Cuyama Basin
Groundwater Sustainability Plan—
Annual Report for 2020-2021 Water Year

Prepared by:

Woodard & Curran

March 2022

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Abbreviations and Acronyms

AF	acre-feet
CBGSA	Cuyama Basin Groundwater Sustainability Agency
CBWD	Cuyama Basin Water District
CBWRM	Cuyama Basin Water Resources Model
CCSD	Cuyama Community Services District
DMS	Data Management System
DWR	California Department of Water Resources
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
SAC	Standing Advisory Committee
SBCWA	Santa Barbara County Water Agency
SGMA	Sustainability Groundwater Management Act
SR	State Route
TSS	Technical Support Services
USGS	United States Geological Survey

Executive Summary

§356.2 (a)	General information, including an executive summary and a location map depicting the basin covered by the report.

ES-1 Introduction

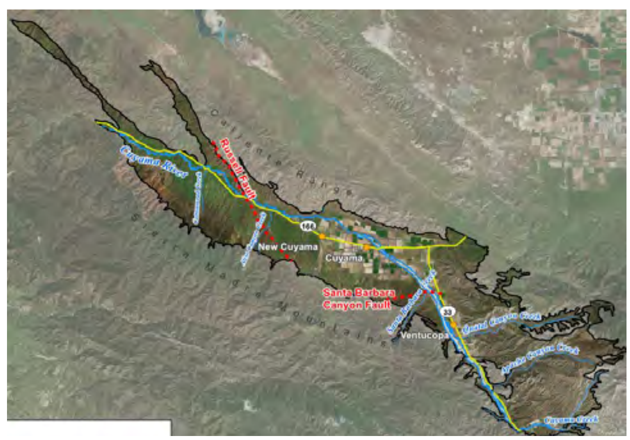
In 2014, the California legislature enacted the Sustainable Groundwater Management Act (SGMA) in response to continued overdraft of California's groundwater resources. The Cuyama Groundwater Basin (Basin) is one of 21 basins and subbasins identified by the California Department of Water Resources (DWR) as being in a state of critical overdraft. SGMA requires that a Groundwater Sustainability Plan (GSP) be prepared to address the measures necessary to attain sustainable conditions in the Cuyama Groundwater Basin. Within the framework of SGMA, sustainability is generally defined as the conditions that result in long-term reliability of groundwater supply and the absence of undesirable results.

In response to SGMA, the Cuyama Basin Groundwater Sustainability Agency (CBGSA) was formed in 2017. The CBGSA is a joint-powers agency that is comprised of Kern, Santa Barbara, San Luis Obispo and Ventura Counties, plus the Cuyama Community Services District and the Cuyama Basin Water District. The CBGSA is governed by an 11-member Board of Directors, with one representative from Kern, San Luis Obispo and Ventura counties, two representatives from Santa Barbara County, one member from the Cuyama Community Services District, and five members from the Cuyama Basin Water District.

The Draft Cuyama Basin GSP was adopted on December 4, 2019 by the CBGSA and submitted to DWR on January 28, 2020. SGMA requires that the CBGSA develop a GSP that achieves groundwater sustainability in the Basin by the year 2040.

The jurisdictional area of the CBGSA is defined by DWR's Bulletin 118, 2013, the 2016 Interim Update, and the latest 2020 update. The Cuyama Groundwater Basin generally underlies the Cuyama Valley, as shown in **Figure ES-1**.

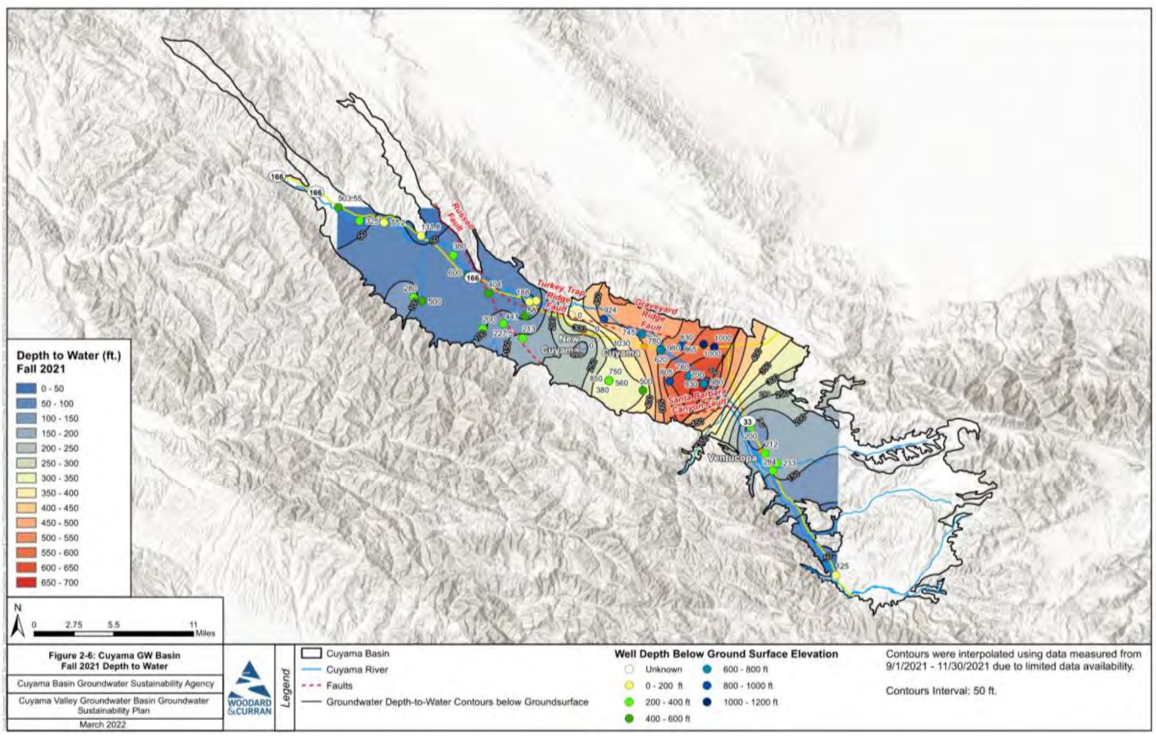
Figure ES-1: GSP Plan Area



ES-2 Groundwater Levels

The Annual Report for the 2021 water year includes groundwater contours for Spring and Fall of 2021, and updated hydrographs for the groundwater level monitoring network identified in the Cuyama Basin GSP. The Cuyama Basin consists of a single principal aquifer, and water levels in Basin monitoring wells are considered representative of conditions in that aquifer. Groundwater levels in some portions of the Basin have been declining for many years while other areas of the Basin have experienced no significant change in groundwater levels. Groundwater levels vary across the Basin, with the highest depth to water occurring in the central portion of the Basin (**Figure ES-2**). The western and eastern portions of the Basin have generally shallower depth to water. Generally, depth to water and groundwater elevation in 2021 have changed a small amount in the central basin compared to 2020 levels with little change in other parts of the basin.

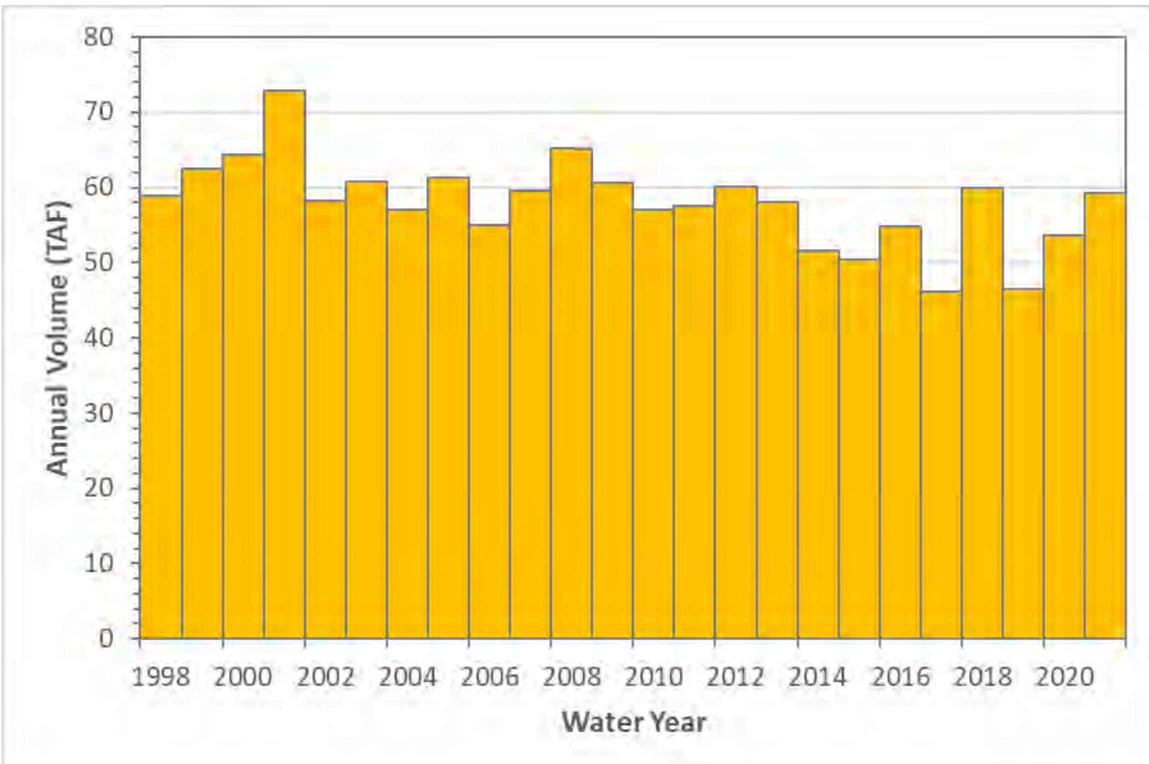
Figure ES-2: Cuyama Basin Depth to Water Contour Map (Fall 2021)



ES-3 Water Use

The Cuyama Groundwater Basin is supplied entirely by groundwater, with virtually no surface water use. Groundwater pumping in the Basin is estimated to have been about 59,000 AF in 2021. This reflects an increase of about 5,000 AF as compared to 2020, primarily due to hotter and drier climactic conditions in 2021 as compared to 2020. (See **Figure ES-3**).

Figure ES-3: Annual Groundwater Extraction in the Cuyama Basin in Water Years 1998-2021



ES-4 Change in Groundwater Storage

It is estimated that there was a reduction in Basin groundwater storage of 40,000 AF in 2021. This continues the long-term trend in groundwater storage reduction in the Basin since 1999. **Figure ES-4** shows the historical change in groundwater storage by year, water year type,[1] and cumulative water volume in each year for the period from 1998 through 2021.

Figure ES-4: Change in Groundwater Storage by Year, Water Year Type, and Cumulative Water Volume

ES-5 Groundwater Quality

While the CBGSA began initial groundwater quality monitoring during the 2020-2021 water year, only 36% of monitoring wells were sampled due to limited landowner access. Furthermore, due to questions about the quality of the data the CBGSA considers it premature to use this data to evaluate the performance of groundwater quality at this time. The CBGSA intends to reevaluate the groundwater quality representative monitoring network going forward.

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[1] Water year types are customized for the Basin watershed based on annual precipitation as follows:

- Wet year = more than 19.6 inches
- Above normal year = 13.1 to 19.6 inches
- Below normal year = 9.85 to 13.1 inches
- Dry year = 6.6 to 9.85 inches
- Critical year = less than 6.6 inches.

ES-6 Land Subsidence

Observed subsidence rates in the Basin are well below the minimum threshold, and thus undesirable results for subsidence are not occurring in the Basin.

ES-7 Plan Implementation

The following plan implementation activities were accomplished in 2021:

- Approval of a groundwater extraction fee and supplemental fee, which is expected to generate $1.3M in revenue to cover the administrative costs of the CBGSA for the period from January 1, 2022, through December 31, 2022.
- A total of 12 public meetings were conducted at which GSP development and implementation was discussed.
- The Cuyama Basin Groundwater Sustainability Agency (CBGSA) Board continued implementation of the groundwater levels monitoring network, includes monthly monitoring at each monitoring well. In addition, continuous monitoring equipment were installed in ten wells under an ongoing DWR grant.
- The CBGSA has applied for a COD SGMA Implementation Grant for $7.6 million in funding for implementation activities over the next 3 years.
- The GSA worked with DWR Technical Support Services to install of 3 additional multi-completion monitoring wells in the Basin.
- The GSA worked with the United States Geological Survey (USGS) to install two new streamflow gauges on the Cuyama River.
- The CBGSA and Cuyama Basin Water District (CBWD) began initial activities for implementation of management actions in the Central management area.

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Section 1. Introduction

§356.2 (a)	General information, including an executive summary and a location map depicting the basin covered by the report.

1.1 Introduction and Agency Information

This section describes the Cuyama Basin Groundwater Sustainability Agency (CBGSA), its authority in relation to the Sustainable Groundwater Management Act (SGMA), and the purpose of this Annual Report.

This Annual Report meets regulatory requirements established by the California Department of Water Resources (DWR) as provided in Article 7 of the California Code of Regulations, Title 23, Division 2, Chapter 1.5, Subchapter 2.

The CBGSA was created by a Joint Exercise of Powers Agreement among the following agencies:

- Counties of Kern, San Luis Obispo, and Ventura
- Santa Barbara County Water Agency (SBCWA), representing the County of Santa Barbara
- Cuyama Basin Water District (CBWD)
- Cuyama Community Services District (CCSD)

The CBGSA Board of Directors includes the following individuals:

- Derek Yurosek – Chairperson, CBWD
- Lynn Compton – Vice Chairperson, County of San Luis Obispo
- Byron Albano – CBWD
- Cory Bantilan – SBCWA
- George Cappello – CBWD
- Paul Chounet –CCSD
- Zack Scrivner – County of Kern
- Glenn Shephard – County of Ventura
- Lorena Stoller – CBWD
- Das Williams – SBCWA
- Jane Wooster – CBWD

The CBGSA's established boundary corresponds to DWR's California's Groundwater Bulletin 118 – Update 2003 (Bulletin 118) groundwater basin boundary for the Cuyama Valley Groundwater Basin (Basin) (DWR, 2003). No additional areas were incorporated.

1.1.1 Management Structure

The CBGSA is governed by an 11-member Board of Directors that meets bi-monthly (i.e. 6 times a year). A General Manager manages day-to-day operations of the CBWD, while Board Members vote on actions of the CBGSA; the Board is the CBGSA's decision-making body. The Board also formed a Standing Advisory Committee comprised of 9 stakeholders to provide recommendations to the Board on key technical issues which also meets regularly.

1.1.2 Legal Authority

Per Section 10723.8(a) of the California Water Code, the Santa Barbara County Water Agency (SBCWA) gave notice to DWR on behalf of the CBGSA of its decision to form a GSA, which is Basin 3-013, per DWR's Bulletin 118.

1.1.3 Groundwater Sustainability Plan

The CBGSA Board of Directors approved the first iteration of the Cuyama Groundwater Sustainability Plan (GSP) on December 4, 2019. The GSP was submitted to DWR for approval on January 28, 2020 and is available for viewing online at http://cuyamabasin.org/.

1.2 Plan Area

Figure 1-1 shows the Basin and its key geographic features. The Basin encompasses an area of about 378 square miles[2] and includes the communities of New Cuyama and Cuyama, which are located along State Route (SR) 166, and Ventucopa, which is located along SR 33. The Basin encompasses an approximately 55-mile stretch of the Cuyama River, which runs through the Basin for much of its extent before leaving the Basin to the northwest and flowing toward the Pacific Ocean. The Basin also encompasses stretches of Wells Creek in its north-central area, Santa Barbara Creek in the south-central area, the Quatal Canyon drainage and Cuyama Creek in the southern area of the Basin. Most of the agriculture in the Basin occurs in the central portion east of New Cuyama, and along the Cuyama River near SR 33 through Ventucopa.

Figure 1-2 shows the CBGSA boundary. The CBGSA boundary covers all of the Cuyama Valley Groundwater Basin.

[2] The current Bulletin 118 section on the Cuyama Valley Groundwater Basin incorrectly states that the Basin area is 230 square miles. The estimate of 378 square miles shown here and in the GSP is consistent with the mapping shown on DWR's GSA Map Viewer.

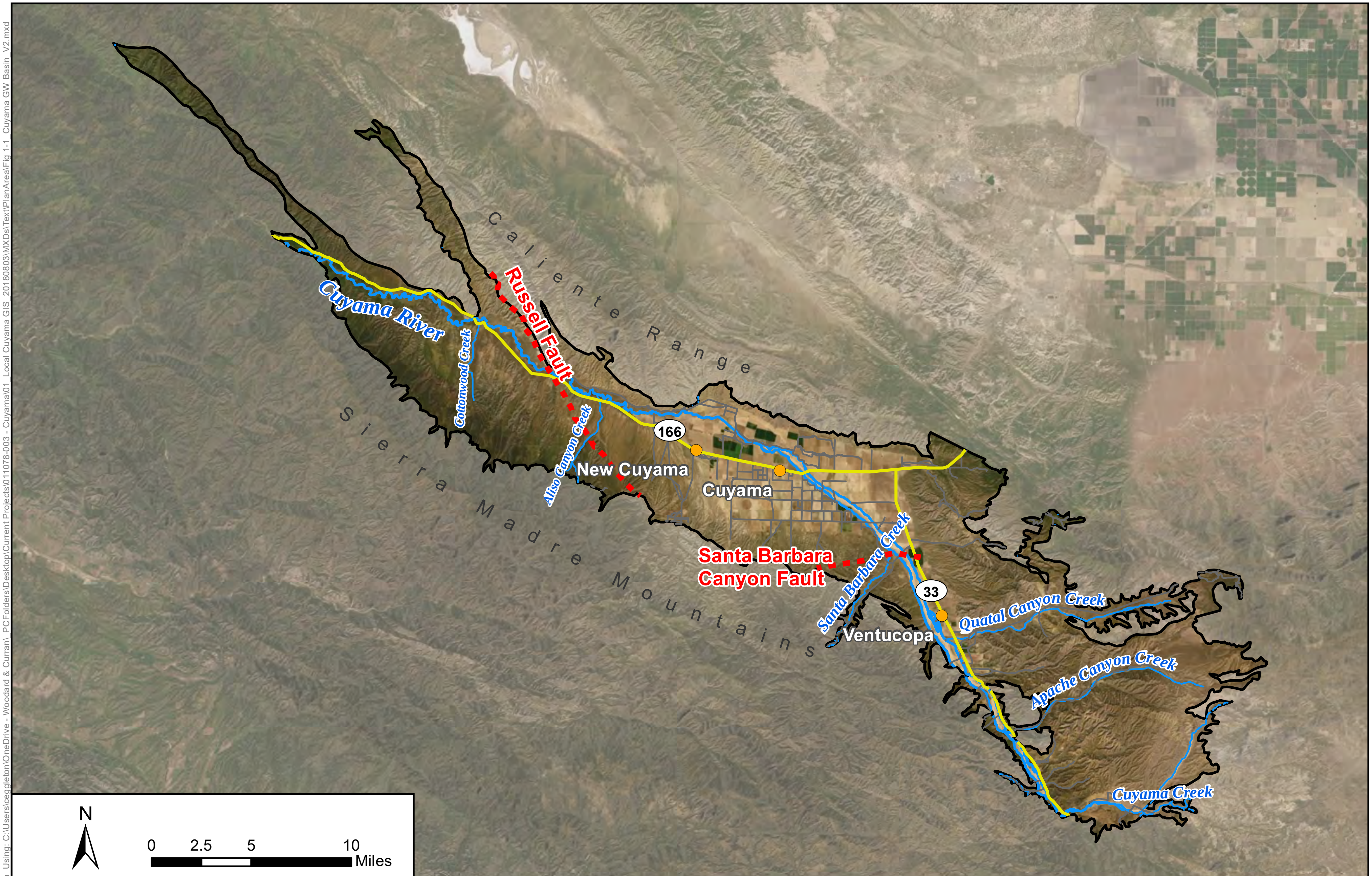

Figure 1-1 - Cuyama Valley Groundwater Basin

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

March 2021

WOODARD & CURRAN

Legend

- Cuyama Basin
- Towns
- Faults
- Highways
- Local Roads
- Cuyama River
- Streams/Creeks

Figure Exported: 3/26/2021 By: ceggleton Using: C:\Users\ceggleton\OneDrive - Woodard & Curran\ PCFolders\Desktop\Current Projects\011078-003 - Cuyama\01 Local Cuyama GIS 20180803\MXDs\Text\PlanArea\Fig 1-1 Cuyama GW Basin V2.mxd

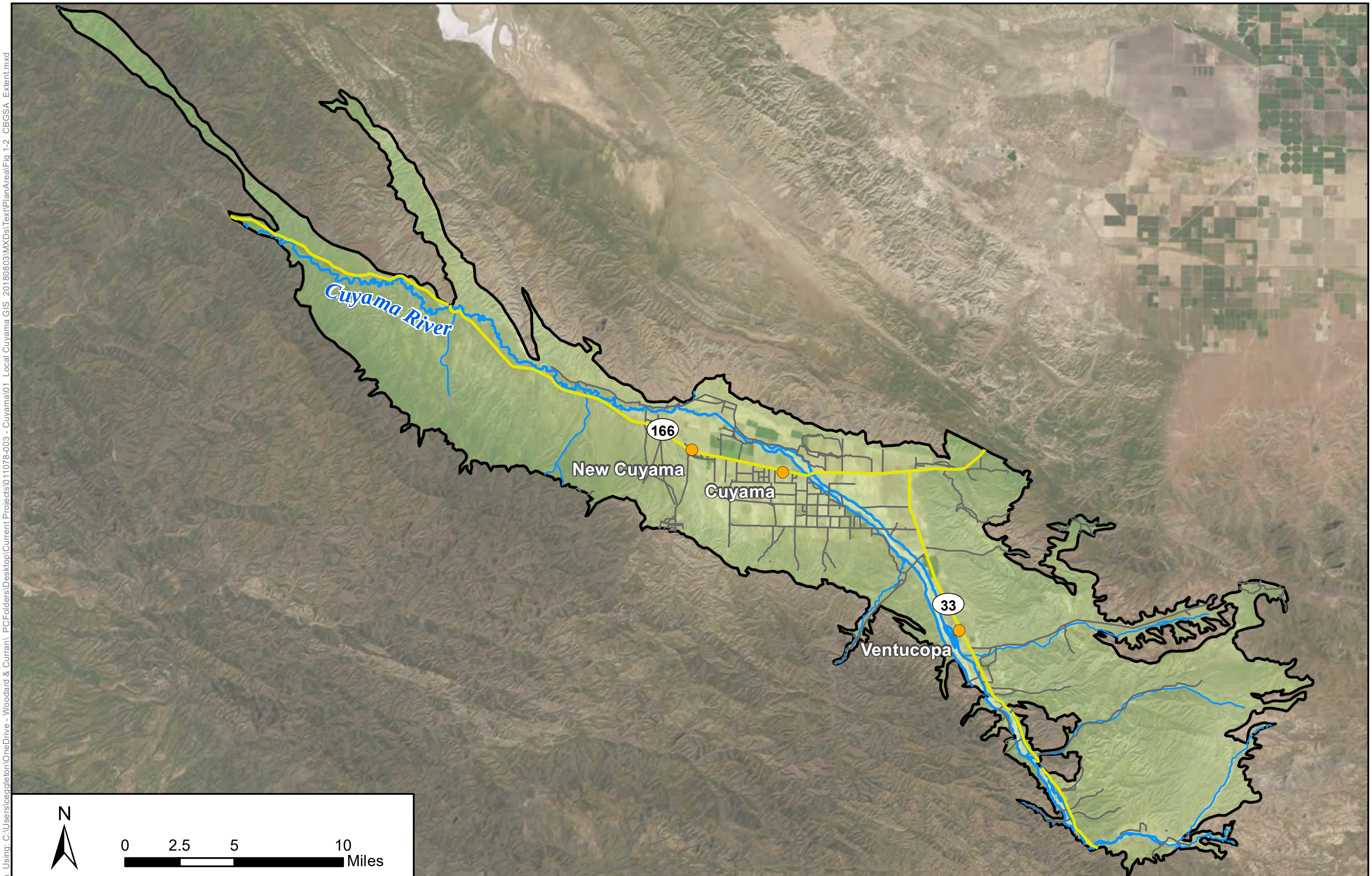

Figure 1-2 - Cuyama Valley Groundwater Sustainability Agency Boundary

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

March 2021

WOODARD & CURRAN

Legend

- Towns
- Cuyama Basin GSA
- Highways
- Local Roads
- Cuyama River
- Streams/Creeks

Section 2. Groundwater Levels

§356.2 (b)(1)	Groundwater elevation data from monitoring wells identified in the monitoring network shall be analyzed and displayed as follows:
§356.2 (b)(1)(A)	Groundwater elevation contour maps for each principal aquifer in the basin illustrating, at a minimum, the seasonal high and seasonal low groundwater conditions.
§356.2 (b)(1)(B)	Hydrographs of groundwater elevations and water year type using historical data to the greatest extent available, including from January 1, 2015, to current reporting year.

2.1 Groundwater Levels Representative Monitoring Network

As required by DWR's SGMA regulations, a monitoring network and representative monitoring network were identified in the Cuyama Basin GSP utilizing existing wells. The groundwater levels representative monitoring network that was included in the GSP is shown on **Figure 2-1**. The Cuyama Basin consists of a single principal aquifer, and water levels in monitoring network wells are considered representative of conditions in that aquifer. The objective of the representative monitoring network is to detect undesirable results in the Basin related to groundwater levels using the sustainability thresholds described in the GSP. Other related objectives of the monitoring network are defined via the SGMA regulations as follows:

- Demonstrate progress toward achieving measurable objectives described in the GSP.
- Monitor impacts to the beneficial uses or users of groundwater.
- Monitor changes in groundwater conditions relative to measurable objectives and minimum thresholds.
- Quantify annual changes in water budget components.
- Monitoring that has occurred on the groundwater level monitoring network since the development of the Cuyama Basin GSP is included in this Annual Report. Collected groundwater level data has been analyzed to prepare contour maps and updated hydrographs, which are presented in the following sections.

2.1.1 Representative Monitoring Network Refinements

As discussed in the 2021 Annual Report, the CBGSA refined and improved the groundwater monitoring network within the Basin by reducing spatial redundant wells from the initial groundwater level representative monitoring network resulting in 52 well in 46 different locations, as shown in **Table 2-1** below.

During 2021, the CBGSA worked with DWR's Technical Support Services (TSS) program to add three new multi-completion wells (with a total of three completions each) using grant funding provided by DWR. In addition, a new well was also added to the network in the vicinity of Santa Barbara Canyon. The revised monitoring network includes 61 wells in 49 locations and is shown in **Figure 2-1**.

The current monitoring network has a monitoring well density of 16.1 wells per 100 square miles when considering each completion. This well density is still greater than the recommended 0.2-10 wells per 100 square miles recommended by Heath (1976) as described in the GSP, *Section 4.5.3 Spatial Density*.

Twelve of the wells in the monitoring network include transducers that provide continuous monitoring. Ten of these transducers were recently added using grant funding from DWR.

Table 2-1: Refined Groundwater Monitoring Network Well List

Opti_ID	Network	Includes a Transducer?	Included in a Multi-Completion Well?	Latitude	Longitude
2	Representative	No	No	34.6985833	-119.3134722
62	Representative	Yes	No	34.829166*	-119.466616*
72	Representative	No	No	34.934603*	-119.689822*
74	Representative	No	No	34.942235*	-119.675109*
77	Representative	Yes	Yes	34.931139*	-119.595234*
85	Representative	No	No	34.819513*	-119.452366*
89	Representative	No	No	34.708085*	-119.37848*
91	Representative	Yes	Yes	34.897694*	-119.54208*
95	Representative	No	No	34.899789*	-119.583875*
96	Representative	No	No	34.89032*	-119.616214*
98	Representative	No	No	34.8839722	-119.6354722
99	Representative	No	Yes	34.899769*	-119.657711*
100	Representative	No	No	34.811832*	-119.456608*
101	Representative	No	No	34.85565*	-119.484574*
102	Representative	Yes	No	34.964658*	-119.704769*
103	Representative	Yes	No	34.927934*	-119.653133*
106	Representative	No	No	34.954879*	-119.787264*
107	Representative	No	No	34.949445*	-119.812449*
110	Monitoring	No	No	34.976685*	-119.793894*
112	Representative	No	No	34.962785*	-119.761096*
114	Representative	No	No	34.978517*	-119.748026*
115	Monitoring	No	No	34.963198*	-119.807102*
118	Representative	No	No	34.975944*	-119.886884*
119	Monitoring	No	No	35.04321*	-119.873055*
121	Monitoring	No	No	34.996523	-119.853474
124	Representative	No	No	34.968831	-119.859639
316	Representative	Yes	Yes	34.897693*	-119.542081*
317	Representative	Yes	Yes	34.897695*	-119.54208*
322	Representative	No	No	34.899771*	-119.657712*
324	Representative	No	Yes	34.89977*	-119.657712*
325	Representative	No	Yes	34.89977*	-119.65771*
420	Representative	Yes	Yes	34.931138*	-119.595235*
421	Representative	Yes	Yes	34.931141*	-119.595235*

Opti_ID	Network	Includes a Transducer?	Included in a Multi-Completion Well?	Latitude	Longitude
474	Representative	No	No	34.940707*	-119.763809*
568	Representative	No	No	34.977355*	-119.756313*
571	Representative	Yes	No	34.979568*	-119.896983*
573	Representative	No	No	34.984849*	-119.805973*
604	Representative	No	No	34.961255*	-119.665*
608	Representative	No	No	34.946425*	-119.618755*
609	Representative	No	No	34.952896*	-119.640085*
610	Representative	No	No	34.905197*	-119.560701*
612	Representative	No	No	34.940453*	-119.594176*
613	Representative	No	No	34.934851*	-119.571774*
615	Representative	No	No	34.94182*	-119.567563*
629	Representative	No	No	34.934806*	-119.530177*
633	Representative	No	No	34.937517*	-119.543251*
830	Representative	No	No	35.054077*	-119.934733*
832	Representative	No	No	35.041341*	-119.8895*
833	Representative	No	No	35.068374*	-119.990842*
836	Representative	No	No	35.055269*	-119.964563*
841	Representative	Yes	No	35.003221*	-119.831741*
845	Representative	Yes	No	35.02238*	-119.849721*
900	Monitoring	No	Yes	35.002893**	-119.81186**
901	Monitoring	No	Yes	35.002845**	-119.811883**
902	Monitoring	No	Yes	35.002846**	-119.811882**
903	Monitoring	No	Yes	34.865465**	-119.495837**
904	Monitoring	No	Yes	34.865466**	-119.495838**
905	Monitoring	No	Yes	34.865466**	-119.495837**
906	Monitoring	No	Yes	34.942695**	-119.691662**
907	Monitoring	No	Yes	34.942696**	-119.691663**
908	Monitoring	No	Yes	34.942696**	-119.691661**

*These well coordinates updated based on survey results conducted during 2021, as discussed in the following subsection.
**These wells were recently installed and therefore were not included in the recent survey. Their metadata is known because source data from DWR was provided.

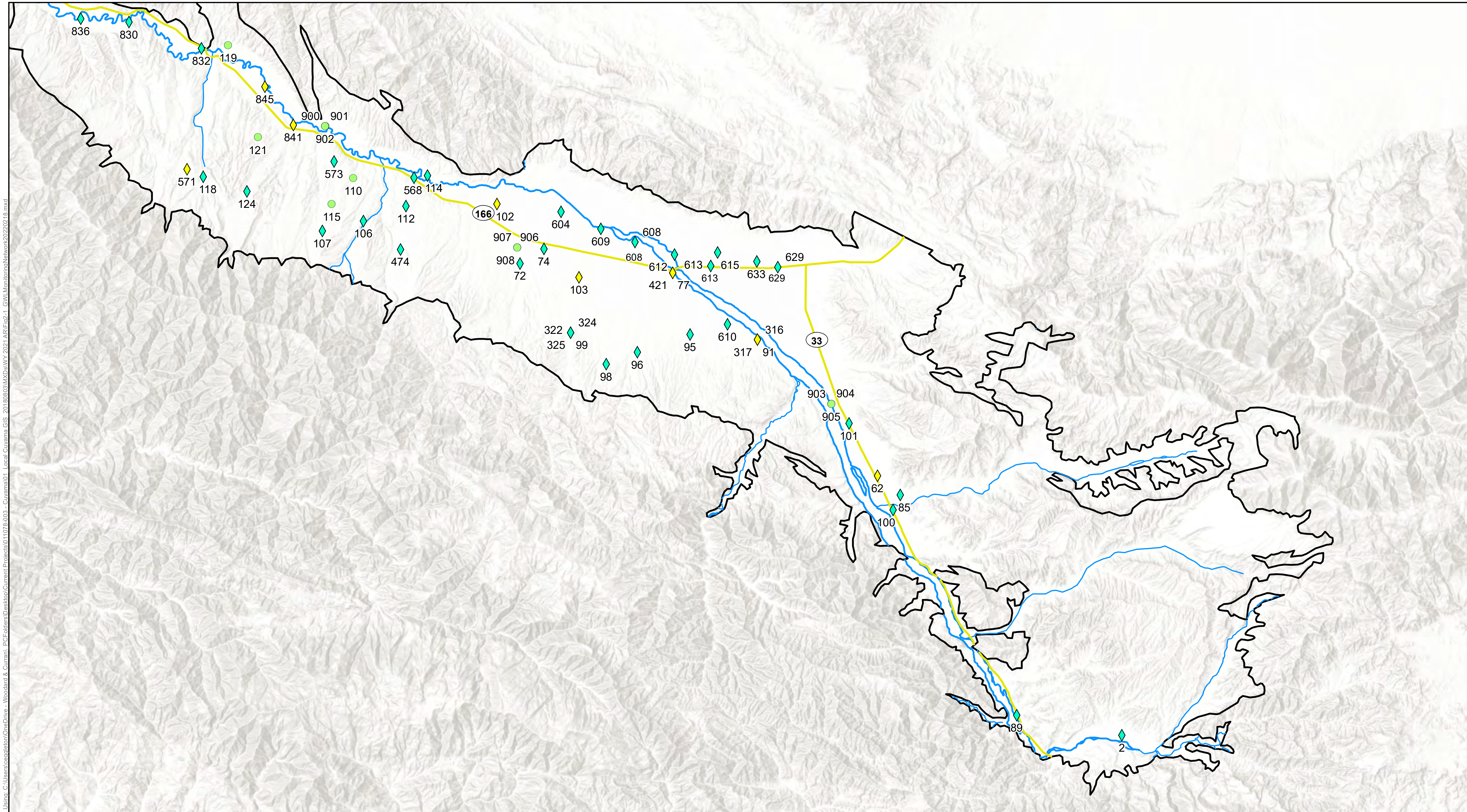

Figure 2-1: Cuyama GW Basin - Refined Groundwater Monitoring Network

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

February 2022

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Legend

- Cuyama Basin
- Cuyama River
- Representative Well
- Representative Well with Transducer
- Monitoring Network Well

N

0 2.5 5 10 Miles

2.1.2 Well Surveying Results and Subsequent Updates

As described the submitted GSP, the GSA intended to survey groundwater level representative monitoring network wells to ensure data accuracy. Because the data assembled for the development of the GSP included several different data sources and historical data accuracy was unknown, the GSA determined that for those wells in the representative network that surveying should be done.

During the fall of 2021, surveys were conducted at 75 wells within the Basin. Additional wells were intended to be surveyed, but land access agreements were not granted. For these wells, previous estimates of ground-surface elevation will continue to be used going forward. The survey data measured included:

- Latitude/longitude
- General site or well notes
- Elevation of the center of the well
- Elevation of the top of the concrete well pad
- Primary monitoring point elevation (“reference point elevation”)
- Secondary monitoring point elevation (if applicable)
- Ground-surface elevation
- Elevation of the top of the well vault (if applicable)

The data collected in the survey allows for the analysis and further processing of historical and recently collected data in each of the surveyed wells. This new metadata, shown in Table 2-2, has been updated in the Cuyama online Opti DMS system, and the GSA is working with DWR to ensure that data submitted in previous uploads through the SGMA Data Portal are also updated appropriately. Notes have been added to each well within Opti explaining when, how, and by how much these data corrections have been performed for public transparency.

Data has been updated using the updated reference point elevations for each surveyed well, more technically described as a vertical datum correction or update. While the depth to water measurements does not change, groundwater elevation values were updated based on the vertical datum corrections. For example, if a well had a recorded reference point elevation of 3,500 ft above mean sea level (amsl), but the survey found the refence point elevation was in fact 3,501.2 ft amsl, then each groundwater level measurement was adjusted accordingly. Therefore, if that same well had a groundwater measurement of 100 ft below ground surface (bgs) or 3,400 ft amsl, then the new measurement would be 100 ft bgs or 3,401.2 ft amsl. **Table 2-2** includes the vertical datum correction.

These vertical datum corrections and updates to the historical data does not impact or alter the GSP in any significant way. Minimum thresholds and measurable objectives described in the submitted GSP were calculated using depth to water, which are not affected by the survey results. While the well survey may cause the elevations of these thresholds to change by a small amount, the same changes are applied to groundwater level measurements at each well, with the result that there are no differences in regard to groundwater level versus threshold comparisons for assessing basin sustainability. Updated minimum threshold and measurable objective elevations are provided in **Table 2-3**.

Although the survey results and vertical datum correction does not have a significant or immediate impact on the wells or Basin management, the survey allows the GSA to increase its data accuracy. Data accuracy will help improve understanding of the Basin, provide more accurate model calibrations, and refine baseline conditions for comparison as GSP implementation moves forward.

