Big Valley Groundwater Basin Advisory Committee (BVAC)

Unapproved Meeting Minutes

BVAC Members:

Lassen County BVAC – Aaron Albaugh, Board Representative; Jeff Hemphill, Alt. Board Representative; Kevin Mitchell, Public Representative; Duane Conner, Public Representative
Modoc County BVAC – Geri Byrne, Board Representative; Ned Coe, Alt. Board Representative; Jimmy Nunn, Public Representative; John Ohm, Public Representative

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Wednesday, December 2, 2020 | 4:00 PM | Adin Community Center
605 Highway 299
Adin, CA 96006

BVAC Convene in Special Session.

Present: Committee Members: Albaugh, Byrne, Mitchell, Ohm, and Nunn.
Absent: Committee Member: Conner (subsequently arrived at 4:49)

Also in attendance: BVAC staff Gaylon Norwood
BVAC staff Tiffany Martinez
BVAC Recorder Brooke Suarez
Modoc County Counsel Sean Cameron
Facilitator Judie Talbott

BVAC Chairman Albaugh called the meeting to order at 4:18 p.m.

Flag Salute: Chairman Albaugh requested Geri Byrne lead the Pledge of Allegiance.

General Update by Secretary: Gaylon Norwood informed the committee that another letter was sent to Governor Gavin Newsom requesting a response to the request for an extension on the due date of the Groundwater Sustainability Plan (GSP).

Matters Initiated by Committee Members: None

Correspondence (unrelated to a specific agenda item): None

Approval of Minutes (November 4, 2020) –

A motion was made by Representative Mitchell to approve BVAC meeting minutes from November 4, 2020. The motion was seconded by Representative Ohm. The motion was carried by the following vote:

Aye: 4 - Albaugh, Mitchell, Ohm, and Nunn.
Abstained: 1 - Byrne

SUBJECT #1:
Introduction of Revised Draft Chapter 6 (*Water Budget*) of the Groundwater Sustainability Plan (GSP).

ACTION REQUESTED:

1. Receive report from the BVAC Secretary, Staff, and/or Consultant.
2. Receive public comment.
3. Accept and "set aside" Revised Draft chapter 6 for future inclusion into the Draft GSP.

David Fairman presented the Revised draft Chapter 6 with a Power Point presentation (Exhibit A). Chapter 6 is the last technical chapter that needs to be officially stamped by a licensed hydrologist. A tentative schedule for the remaining chapters was recapped with the acknowledgement that the stakeholders would be more in the driver's seat now that the more scientific chapters have been drafted. It was GEI's job to prepare the scientific chapters and share the knowledge with everyone so that they have the information required to proceed.

D. Fairman went on to state that Chapter 6 agricultural irrigation map was updated with more precise identification of the irrigation sources used. At the previous meeting committee members updated an agricultural irrigation map by pointing out irrigation water sources. GEI also looked at the Pit River and Ash Creek judgements as to where surface water rights could be used for irrigation. GEI also determined surface water irrigation areas by looking at well drilling records and aerial imagery. The percentage breakdown between groundwater or surface water used for irrigation is 60-65% groundwater and 35-40% surface water. D. Fairman also noted where other refinements were made to the water budget. Chapter 6 was updated using the Department of Water Resources climate change model as this model has more precipitation. With all the adjustments made, the water budget overdraft amount calculated in this draft Chapter 6 is 5,227 acre feet per year. The water budget presented does not include any increase in irrigation in the area or irrigation efficiency improvements in the future. Any future decisions by the committee regarding changes to the water budget could be made to the current model.

Meeting was recessed from 5:25 to 5:35 due to loss of internet connection and online audience could not participate. Representative Nunn, who was present via the internet stated that using the internet for the meeting is not working. It is hard to hear and the internet keeps cutting out and that participation will be hard to get with this set up. Chairman Albaugh requested that another letter be sent to the state requesting an extension due the disadvantage of the area's internet quality.

Gaylon Norwood handed out the comment matrix for Chapter 6. Chairman Albaugh requested that the word "estimated" be added in front of all in-flow statements in the GSP. He wants to see the wetland wildlife irrigation wells be added to the agricultural irrigation map. D. Fairman stated it was identified under the wetland part of the water budget but could be added to the agricultural portion also. Discussion was held regarding the wells in the wetland area and how to obtain the data pertaining to these wells. Representative Mitchell would like to see an overlay of the agricultural irrigation map with the basin boundary map.

Chapter 6 is to come back at the February meeting as the last item on the agenda.

Public Comment: None

SUBJECT #2:
Update and discussion on stream gage project on the Pit River for the Big Valley Groundwater Basin.

ACTION REQUESTED:

1. Receive reports from the BVAC Secretary, Staff, and/or Consultant.
2. Receive public comment.

Tiffany Martinez gave an update on the Pit River stream gage project. T. Martinez had arranged a tour of the possible sites earlier in the day. Several of the committee members as well as a DWR representative went on the tour. A summary of the two locations, the Stone Co. site and the Shaw Pit site, was given. Though the Stone Co. site is a physically better site, it is closer to the Canby gage site. The Shaw Pit site is further down river which allows the inflow water sources between the Stone Co. site and the Shaw Pit site to be included in the measurements. Six to eight measurements at the sites will need to be taken to get and accurate flow rate.

The Shaw Pit site is presenting as the best choice. It has an acceptable stream bed, easy access, and the gage could be mounted on the bridge. The cons regarding this site include: (1) the need to get the land owner's approval, (2) the stream bed might not allow for good high flow readings, (3) readings would have to be taken more often at this site and costs after the grant is over must be taken into consideration, and (4) water has flowed over the bridge in the past and thus it might damage any gage attached to the bridge. Representative Nunn questioned if the possible bridge overflow eliminates the site as a possible choice.

A tour of the Muck Valley diversion was taken. They have detailed readings regarding water flow in that area since 1988. T. Martinez will look into the possibility of obtaining water flow information from them.

Ian Espinoza of DWR commented that there is assistance available through DWR for training and maintenance of the gages. Laura Snell of the UC Cooperative Extension would not only like for a water gage be purchased, but also movable water flow measuring equipment to be able to get measurements in more places. She also stated there will be costs associated with training as the measurements will need to be interpreted into useful information. She estimated that a conservative cost per year to keep taking measurement readings after the grant is completed is $5,000.00.

Chairman Albaugh asked who will own the equipment after it has been purchased and asked if the equipment could be leased. Tiffany Martinez responded that the term of the grant agreement will determine who the owner of the equipment is and she will look into the leasing of equipment. T. Martinez stated that since the committee is only looking at one site, only one gage would be purchased for that site and possibly a second gage will be purchased as a replacement. She also reiterated that there are currently gages on Ash Creek and Willow Creek.

Public Comment: An online comment was that there are 9 miles between the Canby gage and the Stone Co. site. There are 6 miles between the Stone Co. site and the Shaw Pit site.

SUBJECT #3
Introduction of proposed new schedule for regular meetings of the Big Valley Groundwater Basin Advisory Committee (BVAC).

ACTION REQUESTED:

1. Receive reports from the BVAC Secretary, Staff, and/or Consultant.
2. Receive public comment.
3. Approve new regular meeting schedule.

A tentative GSP process and schedule handout (Exhibit D) was presented to the committee. Discussion was held on the necessity of the Public Outreach meeting to be held in January of 2021. Representative Byrne stated that Tiffany Martinez regularly gives the Modoc Board of Supervisors an update on the GSP and that Lassen County Board of Supervisors should receive regular updates also so that they are informed at the final vote needed to pass the GSP. By updating the Boards of Supervisors, they will have time to ask questions and provide input prior to the final presentation of the GSP.

A motion was made by Representative Nunn to approve the new regular meeting schedule. The motion was seconded by Representative Byrne. The motion was carried by the following vote:

Aye: 6 - Albaugh, Byrne, Mitchell, Conner, Ohm, and Nunn.

Public Comment: None

Matters Initiated by the General Public (regarding subjects not on the agenda)**:** None

Establish next meeting date: February 3, 2021 at 4:00 pm. Place to be determined.

Adjournment: There being no further business, Chairman Albaugh adjourned the meeting at 6:58 p.m.

Big Valley Groundwater Sustainability Plan GSP Regulations Checklist (Elements Guide) for Chapter 6

This checklist of the GSP Elements and indicates where in the GSP each element of the regulations is addressed.

Article 5.			Plan Contents for Big Valley Groundwater Basin	GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
§ 354.18.			**Water Budget**					
(a)			Each Plan shall include a water budget for the basin that provides an accounting and assessment of the total annual volume of groundwater and surface water entering and leaving the basin, including historical, current and projected water budget conditions, and the change in the volume of water stored. Water budget information shall be reported in tabular and graphical form.	x	6			
(b)			The water budget shall quantify the following, either through direct measurements or estimates based on data:					
	(1)		Total surface water entering and leaving a basin by water source type.	X	6.2	6-7		Also Appendix 6B and 6C
	(2)		Inflow to the groundwater system by water source type, including subsurface groundwater inflow and infiltration of precipitation, applied water, and surface water systems, such as lakes, streams, rivers, canals, springs and conveyance systems.	X	6.2	6-8		Also Appendix 6B and 6C
	(3)		Outflows from the groundwater system by water use sector, including evapotranspiration, groundwater extraction, groundwater discharge to surface water sources, and subsurface groundwater outflow.	X	6.2	6-8		Also Appendix 6B and 6C
	(4)		The change in the annual volume of groundwater in storage between seasonal high conditions.	X	6.2	6-8		Also Appendix 6B and 6C
	(5)		If overdraft conditions occur, as defined in Bulletin 118, the water budget shall include a quantification of overdraft over a period of years during which water year and water supply conditions approximate average conditions.	X	6.2	6-8		Also Appendix 6B and 6C
	(6)		The water year type associated with the annual supply, demand, and change in groundwater stored.	X	6.2	6-3		
	(7)		An estimate of sustainable yield for the basin.	X	6.2	6-8		
(c)			Each Plan shall quantify the current, historical, and projected water budget for the basin as follows:					
	(1)		Current water budget information shall quantify current inflows and outflows for the basin using the most recent hydrology, water supply, water demand, and land use information.	X	6.2, 6.3	6-4, 6-6:6-8		Also Appendix 6B and 6C
	(2)		Historical water budget information shall be used to evaluate availability or reliability of past surface water supply deliveries and aquifer response to water supply and demand trends relative to water year type. The historical water budget shall include the following:					
		(A)	A quantitative evaluation of the availability or reliability of historical surface water supply deliveries as a function of the historical planned versus actual annual surface water deliveries, by surface water source and water year type, and based on the most recent ten years of surface water supply information.	X	6.2			

"X" indicates that the element has been addressed.
The page number will be filled in once the entire GSP is compiled.

Shaded areas are elements of the regulations that don't have to be addressed in the GSP

Article 5. **Plan Contents for Big Valley Groundwater Basin** **GSP Document References**

				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
		(B)	A quantitative assessment of the historical water budget, starting with the most recently available information and extending back a minimum of 10 years, or as is sufficient to calibrate and reduce the uncertainty of the tools and methods used to estimate and project future water budget information and future aquifer response to proposed sustainable groundwater management practices over the planning and implementation horizon.	X	6.2	6-4:6-7		Also Appendix 6B and 6C
		(C)	A description of how historical conditions concerning hydrology, water demand, and surface water supply availability or reliability have impacted the ability of the Agency to operate the basin within sustainable yield. Basin hydrology may be characterized and evaluated using water year type.	X	6.2			
	(3)		Projected water budgets shall be used to estimate future baseline conditions of supply, demand, and aquifer response to Plan implementation, and to identify the uncertainties of these projected water budget components. The projected water budget shall utilize the following methodologies and assumptions to estimate future baseline conditions concerning hydrology, water demand and surface water supply availability or reliability over the planning and implementation horizon:					
		(A)	Projected hydrology shall utilize 50 years of historical precipitation, evapotranspiration, and streamflow information as the baseline condition for estimating future hydrology. The projected hydrology information shall also be applied as the baseline condition used to evaluate future scenarios of hydrologic uncertainty associated with projections of climate change and sea level rise.	X	6.4	6-10, 6-11		
		(B)	Projected water demand shall utilize the most recent land use, evapotranspiration, and crop coefficient information as the baseline condition for estimating future water demand. The projected water demand information shall also be applied as the baseline condition used to evaluate future scenarios of water demand uncertainty associated with projected changes in local land use planning, population growth, and climate.	X	6.4	6-10, 6-11		
		(C)	Projected surface water supply shall utilize the most recent water supply information as the baseline condition for estimating future surface water supply. The projected surface water supply shall also be applied as the baseline condition used to evaluate future scenarios of surface water supply availability and reliability as a function of the historical surface water supply identified in Section 354.18(c)(2)(A), and the projected changes in local land use planning, population growth, and climate.	X	6.4	6-10, 6-11		
(d)			The Agency shall utilize the following information provided, as available, by the Department pursuant to Section 353.2, or other data of comparable quality, to develop the water budget:					
	(1)		Historical water budget information for mean annual temperature, mean annual precipitation, water year type, and land use.	X	6.2	6-3		
	(2)		Current water budget information for temperature, water year type, evapotranspiration, and land use.	X	6.2, 6.3			
	(3)		Projected water budget information for population, population growth, climate change, and sea level rise.	X	6.4			

				GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
(e)			Each Plan shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow. If a numerical groundwater and surface water model is not used to quantify and evaluate the projected water budget conditions and the potential impacts to beneficial uses and users of groundwater, the Plan shall identify and describe an equally effective method, tool, or analytical model to evaluate projected water budget conditions.	X	6			
(f)			The Department shall provide the California Central Valley Groundwater-Surface Water Simulation Model (C2VSIM) and the Integrated Water Flow Model (IWFM) for use by Agencies in developing the water budget. Each Agency may choose to use a different groundwater and surface water model, pursuant to Section 352.4.	N/A				C2VSIM does not apply to this Basin
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10721, 10723.2, 10727.2, 10727.6, 10729, and 10733.2, Water Code.					

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Tables

No tables in this chapter

Figures

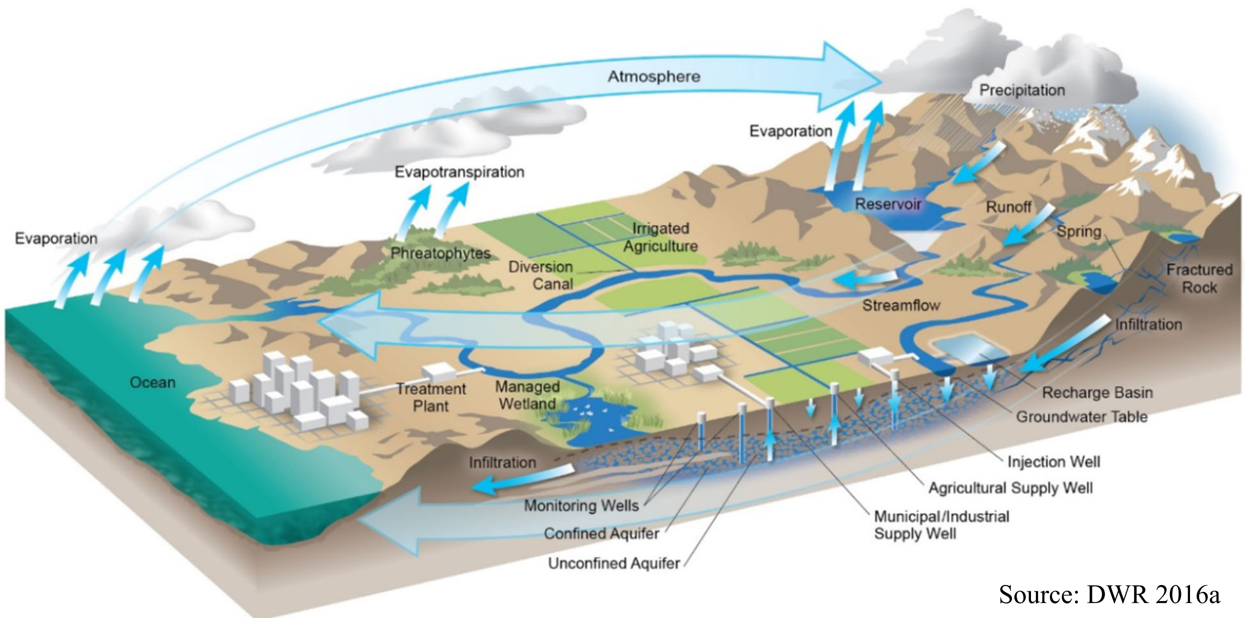
Appendices

Abbreviations and Acronyms

ACWA	Ash Creek Wildlife Area
AFY	Acre-feet per year
Basin	Big Valley Groundwater Basin
BVGB	Big Valley Groundwater Basin
CIMIS	California Irrigation Management Information System
CUP	Consumptive Use Program Model
CWC	California Water Code
DDW	Division of Drinking Water, State Water Resources Control Board
DWR	Department of Water Resources
ETo	Evapotranspiration
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
IWFM	Integrated Water Flow Model
MODFLOW	USGS Modular Finite-Difference Ground-water Flow Model
PRISM	Parameter-elevation Regressions on Independent Slopes Model
USGS	United States Geologic Survey

6. Water Budget (§ 354.18)

The hydrologic cycle describes how water is moved on the earth among the oceans, atmosphere, land, surface water bodies, and groundwater bodies. **Figure 6-1** shows a depiction of the hydrologic cycle.

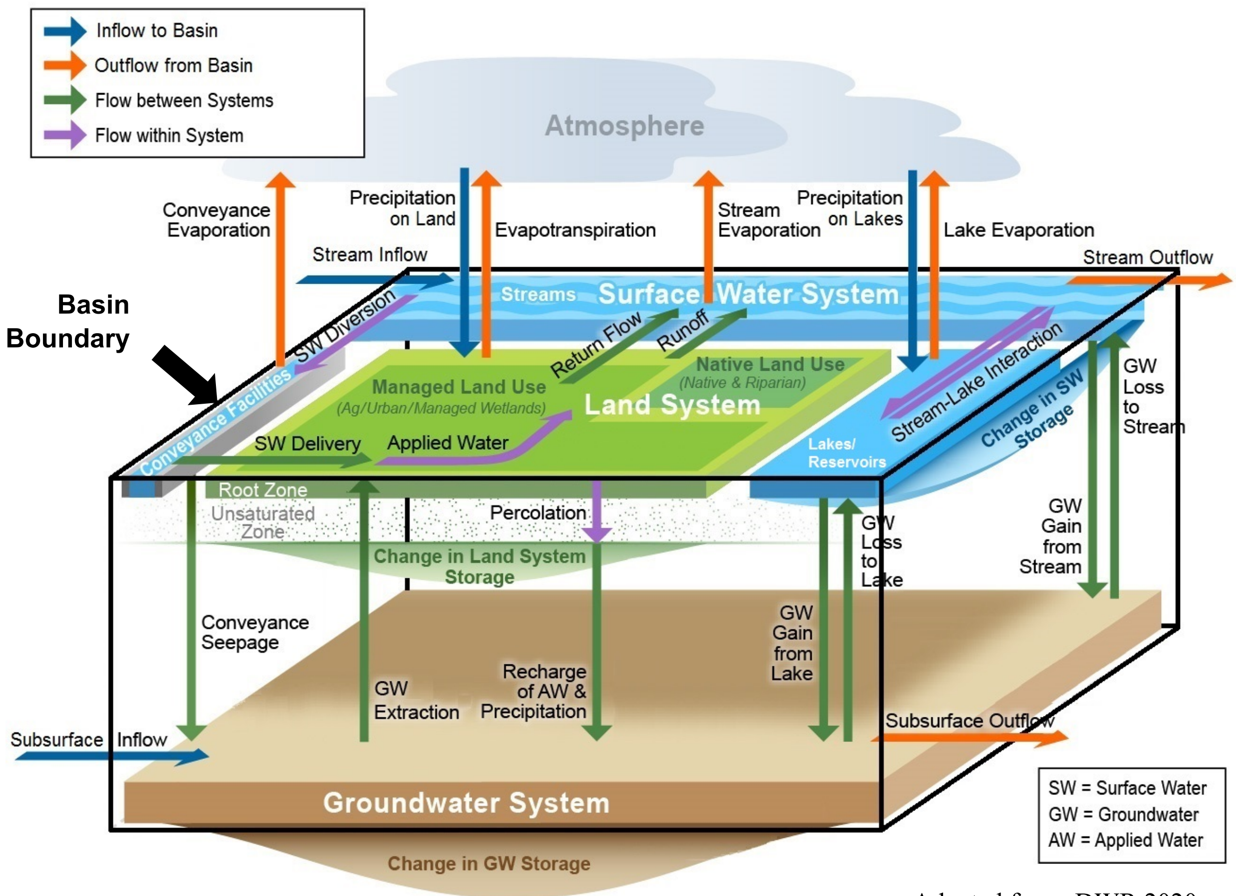


Source: DWR 2016a

Figure 6-1 Hydrologic Cycle

A water budget accounts for the movement of water among the four major systems in Big Valley: atmospheric, land surface, surface water, and groundwater. The Big Valley Groundwater Basin (BVGB) consists of the latter three (land surface, surface water, and groundwater) as shown by the black outline on **Figure 6-2.** This figure demonstrates the specific components of the water budget and exchange between the systems. The systems and the flow arrows are color coded. Inflows to the BVGB are shown with blue arrows and outflows from the BVGB are shown with orange arrows. Flows between the systems are shown with green arrows and flows within a system are shown in purple. The land system, surface water system, and groundwater system are green, blue, and brown respectively.

Like a checking account, a water budget helps the Groundwater Sustainability Agency (GSA) and stakeholders better understand the deposits and withdrawals and identify what conditions result in positive and negative balances. It should be noted that, while the development of a water budget is required by the Groundwater Sustainability Plan (GSP) regulations, the regulations don't require actions based directly on the water budget. Actions are only required based on outcomes related to the six sustainability indicators: groundwater levels, groundwater storage, water quality, subsidence, seawater intrusion, and surface water depletions. Therefore, a water budget should be viewed as a tool to develop a common understanding of the Basin and a basis for making decisions to achieve sustainability and avoid undesirable results with the sustainability indicators.



Adapted from: DWR 2020a

Figure 6-2 Water Budget Components and Systems

6.1 Water Budget Data Sources

Each component shown in **Figure 6-2** was estimated using readily available data and assembled into a budget spreadsheet. ~~Most~~Many groundwater basins in California utilize a numerical groundwater model, such as MODFLOW or IWFM to calculate the water budget. These models require a specialized hydrogeologist to run them and the methodology by which the water budget is calculated is not readily apparent to the lay person. For the BVGB, a non-modeling (spreadsheet) approach was used so that future iterations of the water budget could be performed by a wider range of hydrology professionals (potentially reducing future GSP implementation costs) and so that the calculations of the specific components could be understood by a broader range of people.

Ideally, each component could be quantified precisely and accurately, and the budget would come out balanced. In practice, many of the components can only be roughly estimated, and in some cases not at all. Therefore, much of the work to balance the water budget is adjusting some of the unknown or roughly estimated parameters within acceptable ranges until the budget is balanced and all components of the budget are deemed reasonable.

As such, the water budget calculations presented here are not unique and the precision of the components estimated through the use of the water budget are order of magnitude. Estimation of nearly all components involves assumptions and with more basin-specific data, the accuracy and precision of many of the components are improved. ~~This approach~~Additional and improved data that is obtained results in a budget that more closely reflects the Basin conditions and allows the GSAs to make more informed decisions to sustainably maintain groundwater resources. **Appendix 6A** show the components of the water budget, their data source(s), assumptions, and relative level of precision~~, and the data needed to refine the estimates~~.

Major data sources include the PRISM[1] model (NACSE 2020) for precipitation, CIMIS (DWR 2020b) for evapotranspiration data, the National Water Information System (USGS 2020b) for surface water flows, and DWR land use surveys (DWR 2020c).

6.2 Historical Water Budget

The historic water budget presented in this section covers 1984 to 2018. This period was chosen because it represents an average set of climatic conditions and adequate water level, land use, and climate data were available in this time frame. **Figure 6-3** shows the annual precipitation and year type for the period. The criteria for year types were critical dry below 70% of average precipitation, dry between 70 and 85% of average precipitation, normal between 85 and 115% of average precipitation, and wet years greater than 115% of average precipitation.

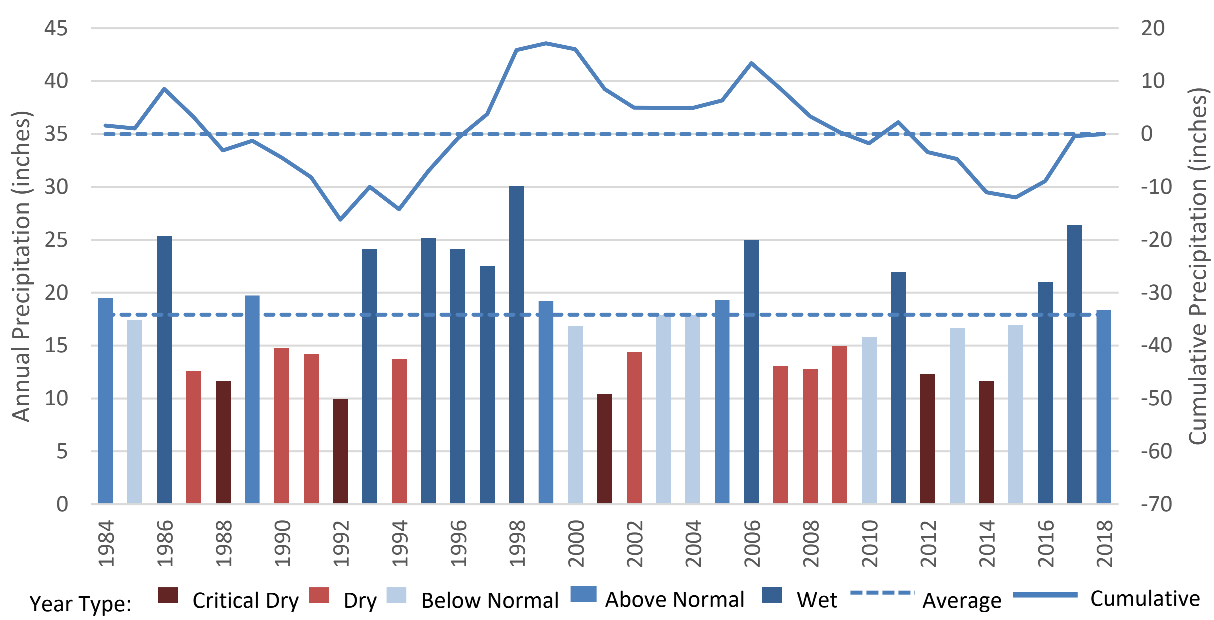


Figure 6-3 Annual and Cumulative Precipitation and Water Year Types 1984 to 2018

[1] PRISM stands for Parameter-elevation Regression on Independent Slopes Model and is provided by the Northwest Alliance for Computational Science and Engineering from Oregon State University. This model provides location-specific, historical precipitation values on monthly and annual time scales. Precipitation was evaluated at Bieber.

The budget was developed using this precipitation and other climate data (evapotranspiration) along with stream flow to estimate the inflows (credits) and outflows (debits) to the total BVGB. The budget was balanced by assuming that the land and surface water systems remain nearly in balance from year to year and allowing the groundwater system to vary. **Figure 6-4** shows the average annual values for the overall water budget. The detailed water budget for each year is included in **Appendix 6B**. **Appendix 6C** shows graphically how the water budget varies over time.

item	**TOTAL BASIN WATER BUDGET** Flow Type	Origin/ Destination	Component	Acre-Feet
(1)	Inflow	Into Basin	Precipitation on Land System	136,801
(14)	Inflow	Into Basin	Precipitation on Reservoirs	501
(13)	Inflow	Into Basin	Stream Inflow	371,148
(27)	Inflow	Into Basin	Subsurface Inflow	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*508,451*
(5)	Outflow	Out of Basin	Evapotranspiration	154,040
(24)	Outflow	Out of Basin	Stream Evaporation	385
(23)	Outflow	Out of Basin	Reservoir Evaporation	722
(19)	Outflow	Out of Basin	Conveyance Evaporation	46
(18)	Outflow	Out of Basin	Stream Outflow	358,486
(29)	Outflow	Out of Basin	Subsurface Outflow	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*513,678*
(34)	Storage Change	(32)-(33)	Change in Total System Storage	(5,227)

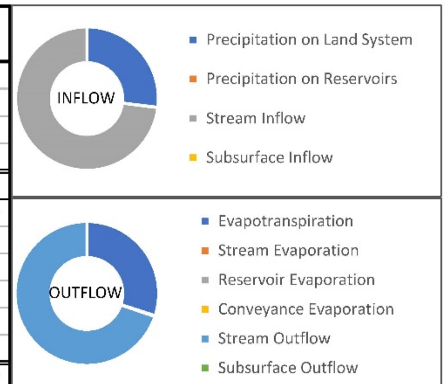


Figure 6-4 Average Total Basin Water Budget 1984-2018 (Historic)

The evapotranspiration value was calculated using land use data (crop and wetland acreages) from DWR for 2014 and land use was assumed to be constant throughout the water budget period.

Using the evapotranspiration for irrigated lands, the amount of irrigation from surface water and groundwater was determined using 85% irrigation efficiency (NRCS 2020) and a respective 35%-65% split between surface water and groundwater. This surface water – groundwater split was determined from input received from local land owners, an assessment of surface water rights (areas without surface water rights were assumed to use 100% groundwater), well drilling records (areas without wells drilled were assumed to use 100% surface water), and an assessment of aerial imagery to see if water source could be determined. ~~**Figure 6-5** shows the irrigated lands~~For the evapotranspiration associated with the Ash Creek Wildlife Area (ACWA), the habitat largely relies on surface water and very shallow subsurface[2] water that is interconnected with Ash Creek. This surface water delivery[3] was enhanced by implementation of a "pond and plug" project in 2012 to keep the water table higher and broader throughout ACWA. The ACWA also has three wells that extract groundwater from the deeper aquifers and is applied in portions of the habitat during dry months (Fall). These groundwater-enhanced habitat areas are indicated

[2] Within about the top 10 feet that plant roots can access.
[3] For the purposes of the water budget, water from Ash Creek is considered "delivered" to the wetland areas.

by the light blue areas within ACWA. Based on the limited area and time groundwater is used to support the habitat, 98% of the evapotranspiration for ACWA is estimated to come from surface water and 2% from groundwater. **Figure 6-5** shows the lands with applied water and their water source based on this assessment.

The water budget for the three systems (land, surface water, and groundwater) are shown on **Figures 6-6** through **6-8.** The detailed water budget for each year is included in **Appendix 6B**. **Appendix 6C** shows graphically how the system water budgets vary over time.

With the land system and surface water system assumed to be in balance, the groundwater system varies and reflects the change in water stored in the Basin. This change in storage is shown in **Figure 6-9** and is analogous to the change in storage presented in Chapter 5 which used groundwater contours to calculate the change. These two approaches show similar trends, but the magnitude of the changes differs slightly, with the groundwater contours showing a cumulative overdraft of about 120,000 acre-feet and the water budget indicating about 190,000 acre-feet. This difference may indicate that the water budget overdraft may be slightly over estimated or that the average specific yield of the basin is higher.

The GSP regulations require an estimate of the sustainable yield[4] for the basin. (§354.18(b)(7)). This requirement is interpreted as the average annual inflow to the groundwater system, which for the 34-year period of the historic water budget is approximately 39,400 acre-feet, as indicated on item 28 of **Figure 6-8** ~~by the inflow value~~ (circled in green) for the groundwater system. The estimate of annual average groundwater use is approximately 44,600 acre-feet per year (AFY).

The regulations also require a quantification of overdraft[5]. (§354.18(b)(5)) Overdraft occurs when the groundwater system change in storage is negative over a long period. For the water budget period of 1984 to 2018, overdraft is estimated at approximately 5,200 AFY, shown as the average groundwater system change in storage, circled in red on **Figure 6-8**~~.~~ (item 31).

6.3 Current Water Budget

The current water budget is demonstrated by looking at water year 2018, which is the most recent year with reliable data.

[4] The state defines sustainable yield as, "the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result." (California Water Code §10721(w))
[5] DWR defines overdraft as "the condition of a groundwater basin or Subbasin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years, during which the water supply conditions approximate average conditions." (DWR 2016b)

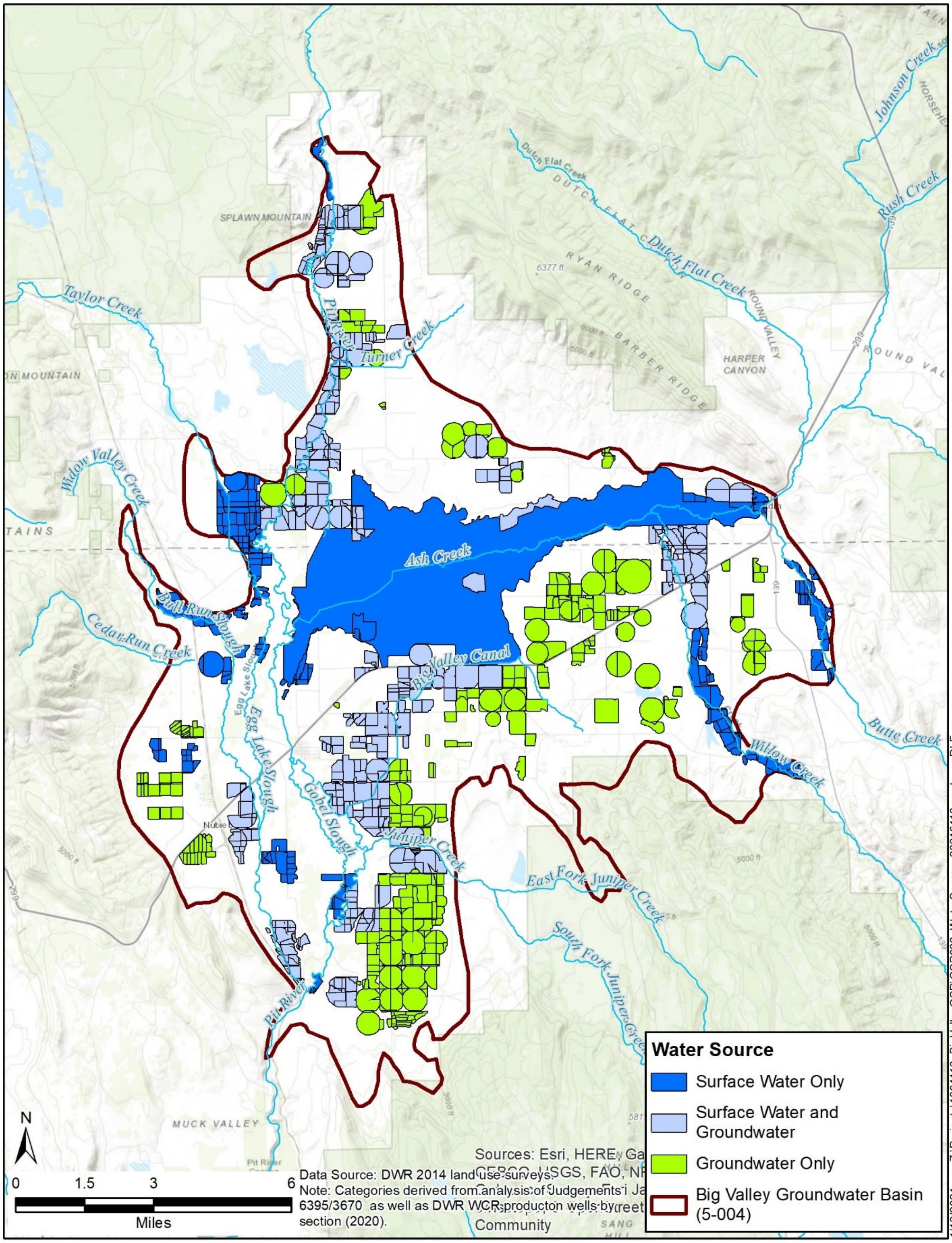
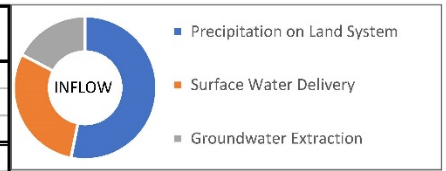


Figure 6-5 Primary Applied Water Sources

item	Flow Type	Origin/ Destination	Component	Acre-Feet
	LAND SYSTEM			
(1)	Inflow	Into Basin	Precipitation on Land System	136,801
(2)	Inflow	Between Systems	Surface Water Delivery	75,811
(3)	Inflow	Between Systems	Groundwater Extraction	44,622
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*257,234*
(5)	Outflow	Out of Basin	Evapotranspiration	154,040
(6)	Outflow	Between Systems	Runoff	83,449
(7)	Outflow	Between Systems	Return Flow	5,012
(8)	Outflow	Between Systems	Recharge of Applied Water	13,133
(9)	Outflow	Between Systems	Recharge of Precipitation	1,601
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*257,234*
(12)	Storage Change	(4)-(11)	Change in Land System Storage	-



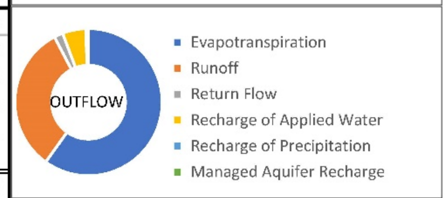
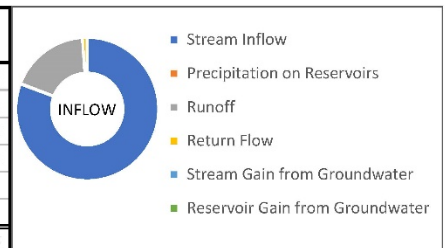


Figure 6-6 Average Land System Water Budget 1984-2018 (Historic)

item	Flow Type	Origin/ Destination	Component	Acre-Feet
	SURFACE WATER SYSTEM			
(13)	Inflow	Into Basin	Stream Inflow	371,148
(14)	Inflow	Into Basin	Precipitation on Reservoirs	501
(6)	Inflow	Between Systems	Runoff	83,449
(7)	Inflow	Between Systems	Return Flow	5,012
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*460,110*
(18)	Outflow	Out of Basin	Stream Outflow	358,486
(19)	Outflow	Out of Basin	Conveyance Evaporation	46
(20)	Outflow	Between Systems	Conveyance Seepage	27
(2)	Outflow	Between Systems	Surface Water Delivery	75,811
(21)	Outflow	Between Systems	Stream Loss to Groundwater	24,037
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	722
(24)	Outflow	Out of Basin	Stream Evaporation	385
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*460,110*
(26)	Storage Change	(17)-(25)	Change in Surface Water Storage	-



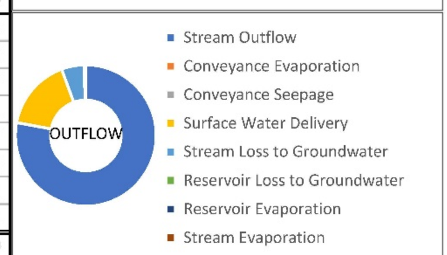
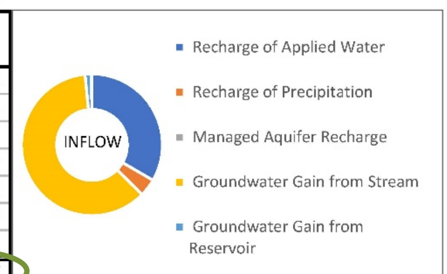


Figure 6-7 Average Surface Water System Water Budget 1984-2018 (Historic)

item	Flow Type	Origin/ Destination	Component	Acre-Feet
	GROUNDWATER SYSTEM			
(8)	Inflow	Between Systems	Recharge of Applied Water	13,133
(9)	Inflow	Between Systems	Recharge of Precipitation	1,601
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	24,037
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596
(20)	Inflow	Between Systems	Conveyance Seepage	27
(27)	Inflow	Into Basin	Subsurface Inflow	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*39,395*
(3)	Outflow	Between Systems	Groundwater Extraction	44,622
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*44,622*
(31)	Storage Change	(28)-(30)	Change in Groundwater Storage	(5,227)



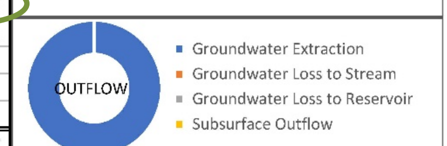


Figure 6-8 Average Groundwater System Water Budget 1984 to 2018 (Historic)

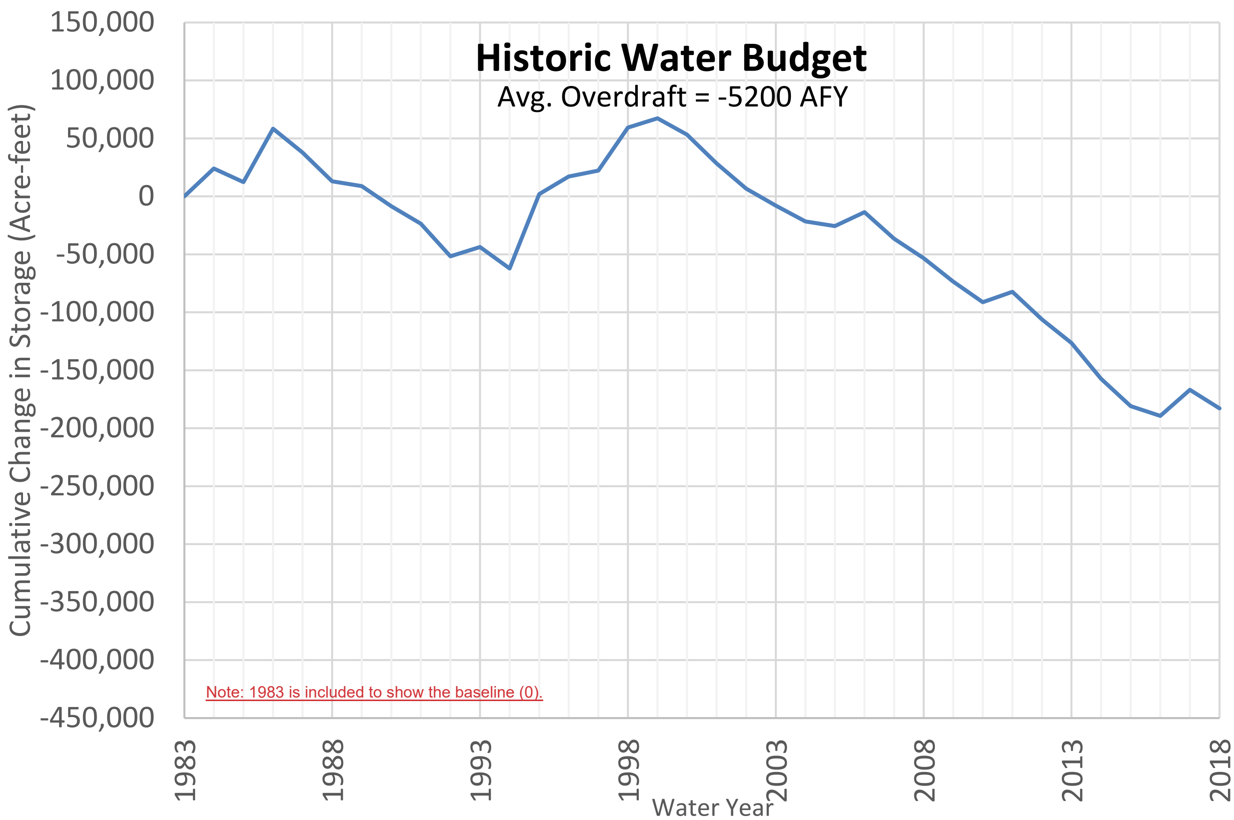


Figure 6-9 Cumulative Groundwater Change in Storage 1984 to 2018 (Historic)

6.4 Projected Water Budget

As required by the GSP Regulations, the projected water budget is developed using at least 50 years of historic climate data (precipitation, evapotranspiration, and streamflow) along with estimates of future land and water use. The climate data from 1962 to 2011 was used as an estimate of future climate baseline conditions.

6.4.1 *Projection Baseline*

The baseline projected water budget uses the most recent estimates of population and land use and keeps them constant. **Figure 6-10** shows the average annual future water budget. Long-term overdraft is projected to be about 2,100 acre-feet per year~~. This~~, which is less than the overdraft for the historic water budget because it uses a longer, wetter time-period for its projections. **Figure 6-11** shows the projected cumulative change in groundwater storage.

item	Flow Type	Origin/ Destination	Component	Acre-Feet
		TOTAL BASIN WATER BUDGET		
(1)	Inflow	Into Basin	Precipitation on Land System	143,208
(14)	Inflow	Into Basin	Precipitation on Reservoirs	525
(13)	Inflow	Into Basin	Stream Inflow	430,242
(27)	Inflow	Into Basin	Subsurface Inflow	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*573,975*
(5)	Outflow	Out of Basin	Evapotranspiration	156,873
(24)	Outflow	Out of Basin	Stream Evaporation	393
(23)	Outflow	Out of Basin	Reservoir Evaporation	741
(19)	Outflow	Out of Basin	Conveyance Evaporation	47
(18)	Outflow	Out of Basin	Stream Outflow	418,003
(29)	Outflow	Out of Basin	Subsurface Outflow	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*576,056*
(34)	Storage Change	(32)-(33)	Change in Total System Storage	(2,080)

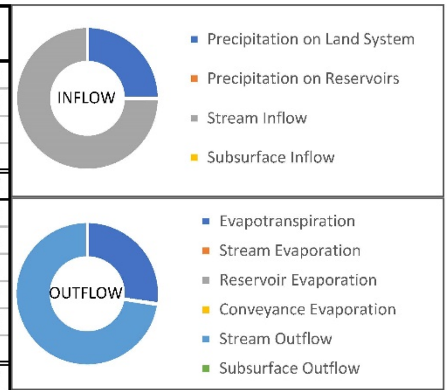


Figure 6-10 Projected Total Basin Water Budget 2019-2068 (Future Baseline)

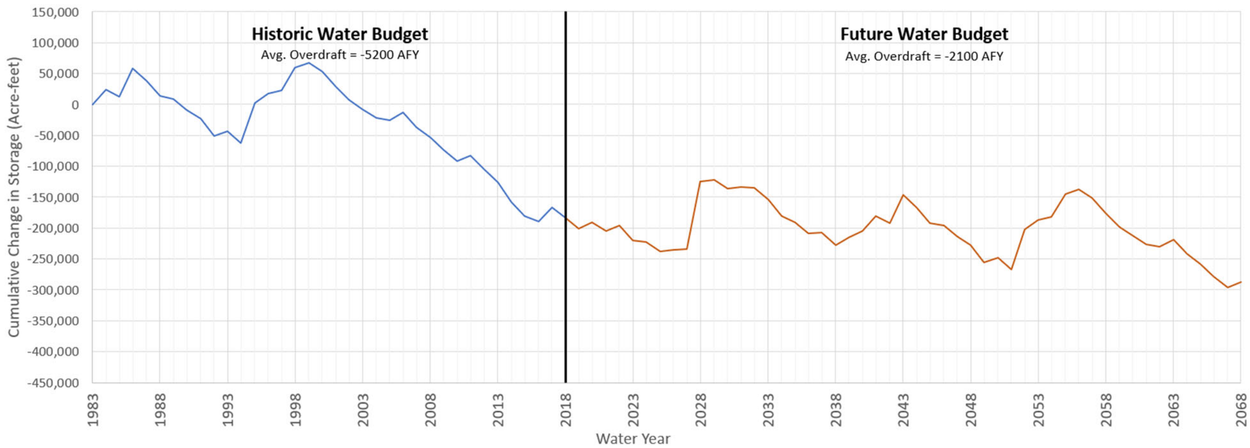
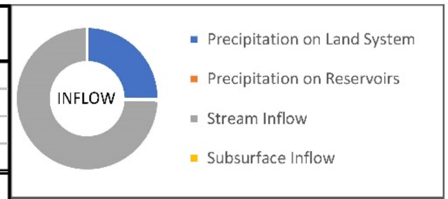


Figure 6-11 Cumulative Groundwater Change in Storage 1984 to 2068 (Future Baseline)

6.4.2 *Projection with Climate Change*

The SGMA regulations require an analysis of future conditions based on a potential change in climate ~~change~~. DWR provides location-specific change factors for precipitation, evapotranspiration, and streamflow based on climate change models. While there is variability in the climate change models, if the models are correct, they indicate that the future climate in Big Valley will be wetter and warmer, resulting in more precipitation, and more of that precipitation falling in the form of rain rather than snow. ~~These~~The change factors were applied to the baseline water budget and are shown in **Figures 6-12** and **6-13**. Land use was assumed to be constant, with conditions the same as DWR's 2014 land use survey. Future conditions with climate change projections indicate that the basin may be nearly in balance, with overdraft of only about 600 AFY.

item	TOTAL BASIN WATER BUDGET Flow Type	Origin/ Destination	Component	Acre-Feet
(1)	Inflow	Into Basin	Precipitation on Land System	152,224
(14)	Inflow	Into Basin	Precipitation on Reservoirs	558
(13)	Inflow	Into Basin	Stream Inflow	450,360
(27)	Inflow	Into Basin	Subsurface Inflow	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*603,143*
(5)	Outflow	Out of Basin	Evapotranspiration	165,795
(24)	Outflow	Out of Basin	Stream Evaporation	414
(23)	Outflow	Out of Basin	Reservoir Evaporation	780
(19)	Outflow	Out of Basin	Conveyance Evaporation	50
(18)	Outflow	Out of Basin	Stream Outflow	436,663
(29)	Outflow	Out of Basin	Subsurface Outflow	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*603,701*
(34)	Storage Change	(32)-(33)	Change in Total System Storage	(558)



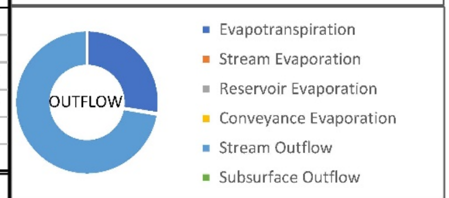


Figure 6-12 Projected Total Basin Water Budget 2019-2068 (Future with Climate Change)

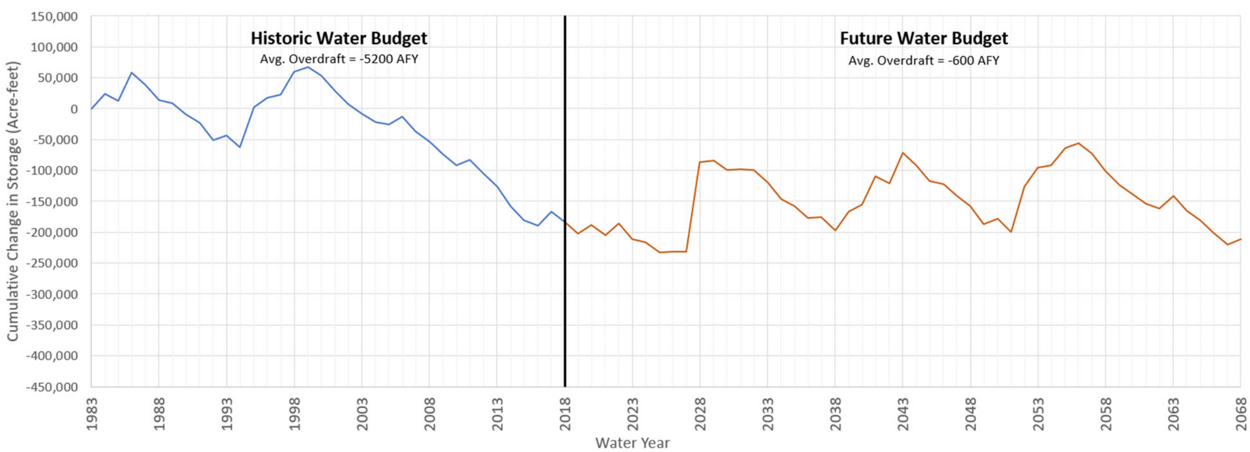


Figure 6-13 Cumulative Groundwater System Change in Storage 1984 to 2068 (Future with Climate Change)

6.5 References

Department of Water Resources (DWR), 2016a. Best Management Practices for the Sustainable Management of Groundwater: Water Budget BMP. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-4-Water-Budget_ay_19.pdf.

DWR, 2016b. California's Groundwater, Bulletin 118 Interim Update 2016. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/B118-Interim-Update-2016_ay_19.pdf.

DWR, 2018. California's Groundwater, Bulletin 118. Basin Boundary dataset available at: https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer.

DWR, 2020a. Handbook for Water Budget Development, With or Without Models, Draft February 2020. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Data-and-Tools/Files/Water-Budget-Handbook.pdf.

DWR 2020b. California Irrigation Management Information System (CIMIS). Available at: https://cimis.water.ca.gov/.

DWR 2020c. CADWR Land Use Viewer. Available at: https://gis.water.ca.gov/app/CADWRLandUseViewer/.

Food and Agriculture Organization of the United Nations (FAO), 1998. Crop Evapotranspiration – Guidelines for computing crop requirements – FAO Irrigation and drainage paper 56. Available at: http://www.fao.org/3/X0490e/x0490e0b.htm.

Natural Resources Conservation Service (NRCS), 1986. Urban Hydrology for Small Watersheds. Technical Release 55. Available at https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044171.pdf.

NRCS, 2020. Personal Communication with Alturas office of NRCS.

Northwest Alliance for Computational Science and Engineering (NACSE), 2020. Parameter-elevation Regressions on Independent Slopes Model (PRISM). Available at: https://prism.oregonstate.edu/explorer/.

Orange, M.N., Matyac, J.S., and Snyder, R.L., 2004. Consumptive Use Program (CUP) Model, Acta Hortic. 664, 461-468. Available at: https://www.ishs.org/ishs-article/664_58.

United States Census Bureau (USCB), 2020. Census data. Available at: https://data.census.gov/cedsci/profile?g=1600000US0606336.

United States Geological Survey (USGS), 2020a. National Hydrography Dataset. Available at: https://www.usgs.gov/core-science-systems/ngp/national-hydrography.

USGS 2020b. National Water Information System (NWIS). Available at: https://waterdata.usgs.gov/nwis.

Appendix 6A

Water Budget Components

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	Credit(+)/ Debit(-)	Relationship with Other Systems	Data Source(s)	Assumptions	Relative Level of Precision
(1)	**Inflow**	Into Basin	Precipitation on Land System	+		-Monthly precipitation from PRISM Model (NACSE 2020) evaluated at Bieber -Basin Land area from DWR (2018). -Area of rivers, conveyance, and lakes from USGS (2020).	-Precipitation does not vary spatially throughout the Basin	High
(2)	**Inflow**	Between Systems	Surface Water Delivery	+	Equal to the *Surface Water Delivery* term in the surface water system outflow	-Reference Evapotranspiration (ETo) from CIMIS spatial data model evaluated at Bieber (DWR 2020b) -Crop Coefficients (Kc) adapted from FAO (1998) using CUP model (Orange, et al 2004) -Monthly precipitation from PRISM Model (NACSE 2020) evaluated at Bieber	-Agriculture and wetland habitats are the only sectors that use surface water. Other uses such as illegal irrigation and fire suppression may use surface water, but there is no way to quantify. -Irrigation efficiency = 85% (NRCS 2020) -35% of agricultural irrigation uses surface water -98% of riparian demands are met by surface water	Low
(3)	**Inflow**	Between Systems	Groundwater Extraction	+	Equal to the *Groundwater Extraction* term in the groundwater system outflow	-Reference Evapotranspiration (ETo) from CIMIS spatial data model evaluated at Bieber (DWR 2020b) -Crop Coefficients (Kc) adapted from FAO (1998) using CUP model (Orange, et al 2004) -Monthly precipitation from PRISM Model (NACSE 2020) evaluated at Bieber Population of Big Valley from DWR (2018) Population of Bieber from United States Census Bureau (2020)	-Irrigation efficiency = 85% (NRCS 2020) -65% of agricultural irrigation uses groundwater -2% of riparian demands are met by groundwater -Per capita water use is 100 gallons/day/person -All domestic users use groundwater	Low
(4)	**Inflow**		*Total Inflow*		*(1)+(2)+(3)*			
(5)	**Outflow**	Out of Basin	Evapotranspiration	-		-Reference Evapotranspiration (ETo) from CIMIS spatial data model evaluated at Bieber (DWR 2020b) -Crop Coefficients (Kc) adapted from FAO (1998) using CUP model (Orange, et al 2004) -Land use and crop acreages from DWR (2014)	-ETo does not vary throughout the Basin -The land system remains in balance from year to year (no change in land system storage).	Moderate
(6)	**Outflow**	Between Systems	Runoff	-	Equal to the *Runoff* term in Surface Water System*	-Precipitation from PRISM Model (NACSE 2020) evaluated at Bieber	-Curve number method was used to estimate the amount of runoff (NRCS 1986)	Low
(7)	**Outflow**	Between Systems	Return Flow	-	Equal to the *Return Flow* term in Surface Water System*	-See surface water delivery and groundwater extraction above	-50% of agricultural inefficiency results in return flow (7.5% of applied water)	Low
(8)	**Outflow**	Between Systems	Recharge of Applied Water	-	Equal to the *Recharge of Applied Water* term in the groundwater system	-See surface water delivery and groundwater extraction above	-50% of agricultural inefficiency results in recharge of grounwater (7.5% of applied water)	Low
(9)	**Outflow**	Between Systems	Recharge of Precipitation	-	Equal to the *Recharge of Precipitation* term in the groundwater system	-Precipitation from PRISM Model (NACSE 2020) evaluated at Bieber	-2% of precipitation results in recharge to groundwater	Moderate
(10)	**Outflow**	Between Systems	Managed Aquifer Recharge	-	Equal to the *Managed Aquifer Recharge* term in the groundwater system	No managed recharge is currently documented in the Big Valley Groundwater basin		
(11)	**Outflow**		*Total Outflow*		*(5)+(6)+(7)+(8)+(9)+(10)*			
(12)	**Storage Change**		Change in Land System Storage		*(4)-(11)*			

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	Credit(+)/ Debit(-)	Relationship with Other Systems	Data Source(s)	Assumptions	Relative Level of Precision
(13)	**Inflow**	Into Basin	Stream Inflow	+		-Historic and current data from Pit River gage at Canby -Historic data from gage on Pit River north of Lookout (where it enters basin), Ash Creek at Adin, Widow Valley Creek, Willow Creek	-Historic relationship between flow at Canby and flow at historic gages is the same as current. E.g. flow during winter events is about 40% higher than Canby once the Pit River reaches Big Valley -Watershed areas outside of those with historic gage measurements have same runoff per acre as the gaged watersheds	Moderate
(14)	**Inflow**	Into Basin	Precipitation on Lakes	+		-Monthly precipitation from PRISM Model (NACSE 2020) evaluated at Bieber -Area of rivers, conveyance, and lakes from USGS (2020).	-precipitation does not vary spatially throughout the Basin	High
(6)	**Inflow**	Between Systems	Runoff	+	Equal to the *Runoff* term in land system (6)	-Precipitation from PRISM Model (NACSE 2020) evaluated at Bieber	-Curve number method was used to estimate the amount of runoff (NRCS 1986)	Low
(7)	**Inflow**	Between Systems	Return Flow	+	Equal to the *Return Flow* term in the land system (7)	-See surface water delivery and groundwater extraction above	-50% of agricultural inefficiency results in return flow (7.5% of applied water)	Low
(15)	**Inflow**	Between Systems	Stream Gain from Groundwater	+	Equal to the *Groundwater Loss to Stream* term in the groundwater system	-None	-Assumed to be 0 until further analysis of transducer data from new monitoring wells	Low
(16)	**Inflow**	Between Systems	Lake Gain from Groundwater	+	Equal to the *Groundwater Loss to Lake* term in the groundwater system	-None	-Assumed to be 0 because most lakes are above the groundwater levels	High
(17)	**Inflow**		*Total Inflow*		*(13)+(14)+(6)+(7)+(15)+(16)*			
(18)	**Outflow**	Out of Basin	Stream Outflow	-		-Estimated based on this water budget -Estimates verified using analysis of historic gage data from Pit River south of Bieber (exit from Basin)	-The surface water system remains in balance from year to year (no change in surface water storage)	Low
(19)	**Outflow**	Out of Basin	Conveyance Evaporation	-		-Reference Evapotranspiration (ETo) from CIMIS spatial data model evaluated at Bieber (DWR 2020b) -Area of conveyance from USGS (2020)	-Each year, conveyance is full from May to September and empty from October to April	Moderate
(20)	**Outflow**	Between Systems	Conveyance Seepage	-	Equal to the *Conveyance Seepage* term in the groundwater system	-Area of conveyance from USGS (2020)	-Each year, conveyance is full from May to September and empty from October to April -Seepage rate of 0.01 ft/day	Moderate
(2)	**Outflow**	Between Systems	Surface Water Delivery	-	Equal to the *Surface Water Delivery* term in land system (2)	-Reference Evapotranspiration (ETo) from CIMIS spatial data model evaluated at Bieber (DWR 2020b) -Crop Coefficients (Kc) adapted from FAO (1998) using CUP model (Orange, et al 2004) -Monthly precipitation from PRISM Model (NACSE 2020) evaluated at Bieber	-Agriculture and wetland habitats are the only sectors that use surface water. Other uses such as illegal irrigation and fire suppression may use surface water, but there is no way to quantify. -Irrigation efficiency = 85% (NRCS 2020) -35% of agricultural irrigation uses surface water -98% of riparian demands are met by surface water	Low
(21)	**Outflow**	Between Systems	Stream Loss to Groundwater	-	Equal to the *Gain from Stream* term in the groundwater system	-Historic and current data from Pit River gage at Canby -Historic data from gage on Pit River north of Lookout (where it enters Basin), Ash Creek at Adin, Widow Valley Creek, Willow Creek, Pit River at exit from Basin.	-Calculated from the historic inflow - outflow relationship.	Low
(22)	**Outflow**	Between Systems	Lake Loss to Groundwater	-	Equal to the *Groundwater Gain from Lake* term in the groundwater system	-Area of lakes from USGS (2020)	-Each year, lakes are full (100%) and surface area drops throughout summer to 10% in September, then gradually refill over the winter. -Seepage rate of 0.01 ft/day	Moderate

(23)	**Outflow**	Out of Basin	Lake Evaporation	-		-Reference Evapotranspiration (ETo) from CIMIS spatial data model evaluated at Bieber (DWR 2020b) -Area of lakes from USGS (2020)	-Each year, lakes are full (100%) and surface area drops throughout summer to 10% in September, then gradually refill over the winter.	High
(24)	**Outflow**	Out of Basin	Stream Evaporation	-		-Reference Evapotranspiration (ETo) from CIMIS spatial data model evaluated at Bieber (DWR 2020b) -Area of streams from USGS (2020)		High
(25)	**Outflow**		*Total Outflow*		*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*			
(26)	**Storage Change**	Change in Surface Water Storage			*(17)-(25)*			

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	Credit(+)/ Debit(-)	Relationship with Other Systems	Data Source(s)	Assumptions	Relative Level of Precision
(8)	**Inflow**	Between Systems	Recharge of Applied Water	+	Equal to the *Recharge of Applied Water* term in the land system (8)	-See surface water delivery and groundwater extraction above	-50% of agricultural inefficiency results in recharge of grounwater (7.5% of applied water)	Low
(9)	**Inflow**	Between Systems	Recharge of Precipitation	+	Equal to the *Recharge of Precipitation* term in the land system (9)	-Precipitation from PRISM Model (NACSE 2020) evaluated at Bieber	-2% of precipitation results in recharge to groundwater	Moderate
(10)	**Inflow**	Between Systems	Managed Aquifer Recharge	+	Equal to the *Managed Aquifer Recharge* term in the land system (10)	No managed recharge is currently documented in the Big Valley Groundwater basin		
(21)	**Inflow**	Between Systems	Groundwater Gain from Stream	+	Equal to the *Stream Loss to Groundwater* term in the surface water system (21)	-Historic and current data from Pit River gage at Canby -Historic data from gage on Pit River north of Lookout (where it enters Basin), Ash Creek at Adin, Widow Valley Creek, Willow Creek, Pit River at exit from Basin.	-Calculated from the historic inflow - outflow relationship.	Low
(22)	**Inflow**	Between Systems	Groundwater Gain from Lake	+	Equal to the *Lake Loss to Groundwater* term in the surface water system (22)	-Area of lakes from USGS (2020)	-Each year, lakes are full (100%) and surface area drops throughout summer to 10% in September, then gradually refill over the winter. -Seepage rate of 0.01 ft/day	Moderate
(20)	**Inflow**	Between Systems	Conveyance Seepage	+	Equal to the *Conveyance Seepage* term in the surface water system (20)	-Area of conveyance from USGS (2020)	-Each year, conveyance is full from May to September and empty from October to April -Seepage rate of 0.01 ft/day	Moderate
(27)	**Inflow**	Into Basin	Subsurface Inflow	+		-Water level data from wells in Round Valley and Adin -Estimate of cross-sectional area of canyon between Round Valley and Big Valley	-Other than subsurface flow from Round Valley (about 1AFY), no subsurface inflow occurs in the BVGB	Moderate
(28)	**Inflow**		*Total Inflow*		*(8)+(9)+(10)+(21)+(22)+(20)+(27)*			
(3)	**Outflow**	Between Systems	Groundwater Extraction	-	Equal to the *Groundwater Extraction* term in the land system (3)	-Reference Evapotranspiration (ETo) from CIMIS spatial data model evaluated at Bieber (DWR 2020b) -Crop Coefficients (Kc) adapted from FAO (1998) using CUP model (Orange, et al 2004) -Monthly precipitation from PRISM Model (NACSE 2020) evaluated at Bieber Population of Big Valley from DWR (2018) Population of Bieber from United States Census Bureau (2020)	-Irrigation efficiency = 85% (NRCS 2020) -65% of agricultural irrigation uses groundwater -2% of riparian demands are met by groundwater -Per capita water use is 100 gallons/day/person -All domestic users use groundwater	Low
(15)	**Outflow**	Between Systems	Groundwater Loss to Stream	-	Equal to the *Stream Gain from Groundwater* term in the surface water system (15)	-None	-Assumed to be 0 until further analysis of transducer data from new monitoring wells	Low
(16)	**Outflow**	Between Systems	Groundwater Loss to Lake	-	Equal to the *Lake Gain from Groundwater* term in the surface water system (16)	-None	-Assumed to be 0 because most lakes are above the groundwater levels	High
(29)	**Outflow**	Out of Basin	Subsurface Outflow	-			-No subsurface outflow occurs in the BVGB	Moderate
(30)	**Outflow**		*Total Outflow*		*(3)+(15)+(16)+(29)*			
(31)	**Storage Change**		Change in Groundwater Storage		(28)-(30)			

TOTAL WATER BUDGET

item	Flow Type	Origin/ Destination	Component	Credit(+)/ Debit(-)	Relationship with Other Systems	Data Source(s)	Assumptions	Relative Level of Precision
(1)	**Inflow**	Into Basin	Precipitation on Land System	+	Equal to the *Precipitation* term in the land system	-Monthly precipitation from PRISM Model (NACSE 2020) evaluated at Bieber -Basin Land area from DWR (2018). -Area of rivers, conveyance, and lakes from USGS (2020).		High
(14)	**Inflow**	Into Basin	Precipitation on Lakes	+	Equal to the *Precipitation on Lakes* term in the surface water system	-Monthly precipitation from PRISM Model (NACSE 2020) evaluated at Bieber -Basin Land area from DWR (2018). -Area of rivers, conveyance, and lakes from USGS (2020).	-Precipitation does not vary spatially throughout the Basin	High
(13)	**Inflow**	Into Basin	Stream Inflow	+	Equal to the *Stream Inflow* term in the surface water system	-Historic and current data from Pit River gage at Canby -Historic data from gage on Pit River north of Lookout (where it enters basin), Ash Creek at Adin, Widow Valley Creek, Willow Creek	-Historic relationship between flow at Canby and flow at historic gages is the same as current. E.g. flow during winter events is about 40% higher than Canby once the Pit River reaches Big Valley -Watershed areas outside of those with historic gage measurements have same runoff per acre as the gaged watersheds	Moderate
(27)	**Inflow**	Into Basin	Subsurface Inflow	+	Equal to the *Subsurface Inflow* term in the groundwater system	-Water level data from wells in Round Valley and Adin -Estimate of cross-sectional area of canyon between Round Valley and Big Valley	-Other than subsurface flow from Round Valley (about 1AFY), no subsurface inflow occurs in the BVGB	Moderate
(32)	**Inflow**		*Total Inflow*		*(1)+(14)+(13)+(27)*			
(5)	**Outflow**	Out of Basin	Evapotranspiration	-	Equal to the *Evapotranspiration* term in the land system	-Reference Evapotranspiration (ETo) from CIMIS spatial data model evaluated at Bieber (DWR 2020b) -Crop Coefficients (Kc) adapted from FAO (1998) using CUP model (Orange, et al 2004) -Land use and crop acreages from DWR (2014)	-ETo does not vary throughout the Basin -The land system remains in balance from year to year (no change in land system storage).	Moderate
(24)	**Outflow**	Out of Basin	Stream Evaporation	-	Equal to the *Stream Evaporation* term in the surface water system	-Reference Evapotranspiration (ETo) from CIMIS spatial data model evaluated at Bieber (DWR 2020b) -Area of streams from USGS (2020)		High
(23)	**Outflow**	Out of Basin	Lake Evaporation	-	Equal to the *Lake Evaporation* term in the surface water system	-Reference Evapotranspiration (ETo) from CIMIS spatial data model evaluated at Bieber (DWR 2020b) -Area of lakes from USGS (2020)	-Each year, lakes are full (100%) and surface area drops throughout summer to 10% in September, then gradually refill over the winter.	High
(19)	**Outflow**	Out of Basin	Conveyance Evaporation	-	Equal to the *Conveyance Evaporation* term in the surface water system	-Reference Evapotranspiration (ETo) from CIMIS spatial data model evaluated at Bieber (DWR 2020b) -Area of conveyance from USGS (2020)	-Each year, conveyance is full from May to September and empty from October to April	Moderate
(18)	**Outflow**	Out of Basin	Stream Outflow	-	Equal to the *Stream Outflow* term in the surface water system	-Estimated based on this water budget -Estimates verified using analysis of historic gage data from Pit River south of Bieber (exit from Basin)	-The surface water system remains in balance from year to year (no change in surface water storage)	Low
(29)	**Outflow**	Out of Basin	Subsurface Outflow	-	Equal to the *Subsurface Outflow* term in the groundwater system		-No subsurface outflow occurs in the BVGB	Moderate
(33)	**Outflow**		*Total Outflow*		*(5)+(24)+(23)+(19)+(18)+(29)*			
(34)	**Storage Change**		Change in Total System Storage		(32)-(33)			

Appendix 6B

Water Budget Details

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	Average (1984-2018)	1984	1985	1986	1987	1988
(1)	Inflow	Into Basin	Precipitation on Land System	136,801	148,899	132,719	193,698	96,315	88,835
(2)	Inflow	Between Systems	Surface Water Delivery	75,811	68,516	76,750	74,262	78,850	85,952
(3)	Inflow	Between Systems	Groundwater Extraction	44,622	39,192	45,598	41,789	47,782	53,245
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*257,234*	*256,607*	*255,067*	*309,749*	*222,946*	*228,032*
(5)	Outflow	Out of Basin	Evapotranspiration	154,040	146,344	152,399	160,318	155,136	159,362
(6)	Outflow	Between Systems	Runoff	83,449	92,329	82,737	130,033	47,265	46,439
(7)	Outflow	Between Systems	Return Flow	5,012	4,396	5,123	4,685	5,373	5,994
(8)	Outflow	Between Systems	Recharge of Applied Water	13,133	11,840	13,309	12,802	13,701	14,966
(9)	Outflow	Between Systems	Recharge of Precipitation	1,601	1,697	1,499	1,910	1,471	1,272
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*257,234*	*256,607*	*255,067*	*309,749*	*222,946*	*228,032*
(12)	Storage Change	**(4)-(11)**	Change in Land System Storage	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	Average (1984-2018)	1984	1985	1986	1987	1988
(13)	Inflow	Into Basin	Stream Inflow	371,148	808,462	310,960	878,565	161,807	162,980
(14)	Inflow	Into Basin	Precipitation on Reservoirs	501	546	486	710	353	326
(6)	Inflow	Between Systems	Runoff	83,449	92,329	82,737	130,033	47,265	46,439
(7)	Inflow	Between Systems	Return Flow	5,012	4,396	5,123	4,685	5,373	5,994
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*460,110*	*905,732*	*399,306*	*1,013,993*	*214,798*	*215,738*
(18)	Outflow	Out of Basin	Stream Outflow	358,486	786,443	302,274	865,544	122,626	116,338
(19)	Outflow	Out of Basin	Conveyance Evaporation	46	44	46	45	45	50
(20)	Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27
(2)	Outflow	Between Systems	Surface Water Delivery	75,811	68,516	76,750	74,262	78,850	85,952
(21)	Outflow	Between Systems	Stream Loss to Groundwater	24,037	49,085	18,460	72,401	11,524	11,579
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	722	667	760	727	736	777
(24)	Outflow	Out of Basin	Stream Evaporation	385	354	393	389	393	420
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*460,110*	*905,732*	*399,306*	*1,013,993*	*214,798*	*215,738*
(26)	Storage Change	**(17)-(25)**	Change in Surface Water Storage	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	Average (1984-2018)	1984	1985	1986	1987	1988
(8)	Inflow	Between Systems	Recharge of Applied Water	13,133	11,840	13,309	12,802	13,701	14,966
(9)	Inflow	Between Systems	Recharge of Precipitation	1,601	1,697	1,499	1,910	1,471	1,272
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	24,037	49,085	18,460	72,401	11,524	11,579
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596
(20)	Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*39,395*	*63,247*	*33,892*	*87,738*	*27,321*	*28,441*
(3)	Outflow	Between Systems	Groundwater Extraction	44,622	39,192	45,598	41,789	47,782	53,245
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir	-	-	-	-	-	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*44,622*	*39,192*	*45,598*	*41,789*	*47,782*	*53,245*
(31)	Storage Change	**(28)-(30)**	Change in Groundwater Storage	(5,227)	24,055	(11,706)	45,949	(20,461)	(24,804)

TOTAL BASIN WATER BUDGET

item	Flow Type	Origin/ Destination	Component	Average (1984-2018)	1984	1985	1986	1987	1988
(1)	Inflow	Into Basin	Precipitation on Land System	136,801	148,899	132,719	193,698	96,315	88,835
(14)	Inflow	Into Basin	Precipitation on Reservoirs	501	546	486	710	353	326
(13)	Inflow	Into Basin	Stream Inflow	371,148	808,462	310,960	878,565	161,807	162,980
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*508,451*	*957,907*	*444,166*	*1,072,973*	*258,475*	*252,142*
(5)	Outflow	Out of Basin	Evapotranspiration	154,040	146,344	152,399	160,318	155,136	159,362
(24)	Outflow	Out of Basin	Stream Evaporation	385	354	393	389	393	420
(23)	Outflow	Out of Basin	Reservoir Evaporation	722	667	760	727	736	777
(19)	Outflow	Out of Basin	Conveyance Evaporation	46	44	46	45	45	50
(18)	Outflow	Out of Basin	Stream Outflow	358,486	786,443	302,274	865,544	122,626	116,338
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*513,678*	*933,852*	*455,872*	*1,027,024*	*278,936*	*276,946*
(34)	Storage Change	**(32)-(33)**	Change in Total System Storage	(5,227)	24,055	(11,706)	45,949	(20,461)	(24,804)

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	1989	1990	1991	1992	1993	1994
(1)	Inflow	Into Basin	Precipitation on Land System	150,654	112,418	108,526	75,556	184,082	104,481
(2)	Inflow	Between Systems	Surface Water Delivery	72,061	72,399	77,619	82,827	70,993	76,177
(3)	Inflow	Between Systems	Groundwater Extraction	41,145	42,407	46,745	52,036	38,861	45,730
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*263,860*	*227,224*	*232,890*	*210,419*	*293,936*	*226,387*
(5)	Outflow	Out of Basin	Evapotranspiration	151,287	148,958	153,216	155,932	156,238	153,369
(6)	Outflow	Between Systems	Runoff	93,806	59,374	59,468	32,898	119,194	53,112
(7)	Outflow	Between Systems	Return Flow	4,615	4,761	5,255	5,860	4,351	5,140
(8)	Outflow	Between Systems	Recharge of Applied Water	12,446	12,539	13,479	14,449	12,207	13,226
(9)	Outflow	Between Systems	Recharge of Precipitation	1,705	1,591	1,472	1,280	1,947	1,541
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*263,860*	*227,224*	*232,890*	*210,419*	*293,936*	*226,387*
(12)	Storage Change	**(4)-(11)**	Change in Land System Storage	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	1989	1990	1991	1992	1993	1994
(13)	Inflow	Into Basin	Stream Inflow	390,854	133,594	263,663	76,254	602,999	167,393
(14)	Inflow	Into Basin	Precipitation on Reservoirs	552	412	398	277	675	383
(6)	Inflow	Between Systems	Runoff	93,806	59,374	59,468	32,898	119,194	53,112
(7)	Inflow	Between Systems	Return Flow	4,615	4,761	5,255	5,860	4,351	5,140
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*489,827*	*198,142*	*328,784*	*115,288*	*727,219*	*226,028*
(18)	Outflow	Out of Basin	Stream Outflow	393,854	113,802	233,159	23,084	622,453	136,286
(19)	Outflow	Out of Basin	Conveyance Evaporation	45	44	47	48	46	46
(20)	Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27
(2)	Outflow	Between Systems	Surface Water Delivery	72,061	72,399	77,619	82,827	70,993	76,177
(21)	Outflow	Between Systems	Stream Loss to Groundwater	22,175	10,212	16,260	7,546	32,039	11,784
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	697	693	693	754	693	726
(24)	Outflow	Out of Basin	Stream Evaporation	371	368	382	406	370	386
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*489,827*	*198,142*	*328,784*	*115,288*	*727,219*	*226,028*
(26)	Storage Change	**(17)-(25)**	Change in Surface Water Storage	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	1989	1990	1991	1992	1993	1994
(8)	Inflow	Between Systems	Recharge of Applied Water	12,446	12,539	13,479	14,449	12,207	13,226
(9)	Inflow	Between Systems	Recharge of Precipitation	1,705	1,591	1,472	1,280	1,947	1,541
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	22,175	10,212	16,260	7,546	32,039	11,784
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596
(20)	Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*36,950*	*24,967*	*31,836*	*23,899*	*46,817*	*27,175*
(3)	Outflow	Between Systems	Groundwater Extraction	41,145	42,407	46,745	52,036	38,861	45,730
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir	-	-	-	-	-	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*41,145*	*42,407*	*46,745*	*52,036*	*38,861*	*45,730*
(31)	Storage Change	**(28)-(30)**	Change in Groundwater Storage	(4,194)	(17,440)	(14,909)	(28,137)	7,956	(18,555)

TOTAL BASIN WATER BUDGET

item	Flow Type	Origin/ Destination	Component	1989	1990	1991	1992	1993	1994
(1)	Inflow	Into Basin	Precipitation on Land System	150,654	112,418	108,526	75,556	184,082	104,481
(14)	Inflow	Into Basin	Precipitation on Reservoirs	552	412	398	277	675	383
(13)	Inflow	Into Basin	Stream Inflow	390,854	133,594	263,663	76,254	602,999	167,393
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*542,060*	*246,425*	*372,587*	*152,087*	*787,756*	*272,257*
(5)	Outflow	Out of Basin	Evapotranspiration	151,287	148,958	153,216	155,932	156,238	153,369
(24)	Outflow	Out of Basin	Stream Evaporation	371	368	382	406	370	386
(23)	Outflow	Out of Basin	Reservoir Evaporation	697	693	693	754	693	726
(19)	Outflow	Out of Basin	Conveyance Evaporation	45	44	47	48	46	46
(18)	Outflow	Out of Basin	Stream Outflow	393,854	113,802	233,159	23,084	622,453	136,286
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*546,255*	*263,865*	*387,496*	*180,224*	*779,799*	*290,812*
(34)	Storage Change	**(32)-(33)**	Change in Total System Storage	(4,194)	(17,440)	(14,909)	(28,137)	7,956	(18,555)

