

Artesian City Critical Ground Water Area

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This area was originally established as the Goose Creek-Rock Creek Critical Ground Water Area (CGWA) in 1962. This area was subdivided into 3 CGWAs in 1967. The West Oakley Fan CGWA was established in 1982; it is now known simply as the Oakley Fan CGWA. The Artesian City CGWA is the furthestmost west of the four CGWAs (Figure 1).

The aquifers are predominately Snake River Group (basalt) and Idavada Volcanics (rhyolite). One of the wells used for this analysis is completed in Quaternary alluvium. The aquifer type in six of the wells is indeterminate because of either missing well logs or incomplete information on well logs. For these wells, the aquifer was estimated using information from nearby wells.

There are three active IDWR monitoring wells (Figures 2 – 5). There are eight other wells in the Artesian City CGWA with long term water level records, and one or more water level measurements since 2011 (Figures 2, 6 - 13). All 11 wells have observable declining water level trends, ranging from 0.3 to 5.1 ft/yr. The average decline for the 11 wells was 1.9 ft/yr. Six of the 11 wells have declines greater than 1 ft/yr. Nine of the wells have declining trends that are statistically significant at the 95 percent confidence level. Summary statistics for the 11 wells that were analyzed are provided in Table 1.

Table 1. Summary statistics for 11 wells in the Artesian City CGWA.

Map Well Number	Station Name	Probability ¹	Mann Kendall Statistic
1	11S 20E 33DAD1	0	0.365
2	12S 19E 02BBC1	0	0.486
3	12S 20E 03CAC2	0	0.347
4	11S 19E 17ABA1	0	0.269
5	11S 19E 13CCC1	0.06	0.524
6	11S 19E 19DAD2	0.069	0.136
7	11S 19E 30ADD1	0	0.459
8	11S 19E 31ADD2	0.001	0.52
9	11S 20E 33ABC1	0.048	0.5
10	11S 20E 32CAD1	0	0.939
11	12S 20E 04DBC1	0	0.44

¹Probability values less than 0.05 indicate that the trend is significant at the 95 percent confidence level.

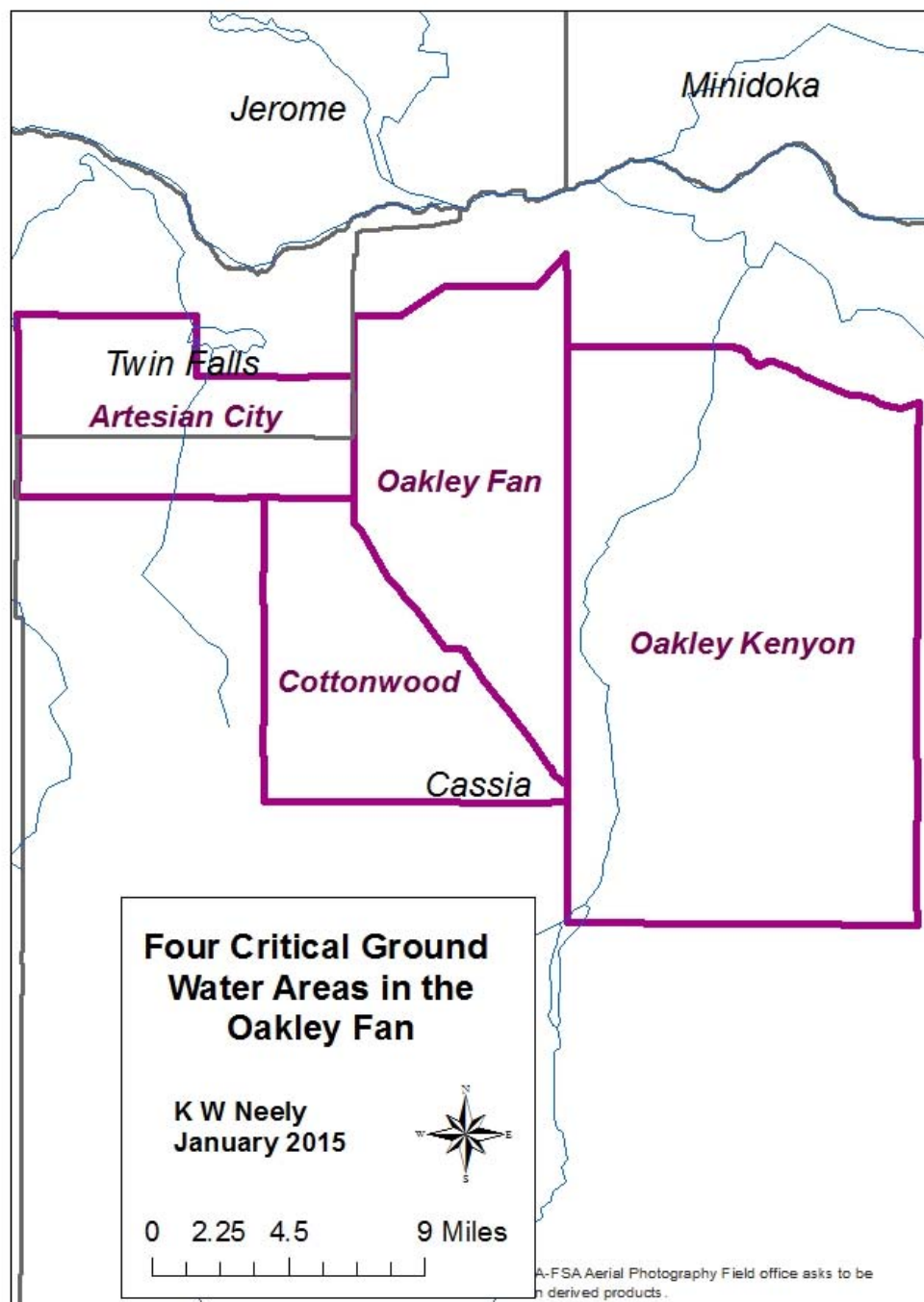


Figure 1. IDWR's four Critical Ground Water Areas in the Oakley Fan.