Table 2-2: Groundwater Level Representative Monitoring Network Wells Survey Results and Vertical Datum Correction

Opti_ID	Original GSE	Survey Latitude	Survey Longitude	Well Head Center Elevation	Concrete Pad Elevation	Reference Point Elevation	Secondary Reference Point Elevation	Survey Ground Surface Elevation	Top of Well Vault Elevation	Vertical Datum Correction Difference
2	3720.2	Could not be surveyed								
62	2921.1	34.829166	-119.466616	2920.94	2919.37	2920.12		2919.05		1.0
72	2171.4	34.934603	-119.689822	2176.94	2171.42	2171.68		2169.68		-0.2
74	2192.6	34.942235	-119.675109	2193.12	2191.99	2192.74		2191		-0.1
77	2285.9	34.931139	-119.595234	2282.62		2282.62		2283.29	2283.16	3.3
85	3046.9	34.819513	-119.452366	3049.92	3049.12	3049.39		3048.75		-2.5
89	3461.4	34.708085	-119.37848	3435.94		3455.56		3434.97		5.9
91	2473.9	34.897694	-119.54208	2478.32		2478.32		2479.16	2479.05	-4.4
95	2449.1	34.899789	-119.583875	2457.92	2457.23	2457.64		2456.99		-8.6
96	2606.4	34.89032	-119.616214	2609.49		2609.13		2608.05		-2.8
98	2687.6	Could not be surveyed								
99	2512.6	34.899769	-119.657711	2503.22		2503.22		2503.93	2504.14	9.4
100	3003.7	34.811832	-119.456608	3009.45	3008.69	3008.89		3007.97		-5.1
101	2741.4	34.85565	-119.484574	2752.33	2748.38	2748.52		2747.61		-7.1
102	2046.0	34.964658	-119.704769	2044.47	2043.58	2043.69		2042.87		2.3
103	2288.8	34.927934	-119.653133	2288.11	2287.57	2288.14		2286.65		0.6
106	2326.5	34.954879	-119.787264	2318.75	2318.29	2318.85		2318.11		7.7
107	2482.3	34.949445	-119.812449	2493.67		2493.75		2492.89		-11.5
110	2046.4	34.976685	-119.793894	2053.6	2051.69	2052.3		2051.47		-5.9
112	2139.0	34.962785	-119.761096	2131.37		2130.53		2129.03		8.5
114	1925.1	34.978517	-119.748026	1928.73		1927.29		1926.47		-2.2
115	2276.1	34.963198	-119.807102	2278.78		2278.37		2276.31		-2.3
118	2270.0	34.975944	-119.886884	2264.42		2264.03		2263.45		6.0

Opti_ID	Original GSE	Survey Latitude	Survey Longitude	Well Head Center Elevation	Concrete Pad Elevation	Reference Point Elevation	Secondary Reference Point Elevation	Survey Ground Surface Elevation	Top of Well Vault Elevation	Vertical Datum Correction Difference
119	1713.4	35.04321	-119.873055	1702.33		1702.15		1701.09		11.2
124	2286.9	Could not be surveyed								
316	2473.9	34.897693	-119.542081	2478.37		2478.37		2479.16	2479.05	-4.5
317	2473.9	34.897695	-119.54208	2478.41		2478.41		2479.16	2479.05	-4.5
322	2512.6	34.899771	-119.657712	2503.22		2503.22		2503.93	2504.14	9.4
324	2512.6	34.89977	-119.657712	2503.21		2503.21		2503.93	2504.14	9.4
325	2512.6	34.89977	-119.65771	2503.14		2503.14		2503.93	2504.14	9.4
420	2285.9	34.931138	-119.595235	2282.63		2282.63		2283.29	2283.16	3.3
421	2285.9	34.931141	-119.595235	2282.63		2282.63		2283.29	2283.16	3.3
474	2368.7	34.940707	-119.763809	2366.75		2366.64		2365.22		2.0
568	1904.7	34.977355	-119.756313	1915.82	1912.74	1914.14		1912.09		-9.4
571	2306.7	34.979568	-119.896983	2317.77	2316.57	2317.02		2316.21		-10.3
573	2084.0	34.984849	-119.805973	2083.86	2083.16	2083.56		2081.62		0.5
604	2124.7	34.961255	-119.665	2124.82	2117.81	2118.29		2117.4		6.4
608	2223.7	34.946425	-119.618755	2215.86	2214.33	2214.58	2215.96	2214.3		9.1
609	2167.0	34.952896	-119.640085	2174.7	2167.1	2167.62	2168.56	2166.35		-0.6
610	2441.9	34.905197	-119.560701	2442.3	2441.83	2442		2440.38		-0.1
612	2266.3	34.940453	-119.594176	2279.49	2272.7	2273.43		2271.87		-7.1
613	2330.3	34.934851	-119.571774	2334.73	2328.57	2329.3		2327.64		1.0
615	2327.3	34.94182	-119.567563	2329.97	2323.67	2324.01		2322.95		3.3
629	2378.9	34.934806	-119.530177	2384.52	2379.24	2379.76		2379.19		-0.8
633	2363.9	34.937517	-119.543251	2371.3	2364.36	2364.84		2364.31		-1.0
830	1571.0	35.054077	-119.934733	1562.53		1562.21		1561.55		8.7
832	1629.7	35.041341	-119.8895	1639.53		1640.86		1639.62		-11.1

Opti_ID	Original GSE	Survey Latitude	Survey Longitude	Well Head Center Elevation	Concrete Pad Elevation	Reference Point Elevation	Secondary Reference Point Elevation	Survey Ground Surface Elevation	Top of Well Vault Elevation	Vertical Datum Correction Difference
833	1457.2	35.068374	-119.990842	1458.4	1456.81	1457.45		1456.06		-0.3
836	1485.8	35.055269	-119.964563	1511.18	1509.82	1510.32		1509.02		-24.5
841	1760.9	35.003221	-119.831741	1764.95	1763.43	1763.53		1762.08		-2.6
845	1711.8	35.02238	-119.849721	1714.74	1713.05	1713.08		1711.89		-1.3
84	2923.2	34.827438	-119.466547	2925.39	2923.33	2924.5		2923.03		-1.3
108	2629.5	Could not be surveyed								
116	2328.6	34.926721	-119.728094	2322.23	2321.95	2322.4		2321.64		6.2
128	3720.7	Could not be surveyed								
467	2224.4	34.938348	-119.65291	2234.11	2228.38	2228.7		2227.2		-4.3
601	2074.2	34.965474	-119.684202	2075.94	2071.17	2072.11		2071.1		2.1
603	2096.8	34.966881	-119.675179	2091.44	2085.09	2085.49		2085.04		11.3
614	2337.1	34.934857	-119.568091	2340.78	2334.51	2335.3	2334.86	2334.47		1.8
618	2162.8	34.955416	-119.643536	2159.29	2157.8	2158.05		2156.81		4.8
619	2306.5	34.938245	-119.581423	2311.55	2305.74	2306.1		2305.48		0.4
620	2432.3	34.905031	-119.568545	2435.24	2429.77	2430.15		2429.5		2.2
621	2126.1	34.960753	-119.655356	2140.01	2134.23	2134.51	2134.8	2134.02		-8.4
623	2288.3	34.941945	-119.586625	2294.24	2288.77	2289.68		2288.06		-1.4
627	2279.1	34.927648	-119.64601	2276.65	2276.53	2276.95		2275.73		2.2
628	2388.2	34.936287	-119.52604	2394.4		2389.09		2387.71		-0.9
630	2371.5	34.934439	-119.539166	2378.49	2371.91	2372.79		2371.73		-1.3
631	2367.4	34.937386	-119.534314	2373.26	2365.35	2366.13		2365.17		1.3
635	2356.4	34.934448	-119.558016	2361.84		2354.91		2354.62		1.4
636	2348.0	34.93449	-119.562449	2354.89	2349.3	2349.92	2350.28	2349.03		-1.9
637	2110.0	34.966758	-119.658803	2123.79	2117.46	2118.38		2116.77		-8.4

Opti_ID	Original GSE	Survey Latitude	Survey Longitude	Well Head Center Elevation	Concrete Pad Elevation	Reference Point Elevation	Secondary Reference Point Elevation	Survey Ground Surface Elevation	Top of Well Vault Elevation	Vertical Datum Correction Difference
638	2436.8	34.905122	-119.56447	2443.21	2435.67	2436.39		2435.02		0.5
640	2238.8	34.94526	-119.604771	2237.55	2236.06	2236.35		2235.08		2.4
641	2204.2	34.947711	-119.628494	2204.28	2202.44	2203.83		2201.8		0.4
642	2231.6	34.94924	-119.607379	2235.07	2233.2	2234.37		2231.82		-2.8
644	2143.4	34.959038	-119.648801	2147.37	2145.52	2145.54		2144.93		-2.1
831	1556.8	35.048818	-119.93885	1156.46	1557.13	1556.78		1556.78		0.0
834	1507.9	35.052221	-119.966532	1510.77	1509.62	1510.35		1509.19		-2.4
835	1554.5	35.044117	-119.964617	1561.43		1560.39		1560.13		-5.8

Table 2-3: Updated Groundwater Level Threshold Depths and Elevations with Vertical Datum Corrections

Well	*Original GSE*	*Surveyed GSE*	*Minimum Threshold (Depth)*	*Measurable Objective (Depth)*	*Minimum Threshold (Elevation)*	*Measurable Objective (Elevation)*
2	*3720.2*	*Unavailable*	*72*	*55*	*3648*	*3665*
62	*2921.1*	*2919.05*	*182*	*142*	*2737*	*2777*
72	*2171.4*	*2169.68*	*169*	*124*	*2001*	*2046*
74	*2192.6*	*2191*	*256*	*243*	*1935*	*1948*
77	*2285.9*	*2283.29*	*450*	*400*	*1833*	*1883*
84	*2923.2*	*2923.03*	-	-	*N/A*	*N/A*
85	*3046.9*	*3048.75*	*233*	*147*	*2816*	*2902*
89	3461.4	3434.97	64	44	3371	3391
91	2473.9	2479.16	625	576	1854	1903
95	2449.1	2456.99	573	538	1884	1919
96	2606.4	2608.05	333	325	2275	2283
98	2687.6	Unavailable	450	439	2238	2249
99	2512.6	2503.93	311	300	2193	2204
100	3003.7	3007.97	181	125	2827	2883
101	2741.4	2747.61	111	81	2637	2667
102	2046.0	2042.87	235	197	1808	1846
103	2288.8	2286.65	290	235	1997	2052
106	2326.5	2318.11	154	141	2164	2177
107	2482.3	2492.89	91	72	2402	2421
108	2629.5	Unavailable	165	136	2464	2494
112	2139.0	2129.03	87	85	2042	2044
114	1925.1	1926.47	47	45	1879	1881
118	2270.0	2263.45	124	57	2139	2206
119	1713.4	1701.09	203	153	1498	1548
124	2286.9	Unavailable	73	57	2214	2230

Well	*Original GSE*	*Surveyed GSE*	*Minimum Threshold (Depth)*	*Measurable Objective (Depth)*	*Minimum Threshold (Elevation)*	*Measurable Objective (Elevation)*
316	2473.9	2479.16	623	574	1856	1905
317	2473.9	2479.16	623	573	1856	1906
322	2512.6	2503.93	307	298	2197	2206
324	2512.6	2503.93	311	299	2193	2205
325	2512.6	2503.93	300	292	2204	2212
420	2285.9	2283.29	450	400	1833	1883
421	2285.9	2283.29	446	398	1837	1885
474	2368.7	2365.22	188	169	2177	2196
568	1904.7	1912.09	37	36	1875	1876
571	2306.7	2316.21	144	121	2172	2196
573	2084.0	2081.62	118	68	1964	2014
604	2124.7	2117.4	526	487	1591	1630
608	2223.7	2214.3	436	407	1778	1807
609	2167.0	2166.35	458	421	1708	1745
610	2441.9	2440.38	621	591	1819	1849
612	2266.3	2271.87	463	440	1809	1832
613	2330.3	2327.64	503	475	1825	1853
615	2327.3	2322.95	500	468	1823	1855
620	2432.3	2429.5	606	566	1824	1864
629	2378.9	2379.19	559	527	1820	1852
633	2363.9	2364.31	547	493	1817	1871
830	1571.0	1561.55	59	56	1503	1506
831	1556.8	1556.78	77	52	1480	1505
832	1629.7	1639.62	45	30	1595	1610
833	1457.2	1456.06	96	24	1360	1432
834	1507.9	1509.19	84	42	1425	1467

Well	*Original GSE*	*Surveyed GSE*	*Minimum Threshold (Depth)*	*Measurable Objective (Depth)*	*Minimum Threshold (Elevation)*	*Measurable Objective (Elevation)*
835	1554.5	1560.13	55	36	1505	1524
836	1485.8	1509.02	79	36	1430	1473
841	1760.9	1762.08	203	153	1559	1609
845	1711.8	1711.89	203	153	1509	1559

2.2 Groundwater Contour Maps

The submitted GSP included contour maps up through the spring of 2018. The previous Annual Reports included contour maps for fall 2018 and spring and fall in 2019 and 2020. For this Annual Report, analysis was conducted to incorporate data from October 2020 to December 2021 that collected by the CBGSA and local landowners. Data was then added to the Data Management System (DMS) and processed to analyze the current groundwater conditions by creating seasonal groundwater contour/ raster maps for the spring and fall of 2021 and hydrographs of basin monitoring wells.

A contour map shows changes in groundwater elevations by interpolating groundwater elevations between monitoring sites. The elevations are shown on the map with the use of a contour line, which indicates that at all locations that line is drawn, the line represents groundwater at the elevation indicated. There are two versions of contour maps used in this section: one that shows the elevation of groundwater above mean sea level, which is useful because it can be used to identify the horizontal gradients of groundwater, and one that shows contours of depth to water, the distance from the ground surface to groundwater, which is useful because it can identify areas of shallow or deep groundwater.

Analysts prepared groundwater contour maps under the supervision of a Certified Hydrogeologist in the State of California for both groundwater elevation and depth to water for both spring and fall of 2021.

Each contour map is contoured at a 50-foot contour interval, with contour elevations indicated in white numeric label. The groundwater contours were also based on assumptions in order to accumulate enough data points to generate useful contour maps. Assumptions are as follows:

- Measurements from wells of different depths are representative of conditions at that location and there are no significant known vertical gradients. Due to the limited spatial amount of monitoring points, data from wells of a wide variety of depths were used to generate the contours.
- Measurements collected by the CBGSA monitoring program in March-May 2021 were used to develop the spring contours and from October 2021 to develop the fall contours. It is assumed that these measurements are representative of conditions during the spring or fall season, and conditions have not changed substantially from the time of the earliest measurement used to the latest.

These assumptions generate contours that are useful at the planning level for understanding groundwater levels across the Basin, and to identify general horizontal gradients and regional groundwater level trends. The contour maps are not indicative of exact values across the Basin because groundwater contour maps approximate conditions between measurement points, and do not account for topography. Therefore, a well on a ridge may be farther from groundwater than one in a canyon, and the contour map will not reflect that level of detail.

Figure 2-2 shows groundwater elevation contours for spring of 2021. Data was collected by local landowners and the CBGSA. The contours developed using the available data show two general trends in the Basin. First, in most of the Basin, groundwater generally reflects the topography of the Basin. For example, groundwater elevations decrease moving from the highest portions of the Valley in the Southeastern portion of the Basin towards the central portion, and groundwater also travels down slope in an northern direction off of the southern foothills towards the Cuyama River. The second trend and potential exception to the first, is the central portion of the basin where there is a clear depression and deviation from the topography (more clearly seen in the following figure). Groundwater levels near the town of Cuyama and slightly towards the east are much deeper and do not match the surface topography. There is also a greater decline in groundwater elevations between the Ventucopa area and the central portion of the basin.

Figure 2-3 shows the depth to groundwater contours for spring 2021 and more clearly shows a depression in the central portion of the Basin greater than 450 ft below ground surface. Groundwater levels then increase toward the west reaching depths above 100 ft in the western portion of the Basin. These levels align with trends seen in previous contour maps provided in the 2020 and 2021 Annual Reports.

Figure 2-4 shows the groundwater elevation contours for fall of 2021. As in **Figure 2-3**, Groundwater elevations show a depression in the central portion of the Basin and a steep gradient between the central portion of the Basin and the Ventucopa area, which is consistent with contour maps for 2015 through 2020 conditions and previous Annual Reports. Contours indicate a groundwater flow down the Basin from east to west, with a decrease in gradient through the central portion of the Basin.

Figure 2-5 shows the depth to groundwater contours for the fall of 2021. Depth to water contours indicate a depression in the central portion of the Basin, and a steep gradient between the central portion of the Basin and the Ventucopa area, which is consistent with contour maps for 2015 through 2019 conditions and previous Annual Reports.

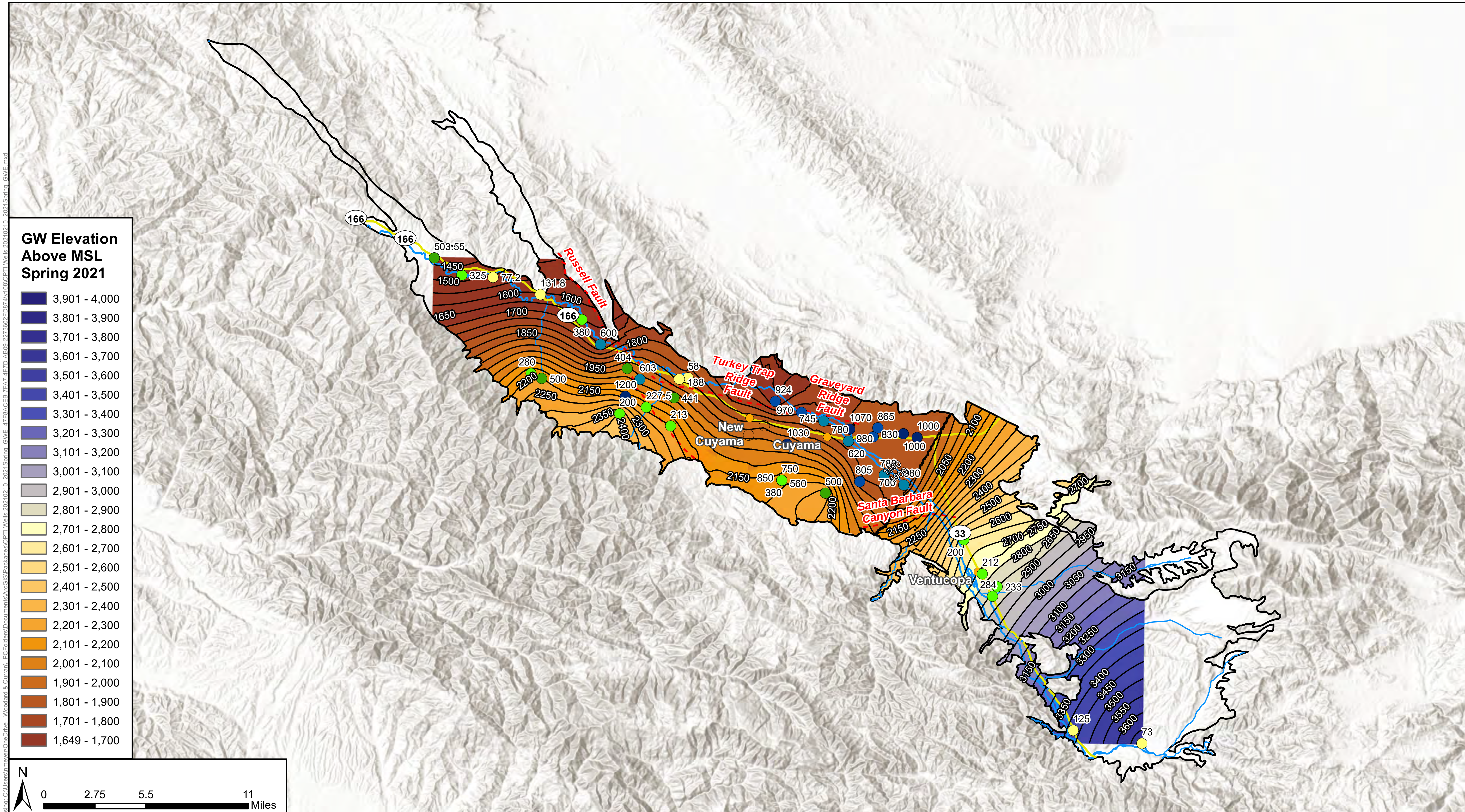


Figure 2-2: Cuyama GW Basin Spring 2021 Groundwater Elevation

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

February 2022

WOODARD & CURRAN

Legend

- Cuyama Basin
- Cuyama River
- Faults
- Groundwater Elevation Above MSL

Well Depth Below Ground Surface Elevation

- Unknown
- 0 - 200 ft
- 200 - 400 ft
- 400 - 600 ft
- 600 - 800 ft
- 800 - 1000 ft
- 1000 - 1200 ft

Contours were interpolated using data measured from 2/1/2021 - 4/30/2021 due to limited data availability.

Contours Interval: 50 ft.

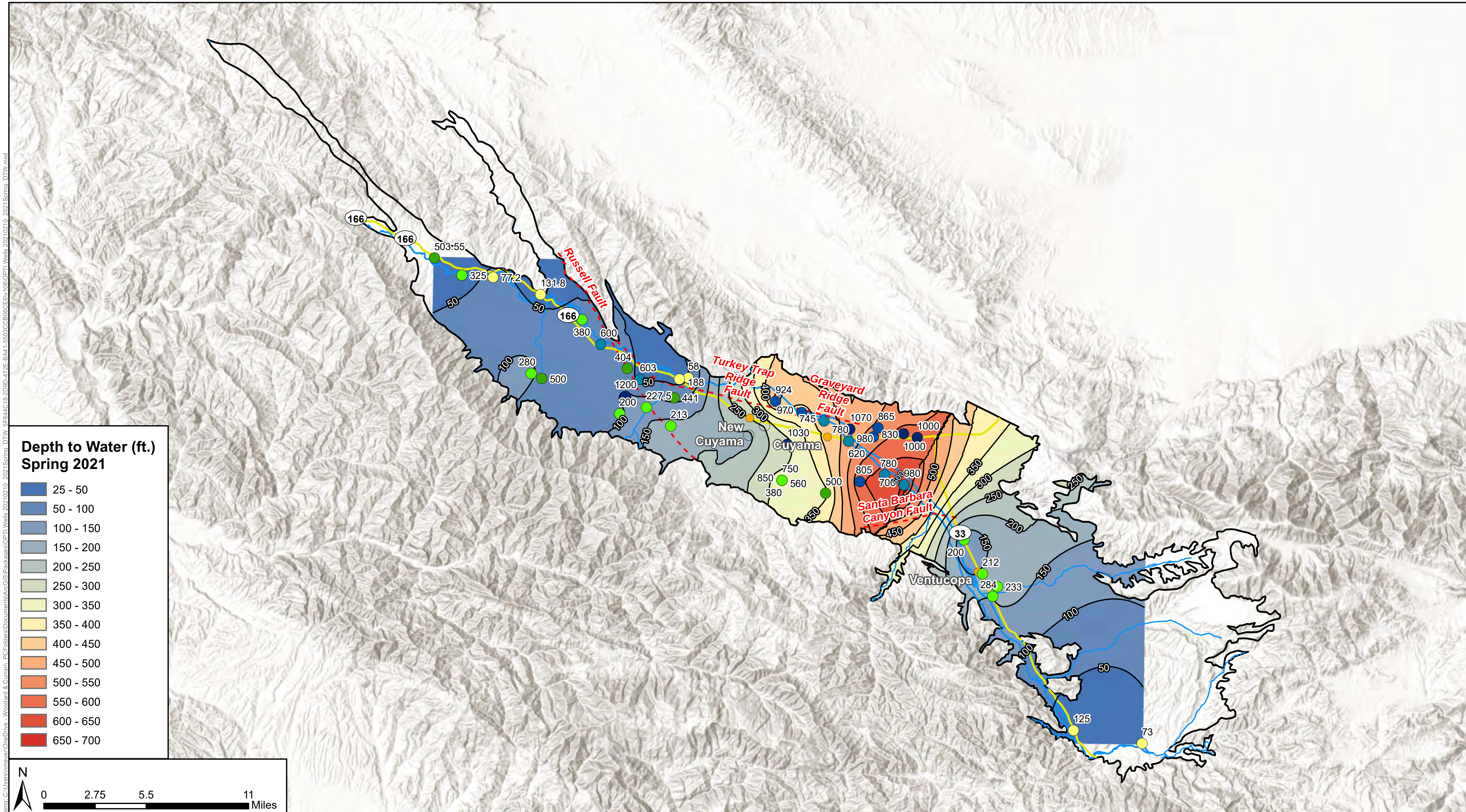


Figure 2-3: Cuyama GW Basin Spring 2021 Depth to Water

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

February 2022

WOODARD & CURRAN

Legend

- Cuyama Basin
- Cuyama River
- Faults
- Groundwater Depth-to-Water Contours below Groundsurface

Well Depth Below Ground Surface Elevation

- Unknown
- 0 - 200 ft
- 200 - 400 ft
- 400 - 600 ft
- 600 - 800 ft
- 800 - 1000 ft
- 1000 - 1200 ft

Contours were interpolated using data measured from 2/1/2021 - 4/30/2021 due to limitated data availability.

Contours Interval: 50 ft.

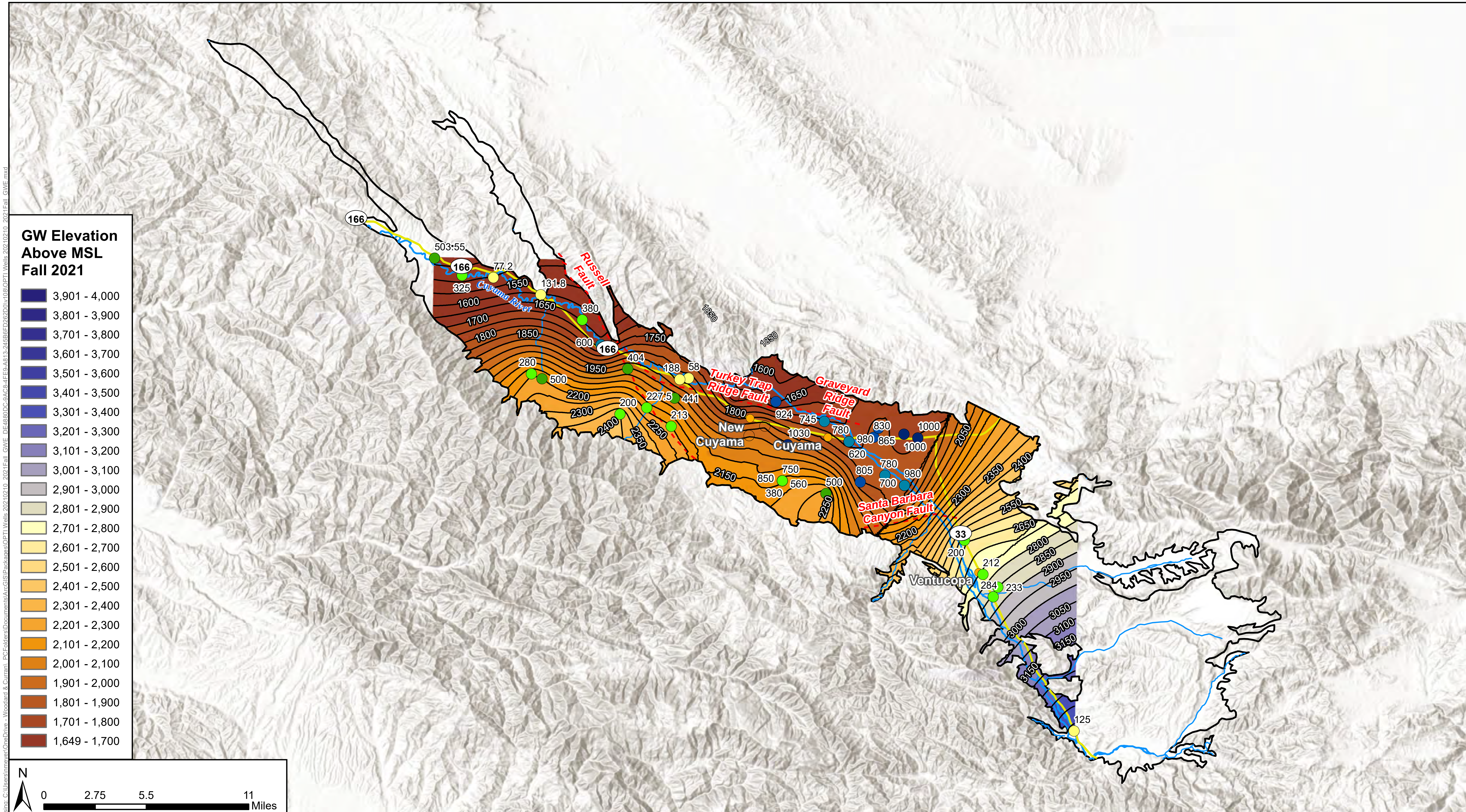


Figure 2-4: Cuyama GW Basin Fall 2021 Groundwater Elevation
Cuyama Basin Groundwater Sustainability Agency
Cuyama Valley Groundwater Basin Groundwater Sustainability Plan
March 2022

WOODARD & CURRAN

Legend

- Cuyama Basin
- Cuyama River
- Faults
- Groundwater Elevation Above MSL

Well Depth Below Ground Surface Elevation

- Unknown
- 0 - 200 ft
- 200 - 400 ft
- 400 - 600 ft
- 600 - 800 ft
- 800 - 1000 ft
- 1000 - 1200 ft

Contours were interpolated using data measured from 9/1/2021 - 11/30/2021 due to limited data availbility.

Contours Interval: 50 ft.

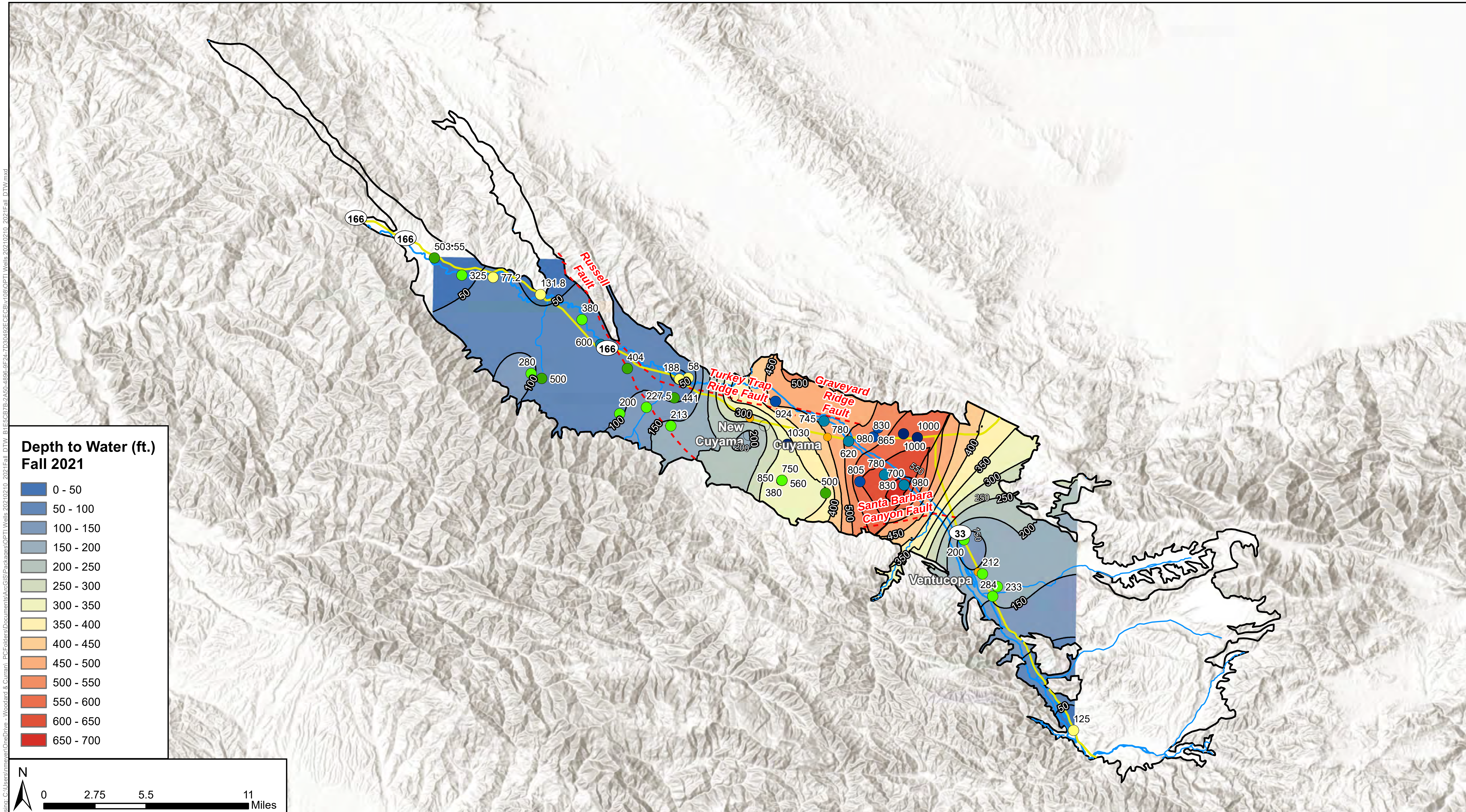


Figure 2-5: Cuyama GW Basin Fall 2021 Depth to Water

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

March 2022

Legend

- Cuyama Basin
- Cuyama River
- Faults
- Groundwater Depth-to-Water Contours below Groundsurface

Well Depth Below Ground Surface Elevation

- Unknown
- 0 - 200 ft
- 200 - 400 ft
- 400 - 600 ft
- 600 - 800 ft
- 800 - 1000 ft
- 1000 - 1200 ft

Contours were interpolated using data measured from 9/1/2021 - 11/30/2021 due to limited data availability.

Contours Interval: 50 ft.

2.3 Hydrographs

Groundwater hydrographs were developed for each monitoring network well to provide indicators of groundwater trends throughout the Basin. Measurements from each well with historical monitoring data were compiled into one hydrograph for each well. A selection of wells from each threshold region are provided below, while hydrographs for every well are presented in Appendix A.[3]

In many cases, changes in historical groundwater conditions at particular wells have been influenced by climactic patterns in the Basin. Historical precipitation is highly variable, with several relatively wet years and some multi-year droughts.

Groundwater conditions generally vary in different parts of the Basin. To provide a comparative analysis general groundwater trends are provided in **Table 2-4** and are accompanied by hydrographs for an example well in each threshold regions. A map of threshold regions is provided in **Figure 2-6**, which also shows the locations of example wells used in each threshold region.

Table 2-4: Groundwater Trends by Threshold Regions

Threshold Region	Groundwater Trend	Example Well(s)
Northwestern Region	Slight downward trend influenced by seasonal fluctuations. This is expected as recent changes in land use have begun to pump groundwater. Levels are still approximately 80 ft above the Measurable Objective.	841 (**Figure 2-7**)
Western Region	Levels in this region have either stayed relatively flat or slightly increased.	571 (Error! Reference s ource not found.)
Central Region	Levels have historically had a steady downward trend with some seasonal fluctuations. This pattern remains with trends continuing downward and, in some cases, levels surpassing minimum thresholds.	74 and 91 (**Figure 2-9 & Figure 2-10**)
Eastern Region	This region has seen an overall decline over several decades, however, recent groundwater trends appear to be approaching equilibrium.	62 (**Figure 2-11**)
Southeastern Region	Levels in this relatively small region decreased slightly during the last drought but have recovered over the past few years and are well above the Measurable Objective.	89 (**Figure 2-12**)

[3] Hydrographs in the appendix for this report include those that have recent monitoring data but will be removed based on monitoring network refinements described in this report. Subsequent Annual Reports for the Cuyama Basin will not include these hydrographs.

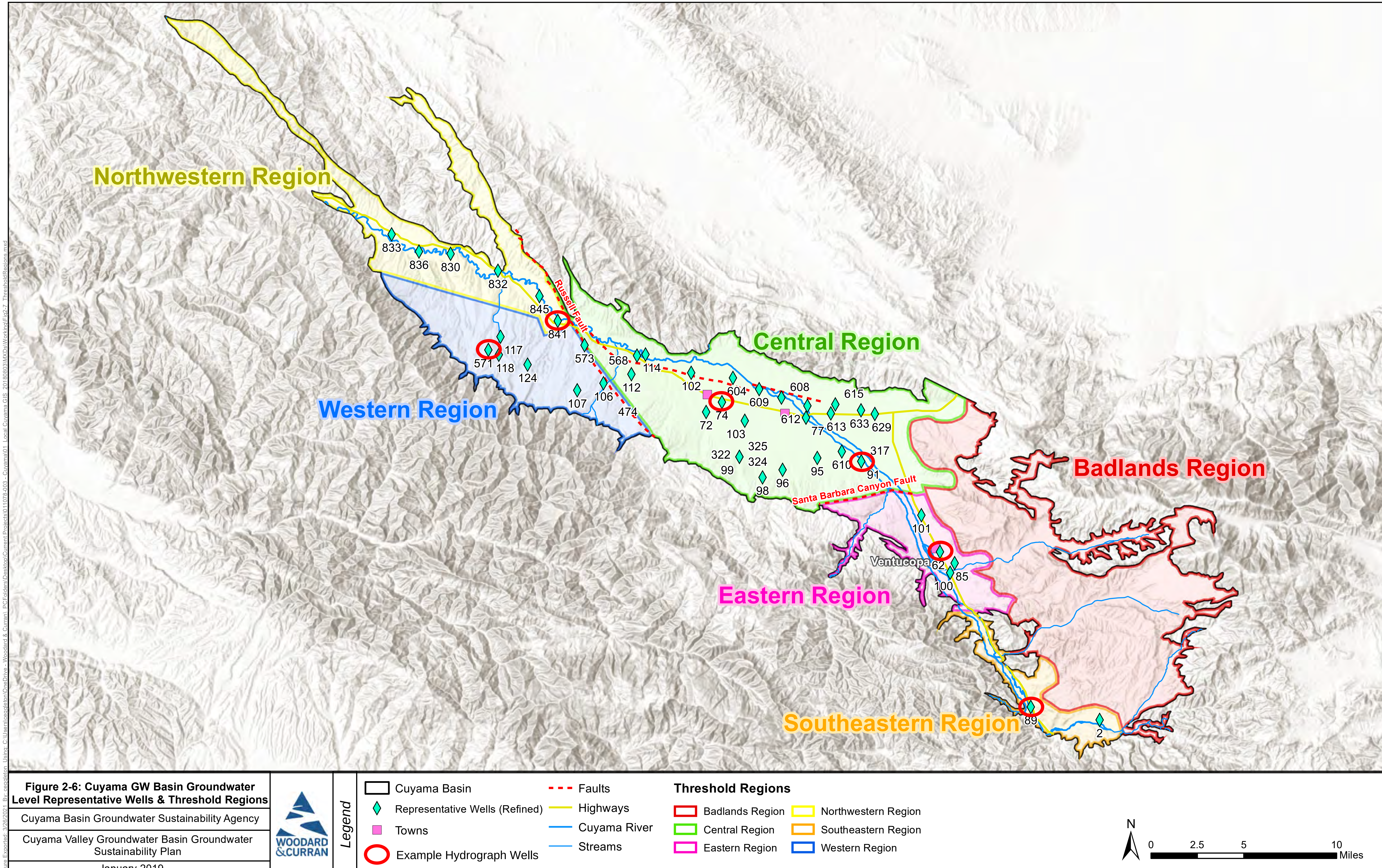


Figure 2-6: Cuyama GW Basin Groundwater Level Representative Wells & Threshold Regions

