IDAHO DEPARTMENT OF WATER RESOURCES

Update of Groundwater Conditions in the Mountain Home Ground Water Management Area and Cinder Cone Butte Critical Ground Water Area

Amy Steimke, P.G.

June 2025

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Introduction

The Idaho Department of Water Resources (IDWR) manages and maintains water-level monitoring networks in the Mountain Home Ground Water Management Area (MHGWMA) and the Cinder Cone Butte Critical Ground Water Area (CCBCGWA) located on the Mountain Home Plateau.

This report gives a brief background on the development of water resources on the plateau and describes the physical setting of the study area. The report then summarizes the status of groundwater-monitoring efforts and water-level trends from data collected from these combined management areas through 2024.

Study Area

The study area used for this report is the combined management areas of the MHGWMA and the CCBCGWA (**Figure 1**). Most of the study area is within Elmore County, but the western part is in Ada County. A portion of land in the western part of the study area, the Orchard Training Area, is used by the Idaho National Guard and Army Reserve as a combat-training site. Areas of significant population within the study area include the City of Mountain Home, which has an estimated population of approximately 16,000 residents and the Mountain Home Air Force Base, with approximately 3,000 residents (US Census, 2024). This base is vitally important to the economy of Elmore County as it is estimated to account for 54% of the employment in the county, and in 2018 had a total effect of $792.6 million on the local economy (Holley and Giuntini, 2019).

After the Mountain Home Air Force Base, agriculture is the second-largest sector of the economy. Primary crops grown in the study area are corn, alfalfa, and wheat. There are also several large dairies in operation, with most of them located south of the City of Mountain Home.

History of Water Development

Surface-water sources on the Mountain Home Plateau are limited. Small, range-front streams (e.g., Canyon Creek, Rattlesnake Creek) provide for a minor amount of irrigation. Water that is diverted from the South Fork Boise River drainage at Little Camas Reservoir, sent through Canyon Creek, and stored in Mountain Home Reservoir, provides additional surface-water irrigation. Snake River water is also pumped up to the southeastern portion of the plateau and provides a reliable source of irrigation water to farms in that area. The remaining irrigation on the plateau utilizes groundwater. In 2023, it was estimated that approximately 40,000 acres were irrigated with either surface or groundwater within the combined management areas (IDWR, 2024a).

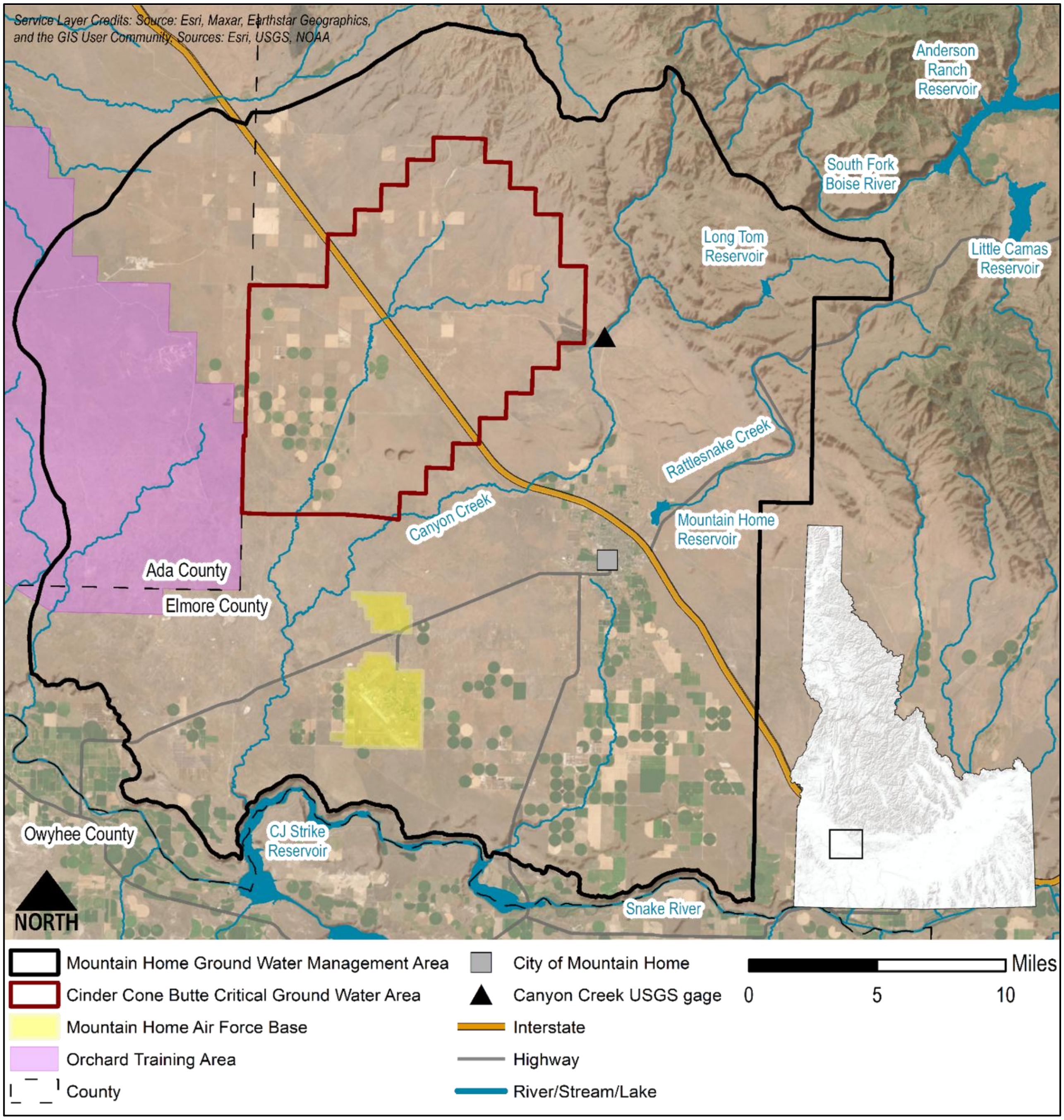


Figure 1: Overview map of the study area. Note the foothills in the northeast portion of the study area.

Groundwater development began in the 1930s but growth accelerated substantially in the 1960s (**Figure 2**). Due to declining water levels, IDWR designated the Cinder Cone Butte Critical Ground Water Area on May 7, 1981 (IDWR, 1981). Following this designation, IDWR conducted a wider study to evaluate water resources on the Mountain Home Plateau which indicated an overdraft of the aquifer (Norton and others, 1982). This study led to IDWR designating the Mountain Home Ground Water Management Area on November 9, 1982 (IDWR, 1982). Since designating these management areas, little additional groundwater development has occurred (**Figure 2**).

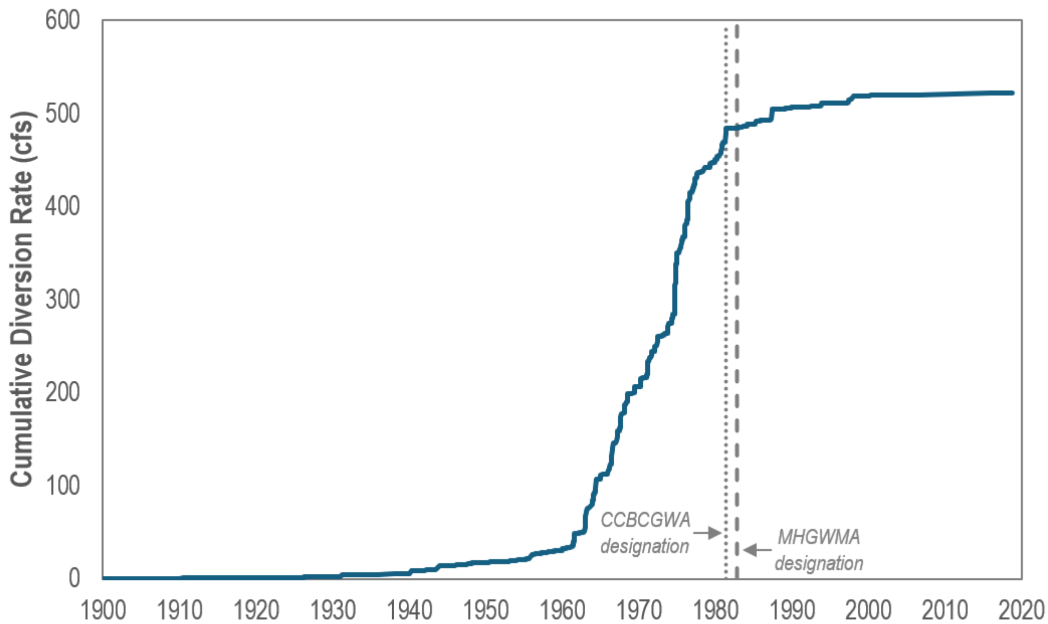


Figure 2: Groundwater diversion rates for water right points of diversions (PODs) within the MHGWMA and CCBCGWA. The dotted line is CCBCGWA designation date, and the dashed line is MHGWMA designation date.

Current Water Sustainability Efforts

Efforts are underway to reduce the region's reliance on groundwater and enhance aquifer levels on the Mountain Home Plateau. Several projects (existing, under development, and proposed) are part of this effort.

Elmore County currently holds a water right to conduct aquifer recharge when excess water is available from Canyon Creek. Just upstream of where Canyon Creek crosses under the interstate, water can be diverted into two gravel pits to conduct recharge.

Groundwater currently serves as the primary water source for the Mountain Home Air Force Base. However, concerns about its long-term sustainability have led to the construction of a pipeline to transport surface water from the Snake River to the base. Once delivered, the water will be treated for use as a substitute for groundwater. The State of Idaho is funding the pipeline construction, while the base is financing the water treatment plant. The entire project is expected to be completed by 2027.

Elmore County is also pursuing two additional water rights to develop water sustainability projects. The first involves a water right permit to pump water from Anderson Ranch Reservoir into Little Camas Reservoir for storage. The water would then be diverted through the existing diversion works between Little Camas Reservoir, Long Tom Reservoir, and Canyon Creek, where it would be used for aquifer recharge or for irrigation. The second project involves an application for a water right to divert water from the Snake River, which would then be piped to the plateau for aquifer recharge and other uses.

In 2021, Elmore County petitioned the Idaho Water Resource Board (IWRB) to incorporate the Mountain Home Plateau into the Treasure Valley groundwater-flow model. In response to that petition, the IWRB funded a study to collect necessary hydrogeologic data for future groundwater-model development. The study is expected to be completed in 2025 and includes developing a hydrogeologic framework and water budget, conducting water-level mass measurement events, well drilling, and borehole geophysics. The expansion of the Treasure Valley groundwater-flow model to include the Mountain Home Plateau has been funded by the IWRB and is expected to commence in 2025 after the study is complete.

Physical Setting

Hydrogeology

The geology and hydrogeology of the Mountain Home Plateau has been described in previous studies (Norton et al., 1982; Ralston and Chapman, 1968; Tesch, 2013; Young, 1977). Recently and in cooperation with IDWR, the U.S. Geological Survey (USGS) has compiled a three-dimensional hydrogeologic model and conceptual hydrogeologic framework of the plateau (Zinsser and Ducar, 2025).

Generally, a regional aquifer system is hosted in the Bruneau Formation, a unit in the Idaho Group, and is composed of fluvial and lacustrine fine-grained sediments and basalt flows (Ralston and Chapman, 1968). Depths to water in this aquifer system range from 150 to nearly 800 feet (Zinsser and Ducar, 2025). Groundwater generally flows in a southwesterly direction across the plateau and discharges to the Snake River.

A perched aquifer system can be found near the vicinity of and to the south of the City of Mountain Home. This perched aquifer was first delineated by Young (1977) and was hypothesized that the perching material was clay beds found in interflow zones of basalt. Zinsser and Ducar (2025) further examined the perched aquifer and found it to occur primarily in basalt in areas north of the interstate and sediments south of the interstate. Zinsser and Ducar (2025) found no evidence of an extensive fine-grained sediment layer responsible for perching conditions, instead attributing perching conditions to variations in vertical and horizontal hydraulic conductivity within the basalt layers as water moves from the foothills and downward toward the regional aquifer. Based on mass measurement events of water levels performed in spring and fall 2023 (Zinsser and Ducar, 2025, **Appendix A**), groundwater generally flows southwesterly to westerly in the perched aquifer.

Climate

Annual precipitation was calculated using the gridded PRISM dataset (PRISM Climate Group, 2024) for the study area but excluded the portion in the foothills. This resulted in an average annual precipitation of 10.1 inches from 1961-2023 (**Figure 3**). Looking at the period from 2000-2023, this average drops to 9.7 inches annually.