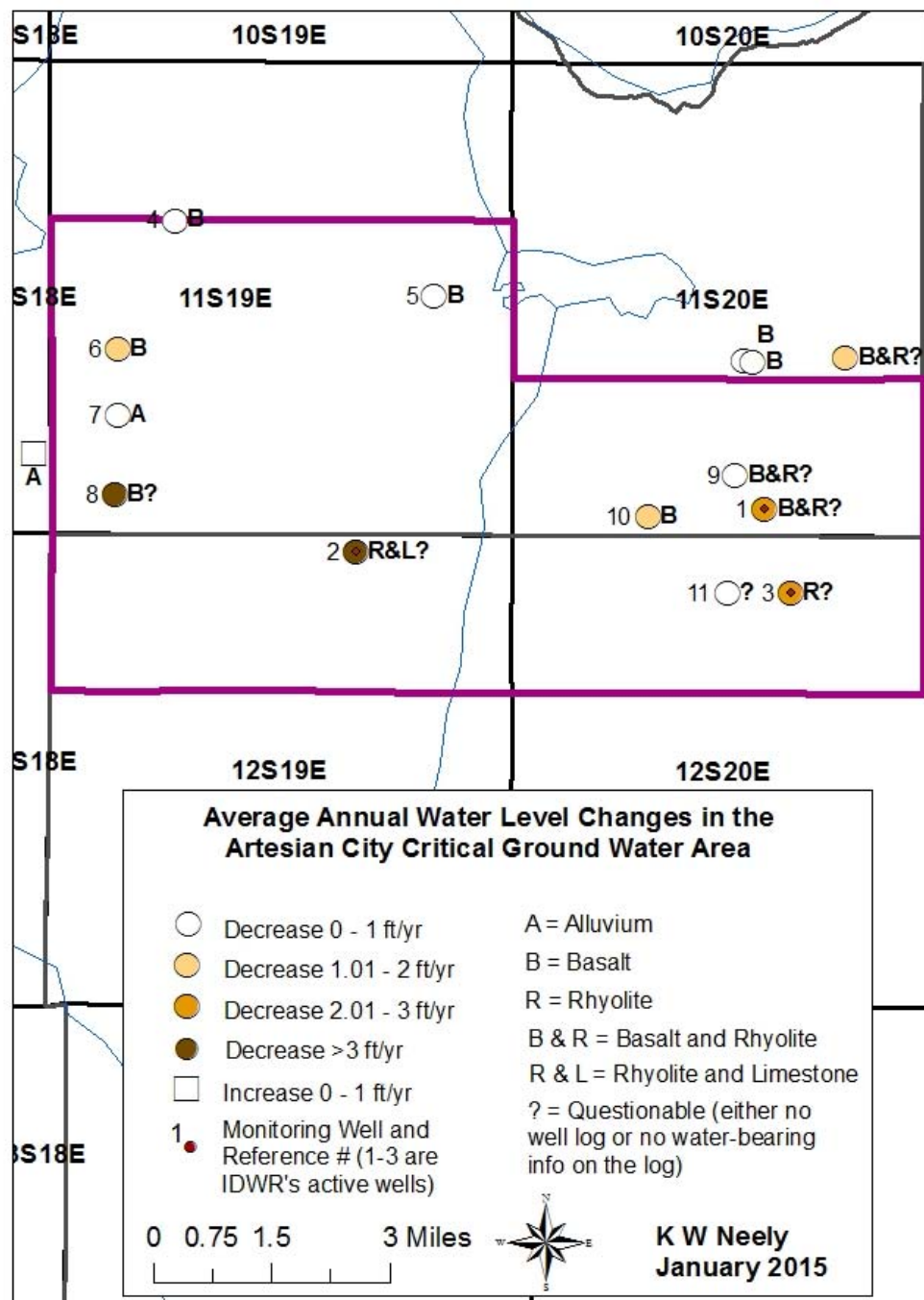


Figure 2. Average annual water level changes in the Artesian City Critical Ground Water Area.

