CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY

STANDING ADVISORY COMMITTEE MEETING

Committee Members

Brenton Kelly (Chair)	Brad DeBranch	Jean Gaillard	Roberta Jaffe
Joe Haslett (Vice Chair)	David Lewis	John Caufield	

AGENDA

February 27, 2025

Agenda for a meeting of the Cuyama Basin Groundwater Sustainability Agency Standing Advisory Committee meeting to be held on Thursday, February 27, 2025, at 5:00 PM at the **Cuyama Valley Family Resource Center 4689 CA-166, New Cuyama, CA 93254**. Participate via computer at: https://msteams.link/SMRO or by going to Microsoft Teams, downloading the free application, then entering Meeting ID: 271 931 749 29 Passcode: ep9zi3jm, or telephonically at (469) 480-3918, Phone Conference ID: 443 911 300#.

The order in which agenda items are discussed may be changed to accommodate scheduling or other needs of the Committee, the public or meeting participants. Members of the public are encouraged to arrive at the commencement of the meeting to ensure that they are present for Committee discussion of all items in which they are interested.

Teleconference Locations:

4689 CA-166 New Cuyama, CA 93254	11601 Bolthouse Dr, Suite 200 Bakersfield, CA 93311	144 De La Costa Ave Santa Cruz, CA 95060

In compliance with the Americans with Disabilities Act, if you need disability-related modifications or accommodations, including auxiliary aids or services, to participate in this meeting, please contact Taylor Blakslee at (661) 477-3385 by 4:00 p.m. on the Wednesday prior to this meeting. The Cuyama Basin Groundwater Sustainability Agency reserves the right to limit each speaker to three (3) minutes per subject or topic.

1. Call to Order (Kelly) (1 min)
2. Roll Call (Kelly) (1 min)
3. Pledge of Allegiance (Kelly) (2 min)
4. Meeting Protocols (Blakslee) (2 min)
5. Public Comment for Items Not on the Agenda | *At this time, the public may address the Committee on any item not appearing on the agenda that is within the subject matter jurisdiction of the Committee.*

<u>ACTION ITEMS</u>

6. Presentation on Cloud Seeding Study (Desert Research Institute) (15 min)
7. Approval of January 9, 2025 Minutes (Kelly) (3 min)
8. Groundwater Sustainability Plan Implementation
   a) Discuss and Take Appropriate Action on Water Year 2023-2024 Annual Report (Van Lienden) (10 min)
   b) Discuss and Take Appropriate Action on GSA Project Prioritization/Schedule (Blakslee) (60 min)

<u>REPORT ITEMS</u>

9. Update on Farm Unit Modification Application Process (Blakslee) (5 min) – *Verbal*
10. Technical Updates
    a) Update on Groundwater Sustainability Plan Activities (Van Lienden) (5 min)
    b) Update on Grant-Funded Projects (Van Lienden) (5 min)
    c) Update on January 2025 Groundwater Conditions Report (Van Lienden) (5 min)
11. Administrative Updates
    a) Report of the Executive Director (Blakslee) (5 min) – *Verbal*
    b) Report of the General Counsel (Dominguez) (1 min) – *Verbal*
    c) Board of Directors Agenda Review (Blakslee) (3 min)
12. Items for Upcoming Sessions (1 min)
13. Committee Forum (1 min)
14. Correspondence (1 min)
15. Adjourn (7:21 p.m.)

2025 Board Ad hocs

1	**CIMIS Station Implementation Policy**	Burnes Bantilan Wooster
2	**Variance**	Albano Anselm Jackson Young
3	**Farm Unit Policy**	Albano Bantilan Yurosek
4	**Fiscal Year Budget**	Burnes Young Zenger

Tech Forum Participants

Participants	**Entity**	**Representing**
Aman Singh Anthony Daus	GSI	Bolthouse / Grimmway
Mack Carlson	BHFS	Coalition of Landowners for Commonsense Groundwater Solution
Derrik Williams	Montgomery & Associates	Coalition of Landowners for Commonsense Groundwater Solution
Bob Abrams Sean Hartman	Aquilogic	BBK
Matt Klinchuch	Cuyama Basin Water District	Cuyama Basin Water District
Jeff Shaw John Fio Macy Frost Marco Maneta	EKI	Cuyama Basin Water District
Neil Currie	Cleath-Harris	Grapevine Capital
Matt Young Matt Scrudato	Santa Barbara County Water Agency	Santa Barbara County
Bianca Cabera Steve Johnson Jeff Helsley	Stetson Engineers	Sunrise Olive

TO: Standing Advisory Committee
Agenda Item No. 6

FROM: Desert Research Institute

DATE: February 27, 2025

SUBJECT: Presentation on Cloud Seeding Study

Recommended Motion
SAC feedback requested.

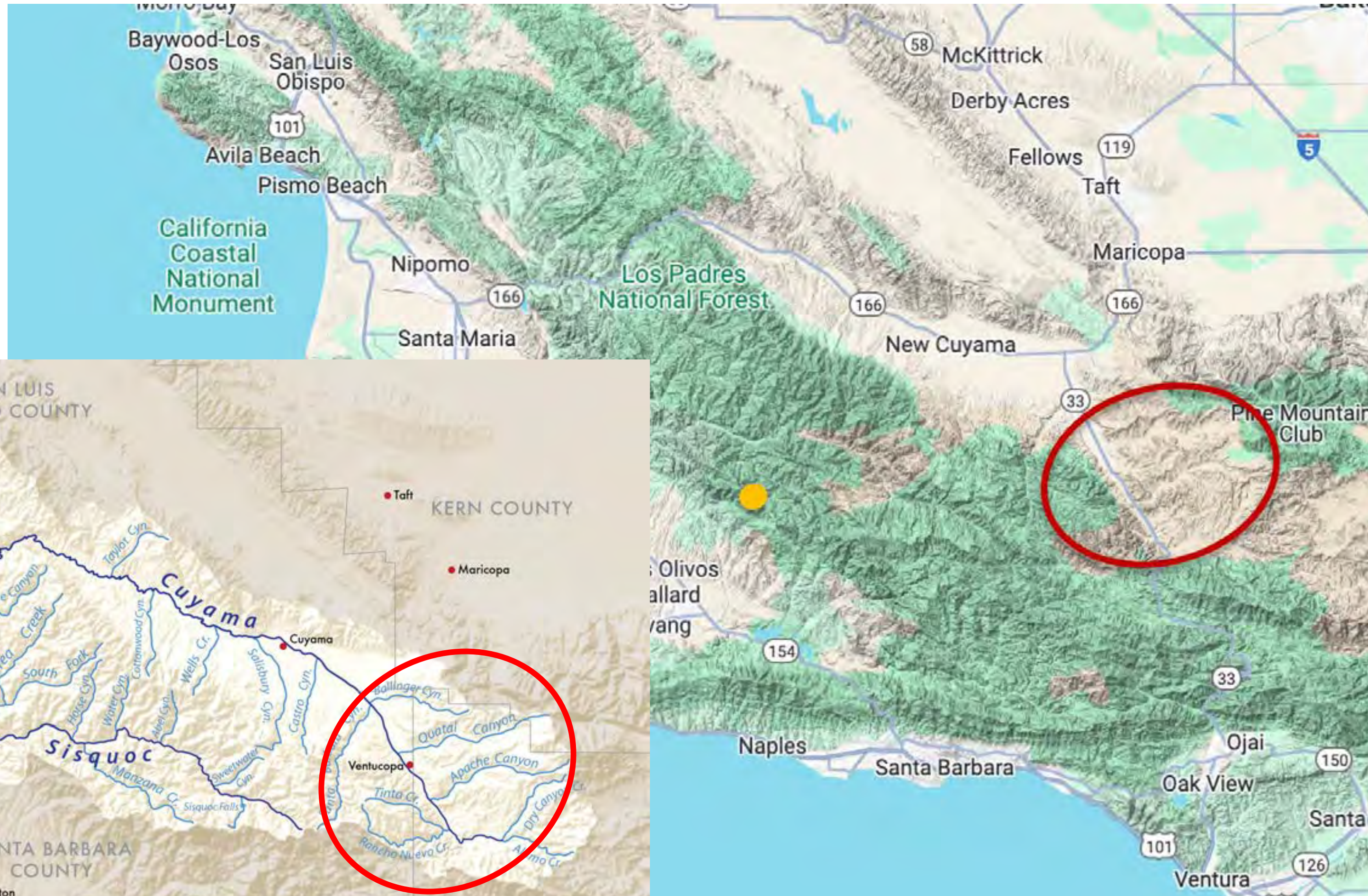
Discussion
In section 7.4.2 of the Cuyama Basin Groundwater Sustainability Agency (CBGSA) Groundwater Sustainability Plan (GSP), precipitation enhancement within the Basin is listed as a potential project. An overview and report on the Cloud Seeding Study from the Desert Research Institute are provided as **Attachment 1** and **Attachment 2**, respectively.

Assessing the Cloud Seeding Effects from the Santa Barbara County Cloud Seeding Program on the Cuyama Valley

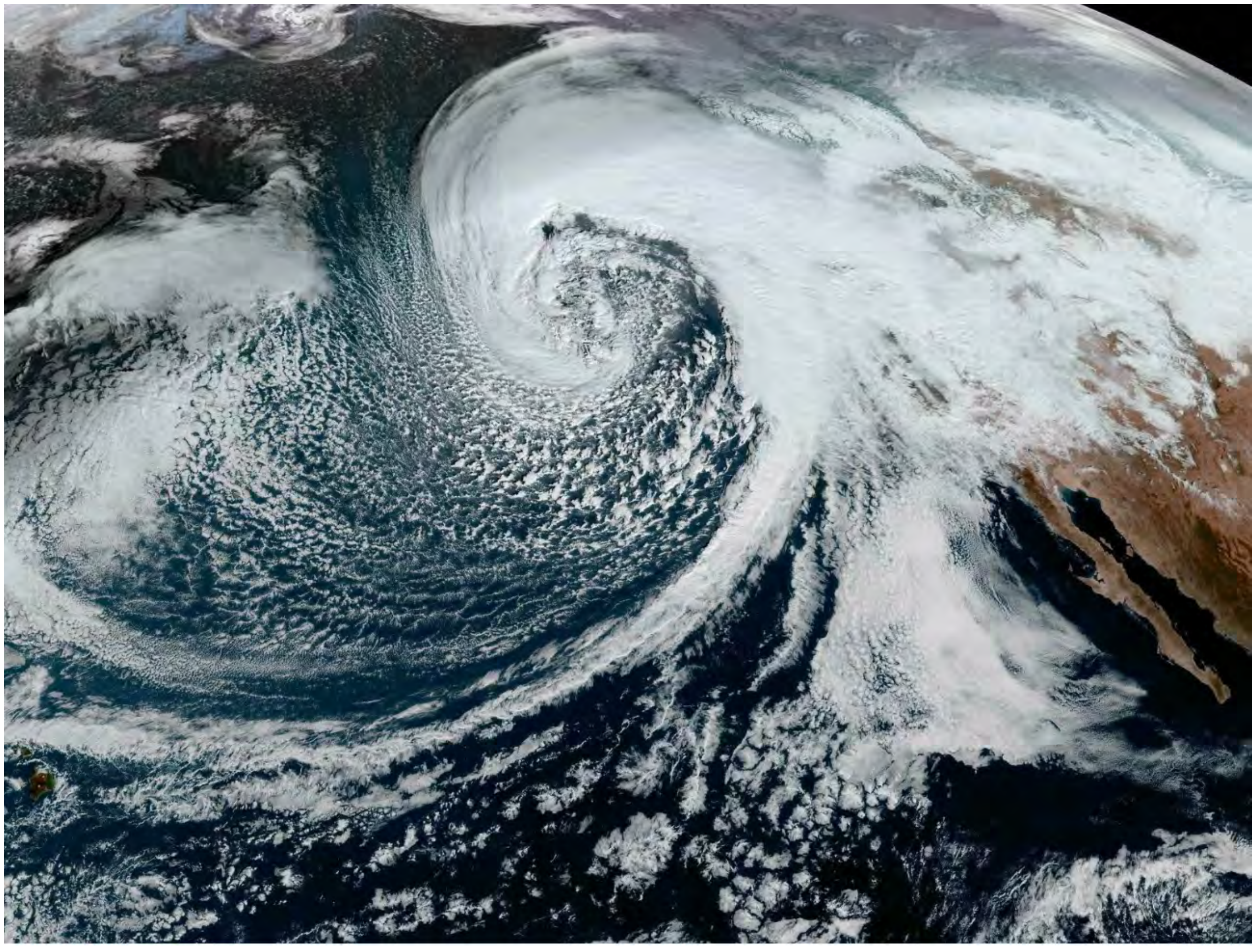
Frank McDonough

Desert Research Institute

The Cuyama River Headwaters



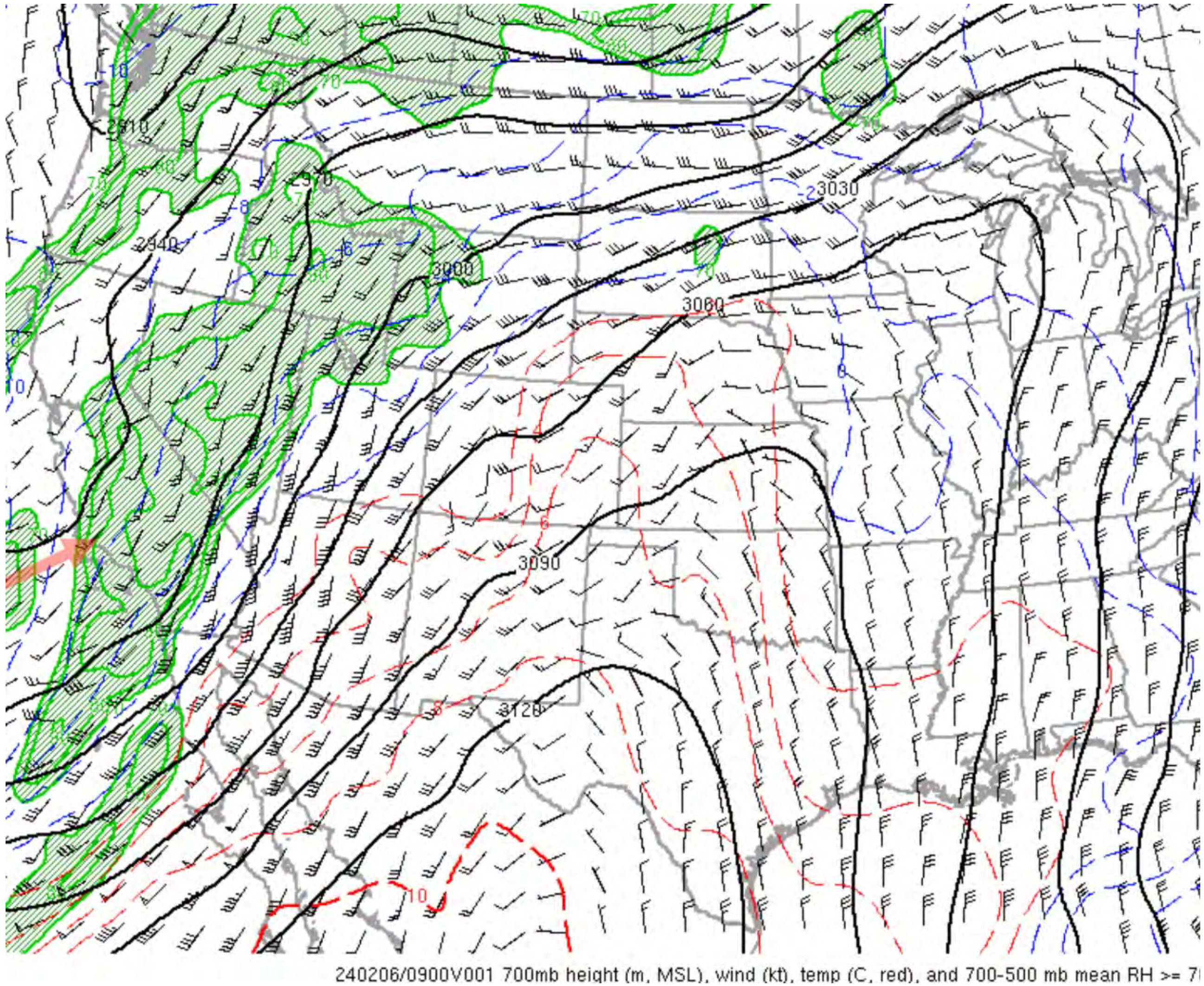
Winter storms moving off the Pacific produce clouds and precipitation impacting the Cuyama Headwaters



The freezing levels during these winter storms typically range from 6,000’ MSL to 12,000’ MSL

The 10,000’ MSL temperatures during February 16, 2024 storm.

Cloud temperatures at 10,000’ MSL over the headwaters are -8C (17F)

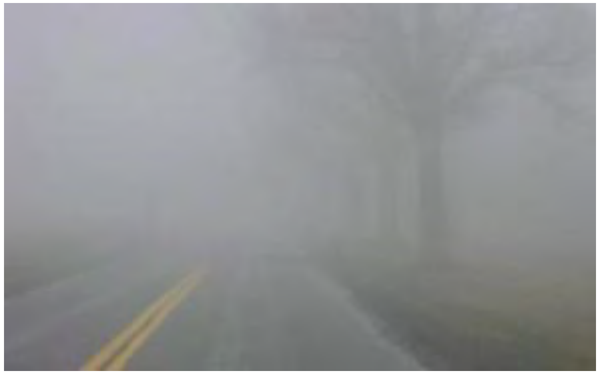


Subfreezing clouds, colder than 0C (32F)

- Subfreezing clouds can contain liquid water drops and/or ice crystals.
- When ice crystals and liquid drops are both present in the same clouds the ice crystals will grow into precipitating snow at the liquid drops expense.
- Special, relatively rare ice forming dust particles are necessary to initiate ice crystal formation (IN). These don't become active until cloud temperatures are colder than about -15^{o}C (5^{o}F).
- Clouds warmer than -15^{o}C (5^{o}F) have low IN concentrations are less efficient at precipitation production, they will also have cloud seeding conditions.

Cloud Seeding of Winter Clouds

- Introduce special IN into subfreezing cloud layers warmer than -15°C (+5°F) that contain subfreezing liquid water drops.
- The dust provides a crystalline structure for embryonic ice crystals form.
- The embryonic Ice crystals will grow and deplete cloud drops, forming snow (rain), which will as snow or melt in rain and fall as increased precipitation.



Liquid water drop clouds below freezing

Seed -> Introduce ice and form snowflakes

Create additional snowfall

DRI Desert Research Institute

How is cloud seeding done

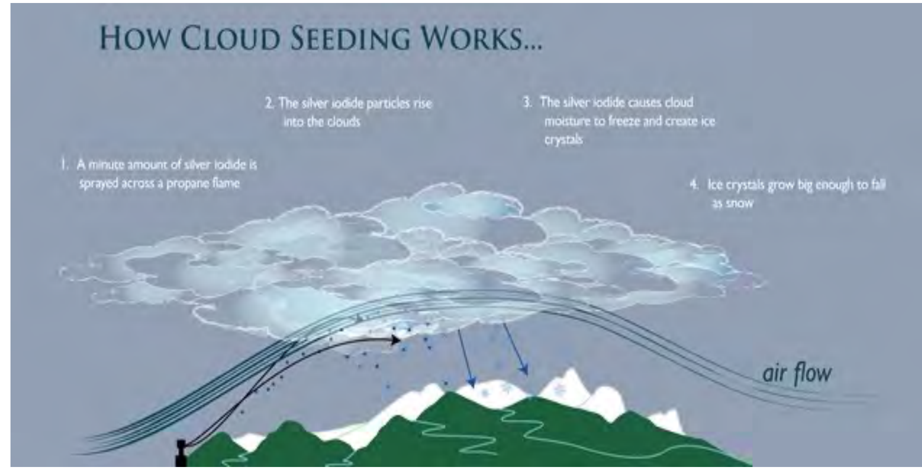
- Silver Iodide (AgI) dust is introduced into subfreezing clouds with liquid water drops.
- The AgI dust causes ice to form at warmer temperatures (below 23^{o}F) than clouds without AgI.
- The co-existing subfreezing liquid water drops will freeze to the newly formed ice crystals and increase snowfall.

Silver Iodide (AgI) – naturally occurring rock

Desert Research Institute

Two primary methods to cloud seed

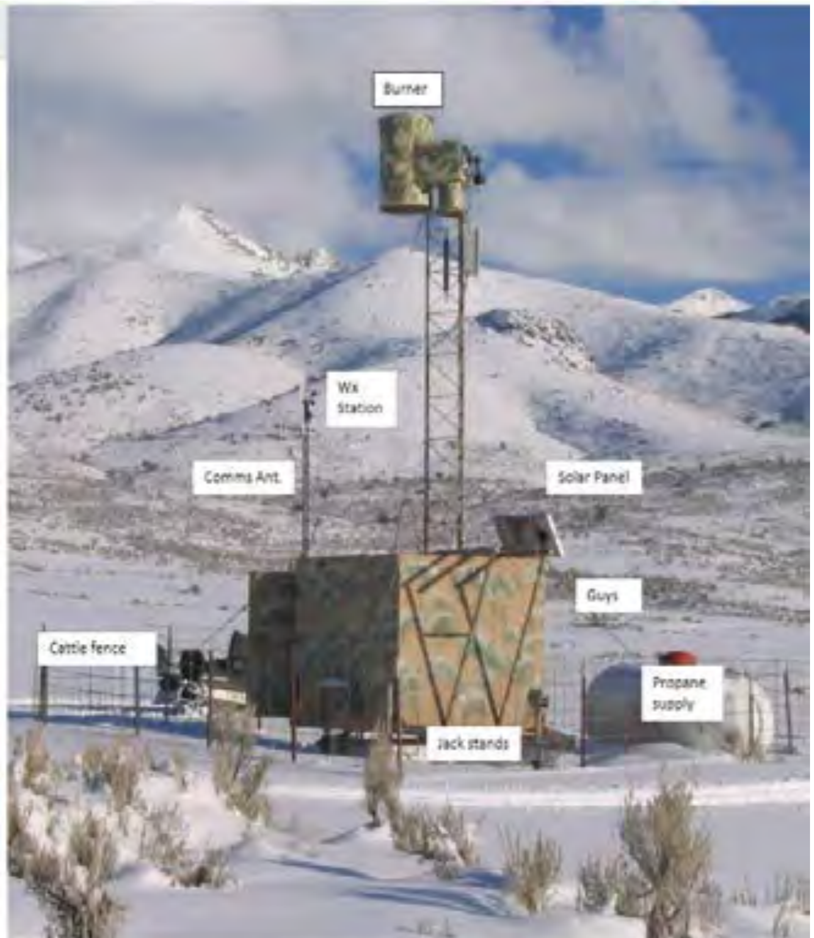
- Ground based
  - All seedable times of storms can be targeted for extra snowfall
  - Need clouds, winds and temperatures to be favorable



- Aircraft
  - Best cloud locations and altitudes can be seeded and seeding area can be adjusted
  - Only 2-4 hour blocks can be seeded without refueling

DRI Desert Research Institute

DRI Cloud Remote Cloud Seeding Generator



Remote controlled high altitude cloud seeder - fully contained

150 to 200 hours of seeding – 3,000 to 6,000 acre feet

Modern electronics and satellite communications

Tasks for the Study

- Task 1
  - Create a High-Resolution Model Cloud Seeding Climatology to Assess the Potential to Cloud Seeding the Cuyama River Headwaters
- Task 2
  - Test precipitation chemistry to determine is the existing Santa Barbara County Cloud Seeding Program is impacting the Headwaters.
- Task 3
  - Potential Precipitation Increases and Hypothetical Project Design

Santa Barbara County Cloud Seeding Program

Twitctell Target Area:
Lower Cuyama
Watershed

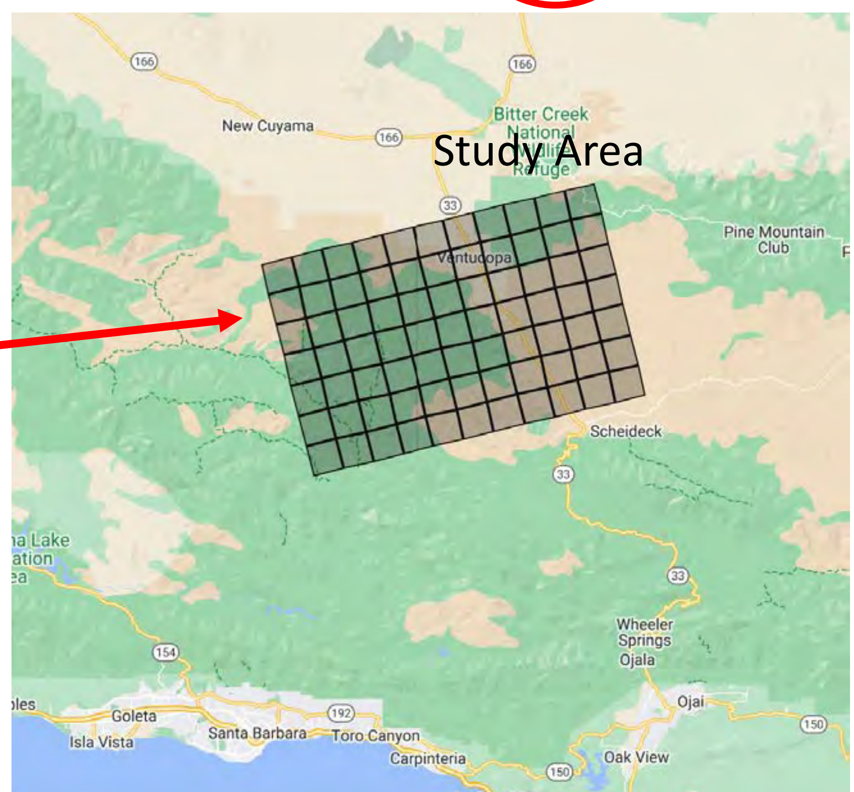
Santa Ynez Target Area:
Santa Ynez Watershed
and Lake Cachuma

Task 1 – Analyze a 5-year numerical weather model cloud and weather simulations to determine the seeding potential across the Cuyama Headwaters

Variety of conditions

Water Year	Precipitation (Figueroa Mtn)	ENSO Phase
2019-2020	21.57"	Neutral
2020-2021	8.41"	La Nina
2021-2022	13.76"	La Nina
2022-2023	42.94"	La Nina
2023-2024	26.79"	El Nino

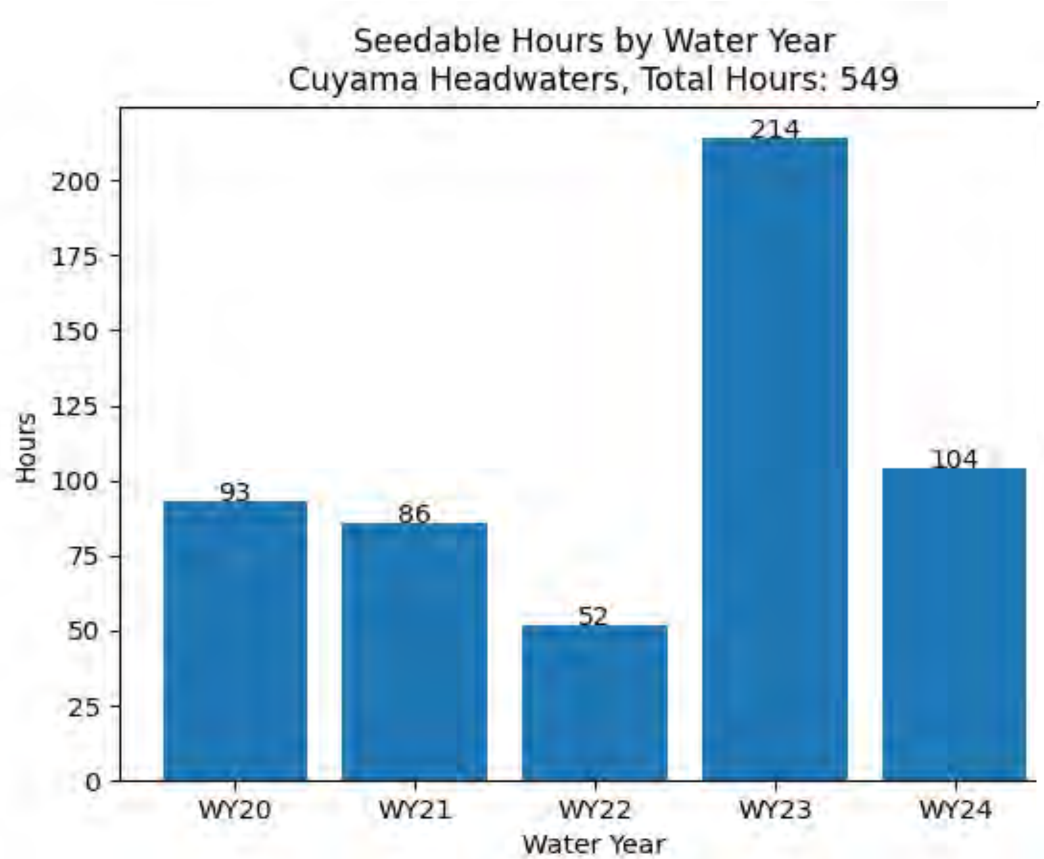
Model grid cells used in analysis



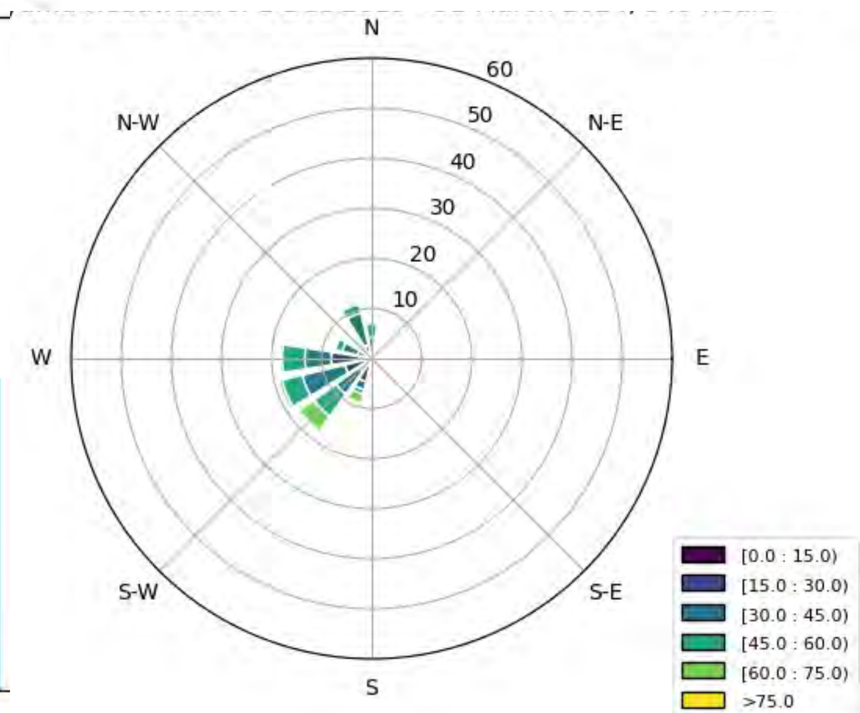
Define Seedable Conditions in the Model

	Ground-based	Aircraft- based
Altitude band:	4,000 – 11,000 ft	8,000 – 14,000 ft
Temperature:	Between -18 and -5 °C	
Cloud Liquid Water (CWMR)	> 0.135 g kg^{-1}	
Minimum number of Model grid cells satisfying Temperature and CWMR conditions, per hour	5	
Median Altitude of reported Wind Values	10,000 ft	14,000 ft

Results: Ground-based Seedable Conditions

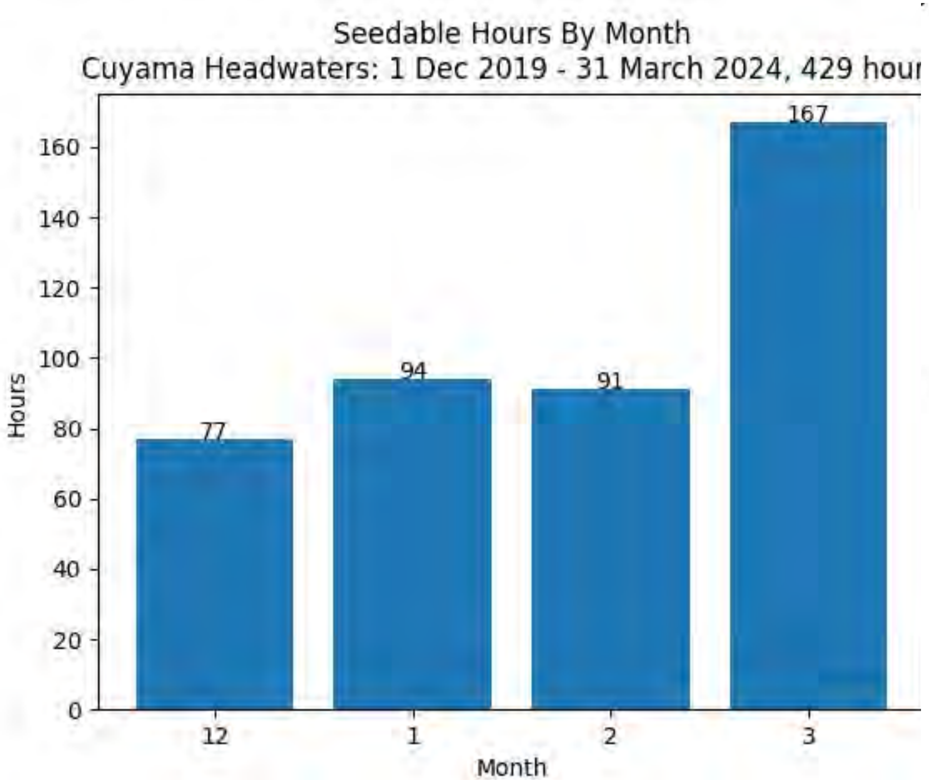


549 hours seeding conditions over the 5-year study

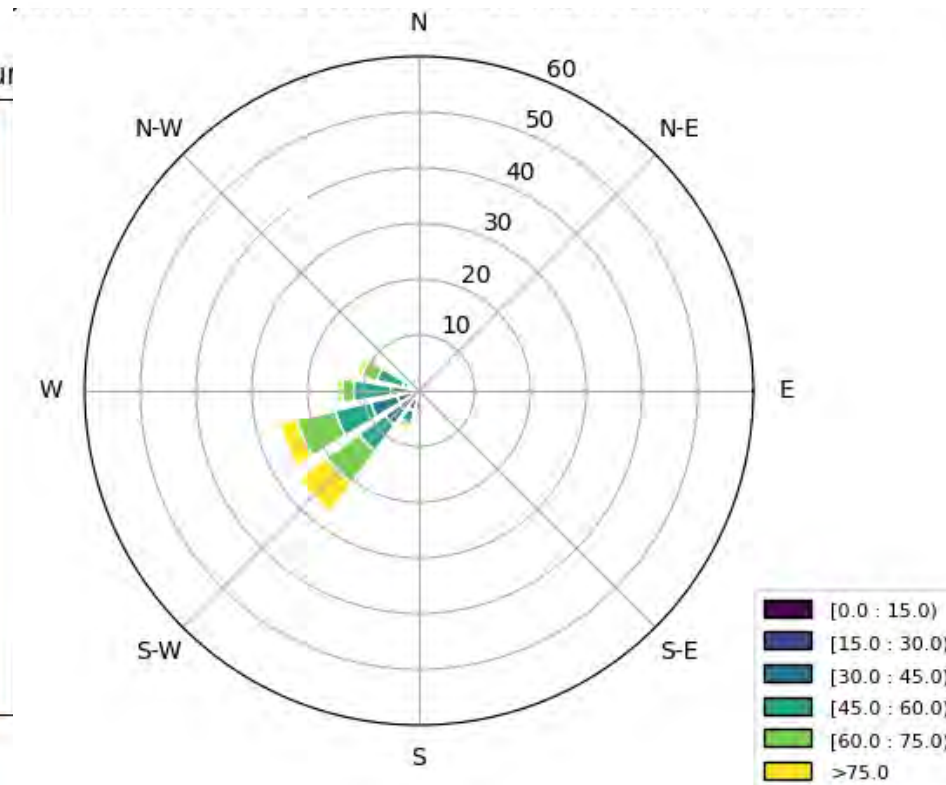


10,000' MSL wind direction and speed for the seeding hours over the 5-year study. Southwest through west dominates at 30 to 75 MPH.

Results: Aircraft-based Seedable Conditions



429 hours seeding conditions over the 5-year study. March had the most seeding conditions.

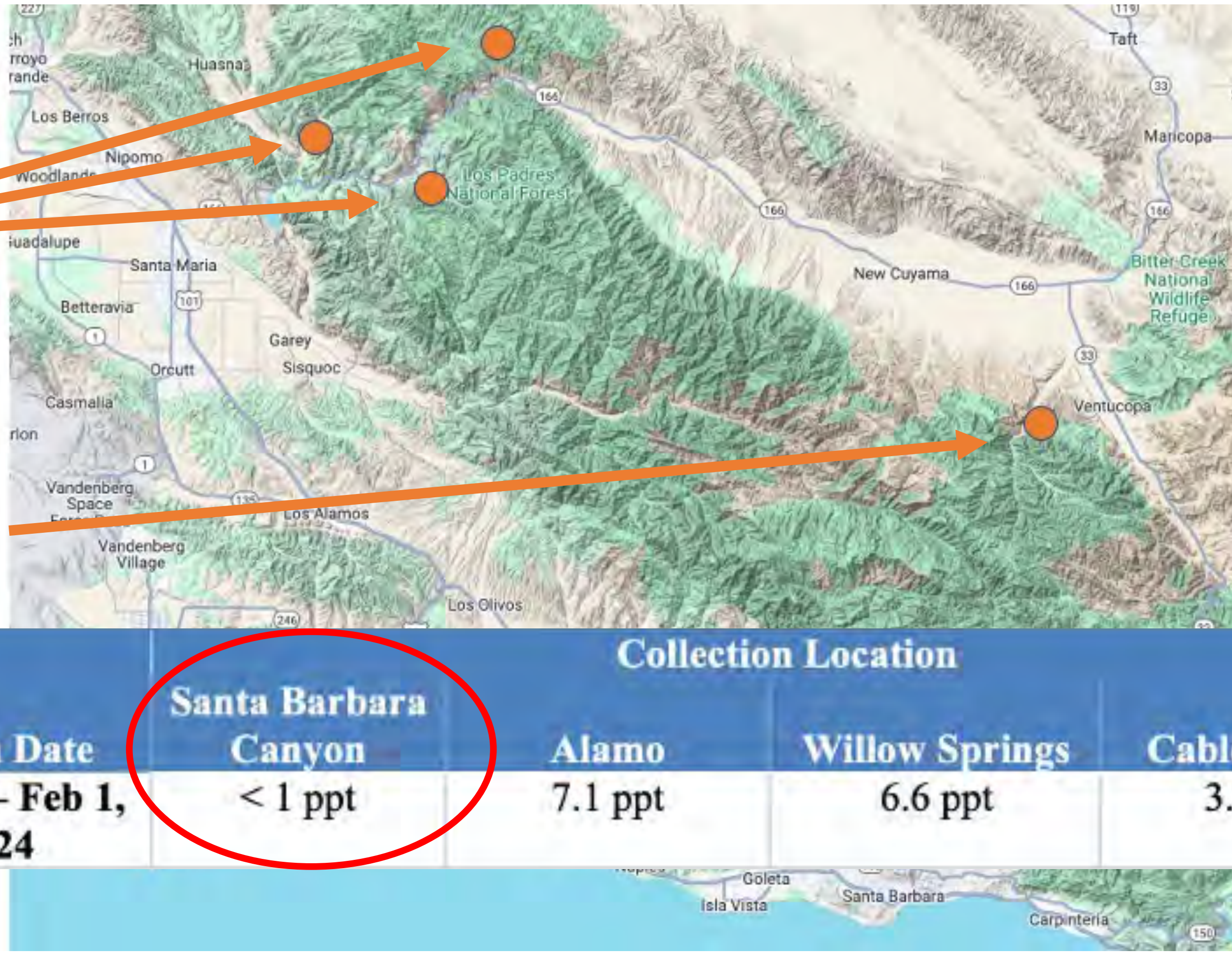


12,000’ MSL wind direction and speed for the seeding hours over the 5-year study. Southwest through west dominates at 30 to 75 MPH.

Task 2) Is the Santa Barbara Seeding Project reaching the Cuyama Headwater (rain chemistry)? No!

Collection Locations

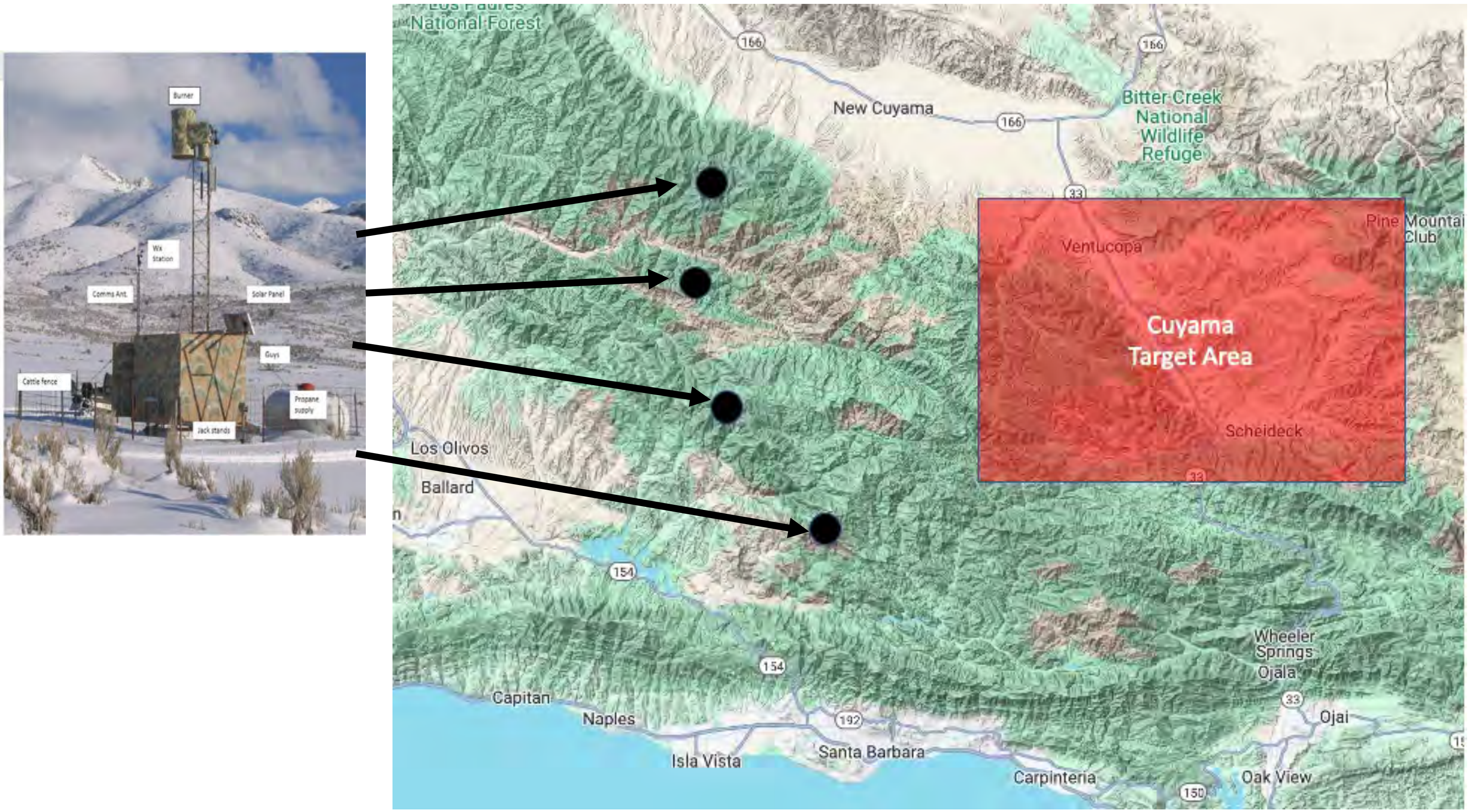
Santa Barbara Canyon



Seeding material absent in Cuyama Headwaters

Storm Date	Collection Location			
	Santa Barbara Canyon	Alamo	Willow Springs	Cable Corral
Jan 30 – Feb 1, 2024	< 1 ppt	7.1 ppt	6.6 ppt	3.7 ppt

Hypothetical Ground Program



Ground Program:
If half of seedable hours were seeded

$$(seeding\ hours) * (4\ generators) * (20\,\frac{af}{hour}) = \text{af of additional water resources}$$

Water Year	Seeding Hours (hrs)	Number of Generators	Precipitation Increases (acre-feet)
2020	46	4	3,680
2021	43	4	3,440
2022	26	4	2,080
2023	107	4	8,560
2024	52	4	4,160
Total	274	4	21,920

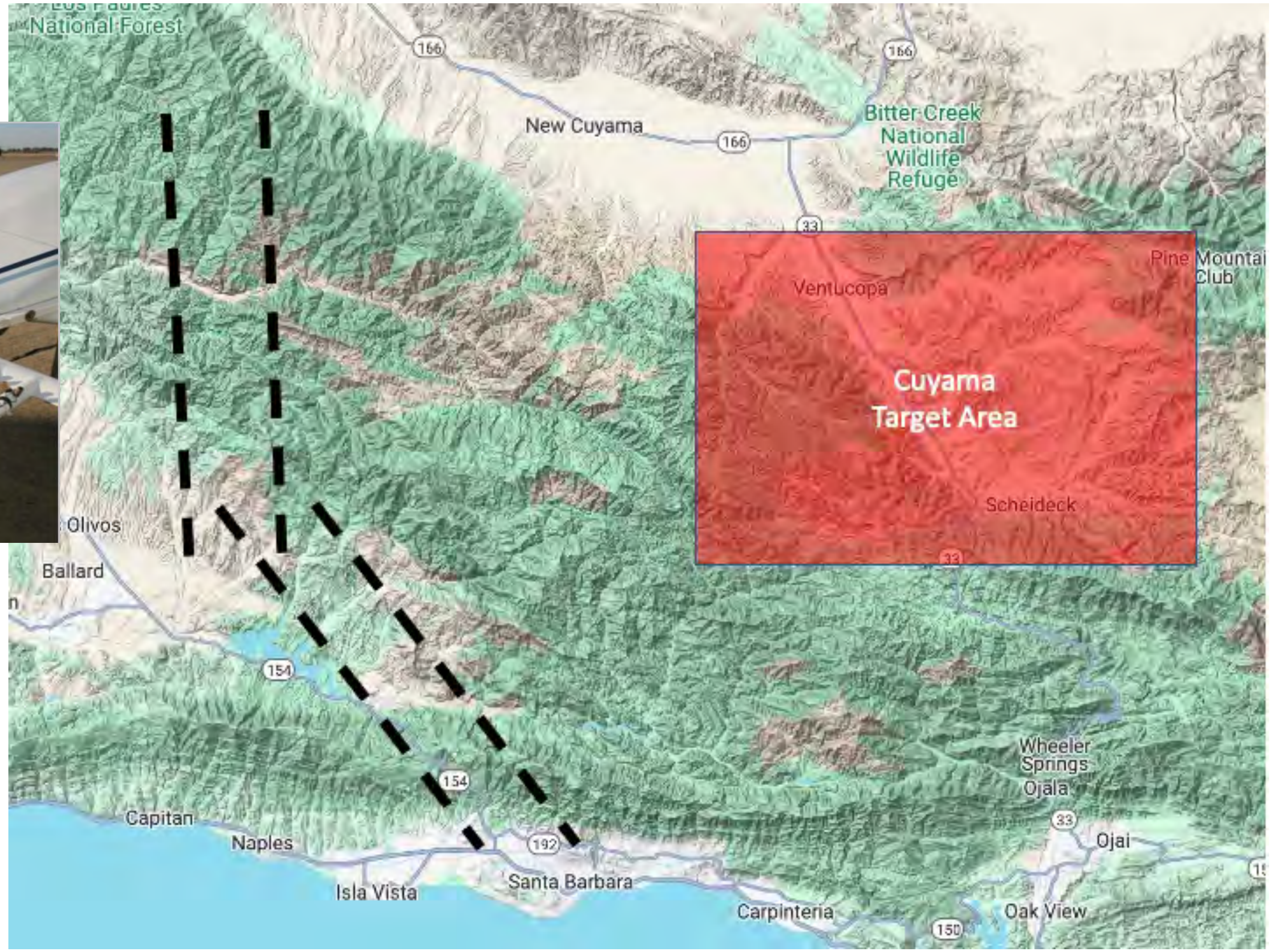
Costs for ground program

- Up front cost – to get started
  - Fabricate new generators if necessary (~$60K per generator)
  - Find locations for generators
  - Required EA/CEQA?
  - Install equipment

- Annual Costs after 1st year
  - $100K/per year

- Cost Benefits
  - 5 year average increase (21,920/5) = 4384 acre-feet
  - $100K/4384 acre-feet = $22.81 per acre-feet

Aircraft Program



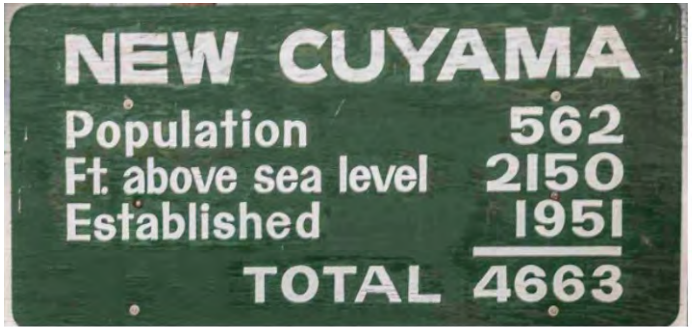
Aircraft Program
if 25% of seedable hours were seeded

$$(seeding\ flight\ hours) * \left(200\,\frac{af}{hour}\right) = af\ of\ additional\ water\ resources$$

Water Year	Flight seeding hours (hours)	Precipitation Increases (acre-feet)
2020	20	4,000
2021	12	2,400
2022	11	2,200
2023	38	7,600
2024	28	5,600
Total	109	21,800

Costs for an aircraft program

- Up front cost – ? (low if no EA required)
  - Contracting with vendor
  - Required EA/CEQA? (not sure this is necessary as Santa Barbara County is already doing cloud seeding in the Cuyama Watershed.
  - Need to do public notice in media and have public meeting (part of vendor duties)
- Hourly costs after 1st year
  - $10K/per hour total
  - Up to 500 acre-feet per hour possible, $20 per acre-foot
  - Example) 20 flight hours would be a $200,000 project and produce 4,000 acre-ft but potentially as much as 10,000 acre-ft (weather dependent).



Thank You/Questions

Assessing the Cloud Seeding Effects from the Santa Barbara County Cloud Seeding Program on the Cuyama Valley

Frank McDonough
Desert Research Institute (DRI)

January 2025

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1 Introduction

In the western US, precipitation from winter storms is critical for many facets of life across the region, including, but not limited to, the economy, ecology and forestry, and water supplies. In addition to ice crystals and snowflakes, the subfreezing portions of winter storm clouds crossing eastern Santa Barbara County frequently have subfreezing liquid water drops (SLW) (Bernstein et. al 2007). These SLW drops will readily freeze onto any surface they come into contact with. Figure 1 shows a huge mountain top rime ice accretion following a Pacific storm. The rime accretion occurred due to the contact and freezing of SLW drops onto equipment. If SLW drops contact ice crystals in clouds then they will freeze on the crystals, causing them to grow large enough to fall out as precipitation. However, the absence of a sufficient number of ice crystals within clouds results in much of the SLW in winter storms remaining within the clouds as small droplets. This results in the moisture crossing the mountains as unrealized precipitation.

Figure 1: Rime ice showing the presence of supercooled liquid water in Pacific storms.

Cloud seeding is a method to add minute ice forming dust particles into SLW clouds. These dust particles interact with the small SLW droplets in the clouds and cause some of them to freeze. The newly formed ice crystals will quickly grow to snowflake sizes utilizing the cloud SLW, and fall to the surface over the cloud seeding target area.

Cloud seeding is typically done from either ground-based generators or flares mounted on aircraft. The generators and flares release minute solid particles of silver iodide dust which quickly enter the clouds and provide ideal surfaces for new ice crystals to form. Once these ice crystals form, they typically grow to precipitation sized particles within 20-30 minutes. The closer the release point of the generators or flares to the seedable clouds, the more likely cloud seeding will be successful. In addition, it’s necessary to locate ground-based generators or fly aircraft tracks about 15 miles upwind from the target area (dependent on what typical storm wind speeds occur). This is optimal to have the seeded precipitation fall within the target area.

Recent well-funded research studies have shown seasonal snowfall/precipitation enhancements of 14% (Manton and Warren, 2011), and recent case studies of storms over Idaho have shown snow water equivalent (SWE) precipitation increases of 0.4mm (0.016”) to 1.3mm (0.05”) per hour across a 930 sq. mile target area, with up to 275 acre-feet of SWE added to the snowpack in 24 minutes (Friedrich et. al 2020).

In this report, a set of 3 research tasks are presented. The first task focused on creating and analyzing multiyear full-winter output from high-resolution numerical weather prediction model output and creating cloud seeding climatologies over the Cuyama Headwaters. In task two the study assesses if the current Santa Barbara Cloud Seeding project is delivering cloud seeding material to the Cuyama target area by collecting precipitation samples from within the target area during seeding operations and analyzing the chemistry of the precipitation. This analysis looked for slightly elevated silver levels, which would confirm whether the generators are well placed and delivering seeding materials to the target area. The final task was to develop a hypothetical cloud seeding program and estimate how much additional precipitation could be added to the Headwaters region.

2 Geography & Santa Barbara Cloud Seeding Project Overview

The headwaters of the Cuyama River reside in eastern Santa Barbara County and northwestern Ventura County, southeast of New Cuyama (Figure 2). The headwaters are part of the southern California Traverse Ranges, with the highest peaks in the Cuyama headwaters area extending to over 8,000’ MSL. The Cuyama River flows generally from east to west through New Cuyama and eventually drains into the Pacific along the west coast of Santa Barbara County.

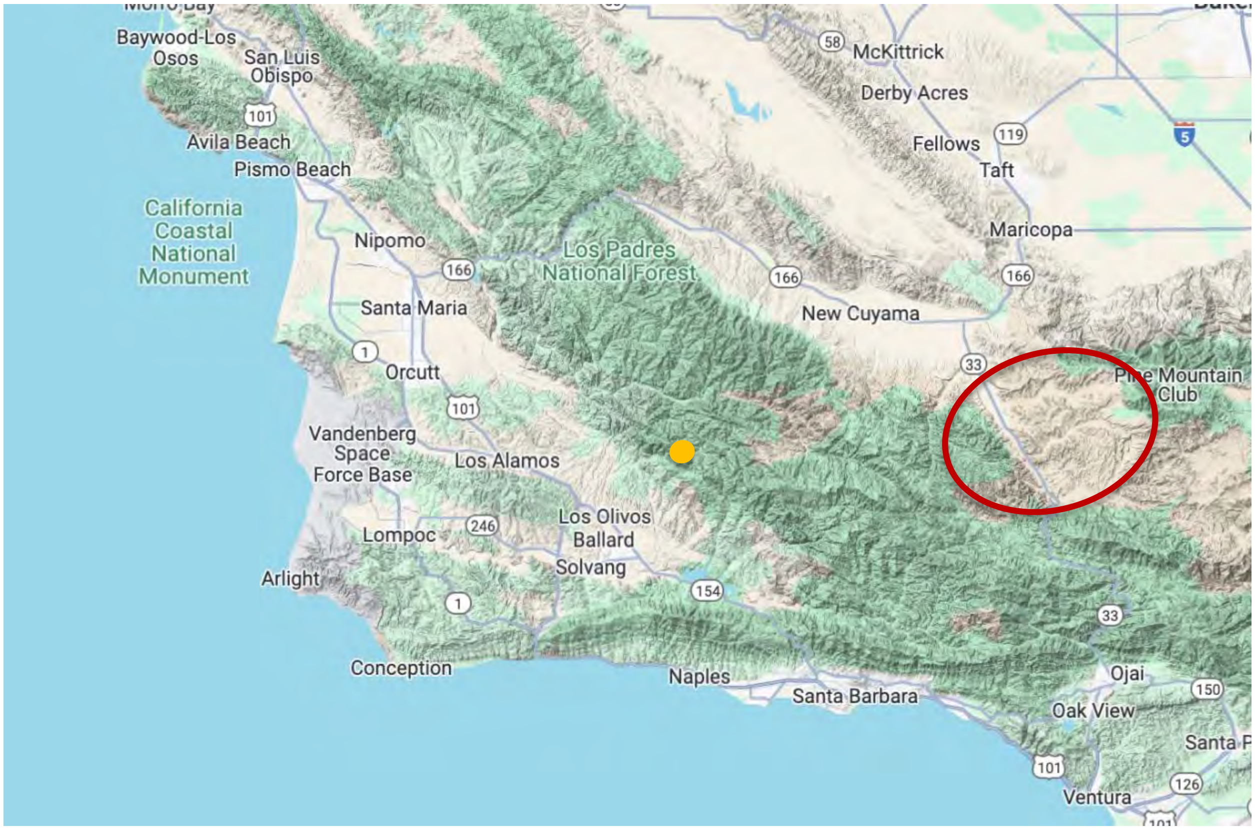

Figure 2: The greater Santa Barbara County terrain map. The red oval shows the location of the Cuyama River Headwaters and the orange dot shows the location of the Figueroa Mountain Rain gauge.

The greater Santa Maria River watershed is shown in Figure 3. The watershed includes the Cuyama River and the Sisquoc River. The existing Santa Barbara Twitchell Reservoir Cloud Seeding project is designed to add water resources to the Twitchell Reservoir. The main rivers and creeks that supply the reservoir include the Cuyama River, Alamo Creek, and the Huasna River.

Figure 3: The Cuyama and Sisquoc River drainages.

The Santa Ynez River watershed in shown in Figure 4. The upper portion of the watershed spans from the eastern edge of Santa Barbara County to Cachuma Lake Reservoir. The water sources feeding Cachuma Lake include the main stem of the Santa Ynez River as well as several creeks that flow south off the higher terrain to the north of the river. These areas make up the Santa Barbara County Santa Ynez (Cachuma) Cloud Seeding project area.

Figure 4: The Santa Ynez River watershed.

The Santa Barbara County Cloud Seeding Program target areas and generator sites are presented in Figure 5. The generator sites are designed to operate under south through westerly wind directions. The Santa Barbara Cloud Seeding Project operates ground-based generators consisting of cloud seeding flares that burn in 4-minute intervals and release short bursts of seeding material. This is in opposition of solution burning ground-based generators, commonly used on other projects, that burn continuously and release seeding material during an entire storm. The project targets the burn of the cloud seeding flares to occur during the short-lived convective bands.

The Twitchell generators are between 100-km (62 miles) and 120-km (75-miles) from the Cuyama headwaters, and the Cachuma generators are between 40-km (25-miles) to 65-km (40-miles) from the Cuyama headwaters. The headwaters of the Cuyama River are not part of the project.

Figure 5: Santa Barbara County Cloud Seeding Project Target Areas (Green Shading) and the 7 Ground Generator Sites (black stars).

3 Analysis

3.1 Task 1: High-Resolution Model Climatology

3.1.1 Task 1 Goals

Understanding the physics of the clouds crossing the Cuyama Headwaters cloud seeding target area is critical for determining the potential for cloud seeding. Clouds must contain SLW at temperatures colder than -5°C to be seedable. Since there are no direct observations of the cloud microstructure (particles within clouds), the main goals for task 1 are to use high resolution numerical weather prediction modeling to identify the time periods, altitudes, winds, and temperatures when cloud seeding conditions are present across the Cuyama Headwaters cloud seeding target area.

3.1.2 Task 1 Methodology

3.1.2.1 Study Time Frame

The study time period consisted of the past 5 years of winter season months (December 1 – March 31) from 1 December 2019 – 31 March 2024. There was a variety of winter seasonal precipitation amounts (as observed at the Figueroa Mountain rain gauge in the mountains of central Santa Barbara County [see Figure 2 for location]). Drought years and very wet years were represented in the study, as well as all three ENSO phases (El Nino, La Nina, and Neutral) (Table 1). In addition, using the past 5 winters for the assessment better represents the current climate regime.

Table 1: Years modeled, precipitation recorded over the Santa Barbara County Mountains at the Figueroa Mountain rain gauge, and the ENSO Phase.

Water Year	Precipitation (Figueroa Mtn)	ENSO Phase
2019-2020	21.57”	Neutral
2020-2021	8.41”	La Nina
2021-2022	13.76”	La Nina
2022-2023	42.94”	La Nina
2023-2024	26.79”	El Nino

3.1.2.2 Numerical Weather Prediction Model Data

Hourly Numerical Weather Prediction (NWP) model data from the analysis runs of the 3-km High Resolution Rapid Refresh (HRRR) model (Dowell et. al., 2022) were used in the climatological analysis. The model uses new observations to initialize the grid each hour. The HRRR includes a state-of-the-art cloud physics scheme with 4 different classifications of cloud particles, including the most advanced depiction of subfreezing cloud liquid water. The cloud scheme also has an advanced (aerosol aware) parameterization as part of its cloud microphysical module and allows convection. Validation of the cloud scheme shows that supercooled liquid water is present in the model at over 75% of the locations where icing (SLW) is reported by aircraft (Thompson et. al, 2017).

A subset of the HRRR grid was identified over the Cuyama Headwaters target area. This three-dimensional high-resolution grid, with 3-km horizontal grid point spacing and 50 vertical levels, formed the basis for the study. Figure 6 shows the horizontal footprint of the target area grid overlaid on a map of the greater Santa Barbara/Ventura County region. The Cuyama Headwaters grid has an 11 x 7 grid footprint. The model fields used in the analysis are listed in Table 2.

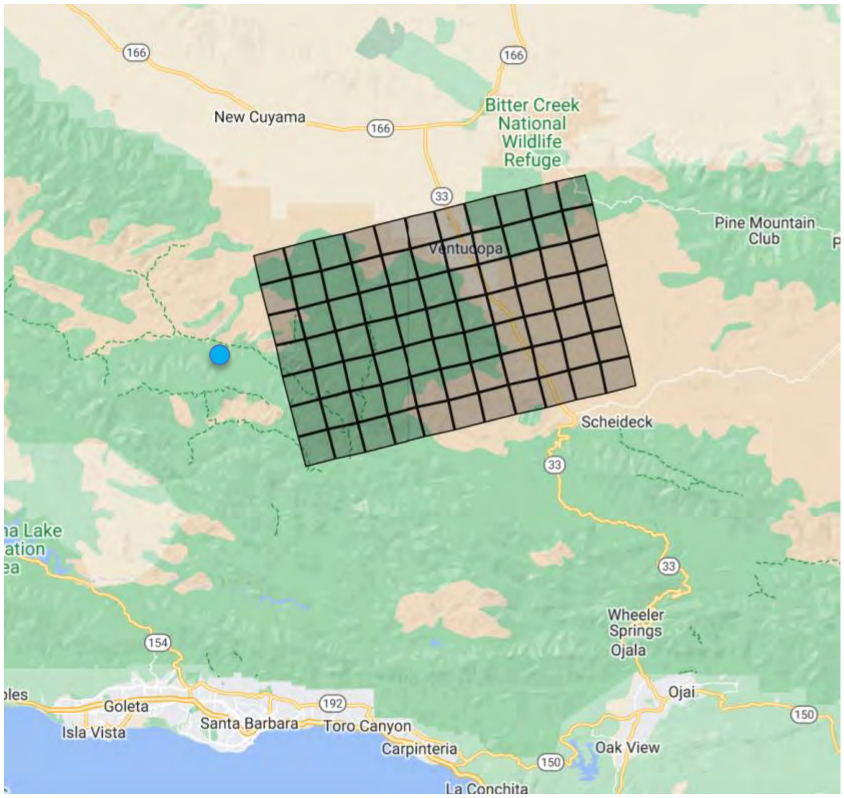

Figure 6: NWP Model Domain for the Cuyama Headwaters Target Area. Blue dot shows the location of the Figueroa Mountain precipitation gauge.

Table 2: Model fields used in the study

GRIB Name	Units
Geopotential Height	Gpm
Cloud Water Mixing Ratio	kg / kg
Temperature	K
U component of wind	m / s
V component of wind	m / s
Pressure	Pa
Specific humidity	kg / kg
Snow Mixing Ratio	kg / kg
Graupel (Snow Pellets)	kg / kg
latitude	Degrees north
longitude	Degrees east

3.1.2.3 Definition of Seedable Conditions

Defining what constitutes favorable seedable conditions for each hourly model update relies on data at each grid cell within the specific target area grid at the appropriate altitudes. Two altitude bands are considered in this study, one relevant for ground-based seeding operations and a second one relevant to aircraft seeding.

The ground-based altitude band looked at all model grid cells between 4,000 and 11,000 feet MSL. This layer is potentially seedable from the ground when the lowest layer of the atmosphere is unstable, allowing uninhibited vertical mixing. The aircraft-based altitude band looked at all model grid cells between 8,000 and 14,000 feet MSL, as these are the altitudes for which an aircraft could seed the area. Next, each grid cell within the target area grid and corresponding altitude band was assessed to determine if the temperature was within the -18°C to -5°C range. The liquid water content of each cell was also assessed. While most studies have used the low threshold of 0.001 g kg^{-1}, essentially looking at whether any liquid water was present at all, this study uses the threshold of 0.135 g kg^{-1} since this is a more realistic minimum amount of cloud water needed to adequately grow precipitation sized snowflakes in the distance between the generators and the target area.

For each hourly model update, a minimum of 5 grid cells within the target area grid, distributed either vertically or horizontally, that satisfied the temperature and cloud water requirements, as outlined above, were needed to signify that seeding conditions were present for that hour. This value was determined by considering grid volume and the growth rate of ice in supercooled liquid water. Figure 7 shows the number of grid cells that satisfy the temperature and liquid water requirements for each model update over the five-year study period for the aircraft-based altitude band over the Cuyama target area. Model hours for which no cells satisfied the conditions, and thus have no seeding potential, are not shown. While requiring at least five grid cells to satisfy the temperature and liquid water requirements to determine seedable conditions does eliminate some seedable hours, as seen in Figure 7, most of the updates show 5-or-more grid cells satisfying the requirements. Note also there is a clear delineation between the number of cases with 4 vs 5 grid cells satisfying the conditions.

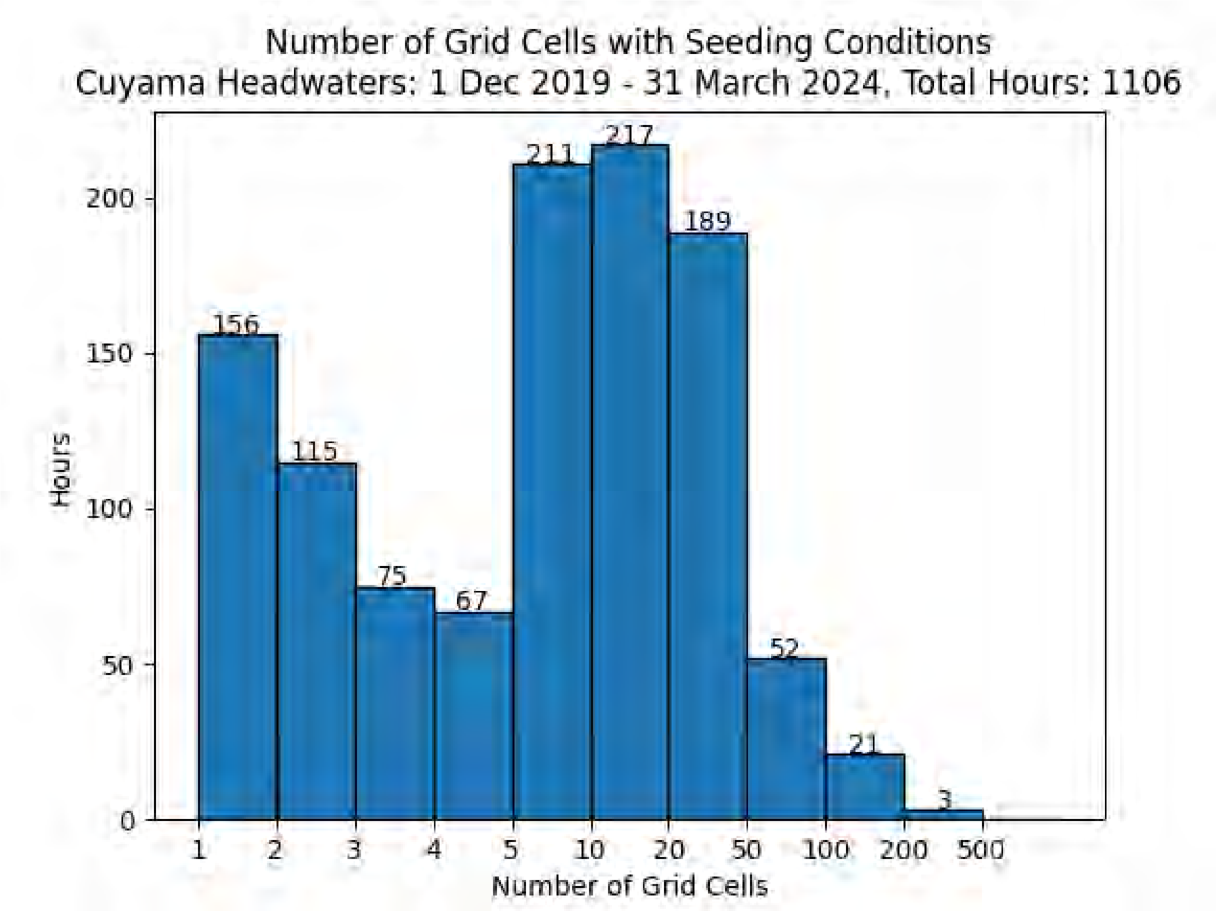

Figure 7: Number of Grid Cells with Seeding Conditions for altitudes relevant to Aircraft-Based Cloud Seeding for the Cuyama target area for WY20-WY24.

The wind speed and temperature during seeding conditions were reviewed as part of the climatology. For ground-based seeding, the median of the wind speed and direction of all the model grid cells closest to 10,000 ft within the target area is reported. For aircraft-based seeding, the median wind speed and direction from 14,000 ft is reported.

Table 3 contains a summary of the definition of seedable conditions for each model update described in this section.

Table 3: Summary of Seedable Conditions Definition

	Ground-based	Aircraft- based
Altitude band:	4,000 – 11,000 ft	8,000 – 14,000 ft
Temperature:	Between -18 and -5 °C	
Cloud Liquid Water (CWMR)	> 0.135 g kg^{-1}	
Minimum number of Model grid cells satisfying Temperature and CWMR conditions, per hour	5	
Median Altitude of reported Wind Values	10,000 ft	14,000 ft

3.1.3 Climatology Results

3.1.3.1 Cuyama Headwaters Area

3.1.3.1.1 Ground based climatology

The analysis of the hourly ground-based climatology for the Cuyama Headwaters shows that there were 755 hours with seedable conditions across the five-year study period, as shown in Figure 8. As expected, the wettest year, winter 2022-2023 (WY23), had the most seedable hours with 278. Of interest was the driest year, WY21, which had 114 seedable hours, which was similar to the seedable hours present during the wetter year of WY20, and had more seedable hours than the higher precipitation winter of WY22. This suggests that significant cloud seeding opportunities can be present even during very dry years.

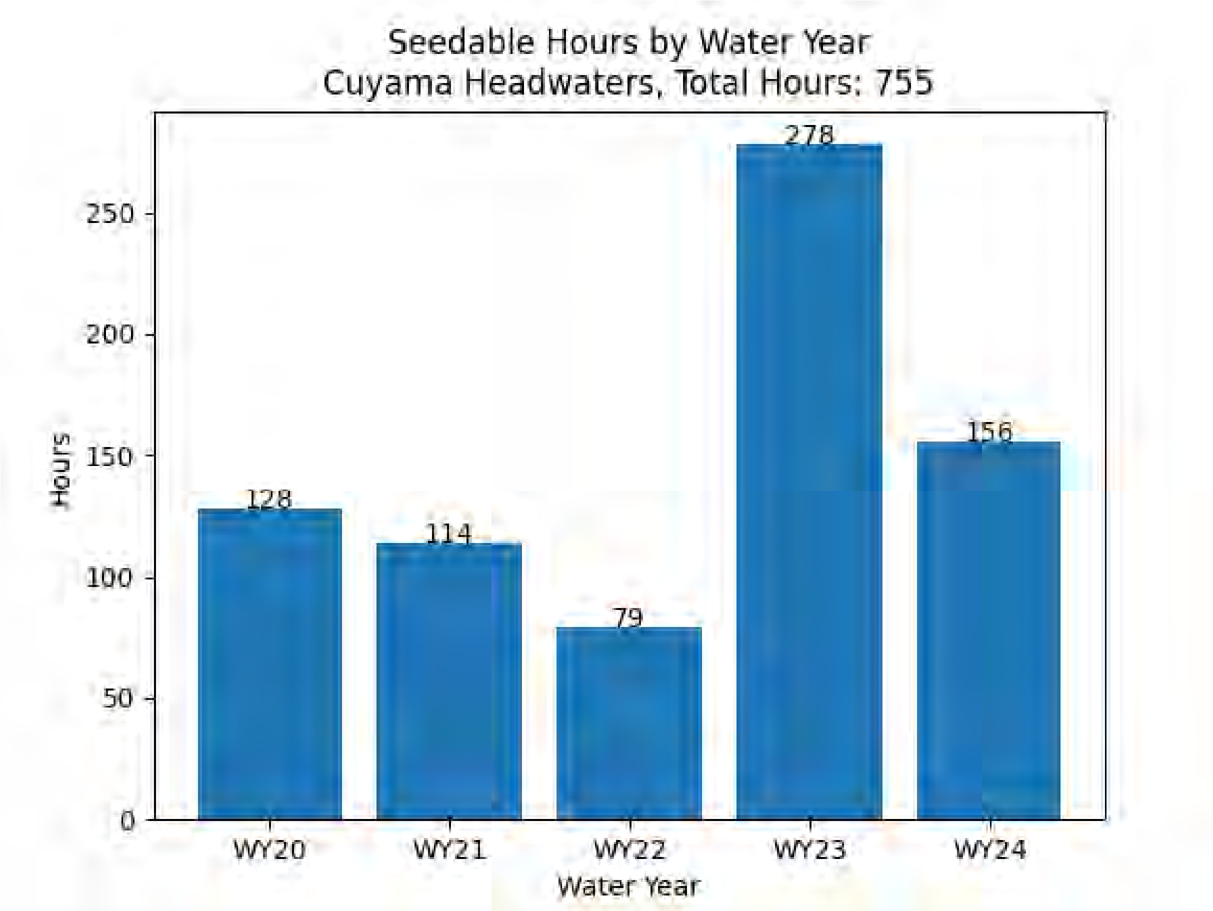

Figure 8: Seedable Hours by Water Year for ground-based seeding over the 5-year Study Period WY20-WY24 for the Cuyama Area.

Next, the duration of the cloud seeding periods were determined. Figure 9 shows the duration of periods with consecutive hours with cloud seeding conditions, denoted as an event. The majority of events are short and fleeting, with 72% of the 259 events shorter than 3 hours, and nearly all of them shorter than 12 hours. However, the events lasting less than 3 hours only make up 27% (206 of 755) of the total seedable hours for the Cuyama Headwaters region. Due to the fleeting amounts of liquid water in the short duration seeding periods and the limited time to create and grow newly formed ice crystals to precipitation sized snowflakes, only events 3 hours long or greater were considered seedable for operational cloud seeding purposes for this study. The operational seedable hours by water year using the 3-or-more hour threshold is shown in Figure 10 and shows a total of 549 hours over the 5-year study period.

