.1 U	625
C-83ba	33.979515	-118.409258	4/18/2007	Eastern	322	0.1 U	607
C-83ba	33.979515	-118.409258	10/31/2007	Eastern	297	0.1 U	630
C-83ba	33.979515	-118.409258	10/31/2007	Eastern	299	0.1 U	641
C-83ba	33.979515	-118.409258	10/28/2008	Eastern	248	0.1 U	576
C-83ba	33.979515	-118.409258	10/13/2009	Eastern	313	0.032 J	647
C-83ba	33.979515	-118.409258	11/2/2010	Eastern	307	0.1 U	475
C-83ba	33.979515	-118.409258	10/25/2011	Eastern	259	0.1 U	507
C-83ba	33.979515	-118.409258	10/15/2012	Eastern	307	0.08 J	520
C-83ba	33.979515	-118.409258	10/14/2013	Eastern	297	0.1 U	271
C-83ba	33.979515	-118.409258	10/20/2014	Eastern	230	0.1 U	520
C-83ba	33.979515	-118.409258	11/13/2015	Eastern	190	0.1 U	470
C-83ba	33.979515	-118.409258	10/27/2016	Eastern	190	0.1 U	470
C-83ba	33.979515	-118.409258	10/23/2017	Eastern	160	0.1 U	370
C-83ba	33.979515	-118.409258	10/23/2017	Eastern	160	0.1 U	370
C-83ba	33.979515	-118.409258	11/20/2018	Eastern	170	0.1 U	330
C-83ba	33.979515	-118.409258	11/20/2018	Eastern	170	0.1 U	330
C-83ba	33.979515	-118.409258	11/4/2019	Eastern	140	0.1 U	290
C-83ba	33.979515	-118.409258	11/4/2019	Eastern	140	0.1 U	290
C-83ba	33.979515	-118.409258	11/6/2020	Eastern	130	0.1 U	270
C-84ba	33.978136	-118.409253	10/27/2004	Central	220	0.55 U	1600
C-84ba	33.978136	-118.409253	10/20/2005	Central	399	0.1 U	2010
C-84ba	33.978136	-118.409253	10/20/2005	Central	405	0.1 U	1900
C-84ba	33.978136	-118.409253	5/5/2006	Central	184	0.1 U	1630
C-84ba	33.978136	-118.409253	5/5/2006	Central	190	0.1 U	1640
C-84ba	33.978136	-118.409253	10/25/2006	Central	190	0.1 U	456
C-84ba	33.978136	-118.409253	10/25/2006	Central	193	0.1 U	455
C-84ba	33.978136	-118.409253	4/30/2007	Central	181	0.1 U	448
C-84ba	33.978136	-118.409253	4/30/2007	Central	178	0.1 U	444
C-84ba	33.978136	-118.409253	11/2/2007	Central	178	0.1 U	501
C-84ba	33.978136	-118.409253	11/4/2008	Central	230	0.1 U	635
C-84ba	33.978136	-118.409253	10/13/2009	Central	158	0.029 J	383
C-84ba	33.978136	-118.409253	10/20/2010	Central	125	0.103	353
C-84ba	33.978136	-118.409253	10/17/2011	Central	138	0.12	287
C-84ba	33.978136	-118.409253	10/11/2012	Central	354	0.12	243
C-84ba	33.978136	-118.409253	10/23/2013	Central	104	0.1 U	308
C-84ba	33.978136	-118.409253	10/20/2014	Central	93	0.1 U	250
C-84ba	33.978136	-118.409253	11/5/2015	Central	93	0.1 U	250
C-84ba	33.978136	-118.409253	10/17/2016	Central	94	0.1 U	210
C-84ba	33.978136	-118.409253	10/18/2017	Central	100	0.1 U	200
C-84ba	33.978136	-118.409253	10/23/2018	Central	89	0.1 U	180
C-84ba	33.978136	-118.409253	10/29/2019	Central	91	0.1 U	170
C-84ba	33.978136	-118.409253	10/29/2020	Central	81	0.1 U	170
C-85Aba	33.977931	-118.405896	5/8/2006	Eastern	235	0.1 U	615

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-85Aba	33.977931	-118.405896	10/30/2006	Eastern	208	0.1 U	643
C-85Aba	33.977931	-118.405896	4/20/2007	Eastern	185	0.1 U	728
C-85Aba	33.977931	-118.405896	11/2/2007	Eastern	137	0.1 U	812
C-85Aba	33.977931	-118.405896	11/5/2008	Eastern	145	0.1 U	842
C-85Aba	33.977931	-118.405896	10/14/2009	Eastern	157	0.1 U	822
C-85Aba	33.977931	-118.405896	10/19/2010	Eastern	107	0.055 J	922
C-85Aba	33.977931	-118.405896	10/24/2011	Eastern	104	0.1 U	887
C-85Aba	33.977931	-118.405896	10/15/2012	Eastern	104	0.12	556
C-85Aba	33.977931	-118.405896	10/9/2013	Eastern	87.1	0.14	636
C-85Aba	33.977931	-118.405896	10/20/2014	Eastern	100	0.1 U	920
C-85Aba	33.977931	-118.405896	10/22/2015	Eastern	91	0.1 U	690
C-85Aba	33.977931	-118.405896	10/17/2016	Eastern	440	0.1 U	480
C-85Aba	33.977931	-118.405896	10/25/2017	Eastern	100	0.1 U	630
C-85Aba	33.977931	-118.405896	10/18/2018	Eastern	79	0.1 U	570
C-85Aba	33.977931	-118.405896	10/28/2019	Eastern	88	0.1 U	510
C-85Aba	33.977931	-118.405896	10/30/2020	Eastern	89	0.1 U	420
C-85ba	33.977989	-118.405954	10/27/2004	Eastern	240	0.22 U	540
C-85ba	33.977989	-118.405954	10/17/2005	Eastern	278	0.1 U	557
C-92	33.972538	-118.423992	9/15/2003	Western	160	0.11 U	0.5 U
C-92	33.972538	-118.423992	11/12/2003	Western	180	0.11 U	0.5 U
C-92	33.972538	-118.423992	2/16/2004	Western	200	0.11 U	0.5 U
C-92	33.972538	-118.423992	5/20/2004	Western	180	0.11 U	0.5 U
C-92	33.972538	-118.423992	8/25/2004	Western	190	0.11 U	0.5 U
C-92	33.972538	-118.423992	10/19/2004	Western	190	0.11 U	0.5 U
C-92	33.972538	-118.423992	2/23/2005	Western	193	0.1 U	1 U
C-92	33.972538	-118.423992	5/2/2005	Western	201	0.1 U	1 U
C-92	33.972538	-118.423992	8/12/2005	Western	192	0.1 U	1 U
C-92	33.972538	-118.423992	10/12/2005	Western	191	0.1 U	3
C-92	33.972538	-118.423992	2/21/2006	Western	204	0.1 U	23.7
C-92	33.972538	-118.423992	5/18/2006	Western	190	0.1 U	31.7
C-92	33.972538	-118.423992	8/4/2006	Western	197	0.27	54.5
C-92	33.972538	-118.423992	11/9/2006	Western	189	0.1 U	58
C-92	33.972538	-118.423992	2/1/2007	Western	181	0.1 UJ	39.5
C-92	33.972538	-118.423992	4/16/2007	Western	191	0.1 U	24.9
C-92	33.972538	-118.423992	8/6/2007	Western	187	0.1 U	37
C-92	33.972538	-118.423992	10/22/2007	Western	184	0.1 U	46.3
C-92	33.972538	-118.423992	1/18/2008	Western	188	0.1 U	47
C-92	33.972538	-118.423992	4/21/2008	Western	189	0.1 U	45.4
C-92	33.972538	-118.423992	7/14/2008	Western	188	0.1 U	53.5
C-92	33.972538	-118.423992	10/22/2008	Western	173	0.1 U	70.3
C-92	33.972538	-118.423992	2/5/2009	Western	165	0.054 J	42.9
C-92	33.972538	-118.423992	4/17/2009	Western	176	0.038 J	37.6
C-92	33.972538	-118.423992	10/14/2009	Western	177	0.027 J	50.6
C-92	33.972538	-118.423992	1/18/2010	Western	183	0.1 U	46.3
C-92	33.972538	-118.423992	5/21/2010	Western	163	0.1 U	50
C-92	33.972538	-118.423992	7/12/2010	Western	145	0.027 J	47.9
C-92	33.972538	-118.423992	10/25/2010	Western	149	0.028 J	36.3
C-92	33.972538	-118.423992	1/24/2011	Western	165	0.041 J	24.5

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-92	33.972538	-118.423992	4/15/2011	Western	150	0.101	18.6
C-92	33.972538	-118.423992	10/26/2011	Western	154	0.07 J	10.5
C-92	33.972538	-118.423992	1/19/2012	Western	134	0.12	6.84
C-92	33.972538	-118.423992	4/18/2012	Western	171	0.1 U	6.89
C-92	33.972538	-118.423992	7/25/2012	Western	180	0.07 J	11.3
C-92	33.972538	-118.423992	10/15/2012	Western	159	0.07 J	10.6
C-92	33.972538	-118.423992	1/28/2013	Western	148	0.1 U	3.56
C-92	33.972538	-118.423992	4/18/2013	Western	264	0.26	3.56
C-92	33.972538	-118.423992	7/22/2013	Western	130	0.1 U	0.4 J
C-92	33.972538	-118.423992	10/24/2013	Western	148	0.1 U	1 U
C-92	33.972538	-118.423992	2/5/2014	Western	133	0.1 U	1 U
C-92	33.972538	-118.423992	4/9/2014	Western	126	0.1 U	1 U
C-92	33.972538	-118.423992	7/28/2014	Western	126	0.1 U	1 U
C-92	33.972538	-118.423992	11/4/2014	Western	140	0.1 U	0.27 J
C-92	33.972538	-118.423992	1/21/2015	Western	150	0.1 U	0.26 J
C-92	33.972538	-118.423992	1/21/2015	Western	150	0.1 U	0.35 J
C-92	33.972538	-118.423992	4/23/2015	Western	160	0.1 U	0.47 J
C-92	33.972538	-118.423992	4/23/2015	Western	160	0.1 U	0.82 J
C-92	33.972538	-118.423992	7/23/2015	Western	140	0.1 U	2.1
C-92	33.972538	-118.423992	7/23/2015	Western	140	0.1 U	1 U
C-92	33.972538	-118.423992	10/26/2015	Western	160	0.1 U	1 U
C-92	33.972538	-118.423992	10/26/2015	Western	160	0.1 U	1 U
C-92	33.972538	-118.423992	1/18/2016	Western	160	0.1 U	0.7 J
C-92	33.972538	-118.423992	1/18/2016	Western	160	0.1 U	0.74 J
C-92	33.972538	-118.423992	4/25/2016	Western	160	0.1 U	0.36 J
C-92	33.972538	-118.423992	4/25/2016	Western	150	0.1 U	0.4 J
C-92	33.972538	-118.423992	7/25/2016	Western	160	0.1 U	1 U
C-92	33.972538	-118.423992	7/25/2016	Western	160	0.1 U	1 U
C-92	33.972538	-118.423992	10/25/2016	Western	160	0.1 U	0.84 J
C-92	33.972538	-118.423992	10/25/2016	Western	160	0.1 U	0.82 J
C-92	33.972538	-118.423992	1/26/2017	Western	150	0.1 U	0.38 J
C-92	33.972538	-118.423992	1/26/2017	Western	150	0.1 U	0.36 J
C-92	33.972538	-118.423992	4/27/2017	Western	160	0.1 U	1 U
C-92	33.972538	-118.423992	4/27/2017	Western	150	0.1 U	1 U
C-92	33.972538	-118.423992	11/1/2017	Western	150	0.1 U	1 U
C-92	33.972538	-118.423992	11/1/2017	Western	150	0.1 U	1 U
C-92	33.972538	-118.423992	5/14/2018	Western	150	0.1 U	0.31 J
C-92	33.972538	-118.423992	5/14/2018	Western	150	0.1 U	0.35 J
C-92	33.972538	-118.423992	11/12/2018	Western	160	0.1 U	1 U
C-92	33.972538	-118.423992	11/12/2018	Western	160	0.1 U	1 U
C-92	33.972538	-118.423992	5/6/2019	Western	150	0.1 U	1 U
C-92	33.972538	-118.423992	5/6/2019	Western	130	0.1 UJ	1 U
C-92	33.972538	-118.423992	11/21/2019	Western	120	0.1 U	1 U
C-92	33.972538	-118.423992	11/16/2020	Western	130	0.1 U	0.28 J
C-96	33.972496	-118.422264	9/19/2003	Western	200	0.11 U	2.8
C-96	33.972496	-118.422264	11/12/2003	Western	210	0.22 U	2.2
C-96	33.972496	-118.422264	11/12/2003	Western	210	0.22 U	3.9
C-96	33.972496	-118.422264	2/16/2004	Western	220	0.11 U	1.4

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-96	33.972496	-118.422264	2/16/2004	Western	230	0.11 U	0.88
C-96	33.972496	-118.422264	5/20/2004	Western	210	0.11 U	1.6
C-96	33.972496	-118.422264	5/20/2004	Western	200	0.11 U	2.5
C-96	33.972496	-118.422264	8/24/2004	Western	200	0.11 U	6.7
C-96	33.972496	-118.422264	8/24/2004	Western	200	0.11 U	6.8
C-96	33.972496	-118.422264	10/22/2004	Western	200	0.11 U	7.6
C-96	33.972496	-118.422264	10/22/2004	Western	190	0.11 U	8.1
C-96	33.972496	-118.422264	2/25/2005	Western	205	0.1 U	7
C-96	33.972496	-118.422264	2/25/2005	Western	208	0.1 U	7
C-96	33.972496	-118.422264	5/5/2005	Western	209	0.1 U	9
C-96	33.972496	-118.422264	5/5/2005	Western	211	0.1 U	9
C-96	33.972496	-118.422264	8/11/2005	Western	222	0.1 U	9
C-96	33.972496	-118.422264	8/11/2005	Western	221	0.1 U	8
C-96	33.972496	-118.422264	10/10/2005	Western	211	0.1 U	3
C-96	33.972496	-118.422264	10/10/2005	Western	208	0.1 U	2
C-96	33.972496	-118.422264	2/20/2006	Western	199	0.1 U	4.2
C-96	33.972496	-118.422264	2/20/2006	Western	200	0.1 U	13.7
C-96	33.972496	-118.422264	5/18/2006	Western	214	0.1 U	9.8
C-96	33.972496	-118.422264	8/7/2006	Western	217	0.1 U	17.3
C-96	33.972496	-118.422264	11/15/2006	Western	208	0.1 U	7.9
C-96	33.972496	-118.422264	11/15/2006	Western	206	0.1 U	8
C-96	33.972496	-118.422264	2/13/2007	Western	209	0.1 U	7.7
C-96	33.972496	-118.422264	4/19/2007	Western	210	0.1 U	8.1
C-96	33.972496	-118.422264	4/19/2007	Western	211	0.1 U	8.2
C-96	33.972496	-118.422264	8/6/2007	Western	212	0.1 U	5.3
C-96	33.972496	-118.422264	11/5/2007	Western	208	0.1 U	5.7
C-96	33.972496	-118.422264	1/18/2008	Western	204	0.1 U	10.1
C-96	33.972496	-118.422264	1/18/2008	Western	205	0.1 U	10.4
C-96	33.972496	-118.422264	4/15/2008	Western	198	0.1 U	5
C-96	33.972496	-118.422264	4/15/2008	Western	198	0.1 U	5
C-96	33.972496	-118.422264	7/16/2008	Western	186	0.1 U	4.5
C-96	33.972496	-118.422264	7/16/2008	Western	188	0.1 U	3.9
C-96	33.972496	-118.422264	10/24/2008	Western	232	0.1 U	8.3
C-96	33.972496	-118.422264	10/24/2008	Western	232	0.1 U	5.4
C-96	33.972496	-118.422264	2/10/2009	Western	181	0.099 U	5.3
C-96	33.972496	-118.422264	2/10/2009	Western	182	0.099 U	5.4
C-96	33.972496	-118.422264	4/15/2009	Western	193	0.045 J	4.9
C-96	33.972496	-118.422264	4/15/2009	Western	194	0.041 J	4.9
C-96	33.972496	-118.422264	10/15/2009	Western	176	0.018 J	4.9
C-96	33.972496	-118.422264	10/15/2009	Western	162	0.018 J	4.5
C-96	33.972496	-118.422264	1/19/2010	Western	176	0.1 U	5.07
C-96	33.972496	-118.422264	5/18/2010	Western	187	0.036 J	9.98
C-96	33.972496	-118.422264	5/18/2010	Western	186	0.043 J	10.8
C-96	33.972496	-118.422264	7/12/2010	Western	163	0.023 J	5.91
C-96	33.972496	-118.422264	10/25/2010	Western	156	0.032 J	4.44
C-96	33.972496	-118.422264	10/25/2010	Western	153	0.026 J	3.24
C-96	33.972496	-118.422264	1/24/2011	Western	174	0.048 J	3.98
C-96	33.972496	-118.422264	1/24/2011	Western	173	0.022 J	3.71

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-96	33.972496	-118.422264	4/15/2011	Western	159	0.092 J	5.5
C-96	33.972496	-118.422264	10/25/2011	Western	167	0.07 J	3.83
C-96	33.972496	-118.422264	10/25/2011	Western	165	0.07 J	2.55
C-96	33.972496	-118.422264	1/25/2012	Western	165	0.18	3.97
C-96	33.972496	-118.422264	4/18/2012	Western	164	0.09 J	6.09
C-96	33.972496	-118.422264	4/18/2012	Western	162	0.1	5.66
C-96	33.972496	-118.422264	7/26/2012	Western	185	0.1 U	22.1
C-96	33.972496	-118.422264	10/16/2012	Western	169	0.1 U	3.45
C-96	33.972496	-118.422264	10/16/2012	Western	164	0.1 U	3.51
C-96	33.972496	-118.422264	1/28/2013	Western	151	0.1 U	3.19
C-96	33.972496	-118.422264	4/18/2013	Western	146	0.22	8.11
C-96	33.972496	-118.422264	4/18/2013	Western	142	0.21	7.9
C-96	33.972496	-118.422264	7/22/2013	Western	134	0.08 J	3.12
C-96	33.972496	-118.422264	11/7/2013	Western	135	0.1 U	4.19
C-96	33.972496	-118.422264	11/7/2013	Western	130	0.1 U	4.32
C-96	33.972496	-118.422264	1/30/2014	Western	160	0.1 U	3.68
C-96	33.972496	-118.422264	4/16/2014	Western	133	0.1 U	3.02
C-96	33.972496	-118.422264	4/16/2014	Western	131	0.1 U	2.76
C-96	33.972496	-118.422264	7/29/2014	Western	128	0.1 U	3.31
C-96	33.972496	-118.422264	7/29/2014	Western	127	0.1 U	3.45
C-96	33.972496	-118.422264	11/7/2014	Western	140	0.1 U	4.5
C-96	33.972496	-118.422264	11/7/2014	Western	140	0.1 U	4.3
C-96	33.972496	-118.422264	4/23/2015	Western	170	0.1 U	1.1
C-96	33.972496	-118.422264	10/27/2015	Western	140	0.1 U	1.8
C-96	33.972496	-118.422264	5/3/2016	Western	160	0.1 U	4.2
C-96	33.972496	-118.422264	11/4/2016	Western	---	0.1 U	5.7
C-96	33.972496	-118.422264	4/13/2017	Western	150	0.1 U	5.2
C-96	33.972496	-118.422264	4/13/2017	Western	150	0.06 J	4.4
C-96	33.972496	-118.422264	11/6/2017	Western	160	0.1 U	4.6
C-96	33.972496	-118.422264	11/6/2017	Western	160	0.1 U	4.5
C-96	33.972496	-118.422264	5/16/2018	Western	150	0.1 U	4.1
C-96	33.972496	-118.422264	5/16/2018	Western	150	0.1 U	4.3
C-96	33.972496	-118.422264	11/12/2018	Western	160	0.1 U	4.5
C-96	33.972496	-118.422264	11/12/2018	Western	160	0.1 U	4.7
C-96	33.972496	-118.422264	5/6/2019	Western	140	0.061 J	4
C-96	33.972496	-118.422264	5/6/2019	Western	160	0.1 U	4.6
C-96	33.972496	-118.422264	11/13/2019	Western	130	0.1 U	2.9
C-96	33.972496	-118.422264	11/13/2019	Western	130	0.1 U	2.9
C-96	33.972496	-118.422264	11/5/2020	Western	130	0.1 U	4.3
D2-Ba01	33.975145	-118.414522	11/30/2020	Central	100	0.1 U	160
D2-Ba02	33.975111	-118.416042	7/31/2013	Central	122	0.1 U	152
D2-Ba02	33.975111	-118.416042	7/31/2013	Central	119	0.1 U	150
D2-Ba02	33.975111	-118.416042	11/18/2013	Central	89.5	0.1 U	127
D2-Ba02	33.975111	-118.416042	11/18/2013	Central	93.4	0.1 U	126
D2-Ba02	33.975111	-118.416042	1/23/2014	Central	112	0.1 U	158
D2-Ba02	33.975111	-118.416042	1/23/2014	Central	119	0.1 U	161
D2-Ba02	33.975111	-118.416042	10/23/2014	Central	110	0.1 U	150
D2-Ba02	33.975111	-118.416042	10/23/2014	Central	110	0.1 U	160

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
D2-Ba02	33.975111	-118.416042	11/12/2015	Central	140	0.1 U	200
D2-Ba02	33.975111	-118.416042	11/2/2016	Central	---	0.1 U	---
D2-Ba02	33.975111	-118.416042	11/3/2017	Central	120	0.1 U	180
D2-Ba02	33.975111	-118.416042	11/6/2018	Central	110	0.1 U	160
D2-Ba02	33.975111	-118.416042	4/25/2019	Central	110	0.1 U	170
D2-Ba02	33.975111	-118.416042	11/14/2019	Central	110	0.1 U	160
D2-Ba02	33.975111	-118.416042	11/14/2019	Central	120	0.1 U	170
D2-Ba02	33.975111	-118.416042	11/9/2020	Central	120	0.1 U	170
D2-Ba04	33.976580	-118.412437	7/11/2014	Central	111	0.1 U	454
D2-Ba04	33.976580	-118.412437	10/28/2014	Central	97	0.1 U	480
D2-Ba04A	33.976631	-118.412276	11/11/2015	Central	100	0.1 U	400
D2-Ba04A	33.976631	-118.412276	11/11/2015	Central	96	0.1 U	400
D2-Ba04A	33.976631	-118.412276	10/28/2016	Central	90	0.1 U	400
D2-Ba04A	33.976631	-118.412276	10/28/2016	Central	89	0.1 U	400
D2-Ba04A	33.976631	-118.412276	11/9/2017	Central	100	0.1 U	380
D2-Ba04A	33.976631	-118.412276	11/9/2017	Central	100	0.1 U	390
D2-Ba04A	33.976631	-118.412276	11/12/2018	Central	110	0.1 U	420
D2-Ba04A	33.976631	-118.412276	11/12/2018	Central	110	0.1 U	420
D2-Ba04A	33.976631	-118.412276	12/3/2019	Central	96	0.1 U	250
D2-Ba04A	33.976631	-118.412276	11/17/2020	Central	90	0.1 U	260
D2-Ba05	33.977948	-118.413144	7/11/2013	Central	139	0.1 U	493
D2-Ba05	33.977948	-118.413144	11/15/2013	Central	91.4	---	351
D2-Ba05	33.977948	-118.413144	1/27/2014	Central	116	0.1 U	442
D2-Ba05	33.977948	-118.413144	10/29/2014	Central	120	0.1 U	330
D2-Ba05	33.977948	-118.413144	11/11/2015	Central	130	0.1 U	340
D2-Ba05	33.977948	-118.413144	10/28/2016	Central	120	0.1 U	270
D2-Ba05	33.977948	-118.413144	11/6/2017	Central	110	0.1 U	230
D2-Ba05	33.977948	-118.413144	11/1/2018	Central	100	0.1 U	190
D2-Ba05	33.977948	-118.413144	12/10/2019	Central	90	0.1 U	170
D2-Ba05	33.977948	-118.413144	11/17/2020	Central	87	0.026 J	170
D2-Ba06	33.979031	-118.413615	7/30/2013	Central	200	0.1 U	401
D2-Ba06	33.979031	-118.413615	7/30/2013	Central	200	0.1 U	407
D2-Ba06	33.979031	-118.413615	11/15/2013	Central	144	---	339
D2-Ba06	33.979031	-118.413615	11/15/2013	Central	148	---	332
D2-Ba06	33.979031	-118.413615	1/24/2014	Central	198	0.1 U	429
D2-Ba06	33.979031	-118.413615	1/24/2014	Central	195	0.1 U	415
D2-Ba06	33.979031	-118.413615	10/22/2014	Central	170	0.1 U	390
D2-Ba06	33.979031	-118.413615	10/22/2014	Central	170	0.1 U	380
D2-Ba06	33.979031	-118.413615	11/13/2015	Central	180	0.1 U	410
D2-Ba06	33.979031	-118.413615	10/27/2016	Central	160	0.1 U	370
D2-Ba06	33.979031	-118.413615	10/27/2016	Central	160	0.1 U	370
D2-Ba06	33.979031	-118.413615	10/25/2017	Central	160	0.1 U	310
D2-Ba06	33.979031	-118.413615	10/25/2017	Central	160	0.1 U	300
D2-Ba06	33.979031	-118.413615	11/1/2018	Central	130	0.1 U	260
D2-Ba06	33.979031	-118.413615	11/1/2018	Central	130	0.1 U	260
D2-Ba06	33.979031	-118.413615	12/10/2019	Central	110	0.1 U	200
D2-Ba06	33.979031	-118.413615	11/19/2020	Central	120	0.1 U	230

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
D2-Ba07	33.977917	-118.416118	7/30/2013	Central	139	0.1 U	144
D2-Ba07	33.977917	-118.416118	11/15/2013	Central	103	---	112
D2-Ba07	33.977917	-118.416118	1/24/2014	Central	130	0.1 U	137
D2-Ba07	33.977917	-118.416118	10/29/2014	Central	150	0.1 U	140
D2-Ba07	33.977917	-118.416118	11/10/2015	Central	---	0.1 U	140
D2-Ba07	33.977917	-118.416118	11/10/2015	Central	---	0.1 U	140
D2-Ba07	33.977917	-118.416118	10/31/2016	Central	160	0.1 U	170
D2-Ba07	33.977917	-118.416118	10/25/2017	Central	150	0.1 U	170
D2-Ba07	33.977917	-118.416118	11/21/2018	Central	170	0.1 U	180
D2-Ba07	33.977917	-118.416118	11/8/2019	Central	160	0.1 U	170
D2-Ba07	33.977917	-118.416118	11/2/2020	Central	170	0.1 U	210
D2-Ba07	33.977917	-118.416118	11/2/2020	Central	150	0.1 U	220
D2-Ba08	33.976763	-118.418782	7/30/2013	Central	138	0.1 U	2.48
D2-Ba08	33.976763	-118.418782	11/15/2013	Central	130	---	0.9 J
D2-Ba08	33.976763	-118.418782	1/24/2014	Central	138	0.1 U	1.09
D2-Ba08	33.976763	-118.418782	10/29/2014	Central	160	0.1 U	1 J
D2-Ba08	33.976763	-118.418782	11/11/2015	Central	160	0.1 U	6.1
D2-Ba08	33.976763	-118.418782	11/2/2016	Central	---	0.1 U	8.1
D2-Ba08	33.976763	-118.418782	10/30/2017	Central	140	0.1 U	11
D2-Ba08	33.976763	-118.418782	11/20/2018	Central	120	0.1 U	32
D2-Ba08	33.976763	-118.418782	11/8/2019	Central	110	0.1 U	37
D2-Ba08	33.976763	-118.418782	11/9/2020	Central	100	0.1 U	47
FSTA-6	33.968863	-118.423960	10/19/2015	Western	160	0.1 U	100
FSTA-6	33.968863	-118.423960	10/19/2015	Western	160	0.1 U	100
FSTA-6	33.968863	-118.423960	10/25/2016	Western	160	0.1 U	27
FSTA-6	33.968863	-118.423960	10/25/2016	Western	160	0.1 U	27
FSTA-6	33.968863	-118.423960	5/11/2017	Western	130	0.1 U	93
FSTA-6	33.968863	-118.423960	5/11/2017	Western	140	0.1 U	110
FSTA-6	33.968863	-118.423960	7/26/2017	Western	150	0.1 U	100
FSTA-6	33.968863	-118.423960	11/9/2017	Western	150	0.1 U	97
FSTA-6	33.968863	-118.423960	11/9/2017	Western	150	0.1 U	97
FSTA-6	33.968863	-118.423960	1/25/2018	Western	150	0.1 U	64
FSTA-6	33.968863	-118.423960	5/24/2018	Western	160	0.1 U	36
FSTA-6	33.968863	-118.423960	5/24/2018	Western	160	0.1 U	37
FSTA-6	33.968863	-118.423960	8/2/2018	Western	160	0.1 U	17
FSTA-6	33.968863	-118.423960	11/16/2018	Western	160	0.1 U	17
FSTA-6	33.968863	-118.423960	11/16/2018	Western	160	0.1 U	17
FSTA-6	33.968863	-118.423960	1/28/2019	Western	150	0.1 U	9.2
FSTA-6	33.968863	-118.423960	5/9/2019	Western	150	0.1 U	13
FSTA-6	33.968863	-118.423960	7/25/2019	Western	140	0.1 U	15
FSTA-6	33.968863	-118.423960	7/25/2019	Western	140	0.1 U	15
FSTA-6	33.968863	-118.423960	11/13/2019	Western	140	0.1 U	13
FSTA-6	33.968863	-118.423960	11/13/2019	Western	8.6	0.1 U	1
FSTA-6	33.968863	-118.423960	11/11/2020	Western	130	0.1 U	11
FSTA-9	33.969654	-118.423439	7/14/2010	Western	142	0.1 U	541
FSTA-9	33.969654	-118.423439	9/23/2010	Western	126	0.027 J	604
FSTA-9	33.969654	-118.423439	10/29/2010	Western	131	0.1 U	459
FSTA-9	33.969654	-118.423439	12/2/2010	Western	129	0.12	568

