

Yolo Subbasin
Groundwater Agency

YOLO
SUBBASIN
**ANNUAL
REPORT**

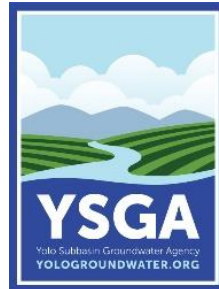
**WATER YEAR
2024**

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Yolo Subbasin Groundwater Sustainability Plan

2025 Annual Report
Covering Water Year 2024



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April 1, 2025

Covers: Front: Almond bloom on a Yolo County Farm
Back: Water flows through the Tehama-Colusa Canal near Dunnigan
Photo credit: YCFC&WCD, Sarah Leicht

EXECUTIVE SUMMARY

The Yolo Subbasin Groundwater Agency (YSGA) has prepared this report for the Yolo Subbasin Groundwater Sustainability Plan (GSP) in compliance with the Sustainable Groundwater Management Act (SGMA; California Water Code Section 10720 et seq.). This annual report covers Water Year 2024 (October 1, 2023 to September 30, 2024). The Yolo Subbasin (Subbasin) covers approximately 540,700 acres. The Subbasin is located in the southwestern side of the Sacramento Valley Groundwater Basin and is subdivided into six Management Areas (See Figure 1).

The sustainability goals for the Yolo Subbasin are as follows:

- Achieve sustainable groundwater management in the Yolo Subbasin by maintaining or enhancing groundwater quantity and quality through the implementation of projects and management actions to support beneficial uses and users.
- Maintain surface water flows and quality to support conjunctive use programs in the Subbasin that promote increased groundwater levels and quality.
- Operate within the established sustainable management criteria and maintain sustainable groundwater use through continued implementation of a monitoring and reporting program.
- Maintain sustainable operations to maintain sustainability over the implementation and planning horizon.

GSP Implementation in 2024 was focused on preparing to update the 2022 Yolo Subbasin GSP and implementing projects funded by DWR's SGMA Implementation Grant Program: Yolo Subbasin GSP Implementation, Yolo-Zamora Groundwater Recharge Pilot Project, Dunnigan Area Recharge Program, City of Winters Feasibility Studies, and YCF&WCD Winter Water Recharge Program. Progress on each of these funded projects is discussed in Section 3.1.1.

Water Year 2024 was an above normal year, in which precipitation was approximately 20" for Yolo County (101% of historical average). These conditions resulted in stable groundwater levels, with no significant change in average groundwater level from Water Year 2023.

Like Water Year 2023, one representative monitoring well for groundwater levels displayed an exceedance of the minimum threshold value, which is a significant improvement from the end of Water Year 2022 (following the 2021-2022 drought) when eight representative monitoring wells exceeded the minimum threshold. The YSGA continues to implement projects and management actions that will facilitate groundwater recovery in areas that observed exceedances during the drought.

This annual report contains estimated acre-feet values for surface water diversions, groundwater extraction, total water use, and change in groundwater storage. Total surface and groundwater use in 2024 was approximately 883 thousand acre-feet (TAF), up from 745 TAF in Water Year 2023. Due to ample surface water supplies, groundwater extraction was less than the sustainable yield of the subbasin (346 AFY), though extraction was higher in Water Year 2024 compared to Water Year 2023 (306 TAF versus 243 TAF, respectively).

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1. INTRODUCTION

The Yolo Subbasin Groundwater Agency Joint Powers Agreement (JPA) was officially executed on June 19, 2017 by 19 member agencies and five affiliated parties via memoranda of understandings (MOU). Since the YSGA was formed, three additional member agencies have signed onto the JPA; three other member agencies consolidated into one; and one affiliated party has entered into an MOU with the JPA, which has resulted in 20 member agencies and six affiliated parties for a total of 26 YSGA members.

The Yolo Subbasin Groundwater Sustainability Plan (GSP) was adopted on January 24, 2022 by the YSGA Board of Directors, and submitted to the California Department of Water Resources (DWR) on January 28, 2022 by YSGA staff. The GSP provides an overview of the planning considerations, hydrogeologic properties, and hydrologic conditions of the area from 1970 to 2018. It also outlines a water budget for the Yolo Subbasin, establishes Sustainable Management Criteria, and identifies projects and management actions to maintain sustainability. For a summary of the plan's contents, please refer to the Executive Summary of the Yolo Subbasin GSP¹.

This 2025 Annual Report provides an update on current activities and conditions during Water Year 2024 (October 1, 2023 – September 30, 2024) within the Subbasin.

2. PLAN AREA

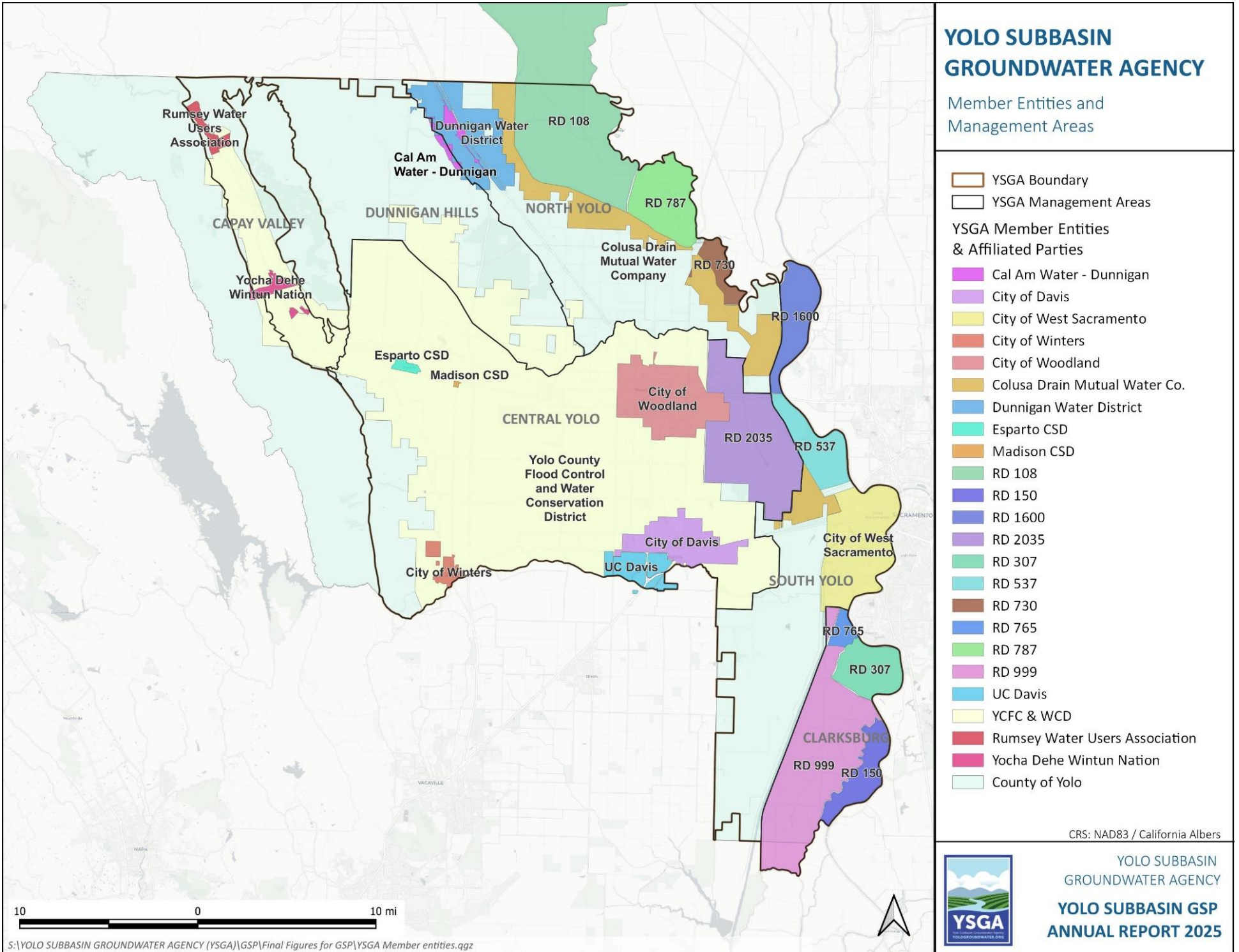
The Yolo Subbasin (Subbasin) covers approximately 540,700 acres, spanning nearly 845 square miles. The Subbasin is located in the southwestern side of the Sacramento Valley Groundwater Basin and is about 27 miles wide from west to east and up to 45 miles long from north to south. The current Subbasin boundaries are the result of the consolidation of portions of the Capay Valley, Colusa, and Solano subbasins via two applications for jurisdictional modifications of the Subbasin's boundary. Land use designations within the YSGA jurisdictional boundary are predominately agriculture and native vegetation, accounting for approximately 60 and 30 percent, respectively. Approximately five percent of the Subbasin contains managed wetlands, which provide migratory bird habitat and other ecosystem services. The source of water for agricultural lands is a combination of surface water and groundwater. Urban and incorporated land use areas are scattered throughout the Subbasin and account for approximately five percent of the Subbasin. The Yolo Subbasin boundary, member agencies, and affiliated parties are shown in Figure 1.

The Subbasin contains six Management Areas for implementation of projects and management actions to achieve groundwater sustainability. In developing these Management Areas, YSGA considered geologic, aquifer, and topographic characteristics. To prevent undesirable results in adjacent Management Areas, consistent minimum thresholds and measurable objectives have been developed as discussed in the Yolo Subbasin GSP ([Section 3 – Sustainable Management Criteria](#))². The six Management Areas are known as the Capay Valley, Dunnigan Hills, North Yolo, Central Yolo, South Yolo, and Clarksburg.

¹ https://www.yologroundwater.org/files/3aac57af3/YoloGSP_Adopted_ExecutiveSummary.pdf

² https://www.yologroundwater.org/files/acff83c75/YoloGSP_Adopted.pdf#page=279

FIGURE 1: YOLO SUBBASIN MAP



YOLO SUBBASIN GROUNDWATER AGENCY

Member Entities and Management Areas

- YSGA Boundary
- YSGA Management Areas
- YSGA Member Entities & Affiliated Parties**
- Cal Am Water - Dunnigan
- City of Davis
- City of West Sacramento
- City of Winters
- City of Woodland
- Colusa Drain Mutual Water Co.
- Dunnigan Water District
- Esparto CSD
- Madison CSD
- RD 108
- RD 150
- RD 1600
- RD 2035
- RD 307
- RD 537
- RD 730
- RD 765
- RD 787
- RD 999
- UC Davis
- YCFC & WCD
- Rumsey Water Users Association
- Yocha Dehe Wintun Nation
- County of Yolo

CRS: NAD83 / California Albers



YOLO SUBBASIN GROUNDWATER AGENCY
YOLO SUBBASIN GSP ANNUAL REPORT 2025

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3. GROUNDWATER MANAGEMENT ACTIVITIES AND MILESTONES

3.1 GSP IMPLEMENTATION PROGRESS

In addition to the general administrative and implementation activities, the YSGA continued to develop a robust process for reviewing well permit applications in compliance with Executive Orders N-7-22 and N-3-23³. Coming out of the 2020-2022 drought period, the YSGA received concerns from stakeholders about areas where groundwater levels were showing potential downward trends and rural residential wells experienced issues. In June 2023, the YSGA created a policy framework for “Focus Areas” where groundwater level declines and stakeholder concerns had been identified. In March 2024, the YSGA initiated a public comment process for stakeholders to comment on the draft Technical Memorandum and the draft Focus Areas Map. Also in March 2024, the YSGA adopted Well Permit Review Procedures, which were later updated in November 2024 to reflect the change with Executive Orders N-7-22 and N-3-23 being rescinded. In November, the County of Yolo adopted an urgency ordinance temporarily extending certain requirements on the issuance of agricultural water well permits in the unincorporated areas pending completion of long-term well ordinance amendments. The YSGA is continuing to provide reviews of agricultural well permit applications located within the Focus Areas. More information about this process is available on the YSGA’s website⁴.

Additionally, the YSGA began implementing projects awarded funding by DWR’s SGM Implementation Grant Program. The YSGA contracted with multiple consultants to assist with the updates to the 2022 Yolo Subbasin GSP in response to DWR’s recommended corrective actions. The YSGA also contracted with Frame Surveying and Mapping to complete a ground-based survey of the Yolo County GPS Subsidence network, which was completed in early October 2024. The YSGA coordinated with project proponents to receive frequent project updates, and to submit necessary documentation for grant quarterly reporting. Several groundwater recharge project updates were presented at local and regional groundwater-related meetings. The YSGA also received technical assistance from DWR to install three new multi-completion wells on the west side of the Subbasin, which enhanced the Yolo Subbasin monitoring network.

Lastly, the YSGA collected critical surface water diversion data from all member agencies/water purveyors and analyzed the total water use in the Yolo Subbasin to support the submittal of a comprehensive Water Report in April 2024.

3.1.1 Projects and Management Actions

GSP Implementation in Water Year 2024 was focused on implementing various projects and management actions defined in the GSP. Five projects were selected to receive funding from DWR’s SGM Implementation Grant, for a total award of \$7,917,000: Yolo Subbasin GSP Implementation, Yolo-Zamora Groundwater Recharge Pilot Project, Dunnigan Area Recharge Program, City of Winters Feasibility Studies, and YCF&WCD Winter Water Recharge Program. Progress on each of these funded projects is discussed below:

Yolo Subbasin GSP Implementation:

- Two outreach meetings were held with stakeholders in the Hungry Hollow Focus Area to identify concerns related to domestic wells, data gaps, and possible projects and management actions to

³ <https://www.gov.ca.gov/wp-content/uploads/2022/03/March-2022-Drought-EO.pdf>;

<https://www.gov.ca.gov/wp-content/uploads/2023/02/Feb-13-2023-Executive-Order.pdf?emrc=b12708>

⁴ <https://www.yologroundwater.org/well-permit-verification>

address declining water levels in the area. These meetings resulted in the creation of the Hungry Hollow Groundwater Working Group (Group). The YSGA received facilitation support services from DWR to facilitate the meetings with the Group. With assistance of meeting participants, the Facilitator developed a Declaration of Cooperation (Group Charter), which outlines the vision, expectation and agreements, shared principles, key practices, and conflict transformation process for the Group.

- YSGA staff completed Spring and Fall 2024 groundwater level measurements.
- YSGA staff worked with DWR to construct three continuous GPS stations and one corner reflector in Yolo Subbasin.
- 18 additional monitoring wells were added to the monitoring network.
- YSGA staff began gathering data on the scale and water demand of managed wetlands within the Subbasin and started to incorporate this data into the YSGA model.
- YSGA staff continued meeting with The Nature Conservancy to explore ways to refine the GSP's interconnected surface water sustainable management criteria.
- YSGA staff drafted and submitted a grant application to the USBR WaterSMART program requesting funding for the development of a domestic well mitigation program and improved climate forecasting tools.
- YSGA staff collaborated with The Nature Conservancy to explore methodology to improve monitoring of groundwater dependent ecosystems and interconnected surface water.
- YSGA staff facilitated numerous internal committee meetings to discuss the methodology for the YSGA's fee study and worked with consultants to initiate the process.

Yolo-Zamora Groundwater Recharge Pilot Project:

- YSGA staff and consultants held three meetings with landowners in the Yolo-Zamora area. Landowners provided input on potential projects and identified project alternatives.
- YSGA staff and consultants completed an aerial imagery/video drone survey of the China Slough to assist in identifying areas of potential wildlife habitat and invasive species to help facilitate work related to rehabilitation of the slough. In addition, work started to define project alternatives and cost estimates to bring surface water to Yolo-Zamora white areas.

Dunnigan Area Recharge Program:

- Dunnigan Water District recharged a total of 2,265 acre-feet in Water Year 2024, with 842 acre-feet recharged through Buckeye Creek and 1,423 acre-feet applied and recharged through farmers' fields.
- The District discussed groundwater recharge diversion pathways with DWR and California Department of Fish Wildlife including options for streamlined groundwater recharge permit and diversions under California Water Code 1242.1.
- Dunnigan Water District was selected for additional funding through DWR's Flood Diversion Recharge Enhancement (FDRE) initiative to purchase/rent temporary pumps and pipelines to conduct groundwater recharge.

YCFC&WCD Winter Water Recharge Program:

- In Water Year 2024, approximately 8,710 acre-feet was recharged through the District's unlined canal system.
- District staff submitted a 2025 temporary winter water right permit application on August 12.

- District staff and Sustainable Conservation began defining areas throughout the District’s service area with the highest recharge potential.
- District staff started drafting a winter water recharge monitoring and assessment plan, landowner agreement template, and guidelines for landowners to conduct on-farm recharge.
- District staff and consultants initiated a water availability analysis in pursuit of a permanent winter water right.

City of Winters Feasibility Studies:

- The City of Winters solicited proposals from qualified firms and ultimately selected Davids Engineering to complete feasibility analyses of various surface water sources and recycled water treatment options.
- Davids Engineering began collecting nearby surface and groundwater data from various agencies and reviewing past reports to determine existing conditions and begin to analyze project options.
- An integrated outreach plan was developed for both feasibility studies.

3.1.2 Outreach and Engagement

The YSGA hosted regular Board and Executive Committee meetings throughout the year providing the public with an update on the status of GSP implementation. Additionally, the YSGA participated in the following public meetings to provide updates on GSP implementation in the Yolo Subbasin:

- October 2023: Lake County Judges Breakfast
- January 2024: Yolo County Irrigated Lands Program Workshops
- July 2024: Colusa Drain Mutual Water Company’s Board of Directors Meeting

Additionally, the YSGA participated in several coordination meetings with Yolo County’s Division of Environmental Health to develop well permitting procedures for complying with the Governor’s Executive Orders N-7-22 and N-3-23 and the development of the County’s temporary urgency order. And YSGA staff coordinated with Yolo County in the development of the SB 553 County Drought Plan. The YSGA also participated in numerous meetings with neighboring GSAs to discuss GSP implementation, well permitting strategies and lessons learned, and interbasin coordination matters. The YSGA continued to participate in meetings related to the Environmental Defense Fund and Water Data Consortium’s Groundwater Accounting Platform. And the YSGA participated in meetings with Yolo RCD, Community Alliance with Family Farmers (CAFF) to prepare for the creation of the [Farming for Our Future video series](#), YSGA staff participated in the production of two videos specific to groundwater: [Groundwater for Agriculture](#) and [Sustaining Our Aquifers](#).

Lastly, the YSGA had the privilege of providing updates at the following meetings:

- FloodMAR Network’s 2023 FloodMAR Forum
- DWR’s Fall 2023 Groundwater Sustainability Agency Forum
- GRA’s Spring 2024 North Sacramento Valley Branch Meeting
- ACWA’s Spring 2024 State Legislative Symposium
- UC Davis’s Hydrologic Sciences Group’s – Introductions to Watersheds, Groundwater, and GSPs 2024 Online Shortcourse
- Water Education Foundation’s and UC Davis’s 2024 International Groundwater Conference
- UC Davis School of Law’s 10 Years In: A SGMA Report Card Conference

Public comments received during the 2024 Water Year were primarily related to concerns over agricultural well permitting oversight and transparency as part of complying with the Governor’s Executive Orders N-7-22 and N-3-23. Public comments were also provided to the Yolo County Board of Supervisors that resulted in significant coordination among the YSGA and Yolo County to ensure the well permitting procedures were aligned. Additionally, several public comments were made regarding water quality considerations.

3.1.3 Addressing Recommended Corrective Actions

On October 26, 2023, DWR released its determination for the Yolo Subbasin GSP, approving the plan and recommending 24 corrective actions be implemented prior to the 2027 periodic update. Table 1 below outlines the corrective actions recommended by DWR and the YSGA’s planned approach for addressing them.

In March 2024, the YSGA released a request for qualifications to solicit technical assistance in resolving the corrective actions and ensuring significant progress occurs in the 2024 Water Year for corrective actions to be addressed in the 2027 periodic update.

TABLE 1: PLANNED APPROACH TO ADDRESS CORRECTIVE ACTIONS

Action	Description	GSP Section	Planned Approach to Address	Timeline for Revision
1	Revise the SMC for the chronic lowering of groundwater levels			
1a	Review states that the definition of significant and unreasonable effects is “vague and circular”. Need to define what exactly constitutes significant and unreasonable effects for chronic lowering of groundwater levels that the GSA is managing the Subbasin to avoid.	3.3.1, pg. 281	YSGA plans to work with the technical team to ensure a clear definition of significant and unreasonable effects for chronic lowering of groundwater levels.	2027 Periodic Evaluation
1b	Provide additional discussion and amend the definition of undesirable results. Specifically, regarding the 51 percent of RMWs exceeding the minimum threshold in two MAs, the GSA should explain how local exceedances within just one management area are not considered an undesirable result. Further, the GSA should clearly define a time component for when an undesirable result will occur, similar to how the time component for minimum threshold exceedances is defined as two consecutive fall measurements that exceed the MT.	3.3.1, pg. 281	YSGA plans to work with the technical team to amend the undesirable results definition to incorporate a time component and either provide justification for the two Management Areas trigger of the undesirable result or redefine to address local exceedances.	2027 Periodic Evaluation
1c	The GSP provides little information on how the basin conditions at the minimum thresholds of groundwater levels will avoid undesirable results for any other sustainability indicators. Department staff recommend the GSA describe the relationship between established minimum thresholds for the chronic lowering of groundwater levels and how they avoid undesirable results for each of the other sustainability indicators, especially in the North Yolo Management Area where minimum thresholds are set below historical lows.	3.3.1 & 3.3.2, pg. 281-282 3.3.2.1.2 pg. 285	YSGA plans to work with the technical team to define how the basin conditions at the minimum thresholds of groundwater levels will avoid undesirable results for any other sustainability indicators, and if necessary, redefine minimum thresholds of groundwater levels in the North Yolo Management Area to more closely align with Colusa.	2027 Periodic Evaluation
2	Revise the SMC for degraded water quality			
2a	Revise the definition of undesirable results for degraded groundwater quality so that exceedances of minimum thresholds caused by groundwater extraction, whether the GSA has implemented projects or not, are considered in the assessment of undesirable results in the Subbasin.	3.5.1 pg. 292	YSGA plans to work with the technical team to revise the definition of undesirable results for degraded groundwater quality so that groundwater extractions and groundwater level minimum threshold exceedances because of a YSGA project or management action are considered in the assessment of the undesirable results. In addition, the definition will be revised to define the YSGAs role when degraded water quality exceedances are caused by groundwater extraction not related to a YSGA project or management action.	2027 Periodic Evaluation

Action	Description	GSP Section	Planned Approach to Address	Timeline for Revision
2a1	<i>Staff also recommend the GSA consider including a metric, such as an isocontour concentration map, in the minimum threshold to define the areas experiencing elevated concentration.</i>	3.5.2 pg. 294	The YSGA will take this recommendation under advisement.	
2a2	<i>The GSA should consider discussing the rationale for choosing the 50 percent minimum threshold exceedance in defining undesirable results.</i>	3.5.1 pg. 292	The YSGA will take this comment under advisement.	
2b	The GSA should revise the GSP to provide the rationale to support their approach that TDS is the only quality constituent that requires the establishment of sustainable management criteria. Alternatively, the GSP should establish sustainable management criteria for all the constituents of potential concern identified in the Basin that have the potential to cause undesirable results.	3.5 pg. 291	YSGA plans to work with the technical team to evaluate whether all the water quality constituents of potential concern within the Subbasin should be incorporated into the GSP and have sustainable management criteria established.	2027 Periodic Evaluation
3	Revise the SMC for land subsidence			
3a	Identify critical infrastructure susceptible to land subsidence and describe what constitutes significant and unreasonable effects that lead to undesirable results.	3.6.1 pg. 294	YSGA plans to work with the technical team to develop a plan for identifying critical infrastructure susceptible to land subsidence and describing what constitutes significant and unreasonable effects that lead to undesirable results. Additionally, the technical team will utilize the Subsidence BMP as guidance when addressing these revisions.	2027 Periodic Evaluation
3b	Revise the operational definition of undesirable results to consider localized instances of subsidence and how they would be determined to be significant and unreasonable. This should include describing how minimum thresholds being exceeded in multiple management areas or a quarter one of one management area does not constitute an undesirable result. Provide additional discussion and justification on the quantitative definition of undesirable results of subsidence:	3.6.1 pg. 294 3.6.2 pg. 299	YSGA plans to work with the technical team to revise the operational definition of undesirable results to consider localized instances of subsidence and the determination of what constitutes significant and unreasonable effects. Additionally, the technical team will document the appropriate quantitative definition of undesirable results of subsidence, and utilize the Subsidence BMP as guidance when addressing these revisions.	2027 Periodic Evaluation
3b1	<i>How the value of “25 percent of the management or sub-MA” mean was determined, and whether it means 25 percent of monitoring sites or 25 percent of area, and</i>	3.6.1.3 pg. 295		
3b2	<i>How to address local or regional undesirable results by requiring three (3) or more management areas or sub-MAs experiencing the minimum threshold exceedances.</i>	3.6.1 pg. 294		

Action	Description	GSP Section	Planned Approach to Address	Timeline for Revision
3c	Department staff note that setting the minimum threshold as the current rate of land subsidence that is occurring in the Subbasin does not meet the intent of SGMA to minimize or avoid subsidence. Department staff recommend the GSA include a cumulative metric for land subsidence that may lead to significant and unreasonable impacts occurring in the Subbasin and revise the minimum thresholds as appropriate. The GSA should also elaborate on how the proposed management will avoid or minimize the land subsidence that has been occurring and increasing in severity recently in the Subbasin.	3.6.1 pg. 294 3.6.2 pg. 299	YSGA plans to work with the technical team to re-evaluate the land subsidence minimum threshold to include a cumulative metric for evaluating when land subsidence may lead to significant and unreasonable impacts occurring in the Subbasin, and will elaborate on how proposed management will minimize land subsidence. Additionally, the technical team will utilize the Subsidence BMP as guidance when addressing these revisions.	2027 Periodic Evaluation
3d	Establish a minimum threshold for the Capay Valley MA.	3.6.2 pg. 299	YSGA plans to work with the technical team to consider establishing a land subsidence minimum threshold for the Capay Valley Management Area if appropriate. Additionally, the technical team will utilize the Subsidence BMP as guidance when addressing these revisions.	Future Periodic Evaluation when sufficient data exists
3e	Revise the measurable objective and interim milestones for land subsidence to a value that achieves the sustainability goal for the basin within 20 years of Plan implementation. Using the current rate of land subsidence as a minimum threshold or measurable objective is not appropriate and should be revised by the GSA.	3.6.3 pg. 299 3.6.4 pg. 299	YSGA plans to work with the technical team to revise the measurable objective and interim milestones for land subsidence. Additionally, the technical team will utilize the Subsidence BMP as guidance when addressing these revisions.	2027 Periodic Evaluation
4	Revise the SMC for interconnected surface water			
4a	Provide additional discussion and amend the definition of undesirable results. Explain the selection of the value of 50 percent of ISW monitoring wells exceeding the minimum threshold in two or more ISW management areas in the same reporting year. Specifically, the GSA should explain how local exceedances within just one management area are not considered an undesirable result.	3.8.1 pg. 301	YSGA plans to work with the technical team to amend the definition of undesirable results and explain the trigger of ISW monitoring wells exceeding the minimum threshold to result in the undesirable results, or will define an approach to fully address this recommended corrective action by the 2032 periodic evaluation. Additionally, the technical team will utilize the ISW guidance papers when addressing these revisions.	2027 Periodic Evaluation
4b	Identify specific beneficial users and uses of interconnected surface water for each reach and describe specifically what constitutes significant and unreasonable effects of depletion of interconnected surface water and use this information to potentially revise the sustainable management criteria.	3.8.1 pg. 301	YSGA plans to work with the technical team to identify specific beneficial users and uses of ISW for each reach and will describe specifically what constitutes significant and unreasonable effects of depletion of ISW, or will define an approach to fully address this recommended corrective action by the 2032 periodic evaluation. Additionally, the technical team will utilize the ISW guidance papers when addressing these revisions.	2027 Periodic Evaluation

Action	Description	GSP Section	Planned Approach to Address	Timeline for Revision
4c	Consider utilizing the interconnected surface water guidance, as appropriate, when issued by the Department to establish quantifiable minimum thresholds, measurable objectives, and management actions.	3.8	YSGA technical team will utilize the ISW guidance papers when addressing these revisions.	2027 Periodic Evaluation
4d	Continue to fill data gaps, collect additional monitoring data, and implement the current strategy to manage depletions of interconnected surface water and define segments of interconnectivity and timing.	3.8	YSGA plans to continue to fill data gaps, collect additional monitoring data, and implement the current strategy to manage depletions of ISW and define segments of interconnectivity and timing.	Ongoing
4e	Prioritize collaborating and coordinating with local, state, and federal regulatory agencies as well as interested parties to better understand the full suite of beneficial uses and users that may be impacted by pumping induced surface water depletion within the GSA's jurisdictional area.	3.8	YSGA will continue to prioritize collaboration and coordination with local, state, and federal regulatory agencies as well as interested parties to better understand all beneficial uses and users that may be impacted by pumping-induced surface water depletion within the Yolo Subbasin.	Ongoing
5	Revise the monitoring network			
5a	Define the monitoring site type and data collection frequency in tabular format for the degraded water quality monitoring network in the GSP.	4.6.1 & 4.6.2 pg. 317-322. Table 4-3 pg. 321	YSGA staff will provide monitoring site type and data collection frequency in tabular format for the degraded water quality monitoring network in the GSP.	2027 Periodic Evaluation
5b	Conduct a reconciliation between the details of the monitoring network provided in the GSP with the requirements of the data and reporting standards in the GSP Regulations. Where requirements of the data and reporting standards are not provided, the GSA should include this information in the periodic update of the GSP. Also, updates to the monitoring network must be reflected in the SGMA Portal's Monitoring Network Module.	Section 4 pgs. 307-344	Where requirements of the data and reporting standards are not provided, YSGA will include this information in the periodic evaluation of the GSP.	2027 Periodic Evaluation
	Misc. Corrections			
Misc1	Correct the Subbasin land use percentages to add up to 100%. Currently states "60% agriculture, 31% vegetation, 6% managed wetlands, and 5% urban and incorporated land use areas" which adds up to 102%, due to rounding errors.	1.5.2 pg. 63	YSGA will correct this error in the periodic evaluation of the GSP.	2027 Periodic Evaluation
Misc2	Correct the number of wells uploaded to SGMA Portal (59) to the correct number of representative wells (62). Make sure all of them are identified as representative monitoring points, as only 54 are identified as representative monitoring points currently.	Fix in SGMA Portal	YSGA will coordinate with Department staff to clarify the discrepancy.	Immediate
Misc3	Regarding the domestic well mitigation program, Department staff recommend the GSAs utilize the Department's Drinking Water Guidance as appropriate and provide updates to the GSP about the progress of this program during GSP implementation.	Table 5-1 pg. 350	YSGA will utilize this guidance in development of the domestic well mitigation program.	Immediate, ongoing

3.1.4 Upcoming in Water Year 2025

In the upcoming Water Year 2025, the YSGA will continue to work with project proponents to implement the SGMA Implementation Grant Funding projects and to expand groundwater recharge opportunities. Additionally, the YSGA will be working to address the corrective actions requested by DWR in the GSP approval letter.

Lessons learned from the YSGA’s updated well permitting review process will provide additional guidance and direction on how to initiate appropriate demand management strategies, if appropriate, within the YSGA’s authority. The YSGA will also begin a fee study to prepare a sustainable revenue structure to ensure long-term implementation of the GSP and critical projects and management actions.

The YSGA will continue to work to establish Advisory Committees for each of the six Management Areas. These Management Area Advisory Committees will review groundwater conditions biannually and recommend projects and management actions for the YSGA’s Board’s consideration to ensure local response to changing conditions.

3.2 MONITORING NETWORK REVISIONS

3.2.1 Additional Monitoring Sites

Over the course of the Water Year 2024, 18 monitoring sites were added to the Yolo Subbasin monitoring network. This includes five real-time sites and 13 sites that will be measured seasonally in spring and fall of each year. Ten of these sites were added by digitizing historical records provided by Dunnigan Water District. Three sites are multi-completion wells constructed with DWR’s technical assistance.

The added sites are summarized in Table 2. Current data for all monitoring wells, including those listed above, is available on the YSGA’s groundwater mapping site⁵ and stored in the Yolo County Water Resources Information Database (WRID)⁶. Data will also be made available to DWR via the CASGEM portal⁷. As additional data is collected at these sites, representative monitoring wells will be chosen from these locations in data gaps and areas of concern.

TABLE 2: ADDITIONAL MONITORING SITES

State Well Number	Monitoring Type	Management Area	Latitude	Longitude	Monitoring Start Date
12N01W10L500M	Real-time	North Yolo	38.902525	-121.964639	4/14/2009
12N01W08K500M	Spring/Fall	North Yolo	38.900032	-121.9946	3/1/2014
12N01W17G500M	Spring/Fall	North Yolo	38.890688	-121.9963	1/29/2015
12N01W16M500M	Real-time	North Yolo	38.8862883	-121.989413	3/1/2009
12N01W21R500M	Spring/Fall	North Yolo	38.867226	-121.970817	3/1/2015
12N01W15A500M	Spring/Fall	North Yolo	38.893888	-121.9569	11/12/2009
12N01W14D500M	Spring/Fall	North Yolo	38.896265	-121.951917	11/12/2009
12N01W23C500M	Spring/Fall	North Yolo	38.881566	-121.9466	11/12/2009
12N01W26N500M	Real-time	North Yolo	38.854761	-121.9487	9/1/2014
12N01W35K500M	Spring/Fall	North Yolo	38.845498	-121.938237	11/18/2022
10N01E10M500M	Spring/Fall	Dunnigan Hills	38.726887	-121.856719	11/3/2023

⁵ <https://sgma.yologroundwater.org>

⁶ <https://wrid.facilitiesmap.com>

⁷ <https://casgem.water.ca.gov>

State Well Number	Monitoring Type	Management Area	Latitude	Longitude	Monitoring Start Date
10N01E06C500M	Spring/Fall	Dunnigan Hills	38.748239	-121.908516	6/7/2024
11N01W36F500M	Spring/Fall	Dunnigan Hills	38.759175	-121.925252	6/7/2024
08N02E05A500M	Spring/Fall	Central Yolo	38.574534	-121.770502	8/1/2021
08N01E02C500M	Spring/Fall	Central Yolo	38.572445	-121.835492	3/20/2024
09N01W30Q500M	Spring/Fall	Central Yolo	38.591515	-122.016975	2/19/2015
08N01W19N501M	Real-time	Central Yolo	38.519658	-122.020576	3/7/2024
11N02W36P500M	Real-time	Central Yolo	38.75276	-122.035216	7/24/2024

4. MONITORING AND CONDITIONS ASSESSMENT

4.1 HYDROLOGIC CONDITIONS

Figure 2 shows annual precipitation in the Yolo Subbasin along with the cumulative deviation from the 1901-2000 mean (CDFM) precipitation beginning in 1971. The Yolo Subbasin has experienced several prolonged drought periods in the past 50 years, notably 1976-1977, 1987-1992, 2011-2016, and 2020-2022. However, the CDFM trends above the 1901-2000 mean over this period, having been heavily influenced by the continually wet years of 1995-2000. Since 2000, the deviation has been influenced by prolonged droughts and recovered in very wet years such as 2017, 2019, and 2023, leading to relatively little change in the CDFM in the 21st century.

Table 3 provides a summary of Water Years 2020 to 2024 describing Water Year type, annual precipitation values, and observed changes in groundwater levels. Two critical years (2021-2022) following a dry year (2020) resulted in declining groundwater levels as observed in the Yolo Subbasin average hydrograph (Figure 3). The dry and critical conditions of 2020, 2021, and 2022 led to 4 feet, 13 feet, and 5 feet of groundwater decline, consecutively. Wet conditions in Water Year 2023 contributed to significant groundwater level recovery (approximately 16 feet). In Water Year 2024, above normal rainfall maintained stable groundwater levels with little change from Fall 2023.

FIGURE 2: YOLO SUBBASIN ANNUAL PRECIPITATION

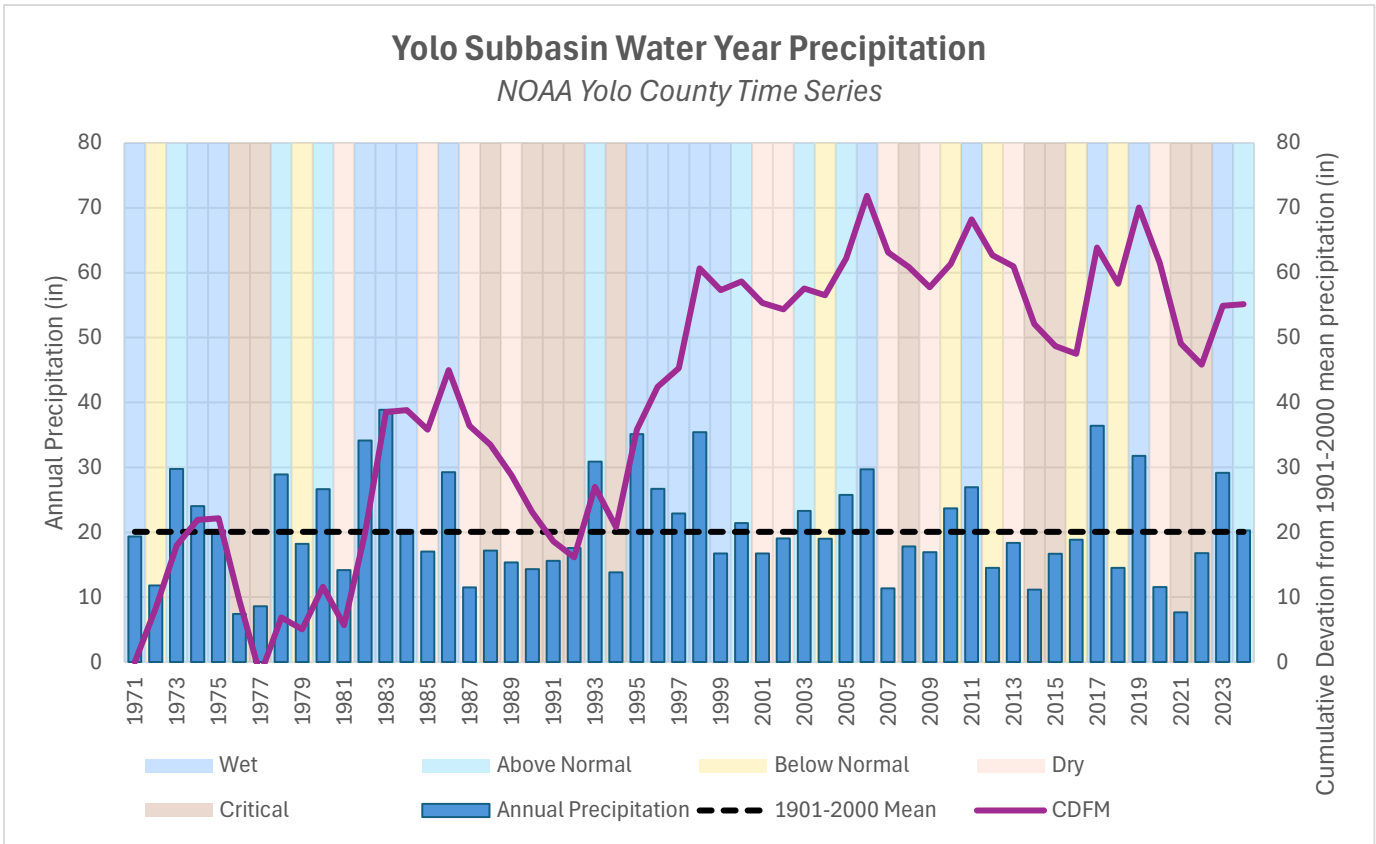


TABLE 3: HYDROLOGIC CONDITIONS

Water Year	Sacramento River Index ⁸	Sac Valley Water Year Type	Yolo Subbasin Precipitation ⁹	Percent of Yolo County Average ¹⁰	Annual Groundwater Change (Fall to Fall)
2020	6.0	Dry	11.53"	57%	-4 ft
2021	3.8	Critical	7.64"	38%	-13 ft
2022	4.6	Critical	16.79"	83%	-5 ft
2023	9.3	Wet	29.15"	145%	+16 ft
2024	8.4	Above Normal	20.30"	101%	+1 ft

⁸ <http://cdec.water.ca.gov/reportapp/javareports?name=WSI>

⁹ October-September 12-month County Time Series data: <https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/county/time-series>

¹⁰ 20.06" based on 1901-2000 NOAA Base Period: <https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance>

4.2 GROUNDWATER ELEVATIONS AND STORAGE

Figure 3 displays the historical average depth to water in the representative monitoring network for Water Year 2024, which includes 62 Representative Monitoring Wells (RMWs). This historical average depth to water hydrograph covers Spring 1975 to Fall 2024. A dry Water Year 2020 prevented recovery of groundwater levels and stunted the 2020 irrigation season. Critical conditions in Water Years 2021 and 2022 led to very limited spring recovery and resulted in seasonal drawdowns of 18 feet and 17 feet, respectively. With wet hydrologic conditions, Water Year 2023 provided significant recovery in groundwater levels. In Water Year 2024, above normal precipitation provided significant spring recovery in water levels. However, the 2024 irrigation season saw more groundwater use than 2023, ending the water year at approximately the same water level as Fall 2023.

Figure 4 and Figure 5 display the seasonal high and low groundwater elevation contours for Water Year 2024. In addition, the individual hydrograph for each RMW can be found in Attachment A.

FIGURE 3: YOLO SUBBASIN AVERAGE DEPTH TO WATER (FALL 1975 TO FALL 2024)

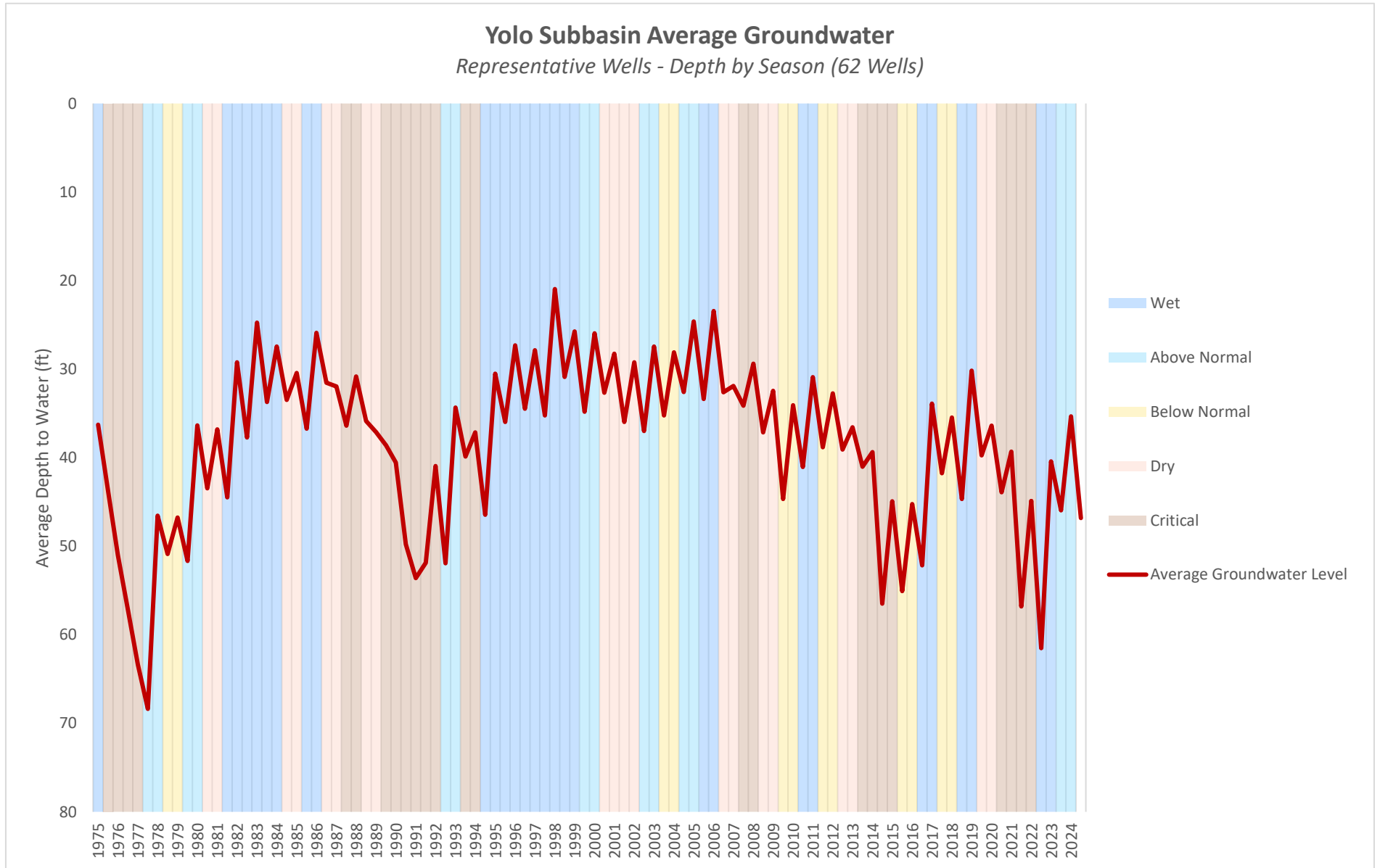


FIGURE 4: GROUNDWATER ELEVATION CONTOUR – SPRING 2024

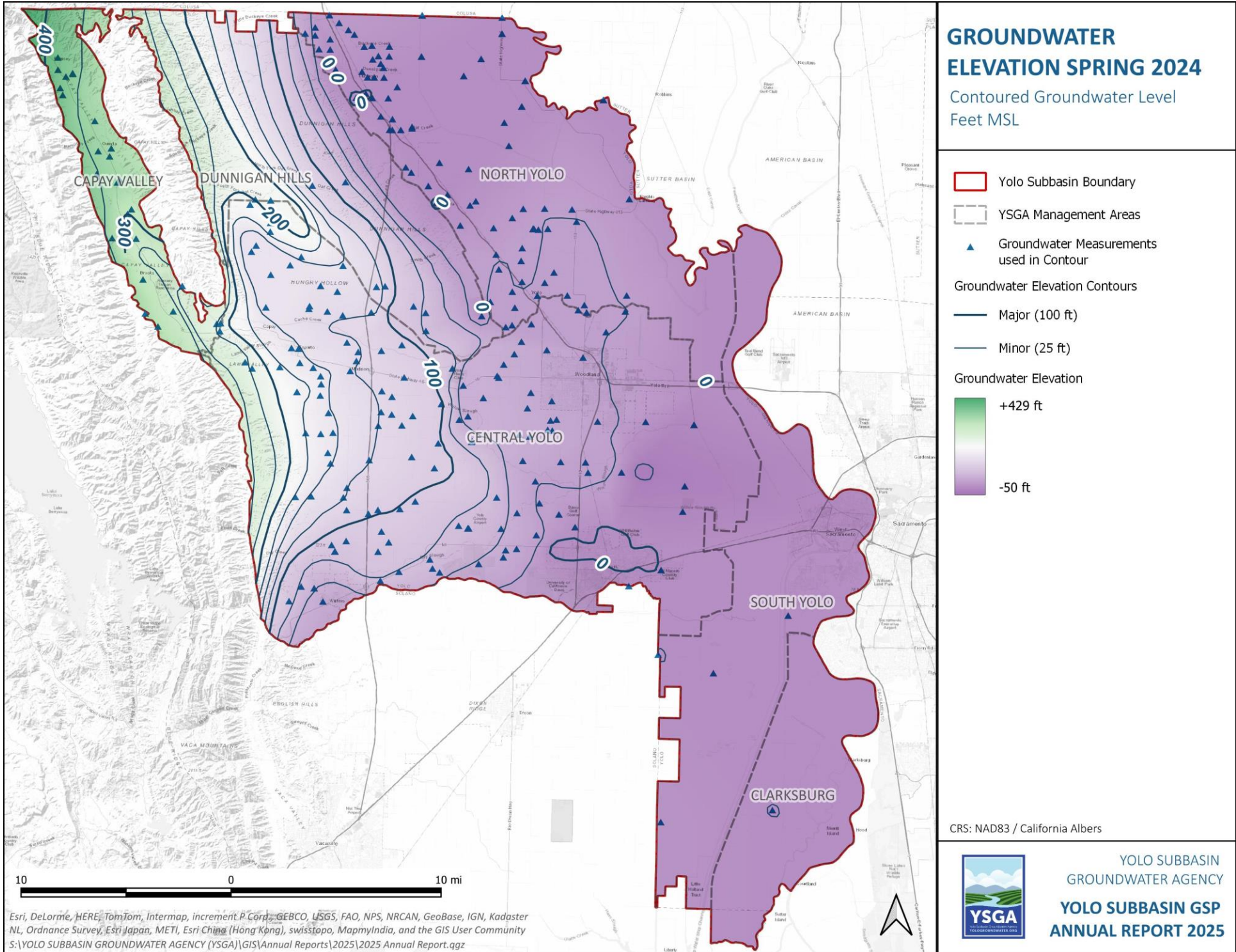


FIGURE 5: GROUNDWATER ELEVATION CONTOUR – FALL 2024

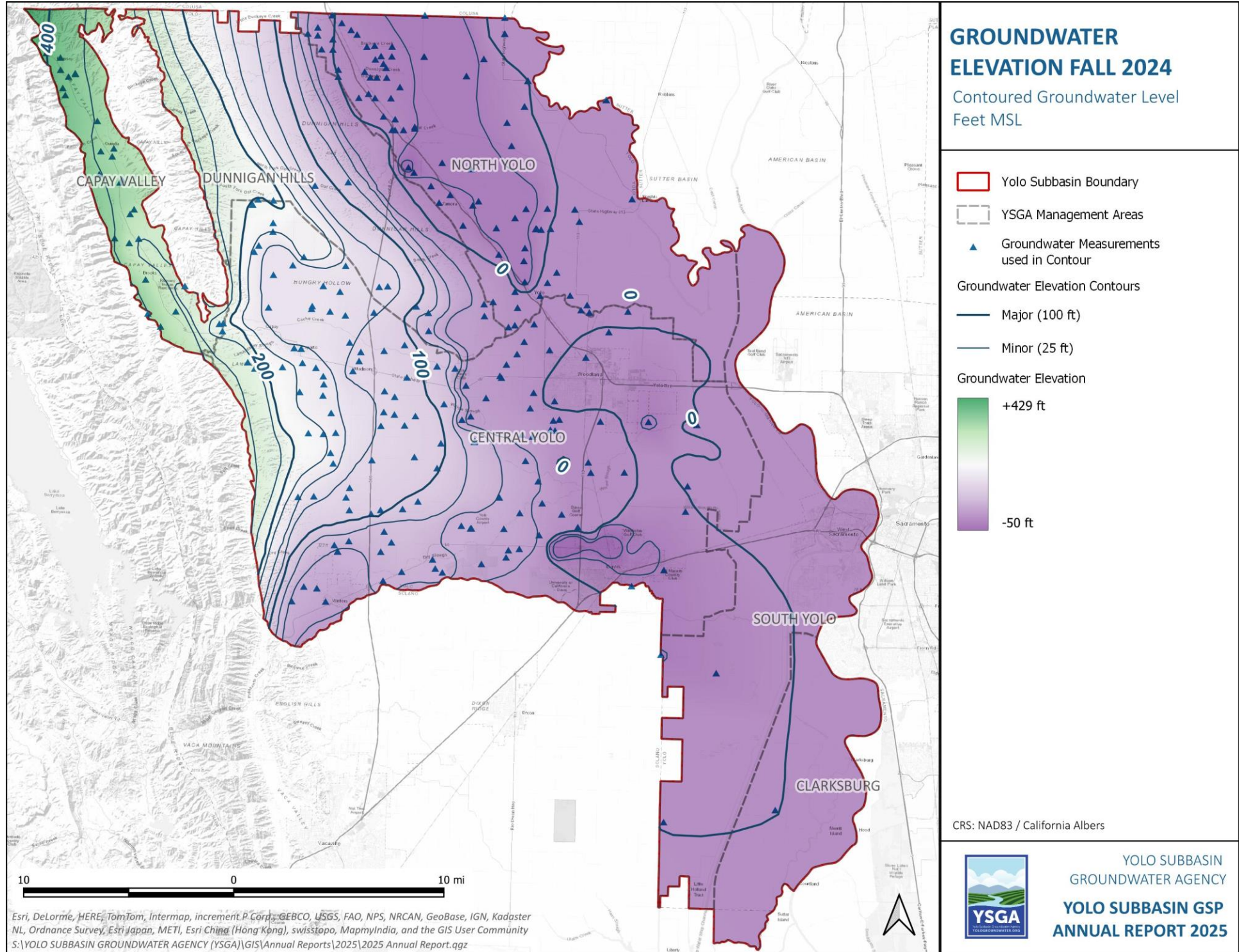


Table 5 through Table 9 show spring and fall groundwater elevation values in the RMWs for each Management Area and a comparison to the sustainable management criteria values as established in the Yolo Subbasin GSP. These RMWs, and the sustainable management criteria assigned to them, represent both the groundwater levels and groundwater storage sustainability indicators. The sustainable management criteria for groundwater elevation and storage are outlined in Table 4. No basin-wide undesirable results occurred during the 2024 Water Year according to these criteria.

Fall measurements in which the groundwater elevation fell below the minimum threshold value are highlighted in orange. One RMW exceeded the minimum threshold in Water Year 2024. Figure 6 provides a map of the water level in representative wells relative to the minimum threshold.

The last two columns in Table 5 through Table 9 provide the five-year (2020-2024) fall average groundwater elevation, and the difference in feet between the measurable objective value and the five-year average. Due to the recent historic drought, 5-year running average groundwater level values at most RMWs outside of the Capay Valley Management Area are currently below the measurable objective. However, fall measurements in 2023 and 2024 show that many wells recovered close to or above the measurable objective value, due to more favorable hydrologic conditions. The individual hydrograph of each of these RMWs is provided in Attachment A.

Groundwater levels in the Capay Valley continue to display significant recovery and stabilization from the 2020-22 drought, with levels largely returning to normal and equal to or above the measurable objective. Clarksburg groundwater levels were largely unaffected by the drought and remain shallow as normal. In South Yolo, the western area along the County line has not displayed the recovery seen in the rest of the Management Area. Groundwater levels in North Yolo generally recovered to normal levels close to or above the measurable objective, except in the northwestern portion of the area near Dunnigan where some wells are showing a longer-term negative trend (RMWs 178, 431, and 411). In Central Yolo, groundwater levels made a significant recovery; most RMWs recovered to normal or slightly below normal levels and are approaching the measurable objectives. However, areas around Winters and along the western edge of the Management Area lacked the same recovery and some wells are showing a longer-term negative trend. The fall groundwater level in Well 279 remained below the minimum threshold this year, making it the only RMW still exceeding the minimum threshold after the 2020-22 drought period. Well 260 in the Dunnigan Hills Management Area is no longer exceeding the minimum threshold as of this fall.

During Water Year 2024, no significant impacts such as groundwater dependent ecosystem health issues, dry wells, or emergency water shortages occurred.

While observed impacts and minimum threshold exceedances in Water Year 2024 were limited, the YSGA is still committed to ensuring groundwater sustainability and addressing the identified long-term water level declines in some monitoring wells. Groundwater recharge efforts in Central Yolo Management Area continued, and recharge expanded in the North Yolo Management Area. The YSGA also finalized the policy framework for delineation of “Focus Areas” where groundwater level declines and stakeholder concerns are identified. Section 3.1.1 of this report provides more detail on these efforts.