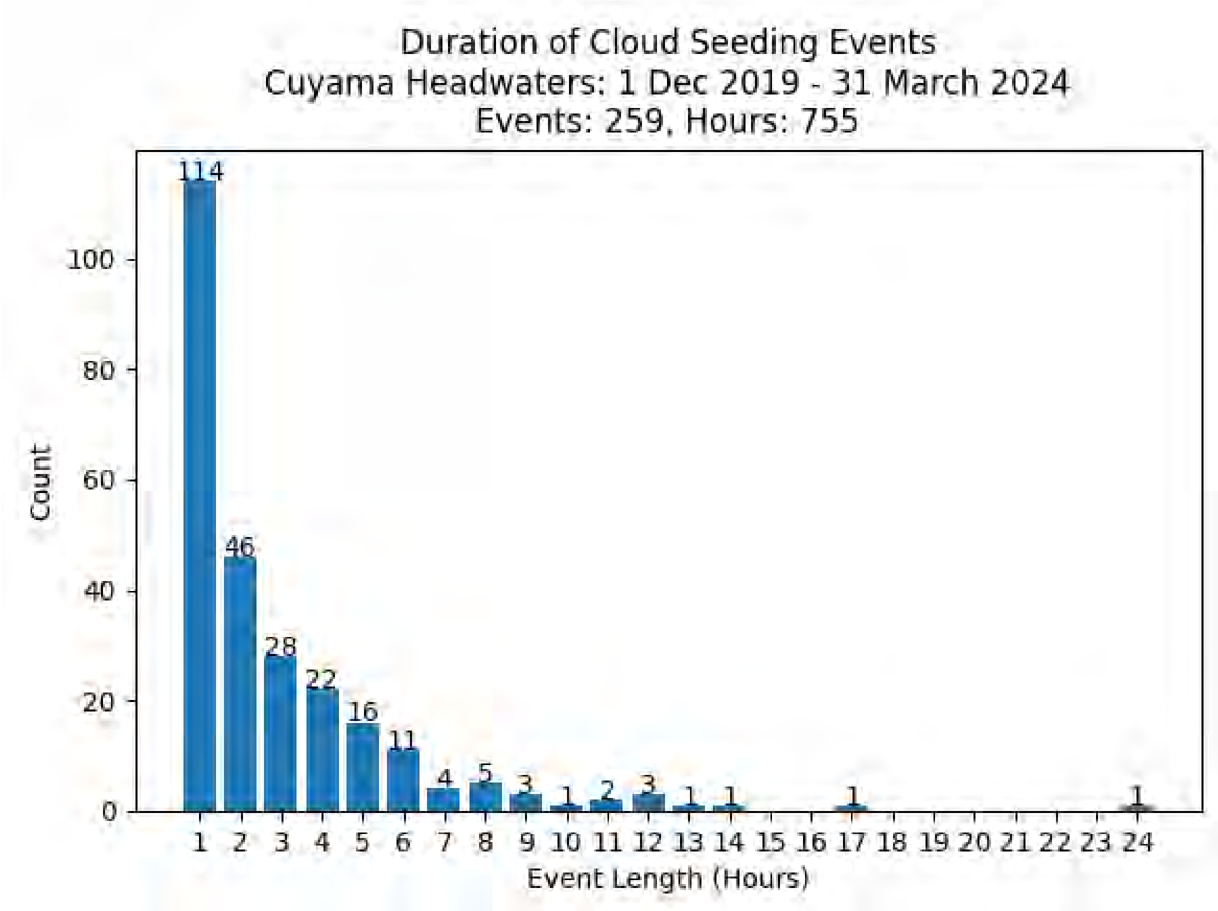

Figure 9: Duration of Cloud Seeding Events for ground-based seeding over the 5-year Study Period WY20-WY24 for the Cuyama Target Area.

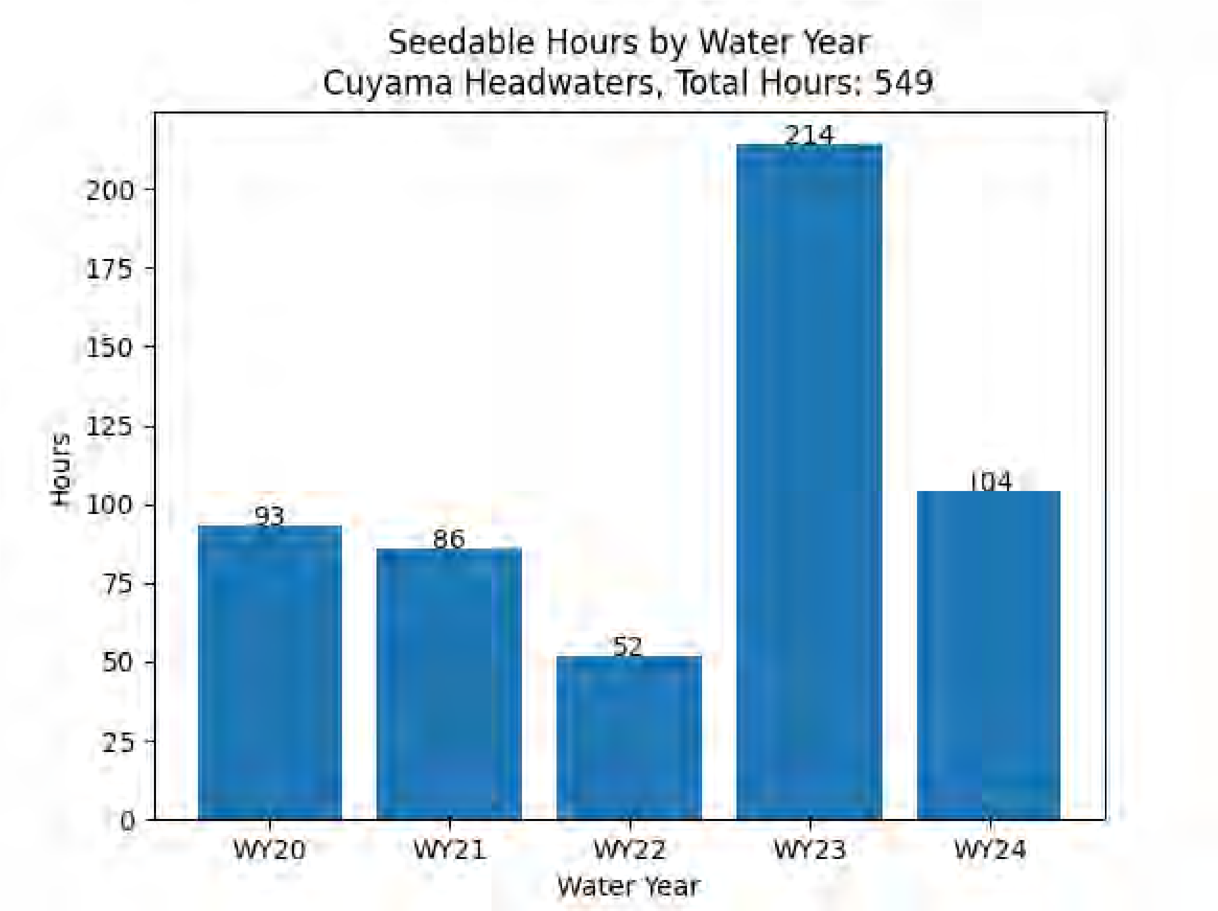

Figure 10: Seedable Hours by Water Year for ground-based seeding over the 5-year Study Period WY20-WY24 for the Cuyama Area for Events lasting at least 3 consecutive hours.

Figure 11 shows the filtered seedable hours by month for the 5-year study period. The most seedable hours for the 5-year study period occur in the month of March, with 242 hours, which is about double the number of hours when compared to the largest number of seedable hours from the other months. This was due to the fact that the coldest storms of the season typically arrive in March. The coldest storms have a lower height of the seedable portions of the clouds which increases the chances for successful vertical mixing from ground-based seeding.

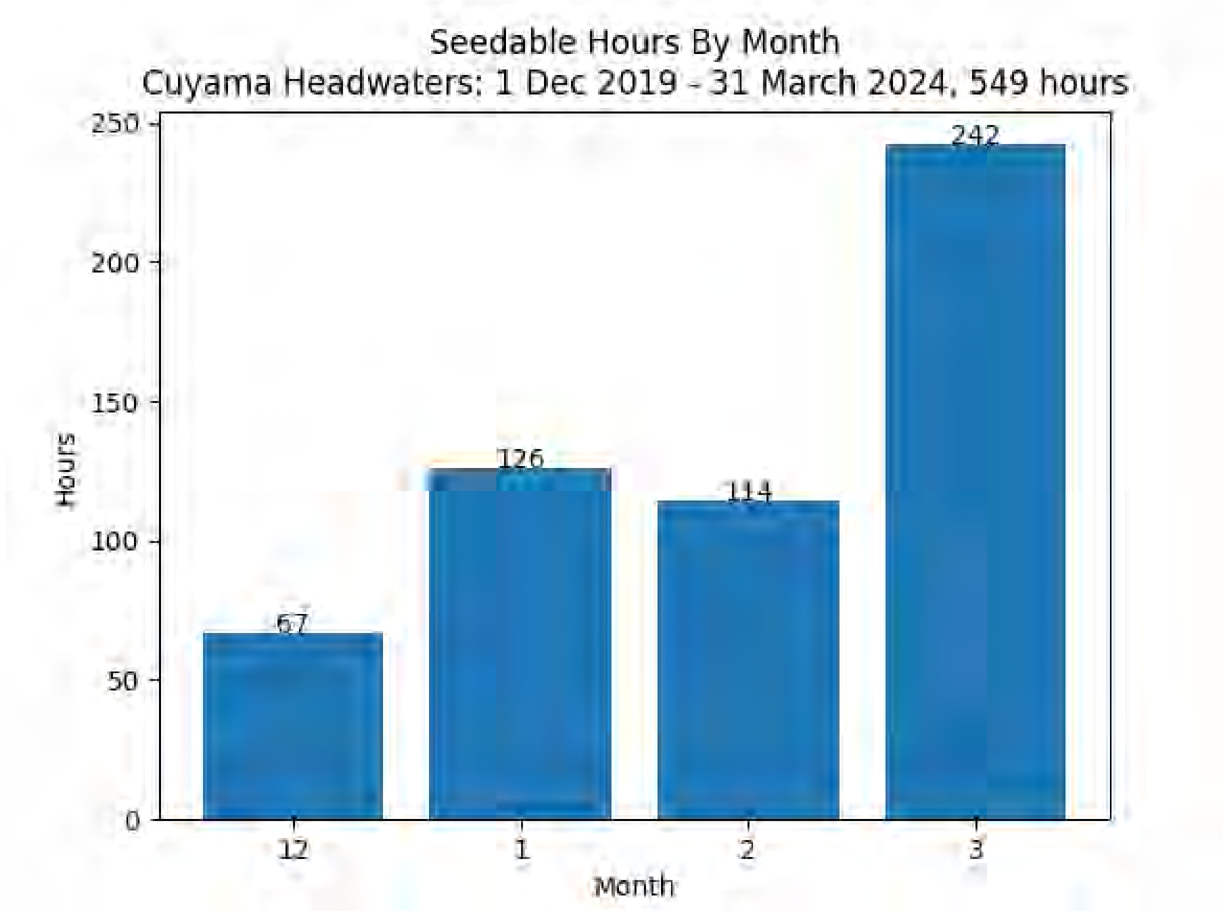

Figure 11: Seedable Hours by Month for ground-based seeding over the 5-year Study Period WY20-WY24 for the Cuyama Target Area for events lasting at least 3 consecutive hours.

The most common seeding level winds (10,000 ft MSL) during ground-based seeding conditions were from the southwest through west (Figure 12). During most California winter storms (mid latitude cyclones) these wind directions are associated with the approach and passage of the cold fronts. The wind directions are also clearly shown to be on-shore, bringing moisture off the Pacific. The wind speeds associated with seeding periods were relatively strong, typically greater than 30MPH.

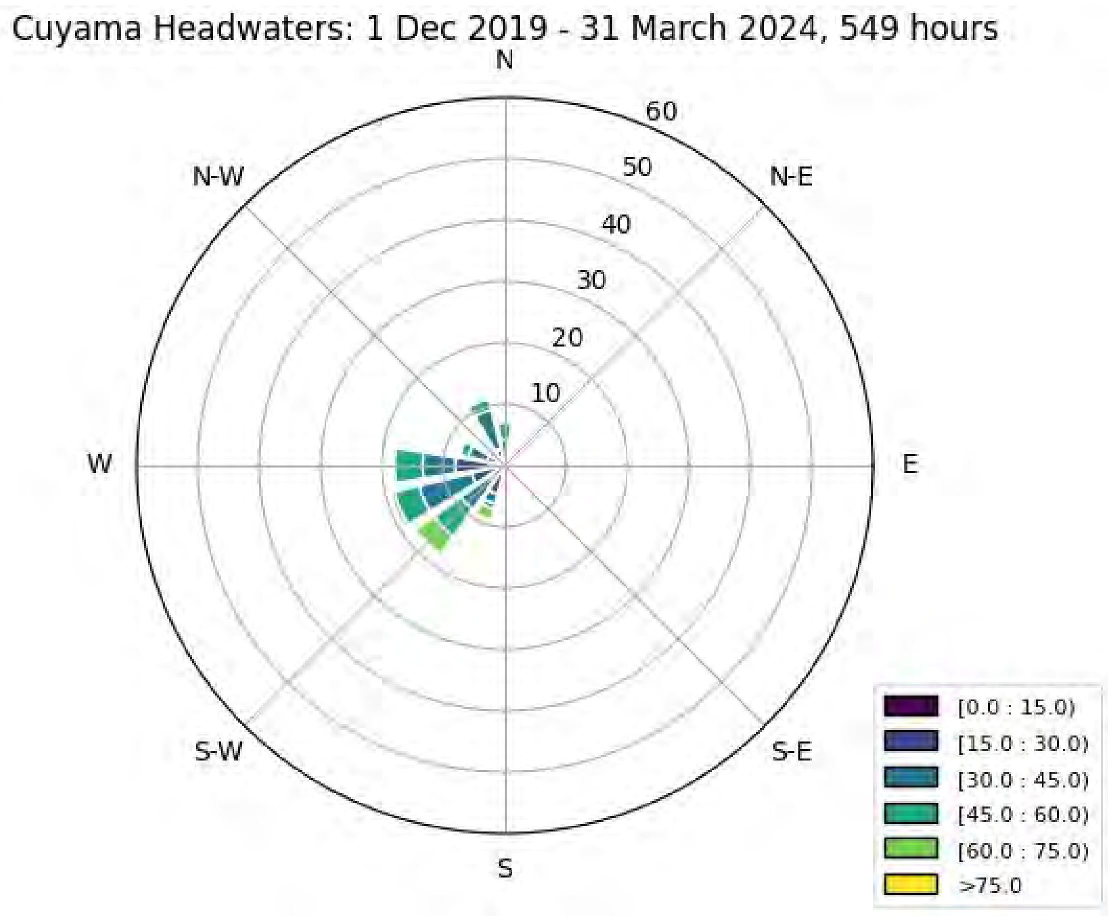

Figure 12: Wind Rose showing the 10,000 ft Wind Speed (MPH) and Direction when Seedable Conditions are Present for ground-based seeding over the 5-year Study Period WY20-WY24 for the Cuyama Target Area for Events lasting at least 3 consecutive hours.

3.1.3.1.2 Aircraft based climatology

The results of the hourly aircraft-based climatology for the Cuyama Headwaters Project show that there were 6*93* hours with seedable conditions across the five-year study period (Figure 13). This is 63 less hours than was identified for the ground-based seeding. Similar to the ground-based climatology, the wettest year winter 2022-2023 (WY23) had the most seedable hours with 232. Unlike the ground-based results, the frequency of seedable hours was more closely tied to the yearly precipitation.

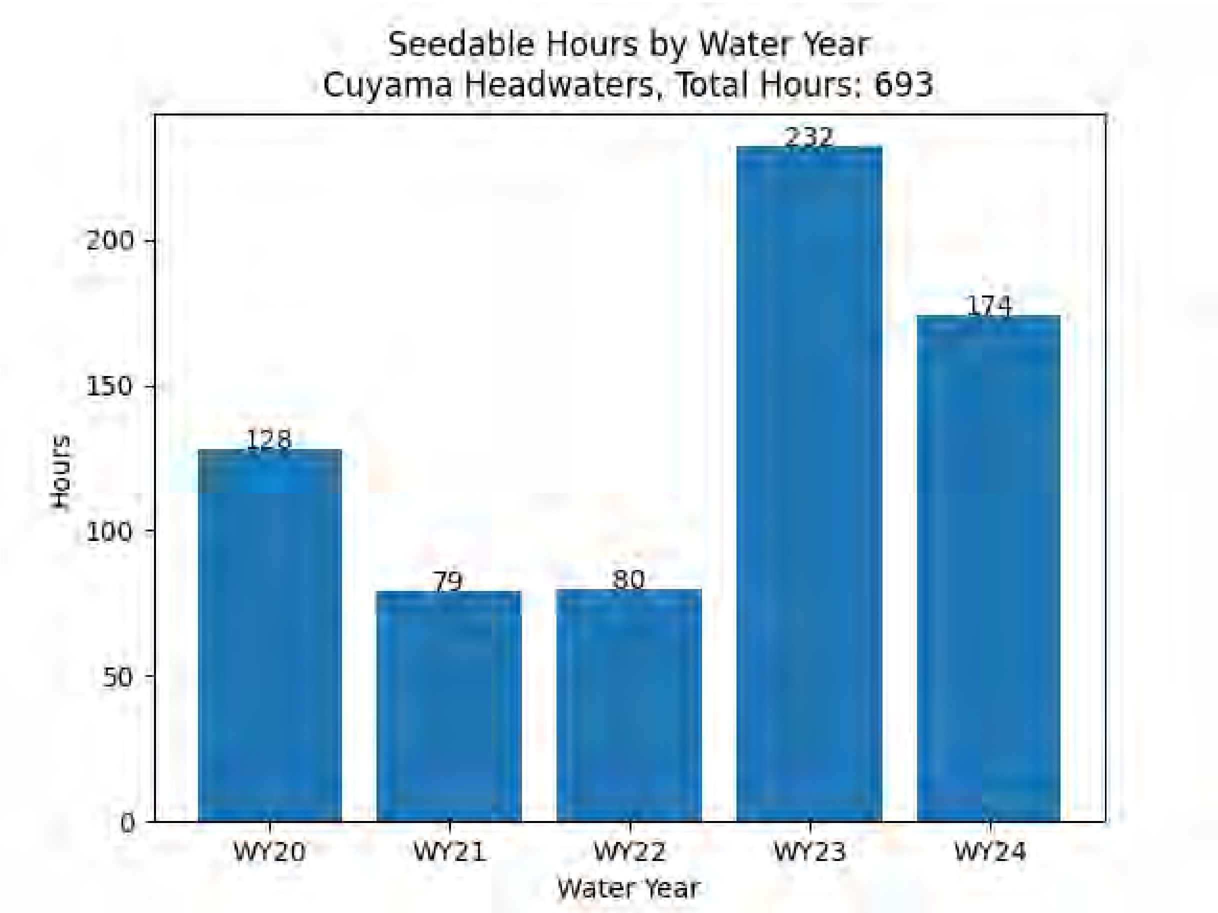

Figure 13: Seedable Hours by Water year for aircraft-based seeding over the 5-year Study Period WY20-WY24 for the Cuyama Headwaters Area.

Next the duration of events, or periods with consecutive hours exhibiting cloud seeding conditions, for Cuyama Headwaters aircraft-based seeding were determined (Figure 14). As with the ground-based seeding, the majority of aircraft seeding events are short and fleeting, with 68% of the 259 events shorter than 3-hours, and nearly all of them shorter than 12-hours. However, the events less than 3 hours only make up about a third (229 of 652 or 35%) of the total seedable hours for the region. Similar to ground-based seeding, due to the fleeting amounts of liquid water in the short duration seeding periods and the limited time to create and grow newly formed ice crystals to precipitation sized snowflakes, only events 3 hour long or greater were considered seedable for operational cloud seeding purposes for this study. The filtered aircraft seedable hours using the 3-or-more hour threshold is shown in Figure 15. A total of 429 hours of aircraft seeding, within 3-or-more consecutive hour storm periods, were identified.

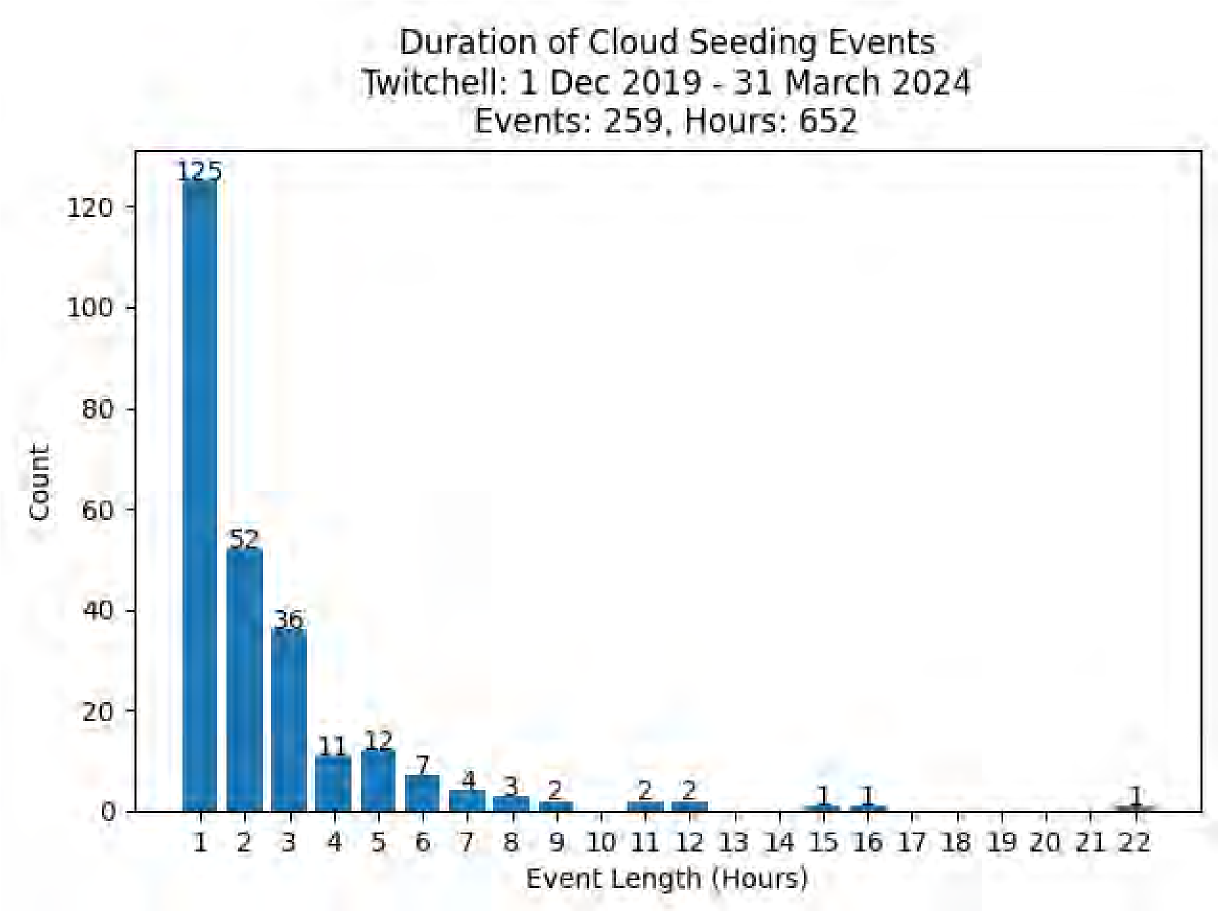

Figure 14: Duration of Cloud Seeding Events for aircraft-based seeding over the 5-year Study Period WY20-WY24 for the Cuyama Target Area.

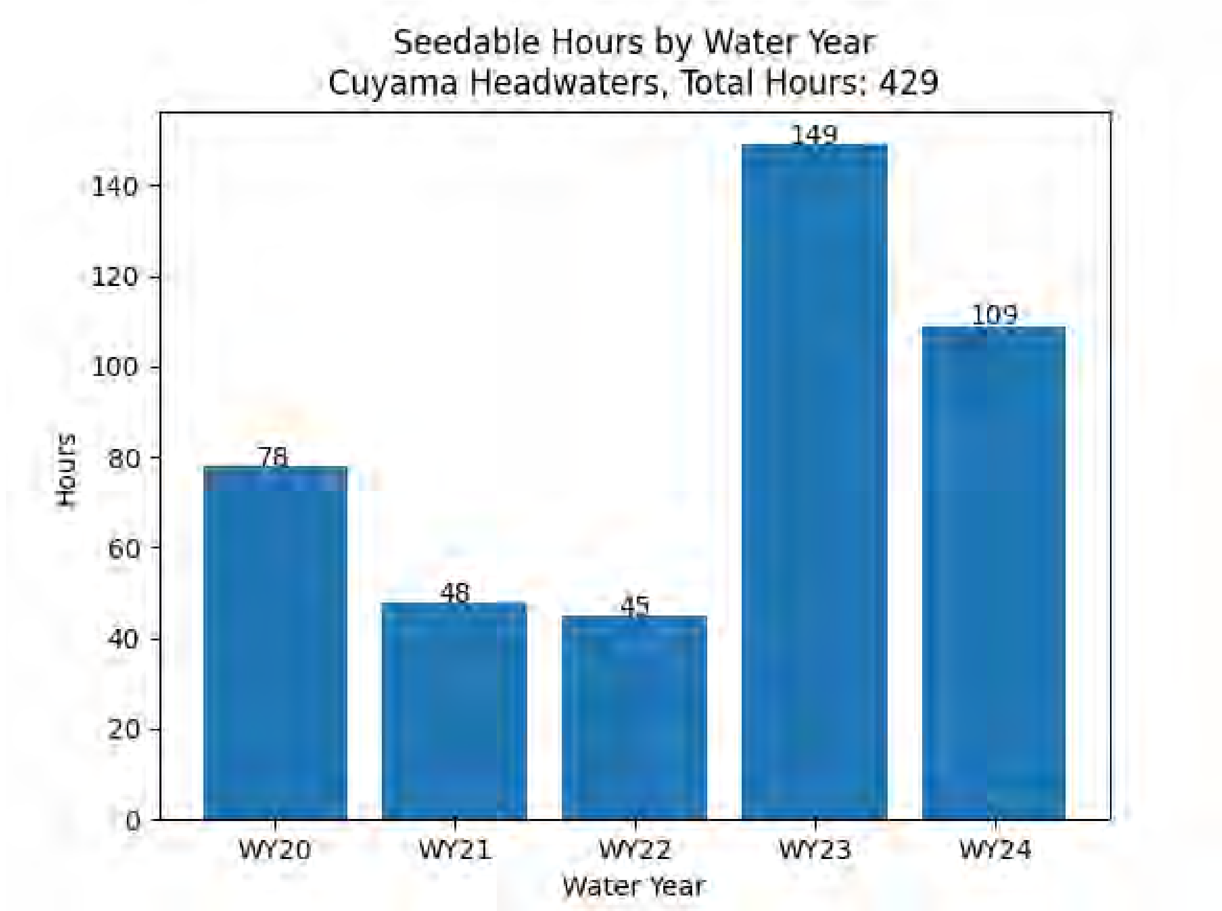

Figure 15: Seedable Hours by Water year for aircraft-based seeding over the 5-year Study Period WY20-WY24 for the Cuyama Target Area for events lasting at least 3 consecutive hours.

Figure 16 shows the filtered seedable hours by month for the 5-year study period. March had the most opportunities for cloud seeding with 167 hours (Figure 16). Unlike the ground-based results where the hours in March were about double that of the other months, significantly more opportunities relative to March were found in December and January, which had 77 and 94 hours, respectively. This is due to the fact that storm temperatures are nearly always cold enough for aircraft seeding at 14,000' MSL.

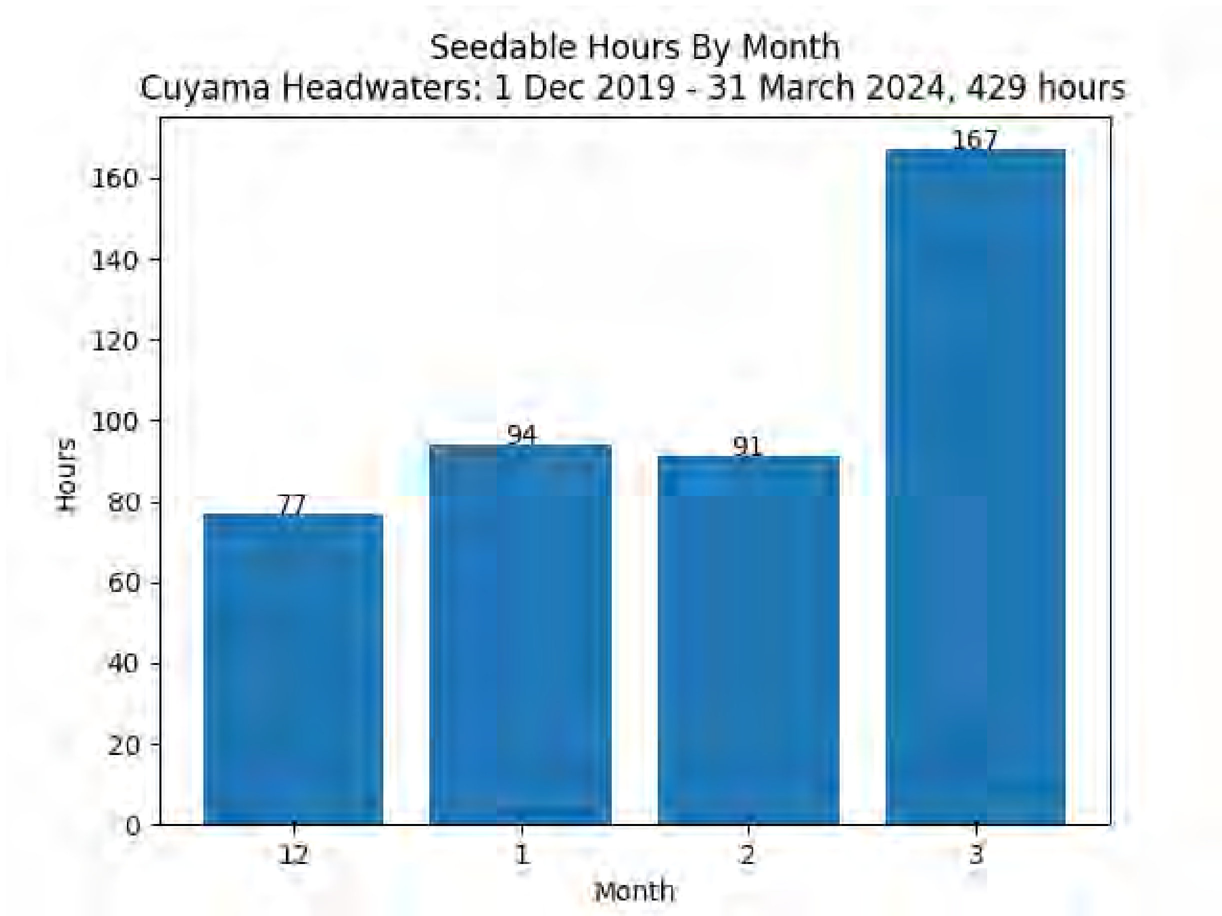

Figure 16: Seedable Hours by Month for aircraft-based seeding over the 5-year Study Period WY20-WY24 for the Cuyama Target Area for events lasting at least 3 consecutive hours.

The most common seeding level winds (14,000' MSL) during the Cuyama aircraft-based seeding conditions were from the southwest through west-southwest (Figure 17), similar to the ground-based results. During most California winter storms (mid latitude cyclones) these wind directions are associated with the approach and passage of the cold fronts. The winds directions are also clearly shown to be on-shore, bringing moisture off the Pacific. The wind speeds associated with the aircraft seeding periods were stronger than seen for the ground-based results, typically greater than 45 MPH, with some median speed values larger than 75 MPH.

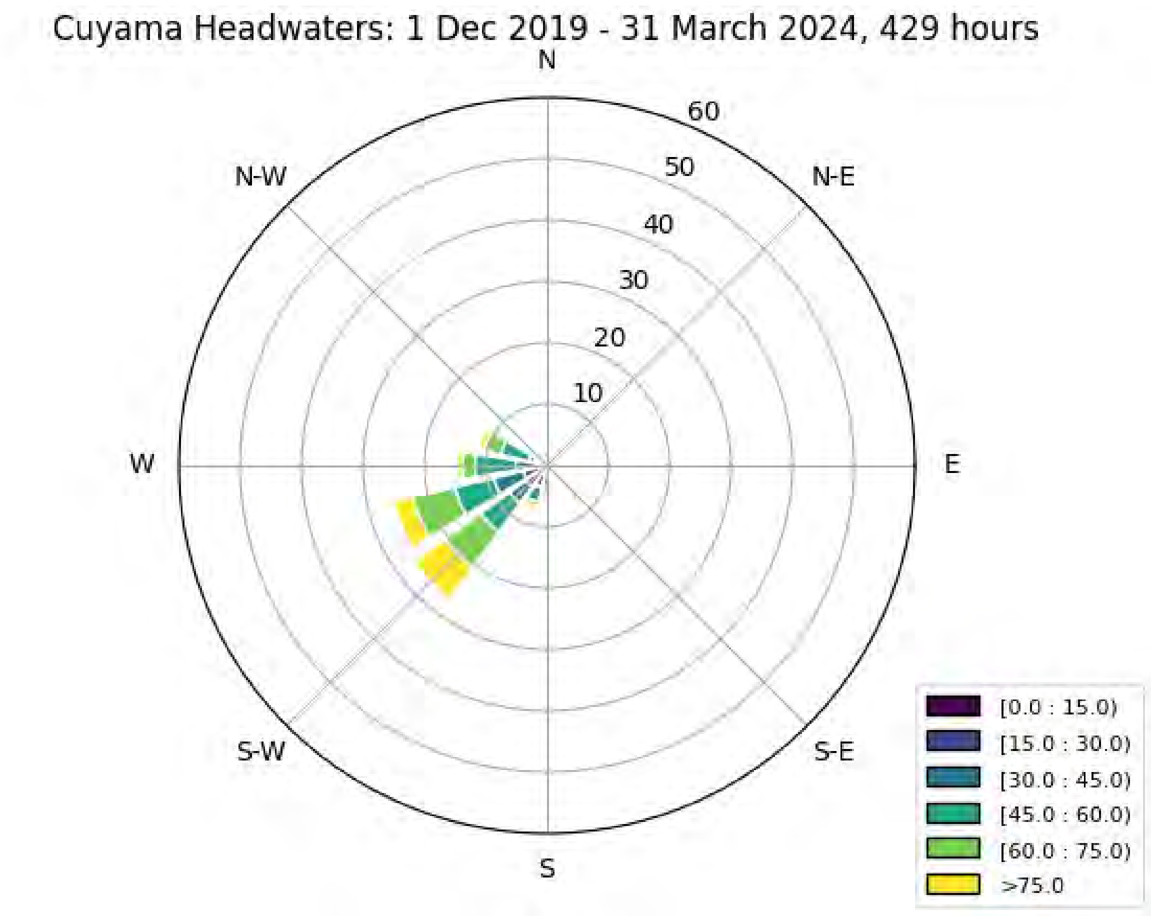

Figure 17: Wind rose showing the 14,000 ft wind speed and direction when seedable conditions are present for aircraft seeding over the 5-year Study Period WY20-WY24 for the Cuyama Target Area for Events lasting at least 3 consecutive hours.

3.1.4 Climatology Summary

The 5-year climatology using the high-resolution NWP model was completed for both potential ground- and aircraft-based cloud seeding over the Cuyama Headwaters. The results showed that cloud seeding opportunities were present during both dry and wet years. All of the periods that were considered seedable from the ground required 3-or-more consecutive hours of seeding conditions. Using the 3-or-more consecutive hours to define seeding activities allows sufficient time for ground-based generators to be started and aircraft to be deployed and conduct seeding.

The climatology results show there were a significant number of seeding opportunities over the Cuyama target area for both aircraft (429-hours) and ground (549-hours). These opportunities are likely due to the moist onshore flow associated with winter storms having increased orographic lift over the higher terrain of the northeastern side of Santa Barbara County and the northwestern side of Ventura County. March had the most opportunities, due to storm frequency and colder temperatures. The aircraft seeding opportunities were somewhat more evenly spread across the winter.

Based on the wind direction analysis, generators and aircraft track should be located to the west-southwest of the project area. Winds speeds suggest that the ground-based equipment would be sited about 15 miles away from the target area, and the variable distance aircraft fracks would range from 20 to 30 miles west or southwest of the target area.

3.2 Task 2: Targeting Assessment Using Snow Chemistry

3.2.1 Methodology

One of the main challenges of conducting cloud seeding from the ground is ensuring that the cloud seeding materials (silver iodide (AgI)) reach clouds with temperatures colder than -5^{o}C and the newly formed seeded snow is deposited in the target area. Successful targeting can be potentially proven by showing slightly elevated silver concentrations in fresh snow. Measurements from the Sierra Nevada and Colorado have shown about 40 parts per trillion for seeded fresh snow/precipitation compared to about 4 parts per trillion (ppt) in unseeded. With the project location so close to the Coast, storm winds are typically onshore. Since very limited crustal silver is found over oceans, we expect very low values of silver in observed unseeded precipitation. This means that a lower positive threshold of 3-4 ppt may show successful targeting. For this study, 4 parts per trillion (ppt) was used as the threshold to delineate between seeded and unseeded precipitation.

It should be noted that in soil samples in the western US silver is found in the 10s to 100s of parts per billion to parts per millions, depending of the geography and geologic history of the area. This is 100,000 times more than the quantities of silver typically found in fresh seeded precipitation.

DRI personnel collected precipitation samples during one winter storm event. The collections were done in the Cuyama Headwaters and several locations across the active Santa Barbara Twitchell target area cloud seeding program. Unfortunately, the Santa Ynez-Cachuma project was suspended for the winter 2023-2024 winter and no active seeding was conducted during the collection period. Figure 18 shows the collection locations on a topographic map of the Twitchell and Cuyama Headwaters target area.

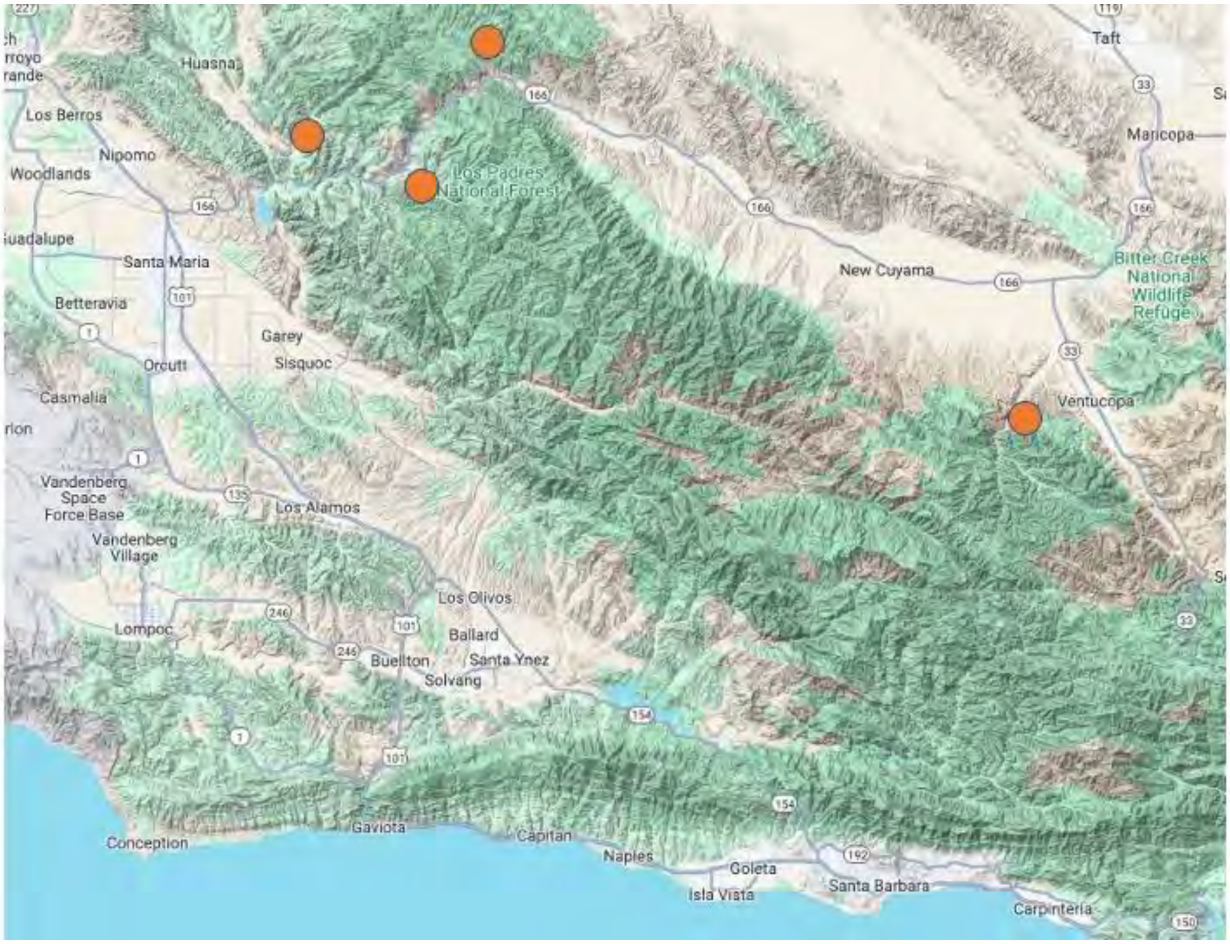

Figure 18: Topographic map of Greater Cuyama River area. Orange dots show the precipitation collection locations for the February 1, 2024 seeded storm. The Alamo Creek site is on the west side of the image. The Willow Springs site is on a ridge to the southeast of Alamo, the Cable Corral site in to the northeast. The Cuyama Headwaters site was in the Santa Barbara Canyon on east side of image.

Figure 19 shows the general precipitation sampling process (shown for snow in the figure). Prior to the storms, precipitation collection tubes with sterile bags were deployed to catch falling rain. After the storm events, the collection tubes and bags with the fresh samples were collected and quickly frozen with dry ice to minimize the samples moving around within the sterile bags. Next the samples were transported frozen to DRI. Finally, the samples were analyzed for silver content using the DRI Ultra Trace Chemistry Lab.

If elevated silver values were found in the seeded precipitation collections, then the generator locations are successfully depositing the seeding material (silver iodide, ice nuclei) in the target area. This would confirm that the generators are well placed to seed the clouds.

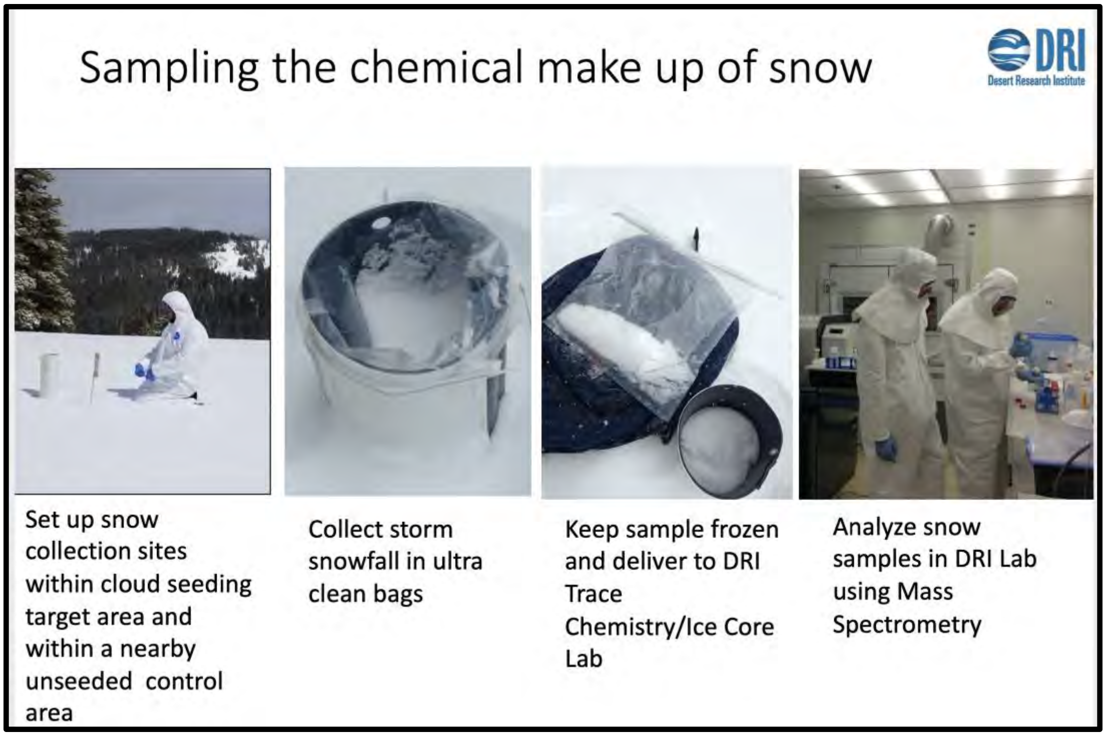

Figure 19: DRI snow chemistry collection and analysis methods

3.2.2 Snow Chemistry Collection Case Analysis

On Jan 31, 2024, a trough and associated cold front were approaching the central California Coast. Four collection tubes were set up in the morning and early afternoon of January 31, 2024 at Santa Barbara Canyon, Alamo, Willow Springs, and Cable Corral, ahead of the arrival of the clouds and precipitation associated with the weather system (see Figure 18 for locations). The storm moved into the area during the evening of January 31 and the early morning of February 1, 2024. Figure 20 shows the 10,000’ MSL (700mb) upper air weather map valid at 1100 UTC. Moisture associated with a cold front is seen moving across the area under southwesterly winds. Seeding was conducted during evening of Jan 31, 2024 - Feb 1, 2024 between 1237AM and 0151AM PST, and another 4-minute flare was burned at 0657 AM. The flares were burned at the 3 generator sites along the western Santa Barbara Coast (Lopse, Harris, Berros [see Figure 5 for locations]).

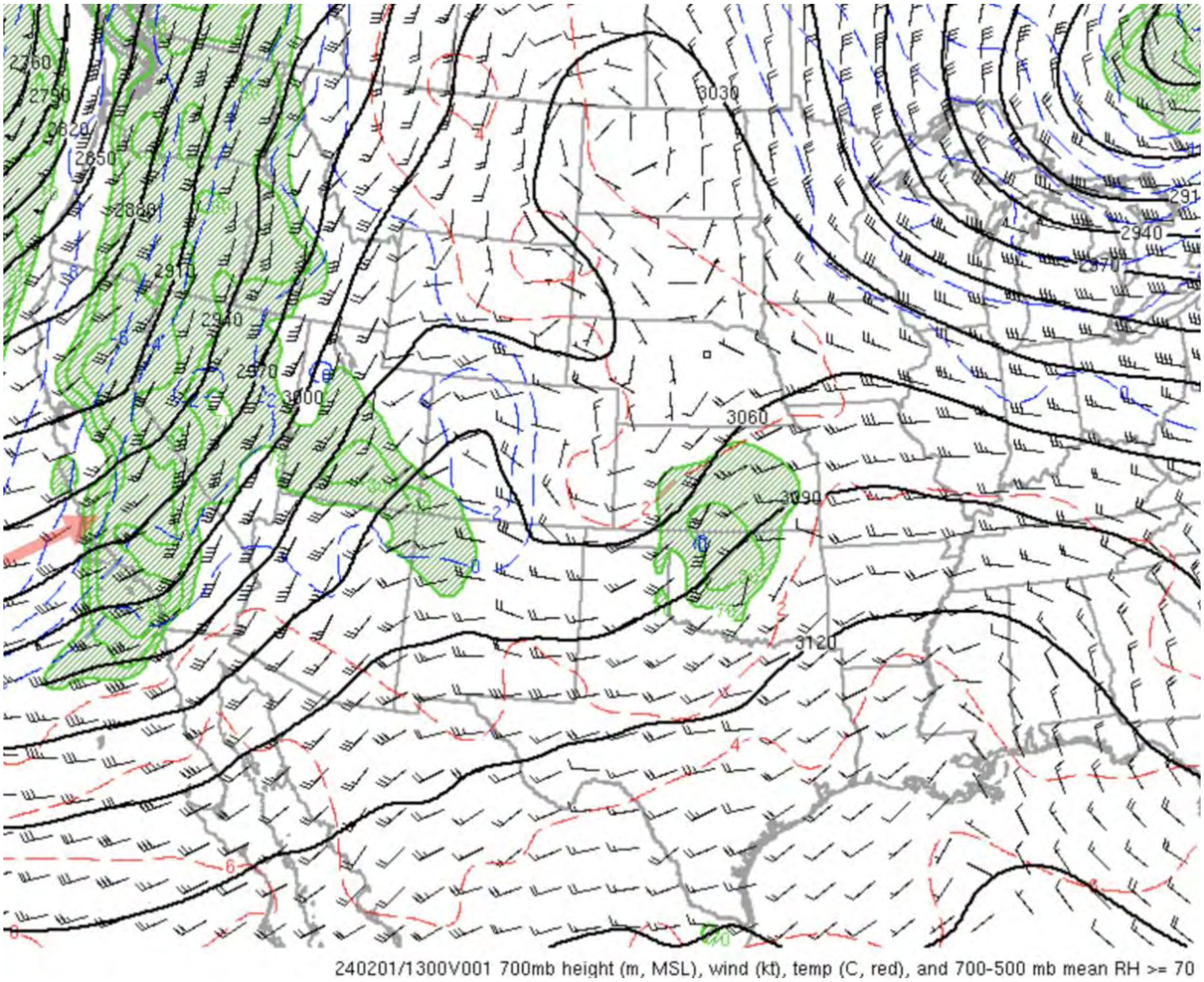

Figure 20: Case 1: February 1, 2024 at 1100 UTC (3AM PST) 10,000' MSL (700mb) upper air weather map. Moisture (green shading) associated with a cold front (blue dashed lines) is seen moving across the area under southwesterly winds

3.2.3 Collection Results

Precipitation samples were obtained from the four collection locations on the early afternoon of February 1, 2024. The weather maps showed the wind directions and associated seeding plumes from the cloud seeding generators would have moved into the active Twitchell target area, and potentially into the distant Cuyama Headwaters area during the storm. Table 4 gives the values of silver found in the precipitation collection samples for the January 31, 2024 – February 1, 2024 storm for each collection location. The samples show slightly elevated silver concentrations at all three collection locations in the Twitchell target area, but nothing (< 1ppt) in the Santa Barbara Canyon sample. It is worth noting that the Santa Barbara County Twitchell Project sample values were much lower than is typically found in other projects, being between 3.7 to 7.1 ppt, but very low amounts of silver are typically released during flare-based seeding operations, so these results may show that seeding material was captured in the precipitation samples. The results suggest that the Twitchell Project was not seeding the Cuyama Headwaters region during this storm.

Table 4: Amount of Silver Measured from Precipitation Collection Samples.

	Collection Location			
Storm Date	**Santa Barbara Canyon**	**Alamo**	**Willow Springs**	**Cable Corral**
Jan 30 – Feb 1, 2024	< 1 ppt	7.1 ppt	6.6 ppt	3.7 ppt

3.2.4 Snow Chemistry Discussion

While only one sample was collected from one storm for the Cuyama target area, the results show low values of the seeding materials in the samples from the collection sites within the Twitchell target area and no evidence of a seeding effect in the sample from the Cuyama target area. In terms of temperatures, wind speeds, and directions this storm is fairly representative of many storms crossing the area. The location of the generators being approximately 60 miles away from the Cuyama target area, and wind speeds of 35 MPH covering a 60+ mile distance between the generator release locations, suggests any seeding material will take nearly 2 hours to reach the Cuyama target area. By this time the seeding material would be highly dispersed, and if precipitation was present upwind the seeding material would also be removed. In addition, the short burn times of the ground based-seeding flares (4-minutes) makes it improbable that the current project is having any effect on the Cuyama headwaters, and thus the result of no (< 1ppt) detectible silver in the sample from the target area makes sense. This discussed in more detail in Task 3

3.3 Task 3: Potential Precipitation Increases and Hypothetical Project Design

3.3.1 The current Santa Barbara County project is not seeding Cuyama Headwaters.

The results of the climatology from task 1 showed that when ground seeding conditions are present over the Cuyama Headwaters the winds are typically from the southwest through west with speeds of 30 to 60 MPH (see Figure 12). This suggests that 5 of the 7 generators are upwind of the Cuyama target area during seedable periods of the majority storms. Figure 21 shows the Santa Barbara Cloud Seeding project and generator sites, including the distance from the sites to the Cuyama target area. The 4 sites to the west (Berros Peak, Mount Lopse, Harris Grade, and Sudden Peak) are between 57 miles and 68 miles away from the Cuyama Headwaters. This is much too far to successfully seed the potential Cuyama Target area, especially since the generator sites currently use silver iodide flares that only burn for 4 minutes. These distances, coupled with the typical wind speeds between 30 to 60 MPH, means a seeding plume would take between one to two hours to reach the Cuyama area, which isn't realistic due to dispersion of such small seeding plumes. While, generally any seeding effect would occur within about 30 minutes of contact with SLW containing clouds. In addition, wet deposition, which is the removal of atmospheric aerosols that occurs by precipitation capture as rain falls through the atmosphere, would also have removed all of the cloud seeding material well upstream of the Cuyama Target Area. The Gaviota/Dos Vistas generator is southwest of the target area and also within the climatological maximum upstream wind directions. This site, at 47 miles away, is still too far away from the Cuyama headwaters to successfully seed. The two other sites, West Camino Ciello at 34 miles, and Gilbratar at 27 miles, are much closer but still further than the optimal 15 miles away from the Cuyama target area. Those two sites also are to the south-southwest and south of the target area and not in the climatological favored wind directions envelope, and not often operated.

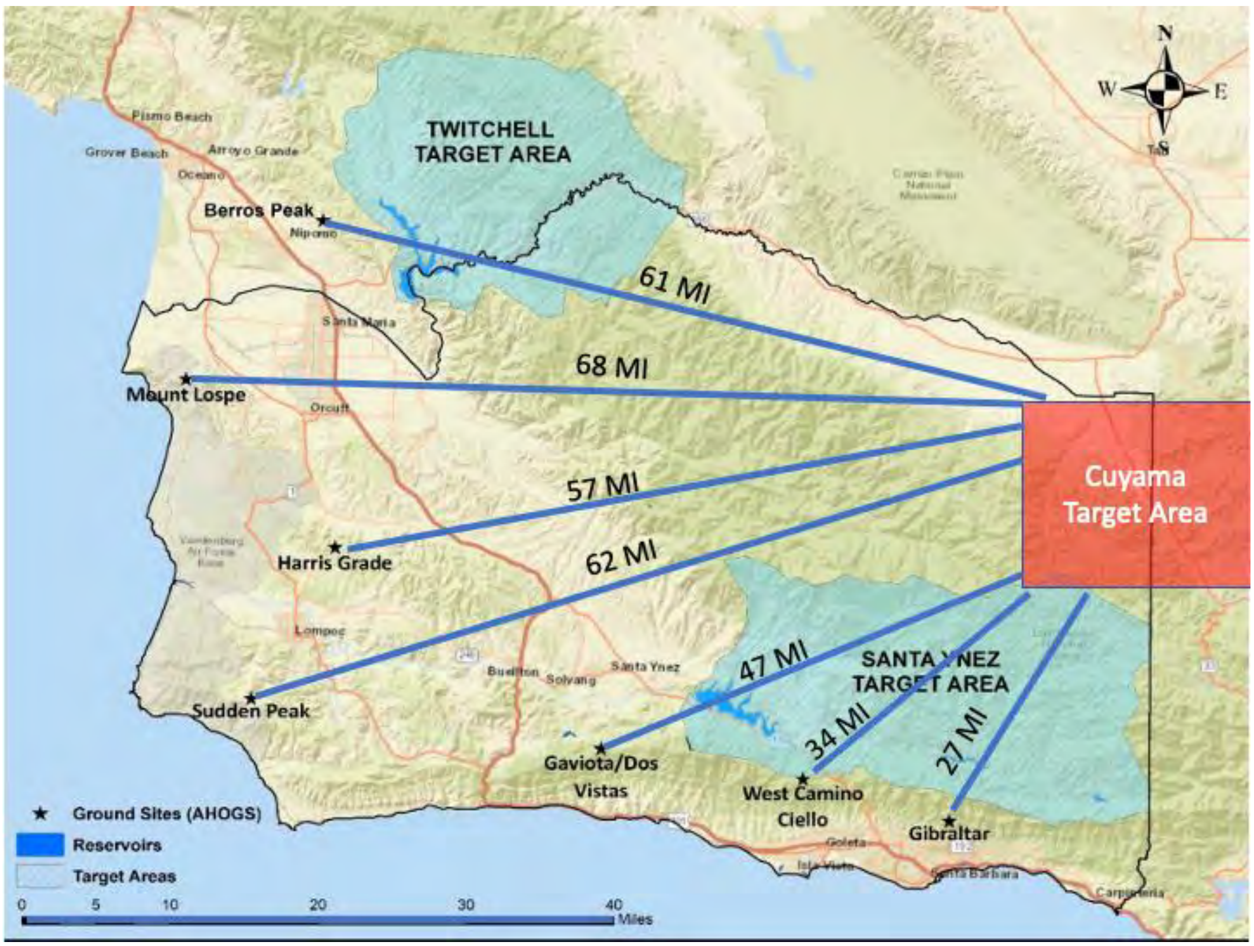

Figure 21: Santa Barbara County Cloud Seeding project areas (green shading), Cuyama Target Area, cloud seeding generators (black stars), Distance each of the generators to the Cuyama target area. generator network

When Twitchell and Santa Ynez (Cachuma) aircraft operations were present the aircraft tracks analyzed would also not have significantly impacted the Cuyama Target area. Similar to the reasons presented about for ground operations, the aircraft tracks were located too far from the Cuyama Headwaters to impact that area.

This analysis along with the snow chemistry shows that the existing Santa Barbara County Cloud Seeding Project is not seeding the Cuyama Headwaters and therefore potential increases from current project do not exist.

3.3.2 Design and results of a potential Cuyama Headwaters cloud seeding project

The results of the analysis from the 5-year climatology study presented in task 1 suggests cloud seeding targeting the Cuyama Headwaters could be done from both the ground or from aircraft.

A ground seeding program would include approximately 4 solution-based generators the continuously produce seeding material, as opposed to the ground-based flare generators. The most ideal locations for these would be on highest terrain available approximately 15-miles to the west and southwest of the target area. A first cut at the placement of 4 ground-based cloud seeding generators are shown in Figure 22.

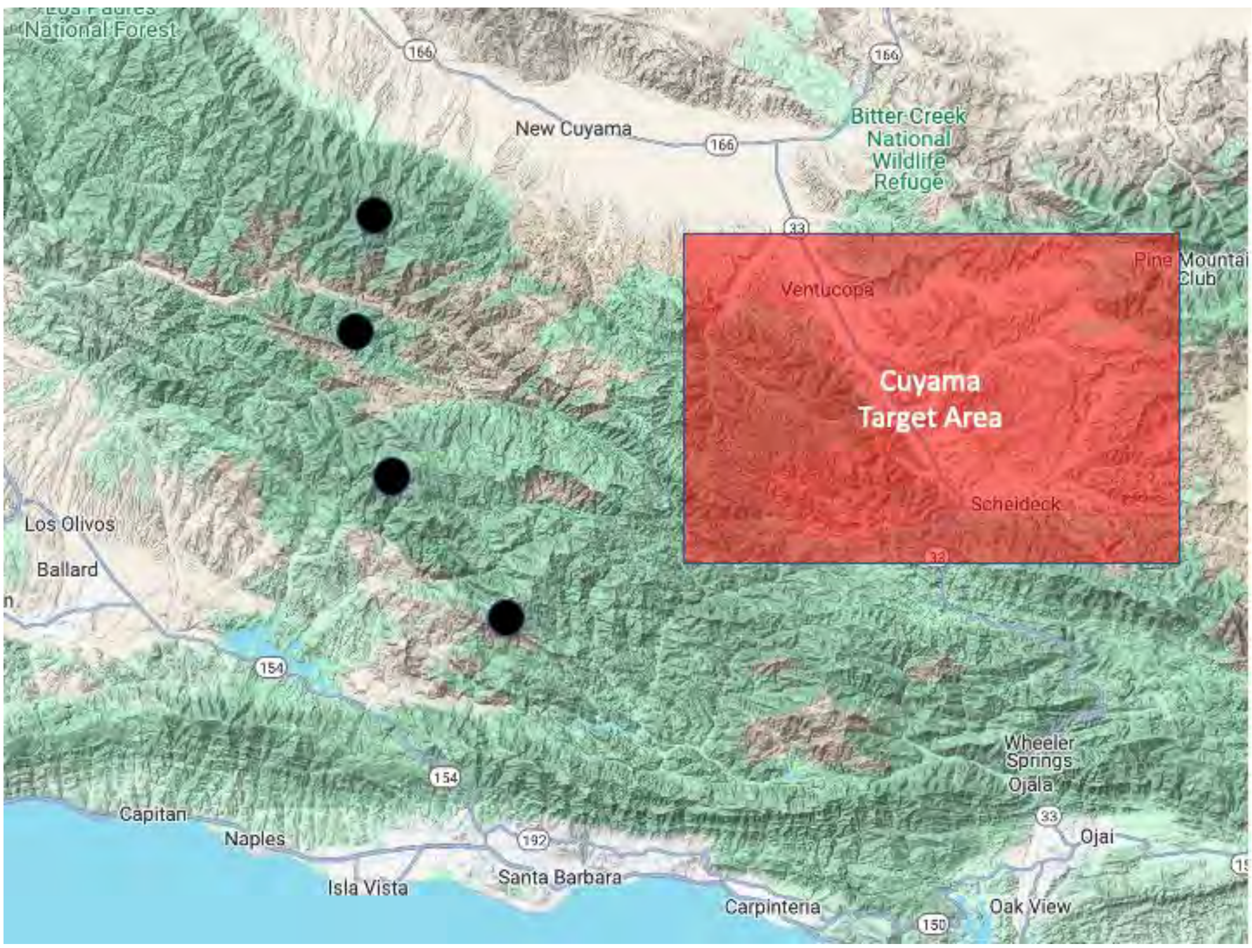

Figure 22. Conceptual model of a ground-based cloud seeding network targeting the Cuyama River Headwaters. Black dots are the cloud seeding generator locations and the red box indicates Cuyama target area.

Ground-based solution generators can produce approximately 20 acre-feet of liquid precipitation per hour, sometime more (Huggins, 2009). If this network was in place during the 5-winters analyzed in section 3.1, and we assume that half of the hours were seeded, then the potential increases in precipitation can be calculated using the below equation, where acre-feet is abbreviated as af. We use 50% due to storm variability, meteorologist forecasting errors, and potential generator mechanical issues.

$$(seeding\ hours) * (4\ generators) * (20\frac{af}{hour}) = \text{af of additional water resources}$$

The total acre-feet of additional precipitation for each year are presented in Table 5. The results show that over 2,000 acre-feet of additional precipitation can potentially be produced during the very dry water year 2022 and as much as 8,500 acre-feet could be produced during the wet winter of 2022-2023.

To set up a 4-generator ground program would require a first-year investment in the fabrication of the generators, about $60,000 per generator. Locations for the generators would need to be found and potential land use agreements (typically $500/year) be completed. Since there is already a Santa Barbara County/Cuyama River cloud seeding program, it is currently unclear if a new California Environmental Quality Assessment (CEQA) would be required for this project. Finally, notification in public media would be required to notify the public about the project, and a public meeting in the project area would be required.

Once the project was operational, it would cost approximately $100,000 per year to operate the project. Assuming 5,000 acre-feet could be produced on an average winter the cost-benefit would be $20 per acre-foot of additional precipitation.

Table 5: Potential precipitation increases from a 4-generator network seeding the Cuyama Headwaters.

Water Year	Seeding Hours (hrs)	Number of Generators	Precipitation Increases (acre-feet)
2020	46	4	3,680
2021	43	4	3,440
2022	26	4	2,080
2023	107	4	8,560
2024	52	4	4,160
Total	274	4	21,920

Aircraft seeding can produce up to 200 acre-feet of additional precipitation per hour when cloud seeding conditions are present (Huggins, 2009). Using the flight tracks identified in Figure 23, and assuming that 25% of the defined aircraft seedable hours from sections 3 were flown for each of the 5 water years, then the potential increases in precipitation can be calculated using the below equation, where acre-feet is abbreviated as af. We use and estimate of 25% due to aircraft operational restrictions, pilot rest time, and refueling time.

$$(seeding\ flight\ hours) * \left(200\frac{af}{hour}\right) = af\ of\ additional\ water\ resources$$

The results for a hypothetical aircraft program are shown in Table 6. The results show that 2,200 acre-feet of additional precipitation could be produced during the dry water year 2022 and as much as 7,600 acre-feet of additional precipitation could be produced during the wet water year 2023.

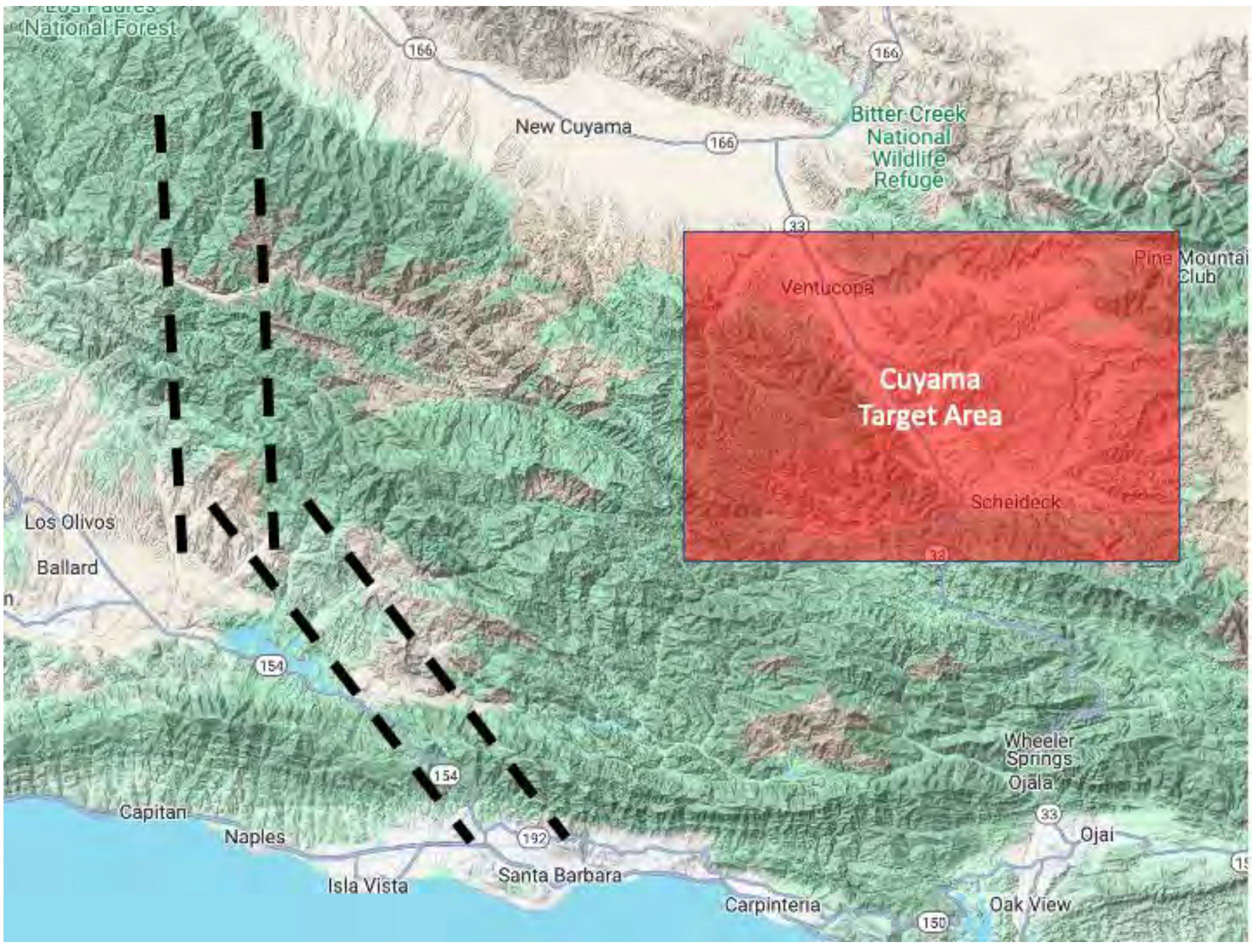

Figure 23: Conceptual model of an aircraft-based cloud seeding network targeting the Cuyama River Headwaters. The dashed lines indicate the potential aircraft seeding flight tracks and the red box indicates the Cuyama Target area.

Table 6: Potential precipitation increases from an aircraft seeding program targeting the Cuyama Headwaters.

Water Year	Flight seeding hours (hours)	Precipitation Increases (acre-feet)
2020	20	4,000
2021	12	2,400
2022	11	2,200
2023	38	7,600
2024	28	5,600
Total	109	21,800

To set up an aircraft program may require an environmental assessment to be completed. Since there is already a Santa Barbara County cloud seeding program, it is currently unclear if a new California Environmental Quality Assessment (CEQA) would be required for this project. Notification in public media would be required to notify the public about the project, and a public meeting in the project area would be required.

Once the project was operational, it would cost approximately $200,000 per year to conduct 20-hours of aircraft seeding. The aircraft seeding results would produce between 200 – 500 acre-feet per hour, with as much 10,000 acre-feet possible. The cost-benefit for this best-case scenario would be $20 per-acre foot.

4 Summary Of Findings

This study assessed if the storms crossing the headwaters region of the Cuyama River had cloud seeding conditions, and if the existing Santa Barbara County cloud seeding program was currently seeding the Cuyama Headwater area.

The results of the study showed that the headwaters region of the Cuyama River are indeed seedable from both the ground and from the air during both dry and wet years. The month of March had by far the highest number of seedable events. The existing Santa Barbara County cloud seeding program is most likely not having an impact in this area, due to the long distances between the cloud seeding equipment and the Cuyama Headwaters. No cloud seeding signature was found from the precipitation chemistry collection effort.

A hypothetical cloud seeding program was designed and the results showed the potential for at least 2,000 acre-feet of additional precipitation could have been produced on the driest year of the study and over 8,000 acre-feet could have been produced on the wet years.

5 Recommendations

1) Contact Santa Barbara County and see if the Twitchell Program would benefit by seeding the Cuyama Headwaters.

2) Increase precipitation gauge numbers in the target area.
3) Set up a single ground-based solution-burning generator or aircraft project and operate a 2-year pilot program to determine the success of a seeding program.
4) Do several additional rounds of precipitation, soil, and stream chemistry over the area to establish base-line values. Then do extensive precipitation chemistry analysis during the pilot program.

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Cuyama Basin Groundwater Sustainability Agency Standing Advisory Committee Meeting

January 9, 2025

Draft Meetings Minutes

PRESENT:
Kelly, Brenton – Chair
Haslett, Joe – Vice Chair
DeBranch, Brad
Caufield, John
Gaillard, Jean
Jaffe, Roberta
Lewis, Dave

Bianchi, Grace – Project Coordinator
Blakslee, Taylor – Assistant Executive Director
Dominguez, Alex – Legal Counsel
Van Lienden, Brian – Woodard & Curran

PRESENT:

1. **Call to Order**
   Cuyama Basin Groundwater Sustainability Agency (CBGSA) Standing Advisory Committee (SAC) Chair Kelly called the meeting to order at 5:08 p.m.

2. **Roll Call**
   Ms. Bianchi called roll of the Committee (shown above).

3. **Pledge of Allegiance**
   Chair Kelly led the pledge of allegiance.

4. **Meeting Protocol**
   Assistant Executive Director Taylor Blakslee provided an overview of the meeting protocols in facilitating a remote meeting.

5. **Public Comment for Items Not on the Agenda**
   There were no public comments.
6. **Introduction of Small Farmer and Rancher Network**
   Committee Member Jaffe introduced small farmer and rancher network and read the following letter from the group:

   > *Over the past few months, a network of Cuyama Basin small farmers, ranchers and small pumpers has been formed. We are funded through the technical assistance funding for small farmers under DWR and we are operating under the auspices of the Cuyama Valley Family Resource Center and the Cuyama Valley Community Association. The SFAR Network includes small farmers, ranchers and de minimus pumpers in all areas of the Cuyama Basin including the CMA. Our purpose is to have the voice of the small pumpers be represented in both the GSP and the adjudication processes with specific results that address the concerns and needs of small pumpers. Our organization has, and will continue to, meet regularly in order to*

understand the needs of Cuyama residents and collectively present our needs to the GSA. To date we have established a steering committee of six Cuyamans, held three community meetings and have formed partnerships with Dudek Engineering for technical assistance and with a legal clinic at UC Davis Law School, the Small Farmer Water Justice Clinic for legal guidance. The legal clinic is led by attorney David Sandino with a team of three third year law students. The team at Dudek includes Matt Naftaly and Steven Stuart as Principal Hydrologists; and Jane Gray as Project Director/Regional Planner. We hope to work collaboratively with the GSA as we highlight the impact of policy considerations on small pumpers. In addition, small pumpers who have negligible impact on groundwater pumping are being seriously impacted by the adjudication trial and we hope to have our specific concerns heard and to seek resolution in the adjudication process. We are available as a resource to the GSA, and we hope you will seriously consider our concerns as we strive to represent the voices and needs of small pumpers in the Cuyama Valley.

Committee Member Brad DeBranch asked who is on the steering committee.

Committee Member Robbie Jaffe responded Ella Boyajian, Margaret Brown, Lynn Carlisle, Brenton Kelly, and Will Price are on the committee.

7. Election of Officers

Mr. Blakslee provided an overview of the duties of the positions up for elections, the chair and vice chair.

Committee Chair Brenton Kelly and Committee Vice Chair DeBranch were asked if they are interested in keeping the role for another year.

Committee Vice Chair DeBranch responded that he would be interested in continuing in the vice chair position.

Committee Chair Kelly responded that he is more than willing to serve as chair again and expressed concern about the requirement of the vice chair to be present in person when the chair is absent. He challenged the vice chair position.

Committee Vice Chair DeBranch responded that he has attended most of the SAC and board meetings in-person when the extended meeting durations became a challenge. He reiterated his previous preference for earlier meetings, which would allow him to attend in person.

MOTION

Committee Member Lewis made a motion to retain the same committee Chair, Brenton Kelly. The motion was seconded by Committee Member Haslett. A roll call vote was made, and the motion passed.

AYES:	Caufield, DeBranch, Gaillard, Jaffe, Kelly, Lewis, Haslett
NOES:	None
ABSTAIN:	None
ABSENT:	None

MOTION

Committee Member Gaillard made a motion to nominate Brad DeBranch as Vice Chair. The motion was not seconded.

MOTION

Committee Chair Kelly made a motion to nominate Joe Haslett as Vice Chair. The motion was seconded by Committee Member Caufield. A roll call vote was made, and the motion passed.

AYES:	Caufield, DeBranch, Gaillard, Jaffe, Kelly, Lewis, Haslett
NOES:	None
ABSTAIN:	None
ABSENT:	None

8. Approval of October 31, 2024, Minutes

Committee Chair Kelly opened the floor for comments on the October 31, 2024, CBGSA SAC meeting minutes.

MOTION

Committee Member Lewis made a motion to approve October 31, 2024, CBGSA SAC meeting minutes. The motion was seconded by Committee Vice Chair Haslett. A roll call vote was made, and the motion passed.

AYES:	Caufield, DeBranch, Gaillard, Jaffe, Kelly, Lewis, Haslett
NOES:	None
ABSTAIN:	None
ABSENT:	None

9. Groundwater Sustainability Plan Implementation

a. Discuss and Take Appropriate Action on Variance Findings and Direction on Setting Final CMA Groundwater Allocations for 2025-2029

Mr. Blakslee provided an update on the variance requests process, including the review of five requests, the involvement of Land IQ for technical issues, and the expected distribution of ad hoc recommendation letters. He reported that the ad hoc recommendation was not provided to the SAC due to the tight schedule and that CBGSA staff is working on provided the ad hoc recommendation as soon as possible.

Committee Chair Kelly commented that it is difficult to provide feedback without the variance ad hoc recommendation.

Committee Member Gaillard asked about the frequency of the variance process. Mr. Blakslee responded that the variance findings apply for allocations for years 2025-2029, unless the is a model update prior.

Committee Member DeBranch asked if they had historically provided data to the GSA as requested in terms of land use, why the land use data was not correct, and how many landowners are not providing requested data.

Mr. Blakslee responded that the incorrect data was historical data for the period of 1998 through 2017. The GSA started collecting land use data from all landowners starting in 2023, but they have received specific use data from the large landowners in the years prior.

Stakeholder David Lewis commented that the variance process is strictly to resolve any discrepancies in the allocation process versus any opportunity to present a need for an exception to the allocation, and that is an issue.

Mr. Blakslee responded that there is the potential to discuss how allocations are administered.

