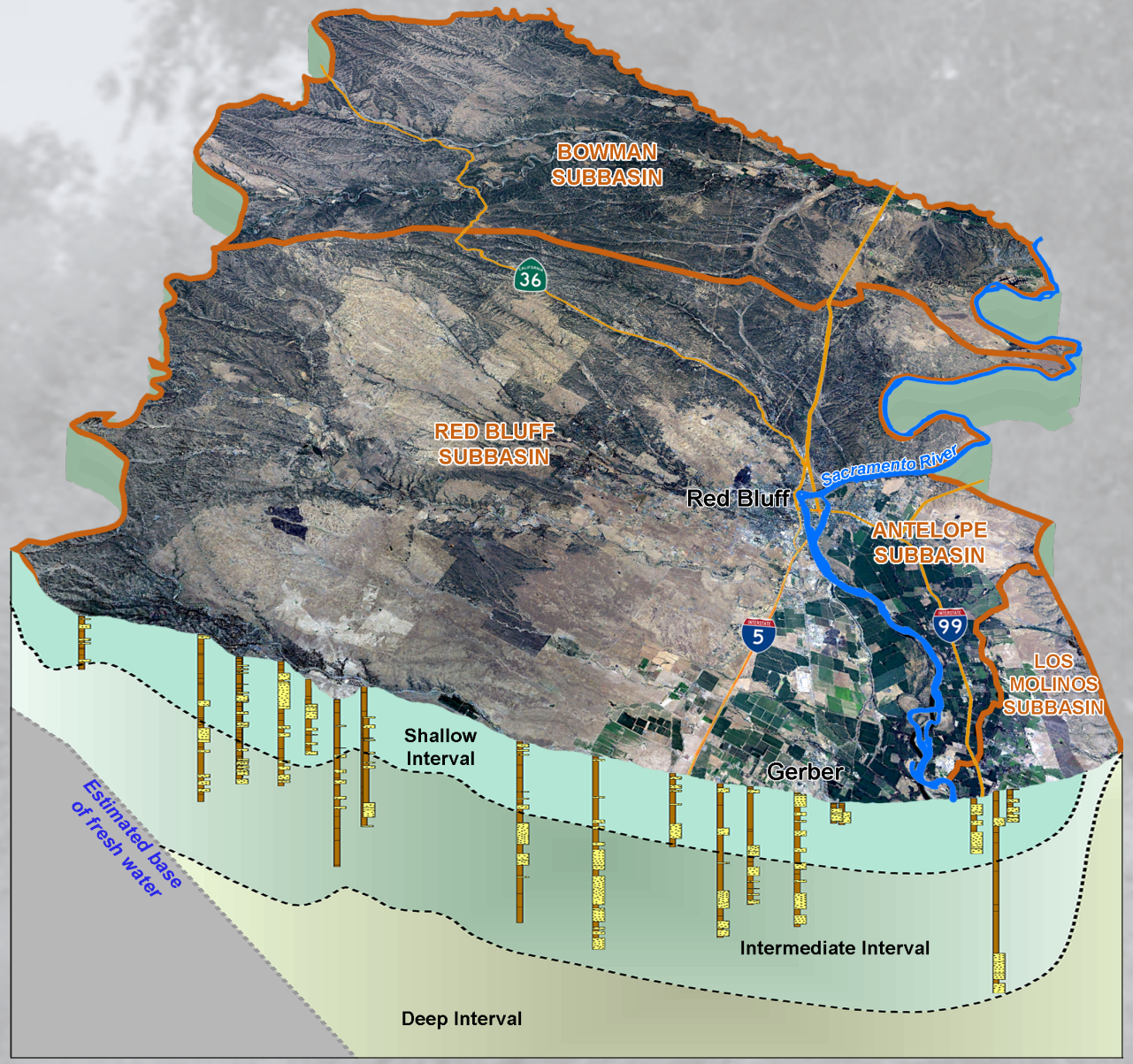
TEHAMA COUNTY
Flood Control and Water Conservation District

Public Webinar

Progress Update On Development of the GSP for the Bowman Subbasin

August 17, 2021



Welcome!

The meeting will begin shortly.

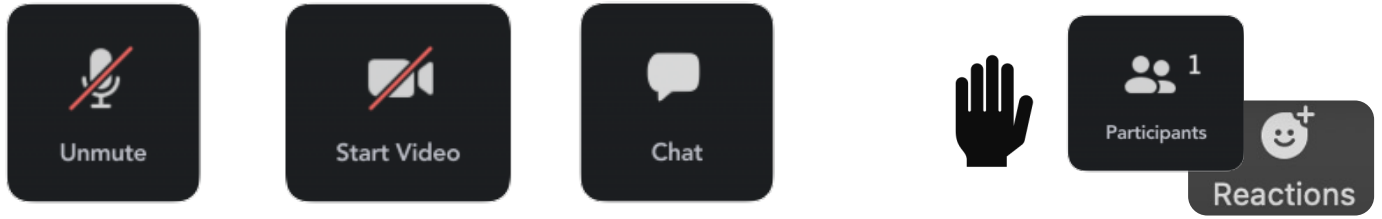
Technical Difficulties?

- Use the Zoom Chat,
- or email Stephanie Horii SHorii@cbi.org,
- or text: 408.768.9394

Instructions for Getting Started:

- ❑ **Use only one audio source** – either computer or phone.
- ❑ **Wear headsets / earbuds** to cut down on ambient noise.
- ❑ **Please MUTE yourself** at all times, except when speaking.
- ❑ **Orient yourself** to Zoom meeting controls:

Unmute/Mute | **Start Video** | **Zoom Chat** | **Raise Hand (via Participants or Reactions)**



How you can participate today:

- **Verbal:** Get into the queue w/ Raise Hand function
- **Written:** Submit questions in Chat Box

COMMON TERMS

SGMA *("Sigma")*: Sustainable Groundwater Management Act • **GSA:** Groundwater Sustainability Agency • **GSP:** Groundwater Sustainability Plan

Zoom Orientation



Introduction to Zoom Webinar Interface and Today's Meeting Process

Stephanie Horii, Consensus Building Institute (CBI)

Note: The meeting will be recorded and posted to the website: TehamaCountyWater.org

Meet the Project Team

Hosts/Co-Hosts: – Project Team

- **Convener: Tehama County GSA**
  - Nichole Bethurem
- **Technical Consultant:** Luhdorff & Scalmanini, Consulting Engineers (LSCE)
  - Eddy Teasdale
- **Facilitation/Tech Support:** Consensus Building Institute (CBI)
  - Stephanie Horii

CBI

Verbal Questions

Raise Hand

If participating through Zoom:

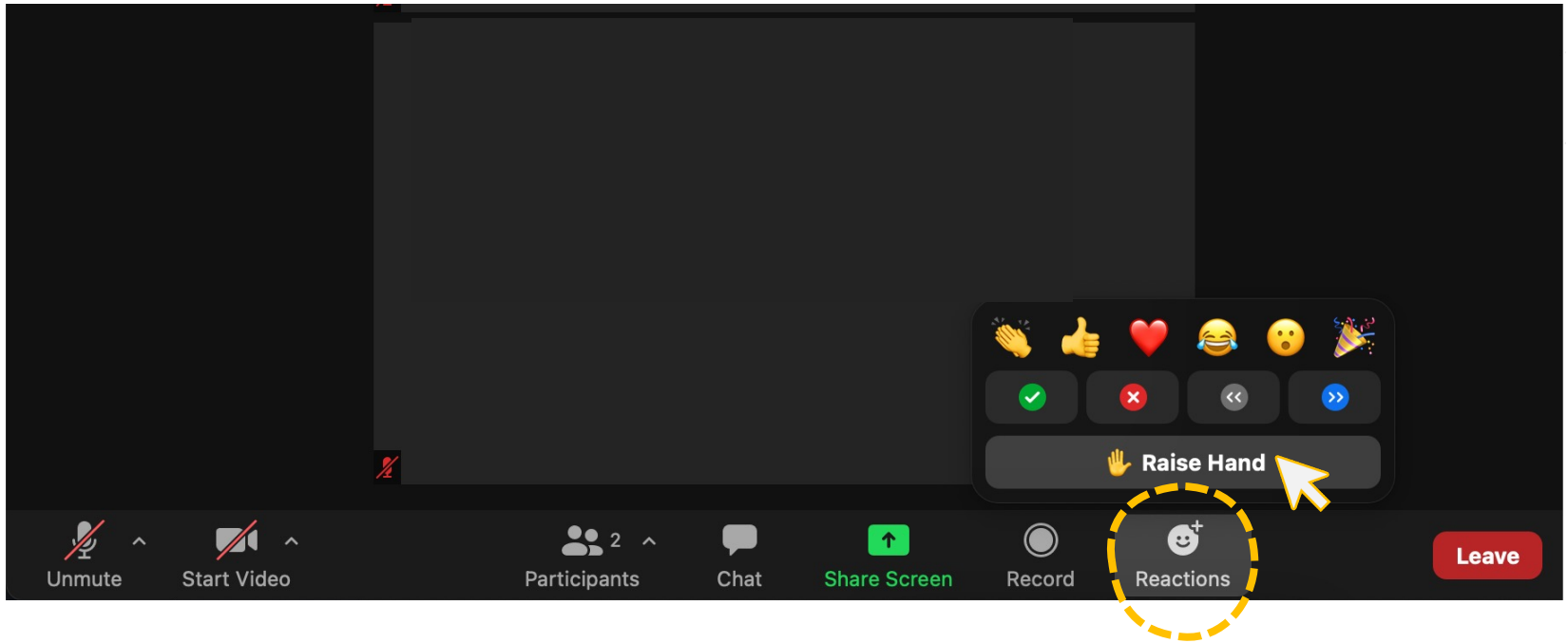
"Raise Hand" to speak

If dialing in by phone only:

Press *9 to "Raise Hand"

We will let you know when it is your turn to speak and can unmute yourself

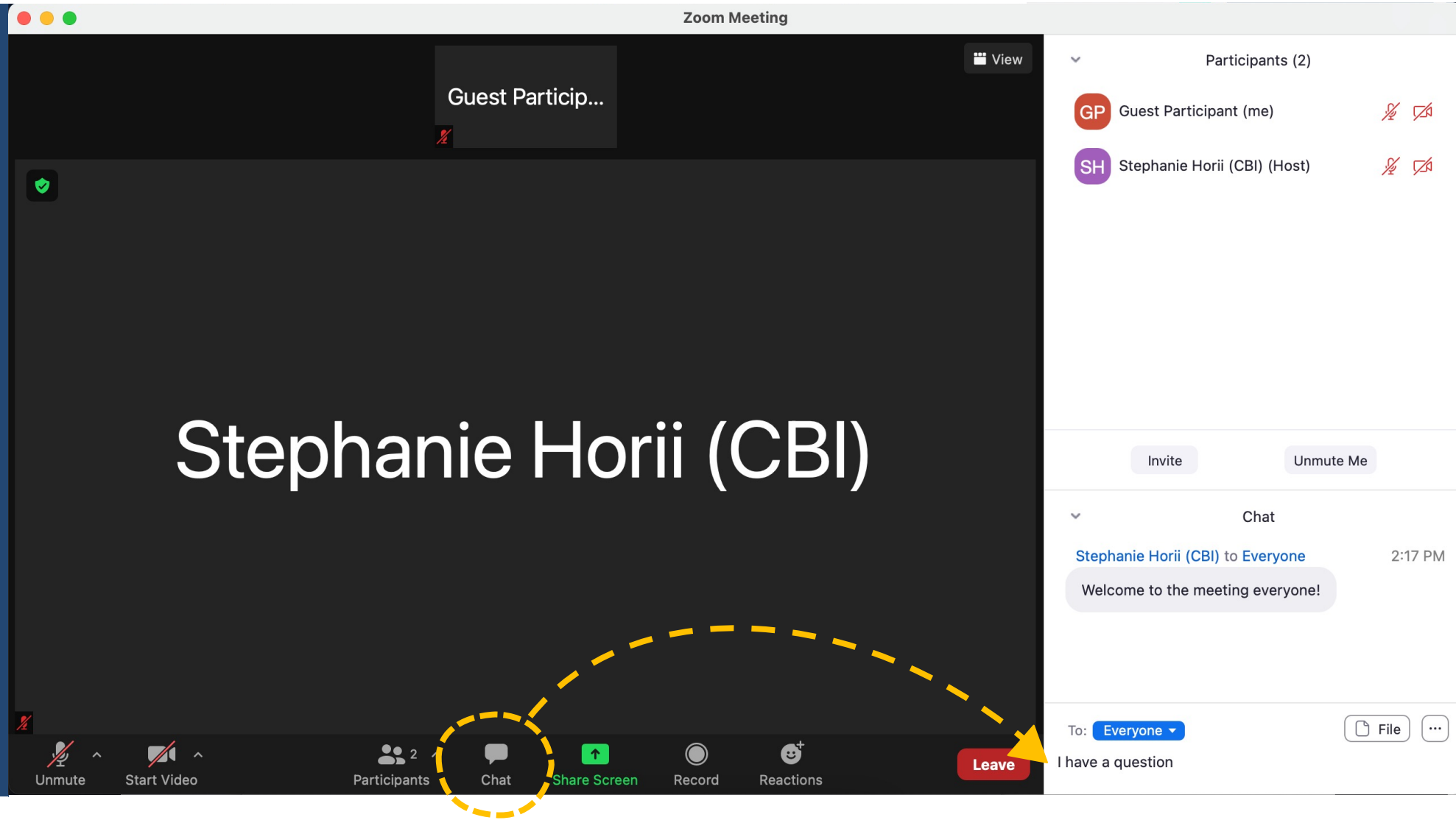
*(Phone-Only Folks – Press *6 to unmute/mute)*



(older versions of Zoom may require using the Participants button to find the Raise Hand icon)

Written Questions

Zoom Chat



Calling in by phone only? email SHorii@cbi.org or text: 408.768.9394

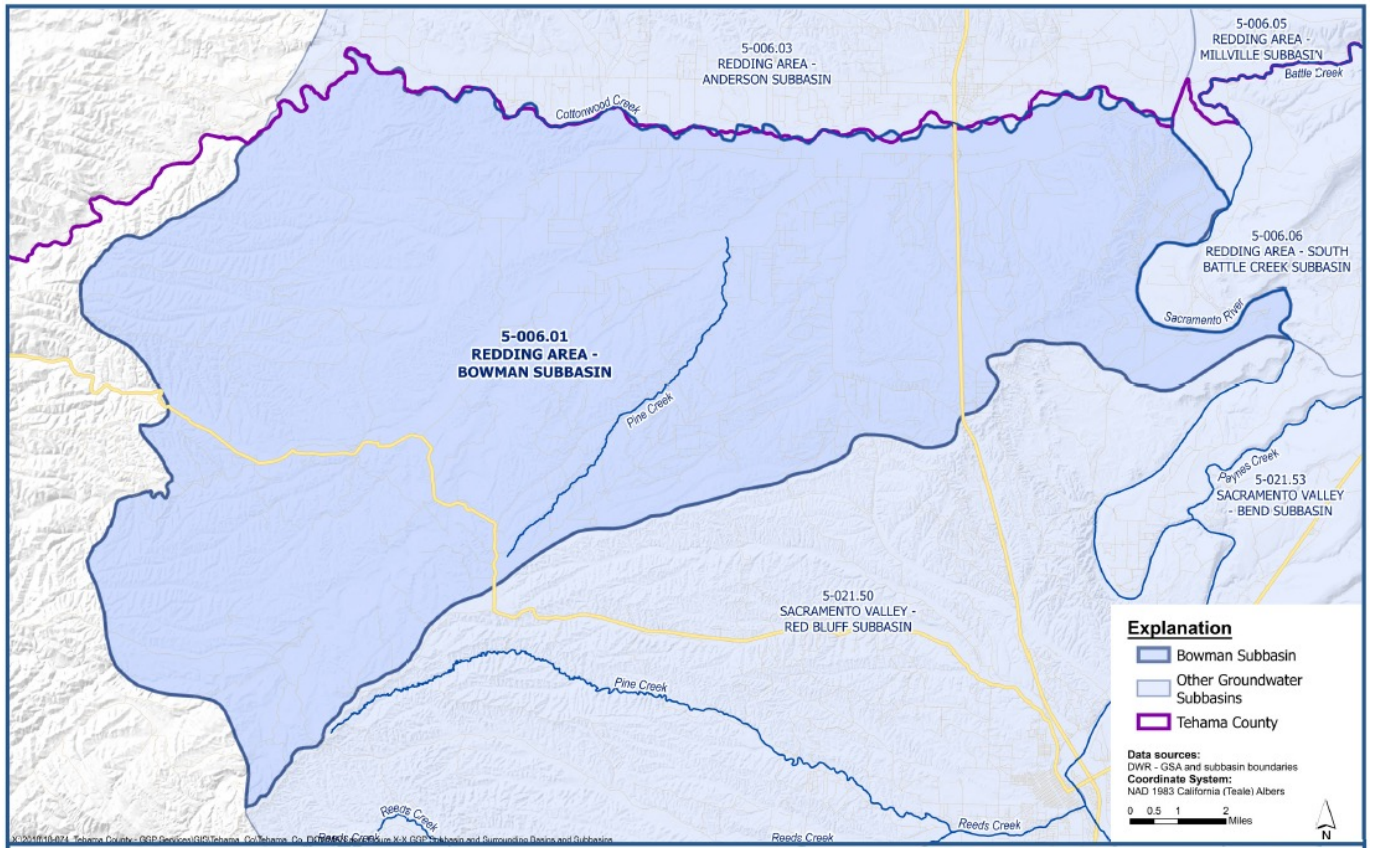
Participating in the Workshop

- “Raise Hand” for Verbal Questions
- Zoom ”Chat” to submit written Questions
- “Start Video” for more interactive experience
- Please keep yourself on MUTE at all times
- Focus on Topic
- Honor Time
- Tech-Adaptive Mind Set