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
FSTA-9	33.969654	-118.423439	1/27/2011	Western	120	0.1 U	553
FSTA-9	33.969654	-118.423439	2/24/2011	Western	120	0.065 J	566
FSTA-9	33.969654	-118.423439	3/31/2011	Western	151	0.11	715
FSTA-9	33.969654	-118.423439	4/27/2011	Western	117	0.158	561
FSTA-9	33.969654	-118.423439	11/7/2011	Western	128	0.1 U	523
FSTA-9	33.969654	-118.423439	1/25/2012	Western	131	0.16	481
FSTA-9	33.969654	-118.423439	1/25/2012	Western	131	0.16	485
FSTA-9	33.969654	-118.423439	4/25/2012	Western	118	0.1	502
FSTA-9	33.969654	-118.423439	8/2/2012	Western	160	0.1	520
FSTA-9	33.969654	-118.423439	8/2/2012	Western	160	0.1 U	511
FSTA-9	33.969654	-118.423439	10/31/2012	Western	141	0.1 U	527
FSTA-9	33.969654	-118.423439	1/31/2013	Western	133	0.1 U	436
FSTA-9	33.969654	-118.423439	1/31/2013	Western	125	0.1 U	427
FSTA-9	33.969654	-118.423439	4/29/2013	Western	115	0.1 U	431
FSTA-9	33.969654	-118.423439	7/29/2013	Western	109	0.1 U	409
FSTA-9	33.969654	-118.423439	7/29/2013	Western	110	0.07 J	394
FSTA-9	33.969654	-118.423439	11/20/2013	Western	90.3	0.12	358
FSTA-9	33.969654	-118.423439	2/7/2014	Western	121	0.1 U	449
FSTA-9	33.969654	-118.423439	2/7/2014	Western	121	0.1 U	451
FSTA-9	33.969654	-118.423439	4/17/2014	Western	113	0.1 U	412
FSTA-9	33.969654	-118.423439	8/6/2014	Western	112	0.1 U	390
FSTA-9	33.969654	-118.423439	10/29/2014	Western	110	0.1 U	380
FSTA-9	33.969654	-118.423439	2/4/2015	Western	120	0.1 U	370
FSTA-9	33.969654	-118.423439	5/11/2015	Western	120	0.1 U	370
FSTA-9	33.969654	-118.423439	7/30/2015	Western	120	0.1 U	330
FSTA-9	33.969654	-118.423439	10/29/2015	Western	120	0.1 U	360
FSTA-9	33.969654	-118.423439	1/18/2016	Western	140	0.1 U	280
FSTA-9	33.969654	-118.423439	4/27/2016	Western	130	0.1 U	250
FSTA-9	33.969654	-118.423439	8/2/2016	Western	120	0.1 U	220
FSTA-9	33.969654	-118.423439	10/25/2016	Western	130	0.1 U	200
FSTA-9	33.969654	-118.423439	1/31/2017	Western	140	0.1 U	190
FSTA-9	33.969654	-118.423439	5/9/2017	Western	130	0.1 U	180
FSTA-9	33.969654	-118.423439	11/13/2017	Western	140	0.1 U	110
FSTA-9	33.969654	-118.423439	5/24/2018	Western	140	0.1 U	93
FSTA-9	33.969654	-118.423439	11/21/2018	Western	140	0.1 U	59
FSTA-9	33.969654	-118.423439	5/9/2019	Western	120	0.1 U	49
FSTA-9	33.969654	-118.423439	11/12/2019	Western	120	0.1 U	28
FSTA-9	33.969654	-118.423439	11/11/2020	Western	110	0.1 U	3
MW-BA-4	33.968528	-118.424110	10/23/2020	Western	130	0.1 U	180
MW-M	33.969705	-118.424127	8/25/2004	Western	110	0.11 U	39
MW-M	33.969705	-118.424127	5/6/2015	Western	93	0.1 U	120
MW-M	33.969705	-118.424127	11/11/2015	Western	110	0.1 U	130
MW-M	33.969705	-118.424127	11/11/2015	Western	110	0.1 U	140
MW-M	33.969705	-118.424127	4/28/2016	Western	110	0.1 U	110
MW-M	33.969705	-118.424127	10/25/2016	Western	110	0.1 U	93
MW-M	33.969705	-118.424127	5/3/2017	Western	120	0.1 U	110
MW-M	33.969705	-118.424127	10/31/2017	Western	120	0.1 U	120
MW-M	33.969705	-118.424127	5/16/2018	Western	130	0.1 U	150

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
MW-M	33.969705	-118.424127	11/13/2018	Western	120	0.1 U	140
MW-M	33.969705	-118.424127	5/13/2019	Western	120	0.1 U	70
MW-M	33.969705	-118.424127	12/3/2019	Western	100	0.1 U	33
MW-M	33.969705	-118.424127	11/20/2020	Western	130	0.038 J	1
Silverado Aquifer							
C-122	33.972884	-118.421089	1/21/2015	---	230	0.1 U	0.64 J
C-122	33.972884	-118.421089	5/8/2015	---	230	0.1 U	0.33 J
C-122	33.972884	-118.421089	7/30/2015	---	220	0.1 U	0.3 J
C-122	33.972884	-118.421089	10/23/2015	---	230	0.1 U	0.28 J
C-122	33.972884	-118.421089	1/21/2016	---	220	0.1 U	0.41 J
C-122	33.972884	-118.421089	5/2/2016	---	230	0.1 U	1 U
C-122	33.972884	-118.421089	7/25/2016	---	220	0.1 U	0.56 J
C-122	33.972884	-118.421089	11/7/2016	---	---	0.1 U	1 U
C-122	33.972884	-118.421089	1/25/2017	---	210	0.1 U	0.61 J
C-122	33.972884	-118.421089	5/3/2017	---	220	0.1 U	0.32 J
C-122	33.972884	-118.421089	7/19/2017	---	210	0.1 U	1 U
C-122	33.972884	-118.421089	11/8/2017	---	220	0.1 U	1 U
C-122	33.972884	-118.421089	2/1/2018	---	220	0.1 U	0.35 J
C-122	33.972884	-118.421089	5/22/2018	---	220	0.1 U	1 U
C-122	33.972884	-118.421089	8/2/2018	---	220	0.1 U	1 U
C-122	33.972884	-118.421089	11/13/2018	---	220	0.1 U	1 U
C-122	33.972884	-118.421089	1/23/2019	---	220	0.1 U	1 U
C-122	33.972884	-118.421089	5/8/2019	---	220	0.1 U	1 U
C-122	33.972884	-118.421089	7/24/2019	---	210	0.1 U	1 U
C-122	33.972884	-118.421089	11/25/2019	---	210	0.1 U	1 U
C-122	33.972884	-118.421089	11/24/2020	---	200	0.1 U	1 U
C-123	33.973846	-118.421527	1/30/2015	---	190	0.1 U	1
C-123	33.973846	-118.421527	1/30/2015	---	190	0.1 U	0.96 J
C-123	33.973846	-118.421527	5/4/2015	---	200	0.1 U	0.35 J
C-123	33.973846	-118.421527	5/4/2015	---	180	0.1 U	0.65 J
C-123	33.973846	-118.421527	7/23/2015	---	170	0.1 U	2.3
C-123	33.973846	-118.421527	7/23/2015	---	170	0.1 U	1.5
C-123	33.973846	-118.421527	10/28/2015	---	190	0.1 U	12
C-123	33.973846	-118.421527	10/28/2015	---	190	0.1 U	1
C-123	33.973846	-118.421527	1/26/2016	---	190	0.1 U	0.88 J
C-123	33.973846	-118.421527	1/26/2016	---	180	0.1 U	0.86 J
C-123	33.973846	-118.421527	4/28/2016	---	190	0.1 U	0.59 J
C-123	33.973846	-118.421527	4/28/2016	---	190	0.1 U	0.84 J
C-123	33.973846	-118.421527	7/28/2016	---	210	0.1 U	2.9
C-123	33.973846	-118.421527	7/28/2016	---	210	0.1 U	3
C-123	33.973846	-118.421527	11/3/2016	---	210	0.1 U	1.2
C-123	33.973846	-118.421527	11/3/2016	---	210	0.1 U	1.9
C-123	33.973846	-118.421527	1/26/2017	---	210	0.1 U	3.3
C-123	33.973846	-118.421527	1/26/2017	---	210	0.1 U	3.2
C-123	33.973846	-118.421527	4/13/2017	---	190	0.1 U	1 U
C-123	33.973846	-118.421527	4/13/2017	---	190	0.1 U	1 U
C-123	33.973846	-118.421527	7/14/2017	---	190	0.1 U	0.55 J
C-123	33.973846	-118.421527	7/14/2017	---	190	0.1 U	0.55 J

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-123	33.973846	-118.421527	11/7/2017	---	280	0.2 U	34
C-123	33.973846	-118.421527	11/7/2017	---	280	0.2 U	34
C-123	33.973846	-118.421527	1/30/2018	---	230	0.55	3.4
C-123	33.973846	-118.421527	1/30/2018	---	230	0.1 U	3.2
C-123	33.973846	-118.421527	5/21/2018	---	220	0.1 U	3.2
C-123	33.973846	-118.421527	5/21/2018	---	220	0.1 U	2.9
C-123	33.973846	-118.421527	8/1/2018	---	210	0.1 U	6.1
C-123	33.973846	-118.421527	8/1/2018	---	210	0.1 U	5.7
C-123	33.973846	-118.421527	11/6/2018	---	220	0.1 U	3.4
C-123	33.973846	-118.421527	11/6/2018	---	220	0.1 U	4.2
C-123	33.973846	-118.421527	1/28/2019	---	200	0.1 U	5.3
C-123	33.973846	-118.421527	1/28/2019	---	190	0.1 U	5.2
C-123	33.973846	-118.421527	5/2/2019	---	200	0.1 U	0.57 J
C-123	33.973846	-118.421527	7/18/2019	---	170	0.076 J	1.8
C-123	33.973846	-118.421527	7/18/2019	---	170	0.066 J	1.8
C-123	33.973846	-118.421527	11/13/2019	---	200	0.1 U	2.5
C-123	33.973846	-118.421527	11/13/2019	---	210	0.1 U	2.5
C-123	33.973846	-118.421527	11/5/2020	---	210	0.025 J	11
C-124	33.972576	-118.422140	1/30/2015	---	180	0.1 U	0.45 J
C-124	33.972576	-118.422140	4/28/2015	---	190	0.028 J	0.43 J
C-124	33.972576	-118.422140	8/3/2015	---	180	0.1 U	0.72 J
C-124	33.972576	-118.422140	10/27/2015	---	180	0.1 U	1
C-124	33.972576	-118.422140	1/26/2016	---	200	0.1 U	1.2
C-124	33.972576	-118.422140	4/25/2016	---	170	0.1 U	0.96 J
C-124	33.972576	-118.422140	7/26/2016	---	180	0.1 U	1 U
C-124	33.972576	-118.422140	11/8/2016	---	---	0.1 U	0.76 J
C-124	33.972576	-118.422140	1/26/2017	---	170	0.1 U	0.41 J
C-124	33.972576	-118.422140	4/12/2017	---	170	0.1 U	1 U
C-124	33.972576	-118.422140	7/14/2017	---	170	0.1 U	0.59 J
C-124	33.972576	-118.422140	11/6/2017	---	170	0.1 U	0.38 J
C-124	33.972576	-118.422140	1/25/2018	---	170	0.064 J	1 U
C-124	33.972576	-118.422140	5/18/2018	---	170	0.1 U	0.35 J
C-124	33.972576	-118.422140	7/31/2018	---	170	0.1 U	1 U
C-124	33.972576	-118.422140	11/14/2018	---	170	0.1 U	1 U
C-124	33.972576	-118.422140	1/22/2019	---	170	0.1 U	1 U
C-124	33.972576	-118.422140	4/30/2019	---	170	0.1 U	1 U
C-124	33.972576	-118.422140	7/17/2019	---	170	0.1 U	1 U
C-124	33.972576	-118.422140	10/22/2019	---	180	0.1 U	1 U
C-124	33.972576	-118.422140	11/10/2020	---	160	0.1 U	1 U
C-136	33.973081	-118.422748	2/4/2015	---	180	0.1 U	0.34 J
C-136	33.973081	-118.422748	5/8/2015	---	170	0.1 U	1 U
C-136	33.973081	-118.422748	7/29/2015	---	170	0.1 U	1 U
C-136	33.973081	-118.422748	10/27/2015	---	160	0.1 U	1 U
C-136	33.973081	-118.422748	1/21/2016	---	180	0.1 U	1 U
C-136	33.973081	-118.422748	5/2/2016	---	150	0.1 U	1 U
C-136	33.973081	-118.422748	7/25/2016	---	180	0.1 U	1 U
C-136	33.973081	-118.422748	11/8/2016	---	---	0.1 U	1 U
C-136	33.973081	-118.422748	1/30/2017	---	180	0.1 U	0.4 J

Table G-1. Playa Vista Propery Water Quality Data

Well Name	Latitude	Longitude	Sample Date	Map and Plot Area Designation	Chloride Concentration (mg/L)	Nitrate as Nitrogen Concentration (mg/L)	Sulfate Concentration (mg/L)
C-136	33.973081	-118.422748	5/9/2017	---	190	0.1 U	1 U
C-136	33.973081	-118.422748	7/18/2017	---	170	0.1 U	0.31 J
C-136	33.973081	-118.422748	10/31/2017	---	170	0.1 U	0.37 J
C-136	33.973081	-118.422748	1/29/2018	---	170	0.12	1 U
C-136	33.973081	-118.422748	5/22/2018	---	180	0.1 U	1 U
C-136	33.973081	-118.422748	8/2/2018	---	170	0.1 U	1 U
C-136	33.973081	-118.422748	11/14/2018	---	180	0.049 J	1 U
C-136	33.973081	-118.422748	1/22/2019	---	150	0.1 U	1 U
C-136	33.973081	-118.422748	5/7/2019	---	170	0.1 U	1 U
C-136	33.973081	-118.422748	7/17/2019	---	140	0.1 U	1 U
C-136	33.973081	-118.422748	11/7/2019	---	160	0.1 U	1 U
C-136	33.973081	-118.422748	11/12/2020	---	140	0.1 U	1 U
C-170SI	33.980537	-118.410318	10/26/2015	---	450	0.1 U	450
C-170SI	33.980537	-118.410318	10/26/2016	---	450	0.1 U	430
C-171SI	33.976766	-118.412210	11/13/2015	---	170	0.1 U	180
C-171SI	33.976766	-118.412210	10/28/2016	---	190	0.1 U	190
C-172SI	33.978263	-118.411531	10/23/2015	---	310	0.1 U	390
C-172SI	33.978263	-118.411531	10/27/2016	---	310	0.1 U	410
C-173SI	33.978868	-118.407556	11/6/2015	---	530	0.1 U	490
C-173SI	33.978868	-118.407556	10/17/2016	---	80	0.1 U	660
C-174SI	33.980795	-118.407416	11/13/2015	---	460	0.1 U	740
C-174SI	33.980795	-118.407416	11/13/2015	---	440	0.1 U	670
C-174SI	33.980795	-118.407416	11/14/2016	---	460	0.1 U	690
D2-Si01	33.975066	-118.414539	7/31/2013	---	218	0.1 U	211
D2-Si01	33.975066	-118.414539	10/30/2013	---	209	---	221
D2-Si01	33.975066	-118.414539	1/27/2014	---	243	0.1 U	241
D2-Si01	33.975066	-118.414539	10/24/2014	---	240	0.1 U	240
D2-Si01	33.975066	-118.414539	10/29/2015	---	220	0.1 U	250
D2-Si01	33.975066	-118.414539	11/1/2016	---	230	0.1 U	240
D2-Si01	33.975066	-118.414539	10/30/2017	---	210	0.1 U	210
D2-Si01	33.975066	-118.414539	10/18/2018	---	210	0.1 U	200
D2-Si01	33.975066	-118.414539	12/3/2019	---	230	0.1 U	220
D2-Si02	33.976466	-118.415486	7/11/2013	---	211	0.1 U	52.7
D2-Si02	33.976466	-118.415486	10/30/2013	---	155	---	59.6
D2-Si02	33.976466	-118.415486	1/27/2014	---	178	0.1 U	64.6
D2-Si02	33.976466	-118.415486	10/28/2014	---	220	0.1 U	150
D2-Si02	33.976466	-118.415486	11/10/2015	---	---	0.1 U	150
D2-Si02	33.976466	-118.415486	10/31/2016	---	210	0.1 U	170
D2-Si02	33.976466	-118.415486	10/30/2017	---	200	0.1 U	140
D2-Si02	33.976466	-118.415486	11/8/2018	---	200	0.1 U	140
D2-Si02	33.976466	-118.415486	11/8/2019	---	180	0.1 U	140
MW-D	33.969234	-118.424291	11/12/2020	---	100	0.1 U	3.2

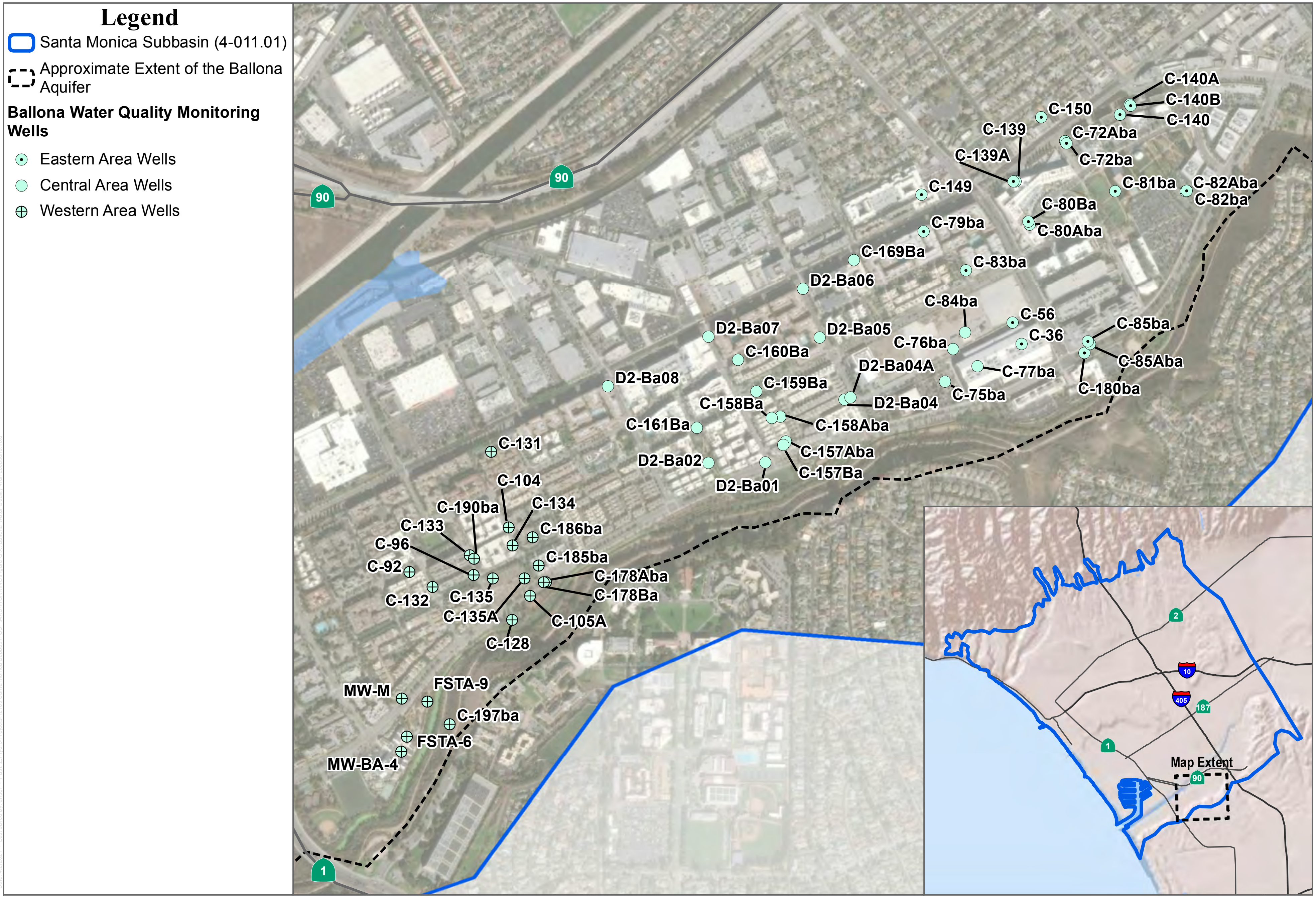
Notes:

--- = Not analyzed

J = Estimated result; concentration was below the reporting limit but above the detection limit

U = Sample concentration below the detection limit shown

Source: Playa Capital Company 2020



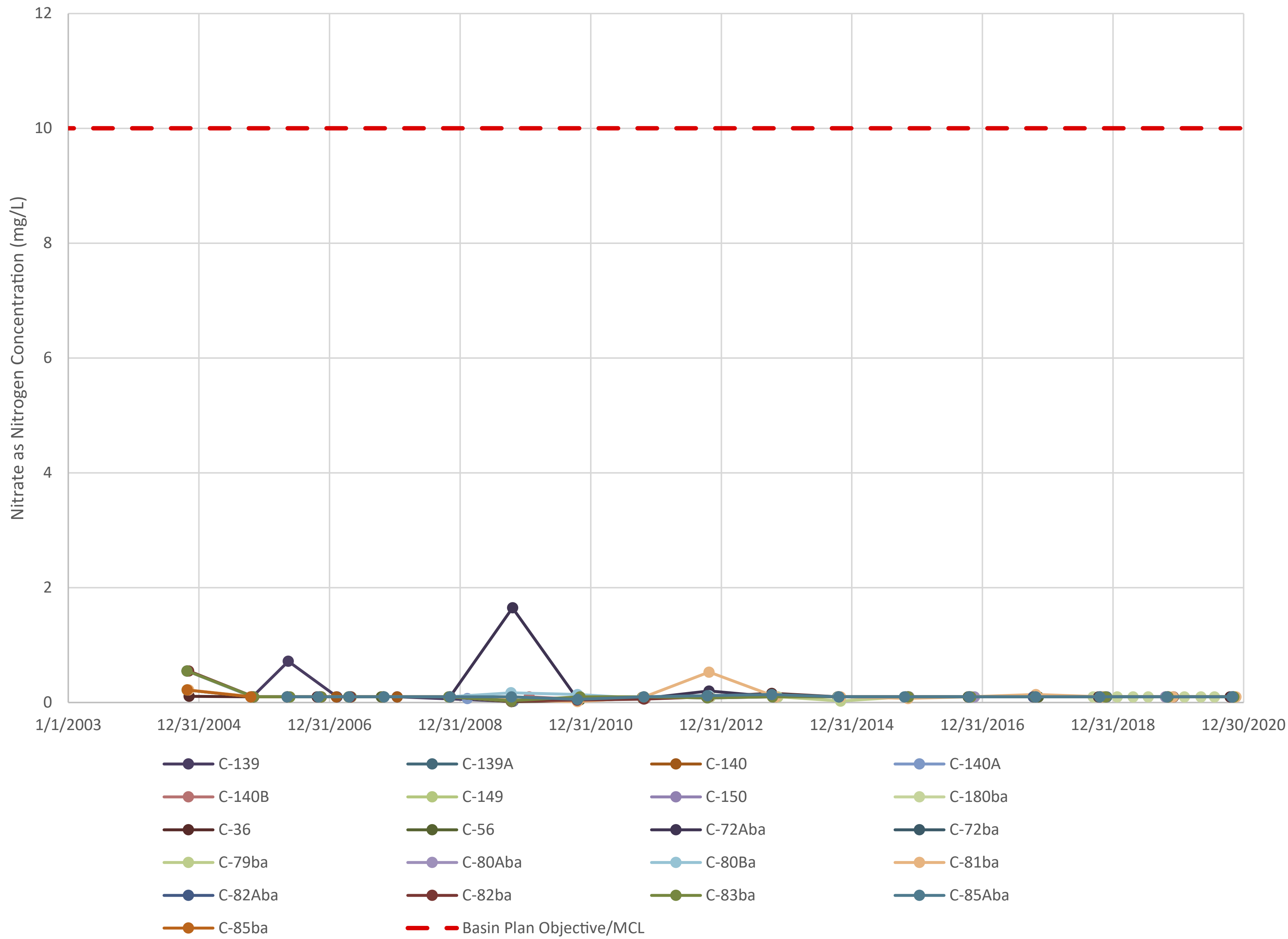
SOURCE: SWRCB, Playa Capital Company

DUDEK

0 0.1 0.2 Miles

FIGURE G-1

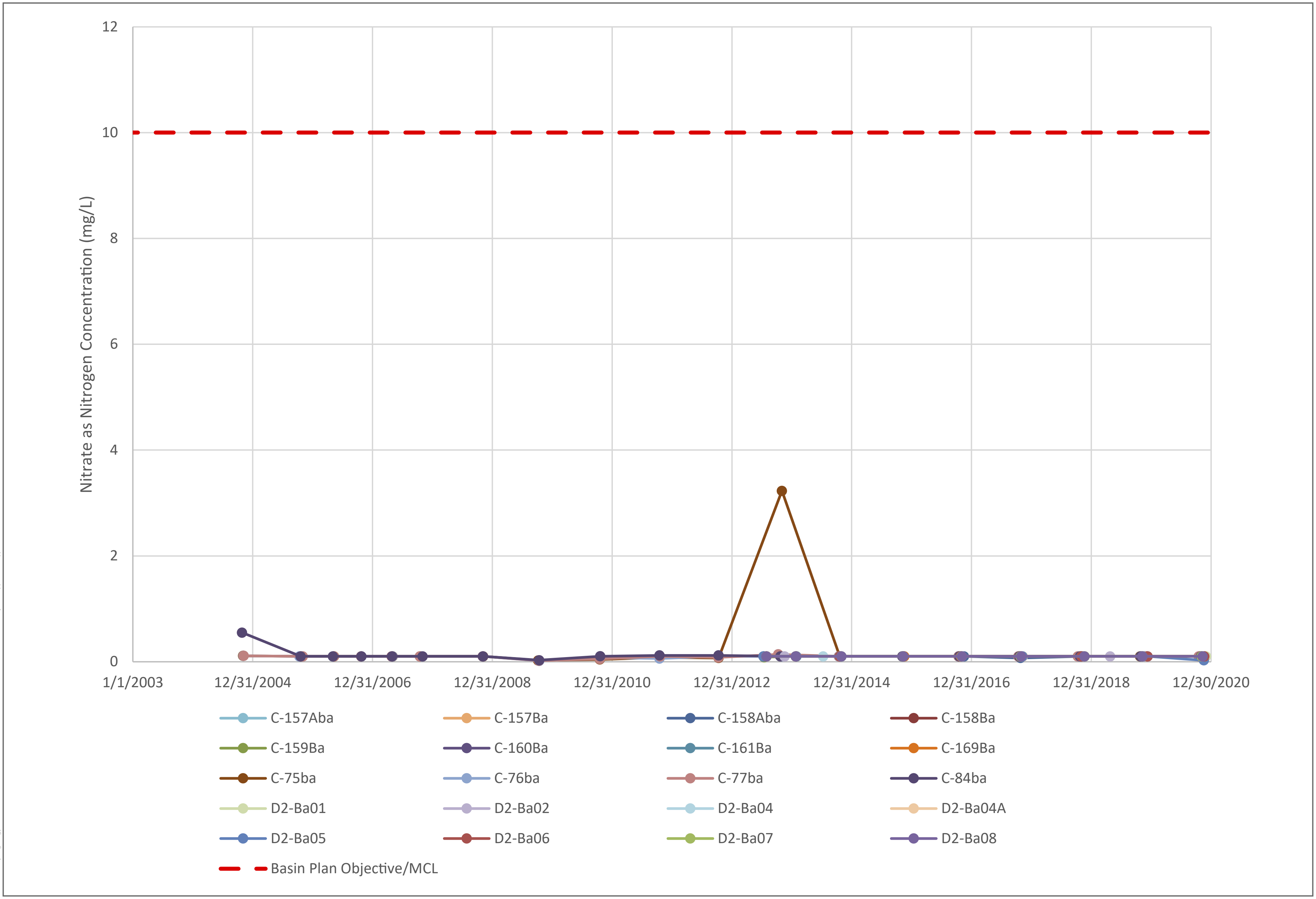
Playa Vista Property Ballona Aquifer Water Quality Monitoring Well Locations



SOURCE: SWRCB

FIGURE G-2.