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	1995	1996	1997	1998	1999	2000
(1)	Inflow	Into Basin	Precipitation on Land System	192,248	183,776	171,871	229,110	146,533	128,140
(2)	Inflow	Between Systems	Surface Water Delivery	65,439	70,985	74,958	64,027	74,092	76,327
(3)	Inflow	Between Systems	Groundwater Extraction	35,592	41,037	42,916	32,854	43,259	44,735
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*293,278*	*295,799*	*289,744*	*325,992*	*263,883*	*249,201*
(5)	Outflow	Out of Basin	Evapotranspiration	143,128	150,803	159,397	151,378	152,590	157,889
(6)	Outflow	Between Systems	Runoff	133,143	126,391	110,752	157,864	91,975	71,370
(7)	Outflow	Between Systems	Return Flow	3,983	4,605	4,815	3,667	4,857	5,024
(8)	Outflow	Between Systems	Recharge of Applied Water	11,251	12,278	12,946	10,945	12,826	13,215
(9)	Outflow	Between Systems	Recharge of Precipitation	1,773	1,722	1,834	2,137	1,637	1,703
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*293,278*	*295,799*	*289,744*	*325,992*	*263,883*	*249,201*
(12)	Storage Change	**(4)-(11)**	Change in Land System Storage	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	1995	1996	1997	1998	1999	2000
(13)	Inflow	Into Basin	Stream Inflow	912,444	780,720	614,680	832,300	691,739	240,124
(14)	Inflow	Into Basin	Precipitation on Reservoirs	704	673	630	840	537	470
(6)	Inflow	Between Systems	Runoff	133,143	126,391	110,752	157,864	91,975	71,370
(7)	Inflow	Between Systems	Return Flow	3,983	4,605	4,815	3,667	4,857	5,024
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*1,050,275*	*912,389*	*730,877*	*994,671*	*789,107*	*316,987*
(18)	Outflow	Out of Basin	Stream Outflow	897,057	798,101	621,549	872,733	677,081	223,698
(19)	Outflow	Out of Basin	Conveyance Evaporation	41	44	46	42	45	47
(20)	Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27
(2)	Outflow	Between Systems	Surface Water Delivery	65,439	70,985	74,958	64,027	74,092	76,327
(21)	Outflow	Between Systems	Stream Loss to Groundwater	86,149	41,575	32,583	56,285	36,166	15,166
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	625	692	729	619	720	736
(24)	Outflow	Out of Basin	Stream Evaporation	340	369	388	340	379	390
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*1,050,275*	*912,389*	*730,877*	*994,671*	*789,107*	*316,987*
(26)	Storage Change	**(17)-(25)**	Change in Surface Water Storage	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	1995	1996	1997	1998	1999	2000
(8)	Inflow	Between Systems	Recharge of Applied Water	11,251	12,278	12,946	10,945	12,826	13,215
(9)	Inflow	Between Systems	Recharge of Precipitation	1,773	1,722	1,834	2,137	1,637	1,703
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	86,149	41,575	32,583	56,285	36,166	15,166
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596
(20)	Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*99,798*	*56,199*	*47,987*	*69,992*	*51,253*	*30,709*
(3)	Outflow	Between Systems	Groundwater Extraction	35,592	41,037	42,916	32,854	43,259	44,735
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir	-	-	-	-	-	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*35,592*	*41,037*	*42,916*	*32,854*	*43,259*	*44,735*
(31)	Storage Change	**(28)-(30)**	Change in Groundwater Storage	64,206	15,162	5,071	37,138	7,994	(14,026)

TOTAL BASIN WATER BUDGET

item	Flow Type	Origin/ Destination	Component	1995	1996	1997	1998	1999	2000
(1)	Inflow	Into Basin	Precipitation on Land System	192,248	183,776	171,871	229,110	146,533	128,140
(14)	Inflow	Into Basin	Precipitation on Reservoirs	704	673	630	840	537	470
(13)	Inflow	Into Basin	Stream Inflow	912,444	780,720	614,680	832,300	691,739	240,124
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*1,105,397*	*965,170*	*787,182*	*1,062,250*	*838,809*	*368,734*
(5)	Outflow	Out of Basin	Evapotranspiration	143,128	150,803	159,397	151,378	152,590	157,889
(24)	Outflow	Out of Basin	Stream Evaporation	340	369	388	340	379	390
(23)	Outflow	Out of Basin	Reservoir Evaporation	625	692	729	619	720	736
(19)	Outflow	Out of Basin	Conveyance Evaporation	41	44	46	42	45	47
(18)	Outflow	Out of Basin	Stream Outflow	897,057	798,101	621,549	872,733	677,081	223,698
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*1,041,192*	*950,008*	*782,111*	*1,025,112*	*830,815*	*382,760*
(34)	Storage Change	**(32)-(33)**	Change in Total System Storage	64,206	15,162	5,071	37,138	7,994	(14,026)

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2001	2002	2003	2004	2005	2006	2007
(1)	Inflow	Into Basin	Precipitation on Land System	79,296	109,976	136,611	136,687	147,525	190,721	99,291
(2)	Inflow	Between Systems	Surface Water Delivery	80,992	80,604	75,245	78,776	70,606	72,295	78,989
(3)	Inflow	Between Systems	Groundwater Extraction	49,626	48,753	44,131	47,093	40,332	40,960	48,745
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*209,913*	*239,333*	*255,987*	*262,556*	*258,462*	*303,976*	*227,025*
(5)	Outflow	Out of Basin	Evapotranspiration	152,585	153,349	151,547	153,751	149,036	151,973	156,935
(6)	Outflow	Between Systems	Runoff	36,368	65,156	84,903	88,396	91,011	133,210	49,352
(7)	Outflow	Between Systems	Return Flow	5,583	5,482	4,956	5,293	4,524	4,593	5,485
(8)	Outflow	Between Systems	Recharge of Applied Water	14,089	14,001	13,030	13,667	12,197	12,475	13,755
(9)	Outflow	Between Systems	Recharge of Precipitation	1,288	1,345	1,551	1,449	1,695	1,725	1,498
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*209,913*	*239,333*	*255,987*	*262,556*	*258,462*	*303,976*	*227,025*
(12)	Storage Change	**(4)-(11)**	Change in Land System Storage	-	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2001	2002	2003	2004	2005	2006	2007
(13)	Inflow	Into Basin	Stream Inflow	100,742	153,035	219,963	295,581	381,347	735,770	127,762
(14)	Inflow	Into Basin	Precipitation on Reservoirs	291	403	501	501	541	699	364
(6)	Inflow	Between Systems	Runoff	36,368	65,156	84,903	88,396	91,011	133,210	49,352
(7)	Inflow	Between Systems	Return Flow	5,583	5,482	4,956	5,293	4,524	4,593	5,485
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*142,983*	*224,076*	*310,322*	*389,772*	*477,422*	*874,271*	*182,963*
(18)	Outflow	Out of Basin	Stream Outflow	51,472	130,528	219,088	291,439	383,378	762,028	92,199
(19)	Outflow	Out of Basin	Conveyance Evaporation	48	48	45	46	43	45	47
(20)	Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(2)	Outflow	Between Systems	Surface Water Delivery	80,992	80,604	75,245	78,776	70,606	72,295	78,989
(21)	Outflow	Between Systems	Stream Loss to Groundwater	8,684	11,116	14,228	17,745	21,733	38,213	9,941
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	763	756	711	747	675	694	762
(24)	Outflow	Out of Basin	Stream Evaporation	400	400	380	395	364	372	402
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*142,983*	*224,076*	*310,322*	*389,772*	*477,422*	*874,271*	*182,963*
(26)	Storage Change	**(17)-(25)**	Change in Surface Water Storage	-	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2001	2002	2003	2004	2005	2006	2007
(8)	Inflow	Between Systems	Recharge of Applied Water	14,089	14,001	13,030	13,667	12,197	12,475	13,755
(9)	Inflow	Between Systems	Recharge of Precipitation	1,288	1,345	1,551	1,449	1,695	1,725	1,498
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	8,684	11,116	14,228	17,745	21,733	38,213	9,941
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596	596
(20)	Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*24,686*	*27,086*	*29,435*	*33,485*	*36,249*	*53,038*	*25,818*
(3)	Outflow	Between Systems	Groundwater Extraction	49,626	48,753	44,131	47,093	40,332	40,960	48,745
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir	-	-	-	-	-	-	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*49,626*	*48,753*	*44,131*	*47,093*	*40,332*	*40,960*	*48,745*
(31)	Storage Change	**(28)-(30)**	Change in Groundwater Storage	(24,940)	(21,666)	(14,696)	(13,608)	(4,082)	12,079	(22,927)

TOTAL BASIN WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2001	2002	2003	2004	2005	2006	2007
(1)	Inflow	Into Basin	Precipitation on Land System	79,296	109,976	136,611	136,687	147,525	190,721	99,291
(14)	Inflow	Into Basin	Precipitation on Reservoirs	291	403	501	501	541	699	364
(13)	Inflow	Into Basin	Stream Inflow	100,742	153,035	219,963	295,581	381,347	735,770	127,762
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*180,328*	*263,415*	*357,075*	*432,770*	*529,413*	*927,191*	*227,418*
(5)	Outflow	Out of Basin	Evapotranspiration	152,585	153,349	151,547	153,751	149,036	151,973	156,935
(24)	Outflow	Out of Basin	Stream Evaporation	400	400	380	395	364	372	402
(23)	Outflow	Out of Basin	Reservoir Evaporation	763	756	711	747	675	694	762
(19)	Outflow	Out of Basin	Conveyance Evaporation	48	48	45	46	43	45	47
(18)	Outflow	Out of Basin	Stream Outflow	51,472	130,528	219,088	291,439	383,378	762,028	92,199
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*205,269*	*285,081*	*371,772*	*446,379*	*533,495*	*915,112*	*250,345*
(34)	Storage Change	**(32)-(33)**	Change in Total System Storage	(24,940)	(21,666)	(14,696)	(13,608)	(4,082)	12,079	(22,927)

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2008	2009	2010	2011	2012	2013	2014
(1)	Inflow	Into Basin	Precipitation on Land System	97,459	114,173	120,660	167,215	93,491	126,995	88,759
(2)	Inflow	Between Systems	Surface Water Delivery	78,709	78,245	71,749	68,856	81,443	78,026	85,157
(3)	Inflow	Between Systems	Groundwater Extraction	47,716	46,430	41,387	38,575	49,850	46,719	54,126
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*223,885*	*238,849*	*233,797*	*274,646*	*224,784*	*251,740*	*228,042*
(5)	Outflow	Out of Basin	Evapotranspiration	151,305	156,057	151,911	146,988	154,515	161,099	159,338
(6)	Outflow	Between Systems	Runoff	52,178	62,460	63,110	109,739	49,166	70,144	46,463
(7)	Outflow	Between Systems	Return Flow	5,366	5,217	4,644	4,323	5,608	5,251	6,098
(8)	Outflow	Between Systems	Recharge of Applied Water	13,678	13,564	12,406	11,872	14,165	13,540	14,874
(9)	Outflow	Between Systems	Recharge of Precipitation	1,358	1,551	1,727	1,724	1,330	1,706	1,269
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*223,885*	*238,849*	*233,797*	*274,646*	*224,784*	*251,740*	*228,042*
(12)	Storage Change	(4)-(11)	Change in Land System Storage	-	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2008	2009	2010	2011	2012	2013	2014
(13)	Inflow	Into Basin	Stream Inflow	240,456	143,169	103,605	629,359	125,535	142,221	52,739
(14)	Inflow	Into Basin	Precipitation on Reservoirs	357	418	442	613	343	465	325
(6)	Inflow	Between Systems	Runoff	52,178	62,460	63,110	109,739	49,166	70,144	46,463
(7)	Inflow	Between Systems	Return Flow	5,366	5,217	4,644	4,323	5,608	5,251	6,098
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*298,356*	*211,263*	*171,801*	*744,034*	*180,651*	*218,081*	*105,625*
(18)	Outflow	Out of Basin	Stream Outflow	202,668	120,562	89,515	640,247	87,552	127,602	12,117
(19)	Outflow	Out of Basin	Conveyance Evaporation	46	46	44	42	47	47	49
(20)	Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(2)	Outflow	Between Systems	Surface Water Delivery	78,709	78,245	71,749	68,856	81,443	78,026	85,157
(21)	Outflow	Between Systems	Stream Loss to Groundwater	15,181	10,657	8,818	33,265	9,837	10,613	6,452
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	737	736	684	648	748	766	802
(24)	Outflow	Out of Basin	Stream Evaporation	391	393	368	352	401	403	423
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*298,356*	*211,263*	*171,801*	*744,034*	*180,651*	*218,081*	*105,625*
(26)	Storage Change	(17)-(25)	Change in Surface Water Storage	-	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2008	2009	2010	2011	2012	2013	2014
(8)	Inflow	Between Systems	Recharge of Applied Water	13,678	13,564	12,406	11,872	14,165	13,540	14,874
(9)	Inflow	Between Systems	Recharge of Precipitation	1,358	1,551	1,727	1,724	1,330	1,706	1,269
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	15,181	10,657	8,818	33,265	9,837	10,613	6,452
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596	596
(20)	Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*30,842*	*26,398*	*23,575*	*47,486*	*25,957*	*26,484*	*23,220*
(3)	Outflow	Between Systems	Groundwater Extraction	47,716	46,430	41,387	38,575	49,850	46,719	54,126
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir	-	-	-	-	-	-	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*47,716*	*46,430*	*41,387*	*38,575*	*49,850*	*46,719*	*54,126*
(31)	Storage Change	(28)-(30)	Change in Groundwater Storage	(16,874)	(20,033)	(17,812)	8,910	(23,893)	(20,235)	(30,907)

TOTAL BASIN WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2008	2009	2010	2011	2012	2013	2014
(1)	Inflow	Into Basin	Precipitation on Land System	97,459	114,173	120,660	167,215	93,491	126,995	88,759
(14)	Inflow	Into Basin	Precipitation on Reservoirs	357	418	442	613	343	465	325
(13)	Inflow	Into Basin	Stream Inflow	240,456	143,169	103,605	629,359	125,535	142,221	52,739
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*338,273*	*257,761*	*224,709*	*797,188*	*219,369*	*269,682*	*141,824*
(5)	Outflow	Out of Basin	Evapotranspiration	151,305	156,057	151,911	146,988	154,515	161,099	159,338
(24)	Outflow	Out of Basin	Stream Evaporation	391	393	368	352	401	403	423
(23)	Outflow	Out of Basin	Reservoir Evaporation	737	736	684	648	748	766	802
(19)	Outflow	Out of Basin	Conveyance Evaporation	46	46	44	42	47	47	49
(18)	Outflow	Out of Basin	Stream Outflow	202,668	120,562	89,515	640,247	87,552	127,602	12,117
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*355,147*	*277,794*	*242,521*	*788,277*	*243,262*	*289,917*	*172,731*
(34)	Storage Change	(32)-(33)	Change in Total System Storage	(16,874)	(20,033)	(17,812)	8,910	(23,893)	(20,235)	(30,907)

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2015	2016	2017	2018
(1)	Inflow	Into Basin	Precipitation on Land System	129,361	160,423	201,559	139,969
(2)	Inflow	Between Systems	Surface Water Delivery	80,035	78,452	75,027	77,947
(3)	Inflow	Between Systems	Groundwater Extraction	47,485	45,590	42,392	46,930
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*256,881*	*284,465*	*318,977*	*264,846*
(5)	Outflow	Out of Basin	Evapotranspiration	161,258	158,534	159,998	153,469
(6)	Outflow	Between Systems	Runoff	74,778	105,600	139,423	91,100
(7)	Outflow	Between Systems	Return Flow	5,336	5,118	4,753	5,276
(8)	Outflow	Between Systems	Recharge of Applied Water	13,872	13,568	12,939	13,535
(9)	Outflow	Between Systems	Recharge of Precipitation	1,637	1,645	1,864	1,466
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*256,881*	*284,465*	*318,977*	*264,846*
(12)	Storage Change	**(4)-(11)**	Change in Land System Storage	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2015	2016	2017	2018
(13)	Inflow	Into Basin	Stream Inflow	82,881	374,311	809,028	243,145
(14)	Inflow	Into Basin	Precipitation on Reservoirs	474	588	739	513
(6)	Inflow	Between Systems	Runoff	74,778	105,600	139,423	91,100
(7)	Inflow	Between Systems	Return Flow	5,336	5,118	4,753	5,276
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*163,468*	*485,618*	*953,943*	*340,034*
(18)	Outflow	Out of Basin	Stream Outflow	73,721	383,946	827,869	244,988
(19)	Outflow	Out of Basin	Conveyance Evaporation	47	47	48	47
(20)	Outflow	Between Systems	Conveyance Seepage	27	27	27	27
(2)	Outflow	Between Systems	Surface Water Delivery	80,035	78,452	75,027	77,947
(21)	Outflow	Between Systems	Stream Loss to Groundwater	7,854	21,405	49,248	15,306
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	778	746	737	730
(24)	Outflow	Out of Basin	Stream Evaporation	409	398	391	392
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*163,468*	*485,618*	*953,943*	*340,034*
(26)	Storage Change	**(17)-(25)**	Change in Surface Water Storage	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2015	2016	2017	2018
(8)	Inflow	Between Systems	Recharge of Applied Water	13,872	13,568	12,939	13,535
(9)	Inflow	Between Systems	Recharge of Precipitation	1,637	1,645	1,864	1,466
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	7,854	21,405	49,248	15,306
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596
(20)	Inflow	Between Systems	Conveyance Seepage	27	27	27	27
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*23,988*	*37,242*	*64,675*	*30,932*
(3)	Outflow	Between Systems	Groundwater Extraction	47,485	45,590	42,392	46,930
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir	-	-	-	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*47,485*	*45,590*	*42,392*	*46,930*
(31)	Storage Change	**(28)-(30)**	Change in Groundwater Storage	(23,497)	(8,348)	22,283	(15,998)

TOTAL BASIN WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2015	2016	2017	2018
(1)	Inflow	Into Basin	Precipitation on Land System	129,361	160,423	201,559	139,969
(14)	Inflow	Into Basin	Precipitation on Reservoirs	474	588	739	513
(13)	Inflow	Into Basin	Stream Inflow	82,881	374,311	809,028	243,145
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*212,717*	*535,323*	*1,011,326*	*383,627*
(5)	Outflow	Out of Basin	Evapotranspiration	161,258	158,534	159,998	153,469
(24)	Outflow	Out of Basin	Stream Evaporation	409	398	391	392
(23)	Outflow	Out of Basin	Reservoir Evaporation	778	746	737	730
(19)	Outflow	Out of Basin	Conveyance Evaporation	47	47	48	47
(18)	Outflow	Out of Basin	Stream Outflow	73,721	383,946	827,869	244,988
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*236,214*	*543,670*	*989,042*	*399,625*
(34)	Storage Change	**(32)-(33)**	Change in Total System Storage	(23,497)	(8,348)	22,283	(15,998)

LAND SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	Average (2019-2068)
Inflow	Into Basin	Precipitation on Land System	143,208
Inflow	Between Systems	Surface Water Delivery	77,048
Inflow	Between Systems	Groundwater Extraction	45,162
Inflow	*(1)+(2)+(3)*	*Total Inflow*	*265,418*
Outflow	Out of Basin	Evapotranspiration	156,873
Outflow	Between Systems	Runoff	88,493
Outflow	Between Systems	Return Flow	5,072
Outflow	Between Systems	Recharge of Applied Water	13,339
Outflow	Between Systems	Recharge of Precipitation	1,641
Outflow	Between Systems	Managed Aquifer Recharge	-
Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*265,418*
Storage Change	(4)-(11)	Change in Land System Storage	-

SURFACE WATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	Average (2019-2068)
Inflow	Into Basin	Stream Inflow	430,242
Inflow	Into Basin	Precipitation on Reservoirs	525
Inflow	Between Systems	Runoff	88,493
Inflow	Between Systems	Return Flow	5,072
Inflow	Between Systems	Stream Gain from Groundwater	-
Inflow	Between Systems	Reservoir Gain from Groundwater	-
Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*524,331*
Outflow	Out of Basin	Stream Outflow	418,003
Outflow	Out of Basin	Conveyance Evaporation	47
Outflow	Between Systems	Conveyance Seepage	27
Outflow	Between Systems	Surface Water Delivery	77,048
Outflow	Between Systems	Stream Loss to Groundwater	27,476
Outflow	Between Systems	Reservoir Loss to Groundwater	596
Outflow	Out of Basin	Reservoir Evaporation	741
Outflow	Out of Basin	Stream Evaporation	393
Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*524,331*
Storage Change	(17)-(25)	Change in Surface Water Storage	-

GROUNDWATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	Average (2019-2068)
Inflow	Between Systems	Recharge of Applied Water	13,339
Inflow	Between Systems	Recharge of Precipitation	1,641
Inflow	Between Systems	Managed Aquifer Recharge	-
Inflow	Between Systems	Groundwater Gain from Stream	27,476
Inflow	Between Systems	Groundwater Gain from Reservoir	596
Inflow	Between Systems	Conveyance Seepage	27
Inflow	Into Basin	Subsurface Inflow	1
Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*43,081*
Outflow	Between Systems	Groundwater Extraction	45,162
Outflow	Between Systems	Groundwater Loss to Stream	-
Outflow	Between Systems	Groundwater Loss to Reservoir s	-
Outflow	Out of Basin	Subsurface Outflow	-
Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*45,162*
Storage Change	(28)-(30)	Change in Groundwater Storage	(2,080)

TOTAL BASIN WATER BUDGET

Flow Type	Origin/ Destination	Component	Average (2019-2068)
Inflow	Into Basin	Precipitation on Land System	143,208
Inflow	Into Basin	Precipitation on Reservoirs	525
Inflow	Into Basin	Stream Inflow	430,242
Inflow	Into Basin	Subsurface Inflow	1
Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*573,975*
Outflow	Out of Basin	Evapotranspiration	156,873
Outflow	Out of Basin	Stream Evaporation	393
Outflow	Out of Basin	Reservoir Evaporation	741
Outflow	Out of Basin	Conveyance Evaporation	47
Outflow	Out of Basin	Stream Outflow	418,003
Outflow	Out of Basin	Subsurface Outflow	-
Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*576,056*
Storage Change	(32)-(33)	Change in Total System Storage	(2,080)

LAND SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2019	2020	2021	2022	2023	2024
Inflow	Into Basin	Precipitation on Land System	124,782	214,533	111,731	190,645	87,538	177,442
Inflow	Between Systems	Surface Water Delivery	82,510	73,612	82,236	77,699	85,805	79,223
Inflow	Between Systems	Groundwater Extraction	49,372	40,325	49,679	45,952	53,502	46,213
Inflow	*(1)+(2)+(3)*	*Total Inflow*	*256,664*	*328,470*	*243,646*	*314,297*	*226,845*	*302,878*
Outflow	Out of Basin	Evapotranspiration	161,959	157,895	160,313	160,477	160,427	158,375
Outflow	Between Systems	Runoff	73,298	151,514	61,974	133,477	44,140	124,005
Outflow	Between Systems	Return Flow	5,550	4,516	5,586	5,162	6,024	5,189
Outflow	Between Systems	Recharge of Applied Water	14,312	12,655	14,281	13,465	14,952	13,706
Outflow	Between Systems	Recharge of Precipitation	1,545	1,891	1,493	1,715	1,302	1,603
Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-
Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*256,664*	*328,470*	*243,646*	*314,297*	*226,845*	*302,878*
Storage Change	(4)-(11)	Change in Land System Storage	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2019	2020	2021	2022	2023	2024
Inflow	Into Basin	Stream Inflow	218,123	697,723	307,955	767,905	183,806	502,177
Inflow	Into Basin	Precipitation on Reservoirs	457	786	409	699	321	650
Inflow	Between Systems	Runoff	73,298	151,514	61,974	133,477	44,140	124,005
Inflow	Between Systems	Return Flow	5,550	4,516	5,586	5,162	6,024	5,189
Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-
Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-
Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*297,429*	*854,539*	*375,924*	*907,243*	*234,290*	*632,021*
Outflow	Out of Basin	Stream Outflow	198,898	742,701	273,501	787,992	134,030	523,627
Outflow	Out of Basin	Conveyance Evaporation	49	48	48	47	50	49
Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27
Outflow	Between Systems	Surface Water Delivery	82,510	73,612	82,236	77,699	85,805	79,223
Outflow	Between Systems	Stream Loss to Groundwater	14,143	36,444	18,320	39,708	12,547	27,351
Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596
Outflow	Out of Basin	Reservoir Evaporation	790	727	782	770	809	747
Outflow	Out of Basin	Stream Evaporation	416	383	414	403	426	400
Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*297,429*	*854,539*	*375,924*	*907,243*	*234,290*	*632,021*
Storage Change	(17)-(25)	Change in Surface Water Storage	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2019	2020	2021	2022	2023	2024
Inflow	Between Systems	Recharge of Applied Water	14,312	12,655	14,281	13,465	14,952	13,706
Inflow	Between Systems	Recharge of Precipitation	1,545	1,891	1,493	1,715	1,302	1,603
Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-
Inflow	Between Systems	Groundwater Gain from Stream	14,143	36,444	18,320	39,708	12,547	27,351
Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596
Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27
Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1
Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*30,624*	*51,614*	*34,718*	*55,512*	*29,425*	*43,285*
Outflow	Between Systems	Groundwater Extraction	49,372	40,325	49,679	45,952	53,502	46,213
Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-
Outflow	Between Systems	Groundwater Loss to Reservoir s	-	-	-	-	-	-
Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-
Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*49,372*	*40,325*	*49,679*	*45,952*	*53,502*	*46,213*
Storage Change	(28)-(30)	Change in Groundwater Storage	(18,748)	11,289	(14,961)	9,560	(24,077)	(2,928)

TOTAL BASIN WATER BUDGET

Flow Type	Origin/ Destination	Component	2019	2020	2021	2022	2023	2024
Inflow	Into Basin	Precipitation on Land System	124,782	214,533	111,731	190,645	87,538	177,442
Inflow	Into Basin	Precipitation on Reservoirs	457	786	409	699	321	650
Inflow	Into Basin	Stream Inflow	218,123	697,723	307,955	767,905	183,806	502,177
Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1
Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*343,363*	*913,043*	*420,096*	*959,249*	*271,665*	*680,269*
Outflow	Out of Basin	Evapotranspiration	161,959	157,895	160,313	160,477	160,427	158,375
Outflow	Out of Basin	Stream Evaporation	416	383	414	403	426	400
Outflow	Out of Basin	Reservoir Evaporation	790	727	782	770	809	747
Outflow	Out of Basin	Conveyance Evaporation	49	48	48	47	50	49
Outflow	Out of Basin	Stream Outflow	198,898	742,701	273,501	787,992	134,030	523,627
Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-
Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*362,111*	*901,754*	*435,058*	*949,689*	*295,742*	*683,197*
Storage Change	(32)-(33)	Change in Total System Storage	(18,748)	11,289	(14,961)	9,560	(24,077)	(2,928)

LAND SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2025	2026	2027	2028	2029	2030	2031
Inflow	Into Basin	Precipitation on Land System	133,558	164,010	182,632	204,764	123,866	115,700	185,913
Inflow	Between Systems	Surface Water Delivery	79,192	82,117	81,376	74,115	82,207	83,257	79,490
Inflow	Between Systems	Groundwater Extraction	46,615	48,324	47,544	41,095	48,483	49,808	45,707
Inflow	*(1)+(2)+(3)*	*Total Inflow*	*259,366*	*294,451*	*311,552*	*319,974*	*254,556*	*248,765*	*311,111*
Outflow	Out of Basin	Evapotranspiration	160,592	163,111	162,673	161,164	164,323	164,927	162,327
Outflow	Between Systems	Runoff	78,161	110,076	127,816	139,490	68,901	62,194	128,193
Outflow	Between Systems	Return Flow	5,236	5,429	5,339	4,604	5,447	5,599	5,130
Outflow	Between Systems	Recharge of Applied Water	13,715	14,217	14,078	12,757	14,236	14,440	13,730
Outflow	Between Systems	Recharge of Precipitation	1,662	1,618	1,644	1,958	1,649	1,605	1,732
Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*259,366*	*294,451*	*311,552*	*319,974*	*254,556*	*248,765*	*311,111*
Storage Change	**(4)-(11)**	Change in Land System Storage	-	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2025	2026	2027	2028	2029	2030	2031
Inflow	Into Basin	Stream Inflow	255,335	637,275	624,047	1,007,609	667,874	318,068	592,563
Inflow	Into Basin	Precipitation on Reservoirs	489	601	669	750	454	424	681
Inflow	Between Systems	Runoff	78,161	110,076	127,816	139,490	68,901	62,194	128,193
Inflow	Between Systems	Return Flow	5,236	5,429	5,339	4,604	5,447	5,599	5,130
Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-	-
Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-	-
Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*339,222*	*753,380*	*757,872*	*1,152,454*	*742,676*	*386,285*	*726,567*
Outflow	Out of Basin	Stream Outflow	242,296	635,748	641,606	941,819	623,530	282,329	613,664
Outflow	Out of Basin	Conveyance Evaporation	46	49	49	46	49	49	49
Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
Outflow	Between Systems	Surface Water Delivery	79,192	82,117	81,376	74,115	82,207	83,257	79,490
Outflow	Between Systems	Stream Loss to Groundwater	15,873	33,633	33,018	134,726	35,056	18,790	31,554
Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596	596
Outflow	Out of Basin	Reservoir Evaporation	783	792	785	733	793	811	778
Outflow	Out of Basin	Stream Evaporation	408	417	413	390	417	423	407
Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*339,222*	*753,380*	*757,872*	*1,152,454*	*742,676*	*386,285*	*726,567*
Storage Change	**(17)-(25)**	Change in Surface Water Storage	-	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2025	2026	2027	2028	2029	2030	2031
Inflow	Between Systems	Recharge of Applied Water	13,715	14,217	14,078	12,757	14,236	14,440	13,730
Inflow	Between Systems	Recharge of Precipitation	1,662	1,618	1,644	1,958	1,649	1,605	1,732
Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
Inflow	Between Systems	Groundwater Gain from Stream	15,873	33,633	33,018	134,726	35,056	18,790	31,554
Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596	596
Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*31,874*	*50,093*	*49,366*	*150,066*	*51,566*	*35,460*	*47,640*
Outflow	Between Systems	Groundwater Extraction	46,615	48,324	47,544	41,095	48,483	49,808	45,707
Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-	-
Outflow	Between Systems	Groundwater Loss to Reservoir s	-	-	-	-	-	-	-
Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*46,615*	*48,324*	*47,544*	*41,095*	*48,483*	*49,808*	*45,707*
Storage Change	**(28)-(30)**	Change in Groundwater Storage	(14,741)	1,769	1,822	108,971	3,083	(14,348)	1,933

TOTAL BASIN WATER BUDGET

Flow Type	Origin/ Destination	Component	2025	2026	2027	2028	2029	2030	2031
Inflow	Into Basin	Precipitation on Land System	133,558	164,010	182,632	204,764	123,866	115,700	185,913
Inflow	Into Basin	Precipitation on Reservoirs	489	601	669	750	454	424	681
Inflow	Into Basin	Stream Inflow	255,335	637,275	624,047	1,007,609	667,874	318,068	592,563
Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*389,384*	*801,886*	*807,348*	*1,213,124*	*792,195*	*434,193*	*779,158*
Outflow	Out of Basin	Evapotranspiration	160,592	163,111	162,673	161,164	164,323	164,927	162,327
Outflow	Out of Basin	Stream Evaporation	408	417	413	390	417	423	407
Outflow	Out of Basin	Reservoir Evaporation	783	792	785	733	793	811	778
Outflow	Out of Basin	Conveyance Evaporation	46	49	49	46	49	49	49
Outflow	Out of Basin	Stream Outflow	242,296	635,748	641,606	941,819	623,530	282,329	613,664
Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*404,125*	*800,117*	*805,527*	*1,104,153*	*789,112*	*448,540*	*777,226*
Storage Change	**(32)-(33)**	Change in Total System Storage	(14,741)	1,769	1,822	108,971	3,083	(14,348)	1,933

LAND SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2032	2033	2034	2035	2036	2037	2038	2039
Inflow	Into Basin	Precipitation on Land System	139,206	110,510	85,325	164,468	106,923	179,197	114,326	204,535
Inflow	Between Systems	Surface Water Delivery	79,545	79,582	82,522	77,244	81,768	78,012	81,900	76,749
Inflow	Between Systems	Groundwater Extraction	46,907	48,100	51,806	43,861	49,645	43,934	48,901	42,492
Inflow	*(1)+(2)+(3)*	*Total Inflow*	*265,658*	*238,192*	*219,653*	*285,573*	*238,337*	*301,143*	*245,127*	*323,776*
Outflow	Out of Basin	Evapotranspiration	162,112	159,554	157,350	163,976	159,997	166,332	163,172	165,607
Outflow	Between Systems	Runoff	82,807	57,826	40,736	101,461	57,051	114,498	60,644	138,214
Outflow	Between Systems	Return Flow	5,269	5,409	5,834	4,920	5,584	4,926	5,496	4,761
Outflow	Between Systems	Recharge of Applied Water	13,778	13,823	14,395	13,326	14,208	13,445	14,203	13,205
Outflow	Between Systems	Recharge of Precipitation	1,692	1,581	1,338	1,890	1,496	1,941	1,610	1,990
Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-	-
Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*265,658*	*238,192*	*219,653*	*285,573*	*238,337*	*301,143*	*245,127*	*323,776*
Storage Change	**(4)-(11)**	Change in Land System Storage	-	-	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2032	2033	2034	2035	2036	2037	2038	2039
Inflow	Into Basin	Stream Inflow	557,523	196,081	110,187	299,161	236,541	547,651	165,958	760,457
Inflow	Into Basin	Precipitation on Reservoirs	510	405	313	603	392	657	419	749
Inflow	Between Systems	Runoff	82,807	57,826	40,736	101,461	57,051	114,498	60,644	138,214
Inflow	Between Systems	Return Flow	5,269	5,409	5,834	4,920	5,584	4,926	5,496	4,761
Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-	-	-
Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-	-	-
Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*646,109*	*259,720*	*157,070*	*406,144*	*299,568*	*667,733*	*232,517*	*904,181*
Outflow	Out of Basin	Stream Outflow	534,796	165,138	63,542	309,163	200,936	558,396	137,030	786,222
Outflow	Out of Basin	Conveyance Evaporation	48	46	47	48	48	48	49	49
Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27	27
Outflow	Between Systems	Surface Water Delivery	79,545	79,582	82,522	77,244	81,768	78,012	81,900	76,749
Outflow	Between Systems	Stream Loss to Groundwater	29,925	13,118	9,124	17,911	14,999	29,466	11,717	39,361
Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596	596	596
Outflow	Out of Basin	Reservoir Evaporation	766	802	794	754	781	779	783	773
Outflow	Out of Basin	Stream Evaporation	404	411	416	400	412	408	414	403
Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*646,109*	*259,720*	*157,070*	*406,144*	*299,568*	*667,733*	*232,517*	*904,181*
Storage Change	**(17)-(25)**	Change in Surface Water Storage	-	-	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2032	2033	2034	2035	2036	2037	2038	2039
Inflow	Between Systems	Recharge of Applied Water	13,778	13,823	14,395	13,326	14,208	13,445	14,203	13,205
Inflow	Between Systems	Recharge of Precipitation	1,692	1,581	1,338	1,890	1,496	1,941	1,610	1,990
Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-	-
Inflow	Between Systems	Groundwater Gain from Stream	29,925	13,118	9,124	17,911	14,999	29,466	11,717	39,361
Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596	596	596
Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27	27
Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1	1
Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*46,020*	*29,146*	*25,481*	*33,752*	*31,328*	*45,477*	*28,156*	*55,180*
Outflow	Between Systems	Groundwater Extraction	46,907	48,100	51,806	43,861	49,645	43,934	48,901	42,492
Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-	-	-
Outflow	Between Systems	Groundwater Loss to Reservoir s	-	-	-	-	-	-	-	-
Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-	-
Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*46,907*	*48,100*	*51,806*	*43,861*	*49,645*	*43,934*	*48,901*	*42,492*
Storage Change	**(28)-(30)**	Change in Groundwater Storage	(888)	(18,954)	(26,325)	(10,109)	(18,317)	1,543	(20,745)	12,688

TOTAL BASIN WATER BUDGET

Flow Type	Origin/ Destination	Component	2032	2033	2034	2035	2036	2037	2038	2039
Inflow	Into Basin	Precipitation on Land System	139,206	110,510	85,325	164,468	106,923	179,197	114,326	204,535
Inflow	Into Basin	Precipitation on Reservoirs	510	405	313	603	392	657	419	749
Inflow	Into Basin	Stream Inflow	557,523	196,081	110,187	299,161	236,541	547,651	165,958	760,457
Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1	1
Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*697,240*	*306,996*	*195,825*	*464,232*	*343,856*	*727,506*	*280,703*	*965,743*
Outflow	Out of Basin	Evapotranspiration	162,112	159,554	157,350	163,976	159,997	166,332	163,172	165,607
Outflow	Out of Basin	Stream Evaporation	404	411	416	400	412	408	414	403
Outflow	Out of Basin	Reservoir Evaporation	766	802	794	754	781	779	783	773
Outflow	Out of Basin	Conveyance Evaporation	48	46	47	48	48	48	49	49
Outflow	Out of Basin	Stream Outflow	534,796	165,138	63,542	309,163	200,936	558,396	137,030	786,222
Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-	-
Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*698,127*	*325,950*	*222,150*	*474,341*	*362,174*	*725,963*	*301,449*	*953,054*
Storage Change	**(32)-(33)**	Change in Total System Storage	(888)	(18,954)	(26,325)	(10,109)	(18,317)	1,543	(20,745)	12,688

LAND SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2040	2041	2042	2043	2044	2045	2046	2047
Inflow	Into Basin	Precipitation on Land System	191,332	148,899	132,719	193,698	96,315	88,835	150,654	112,418
Inflow	Between Systems	Surface Water Delivery	74,947	68,516	76,750	74,262	78,850	85,952	72,061	72,399
Inflow	Between Systems	Groundwater Extraction	41,152	39,192	45,598	41,789	47,782	53,245	41,145	42,407
Inflow	*(1)+(2)+(3)*	*Total Inflow*	*307,432*	*256,607*	*255,067*	*309,749*	*222,946*	*228,032*	*263,860*	*227,224*
Outflow	Out of Basin	Evapotranspiration	163,789	146,344	152,399	160,318	155,136	159,362	151,287	148,958
Outflow	Between Systems	Runoff	124,132	92,329	82,737	130,033	47,265	46,439	93,806	59,374
Outflow	Between Systems	Return Flow	4,609	4,396	5,123	4,685	5,373	5,994	4,615	4,761
Outflow	Between Systems	Recharge of Applied Water	12,886	11,840	13,309	12,802	13,701	14,966	12,446	12,539
Outflow	Between Systems	Recharge of Precipitation	2,016	1,697	1,499	1,910	1,471	1,272	1,705	1,591
Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-	-
Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*307,432*	*256,607*	*255,067*	*309,749*	*222,946*	*228,032*	*263,860*	*227,224*
Storage Change	**(4)-(11)**	Change in Land System Storage	-	-	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2040	2041	2042	2043	2044	2045	2046	2047
Inflow	Into Basin	Stream Inflow	697,741	808,462	310,960	878,565	161,807	162,980	390,854	133,594
Inflow	Into Basin	Precipitation on Reservoirs	701	546	486	710	353	326	552	412
Inflow	Between Systems	Runoff	124,132	92,329	82,737	130,033	47,265	46,439	93,806	59,374
Inflow	Between Systems	Return Flow	4,609	4,396	5,123	4,685	5,373	5,994	4,615	4,761
Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-	-	-
Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-	-	-
Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*827,183*	*905,732*	*399,306*	*#######*	*214,798*	*215,738*	*489,827*	*198,142*
Outflow	Out of Basin	Stream Outflow	713,968	786,443	302,274	865,544	122,626	116,338	393,854	113,802
Outflow	Out of Basin	Conveyance Evaporation	47	44	46	45	45	50	45	44
Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27	27
Outflow	Between Systems	Surface Water Delivery	74,947	68,516	76,750	74,262	78,850	85,952	72,061	72,399
Outflow	Between Systems	Stream Loss to Groundwater	36,445	49,085	18,460	72,401	11,524	11,579	22,175	10,212
Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596	596	596
Outflow	Out of Basin	Reservoir Evaporation	757	667	760	727	736	777	697	693
Outflow	Out of Basin	Stream Evaporation	395	354	393	389	393	420	371	368
Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*827,183*	*905,732*	*399,306*	*#######*	*214,798*	*215,738*	*489,827*	*198,142*
Storage Change	**(17)-(25)**	Change in Surface Water Storage	-	-	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2040	2041	2042	2043	2044	2045	2046	2047
Inflow	Between Systems	Recharge of Applied Water	12,886	11,840	13,309	12,802	13,701	14,966	12,446	12,539
Inflow	Between Systems	Recharge of Precipitation	2,016	1,697	1,499	1,910	1,471	1,272	1,705	1,591
Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-	-
Inflow	Between Systems	Groundwater Gain from Stream	36,445	49,085	18,460	72,401	11,524	11,579	22,175	10,212
Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596	596	596
Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27	27
Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1	1
Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*51,971*	*63,247*	*33,892*	*87,738*	*27,321*	*28,441*	*36,950*	*24,967*
Outflow	Between Systems	Groundwater Extraction	41,152	39,192	45,598	41,789	47,782	53,245	41,145	42,407
Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-	-	-
Outflow	Between Systems	Groundwater Loss to Reservoir s	-	-	-	-	-	-	-	-
Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-	-
Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*41,152*	*39,192*	*45,598*	*41,789*	*47,782*	*53,245*	*41,145*	*42,407*
Storage Change	**(28)-(30)**	Change in Groundwater Storage	10,819	24,055	(11,706)	45,949	(20,461)	(24,804)	(4,194)	(17,440)

TOTAL BASIN WATER BUDGET

Flow Type	Origin/ Destination	Component	2040	2041	2042	2043	2044	2045	2046	2047
Inflow	Into Basin	Precipitation on Land System	191,332	148,899	132,719	193,698	96,315	88,835	150,654	112,418
Inflow	Into Basin	Precipitation on Reservoirs	701	546	486	710	353	326	552	412
Inflow	Into Basin	Stream Inflow	697,741	808,462	310,960	878,565	161,807	162,980	390,854	133,594
Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1	1
Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*889,774*	*957,907*	*444,166*	*#######*	*258,475*	*252,142*	*542,060*	*246,425*
Outflow	Out of Basin	Evapotranspiration	163,789	146,344	152,399	160,318	155,136	159,362	151,287	148,958
Outflow	Out of Basin	Stream Evaporation	395	354	393	389	393	420	371	368
Outflow	Out of Basin	Reservoir Evaporation	757	667	760	727	736	777	697	693
Outflow	Out of Basin	Conveyance Evaporation	47	44	46	45	45	50	45	44
Outflow	Out of Basin	Stream Outflow	713,968	786,443	302,274	865,544	122,626	116,338	393,854	113,802
Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-	-
Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*878,956*	*933,852*	*455,872*	*#######*	*278,936*	*276,946*	*546,255*	*263,865*
Storage Change	**(32)-(33)**	Change in Total System Storage	10,819	24,055	(11,706)	45,949	(20,461)	(24,804)	(4,194)	(17,440)

LAND SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2048	2049	2050	2051	2052	2053	2054	2055
Inflow	Into Basin	Precipitation on Land System	108,526	75,556	184,082	104,481	192,248	183,776	171,871	229,110
Inflow	Between Systems	Surface Water Delivery	77,619	82,827	70,993	76,177	65,439	70,985	74,958	64,027
Inflow	Between Systems	Groundwater Extraction	46,745	52,036	38,861	45,730	35,592	41,037	42,916	32,854
Inflow	*(1)+(2)+(3)*	*Total Inflow*	*232,890*	*210,419*	*293,936*	*226,387*	*293,278*	*295,799*	*289,744*	*325,992*
Outflow	Out of Basin	Evapotranspiration	153,216	155,932	156,238	153,369	143,128	150,803	159,397	151,378
Outflow	Between Systems	Runoff	59,468	32,898	119,194	53,112	133,143	126,391	110,752	157,864
Outflow	Between Systems	Return Flow	5,255	5,860	4,351	5,140	3,983	4,605	4,815	3,667
Outflow	Between Systems	Recharge of Applied Water	13,479	14,449	12,207	13,226	11,251	12,278	12,946	10,945
Outflow	Between Systems	Recharge of Precipitation	1,472	1,280	1,947	1,541	1,773	1,722	1,834	2,137
Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-	-
Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*232,890*	*210,419*	*293,936*	*226,387*	*293,278*	*295,799*	*289,744*	*325,992*
Storage Change	**(4)-(11)**	Change in Land System Storage	-	-	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2048	2049	2050	2051	2052	2053	2054	2055
Inflow	Into Basin	Stream Inflow	263,663	76,254	602,999	167,393	912,444	780,720	614,680	832,300
Inflow	Into Basin	Precipitation on Reservoirs	398	277	675	383	704	673	630	840
Inflow	Between Systems	Runoff	59,468	32,898	119,194	53,112	133,143	126,391	110,752	157,864
Inflow	Between Systems	Return Flow	5,255	5,860	4,351	5,140	3,983	4,605	4,815	3,667
Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-	-	-
Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-	-	-
Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*328,784*	*115,288*	*727,219*	*226,028*	*1,050,275*	*912,389*	*730,877*	*994,671*
Outflow	Out of Basin	Stream Outflow	233,159	23,084	622,453	136,286	897,057	798,101	621,549	872,733
Outflow	Out of Basin	Conveyance Evaporation	47	48	46	46	41	44	46	42
Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27	27
Outflow	Between Systems	Surface Water Delivery	77,619	82,827	70,993	76,177	65,439	70,985	74,958	64,027
Outflow	Between Systems	Stream Loss to Groundwater	16,260	7,546	32,039	11,784	86,149	41,575	32,583	56,285
Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596	596	596
Outflow	Out of Basin	Reservoir Evaporation	693	754	693	726	625	692	729	619
Outflow	Out of Basin	Stream Evaporation	382	406	370	386	340	369	388	340
Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*328,784*	*115,288*	*727,219*	*226,028*	*1,050,275*	*912,389*	*730,877*	*994,671*
Storage Change	**(17)-(25)**	Change in Surface Water Storage	-	-	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2048	2049	2050	2051	2052	2053	2054	2055
Inflow	Between Systems	Recharge of Applied Water	13,479	14,449	12,207	13,226	11,251	12,278	12,946	10,945
Inflow	Between Systems	Recharge of Precipitation	1,472	1,280	1,947	1,541	1,773	1,722	1,834	2,137
Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-	-
Inflow	Between Systems	Groundwater Gain from Stream	16,260	7,546	32,039	11,784	86,149	41,575	32,583	56,285
Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596	596	596
Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27	27
Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1	1
Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*31,836*	*23,899*	*46,817*	*27,175*	*99,798*	*56,199*	*47,987*	*69,992*
Outflow	Between Systems	Groundwater Extraction	46,745	52,036	38,861	45,730	35,592	41,037	42,916	32,854
Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-	-	-
Outflow	Between Systems	Groundwater Loss to Reservoir s	-	-	-	-	-	-	-	-
Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-	-
Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*46,745*	*52,036*	*38,861*	*45,730*	*35,592*	*41,037*	*42,916*	*32,854*
Storage Change	**(28)-(30)**	Change in Groundwater Storage	(14,909)	(28,137)	7,956	(18,555)	64,206	15,162	5,071	37,138

TOTAL BASIN WATER BUDGET

Flow Type	Origin/ Destination	Component	2048	2049	2050	2051	2052	2053	2054	2055
Inflow	Into Basin	Precipitation on Land System	108,526	75,556	184,082	104,481	192,248	183,776	171,871	229,110
Inflow	Into Basin	Precipitation on Reservoirs	398	277	675	383	704	673	630	840
Inflow	Into Basin	Stream Inflow	263,663	76,254	602,999	167,393	912,444	780,720	614,680	832,300
Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1	1
Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*372,587*	*152,087*	*787,756*	*272,257*	*1,105,397*	*965,170*	*787,182*	*#######*
Outflow	Out of Basin	Evapotranspiration	153,216	155,932	156,238	153,369	143,128	150,803	159,397	151,378
Outflow	Out of Basin	Stream Evaporation	382	406	370	386	340	369	388	340
Outflow	Out of Basin	Reservoir Evaporation	693	754	693	726	625	692	729	619
Outflow	Out of Basin	Conveyance Evaporation	47	48	46	46	41	44	46	42
Outflow	Out of Basin	Stream Outflow	233,159	23,084	622,453	136,286	897,057	798,101	621,549	872,733
Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-	-
Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*387,496*	*180,224*	*779,799*	*290,812*	*1,041,192*	*950,008*	*782,111*	*#######*
Storage Change	**(32)-(33)**	Change in Total System Storage	(14,909)	(28,137)	7,956	(18,555)	64,206	15,162	5,07[illegible]	37,138

LAND SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2056	2057	2058	2059	2060	2061	2062	2063
Inflow	Into Basin	Precipitation on Land System	146,533	128,140	79,296	109,976	136,611	136,687	147,525	190,721
Inflow	Between Systems	Surface Water Delivery	74,092	76,327	80,992	80,604	75,245	78,776	70,606	72,295
Inflow	Between Systems	Groundwater Extraction	43,259	44,735	49,626	48,753	44,131	47,093	40,332	40,960
Inflow	*(1)+(2)+(3)*	*Total Inflow*	*263,883*	*249,201*	*209,913*	*239,333*	*255,987*	*262,556*	*258,462*	*303,976*
Outflow	Out of Basin	Evapotranspiration	152,590	157,889	152,585	153,349	151,547	153,751	149,036	151,973
Outflow	Between Systems	Runoff	91,975	71,370	36,368	65,156	84,903	88,396	91,011	133,210
Outflow	Between Systems	Return Flow	4,857	5,024	5,583	5,482	4,956	5,293	4,524	4,593
Outflow	Between Systems	Recharge of Applied Water	12,826	13,215	14,089	14,001	13,030	13,667	12,197	12,475
Outflow	Between Systems	Recharge of Precipitation	1,637	1,703	1,288	1,345	1,551	1,449	1,695	1,725
Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-	-
Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*263,883*	*249,201*	*209,913*	*239,333*	*255,987*	*262,556*	*258,462*	*303,976*
Storage Change	**(4)-(11)**	Change in Land System Storage	-	-	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2056	2057	2058	2059	2060	2061	2062	2063
Inflow	Into Basin	Stream Inflow	691,739	240,124	100,742	153,035	219,963	295,581	381,347	735,770
Inflow	Into Basin	Precipitation on Reservoirs	537	470	291	403	501	501	541	699
Inflow	Between Systems	Runoff	91,975	71,370	36,368	65,156	84,903	88,396	91,011	133,210
Inflow	Between Systems	Return Flow	4,857	5,024	5,583	5,482	4,956	5,293	4,524	4,593
Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-	-	-
Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-	-	-
Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*789,107*	*316,987*	*142,983*	*224,076*	*310,322*	*389,772*	*477,422*	*874,271*
Outflow	Out of Basin	Stream Outflow	677,081	223,698	51,472	130,528	219,088	291,439	383,378	762,028
Outflow	Out of Basin	Conveyance Evaporation	45	47	48	48	45	46	43	45
Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27	27
Outflow	Between Systems	Surface Water Delivery	74,092	76,327	80,992	80,604	75,245	78,776	70,606	72,295
Outflow	Between Systems	Stream Loss to Groundwater	36,166	15,166	8,684	11,116	14,228	17,745	21,733	38,213
Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596	596	596
Outflow	Out of Basin	Reservoir Evaporation	720	736	763	756	711	747	675	694
Outflow	Out of Basin	Stream Evaporation	379	390	400	400	380	395	364	372
Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*789,107*	*316,987*	*142,983*	*224,076*	*310,322*	*389,772*	*477,422*	*874,271*
Storage Change	**(17)-(25)**	Change in Surface Water Storage	-	-	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2056	2057	2058	2059	2060	2061	2062	2063
Inflow	Between Systems	Recharge of Applied Water	12,826	13,215	14,089	14,001	13,030	13,667	12,197	12,475
Inflow	Between Systems	Recharge of Precipitation	1,637	1,703	1,288	1,345	1,551	1,449	1,695	1,725
Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-	-
Inflow	Between Systems	Groundwater Gain from Stream	36,166	15,166	8,684	11,116	14,228	17,745	21,733	38,213
Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596	596	596
Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27	27
Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1	1
Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*51,253*	*30,709*	*24,686*	*27,086*	*29,435*	*33,485*	*36,249*	*53,038*
Outflow	Between Systems	Groundwater Extraction	43,259	44,735	49,626	48,753	44,131	47,093	40,332	40,960
Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-	-	-
Outflow	Between Systems	Groundwater Loss to Reservoir s	-	-	-	-	-	-	-	-
Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-	-
Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*43,259*	*44,735*	*49,626*	*48,753*	*44,131*	*47,093*	*40,332*	*40,960*
Storage Change	**(28)-(30)**	Change in Groundwater Storage	7,994	(14,026)	(24,940)	(21,666)	(14,696)	(13,608)	(4,082)	12,079

TOTAL BASIN WATER BUDGET

Flow Type	Origin/ Destination	Component	2056	2057	2058	2059	2060	2061	2062	2063
Inflow	Into Basin	Precipitation on Land System	146,533	128,140	79,296	109,976	136,611	136,687	147,525	190,721
Inflow	Into Basin	Precipitation on Reservoirs	537	470	291	403	501	501	541	699
Inflow	Into Basin	Stream Inflow	691,739	240,124	100,742	153,035	219,963	295,581	381,347	735,770
Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1	1
Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*838,809*	*368,734*	*180,328*	*263,415*	*357,075*	*432,770*	*529,413*	*927,191*
Outflow	Out of Basin	Evapotranspiration	152,590	157,889	152,585	153,349	151,547	153,751	149,036	151,973
Outflow	Out of Basin	Stream Evaporation	379	390	400	400	380	395	364	372
Outflow	Out of Basin	Reservoir Evaporation	720	736	763	756	711	747	675	694
Outflow	Out of Basin	Conveyance Evaporation	45	47	48	48	45	46	43	45
Outflow	Out of Basin	Stream Outflow	677,081	223,698	51,472	130,528	219,088	291,439	383,378	762,028
Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-	-
Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*830,815*	*382,760*	*205,269*	*285,081*	*371,772*	*446,379*	*533,495*	*915,112*
Storage Change	**(32)-(33)**	Change in Total System Storage	7,994	(14,026)	(24,940)	(21,666)	(14,696)	(13,608)	(4,082)	12,079

LAND SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2064	2065	2066	2067	2068
Inflow	Into Basin	Precipitation on Land System	99,291	97,459	114,173	120,660	167,215
Inflow	Between Systems	Surface Water Delivery	78,989	78,709	78,245	71,749	68,856
Inflow	Between Systems	Groundwater Extraction	48,745	47,716	46,430	41,387	38,575
Inflow	*(1)+(2)+(3)*	*Total Inflow*	*227,025*	*223,885*	*238,849*	*233,797*	*274,646*
Outflow	Out of Basin	Evapotranspiration	156,935	151,305	156,057	151,911	146,988
Outflow	Between Systems	Runoff	49,352	52,178	62,460	63,110	109,739
Outflow	Between Systems	Return Flow	5,485	5,366	5,217	4,644	4,323
Outflow	Between Systems	Recharge of Applied Water	13,755	13,678	13,564	12,406	11,872
Outflow	Between Systems	Recharge of Precipitation	1,498	1,358	1,551	1,727	1,724
Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-
Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*227,025*	*223,885*	*238,849*	*233,797*	*274,646*
Storage Change	(4)-(11)	Change in Land System Storage	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2064	2065	2066	2067	2068
Inflow	Into Basin	Stream Inflow	127,762	240,456	143,169	103,605	629,359
Inflow	Into Basin	Precipitation on Reservoirs	364	357	418	442	613
Inflow	Between Systems	Runoff	49,352	52,178	62,460	63,110	109,739
Inflow	Between Systems	Return Flow	5,485	5,366	5,217	4,644	4,323
Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-
Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-
Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*182,963*	*298,356*	*211,263*	*171,801*	*744,034*
Outflow	Out of Basin	Stream Outflow	92,199	202,668	120,562	89,515	640,247
Outflow	Out of Basin	Conveyance Evaporation	47	46	46	44	42
Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27
Outflow	Between Systems	Surface Water Delivery	78,989	78,709	78,245	71,749	68,856
Outflow	Between Systems	Stream Loss to Groundwater	9,941	15,181	10,657	8,818	33,265
Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596
Outflow	Out of Basin	Reservoir Evaporation	762	737	736	684	648
Outflow	Out of Basin	Stream Evaporation	402	391	393	368	352
Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*182,963*	*298,356*	*211,263*	*171,801*	*744,034*
Storage Change	(17)-(25)	Change in Surface Water Storage	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

Flow Type	Origin/ Destination	Component	2064	2065	2066	2067	2068
Inflow	Between Systems	Recharge of Applied Water	13,755	13,678	13,564	12,406	11,872
Inflow	Between Systems	Recharge of Precipitation	1,498	1,358	1,551	1,727	1,724
Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-
Inflow	Between Systems	Groundwater Gain from Stream	9,941	15,181	10,657	8,818	33,265
Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596
Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27
Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1
Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*25,818*	*30,842*	*26,398*	*23,575*	*47,486*
Outflow	Between Systems	Groundwater Extraction	48,745	47,716	46,430	41,387	38,575
Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-
Outflow	Between Systems	Groundwater Loss to Reservoir s	-	-	-	-	-
Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-
Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*48,745*	*47,716*	*46,430*	*41,387*	*38,575*
Storage Change	(28)-(30)	Change in Groundwater Storage	(22,927)	(16,874)	(20,033)	(17,812)	8,910

TOTAL BASIN WATER BUDGET

Flow Type	Origin/ Destination	Component	2064	2065	2066	2067	2068
Inflow	Into Basin	Precipitation on Land System	99,291	97,459	114,173	120,660	167,215
Inflow	Into Basin	Precipitation on Reservoirs	364	357	418	442	613
Inflow	Into Basin	Stream Inflow	127,762	240,456	143,169	103,605	629,359
Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1
Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*227,418*	*338,273*	*257,761*	*224,709*	*797,188*
Outflow	Out of Basin	Evapotranspiration	156,935	151,305	156,057	151,911	146,988
Outflow	Out of Basin	Stream Evaporation	402	391	393	368	352
Outflow	Out of Basin	Reservoir Evaporation	762	737	736	684	648
Outflow	Out of Basin	Conveyance Evaporation	47	46	46	44	42
Outflow	Out of Basin	Stream Outflow	92,199	202,668	120,562	89,515	640,247
Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-
Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*250,345*	*355,147*	*277,794*	*242,521*	*788,277*
Storage Change	(32)-(33)	Change in Total System Storage	(22,927)	(16,874)	(20,033)	(17,812)	8,910

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	Average (2019-2068)
(1)	Inflow	Into Basin	Precipitation on Land System	152,224
(2)	Inflow	Between Systems	Surface Water Delivery	81,239
(3)	Inflow	Between Systems	Groundwater Extraction	47,500
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*280,964*
(5)	Outflow	Out of Basin	Evapotranspiration	165,795
(6)	Outflow	Between Systems	Runoff	94,032
(7)	Outflow	Between Systems	Return Flow	5,335
(8)	Outflow	Between Systems	Recharge of Applied Water	14,056
(9)	Outflow	Between Systems	Recharge of Precipitation	1,746
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*280,964*
(12)	Storage Change	**(4)-(11)**	Change in Land System Storage	-

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	Average (2019-2068)
(13)	Inflow	Into Basin	Stream Inflow	450,360
(14)	Inflow	Into Basin	Precipitation on Reservoirs	558
(6)	Inflow	Between Systems	Runoff	94,032
(7)	Inflow	Between Systems	Return Flow	5,335
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*550,284*
(18)	Outflow	Out of Basin	Stream Outflow	436,663
(19)	Outflow	Out of Basin	Conveyance Evaporation	50
(20)	Outflow	Between Systems	Conveyance Seepage	27
(2)	Outflow	Between Systems	Surface Water Delivery	81,239
(21)	Outflow	Between Systems	Stream Loss to Groundwater	30,515
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	780
(24)	Outflow	Out of Basin	Stream Evaporation	414
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*550,284*
(26)	Storage Change	**(17)-(25)**	Change in Surface Water Storage	-

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	Average (2019-2068)
(8)	Inflow	Between Systems	Recharge of Applied Water	14,056
(9)	Inflow	Between Systems	Recharge of Precipitation	1,746
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	30,515
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596
(20)	Inflow	Between Systems	Conveyance Seepage	27
(27)	Inflow	Into Basin	Subsurface Inflow	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*46,942*
(3)	Outflow	Between Systems	Groundwater Extraction	47,500
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir s	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*47,500*
(31)	Storage Change	**(28)-(30)**	Change in Groundwater Storage	(558)

TOTAL BASIN WATER BUDGET

item	Flow Type	Origin/ Destination	Component	Average (2019-2068)
(1)	Inflow	Into Basin	Precipitation on Land System	152,224
(14)	Inflow	Into Basin	Precipitation on Reservoirs	558
(13)	Inflow	Into Basin	Stream Inflow	450,360
(27)	Inflow	Into Basin	Subsurface Inflow	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*603,143*
(5)	Outflow	Out of Basin	Evapotranspiration	165,795
(24)	Outflow	Out of Basin	Stream Evaporation	414
(23)	Outflow	Out of Basin	Reservoir Evaporation	780
(19)	Outflow	Out of Basin	Conveyance Evaporation	50
(18)	Outflow	Out of Basin	Stream Outflow	436,663
(29)	Outflow	Out of Basin	Subsurface Outflow	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*603,701*
(34)	Storage Change	**(32)-(33)**	Change in Total System Storage	(558)

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2019	2020	2021	2022	2023	2024	2025
(1)	Inflow	Into Basin	Precipitation on Land System	129,500	222,333	117,416	190,878	86,735	178,276	131,750
(2)	Inflow	Between Systems	Surface Water Delivery	85,796	76,976	85,067	81,416	89,423	82,756	83,061
(3)	Inflow	Between Systems	Groundwater Extraction	51,348	42,198	51,204	48,394	55,962	48,513	49,306
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*266,644*	*341,507*	*253,687*	*320,687*	*232,119*	*309,545*	*264,117*
(5)	Outflow	Out of Basin	Evapotranspiration	168,320	164,569	166,471	165,779	165,207	163,577	165,440
(6)	Outflow	Between Systems	Runoff	76,070	157,023	65,127	133,640	43,735	124,588	77,103
(7)	Outflow	Between Systems	Return Flow	5,773	4,726	5,758	5,438	6,302	5,449	5,541
(8)	Outflow	Between Systems	Recharge of Applied Water	14,879	13,230	14,763	14,113	15,585	14,321	14,394
(9)	Outflow	Between Systems	Recharge of Precipitation	1,603	1,959	1,569	1,717	1,290	1,611	1,639
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*266,644*	*341,507*	*253,687*	*320,687*	*232,119*	*309,545*	*264,117*
(12)	Storage Change	(4)-(11)	Change in Land System Storage	-	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2019	2020	2021	2022	2023	2024	2025
(13)	Inflow	Into Basin	Stream Inflow	231,125	772,605	313,116	811,978	194,478	508,919	263,663
(14)	Inflow	Into Basin	Precipitation on Reservoirs	475	815	430	699	318	653	483
(6)	Inflow	Between Systems	Runoff	76,070	157,023	65,127	133,640	43,735	124,588	77,103
(7)	Inflow	Between Systems	Return Flow	5,773	4,726	5,758	5,438	6,302	5,449	5,541
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*313,442*	*935,169*	*384,431*	*951,756*	*244,833*	*639,609*	*346,789*
(18)	Outflow	Out of Basin	Stream Outflow	210,973	816,434	278,896	818,346	140,411	527,323	245,560
(19)	Outflow	Out of Basin	Conveyance Evaporation	51	50	50	49	52	51	48
(20)	Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(2)	Outflow	Between Systems	Surface Water Delivery	85,796	76,976	85,067	81,416	89,423	82,756	83,061
(21)	Outflow	Between Systems	Stream Loss to Groundwater	14,747	39,926	18,560	50,102	13,043	27,665	16,260
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	818	759	807	799	839	775	812
(24)	Outflow	Out of Basin	Stream Evaporation	432	400	428	419	442	415	424
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*313,442*	*935,169*	*384,431*	*951,756*	*244,833*	*639,609*	*346,789*
(26)	Storage Change	(17)-(25)	Change in Surface Water Storage	-	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2019	2020	2021	2022	2023	2024	2025
(8)	Inflow	Between Systems	Recharge of Applied Water	14,879	13,230	14,763	14,113	15,585	14,321	14,394
(9)	Inflow	Between Systems	Recharge of Precipitation	1,603	1,959	1,569	1,717	1,290	1,611	1,639
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	14,747	39,926	18,560	50,102	13,043	27,665	16,260
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596	596
(20)	Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*31,854*	*55,740*	*35,516*	*66,557*	*30,543*	*44,221*	*32,918*
(3)	Outflow	Between Systems	Groundwater Extraction	51,348	42,198	51,204	48,394	55,962	48,513	49,306
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir s	-	-	-	-	-	-	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*51,348*	*42,198*	*51,204*	*48,394*	*55,962*	*48,513*	*49,306*
(31)	Storage Change	(28)-(30)	Change in Groundwater Storage	(19,494)	13,542	(15,688)	18,163	(25,419)	(4,292)	(16,388)

TOTAL BASIN WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2019	2020	2021	2022	2023	2024	2025
(1)	Inflow	Into Basin	Precipitation on Land System	129,500	222,333	117,416	190,878	86,735	178,276	131,750
(14)	Inflow	Into Basin	Precipitation on Reservoirs	475	815	430	699	318	653	483
(13)	Inflow	Into Basin	Stream Inflow	231,125	772,605	313,116	811,978	194,478	508,919	263,663
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*361,100*	*995,753*	*430,963*	*1,003,556*	*281,532*	*687,849*	*395,896*
(5)	Outflow	Out of Basin	Evapotranspiration	168,320	164,569	166,471	165,779	165,207	163,577	165,440
(24)	Outflow	Out of Basin	Stream Evaporation	432	400	428	419	442	415	424
(23)	Outflow	Out of Basin	Reservoir Evaporation	818	759	807	799	839	775	812
(19)	Outflow	Out of Basin	Conveyance Evaporation	51	50	50	49	52	51	48
(18)	Outflow	Out of Basin	Stream Outflow	210,973	816,434	278,896	818,346	140,411	527,323	245,560
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*380,595*	*982,212*	*446,651*	*985,392*	*306,950*	*692,141*	*412,284*
(34)	Storage Change	(32)-(33)	Change in Total System Storage	(19,494)	13,542	(15,688)	18,163	(25,419)	(4,292)	(16,388)

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2026	2027	2028	2029	2030	2031	2032
(1)	Inflow	Into Basin	Precipitation on Land System	169,078	181,223	223,561	122,811	117,302	187,191	133,627
(2)	Inflow	Between Systems	Surface Water Delivery	85,585	85,130	76,120	85,600	86,677	82,850	83,904
(3)	Inflow	Between Systems	Groundwater Extraction	50,419	50,097	41,580	50,791	52,010	47,910	50,101
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*305,082*	*316,450*	*341,260*	*259,201*	*255,989*	*317,951*	*267,632*
(5)	Outflow	Out of Basin	Evapotranspiration	169,456	167,624	169,093	168,714	170,424	167,439	166,339
(6)	Outflow	Between Systems	Runoff	113,477	126,831	152,295	68,314	63,055	129,075	79,488
(7)	Outflow	Between Systems	Return Flow	5,665	5,628	4,656	5,708	5,848	5,379	5,632
(8)	Outflow	Between Systems	Recharge of Applied Water	14,816	14,735	13,079	14,830	15,035	14,315	14,549
(9)	Outflow	Between Systems	Recharge of Precipitation	1,668	1,632	2,138	1,635	1,627	1,743	1,624
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*305,082*	*316,450*	*341,260*	*259,201*	*255,989*	*317,951*	*267,632*
(12)	Storage Change	(4)-(11)	Change in Land System Storage	-	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2026	2027	2028	2029	2030	2031	2032
(13)	Inflow	Into Basin	Stream Inflow	657,649	631,029	1,061,564	701,971	332,242	627,237	588,265
(14)	Inflow	Into Basin	Precipitation on Reservoirs	620	664	819	450	430	686	490
(6)	Inflow	Between Systems	Runoff	113,477	126,831	152,295	68,314	63,055	129,075	79,488
(7)	Inflow	Between Systems	Return Flow	5,665	5,628	4,656	5,708	5,848	5,379	5,632
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*777,411*	*764,153*	*1,219,334*	*776,443*	*401,574*	*762,376*	*673,874*
(18)	Outflow	Out of Basin	Stream Outflow	655,315	643,761	971,790	652,274	293,494	644,456	556,723
(19)	Outflow	Out of Basin	Conveyance Evaporation	52	51	48	51	52	51	51
(20)	Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(2)	Outflow	Between Systems	Surface Water Delivery	85,585	85,130	76,120	85,600	86,677	82,850	83,904
(21)	Outflow	Between Systems	Stream Loss to Groundwater	34,581	33,343	169,590	36,642	19,449	33,167	31,354
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	822	814	759	820	840	806	796
(24)	Outflow	Out of Basin	Stream Evaporation	433	429	404	432	439	423	421
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*777,411*	*764,153*	*1,219,334*	*776,443*	*401,574*	*762,376*	*673,874*
(26)	Storage Change	(17)-(25)	Change in Surface Water Storage	-	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2026	2027	2028	2029	2030	2031	2032
(8)	Inflow	Between Systems	Recharge of Applied Water	14,816	14,735	13,079	14,830	15,035	14,315	14,549
(9)	Inflow	Between Systems	Recharge of Precipitation	1,668	1,632	2,138	1,635	1,627	1,743	1,624
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	34,581	33,343	169,590	36,642	19,449	33,167	31,354
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596	596
(20)	Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*51,689*	*50,335*	*185,432*	*53,731*	*36,736*	*49,850*	*48,152*
(3)	Outflow	Between Systems	Groundwater Extraction	50,419	50,097	41,580	50,791	52,010	47,910	50,101
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir s	-	-	-	-	-	-	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*50,419*	*50,097*	*41,580*	*50,791*	*52,010*	*47,910*	*50,101*
(31)	Storage Change	(28)-(30)	Change in Groundwater Storage	1,270	238	143,851	2,941	(15,273)	1,939	(1,949)

TOTAL BASIN WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2026	2027	2028	2029	2030	2031	2032
(1)	Inflow	Into Basin	Precipitation on Land System	169,078	181,223	223,561	122,811	117,302	187,191	133,627
(14)	Inflow	Into Basin	Precipitation on Reservoirs	620	664	819	450	430	686	490
(13)	Inflow	Into Basin	Stream Inflow	657,649	631,029	1,061,564	701,971	332,242	627,237	588,265
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*827,348*	*812,918*	*1,285,945*	*825,232*	*449,974*	*815,115*	*722,382*
(5)	Outflow	Out of Basin	Evapotranspiration	169,456	167,624	169,093	168,714	170,424	167,439	166,339
(24)	Outflow	Out of Basin	Stream Evaporation	433	429	404	432	439	423	421
(23)	Outflow	Out of Basin	Reservoir Evaporation	822	814	759	820	840	806	796
(19)	Outflow	Out of Basin	Conveyance Evaporation	52	51	48	51	52	51	51
(18)	Outflow	Out of Basin	Stream Outflow	655,315	643,761	971,790	652,274	293,494	644,456	556,723
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*826,078*	*812,679*	*1,142,093*	*822,292*	*465,248*	*813,176*	*724,331*
(34)	Storage Change	(32)-(33)	Change in Total System Storage	1,270	238	143,851	2,941	(15,273)	1,939	(1,949)

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2033	2034	2035	2036	2037	2038	2039
(1)	Inflow	Into Basin	Precipitation on Land System	112,985	87,563	166,097	108,662	182,240	116,838	212,359
(2)	Inflow	Between Systems	Surface Water Delivery	82,916	85,651	80,321	84,772	81,197	84,997	79,509
(3)	Inflow	Between Systems	Groundwater Extraction	50,186	53,811	45,810	51,508	45,858	50,845	43,902
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*246,087*	*227,025*	*292,228*	*244,942*	*309,296*	*252,680*	*335,770*
(5)	Outflow	Out of Basin	Evapotranspiration	165,305	162,848	168,854	164,920	171,741	168,601	171,612
(6)	Outflow	Between Systems	Runoff	59,121	41,805	102,466	57,979	116,443	61,977	143,501
(7)	Outflow	Between Systems	Return Flow	5,644	6,060	5,140	5,794	5,143	5,716	4,919
(8)	Outflow	Between Systems	Recharge of Applied Water	14,401	14,939	13,860	14,728	13,995	14,740	13,672
(9)	Outflow	Between Systems	Recharge of Precipitation	1,616	1,373	1,909	1,520	1,974	1,646	2,066
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*246,087*	*227,025*	*292,228*	*244,942*	*309,296*	*252,680*	*335,770*
(12)	Storage Change	(4)-(11)	Change in Land System Storage	-	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2033	2034	2035	2036	2037	2038	2039
(13)	Inflow	Into Basin	Stream Inflow	207,813	116,791	312,968	249,739	560,602	170,483	840,537
(14)	Inflow	Into Basin	Precipitation on Reservoirs	414	321	609	398	668	428	778
(6)	Inflow	Between Systems	Runoff	59,121	41,805	102,466	57,979	116,443	61,977	143,501
(7)	Inflow	Between Systems	Return Flow	5,644	6,060	5,140	5,794	5,143	5,716	4,919
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*272,991*	*164,977*	*421,182*	*313,910*	*682,856*	*238,603*	*989,735*
(18)	Outflow	Out of Basin	Stream Outflow	174,482	67,971	320,441	211,623	569,687	139,767	849,395
(19)	Outflow	Out of Basin	Conveyance Evaporation	49	49	50	50	51	51	51
(20)	Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(2)	Outflow	Between Systems	Surface Water Delivery	82,916	85,651	80,321	84,772	81,197	84,997	79,509
(21)	Outflow	Between Systems	Stream Loss to Groundwater	13,663	9,431	18,553	15,613	30,068	11,927	58,942
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	831	821	779	804	807	809	798
(24)	Outflow	Out of Basin	Stream Evaporation	427	431	413	425	422	429	417
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*272,991*	*164,977*	*421,182*	*313,910*	*682,856*	*238,603*	*989,735*
(26)	Storage Change	(17)-(25)	Change in Surface Water Storage	-	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2033	2034	2035	2036	2037	2038	2039
(8)	Inflow	Between Systems	Recharge of Applied Water	14,401	14,939	13,860	14,728	13,995	14,740	13,672
(9)	Inflow	Between Systems	Recharge of Precipitation	1,616	1,373	1,909	1,520	1,974	1,646	2,066
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	13,663	9,431	18,553	15,613	30,068	11,927	58,942
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596	596
(20)	Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*30,305*	*26,367*	*34,946*	*32,486*	*46,661*	*28,938*	*75,305*
(3)	Outflow	Between Systems	Groundwater Extraction	50,186	53,811	45,810	51,508	45,858	50,845	43,902
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir s	-	-	-	-	-	-	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*50,186*	*53,811*	*45,810*	*51,508*	*45,858*	*50,845*	*43,902*
(31)	Storage Change	(28)-(30)	Change in Groundwater Storage	(19,881)	(27,444)	(10,864)	(19,022)	803	(21,907)	31,402

TOTAL BASIN WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2033	2034	2035	2036	2037	2038	2039
(1)	Inflow	Into Basin	Precipitation on Land System	112,985	87,563	166,097	108,662	182,240	116,838	212,359
(14)	Inflow	Into Basin	Precipitation on Reservoirs	414	321	609	398	668	428	778
(13)	Inflow	Into Basin	Stream Inflow	207,813	116,791	312,968	249,739	560,602	170,483	840,537
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*321,212*	*204,676*	*479,674*	*358,800*	*743,511*	*287,749*	*#######*
(5)	Outflow	Out of Basin	Evapotranspiration	165,305	162,848	168,854	164,920	171,741	168,601	171,612
(24)	Outflow	Out of Basin	Stream Evaporation	427	431	413	425	422	429	417
(23)	Outflow	Out of Basin	Reservoir Evaporation	831	821	779	804	807	809	798
(19)	Outflow	Out of Basin	Conveyance Evaporation	49	49	50	50	51	51	51
(18)	Outflow	Out of Basin	Stream Outflow	174,482	67,971	320,441	211,623	569,687	139,767	849,395
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*341,093*	*232,120*	*490,538*	*377,822*	*742,708*	*309,656*	*#######*
(34)	Storage Change	(32)-(33)	Change in Total System Storage	(19,881)	(27,444)	(10,864)	(19,022)	803	(21,907)	31,402

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2040	2041	2042	2043	2044	2045	2046
(1)	Inflow	Into Basin	Precipitation on Land System	194,896	150,631	141,993	197,252	96,916	93,605	146,583
(2)	Inflow	Between Systems	Surface Water Delivery	78,633	71,640	78,677	77,256	81,529	88,716	75,392
(3)	Inflow	Between Systems	Groundwater Extraction	43,464	41,156	46,349	43,597	49,524	54,803	43,509
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*316,993*	*263,426*	*267,019*	*318,105*	*227,969*	*237,125*	*265,484*
(5)	Outflow	Out of Basin	Evapotranspiration	170,100	151,307	158,063	165,533	159,191	165,244	154,639
(6)	Outflow	Between Systems	Runoff	126,445	93,403	88,518	132,419	47,560	48,932	91,271
(7)	Outflow	Between Systems	Return Flow	4,870	4,617	5,206	4,889	5,570	6,169	4,883
(8)	Outflow	Between Systems	Recharge of Applied Water	13,524	12,382	13,627	13,319	14,168	15,439	13,032
(9)	Outflow	Between Systems	Recharge of Precipitation	2,054	1,717	1,604	1,945	1,481	1,340	1,659
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*316,993*	*263,426*	*267,019*	*318,105*	*227,969*	*237,125*	*265,484*
(12)	Storage Change	(4)-(11)	Change in Land System Storage	-	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2040	2041	2042	2043	2044	2045	2046
(13)	Inflow	Into Basin	Stream Inflow	727,089	878,808	337,563	890,868	170,896	171,875	421,974
(14)	Inflow	Into Basin	Precipitation on Reservoirs	714	552	520	723	355	343	537
(6)	Inflow	Between Systems	Runoff	126,445	93,403	88,518	132,419	47,560	48,932	91,271
(7)	Inflow	Between Systems	Return Flow	4,870	4,617	5,206	4,889	5,570	6,169	4,883
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*859,118*	*977,381*	*431,808*	*#######*	*224,381*	*227,319*	*518,665*
(18)	Outflow	Out of Basin	Stream Outflow	740,802	831,518	331,578	872,619	129,071	124,699	417,877
(19)	Outflow	Out of Basin	Conveyance Evaporation	49	46	48	47	47	52	47
(20)	Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(2)	Outflow	Between Systems	Surface Water Delivery	78,633	71,640	78,677	77,256	81,529	88,716	75,392
(21)	Outflow	Between Systems	Stream Loss to Groundwater	37,810	72,494	19,697	77,195	11,947	11,992	23,622
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	789	691	781	754	758	802	720
(24)	Outflow	Out of Basin	Stream Evaporation	412	368	404	403	405	433	384
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*859,118*	*977,381*	*431,808*	*#######*	*224,381*	*227,319*	*518,665*
(26)	Storage Change	(17)-(25)	Change in Surface Water Storage	-	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2040	2041	2042	2043	2044	2045	2046
(8)	Inflow	Between Systems	Recharge of Applied Water	13,524	12,382	13,627	13,319	14,168	15,439	13,032
(9)	Inflow	Between Systems	Recharge of Precipitation	2,054	1,717	1,604	1,945	1,481	1,340	1,659
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	37,810	72,494	19,697	77,195	11,947	11,992	23,622
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596	596
(20)	Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*54,012*	*87,217*	*35,553*	*93,084*	*28,220*	*29,396*	*38,938*
(3)	Outflow	Between Systems	Groundwater Extraction	43,464	41,156	46,349	43,597	49,524	54,803	43,509
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir s	-	-	-	-	-	-	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*43,464*	*41,156*	*46,349*	*43,597*	*49,524*	*54,803*	*43,509*
(31)	Storage Change	(28)-(30)	Change in Groundwater Storage	10,548	46,061	(10,796)	49,487	(21,304)	(25,407)	(4,571)

TOTAL BASIN WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2040	2041	2042	2043	2044	2045	2046
(1)	Inflow	Into Basin	Precipitation on Land System	194,896	150,631	141,993	197,252	96,916	93,605	146,583
(14)	Inflow	Into Basin	Precipitation on Reservoirs	714	552	520	723	355	343	537
(13)	Inflow	Into Basin	Stream Inflow	727,089	878,808	337,563	890,868	170,896	171,875	421,974
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*922,700*	*#######*	*480,077*	*#######*	*268,168*	*265,823*	*569,095*
(5)	Outflow	Out of Basin	Evapotranspiration	170,100	151,307	158,063	165,533	159,191	165,244	154,639
(24)	Outflow	Out of Basin	Stream Evaporation	412	368	404	403	405	433	384
(23)	Outflow	Out of Basin	Reservoir Evaporation	789	691	781	754	758	802	720
(19)	Outflow	Out of Basin	Conveyance Evaporation	49	46	48	47	47	52	47
(18)	Outflow	Out of Basin	Stream Outflow	740,802	831,518	331,578	872,619	129,071	124,699	417,877
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*912,152*	*983,931*	*490,873*	*#######*	*289,472*	*291,231*	*573,666*
(34)	Storage Change	(32)-(33)	Change in Total System Storage	10,548	46,061	(10,796)	49,487	(21,304)	(25,407)	(4,571)