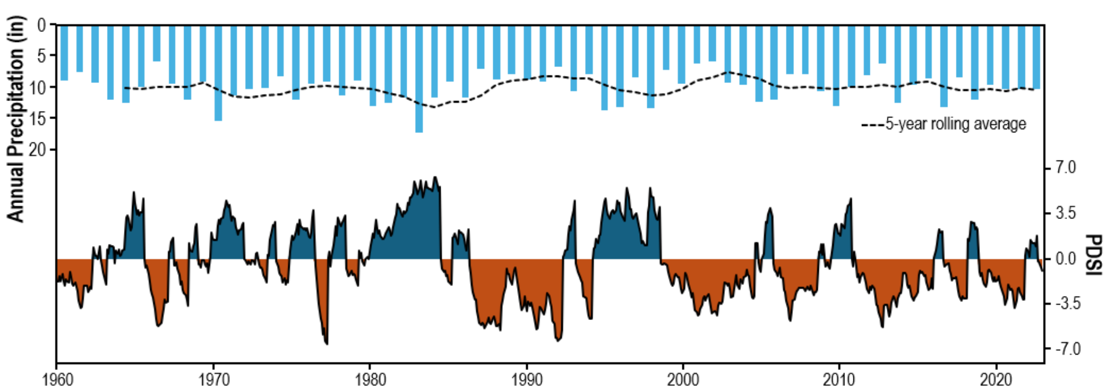


Figure 3: Palmer Drought Severity Index for Idaho Southwestern Valleys region and annual precipitation totals in the plains portion of the study area.

The Palmer Drought Severity Index (PDSI) combines precipitation and temperature and can be used to look at longer-term patterns of regional drought. PDSI values greater than two indicate moist conditions and values less than negative two indicate drought conditions. The greater the magnitude of the index, the more severe the drought/moistness is. The Mountain Home Plateau lies within the Southwestern Valleys climate division in Idaho and PDSI values from 1960-2023 are shown in **Figure 3** (NOAA, 2024). Across the period of record, this area has been at near-normal conditions 44% of the time and in drought conditions 32% of the time. Looking at the period from 2000-2023, drought conditions have increased to 47%, indicating drier conditions recently than the long-term average (**Table 1**).

Table 1: PDSI conditions for Idaho Southwestern Valleys.

PDSI Condition	PDSI Value	1960-2023	2000-2023
Extreme Drought	$x \leq -4$	9%	6%
Severe Drought	$-4 < x \leq -3$	10%	15%
Moderate Drought	$-3 < x \leq -2$	14%	26%
Near Normal	$-2 < x < 2$	44%	44%
Unusually Moist	$2 \leq x < 3$	9%	6%
Very Moist	$3 \leq x < 4$	8%	2%
Extremely Moist	$x \geq 4$	7%	1%

Water-Level Analyses

Water-Level Network

IDWR maintains a network of 28 actively monitored wells and two recently inactive wells with historic data within the study area (**Figure 4**, **Table 2**). In spring and summer 2024, IDWR installed five new monitoring wells on the Mountain Home Plateau to fill in data gaps (**Figure 4**). These new wells do not yet have enough data to analyze but will be discussed in future reports.

Water-level data used in this report were obtained from IDWR's internal database which serves data to the public via the Groundwater Data Portal (IDWR, 2024b). In some cases, data were also obtained from the USGS's National Water Information System database (USGS, 2024).

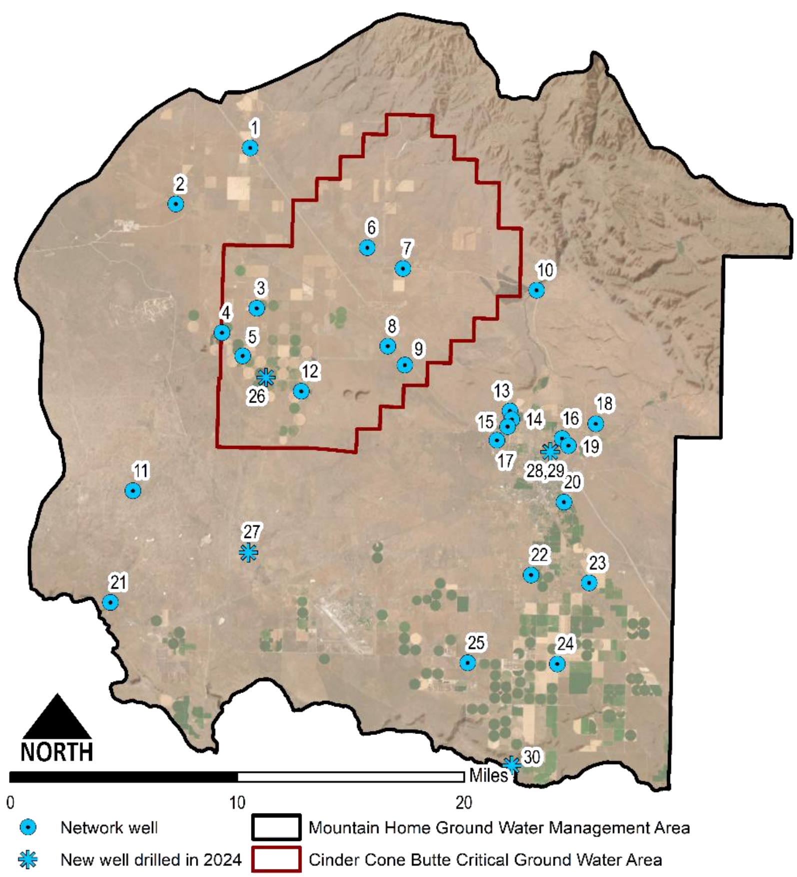


Figure 4: IDWR monitoring network covered in this report. Refer to **Table 2** for well metadata.

Table 2: Summary of active or recently inactive monitoring wells in the study area.

Well ID	Station	Status	Total Depth (ft)	Water Use	Latitude	Longitude	Elevation (ft AMSL)	Period of Record
1	01S 04E 10DAD1	Active	525	Irrigation	43.3478	-115.9556	3,311	1960-present
2	01S 04E 30AAC1	Active*	750	Unused	43.3109	-116.0194	3,156	1967-present
3	02S 04E 14CDD1	Active	-	Irrigation	43.2457	-115.9466	3,126	1981-present
4	02S 04E 22CCC2	Active	-	Irrigation	43.2296	-115.9764	3,086	1981-present
5	02S 04E 27DDD1	Inactive[1]	1,190	Irrigation	43.2151	-115.9579	3,082	1976-2020
6	02S 05E 03BAB1	Active	-	Domestic	43.2859	-115.8513	3,298	1975-present
7	02S 05E 11AAB1	Active	-	Irrigation	43.2731	-115.8197	3,328	1981-present
8	02S 05E 26BDB1	Active	429	Unused	43.2233	-115.8315	3,193	1960-present
9	02S 05E 36BBB1	Active	357	Unused	43.2115	-115.8163	3,190	1960-present
10	02S 06E 11DAC1	Active	1,620	Unused	43.2610	-115.7026	3,548	1967-present
11	03S 03E 36BAB1	Active	557	Domestic	43.1274	-116.0509	3,061	2022-present
12	03S 05E 06ACC1	Inactive[1]	-	Irrigation	43.1933	-115.9061	3,085	1981-2021
13	03S 06E 10ABA1	Active*	622	Irrigation	43.1837	-115.7237	3,237	1990-present
14	03S 06E 10ACD2	Active*	400	Domestic	43.1783	-115.7219	3,231	1998-present
15	03S 06E 10DBC1	Active	220	Irrigation	43.1737	-115.7255	3,221	1998-present
16	03S 06E 13AAD1	Active	525	Irrigation	43.1668	-115.6777	3,254	1976-present
17	03S 06E 15BCD1	Active	402	Domestic	43.1648	-115.7346	3,198	1976-present
18	03S 07E 08DBB1	Active	225	Domestic	43.1766	-115.6486	3,333	1976-present
19	03S 07E 18CAB1	Active	250	Domestic	43.1623	-115.6720	3,261	1976-present
20	03S 07E 31BBA1	Active*	145	Unused	43.1263	-115.6750	3,134	2023-present
21	04S 03E 23CDD1	Active*	600	Unused	43.0558	-116.0680	2,919	1976-present
22	04S 06E 14ACA1	Active	700	Irrigation	43.0793	-115.7024	3,085	1976-present
23	04S 07E 17CAB1	Active	500	Domestic	43.0750	-115.6517	3,090	1976-present
24	05S 06E 01AAD1	Active	435	Domestic	43.0229	-115.6780	3,068	1976-present
25	05S 06E 04BBC1	Active	495	Irrigation	43.0225	-115.7559	3,038	1976-present
26	02S 04E 36CCC1	Active*	700	Unused	43.2018	-115.9371	3,081	2024-present
27	04S 04E 11CAD1	Active*	605	Unused	43.0899	-115.9490	2,983	2024-present
28	03S 06E 13CDA1	Active*	460	Unused	43.1583	-115.6879	3,207	2024-present
29	03S 06E 13CDA2	Active*	150	Unused	43.1582	-115.6880	3,207	2024-present
30	05S 06E 27CBC1	Active*	505	Unused	42.9577	-115.7158	2,775	2024-present

* Indicates that a pressure transducer is installed in well.
[1] Well is obstructed and no longer measured.

Water-Level Hydrographs

Wells located near each other or showing similar water-level trends over time were grouped together (**Figure 5**). Water levels for each group were plotted (**Figure 6**), and descriptive trends are discussed below. Wells lacking a long-term record are excluded from this section. Refer to **Appendix B** for individual hydrographs.

Wells located in the northwestern portion of the study area and located north of the freeway exhibit little substantial change in water levels over time (**Figure 6A**). Well 1 was previously unused and water levels slowly rose from the 1960s to around 2020. Water levels in this well have been declining since it was put into production in 2020. Water levels in Well 7 have declined since monitoring began in the 1980s but have not done so linearly. Well 6 has risen over its period of record.

Well 2, also located in the northwest, is an unused well and has a unique water-level record compared to other wells in the study area (**Figure 6B**). Water levels in this well rose until around the year 2000 but have since been declining. One potential explanation for this change is that a cone of depression from the CCBCGWA could be expanding and water levels in this well are now influenced by pumping that occurs to the southeast of it.

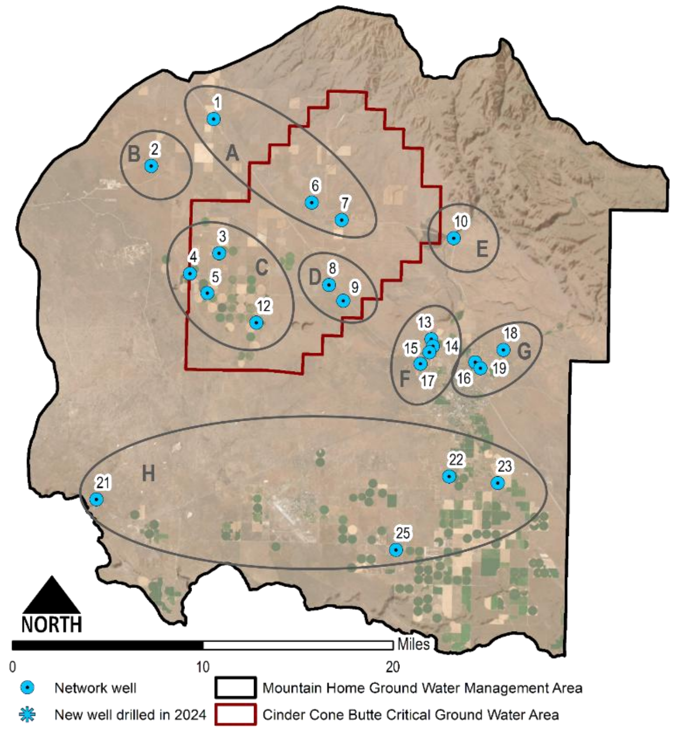


Figure 5: Groupings selected for Figure 6.

Wells 3, 4, 5, and 12 are located in the southwestern portion of the CCBCGWA, which is where the majority of groundwater-supplied agriculture is concentrated. Water levels in these wells have declined 60 to 180 feet over their periods of record (**Figure 6C**). These wells are all irrigation wells where measurements can be difficult to obtain and pressure transducers cannot be installed. IDWR recently installed a new monitoring well between wells 5 and 12 (**Figure 4**), which will allow IDWR to evaluate water-level changes that occur during the irrigation season.

Wells 8 and 9 are unused wells located in the eastern portion of the CCBCGWA and show relatively stable and rising water levels from the 1960s to the early 1990s (**Figure 6D)**. Beginning in the 1990s and continuing to present, water levels have been steadily declining at a rate of about 1/3 foot a year. As with Well 2, a possible explanation for the declines could be an expansion of the cone of depression from pumping occurring in the southwestern portion of the CCBCGWA.

Well 10 is a deep well (1,620 feet) located on the banks of Canyon Creek and adjacent to the Canyon Creek USGS gage (Site ID 13159800, **Figure 1**). Water levels in this well rose until approximately the year 2000 and then began to stabilize (**Figure 6E**). This well does not appear to be correlated to flows in Canyon Creek and the record of its use is unknown.