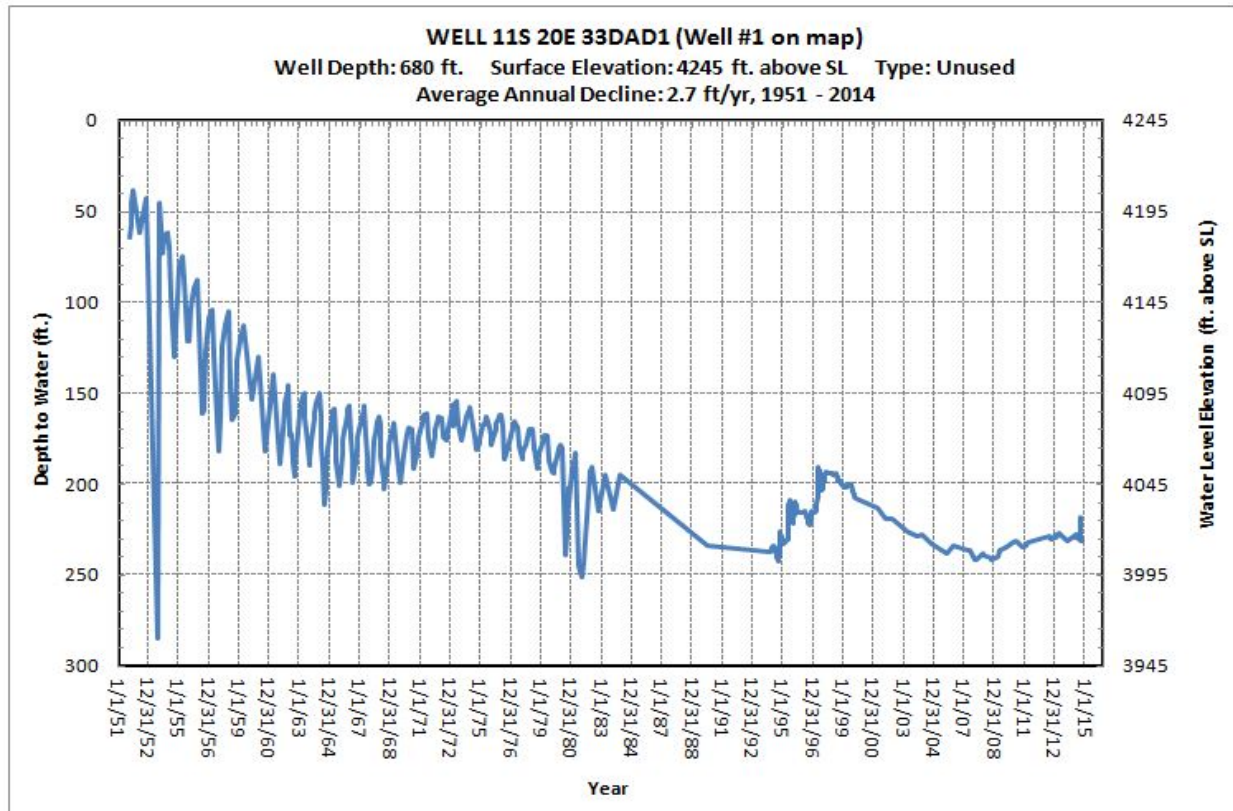


Figure 3. Ground water level hydrograph for 11S 20E 33DAD1, 1951 – 2014.

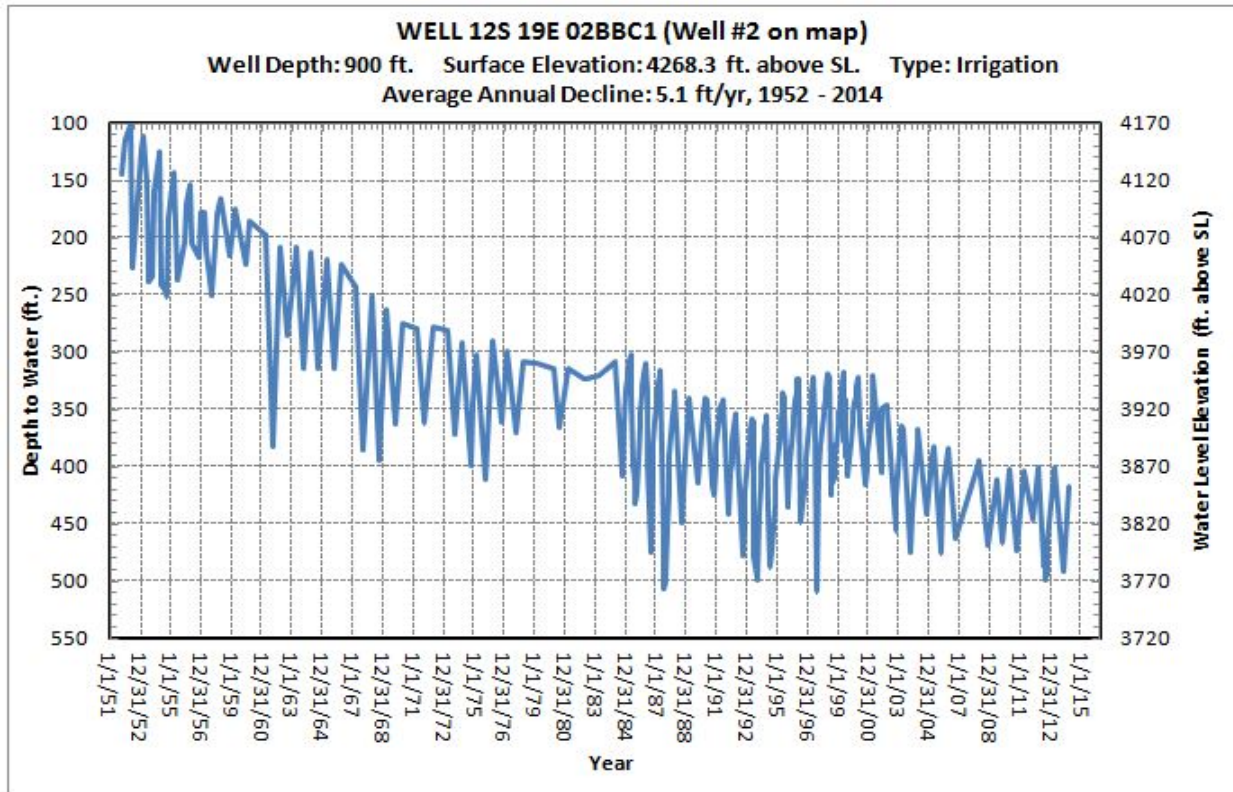


Figure 4. Ground water level hydrograph for 12S 19E 02BBC1, 1951 – 2014.