Playa Vista Ballona Aquifer Eastern Area Nitrate as Nitrogen Concentration Hydrographs

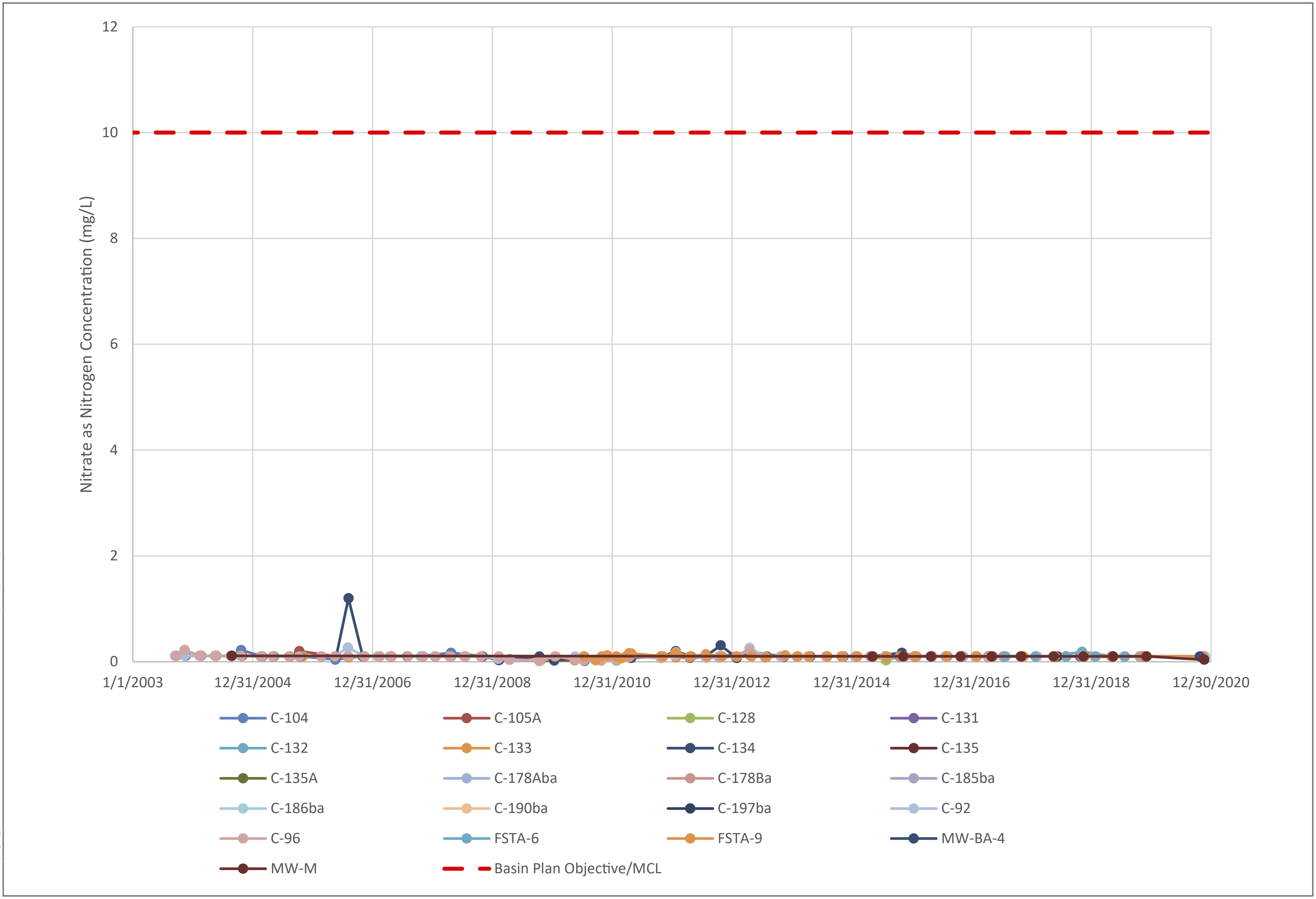


SOURCE: SWRCB

DUDEK

FIGURE G-3.

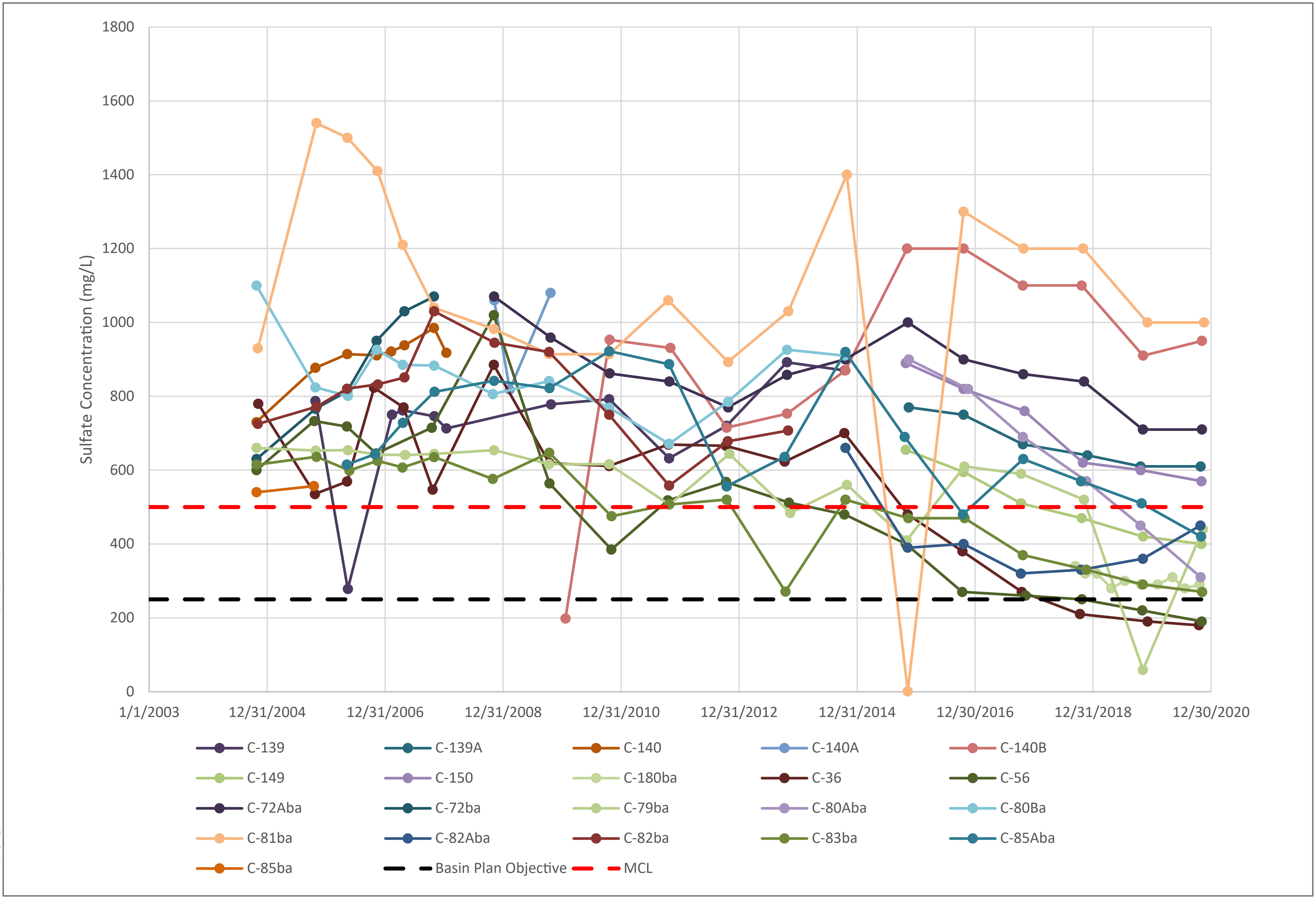
Playa Vista Ballona Aquifer Central Area Nitrate as Nitrogen Concentration Hydrographs



SOURCE: SWRCB

FIGURE G-4.

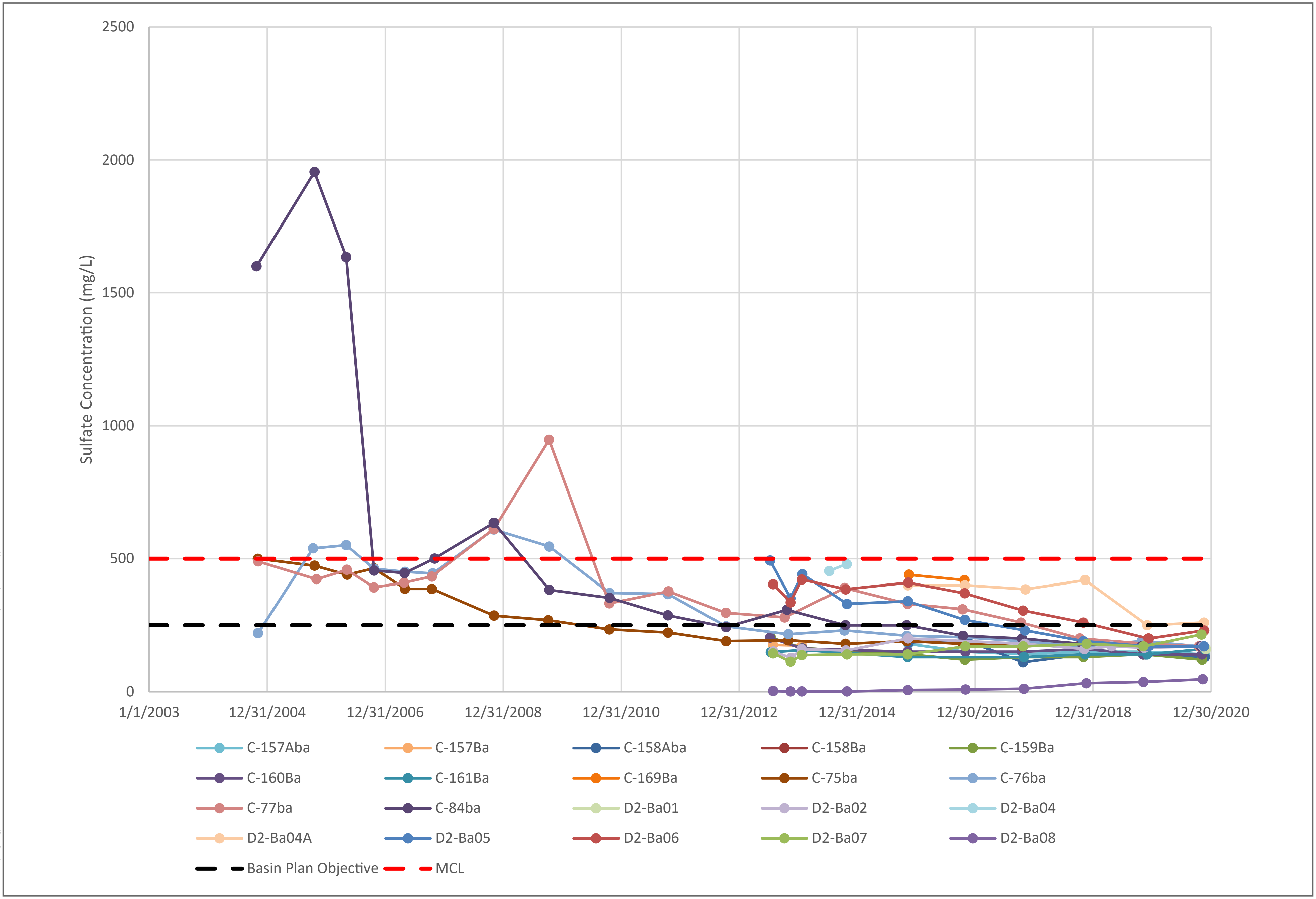
Playa Vista Ballona Aquifer Western Area Nitrate as Nitrogen Concentration Hydrographs



SOURCE: SWRCB

FIGURE G-5.

Playa Vista Ballona Aquifer Eastern Area Sulfate Concentration Hydrographs

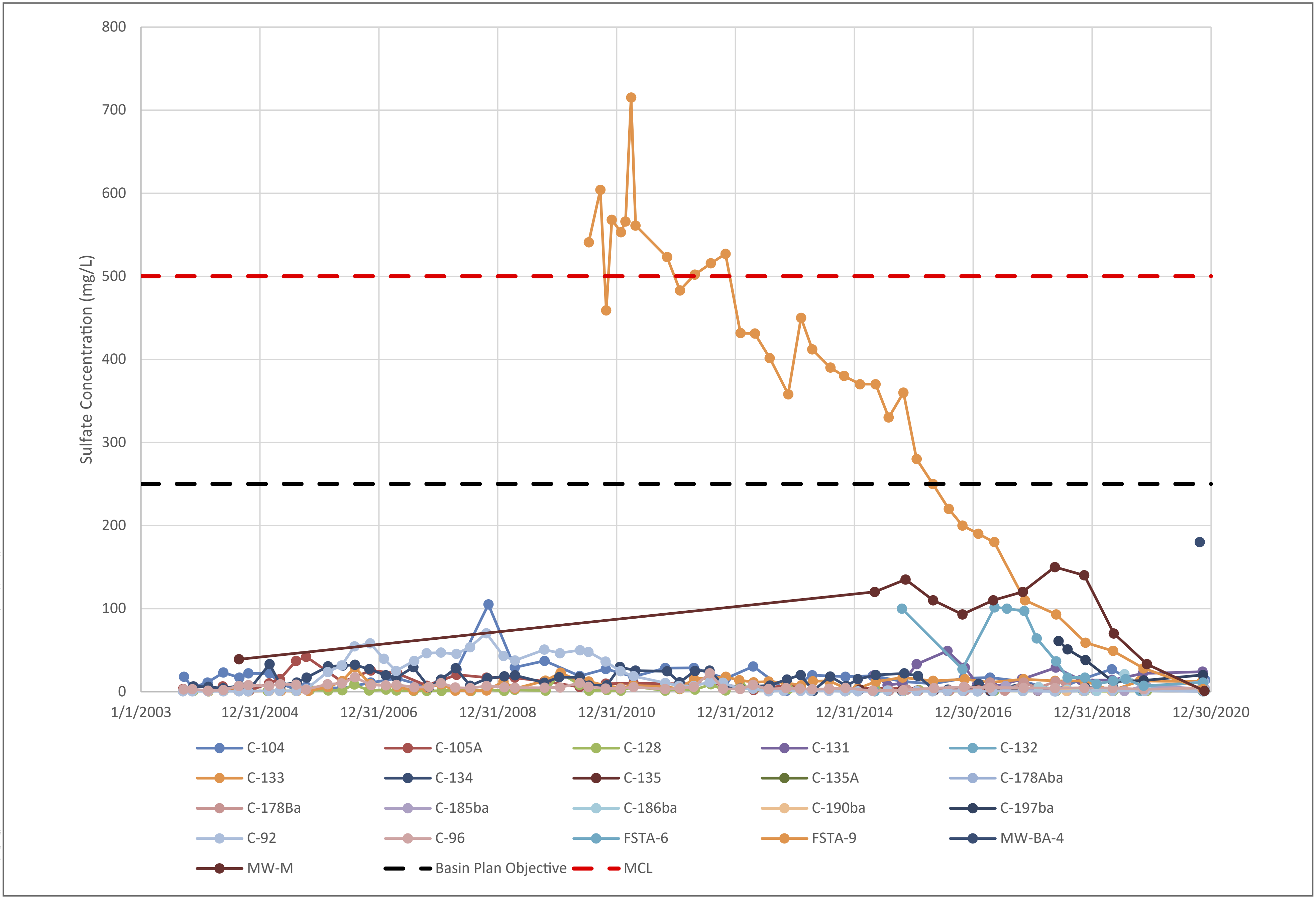


SOURCE: SWRCB

FIGURE G-6.

Playa Vista Ballona Aquifer Central Area Sulfate Concentration Hydrographs

DUDEK

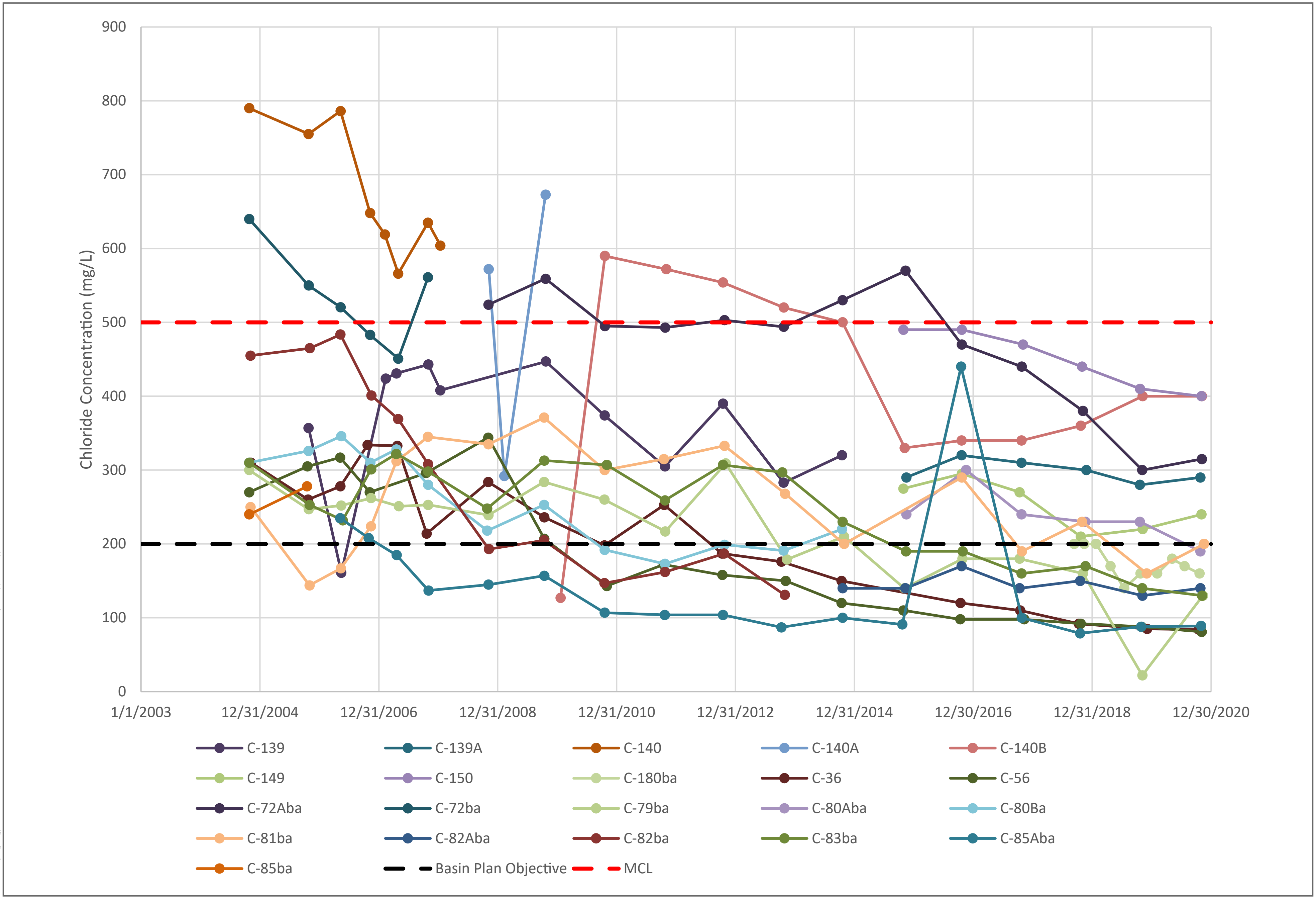


SOURCE: SWRCB

DUDEK

FIGURE G-7.

Playa Vista Ballona Aquifer Western Area Sulfate Concentration Hydrographs

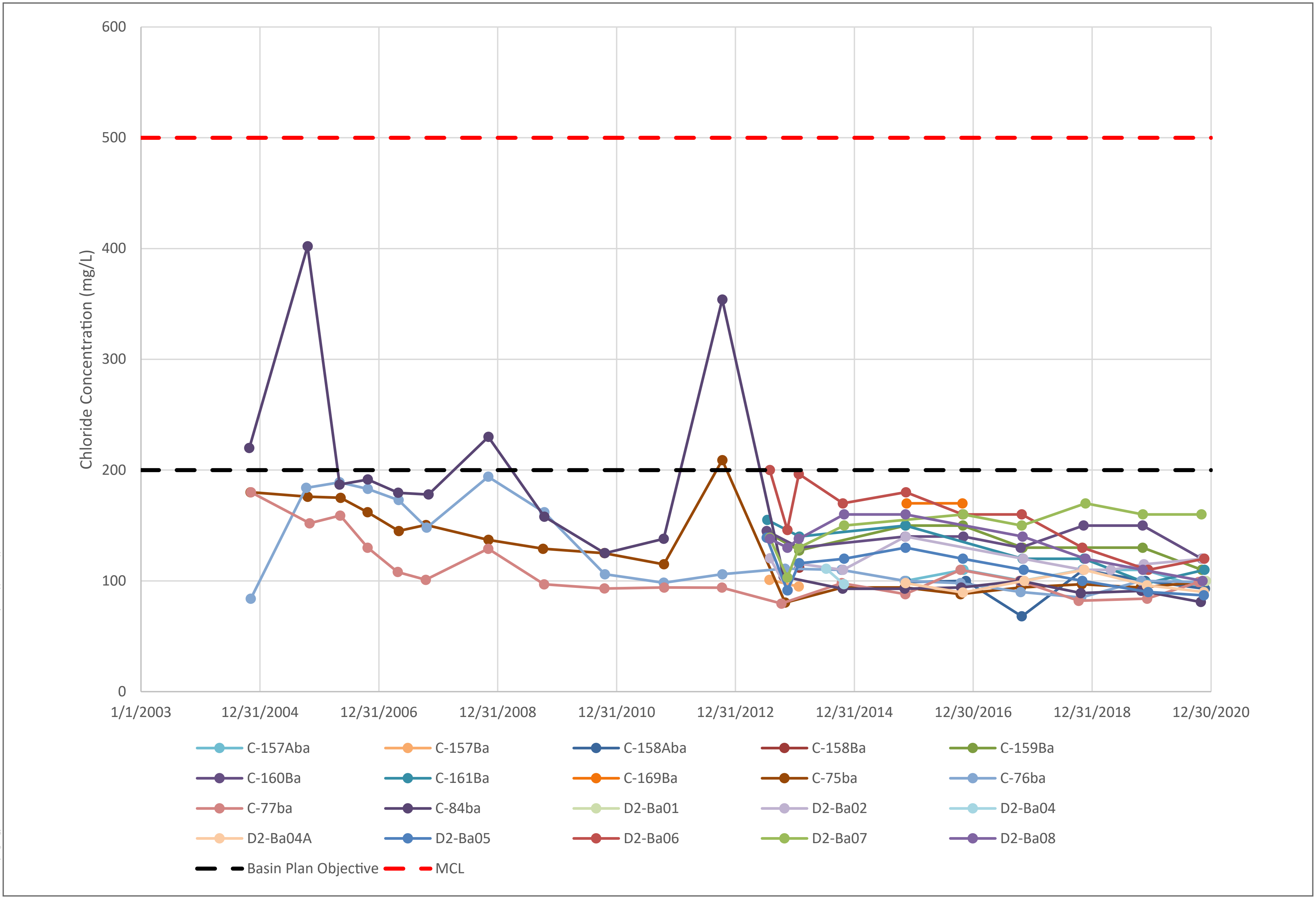


SOURCE: SWRCB

DUDEK

FIGURE G-8.

Playa Vista Ballona Aquifer Eastern Area Chloride Concentration Hydrographs



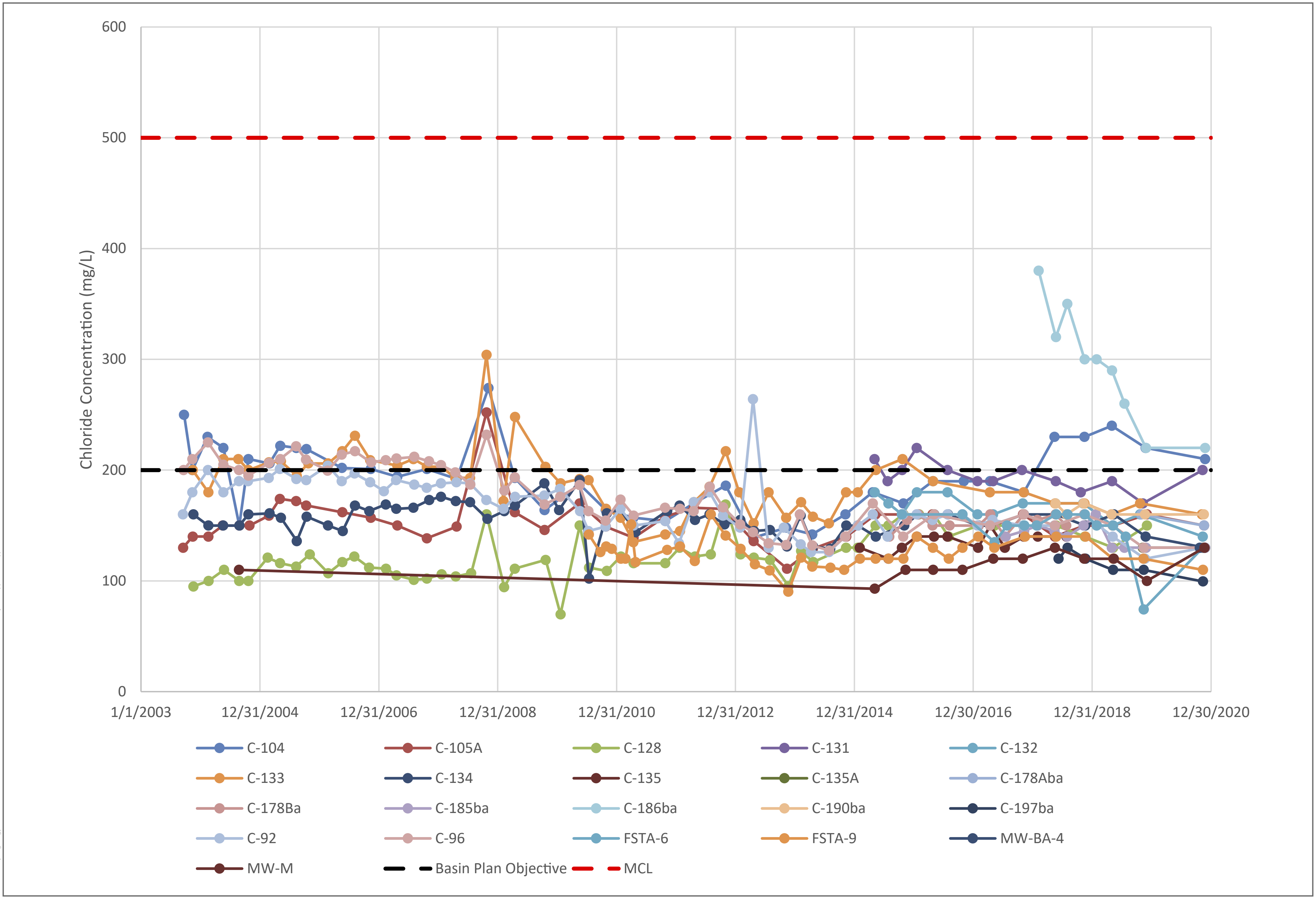
SOURCE: SWRCB

DUDEK

FIGURE G-9.

Playa Vista Ballona Aquifer Central Area Chloride Concentration Hydrographs

Groundwater Sustainability Plan for the Santa Monica Subbasin

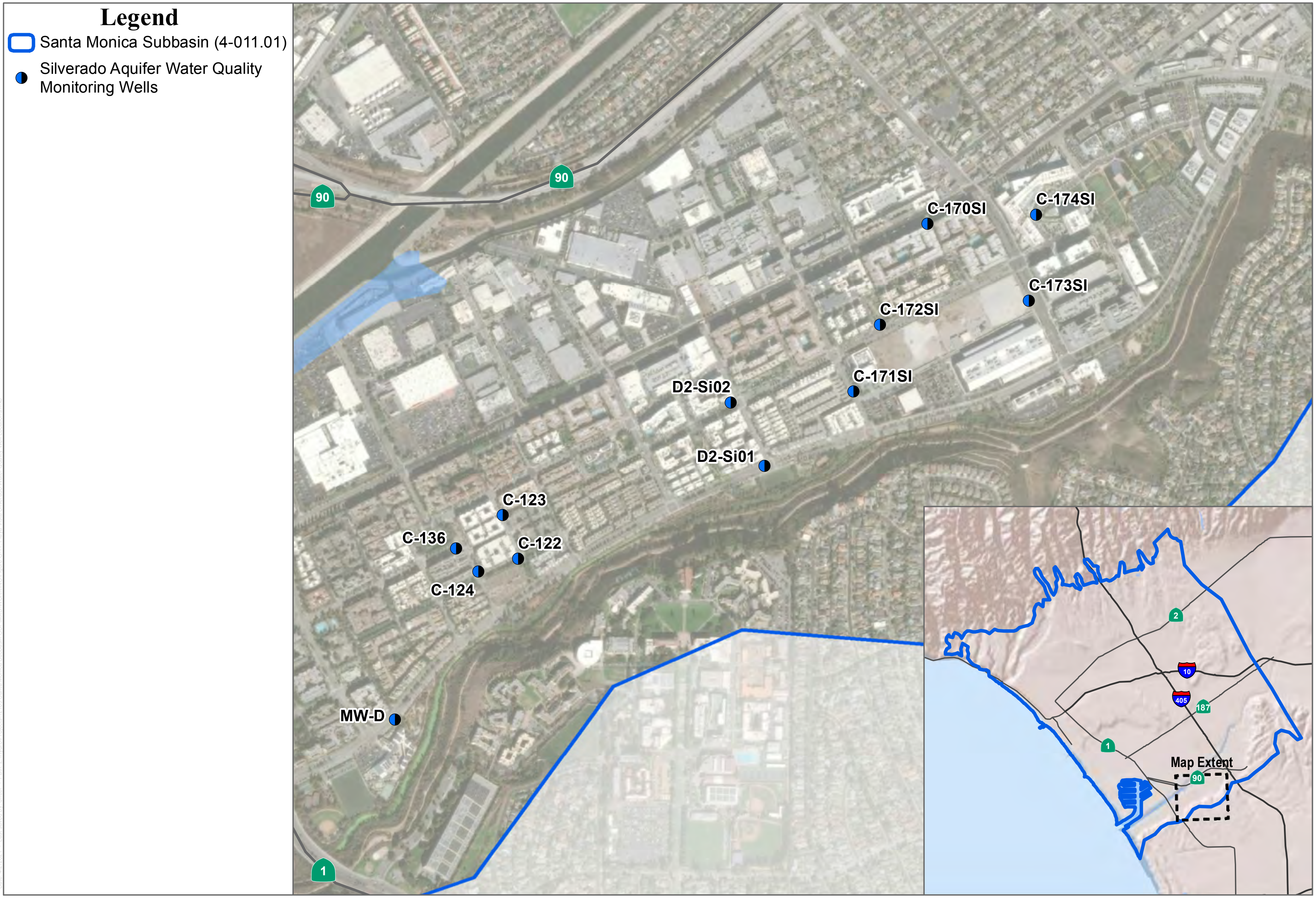


SOURCE: SWRCB

DUDEK

FIGURE G-10.