Committee Vice Chair Haslett commented that it is unjust to manage properties that have been included and secluded in the Central Management Area (CMA), and that should be addressed, so landowners can plan farming long-term. The impacts on landowners

Committee Member Caufield commented that the variance process is trying to address technical issues. He asked about an opportunity to address equity issues, not only equality in this process.

Mr. Blakslee responded that the variance process is to correct technical data, specifically historical data. The board has discussed minimum allocations and tiered systems in the past, but they have not decided to pursue those options at this time.

Committee Member Jaffe expressed frustration that small farmers are most impacted and emphasized the variance requests for such a small amount of water compared to larger pumpers.

Stakeholder Dan Raytis with Cuyama Dairy Farm commented that they filed a variance request and revision to data due to large changes in water use between years at Cuyama Dairy Farm, while the number of cattle has remained consistent. He requests that the information provided by the Cuyama Dairy Farm override the model data.

Committee Member Gaillard asked about a water offset contract with the dairy farm and the nearby cannabis company.

Stakeholder Dan Raytis responded that the contract was originally for three years, with no change in water use for the cattle and a reduction in water use for crops. However, the contract is no longer in effect.

Committee Chair Kelly asked if crops are irrigated with groundwater or used water from the dairy.

Stakeholder Aaron Hoekstra responded that all summer crops use groundwater directly and groundwater is reirrigated for winter crops. He added that all wastewater is applied to winter crops, but it's a very small percentage of the pumped water. The wastewater management criteria requires them to collect any water that has come in contact with manure before reapplying it to the ground.

Stakeholder Dan Raytis commented that the information provided in the variance requests supports an argument for an allocation of 1,400 acre-feet (AF), but they requested 1,165 AF, which recognizes that there were some years without double crops or recycled use.

Committee Member Debranch asked how many of the five variance requests were to correct technical data. Mr. Blakslee responded that four of the five requesters raised technical issues.

Committee Chair Kelly noted the key concern raised by SAC members was how to address parcels that fall within the margin of error in water allocation calculations and whether a minimum allocation threshold should be established to ensure equitable treatment. He emphasized the need for fairness, particularly for small-scale operators whose water allocations may be significantly impacted by minor calculation errors. He acknowledged the challenges in defining an appropriate policy and the need for further discussion to address concerns raised by small farmers.

Committee Member DeBranch commented that the motion is a step backwards from progress the Board has made and contradicts board policies. He noted the suggested policy recommendation would require changing all allocations.

MOTION
Committee Member Jaffe made a motion to recommend that the GSA consider the amount of water being requested in the variances and it impacts to the percentage of the total allocations for the CMA, in addition to the technical data considerations. The motion was seconded by Committee Member Haslett. A roll call vote was made, and the motion passed.

AYES:	Caufield, Gaillard, Kelly, Lewis, Haslett
NOES:	DeBranch
ABSTAIN:	None
ABSENT:	Jaffe

b. Discuss and Take Appropriate Action on GSA Project Prioritization/Schedule
Mr. Blakslee presented a draft list of policy and project priorities for the next five years. He is looking for feedback from the committee on any edits or changes to the list and the recommended process for ranking the projects.

Committee Member Caufield asked if reporting below 25 AF is required for the evapotranspiration study.

Mr. Van Lienden responded that the model develops evapotranspiration for classes of land use. Then the land use is used to simulate historical data going back to 1995. The model does not simulate evapotranspiration for each field. He added that due to the time constraint during the model update, a full reassessment of evapotranspiration was not conducted. The team relied on previously developed estimates for different crop types in the basin and pumping data was used for model calibration. He noted that using meter data can potentially improve evapotranspiration estimates.

Mr. Blakslee commented that ET refinement can be used to correct historical information.

Committee Chair Kelly asked that isotope testing / water migration to be considered with the deep percolation study understand movement of water between the root zone and aquifer.

Committee Vice Chair Haslett asked that the board consider adding prescriptive burns to the project list.

Committee Member DeBranch commented that he is not in favor of including the tiered allocation, carry over and water markets until allocations are basin-wide.

Committee Member Lewis asked to consider an alternative to historical pumping for allocations, if there are inequities in the allocations.

Stakeholder Adam Lovgren commented that the ranking criteria is not clear and asked that definitions be included on the sheet.

c. Discuss and Take Appropriate Action on Stormwater Capture Surface Rights Analysis

Legal Counsel Alex Dominguez provided a brief update on the legal and technical aspects of stormwater capture and surface water rights analysis, including the availability of water for diversion, the permitting process, and potential funding challenges.

Committee Chair Kelly asked who would be responsible for funding the project.

Mr. Dominguez responded that it would depend on how the project is structured and specific details have not been discussed.

Committee Vice Chair Haslett commented that while traditional projects can be expensive, proven technologies are already in use across California and offer cost-effective and efficient recharge solutions. He mentioned the importance of a watershed management approach over a industrial method, and suggested that integrating local projects into broader regional and state-supported initiatives could provide benefits while aligning with ongoing watershed management efforts.

Committee Member Gaillard asked about the legality of rainwater catchment systems and water rights because captured water cannot recharge the downstream users.

Mr. Dominguez responded that the technical team determined that generally there is storm event every 10 years that allows for an excess amount of water than what is permitted.

Committee Member Caufield asked about the definition of stormwater.

Mr. Dominguez responded that the analysis accounted for all water rights and dam capacity first, then evaluated the remaining water availability after those factors were addressed.

10. Groundwater Sustainability Plan Amendment Components

a. Review Land Use Classifications

Mr. Van Lienden noted that this item was included in response to a previous request from SAC members. He introduced Sercan Ceyhan (Woodard and Curran), who will review the land use classifications.

Mr. Ceyhan presented the historical land use data and the process of updating the model with annual land use information. He provided an overview of the data sources and land use classifications including Land IQ crop mapping and land use processing assumptions. He described the process of identifying and classifying non-irrigated lands in the model.

Committee Member Caufield asked ground-truthing in the Cuyama Valley.

Mr. Van Lienden responded that they did ground-truthing in 2023 and 2024. Mr. Blakslee added that Land IQ will go out in the spring and fall to ground-truth.

Committee Vice Chair Haslett asked what percentage of the Cuyama Valley has been covered by Land IQ ground-truthing. Mr. Van Lienden responded that it is dependent on where Land IQ can get access.

Committee Member Jaffe asked if it would be accurate to compare Land IQ data with the landowner reporting.

Mr. Ceyhan responded that Land IQ defines the crop type; they do not provide historical water use or parcel border data, which makes it difficult to compare it to the landowner reports

Committee Chair Kelly asked if each of the model land use types have different ET rates. Mr. Ceyhan responded that land use types have different ET rates, but it does not differentiate between the same crop in different areas within the basin.

Committee Vice Chair Haslett pointed out that cannabis was not included as a model type. He commented that grazing land is not differentiated.

Committee Member Jaffe asked how de minimis users are included in the model and what is considered non-irrigated land.

Mr. Ceyhan responded that de minimis classification does not affect the model estimation. He added that non-irrigated land is idle for consecutive years.

Committee Member Haslett asked how rainfall is included in the estimation of the amount of overall pumping for a crop.

Mr. Ceyhan responded that there are two inflows in the model, infiltration from precipitation and water from applied irrigation.

Committee Member Caufield suggested differentiating pasture and natural vegetation classifications.

Stakeholder Adam Lovgren asked if different irrigation practices are represented in the model. Mr. Ceyhan responded that the model does differentiate irrigation practices, but they can control irrigation thresholds for crop types.

11. Technical Updates

a. Update on Groundwater Sustainability Plan Activities
Mr. Van Lienden briefly reviewed that all the GSP activities, which is provided in the SAC packet.

b. Update on Grant-Funded Projects
Mr. Van Lienden provided a brief overview of the grant-funded projects which is provided in the SAC packet. He reported that the website redesign is complete.

Committee Chair Kelly asked if the GDE wells will have transducers. Mr. Van Lienden responded that transducers are for multi-completion wells, but he will confirm.

c. Update on 2024 Groundwater Conditions Report
Mr. Van Lienden provided an overview of the October 2024 Groundwater Conditions Report which is provided in the SAC packet. He noted that he will review and confirm the criteria used for setting the minimum threshold for well 118.

12. Administrative Updates

a. Report of the Executive Director
Nothing to report.

b. Report of the General Counsel

Nothing to report.

c. Board of Directors Agenda Review
Mr. Blakslee briefly noted that January 15, 2025, CBGSA Board Meeting agenda is provided in the SAC packet.

13. Items for Upcoming Sessions
Nothing to report.

14. Committee Forum
Nothing to report.

15. Correspondence
Nothing to report.

16. Adjourn
Chair Kelly adjourned the meeting at 8:42 p.m.

STANDING ADVISORY COMMITTEE OF THE
CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY

Chair Kelly: ___________________________________

ATTEST:
Vice Chair Haslett: ____________________________________

TO: Standing Advisory Committee
Agenda Item No. 8a

FROM: Taylor Blakslee / Brian Van Lienden

DATE: February 27, 2025

SUBJECT: Discuss and Take Appropriate Action on Water Year 2023-2024 Annual Report

Recommended Motion
Approve the Water Year 2024 Annual Report.

Discussion
In compliance with the Sustainable Groundwater Management Act, annual reports on basin sustainability metrics and progress on Groundwater Sustainability Plan implementation must be submitted to the California Department of Water Resources (DWR) by April 1st of each year.

A summary of the draft annual report for Water Year 2023-2024 (October 1, 2023 through September 30, 2024) is provided as **Attachment 1**, and the full report is provided as **Attachment 2** for consideration of approval.

Cuyama Basin Groundwater Sustainability Agency

Discuss and Take Appropriate Action on Water Year 2023-2024 Annual Report

February 27, 2025

HALLMARK GROUP

Woodard & Curran

Annual Report Timeline

- DWR SGMA regulations require that an Annual Report be submitted each year by April 1st each year

- **Staff is requesting approval of the Annual Report**

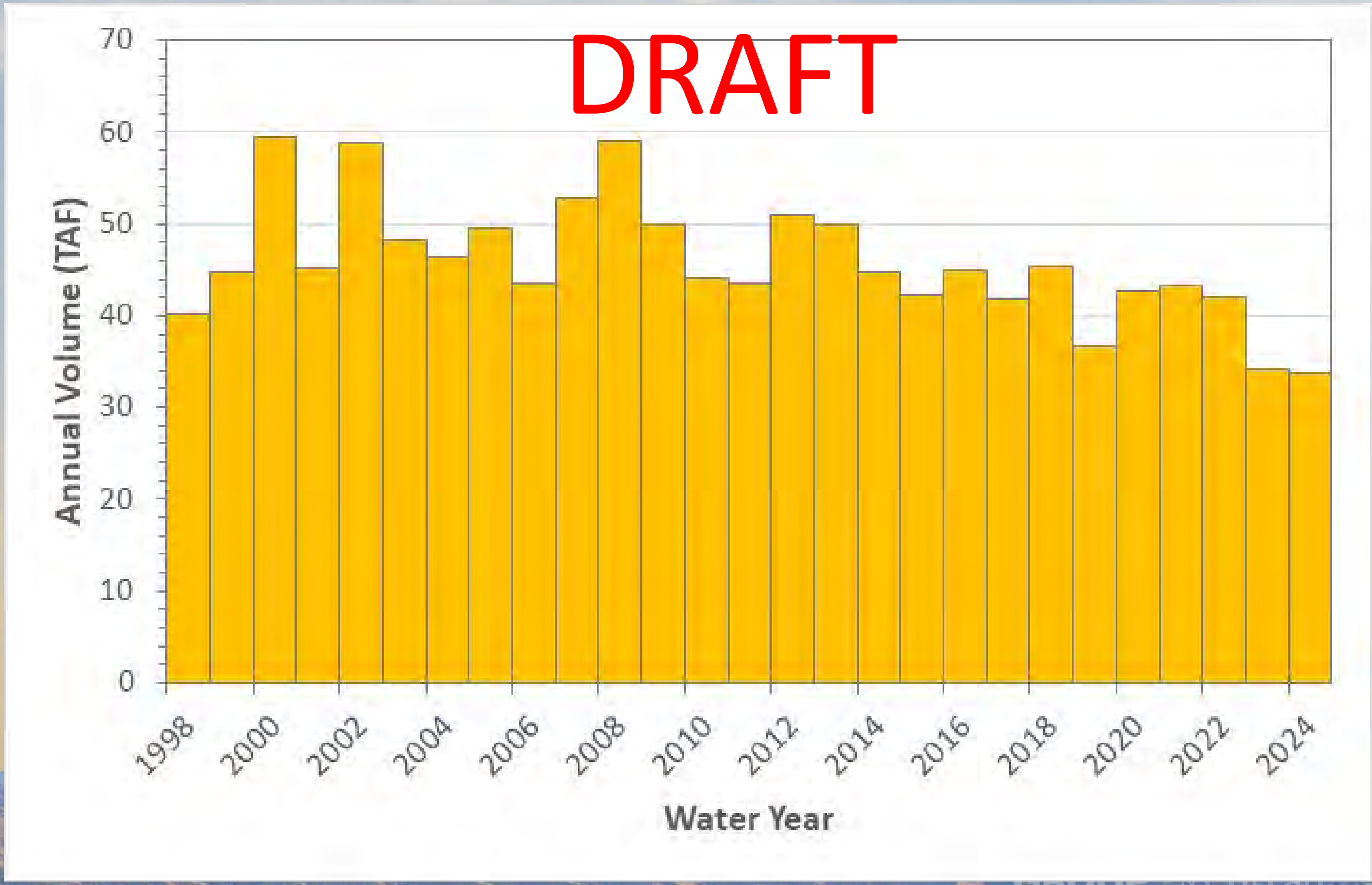
Data and Model Updates

- Groundwater elevations:
  - Available data collected for all wells in monitoring network through 2024
- Groundwater model update
  - Historical model period is extended through 2024
    - Annual Report model reflects the model updates that were completed in 2024
  - Updated land use, precipitation and evapotranspiration data collected for 2024
    - Updated land use data has been provided for 2024 period by local landowners
    - LandIQ also developed land use estimates for 2024; this was used to supplement local landowner data

HALLMARK GROUP Woodard & Curran

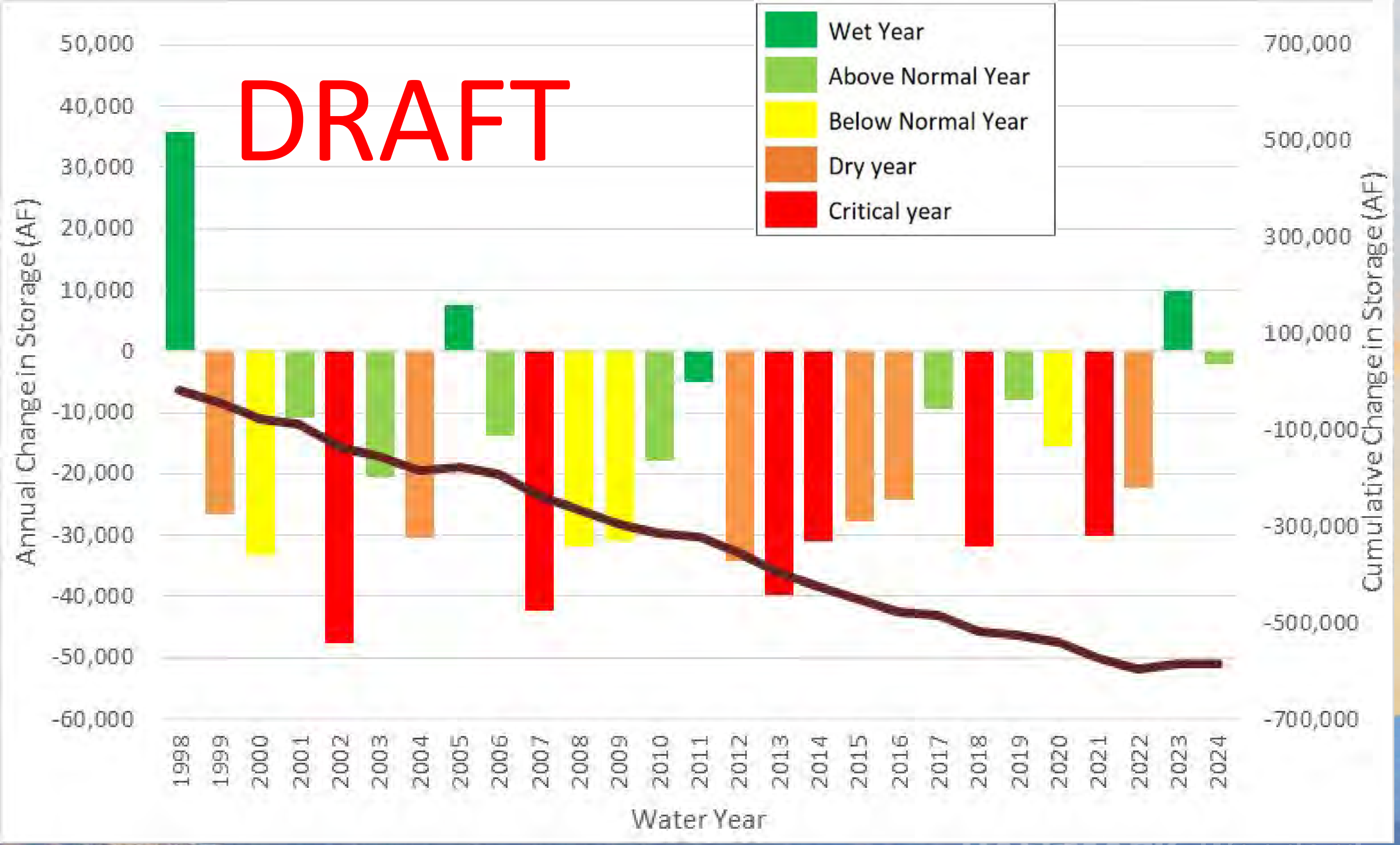
Estimated Groundwater Extraction

- Estimated groundwater extractions:
  - 2022: 41,900 AF
  - 2023: 34,100 AF
  - 2024: 33,800 AF



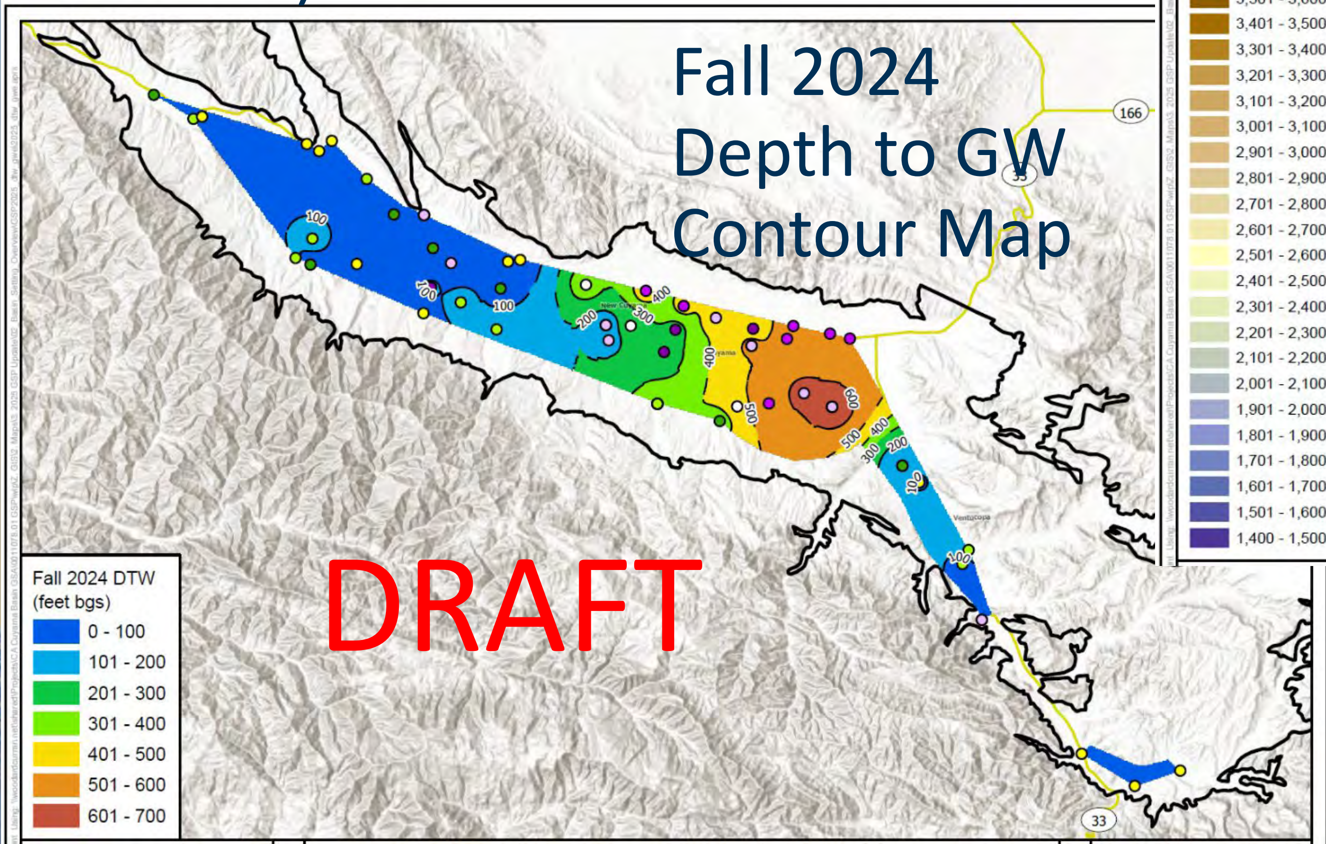
Change in Groundwater Storage

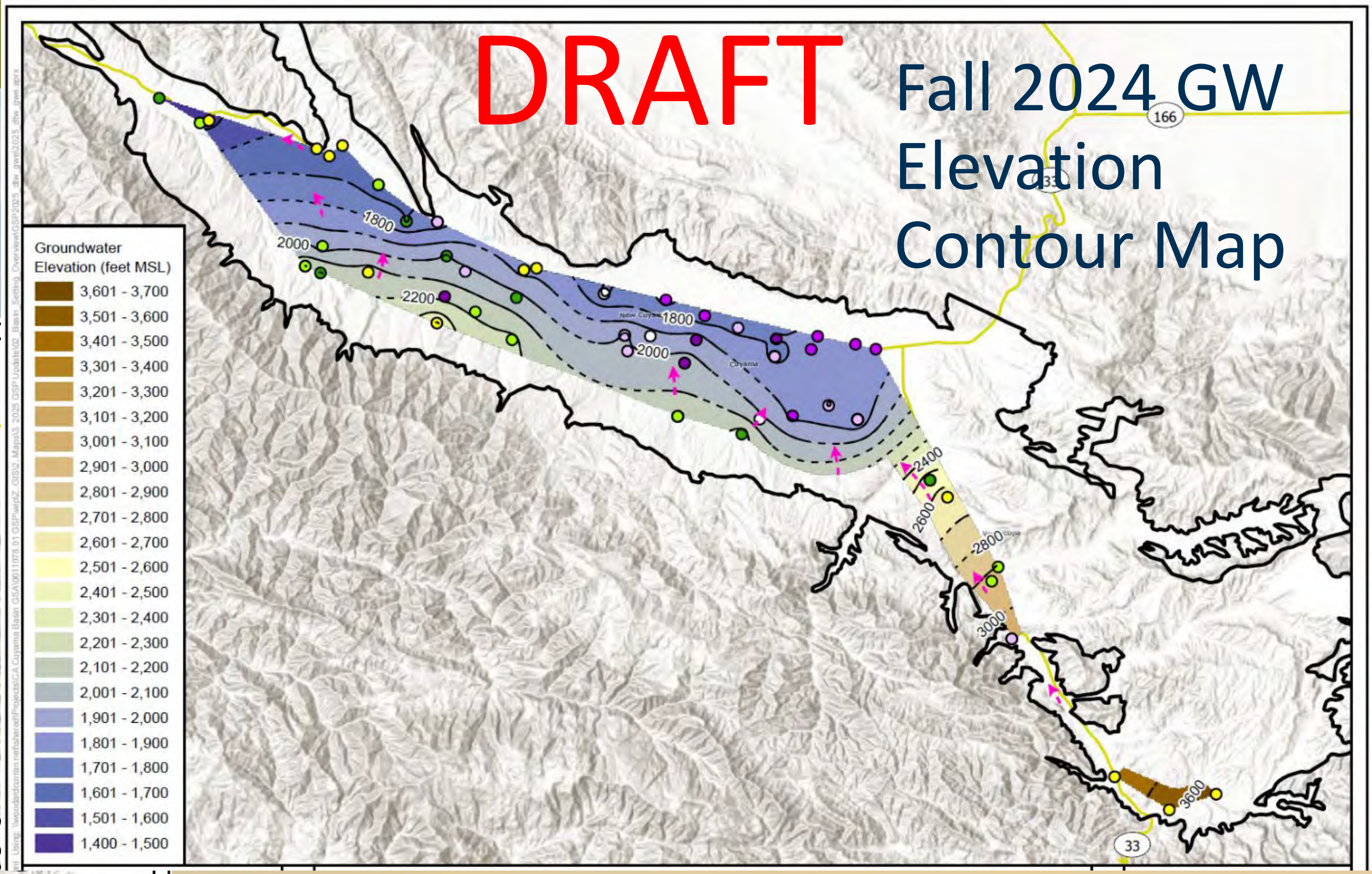
- Estimated change in storage:
  - 2022: -22,200 AF
  - 2023: +9,900 AF
  - 2024: -2,100 AF

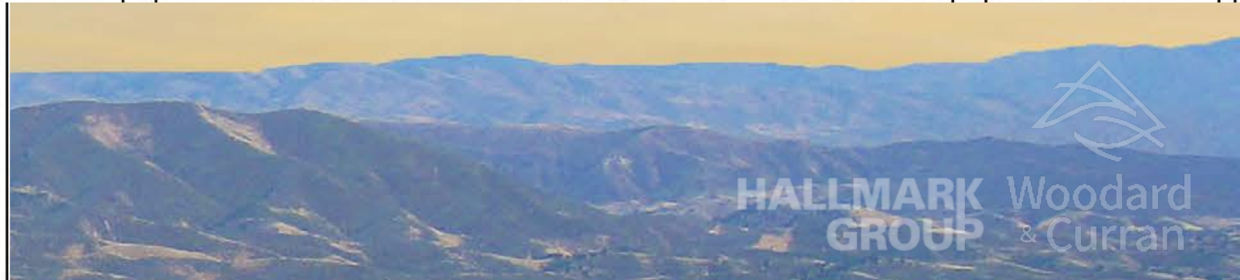


Updated Groundwater Conditions Figures

Updated Contour Maps were created for 2024 (Spring and Fall)

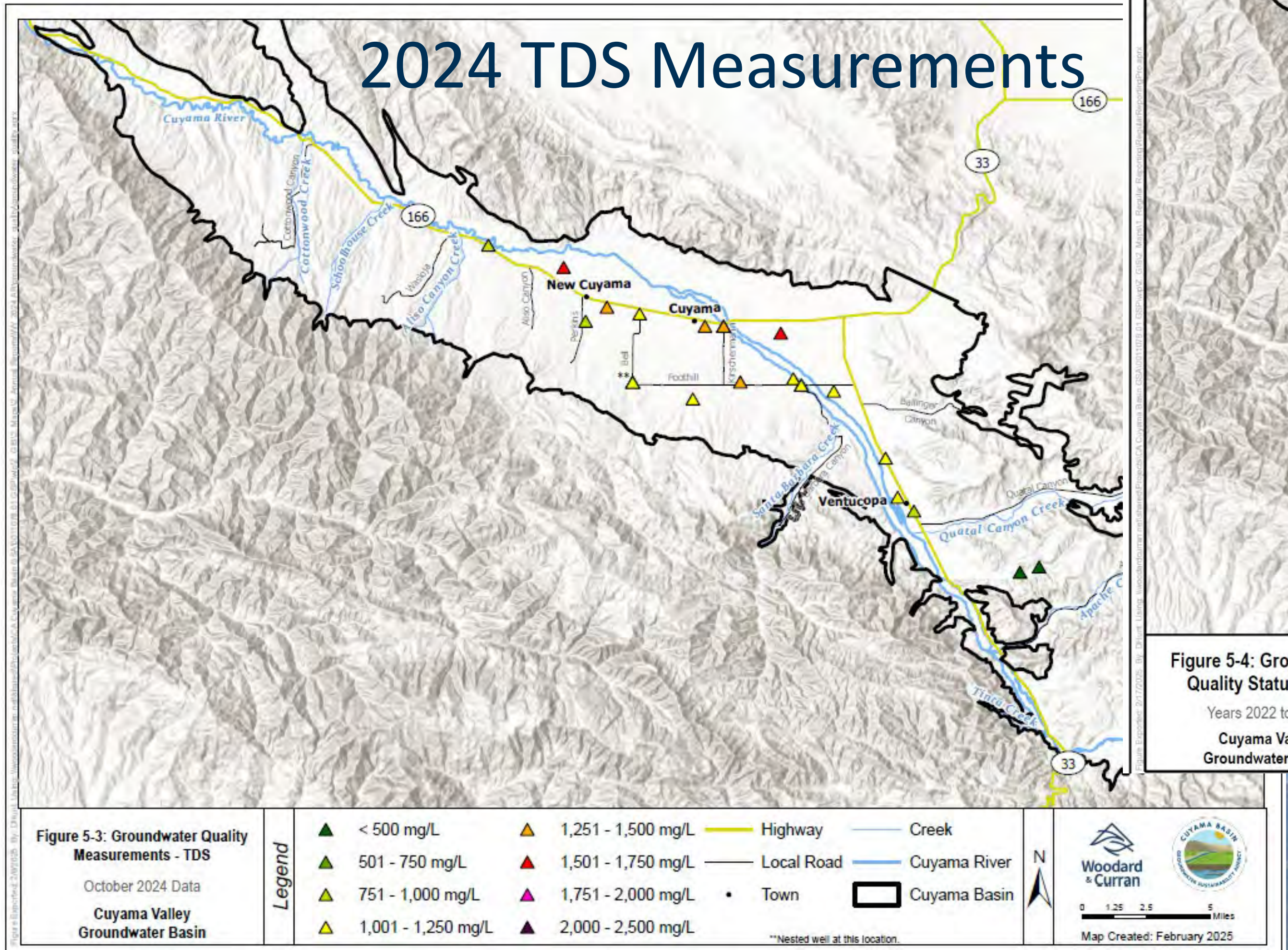


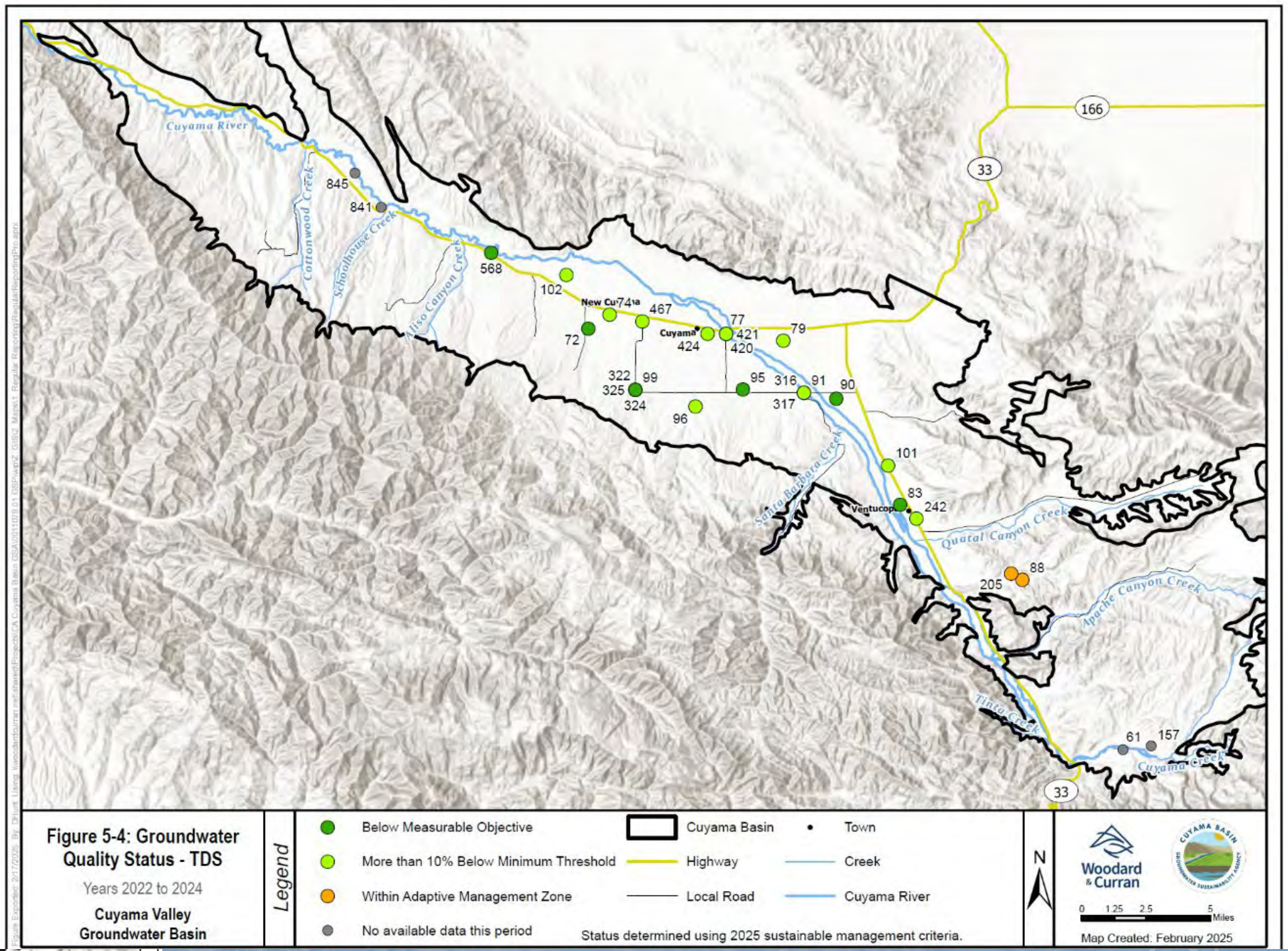




Salinity (TDS) Conditions Figures DRAFT

2024 TDS Measurements





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Cuyama Basin
Groundwater Sustainability Plan—
Draft Annual Report for 2023-2024 Water Year

Prepared by:

Woodard & Curran

March 2025

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Tables

Figures

Appendices

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.

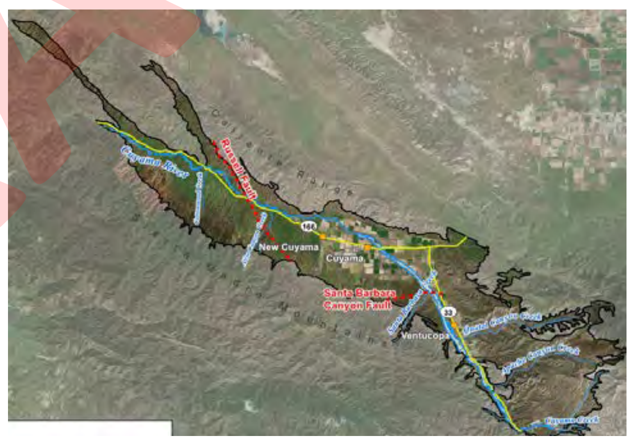


Figure ES-1: GSP Plan Area

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.

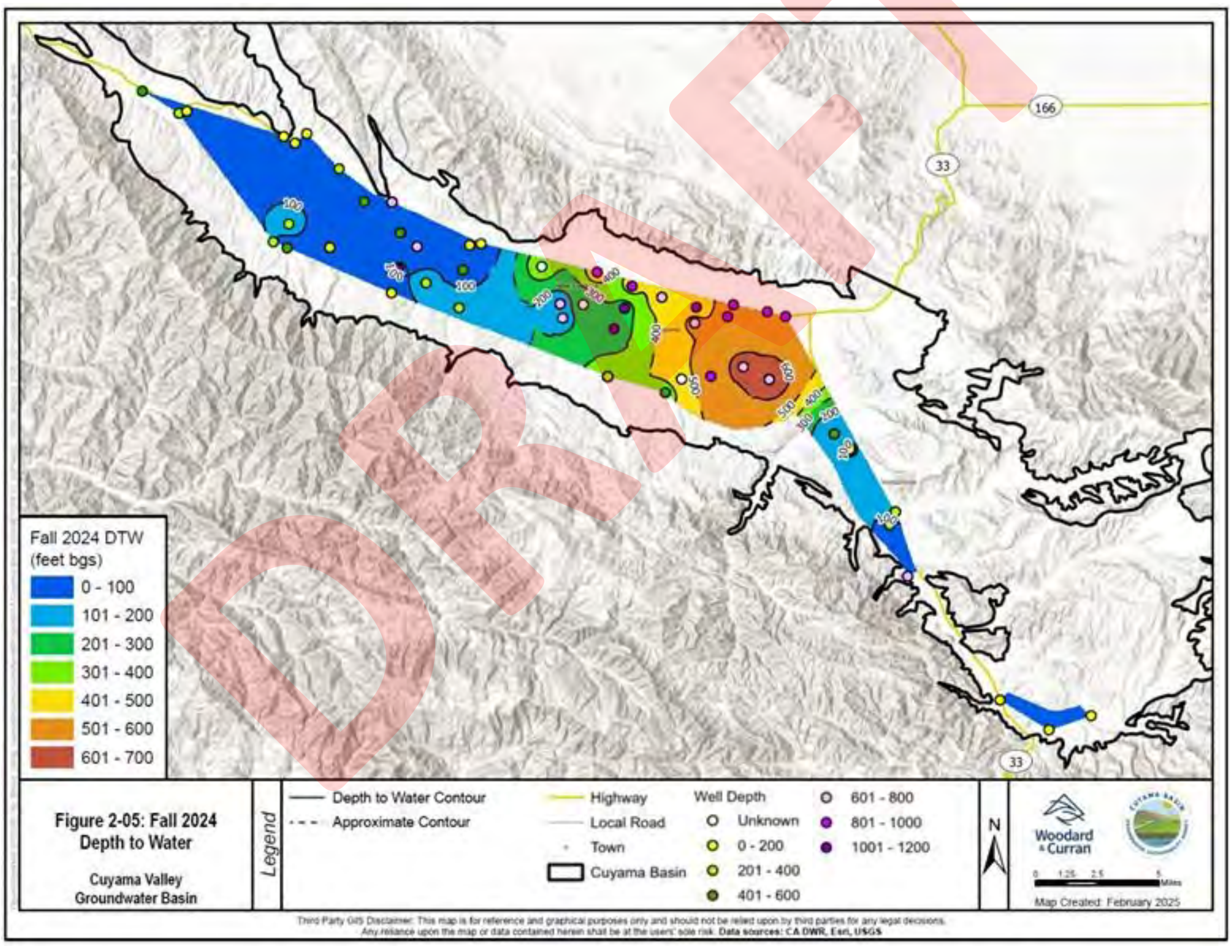
On January 21, 2021, DWR determined that the GSP was "incomplete" and recommended CBGSA to amend the GSP to address four corrective actions. To address these corrective actions, CBGSA developed supplemental sections to the GSP and resubmitted to DWR on July 18, 2022. On March 2, 2023, DWR announced that the Revised GSP had been Approved.

In compliance with SGMA Regulations the 2025 GSP Update was developed and approved by the CBGSA in November of 2024. The 2025 GSP update incorporated recent monitoring data, an updated groundwater model, new information and studies, and updated monitoring networks and sustainable management criteria (SMC). The updated GSP was submitted to DWR on January 29, 2025. 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**.

ES-2 Groundwater Levels

The Annual Report for the 2024 water year includes groundwater contours for Spring and Fall of 2024, 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 2024 have changed a small amount in the central basin compared to 2023 levels with little change in other parts of the basin.

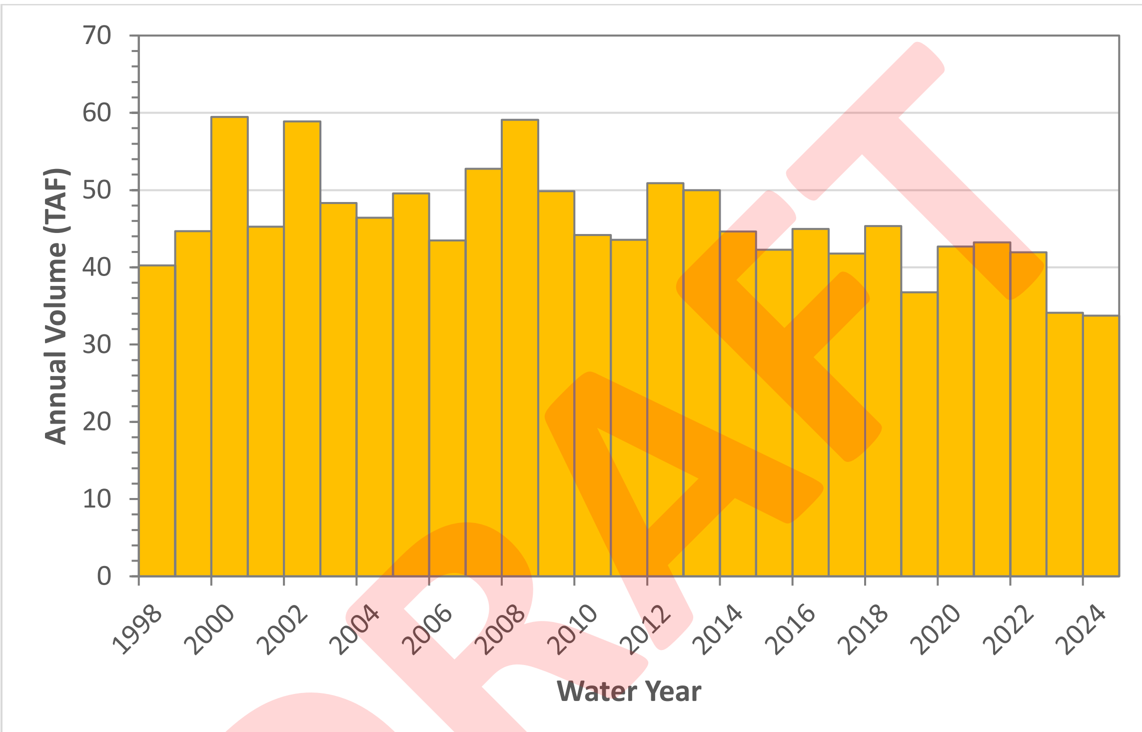
Figure ES-2: Cuyama Basin Depth to Water Contour Map (Fall 2024)



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 33,700 AF in 2024. This reflects a decrease of about 16,200 AF as compared to 2023. (See **Figure ES-3**).

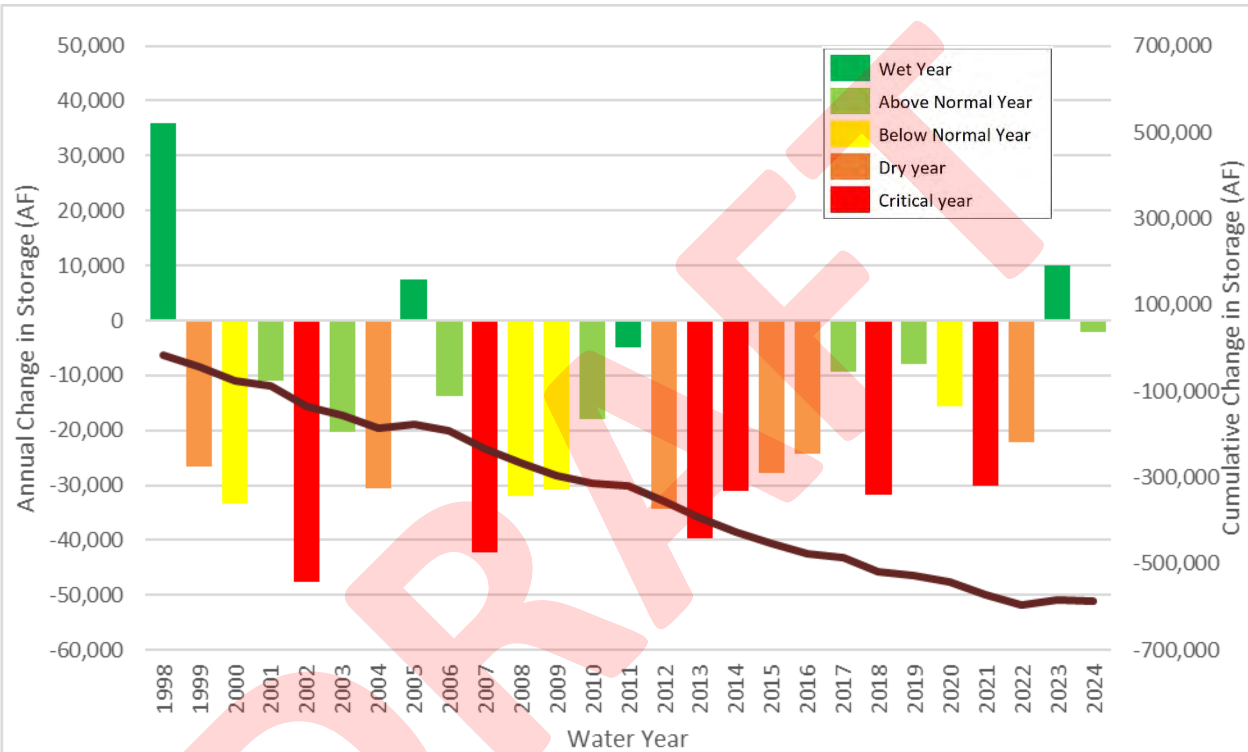
Figure ES-3: Annual Groundwater Extraction in the Cuyama Basin in Water Years 1998-2024



ES-4 Change in Groundwater Storage

It is estimated that there was a decrease in Basin groundwater storage of 2,100 AF in 2024. There continues to be a 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 2024.

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



[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-5 Groundwater Quality

Only 76% (19 of 25) of monitoring wells were sampled for total dissolved solids (TDS) in 2024. Approximately 68% (17 wells) of representative wells were lower (i.e. better) than their measurable objective and only 4% (one well) exceeded its minimum threshold for TDS.

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 2024:

- Implementation of a groundwater extraction fee and supplemental fee, which is expected to generate revenue to cover the administrative costs of the CBGSA for the period from January 1, 2025, through December 31, 2025.
- A total of eleven 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 quarterly monitoring at each monitoring well.
- The CBGSA continued to utilize the COD SGMA Implementation Grant for $7.6 million in funding for implementation activities.
- The CBGSA and Cuyama Basin Water District (CBWD) continued 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:

- Cory Bantilan – Chairperson, SBCWA
- Derek Yurosek – Vice Chair –CBWD
- Deborah Williams –CCSD
- Byron Albano – CBWD
- Jimmy Paulding – County of San Luis Obispo
- Arne Anselm – County of Ventura
- Rick Burnes – CBWD
- Jane Wooster – CBWD
- Katelyn Zenger – County of Kern
- Matthew Young – Santa Barbara County Water Agency
- Steve Jackson – Cuyama Basin Water District

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. six-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 nine 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.

On January 21, 2021, DWR determined that the GSP was "incomplete" and recommended CBGSA amend the GSP to address the following four corrective actions:

- Provide justification for, and effects associated with, the sustainable management criteria;
- Use of groundwater levels as a proxy for depletion of interconnected surface water;
- Further address degraded water quality; and
- Provide explanation for how overdraft will be mitigated in the basin.

To address these corrective actions, the CBGSA developed the following supplement sections to the GSP and resubmitted to DWR on July 18, 2022:

- Supplemental Section 2.2.7: Basin Settings, Groundwater Conditions, Groundwater Quality performed additional data collection efforts for nitrate and arsenic measurements.
- Supplemental Section 3.3: Undesirable Results, Evaluation of the Presence of Undesirable Results provided additional information regarding the rationale for the criteria used in the GSP to define the point at which Basin conditions cause significant and unreasonable effects to occur.
- Supplemental Section 4.10: Monitoring Networks, Depletions of Interconnected Surface Water Monitoring Network identifies a subset of groundwater level representative monitoring wells for use in ISW monitoring and provides a rational for their selection and adequate data collection and monitoring for ISWs.
- Supplemental Section 5.2: Minimum Thresholds, Measurable Objectives, and Interim Milestones, Chronic Lowering of Groundwater Levels performed two technical analyses to provide additional information related to the effects of the GSP's groundwater levels minimum thresholds and undesirable results on well infrastructure and on environmental uses of groundwater.
- Supplemental Section 5.5: Minimum Thresholds, Measurable Objectives, and Interim Milestones, Degraded Water Quality provides information on why groundwater management is unlikely to affect nitrate and arsenic concentrations.
- Supplemental Section 7.2: Projects and Management Actions, Management Areas provide additional information regarding the Ventucopa management area and the northwestern region of the Basin.
- Supplemental Section 7.6: Projects and Management Actions, Adaptive Management explains the circumstances of when adaptative management strategies may be also triggered for other reasons.

On March 2, 2023, DWR announced that the Revised GSP had been Approved.

The CBGSA prepared an updated GSP, which was approved in November 2024 and submitted to DWR in January 2025. The updated GSP incorporates newly collected data and updated groundwater model, updated sustainable management criteria, and updates to projects and management actions. The resubmitted and Updated 2025 GSP 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 2003 version of Bulletin 118 section on the Cuyama Valley Groundwater Basin incorrectly stated 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.

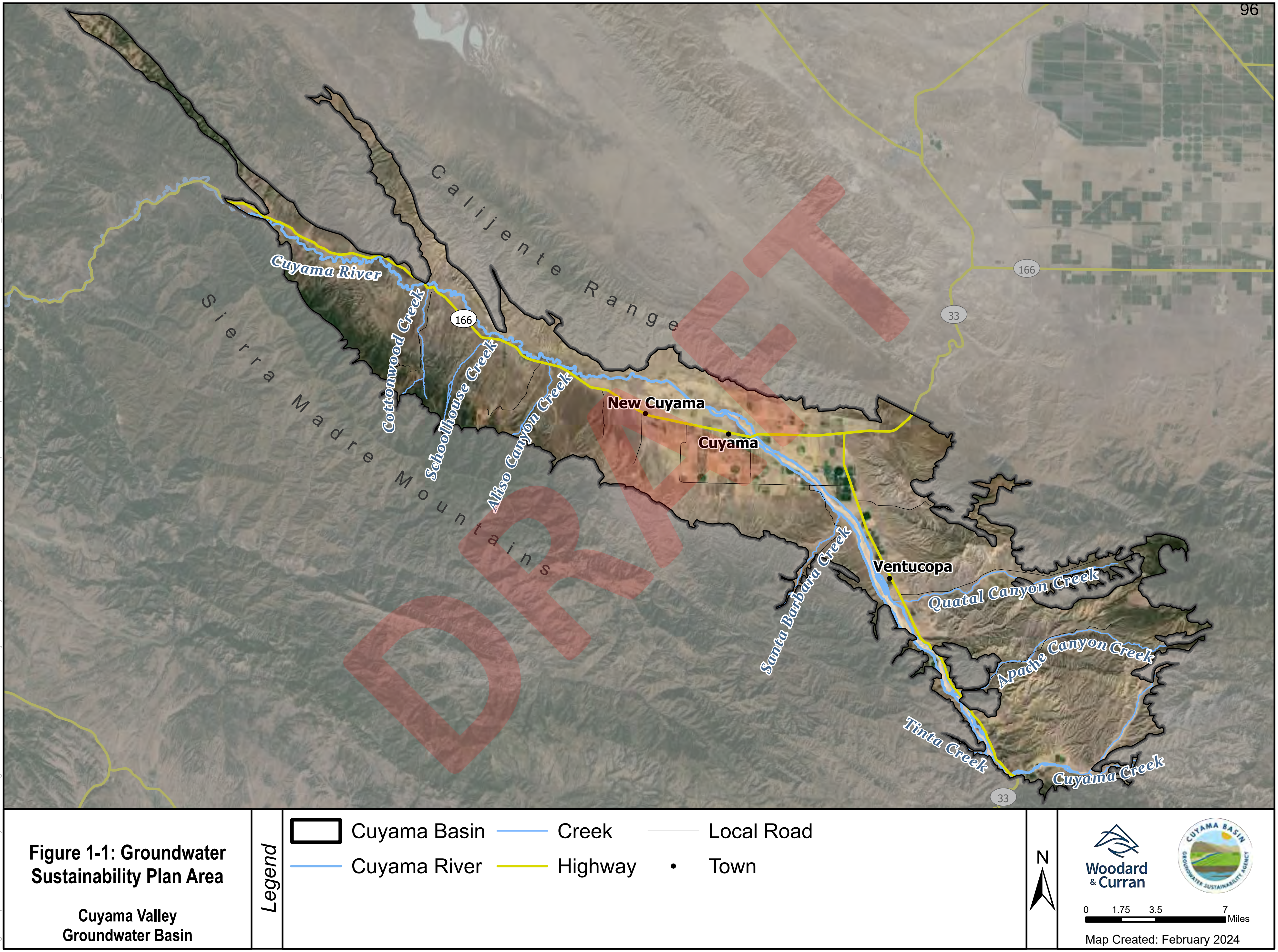

Figure 1-1: Groundwater Sustainability Plan Area

Cuyama Valley Groundwater Basin

Map Created: February 2024

Figure Exported: 2/20/2024 By: DHunt Using: \\woodardcurran.net\shared\Projects\CA Cuyama Basin GSA\0011078.01 GSP\wip\Z_GIS\2_Maps\Annual Reports\WY 2023 AR\Introduction\ar_2024_introduction.aprx

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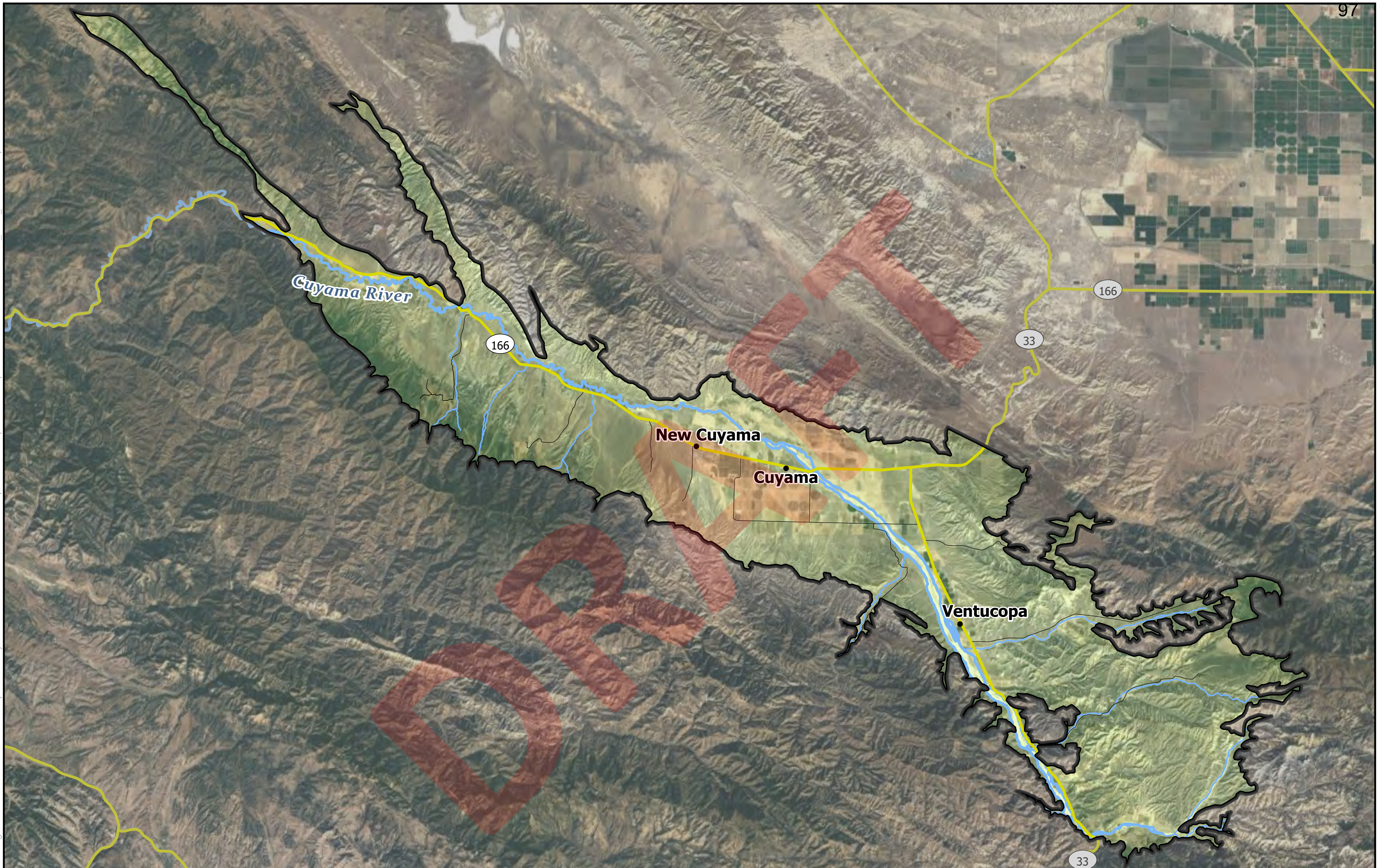

Figure 1-2: Groundwater Sustainability Agency Boundary

Cuyama Valley Groundwater Basin

Legend

- Cuyama Basin
- Cuyama River
- Creek
- Highway
- Local Road
- • Town
- Cuyama Basin GSA

N

0 1.75 3.5 7 Miles

Woodard & Curran

Cuyama Basin Groundwater Sustainability Agency

Map Created: February 2024

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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 current groundwater levels representative monitoring network that was approved by the CBGSA Board 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.

In advance of the 2025 GSP Update, the CBGSA Board voted to modify the representative monitoring network to remove two wells for which the CBGSA has not been able to get a landowner agreement. In addition, CBGSA Board approved updated minimum thresholds and measurable objectives that take into consideration beneficial uses and users of groundwater and data collected over the last several years of Basin implementation. These changes have been reflected in the 2025 GSP update and in this Annual Report.

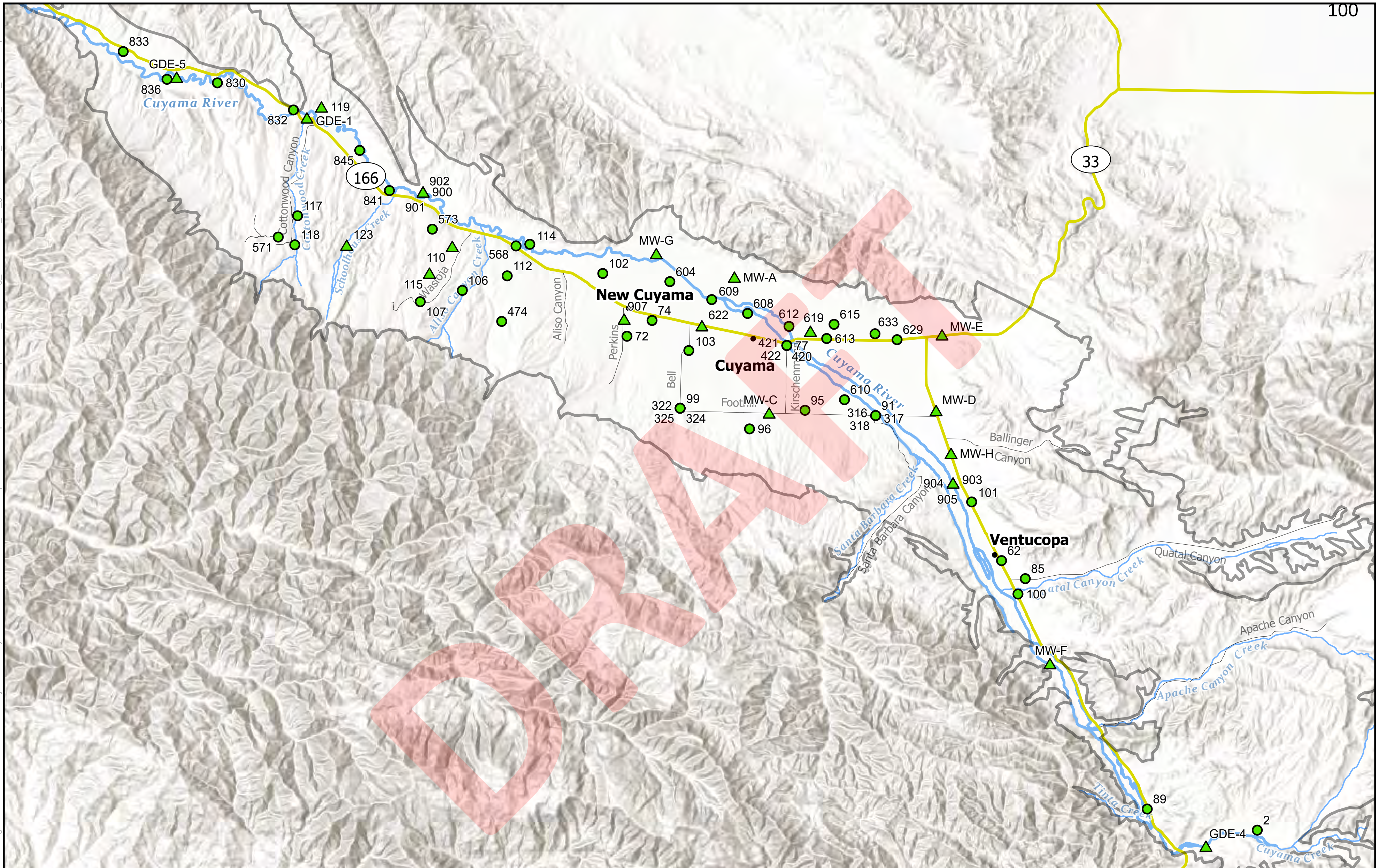

Figure 2-1: Updated Groundwater Level Monitoring Network

Cuyama Valley Groundwater Basin

Legend

Network Well

- Representative Monitoring
- Non-representative Monitoring

- Highway
- Local Road
- Town
- Cuyama River
- Creek
- Cuyama Basin

N

0 1.25 2.5 5 Miles

Map Created: December 2023

Woodard & Curran

Cuyama Basin Groundwater Sustainability Agency

Figure Exported: 12/27/2023 By: DHunt Using: \\woodardcurran.net\shared\Projects\CA Cuyama Basin GSA\0011078.01 GSP\wip\Z. GIS\2. Maps\2025 GSP Update\04_Monitoring_Networks\17_19_groundwater_level\gw_level_network.aprx

2.2 Groundwater Contour Maps

The Updated 2025 GSP submitted in January, 2025, included contour maps up through the spring of 2024. The previous Annual Reports included contour maps for spring and fall of 2019 through 2023. For this Annual Report, analysis was conducted to incorporate data through October 2024 that was 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 2024 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 2024.

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 April 2024 were used to develop the spring contours and in October 2024 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 2024. Based on data that 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 a 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 2024 and more clearly shows a depression in the central portion of the Basin greater than 600 ft below ground surface. Groundwater levels then increase toward the west reaching depths of less than 100 ft in the western portion of the Basin. These levels align with trends seen in previous contour maps provided in previous Annual Reports.

Figure 2-4 shows the groundwater elevation contours for Fall of 2024. 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 2023 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 2024. 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 2023 conditions and previous Annual Reports.

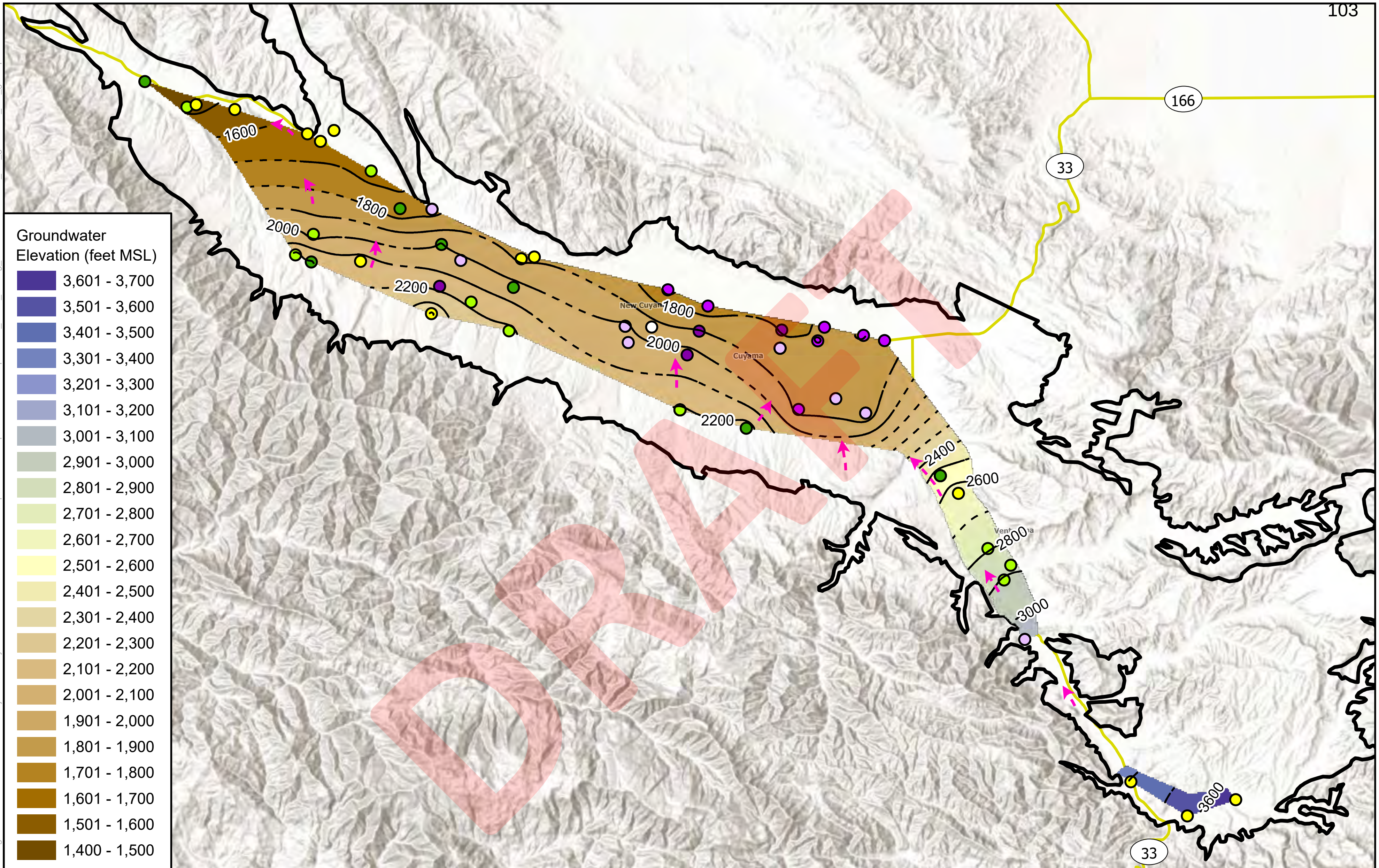

Figure 2-02: Spring 2024 Groundwater Elevation

Cuyama Valley Groundwater Basin

Legend

Groundwater Elevation Contour	Highway
Approximate Contour	Cuyama Basin
Conceptual Flowline	

Well Depth (feet)

Unknown	401 - 600
0 - 200	601 - 800
201 - 400	801 - 1000
	1001 - 1200

N

Woodard & Curran

Cuyama Basin Groundwater Sustainability Agency

0 1.25 2.5 5 Miles

Map Created: February 2025

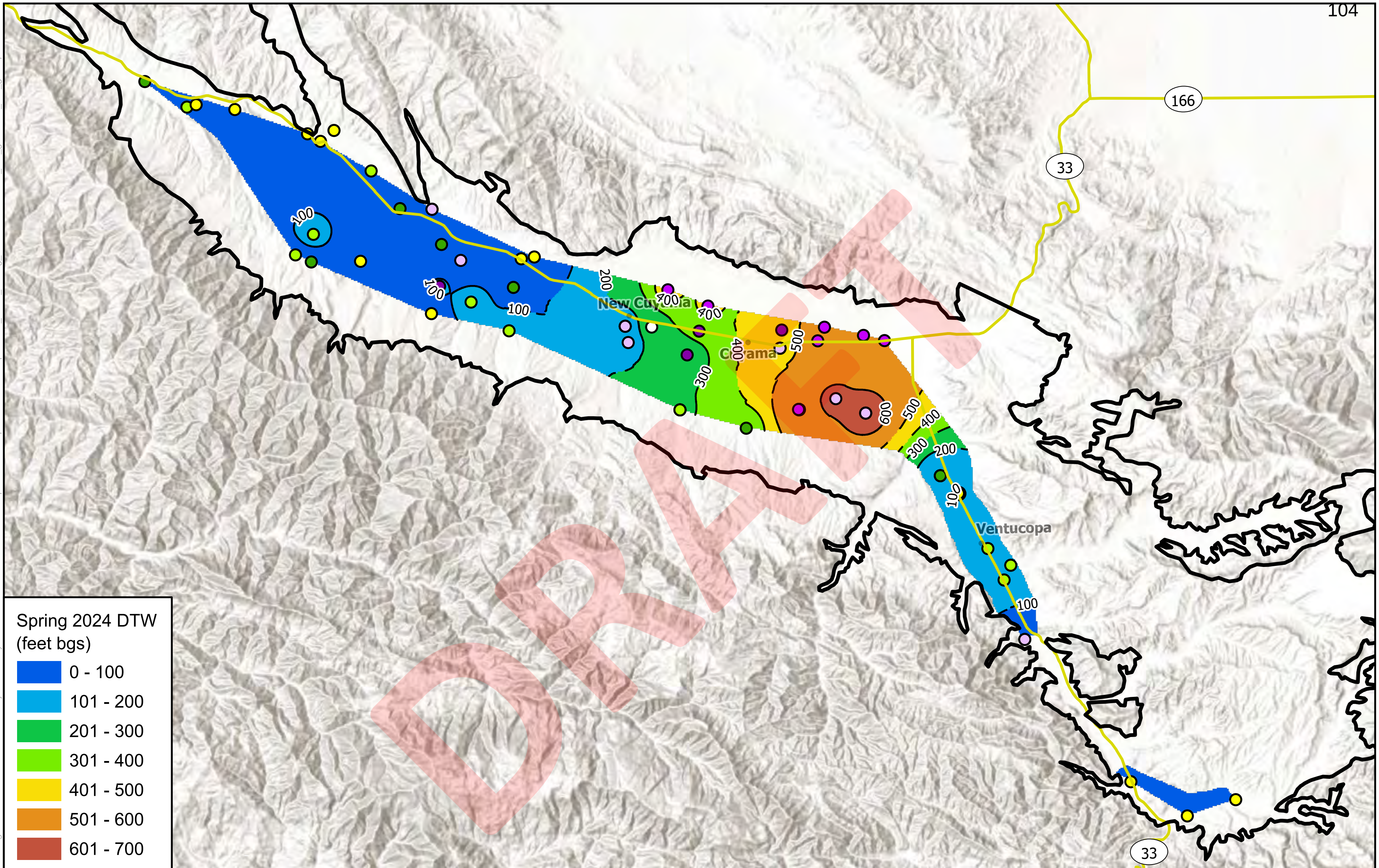

Figure 2-03: Spring 2024 Depth to Water

Cuyama Valley Groundwater Basin

Legend

Depth to Water Contour
Approximate Contour
Highway
Local Road
Town
Cuyama Basin
Well Depth
Unknown
0 - 200
201 - 400
401 - 600
601 - 800
801 - 1000
1001 - 1200

N

Woodard & Curran

CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY

0 1.25 2.5 5 Miles

Map Created: January 2025

Figure Exported: 1/30/2025 By: DHunt Using: \\woodardcurran.net\shared\Projects\CA Cuyama Basin GSA\0011078.01 GSP\wip\Z_GIS\2_Maps\3_2025 GSP Update\02_Basin_Setting_Overview\GSP2025_dtw_gwe\2025_dtw_gwe.aprx

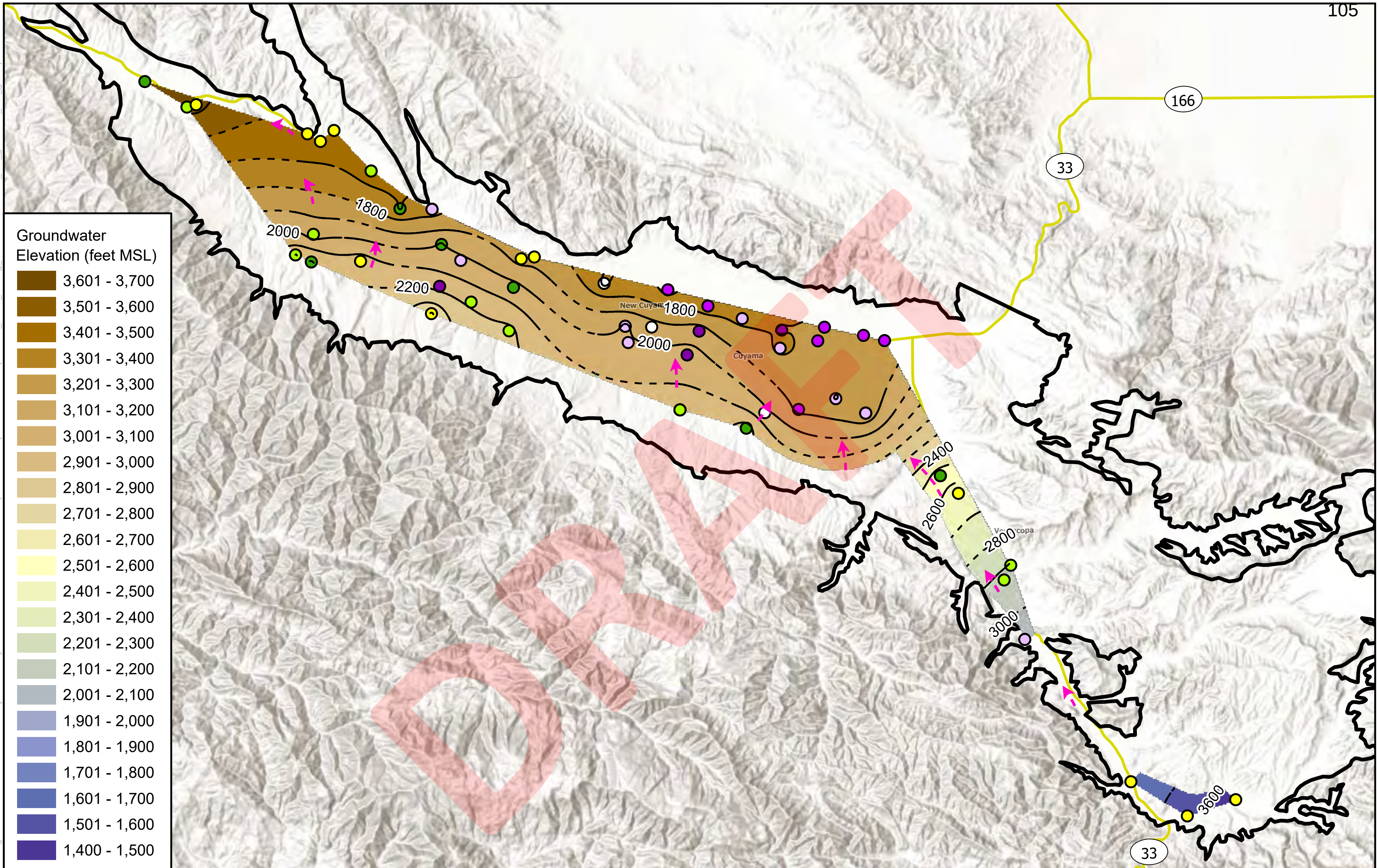

Figure 2-04: Fall 2024 Groundwater Elevation

Cuyama Valley Groundwater Basin

Legend

- Groundwater Elevation Contour
- Approximate Contour
- Conceptual Flowline
- Highway
- Cuyama Basin

Well Depth (feet)

- Unknown
- 0 - 200
- 201 - 400
- 401 - 600
- 601 - 800
- 801 - 1000
- 1001 - 1200

N

Woodard & Curran

Cuyama Basin Groundwater Sustainability Agency

0 1.25 2.5 5 Miles

Map Created: February 2025

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Figure Exported: 2/6/2025 By: DHunt Using: \\woodardcurran.net\shared\Projects\CA Cuyama Basin GSA\0011078.01 GSP\wip\Z. GIS\2. Maps\3. 2025 GSP Update\02_Basin_Setting_Overview\GSP2025_dtw_gwe\2025_dtw_gwe.aprx

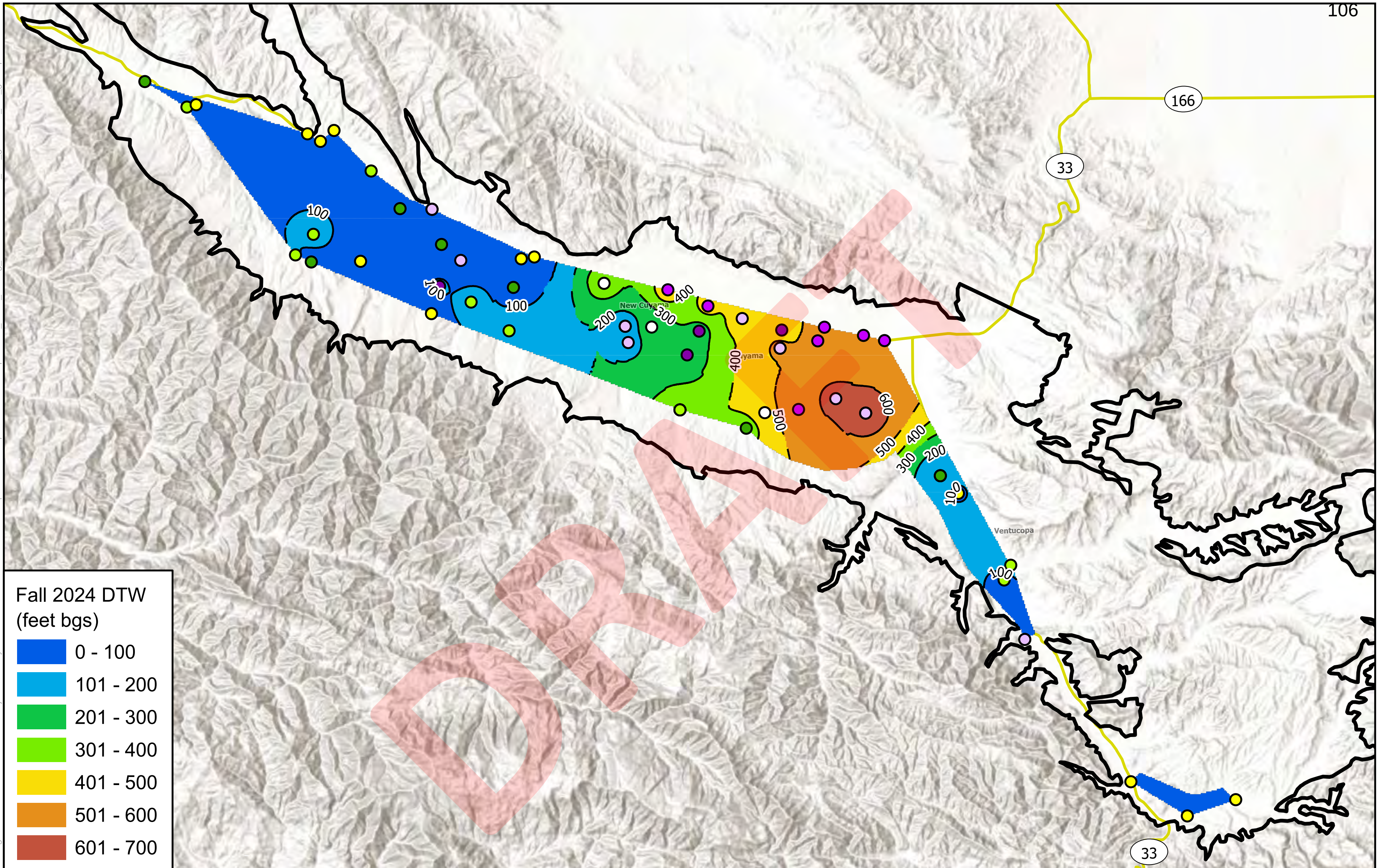


Figure 2-05: Fall 2024 Depth to Water

Cuyama Valley Groundwater Basin

Legend

- Depth to Water Contour
- Approximate Contour
- Highway
- Local Road
- Town
- Cuyama Basin

Well Depth

- Unknown
- 0 - 200
- 201 - 400
- 401 - 600
- 601 - 800
- 801 - 1000
- 1001 - 1200

N

Woodard & Curran

CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY

0 1.25 2.5 5 Miles

Map Created: February 2025

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data sources: CA DWR, Esri, USGS**

2.3 Hydrographs

Groundwater hydrographs were developed for each representative 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 groundwater level representative network well are presented in Appendix A.