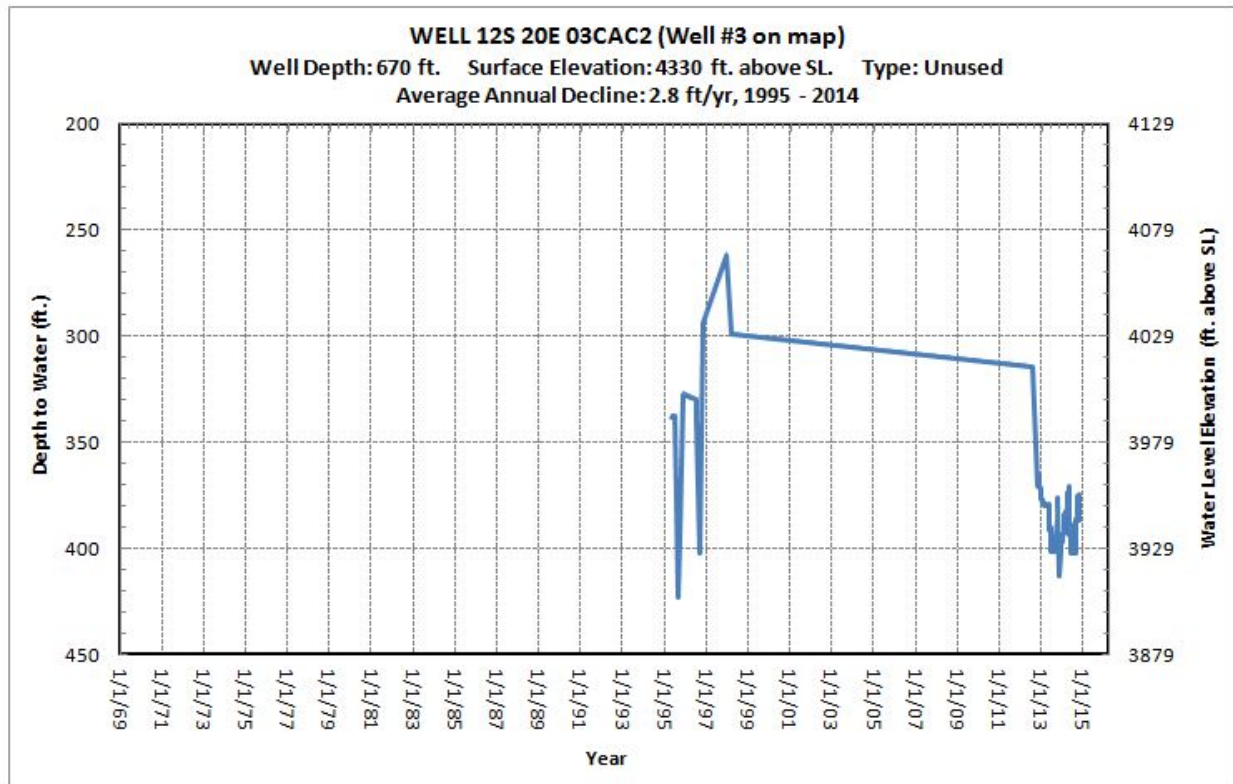


Figure 5. Ground water level hydrograph for 12S 20E 03CAC2, 1995 – 2014.

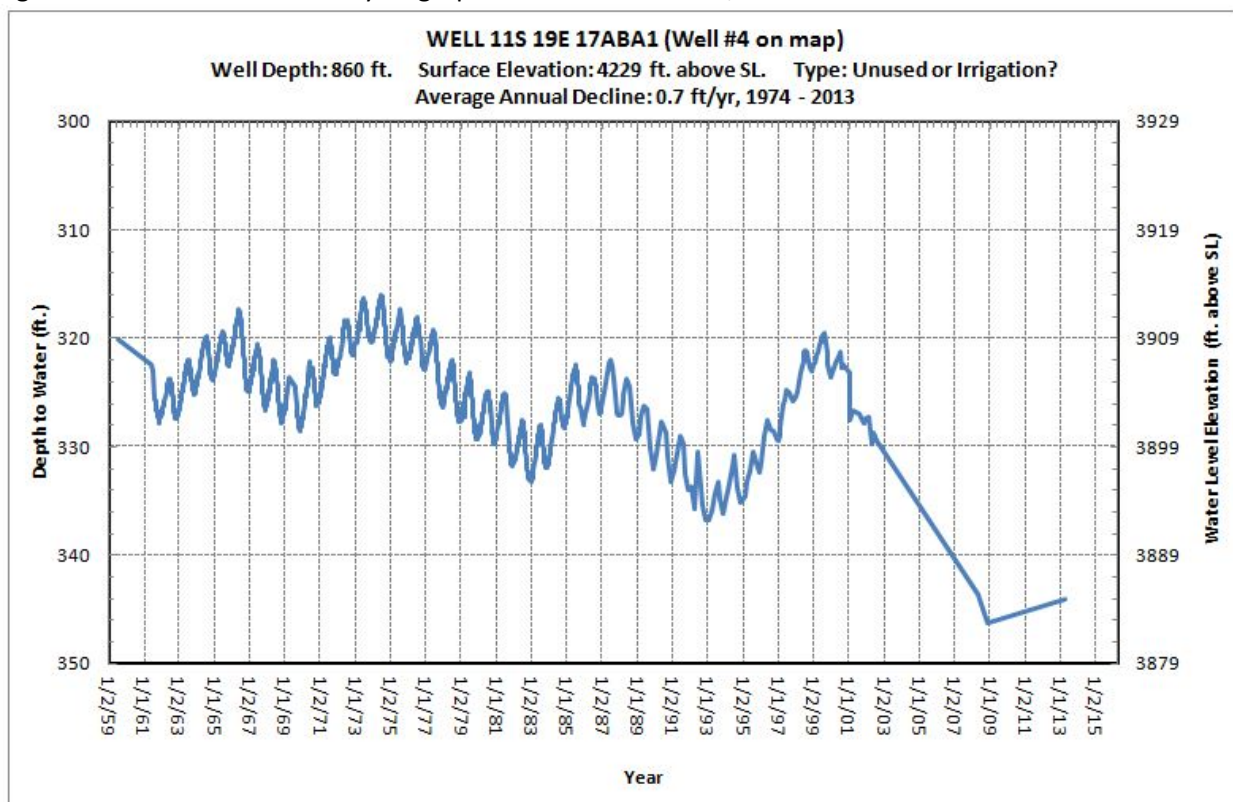


Figure 6. Ground water level hydrograph for 11S 19E 17ABA1, 1959 – 2013.