Wells 13, 14, 15, and 17 are in the western portion of the City of Mountain Home and are open to the perched aquifer system. Water levels in Wells 13, 14, and 15 typically respond to flows in Canyon Creek and nearby recharge activities that occur when water is available (**Figure 6F**). Well 17 is located further south than the others and has had little water-level change over its available period of record.

Wells 16, 18, and 19 are in the northeast portion of the City of Mountain Home. Water levels in these wells do not exhibit any discernible trends over the period of record (**Figure 6G**).

Wells 21, 22, 23, and 25 are located in the southern portion of the MHGWMA. These wells all show steady declines in water levels ranging from approximately 30 to 70 feet (**Figure 6H**). While located in the vicinity, Well 24 was not included in this grouping as it appears to show an artificial rise in water levels, potentially from leakage from surface water irrigation, and is not thought to be representative of the aquifer system. A hydrograph for that well is found in **Appendix B**.

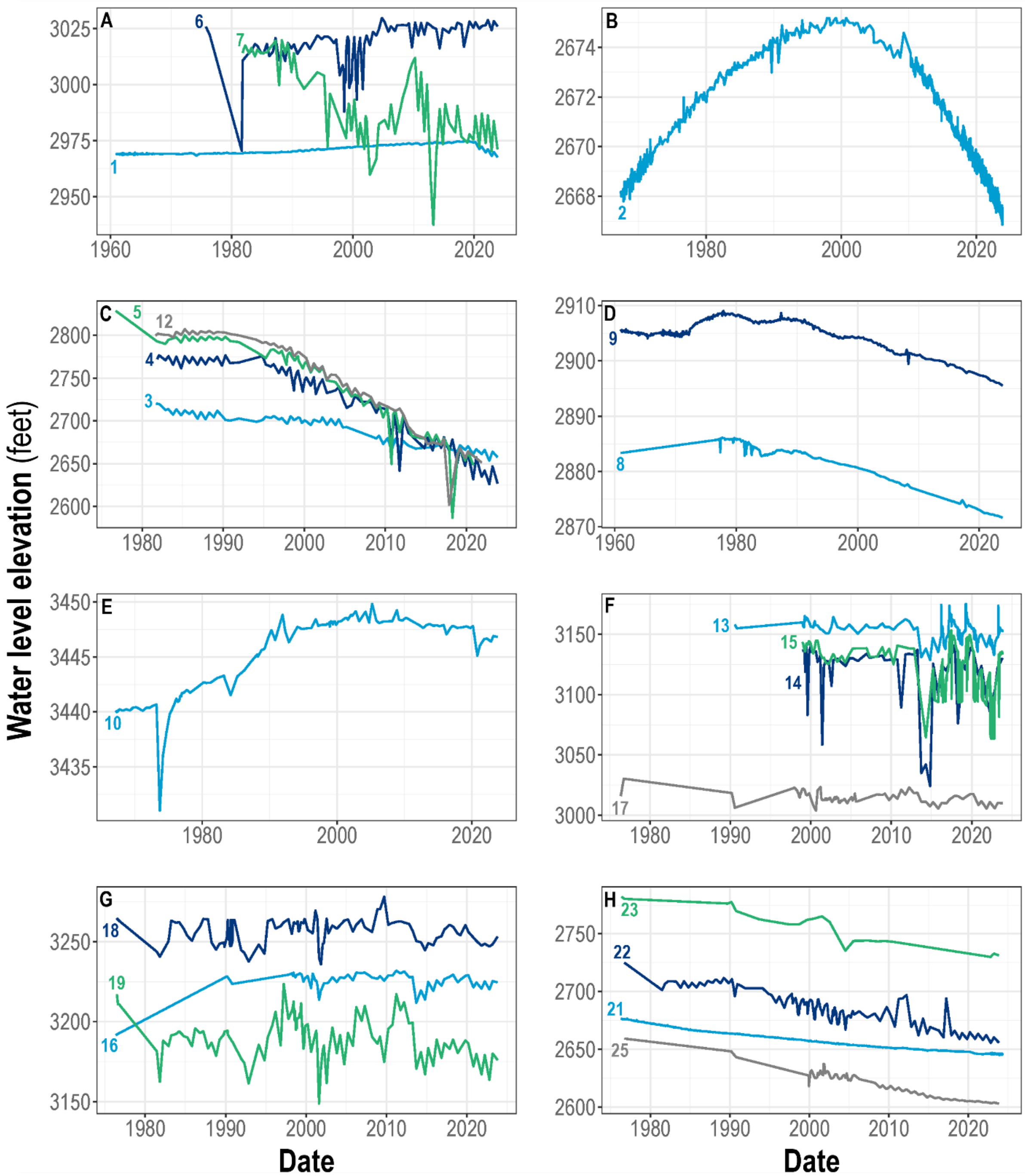


Figure 6: Grouped water-level hydrographs for select wells. Refer to **Figure 5** for locations of wells and groupings A-H. All hydrographs are shown in water-level elevation. Refer to **Appendix B** for individual hydrographs that show both elevation and depth axes. Note that vertical and horizontals scales are not consistent across panels A-H.

Water-Level Changes

Water-level changes and an associated change map were developed using data from fall 1981 and fall 2021 (**Figure 7**). These dates have the greatest number of wells measured and represent a time span long enough to discern trends. Of the 30 wells presented in **Table 2**, 12 wells had water levels during both time periods. The resulting map highlights substantial drawdown in the southern portion of the CCBCGWA, where declines of nearly 150 feet have been observed over this 40-year period.

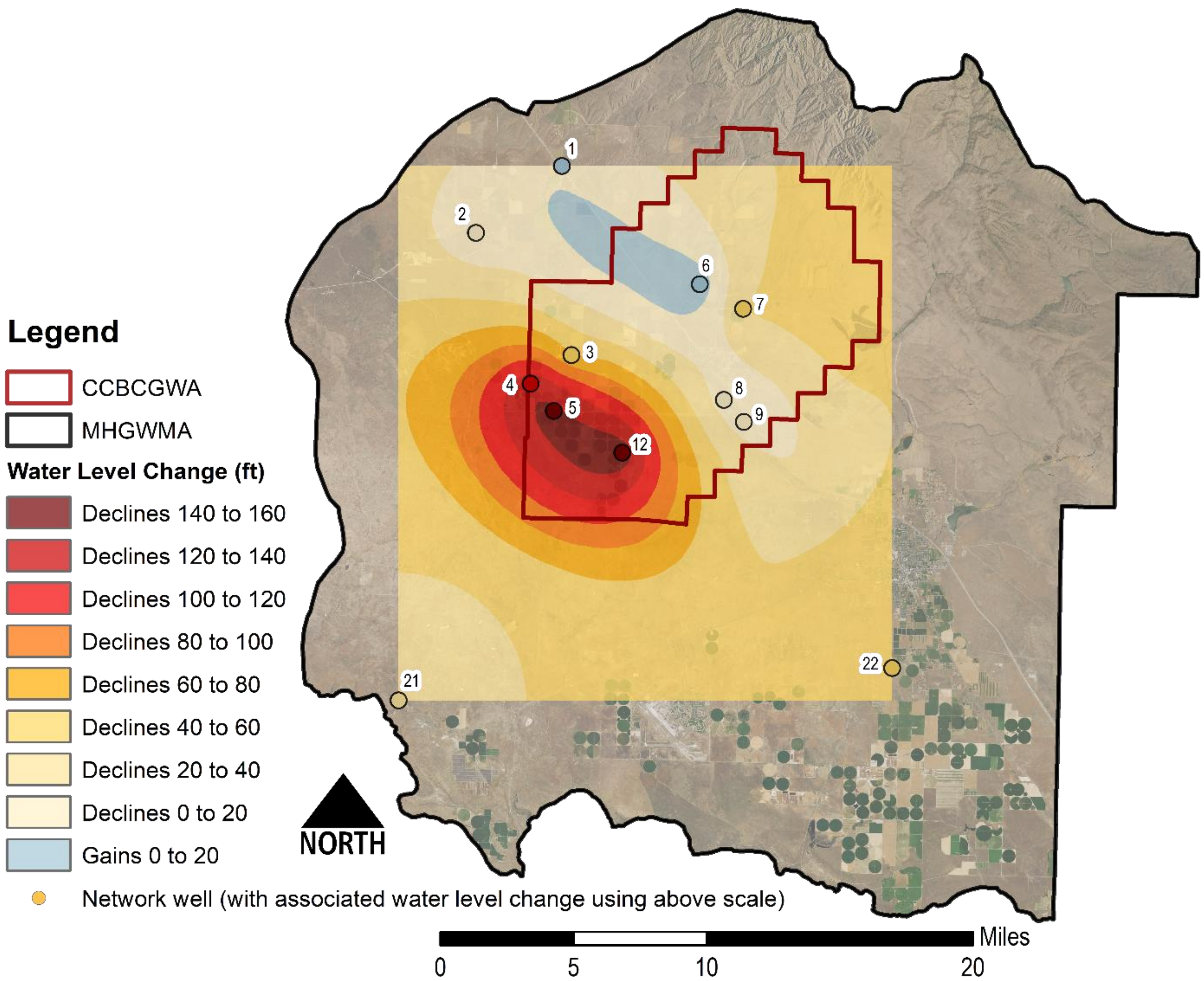


Figure 7: Water-level change between fall 1981 and fall 2021 for wells in the Mountain Home monitoring network.

Water-Level Trends

Water-level trends were calculated for the monitoring network using the Mann-Kendall test (Helsel et al., 2006). This nonparametric test describes trend over time while also providing a measure of its statistical significance. Trends were calculated for wells with at least ten years of observations. Trends were deemed significant at the 95% confidence interval, thus trends with a p-value of less than 0.05 were deemed statistically significant.

Over the period of record, 14 out of 22 wells exhibit statistically significant trends, 11 of which are declining trends (**Table 3**). The steepest declines are in Wells 4, 5, and 12 with declines ranging from 3.5 to 4.5 feet per year (**Figure 8**). These wells are all located within the CCBCGWA. Statistically significant rising trends were observed in three wells (Wells 1, 6, and 10) with rises ranging from 0.1 to 0.3 feet per year. These wells are located north of the interstate and further away from areas of groundwater development.

Table 3: Mann-Kendall test results for spring measurements for wells with sufficient data. Shaded, italicized rows indicate wells that do not have statistically significant trends (p≥0.05) or there is insufficient data to run the analysis (n<10). Unshaded rows have statistically significant trends (p<0.05).

Well ID	Station	Period of Record	Period of Record Trend			2000-2024 Trend		
			Trend (ft/yr)	p-value	# of obs.[1]	Trend (ft/yr)	p-value	# of obs.
1	01S 04E 10DAD1	1960-2024	0.1	0.00	61	*0.1*	*0.17*	*22*
2	01S 04E 30AAC1	1967-2024	*0.0*	*0.09*	*56*	-0.3	0.00	23
3	02S 04E 14CDD1	1981-2024	-1.3	0.00	31	-1.7	0.00	16
4	02S 04E 22CCC2	1981-2024	-3.5	0.00	35	-4.7	0.00	21
5	02S 04E 27DDD1	1976-2020	-4.1	0.00	32	-5.3	0.00	18
6	02S 05E 03BAB1	1975-2024	0.3	0.00	40	0.1	0.02	24
7	02S 05E 11AAB1	1981-2024	-0.8	0.00	34	*-0.3*	*0.49*	*21*
8	02S 05E 26BDB1	1960-2024	-0.3	0.00	40	-0.4	0.00	18
9	02S 05E 36BBB1	1960-2024	-0.2	0.00	63	-0.3	0.00	25
10	02S 06E 11DAC1	1967-2024	0.2	0.00	53	-0.1	0.00	23
12	03S 05E 06ACC1	1981-2021	-4.5	0.00	31	-5.5	0.00	17
13	03S 06E 10ABA1	1990-2024	*-0.3*	*0.09*	*22*	*-0.2*	*0.19*	*21*
14	03S 06E 10ACD2	1998-2024	*-0.5*	*0.08*	*24*	*-0.4*	*0.19*	*23*
15	03S 06E 10DBC1	1998-2024	*-0.4*	*0.11*	*21*	*-0.4*	*0.21*	*20*
16	03S 06E 13AAD1	1990-2024	*-0.1*	*0.49*	*29*	*-0.1*	*0.47*	*25*
17	03S 06E 15BCD1	1975-2024	-0.2	0.03	27	*-0.1*	*0.18*	*23*
18	03S 07E 08DBB1	1976-2024	*-0.1*	*0.23*	*40*	-0.5	0.01	24
19	03S 07E 18CAB1	1976-2024	*-0.2*	*0.17*	*41*	-0.6	0.01	25
21	04S 03E 23CDD1	1976-2024	-0.6	0.00	48	-0.5	0.00	24
22	04S 06E 14ACA1	1976-2024	-1.3	0.00	41	-1.3	0.00	25
24	05S 06E 01AAD1	1976-2024	*0.2*	*0.58*	*13*	*NA*[2]	*NA*	*3*
25	05S 06E 04BBC1	1976-2024	-1.3	0.00	25	-1.3	0.00	24

[1]Refers to the number of years that spring measurements are available.