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2047	2048	2049	2050	2051	2052	2053
(1)	Inflow	Into Basin	Precipitation on Land System	112,828	109,588	75,064	225,757	109,477	199,671	205,058
(2)	Inflow	Between Systems	Surface Water Delivery	75,481	81,148	86,327	75,721	83,120	71,972	76,728
(3)	Inflow	Between Systems	Groundwater Extraction	44,408	49,085	54,406	39,876	50,096	39,618	44,076
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*232,717*	*239,821*	*215,797*	*341,355*	*242,692*	*311,261*	*325,861*
(5)	Outflow	Out of Basin	Evapotranspiration	153,467	158,670	160,652	175,368	165,364	154,317	164,713
(6)	Outflow	Between Systems	Runoff	59,591	60,050	32,684	146,180	55,652	138,285	141,027
(7)	Outflow	Between Systems	Return Flow	4,988	5,520	6,128	4,458	5,633	4,437	4,946
(8)	Outflow	Between Systems	Recharge of Applied Water	13,076	14,095	15,061	12,961	14,429	12,381	13,254
(9)	Outflow	Between Systems	Recharge of Precipitation	1,597	1,486	1,271	2,387	1,615	1,842	1,921
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*232,717*	*239,821*	*215,797*	*341,355*	*242,692*	*311,261*	*325,861*
(12)	Storage Change	(4)-(11)	Change in Land System Storage	-	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2047	2048	2049	2050	2051	2052	2053
(13)	Inflow	Into Basin	Stream Inflow	136,845	266,826	77,677	639,443	168,796	939,201	838,666
(14)	Inflow	Into Basin	Precipitation on Reservoirs	413	402	275	827	401	732	751
(6)	Inflow	Between Systems	Runoff	59,591	60,050	32,684	146,180	55,652	138,285	141,027
(7)	Inflow	Between Systems	Return Flow	4,988	5,520	6,128	4,458	5,633	4,437	4,946
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*201,836*	*332,797*	*116,764*	*790,908*	*230,482*	*1,082,654*	*985,391*
(18)	Outflow	Out of Basin	Stream Outflow	114,222	233,452	20,949	679,625	133,636	910,698	848,509
(19)	Outflow	Out of Basin	Conveyance Evaporation	46	49	50	50	51	46	48
(20)	Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(2)	Outflow	Between Systems	Surface Water Delivery	75,481	81,148	86,327	75,721	83,120	71,972	76,728
(21)	Outflow	Between Systems	Stream Loss to Groundwater	10,363	16,407	7,612	33,734	11,849	98,262	58,331
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	719	720	781	752	785	682	751
(24)	Outflow	Out of Basin	Stream Evaporation	381	397	421	402	418	371	400
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*201,836*	*332,797*	*116,764*	*790,908*	*230,482*	*1,082,654*	*985,391*
(26)	Storage Change	(17)-(25)	Change in Surface Water Storage	-	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2047	2048	2049	2050	2051	2052	2053
(8)	Inflow	Between Systems	Recharge of Applied Water	13,076	14,095	15,061	12,961	14,429	12,381	13,254
(9)	Inflow	Between Systems	Recharge of Precipitation	1,597	1,486	1,271	2,387	1,615	1,842	1,921
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	10,363	16,407	7,612	33,734	11,849	98,262	58,331
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596	596
(20)	Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*25,661*	*32,613*	*24,569*	*49,707*	*28,518*	*113,109*	*74,131*
(3)	Outflow	Between Systems	Groundwater Extraction	44,408	49,085	54,406	39,876	50,096	39,618	44,076
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir s	-	-	-	-	-	-	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*44,408*	*49,085*	*54,406*	*39,876*	*50,096*	*39,618*	*44,076*
(31)	Storage Change	(28)-(30)	Change in Groundwater Storage	(18,748)	(16,471)	(29,836)	9,832	(21,578)	73,491	30,055

TOTAL BASIN WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2047	2048	2049	2050	2051	2052	2053
(1)	Inflow	Into Basin	Precipitation on Land System	112,828	109,588	75,064	225,757	109,477	199,671	205,058
(14)	Inflow	Into Basin	Precipitation on Reservoirs	413	402	275	827	401	732	751
(13)	Inflow	Into Basin	Stream Inflow	136,845	266,826	77,677	639,443	168,796	939,201	838,666
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*250,087*	*376,817*	*153,017*	*866,029*	*278,675*	*1,139,604*	*#######*
(5)	Outflow	Out of Basin	Evapotranspiration	153,467	158,670	160,652	175,368	165,364	154,317	164,713
(24)	Outflow	Out of Basin	Stream Evaporation	381	397	421	402	418	371	400
(23)	Outflow	Out of Basin	Reservoir Evaporation	719	720	781	752	785	682	751
(19)	Outflow	Out of Basin	Conveyance Evaporation	46	49	50	50	51	46	48
(18)	Outflow	Out of Basin	Stream Outflow	114,222	233,452	20,949	679,625	133,636	910,698	848,509
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*268,834*	*393,288*	*182,853*	*856,197*	*300,253*	*1,066,113*	*#######*
(34)	Storage Change	(32)-(33)	Change in Total System Storage	(18,748)	(16,471)	(29,836)	9,832	(21,578)	73,491	30,055

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2054	2055	2056	2057	2058	2059	2060
(1)	Inflow	Into Basin	Precipitation on Land System	181,148	240,300	165,297	145,585	86,442	130,562	161,922
(2)	Inflow	Between Systems	Surface Water Delivery	81,726	69,567	80,770	82,627	87,201	86,559	80,563
(3)	Inflow	Between Systems	Groundwater Extraction	46,992	36,069	46,825	47,959	53,321	51,640	46,430
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*309,865*	*345,936*	*292,892*	*276,171*	*226,963*	*268,760*	*288,915*
(5)	Outflow	Out of Basin	Evapotranspiration	171,815	162,194	168,075	173,482	164,756	169,002	167,314
(6)	Outflow	Between Systems	Runoff	116,731	165,574	103,752	81,087	39,646	77,352	100,633
(7)	Outflow	Between Systems	Return Flow	5,274	4,029	5,257	5,385	5,999	5,805	5,211
(8)	Outflow	Between Systems	Recharge of Applied Water	14,113	11,896	13,962	14,283	15,158	15,005	13,917
(9)	Outflow	Between Systems	Recharge of Precipitation	1,933	2,242	1,846	1,935	1,404	1,596	1,839
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*309,865*	*345,936*	*292,892*	*276,171*	*226,963*	*268,760*	*288,915*
(12)	Storage Change	**(4)-(11)**	Change in Land System Storage	-	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2054	2055	2056	2057	2058	2059	2060
(13)	Inflow	Into Basin	Stream Inflow	659,533	809,502	712,444	240,135	96,425	160,946	229,397
(14)	Inflow	Into Basin	Precipitation on Reservoirs	664	881	606	533	317	478	593
(6)	Inflow	Between Systems	Runoff	116,731	165,574	103,752	81,087	39,646	77,352	100,633
(7)	Inflow	Between Systems	Return Flow	5,274	4,029	5,257	5,385	5,999	5,805	5,211
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*782,201*	*979,986*	*822,059*	*327,140*	*142,387*	*244,582*	*335,835*
(18)	Outflow	Out of Basin	Stream Outflow	663,923	859,330	702,286	227,447	44,776	144,611	238,751
(19)	Outflow	Out of Basin	Conveyance Evaporation	51	46	50	51	52	52	49
(20)	Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(2)	Outflow	Between Systems	Surface Water Delivery	81,726	69,567	80,770	82,627	87,201	86,559	80,563
(21)	Outflow	Between Systems	Stream Loss to Groundwater	34,668	49,384	37,129	15,166	8,484	11,484	14,667
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	789	668	786	801	820	819	769
(24)	Outflow	Out of Basin	Stream Evaporation	420	367	414	424	430	433	412
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*782,201*	*979,986*	*822,059*	*327,140*	*142,387*	*244,582*	*335,835*
(26)	Storage Change	**(17)-(25)**	Change in Surface Water Storage	-	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2054	2055	2056	2057	2058	2059	2060
(8)	Inflow	Between Systems	Recharge of Applied Water	14,113	11,896	13,962	14,283	15,158	15,005	13,917
(9)	Inflow	Between Systems	Recharge of Precipitation	1,933	2,242	1,846	1,935	1,404	1,596	1,839
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	34,668	49,384	37,129	15,166	8,484	11,484	14,667
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596	596
(20)	Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*51,339*	*64,147*	*53,562*	*32,009*	*25,671*	*28,710*	*31,048*
(3)	Outflow	Between Systems	Groundwater Extraction	46,992	36,069	46,825	47,959	53,321	51,640	46,430
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir s	-	-	-	-	-	-	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*46,992*	*36,069*	*46,825*	*47,959*	*53,321*	*51,640*	*46,430*
(31)	Storage Change	**(28)-(30)**	Change in Groundwater Storage	4,347	28,079	6,736	(15,950)	(27,650)	(22,930)	(15,382)

TOTAL BASIN WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2054	2055	2056	2057	2058	2059	2060
(1)	Inflow	Into Basin	Precipitation on Land System	181,148	240,300	165,297	145,585	86,442	130,562	161,922
(14)	Inflow	Into Basin	Precipitation on Reservoirs	664	881	606	533	317	478	593
(13)	Inflow	Into Basin	Stream Inflow	659,533	809,502	712,444	240,135	96,425	160,946	229,397
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*841,345*	*#######*	*878,347*	*386,254*	*183,184*	*291,987*	*391,913*
(5)	Outflow	Out of Basin	Evapotranspiration	171,815	162,194	168,075	173,482	164,756	169,002	167,314
(24)	Outflow	Out of Basin	Stream Evaporation	420	367	414	424	430	433	412
(23)	Outflow	Out of Basin	Reservoir Evaporation	789	668	786	801	820	819	769
(19)	Outflow	Out of Basin	Conveyance Evaporation	51	46	50	51	52	52	49
(18)	Outflow	Out of Basin	Stream Outflow	663,923	859,330	702,286	227,447	44,776	144,611	238,751
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*836,998*	*#######*	*871,611*	*402,204*	*210,835*	*314,917*	*407,295*
(34)	Storage Change	**(32)-(33)**	Change in Total System Storage	4,347	28,079	6,736	(15,950)	(27,650)	(22,930)	(15,382)

LAND SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2061	2062	2063	2064	2065	2066	2067
(1)	Inflow	Into Basin	Precipitation on Land System	146,572	148,701	232,665	118,707	132,516	149,197	135,123
(2)	Inflow	Between Systems	Surface Water Delivery	85,780	77,131	76,997	84,401	82,618	83,095	77,644
(3)	Inflow	Between Systems	Groundwater Extraction	51,324	44,577	42,403	51,384	48,300	47,652	44,474
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*283,677*	*270,410*	*352,064*	*254,491*	*263,434*	*279,943*	*257,241*
(5)	Outflow	Out of Basin	Evapotranspiration	166,689	158,629	169,465	173,250	170,923	176,605	166,236
(6)	Outflow	Between Systems	Runoff	94,789	91,736	162,505	59,003	70,946	81,620	70,674
(7)	Outflow	Between Systems	Return Flow	5,770	5,003	4,750	5,780	5,425	5,348	4,990
(8)	Outflow	Between Systems	Recharge of Applied Water	14,876	13,333	13,240	14,667	14,293	14,344	13,407
(9)	Outflow	Between Systems	Recharge of Precipitation	1,554	1,709	2,105	1,791	1,847	2,027	1,933
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*283,677*	*270,410*	*352,064*	*254,491*	*263,434*	*279,943*	*257,241*
(12)	Storage Change	**(4)-(11)**	Change in Land System Storage	-	-	-	-	-	-	-

SURFACE WATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2061	2062	2063	2064	2065	2066	2067
(13)	Inflow	Into Basin	Stream Inflow	321,321	372,195	798,642	131,362	254,574	150,766	106,628
(14)	Inflow	Into Basin	Precipitation on Reservoirs	537	545	853	435	486	547	495
(6)	Inflow	Between Systems	Runoff	94,789	91,736	162,505	59,003	70,946	81,620	70,674
(7)	Inflow	Between Systems	Return Flow	5,770	5,003	4,750	5,780	5,425	5,348	4,990
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-	-	-	-	-	-	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-	-	-	-	-	-	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*422,417*	*469,479*	*966,750*	*196,580*	*331,430*	*238,280*	*182,788*
(18)	Outflow	Out of Basin	Stream Outflow	315,780	369,247	841,604	100,139	231,086	142,278	94,373
(19)	Outflow	Out of Basin	Conveyance Evaporation	51	47	49	51	51	50	48
(20)	Outflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(2)	Outflow	Between Systems	Surface Water Delivery	85,780	77,131	76,997	84,401	82,618	83,095	77,644
(21)	Outflow	Between Systems	Stream Loss to Groundwater	18,941	21,307	46,323	10,108	15,838	11,011	8,958
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596	596	596	596	596	596	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	811	730	750	823	793	797	742
(24)	Outflow	Out of Basin	Stream Evaporation	429	393	403	434	420	427	399
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*422,417*	*469,479*	*966,750*	*196,580*	*331,430*	*238,280*	*182,788*
(26)	Storage Change	**(17)-(25)**	Change in Surface Water Storage	-	-	-	-	-	-	-

GROUNDWATER SYSTEM WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2061	2062	2063	2064	2065	2066	2067
(8)	Inflow	Between Systems	Recharge of Applied Water	14,876	13,333	13,240	14,667	14,293	14,344	13,407
(9)	Inflow	Between Systems	Recharge of Precipitation	1,554	1,709	2,105	1,791	1,847	2,027	1,933
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-	-	-	-	-	-	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	18,941	21,307	46,323	10,108	15,838	11,011	8,958
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596	596	596	596	596	596	596
(20)	Inflow	Between Systems	Conveyance Seepage	27	27	27	27	27	27	27
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*35,995*	*36,973*	*62,292*	*27,191*	*32,602*	*28,006*	*24,924*
(3)	Outflow	Between Systems	Groundwater Extraction	51,324	44,577	42,403	51,384	48,300	47,652	44,474
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-	-	-	-	-	-	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir s	-	-	-	-	-	-	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*51,324*	*44,577*	*42,403*	*51,384*	*48,300*	*47,652*	*44,474*
(31)	Storage Change	**(28)-(30)**	Change in Groundwater Storage	(15,329)	(7,604)	19,889	(24,192)	(15,698)	(19,646)	(19,550)

TOTAL BASIN WATER BUDGET

item	Flow Type	Origin/ Destination	Component	2061	2062	2063	2064	2065	2066	2067
(1)	Inflow	Into Basin	Precipitation on Land System	146,572	148,701	232,665	118,707	132,516	149,197	135,123
(14)	Inflow	Into Basin	Precipitation on Reservoirs	537	545	853	435	486	547	495
(13)	Inflow	Into Basin	Stream Inflow	321,321	372,195	798,642	131,362	254,574	150,766	106,628
(27)	Inflow	Into Basin	Subsurface Inflow	1	1	1	1	1	1	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*468,431*	*521,442*	*#######*	*250,505*	*387,576*	*300,511*	*242,247*
(5)	Outflow	Out of Basin	Evapotranspiration	166,689	158,629	169,465	173,250	170,923	176,605	166,236
(24)	Outflow	Out of Basin	Stream Evaporation	429	393	403	434	420	427	399
(23)	Outflow	Out of Basin	Reservoir Evaporation	811	730	750	823	793	797	742
(19)	Outflow	Out of Basin	Conveyance Evaporation	51	47	49	51	51	50	48
(18)	Outflow	Out of Basin	Stream Outflow	315,780	369,247	841,604	100,139	231,086	142,278	94,373
(29)	Outflow	Out of Basin	Subsurface Outflow	-	-	-	-	-	-	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*483,760*	*529,046*	*#######*	*274,697*	*403,274*	*320,156*	*261,797*
(34)	Storage Change	**(32)-(33)**	Change in Total System Storage	(15,329)	(7,604)	19,889	(24,192)	(15,698)	(19,646)	(19,550)

item	Flow Type	Origin/ Destination	Component	2068
	LAND SYSTEM WATER BUDGET			
(1)	Inflow	Into Basin	Precipitation on Land System	198,737
(2)	Inflow	Between Systems	Surface Water Delivery	73,214
(3)	Inflow	Between Systems	Groundwater Extraction	39,935
(4)	Inflow	*(1)+(2)+(3)*	*Total Inflow*	*311,886*
(5)	Outflow	Out of Basin	Evapotranspiration	162,359
(6)	Outflow	Between Systems	Runoff	130,426
(7)	Outflow	Between Systems	Return Flow	4,471
(8)	Outflow	Between Systems	Recharge of Applied Water	12,581
(9)	Outflow	Between Systems	Recharge of Precipitation	2,049
(10)	Outflow	Between Systems	Managed Aquifer Recharge	-
(11)	Outflow	*(5)+(6)+(7)+(8)+(9)+(10)*	*Total Outflow*	*311,886*
(12)	Storage Change	**(4)-(11)**	Change in Land System Storage	-

item	Flow Type	Origin/ Destination	Component	2068
	SURFACE WATER SYSTEM WATER BUDGET			
(13)	Inflow	Into Basin	Stream Inflow	652,832
(14)	Inflow	Into Basin	Precipitation on Reservoirs	728
(6)	Inflow	Between Systems	Runoff	130,426
(7)	Inflow	Between Systems	Return Flow	4,471
(15)	Inflow	Between Systems	Stream Gain from Groundwater	-
(16)	Inflow	Between Systems	Reservoir Gain from Groundwater	-
(17)	Inflow	*(13)+(14)+(6)+(7)+(15)+(16)*	*Total Inflow*	*788,457*
(18)	Outflow	Out of Basin	Stream Outflow	679,139
(19)	Outflow	Out of Basin	Conveyance Evaporation	46
(20)	Outflow	Between Systems	Conveyance Seepage	27
(2)	Outflow	Between Systems	Surface Water Delivery	73,214
(21)	Outflow	Between Systems	Stream Loss to Groundwater	34,357
(22)	Outflow	Between Systems	Reservoir Loss to Groundwater	596
(23)	Outflow	Out of Basin	Reservoir Evaporation	697
(24)	Outflow	Out of Basin	Stream Evaporation	380
(25)	Outflow	*(18)+(19)+(20)+(2)+(21)+(22)+(23)+(24)*	*Total Outflow*	*788,457*
(26)	Storage Change	**(17)-(25)**	Change in Surface Water Storage	-

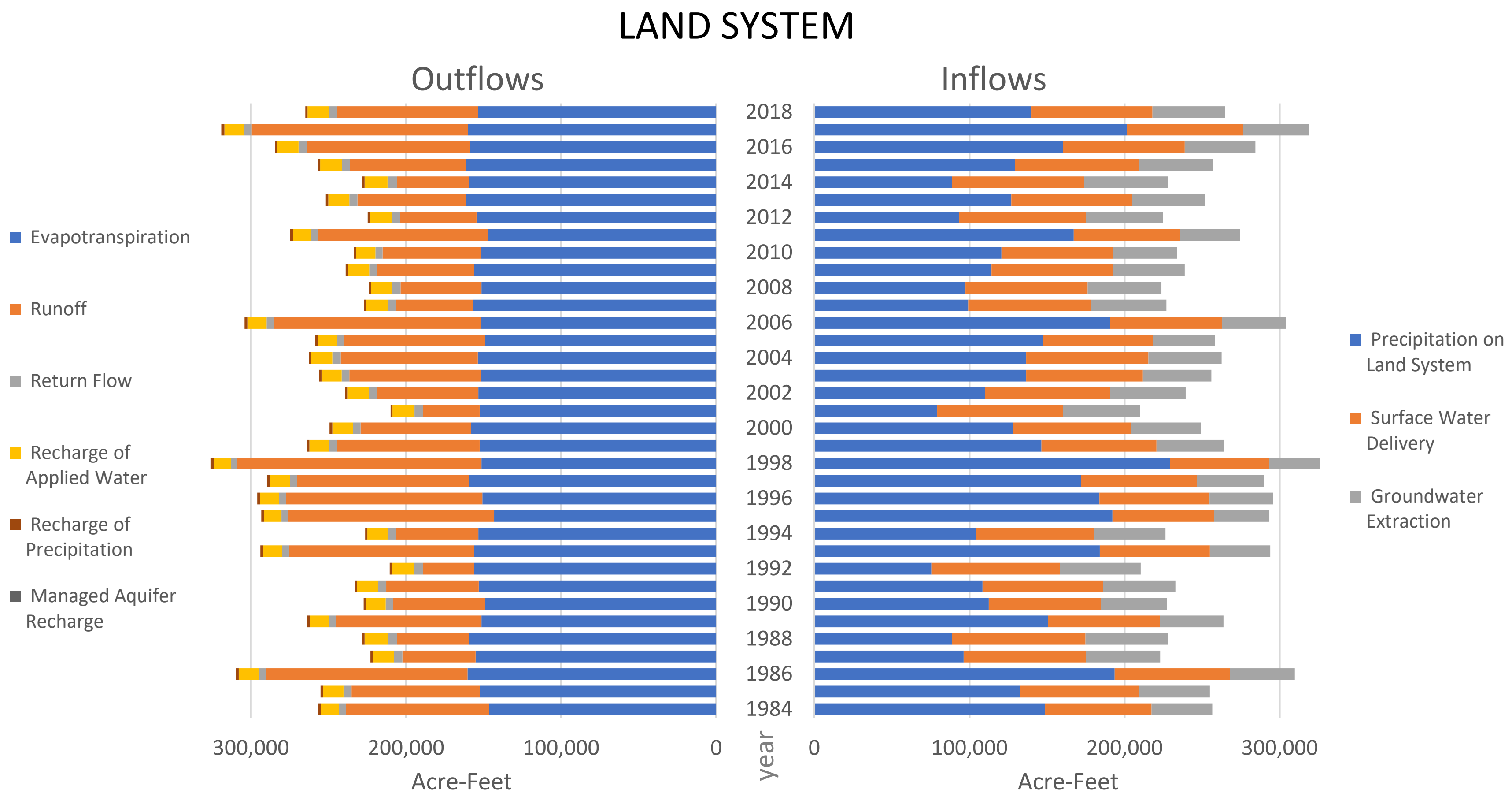
item	Flow Type	Origin/ Destination	Component	2068
	GROUNDWATER SYSTEM WATER BUDGET			
(8)	Inflow	Between Systems	Recharge of Applied Water	12,581
(9)	Inflow	Between Systems	Recharge of Precipitation	2,049
(10)	Inflow	Between Systems	Managed Aquifer Recharge	-
(21)	Inflow	Between Systems	Groundwater Gain from Stream	34,357
(22)	Inflow	Between Systems	Groundwater Gain from Reservoir	596
(20)	Inflow	Between Systems	Conveyance Seepage	27
(27)	Inflow	Into Basin	Subsurface Inflow	1
(28)	Inflow	*(8)+(9)+(10)+(21)+(22)+(20)+(27)*	*Total Inflow*	*49,612*
(3)	Outflow	Between Systems	Groundwater Extraction	39,935
(15)	Outflow	Between Systems	Groundwater Loss to Stream	-
(16)	Outflow	Between Systems	Groundwater Loss to Reservoir s	-
(29)	Outflow	Out of Basin	Subsurface Outflow	-
(30)	Outflow	*(3)+(15)+(16)+(29)*	*Total Outflow*	*39,935*
(31)	Storage Change	**(28)-(30)**	Change in Groundwater Storage	9,676

item	Flow Type	Origin/ Destination	Component	2068
	TOTAL BASIN WATER BUDGET			
(1)	Inflow	Into Basin	Precipitation on Land System	198,737
(14)	Inflow	Into Basin	Precipitation on Reservoirs	728
(13)	Inflow	Into Basin	Stream Inflow	652,832
(27)	Inflow	Into Basin	Subsurface Inflow	1
(32)	Inflow	*(1)+(14)+(13)+(27)*	*Total Inflow*	*852,297*
(5)	Outflow	Out of Basin	Evapotranspiration	162,359
(24)	Outflow	Out of Basin	Stream Evaporation	380
(23)	Outflow	Out of Basin	Reservoir Evaporation	697
(19)	Outflow	Out of Basin	Conveyance Evaporation	46
(18)	Outflow	Out of Basin	Stream Outflow	679,139
(29)	Outflow	Out of Basin	Subsurface Outflow	-
(33)	Outflow	*(5)+(24)+(23)+(19)+(18)+(29)*	*Total Outflow*	*842,621*
(34)	Storage Change	**(32)-(33)**	Change in Total System Storage	9,676

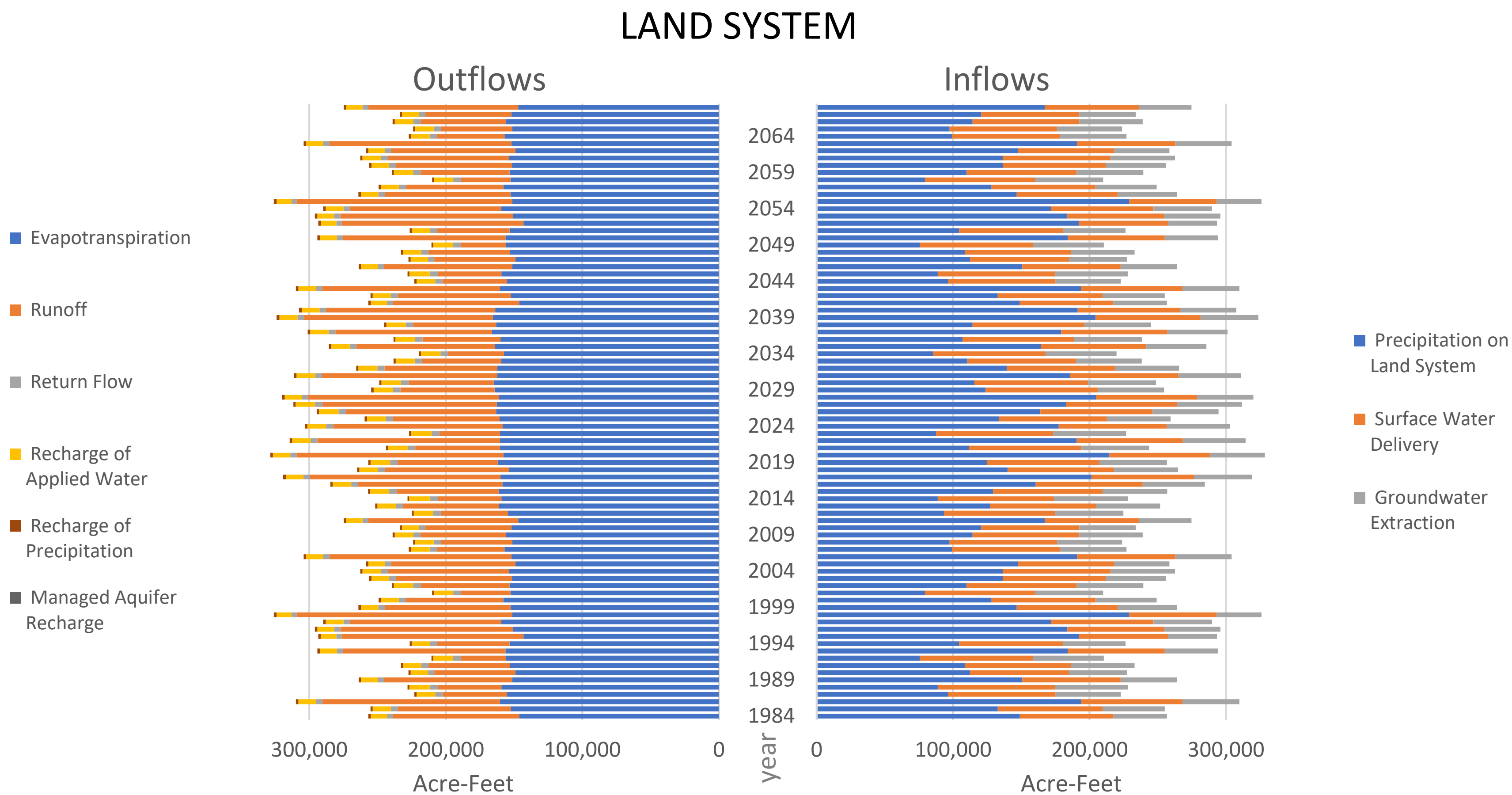
Appendix 6C

Water Budget Bar Charts

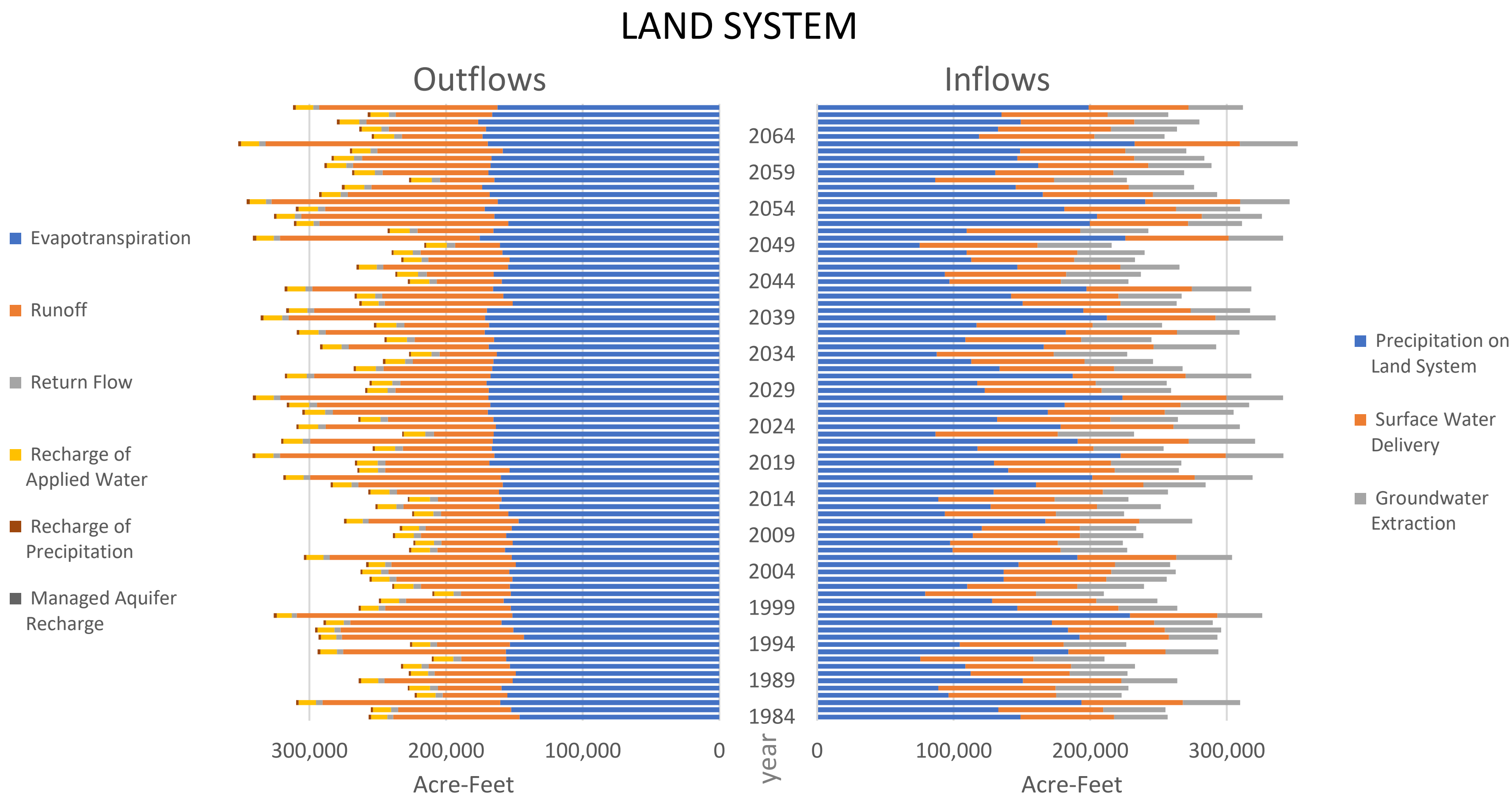
Historic Water Budget



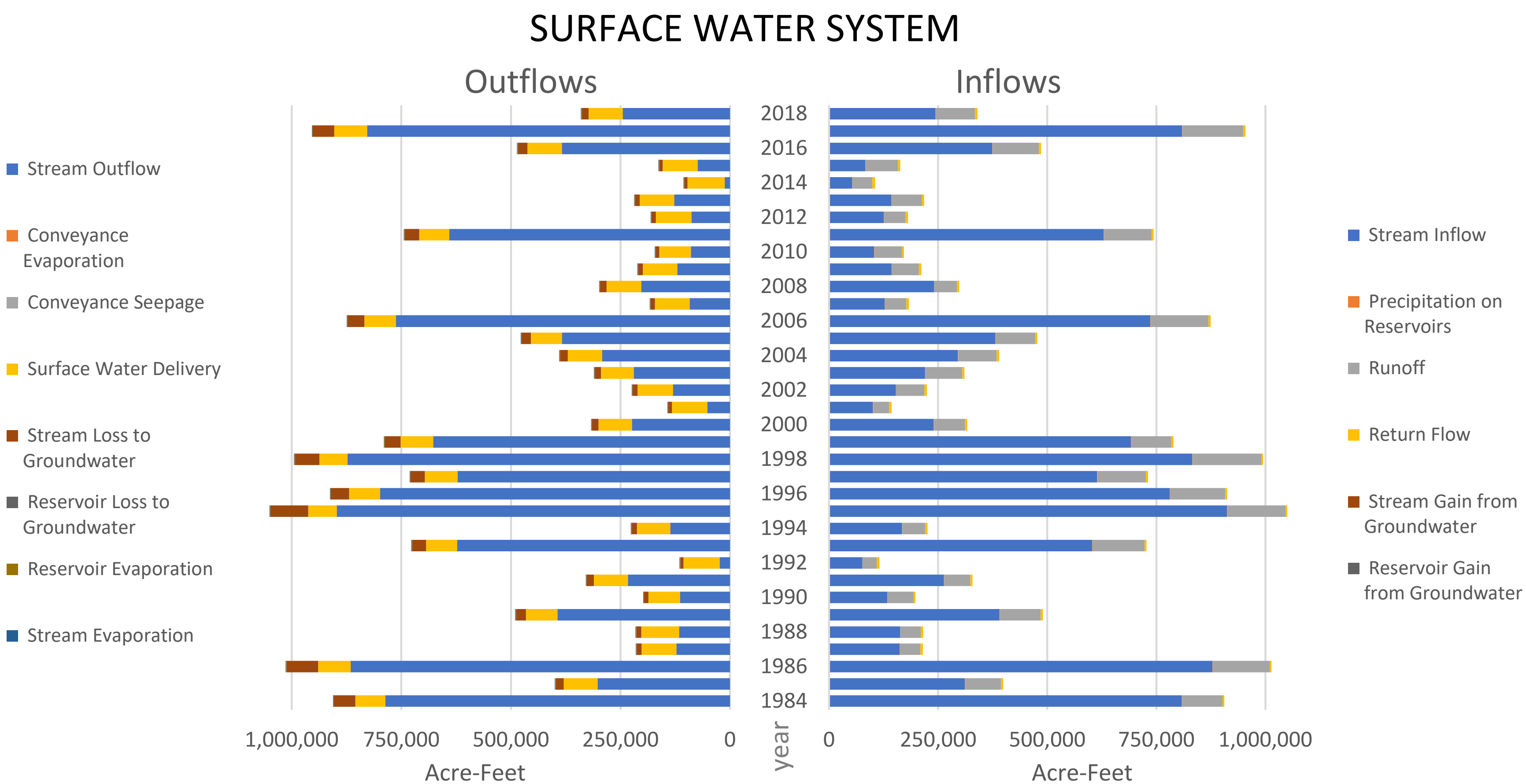
Future Water Budget



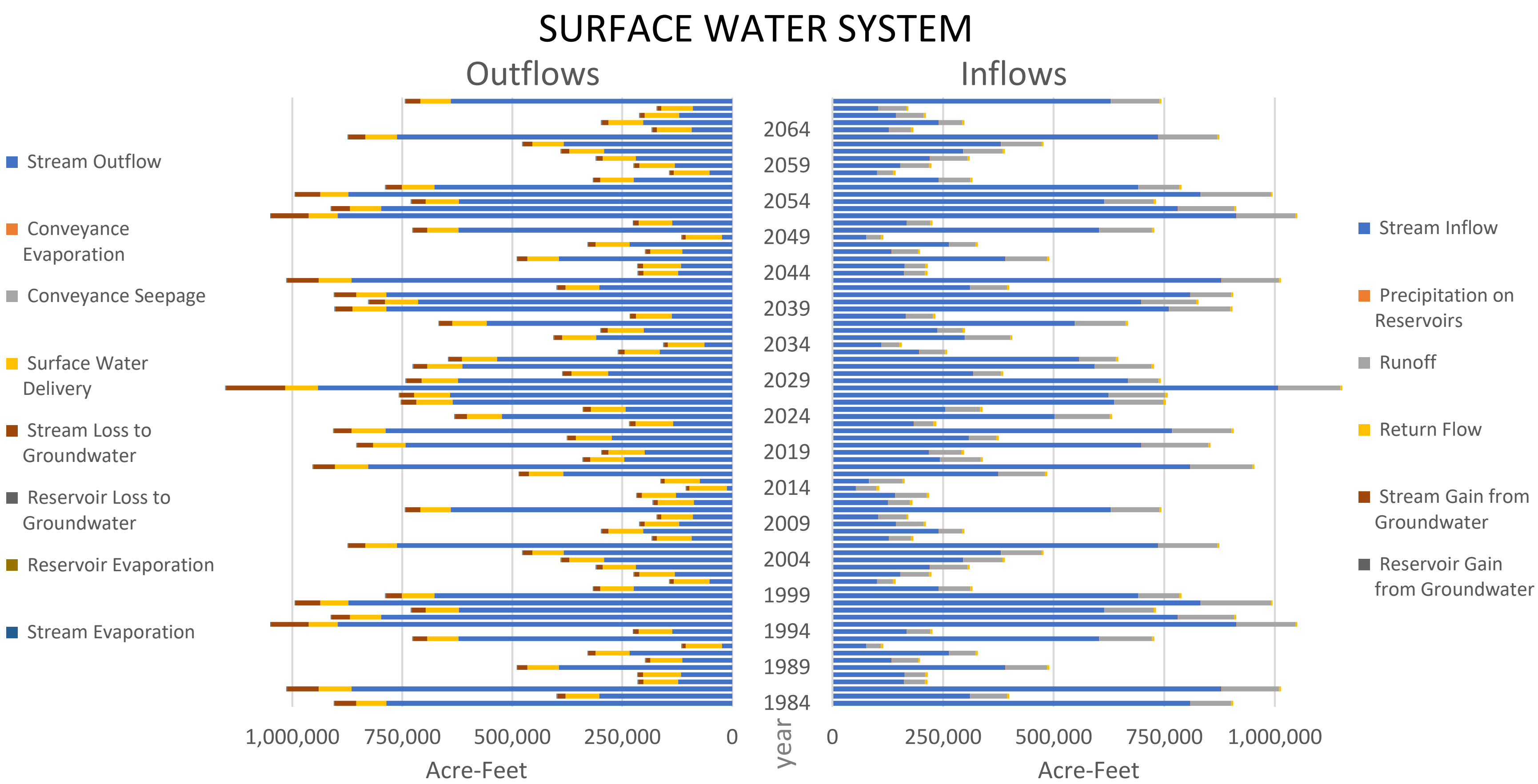
Future Water Budget With Climate Change



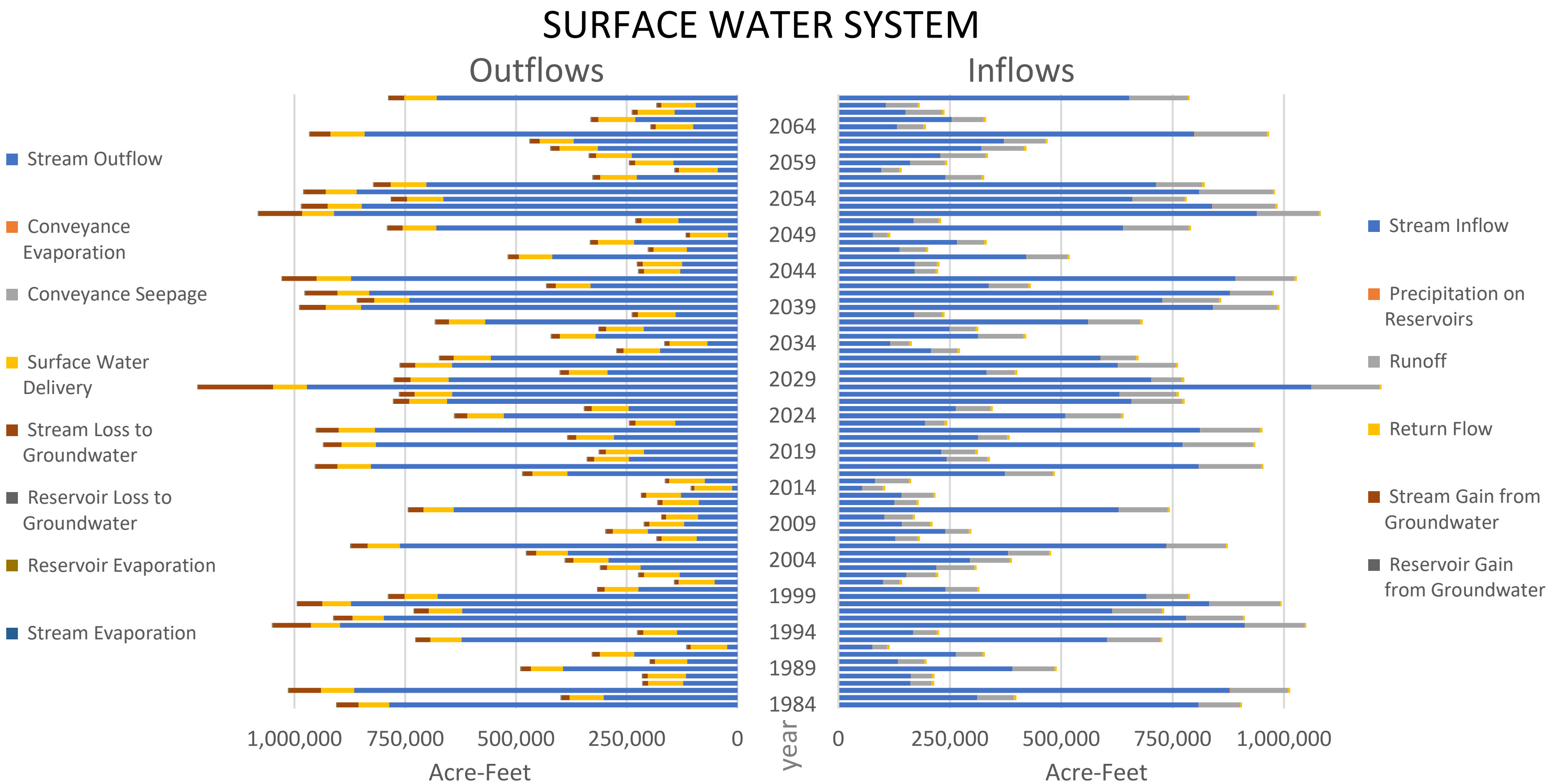
Historic Water Budget



Future Water Budget

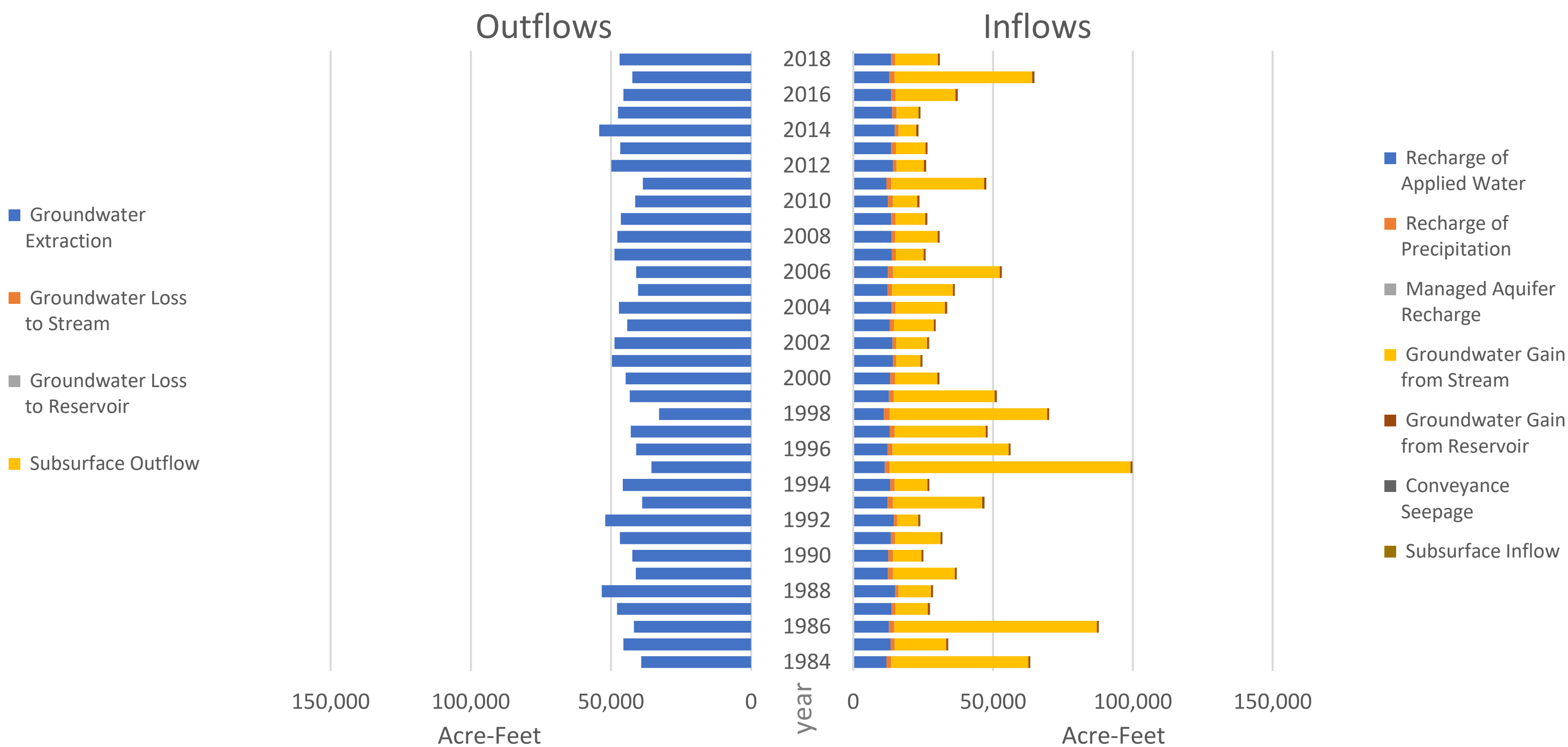


Future Water Budget With Climate Change

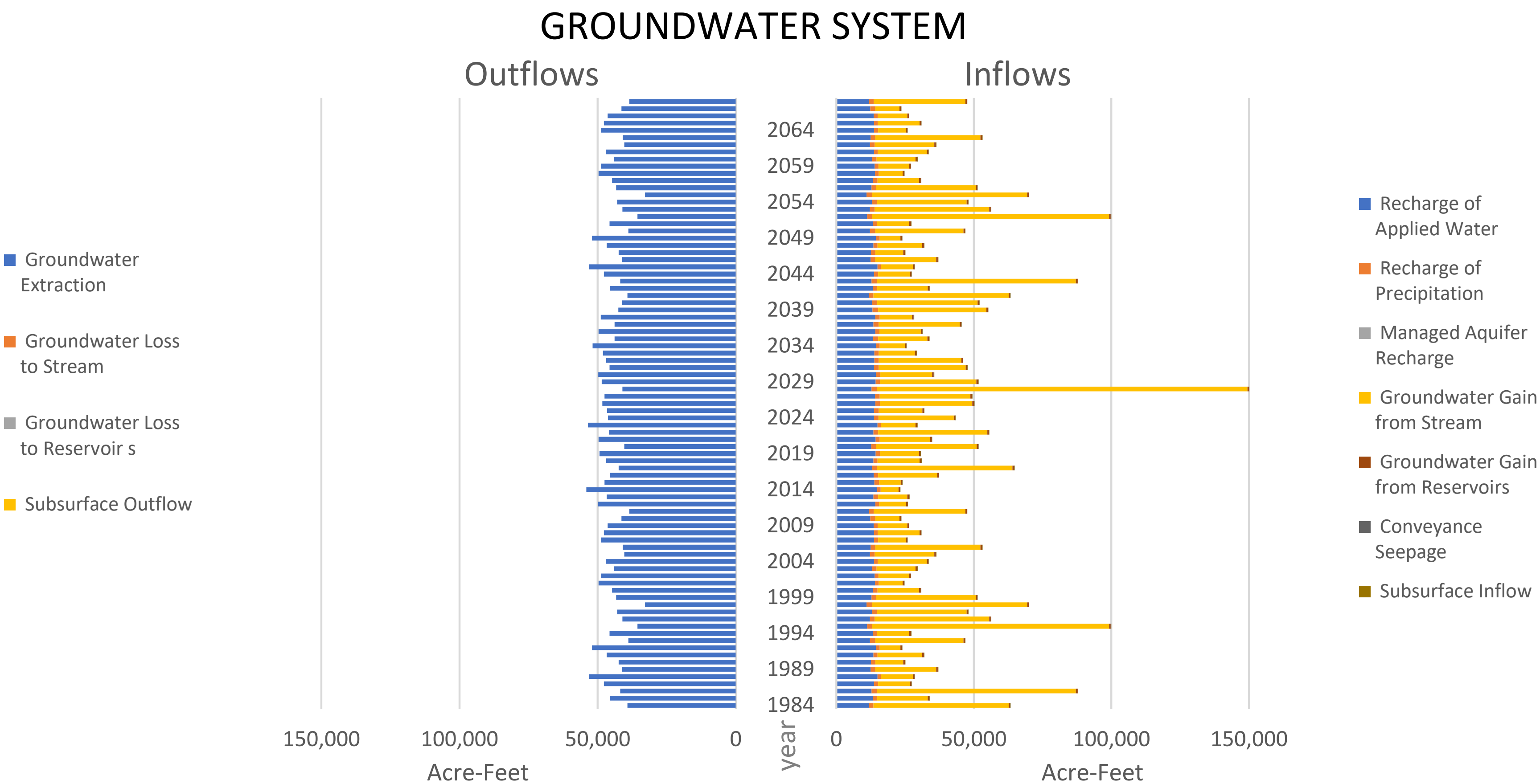


Historic Water Budget

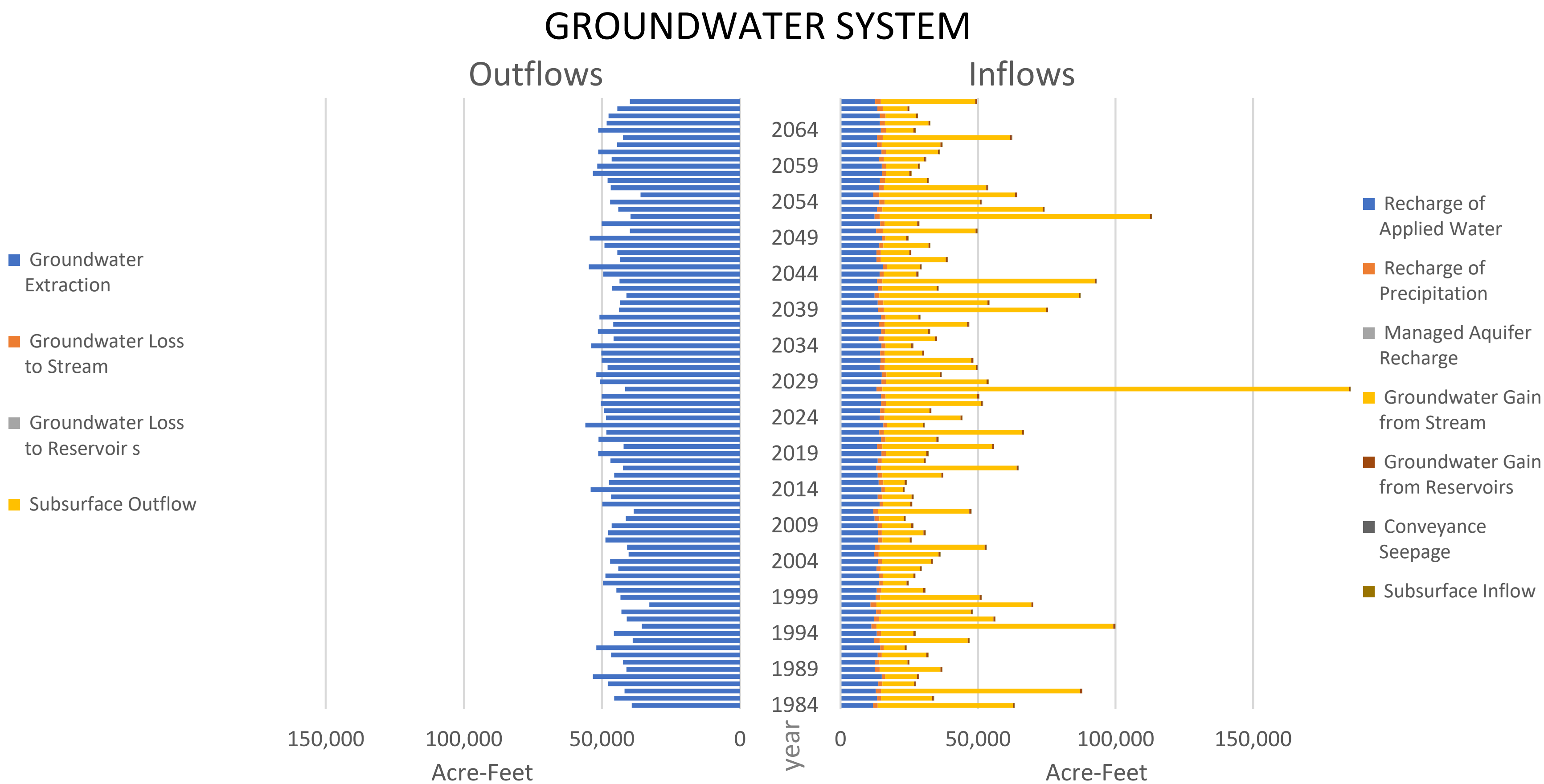
GROUNDWATER SYSTEM



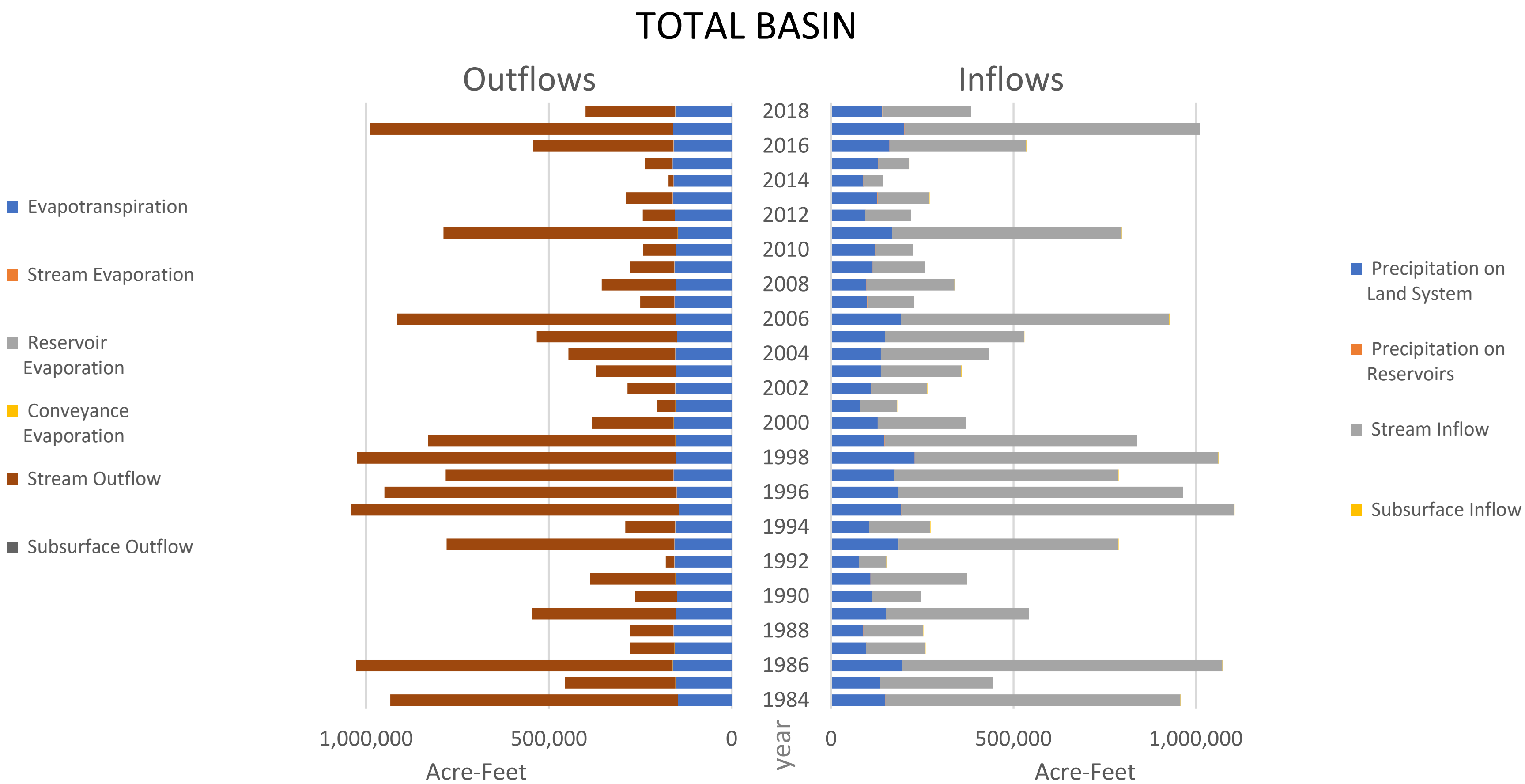
Future Water Budget



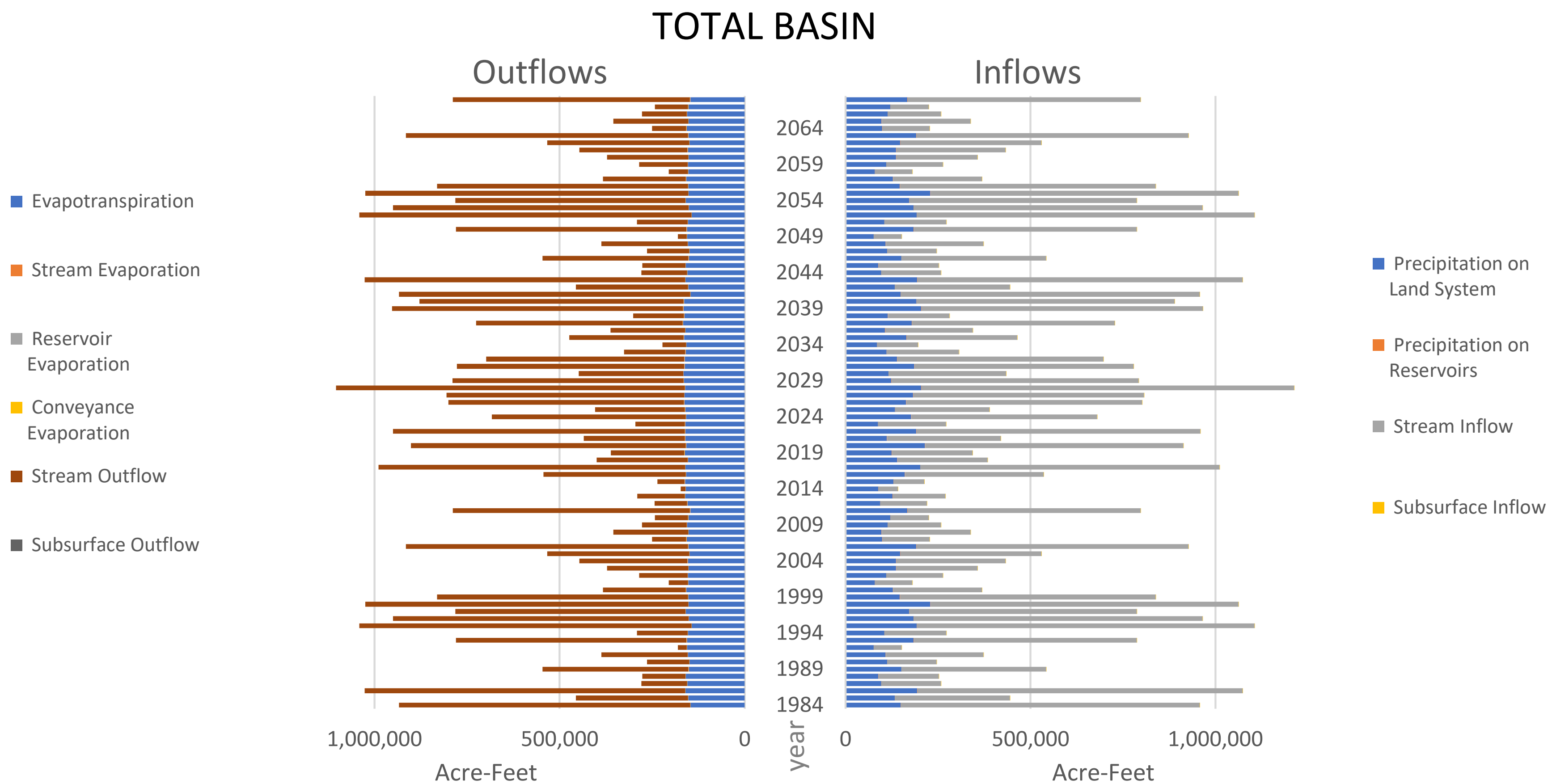
Future Water Budget With Climate Change



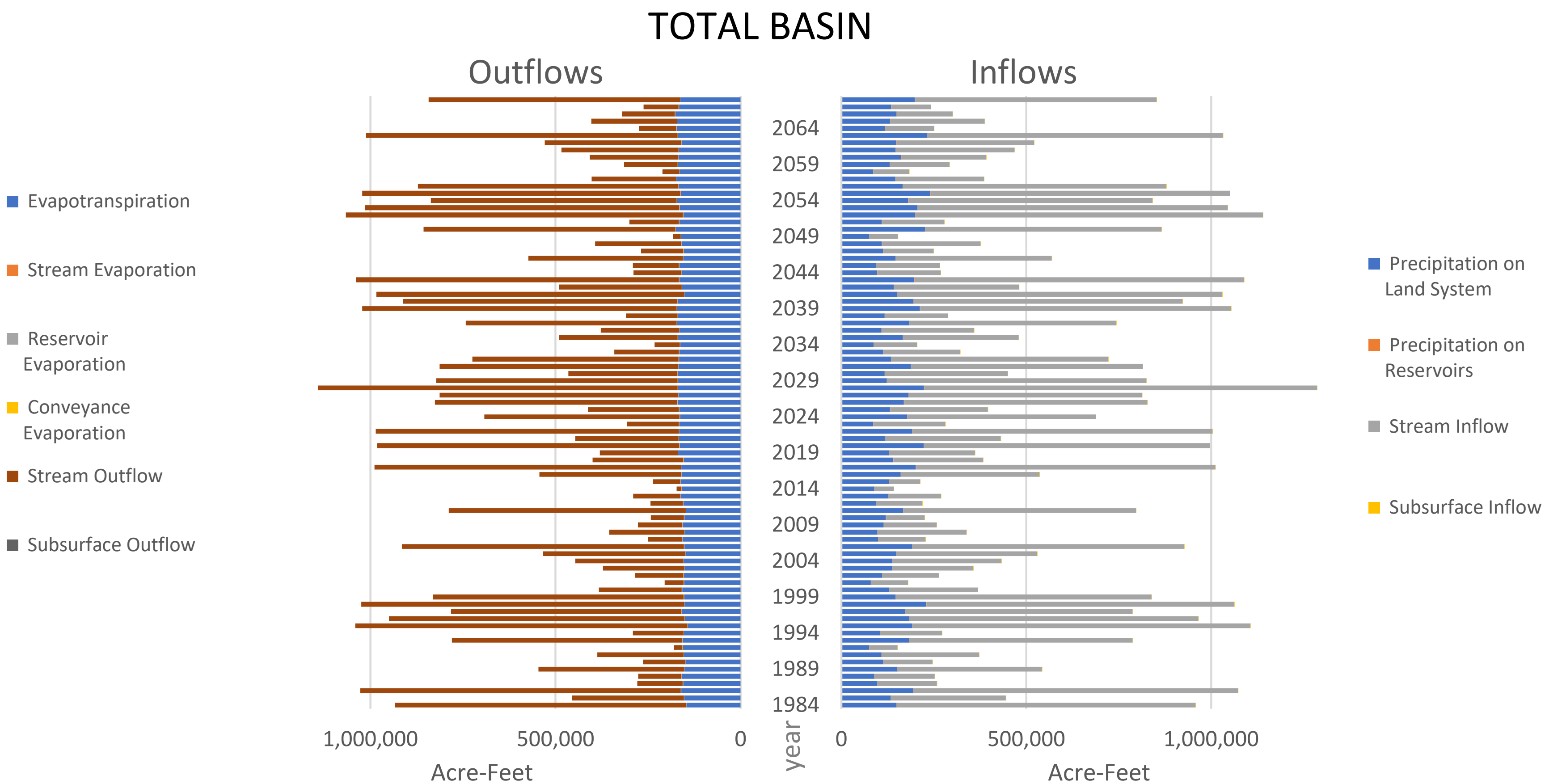
Historic Water Budget



Future Water Budget



Future Water Budget With Climate Change



Big Valley GSP Comment Matrix

Document	Packet Page	Page & Line Number	Comment	Date	Notes and Responses
Public Draft Ch 6, Current Wtr Budget			**The Tables in Chapter 6 should say "ESTIMATED" or "ASSUMED" for Inflow, Outflow.**	Dec. 2	Data is used where it's available, rough estimates are made in other areas, and assumptions based on best professional judgement in still other areas. The water budget is balanced by adjusting the estimates and assumptions within generally acceptable ranges until the budget is balanced. As such, the water budget is not necessarily a unique solution, but represents the best professional estimate. Water budget estimates of this type are considered order of magnitude estimates and can be refined as new data becomes available.
Public Draft Ch 6, Current Wtr Budget			**Some areas are shown on the map as irrigated, when they are actually dry farmed. These areas have only been irrigated on a select few occasions.**	Dec. 2	In order to reflect these farming practices, the GSP development team needs data to substantiate it. Input was requested on water source throughout the Basin in previous BVAC meetings. Similar input will be solicited at upcoming meetings and the new information can be incorporated into the Water Budget in future revisions.
Public Draft Ch 6, Current Wtr Budget			**Concern that the 14,000 acres of the wetland don't show irrigation. Ash Creek Refuge is white on the map, rather than blue.**	Dec. 2	The focus was on calculating irrigated acreage. Wetlands are a water use in the water budget - the assumption is that 98% of the water supply on the refuge is from surface water, and 2% groundwater. **The wetlands in the Ash Creek Wildlife area have been added to Figure 6-5.**
Public Draft Ch 6, Current Wtr Budget			**How were the percentages of 98% surface water and 2% groundwater derived for the wetlands?**	Dec. 2	Starting with the area of the wetlands, the evapatranspiration values (more specific to the conditions in Big Valley) are combined with crop co-efficients. A coefficient was used for crops similar to the vegetation of the wetland. The yields an estimate of evapotranspiration associated with the plants in the wetland. If the refuge did not run any groundwater pumps, then the refuge would be supplied 100% by surface water. Because there are three pumps that are occasionally run, there is some source from groundwater. The 2% was estimated based on professional judgement due to knowledge of the locations of the wells, the areas that they irrigate and conversations from the CDFW about how often they use them (typically for a month or two in the fall to bridge the driest part of the year). Consultant staff has reached out to the CDFW to obtain pumping data, but they have indicated that the data does not exist. As such, 2% is currently the best estimate. **Text was added to the chapter to document this estimate.**
Public Draft Ch 6, Current Wtr Budget			What are the options for determining runoff? Which way is best?		Modeling or calculations using the "Curve Number Method" (CNM) are the two widely accepted options to determine runoff. In the opinion of the consultants, modeling runoff would not produce significantly improved estimates from CNM, but would take additional time and budget.
Public Draft Ch 6, Current Wtr Budget			Is there a way to get a larger map, or better electronic version, to take a closer look at the basin boundary?	Dec. 2	**A KMZ file (viewable in Google Earth) of the Basin Boundary has been posted on the website. An email notification was sent to the interested parties notifying them of the file and how to use it.**
Public Draft Ch 6, Current Wtr Budget			Using the numbers on this chart, does this mean that a 7-8% reduction in pumping is needed?	Dec. 2	What this means is that there needs to be about 5,000 AF per year on average in compensation to reduce overdraft. It might involve managed aquifer recharge, reduced pumping or combination of the two. Reducing overdraft can be achieved in various ways.
Public Draft Ch 6, Future Wtr Budget			Is it required to use 50 years of data? Does it specify which years of data need to be used?	Dec. 2	At least 50 years of historical data are required as per the GSP Regulations. Going back further would include data from a time period with higher uncertainty and lower accuracy.

Big Valley GSP Comment Matrix

Document	Packet Page	Page & Line Number	Comment	Date	Notes and Responses
Public Draft Ch 6, Future Wtr Budget			How does an overdraft of about 5-10% compare with other basins? It's surprising that the number is so small, but it would still impact a lot of people.	Dec. 2	Not sure, but there are certainly a lot other basins that are much worse off.
Public Draft Ch 6, Future Wtr Budget	30		**Land System Water Budget Chart, item 2 (inflow between systems): This uses surface water. Ash Creek Wildlife Refuge is here. The assumption is that ag is the only sector that uses surface water. There are other uses and users of surface water.**	Dec. 2	The wetlands are alos a surface water user and text has been added to describe that. There are also illegal uses, fire uses. There is not a way to measure or quantify those uses. If some reasonable and defensible data or assumptions were provided to the GSP development team, then those uses could be incorporated into the budget.
Public Draft Ch 6, Future Wtr Budget			**Land System Water Budget Chart, item 3 (population): This only uses the population from the census of Bieber, there's Adin, New Bieber and Lookout. Those need to be added in.**	Dec. 2	The water budget considers the entire population of Big Valley published by DWR. A distinction is made between Bieber and the rest of Big Valley, because Bieber is served by a public water supply system while the rest of domestic use in Big Valley is from individual wells. This is a distinction between "municipal" and "domestic" uses, which SGMA categorizes differently. However, all household use is considered and accounted for in the water budget.
Public Draft Ch 6, Future Wtr Budget			**There's a piece of ground that's not on the map that needs to be included (Jimmy Nunn).**	Dec. 2	This information can be incorporated once the land is clearly identified. Such information will be solicited at future BVAC and/or public outreach meetings.

Big Valley Groundwater Sustainability Plan GSP Regulations Checklist (Elements Guide) for Chapter 7

This checklist of the GSP Elements and indicates where in the GSP each element of the regulations is addressed.

Article 5. **Plan Contents for Big Valley Groundwater Basin**

				GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
§ 354.20.			**Management Areas**					
(a)			Each Agency may define one or more management areas within a basin if the Agency has determined that creation of management areas will facilitate implementation of the Plan. Management areas may define different minimum thresholds and be operated to different measurable objectives than the basin at large, provided that undesirable results are defined consistently throughout the basin.	partially complete	7.3			Needs input from BVAC and stakeholders to complete.
(b)			A basin that includes one or more management areas shall describe the following in the Plan:					
	(1)		The reason for the creation of each management area.		7.3			Needs input from BVAC and stakeholders to complete.
	(2)		The minimum thresholds and measurable objectives established for each management area, and an explanation of the rationale for selecting those values, if different from the basin at large.		7.3			Needs input from BVAC and stakeholders to complete.
	(3)		The level of monitoring and analysis appropriate for each management area.		7.3			Needs input from BVAC and stakeholders to complete.
	(4)		An explanation of how the management area can operate under different minimum thresholds and measurable objectives without causing undesirable results outside the management area, if applicable.		7.3			Needs input from BVAC and stakeholders to complete.
(c)			If a Plan includes one or more management areas, the Plan shall include descriptions, maps, and other information required by this Subarticle sufficient to describe conditions in those areas.		7.3			Needs input from BVAC and stakeholders to complete.
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10733.2 and 10733.4, Water Code.					
SubArticle 3.			**Sustainable Management Criteria**					
§ 354.22.			**Introduction to Sustainable Management Criteria**					
			This Subarticle describes criteria by which an Agency defines conditions in its Plan that constitute sustainable groundwater management for the basin, including the process by which the Agency shall characterize undesirable results, and establish minimum thresholds and measurable objectives for each applicable sustainability indicator.					
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Section 10733.2, Water Code.					
§ 354.24.			**Sustainability Goal**					

"X" indicates that the element has been addressed.
The page number will be filled in once the entire GSP is compiled.

Shaded areas are elements of the regulations that don't have to be addressed in the GSP

				GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
			Each Agency shall establish in its Plan a sustainability goal for the basin that culminates in the absence of undesirable results within 20 years of the applicable statutory deadline. The Plan shall include a description of the sustainability goal, including information from the basin setting used to establish the sustainability goal, a discussion of the measures that will be implemented to ensure that the basin will be operated within its sustainable yield, and an explanation of how the sustainability goal is likely to be achieved within 20 years of Plan implementation and is likely to be maintained through the planning and implementation horizon.	partially complete	7.1			Needs input from BVAC and stakeholders to complete.
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10721, 10727, 10727.2, 10733.2, and 10733.8, Water Code.					
§ 354.26.			**Undesirable Results**					
(a)			Each Agency shall describe in its Plan the processes and criteria relied upon to define undesirable results applicable to the basin. Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin.	partially complete	7.4:7.9			Needs input from BVAC and stakeholders to complete.
(b)			The description of undesirable results shall include the following:					
	(1)		The cause of groundwater conditions occurring throughout the basin that would lead to or has led to undesirable results based on information described in the basin setting, and other data or models as appropriate.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
	(2)		The criteria used to define when and where the effects of the groundwater conditions cause undesirable results for each applicable sustainability indicator. The criteria shall be based on a quantitative description of the combination of minimum threshold exceedances that cause significant and unreasonable effects in the basin.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
	(3)		Potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
(c)			The Agency may need to evaluate multiple minimum thresholds to determine whether an undesirable result is occurring in the basin. The determination that undesirable results are occurring may depend upon measurements from multiple monitoring sites, rather than a single monitoring site.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
(d)			An Agency that is able to demonstrate that undesirable results related to one or more sustainability indicators are not present and are not likely to occur in a basin shall not be required to establish criteria for undesirable results related to those sustainability indicators.	X	7.6			Seawater Intrusion is not applicable to the Basin and this section states that it does not and will not occur in the future.
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10721, 10723.2, 10727.2, 10733.2, and 10733.8, Water Code.					
§ 354.28.			**Minimum Thresholds**					

Article 5.			Plan Contents for Big Valley Groundwater Basin	GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
(a)			Each Agency in its Plan shall establish minimum thresholds that quantify groundwater conditions for each applicable sustainability indicator at each monitoring site or representative monitoring site established pursuant to Section 354.36. The numeric value used to define minimum thresholds shall represent a point in the basin that, if exceeded, may cause undesirable results as described in Section 354.26.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
(b)			The description of minimum thresholds shall include the following:					
	(1)		The information and criteria relied upon to establish and justify the minimum thresholds for each sustainability indicator. The justification for the minimum threshold shall be supported by information provided in the basin setting, and other data or models as appropriate, and qualified by uncertainty in the understanding of the basin setting.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
	(2)		The relationship between the minimum thresholds for each sustainability indicator, including an explanation of how the Agency has determined that basin conditions at each minimum threshold will avoid undesirable results for each of the sustainability indicators.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
	(3)		How minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
	(4)		How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
	(5)		How state, federal, or local standards relate to the relevant sustainability indicator. If the minimum threshold differs from other regulatory standards, the Agency shall explain the nature of and basis for the difference.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
	(6)		How each minimum threshold will be quantitatively measured, consistent with the monitoring network requirements described in Subarticle 4.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
(c)			Minimum thresholds for each sustainability indicator shall be defined as follows:					
	(1)		Chronic Lowering of Groundwater Levels. The minimum threshold for chronic lowering of groundwater levels shall be the groundwater elevation indicating a depletion of supply at a given location that may lead to undesirable results. Minimum thresholds for chronic lowering of groundwater levels shall be supported by the following:					
		(A)	The rate of groundwater elevation decline based on historical trends, water year type, and projected water use in the basin.	X	7.4			Also Appendix 7B
		(B)	Potential effects on other sustainability indicators.		7.4			Will be completed once the undesirable results, minimum thresholds, measurable objectives, and monitoring network are established.

				GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
	(2)		Reduction of Groundwater Storage. The minimum threshold for reduction of groundwater storage shall be a total volume of groundwater that can be withdrawn from the basin without causing conditions that may lead to undesirable results. Minimum thresholds for reduction of groundwater storage shall be supported by the sustainable yield of the basin, calculated based on historical trends, water year type, and projected water use in the basin.		7.5			Needs input from BVAC and stakeholders to complete.
	(3)		Seawater Intrusion. The minimum threshold for seawater intrusion shall be defined by a chloride concentration isocontour for each principal aquifer where seawater intrusion may lead to undesirable results. Minimum thresholds for seawater intrusion shall be supported by the following:					
		(A)	Maps and cross-sections of the chloride concentration isocontour that defines the minimum threshold and measurable objective for each principal aquifer.	N/A	7.6			Seawater Intrusion is not applicable to the Basin and this section states that it does not and will not occur in the future.
		(B)	A description of how the seawater intrusion minimum threshold considers the effects of current and projected sea levels.	N/A	7.6			Seawater Intrusion is not applicable to the Basin and this section states that it does not and will not occur in the future.
	(4)		Degraded Water Quality. The minimum threshold for degraded water quality shall be the degradation of water quality, including the migration of contaminant plumes that impair water supplies or other indicator of water quality as determined by the Agency that may lead to undesirable results. The minimum threshold shall be based on the number of supply wells, a volume of water, or a location of an isocontour that exceeds concentrations of constituents determined by the Agency to be of concern for the basin. In setting minimum thresholds for degraded water quality, the Agency shall consider local, state, and federal water quality standards applicable to the basin.		7.7			Needs input from BVAC and stakeholders to complete.
	(5)		Land Subsidence. The minimum threshold for land subsidence shall be the rate and extent of subsidence that substantially interferes with surface land uses and may lead to undesirable results. Minimum thresholds for land subsidence shall be supported by the following:					
		(A)	Identification of land uses and property interests that have been affected or are likely to be affected by land subsidence in the basin, including an explanation of how the Agency has determined and considered those uses and interests, and the Agency's rationale for establishing minimum thresholds in light of those effects.		7.8			Needs input from BVAC and stakeholders to complete.
		(B)	Maps and graphs showing the extent and rate of land subsidence in the basin that defines the minimum threshold and measurable objectives.		7.8			Partially addressed in Chapters 4-5. Will be updated once input from BVAC and stakeholders is received.
	(6)		Depletions of Interconnected Surface Water. The minimum threshold for depletions of interconnected surface water shall be the rate or volume of surface water depletions caused by groundwater use that has adverse impacts on beneficial uses of the surface water and may lead to undesirable results. The minimum threshold established for depletions of interconnected surface water shall be supported by the following:					
		(A)	The location, quantity, and timing of depletions of interconnected surface water.	X	7.9, 6.2	7.7, 6.7		

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The page number will be filled in once the entire GSP is compiled.