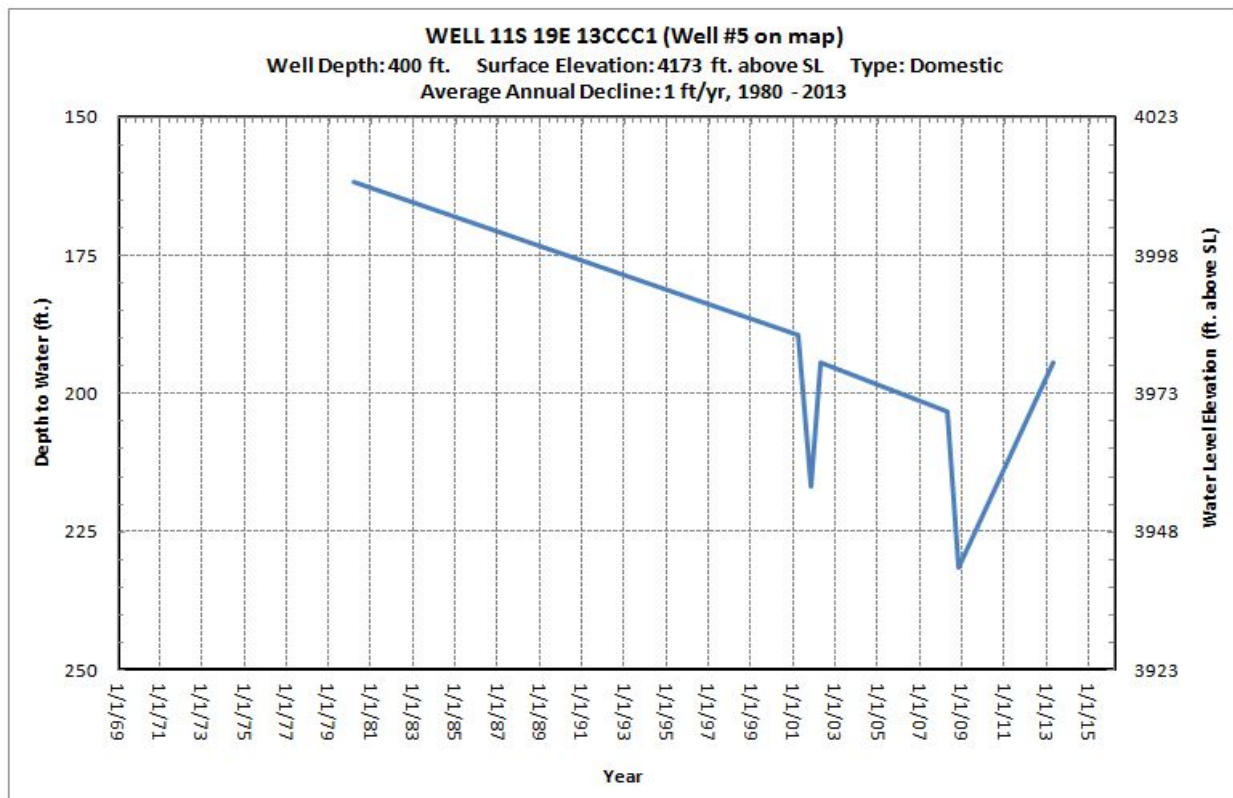


Figure 7. Ground water level hydrograph for 11S 19E 13CCC1, 1980 – 2013.

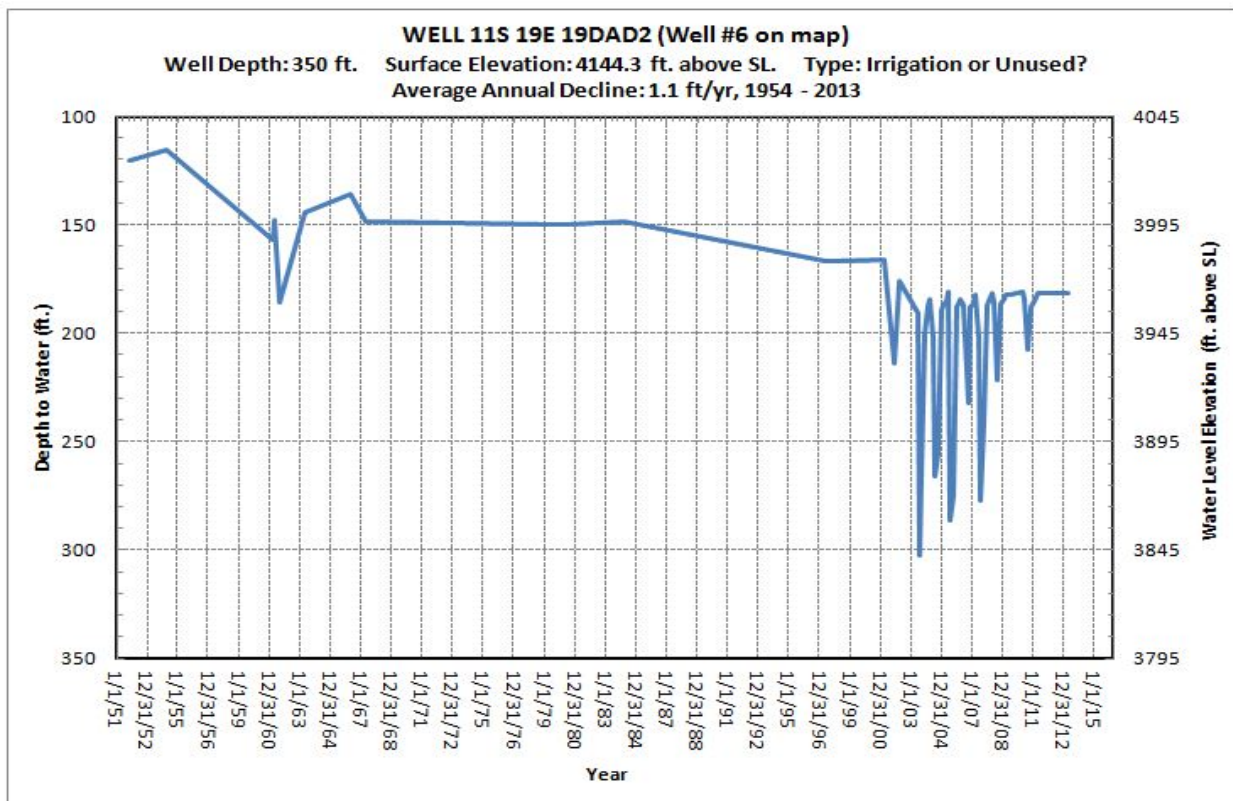


Figure 8. Ground water level hydrograph for 11S 19E 19DAD2, 1951 – 2013.