[2]NA indicates the Mann-Kendall calculation is not applicable due to insufficient data (n<10).

Mann-Kendall trends were also calculated with data collected from 2000-2024 and compared with the period of record trends (**Table 3**). Several wells exhibit accelerated declines in more recent years. For example, Wells 3, 4, 5, and 12 declined at rates 0.5 to 1.2 feet per year faster than over their entire period of record. These four wells are all located within areas of groundwater development within the CCBCGWA.

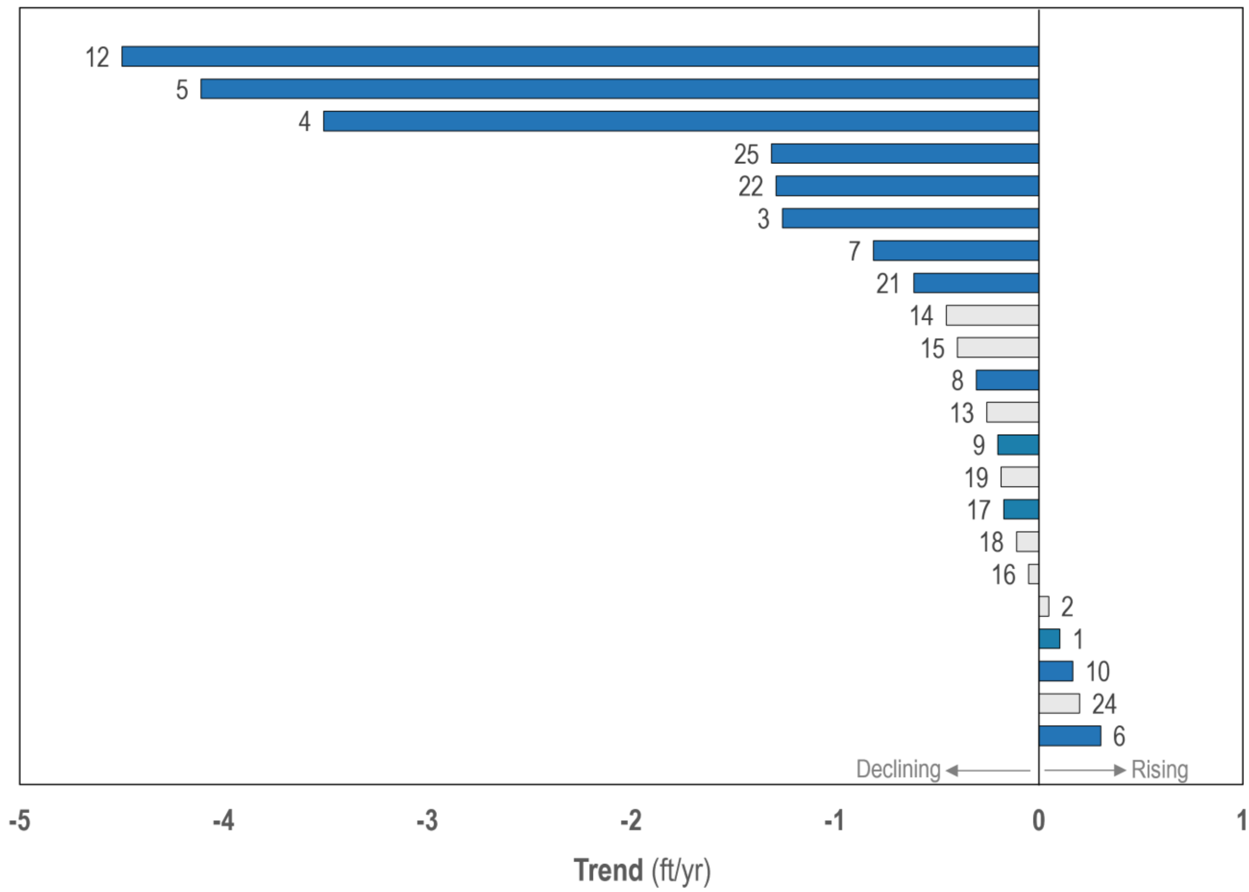


Figure 8: Mann-Kendall trend results from spring measurements for the period of available record. Number by each bar refers to the Well ID. Bars in blue are statistically significant ($p<0.05$); bars in gray are not statistically significant ($p \geq 0.05$). Refer to **Table 3** for more details.

Conclusions and Recommendations

IDWR maintains a monitoring network of 28 active wells and two recently inactive wells within the MHGWMA and CCBCGWA. Observed water-level declines have been the greatest in the southern portion of the CCBCGWA where declines of close to 150 feet over a 40-year period have been observed.

Over the period of record of these wells, 11 exhibit statistically significant declining trends while three exhibit statistically significant rising trends. The remaining wells either had insufficient periods of record to conduct trend analyses (eight wells) or had statistically insignificant results (eight wells).

Since 2000, several wells have shown an accelerated rate of decline (Wells 3, 4, 5, and 12) or even a complete reversal from a rising to declining trend (Well 2). Several factors may explain these changes. The recent period has generally been drier, likely resulting in less recharge to the system and potentially creating more demand for withdrawals. Changing technology and agriculture practices, including increased irrigation efficiency or shifting crop types, could have affected overall withdrawals and incidental recharge. Additionally, as the aquifer is drawn down, a potential decrease in transmissivity and storage capacity in deeper geologic layers may contribute to more pronounced drawdown in response to the same volume of groundwater extraction.

IDWR plans to maintain the current water-level monitoring network, and while the five new wells drilled in 2024 will help fill data gaps (**Figure 4**), it is recommended to expand the monitoring network where possible to fill in other existing gaps. Wells with the potential to accommodate a datalogger for continuous water-level monitoring should be prioritized for additions to the network. Additionally, wells located near areas of planned recharge activities or conversion from groundwater to surface water sources should be added to monitor the impacts of those efforts.

References

Helsel, D.R., Mueller, D.K., and Slack, J.R., 2006. *Computer program for the Kendall family of trend tests,* U.S. Geological Survey Scientific Investigation Report, 2005-5275, https://doi.org/10.3133/sir20055275

Holley, D., and Giuntini, G., 2019. *Economic Impact of Mountain Home Air Force Base (MHAFB) in Elmore County and the state of Idaho for the year 2018*, Report prepared for The Economic Development Office of Mountain Home, ID, https://mountainhomechamber.com/wp-content/uploads/2020/11/BOI-2019-MHAFB-Impact-Study-Final-PDF.pdf

IDWR, 2024a. *2023 Irrigated Lands for the Mountain Home Plateau: Machine Learning Generated,* Idaho Department of Water Resources dataset, https://www.arcgis.com/home/item.html?id=b5c6474cb4ae459480bb804127c4831e

IDWR, 2024b. *Groundwater Data Portal*, Idaho Department of Water Resources database, https://idwr-groundwater-data.idaho.gov/

Norton, M.A., Ondrechen, W., and Baggs, J.L., 1982. *Ground Water Investigation of the Mountain Home Plateau, Idaho*, Idaho Department of Water Resources Open-File Report, https://idwr.idaho.gov/wp-content/uploads/sites/2/publications/198208-OFR-gw-investigations-mthome-plateau-id.pdf

NOAA, 2024. *U.S. Climate Divisional Database*, https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/divisional/time-series

PRISM Climate Group, 2024. *PRISM Climate Data,* Oregon State University dataset, https://prism.oregonstate.edu

Ralston, D.R., and Chapman, S.L., 1968. *Ground-water Resource of the Mountain Home area, Elmore County, Idaho,* Idaho Department of Reclamation Water Information Bulletin, https://idwr.idaho.gov/wp-content/uploads/sites/2/publications/wib04-gw-res-mthome-id.pdf

Tesch, C.A., 2013. *East Ada County Comprehensive Hydrologic Investigation*, Idaho Department of Water Resources Technical Report, https://idwr.idaho.gov/wp-content/uploads/sites/2/publications/201310-MISC-East-Ada-County-Comprehensive-Hydrologic-Investigation.pdf

US Census, 2024. *2020 Census Results,* U.S. Census Bureau database, https://www.census.gov/programs-surveys/decennial-census/decade/2020/2020-census-results.html

USGS, 2024. *USGS Water Data for the Nation*, U.S. Geological Survey National Water Information System database, https://doi.org/10.5066/F7P55KJN

Young, H.W., 1977. *Reconnaissance of ground-water resources in the Mountain Home plateau area, southwest Idaho,* U.S. Geological Survey Water-Resources Investigations Report, 77-108, https://doi.org/10.3133/wri77108

Zinsser, L.M., and Ducar, S.D, 2025. *Hydrogeologic framework of the Mountain Home area, southern Idaho,* U.S. Geological Survey Scientific Investigations Report, 2024-5132, https://doi.org/10.3133/sir20245132

Appendix A: Water-Level Contour Map

The following figure is from Zinsser and Ducar (2025) and displays spring and fall 2023 water-level contours. Data was collected in coordination with IDWR.