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 2-1** and are accompanied by hydrographs for an example well in each threshold region. 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 2-1: Groundwater Trends by Threshold Regions

Threshold Region	Groundwater Trend	Example Well(s)
Northwestern Region	An upward trend influenced by seasonal fluctuations. This is expected as a wet winter brought recharge to this area. Although there are recent changes in land use that have begun to pump groundwater, levels have risen over the past water year. Levels are approximately 100 ft above the Measurable Objective.	841 (**Figure 2-7**)
Western Region	Levels in this region showed a significant recovery due to previous wet water years to within 40 feet of ground surface. Current levels are approximately 10 ft above the Measurable Objective.	571 (**Figure 2-8**)
Central Region	Levels have historically had a steady downward trend with some seasonal fluctuations. This pattern remains for some wells but with slight bumps correlated with the wet year (Well 91) with trends continuing downward and, in some cases, levels surpassing minimum thresholds. There is some indication of recovery in some wells such as Well 74 where groundwater levels improved and then continued the downward trend again.	74 and 91 (**Figure 2-9 & Figure 2-10**)
Eastern Region	This region has seen an overall decline over several decades. However, with the wet conditions, groundwater trends appear to be improving consistently and are far above the MO.	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**)

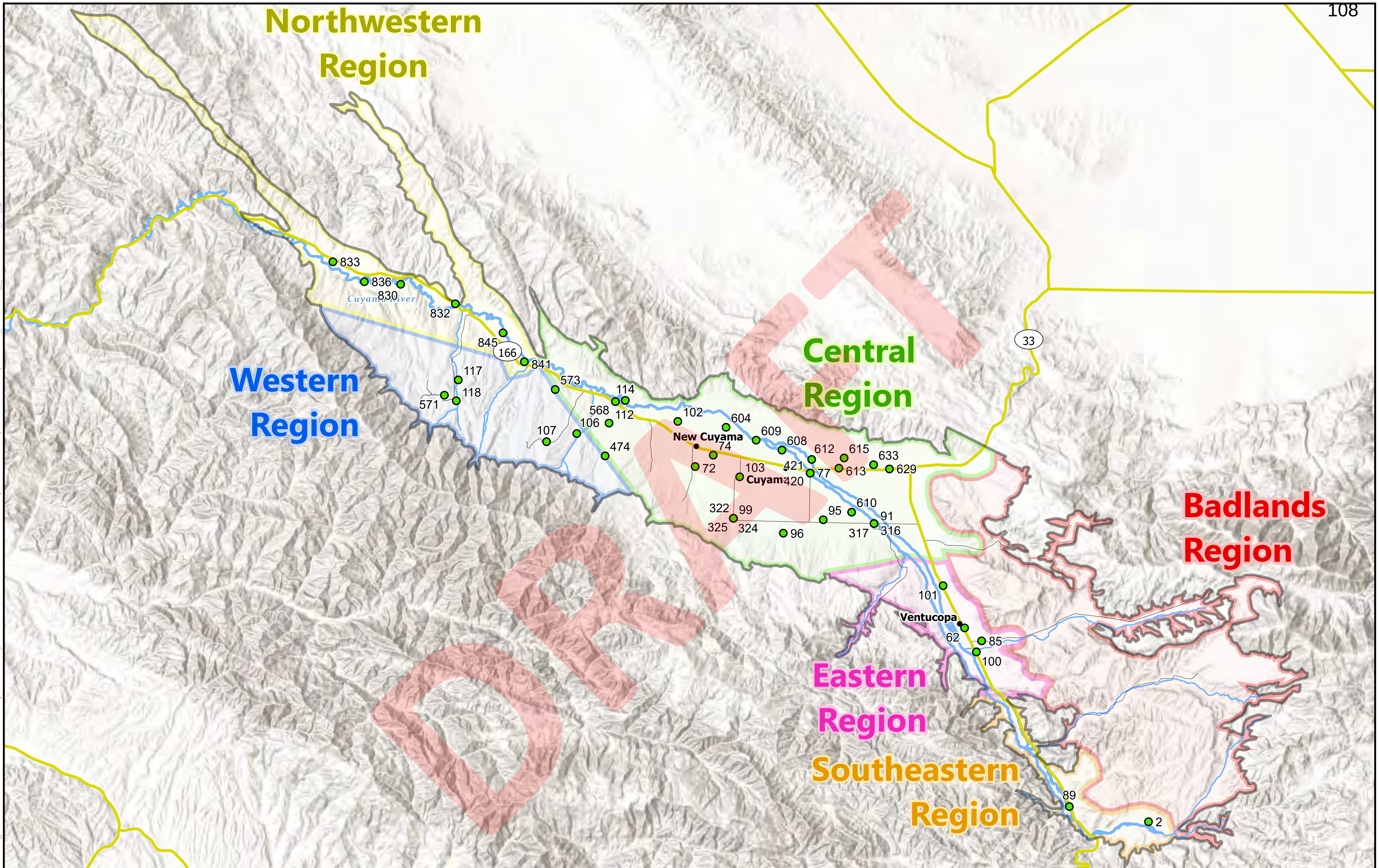


Figure 2-6: Representative Groundwater Monitoring Network and Threshold Regions

Cuyama Valley Groundwater Basin

Legend

- Representative Well
- **Threshold Regions**
- Badlands Region
- Central Region
- Eastern Region
- Northwestern Region
- Southeastern Region
- Western Region
- Highway
- Local Road
- Town
- Creek
- Cuyama River
- Cuyama Basin

N

0 1.75 3.5 7 Miles

Woodard & Curran

CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY

Map Created: February 2024

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions.
Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data sources: CA DWR, ESRI, USGS. Monitoring well data available in the Opti data catalog: https://opti.woodardcurran.com/cuyama/login.php**

Figure Exported: 2/19/2024 By: DHunt Using: \\woodardcurran.net\shared\Projects\CA Cuyama Basin GSA\0011078.01 GSP\wip\Z_GIS\2_Maps\2025 GSP Update\04_Monitoring_Networks\17_19_groundwater_level\gw_level_network.aprx

Figure 2-7: Example Well Hydrographs – Northwestern Region

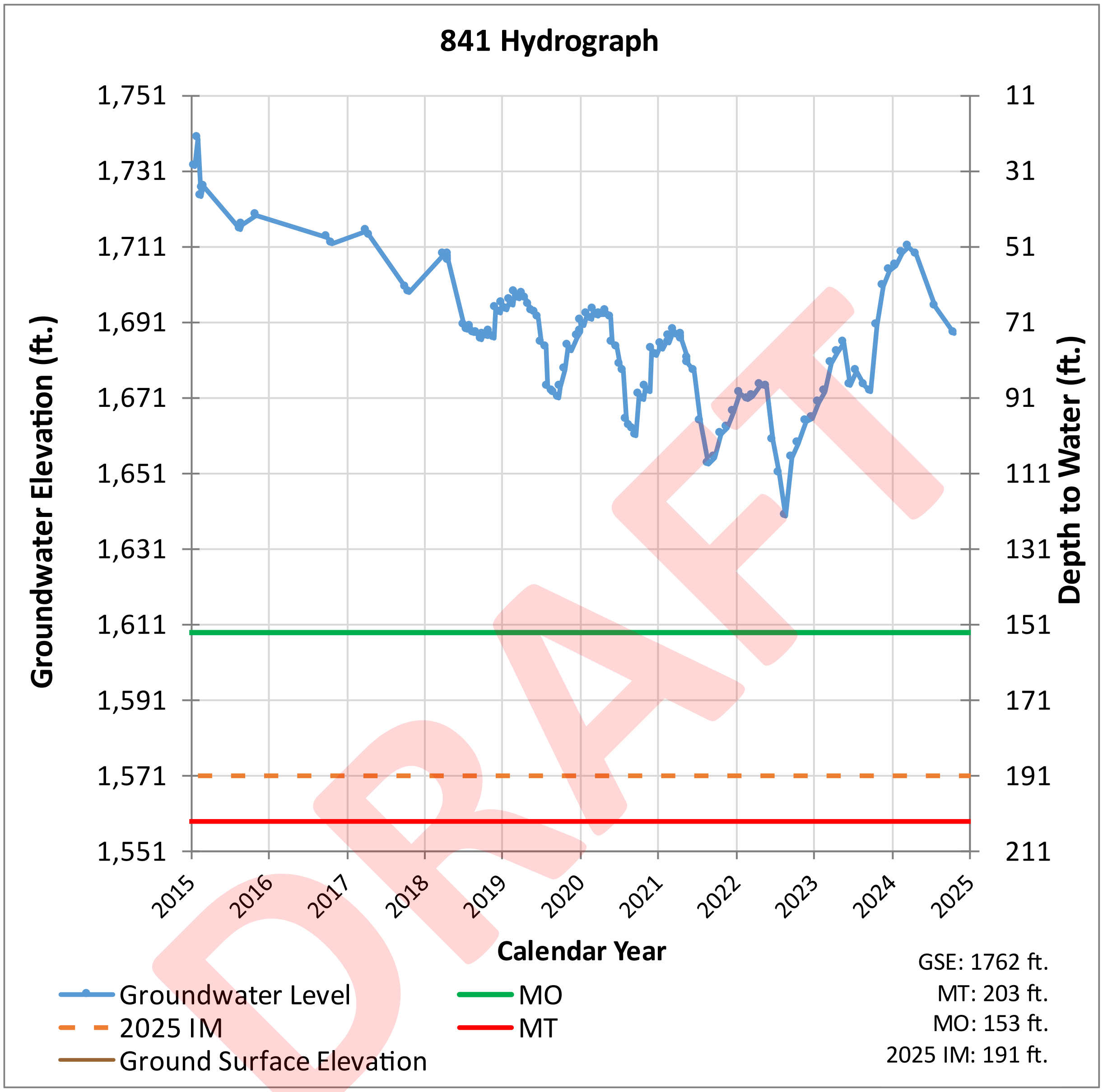


Figure 2-8: Example Well Hydrographs – Western Region

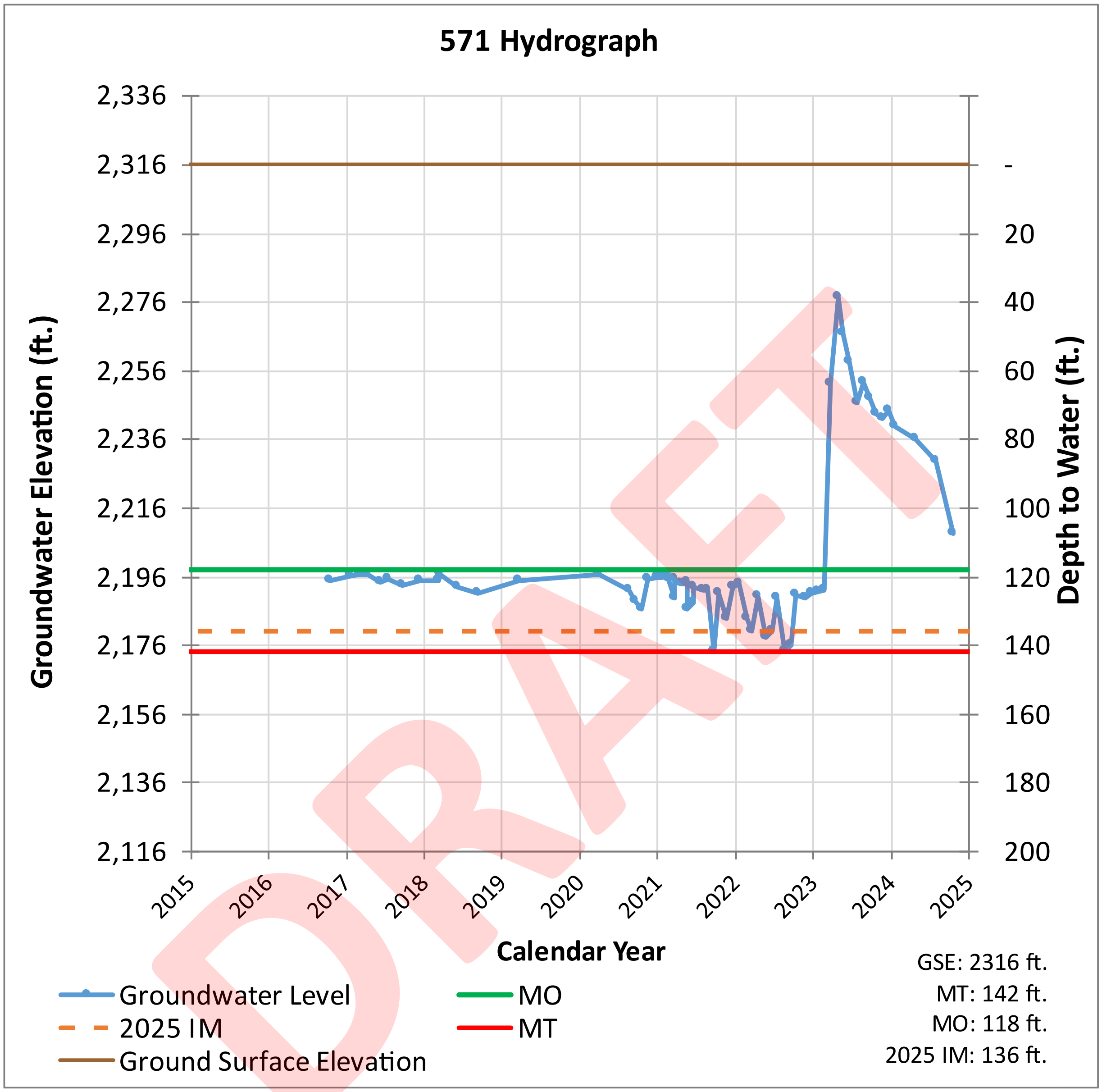


Figure 2-9: Example Well Hydrographs – Central Region

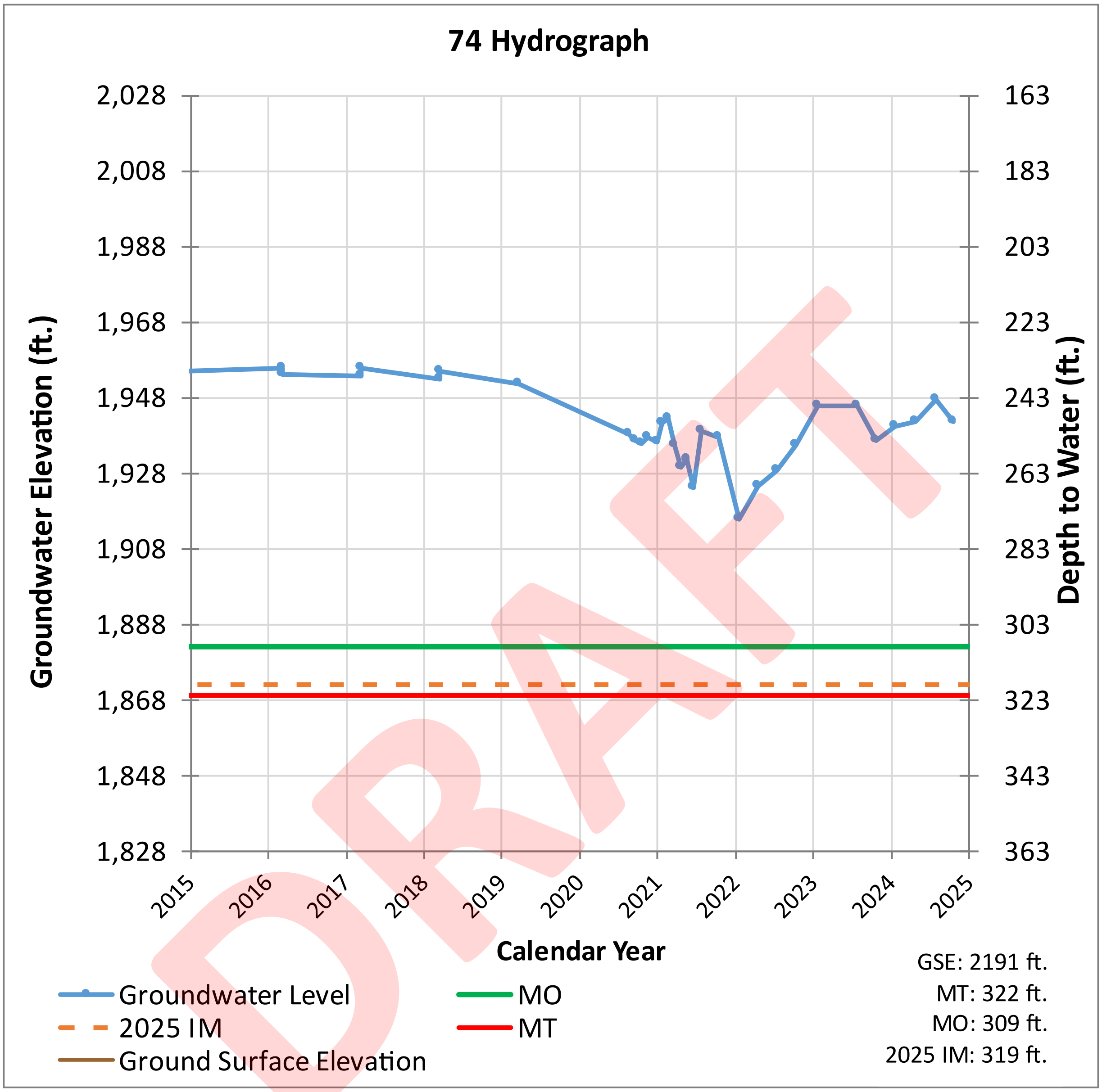


Figure 2-10: Example Well Hydrographs – Central Region

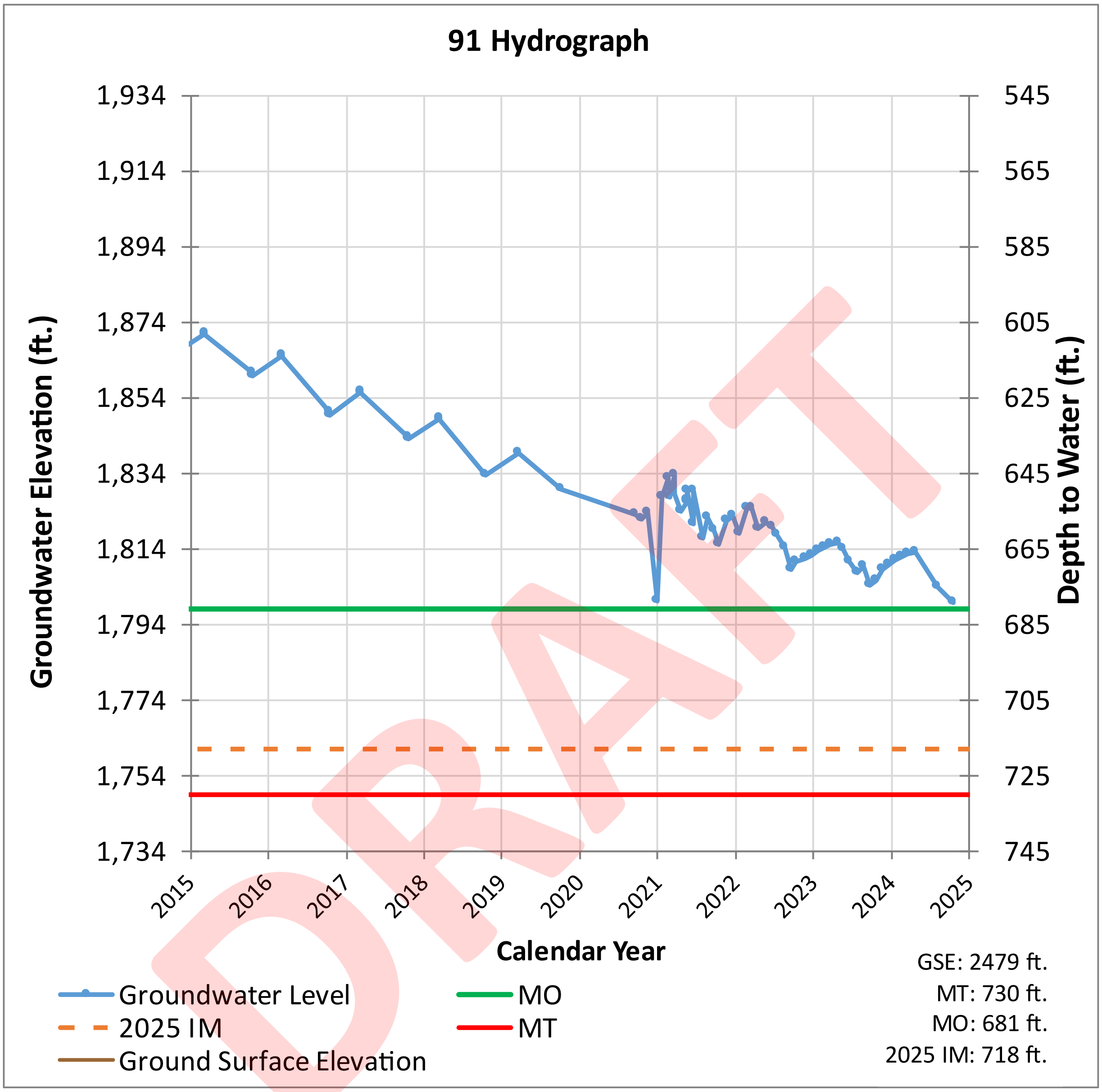


Figure 2-11: Example Well Hydrographs – Eastern Region

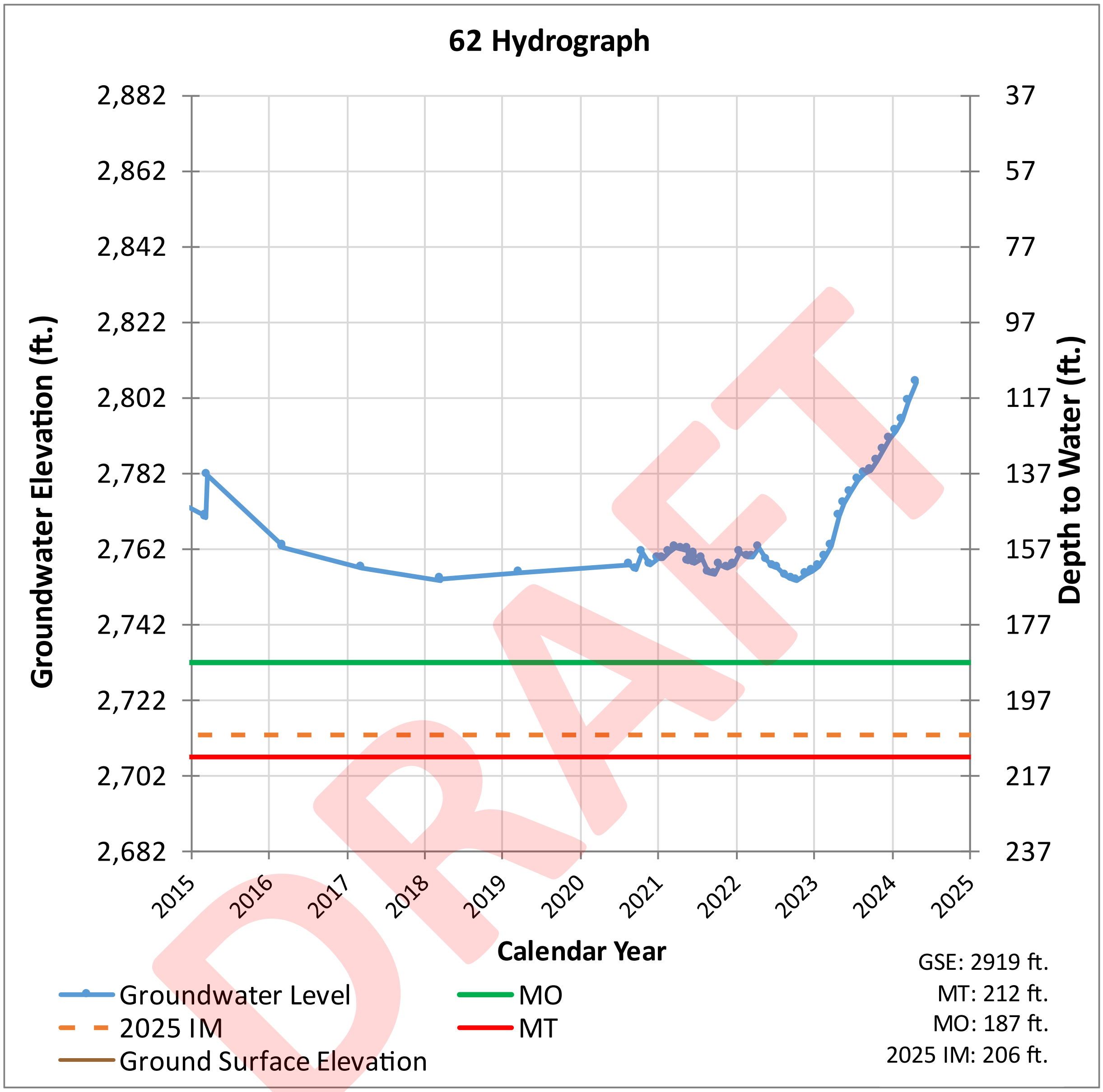
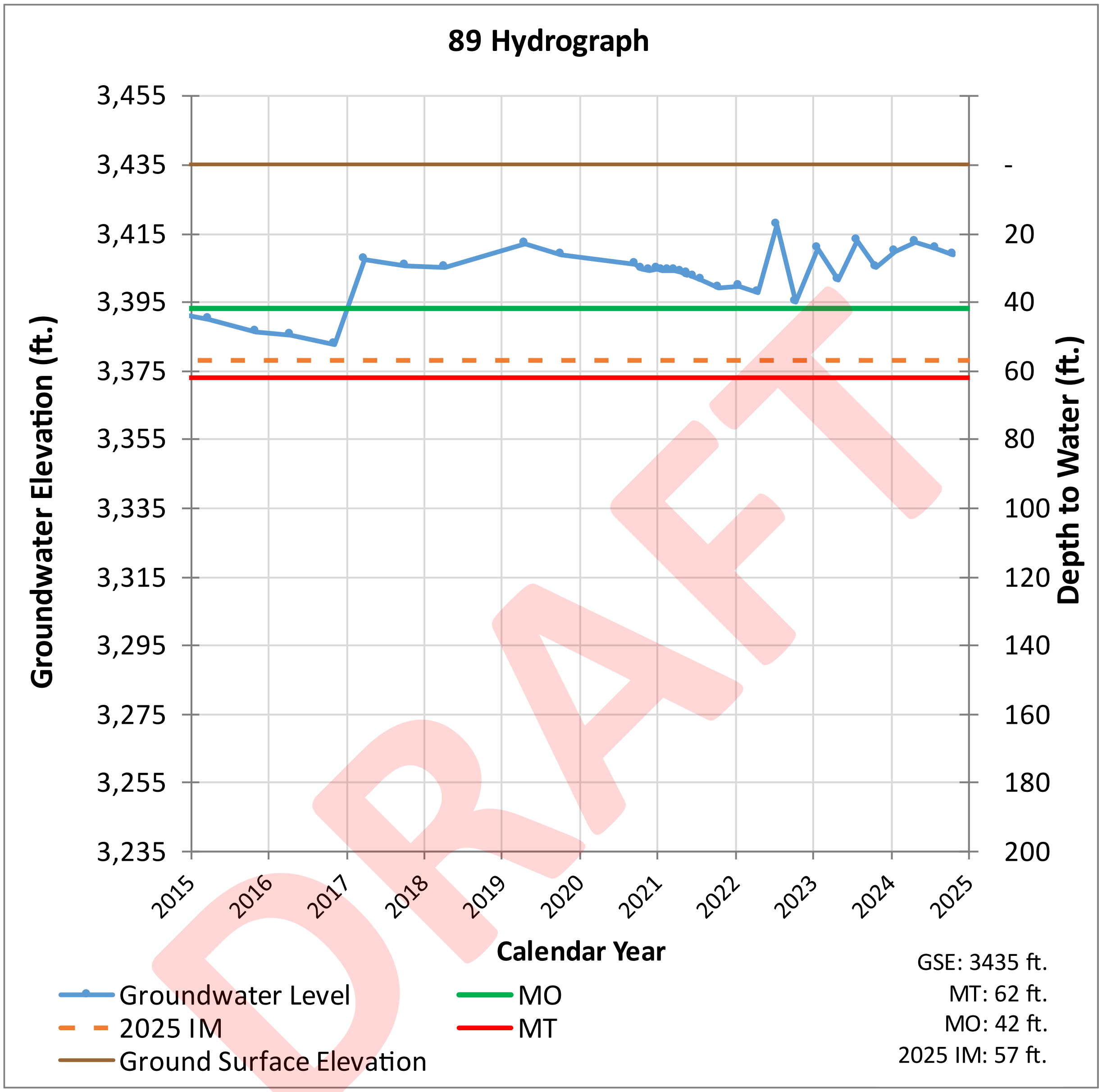


Figure 2-12: Example Well Hydrographs – Southeastern Region



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 2020 GSP, the CBWRM was used to develop water budget estimates for the hydrologic period of 1998 through 2017. An update of the model, including re-calibration based on recently available data, was completed for the 2025 GSP Update and is based on the best available data and information as of September 2023. 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 current Annual Report, the CBWRM model was extended to include the 2024 water year, utilizing updated land use, temperature, and precipitation[3] data from those years.

Figure 3-1 shows the annual time series of groundwater pumping for the water years 1998 through 2024.[4] The CBWRM estimates a total groundwater extraction amount of 33,700 AF in the Cuyama Basin in the 2024 water year. This reflects a decrease of about 400 AF as compared to 2023. 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.

The total pumping volume in the basin in water year 2024 was significantly higher than the sustainable yield of 16,800 AF estimated in the GSP. The GSP included a pumping allocations management action to reduce pumping levels to sustainable levels by 2040. See section 7.5.2 for an update on progress made to implement this management action.

[3] 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.

[4] Groundwater extraction estimates for years 1998 through 2022 differ from estimates reported in previous Cuyama Basin Annual Reports due to the model update and re-calibration that was performed for the 2025 GSP Update.

Figure 3-1: Annual Groundwater Extraction in the Cuyama Basin in Water Years 1998-2024

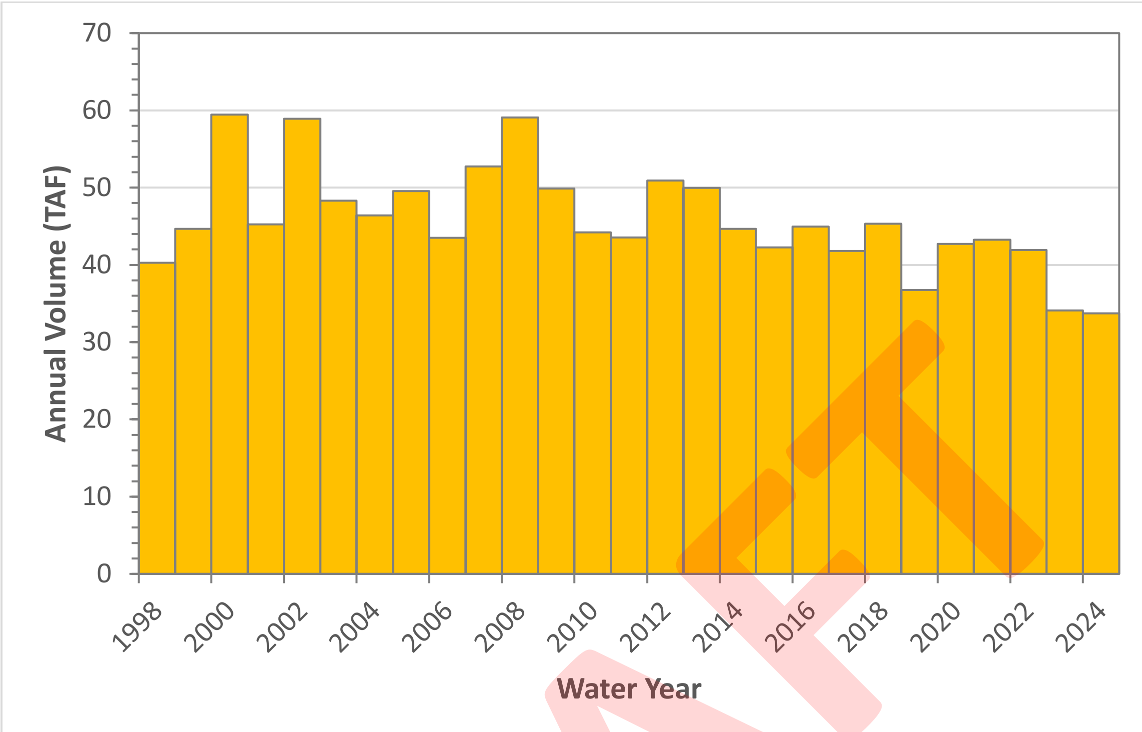


Figure 3-2 shows the locations where groundwater is applied in the Basin. The locations of groundwater use have not changed significantly since completion of the GSP.

Figure 3-3: Shows the active pumping wells within the Cuyama Basin Boundary.

3.2 Surface Water Use

Surface water use in the Cuyama Basin was minimal during the reporting period.

3.3 Total Water Use

Since there is minimal surface water use in the Cuyama Basin, the total water use equals the groundwater extraction in each year, as shown in Section 3.1.

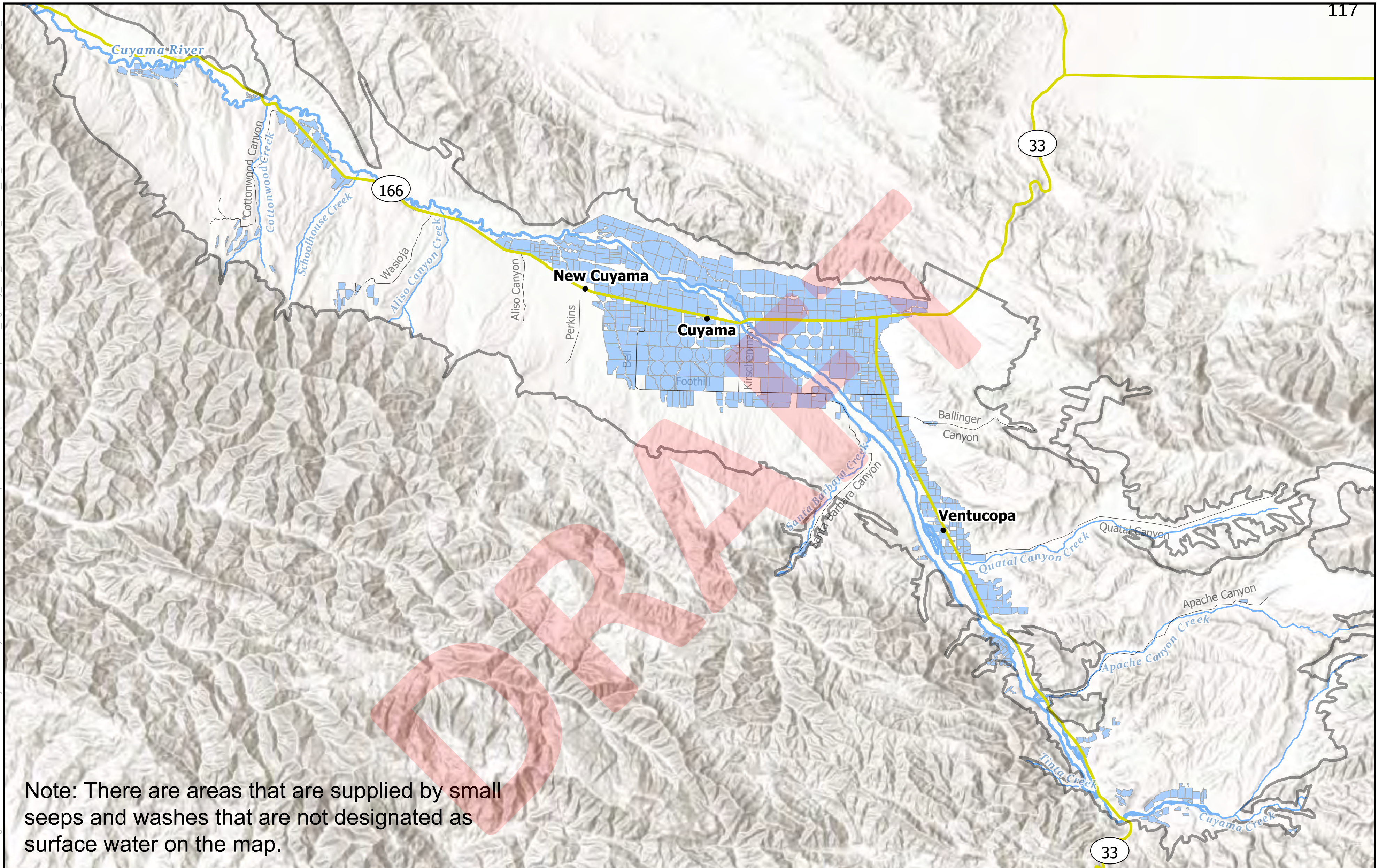


Figure 3-2: Water Source for Land Use

Cuyama Valley Groundwater Basin

Legend

. ater Source
- Irrigated by Surface Water
- irrigated by Surface and Groundwater
- Irrigated by Groundwater
- Highway
- Local Road
- Town
- Cuyama River
- Creek
- Cuyama Basin

N

0 1.25 2.5 5 Miles

Map Created: December 2023

Woodard & Curran

CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY

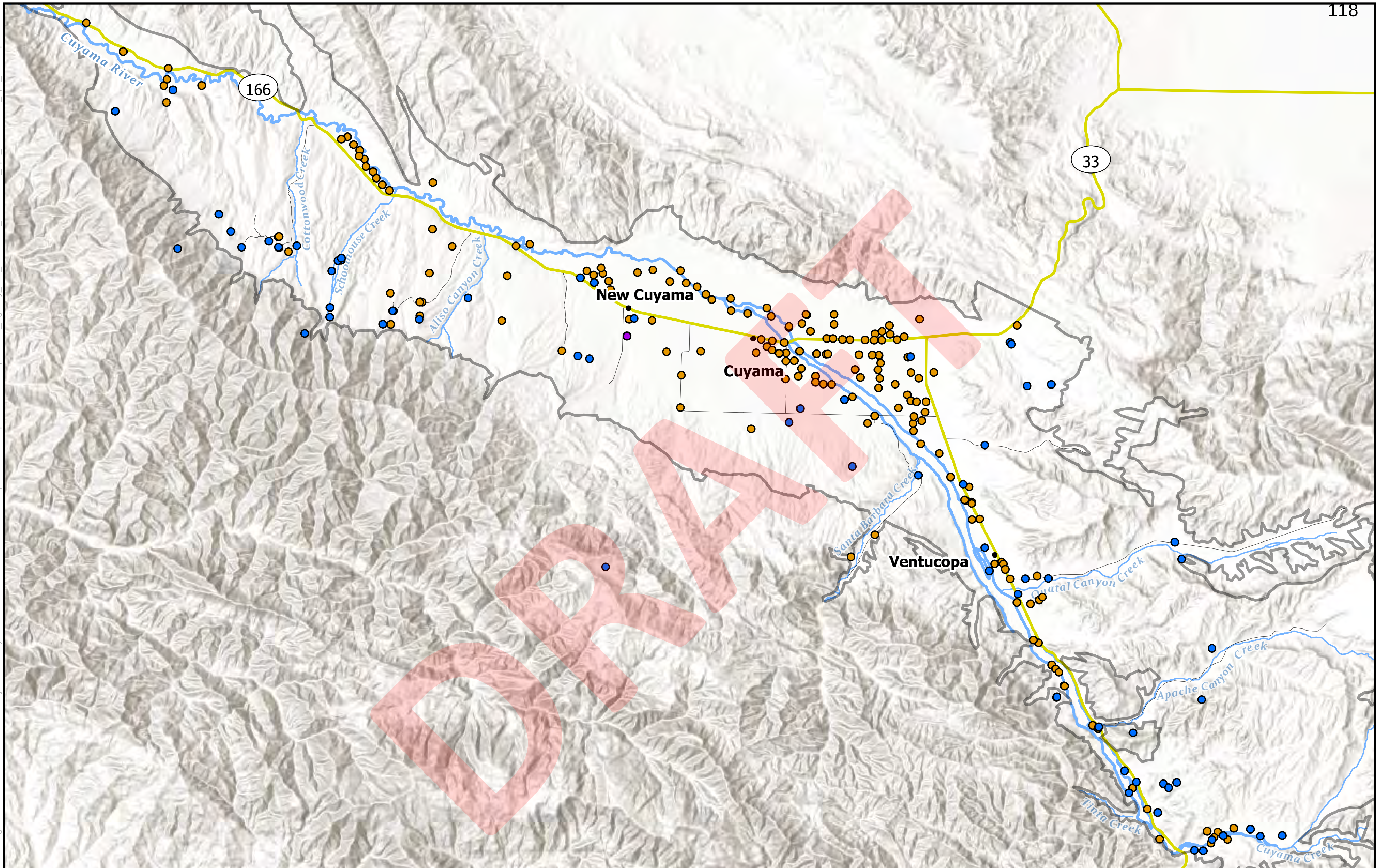


Figure 3-3: Active Wells in Network

Cuyama Valley Groundwater Basin

Legend

Well Type
- Domestic
- Production
- Public

- Highway
- Local Road
- Town
- Cuyama River
- Creek
- Cuyama Basin

N

Woodard & Curran

Cuyama Basin Groundwater Sustainability Agency

0 1.25 2.5 5 Miles

Map Created: December 2023

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data sources: CA DWR, esri, USGS**

Figure Exported: 12/26/2023 By: DHunt Using: \\woodardcurran.net\shared\Projects\CA Cuyama Basin GSA\0011078.01 GSP\wip\Z. GIS\2. Maps\2025 GSP Update\01_Agency_Info_Plan Area_Com\active_opti_wells\active_opti_wells.aprx

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 2023 and fall 2024. 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 2024 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 of the past four years are shown in **Table 4-1**. The CBWRM estimates a reduction in groundwater storage of 22,200 AF in 2022, an increase of 9,900 AF in 2023, and a reduction of 2,100 AF in 2024.

Table 4-1: Groundwater Budget Estimates for Water Years 2022, 2023, and 2024

Component	Water Year 2022 (AFY)	Water Year 2023 (AFY)	Water Year 2024 (AFY)
Inflows			
Deep percolation	13,800	26,900	21,300
Stream seepage	4,500	11,800	8,100
Subsurface inflow	1,400	5,300	2,300
Total Inflow	19,700	44,000	31,700
Outflow			
Groundwater pumping	41,900	34,100	33,800
Total Outflow	41,900	34,100	33,800
Change in Storage	**-22,200**	**+9,900**	**-2,100**

Table 4-2 shows groundwater extractions by water use sector. The primary use of groundwater extractions in the basin is agricultural, accounting for 99% of the groundwater utilized. Urban water use is primarily in Cuyama and New Cuyama for drinking water supply. Groundwater use for other sectors in the Cuyama Basin is minimal.

As shown in **Table 4-3,** the groundwater extraction estimates were developed using the CBWRM model developed by the CBGSA. The model uses crop acreage from local landowners and LandIQ to estimate crop demands.

Table 4-2: Groundwater Extraction By Water Use Sector (2024)

Groundwater Extraction Sector	Total Water Use (Acre-feet)
Agricultural	33,600
Urban	200
Industrial	0
Managed Wetlands	0
Managed Recharge	0
Native Vegetation	0
Other	0
Total	**33,800**

Table 4-3: Groundwater Extraction Measurement Volume Methods and Accuracy Table

Groundwater Extraction Volume	Measurement Type	Method Description	Accuracy	Accuracy Description
33,800	CBRWM	Indirect estimate of groundwater extraction based upon a calculated demand. Crop demand is estimated using locally reported crops per field with the spatial support of LandIQ.	+/-10%	CBWRM utilizes available land use, precipitation, evapotranspiration, soil survey, geological survey, population and per-capita water use data in the subbasin. Since the primary water use sector is agriculture, LandIQ was correlated with local survey data to better estimate crop demand.

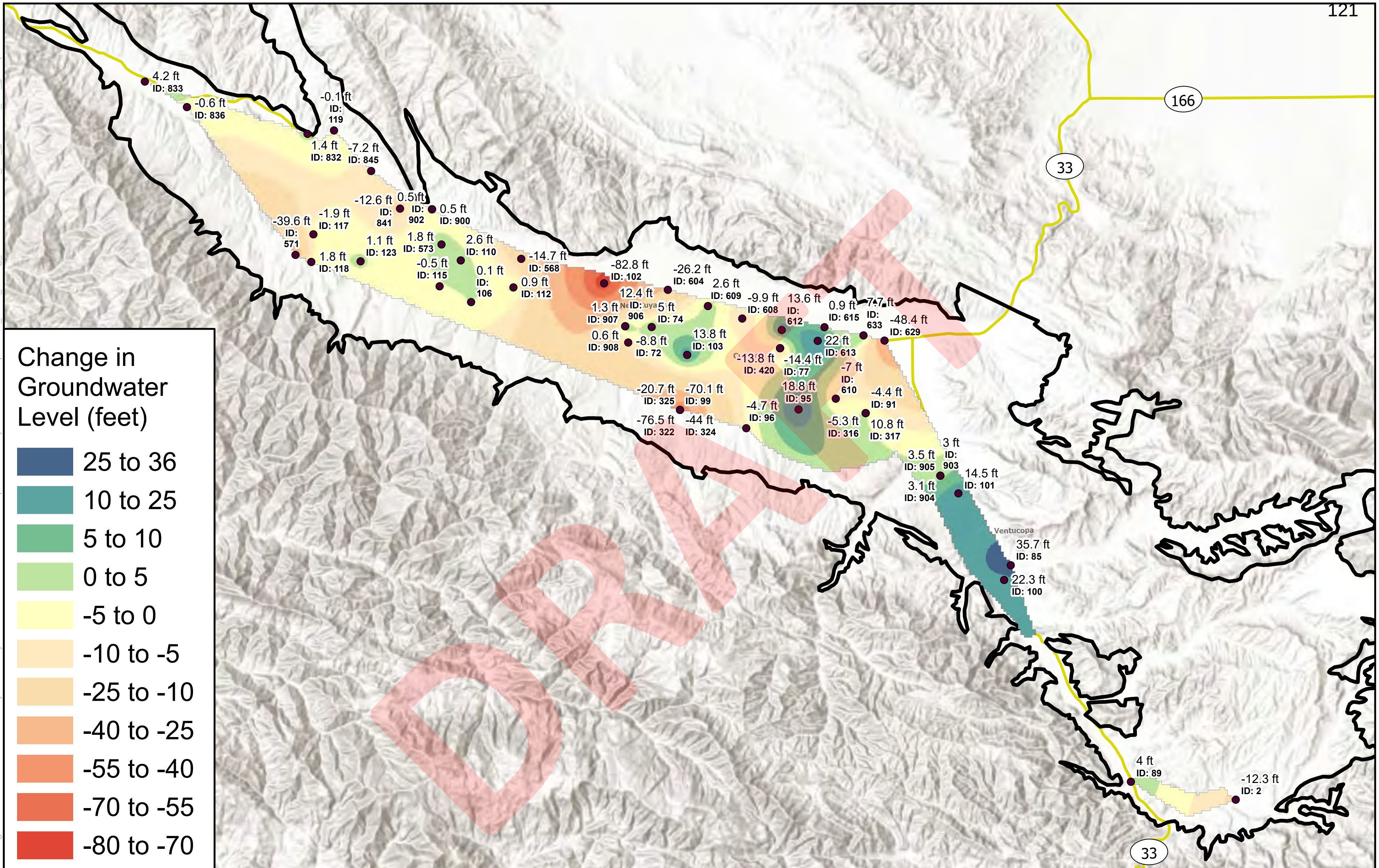


Figure 4-01: Groundwater Level Change - Fall 2023 to Fall 2024

Cuyama Valley Groundwater Basin

Legend

- Measurement Well
- Cuyama Basin
- Highway

GWL difference was calculated from wells with measurements collected in both October 2023 and 2024. "ID" labels correspond to Opti ID numbers - refer to individual well hydrographs for a more informative view of GWL change.

N

0 1.25 2.5 5 Miles

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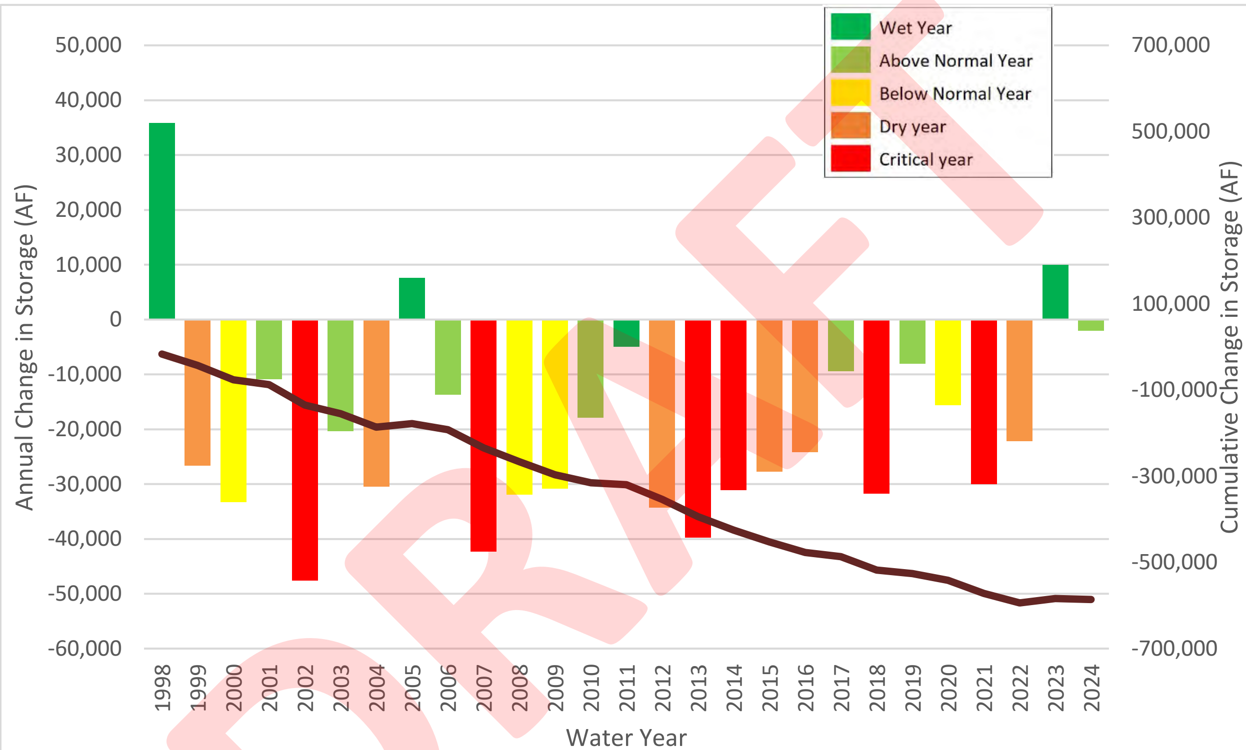
Cuyama Basin Groundwater Sustainability Agency

Map Created: February 2025

Figure Exported: 2/17/2025 By: DHunt Using: \\woodardcurran.net\shared\Projects\CA Cuyama Basin GSA\0011078.01 GSP\wip\Z_GIS\2_Maps\3_2025 GSP Update\02_Basin_Setting_Overview\GSP2025_dtw_gwe\2025_dtw_gwe.aprx

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 2024.[6] 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.

[6] Groundwater storage change estimates for years 1998 through 2021 differ from estimates reported in previous Cuyama Basin Annual Reports due to model updates using the most recent land use data.

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 prior to the 2025 GSP Update was composed of 64 wells representative wells and 13 non-representative wells, for a total of 77 wells, as shown in **Figure 5-1.**

In 2023 a comprehensive review of the groundwater quality network was conducted after three years of annual sampling for TDS had been performed. Wells were evaluated with respect to the following issues: lack of landowner agreements for monitoring, access issues at well sites, access issues due to weather. Based on this analysis, the CBGSA board approved a revised water quality network in November 2023, which includes 25 representative wells and 12 non-representative wells, is shown in **Figure 5-2.** This revised network will take effect when the 2025 GSP Update is complete and will provide adequate coverage in the Basin while ensuring continued and consistent monitoring during the GSP implementation period.

In 2024, the CBGSA collected TDS measurements at 19 of the 25 representative wells (76%) in the groundwater quality monitoring network. The results are listed in **Table 5-1** and shown on **Figure 5-3.** Of the 19 representative wells measured in water year 2024, 17 wells were lower (i.e. better) than their measurable objective, and one well exceeded the minimum threshold and 2025 interim milestone. Therefore, 4% of representative wells exceeded their minimum threshold. However, 24% of wells were not sampled due to limitations in gaining access to well sites. Water quality results (as compared to minimum thresholds) can be found in **Table 5-1** and **Figure 5-4**. The CBGSA will continue to sample for TDS and will assess the appropriateness of sustainability criteria for TDS in the future.

The CBGSA conducts its own sampling for nitrate and arsenic once every five years. In the interim years the CBGSA leverages existing monitoring programs for nitrate and arsenic through California State Water Resource Control Board Groundwater Ambient Monitoring and Assessment (GAMA) Database, which includes in particular data from the Central Coast Regional Water Board's Irrigated Lands Program for nitrates as part of its database. Nitrate and arsenic data are shown on **Figure 5-5** for nitrate **Figure 5-6** for arsenic. The table on the **Figure 5-6** shows arsenic results from a multi -completion well. As you can see arsenic varies with depth so results for all depths are shown.

These maps include data downloaded from GAMA and the sampling results from the CBGSA's sampling for these constituents conducted in 2022 and reported in the WY 2022 Annual Report. Because few measurements were available for WY 2023 and WY 2024, these maps include data for water years 2022, 2023 and 2024 in the Cuyama Basin. The CBGSA will continue to rely on these third-party sources as described in the 2022 GSP update Supplemental Section 2.2.7.

Table 5-1: Groundwater Quality Network Wells and TDS Measurements

	TDS					
Opti ID	Date	Measurement (mg/L)	MO (mg/L)	MT (mg/L)	2025 Interim Milestone (mg/L)	Interim Milestone Status
61	-	-	585	615	615	
74	8/22/2024	1360	1500	1833	1833	Below IM
77	7/20/2024	1165	1500	1592	1592	Below IM
83	8/21/2024	1110	1500	1726	1726	Below IM
88	8/22/2024	337	302	302	302	Above IM
90	8/22/2024	1120	1500	1593	1593	Below IM
91	7/20/2024	1059	1410	1487	1487	Below IM
96	8/21/2024	1220	1500	1632	1632	Below IM
99	8/22/2024	1060	1490	1562	1562	Below IM
101	8/21/2024	1230	1500	1693	1693	Below IM
102	8/21/2024	1640	1500	2351	2351	Below IM
157	-	-	1500	2360	2360	
242	8/22/2024	883	1470	1518	1518	Below IM
316	7/20/2024	1105	1380	1468	1468	Below IM
317	7/20/2024	1068	1260	1337	1337	Below IM
318	-	-	1080	1152	1152	
322	8/22/2024	1170	1350	1386	1386	Below IM
324	8/22/2024	700	746	777	777	Below IM
325	8/22/2024	1040	1470	1569	1569	Below IM
420	7/20/2024	1121	1430	1490	1490	Below IM
421	7/20/2024	1390	1500	1616	1616	Below IM
422	-	-	1500	1942	1942	
467	8/22/2024	1080	1500	1764	1764	Below IM
841	-	-	561	561	561	
845	-	-	1250	1250	1250	

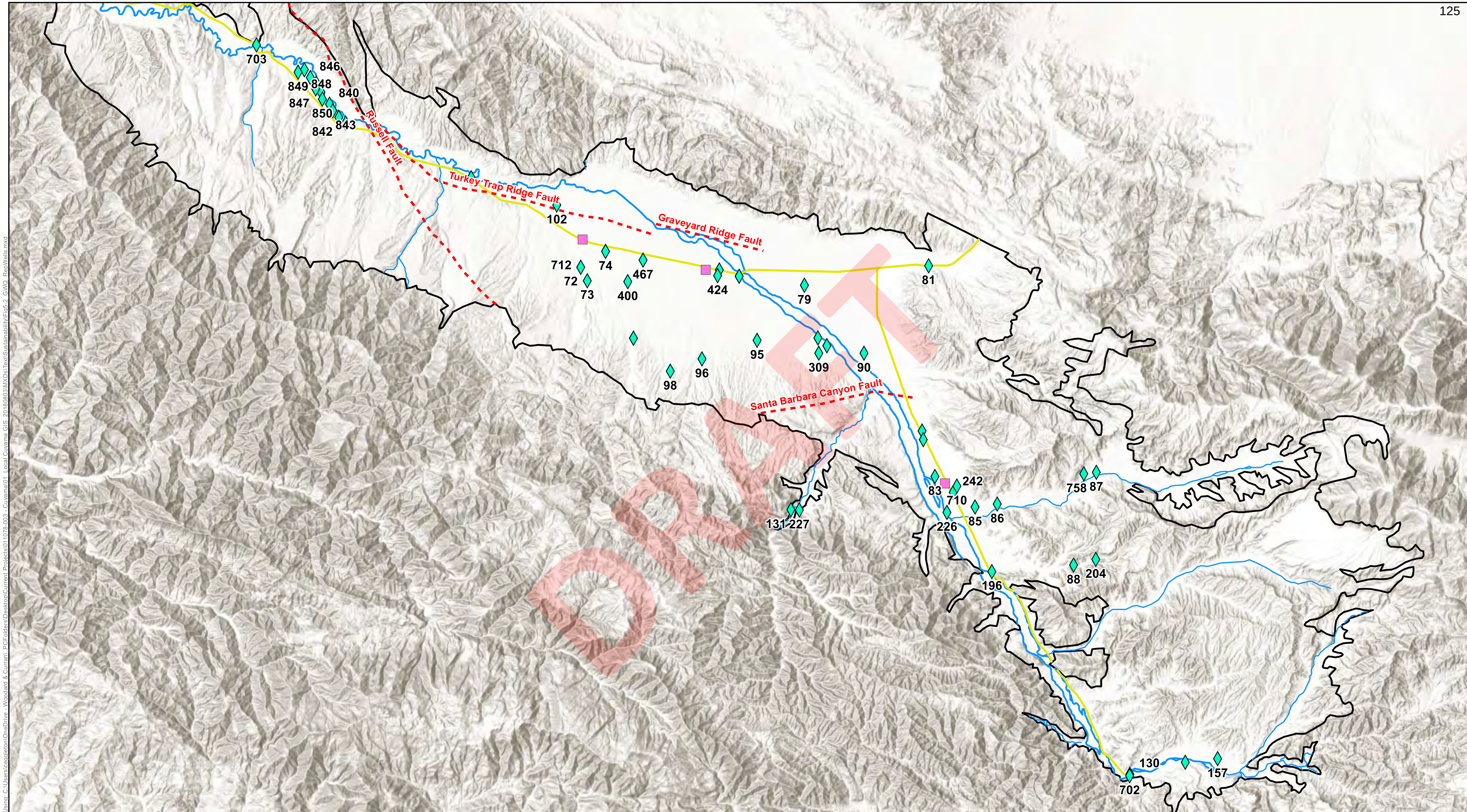


Figure 5-1: Cuyama GW Basin Groundwater Quality Representative Wells

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 Exported: 2/1/2019 By: ceggleton Using: C:\Users\ceggleton\OneDrive - Woodard & Curran\ PCFolders\Desktop\Current Projects\01078-003 - Cuyama\01_Local\Cuyama GIS_20180803\MXDs\Text\Sustainability\Fig5-2_GWQ_RepWells.mxd

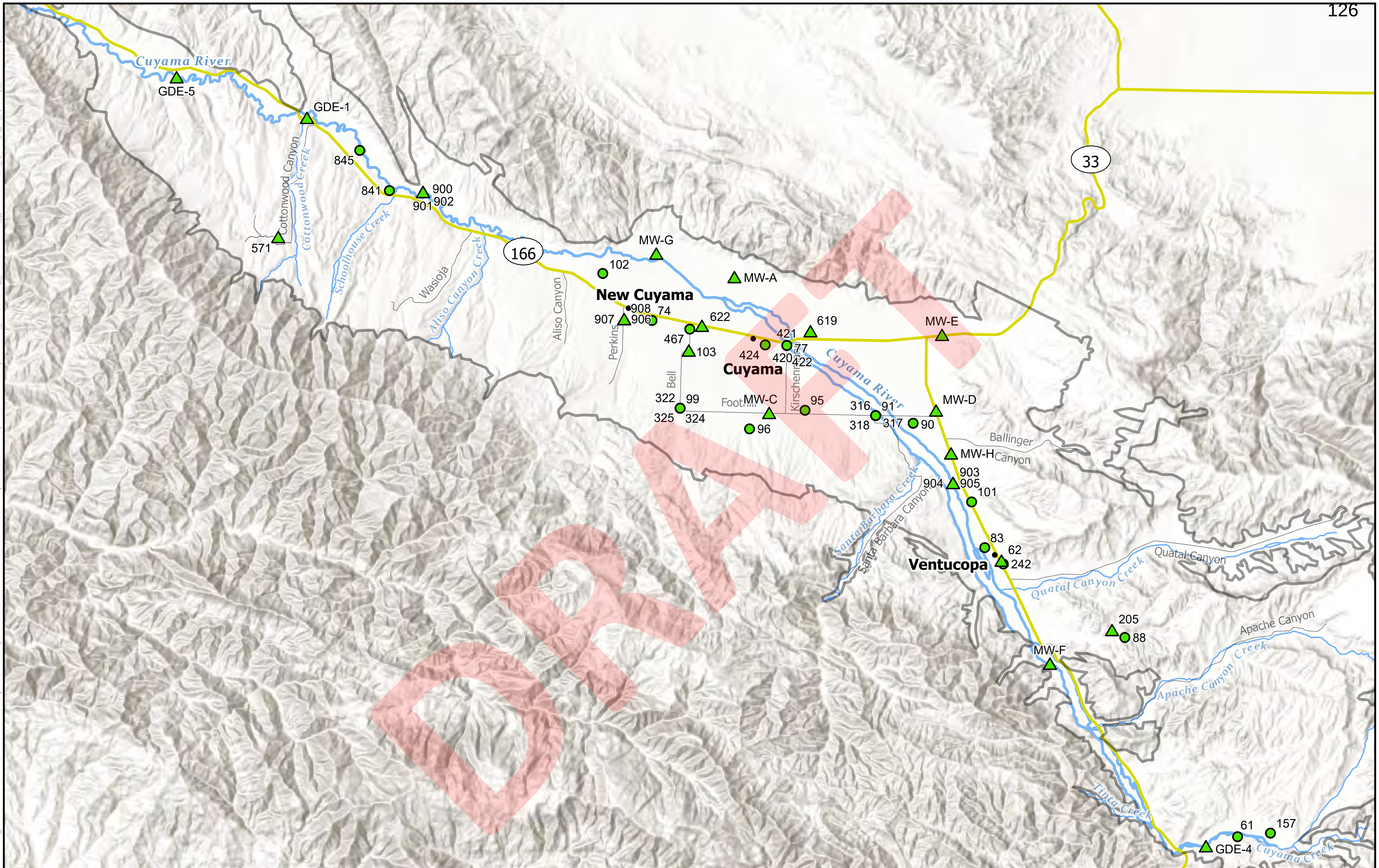


Figure 5-2: Updated Groundwater Quality Monitoring Network

Cuyama Valley Groundwater Basin

Legend

Network Well		
● Representative Monitoring	Highway	Cuyama River
▲ Non-representative Monitoring	Local Road	Creek
	• Town	Cuyama Basin

N

0 1.25 2.5 5 Miles

Map Created: December 2023

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Cuyama Basin Groundwater Sustainability Agency

Figure Exported: 12/27/2023 By: DHunt Using: \\woodardcurran.net\shared\Projects\CA Cuyama Basin GSA\0011078.01 GSP\wip\Z. GIS\2. Maps\2025 GSP Update\04_Monitoring_Networks\21_groundwater_quality\gw_quality_network.aprx

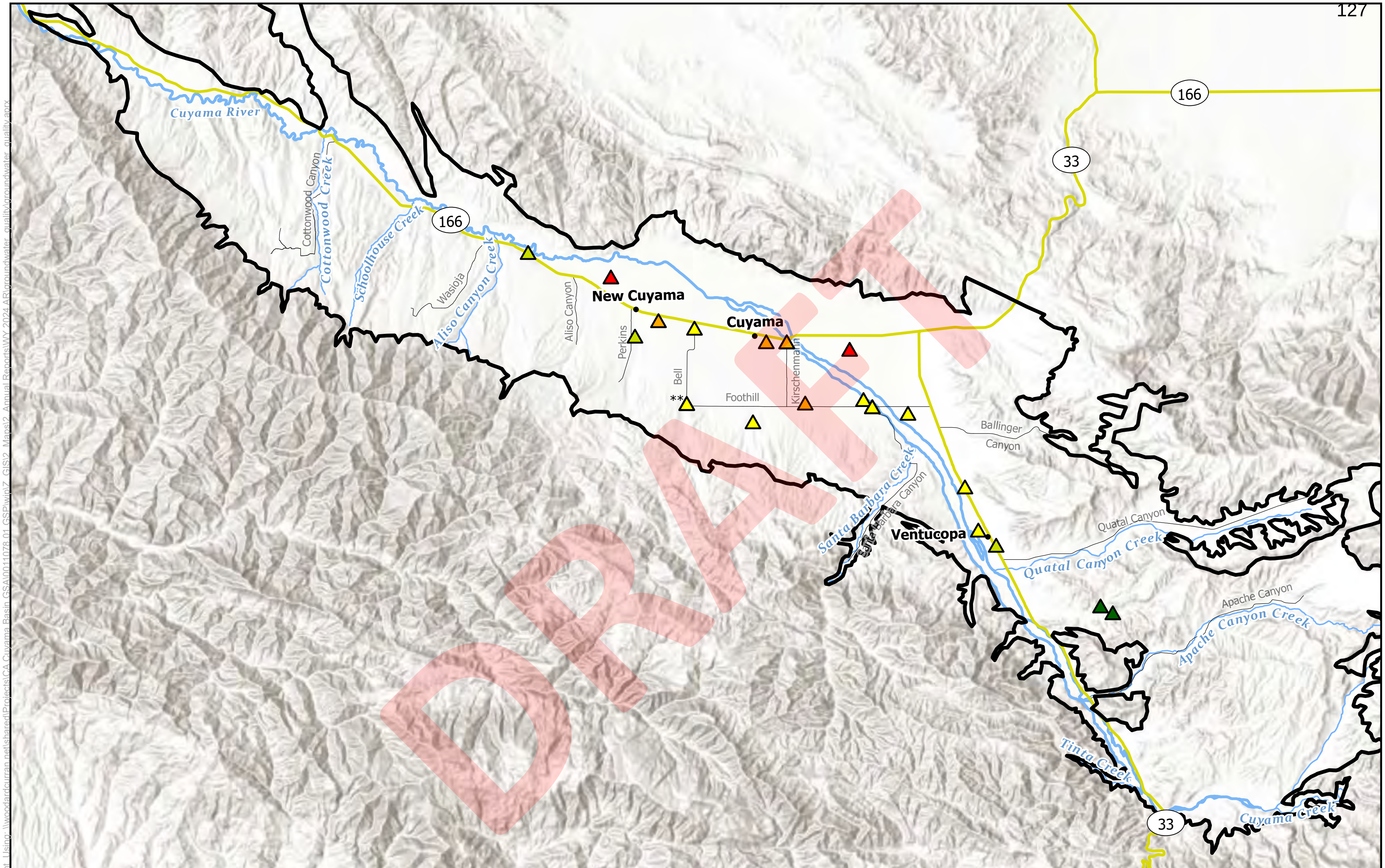

Figure 5-3: Groundwater Quality Measurements - TDS

October 2024 Data

Cuyama Valley Groundwater Basin

Legend

- < 500 mg/L
- 501 - 750 mg/L
- 751 - 1,000 mg/L
- 1,001 - 1,250 mg/L
- 1,251 - 1,500 mg/L
- 1,501 - 1,750 mg/L
- 1,751 - 2,000 mg/L
- 2,000 - 2,500 mg/L
- Highway
- Local Road
- Town
- Creek
- Cuyama River
- Cuyama Basin

**Nested well at this location.

N

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0 1.25 2.5 5 Miles

Map Created: February 2025

Figure Exported: 2/17/2025 By: DHunt

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data sources: CA DWR, Esri, USGS**

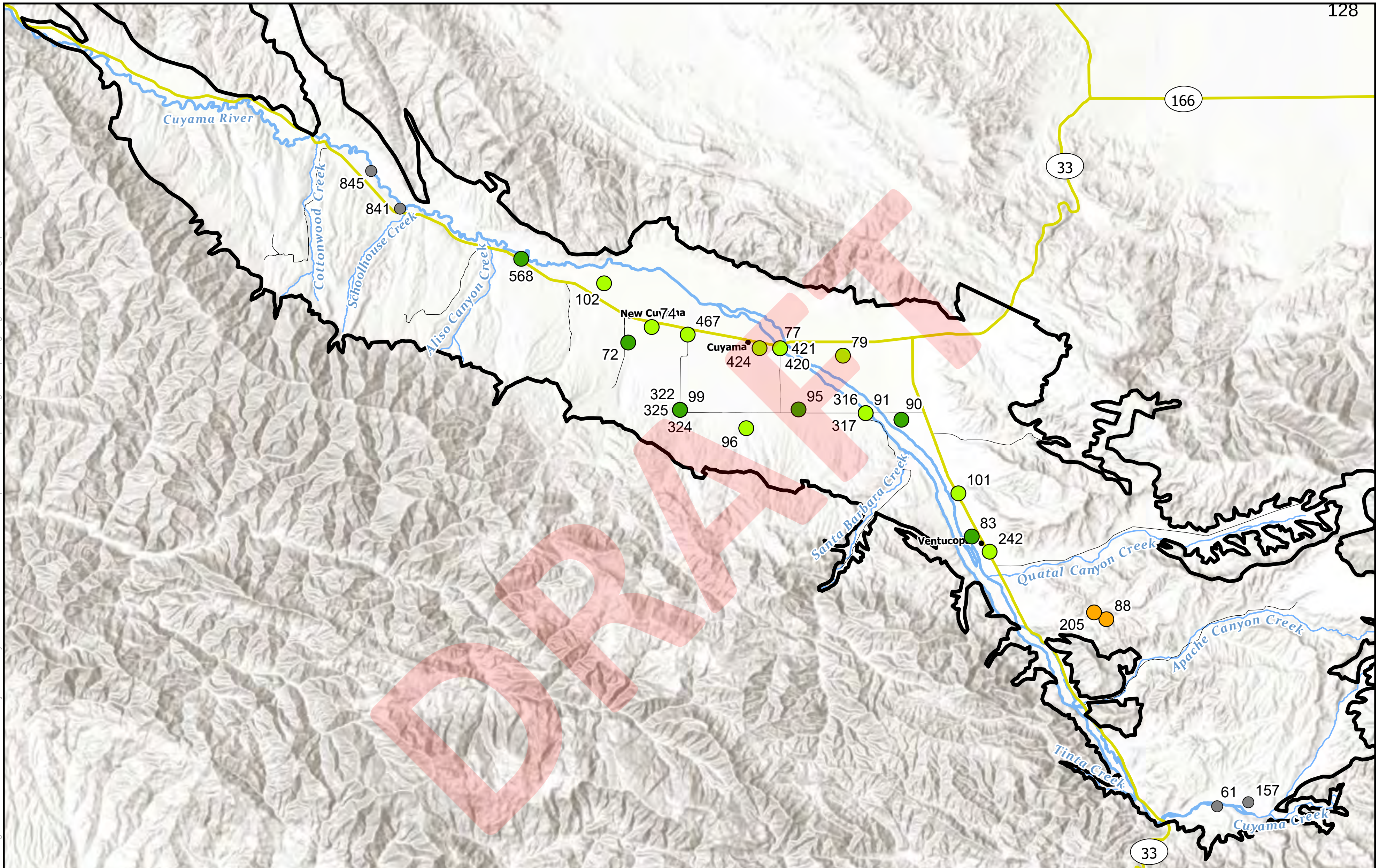

Figure 5-4: Groundwater Quality Status - TDS

Years 2022 to 2024

Cuyama Valley Groundwater Basin

Legend

- Below Measurable Objective
- More than 10% Below Minimum Threshold
- Within Adaptive Management Zone
- No available data this period
- Cuyama Basin
- Highway
- Local Road
- Town
- Creek
- Cuyama River

Status determined using 2025 sustainable management criteria.