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

January 2019

Figure 2-7: Example Well Hydrographs – Northwestern Region

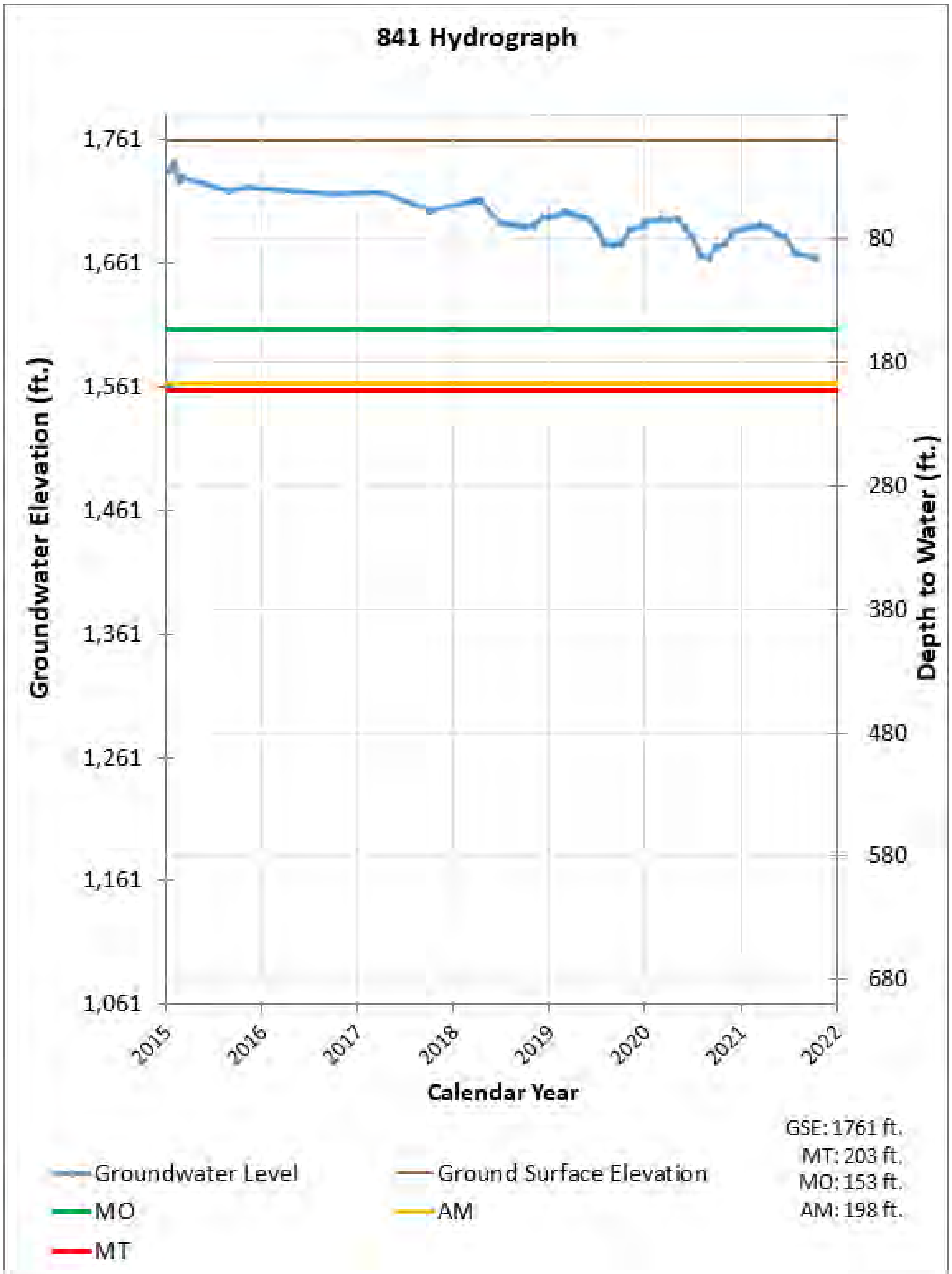


Figure 2-8: Example Well Hydrographs – Western Region

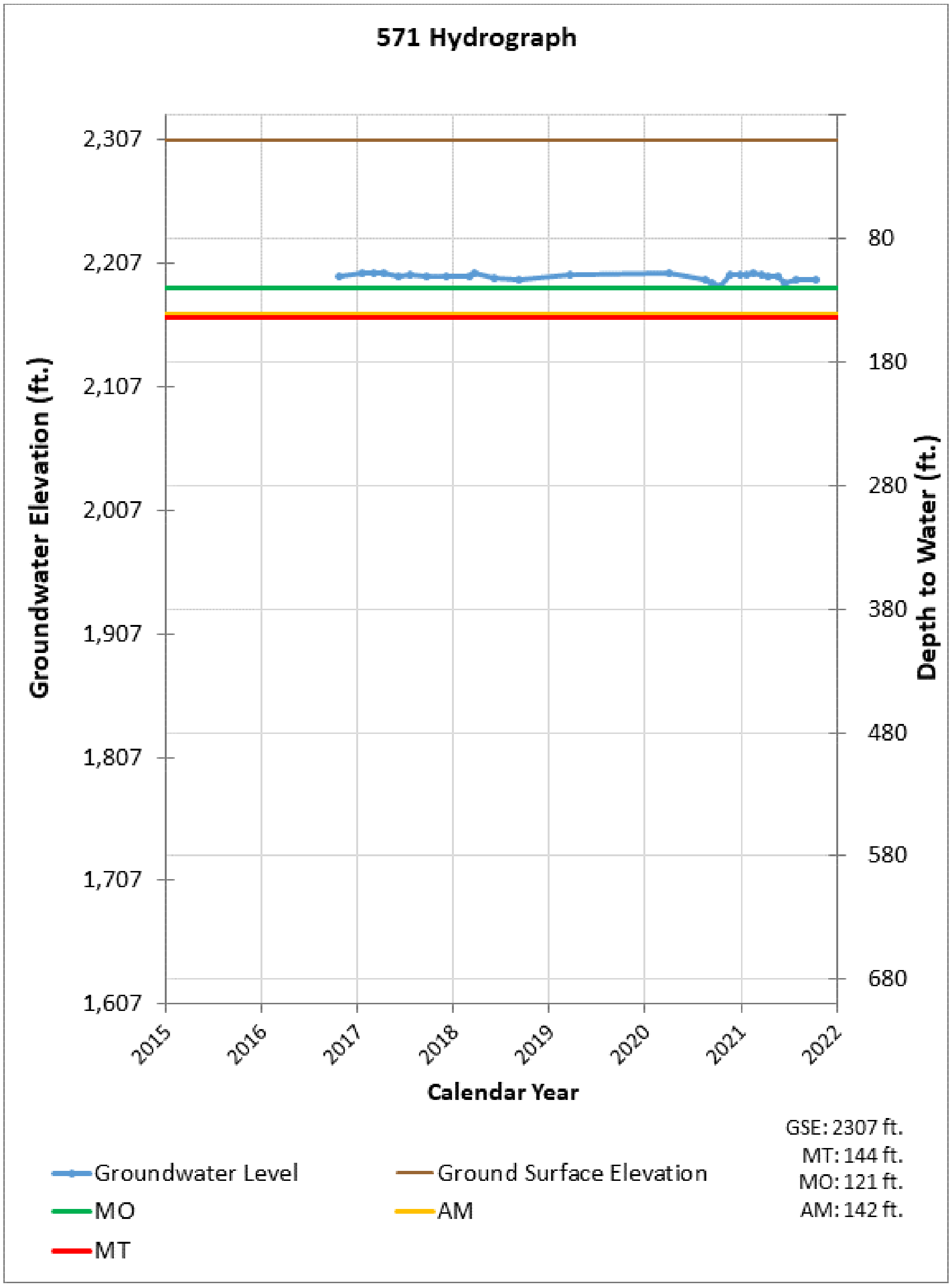


Figure 2-9: Example Well Hydrographs – Central Region

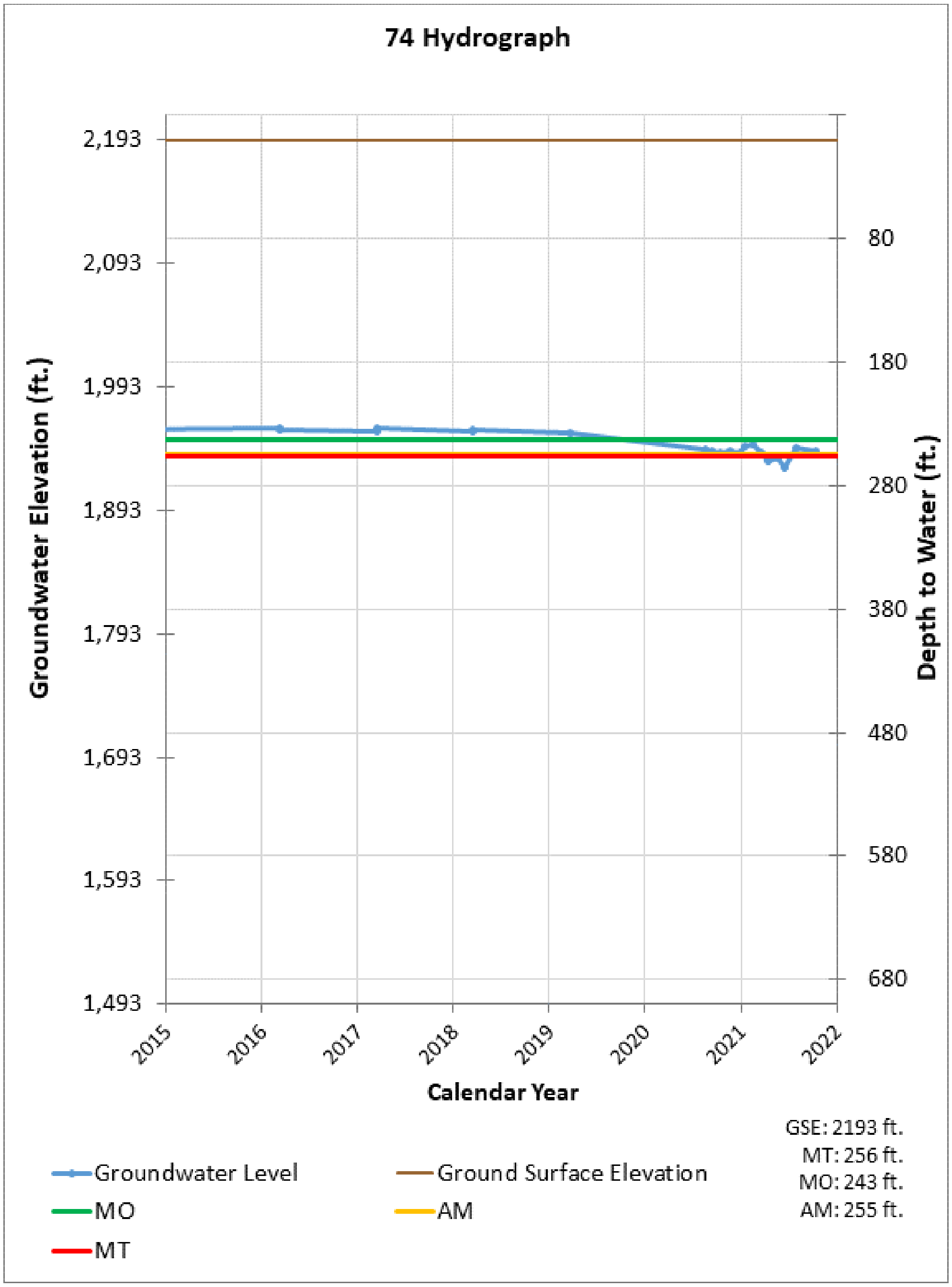


Figure 2-10: Example Well Hydrographs – Central Region

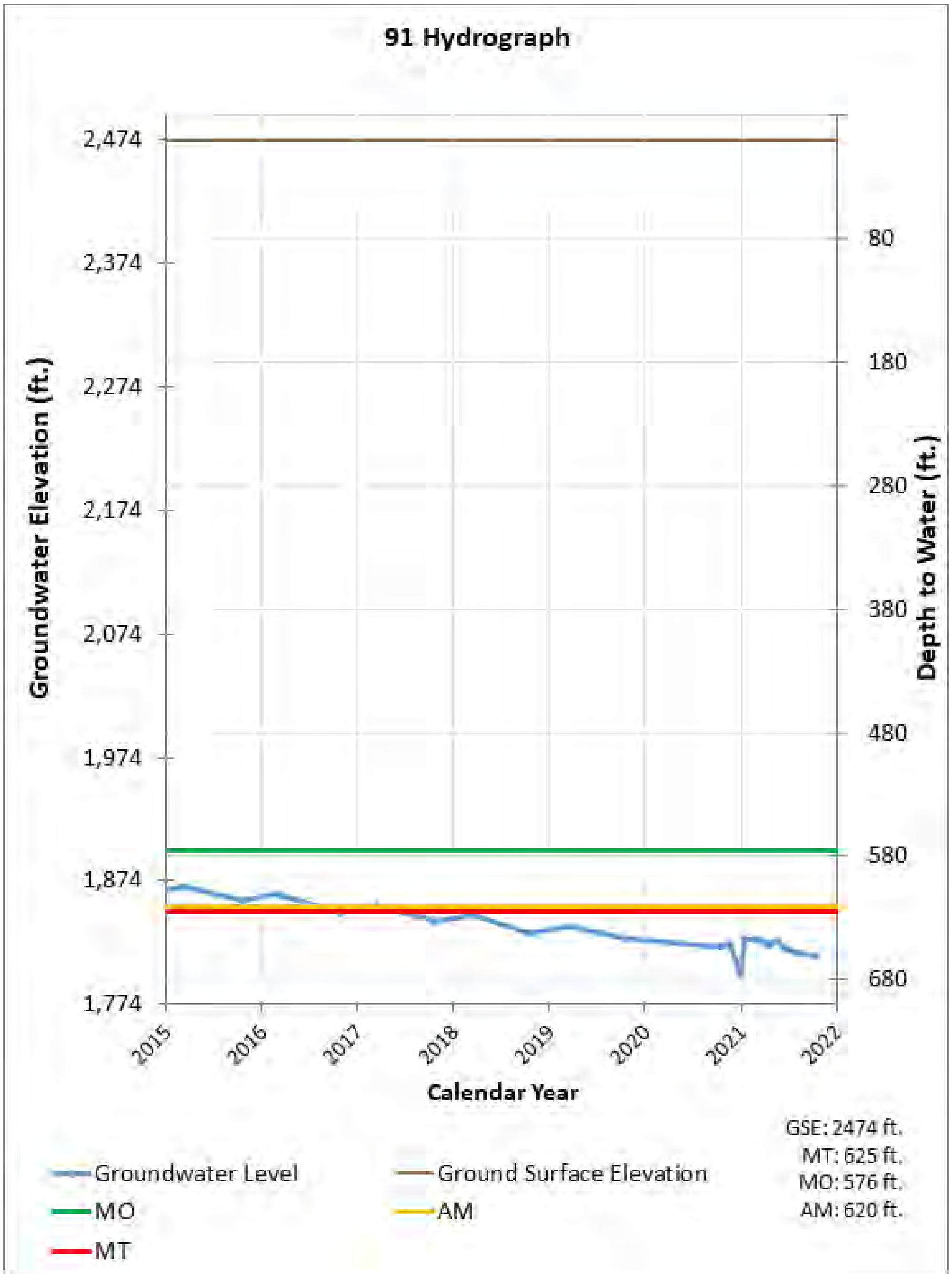


Figure 2-11: Example Well Hydrographs – Eastern Region

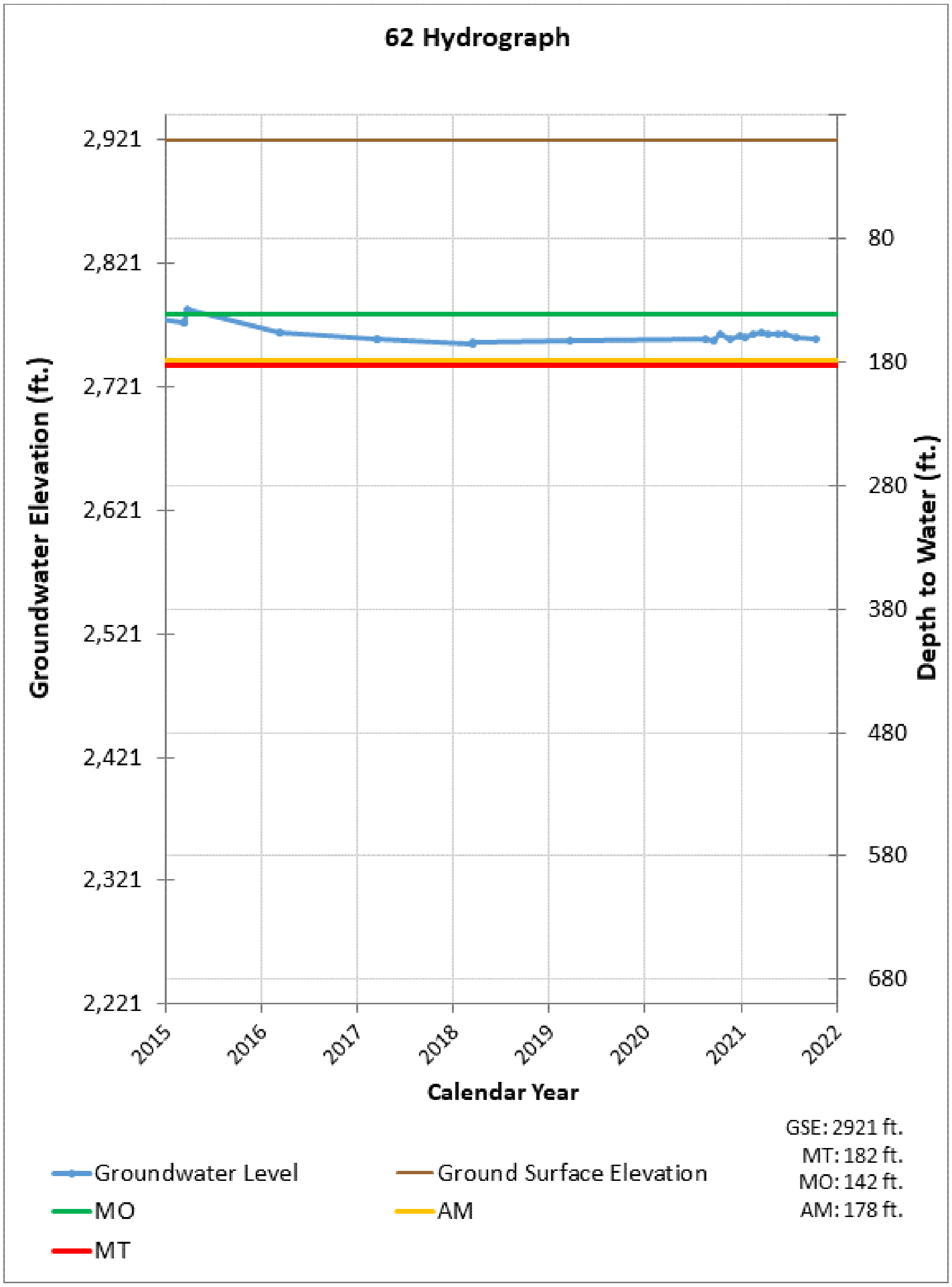
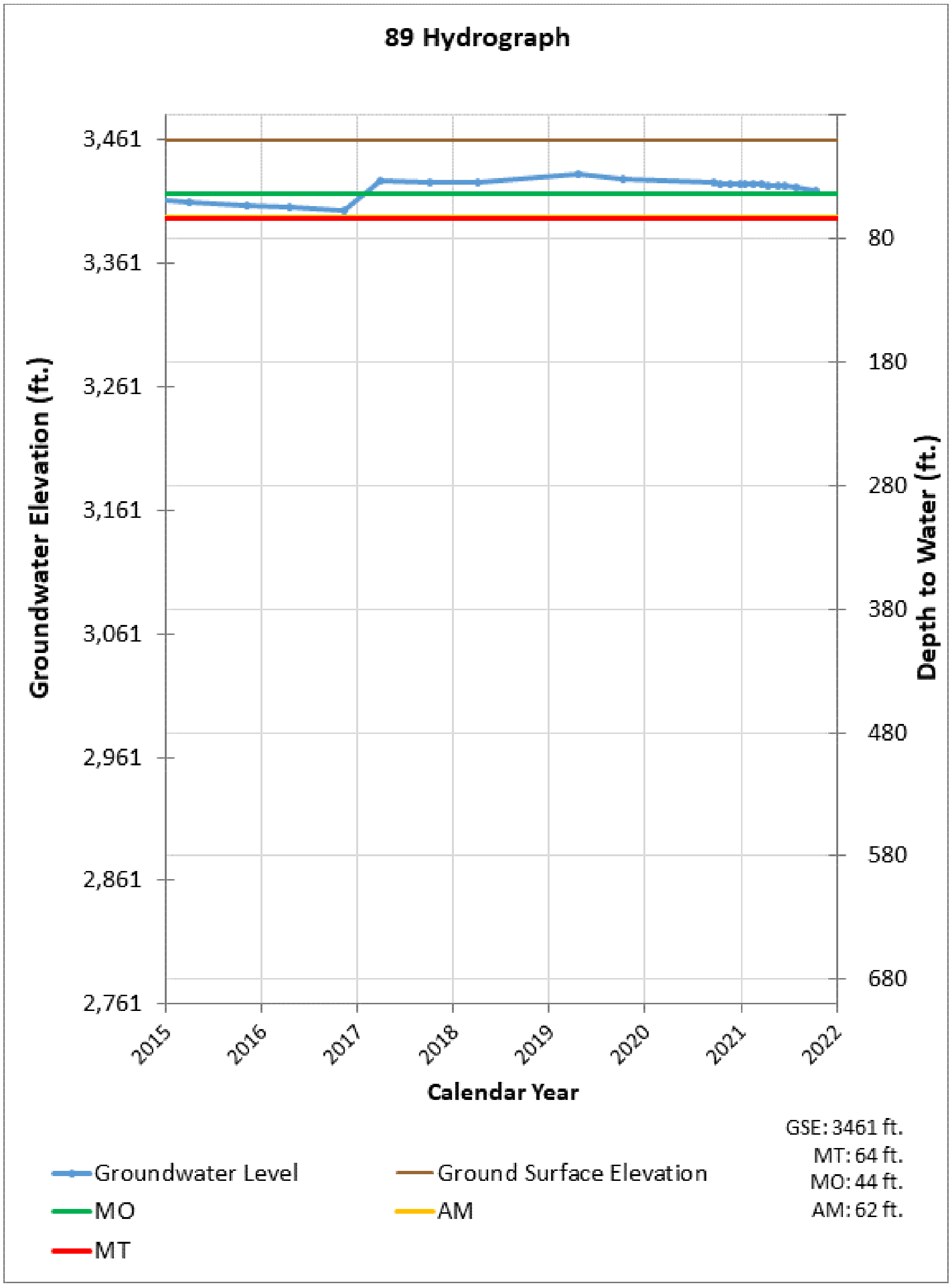


Figure 2-12: Example Well Hydrographs – Southeastern Region



Section 3. Water Use

§356.2 (b) (2)	Groundwater extraction for the preceding water year. Data shall be collected using the best available measurement methods and shall be presented in a table that summarizes groundwater extractions by water use sector, and identifies the method of measurement (direct or estimate) and accuracy of measurements, and a map that illustrates the general location and volume of groundwater extractions.
§356.2 (b) (3)	Surface water supply used or available for use, for groundwater recharge or in-lieu use shall be reported based on quantitative data that describes the annual volume and sources for the preceding water year.
§356.2 (b) (4)	Total water use shall be collected using the best available measurement methods and shall be reported in a table that summarizes total water use by water use sector, water source type, and identifies the method of measurement (direct or estimate) and accuracy of measurements. Existing water use data from the most recent Urban Water Management Plans or Agricultural Water Management Plans within the basin may be used, as long as the data are reported by water year.

3.1 Groundwater Extraction

Water budgets in the Cuyama Basin GSP were developed using the Cuyama Basin Water Resources Model (CBWRM) model, which is a fully integrated surface and groundwater flow model covering the Basin. The CBWRM was used to develop a historical water budget that evaluated the availability and reliability of past surface water supply deliveries, aquifer response to water supply, and demand trends relative to water year type. For the GSP, the CBWRM was used to develop water budget estimates for the hydrologic period of 1998 through 2017. As discussed in the GSP, the model was developed based on the best available data and information as of June 2018. An assessment of model uncertainty included in the GSP estimated an error range in overall model results of about +/- 10%. It is expected that the model will be refined in the future as improved and updated monitoring information becomes available for the Basin. For the past three Annual Reports, the CBWRM model was extended to include the 2018 through 2021 water years, utilizing updated land use, temperature, and precipitation[4] data from those years.

Figure 3-1 shows the annual time series of groundwater pumping for the water years 1998 through 2021. The CBWRM estimates a total groundwater extraction amount of 59,300 AF in the Cuyama Basin in the 2021 water year. Almost all groundwater extraction in the Basin is for agriculture use. There is approximately 300 AF of domestic use in each year, with the remainder in each year being for agricultural use.

[4] It should be noted that precipitation data provided by PRISM was updated and there are minor changes to some historical (pre-2020) data reflected in the water budget results when compared to previous reports.

Figure 3-1: Annual Groundwater Extraction in the Cuyama Basin in Water Years 1998-2021

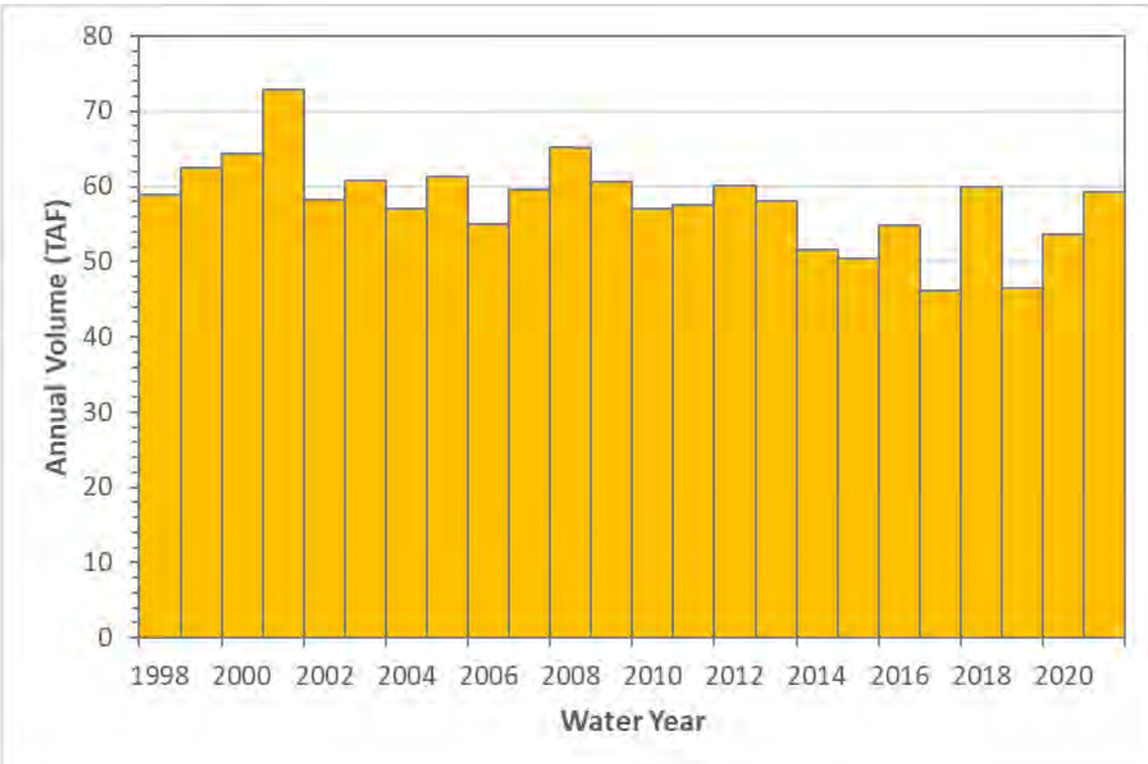


Figure 3-2 shows the locations where groundwater is applied in the Basin. The locations of groundwater use have not changed since completion of the GSP.

3.2 Surface Water Use

No surface water was used in the Cuyama Basin during the reporting period.

3.3 Total Water Use

Since there is no surface water use in the Cuyama Basin, the total water use equals the groundwater extraction in each year, as shown in Section 3.1.

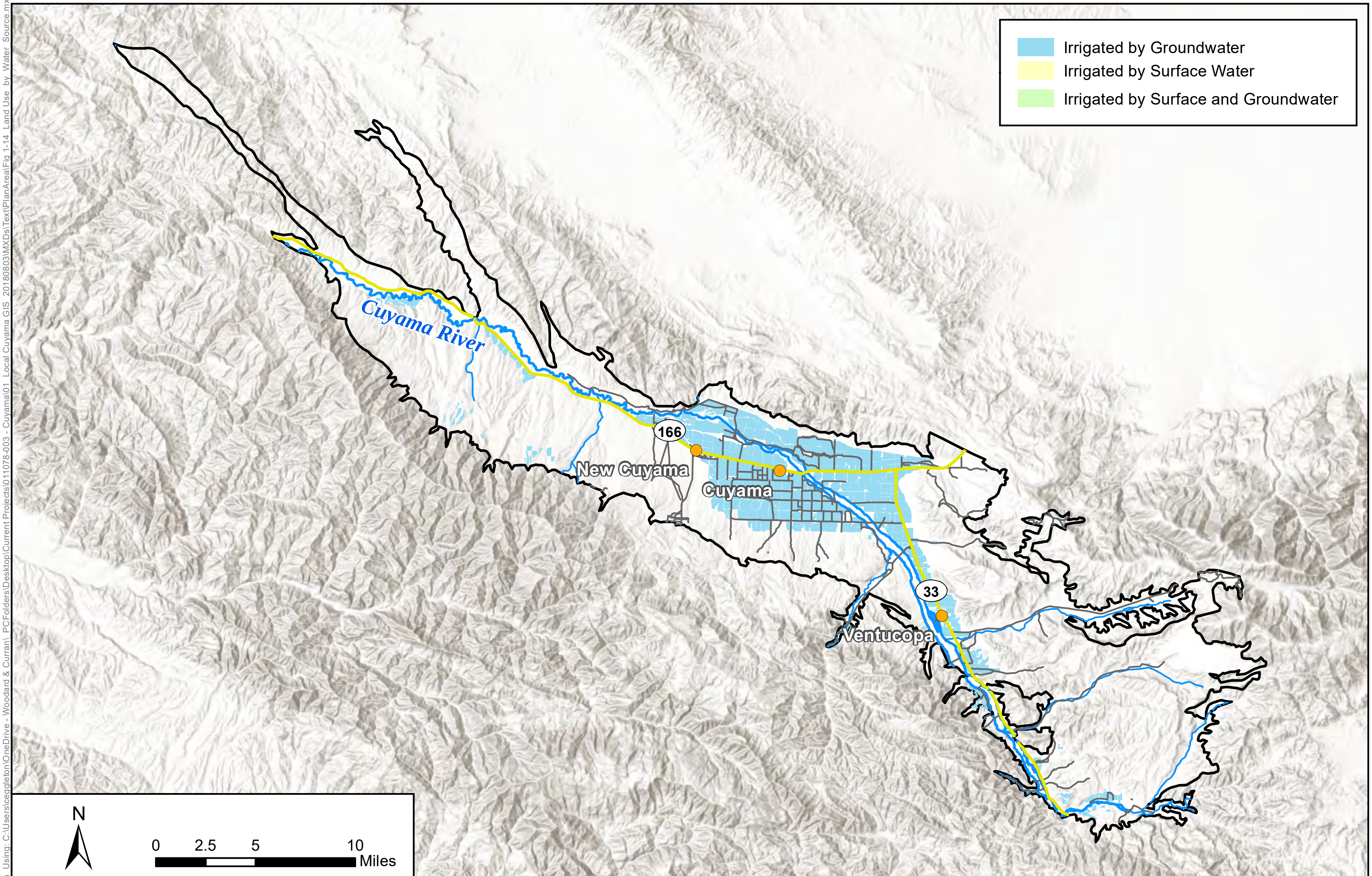


Figure 3-2 - Land Use by Water Source

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

March 2021

Legend

Cuyama Basin
Towns
Highways
Local Roads
Cuyama River
Streams/Creeks

Source: California Department of Water Resources Statewide Crop Mapping, 2016 dataset.
https://gis.water.ca.gov/app/CADWRLandUseViewer/

Section 4. Change in Groundwater Storage

§356.2 (b) (5)	Change in groundwater in storage shall include the following:
§356.2 (b) (5) (A)	Change in groundwater in storage maps for each principal aquifer in the basin.
§356.2 (b) (5) (B)	A graph depicting water year type, groundwater use, the annual change in groundwater in storage, and the cumulative change in groundwater in storage for the basin based on historical data to the greatest extent available, including from January 1, 2015, to the current reporting year.

Figure 4-1 shows contours of the estimated change in groundwater levels in the Cuyama Basin between fall 2020 and fall 2021. The changes shown are based on historical measurements of groundwater elevations in Cuyama Basin representative wells that have recorded measurements in the fall period of each year. These contours are useful at the planning level for understanding groundwater levels across the Basin, and to identify general horizontal gradients and regional groundwater level trends. The contour map is not indicative of exact values across the Basin because groundwater contour maps approximate conditions between measurement points, and do not account for topography.

A quantitative estimate of the annual change in groundwater storage was estimated using the CBWRM model, which was extended to include the 2021 water year as described in the groundwater extraction section above. The CBWRM was used to estimate the full groundwater budget for each year in the Cuyama Basin, which consists of a single principal aquifer. The estimated values for each water budget component in each year are shown in **Table 4-1**. The CBWRM estimates reductions in groundwater storage of 14,800 AF in 2019, 23,600 AF in 2020, and 40,000 AF in 2021.

Table 4-1: Groundwater Budget Estimates for Water Years 2019, 2020 and 2021

Component	Water Year 2019 (AFY)	Water Year 2020 (AFY)	Water Year 2021 (AFY)
Inflows			
Deep percolation	26,200	25,700	18,100
Stream seepage	3,900	2,800	-200
Subsurface inflow	1,600	1,500	1,400
Total Inflow	31,700	30,000	19,300
Outflows			
Groundwater pumping	46,500	53,600	59,300
Total Outflow	46,500	53,600	59,300
Change in Storage	**-14,800**	**-23,600**	**-40,000**

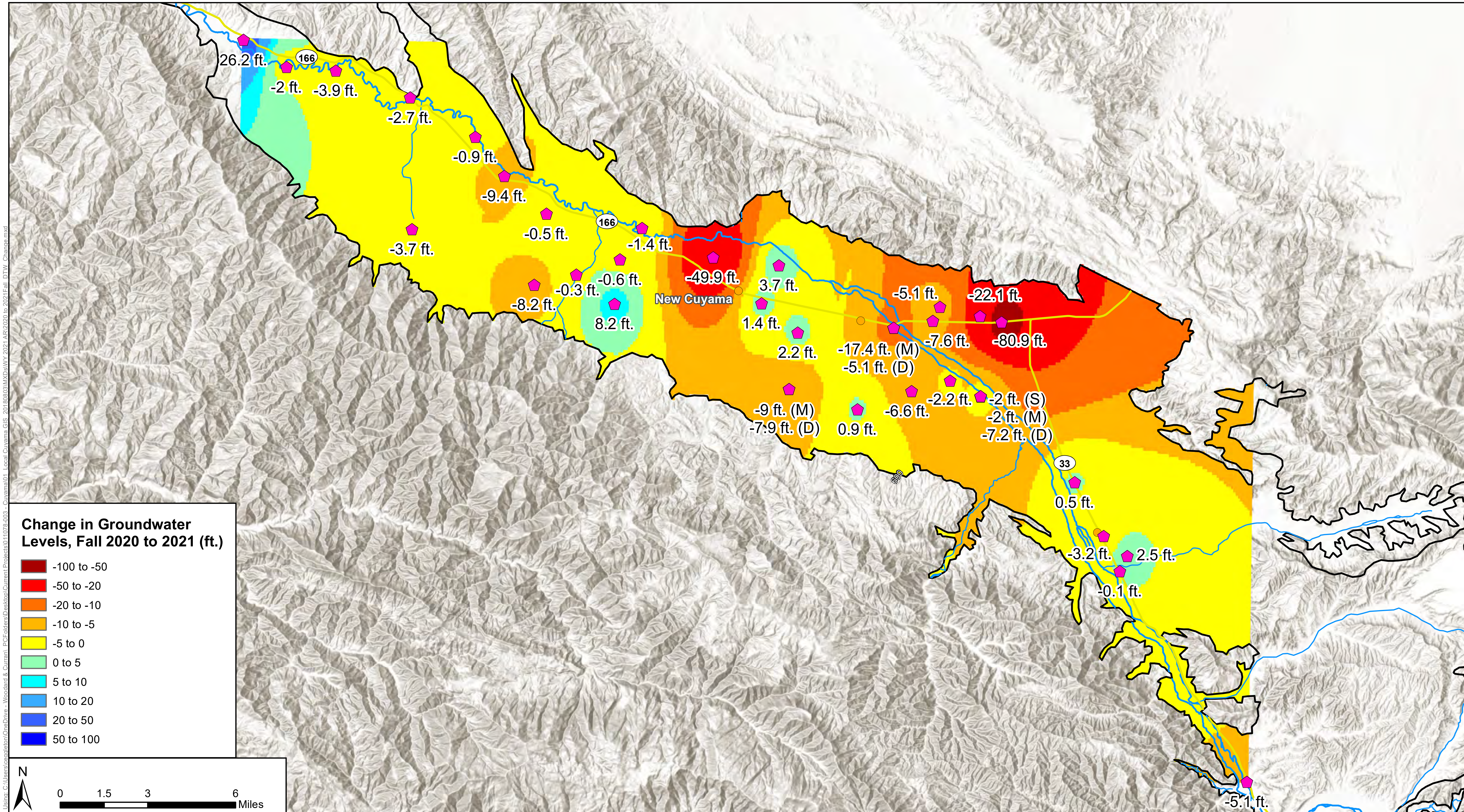


Figure 4-1: Cuyama GW Basin Fall 2020 to 2021 GWL Change

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

January 2022

WOODARD & CURRAN

Legend

- Cuyama Basin
- Cuyama River
- Fall 2020-2021 Overlapping Wells

Well labels are the change in groundwater elevations from Fall 2020 to 2021.

Rasters have been developed as an estimation tool. Areas of overlapping interpolation data for Fall 2020 and Fall 2021 are interpolated using data measured from September 1st and November 30th of each year due to limiated data avilability. It should be noted this information should be used with individual well hydrographs to make a more informative analysis of groundwater conditions.

Figure 4-2 shows the historical change in groundwater storage by year, water year type,[5] and cumulative water volume in each year for the period from 1998 through 2021. The change in groundwater storage in each year was estimated by the CBWRM model. The color of bar for each year of change in storage correlates a water year type defined by Basin precipitation.

Figure 4-2: Change in Groundwater Storage by Year, Water Year Type, and Cumulative Water Volume

[5] Water year types are customized for the Basin watershed based on annual precipitation as follows:

- Wet year = more than 19.6 inches
- Above normal year = 13.1 to 19.6 inches
- Below normal year = 9.85 to 13.1 inches
- Dry year = 6.6 to 9.85 inches
- Critical year = less than 6.6 inches.

Section 5. Groundwater Quality

As discussed in Section 4.8 of the Cuyama GSP, the CBGSA's groundwater quality network is designed to monitor salinity levels (as total dissolved solids (TDS)). The groundwater quality network is composed of 64 wells, all of which are representative, and are listed in **Table 5-1** and shown on **Figure 5-1**.

The CBGSA began collecting groundwater quality data in early 2021 and has collected TDS measurements at 23 wells, all of which are part of the groundwater quality representative monitoring network. The results are listed in **Table 5-1** and shown on **Figure 5-2**. Of the 23 wells measured in water year 2021, five wells exceeded their measurable objective, and three wells exceeded the minimum threshold and 2025 interim milestone. Therefore, 22% of measured wells exceeded their measurable objective and 13% exceeded their minimum threshold. However, 64% of wells were not sampled do to limit access. Furthermore, since the measurement at many of these wells was the first one taken in many years, and significant differences were noted relative to previous measurements (in both a positive and negative direction), the CBGSA considers it premature to use this data to evaluate the performance of groundwater quality at this time. The CBGSA intends to reevaluate the groundwater quality representative monitoring network based on the well information, site access, and landowner participation moving forward to ensure that the representative monitoring network both provides adequate coverage and representative data for the Basin while ensuring continued and consistent monitoring is conducted over the implementation horizon. This may also include reassessing threshold values and consideration of the proper translation of measured electrical conductivity (EC) versus TDS.

The CBGSA is currently pursuing grant funding to fund quarterly monitoring of groundwater levels and annual monitoring of groundwater quality for total dissolved solids (TDS) at existing monitoring locations for three years, as well as one-time testing of groundwater quality for nitrate and arsenic at existing groundwater quality representative monitoring network locations.

The CBGSA also intends to leverage and make use of existing monitoring programs for nitrates and arsenic (in particular ILP for nitrates and USGS for arsenic). To supplement the understanding of nitrate and arsenic concentrations in the basin, the GSP intends to perform an additional measurement of nitrate and arsenic at each water quality well identified in the GSP (GSP Figure 4-20) during calendar year 2022. This will provide a baseline constituent level in all groundwater quality representative monitoring network locations that can be utilized for future basin planning. Additional measurements may be considered by the GSA in the future in anticipation of future five-year updates.

Table 5-1: Groundwater Quality Monitoring Network Well List and TDS Results

Opti ID	Measurement Date	TDS Measurement (mg/L)	MO (mg/L)	MT (mg/L)	2025 Interim Milestone (mg/L)
61	---	---	585	615.2	615
72	2/25/2021	559	996	1,023	1,023
73	---	---	805	855.9	856
74	2/25/2021	1260	1,500	1,833	1,833
76	2/25/2021	1270	1,500	2,306.90	2,307
77	2/16/2021	1070	1,500	1,592	1,592
79	3/17/2021	1790	1,500	2,320	2,320
81	---	---	1,500	2,788	2,788
83	3/17/2021	1120	1,500	1,726	1,726
85	---	---	618	1,391.20	1,391
86	---	---	969	974.7	975
87	---	---	1,090	1,164.80	1,165
88	2/25/2021	330	302	302	302
90	---	---	1,500	1,593	1,593
91	---	---	1,410	1,487	1,487
94	3/17/2021	964	1,050	1,245	1,245
95	2/15/2021	1290	1,500	1,866	1,866
96	2/25/2021	1210	1,500	1,632	1,632
98	---	---	1,500	2,400	2,400
99	2/16/2021	1010	1,490	1,562	1,562
101	---	---	1,500	1,693	1,693
102	2/25/2021	905	1,500	2,351	2,351
130	---	---	1,500	1,855	1,855
131	---	---	1,500	1,982	1,982
157	3/17/2021	1360	1,500	2,360	2,360
196	---	---	851	903.7	904
204	2/26/2021	364	253	268.6	269
226	---	---	1,500	1,844	1,844
227	---	---	1,500	2,230	2,230
242	2/26/2021	826	1,470	1,518	1,518
269	---	---	1,500	1,702	1,702
309	---	---	1,410	1,509	1,509
316	---	---	1,380	1,468	1,468

Opti ID	Measurement Date	TDS Measurement (mg/L)	MO (mg/L)	MT (mg/L)	2025 Interim Milestone (mg/L)
317	2/25/2021	692	1,260	1,337	1,337
318	---	---	1,080	1,152	1,152
322	2/16/2021	1120	1,350	1,386	1,386
324	2/25/2021	488	746	777.2	777
325	2/25/2021	746	1,470	1,569	1,569
400	3/17/2021	1350	918	975.6	976
420	---	---	1,430	1,490	1,490
421	2/25/2021	797	1,500	1,616	1,616
422	---	---	1,500	1,942	1,942
424	---	---	1,500	1,588	1,588
467	3/17/2021	1140	1,500	1,764	1,764
568	2/15/2021	872	871	1,191.40	1,191
702	---	---	110	2,074.40	2,074
703	---	---	400	4,096.80	4,097
710	---	---	1,040	1,040	1,040
711	---	---	928	928	928
712	---	---	977	977.5	978
713	---	---	1,200	1,200	1,200
721	---	---	1,500	2,170	2,170
758	---	---	900	954.3	954
840	---	---	559	559	559
841	---	---	561	561	561
842	---	---	547	547	547
843	---	---	569	569	569
844	---	---	481	481	481
845	---	---	1,250	1,250	1,250
846	---	---	918	918	918
847	---	---	480	480	480
848	---	---	674	674	674
849	---	---	1,500	1,780	1,780
850	---	---	472	472	472

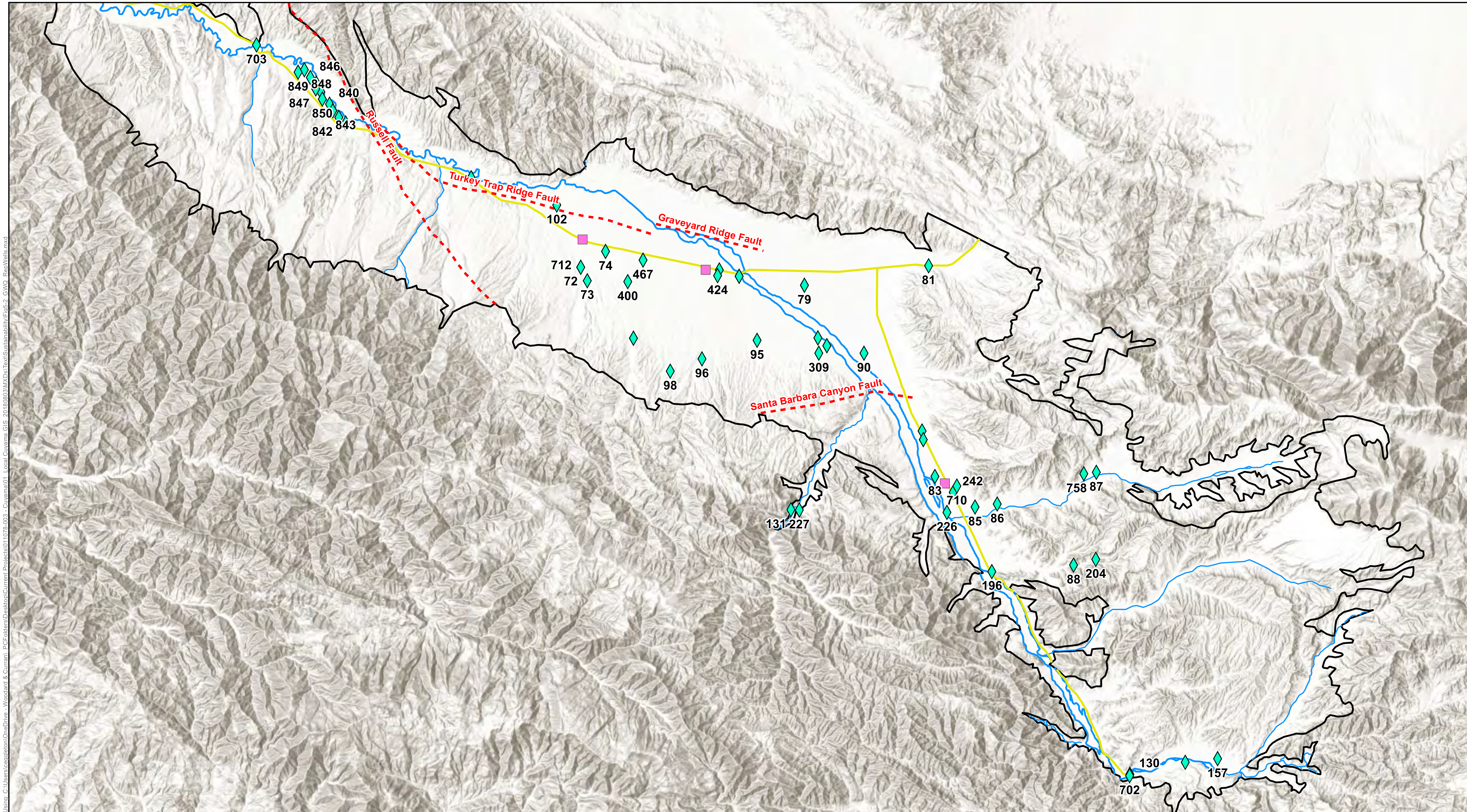


Figure 5-3: Cuyama GW Basin Groundwater Quality Representative Wells

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

December 2019

WOODARD & CURRAN

Legend

- Cuyama Basin
- Towns
- Faults
- Highways
- Cuyama River
- Streams
- Representative Groundwater Quality Wells

N

0 1.75 3.5 7 Miles

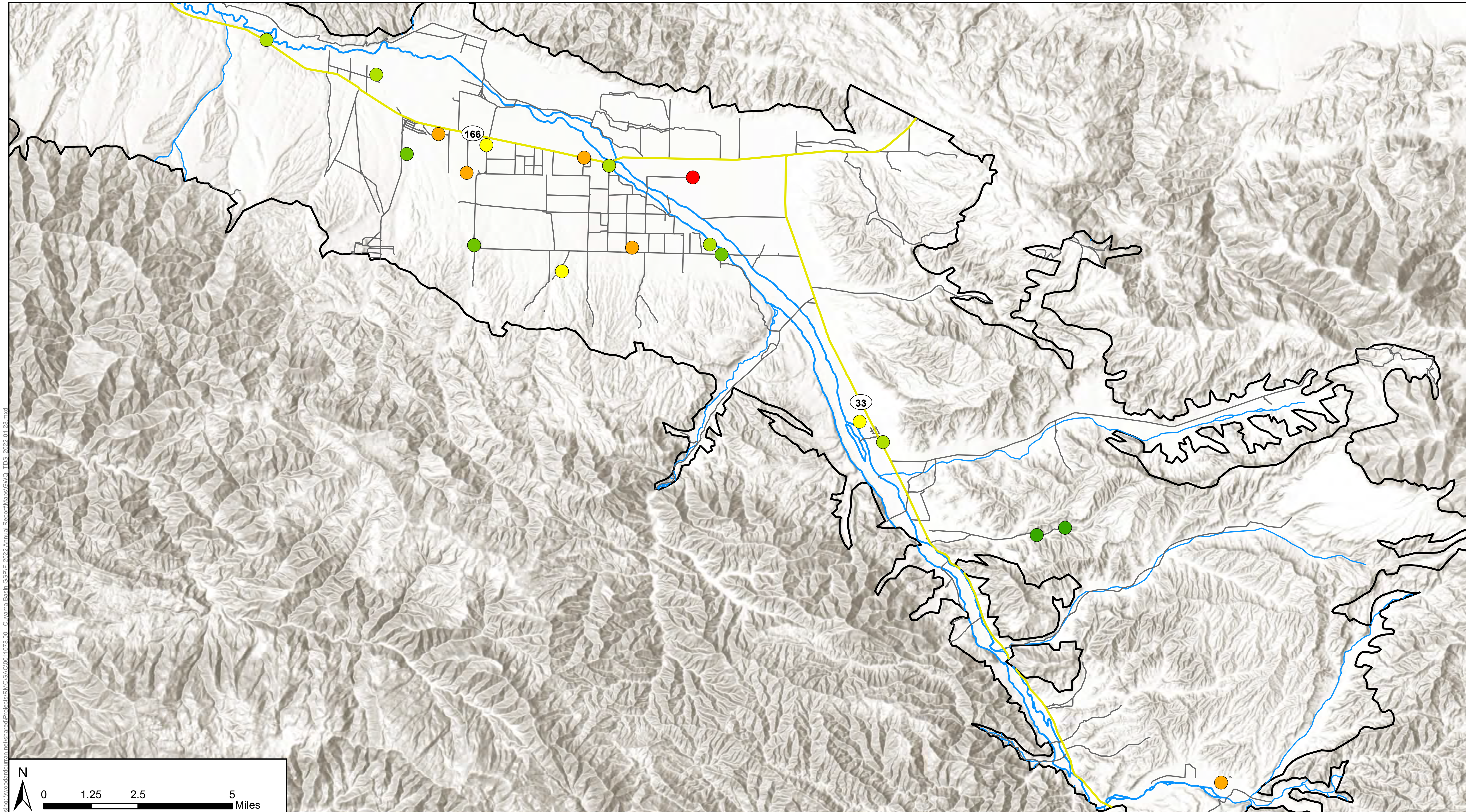


Figure 5-2: 2021 Groundwater Quality Measurements

Cuyama Basin Groundwater Sustainability Agency

Cuyama Valley Groundwater Basin Groundwater Sustainability Plan

January 2022

WOODARD & CURRAN

Legend

Total Dissolved Solids (TDS) (mg/L)

- < 500
- 500 - 750
- 750 - 1000
- 1000 - 1250
- 1250 - 1500
- 1500 - 1750
- 1750 - 2000

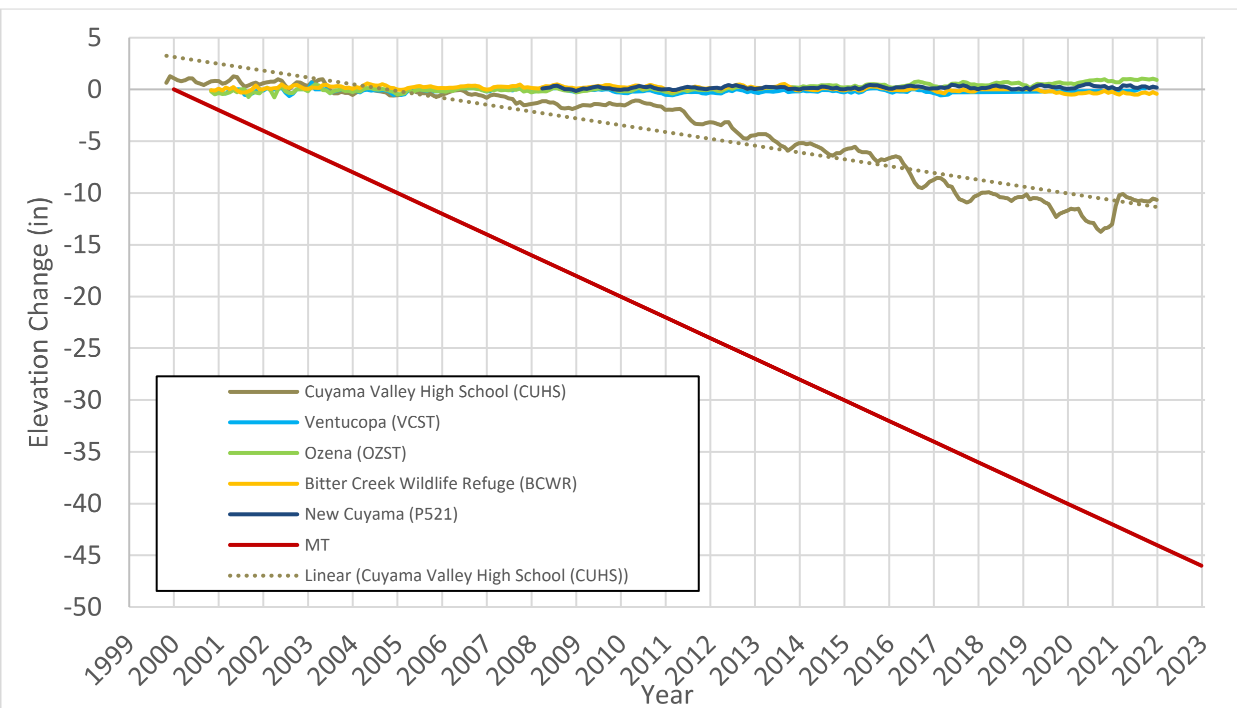
Section 6. Land Subsidence

Section 4.9 of the Cuyama GSP describes the monitoring network for land subsidence in the Basin, which is composed of five continuous geographic positioning system (CGPS) stations in and around the Basin to monitor lateral and vertical ground movements. Two of the five stations, the Cuyama Valley High School (CUHS) and the Ventucopa (VCST) stations are within the Basin boundary. The other three stations are outside of the Basin and provide data comparative data for vertical movements that are more likely related to tectonic displacement rather than land subsidence.