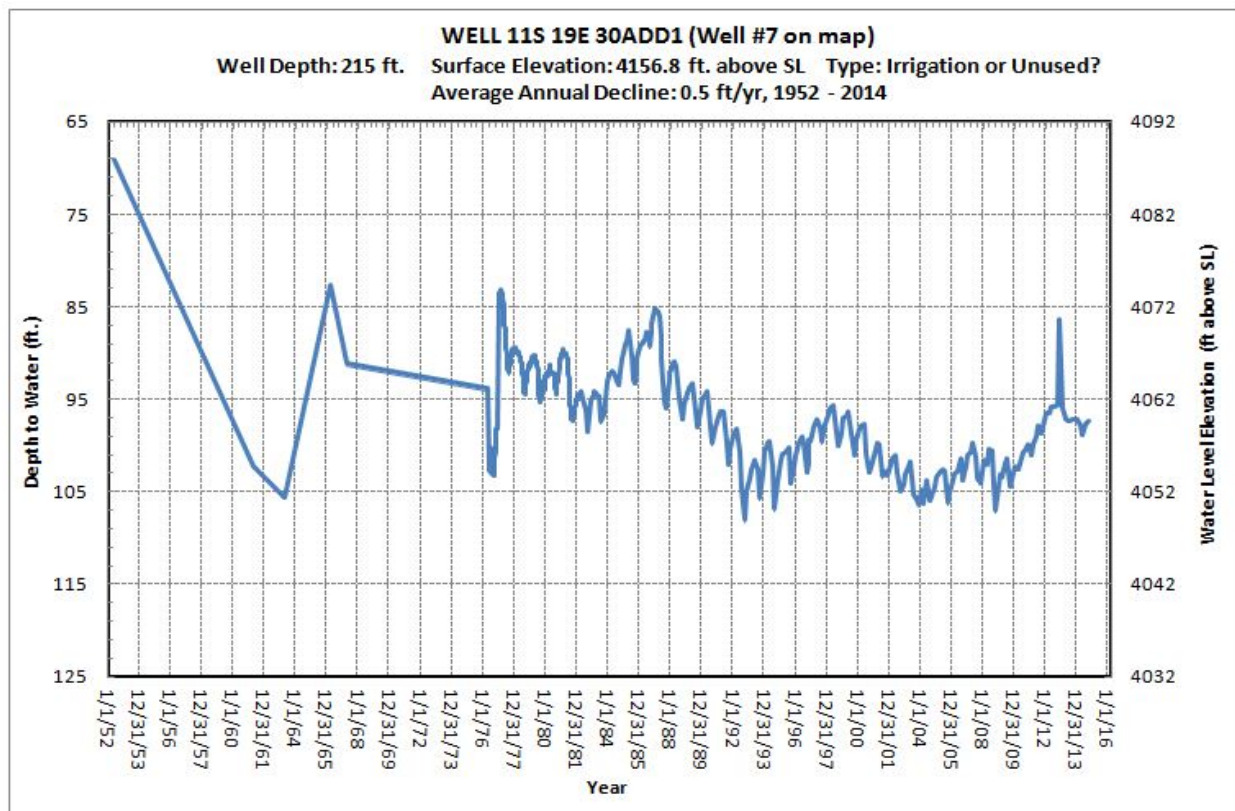


Figure 9. Ground water level hydrograph for 11S 19E 30ADD1, 1952 – 2014.