Presentation Outline

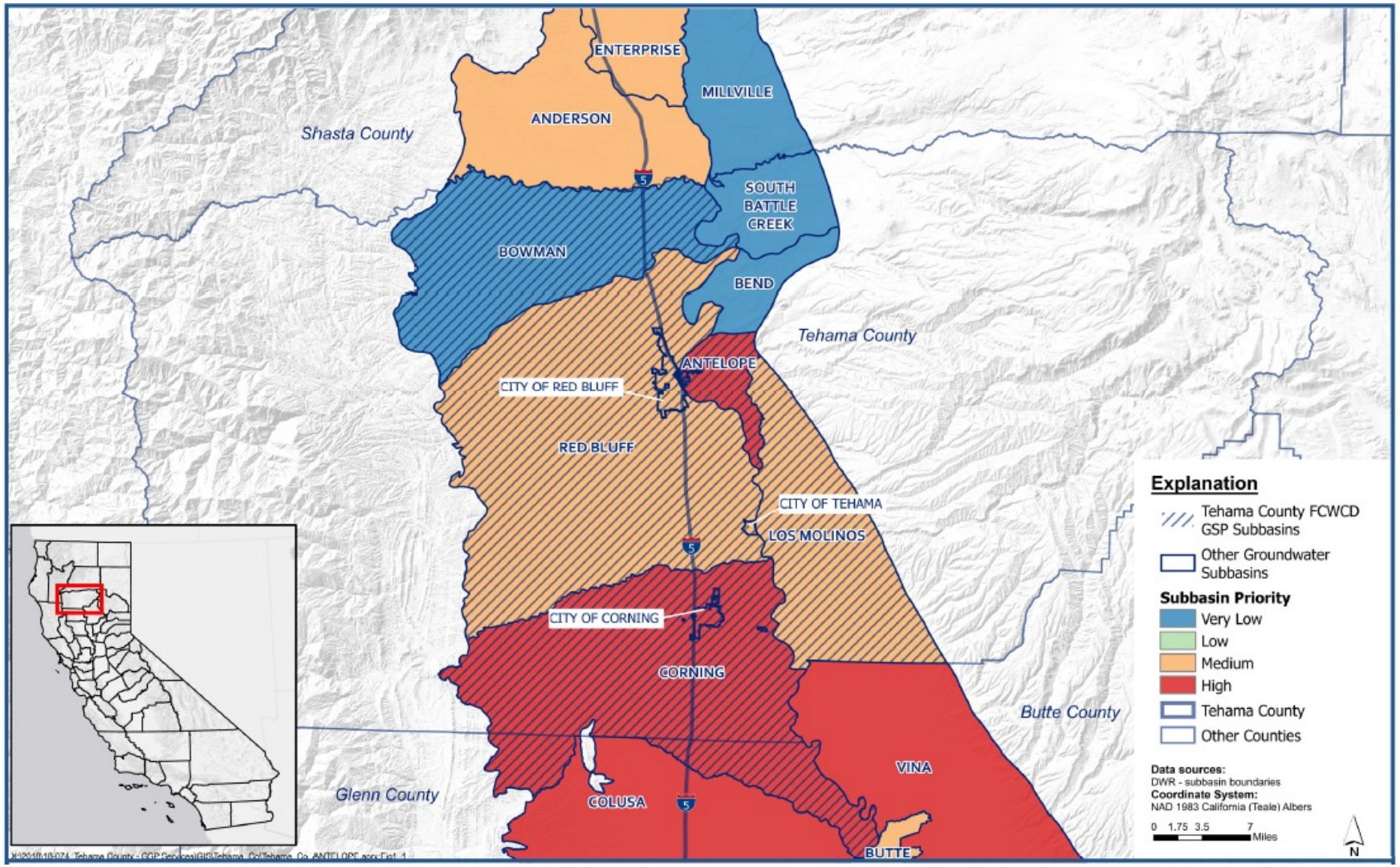
TEHAMA COUNTY
Flood Control and Water Conservation District

- Progress on GSP Chapters
- Water Budgets
- Sustainable Management Criteria (SMC)
- Projects and Management Actions (PMA)
- GSP Implementation Costs
- GSP Schedule and Implementation



Bowman Subbasin

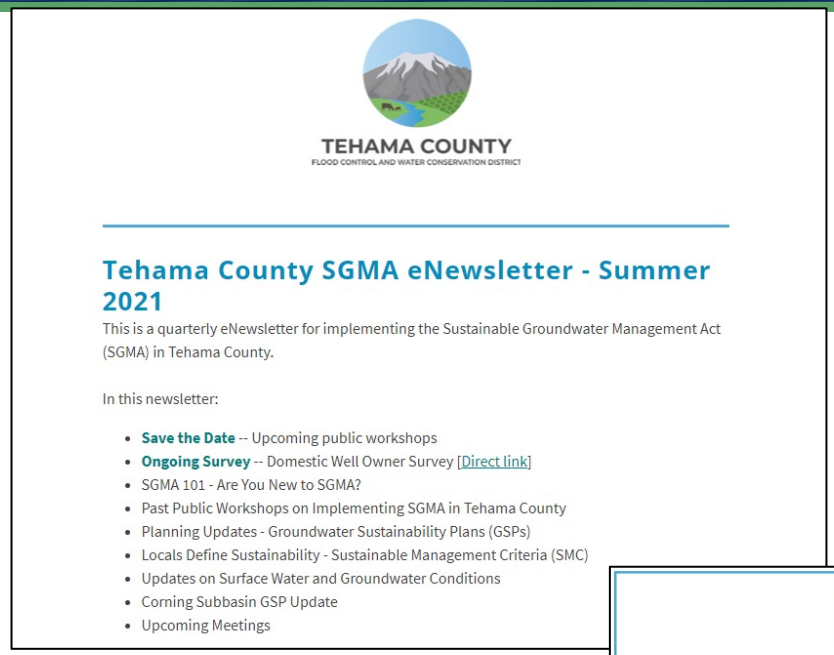
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Flood Control and Water Conservation District



Stakeholder Coordination General Update

TEHAMA COUNTY
Flood Control and Water Conservation District

- October and December 2020
- December 2020 Newsletter
- July 2021 eNewsletter
  - GSP Updates
  - Groundwater/Surface Water Conditions
  - Groundwater Modeling
- Outreach Meetings
  - August 17-25
  - Topics Covered
    - Basin Settings
    - Water Budgets
    - SMC Introduction
    - Modeling
    - Project & Management Actions



TEHAMA COUNTY
FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Tehama County SGMA eNewsletter - Summer 2021

This is a quarterly eNewsletter for implementing the Sustainable Groundwater Management Act (SGMA) in Tehama County.

In this newsletter:

- **Save the Date** -- Upcoming public workshops
- **Ongoing Survey** -- Domestic Well Owner Survey [Direct link]
- SGMA 101 - Are You New to SGMA?
- Past Public Workshops on Implementing SGMA in Tehama County
- Planning Updates - Groundwater Sustainability Plans (GSPs)
- Locals Define Sustainability - Sustainable Management Criteria (SMC)
- Updates on Surface Water and Groundwater Conditions
- Corning Subbasin GSP Update
- Upcoming Meetings



Save the Date | Online Public Meetings

August 17, 19, 23, and 25

The next round of public workshops will occur in August, each starting at 6:00pm. There will be four online, interactive webinars, each one focused on a specific subbasin (see schedule below)

Topics will focus on:
- Sustainable Management Criteria (SMCs)
- Proposed Projects and Management Actions (PMAs)
- Public review schedule for Draft GSPs

How do I attend the online public meeting(s)?
Follow the link(s) below to register for the subbasin-specific meetings:

- August 17 - Bowman Subbasin - https://bit.ly/SGMA-Aug17-Bowman
- August 19 - Red Bluff Subbasin - https://bit.ly/SGMA-Aug19-RedBluff
- August 23 - Antelope Subbasin - https://bit.ly/SGMA-Aug23-Antelope
- August 25 - Los Molinos Subbasin - https://bit.ly/SGMA-Aug25-LosMolinos

Note: when you register, you will receive a confirmation email that will include instructions on how to join the webinar, including dial-in-by-phone information.
Webinars will be recorded and posted to the District's website for future viewing.

Visit the website to learn more: TehamaCountyWater.org

Tehama County Subbasins Groundwater Sustainability Plans

TEHAMA COUNTY
Flood Control and Water Conservation District

Describe the Basin Conditions
Plan Area, Subbasin Setting & Water Supplies

What water sources are used in the basin and what are the basin conditions related to those uses?

Define Basin Sustainability
Sustainable Management Criteria & Monitoring

What is sustainable groundwater management?

Develop Projects/Management Actions & Implementation Plans

How can we ensure groundwater sustainability?

Develop & Adopt GSPs
Submit GSP to DWR: January 31, 2022

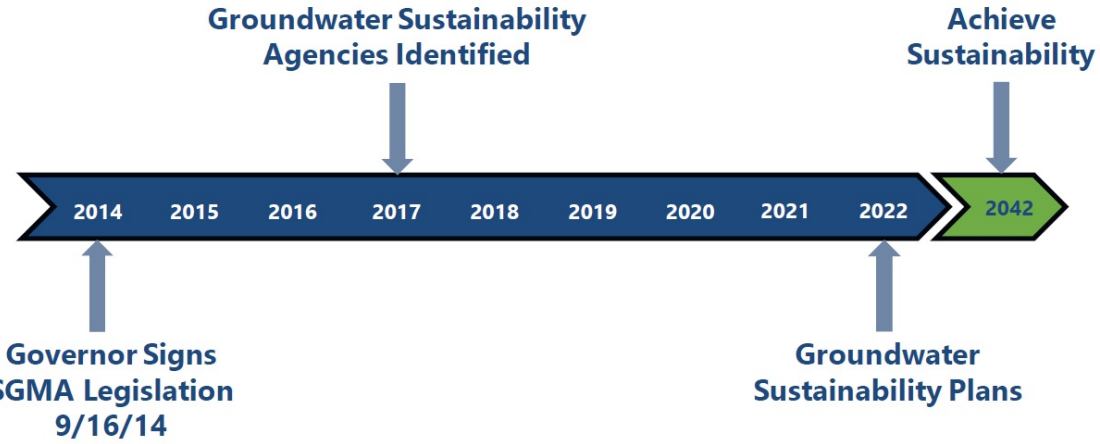
Will this plan meet our sustainability goals?

GSP Chapter Development

TEHAMA COUNTY
Flood Control and Water Conservation District

- Chapter 1 – Introduction (Complete)
- Chapter 2 – (Complete)
  - Chapter 2A – Plan Area
  - Chapter 2B – Basin Setting
  - Chapter 2C – Current & Historical Groundwater Conditions (in progress)
- Chapter 3 – SMCs (Complete)
- Chapter 4 – Projects and Management Actions (In Progress)
- Chapter 5 – GSP Implementation (In Progress)

TIMELINE FOR SUSTAINABLE MANAGEMENT

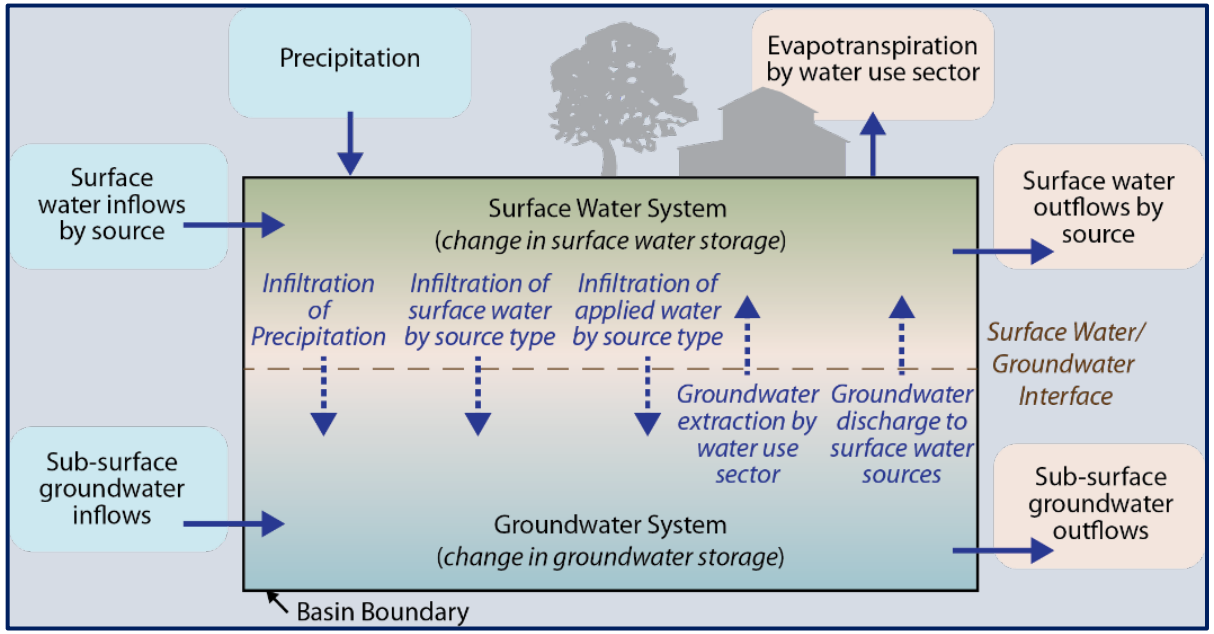


GSP Chapter 2C Water Budget

TEHAMA COUNTY
Flood Control and Water Conservation District

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2.3.7.3 Groundwater System 2-80
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Water Budget Accounting Structure (Source: DWR, 2016a)