TABLE 4: CHRONIC LOWERING OF GROUNDWATER LEVELS SUSTAINABLE MANAGEMENT CRITERIA

Undesirable Result Description	Undesirable Result Criteria	Management Area	Minimum Thresholds	Measurable Objectives	Interim Milestones
The point at which significant and unreasonable impacts over the planning and implementation horizon, as determined by depth or elevation of groundwater, affect the reasonable beneficial use of, and access to, groundwater by overlying users.	Occurs when the MT criteria is exceeded in 51% or more of representative monitoring wells in two MAs.	Capay Valley	A well violates the minimum threshold when the groundwater elevation exceeds the historic (pre-2016) minimum elevation in the period of record of each Representative Well in two consecutive fall measurements.	Measurable objective is equal to the average fall (Sep.-Dec.) groundwater elevation for the Water Year period of 2000 to 2011 at each Representative Well. Performance of the measurable objective will be measured as the five (5) year running average of the minimum fall (Sep.-Dec.) groundwater elevation.	Interim milestones for the Chronic Lowering of Groundwater Levels are set equal to measurable objectives.
		Dunnigan Hills			
		Central Yolo			
		South Yolo			
		North Yolo	A well violates the minimum threshold when the groundwater elevation exceeds the historic minimum elevation in the period of record (pre-2016) of each Representative Well plus 20 percent of the depth between the historic maximum and historic minimum elevation for the period of record (pre-2016) of the Representative Well in two consecutive fall measurements.		
		Clarksburg	No minimum threshold has been established for the Clarksburg MA due to the lack of groundwater usage in the MA.	No minimum threshold has been established for the Clarksburg MA due to the lack of groundwater usage in the MA.	n/a

**Groundwater elevations are used as a proxy for the reduction of groundwater storage sustainability indicator. The definition of undesirable results, minimum thresholds, measurable objectives, and interim milestones for the reduction of groundwater storage are based on and identical to those of the chronic lowering of groundwater levels sustainability indicator.*

TABLE 5: CAPAY VALLEY REPRESENTATIVE MONITORING WELL GROUNDWATER ELEVATIONS

State Well Number	Representative Well Number	Measurable Objective	Minimum Threshold	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Fall 2023	Spring 2024	Fall 2024	5 yr Fall Average	Distance to Measurable Objective
<i>DWR assigned well number</i>	<i>YSGA GSP Well Number</i>	<i>Groundwater Elevation</i>		<i>Groundwater Elevation, ft. MSL *** represents no measurement. The 2020-24 average will be calculated excluding missing measurements.</i>										<i>Fall 2020-Fall 2024</i>	<i>5-year average minus MO</i>
10N02W16R001M	276	215.0	207.7	216.2	214.6	214.2	211.2	215.2	209.9	218.1	218.3	217.6	217.8	214.3	-0.7
10N02W18F001M	277	315.6	304.2	317.8	325.9	314.8	311.2	314.8	312.2	322.2	317.9	320.3	316.8	316.8	1.2
10N03W02R002M	280	319.5	308.2	316.7	313.3	313.4	309.3	312.5	310.2	321.9	314.1	325.4	316.5	312.7	-6.8
11N03W09Q001M	285	383.7	355.8	389.3	382.3	381.6	377.6	387.4	382.4	393.9	385.2	393.5	385.3	382.6	-1.1
11N03W23L001M	287	296.0	287.6	298.7	298.2	***	285.9	298.6	286.0	301.6	***	301.9	298.6	292.2	-3.9
11N03W23N001M	288	287.3	271.0	297.5	294.5	289.3	284.4	297.4	286.7	301.3	290.3	301.0	290.9	289.4	2.1
11N03W33F001M	289	351.1	341.2	352.0	351.3	351.2	344.4	351.4	345.8	356.4	352.5	358.3	352.2	349.3	-1.8
12N03W20D001M	293	382.8	376.4	383.6	382.0	382.4	380.0	383.6	378.0	386.8	381.2	387.3	383.4	380.9	-1.9
11N03W35D003M	415	280.7	273.0	284.1	281.2	283.1	275.9	286.1	278.1	292.5	286.9	297.5	285.7	281.5	0.9
10N03W24B002M	416	324.8	281.1	339.6	327.2	326.6	310.4	305.2	303.1	298.0	340.7	340.1	335.9	323.5	-1.3

TABLE 6: NORTH YOLO REPRESENTATIVE MONITORING WELL GROUNDWATER ELEVATIONS

State Well Number	Representative Well Number	Measurable Objective	Minimum Threshold	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Fall 2023	Spring 2024	Fall 2024	5 yr Fall Average	Distance to Measurable Objective
<i>DWR assigned well number</i>	<i>YSGA GSP Well Number</i>	<i>Groundwater Elevation</i>		<i>Groundwater Elevation, ft. MSL *** represents no measurement. The 2020-24 average will be calculated excluding missing measurements.</i>										<i>Fall 2020-Fall 2024</i>	<i>5-year average minus MO</i>
11N01E02D001M	127	-13.3	-88.3	7.6	-27.2	5.6	-37.1	0.5	-33.1	10.4	-10.9	-3.0	-26.0	-26.9	-13.5
11N01E16P001M	128	-33.1	-129.8	17.3	-25.9	10.5	-58.5	-8.0	-86.9	15.7	-56.3	19.8	-65.5	-58.6	-25.5
12N01E03R002M	129	9.1	-44.3	19.2	-9.0	15.3	-32.8	16.3	-2.9	20.9	12.5	22.9	12.6	-3.9	-13.1
12N01E26A002M	131	-4.2	-46.1	13.0	-12.5	5.6	-29.7	3.3	-8.6	12.8	-0.7	8.5	-8.9	-12.1	-7.9
10N03E33B011M	153	3.8	-73.3	14.2	3.1	11.3	1.7	10.8	-23.4	18.0	-11.2	***	***	-7.5	-11.3
12N01W14M001M	178	10.5	-30.9	10.8	-14.9	-5.9	-29.5	-33.7	-28.5	8.8	-10.4	13.4	-10.7	-18.8	-29.3
12N01W26L002M	431	13.1	-43.8	6.0	-16.3	-9.2	-35.3	-17.3	-41.7	-4.6	-16.4	3.3	-16.3	-25.2	-38.3
10N01E02Q002M	251	32.1	-32.6	32.6	17.6	22.5	***	***	-6.4	29.1	21.4	38.2	14.4	11.7	-20.4
10N02E06B001M	405	26.0	-85.7	29.6	23.6	25.0	-8.1	15.6	1.7	23.9	20.5	27.9	24.1	12.3	-13.7
12N01W05B001M	411	49.5	-25.3	25.6	15.5	16.5	4.4	8.6	***	11.1	8.9	18.8	14.9	10.9	-38.6
10N02E09N001M	410	12.9	-63.7	28.0	17.1	23.2	-3.4	15.7	-11.3	25.6	16.2	32.8	15.4	6.8	-6.1
10N02E03R002M	420	12.2	-39.2	22.3	***	15.7	***	4.4	-36.7	22.0	5.4	28.1	-10.3	-13.9	-26.1
11N02E20K004M	421	28.8	-31.6	32.9	26.8	29.1	20.9	24.4	17.1	28.9	23.3	51.3	26.9	23.0	-5.8

TABLE 7: CENTRAL YOLO REPRESENTATIVE MONITORING WELL GROUNDWATER ELEVATIONS

State Well Number	Representative Well Number	Measurable Objective	Minimum Threshold	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Fall 2023	Spring 2024	Fall 2024	5 yr Fall Average	Distance to Measurable Objective
<i>DWR assigned well number</i>	<i>YSGA GSP Well Number</i>	<i>Groundwater Elevation</i>		<i>Groundwater Elevation, ft. MSL</i>										<i>Fall 2020- Fall 2024</i>	<i>5-year average minus MO</i>
<i>*** represents no measurement. The 2020-24 average will be calculated excluding missing measurements.</i>															
08N02E15A002M	114	-25.1	-61.3	16.8	-9.6	10.0	-28.6	-15.8	-31.2	11.8	-31.2	12.4	-27.6	-25.6	-0.5
08N03E07N001M	132	-22.0	-78.0	***	***	***	-28.9	-7.5	-32.3	7.1	0.0	0.0	0.0	-15.3	6.7
09N03E33B002M	151	4.7	-35.3	15.0	-2.1	12.9	-4.2	11.4	-9.3	9.2	-4.0	12.9	-2.4	-4.4	-9.2
08N02E18M002M	170	20.4	1.5	***	20.9	22.5	8.9	14.1	5.5	15.4	9.6	17.8	10.0	11.0	-9.4
08N01E07R001M	220	82.3	16.5	72.2	***	65.1	46.5	59.6	42.5	67.4	53.5	72.6	57.5	50.0	-32.2
08N01W09C001M	222	110.9	40.3	82.6	85.4	88.6	69.0	73.9	51.9	68.0	67.7	79.6	77.4	70.3	-40.6
08N01W13G003M	224	80.0	47.8	77.8	71.8	73.3	58.8	61.4	53.3	68.7	69.0	70.1	68.7	64.3	-15.7
08N01W20R005M	229	72.8	36.4	72.0	45.0	59.6	31.2	47.2	26.1	48.0	40.4	56.0	40.9	36.7	-36.1
10N01E34A003M	430	27.6	-47.4	35.5	18.6	25.9	***	11.1	***	***	9.4	32.9	11.8	13.3	-14.4
09N01E07D001M	231	111.1	68.3	104.5	99.2	97.2	76.5	93.0	75.7	96.5	99.5	105.6	101.4	90.5	-20.6
09N01E20E001M	233	104.8	67.1	105.0	105.7	98.9	91.7	94.7	85.7	99.6	104.4	107.0	103.8	98.3	-6.5
09N01E24D001M	234	52.2	7.6	47.3	45.3	40.7	29.1	36.4	27.4	43.4	38.7	43.7	42.4	36.6	-15.6
09N01E31D001M	235	104.6	68.3	100.7	101.8	92.6	70.9	79.0	64.8	84.3	91.5	94.2	92.9	84.4	-20.3
09N01W08Q001M	239	185.1	152.2	178.3	184.5	174.9	172.9	168.9	161.1	166.7	181.7	185.7	181.3	176.3	-8.8
09N01W21E001M	240	163.4	144.7	165.1	162.4	159.4	149.5	150.3	141.9	147.0	152.1	156.9	156.4	152.5	-10.9
09N02E07L001M	246	24.7	-45.4	28.2	***	23.4	-19.6	10.2	-26.8	20.4	5.0	26.8	-2.3	-10.9	-35.6
09N02E32M001M	248	29.1	-7.0	32.7	21.6	27.2	-2.7	18.4	-18.1	24.4	6.2	22.7	6.0	2.6	-26.5
09N03E19R002M	250	6.7	-14.1	15.0	-0.6	12.9	-6.0	12.7	9.8	16.2	-3.7	16.0	13.3	2.6	-4.2
10N01E23Q002M	254	26.8	-43.0	37.7	23.0	29.6	-12.2	16.0	-25.0	25.6	18.1	37.5	19.4	4.7	-22.2
10N01E29K001M	256	77.8	58.4	80.8	80.2	79.5	77.2	79.4	77.5	83.2	81.5	82.4	79.5	79.1	1.3
10N01W08B001M	261	139.5	73.3	140.5	137.3	135.7	106.9	123.3	90.4	124.3	126.7	137.3	133.7	119.0	-20.6
10N01W21J001M	265	127.5	90.9	131.2	129.7	129.3	115.4	124.4	106.1	126.9	125.9	133.8	127.3	120.9	-6.7
10N01W32E001M	268	169.9	144.5	167.1	168.6	164.1	152.0	158.2	146.8	159.5	166.6	169.6	166.7	160.1	-9.8
10N01W35Q001M	269	120.5	93.0	116.2	123.3	110.0	104.8	113.4	98.8	117.1	120.6	125.0	118.3	113.1	-7.4
10N02W14A001M	275	137.8	91.1	138.8	137.2	134.1	104.8	125.4	91.3	128.6	129.7	141.8	135.6	119.8	-18.0
10N02W26P001M	279	241.7	212.7	221.4	211.2	***	***	207.7	207.0	208.5	***	208.0	209.8	209.3	-32.5
10N02E29A001M	406	35.7	9.9	37.4	***	***	***	26.5	23.7	26.9	26.6	30.4	30.0	26.7	-9.0
09N02E22H002M	400	22.9	-24.8	28.4	23.3	24.2	14.0	14.3	13.2	25.0	22.0	20.0	24.0	19.3	-3.6
10N02E36E001M	401	22.1	9.0	25.8	19.6	23.6	14.1	22.0	9.4	24.4	15.3	24.7	14.7	14.6	-7.5
09N01E26N001M	403	71.7	32.2	64.8	61.0	58.7	46.3	46.6	35.4	***	48.0	54.3	52.7	48.6	-23.1
09N01W23D001M	404	135.8	82.9	122.1	122.8	121.6	67.9	113.2	39.5	123.7	117.9	131.9	119.5	93.6	-42.3
08N01W22G500M	419	71.9	6.5	78.5	47.5	62.5	16.5	41.5	9.5	50.5	***	60.5	41.5	28.7	-43.2

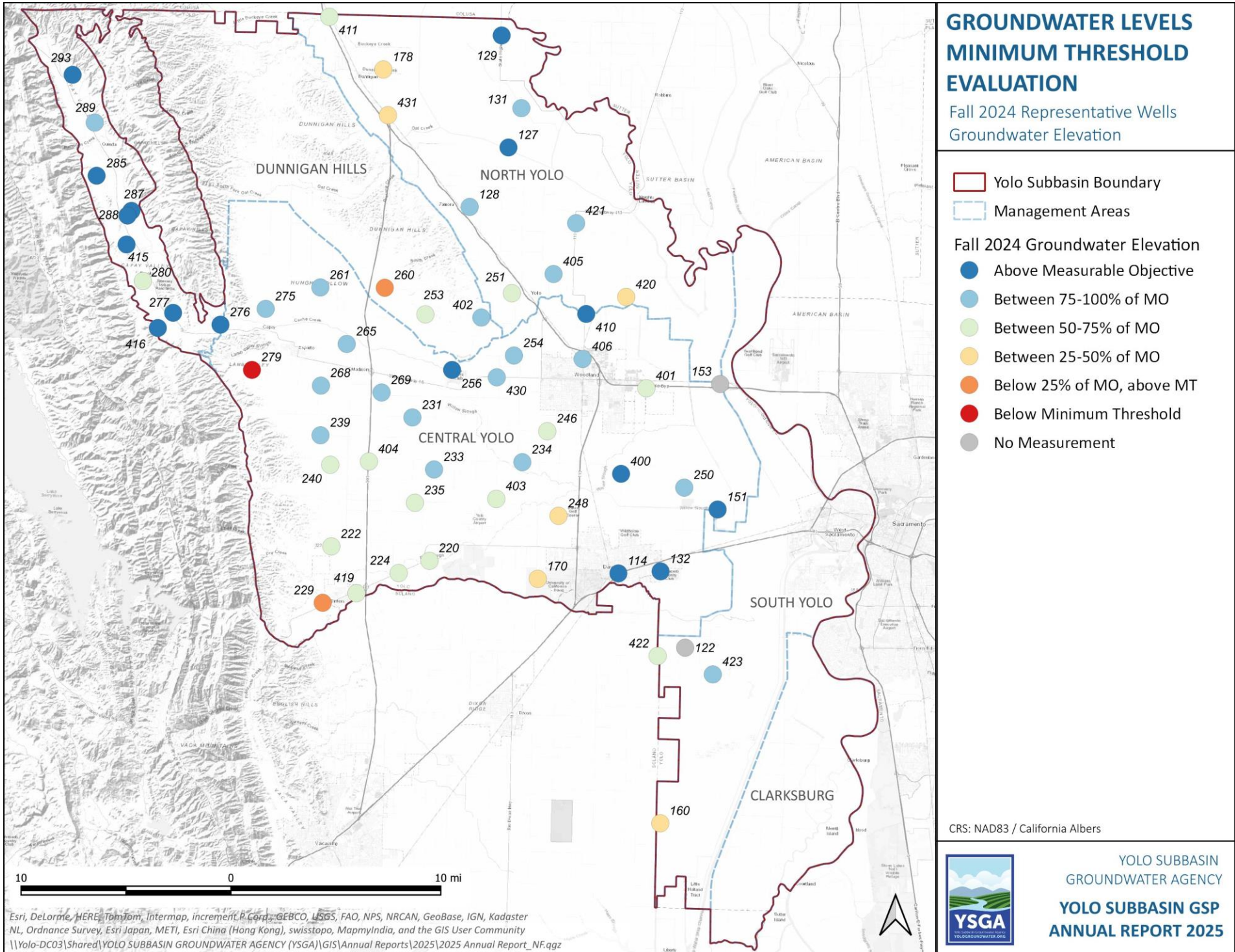
TABLE 8: SOUTH YOLO REPRESENTATIVE MONITORING WELL GROUNDWATER ELEVATIONS

State Well Number	Representative Well Number	Measurable Objective	Minimum Threshold	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Fall 2023	Spring 2024	Fall 2024	5 yr Fall Average	Distance to Measurable Objective
<i>DWR assigned well number</i>	<i>YSGA GSP Well Number</i>	<i>Groundwater Elevation</i>	<i>Groundwater Elevation</i>	<i>Groundwater Elevation, ft. MSL *** represents no measurement. The 2020-24 average will be calculated excluding missing measurements.</i>										<i>Fall 2020-Fall 2024</i>	<i>5-year average minus MO</i>
08N03E32L001M	122	-1.9	-71.8	8.8	-18.4	2.9	-31.1	-0.6	***	***	***	***	***	-24.7	-22.8
06N03E07M001M	160	9.9	-10.8	12.2	-5.4	***	-7.0	4.7	-7.9	5.6	-6.4	12.7	-6.8	-6.7	-16.6
08N03E31N001M	422	-7.0	-49.3	2.9	-20.8	***	-34.2	-12.1	-40.3	0.8	-28.1	-4.6	-25.6	-29.8	-22.7
07N03E04Q001M	423	0.5	-27.1	7.7	***	***	-7.7	7.4	-6.0	13.4	-14.4	12.6	-4.7	-8.2	-8.7

TABLE 9: DUNNIGAN HILLS REPRESENTATIVE MONITORING WELL GROUNDWATER ELEVATIONS

State Well Number	Representative Well Number	Measurable Objective	Minimum Threshold	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Fall 2023	Spring 2024	Fall 2024	5 yr Fall Average	Distance to Measurable Objective
<i>DWR assigned well number</i>	<i>YSGA GSP Well Number</i>	<i>Groundwater Elevation</i>	<i>Groundwater Elevation</i>	<i>Groundwater Elevation, ft. MSL *** represents no measurement. The 2020-24 average will be calculated excluding missing measurements.</i>										<i>Fall 2020-Fall 2024</i>	<i>5-year average minus MO</i>
10N01E18C001M	253	143.1	132.8	137.5	138.5	135.4	134.5	133.8	132.9	138.2	138.1	137.4	138.3	136.5	-6.6
10N01W02Q001M	260	128.3	73.6	91.0	79.8	78.4	46.2	71.6	46.1	73.2	73.0	80.8	76.0	64.2	-64.1
10N01E15D001M	402	17.5	-69.6	17.7	-2.3	7.4	-23.6	-9.6	-26.6	-7.0	-8.6	8.2	0.7	-12.1	-29.6

FIGURE 6: GROUNDWATER LEVELS MINIMUM THRESHOLD EVALUATION



4.3 GROUNDWATER QUALITY

Table 10 provides the sustainable management criteria for the water quality indicator as described in the Yolo Subbasin GSP. Groundwater quality data for arsenic, boron, hexavalent chromium, nitrate, and total dissolved solids (TDS) are summarized in Table 11, and Figure 7 through 11 below. Each figure visualizes measured values for each constituent in 2024. Groundwater quality measurements were aggregated from the SWRCB’s Groundwater Ambient Monitoring and Assessment Program (GAMA) dataset¹¹.

YSGA plans to work with the technical team to revise the definition of undesirable results for degraded groundwater quality so that groundwater extractions and groundwater level minimum threshold exceedances are considered in the assessment of the undesirable results. Additionally, the YSGA will work with the technical team to evaluate whether all the water quality constituents of potential concern within the Subbasin should be incorporated into the GSP and have sustainable management criteria established.

TABLE 10: GROUNDWATER QUALITY SUSTAINABLE MANAGEMENT CRITERIA

Undesirable Result	Undesirable Result Criteria	Minimum Thresholds	Measurable Objectives	Interim Milestones
The point at which water quality is degraded to the extent of causing significant and unreasonable impacts from groundwater management actions in the Yolo Subbasin, that affect the reasonable and beneficial use of, and access to, groundwater by overlying users.	An undesirable result occurs when the minimum threshold criteria is exceeded in 50 percent or more of representative monitoring wells monitored for total dissolved solids.	A representative monitoring well violates the minimum threshold when the total dissolved solids concentration exceeds 1,000 ppm over a three (3) year rolling average.	A representative monitoring well violates the measurable objective when the total dissolved solids concentration exceeds 750 ppm over a three (3) year rolling average.	Interim milestones for the Degraded Water Quality are set equal to measurable objectives.

TABLE 11: WATER QUALITY EVALUATION

Constituent	Minimum Threshold	MCL/SMCL/NL ¹²	Wells Sampled in WY 2024	# above MT	# above MCL/SMCL/NL
Arsenic	n/a	10 µg/L (MCL)	50	n/a	7
Boron	n/a	1 mg/L (NL)	33	n/a	4
Hexavalent Chromium	n/a	10 µg/L (MCL)	48	n/a	27
Nitrate	n/a	10 mg/L (MCL)	118	n/a	15
TDS	1000 ppm	500 ppm (SMCL)	36	0	9

¹¹ <https://www.waterboards.ca.gov/gama/>

¹² MCL – Maximum Contaminant Level; NL – Notification Level; SMCL – Secondary Maximum Contaminant Level

4.3.1 Arsenic

A total of 50 wells were measured for arsenic concentration in the Yolo Subbasin in Water Year 2024, and seven wells exceeded the maximum contaminant level (MCL) of 10 µg/L. Of those seven, five are in the Central Yolo Management Area (two on the northwest side of the management area, two at the Wild Wings CSA and one within the Yolo Central Landfill), one is near the Sacramento River in the North Yolo Management Area, and one is in the Dunnigan Hills Management Area (Figure 7).

4.3.2 Boron

There is no established MCL for boron, but any measurement over 1 mg/L exceeds the California State Notification Level (NL). Out of the 33 wells measured for boron in 2024, four exceeded the notification level (Figure 8). Three of these wells are in the Central Yolo Management Area near Cache Creek, and one is in the Yolo Bypass just south of Putah Creek.

4.3.3 Hexavalent Chromium

The California State Water Resources Control Board adopted a new MCL for hexavalent chromium (Cr6) effective October 1, 2024. In the Yolo Subbasin, 48 wells were sampled for hexavalent chromium (Cr6) in 2024, and 27 wells exceeded the newly established MCL. The majority of exceedances were located near the Cities of Winters and Davis, though elevated levels are also present in Dunnigan and the outskirts of Woodland (Figure 9).

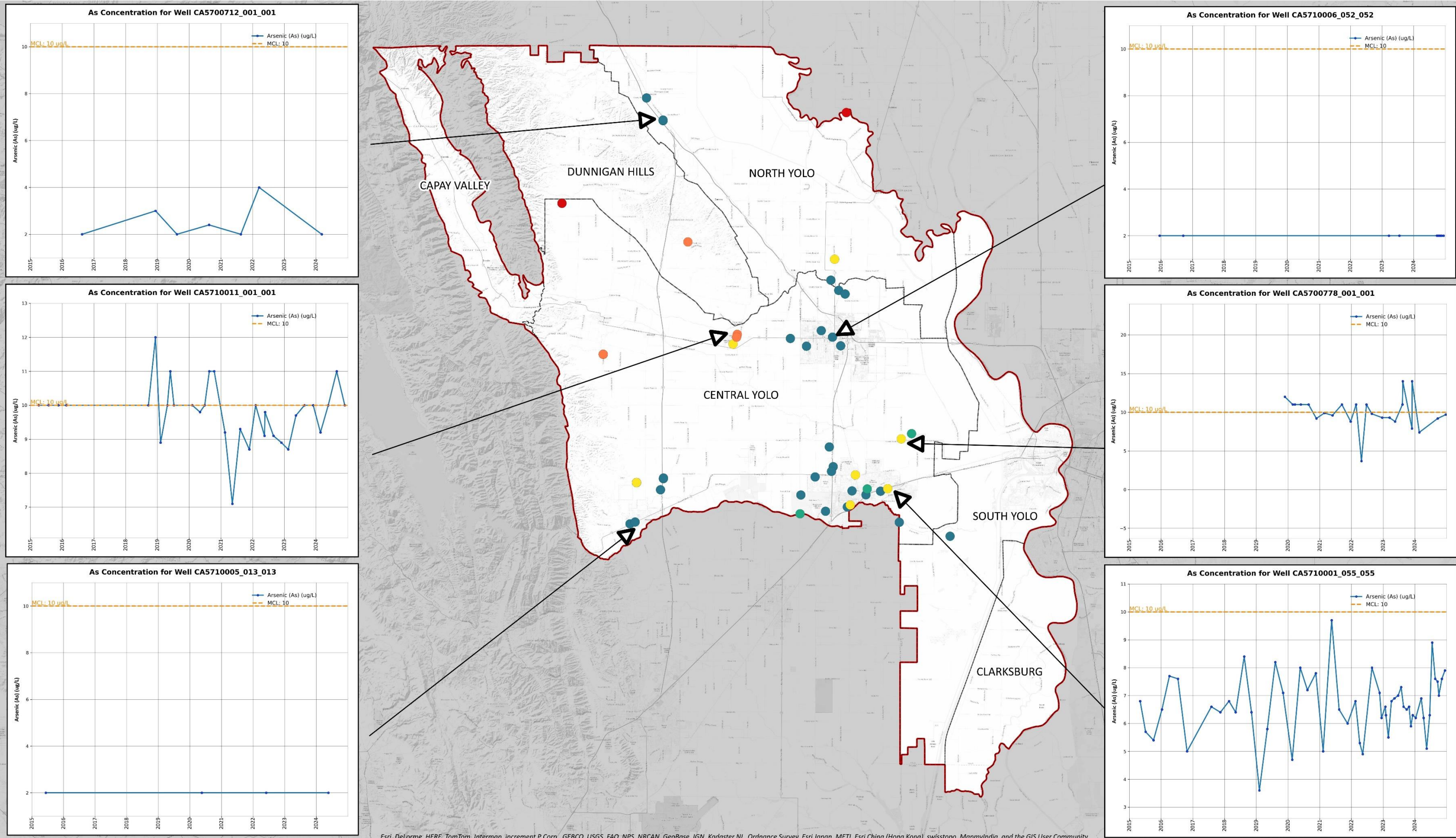
4.3.4 Nitrate

118 wells were measured for nitrate at least once in 2024, including those sampled as part of the Irrigated Lands Regulatory Program (ILRP). 15 of these wells exceeded the nitrate MCL of 10 mg/L. Wells that exceed the MCL are scattered in numerous places within the Yolo Subbasin, but many of them are clustered in rural areas on the outskirts of the Cities of Davis, Woodland, and Winters (Figure 10). No wells sampled as part of ILRP exceeded the MCL in Water Year 2024.

4.3.5 Total Dissolved Solids

None of the 36 wells measured for TDS in Water Year 2024 exceeded the 1000-ppm TDS minimum threshold. Just two wells exceeded the 750-ppm measurable objective in Water Year 2024, one located within the City of Davis and the other near County Road 13. Nine wells were measured above the recommended secondary MCL of 500-ppm (Figure 11).

FIGURE 7: GROUNDWATER QUALITY – ARSENIC




GROUNDWATER QUALITY
ARSENIC CONCENTRATION
 2024 Sampling Results in ug/L

- Arsenic Maximum Concentration**
- < 4 ug/L
 - 4 - 6 ug/L
 - 6-10 ug/L
 - 10-20 ug/L
 - > 20 ug/L
- Yolo Subbasin Boundary



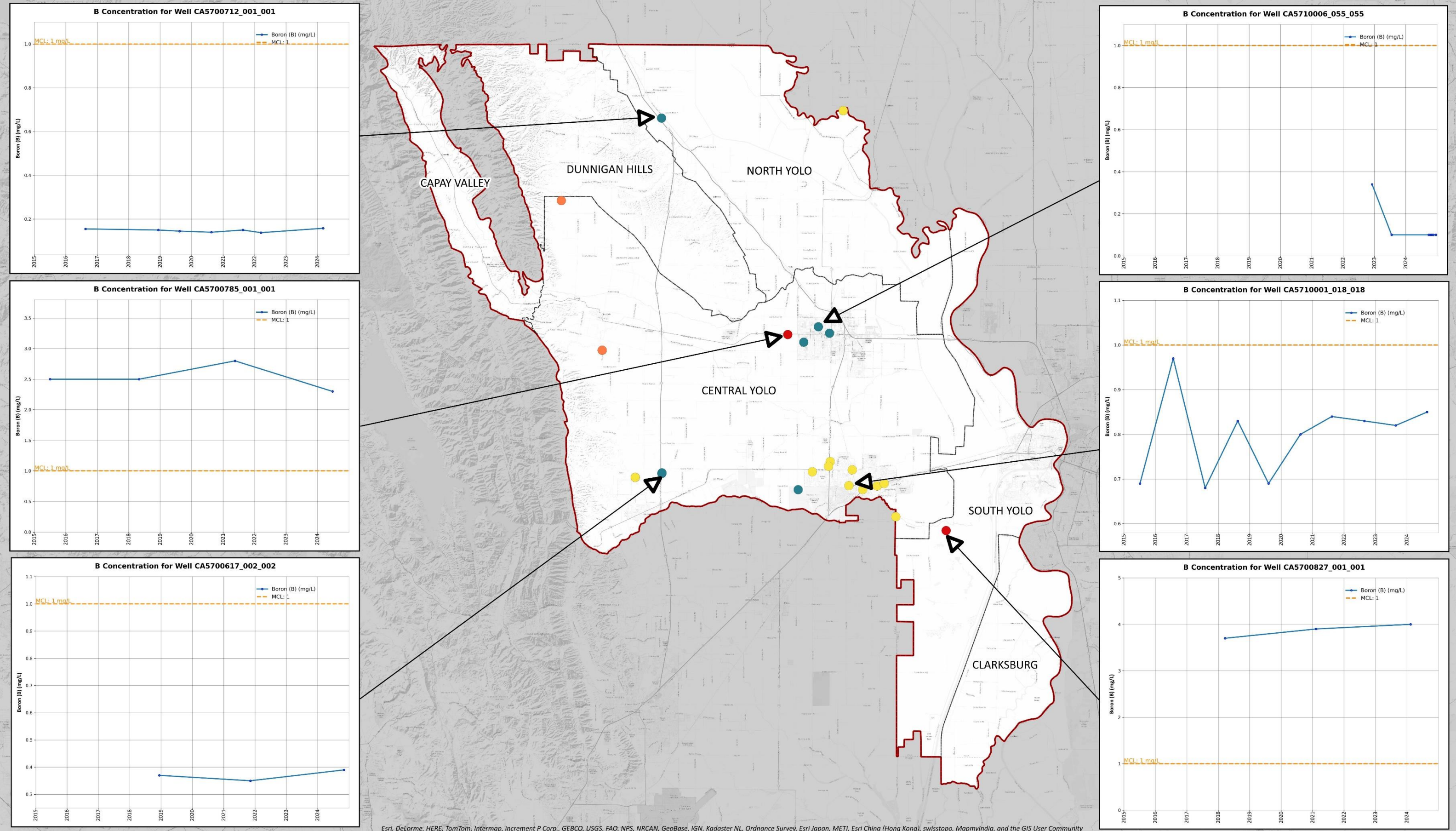
SOURCE: GAMA Database
 CRS: NAD83 / California Albers



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FIGURE 8: GROUNDWATER QUALITY – BORON



**GROUNDWATER QUALITY
BORON CONCENTRATION**
2024 Sampling Results in mg/L

- Boron Maximum Concentration**
- < 0.5 mg/L
 - 0.5 - 1 mg/L
 - 1 - 2 mg/L
 - > 2 mg/L
 - Yolo Subbasin Boundary

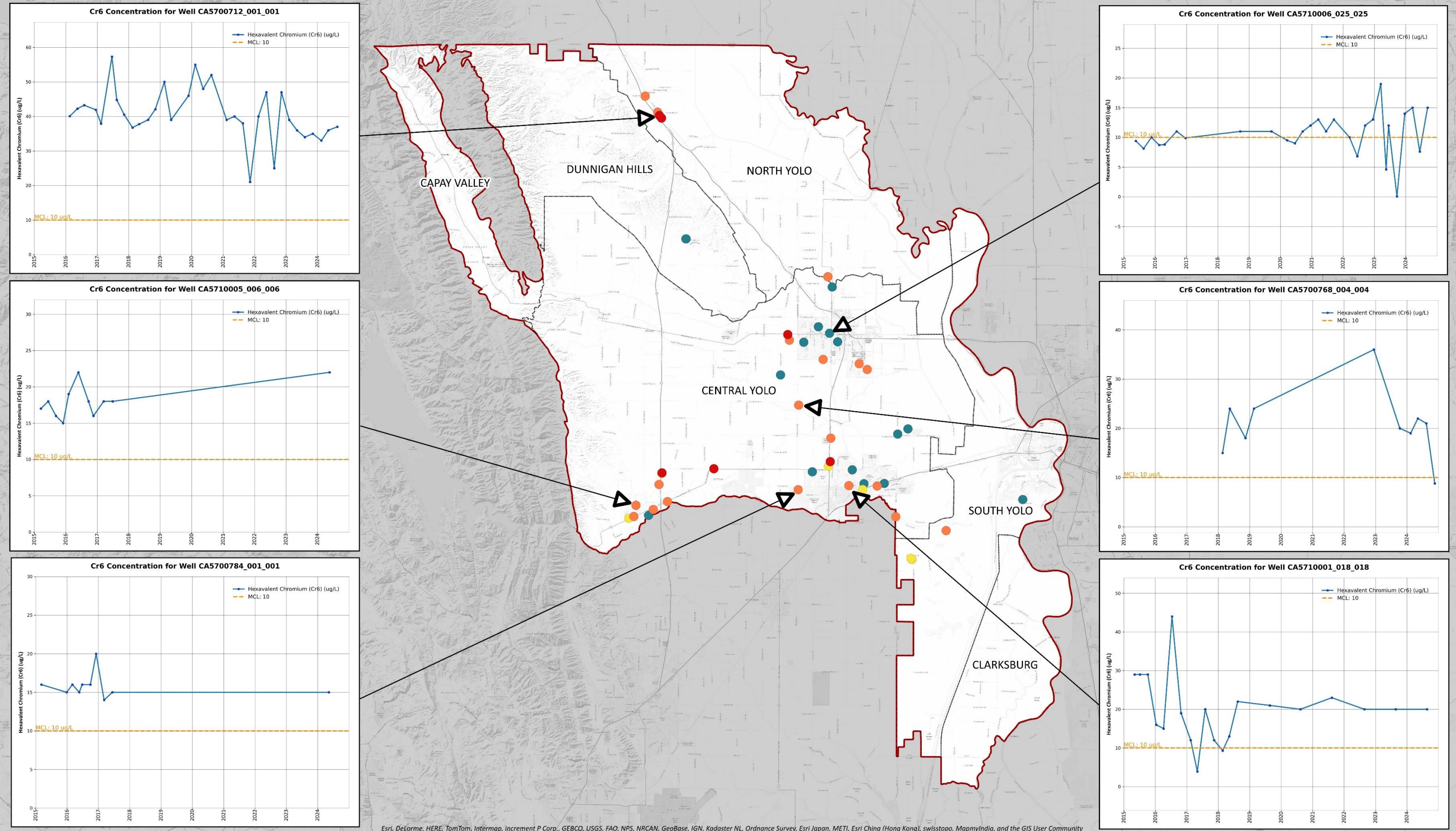


SOURCE: GAMA Database
CRS: NAD83 / California Albers



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FIGURE 9: GROUNDWATER QUALITY – HEXAVALENT CHROMIUM



**GROUNDWATER QUALITY
HEXAVALENT CHROMIUM**
2024 Sampling Results in ug/L

Chromium (VI) Maximum Concentration

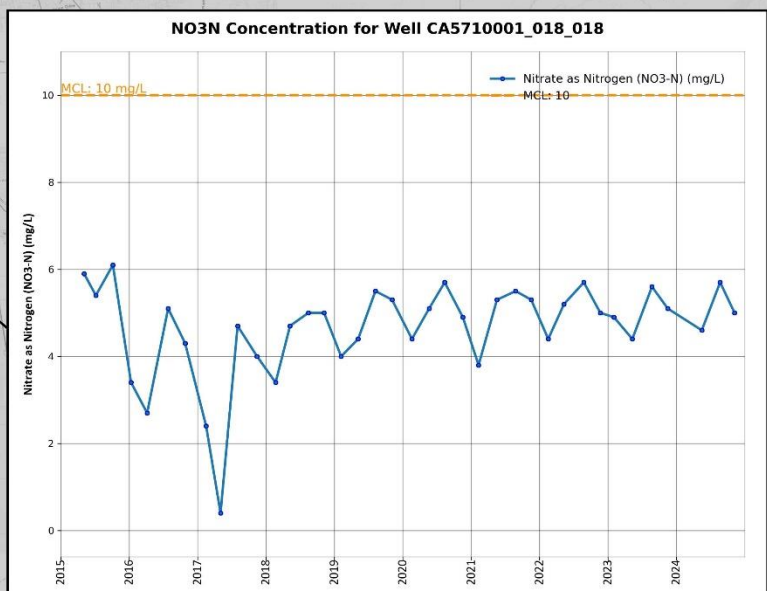
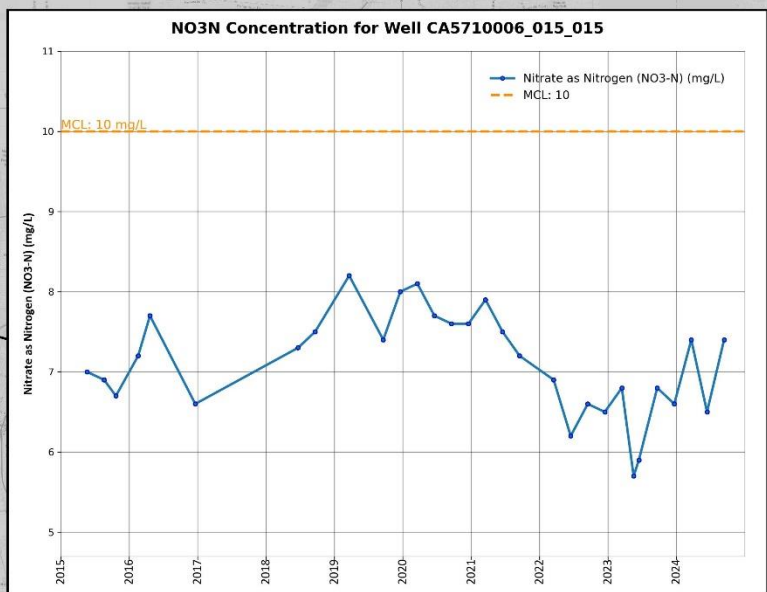
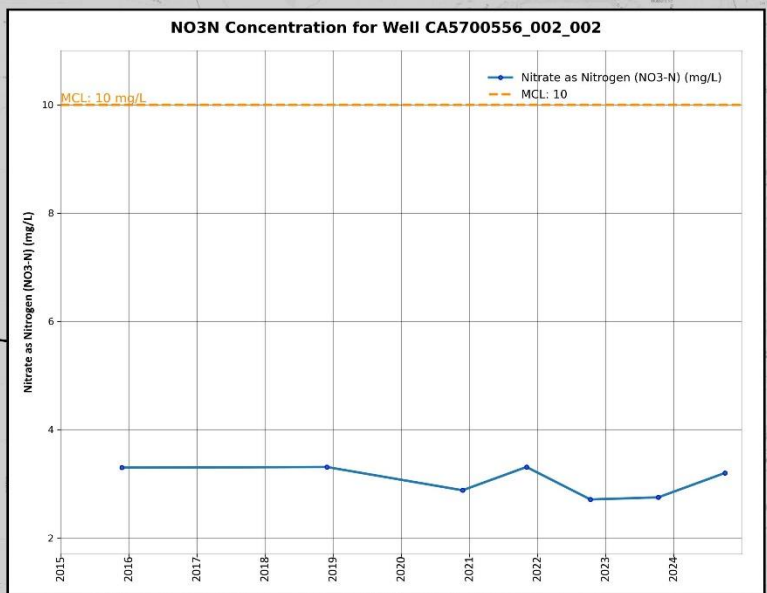
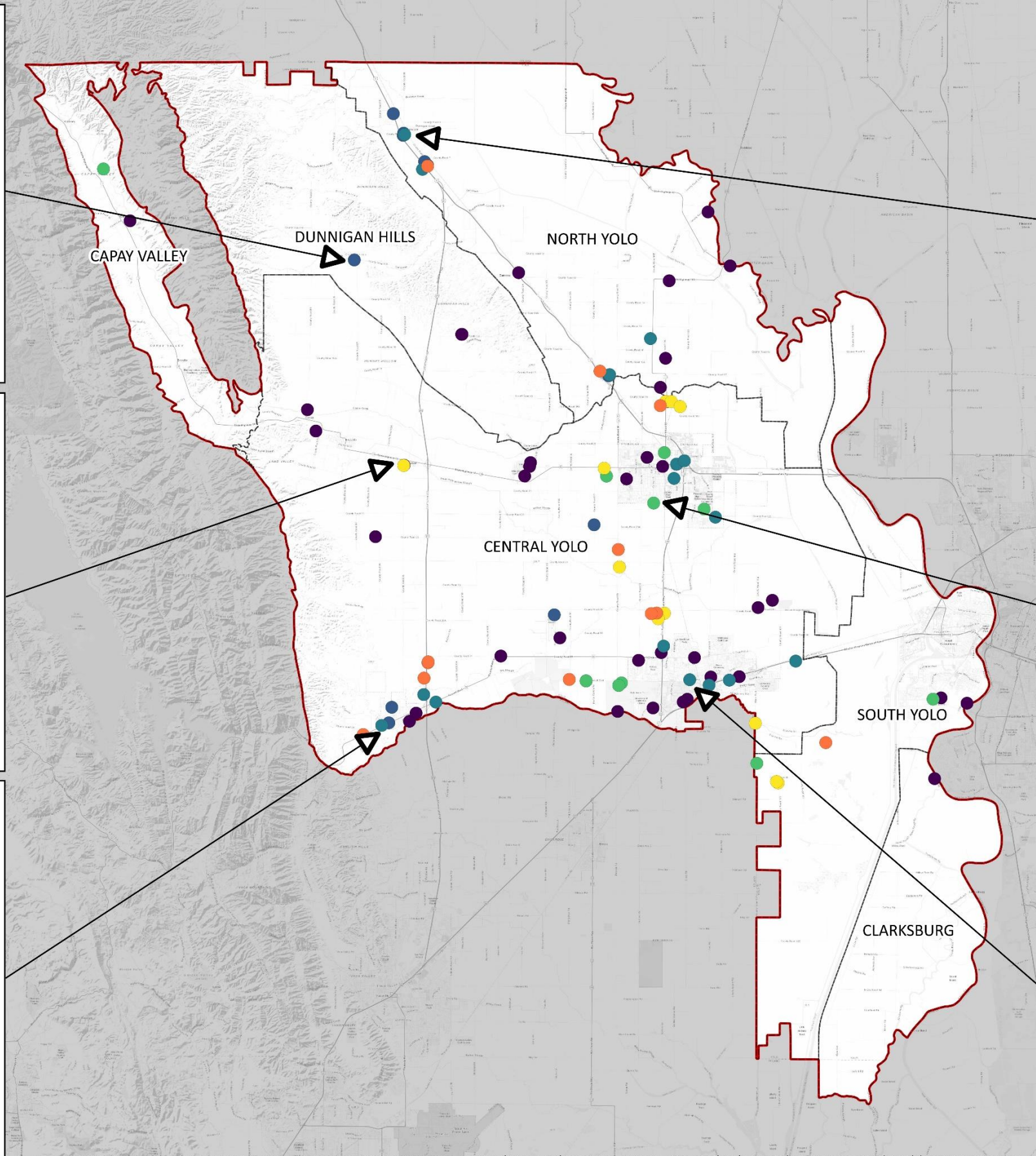
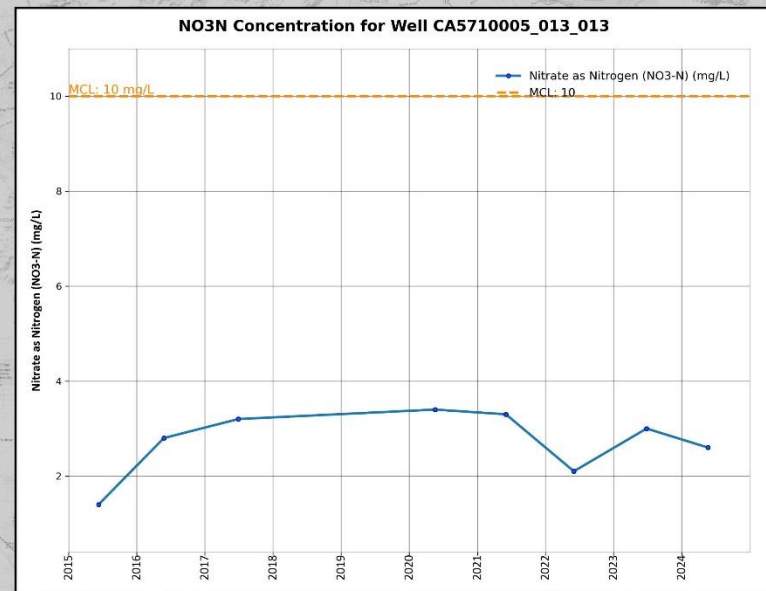
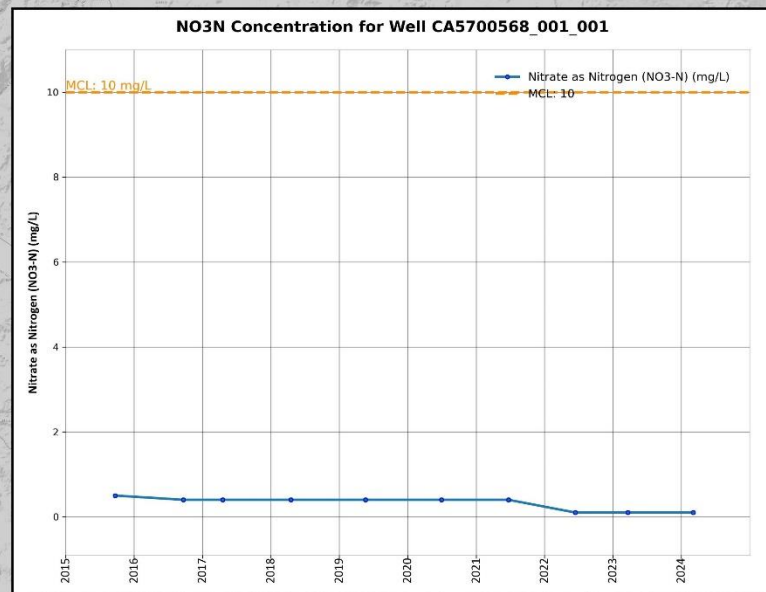
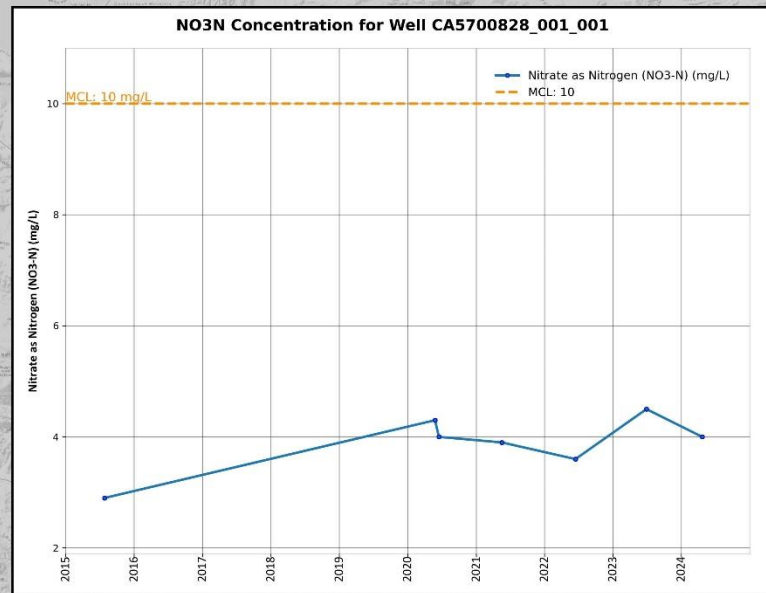
- < 6 ug/L
- 10 - 30 ug/L
- 6 - 10 ug/L
- > 30 ug/L
- ▭ Yolo Subbasin Boundary



SOURCE: GAMA Database
CRS: NAD83 / California Albers
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FIGURE 10: GROUNDWATER QUALITY – NITRATE



**GROUNDWATER QUALITY
NITRATE CONCENTRATION**
2024 Sampling Results in mg/L

- Nitrate as N - Max Concentration
- 6 - 8 mg/L
 - < 2 mg/L
 - 2 - 4 mg/L
 - 8 - 10 mg/L
 - > 10 mg/L
 - Yolo Subbasin Boundary

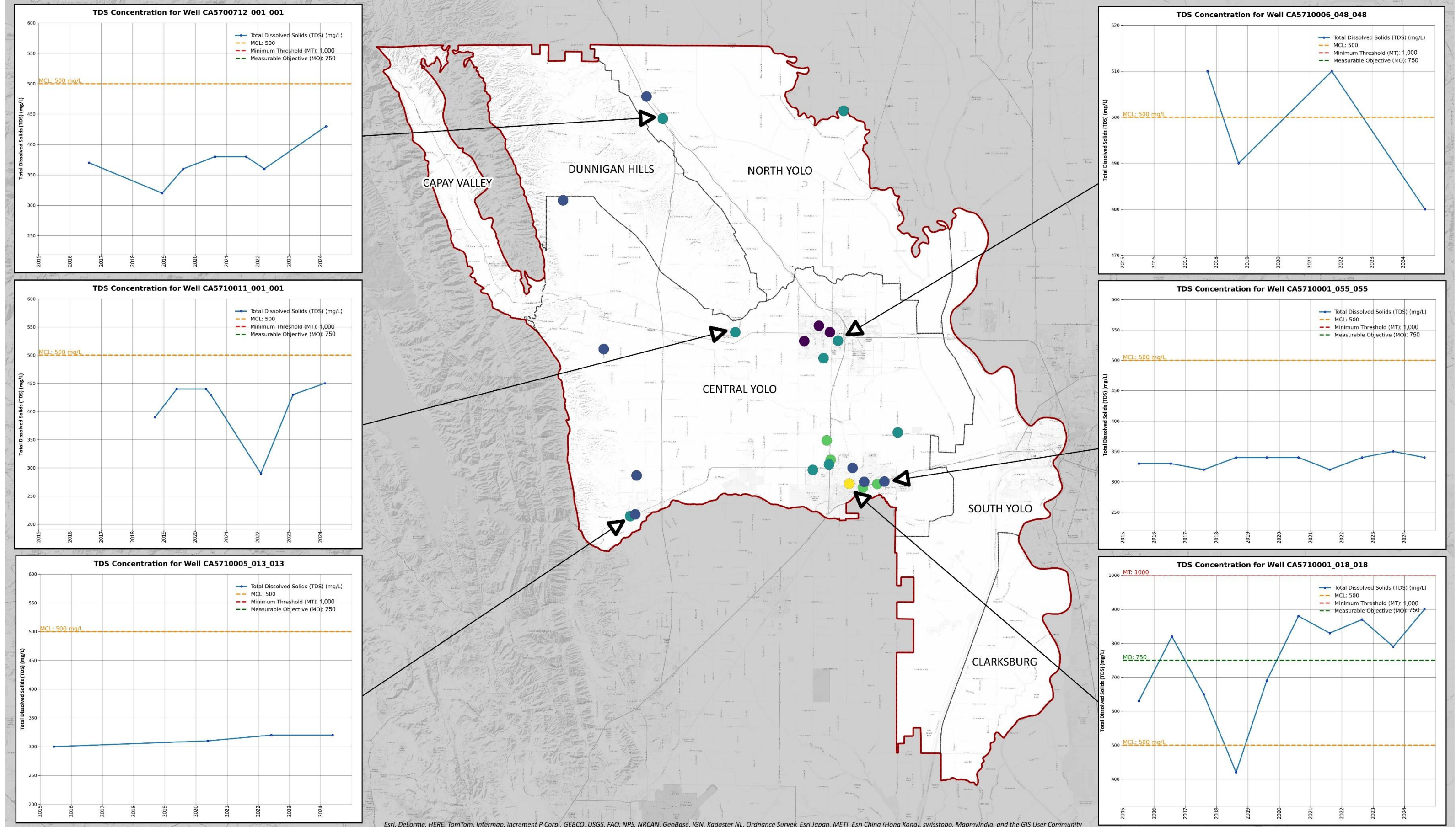


SOURCE: GAMA Database
CRS: NAD83 / California Albers
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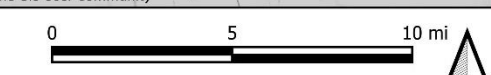
FIGURE 11: GROUNDWATER QUALITY – SMC EVALUATION – TDS



GROUNDWATER QUALITY
SMC EVALUATION - TDS
 2024 Sampling Results in mg/L

- Maximum TDS Concentration
- 400-600 mg/L
 - < 200 mg/L
 - 200-400 mg/L
 - 600-800 mg/L
 - 800-900 mg/L

Yolo Subbasin Boundary



SOURCE: GAMA Database
 CRS: NAD83 / California Albers
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4.4 LAND SUBSIDENCE

Land deformation occurs as both surface subsidence and surface uplifting, and the Yolo Subbasin experiences both processes. Historically, steady levels of subsidence have been documented in the eastern portion of the Central Yolo Management Area and much of the North Yolo Management Area. A slight amount of uplift has historically been observed in the western portion of the Central Yolo Management Area.

The source of the land subsidence data discussed below is the TRE Altamira InSAR Vertical Displacement dataset provided by DWR, available on SGMA Data Viewer¹³. This data uses radar data from the Sentinel-1 satellites to calculate changes in land surface elevation (known as vertical displacement). The reported statewide accuracy of the data is 18 mm, or 0.059 feet¹⁴. The dataset shows several pockets in the Yolo Subbasin where there are indications of subsidence and changes in the Subbasin's surface elevation.

Figure 12 shows the remotely sensed vertical displacement from Water Year 2024. A larger region of subsidence in the central portion of the Subbasin was newly detected in Water Year 2021. Deformation peaked in July 2022, with subsidence rates up to 0.4 ft/year in the areas of highest severity (County Road 95 between State Highway 16 and County Road 29, the southwestern base of the Dunnigan Hills, and the North Yolo Management Area east of the town of Dunnigan). Since July 2022, subsidence has largely stabilized due to subsequent above normal water years allowing for natural recharge and reduced groundwater use. The central portion of the Subbasin showed recovery (upward land movement) of approximately 0.1 feet in 2023. In Water Year 2024, no vertical displacement was detected.

Table 12 provides sustainable management criteria for land subsidence designated in the Yolo Subbasin GSP. Land subsidence measurable objective values are to be evaluated against the rolling 3-year average vertical displacement. Figure 13 shows the calculated 3-year average vertical displacement between Water Years 2022 and 2024, and Figure 14 provides a comparison between this calculated value and the established measurable objective values. The newly observed region of subsidence in the center of the Subbasin, the North Yolo Management Area, and the northern portion of the South Yolo Management Area are the primary areas showing exceedance of the measurable objectives.

Minimum threshold values are evaluated against the rolling 5-year average vertical displacement. Figure 15 shows the calculated 5-year average vertical displacement between Water Years 2019 and 2024, and Figure 16 provides a comparison between this calculated value and the established minimum threshold values. The areas of highest severity (east of the town of Dunnigan, along the base of the Dunnigan Hills, and in the central portion of the Subbasin along Highway 16) are showing exceedances of the minimum threshold values.

In summer 2024, the YSGA contracted Frame Surveying and Mapping to complete a ground-based survey of the Yolo County GPS Subsidence network¹⁵. The survey provides change in height between 2024 and 2017 (the date of the previous survey) at fixed survey marks throughout the Subbasin. Figure 17 shows

¹³ <https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer>

¹⁴ <https://data.cnra.ca.gov/dataset/5e2d49e1-9ed0-425e-9f3e-2cda4a213c26/resource/a1949b59-2435-4e5d-bb29-7a8d432454f5/download/insar-data-accuracy-report-towill.pdf>

¹⁵ <https://www.yologroundwater.org/files/485f14ff1/YSGA+2024+Project+Report.pdf>

the results of the 2024 survey overlaid over the InSAR data from the same time period. The datasets have slight differences in magnitude but appear to agree well about the spatial distribution and amount of vertical displacement occurring in the Subbasin.

The YSGA has been working with Intera to revise the sustainable management criteria for land subsidence in response to DWR’s feedback on the GSP. In Water Year 2025, Intera will work with the YSGA to define critical head at the YSGA RMWs (where data allows) to better understand seasonal and historical changes in land subsidence relative to groundwater levels. Intera and the YSGA will continue working on redefining the land subsidence sustainable management criteria to be incorporated in the 2027 periodic evaluation based on methods defined in DWR’s upcoming Land Subsidence BMP.

TABLE 12: LAND SUBSIDENCE SUSTAINABLE MANAGEMENT CRITERIA

Undesirable Result Description	Undesirable Result Criteria	Management Area	Minimum Threshold*	Measurable Objective*	Interim Milestones
The point at which the rate and extent of subsidence in the Subbasin causes significant and unreasonable impacts to surface land uses or critical infrastructure.	An undesirable result occurs when the minimum threshold value is exceeded over 25 percent of the management or sub-MA in three (3) or more management or sub-MAs in the same reporting year.	Capay Valley	TBD	TBD	Interim milestones for Land Subsidence are set equal to measurable objectives that are generally equal to current levels of subsidence.
		Dunnigan Hills	0.059 ft/yr	0.059 ft/yr	
		East Central Yolo	0.082 ft/yr	0.082 ft/yr	
		West Central Yolo	0.059 ft/yr	0.059 ft/yr	
		South Yolo	0.0 ft/year	0.0 ft/year	
		North Yolo	0.098 ft/yr	0.098 ft/yr	
		Clarksburg	0.0 ft/year	0.0 ft/year	
<i>*Minimum threshold values are based on a 5-year running average, while measurable objective values are based on a 3-year running average</i>					

FIGURE 12: VERTICAL DISPLACEMENT – WATER YEAR 2024

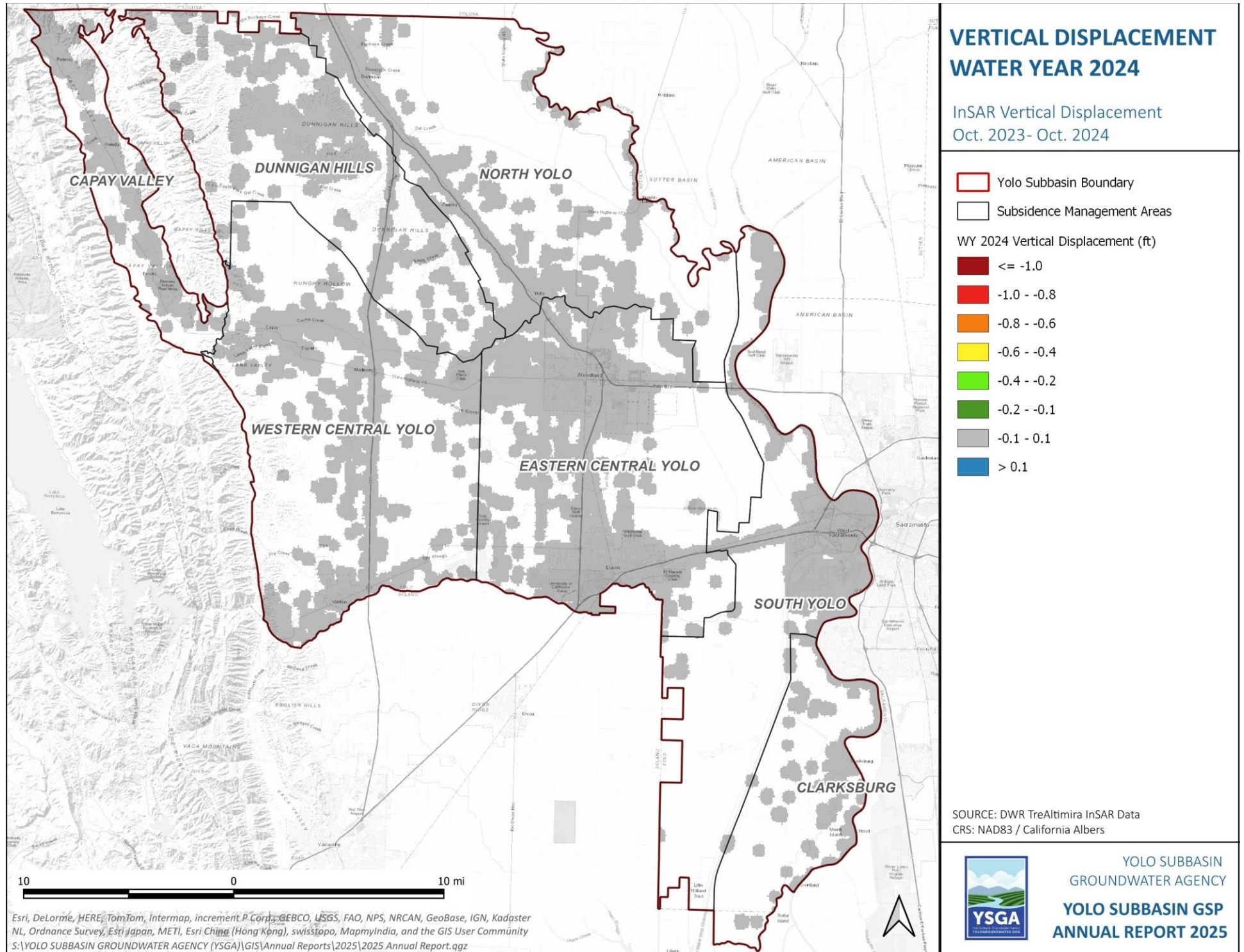


FIGURE 13: VERTICAL DISPLACEMENT – 3 YEAR AVERAGE

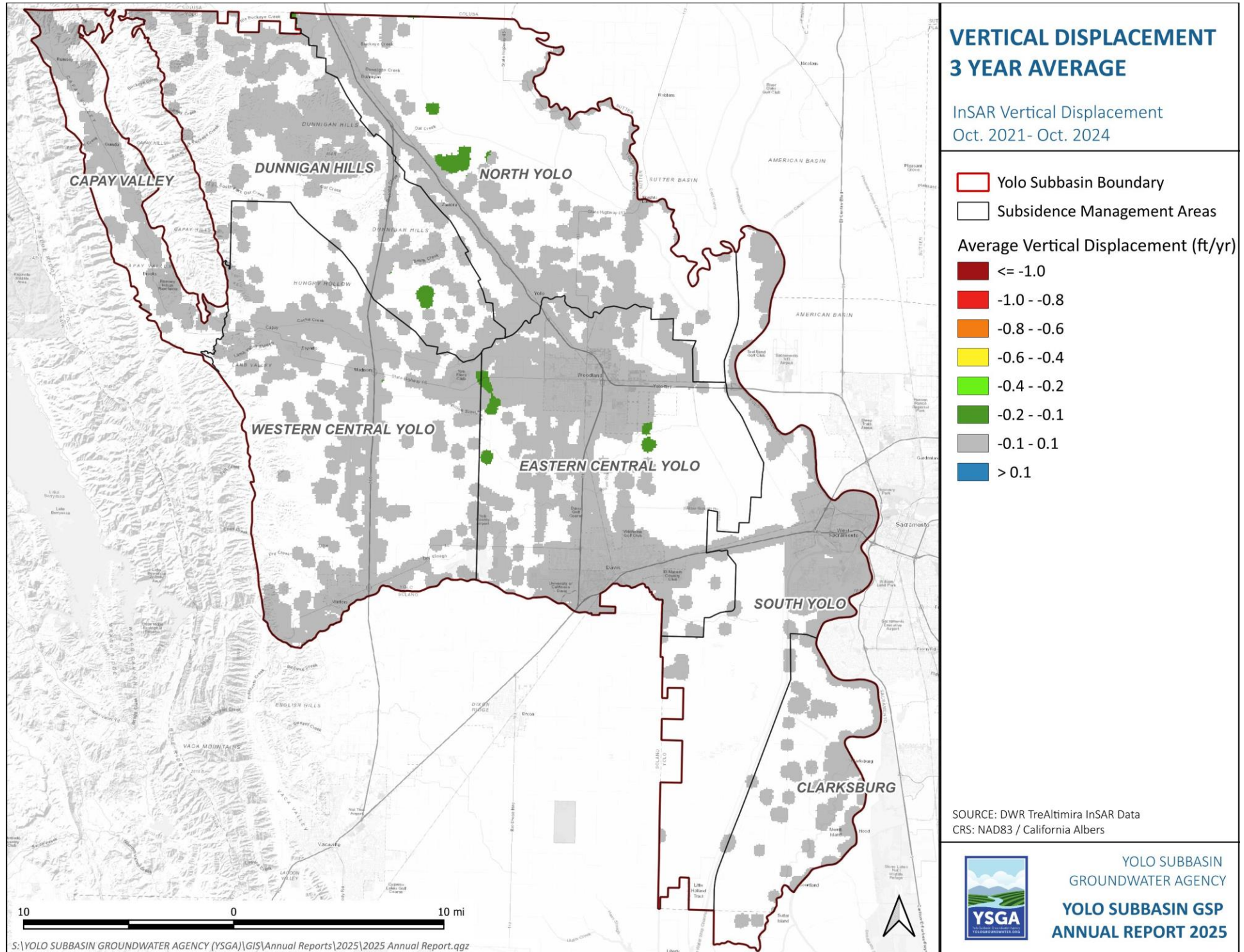


FIGURE 14: LAND SUBSIDENCE MEASURABLE OBJECTIVE EVALUATION

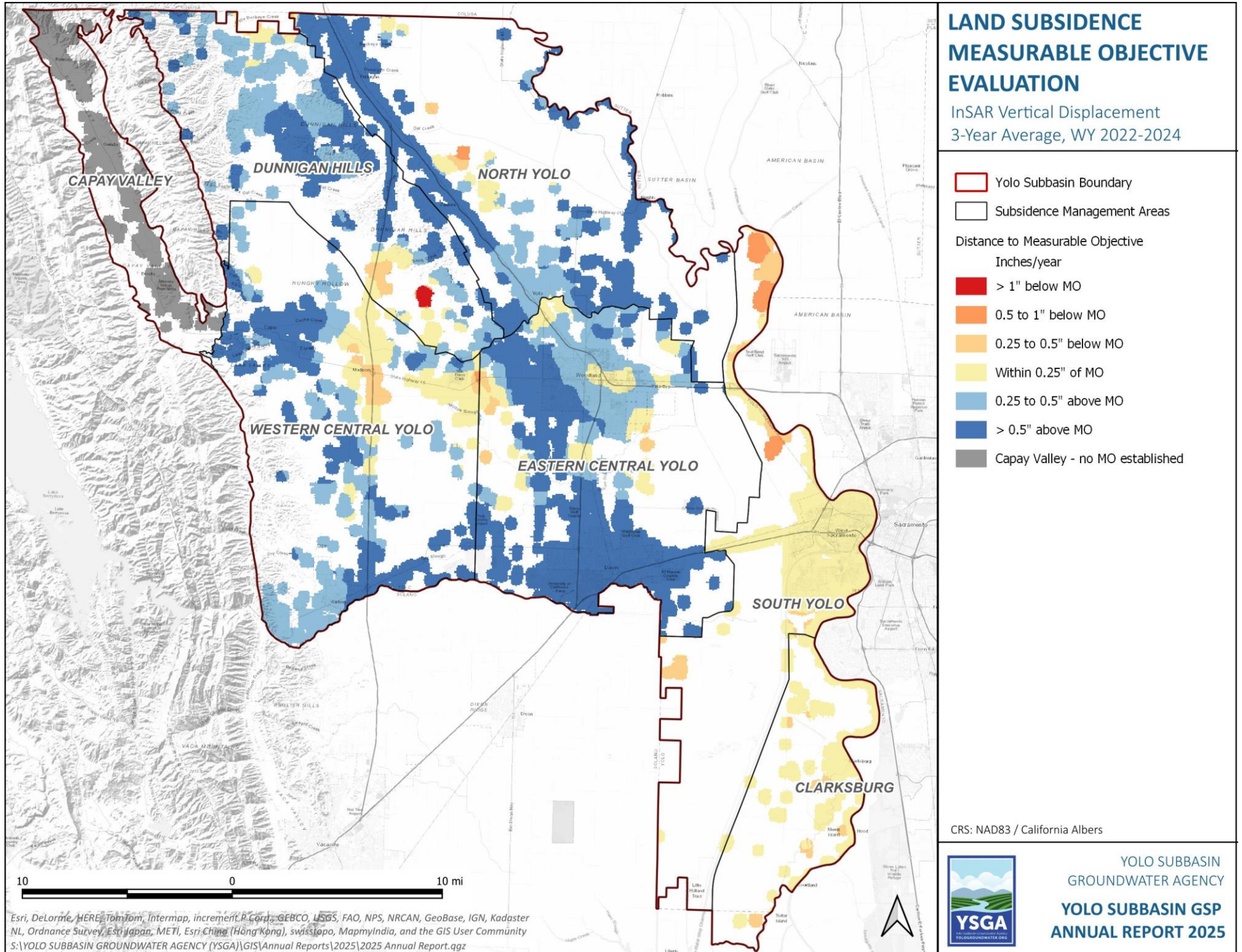
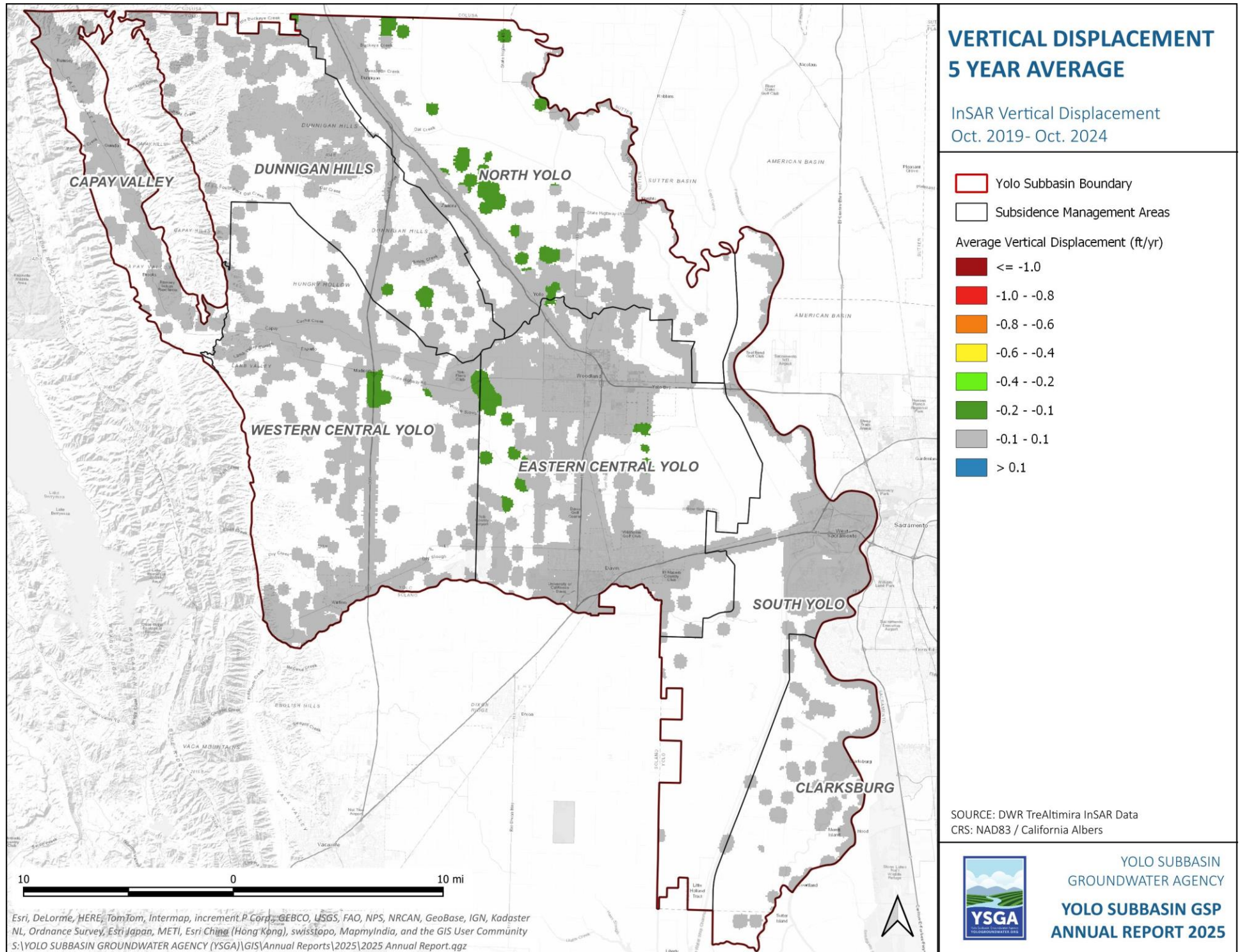


FIGURE 15: VERTICAL DISPLACEMENT – 5 YEAR AVERAGE



Esri, DeLorme, HERE, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, and the GIS User Community
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FIGURE 16: LAND SUBSIDENCE MINIMUM THRESHOLD EVALUATION

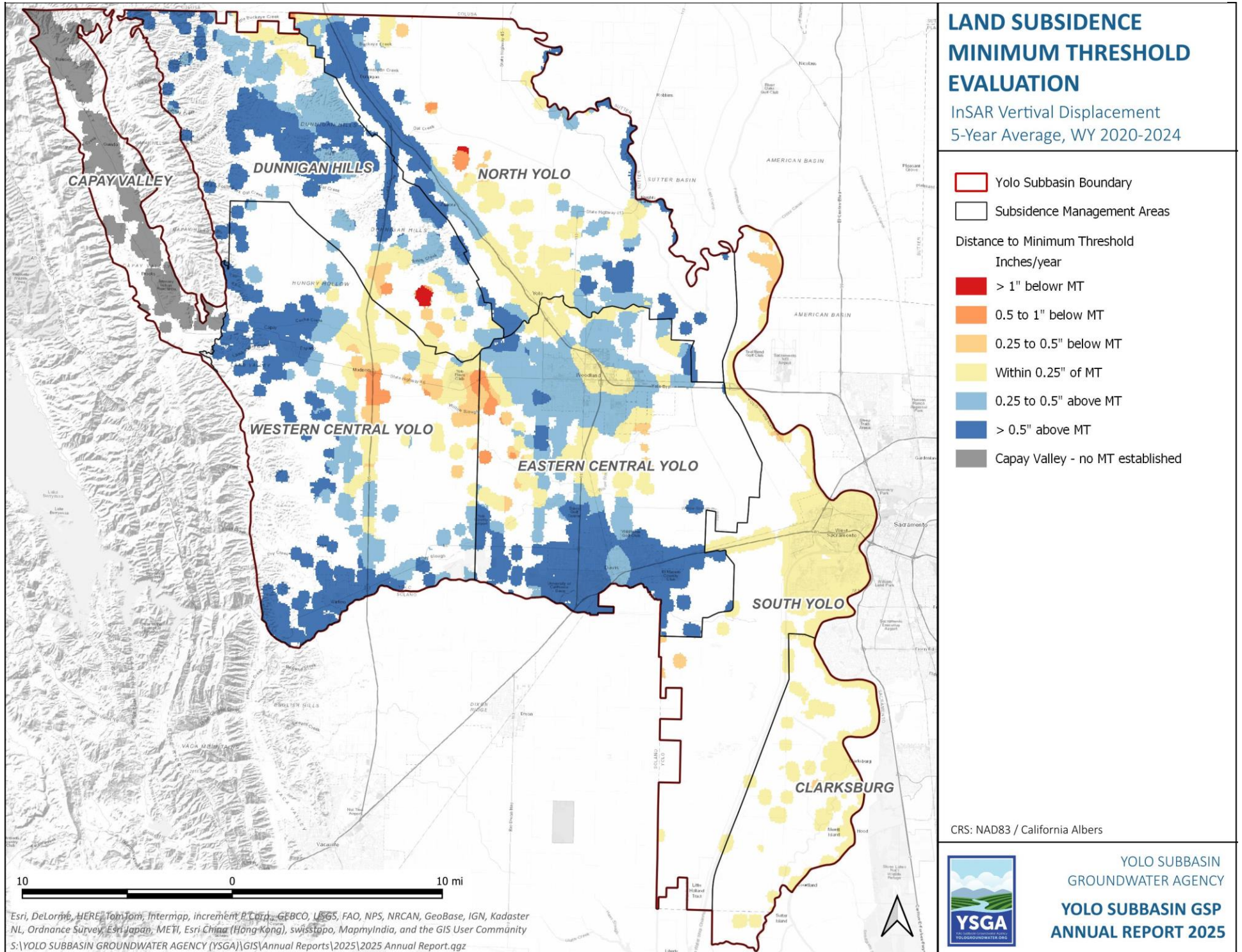
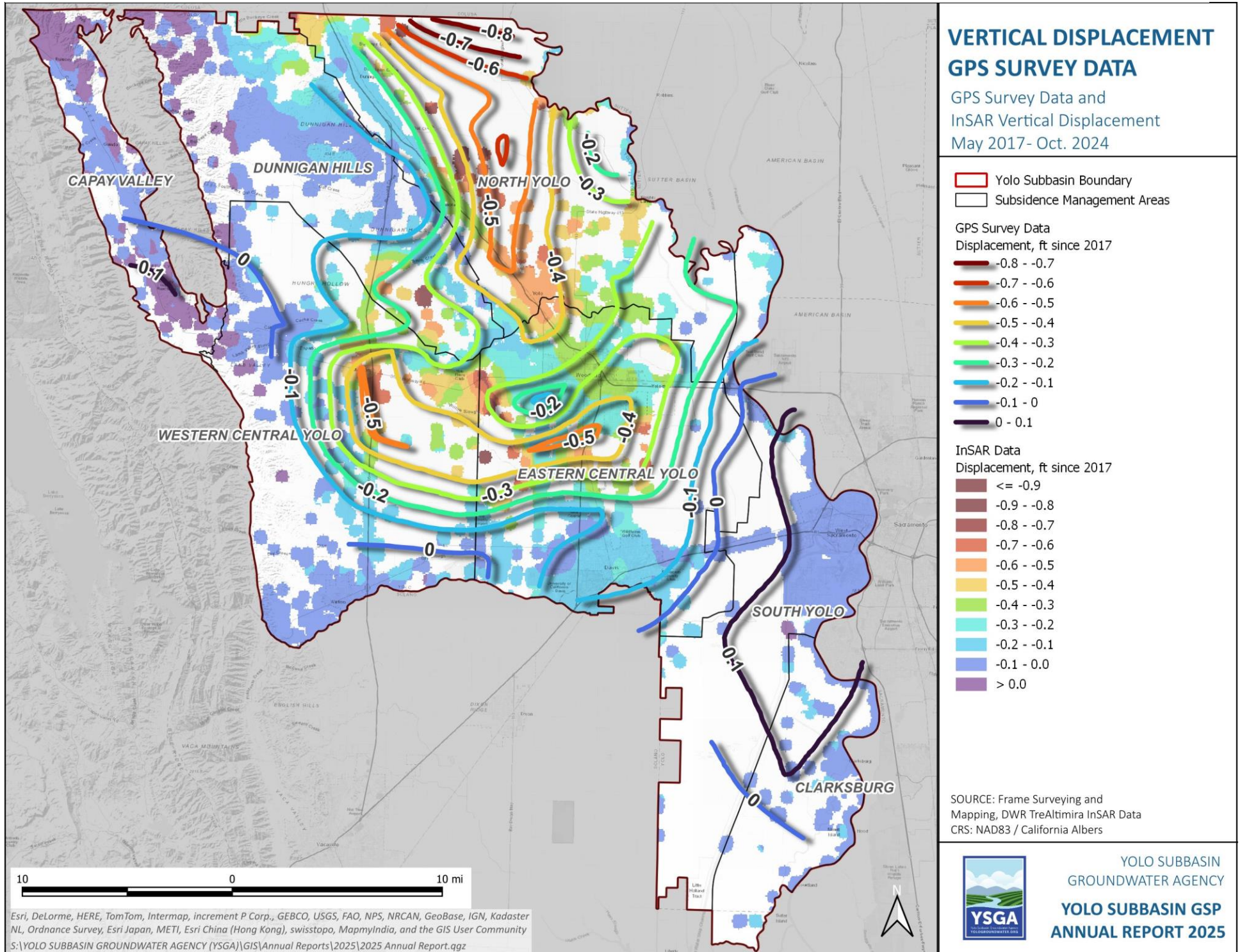


FIGURE 17: VERTICAL DISPLACEMENT GPS SURVEY DATA



4.5 INTERCONNECTED SURFACE WATERS

The Yolo Subbasin GSP designates minimum thresholds for the depletion of major interconnected surface water bodies in the Yolo Subbasin as outlined in Table 13.