Map Created: February 2025

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data sources: CA DWR, Esri, USGS**

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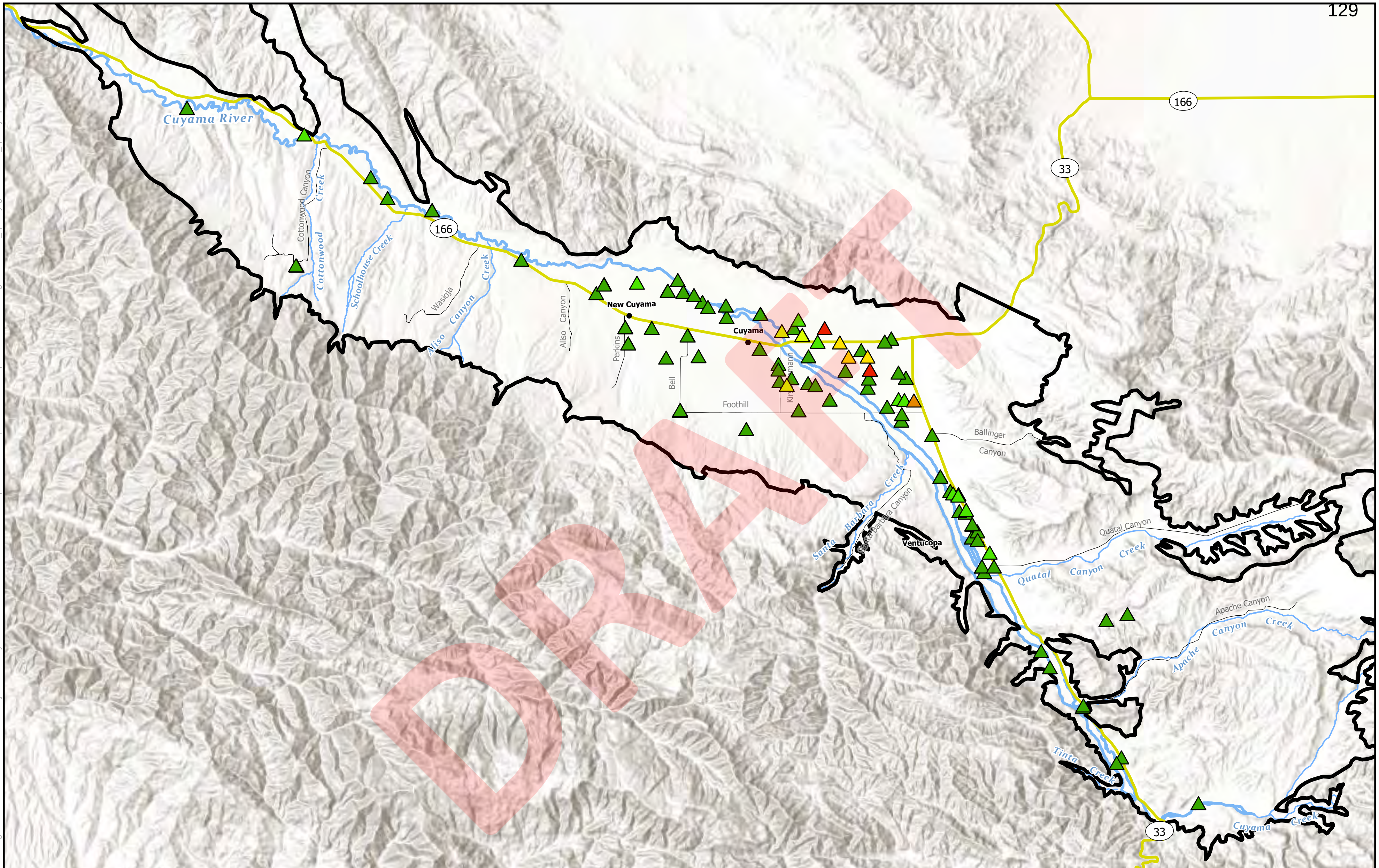

Figure 5-5: Groundwater Quality Measurements - Nitrate as NO3-N

Years 2022 to 2024

Cuyama Valley Groundwater Basin

Legend

< 5 mg/L	10 - 15 mg/L	Highway
5 - 8 mg/L	15 - 20 mg/L	Local Road
8 - 10 mg/L	> 20 mg/L	Town
Creek	Cuyama River	Cuyama Basin

*Most recent values from monitoring wells with multiple observations are shown.

N

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0 1.25 2.5 5 Miles

Map Created: February 2025

Figure Exported: 2/19/2025 By: DHunt Using: \\woodardcurran.net\shared\Projects\CA Cuyama Basin GSA\0011078.01 GSP\wip\Z_GIS\2_Maps\2_Annual Reports\WY 2024 AR\groundwater_quality\groundwater_quality.aprx

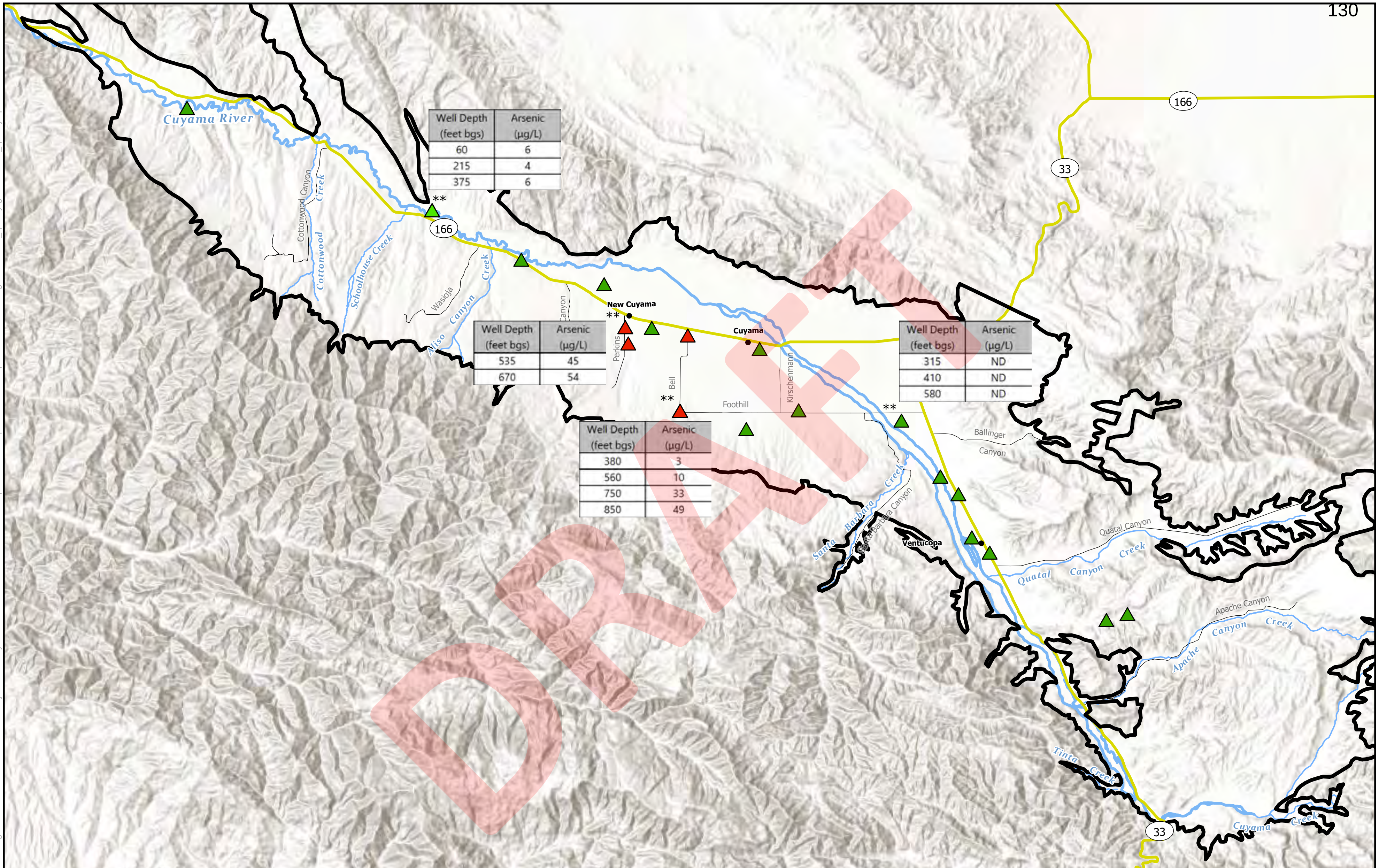


Figure 5-6: Groundwater Quality Measurements - Arsenic

Years 2022 to 2024

Cuyama Valley Groundwater Basin

Legend

- < 5 µg/L
- 5 - 8 µg/L
- 8 - 10 µg/L
- 10 - 15 µg/L
- 15 - 20 µg/L
- > 20 µg/L
- Highway
- Local Road
- Town
- Creek
- Cuyama River
- Cuyama Basin

*Most recent values from monitoring wells with multiple observations are shown. **Nested well at this location.

N

Woodard & Curran

Cuyama Basin Groundwater Sustainability Agency

0 1.25 2.5 5 Miles

Map Created: February 2025

Third Party GIS Disclaimer: This map is for reference and graphical purposes only and should not be relied upon by third parties for any legal decisions. Any reliance upon the map or data contained herein shall be at the users' sole risk. **Data sources: CA DWR, Esri, USGS**

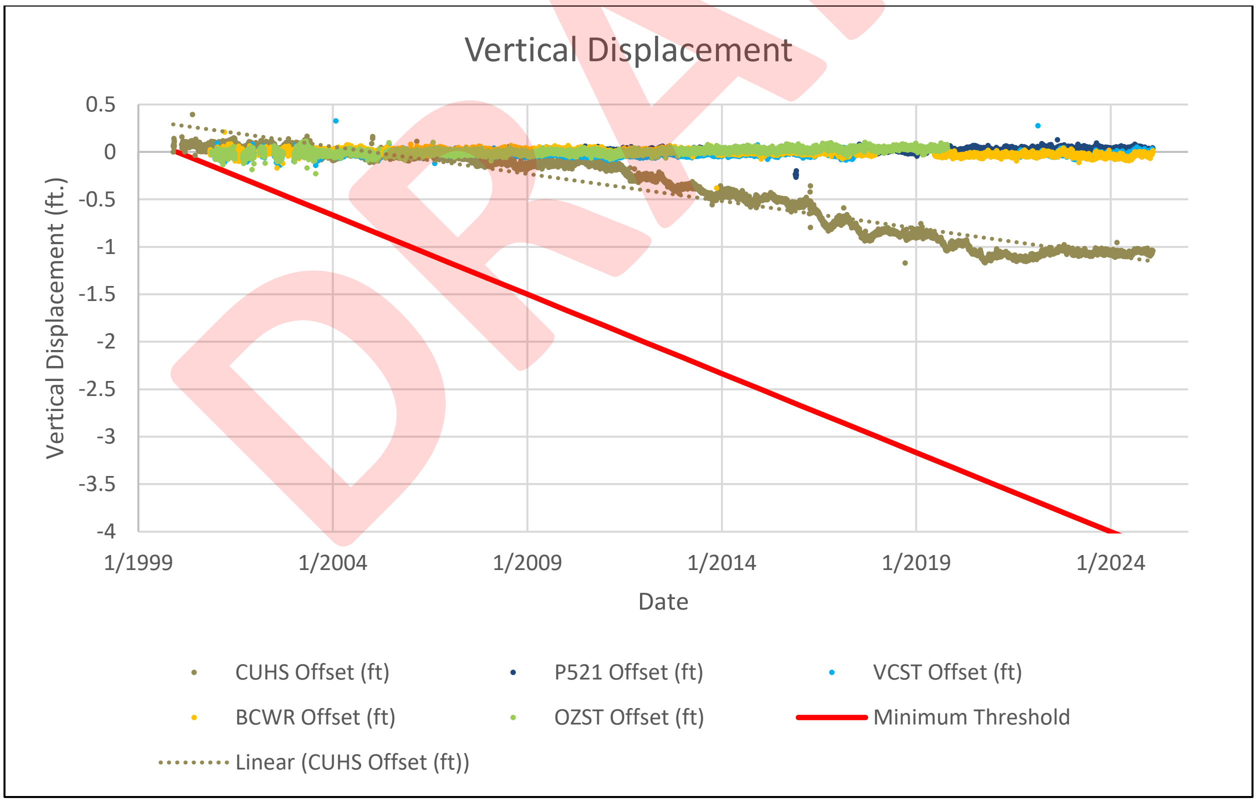
Section 6. Land Subsidence

Section 4.9 of the Cuyama Basin 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 2025 was downloaded from UNAVCO[7] and the subsidence trend for CUHS was recalculated. Subsidence rates during 2021 and 2022 actually reflected a positive change in ground surface elevation, and current subsidence rates in the central portion of the Basin are 1.5 mm per year or 0.06 inches per year (for WY 2024) in an upwards direction. This rate is below the minimum threshold, and thus undesirable results for subsidence are not occurring in the Basin.

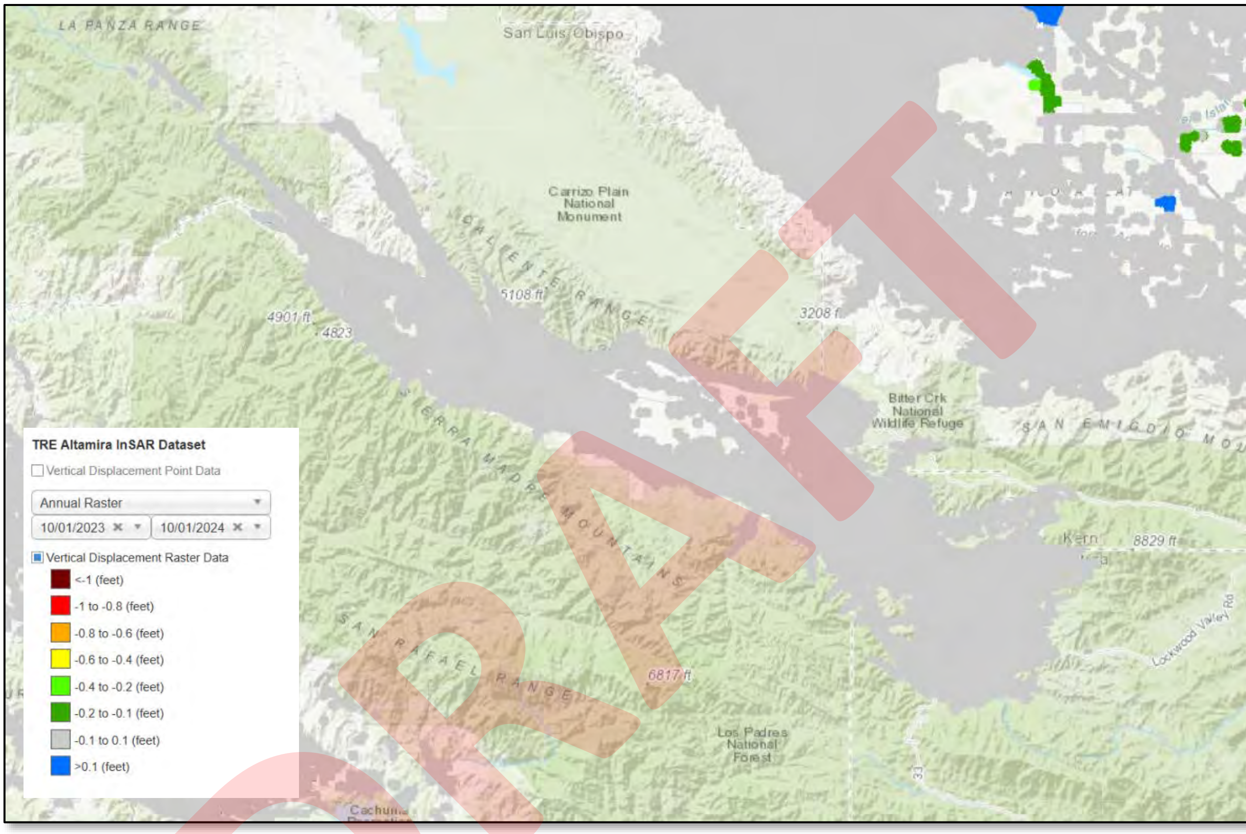
Figure 6-1: Subsidence Monitoring Data



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

Additional subsidence data is available through TRE Altamira InSAR Dataset from DWR and was used to verify no detrimental or drastic changes had occurred. Raster results are presented in **Figure 6-2** and show no discernable change (between -0.1 and +0.1 feet) over that period.

Figure 6-2: Cuyama Subsidence Raster from SGMA Data Viewer – TRE Altamira InSAR Data – WY2024



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 original 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 quarterly groundwater condition reports based on the data collected to monitoring groundwater levels. Current data collection occurs quarterly with corresponding reports. Data collection prior to 2022 was conducted monthly, but the CBGSA determined quarterly data collection was sufficient after a full year of monthly monitoring had been performed.

The Updated 2025 GSP included a reevaluation of thresholds for the groundwater level sustainability indicator, as described in Section 5 (Minimum Thresholds, Measurable Objectives, and Interim Milestones). As described in the 2025 GSP Update, the minimum threshold calculation now uses a stepwise function that takes a conservative approach to protect wells (production and domestic) across the Basin while providing flexibility, when possible, to accommodate the CBGSA planned pumping allocations and reductions strategy. The stepwise function has four potential calculation outcomes:

1. **Combined Well protection and GDE protection depth:** The well protection depth and GDE protection depth were merged together in a GIS analysis process that interpolated the data into a 3-dimensional coverage across the Basin, in the same process elevation points make a topographic map of the surface elevation. For each RMW's location, the interpolated protection depth was then extracted to get the final Well Protection / GDE protection depth value.
    a. **Well Protection Depth**: The well protection depth is used to ensure that active production and domestic wells within the Basin are protected from harm to their beneficial uses. The well protection depth is a numerical value representing the approximate depth at which, if exceeded, beneficial uses could be impacted in a well. This value is unique and calculated for each active production and domestic well within the Basin where there is available data. Where data is not available, generalized or regional proxy data is utilized. Some wells are screened from this analysis either because they are too far removed from the representative well network (and therefore conditions at the nearest RWM are not indicative of conditions at the active well because of distance and/or other conditions such as geology or topology) or wells were already dry in 2015. The well protection depth is calculated for each pumping well as a four-part stepwise function, with a slight difference in the fourth step between domestic and production wells (Figure 7-1).
    b. **GDE Protection Depth**: All potential GDE locations in the Basin were assigned a protection depth of 30 ft bgs via a dense spatial point-cloud within each GDE polygon in

GIS. The point-clouds allow GIS to utilize the same data type (points instead of polygons) in the processing required for the protection depth calculation.

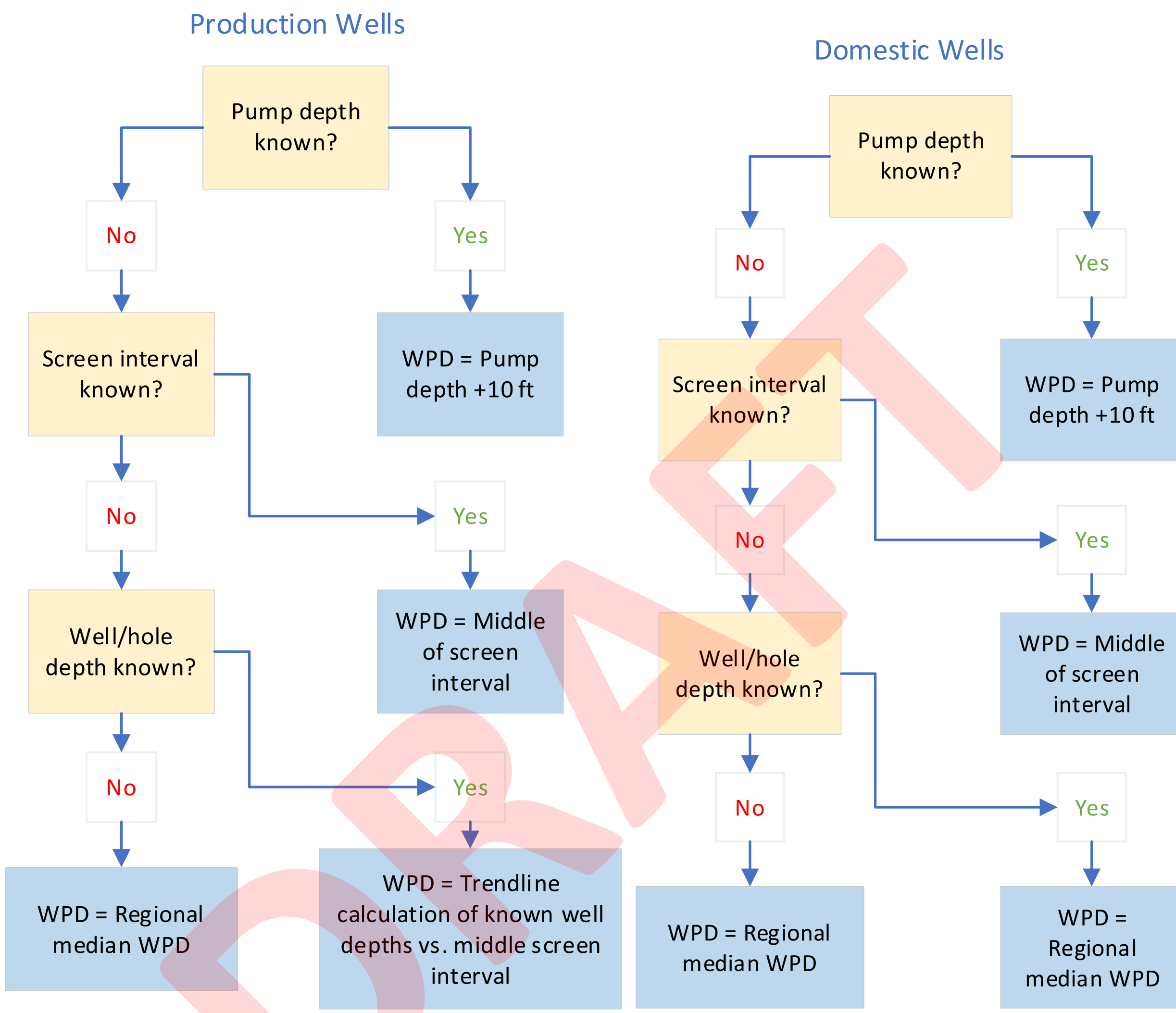


Figure 7-1: Well Protection Depth Stepwise Diagram for Production and Domestic Wells

2. **Recent deepest measurement plus 10 ft or 5% buffer (whichever is greater):** Historical data for the last ten years (2013-2023 based on the timing of the development of this methodology) was analyzed to find the deepest depth to water during that period. A buffer of the greater of either 10 ft or 5% of the depth to water value was then added to the max depth. This methodology helps utilize, where appropriate, historical and recently collected data that captures both wet and dry periods. This criteria allows for the flexibility for regions of the Basin that experience significant drawdown and recovery during dry and wet hydrologic cycles to manage those variations in groundwater elevation.
3. **Projected depth of water in 2040 based on modeled glidepath**: The Cuyama Basing Groundwater Model (updated in 2024) was used to project the depth of water in 2040 based on

the CBGSA's planned allocation and glidepath pumping reductions. In regions of the Basin where there is significant pumping, this allows for groundwater levels to decline to where the model predicts they will be in 2040 given the anticipated schedule for pumping reductions.

4. **Saturated thickness in areas of greater geologic understanding:** The calculation for this strategy uses the localized region's total average saturated thickness for the primary storage area and calculating 15 percent of that depth. Because there is an area in the northwestern portion of the Basin with greater geological research and understanding, the saturated thickness provides a measurable and defined direct relationship between available water in the aquifer, storage capacity, and undesirable conditions. As discussed in the following section, additional analysis has also been conducted to ensure that the calculated MTs in this area do not impact beneficial uses or uses at any nearby active wells or potential GDEs.

Using these four options above, the stepwise function to determine the appropriate MT for each RMW is as follows:

1. For RMWs that used the saturated thickness approach in the approved 2020 GSP, utilize that same approach.
2. For RMWs that did not utilize the saturated thickness approach in the approved 2020 GSP,
    a. First find the deeper of these two values:
        i. Deepest depth to water (DTW) from 2013-2023 + buffer
        ii. Cuyama Basin groundwater model projected DTW in 2040
3. Then find the shallower value between Step 2a, the WPD and the GDE protection depth

As outlined in the GSP, undesirable results for the chronic lowering of groundwater levels occurs, "when 30 percent of representative monitoring wells… fall below their minimum groundwater elevation threshold for two consecutive years." (Cuyama GSP, pg. 3-2). As of October 2024, 11% of representative wells (5 of 47) were below the minimum threshold. (Cuyama Groundwater Conditions Report, pg. 1). Undesirable results conditions have therefore not been met.

Table 7-1: Measured Depths to Groundwater Compared to 2025 Minimum Thresholds

Well	Region	Depth to Water (feet)	Measurement Month	Minimum Threshold (feet)	Status
72	Central	161	October 2024	373	Above Measurable Objective
74	Central	246	October 2024	322	Above Measurable Objective
77	Central	518	October 2024	514	Below Minimum Threshold (4 months)
91	Central	681	October 2024	730	Above Measurable Objective
95	Central	589	October 2024	597	More than 10% above Minimum Threshold
96	Central	340	October 2024	369	Above Measurable Objective
99	Central	361	October 2024	379	Above Measurable Objective
102	Central	370	October 2024	470	Above Measurable Objective
103	Central	233	October 2024	379	Above Measurable Objective
112	Central	83	October 2024	102	Above Measurable Objective
114	Central	47	October 2024	58	Above Measurable Objective
316	Central	681	October 2024	731	Above Measurable Objective
317	Central	679	October 2024	700	More than 10% above Minimum Threshold
322	Central	368	October 2024	387	Above Measurable Objective
324	Central	337	October 2024	365	Above Measurable Objective
325	Central	312	October 2024	331	Above Measurable Objective
420	Central	519	October 2024	514	Below Minimum Threshold (4 months)
421	Central	503	October 2024	514	More than 10% above Minimum Threshold
474	Central	128	October 2024	197	Above Measurable Objective
568	Central	50	October 2024	47	Below Minimum Threshold (1 month)
604	Central	466	October 2024	544	Above Measurable Objective
608	Central	441	October 2024	504	Above Measurable Objective
609	Central	436	October 2024	499	Above Measurable Objective
610	Central	642	October 2024	557	Below Minimum Threshold (51 months)
612	Central	464	October 2024	513	Above Measurable Objective
613	Central	506	October 2024	578	Above Measurable Objective
615	Central	516	October 2024	588	Above Measurable Objective
629	Central	578	October 2024	613	Above Measurable Objective
633	Central	558	October 2024	605	More than 10% above Minimum Threshold
62	Eastern	-	-	212	No available data this period (above MO in April 2024)
85	Eastern	140	October 2024	200	Above Measurable Objective

Well	Region	Depth to Water (feet)	Measurement Month	Minimum Threshold (feet)	Status
100	Eastern	72	October 2024	186	Above Measurable Objective
101	Eastern	91	October 2024	138	Above Measurable Objective
841	Northwestern	71	October 2024	203	Above Measurable Objective
845	Northwestern	78	October 2024	203	Above Measurable Objective
2	Southeastern	34	October 2024	52	Above Measurable Objective
89	Southeastern	25	October 2024	62	Above Measurable Objective
106	Western	141	October 2024	164	Above Measurable Objective
107	Western	72	October 2024	122	Above Measurable Objective
117	Western	154	October 2024	163	Above Measurable Objective
118	Western	50	October 2024	40	Below Minimum Threshold (49 months)
571	Western	106	October 2024	142	Above Measurable Objective
573	Western	66	October 2024	93	More than 10% above Minimum Threshold
830	Far-West Northwestern	-	-	63	No available data this period (above MO in July 2024)
832	Far-West Northwestern	32	October 2024	50	Above Measurable Objective
833	Far-West Northwestern	18	October 2024	48	More than 10% above Minimum Threshold
836	Far-West Northwestern	29	October 2024	49	More than 10% above Minimum Threshold

*Well 608 is now confirmed to be “destroyed” and is no longer available for monitoring. The landowner and monitoring staff have identified a well within 100 ft that is suitable to continue monitoring in this location, which is where the measurement shown was taken. The groundwater level representative network will be modified to remove well 608 and add in this new well. The new well is in the process of being incorporated into Opti and being assigned an ID number.

7.2 Funding to Support GSP Implementation

On May 1, 2024, the CBGSA Board held a rate hearing and set a groundwater extraction fee of $5 per acre-foot for FY 24-25.

Additionally, the CBGSA has been awarded a $7.6 million in grant fund under the Critically Overdrafted Basin (COD) SGMA Implementation Round 1 grant opportunity, with funding awarded for the following activities through April, 2025:

- Ongoing Monitoring and Enhancements
    - Installation of Piezometers
    - installation of dedicated monitoring wells
    - DMS maintenance and enhancements
    - Groundwater level and quality monitoring
    - USGS stream gage maintenance

- Project and Management Action Implementation
    - CBWRM model update and re-calibration
    - Develop and implement framework for pumping allocations
    - Analysis of management actions implementation options
    - Adaptive management support
    - Precipitation enhancement technical analysis
    - Flood and stormwater capture technical analysis
- GSP Implementation and Outreach Activities
    - GSP implementation program management
    - Stakeholder engagement and community outreach
    - Prepare annual reports
    - Modify GSP in response to DWR determination
    - 5-year GSP update
- Improving Understanding of Basin Water Use
    - Perform updated land use survey
    - Perform river channel survey
    - Enhance existing CIMIS station and implement new stations

The CBGSA has also submitted a proposal to DWR for approximately $2 million under the SGMA Implementation Round 2 grant opportunity with funding to do additional implementation tasks. The CBGSA however did not get funding through that grant opportunity.

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 2023-2024 water year.

- CBGSA Board meetings[8]: October 12, November 1, December 22, January 2, January 10, March 6, May 1, May 23, July 10, July 31, and September 4
- Standing Advisory Committee (SAC) meetings[9]: October 12, October 26, January 4, February 29, April 25, July 1, July 25, and August 29

[8] https://cuyamabasin.org/board-of-directors

[9] https://cuyamabasin.org/standing-advisory-committee

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	Water rights analysis of potential water supplies currently underway	• 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	Study currently underway by Desert Research Institute	• 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	In progress for CCSD; not yet begun for other communities	• 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	Allocations developed for 2025 through 2029	• Allocations implemented: 2023 through 2040	• Plan: $300,000 • Implementation: $150,000 per year
Adaptive Management	Board ad-hoc committee has been formed and is considering potential actions	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. Initial work has been done to look at reservoir operations data to see during what windows during Twitchell Reservoir there were managed released and to assess the possibility of capturing this excess water upstream in the Cuyama Basin. Our current data suggests that this occurs 11% of the time.

The CBGSA also looked at USGS stream flow gages in the area to correlate time periods when reservoirs were releasing water to see how much stormwater may be available for capture. Additional analysis will be done in the coming year to assess the feasibility of implementation of a flood and stormwater capture project. This water rights analysis has not yet been completed but is expected to be completed in 2025.

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 study of the precipitation enhancement action identified in the GSP to determine if this action should be pursued and implemented in the Basin. The CBGSA contracted with the Desert Research Institute (DRI) to assess cloud seeding effects on Santa Barbra County and the Cuyama Valley. A proposal was submitted in September 2023 and work was initiated in October. A final report which will provide additional acre feet potential of precipitation from cloud seeding is expected in 2025.

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. This project will be explored if Project 1 mentioned above: flood and stormwater capture was feasible but greater volumes of water are desired.

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

This management action includes consideration of opportunities to improve water supply reliability for Ventucopa within CCSD service area. Potential projects include a replacement well for CCSD and improvement of Ventucopa Water Supply Company (VWSC's) existing well. Since the 2020 GSP adoption DWR's IRWM program awarded CCSD a grant to install a new production well. Work by the CCSD to install the new well is ongoing.

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

CBGSA staff has worked and continues to work with the Board and stakeholders to implement pumping allocations in the Central Management Area which began in the 2023 calendar year. As directed by the Board, in July 2022, CBGSA staff developed pumping allocations for 2023 and 2024 for each parcel located within the Central Management Area. These allocations reflect a 5% reduction in 2023 and a 10% reduction in 2024 relative to baseline levels. Actual pumping was reported for most water users in the Central Management Area in 2023, with all users at or below their pumping allocation amount for 2023.

Allocations for 2025 through 2029 were developed in conjunction with the development of the 2025 GSP Update and were approved by the Board in January 2025. These new allocations take into consideration a new management area boundary developed using the same methodology as the previous management area, but utilizing the updated model and recent monitoring data. These allocations are available for review on the CBGSA website.

7.5.3 Consideration of Pumping Allocations Outside of Central Management Area

The 2025 GSP Update included a Ventucopa Management Area but did not include a management action to implement pumping allocations outside the Central Management Area. Instead the CBGSA plans to develop a management plan for the Ventucopa Management Area in the future. Since the 2025 GSP Update was just recently submitted, no new information has been collected that would indicate that pumping allocations should be implemented outside the Central Management Area at this time. This will be re-considered in future Annual Reports.

7.6 Adaptive Management

As discussed in the previous annual report, because several wells in the Basin are trending towards undesirable results, the CBGSA Board has undertaken efforts 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. During WY 2024, several wells with groundwater levels that previously exceeded minimum thresholds recovered to above these threshold levels.

The Board continues to consider potential actions to address minimum threshold exceedances, including restricting pumping in individual wells, adjusting minimum thresholds or the undesirable result criteria identified in the GSP, and accelerating basin-wide pumping reductions. Potential options for implementing these actions will continue to be discussed by the Board during the upcoming water year.

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

In October 2021 the CBGSA transitioned to quarterly groundwater monitoring from its groundwater levels network. The CBGSA goes out in the field and collects Depth to Water measurements quarterly and attempts to take measurements from each of the representative and non-representative wells in the monitoring network. The results of this groundwater level monitoring are shown in Table 7-1. In September 2023, the CBGSA board voted to revise the monitoring network; the revised monitoring network has been included in the 2025 GSP Update and reflected in this Annual Report.

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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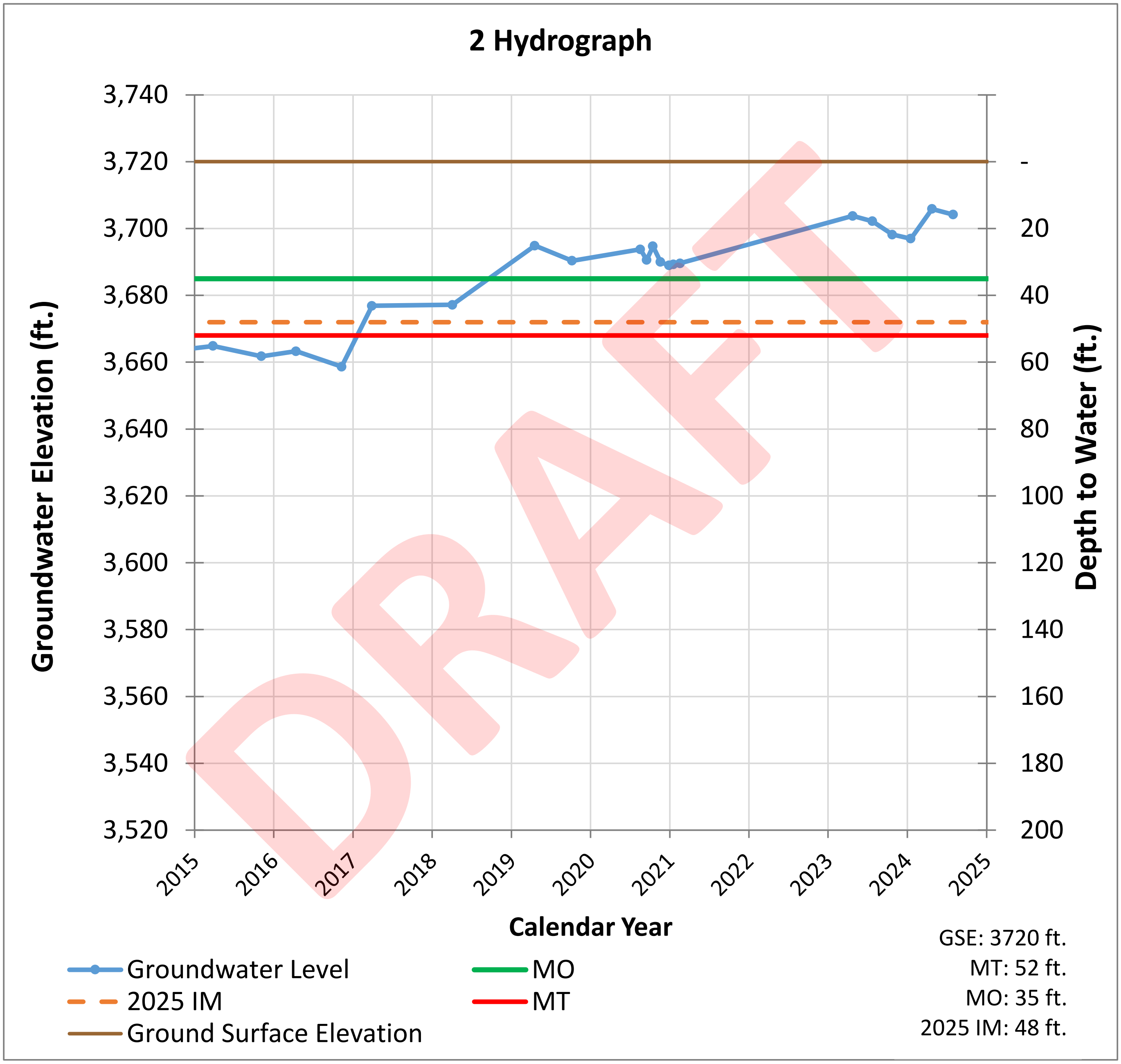
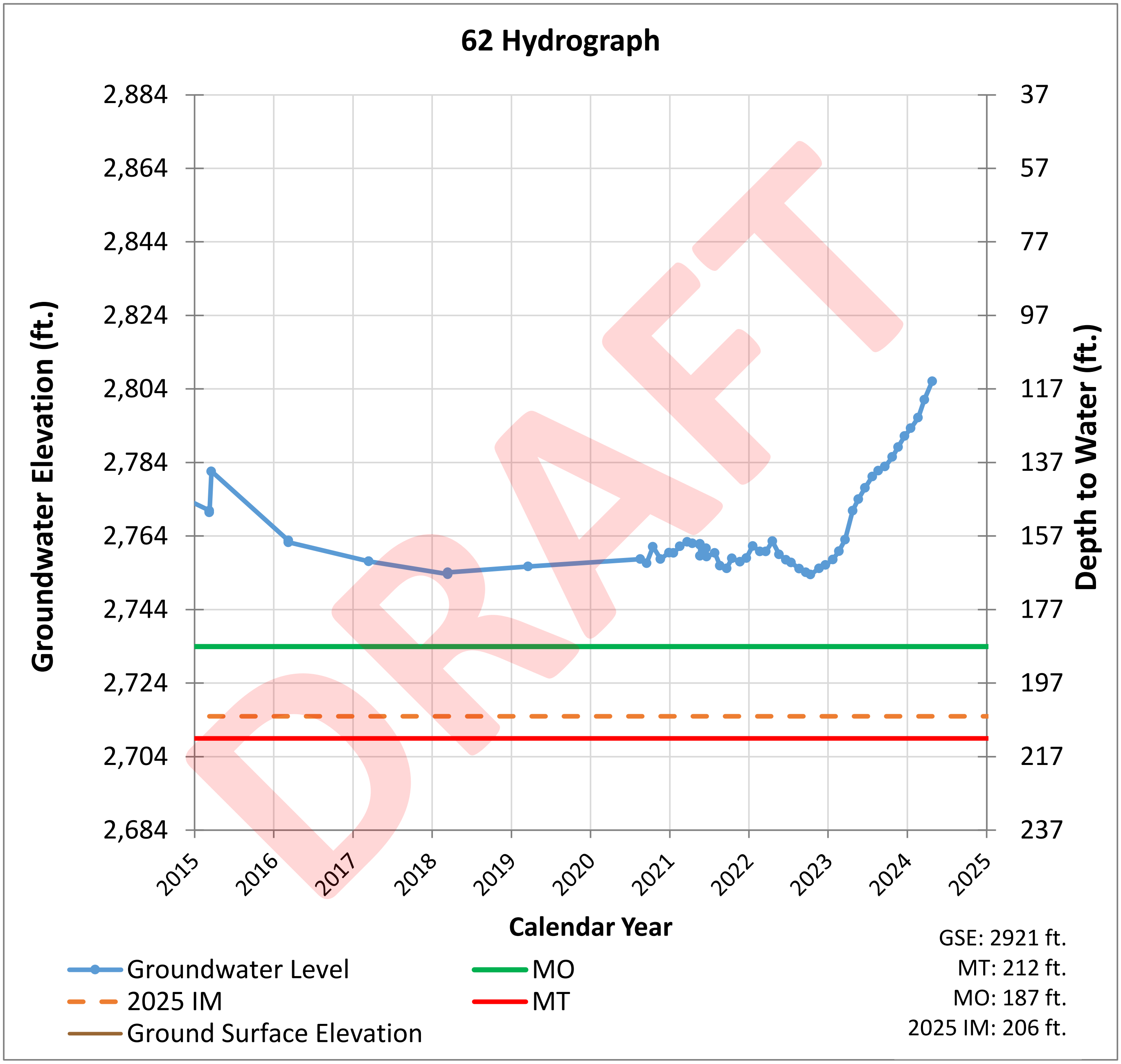
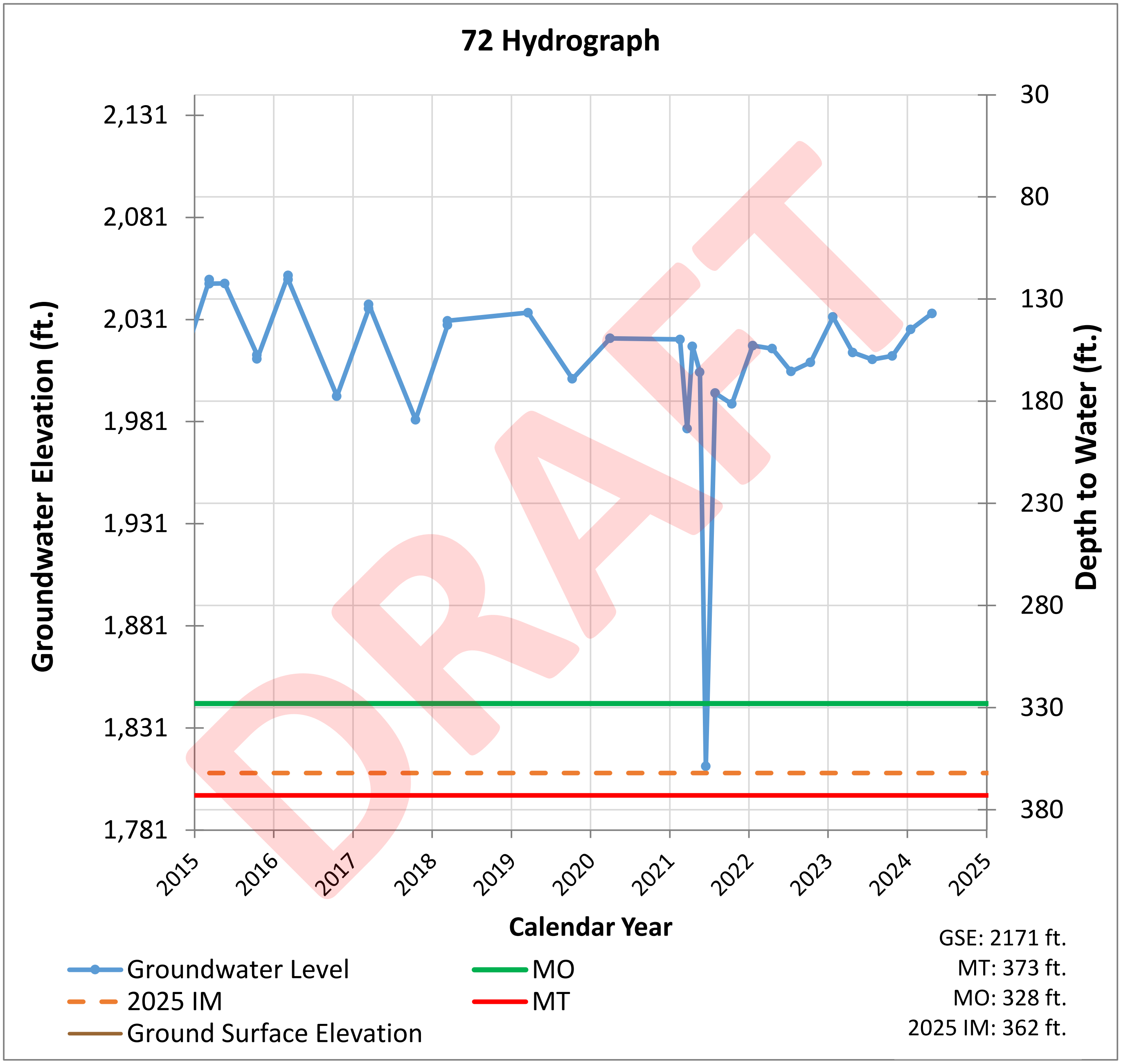
Appendix A
Updated Hydrographs for Representative Wells

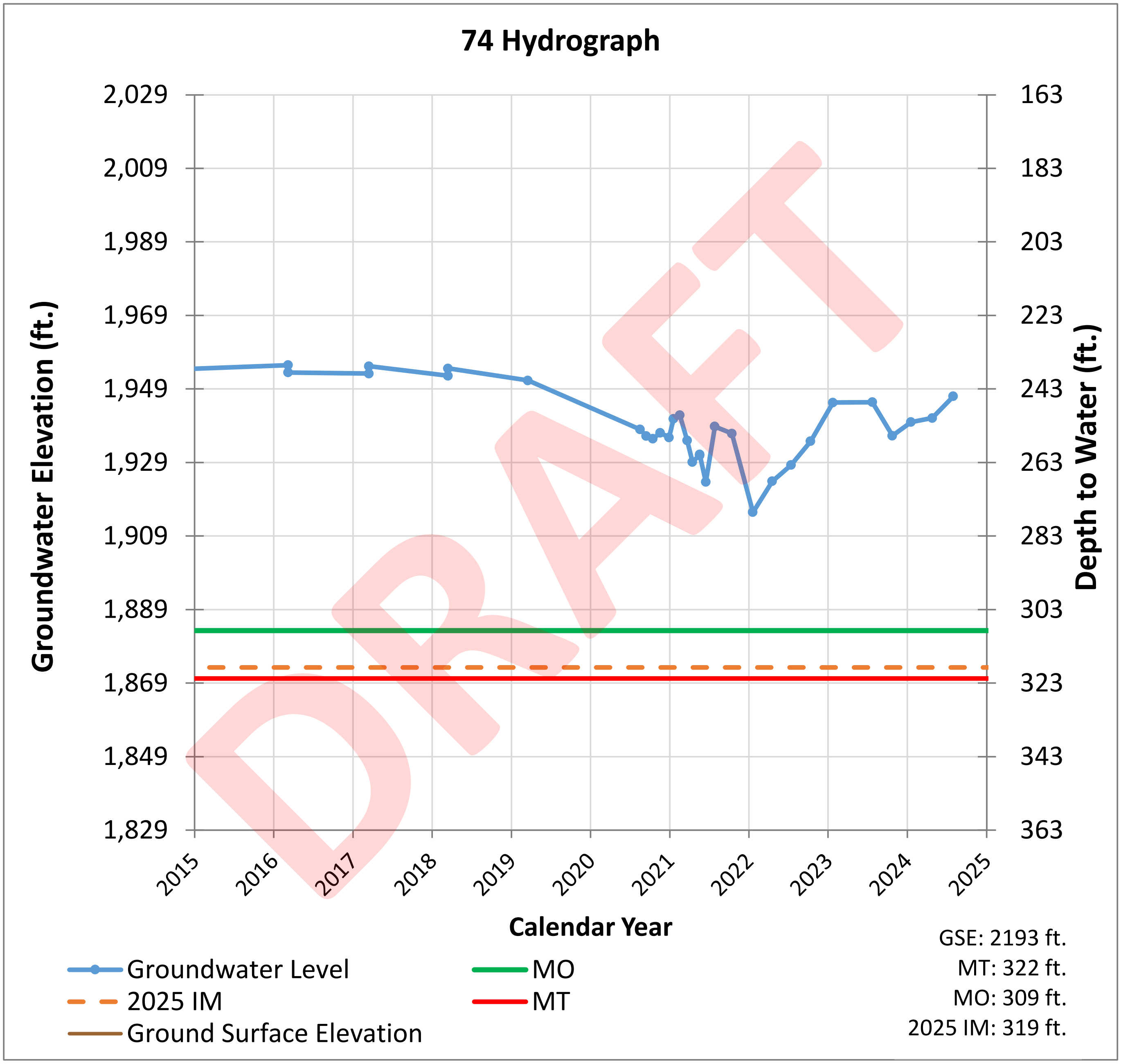


2 Hydrograph
3,740
3,720
3,700
3,680
3,660
3,640
3,620
3,600
3,580
3,560
3,540
3,520
Groundwater Elevation (ft.)
-
20
40
60
80
100
120
140
160
180
200
Depth to Water (ft.)
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 3720 ft.
MT: 52 ft.
MO: 35 ft.
2025 IM: 48 ft.
DRAFT

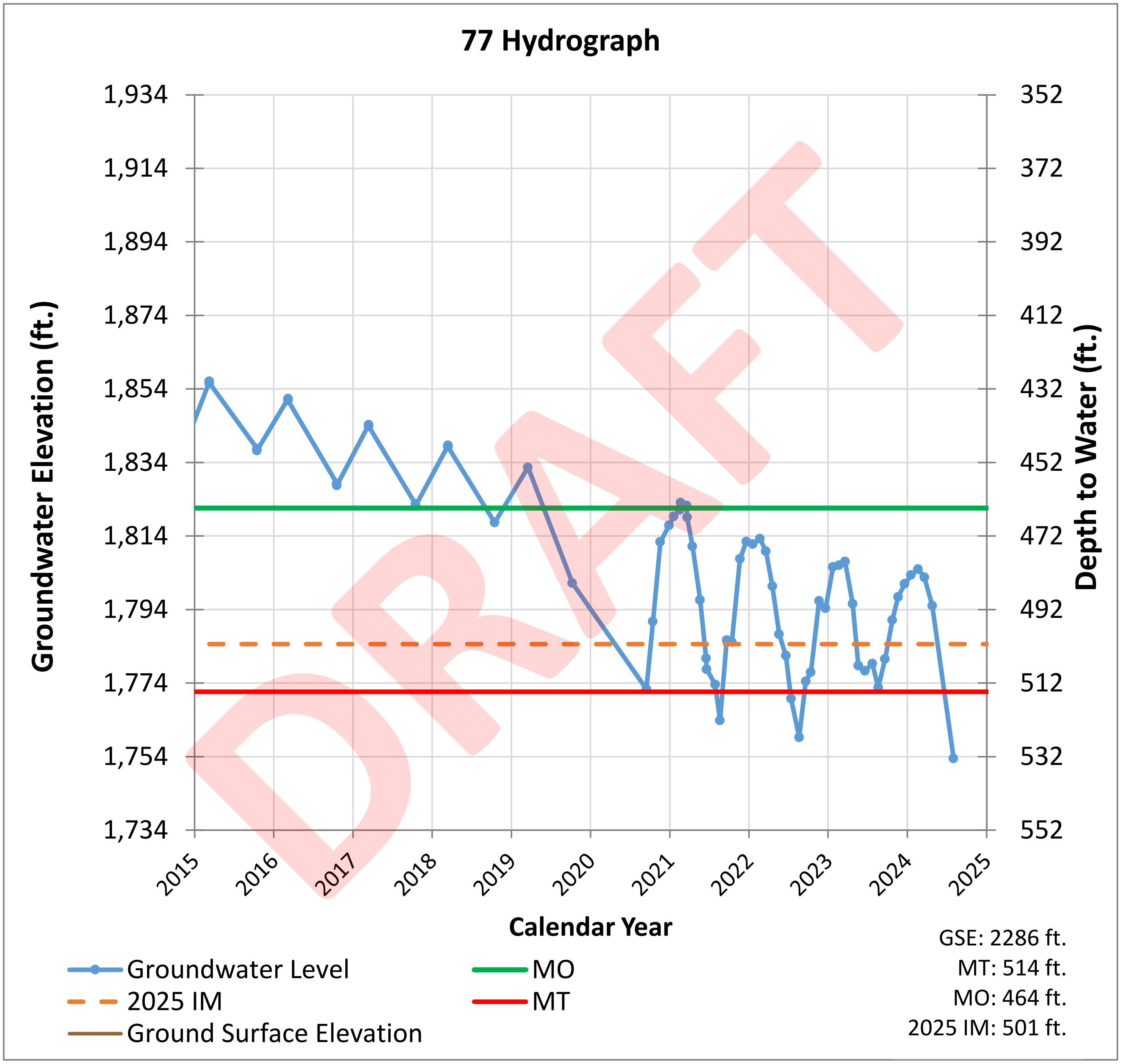

62 Hydrograph
Groundwater Elevation (ft.)
2,884
2,864
2,844
2,824
2,804
2,784
2,764
2,744
2,724
2,704
2,684
Depth to Water (ft.)
37
57
77
97
117
137
157
177
197
217
237
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
DRAFT
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2921 ft.
MT: 212 ft.
MO: 187 ft.
2025 IM: 206 ft.

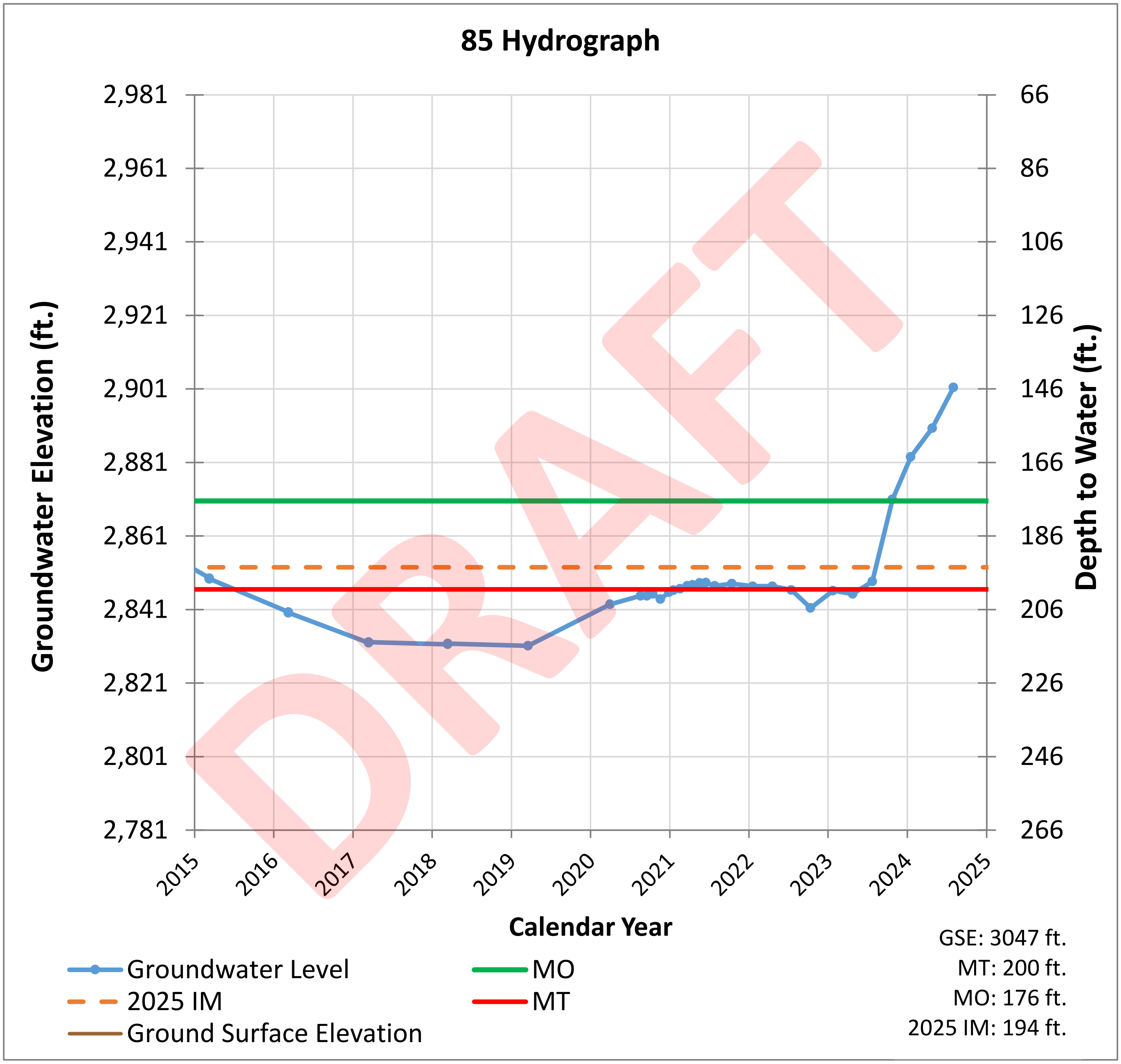


72 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,131
2,081
2,031
1,981
1,931
1,881
1,831
1,781
30
80
130
180
230
280
330
380
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2171 ft.
MT: 373 ft.
MO: 328 ft.
2025 IM: 362 ft.
DRAFT

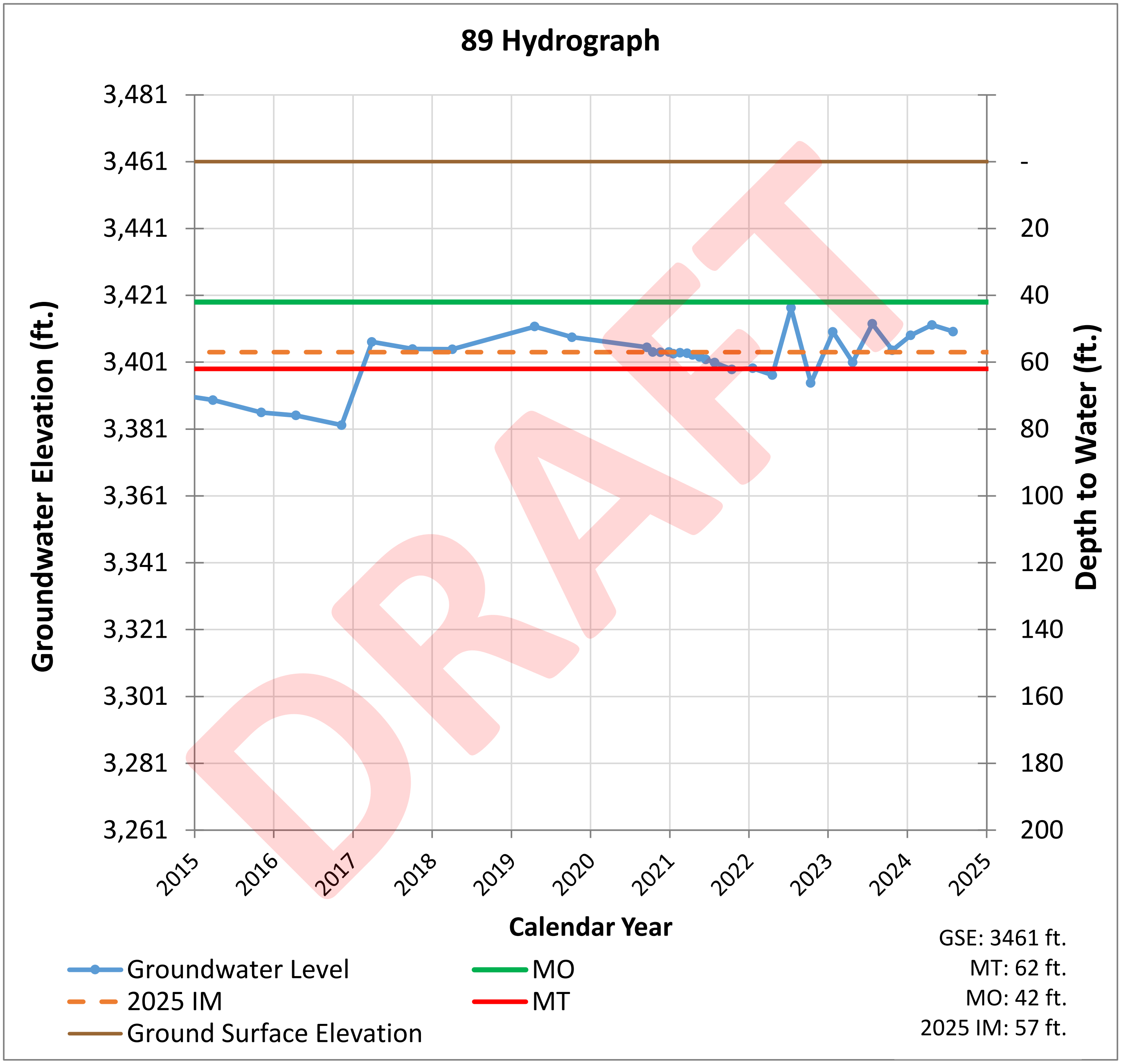


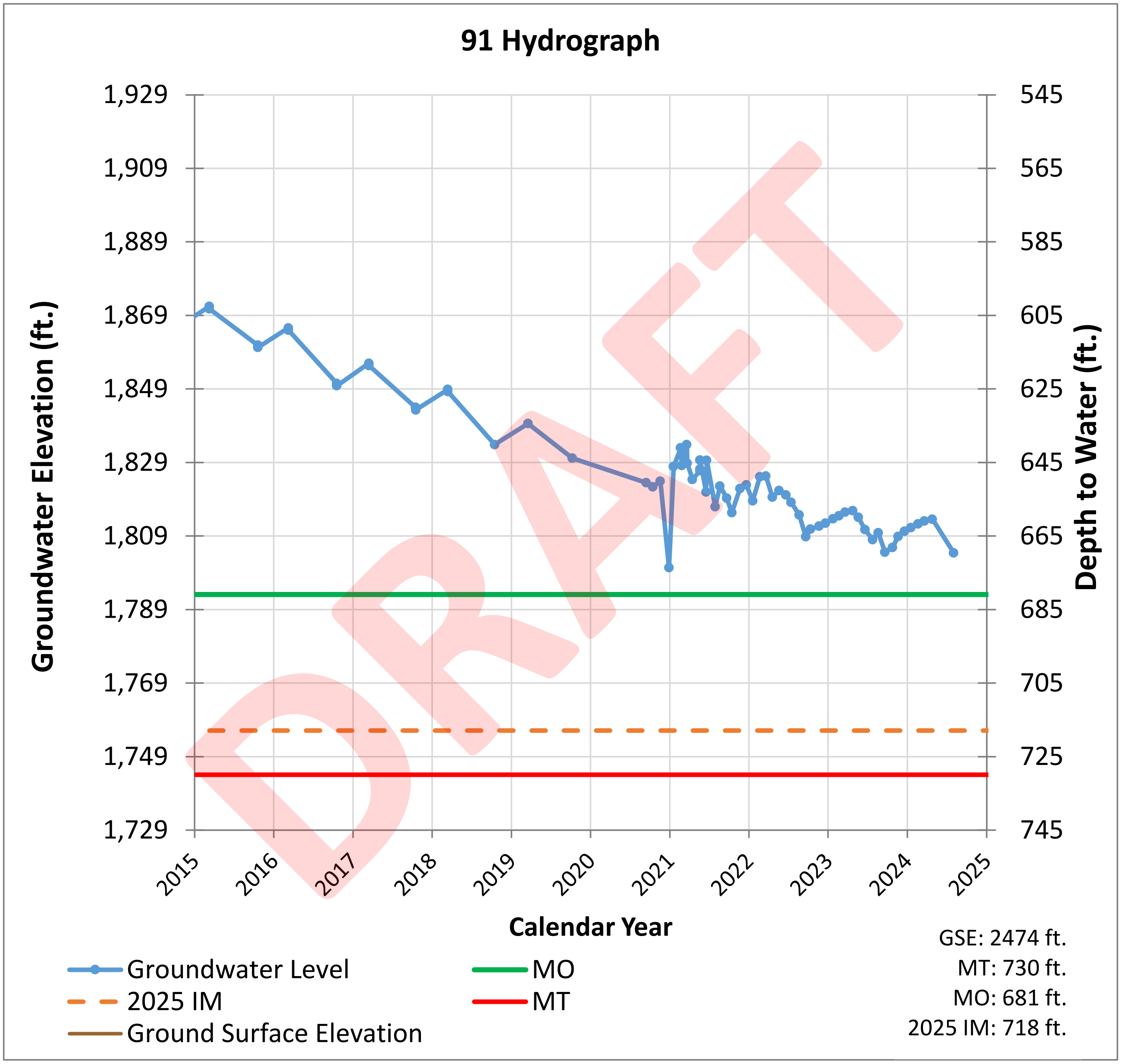
74 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,029
2,009
1,989
1,969
1,949
1,929
1,909
1,889
1,869
1,849
1,829
163
183
203
223
243
263
283
303
323
343
363
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2193 ft.
MT: 322 ft.
MO: 309 ft.
2025 IM: 319 ft.
DRAFT


77 Hydrograph
Groundwater Elevation (ft.)
1,934
1,914
1,894
1,874
1,854
1,834
1,814
1,794
1,774
1,754
1,734
Depth to Water (ft.)
352
372
392
412
432
452
472
492
512
532
552
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2286 ft.
MT: 514 ft.
MO: 464 ft.
2025 IM: 501 ft.
DRAFT

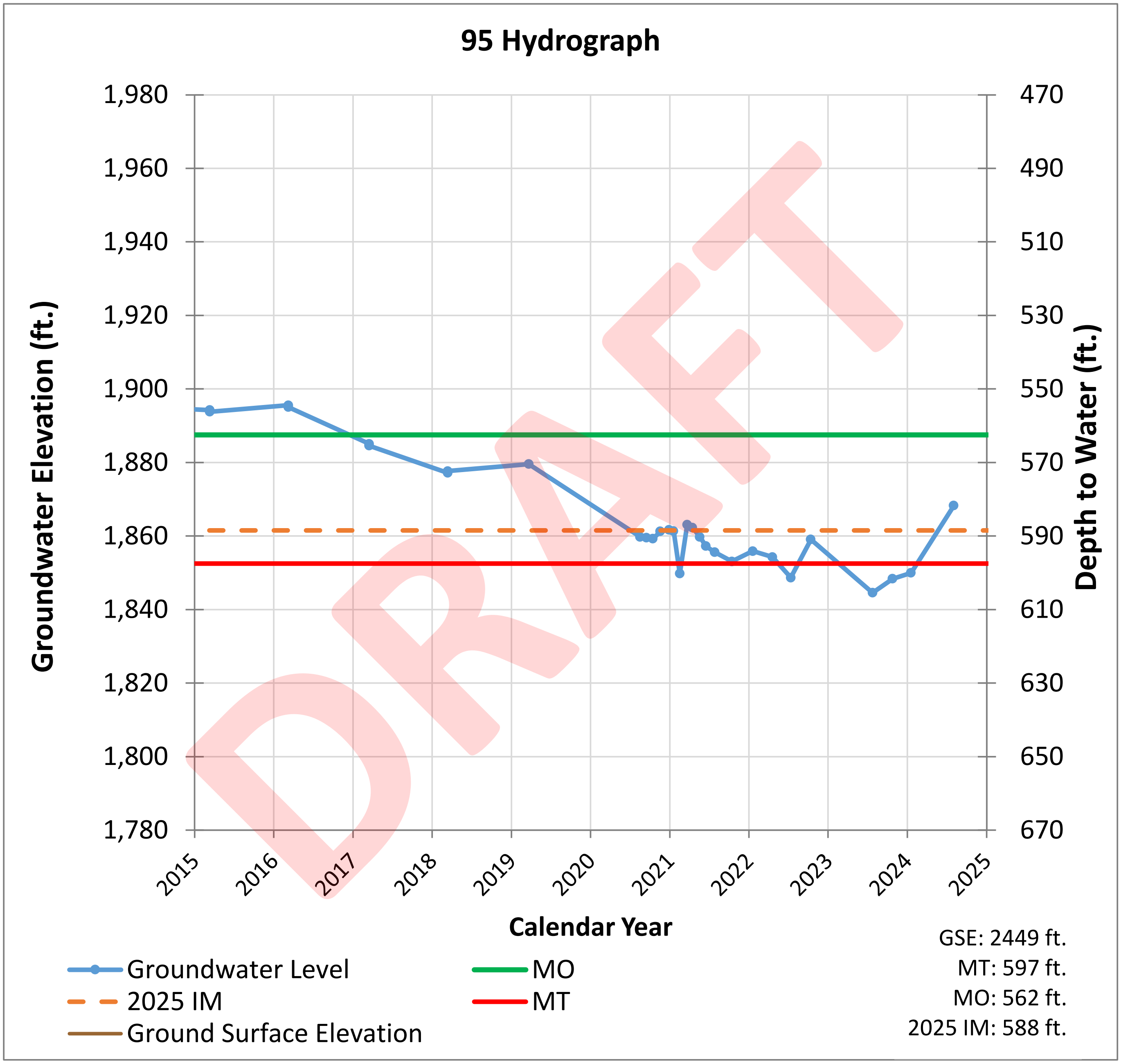


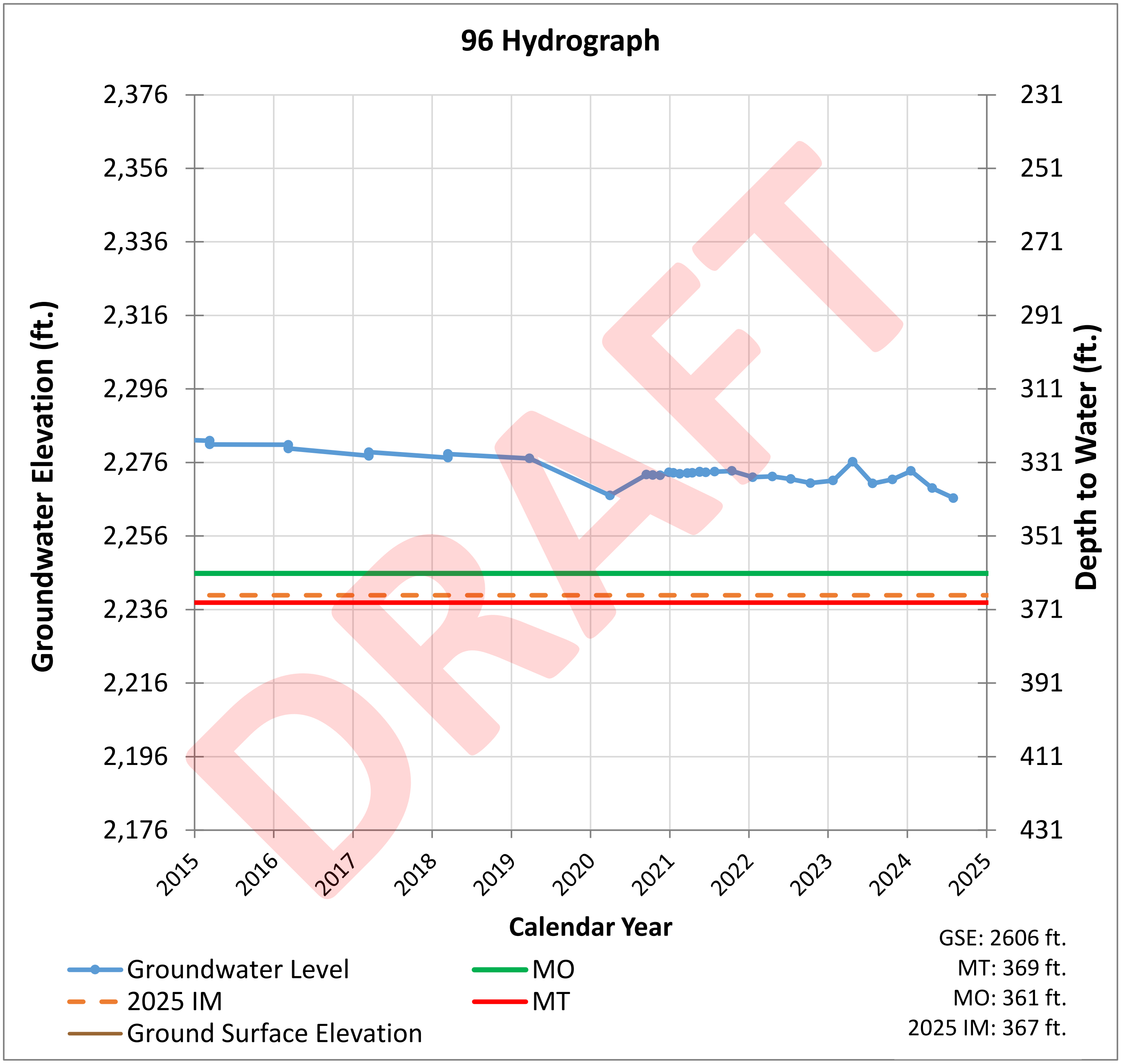
85 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,981
2,961
2,941
2,921
2,901
2,881
2,861
2,841
2,821
2,801
2,781
66
86
106
126
146
166
186
206
226
246
266
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
MO
2025 IM
MT
Ground Surface Elevation
GSE: 3047 ft.
MT: 200 ft.
MO: 176 ft.
2025 IM: 194 ft.
DRAFT

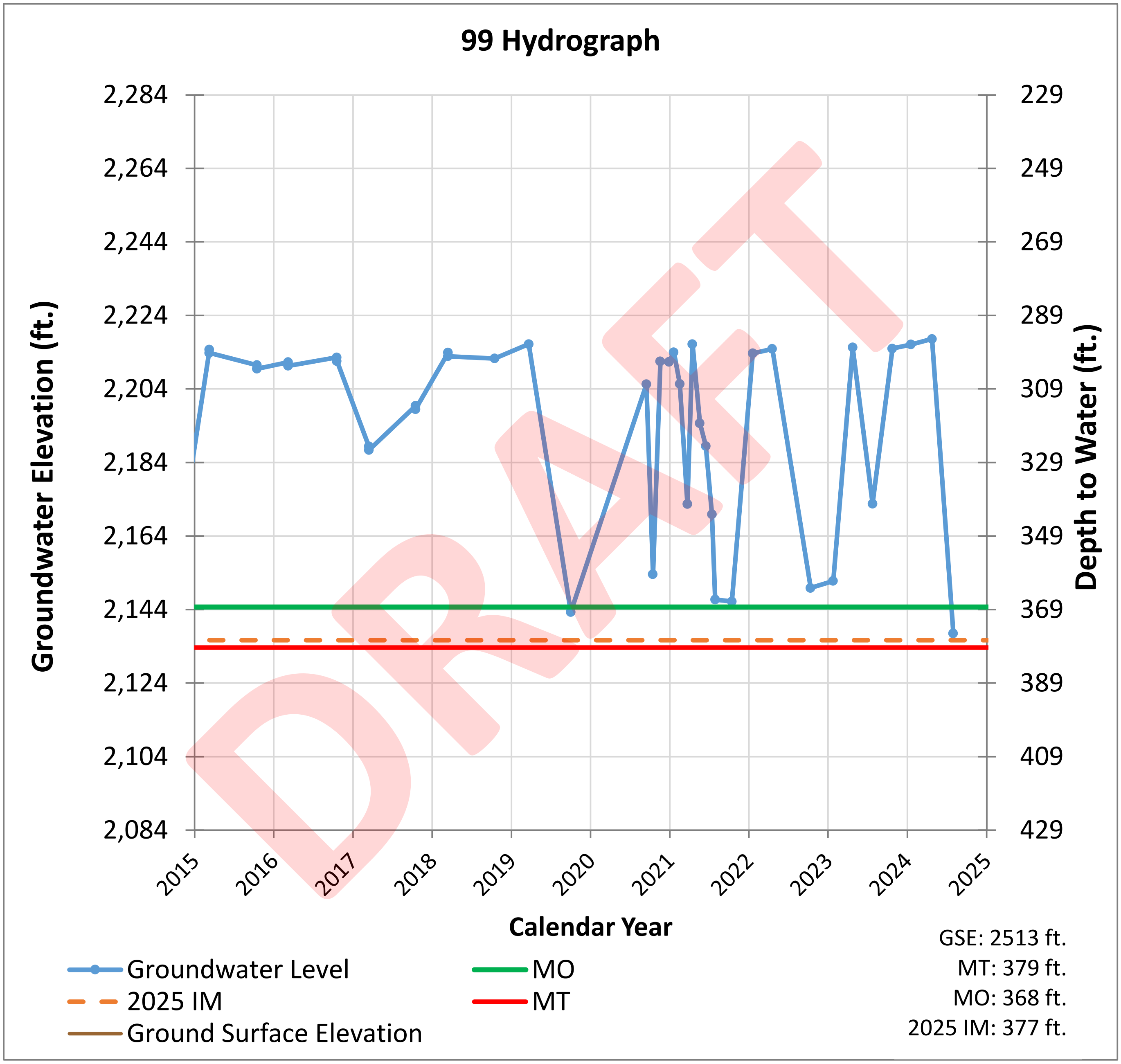

89 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
3,481
3,461
3,441
3,421
3,401
3,381
3,361
3,341
3,321
3,301
3,281
3,261
-
20
40
60
80
100
120
140
160
180
200
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 3461 ft.
MT: 62 ft.
MO: 42 ft.
2025 IM: 57 ft.
DRAFT