The undesirable result for subsidence, as described in Section 3.2.5, is detected when 30 percent of representative subsidence monitoring sites (i.e. 1 of 2 sites) exceed the minimum threshold for subsidence over two years. The minimum threshold for subsidence, as defined in GSP Section 5.6.3, is 2 inches per year.

At the time the GSP was submitted in 2020, subsidence rates for the CUHS station were -0.56 inches per year. As shown in **Figure 6-1**, data through 2021 was downloaded from UNAVCO[6] and the subsidence trend for CUHS was recalculated. Subsidence rates during 2021 actually reflected a positive change in ground surface elevation, and current subsidence rates in the central portion of the Basin are now -16.4 mm per year or -0.65 inches per year. This is rate is still below the minimum threshold, and thus undesirable results for subsidence are not occurring in the Basin.

Figure 6-1: Subsidence Monitoring Data



[6] https://www.unavco.org/data/web-services/documentation/documentation.html#!/GNSS47GPS/getPositionByStationId

Section 7. Plan Implementation

§356.2 (c)	A description of progress toward implementing the Plan, including achieving interim milestones, and implementation of projects or management actions since the previous annual report.

This section describes management activities taken by the CBGSA to implement the Cuyama Basin GSP from adoption of the GSP through preparation of this Annual Report.

7.1 Progress Toward Achieving Interim Milestones

Since the GSP was adopted by the CBGSA Board recently and CBGSA data collection efforts began in the second half of 2020, progress toward achieving interim milestones is in its early stages.

To track changes in groundwater conditions and the Basins progress towards sustainability, the GSA compiles a monthly groundwater condition reports based on the data collected to monitoring groundwater levels. Current data collection occurs monthly with corresponding reports, however, at its January 2021 meeting, the CBGSA Board determined to shift to quarterly monitoring starting in October 2021 after a full year of monthly monitoring had been performed.

As described in Section 5 of the GSP (Minimum Thresholds, Measurable Objectives, and Interim Milestones), all interim milestones (IMs) are calculated the same way in each threshold region. IMs are equal to the MT in 2025, with a projected improvement to one-third the distance between the MT and MO in 2030 and half the distance between the MT and MO in 2035. **Table 7-1** includes measurements of depth to water (DTW) taken in October 2021 at each well and compares them to their respective 2025 IMs. As is shown in the table, 33 wells are currently above their IM, while 16 are below, relative to the most recent measurement. Eleven wells did not have data available either in November or December, either because an access agreement has not granted, or the well was inaccessible. As there are still four years before 2025, the CBGSA will use its regular groundwater condition reports to closely monitor the Basin's progress towards sustainability and its IMs.

Table 7-1: Measured Depths to Groundwater in November & December 2020 Compared to 2025 Interim Milestones

Well	Region	Oct-21 DTW (feet)	2025 IM (feet)	Status
72	Central	178	169	Below IM
74	Central	252	256	Above IM
77	Central	498	450	Below IM
91	Central	665	625	Below IM
95	Central	604	573	Below IM
96	Central	334	333	Below IM
98	Central	-	450	Unknown
99	Central	359	311	Below IM
102	Central	378	235	Below IM
103	Central	327	290	Below IM
112	Central	85	87	Above IM
114	Central	47	47	Above IM
316	Central	665	623	Below IM
317	Central	665	623	Below IM
322	Central	369	307	Below IM
324	Central	348	311	Below IM
325	Central	314	300	Below IM
420	Central	511	450	Below IM
421	Central	507	446	Below IM
422	Central	-	444	Unknown
474	Central	163	188	Above IM
568	Central	39	37	Below IM
604	Central	480	526	Above IM
608	Central	462	436	Below IM
609	Central	-	458	Unknown
610	Central	631	621	Below IM
612	Central	-	463	Unknown
613	Central	524	503	Below IM
615	Central	514	500	Below IM
620	Central	-	606	Unknown
629	Central	578	559	Below IM
633	Central	579	547	Below IM
62	Eastern	160	182	Above IM
85	Eastern	200	233	Above IM
100	Eastern	152	181	Above IM
101	Eastern	110	111	Above IM
840	Northwestern	-	203	Unknown
841	Northwestern	98	203	Above IM
843	Northwestern	-	203	Unknown
845	Northwestern	70	203	Above IM
849	Northwestern	-	203	Unknown
2	Southeastern	-	72	Unknown
89	Southeastern	35	64	Above IM

Well	Region	Oct-21 DTW (feet)	2025 IM (feet)	Status
106	Western	143	154	Above IM
107	Western	91	91	Above IM
108	Western	-	165	Unknown
117	Western	-	160	Unknown
118	Western	59	124	Above IM
123	Western	-	31	Unknown
124	Western	-	73	Unknown
127	Western	-	42	Unknown
571	Western	124	144	Above IM
573	Western	71	118	Above IM
830	Far-West Northwestern	60	59	Below IM
831	Far-West Northwestern	-	77	Unknown
832	Far-West Northwestern	39	45	Above IM
833	Far-West Northwestern	26	96	Above IM
834	Far-West Northwestern	-	84	Unknown
835	Far-West Northwestern	-	55	Unknown
836	Far-West Northwestern	38	79	Above IM

7.2 Funding to Support GSP Implementation

On May 5, 2021, the CBGSA Board held a rate hearing and set a groundwater extraction fee of $39 per acre-foot for FY 21-22. The fee was based on user-reported water usage totaling 28,000 acre-feet and the Fiscal Year 2021-2022 budget totaling $1.3 million, a portion of which was met with existing funds. For FY 21-22 and FY 22-23, the CBGSA will administer the annual fee based on crop factors but will transition to metered data for the administration of the FY 23-24 fee.

Additionally, the CBGSA unsuccessfully applied for Proposition 68 SGM Implementation Grant funding from DWR in January of 2021 to support implementation activities, with a total requested grant amount was $5,000,000.

The CBGSA has recently submitted a proposal to DWR for $7.6 million in funding under the Critically Overdrafted Basin (COD) SGMA Implementation grant opportunity, with funding requested for the following activities over the next three years:

- Ongoing Monitoring and Enhancements
- Project and Management Action Implementation
- GSP Implementation and Outreach Activities
- Improving Understanding of Basin Water Use

7.3 Stakeholder Outreach Activities in Support of GSP Implementation

The following is a list of public meetings where GSP development and implementation was discussed during the 2020-2021 water year.

- CBGSA Board meetings: November 4, January 13, March 3, May 5, July 7, August 18, and September 1, and November 3
- Standing Advisory Committee (SAC) meetings: October 29, January 7, February 25, April 29, July 1, August 11, and August 26

7.4 Progress on Implementation of GSP Projects

Table 7-2 shows the projects and management actions that were included in the GSP. The following subsections describe the progress of implementation of each GSP project.

Table 7-2: Summary of Projects and Management Actions included in the GSP

Activity	Current Status	Anticipated Timing	Estimated Cost[a]
Project 1: Flood and Stormwater Capture	Conceptual project evaluated in 2015	• Feasibility study: 0 to 5 years • Design/Construction: 5 to 15 years	• Study: $1,000,000 • Flood and Stormwater Capture Project: $600-$800 per AF ($2,600,000 – 3,400,000 per year)
Project 2: Precipitation Enhancement	Initial Feasibility Study completed in 2016	• Refined project study: 0 to 2 years • Implementation of Precipitation Enhancement: 0 to 5 years	• Study: $200,000 • Precipitation Enhancement Project: $25 per AF ($150,000 per year)
Project 3: Water Supply Transfers/Exchanges	Not yet begun	• Feasibility study/planning: 0 to 5 years • Implementation in 5 to 15 years	• Study: $200,000 • Transfers/Exchanges: $600-$2,800 per AF (total cost TBD)
Project 4: Improve Reliability of Water Supplies for Local Communities	Preliminary studies/planning complete	• Feasibility studies: 0 to 2 years • Design/Construction: 1 to 5 years	• Study: $100,000 • Design/Construction: • $1,800,000
Management Action 1: Basin-Wide Economic Analysis	Completed	• December 2020	• $60,000
Management Action 2: Pumping Allocations in Central Basin Management Area	Preliminary coordination begun	• Pumping Allocation Study completed: 2022 • Allocations implemented: 2023 through 2040	• Plan: $300,000 • Implementation: $150,000 per year
Adaptive Management	Not yet begun	Only implemented if triggered; timing would vary	TBD

[a] Estimated cost based on planning documents and professional judgment
AF = acre-feet

7.4.1 Project 1: Flood and Stormwater Capture

The CBGSA application for COD SGMA Implementation Grant funding from DWR includes a task to understand the feasibility of future flood and stormwater capture. Specifically, funding was sought to perform a water rights analysis on flood and stormwater capture flows in the Basin to understand the feasibility of further developing a stormwater capture project in the Basin given water availability and existing water rights.

7.4.2 Project 2: Precipitation Enhancement

The CBGSA application for COD SGMA Implementation Grant funding from DWR which includes a task to understand the feasibility of precipitation enhancements efforts. Specifically, funding was sought to perform a feasibility study of the precipitation enhancement action identified in the GSP to determine if this action should be pursued and implemented in the Basin.

7.4.3 Project 3: Water Supply Transfers or Exchanges

No progress was made toward implementation of this project since completion of the GSP in January 2020.

7.4.4 Project 4: Improve Reliability of Water Supplies for Local Communities

As noted in last year's Annual Report, the CCSD received a grant award from DWR's IRWM program to install a new production well. Work to install this well is currently underway.

7.5 Management Actions

Table 7-2 shows the projects and management actions that were included in the GSP. The following subsections describe the progress of implementation of each GSP management action.

7.5.1 Management Action 1: Basin-Wide Economic Analysis

A Basin-wide direct economic analysis of proposed GSP actions was completed. The results of this analysis were presented to the GSP Board on December 4, 2019, and the final report was completed in December 2019. The final Basin-wide economic analysis report was provided in the 2020 Annual Report. This management action is 100% complete.

7.5.2 Management Action 2: Pumping Allocations in Central Basin Management Area

On May 5, 2021, the CBGSA Board adopted a resolution delegating the implementation of management actions in the Central Management Area to the Cuyama Basin Water District (CBWD). However, on August 5, 2021, the CBWD informed the CBGSA it was disinclined to pursue delegation at this time. On August 17, 2021, an adjudication was filed by two large growers in the basin. Therefore, CBGSA staff has taken over the implementation of pumping reductions in the Central Management Area and is working with the Board and stakeholders to implement pumping allocations in the Central Management Area starting in January 2023.

7.6 Adaptive Management

With several wells in the basin trending towards undesirable results, the CBGSA Board undertook an effort to review wells that have exceeded minimum thresholds, investigate potential causes of the exceedances, and identify if any domestic or production wells are affected by declining groundwater levels. To support the understanding of potential impacts, a form was added to the CBGSA website to allow landowners to report issues that occur with wells due to groundwater level declines. Potential actions that have been considered by the Board include restricting pumping in individual wells, adjusting minimum thresholds or the undesirable result criteria identified in the GSP, and accelerating basin-wide pumping reductions. However, the CBGSA Board has determined that additional data collection and analysis is needed, and no specific actions have been taken. The CBGSA will continue to evaluate potential actions going forward.

7.7 Progress Toward Implementation of Monitoring Networks

This section provides updates about implementation of the monitoring networks identified during GSP development.

7.7.1 Groundwater Levels Monitoring Network

As described in the previous annual reports, on December 4, 2019, the CBGSA Board approved a task to begin implementation of the groundwater levels monitoring network. As part of this task, well information sheets were prepared for each well in the monitoring network to allow for implementation of regular monitoring at each well. This work was completed in early 2021, and monthly groundwater data were collected at each well in the monitoring network through July 2021. Starting in October 2021, the CBGSA transitioned to quarterly monitoring at each well.

As described in Section 2.1 above, the CBGSA has begun to refine the groundwater monitoring network to be more efficient, manageable, and economical for monitoring while retaining reliability and adequate representation of the Basin. The refined monitoring network is included in **Table 2-1** and **Figure 2-1**.

In addition, under a Category 1 grant from DWR, continuous monitoring equipment was installed in 10 additional wells in early 2021. These wells are also identified in **Table 2-1** and **Figure 2-1** shows the locations selected for installation.

The CBGSA worked with DWR's Technical Support Services (TSS) to install three new multi-completion monitoring wells within the Basin during 2021. These wells are identified in **Table 2-1**, with locations shown in **Figure 2-1**.

Finally, as described above the CBGSA completed a survey of all the groundwater level monitoring network wells in 2021. This included re-measuring latitudes, longitudes, elevations, and other metadata associated with each well. Groundwater level measurement data collected before this survey has been adjusted and will be reuploaded to DWR to adequately reflect the resulting differences in elevations.

7.7.2 Surface Water Monitoring Network

Under a Category 1 grant from DWR, two new surface flow gages were installed on the Cuyama River during 2021. These gages are managed by the United States Geologic Survey (USGS), and data collected at the gage locations are available on the USGS website at the following links:

https://waterdata.usgs.gov/nwis/uv?site_no=11136500

https://waterdata.usgs.gov/ca/nwis/uv?site_no=11136710

Section 8. References

California Department of Water Resources (DWR). 2003. *California's Groundwater Bulletin 118—Update 2003*. https://water.ca.gov/LegacyFiles/groundwater/bulletin118/basindescriptions/3-13.pdf

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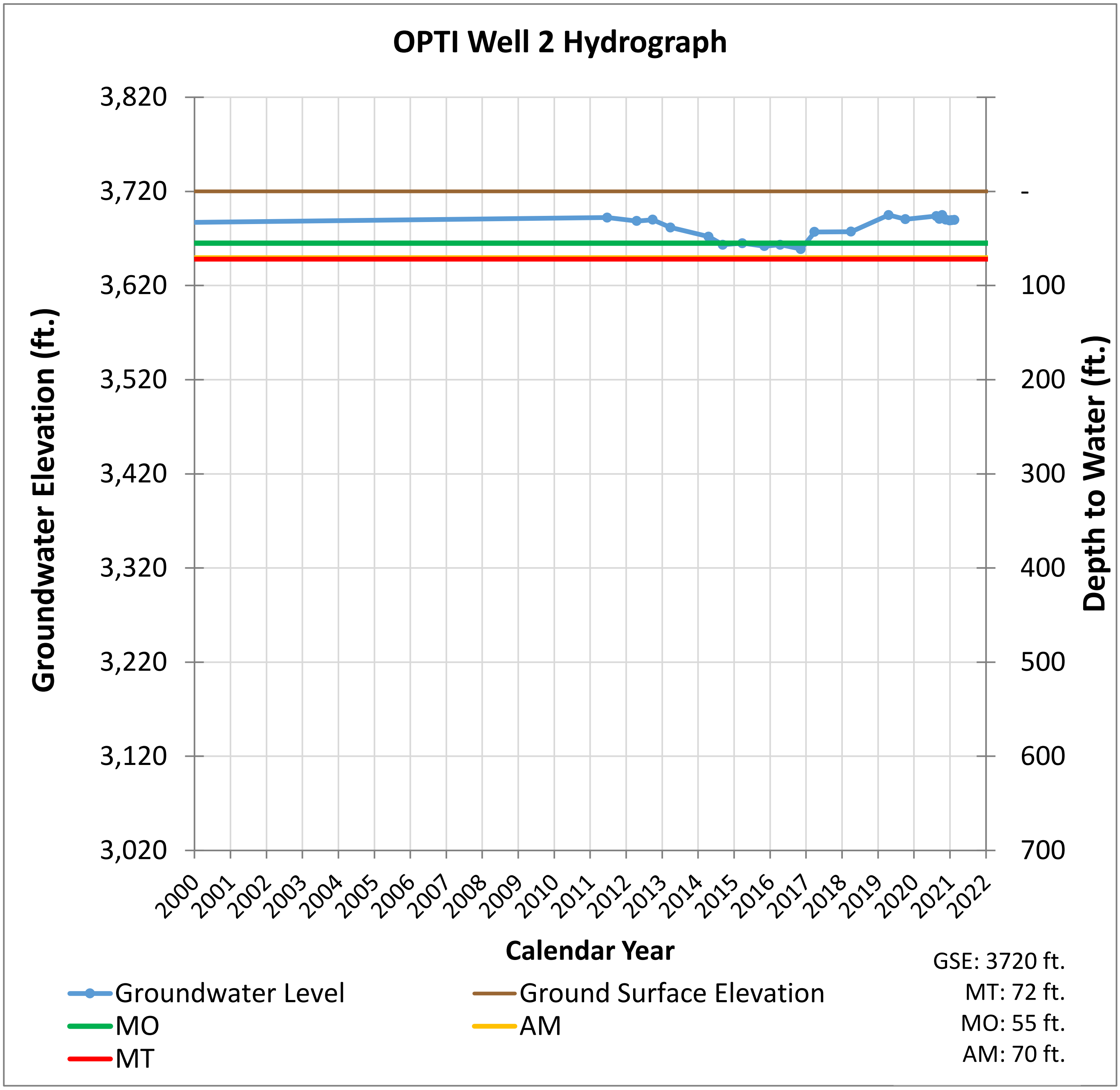
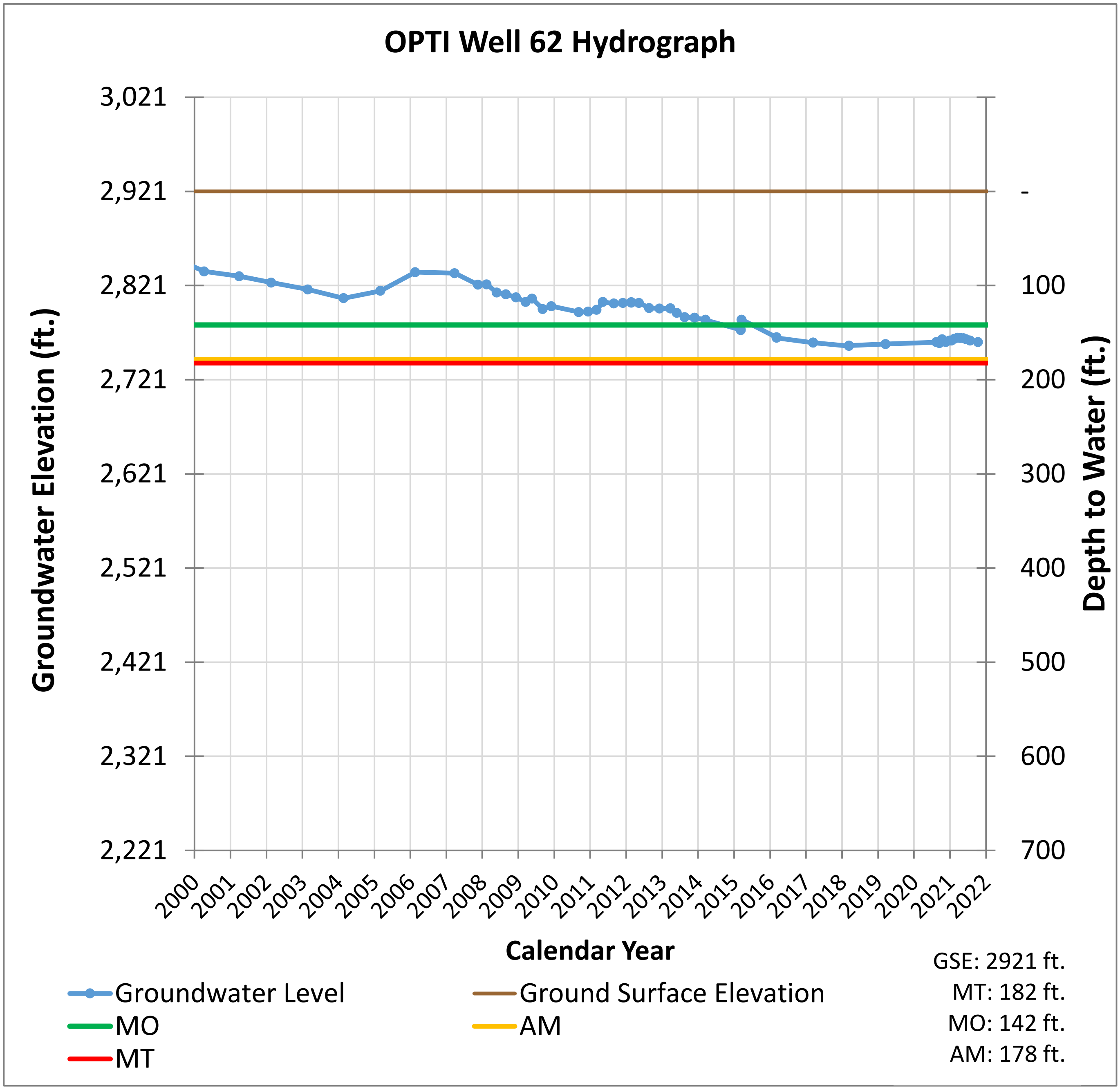
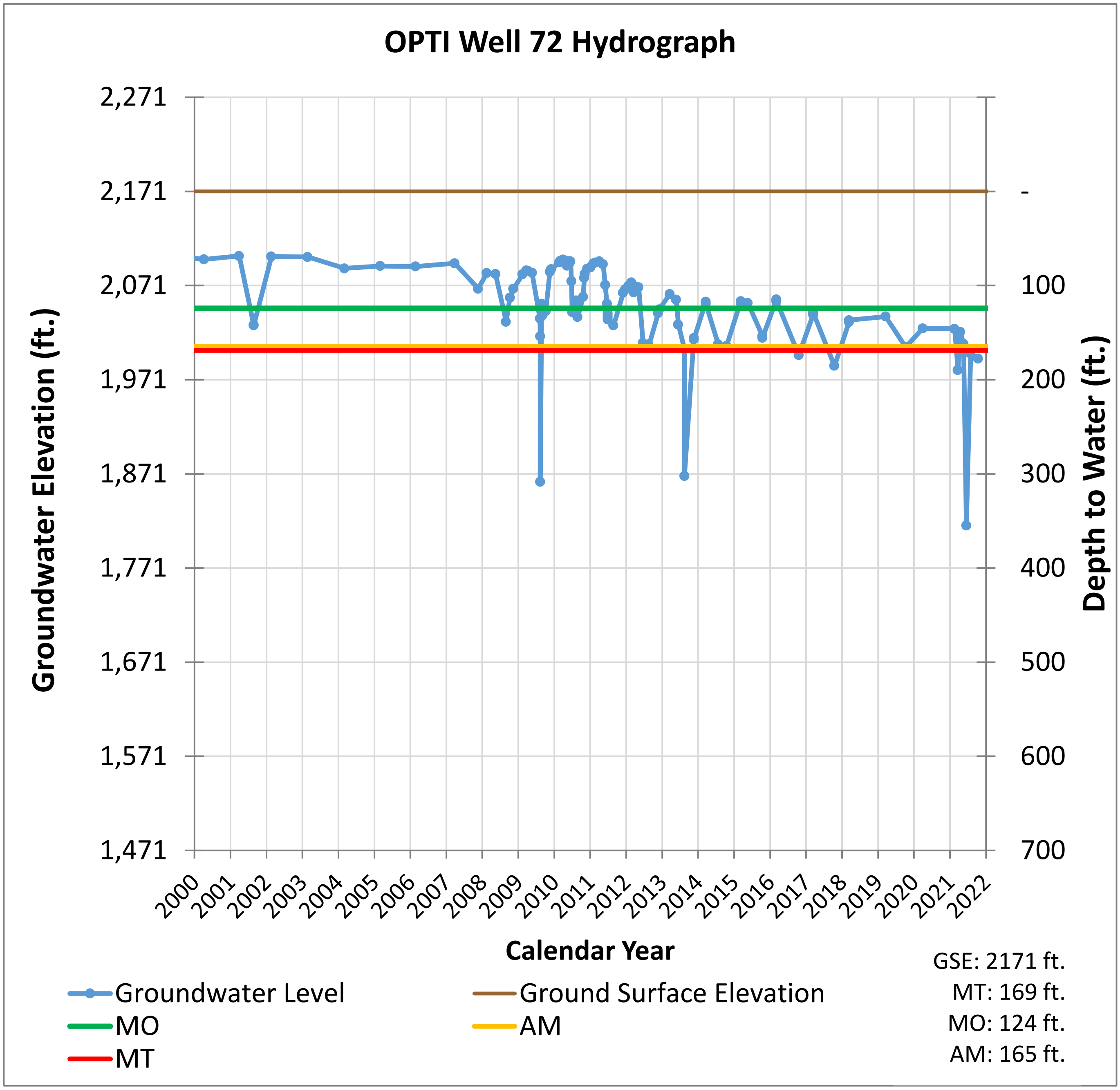
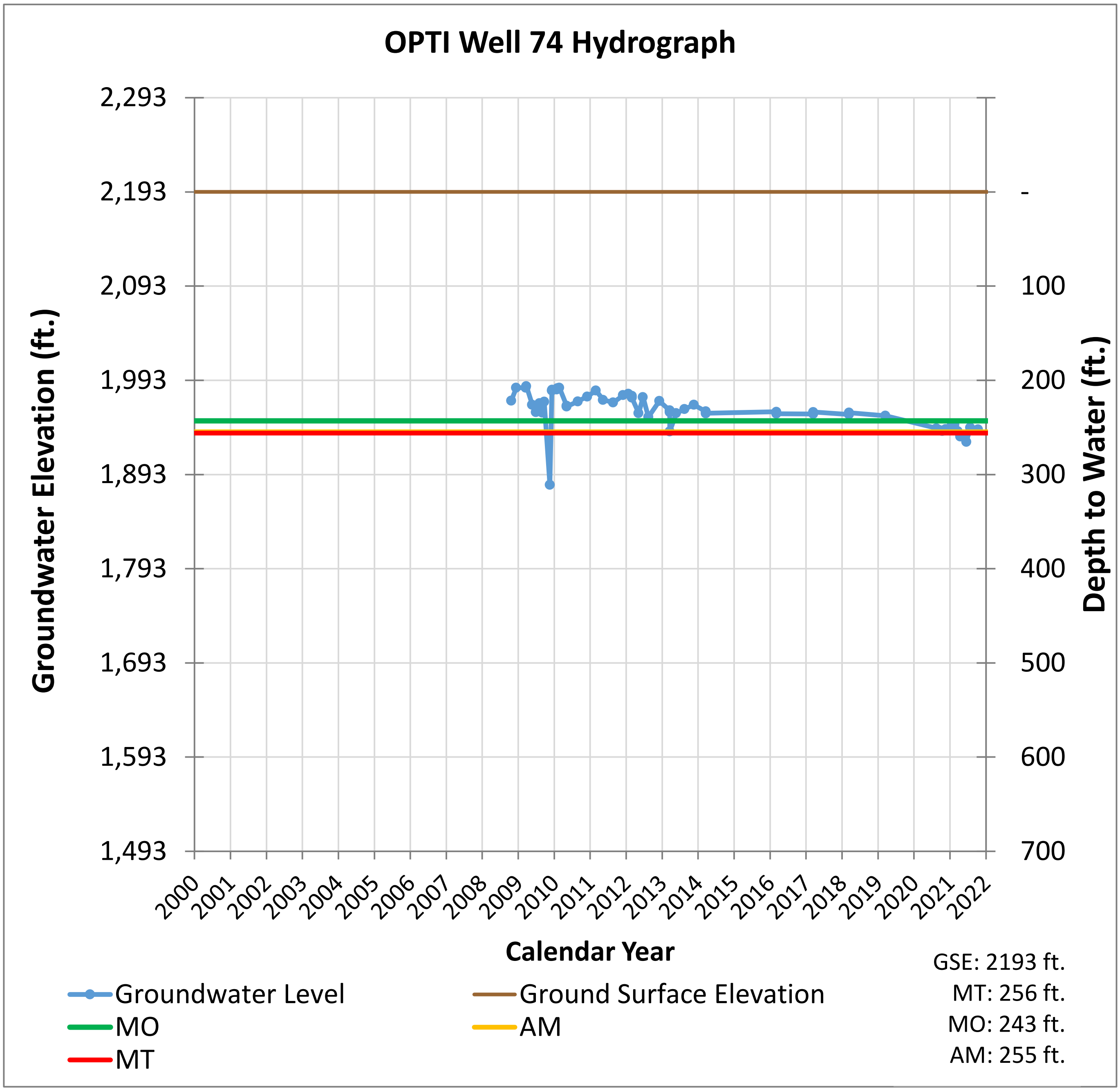
Appendix A
Updated Hydrographs for Representative Wells

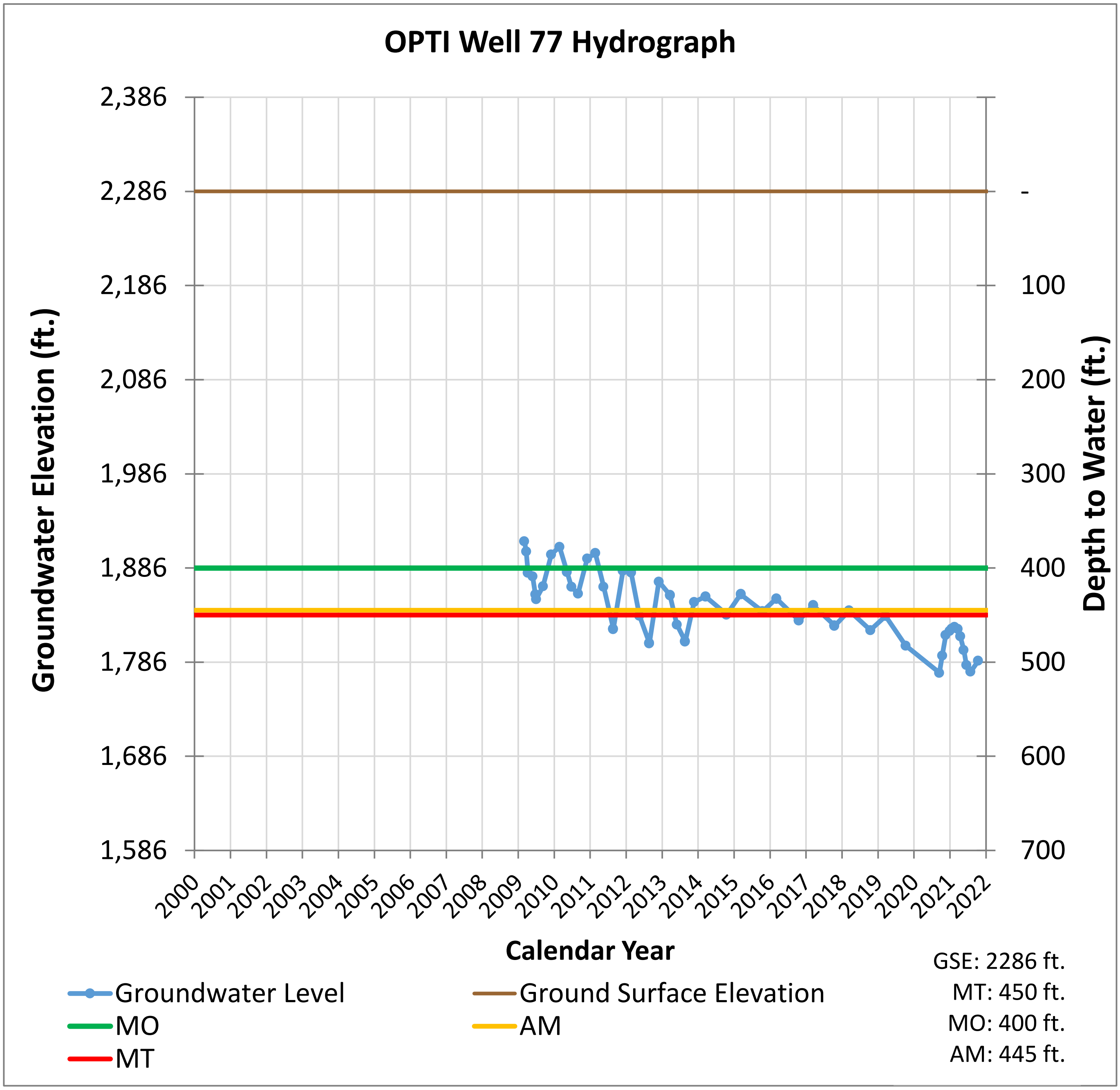

OPTI Well 2 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
3,820
3,720
3,620
3,520
3,420
3,320
3,220
3,120
3,020
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 3720 ft.
MT: 72 ft.
MO: 55 ft.
AM: 70 ft.

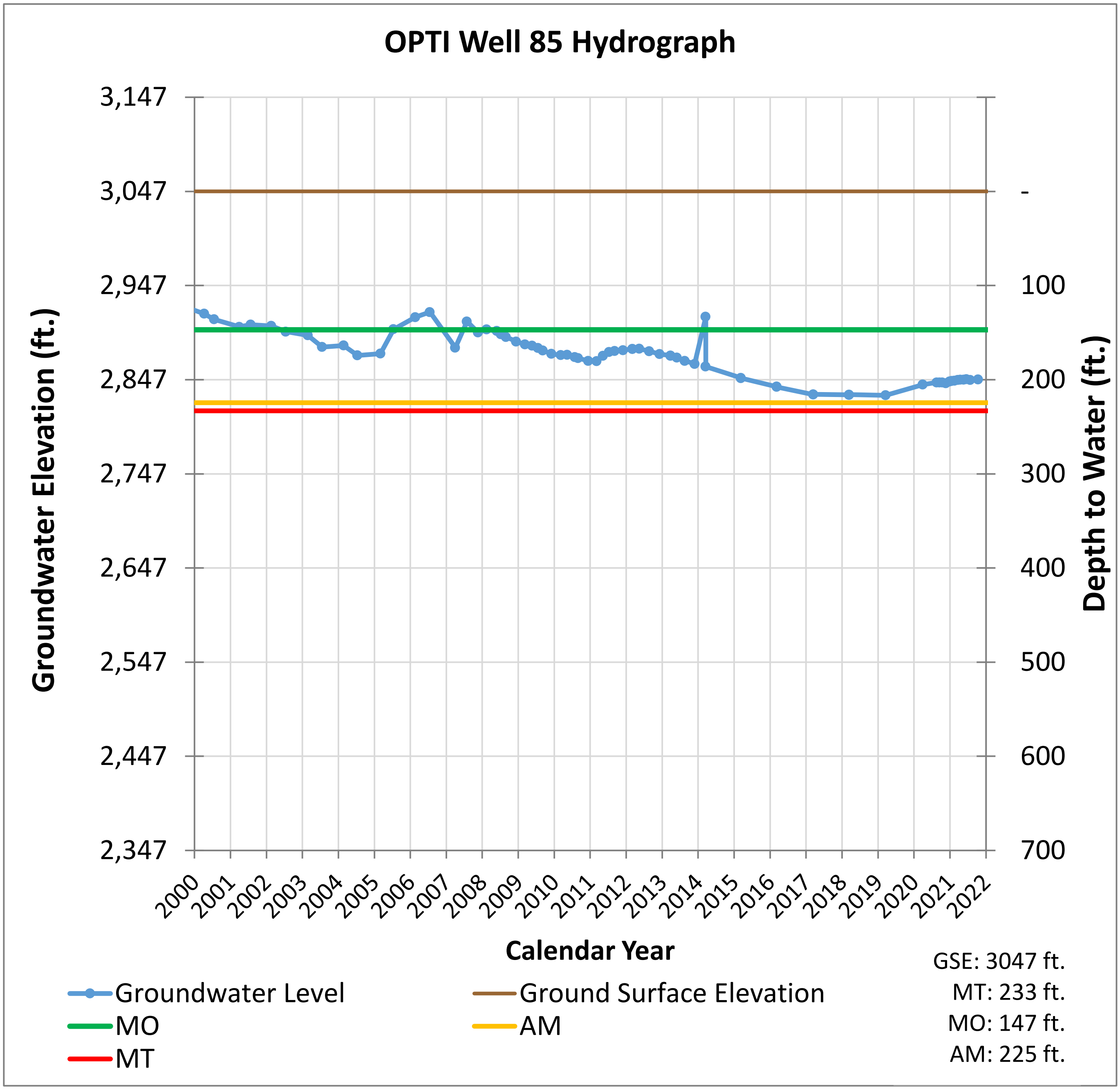

OPTI Well 62 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
3,021
2,921
2,821
2,721
2,621
2,521
2,421
2,321
2,221
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2921 ft.
MT: 182 ft.
MO: 142 ft.
AM: 178 ft.