Groundwater levels in RMWs for Upper Cache Creek, Upper Sacramento River, Lower Sacramento River, and Putah Creek are compared to the minimum thresholds in Table 14. During the critical conditions of Water Year 2022, there was one minimum threshold exceedance at Upper Cache Creek (Well 287) and one exceedance at Putah Creek (Well 229). The groundwater elevations in both of these wells have now recovered above the minimum threshold thanks to higher rainfall in Water Years 2023 and 2024.

Table 15 provides a comparison of representative groundwater levels around Lower Cache Creek to the minimum threshold value. Each well must remain below the minimum threshold value for seven years to violate its minimum threshold criterion. Ample recovery occurred in spring 2024 such that only one well (275) remains below the minimum threshold value. This well has now exceeded the minimum threshold value in five consecutive spring measurements, although the most recent spring measurement was just 1.4 feet below the minimum threshold value.

Table 14 and Table 15 also provide a comparison of the five-year running average of spring groundwater elevations to the measurable objectives. After the recent historic drought conditions in 2020-22, 5-year spring averages in all but one well are currently below the measurable objective. However, Spring 2024 levels in most wells recovered to, or close to, the measurable objective value. The individual hydrographs of each of these wells are provided in Attachment B.

TABLE 13: INTERCONNECTED SURFACE WATER SUSTAINABLE MANAGEMENT CRITERIA

Undesirable Result Description	Undesirable Result Criteria	Management Zone	Minimum Thresholds	Measurable Objectives	Interim Milestones
<p>The point at which significant and unreasonable impacts to the surface waters affect the reasonable and beneficial use of those surface waters by overlying users, including associated ecosystems.</p>	<p>An undesirable result occurs when the Minimum Threshold is exceeded in over 50 percent of the interconnected surface water representative monitoring wells in two (2) or more interconnected surface water MAs in the same reporting year.</p>	Lower Cache Creek	The recurrence of the spring (March-May) average measurement for 1975 to present in at least one spring in every seven (7) years.	<p>Equal to the average spring (March-May) groundwater elevation for Water Years 2000-2011 at the RMW. Performance of the Measurable Objective will be measured as the five (5) year running average of the maximum spring (March-May) groundwater elevation.</p>	<p>Set equal to measurable objectives that are generally equal to current conditions.</p>
		Upper Cache Creek	Equal to the minimum elevation for the period of record at the RMW, exceeded in 2 consecutive years.		
		Putah Creek			
		Lower Sacramento River			
		Upper Sacramento River	Exceedance of the historic minimum elevation in the period of record of each RMW plus 20 percent of the depth between the historic maximum and historic minimum elevation for the period of record of the RMW in 2 consecutive years.		

TABLE 14: INTERCONNECTED SURFACE WATERS REPRESENTATIVE GROUNDWATER ELEVATIONS

ISW Management Zone	State Well Number	Representative Well Number	Measurable Objective Value	Minimum Threshold Value	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Fall 2023	Spring 2024	Fall 2024	5-year Spring Average	Distance to Measurable Objective
Upper Cache Creek	11N03W23L001M	287	298.7	287.6	298.7	298.2	***	285.9	298.6	286.0	301.6	***	301.9	298.6	300.2	1.5
Upper Cache Creek	11N03W33F001M	289	354.3	341.2	352.0	351.3	351.2	344.4	351.4	345.8	356.4	352.5	358.3	352.2	353.9	-0.4
Upper Cache Creek	12N03W20D001M	293	385.2	376.4	383.6	382.0	382.4	380.0	383.6	378.0	386.8	381.2	387.3	383.4	384.7	-0.5
Upper Sac River	10N02E03R002M	420	23.9	-39.2	22.3	***	15.7	***	4.4	-36.7	22.0	5.4	28.1	-10.3	18.5	-5.4
Upper Sac River	12N01E03R003M	427	29.3	-35.4	23.4	6.4	20.6	-26.7	18.6	-19.5	24.3	14.5	28.1	6.3	23.0	-6.3
Upper Sac River	11N02E20K004M	421	33.5	-31.6	32.9	26.8	29.1	20.9	24.4	17.1	28.9	23.3	51.3	26.9	33.3	-0.2
Lower Sac River	09N03E33B002M	151	15.7	-35.3	15.0	-2.1	12.9	-4.2	11.4	-9.3	14.1	-4.0	12.9	-2.4	13.2	-2.5
Lower Sac River	10N02E36E001M	401	26.8	9.0	25.8	19.6	23.6	14.1	22.0	9.4	24.4	15.3	24.7	14.7	24.1	-2.8
Lower Sac River	08N04E19N001M	428	8.7	-1.3	7.5	2.0	6.9	2.0	7.1	1.4	10.0	3.7	10.6	3.7	8.4	-0.3
Putah Creek	08N02E18M002M	170	29.7	1.5	***	13.5	22.5	8.9	14.1	5.5	15.4	9.6	17.8	10.0	17.5	-12.2
Putah Creek	08N01W20R005M	229	91.6	36.4	72.0	45.0	59.6	31.2	47.2	26.1	48.0	40.4	56.0	40.9	56.6	-35.0
Putah Creek	08N01E17F001M	429	76.0	56.1	***	63.7	64.4	***	***	***	62.6	61.6	66.9	***	64.6	-11.3

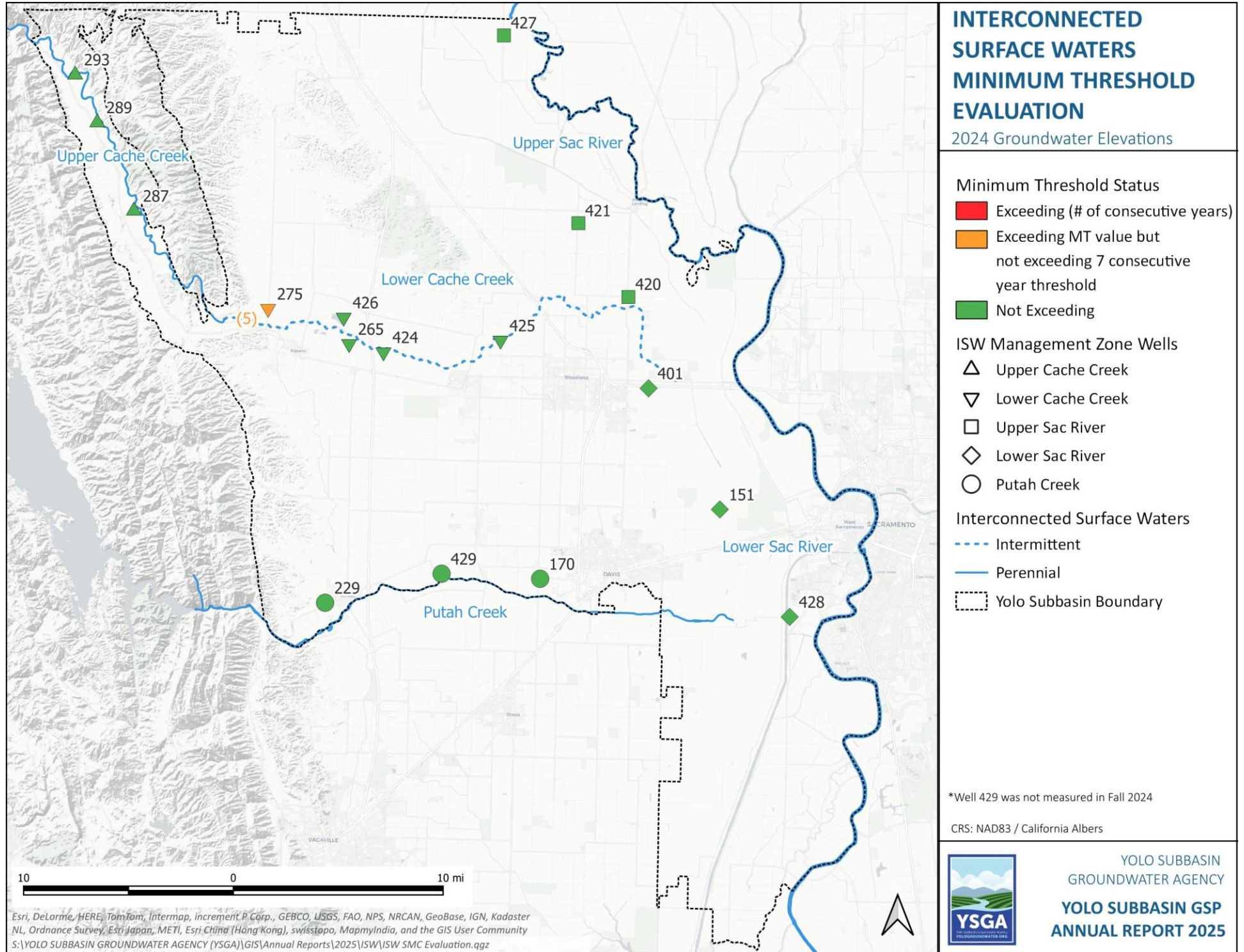
***Missing measurement. The 2020-24 average will be calculated excluding missing measurements.

TABLE 15: LOWER CACHE CREEK REPRESENTATIVE GROUNDWATER ELEVATIONS

ISW Management Zone	State Well Number	Representative Well Number	Measurable Objective Value	Minimum Threshold Value	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Fall 2023	Spring 2024	Fall 2024	Years Below MT Value	5-year Spring Average	Distance to Measurable Objective
Lower Cache Creek	10N01W21J001M	265	132.7	131.6	131.2	129.7	129.3	115.4	124.4	106.1	126.9	125.9	133.8	127.3	0	129.1	-3.6
Lower Cache Creek	10N02W14A001M	275	145.4	143.2	138.8	137.2	134.1	104.8	125.4	91.3	128.6	129.7	141.8	135.6	5	133.8	-11.7
Lower Cache Creek	10N01W23P001M	424	115.8	116.7	112.2	111.8	115.7	106.3	114.1	***	116.8	112.9	118.0	112.2	0	115.4	-0.4
Lower Cache Creek	10N01E22H500M	425	61.2	55.1	57.3	54.4	50.1	38.4	41.2	***	58.8	58.6	65.5	57.6	0	54.6	-6.6
Lower Cache Creek	10N01W16G500M	426	138.0	132.6	133.0	129.5	130.2	102.7	123.2	102.8	127.1	125.8	133.5	130.2	0	129.4	-8.6

***Missing measurement. The 2020-24 average will be calculated excluding missing measurements.

FIGURE 18: INTERCONNECTED SURFACE WATERS MINIMUM THRESHOLD EVALUATION



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5. WATER BUDGET ASSESSMENT

An assessment of the Yolo Subbasin water budget was conducted using the YSGA Model developed by Stockholm Environment Institute (SEI). Additional details about the YSGA Model can be found in the Water Budget¹⁶ and Model Documentation¹⁷ Appendices to the Yolo Subbasin GSP.

This annual report contains estimated acre-feet values for four metrics: surface water diversions, groundwater extraction, total water use, and change in groundwater storage. The line-by-line water budget numbers are provided in Table 16. Values are reported in acre-feet (AF) and rounded to the nearest hundred AF. The following sections provide an explanation of the reasoning and methods in providing these estimates, referencing the row number on the left of the table for ease of understanding. For further details on each calculation, please see the referenced section.

TABLE 16: WATER BUDGET SUMMARY

	Variable	WY 2020	WY 2021	WY 2022	WY 2023	WY 2024	See Text
1	Agricultural SW Diversion	505,300	369,000	221,700	509,900	547,600	5.3.2
2	Agricultural GW Extraction	226,300	378,900	347,200	259,100	293,700	5.4.2
3	Agricultural Managed Recharge	0	0	200	6,800	12,300	5.5.1
4	Agricultural Total Water Use	731,600	747,900	568,900	769,000	841,300	5.6
5	Urban SW Diversion	30,800	26,600	29,000	27,600	29,900	5.3.1
6	Urban GW Extraction	12,100	15,900	11,700	12,400	11,900	5.4.1
7	Urban Aquifer Storage	2,400	1,400	2,600	1,800	1,100	5.5.2
8	Urban Total Water Use	42,900	42,500	40,700	40,000	41,800	5.6
9	Total SW Diversion	536,100	395,600	250,700	537,500	577,500	5.3.3
10	Total GW Extraction	238,400	394,800	358,900	271,600	305,600	5.4.3
11	Total Managed Recharge	2,400	1,400	2,800	8,600	13,400	5.5
12	Total Water Use	774,500	790,400	609,600	809,100	883,100	5.6

5.1 ACCURACY ESTIMATE

Table 17 provides the estimated accuracy of each data source. To estimate changes in groundwater storage and other water budget components, several different data sources were compiled. Each of these data sources have some level of uncertainty. The table below qualitatively describes the estimated accuracy for the model inputs used for climate data, stream flows, surface water diversions, reservoir storage, and land use.

¹⁶ https://www.yologroundwater.org/files/cc7d08fed/Yolo+GSP_AppendixF.pdf

¹⁷ https://www.yologroundwater.org/files/b90061148/Yolo+GSP_AppendixE.pdf

TABLE 17: DATA SOURCES AND ACCURACY

Variable	Data Source	Certainty
Climate	CIMIS ¹⁸ , PRISM ¹⁹	Medium
Stream Flows	USGS ²⁰	High
Surface Water Diversions	eWRIMS ²¹ , Direct Reporting	Medium
Reservoir Storage	CDEC ²²	High
Groundwater Levels	YSGA	High
Land Use	See Section 5.2	Medium

The largest source of uncertainty is land use data and irrigation applications. Assumptions using the best available data and methods were used to estimate land use in Water Years 2020, 2021, and 2022. Modeled water use estimates are highly sensitive to changes in land use and to assumptions about whether crops are fully irrigated or not. Conversations with growers and USDA staff in the first quarter of 2024, plus intensive investigation of OpenET²³, confirm that there is a wide variation in water application on orchards and alfalfa. OpenET estimates, based on satellite data, depend on the frequency of satellite overpass, the time of overpass, and the algorithms to interpolate between overpass dates as well as estimate a daily total from an instantaneous snapshot, all of which can lead to substantial uncertainty in final estimates. Therefore, we tailored the ET parameters for almonds and pistachios by using field data and experience courtesy of Daniele Zaccaria and UCD Cooperative Extension, along with grower information on applied water, in addition to OpenET estimates.

In addition, there is significant uncertainty with estimating surface water diversions. Because the SWRCB’s reporting deadline for Water Year 2024 was February 1, 2025, data for Water Year 2024 may be incomplete. Data for Water Year 2024 was last downloaded for this report on February 19, 2025.

5.2 LAND USE ESTIMATES

Water Year 2019 land use was modeled using DWR’s 2019 Statewide Cropping²⁴ dataset. For Water Years 2020 and 2021, land use was modeled using GIS data from the County of Yolo²⁵, along with corrections from local agencies. 2022 land use was initially kept constant with 2021 land use; corrections were then provided by local agencies to reflect significant fallowing that occurred in 2022. 2023 and 2024 land use data was purchased from LandIQ.

¹⁸ <https://cimis.water.ca.gov/>

¹⁹ <http://www.prism.oregonstate.edu/explorer/>

²⁰ <https://waterdata.usgs.gov/nwis/sw>

²¹ https://www.waterboards.ca.gov/waterrights/water_issues/programs/ewrims/

²² <https://cdec.water.ca.gov/>

²³ <https://etdata.org/>

²⁴ <https://data.cnra.ca.gov/dataset/i15-crop-mapping-2019>

²⁵ <https://yodata-yolo.opendata.arcgis.com/search?groupIds=8880e638e44f4fab8b2aaca6633f2ced>

Table 18 provides the modeled acreage of each major land use type for 2020-2024. Land use is used to estimate actual agricultural evapotranspiration (ET_a) using the MABIA Method²⁶, which represents the amount of water consumed by crops.

TABLE 18: ESTIMATED LAND USE 2020-2024

	2020 Acres	2021 Acres	2022 Acres	2023 Acres	2024 Acres
Native Vegetation & Fallow Land	339,300	348,800	375,300	287,100	297,300
Urban	35,500	35,500	35,500	29,500	29,900
Open Water	5,400	5,400	5,400	5,400	5,400
Total Irrigated Acres	259,000	249,400	222,900	317,100	306,600
Alfalfa	9,200	9,400	6,800	19,700	15,000
Deciduous Fruits & Nuts	73,800	75,200	79,000	79,200	76,200
<i>Almonds</i>	42,500	45,100	47,900	46,200	46,100
<i>Pistachios</i>	5,600	7,200	8,400	10,800	12,100
<i>Other</i>	25,700	22,900	22,700	22,200	18,000
Field Crops	33,200	25,800	16,500	24,500	36,100
<i>Corn</i>	6,500	6,600	4,900	10,000	20,800
<i>Sunflower & Safflower</i>	6,800	4,600	4,000	4,000	6,800
<i>Other</i>	19,900	14,600	7,600	10,500	8,600
Grain	19,500	23,400	20,000	48,600	40,700
Managed Wetlands	30,200	30,200	30,300	30,300	30,300
Pasture	800	800	700	11,900	10,900
Rice	35,500	24,200	12,400	33,500	31,200
Subtropical Fruits & Nuts	5,800	6,200	6,200	6,600	8,100
Truck Crops	30,000	33,900	30,800	43,800	39,800
<i>Cucurbits</i>	2,100	900	900	3,800	4,800
<i>Tomatoes</i>	25,300	28,900	26,500	34,700	30,500
<i>Other</i>	2,700	4,100	3,500	5,300	4,500
Vineyards	20,900	20,200	20,200	19,000	18,300

5.3 SURFACE WATER DIVERSIONS

5.3.1 Urban Surface Water Diversions

Urban surface water diversions were reported directly by the following municipalities. The reported values were used to constrain urban surface water deliveries in the YSGA Model (Table 16, line 5).

- City of Davis
- City of Woodland and Woodland-Davis Clean Water Agency (WDCWA)
- City of West Sacramento
- University of California, Davis

²⁶ See https://www.yologroundwater.org/files/b90061148/Yolo+GSP_AppendixE.pdf#page=20

5.3.2 Agricultural Surface Water Diversions

To estimate surface water diversion in agricultural areas (Table 16, line 1), data reported from agricultural water purveyors was used along with data extracted from eWRIMS. The reported values were used to constrain agricultural surface water deliveries in the YSGA Model. The following agricultural water purveyors provided estimates of surface water diversions for Water Years 2019 through 2024:

- Yolo County Flood Control & Water Conservation District
- Dunnigan Water District
- Reclamation District (RD) 108
- RD 787
- RD 2035
- Rumsey Water Users Association

The remainder of the agricultural surface water used in the Subbasin was estimated using the State Water Resources Control Board’s eWRIMS database²⁷. The eWRIMS database provides reported water use amounts for each SWRCB permit. The entities who had reported directly to the YSGA were removed from the total diversion amount to prevent double counting.

5.3.3 Total Surface Water Diversions

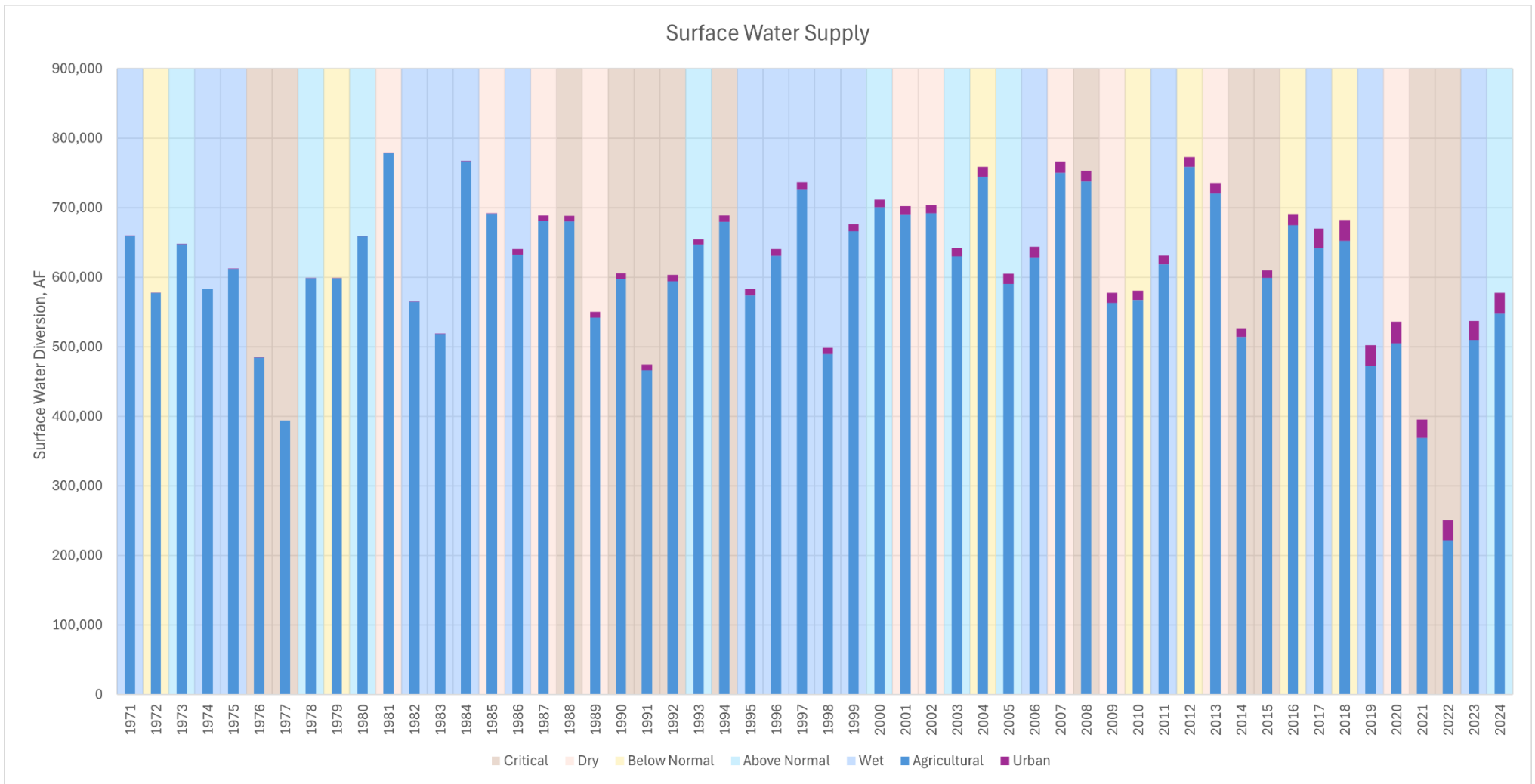
Total surface water diversions (Table 16, line 9) are modeled by the WEAP portion of the YSGA Model, using reported urban surface water diversions, reported agricultural surface water diversions, and agricultural surface water use from eWRIMS to constrain modeled water availability. Table 19 shows the surface water diversion in 2024 by source. Major storm events provided increased reservoir storage in Water Year 2020, allowing for approximately 500,000 AF of surface water diversions. However, critical Water Year 2021 brought historic drought conditions, leading to curtailments and a significant reduction (approximately 136,000 AF) in surface water diversions. Water Year 2022’s critical conditions worsened drought conditions and reduced available surface water by approximately another 147,000 AF from 2021. In Water Year 2023, wet conditions led to plentiful surface water supply, returning to normal diversion amounts of approximately 500,000 AF. Above normal rainfall and abundant reservoir storage allowed for more surface water diversions in Water Year 2024, totaling over 550,000 AF.

TABLE 19: WY 2024 SURFACE WATER SUPPLY BY SOURCE

Surface Water Source	Water Use (Acre-feet)	Methods Used to Determine
Central Valley Project	180,000	Self-reported by member agencies
State Water Project	0	
Managed Local Supplies	397,500	Self-reported by member agencies and EWRIMS
Local Imported Supplies	0	
Recycled Water	0	
Other	0	
TOTAL	577,500	

²⁷ https://www.waterboards.ca.gov/waterrights/water_issues/programs/ewrims/

FIGURE 19: ANNUAL SURFACE WATER SUPPLY



5.4 GROUNDWATER EXTRACTION

5.4.1 Urban Groundwater Extraction

Extraction of groundwater for urban delivery was reported directly by the following entities, representing most urban water purveyors (Table 16, line 6). This number may be slightly under-reported due to the YSGA's inability to collect data from smaller urban water suppliers in the Subbasin.

- City of Davis
- City of Woodland
- City of Winters
- University of California, Davis
- Esparto Community Services District (CSD)
- Madison CSD
- California American Water Company, Dunnigan

Pump-to-waste was reported separately by the Cities of Davis, Woodland, and Winters, as well as UC Davis. For the purposes of this report, pump-to-waste was modeled as additional groundwater extraction.

5.4.2 Agricultural Groundwater Extraction

Agricultural groundwater extraction is not directly measured in the Yolo Subbasin. Groundwater extraction, shown in Table 16, line 2, is modeled by the YSGA model using land use estimates, estimated crop water demand, irrigation efficiency, and available surface water supplies. The model uses precipitation, existing soil moisture, and irrigation efficiency to calculate total agricultural water demand from agricultural ET_a . Finally, groundwater extraction is determined by subtracting available surface water diversions (line 1) from the total agricultural water demand.

5.4.3 Total Groundwater Extraction

Total groundwater extraction (Table 16, line 10) is found by adding urban groundwater extraction (line 6) and agricultural groundwater extraction (line 2).

As an estimate of the Subbasin's condition relative to the GSP's sustainability goal, annual groundwater extraction can be compared to the sustainable yield. Sustainable yield represents the amount of groundwater that can be withdrawn annually without causing undesirable results. The estimated annual pumping in the Subbasin varies widely over the historical period, from 197-519 TAF/year. Note that SGMA does not incorporate sustainable yield estimates directly into sustainable management criteria. "Basinwide pumping within the sustainable yield estimate is neither a measure of, nor proof of, sustainability. Sustainability under SGMA is only demonstrated by avoiding undesirable results for the six sustainability indicators" (DWR 2017).

The GSP lists the sustainable yield of the Yolo Subbasin as approximately 346,000 AF. Figure 20 presents the annual groundwater extraction estimates from Table 16 relative to the sustainable yield of 346 TAF. Table 20 provides groundwater extraction estimates by water use sector, and Figure 21 provides a spatial visualization of estimated groundwater pumping by MODFLOW cell.

FIGURE 20. ANNUAL GROUNDWATER EXTRACTION

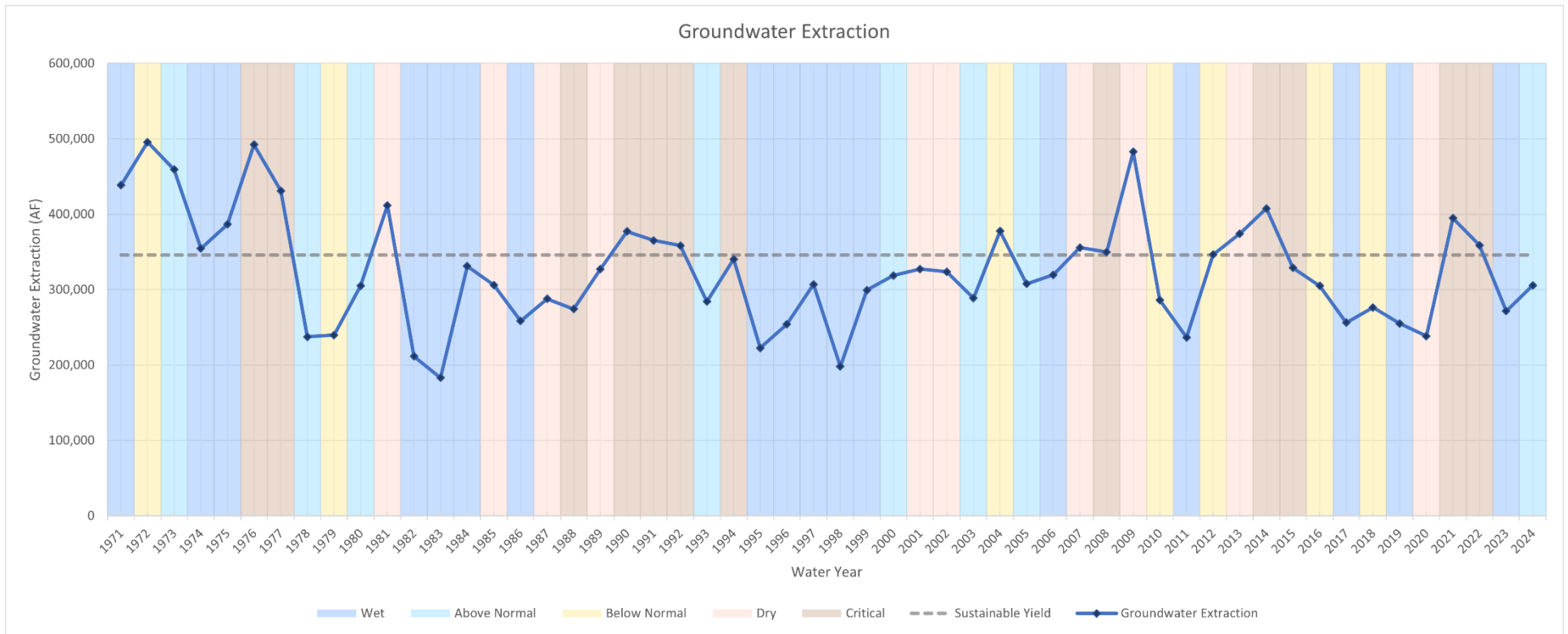


TABLE 20: WY 2024 GROUNDWATER EXTRACTION BY SECTOR

Sector	Groundwater Extraction (Acre-feet)
Urban	11,900
Industrial	0
Agricultural	293,700
Managed Wetland	0
Managed Recharge	0
Native Vegetation	0
Other	0
TOTAL	305,600

FIGURE 21: WATER YEAR 2024 GROUNDWATER EXTRACTION

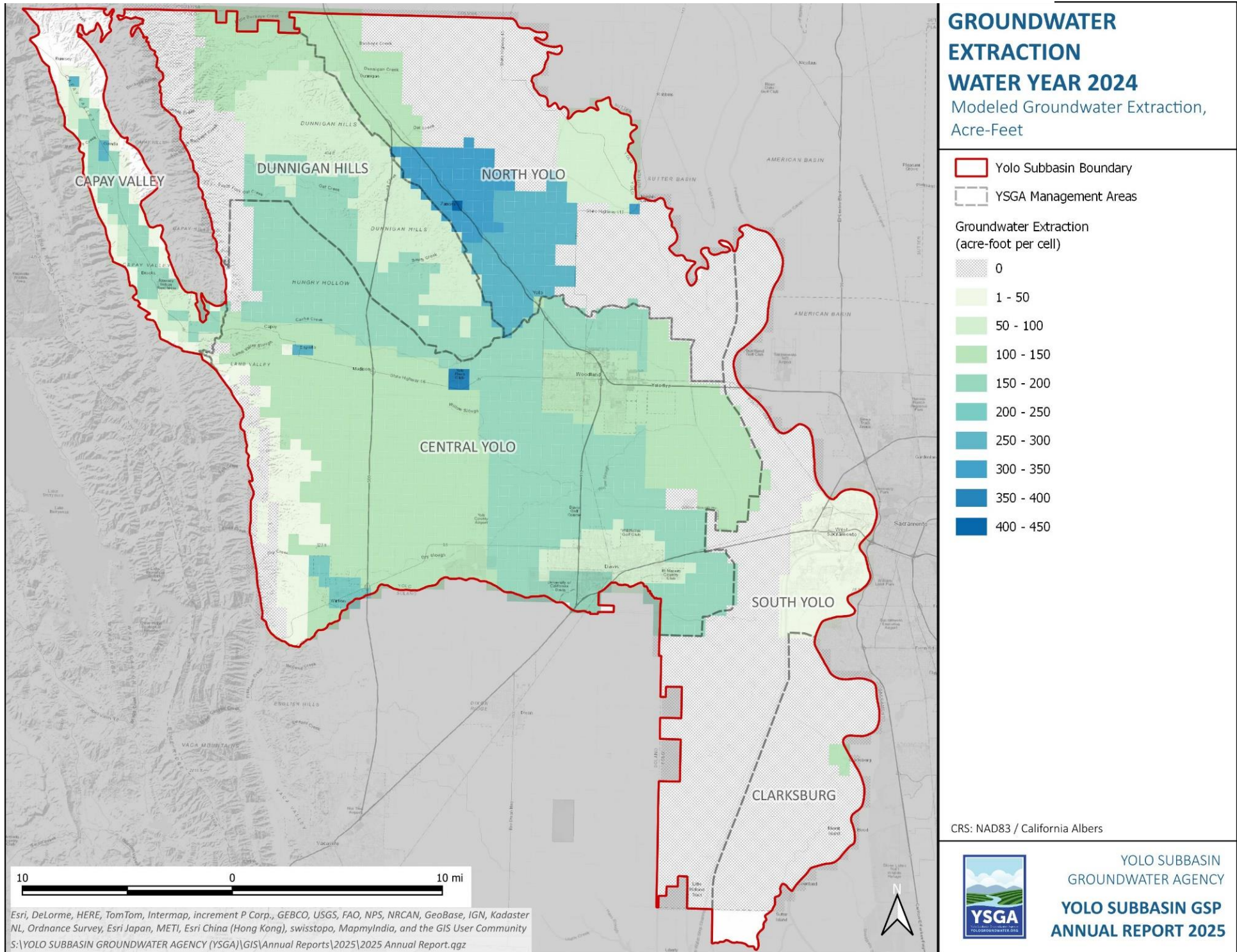
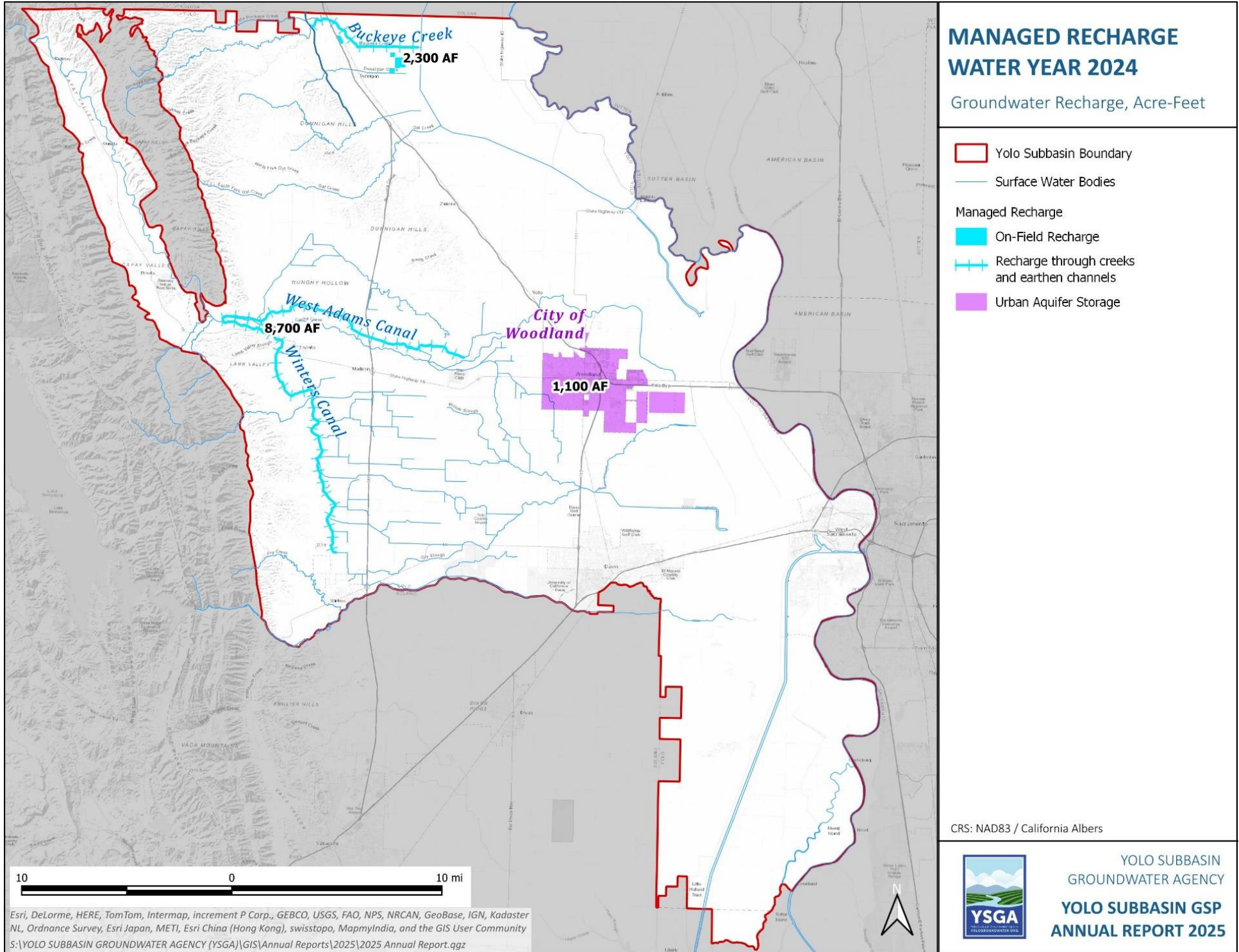


FIGURE 22: WATER YEAR 2024 MANAGED RECHARGE



5.5 MANAGED RECHARGE

During Water Year 2024, managed groundwater recharge projects were implemented by Dunnigan Water District, Yolo County Flood Control & Water Conservation District (YCFC&WCD), and the City of Woodland. The locations of these projects are shown in Figure 22.

5.5.1 Agricultural Managed Recharge

Due to surface water availability, Dunnigan Water District and YCFC&WCD were able to conduct groundwater recharge during the winter. Dunnigan Water District recharged 2,265 AF of water purchased from the Tehama-Colusa Canal. The water recharged through the gravel channel of Buckeye Creek and was also applied to farmers’ fields. YCFC&WCD recharged 8,710 AF of water from Cache Creek using the earthen Winters and West Adams canals.

5.5.2 Urban Managed Recharge

The City of Woodland injects surface water into the aquifer using aquifer storage and recovery (ASR) wells; this water is accounted for in line 7 of Table 16. Water recovered from the aquifer using the ASR wells is included within line 6. During Water Year 2024, the City injected 1,109 AF of surface water.

5.6 TOTAL WATER USE

Total water use (Table 16, line 12) is estimated at the Yolo Subbasin scale as the sum of surface water diversions (line 12) and groundwater extraction (line 13). Water use in 2024 (883 TAF) displays an increase from 2023, but much of this increase is explained by the increased availability of surface water (38 TAF more in WY 2024). Table 21 and Table 22 summarize total water use by source and by sector for Water Year 2024.

TABLE 21: WATER USE BY SOURCE

Water Source Type	Water Use (Acre-feet)
Groundwater	305,600
Surface Water	577,500
Recycled Water	
Reused Water	
Other	
TOTAL	883,000

TABLE 22: WATER USE BY SECTOR

Water Use Sector	Water Use (Acre-feet)
Urban	41,800
Industrial	
Agricultural	808,400
Managed Wetlands	32,900
Managed Recharge	13,400
Native Vegetation	
Other	
TOTAL	883,000

5.7 CHANGE IN GROUNDWATER STORAGE

Changes in groundwater storage were modeled by the MODFLOW portion of the YSGA model. Changes in groundwater storage over time are the aggregate (net) outcome of the individual inflows and outflows from the aquifer. Table 23 shows the results of this analysis as changes in groundwater water storage.

TABLE 23: ESTIMATED GROUNDWATER EXTRACTION AND CHANGE IN GROUNDWATER STORAGE

Water Year	2020	2021	2022	2023	2024
Groundwater Extraction, AF	238,400	394,800	358,900	271,600	305,600
Difference to Sustainable Yield, AF	-107,600	+48,800	+12,900	-74,400	-40,400
Modeled Estimated Change in Storage, AF	-108,100	-280,000	-112,600	+246,300	+10,400

Figure 23 and Figure 24 show the cumulative monthly, and annual incremental change in modeled groundwater storage values, from WY 1971 onwards along with the corresponding Water Year type. Subbasin groundwater storage tracks wet and dry years consistently over the 50+ years of modeling. In deep droughts (1976-1977 and 2020-2022 for example) and in extended droughts (late 1980's and 2011-2015), groundwater storage trends downwards. In wet years, Subbasin groundwater storage has historically recovered, and showed recovery in WY 2023 after three years of dry conditions. In WY 2024, groundwater storage recovered only slightly above that of WY 2023, and storage has still not returned to pre-drought WY 2019 conditions.

Figure 25 provides a map of estimated change in storage at the Yolo Subbasin level that may not agree with real-time conditions. Estimates are provided for each MODFLOW cell, which each have an area of 1/4 square mile. In much of the Subbasin, there was no substantial change in groundwater storage compared to WY 2023. The largest gains are in western portions of the Subbasin between Esparto and Winters. In the Dunnigan Hills and Zamora areas, the model shows a loss in groundwater storage.

FIGURE 23: CUMULATIVE CHANGE IN GROUNDWATER STORAGE

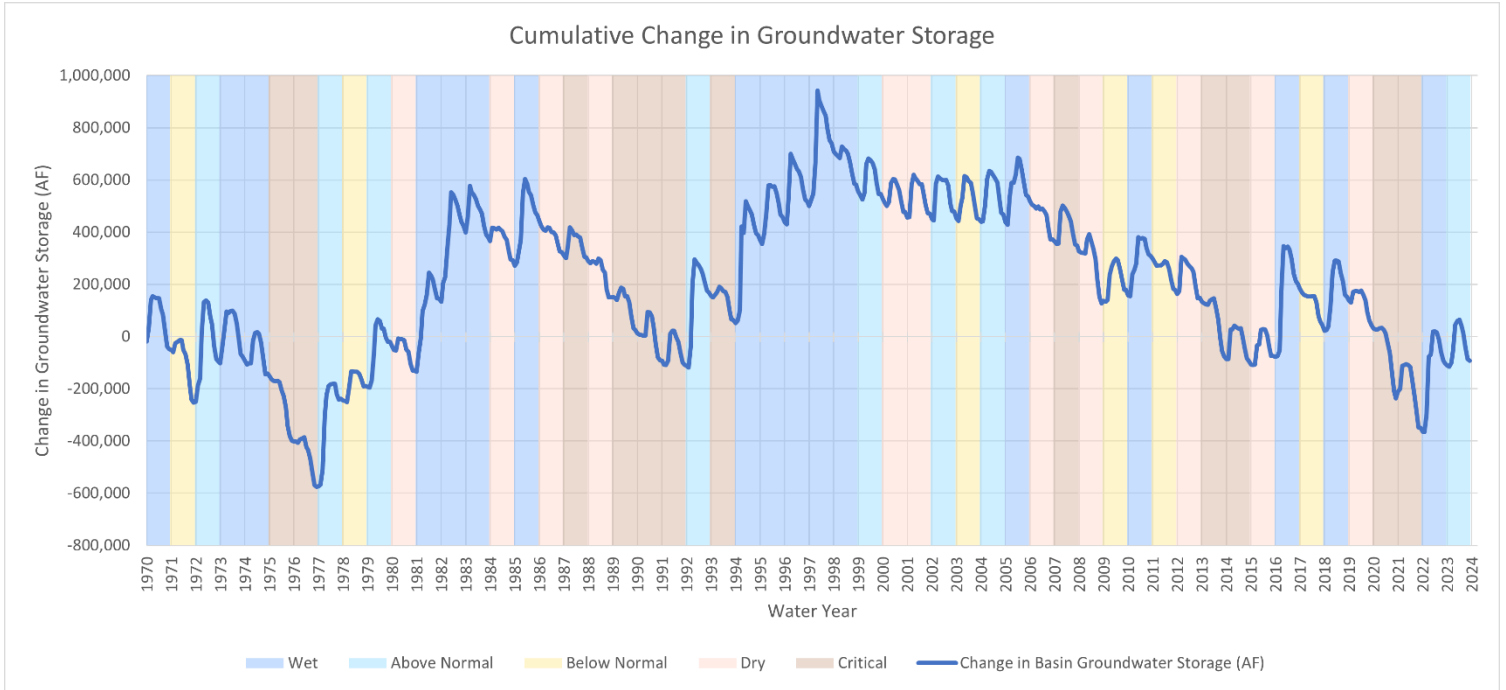


FIGURE 24: ANNUAL CHANGE IN GROUNDWATER STORAGE

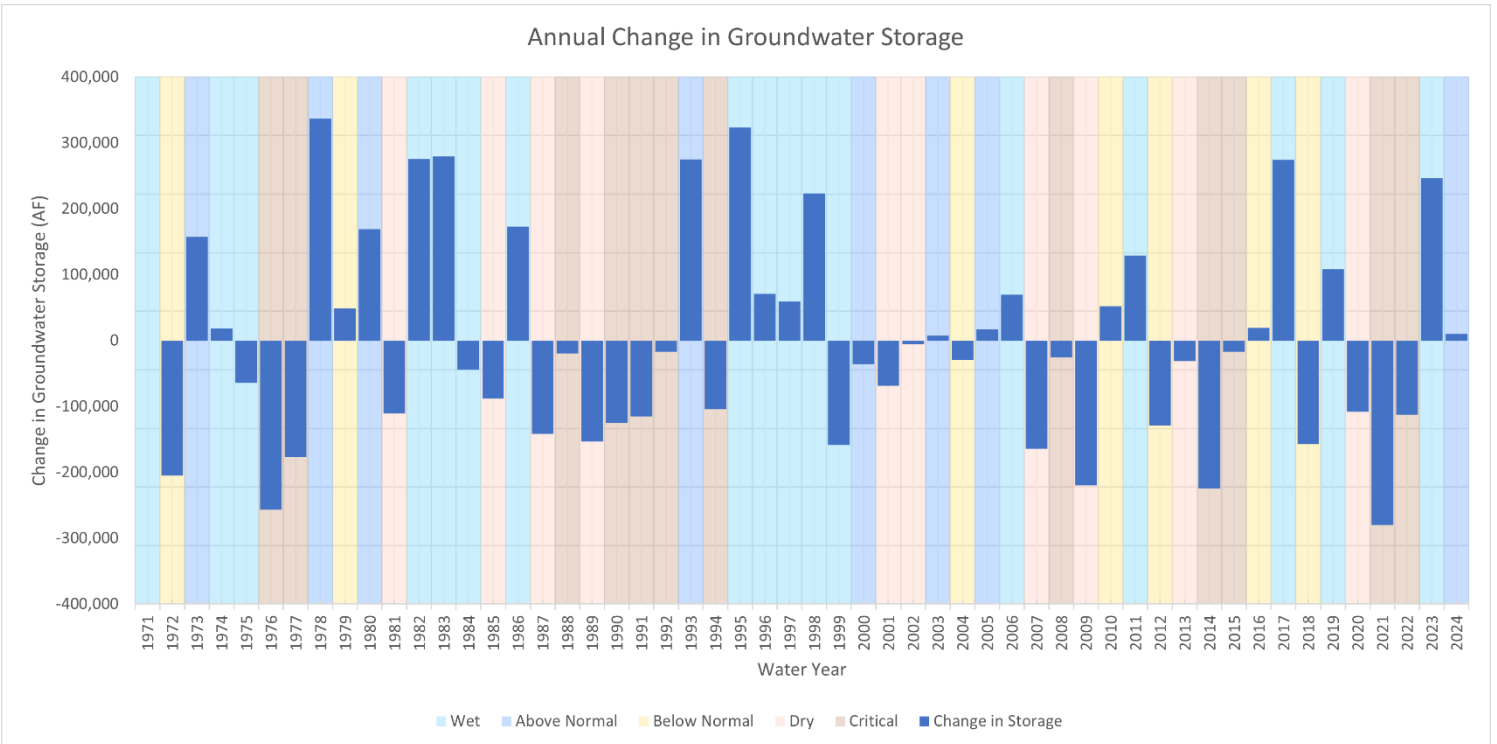
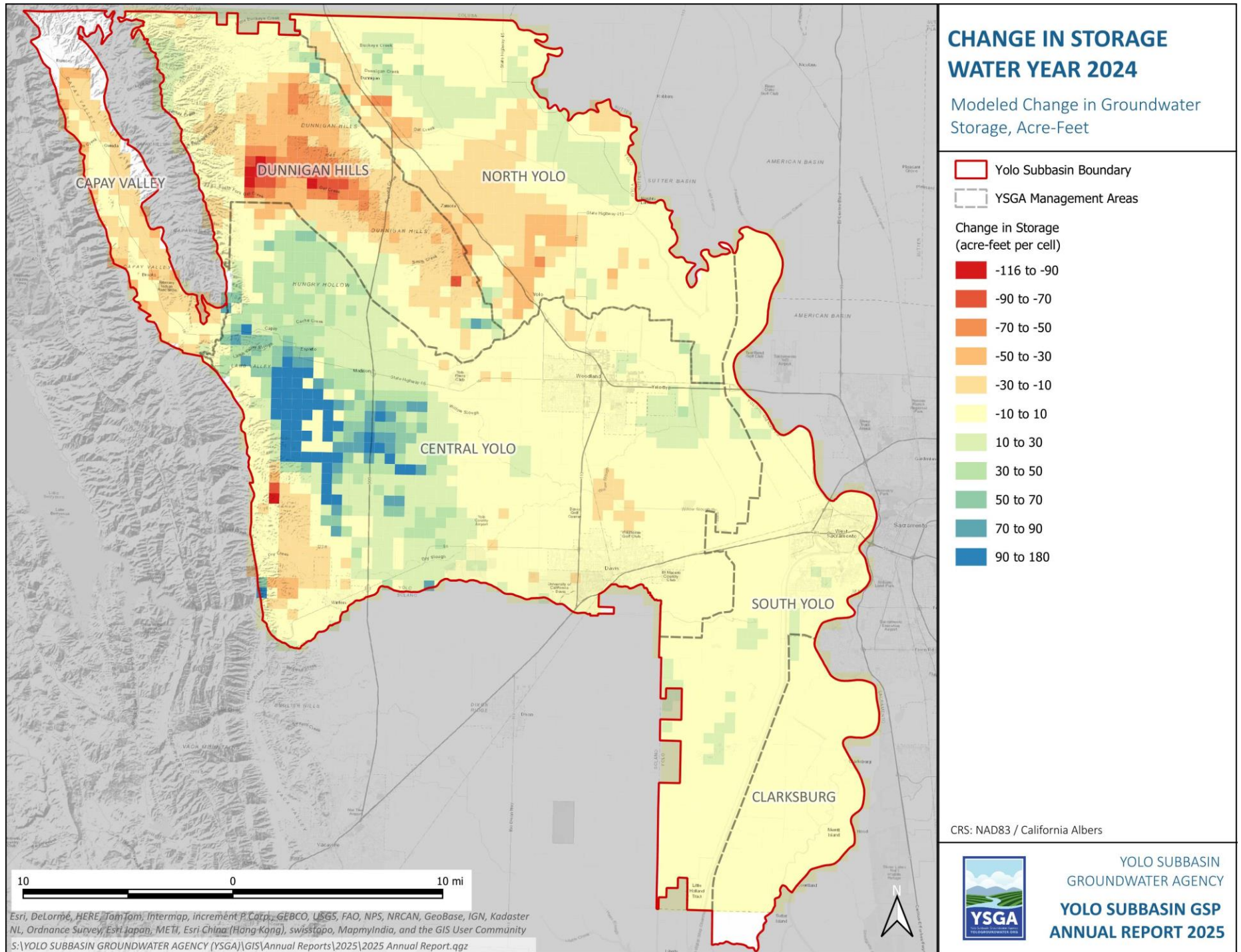