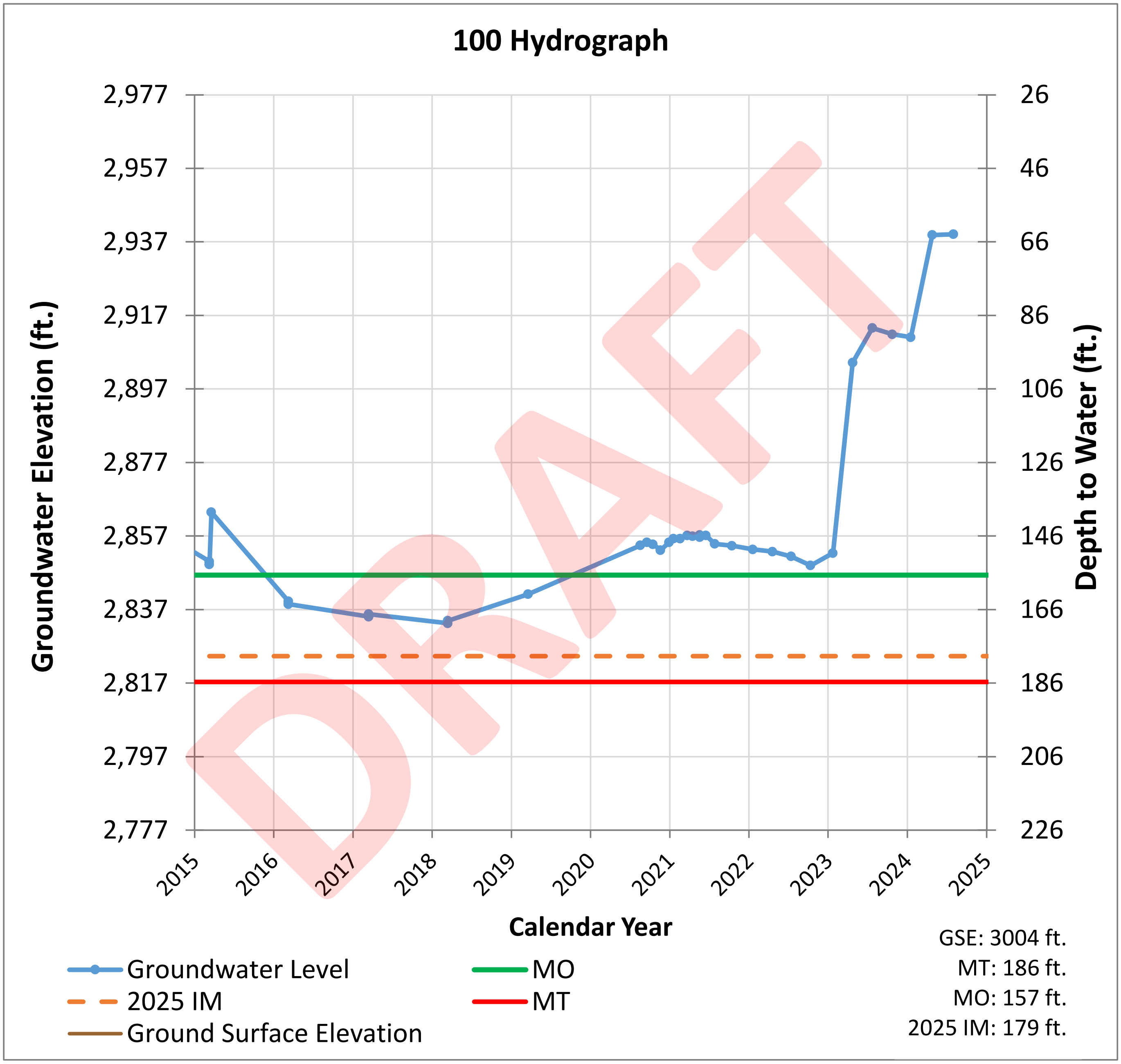


91 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
1,929
1,909
1,889
1,869
1,849
1,829
1,809
1,789
1,769
1,749
1,729
545
565
585
605
625
645
665
685
705
725
745
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2474 ft.
MT: 730 ft.
MO: 681 ft.
2025 IM: 718 ft.
DRAFT

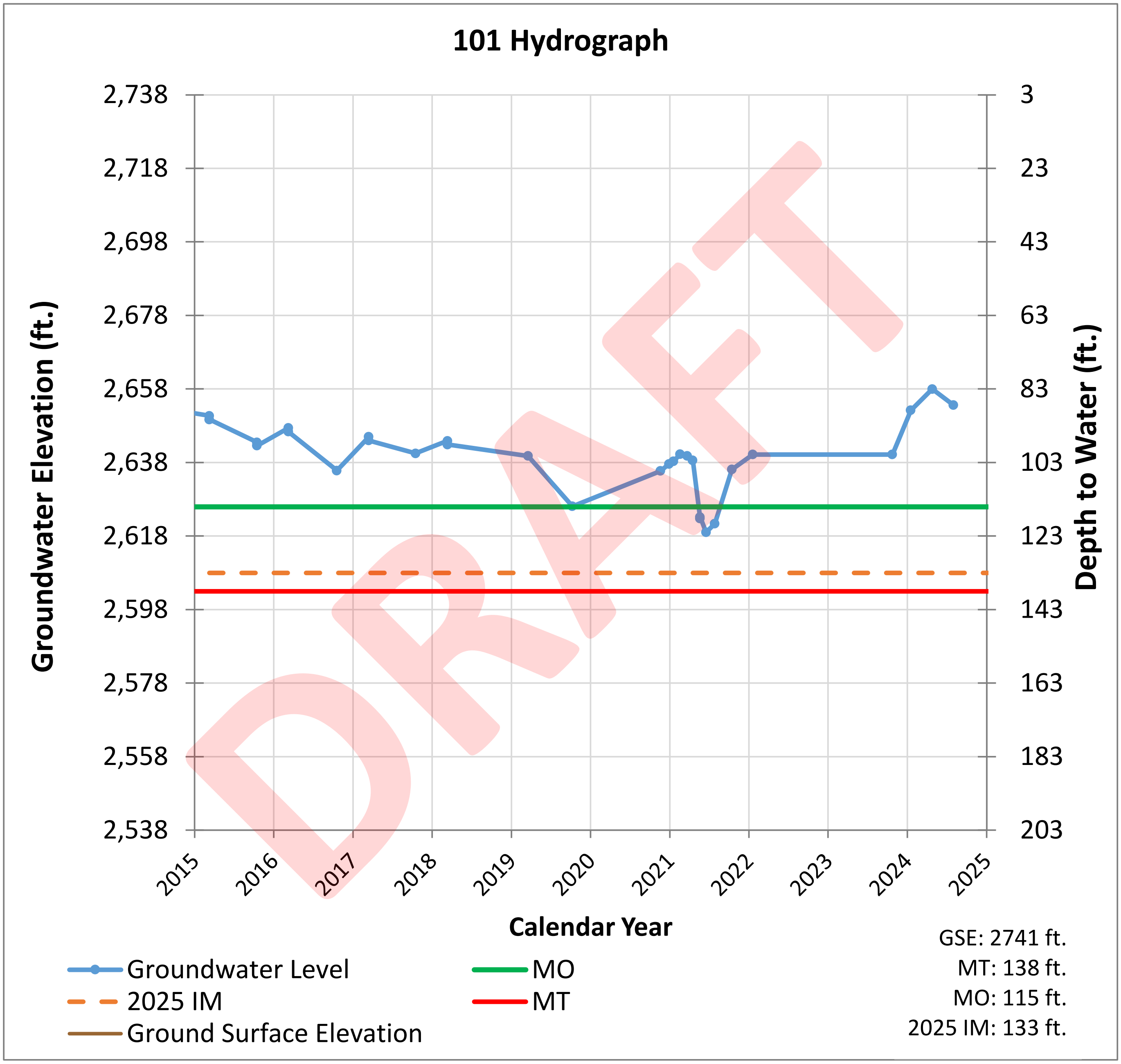

95 Hydrograph
1,980
1,960
1,940
1,920
1,900
1,880
1,860
1,840
1,820
1,800
1,780
470
490
510
530
550
570
590
610
630
650
670
Groundwater Elevation (ft.)
Depth to Water (ft.)
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2449 ft.
MT: 597 ft.
MO: 562 ft.
2025 IM: 588 ft.
DRAFT

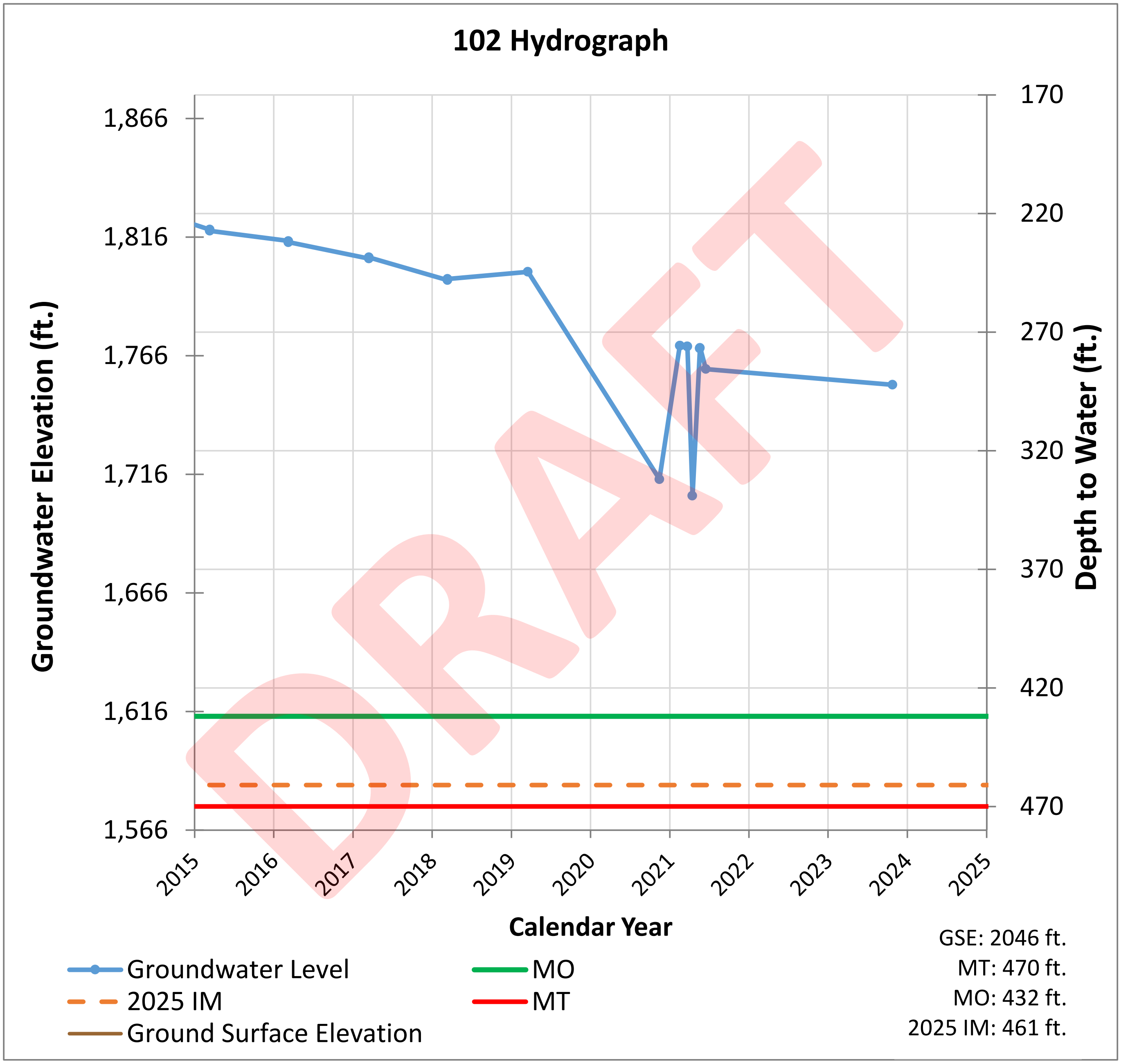

96 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,376
2,356
2,336
2,316
2,296
2,276
2,256
2,236
2,216
2,196
2,176
231
251
271
291
311
331
351
371
391
411
431
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2606 ft.
MT: 369 ft.
MO: 361 ft.
2025 IM: 367 ft.
DRAFT

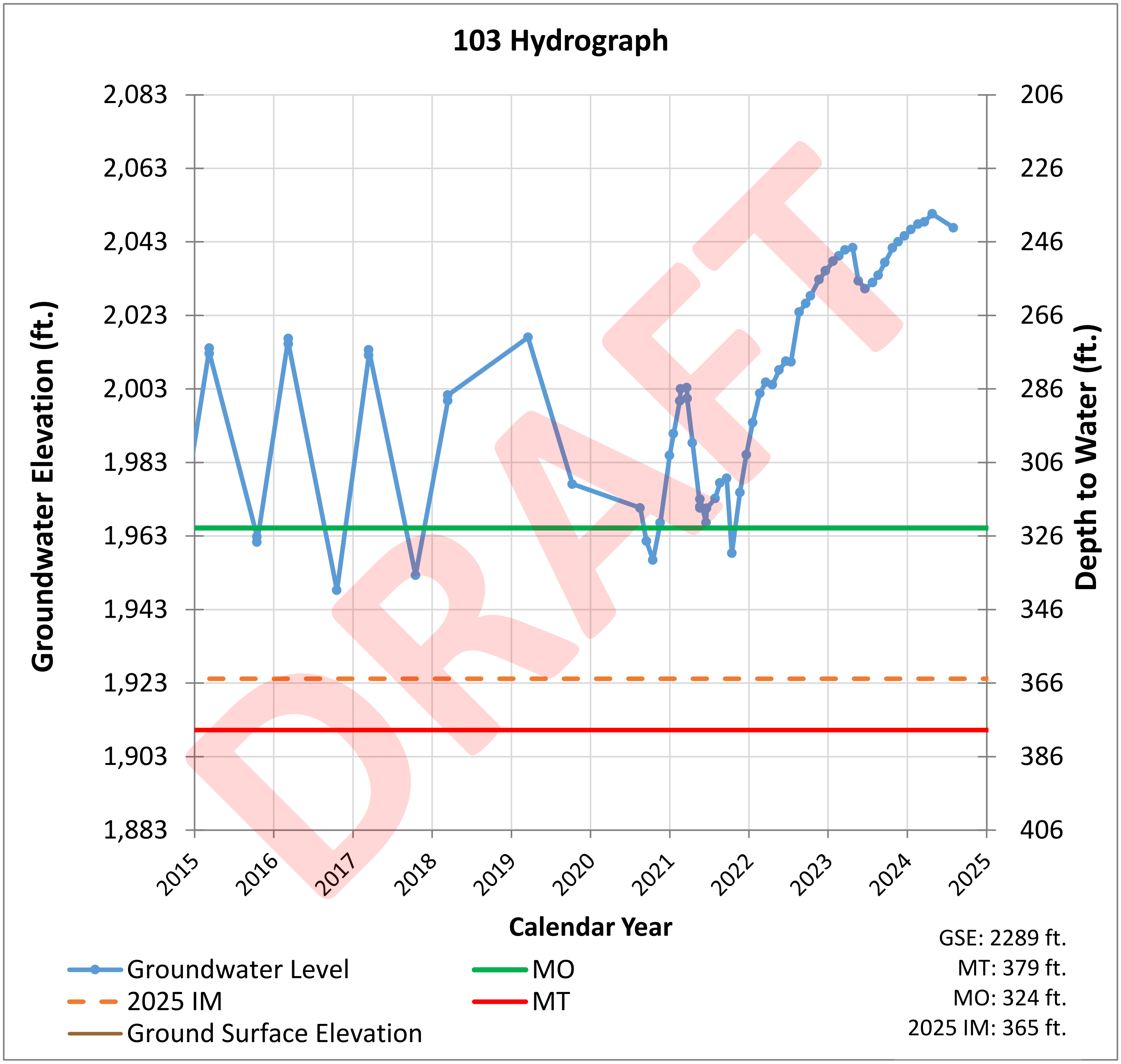

99 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,284
2,264
2,244
2,224
2,204
2,184
2,164
2,144
2,124
2,104
2,084
229
249
269
289
309
329
349
369
389
409
429
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2513 ft.
MT: 379 ft.
MO: 368 ft.
2025 IM: 377 ft.
DRAFT



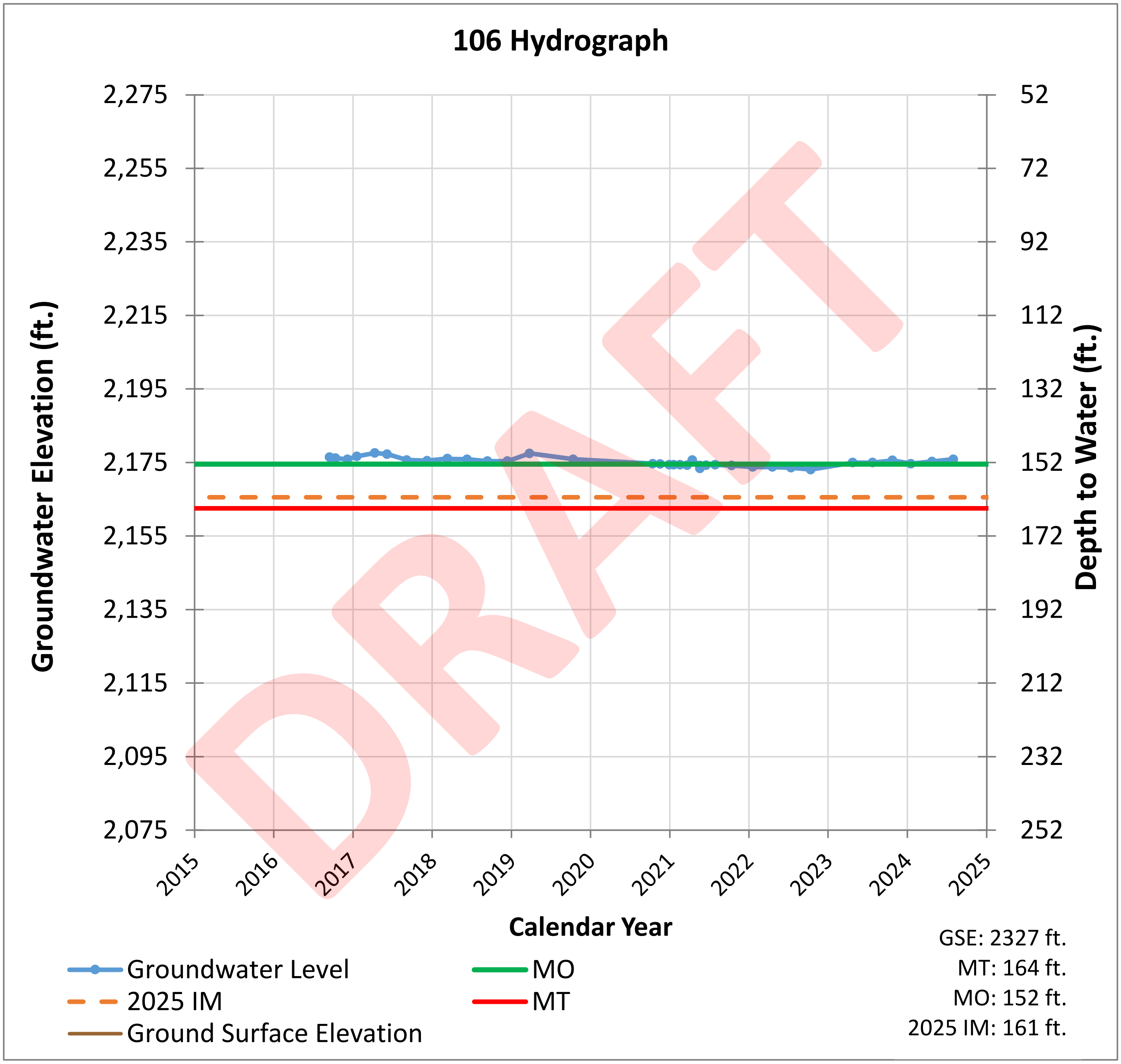
100 Hydrograph
Groundwater Elevation (ft.)
2,977
2,957
2,937
2,917
2,897
2,877
2,857
2,837
2,817
2,797
2,777
Depth to Water (ft.)
26
46
66
86
106
126
146
166
186
206
226
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 3004 ft.
MT: 186 ft.
MO: 157 ft.
2025 IM: 179 ft.
DRAFT


101 Hydrograph
Groundwater Elevation (ft.)
2,738
2,718
2,698
2,678
2,658
2,638
2,618
2,598
2,578
2,558
2,538
Depth to Water (ft.)
3
23
43
63
83
103
123
143
163
183
203
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2741 ft.
MT: 138 ft.
MO: 115 ft.
2025 IM: 133 ft.
DRAFT

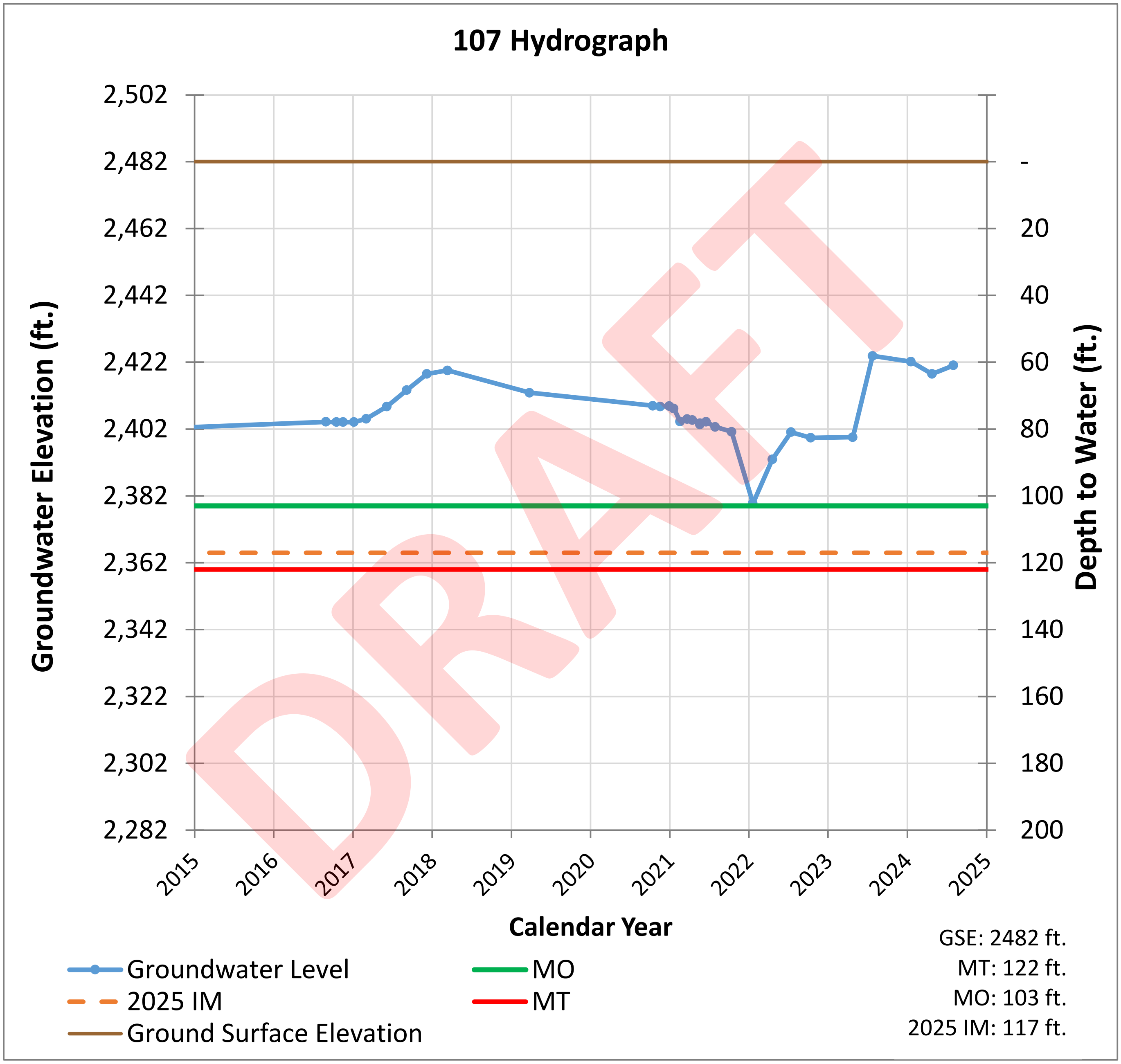

102 Hydrograph
Groundwater Elevation (ft.)
1,866
1,816
1,766
1,716
1,666
1,616
1,566
Depth to Water (ft.)
170
220
270
320
370
420
470
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2046 ft.
MT: 470 ft.
MO: 432 ft.
2025 IM: 461 ft.
DRAFT



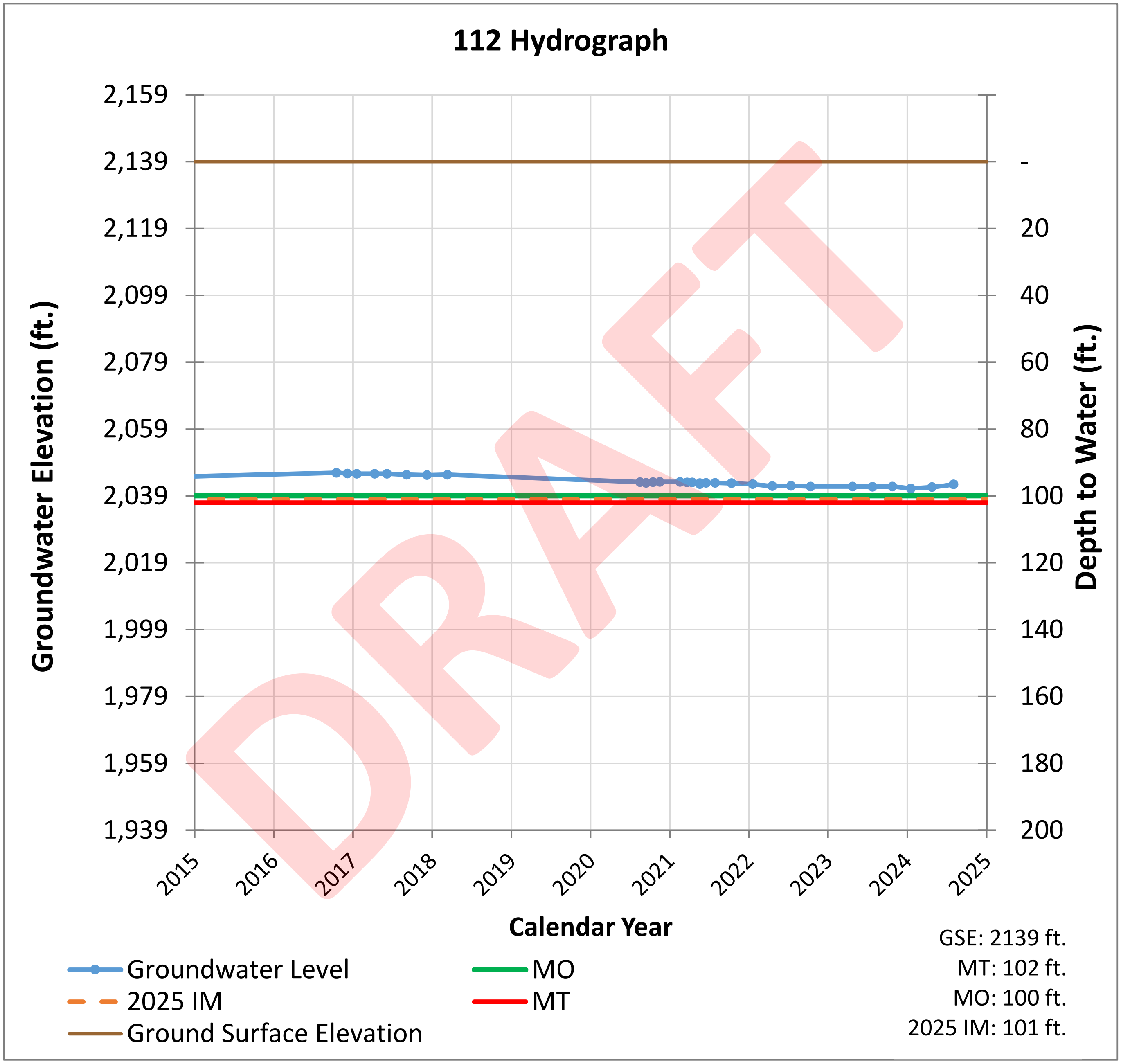
103 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,083
2,063
2,043
2,023
2,003
1,983
1,963
1,943
1,923
1,903
1,883
206
226
246
266
286
306
326
346
366
386
406
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2289 ft.
MT: 379 ft.
MO: 324 ft.
2025 IM: 365 ft.
DRAFT



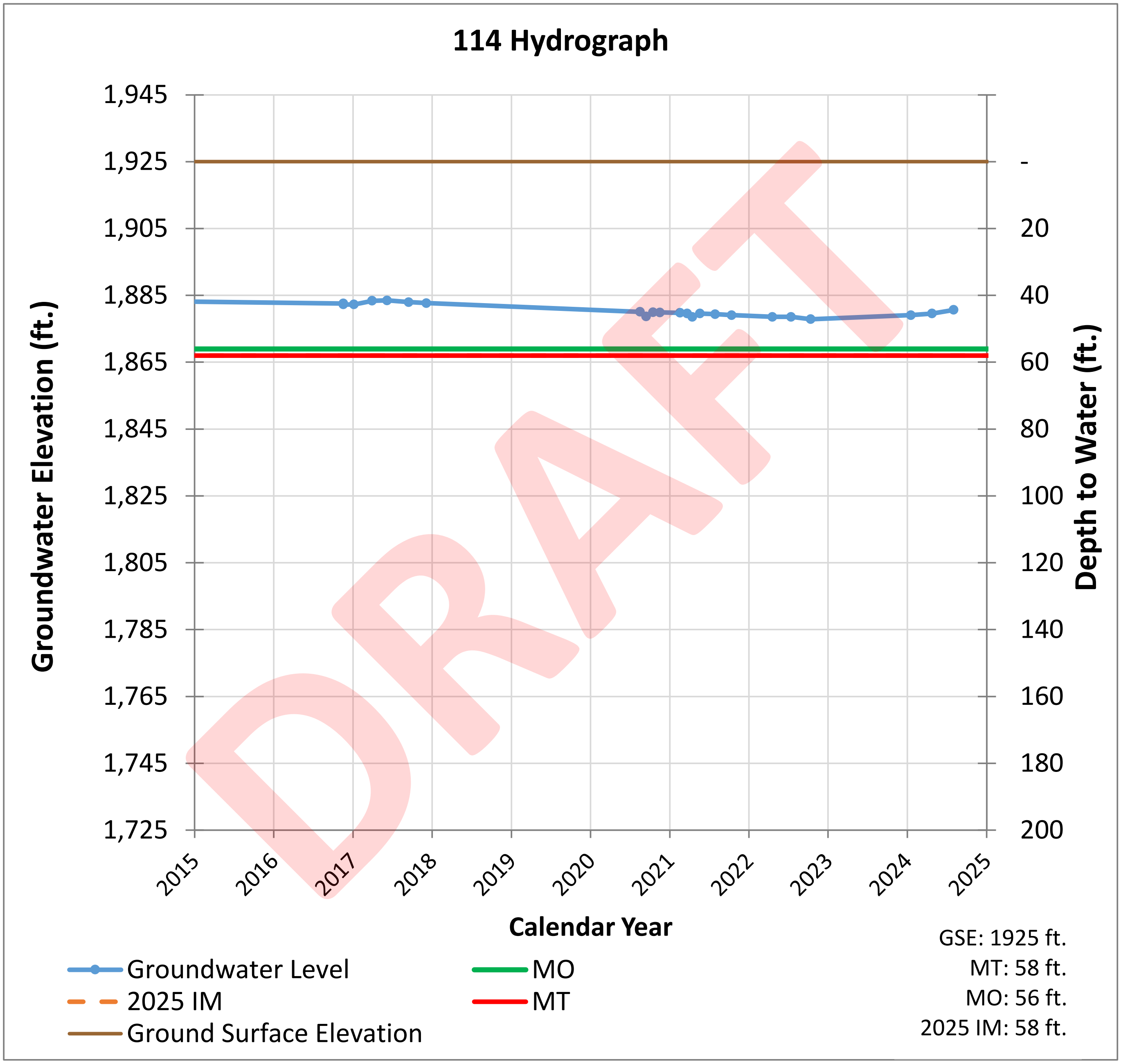
106 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,275
2,255
2,235
2,215
2,195
2,175
2,155
2,135
2,115
2,095
2,075
52
72
92
112
132
152
172
192
212
232
252
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2327 ft.
MT: 164 ft.
MO: 152 ft.
2025 IM: 161 ft.
DRAFT

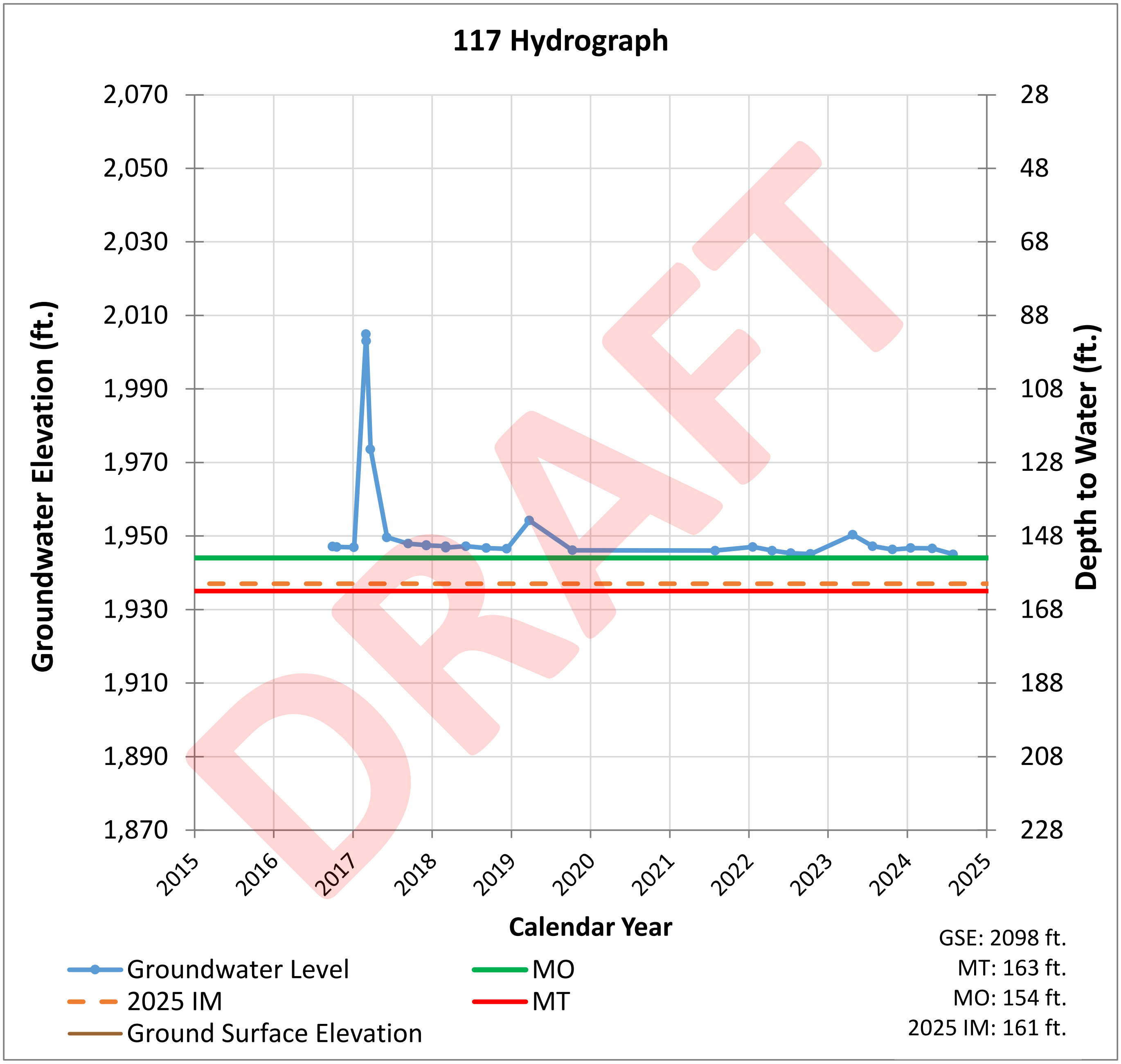


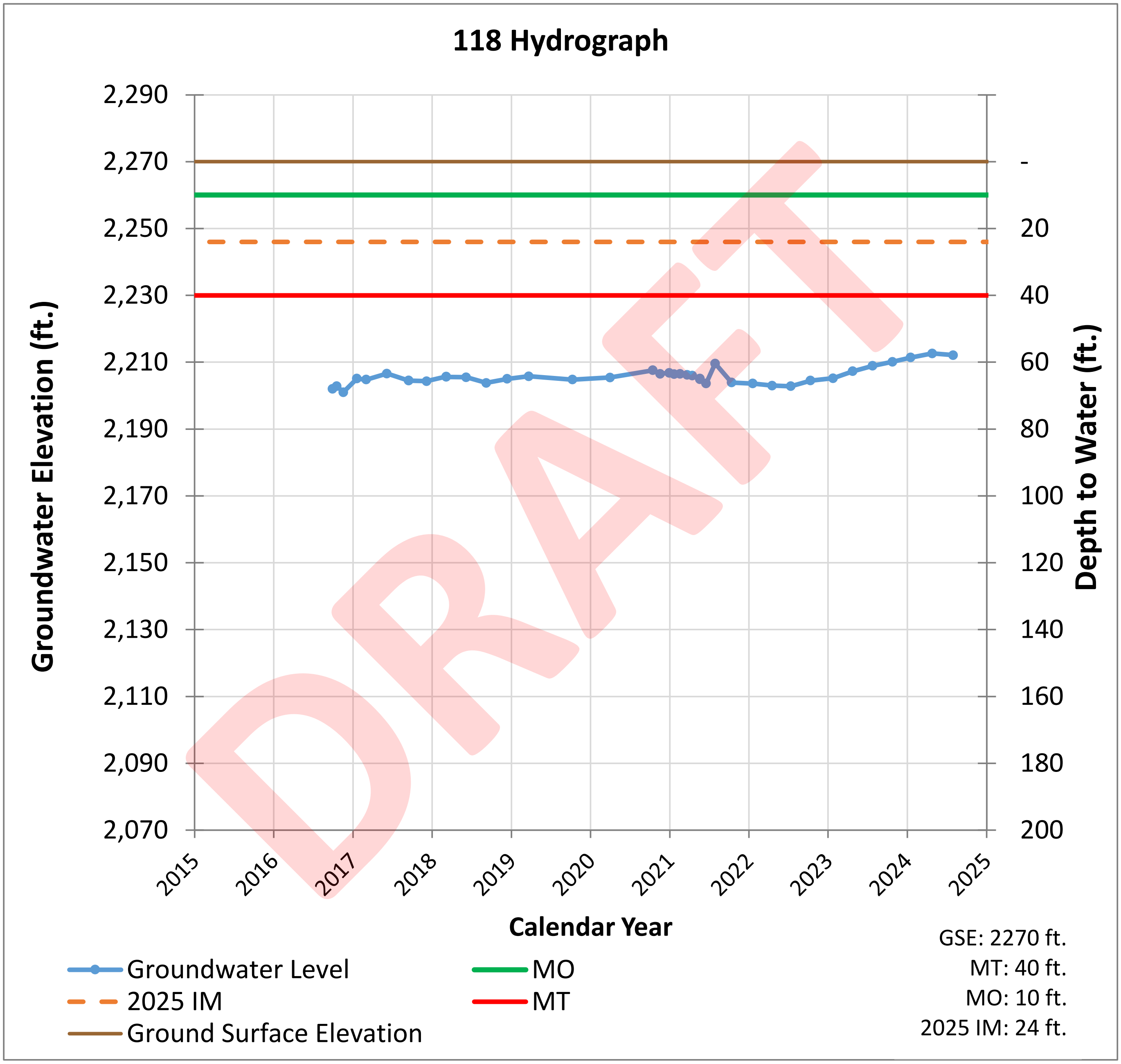
107 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,502
2,482
2,462
2,442
2,422
2,402
2,382
2,362
2,342
2,322
2,302
2,282
-
20
40
60
80
100
120
140
160
180
200
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2482 ft.
MT: 122 ft.
MO: 103 ft.
2025 IM: 117 ft.
DRAFT

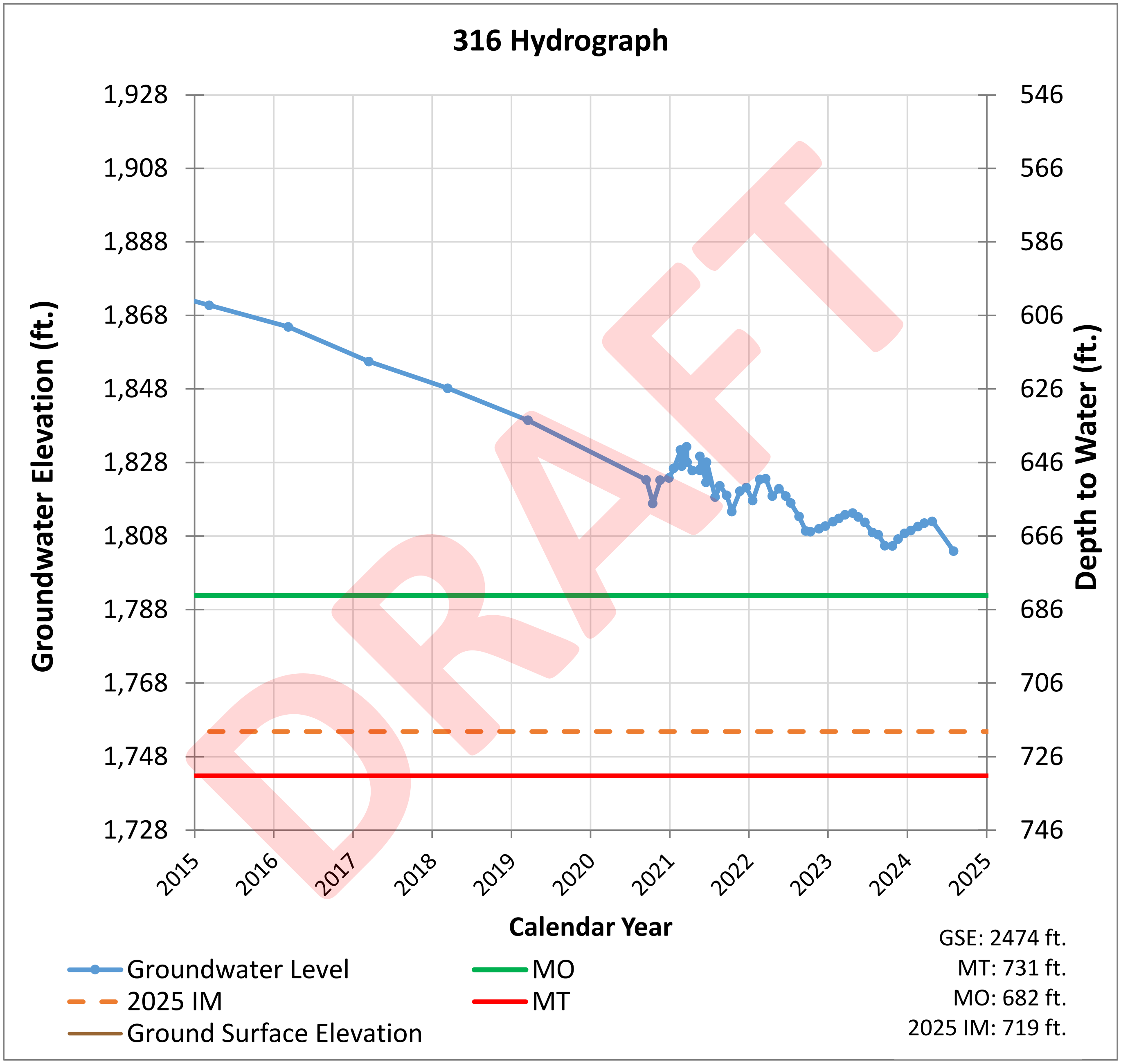


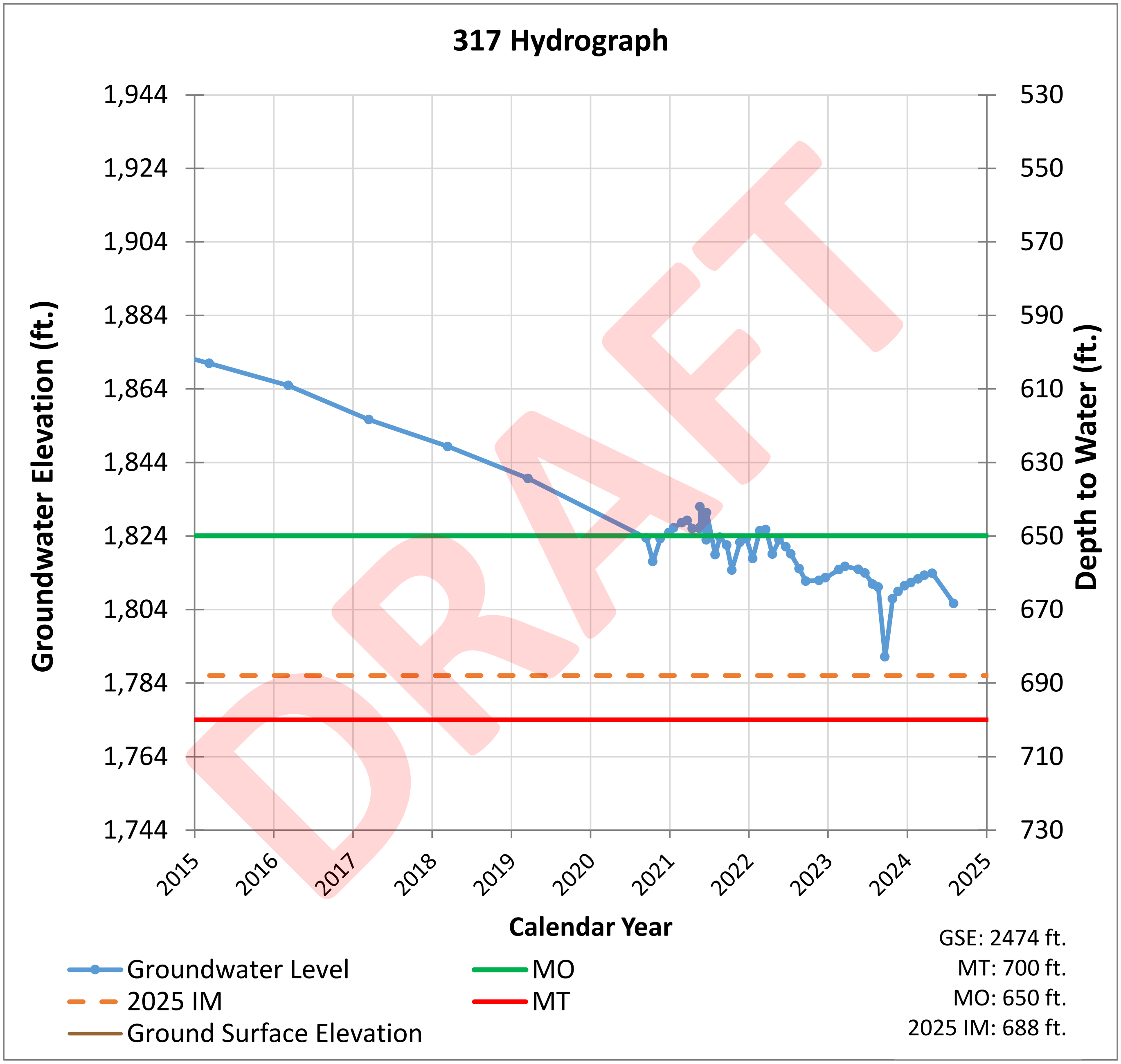
112 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,159
2,139
2,119
2,099
2,079
2,059
2,039
2,019
1,999
1,979
1,959
1,939
-
20
40
60
80
100
120
140
160
180
200
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2139 ft.
MT: 102 ft.
MO: 100 ft.
2025 IM: 101 ft.
DRAFT


114 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
1,945
1,925
1,905
1,885
1,865
1,845
1,825
1,805
1,785
1,765
1,745
1,725
-
20
40
60
80
100
120
140
160
180
200
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 1925 ft.
MT: 58 ft.
MO: 56 ft.
2025 IM: 58 ft.
DRAFT

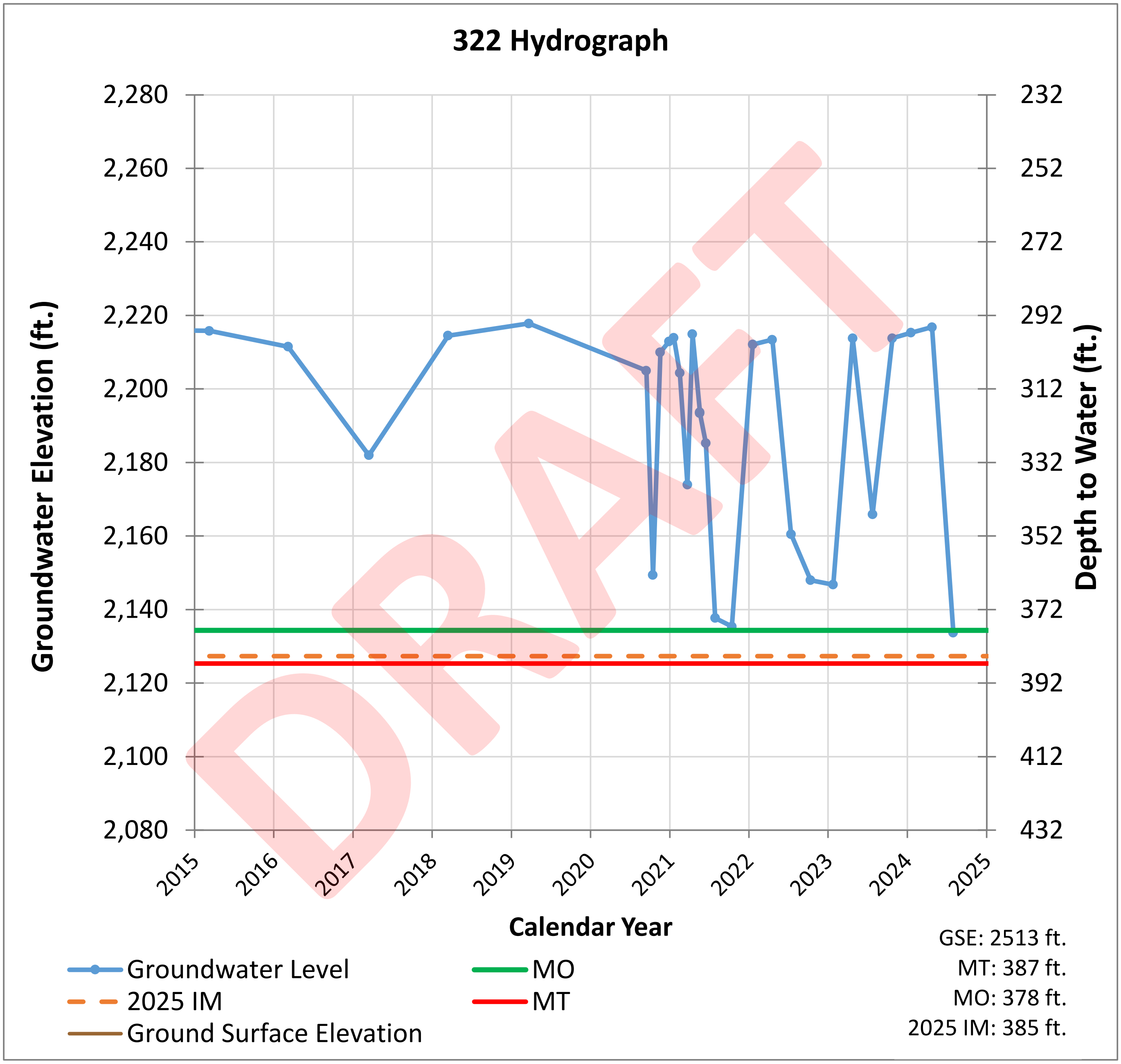

117 Hydrograph
Groundwater Elevation (ft.)
2,070
2,050
2,030
2,010
1,990
1,970
1,950
1,930
1,910
1,890
1,870
Depth to Water (ft.)
28
48
68
88
108
128
148
168
188
208
228
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2098 ft.
MT: 163 ft.
MO: 154 ft.
2025 IM: 161 ft.
DRAFT

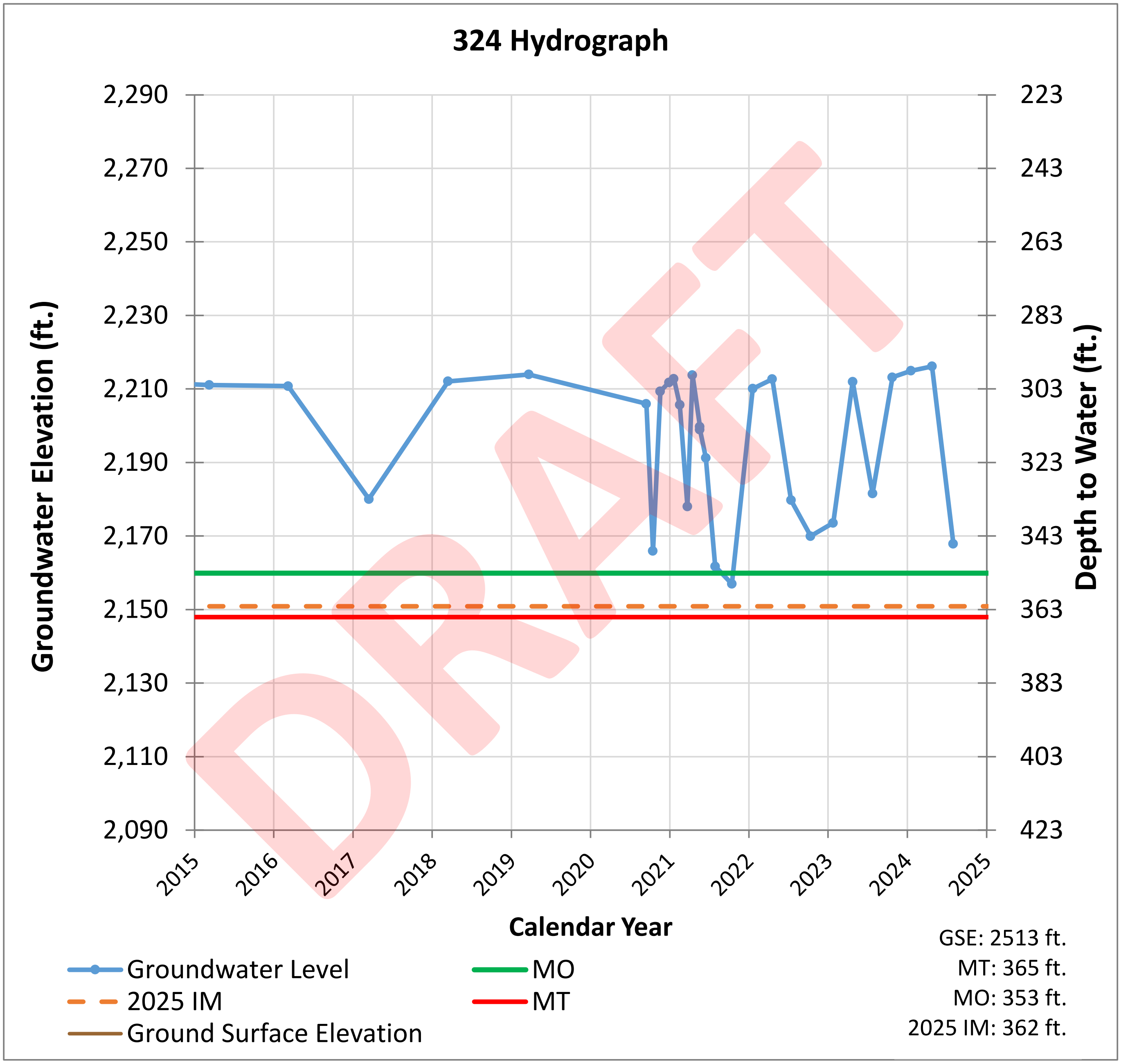

118 Hydrograph
Groundwater Elevation (ft.)
2,290
2,270
2,250
2,230
2,210
2,190
2,170
2,150
2,130
2,110
2,090
2,070
Depth to Water (ft.)
-
20
40
60
80
100
120
140
160
180
200
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2270 ft.
MT: 40 ft.
MO: 10 ft.
2025 IM: 24 ft.
DRAFT


316 Hydrograph
Groundwater Elevation (ft.)
1,928
1,908
1,888
1,868
1,848
1,828
1,808
1,788
1,768
1,748
1,728
Depth to Water (ft.)
546
566
586
606
626
646
666
686
706
726
746
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2474 ft.
MT: 731 ft.
MO: 682 ft.
2025 IM: 719 ft.
DRAFT

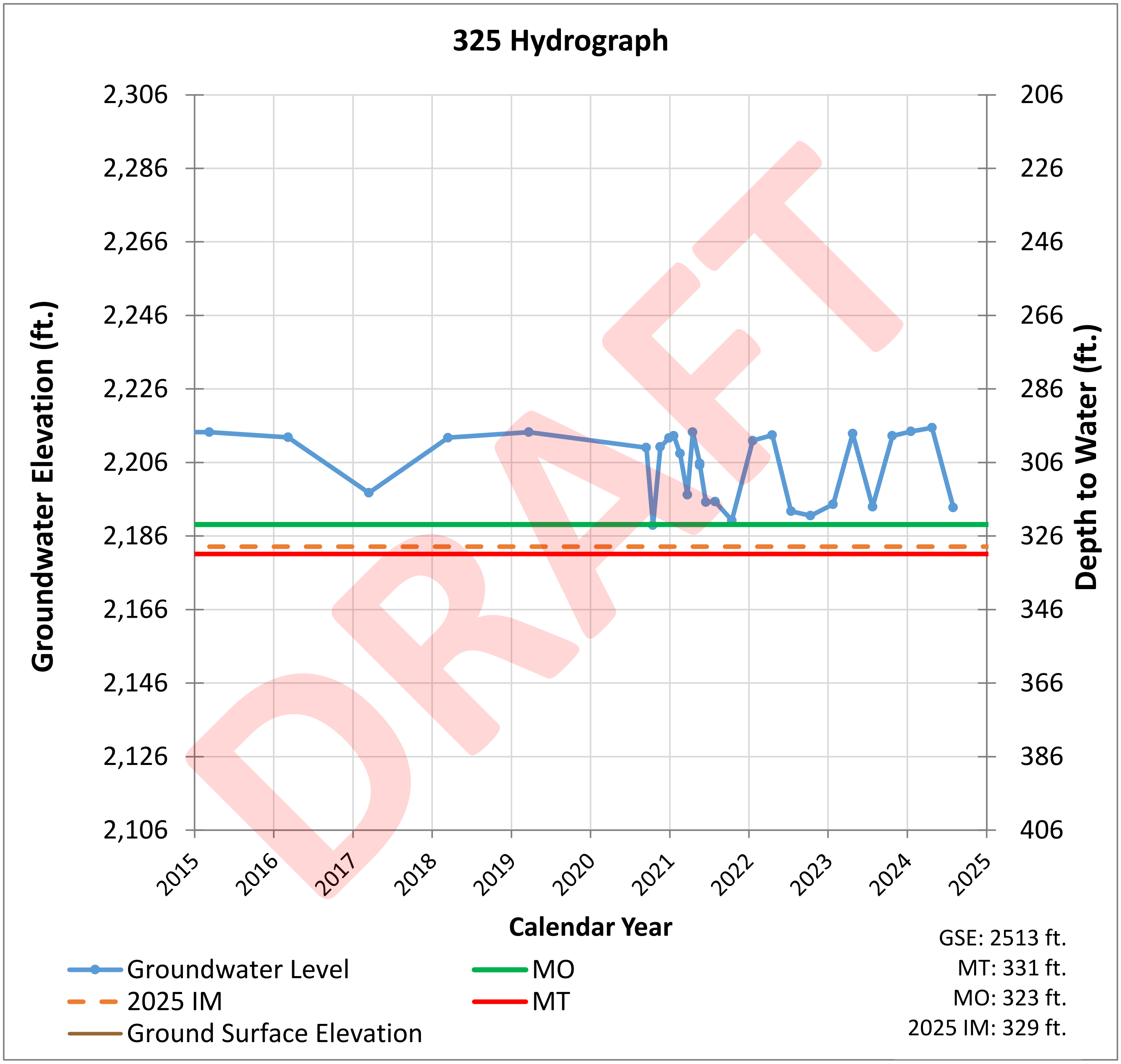


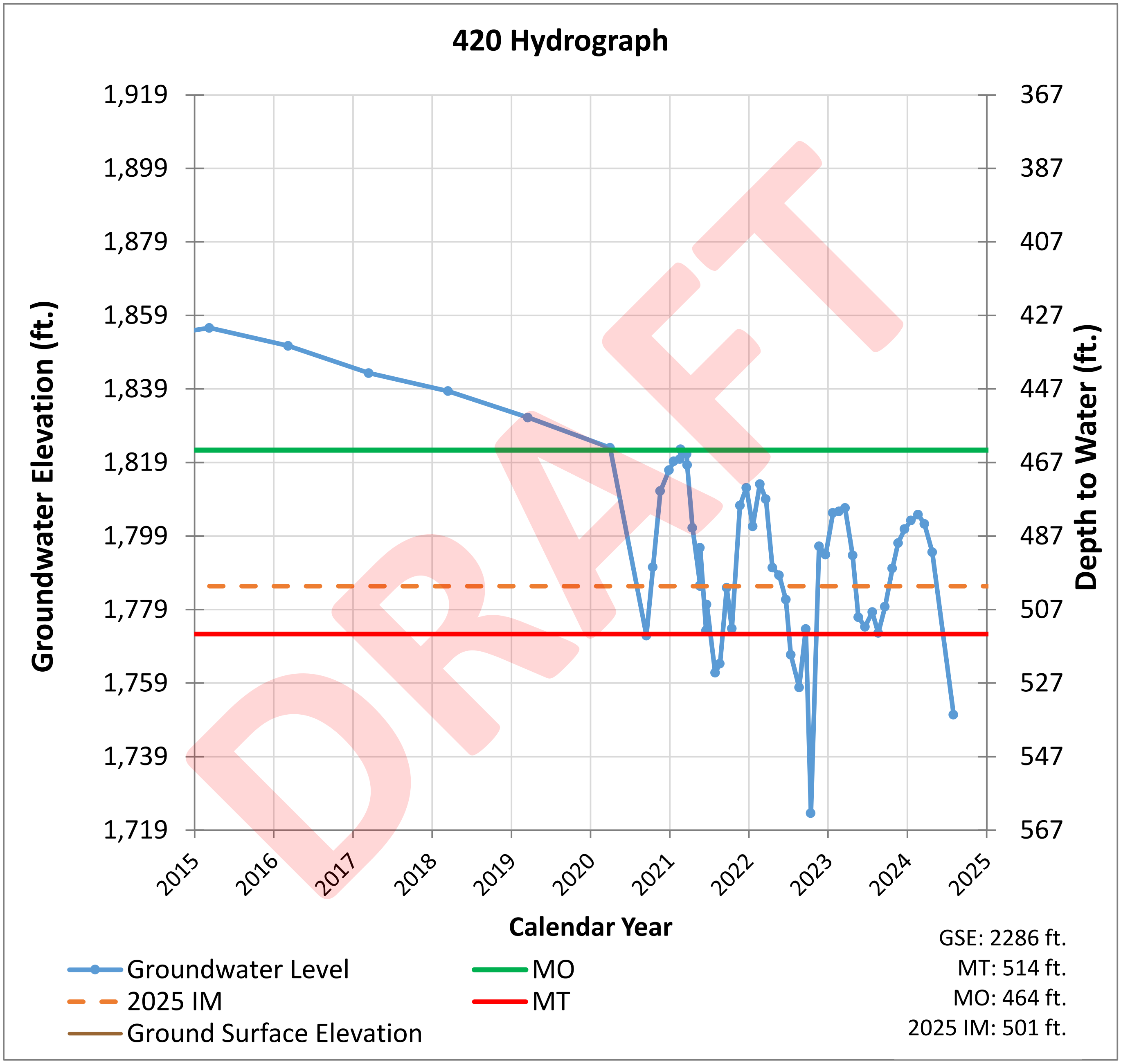
317 Hydrograph
Groundwater Elevation (ft.)
1,944
1,924
1,904
1,884
1,864
1,844
1,824
1,804
1,784
1,764
1,744
Depth to Water (ft.)
530
550
570
590
610
630
650
670
690
710
730
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2474 ft.
MT: 700 ft.
MO: 650 ft.
2025 IM: 688 ft.
DRAFT


322 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,280
2,260
2,240
2,220
2,200
2,180
2,160
2,140
2,120
2,100
2,080
232
252
272
292
312
332
352
372
392
412
432
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2513 ft.
MT: 387 ft.
MO: 378 ft.
2025 IM: 385 ft.
DRAFT

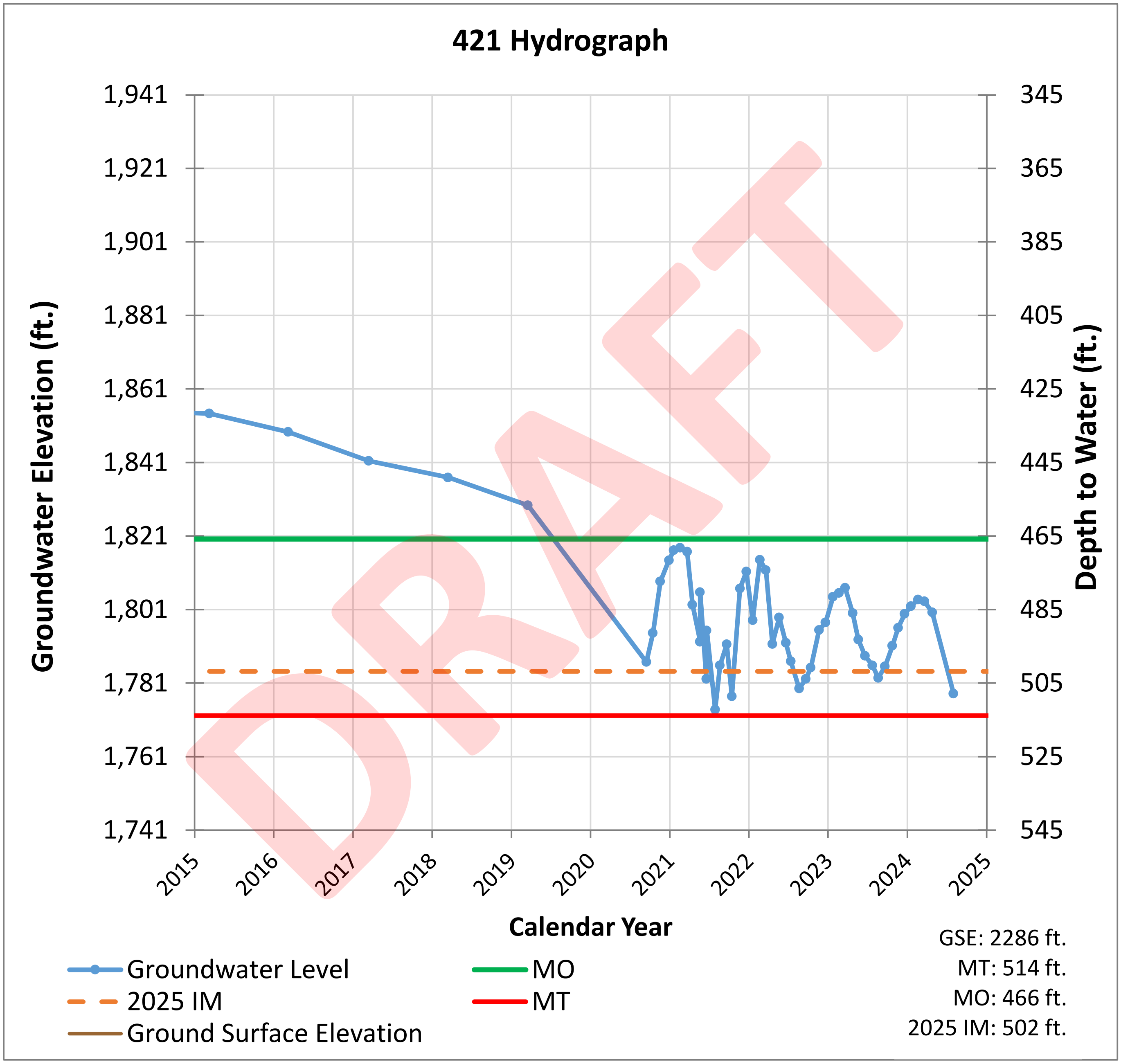


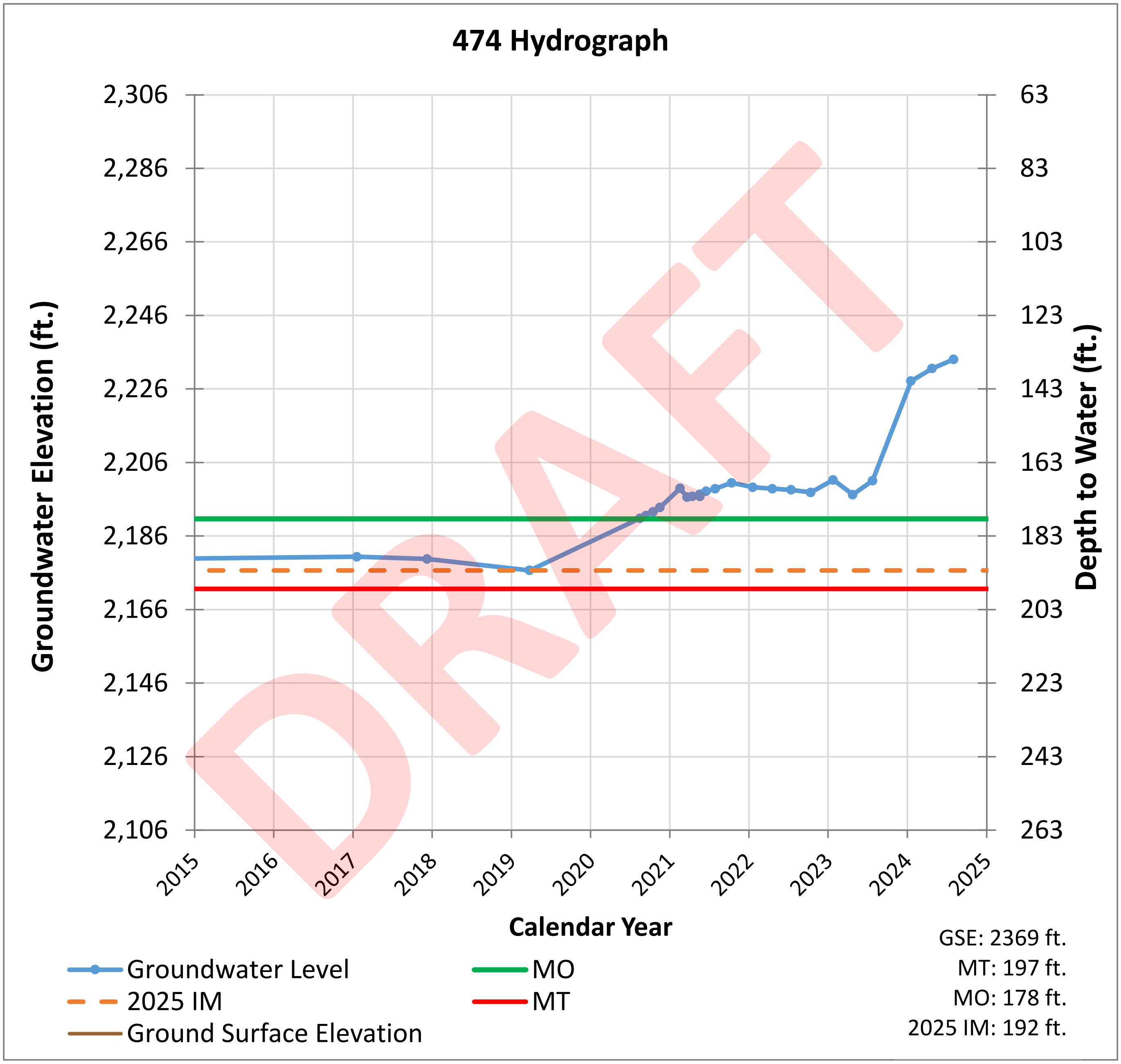
324 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,290
2,270
2,250
2,230
2,210
2,190
2,170
2,150
2,130
2,110
2,090
223
243
263
283
303
323
343
363
383
403
423
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
MO
2025 IM
MT
Ground Surface Elevation
GSE: 2513 ft.
MT: 365 ft.
MO: 353 ft.
2025 IM: 362 ft.
DRAFT

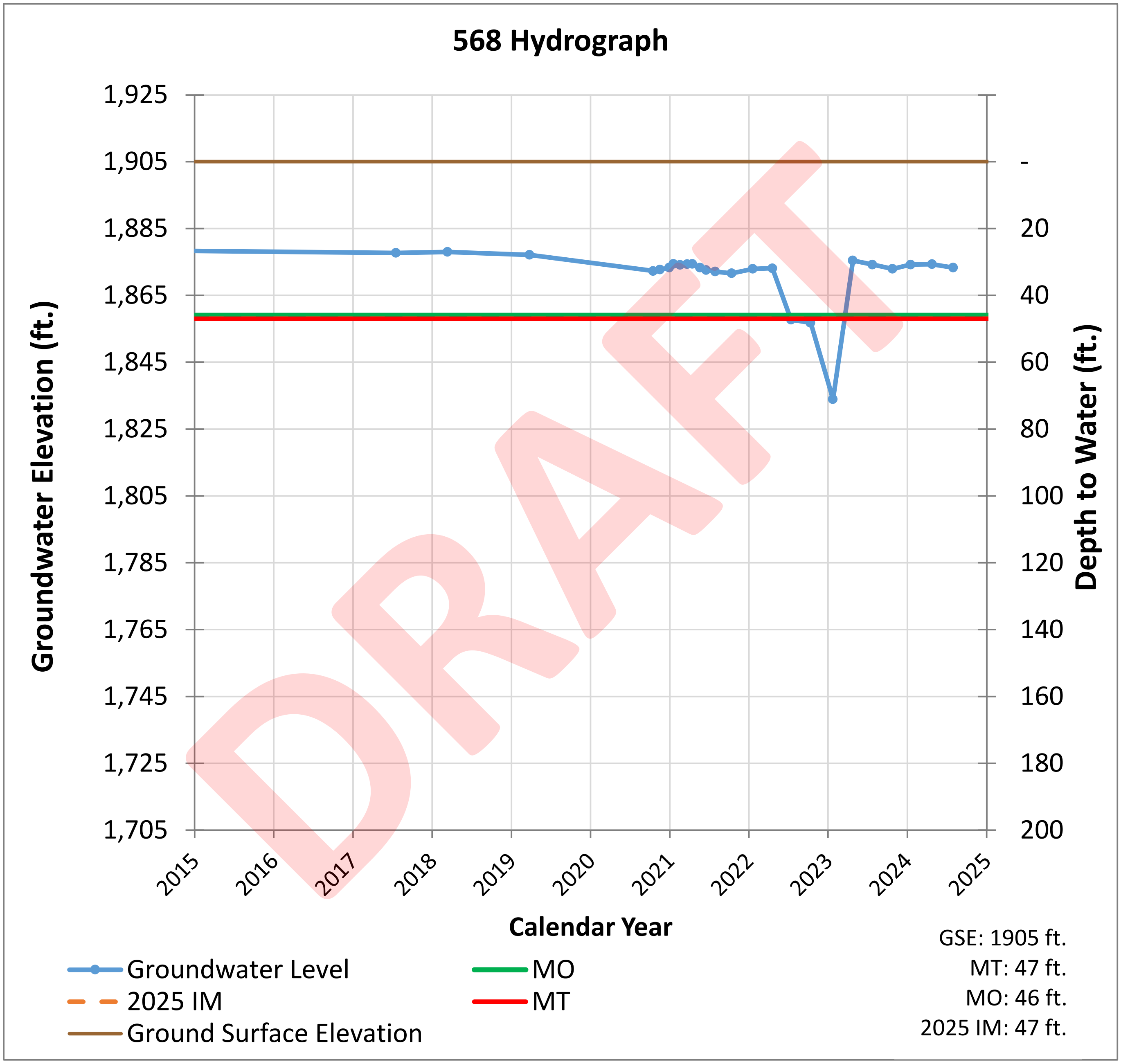

325 Hydrograph
2,306
2,286
2,266
2,246
2,226
2,206
2,186
2,166
2,146
2,126
2,106
206
226
246
266
286
306
326
346
366
386
406
Groundwater Elevation (ft.)
Depth to Water (ft.)
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2513 ft.
MT: 331 ft.
MO: 323 ft.
2025 IM: 329 ft.
DRAFT



