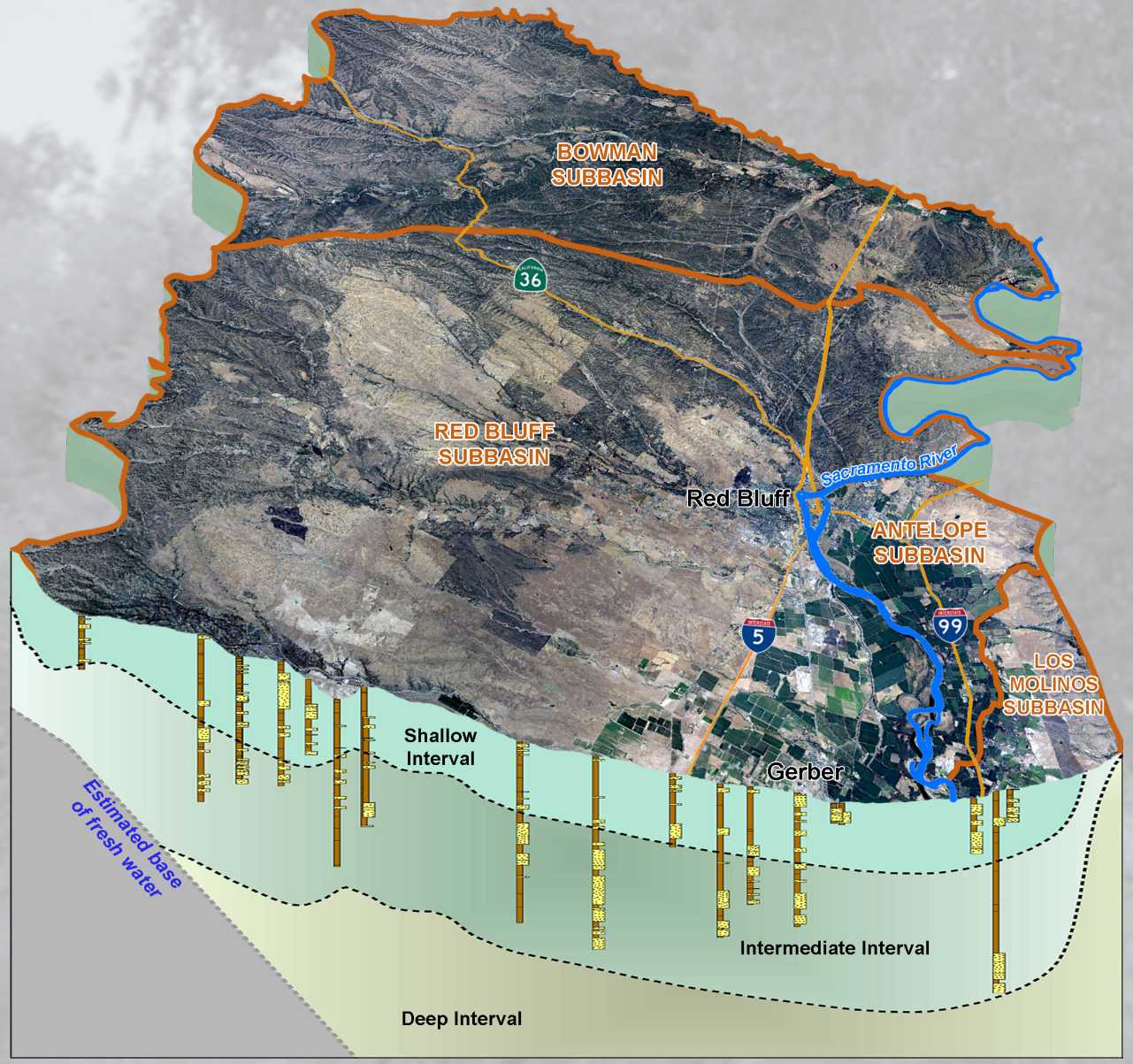
TEHAMA COUNTY
Flood Control and Water Conservation District

Public Webinar

Progress Update On Development of the GSP for the Antelope Subbasin

April 21, 2021



Welcome!

The meeting will begin shortly.