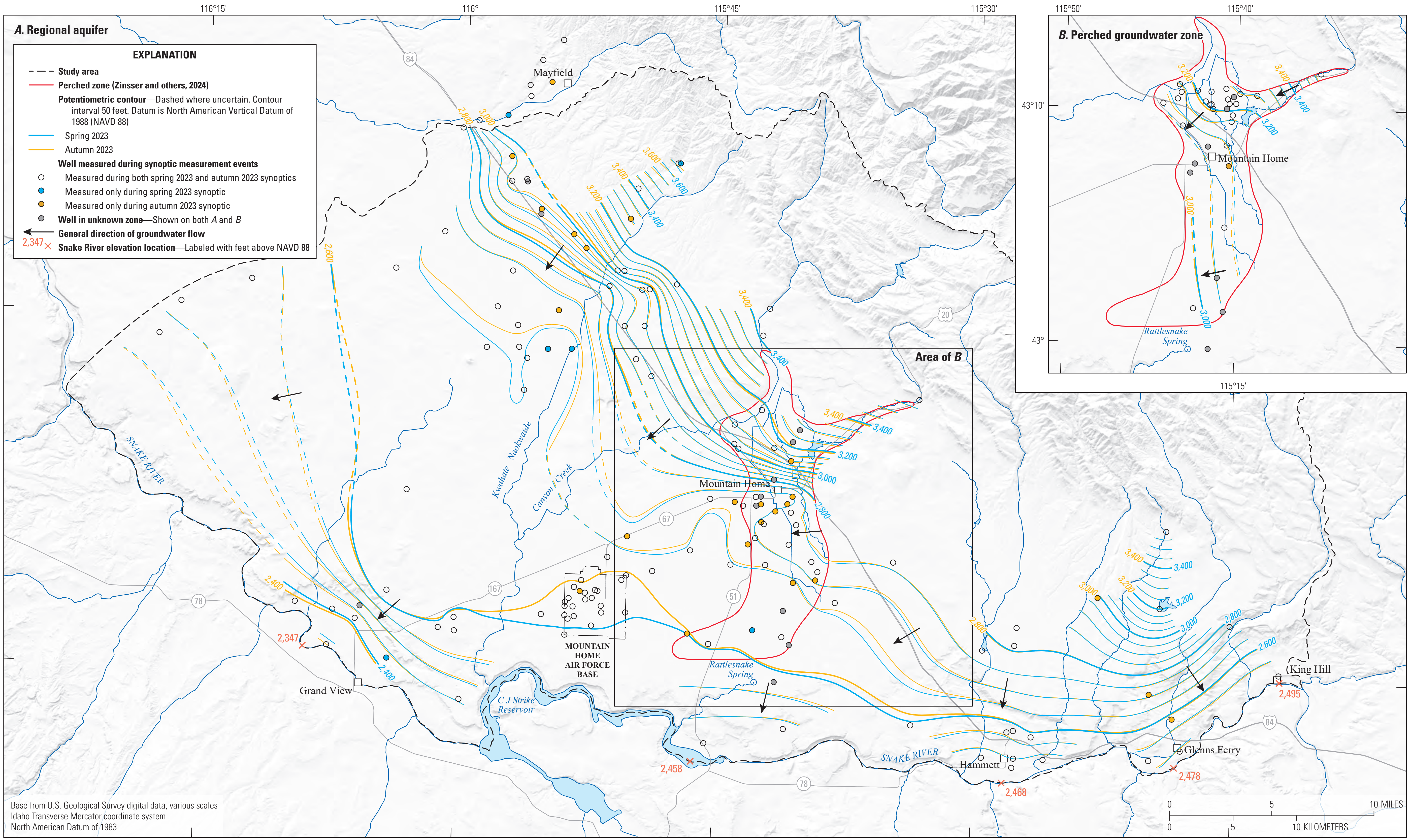


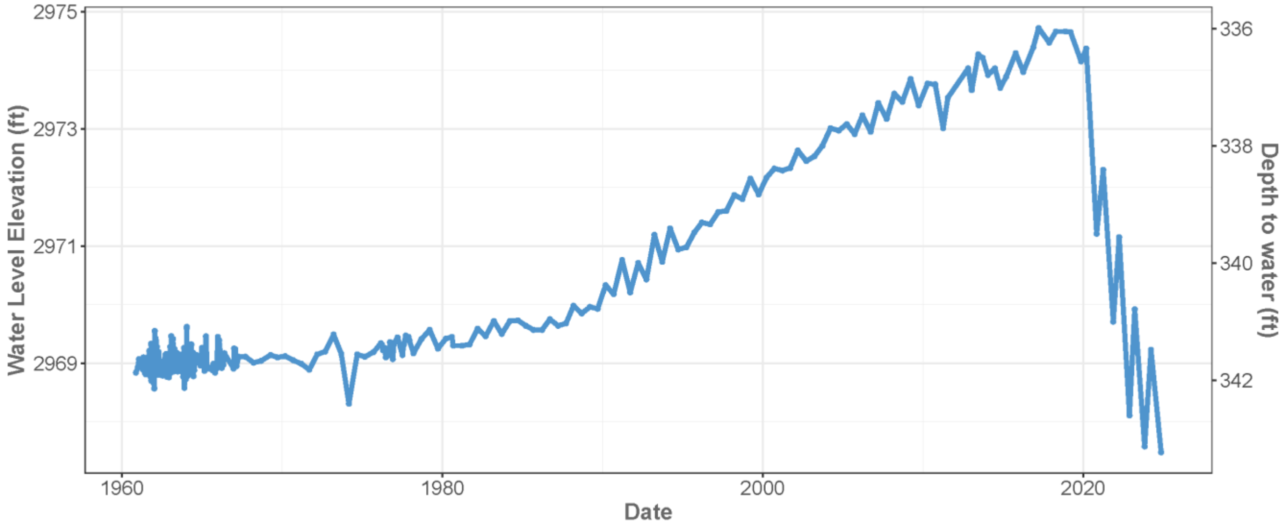
Figure A1: Water-table contours in March and November 2023 for (A) the regional aquifer and (B) the perched groundwater zone (figure from Zinsser and Ducar, 2025).

Appendix B: Individual Hydrographs

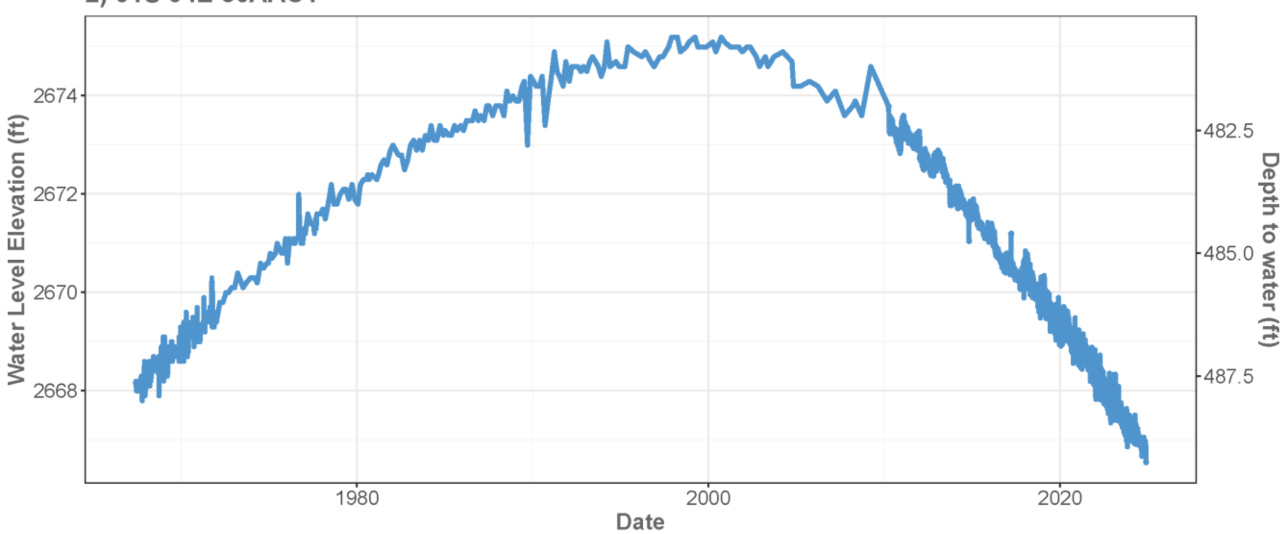
On the following hydrographs, dashed lines represent over two years of time between measurements.

Hydrographs are shown for all wells in Table 2, except for Wells 20 and 26-30 which have few measurements.