Shaded areas are elements of the regulations that don't have to be addressed in the GSP

				GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
		(B)	A description of the groundwater and surface water model used to quantify surface water depletion. If a numerical groundwater and surface water model is not used to quantify surface water depletion, the Plan shall identify and describe an equally effective method, tool, or analytical model to accomplish the requirements of this Paragraph.	X	7.9			
(d)			An Agency may establish a representative minimum threshold for groundwater elevation to serve as the value for multiple sustainability indicators, where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual minimum thresholds as supported by adequate evidence.		7.9			Needs input from BVAC and stakeholders to complete.
(e)			An Agency that has demonstrated that undesirable results related to one or more sustainability indicators are not present and are not likely to occur in a basin, as described in Section 354.26, shall not be required to establish minimum thresholds related to those sustainability indicators.	X	7.6			Seawater Intrusion is not applicable to the Basin and this section states that it does not and will not occur in the future.
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10723.2, 10727.2, 10733, 10733.2, and 10733.8, Water Code.					
§ 354.30.			**Measurable Objectives**					
(a)			Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin within 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
(b)			Measurable objectives shall be established for each sustainability indicator, based on quantitative values using the same metrics and monitoring sites as are used to define the minimum thresholds.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
(c)			Measurable objectives shall provide a reasonable margin of operational flexibility under adverse conditions which shall take into consideration components such as historical water budgets, seasonal and long-term trends, and periods of drought, and be commensurate with levels of uncertainty.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
(d)			An Agency may establish a representative measurable objective for groundwater elevation to serve as the value for multiple sustainability indicators where the Agency can demonstrate that the representative value is a reasonable proxy for multiple individual measurable objectives as supported by adequate evidence.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
(e)			Each Plan shall describe a reasonable path to achieve the sustainability goal for the basin within 20 years of Plan implementation, including a description of interim milestones for each relevant sustainability indicator, using the same metric as the measurable objective, in increments of five years. The description shall explain how the Plan is likely to maintain sustainable groundwater management over the planning and implementation horizon.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
(f)			Each Plan may include measurable objectives and interim milestones for additional Plan elements described in Water Code Section 10727.4 where the Agency determines such measures are appropriate for sustainable groundwater management in the basin.		7.4:7.9			Needs input from BVAC and stakeholders to complete.

"X" indicates that the element has been addressed.
The page number will be filled in once the entire GSP is compiled.

Shaded areas are elements of the regulations that don't have to be addressed in the GSP

				GSP Document References				
				Page Numbers of Plan	Or Section Numbers	Or Figure Numbers	Or Table Numbers	Notes
(g)			An Agency may establish measurable objectives that exceed the reasonable margin of operational flexibility for the purpose of improving overall conditions in the basin, but failure to achieve those objectives shall not be grounds for a finding of inadequacy of the Plan.		7.4:7.9			Needs input from BVAC and stakeholders to complete.
			Note: Authority cited: Section 10733.2, Water Code.					
			Reference: Sections 10727.2, 10727.4, and 10733.2, Water Code.					

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Appendix 7A Sample Sustainability Goals and Undesirable Results
Appendix 7B Sustainability Indicator Analytics for Existing Monitoring Wells

Abbreviations and Acronyms

Basin	Big Valley Groundwater Basin
BVGB	Big Valley Groundwater Basin
BVAC	Big Valley Groundwater Basin Advisory Committee
COC	Constituent of Concern
DWR	Department of Water Resources
GSA	Groundwater Sustainability Agency
GSP	Groundwater Sustainability Plan
MCL	Maximum Contaminant Level
SGMA	Sustainable Groundwater Management Act of 2014
SI	Sustainability Indicator (aka Undesirable Result)
SMC	Sustainable Management Criteria
TDS	Total Dissolved Solids

7. Sustainable Management Criteria (§ 354.22-30)

7.1 Sustainability Goal and Introduction

The sustainability goal for the Big Valley Groundwater Basin (BVGB or Basin) will be developed and documented in this Chapter and consists of a broad statement that when implemented will culminate "in the absence of undesirable results within 20 years". (§ 354.22) It generally describes the beneficial uses and users that the Groundwater Sustainability Plan (GSP) seeks to protect. **Appendix 7A** contains examples of sustainability goals from GSPs submitted in January 2020. Below is the text of the GSP Regulation that requires a sustainability goal:

> ***§ 354.22. Sustainability Goal.*** *Each Agency shall establish in its Plan a sustainability goal for the basin that culminates in the absence of undesirable results within 20 years of the applicable statutory deadline. The Plan shall include a description of the sustainability goal, including information from the basin setting used to establish the sustainability goal, a discussion of the measures that will be implemented to ensure that the basin will be operated within its sustainable yield, and an explanation of how the sustainability goal is likely to be achieved within 20 years of Plan implementation and is likely to be maintained through the planning and implementation horizon.*

Undesirable Results are when "significant and unreasonable" effects occur relating to:

- Chronic lowering of groundwater *levels*
- Reduction of groundwater *storage*
- *Seawater intrusion* (not applicable to the BVGB)
- Degraded *water quality*
- Land *subsidence*
- Depletion of *interconnected surface water*

These six items are also known as "sustainability indicators" (SIs) in the Groundwater Sustainability Plan (GSP) Regulations. While the sustainability goal is a statement that governs the entire GSP, undesirable results are defined for each SI. In other words, undesirable results define what is "significant and unreasonable" for each SI (in the case of the BVGB this includes levels, storage, water quality, subsidence, and interconnected surface water).

This preliminary (admin) draft of Chapter 7 will not define the sustainability goal or undesirable results but will present examples and key information from which they can be developed. Development of the SMCs will be performed through collaboration between the Groundwater Sustainability Agency (GSA) staff and consultants, the Big Valley Advisory Committee (BVAC), interested parties (stakeholders), and potentially the GSA governing bodies (boards of supervisors) if the staff and BVAC deem that to be appropriate. The development of SMCs should be stakeholder driven and the text and recommendations in this chapter should largely be regarded as more suggestive than prescriptive, outside of where the regulations drive the content.

7.2 Process for Establishing Sustainable Management Criteria

Establishing Sustainable Management Criteria[1] (SMCs) will likely be an iterative process with initial criteria needing adjustment to address effects on an assessment of beneficial uses and users of groundwater, land uses, and property interests. The SMC development process will be performed through BVAC meetings, public review of draft SMCs, and other public outreach forums.

7.2.1 *Minimum Thresholds and Undesirable Results*

A minimum threshold is a numeric value used to help define when conditions have become undesirable. Minimum thresholds are established for representative monitoring sites, which when exceeded may cause undesirable results. Undesirable results will be defined by minimum threshold exceedances and are viewed by the Department of Water Resources (DWR) to determine whether the Basin is sustainable (i.e. in compliance with the Sustainable Groundwater Management Act (SGMA)).

Undesirable results may be defined as a minimum threshold exceedance at a single monitoring site, multiple monitoring sites, or a portion of the Basin. For example, say five wells are chosen as representative monitoring sites for groundwater levels in a basin. Each well needs a minimum threshold, which the GSP establishes as, say 4000, 4200, 4100, 4050, and 4150 feet above mean sea level. A minimum threshold exceedance would be when the water level in a well drops below its corresponding threshold. However, let's say in this example that the GSP defines the undesirable result criteria as "when more than 25% of the wells in the basin exceed their minimum threshold". So, in a particular year, if one well exceeds its threshold that is not an undesirable result (one of five wells would be 20%). If two wells exceed the threshold (two of five wells or 40%), that would be an undesirable result and DWR would have reason to act.

The description of an undesirable result will need to discuss the:

- <u>Cause</u> of the undesirable result
    - For example, groundwater pumping in the case of water levels or perhaps a high density of septic systems in the case of water quality.
- The <u>criteria</u> that defines when and where the effects are significant and unreasonable (i.e. undesirable result)
    - This is the quantitative definition of the combination of minimum threshold exceedances that constitute an undesirable result (e.g. 25% of wells exceed their minimum threshold)
- The potential <u>effects</u> of the undesirable result on beneficial uses and users of groundwater, land uses, and property interests.
    - For example, wells going dry in the case of water levels or water being unsuitable for human consumption in the case of water quality.

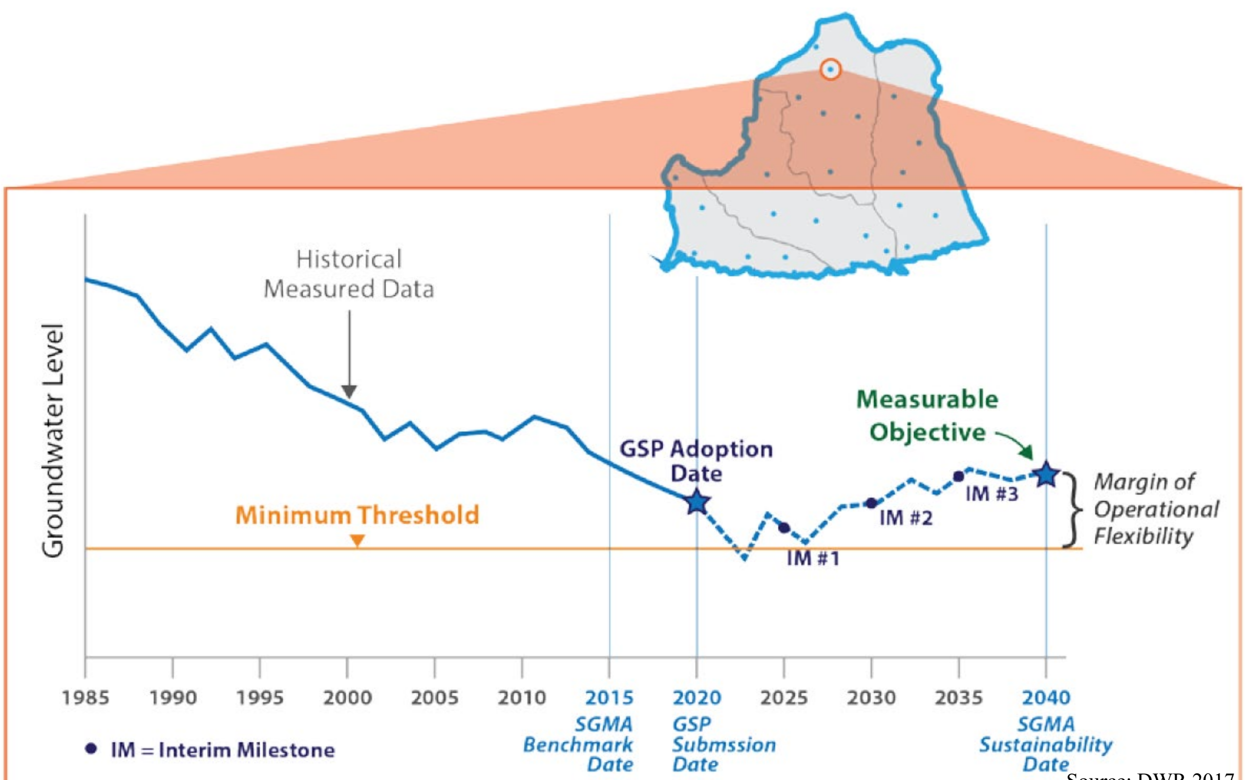
[1] SMCs are the minimum thresholds, undesirable results, measurable objectives, and interim milestones.

Appendix 7A contains several examples of undesirable results from GSPs submitted in January 2020.

7.2.2 *Measurable Objectives and Interim Milestones*

Measurable objectives are numeric goals that reflect the basin's desired groundwater conditions. Measurable objectives are set for the same monitoring sites as the minimum thresholds. Ideally, the measurable objective is set substantially above the minimum threshold to give some flexibility for conditions to fluctuate due to seasonal or drought conditions.

Interim milestones are numeric values for every 5 years between the GSP adoption and sustainability (20 years) that describe how the basin will reach the measurable objective. The interim milestones may describe a straight-line path between current conditions and the measurable objective, or the milestones may indicate that the GSAs plan for conditions to decline for 5-10 years and then improve. This could include interim milestones that are below the minimum threshold. The GSP is not required to have interim milestones. **Figure 7-1** gives a hypothetical example that shows the relationship between the SIs and the margin of operational flexibility.



Source: DWR 2017

Figure 7-1 Illustration of the relationship among the sustainability indicators

7.2.3 *Information for Establishing Sustainable Management Criteria*

Ideally, the SMCs should reflect the priorities and future vision of the residents and stakeholders in the BVGB. To develop SMCs that meet this goal, there needs to be a common understanding of the Basin's physical conditions, overlying management and legal structures, and the Basin's water supply and demands. Chapters 1-6 of this GSP contain much of this information. The sections below point the reader to the pertinent information from these previous chapters and key figures and tables are repeated here. In addition, a variety of information has been assembled on a single page for each well in the Basin that could be used as part of the monitoring networks. A page for each of the 42 wells is included in **Appendix 7B.**

Again, this preliminary draft stops short of establishing the actual SMCs but provides much of the key information and potential considerations that the GSA staff, BVAC, and interested parties may use to establish them.

7.3 Management Areas

Figure 7-2 shows the locations of the wells, major streams, and groundwater dependent ecosystems (GDEs). In order to develop a representative monitoring network, the Basin was divided into areas that each well could potentially represent (i.e. the various colors). These delineations were made by assigning each 1-mile by 1-mile section to the well that would best represent conditions in that section. These judgments were made considering the distribution of the wells, streams, geology, land use, and other physical characteristics.

This exercise in dividing the basin into representative areas assumes that nearly all the wells would be used as representative sites. In practice, many of the wells are redundant and one well can potentially represent larger areas than shown on the map. For example, wells 18E1 and 18M1 are located very close to one another, are similar depths and their locations aren't separated or distinguishable by any major physical characteristics. Other potential redundancy and consolidation of the representative areas of wells could be performed. There are tradeoffs between having many representative sites vs fewer, which can and should be discussed during a BVAC or other public outreach meeting in establishing the representative monitoring network.

Consolidating areas of the Basin in this way could bring the GSAs to decide that management areas should be defined in the GSP. Management areas are allowed, but not required under SGMA. Management areas require additional documentation in the GSP and, in general, establishing management areas adds a level of complexity that may not be necessary. That said, management areas could be used to clearly delineate different land uses, land owners, water uses, water source, water rights, geology, or political affiliation (e.g. Modoc vs Lassen County). Management areas may have different SMCs than the basin at large, however there is nothing that prevents the GSP from establishing different SMCs at different monitoring sites around the Basin even without management areas.

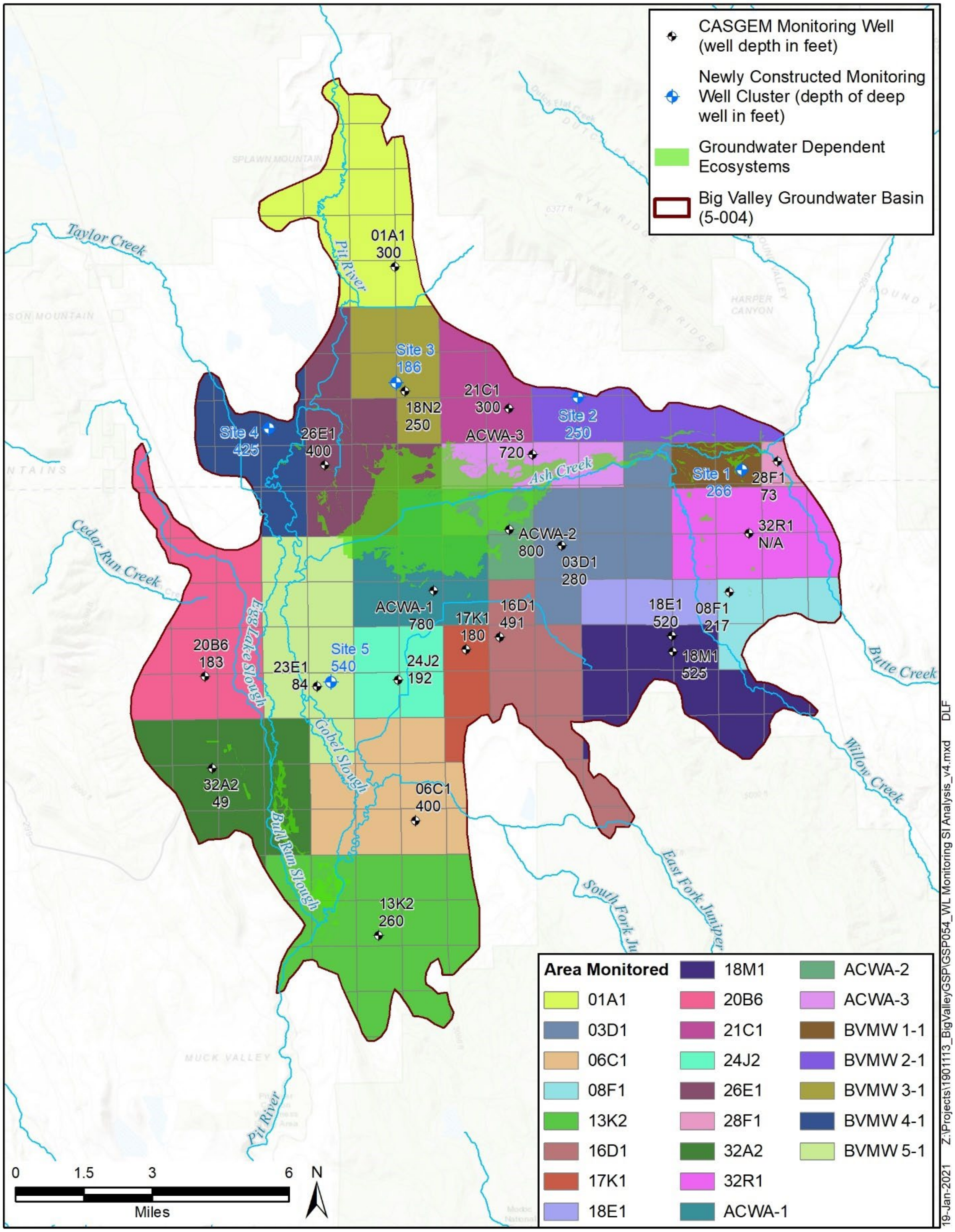


Figure 7-2 Potential monitoring wells and their representative areas

The GSP Regulations §354.20 details the required content for establishing management areas:

> *(a) Each Agency may define one or more management areas within a basin if the Agency has determined that creation of management areas will facilitate implementation of the Plan. Management areas may define different minimum thresholds and be operated to different measurable objectives than the basin at large, provided that undesirable results are defined consistently throughout the basin.*
>
> *(b) A basin that includes one or more management areas shall describe the following in the Plan:*
>
> > *(1) The reason for the creation of each management area.*
> >
> > *(2) The minimum thresholds and measurable objectives established for each management area, and an explanation of the rationale for selecting those values, if different from the basin at large.*
> >
> > *(3) The level of monitoring and analysis appropriate for each management area.*
> >
> > *(4) An explanation of how the management area can operate under different minimum thresholds and measurable objectives without causing undesirable results outside the management area, if applicable.*
>
> *(c) If a Plan includes one or more management areas, the Plan shall include descriptions, maps, and other information required by this Subarticle sufficient to describe conditions in those areas.*

7.4 Chronic Lowering of Groundwater Levels Sustainability Indicator

7.4.1 *Locally Defined Undesirable Results*

As described in section 7.2.1 above, the undesirable result for water levels needs to describe the cause of the undesirable result, the criteria that defines when and where the effects are significant and unreasonable, and the effects of the undesirable results.

Causes

The potential causes of chronic lowering of groundwater levels in the BVGB include groundwater pumping for various uses, including agriculture, industrial, domestic, municipal, and environmental enhancement.

Criteria

The GSAs will determine, through outreach, reasonable criteria for determining when chronic lowering of groundwater levels are significant and unreasonable. The criteria will be defined by minimum threshold exceedances at a single monitoring site, multiple monitoring sites, a portion of the basin, a management area, or the entire basin.

Effects

The potential effects of chronic lowering of groundwater levels on groundwater uses and users will need to be defined. Potential considerations include reduced groundwater production, wells going dry, increased energy (pumping) costs, or increased capital costs to install larger pumps in wells. Other effects may be developed when establishing the undesirable result for this SI. Note that effects such as subsidence, poor water quality, and depletion of surface water and GDEs need not be addressed under this SI but will be addressed through the other SIs.

7.4.2 *Minimum Thresholds and Measurable Objectives*

Minimum thresholds and measurable objectives will be developed for each well chosen for the representative monitoring network. Determining a reasonable groundwater elevation (above mean sea level) for each well should consider information such as depth and screen intervals of other nearby wells, historic and current water levels, and water level trends (seasonal fluctuations and response to wet and dry periods). **Appendix 7C** is a compilation of much of this information for each potential representative monitoring well. **Figure 7-3** shows and example of a well with lowering groundwater levels. Minimum thresholds could be set at criteria such as the lowest historic level, the level of the shallowest wells in the area, the projected 2042 water level, or other criteria developed through collaboration with the BVAC. Measurable objectives could be set at levels such as the 2015 water level, current water level, or some other criteria that gives an appropriate margin of operational flexibility.

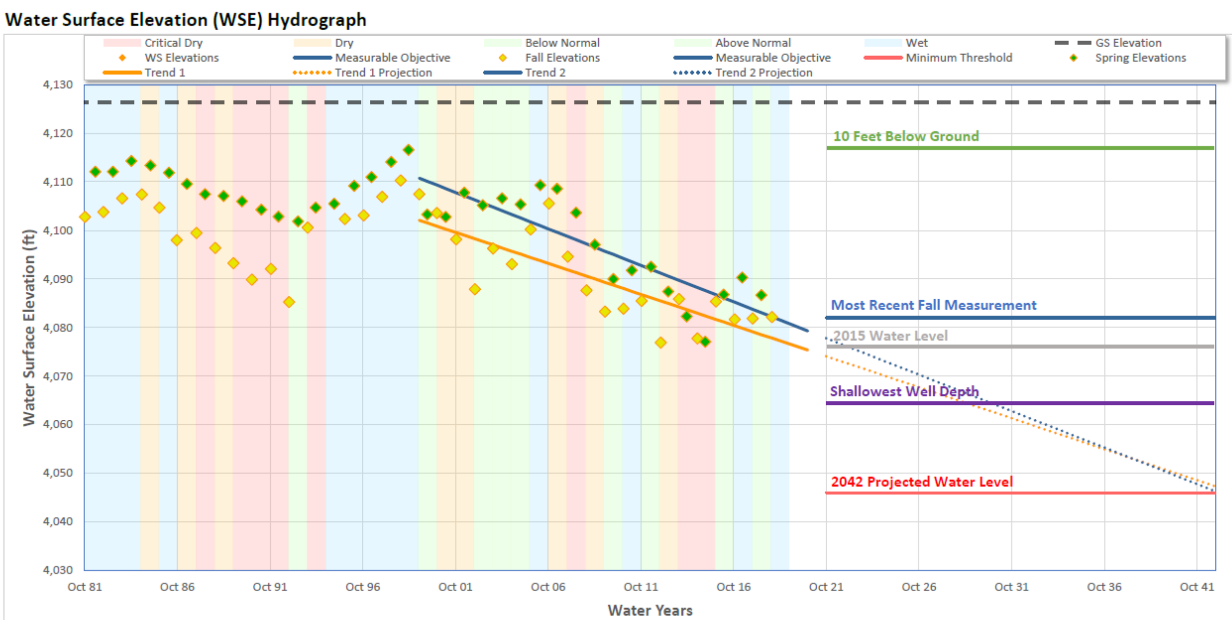


Figure 7-3 Sample Hydrograph with Plots of Potential SMC Rationale

7.5 Reduction in Groundwater Storage Sustainability Indicator

7.5.1 *Locally Defined Undesirable Results*

The definition of undesirable results for groundwater storage can largely be the same as for water levels, as the two both depend directly on groundwater levels. This applies to both the causes and effects of reduced storage. The main difference with this sustainability indicator is that the criteria for an undesirable result in the case of storage is best defined by the amount of groundwater storage calculated from contouring the water levels in the Basin. These contours were developed for historic data and presented in Section 5.2 and Appendix 5B. For contouring and calculating the groundwater in storage, a larger groundwater monitoring network than the water level representative wells. The wells used to contour the historic data would be appropriate.

7.5.2 *Minimum Thresholds and Measurable Objectives*

Establishing a minimum threshold and measurable objective for groundwater storage would be best performed by an analysis of the historic storage fluctuations as shown in **Figure 7-4** (same as Figure 5-7). In addition, groundwater storage was projected into the future in Chapter 6, Water Budget. This projection is included as **Figure 7-5** (same as Figure 6-11).

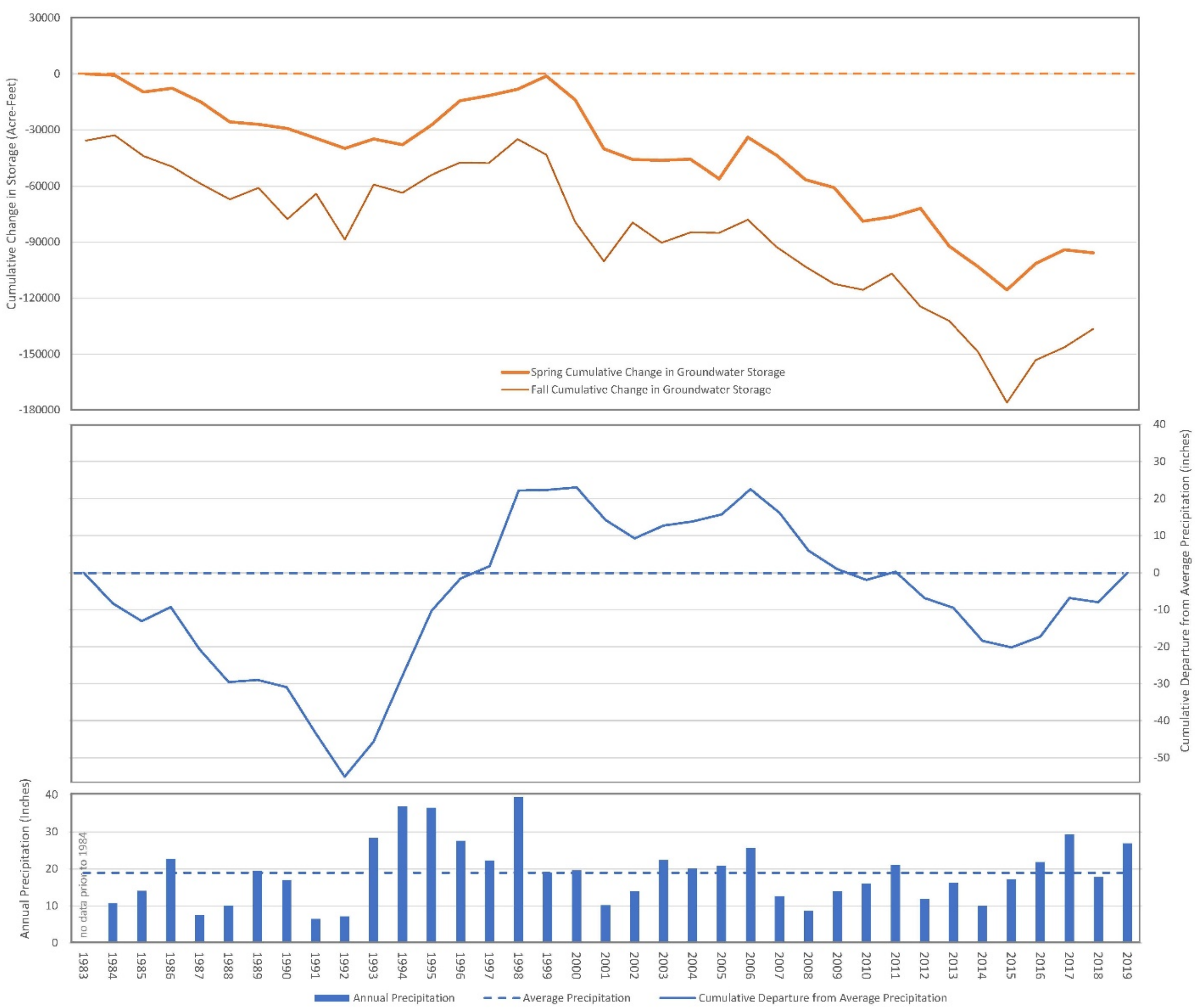


Figure 7-4 Historic Groundwater Storage from Contours (same as Figure 5-7)

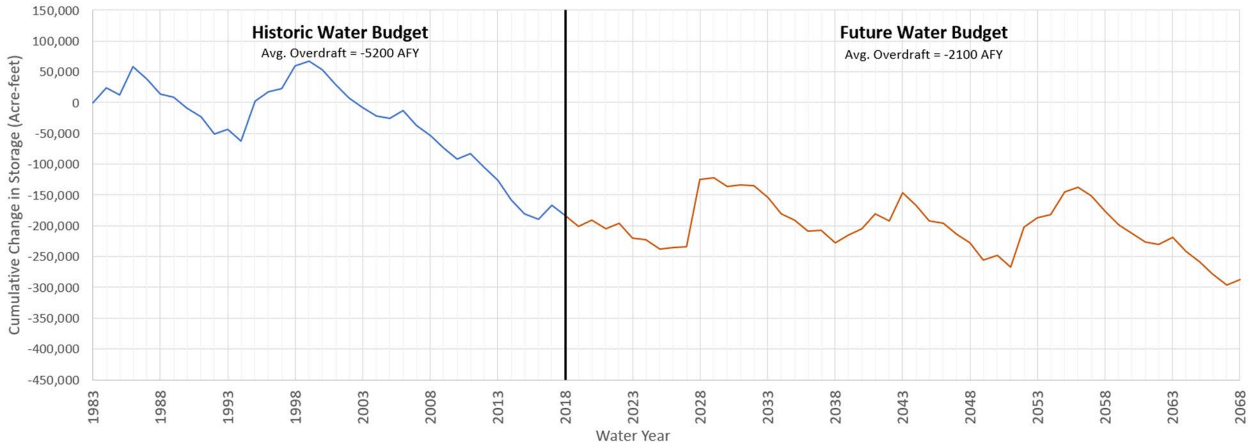


Figure 7-5 Future Groundwater Storage from Water Budget (same as Figure 6-11)

7.6 Seawater Intrusion Sustainability Indicator

The BVGB is not located near any ocean, bay, delta, or inlet. Therefore, seawater intrusion does not exist and could not occur in the Basin and is therefore not an applicable sustainability indicator.

7.7 Degraded Water Quality Sustainability Indicator

Sections 4.7 and 5.4 describe in detail water quality conditions, which are generally good to excellent. However, unlike seawater intrusion which cannot occur in the Basin, degradation of water quality is certainly possible and is an applicable sustainability indicator in the BVGB. Therefore, undesirable results must be defined along with thresholds and therefore water quality monitoring will be needed. The potential monitoring network will be described in more detail in Chapter 8.

7.7.1 *Locally Defined Undesirable Results*

The GSP Regulations are not prescriptive about what constituents must be considered for degraded water quality. They leave it to the GSAs to determine the constituents of concern (COCs) for the beneficial uses in the Basin. Section 5.4 presents an analysis of the readily available historic water quality data. **Table 7-1** (same as Table 5-3) shows the results which identify several constituents that have been detected above suitable levels. Discussion will be needed to allow the GSAs determine which of these should be deemed COCs. At a minimum, electrical conductivity and/or Total Dissolved Solids (TDS) are recommended as COCs because they are a measure of the generalized quality of groundwater.

The Regulations do stipulate that migration of contaminant plumes be considered for the degraded water quality SI. **Table 7-2** (same as Table 5-4) describes the known contamination plumes.

Table 7-1 Water Quality Statistics (same as Table 5-3)

Constituent Name	Suitability Threshold Concentration	Suitability Threshold Type	Total # of Meas	min	max	# Meas Above Threshold	% of Meas Above Threshold	# Wells With Meas	# Wells with Average Above Threshold	% of Wells with Average Above Threshold	# Wells with Most Recent Meas Above Threshold	% of Wells with Most Recent Meas Above Threshold	Comment
Aluminum	200	DW1	41	0	552	2	5%	18	1	6%	0	0%	Low concern due to only two threshold exceedances and zero recent measurements above MCL
Antimony	6	DW1	45	0	36	1	2%	20	1	5%	0	0%	Low concern due to only one threshold exceedance and zero recent measurements above MCL
Arsenic	10	DW1	53	0	12	4	8%	23	3	13%	3	13%	
Barium	1000	DW1	49	0	600	0	0%	23	0	0%	0	0%	
Beryllium	4	DW1	48	0	1	0	0%	23	0	0%	0	0%	
Cadmium	5	DW1	49	0	1	0	0%	23	0	0%	0	0%	
Chromium (Total)	50	DW1	36	0	20	0	0%	13	0	0%	0	0%	
Chromium (Hexavalent)	10	DW1*	13	0.05	3.29	0	0%	13	0	0%	0	0%	
Copper	1300	DW1	34	0	190	0	0%	21	0	0%	0	0%	
Fluoride	2000	DW1	42	0	500	0	0%	16	0	0%	0	0%	
Lead	15	DW1	28	0	6.2	0	0%	16	0	0%	0	0%	
Mercury	2	DW1	44	0	1	0	0%	19	0	0%	0	0%	
Nickel	100	DW1	46	0	10	0	0%	20	0	0%	0	0%	
Nitrate (as N)	10000	DW1	151	0	4610	0	0%	24	0	0%	0	0%	
Nitrite	1000	DW1	62	0	930	0	0%	20	0	0%	0	0%	
Nitrate + Nitrite (as N)	10000	DW1	2	40	2250	0	0%	2	0	0%	0	0%	
Selenium	50	DW1	49	0	5	0	0%	23	0	0%	0	0%	
Thallium	2	DW1	46	0	1	0	0%	20	0	0%	0	0%	
Chloride	250000	DW2	66	1400	79000	0	0%	43	0	0%	0	0%	
Iron	300	DW2	50	0	11900	26	52%	21	8	38%	9	43%	Low human health concern due to being a secondary MCL for aesthetics
Iron	5000	AG	50	0	11900	2	4%	21	2	10%	2	10%	
Manganese	50	DW2	45	0	807	28	62%	21	12	57%	11	52%	Low human health concern due to being a secondary MCL for aesthetics
Manganese	200	AG	45	0	807	22	49%	21	7	33%	7	33%	
Silver	100	DW2	36	0	20	0	0%	19	0	0%	0	0%	
Specific Conductance	900	DW2	66	125	1220	3	5%	42	1	2%	1	2%	
Sulfate	250000	DW2	60	500	1143000	1	2%	40	0	0%	0	0%	Low concern due to only one threshold exceedance and zero recent measurements above MCL
Total Dissolved Solids (TDS)	500000	DW2	57	131000	492000	0	0%	39	0	0%	0	0%	
Zinc	5000	DW2	34	0	500	0	0%	20	0	0%	0	0%	
Boron	700	AG	40	0	100	0	0%	34	0	0%	0	0%	
Sodium	69000	AG	33	11600	69000	0	0%	21	0	0%	0	0%	

Sources:
GAMA Groundwater Information System, accessed June 5, 2020 (SWRCB 2020)
University of California Cooperative Extension Farm Advisor (UCCE 2020)

Notes:
GAMA data was filtered to remove all measurements before Oct 1, 1982 and all GeoTracker cleanup sites
Constituents listed are all inorganic naturally occurring elements and compounds that have a SWRCB drinking water maximum contaminant limit (MCL), plus Boron, which has a threshold for agricultural use.
All measurements in micrograms per liter, except specific conductance which is measured in microsiemens per centimeter.
Green indicates less than 1%
Yellow indicates between 1% and 10%
Red indicates greater than 10%
Threshold Types:
DW1: Primary drinking water MCL
DW2: Secondary drinking water MCL (for aesthetics such as taste, color, and odor)
AG: Agricultural threshold based on guidelines by the Food and Agricultural Organization of the United Nations (Ayers and Westcot 1985)
* Hexavalent chromium was regulated under a primary drinking water MCL until the MCL was invalidated in 2017. The SWRCB is working to re-establish the MCL.

Table 7-2 Known Potential Groundwater Contamination Sites (same as Table 5-4)

GeoTracker ID	Latitude	Longitude	Case Type	Status	Last Regulatory Acitivity	Case Begin Date	Potential Contaminants of Concern	Site Summary
T10000003882	41.12050	-121.14605	LUST Cleanup Site	Open - Assessment & Interim Remedial Action	04/16/20	10/17/11	Benzene, Diesel, Ethylbenzene, Total Petroleum Hydrocarbons (TPH), Xylene	The case was opened following an unauthorized release from an underground storage tank(s). Tank removal and further site assessment, including installation of eight monitoring wells, led to remedial actions. Periodic groundwater monitoring started in October 2013 and has been ongoing though March 2020.
T0603593601	41.13230	-121.13070	LUST Cleanup Site	Open - Remediation	07/29/20	03/22/00	Gasoline	Active gas station with groundwater impacts. Full-scale remediation via groundwater extraction and treatment began in September 2013 and was shut-down in April 2017 because it was determined that it was no longer an effective remedy to treat soil and groundwater. At the time of system shutdown, the influent MTBE concentration was 5,650 ug/L which exceeds the Low-Threat Closure Policy criteria. Additionally, high levels of TPHg and sheen/free product are present. A soil vapor extraction (SVE) system operated for a limited time in 2016/2017 but was not effective. In April 2018, it was determined that active remediation is not a cost-effective path to closure given low permeability of site soils. Staff suggested incorporating institutional controls (IC) and risk-based cleanup objectives instead of active remediation of soil and groundwater. The IC approach was dependent on the submittal of several documents related to soil management, deed restriction, and risk modeling plus annual groundwater sampling. This information has not been provided and the RWQCB sent an Order for this information.
T0603500006	41.12241	-121.14128	LUST Cleanup Site	Completed - Case Closed	01/04/00	06/28/99	Diesel	A 2000-gallon underground storage tank was removed and limited contaminated soil was present in the excavation. Petroleum hydrocarbons were not found in the uppermost groundwater. These findings led to the closure of the case.
L10005078943	41.12941	-121.14169	Land Disposal Site	Open - Closed facility with Monitoring*	06/26/20	06/30/08	Higher levels of Inorganic constituents, organic chemicals (synthetic), per/polyfluoroalkyl substances	Disposal activities at Bieber Landfill occurred from the early 1950s until 1994. The landfill was closed during the early 2000s. While active, the site received residential, commercial, and industrial non-hazardous solid waste. Formerly an unlined burn dump, the site was converted to cut-and-cover landfill operation in 1974. Landfill refuse is estimated to occupy less than 13 acres of the 20-acre site. Wastes are estimated to be approximately 10 to 15 feet thick. The Class III landfill was closed in accordance with Title 27 of the California Code of Regulations. A transfer station was established at the site for the transporation of waste to another landfill. Groundwater levels and quality are monitored twice per year at four wells.
T0603500003	41.12124	-121.14061	LUST Cleanup Site	Completed - Case Closed	09/13/94	07/31/91	Heating Oil / Fuel Oil	A 1000-gallon underground storage tank was removed and contaminated soil was present beneath the tank, which led to installation of nine soils borings and three monitoring wells. Contaminated soil was removed but an adjacent building limited the extent of the excavation so contaminated soil remains under the building. Hydrocarbons were initally found in one well but not in subsequent sampling. The RWQCB concurred with a request to close the investigation.
T10000003101	41.13151	-121.13658	Cleanup Program Site	Open - Assessment & Interim Remedial Action	07/22/20	04/03/07	Benzene, Toluene, Xylene, MTBE / TBA / Other Fuel Oxygenates, Gasoline, Other Petroleum	A diesel leak was found in association with an industrial chipper. Corrective action included excavation of diesel-impacted soil, removing contaminated water, and groundwater monitoring. Results of soil and groundwater sampling indicate low concentrations of TPHg and BTEX and that there is no offsite migration. Staff have determined that the case is ready for closure, pending decommissioning of the site monitoring wells.
SL0603581829	41.09251	-121.17904	Cleanup Program Site	Completed - Case Closed	09/01/05	01/08/05	Petroleum - Diesel fuels, Petroleum - Other	Contaminated soil excavated and transported to Forward Landfill for disposal. Contaminated groundwater (7,000 gallons) extracted with vacuum truck for disposal.
T0603500002	41.12188	-121.13546	LUST Cleanup Site	Completed - Case Closed	07/17/06	10/20/86	Gasoline / diesel	Three underground storage tanks were removed and contaminated soil was present beneath the tank, which led to installation of nine monitoring wells and three remediation wells. Natural attenuation of the hydrocarbon impact was acceptable to the RWQCB due to the limited, well-defined extent of the impact and the limited and declining impact to groundwater. The RWQCB concurred with a request to close the site.
T0603500004	41.12134	-121.13547	LUST Cleanup Site	Completed - Case Closed	03/12/99	06/12/97	Diesel	A 5000-gallon underground storage tank was removed and very low levels of petroluem hydrocarbons were detected in the soil, which was allowed to be spread onsite and the case was closed.
T10000002713	41.11993	-121.14271	Cleanup Program Site	Open - Site Assessment	12/30/16	03/10/10	Other Petroleum	The site is an old bulk plant which was built in the 1930's and handled gasoline and diesel. During a routine inspection in March 2010, evidence of petroleum spills were identified at the loading dock area. A follow-up inspection was conducted in April 2010. The ASTs and loading dock were removed but additional contamination was noted under the removed structures. Furthermore, a shallow excavation contained standing water with a sheen. Due to the potential impacts to shallow groundwater, the Central Valley Water Board became the lead agency in December 2010. Additional information was requested in December 2016. A response is not evident.

*This terminology indicates that the landfill is closed (no new material being disposed), but the site is open with regard to ongoing groundwater monitoring.
Source: GeoTracker (SWRCB 2020b)

Causes

Below is a description of potential causes of degradation of water quality. In future versions of this chapter, not all of these must be included, as the GSAs through outreach with the BVAC and stakeholders will determine which sources are of significant concern.

Much of the potential sources of water quality degradation are naturally occurring. Deep parts of the aquifer contain higher TDS. Geothermal areas also have high TDS. Iron, Arsenic, and Manganese are all naturally occurring. Anthropogenic sources include agricultural users if they use nitrate and pesticides, septic tanks, wastewater ponds, and the potential contamination sites listed in **Table 7-2** and shown on **Figure 7-6** (same as Figure 5-15).

Regardless of the original source, groundwater pumping can induce the migration of poor-quality water, both horizontally and vertically.

Criteria

The GSAs will determine, reasonable criteria for determining when degradation of water quality is significant and unreasonable. The criteria will be defined by minimum threshold exceedances at a single monitoring site, multiple monitoring sites, a portion of the basin, a management area, or an entire basin.

Effects

The potential effects of chronic lowering of groundwater levels on groundwater uses and users will need to be defined. Generally the effects of degraded water quality is reduced suitability for beneficial uses.

7.7.2 Minimum Thresholds and Measurable Objectives

The GSP Regulations state that the GSAs "shall consider local, state, and federal water quality standards applicable to the basin". (§354.28(c)(4)) The suitability threshold concentrations listed in **Table 7-1** provide a good starting point for defining minimum thresholds and measurable objectives. Other basins in the state have used suitability thresholds (such as drinking water maximum contaminant levels (MCLs)) as the minimum threshold and say 75% of the MCL as the measurable objective. That is to say that the measurable objective is to stay below 75%.

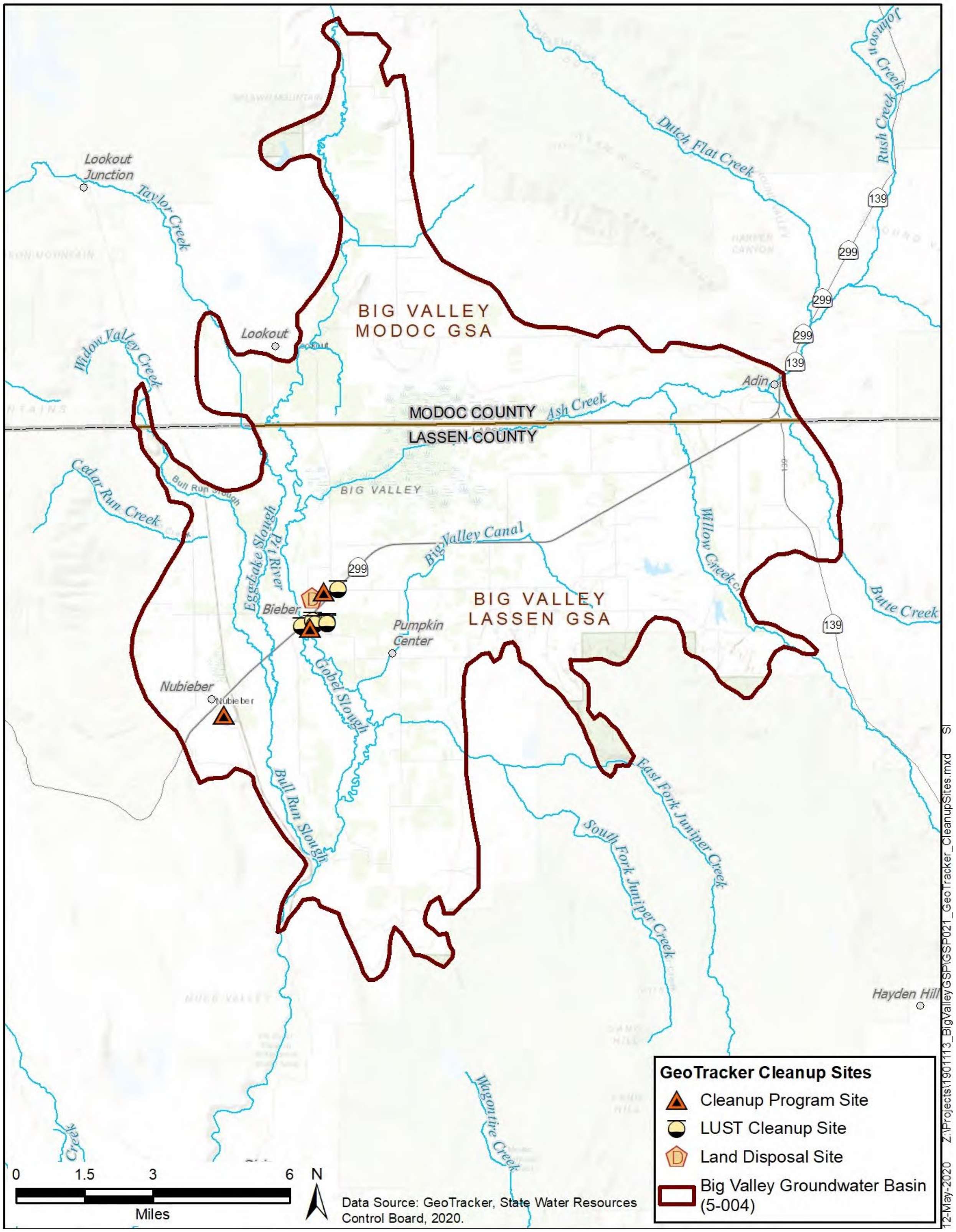


Figure 7-6 Potential Groundwater Contamination Sites (same as Figure 5-15)

7.8 Subsidence Sustainability Indicator

7.8.1 *Locally Defined Undesirable Results*

Subsidence conditions in Big Valley were presented in Section 5.5 and indicate minimal subsidence. However, future subsidence is possible and is therefore an applicable SI in the BVGB. The Regulations indicate that undesirable subsidence is that which interferes with surface land uses. Many surface land uses, such as agriculture are not greatly affected by subsidence, unless their conveyances are disturbed.

Causes

The potential causes of land subsidence in the BVGB are groundwater extraction to levels below historic lows causing the compaction of clay layers, oxidation of peat soils, and tectonic (natural) processes.

Criteria

Generally, the GSAs will want to focus their undesirable results on areas with infrastructure that is sensitive to ground level fluctuations such as canals, railroads, and perhaps highways. The criteria will be defined by minimum threshold exceedances (subsidence rate and extent) at a single monitoring site, multiple monitoring sites, a portion of the basin, a management area, or an entire basin. The easiest, least expensive, and most readily available monitoring is through the InSAR datasets provided by DWR and described in Section 5.5.

Effects

The effects of subsidence on land uses and property interests comes generally in the form of infrastructure repair costs to canals, railroads, and perhaps highways. Additionally, widespread subsidence can make areas more susceptible to flooding and affect land uses.

7.8.2 *Minimum Thresholds and Measurable Objectives*

Minimum thresholds for subsidence depend on the type of infrastructure and its sensitivity to ground elevation changes. Canals are particularly sensitive and more conservative thresholds may be needed, while other areas may have more liberal thresholds.

7.9 Depletion of Interconnected Surface Water Sustainability Indicator

7.9.1 *Locally Defined Undesirable Results*

Depletion of interconnected surface water measurement is the volume or rate of depletions that “has adverse impacts on beneficial uses of surface water”. (§354.28(c)(6))

Causes

The cause of surface water depletion is the lowering of groundwater levels at or near surface water bodies which induces a higher gradient and more water flows to the groundwater aquifer from streams and surrounding riparian areas.

Criteria

The groundwater contours in **Figure 7-7** (same as Figure 5-5 in Section 5.1.3) demonstrate where surface water depletions occur and the water budget in Chapter 6 gives estimates of the total volume of surface water losses (depletions). DWR allows GSAs to use measurements of water levels as a proxy for depletions, so therefore a monitoring network of wells near surface water bodies would be appropriate for measurement of depletions and may include minimum threshold exceedances at a single monitoring site, multiple monitoring sites, a portion of the basin, a management area, or the entire basin.

Effects

The effects of significant and unreasonable surface water depletions is on beneficial uses of surface water, which could include surface water rights, riparian habitat, and groundwater dependent ecosystems.

7.9.2 *Minimum Thresholds and Measurable Objectives*

Direct measurement of the volume or rate of depletion is difficult, and DWR allows GSAs to use measurements of water levels as a proxy for depletions. The water budget in Chapter 6 gives estimates of surface water losses to groundwater. The process of establishing minimum thresholds and measurable objectives could involve determining the significant and unreasonable volume of depletions and performing an analysis of what water levels in wells adjacent to the streams correlate with these volumes. Some GSAs have settled on the rate of depletions in 2015 (the baseline year for SGMA) as the minimum threshold or measurable objective.

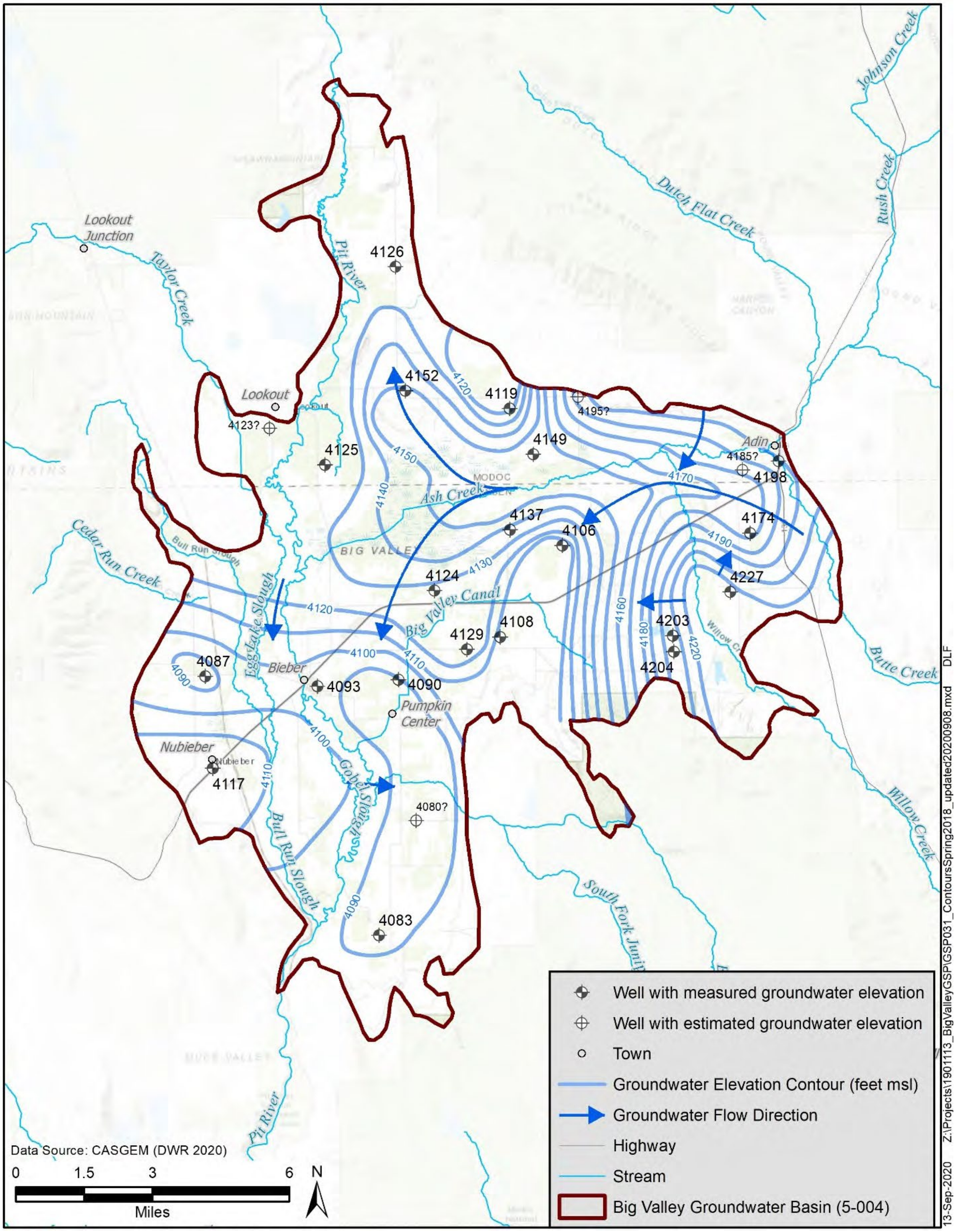


Figure 7-7 Groundwater Elevation Contours and Flow Direction (same as Figure 5-5)

7.10 References

Department of Water Resources (DWR), 2017. Draft Sustainable Management Criteria BMP. Published November 2017. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT_ay_19.pdf.

Appendix 7A

Sample Sustainability Goals and Undesirable Results

- Mid Kaweah GSP
- Cuyama GSP
- North Yuba GSP

From the Mid Kaweah GSP

available at: https://sgma.water.ca.gov/portal/gsp/preview/50

Sustainability Goal: (page 3-1)

"The broadly stated Sustainability Goal for the Kaweah Subbasin is for each GSA to manage groundwater resources to preserve the viability of existing agricultural enterprises of the region and the smaller communities that provide much of their job base in the Sub-basin, including the school districts serving these communities. The Goal will also strive to fulfill the water needs of existing and amended county and city general plans that commit to continued economic and population growth within Tulare County."

Undesirable Results for Groundwater Levels:

Causes (page 3-3):

"Undesirable results associated with groundwater level declines are caused by over-pumping or nominal groundwater recharge operations -such that groundwater levels fall and remain below minimum thresholds. Over-pumping and lack of recharge is area specific, and some GSA Management Areas experience greater adverse impacts than others. Overdraft during a period of drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and groundwater recharge are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods."

Criteria (page 3-5):

"Groundwater elevations serve as the sustainability indicator and metric for chronic lowering of groundwater levels. With respect to water-level declines, undesirable results occur when one-third of the representative monitoring sites in all three GSA jurisdictions combined exceed their respective minimum threshold water level elevations. Should this occur, a determination shall be made of the then-current GSA water budgets and resulting indications of net reduction in storage. Similar determinations shall be made of adjacent GSA water budgets in neighboring subbasins to ascertain the causes for the occurrence of the undesirable result."

Effects (page 3-8):

"The potential effects of lowered groundwater levels, when approaching or exceeding minimum thresholds and thus becoming an undesirable result, are reduced irrigation water supplies for agriculture and for municipal systems through loss of well capacity, loss or degradation of water supplies for smaller community water systems and domestic wells due to well failures, increased energy consumption due to lowered water levels, and the adverse economic consequences of the aforementioned effects such as increased energy usage to extract groundwater from deeper levels. The same effects occur with reductions in groundwater storage due to the proxy relationship with water levels."

From the Cuyama Valley GSP

available at: https://sgma.water.ca.gov/portal/gsp/preview/32

Sustainability Goal: (page 3-1)

"Sustainability Goal: To maintain a sustainable groundwater resource for beneficial users of the Basin now and into the future consistent with the California Constitution."

Undesirable Results for Surface Water Depletions: (page 3-5)

"Description of Undesirable Results

The Undesirable Result for depletions of interconnected surface water is a result that causes significant and unreasonable reductions in the viability of agriculture or riparian habitat within the Basin over the planning and implementation horizon of this GSP.

Identification of Undesirable Results

This result is considered to occur during GSP implementation when 30 percent of representative monitoring wells (i.e., 18 of 60 wells) fall below their minimum groundwater elevation thresholds for two consecutive years.

Justification of Groundwater Elevations as a Proxy

Use of groundwater elevation as a proxy metric for Undesirable Results is necessary given the difficulty and cost of direct monitoring of depletions of interconnected surface water. The depletion of interconnected surface water is driven by a gradient between water surface elevation in the surface water body and groundwater elevations in the connected, shallow groundwater system. By setting minimum thresholds on shallow groundwater wells near surface water, the CBGSA can to monitor and manage this gradient, and in turn, manage potential changes in depletions of interconnected surface.

Potential Causes of Undesirable Results

Potential causes of future Undesirable Results for depletions of interconnected surface water are likely tied to groundwater production, which could result in lowering of groundwater elevations in shallow aquifers near surface water courses. This could change the hydraulic gradient between the water surface elevation in the surface water course and the groundwater elevation, resulting in an increase in depletion of surface water to groundwater. If depletions of interconnected surface water were to reach Undesirable Results, groundwater dependent ecosystems could be affected."

From the North Yuba GSP

available at: https://sgma.water.ca.gov/portal/gsp/preview/53

Sustainability Goal: (page 4-3)

"The sustainability goal for the Yuba Subbasins is to maintain a locally managed, economically viable, sustainable groundwater resource for existing and future beneficial use in Yuba County by continuing existing management to maintain operation within the sustainable yield or by modification of existing management to address unforeseen future conditions."

Undesirable Results for water quality degradation: (page 4-5)

"Description of Undesirable Results

The undesirable result for degraded water quality is a result stemming from a causal nexus between groundwater related activities, such as groundwater extraction or groundwater recharge, and groundwater quality that causes a significant and unreasonable reduction in the long-term viability of domestic, agricultural, municipal, or environmental uses over the planning and implementation horizon of this GSP. The causal nexus reflects that the undesirable results are water quality issues associated with groundwater pumping and other groundwater-related activities rather than water quality issues resulting from land use practices, naturally occurring water quality issues, or other issues not associated with groundwater pumping and other groundwater-related activities.

Within the Yuba Subbasins, the causal nexus would be related to increased salinity concentrations resulting from pumping-induced upconing of deeper saline groundwater, as discussed later in this section. It should be noted that water quality issues outside of the causal nexus are generally covered by other regulatory frameworks. Contaminated sites are regulated by the RWQCB, Department of Toxic Substances Control, and the USEPA. Drinking water quality is regulated by the SWRCB-DDW. Potential contamination by agricultural practices are regulated through CV-SALTS, ILRP, and DPR.

Potential Causes of Undesirable Results

The Yuba Subbasins have a long history of successful sustainable management. Potential causes of future undesirable results for degraded groundwater quality likely would be tied to significant increases in groundwater production (which are not anticipated) resulting in upconing (upward movement of saline water due to pumping within shallower freshwater aquifers) of deeper saline water, naturally present in the aquifer below the fresh water aquifer accessed for water supply. The potential causes of substantial increases in groundwater production are the same as those previously described in Section 4.3.1. Degraded groundwater quality may potentially also be caused by issues outside of that causal nexus which would not be considered undesirable results under this GSP, such as unforeseen contamination issues within the Yuba Subbasins or changes resulting from salt and nutrient loading.

Potential Effects of Undesirable Results

If groundwater quality were degraded to reach undesirable results levels, the effect could cause a reduction in economically usable supply to groundwater users, with domestic wells being most vulnerable as costs for treatment or access to alternate supplies can be high for small users. High salinity can impact both drinking water uses and agricultural uses, as there are maximum values associated with aesthetics (taste, color, and odor) for drinking water and crop health and yield for agriculture. Water quality degradation could impact GDEs, impact surface water quality and health of aquatic species, cause changes in crops grown, cause adverse effects to property values, and cause other economic effects. Additionally, reaching undesirable results levels for groundwater quality could adversely affect current and projected municipal uses, which could have to install treatment systems or seek alternate supplies.

Identification of Undesirable Results

Two wells in the North Yuba Subbasin and 2 wells in the South Yuba Subbasin were selected for identification of undesirable results to indicate region-wide impacts rather than localized conditions. Therefore, within each individual subbasin, undesirable results are considered to occur during GSP implementation when at least 50% of representative monitoring wells (2 of 4 sites in the North Yuba Subbasin; 2 of 4 sites in the South Yuba Subbasin) exceed the minimum thresholds for water quality for two consecutive measurements (occurring biennially) at each location and where these values can be tied to a causal nexus between groundwater-related activities and water quality. Minimum thresholds are discussed in Section 4.4.4.2."

Appendix 7B

Sustainability Indicator Analytics for Existing Monitoring Wells

20B6 Sustainability Indicator Analysis

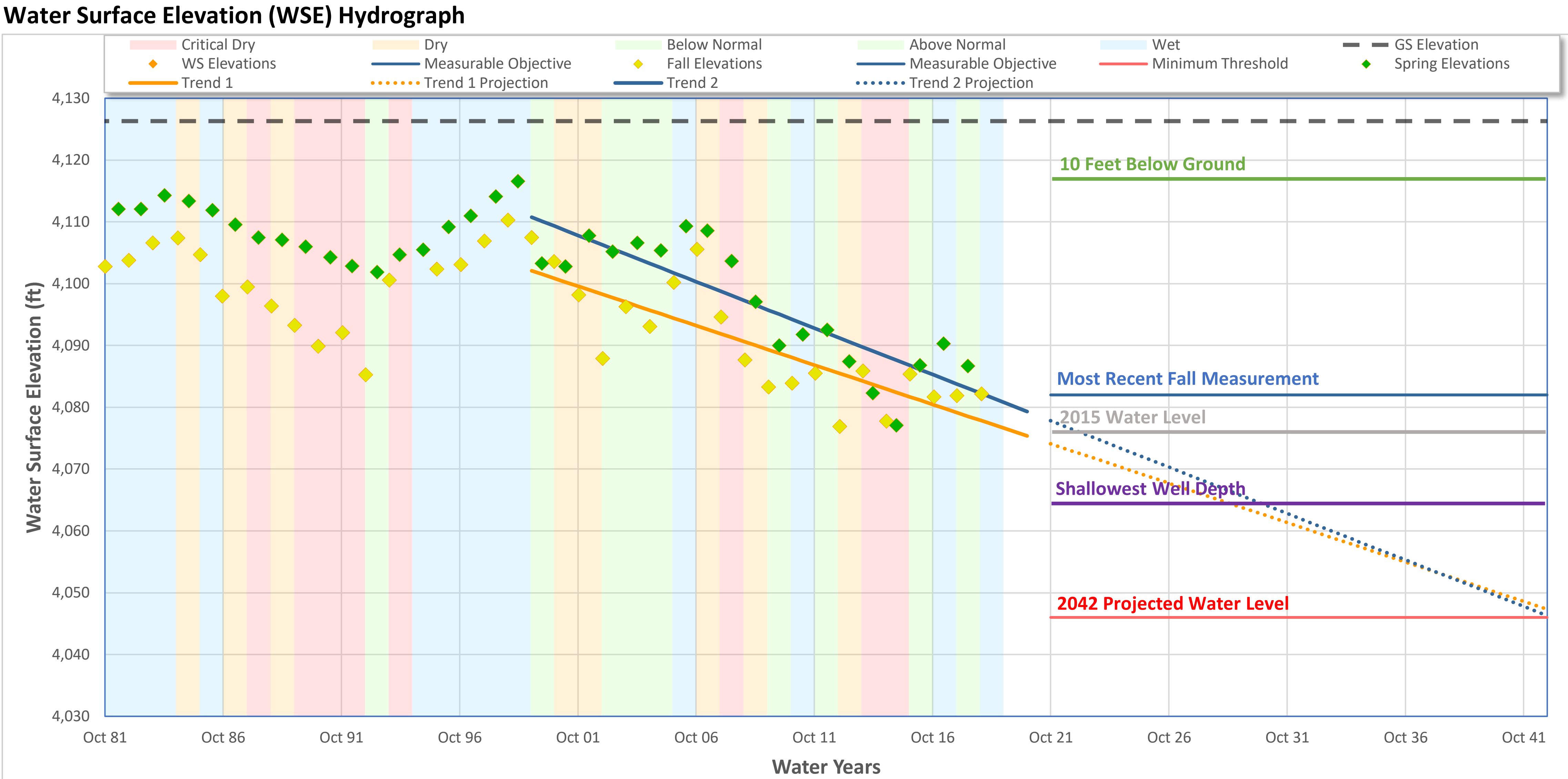
Date: 1/18/2021

Well Information	
Well ID	000002-38N07E20B006M
Alternate Name	20B6
State Number	38N07E20B006M
CASGEM ID	411242N1211866W001
Well Location	
County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Unknown
Well Use	Other
Completion Type	Single

Well Coordinates/Geometry		
Location	Lat:	41.1242
	Long:	-121.1866
Well Depth		183 ft
Ground Surface Elevation		4126.30 ft
Ref. Point Elevation		4127.30 ft
Screen Depth Range		41 to 183 ft
Screen Elevation Range		4086 to 3944 ft
Principal Aquifer		-
Well Period of Record		
Period-of-Record		1979..2019
WS Elev-Range	Min:	4076.9 ft
	Max	4116.6 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(1.275 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(1.501 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4077 ft
	Max	4117 ft
2015 WS Elevations	Spring:	4077 ft
	Fall:	4085 ft
Most Recent WS Elev	Spring:	4087 ft
	Fall:	4082 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	4073 ft	4076 ft
2027	4066 ft	4069 ft
2032	4060 ft	4061 ft
2037	4054 ft	4054 ft
2042	4047 ft	4046 ft
2047	4041 ft	4039 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,046.0 ft	Projected 2042 water level
MO	Measureable Objective	2022	4,082.0 ft	Most Recent Fall Measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	11	61	4065
Production (Ag)	6	170	3956

Sustainability Indicators to Consider

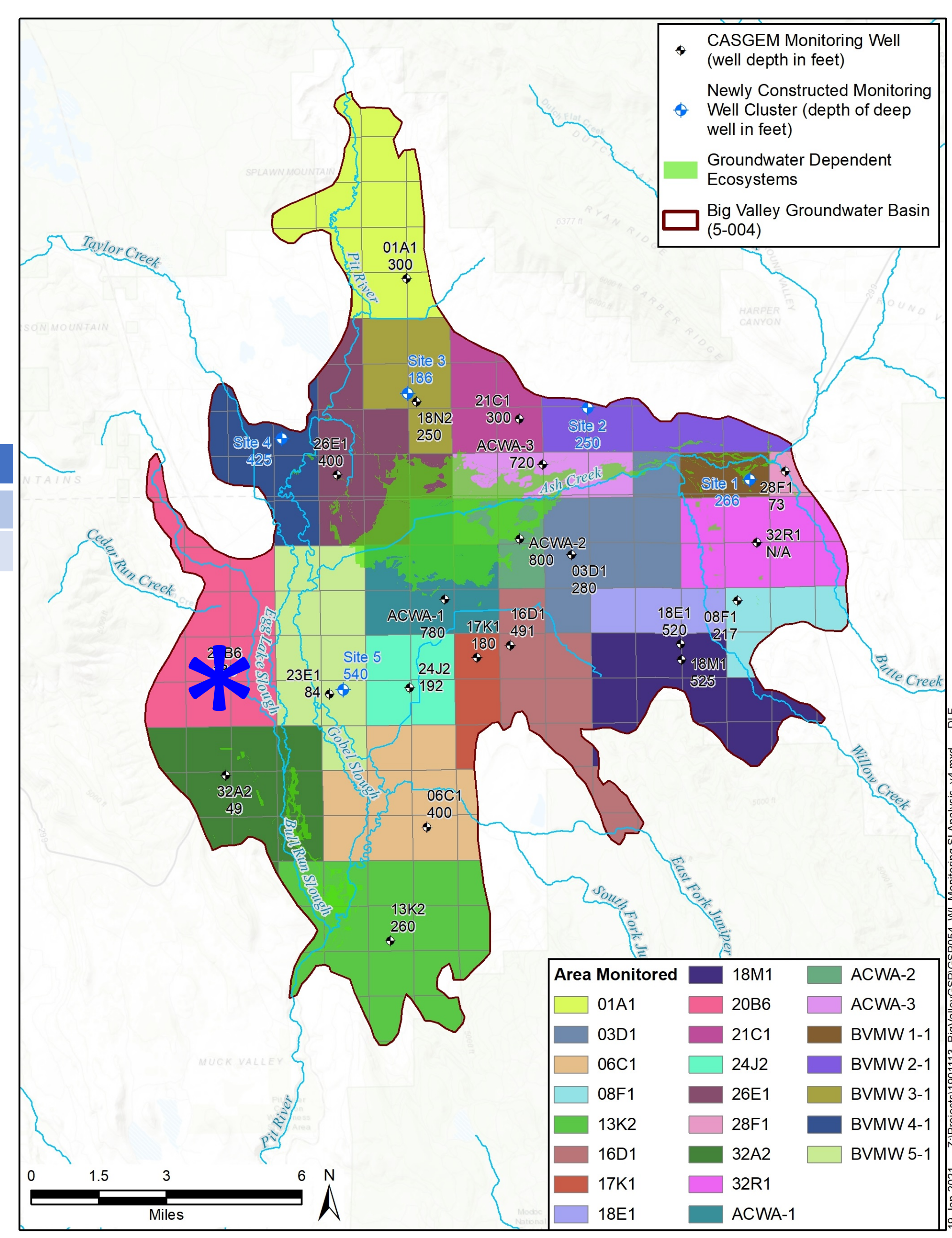
Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	Maybe
Surface Water Depletions	No

Other Pertinent Information

Distance From Nearest Perennial Stream	2.1 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	1.5 miles
Description of Nearest GDE	Bull Run Slough near Nubieber

Notes:

Located near railway, so water levels could be used here as a proxy for making sure there isn't subsidence on the infrastructure.