GSP Chapter 2C Water Budget

TEHAMA COUNTY
Flood Control and Water Conservation District

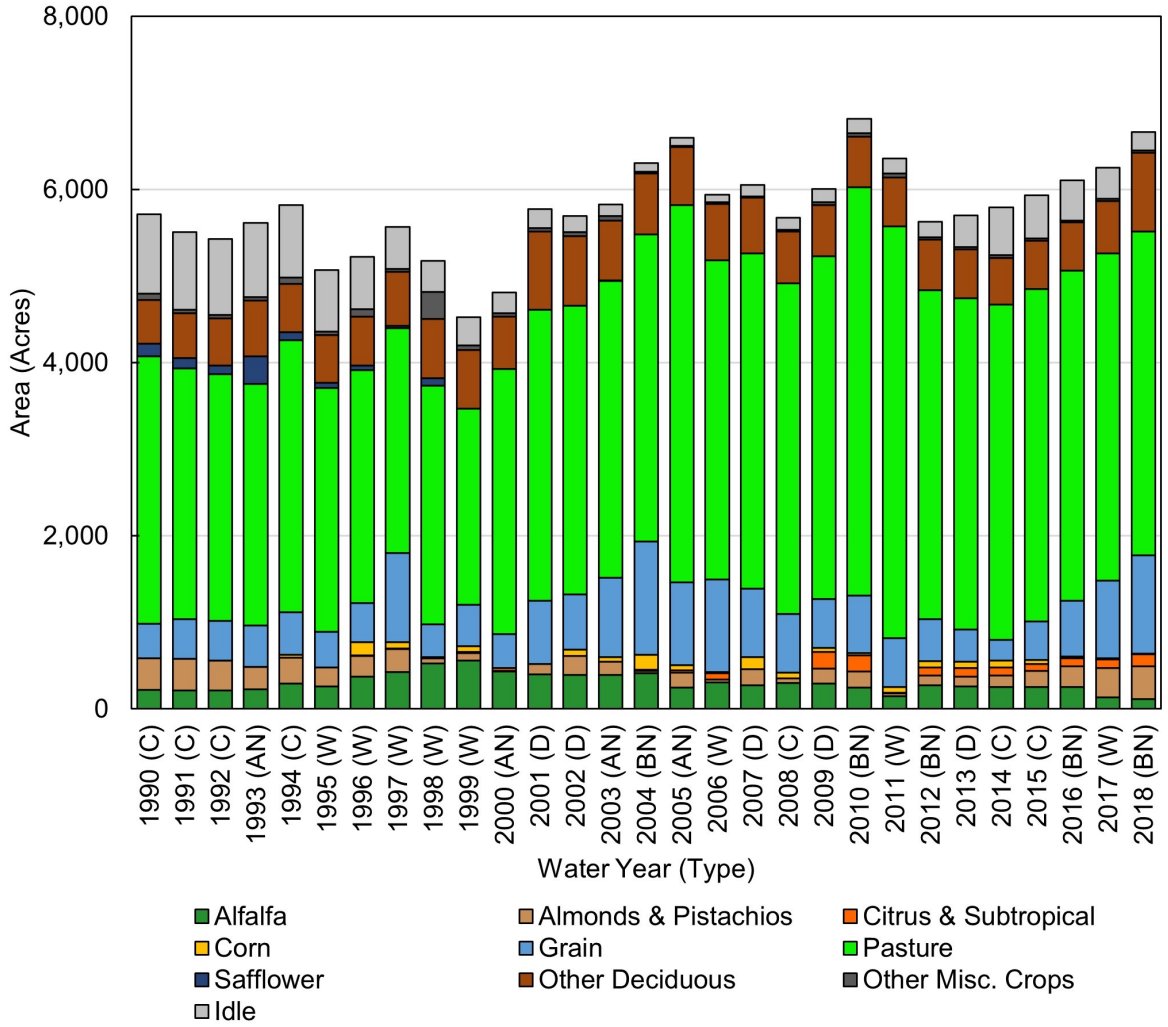


Figure 2-44. Bowman Subbasin Agricultural Land Use Areas

GSP Chapter 2C Water Budget

TEHAMA COUNTY
Flood Control and Water Conservation District

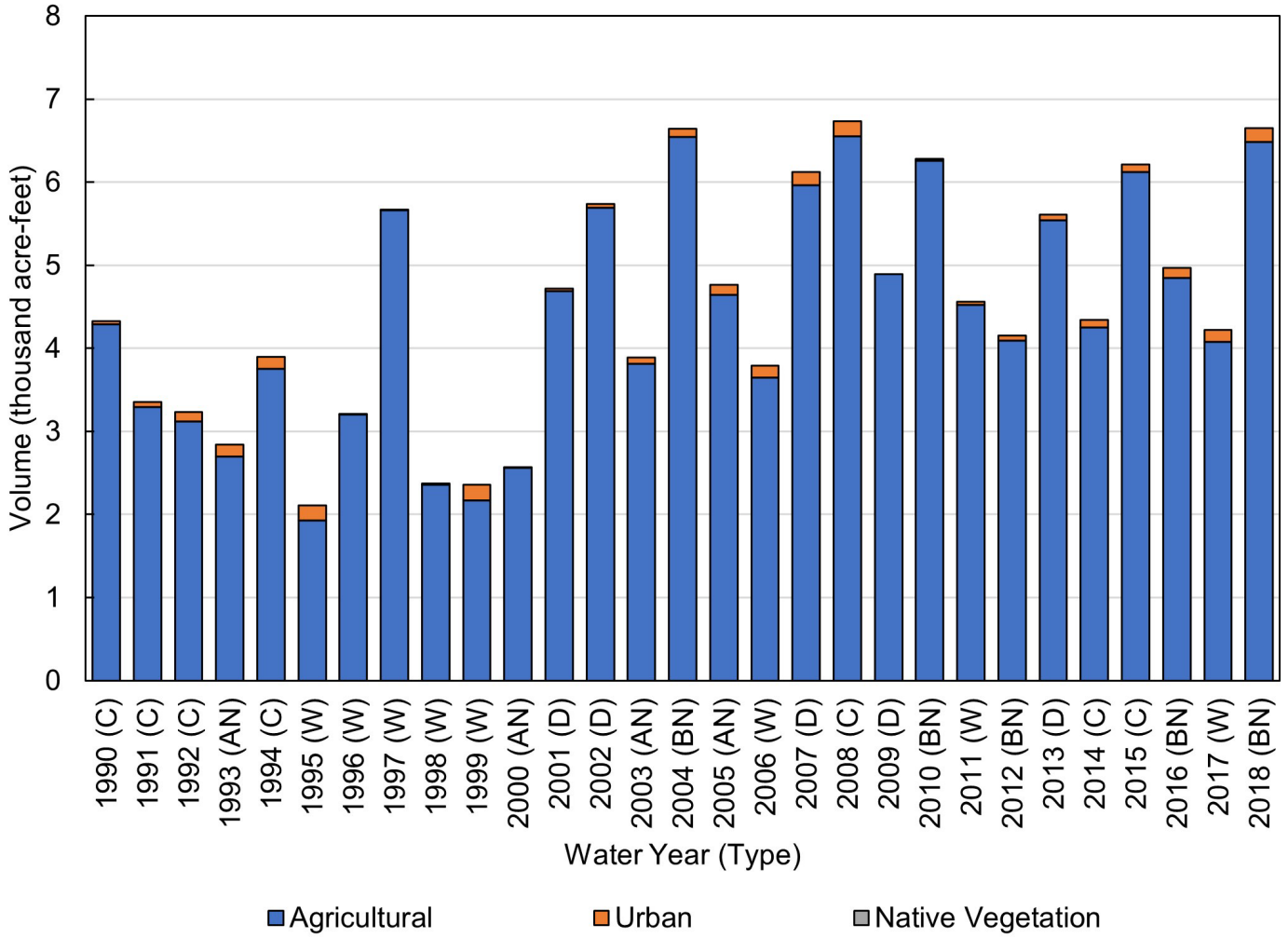


Figure 2-47. Bowman Subbasin Groundwater Pumping, by Water Use Sector

GSP Chapter 2C Water Budget

TEHAMA COUNTY
Flood Control and Water Conservation District

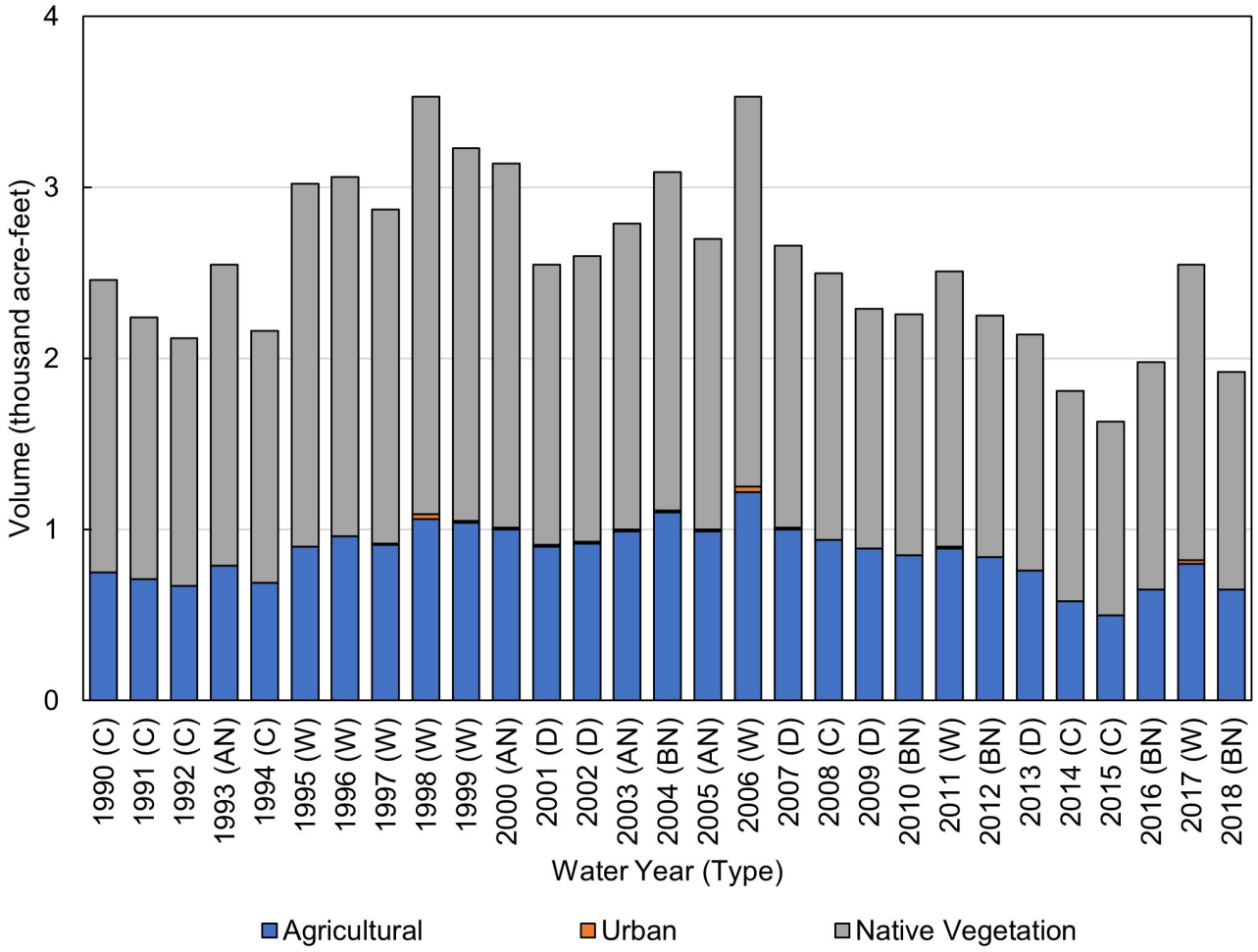


Figure 2-48. Bowman Subbasin Groundwater Uptake, by Water Use Sector

GSP Chapter 2C Water Budget

TEHAMA COUNTY
Flood Control and Water Conservation District

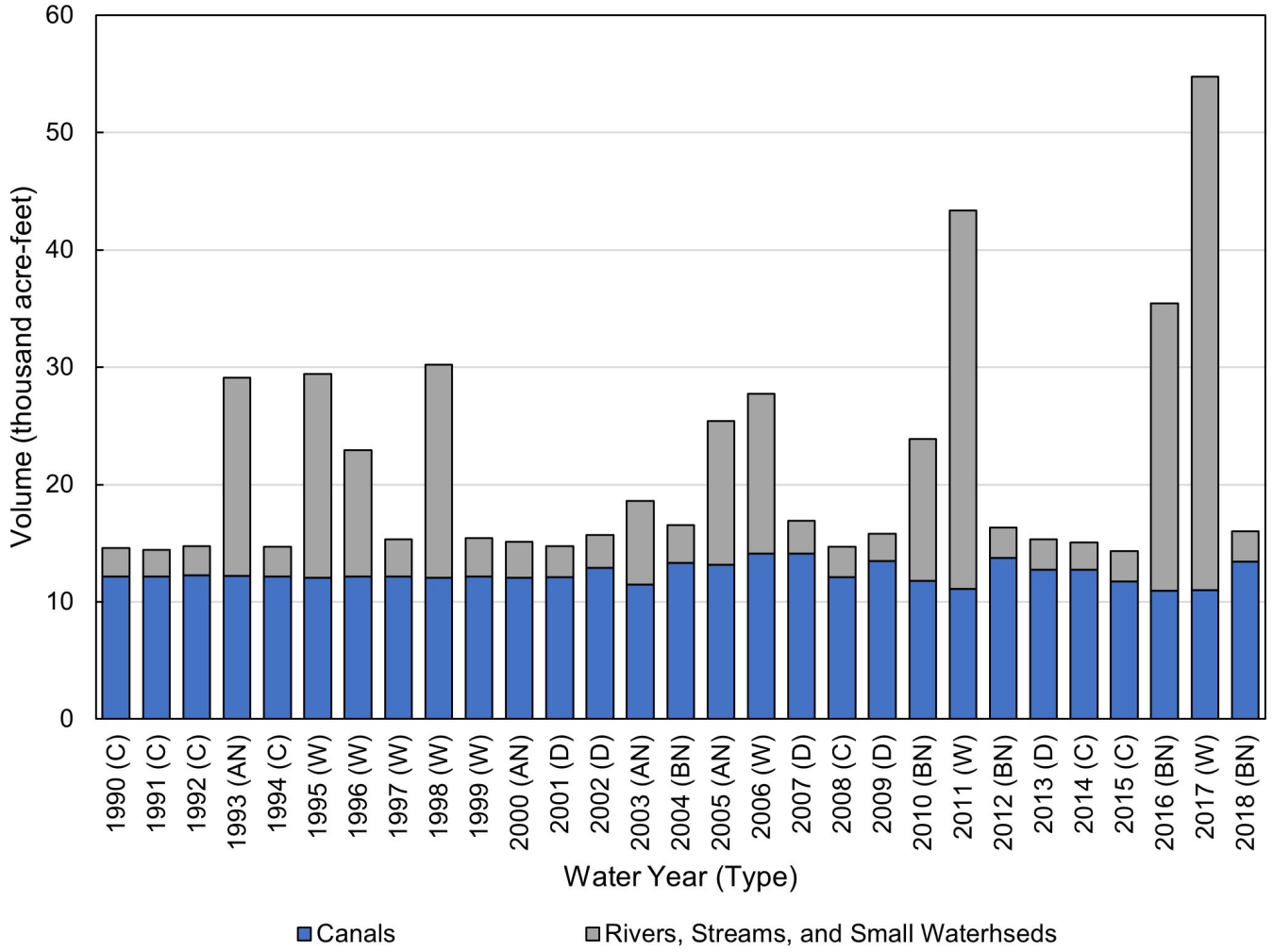


Figure 2-58. Bowman Subbasin Infiltration of Surface Water, by Water Use Sector

GSP Chapter 2C Water Budget

TEHAMA COUNTY
Flood Control and Water Conservation District

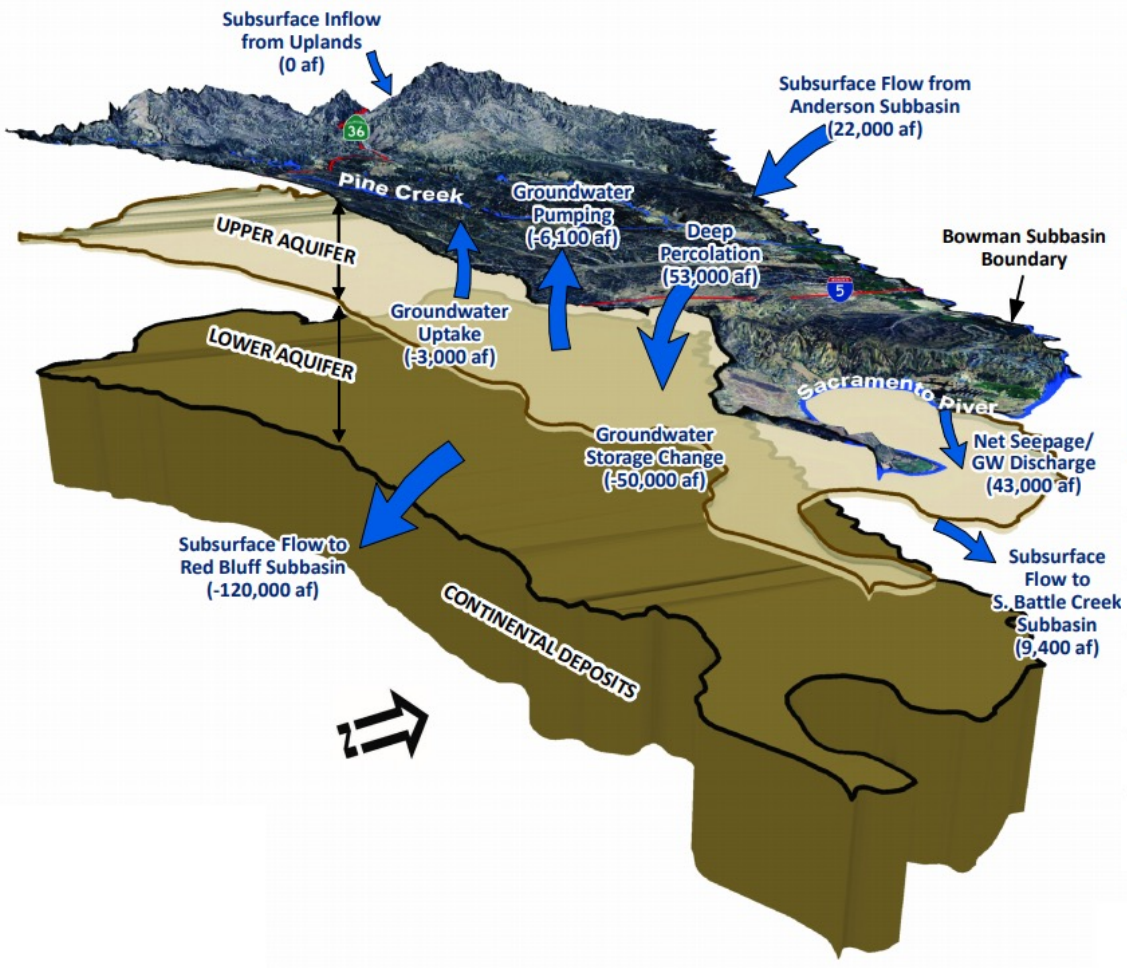


Figure 2-71. Diagram of the Bowman Subbasin Historical Average Annual Water Budget (1990-2018)

Table 2-38. Comparison of Recent GWS Water Budget Periods (acre-feet, rounded)

GWS Water Budget Component	Recent Water Budget Periods				
	Recent 10 Years	Recent 5 Years	Recent 3 Years	Recent 1 Year	Recent 1 Year
	(2009-2018)	(2014-2018)	(2016-2018)	2018	2019
Total Net Seepage	45,100	44,700	51,300	30,100	60,200
Deep Percolation	42,500	42,100	51,400	23,600	71,600
Total Net Subsurface Flows	-80,900	-78,300	-83,900	-80,700	-87,400
Groundwater Extraction (Pumping)	-7,000	-7,100	-6,600	-7,800	-6,000
Groundwater Extraction (Root Uptake)	-2,300	-2,100	-2,300	-1,900	-2,900
Annual Groundwater Storage Change[1]	***-2,700***	***-700***	***9,800***	***-36,700***	***35,600***

[1] Annual storage change volumes rounded to 100 af.

Note: positive values indicate inflows/increasing storage, negative values indicate outflows/decreasing storage.