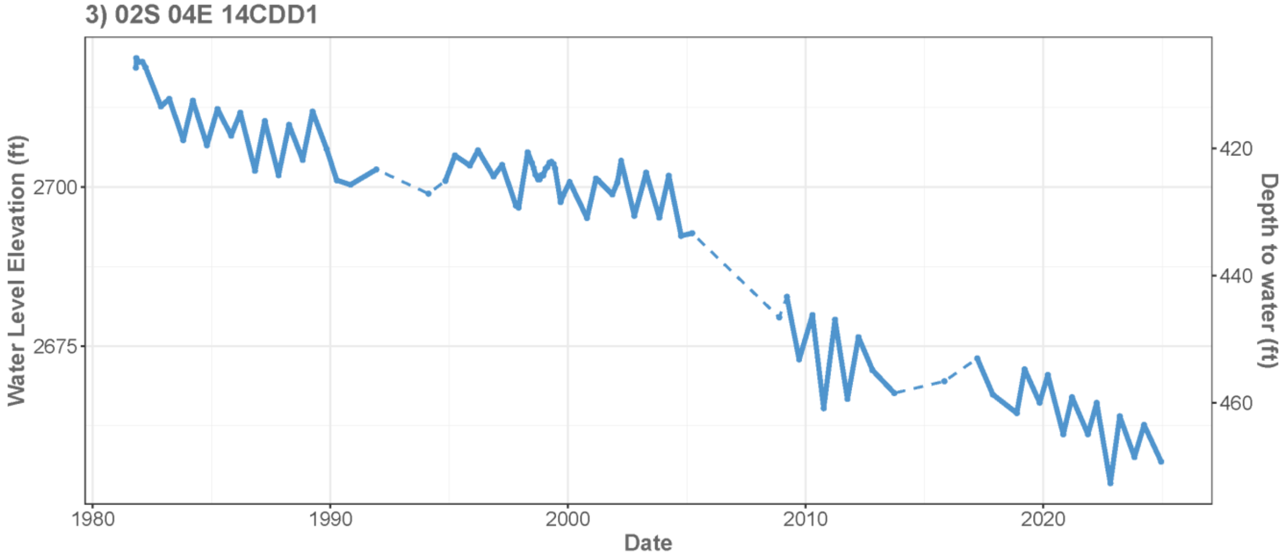
1) 01S 04E 10DAD1

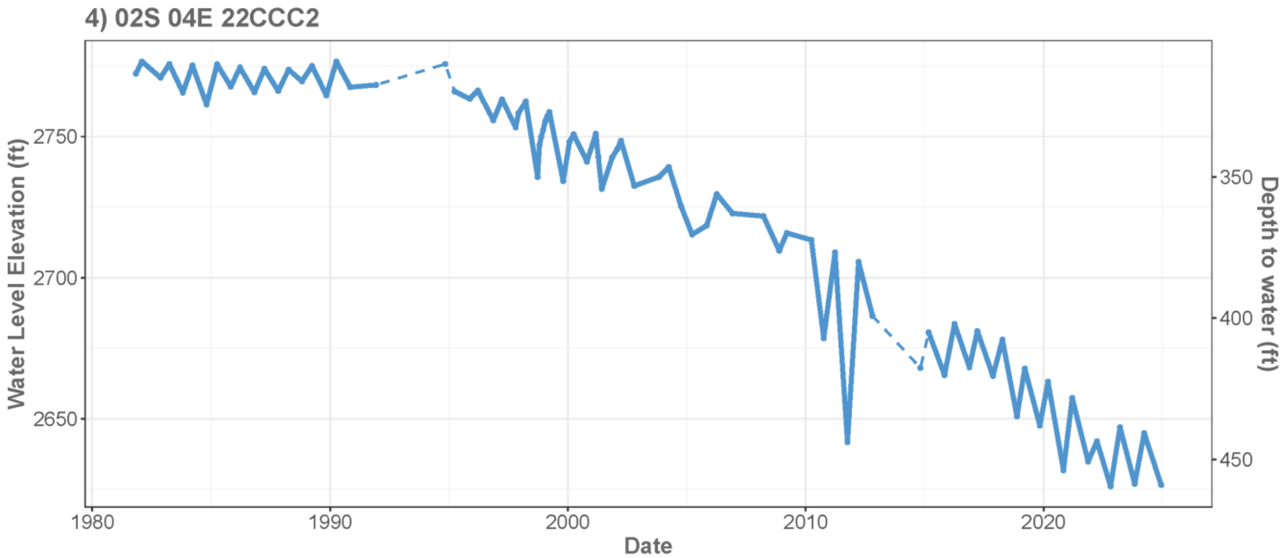


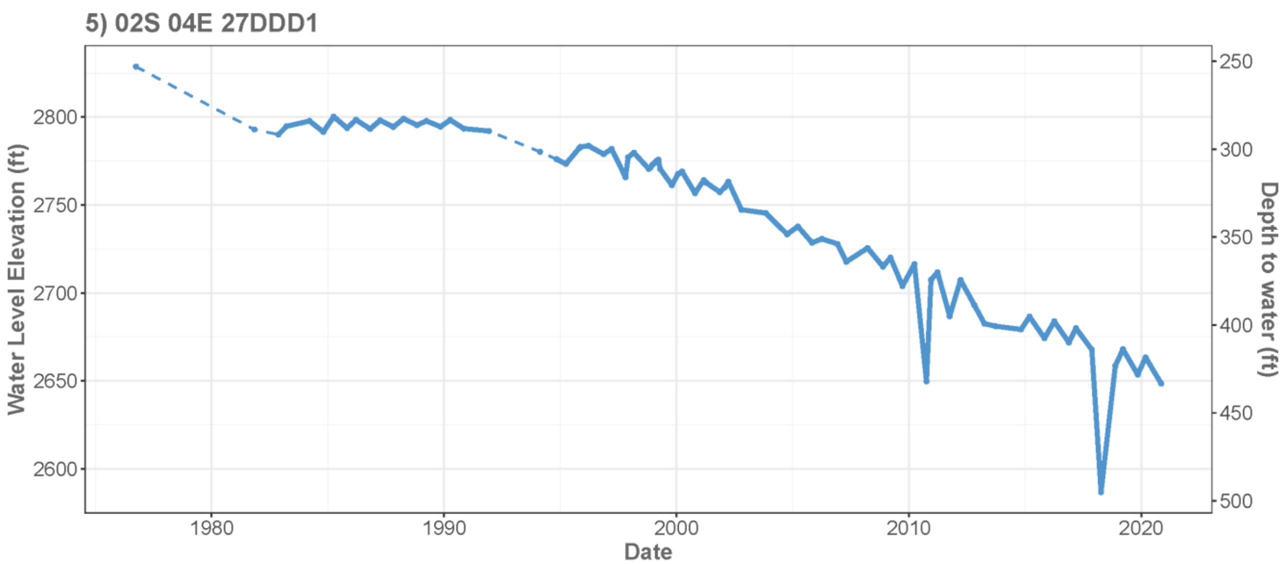
2) 01S 04E 30AAC1

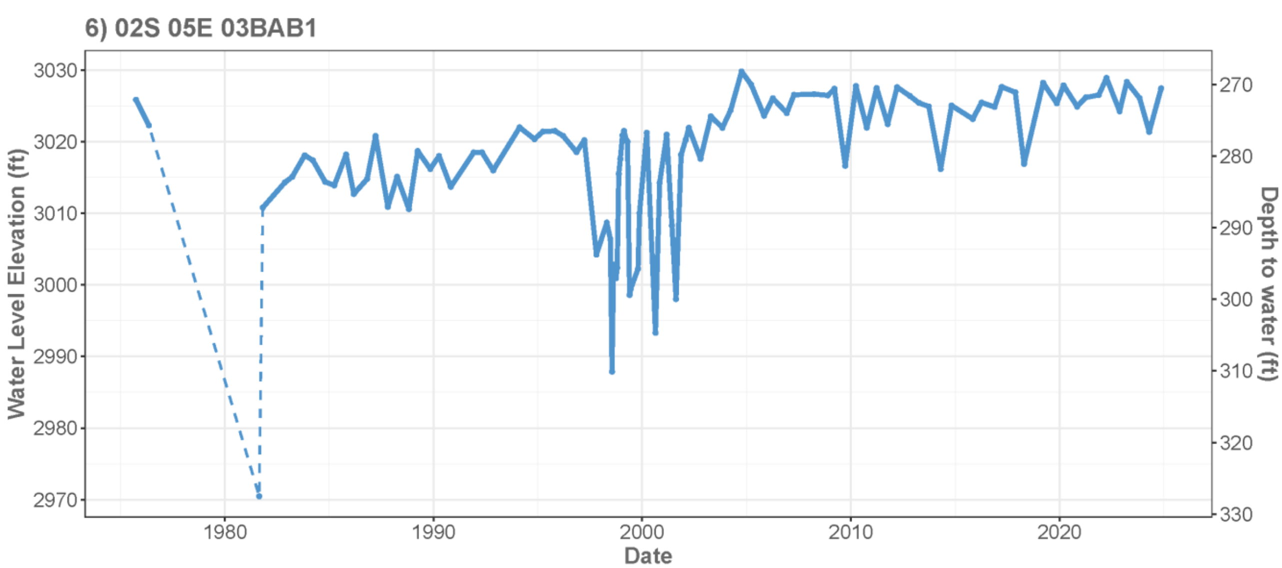


3) 02S 04E 14CDD1

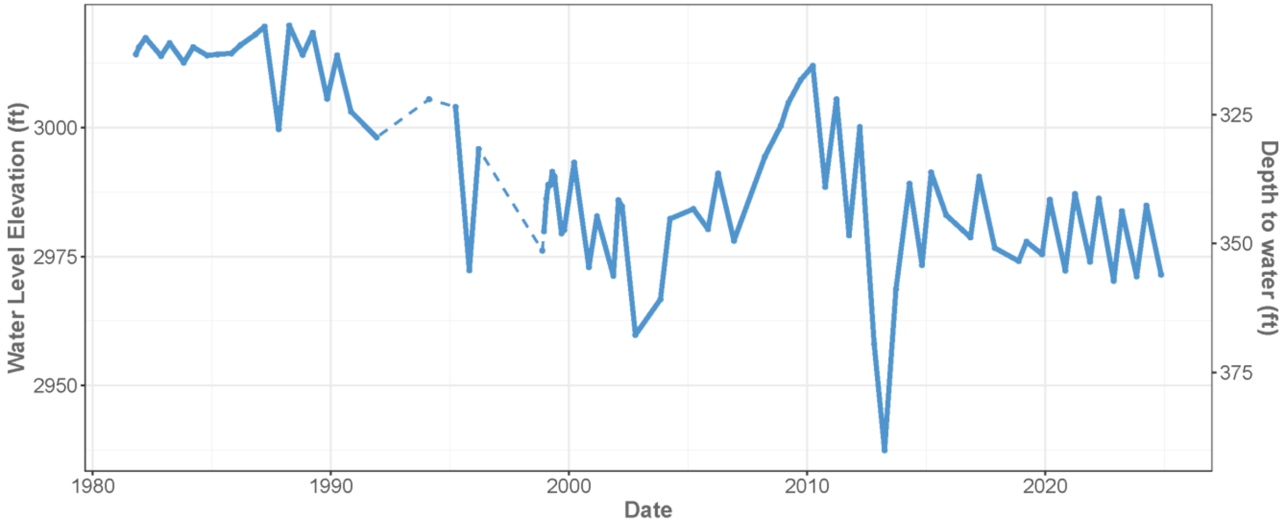



4) 02S 04E 22CCC2
Water Level Elevation (ft)
2750
2700
2650
Depth to water (ft)
350
400
450
1980
1990
2000
2010
2020
Date

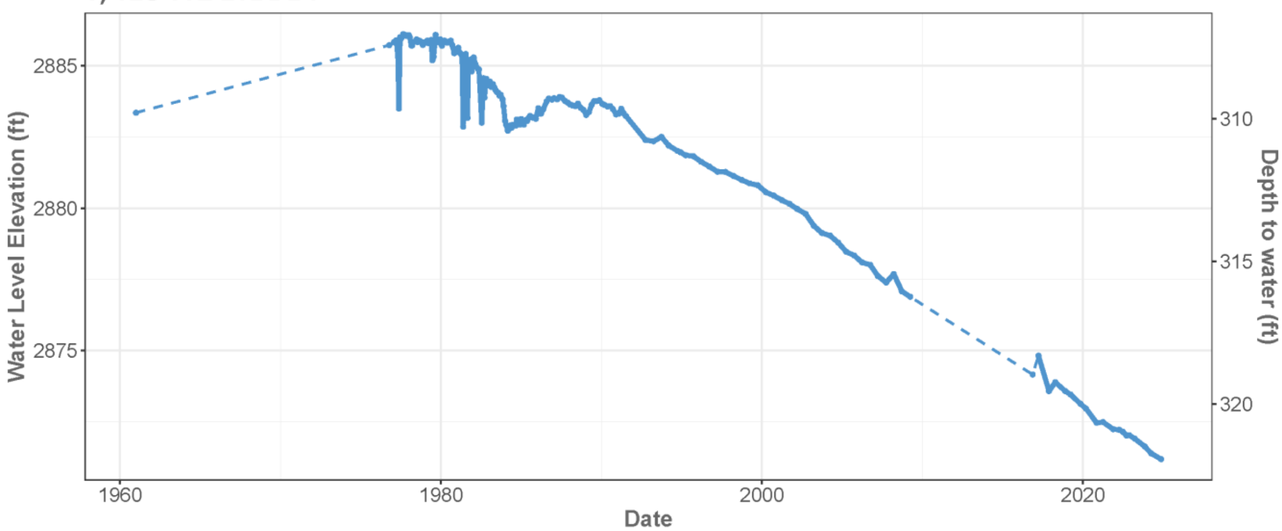

5) 02S 04E 27DDD1
Water Level Elevation (ft)
2800
2750
2700
2650
2600
Depth to water (ft)
250
300
350
400
450
500
1980
1990
2000
2010
2020
Date


6) 02S 05E 03BAB1
Water Level Elevation (ft)
3030
3020
3010
3000
2990
2980
2970
Depth to water (ft)
270
280
290
300
310
320
330
1980
1990
2000
2010
2020
Date