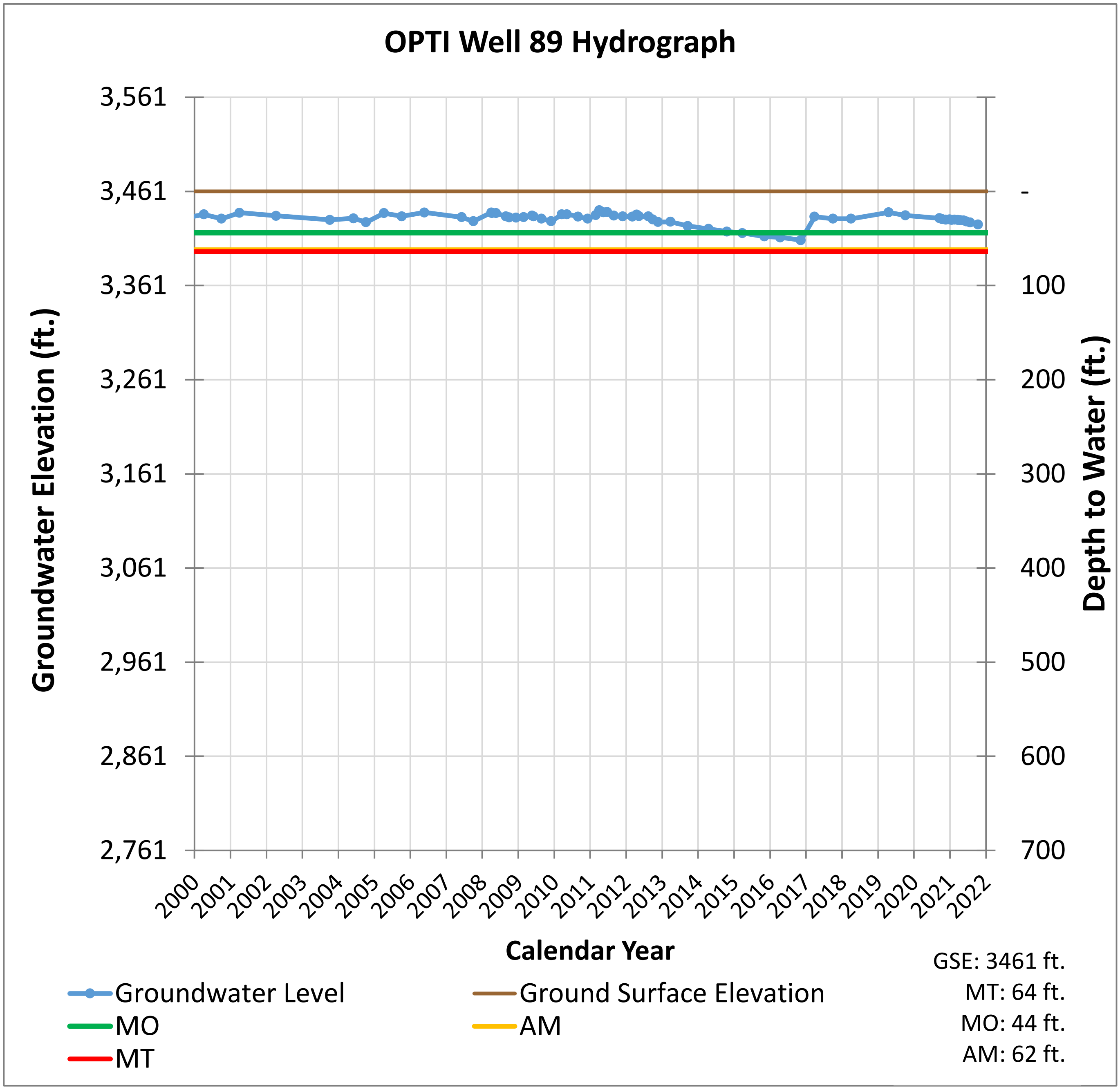
OPTI Well 72 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,271
2,171
2,071
1,971
1,871
1,771
1,671
1,571
1,471
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2171 ft.
MT: 169 ft.
MO: 124 ft.
AM: 165 ft.

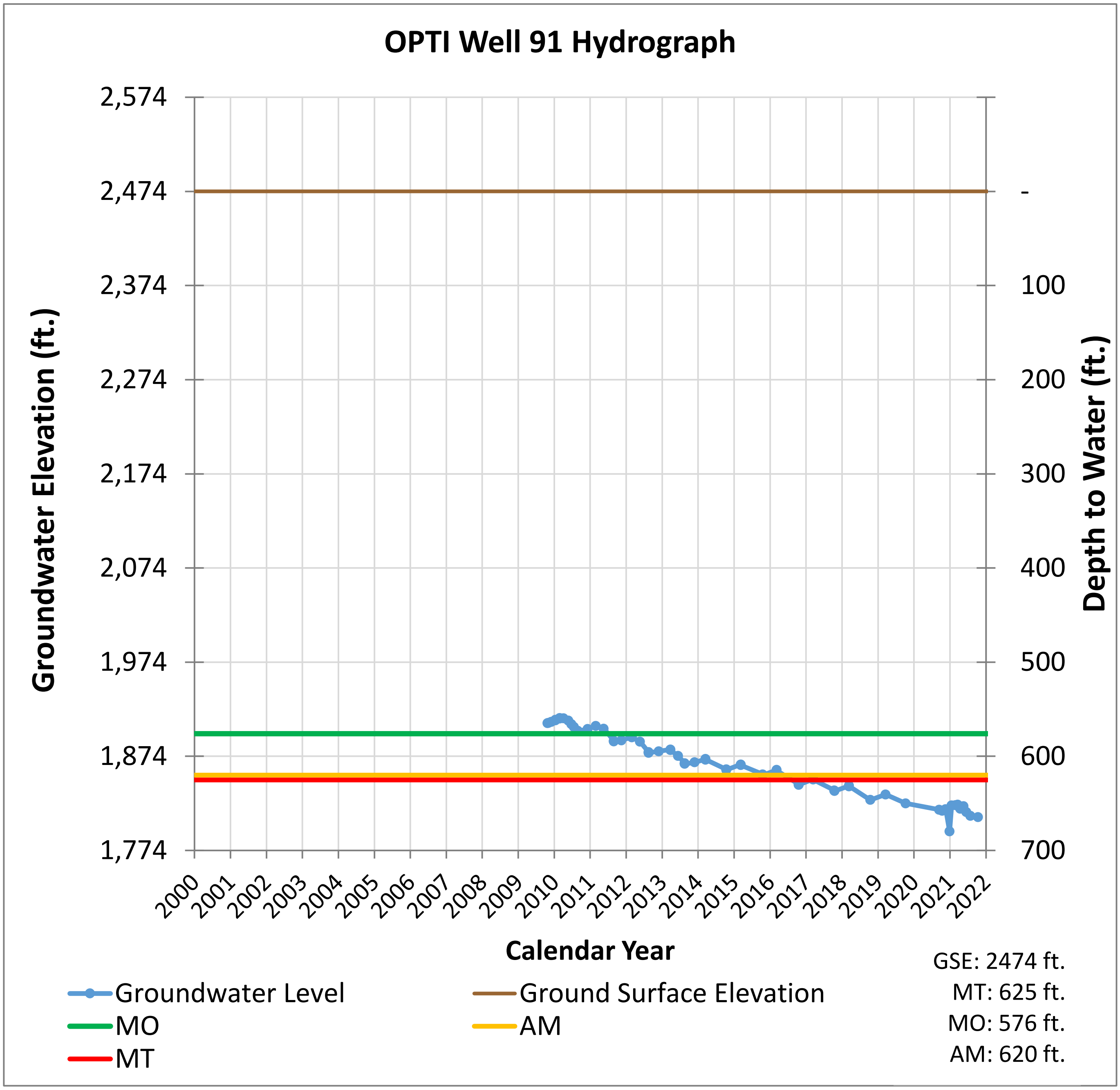

OPTI Well 74 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,293
2,193
2,093
1,993
1,893
1,793
1,693
1,593
1,493
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2193 ft.
MT: 256 ft.
MO: 243 ft.
AM: 255 ft.

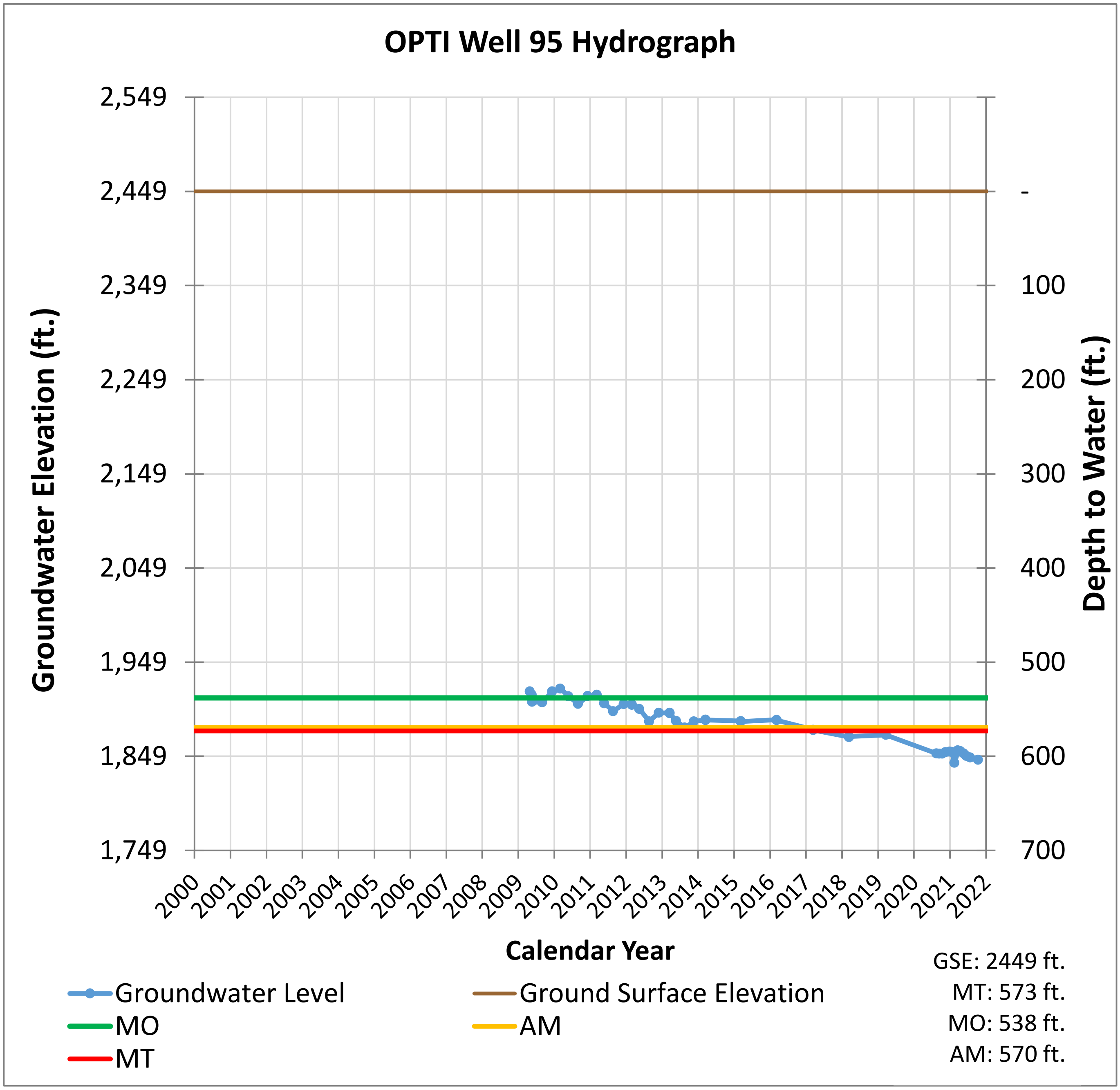

OPTI Well 77 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,386
2,286
2,186
2,086
1,986
1,886
1,786
1,686
1,586
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2286 ft.
MT: 450 ft.
MO: 400 ft.
AM: 445 ft.

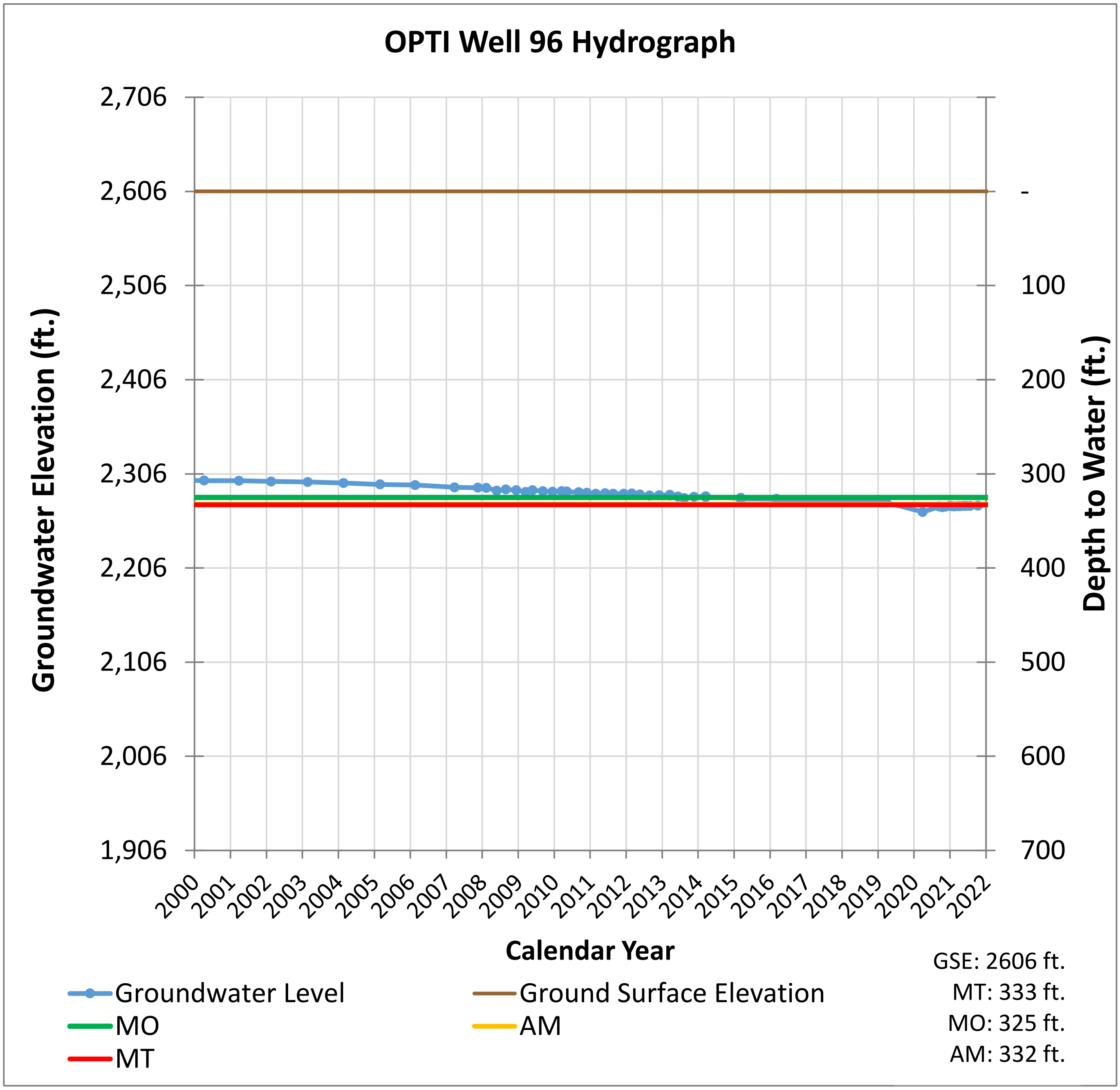


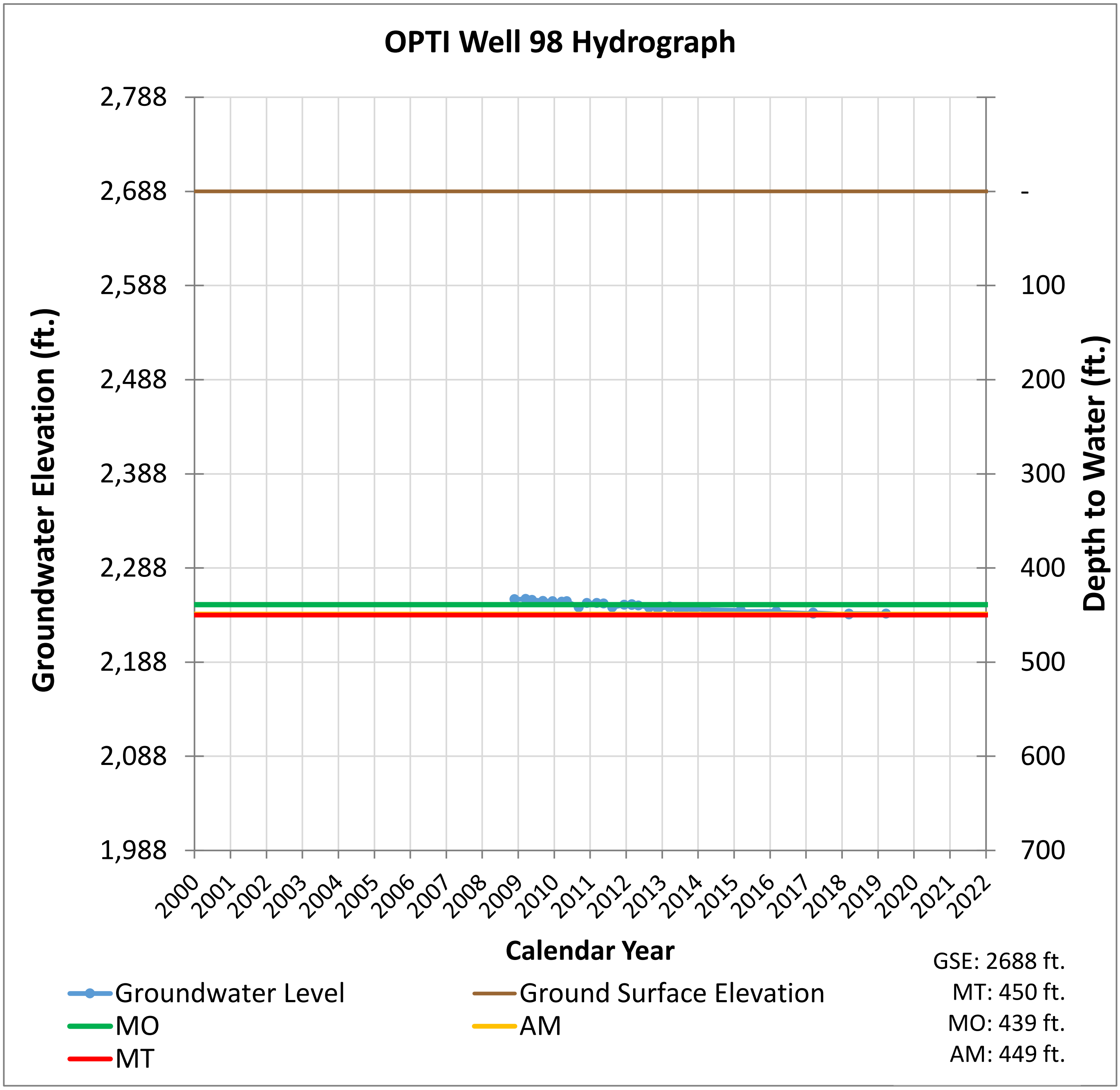
OPTI Well 85 Hydrograph
3,147
3,047
2,947
2,847
2,747
2,647
2,547
2,447
2,347
-
100
200
300
400
500
600
700
Groundwater Elevation (ft.)
Depth to Water (ft.)
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 3047 ft.
MT: 233 ft.
MO: 147 ft.
AM: 225 ft.


OPTI Well 89 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
3,561
3,461
3,361
3,261
3,161
3,061
2,961
2,861
2,761
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 3461 ft.
MT: 64 ft.
MO: 44 ft.
AM: 62 ft.

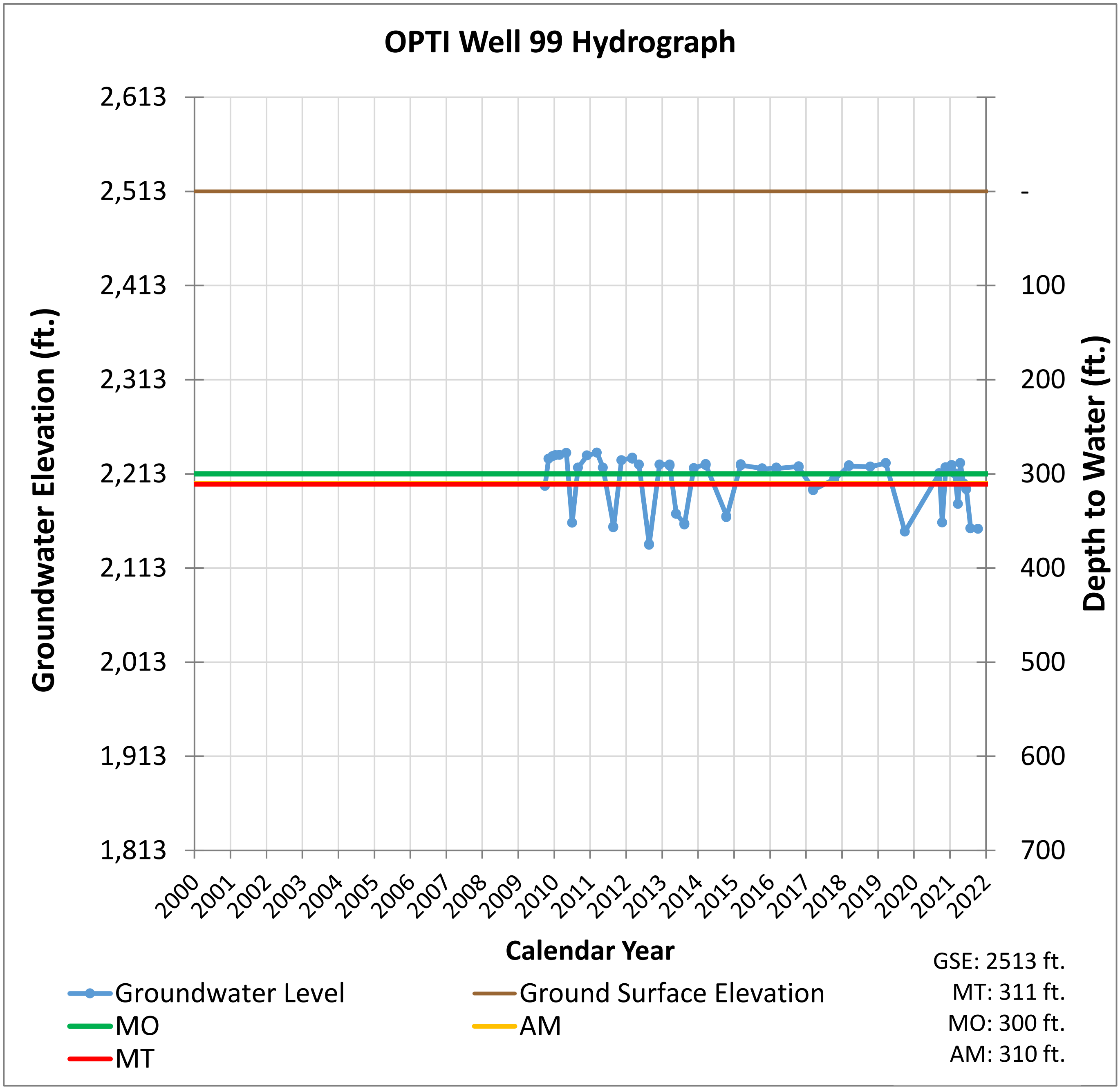

OPTI Well 91 Hydrograph
2,574
2,474
2,374
2,274
2,174
2,074
1,974
1,874
1,774
Groundwater Elevation (ft.)
-
100
200
300
400
500
600
700
Depth to Water (ft.)
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2474 ft.
MT: 625 ft.
MO: 576 ft.
AM: 620 ft.

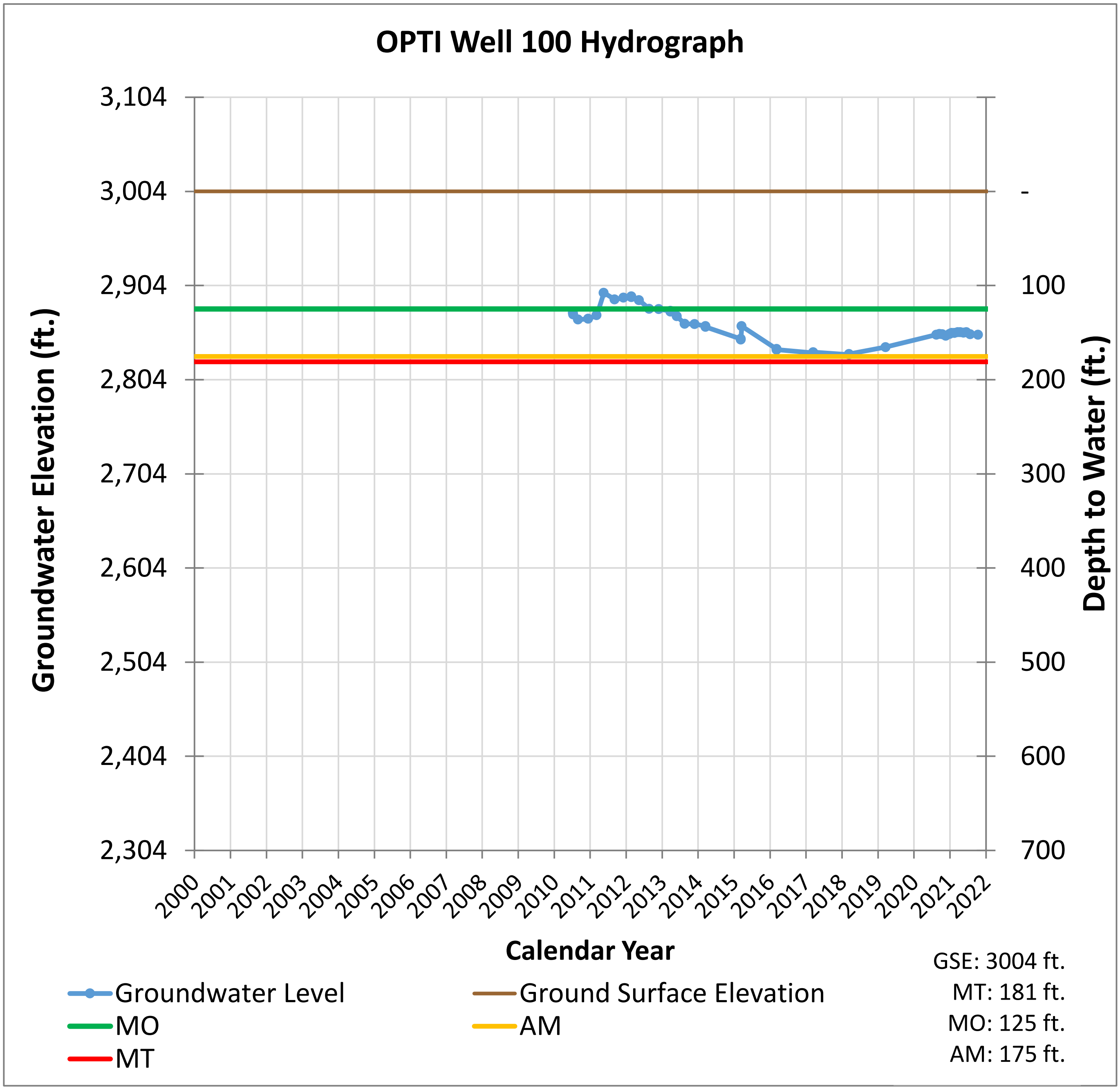

OPTI Well 95 Hydrograph
2,549
2,449
2,349
2,249
2,149
2,049
1,949
1,849
1,749
Groundwater Elevation (ft.)
-
100
200
300
400
500
600
700
Depth to Water (ft.)
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2449 ft.
MT: 573 ft.
MO: 538 ft.
AM: 570 ft.

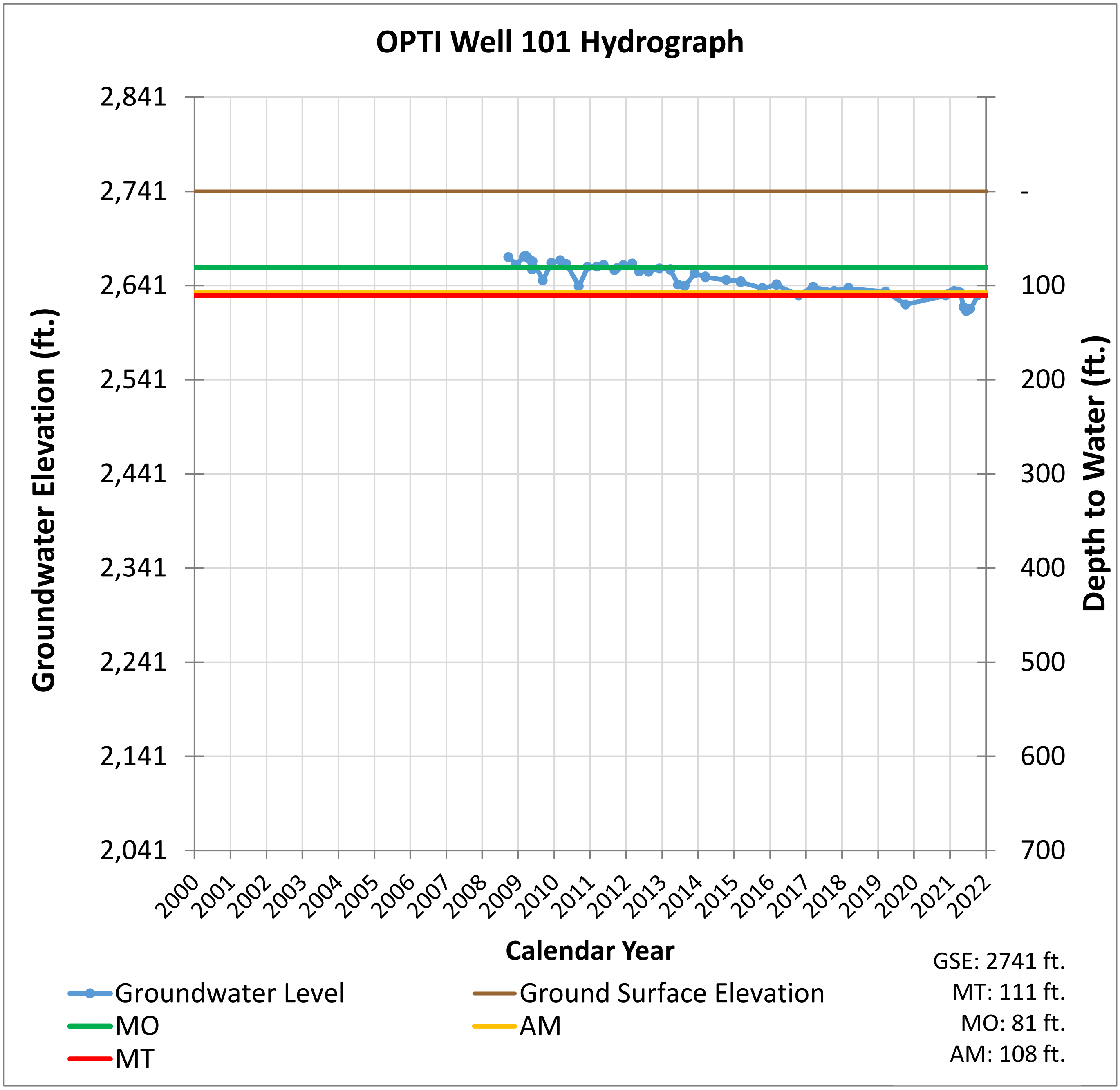

OPTI Well 96 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,706
2,606
2,506
2,406
2,306
2,206
2,106
2,006
1,906
-
100
200
300
400
500
600
700
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2606 ft.
MT: 333 ft.
MO: 325 ft.
AM: 332 ft.

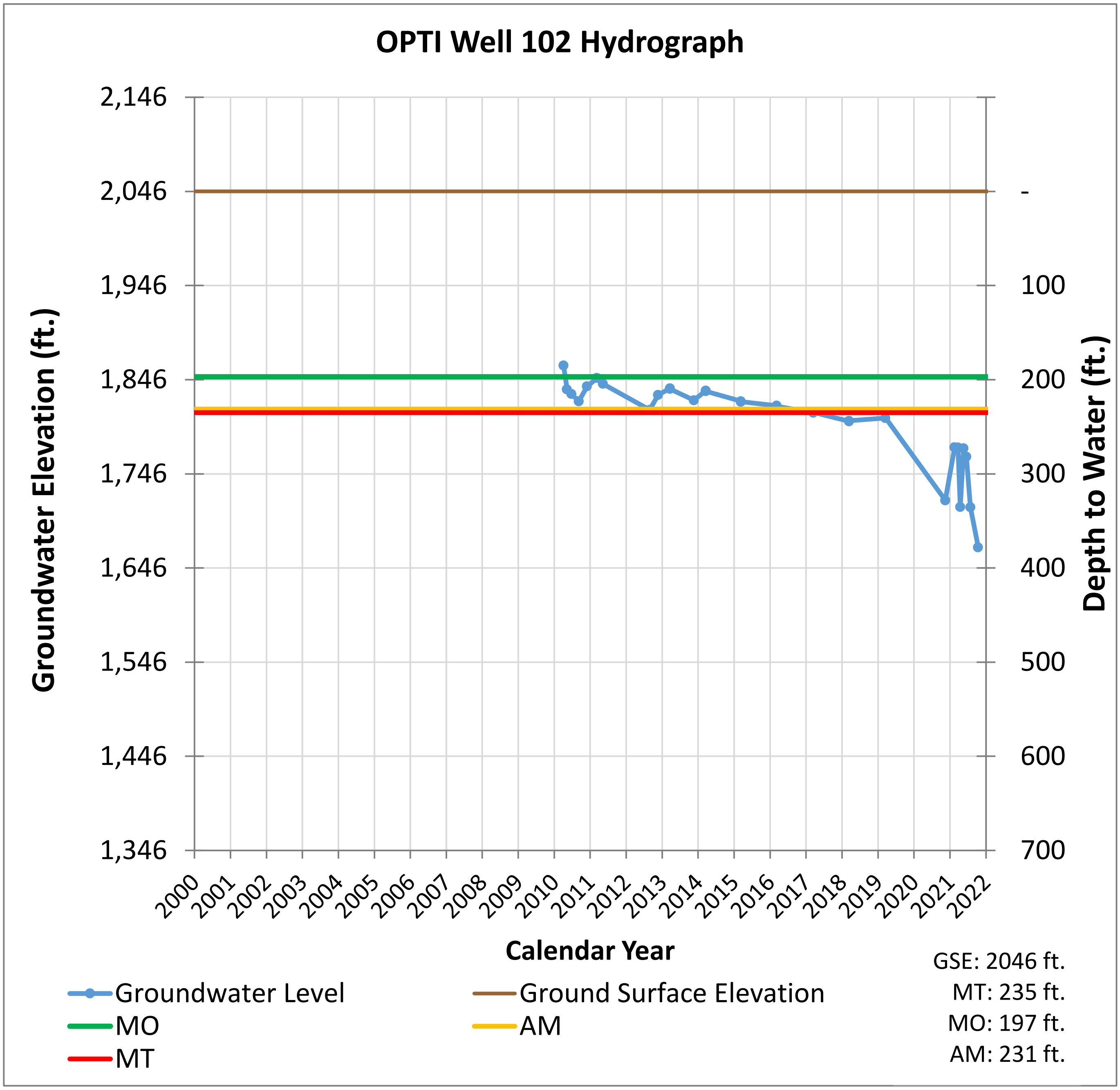


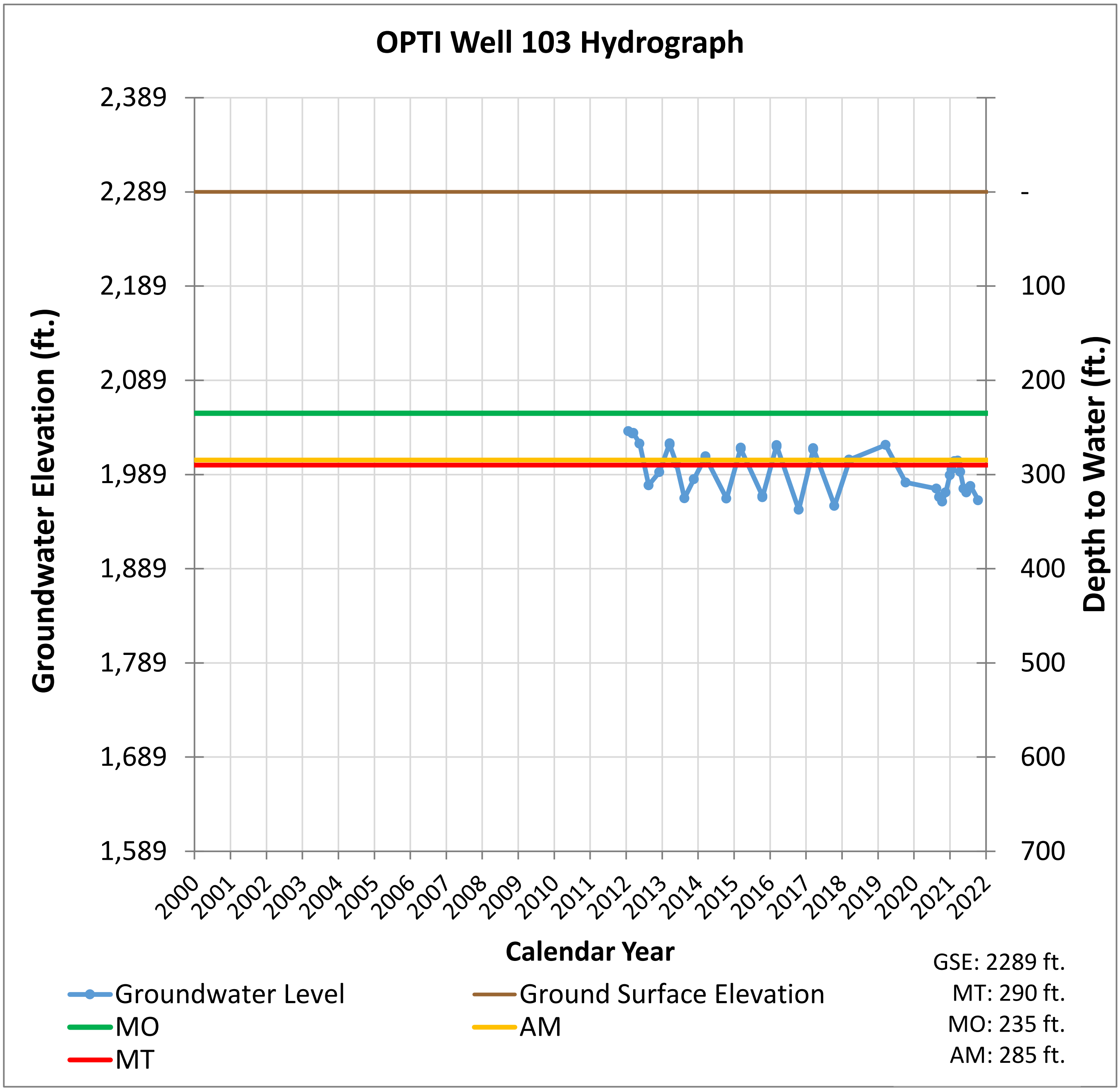
OPTI Well 98 Hydrograph
2,788
2,688
2,588
2,488
2,388
2,288
2,188
2,088
1,988
Groundwater Elevation (ft.)
-
100
200
300
400
500
600
700
Depth to Water (ft.)
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2688 ft.
MT: 450 ft.
MO: 439 ft.
AM: 449 ft.


OPTI Well 99 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,613
2,513
2,413
2,313
2,213
2,113
2,013
1,913
1,813
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2513 ft.
MT: 311 ft.
MO: 300 ft.
AM: 310 ft.

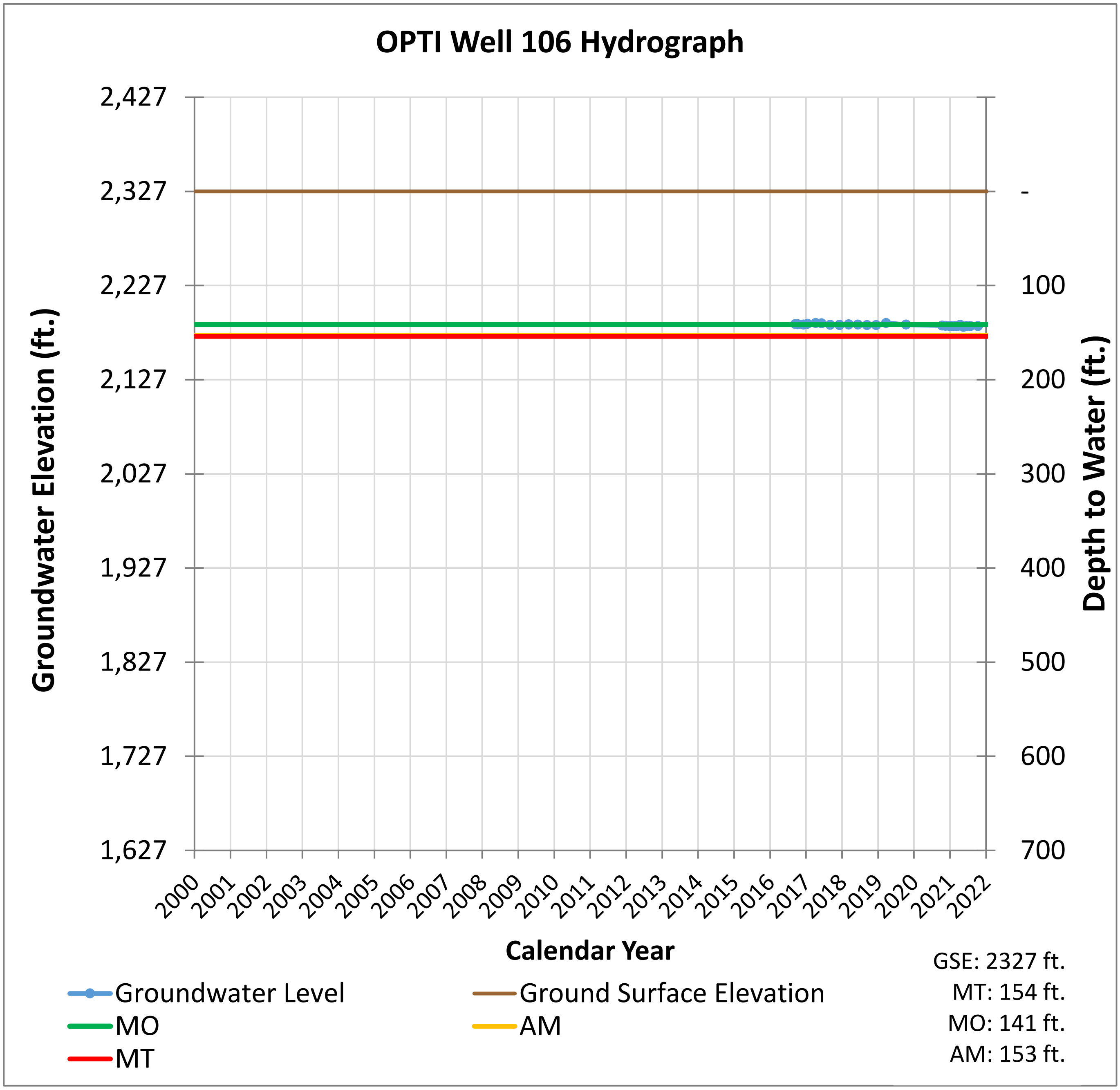

OPTI Well 100 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
3,104
3,004
2,904
2,804
2,704
2,604
2,504
2,404
2,304
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 3004 ft.
MT: 181 ft.
MO: 125 ft.
AM: 175 ft.


OPTI Well 101 Hydrograph
Groundwater Elevation (ft.)
2,841
2,741
2,641
2,541
2,441
2,341
2,241
2,141
2,041
Depth to Water (ft.)
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2741 ft.
MT: 111 ft.
MO: 81 ft.
AM: 108 ft.