23E1 Sustainability Indicator Analysis

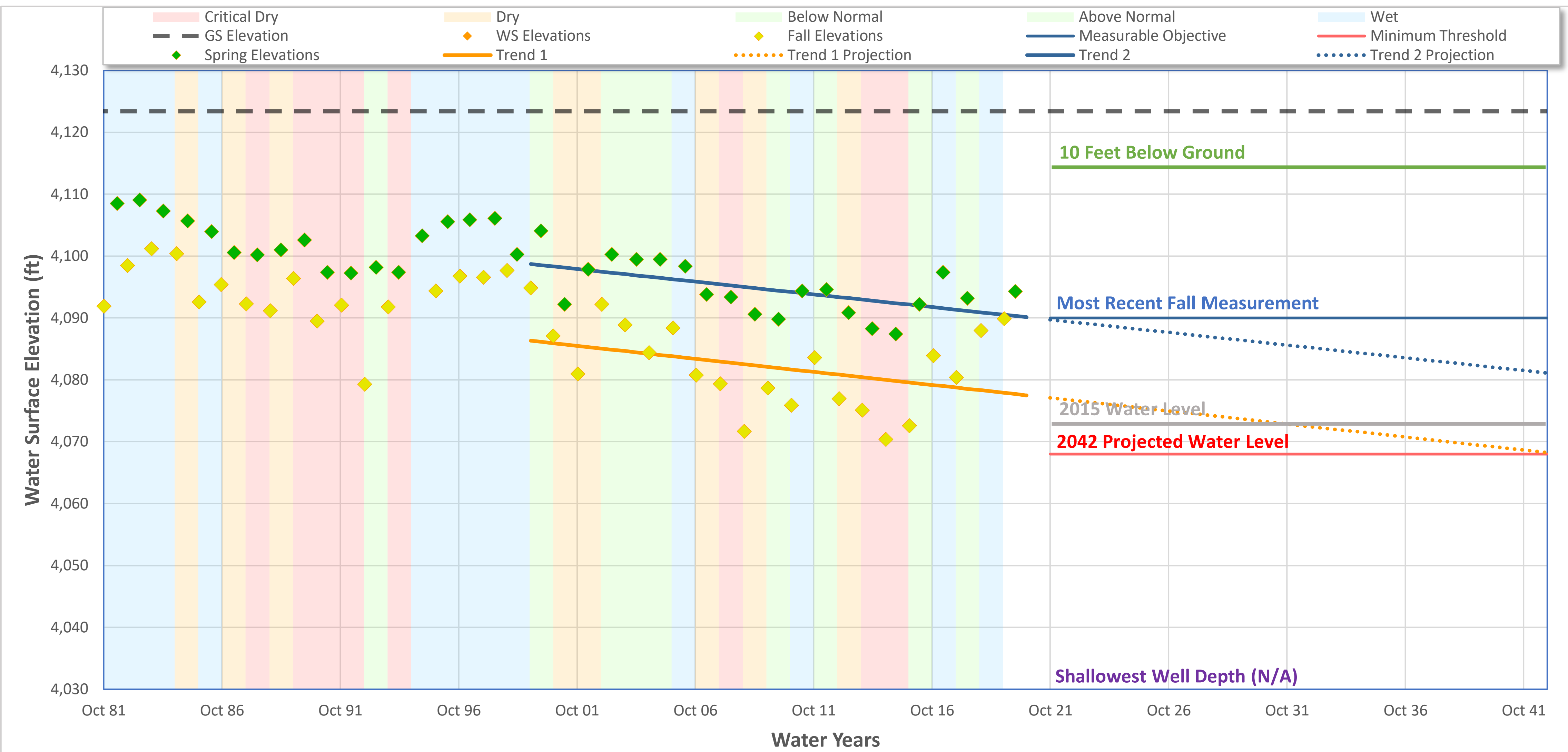
Date: 1/18/2021

Well Information	
Well ID	000004-38N07E23E001M
Alternate Name	23E1
State Number	38N07E23E001M
CASGEM ID	411207N1211395W001
Well Location	
County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Unknown
Well Use	Residential
Completion Type	Single

Well Coordinates/Geometry		
Location	Lat:	41.1207
	Long:	-121.1395
Well Depth		84 ft
Ground Surface Elevation		4123.40 ft
Ref. Point Elevation		4123.40 ft
Screen Depth Range		28 to 84 ft
Screen Elevation Range		4095 to 4039 ft
Principal Aquifer		-
Well Period of Record		
Period-of-Record		1979..2020
WS Elev-Range	Min:	4070.4 ft
	Max	4109.1 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.421 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.410 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4070 ft
	Max	4109 ft
2015 WS Elevations	Spring:	4087 ft
	Fall:	4073 ft
Most Recent WS Elev	Spring:	4094 ft
	Fall:	4090 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	4077 ft	4089 ft
2027	4075 ft	4087 ft
2032	4072 ft	4085 ft
2037	4070 ft	4083 ft
2042	4068 ft	4081 ft
2047	4066 ft	4079 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,068.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,090.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	0	-	-
Production (Ag)	0	-	-

Sustainability Indicators to Consider

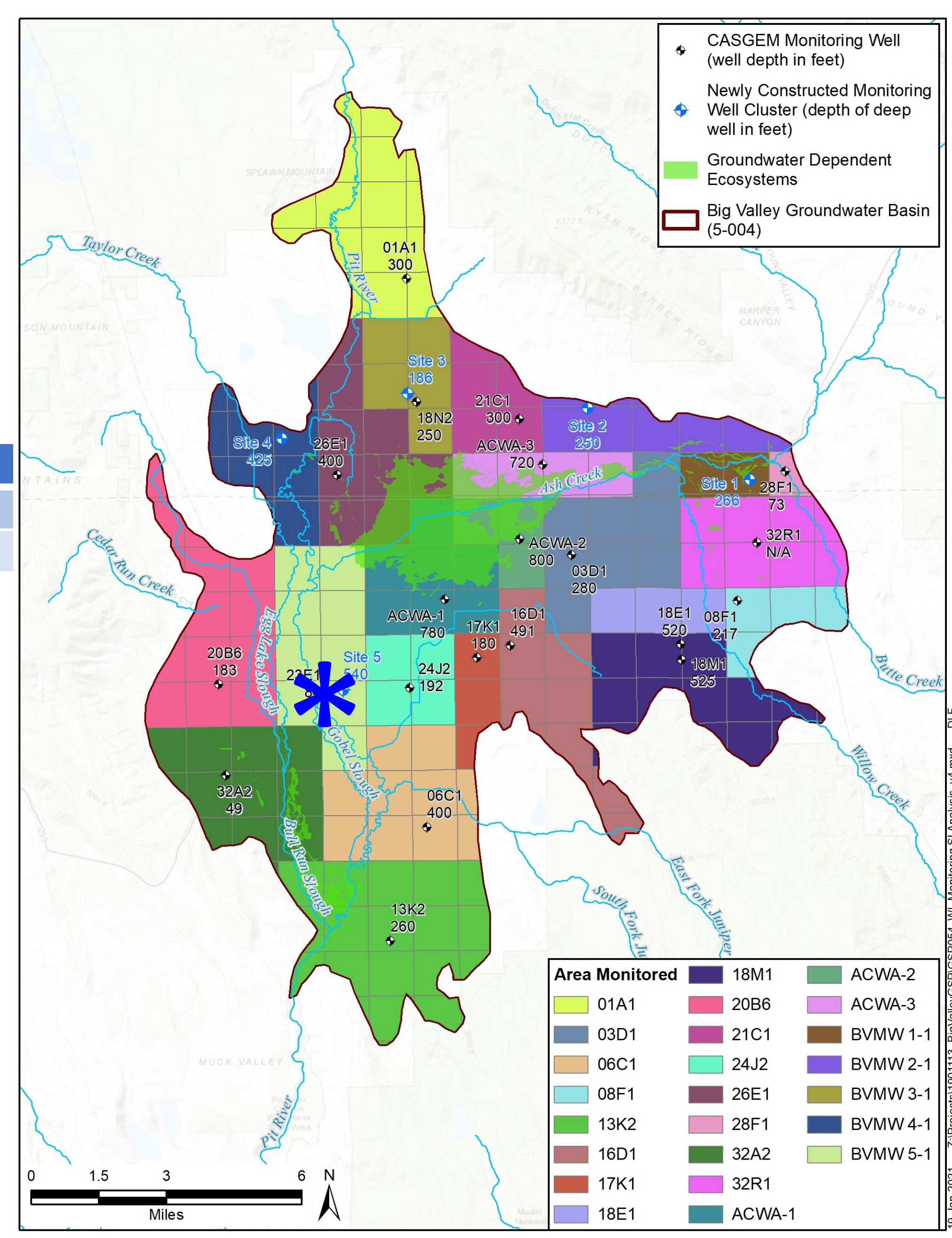
Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Yes

Other Pertinent Information

Distance From Nearest Perennial Stream	0.3 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	1.8 miles
Description of Nearest GDE	Pit River/Bull Run Slough

Notes:

Located near Site 5 Monitoring Well cluster. Has historic data to inform surface water depletion analysis



24J2 Sustainability Indicator Analysis

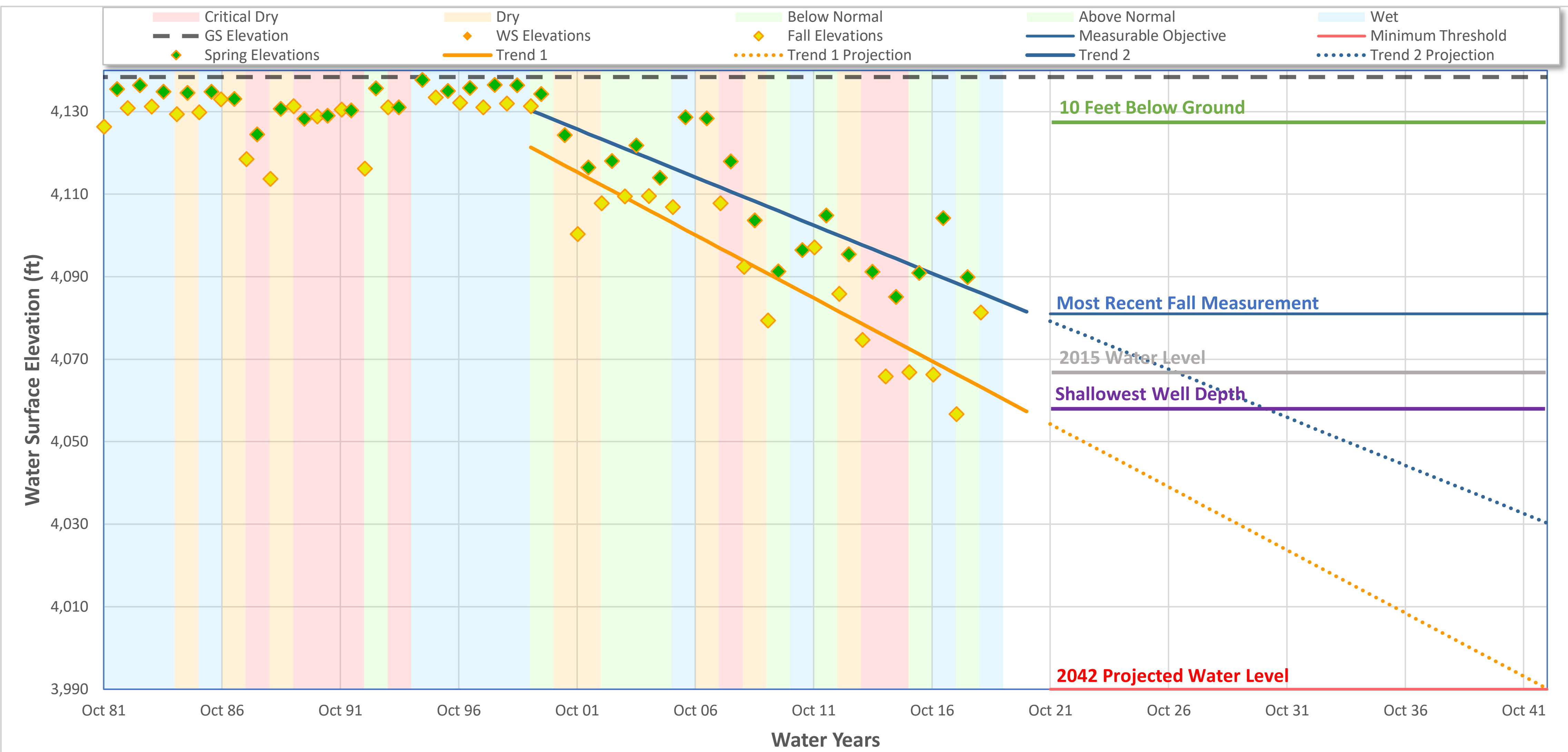
Date: 1/18/2021

Well Information	
Well ID	000005-38N07E24J002M
Alternate Name	24J2
State Number	38N07E24J002M
CASGEM ID	411228N1211054W001
Well Location	
County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Unknown
Well Use	Irrigation
Completion Type	Single

Well Coordinates/Geometry		
Location	Lat:	41.1226
	Long:	-121.1054
Well Depth		192 ft
Ground Surface Elevation		4138.40 ft
Ref. Point Elevation		4139.40 ft
Screen Depth Range		1 to 192 ft
Screen Elevation Range		4138 to 3947 ft
Principal Aquifer		-
Well Period of Record		
Period-of-Record		1979..2019
WS Elev-Range	Min:	4056.7 ft
	Max	4137.7 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(3.055 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(2.328 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4057 ft
	Max	4138 ft
2015 WS Elevations	Spring:	4085 ft
	Fall:	4067 ft
Most Recent WS Elev	Spring:	4090 ft
	Fall:	4081 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	4051 ft	4077 ft
2027	4036 ft	4065 ft
2032	4021 ft	4054 ft
2037	4005 ft	4042 ft
2042	3990 ft	4030 ft
2047	3975 ft	4019 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	3,990.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,081.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	6	80	4058
Production (Ag)	11	105	4033

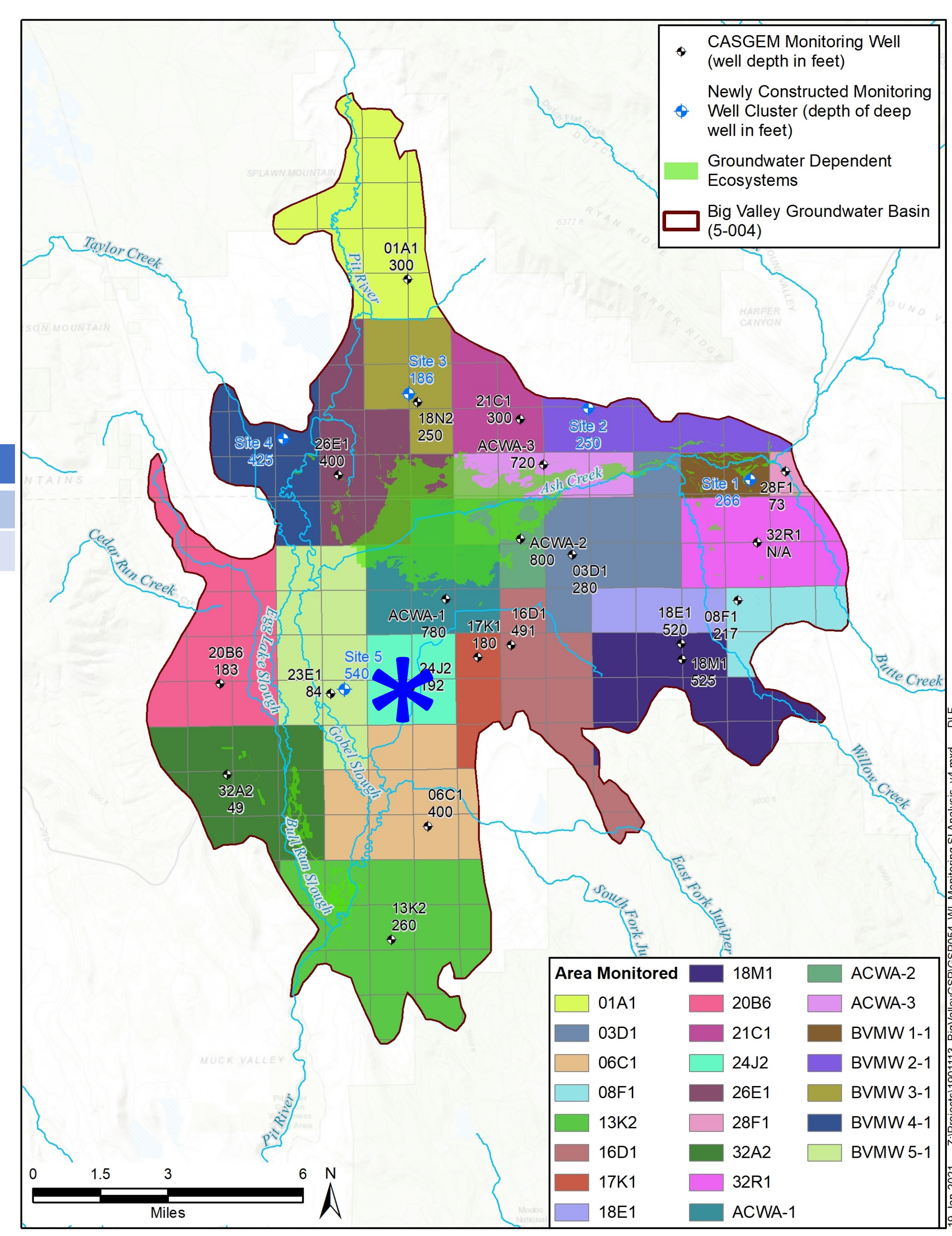
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1.7 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	2.1 miles
Description of Nearest GDE	Ash Creek Wildlife Area



32A2 Sustainability Indicator Analysis

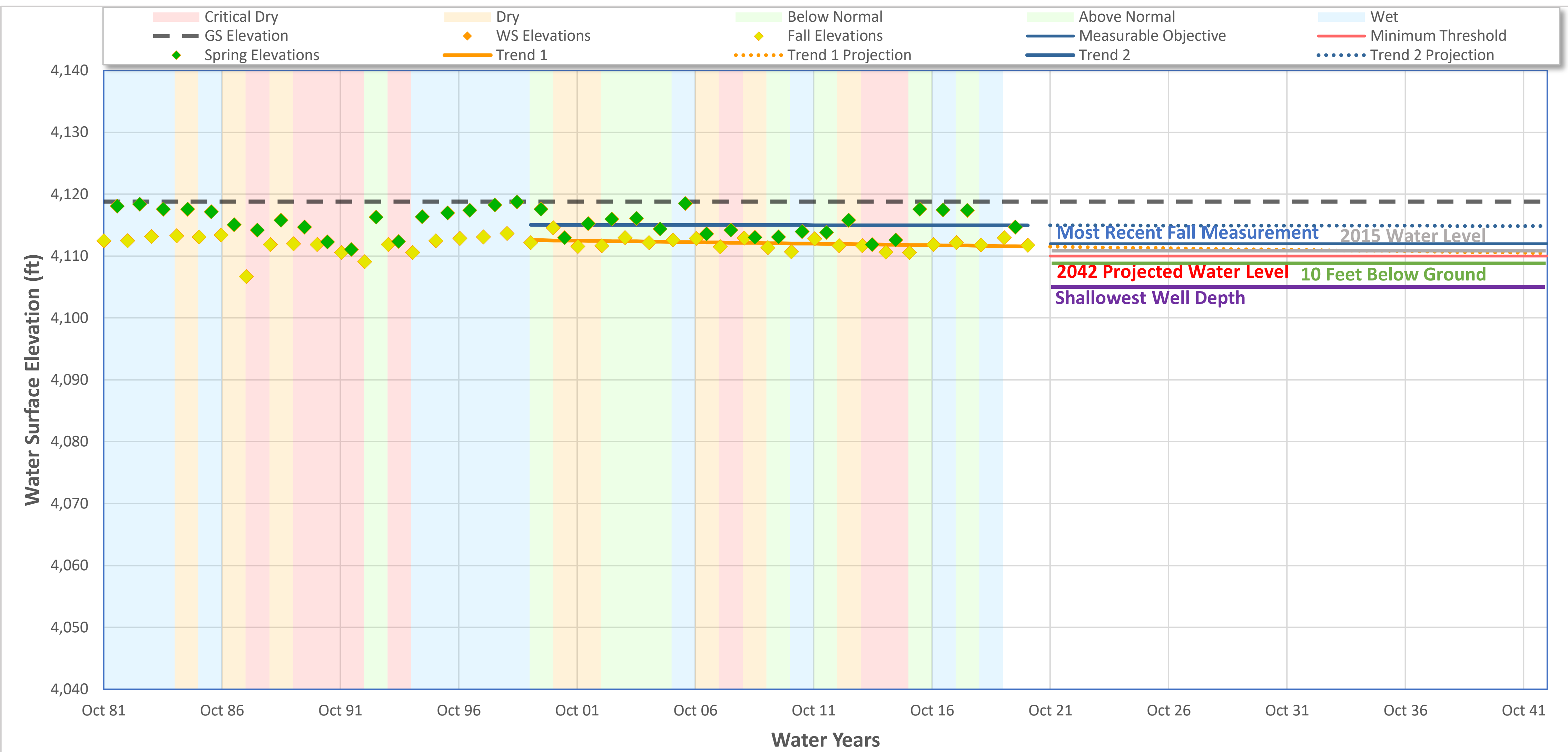
Date: 1/18/2021

Well Information	
Well ID	000006-38N07E32A002M
Alternate Name	32A2
State Number	38N07E32A002M
CASGEM ID	410950N1211839W001
Well Location	
County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Unknown
Well Use	Residential
Completion Type	Single

Well Coordinates/Geometry		
Location	Lat:	41.0950
	Long:	-121.1839
Well Depth		49 ft
Ground Surface Elevation		4118.80 ft
Ref. Point Elevation		4119.50 ft
Screen Depth Range		-
Screen Elevation Range		-
Principal Aquifer	-	
Well Period of Record		
Period-of-Record		1959..2021
WS Elev-Range	Min:	4106.7 ft
	Max	4118.8 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.049 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.005 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4107 ft
	Max	4119 ft
2015 WS Elevations	Spring:	4113 ft
	Fall:	4111 ft
Most Recent WS Elev	Spring:	4115 ft
	Fall:	4112 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	4111 ft	4115 ft
2027	4111 ft	4115 ft
2032	4111 ft	4115 ft
2037	4111 ft	4115 ft
2042	4110 ft	4115 ft
2047	4110 ft	4115 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,110.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,112.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	27	14	4105
Production (Ag)	5	380	3739

Sustainability Indicators to Consider

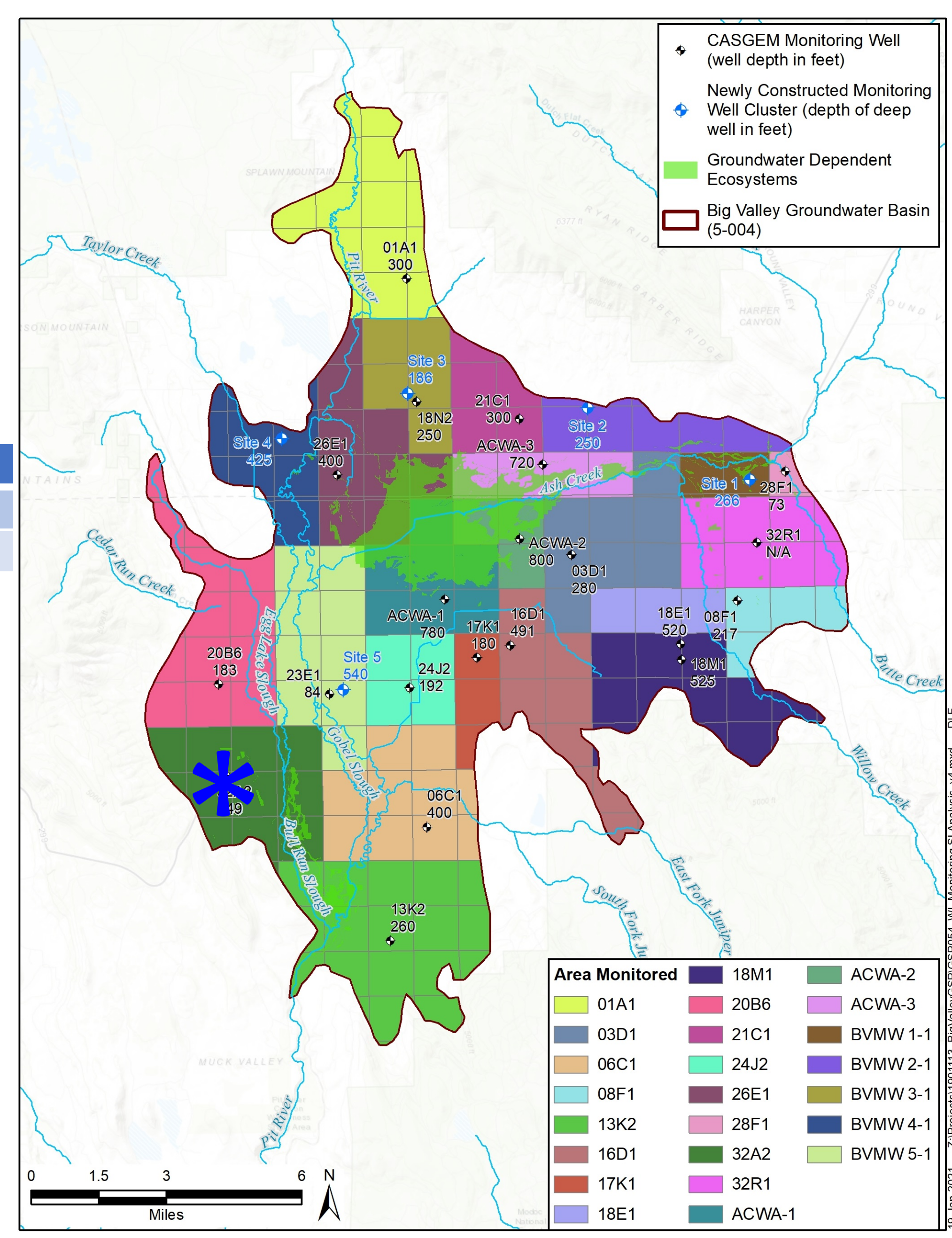
Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	Maybe
Surface Water Depletions	No

Other Pertinent Information

Distance From Nearest Perennial Stream	2.7 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	0.4 miles
Description of Nearest GDE	Bull Run Slough near Nubieber

Notes:

Located near railway, so water levels could be used here as a proxy for making sure there isn't subsidence on the infrastructure.



03D1 Sustainability Indicator Analysis

Date: 1/18/2021

Well Information

Well ID	000007-38N08E03D001M
Alternate Name	03D1
State Number	38N08E03D001M
CASGEM ID	411647N1210358W001

Well Location

County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Unknown
Well Use	Irrigation
Completion Type	Single

Well Coordinates/Geometry

Location	Lat:	41.1646
	Long:	-121.0360
Well Depth		280 ft
Ground Surface Elevation		4163.40 ft
Ref. Point Elevation		4163.40 ft
Screen Depth Range		50 to 280 ft
Screen Elevation Range		4113 to 3883 ft
Principal Aquifer		-

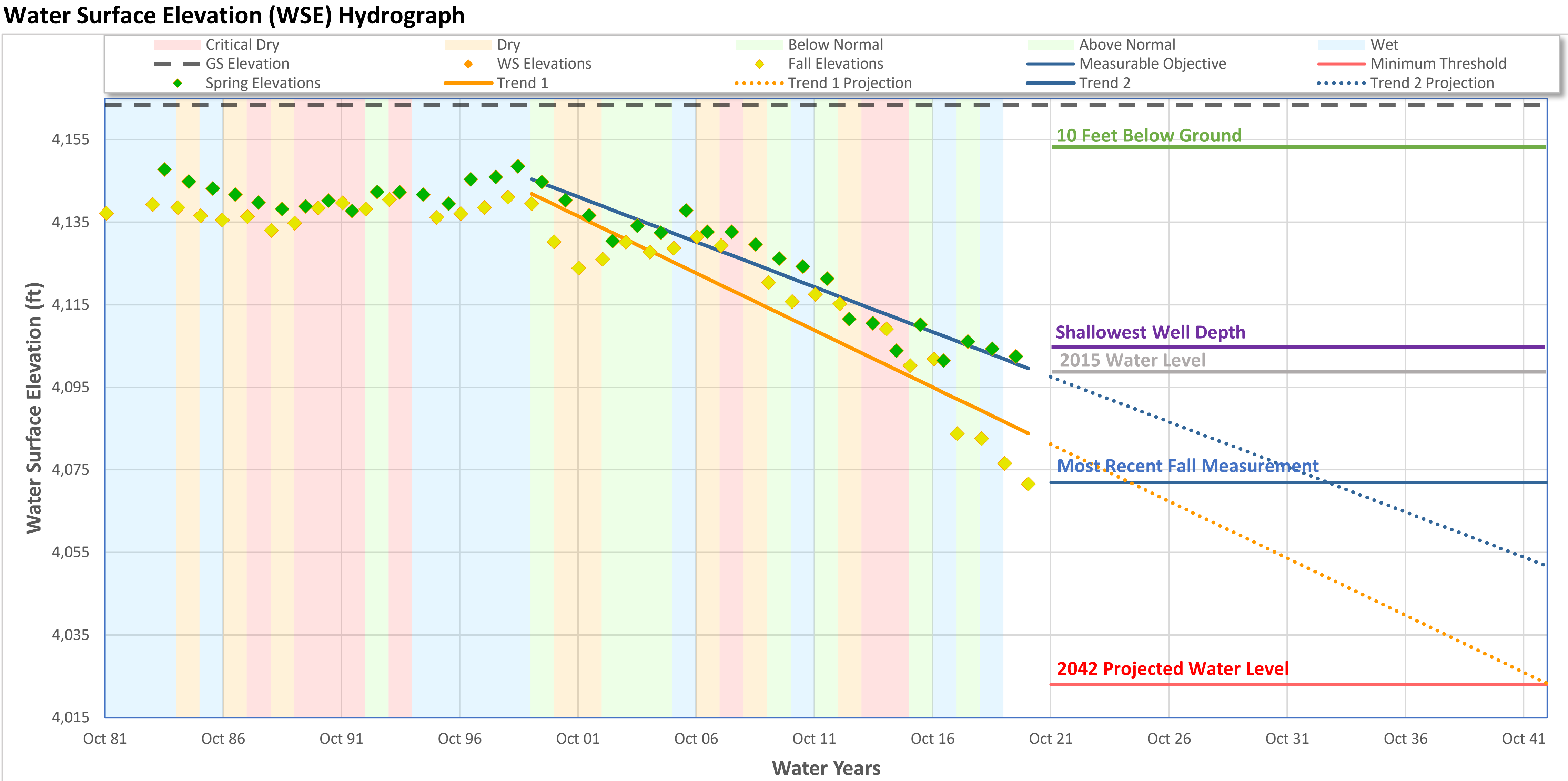
Well Period of Record

Period-of-Record		1982..2021
WS Elev-Range	Min:	4071.6 ft
	Max	4148.6 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(2.762 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(2.182 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4072 ft
	Max	4149 ft
2015 WS Elevations	Spring:	4104 ft
	Fall:	4100 ft
Most Recent WS Elev	Spring:	4103 ft
	Fall:	4072 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	4078 ft	4095 ft
2027	4065 ft	4084 ft
2032	4051 ft	4074 ft
2037	4037 ft	4063 ft
2042	4023 ft	4052 ft
2047	4009 ft	4041 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,023.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,072.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	9	59	4104
Production (Ag)	29	70	4093

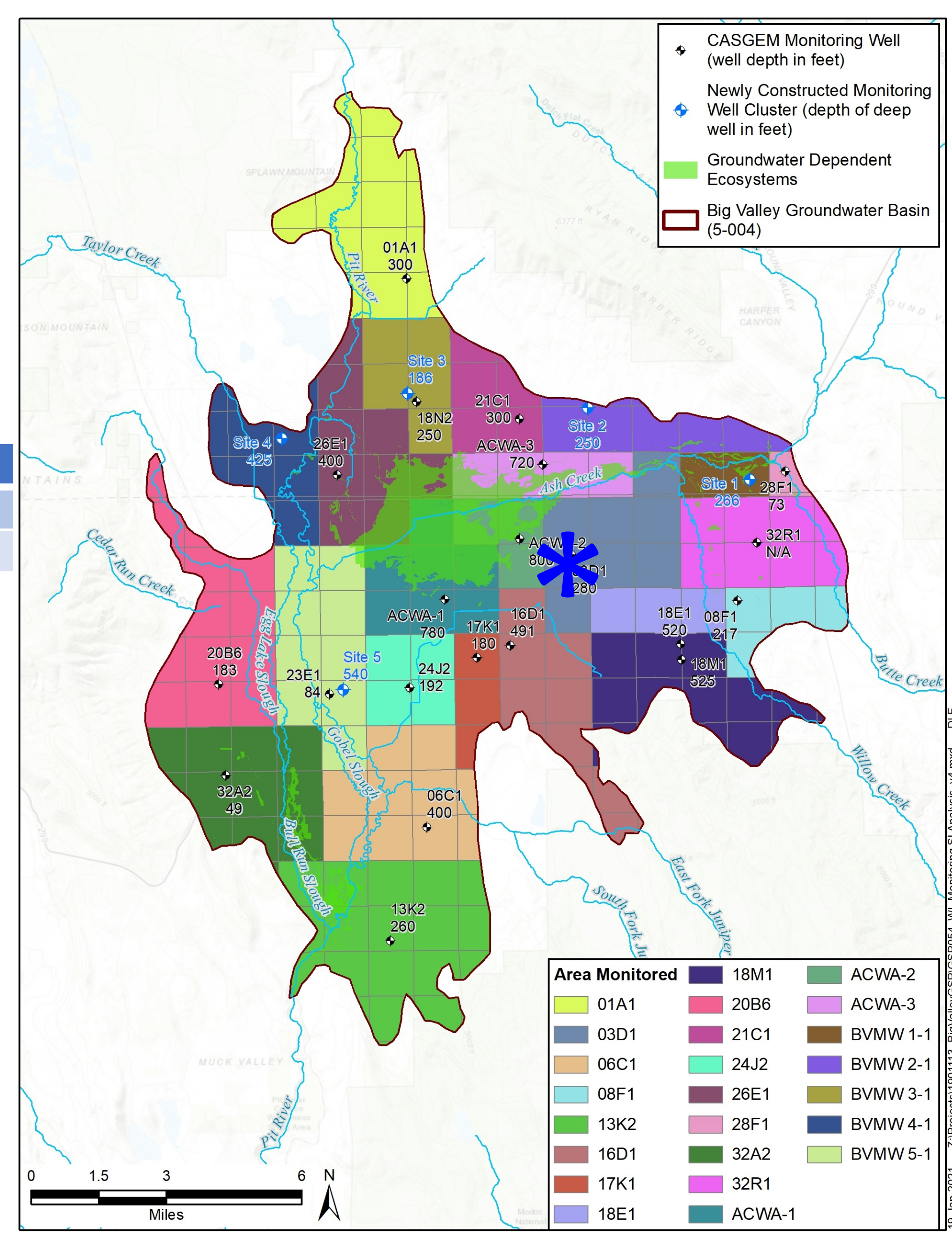
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1.3 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	0.9 miles
Description of Nearest GDE	Ash Creek Wildlife Area



16D1 Sustainability Indicator Analysis

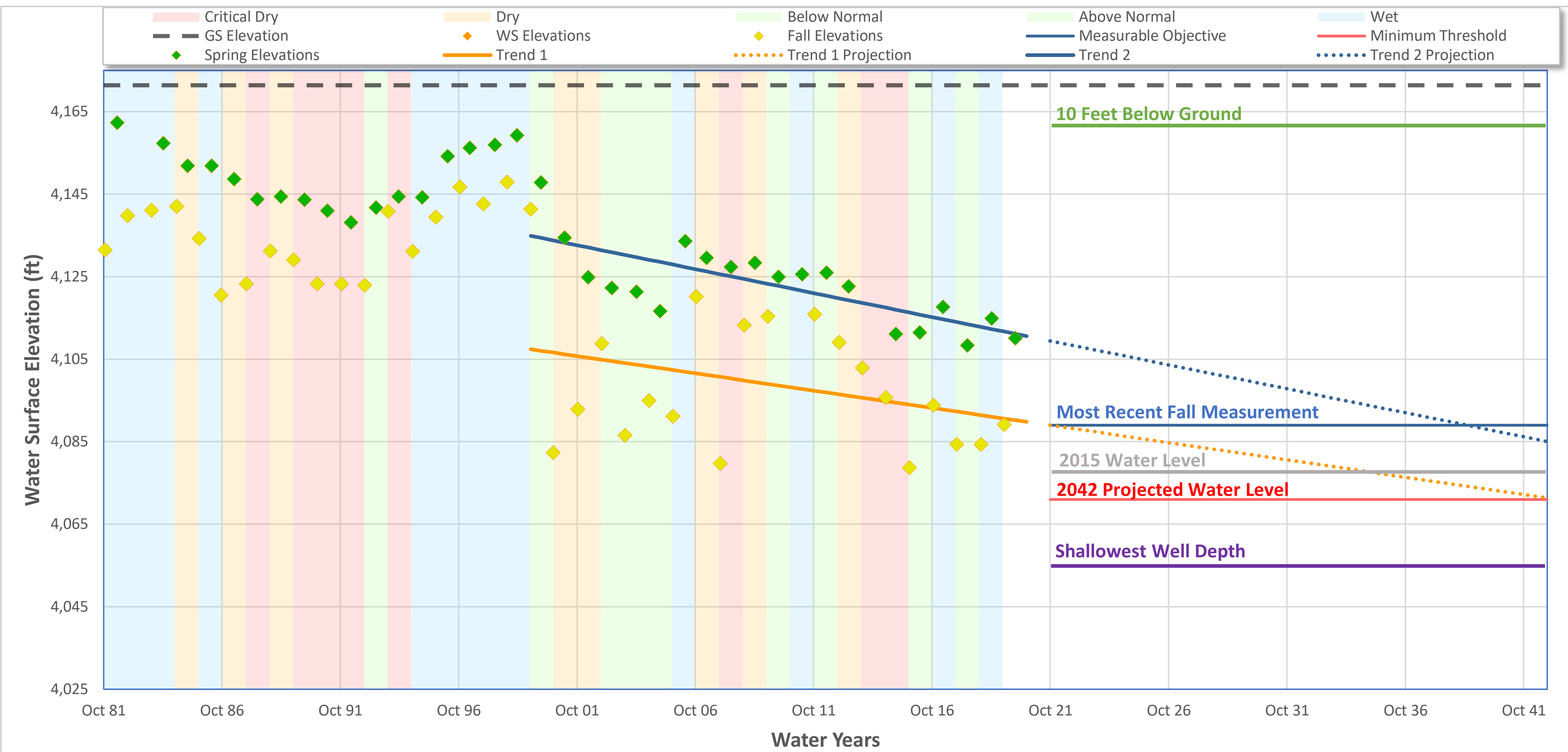
Date: 1/18/2021

Well Information	
Well ID	000008-38N08E16D001M
Alternate Name	16D1
State Number	38N08E16D001M
CASGEM ID	411359N1210625W001
Well Location	
County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Unknown
Well Use	Other
Completion Type	Single

Well Coordinates/Geometry		
Location	Lat:	41.1358
	Long:	-121.0625
Well Depth		491 ft
Ground Surface Elevation		4171.40 ft
Ref. Point Elevation		4171.60 ft
Screen Depth Range		250 to 491 ft
Screen Elevation Range		3922 to 3681 ft
Principal Aquifer		-
Well Period of Record		
Period-of-Record		1982..2020
WS Elev-Range	Min:	4078.7 ft
	Max	4162.4 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.840 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(1.160 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4079 ft
	Max	4162 ft
2015 WS Elevations	Spring:	4111 ft
	Fall:	4079 ft
Most Recent WS Elev	Spring:	4110 ft
	Fall:	4089 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	4088 ft	4108 ft
2027	4084 ft	4102 ft
2032	4080 ft	4097 ft
2037	4076 ft	4091 ft
2042	4071 ft	4085 ft
2047	4067 ft	4079 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,071.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,089.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	5	120	4051
Production (Ag)	13	115	4056

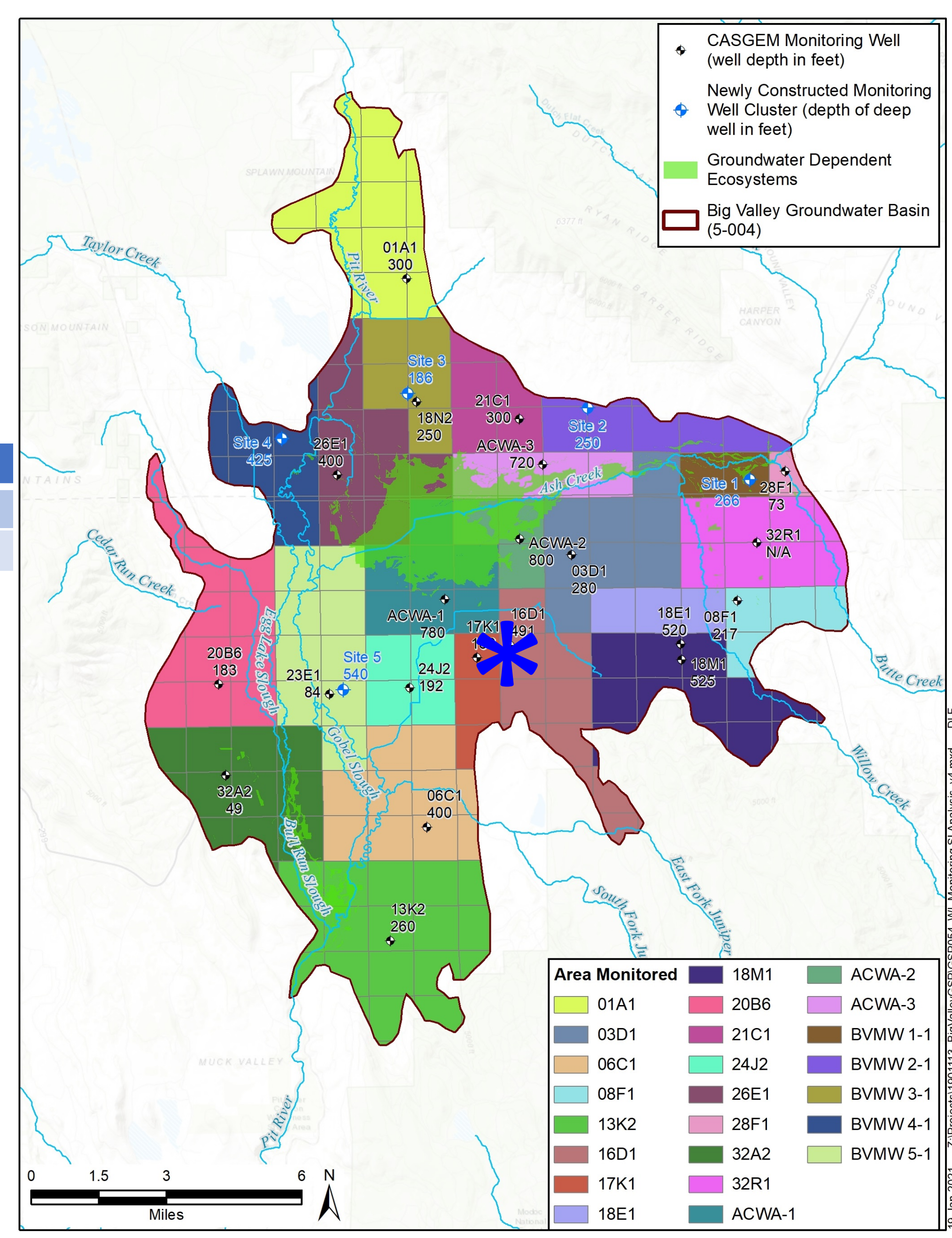
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	3 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	1.4 miles
Description of Nearest GDE	Ash Creek Wildlife Area



17K1 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000009-38N08E17K001M
Alternate Name	17K1
State Number	38N08E17K001M
CASGEM ID	411320N1210766W001

Well Location

County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Unknown
Well Use	Irrigation
Completion Type	Single

Well Coordinates/Geometry

Location	Lat:	41.1320
	Long:	-121.0766
Well Depth		180 ft
Ground Surface Elevation		4153.30 ft
Ref. Point Elevation		4154.30 ft
Screen Depth Range		30 to 180 ft
Screen Elevation Range		4124 to 3974 ft
Principal Aquifer		-

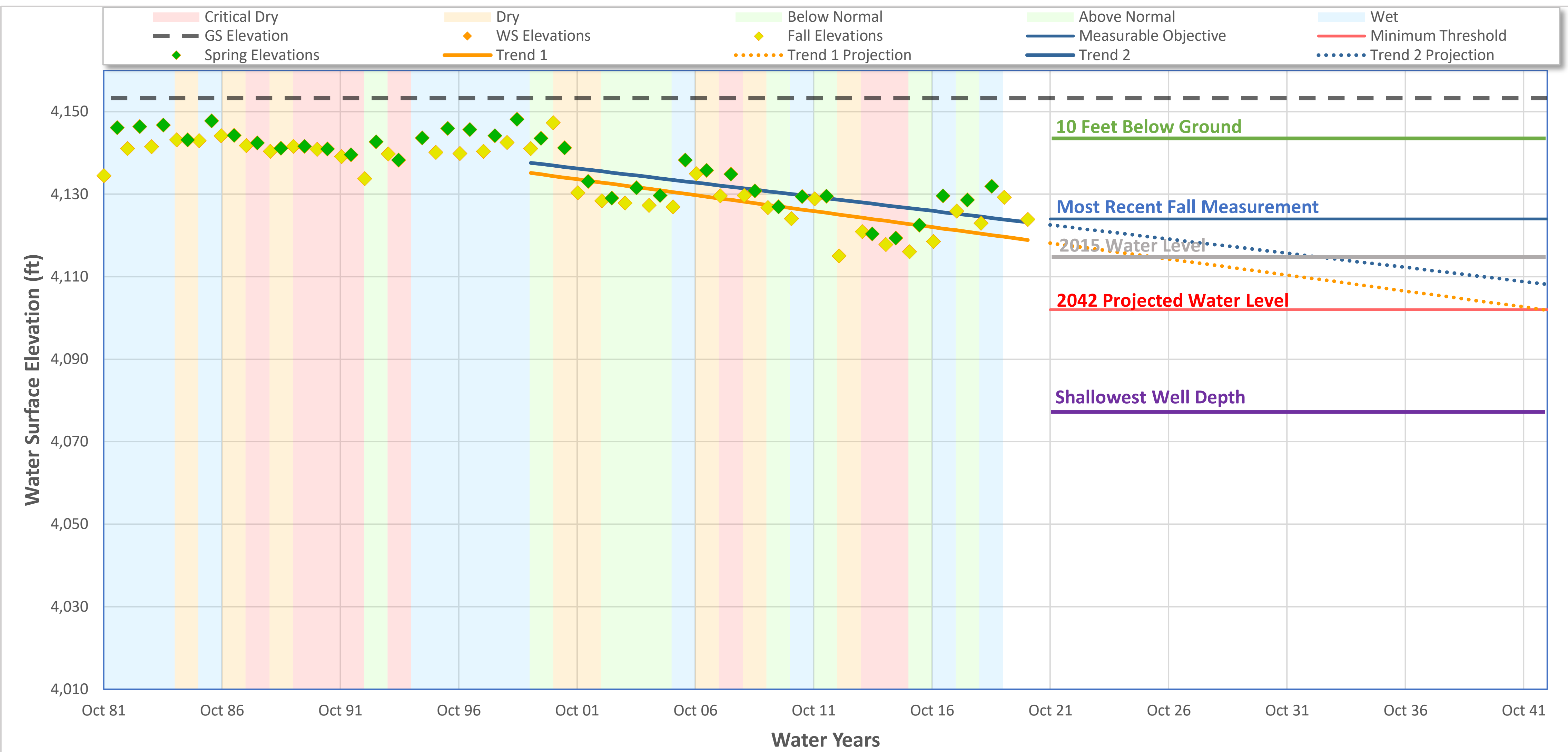
Well Period of Record

Period-of-Record		1957..2021
WS Elev-Range	Min:	4115.1 ft
	Max	4150.0 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.774 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.685 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4115 ft
	Max	4150 ft
2015 WS Elevations	Spring:	4119 ft
	Fall:	4116 ft
Most Recent WS Elev	Spring:	4132 ft
	Fall:	4124 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	4117 ft	4122 ft
2027	4114 ft	4118 ft
2032	4110 ft	4115 ft
2037	4106 ft	4112 ft
2042	4102 ft	4108 ft
2047	4098 ft	4105 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,102.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,124.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	9	76	4077
Production (Ag)	11	211	3942

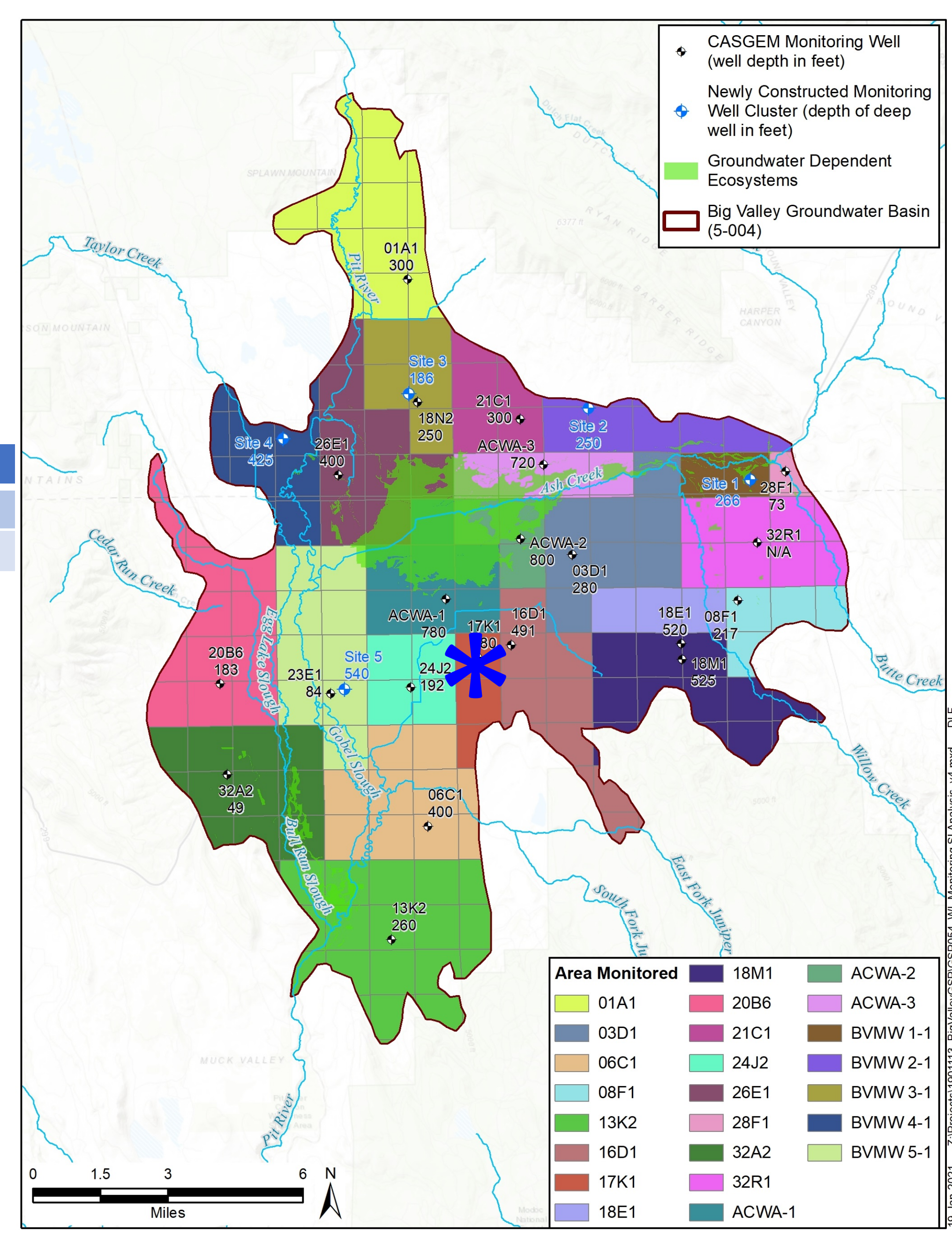
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	3.1 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	1.5 miles
Description of Nearest GDE	Ash Creek Wildlife Area



08F1 Sustainability Indicator Analysis

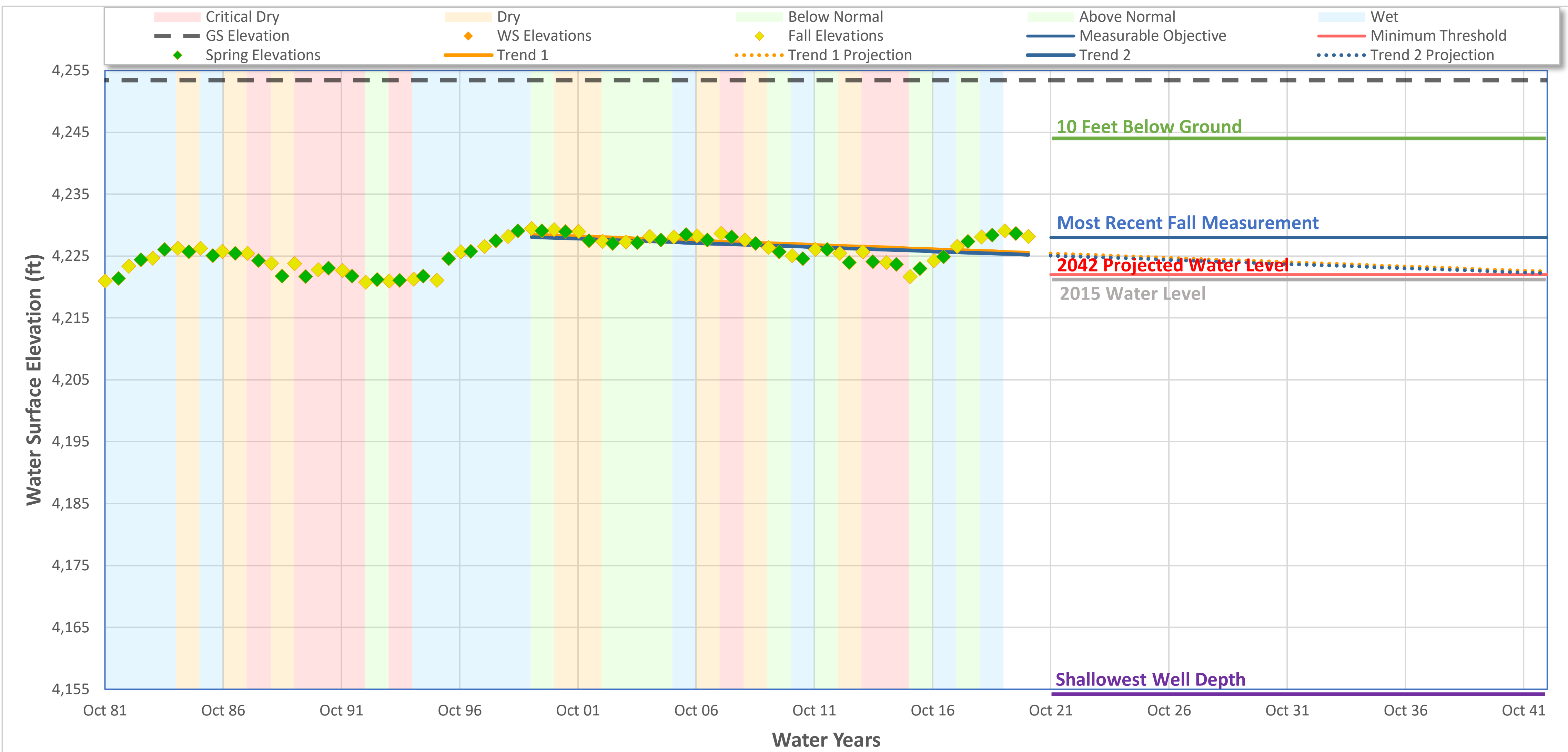
Date:	1/18/2021

Well Information	
Well ID	000010-38N09E08F001M
Alternate Name	08F1
State Number	38N09E08F001M
CASGEM ID	411493N1209656W001
Well Location	
County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Unknown
Well Use	Irrigation
Completion Type	Single

Well Coordinates/Geometry		
Location	Lat:	41.1493
	Long:	-120.9656
Well Depth		217 ft
Ground Surface Elevation		4253.40 ft
Ref. Point Elevation		4255.40 ft
Screen Depth Range		26 to 217 ft
Screen Elevation Range		4229 to 4038 ft
Principal Aquifer		-
Well Period of Record		
Period-of-Record		1979..2021
WS Elev-Range	Min:	4220.5 ft
	Max	4229.5 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.139 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.136 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4221 ft
	Max	4230 ft
2015 WS Elevations	Spring:	4224 ft
	Fall:	4222 ft
Most Recent WS Elev	Spring:	4229 ft
	Fall:	4228 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	4225 ft	4225 ft
2027	4225 ft	4224 ft
2032	4224 ft	4224 ft
2037	4223 ft	4223 ft
2042	4223 ft	4222 ft
2047	4222 ft	4222 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,222.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,228.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	3	160	4093
Production (Ag)	5	100	4153

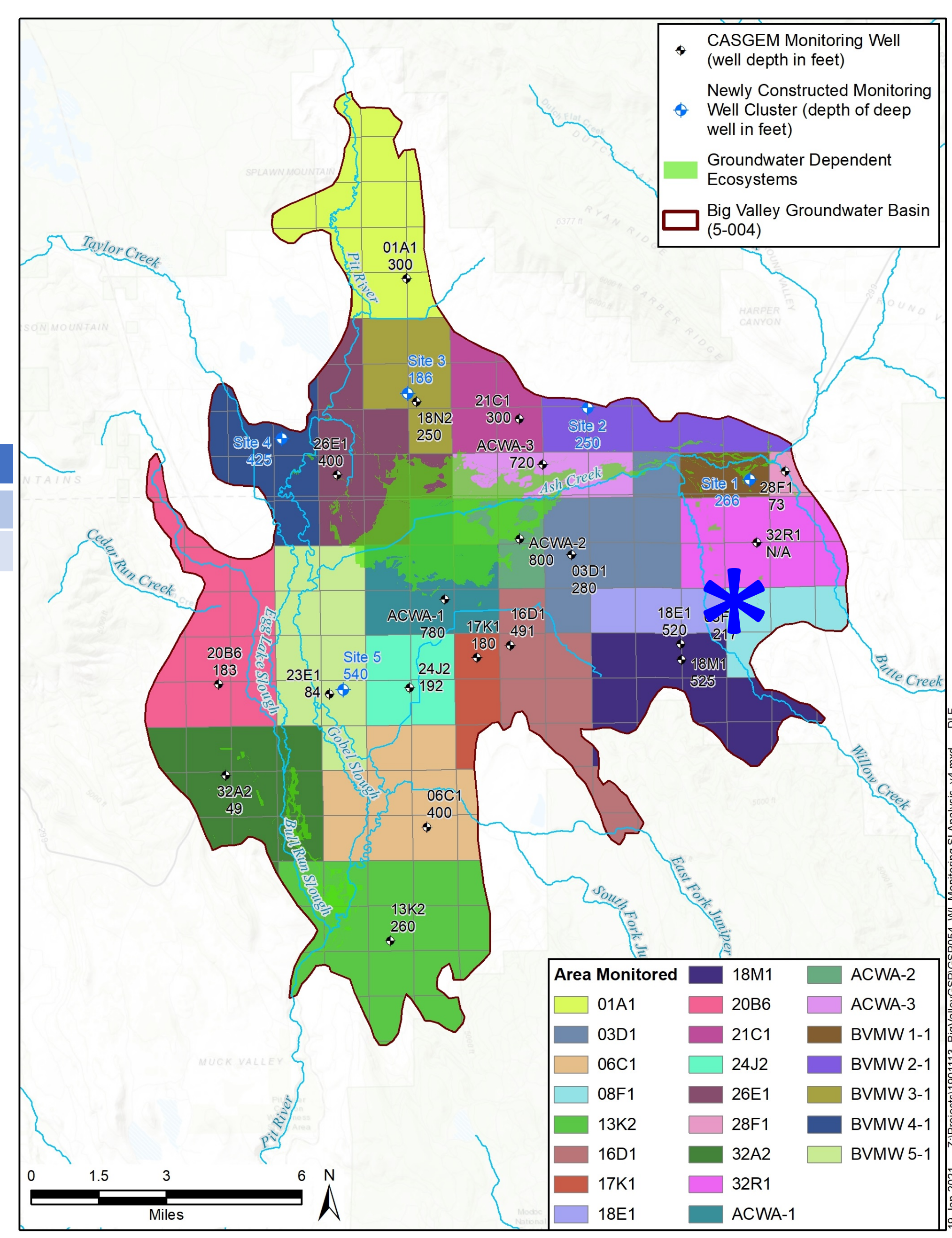
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	3 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	0.5 miles
Description of Nearest GDE	Willow Creek Valley



18E1 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000011-38N09E18E001M
Alternate Name	18E1
State Number	38N09E18E001M
CASGEM ID	411356N1209900W001

Well Location

County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Unknown
Well Use	Residential
Completion Type	Single

Well Coordinates/Geometry

Location	Lat:	41.1356
	Long:	-120.9900
Well Depth		520 ft
Ground Surface Elevation		4248.40 ft
Ref. Point Elevation		4249.50 ft
Screen Depth Range		21 to 520 ft
Screen Elevation Range		4229 to 3730 ft
Principal Aquifer		-

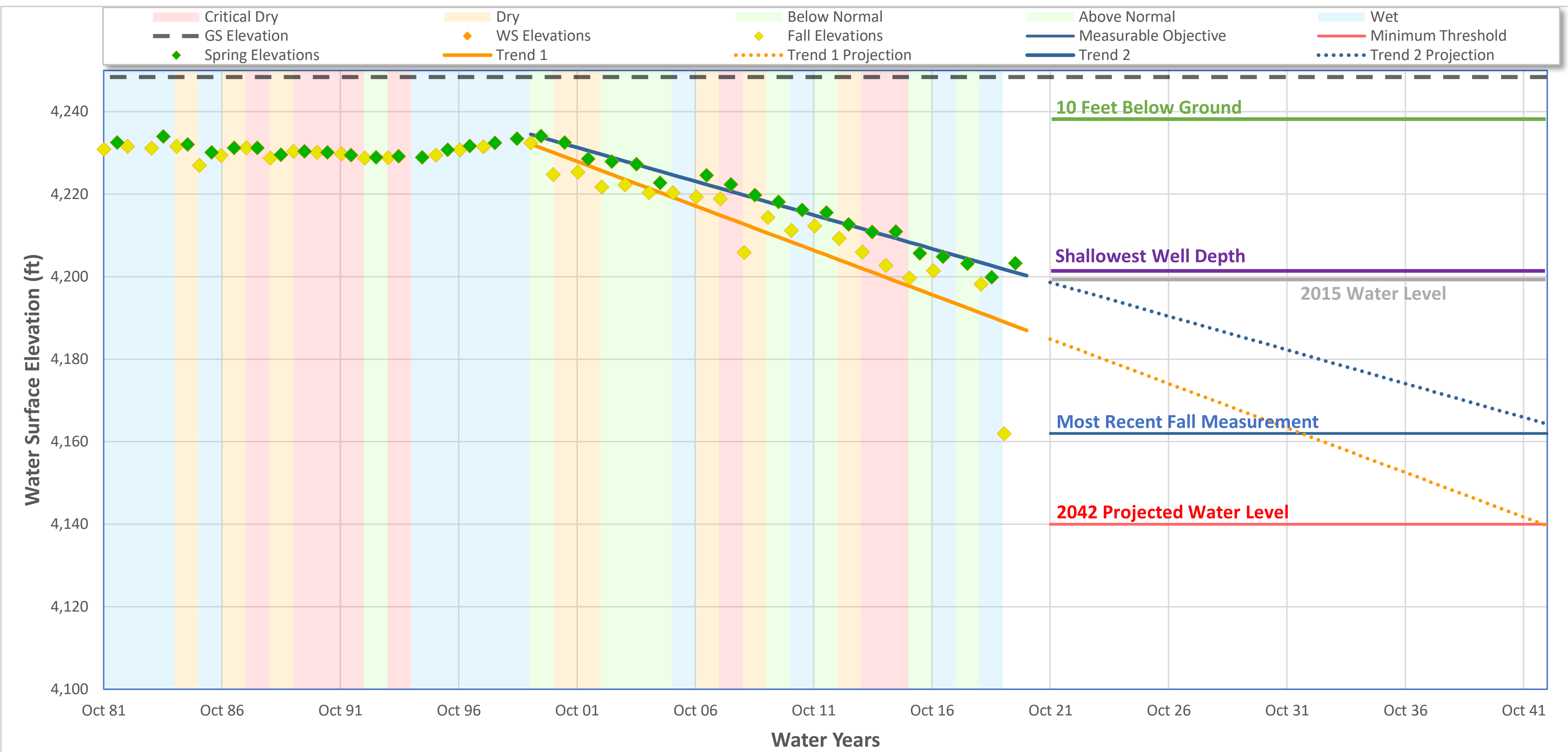
Well Period of Record

Period-of-Record		1981..2020
WS Elev-Range	Min:	4162.0 ft
	Max	4234.1 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(2.154 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(1.635 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4162 ft
	Max	4234 ft
2015 WS Elevations	Spring:	4211 ft
	Fall:	4200 ft
Most Recent WS Elev	Spring:	4203 ft
	Fall:	4162 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	4183 ft	4197 ft
2027	4172 ft	4189 ft
2032	4161 ft	4181 ft
2037	4150 ft	4172 ft
2042	4140 ft	4164 ft
2047	4129 ft	4156 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,140.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,162.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	4	46	4202
Production (Ag)	3	70	4178

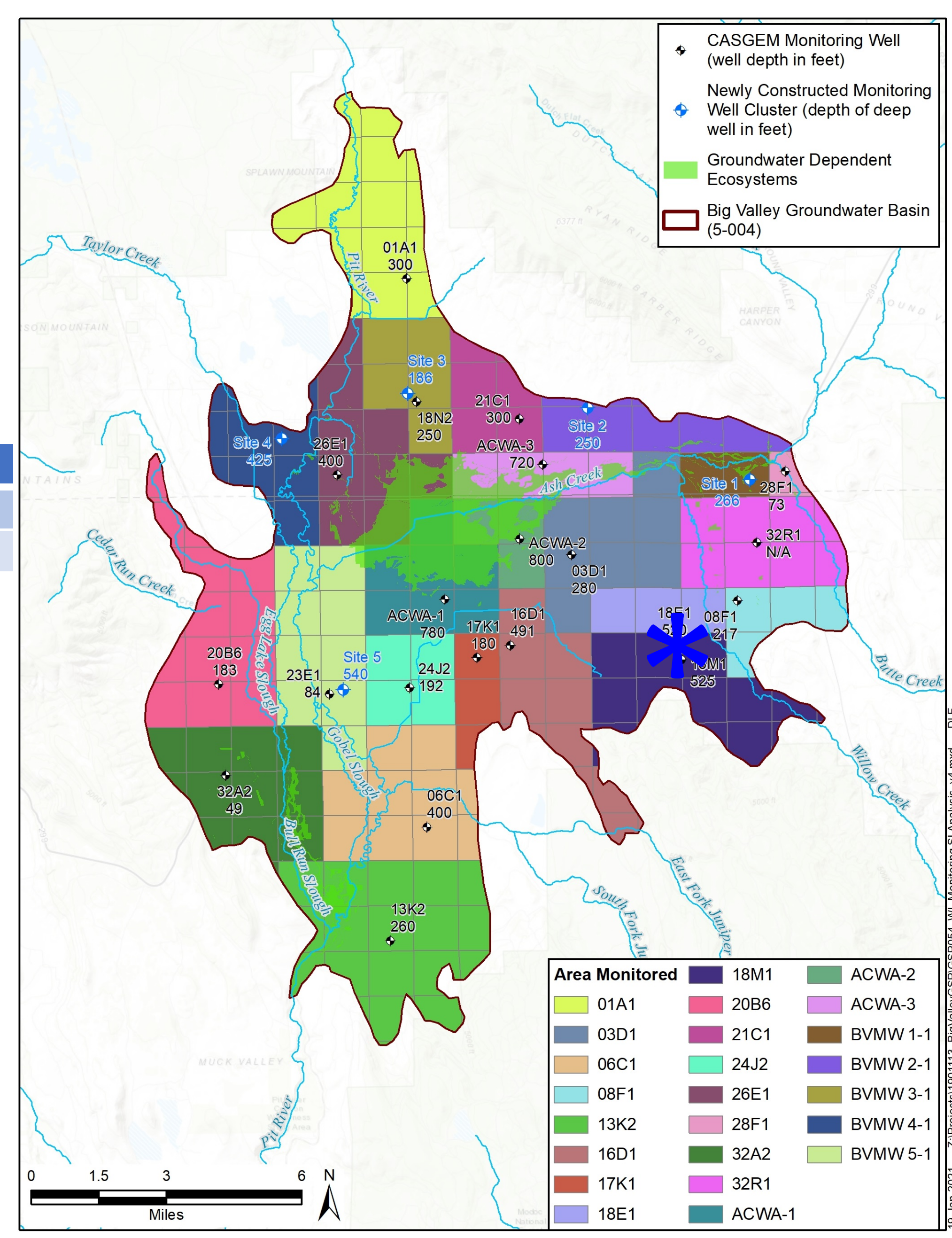
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	3.8 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	1.4 miles
Description of Nearest GDE	Willow Creek Valley



18M1 Sustainability Indicator Analysis

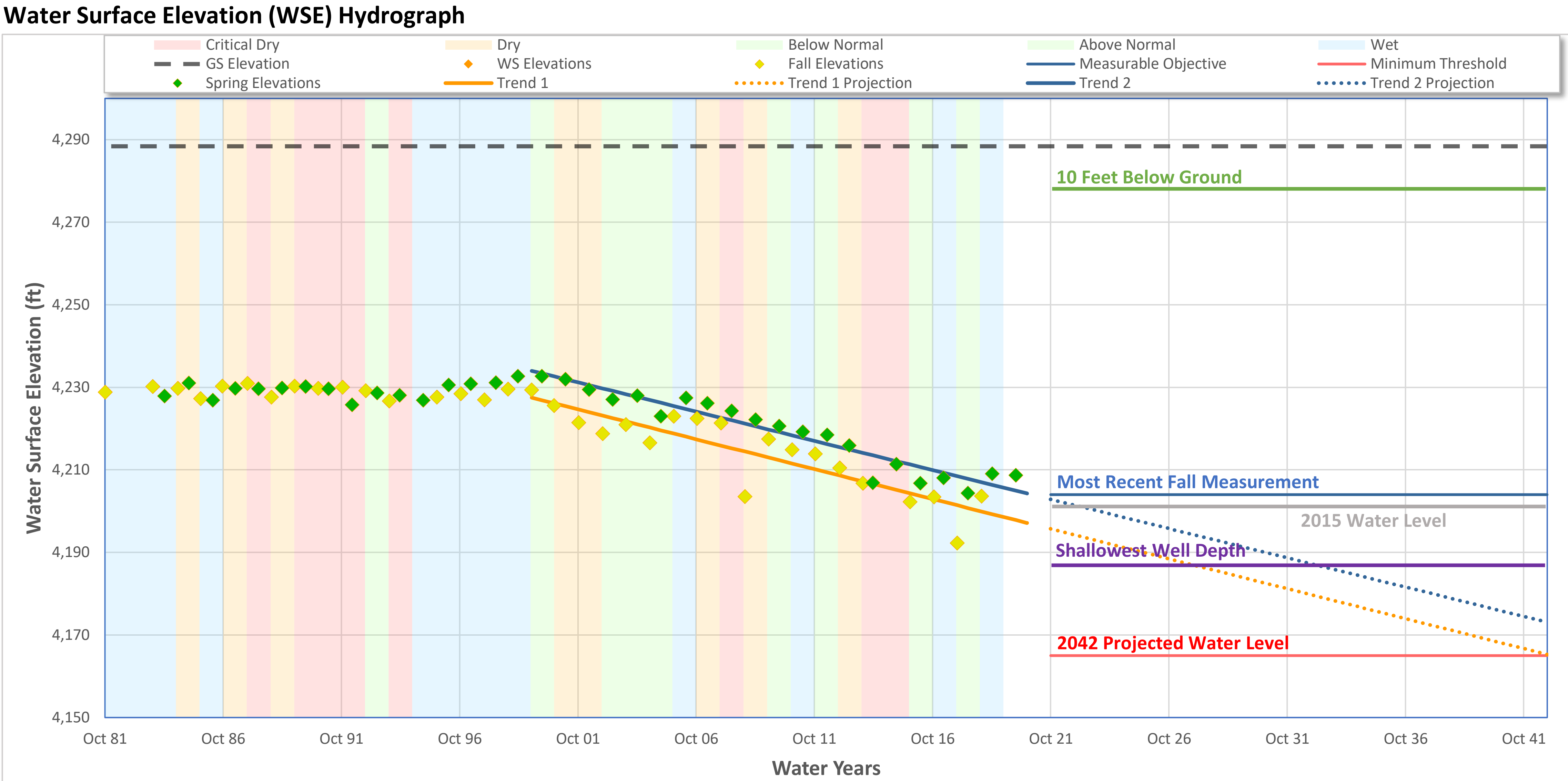
Date:	1/18/2021

Well Information	
Well ID	000012-38N09E18M001M
Alternate Name	18M1
State Number	38N09E18M001M
CASGEM ID	411305N1209896W001
Well Location	
County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Unknown
Well Use	Irrigation
Completion Type	Single

Well Coordinates/Geometry		
Location	Lat:	41.1305
	Long:	-120.9897
Well Depth		525 ft
Ground Surface Elevation		4288.40 ft
Ref. Point Elevation		4288.90 ft
Screen Depth Range		40 to 525 ft
Screen Elevation Range		4249 to 3764 ft
Principal Aquifer	-	
Well Period of Record		
Period-of-Record		1981..2020
WS Elev-Range	Min:	4192.3 ft
	Max	4232.7 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(1.449 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(1.417 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4192 ft
	Max	4233 ft
2015 WS Elevations	Spring:	4211 ft
	Fall:	4202 ft
Most Recent WS Elev	Spring:	4209 ft
	Fall:	4204 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	4194 ft	4201 ft
2027	4187 ft	4194 ft
2032	4180 ft	4187 ft
2037	4173 ft	4180 ft
2042	4165 ft	4173 ft
2047	4158 ft	4166 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,165.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,204.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	11	100	4188
Production (Ag)	10	200	4088

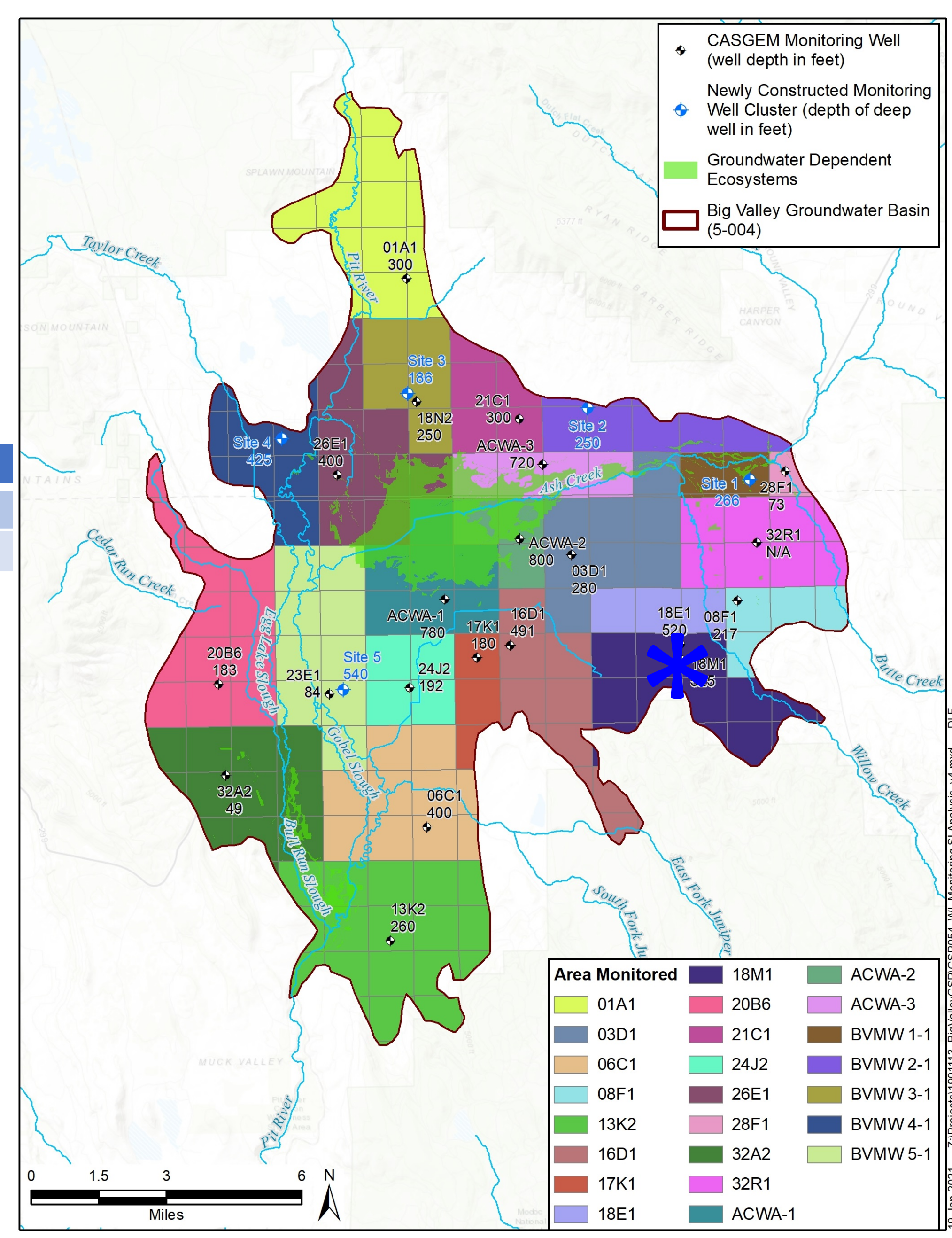
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	4.2 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	1.7 miles
Description of Nearest GDE	Willow Creek Valley



01A1 Sustainability Indicator Analysis

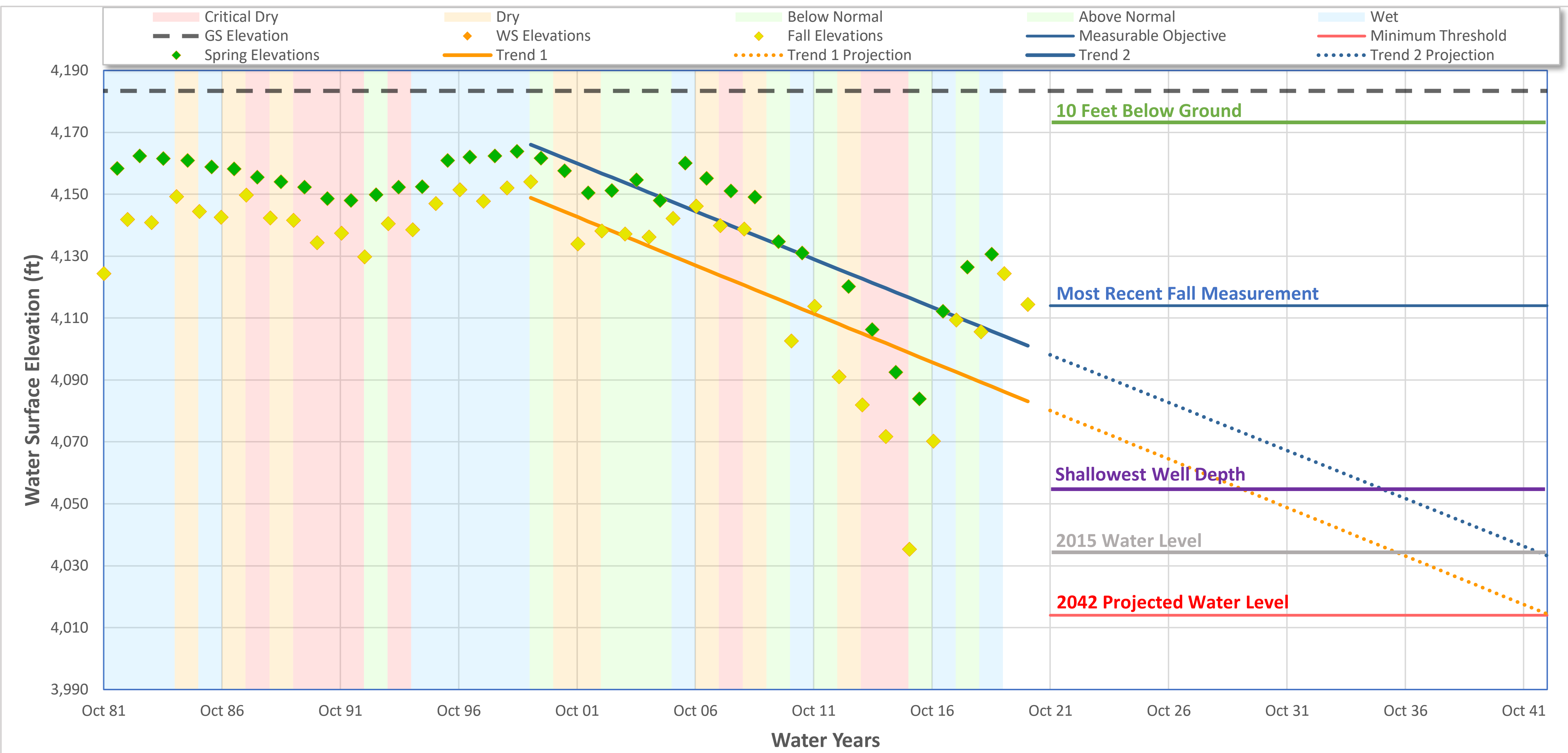
Date:	1/18/2021

Well Information	
Well ID	000013-39N07E01A001M
Alternate Name	01A1
State Number	39N07E01A001M
CASGEM ID	412539N1211050W001
Well Location	
County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Unknown
Well Use	Irrigation
Completion Type	Single

Well Coordinates/Geometry		
Location	Lat:	41.2539
	Long:	-121.1050
Well Depth		300 ft
Ground Surface Elevation		4183.40 ft
Ref. Point Elevation		4184.40 ft
Screen Depth Range		-
Screen Elevation Range		-
Principal Aquifer		-
Well Period of Record		
Period-of-Record		1979..2021
WS Elev-Range	Min:	4035.4 ft
	Max	4163.9 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(3.131 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(3.092 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4035 ft
	Max	4164 ft
2015 WS Elevations	Spring:	4093 ft
	Fall:	4035 ft
Most Recent WS Elev	Spring:	4131 ft
	Fall:	4114 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	4077 ft	4095 ft
2027	4061 ft	4080 ft
2032	4046 ft	4064 ft
2037	4030 ft	4049 ft
2042	4014 ft	4033 ft
2047	3999 ft	4018 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,014.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,114.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	12	127	4056
Production (Ag)	25	260	3923

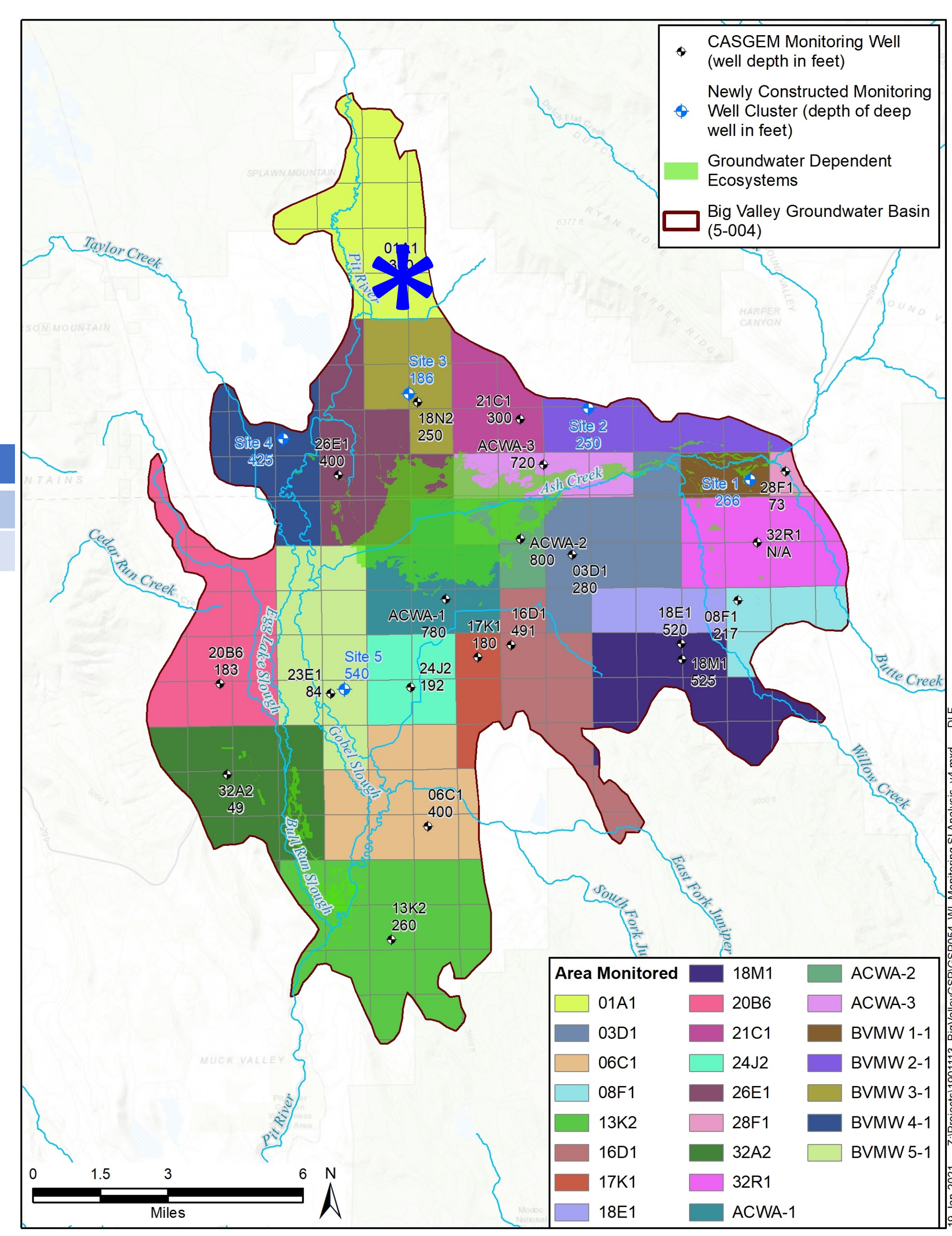
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	3.2 miles
Description of Nearest GDE	Pit River



26E1 Sustainability Indicator Analysis

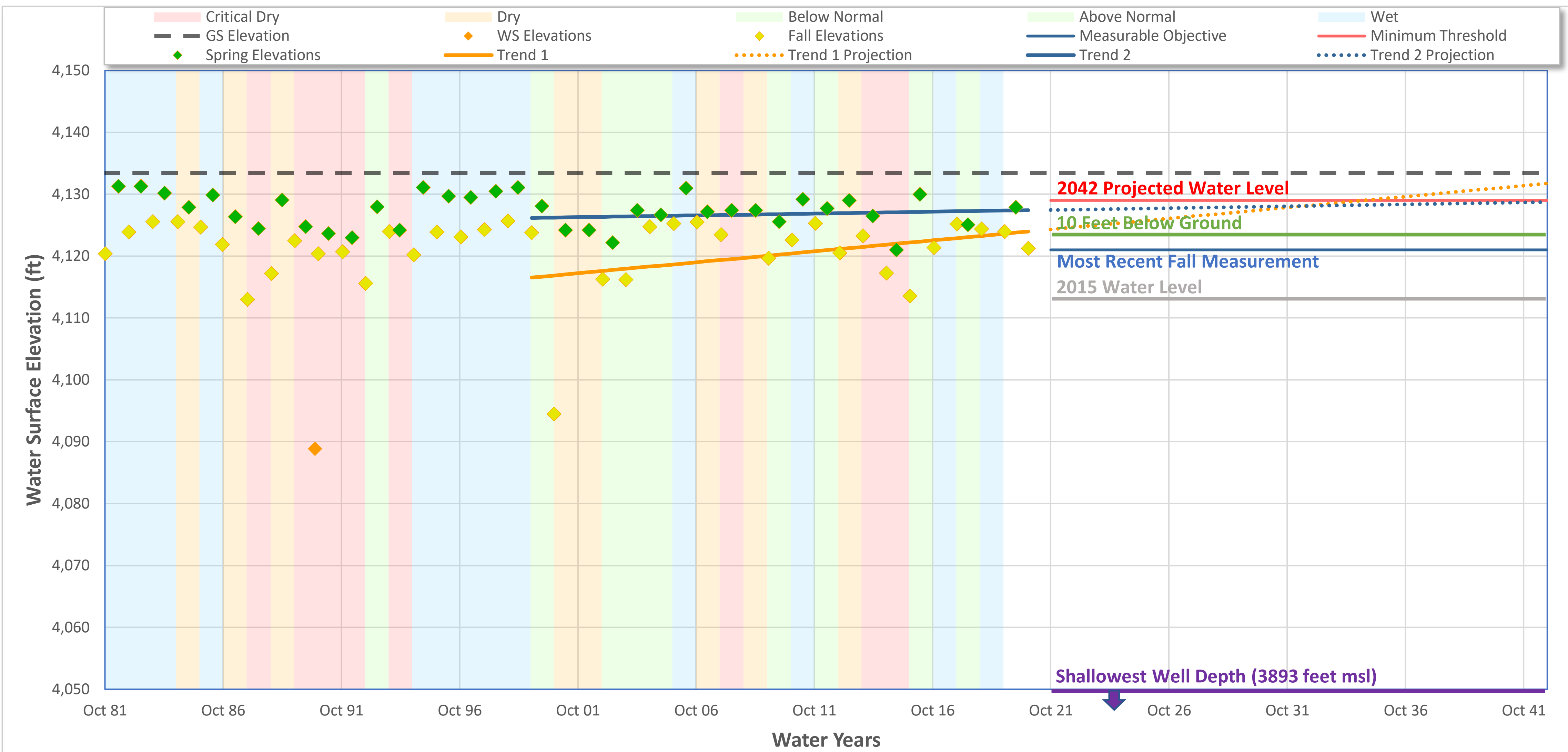
Date:	1/18/2021

Well Information	
Well ID	000014-39N07E26E001M
Alternate Name	26E1
State Number	39N07E26E001M
CASGEM ID	411911N1211354W001
Well Location	
County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Unknown
Well Use	Irrigation
Completion Type	Single

Well Coordinates/Geometry		
Location	Lat:	41.1911
	Long:	-121.1354
Well Depth		400 ft
Ground Surface Elevation		4133.40 ft
Ref. Point Elevation		4135.00 ft
Screen Depth Range		20 to 400 ft
Screen Elevation Range		4115 to 3735 ft
Principal Aquifer	-	
Well Period of Record		
Period-of-Record		1979..2021
WS Elev-Range	Min:	4088.9 ft
	Max	4131.3 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	0.354 ft/yr
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	0.059 ft/yr