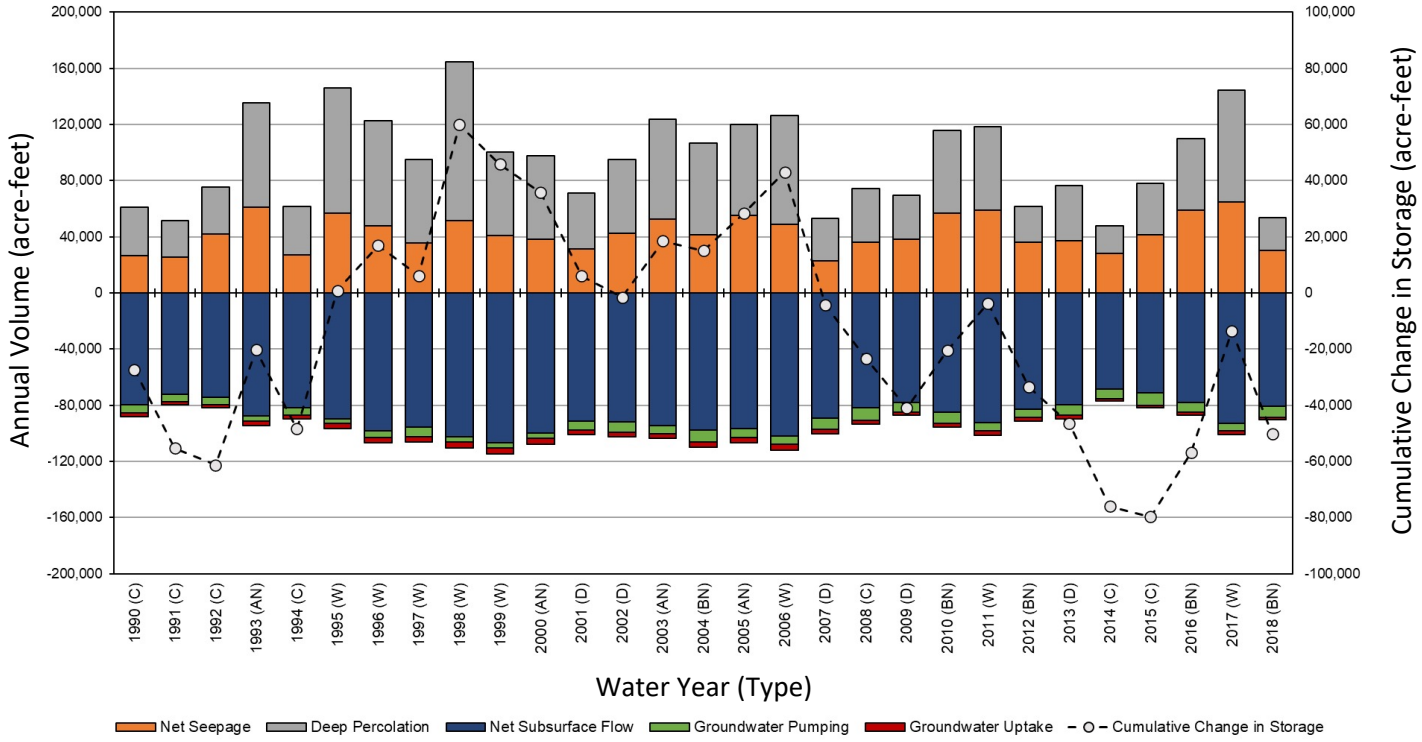
GSP Chapter 2C Water Budget (Historical)

TEHAMA COUNTY
Flood Control and Water Conservation District

Bowman Subbasin Historical Water Budget Summary (acre-feet, rounded)

Water Year (Type)		Net Seepage	Deep Percolation	Net Subsurface Flows	Ground-water Pumping	Ground-water Uptake	Annual Groundwater Storage Change	Cumulative Groundwater Storage Change
1990 (C)		26,000	35,000	-80,000	-5,600	-3,000	-27,000	-27,000
1991 (C)		26,000	26,000	-72,000	-5,100	-2,300	-28,000	-55,000
1992 (C)		42,000	33,000	-75,000	-4,900	-2,200	-6,000	-61,000
1993 (AN)		61,000	75,000	-87,000	-4,100	-3,100	41,000	-20,000
1994 (C)		27,000	34,000	-82,000	-5,300	-2,300	-28,000	-48,000
1995 (W)		57,000	89,000	-90,000	-3,300	-3,300	49,000	910
1996 (W)		48,000	75,000	-98,000	-4,500	-3,600	16,000	17,000
1997 (W)		35,000	60,000	-96,000	-7,000	-3,500	-11,000	6,100
1998 (W)		52,000	110,000	-100,000	-3,600	-4,400	54,000	60,000
1999 (W)		41,000	59,000	-110,000	-3,400	-4,300	-14,000	46,000
2000 (AN)		38,000	59,000	-100,000	-3,800	-4,000	-10,000	36,000
2001 (D)		31,000	40,000	-92,000	-5,900	-3,300	-30,000	6,100
2002 (D)		43,000	53,000	-92,000	-7,200	-3,400	-7,600	-1,500
2003 (AN)		52,000	71,000	-95,000	-5,500	-3,500	20,000	19,000
2004 (BN)		41,000	65,000	-98,000	-8,500	-3,700	-3,500	15,000
2005 (AN)		55,000	65,000	-97,000	-6,300	-3,600	13,000	28,000
2006 (W)		49,000	78,000	-100,000	-5,700	-4,000	15,000	43,000
2007 (D)		23,000	30,000	-89,000	-8,000	-3,100	-47,000	-4,300
2008 (C)		36,000	38,000	-82,000	-8,900	-2,900	-19,000	-23,000
2009 (D)		38,000	31,000	-78,000	-6,900	-2,400	-18,000	-41,000
2010 (BN)		57,000	59,000	-85,000	-7,700	-2,700	21,000	-20,000
2011 (W)		59,000	59,000	-92,000	-6,200	-3,200	17,000	-3,700
2012 (BN)		36,000	26,000	-83,000	-6,000	-2,300	-30,000	-33,000
2013 (D)		37,000	39,000	-80,000	-7,700	-2,300	-13,000	-47,000
2014 (C)		28,000	20,000	-69,000	-6,900	-1,700	-29,000	-76,000
2015 (C)		42,000	37,000	-71,000	-8,800	-1,700	-3,800	-80,000
2016 (BN)		59,000	51,000	-78,000	-6,700	-2,300	23,000	-57,000
2017 (W)		65,000	79,000	-93,000	-5,400	-2,800	43,000	-13,000
2018 (BN)		30,000	24,000	-81,000	-7,800	-1,900	-37,000	-50,000
2019 (W)		60,000	72,000	-87,000	-6,000	-2,900	36,000	-15,000
Average (1990-2018)		43,000	53,000	-88,000	-6,100	-3,000	-1,700	0
1990-2018	W	51,000	76,000	-98,000	-4,900	-3,700	21,000	
	AN	56,000	70,000	-93,000	-5,300	-3,400	25,000	
	BN	47,000	46,000	-84,000	-7,200	-2,500	-590	
	D	34,000	39,000	-86,000	-7,200	-2,900	-23,000	
	C	32,000	32,000	-76,000	-6,500	-2,300	-20,000	

Note: positive values indicate inflows/increasing storage, negative values indicate outflows/decreasing storage.

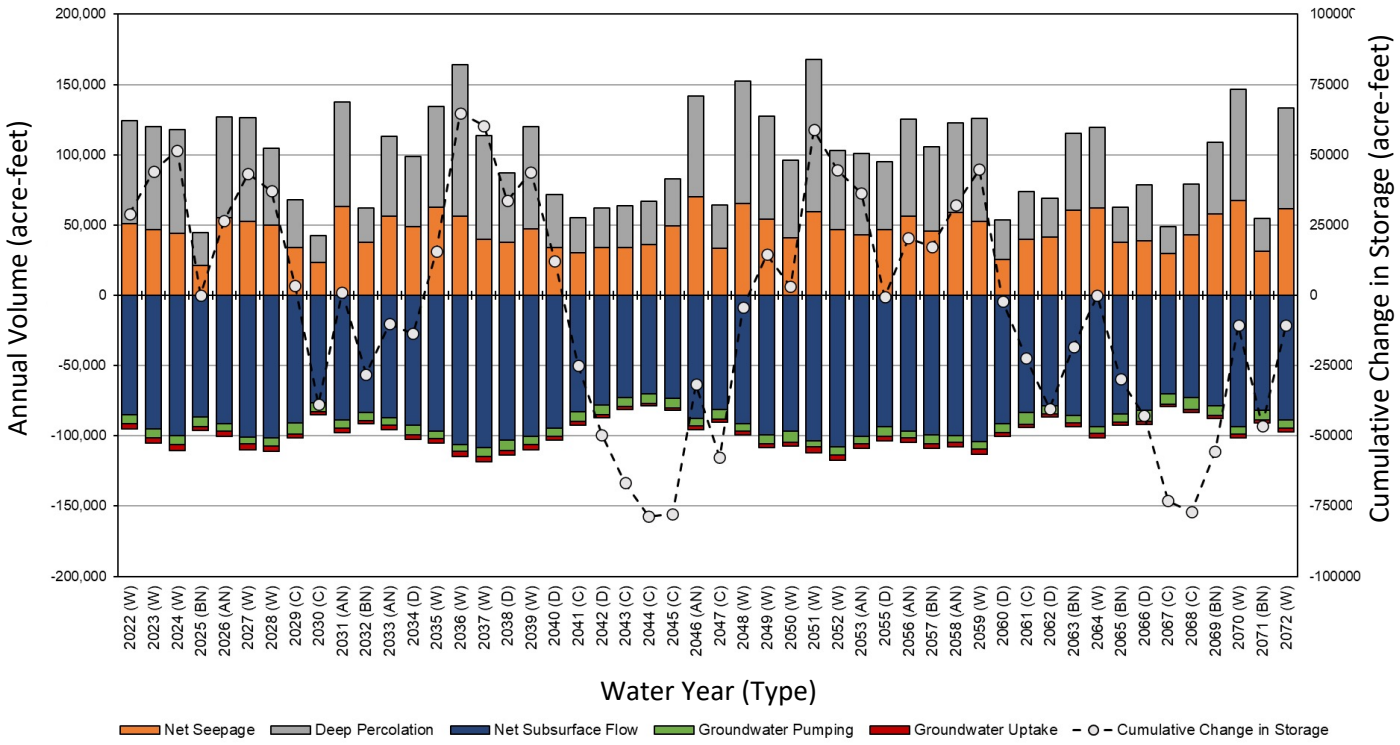


Bowman Subbasin Historical Water Budget Summary

Water Budget (Projected with Current Land Use)

TEHAMA COUNTY
Flood Control and Water Conservation District

WY (Type)	Net Seepage	Deep Percolation	Net Subsurface Flows	Groundwater Pumping	Groundwater Uptake	Annual Groundwater Storage Change	Cumulative Groundwater Storage Change
2020 (D)	9,100	30,900	-94,400	-6,600	-4,000	-64,900	0
2021 (C)	11,700	19,400	-73,100	-6,700	-3,200	-51,900	0
2022 (W)	51,000	73,100	-84,800	-6,400	-3,900	29,100	29,100
2023 (W)	46,600	73,600	-95,100	-6,300	-3,800	15,000	44,100
2024 (W)	44,100	73,700	-99,900	-6,500	-4,000	7,400	51,500
2025 (BN)	21,000	23,600	-86,300	-6,900	-2,900	-51,400	100
2026 (AN)	55,000	71,800	-91,200	-5,600	-3,500	26,600	26,700
2027 (W)	52,800	73,500	-100,800	-5,100	-3,800	16,700	43,400
2028 (W)	50,100	54,700	-101,400	-5,900	-3,700	-6,200	37,200
2029 (C)	34,100	33,700	-90,700	-8,000	-3,000	-33,800	3,400
2030 (C)	23,600	19,100	-76,300	-6,700	-2,000	-42,200	-38,800
2031 (AN)	63,000	74,700	-88,900	-5,800	-3,000	40,000	1,100
2032 (BN)	37,600	24,500	-83,400	-5,600	-2,200	-29,200	-28,000
2033 (AN)	56,300	56,800	-87,300	-5,100	-2,900	17,900	-10,200
2034 (D)	49,100	49,800	-92,200	-7,300	-2,800	-3,500	-13,700
2035 (W)	62,400	71,900	-96,700	-5,100	-3,200	29,300	15,600
2036 (W)	56,600	107,500	-106,400	-4,500	-3,900	49,200	64,900
2037 (W)	39,900	73,900	-108,300	-6,200	-3,900	-4,500	60,300
2038 (D)	37,600	49,600	-102,900	-7,400	-3,500	-26,700	33,700
2039 (W)	47,400	72,700	-100,200	-6,200	-3,500	10,300	43,900
2040 (D)	34,000	37,500	-94,400	-5,800	-3,000	-31,600	12,300
2041 (C)	30,100	25,200	-82,900	-7,100	-2,500	-37,200	-24,900
2042 (D)	34,000	28,300	-78,200	-6,800	-2,100	-24,700	-49,600
2043 (C)	33,800	30,200	-72,600	-6,700	-1,900	-17,200	-66,800
2044 (C)	36,300	30,600	-70,300	-6,700	-1,800	-11,900	-78,600
2045 (C)	49,600	33,100	-73,200	-6,800	-1,800	900	-77,700
2046 (AN)	69,900	71,800	-87,600	-5,600	-2,500	46,000	-31,700
2047 (C)	33,500	30,600	-81,500	-6,700	-1,900	-26,000	-57,700
2048 (W)	65,100	87,500	-91,100	-5,300	-2,900	53,400	-4,300
2049 (W)	54,400	72,900	-99,300	-6,200	-3,000	18,800	14,500
2050 (W)	41,000	54,900	-96,600	-7,800	-2,900	-11,400	3,100
2051 (W)	59,600	108,000	-103,600	-4,500	-3,800	55,700	58,900
2052 (W)	46,700	56,600	-107,800	-6,000	-3,800	-14,300	44,500
2053 (AN)	43,200	57,700	-100,400	-5,100	-3,600	-8,200	36,400
2054 (D)	35,000	38,400	-92,900	-5,900	-2,900	-28,300	8,000
2055 (D)	46,600	48,300	-93,300	-7,300	-3,000	-8,600	-600
2056 (AN)	56,300	69,300	-96,400	-5,100	-3,100	21,100	20,400
2057 (BN)	45,400	60,400	-99,100	-6,500	-3,300	-3,100	17,300
2058 (AN)	58,800	63,900	-100,000	-4,700	-3,200	14,700	32,000
2059 (W)	52,700	73,000	-104,200	-5,100	-3,600	12,700	44,800
2060 (D)	25,400	28,200	-91,100	-6,700	-2,700	-46,800	-2,000
2061 (C)	39,800	34,100	-83,500	-8,100	-2,500	-20,300	-22,300
2062 (D)	41,500	27,300	-78,700	-6,000	-2,100	-17,900	-40,200
2063 (BN)	60,600	54,700	-85,700	-5,200	-2,500	22,000	-18,300
2064 (W)	62,000	57,700	-93,500	-4,900	-2,900	18,300	0
2065 (BN)	37,900	24,600	-84,500	-5,600	-2,100	-29,800	-29,900
2066 (D)	39,000	39,800	-81,600	-7,900	-2,200	-12,900	-42,800
2067 (C)	29,700	19,000	-70,200	-7,100	-1,700	-30,300	-73,000
2068 (C)	42,800	36,300	-72,900	-8,600	-1,700	-4,100	-77,100
2069 (BN)	57,800	51,200	-78,500	-6,700	-2,100	21,600	-55,500
2070 (W)	67,300	79,200	-93,600	-5,300	-2,700	44,900	-10,600
2071 (BN)	31,100	23,700	-81,800	-6,900	-1,900	-35,700	-46,300
2072 (W)	61,600	71,500	-88,500	-6,100	-2,800	35,800	-10,600
Average (2022-2072)	46,100	53,000	-90,200	-6,200	-2,900	-200	

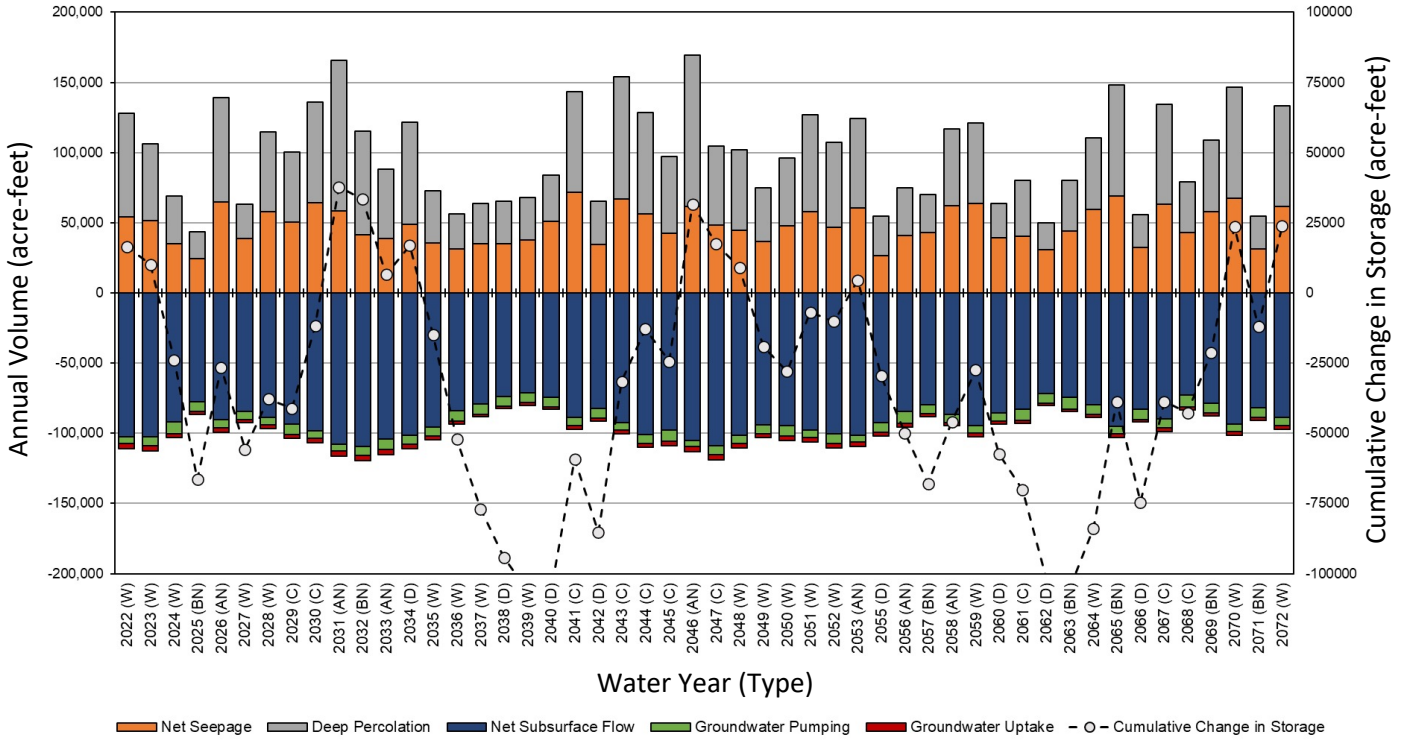


Bowman Subbasin Projected Water Budget Summary with Current Land Use

Water Budget (Projected with Future Land Use)