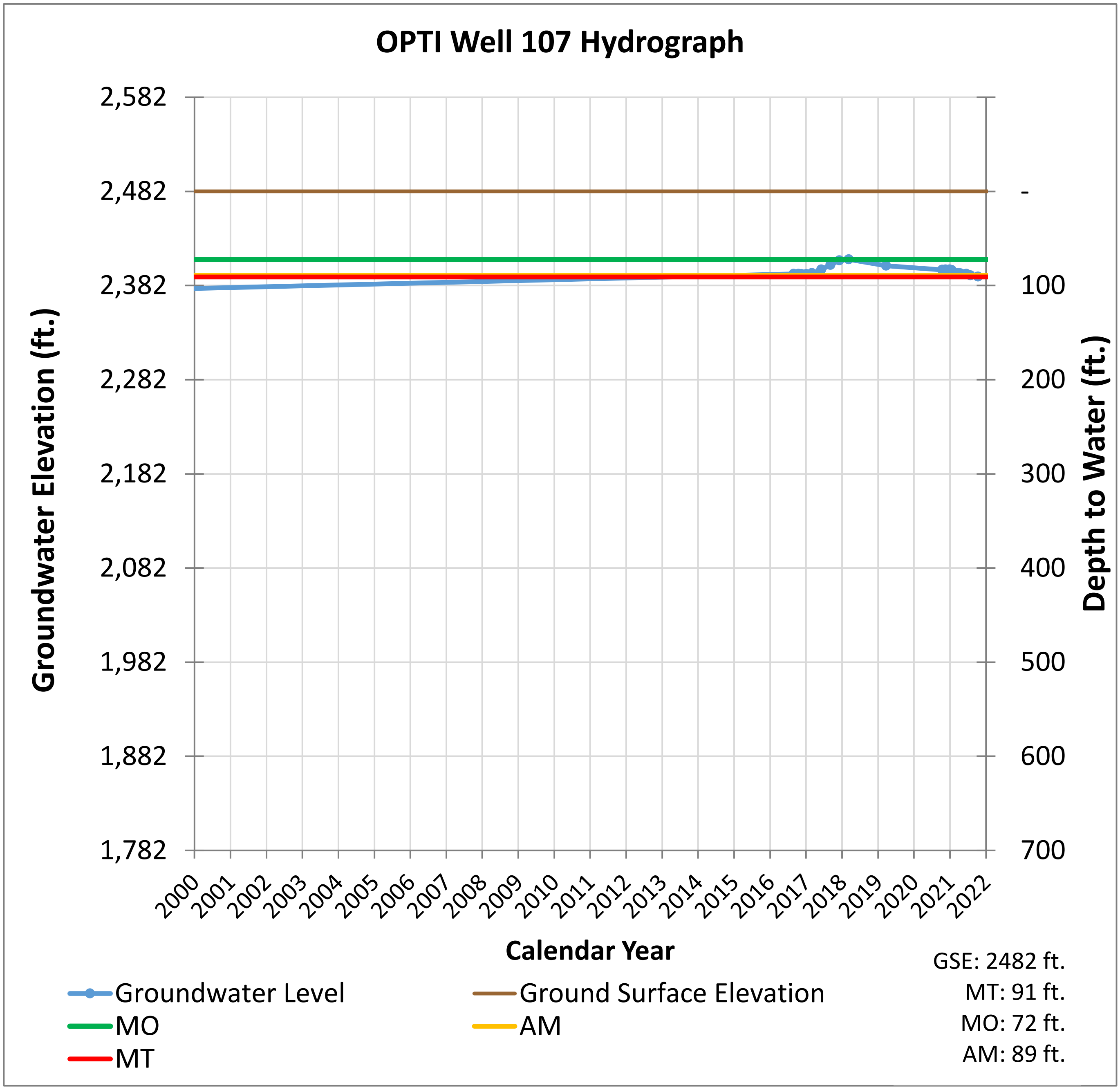

OPTI Well 102 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,146
2,046
1,946
1,846
1,746
1,646
1,546
1,446
1,346
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2046 ft.
MT: 235 ft.
MO: 197 ft.
AM: 231 ft.



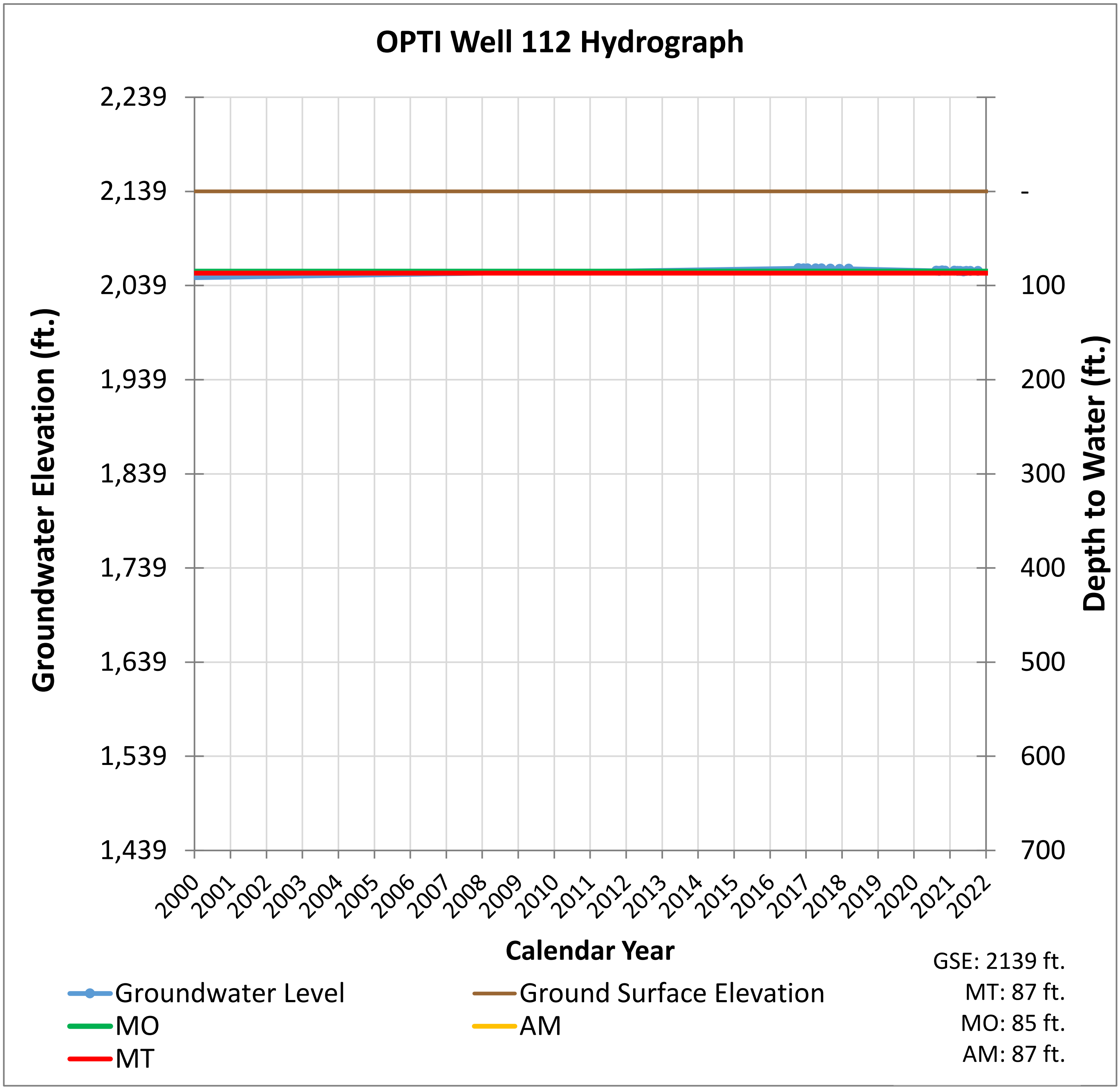
OPTI Well 103 Hydrograph
2,389
2,289
2,189
2,089
1,989
1,889
1,789
1,689
1,589
Groundwater Elevation (ft.)
-
100
200
300
400
500
600
700
Depth to Water (ft.)
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2289 ft.
MT: 290 ft.
MO: 235 ft.
AM: 285 ft.

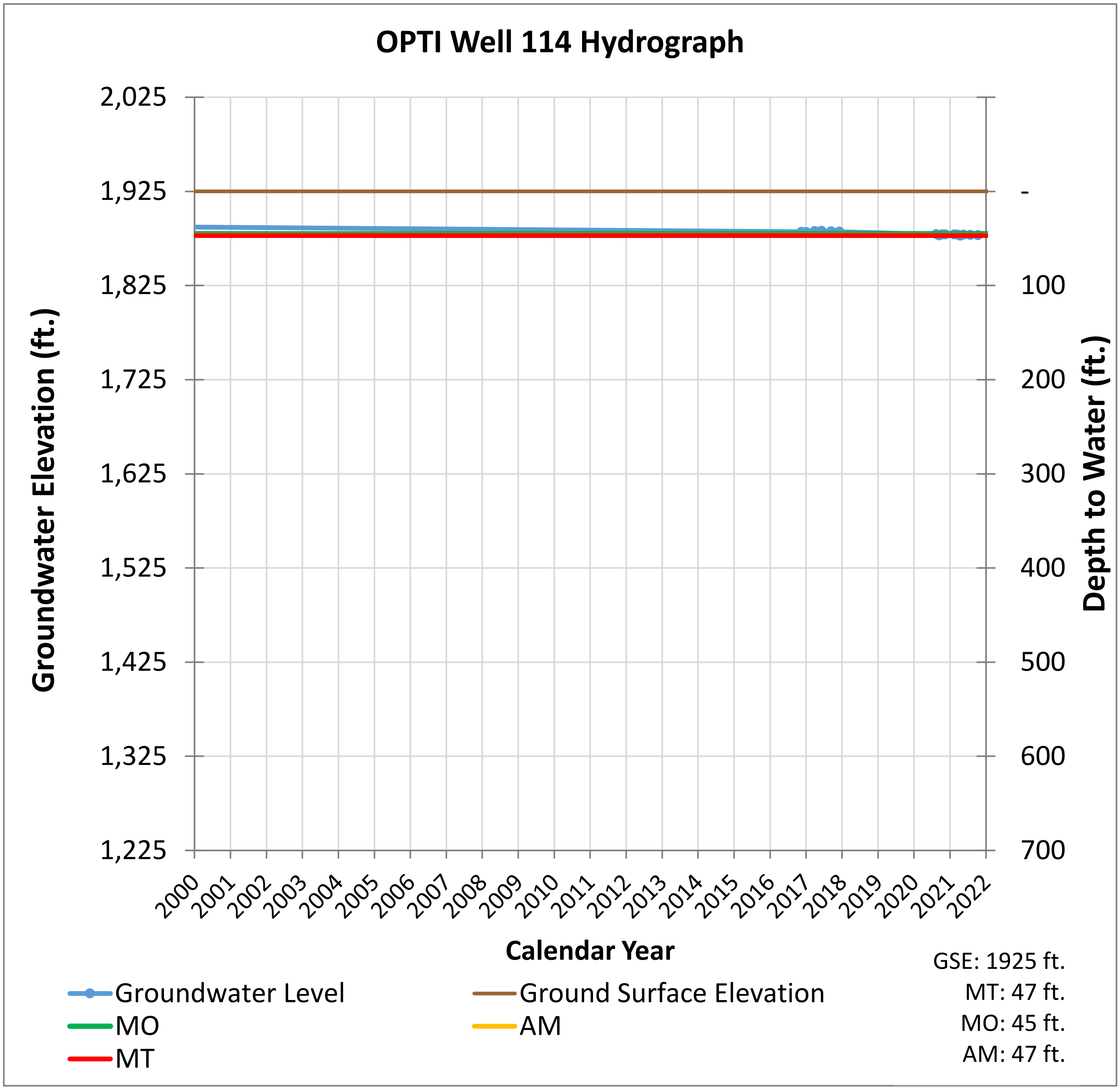


OPTI Well 106 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,427
2,327
2,227
2,127
2,027
1,927
1,827
1,727
1,627
-
100
200
300
400
500
600
700
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2327 ft.
MT: 154 ft.
MO: 141 ft.
AM: 153 ft.

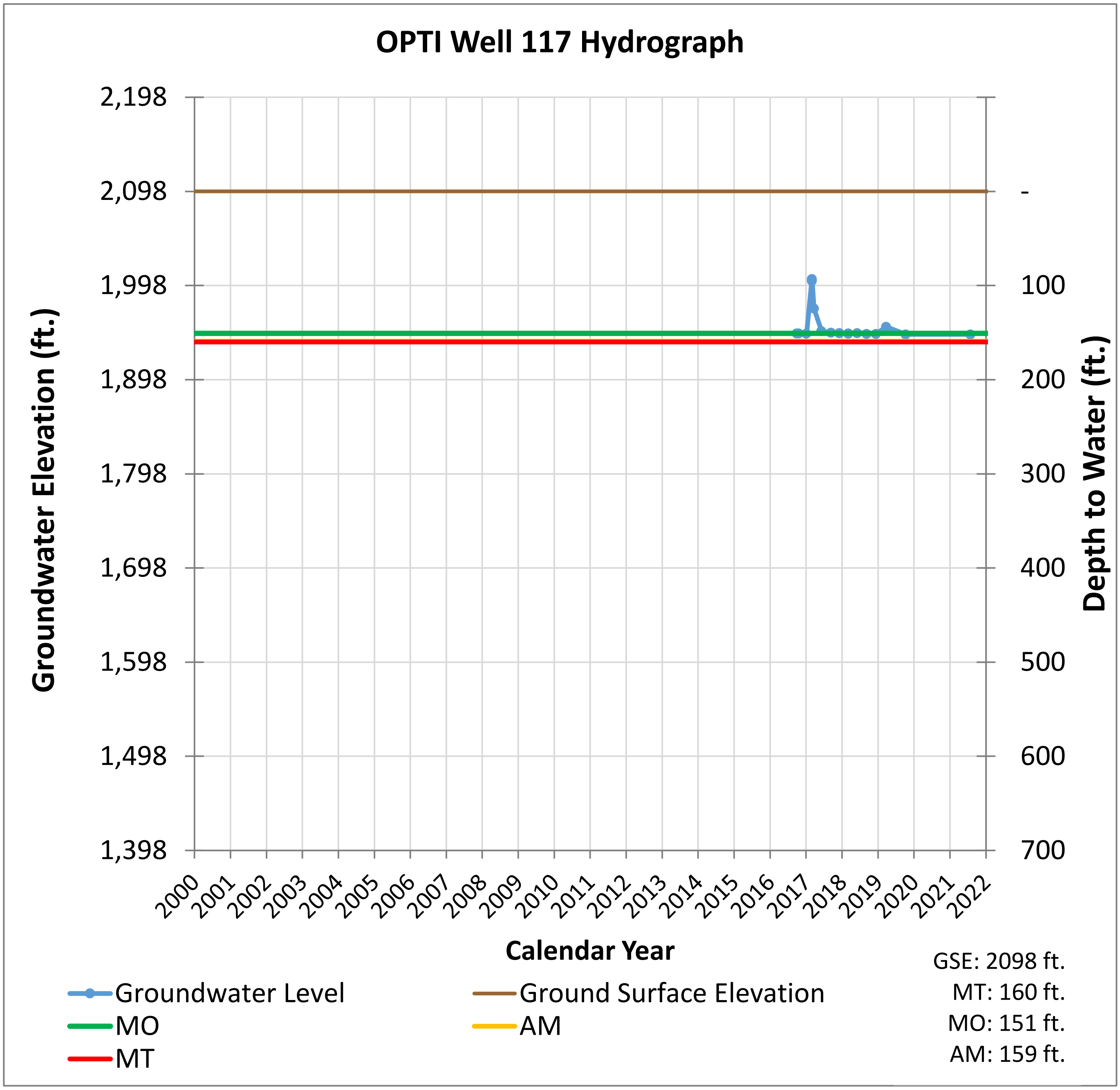


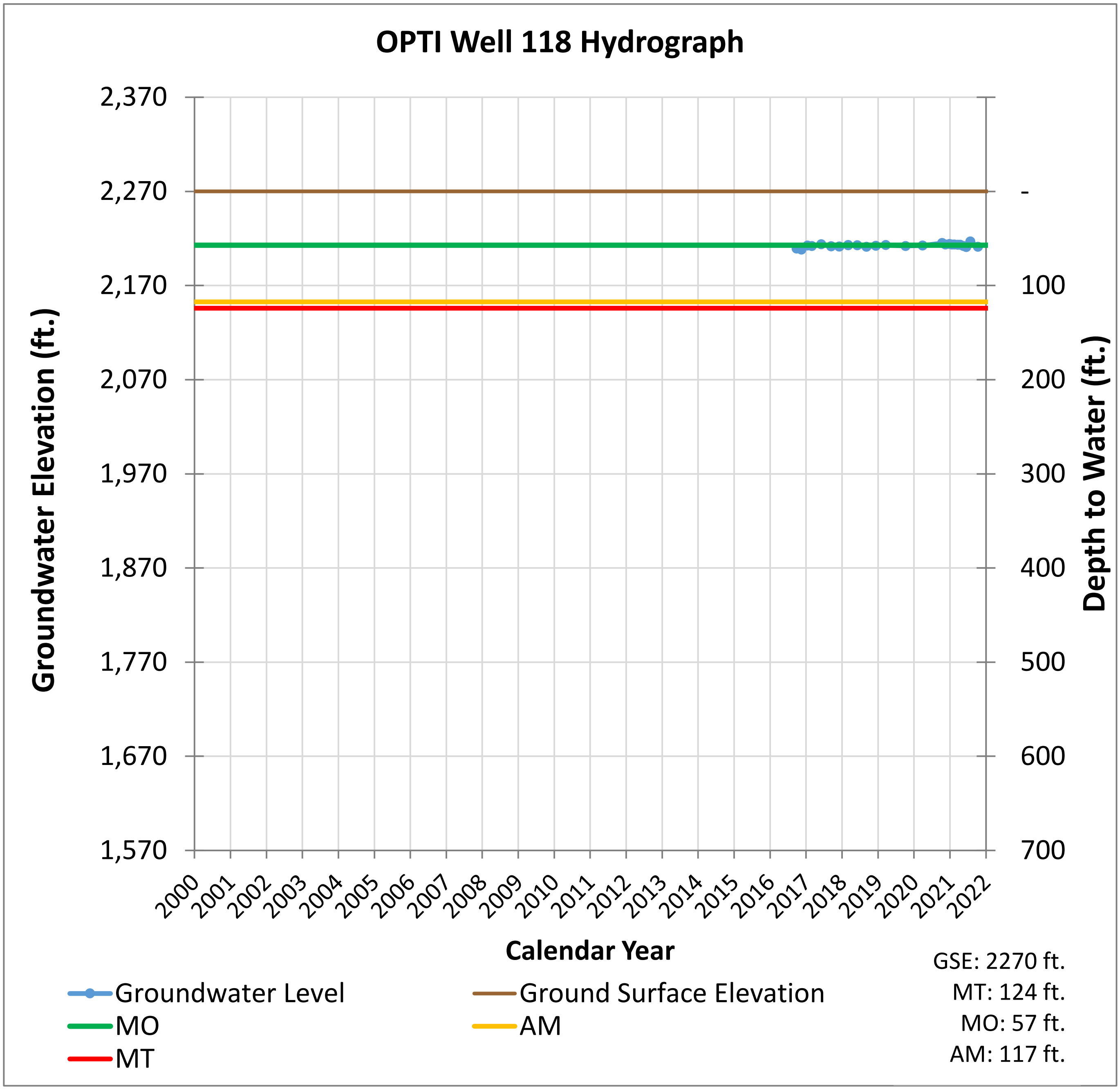
OPTI Well 107 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,582
2,482
2,382
2,282
2,182
2,082
1,982
1,882
1,782
-
100
200
300
400
500
600
700
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2482 ft.
MT: 91 ft.
MO: 72 ft.
AM: 89 ft.

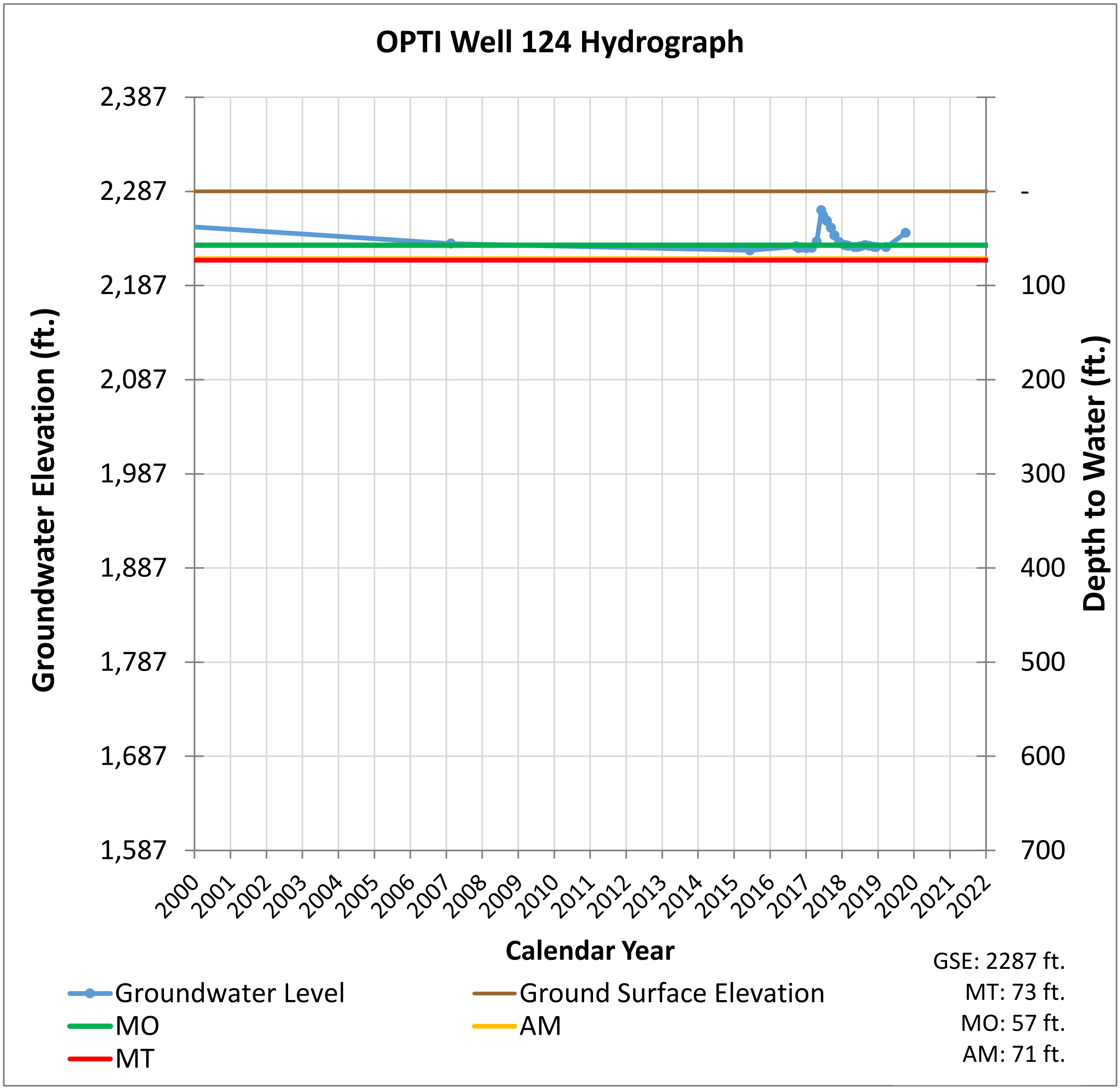

OPTI Well 112 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
Calendar Year
2,239
2,139
2,039
1,939
1,839
1,739
1,639
1,539
1,439
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2139 ft.
MT: 87 ft.
MO: 85 ft.
AM: 87 ft.

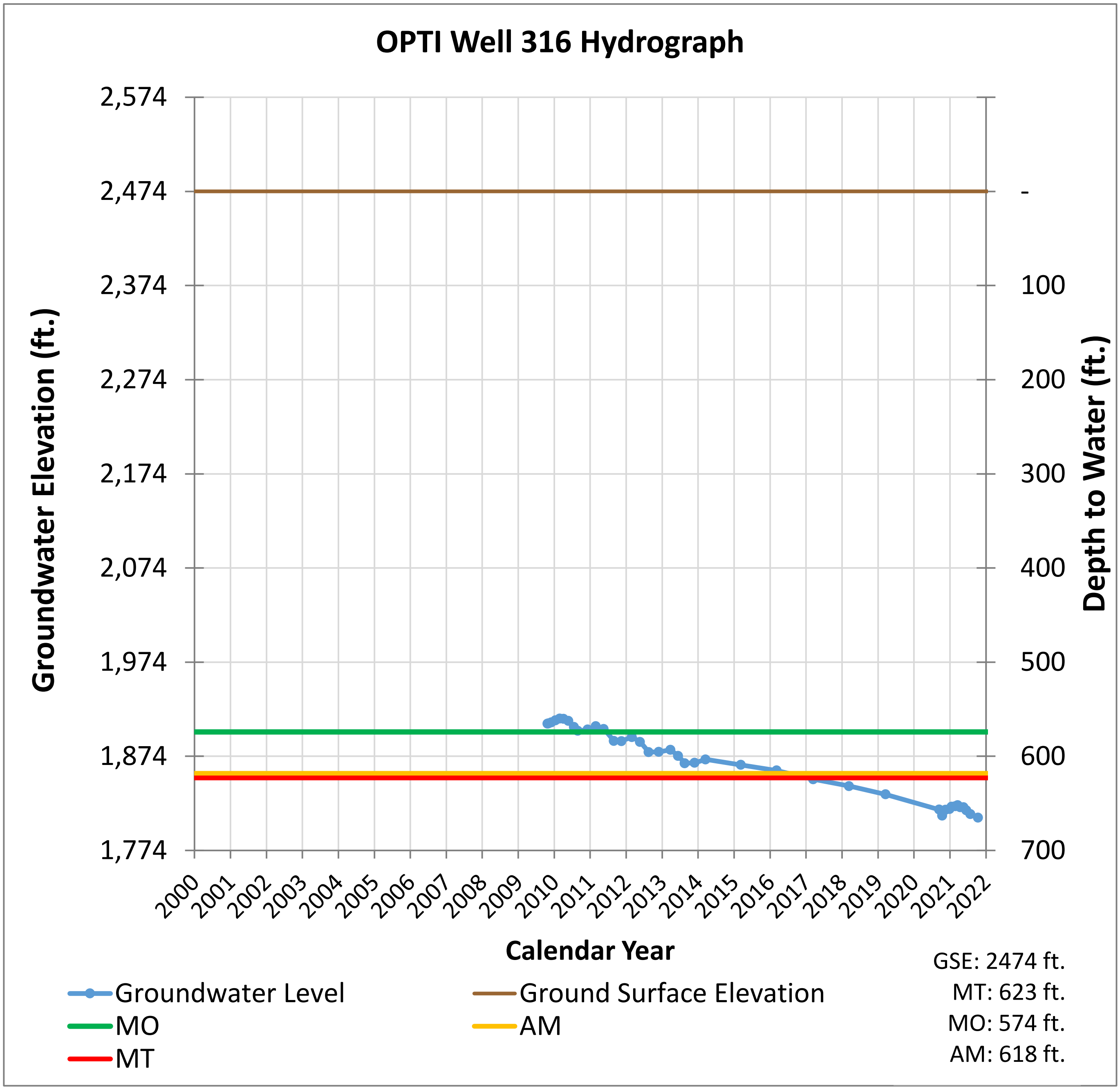


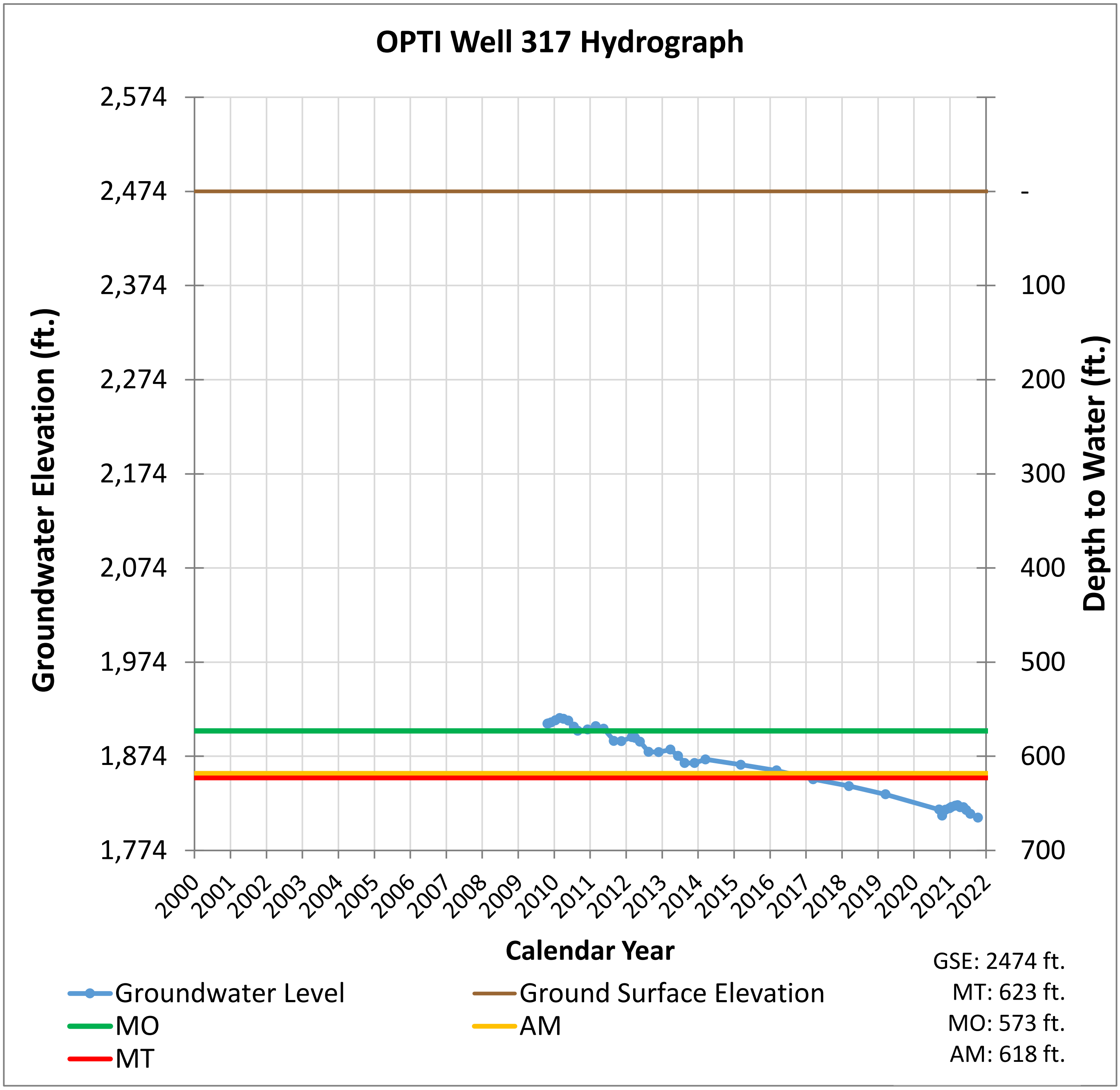
OPTI Well 114 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,025
1,925
1,825
1,725
1,625
1,525
1,425
1,325
1,225
-
100
200
300
400
500
600
700
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 1925 ft.
MT: 47 ft.
MO: 45 ft.
AM: 47 ft.

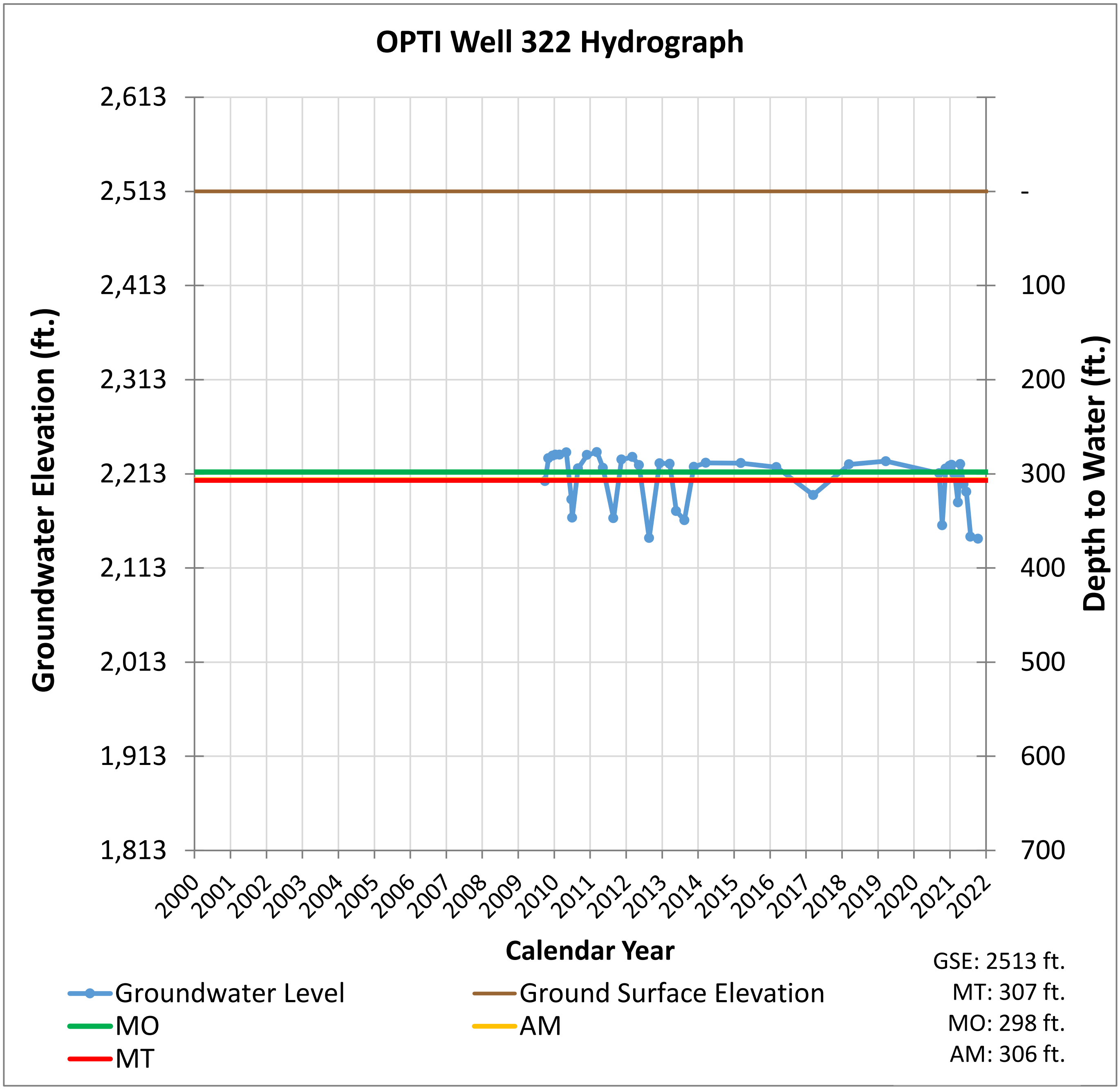

OPTI Well 117 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,198
2,098
1,998
1,898
1,798
1,698
1,598
1,498
1,398
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2098 ft.
MT: 160 ft.
MO: 151 ft.
AM: 159 ft.

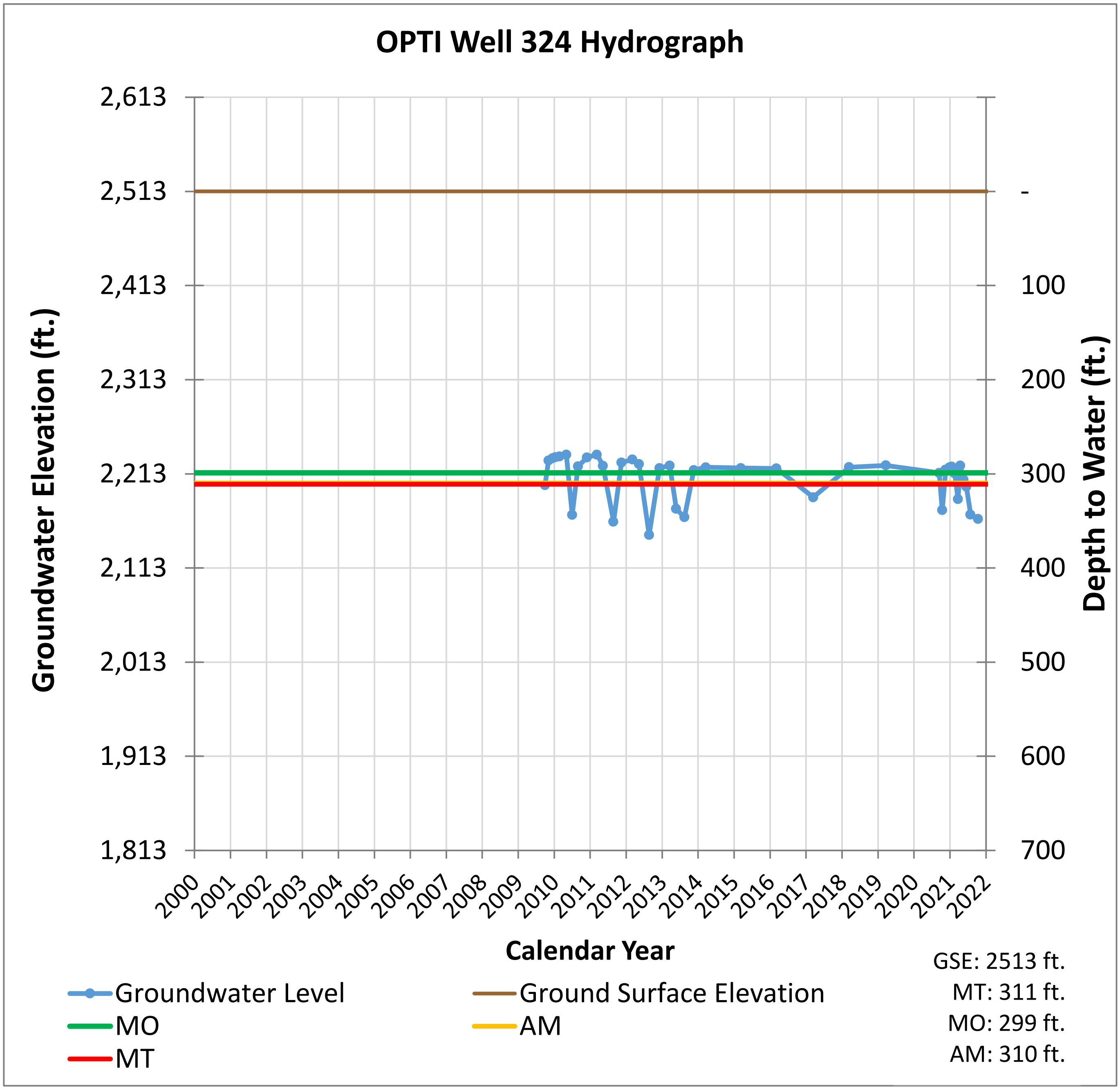

OPTI Well 118 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,370
2,270
2,170
2,070
1,970
1,870
1,770
1,670
1,570
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2270 ft.
MT: 124 ft.
MO: 57 ft.
AM: 117 ft.

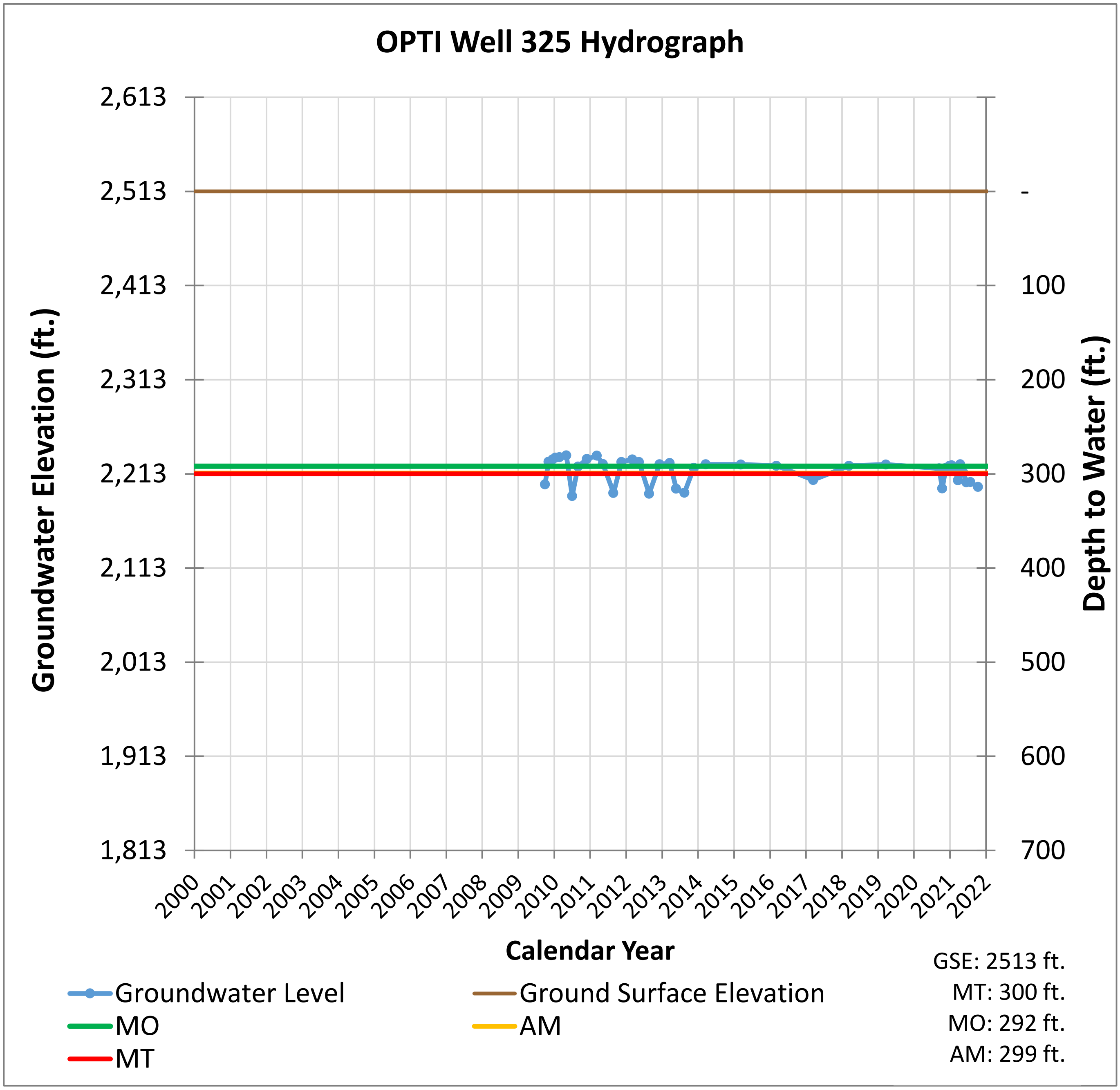

OPTI Well 124 Hydrograph
Groundwater Elevation (ft.)
2,387
2,287
2,187
2,087
1,987
1,887
1,787
1,687
1,587
Depth to Water (ft.)
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2287 ft.
MT: 73 ft.
MO: 57 ft.
AM: 71 ft.