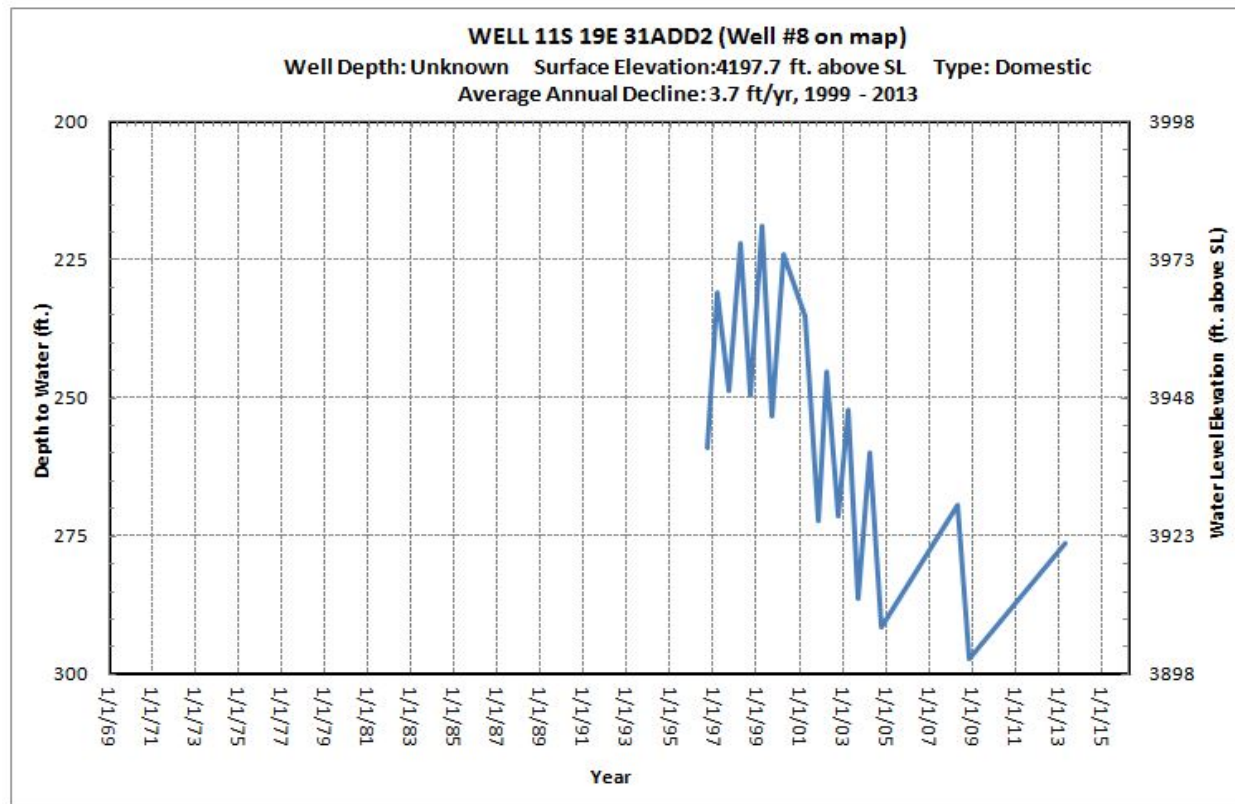


Figure 10. Ground water level hydrograph for 11S 19E 31ADD2, 1997 – 2013.

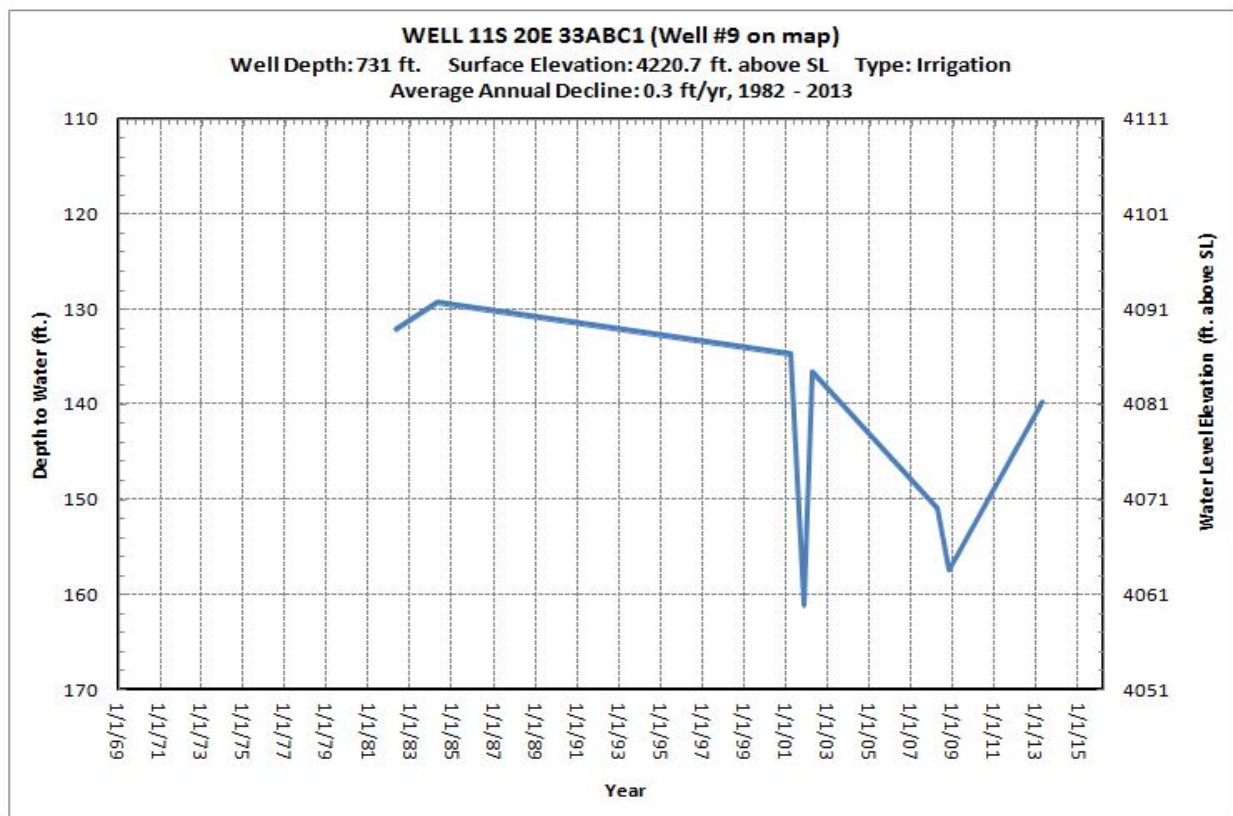


Figure 11. Ground water level hydrograph for 11S 20E 33ABC1, 1982 – 2013.