TEHAMA COUNTY
Flood Control and Water Conservation District

WY (Type)	Net Seepage	Deep Percolation	Net Subsurface Flows	Ground-water Pumping	Ground-water Uptake	Annual Groundwater Storage Change	Cumulative Groundwater Storage Change
2020 (D)	21,900	23,600	-87,700	-7,100	-2,800	-52,100	0
2021 (C)	56,400	71,600	-92,600	-5,800	-3,400	26,300	0
2022 (W)	54,400	73,400	-102,200	-5,300	-3,700	16,500	16,500
2023 (W)	51,500	54,600	-102,700	-6,100	-3,600	-6,300	10,200
2024 (W)	35,200	33,700	-91,900	-8,200	-2,900	-34,000	-23,800
2025 (BN)	24,700	19,100	-77,600	-6,900	-1,900	-42,700	-66,500
2026 (AN)	64,600	74,500	-90,200	-6,000	-2,900	40,000	-26,500
2027 (W)	38,900	24,400	-84,600	-5,800	-2,100	-29,300	-55,700
2028 (W)	57,900	56,700	-88,500	-5,400	-2,800	18,000	-37,700
2029 (C)	50,600	49,600	-93,300	-7,600	-2,700	-3,400	-41,100
2030 (C)	64,100	71,800	-98,100	-5,300	-3,200	29,400	-11,800
2031 (AN)	58,500	107,300	-107,800	-4,700	-3,800	49,500	37,800
2032 (BN)	41,600	73,700	-109,500	-6,400	-3,800	-4,400	33,400
2033 (AN)	39,000	49,400	-104,100	-7,600	-3,400	-26,800	6,600
2034 (D)	49,000	72,500	-101,500	-6,300	-3,400	10,300	16,900
2035 (W)	35,400	37,400	-95,600	-6,100	-2,900	-31,700	-14,800
2036 (W)	31,300	25,100	-84,000	-7,300	-2,400	-37,300	-52,000
2037 (W)	35,200	28,300	-79,300	-7,000	-2,000	-24,900	-76,900
2038 (D)	35,000	30,100	-73,600	-6,900	-1,900	-17,300	-94,200
2039 (W)	37,500	30,500	-71,300	-6,900	-1,800	-12,000	-106,200
2040 (D)	50,900	33,100	-74,300	-7,000	-1,800	800	-105,400
2041 (C)	71,600	71,600	-88,700	-5,800	-2,500	46,200	-59,100
2042 (D)	34,600	30,500	-82,500	-6,900	-1,800	-26,100	-85,300
2043 (C)	66,900	87,400	-92,300	-5,500	-2,800	53,700	-31,600
2044 (C)	56,100	72,700	-100,700	-6,400	-2,900	18,800	-12,800
2045 (C)	42,400	54,800	-97,900	-8,000	-2,800	-11,500	-24,300
2046 (AN)	61,500	107,700	-104,900	-4,700	-3,700	56,000	31,700
2047 (C)	48,200	56,500	-109,000	-6,200	-3,700	-14,200	17,500
2048 (W)	44,600	57,600	-101,700	-5,300	-3,500	-8,300	9,200
2049 (W)	36,400	38,300	-94,100	-6,100	-2,800	-28,300	-19,100
2050 (W)	48,000	48,200	-94,600	-7,500	-2,900	-8,800	-27,900
2051 (W)	58,000	69,200	-97,800	-5,300	-3,000	21,000	-6,900
2052 (W)	47,000	60,200	-100,500	-6,700	-3,200	-3,300	-10,200
2053 (AN)	60,500	63,700	-101,400	-4,900	-3,100	14,800	4,600
2054 (D)	54,400	72,900	-105,600	-5,300	-3,500	12,900	17,500
2055 (D)	26,600	28,100	-92,300	-6,900	-2,600	-47,000	-29,500
2056 (AN)	41,000	34,000	-84,700	-8,300	-2,500	-20,400	-49,900
2057 (BN)	42,800	27,200	-79,800	-6,200	-2,100	-18,100	-68,000
2058 (AN)	62,200	54,500	-86,700	-5,400	-2,400	22,100	-45,800
2059 (W)	63,600	57,500	-94,700	-5,100	-2,800	18,500	-27,400
2060 (D)	39,100	24,500	-85,500	-5,900	-2,100	-29,900	-57,200
2061 (C)	40,200	39,800	-82,700	-8,200	-2,200	-13,000	-70,200
2062 (D)	30,700	19,000	-71,400	-7,300	-1,700	-30,700	-100,900
2063 (BN)	43,900	36,200	-74,100	-8,800	-1,700	-4,400	-105,400
2064 (W)	59,200	51,100	-79,700	-6,900	-2,100	21,500	-83,800
2065 (BN)	69,100	79,000	-94,800	-5,500	-2,600	45,200	-38,600
2066 (D)	32,300	23,700	-83,000	-7,100	-1,800	-35,900	-74,600
2067 (C)	63,400	71,200	-89,700	-6,300	-2,700	35,900	-38,600
2068 (C)	42,800	36,300	-72,900	-8,600	-1,700	-4,100	-42,700
2069 (BN)	57,800	51,200	-78,500	-6,700	-2,100	21,600	-21,100
2070 (W)	67,300	79,200	-93,600	-5,300	-2,700	44,900	23,700
2071 (BN)	31,100	23,700	-81,800	-6,900	-1,900	-35,700	-12,000
2072 (W)	61,600	71,500	-88,500	-6,100	-2,800	35,800	23,800
Average (2022-2072)	48,200	51,800	-90,500	-6,400	-2,700	500	

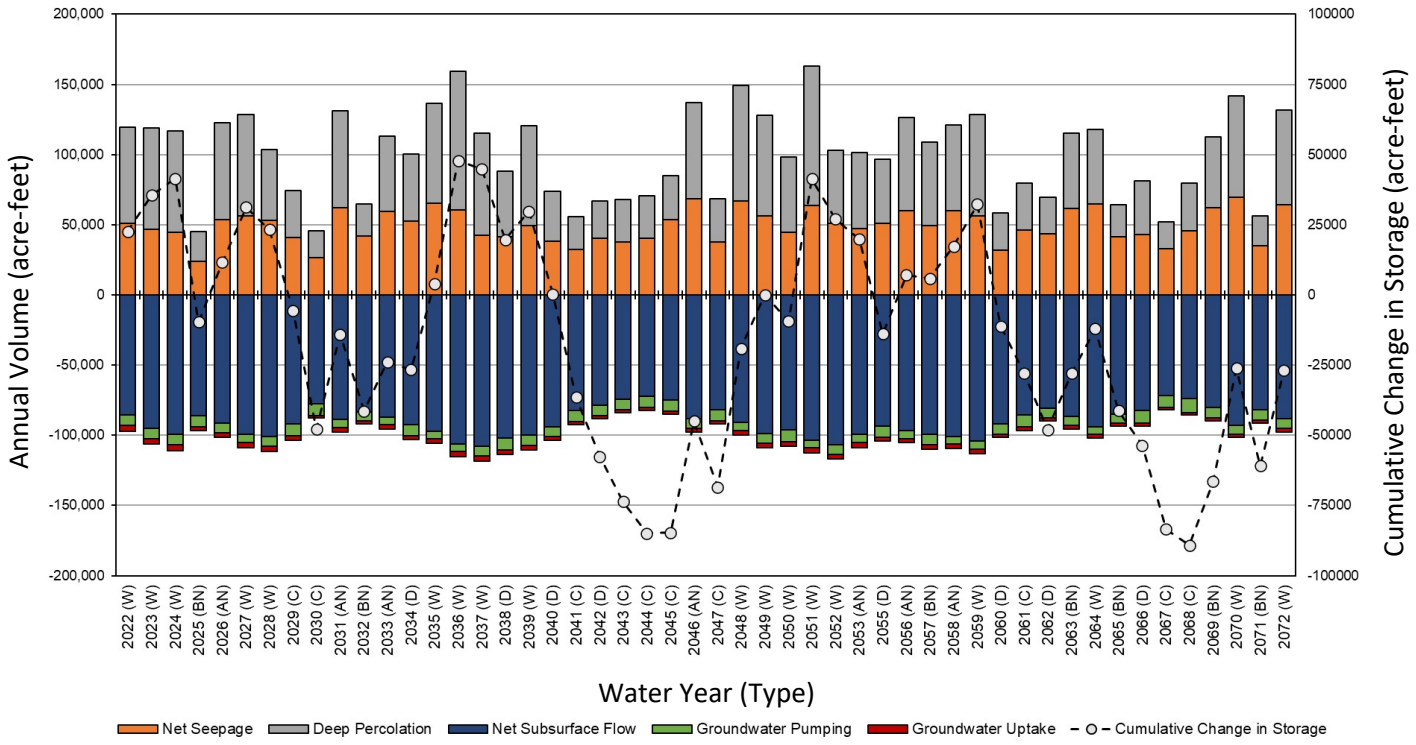


Bowman Subbasin Projected Water Budget Summary With Future Land Use

Water Budget (Projected with Climate Change)

TEHAMA COUNTY
Flood Control and Water Conservation District

WY (Type)	Net Seepage	Deep Percolation	Net Subsurface Flows	Groundwater Pumping	Groundwater Uptake	Annual Groundwater Storage Change	Cumulative Groundwater Storage Change
2020 (D)	13,000	30,600	-96,200	-7,100	-4,100	-63,900	0
2021 (C)	13,100	19,600	-75,200	-7,800	-3,400	-53,600	0
2022 (W)	51,100	68,600	-85,700	-7,500	-3,900	22,700	22,700
2023 (W)	46,800	72,200	-95,100	-7,200	-3,900	12,900	35,600
2024 (W)	44,500	72,200	-99,500	-7,300	-3,900	6,000	41,500
2025 (BN)	23,700	21,600	-86,100	-7,700	-2,800	-51,200	-9,700
2026 (AN)	53,600	69,200	-91,500	-6,600	-3,500	21,300	11,600
2027 (W)	56,300	72,200	-99,500	-5,600	-3,800	19,600	31,300
2028 (W)	52,900	50,400	-101,000	-6,800	-3,500	-8,000	23,300
2029 (C)	40,700	33,700	-91,700	-8,800	-3,000	-29,000	-5,700
2030 (C)	26,500	19,100	-77,600	-8,200	-2,000	-42,100	-47,800
2031 (AN)	62,000	69,300	-88,500	-6,200	-2,900	33,800	-14,100
2032 (BN)	41,900	22,600	-83,400	-6,300	-2,200	-27,300	-41,400
2033 (AN)	59,500	53,500	-86,800	-5,800	-2,700	17,600	-23,800
2034 (D)	52,800	47,400	-92,200	-8,100	-2,700	-2,800	-26,600
2035 (W)	65,200	71,300	-96,900	-5,600	-3,300	30,600	4,000
2036 (W)	60,300	98,900	-106,400	-5,300	-3,800	43,800	47,800
2037 (W)	42,600	72,900	-107,600	-7,100	-3,800	-3,000	44,900
2038 (D)	41,600	46,800	-102,100	-8,100	-3,400	-25,100	19,700
2039 (W)	49,100	71,400	-99,900	-7,100	-3,400	10,100	29,800
2040 (D)	38,200	35,700	-93,800	-6,900	-2,800	-29,500	300
2041 (C)	32,300	23,600	-82,500	-7,900	-2,200	-36,700	-36,400
2042 (D)	40,300	26,700	-78,800	-7,300	-2,000	-21,100	-57,500
2043 (C)	37,800	30,100	-74,200	-7,800	-1,900	-16,100	-73,600
2044 (C)	40,400	30,400	-72,300	-8,100	-1,800	-11,300	-84,900
2045 (C)	53,400	31,700	-75,100	-7,800	-1,900	300	-84,600
2046 (AN)	68,400	68,800	-88,300	-6,600	-2,500	39,700	-44,900
2047 (C)	37,500	30,800	-81,900	-8,000	-1,900	-23,500	-68,400
2048 (W)	66,900	82,200	-90,700	-6,100	-2,800	49,400	-19,100
2049 (W)	56,300	71,700	-98,800	-7,100	-2,900	19,100	0
2050 (W)	44,800	53,400	-96,000	-8,800	-2,700	-9,400	-9,400
2051 (W)	63,800	99,300	-103,400	-5,300	-3,700	50,700	41,300
2052 (W)	51,100	51,700	-106,600	-6,800	-3,600	-14,300	27,100
2053 (AN)	47,300	54,200	-99,500	-5,800	-3,400	-7,200	19,800
2054 (D)	39,600	36,500	-92,400	-7,100	-2,800	-26,200	-6,400
2055 (D)	50,700	46,100	-93,400	-8,100	-2,800	-7,500	-13,900
2056 (AN)	60,000	66,200	-96,500	-5,700	-3,000	21,000	7,100
2057 (BN)	49,500	59,300	-99,300	-7,400	-3,300	-1,200	6,000
2058 (AN)	60,200	60,700	-101,000	-5,500	-3,100	11,400	17,300
2059 (W)	56,300	72,000	-104,100	-5,600	-3,600	15,000	32,400
2060 (D)	31,700	26,500	-92,000	-7,200	-2,500	-43,500	-11,100
2061 (C)	46,100	33,900	-85,600	-8,600	-2,600	-16,900	-28,000
2062 (D)	43,600	25,900	-80,600	-6,800	-2,100	-20,100	-48,100
2063 (BN)	61,900	53,600	-86,700	-6,100	-2,500	20,100	-27,900
2064 (W)	64,800	53,000	-93,700	-5,500	-2,800	15,800	-12,100
2065 (BN)	41,600	22,800	-85,100	-6,300	-2,100	-29,200	-41,200
2066 (D)	43,000	38,100	-82,400	-8,900	-2,200	-12,300	-53,600
2067 (C)	32,800	19,200	-71,500	-8,600	-1,700	-29,800	-83,400
2068 (C)	45,800	34,100	-73,900	-9,900	-1,800	-5,800	-89,100
2069 (BN)	62,200	50,400	-80,000	-7,800	-2,100	22,700	-66,400
2070 (W)	69,500	72,500	-92,700	-6,300	-2,600	40,400	-26,100
2071 (BN)	35,300	21,200	-81,600	-7,700	-1,800	-34,800	-60,800
2072 (W)	64,400	67,400	-88,000	-7,000	-2,700	34,000	-26,800
Average (2022-2072)	49,200	50,700	-90,500	-7,100	-2,800	-500	



Bowman Subbasin Projected Water Budget Summary With Climate Change

Proposed SMC Development Process

TEHAMA COUNTY
Flood Control and Water Conservation District

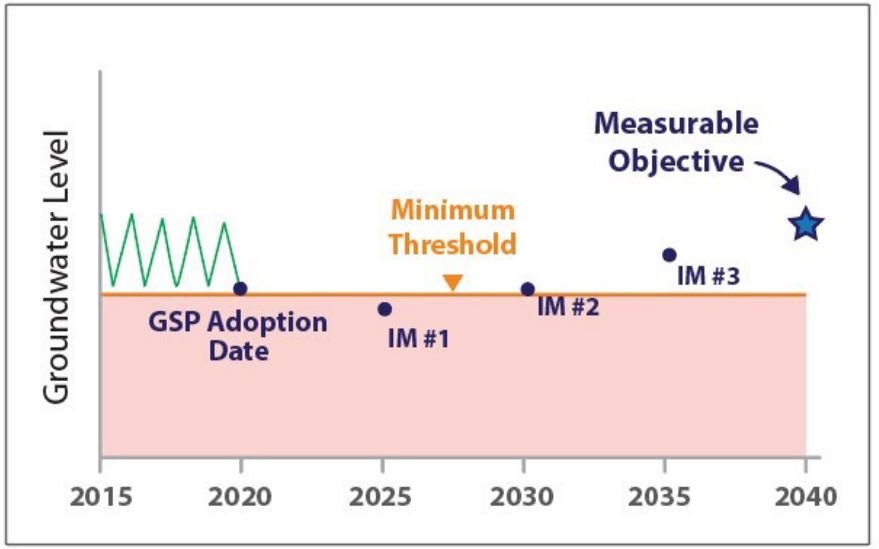
The charge under SGMA is to build a “thermometer” for each of the six groundwater sustainability indicators