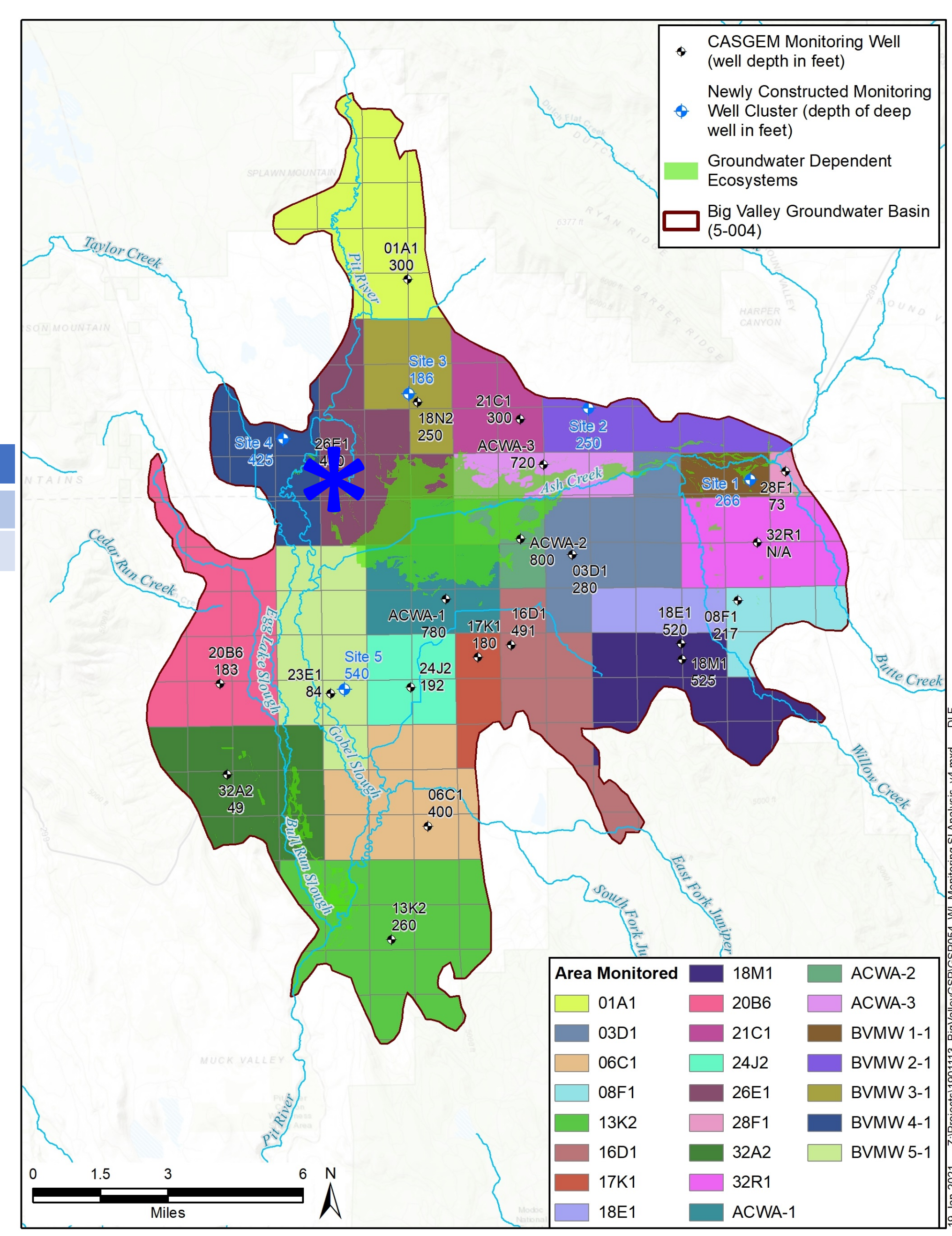
Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4089 ft
	Max	4131 ft
2015 WS Elevations	Spring:	4121 ft
	Fall:	4114 ft
Most Recent WS Elev	Spring:	4128 ft
	Fall:	4121 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	4125 ft	4128 ft
2027	4126 ft	4128 ft
2032	4128 ft	4128 ft
2037	4130 ft	4128 ft
2042	4132 ft	4129 ft
2047	4133 ft	4129 ft



Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,129.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,121.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	4	240	3893
Production (Ag)	21	302	3831

Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	Maybe

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	0.7 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	0.3 miles
Description of Nearest GDE	ACWA/Pit River

18N2 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000015-39N08E18N002M
Alternate Name	18N2
State Number	39N08E18N002M
CASGEM ID	412144N1211013W001
Well Location	
County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Unknown
Well Use	Irrigation
Completion Type	Single

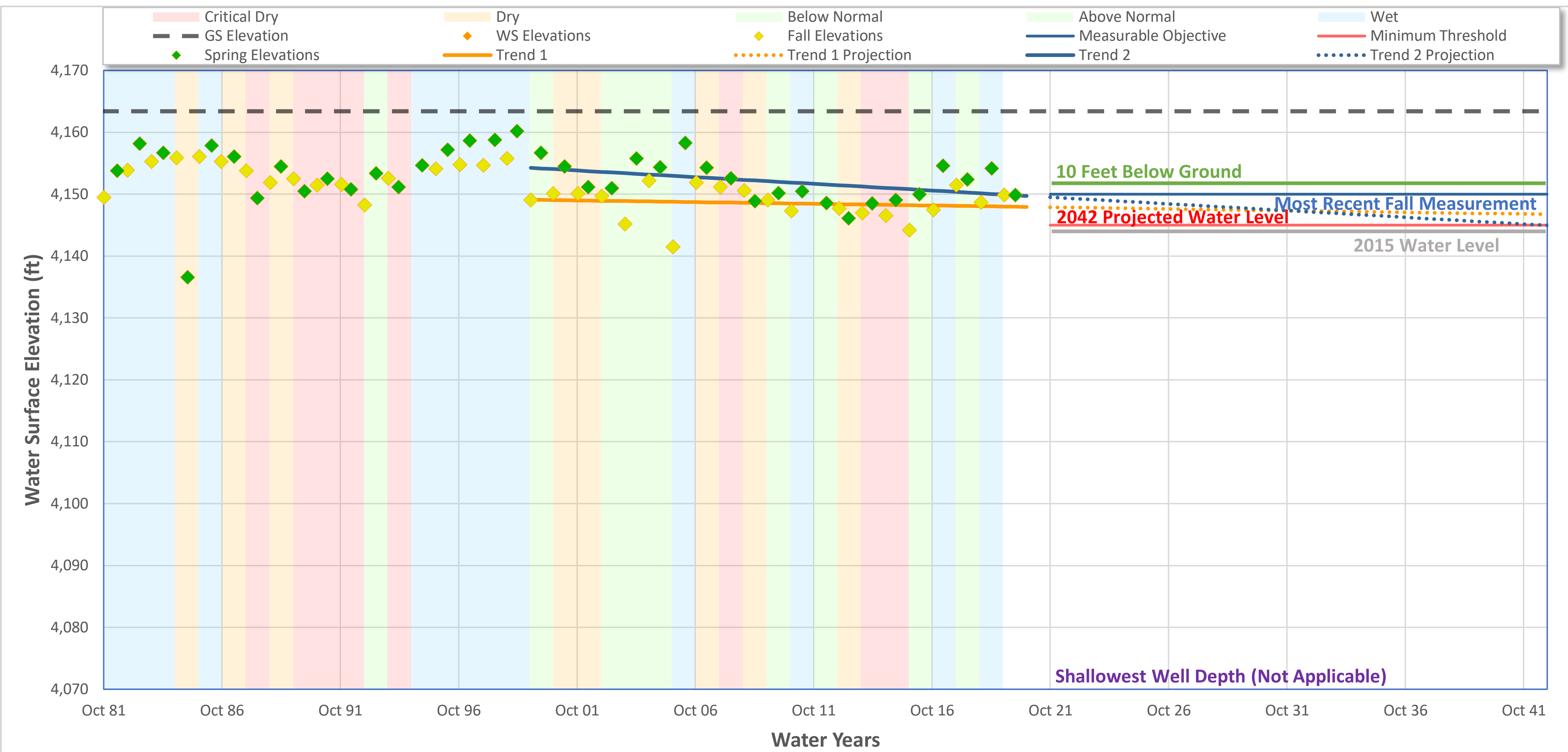
Well Coordinates/Geometry

Location	Lat:	41.2144
	Long:	-121.1013
Well Depth		250 ft
Ground Surface Elevation		4163.40 ft
Ref. Point Elevation		4164.40 ft
Screen Depth Range		-
Screen Elevation Range		-
Principal Aquifer	-	
Well Period of Record		
Period-of-Record		1979..2020
WS Elev-Range	Min:	4136.6 ft
	Max	4160.2 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.055 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.216 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4137 ft
	Max	4160 ft
2015 WS Elevations	Spring:	4149 ft
	Fall:	4144 ft
Most Recent WS Elev	Spring:	4150 ft
	Fall:	4150 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	4148 ft	4149 ft
2027	4148 ft	4148 ft
2032	4147 ft	4147 ft
2037	4147 ft	4146 ft
2042	4147 ft	4145 ft
2047	4146 ft	4144 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,145.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,150.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	0	-	-
Production (Ag)	0	-	-

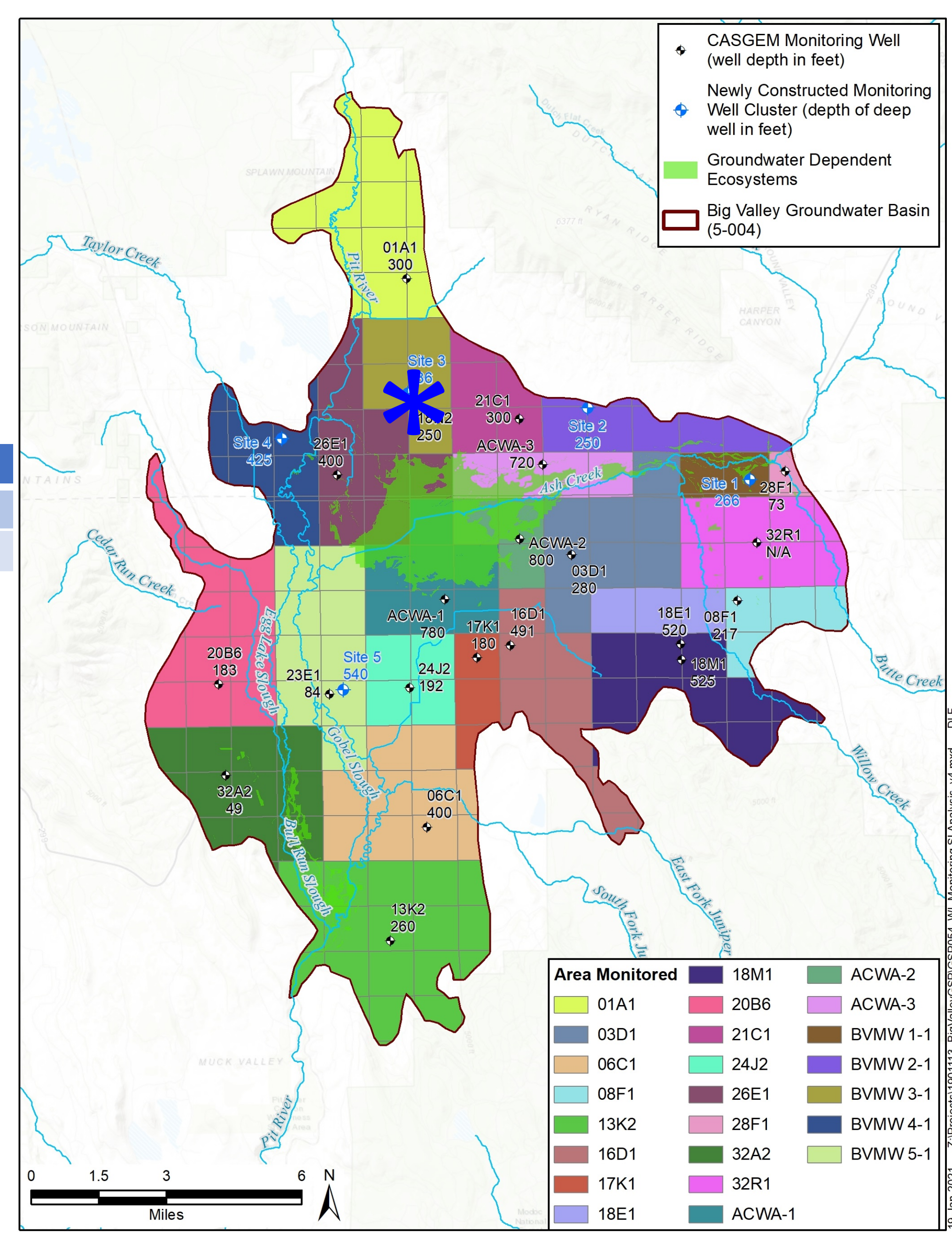
Sustainability Indicators to Consider

Water Levels	Maybe
Groundwater Storage	Maybe
Water Quality	No
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1.6 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	1.4 miles
Description of Nearest GDE	Ash Creek Wildlife Area



21C1 Sustainability Indicator Analysis

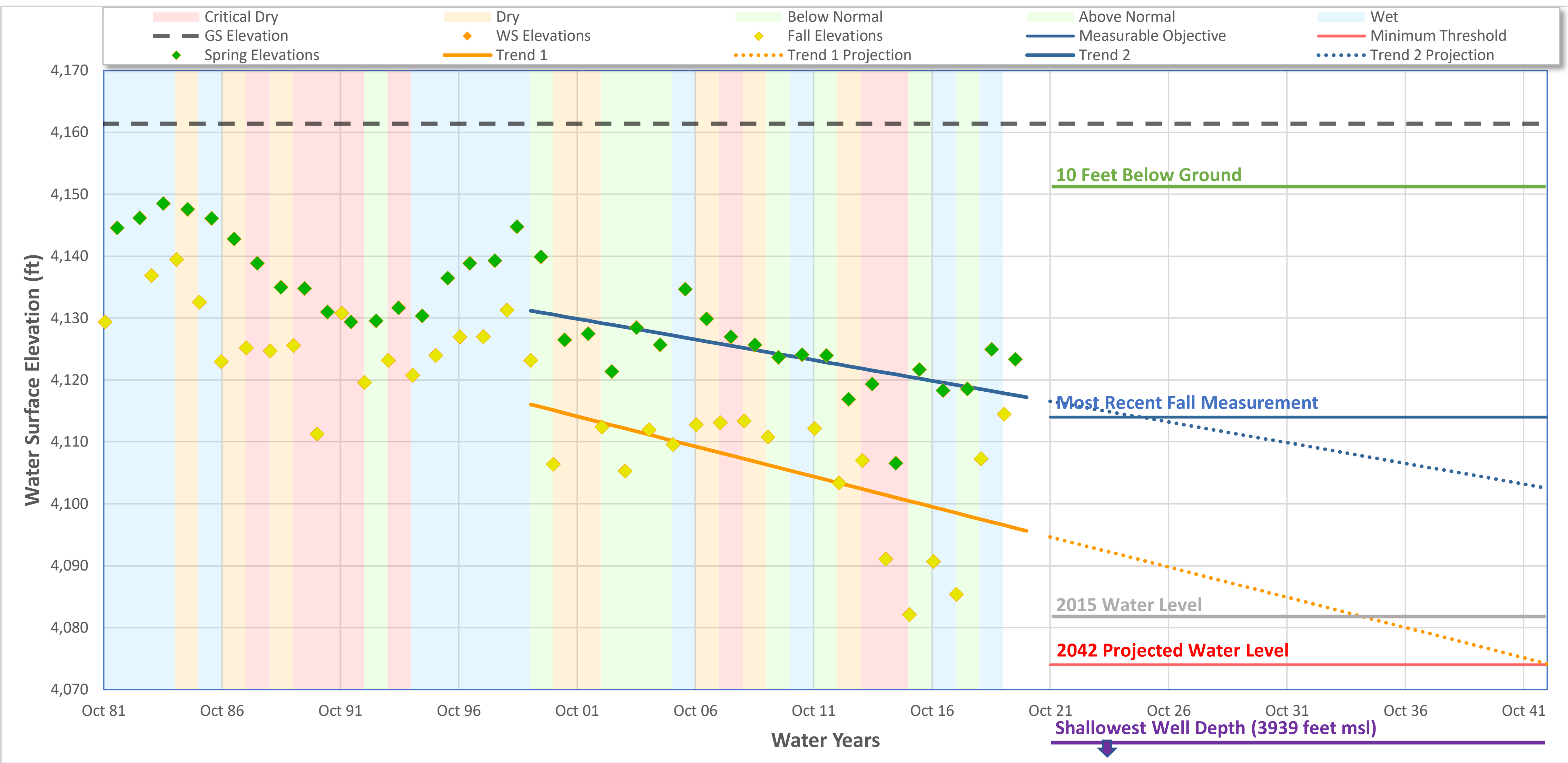
Date: 1/18/2021

Well Information	
Well ID	000016-39N08E21C001M
Alternate Name	21C1
State Number	39N08E21C001M
CASGEM ID	412086N1210574W001
Well Location	
County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Unknown
Well Use	Irrigation
Completion Type	Single

Well Coordinates/Geometry		
Location	Lat:	41.2084
	Long:	-121.0576
Well Depth		300 ft
Ground Surface Elevation		4161.40 ft
Ref. Point Elevation		4161.70 ft
Screen Depth Range		30 to 40 ft
Screen Elevation Range		4132 to 4122 ft
Principal Aquifer		-
Well Period of Record		
Period-of-Record		1979..2020
WS Elev-Range	Min:	4082.1 ft
	Max	4148.5 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.975 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.667 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4082 ft
	Max	4149 ft
2015 WS Elevations	Spring:	4107 ft
	Fall:	4082 ft
Most Recent WS Elev	Spring:	4123 ft
	Fall:	4115 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	4094 ft	4116 ft
2027	4089 ft	4113 ft
2032	4084 ft	4109 ft
2037	4079 ft	4106 ft
2042	4074 ft	4103 ft
2047	4069 ft	4099 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,074.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,114.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	2	222	3939
Production (Ag)	13	340	3821

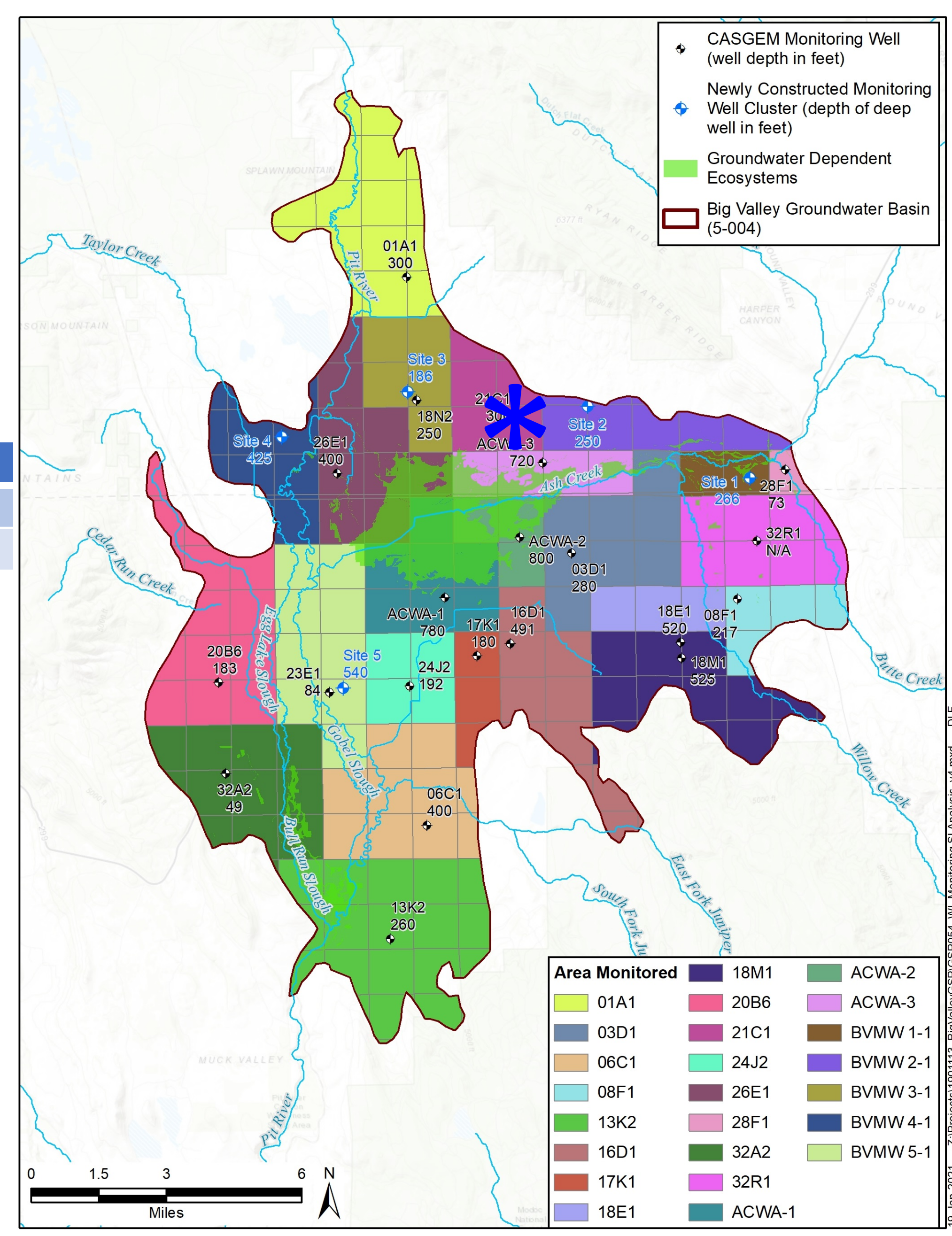
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1.8 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	1 miles
Description of Nearest GDE	Ash Creek Wildlife Area



28F1 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000017-39N09E28F001M
Alternate Name	28F1
State Number	39N09E28F001M
CASGEM ID	411907N1209447W001

Well Location

County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Unknown
Well Use	Residential
Completion Type	Single

Well Coordinates/Geometry

Location	Lat:	41.1907
	Long:	-120.9447
Well Depth		73 ft
Ground Surface Elevation		4206.60 ft
Ref. Point Elevation		4207.10 ft
Screen Depth Range		-
Screen Elevation Range		-
Principal Aquifer	-	

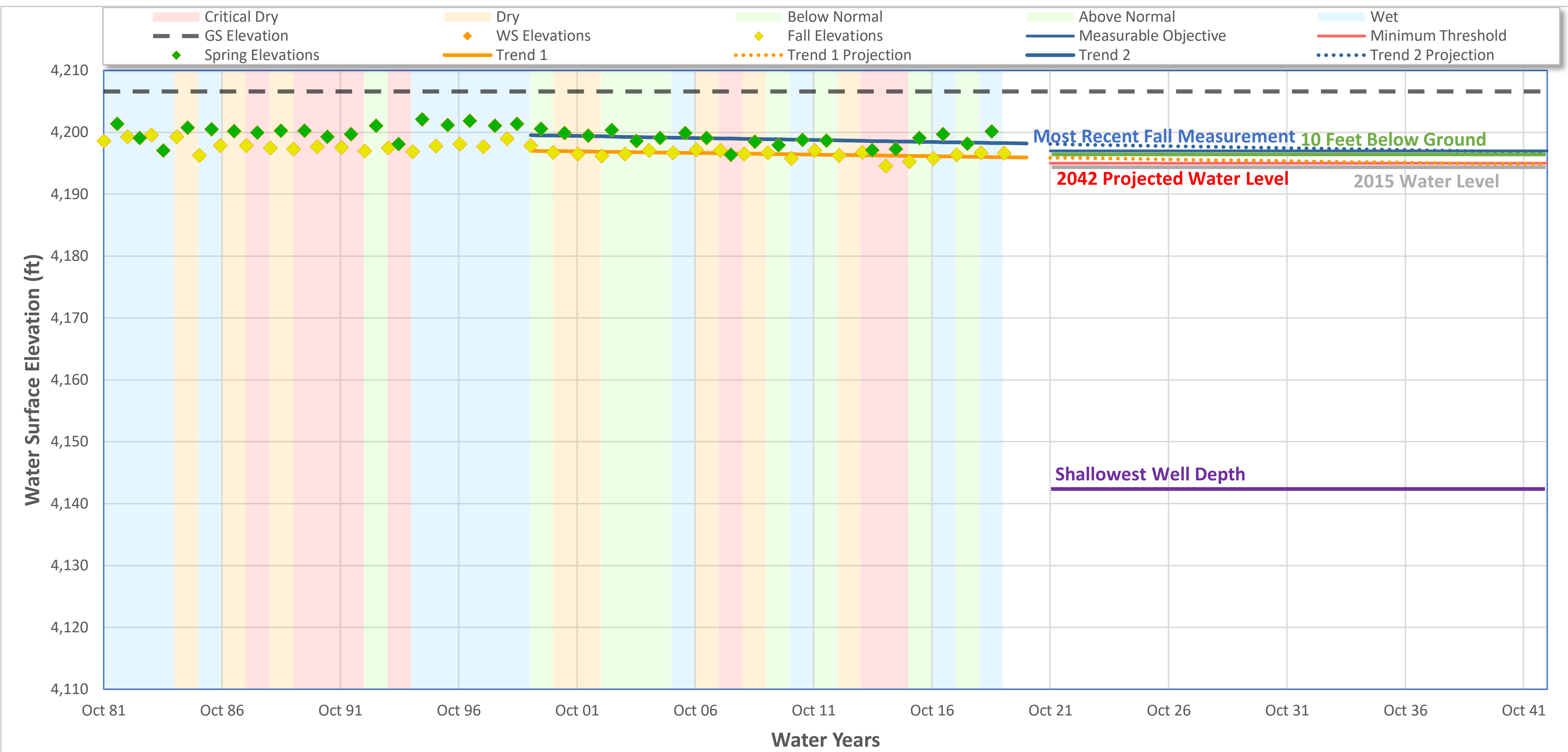
Well Period of Record

Period-of-Record		1982..2020
WS Elev-Range	Min:	4194.6 ft
	Max	4202.1 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.052 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.065 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4195 ft
	Max	4202 ft
2015 WS Elevations	Spring:	4197 ft
	Fall:	4195 ft
Most Recent WS Elev	Spring:	4200 ft
	Fall:	4197 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	4196 ft	4198 ft
2027	4196 ft	4198 ft
2032	4195 ft	4197 ft
2037	4195 ft	4197 ft
2042	4195 ft	4197 ft
2047	4195 ft	4196 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,195.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,197.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	18	65	4142
Production (Ag)	3	103	4104

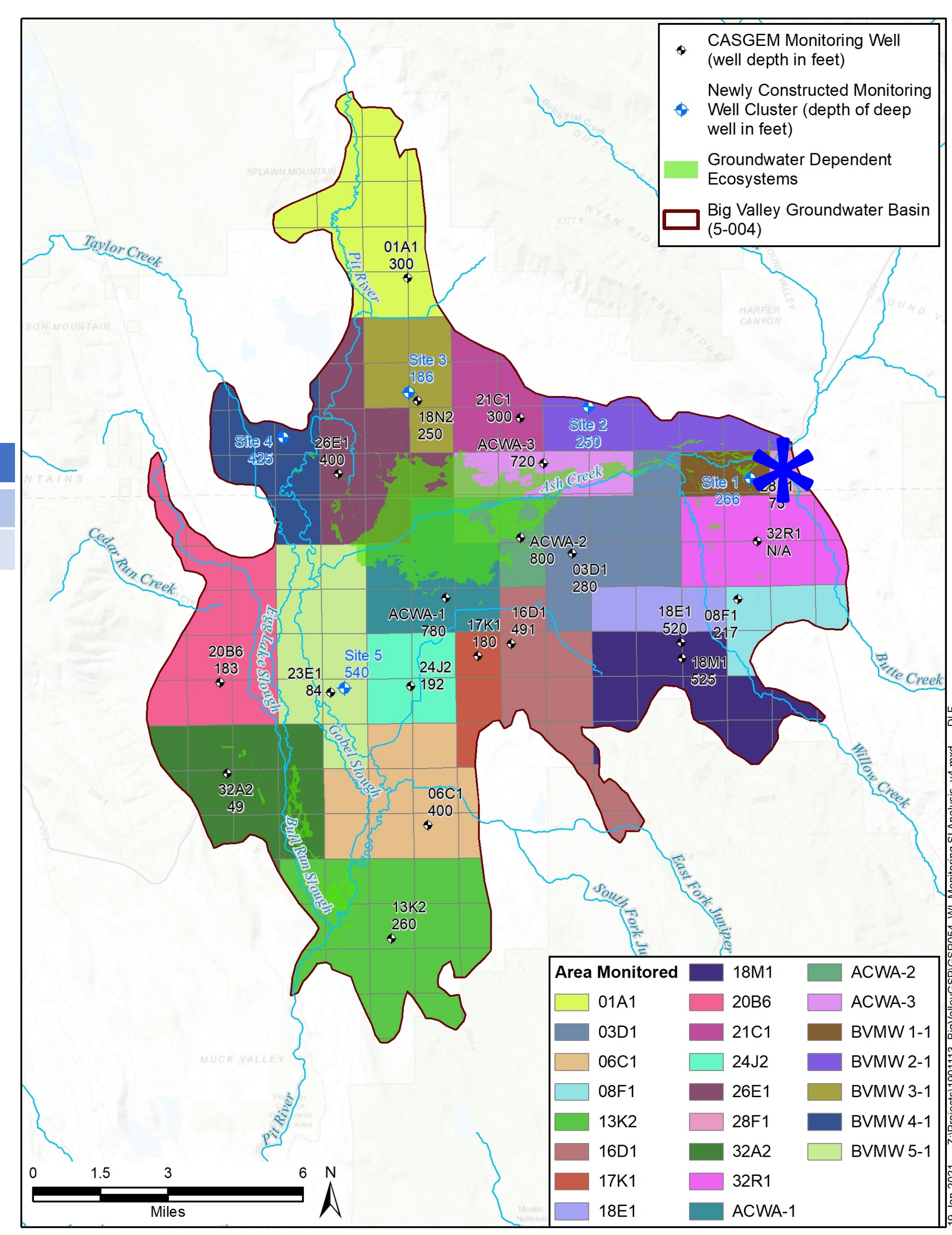
Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Yes

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	0.3 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	0.2 miles
Description of Nearest GDE	Butte Creek Valley



32R1 Sustainability Indicator Analysis

Date: 1/18/2021

Well Information

Well ID		000018-39N09E32R001M
Alternate Name		32R1
State Number		39N09E32R001M
CASGEM ID		411649N1209569W001

Well Location

County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Unknown
Well Use	Residential
Completion Type	Single

Well Coordinates/Geometry

Location	Lat:	41.1680
	Long:	-120.9570
Well Depth		-
Ground Surface Elevation		4243.40 ft
Ref. Point Elevation		4243.60 ft
Screen Depth Range		-
Screen Elevation Range		-
Principal Aquifer	-	

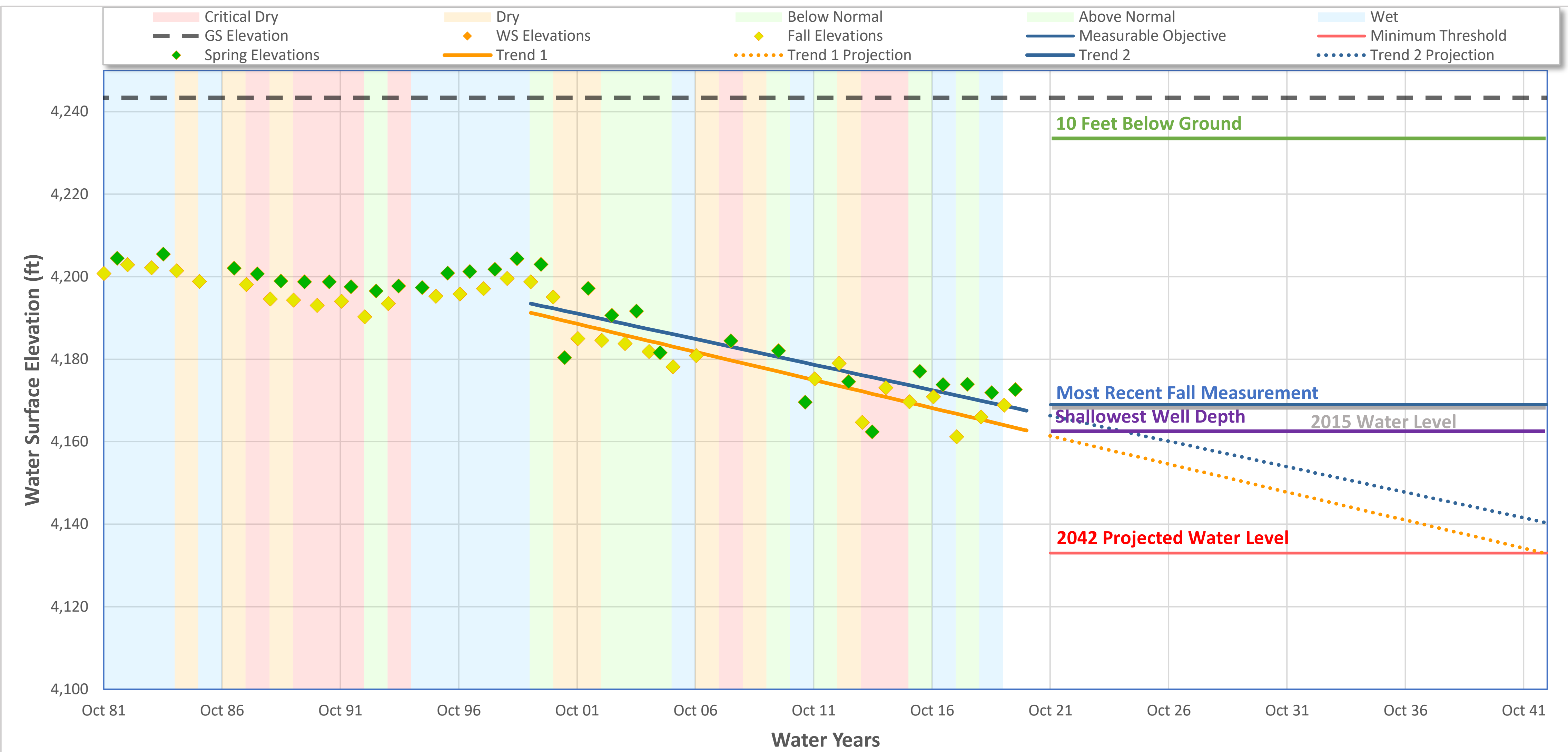
Well Period of Record

Period-of-Record		1981..2020
WS Elev-Range	Min:	4161.2 ft
	Max	4205.5 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(1.359 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(1.238 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4161 ft
	Max	4206 ft
2015 WS Elevations	Spring:	-
	Fall:	4170 ft
Most Recent WS Elev	Spring:	4173 ft
	Fall:	4169 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	4160 ft	4165 ft
2027	4153 ft	4159 ft
2032	4146 ft	4153 ft
2037	4140 ft	4147 ft
2042	4133 ft	4140 ft
2047	4126 ft	4134 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,133.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,169.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	18	80	4163
Production (Ag)	18	160	4083

Sustainability Indicators to Consider

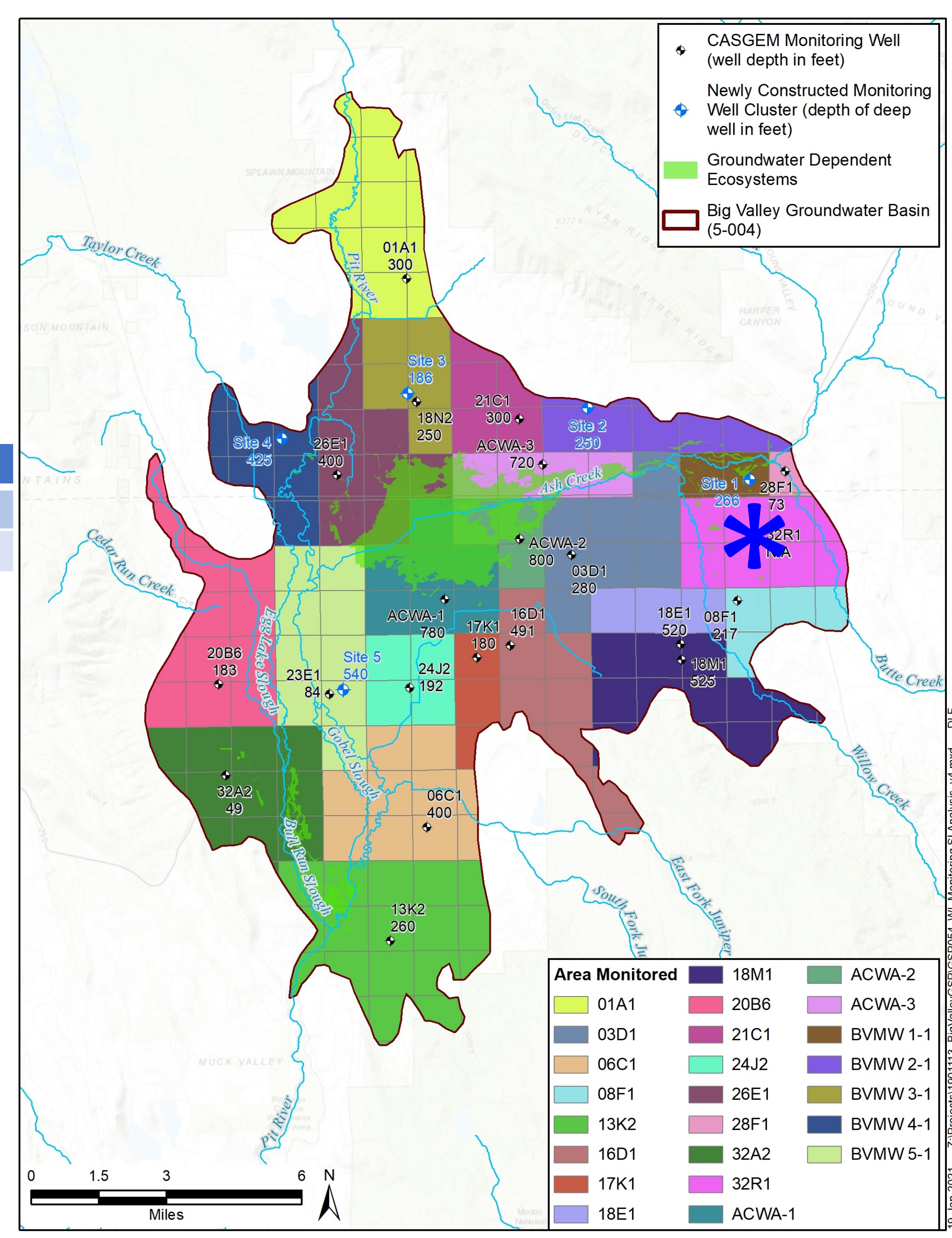
Water Levels	Maybe
Groundwater Storage	Maybe
Water Quality	No
Subsidence	No
Surface Water Depletions	Maybe

Other Pertinent Information

Distance From Nearest Perennial Stream	1.8 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	0.9 miles
Description of Nearest GDE	Willow Creek Valley

Notes:

The depth of this well is unknown. Therefore can only be used if depth is determined.



13K2 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000019-37N07E13K002M
Alternate Name	13K2
State Number	37N07E13K002M
CASGEM ID	410413N1211147W001
Well Location	
County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Unknown
Well Use	Irrigation
Completion Type	Single

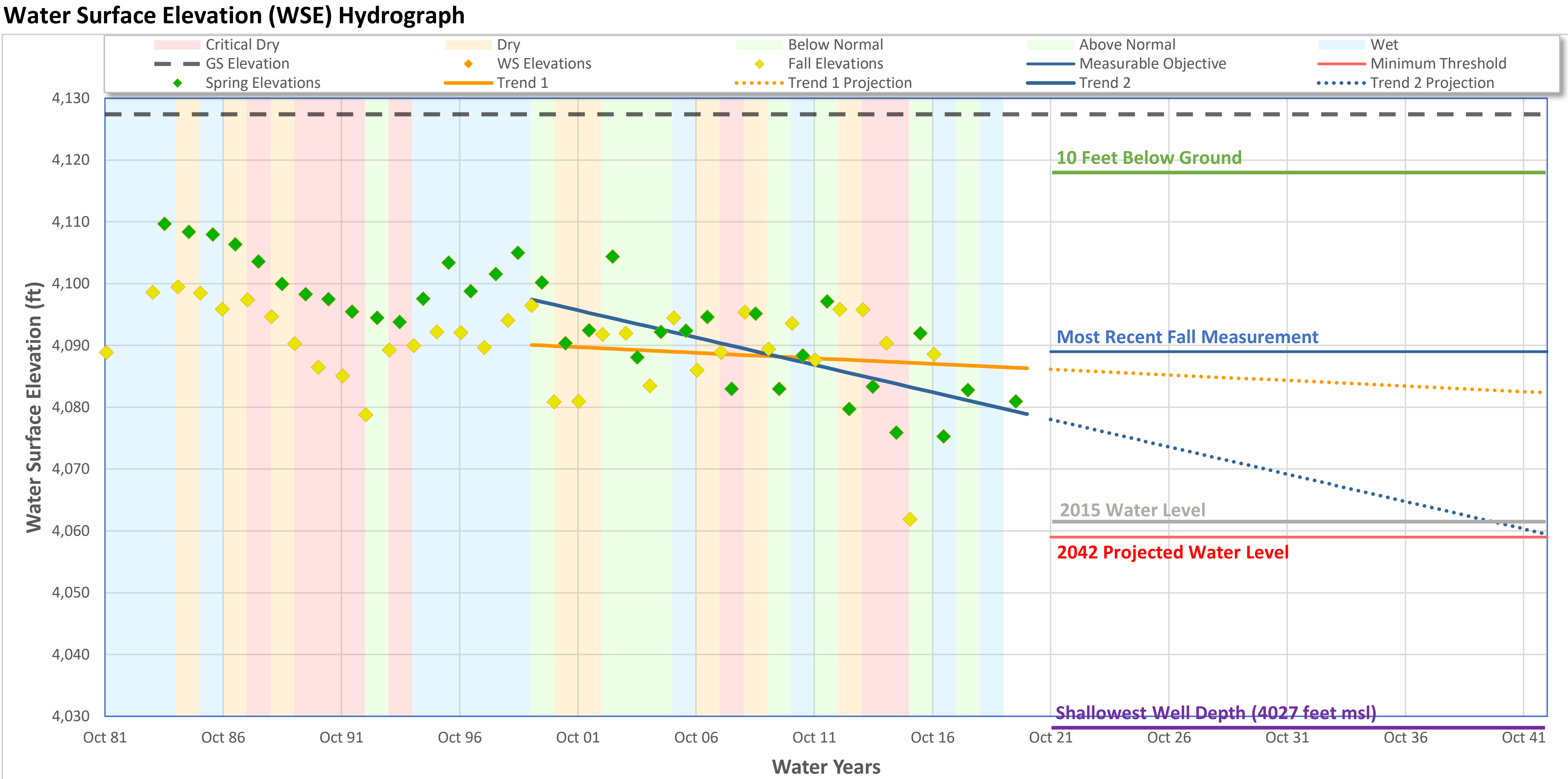
Well Coordinates/Geometry

Location	Lat:	41.0413
	Long:	-121.1147
Well Depth		260 ft
Ground Surface Elevation		4127.40 ft
Ref. Point Elevation		4127.90 ft
Screen Depth Range		20 to 260 ft
Screen Elevation Range		4108 to 3868 ft
Principal Aquifer		-
Well Period of Record		
Period-of-Record		1982..2020
WS Elev-Range	Min:	4061.9 ft
	Max	4109.7 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.179 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(0.884 ft/yr)

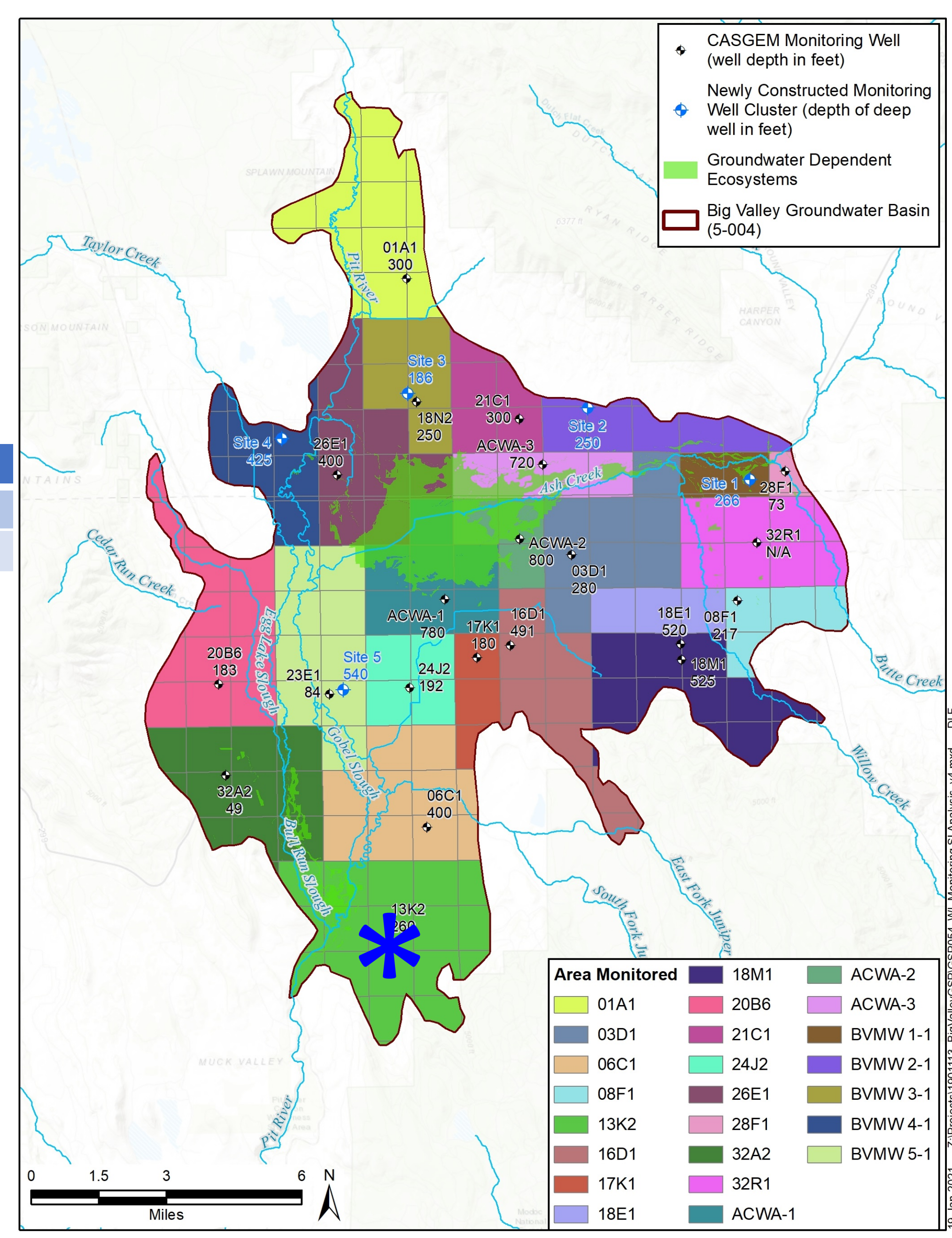
Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4062 ft
	Max	4110 ft
2015 WS Elevations	Spring:	4076 ft
	Fall:	4062 ft
Most Recent WS Elev	Spring:	4081 ft
	Fall:	4089 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	4086 ft	4077 ft
2027	4085 ft	4073 ft
2032	4084 ft	4068 ft
2037	4083 ft	4064 ft
2042	4082 ft	4059 ft
2047	4081 ft	4055 ft



Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	4,059.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,089.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	7	100	4027
Production (Ag)	13	200	3927

Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1.1 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	0.9 miles
Description of Nearest GDE	Pit River/Bull Run Slough at south end of basin

06C1 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000020-37N08E06C001M	
Alternate Name	06C1	
State Number	37N08E06C001M	
CASGEM ID	410777N1210986W001	

Well Location

County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Unknown
Well Use	Residential
Completion Type	Single

Well Coordinates/Geometry

Location	Lat:	41.0777
	Long:	-121.0986
Well Depth		400 ft
Ground Surface Elevation		4133.40 ft
Ref. Point Elevation		4133.90 ft
Screen Depth Range		20 to 400 ft
Screen Elevation Range		4114 to 3734 ft
Principal Aquifer	-	

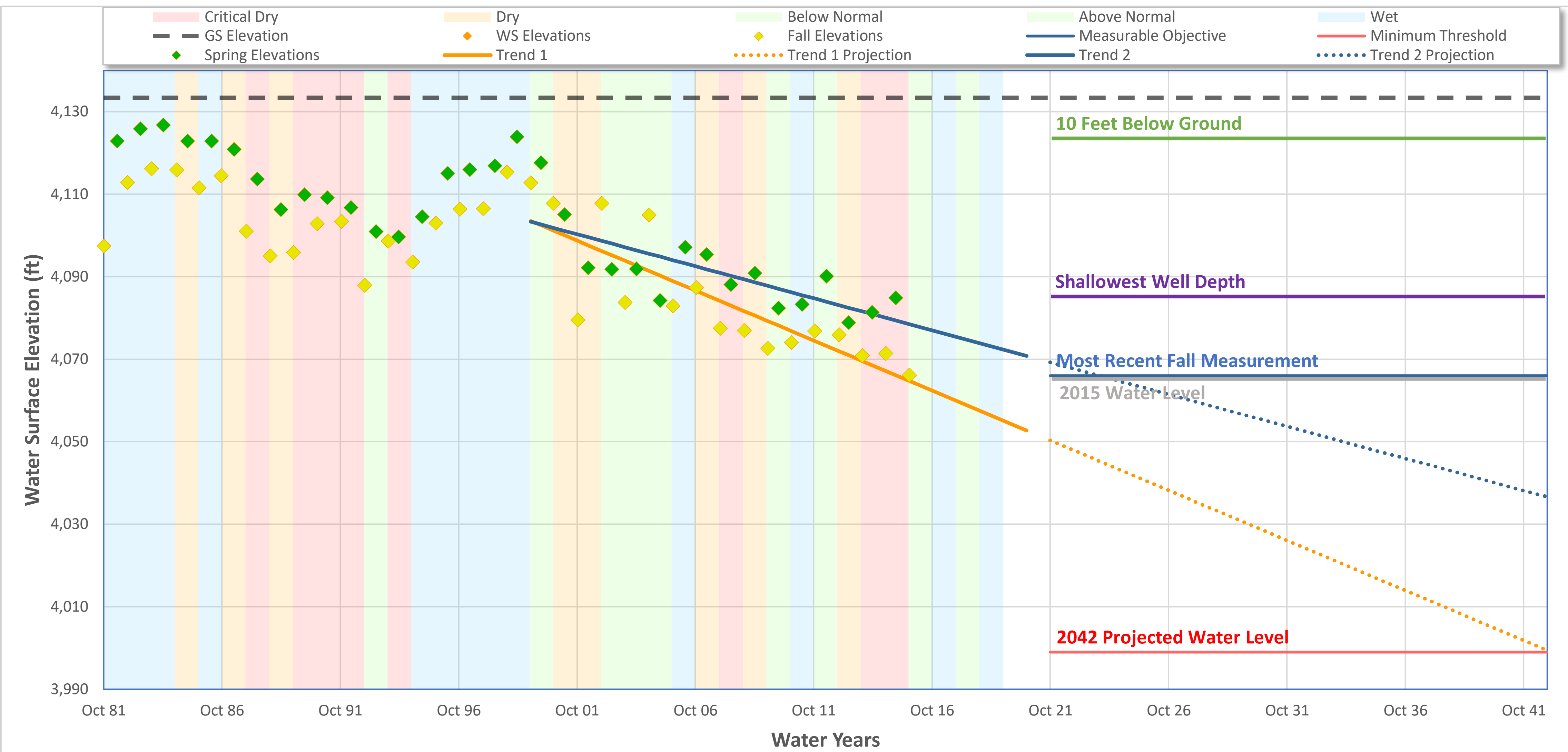
Well Period of Record

Period-of-Record		1982..2016
WS Elev-Range	Min:	4066.2 ft
	Max	4126.8 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		Fall Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(2.423 ft/yr)
Show Trend 2		Spring Data
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	(1.553 ft/yr)

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4066 ft
	Max	4127 ft
2015 WS Elevations	Spring:	4085 ft
	Fall:	4066 ft
Most Recent WS Elev	Spring:	4085 ft
	Fall:	4066 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	4048 ft	4068 ft
2027	4036 ft	4060 ft
2032	4024 ft	4052 ft
2037	4012 ft	4044 ft
2042	3999 ft	4037 ft
2047	3987 ft	4029 ft

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MT	Minimum Threshold	2022	3,999.0 ft	2042 projected water level
MO	Measureable Objective	2022	4,066.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	6	80	4053
Production (Ag)	30	47	4086

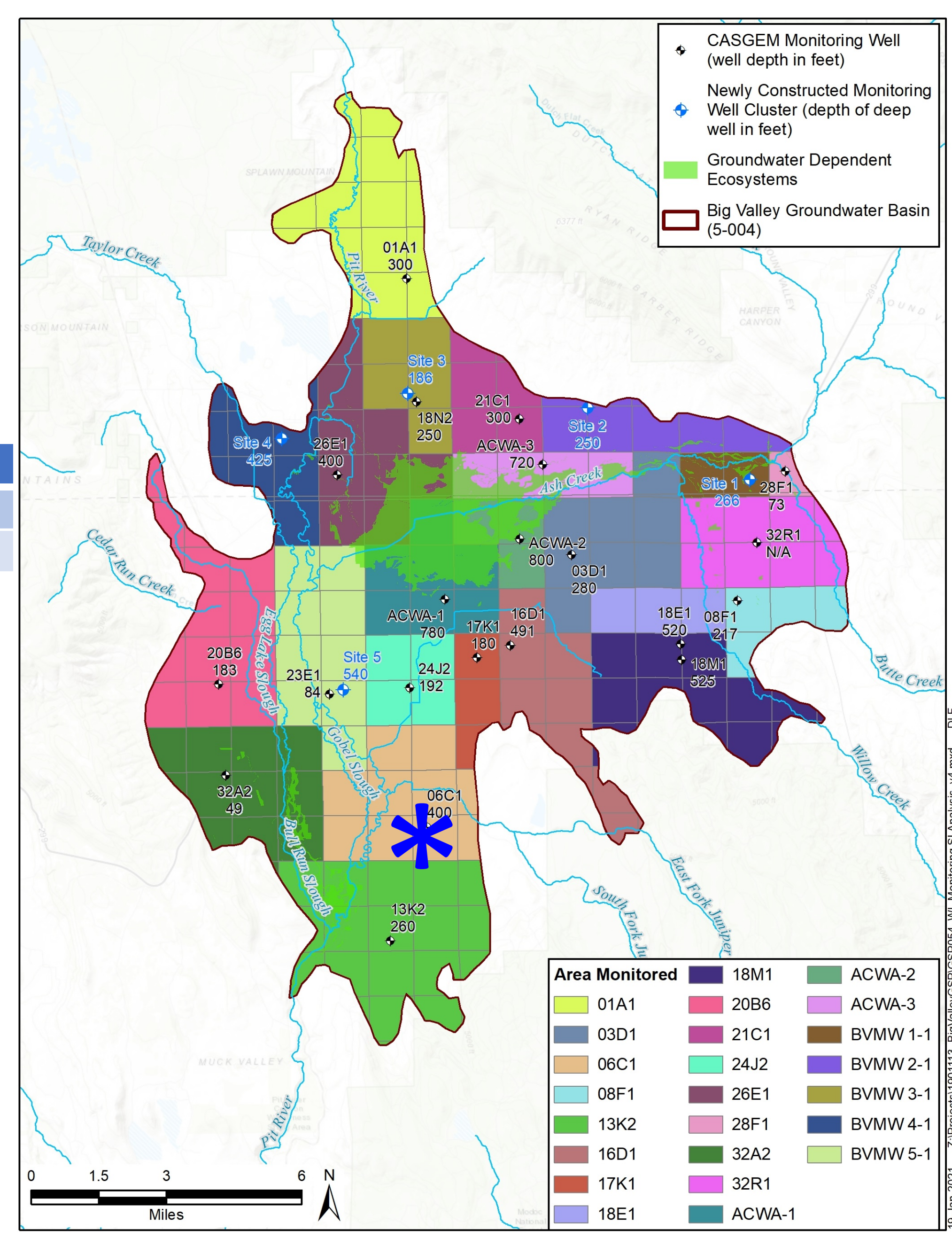
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	1.9 miles
Description of Nearest GDE	Pit River/Bull Run Slough



ACWA-1 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000021-ACWA-1
Alternate Name	ACWA-1
State Number	38N08E07A001M
CASGEM ID	411508N1210900W001

Well Location

County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Unknown
Well Use	Stockwatering
Completion Type	Single

Well Coordinates/Geometry

Location	Lat:	41.1508
	Long:	-121.0900
Well Depth		780 ft
Ground Surface Elevation		4142.00 ft
Ref. Point Elevation		4142.75 ft
Screen Depth Range		60 to 780 ft
Screen Elevation Range		4083 to 3363 ft
Principal Aquifer		-

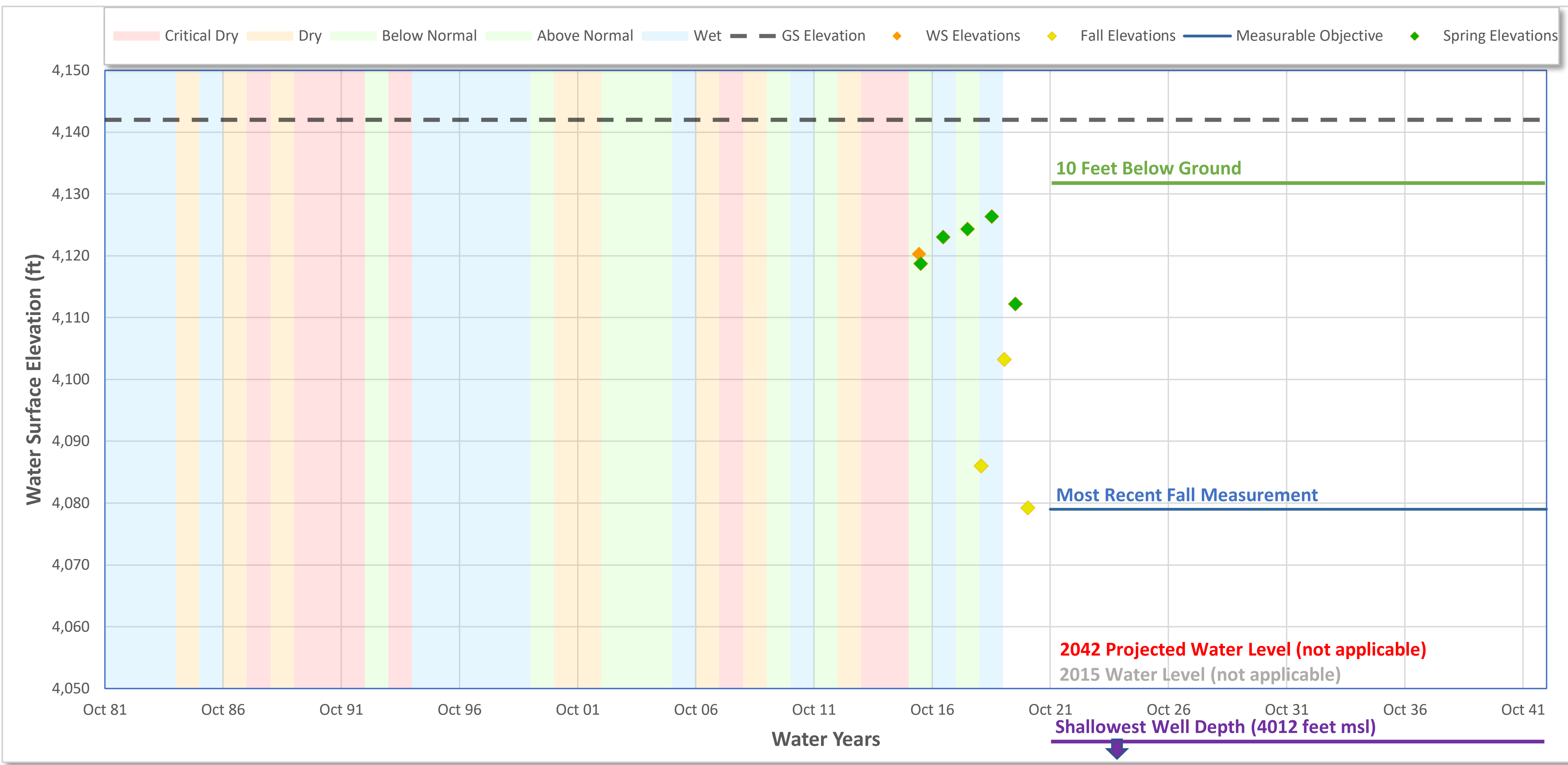
Well Period of Record

Period-of-Record		2016..2021
WS Elev-Range	Min:	4039.2 ft
	Max	4126.4 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4039 ft
	Max	4126 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4112 ft
	Fall:	4079 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,079.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	3	130	4012
Production (Ag)	11	162	3980

Sustainability Indicators to Consider

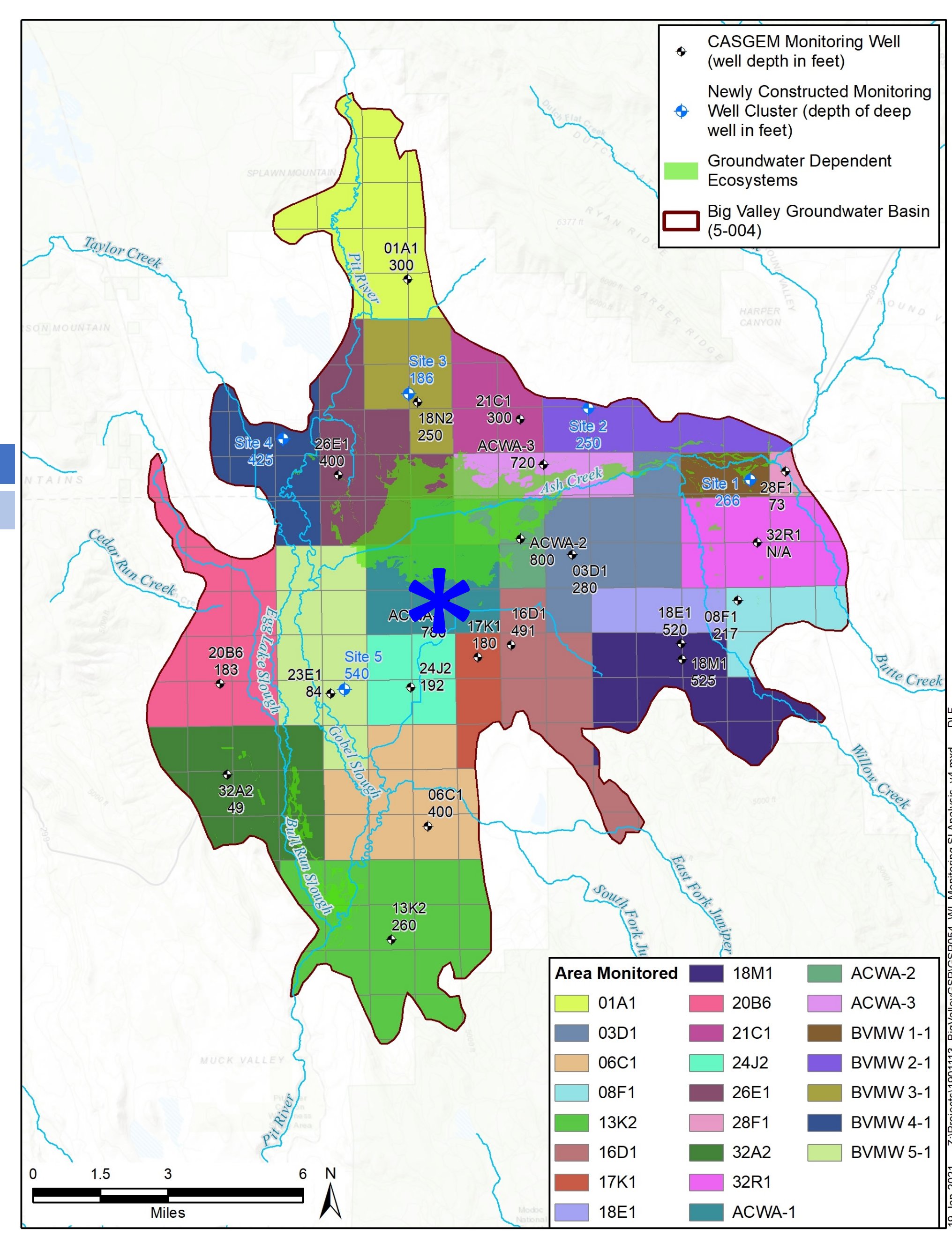
Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	Maybe

Other Pertinent Information

Distance From Nearest Perennial Stream	1.7 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	0.3 miles
Description of Nearest GDE	Ash Creek Wildlife Area

Notes:

Deep well, but located right on ACWA, so could potentially be an indicator for GDE (spring water levels). Screen comes up to 60 feet bgs.



ACWA-2 Sustainability Indicator Analysis

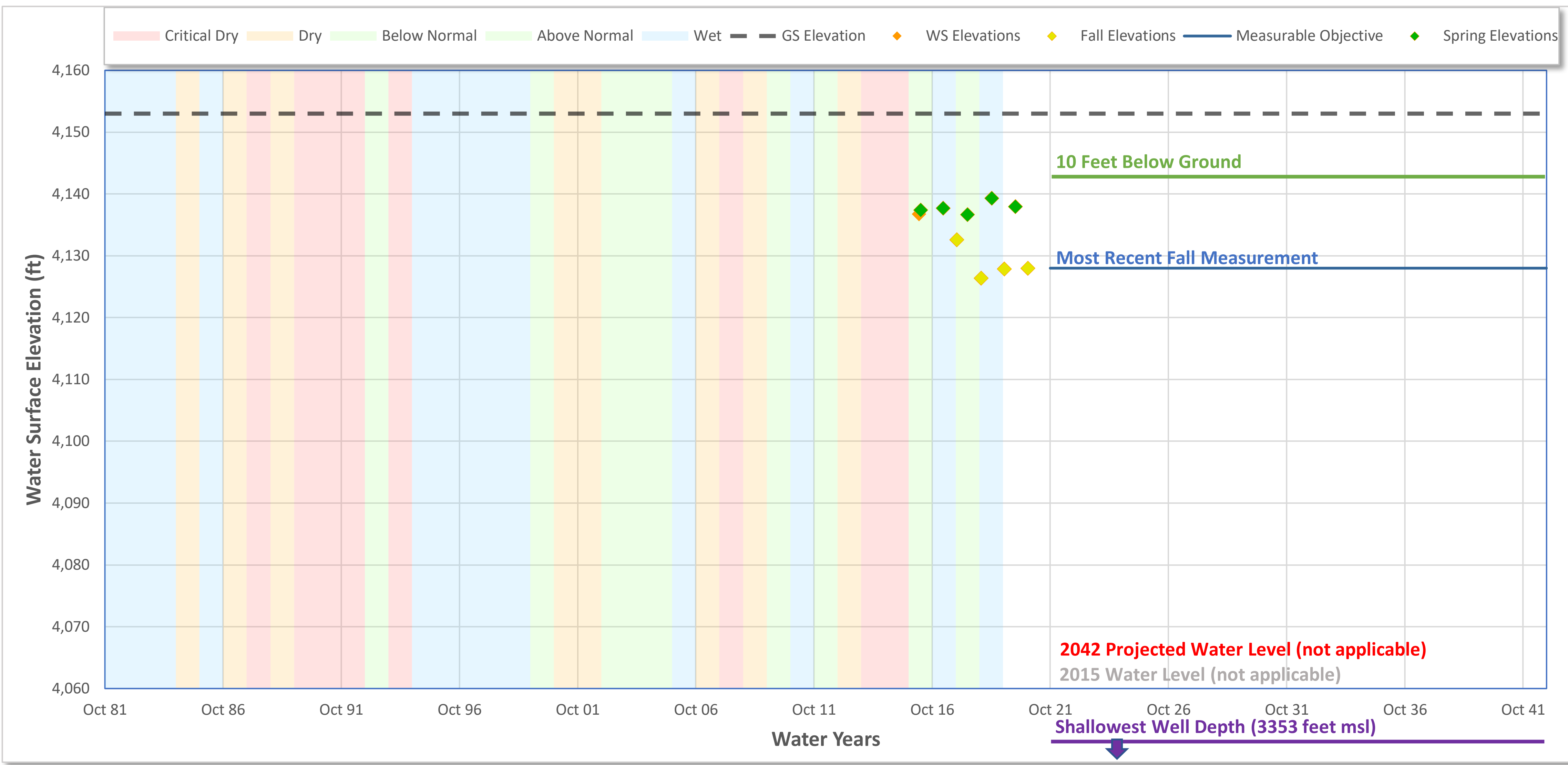
Date:	1/18/2021

Well Information	
Well ID	000001-ACWA-2
Alternate Name	ACWA-2
State Number	39N08E33P002M
CASGEM ID	411699N1210579W001
Well Location	
County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Unknown
Well Use	Irrigation
Completion Type	Single

Well Coordinates/Geometry		
Location	Lat:	41.1699
	Long:	-121.0579
Well Depth		800 ft
Ground Surface Elevation		4153.00 ft
Ref. Point Elevation		4153.20 ft
Screen Depth Range		50 to 800 ft
Screen Elevation Range		4103 to 3353 ft
Principal Aquifer		-
Well Period of Record		
Period-of-Record		2016..2021
WS Elev-Range	Min:	4126.4 ft
	Max	4139.4 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



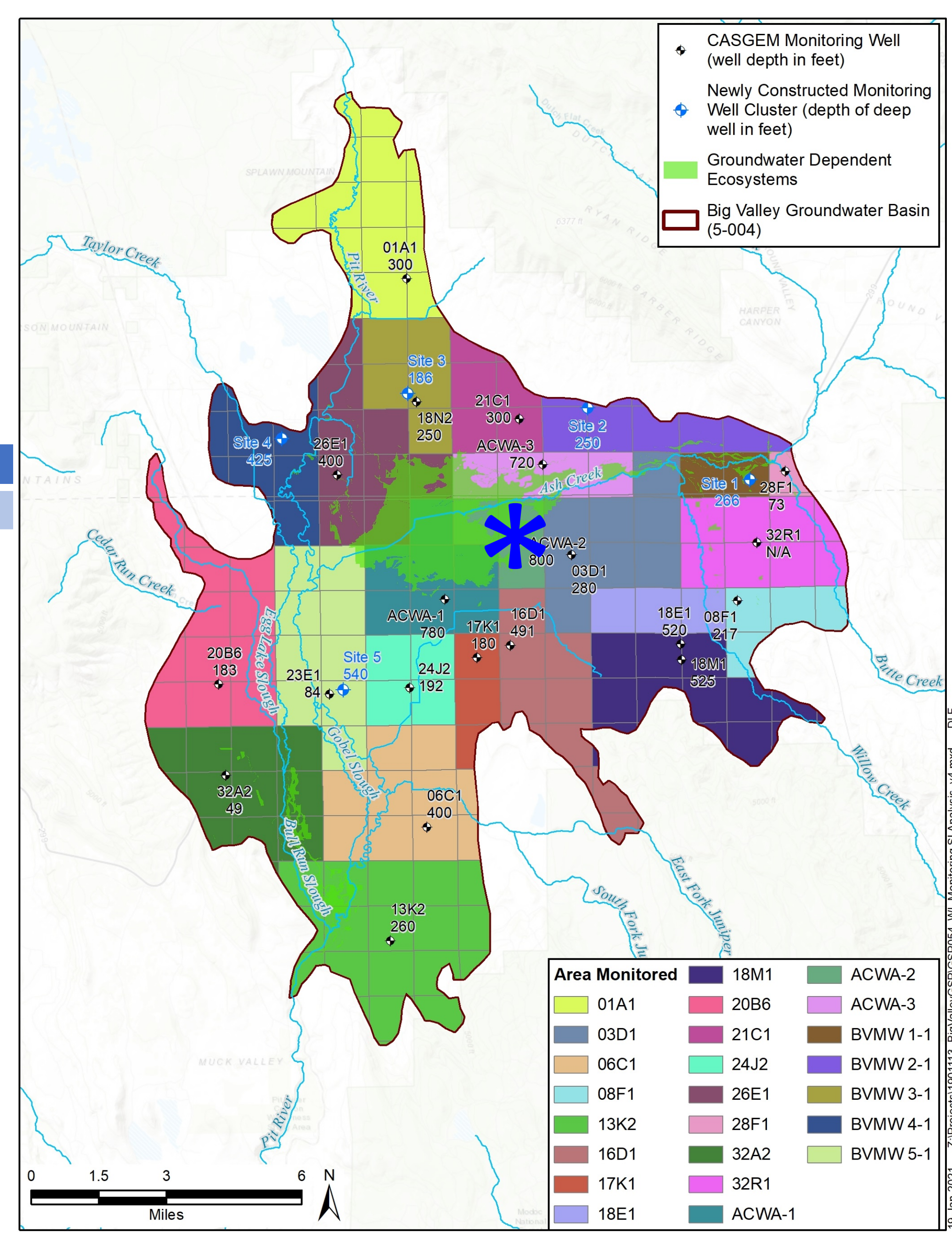
Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4126 ft
	Max	4139 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4138 ft
	Fall:	4128 ft

Trend Projections		
Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,128.0 ft	Most Recent Fall Measurement



Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	0	-	-
Production (Ag)	1	800	3353

Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	Maybe

Other Pertinent Information

Distance From Nearest Perennial Stream	0.9 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	0 miles
Description of Nearest GDE	Ash Creek Wildlife Area

Notes:

Deep well, but located right on ACWA, so could potentially be an indicator for GDE (spring water levels). Screen starts at 50 feet bgs.

ACWA-3 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000022-ACWA-3
Alternate Name	ACWA-3
State Number	39N08E28A001M
CASGEM ID	411938N1210478W001

Well Location

County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Unknown
Well Use	Irrigation
Completion Type	Single

Well Coordinates/Geometry

Location	Lat:	41.1938
	Long:	-121.0478
Well Depth		720 ft
Ground Surface Elevation		4159.00 ft
Ref. Point Elevation		4159.83 ft
Screen Depth Range		60 to 720 ft
Screen Elevation Range		4100 to 3440 ft
Principal Aquifer		-

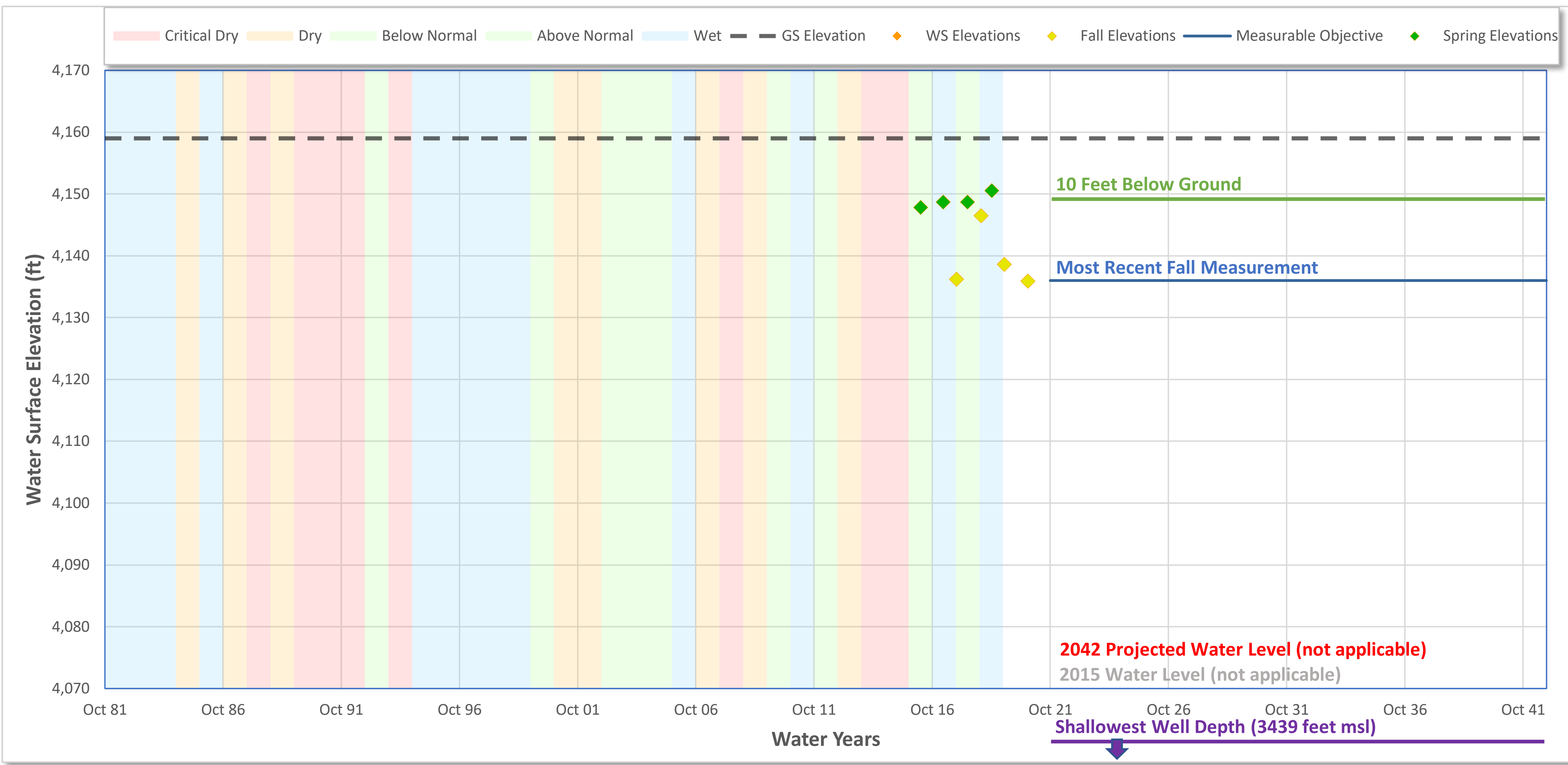
Well Period of Record

Period-of-Record		2016..2021
WS Elev-Range	Min:	4135.9 ft
	Max	4150.6 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4136 ft
	Max	4151 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4151 ft
	Fall:	4136 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,136.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	0	-	-
Production (Ag)	1	720	3439

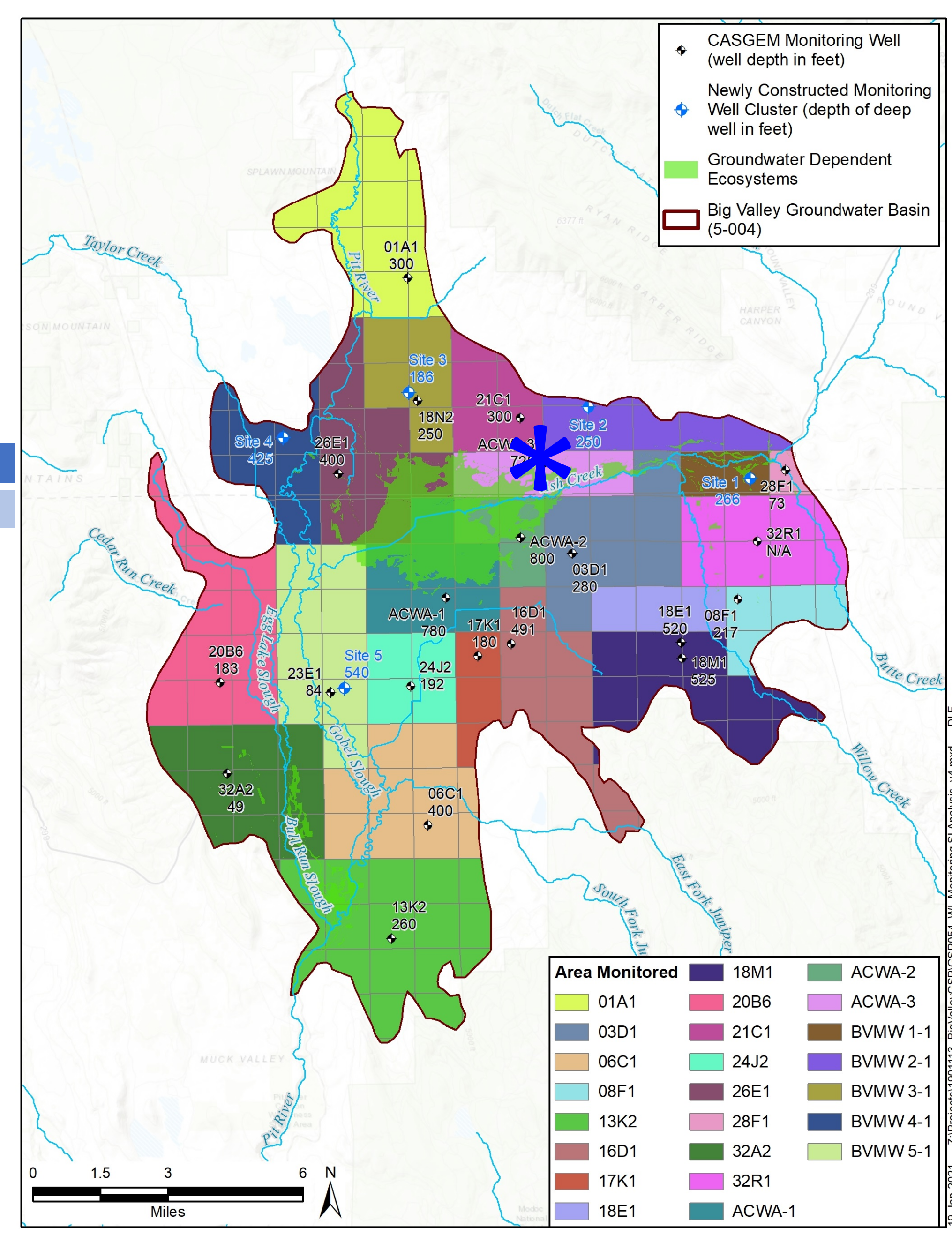
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	No
Subsidence	No
Surface Water Depletions	Maybe

Other Pertinent Information

Distance From Nearest Perennial Stream	0.7 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	0 miles
Description of Nearest GDE	Ash Creek Wildlife Area

Notes:
Deep well, but located right on ACWA, so could potentially be an indicator for GDE (spring water levels). Screen comes up to 60 feet bgs.