FIGURE 25. ESTIMATED CHANGE IN GROUNDWATER STORAGE – WATER YEAR 2024





530-662-3211
www.yologroundwater.org
34274 State Hwy 16, Woodland CA

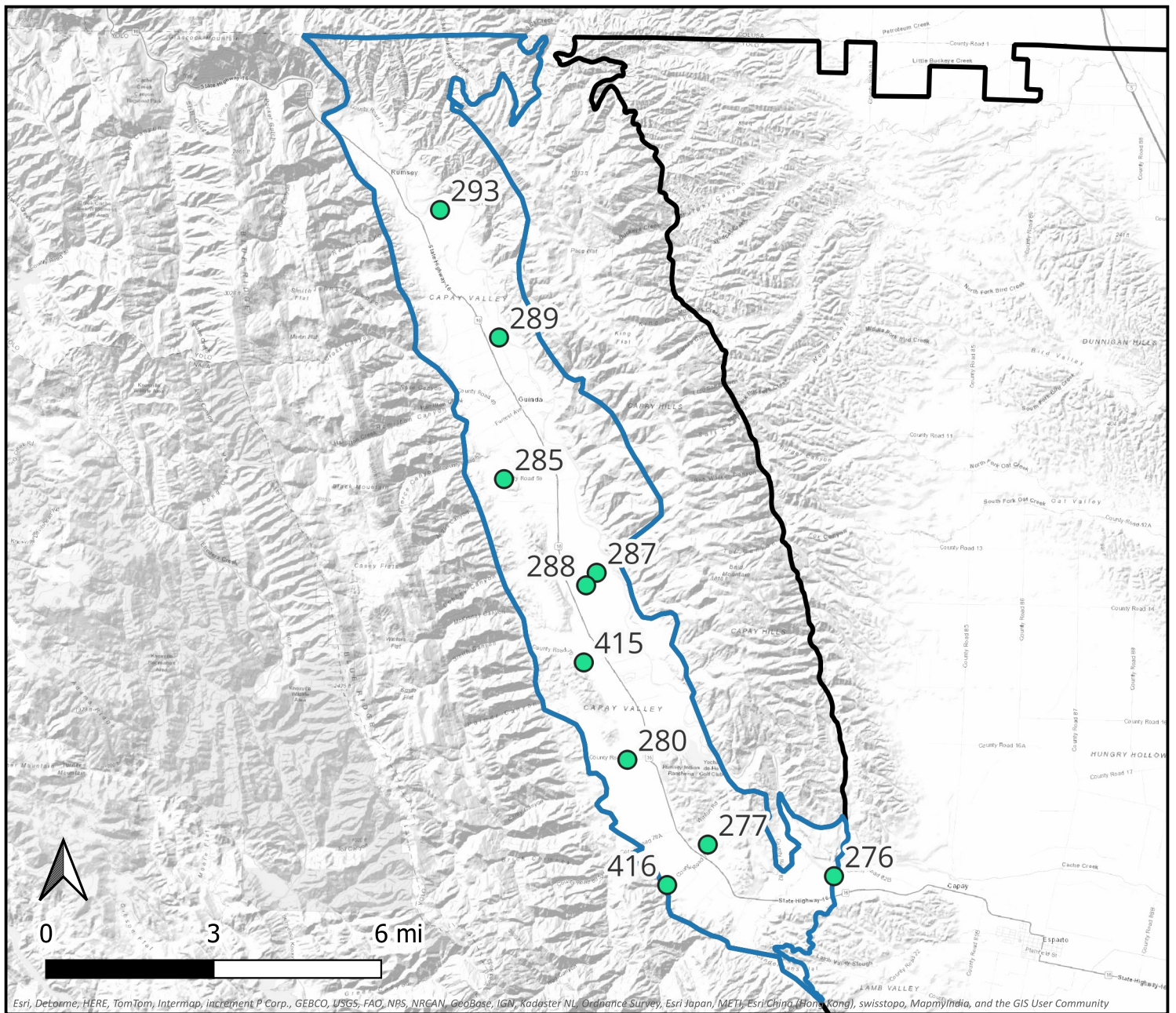
YOLO SUBBASIN GSP ANNUAL REPORT 2025



ATTACHMENT A

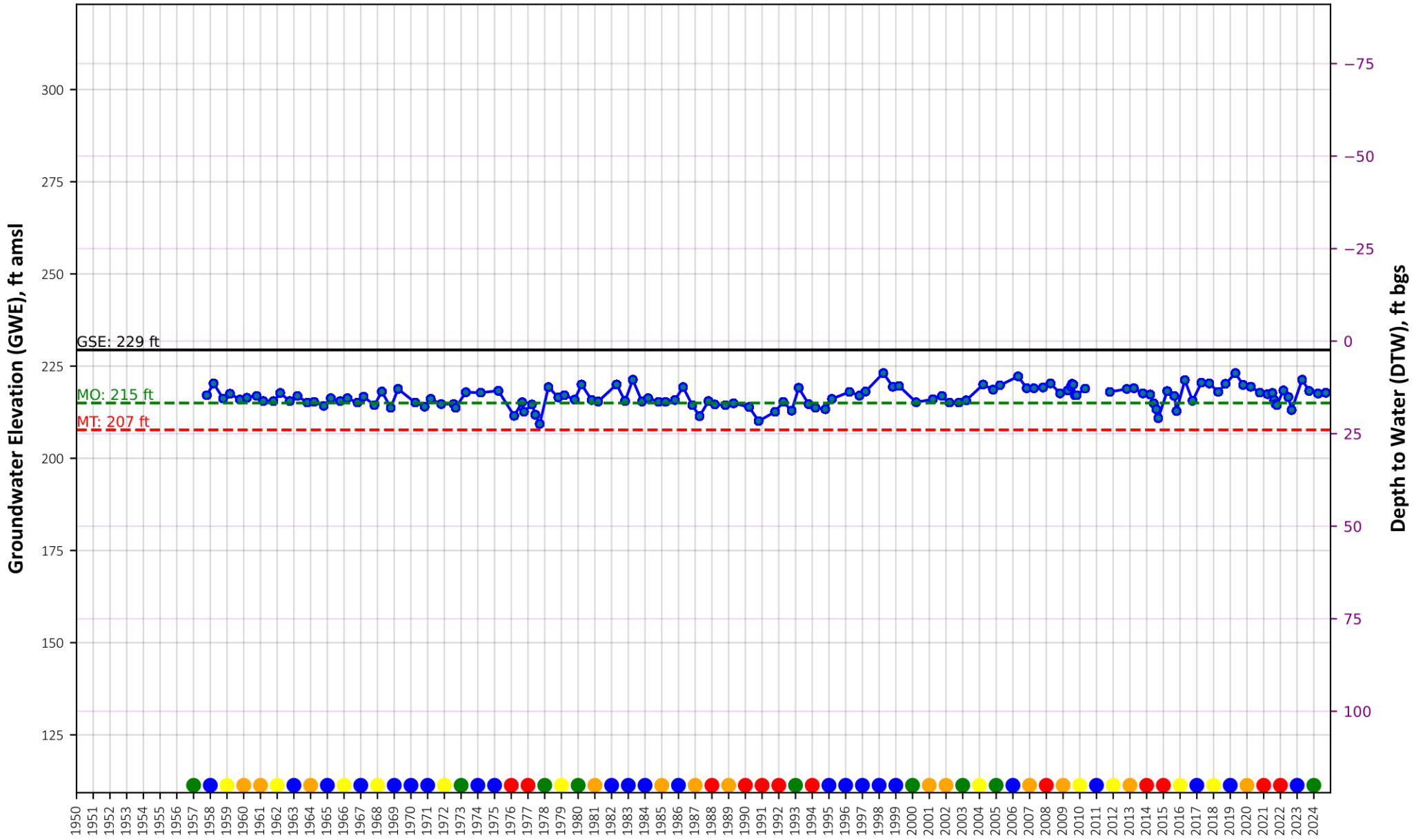
Groundwater Elevation

Representative Well Hydrographs



Capay Valley Management Area RMW Hydrographs

Groundwater Level Hydrograph for RMW #276



State Well Id: 10N02W16R001M
 Management Area: Capay Valley

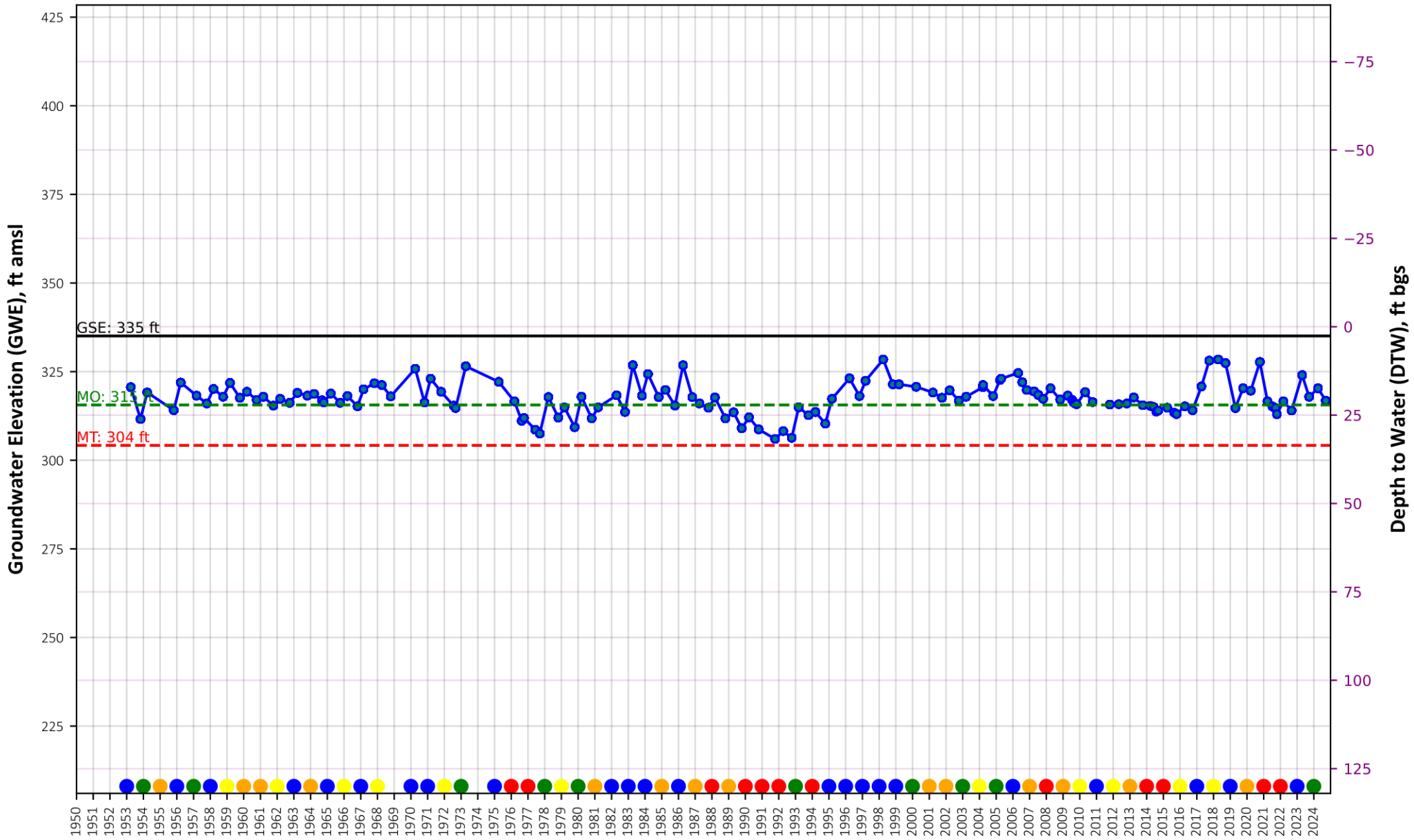


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #277



State Well Id: 10N02W18F001M
 Management Area: Capay Valley

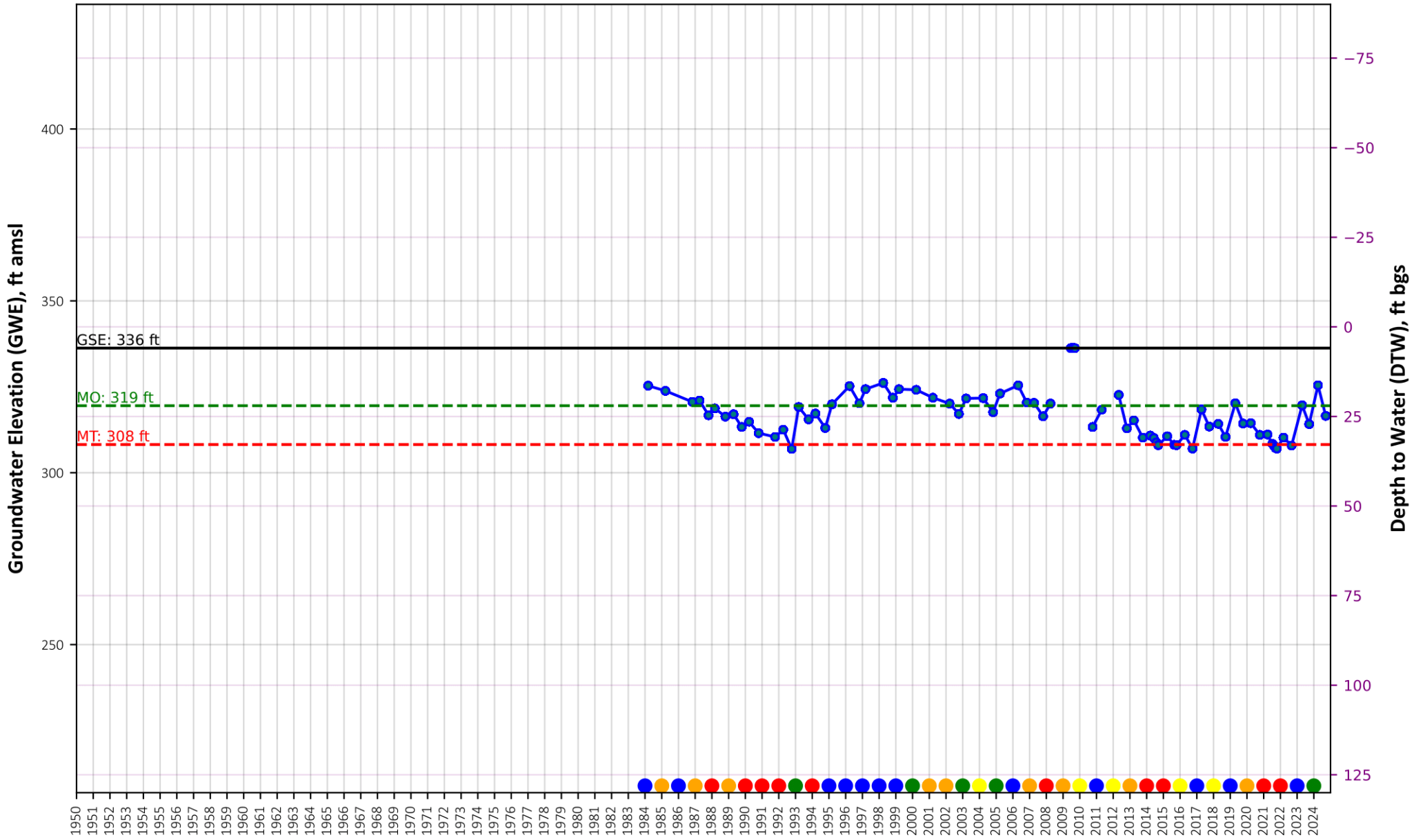


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #280



State Well Id: 10N03W02R002M
 Management Area: Capay Valley

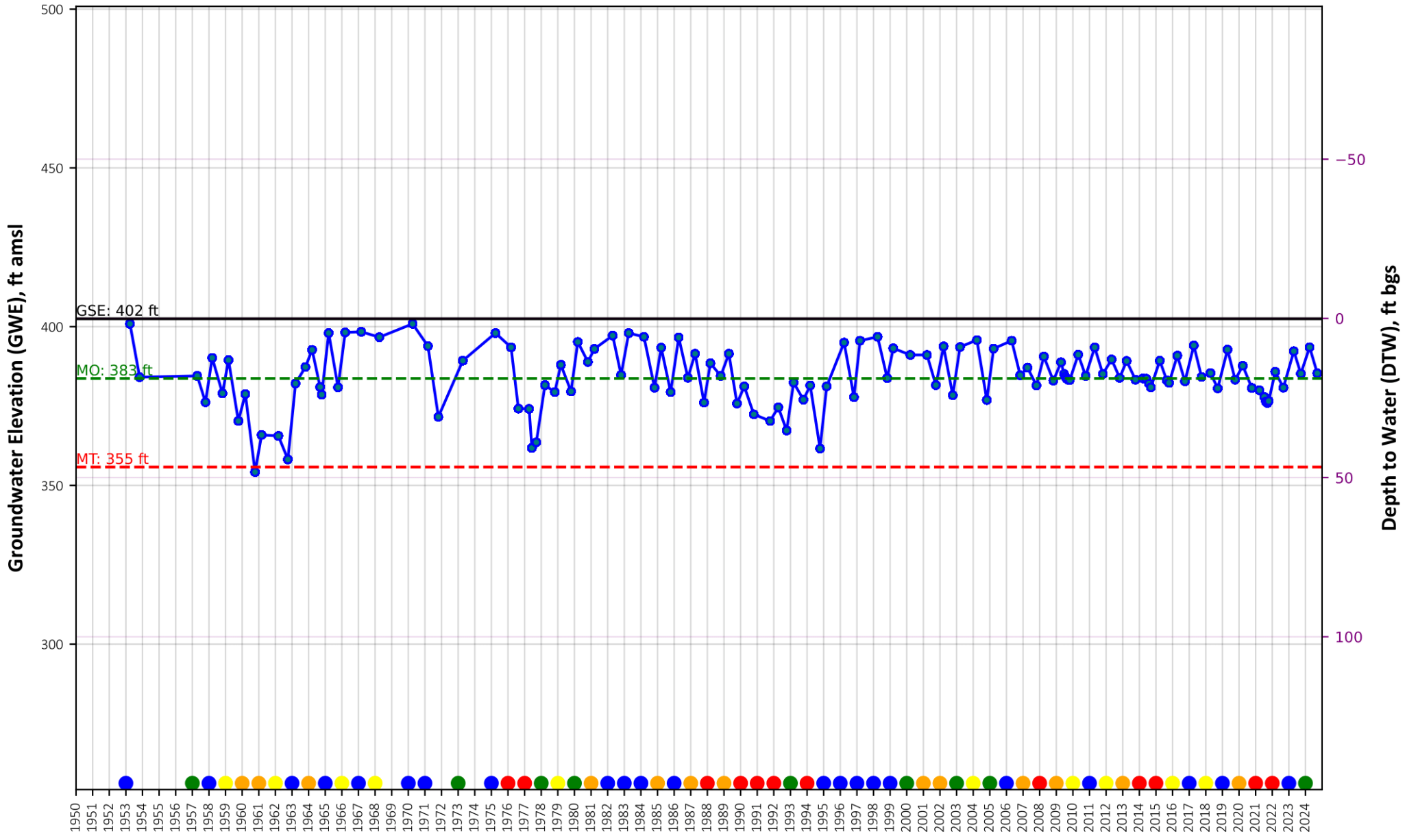


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #285



State Well Id: 11N03W09Q001M
 Management Area: Capay Valley

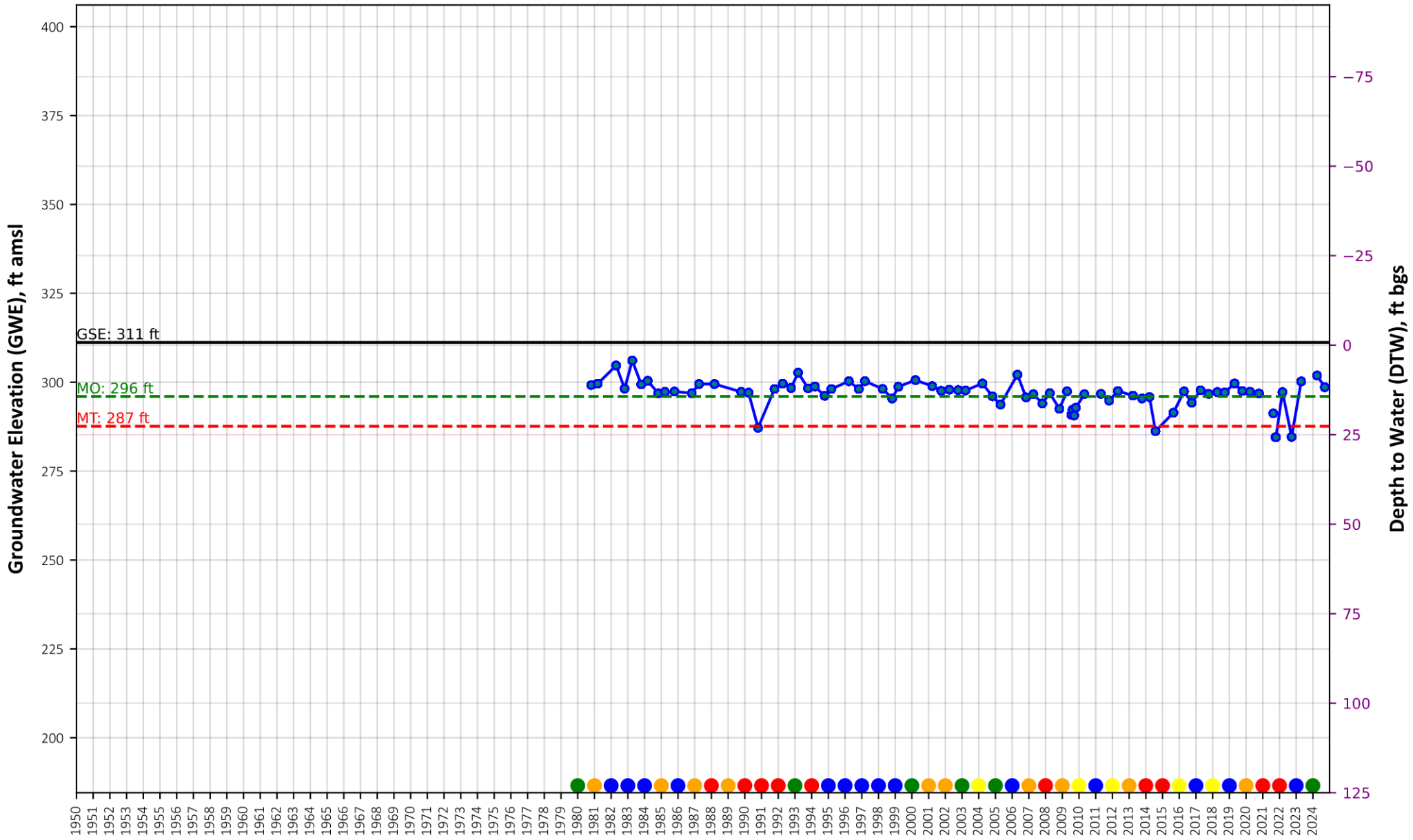


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #287



State Well Id: 11N03W23L001M
 Management Area: Capay Valley

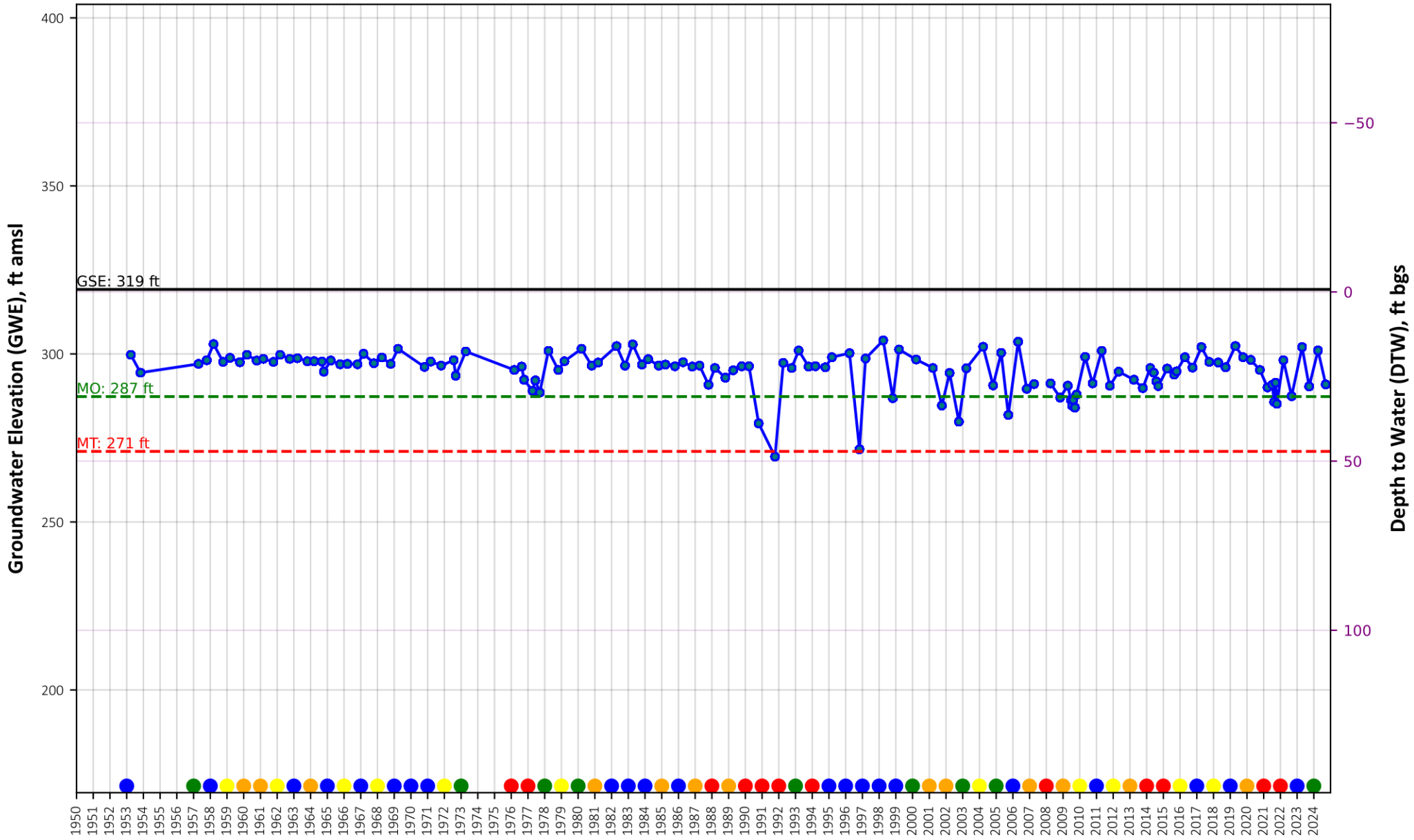


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #288



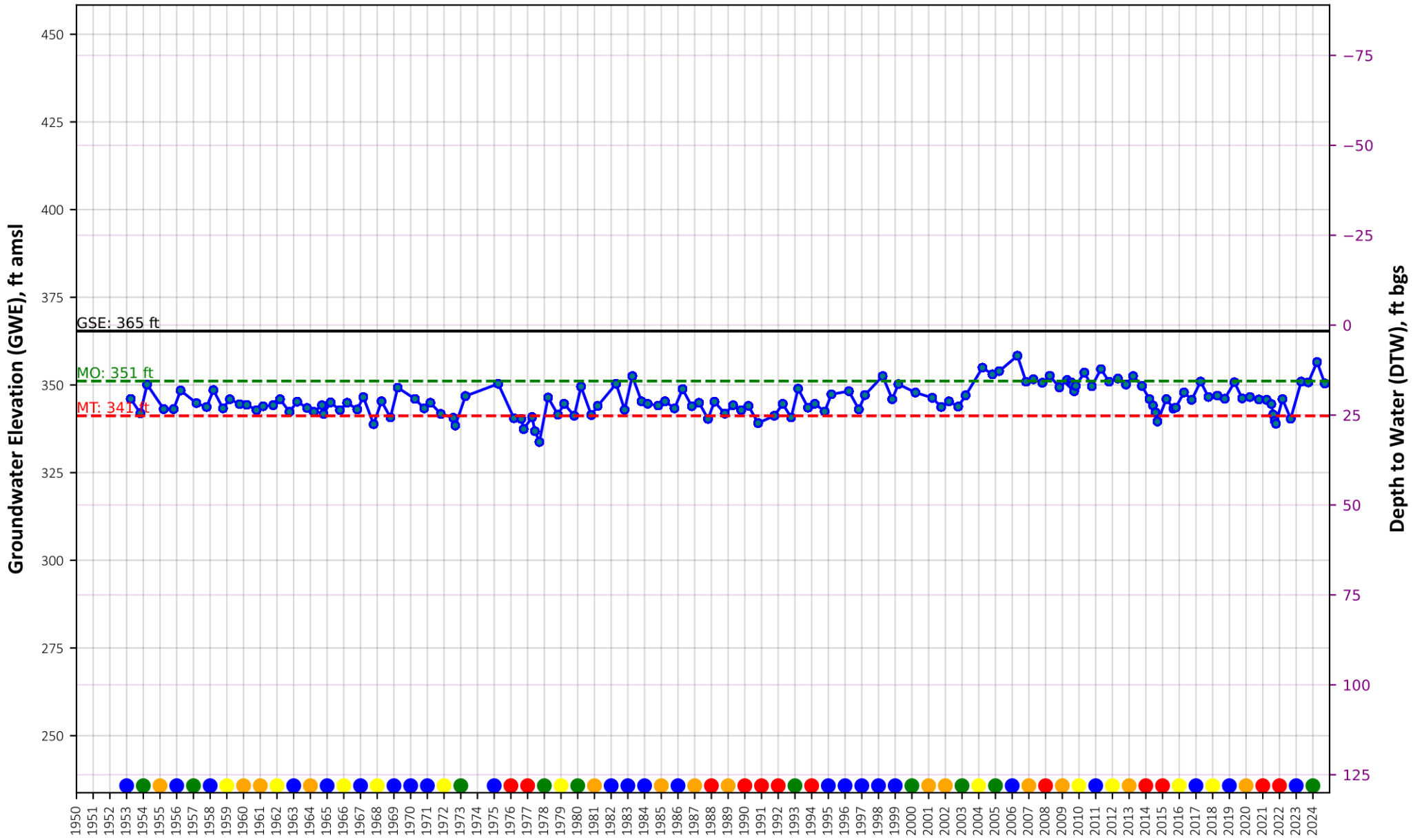
State Well Id: 11N03W23N001M
 Management Area: Capay Valley



- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #289



State Well Id: 11N03W33F001M
 Management Area: Capay Valley

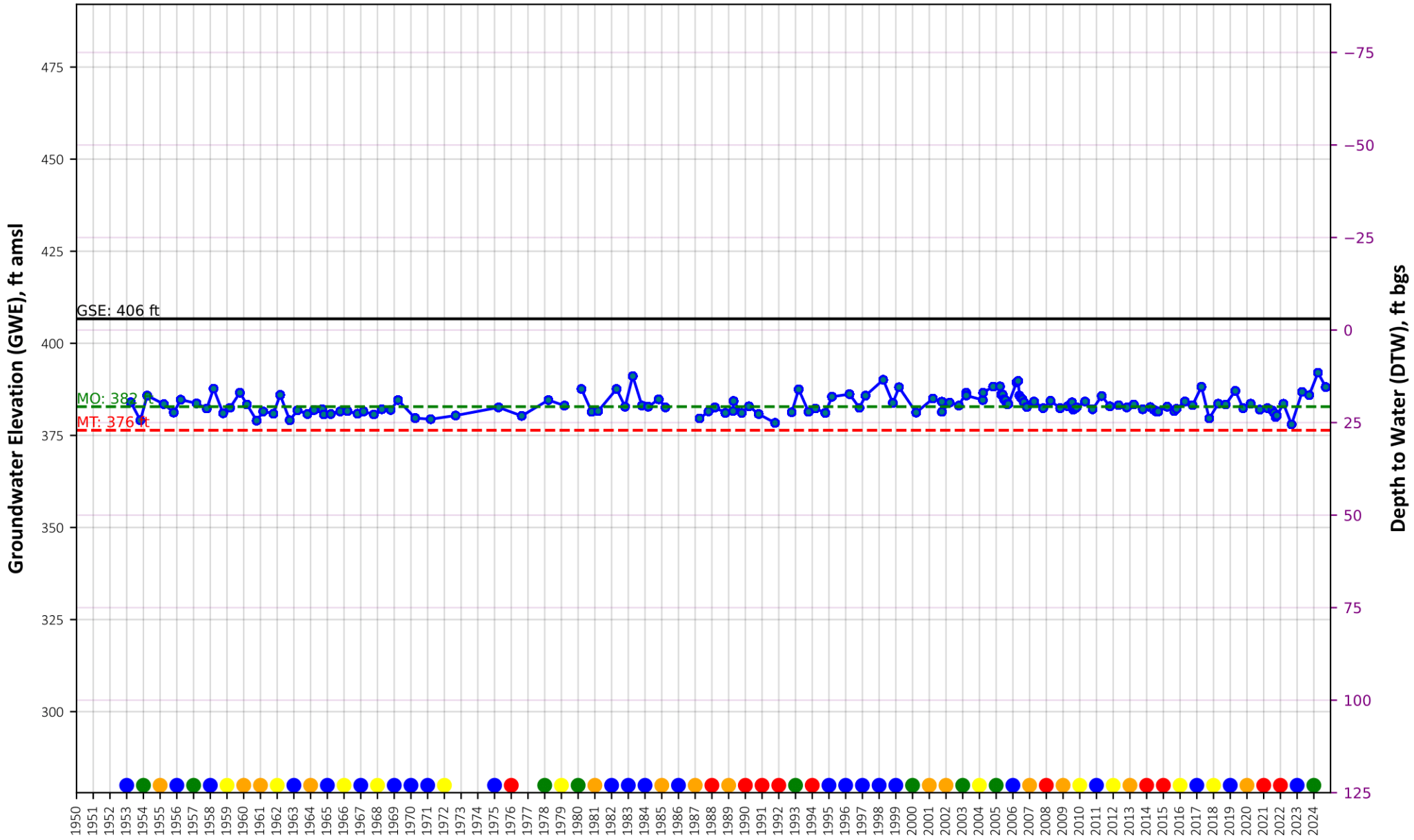


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #293



State Well Id: 12N03W20D001M
 Management Area: Capay Valley

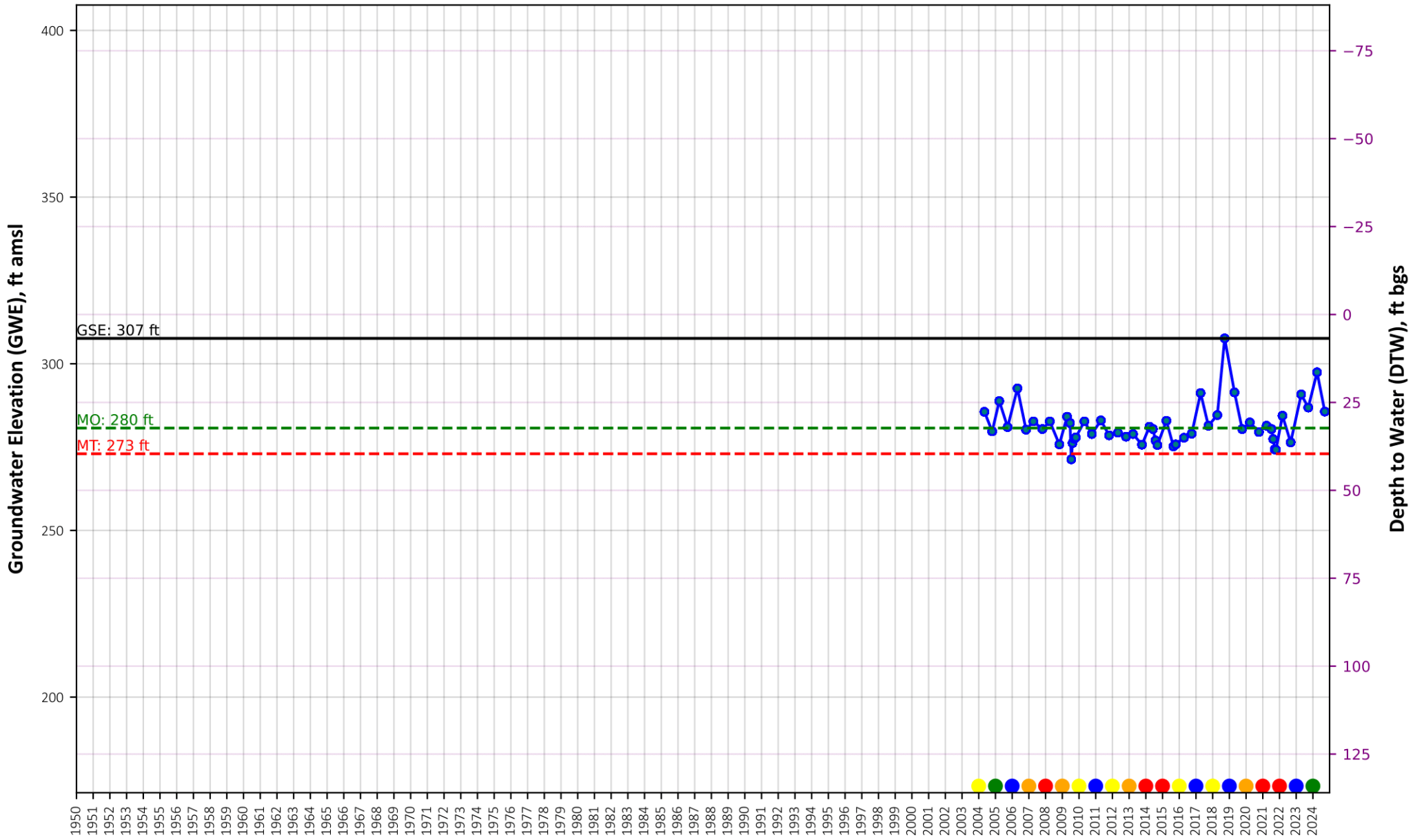


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #415



State Well Id: 11N03W35D003M
 Management Area: Capay Valley

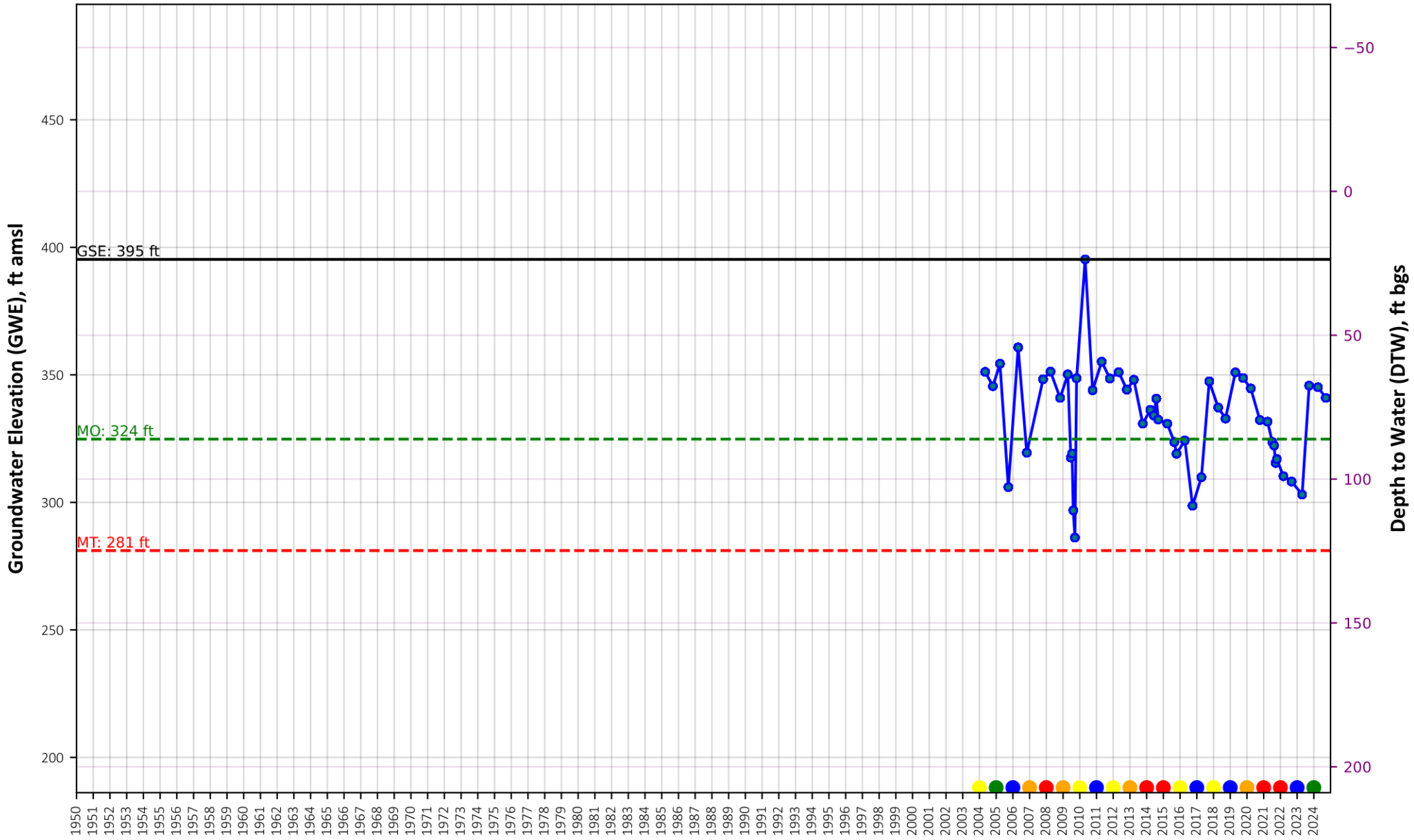


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #416



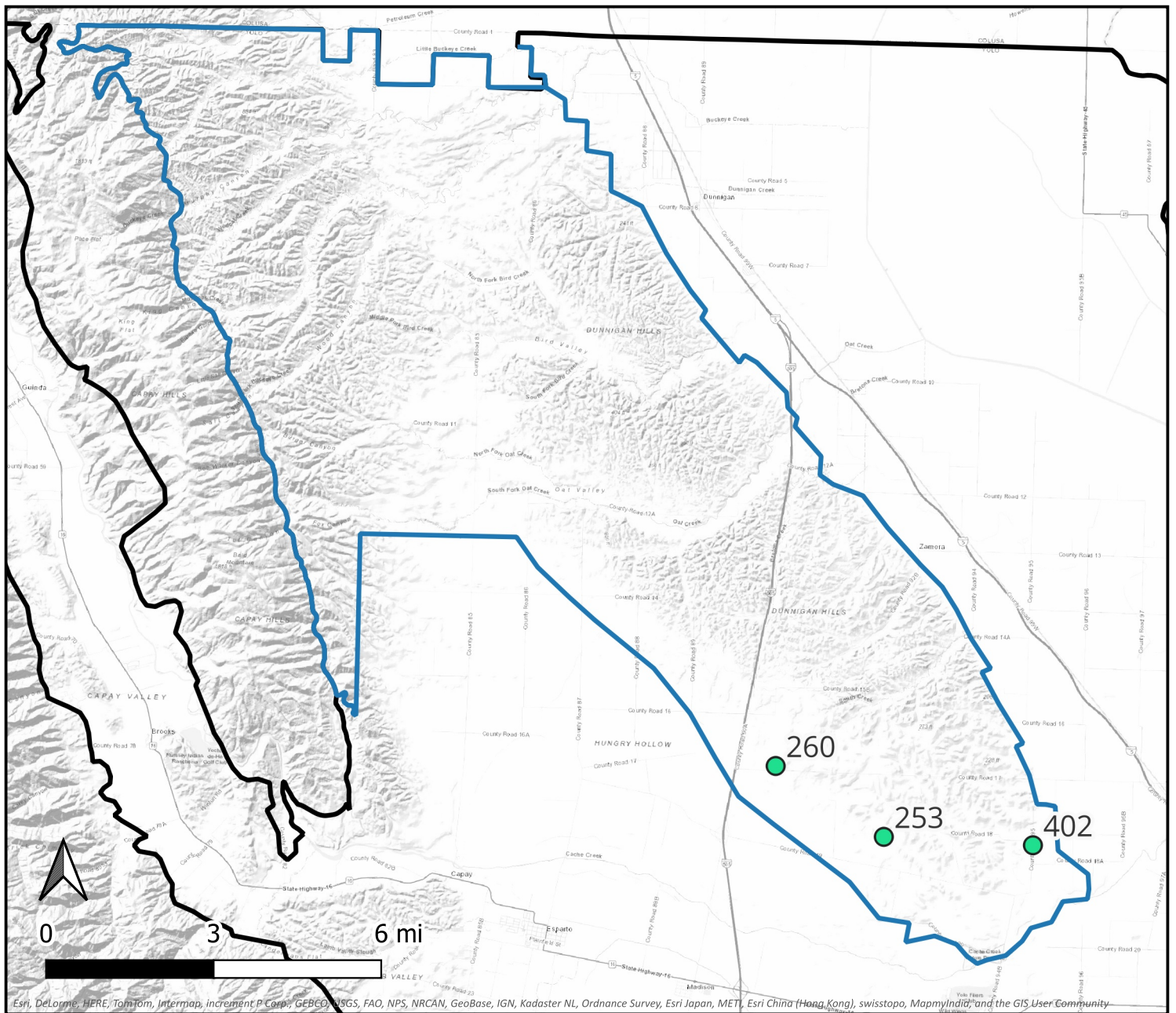
State Well Id: 10N03W24B002M
 Management Area: Capay Valley



Year

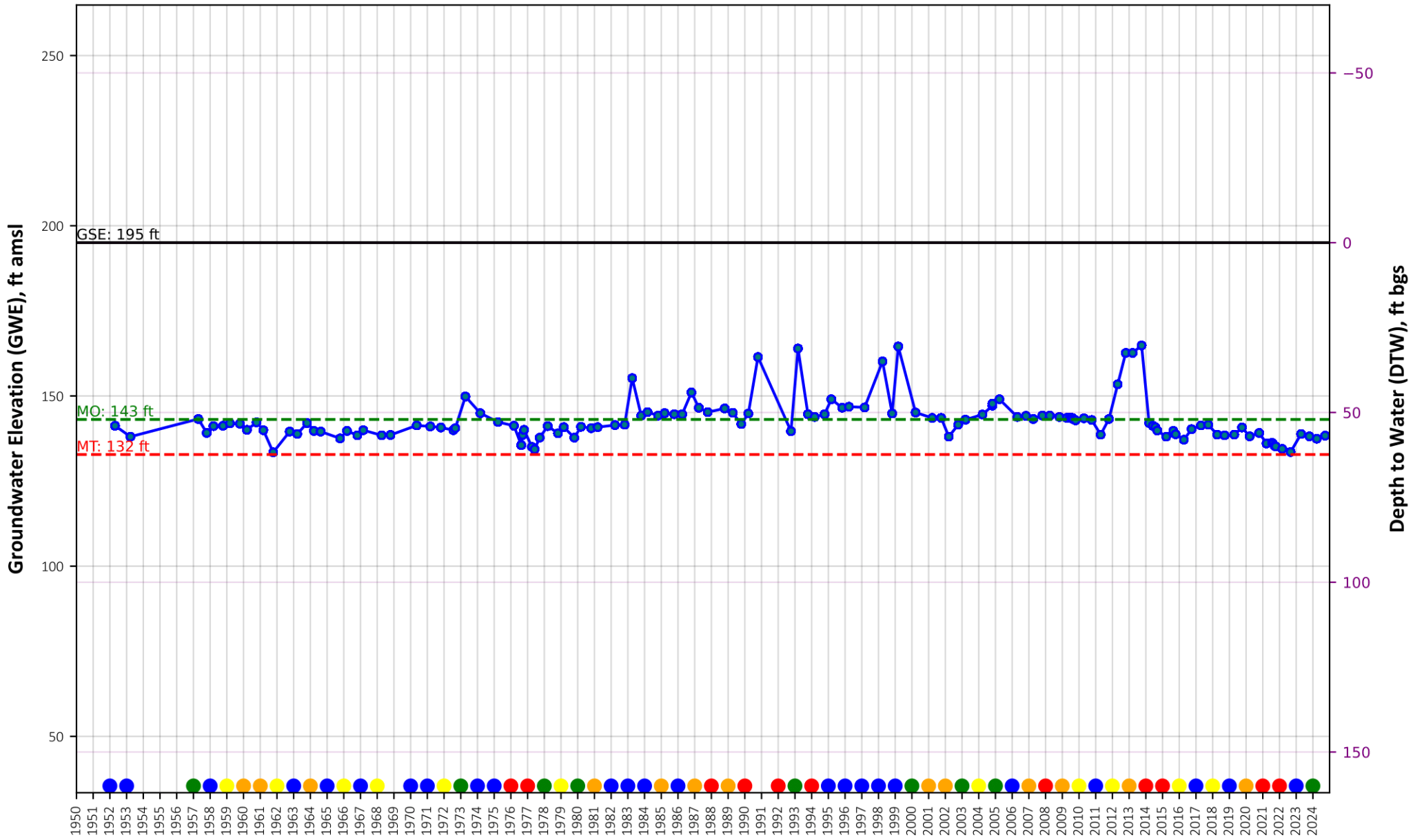
- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry





Dunnigan Hills Management Area RMW Hydrographs

Groundwater Level Hydrograph for RMW #253



State Well Id: 10N01E18C001M
 Management Area: Dunnigan Hills

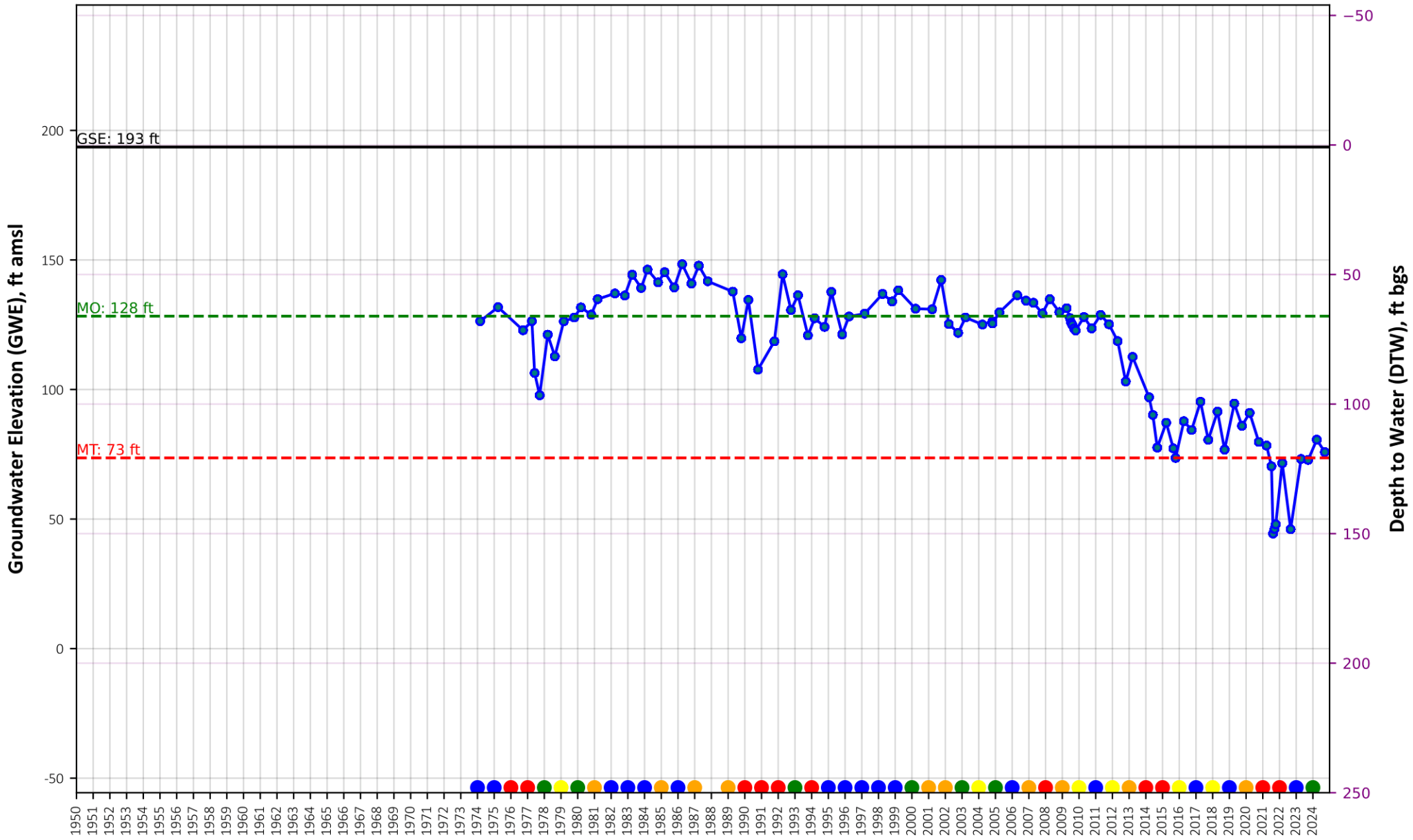


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #260



State Well Id: 10N01W02Q001M
 Management Area: Dunnigan Hills

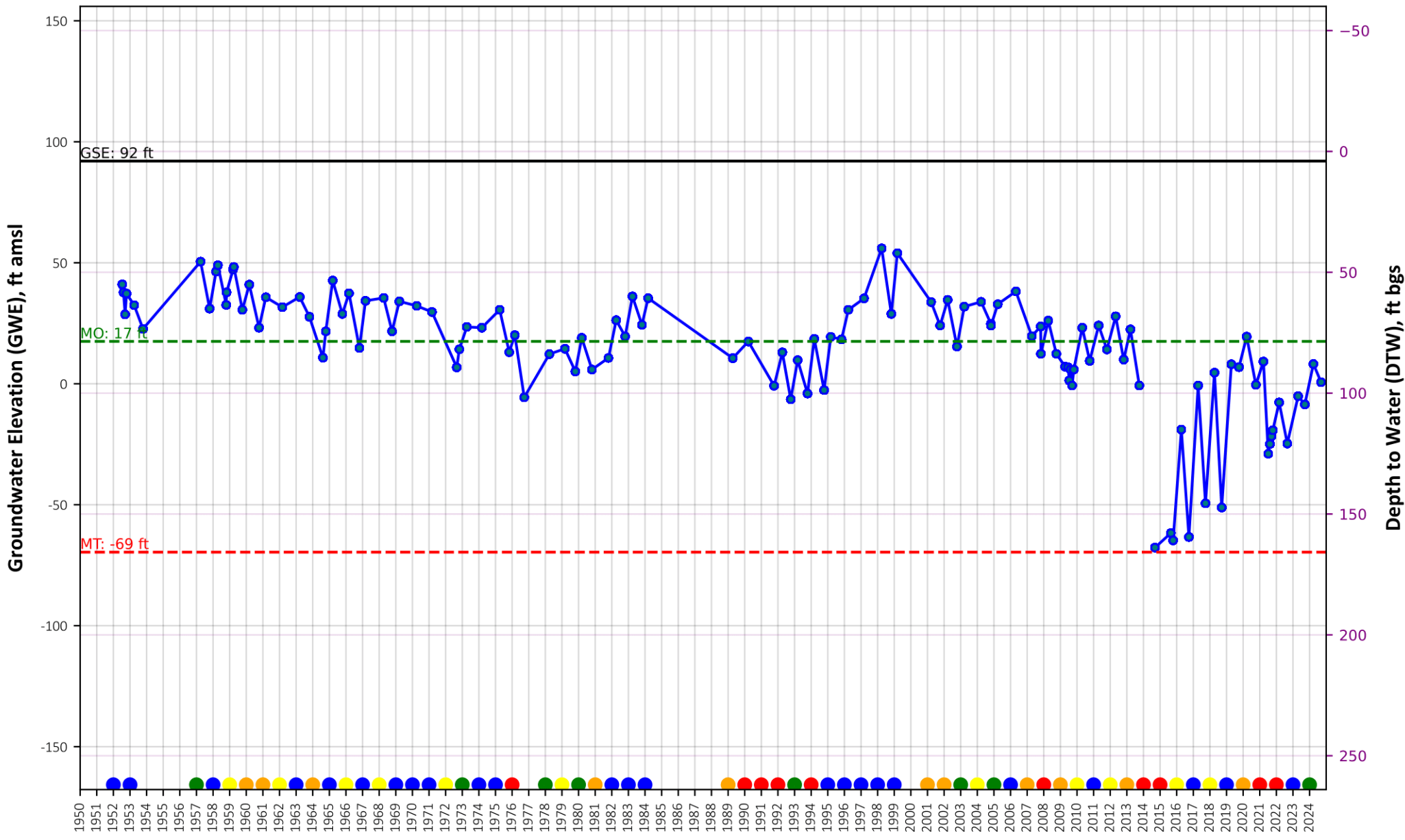


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #402



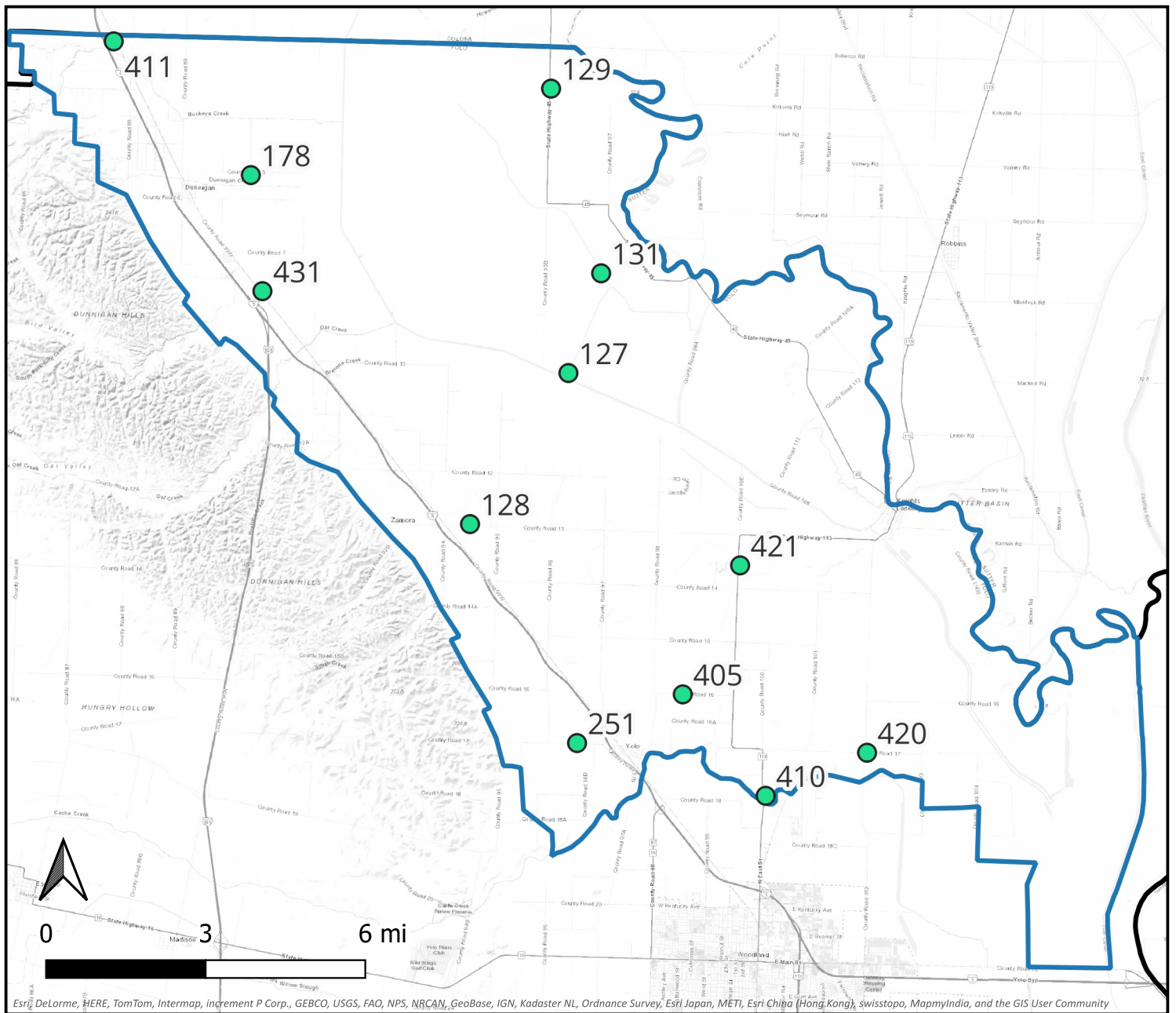
State Well Id: 10N01E15D001M
 Management Area: Dunnigan Hills



Year

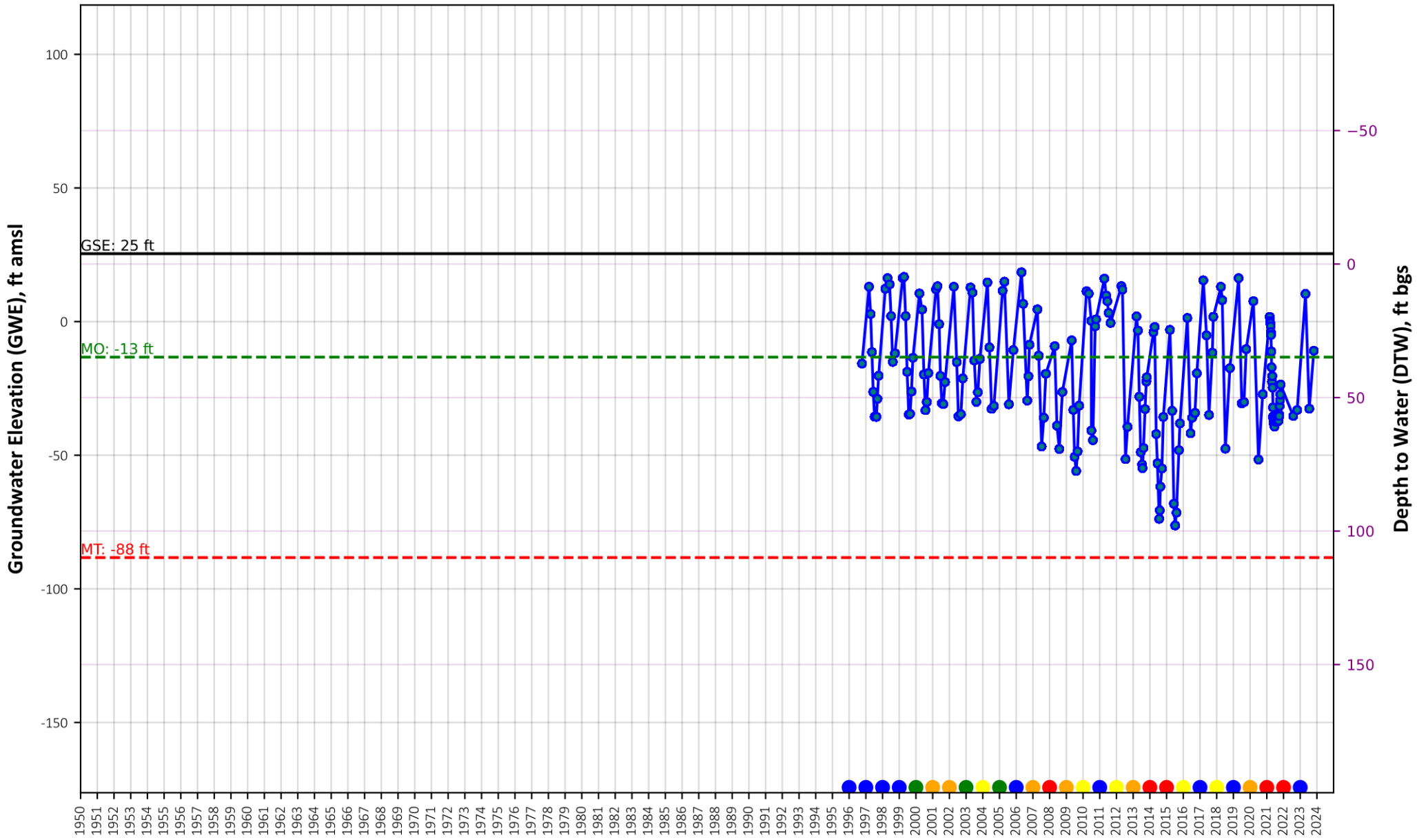
- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry





North Yolo Management Area RMW Hydrographs

Groundwater Level Hydrograph for RMW #127



State Well Id: 11N01E02D001M
 Management Area: North Yolo

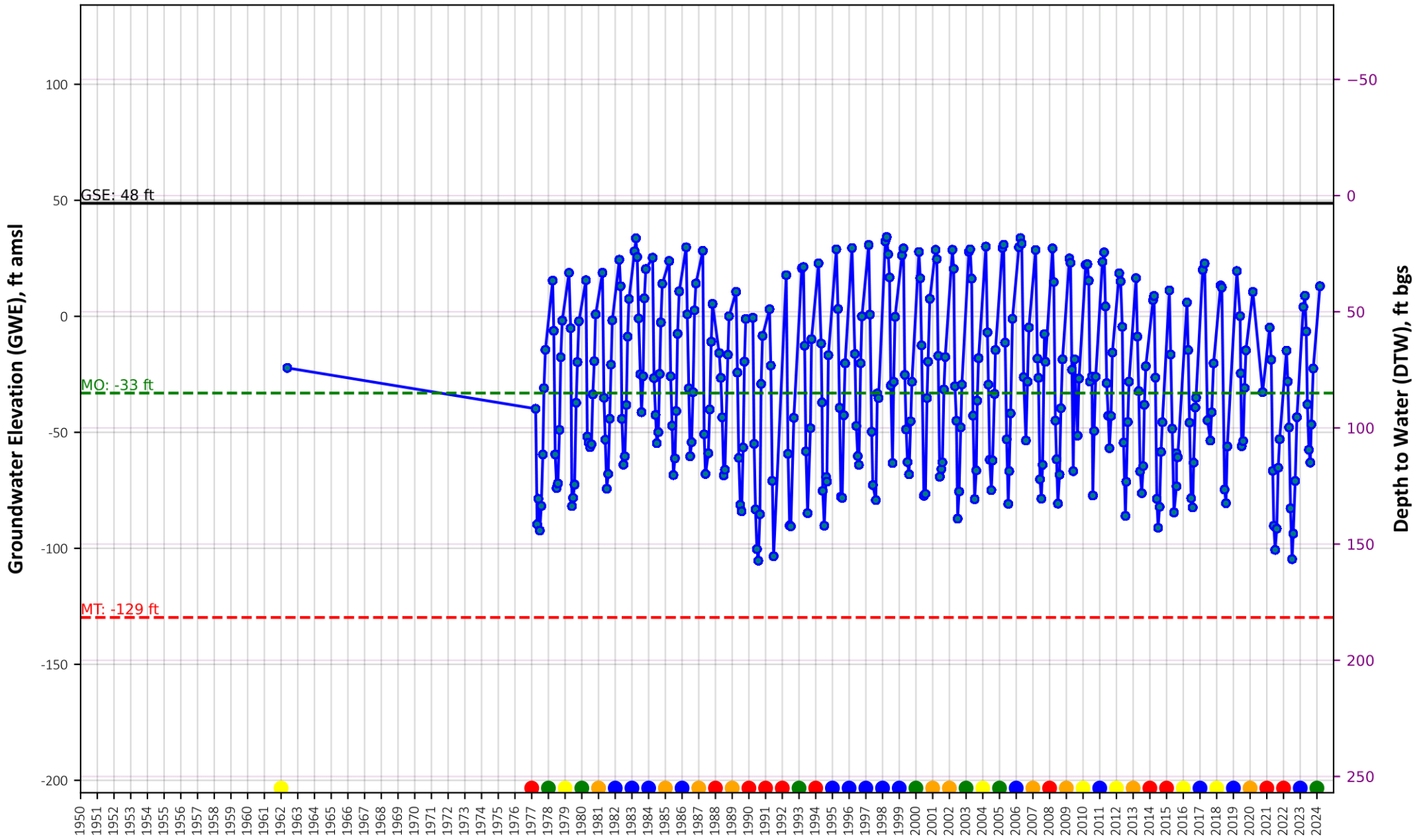


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



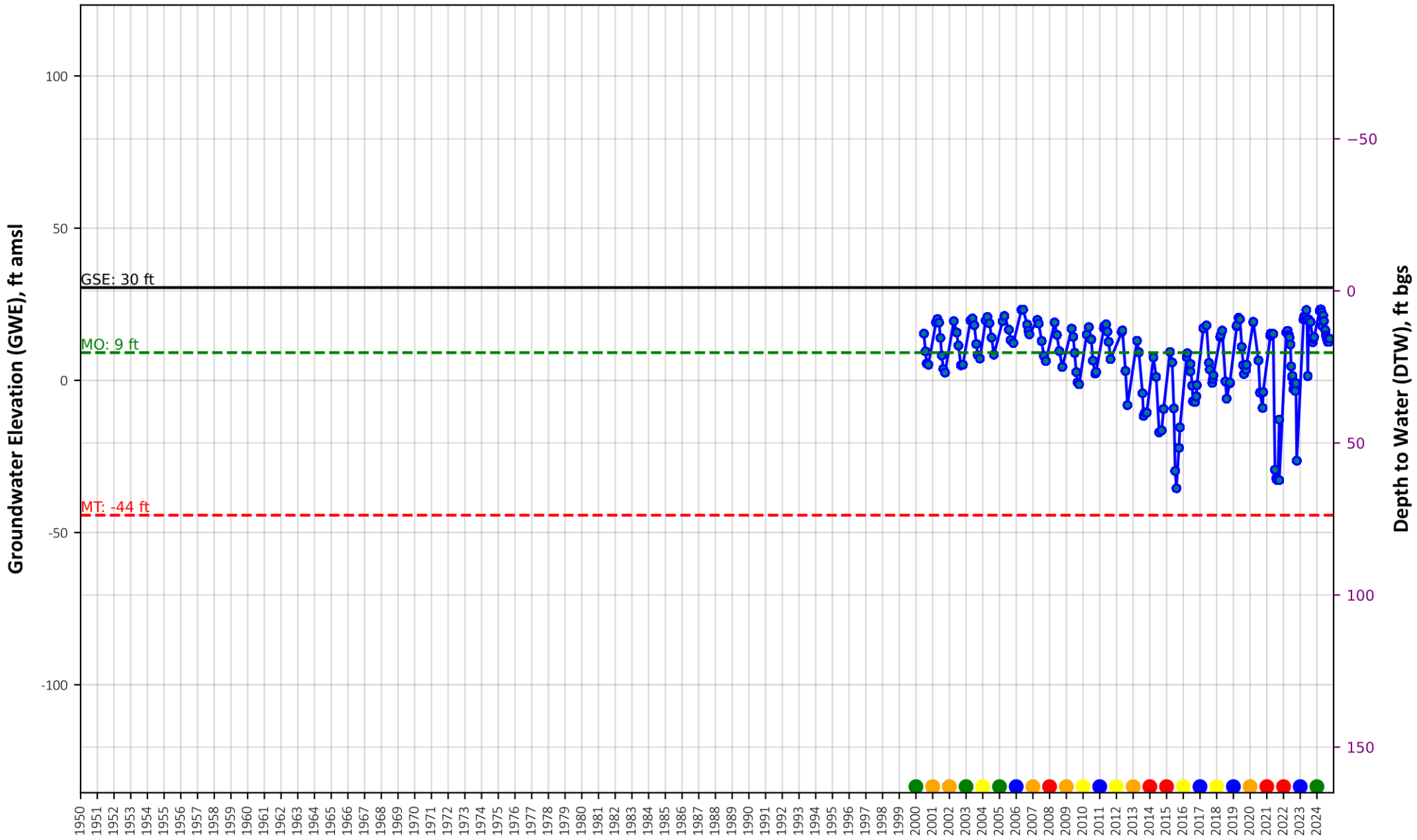
Groundwater Level Hydrograph for RMW #128