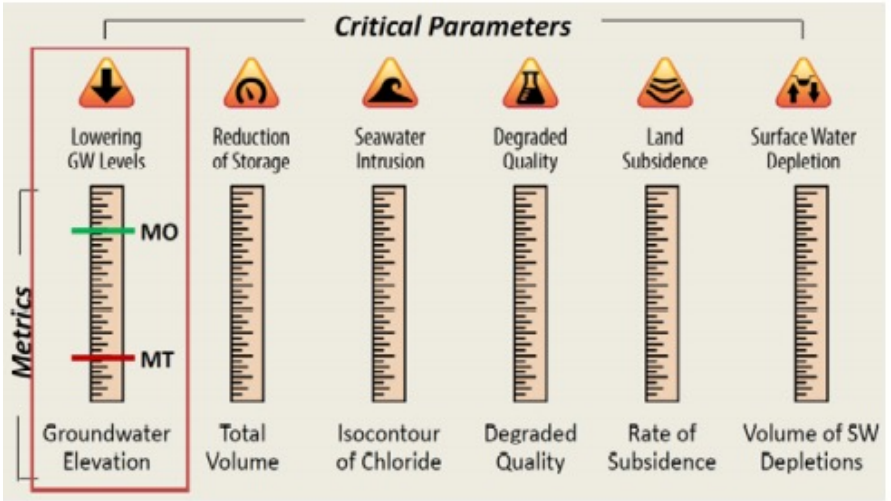
1. Define what is healthy/sustainable
2. Define what is unhealthy/unsustainable
3. Determine what to do when not healthy or close to not healthy

GSP Chapter 3 Sustainable Management Criteria

TEHAMA COUNTY
Flood Control and Water Conservation District

1. Sustainable Management Goal
2. Measurable Objectives
3. Minimum Thresholds
4. Undesirable Results
5. Monitoring Network

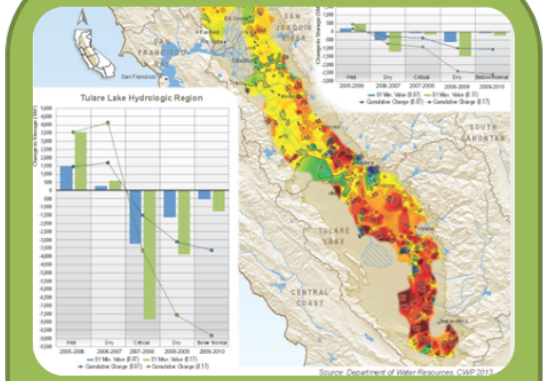




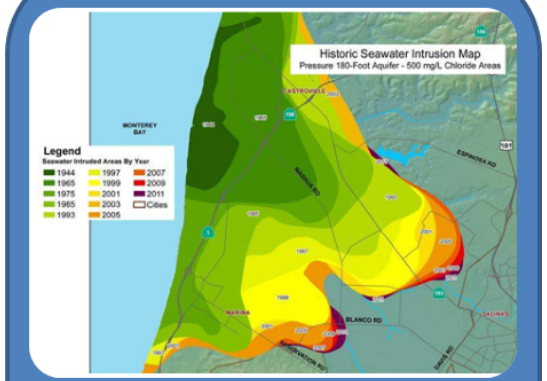
Sustainability Indicator Examples



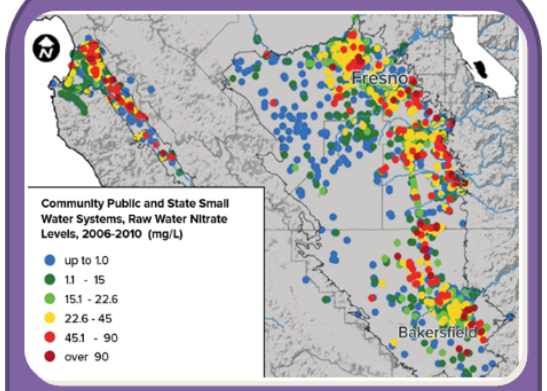
Lowering of GW Levels



Reduction of GW Storage



Seawater Intrusion



Degraded Water Quality



Land Subsidence



Depletion of Inter-connected Streams

Source: DWR

Sustainable Management Criteria (SMC)

TEHAMA COUNTY
Flood Control and Water Conservation District

Locally Agreed Upon (Qualitative)

Undesirable Conditions

Sustainable Management Criteria

Measurable Objectives

Minimum Thresholds

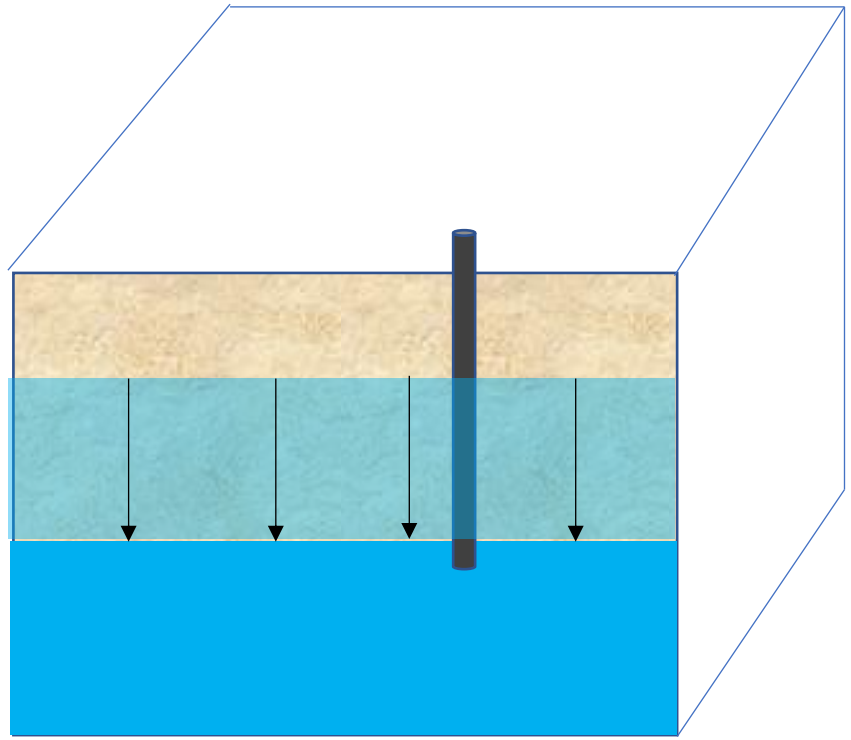
Interim Milestones

Undesirable Result – Combination of MT Exceedances

Locally Agreed Upon (Quantitative)

Chronic Lowering of Groundwater Levels

TEHAMA COUNTY
Flood Control and Water Conservation District



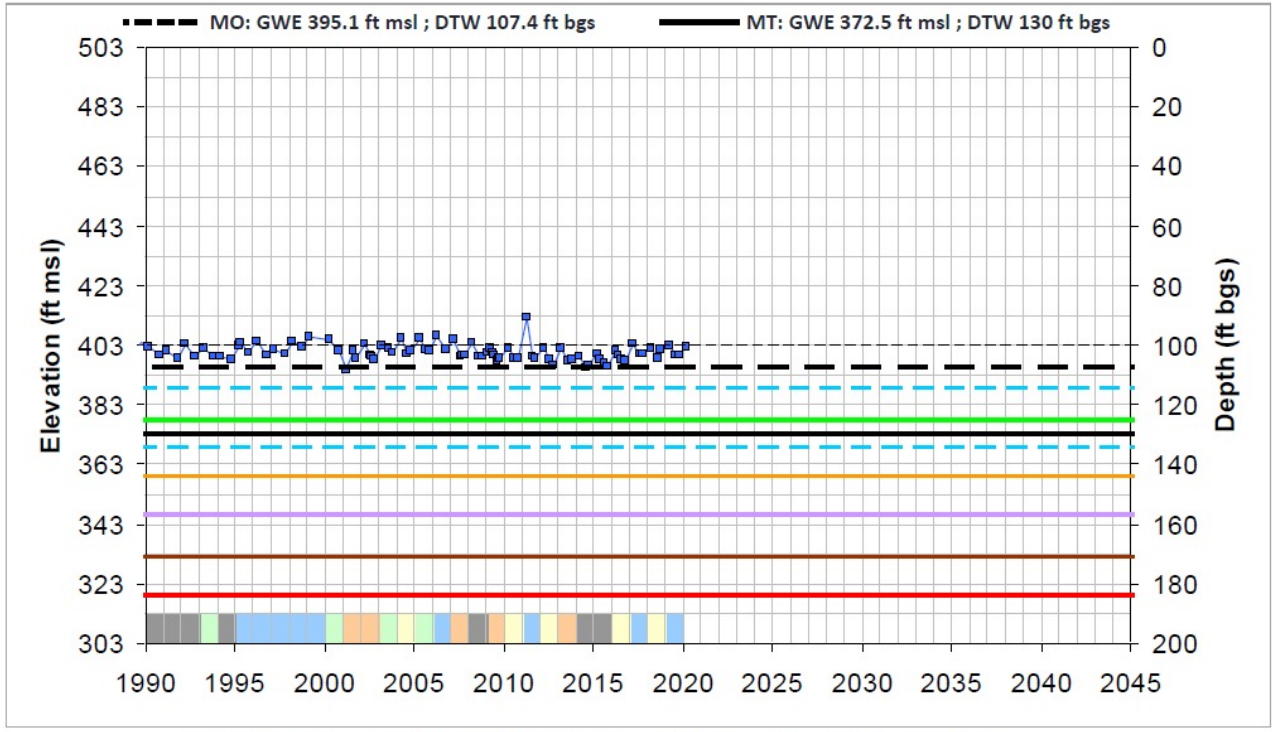
- Continued lowering of groundwater levels can lead to undesirable results for all beneficial users

- Overdraft during a period of drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and recharge are managed as necessary to ensure that reductions during a period of drought are offset by increases during other periods

Chronic Lowering of Groundwater Levels

TEHAMA COUNTY
Flood Control and Water Conservation District

Bow-2 SWN: 29N04W28D001M (in Bowman Subbasin) **Well Depth (ft): 134; Screens (ft bgs): 114 - 134**
MO method: SP 2015 DTW + 5 ft **Aquifer: Upper; Well Type: Domestic**



Upper Aquifer grid: D-2; Analysis based on domestic wells constructed since 1980

Number of wells in Upper Aq. Grid				Number of wells shallower than:				
All Wells	Up Aq.	Low Aq.	Composite/ Aq. Unknown	10th pct	20th pct	30th pct	40th pct	50th pct
359	354	0	5	41	73	108	145	183

Chronic Lowering of Groundwater Levels

TEHAMA COUNTY
Flood Control and Water Conservation District

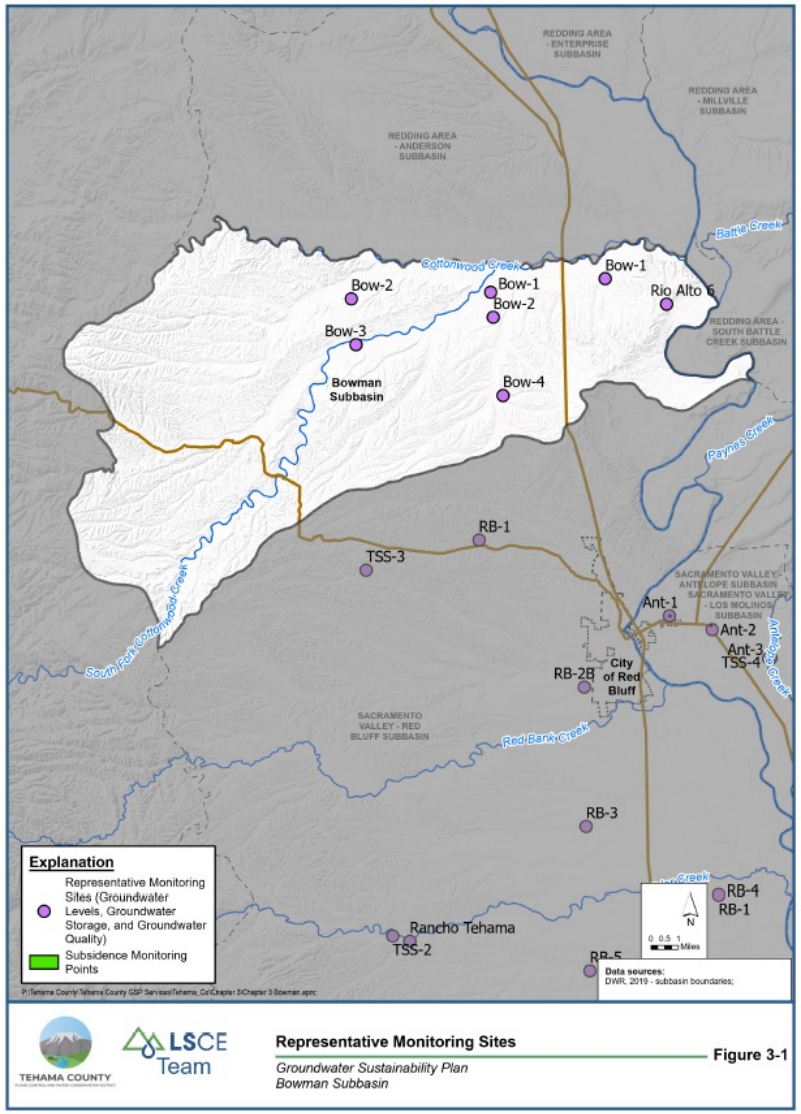
Sustainability Indicator	Minimum Threshold	Measurable Objective	Undesirable Result
Chronic Lowering of Groundwater Elevations	Upper Aquifer: Spring groundwater elevation where less than 10 - 20% (on average) of domestic wells could potentially be impacted. Lower Aquifer: Spring groundwater elevation plus 20 to 120 feet	Upper & Lower Aquifer: Spring 2015 groundwater elevation minus 5 feet (for wells with increasing or no groundwater trends) or projected Spring 2042 groundwater elevation minus 5 feet for wells with declining groundwater elevations	25% of groundwater elevations measured at same RMS wells exceed the associated MT for 2 consecutive measurements. *If the water year is dry or critically dry, then levels below the MT are not undesirable if groundwater management allows for recovery in average or wetter years*

Table 3-7. Minimum Thresholds and Interim Milestones for the Chronic Lowering of Water Elevations – Upper Aquifer

Well Name	SWN	Interim Milestone 5 Years (ft NAVD88)	Interim Milestone 10 Years (ft NAVD88)	Interim Milestone 15 Years (ft NAVD88)	Measurable Objective (ft NAVD88)	Minimum Threshold (ft NAVD88)
Bow-1	29N03W18M001M	391.67	389.88	388.09	386.3	318.5
Bow-2	29N04W28D001M	399.0675	397.745	396.4225	395.1	372.5
Bow-3	29N05W33A004M	490.87	488.88	486.89	484.9	419.6
Bow-4	28N04W04P001M	412.18	409.72	407.26	404.8	377.5

Table 3-8. Minimum Threshold and Interim Milestones for the Chronic Lowering of Water Elevations - Lower Aquifer

Well Name	SWN	Interim Milestone 5 Years (ft NAVD88)	Interim Milestone 10 Years (ft NAVD88)	Interim Milestone 15 Years (ft NAVD88)	Measurable Objective (ft NAVD88)	Minimum Threshold (ft NAVD88)
Bow-1	29N04W20A002M	400.86	399.44	398.02	396.6	351.8
Bow-2	29N05W21H001M	472.1125	467.475	462.8375	458.2	417.6
Rio Alto 6	29N03W21	398.11	378.24	358.37	338.5	294

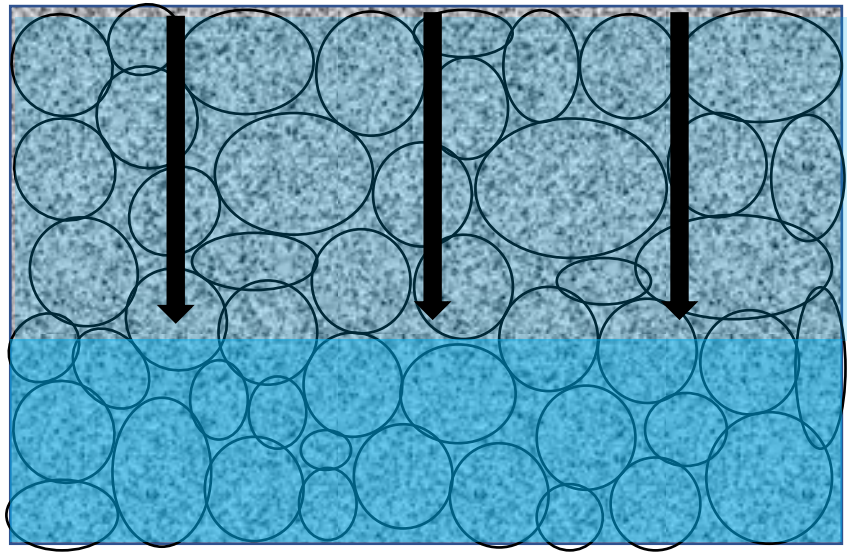


Reduction of Groundwater Storage

TEHAMA COUNTY
Flood Control and Water Conservation District

- Decline in groundwater storage would result in a decreased availability of groundwater for agriculture, municipal, industrial and domestic uses.