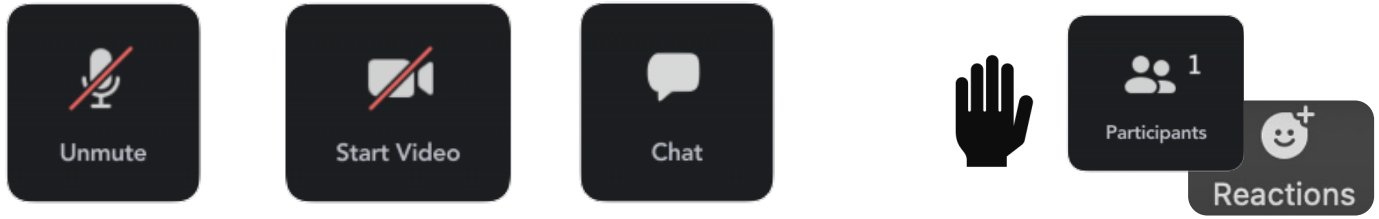
Technical Difficulties?

- 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)

Meet the Project Team

"Hosts/Co-Hosts: – Project Team

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

CBI

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

Verbal Questions

Raise Hand

If participating through Zoom:

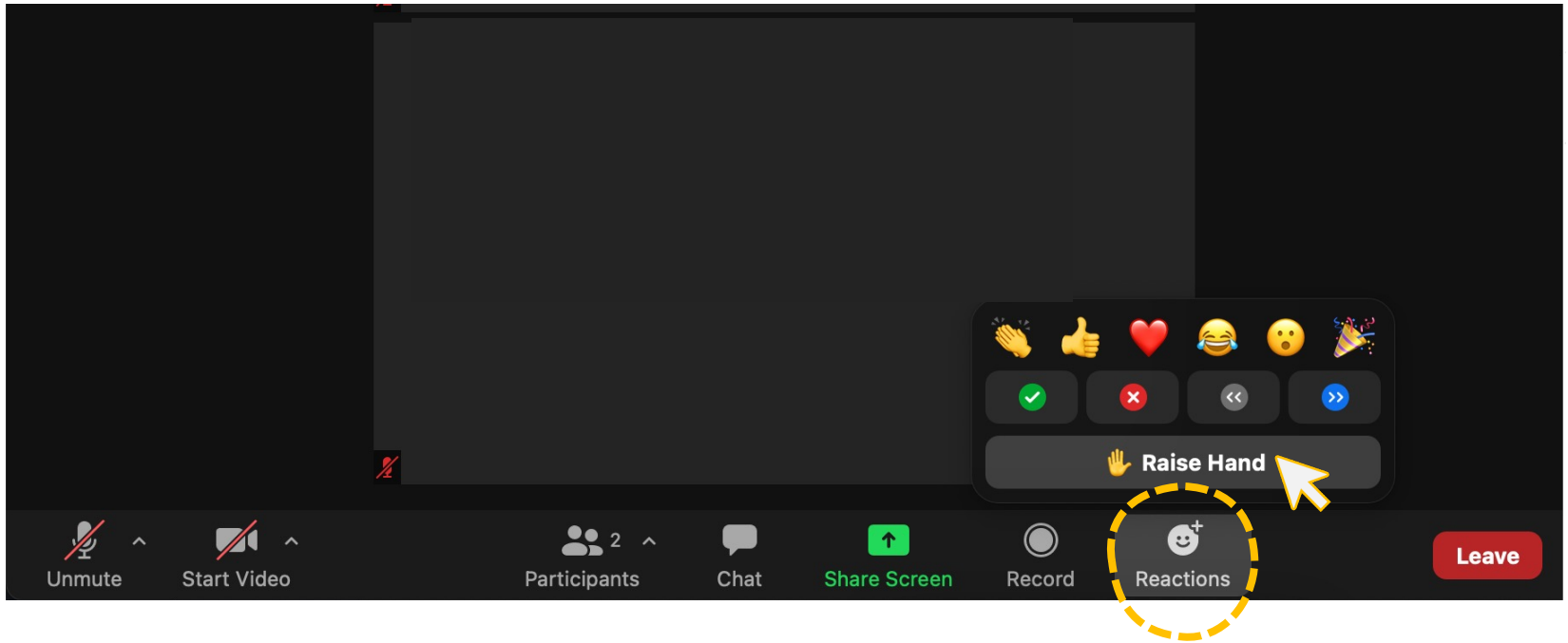
"Raise Hand" to speak

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

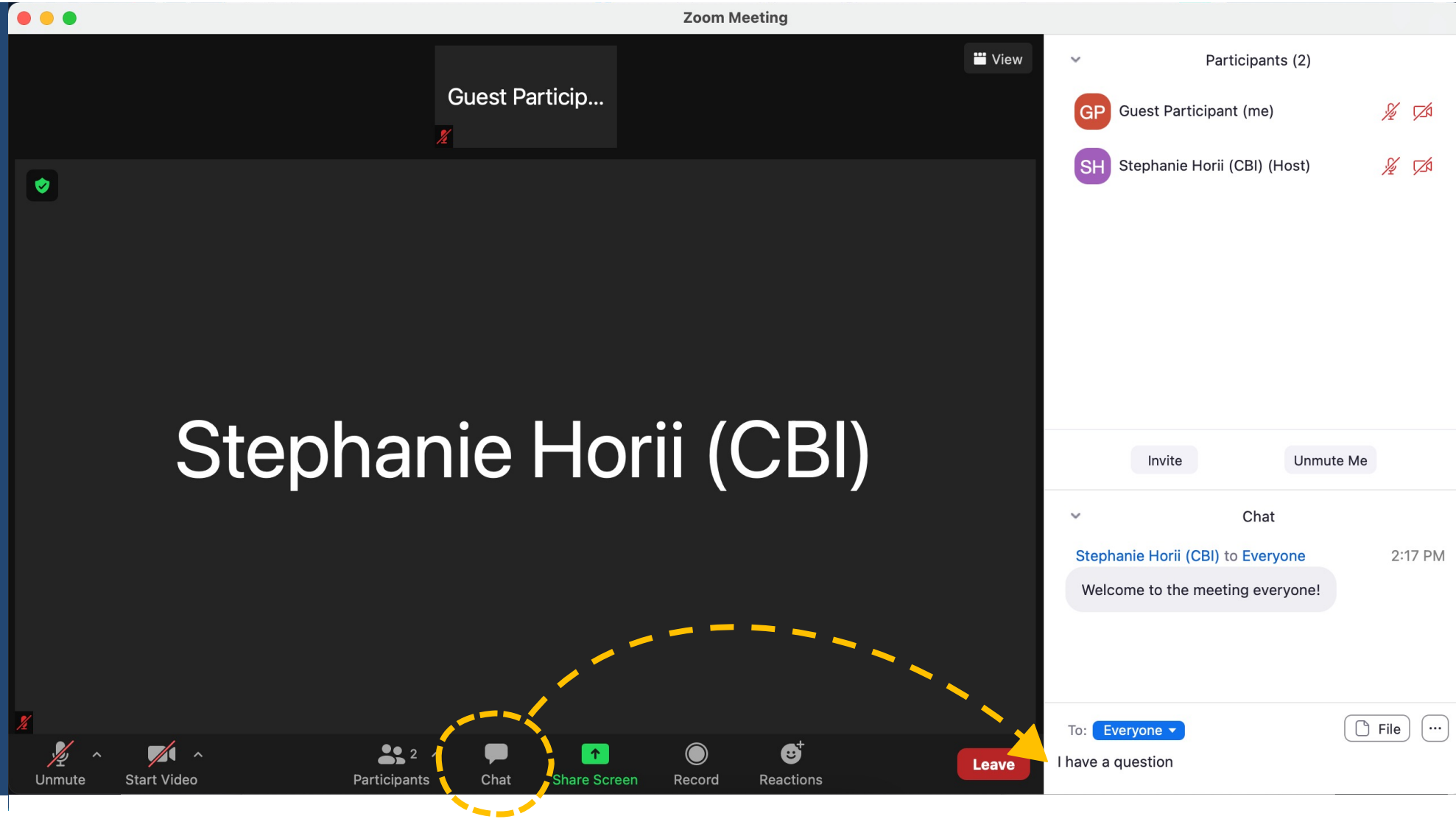
*(Phone-Only Folks – Press *6 to unmute/mute)*