Playa Vista Ballona Aquifer Western Area Chloride Concentration Hydrographs



SOURCE: SWRCB, Playa Capital Company

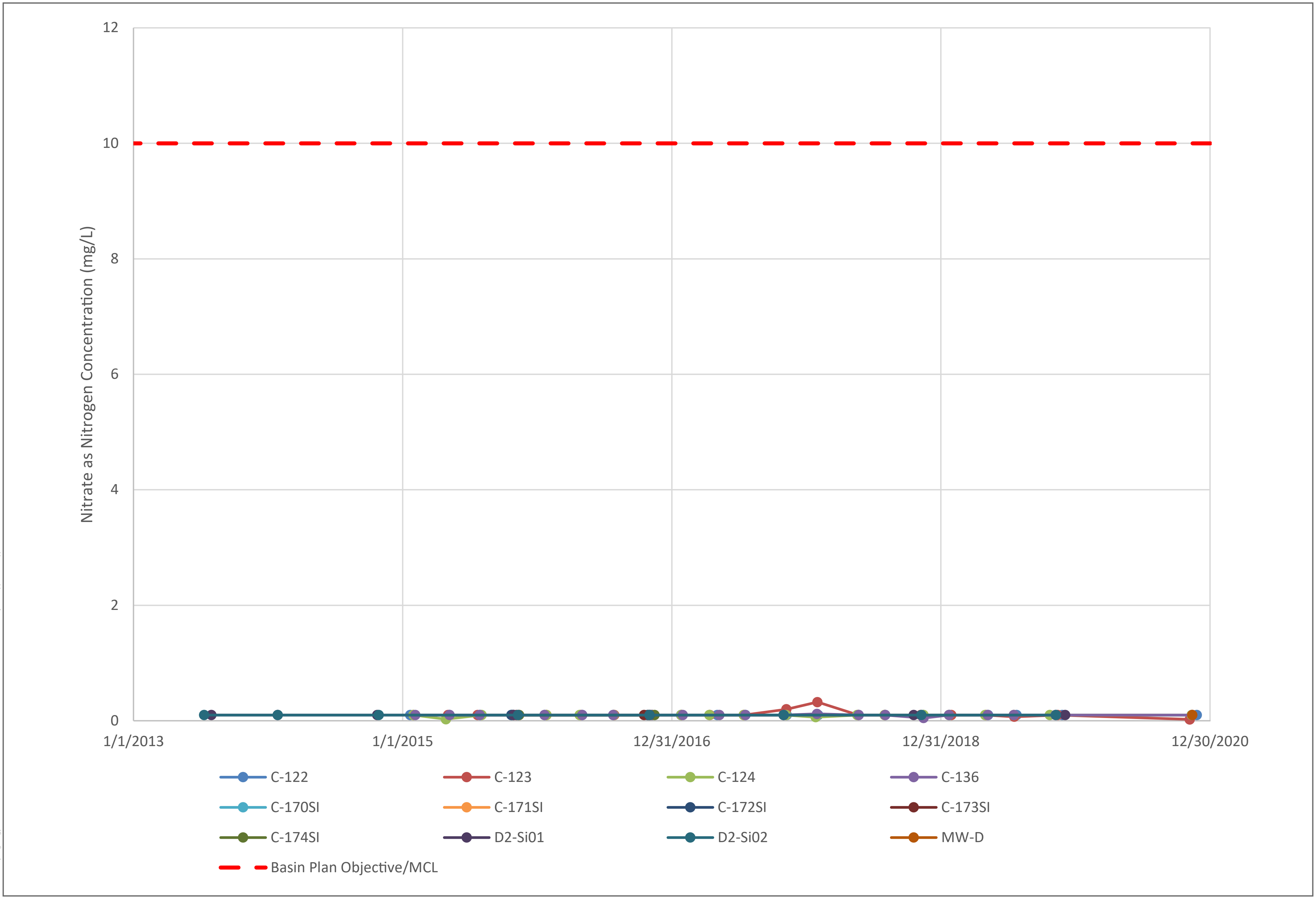
DUDEK

0 0.1 0.2 Miles

FIGURE G-11

Playa Vista Property Silverado Aquifer Water Quality Monitoring Well Locations

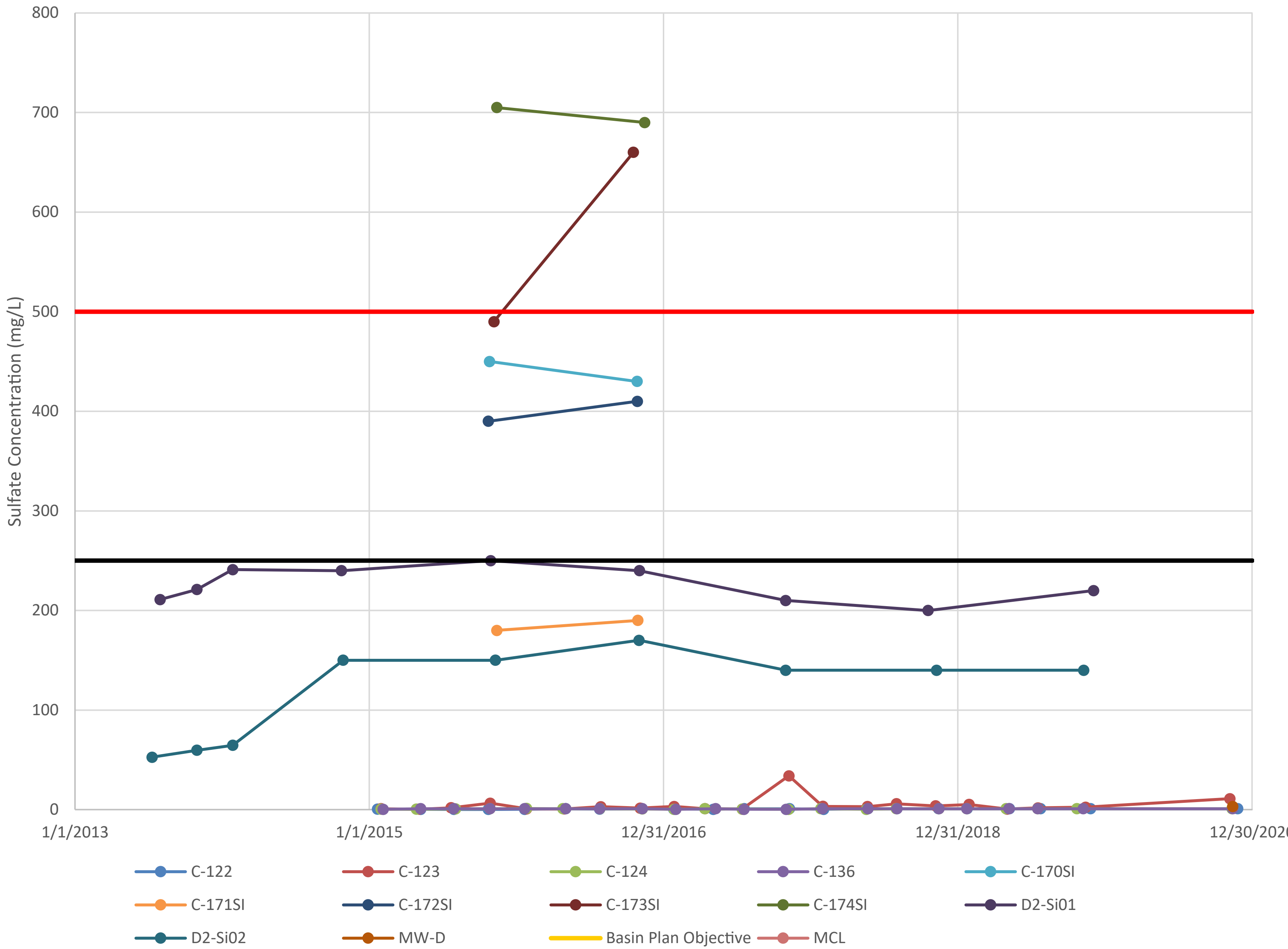
Groundwater Sustainability Plan for the Santa Monica Subbasin



SOURCE: SWRCB

FIGURE G-12.

Playa Vista Silverado Aquifer Nitrate as Nitrogen Concentration Hydrographs



SOURCE: SWRCB

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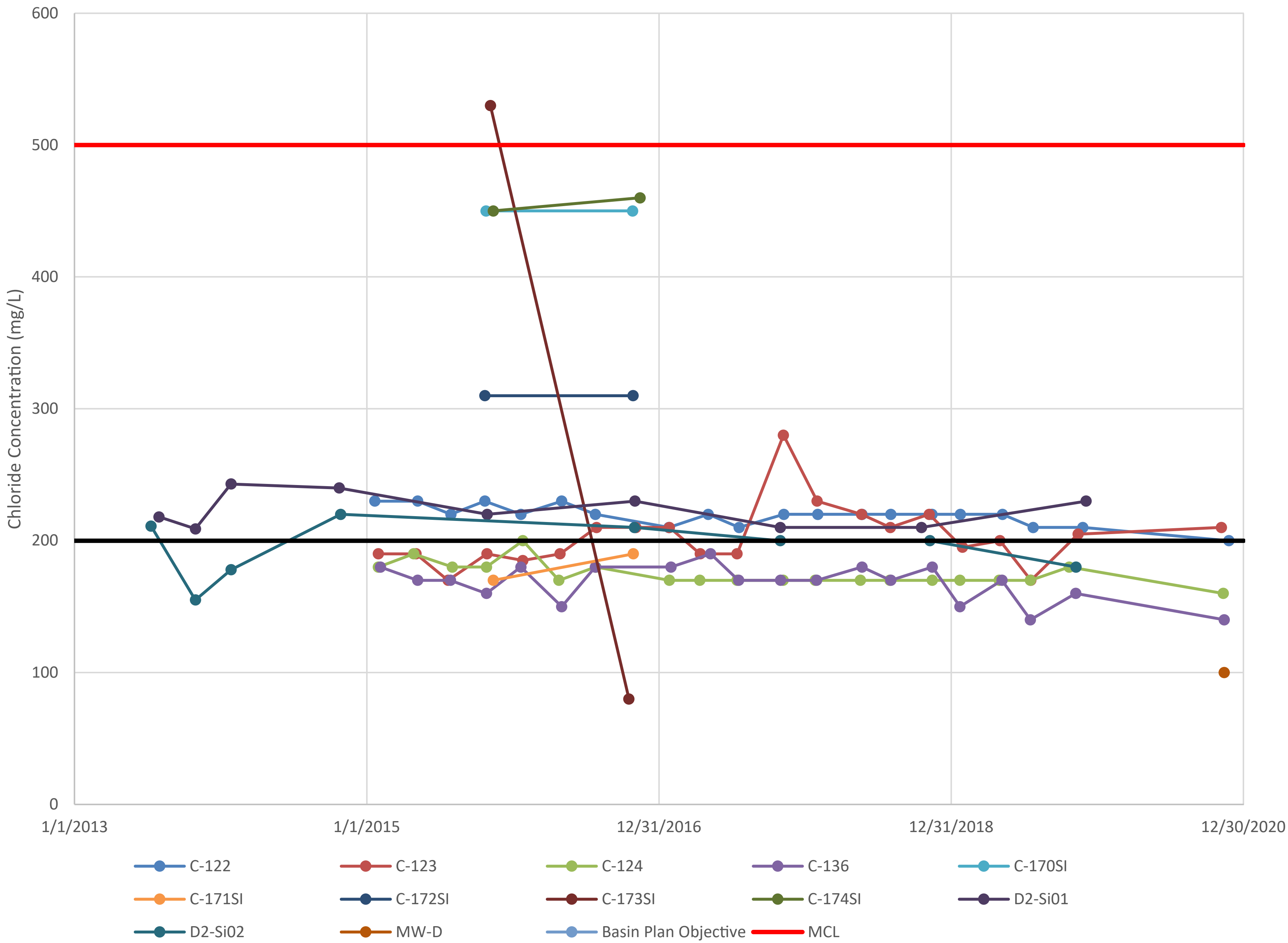
FIGURE G-13.

Playa Vista Silverado Aquifer Sulfate Concentration Hydrographs



SOURCE: SWRCB

FIGURE G-14.

Playa Vista Silverado Aquifer Chloride Concentration Hydrographs

Appendix H

Supplemental Studies and Analyses Optimize Use of the Basin for Public Benefit

Santa Monica Basin Groundwater Sustainability Plan

Task 5.1: Supplemental Studies and Analyses
Optimizing Use of the Basin for Public Benefit

Technical Memorandum

Supporting materials available in an Online Repository

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Overview

As part of the Santa Monica Basin Groundwater Sustainability Plan (SMBGSP), the Office of Water Programs (OWP) at California State University, Sacramento (Sacramento State) is leading the development of a plan to optimize the use of groundwater resources in the basin for public benefit, including benefits such as municipal supply or environmental flows for habitat. As part of this analysis, OWP is evaluating available options that support the groundwater sustainability plan (GSP) goals, as described in the main sections of the GSP, which may include capturing and using stormwater, enhancing recycled water production and use, investing in leak loss reduction, and others. The groundwater public benefit optimization plan is not a required component of GSPs and is a supplemental section to the GSP. It is intended to complement the evaluation and recommendation of options described within the main text of the GSP, which serves to link GSP planning efforts with other sustainable urban water management efforts from GSP member agencies.

This appendix to the GSP is divided into the following sections:

1) Introduction
2) Feasibility criteria for evaluating projects
3) Identifying potential projects for the GSP
4) Evaluating multiple benefits of projects for the GSP
5) Electricity intensity of water management projects in Los Angeles
6) Conclusions and recommendations
7) Appendices

1 Introduction

Cities use groundwater as a source of local water supply. Groundwater basins support many beneficial uses, especially as a source of drinking water. Groundwater is often cleaner than local surface water, historically making it a preferred source of water supply in the development of cities.[1–3]

In California, residents of some urban areas rely almost entirely on groundwater, including both inland cities, such as Fresno and Chico, and coastal cities, such as parts of the metropolitan City of Los Angeles (LA).[4,5] In many other urban areas, it comprises a measurable percentage of water supply.[6] Across Los Angeles County, over 30% of municipal supplies come from groundwater sources, reflecting the importance of managing this resource for the benefit of residents across communities within the Santa Monica Basin and throughout Los Angeles County.[7] The importance of groundwater as a resource increases significantly in years with little precipitation, when communities must switch supply sources from surface water storage to aquifers (where possible).

1.1 Optimizing Public Benefit of Groundwater Resources

A plan to optimize the public benefits of groundwater basin resources should not only consider those already identified for the Santa Monica Basin but also broader management goals for water utilities in a metropolitan area. Understanding how groundwater basins are managed sustainably as well as how they support integrated goals for conjunctive use, habitat restoration, or alternative supplies is important.

In considering potential types of projects, OWP noted several categories of interest by the stakeholders, including:

- Strategies to manage and capture stormwater, especially during peak flows, and evaluate benefits of artificial recharge as part of implementing Enhanced Watershed Management Plans (EWMPs)
- Use of recycled water for direct groundwater recharge or as a source of supply that reduces pumping needs
- Conjunctive use of surface and groundwater resources in tandem with other regional agencies, which can maintain groundwater in storage by using other supplies when available

The following sections provide necessary background on existing and emerging urban water management strategies in the Santa Monica Basin and greater Los Angeles area, as well as assessment criteria to evaluate how GSP strategies will contribute to optimizing resources for public benefit. Identified options are also evaluated and discussed. The assessment criteria, list of options, and results all incorporated input from GSP stakeholders.

1.2 Consumptive Uses of Water Supply in Cities

In cities, the flow of water across landscapes is much different than in agricultural or rural areas. Extensive impervious surface cover reduces infiltration, making surface water and groundwater highly disconnected. This alters the volume and timing of runoff and reduces groundwater recharge. In addition, many cities in California import water for municipal supplies from far away to augment local water sources and support large populations. The imported water increases local surface and groundwater supply in measurable volumes.[8]

For cities within the Santa Monica Basin, municipal water providers supply water to many types of users. Urban water demand typically includes single-family and multi-family homes, businesses, industrial facilities, schools, and parks and landscapes. Urban water utilities in California typically classify sectors of consumption as:

- Residential indoor and outdoor use, which can be divided into single-family and multi-family homes.
- Commercial, industrial, and institutional use, for both indoor needs and outdoor landscapes. This category includes businesses, industrial facilities, universities, public schools, and other municipal end-users.
- Agricultural use. While not prominent, some urban areas in California support agriculture.
- Landscape irrigation needs, such as parkland areas. Urban water supply agencies across the state inconsistently report water use for this category, but it can include parks, trees, and landscapes on some types of private property.

In addition, cities may support beneficial uses of water resources for environmental needs, such as local streams and wetlands habitat. This can happen directly through participation in local or regional environmental programs or indirectly when wastewater facilities discharge effluent to local water bodies, which increases streamflow or water levels during dry periods.

1.3 Integrated Urban Water Management Efforts in the Santa Monica Basin

Evaluating options for stormwater capture and recharge, recycled water investments, and conjunctive use requires knowledge of and context for urban water management trends throughout the Los Angeles region. Los Angeles County has a complex and interconnected system of water management. In recent decades, the region has received approximately 55–60% of its supply from imported water sources.[7,9] The primary water importer, the Metropolitan Water District of Southern California (MWD), was created through state legislation in 1927 and approved by local voters to import water to the region, first from the Colorado River federal complex and subsequently from California's State Water Project. The MWD distributes imported water to over 100 different water delivery entities within a hierarchy of agencies.[10] Regional municipal water agencies, which often do not have jurisdictional boundaries that align with local groundwater management areas, act as wholesalers, receiving water from MWD and potentially other sources and distributing it to a series of water retailers. In total, the county has over 200 water systems; approximately 100 of these systems serve at least 3,000 connections or provide at least 3,000 acre-feet of water per year to retail end-users. The Cities of Los Angeles and Santa Monica are two municipalities that receive imported water directly from MWD as member agencies but also directly supply water to residents, making them both wholesalers and retailers of water supply.

Across the county, interlinked infrastructure systems connect 17 wastewater reclamation facilities, 25 groundwater recharge areas, drinking water treatment plants, dams, and surface water storage. The tremendous extent of existing infrastructure must meet goals for:

1) Drinking water of adequate supply and quality
2) Preventing wastewater and stormwater discharges from polluting environmental systems
3) Adequate flood control during storms
4) Recreational opportunities
5) Economic development and social wellbeing

The extensive connectivity and complexity of infrastructure and managerial agreements throughout Los Angeles County's water management system creates many opportunities for innovative conjunctive use, recycled water allocations, and other emerging strategies, which could enhance the use of groundwater basin resources. At the same time, it is a detailed and involved task to explore such opportunities given the system's complexity.

Water agencies in LA also face uncertainty. In future decades, declining snowpack from warming temperatures and increasing risk of severe drought from extreme weather events will likely make imported water availability more variable. Many agencies are investing in alternative water management strategies that reduce the region's reliance on imported water sources as well as improve water quality. These include both demand-side strategies to reduce water consumption and supply-side strategies to enhance new supplies or managerial flexibility. Advanced water treatment and reuse, stormwater capture during months with rainfall, ocean or brackish water desalination, and conjunctive use of surface and groundwater resources are all being explored by regional agencies to meet water reliability or quality requirements.

Water management agencies in the Santa Monica Basin are already pursuing many of these strategies. For instance, in 2018, the City of Santa Monica published its sustainable water master plan, which outlined targets for long-term investments in local water supplies, including investments in local recycled water projects.[11] The plan formulated a long-term goal to achieve water “self-sufficiency” and eliminate reliance on imported water sources by 2023. As another example, in 2016, residents of Culver City approved a popular ballot measure to enact an annual stormwater utility fee on properties in the city.[12] Revenue from the dedicated stormwater fund has supported regional stormwater projects, with the goal of meeting a target of 99 acre-feet of stormwater capture capacity to meet local requirements outlined in the Enhanced Watershed Management Plan.[12] Finally, LA has outlined goals to fully recycle local wastewater and reduce imported water reliance in the coming decades. Details have been outlined through LA’s Green New Deal, the Sustainable City pLAn, and subsequent updates.[13] Local utilities are actively planning how such goals will be met through investments in new recycled water infrastructure, reduced per capita consumption, and stormwater capture and recharge.

In addition, there are many efforts to enhance river flows, aquatic habitat, wetlands, and recreational opportunities in the region. For example, LA has supported recent or forthcoming water quality and habitat improvements in many lakes and riverine areas, including dredging Machado Lake to remove invasive plants and improve stormwater quality, as well as the extensive planning process for revitalization of many portions of the Los Angeles River. Stormwater and recycled water flows can directly or indirectly support water availability in such areas. The Santa Monica Bay Restoration Commission and Authority are joint efforts to implement the Santa Monica Bay National Estuary Program (NEP) that funds activities to reduce pollution into Santa Monica Bay.

2 Feasibility Criteria for Evaluating Potential Projects for the GSP

Projects that may support groundwater sustainability must be implemented and completed during the timeframe of the GSP. Municipal and regional planning and implementation documents were scanned to identify such potential projects, and a list was compiled from surveyed reports. The list of projects was then evaluated by the team for inclusion in the GSP in addition to this feasibility analysis and recommendations for potential projects.

To be included in the GSP, projects or efforts had to meet the criteria identified by stakeholders as well as have a scheduled implementation timeline corresponding with the GSP. Projects also had to have a clear benefit for groundwater resources, such as preserving or augmenting groundwater supplies. Thus, projects that are currently being scoped or undergoing feasibility assessments do not qualify. Projects slated for funding through capital improvement plans or other types of plans were the only ones considered for inclusion in GSP quantifications.

2.1 Key Questions

Any opportunities for enhancing the use of groundwater resources in the Santa Monica Basin must be physically and operationally feasible. Typical feasibility assessment criteria can include:

- The project must meet technical design requirements, including size, location, and other factors. This is most applicable to infrastructure and operations.
- The project must be executed within legal, regulatory, institutional, and managerial requirements.
- The project must be implemented on a timeline that meets the goals or requirements of the GSP.
- Determining if there are any potential environmental impacts and (if so) can they be mitigated.

- Project benefits and costs must acceptable to stakeholders.

Through the design and scoping process for a project or program, an engineering feasibility study or design report will typically address these questions. In addition, an engineering report often discusses life-cycle costs of a project and potential alternatives. A community should consider that the cost of a project justifies the benefits it will likely provide, both monetary and non-monetary.

The criteria above are relevant to any infrastructure investments, operational changes, and managerial arrangements that support managing groundwater basin resources in the Santa Monica Basin.

3 Identifying Potential Projects for the GSP

Current and planned projects were evaluated for inclusion in the GSP and include three types of projects: stormwater capture and recharge, recycled water use, and conjunctive management of surface and groundwater resources.

The types of plans that contained potential projects varied (a list of projects with references is included in Appendix H) and were evaluated in the following ways:

- Stormwater-related projects, Measure W documentation, Enhanced Watershed Management Plans, and available stormwater master plans were investigated
- Recycled water projects, existing facilities, and planning documents or studies were investigated
- For conjunctive use opportunities, available documentation was identified through discussions with the member agencies
- For environmental management and restoration activities, available documents for Ballona Creek and the Santa Monica Bay Restoration Commission (SMBRC) were surveyed

The team conducted interviews with GSP members to understand existing and planned investments in qualifying projects that should be included in the GSP as part of the optimization assessment of groundwater basin resources.

Potential projects were evaluated for each category of interest. Identified feasible projects that were considered for inclusion in the GSP are described in the following subsections.

3.1 Stormwater Capture and Recharge

Stormwater management agencies in Los Angeles County have conducted a multiyear planning, regulatory, and policy development process to improve stormwater quality. In 2012, a countywide stormwater discharge permit was adopted to comply with National Pollutant Discharge Elimination System (NPDES) requirements. Municipalities within the watersheds subsequently outlined plans to identify long-term targets for stormwater capture, treatment, and recharge, which would lead to measurable declines in pollution to meet regulatory requirements for the total maximum daily load (TMDL) allowable to local waterways and the ocean.

3.1.1 Stormwater Management Strategies

Many strategies for managing stormwater involve building infrastructure. Stormwater management infrastructure can generally be categorized as infiltrating devices, non-infiltrating devices, and restoration practices. Infiltrating devices such as bioswales and porous pavement capture stormwater to infiltrate it into the soil and potentially to groundwater basins. Non-infiltrating devices such as rain barrels or detention basins capture stormwater for later use, treatment, or release. Restoration practices such as riparian buffers or reconnected floodplains try to use natural water flows and features to manage runoff in a way that mitigates flooding. Table 1 lists these strategies. Appendix F has a more comprehensive description of each type of stormwater capture measurement or device.

Table 1: Types of stormwater management infrastructure.

Infrastructure	SCM/Restoration Type
Infiltration devices (including LID and green streets)	Bioretention planter or bioretention facility
	Biostrip or vegetated filter strip
	Bioswale (swale, vegetated swale)
	Dry well
	Green roof
	Green street
	Infiltration basin, gallery, or trench
	Porous pavement, pervious pavement
	Rain garden
	Disconnected impervious surfaces, disconnected downspouts
	Tree planting and preservation
	Alternative driveways
	Wet pond or wetland
Non-infiltrating devices	Rain barrel or cistern
	Detention basin
	Lined (non-infiltrating) planter, stormwater planter (flow-through), tree box biofilter
	Media filter, sand filter
	Vortex separator or drain inlet insert
Restoration practices	Stream bed and bank stabilization
	Riparian buffer enhancement and protection
	In-stream enhancement
	Floodplain reconnection

Beyond infrastructure, a broader set of stormwater management practices can help improve water quality and reduce runoff impacts like watershed pollution or hydromodification (alteration of streambeds and channels). Such non-structural stormwater management strategies could include trash management, street sweeping, source control programs that work with industry to reduce the presence of contaminants before they reach stormwater, and public education programs.

Finally, operations and maintenance are critical to maintain properly functioning stormwater devices. In recent years, more resources have become available with guidance for maintaining specific types of stormwater devices, especially distributed devices such as swales and rain gardens. OWP has published a series of templates that can be used to develop a comprehensive plan for localities that must maintain such systems. The template outlines steps and training that localities can give to staff on how to properly operate and maintain stormwater devices (Appendix F).

The GSP focuses on water quantity. As such, potential stormwater management options related to optimizing groundwater basin resources for public benefit focus on structural devices with identified water quantity benefits. Nonstructural options, which are part of many of the stormwater management programs of GSP members in the Santa Monica Basin, can also help enhance groundwater basin resources but are not specifically surveyed here.

Emerging Guidance for Dry Wells

Dry wells (Table 1) are one type of stormwater management strategy. Stormwater infiltration dry wells are devices that capture and infiltrate wet weather runoff and dry weather flow into an unsaturated subsurface zone above the groundwater table. Dry wells consist of a main chamber, up to 4 feet in diameter and up to 50 feet deep, as well as a pretreatment and sedimentation chamber where runoff first enters the device. The pretreatment chamber removes sediment and may even consist of other pretreatment or risk management devices. Once water fills the chamber, it flows through a conduit to the main chamber. Once in the main chamber, perforations in the wall allow water to seep out to the vadose zone.

Dry wells are a strategy of growing popularity in some parts of the state. The interest spurred the State Water Resources Control Board (SWRCB) and the Department of Water Resources (DWR) to examine regulatory aspects of dry well placement and potential risk to water quality. Under the Porter Cologne Act, the SWRCB has authority to oversee points of discharge that affect surface and groundwater quality and Section 13260 identifies that parties seeking to build wells to inject water to groundwater must file a report of waste discharge (ROWD) with the relevant Regional Water Quality Control Board (RWQCB). For its part, DWR regulates construction standards for wells that are designed to protect drinking water sources, especially the inflow of surface water into wells (Bulletin 74-81). Both of these instances describe aspects of dry well operations, but not entirely. As such, the SWRCB studied the dry wells and issued guidance based on internal analysis and underlying analysis prepared by Geosyntec Consultants.[14] The report is provided as Appendix G.

The findings identified offer insights from existing guidance and key data gaps. First, most current dry well guidance focuses on evaluating and reducing risk to groundwater quality from traditional stormwater contaminants, including heavy metals, sediment, and nutrients. By comparison, limited guidance exists for the use of dry wells with emerging contaminants.

Second, in considering the design and use of a dry well, the quality of runoff should be evaluated. Runoff from high-risk sources such as fuel stations may require additional pretreatment solutions within the dry well design.

Third, additional studies in California are needed to evaluate the types of contaminants in stormwater across regions when considering emerging contaminants; assess pollutant attenuation in the vadose zone before infiltrated water reaches groundwater basins; identify infiltration testing methods that will best simulate performance; evaluate long-term impacts on groundwater quality; and assess life-cycle operations of dry wells.

The report also found some examples in California of local responsible agencies regulating permits for dry wells. For instance, in Orange County, northern parts of the county within the

Santa Ana Regional Water Quality Control Board territory developed a process for dry well permit applications and review. Orange County Public Works led the development of draft guidance that issued procedures to apply for construction permits.

3.1.2 Overview of Data Sources

Planned or ongoing stormwater projects were compiled from a variety of sources to create a database of information with important project details. Data was collected on project status, capital or unit cost, responsible party, volumetric and flow capacity (including diversion, capture and infiltration, and water supply enhancement), likely volume capture, description, coordinates, address, name, region, and program. A list of identified projects from the data is included in Appendix B.

Sources examined for data included any enhanced watershed management plans (EWMPs), Measure W, the Safe Clean Water LA Program, and municipal plans. EWMPs can contain potential or proposed projects, as can some municipal plans. Measure W is another source of information, which can be accessed on the website for the implemented program, Safe Clean Water LA.[15] EWMPs and municipal plans had to be manually searched for and obtained through city websites or a search engine.

Initially, general search engine results provided an overall knowledge on available data. Further search results led to a directory in the Los Angeles County Department of Public Works (DPW) that contained the Infrastructure Program with planned investments for the 2020–2021 Safe Clean Water LA Program. Next, the documents were compared to those on the Safe Clean Water website. The site contains a GIS map with technical resources, scientific studies, and infrastructure projects. The website provided downloads for each file. A *Python* script was created to scrape files from the website using the *wget* module. About 60 files containing the most recent stormwater project information were collected from the Los Angeles County DPW and Safe Clean Water LA.

EWMPs and municipal plans contained additional information on stormwater projects but had to be thoroughly searched for relevant data. From municipal documents, municipal plans were searched for the cities of Culver City, Santa Monica, Beverly Hills, and LA. No additional stormwater projects were identified in the municipal plans for those cities that were not already found in the Los Angeles County DPW or Safe Clean Water websites. EWMPs for Santa Monica Bay and Ballona Creek contained useful information, which was included in the database of stormwater projects.

Enhanced Watershed Management Plans

Throughout Los Angeles County, EWMPs for each watershed were developed and generally finalized by its corresponding regional agencies between 2013 and 2019. They outlined investment plans and identified intended local and regional infrastructure projects that would satisfy permit requirements based on empirical modeling. The Santa Monica Groundwater Basin primarily corresponds with two EWMP planning areas: 1) the Santa Monica Bay (Jurisdictional Groups 2 and 3); and 2) Ballona Creek (Figure 1).