- Projects and/or Management actions would be required to mitigate these reductions in storage.



Reduction of Groundwater Storage

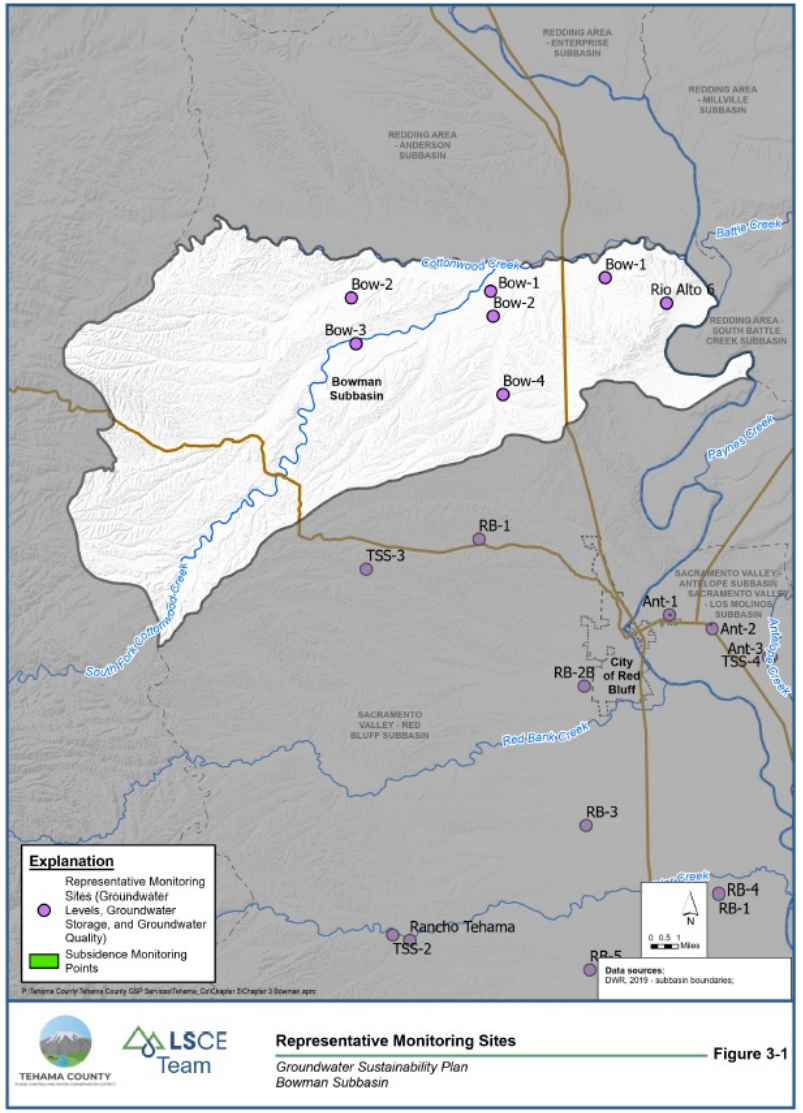
Sustainability Indicator	Minimum Threshold	Measurable Objective	Undesirable Result
Reduction of Groundwater Storage	Upper & Lower Aquifer: Amount of groundwater in storage when groundwater elevations are at their MT	Upper & Lower Aquifer: Amount of groundwater storage when groundwater elevations are at their measurable objective	Same as chronic lowering of groundwater levels

Table 3-7. Minimum Thresholds and Interim Milestones for the Chronic Lowering of Water Elevations – Upper Aquifer

Well Name	SWN	Interim Milestone 5 Years (ft NAVD88)	Interim Milestone 10 Years (ft NAVD88)	Interim Milestone 15 Years (ft NAVD88)	Measurable Objective (ft NAVD88)	Minimum Threshold (ft NAVD88)
Bow-1	29N03W18M001M	391.67	389.88	388.09	386.3	318.5
Bow-2	29N04W28D001M	399.0675	397.745	396.4225	395.1	372.5
Bow-3	29N05W33A004M	490.87	488.88	486.89	484.9	419.6
Bow-4	28N04W04P001M	412.18	409.72	407.26	404.8	377.5

Table 3-8. Minimum Threshold and Interim Milestones for the Chronic Lowering of Water Elevations - Lower Aquifer

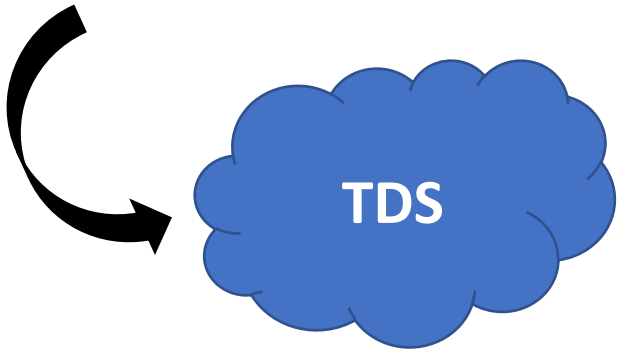
Well Name	SWN	Interim Milestone 5 Years (ft NAVD88)	Interim Milestone 10 Years (ft NAVD88)	Interim Milestone 15 Years (ft NAVD88)	Measurable Objective (ft NAVD88)	Minimum Threshold (ft NAVD88)
Bow-1	29N04W20A002M	400.86	399.44	398.02	396.6	351.8
Bow-2	29N05W21H001M	472.1125	467.475	462.8375	458.2	417.6
Rio Alto 6	29N03W21	398.11	378.24	358.37	338.5	294



Degradation of Water Quality

TEHAMA COUNTY
Flood Control and Water Conservation District





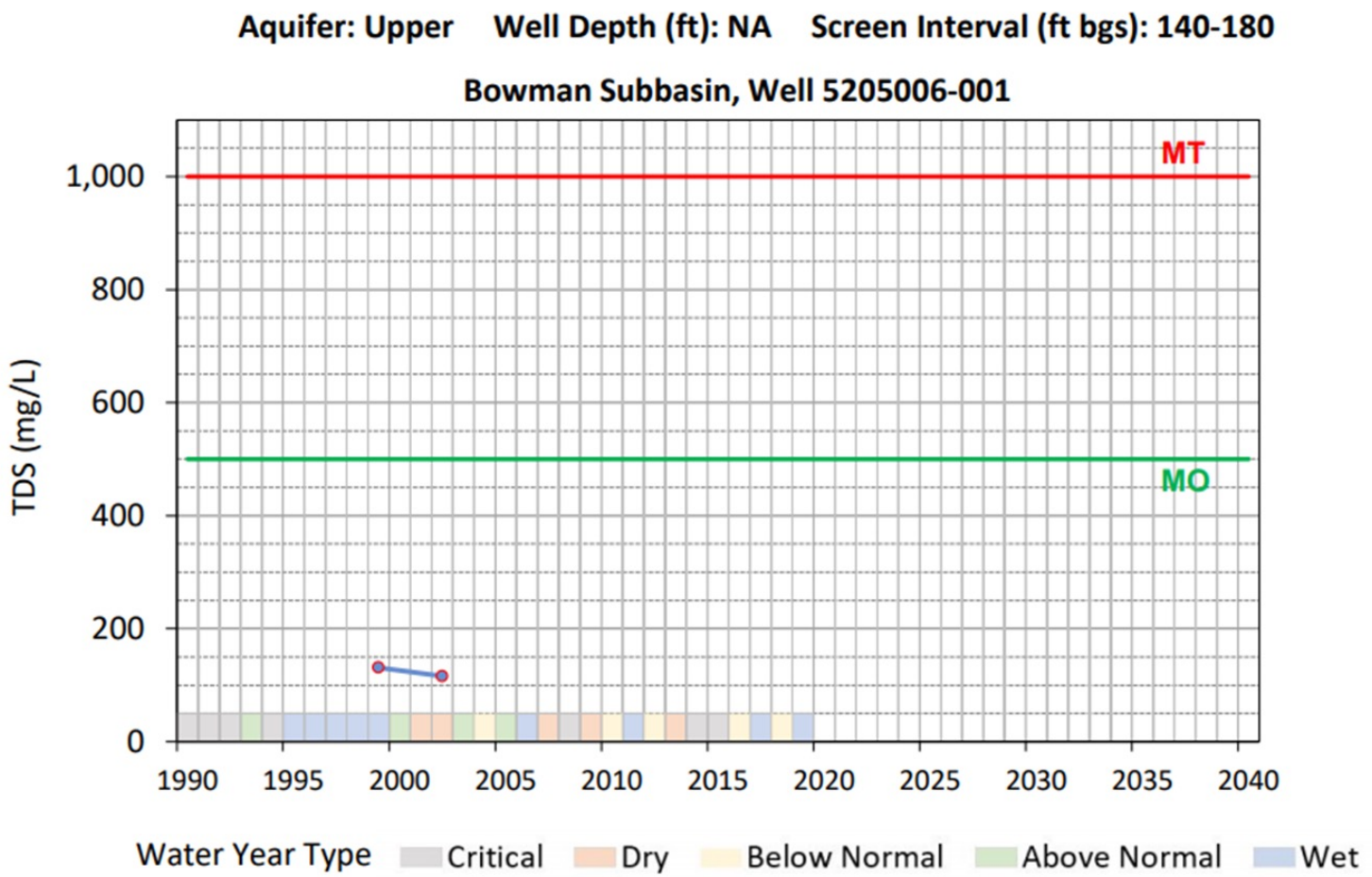
- Degradation of water quality is considered significant and undesirable if the magnitude of degradation renders groundwater in pre-existing wells unusable without management actions

- Within these four subbasins, TDS will be used as indicators for water quality degradation

Total Dissolved Solids (TDS)

Degradation of Water Quality

TEHAMA COUNTY
Flood Control and Water Conservation District

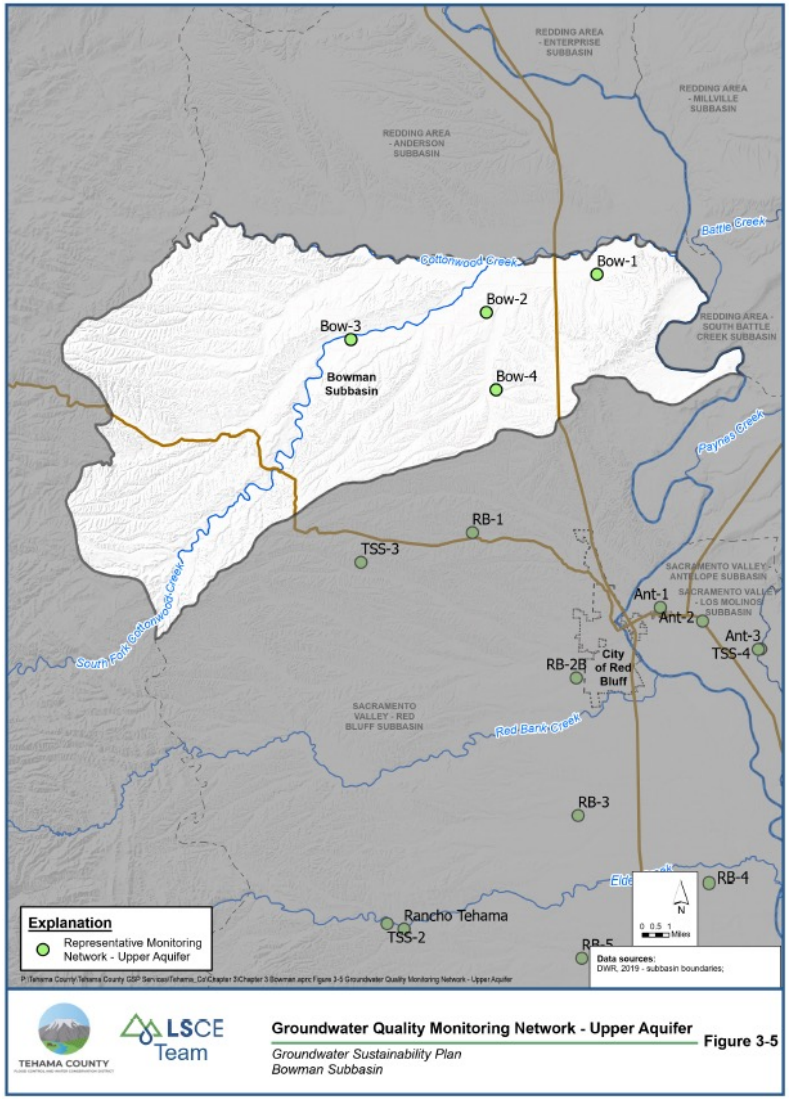


Degradation of Water Quality

Sustainability Indicator	Minimum Threshold	Measurable Objective	Undesirable Result
Degraded Water Quality	Upper & Lower Aquifer: TDS concentration of 750 mg/L at all RMS wells	Upper & Lower Aquifer: California lower limit secondary MCL concentration for TDS of 500 mg/L measured at RMS wells	At least 25% of RMS exceed the MT for water quality for 2 consecutive years at each well where it can be established that GSP implementation is the cause of the exceedance

Table 3-10. Minimum Thresholds, Measurable Objectives, and Interim Milestones for Groundwater Quality

Well Name	Interim Milestone 5 Years (TDS mg/L)	Interim Milestone 10 Years (TDS mg/L)	Interim Milestone 15 Years (TDS mg/L)	Measurable Objective (TDS mg/L)	Minimum Threshold (TDS mg/L)
Bow-1	TBD	TBD	TBD	500	750
Bow-2	TBD	TBD	TBD	500	750
Bow-3	TBD	TBD	TBD	500	750
Bow-4	TBD	TBD	TBD	500	750

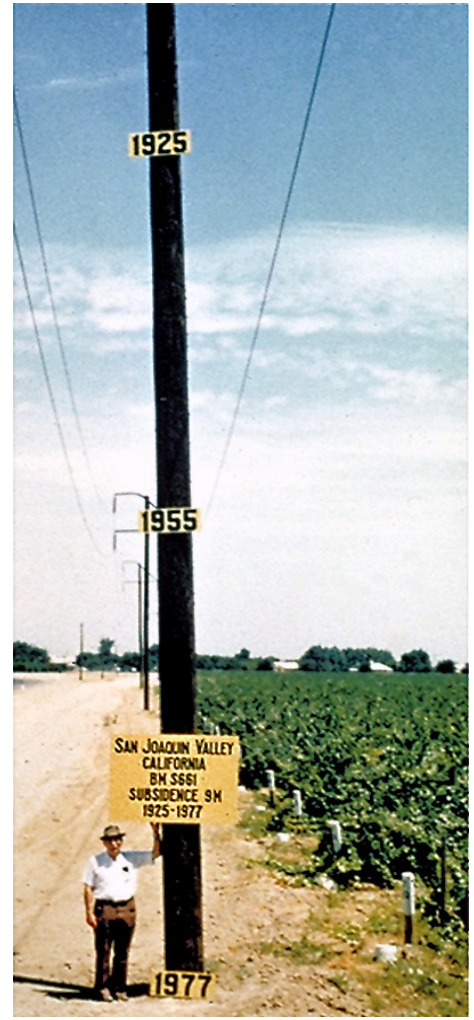


Land Subsidence

TEHAMA COUNTY
Flood Control and Water Conservation District

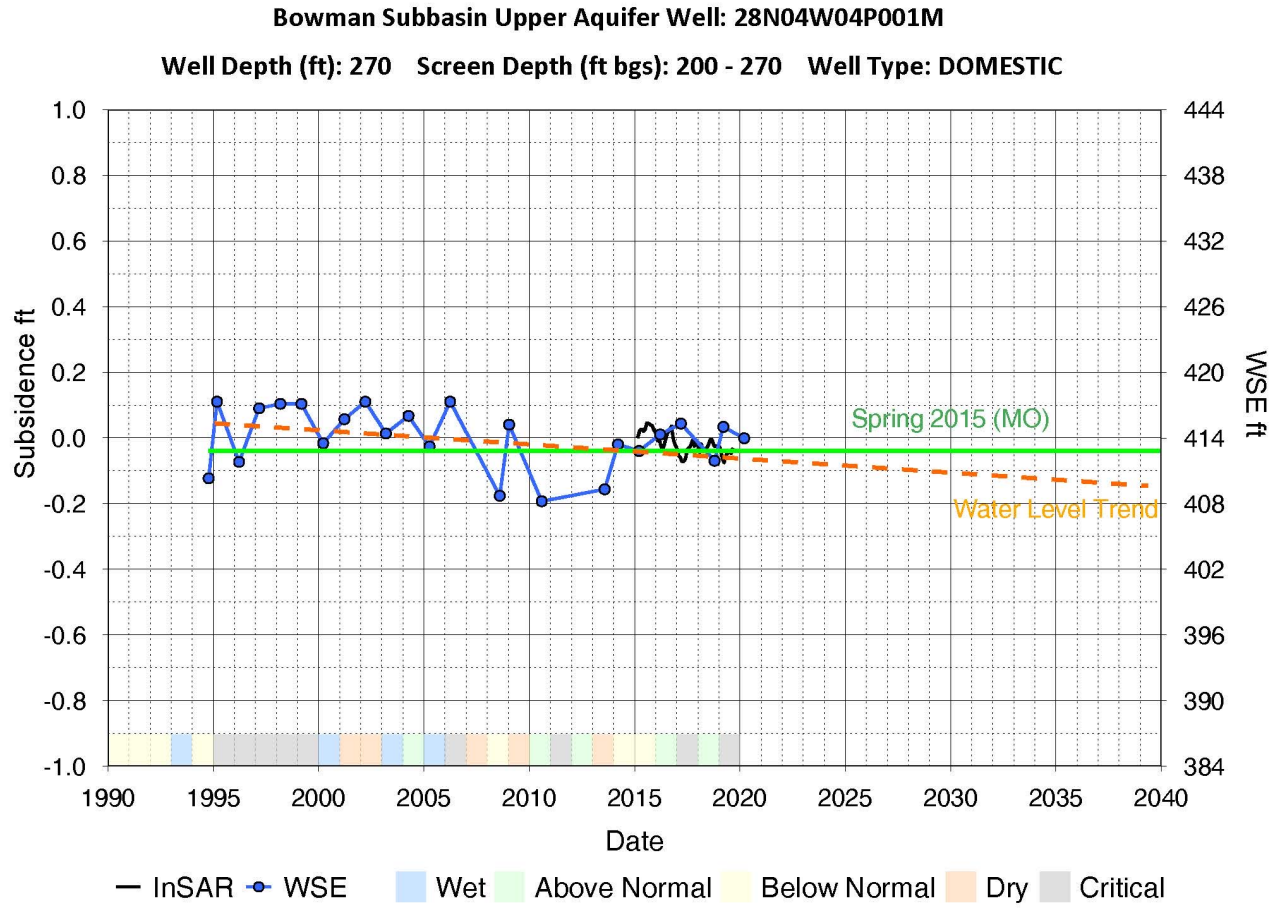
- Historically, Tehama County has experienced minor levels of subsidence