(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

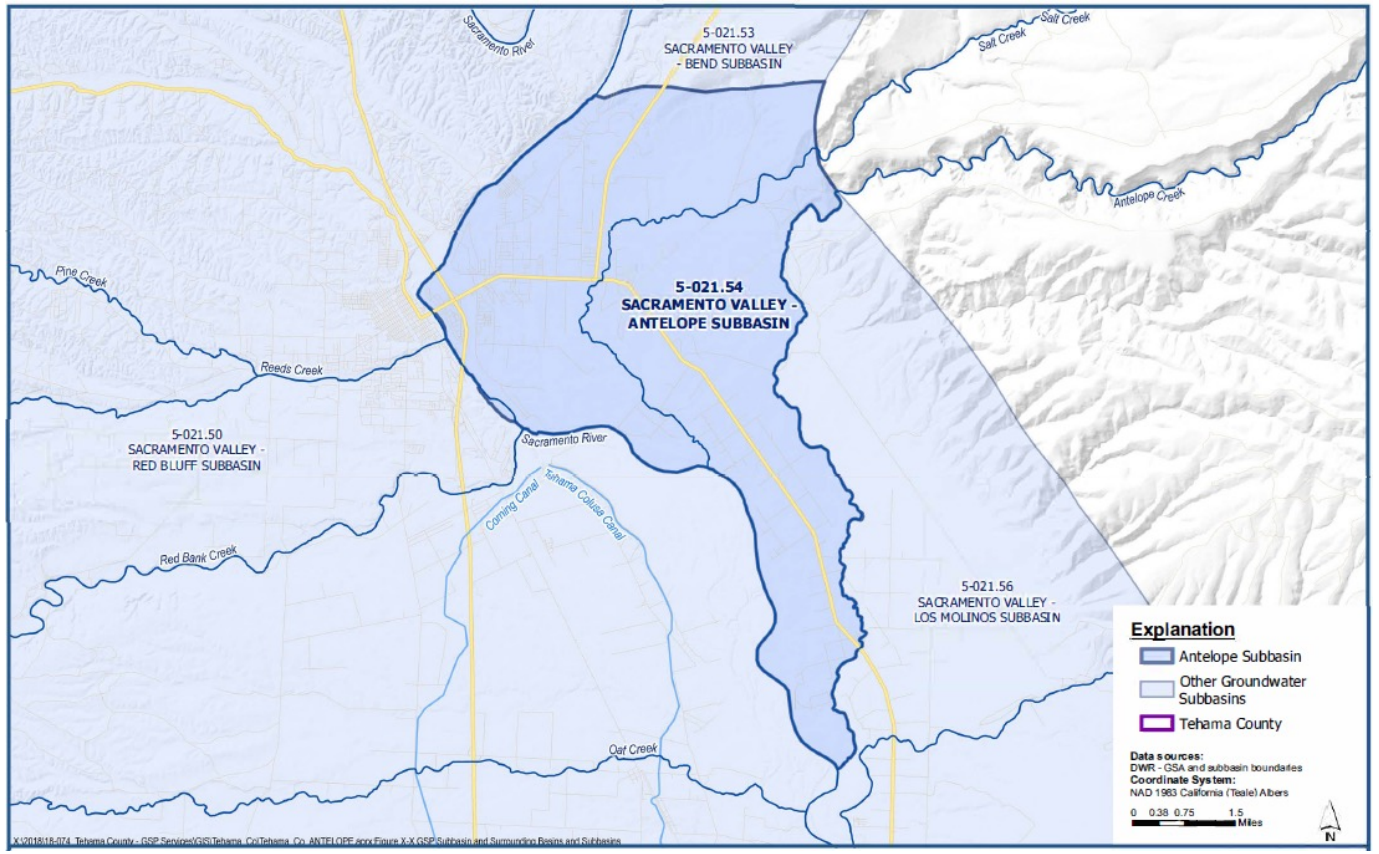
Participating in the Workshop

- “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

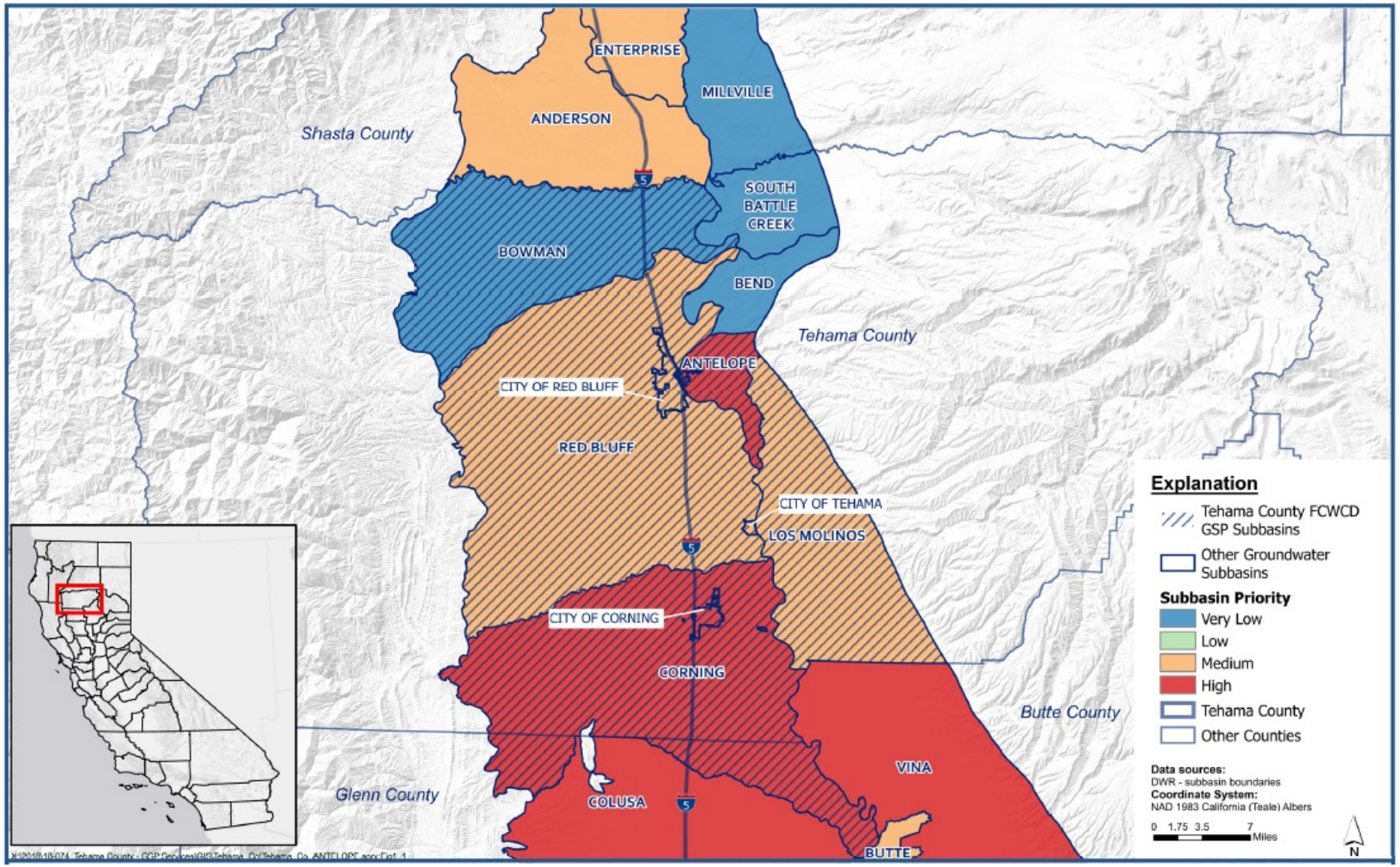
TEHAMA COUNTY
Flood Control and Water Conservation District

- Brief Summary of SGMA
- Outreach and Engagement
- Interbasin Coordination
- Progress on GSP Chapters
- Chapter 2 – Basin Setting and Hydrogeologic Conceptual Model (HCM)
- Chapter 3 – Sustainable Management Criteria (SMC)
- Overview of Chapter 4 & 5
- Other Activities
- Next Steps