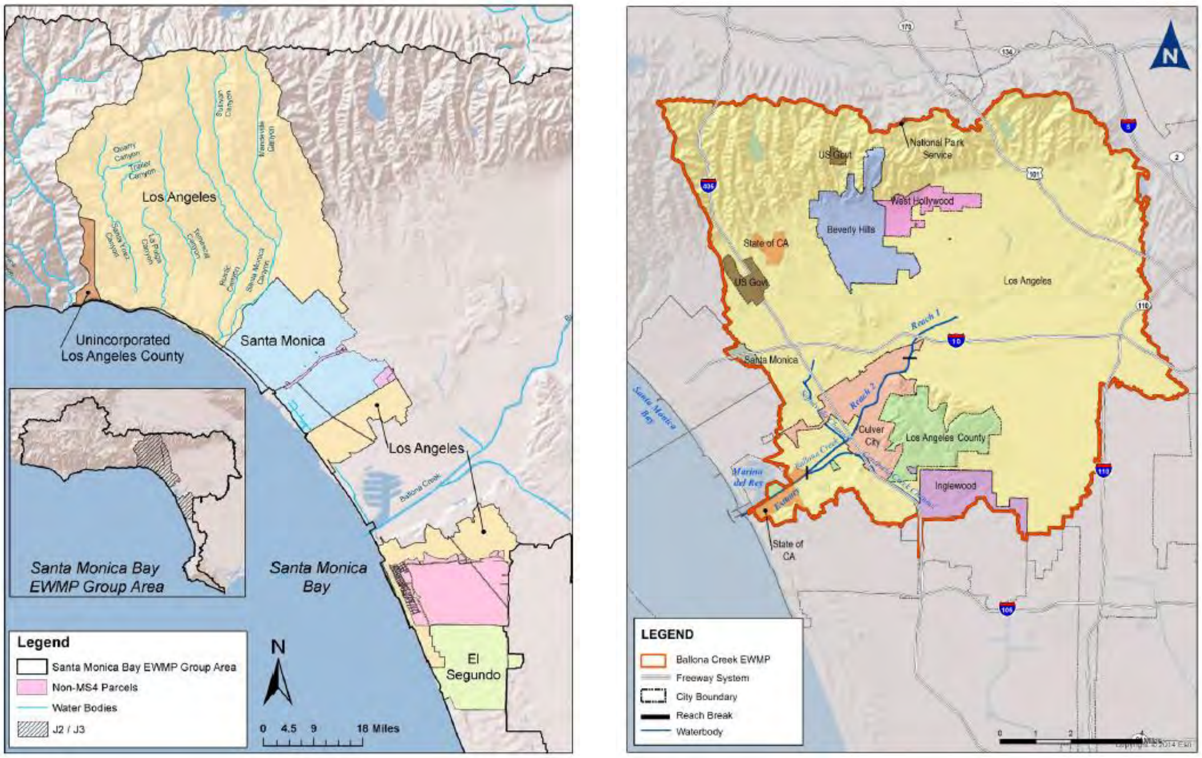

Figure 1: Study area boundaries for the Enhanced Watershed Management Plans (EWMPs) in the Santa Monica Bay Jurisdictions 2 and 3 (left) and Ballona Creek (right). Sources: Santa Monica Bay Jurisdictional Groups 2 and 3 EWMP,[16] Ballona Creek EWMP.[17]

Santa Monica Bay EWMP. Within the Santa Monica Bay Jurisdictional Areas 2 and 3 EWMP, jurisdictions proposed both regional (multi-jurisdictional) and distributed best management practices (BMPs) to meet water quality requirements. The EWMP assumed an implementation timeline through 2021. Of the eight proposed regional projects, six were within or near the Santa Monica Groundwater Basin boundaries, including projects from LA City at the Riviera, Brentwood Country Clubs, Rustic Canyon, and Oakwood Recreation Center, as well as projects from the City of Santa Monica at Memorial Park and the Santa Monica Civic Auditorium and Courthouse. Regional projects were all infiltration-based and sized to capture and infiltrate up to the 85th percentile 24-hour storm (approximately 1 inch of precipitation).

For two key jurisdictions (the cities of Santa Monica and LA) the total 24-hour volume of capture based on the 85th percentile storm event for the six proposed projects within the Santa Monica Basin was approximately 24 acre-feet. Across all projects included in the EWMP, the total estimated annual captured runoff would be 218 AFY. The EWMP did not report the estimated annual runoff retained by specific projects. Additional runoff would be captured by implementing small-scale green streets, where road sections are converted to include swales and potentially permeable pavement. The capture potential for these projects were also included in the plans (Table 4). Additional runoff reduction measures were included as downspout disconnect programs, where residents are incentivized by the municipality to disconnect downspouts that pour roof runoff to streets in favor of capturing the water in harvesting barrels for on-site use.

The estimates of captured runoff for regional, green streets, and downspout disconnect projects are based on a set of assumptions on land use, runoff coefficients, and hydrology. These are detailed in the EWMPs. For the analysis of regional projects, available sites were identified through a multistep screening process. First, publicly owned properties greater than 0.5 acres and within 500 feet of existing MS4 infrastructure were identified, yielding 115 parcels. Second, areas were removed with:

- Slopes greater than 20%
- Underlying bedrock
- Ecological or habitat significance
- Liquefaction potential

The result was a collection of 76 potential properties in the EWMP study region where regional stormwater capture devices could be installed and from which the 8 sites were selected.

Table 3: Summary of size and capture volume for six recommended BMPs in the Santa Monica Basin. Source: Table 4-10 in the Santa Monica Bay Jurisdictional Areas 2 and 3 EWMP.[16]

Regional EWMP Project	Drainage Area (acres)	85th-Percentile, 24-hour Storm Rainfall Depth (inches)	Percent Impervious Area (%)	Developed Runoff Coefficient	85th-Percentile, 24-hour Storm Volume (acre-feet)
Brentwood Country Club	173.6	1.07	21.6	0.27	4.2
Oakwood Recreation Center	14.5	1.07	63.6	0.61	0.8
Riviera Country Club	32.75	1.03	14.1	0.21	4.16
Rustic Canyon Recreation Center	50.1	0.97	16.1	0.23	0.9
Memorial Park	135.9	1.06	83.6	0.77	9.2
Santa Monica Civic Auditorium and Courthouse	88.0	1.04	61.5	0.59	4.5

Table 4: Summary of total runoff retained from distributed green streets by jurisdiction. Source: Table 5-4 in the Santa Monica Bay Jurisdictional Areas 2 and 3 EWMP.[16]

Year	Green Street BMP Total Runoff Retained (AF)				
	County of Los Angeles	City of Los Angeles	City of Santa Monica	City of El Segundo	Total
2019	n/a	n/a	0.0	0.0	0.0
2021	1.0	60.4	35.4	0.0	96.8
Total	1.0	60.4	35.4	0.0	96.8

Finally, the EWMP compiled existing distributed stormwater BMP devices in the jurisdictions to understand current infrastructure. Only the cities of Santa Monica and LA reported any existing BMPs. The EWMP identifies the locations of all of these BMPs but does not provide the design specifications to quantify capture and infiltration potential for infiltrating devices. Table 5 summarizes the amount of various BMP types in the two cities.

Table 5: Summary of existing distributed BMPs in the Santa Monica Bay EWMP study area. Source: Table 4-3 in the Santa Monica Bay Jurisdictional Areas 2 and 3 EWMP.[16]

City	Total BMPs Reported	Site-Scale Detention	Bioretention	Biofiltration	Permeable Pavement	Bioswale	Infiltration	Rainfall Harvest	Flow Through
El Segundo	-	-	-	-	-	-	-	-	-
Los Angeles	340	14	168	-	51	11	9	44	11
Santa Monica	1,872	-	1	230	89	-	1,329	1	101
County	-	-	-	-	-	-	-	-	-
LACFCD	-	-	-	-	-	-	-	-	-
TOTAL	**2,212**	**14**	**169**	**230**	**140**	**11**	**1,338**	**45**	**112**

Ballona Creek EWMP. The Ballona Creek EWMP includes parts of the cities of Santa Monica, LA, Beverly Hills, and Culver City. Within the Ballona Creek EWMP study area, which includes many areas that are not within the Santa Monica Groundwater Basin boundaries, the EWMP outlined a set of priority regional stormwater capture projects in the Ballona Creek study area. Summary totals of potential volumetric BMP capacity were calculated by jurisdiction (Figure 2). Two regional projects were identified as contributing to infiltration in the Santa Monica Groundwater Basin:

1) A proposed retention and infiltration BMP at the Rancho Park Golf Course and Cheviot Hills Recreation Center, with a recommended volumetric capacity of 11.6 acre-feet annually
2) A proposed median strip enhancement for Culver Boulevard with a recommended volumetric capacity of 29.2 acre-feet annually

Together, the two regional projects would equal 40 acre-feet of annual stormwater capture potential.

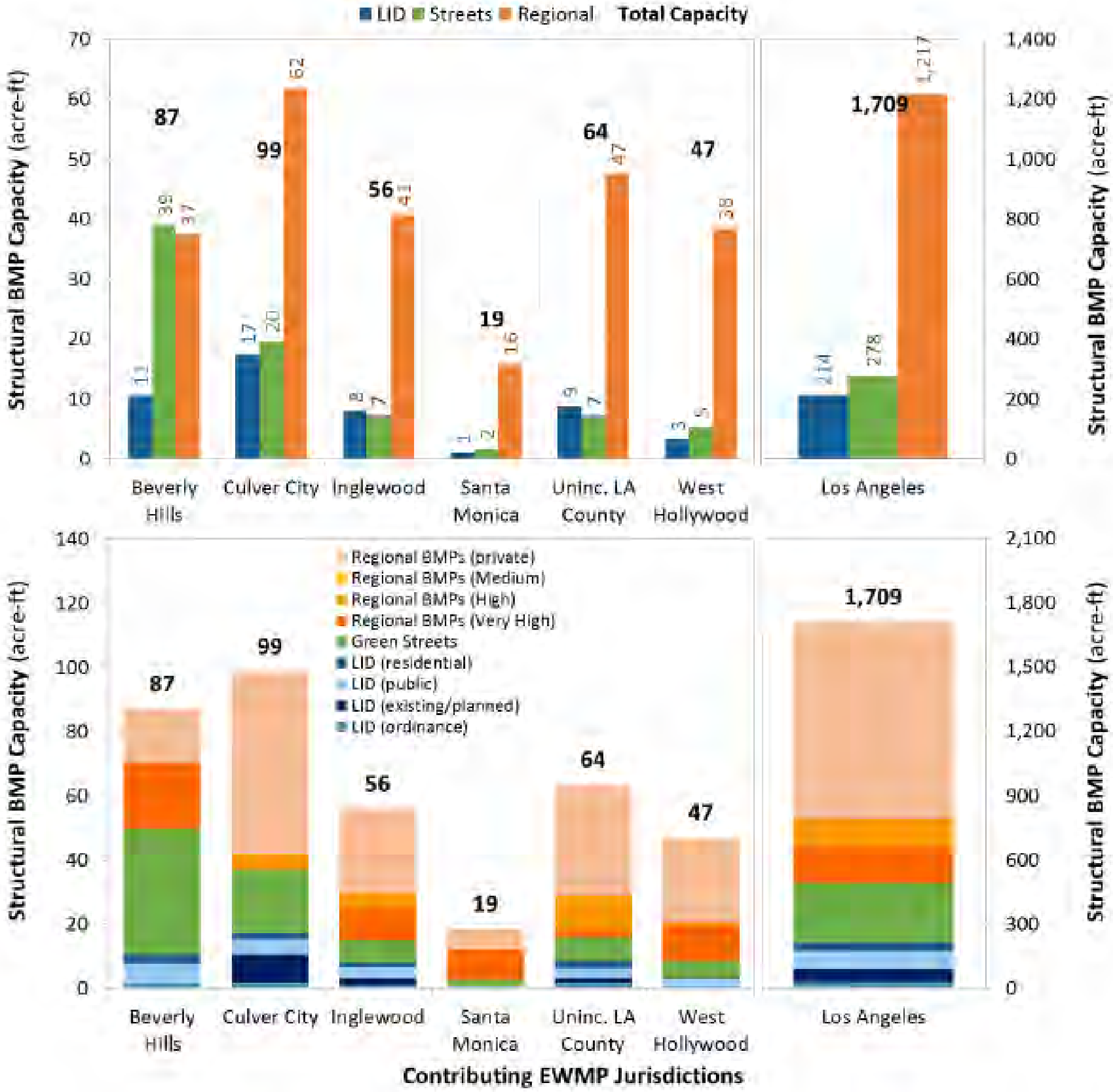

Figure 2: Structural BMP capacity potential of distributed and regional BMPs in the Ballona Creek EWMP study area. Source: Figure ES-9 in the Ballona Creek EWMP.[17]

The EWMP studies for Santa Monica Bay and Ballona Creek did not consider emerging contaminants of interest, such as per- and polyfluoroalkyl substances (PFAS). These are becoming significant water quality concerns in groundwater and surface runoff where sites have contaminated soils.

The EWMP also surveyed existing distributed and regional BMPs that may already be contributing to compliance. Within the City of Santa Monica, approximately 19 acre-feet of infrastructure capacity was proposed, while LA would undertake much more extensive infrastructure upgrades. As of 2018, extensive infrastructure was already installed in the watershed, including over 1,700 stormwater capture devices capable of capturing and infiltrating up to 15 acre-feet annually.

Safe Clean Water LA Projects

As infrastructure plans emerged to improve water quality and enhance local water supply, communities in Los Angeles County recognized the significant costs associated with large infrastructure investments. In 2018, voters approved a popular ballot measure (Measure W) to enact a parcel-based fee to fund a countywide stormwater infrastructure improvement fund called the Safe Clean Water LA Program.[15] Revenues from the parcel charges will fund investments in local and regional stormwater projects.

Within each of the Safe Clean Water LA planning areas, participating agencies submitted projects for consideration and, through a public process with a standardized ranking and scoring system, recommended projects for the first round of funding in 2020–2021.

Project investments are coordinated in regions across the county. For the Santa Monica Groundwater Basin, the Central Santa Monica Bay planning area encompasses the majority of the Santa Monica GSP region. Many of the projects recommended for funding in 2020–2021 are similar to projects listed in the EWMPs. In the Central Santa Monica Bay planning area, eight projects were recommended for funding (Table 6). Using the methodologies outlined by the Safe Clean Water LA Program, the total estimated annual volume of water to be captured is 6,600 acre-feet. Of this total, 5,661 acre-feet would be diverted for treatment and reuse at the Hyperion Wastewater Treatment Facility while another 935 acre-feet would be infiltrated for groundwater recharge.

Stormwater Master Plans

Stormwater master plans are planning documents that outline future investments and strategies for stormwater program planning in a locality. In the Santa Monica Basin, both LA (2015) and Beverly Hills (2019) have previously developed stormwater master plans, while Culver City is currently in the process of developing one. Plans for the cities of LA and Beverly Hills were surveyed to capture any relevant information on projects to include in the SMBGSP supplemental.[18,19]

The Los Angeles Department of Water and Power (LADWP) published LA's plan in 2015 after an extensive development process. The "Stormwater Capture Master Plan" report focused on enhancing the use of stormwater as a resource. The document laid the foundation for subsequent planning efforts for regional stormwater quality investments. It emphasized an empirical assessment of potential capture and infiltration volumes for runoff from distributed and regional projects, identifying that an additional 68,000 to 114,000 acre-feet of runoff could be captured over the course of 20 years. LA already operates a network of stormwater recharge basins, but none are located within the boundaries of the SMBGSP area. Existing distributed stormwater capture and use projects at the time were surveyed, but most were located within the San Fernando Valley. The plan also surveyed existing rebate programs, including incentives for rainwater harvesting and rain garden infrastructure.

Table 6: Identified projects with intended funding by the Safe Clean Water LA Program in the Central Santa Monica Basin planning area (Source: Safe Clean Water LA 2020).

Safe Clean Water LA Planning Region	Project	Capacity	Likely Capture
Central Santa Monica Basin	Ballona Creek Total Maximum Daily Load Project	Diversion: 30.3 MGD (both diversions) Capture and Infiltration: 0 MGD Water Supply Enhancement: 5,060 acre-feet of dry weather capture sent to Hyperion for reuse	Capture and Diversion for water supply enhancement: 5,060 ac-ft of dry weather capture sent to Hyperion for reuse
Central Santa Monica Basin	Beverly Hills Burton Way Green Street and Water Efficient Landscape Project	Total Inlet Inflow Rate during 24-hour event: 6.19 cfs + 3.51 cfs; Capture of 5.17 ac-ft + 2.15 ac-ft (2 inlets), for 7.32 ac-ft total	94 AFY
Central Santa Monica Basin	Culver City Mesmer Low Flow Diversion	Average dry weather inflow rate: 0.99 cfs	Capture and Diversion for water supply enhancement: 600.9 ac-ft of dry weather capture sent to Hyperion for reuse
Central Santa Monica Basin	Ladera Park Stormwater Improvements Project	Maximum diversion rate: 10.2 cfs Estimated average inflow capture: 5.56 cfs	5.1 ac-ft for 24-hour event Annual average inflow: 28.637 ac-ft to West Coast Basin
Central Santa Monica Basin	MacArthur Lake Rehabilitation Project	Max diversion rate: 22.7 cfs	26.3824 ac-ft for 24-hour event Annual average inflow: 361.359 ac-ft
Central Santa Monica Basin	Monteith Park and View Park Green Alley Stormwater Improvements Project	Max diversion rate: 28 cfs	9.3 ac-ft for 24-hour event Annual average capture: 39.669 ac-ft
Central Santa Monica Basin	Sustainable Water Infrastructure Project	Maximum diversion rate: 5.5 cfs	7.1154 ac-ft for 24-hour event Average annual capture: 386.645 ac-ft
Central Santa Monica Basin	Washington Boulevard Stormwater and Urban Runoff Diversion	Maximum diversion rate: 6.73 cfs	2.96 ac-ft 24-hour design capacity Annual average capture: 25.431 ac-ft

The City of Beverly Hills published its Stormwater Compliance Master Plan in 2019, with a portion of the city's western edge overlapping the eastern part of the Santa Monica Basin. The recent plant was reviewed to determine if the city has any current or planned stormwater infrastructure relevant to the SBGSP. More than 30 stormwater BMPs are planned in the area of the city that overlaps the basin and range from small sidewalk bioretention strips to large subsurface storage vaults. Each BMP has been sized to capture the 85th percentile storm, which in this location is a rain depth of 1.1 inches. However, the potential volume of infiltrated water cannot be quantified, as each BMP design has the option to allow infiltration or not. For this planning-level document, the configuration of the BMP at each location has yet to be determined.

Hypothetical Modeling of Maximal Cost-Effective Stormwater Capture

As part of UCLA's Sustainable LA Grand Challenge project on "One Water" opportunities for LA, researchers at the Colorado School of Mines used metropolitan-scale stormwater modeling for the watersheds in LA to estimate water quality effects and infiltration volumes of various scenarios of stormwater BMP implementation across the watersheds in Los Angeles County.

The team conducted a study for the Ballona Creek watershed that partially overlaps with the planning area of the SMBGSP (Figure 3). In this area, the potential volume of runoff that could be captured and stored in local groundwater basins was estimated to be 20,000 to 60,000 AFY. This is equivalent to 40–77% of the total annual runoff in the watershed, given 15 inches of average precipitation.[20]

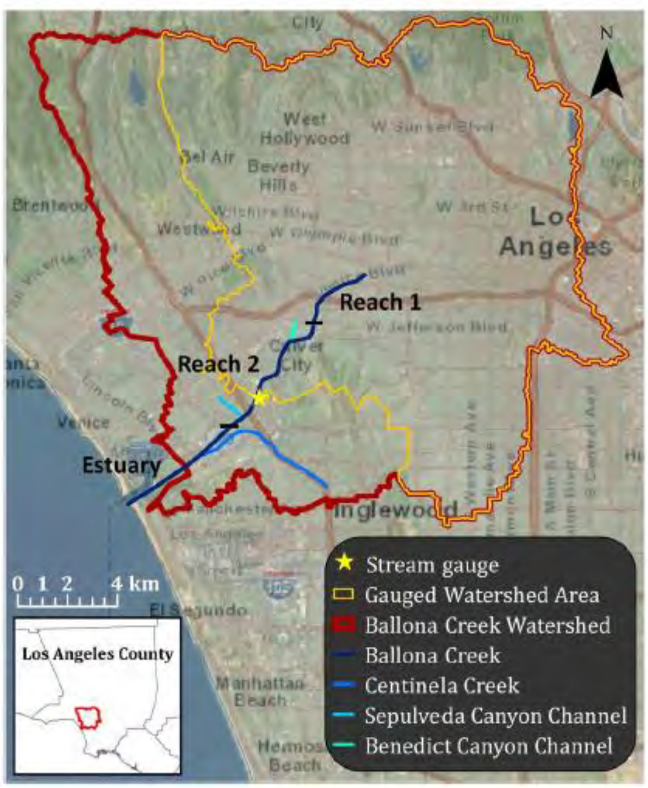

Figure 3: Study area for the Ballona Creek watershed assessment performed as part of UCLA's Sustainable LA Grand Challenge project to identify "One Water" opportunities in LA. Source: Figure 1 in Gold *et al*. (2015).

The range of recharge estimates were primarily related to scenarios of BMP implementation. In the modeling, which used the EPA's System for Urban Stormwater Treatment and Analysis Integration (SUSTAIN), the percent land cover in a sub-watershed allocated to each of five types of stormwater BMPs was optimized to meet water quality goals and outcomes with the least associated cost. BMPs were designed to capture up to the 85th percentile, 24-hour storm and included both treat-and-release BMPs and infiltrating BMPs. The modeling included options for both larger regional devices and smaller distributed devices. Infiltration trenches and dry ponds were selected as regional BMPs, while vegetated swales, bioretention basins, and porous pavement were selected as distributed BMPs. In the modeling, vegetated swales and dry ponds were considered flow-through devices that treat and release water and as such do not contribute to infiltration.

The BMP scenarios used varying assumptions for land use types included in the estimates. For instance, in the most extensive scenario, all land use types were considered potential locations for regional and distributed BMPs. In this case, 90% of runoff was captured from the design storm, which was the maximum percent of runoff volume captured in the modeled scenarios. The minimum percent of runoff volume capture (22% of runoff) corresponded with devices located primarily on public lands (public parks and government-owned parcels) and transportation rights of way.

Finally, the recharge estimates were based on a simple bucket model approach to simulate flows from water infiltrating in the vadose zone to underlying groundwater. The need for more detailed groundwater modeling was identified.

While the geographic boundaries of UCLA's *Sustainable LA* study do not fully align with the Santa Monica Basin, the study is useful for understanding empirical estimates of stormwater capture and infiltration potential, which could be used to enhance recharge during years with precipitation that promotes sustainable groundwater levels over time.

3.2 Recycled Water for Indirect and Direct Potable Reuse

As populations grow and freshwater supplies become increasingly strained, treated wastewater or reclaimed water can become a crucial resource. Reuse of treated wastewater is a growing source of supply in many parts of California, but it can pose a risk to public health. Wastewater must be treated to an appropriate level of quality to avoid public exposure to pathogens and other hazardous contaminants. The impacts of wastewater discharge on local watersheds must also be considered. Treating wastewater to an appropriate level for its intended use is a crucial planning requirement. This is sometimes referred to as producing fit-for-purpose water. The primary consideration when deciding the level of treatment for reclaimed water is public exposure.

3.2.1 *End-Uses for* Wastewater Reuse

The level of treatment required before wastewater is safe for reuse depends on its intended application. These include non-potable uses with no consumption, indirect potable uses where consumption may occur at a later time after a sufficient period to ensure water quality, and direct potable reuse where treated wastewater meets public health guidelines for drinking water quality.

Title 22 Article 3 of the California Water Code identifies recycled water uses and specifies levels of treatment for non-potable applications. Within section 60304, Table AD-1 in Appendix D summarizes the required level of treatment for recycled water by the type of use and application. Three basic types of use are outlined: non-potable reuse, indirect potable reuse, and direct potable reuse. Urban, agricultural, environmental, and industrial end-uses may be associated with each type of recycled water operation. Title 22 specifies water quality standards associated with each type of reuse and end-use of the recycled water. The statute was amended in 2018, as summarized by the SWRCB.[2] Tables 7–12 in the sections below summarize the water quality standards provided as of the October 1, 2018 adopted updates to Title 17 and Title 22 of the California Water Code.

Non-Potable Reuse

Non-potable reuse includes all applications of reclaimed water where the end goal is not human consumption.

Urban Reuse. Urban applications make up the most significant portion of non-potable reuse. Examples of urban reuse include landscape and recreational field irrigation, fire safety, and toilet flushing. The treatment requirements for urban reuse depend on whether public access to the site of reuse is restricted. The risk to public health is greater in locations where public access is unrestricted. Consequently, wastewater must be treated to higher standards for these applications (Table 6).

Table 6: Summary of types of non-potable municipal water reuse projects with associated standards for water quality and treatment level.

Type of Reuse	Water Quality Standards	Treatment Required
Restricted public access	pH = 6.0–9.0 Less than 30 mg/L BOD Less than 200 fecal coliform/mL Minimum residual of 1 mg/L Cl_2 Less than 30 mg/L TSS	Secondary treatment Disinfection
Unrestricted public access	pH = 6.0–9.0 Less than 10 mg/L BOD No detectable fecal coliform Minimum residual of 1 mg/L Cl_2 Less than 2 NTU	Secondary treatment Filtration Disinfection

Impoundments. Treated wastewater can also be used to maintain recreational water impoundments such as golf course hazards or reservoirs. The level of treatment required depends on whether full-body contact activities are permitted. This category also includes water used for snowmaking (Table 8).

Table 8: Summary of types of non-potable impoundment water reuse projects with associated standards for water quality and treatment level.

Type of Reuse	Water Quality Standards	Treatment Required
Restricted use (no full body contact permitted)	Less than 30 mg/L BOD Less than 200 fecal coliform/mL Minimum residual of 1 mg/L Cl_2 Less than 30 mg/L TSS	Secondary treatment Disinfection
Unrestricted use (no restrictions on full body contact)	pH = 6.0–9.0 Less than 10 mg/L BOD No detectable fecal coliform Minimum residual of 1 mg/L Cl_2	Secondary treatment Filtration Disinfection

Agricultural Reuse. Agriculture accounts for around 37% of freshwater use in the United States. As freshwater supplies become more strained and agricultural demands rise with a growing population, water reuse provides a crucial means to reduce the reliance on freshwater. Water quality and treatment requirements depend on the type of agriculture, as crops intended for human consumption have more stringent standards than those intended for animal consumption. Further, crops that are distributed directly for consumption require more heavily treated water than crops used for processed food (Table 7).

Table 7: Summary of types of non-potable agricultural water reuse projects with associated standards for water quality and treatment level.

Type of Reuse	Water Quality Standards	Treatment Required
Food Crops	pH = 6.0–9.0 Less than 10 mg/L BOD No detectable fecal coliform Minimum residual of 1 mg/L Cl_2 Less than 2 NTU	Secondary treatment Filtration (sand, media, membrane, etc.) Disinfection
Non-food crops or Processed food crops	pH = 6.0–9.0 Less than 30 mg/L BOD Less than 200 fecal coliform/mL Minimum residual of 1 mg/L Cl_2 Less than 30 mg/L TSS	Secondary treatment Disinfection

Industrial Reuse. The use of reclaimed water is common for cooling towers as well as in the paper and textile industries. Recently, industrial applications of water reuse have expanded significantly, notably in the electronics, food processing, and energy production industries. Treatment requirements are typically site-specific depending on public exposure. However, there are guidelines for the use of reclaimed water in cooling towers (Table 9).

Table 9: Summary of types of non-potable industrial water reuse projects with associated standards for water quality and treatment level.

Type of Reuse	Water Quality Standards	Treatment Required
Once-through Cooling	pH = 6.0–9.0 Less than 30 mg/L BOD Less than 200 fecal coliform/100mL Minimum residual of 1 mg/L Cl_2 Less than 30 mg/L TSS	Secondary treatment
Recirculating Cooling Towers	pH = 6.0–9.0 Less than 30 mg/L BOD Less than 200 fecal coliform/100mL Minimum residual of 1 mg/L Cl_2 Less than 30 mg/L TSS	Secondary treatment Disinfection Chemical coagulation or filtration might be needed depending on source water quality)

Environmental Reuse. Environmental reuse refers to the use of reclaimed water to supplement or restore wetlands, streams, or other natural water bodies. Groundwater recharge of non-potable aquifers is another example of environmental reuse. This is often done to mitigate the negative impacts of human development on local ecosystems. Consideration of both public and environmental health must be taken when determining the level of treatment (Table 10).

Table 10: Summary of types of non-potable and non-contact environmental water reuse projects with associated standards for water quality and treatment level.

Type of Reuse	Water Quality Standards	Treatment Required
Environmental Reuse	Less than 30 mg/L BOD Less than 200 fecal coliform/100mL Minimum residual of 1 mg/L Cl_2 Less than 30 mg/L TSS	Secondary treatment Disinfection Other site-specific processes
Groundwater recharge of non-potable aquifer	Site-specific	Primary (if spreading) Secondary treatment (if injected)

Potable Reuse

Potable reuse refers to any application that intentionally augments the drinking water supply with reclaimed water.

Indirect Potable Reuse (IPR). IPR refers to the augmentation of a drinking water source with reclaimed water followed by an environmental buffer that precedes drinking water treatment (Table 11).

Table 11: Summary of types of indirect potable water reuse projects with associated standards for water quality and treatment level.

Type of Reuse	Water Quality Standards	Treatment Required
Groundwater recharge: Spreading into Aquifer	pH = 6.5–8.5 No detectable TC Minimum residual of 1 mg Cl_2/L Turbidity less than 2 NTU Less than 2 mg/L TOC Must meet drinking water standards after percolation through vadose zone	Secondary treatment Filtration (sand, media, membrane, etc.) Soil aquifer treatment
Groundwater recharge: Injection into Aquifer	pH = 6.5–8.5 No detectable TC Minimum residual of 1 mg Cl_2/L Turbidity less than 2 NTU Less than 2 mg/L TOC Must meet drinking water standards	Secondary treatment Filtration (sand, media, membrane, etc.) Advanced water treatment
Surface Water Augmentation	pH = 6.5–8.5 No detectable TC Minimum residual of 1 mg Cl_2/L Turbidity less than 2 NTU Less than 2 mg/L TOC Must meet drinking water standards	Secondary treatment Filtration (sand, media, membrane, etc.) Advanced water treatment

Direct Potable Reuse (DPR). DPR is the introduction of reclaimed water directly into a drinking water treatment plant either collocated or remote from advanced water treatment (Table 12).