State Well Id: 11N01E16P001M
 Management Area: North Yolo



Groundwater Level Hydrograph for RMW #129



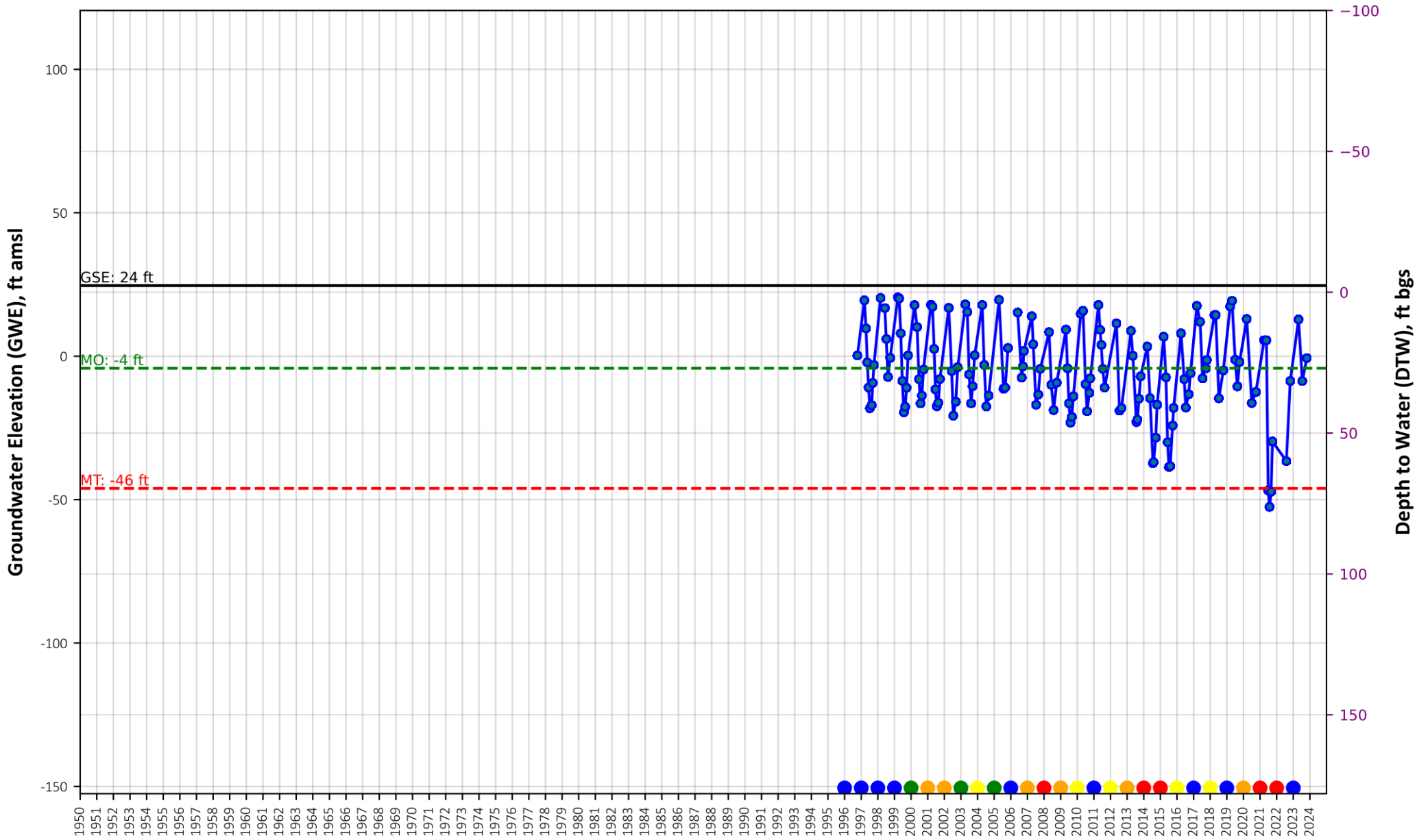
State Well Id: 12N01E03R002M
 Management Area: North Yolo



- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #131



State Well Id: 12N01E26A002M
 Management Area: North Yolo

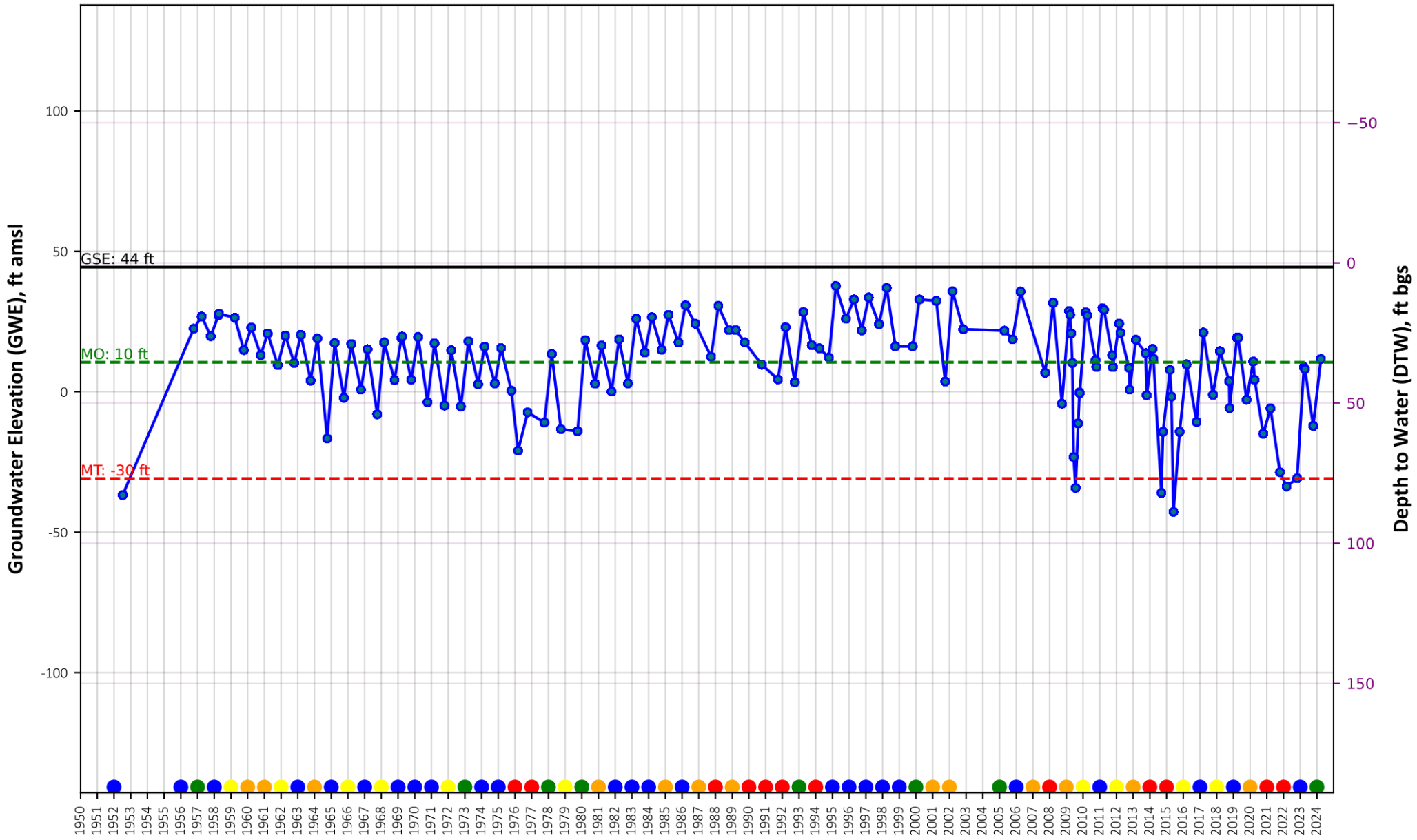


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #178



State Well Id: 12N01W14M001M
 Management Area: North Yolo

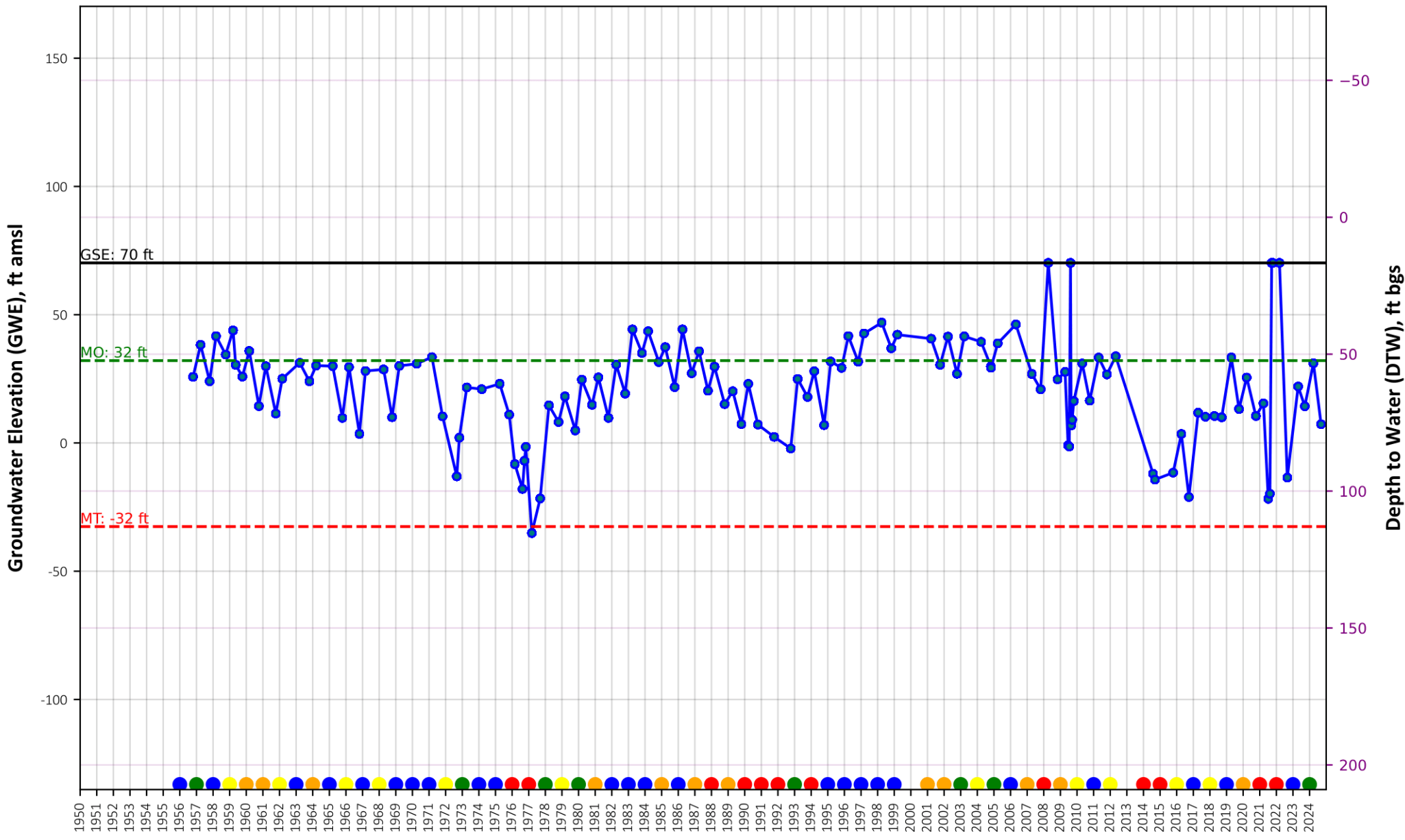


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



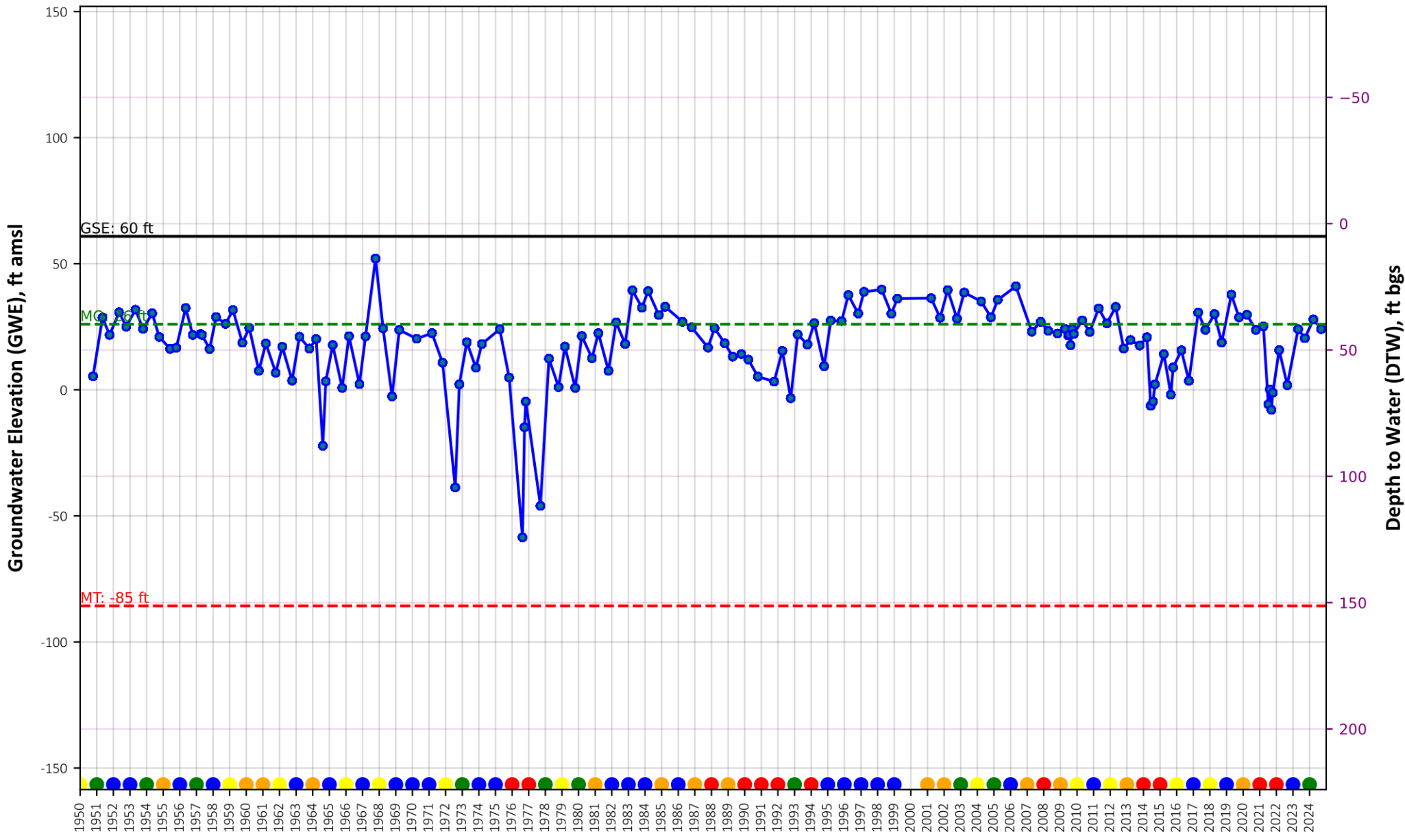
Groundwater Level Hydrograph for RMW #251



State Well Id: 10N01E02Q002M
 Management Area: North Yolo



Groundwater Level Hydrograph for RMW #405



State Well Id: 10N02E06B001M
 Management Area: North Yolo

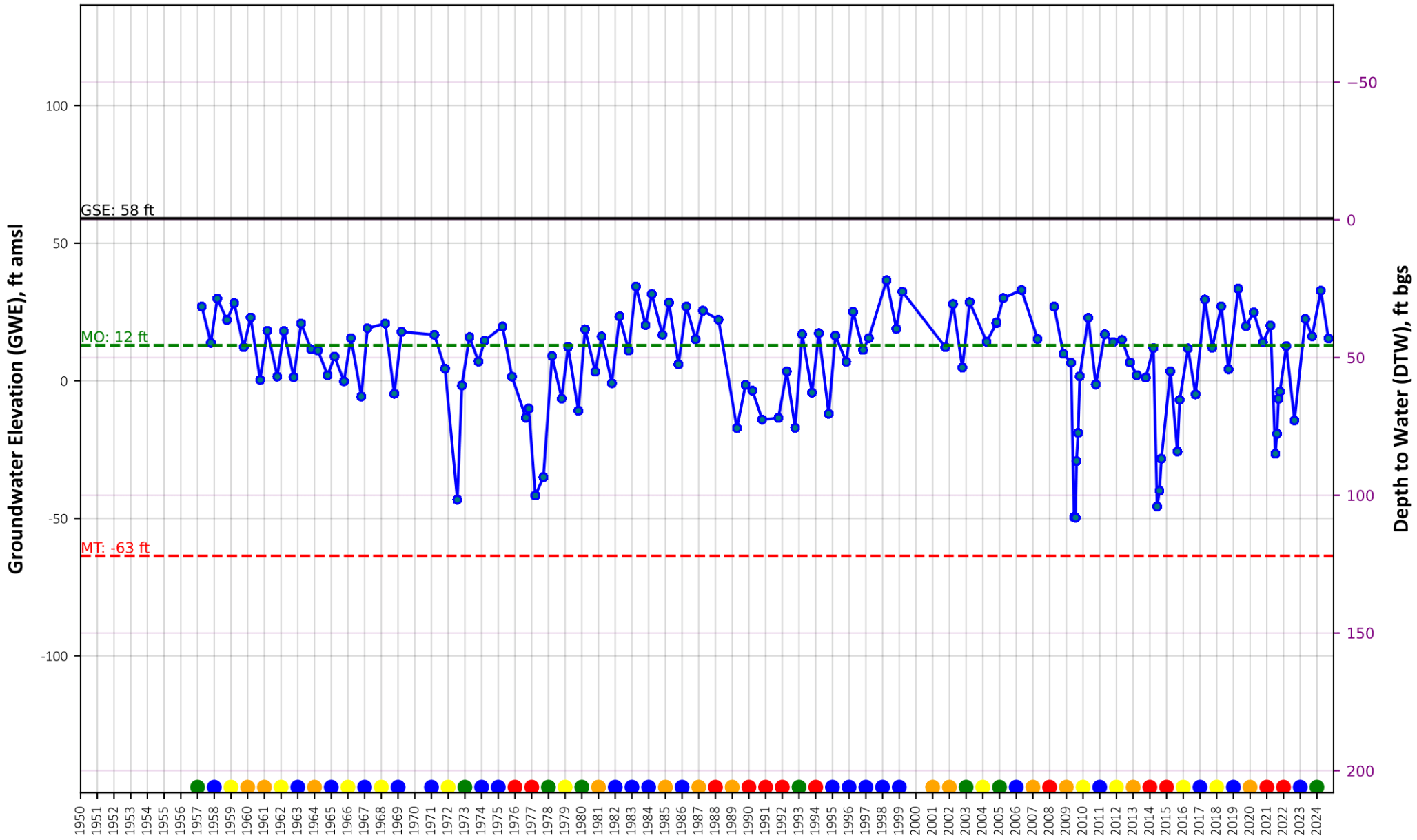


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #410



State Well Id: 10N02E09N001M
 Management Area: North Yolo

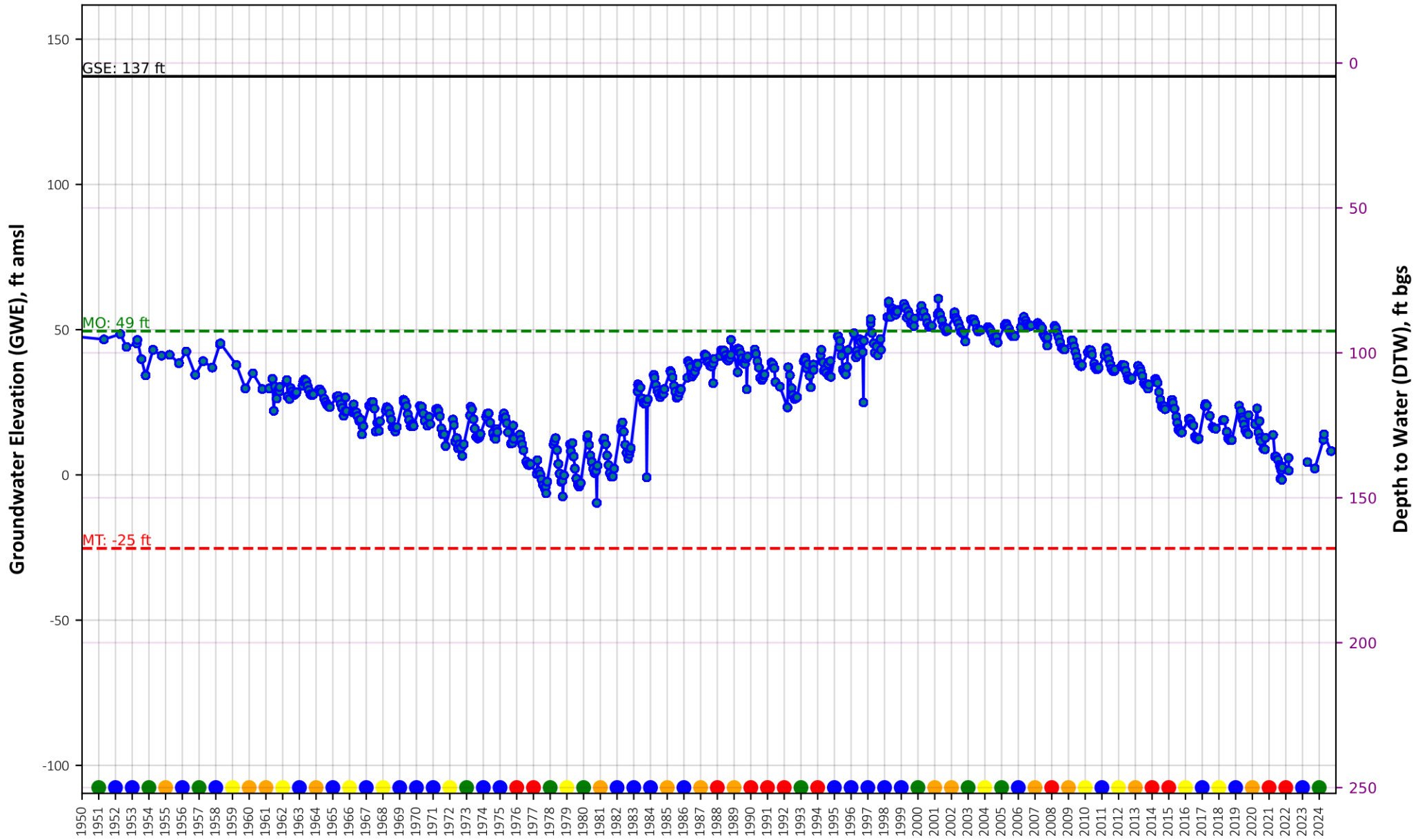


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #411



State Well Id: 12N01W05B001M
 Management Area: North Yolo

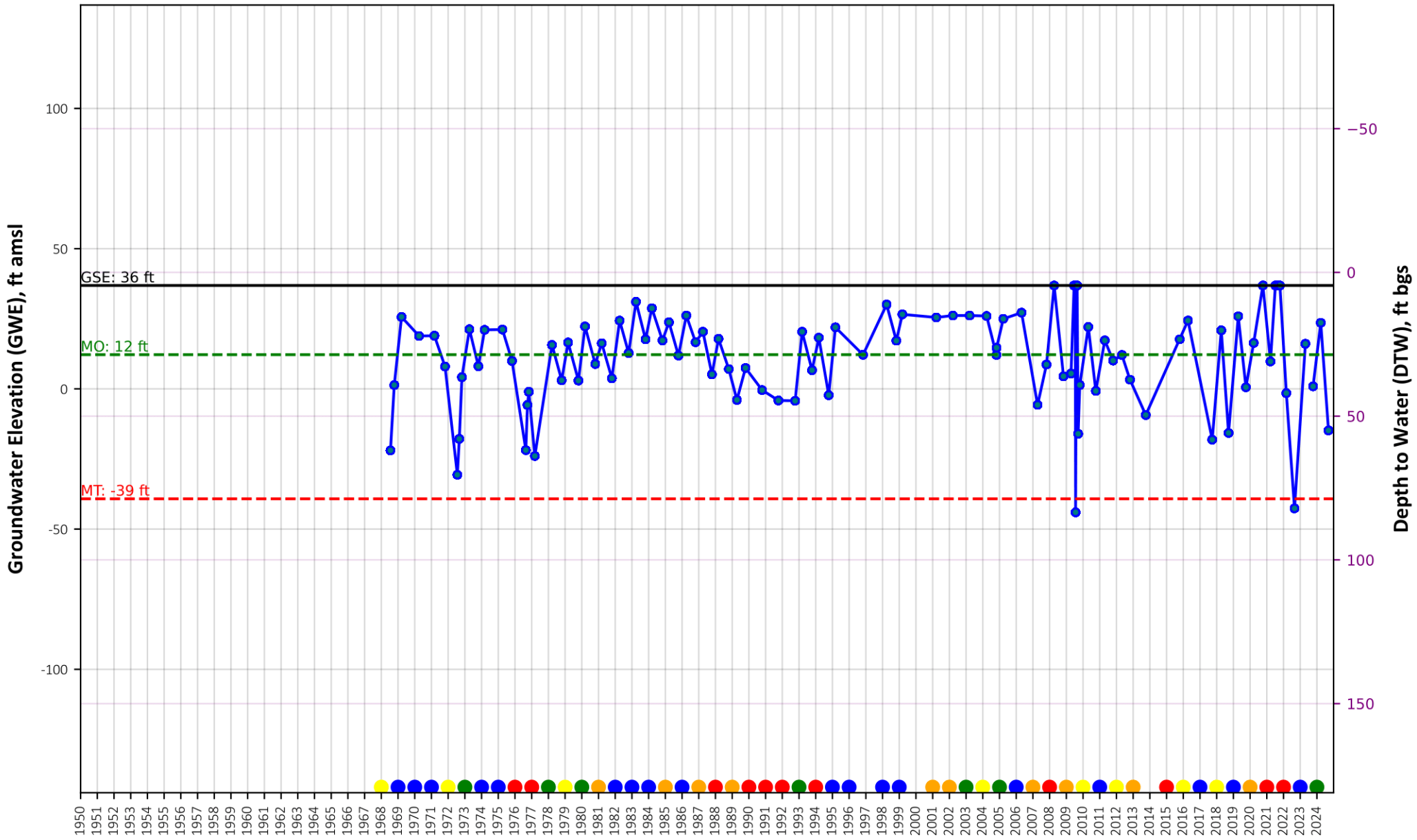


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #420



State Well Id: 10N02E03R002M
 Management Area: North Yolo
 ISW: YES

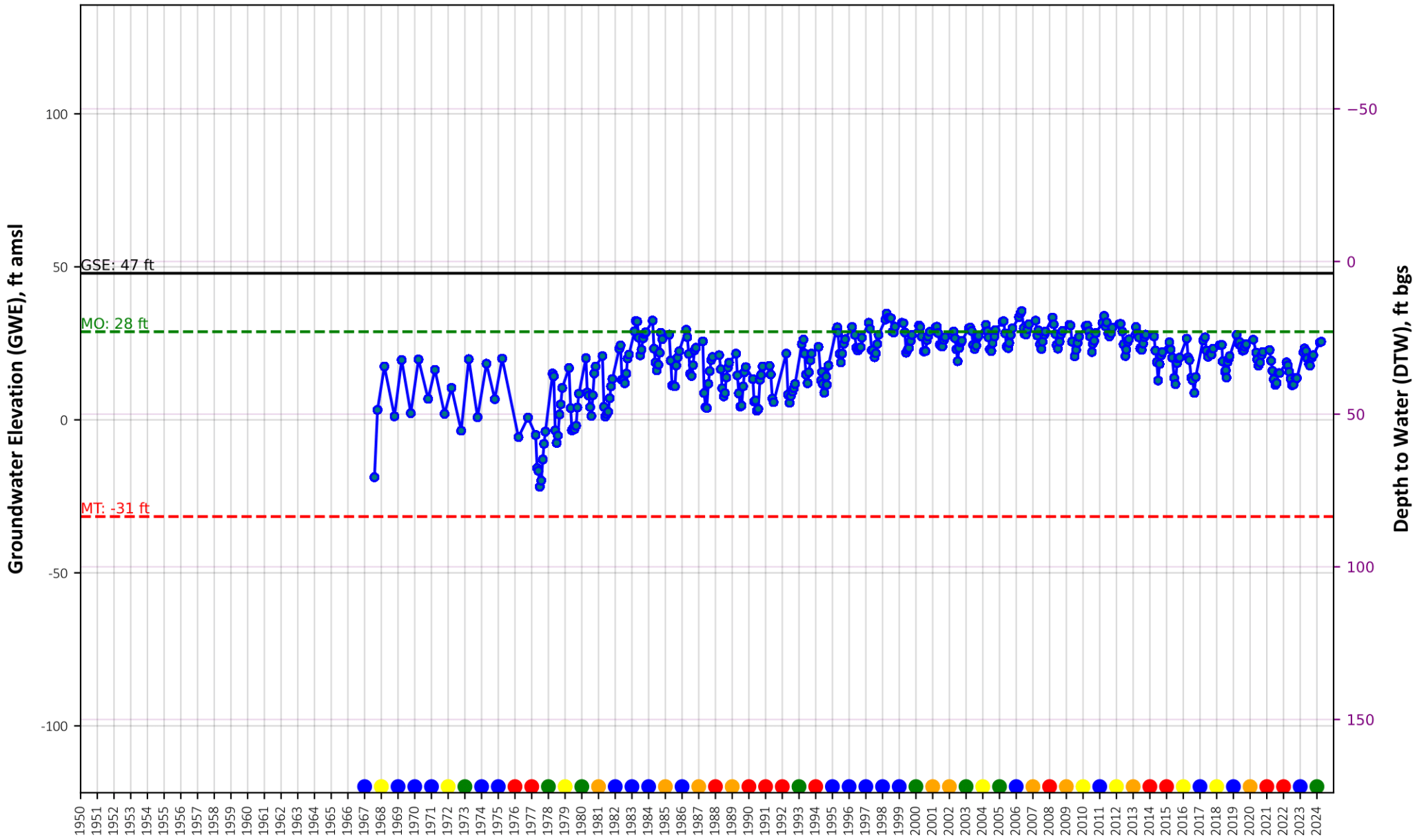


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #421



State Well Id: 11N02E20K004M
 Management Area: North Yolo
 ISW: YES

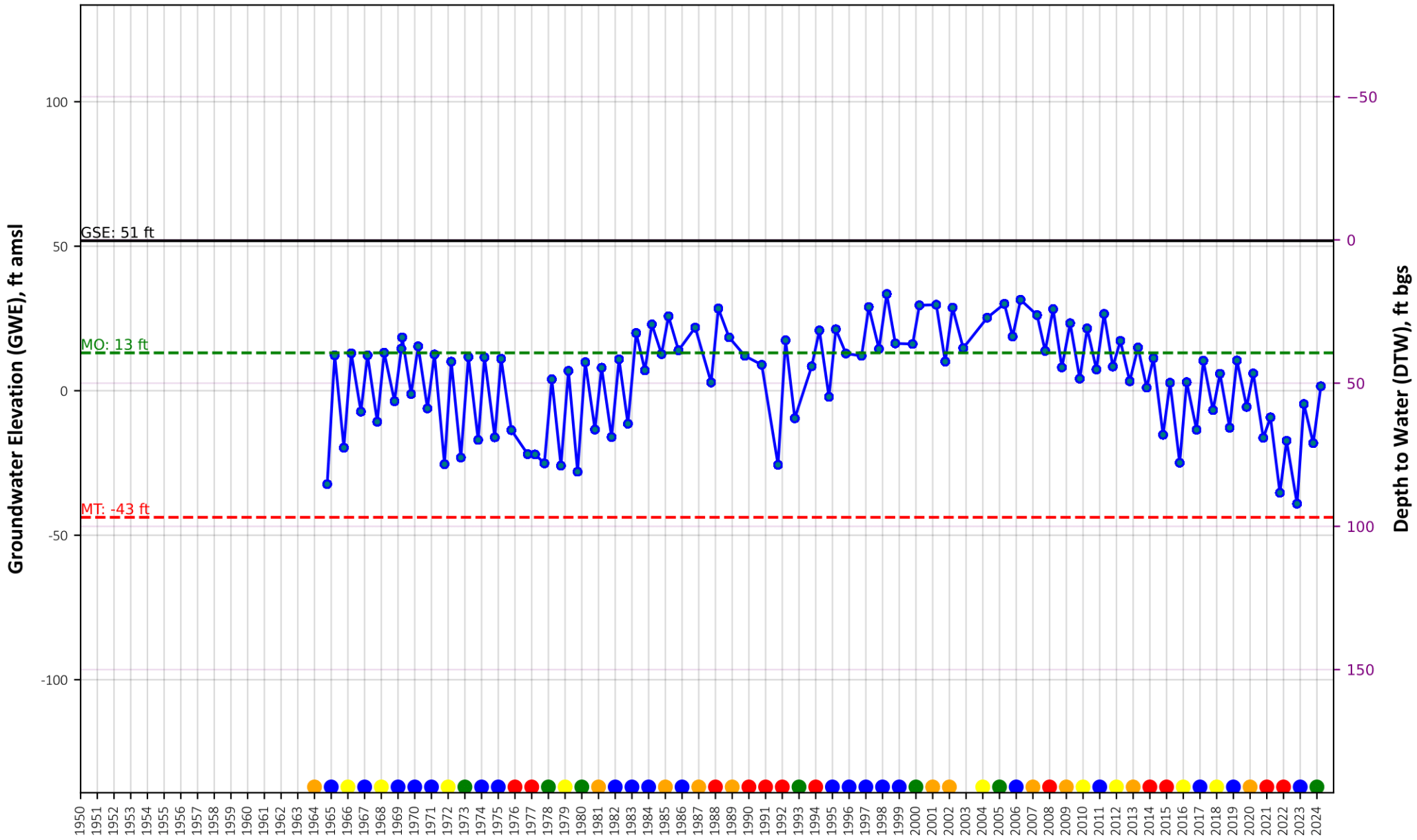


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #431



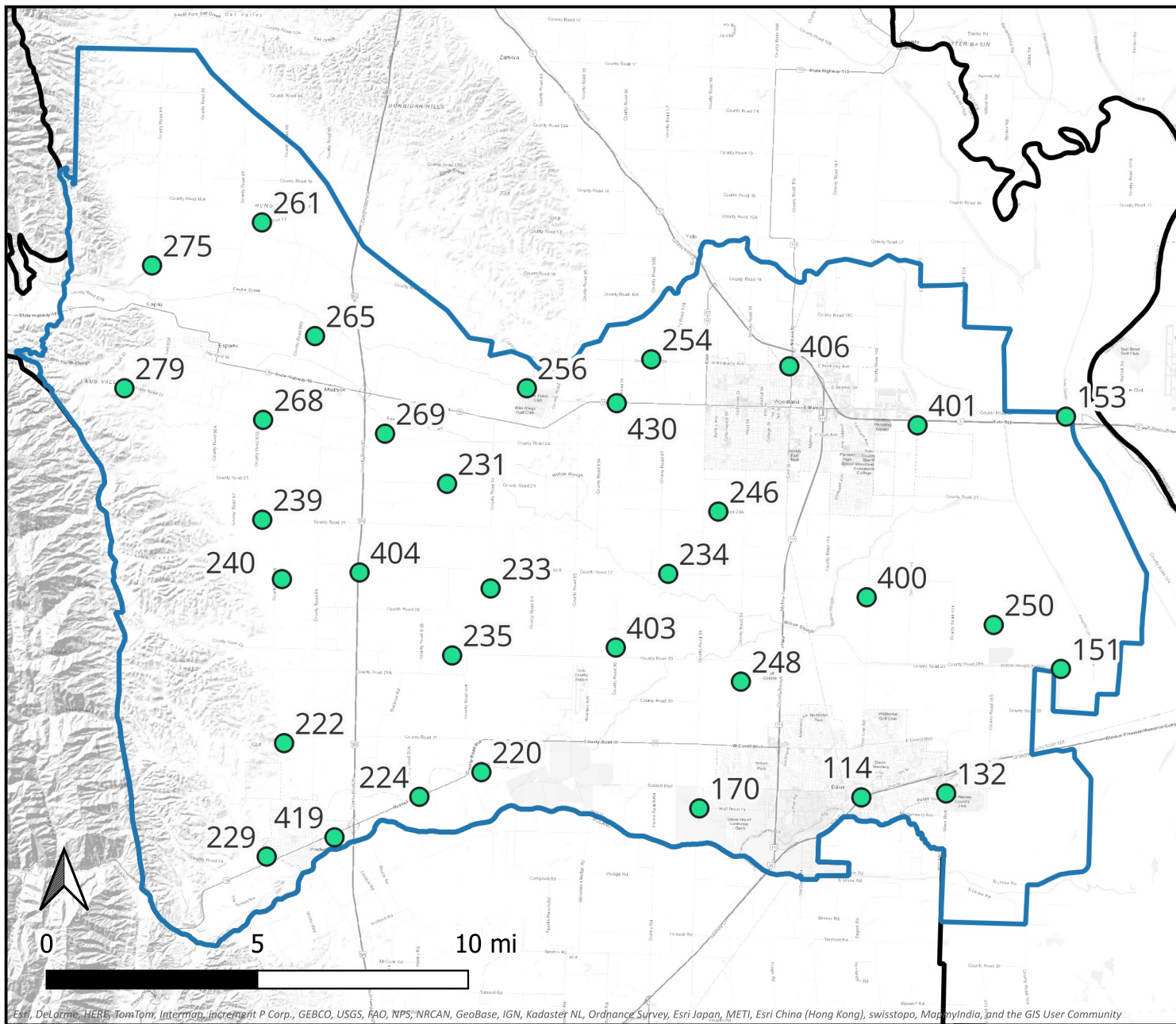
State Well Id: 12N01W26L002M
 Management Area: North Yolo



Year

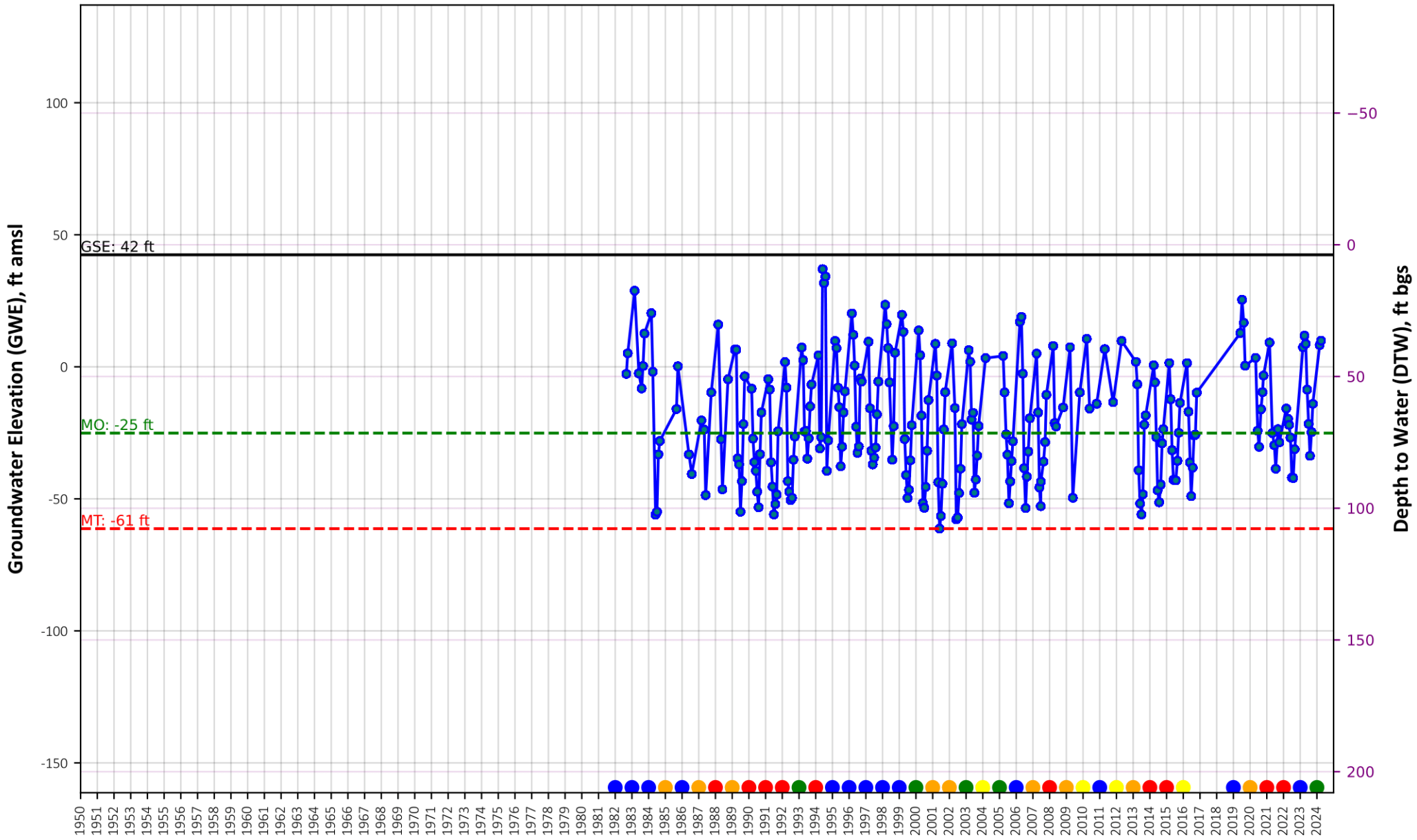
- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry





Central Yolo Management Area RMW Hydrographs

Groundwater Level Hydrograph for RMW #114



State Well Id: 08N02E15A002M
 Management Area: Central Yolo

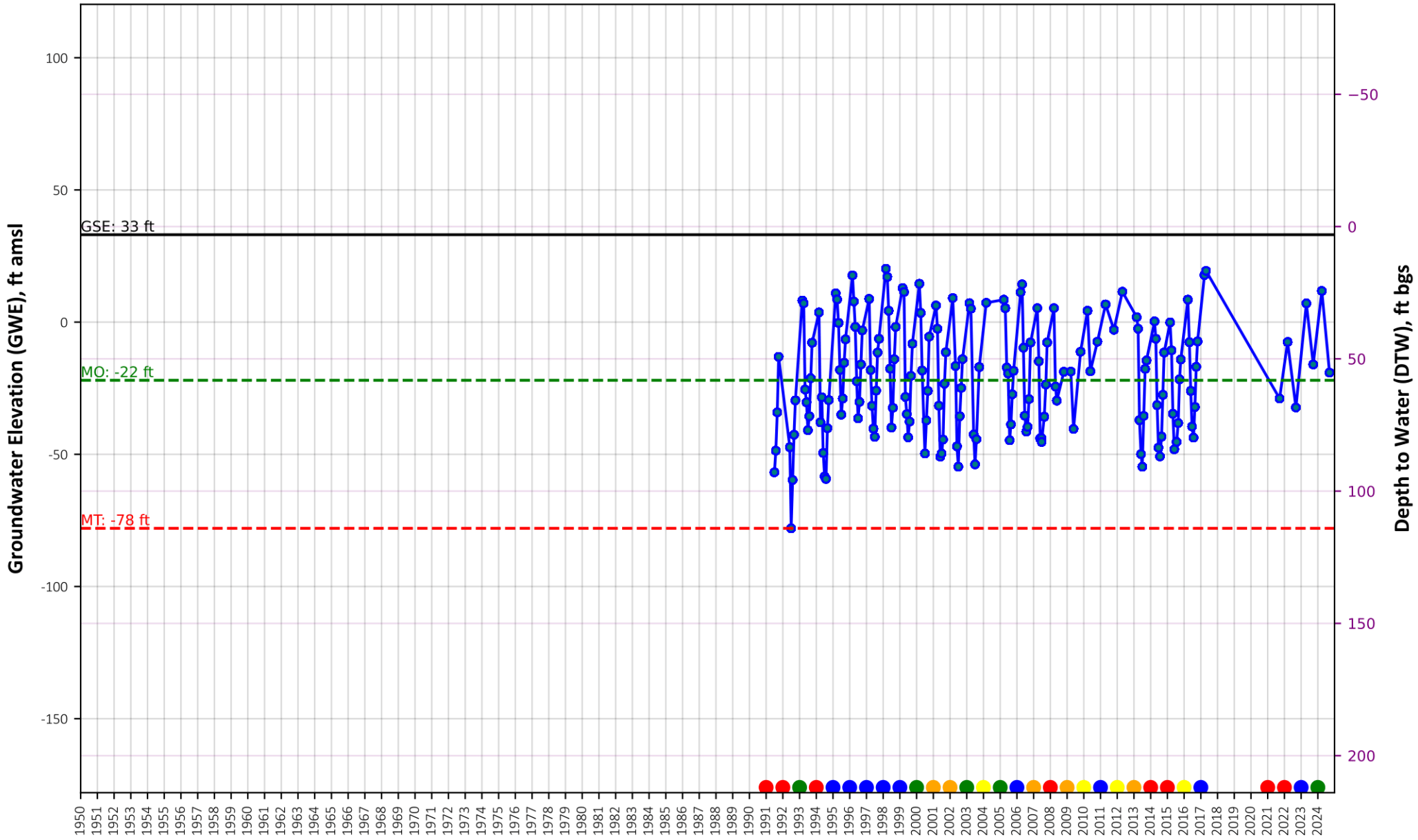


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #132



State Well Id: 08N03E07N500M
 Management Area: Central Yolo

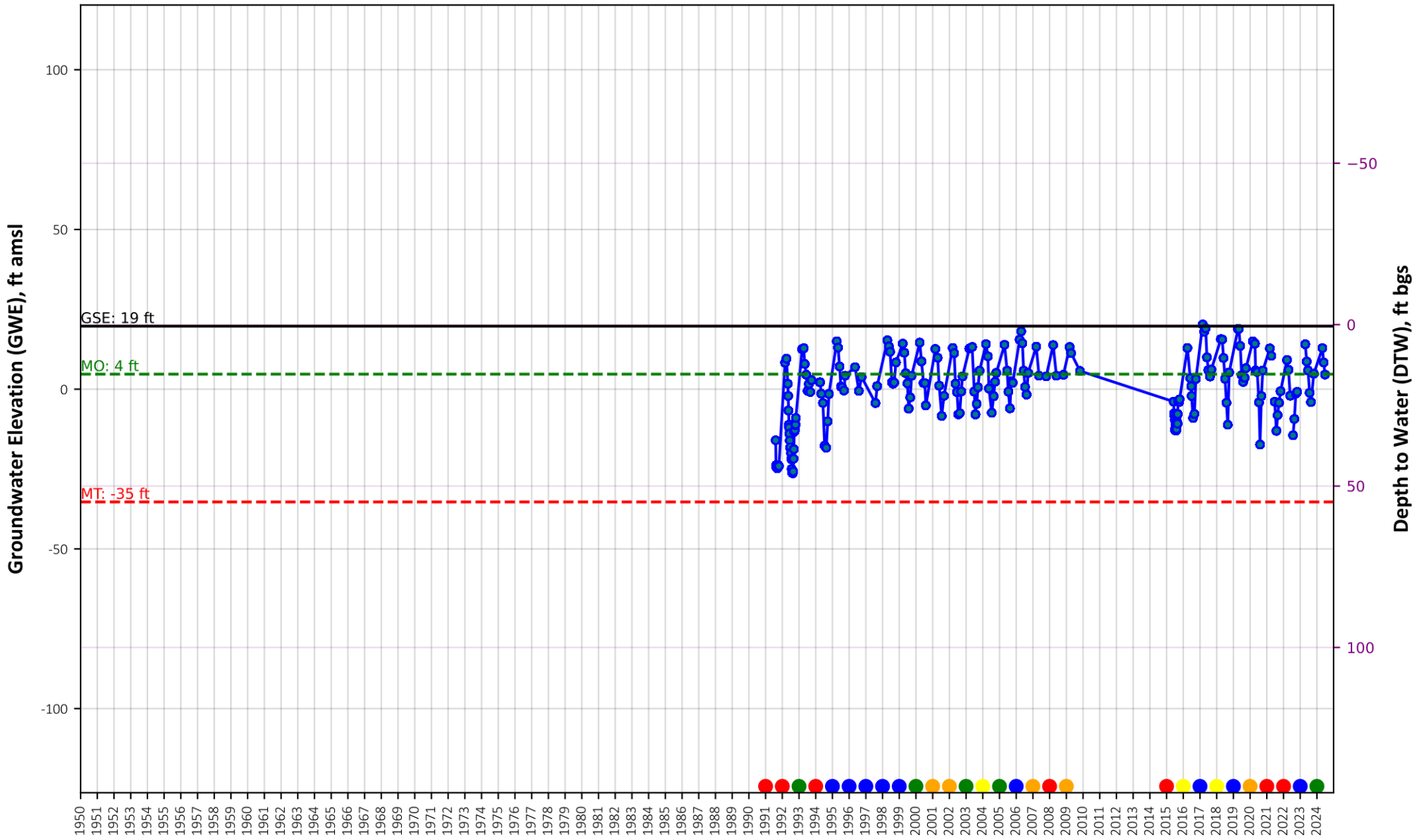


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #151



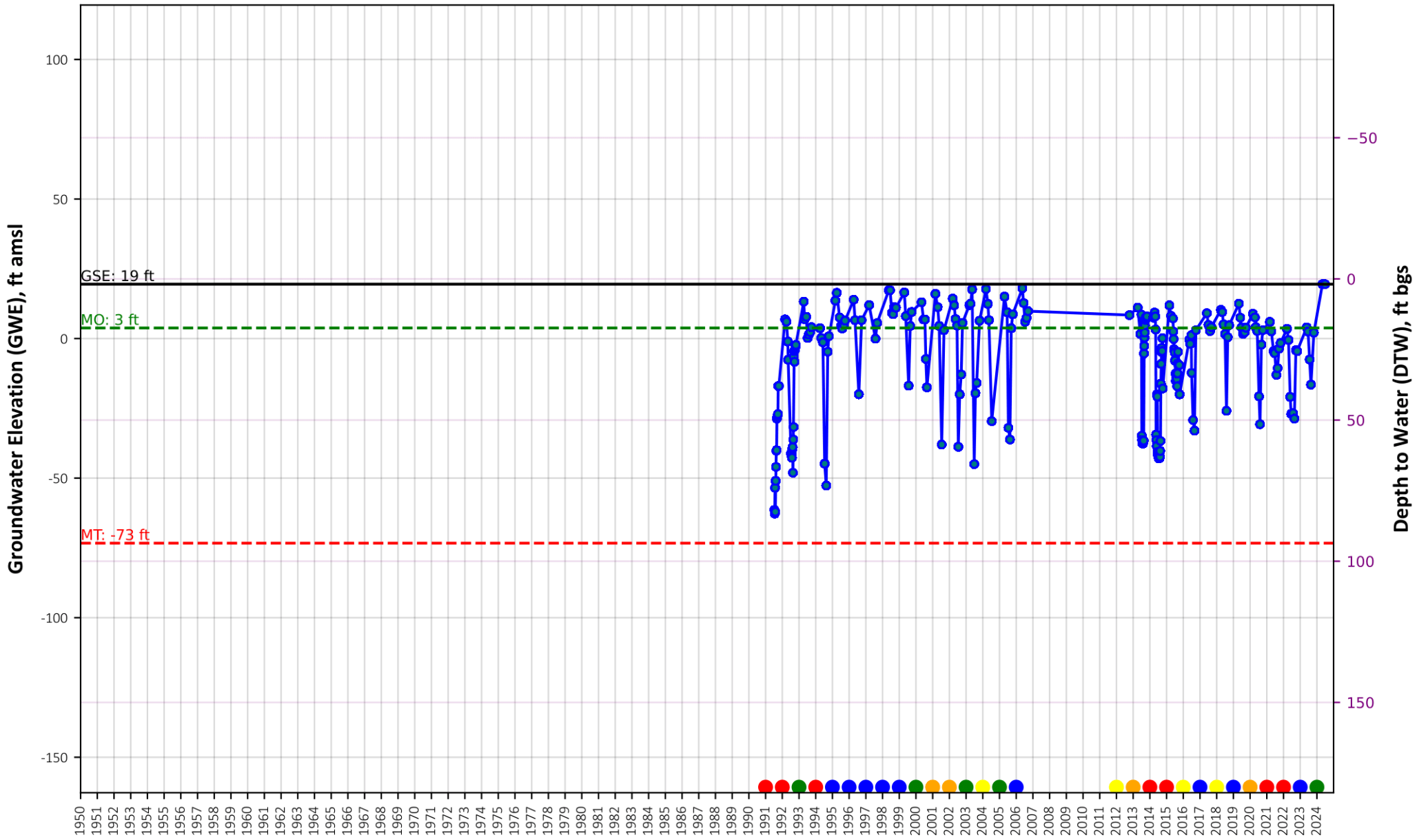
State Well Id: 09N03E33B002M
 Management Area: Central Yolo



- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- - - Measurable Objective (MO), ft amsl
- - - Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #153



State Well Id: 10N03E33B011M
 Management Area: Central Yolo

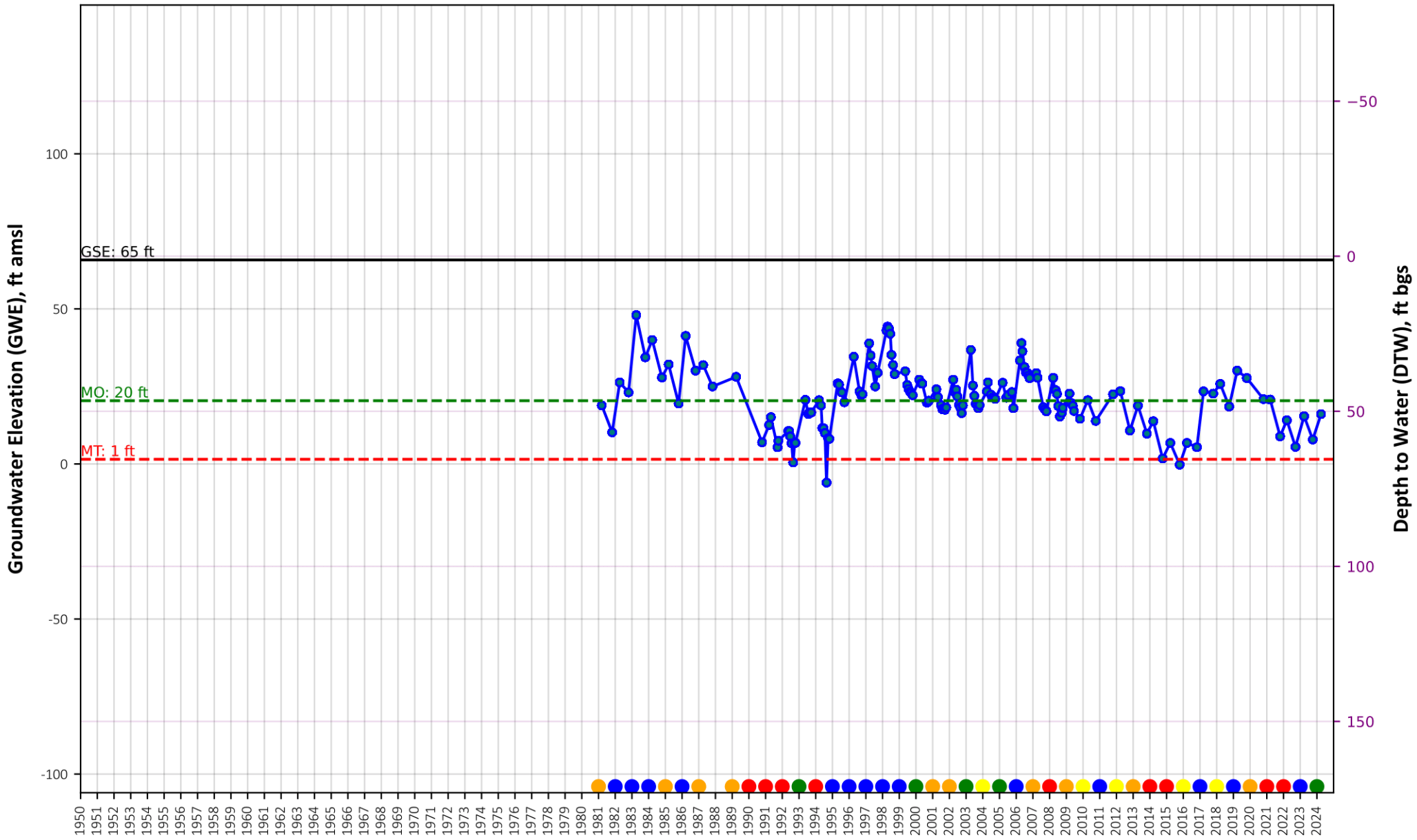


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #170



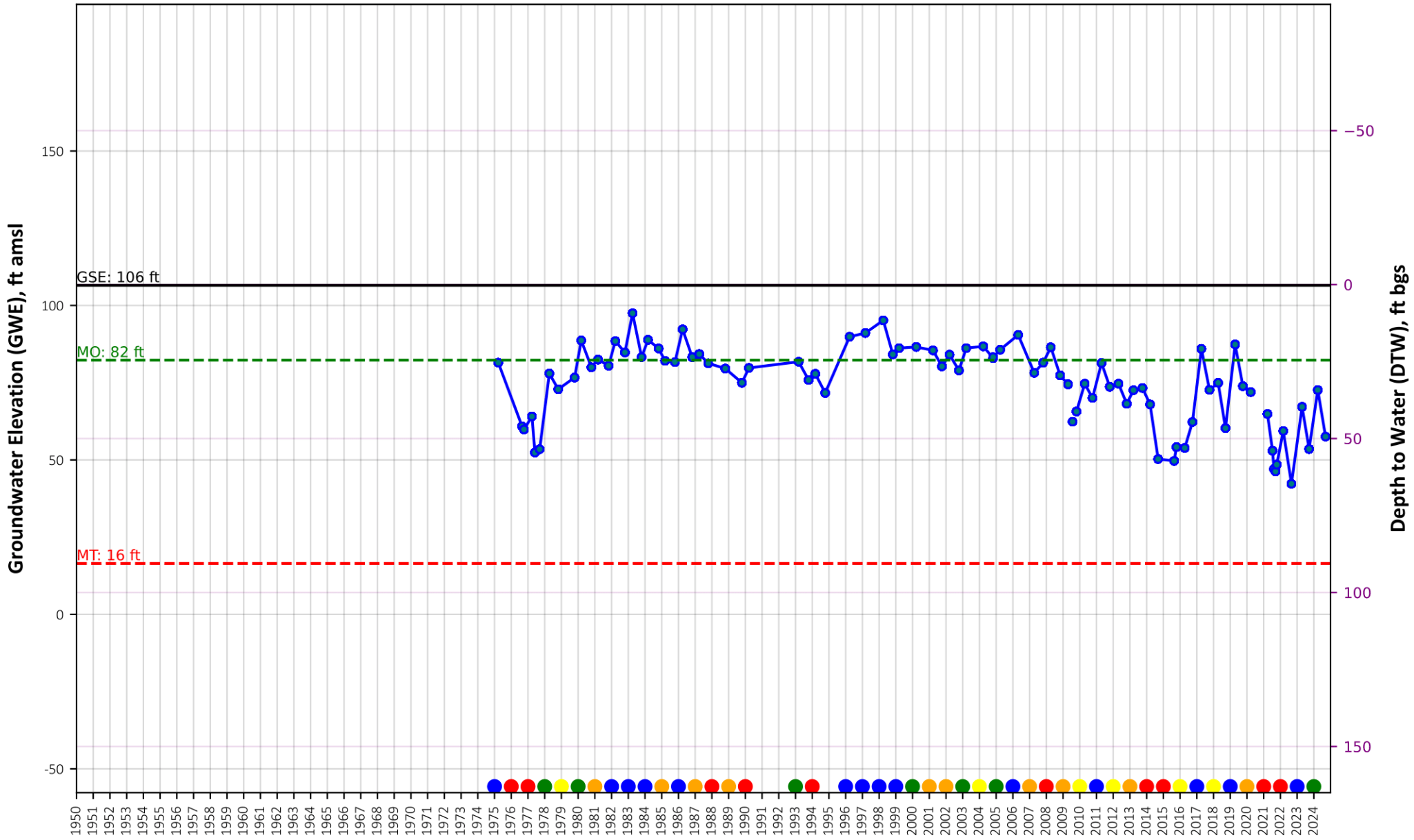
State Well Id: 08N02E18M002M
 Management Area: Central Yolo



- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #220



State Well Id: 08N01E07R001M
 Management Area: Central Yolo

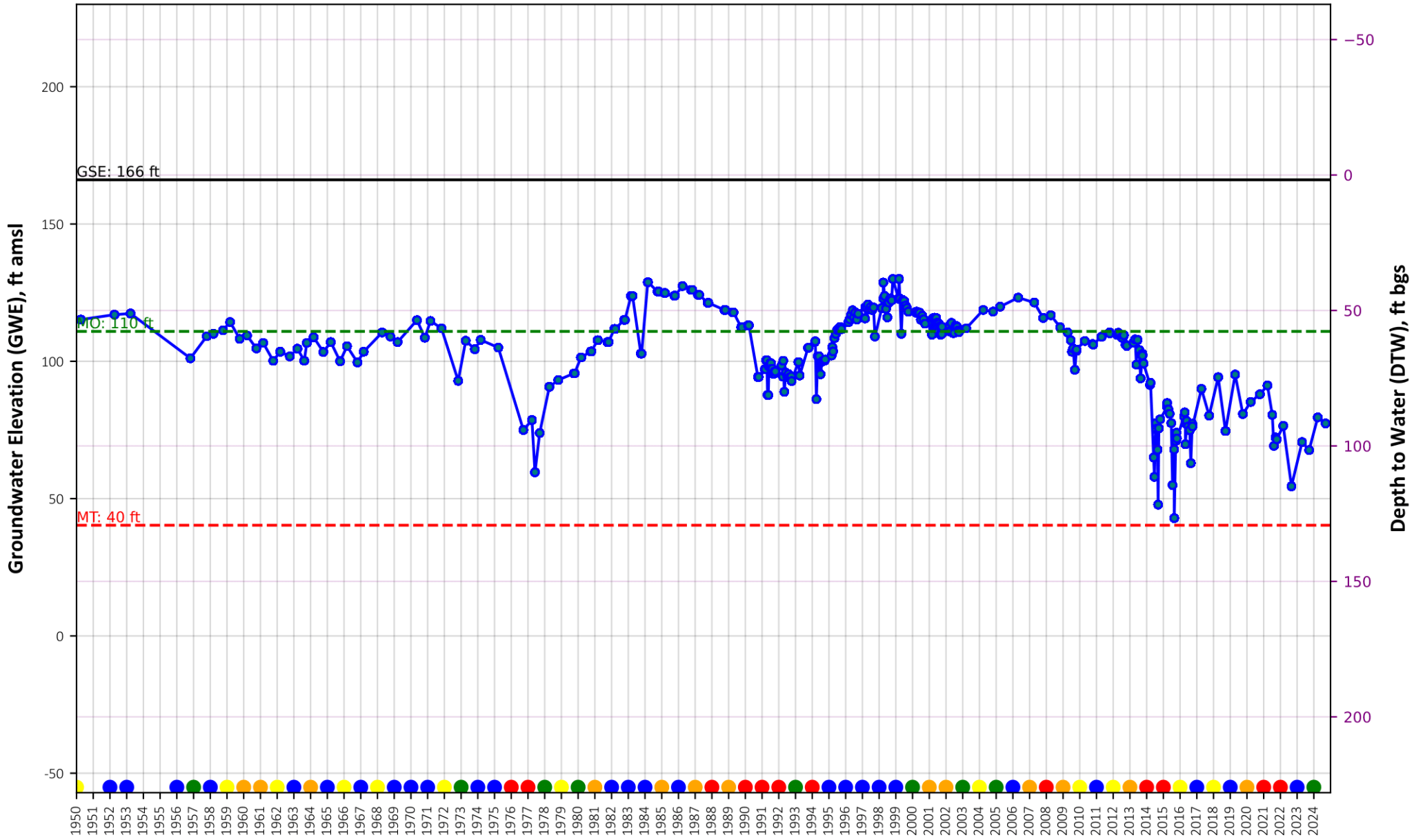


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #222



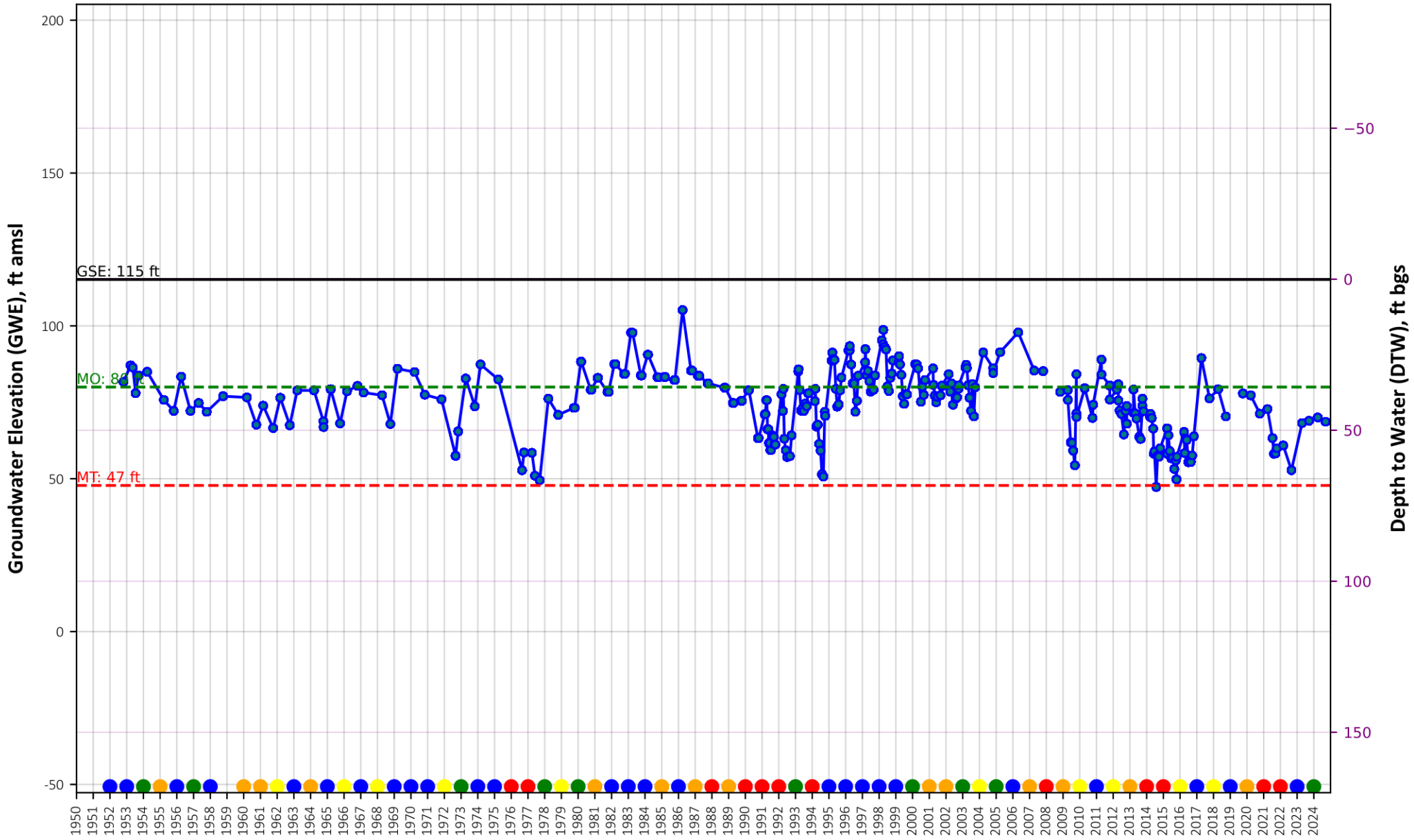
State Well Id: 08N01W09C001M
 Management Area: Central Yolo



- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #224



State Well Id: 08N01W13G003M
 Management Area: Central Yolo

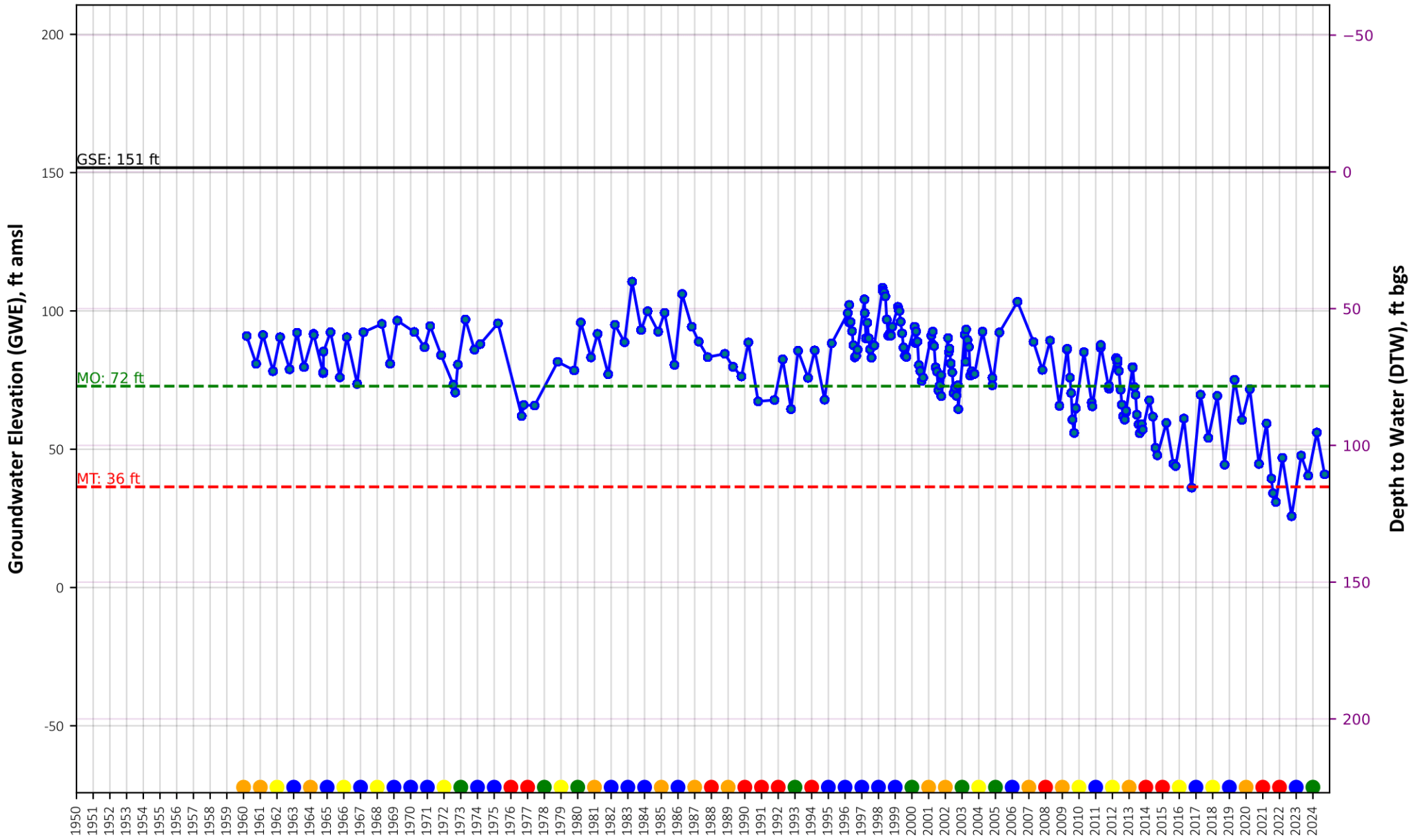


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #229



State Well Id: 08N01W20R005M
 Management Area: Central Yolo

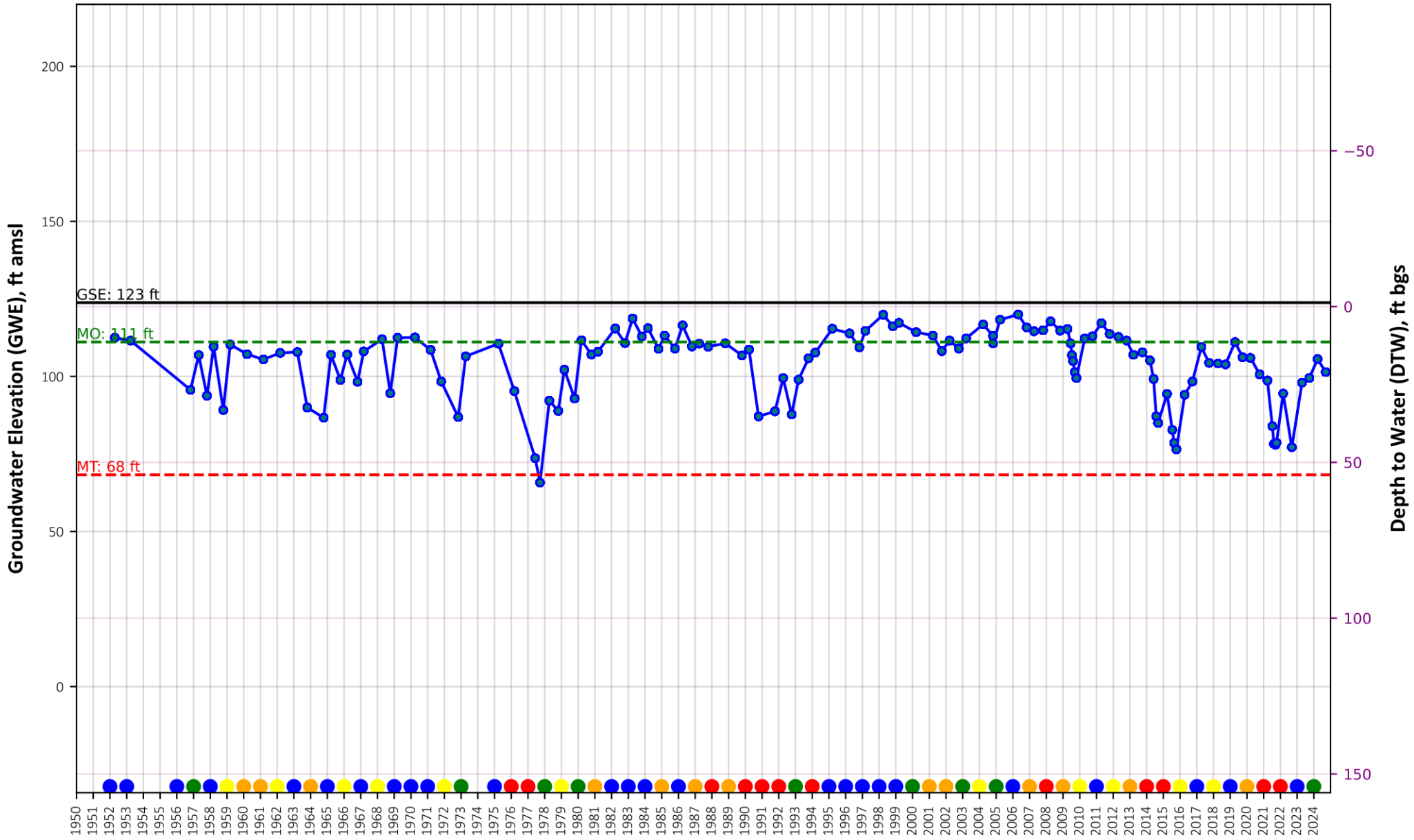


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #231



State Well Id: 09N01E07D001M
 Management Area: Central Yolo

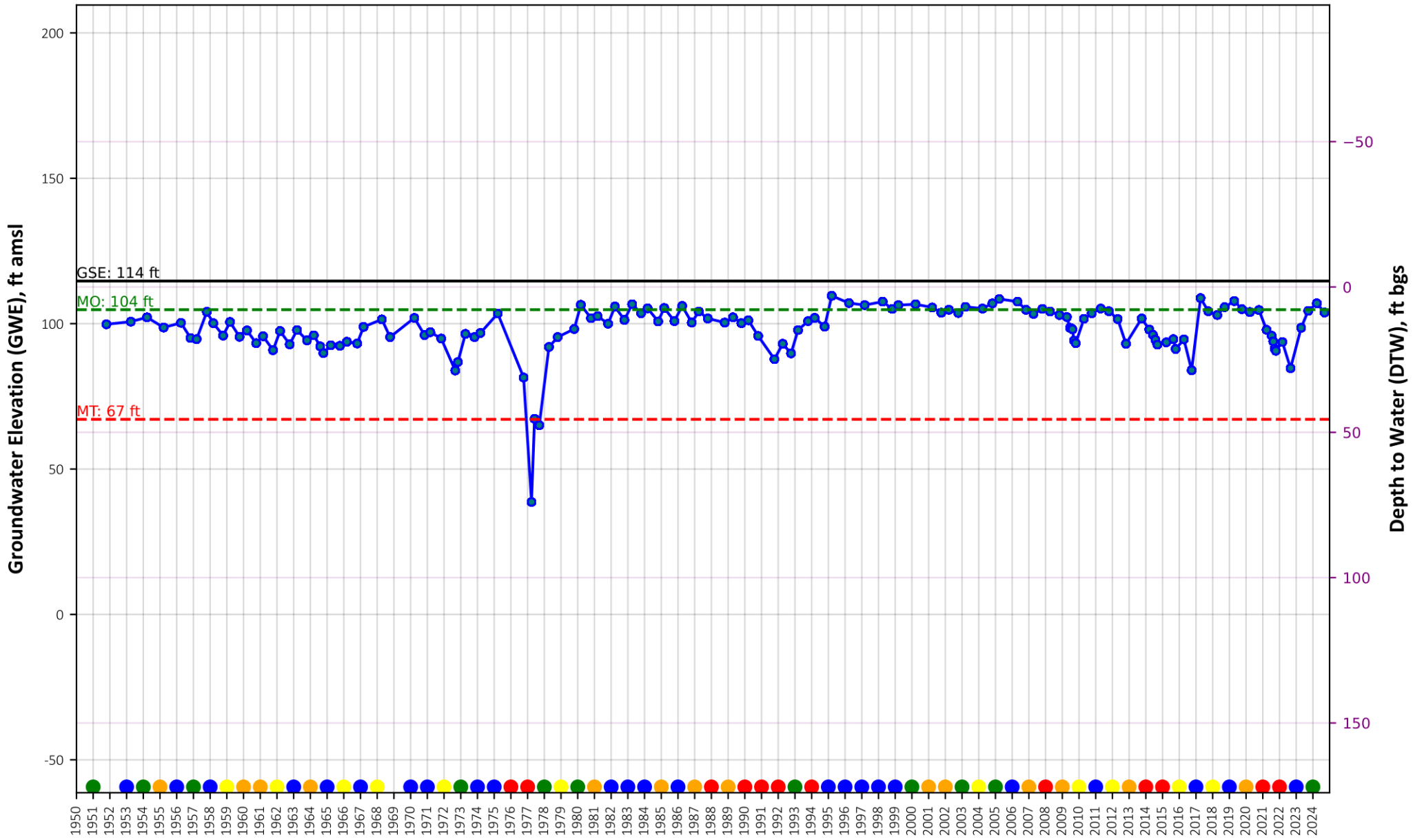


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #233



State Well Id: 09N01E20E001M
 Management Area: Central Yolo

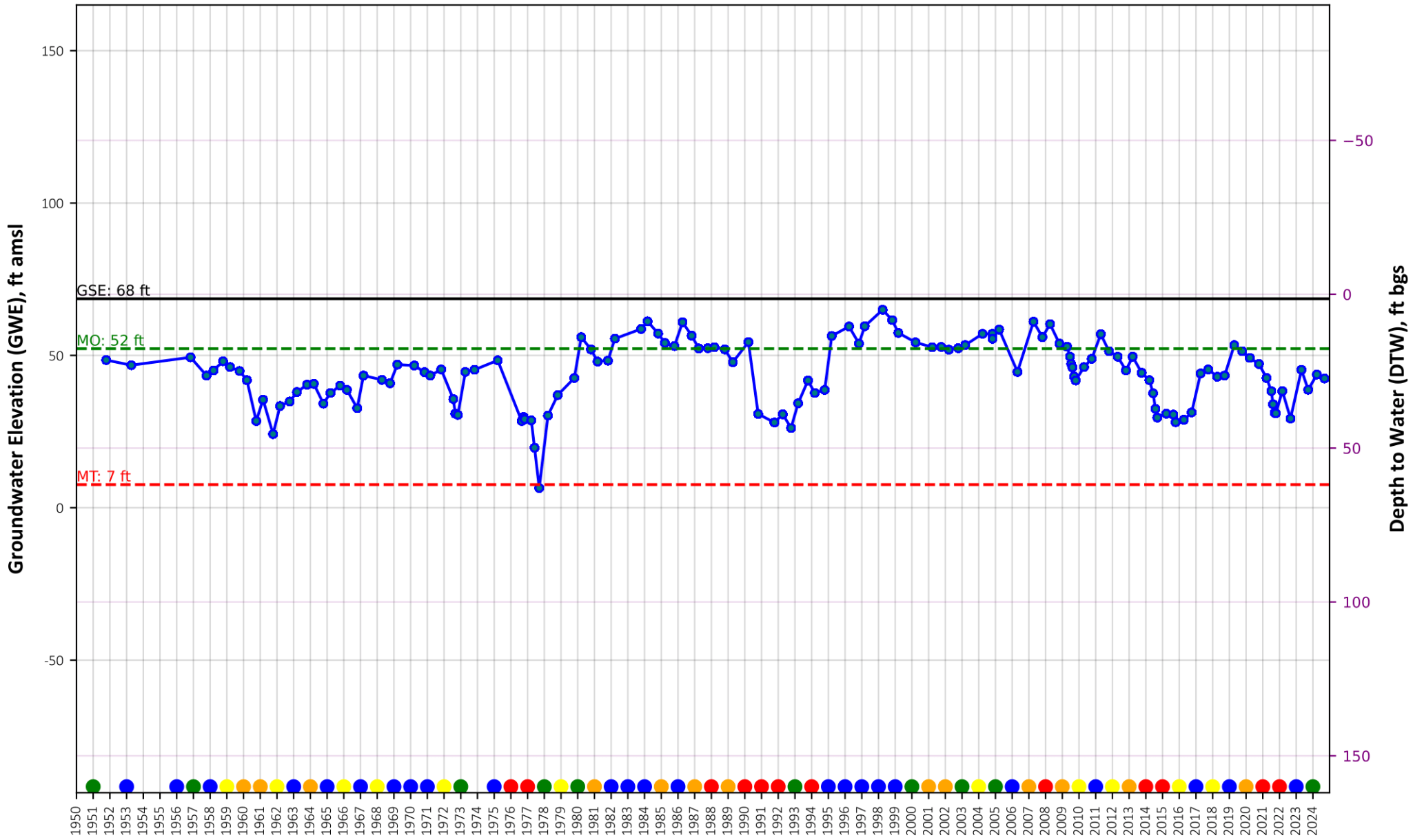


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #234



State Well Id: 09N01E24D001M
 Management Area: Central Yolo

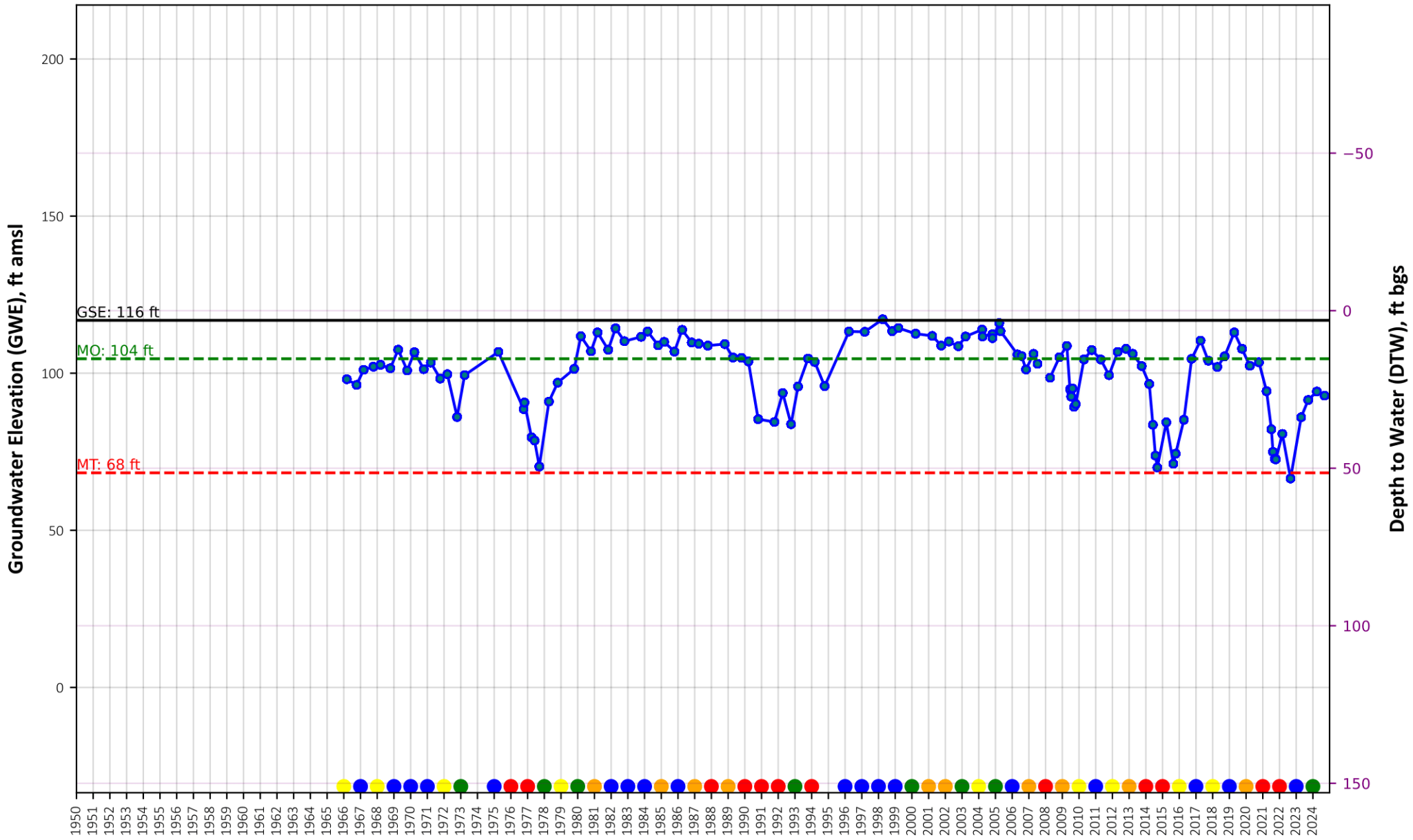


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #235



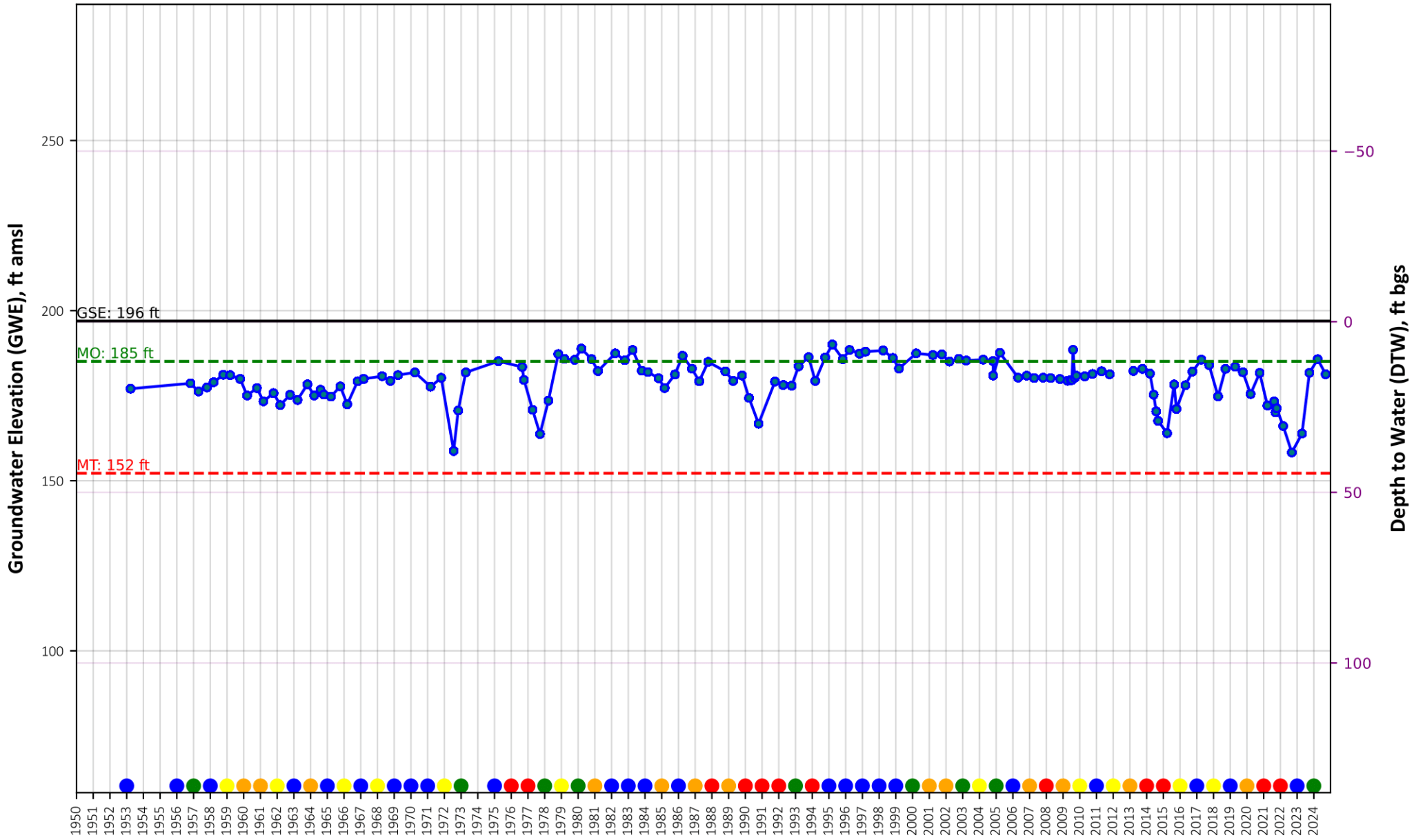
State Well Id: 09N01E31D001M
 Management Area: Central Yolo



- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #239



State Well Id: 09N01W08Q001M
 Management Area: Central Yolo

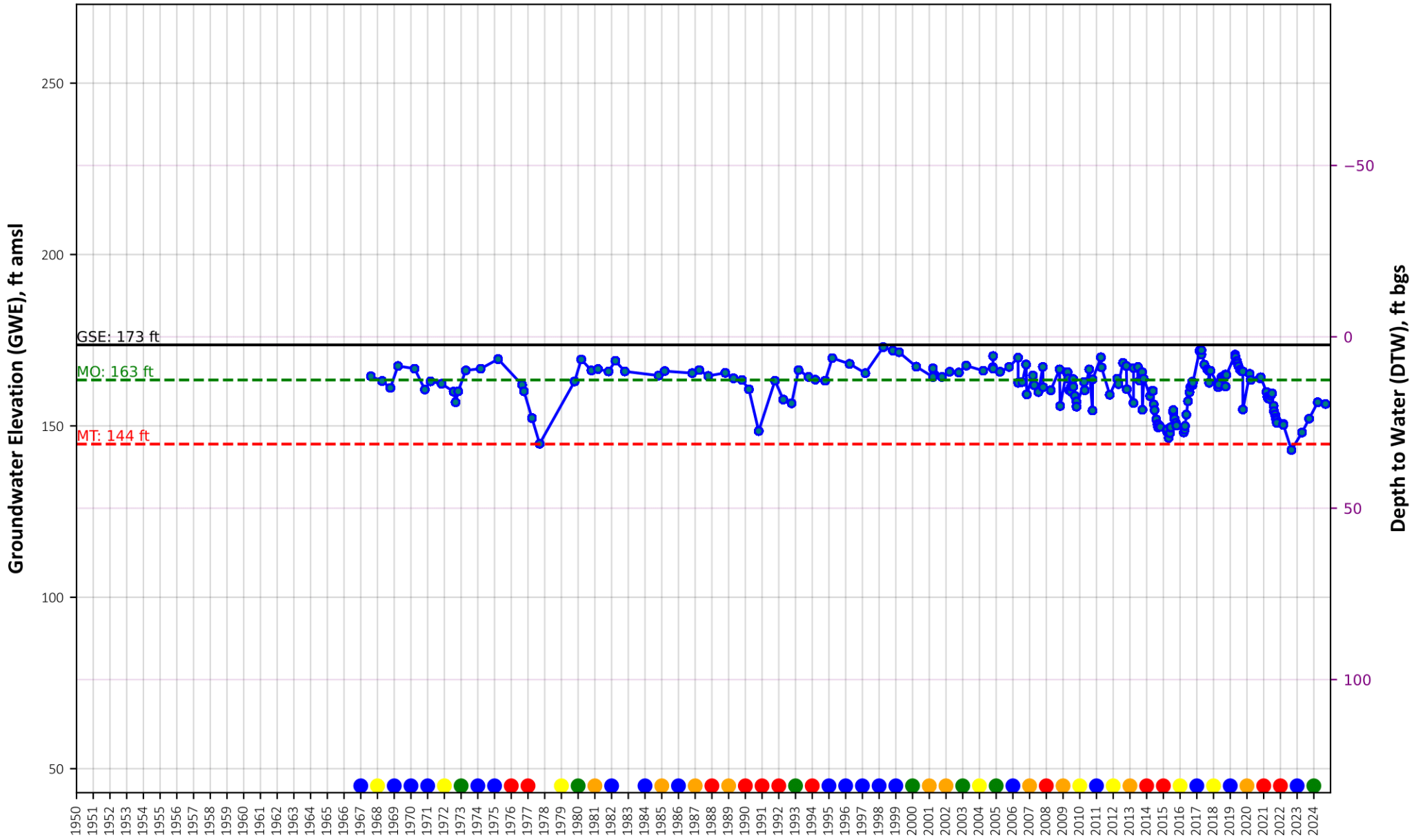


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #240



State Well Id: 09N01W21E001M
 Management Area: Central Yolo

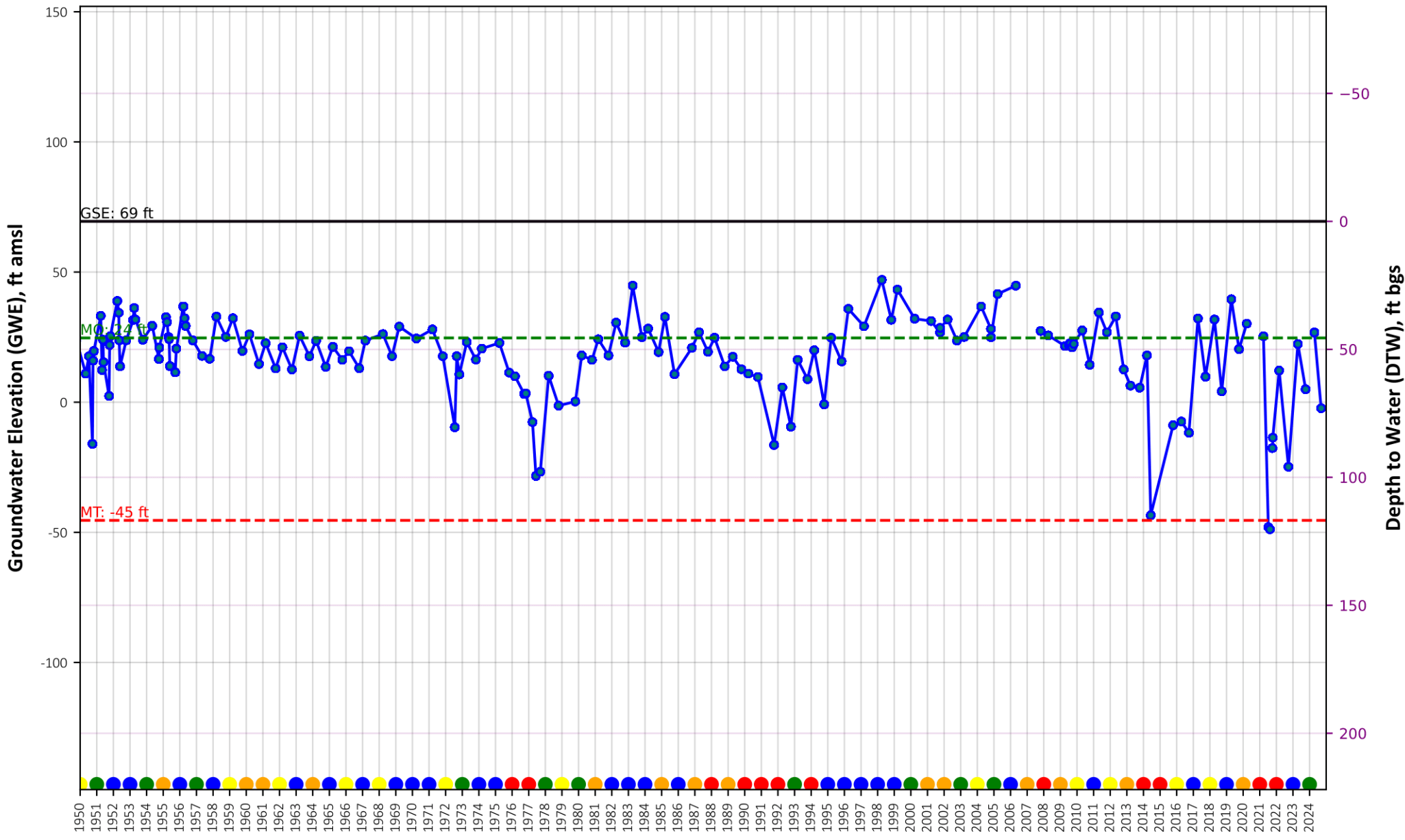


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #246



State Well Id: 09N02E07L001M
 Management Area: Central Yolo

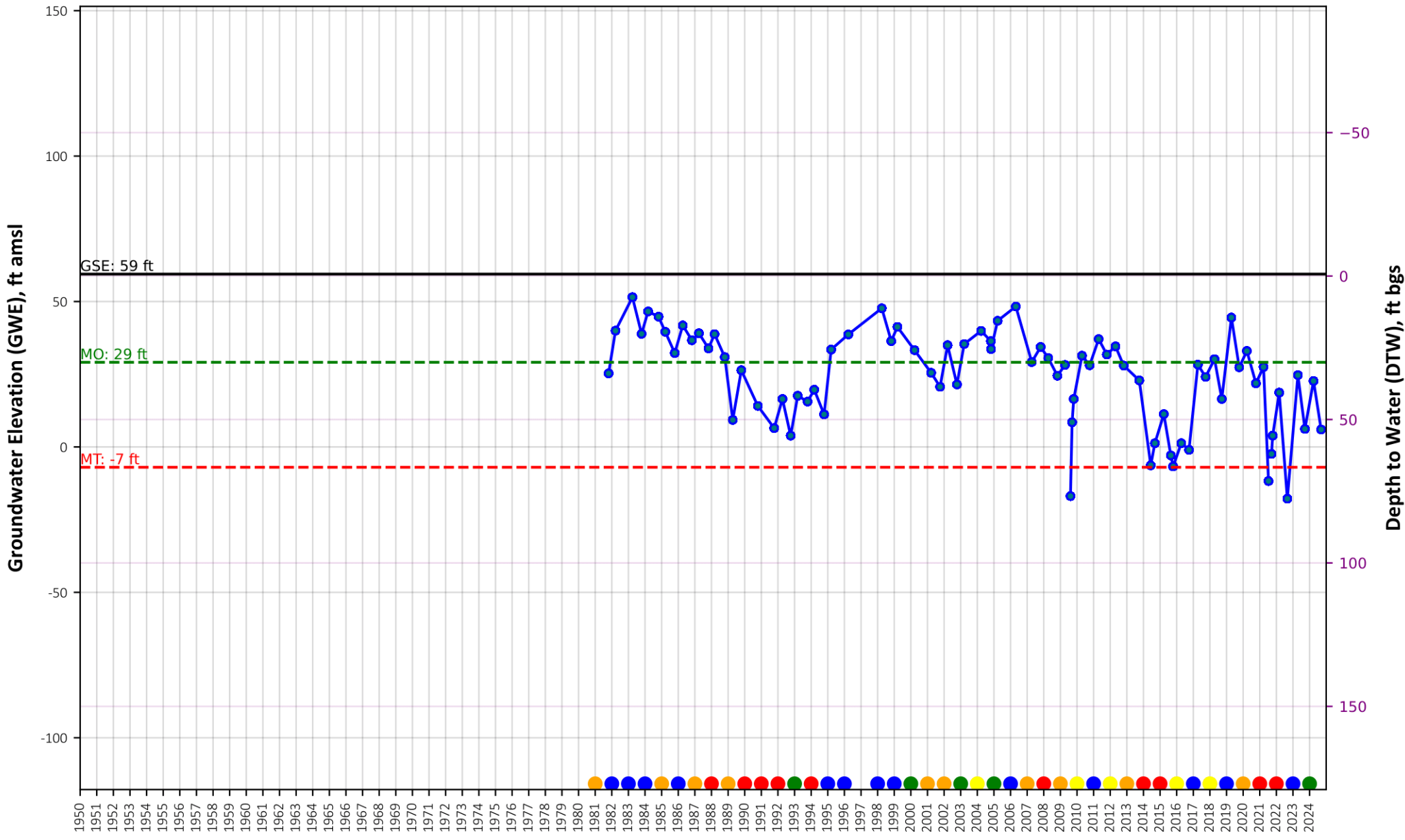


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



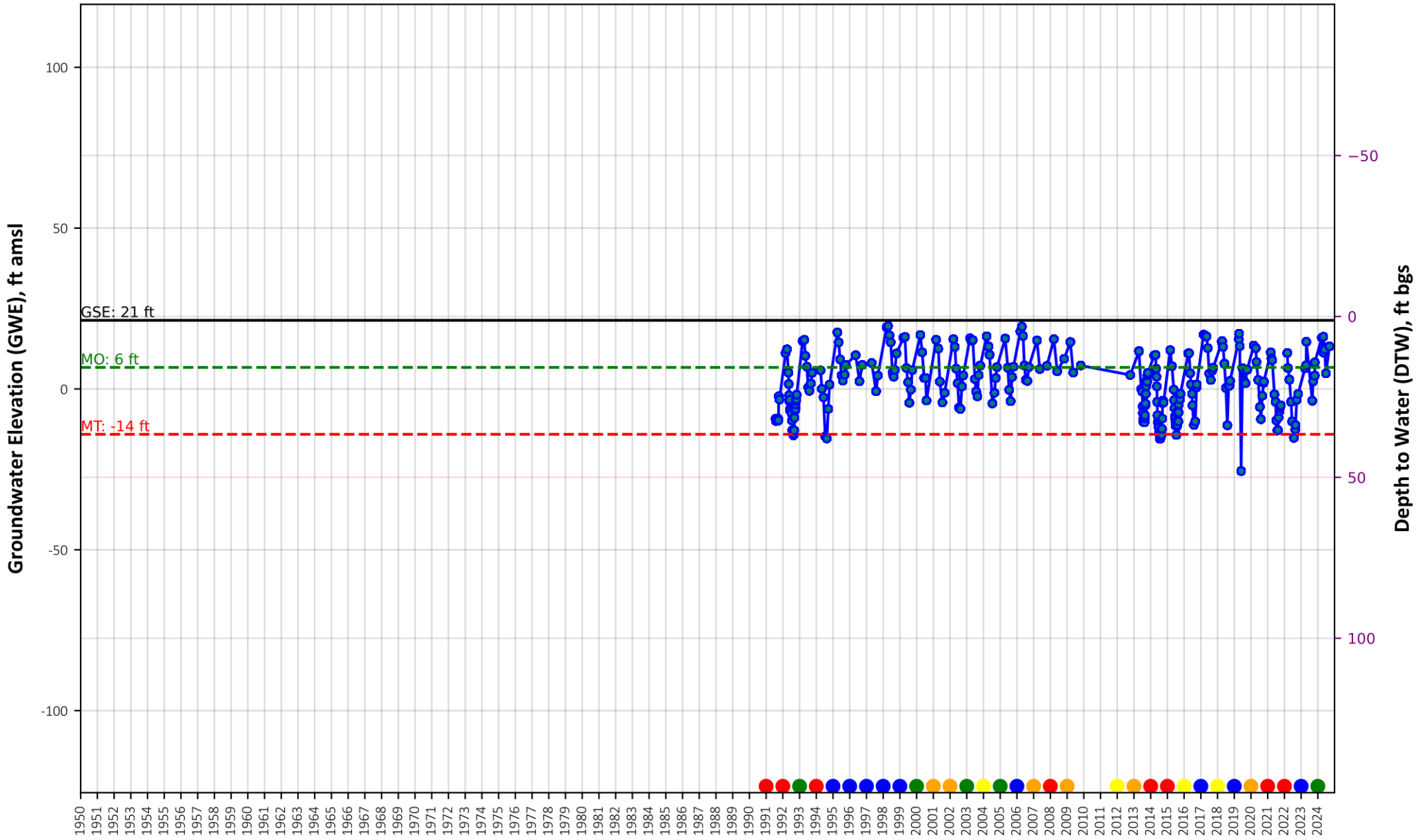
Groundwater Level Hydrograph for RMW #248



State Well Id: 09N02E32M001M
 Management Area: Central Yolo



Groundwater Level Hydrograph for RMW #250



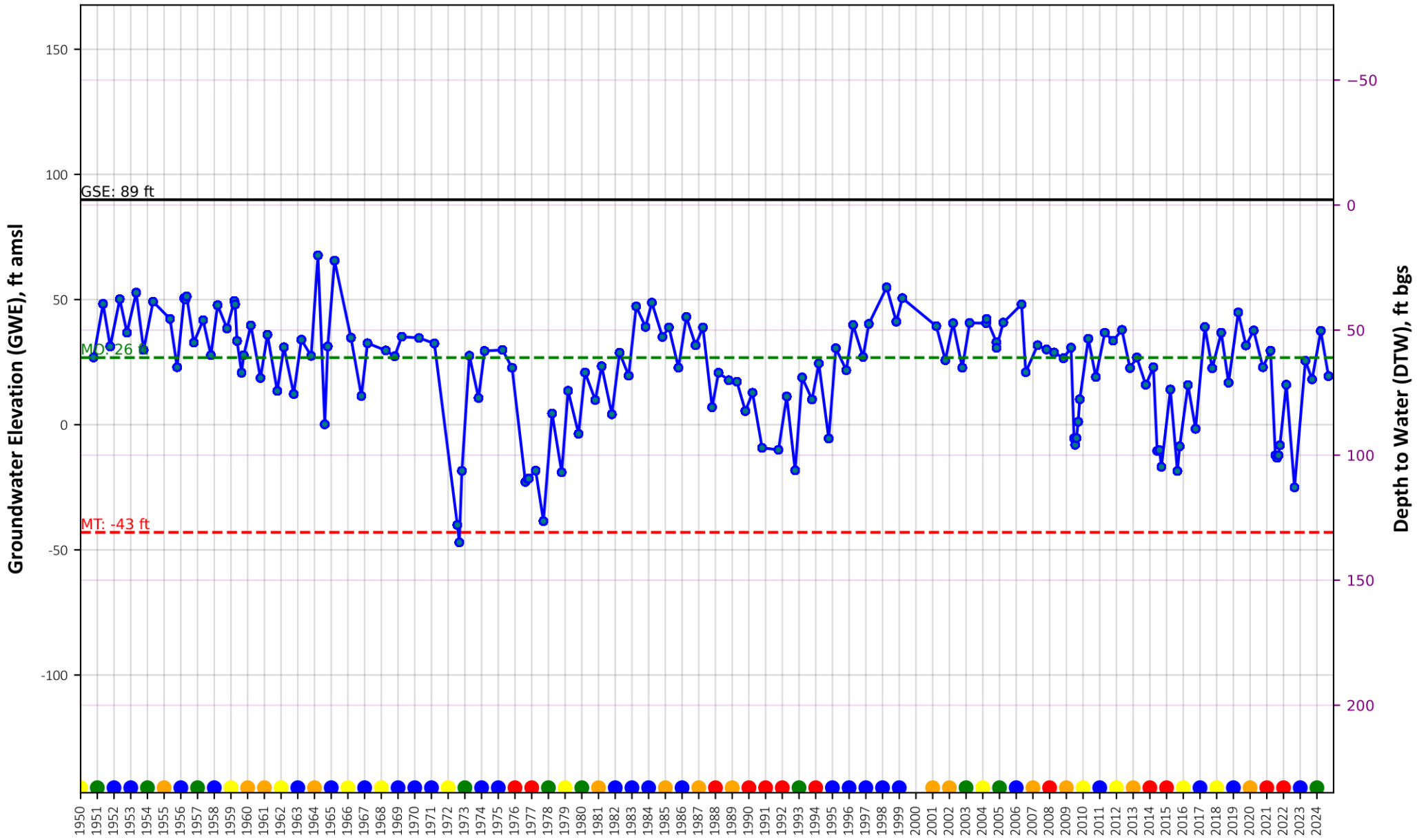
State Well Id: 09N03E19R002M
 Management Area: Central Yolo



- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #254



State Well Id: 10N01E23Q002M
 Management Area: Central Yolo

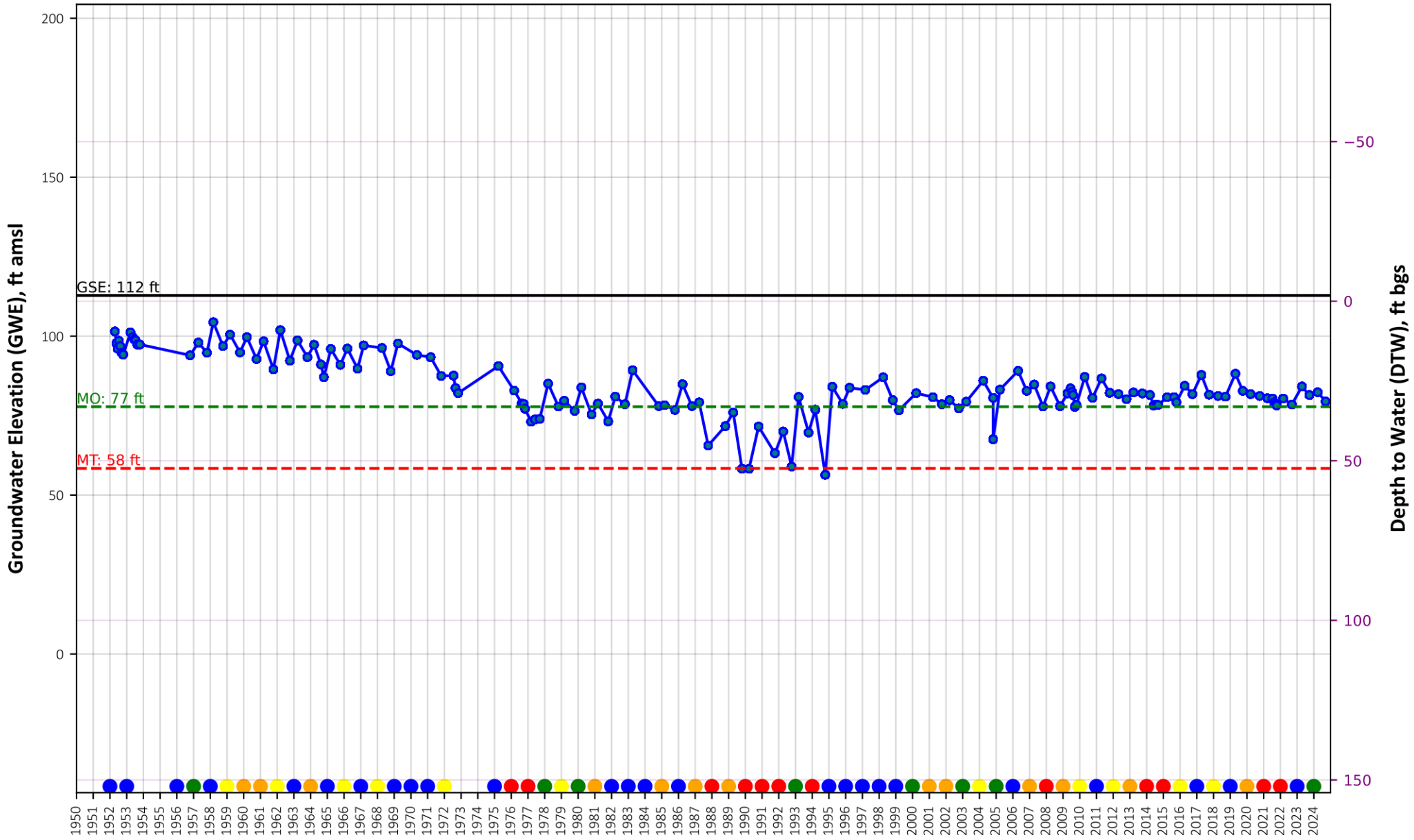


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #256



State Well Id: 10N01E29K001M
 Management Area: Central Yolo

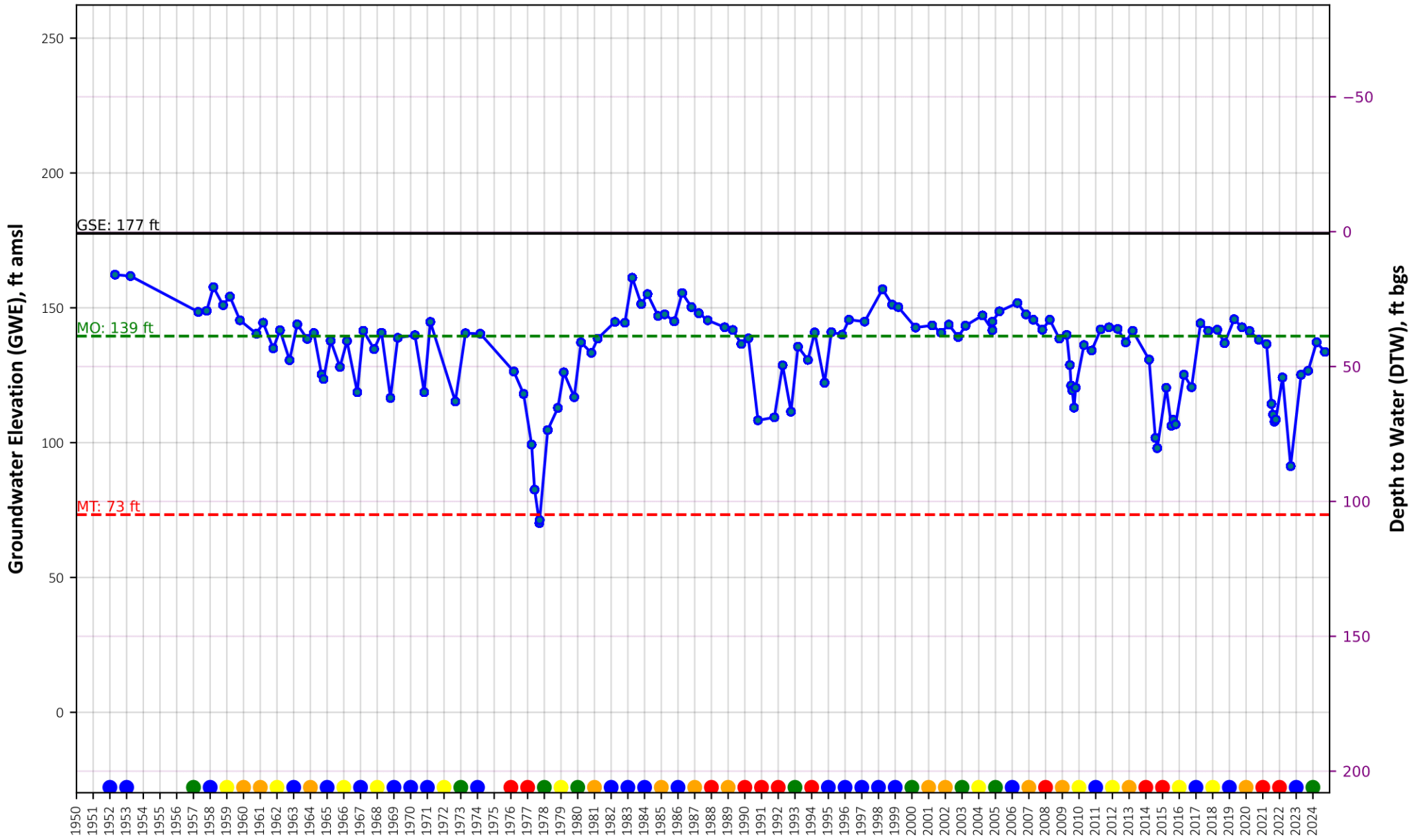


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #261



State Well Id: 10N01W08B001M
 Management Area: Central Yolo

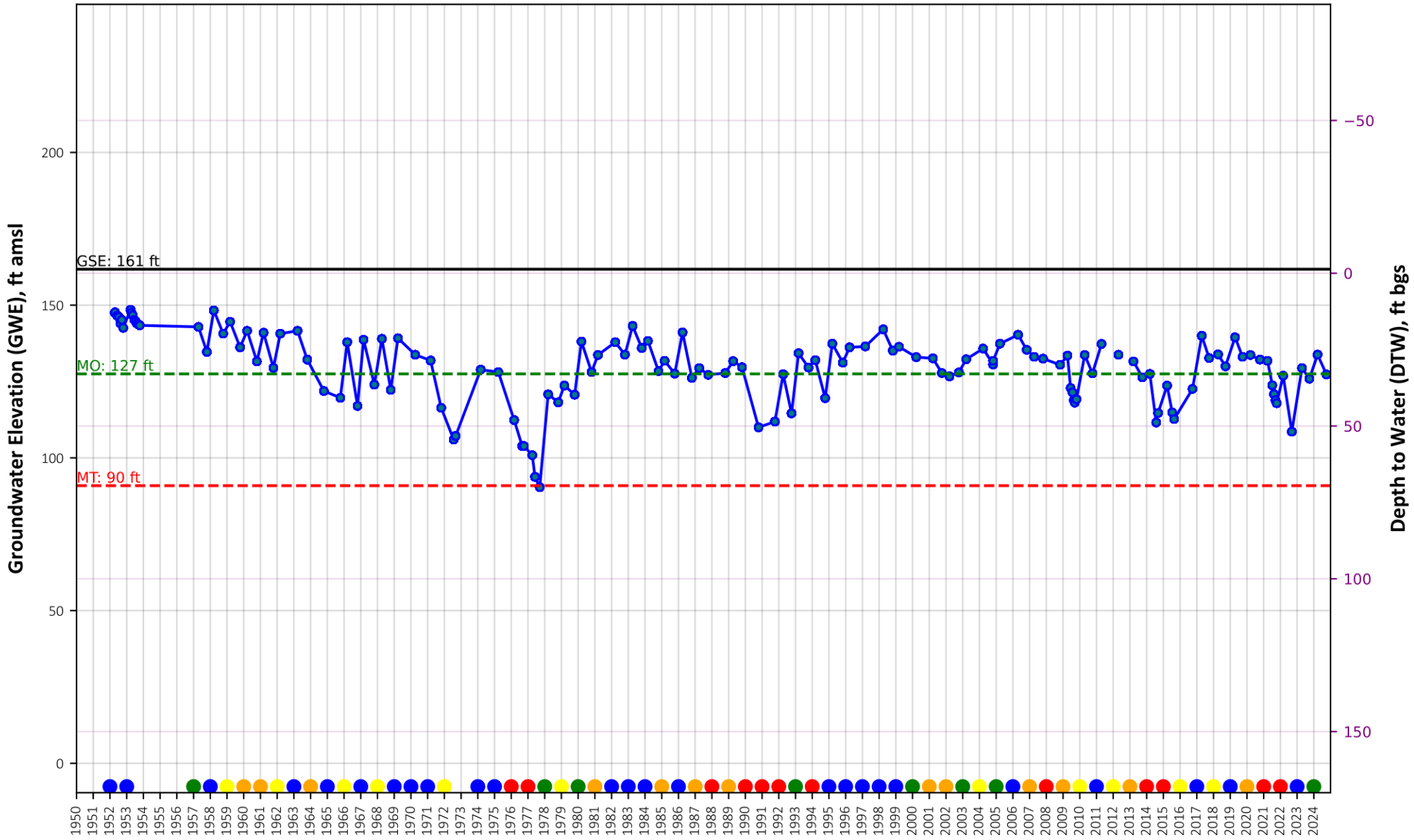


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #265



State Well Id: 10N01W21J001M
 Management Area: Central Yolo

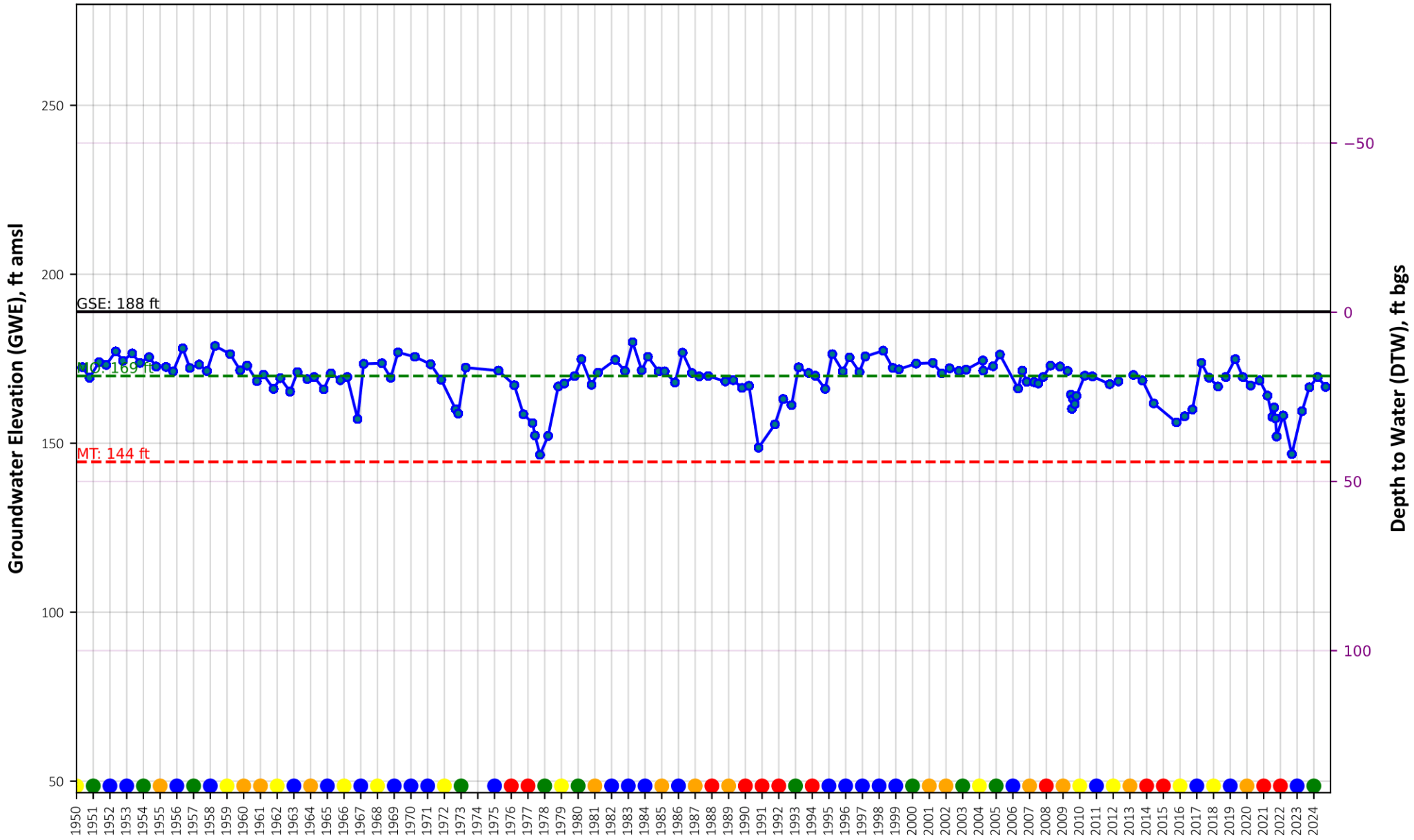


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #268



State Well Id: 10N01W32E001M
 Management Area: Central Yolo

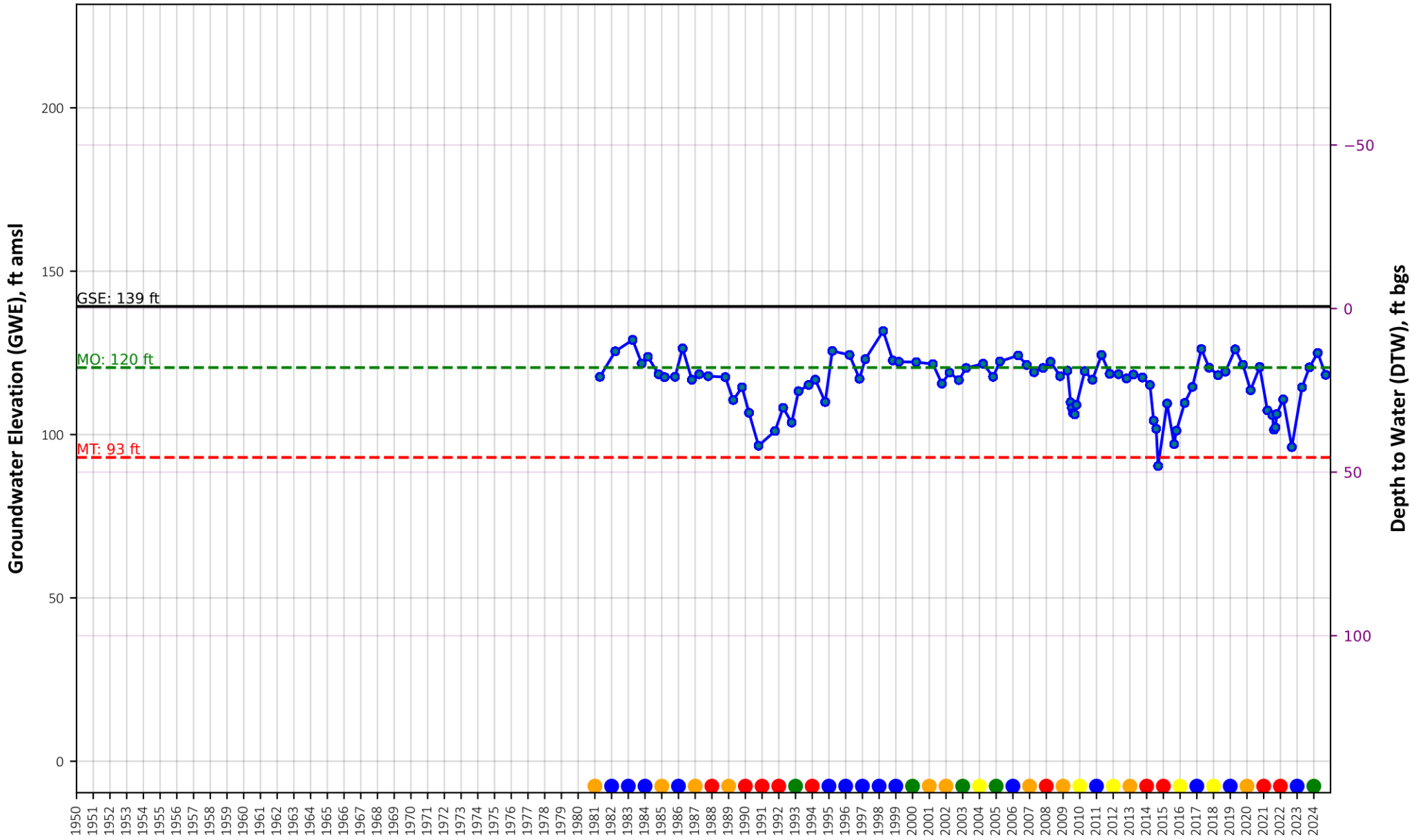


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #269



State Well Id: 10N01W35Q001M
 Management Area: Central Yolo

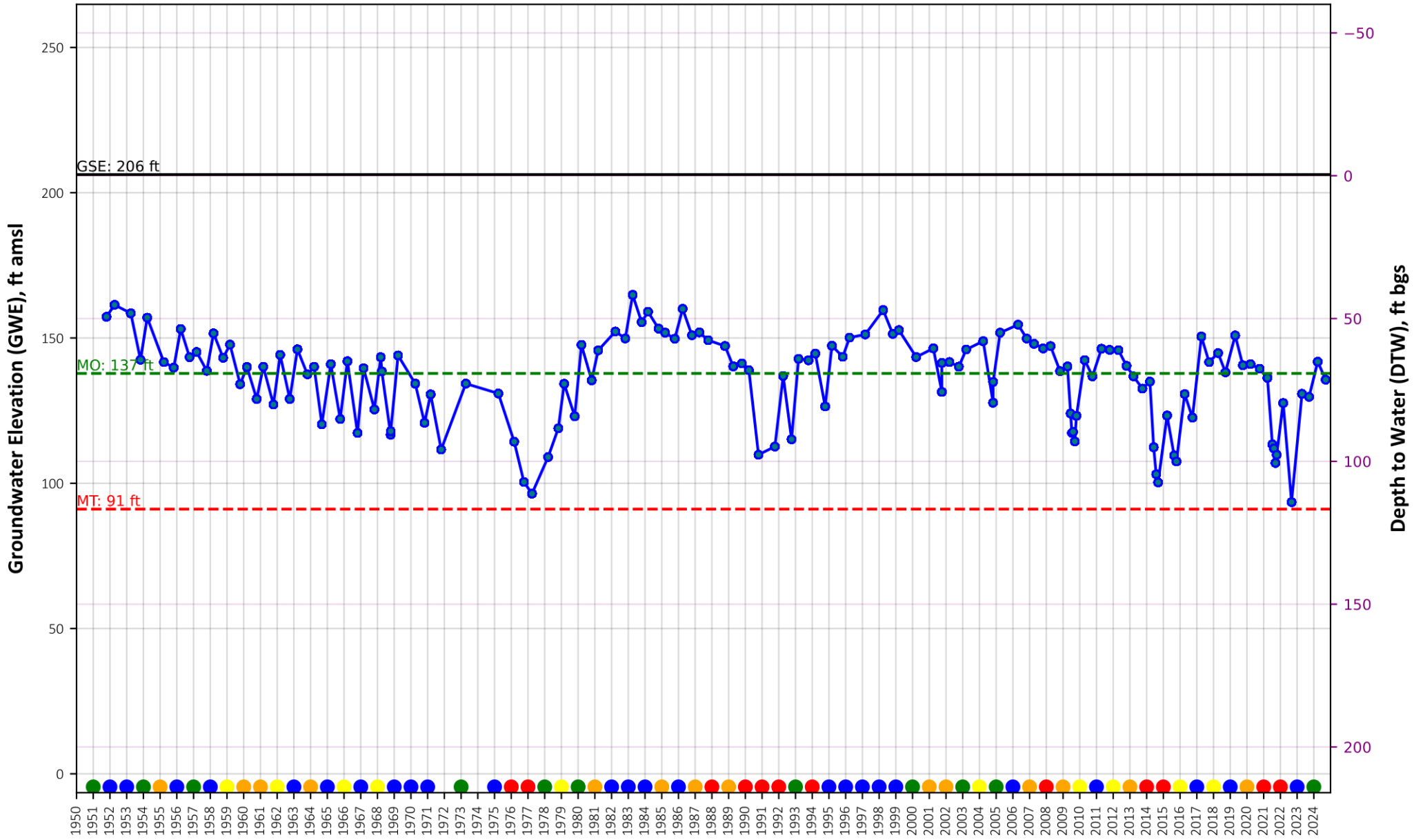


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #275



State Well Id: 10N02W14A001M
 Management Area: Central Yolo

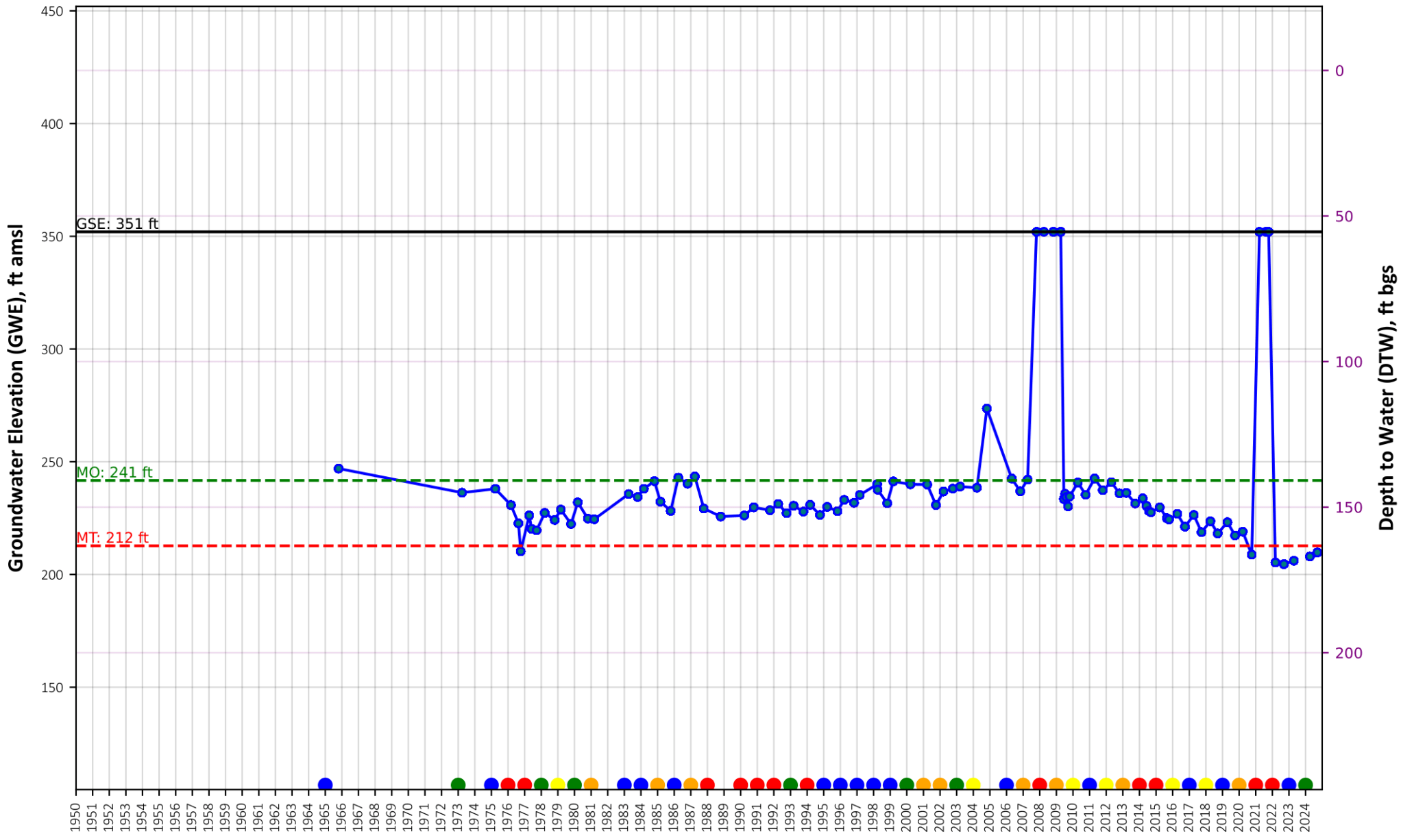


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #279



State Well Id: 10N02W26P001M
 Management Area: Central Yolo

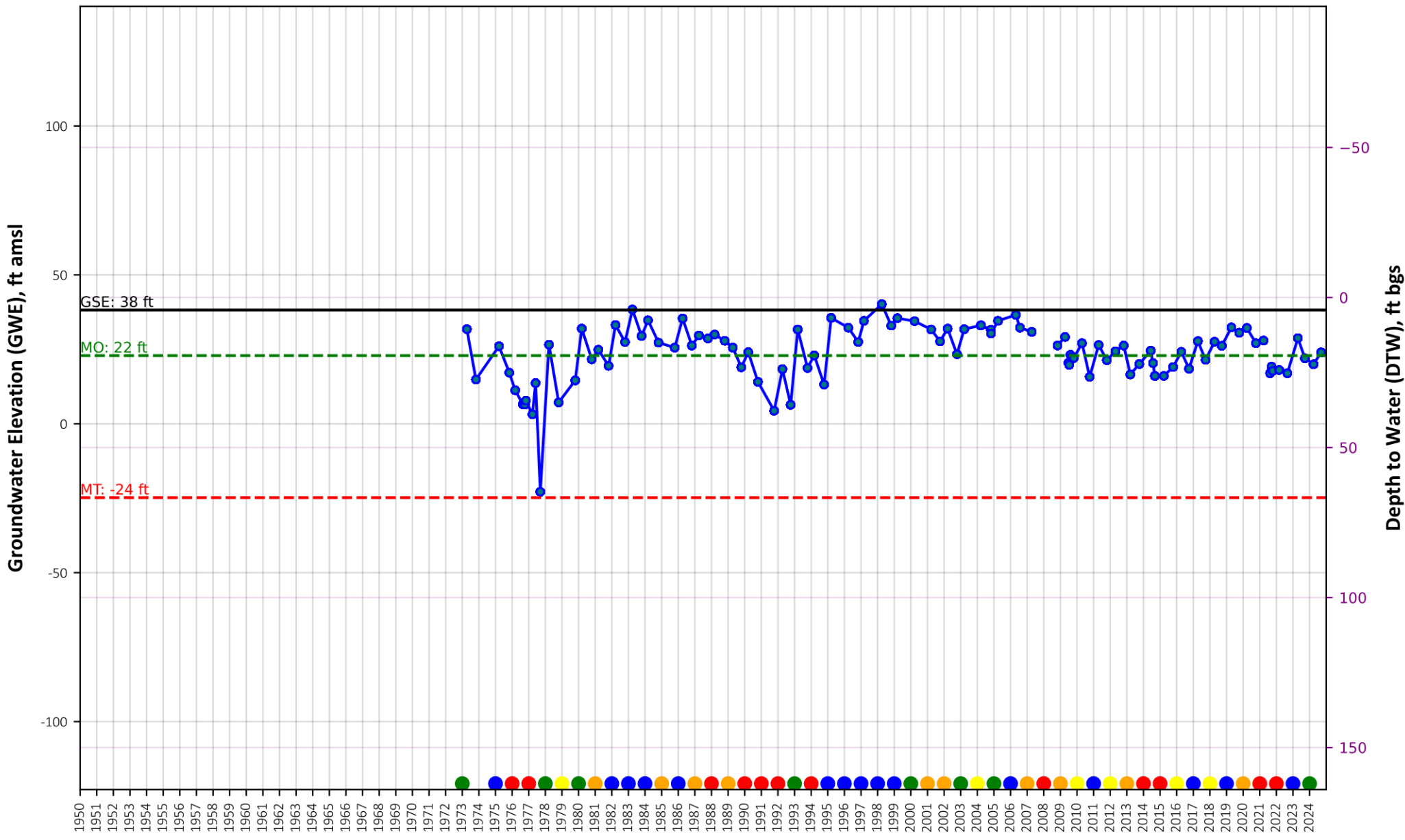


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



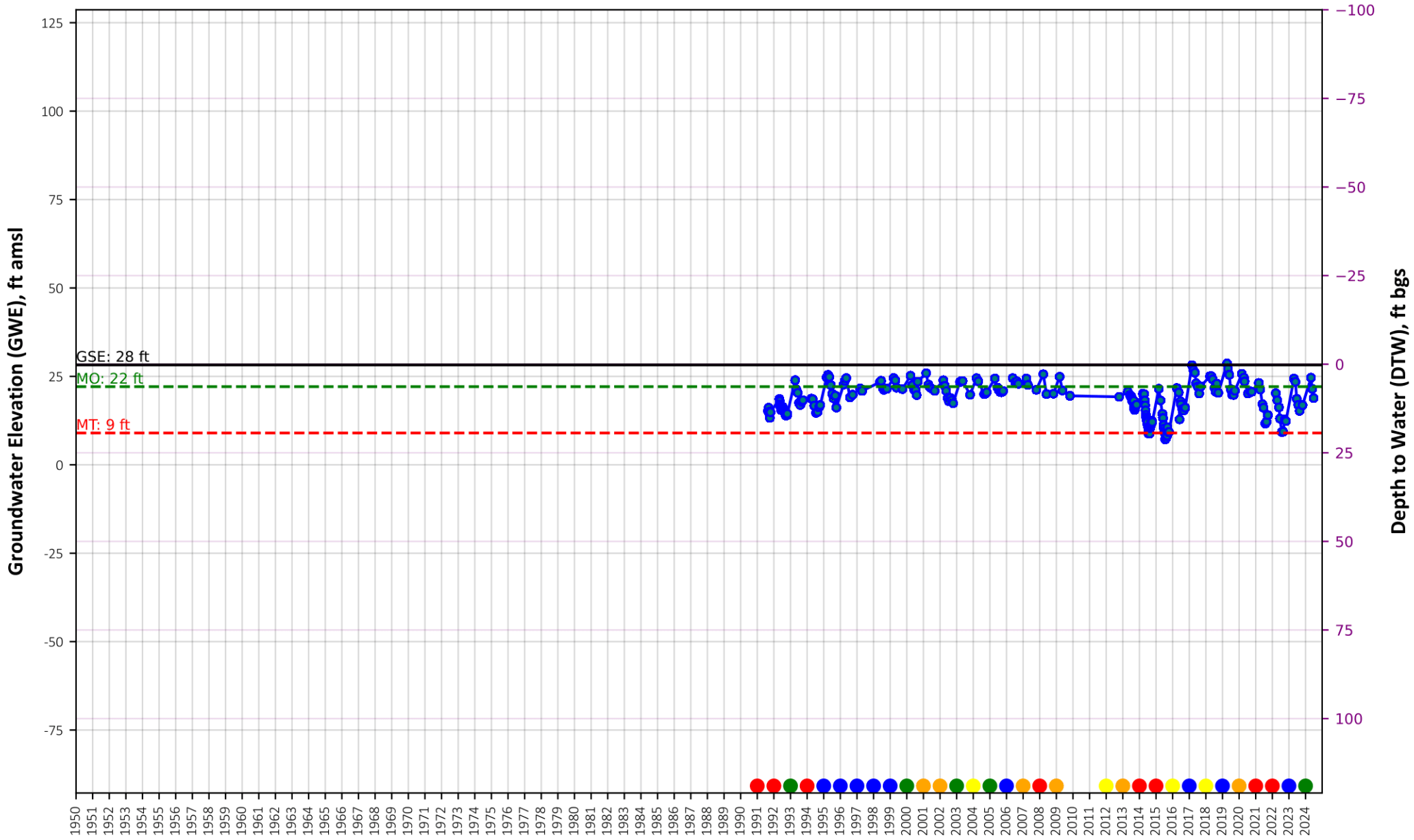
Groundwater Level Hydrograph for RMW #400



State Well Id: 09N02E22H002M
 Management Area: Central Yolo



Groundwater Level Hydrograph for RMW #401



State Well Id: 10N02E36E001M
 Management Area: Central Yolo

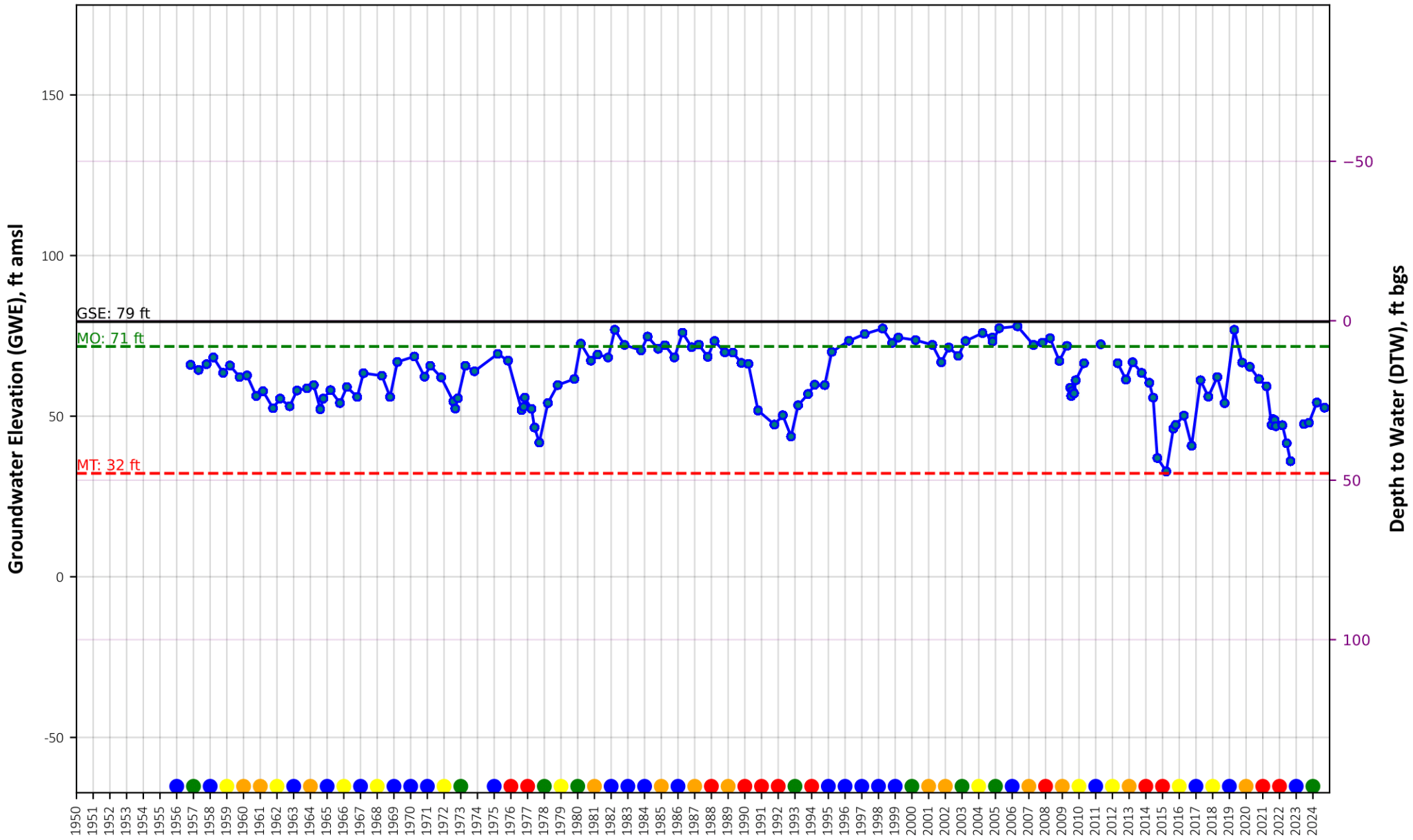


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #403



State Well Id: 09N01E26N001M
 Management Area: Central Yolo

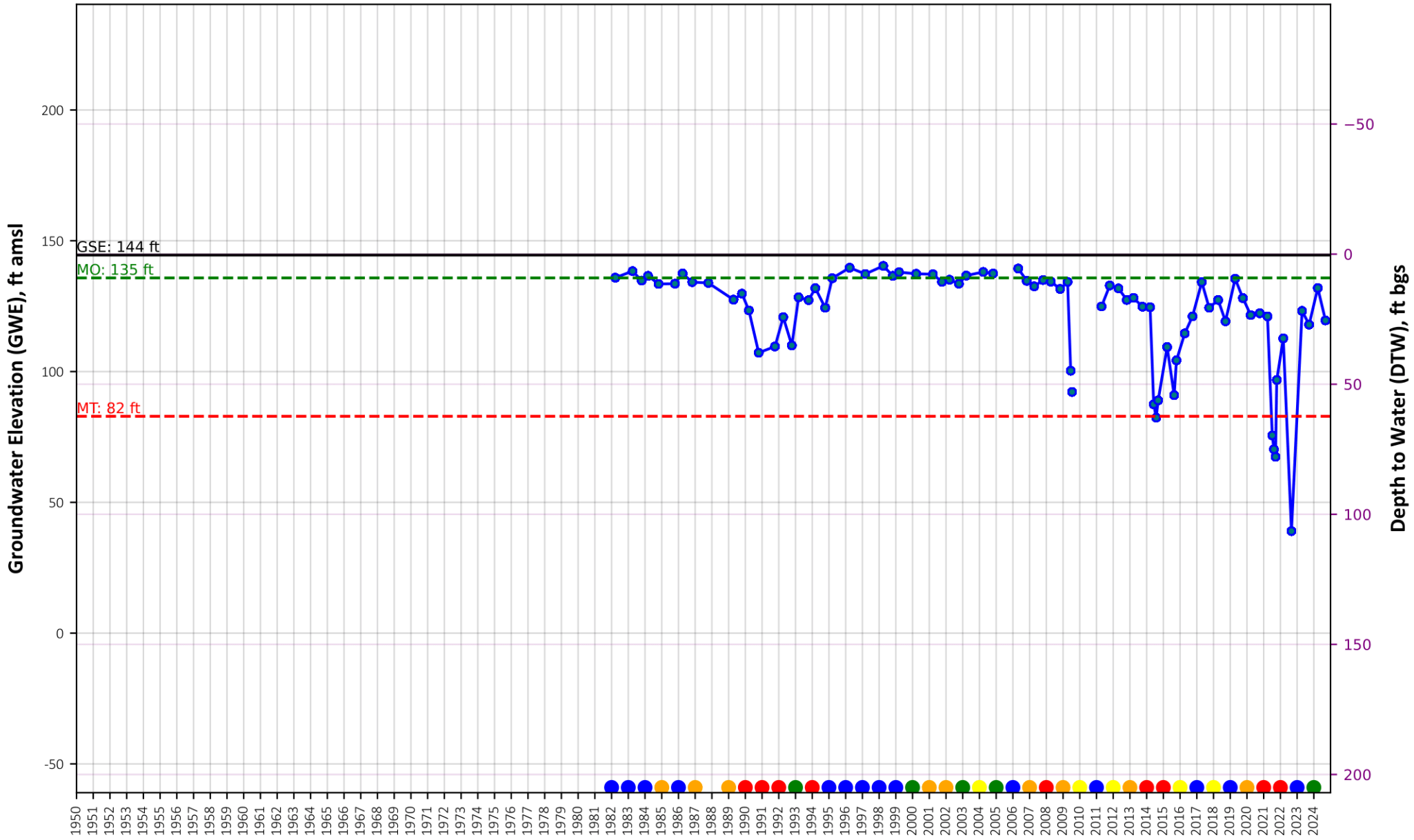


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #404



State Well Id: 09N01W23D001M
 Management Area: Central Yolo

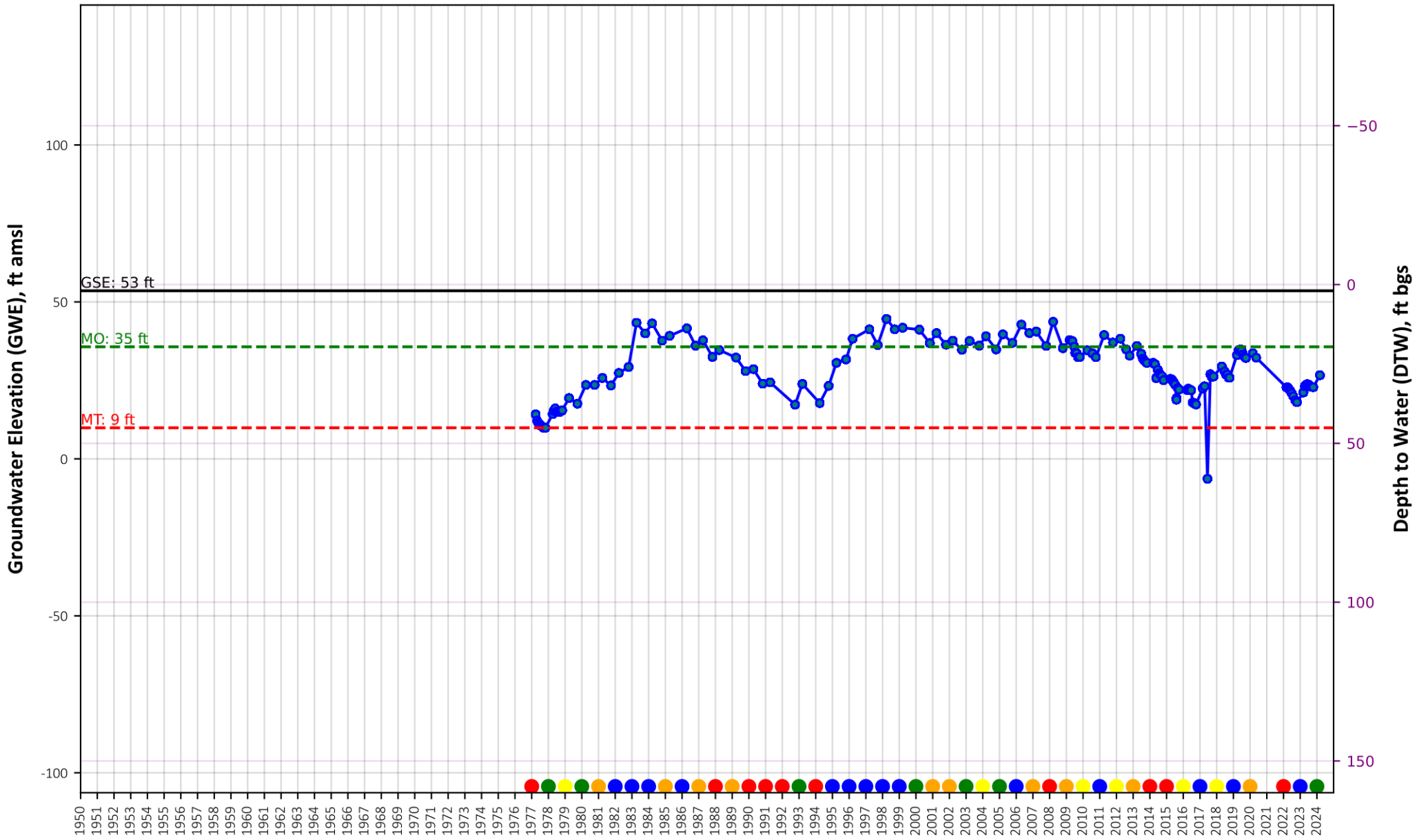


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #406



State Well Id: 10N02E29A001M
 Management Area: Central Yolo

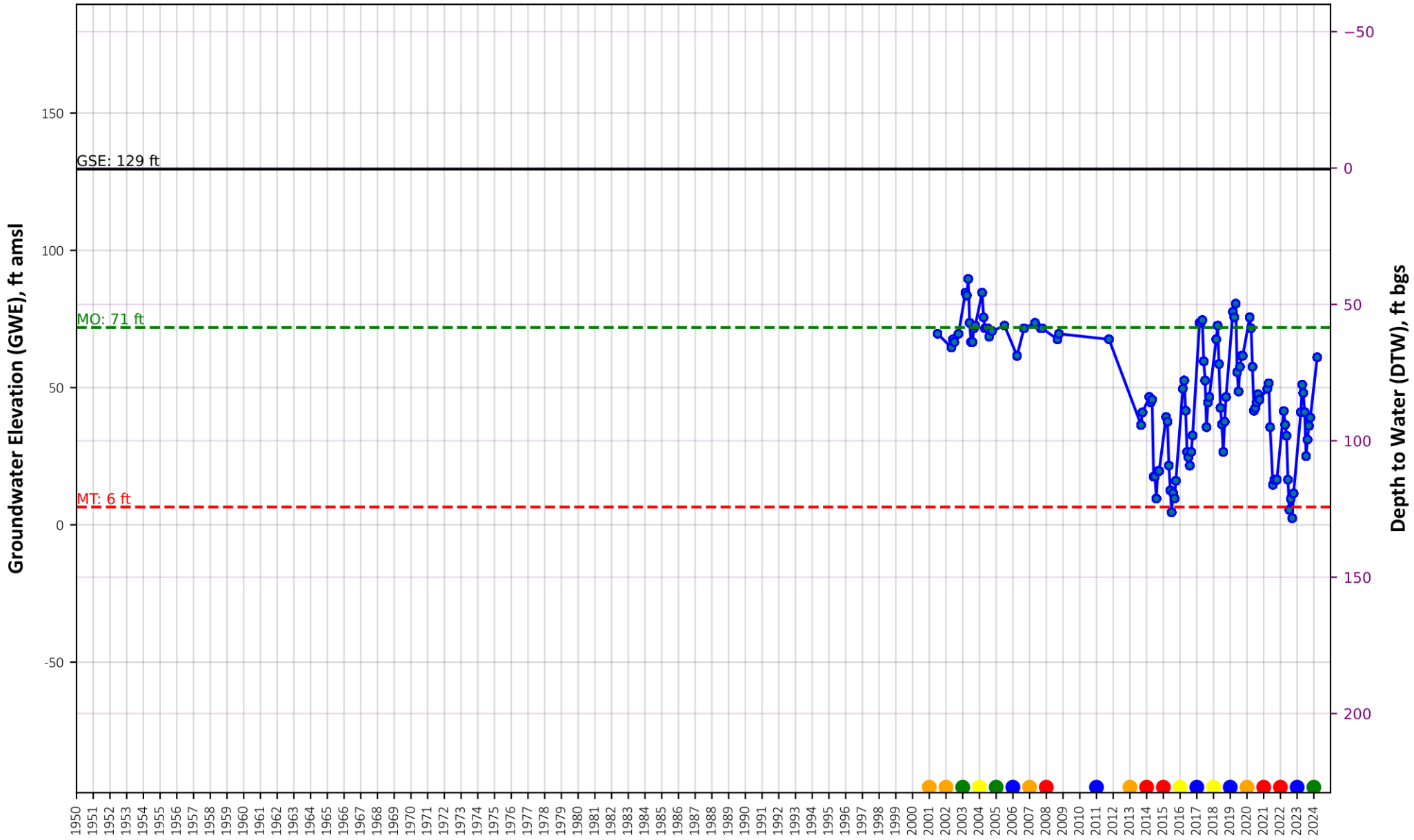


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #419



State Well Id: 08N01W22G500M
 Management Area: Central Yolo

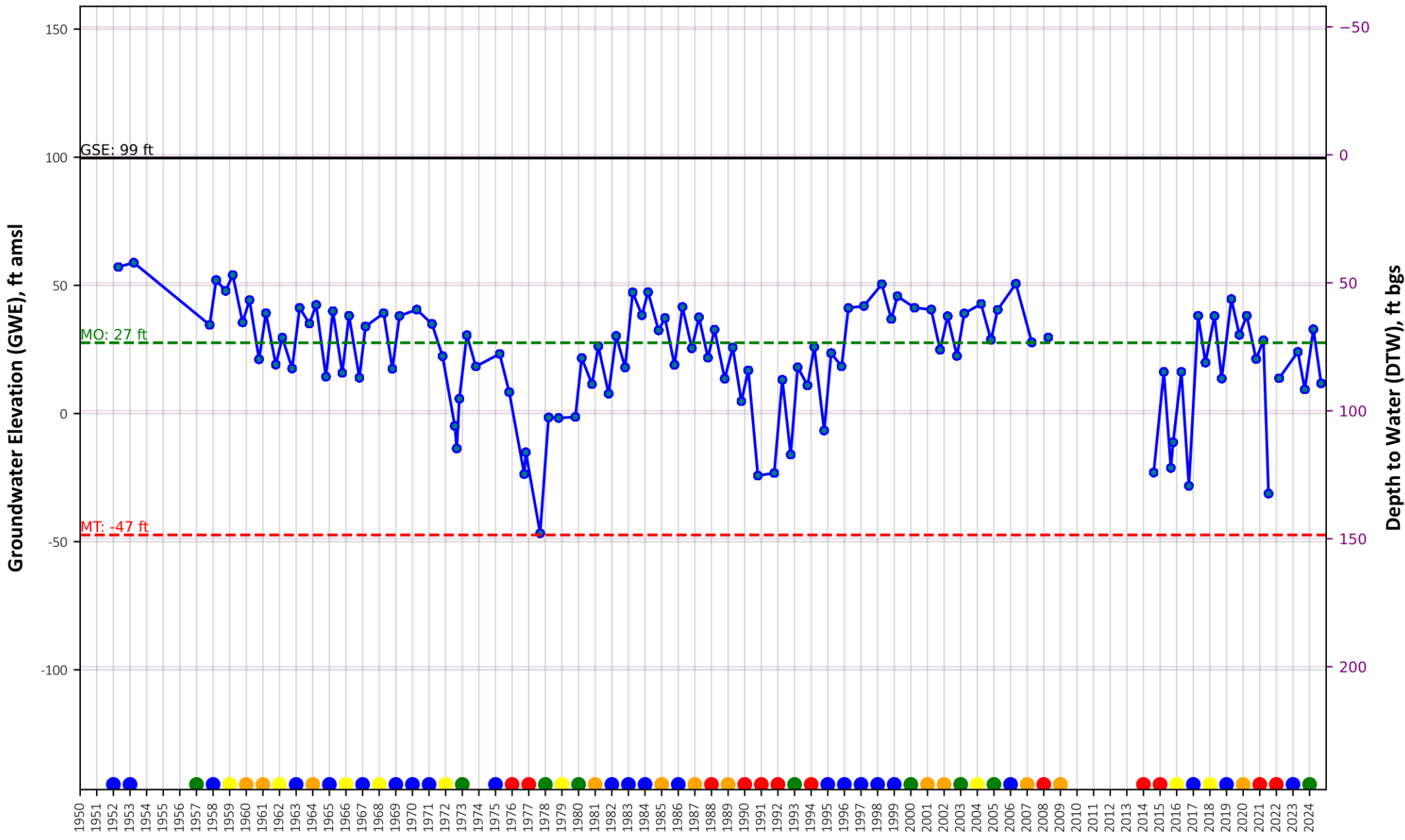


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #430



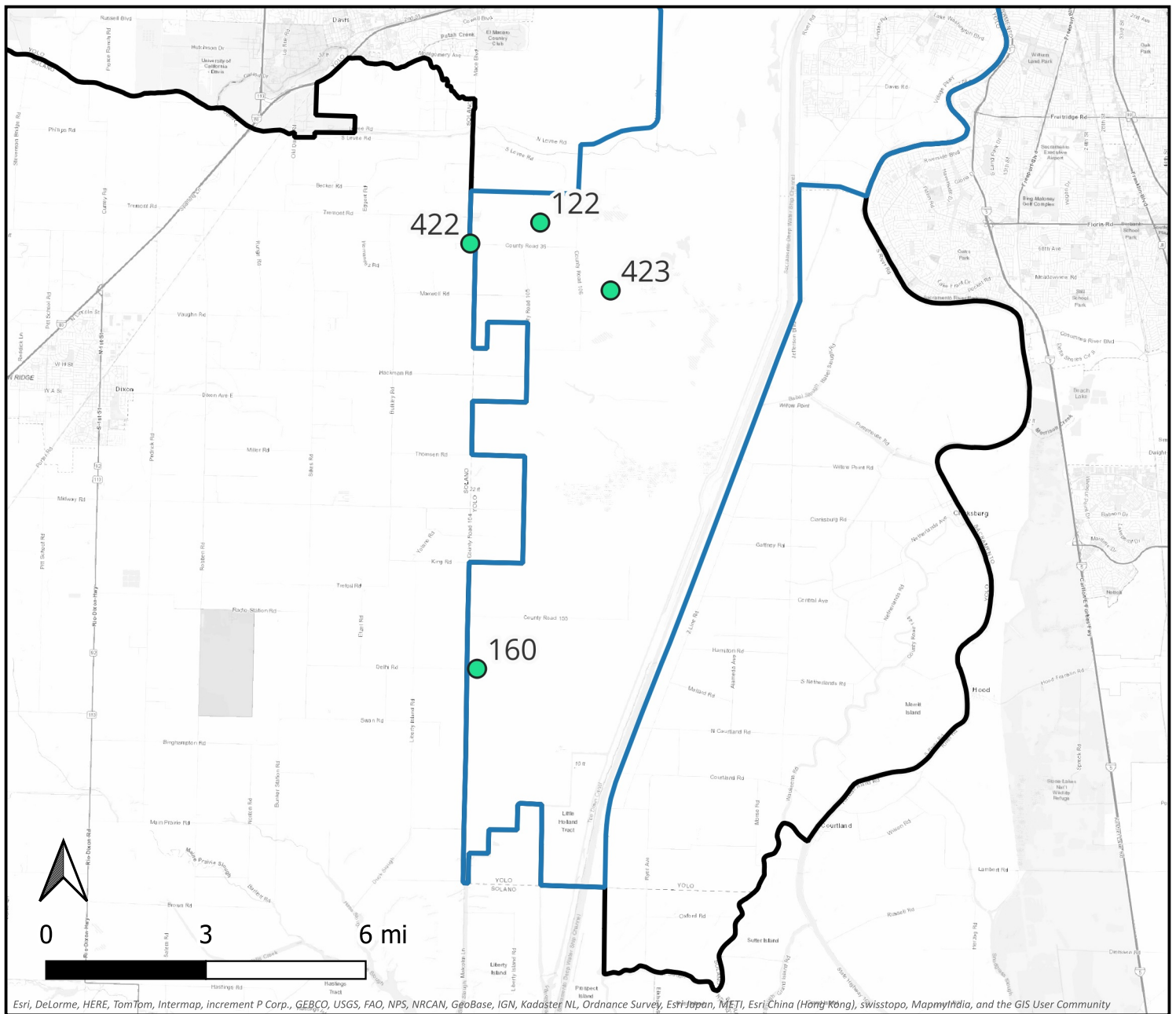
State Well Id: 10N01E34A003M
 Management Area: Central Yolo



Year

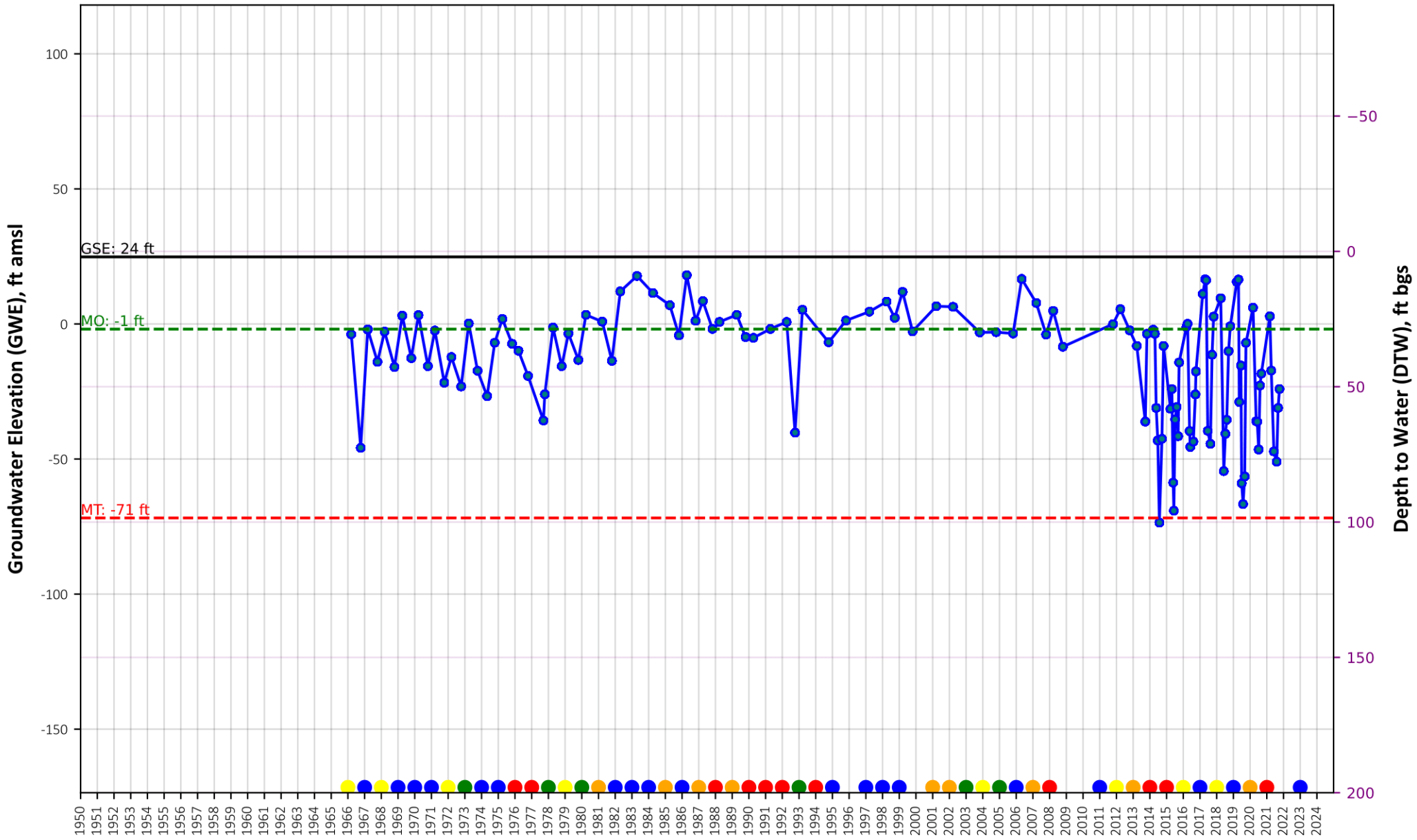
- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry





South Yolo Management Area RMW Hydrographs

Groundwater Level Hydrograph for RMW #122



State Well Id: 08N03E32L001M
 Management Area: South Yolo

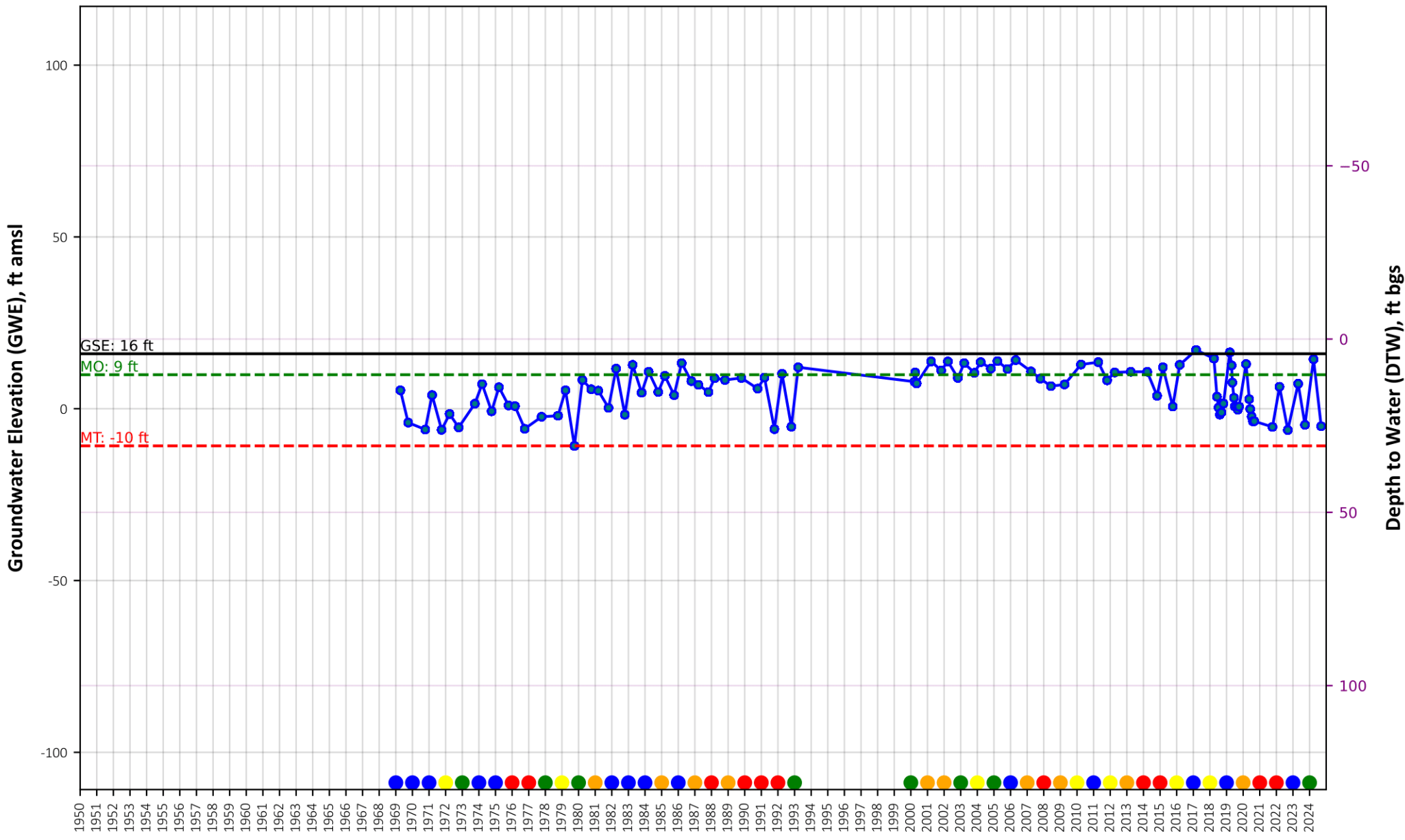


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #160



State Well Id: 06N03E07M001M
 Management Area: South Yolo

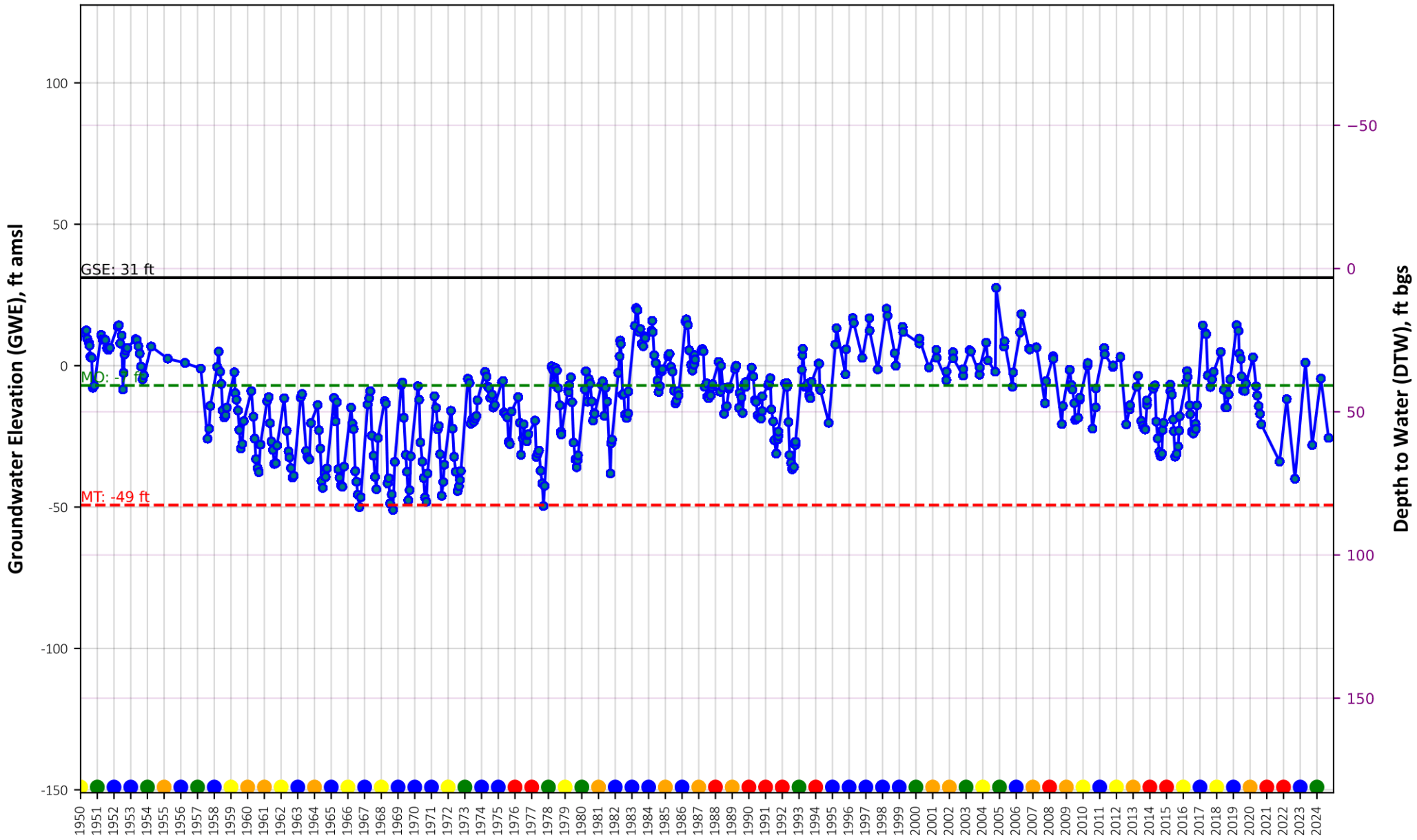


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #422



State Well Id: 08N03E31N001M
 Management Area: South Yolo

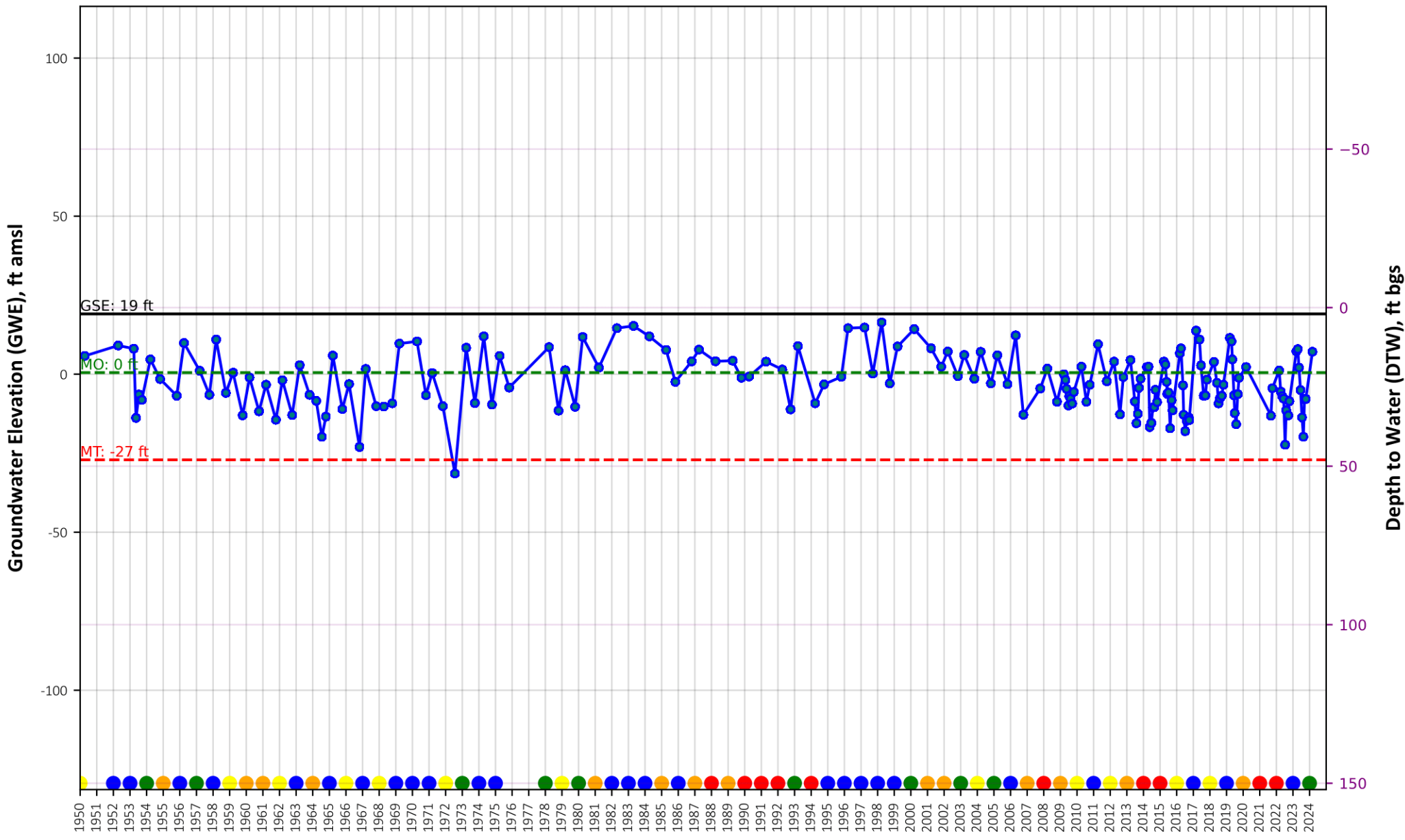


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #423



State Well Id: 07N03E04Q001M
 Management Area: South Yolo



Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry

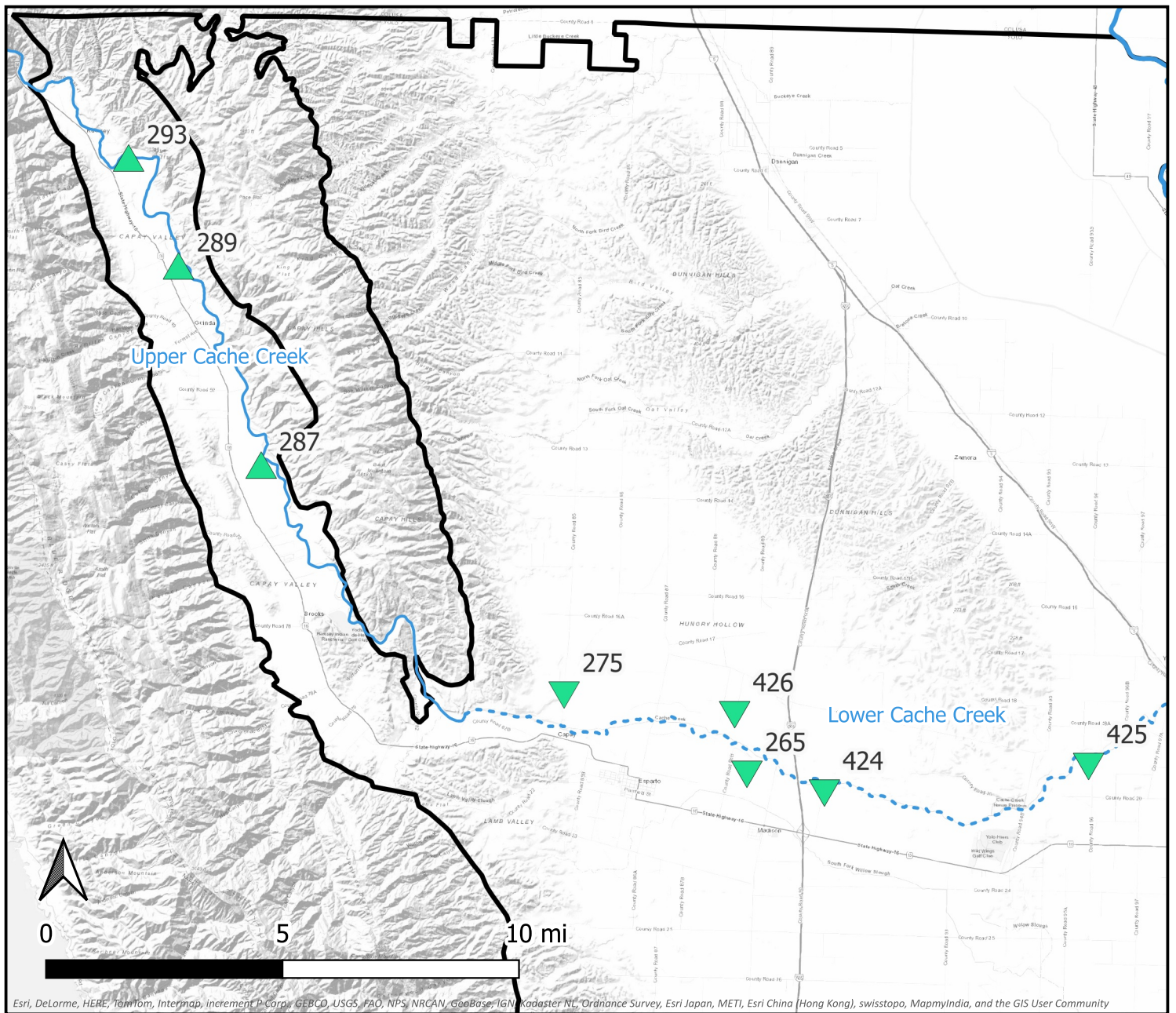


YOLO SUBBASIN GSP ANNUAL REPORT 2025



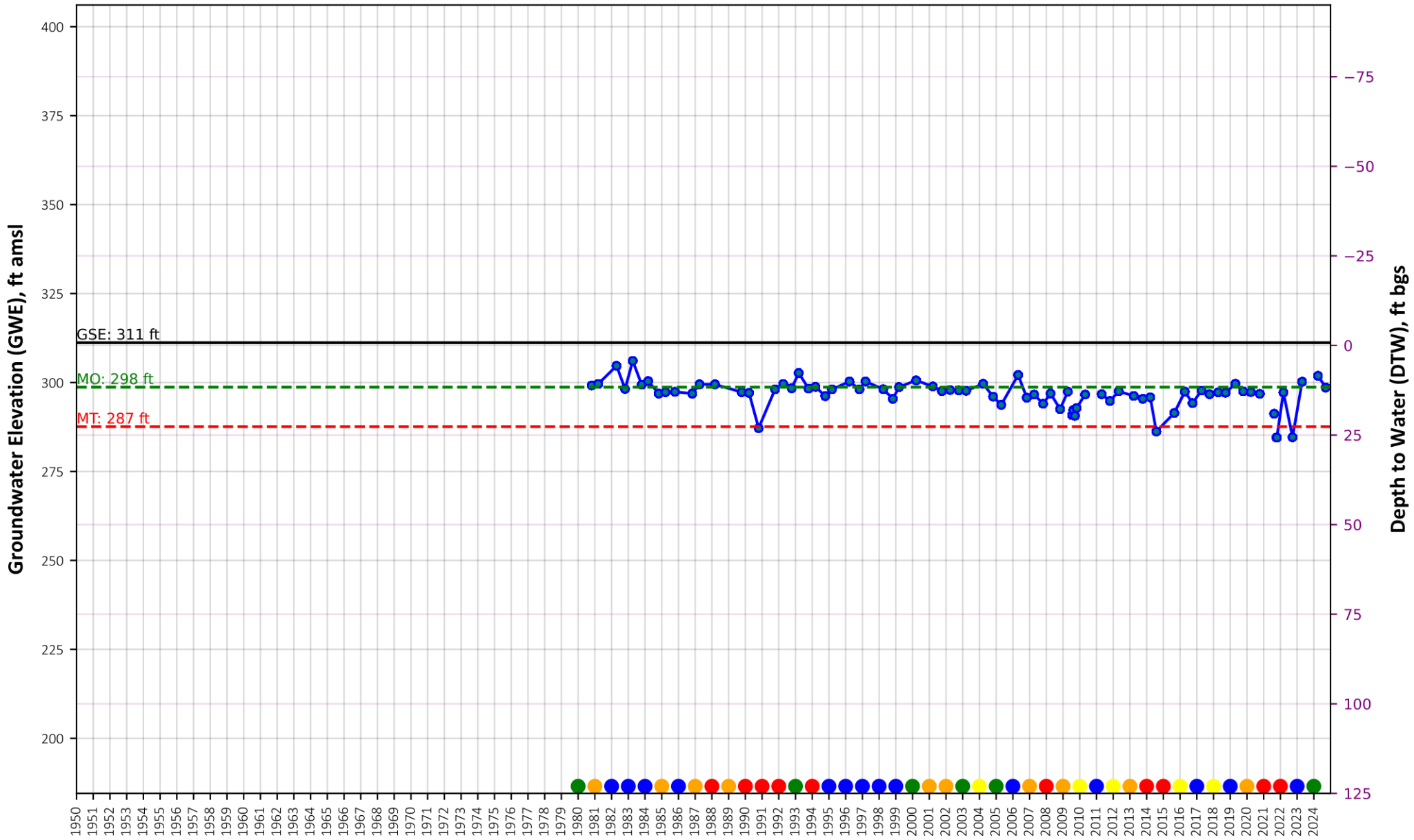
ATTACHMENT B

Interconnected Surface Waters
Representative Well Hydrographs



Upper & Lower Cache Creek ISW Management Zone Hydrographs

Groundwater Level Hydrograph for RMW #287



State Well Id: 11N03W23L001M
 Management Area: Capay Valley
 ISW: YES

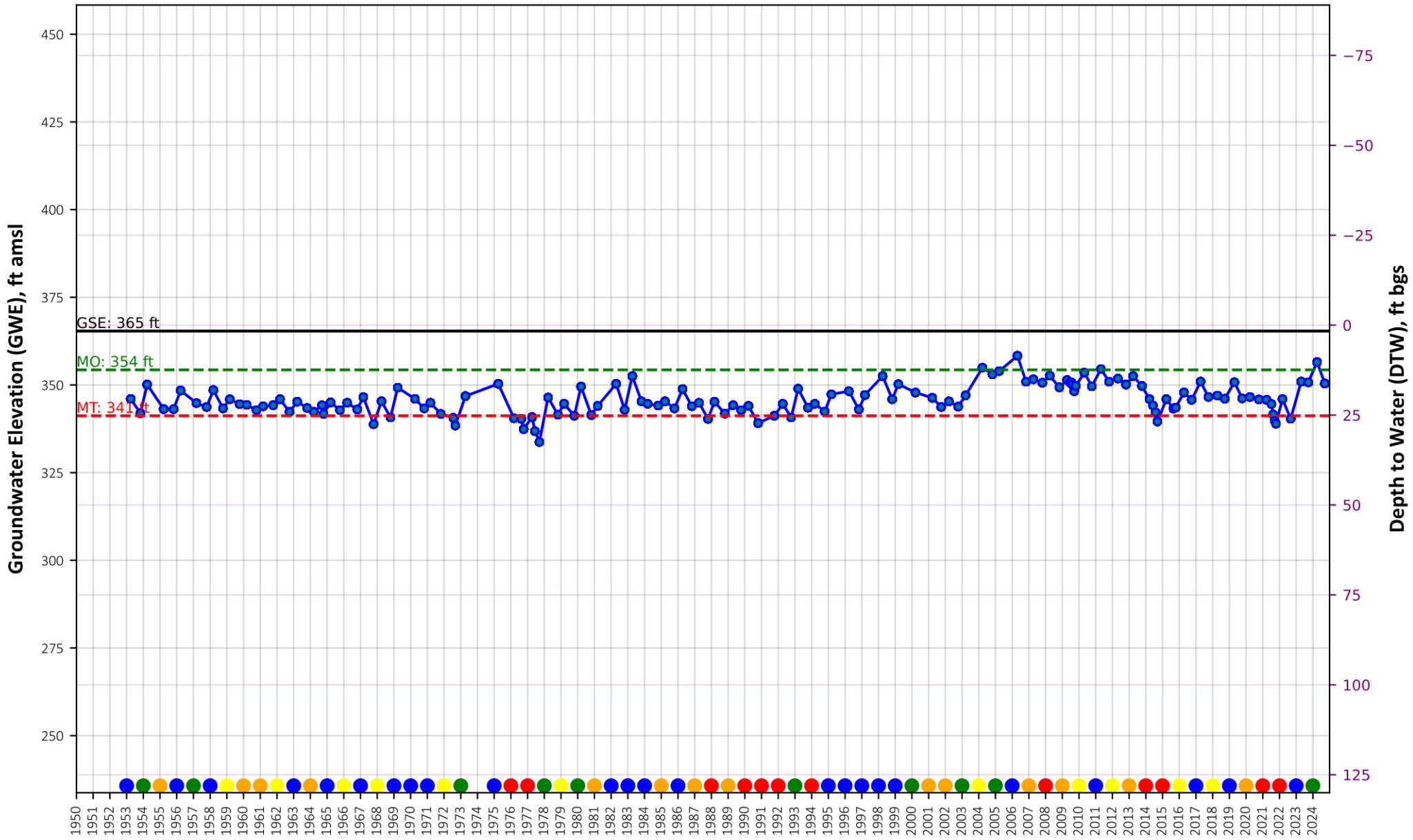


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #289



State Well Id: 11N03W33F001M
 Management Area: Capay Valley
 ISW: YES

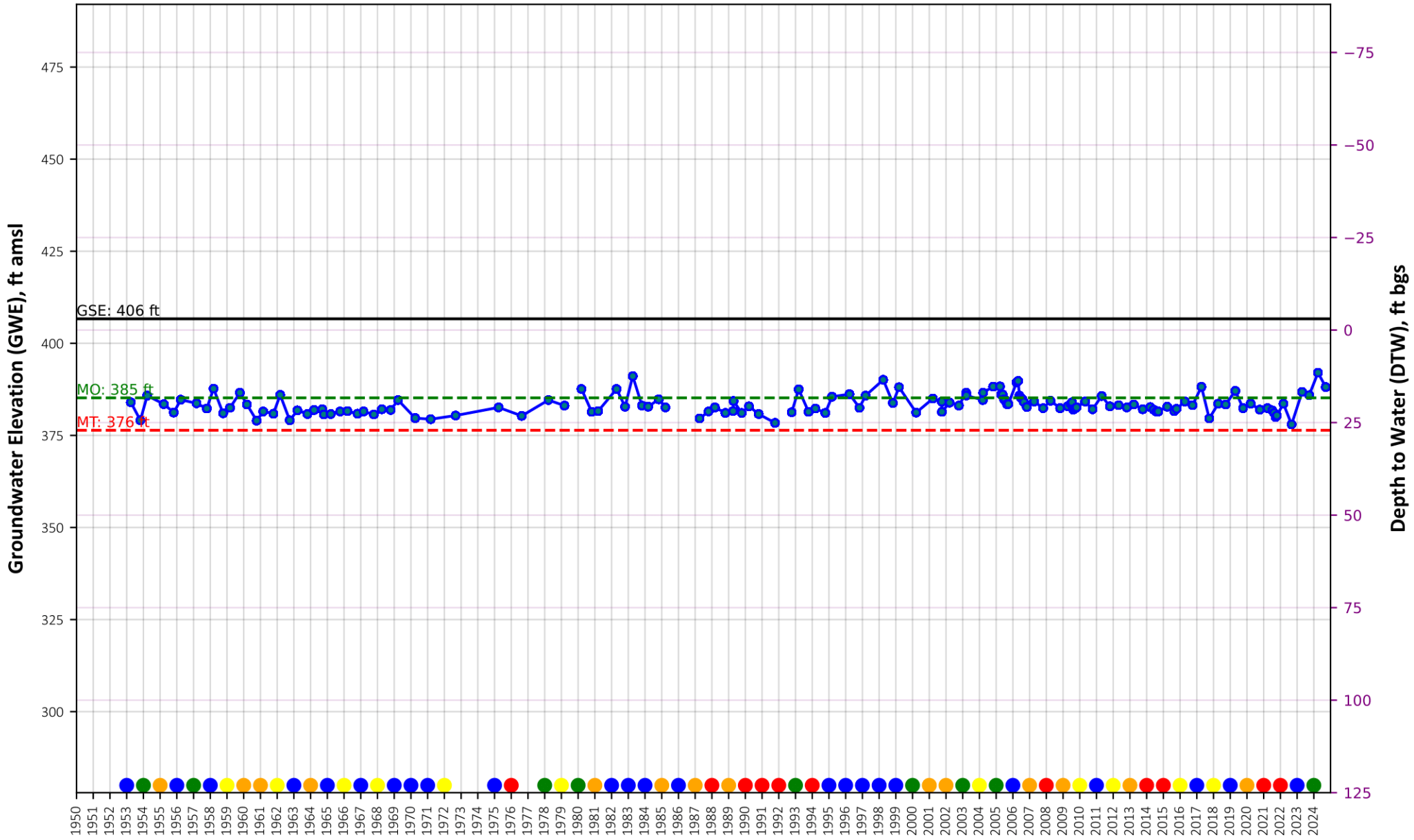


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #293



State Well Id: 12N03W20D001M
 Management Area: Capay Valley
 ISW: YES

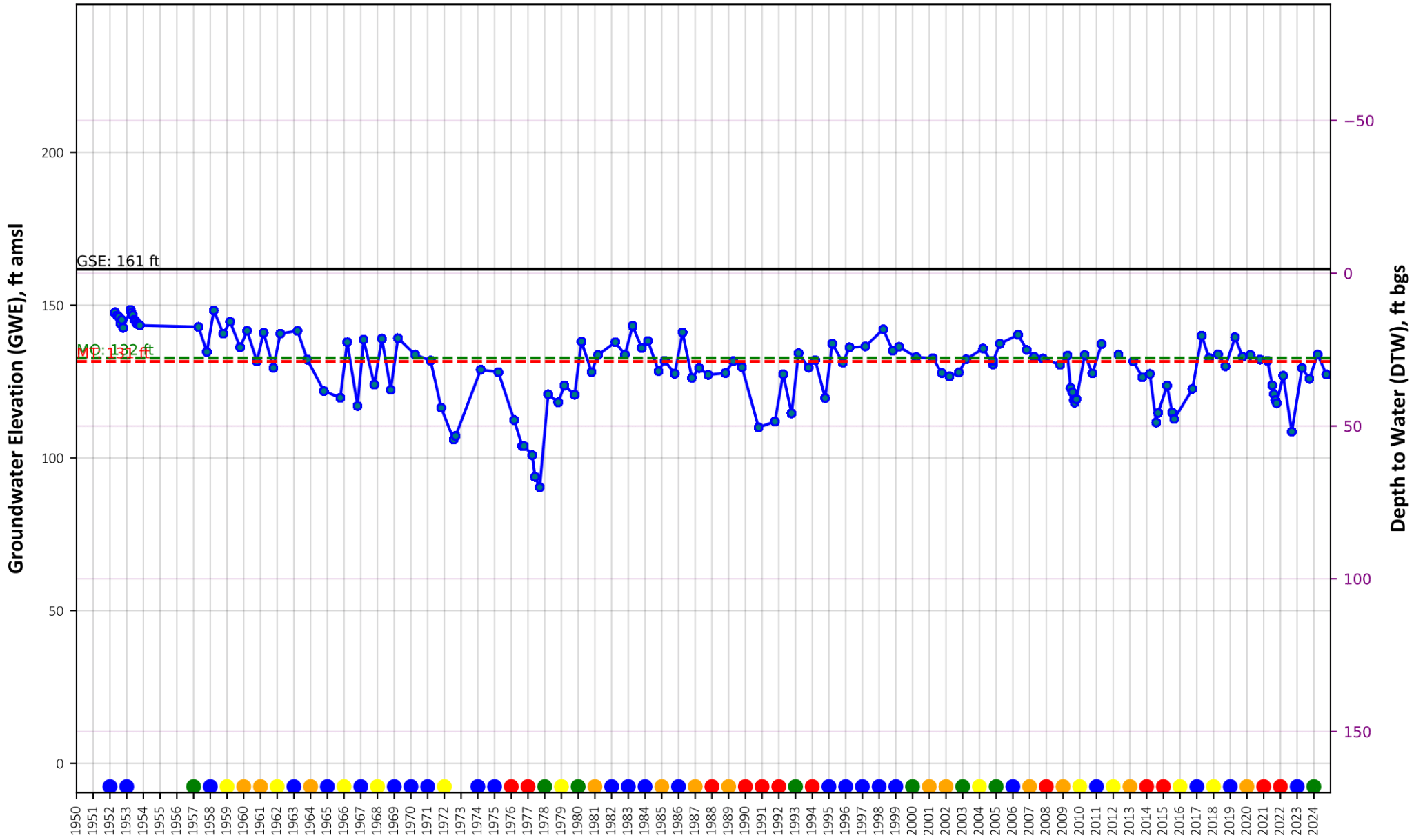


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



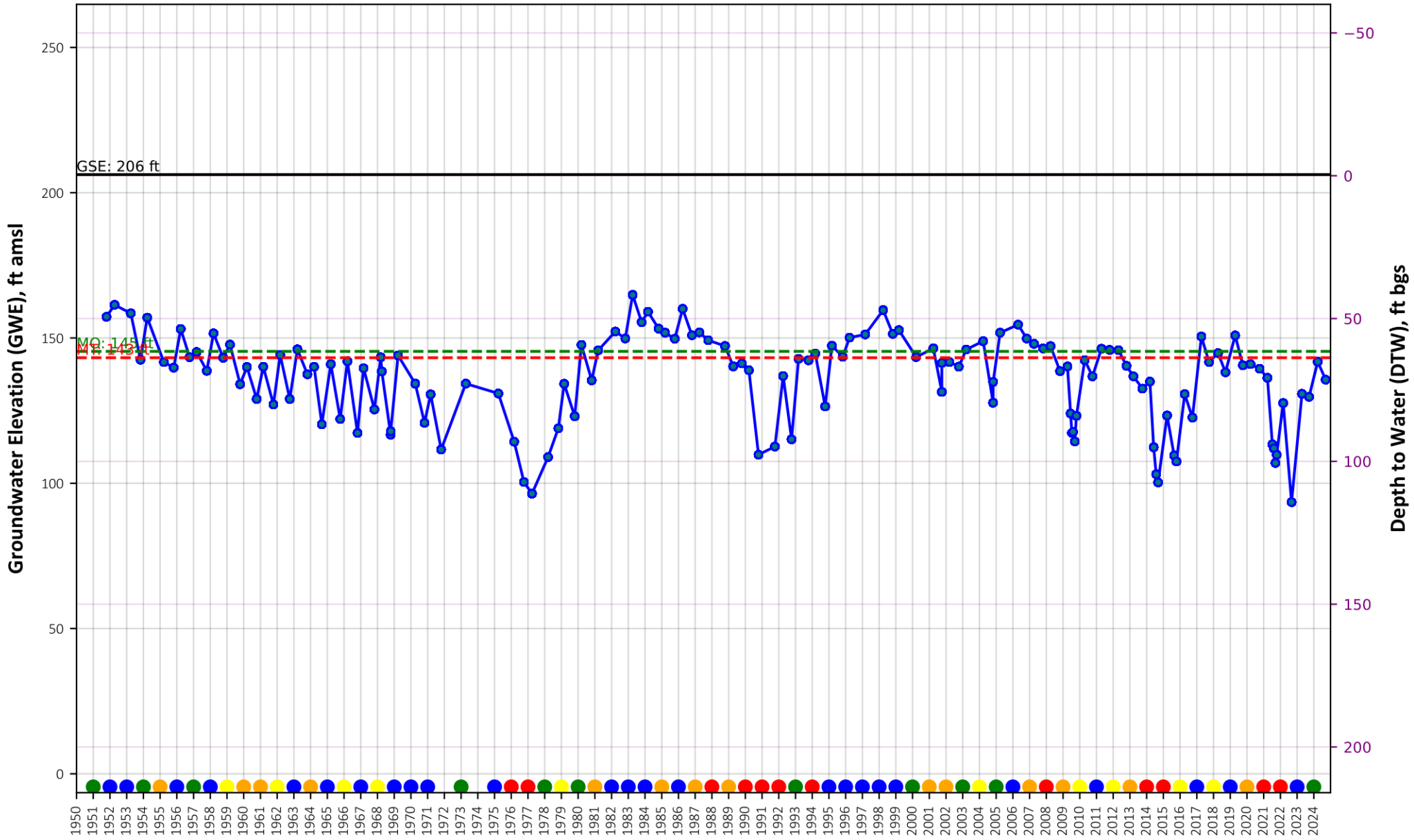
Groundwater Level Hydrograph for RMW #265



State Well Id: 10N01W21J001M
 Management Area: Central Yolo
 ISW: YES



Groundwater Level Hydrograph for RMW #275



State Well Id: 10N02W14A001M
 Management Area: Central Yolo
 ISW: YES

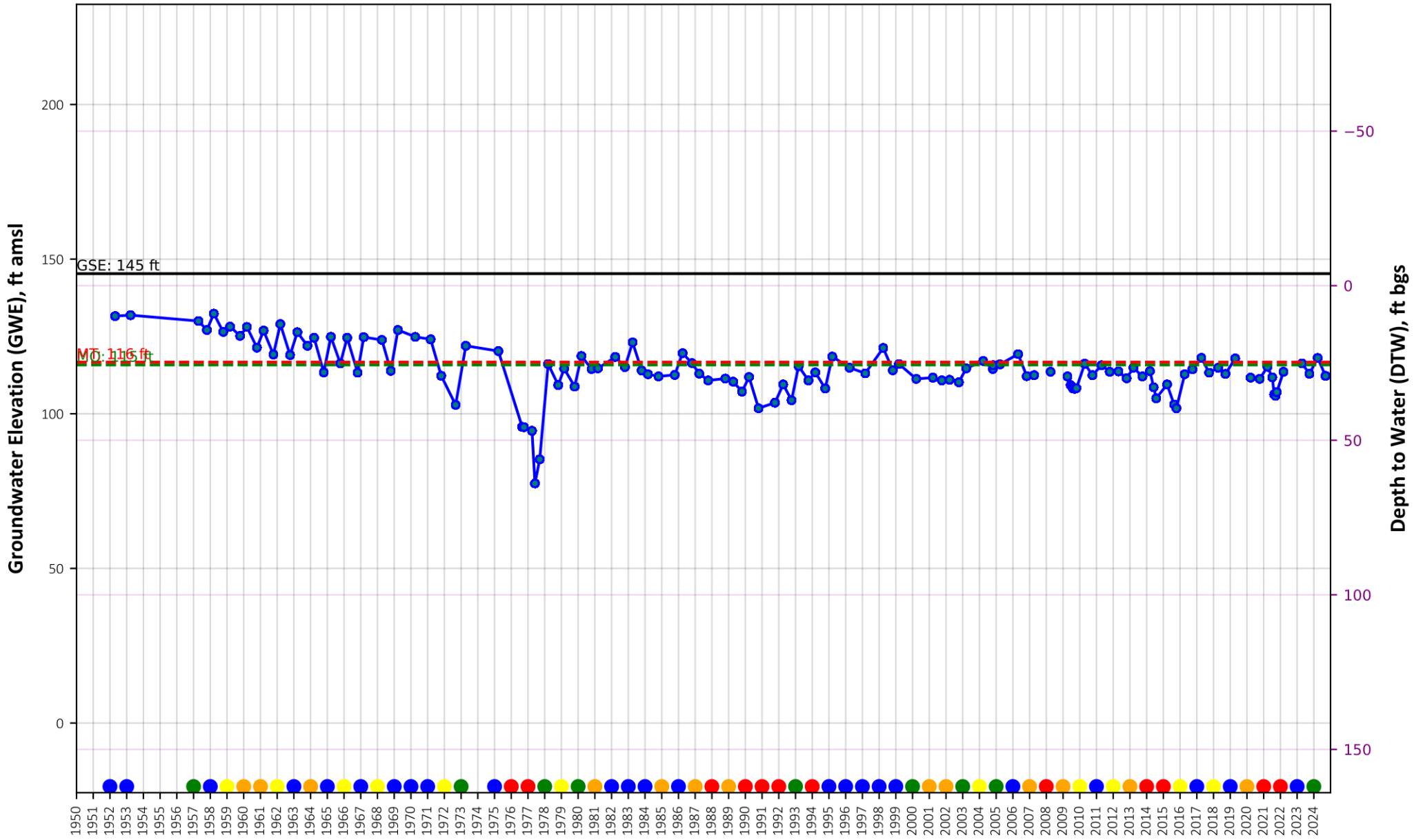


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #424



State Well Id: 10N01W23P001M
 Management Area: Central Yolo
 ISW: YES

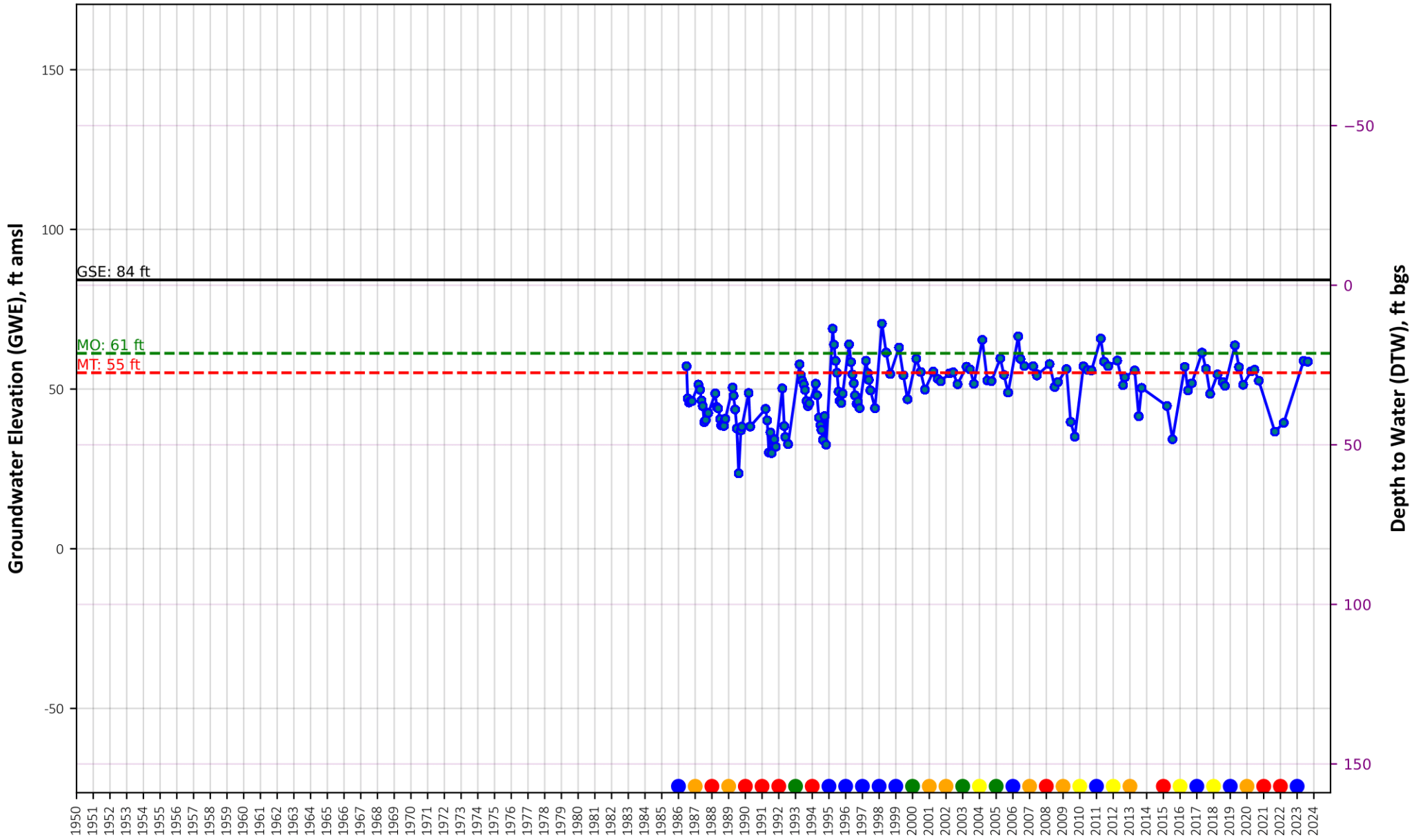


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #425



State Well Id: 10N01E22H500M
 Management Area: Central Yolo
 ISW: YES

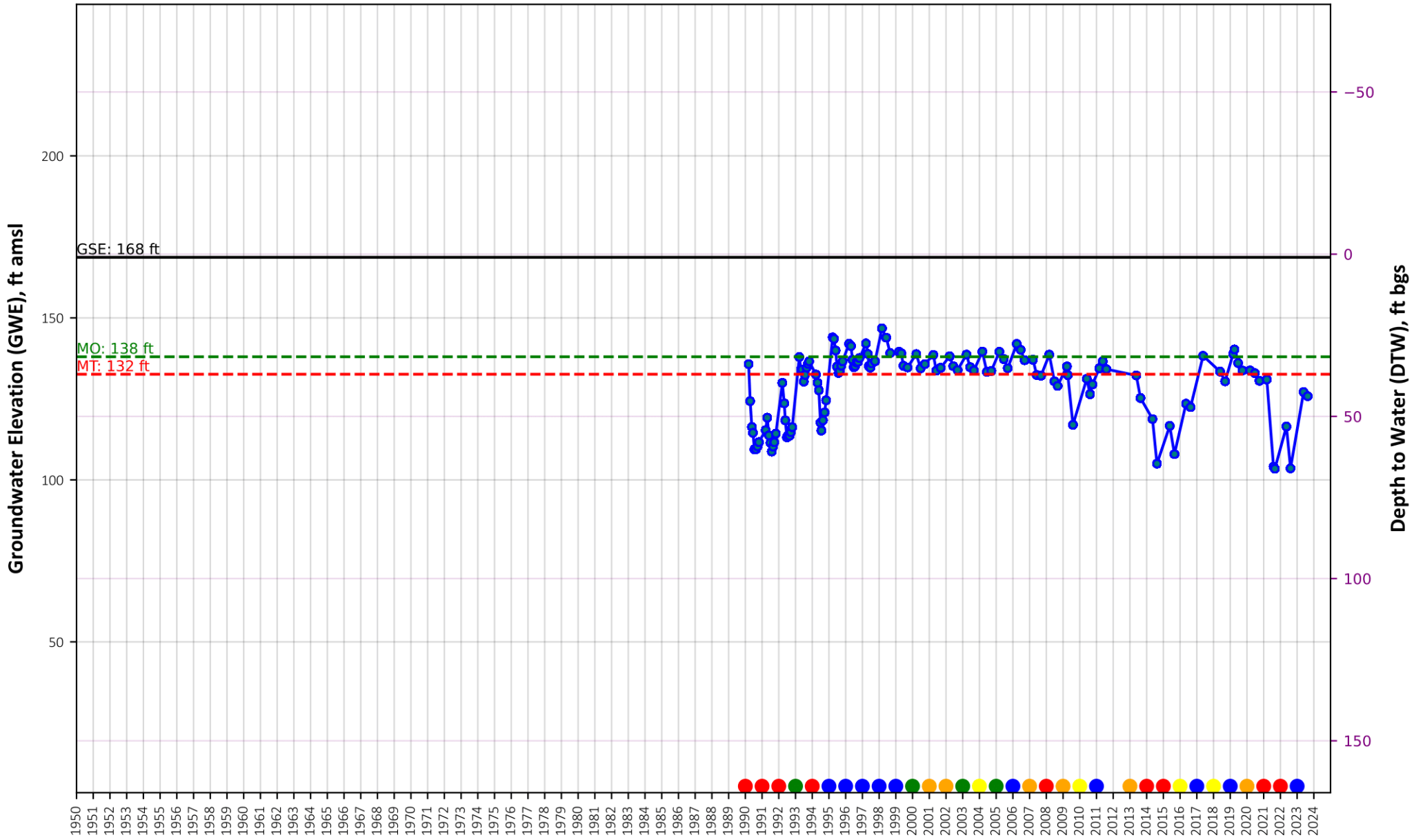


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #426



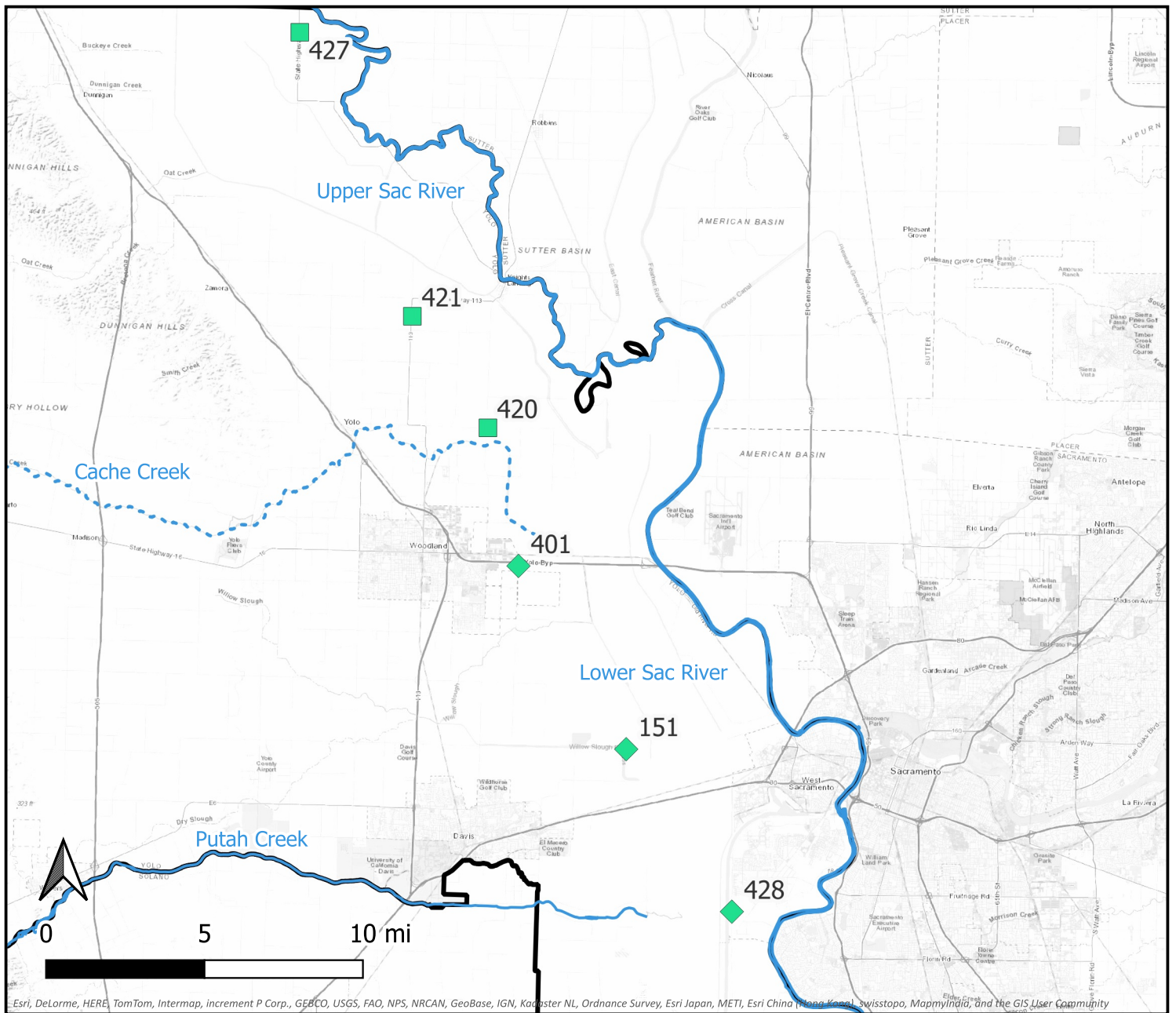
State Well Id: 10N01W16G500M
 Management Area: Central Yolo
 ISW: YES



Year

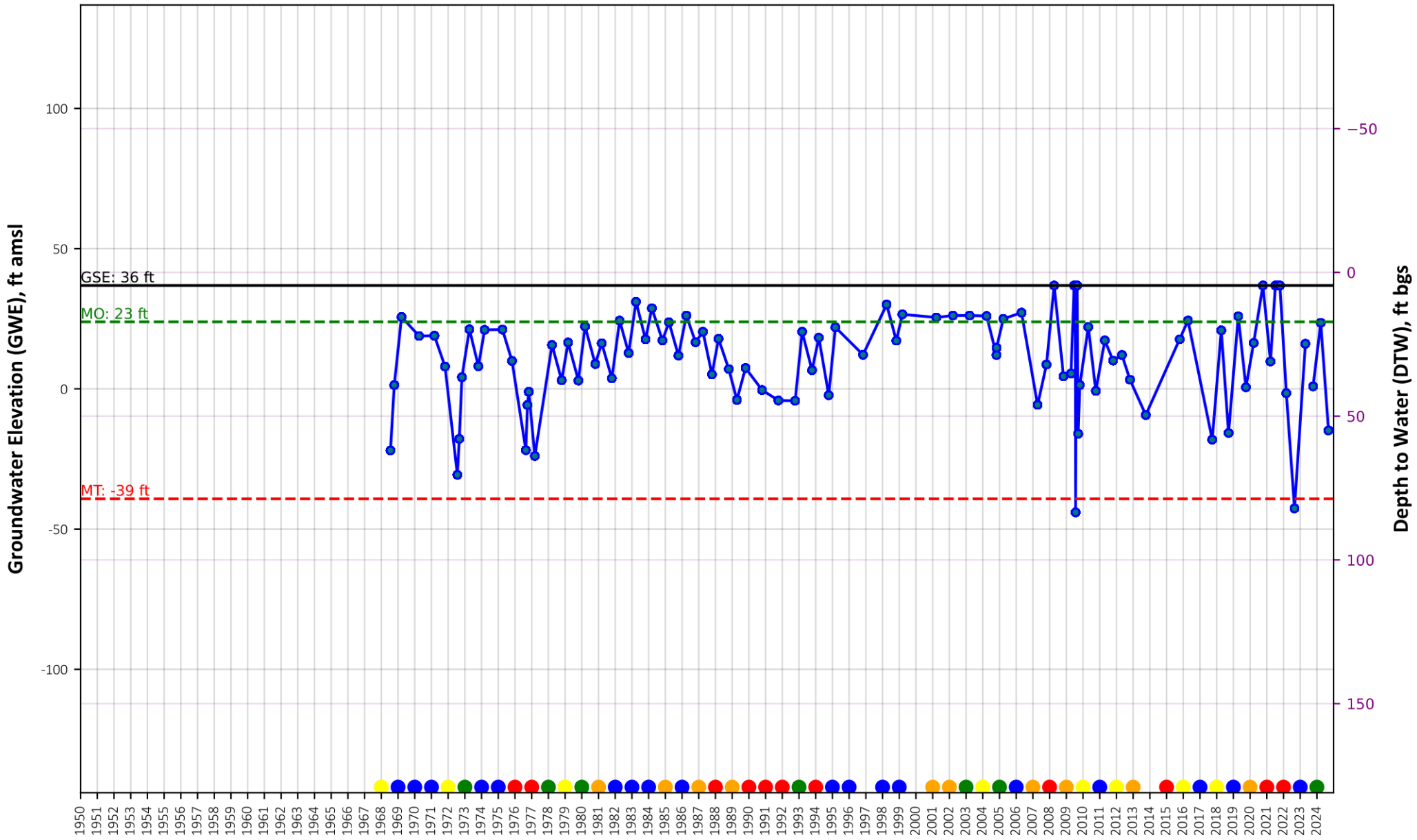
- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry





Upper & Lower Sacramento River ISW Management Zone Hydrographs

Groundwater Level Hydrograph for RMW #420



State Well Id: 10N02E03R002M
 Management Area: North Yolo
 ISW: YES

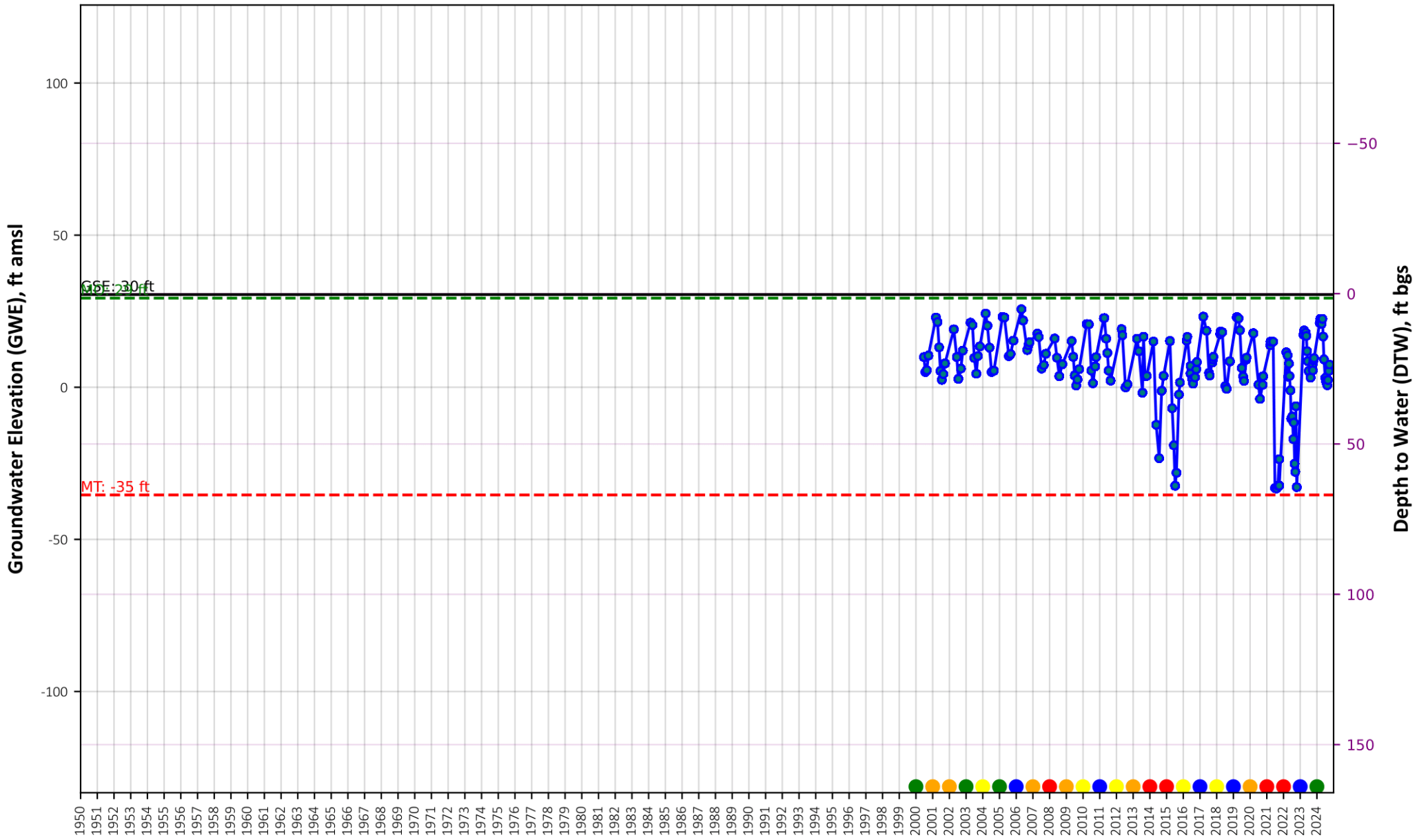


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #427



State Well Id: 12N01E03R003M
 Management Area: North Yolo
 ISW: YES

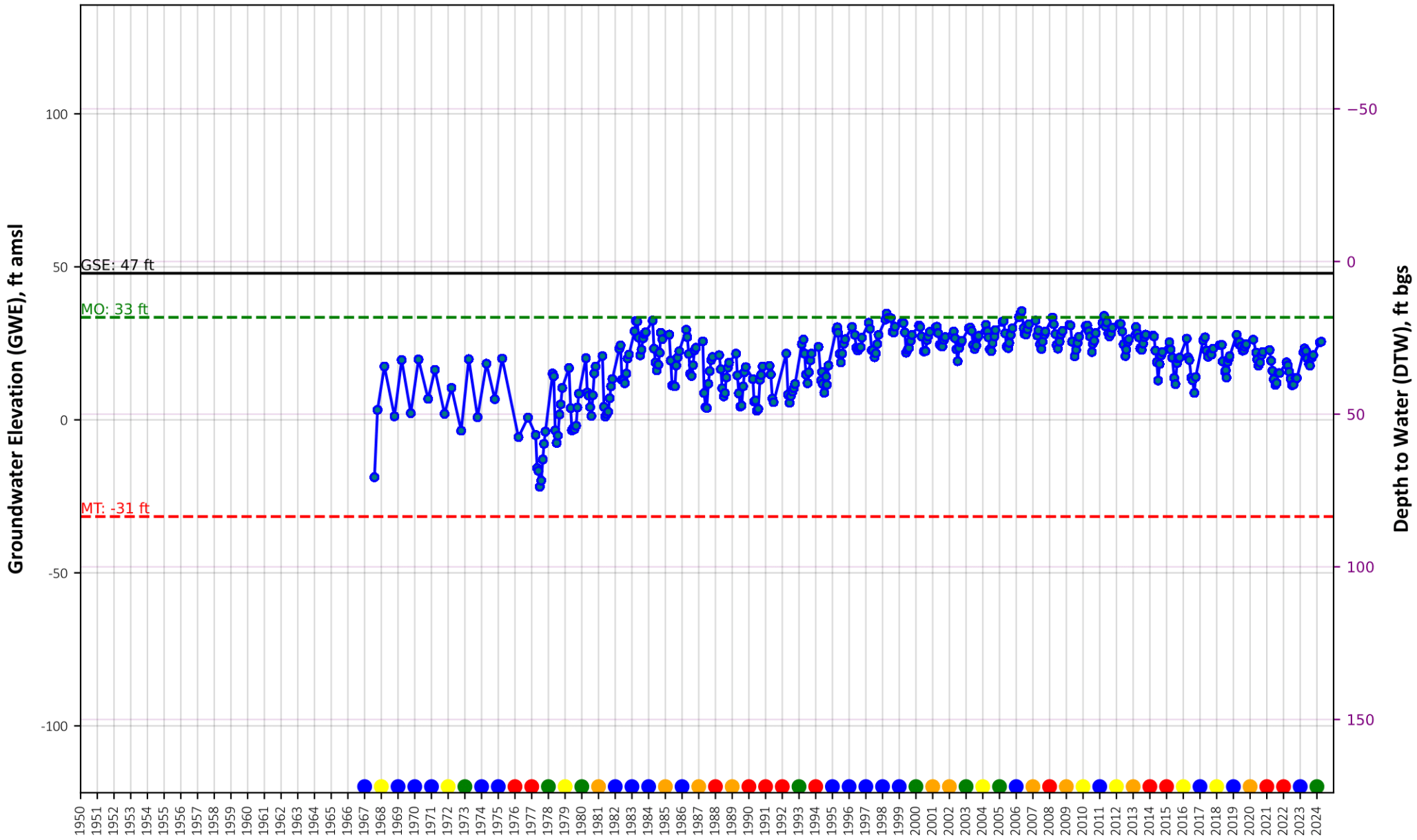


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- - - Measurable Objective (MO), ft amsl
- - - Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #421



State Well Id: 11N02E20K004M
 Management Area: North Yolo
 ISW: YES

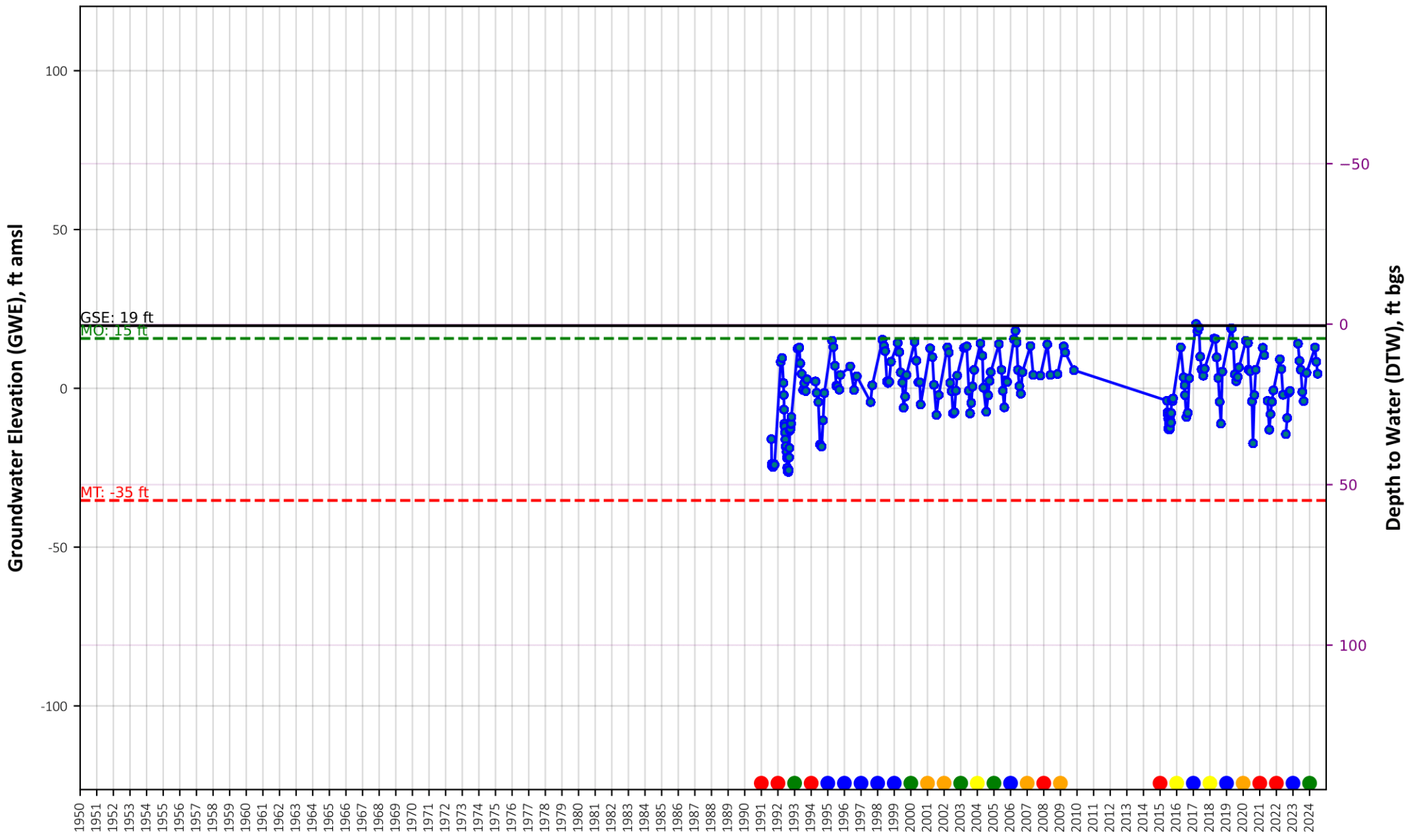


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



Groundwater Level Hydrograph for RMW #151



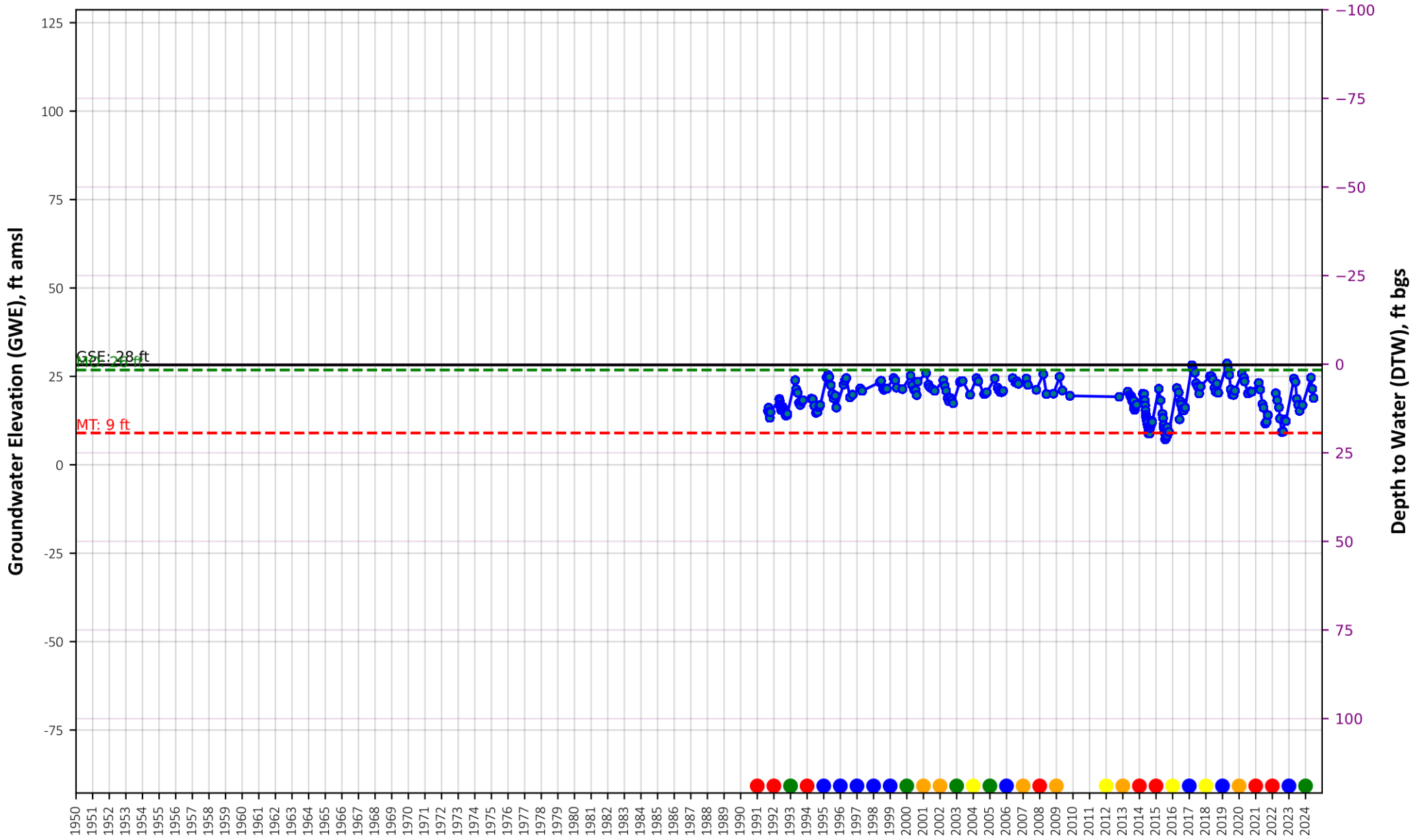
State Well Id: 09N03E33B002M
 Management Area: Central Yolo
 ISW: YES



- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- - - Measurable Objective (MO), ft amsl
- - - Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



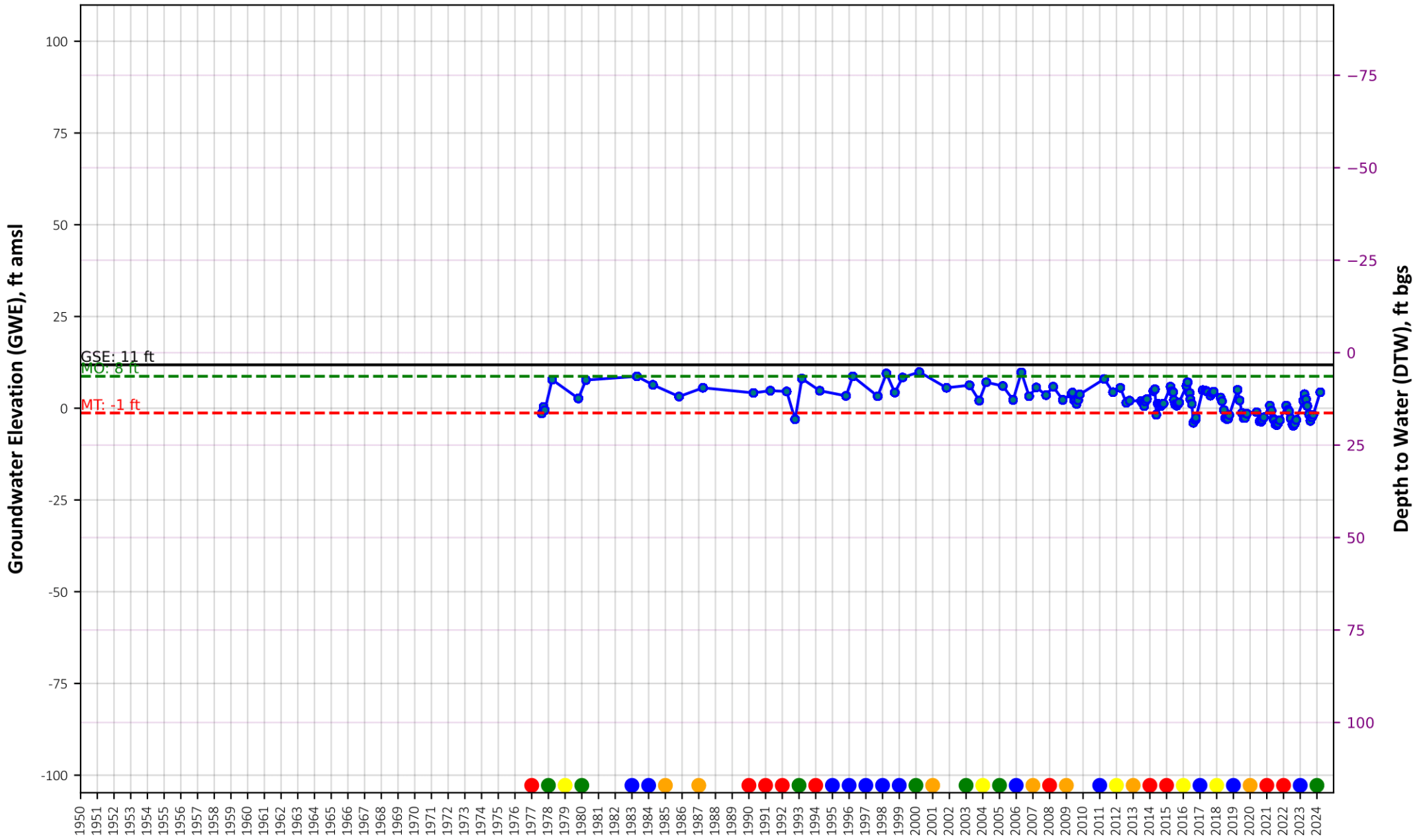
Groundwater Level Hydrograph for RMW #401



State Well Id: 10N02E36E001M
 Management Area: Central Yolo
 ISW: YES

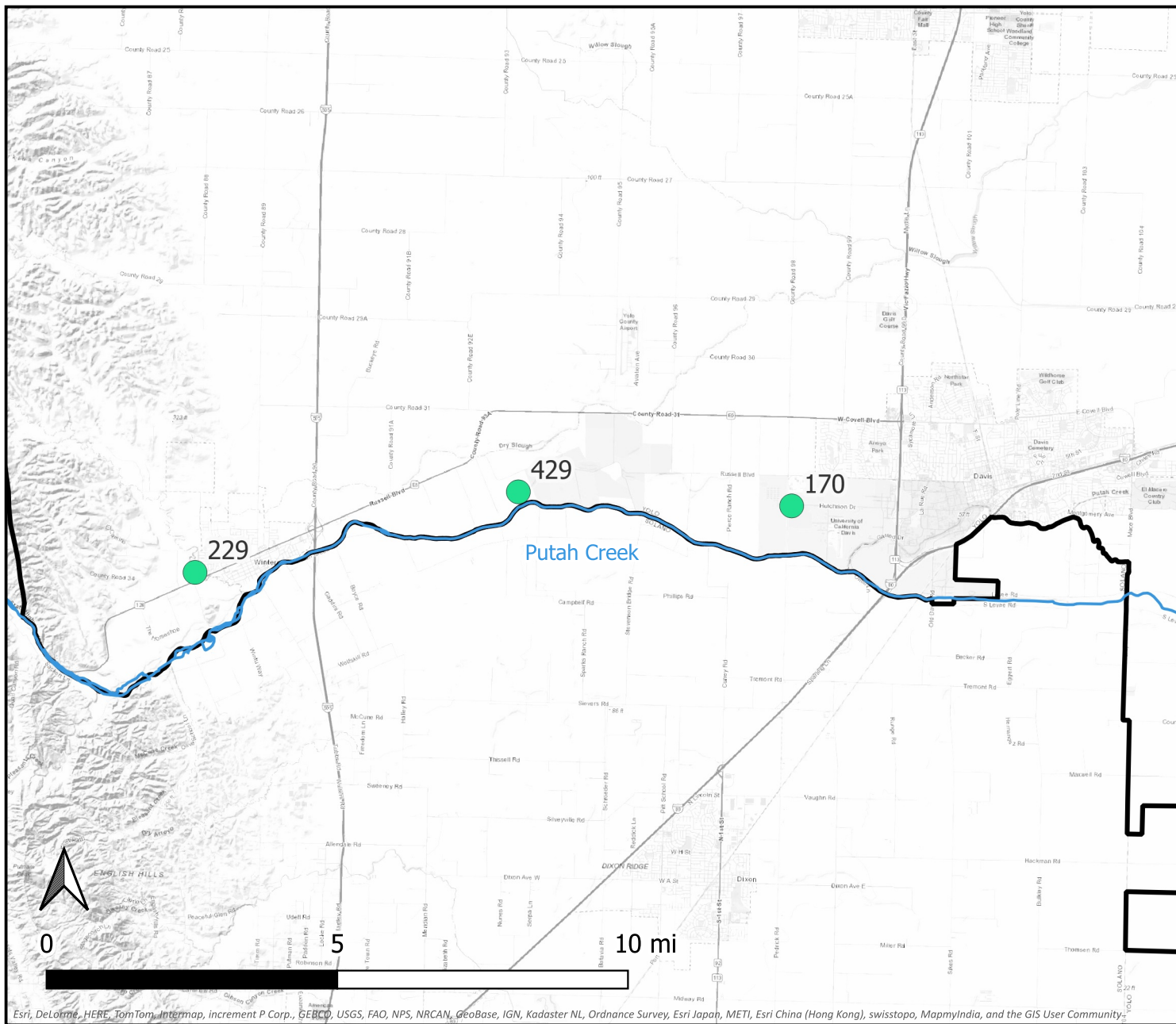


Groundwater Level Hydrograph for RMW #428



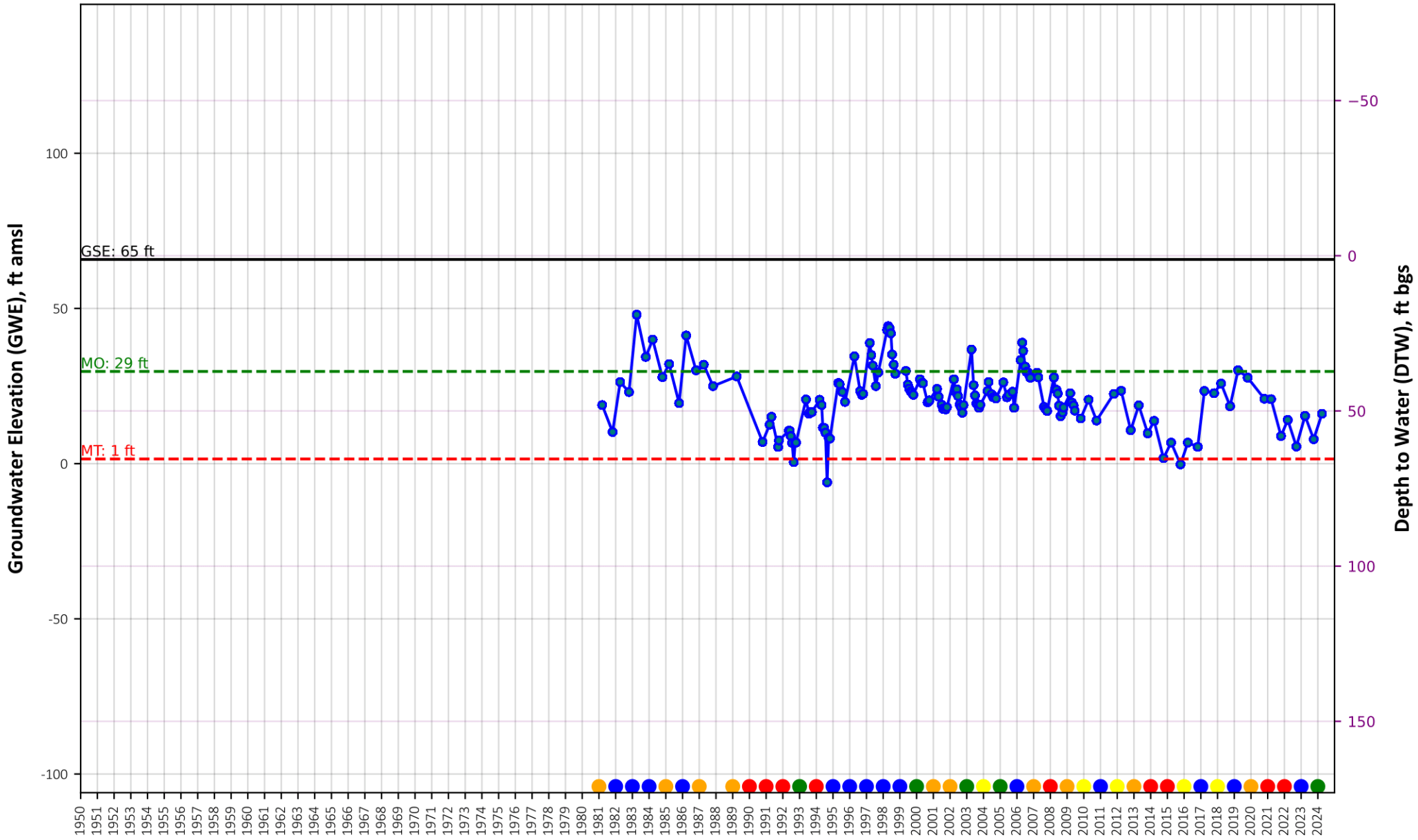
State Well Id: 08N04E19N001M
 Management Area: South Yolo
 ISW: YES





Putah Creek ISW Management Zone Hydrographs

Groundwater Level Hydrograph for RMW #170



State Well Id: 08N02E18M002M
 Management Area: Central Yolo
 ISW: YES

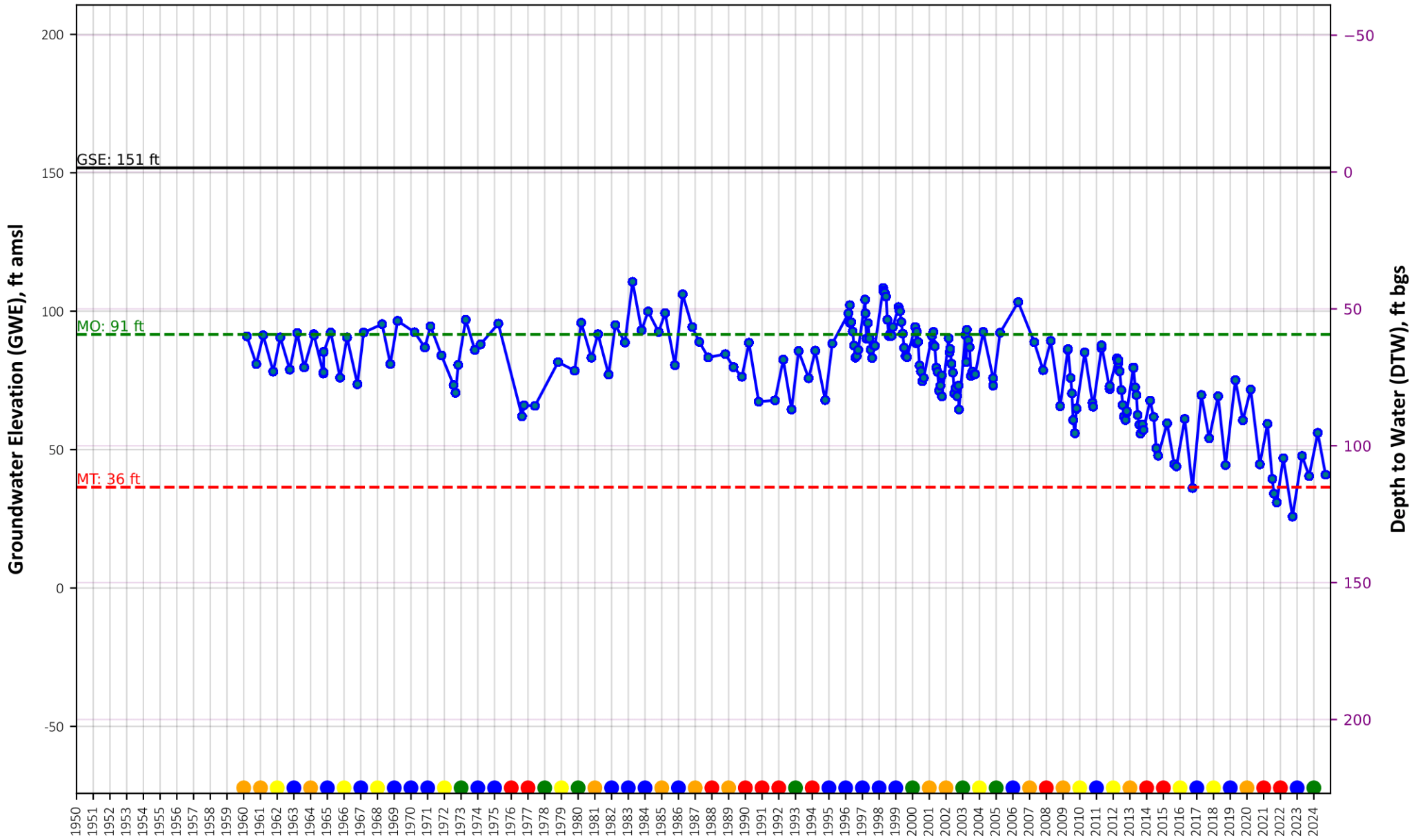


Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry



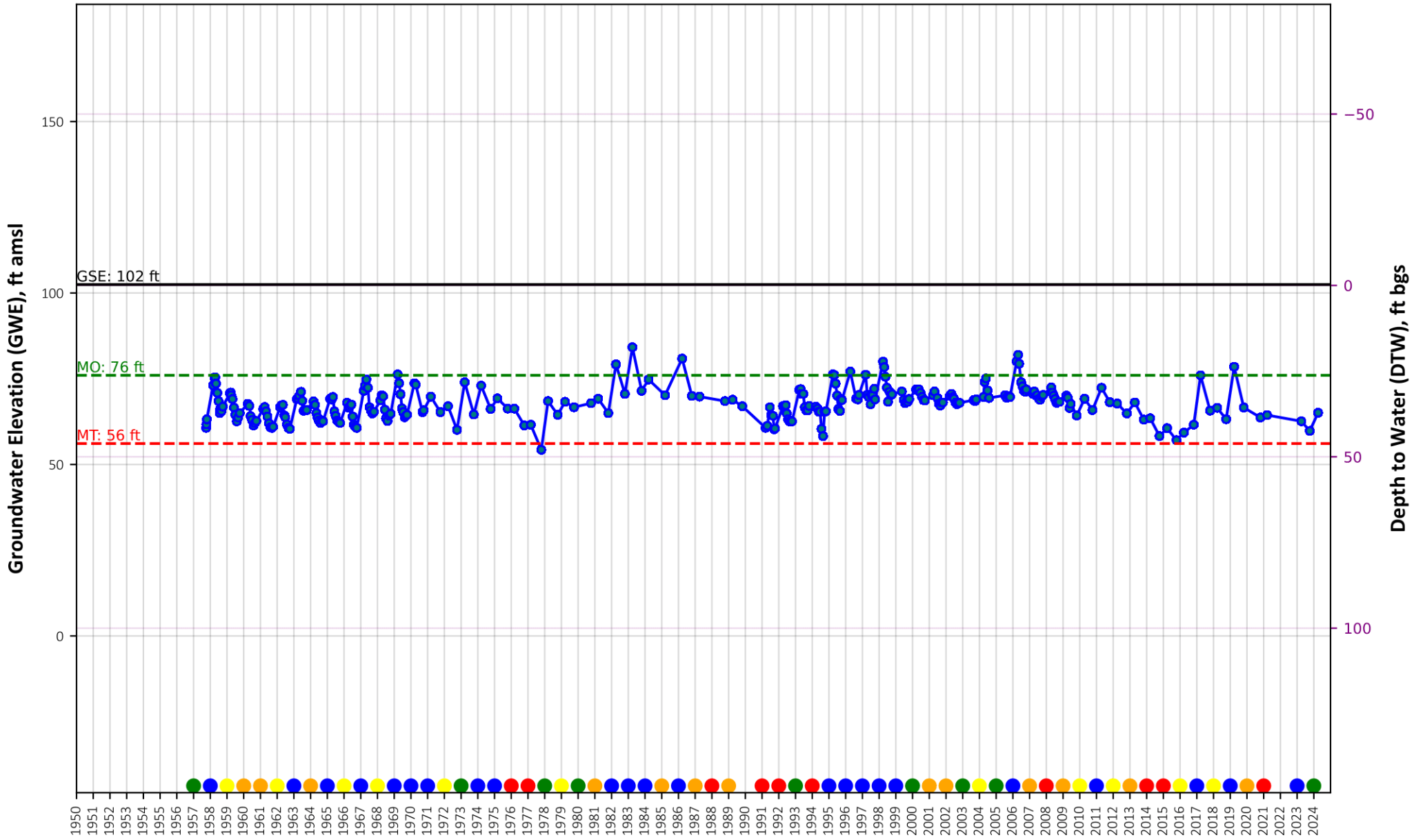
Groundwater Level Hydrograph for RMW #229



State Well Id: 08N01W20R005M
 Management Area: Central Yolo
 ISW: YES



Groundwater Level Hydrograph for RMW #429



State Well Id: 08N01E17F001M
 Management Area: Central Yolo
 ISW: YES



Year

- GWE, ft amsl
- Ground Surface Elevation (GSE), feet amsl
- Measurable Objective (MO), ft amsl
- Minimum Threshold (MT), ft amsl
- Wet
- Above Normal
- Below Normal
- Dry
- Critically Dry