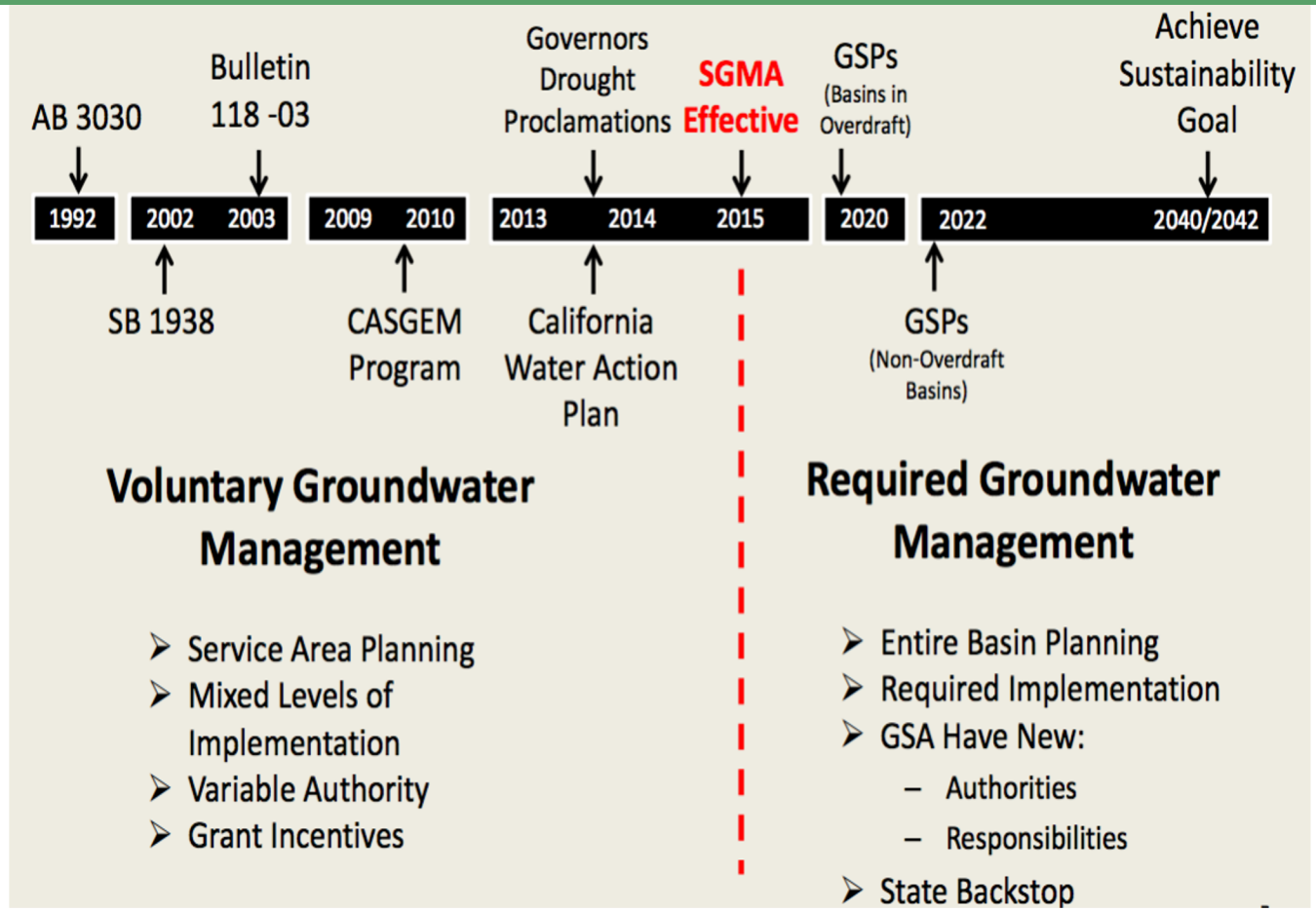
Antelope Subbasin

TEHAMA COUNTY
Flood Control and Water Conservation District



Groundwater Management in California

- California is the last western state to adopt statewide groundwater regulations
- Recent multi-year drought led California to regulate groundwater for the first time



The Sustainable Groundwater Management Act (SGMA) will help to ensure groundwater resources are available for the future.

Sustainable Groundwater Management Act

- SGMA established robust framework for sustainable management of groundwater resources for the first time in CA's history
- Enacted in September 2014, and implementation began January 1, 2015
- Requires groundwater sustainability plans in 94 medium and high priority basins
- Recognizes management is most effective when done at the local level by local agencies with adequate info, tools, etc.
- Creates State "backstop"
- Defines timeframe for accomplishing goals

Local Control



"A central feature of these bills is the recognition that groundwater management in California is best accomplished locally."