BVMW 1-1 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000147-BVMW 1-1
Alternate Name	BVMW 1-1
State Number	-
CASGEM ID	-
Well Location	
County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

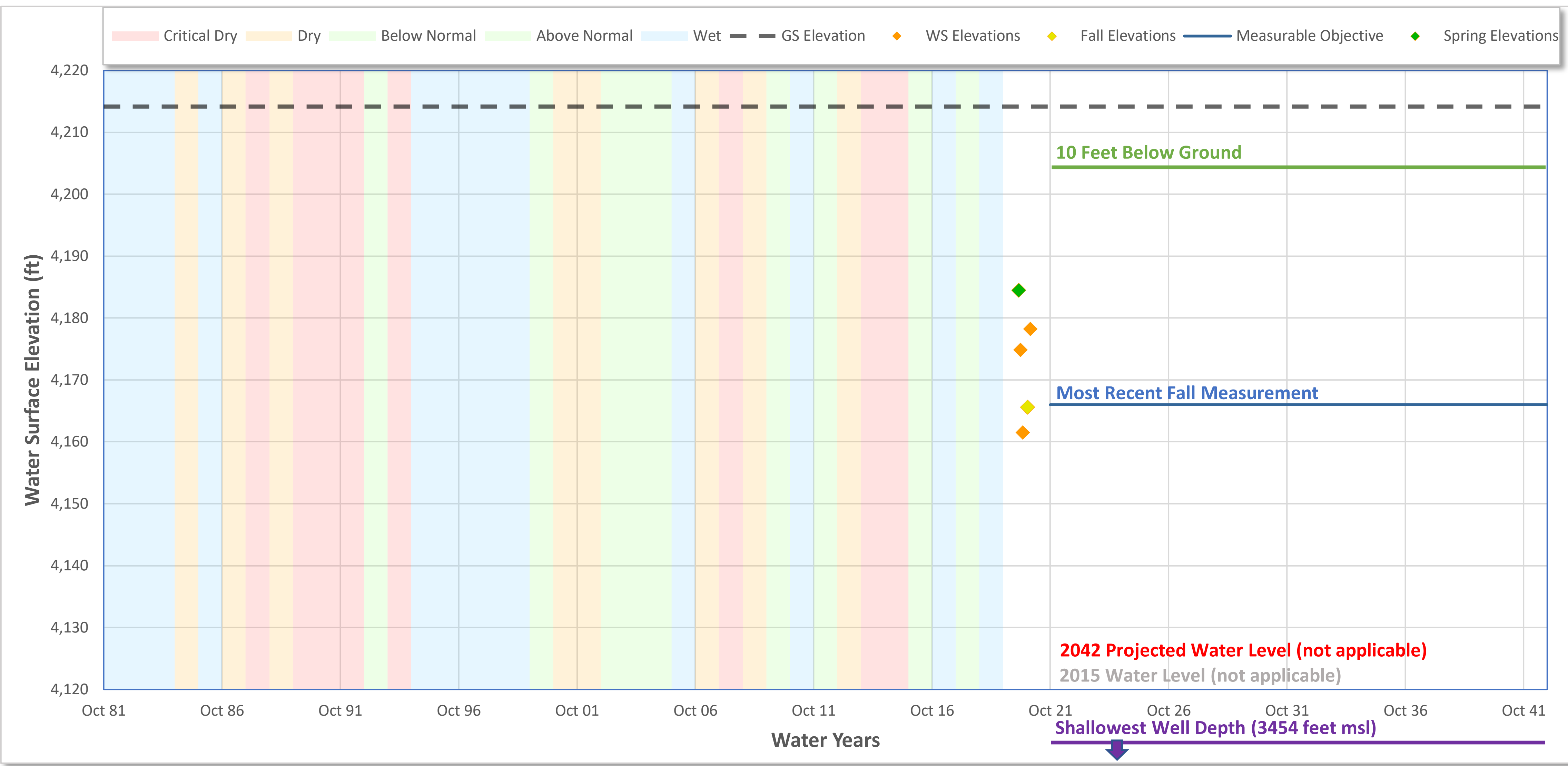
Well Coordinates/Geometry

Location	Lat:	41.1880
	Long:	-120.9599
Well Depth		470 ft
Ground Surface Elevation		4214.17 ft
Ref. Point Elevation		4213.84 ft
Screen Depth Range		175 to 265 ft
Screen Elevation Range		4039 to 3949 ft
Principal Aquifer		-
Well Period of Record		
Period-of-Record		2020..2021
WS Elev-Range	Min:	4161.5 ft
	Max	4184.5 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4162 ft
	Max	4185 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4185 ft
	Fall:	4166 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,166.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	0	-	-
Production (Ag)	3	760	3454

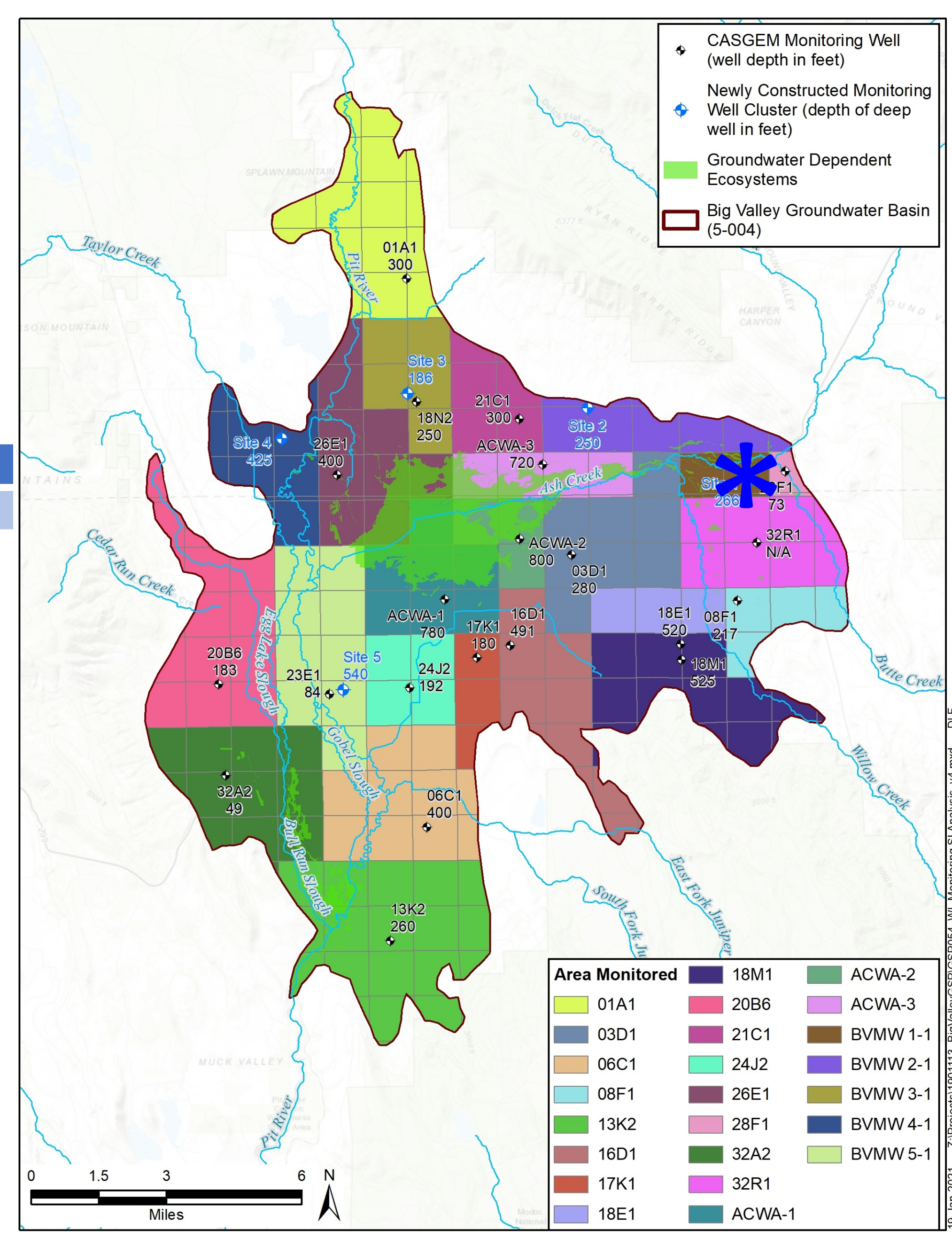
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	Maybe
Subsidence	No
Surface Water Depletions	No

Other Pertinent Information

Distance From Nearest Perennial Stream	0.4 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	0 miles
Description of Nearest GDE	Ash Creek above Willow Creek

Notes:



BVMW 1-2 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000148-BVMW 1-2
Alternate Name	BVMW 1-2
State Number	-
CASGEM ID	-

Well Location

County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry

Location	Lat:	41.1881
	Long:	-120.9598
Well Depth		60 ft
Ground Surface Elevation		4214.54 ft
Ref. Point Elevation		4214.21 ft
Screen Depth Range		32 to 52 ft
Screen Elevation Range		4182 to 4162 ft
Principal Aquifer		-

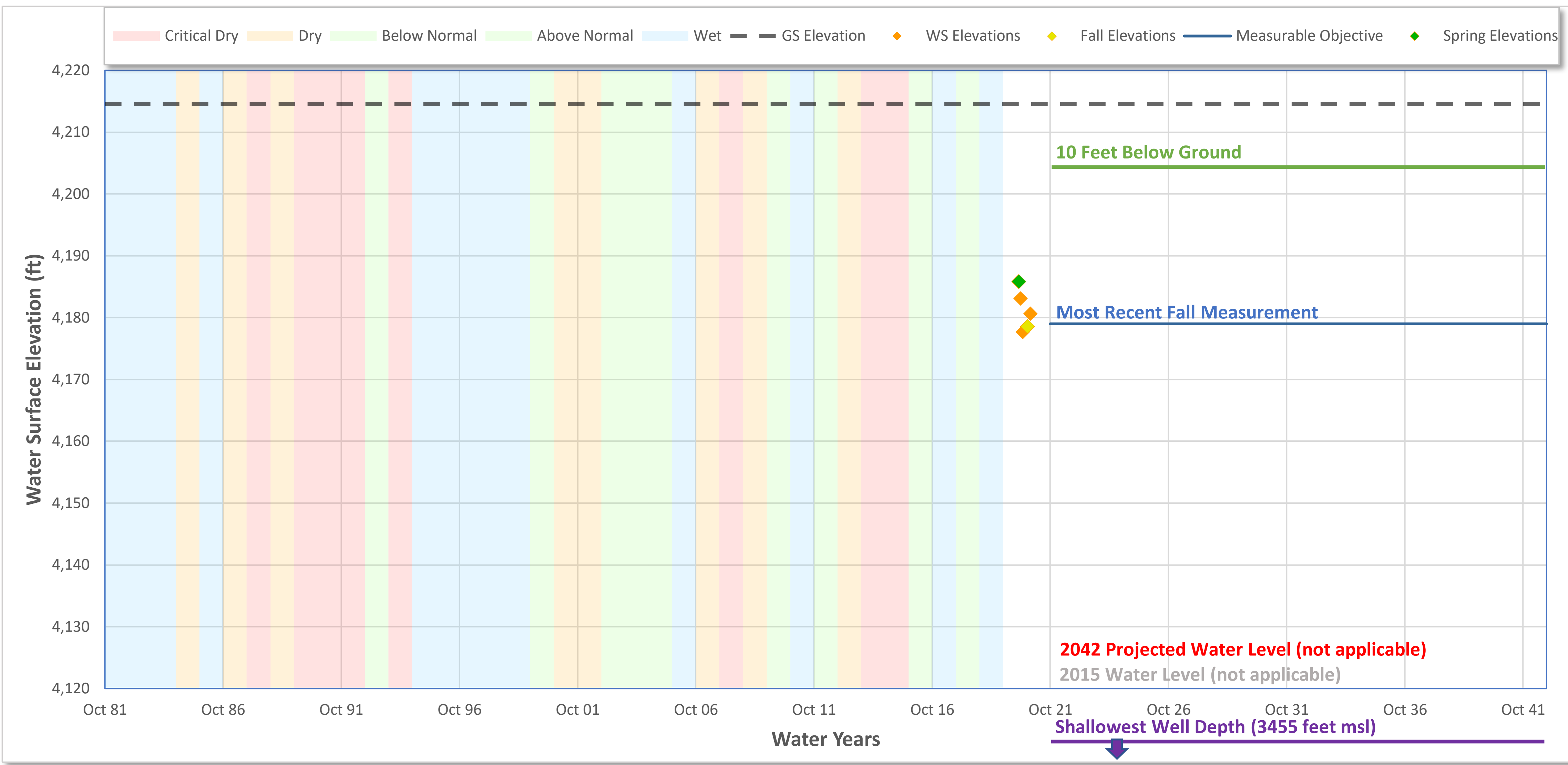
Well Period of Record

Period-of-Record		2020..2021
WS Elev-Range	Min:	4177.7 ft
	Max	4185.9 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

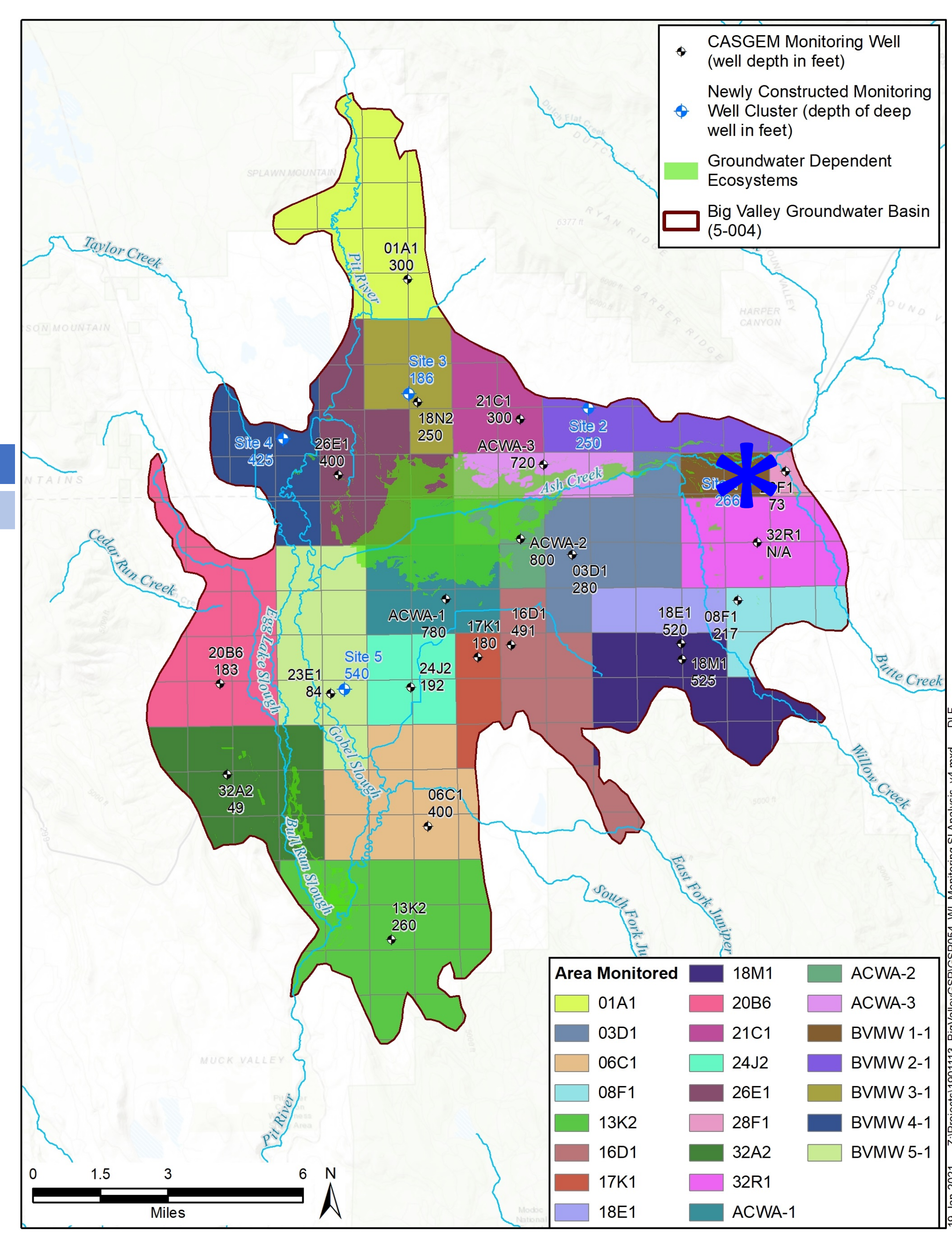
Parameter		Value
WS Elevation Range	Min:	4178 ft
	Max	4186 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4186 ft
	Fall:	4179 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,179.0 ft	Most recent Fall measurement



Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	0	-	-
Production (Ag)	3	760	3455

Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Yes

Other Pertinent Information

Distance From Nearest Perennial Stream	0.4 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	0 miles
Description of Nearest GDE	Ash Creek above Willow Creek

Notes:

BVMW 1-3 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000149-BVMW 1-3
Alternate Name	BVMW 1-3
State Number	-
CASGEM ID	-

Well Location

County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry

Location	Lat:	41.1878
	Long:	-120.9593
Well Depth		60 ft
Ground Surface Elevation		4218.50 ft
Ref. Point Elevation		4218.17 ft
Screen Depth Range		30 to 50 ft
Screen Elevation Range		4184 to 4164 ft
Principal Aquifer		-

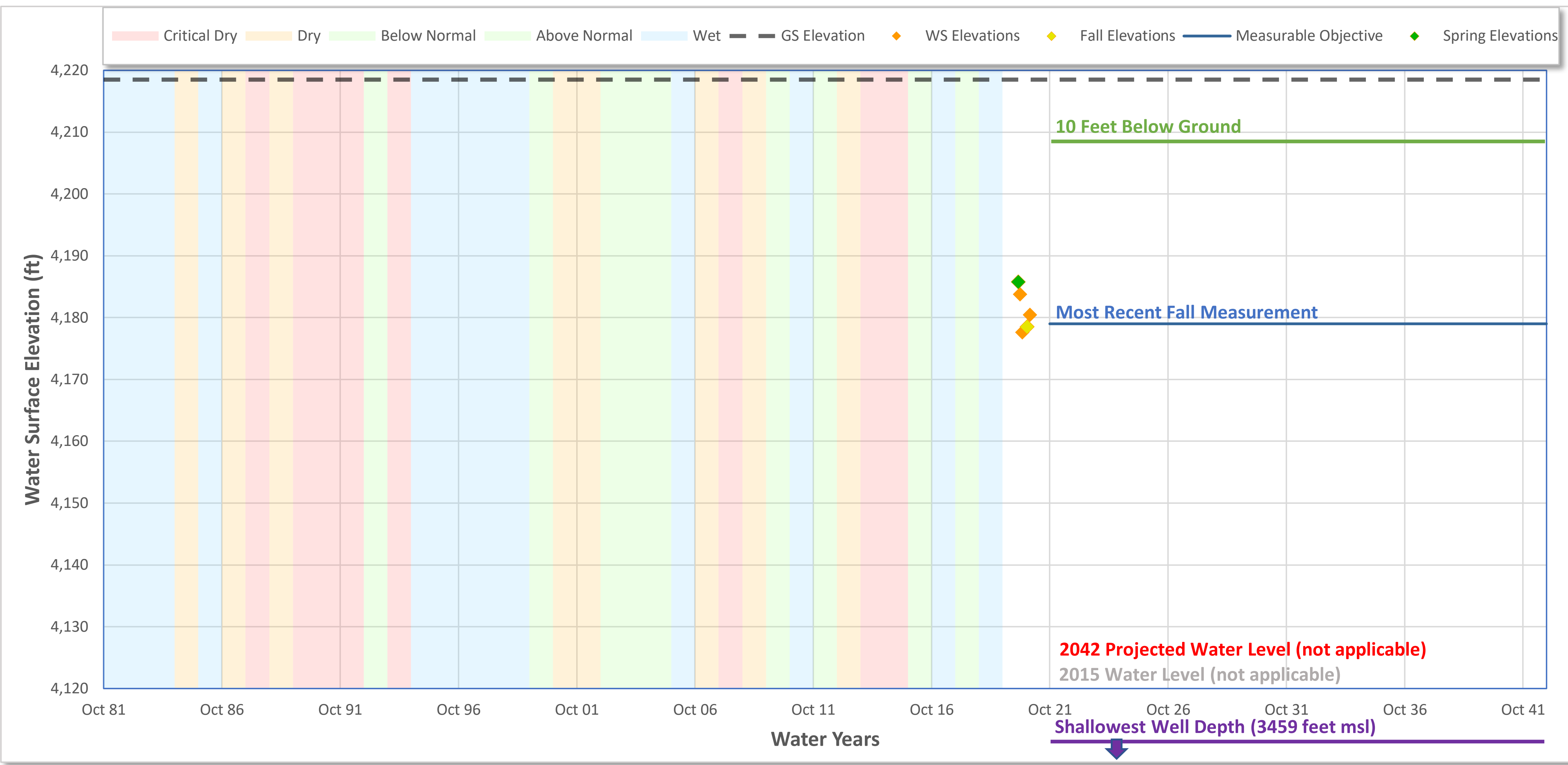
Well Period of Record

Period-of-Record		2020..2021
WS Elev-Range	Min:	4177.7 ft
	Max	4185.8 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4178 ft
	Max	4186 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4186 ft
	Fall:	4179 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,179.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	0	-	-
Production (Ag)	3	760	3459

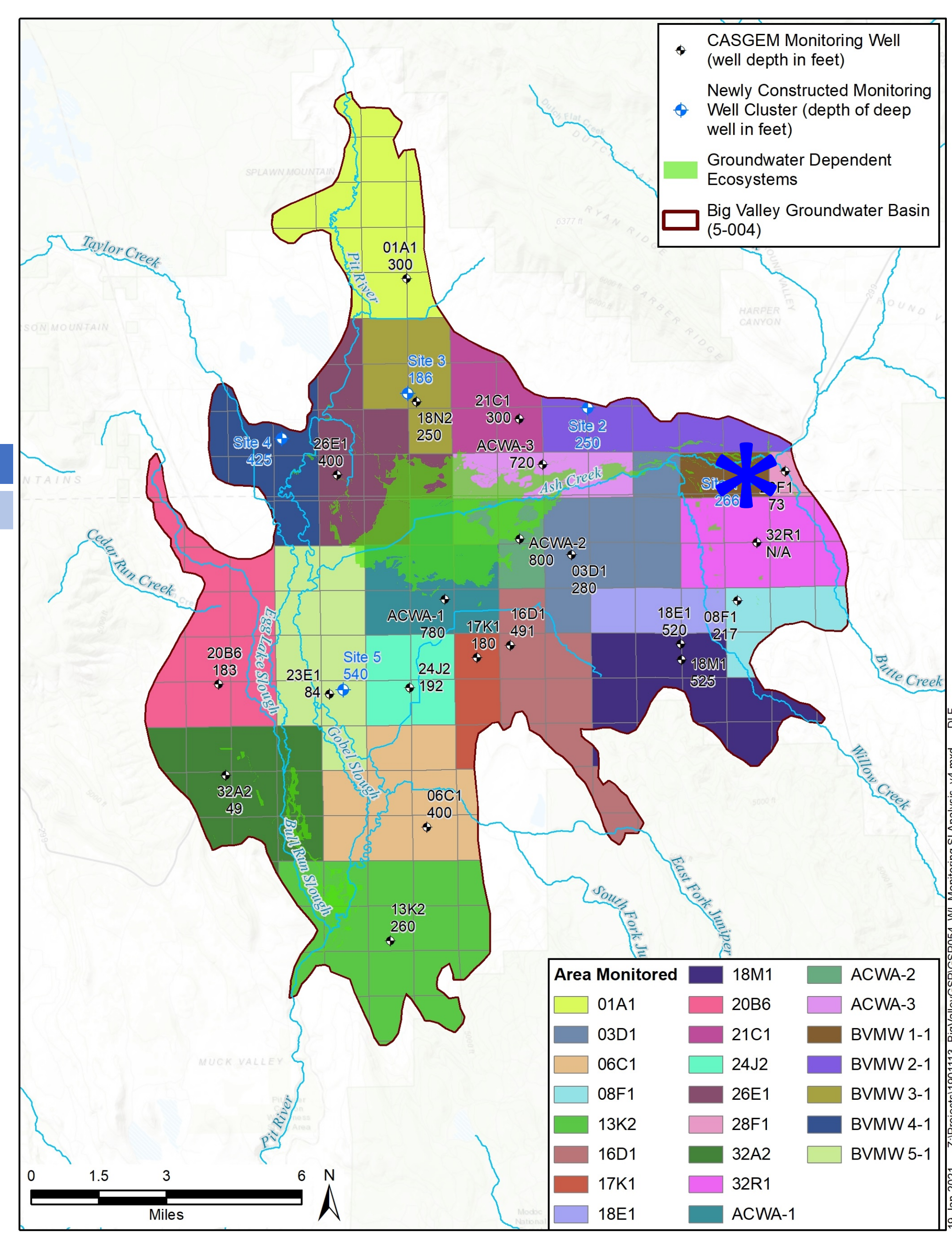
Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Yes

Other Pertinent Information

Distance From Nearest Perennial Stream	0.4 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	0 miles
Description of Nearest GDE	Ash Creek above Willow Creek

Notes:



BVMW 1-4 Sustainability Indicator Analysis

Date: 1/18/2021

Well Information	
Well ID	000150-BVMW 1-4
Alternate Name	BVMW 1-4
State Number	-
CASGEM ID	-
Well Location	
County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry		
Location	Lat:	41.1880
	Long:	-120.9590
Well Depth		59 ft
Ground Surface Elevation		4218.39 ft
Ref. Point Elevation		4218.06 ft
Screen Depth Range		29 to 49 ft
Screen Elevation Range		4189 to 4169 ft
Principal Aquifer		-
Well Period of Record		
Period-of-Record		2020..2021
WS Elev-Range	Min:	4178.0 ft
	Max	4186.0 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph

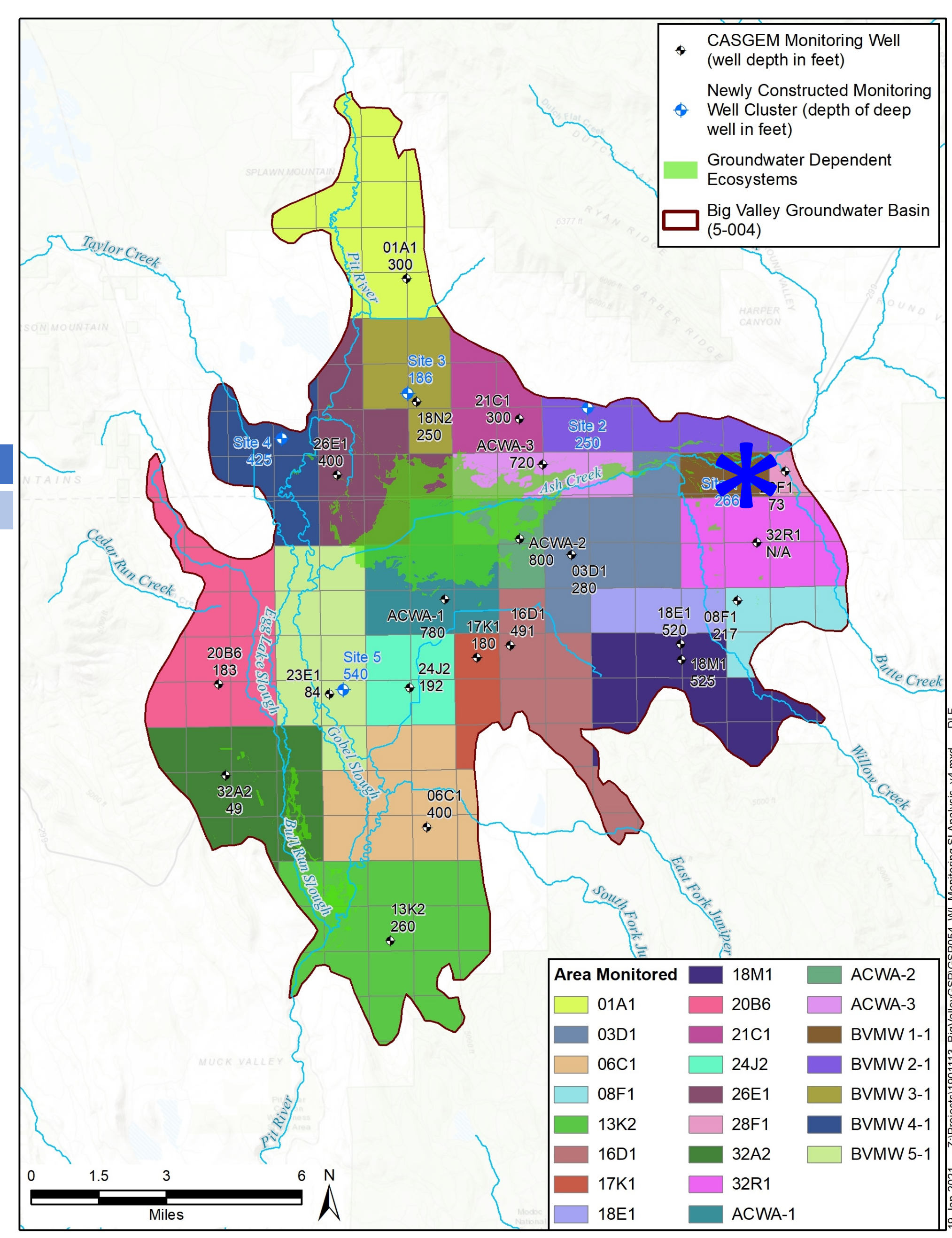
Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4178 ft
	Max	4186 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4186 ft
	Fall:	4179 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,179.0 ft	Most recent Fall measurement



Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	0	-	-
Production (Ag)	3	760	3458

Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Yes

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	0.4 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	0 miles
Description of Nearest GDE	Ash Creek above Willow Creek

BVMW 2-1 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000151-BVMW 2-1
Alternate Name	BVMW 2-1
State Number	-
CASGEM ID	-

Well Location

County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry

Location	Lat:	41.2119
	Long:	-121.0286
Well Depth		505 ft
Ground Surface Elevation		4216.51 ft
Ref. Point Elevation		4216.18 ft
Screen Depth Range		210 to 250 ft
Screen Elevation Range		4006 to 3966 ft
Principal Aquifer		-

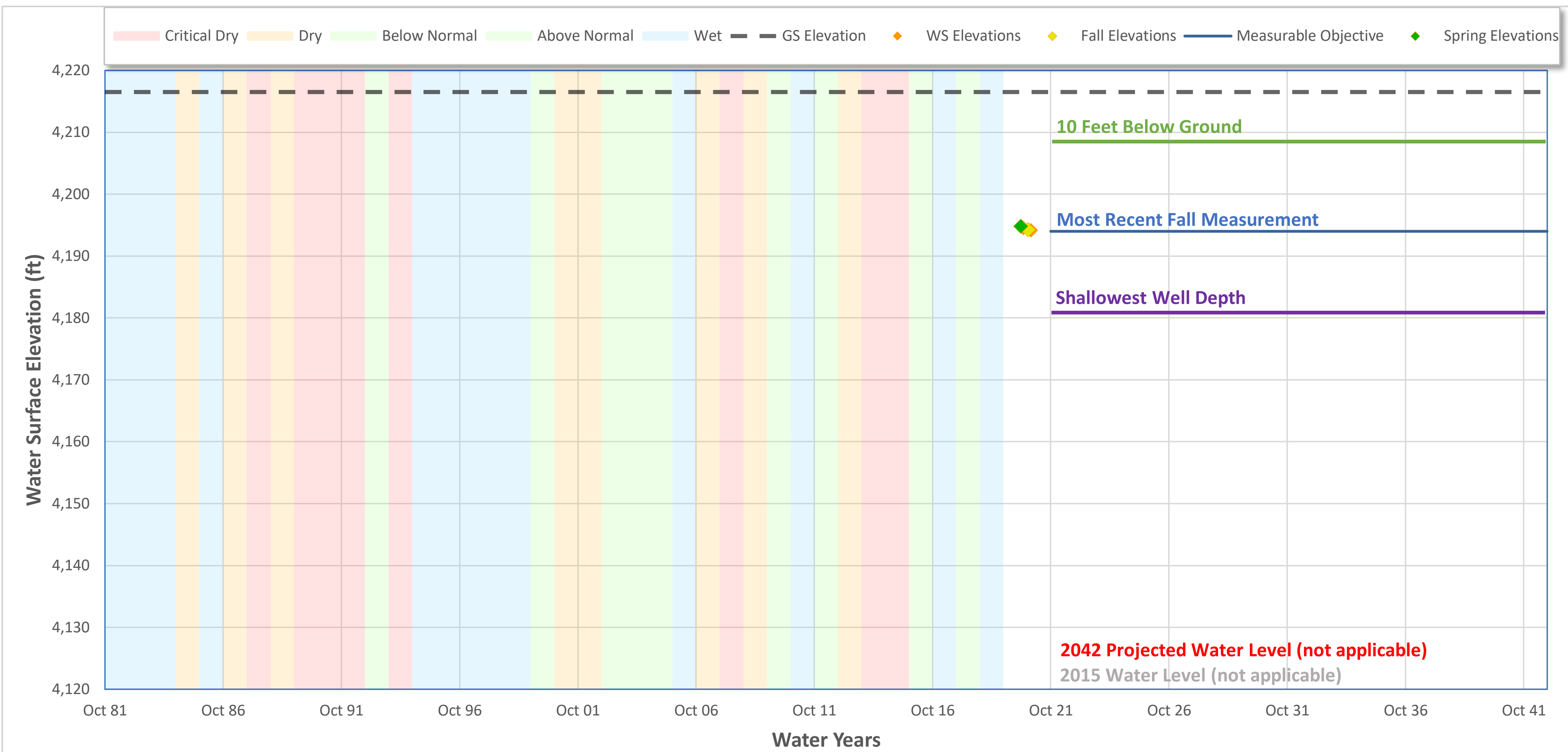
Well Period of Record

Period-of-Record		2020..2021
WS Elev-Range	Min:	4194.2 ft
	Max	4194.9 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4194 ft
	Max	4195 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4195 ft
	Fall:	4194 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,194.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	10	36	4181
Production (Ag)	5	300	3917

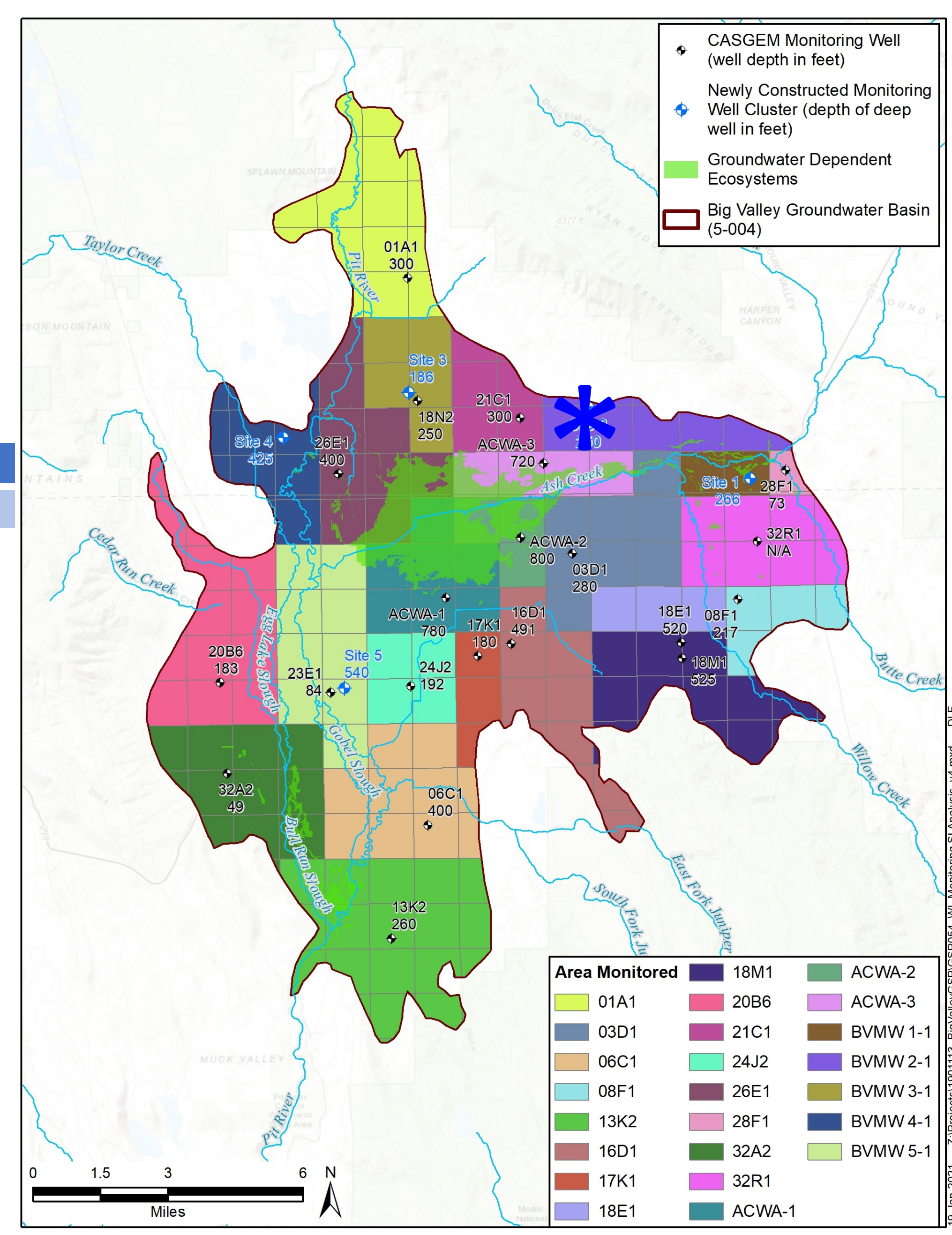
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	Maybe
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1.6 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	1.1 miles
Description of Nearest GDE	Ash Creek Wildlife Area



BVMW 2-2 Sustainability Indicator Analysis

Date: 1/18/2021

Well Information

Well ID	000152-BVMW 2-2
Alternate Name	BVMW 2-2
State Number	-
CASGEM ID	-

Well Location

County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry

Location	Lat:	41.2118
	Long:	-121.0286
Well Depth		75 ft
Ground Surface Elevation		4216.77 ft
Ref. Point Elevation		4216.44 ft
Screen Depth Range		50 to 70 ft
Screen Elevation Range		4166 to 4146 ft
Principal Aquifer		-

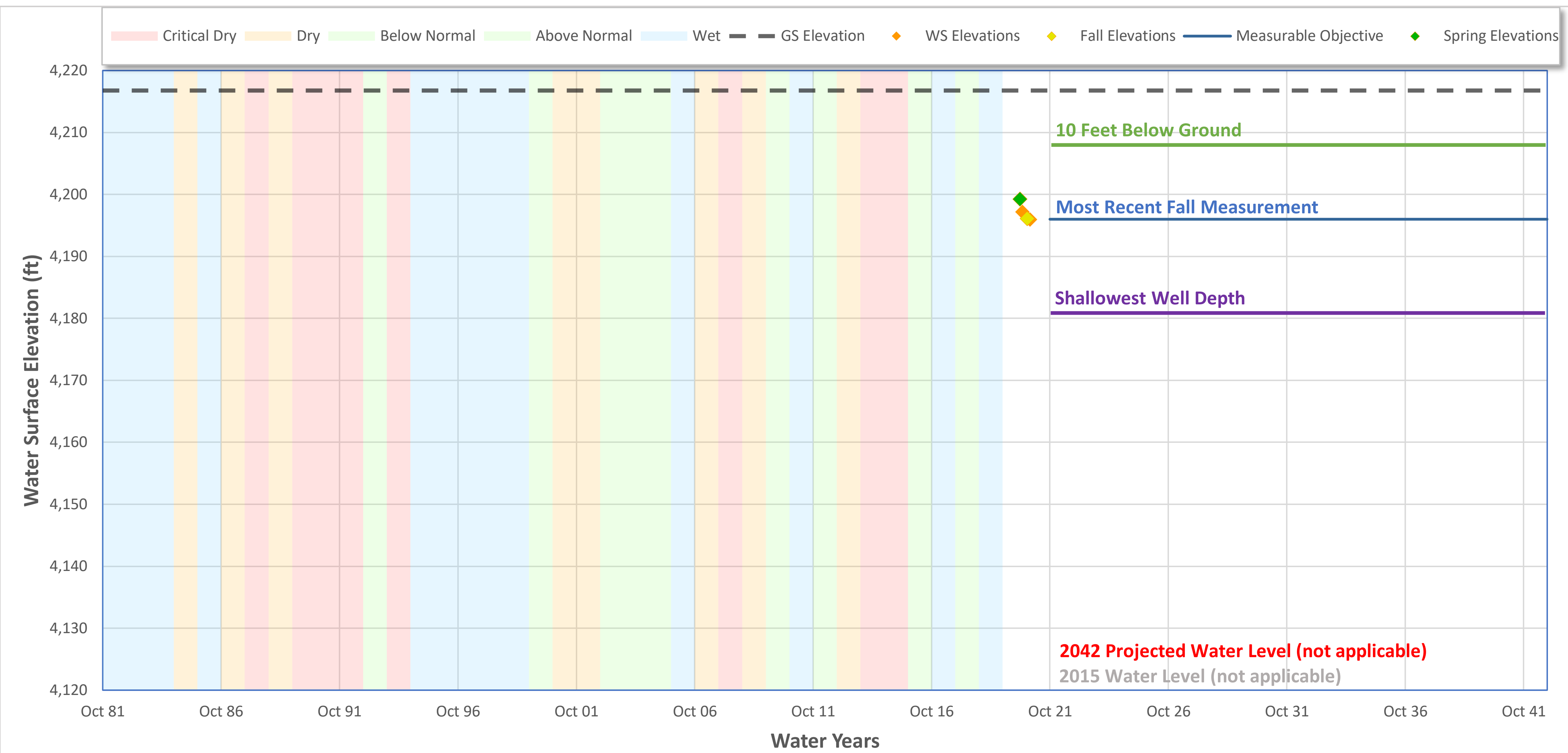
Well Period of Record

Period-of-Record		2020..2021
WS Elev-Range	Min:	4196.0 ft
	Max	4199.3 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4196 ft
	Max	4199 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4199 ft
	Fall:	4196 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,196.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	10	36	4181
Production (Ag)	5	300	3917

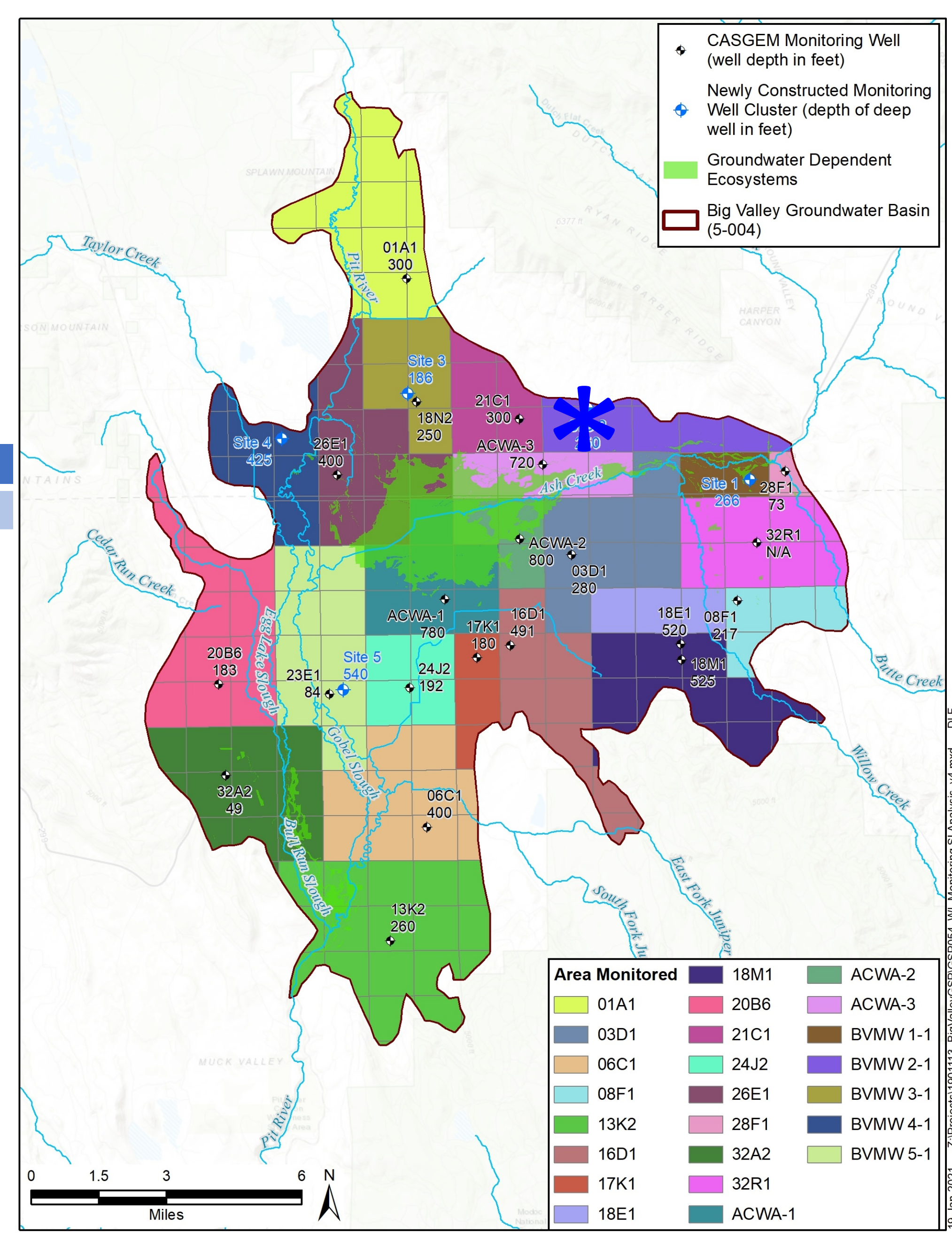
Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Maybe

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1.6 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	1.1 miles
Description of Nearest GDE	Ash Creek Wildlife Area



BVMW 2-3 Sustainability Indicator Analysis

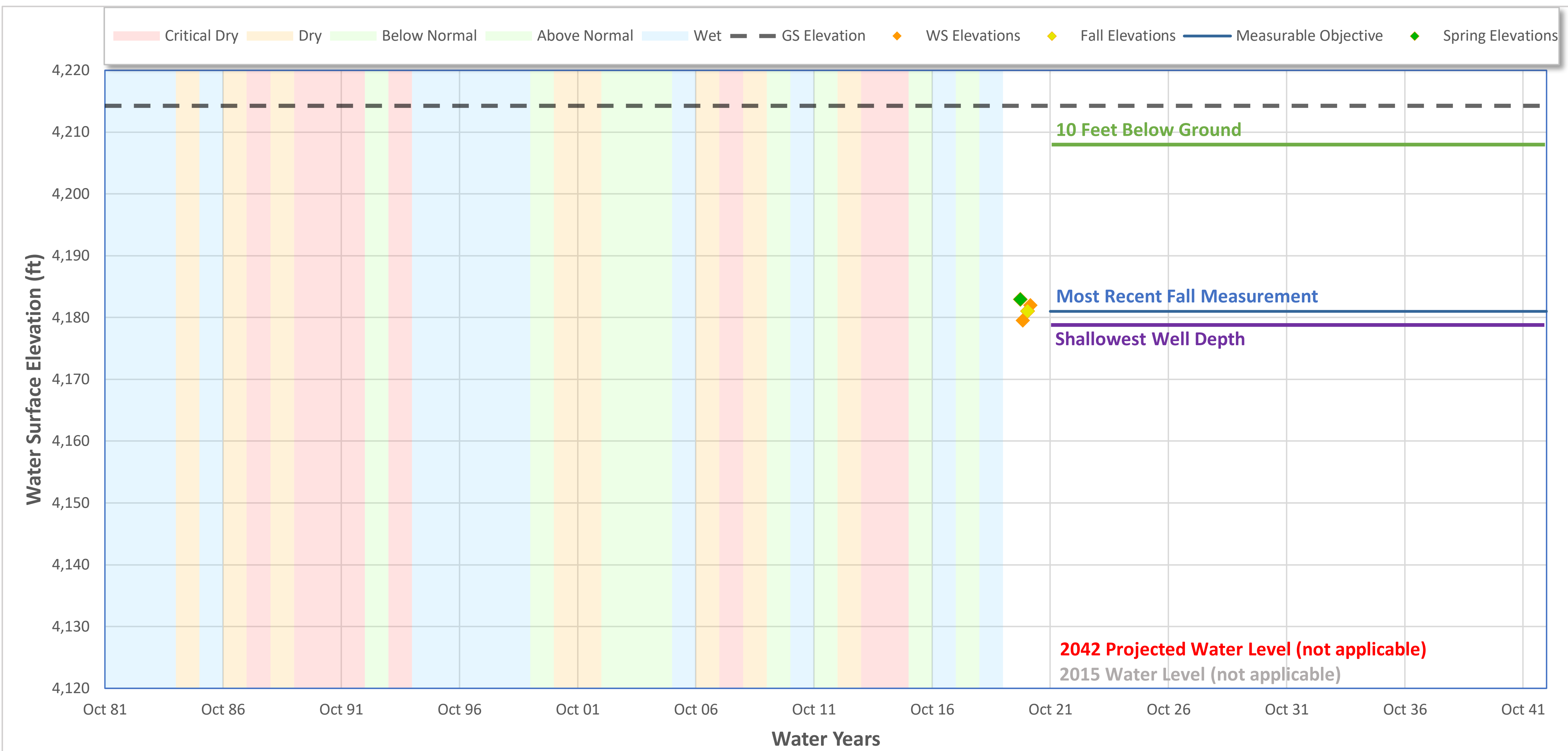
Date: 1/18/2021

Well Information	
Well ID	000153-BVMW 2-3
Alternate Name	BVMW 2-3
State Number	-
CASGEM ID	-
Well Location	
County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry		
Location	Lat:	41.2110
	Long:	-121.0287
Well Depth		75 ft
Ground Surface Elevation		4214.26 ft
Ref. Point Elevation		4213.93 ft
Screen Depth Range		50 to 70 ft
Screen Elevation Range		4166 to 4146 ft
Principal Aquifer		-
Well Period of Record		
Period-of-Record		2020..2021
WS Elev-Range	Min:	4179.5 ft
	Max	4183.0 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4180 ft
	Max	4183 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4183 ft
	Fall:	4181 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,181.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	10	36	4178
Production (Ag)	5	300	3914

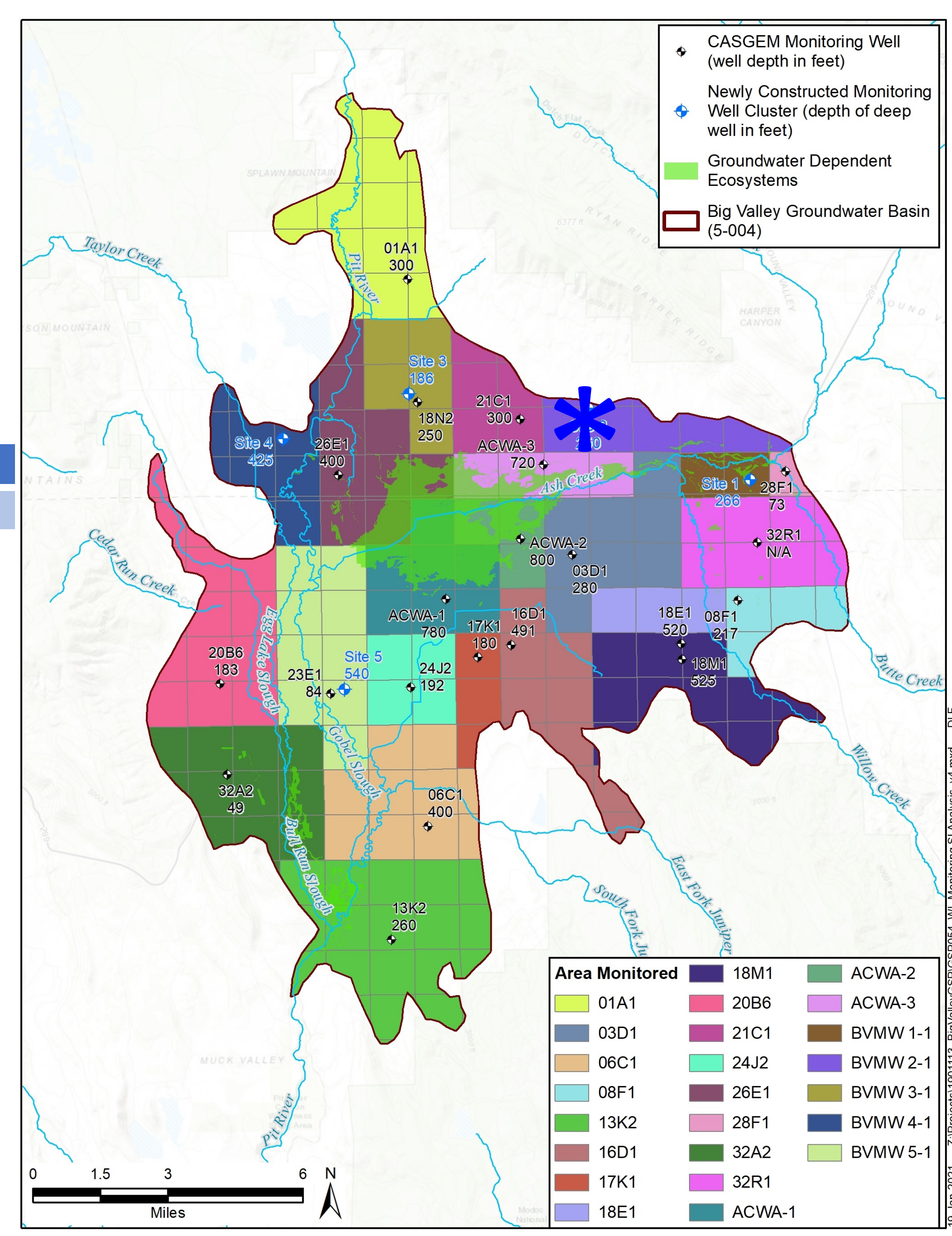
Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Maybe

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1.6 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	1.1 miles
Description of Nearest GDE	Ash Creek Wildlife Area



BVMW 2-4 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000154-BVMW 2-4
Alternate Name	BVMW 2-4
State Number	-
CASGEM ID	-

Well Location

County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry

Location	Lat:	41.2120
	Long:	-121.0294
Well Depth		65 ft
Ground Surface Elevation		4209.95 ft
Ref. Point Elevation		4209.62 ft
Screen Depth Range		40 to 60 ft
Screen Elevation Range		4174 to 4154 ft
Principal Aquifer		-

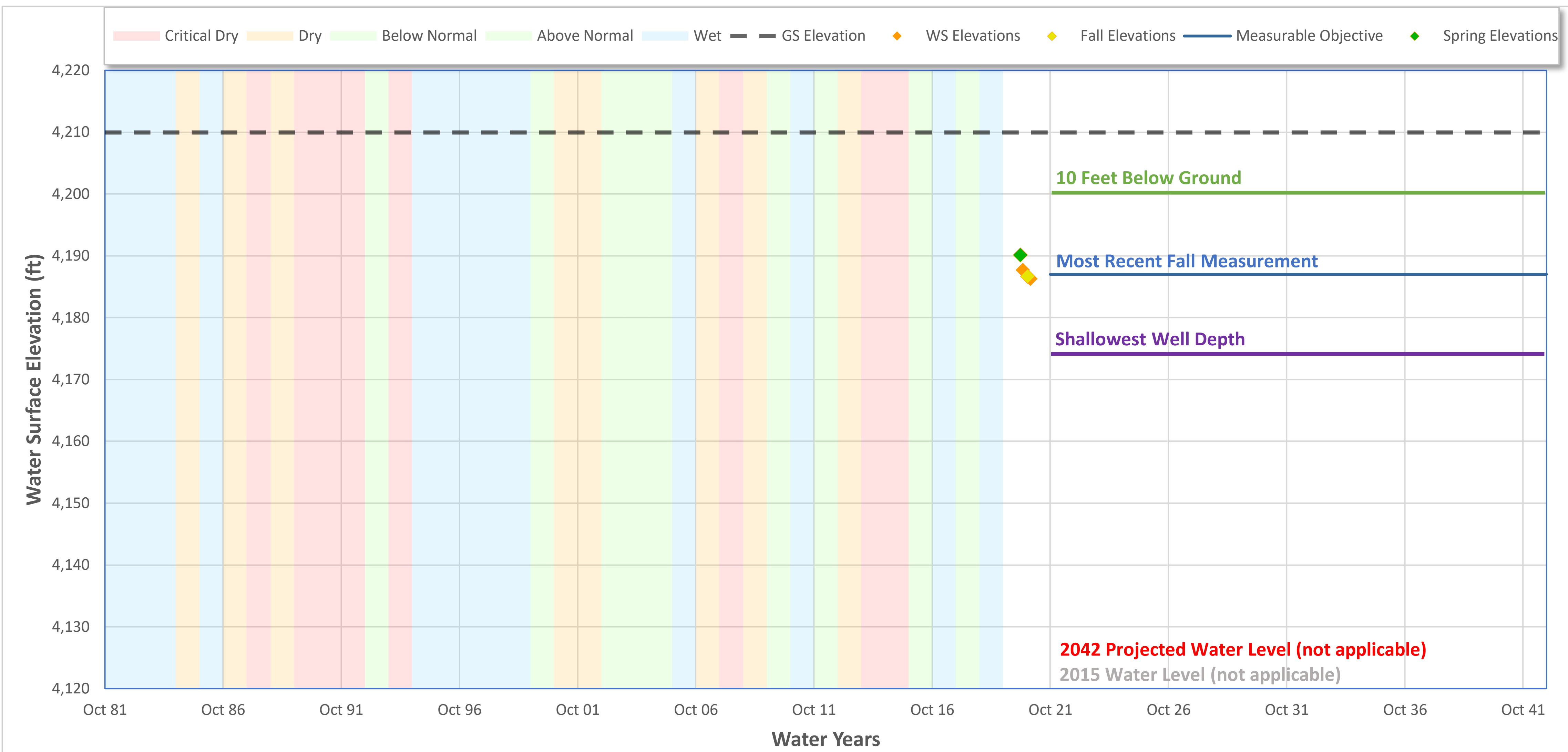
Well Period of Record

Period-of-Record		2020..2021
WS Elev-Range	Min:	4186.3 ft
	Max	4190.2 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

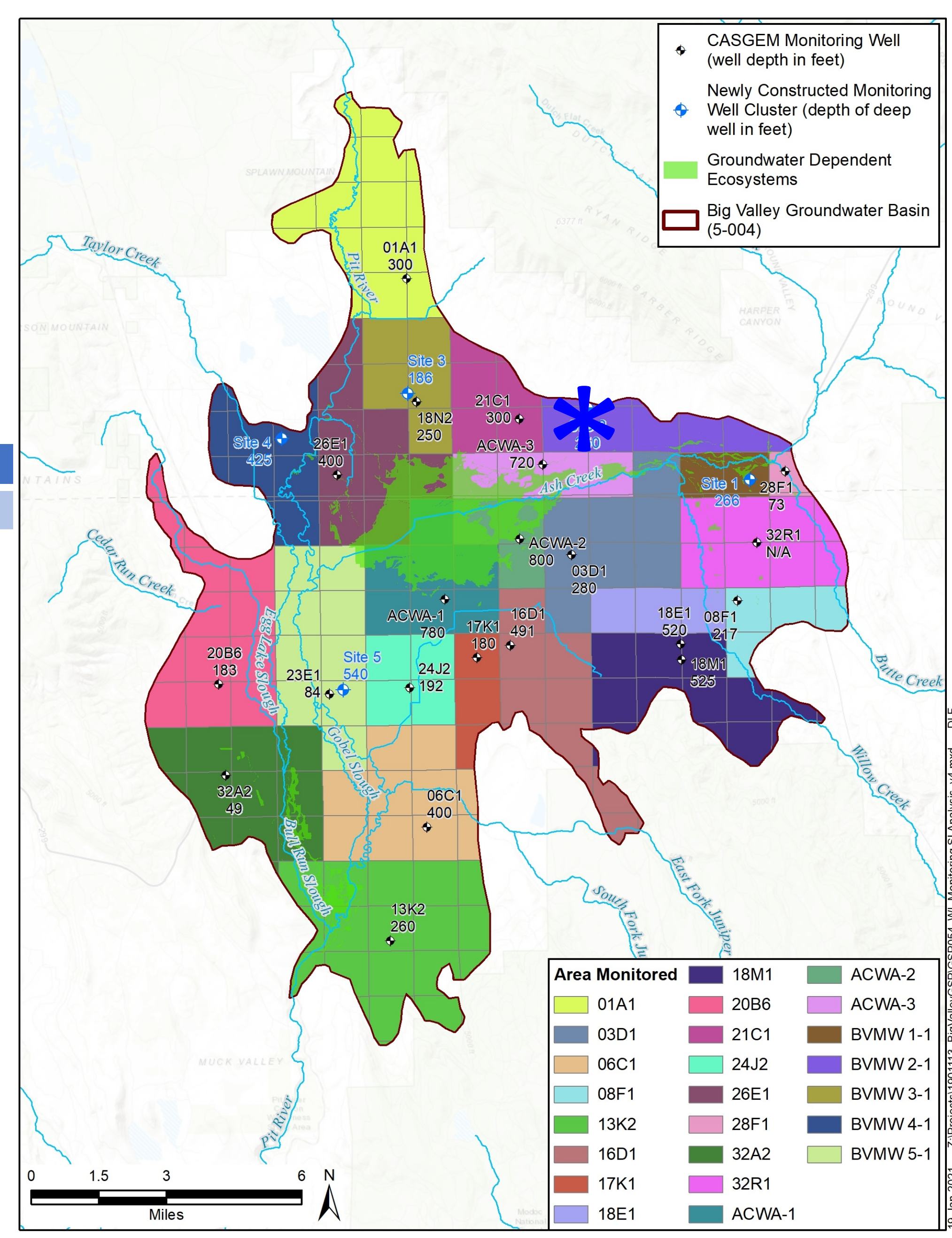
Parameter		Value
WS Elevation Range	Min:	4186 ft
	Max	4190 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4190 ft
	Fall:	4187 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,187.0 ft	Most recent Fall measurement



Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	10	36	4174
Production (Ag)	5	300	3910

Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Maybe

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1.6 miles
Name of Nearest Perennial Stream	Ash Creek
Distance From Nearest GDE	1.1 miles
Description of Nearest GDE	Ash Creek Wildlife Area

BVMW 3-1 Sustainability Indicator Analysis

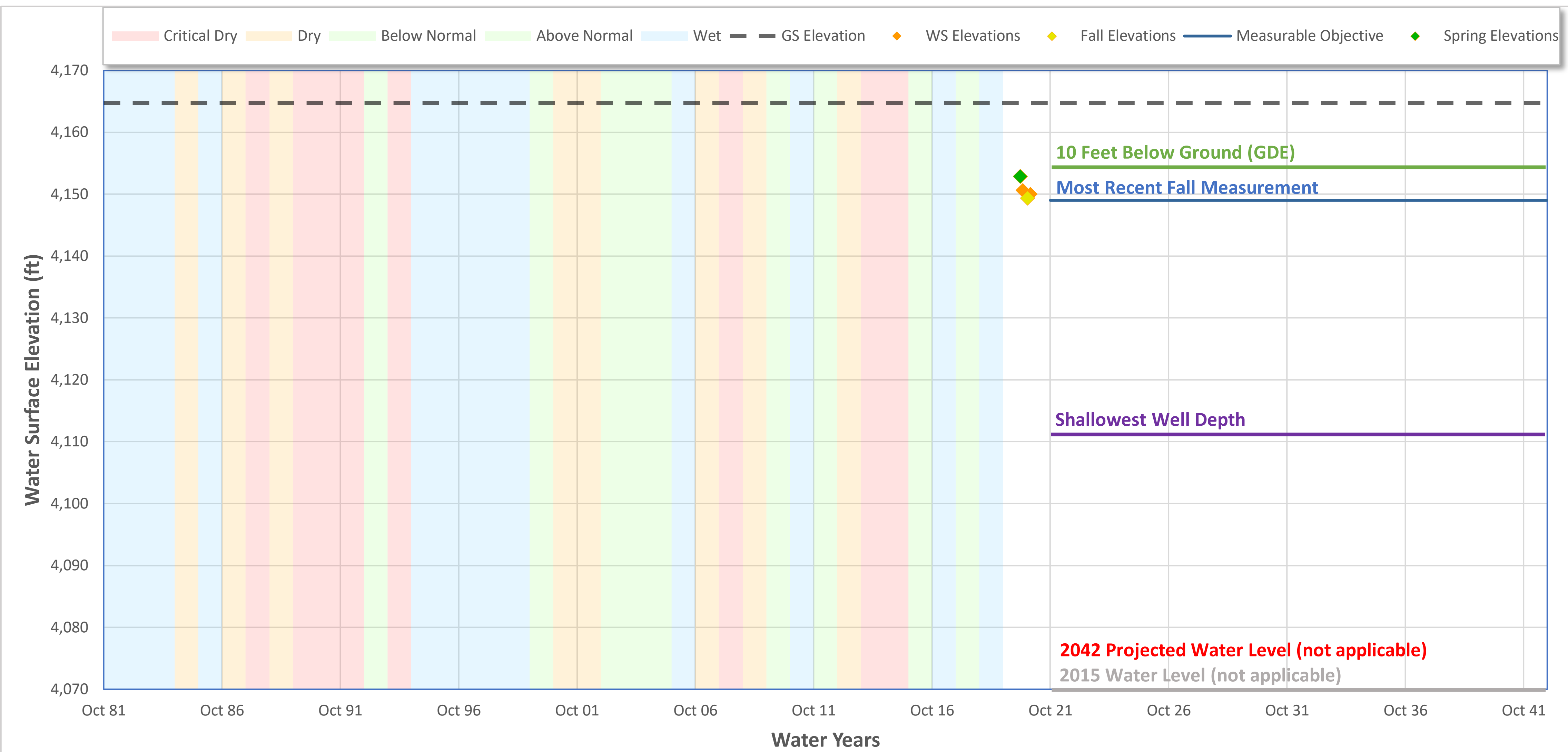
Date: 1/18/2021

Well Information	
Well ID	000155-BVMW 3-1
Alternate Name	BVMW 3-1
State Number	-
CASGEM ID	-
Well Location	
County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry		
Location	Lat:	41.2169
	Long:	-121.1050
Well Depth		470 ft
Ground Surface Elevation		4164.75 ft
Ref. Point Elevation		4167.41 ft
Screen Depth Range		135 to 185 ft
Screen Elevation Range		4032 to 3982 ft
Principal Aquifer	-	
Well Period of Record		
Period-of-Record		2020..2021
WS Elev-Range	Min:	4149.4 ft
	Max	4152.9 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4149 ft
	Max	4153 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4153 ft
	Fall:	4149 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,149.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	13	54	4111
Production (Ag)	4	450	3715

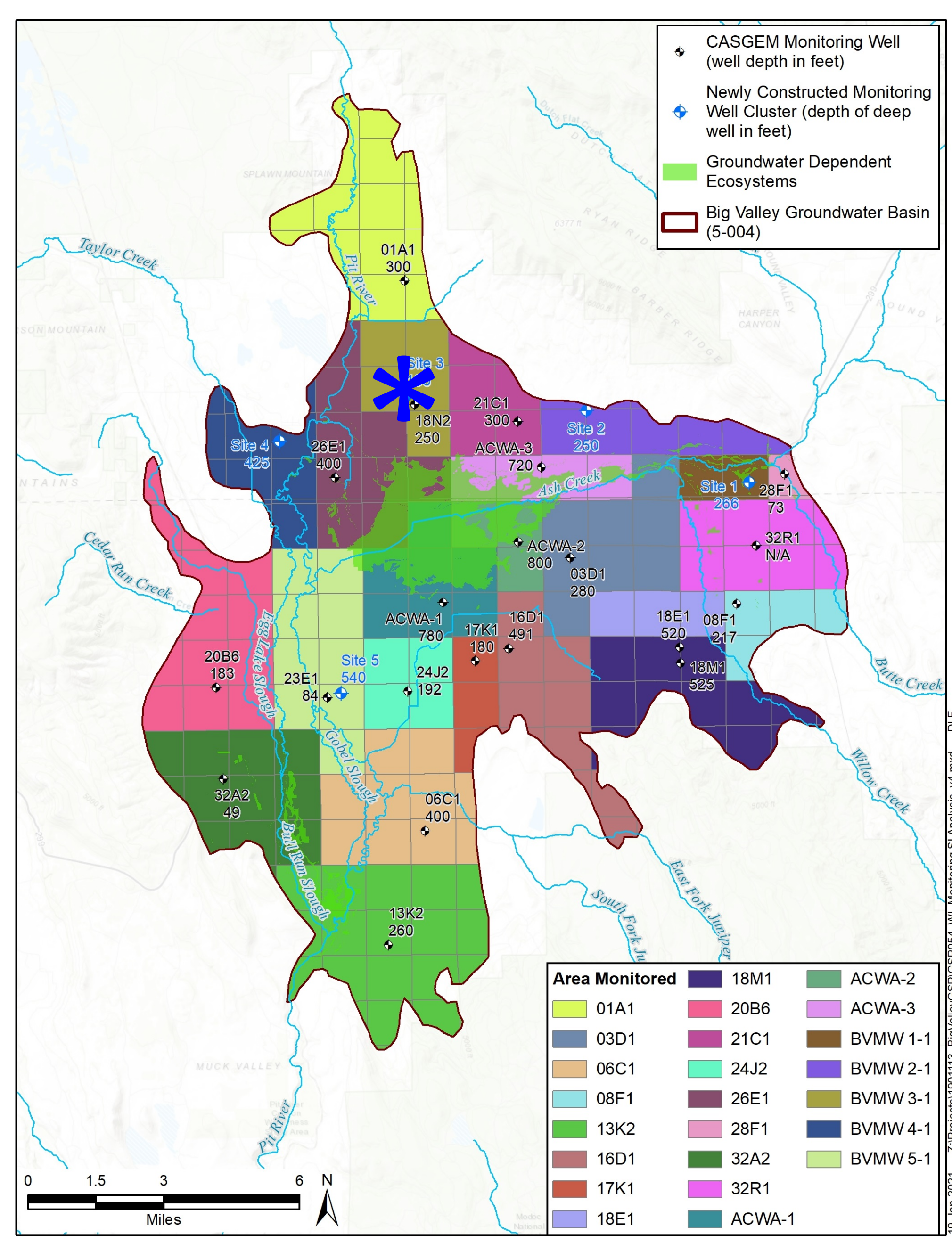
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	Maybe
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1.4 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	1.2 miles
Description of Nearest GDE	Ash Creek Wildlife Area



BVMW 3-2 Sustainability Indicator Analysis

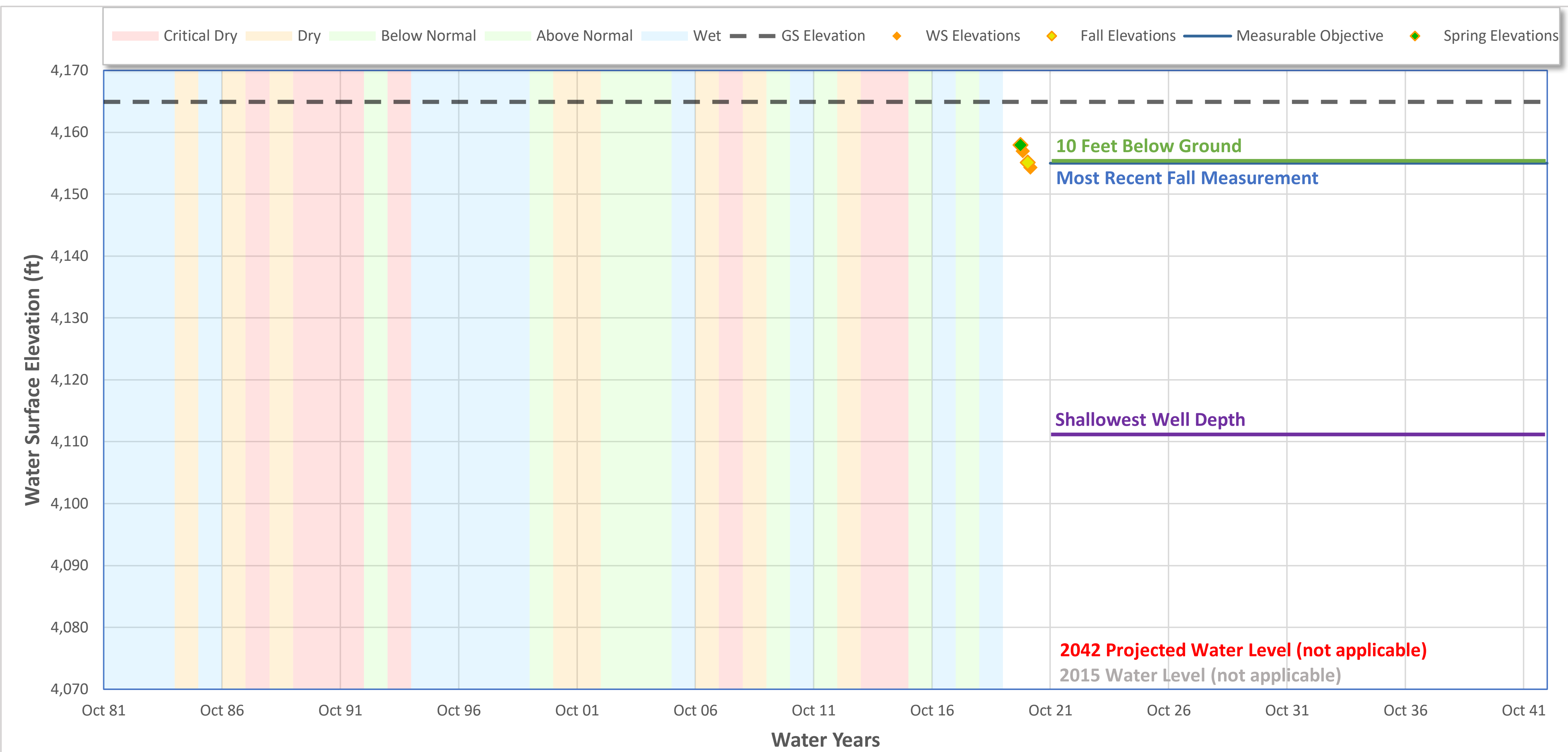
Date: 1/18/2021

Well Information	
Well ID	000156-BVMW 3-2
Alternate Name	BVMW 3-2
State Number	-
CASGEM ID	-
Well Location	
County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry		
Location	Lat:	41.2170
	Long:	-121.1050
Well Depth		45 ft
Ground Surface Elevation		4164.92 ft
Ref. Point Elevation		4167.58 ft
Screen Depth Range		25 to 40 ft
Screen Elevation Range		4142 to 4127 ft
Principal Aquifer		-
Well Period of Record		
Period-of-Record		2020..2021
WS Elev-Range	Min:	4154.3 ft
	Max	4158.0 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4154 ft
	Max	4158 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4158 ft
	Fall:	4155 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,155.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	13	54	4111
Production (Ag)	4	450	3715

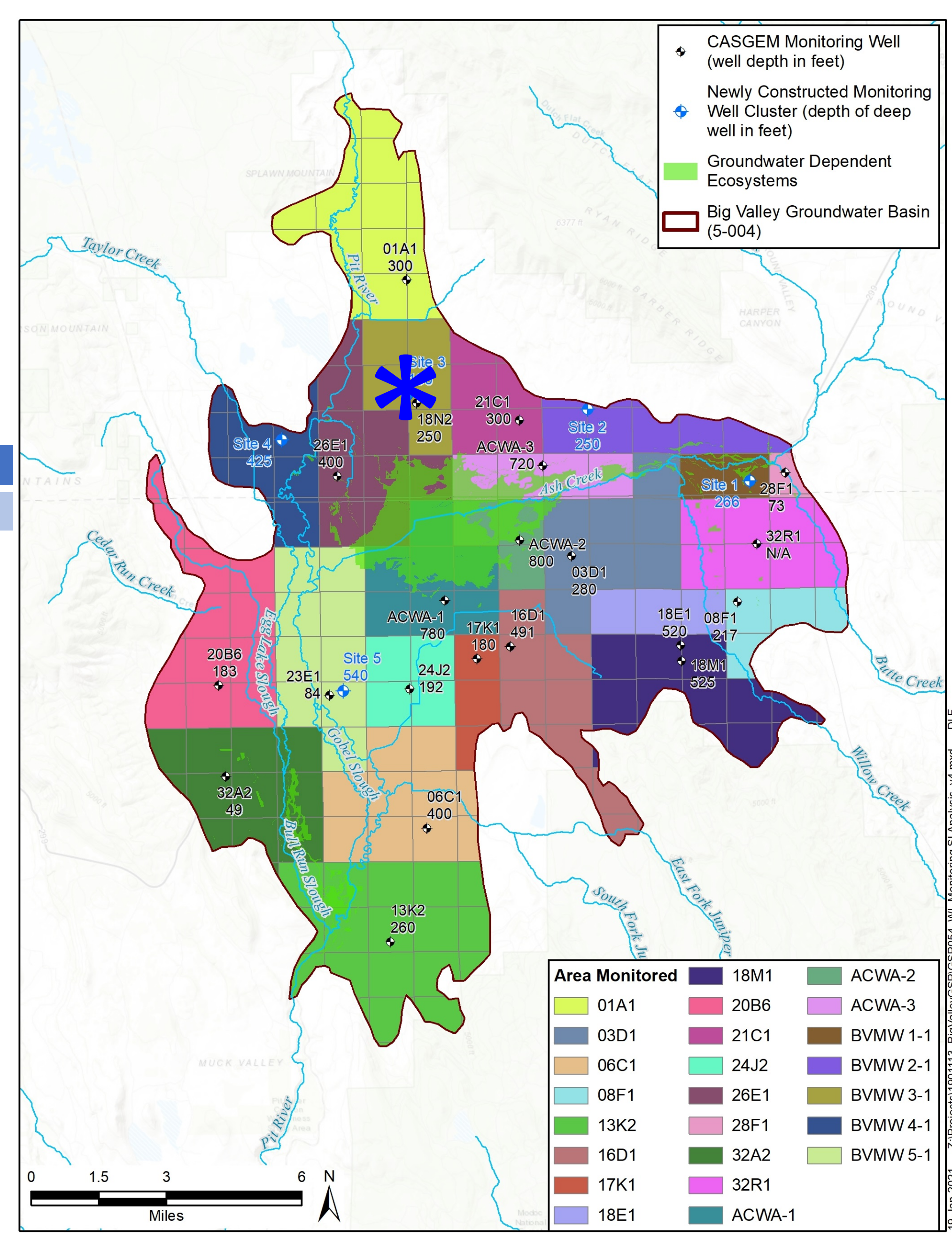
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	Maybe
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1.4 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	1.2 miles
Description of Nearest GDE	Ash Creek Wildlife Area