Table 12: Summary of types of direct potable water reuse projects with associated standards for water quality and treatment level.

Type of Reuse	Water Quality Standards	Treatment Required
Direct potable reuse with an engineered buffer	pH = 6.5–8.5 No detectable TC Minimum residual of 1 mg Cl_2/L Turbidity less than 2 NTU Less than 2 mg/L TOC Must meet drinking water standards	Secondary treatment Filtration (sand, media, membrane, etc.) Advanced water treatment
Groundwater recharge: Injection into Aquifer	pH = 6.5–8.5 No detectable TC Minimum residual of 1 mg Cl_2/L Turbidity less than 2 NTU Less than 2 mg/L TOC Must meet drinking water standards	Secondary treatment Filtration (sand, media, membrane, etc.) Advanced water treatment

De Facto Reuse. De facto reuse refers to any situation where the use of reclaimed water is not officially recognized but the water gets incorporated into a drinking water supply (e.g., drinking water supply intake downstream of the wastewater treatment plant).

3.2.2 Water Reuse Projects in the Santa Monica GSP Area

Several existing and planned water recycling and reuse projects are located in or near the area of the Santa Monica Groundwater Sustainability Plan. These projects are summarized below.

The Santa Monica Urban Runoff Recycling Facility

Since 2001, the City of Santa Monica has operated the Santa Monica Urban Runoff Recycling Facility (SMURRF). SMURRF collects dry weather runoff from the Pico-Kenter and Pier Storm Drains and treats it to tertiary standards for use as non-potable irrigation water and indoor commercial building use allowable under State of California Title 22 standards. The project was funded by the City of Santa Monica, LA, MWD, the SWRCB, and federal and local grants.

The facility was originally designed with a treatment capacity of 500,000 gallons of stormwater per day or a maximum annual production capacity of 560 AFY. From 2010 to 2017, the facility produced 79–134 AFY.[11] Reductions in dry weather runoff through irrigation efficiency and other actions have reduced the average annual yield to approximately 100 AFY.

As part of the City of Santa Monica’s 2018 Sustainable Water Master Plan, the city proposed upgrading the facility with advanced water purification technology and identified additional sources of non-potable water supply to the facility that would enhance its current production and reduce the need for supplementing inflows with potable water supply to meet existing water delivery contracts. The SMURRF upgrades were part of the Sustainable Water Infrastructure Project (SWIP) that included other plans to enhance aquifer recharge and advanced water treatment that supports continued use of groundwater resources. The SWIP’s Element 1 outlined the installation of a reverse osmosis (RO) treatment unit at SMURRF capable of treating brackish and saline water. The RO unit would allow SMURRF to accept runoff collected in a 1.6-million-gallon (MG) stormwater harvesting tank located near the Santa Monica Pier. The tank collects stormwater runoff that enters the storm sewer drainage system from the downtown area, which can be routed to SMURRF to supplement dry water flows. The master plan identified that this would allow SMURRF to operate at full capacity, yielding 560 AFY of water supply for non-potable uses.

Additional Proposed Reuse in Santa Monica

SWIP also identified two additional potential advanced water treatment opportunities. SWIP Element 2 described the construction of an underground advanced water treatment plant at the Civic Center Parking Lot that could produce 1 MG per day (or 1,120 AFY) of advanced treated water for non-potable use or groundwater recharge. This system would be supplemented through two stormwater harvesting tanks located beneath Memorial Park (3.0 MG) and the Civic Center (1.5 MG) as part of SWIP Element 3.

Operation NEXT

LA has committed to significant investments in future recycled water capacity. The Los Angeles Department of Water and Power (LADWP) and LA Sanitation and Environment (LASAN) are pursuing advanced water treatment capacity to support reuse for supply throughout the municipal area.

The agencies are planning and implementing two connected efforts. First, new advanced treatment operations at the Hyperion Wastewater Treatment Plant will boost the facility's output of purified wastewater. The facility is designed to treat up to 450 million gallons per day (MGD) to secondary standards for discharge. Current influent flows are, on average, 260 MGD. Through LASAN's Hyperion 2035 program, Hyperion will be upgraded to an advanced treatment train that includes membrane bioreactors, reverse osmosis, and advanced oxidation. The advanced wastewater treatment process is expected to produce up to 170 MGD.

Second, LADWP's Operation NEXT will convey highly treated recycled water from Hyperion to several locations throughout the metropolitan area, including local stormwater capture and groundwater recharge facilities and, as statewide regulations allow, for use as a raw water source at the Los Angeles Aqueduct Filtration Plant in the San Fernando Valley. The conveyance operations require large-scale pipeline systems to move treated effluent throughout the municipal area to opportune areas for recharge or water supply operations.

The design, permitting, and construction of these projects are scheduled through 2035. Conceptual design and an analysis of alternatives are taking place through 2023. A program environmental impact report (EIR) for a preliminary design is scheduled to be completed in 2021.

The project timeline offers time to consider using highly treated wastewater from Hyperion, conveyed throughout the Los Angeles metropolitan region, to support groundwater recharge or substitute for consumption of other water sources within the Santa Monica Basin, which aligns with goals of the SMBGSP.

Preliminary Designs for Purified Water Conveyance

Several opportunities exist for using advanced treated water produced through investments from Operation NEXT (Figure 4). First, purified water can support existing injection and desalting operations for subsurface seawater intrusion barriers. Second, purified water can be used for groundwater recharge in the Central and West Coast groundwater basins of LA's coastal plain. A series of spreading grounds support recharge operations in these basins, where LADWP has some rights for pumping groundwater. Such uses would likely not directly impact the SMGSP. Third, purified water can be used to supply existing groundwater recharge operations in the San Fernando Valley, where LADWP has larger groundwater pumping rights. Finally, purified water can be used as a source of raw water for water treatment and filtration plants that supply LA's municipal distribution system.

These end-uses for purified water are all at different locations throughout the LA metropolitan area and require conveyance. The Hyperion plant is located along the West Coast at low elevation near sea level. Eastern and northern areas of the metropolitan area, however, rise over 1,000 feet above sea level. As such, conveyance pipelines require significant energy and must also be built to avoid critical geological faults and reduce susceptibility to possible damage during earthquakes.

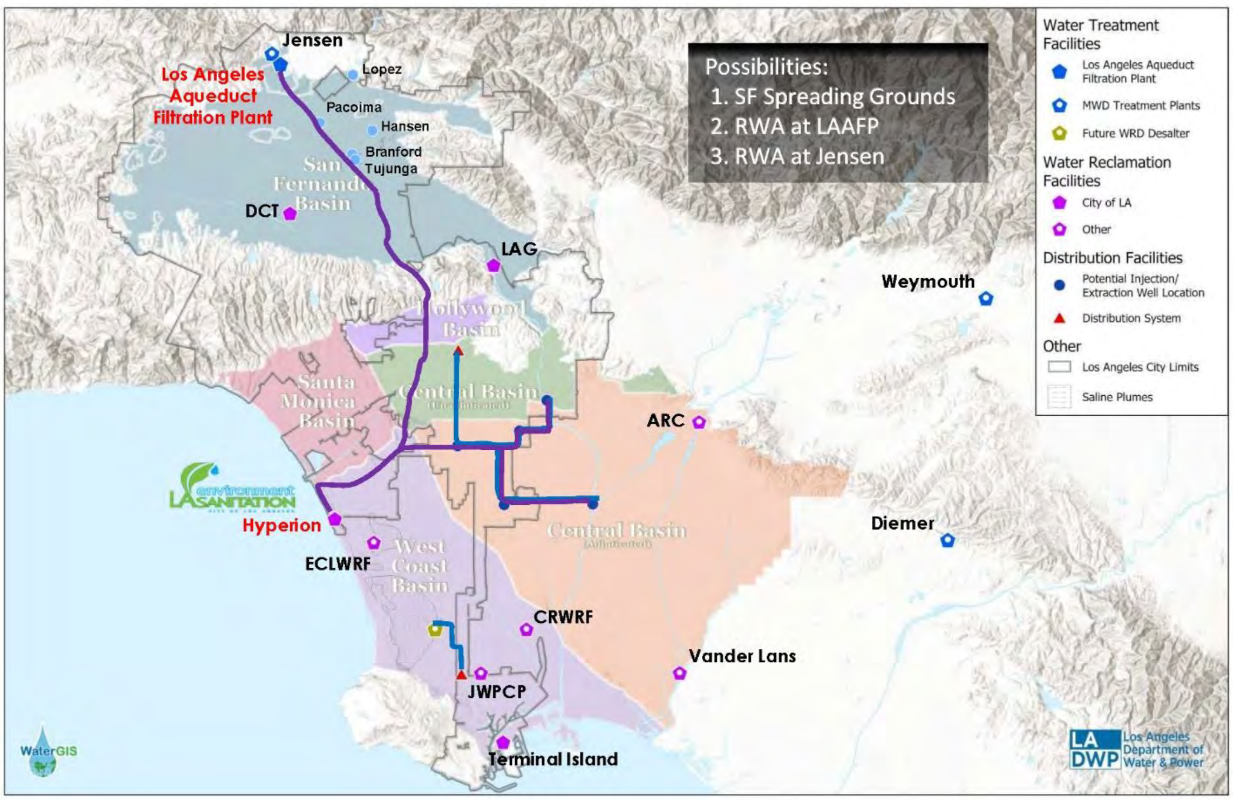

Figure 4: Map showing the paths for conveying purified water from Operation NEXT to end-uses, including groundwater recharge, seawater intrusion and desalting operations, and raw water augmentation (Source: Los Angeles Department of Water and Power).

LADWP and LASAN initially examined options for using purified effluent for groundwater recharge in the Central and West Coast Basins through existing recharge facilities. In those basins, the third amendment to the existing groundwater adjudication, finalized in 2013, created a storage pool for parties with groundwater rights to inject and store water for future use.[22] The amendment, however, limits carry-over storage to just one year.

Given the rules for carry-over storage, LADWP and LASAN examined other possible uses of advanced treated water from Hyperion. The current plans include:

- A pipeline that supports more limited supply to spreading grounds for groundwater recharge and water supply storage in the Central and West Coast Basins.
- Pumping brackish groundwater from inland plumes and sending the influent to the Donald C. Tillman treatment facility for desalting and use.
- A large pipeline that conveys purified water from Hyperion through the Cahuenga Pass to the San Fernando Valley. Some purified water will be diverted to support recharge operations in the Tujunga, Pacoima, and Hansen spreading grounds. Purified water will also be sent to the Jensen treatment and filtration plant that treats LA Aqueduct influent for use in the drinking water system.

The total expected capacity of purified effluent for reuse will likely be up to 270 cubic feet per second (cfs), equivalent to a volume of 190,000 AFY. This includes sending 10,000 AFY south to the Los Angeles Harbor region, 30,000 AFY to Central Basin recharge operations, and 150,000 AFY to the San Fernando Basin for recharge or eventual raw water augmentation.

In the San Fernando Valley, existing spreading grounds have 380 cfs of dry weather recharge capacity, with 110 cfs at Tujunga Spreading Grounds, 120 cfs at Pacoima Spreading Grounds, and 150 cfs at Hansen Spreading Grounds. After precipitation events when stormwater runoff is captured and diverted to the basins, capacity is reduced as rain water infiltrates.

Across the metropolitan area, LADWP and LASAN are using investments in Operation NEXT to move toward more standardized water distribution systems in the metropolitan area that convey treated water to advanced levels rather than investing in multiple pipe systems conveying water separately to secondary, tertiary, or advanced level treatment.

The current plan for advanced treated water and conveyance operations in Operation NEXT will be used to develop an EIR in 2023.

Overlaps Between Operation NEXT and the SMBGSP

The most recent plans (as of Summer 2020) for producing and conveying advanced treated water from Hyperion may offer opportunities to support the goals of the SMBGSP currently being developed. Such opportunities fall into two main categories:

1) Using advanced treated water from Hyperion to recharge aquifers through injection wells that are connected by a new pipeline to LADWP's planned Operation NEXT conveyance route
2) Using advanced treated water from Hyperion in lieu supply, where advanced treated water becomes a source of supply for potable or non-potable needs by Groundwater Sustainability Agency (GSA) member, which allows for reduced pumping of groundwater from one or more aquifers in the Santa Monica Basin

Several factors are important in considering these options. First, are potential end-uses of advanced treated water in the Santa Monica Basin in reasonable proximity to the supply source (LADWP's planned Operation NEXT conveyance pipeline)? Second, how much advanced treated water would be available from Hyperion and when? Finally, does the effluent quality of the advanced treated water match the end-use needs?

Recharging Aquifers with Advanced Treated Water

Aquifer recharge operations can be done either through spreading grounds or injection wells. Spreading grounds disperse water to be recharged across a large area for infiltration through soil and the vadose zone over time, while injection wells pump recharge water directly into aquifers.

In the highly urbanized LA area, few large areas are available for new recharge operations with spreading grounds. Injection wells offer an opportunity to directly recharge aquifers, but pumping requires energy, and recharge water must not introduce new contaminants to subsurface basins or spread existing contaminant plumes. Thus, when considering purified effluent from advanced water treatment at Hyperion, aquifer recharge through an injection well is more viable.

Within the Santa Monica Groundwater Basin, the conveyance pipeline that will carry purified wastewater will run along the southern edge of the Santa Monica Basin before turning north toward the Cahuenga Pass. The pipeline would pass closest to the Charnock and Crestal sub-basins within the SMBGSP territory. The City of Santa Monica identified recharge demand in the Charnock sub-basin of approximately 5–6 MGD (5,600–6,725 AFY).

Near the path of the aquifer pipeline, the City of Santa Monica identified the Charnock sub-basin wellfield at 11375 Westminster Ave, south of the Mar Vista Recreation Center, as a nearby municipally owned property with water infrastructure where new recharge capacity could be constructed. This site would be approximately 4 miles from the pipeline route of Hyperion purified water, meaning that an intertie bringing water to the wellfield for recharge operations would need to identify a feasible route across this distance.

Discussions with GSA member agencies also identified that other municipally owned properties in the vicinity of the pipeline could serve as locations for an injection well that supports recharge operations. For instance, LA has a water augmentation pilot project in Griffith Park. An analysis of Los Angeles County parcel records identified over 900 government-owned properties in the area of the Santa Monica Groundwater Basin. The property locations are included in Appendix A of this supplemental section.

The potential benefits of such arrangements for the GSP would depend on the volume of treated effluent from Hyperion that is diverted to the Santa Monica Basin for groundwater recharge, which could be compared to an estimated volume of natural and managed recharge needed to support groundwater sustainability goals in the basin.

3.3 Conjunctive Use of Water Supply

Conjunctive use of water resources seeks to maximize the use of water supply sources by prioritizing the use of certain water supply sources when available, which can conserve other sources for a later date of need. Many past examples of conjunctive use focused on surface- and groundwater resources, defined by one historical source as:

> …the management of surface- and ground-water resources in a coordinated operation to the end that the total yield of such a system over a period of years exceeds the sum of the yields of the separate components of the system resulting from an uncoordinated operation.[23]

In the Santa Monica Basin, several conjunctive use arrangements are possible, including using advanced treated water as a source of supply to reduce groundwater dependence or increase recharge, drawing on imported water in times of high availability for local storage, and developing partnerships with other basins for virtual exchanges of water stored in the Santa Monica sub-basins. Options are explored below, including references and notation as to when some of these options have been surveyed in past reports.

a) In-Lieu Supply

Advanced treated water from Hyperion is a possible source of in-lieu supply for the City of Santa Monica or other localities in the Santa Monica Basin. In-lieu arrangements typically emphasize jointly managing two sources of supply so that using one source when it is available allows for preserving the other supply source for later periods of water scarcity.

In the context of the SMBGSP and advanced water treatment from Hyperion, an available volume of treated effluent would be relatively stable, assuming consistent levels of demand and wastewater generation in the sewer system collection territory (the “sewershed”) of Hyperion. Purified supply from Hyperion would be diverted from LADWP/LASAN’s major pipeline and sent to a water treatment facility for use in the drinking water distribution system or allocated to other uses where the purified water would meet current public health guidelines. This additional supply from Hyperion would allow the City of Santa Monica to defer groundwater pumping and leave that groundwater in storage for later use.

The City of Santa Monica owns and operates a water treatment plant, located at 1228 S. Bundy Ave. This facility accepts raw water from groundwater pumping for introduction into the drinking water distribution system. It will also take advanced treated effluent from the SMURRF facility as part of Santa Monica’s Sustainable Water Master Plan. The plant is situated on the northern side of the city, approximately 7 miles from the proposed pipeline route for Operation NEXT.

The potential benefits of in-lieu arrangements for groundwater sustainability as part of the GSP would depend on the volume of treated effluent from Hyperion that is diverted to the Santa Monica Basin for use. Assuming relatively stable water demand, wastewater generation, and treatment operations, the consistency of reuse production would allow for incorporating an annual volume, delivered in times of availability, of treated effluent to the city for supply.

b) Imported Water

Importing water to cities in the Los Angeles area has significant environmental impacts on distant regions. The MWD, the region’s primary water importing agency and the principal source of imported water for many of the member agencies in the Santa Monica Basin, acquires fresh water from Northern California via the California Aqueduct that diverts from the Sacramento-San Joaquin Delta, as well as the Colorado River Basin through the Colorado River Aqueduct at the border of California and Arizona.

In recent years, both basins have experienced water scarcity and undertaken efforts to reduce diversions for urban and agricultural consumption. In the California Delta, starting with the Central Valley Project Improvement Act of 2006, pumping diversions to agricultural and urban users in the Central Valley and Southern California were required to be managed alongside environmental goals to reduce mortality of threatened and endangered aquatic species. This has led to cutbacks in pumping allocations for Central Valley and Southern California during some years, especially during drought.

The Los Angeles Department of Water and Power has also undertaken efforts in the past decade to reduce water diversions and implement partial environmental restoration in the Owens Valley. At its peak deliveries (1983–1984), the Los Angeles Aqueduct that conveys diverted water delivered over 530,000 acre-feet. Since 1992, LA has expanded efforts to reduce diversions and provided approximately 177,000 AFY for environmental projects throughout the Eastern Sierra. These included programs such as watering for air quality mitigation that has resulted from drying up the Owens Valley. As a comparison, exports to LA averaged 258,000 AFY during the same period.[24] The allocation of water to LA is unlikely to grow over time given the environmental goals and constraints, reemphasizing the value of integrated management of local water resources such as groundwater basins in Los Angeles County.

One opportunity for utilizing current water conveyance infrastructure to support groundwater sustainability and local supply in the Santa Monica Basin would be to acquire imported water only during years with significant precipitation. In these sorts of strategies, imported water would flow through pipelines only in years with significant precipitation and be stored in regional surface water storage or recharged in local groundwater basins. In normal or dry years, no water imports would be acquired by water supply agencies in the Santa Monica Basin.

Such a configuration enables conjunctive use strategies for jointly managing surface and groundwater supplies. In times of high statewide precipitation, water is imported and infiltrated into the basins while local surface water is deferred and water is infiltrated, maximizing water in basins for later use. When there is no precipitation, groundwater is pumped. In this scheme, groundwater recharge and storage allow for the imports that arrive only in wet years to be banked. Agreements will need to be altered to increase storage and expand pumping rights to ensure the management of long-term resource availability and equitable access. Currently, there are about 300 groundwater pumpers that have historic rights, to the exclusion of all others.

c) Leak Loss Reduction

Leak loss reduction programs seek to reduce the volume of water lost from water supply or sanitary sewer systems. Urban water supply agencies typically focus on losses in treated water supply, such as in distribution systems or on-site in homes and buildings. Reducing leak losses from wastewater systems, on the other hand, may not have direct benefits to increase water supply but instead support improved operations of wastewater collection and treatment. In periods of significant precipitation, for instance, runoff can seep into leaky collection systems, causing influent surges that overwhelm treatment capacity at a wastewater treatment facility.

Water losses can affect the balance of groundwater basins in opposite ways. Losses can directly contribute to recharge that supplements aquifer levels. Conversely, water losses in distribution systems can cause water supply agencies to pump and treat more groundwater to meet demand, of which a reduced fraction may return to the aquifer. Thus, while losses in distribution systems and wastewater collection systems can augment aquifer levels, increased pumping needs can reduce them.

In the past decade, statewide regulations have focused on improving efficiency and reducing leaks in water supply and distribution systems. During the 2011–2016 drought, several statewide executive and regulatory actions focused on reducing water losses and leaks in urban water systems. Executive Orders B-37-16 and B-40-17 directed the State Water Resources Control Board to reduce water waste in retail water supply systems.[25,26] Statewide legislation passed in 2015, Senate Bill 555, amended Section 10608.34 to the Water Code and required:

…each urban retail water supplier, on or before October 1, 2017, and on or before October 1 of each year thereafter, to submit a completed and validated water loss audit report for the previous calendar year or previous fiscal year as prescribed by rules adopted by the Department of Water Resources on or before January 1, 2017, and updated as provided. The bill would require the department to post all validated water loss audit reports on its Internet Web site in a manner that allows for comparisons across water suppliers and to make these reports available for public viewing. This bill would require the department to provide technical assistance to guide urban retail water suppliers' water loss detection programs. The bill would require the State Water Resources Control Board, no earlier than January 1, 2019, and no later than July 1, 2020, to adopt rules requiring urban retail water suppliers to meet performance standards for the volume of water losses.

In 2017, the California Department of Water Resources (DWR) began collecting data from water supply agencies on leak losses and the State Water Board began a rulemaking process to identify standards of efficient performance standards for leak loss from distribution systems. Agencies started submitting water loss audit reports in 2016, which DWR reviews and verifies. The leak loss estimates are reported through the Free Water Audit Software from the American Water Works Association. The final performance standards are expected to be adopted in 2021.

Recent water loss audit data is available for the systems in the SMBGSP area, including the City of Santa Monica, LADWP, Beverly Hills, and Golden State Water Co. that services Culver City. Across the systems, rates of water losses range from 1.8–9.7%. The City of Santa Monica, which lies entirely within the SMBGSP area, has the lowest reported rate of leak losses based on the water loss audit methodology. Table 13 lists the data.

Table 13: Reported volumes of leak losses in water distribution systems the most recent year with data verified by the California Department of Water Resources (Source: Water Loss Audit Reports, DWR WUE Data[27]).

System	Loss Volume (AFY)	Loss as % of Water Supplied	Loss per Connection (gal)	Reporting Year	Location in SMBGSP
City of Santa Monica	188	1.8%	7.19	2016	Full
City of Los Angeles	41,647	9.7%	10.38	2018	Partial
City of Beverly Hills	758	7.6%	18.71	2017	Partial
Golden State Water Culver City	295	6.0%	8.77	2017	Partial

There is no equivalent regulatory focus or systematic data collection effort on leak losses in wastewater collection systems. The primary source of regulatory oversight is through the State Water Board's Sewer System Overflow (SSO) program, which tracks SSOs in collection systems that spill untreated sewage to the surface or even waterways. Through the SSO program, data is collected on system age, maintenance actions, staff capabilities, reported overflow events, and causes such as root intrusion or blockages.

In the water balance model of the SMBGSP, recharge from water supply distribution, wastewater collection, and storm sewer is not specifically estimated in the model results. Instead, the water balance estimates rely on an assumed value of loss based on literature and local studies. The assumed value of total losses is equal to 5% of the total amount of supplied water.[28] Based on this value, the total leakage from all systems in the Santa Monica Basin is estimated based on the total water delivered, with losses ranging from 2,982 AFY to 4,328 AFY and an annual average value of 3,916 AFY from 1985–2015. As another benchmark, LADWP estimated water distribution system losses to be 3.8%, which is lower than the reported value noted in Table 13 via the audit tool.[29] Finally, other sources have estimated ranges of leak losses for various urban water conveyance systems, including 6% for sanitary sewer lines and 5–10% from storm sewer lines depending on rainfall conditions.[30–32]

d) Other Conjunctive Use Opportunities

Other recent studies have identified potential conjunctive use opportunities for groundwater sustainability in the Santa Monica that could support increased yield or recharge. For instance, as part of UCLA's Sustainable LA Grand Challenge project on "One Water" opportunities for LA, options were evaluated from existing studies related to: 1) groundwater injection to create a seawater barrier intrusion for the Coastal and Crestal subbasins in Santa Monica; and 2) capturing stormwater from dewatering operations to support enhanced supplies.[20] Options discussed in several regional studies were summarized:

> "The Santa Monica and Hollywood groundwater basins offer a unique opportunity to develop regional partnerships to maximize the conjunctive use of groundwater outside of the restrictions of a pre-existing adjudication. It is critical for all parties to work together to stay informed on all and which projects are best implemented through collaborations. For example, one of the constraints on groundwater production in the Coastal subbasin is the risk of seawater intrusion, which through groundwater flow patterns, could also impact Charnock subbasin[33]. There is a need for studies to assess whether the injection of advanced treated recycled water from HTP (or water from other potential sources) along the Coastal subbasin as a seawater intrusion barrier would enable the sustainable extraction of more groundwater from Santa Monica subbasins for use in local water supply.
>
> In 2009, Beverly Hills commissioned a study exploring the possibility of developing shallow groundwater wells to increase the groundwater component of their water supply and increase the flow through their water treatment plant. Current groundwater levels in Beverly Hills are high enough that active dewatering sumps, which collect groundwater, pump it to the surface, and then discharge it to a nearby storm drain (under a NPDES permit), are required at some properties. Data from two properties with sumps near the shallow groundwater well study site were collected; average flow volumes at one site between 2002 and 2007 were between 210,000 and 290,000 gallons per day and two days of initial monitoring data from the other site had average daily volume of 431,000 gallons per day and 443,000 gallons per day.[34] Further research into available information on flow volumes of groundwater currently being discharged to storm drains through dewatering could help identify opportunities to establish partnerships to capture and use this water rather than sending it through the storm drains and out to the ocean."[15]

3.4 Environmental Management and Restoration

For decades, the Santa Monica Bay has been a focus of regulatory and restoration actions. The Santa Monica Bay is part of the federal National Estuary Program (NEP), which monitors conservation efforts in 28 designated estuaries of significant ecological value throughout the US. The Santa Monica Bay Restoration Commission (SMBRC) is a nonregulatory agency that administrates the Comprehensive Conservation and Restoration Plan (CCRP) as part of the NEP. It was formed in 2002 to monitor, assess, coordinate, and advise the activities of state programs and oversee funding that affects the beneficial uses, restoration and enhancement of Santa Monica Bay and its watersheds, which include watersheds overlying the SMBGSP area (Figure 5).

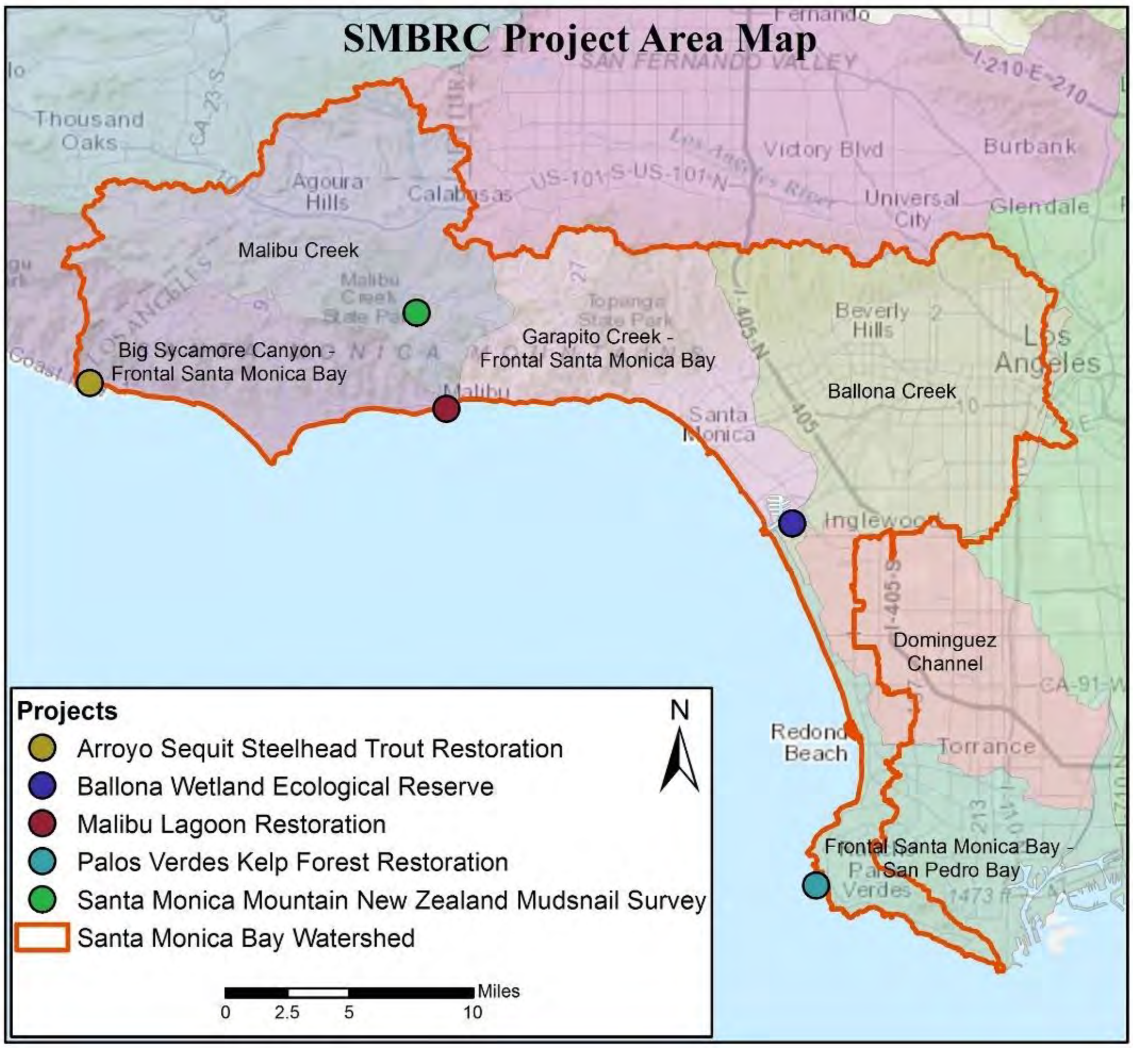

Figure 5: Map of the Santa Monica Bay Restoration Commission project area (Source: Personal Communication, Cung Nguyen, LA County).