OPTI Well 316 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,574
2,474
2,374
2,274
2,174
2,074
1,974
1,874
1,774
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2474 ft.
MT: 623 ft.
MO: 574 ft.
AM: 618 ft.

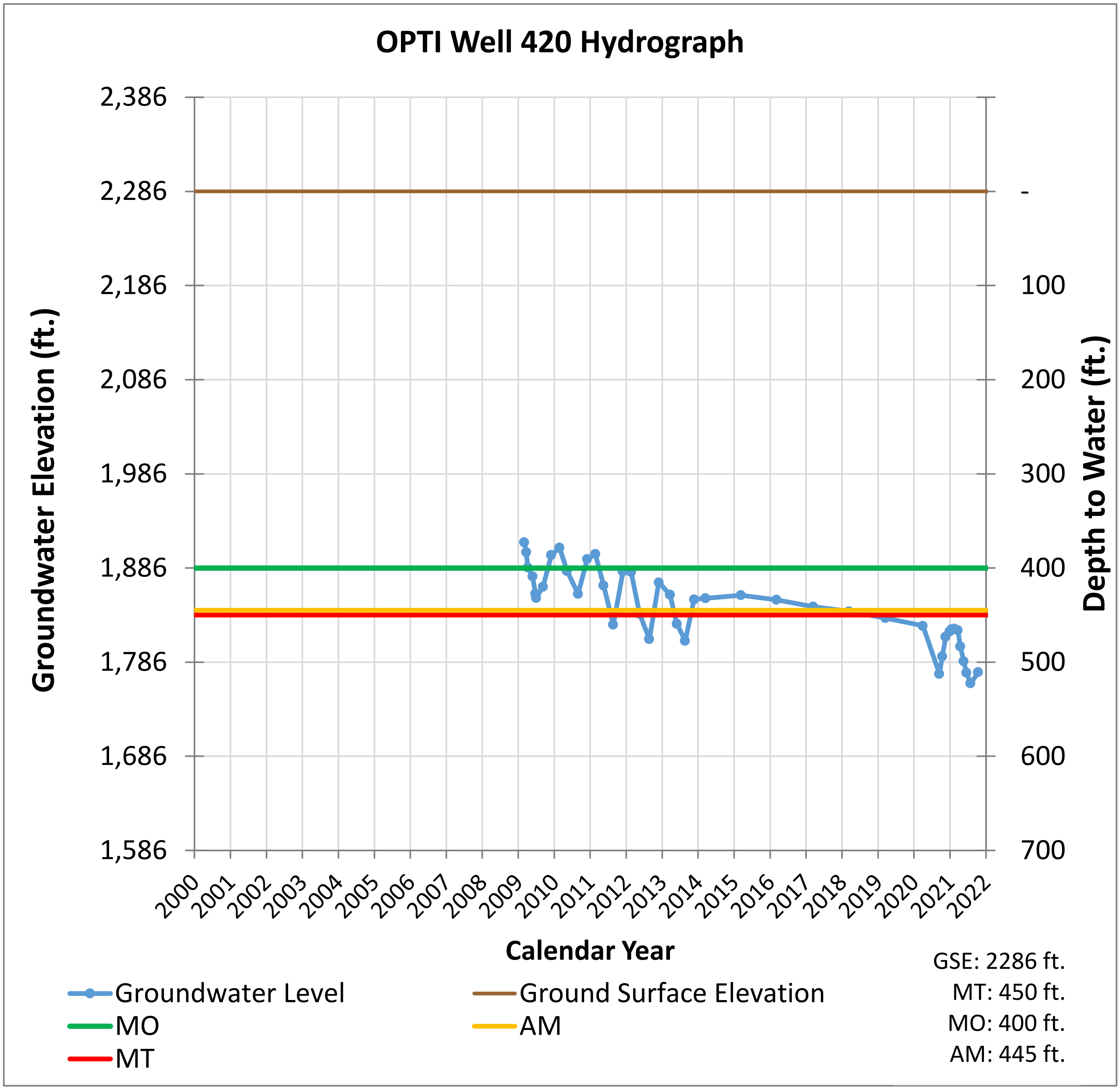

OPTI Well 317 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,574
2,474
2,374
2,274
2,174
2,074
1,974
1,874
1,774
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2474 ft.
MT: 623 ft.
MO: 573 ft.
AM: 618 ft.

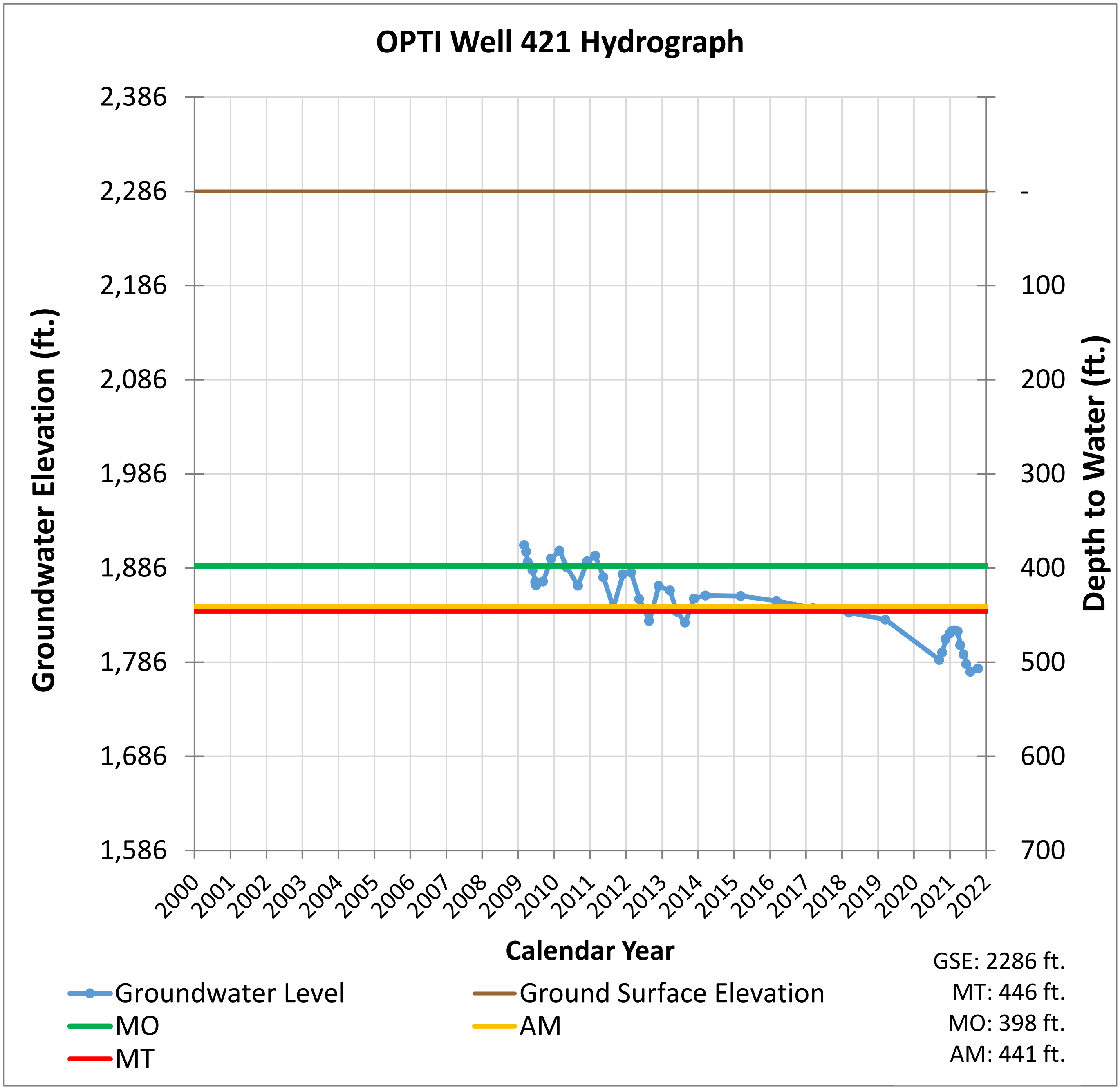

OPTI Well 322 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,613
2,513
2,413
2,313
2,213
2,113
2,013
1,913
1,813
-
100
200
300
400
500
600
700
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2513 ft.
MT: 307 ft.
MO: 298 ft.
AM: 306 ft.

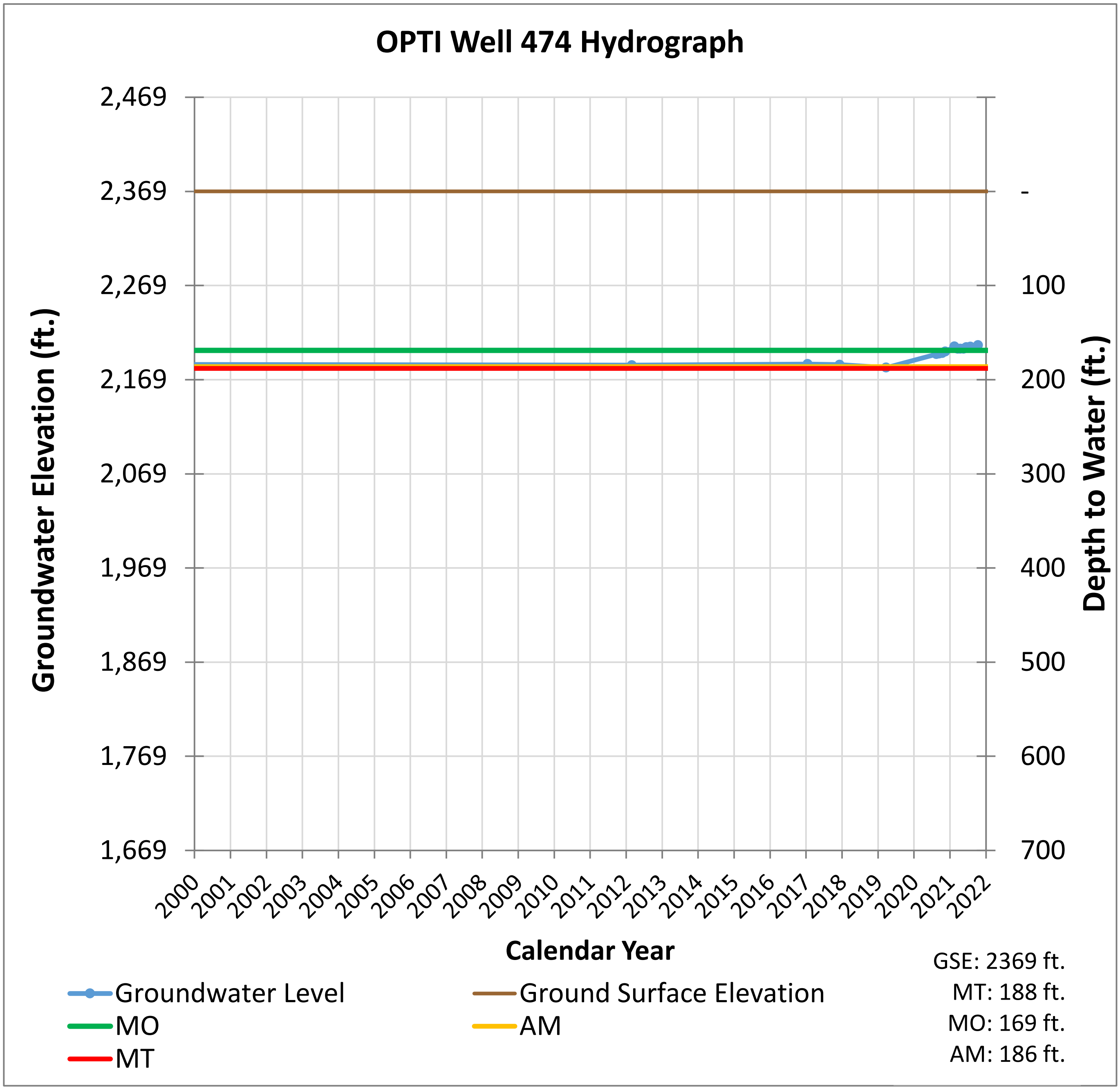

OPTI Well 324 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,613
2,513
2,413
2,313
2,213
2,113
2,013
1,913
1,813
-
100
200
300
400
500
600
700
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2513 ft.
MT: 311 ft.
MO: 299 ft.
AM: 310 ft.

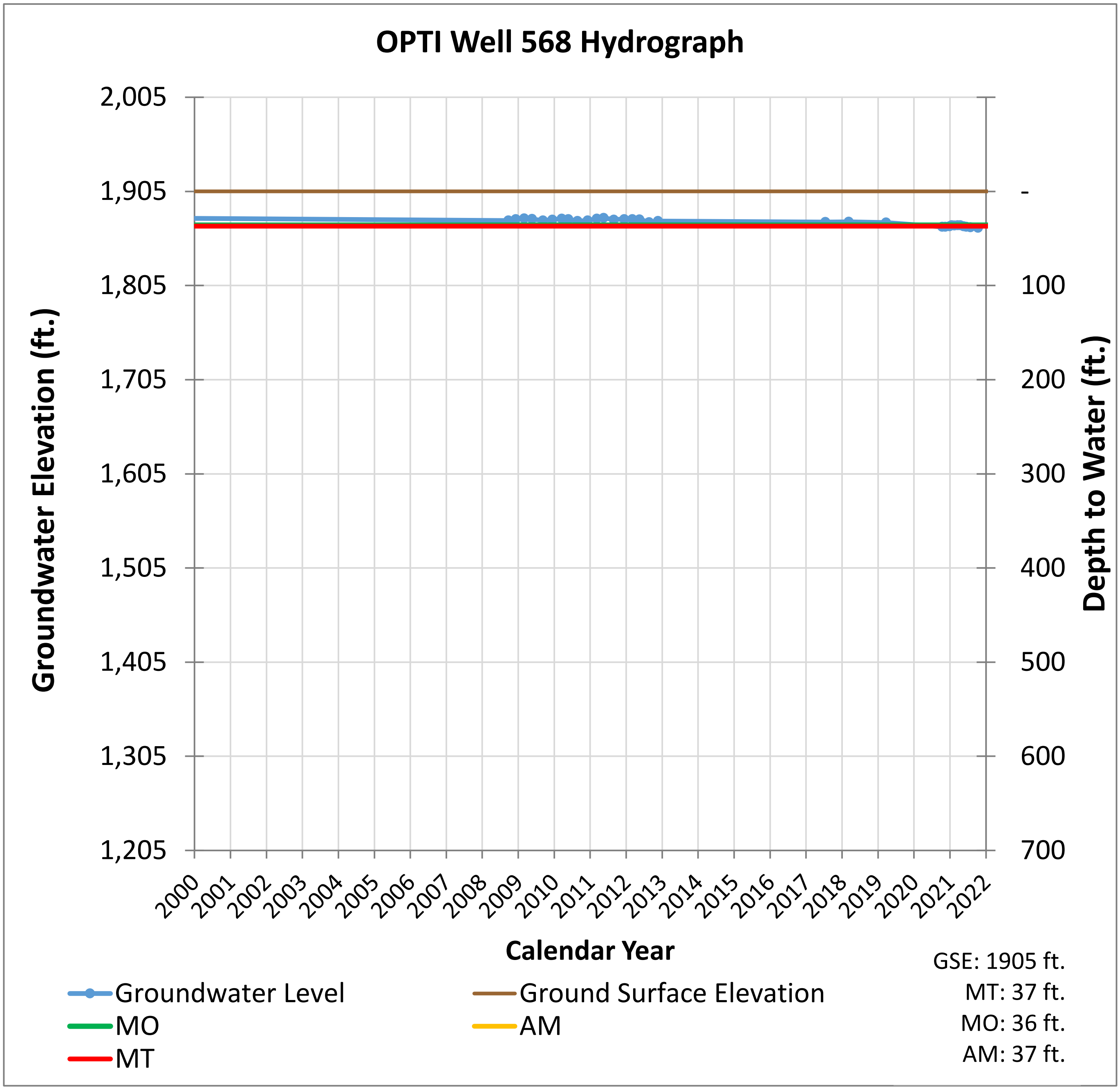


OPTI Well 325 Hydrograph
Groundwater Elevation (ft.)
2,613
2,513
2,413
2,313
2,213
2,113
2,013
1,913
1,813
Depth to Water (ft.)
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2513 ft.
MT: 300 ft.
MO: 292 ft.
AM: 299 ft.

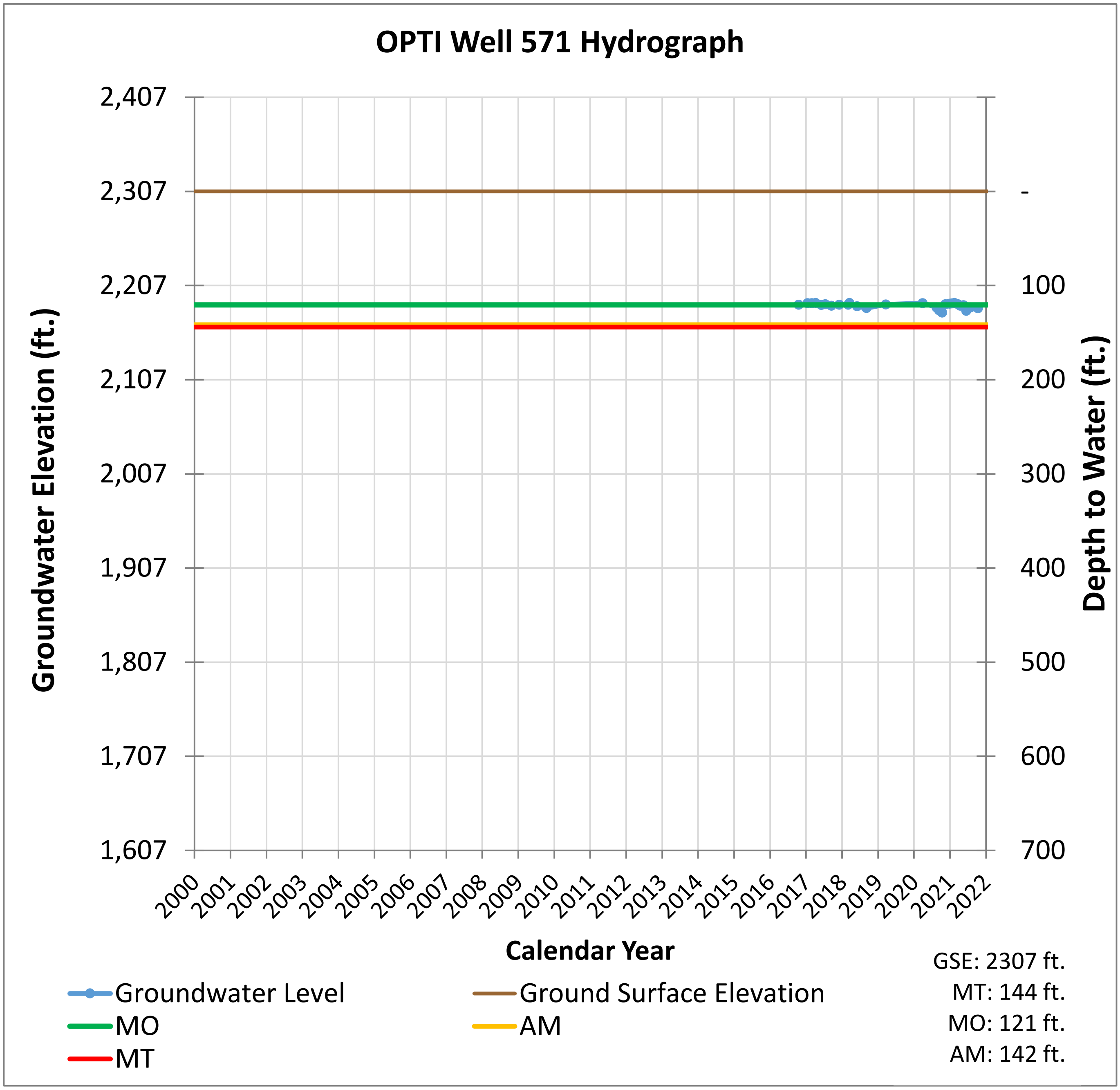

OPTI Well 420 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,386
2,286
2,186
2,086
1,986
1,886
1,786
1,686
1,586
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2286 ft.
MT: 450 ft.
MO: 400 ft.
AM: 445 ft.


OPTI Well 421 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,386
2,286
2,186
2,086
1,986
1,886
1,786
1,686
1,586
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2286 ft.
MT: 446 ft.
MO: 398 ft.
AM: 441 ft.

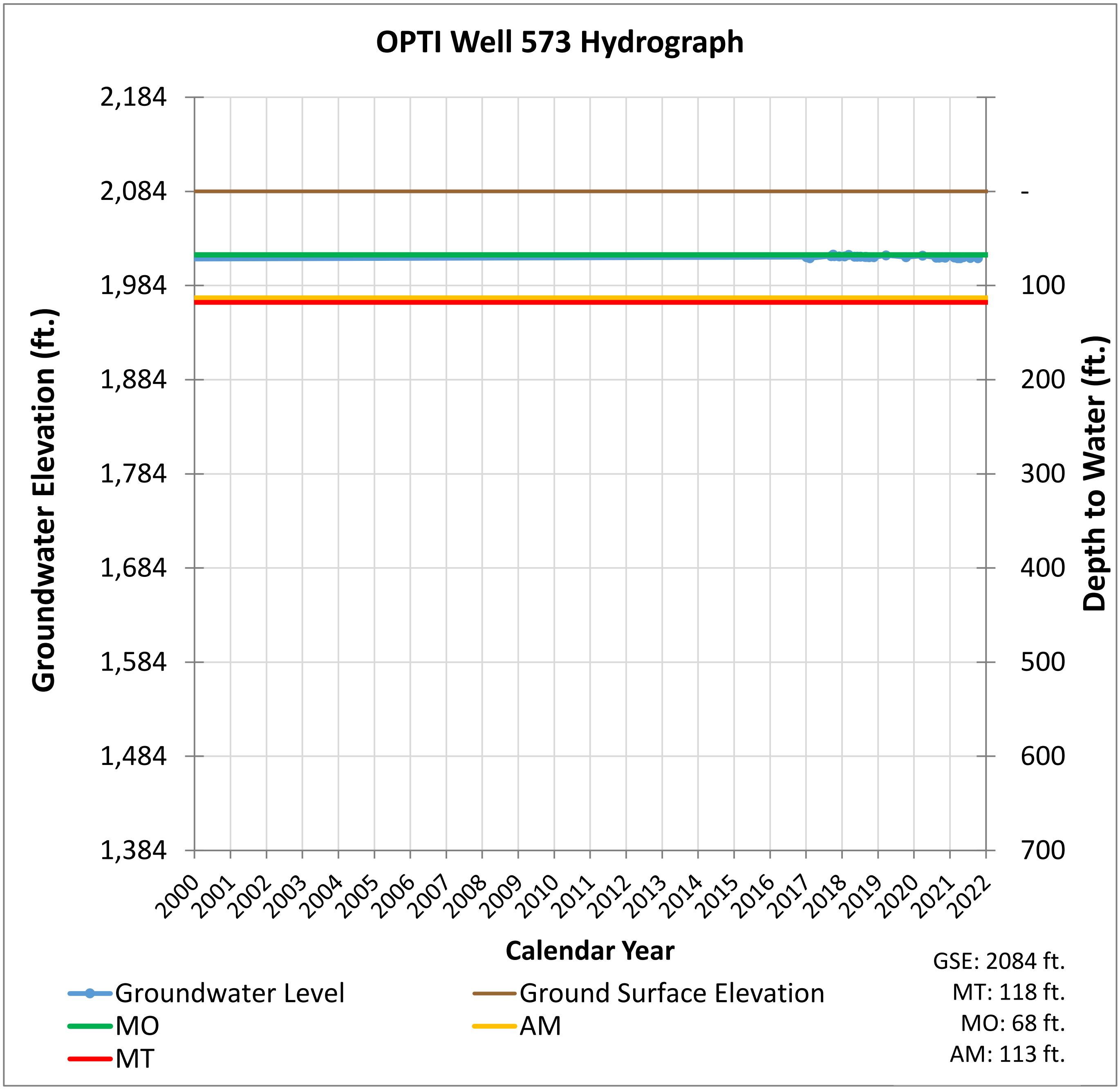

OPTI Well 474 Hydrograph
2,469
2,369
2,269
2,169
2,069
1,969
1,869
1,769
1,669
Groundwater Elevation (ft.)
-
100
200
300
400
500
600
700
Depth to Water (ft.)
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2369 ft.
MT: 188 ft.
MO: 169 ft.
AM: 186 ft.



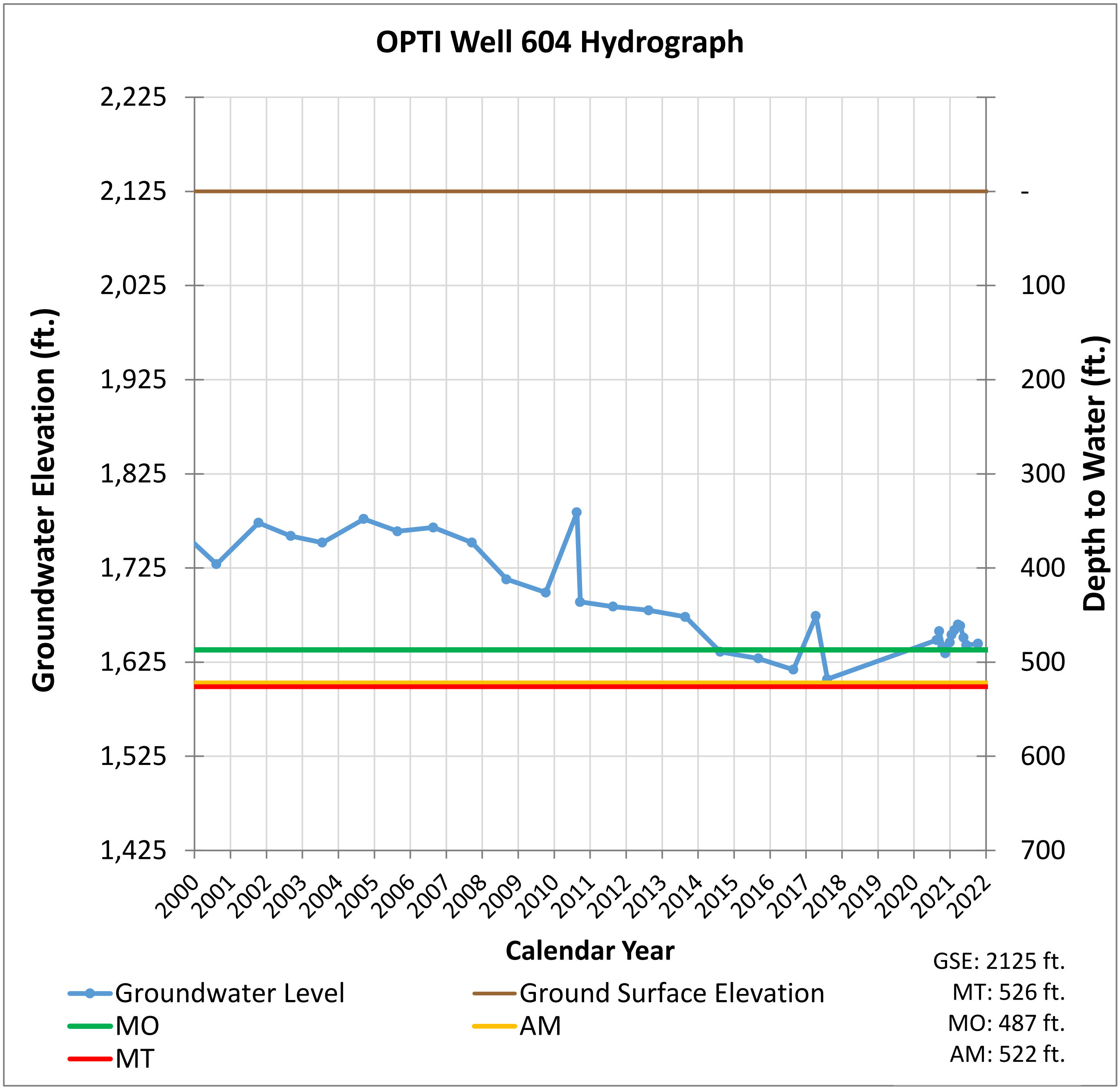
OPTI Well 568 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,005
1,905
1,805
1,705
1,605
1,505
1,405
1,305
1,205
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 1905 ft.
MT: 37 ft.
MO: 36 ft.
AM: 37 ft.

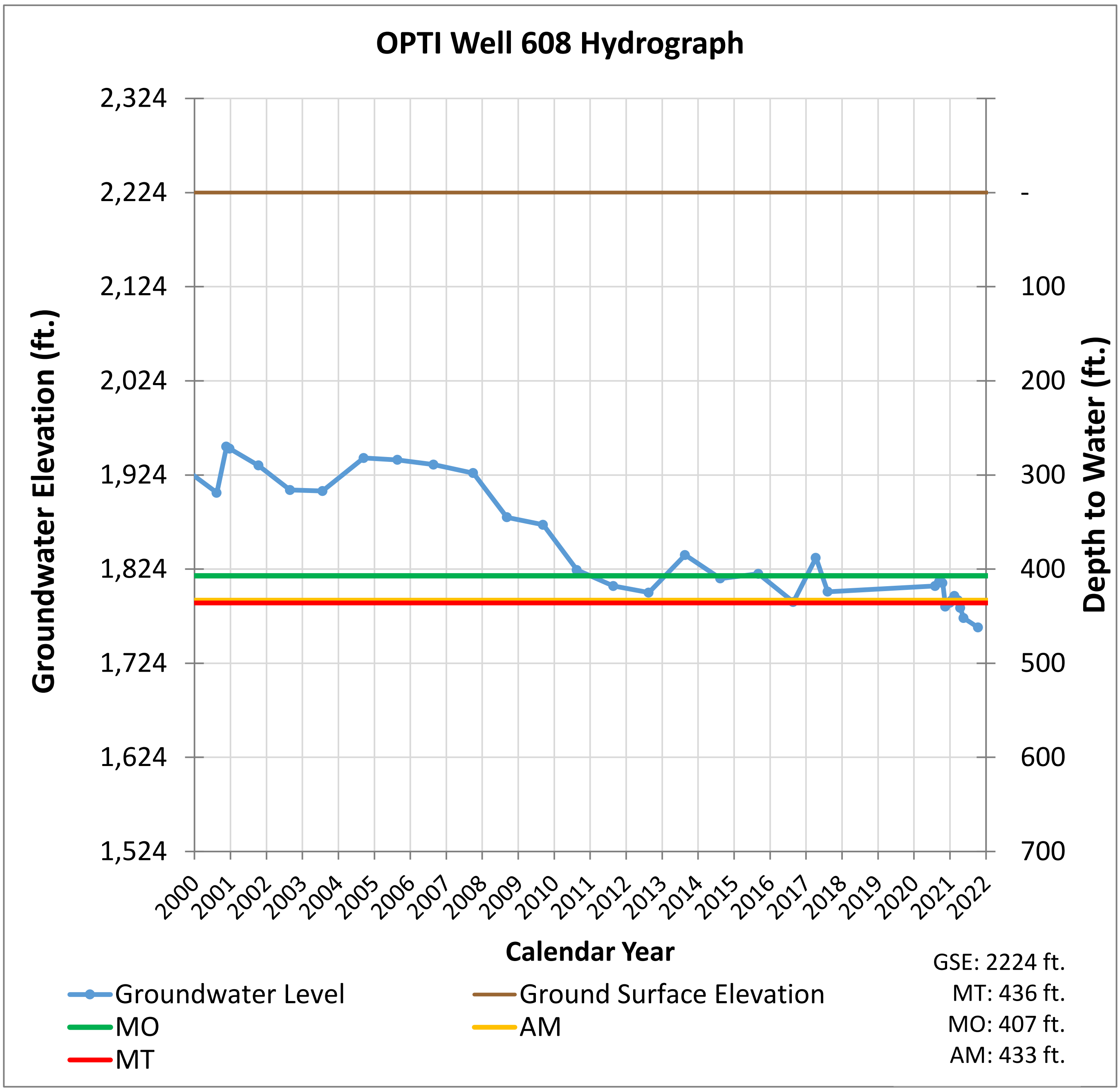


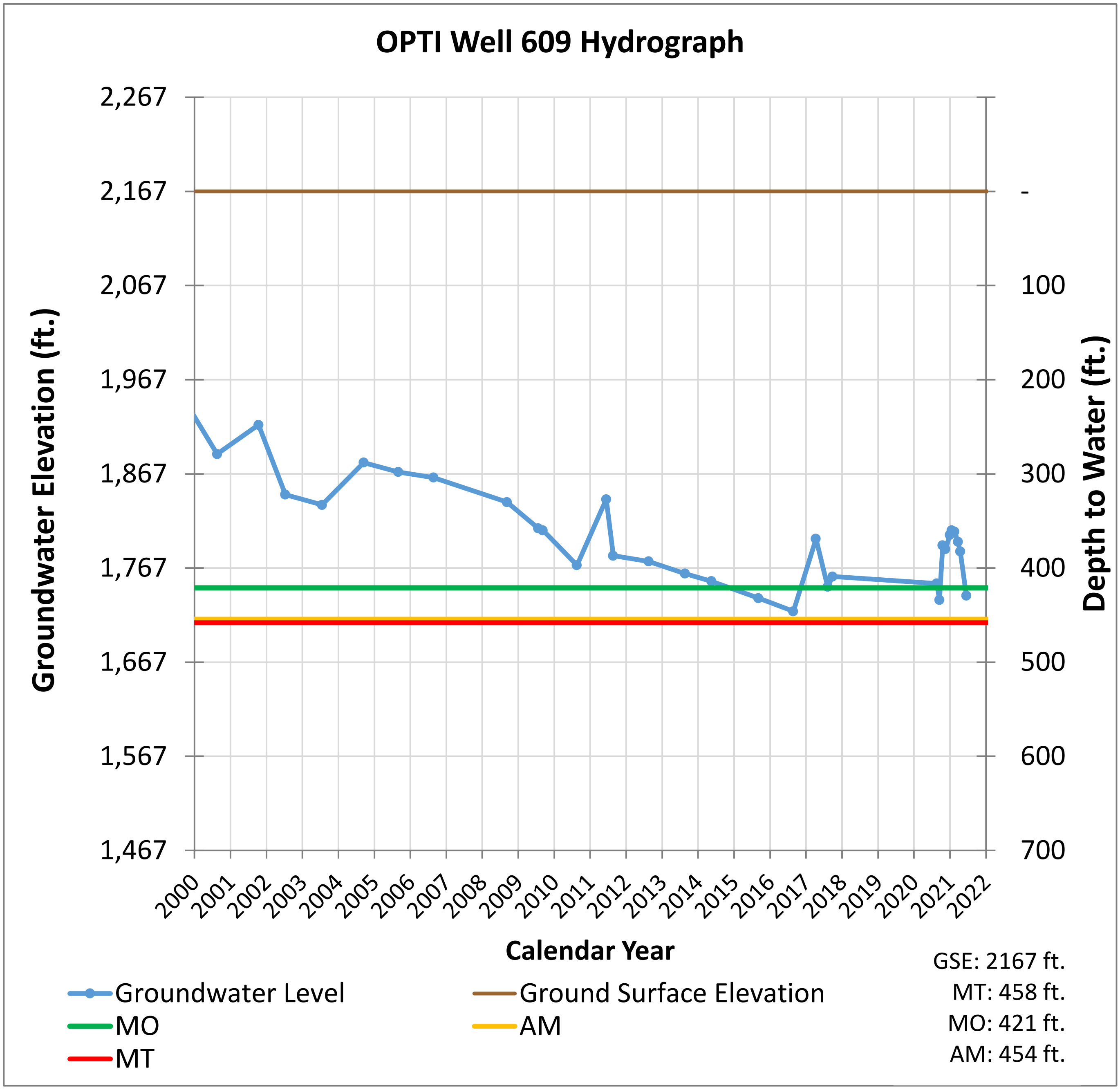
OPTI Well 571 Hydrograph
Groundwater Elevation (ft.)
2,407
2,307
2,207
2,107
2,007
1,907
1,807
1,707
1,607
Depth to Water (ft.)
-
100
200
300
400
500
600
700
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2307 ft.
MT: 144 ft.
MO: 121 ft.
AM: 142 ft.



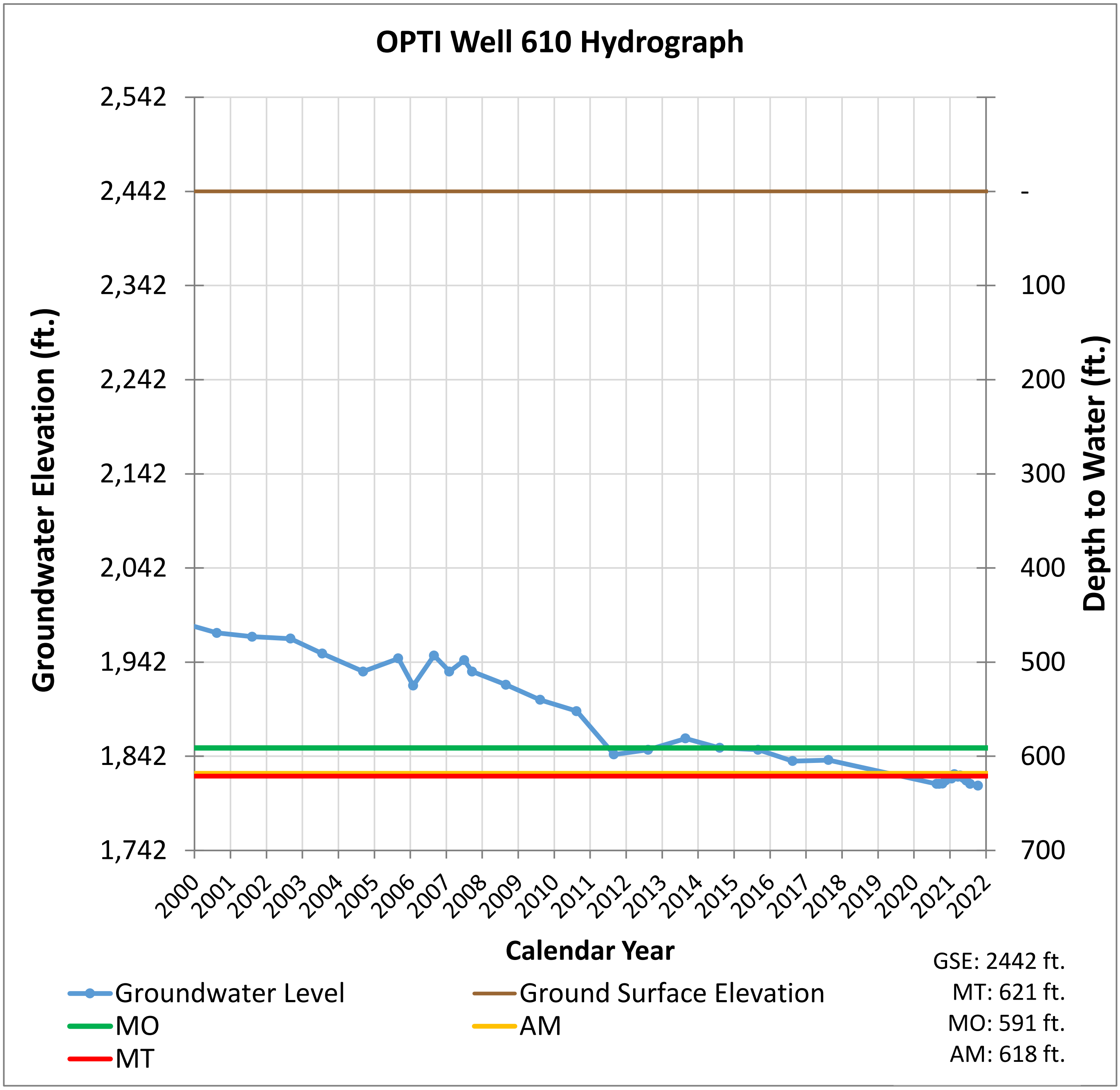
OPTI Well 573 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,184
2,084
1,984
1,884
1,784
1,684
1,584
1,484
1,384
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2084 ft.
MT: 118 ft.
MO: 68 ft.
AM: 113 ft.

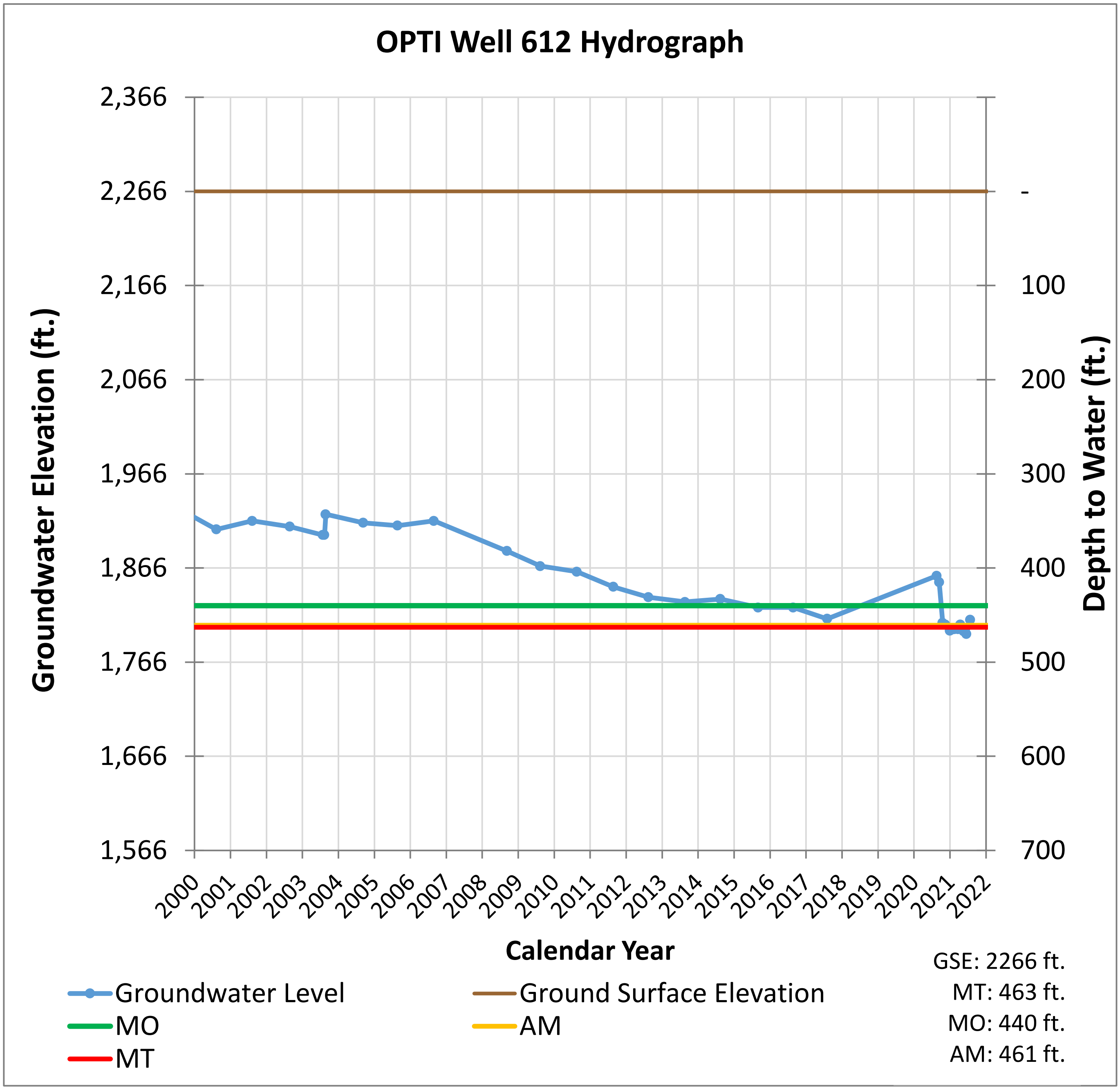

OPTI Well 604 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,225
2,125
2,025
1,925
1,825
1,725
1,625
1,525
1,425
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2125 ft.
MT: 526 ft.
MO: 487 ft.
AM: 522 ft.