BVMW 3-3 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID		000157-BVMW 3-3
Alternate Name		BVMW 3-3
State Number		-
CASGEM ID		-
Well Location		
County		Modoc
Basin		BIG VALLEY
Sub-Basin		-
Management Area		-
Proveyor Agency		-
Well Type Information		
Well Type		Monitoring
Well Use		Observation
Completion Type		Single/Cluster

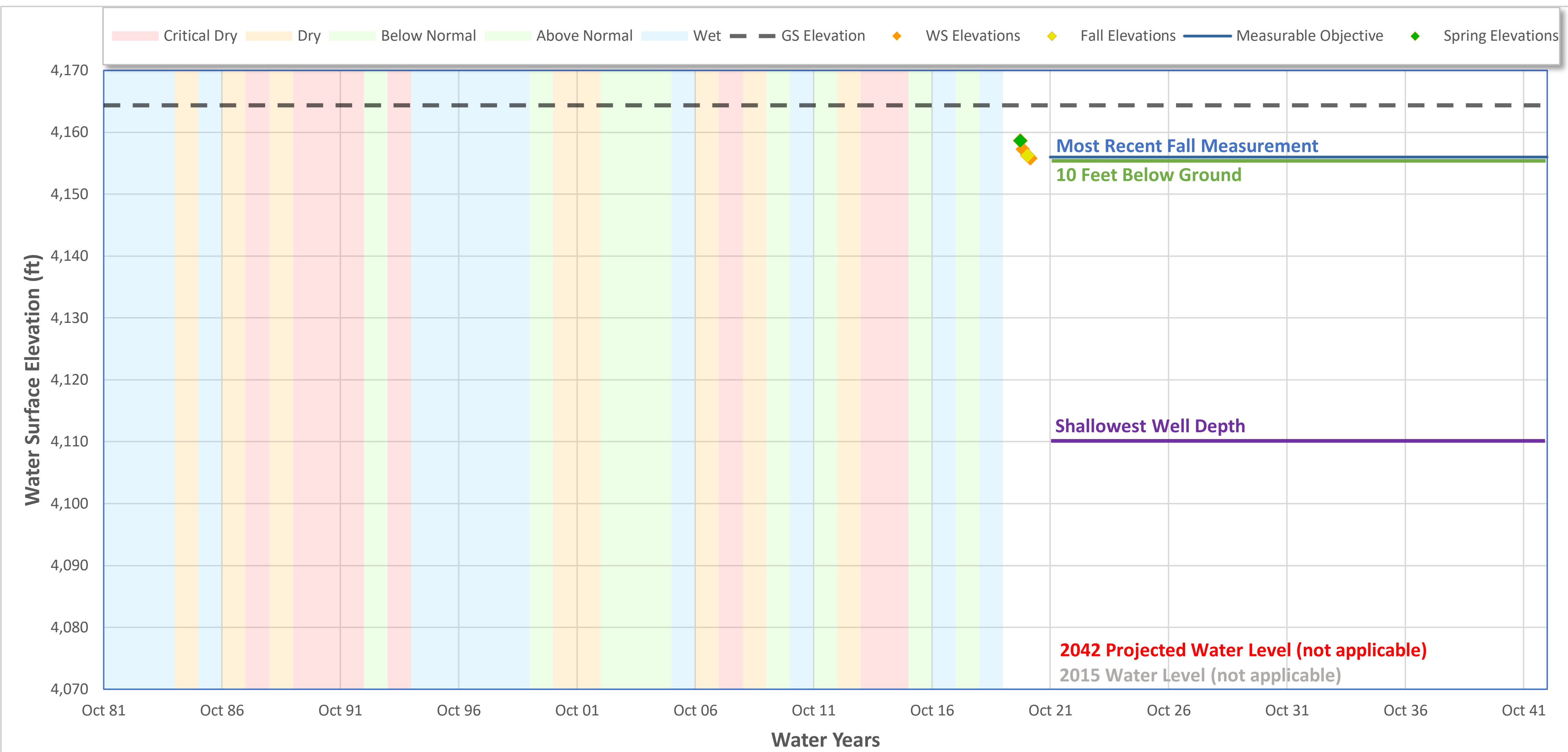
Well Coordinates/Geometry

Location	Lat:	41.2157
	Long:	-121.1051
Well Depth		55 ft
Ground Surface Elevation		4164.36 ft
Ref. Point Elevation		4164.02 ft
Screen Depth Range		25 to 50 ft
Screen Elevation Range		4143 to 4118 ft
Principal Aquifer		-
Well Period of Record		
Period-of-Record		2020..2021
WS Elev-Range	Min:	4155.8 ft
	Max	4158.7 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4156 ft
	Max	4159 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4159 ft
	Fall:	4156 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,156.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	13	54	4110
Production (Ag)	4	450	3714

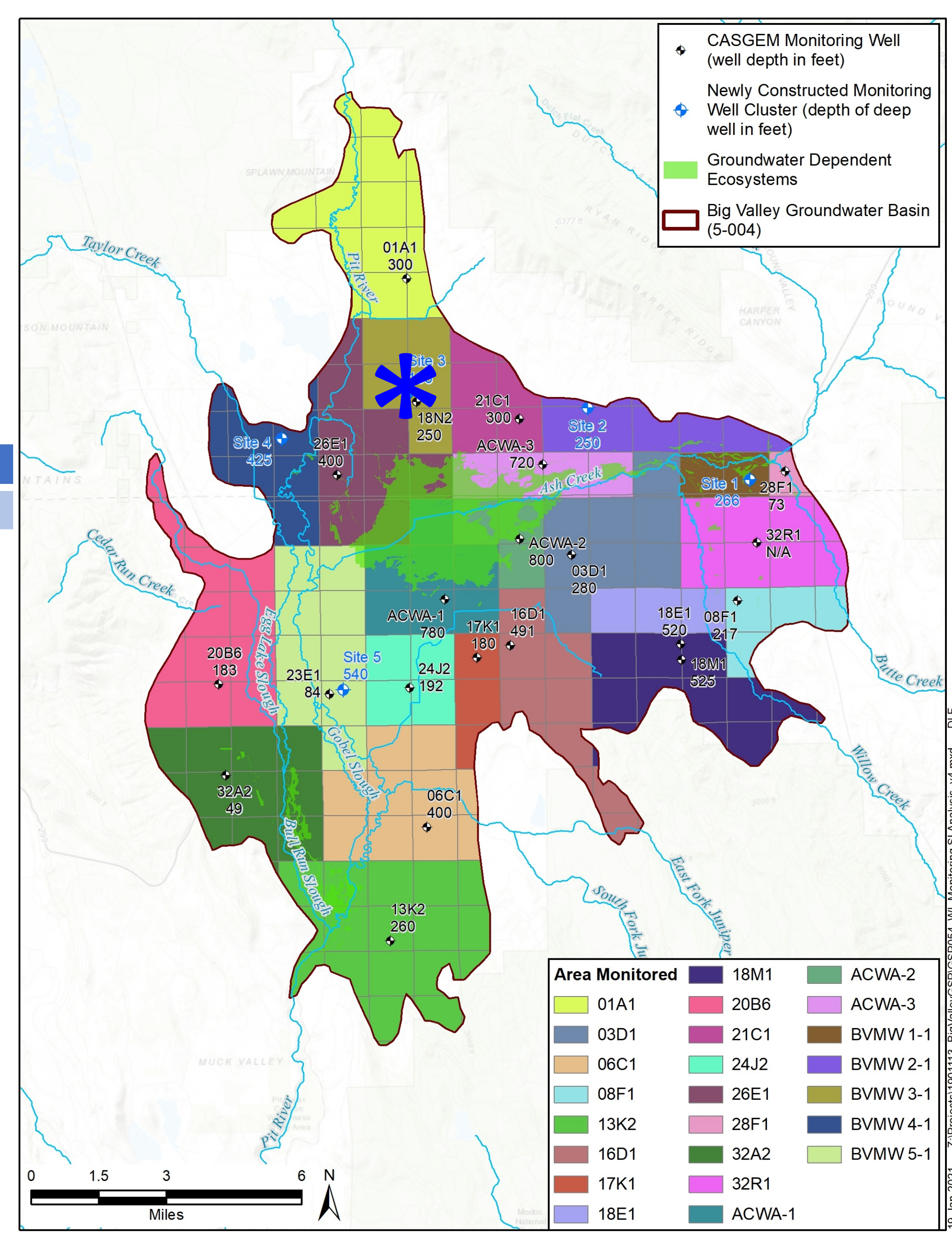
Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Maybe

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1.4 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	1.2 miles
Description of Nearest GDE	Ash Creek Wildlife Area



BVMW 3-4 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000158-BVMW 3-4
Alternate Name	BVMW 3-4
State Number	-
CASGEM ID	-

Well Location

County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry

Location	Lat:	41.2157
	Long:	-121.1054
Well Depth		100 ft
Ground Surface Elevation		4165.31 ft
Ref. Point Elevation		4164.97 ft
Screen Depth Range		25 to 50 ft
Screen Elevation Range		4139 to 4114 ft
Principal Aquifer		-

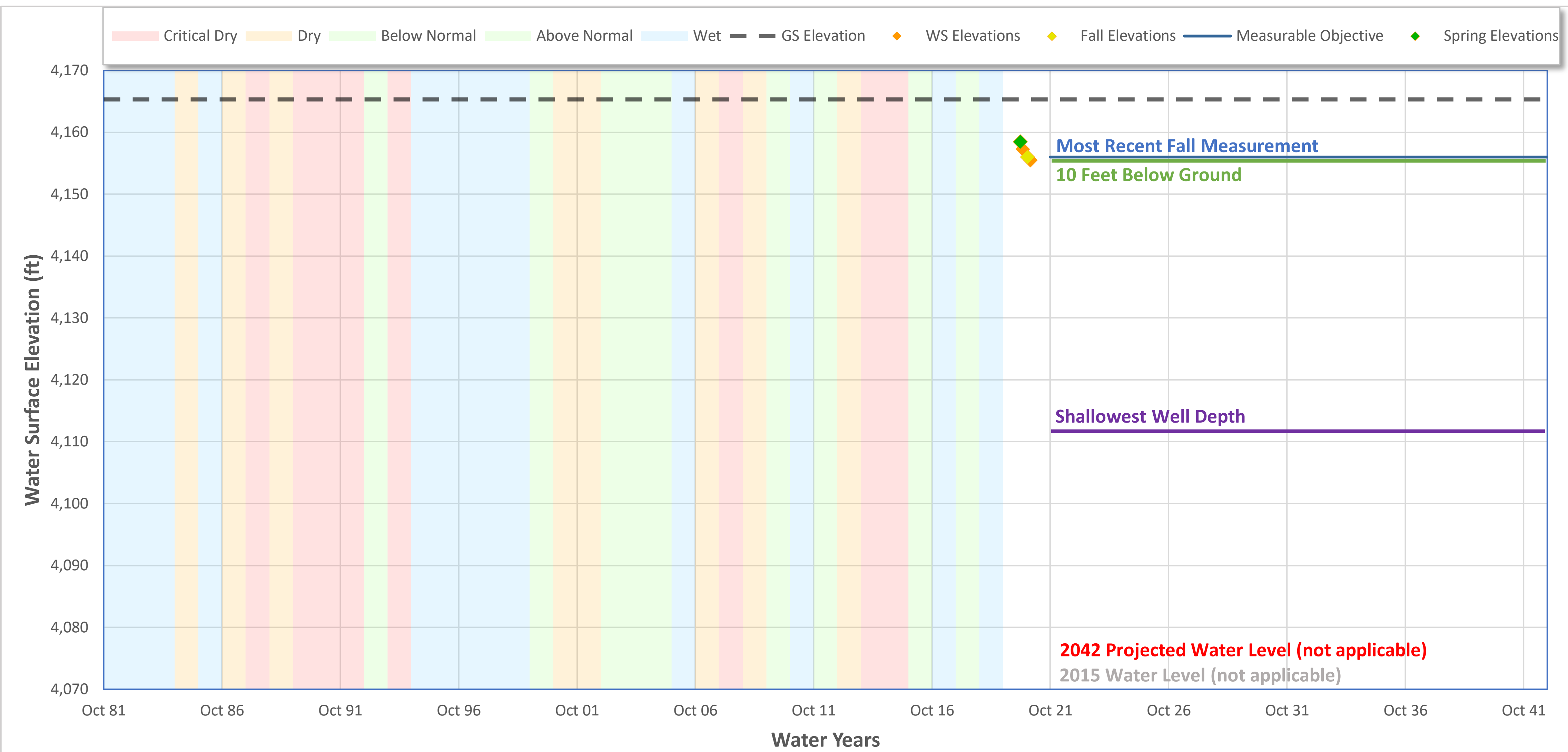
Well Period of Record

Period-of-Record		2020..2021
WS Elev-Range	Min:	4155.5 ft
	Max	4158.5 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4156 ft
	Max	4158 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4158 ft
	Fall:	4156 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,156.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	13	54	4111
Production (Ag)	4	450	3715

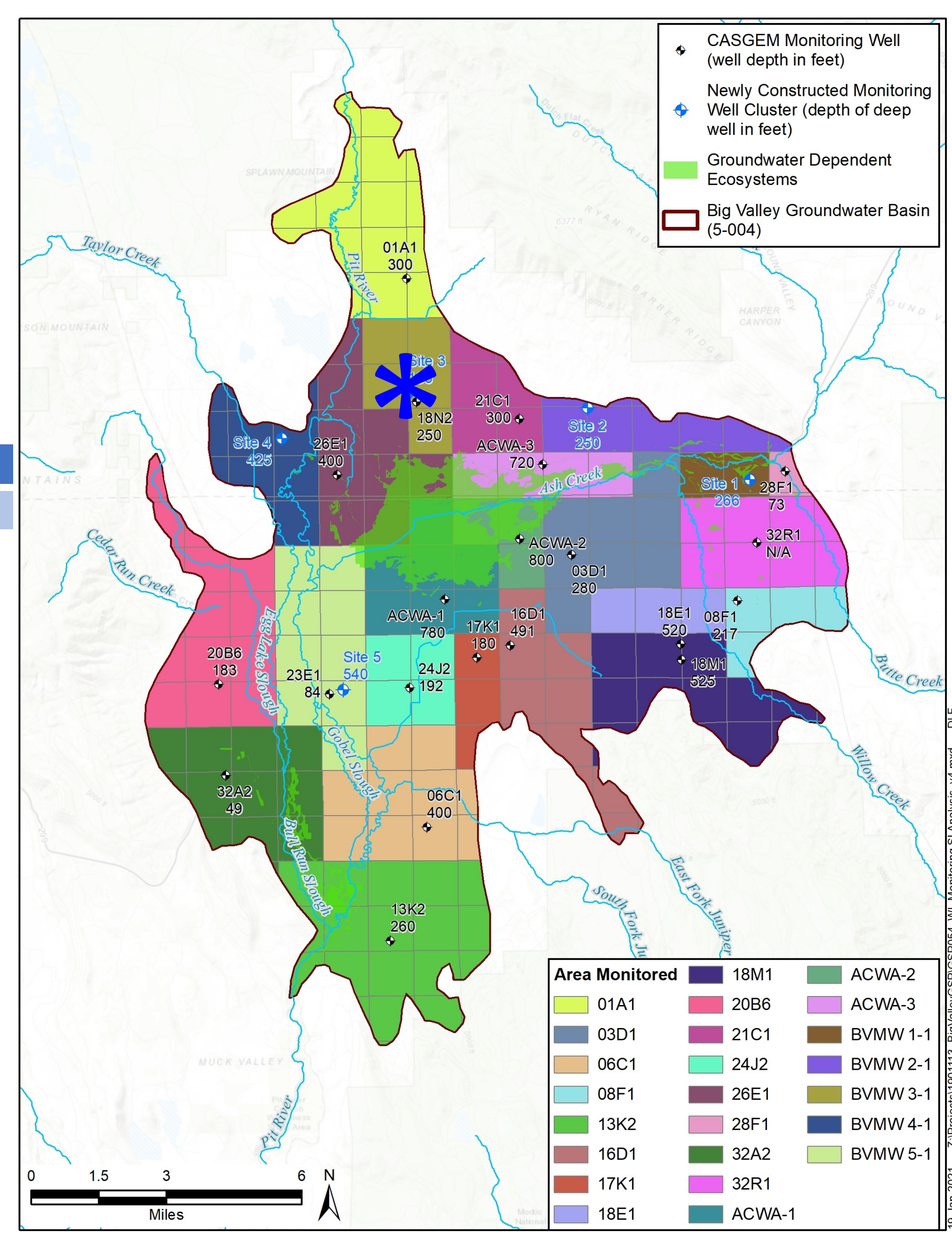
Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Maybe

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	1.4 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	1.2 miles
Description of Nearest GDE	Ash Creek Wildlife Area



BVMW 4-1 Sustainability Indicator Analysis

Date: 1/18/2021

Well Information

Well ID	000159-BVMW 4-1
Alternate Name	BVMW 4-1
State Number	-
CASGEM ID	-

Well Location

County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry

Location	Lat:	41.2029
	Long:	-121.1587
Well Depth		500 ft
Ground Surface Elevation		4152.73 ft
Ref. Point Elevation		4152.40 ft
Screen Depth Range		385 to 415 ft
Screen Elevation Range		3767 to 3737 ft
Principal Aquifer		-

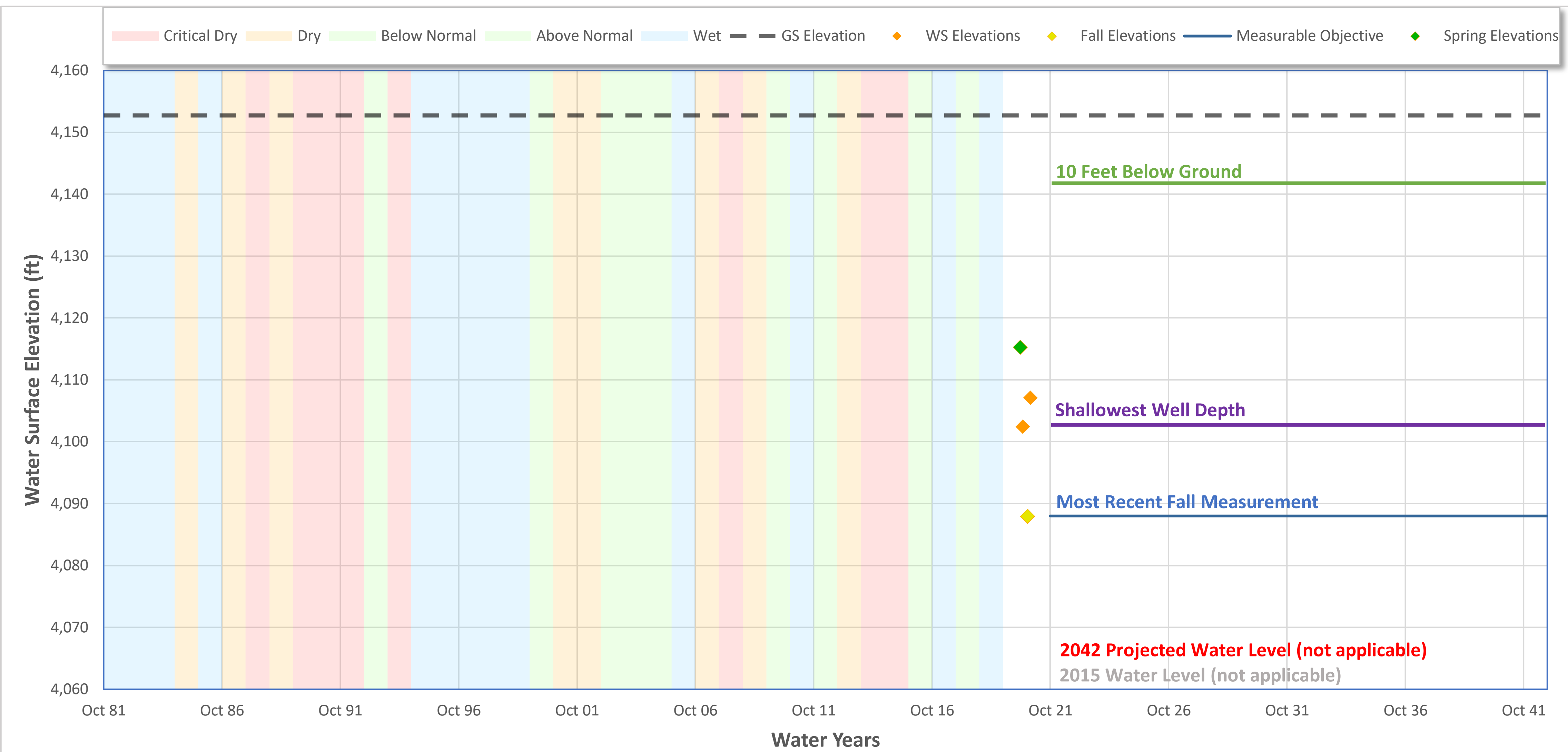
Well Period of Record

Period-of-Record		2020..2021
WS Elev-Range	Min:	4088.0 ft
	Max	4115.3 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4088 ft
	Max	4115 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4115 ft
	Fall:	4088 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,088.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	22	50	4103
Production (Ag)	8	305	3848

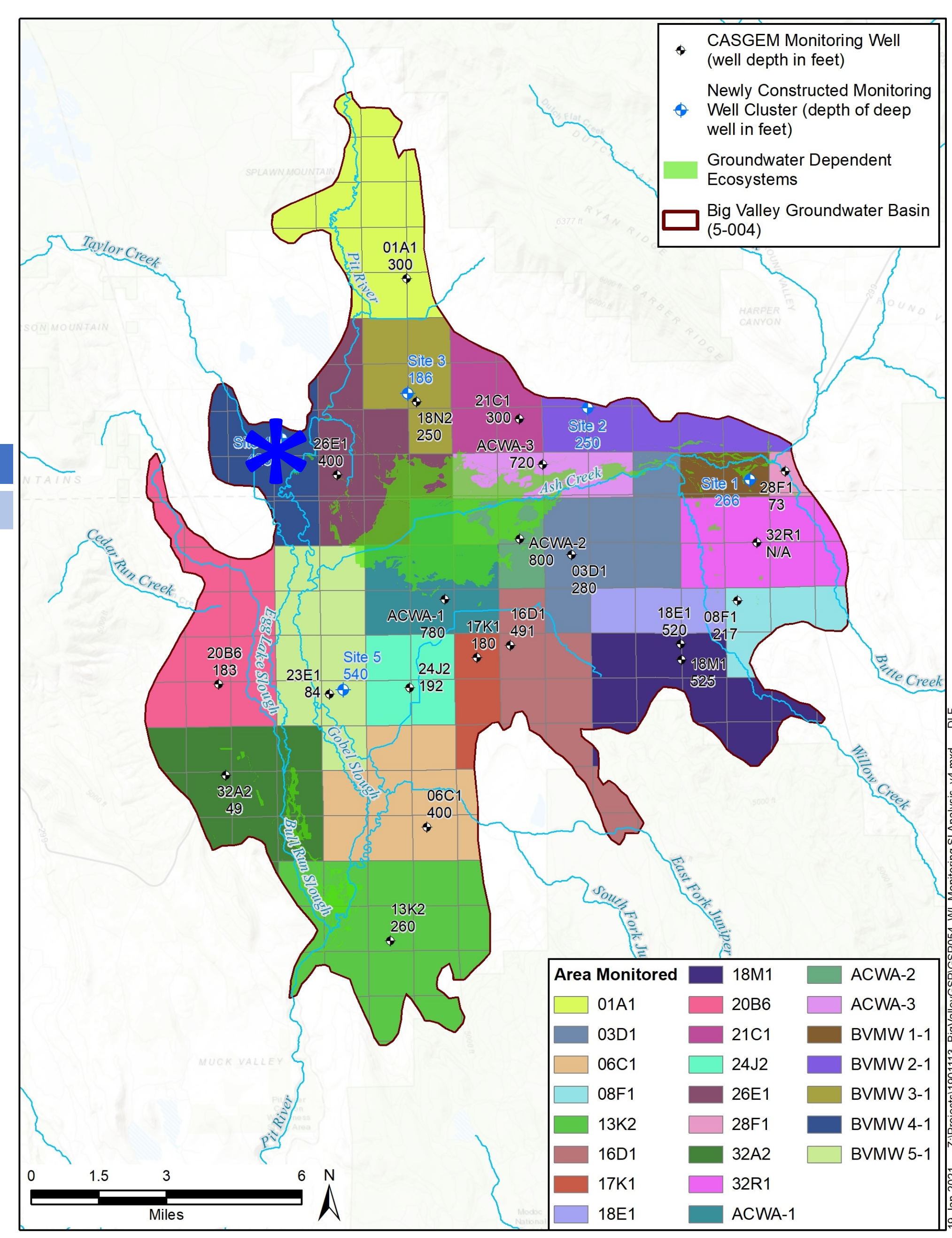
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	Maybe
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	0.6 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	0.6 miles
Description of Nearest GDE	Pit River



BVMW 4-2 Sustainability Indicator Analysis

Date: 1/18/2021

Well Information

Well ID	000160-BVMW 4-2
Alternate Name	BVMW 4-2
State Number	-
CASGEM ID	-

Well Location

County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry

Location	Lat:	41.2029
	Long:	-121.1588
Well Depth		79 ft
Ground Surface Elevation		4153.06 ft
Ref. Point Elevation		4152.73 ft
Screen Depth Range		54 to 74 ft
Screen Elevation Range		4098 to 4078 ft
Principal Aquifer		-

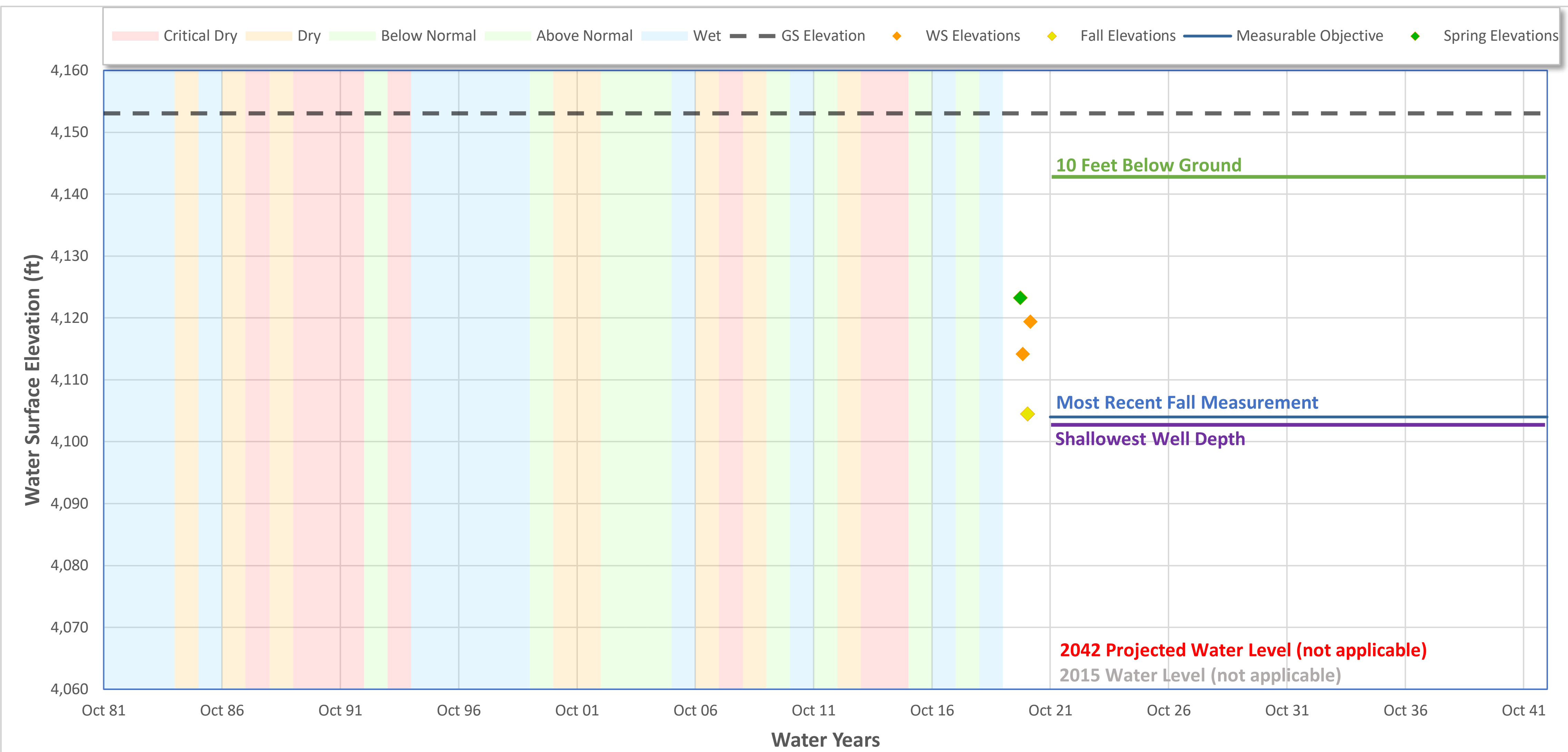
Well Period of Record

Period-of-Record		2020..2021
WS Elev-Range	Min:	4104.5 ft
	Max	4123.3 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4104 ft
	Max	4123 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4123 ft
	Fall:	4104 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,104.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	22	50	4103
Production (Ag)	8	305	3848

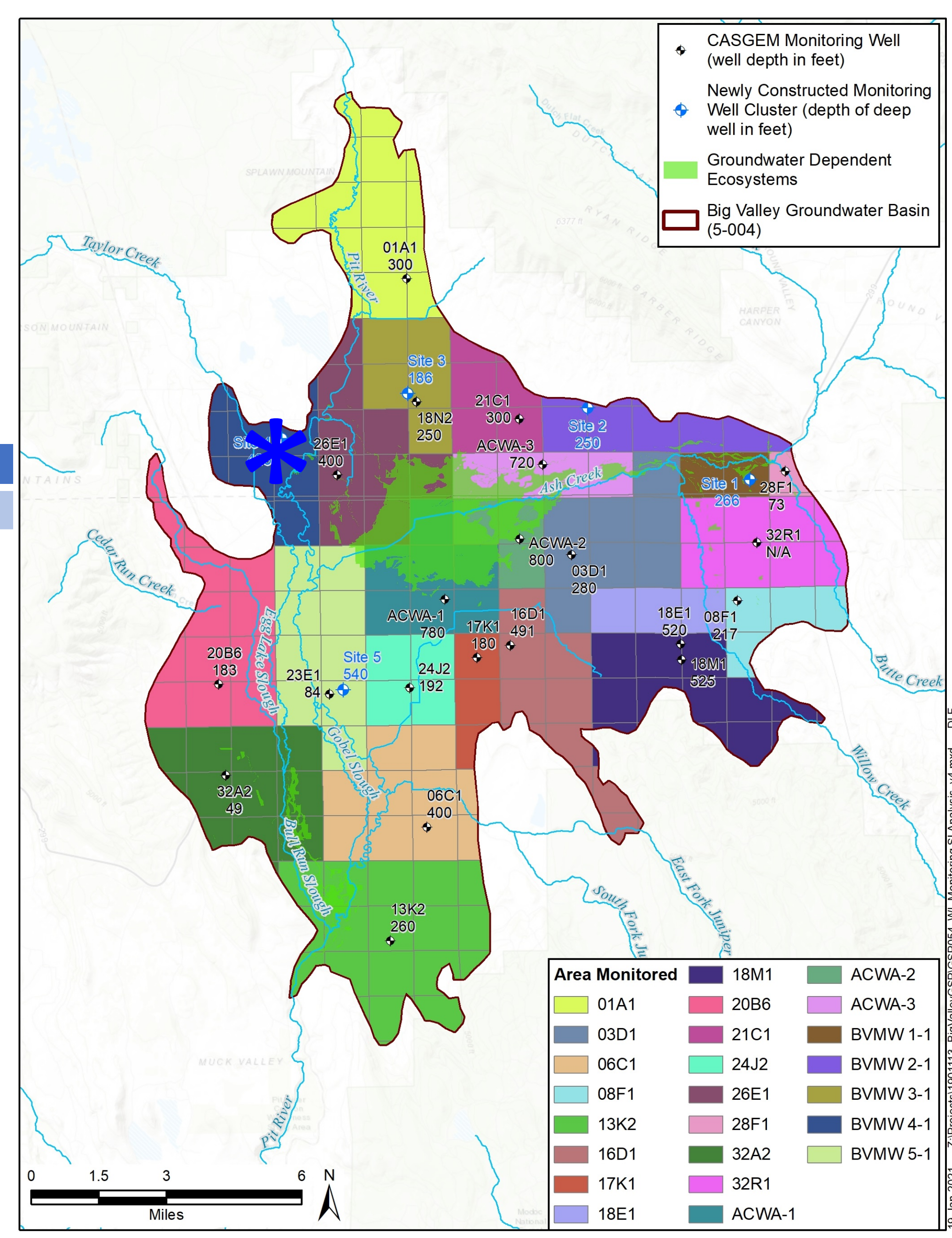
Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Yes

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	0.6 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	0.6 miles
Description of Nearest GDE	Pit River



BVMW 4-3 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID		000161-BVMW 4-3
Alternate Name		BVMW 4-3
State Number		-
CASGEM ID		-

Well Location

County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry

Location	Lat:	41.2030
	Long:	-121.1579
Well Depth		101 ft
Ground Surface Elevation		4152.66 ft
Ref. Point Elevation		4152.33 ft
Screen Depth Range		60 to 80 ft
Screen Elevation Range		4093 to 4073 ft
Principal Aquifer		-

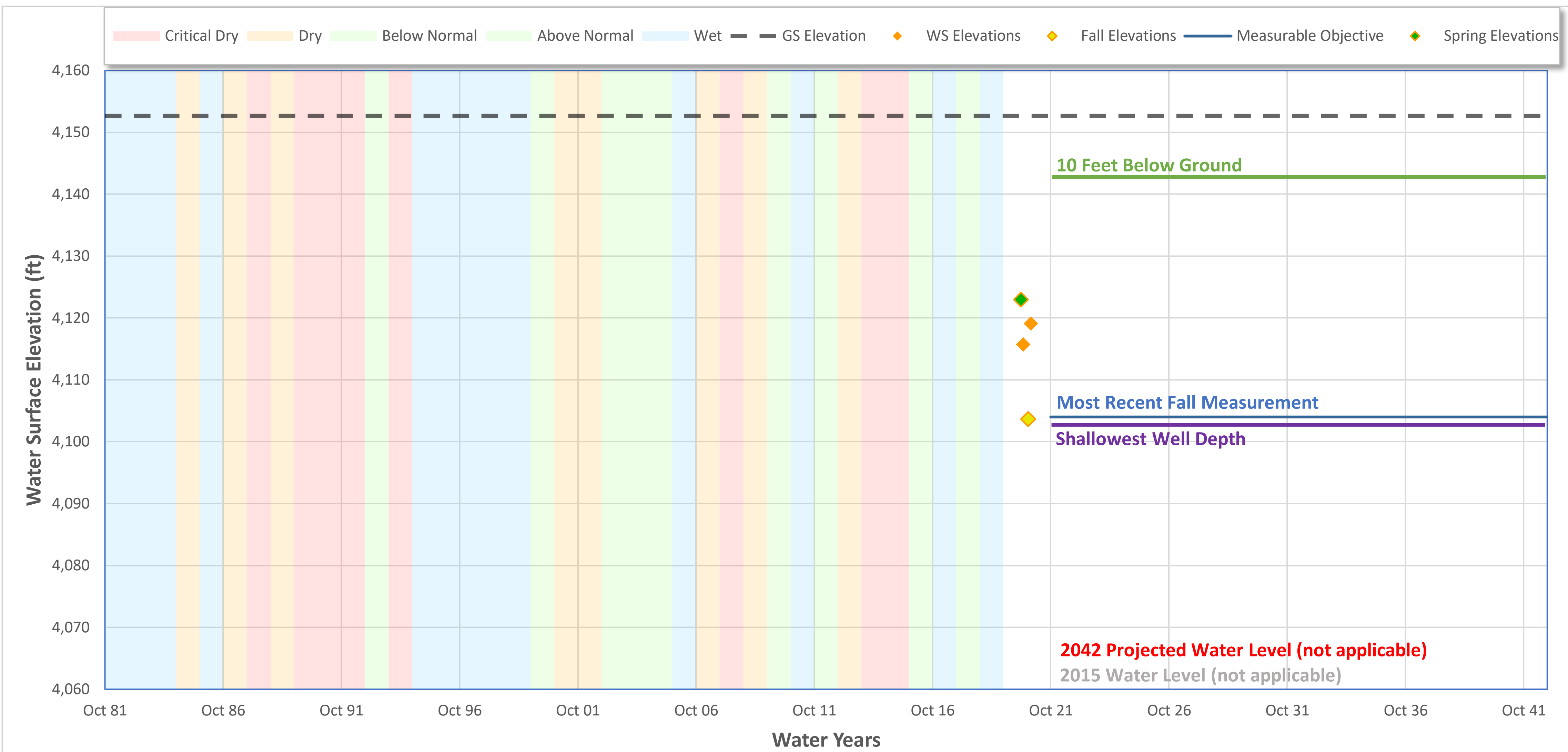
Well Period of Record

Period-of-Record		2020..2021
WS Elev-Range	Min:	4103.7 ft
	Max	4123.0 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4104 ft
	Max	4123 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4123 ft
	Fall:	4104 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,104.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	22	50	4103
Production (Ag)	8	305	3848

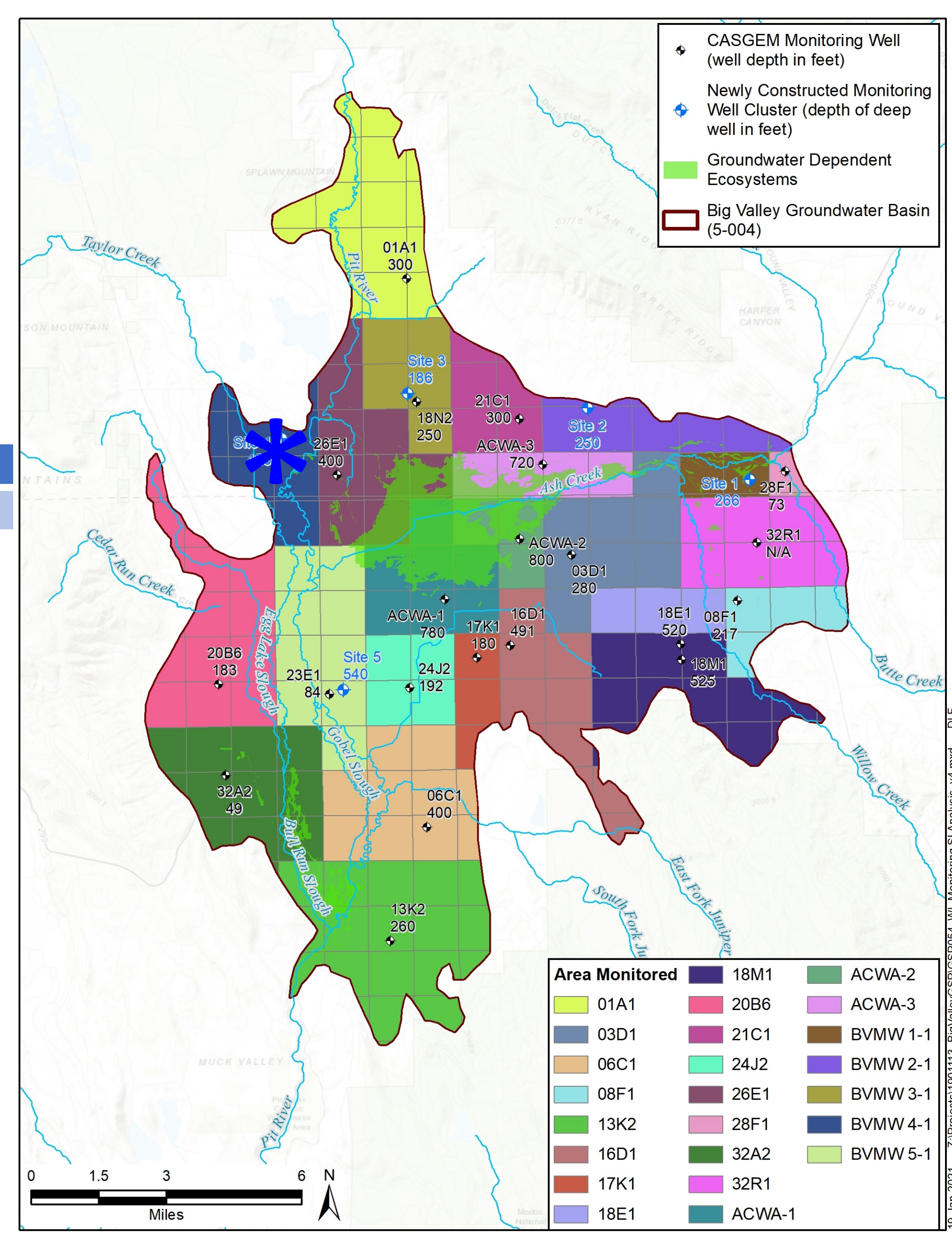
Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Yes

Other Pertinent Information

Distance From Nearest Perennial Stream	0.6 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	0.6 miles
Description of Nearest GDE	Pit River

Notes:



BVMW 4-4 Sustainability Indicator Analysis

Date: 1/18/2021

Well Information

Well ID	000162-BVMW 4-4
Alternate Name	BVMW 4-4
State Number	-
CASGEM ID	-

Well Location

County	Modoc
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry

Location	Lat:	41.2035
	Long:	-121.1578
Well Depth		100 ft
Ground Surface Elevation		4161.65 ft
Ref. Point Elevation		4161.32 ft
Screen Depth Range		73 to 93 ft
Screen Elevation Range		4088 to 4068 ft
Principal Aquifer		-

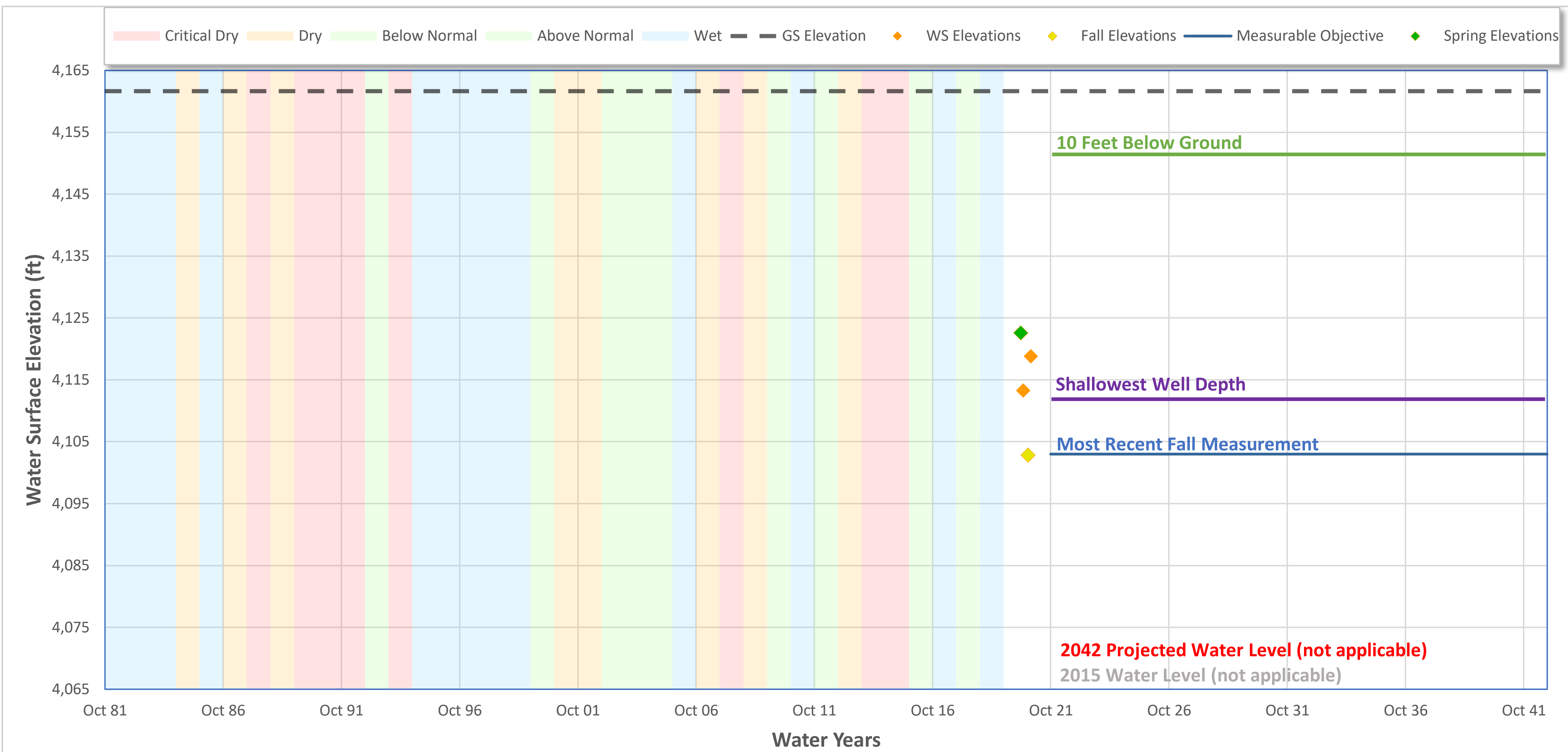
Well Period of Record

Period-of-Record		2020..2021
WS Elev-Range	Min:	4102.9 ft
	Max	4122.6 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4103 ft
	Max	4123 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4123 ft
	Fall:	4103 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,103.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	22	50	4112
Production (Ag)	8	305	3857

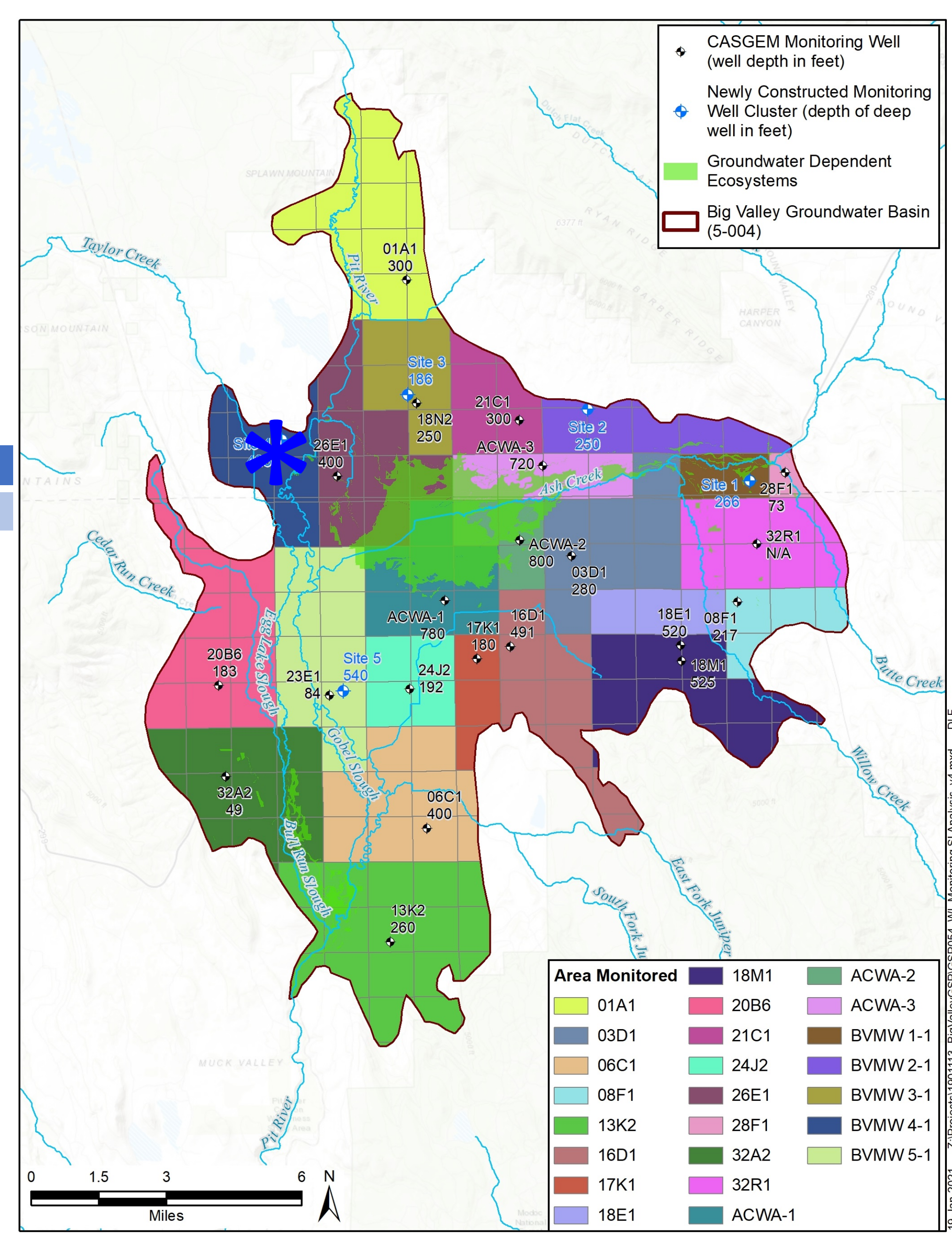
Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Yes

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	0.6 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	0.6 miles
Description of Nearest GDE	Pit River



BVMW 5-1 Sustainability Indicator Analysis

Date: 1/18/2021

Well Information

Well ID	000143-BVMW 5-1
Alternate Name	BVMW 5-1
State Number	-
CASGEM ID	411219N1211339W001

Well Location

County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry

Location	Lat:	41.1219
	Long:	-121.1339
Well Depth		540 ft
Ground Surface Elevation		4129.05 ft
Ref. Point Elevation		4129.05 ft
Screen Depth Range		485 to 535 ft
Screen Elevation Range		3644 to 3594 ft
Principal Aquifer		-

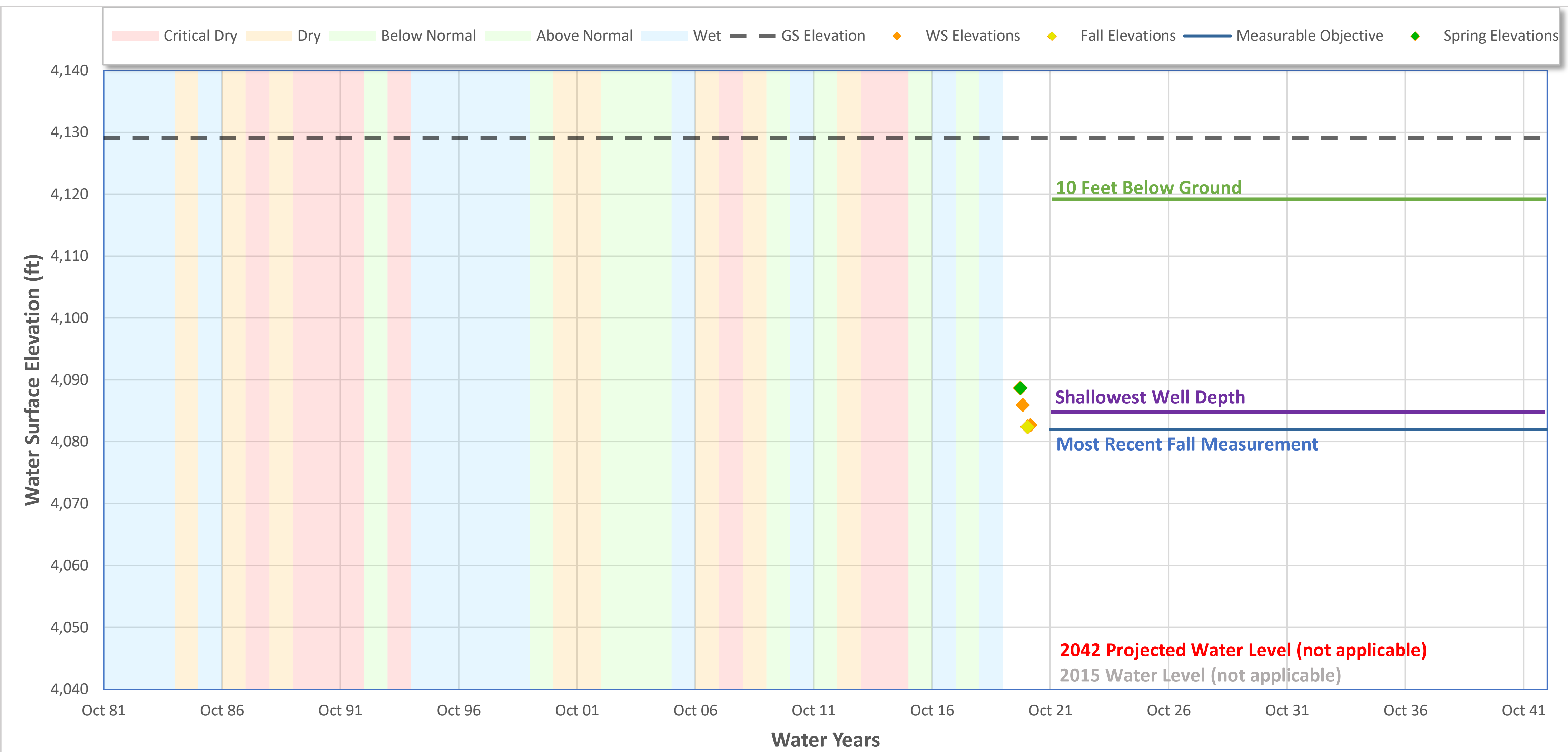
Well Period of Record

Period-of-Record		2020..2021
WS Elev-Range	Min:	4082.4 ft
	Max	4088.7 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4082 ft
	Max	4089 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4089 ft
	Fall:	4082 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,082.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	24	44	4085
Production (Ag)	10	120	4009

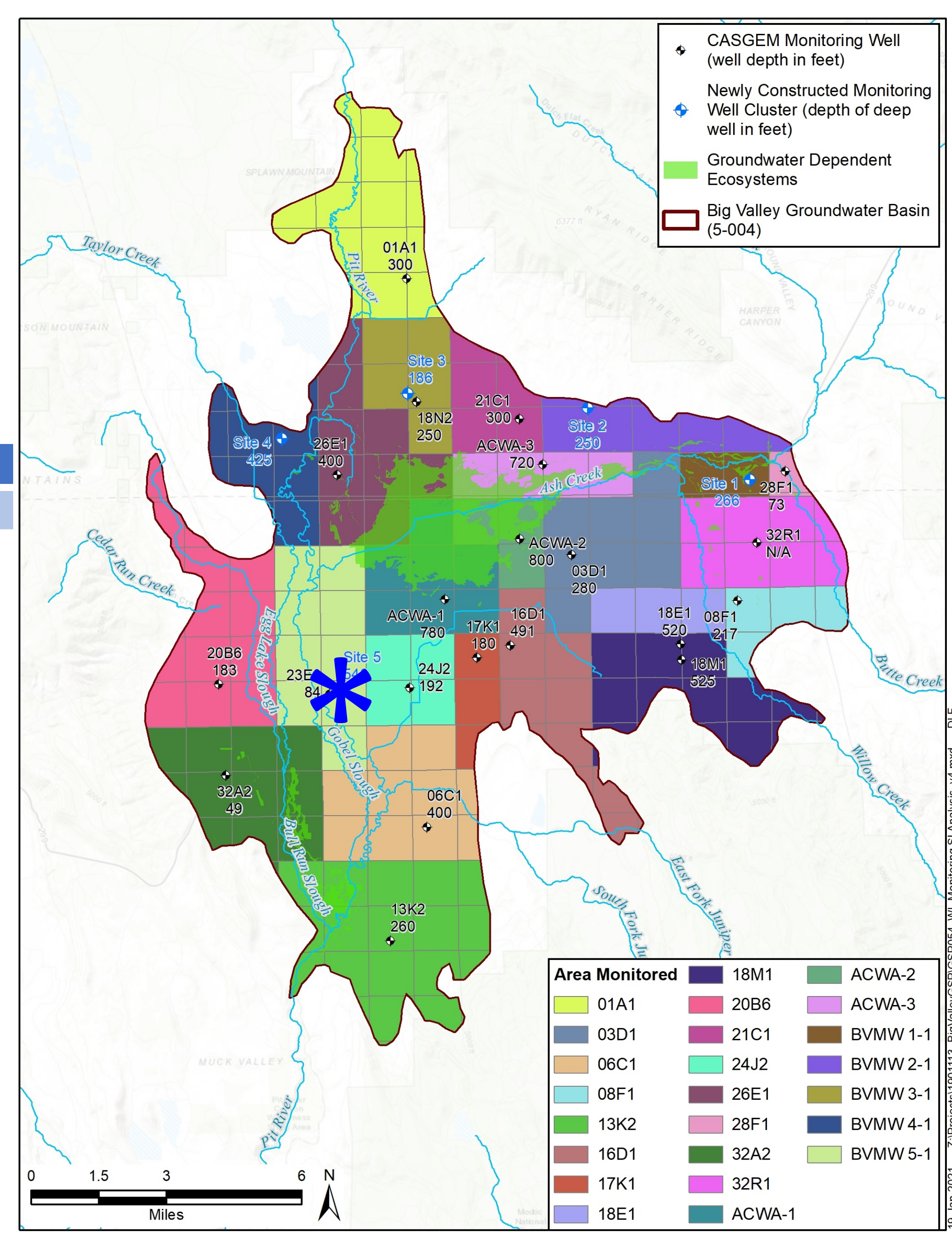
Sustainability Indicators to Consider

Water Levels	Yes
Groundwater Storage	Yes
Water Quality	Maybe
Subsidence	No
Surface Water Depletions	No

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	0.6 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	2 miles
Description of Nearest GDE	Pit River/Bull Run Slough



BVMW 5-2 Sustainability Indicator Analysis

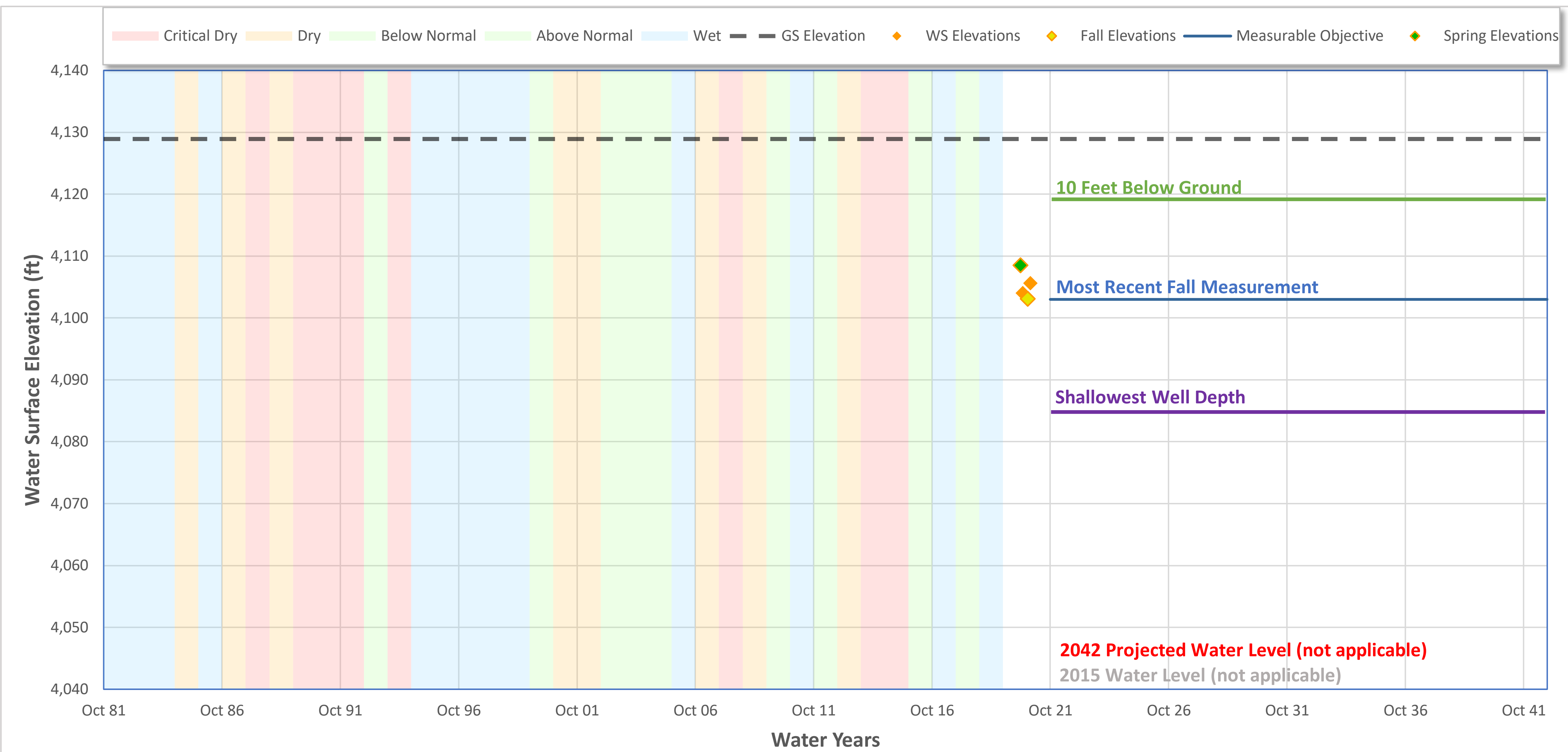
Date: 1/18/2021

Well Information	
Well ID	000144-BVMW 5-2
Alternate Name	BVMW 5-2
State Number	-
CASGEM ID	411220N1211339W001
Well Location	
County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-
Well Type Information	
Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry		
Location	Lat:	41.1220
	Long:	-121.1339
Well Depth		115 ft
Ground Surface Elevation		4128.92 ft
Ref. Point Elevation		4128.92 ft
Screen Depth Range		65 to 115 ft
Screen Elevation Range		4064 to 4014 ft
Principal Aquifer		-
Well Period of Record		
Period-of-Record		2020..2021
WS Elev-Range	Min:	4103.1 ft
	Max	4108.5 ft

Trend Analysis		
Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



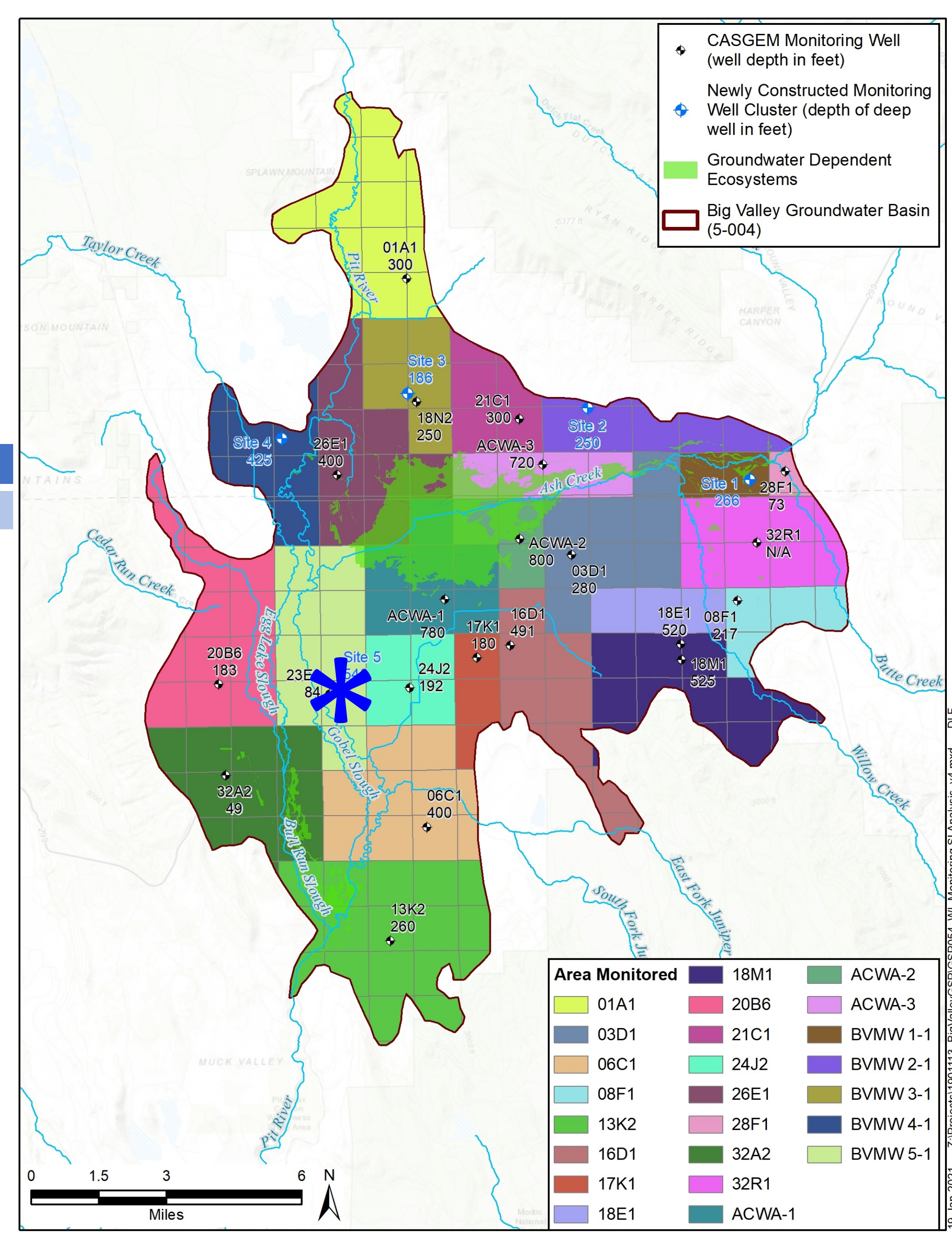
Sustainability Indicator Considerations

Observed WS Elevations		
Parameter		**Value**
WS Elevation Range	Min:	4103 ft
	Max	4109 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4109 ft
	Fall:	4103 ft

Trend Projections		
Year	**Trend 1-Fall**	**Trend 2-Spring**
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,103.0 ft	Most recent Fall measurement



Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	24	44	4085
Production (Ag)	10	120	4009

Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Yes

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	0.6 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	2 miles
Description of Nearest GDE	Pit River/Bull Run Slough

BVMW 5-3 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000145-BVMW 5-3
Alternate Name	BVMW 5-3
State Number	-
CASGEM ID	411212N1211366W001

Well Location

County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry

Location	Lat:	41.1212
	Long:	-121.1366
Well Depth		85 ft
Ground Surface Elevation		4131.73 ft
Ref. Point Elevation		4131.73 ft
Screen Depth Range		65 to 85 ft
Screen Elevation Range		4064 to 4044 ft
Principal Aquifer		-

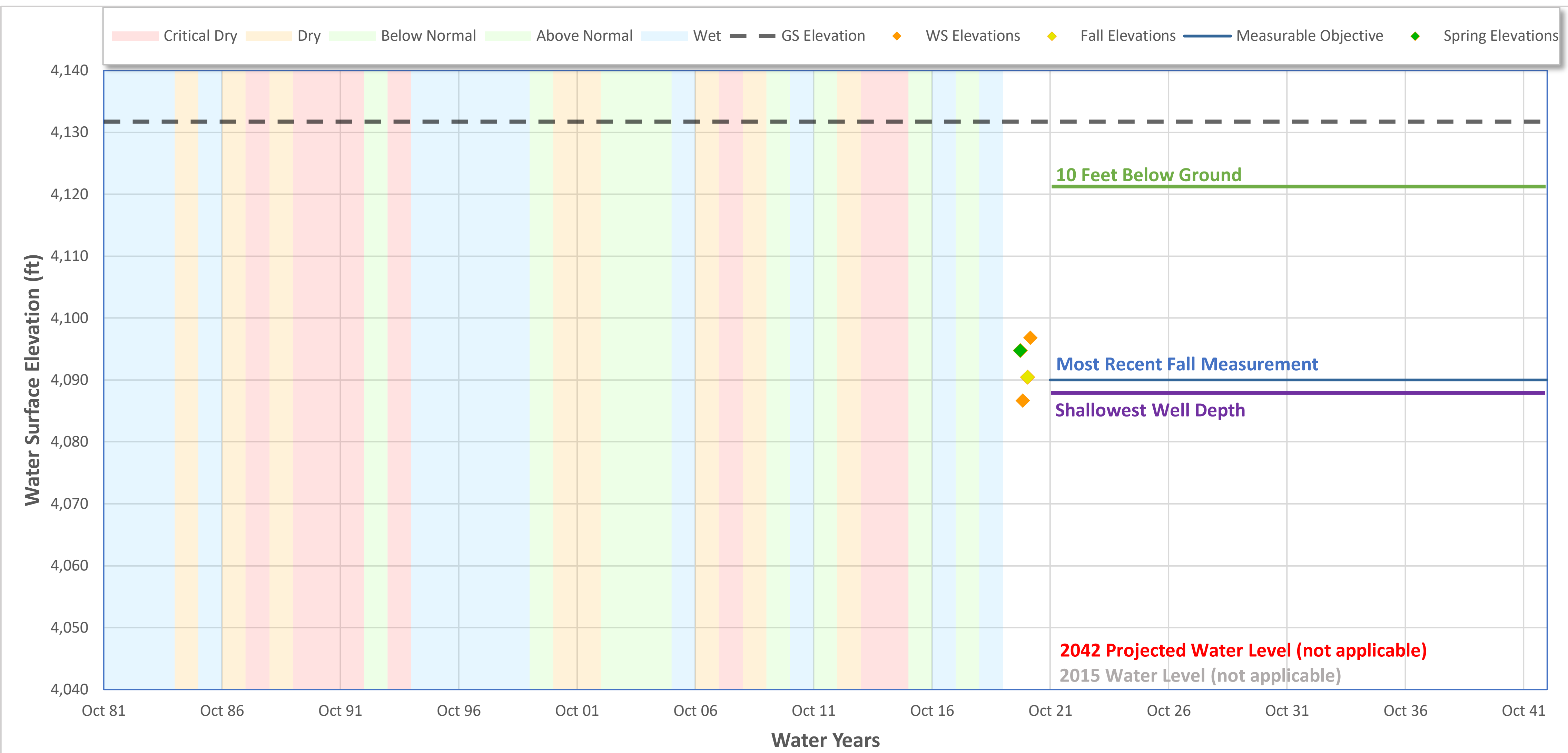
Well Period of Record

Period-of-Record		2020..2021
WS Elev-Range	Min:	4086.7 ft
	Max	4096.9 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4087 ft
	Max	4097 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4095 ft
	Fall:	4090 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,090.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	24	44	4088
Production (Ag)	10	120	4012

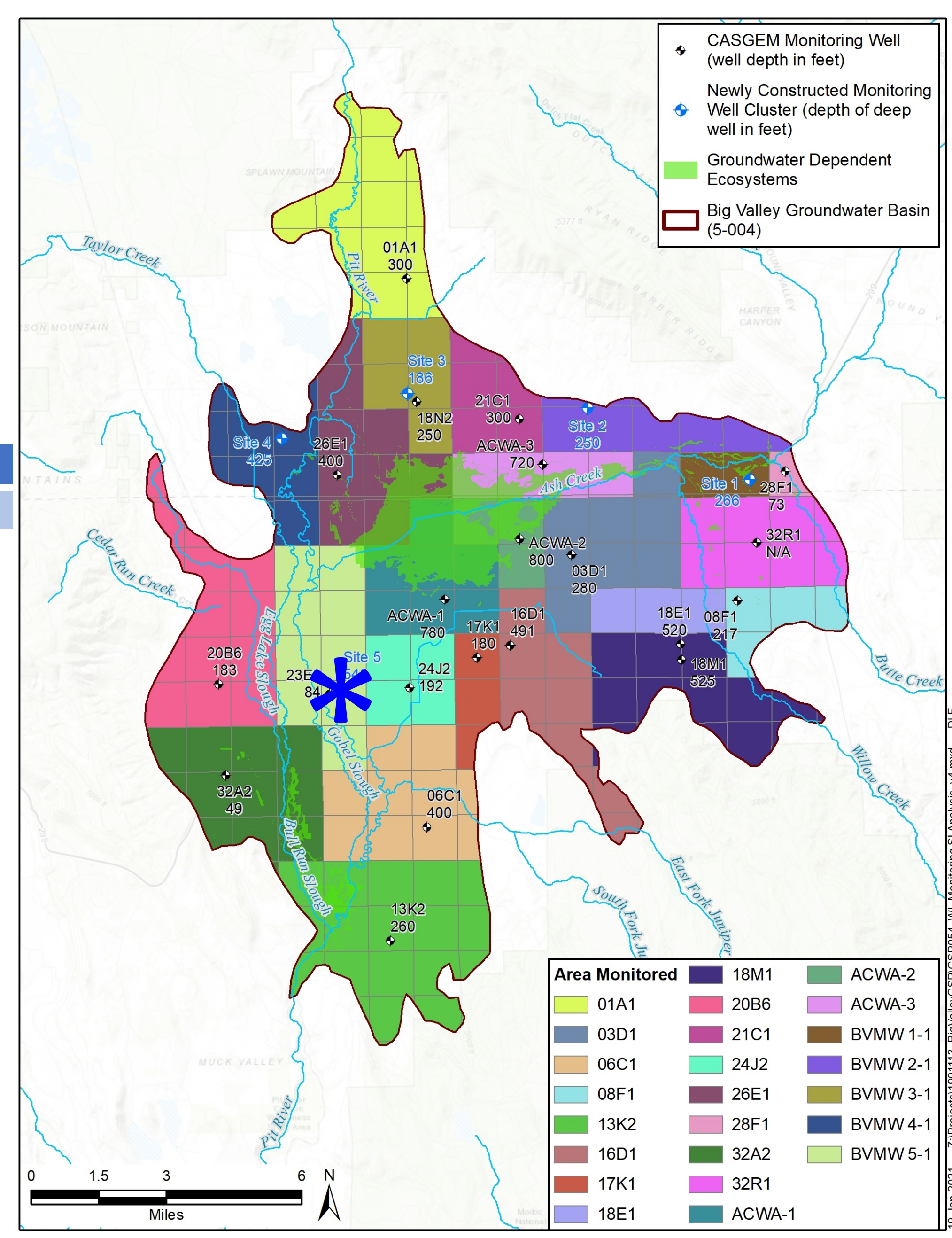
Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Yes

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	0.6 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	2 miles
Description of Nearest GDE	Pit River/Bull Run Slough



BVMW 5-4 Sustainability Indicator Analysis

Date:	1/18/2021

Well Information

Well ID	000146-BVMW 5-4
Alternate Name	BVMW 5-4
State Number	-
CASGEM ID	411206N1211340W001

Well Location

County	Lassen
Basin	BIG VALLEY
Sub-Basin	-
Management Area	-
Proveyor Agency	-

Well Type Information

Well Type	Monitoring
Well Use	Observation
Completion Type	Single/Cluster

Well Coordinates/Geometry

Location	Lat:	41.1206
	Long:	-121.1340
Well Depth		90 ft
Ground Surface Elevation		4130.23 ft
Ref. Point Elevation		4130.23 ft
Screen Depth Range		70 to 90 ft
Screen Elevation Range		4062 to 4042 ft
Principal Aquifer	-	

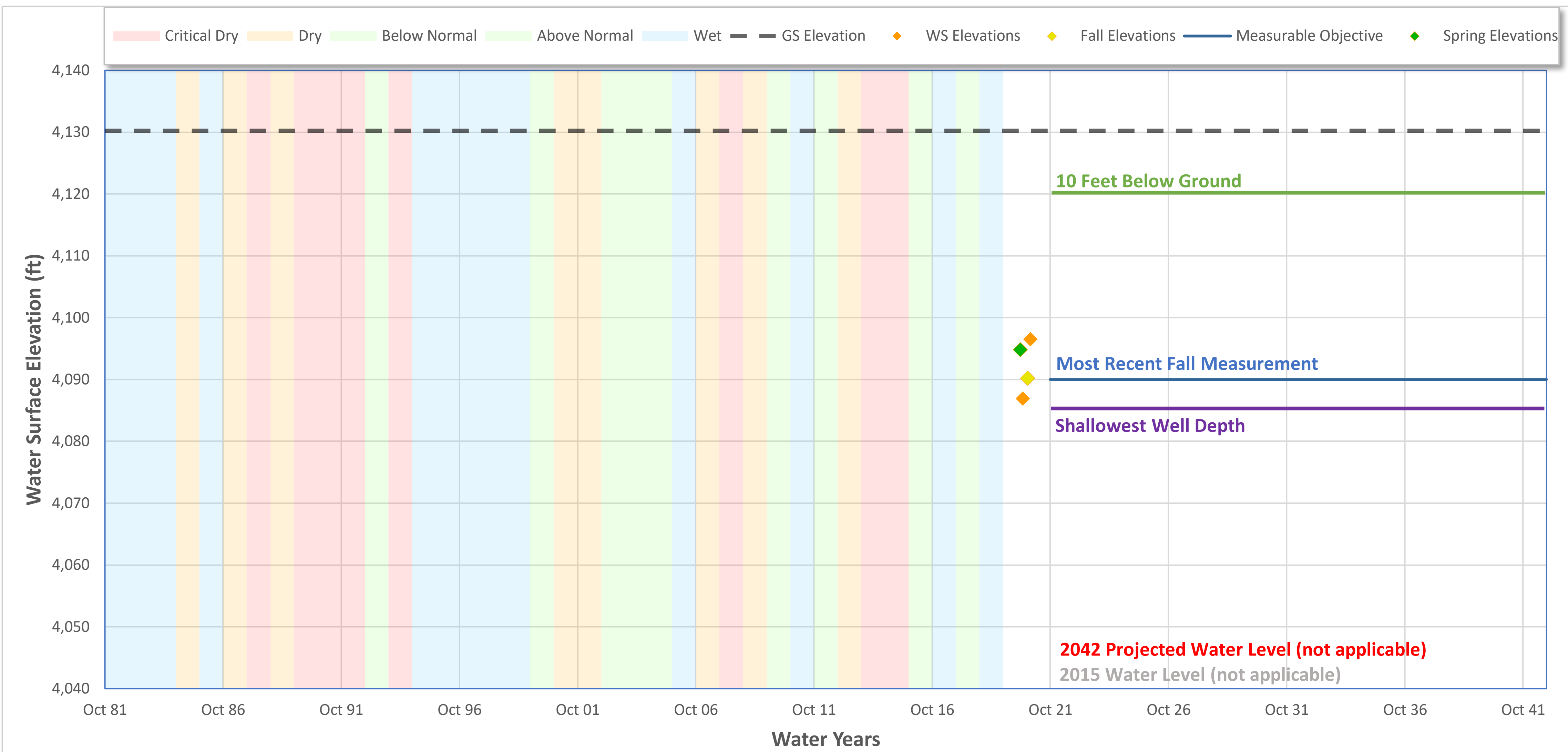
Well Period of Record

Period-of-Record		2020..2021
WS Elev-Range	Min:	4087.0 ft
	Max	4096.6 ft

Trend Analysis

Seasonal Data Method		Apr1/Oct1
Show Trend 1		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-
Show Trend 2		None
Date Range	Start WY:	2000
	End WY:	2021
Extend Trend Line		Yes
Trend Results	Slope	-

Water Surface Elevation (WSE) Hydrograph



Sustainability Indicator Considerations

Observed WS Elevations

Parameter		Value
WS Elevation Range	Min:	4087 ft
	Max	4097 ft
2015 WS Elevations	Spring:	-
	Fall:	-
Most Recent WS Elev	Spring:	4095 ft
	Fall:	4090 ft

Trend Projections

Year	Trend 1-Fall	Trend 2-Spring
2022	-	-
2027	-	-
2032	-	-
2037	-	-
2042	-	-
2047	-	-

Sustainability Indicator Settings

Key	Threshold Type	Effect. Yr.	Value	Description
MO	Measureable Objective	2022	4,090.0 ft	Most recent Fall measurement

Well Depths Within Area

Well Type	Number of Wells	Shallowest Depth (feet bgs)	Shallowest Elevation (feet msl)
Domestic	24	44	4086
Production (Ag)	10	120	4010

Sustainability Indicators to Consider

Water Levels	No
Groundwater Storage	No
Water Quality	No
Subsidence	No
Surface Water Depletions	Yes

Notes:

Other Pertinent Information

Distance From Nearest Perennial Stream	0.6 miles
Name of Nearest Perennial Stream	Pit River
Distance From Nearest GDE	2 miles
Description of Nearest GDE	Pit River/Bull Run Slough