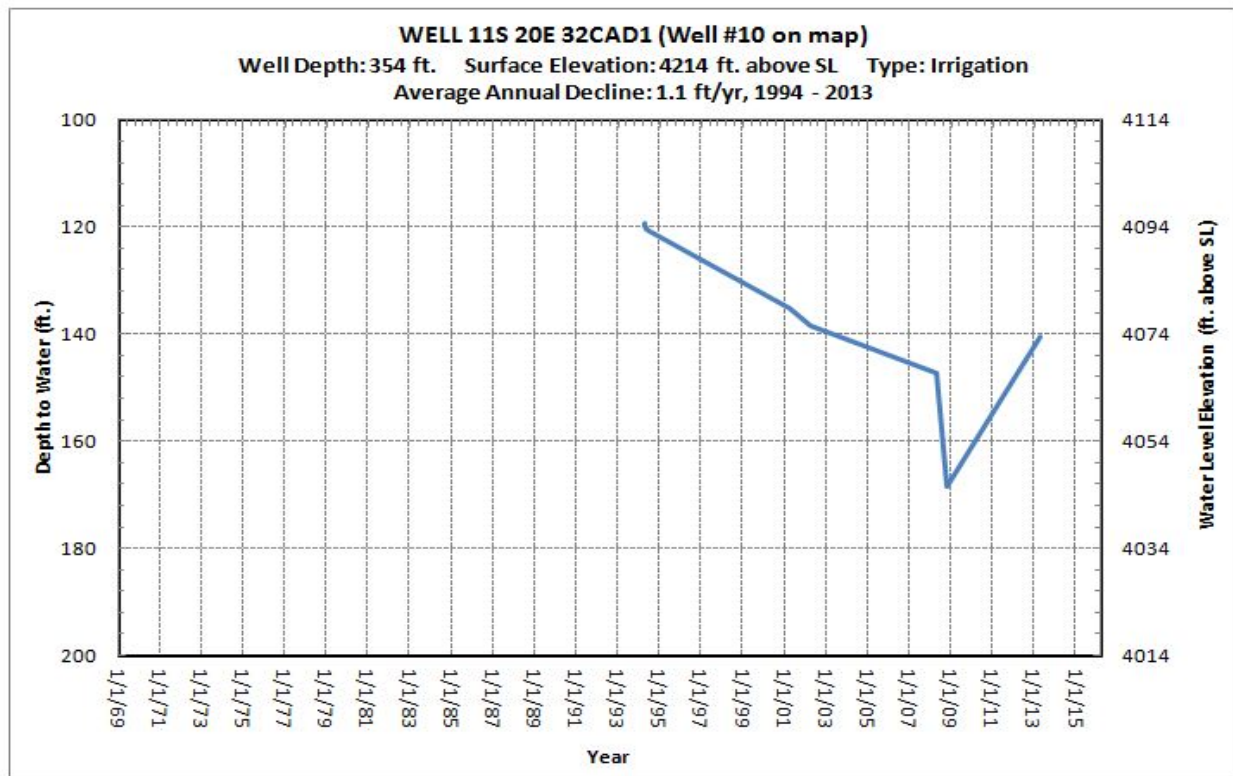


Figure 12. Ground water level hydrograph for 11S 20E 32CAD1, 1994 – 2013.

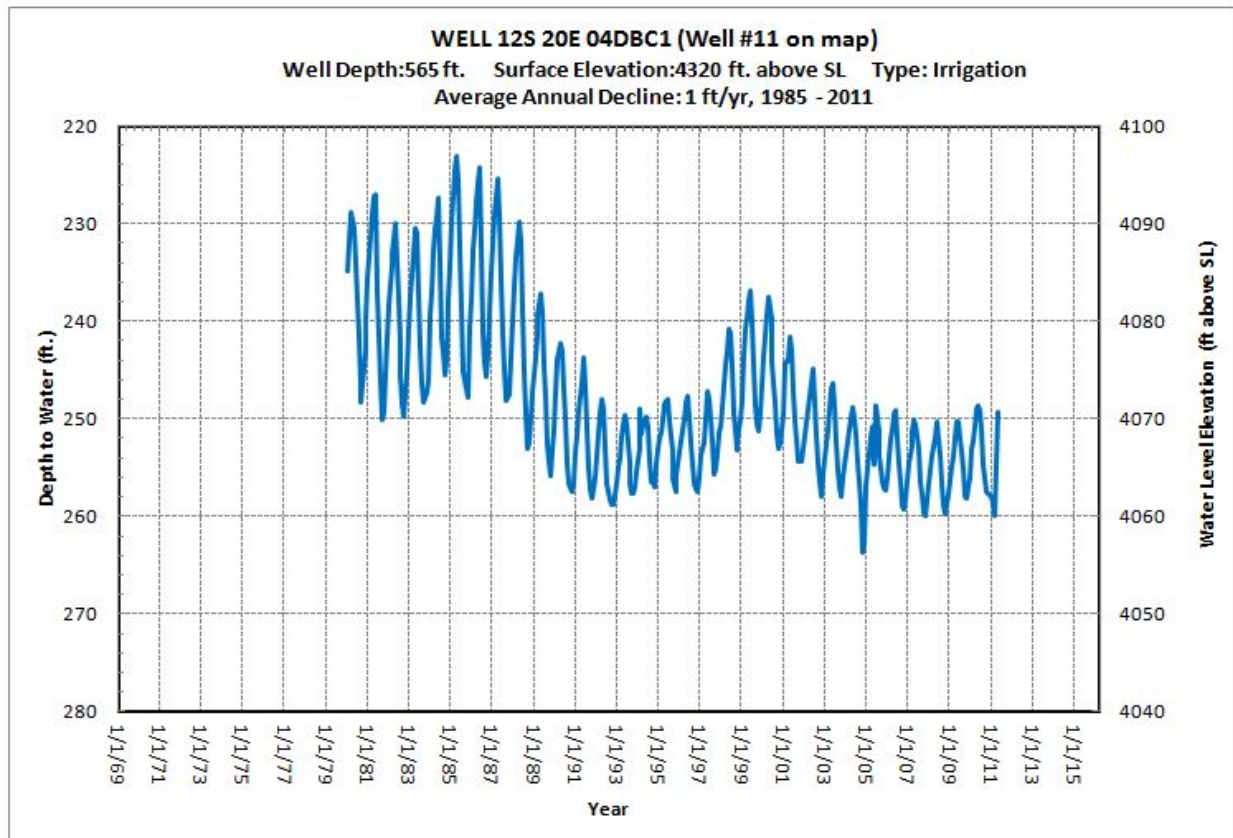


Figure 13. Ground water level hydrograph for 12S 20E 04DBC1, 1980 – 2011.