- Typically (Not the case in Tehama County), in areas near significant infrastructure minimal amounts of additional subsidence could be significant and unreasonable due to the susceptibility of infrastructure to subsidence



Land Subsidence

TEHAMA COUNTY
Flood Control and Water Conservation District

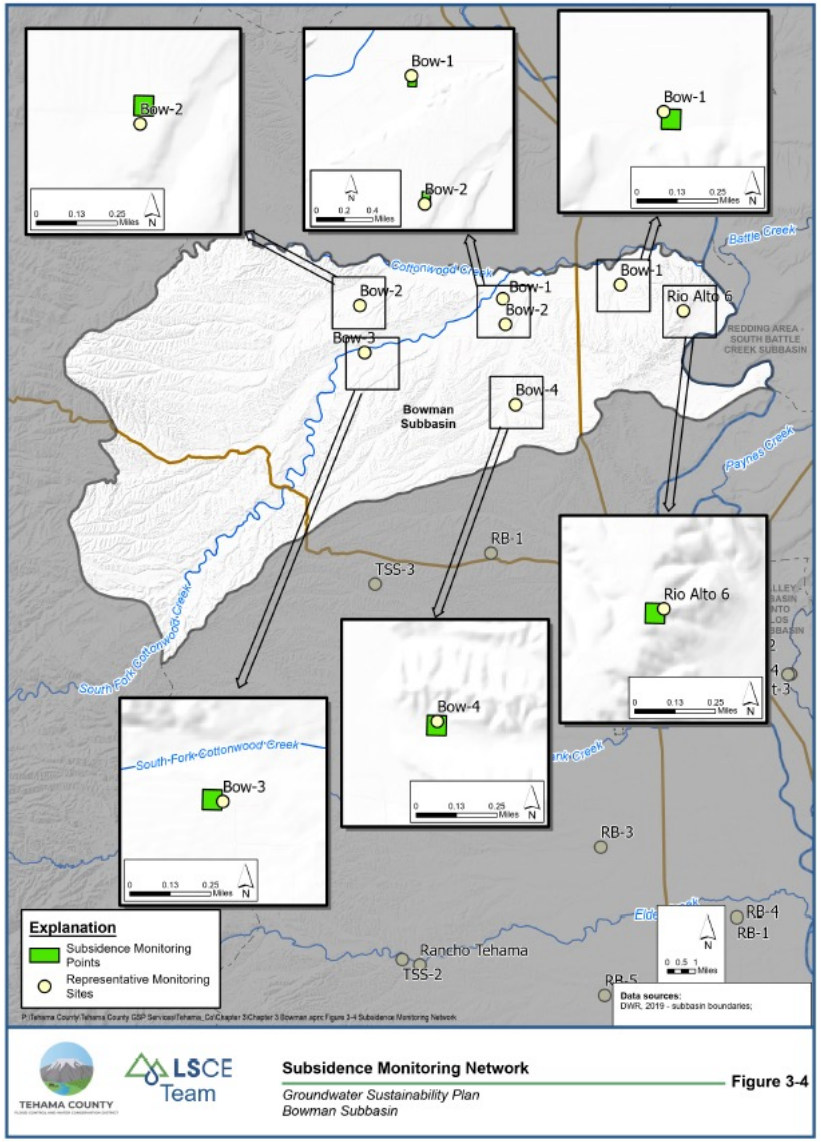


Land Subsidence

Sustainability Indicator	Minimum Threshold	Measurable Objective	Undesirable Result
Land Subsidence	Two feet over 20 years (i.e., no more than 0.5 feet of cumulative subsidence over a five-year period (beyond the measurement error), solely due to lowering of groundwater elevations	One foot over 20 years (Zero inelastic subsidence, in addition to any measurement error). If InSAR data are used, the measurement error is 0.1 feet and any measurement 0.1 feet or less would not be considered inelastic subsidence	50% of RMS exceed the MT over a 5-year period that is irreversible and is caused by lowering of groundwater elevations

Table 3-9. Minimum Thresholds and Interim Milestones for Subsidence

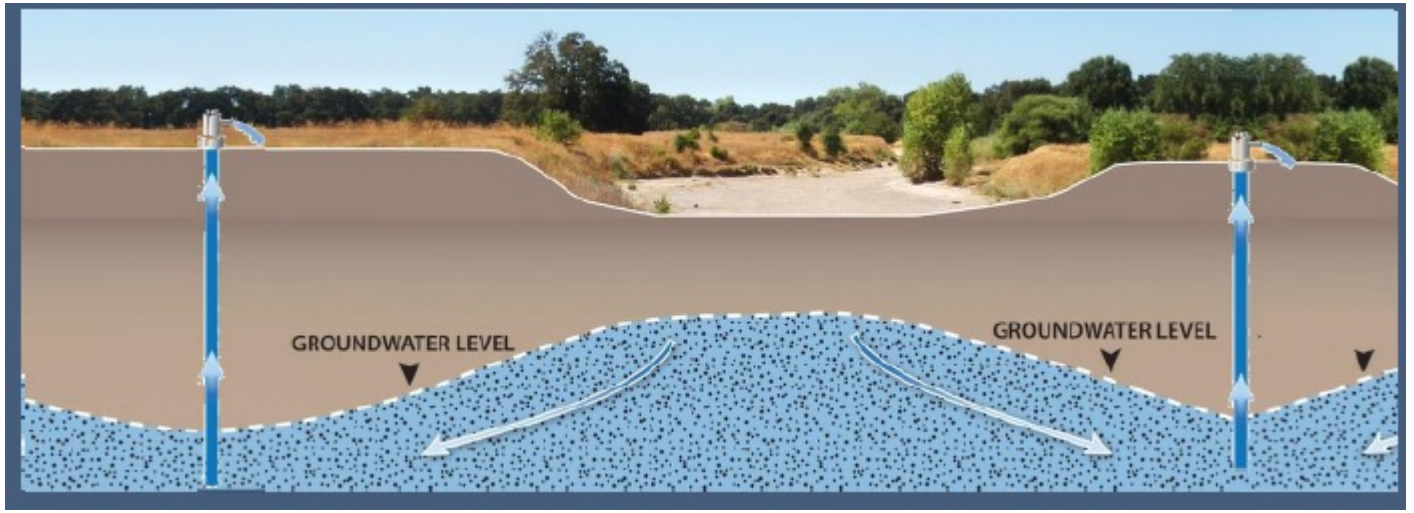
InSAR Pixel	Interim Milestone 5 Years (ft)	Interim Milestone 10 Years (ft)	Interim Milestone 15 Years (ft)	Measurable Objective (ft)	Minimum Threshold (ft)
DXF1N61	-1.75	-1.5	-1.25	-1.0	-2.0
DXAA6E6	-1.75	-1.5	-1.25	-1.0	-2.0
DWYYXU2	-1.75	-1.5	-1.25	-1.0	-2.0
DWIASYT	-1.75	-1.5	-1.25	-1.0	-2.0
DXNZ5CY	-1.75	-1.5	-1.25	-1.0	-2.0
DXFN2X3	-1.75	-1.5	-1.25	-1.0	-2.0



Depletion of Inter-Connected Surface Water

TEHAMA COUNTY
Flood Control and Water Conservation District

- Lowered groundwater table (from pumping) impacts groundwater dependent ecosystems
- Areas where DTW>30 feet bgs are not considered GDEs
- Areas where DTW <30 feet are considered GDEs



Depth to Water (DTW)
Below Ground Surface (BGS)
Groundwater Dependent Ecosystems (GDE)

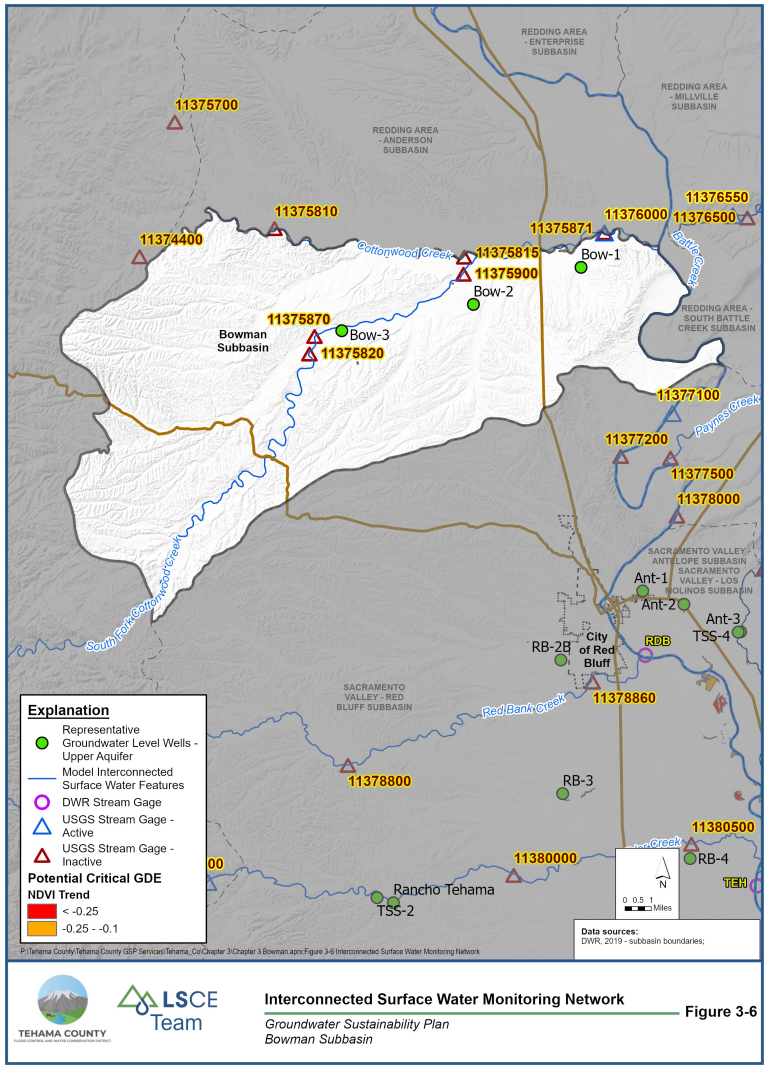
Depletion of Inter-Connected Surface Water

TEHAMA COUNTY
Flood Control and Water Conservation District

Sustainability Indicator	Minimum Threshold	Measurable Objective	Undesirable Result
Depletion of Interconnected Surface Water	Same as chronic lowering of	Same as chronic lowering of	25% of groundwater elevations measured at RMS wells drop below the associated threshold

Table 3-11. Initial Minimum Thresholds and Interim Milestones for Interconnected Surface Water Depletions

Well Name	SWN	Interim Milestone 5 Years (ft NAVD88)	Interim Milestone 10 Years (ft NAVD88)	Interim Milestone 15 Years (ft NAVD88)	Measurable Objective (ft NAVD88)	Minimum Threshold (ft NAVD88)
Bow-1	29N03W18M001M	391.67	389.88	388.09	386.3	318.5
Bow-2	29N04W28D001M	399.0675	397.745	396.4225	395.1	372.5
Bow-3	29N05W33A004M	490.87	488.88	486.89	484.9	419.6
Bow-4	28N04W04P001M	412.18	409.72	407.26	404.8	377.5



GSP Chapter 4 Projects and Management Actions

TEHAMA COUNTY
Flood Control and Water Conservation District

- Projects and management actions may have to be developed to address sustainability goals, measurable objectives, and undesirable results within each of the subbasins in Tehama County, with a view towards reducing the potential socioeconomic impacts associated with actions required to sustainability manage the Subbasins.
- Potential PMAs may fall under several categories, including but not limited to the following:
  - Recharge projects
  - Supply augmentation projects
  - Water conservation projects
  - Projects to reduce non-beneficial consumptive use
  - Groundwater pumping allocations
  - Monitoring programs (groundwater pumping, water levels, stream flows, etc.)

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GSP Chapter 5 GSP Implementation

TEHAMA COUNTY
Flood Control and Water Conservation District

- GSP implementation, administration and management
- Implementation of the monitoring program
- Reporting, including annual reports and 5-year evaluations and updates
- Implementation of adaptive management strategies
- Funding

	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042
Reporting																					
Groundwater Level Monitoring	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Water Quality Reporting	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Pump Metering	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Land Subsidence Monitoring	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Operations & Maintenance																					
Data Management System	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Groundwater Model Update	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
DWR Reporting	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Project Management & Coordination																					

● Occurs once a year

● Occurs twice a year

● Occurs monthly

Ongoing

*All monitoring is reported on an annual basis

Other Activities– Financial Assurance Plan

The GSA intends to include a financial strategy as part of the 2022 GSP that provides sustainable GSA funding mechanisms to facilitate local control of groundwater resources.

1. Long Term GSA Funding
2. Long Term GSP Project Funding
3. Funding Options
4. Financial Assurance Plan
5. Post-GSP: GSA is financially sustainable

GSP Development & Public Input Opportunities

TEHAMA COUNTY
Flood Control and Water Conservation District

May	June–July	August	September	November	December	January
Sustainable Management Criteria and Monitoring Network Regular GSA meetings*	**Projects & Management Actions** **GSP Implementation Plan** Regular GSA meetings*	**Administrative Draft GSPs in development** Public Workshops Regular GSA meetings*	**Draft GSPs available for review and comment** Access via websites Regular GSA meetings*	Public Workshops Regular GSA meetings*	Public Hearings for adoption of Final GSPs Regular GSA meetings*	Final GSPs submitted to the State Regular GSA meetings*

** Regular GSA meetings: Groundwater Commission, District Board, and Corning Subbasin Advisory Board (CSAB)*

How to Stay Involved and Provide Input

TEHAMA COUNTY
Flood Control and Water Conservation District

EMAIL UPDATES

Sign Up for the interested parties email list and/or to receive meeting agendas - contact nbethurem@tcpw.ca.gov

QUARTERLY NEWSLETTER

Sign Up for the interested parties email list

REGULAR MEETINGS

Groundwater Commission Meetings | 4th Wednesdays @ 8:30a*

Regular meetings: August 25 • September 22 at 8:30 AM

District Board Meetings | 3rd Monday, every other month @ 11:00a | Next meeting Sep 20

Corning Subbasin Advisory Board Meetings | 1st Wednesdays @ 1:30p | Next meeting Sep 1

PUBLIC MEETINGS

5th Webinar / Meeting – Fall 2021

Draft GSP webinar & workshop

WEBSITE: DRAFT GSP SECTIONS

Review drafts / submit comments via TehamaCountyWater.org CorningSubbasinGSP.org

SURVEYS

Domestic Well Owner: www.surveymonkey.com/r/TehamaSGMA_WellOwners

TEHAMA COUNTY
FLOOD CONTROL AND WATER CONSERVATION DISTRICT

How best can we connect with you?

Let us know in the Chat Box

- Websites - TehamaCountyWater.org and CorningSubbasinGSP.org
- Email (subscribe to our mailing list - contact nbethurem@tcpw.ca.gov)
- eNewsletter (quarterly)
- Social media (which platforms?)
- Paper Mail
- Direct Call
- Newspaper
- Radio
- Public Workshops and Meetings
- Neighborhood hubs for sign postings (specific locations?)
- Other Suggestions?

Thank You! General Questions?

TEHAMA COUNTY
Flood Control and Water Conservation District

How to Ask Questions

Zoom Options:

Verbal – "Raise Hand" to speak

Written – Use Chat Box

Calling-In Options:

*9 to Raise Hand

*(*6 to Unmute/Mute)*

E-mail shorii@cbi.org or

Text: 408.768.9394

Project Team

Tehama County GSA

- Nichole Bethurem, GSA Project Manager

Technical Consultants, LSCE

- Eddy Teasdale

Facilitator, CBI

- Stephanie Horii

COMMON TERMS

SGMA *("Sigma")*: Sustainable Groundwater Management Act • **GSA:** Groundwater Sustainability Agency • **GSP:** Groundwater Sustainability Plan