Governor Jerry Brown, September 2014

Stakeholder Coordination General Update

TEHAMA COUNTY
Flood Control and Water Conservation District

- October and December 2020
- December 2020 Newsletter
- March 2021 Newsletter
  - GSP Updates
  - Groundwater/Surface Water Conditions
  - Groundwater Modeling
- Outreach Meetings
  - April 19-22
  - Topics Covered
    - Basin Settings
    - Water Budgets
    - SMC Introduction
    - Modeling
    - Project & Management Actions



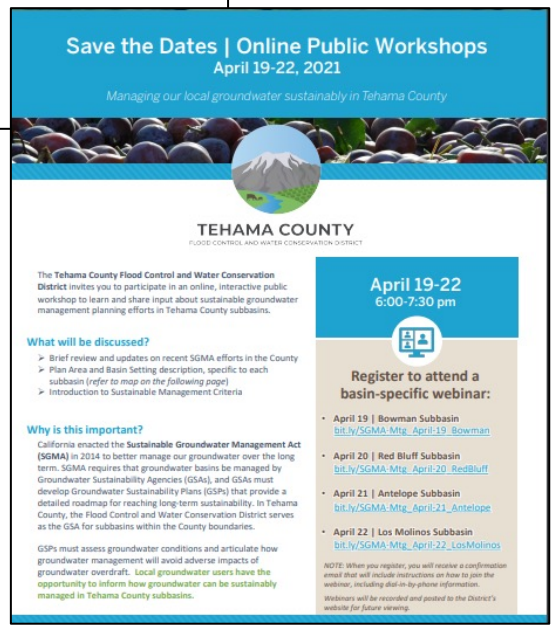
TEHAMA COUNTY
FLOOD CONTROL AND WATER CONSERVATION DISTRICT

Tehama County SGMA eNewsletter - Spring 2021

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

In this newsletter:

- **EVENT ANNOUNCEMENT** -- Upcoming April public webinars - Register today!
- **NEW** -- Domestic Well Owner Survey
- SGMA 101 - New to SGMA?
- Planning Updates - Groundwater Sustainability Plans (GSPs)
- Data and Tech Update - Integrated Hydrologic Model and Database Management System
- Updates on Surface Water and Groundwater Conditions
- Corning Subbasin GSP Update
- Upcoming Meetings



Save the Dates | Online Public Workshops
April 19-22, 2021

Managing our local groundwater sustainably in Tehama County

TEHAMA COUNTY
FLOOD CONTROL AND WATER CONSERVATION DISTRICT

The **Tehama County Flood Control and Water Conservation District** invites you to participate in an online, interactive public workshop to learn and share input about sustainable groundwater management planning efforts in Tehama County subbasins.

What will be discussed?

- Brief review and updates on recent SGMA efforts in the County
- Plan Area and Basin Setting description, specific to each subbasin (*refer to map on the following page*)
- Introduction to Sustainable Management Criteria

Why is this important?

California enacted the **Sustainable Groundwater Management Act (SGMA)** in 2014 to better manage our groundwater over the long term. SGMA requires that groundwater basins be managed by Groundwater Sustainability Agencies (GSAs), and GSAs must develop Groundwater Sustainability Plans (GSPs) that provide a detailed roadmap for reaching long-term sustainability. In Tehama County, the Flood Control and Water Conservation District serves as the GSA for subbasins within the County boundaries.

GSPs must assess groundwater conditions and articulate how groundwater management will avoid adverse impacts of groundwater overdraft. **Local groundwater users have the opportunity to inform how groundwater can be sustainably managed in Tehama County subbasins.**

April 19-22
6:00-7:30 pm

Register to attend a basin-specific webinar:

- **April 19 | Bowman Subbasin**
  bit.ly/SGMA-Mtg_April-19_Bowman
- **April 20 | Red Bluff Subbasin**
  bit.ly/SGMA-Mtg_April-20_RedBluff
- **April 21 | Antelope Subbasin**
  bit.ly/SGMA-Mtg_April-21_Antelope
- **April 22 | Los Molinos Subbasin**
  bit.ly/SGMA-Mtg_April-22_LosMolinos