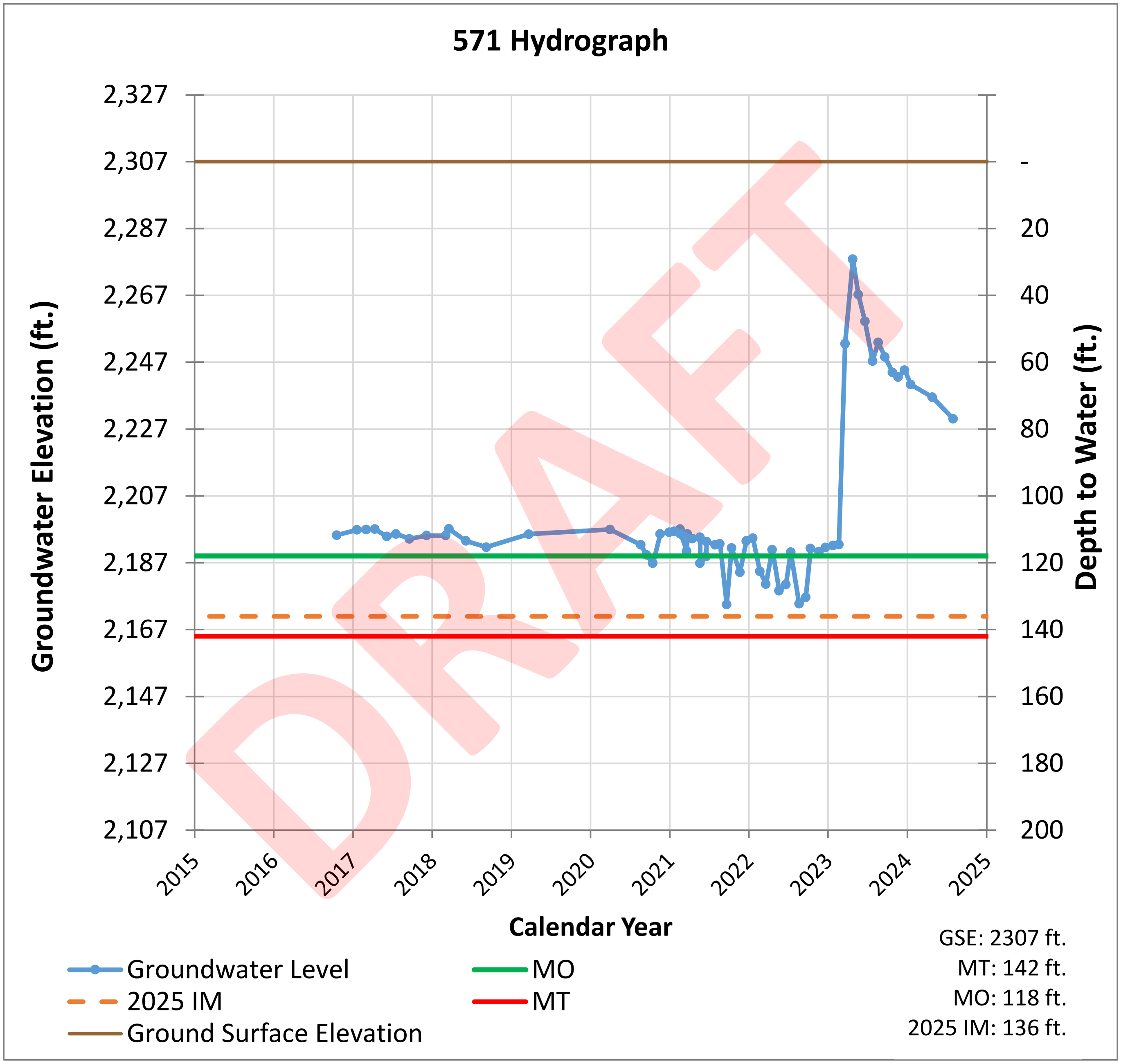
420 Hydrograph
Groundwater Elevation (ft.)
1,919
1,899
1,879
1,859
1,839
1,819
1,799
1,779
1,759
1,739
1,719
Depth to Water (ft.)
367
387
407
427
447
467
487
507
527
547
567
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2286 ft.
MT: 514 ft.
MO: 464 ft.
2025 IM: 501 ft.
DRAFT

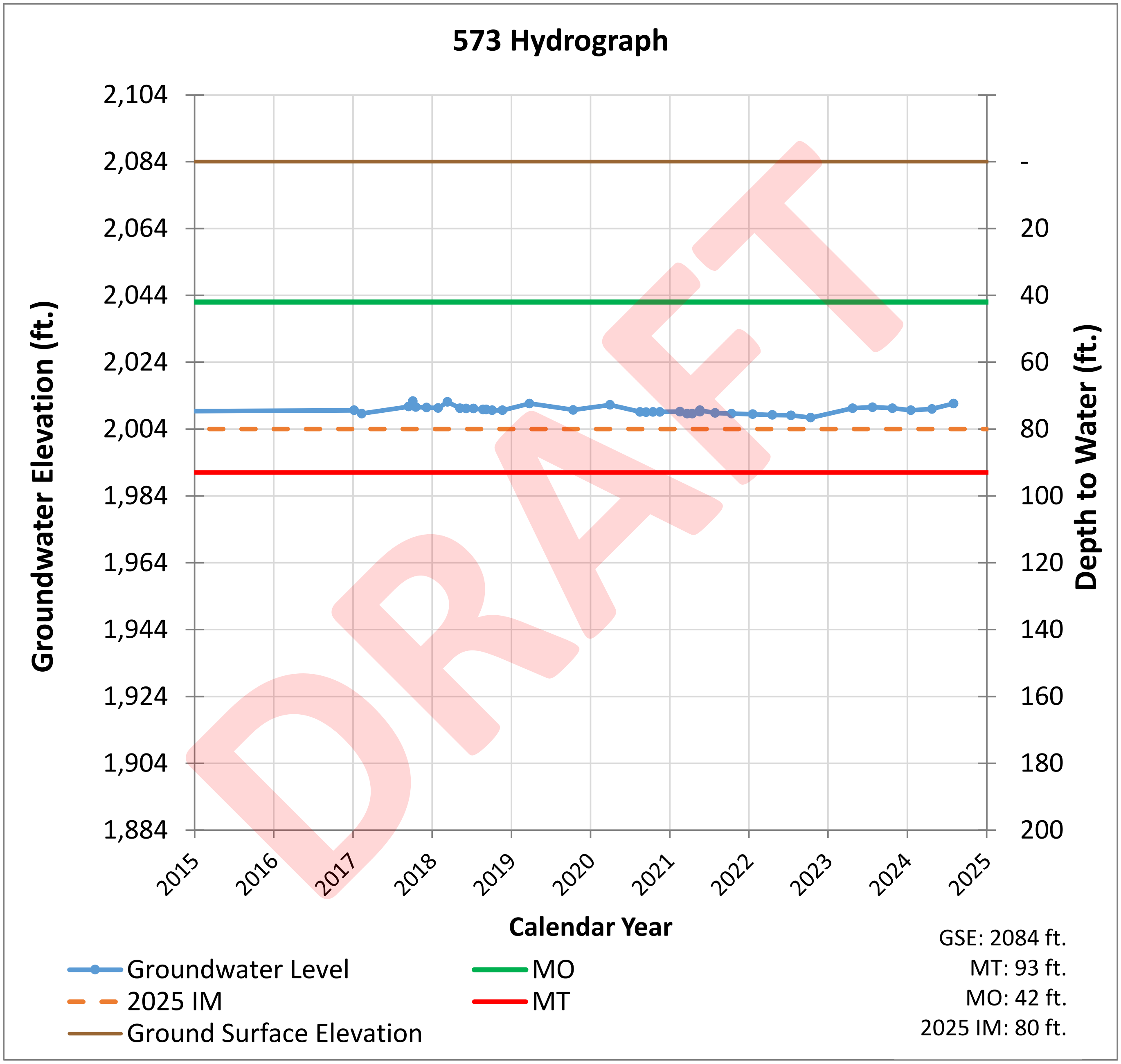

421 Hydrograph
1,941
1,921
1,901
1,881
1,861
1,841
1,821
1,801
1,781
1,761
1,741
Groundwater Elevation (ft.)
345
365
385
405
425
445
465
485
505
525
545
Depth to Water (ft.)
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2286 ft.
MT: 514 ft.
MO: 466 ft.
2025 IM: 502 ft.
DRAFT

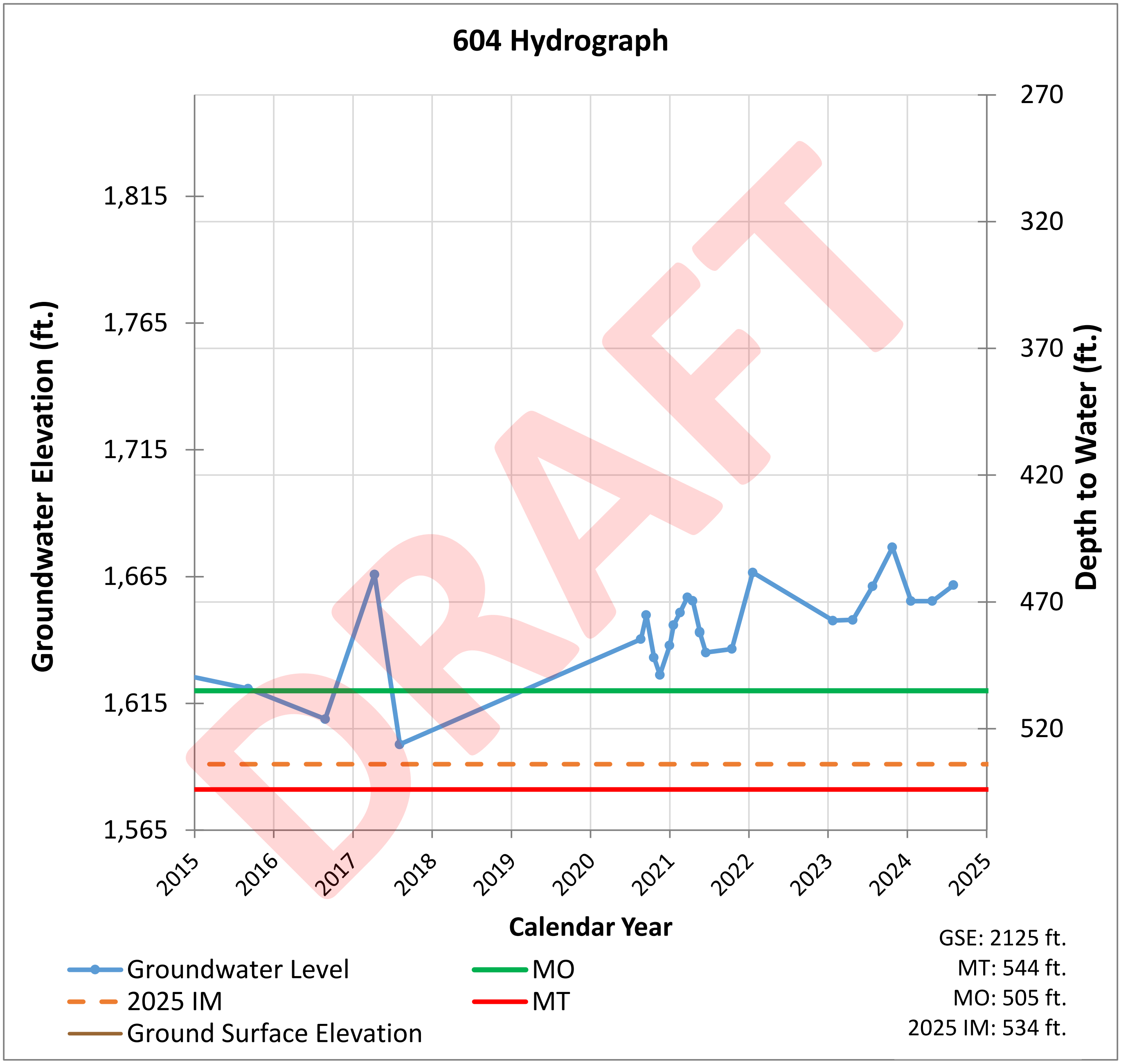

474 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,306
2,286
2,266
2,246
2,226
2,206
2,186
2,166
2,146
2,126
2,106
63
83
103
123
143
163
183
203
223
243
263
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2369 ft.
MT: 197 ft.
MO: 178 ft.
2025 IM: 192 ft.
DRAFT

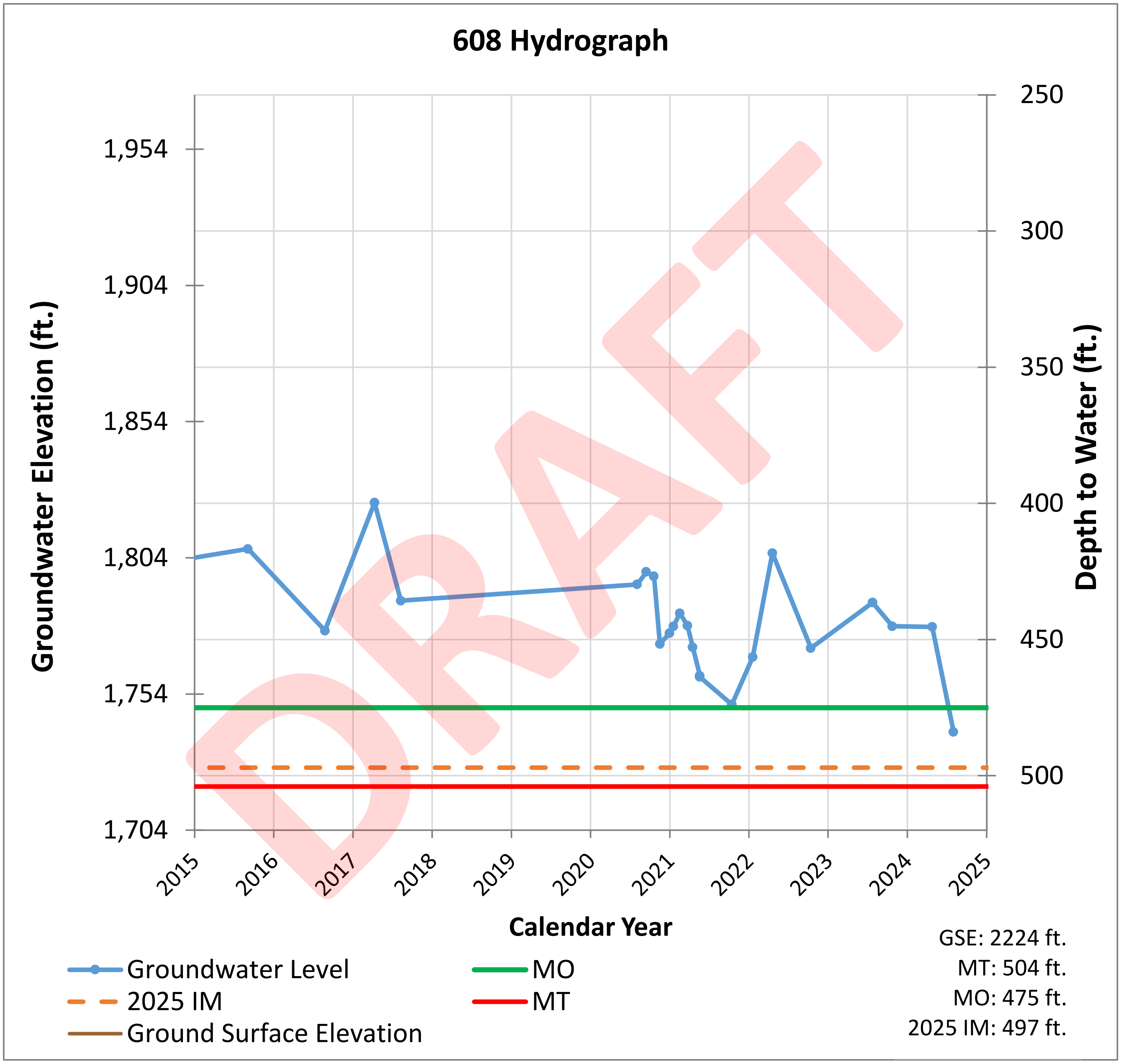


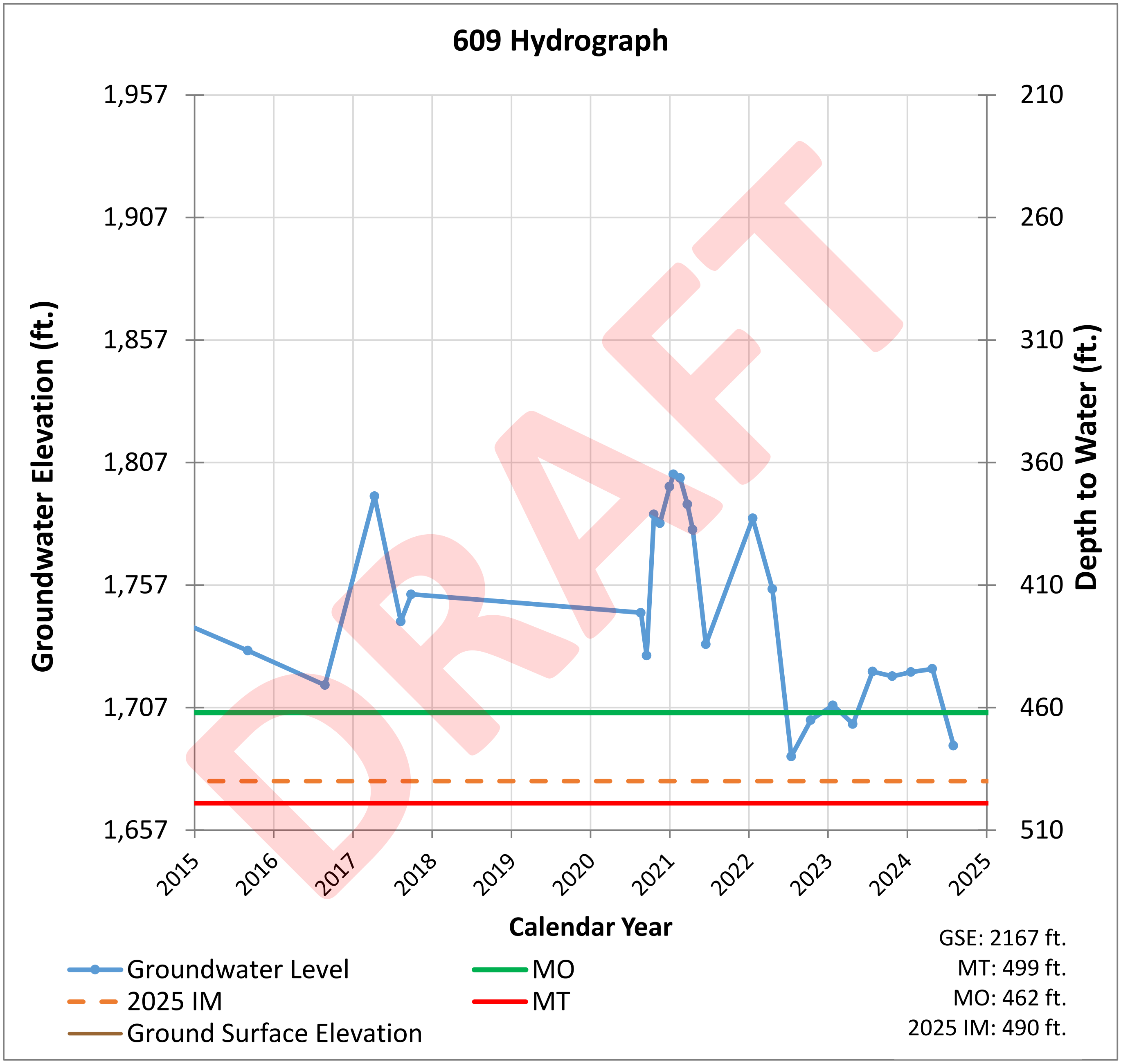
568 Hydrograph
1,925
1,905
1,885
1,865
1,845
1,825
1,805
1,785
1,765
1,745
1,725
1,705
Groundwater Elevation (ft.)
-
20
40
60
80
100
120
140
160
180
200
Depth to Water (ft.)
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
DRAFT
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 1905 ft.
MT: 47 ft.
MO: 46 ft.
2025 IM: 47 ft.


571 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
Calendar Year
2,327
2,307
2,287
2,267
2,247
2,227
2,207
2,187
2,167
2,147
2,127
2,107
-
20
40
60
80
100
120
140
160
180
200
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2307 ft.
MT: 142 ft.
MO: 118 ft.
2025 IM: 136 ft.
DRAFT

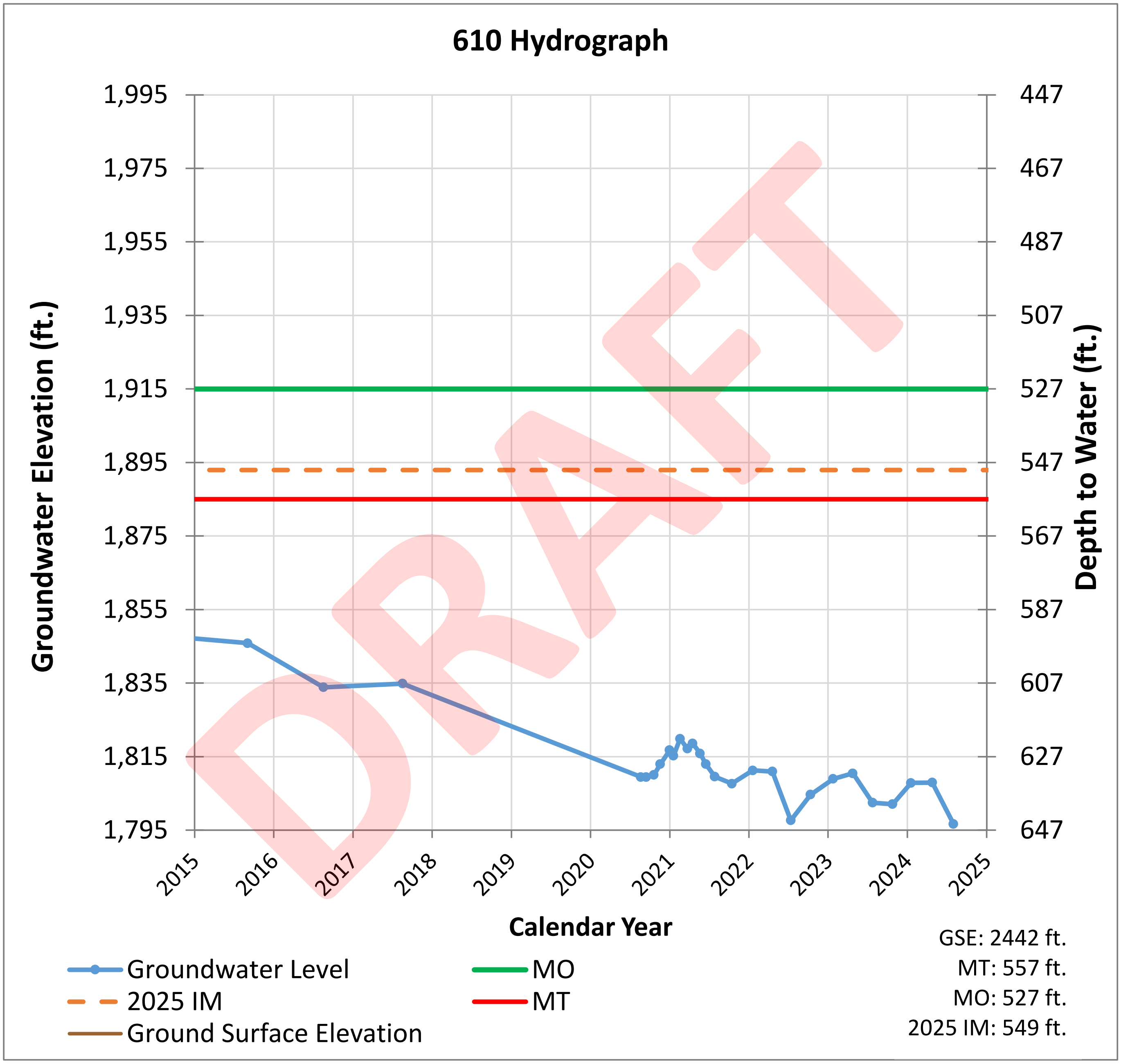

573 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
2,104
2,084
2,064
2,044
2,024
2,004
1,984
1,964
1,944
1,924
1,904
1,884
-
20
40
60
80
100
120
140
160
180
200
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2084 ft.
MT: 93 ft.
MO: 42 ft.
2025 IM: 80 ft.
DRAFT

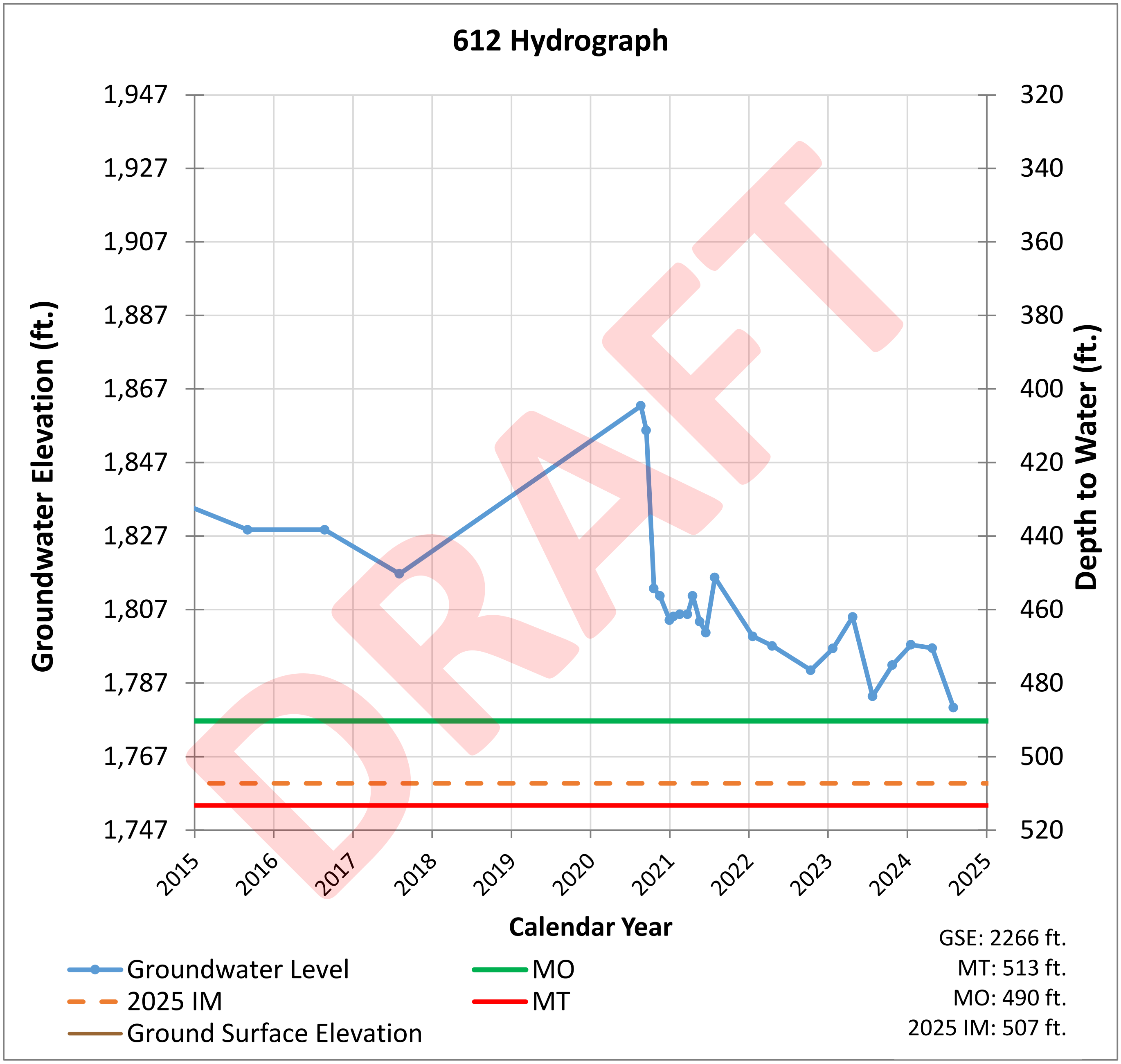

604 Hydrograph
Groundwater Elevation (ft.)
1,815
1,765
1,715
1,665
1,615
1,565
Depth to Water (ft.)
270
320
370
420
470
520
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
DRAFT
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2125 ft.
MT: 544 ft.
MO: 505 ft.
2025 IM: 534 ft.

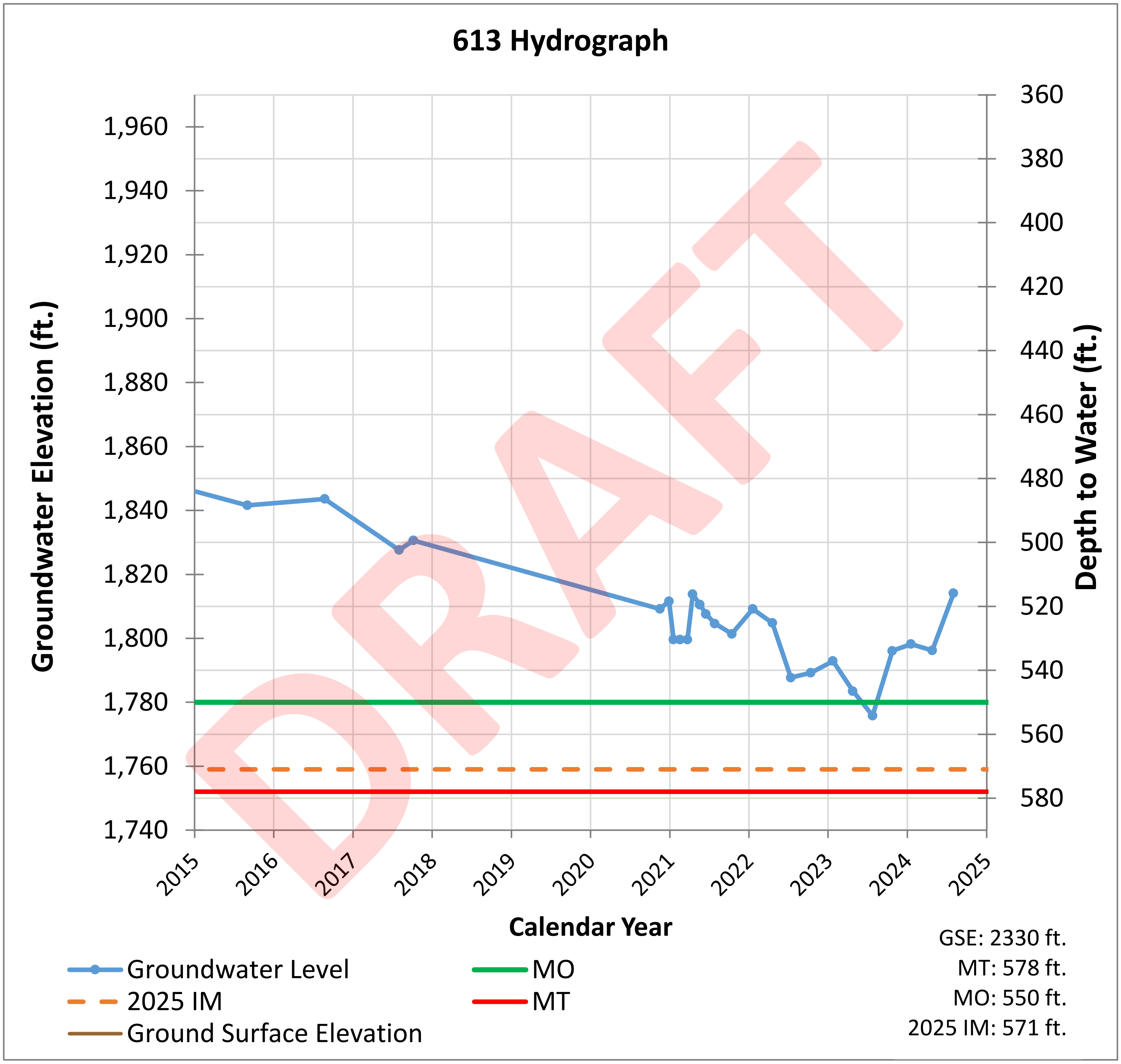

608 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
1,954
1,904
1,854
1,804
1,754
1,704
250
300
350
400
450
500
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2224 ft.
MT: 504 ft.
MO: 475 ft.
2025 IM: 497 ft.
DRAFT

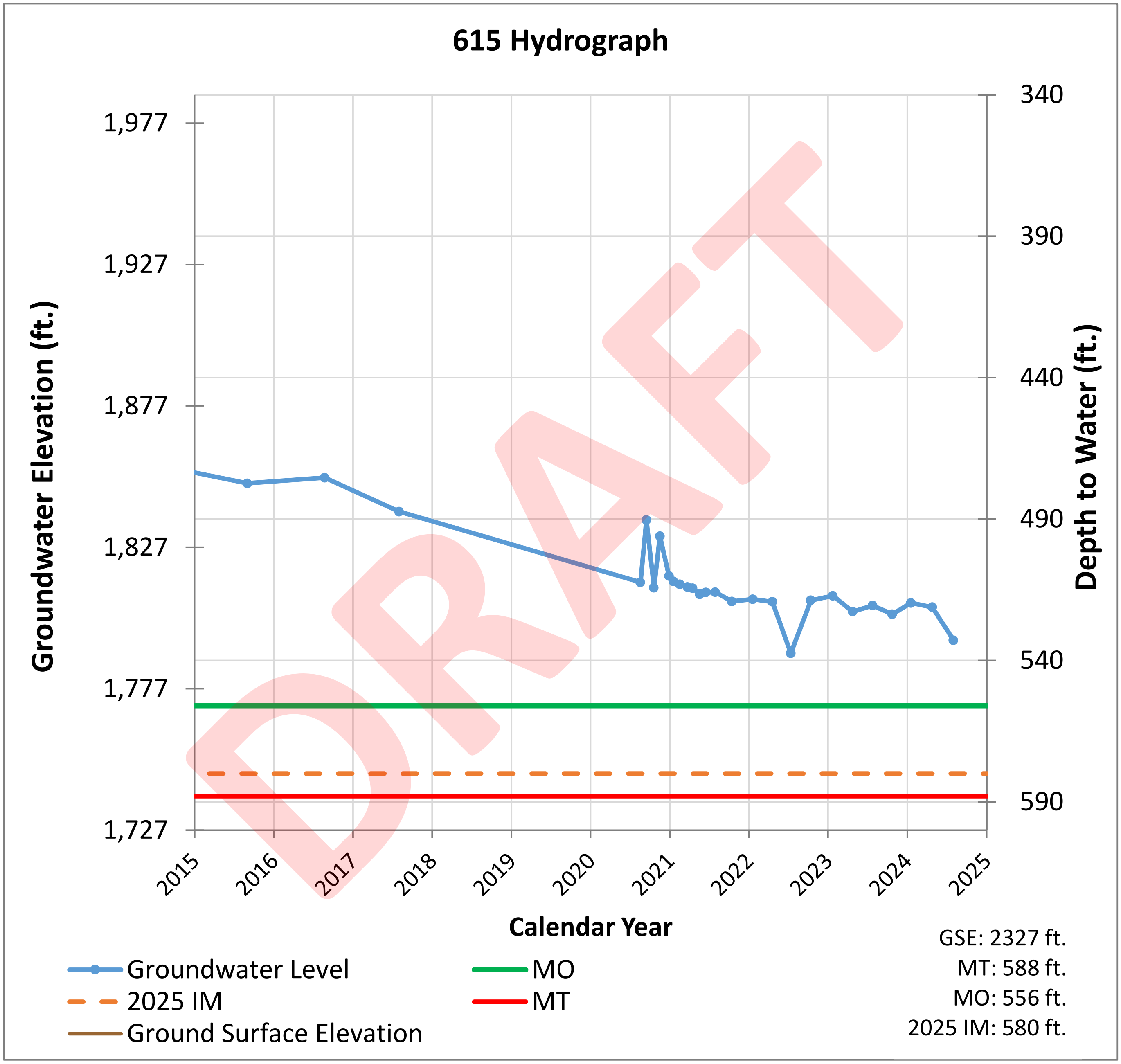


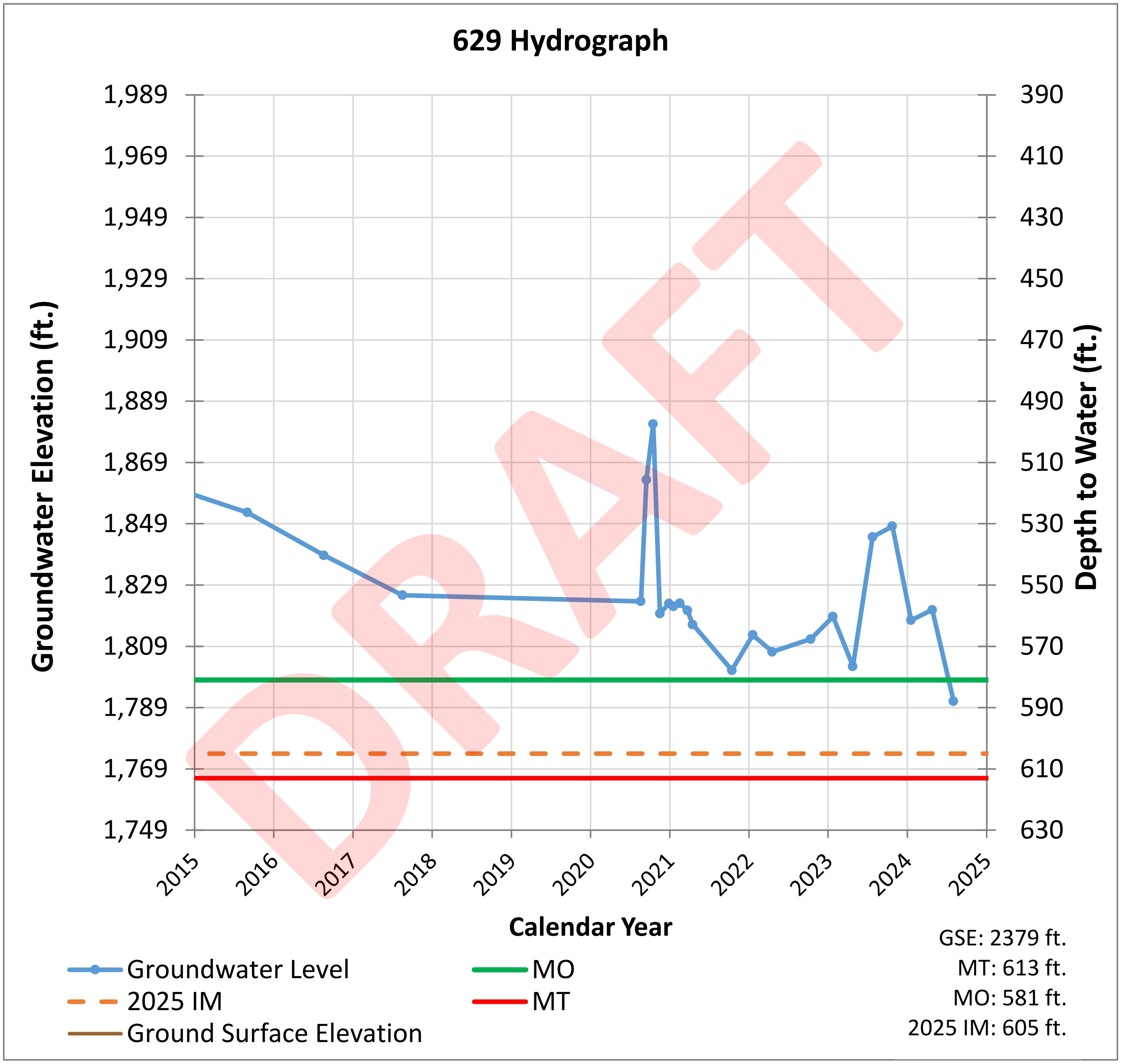
609 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
1,957
1,907
1,857
1,807
1,757
1,707
1,657
210
260
310
360
410
460
510
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2167 ft.
MT: 499 ft.
MO: 462 ft.
2025 IM: 490 ft.
DRAFT


610 Hydrograph
1,995
1,975
1,955
1,935
1,915
1,895
1,875
1,855
1,835
1,815
1,795
447
467
487
507
527
547
567
587
607
627
647
Groundwater Elevation (ft.)
Depth to Water (ft.)
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2442 ft.
MT: 557 ft.
MO: 527 ft.
2025 IM: 549 ft.
DRAFT

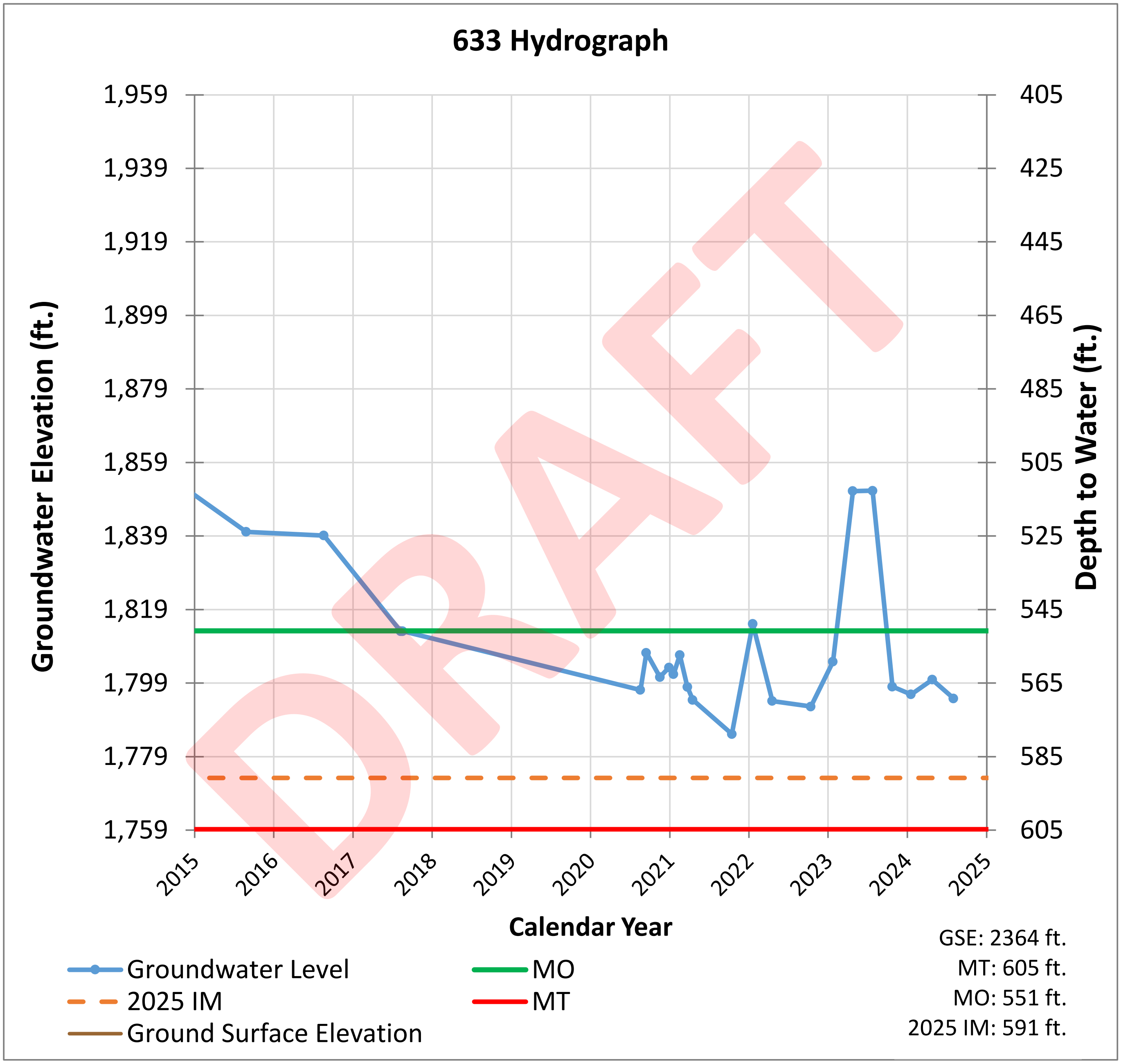

612 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
1,947
1,927
1,907
1,887
1,867
1,847
1,827
1,807
1,787
1,767
1,747
320
340
360
380
400
420
440
460
480
500
520
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
DRAFT
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2266 ft.
MT: 513 ft.
MO: 490 ft.
2025 IM: 507 ft.

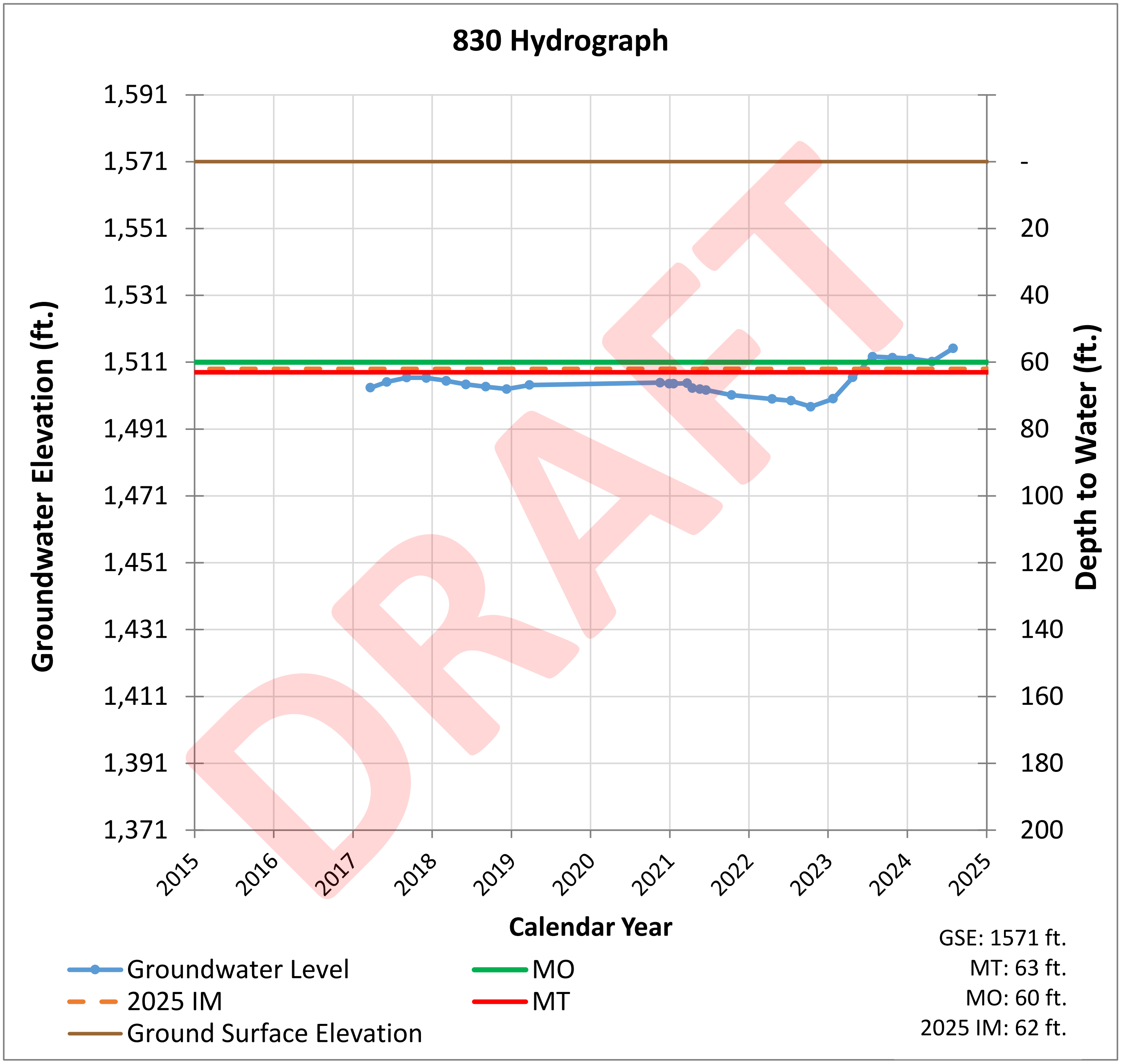

613 Hydrograph
Groundwater Elevation (ft.)
1,960
1,940
1,920
1,900
1,880
1,860
1,840
1,820
1,800
1,780
1,760
1,740
Depth to Water (ft.)
360
380
400
420
440
460
480
500
520
540
560
580
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2330 ft.
MT: 578 ft.
MO: 550 ft.
2025 IM: 571 ft.
DRAFT

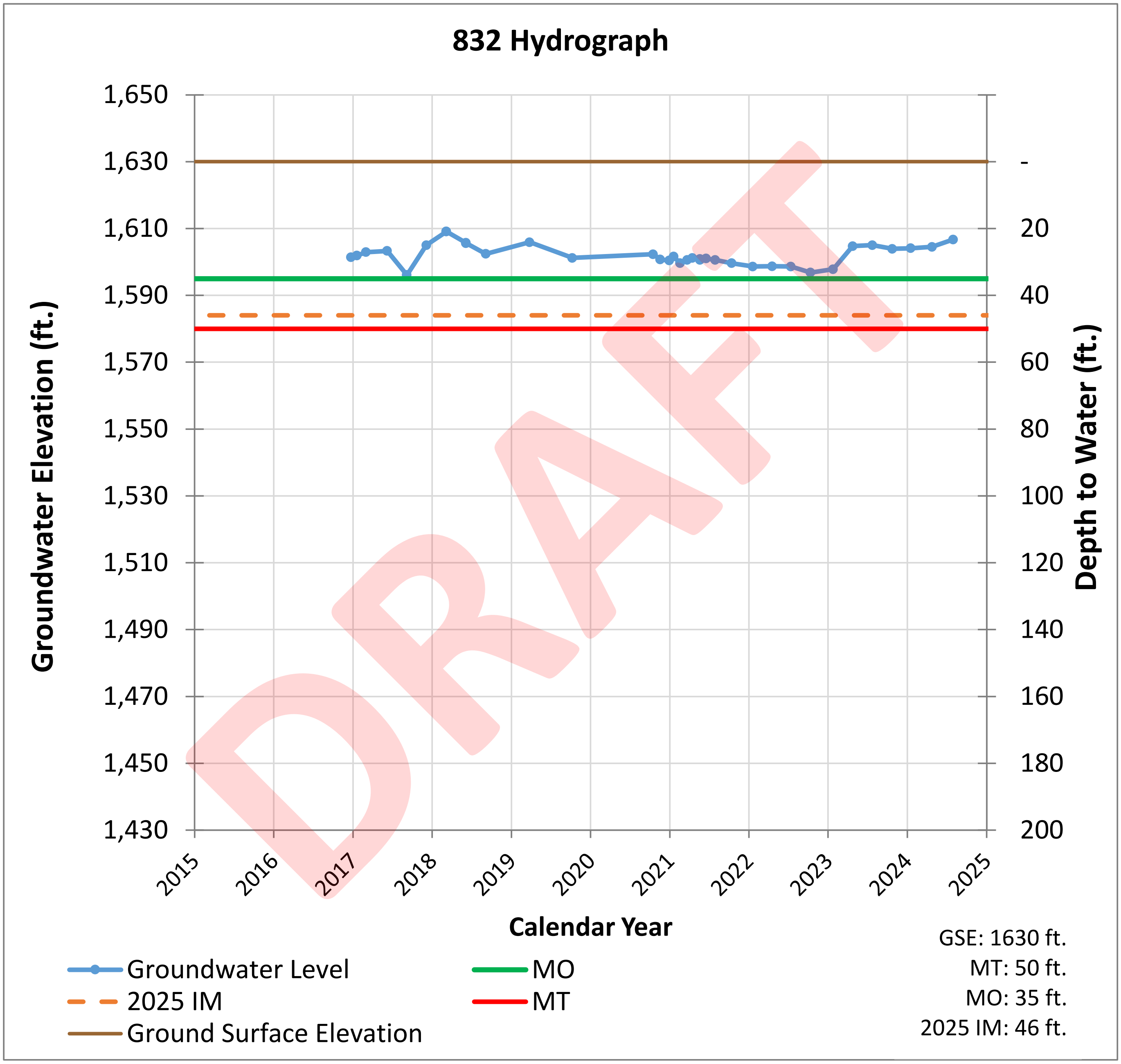

615 Hydrograph
Groundwater Elevation (ft.)
1,977
1,927
1,877
1,827
1,777
1,727
Depth to Water (ft.)
340
390
440
490
540
590
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2327 ft.
MT: 588 ft.
MO: 556 ft.
2025 IM: 580 ft.
DRAFT



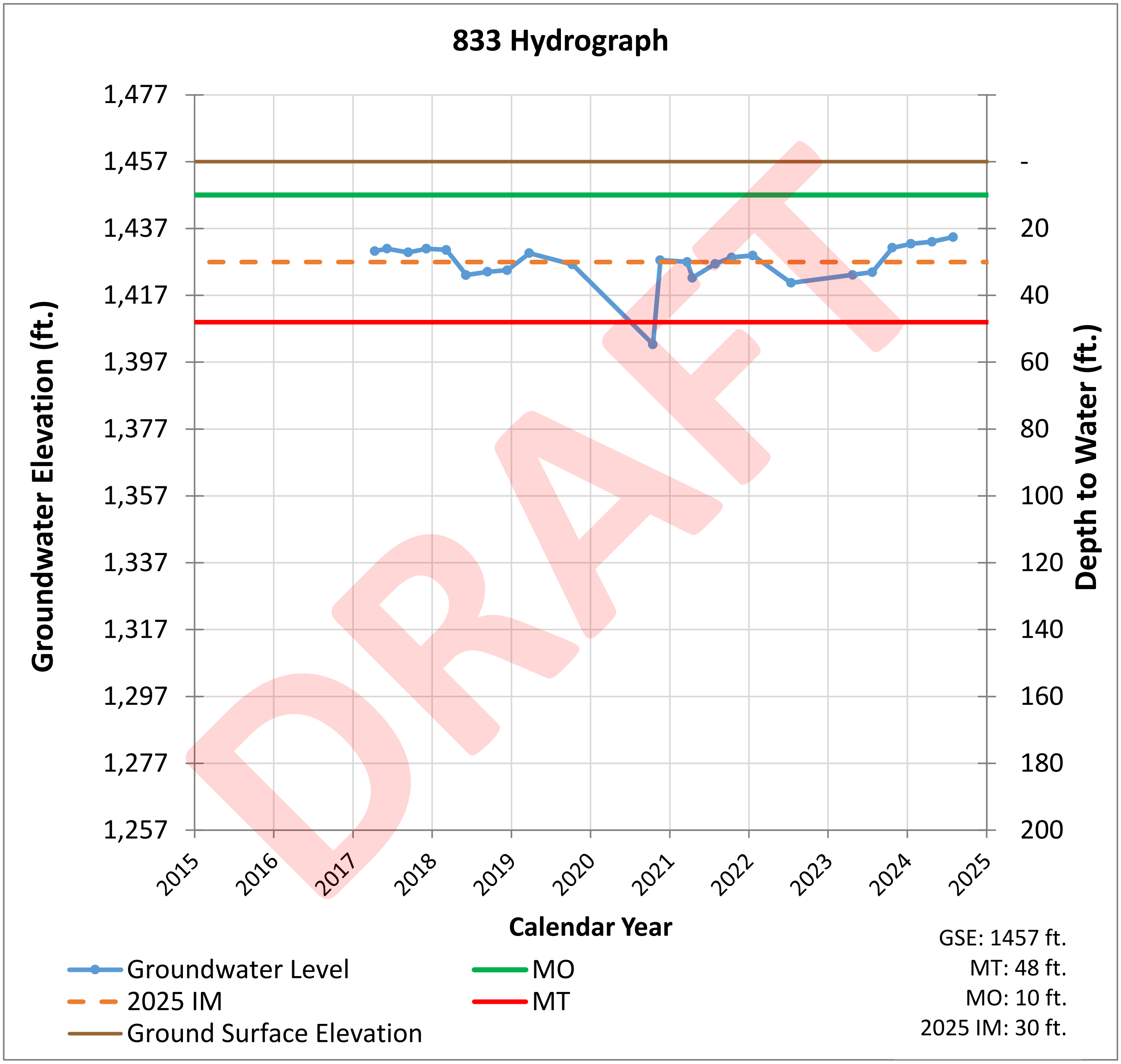
629 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
1,989
1,969
1,949
1,929
1,909
1,889
1,869
1,849
1,829
1,809
1,789
1,769
1,749
390
410
430
450
470
490
510
530
550
570
590
610
630
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2379 ft.
MT: 613 ft.
MO: 581 ft.
2025 IM: 605 ft.
DRAFT

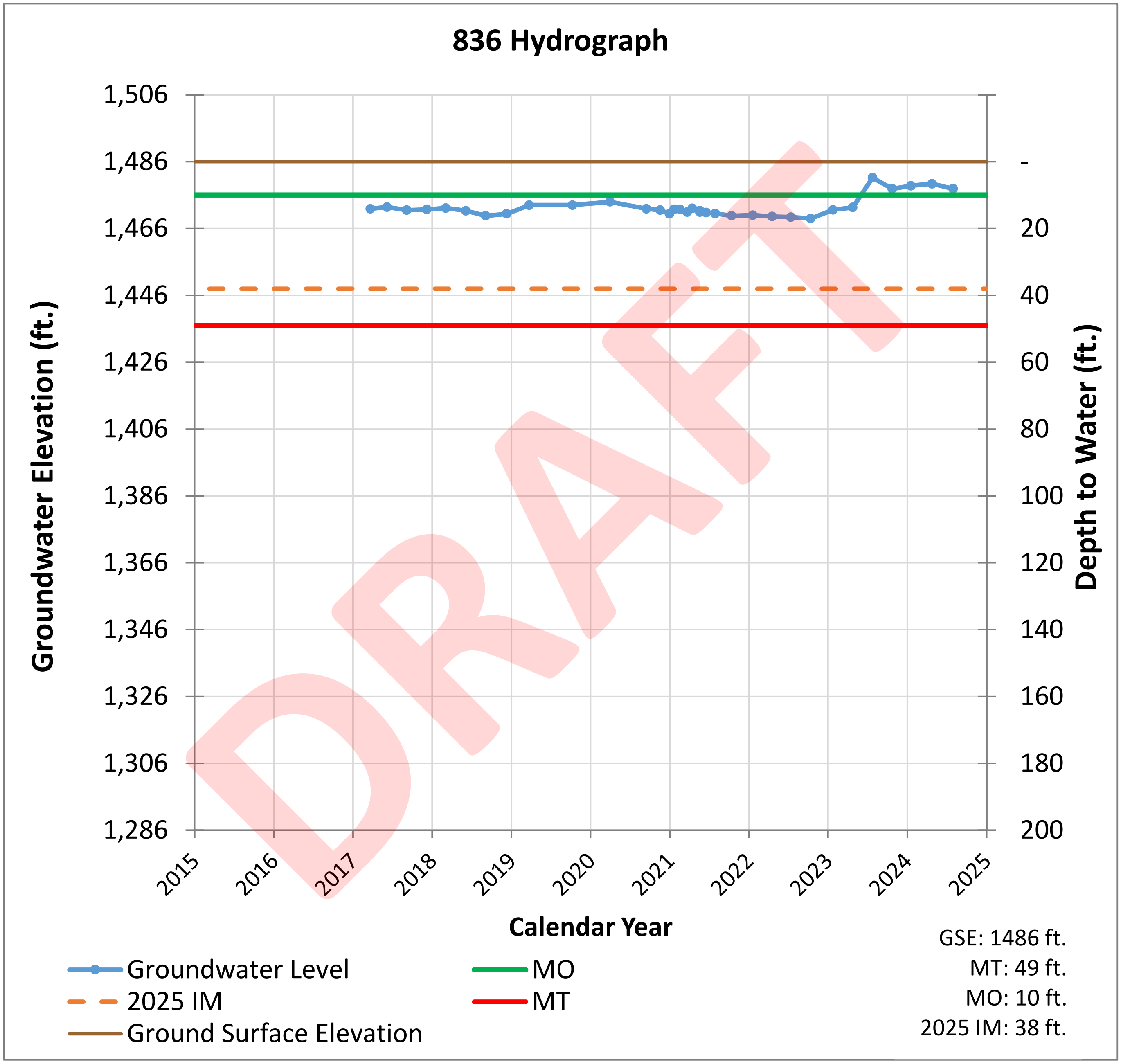

633 Hydrograph
Groundwater Elevation (ft.)
1,959
1,939
1,919
1,899
1,879
1,859
1,839
1,819
1,799
1,779
1,759
Depth to Water (ft.)
405
425
445
465
485
505
525
545
565
585
605
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 2364 ft.
MT: 605 ft.
MO: 551 ft.
2025 IM: 591 ft.
DRAFT

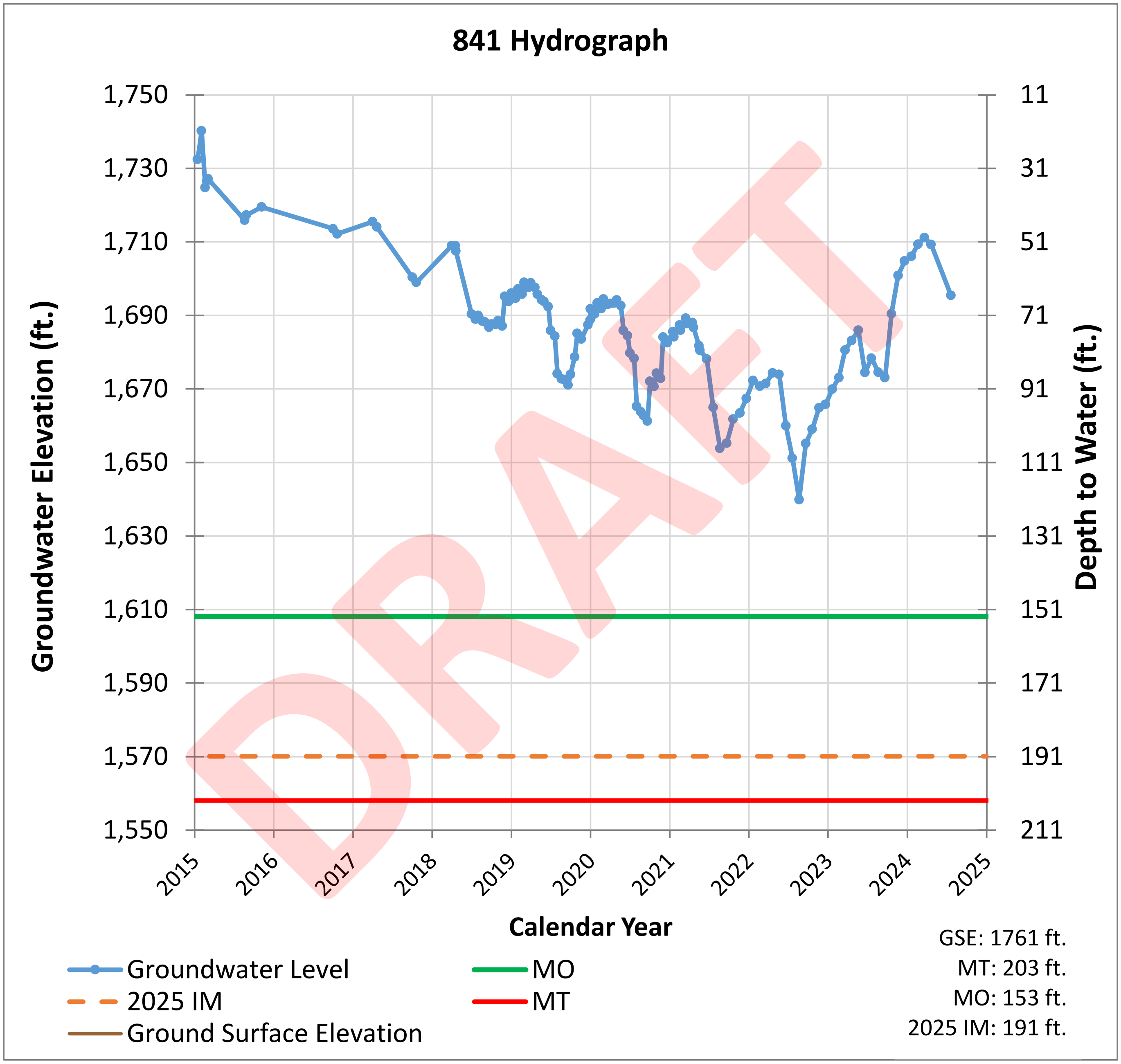

830 Hydrograph
Groundwater Elevation (ft.)
1,591
1,571
1,551
1,531
1,511
1,491
1,471
1,451
1,431
1,411
1,391
1,371
Depth to Water (ft.)
-
20
40
60
80
100
120
140
160
180
200
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 1571 ft.
MT: 63 ft.
MO: 60 ft.
2025 IM: 62 ft.
DRAFT

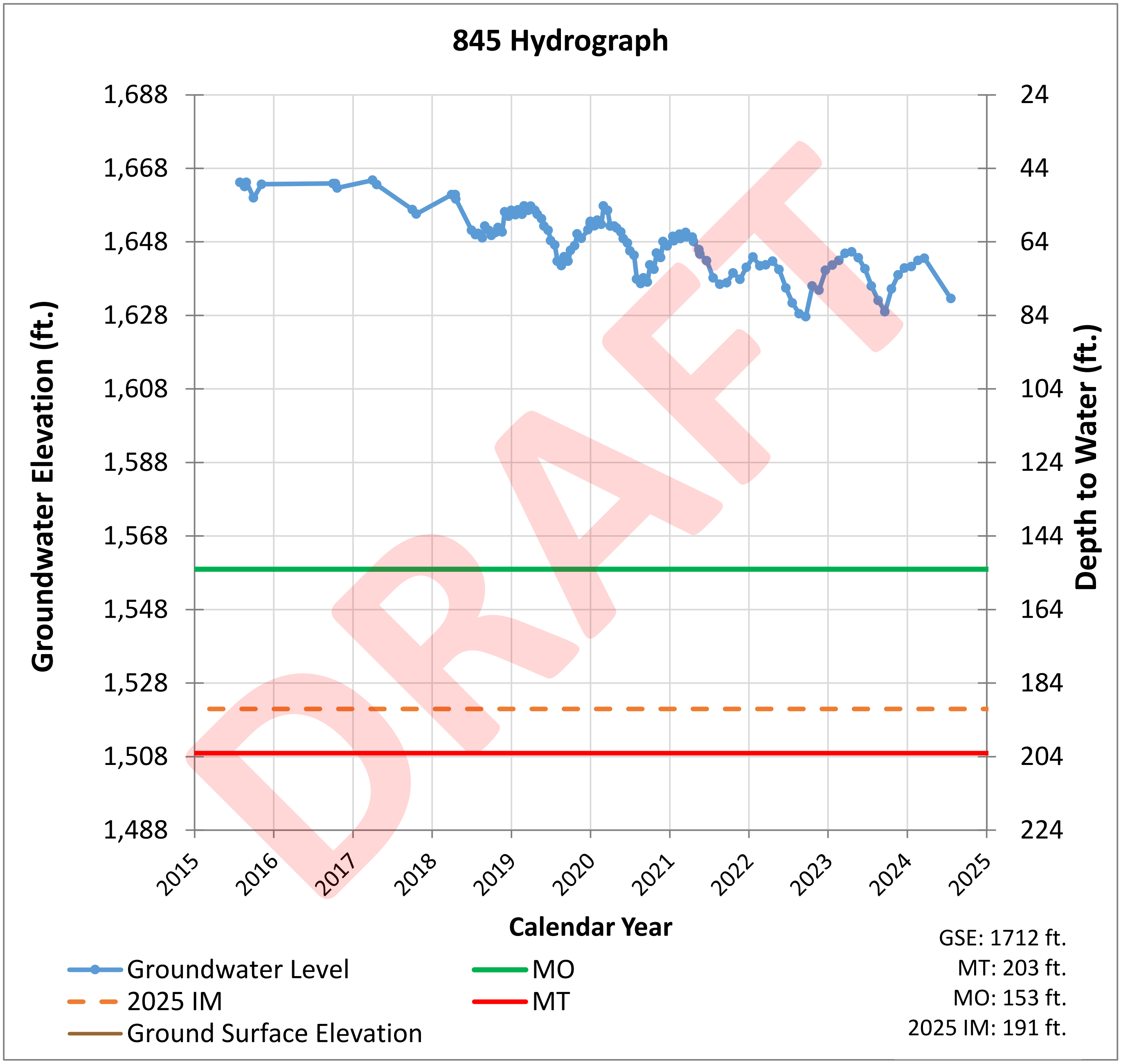


832 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
1,650
1,630
1,610
1,590
1,570
1,550
1,530
1,510
1,490
1,470
1,450
1,430
-
20
40
60
80
100
120
140
160
180
200
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
MO
2025 IM
MT
Ground Surface Elevation
GSE: 1630 ft.
MT: 50 ft.
MO: 35 ft.
2025 IM: 46 ft.
DRAFT


833 Hydrograph
Groundwater Elevation (ft.)
1,477
1,457
1,437
1,417
1,397
1,377
1,357
1,337
1,317
1,297
1,277
1,257
Depth to Water (ft.)
-
20
40
60
80
100
120
140
160
180
200
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 1457 ft.
MT: 48 ft.
MO: 10 ft.
2025 IM: 30 ft.
DRAFT


836 Hydrograph
Groundwater Elevation (ft.)
1,506
1,486
1,466
1,446
1,426
1,406
1,386
1,366
1,346
1,326
1,306
1,286
Depth to Water (ft.)
-
20
40
60
80
100
120
140
160
180
200
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 1486 ft.
MT: 49 ft.
MO: 10 ft.
2025 IM: 38 ft.
DRAFT


841 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
1,750
1,730
1,710
1,690
1,670
1,650
1,630
1,610
1,590
1,570
1,550
11
31
51
71
91
111
131
151
171
191
211
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 1761 ft.
MT: 203 ft.
MO: 153 ft.
2025 IM: 191 ft.
DRAFT


845 Hydrograph
Groundwater Elevation (ft.)
Depth to Water (ft.)
1,688
1,668
1,648
1,628
1,608
1,588
1,568
1,548
1,528
1,508
1,488
24
44
64
84
104
124
144
164
184
204
224
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
2025
Calendar Year
Groundwater Level
2025 IM
Ground Surface Elevation
MO
MT
GSE: 1712 ft.
MT: 203 ft.
MO: 153 ft.
2025 IM: 191 ft.
DRAFT

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TO:	Standing Advisory Committee Agenda Item No. 8b
FROM:	Taylor Blakslee
DATE:	February 27, 2025
SUBJECT:	Discuss and Take Appropriate Action on GSA Project Prioritization/Schedule

Recommended Motion
SAC feedback requested.

Discussion
During the development of the amended 2024 Groundwater Sustainability Plan (GSP), staff captured several items suggest by the board and standing advisory committee (SAC) members to be considered in the future. These suggestions were compiled into a draft project prioritization list, which was presented for review at the SAC meeting on January 9, 2025, and the board meeting on January 15, 2025. Based on feedback from both groups/meetings, the draft list was refined and finalized.

The finalized project/initiative list was distributed to SAC members to indicate which items were most important to them to assist staff in developing a five-year work plan. The finalized project/initiative priority list, with a summary of SAC project importance, was distributed to board members to complete.

A summary of the project/initiative importance rankings is provided as **Attachment 1**. Staff used the board feedback to develop a draft schedule for the top ranked projects/initiatives for SAC/board review which is provided as **Attachment 2**.