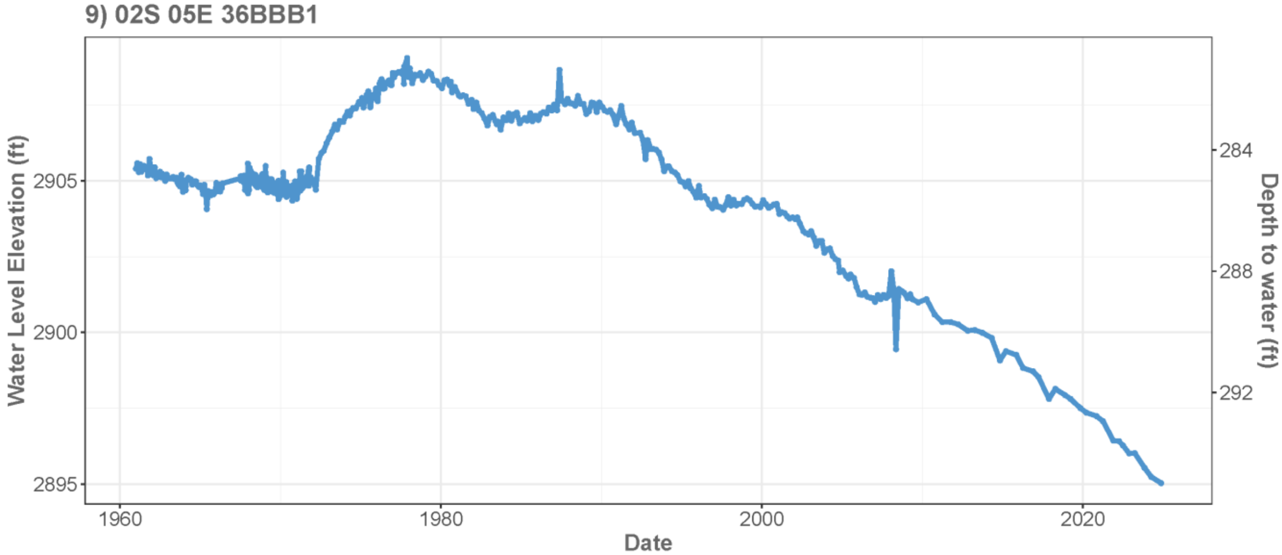
7) 02S 05E 11AAB1



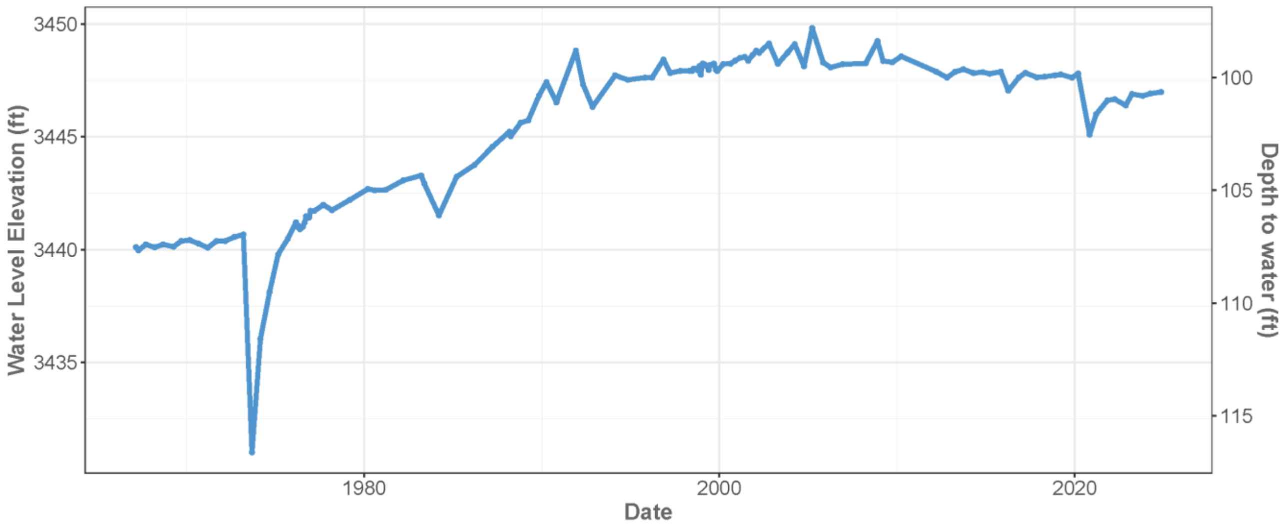
8) 02S 05E 26BDB1



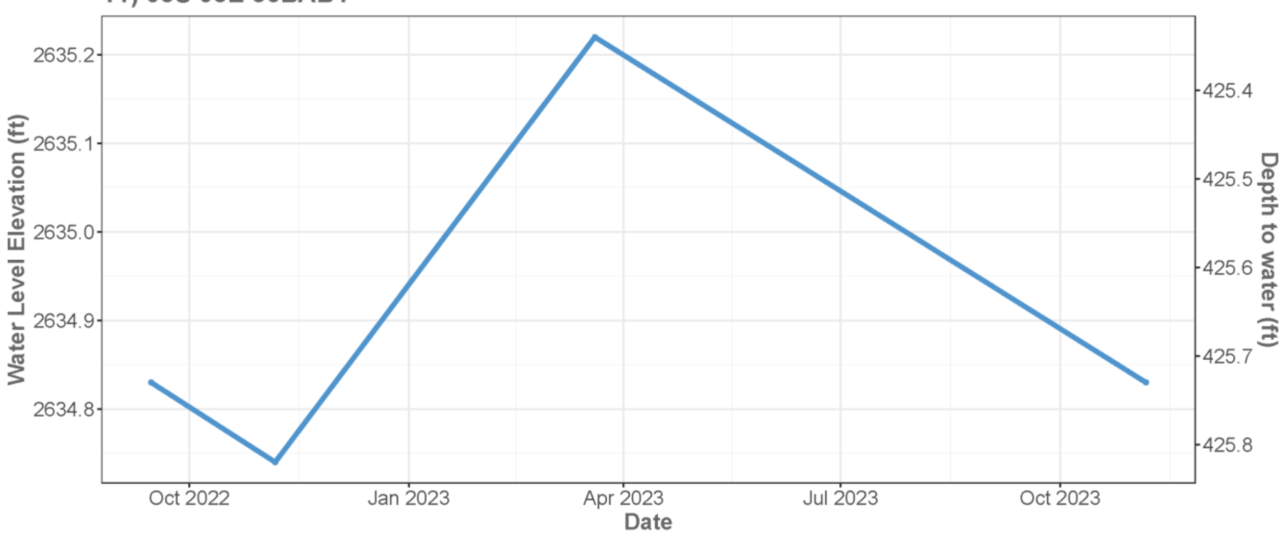
9) 02S 05E 36BBB1



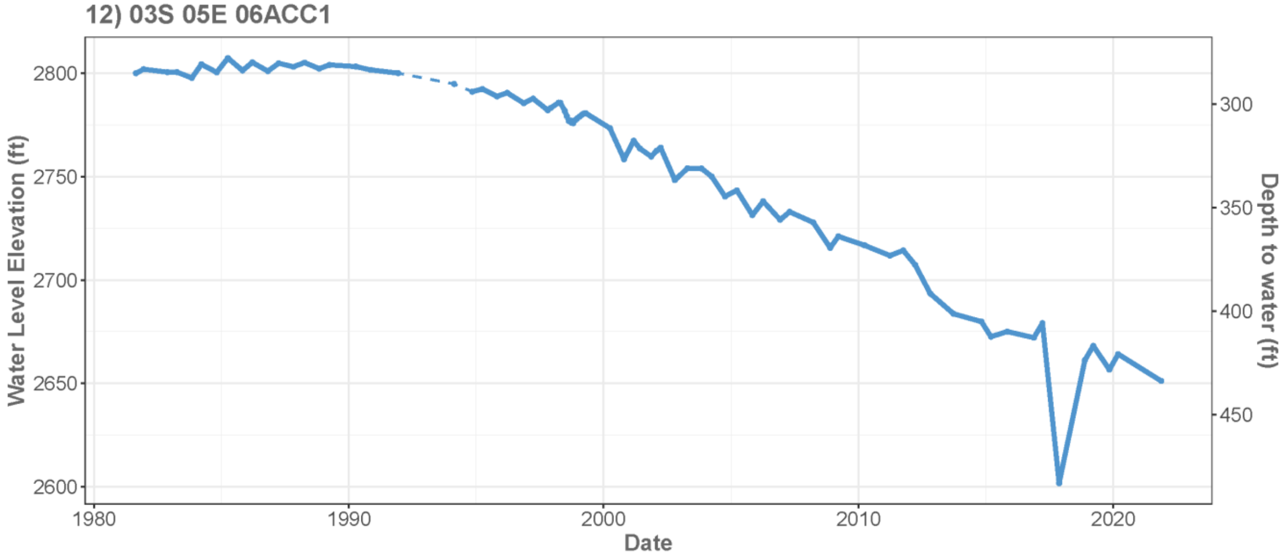
10) 02S 06E 11DAC1

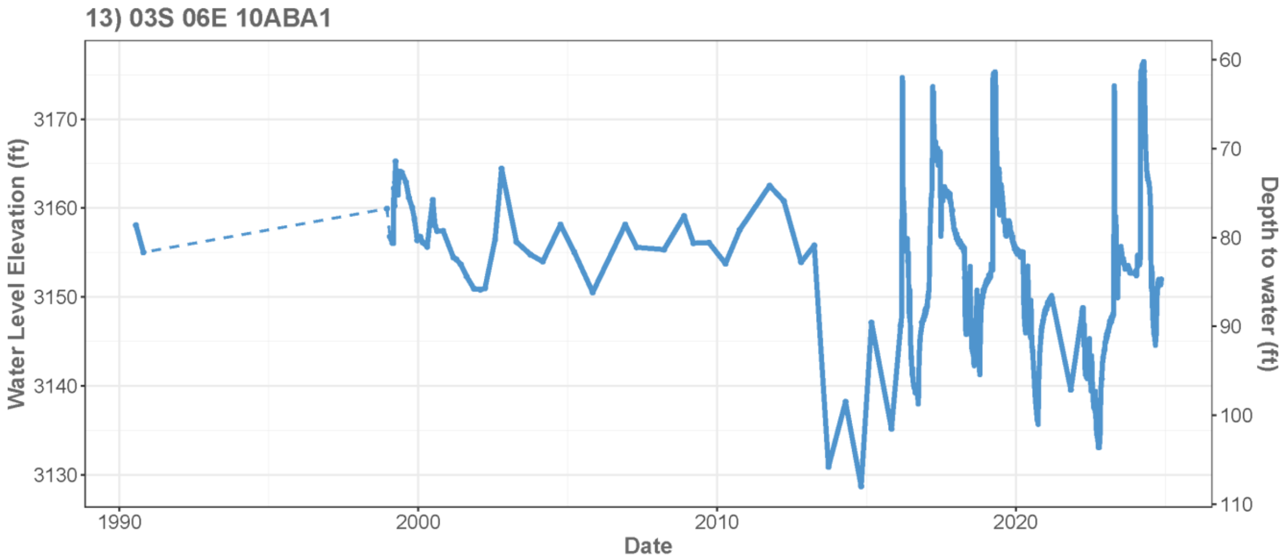


11) 03S 03E 36BAB1

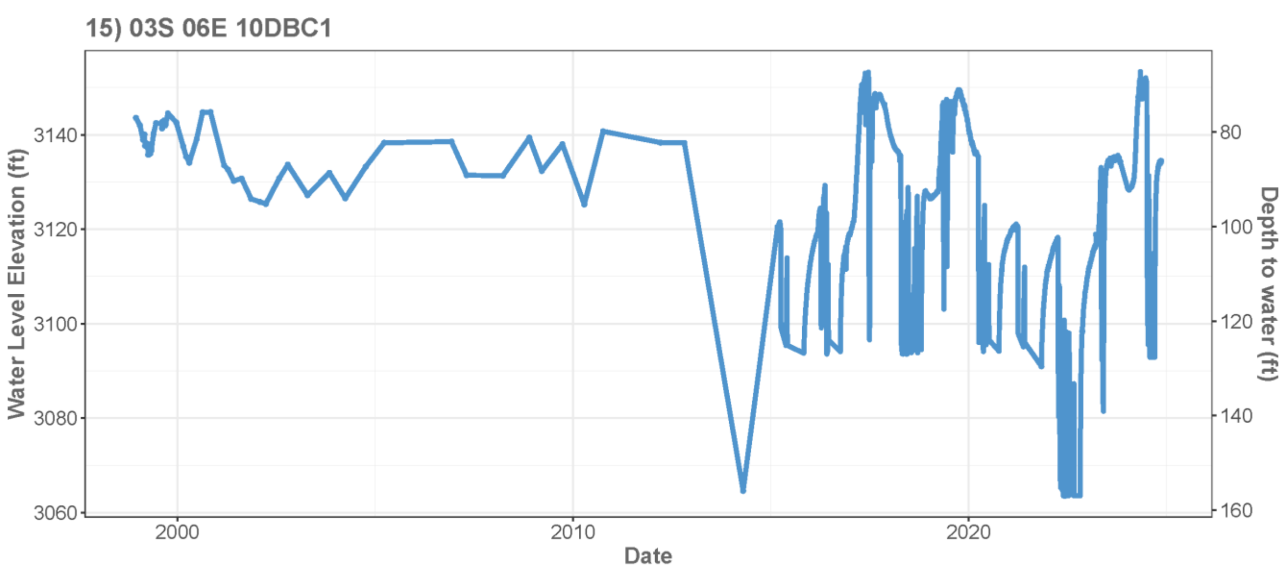


12) 03S 05E 06ACC1

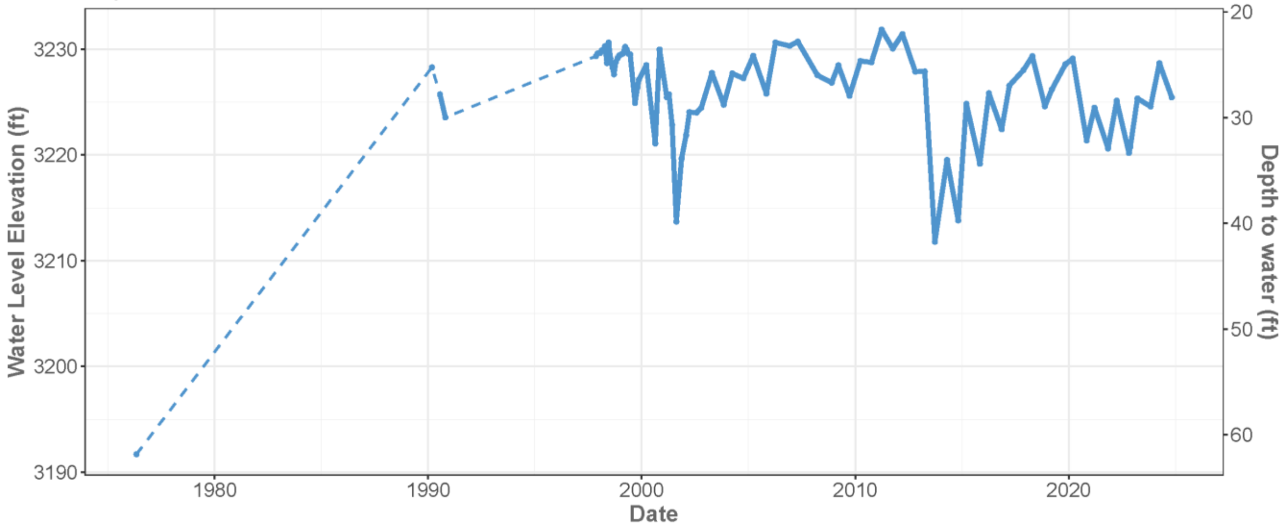



13) 03S 06E 10ABA1
Water Level Elevation (ft)
3170
3160
3150
3140
3130
Depth to water (ft)
60
70
80
90
100
110
1990
2000
2010
2020
Date

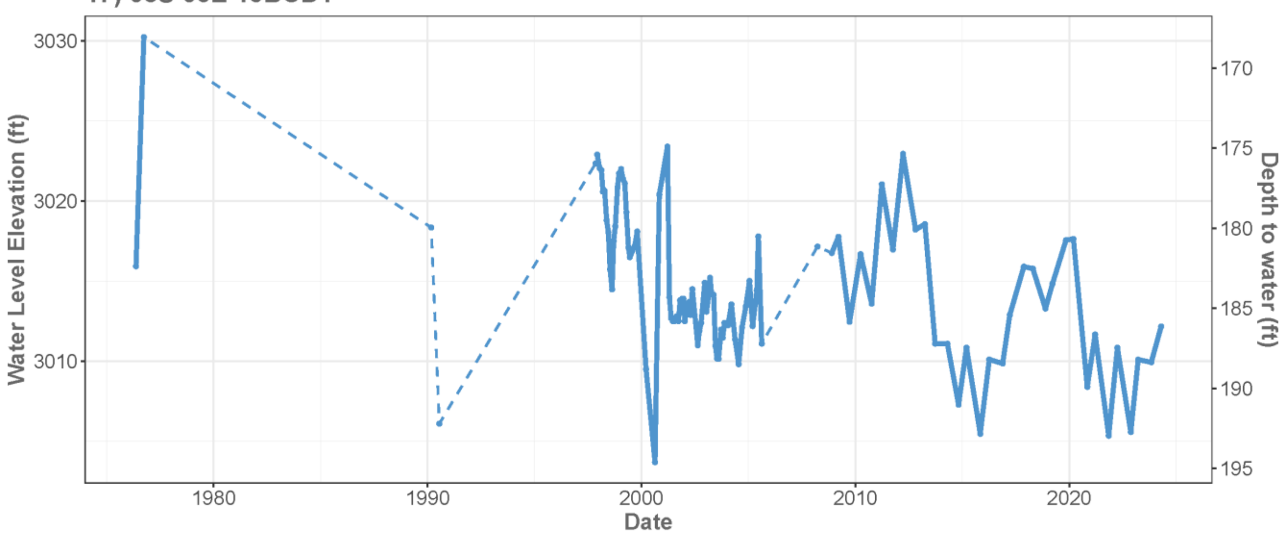

14) 03S 06E 10ACD2
Water Level Elevation (ft)
3125
3100
3075
3050
3025
Depth to water (ft)
90
120
150
180
210
2000
2010
2020
Date


15) 03S 06E 10DBC1
Water Level Elevation (ft)
3140
3120
3100
3080
3060
Depth to water (ft)
80
100
120
140
160
2000
2010
2020
Date