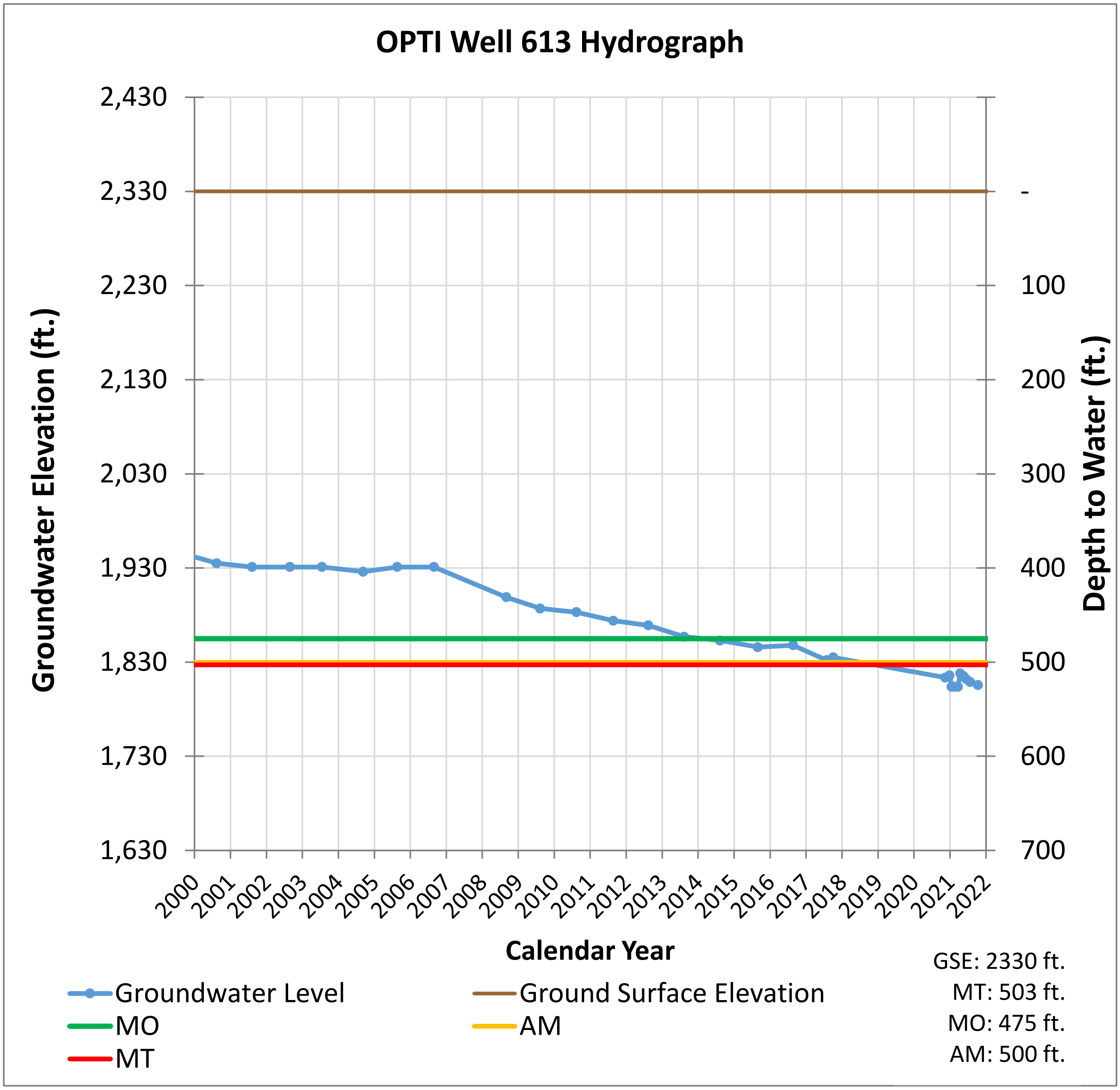

OPTI Well 608 Hydrograph
2,324
2,224
2,124
2,024
1,924
1,824
1,724
1,624
1,524
Groundwater Elevation (ft.)
-
100
200
300
400
500
600
700
Depth to Water (ft.)
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2224 ft.
MT: 436 ft.
MO: 407 ft.
AM: 433 ft.

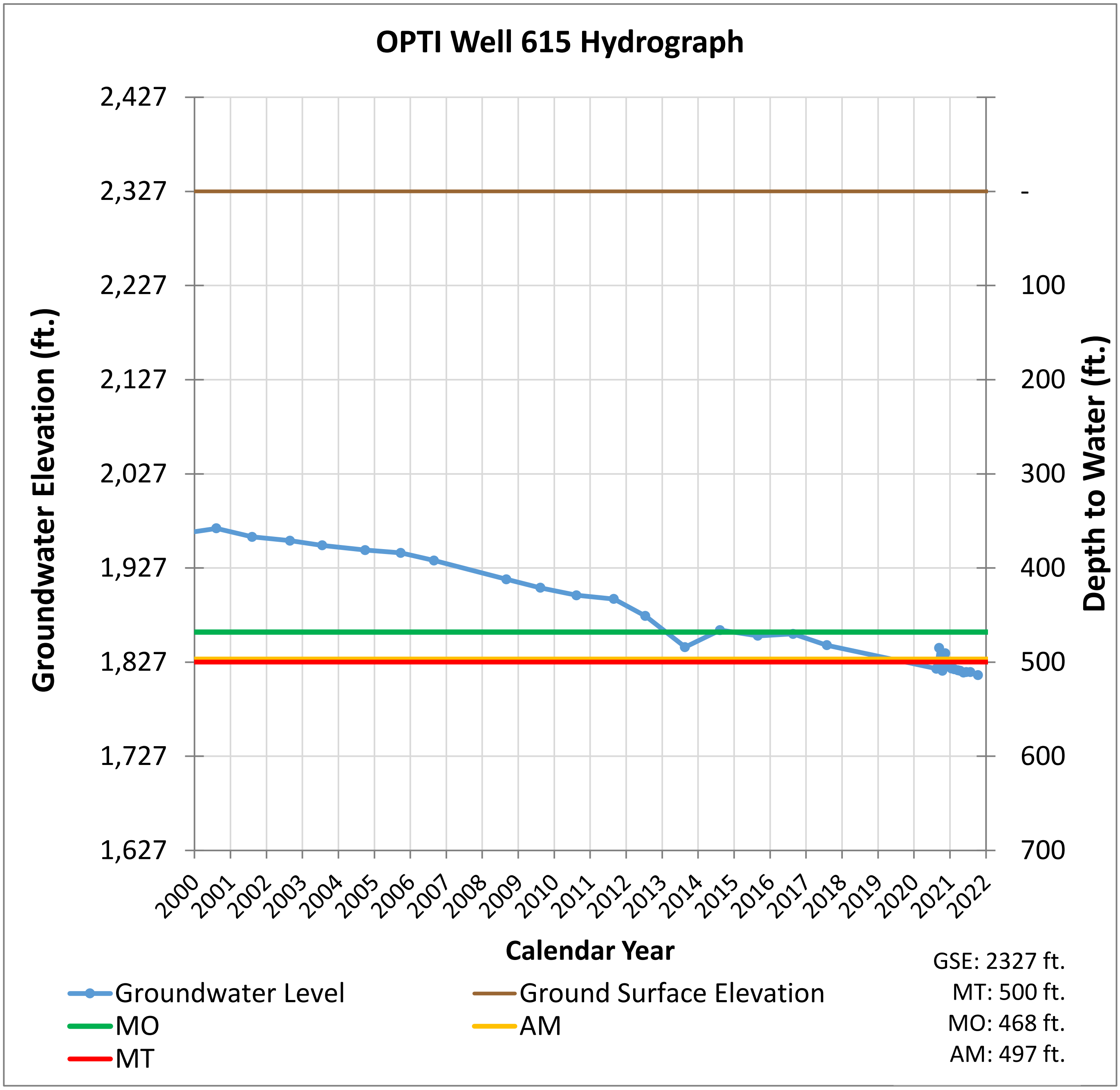


OPTI Well 609 Hydrograph
Groundwater Elevation (ft.)
2,267
2,167
2,067
1,967
1,867
1,767
1,667
1,567
1,467
Depth to Water (ft.)
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2167 ft.
MT: 458 ft.
MO: 421 ft.
AM: 454 ft.

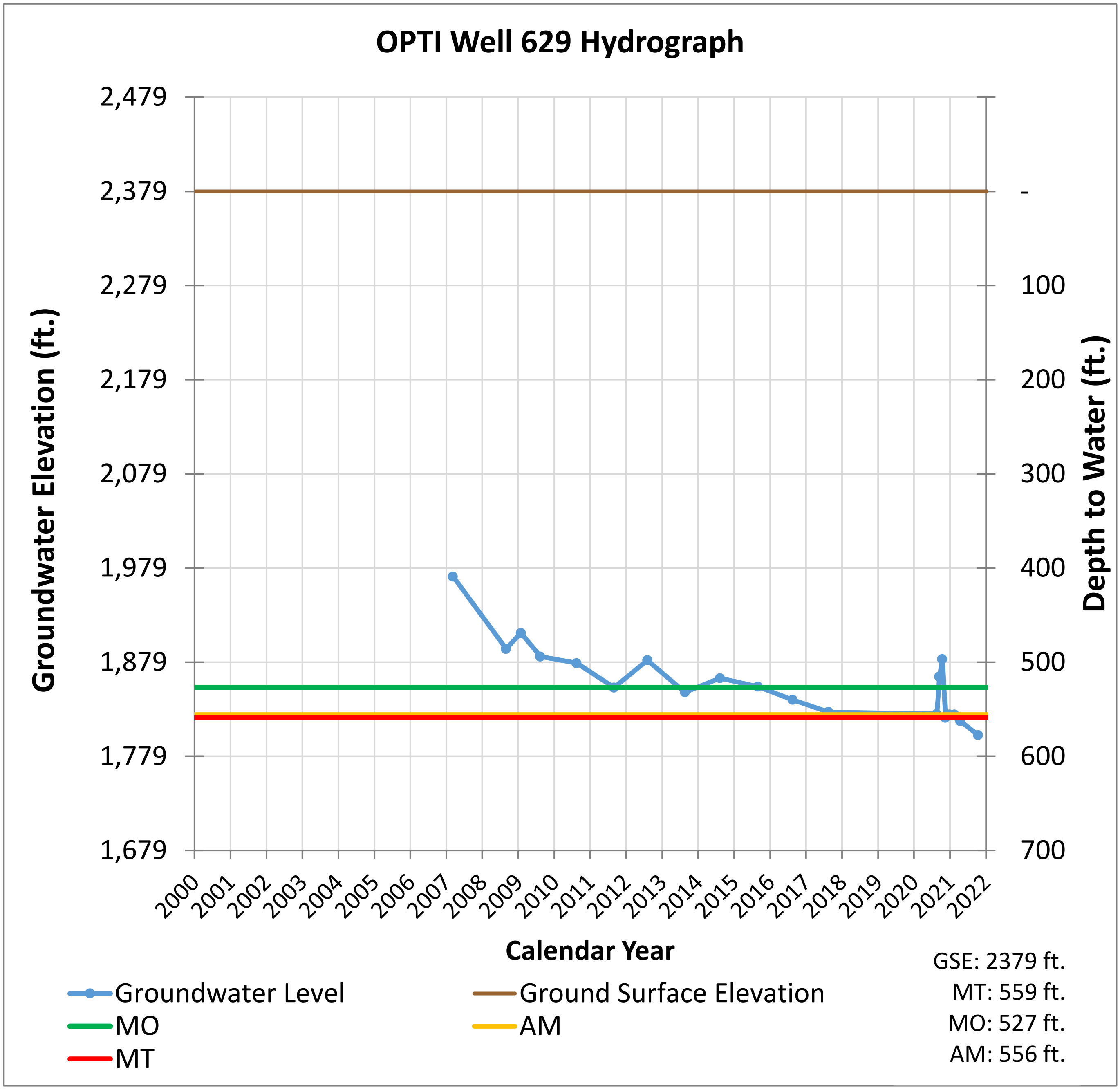

OPTI Well 610 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,542
2,442
2,342
2,242
2,142
2,042
1,942
1,842
1,742
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2442 ft.
MT: 621 ft.
MO: 591 ft.
AM: 618 ft.

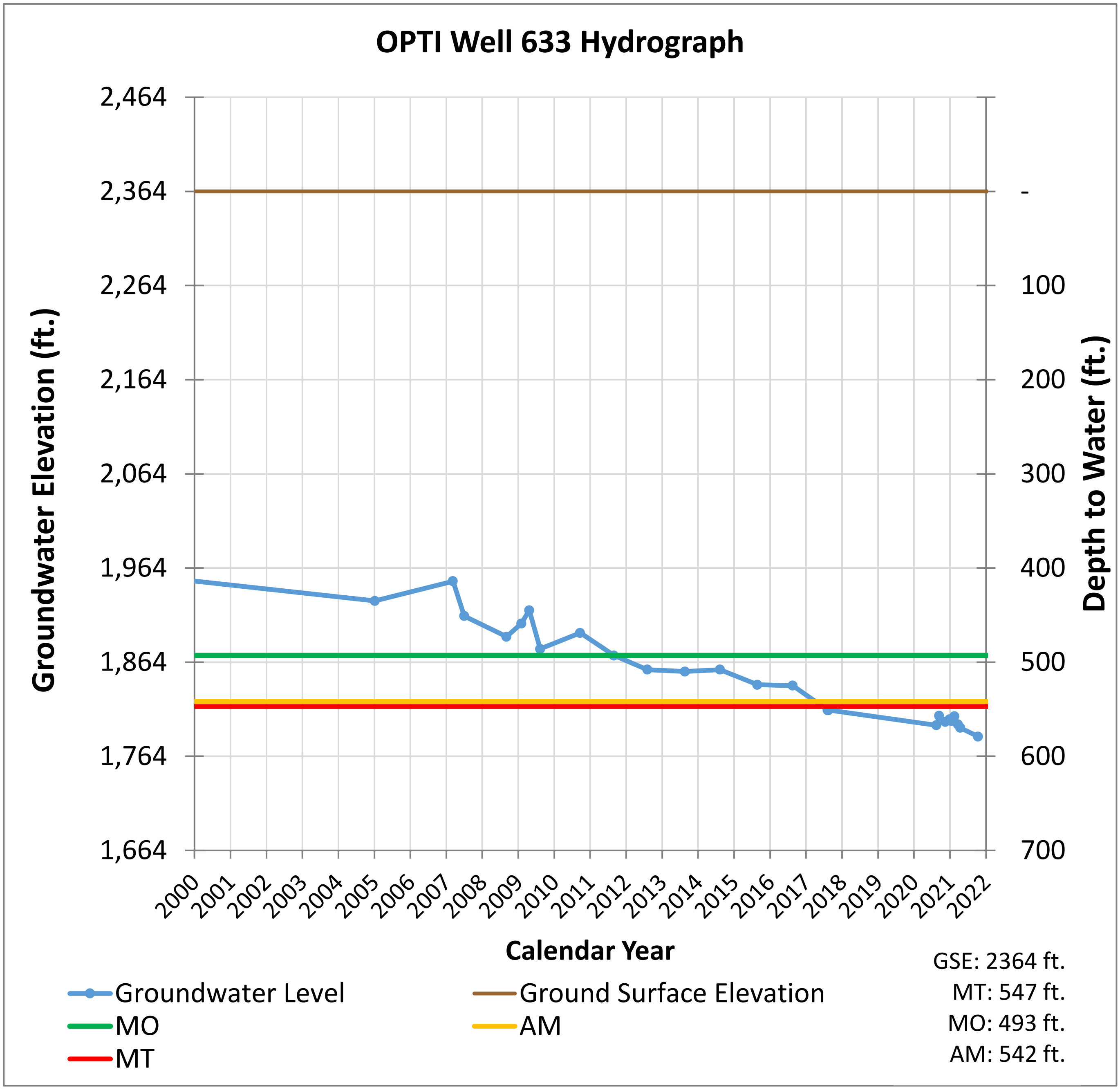

OPTI Well 612 Hydrograph
2,366
2,266
2,166
2,066
1,966
1,866
1,766
1,666
1,566
Groundwater Elevation (ft.)
-
100
200
300
400
500
600
700
Depth to Water (ft.)
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2266 ft.
MT: 463 ft.
MO: 440 ft.
AM: 461 ft.


OPTI Well 613 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,430
2,330
2,230
2,130
2,030
1,930
1,830
1,730
1,630
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2330 ft.
MT: 503 ft.
MO: 475 ft.
AM: 500 ft.



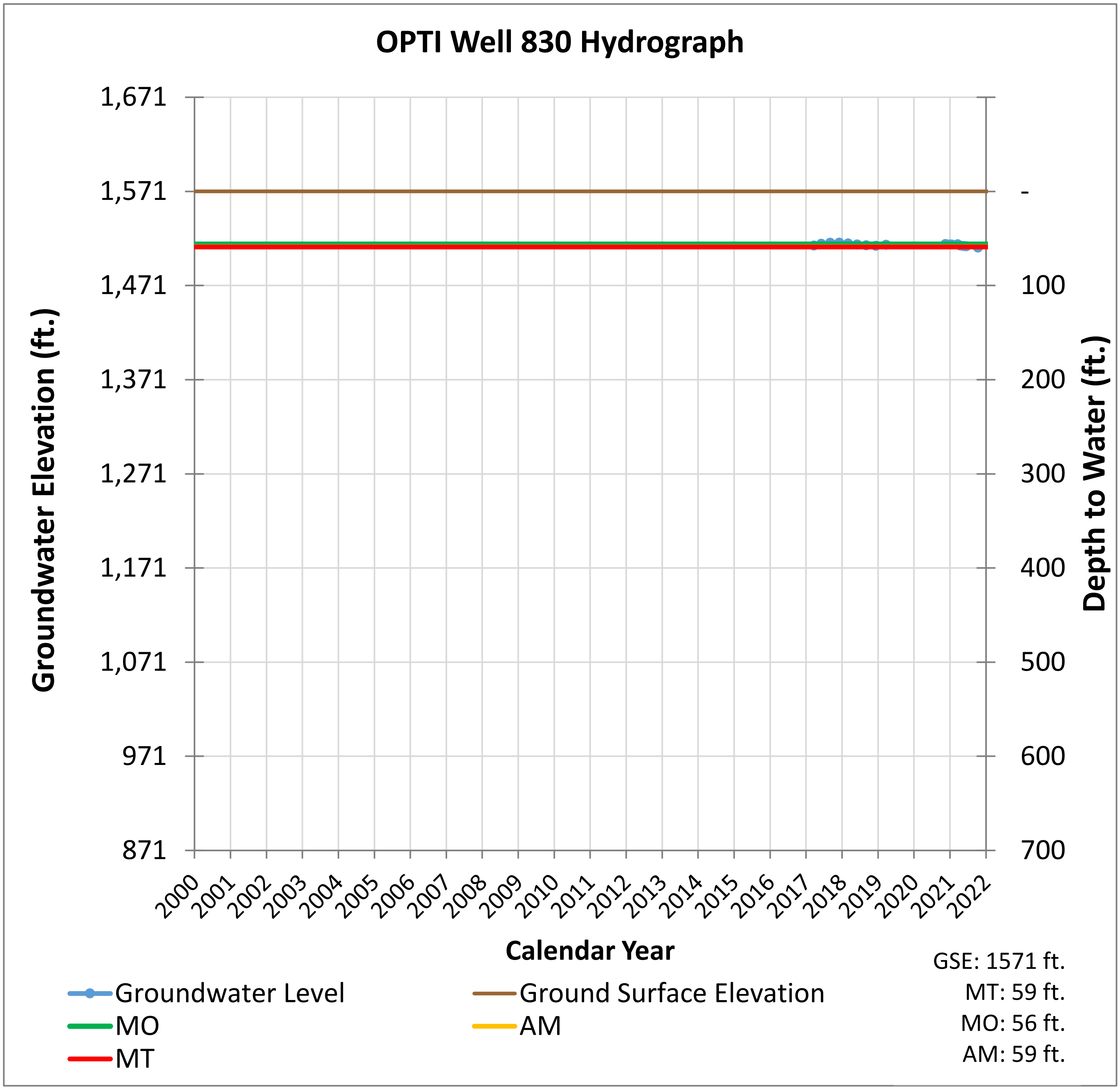
OPTI Well 615 Hydrograph
Groundwater Elevation (ft.)
2,427
2,327
2,227
2,127
2,027
1,927
1,827
1,727
1,627
Depth to Water (ft.)
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2327 ft.
MT: 500 ft.
MO: 468 ft.
AM: 497 ft.

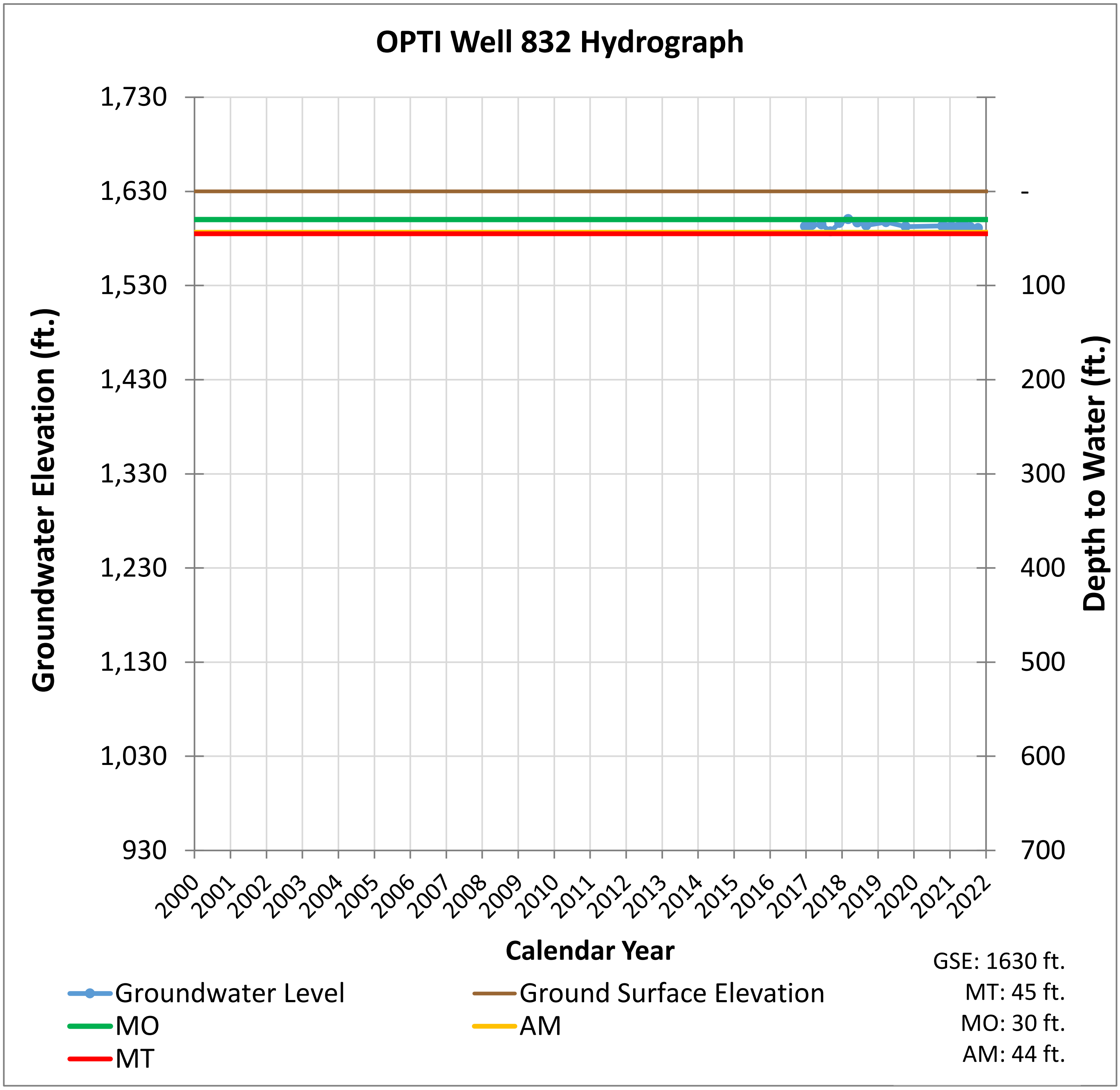

OPTI Well 629 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,479
2,379
2,279
2,179
2,079
1,979
1,879
1,779
1,679
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2379 ft.
MT: 559 ft.
MO: 527 ft.
AM: 556 ft.

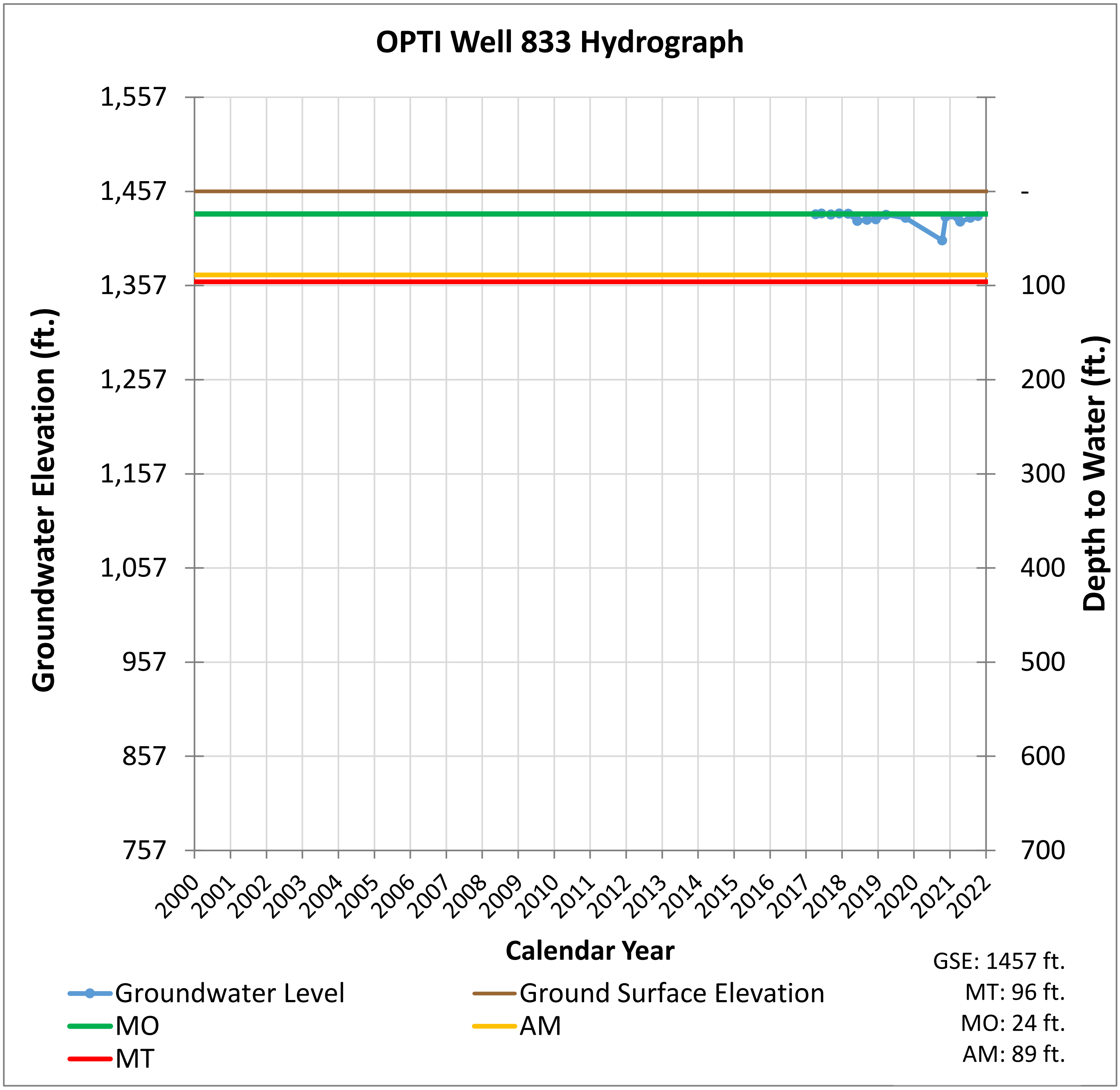


OPTI Well 633 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,464
2,364
2,264
2,164
2,064
1,964
1,864
1,764
1,664
-
100
200
300
400
500
600
700
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 2364 ft.
MT: 547 ft.
MO: 493 ft.
AM: 542 ft.

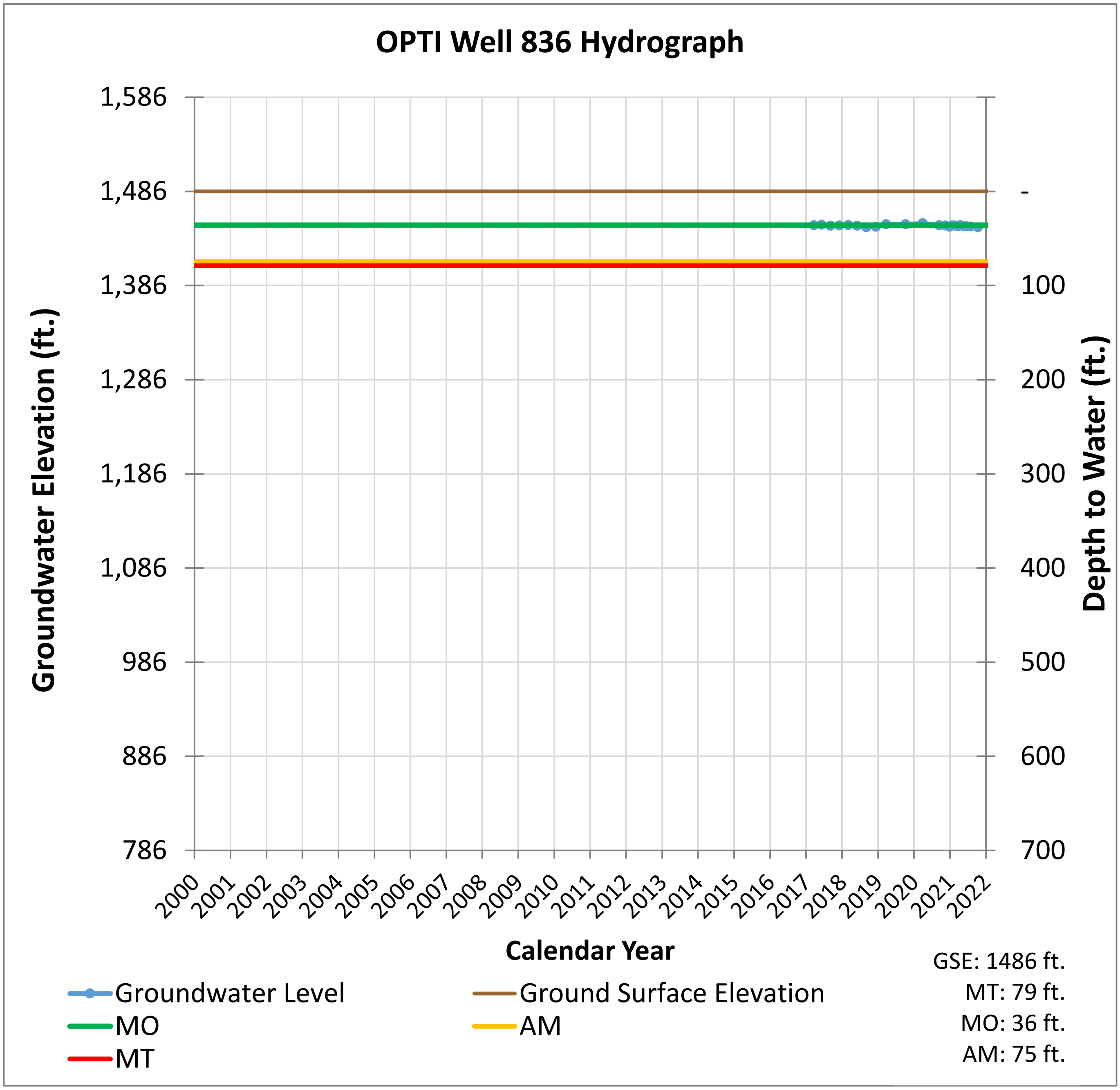
OPTI Well 830 Hydrograph

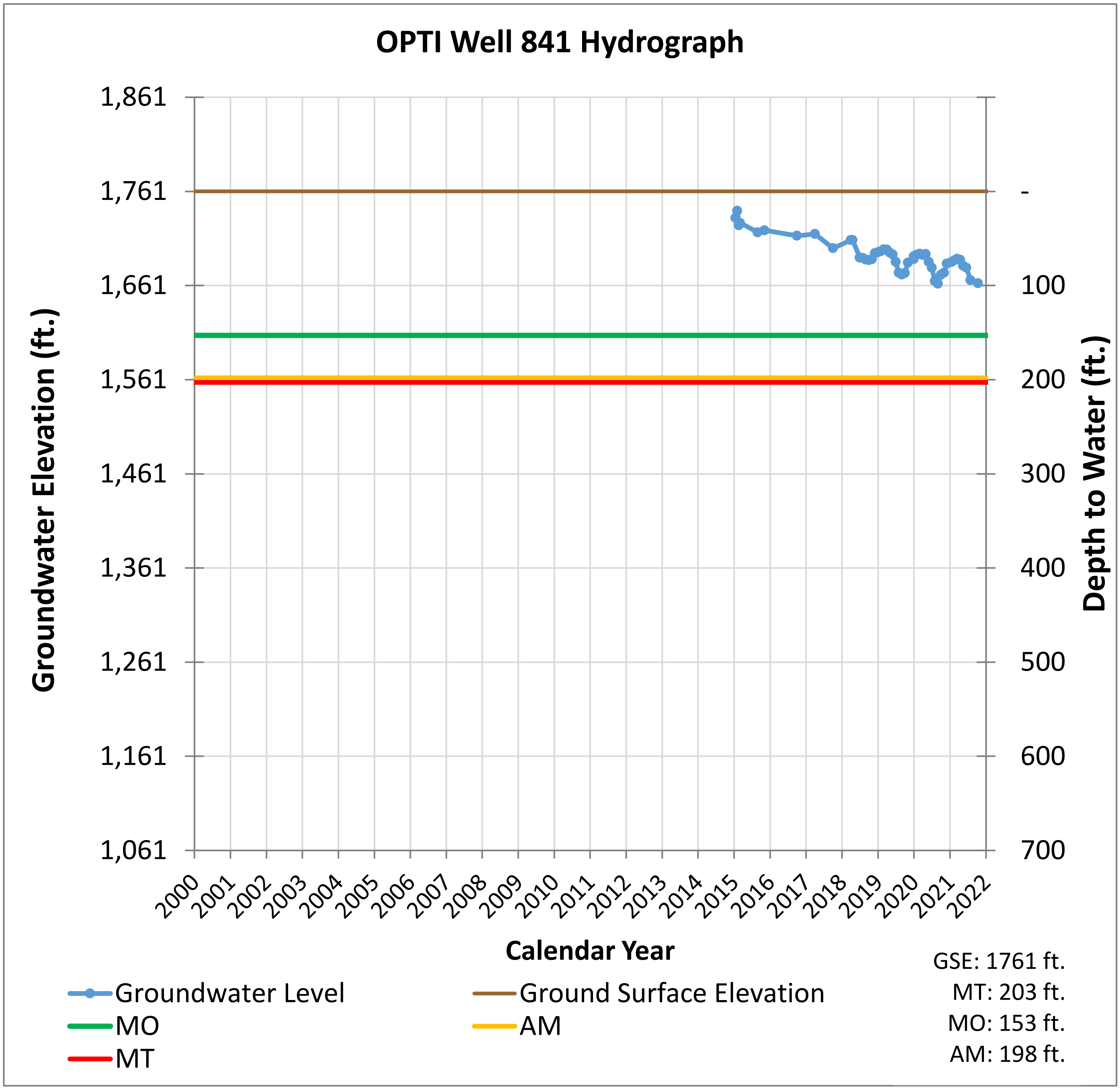



OPTI Well 832 Hydrograph
Groundwater Elevation (ft.)
1,730
1,630
1,530
1,430
1,330
1,230
1,130
1,030
930
Depth to Water (ft.)
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 1630 ft.
MT: 45 ft.
MO: 30 ft.
AM: 44 ft.

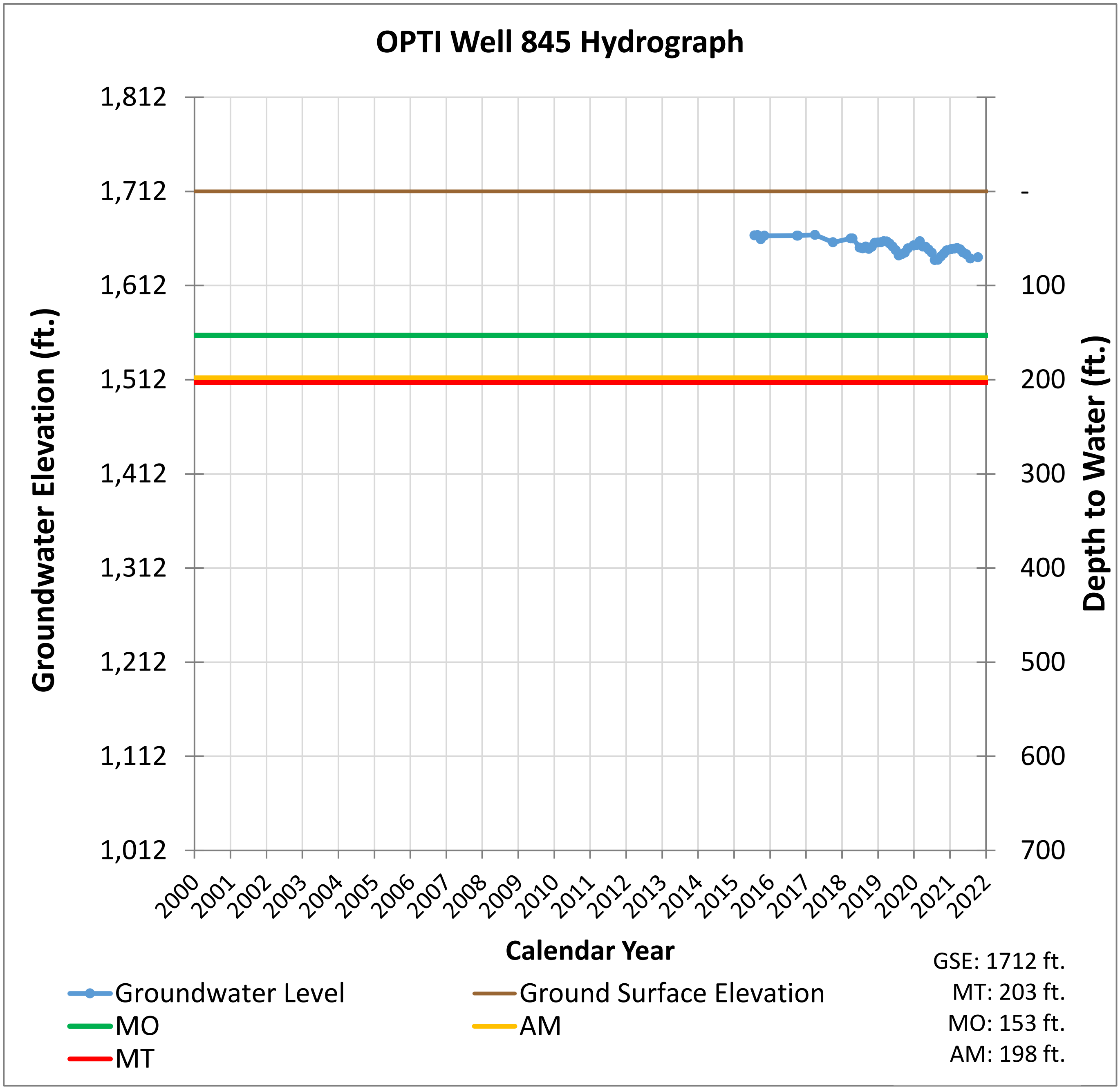


OPTI Well 833 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
1,557
1,457
1,357
1,257
1,157
1,057
957
857
757
-
100
200
300
400
500
600
700
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 1457 ft.
MT: 96 ft.
MO: 24 ft.
AM: 89 ft.


OPTI Well 836 Hydrograph
1,586
1,486
1,386
1,286
1,186
1,086
986
886
786
-
100
200
300
400
500
600
700
Groundwater Elevation (ft.)
Depth to Water (ft.)
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 1486 ft.
MT: 79 ft.
MO: 36 ft.
AM: 75 ft.



OPTI Well 841 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
1,861
1,761
1,661
1,561
1,461
1,361
1,261
1,161
1,061
-
100
200
300
400
500
600
700
2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 1761 ft.
MT: 203 ft.
MO: 153 ft.
AM: 198 ft.


OPTI Well 845 Hydrograph
Groundwater Elevation (ft.)
1,812
1,712
1,612
1,512
1,412
1,312
1,212
1,112
1,012
Depth to Water (ft.)
-
100
200
300
400
500
600
700
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
Calendar Year
Groundwater Level
Ground Surface Elevation
MO
AM
MT
GSE: 1712 ft.
MT: 203 ft.
MO: 153 ft.
AM: 198 ft.

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