The CCRP identifies key goals that overlap with those of the SMBGSP[35]:

1) Protect, enhance, and improve the ecosystems of Santa Monica Bay and its watersheds
2) Improve water availability
3) Improve water quality
4) Enhance socioeconomic benefits to the public
5) Enhance public engagement and education
6) Mitigate impacts and increase resiliency to climate change
7) Improve monitoring and ability to assess effectiveness of management actions

The CCRP 2020 Semi-Annual report lists 44 ongoing program and project actions to improve conservation and restoration efforts.[35] These ongoing program actions were evaluated for relevance to the Santa Monica GSP as potential projects to include in the plan. Several projects were relevant, including:

- Restore Ballona Wetlands Ecological Reserve to enhance wetlands habitats and benefits to the public. Since the Ballona Wetlands is located at the periphery of the Santa Monica GSP, relevant projects may be noted or included if they contribute to groundwater recharge or reduce pumping requirements.
- Support implementation of activities and projects such as those in Enhanced Watershed Management Plans (EWMPs) and activities identified in the TMDL implementation schedule. The plan noted progress in the oversight of identified EWMP projects funded by proposition ballot sources for purposes of "stormwater pollution reduction through multi-benefit solutions."[35]
- Infiltrate, capture, and reuse stormwater and dry-weather runoff through green infrastructure. The plan noted progress in working with grantees to implement several previously funded projects, such as the Culver Boulevard Realignment and Stormwater Infiltration/Retention Project, Westwood Neighborhood Greenway Project, Santa Monica Bay Catch Basin Insert Project, and Ladera Park Water Quality Enhancement Project. These projects were generally categorized as future projects for the GSP, especially through EWMP project lists.
- Support policies that promote reuse, recycling, and advanced wastewater treatment to reduce reliance on imported water sources. The plan noted participation in three regional water recycling efforts, including the development of reuse at the LA County Joint Water Pollution Control Plant (JWPCP), completion of Hyperion's pilot project, and expanded water reuse for the Tapia Water Reclamation Facility in Las Virgenes.

After surveying, it was noted that most of the involvement in ongoing projects was captured elsewhere in the survey of potential projects through the GSP Supplemental, with the exception of Ballona Creek Restoration efforts. This is described in more detail below. The other action items in the 2020 Semi-Annual Report focused on habitat restoration, education and outreach, monitoring, beach restoration, coastal resilience, and other goals that are important for integrated water management but not directly related to groundwater sustainability in the Santa Monica Basin.

3.5 Ballona Creek Restoration

Two goals identified within the Santa Monica Bay NEP CCMP capture important sets of projects with potential relevance for the GSP: 1) completion of the Final Environmental Impact Statement and Report for the Ballona Creek project and 2) restoration of 4 acres of degraded wetland and transition habitat at the Ballona Wetlands Ecological Reserve.

The Ballona Creek Wetlands Restoration Project is a joint effort between the California Department of Fish and Wildlife (CDFW), which manages the Ballona Wetlands Ecological Reserve, LACDPW, and the US Army Corps of Engineers that manage the Ballona Creek channel and levee system.

The federal and state jurisdictional involvement in the project mean that both the National Environmental Protection Act (NEPA) and the California Environmental Quality Act (CEQA) are relevant. In September 2017, CDFW released a draft environmental impact statement/environmental impact report in conjunction with other agencies to comply with NEPA and CEQA regulations. The document outlined several project options, including full restoration, two alternatives of engineered solutions, and a no-project alternative.

The draft EIR included a section assessing potential impacts on hydrology and water quality from the project, including groundwater resources. The EIR noted that municipal and domestic supply was a potential beneficial use in portions of the Ballona Creek area. However, the draft EIR also reported that there were no active groundwater pumping wells in the area of the restoration project. One project, the Culver Boulevard Project, would require dewatering, which was assessed as impacting groundwater recharge capacity in the immediate area.

Subsequently, in December 2019, CDFW released a final EIR to comply with CEQA regulations. The final project included multiple activities to remove or reduce existing infrastructure that would restore natural flow regimes, enhance public access and trails, and improve levee setbacks and other hydraulic infrastructure to reduce flood risk in key areas.

The overall impacts to groundwater quality were still deemed insignificant. Some comments and revisions to the EIR between 2017–2020 are relevant to GSP efforts in the Santa Monica Basin. For instance, in a comment letter dated February 7, 2018, the Los Angeles Regional Water Quality Control Board requested revisions to the draft environmental impact statement, which identified project impacts to the groundwater basin from saltwater intrusion as “less than significant” because groundwater in the area is not used for municipal or domestic supply. The Regional Board pointed out that the underlying Santa Monica Basin does have an existing beneficial use for municipal supply, and saltwater intrusion from the project could impact this supply. In response to these comments, CDFW revised the EIR to note:

> The Basin Plan includes municipal water supply as an existing designated beneficial use for the Santa Monica Basin groundwater basin, which, as mentioned in Draft EIS/EIR Section 3.9.2.2, is comprised of five sub-basins with the Coastal sub-basin underlying the Ballona Reserve.
>
> As of 2011, the City of Santa Monica, an entity that manages water resources in the Santa Monica Basin, extracted groundwater from 10 active wells, none of which are located in the Coastal sub-basin. As the City explains in its Urban Water Management Plan, “[g]roundwater extracted from the Santa Monica Basin and its sub-basins contain various levels of contaminants specific to the basin which include, Total Dissolved Solids (TDS), Nitrate, Volatile Organic Compounds (VOCs), and methyl tertiary butyl ether (MTBE). Overall TDS concentrations in the Santa Monica Basin are typically high and exceed the secondary maximum

contaminant level (MCL) of 500 mg/l in all three of the sub-basins." Specific to the Coastal sub-basin, the City states in its Sustainable Water Master Plan that the Coastal sub-basin "has not been utilized as a groundwater source to date due to salt water intrusion, and the high cost of additional treatment that would be required to utilize this water source." Groundwater data from the Draft Environmental Impact Report for the Village at Playa Vista (2003), collected in the immediate vicinity of the Ballona Reserve, are consistent with recent City of Santa Monica findings, showing that the TDS levels in the Coastal sub-basin are above municipal drinking water standards, and in many cases far above. Also consistent with the City of Santa Monica's determination, is a 1974 report by the State Oil and Gas Supervisor stating that in the 1930s water wells were abandoned in the Ballona Reserve area when seawater intrusion ruined the quality of groundwater.

Prior to the abandonment of these groundwater wells, a tidally influenced saltwater marsh and alkali meadow environment existed while groundwater pumping for municipal use occurred in the Ballona Reserve area. Therefore, although implementation of Alternative 1, 2, or 3 would increase the tidal prism with the potential for brackish water to migrate inland, as mentioned in Draft EIS/EIR Sections 3.9.6.1, 3.9.6.2, and 3.9.6.3, such potential inland migration of brackish water would be consistent with conditions in the early 1900s when a municipal groundwater source and tidal influence were both present.

It is worth noting that one significant difference from the early 1900s is that groundwater pumping does not, and will not, occur within the Ballona Reserve. Therefore, stress on the groundwater basin that occurred during the 1930s would not occur within the Ballona Reserve under Project conditions or as a result of any of the Alternatives. Additionally, Alternatives 1, 2, and 3 would help achieve beneficial uses that are currently impaired, such as restored estuarine habitat; increased migration opportunity for aquatic organisms; increased habitat for rare, threatened and endangered species; increased non-contact water recreation; increased aquatic habitat for spawning, reproduction, and/or early development; increased wetland habitat; and increased wildlife habitat.

Given the information above regarding tidal flows and a municipal groundwater source co-occurring in the early 1900s and no future groundwater pumping at the Ballona Reserve, CDFW believes that implementation of Alternative 1, 2, or 3 would result in a less-than-significant impact to the municipal water supply beneficial use of the groundwater basin.

4 Evaluating Multiple Benefits of GSP Projects

Public expectations of investments in infrastructure and programs are evolving. Across California, community-based and nonprofit organizations are strong voices advocating for public agencies to make investments in traditionally underserved goals, including ensuring equal investments across areas of socioeconomic diversity and promoting environmental considerations in projects.

At the same time, many cities and utilities look to maximize investments that yield beneficial outcomes across many sectors. This can have both fiscal and policy benefits. For instance, if a project involves building a new regional park or sports facility, it could also support goals that improve water quality and groundwater recharge, such as capturing stormwater and reducing runoff. If successful, multi-benefit projects are an opportunity to connect funding streams.

In evaluating options for optimizing use of the basin resources, an assessment of multiple benefits could include questions like:

1) Do plans and projects address issues of socioeconomic diversity and improve access to infrastructure and resources across marginalized or low-income groups?
2) Would plans and projects promote improved water quality or habitat restoration?
3) Would plans and projects improve recreational goals, increase open-space, or benefit other land management outcomes?
4) Would plans and projects support goals across multiple sectors of water management?

A detailed matrix of evaluation criteria, informed through stakeholder input, can assist with this task. Many examples of multi-benefit evaluation criteria exist that are relevant to decision-making within the Santa Monica Basin. For instance, Table 14 is an example of a multi-benefit matrix used to evaluate stormwater capture and use projects in the American River Basin as part of that region's Stormwater Resource Plan.[36] The matrix shows broad benefit categories and specific types of benefits that could result from implementing a stormwater capture and use project. The evaluation framework also includes a specific quantitative or qualitative metric, as well as the unit.

Table 14. An example of a multi-benefit evaluation framework from the American River Basin Stormwater Resource Plan.[36] The framework focuses on alternative benefits from stormwater management projects.

Benefit Category	Benefits	Benefit Type	Metric	Unit
Water Quality	Reestablishment of natural water drainage and treatment	Primary	Volume of runoff reduced	AFY
	Increase in filtration and/or treatment of pollutants in runoff (TSS)	Primary	Load of TSS reduced	kg/yr
	Increase in filtration and/or treatment of pollutants in runoff (dissolved copper)	Primary	Load of dissolved copper reduced	kg/yr
	Increase in filtration and/or treatment of pollutants in runoff (*E. coli*)	Primary	Load of *E. coli* reduced	mpn/yr
Water Supply	Increase in groundwater supply through infiltration	Primary	Volume infiltrated to groundwater	AFY
	Increase in groundwater supply through in-lieu recharge	Primary	Volume captured to offset demand	AFY
	Increase in surface water supply through direct use	Primary	Volume captured to offset demand	AFY
Flood Management	Decrease in flood risk through reduced peak flow rates of runoff	Primary	Rate of peak flow reduced for the 2-, 10-, 25-, 50-, and/or 100-year storm(s) as appropriate	cfs
	Increase in area addressed for flood mitigation	Primary	Size of area addressed for flood mitigation	acres
	Decrease in combined sewer overflows	Additional	Volume of runoff reduced to combine sewer systems	AFY
Environmental	Enhancement, creation, and/or protection of wetlands, riparian zones, and aquatic habitat	Primary	Size of area of wetland, riparian zone, or habitat enhanced, created, or protected	acres
	Increase in urban green space	Primary	Size of area created	acres
	Improvement to instream flow rate	Primary	Rate of instream flowrate improved	cfs
	Decrease in energy use	Additional	Energy use reduced	kWh/yr
	Decrease in greenhouse gas (GHG) emissions	Additional	Mass of GHG emissions reduced	tonnes/yr
	Improvement in Water Temperature	Additional	Degrees of water temperature improved or percent canopy cover increased	Degrees or %
Community	Increase in public education	Primary	Number of outreach materials provided or events conducted or number of participants	# of outreach types or participants
	Increase in public involvement	Additional	Number of hours volunteered or number of participants	# of hours or participants
	Creation or enhancement of public space	Additional	Size of public space created or enhanced	acres

Several other examples of multi-benefit assessment frameworks exist for water-related projects. For instance, the Pacific Institute (PI) surveyed hundreds of available resources on multi-benefit assessment frameworks and developed a list of five key themes that projects can promote[37]:

1) Water management goals, including improved quality, quantity, and flood risk reduction
2) Environmental goals, such as improving soil health and in-stream flows, or reducing urban heat island effects
3) Risk and resilience, such as reducing risk and vulnerability to natural hazards
4) People and community, such as enhancing the local economy, promoting human health and wellbeing, or improving education
5) Energy goals, such as increasing the supply of renewable energy or reducing energy consumption

PI researchers also outlined a multi-step decision-making process that can align projects with multi-benefit outcomes:

1) Project planners envision the project and understand how decisions will be made, thinking broadly about challenges and stakeholder engagement.
2) Planners identify benefits and tradeoffs in various goals.
3) Planners characterize key benefits and outcomes, considering uncertainty and defining appropriate evaluation metrics.
4) Planners inform decision-making by clearly communicating findings to decision-makers.

PI researchers compiled an extensive library of peer-reviewed and other studies that demonstrate frameworks or examples for multi-benefit evaluations of water projects. Of these, 34 were categorized as relating to groundwater management, while over 100 were categorized as related to centralized or distributed stormwater management. A total of 84 resources included some sort of decision-support tool, ranging from matrix worksheets to conceptual tools for implementing multi-benefit assessments. Several resources provided web-based sources of data, such as the EPA EnviroAtlas, which has data for LA related to land use and land cover, weather and climate, pollutants and monitoring records, sociodemographic and economic indicators, and natural and physical boundaries.

Drawing on and adapting these sorts of multi-benefit frameworks to the goals of the SMBGSP first requires identifying potential benefits of interest. To support multi-benefit goals, proposed investments and programs that are part of the SMBGSP can be evaluated to understand the extent to which they (Table 15):

- Support regional goals to enhance alternative water supplies by increasing groundwater availability for drinking water, promoting recycled water use, or improving agency coordination towards regional water management goals
- Make equitable investments that serve low-income or marginalized communities
- Enhance water quality goals through opportunities to capture and infiltrate stormwater in small and regional scale projects
- Reduce energy consumption of urban water management operations
- Improve aquatic habitat by enhancing existing wetlands and habitat, creating or restoring new wetlands and riparian zones, or supporting stream flows

- Promote better land use and landscape management practices by reducing pavement, increasing the use of water-wise plants and low-water landscapes that also benefit water supply operations, reduce pumping requirements, or provide recreational opportunities
- Enhance public education and outreach
- Support improved flood control

These considerations can be addressed through the thoughtful creation of metrics (Table 16). The approach to developing metrics that assess if projects or programs optimize groundwater basin resources can utilize a multi-criteria decision analysis approach, which identifies metrics based on stakeholder input and existing literature, uses tools to calculate the metrics, and integrates best practices as identified in available literature.

Initially, metrics were developed by conceptualizing outcomes from the three major types of projects to be considered: stormwater capture and recharge, recycled water, and conjunctive use of water resources. Thoughtful selection of metrics for comparing the modeled solutions is critical to improving the quality and usefulness of metrics. Many frameworks and criteria are potentially available within the literature on sustainability, covering typical components that consider technical, economic, environmental, and social factors and impacts. However, a framework must also incorporate implementation considerations, such as availability of data, replicability over time, and input from stakeholders.

Table 15: Multi-benefit considerations for GSP planning.

Do proposed investments and programs through the GSP:
Improve stormwater management and flood control? • Do they enhance opportunities for infiltrating stormwater capture devices, including dry wells? • Do they improve drainage infrastructure? • Do they reduce flood risk?
Improve integrated urban water management and supply resilience? • Do they enhance groundwater supplies for drinking water? • Do they add infrastructure for in-lieu groundwater recharge? • Do they add infrastructure for using storm or recycled water?
Improve environmental goals and habitat? • Do they reduce the energy intensity of urban water supply and treatment? • Do they enhance aquatic or wetlands habitat? • Do they create or restore wetlands or riparian buffers? • Do they improve stream flows?
Improve landscape management practices and recreational opportunities? • Do they include plans to increase water-wise and native vegetation? • Do they enhance recreational areas and opportunities? • Do they include plans to remove invasive vegetation?
Promote social equity? • Do they equitably invest in projects that serve low-income communities?
Enhance public education and outreach? • Do they support engagement of communities and schools?

Table 16: A list of proposed metrics relevant for evaluating multiple benefits of potential integrated water management projects associated with the Santa Monica GSP.

Benefit Category	Benefits	Metric	Unit[2]
Stormwater Management and Flood Control	Enhance opportunities for infiltrating stormwater capture devices, including dry wells	Volume of runoff infiltrated	AFY
	Improve or enhance drainage infrastructure or capacity	Volume of additional runoff capacity to mitigate flood risk	cfs
	Decrease in flood risk through reduced peak flow rates of runoff	Rate of peak flow reduced for the 2-, 10-, 25-, 50-, or 100-year storms as appropriate	cfs
	Increase in area addressed for flood mitigation	Size of area addressed for flood mitigation	acres
	Decrease in combined sewer overflows	Volume of runoff reduced to combine sewer systems	AFY
Improve Integrated Urban Water Management and Supply Resilience	Enhance groundwater supplies for drinking water	Volume infiltrated to groundwater	AFY
	Add infrastructure for in-lieu groundwater recharge	Volume captured to offset demand	AFY
	Add infrastructure for using storm or recycled water in lieu of surface water	Volume captured to offset demand	AFY
Improve Environmental Goals and Habitat	Reduce the energy intensity of urban water supply and treatment operations	Energy use reduced	kWh/yr
	Enhance aquatic or wetlands habitat	Size of area of aquatic or wetland habitat enhanced	acres
	Create or restore wetlands or riparian buffers	Size of area of wetland or riparian buffers created, or restored	acres
	Improve stream flows	Rate of instream flowrate improved	cfs
Improve Landscape Management Practices and Recreational Opportunities	Include plans to increase water-wise and native vegetation	Size of area planted	acres
	Enhance recreational areas and opportunities	Size of area created	acres
	Include plans to remove invasive vegetation	Size of area cleared	acres
Promote Social Equity	Equitably invest in projects that serve low-income and marginalized communities	Percent project budget spent in low-income or marginalized communities	%
Enhance Public Education and Outreach	Enhance public education and outreach	Number of outreach materials provided or events conducted or number of participants	# of outreach types or participants

4.1 Energy Use Benefits

Reduced energy consumption is one potential benefit from projects undertaken as part of the GSP. Urban water management operations use energy to move and treat water to a sufficient quantity and quality. Energy is also consumed for the end-uses of water. In cities, the largest component of energy-for-water is generally in heating hot water in households.[38,39] In Los Angeles County, in-home water heating equals or surpasses energy use for water utility operations, even in an urban water management system that is highly energy intensive due to the dependence on imported water sources.[40]

Generally, energy use for urban water utility operations comes in the form of electricity consumption and can be reported in kilowatt-hours per acre-foot (kWh/ac-ft) or other units of water volume. This is referred to as the energy intensity of water management or the amount of electricity needed to supply or treat a unit volume of water. In urban water management operations, each stage of the urban water cycle, including acquisition (importing or pumping), conveyance, treatment, distribution, wastewater treatment, and disposal, has associated electricity usage. The electricity for such operations usually originates from the local electric grid, which is managed by either municipally owned or investor-owned utilities. Thus, for the purposes of water utility operations, when only considering energy needs supplied by electricity, it is more precise to use the term electricity intensity (EI) when referencing potential consumption.

Table 17 summarizes the ranges of EI for each stage of the urban water management typically found in Los Angeles County water supply and treatment operations. Data was compiled and published as part of a comprehensive study of energy use for urban water management in Los Angeles County.[40] To estimate the EI of various projects related to the GSP within the Santa Monica Basin, site-specific considerations can be evaluated alongside these regions to tailor the EI values when comparing options. Appendix E provides a detailed description of the sources and methods used to compile the EI data.

Importing water sources into Los Angeles County is one of the most energy intensive water utility operation. The EI of these sources is reported as either gross or net. Gross EI is the total amount of electricity used to provide a volume of water supply, while net EI is the amount of electricity used when considering any production of electricity that may occur from hydropower facilities during imported water operations. Net electricity consumption is generally lower than gross EI, the Los Angeles Aqueduct actually produces electricity along its route. However, for purposes of greenhouse gas (GHG) emissions accounting, net EI is not a relevant concept. Offsetting electricity produced and used in one location by electricity generated in another location does not result in a net reduction in GHGs.

Table 17: Electricity intensity of water supply and treatment, by source and technology. Equivalent to Table 1 in the main text, but reported in units of kWh/ac-ft (Sources: As published in Porse *et al.* (2020); compiled from Mika *et al.* (2018), WaterReuse Foundation *et al*. (2015), and correspondence with the California Department of Water Resources).

Technology/Water Source	**Electricity Intensity (kWh/ac-ft)**	
	Low	*High*
Groundwater		
Pumping [a]	260	620
Water and Wastewater Treatment Processes		
Conventional water treatment	100	130
Disinfection (chlorine or ozone)	20	45
Membrane-based water treatment	325	490
Secondary Treatment without nutrient removal	340	450
Tertiary treatment (nutrient removal and filtration)	520	630
Membrane Bioreactor (MBR)	740	2,830
Brackish water desalination	1,010	2,020
Advanced water treatment [b]	1,060	5,260[e]
Imported Water		
Colorado River Aqueduct imported water	2,000	2,400
State Water Project imported water	2,580 (4,110) [c]	3,230 (4,520) [c]
Los Angeles Aqueduct imported water	-2,241 [d]	-2,241 [d]
Distribution (within a retailer system)	Ranges from 0–1,100	
Ocean desalination	3,100	4,800

[a] Derived from local studies from cities in Los Angeles County and agricultural pumping well values reported through the California Agricultural Water Electrical Requirements.

[b] Not used in this study but provided for reference. Values basin on the advanced water treatment system from the Orange County Water District beyond secondary treatment, including treatment technology such as filter screens, membrane filtration, cartridge filtration, reverse osmosis, advanced oxidation, decarbonation, and lime stabilization.[41(p11)]

[c] Net and gross electricity intensity values, with gross EI in parenthesis.

[d] While the Los Angeles Aqueduct produces energy through hydropower, it is sold to the electric grid outside the LA Basin. Thus, its EI is 0 kWh/ac-ft in evaluating electricity use for water supply operations within Los Angeles County.

[e] The City of Santa Monica operates a facility that treats urban runoff through advanced water treatment with microfiltration and UV disinfection for irrigation and non-potable use. The reported EI of the facility is 5,260 kWh/ac-ft, which is a high outlier and only applied in the modeling for that specific link.

5 Conclusions and Recommendations

Optimizing the use of groundwater resources in the Santa Monica Basin involves considerations of water quality, water supply, and demand management. Based on the survey of activities that water agencies and organizations in the Santa Monica Basin are pursuing as detailed in this Appendix, several recommended actions can support sustainable use of groundwater resources over time.

First, urban water demand management should remain a key tool through continued investments that help offset groundwater pumping needs. Cities in the SMGSP and across LA County have invested in long-term water use efficiency and conservation through incentives for indoor and outdoor water-saving devices. Future water demand forecasts should be developed that include continued declines in per capita use. Such forecasts should recognize the many drivers of water use efficiency and conservation, but also integrate potential constraints. Multiple strategies for managing and forecasting water demand can support sustainable use of groundwater resources:

- **Technological investments** including efficient indoor fixtures (toilets, washers, dishwashers) and outdoor fixtures (irrigation nozzles, weather-based controllers). Traditional utility programs offer rebates to willing participants for replacing old fixtures, while future fixture upgrade programs can reach additional customers.
- **Water use efficiency saturation studies** to understand the types and numbers of remaining fixtures that would provide the greatest water savings through replacements and rebates.
- **Integrating drought-based reductions into demand forecasts**. Many studies with urban water demand forecasting do not recognize lasting effects of per capita water use reductions during drought. Such acute changes in past drought periods in California have resulted in measurable reduced per capita water use in cities. Per capita use has tended to undergo a significant reduction during drought, followed by a period of rebound, but the rebound does not return water demand to pre-drought levels. A combination of technological and behavioral changes likely accounts for the difference.
- **Climate-appropriate landscapes that include water-retaining features**. Water supply agencies in the Santa Monica Basin, and most agencies across Los Angeles County, provide rebates and incentives for converting fixtures and removing lawns. Enhancing these offerings with design guidance, such as handbooks that offer planting designs and planting suggestions, can help long-term conversion of yards to climate-appropriate landscapes that include native and drought-tolerant vegetation and tree species. Integrating site-scale capture of wet-weather and dry-weather runoff can help promote infiltration with low-risk of water quality impacts.
- **Leak loss reduction investments in households and distribution systems**. Such investments are already necessary for compliance with statewide requirements through statewide regulations from Senate Bill (SB) 555 regarding leak losses, and Assembly Bill (AB) 1668 and Senate Bill 606 (AB 1668-SB 606) for urban water use efficiency. Household leak detection, in particular, provides a utility service that can save customers money, especially when supported by repair options.

Second, continued investments in recycled water production and in-lieu programs can help offset groundwater pumping. Recent awards to support upgrades to the Arcadia Water

Treatment Plant and stormwater harvesting tanks through the Sustainable Water Infrastructure Project (SWIP) are examples of projects that integrate new technologies into the existing water distribution and treatment infrastructure through innovative designs. SMGSP member agencies can pursue similar efforts that:

- **Invest in non-potable water reuse** on properties and at larger spatial scales. Large-scale stormwater capture can divert runoff to holding tanks for transmission to treatment facilities. Small-scale stormwater capture can include site-scale irrigation on large Commercial, Industrial, and Institutional landscapes through stormwater harvesting.
- **Plan for direct potable reuse options** by designing system adaptations that can benefit from the large-scale reuse projects currently being planned in the City and County of Los Angeles. In particular, studying potential interties to the City of Los Angeles's Hyperion Wastewater Treatment and Reuse upgrade program as part of Operation NEXT may offer ways to offset groundwater pumping through in-lieu purchase and use of recycled water at convenient sites
- **Investigate opportunities for building-scale reuse in commercial and industrial facilities.** Most municipal water reuse programs for commercial and industrial users seek to get local businesses to accept centrally-produced recycled water. During the period of implementing the SMGSP, however, new building-scale technologies will likely emerge that make small-scale reuse more feasible. Many examples of building-scale greywater and blackwater reuse are in planning or already exist, such as in parts of Northern California (Silicon Valley) and in Portland, OR.

Third, conjunctive use of surface, groundwater, and recycled water resources offers opportunities to utilize water when available. Water agencies in the SMGSP should explore ways to develop water supply portfolios that consider supply in both wet and dry years, including potential recycled water production given likely continued indoor water use efficiency. Water agencies can also enhance the safe capture and use of stormwater, but do so with caution given the prevalence of contaminants in stormwater that could affect groundwater quality. Potential strategies include:

- **Invest in stormwater infiltration that is treated locally or at centralized facilities** based on influent water quality. One stormwater capture and infiltration option with recent new statewide guidance is the operation of dry wells with pre-treatment. Dry wells can be effective at boosting groundwater infiltration, but in highly urbanized areas, must be implementing with caution. Dry wells can be investigated in areas where the contributing watershed area poses minimal contaminant risk.
- **Adopt a rubric to evaluate multiple benefits of stormwater capture.** While stormwater capture can primarily improve water quality, throughout LA County, the Safe Clean Water Program prioritizes projects that achieve economic, environmental, and social benefits. Many of the early Safe Clean Water Projects in the Santa Monica Basin planning areas are adapted from previous detailed watershed studies. As municipalities in the SMGSP fund and build these initial stormwater projects, they should investigate new multi-benefit project opportunities. Adopting an accepted rubric to quantify or qualify benefits associated with stormwater capture and use projects can help identify multiple projects.

- **Use surface water in years with precipitation.** Water agencies may explore the use of imported water only during years with significant precipitation to reduce imported water reliance. Wet-year imports could offset groundwater demand or boost groundwater recharge. In these strategies, imported water would flow through pipelines only in years with significant precipitation and be stored in regional surface water storage or recharged in local groundwater basins. In normal or dry years, no water imports would be acquired by water supply agencies in the Santa Monica Basin. This would have the effect of minimizing the environmental impacts of upstream diversions. Such strategies would reduce imported water demand across agencies in the Basin, mirroring efforts by the City of Santa Monica to eliminate imported water use in coming years.