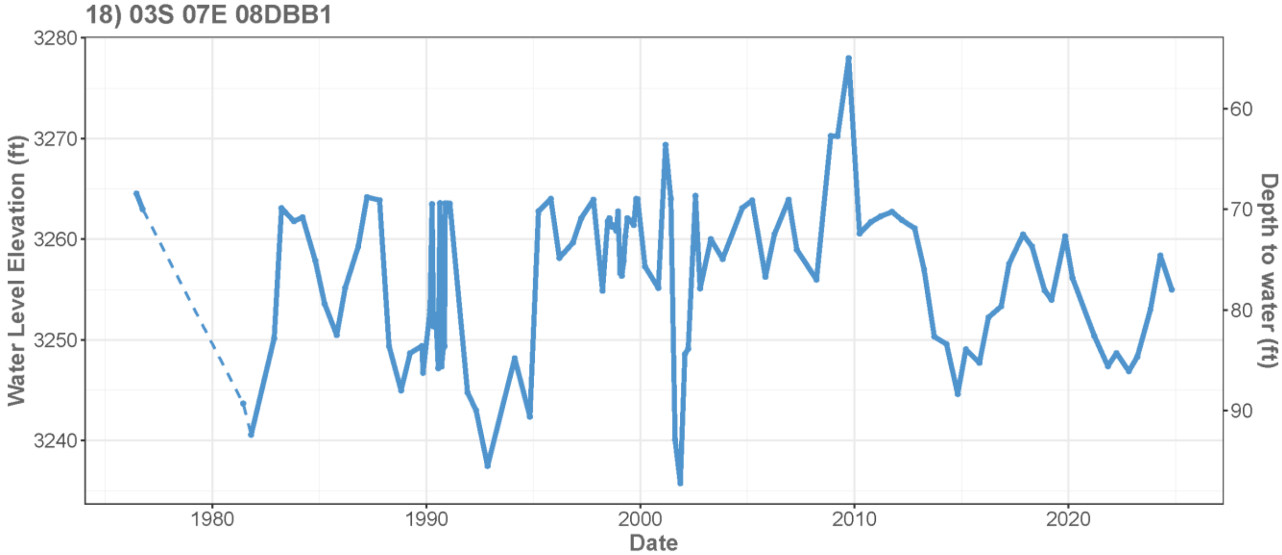
16) 03S 06E 13AAD1



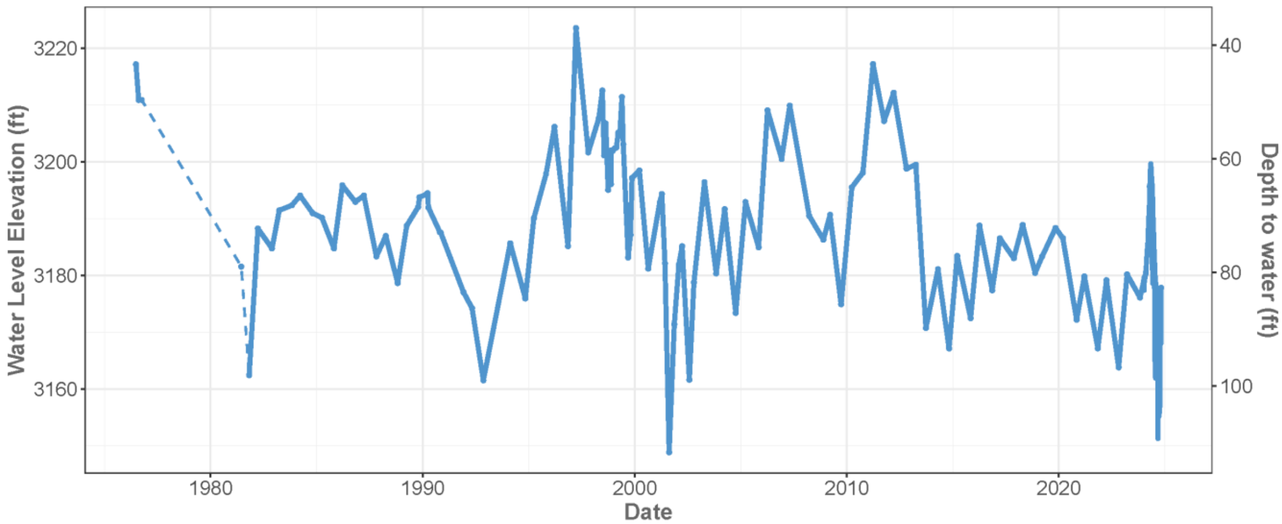
17) 03S 06E 15BCD1



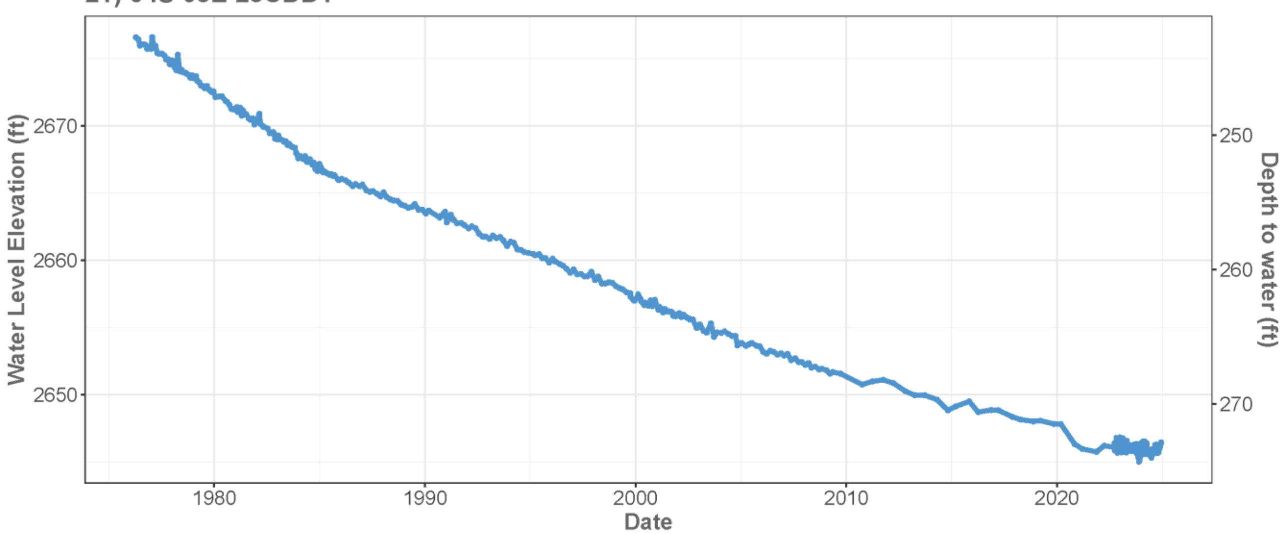
18) 03S 07E 08DBB1



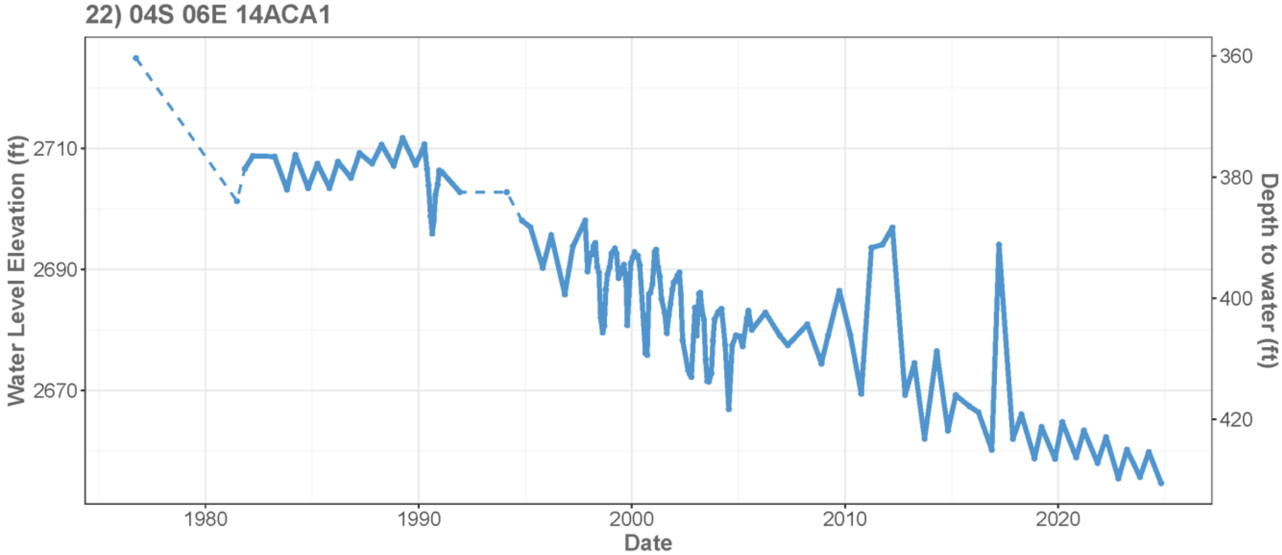
19) 03S 07E 18CAB1



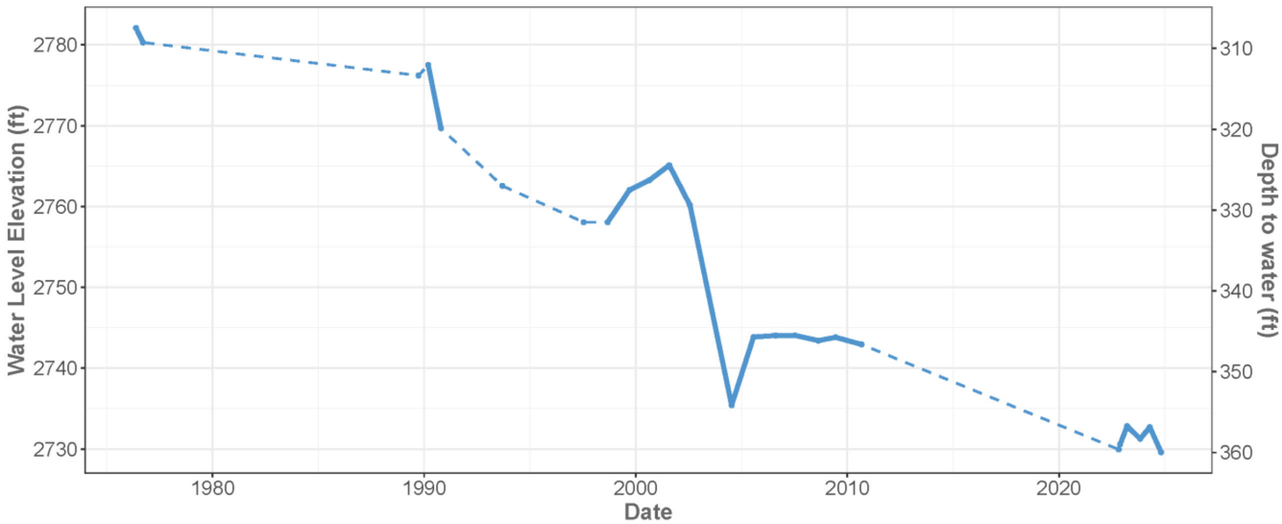
21) 04S 03E 23CDD1



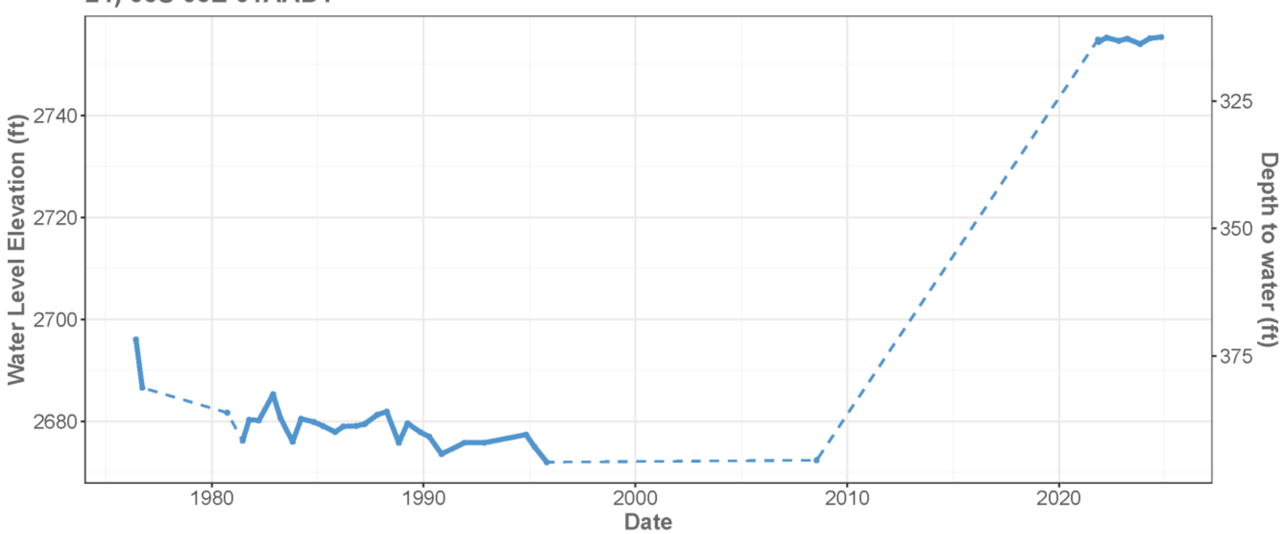
22) 04S 06E 14ACA1



23) 04S 07E 17CAB1



24) 05S 06E 01AAD1



25) 05S 06E 04BBC1