Staff is seeking SAC/Board feedback on:

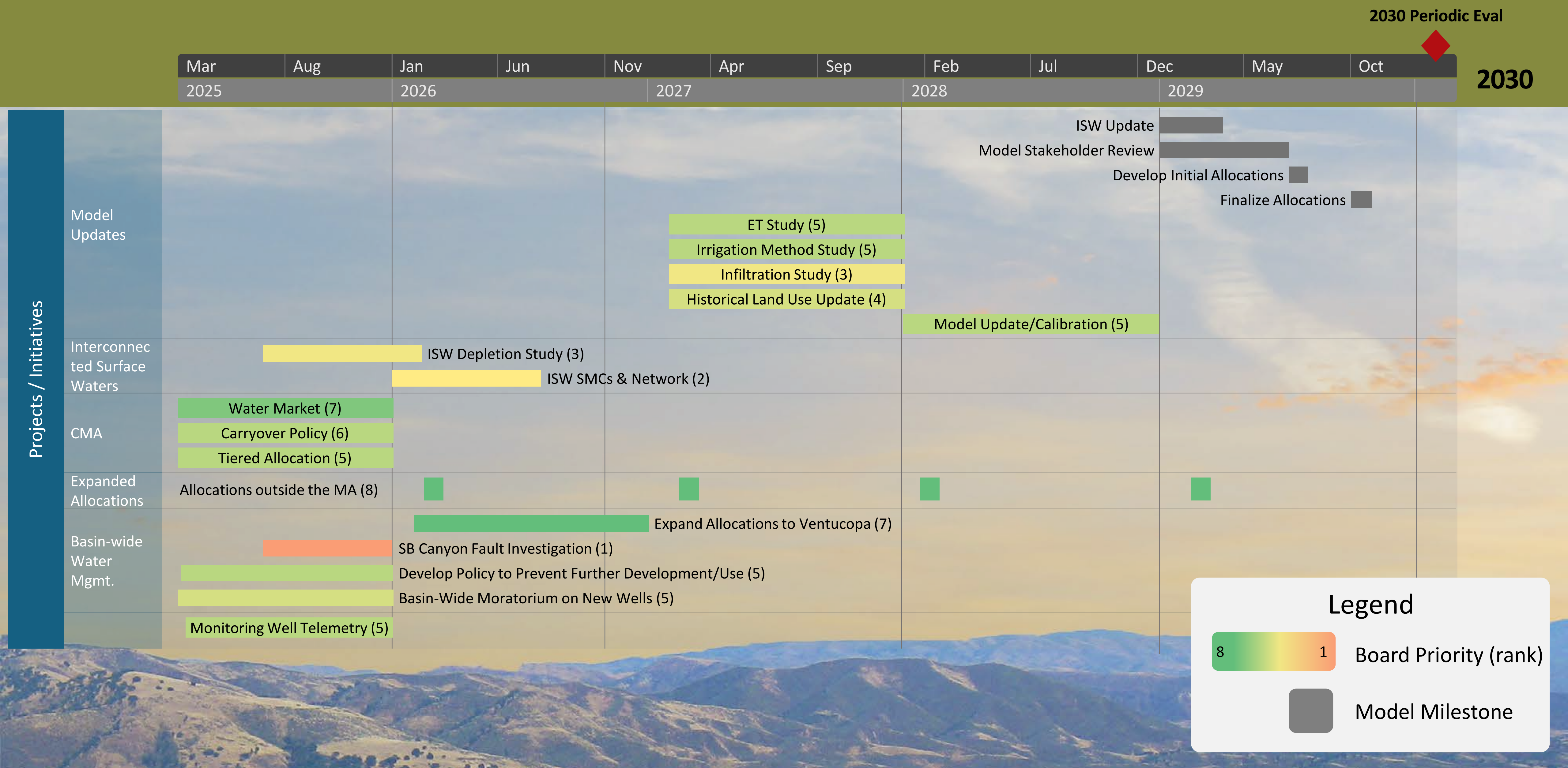
1. The draft 2025-2029 schedule
2. How to handle lower-ranked projects (options below):
    a. Include on the 2025-2029 schedule
    b. Considered annually during the budget development process, or project prioritization review
    c. Only consider if grant funded
    d. Put on a “do not consider at this time” list
    e. Other

Cuyama Project Prioritization List

	Category	Title	Est. Level of Effort	Board Rank	SAC Rank	Required by SGMA
B.6	MA | Expanded Allocations	Allocations Outside Existing Management Areas	Medium	8	3	
B.5	MA | Expanded Allocations	Ventucopa Management Area	High	7	3	
B.2	MA | CMA	Water Market	Medium	7	2	
B.1	MA | CMA	Carryover Policy	Low	6	2	
A.2	Model Updates	Irrigation Efficiency/Methods Study	Medium	5	5	
A.1	Model Updates	Evapotranspiration Study	Medium	5	4	
A.15	Groundwater Monitoring Network	Monitoring Well Telemetry	Medium	5	4	
B.3	MA | CMA	Tiered Allocation Approach (e.g. Minimum Allocation)	Medium	5	4	
B.8	MA | Basin-Wide Water Mgmt. Policies	Preventing Further Development/Water Use	Unknown	5	3	
A.5	Model Updates	Model Recalibration/Update	High	5	2	
B.10	MA | Basin-Wide Water Mgmt. Policies	Basin-Wide Management Plan (Including Allocations)	Unknown	5	2	
B.7	MA | Basin-Wide Water Mgmt. Policies	Basin-Wide Moratorium on New Wells	Unknown	4	3	
A.4	Model Updates	Historical Land Use Update	Medium	4	1	
A.10	Basin Understanding	Infiltration Rate Study	Unknown	3	5	
B.4	MA | CMA	Reconsider Allocation Policy	Medium	3	4	
A.12	ISW	ISW Depletion Study	High	3	3	X
C.5	Projects | GSP Projects	Flow Meter Calibration Program	Medium	3	3	
A.9	Basin Understanding	3D Basin Map	Unknown	3	2	
A.3	Model Updates	Deep Percolation Study	High	2	4	
A.11	Basin Understanding	Water Age Testing	Unknown	2	4	
A.17	Land Use	Irrigation Efficiency Grants / Incentives	Unknown	2	4	X
B.9	MA | Basin-Wide Water Mgmt. Policies	Analyze Geochem of Water	Unknown	2	3	
A.13	ISW	ISW Sustainable Management Criteria and Monitoring Network	Medium	2	2	
A.16	Land Use	Land Repurposing Grants / Incentives	Unknown	2	2	
A.14	Groundwater Monitoring Network	New Monitoring Wells	High	2	1	
A.6	Additional Fault Investigations	Santa Barbara Canyon Fault	High	1	3	
C.4	Projects | GSP Projects	Improve Reliability of Water Supplies for Local Communities (Ventucopa Water Supply Company Well)	Unknown	1	3	
A.8	Additional Fault Investigations	Ozena	High	1	2	
C.6	Additional Projects	Prescriptive Burns	Unknown	1	2	
A.19	Outreach	Workshops	Medium	1	1	
C.9	Additional Projects	Irrigation Method Comparison	Unknown	1	0	
C.10	Additional Projects	Irrigation Water Run Off Study	Unknown	1	0	
A.7	Additional Fault Investigations	Russell Fault	High	0	3	
C.1	Projects | GSP Projects	Flood and Stormwater Capture - Project Feasiblity Study	High	0	2	
C.2	Projects | GSP Projects	Water Supply Transfers/Exchanges - Companion Project to Flood and Stormwater Capture	High	0	2	
A.18	Outreach	Newsletters	Low	0	1	
C.7	Additional Projects	Vegetation Management	Unknown	0	1	
C.3	Projects | GSP Projects	Precipitation Enhancement - Project Feasibility Study	High	0	0	
C.8	Additional Projects	Groundwater Dependent Ecosystem Enhancement	Unknown	0	0	

Attachment 2

Draft 2025-2029 Schedule



TO: Standing Advisory Committee
Agenda Item No. 10a

FROM: Brian Van Lienden, Woodard & Curran

DATE: February 27, 2025

SUBJECT: Update on Groundwater Sustainability Plan Activities

Recommended Motion
None – information only.

Discussion
Cuyama Basin Groundwater Sustainability Agency (CBGSA) Groundwater Sustainability Plan (GSP) activities and consultant Woodard & Curran's (W&C) accomplishments are provided as **Attachment 1.**

Jan-Feb Accomplishments

- ✓ Prepared final 2025 GSP Update and Periodic Evaluation documents for the Cuyama Basin and submitted to dWR
- ✓ Facilitated agreements for potential new CIMIS stations
- ✓ Developed groundwater conditions report for January 2025
- ✓ Completed cloud seeding study for the Cuyama Valley
- ✓ Prepared final allocation tables for 2025-2029 for Central Management Area
- ✓ Performed updates to Data Management System

HALLMARK GROUP Woodard & Curran

TO:	Standing Advisory Committee Agenda Item No. 10b
FROM:	Brian Van Lienden, Woodard & Curran
DATE:	February 27, 2025
SUBJECT:	Update on Grant-Funded Projects

Recommended Motion
None – information only.

Discussion
An update on Cuyama Basin Groundwater Sustainability Agency (CBGSA) grant-funded projects is provided as **Attachment 1.**

Updates on Grant Funded Projects

- The 2025 GSP Update and Periodic Evaluation were submitted to the CA Department of Water Resources in January 2025
  - Comments can be submitted via the DWR SGMA portal by April 20, 2025
- Transducer installation in newly installed wells
  - Currently working to procure transducers to install in each well
  - Installation expected in March or April 2025
- Cloud seeding study report is complete
- Under development with expected completion by March 2025:
  - Fault investigation report
  - Data Management System update

HALLMARK GROUP Woodard & Curran

TO: Standing Advisory Committee
Agenda Item No. 10c

FROM: Brian Van Lienden, Woodard & Curran

DATE: February 27, 2025

SUBJECT: Update on January 2025 Groundwater Conditions Report

Recommended Motion
None – information only.

Discussion
The quarterly Groundwater Conditions– Cuyama Valley Groundwater Basin January 2025 report is summarized as **Attachment 1** and the detailed report is provided as **Attachment 2.**

Attachment 1

Cuyama Basin Groundwater Sustainability Agency

Update on Quarterly Groundwater Conditions Report

February 27, 2025

January 2025 Report

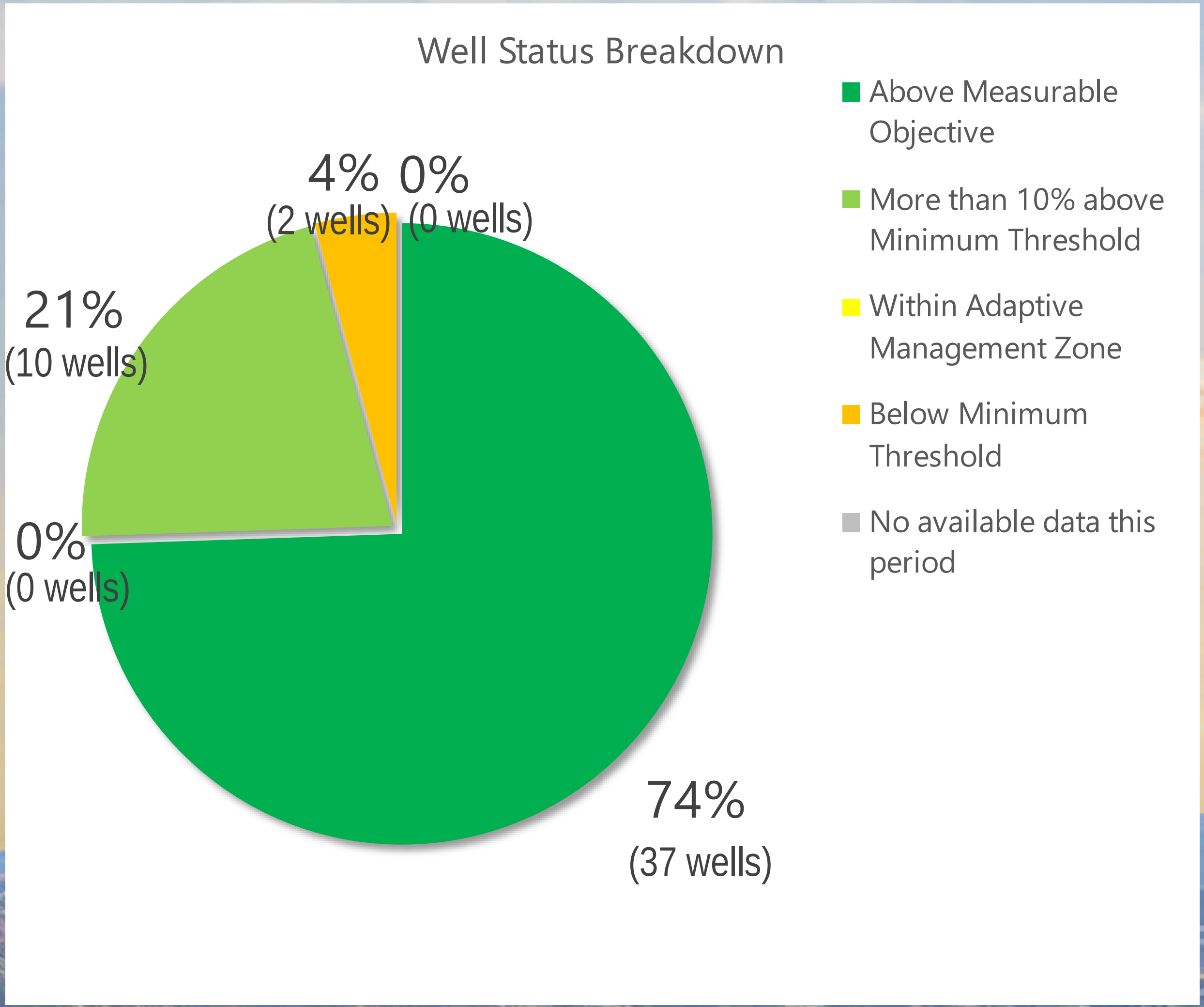
Groundwater Levels Monitoring Network – Summary of Current Conditions

- Monitoring data from April 2024, July 2024 and October 2024 for representative wells is included in the Groundwater Conditions report
- The Groundwater Conditions report reflects the updated monitoring network and minimum thresholds approved by the CBGSA Board for the 2025 GSP Update:
  - All 47 representative monitoring wells have levels data at least once in the previous 12 months
  - 2 wells were below the updated minimum threshold based on latest measurement since April 2024

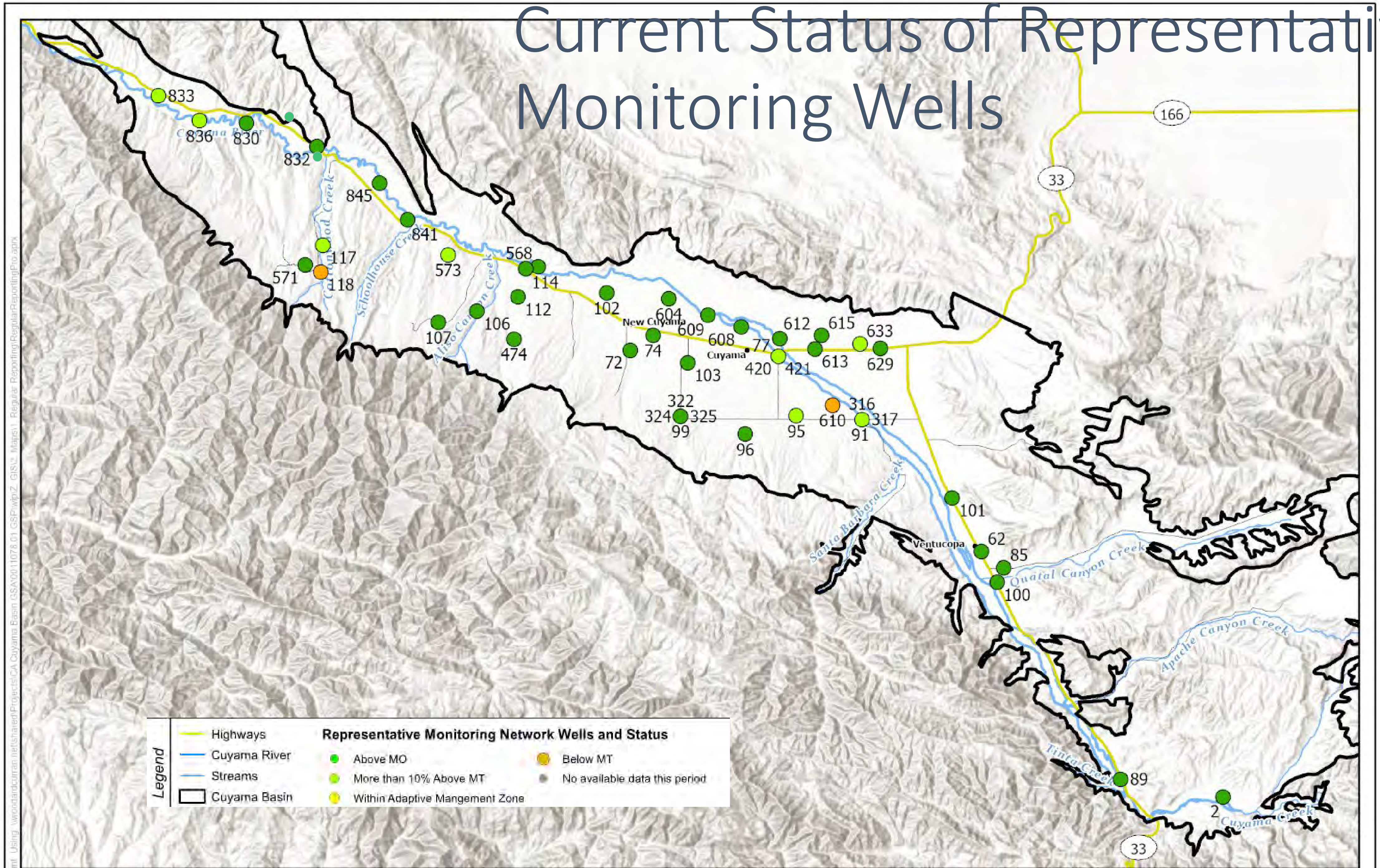
HALLMARK GROUP Woodard & Curran

Summary of Groundwater Well Levels as Compared To Sustainability Criteria

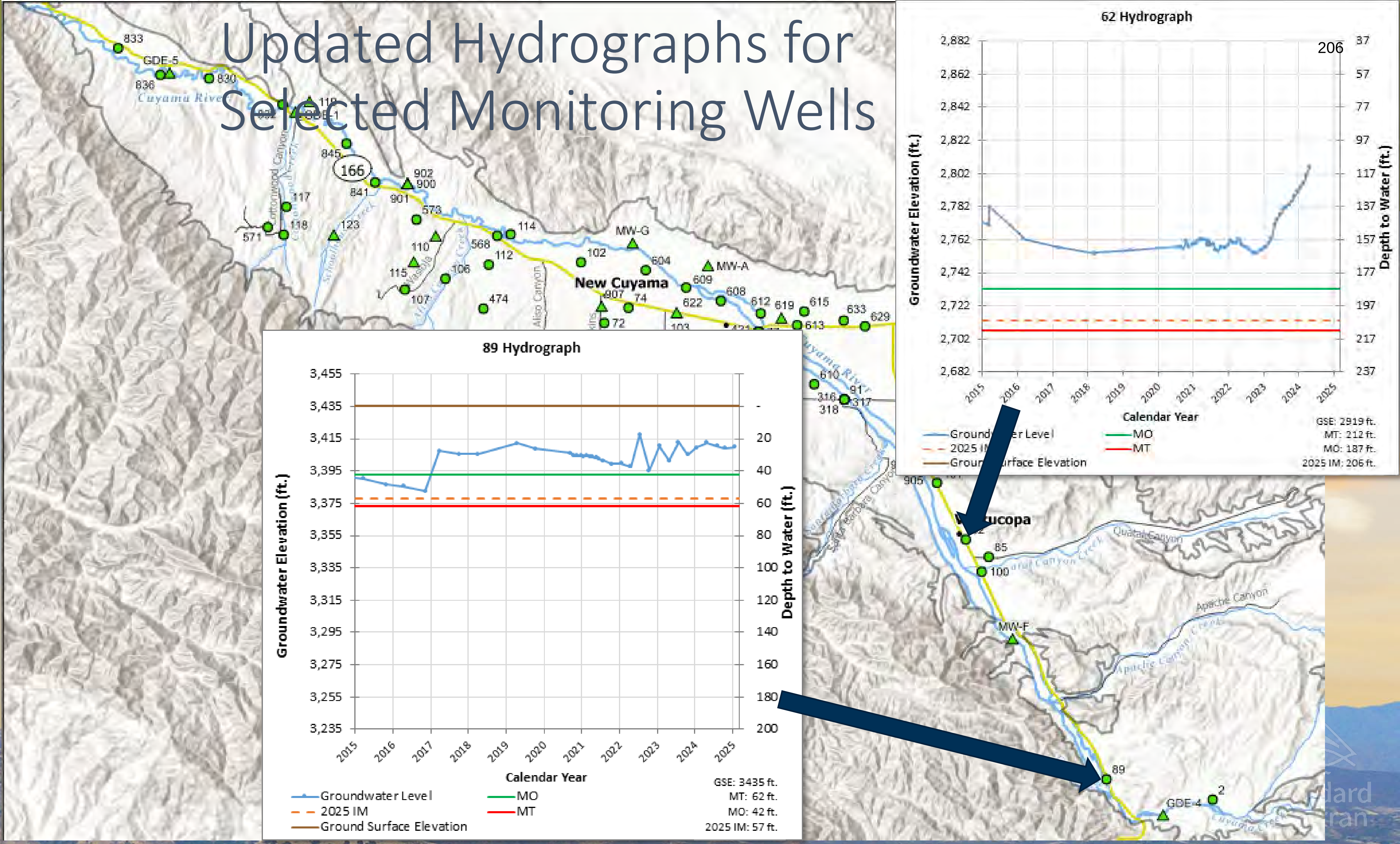
- 2 wells are currently below the updated minimum threshold (MT)
  - 2 wells (4%) have been below the MT for at least 24 months
  - 0 wells dropped below the MT in January 2025
  - 3 wells moved above the MT in January 2025



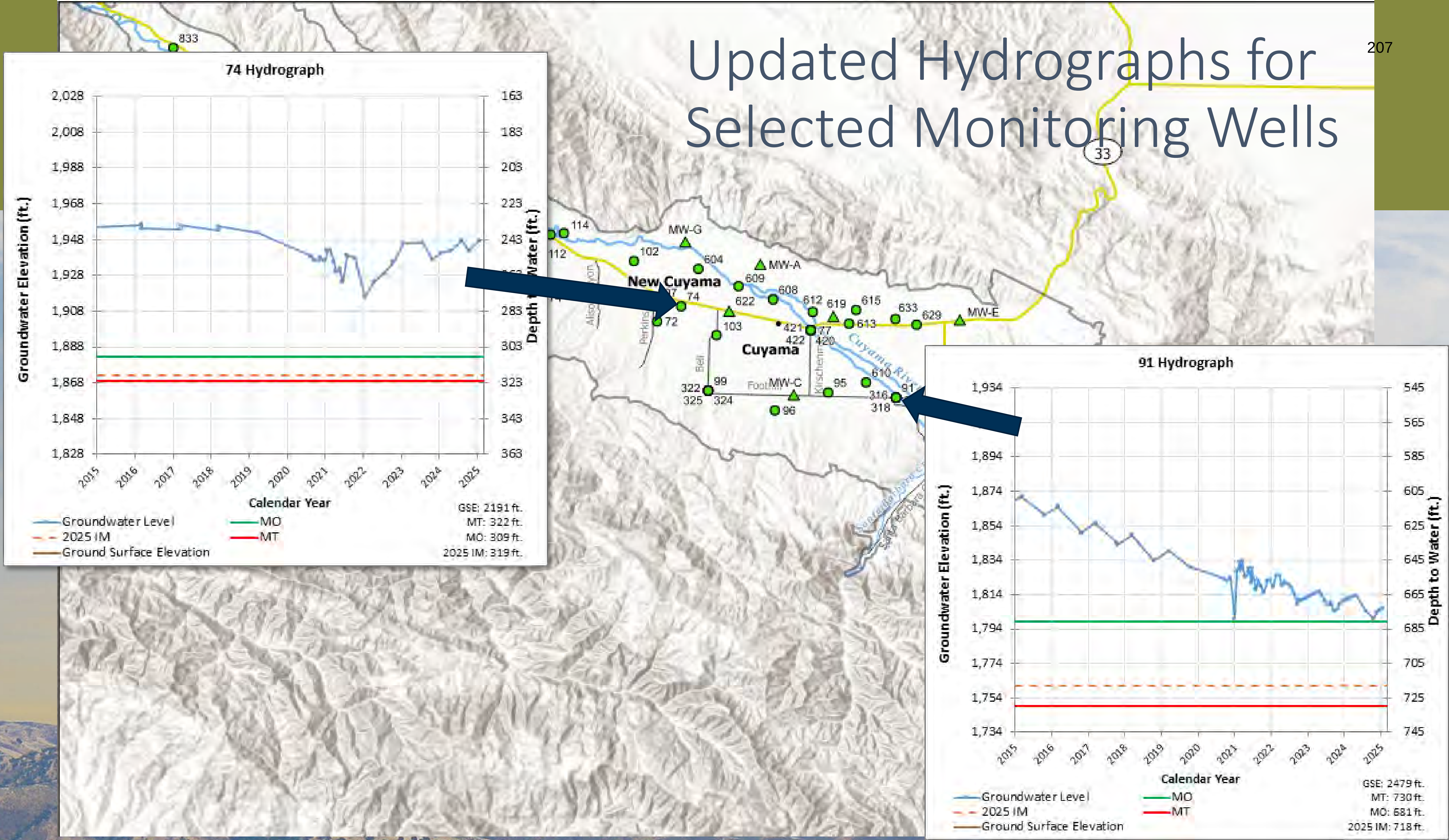
Current Status of Representative Monitoring Wells



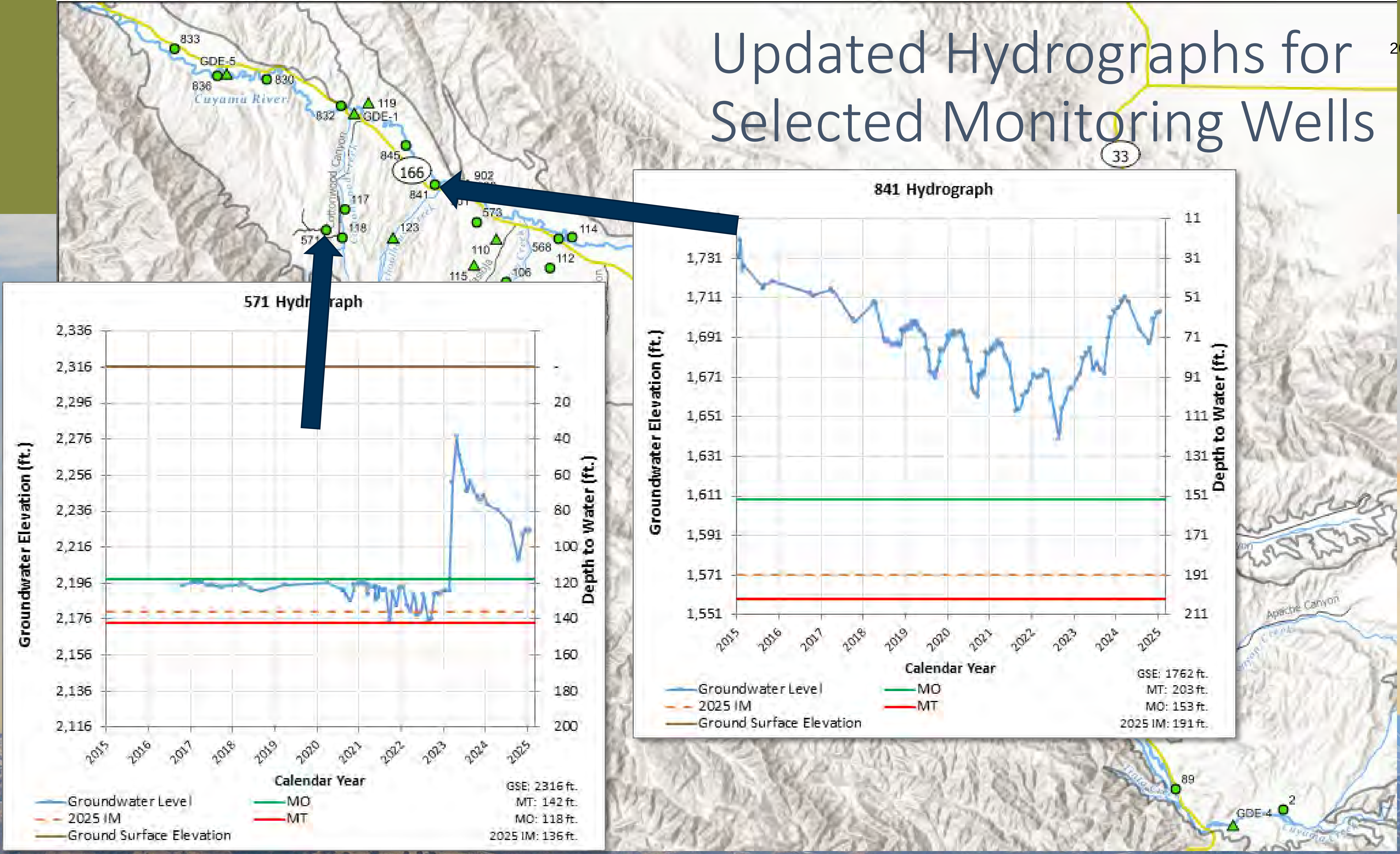
Updated Hydrographs for Selected Monitoring Wells



Updated Hydrographs for Selected Monitoring Wells



Updated Hydrographs for Selected Monitoring Wells



Attachment 2

GROUNDWATER CONDITIONS REPORT – CUYAMA VALLEY GROUNDWATER BASIN

January 2025

801 T Street
Sacramento, CA
916.999.8700

woodardcurran.com

Cuyama Basin Groundwater Sustainability Agency

TABLE OF CONTENTS

SECTION **PAGE NO.**

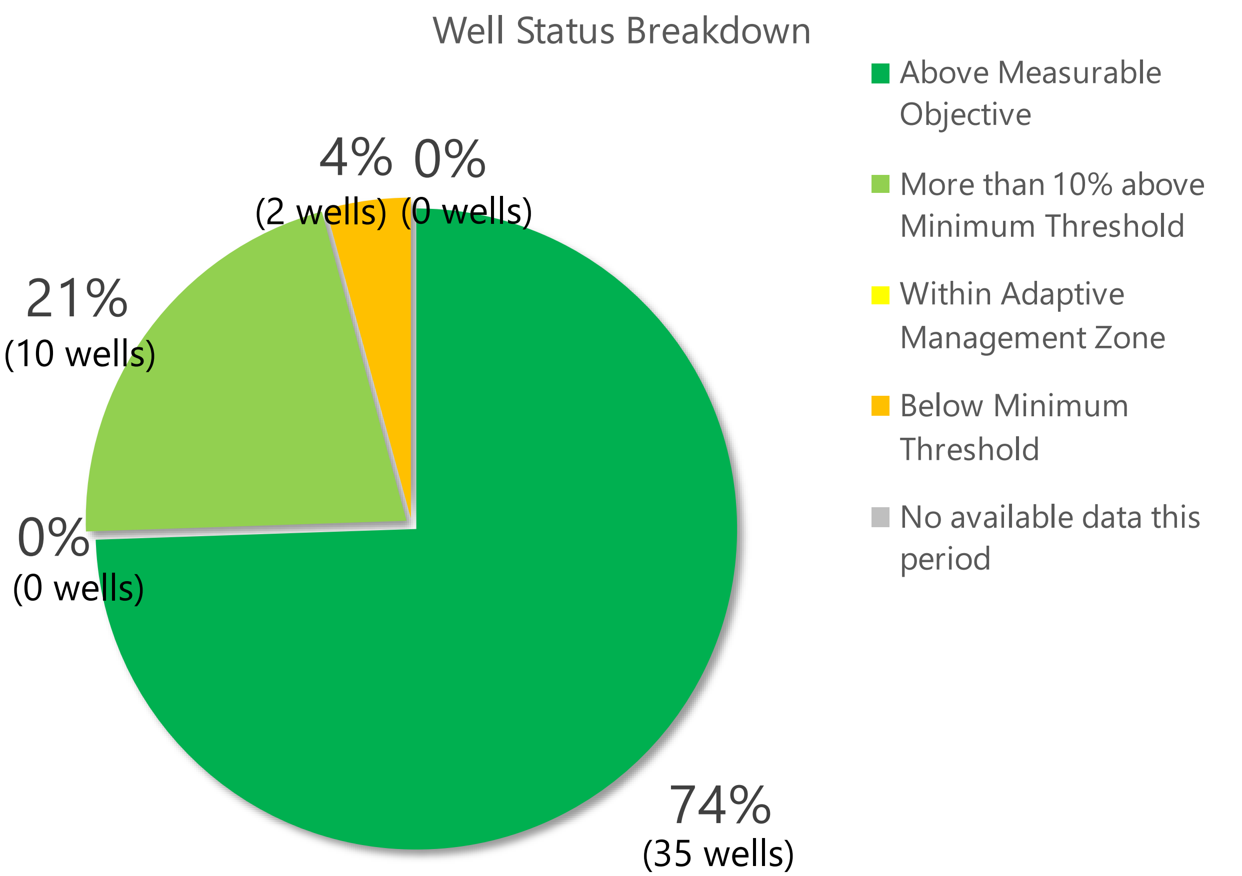
TABLES

FIGURES

1. INTRODUCTION

This report is intended to provide an update on the current groundwater level conditions in the Cuyama Valley Groundwater Basin. This work is completed by the Cuyama Basin Groundwater Sustainability Agency (CBGSA), in compliance with the Sustainable Groundwater Management Act (SGMA).

2. SUMMARY STATISTICS



There are currently 2 wells with groundwater levels exceeding the updated minimum thresholds. As outlined in the GSP, undesirable results for the chronic lowering of groundwater levels occurs, "when 30 percent of representative monitoring wells... fall below their minimum groundwater elevation threshold for two consecutive years." (Cuyama GSP, pg. 3-2). Currently, 4% of representative monitoring wells (i.e. 2 wells) have exceeded the minimum threshold for 24 or more consecutive months.

3. CURRENT CONDITIONS

Table 1 includes the most recent groundwater level measurements taken in the Cuyama Basin from representative wells included in the Cuyama GSP Groundwater Level Monitoring Network, as well as the previous two measurements and the measurement from the same time period in the previous year. Table 2 includes all of the wells and their current status in relation to the thresholds applied to each well. This information is also shown on Figure 1.

All measurements are also incorporated into the Cuyama DMS, which may be accessed at https://opti.woodardcurran.com/cuyama/login.php.

Table 1: Recent Groundwater Levels for Representative Monitoring Network

Well	Region	Jul-24	Oct-24	Jan-25	Last Year		Elevation Change
		GWL (ft. msl)	GWL (ft. msl)	GWL (ft. msl)	GWL (ft. msl)	Month/ Year	
72	Central	-	2005	2034	2027	Jan-24	7.4
74	Central	1947	1942	1947	1940	Jan-24	6.6
77	Central	1754	1766	1791	1804	Jan-24	-12.7
91	Central	1804	1800	1806	1811	Jan-24	-5.1
95	Central	1868	1867	1867	1850	Jan-24	17.5
96	Central	2266	2266	2266	2273	Jan-24	-7.2
99	Central	2137	2145	2212	2216	Jan-24	-4
102	Central	-	1671	1763	-	-	-
103	Central	2046	2051	2054	2046	Jan-24	8.1
112	Central	2042	2043	2043	2041	Jan-24	1.8
114	Central	1881	1878	1879	1879	Jan-24	-0.2
316	Central	1804	1800	1804	1810	Jan-24	-5.6
317	Central	1806	1802	1806	1811	Jan-24	-5.3
322	Central	2134	2138	2211	2216	Jan-24	-4.5
324	Central	2168	2169	2210	2215	Jan-24	-4.6
325	Central	2194	2193	2211	2215	Jan-24	-3.9
420	Central	1750	1766	1791	1803	Jan-24	-11.8
421	Central	1778	1781	1795	1802	Jan-24	-6.7
474	Central	2234	2235	2234	2228	Jan-24	5.8
568	Central	1873	1858	1873	1874	Jan-24	-0.9

Well	Region	Jul-24	Oct-24	Jan-25	Last Year		Elevation Change
		GWL (ft. msl)	GWL (ft. msl)	GWL (ft. msl)	GWL (ft. msl)	Month/ Year	
604	Central	1661	1650	1667	1655	Jan-24	12
608	Central	1740	1769	1790	-	-	-
609	Central	1691	1722	1725	1721	Jan-24	3.5
610	Central	1797	1795	1801	1808	Jan-24	-6.8
612	Central	1780	1805	1803	1797	Jan-24	6
613	Central	1814	1818	-	1799	Jan-24	-
615	Central	1794	1805	1795	1808	Jan-24	-12.6
629	Central	1791	1800	1802	1817	Jan-24	-15.4
633	Central	1794	1805	-	1796	Jan-24	-
62	Eastern	-	-	-	2793	Jan-24	-
85	Eastern	2902	2907	2908	2883	Jan-24	25
100	Eastern	2939	2935	2930	2911	Jan-24	18.5
101	Eastern	2654	2655	2671	2653	Jan-24	18.3
841	Northwestern	1695	1688	1704	1706	Jan-24	-2
845	Northwestern	1632	1632	1642	1641	Jan-24	0.9
2	Southeastern	3704	3686	3699	3697	Jan-24	1.8
89	Southeastern	3411	3409	3410	3390	Jan-24	20.5
106	Western	2176	2176	2176	2175	Jan-24	1.3
107	Western	2421	2419	2418	2422	Jan-24	-4.4
117	Western	1945	1945	1944	1947	Jan-24	-2.8
118	Western	2212	2212	2212	2211	Jan-24	0.6

Well	Region	Jul-24	Oct-24	Jan-25	Last Year		Elevation Change
		GWL (ft. msl)	GWL (ft. msl)	GWL (ft. msl)	GWL (ft. msl)	Month/ Year	
571	Western	2230	2209	2225	2240	Jan-24	-15.1
573	Western	2012	2012	2012	2010	Jan-24	2.3
830	Far-West Northwestern	1515	-	-	1512	Jan-24	-
832	Far-West Northwestern	1606	1605	1605	1604	Jan-24	1.1
833	Far-West Northwestern	1435	1436	1436	1433	Jan-24	3.4
836	Far-West Northwestern	1478	1477	1477	1479	Jan-24	-1.6
*Well 608 is now confirmed to be “destroyed” and is no longer available for monitoring. The landowner and monitoring staff have identified a well within 100 ft that is suitable to continue monitoring in this location, and the groundwater level monitoring network will be modified to remove well 608 and add in this new well. The new well is in the process of being incorporated into Opti and being assigned an ID number.							

Table 2: Well Status Related to Thresholds

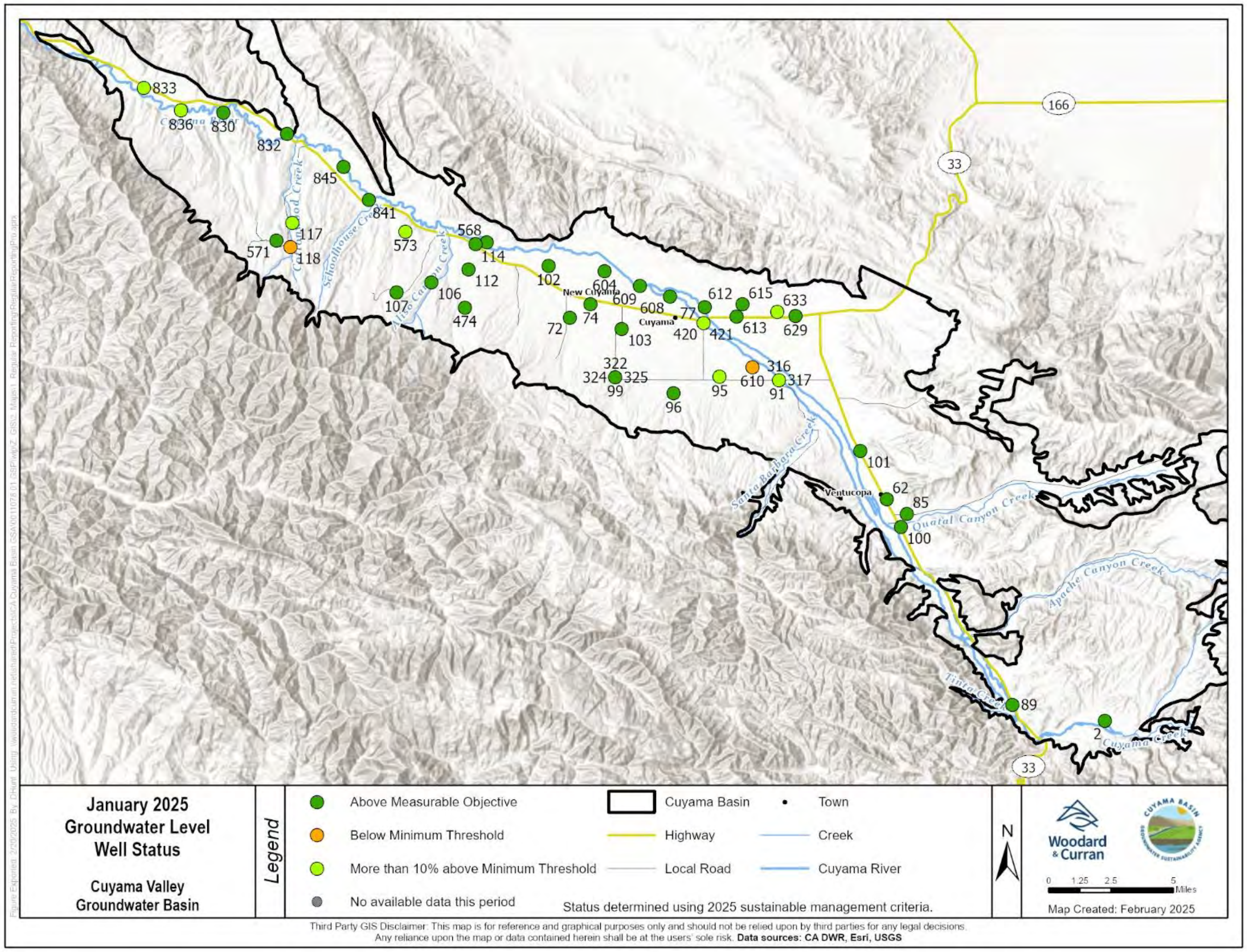
Well	Region	Current Month GWL (DTW)	Current Month Date	Minimum Threshold	Within 10% Minimum Threshold	Measurable Objective	Well Depth	Status	GSA Action Required?
72	Central	132	1/15/2025	373	369	328	790	Above Measurable Objective	No
74	Central	241	1/15/2025	322	321	309	-	Above Measurable Objective	No
77	Central	493	1/16/2025	514	509	464	980	More than 10% above Minimum Threshold	No
91	Central	675	1/17/2025	730	725	681	980	Above Measurable Objective	No
95	Central	589	1/17/2025	597	594	562	805	More than 10% above Minimum Threshold	No
96	Central	340	1/17/2025	369	368	361	500	Above Measurable Objective	No
99	Central	294	1/15/2025	379	378	368	750	Above Measurable Objective	No
102	Central	278	1/16/2025	470	466	432	-	Above Measurable Objective	No
103	Central	230	1/15/2025	379	374	324	1030	Above Measurable Objective	No
112	Central	83	1/16/2025	102	102	100	441	Above Measurable Objective	No
114	Central	46	1/16/2025	58	58	56	58	Above Measurable Objective	No
316	Central	676	1/17/2025	731	726	682	830	Above Measurable Objective	No
317	Central	675	1/17/2025	700	695	650	700	More than 10% above Minimum Threshold	No
322	Central	295	1/15/2025	387	386	378	850	Above Measurable Objective	No
324	Central	296	1/15/2025	365	364	353	560	Above Measurable Objective	No
325	Central	295	1/15/2025	331	330	323	380	Above Measurable Objective	No
420	Central	494	1/16/2025	514	509	464	780	More than 10% above Minimum Threshold	No

Well	Region	Current Month GWL (DTW)	Current Month Date	Minimum Threshold	Within 10% Minimum Threshold	Measurable Objective	Well Depth	Status	GSA Action Required?
421	Central	490	1/16/2025	514	509	466	620	More than 10% above Minimum Threshold	No
474	Central	128	1/16/2025	197	195	178	213	Above Measurable Objective	No
568	Central	35	1/16/2025	47	47	46	188	Above Measurable Objective	No
604	Central	449	1/16/2025	544	540	505	924	Above Measurable Objective	No
608	Central	420	1/16/2025	504	501	475	745	Above Measurable Objective	No
609	Central	433	1/16/2025	499	495	462	970	Above Measurable Objective	No
610	Central	636	1/17/2025	557	554	527	780	Below Minimum Threshold (54 months)	No
612	Central	466	1/16/2025	513	511	490	1070	Above Measurable Objective	No
613	Central	-	-	578	575	550	830	No available data this period (Above MO in October 2024)	No
615	Central	525	1/16/2025	588	585	556	865	Above Measurable Objective	No
629	Central	576	1/16/2025	613	610	581	1000	Above Measurable Objective	No
633	Central	-	-	605	600	551	1000	No available data this period (More than 10% above MT October 2024)	No
62	Eastern	-	-	212	210	187	212	No available data this period (Above MO in April 2024)	No
85	Eastern	140	1/15/2025	200	198	176	233	Above Measurable Objective	No
100	Eastern	76	1/15/2025	186	183	157	284	Above Measurable Objective	No
101	Eastern	75	1/15/2025	138	136	115	200	Above Measurable Objective	No
841	Northwestern	55	1/20/2025	203	198	153	600	Above Measurable Objective	No
845	Northwestern	67	1/20/2025	203	198	153	380	Above Measurable Objective	No

Well	Region	Current Month GWL (DTW)	Current Month Date	Minimum Threshold	Within 10% Minimum Threshold	Measurable Objective	Well Depth	Status	GSA Action Required?
2	Southeastern	21	1/15/2025	52	50	35	73	Above Measurable Objective	No
89	Southeastern	24	1/15/2025	62	60	42	125	Above Measurable Objective	No
106	Western	141	1/16/2025	164	163	152	228	Above Measurable Objective	No
107	Western	73	1/16/2025	122	120	103	200	Above Measurable Objective	No
117	Western	154	1/16/2025	163	162	154	212	More than 10% above Minimum Threshold	No
118	Western	50	1/16/2025	40	37	10	500	Below Minimum Threshold (52 months)	No
571	Western	90	1/16/2025	142	140	118	280	Above Measurable Objective	No
573	Western	66	1/16/2025	93	88	42	404	More than 10% above Minimum Threshold	No
830	Far-West Northwestern	-	-	63	63	60	77	Above Measurable Objective (above MO in July 2024)	No
832	Far-West Northwestern	32	1/16/2025	50	49	35	132	Above Measurable Objective	No
833	Far-West Northwestern	18	1/15/2025	48	44	10	504	More than 10% above Minimum Threshold	No
836	Far-West Northwestern	29	1/15/2025	49	45	10	325	More than 10% above Minimum Threshold	No
*Well 608 is now confirmed to be "destroyed" and is no longer available for monitoring. The landowner and monitoring staff have identified a well within 100 ft that is suitable to continue monitoring in this location, which is where the measurement shown was taken. The groundwater level representative network will be modified to remove well 608 and add in this new well. The new well is in the process of being incorporated into Opti and being assigned an ID number.									

Note: Wells only count towards the identification of undesirable results if the level measurement is below the minimum threshold for 24 consecutive months.

Figure 1: Groundwater Level Representative Wells and Status in January 2025



4. HYDROGRAPHS

The following hydrographs provide an overview of conditions in each of the six areas threshold regions identified in the GSP.

Figure 2: Southeast Region – Well 89

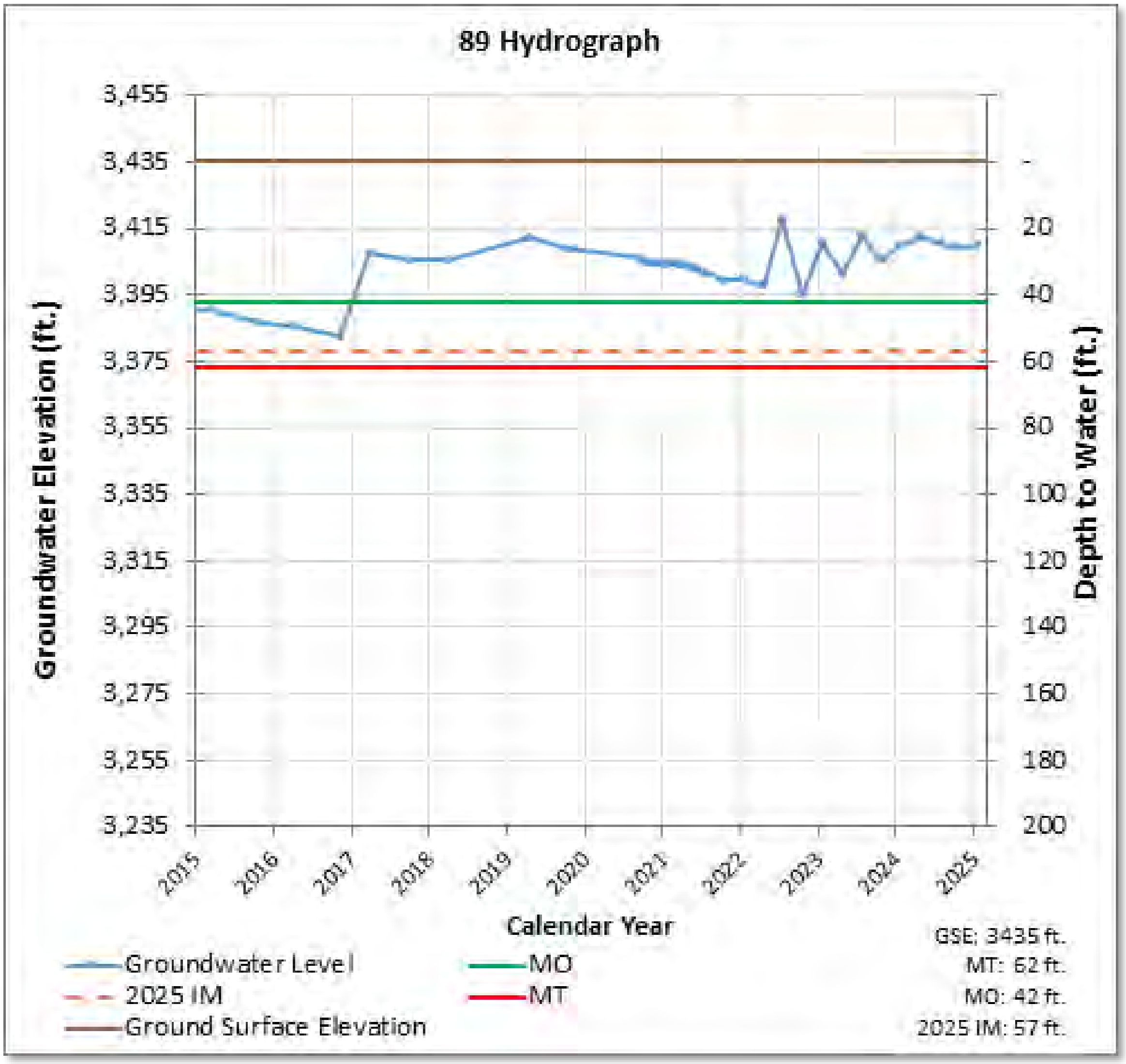


Figure 3: Eastern Region – Well 62

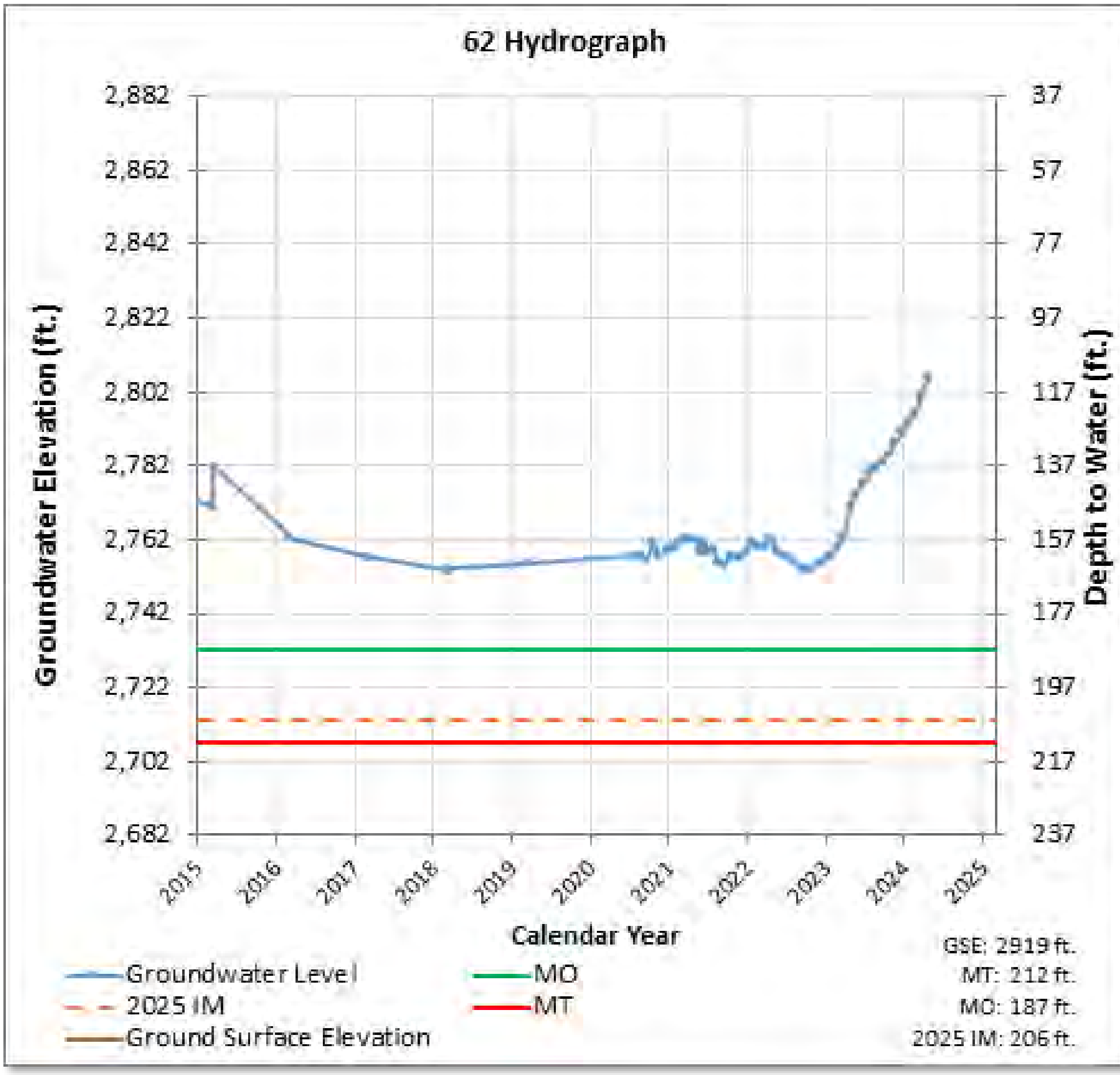


Figure 4: Central Region – Well 91

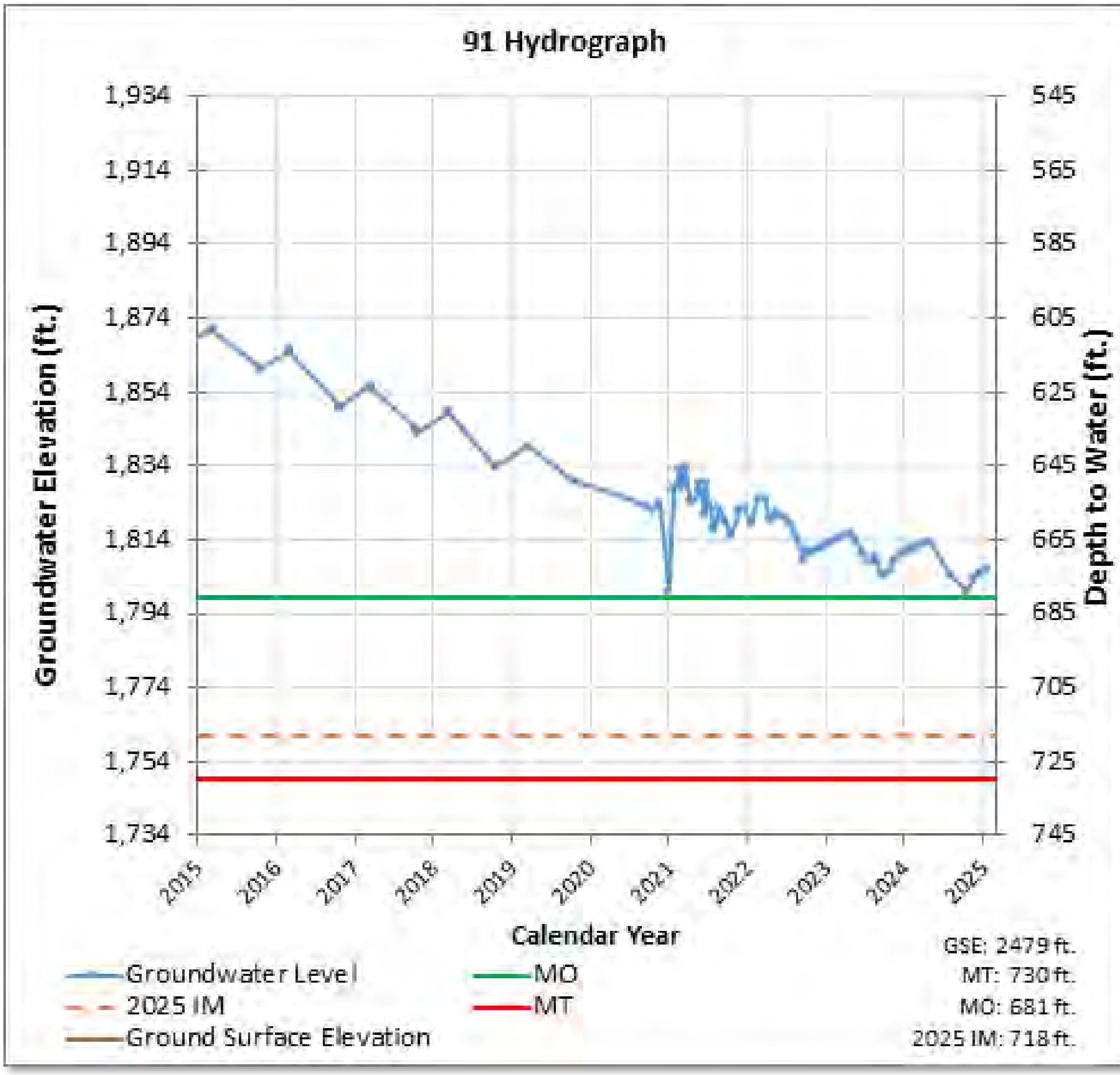


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Figure 5: Central Region – Well 74

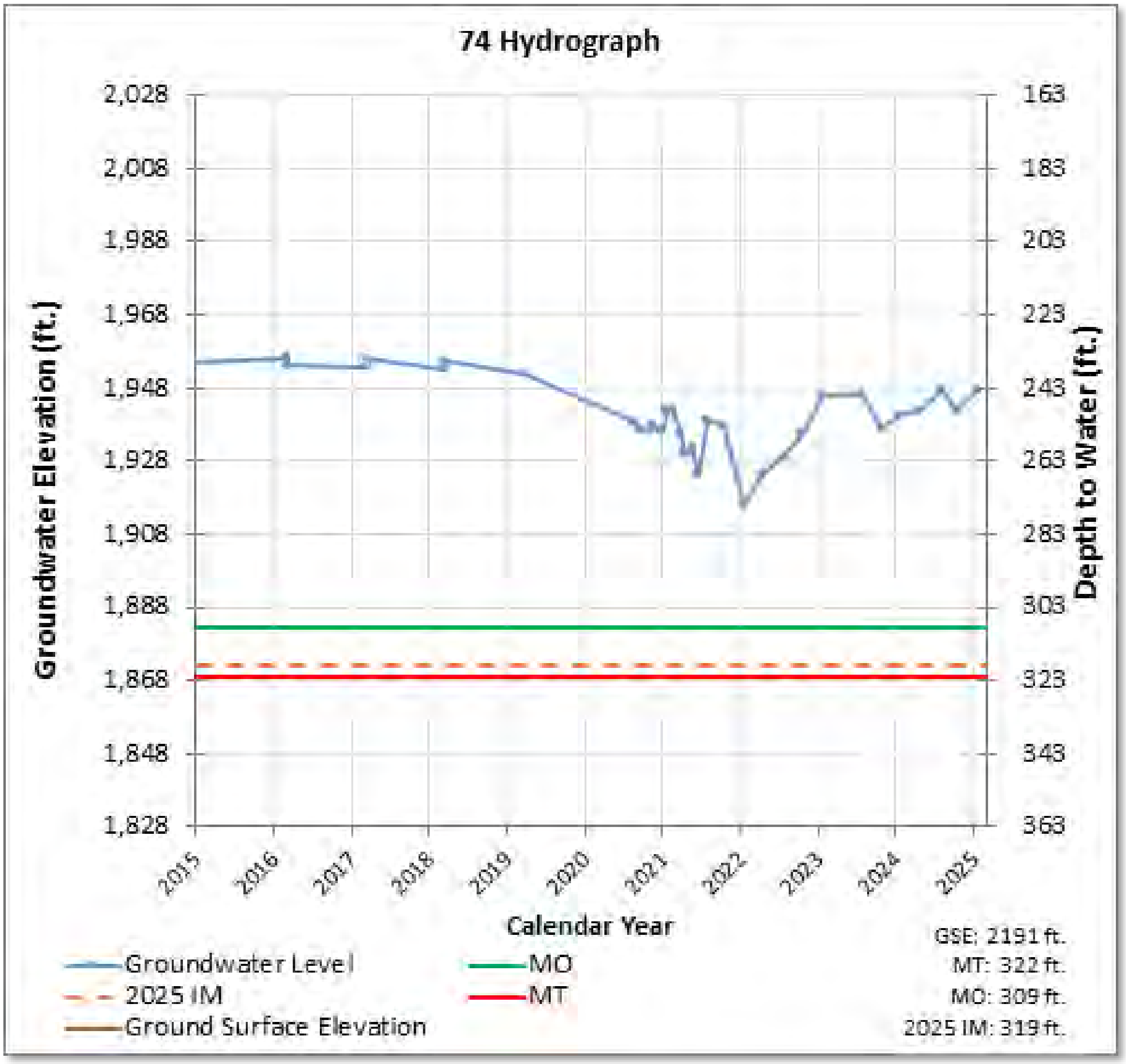


Figure 6: Western Region – Well 571

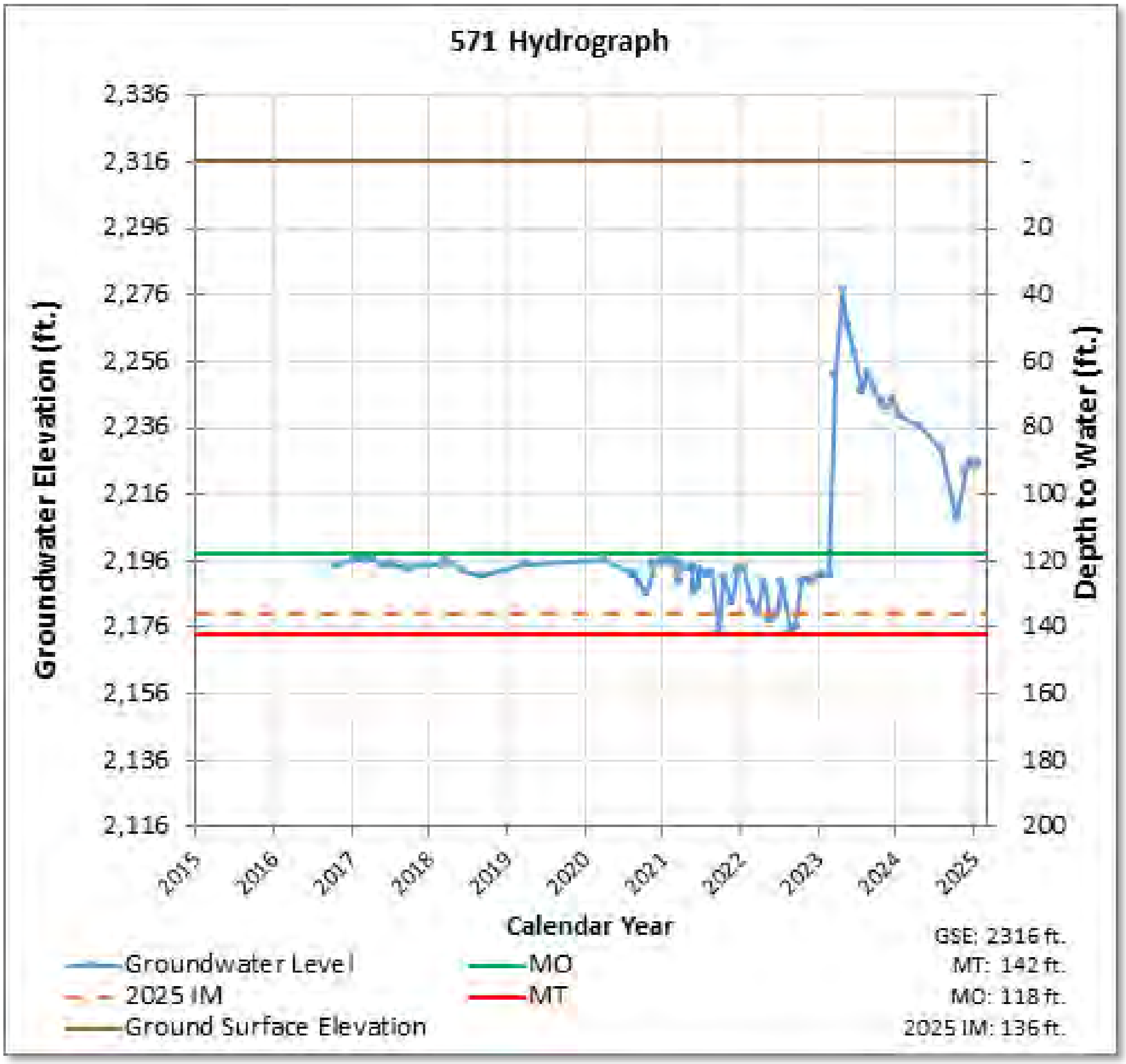
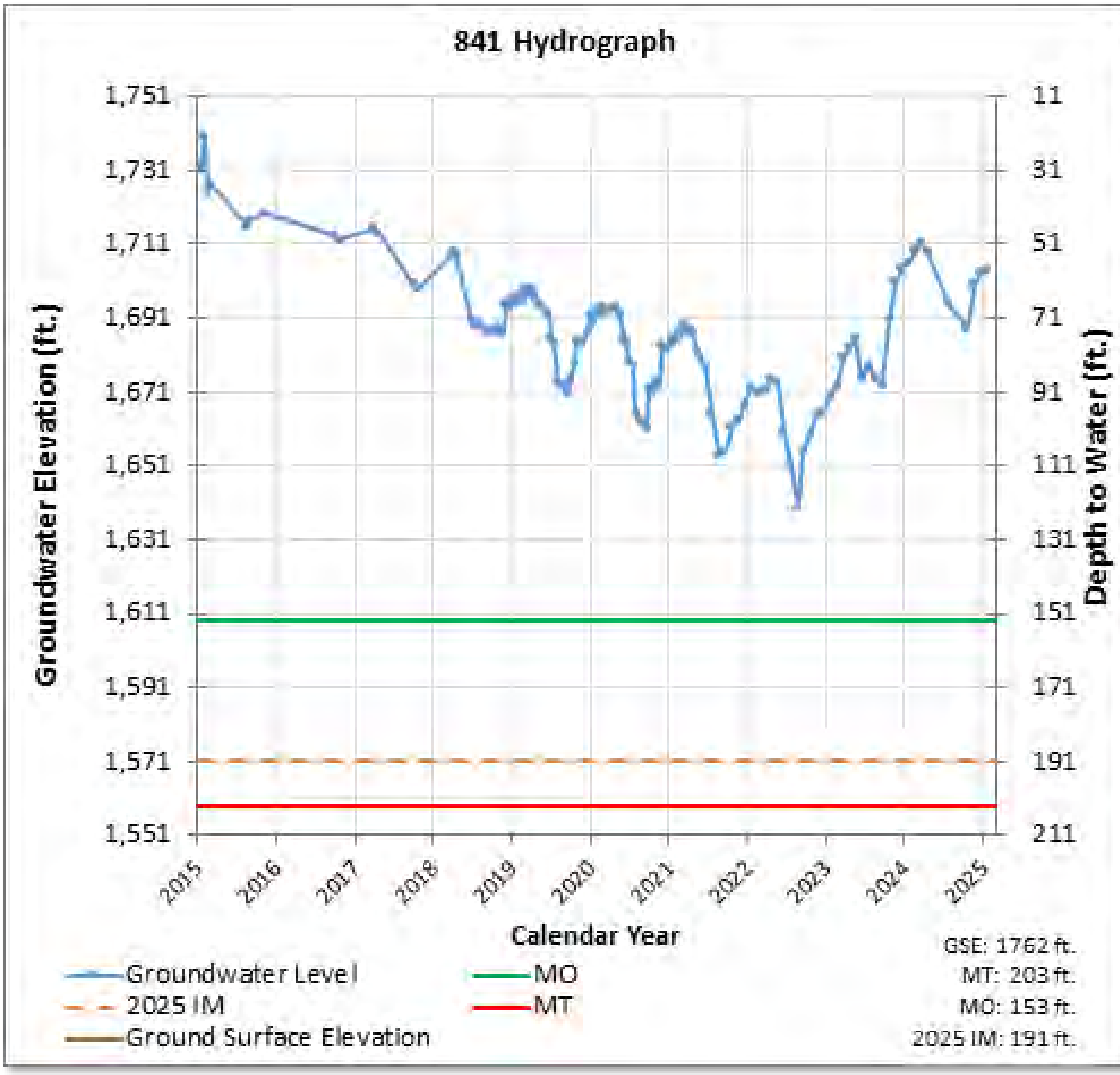


Figure 7: Northwestern Region – Well 841



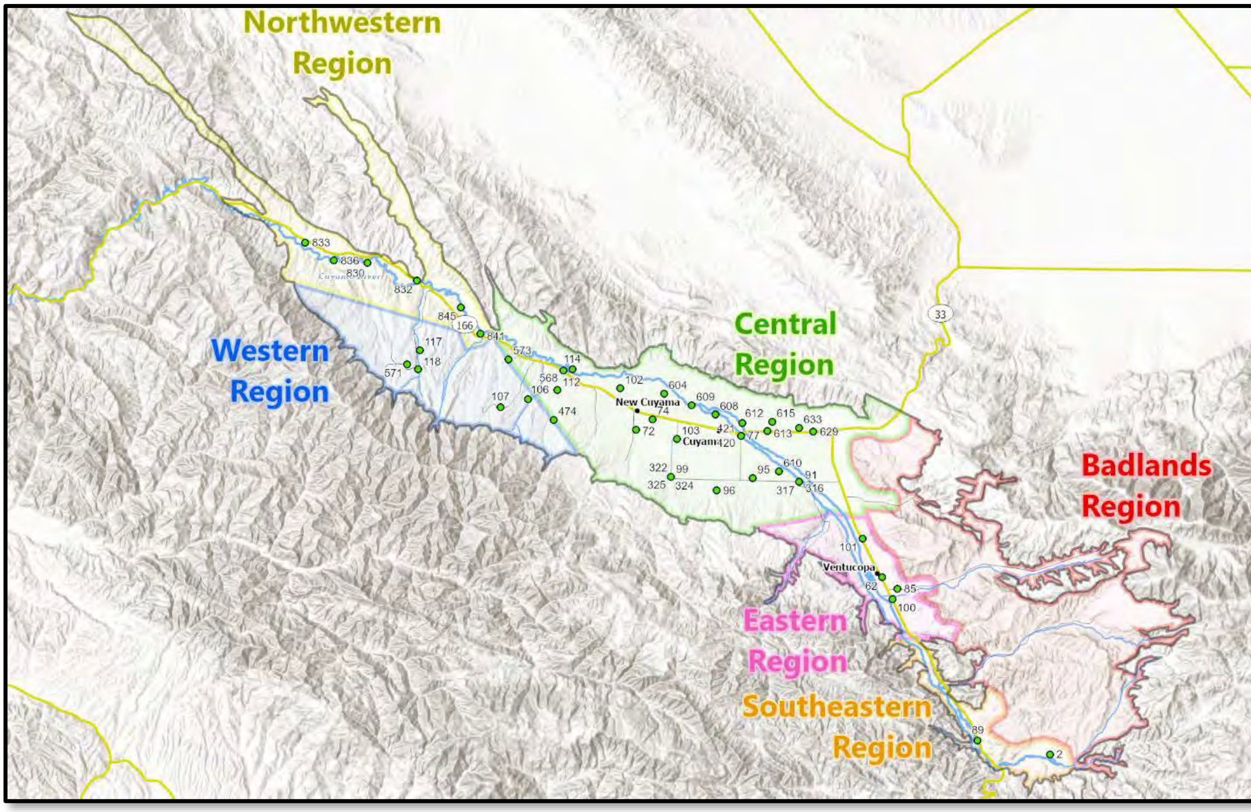


Figure 8: Threshold Regions in the Cuyama Groundwater Basin

5. MONITORING NETWORK UPDATES

As shown in Table 2, there are four wells with no measurement during the current monitoring period. These “no measurement codes” can have different causes as described below.

- Landowner changed and an access agreements have not been established with the current landowner:
  - Wells 830
- Data not yet available due to transducer malfunction:
  - Wells 62
- Wellsite was locked at the time that the monitoring team arrived to take a measurement:
  - Wells 613 and 633

Additionally, well 608 is now confirmed to be “destroyed” and is no longer available for monitoring. The landowner and monitoring staff have identified a well within 100 ft that is suitable to continue monitoring in this location; the data from that new well is still reported for well 608 in this version of the report. The groundwater level monitoring network will be modified to remove well 608 and add in this new well. The new well is in the process of being incorporated into Opti. The new well will use historical data from Well 608 as a proxy for future analysis conducted for GSP implementation.

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TO: Standing Advisory Committee
Agenda Item No. 11c

FROM: Taylor Blakslee, Hallmark Group

DATE: February 27, 2025

SUBJECT: Board of Directors Agenda Review

Recommended Motion
None – informational only.

Discussion
The Cuyama Basin Groundwater Sustainability Agency Board of Directors agenda for the March 5, 2025, Board of Directors meeting is provided as **Attachment 1**.

CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY

BOARD OF DIRECTORS MEETING

Board of Directors

Cory Bantilan Chair, Santa Barbara County Water Agency
Derek Yurosek Vice Chair, Cuyama Basin Water District
Arne Anselm Secretary, County of Ventura
Byron Albano Treasurer, Cuyama Basin Water District
Rick Burnes Cuyama Basin Water District
Steve Jackson Cuyama Basin Water District
Jimmy Paulding County of San Luis Obispo
Katelyn Zenger County of Kern
Matthew Young Santa Barbara County Water Agency
Deborah Williams Cuyama Community Services District
Jane Wooster Cuyama Basin Water District

AGENDA

March 5, 2025

Agenda for a meeting of the Cuyama Basin Groundwater Sustainability Agency Board of Directors to be held on Wednesday, March 5, 2025, at 2:00 PM at the **Cuyama Valley Family Resource Center 4689 CA-166, New Cuyama, CA 93254.** Participate via computer at: https://msteams.link/4GXC or by going to Microsoft Teams, downloading the free application, then entering Meeting ID: 211 568 992 705 Passcode: et2fD66g or enter or telephonically at (469) 480-3918 Phone Conference ID: 839 596 065#.

Teleconference Locations:

4689 CA-166 New Cuyama, CA 93254	1115 Truxtun Ave, 5th Floor, Bakersfield, CA 93301		

The order in which agenda items are discussed may be changed to accommodate scheduling or other needs of the Board or Committee, the public, or meeting participants. Members of the public are encouraged to arrive at the commencement of the meeting to ensure that they are present for discussion of all items in which they are interested.

In compliance with the Americans with Disabilities Act, if you need disability-related modifications or accommodations, including auxiliary aids or services, to participate in this meeting, please contact Taylor Blakslee at (661) 477-3385 by 4:00 p.m. on the Friday prior to this meeting. The Cuyama Basin Groundwater Sustainability Agency reserves the right to limit each speaker to three (3) minutes per subject or topic.

1. Call to Order (Bantilan) (1 min)
2. Roll Call (Blakslee) (1 min)
3. Pledge of Allegiance (Bantilan) (1 min)
4. Meeting Protocols (Blakslee) (2 min)
5. Standing Advisory Committee Meeting Report (Kelly) (3 min)

CONSENT AGENDA

Items listed on the Consent Agenda are considered routine and non-controversial by staff and will be approved by one motion if no member of the Board or public wishes to comment or ask questions. If comment or discussion is desired by anyone, the item will be removed from the Consent Agenda and will be considered in the listed sequence with an opportunity for any member of the public to address the Board concerning the item before action is taken.

6. Approve January 15, 2025, Meeting Minutes (Bantilan) (1 min)
7. Approve January 27, 2025, Special Meeting Minutes (Bantilan) (1 min)
8. Approve Payment of Bills for January and February 2025 (Blakslee) (1 min)

9. Approve Financial Reports for January and February 2025 (Blakslee) (1 min)

ACTION ITEMS

All action items require a simple majority vote by default (50% of the vote). Items that require a super majority vote (75% of the weighted total) will be noted as such at the end of the item.

10. Update on Cloud Seeding Study (Desert Research Institute) (15 min)
11. Approve Resolution to Adopt Conflict of Interest Code
12. Groundwater Sustainability Plan Implementation
    a) Discuss and Take Appropriate Action on Water Year 2023-2024 Annual Report (Van Lienden) (10 min)
    b) Discuss and Take Appropriate Action on 2024 Central Management Area Allocation Use (Blakslee/Hughes) (45 min)
    c) Discuss and Take Appropriate Action on GSA Project Prioritization/Schedule (Beck) (60 min)
    d) Discuss and Take Appropriate Action on Fiscal Year 2025-2026 Budget Components (Blakslee) (30 min)
    e) Approve Landowner Agreements for CIMIS Stations (Blakslee/Dominguez) (15 min)
    f) Consider Fee Equity (Blakslee) (5 min) – *Verbal*

REPORT ITEMS

13. Update on Farm Unit Modification Application Process (Blakslee) (5 min) – *Verbal*
14. Update on Potential Non-Reporting Pumpers
15. Administrative Updates
    a) Report of the Executive Director (Blakslee) (5 min)
    b) Report of the General Counsel (Hughes) (5 min)
16. Technical Updates
    a) Update on Groundwater Sustainability Plan Activities (Van Lienden) (5 min)
    b) Update on Grant-Funded Projects (Van Lienden) (5 min)
    c) Update on January 2025 Groundwater Levels Report (Van Lienden) (5 min)
17. Report of Ad Hoc Committees (1 min)
18. Directors’ Forum (1 min)
19. Public Comment for Items Not on the Agenda (5 min)
20. Correspondence (1 min)

CLOSED SESSION

21. Conference with Legal Counsel – Existing Litigation (15 min)

    Pursuant to Government Code section 54956.9(d)(1)

    (a) Bolthouse Land Company, LLC, et al v. All Persons Claiming a Right to Extract or Store Groundwater in the Cuyama Valley Groundwater Basin (BCV-21-101927)
22. Adjourn (6:05 p.m.)