Finally, institutional reforms and innovations are important management tools. In the Los Angeles Basin, GSP planning requirements push agencies to consider cross-sector management strategies, such as conjunctive use of surface and groundwater, or water demand management. Additional institutional reforms and innovations can help further the goals of the SMGSP. Several strategies could support planning needs:

- **Create consistent funding streams for replacing turf.** Water use efficiency funding tends to ebb and flow with periods of drought and plentiful rain. Institutional reforms that develop funding sources for outdoor water use efficiency and conservation programs can help avoid the pitfalls of large expenditures during drought, such as programs in Southern California from 2014-16, where some turf replacement projects resulted in converted landscapes with limited visual interest and simplistic plant palates.
- **Report nominal and annualized costs in planning**. Planning documents often report only nominal costs associated with water supply and demand management options. Such costs tend to favor existing infrastructure. Requiring agencies to instead report both nominal and annualized costs for supply sources, using standardized and well-documented assumptions, can make water reuse, stormwater, capture, and water use efficiency programs more attractive financial options. The SWIP program in the City of Santa Monica is an example of implementing this approach to compare costs of innovative projects with existing imported water purchases using annualized totals that recognize long-term cost increases for imported water.
- **Promote planning across the "full-cycle" of urban water management.** The full-cycle costs of urban water management include not just sector-specific costs for water supply or treatment by source, but instead consider the cost across supply- and treatment-trains, whereby the costs of acquiring, treating, and distributing water supply are considered in tandem with costs of collecting, treating, and discharging or reusing wastewater. Project planning can use this to break down silos of urban water management. Regional groups such as the SMGSP can promote more multilateral planning and information sharing to reduce the transactional costs (time, funding) of assembling projects within the complex network of agencies in Los Angeles

6 Appendices

Appendix A: List of publicly owned properties in the Santa Monica Basin
Appendix B: Database of existing stormwater capture and recharge projects and list of existing locations of stormwater infrastructure in the Central Santa Monica Enhanced Watershed Management Planning Area
Appendix C: City of Santa Monica water supply and operations data
Appendix D: Summary table of treatment requirements for water recycling and reuse by type and application
Appendix E: Energy intensity of water supply and treatment operations in Los Angeles County
Appendix F: Maintenance template sheets for common stormwater Low Impact Development devices and Best Management Practices
Appendix G: California Drywell Guidance Research and Recommendations

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Appendix I

Future Water Budget Tables

Baseline Scenario

Year	INFLOWS (Acre-Feet)					OUTFLOWS (Acre-Feet) [-ve are INFLOWS]										STORAGE CHANGE, Acre-Feet (+ve is loss)
	Inflows From Storage (Results in decrease in GW head)	Total Recharge [col D +col E=col C]	Mountain-Front recharge (calculated as applied recharge at model boundary cells)	Areal recharge (calculated as Total Recharge - MountainFront Recharge)	Total IN	Outflow to Storage (results in increase in GW head)	Net Production from Pumping wells	To all DRAIN cells	To Ephemeral Stream in Santa Monica Mtns [col K +col L=col J]	To Ballona Creek [col K +col L=col J]	To Hollywood Basin (negative values means inflow to Santa Monica)	To Central Basin (negative values means inflow to Santa Monica)	To ocean (negative values means inflow to Santa Monica)	To West Coast Basin (negative values means inflow to Santa Monica)	Total OUT	
2016	5544	2695	1503	1192	8239	526	9232	112	112	0	-101	-252	-1915	634	8235	5019
2017	4428	3581	1997	1584	8010	504	9232	147	147	0	-88	-231	-2076	513	8001	3924
2018	4896	2567	1432	1136	7464	231	9232	95	95	0	-103	-211	-2241	454	7457	4666
2019	3720	10417	5809	4608	14138	6400	9232	540	538	2	39	-256	-2215	394	14133	-2680
2020	3255	4177	2330	1848	7433	268	9232	179	179	0	-63	-222	-2364	399	7429	2987
2021	3926	3165	1765	1400	7091	149	9232	128	128	0	-82	-213	-2509	384	7090	3777
2022	1706	12505	6973	5531	14211	6844	9232	599	597	2	14	-253	-2553	326	14209	-5138
2023	3272	7796	4347	3448	11068	3274	9232	999	998	1	39	-291	-2475	287	11065	-1
2024	1195	11925	6650	5275	13120	4812	9232	1520	1518	2	63	-310	-2464	265	13117	-3617
2025	3251	5417	3021	2396	8668	973	9232	1012	1011	0	-15	-298	-2513	276	8666	2277
2026	4847	22624	12617	10008	27472	16374	9232	4147	4137	10	155	-421	-2215	199	27471	-11527
2027	3907	5318	2966	2352	9225	1132	9232	1423	1423	0	-78	-349	-2375	234	9220	2774
2028	3395	4564	2545	2019	7959	362	9232	1043	1043	0	-86	-351	-2467	224	7957	3033
2029	3927	3165	1765	1400	7092	207	9232	478	478	0	-137	-342	-2578	231	7092	3720
2030	3059	11107	6194	4913	14165	5865	9232	1747	1745	2	-6	-394	-2485	205	14164	-2806
2031	2499	7500	4182	3318	9999	2248	9232	1252	1252	0	-61	-381	-2503	211	9999	251
2032	2572	5796	3232	2564	8368	1016	9232	932	932	0	-88	-375	-2548	196	8367	1556
2033	2963	3902	2176	1726	6865	181	9232	395	395	0	-140	-358	-2637	192	6865	2783
2034	1619	5310	2961	2349	6929	259	9232	415	415	0	-119	-358	-2688	188	6929	1360
2035	4773	27104	15114	11989	31877	20235	9232	4900	4886	14	145	-519	-2215	97	31875	-15461
2036	4265	11169	6228	4940	15433	5691	9232	3018	3015	3	-2	-463	-2180	136	15431	-1426
2037	5617	22654	12633	10021	28271	15851	9232	5447	5436	11	102	-554	-1884	72	28266	-10234
2038	5693	4126	2301	1825	9818	933	9232	2176	2176	0	-150	-466	-2039	129	9815	4760
2039	3542	5149	2871	2278	8692	613	9232	1463	1463	0	-167	-460	-2135	143	8689	2929
2040	2261	24871	13869	11001	27132	15052	9232	5050	5039	11	83	-589	-1771	73	27129	-12791
2041	5785	3875	2161	1714	9660	748	9232	2081	2081	0	-174	-503	-1861	136	9658	5037
2042	4031	4568	2547	2020	8599	387	9232	1464	1464	0	-182	-493	-1942	131	8596	3644
2043	2644	9504	5300	4204	12149	3410	9232	1935	1934	1	-113	-519	-1903	104	12147	-766
2044	4330	3301	1841	1460	7632	195	9232	785	785	0	-227	-478	-2005	129	7631	4135
2045	2761	4799	2676	2123	7560	235	9232	689	689	0	-199	-468	-2066	137	7560	2526
2046	3934	2991	1668	1323	6925	30	9232	337	337	0	-222	-448	-2145	141	6925	3904
2047	3740	3028	1688	1339	6767	131	9232	183	183	0	-230	-433	-2238	124	6769	3609
2048	2568	5866	3271	2595	8434	1613	9232	361	361	0	-169	-438	-2263	98	8434	955

Baseline Scenario

Year	INFLOWS (Acre-Feet)					OUTFLOWS (Acre-Feet) [-ve are INFLOWS]										STORAGE CHANGE, Acre-Feet (+ve is loss)
	Inflows From Storage (Results in decrease in GW head)	Total Recharge [col D +col E=col C]	Mountain-Front recharge (calculated as applied recharge at model boundary cells)	Areal recharge (calculated as Total Recharge - MountainFront Recharge)	Total IN	Outflow to Storage (results in increase in GW head)	Net Production from Pumping wells	To all DRAIN cells	To Ephemeral Stream in Santa Monica Mtns [col K +col L=col J]	To Ballona Creek [col K +col L=col J]	To Hollywood Basin (negative values means inflow to Santa Monica)	To Central Basin (negative values means inflow to Santa Monica)	To ocean (negative values means inflow to Santa Monica)	To West Coast Basin (negative values means inflow to Santa Monica)	Total OUT	
2016	5544	2695	1503	1192	8239	526	9232	112	112	0	-101	-252	-1915	634	8235	5019
2049	2788	13495	7526	5970	16283	7833	9232	1808	1805	3	-48	-482	-2121	60	16283	-5045
2050	4652	20412	11383	9029	25065	14277	9232	3874	3865	10	37	-543	-1835	21	25063	-9624
2051	4685	3463	1931	1532	8148	275	9232	1203	1203	0	-190	-455	-1996	78	8148	4410
2052	4084	17895	9980	7916	21980	11485	9232	3580	3573	7	1	-544	-1785	8	21978	-7400
2053	3091	6573	3665	2907	9664	1105	9232	1805	1805	0	-151	-496	-1868	35	9662	1986
2054	3416	4932	2750	2182	8348	422	9232	1251	1251	0	-183	-483	-1943	50	8346	2993
2055	4324	23790	13266	10523	28114	16223	9232	4824	4812	12	41	-605	-1584	-19	28112	-11899
2056	5378	3509	1957	1552	8887	332	9232	1719	1719	0	-214	-510	-1721	49	8887	5046
2057	3519	5175	2886	2289	8694	615	9232	1316	1316	0	-203	-505	-1802	41	8694	2904
2058	2794	9992	5572	4420	12787	4029	9232	1927	1926	2	-129	-534	-1755	15	12785	-1235
2059	4609	2866	1598	1268	7475	173	9232	650	650	0	-260	-487	-1877	45	7475	4436
2060	2625	6918	3858	3060	9543	1732	9232	1092	1091	1	-174	-497	-1885	42	9542	892
2061	2528	7164	3995	3169	9693	2246	9232	795	794	0	-202	-481	-1944	46	9692	282
2062	6066	29538	16472	13066	35604	22272	9232	6133	6113	20	82	-656	-1375	-87	35602	-16206
2063	4824	5247	2926	2321	10072	842	9232	2248	2248	0	-181	-539	-1517	-15	10070	3982
2064	5490	2394	1335	1059	7884	95	9232	992	992	0	-271	-499	-1683	18	7884	5395
2065	3063	6134	3421	2713	9197	1236	9232	1149	1148	0	-205	-508	-1730	23	9197	1827
2066	3711	3816	2128	1688	7526	210	9232	608	608	0	-248	-487	-1821	34	7526	3501
2067	1555	9694	5406	4288	11249	3266	9232	1229	1228	1	-159	-511	-1810	-1	11246	-1711
2068	3024	8187	4566	3622	11211	2838	9232	1572	1570	1	-137	-518	-1754	-22	11211	186
2069	3855	3400	1896	1504	7254	80	9232	531	531	0	-244	-474	-1874	3	7255	3774
2070	4307	2441	1361	1080	6749	3	9232	197	197	0	-264	-449	-1990	21	6750	4304
2071	3594	3271	1824	1447	6865	221	9232	173	173	0	-255	-436	-2091	22	6865	3373
2072	3128	3501	1953	1549	6629	53	9232	180	180	0	-235	-430	-2172	3	6631	3074
2073	2903	4052	2260	1793	6955	446	9232	183	183	0	-225	-421	-2247	-12	6956	2457
2074	2804	8997	5017	3980	11801	4684	9232	680	679	1	-120	-446	-2194	-36	11800	-1879
2075	3633	2942	1640	1301	6575	145	9232	153	153	0	-231	-401	-2314	-7	6576	3488
2076	2376	9624	5367	4257	11999	4766	9232	840	839	1	-106	-432	-2266	-35	11999	-2390
Average	3652	8130	4534	3596	11782	3585	9232	1472	1470	2	-112	-435	-2089	129	11781	67
Min	1195	2394	1335	1059	6575	3	9232	95	95	0	-271	-656	-2688	-87	6576	-16206
Max	6066	29538	16472	13066	35604	22272	9232	6133	6113	20	155	-211	-1375	634	35602	5395

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Year	INFLOWS (Acre-Feet)					OUTFLOWS (Acre-Feet) [-ve are INFLOWS]										STORAGE CHANGE, Acre-Feet (+ve is loss)
	Inflows From Storage (Results in decrease in GW head)	Total Recharge [col D +col E=col C]	Mountain-Front recharge (calculated as applied recharge at model boundary cells)	Areal recharge (calculated as Total Recharge - MountainFront Recharge)	Total IN	Outflow to Storage (results in increase in GW head)	Net Production from Pumping wells	To all DRAIN cells	To Ephimeral Stream in Santa Monica Mtns [col K +col L=col J]	To Ballona Creek [col K +col L=col J]	To Hollywood Basin (negative values means inflow to Santa Monica)	To Central Basin (negative values means inflow to Santa Monica)	To ocean (negative values means inflow to Santa Monica)	To West Coast Basin (negative values means inflow to Santa Monica)	Total OUT	
2016	5,351	2,856	1,593	1,263	8,207	551	9,232	121	121	0	-98	-252	-2,006	643	8,190	4,801
2017	4,384	3,612	2,014	1,598	7,996	506	9,232	149	149	0	-86	-224	-2,143	543	7,977	3,878
2018	4,875	2,567	1,432	1,136	7,442	208	9,232	95	95	0	-103	-200	-2,301	496	7,427	4,667
2019	3,793	11,567	6,450	5,117	15,360	7,510	9,232	619	616	3	53	-251	-2,244	428	15,347	-3,717
2020	3,062	4,494	2,506	1,988	7,555	331	9,232	215	215	0	-54	-215	-2,388	424	7,546	2,730
2021	3,934	3,187	1,777	1,410	7,121	152	9,232	136	136	0	-79	-203	-2,532	408	7,115	3,782
2022	1,520	12,769	7,121	5,648	14,289	6,803	9,232	672	669	3	19	-237	-2,572	366	14,283	-5,284
2023	3,316	7,934	4,424	3,509	11,250	3,232	9,232	1,158	1,157	1	42	-270	-2,487	336	11,242	84
2024	1,149	11,926	6,651	5,276	13,075	4,623	9,232	1,599	1,598	2	65	-288	-2,477	312	13,067	-3,474
2025	3,333	5,279	2,944	2,335	8,613	843	9,232	1,040	1,040	0	-17	-276	-2,531	314	8,605	2,490
2026	4,932	23,153	12,912	10,242	28,085	16,767	9,232	4,307	4,296	11	161	-401	-2,219	231	28,078	-11,834
2027	4,095	5,141	2,867	2,274	9,237	1,019	9,232	1,476	1,476	0	-79	-320	-2,382	283	9,228	3,076
2028	3,582	4,379	2,442	1,937	7,961	289	9,232	1,042	1,042	0	-89	-317	-2,482	282	7,956	3,293
2029	4,087	3,031	1,690	1,341	7,118	183	9,232	462	462	0	-140	-307	-2,598	284	7,117	3,904
2030	3,497	12,685	7,074	5,611	16,182	7,458	9,232	2,074	2,071	3	14	-373	-2,466	239	16,179	-3,961
2031	2,585	7,601	4,239	3,362	10,186	2,239	9,232	1,361	1,360	1	-57	-352	-2,491	247	10,179	346
2032	2,686	5,913	3,297	2,616	8,599	1,047	9,232	1,027	1,027	0	-84	-340	-2,537	248	8,592	1,639
2033	2,954	4,164	2,322	1,842	7,118	227	9,232	492	492	0	-133	-322	-2,628	251	7,120	2,726
2034	1,914	5,182	2,890	2,292	7,096	285	9,232	460	460	0	-118	-320	-2,682	243	7,100	1,629
2035	4,855	27,411	15,286	12,125	32,266	20,411	9,232	5,017	5,003	14	150	-485	-2,203	140	32,261	-15,556
2036	4,234	10,285	5,735	4,549	14,518	4,832	9,232	2,891	2,889	2	-12	-420	-2,193	181	14,511	-598
2037	5,717	23,612	13,168	10,445	29,329	16,603	9,232	5,646	5,634	12	111	-520	-1,874	124	29,322	-10,886
2038	5,918	3,987	2,224	1,764	9,906	868	9,232	2,218	2,218	0	-150	-424	-2,036	193	9,901	5,050
2039	3,763	4,891	2,728	2,164	8,655	504	9,232	1,442	1,442	0	-171	-415	-2,143	202	8,652	3,259
2040	2,129	24,297	13,549	10,748	26,426	14,417	9,232	4,906	4,895	11	80	-541	-1,795	121	26,421	-12,289
2041	5,728	3,914	2,183	1,731	9,642	692	9,232	2,049	2,049	0	-171	-459	-1,885	179	9,638	5,036
2042	4,081	4,594	2,562	2,032	8,674	379	9,232	1,461	1,461	0	-177	-446	-1,965	187	8,671	3,702
2043	2,575	9,372	5,226	4,145	11,947	3,163	9,232	1,888	1,887	1	-111	-466	-1,935	170	11,941	-588
2044	4,338	3,371	1,880	1,491	7,709	195	9,232	782	782	0	-221	-428	-2,038	188	7,710	4,143
2045	2,719	4,936	2,752	2,183	7,654	251	9,232	705	705	0	-191	-421	-2,100	182	7,657	2,468
2046	3,907	3,119	1,739	1,380	7,026	43	9,232	364	364	0	-213	-402	-2,178	183	7,030	3,864
2047	3,795	3,067	1,710	1,357	6,862	145	9,232	188	188	0	-223	-383	-2,273	181	6,868	3,650
2048	2,710	5,272	2,940	2,332	7,982	1,158	9,232	303	303	0	-174	-379	-2,316	166	7,990	1,552
2049	2,713	12,998	7,249	5,750	15,712	7,352	9,232	1,661	1,658	3	-48	-423	-2,186	125	15,714	-4,639
2050	4,728	20,423	11,389	9,034	25,151	14,363	9,232	3,825	3,816	10	43	-489	-1,898	71	25,148	-9,635
2051	4,592	3,606	2,011	1,595	8,197	292	9,232	1,190	1,190	0	-179	-402	-2,058	124	8,199	4,300
2052	3,876	16,087	8,971	7,116	19,963	9,856	9,232	3,170	3,164	6	-10	-473	-1,892	77	19,960	-5,980
2053	2,733	7,229	4,031	3,198	9,962	1,361	9,232	1,786	1,785	0	-133	-435	-1,958	103	9,956	1,371
2054	3,350	4,994	2,785	2,209	8,344	407	9,232	1,220	1,220	0	-172	-422	-2,033	112	8,344	2,943
2055	4,545	24,615	13,727	10,888	29,160	17,058	9,232	4,985	4,972	13	58	-550	-1,656	27	29,154	-12,513
2056	5,491	3,463	1,931	1,532	8,953	345	9,232	1,737	1,737	0	-205	-453	-1,800	94	8,950	5,145
2057	3,413	5,570	3,106	2,464	8,983	765	9,232	1,399	1,399	0	-186	-448	-1,877	99	8,983	2,648
2058	2,966	10,853	6,052	4,801	13,819	4,766	9,232	2,137	2,135	2	-108	-479	-1,812	78	13,815	-1,800
2059	4,739	2,861	1,595	1,265	7,600	165	9,232	721	721	0	-251	-430	-1,941	106	7,601	4,574
2060	2,716	7,082	3,949	3,133	9,799	1,861	9,232	1,171	1,170	1	-163	-444	-1,948	91	9,800	855
2061	2,430	7,533	4,201	3,332	9,964	2,367	9,232	895	895	1	-187	-431	-2,002	92	9,965	63
2062	6,164	29,303	16,341	12,962	35,467	22,031	9,232	6,168	6,148	20	89	-597	-1,437	-24	35,462	-15,867
2063	5,105	4,894	2,729	2,165	9,999	747	9,232	2,209	2,209	0	-182	-477	-1,591	58	9,995	4,358
2064	5,536	2,373	1,323	1,050	7,909	86	9,232	978	978	0	-266	-440	-1,761	84	7,912	5,450
2065	3,082	6,267	3,495	2,772	9,349	1,327	9,232	1,171	1,171	0	-194	-453	-1,804	74	9,353	1,755
2066	3,618	4,024	2,244	1,780	7,643	250	9,232	645	645	0	-236	-435	-1,892	81	7,646	3,368
2067	1,518	10,667	5,949	4,719	12,186	3,962	9,232	1,390	1,389	1	-137	-458	-1,865	59	12,182	-2,443
2068	3,253	8,200	4,573	3,627	11,453	2,880	9,232	1,682	1,680	1	-125	-461	-1,804	49	11,452	373
2069	4,034	3,313	1,847	1,465	7,347	83	9,232	558	558	0	-238	-417	-1,934	69	7,353	3,951
2070	4,362	2,466	1,375	1,091	6,829	14	9,232	214	214	0	-256	-396	-2,052	75	6,831	4,348

DWR 2030 Sceanrio

Year	INFLOWS (Acre-Feet)					OUTFLOWS (Acre-Feet) [-ve are INFLOWS]										STORAGE CHANGE, Acre-Feet (+ve is loss)
	Inflows From Storage (Results in decrease in GW head)	Total Recharge [col D +col E=col C]	Mountain-Front recharge (calculated as applied recharge at model boundary cells)	Areal recharge (calculated as Total Recharge - MountainFront Recharge)	Total IN	Outflow to Storage (results in increase in GW head)	Net Production from Pumping wells	To all DRAIN cells	To Ephimeral Stream in Santa Monica Mtns [col K +col L=col J]	To Ballona Creek [col K +col L=col J]	To Hollywood Basin (negative values means inflow to Santa Monica)	To Central Basin (negative values means inflow to Santa Monica)	To ocean (negative values means inflow to Santa Monica)	To West Coast Basin (negative values means inflow to Santa Monica)	Total OUT	
2071	3,495	3,477	1,939	1,538	6,972	262	9,232	190	190	0	-244	-385	-2,150	72	6,978	3,232
2072	3,063	3,685	2,055	1,630	6,748	83	9,232	200	200	0	-222	-375	-2,228	67	6,756	2,980
2073	2,835	4,331	2,415	1,916	7,166	550	9,232	207	207	0	-211	-365	-2,300	61	7,174	2,284
2074	2,878	9,377	5,229	4,148	12,255	4,910	9,232	821	819	1	-105	-391	-2,239	31	12,259	-2,032
2075	3,870	2,714	1,514	1,201	6,584	92	9,232	154	154	0	-224	-345	-2,366	49	6,593	3,778
2076	2,725	9,260	5,164	4,096	11,985	4,693	9,232	846	845	1	-103	-375	-2,325	21	11,989	-1,967
Average	3,694	8,217	4,582	3,635	11,911	3,621	9,232	1,503	1,501	2	-106	-392	-2,130	180	11,909	74
Min	1,149	2,373	1,323	1,050	6,584	14	9,232	95	95	0	-266	-597	-2,682	-24	6,593	-15,867
Max	6,164	29,303	16,341	12,962	35,467	22,031	9,232	6,168	6,148	20	161	-200	-1,437	643	35,462	5,450

DWR 2070 Scenario

Year	INFLOWS (Acre-Feet)					OUTFLOWS (Acre-Feet) [-ve are INFLOWS]										STORAGE CHANGE, Acre-Feet (+ve is loss)
	Inflows From Storage (Results in decrease in GW head)	Total Recharge [col D +col E=col C]	Mountain-Front recharge (calculated as applied recharge at model boundary cells)	Areal recharge (calculated as Total Recharge - MountainFront Recharge)	Total IN	Outflow to Storage (results in increase in GW head)	Net Production from Pumping wells	To all DRAIN cells	To Ephemeral Stream in Santa Monica Mtns [col K +col L=col J]	To Ballona Creek [col K +col L=col J]	To Hollywood Basin (negative values means inflow to Santa Monica)	To Central Basin (negative values means inflow to Santa Monica)	To ocean (negative values means inflow to Santa Monica)	To West Coast Basin (negative values means inflow to Santa Monica)	Total OUT	
2016	5199	2883	1607	1275	8081	622	9232	122	122	0	-97	-253	-2194	645	8077	4576
2017	4185	3786	2111	1675	7971	629	9232	159	159	0	-82	-232	-2276	531	7961	3555
2018	4839	2450	1366	1084	7290	219	9232	89	89	0	-105	-211	-2418	476	7283	4620
2019	3699	11518	6423	5095	15216	7513	9232	615	612	3	52	-263	-2350	412	15211	-3815
2020	2945	4463	2489	1974	7408	308	9232	211	211	0	-56	-226	-2486	422	7405	2638
2021	3851	3143	1753	1390	6993	130	9232	136	136	0	-79	-216	-2620	408	6992	3720
2022	1428	11442	6381	5061	12870	5639	9232	555	553	2	5	-251	-2668	355	12867	-4211
2023	2998	7681	4283	3397	10679	3023	9232	956	955	1	33	-286	-2599	316	10675	-25
2024	1016	12311	6865	5446	13327	5041	9232	1574	1572	2	67	-310	-2572	292	13324	-4025
2025	3287	5348	2982	2366	8634	1003	9232	1022	1022	0	-16	-296	-2616	305	8633	2284
2026	5338	26017	14508	11508	31354	19490	9232	4910	4897	13	185	-444	-2234	213	31352	-14153
2027	4394	5062	2823	2239	9456	1164	9232	1634	1634	0	-79	-355	-2405	259	9451	3230
2028	3831	4112	2293	1819	7943	313	9232	1102	1102	0	-96	-353	-2510	253	7941	3518
2029	4129	2904	1620	1285	7033	177	9232	481	481	0	-149	-343	-2628	262	7032	3952
2030	3704	14081	7853	6229	17786	8797	9232	2388	2384	4	24	-419	-2459	222	17784	-5093
2031	2729	7717	4303	3413	10446	2411	9232	1503	1502	1	-60	-393	-2483	236	10446	319
2032	2804	5651	3151	2500	8455	952	9232	1058	1058	0	-95	-383	-2535	225	8453	1852
2033	2602	4789	2671	2118	7391	451	9232	609	609	0	-132	-371	-2617	218	7390	2151
2034	1839	5324	2969	2355	7162	258	9232	596	596	0	-116	-370	-2653	215	7162	1580
2035	5117	29161	16262	12899	34277	21956	9232	5493	5477	16	157	-545	-2135	117	34274	-16840
2036	4667	11960	6670	5291	16627	6332	9232	3470	3467	3	3	-481	-2088	158	16626	-1666
2037	5910	23287	12986	10301	29197	16220	9232	5890	5878	12	100	-568	-1778	96	29192	-10310
2038	6118	4073	2271	1802	10191	983	9232	2398	2398	0	-159	-483	-1941	157	10188	5135
2039	3830	4984	2780	2205	8814	544	9232	1562	1562	0	-181	-474	-2044	173	8811	3286
2040	2531	25427	14180	11248	27958	15521	9232	5297	5284	12	79	-607	-1664	100	27957	-12991
2041	6151	3547	1978	1569	9698	621	9232	2146	2146	0	-189	-514	-1764	165	9696	5530
2042	4312	4361	2432	1929	8674	367	9232	1466	1466	0	-197	-503	-1855	161	8671	3945
2043	2210	10695	5964	4731	12906	3831	9232	2148	2146	2	-104	-534	-1798	130	12904	-1621
2044	4539	3327	1855	1472	7866	175	9232	918	918	0	-229	-490	-1896	155	7865	4364
2045	3048	4649	2592	2056	7697	215	9232	739	739	0	-209	-477	-1967	164	7697	2833
2046	4055	3039	1695	1344	7094	61	9232	373	373	0	-230	-456	-2053	168	7094	3993
2047	3869	3023	1686	1337	6892	148	9232	191	191	0	-237	-441	-2150	151	6894	3721
2048	2792	5306	2959	2347	8099	1236	9232	325	324	0	-187	-441	-2192	127	8099	1556
2049	3051	13985	7799	6186	17037	8384	9232	1917	1912	4	-51	-490	-2039	84	17035	-5333
2050	4919	22804	12717	10087	27723	16244	9232	4428	4415	12	51	-566	-1703	35	27721	-11324
2051	5094	3446	1921	1524	8539	337	9232	1405	1405	0	-194	-466	-1874	99	8538	4757
2052	4204	18383	10252	8132	22587	11709	9232	3830	3822	8	0	-557	-1660	29	22584	-7506
2053	3267	7213	4022	3190	10480	1478	9232	2101	2101	1	-145	-513	-1731	54	10478	1789
2054	3635	5055	2819	2236	8690	476	9232	1408	1407	0	-190	-495	-1815	72	8688	3158
2055	4587	24612	13725	10887	29199	16809	9232	5176	5141	35	40	-622	-1438	0	29196	-12222
2056	5617	3595	2005	1590	9212	354	9232	1883	1880	2	-221	-522	-1585	70	9210	5263
2057	3561	5692	3174	2518	9254	817	9232	1523	1523	0	-202	-520	-1660	61	9253	2744
2058	3373	12672	7066	5605	16044	6398	9232	2609	2605	4	-102	-564	-1553	24	16042	-3025
2059	5177	2655	1481	1174	7832	129	9232	878	878	0	-271	-504	-1696	64	7832	5048
2060	2912	6840	3814	3025	9751	1644	9232	1227	1226	1	-188	-512	-1717	64	9751	1268
2061	2592	6928	3863	3064	9520	1791	9232	917	916	0	-212	-497	-1780	68	9519	801
2062	6122	29357	16371	12986	35479	21867	9232	6267	6143	124	68	-668	-1225	-66	35476	-15745
2063	5226	4889	2726	2162	10115	688	9232	2324	2250	74	-199	-549	-1386	3	10113	4538
2064	5638	2359	1316	1044	7997	72	9232	1012	1006	6	-284	-509	-1564	37	7996	5565
2065	3241	6454	3599	2855	9695	1511	9232	1243	1242	0	-208	-519	-1605	41	9695	1731
2066	3882	3821	2131	1690	7702	230	9232	644	644	0	-258	-496	-1703	53	7702	3652
2067	1620	10696	5964	4731	12316	4008	9232	1416	1415	1	-155	-524	-1679	14	12313	-2388

DWR 2070 Scenario

Year	INFLOWS (Acre-Feet)					OUTFLOWS (Acre-Feet) [-ve are INFLOWS]										STORAGE CHANGE, Acre-Feet (+ve is loss)
	Inflows From Storage (Results in decrease in GW head)	Total Recharge [col D +col E=col C]	Mountain-Front recharge (calculated as applied recharge at model boundary cells)	Areal recharge (calculated as Total Recharge - MountainFront Recharge)	Total IN	Outflow to Storage (results in increase in GW head)	Net Production from Pumping wells	To all DRAIN cells	To Ephimeral Stream in Santa Monica Mtns [col K +col L=col J]	To Ballona Creek [col K +col L=col J]	To Hollywood Basin (negative values means inflow to Santa Monica)	To Central Basin (negative values means inflow to Santa Monica)	To ocean (negative values means inflow to Santa Monica)	To West Coast Basin (negative values means inflow to Santa Monica)	Total OUT	
2068	3360	8263	4608	3655	11623	2964	9232	1721	1719	2	-141	-529	-1618	-6	11622	396
2069	4248	3139	1750	1388	7386	78	9232	551	551	0	-260	-481	-1756	22	7386	4170
2070	4516	2368	1321	1048	6884	16	9232	209	209	0	-276	-456	-1881	41	6885	4500
2071	3694	3295	1838	1458	6989	228	9232	182	182	0	-264	-443	-1987	41	6989	3466
2072	3178	3637	2028	1609	6815	122	9232	193	193	0	-242	-436	-2072	21	6817	3056
2073	2846	4464	2489	1975	7310	647	9232	220	220	0	-223	-430	-2141	5	7310	2199
2074	2938	9531	5315	4216	12469	5053	9232	863	861	2	-120	-456	-2082	-21	12468	-2115
2075	3846	2808	1566	1242	6654	105	9232	165	165	0	-238	-407	-2211	10	6655	3741
2076	2905	9851	5493	4357	12756	5257	9232	996	994	2	-111	-439	-2160	-19	12755	-2352
Average	3,823	8,464	4,720	3,744	12,288	3,865	9,232	1,630	1,624	6	-114	-445	-2,032	151	12,286	-42
Min	1,016	2,359	1,316	1,044	6,654	16	9,232	89	89	0	-284	-668	-2,668	-66	6,655	-16,840
Max	6,151	29,357	16,371	12,986	35,479	21,956	9,232	6,267	6,143	124	185	-211	-1,225	645	35,476	5,565