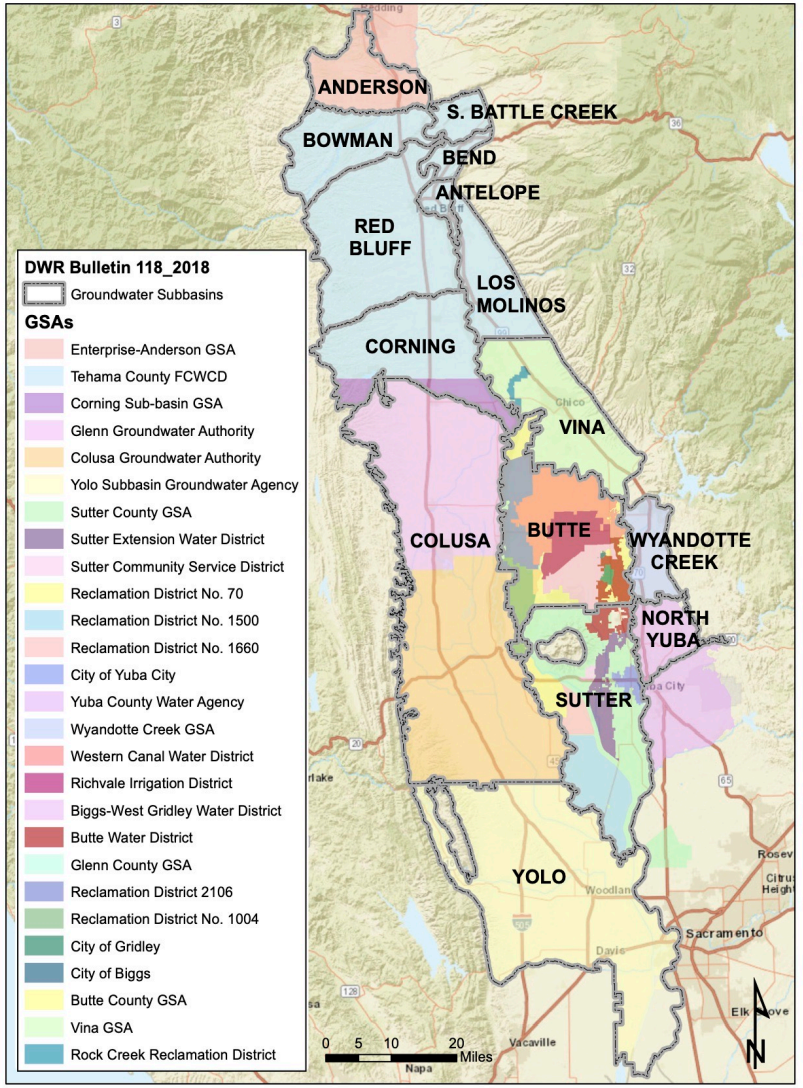
NOTE: When you register, you will receive a confirmation email that will include instructions on how to join the webinar, including dial-in-by-phone information.

Webinars will be recorded and posted to the District's website for future viewing.

Inter-basin Coordination

TEHAMA COUNTY
Flood Control and Water Conservation District

- Northern California Water Agencies
- Corning Subbasin
- Northern Sacramento Valley
- Coordination with Butte County
- Coordination with Shasta County
- Sacramento River Corridor Coordination



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

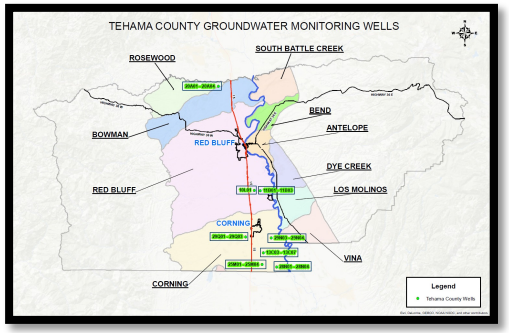
How can we ensure groundwater sustainability?

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

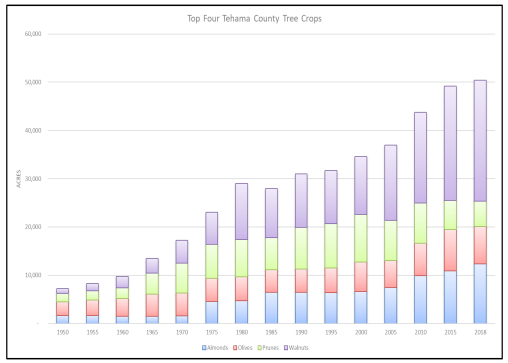
Will this plan meet our sustainability goals?

GSP Section Preparation

TEHAMA COUNTY
Flood Control and Water Conservation District









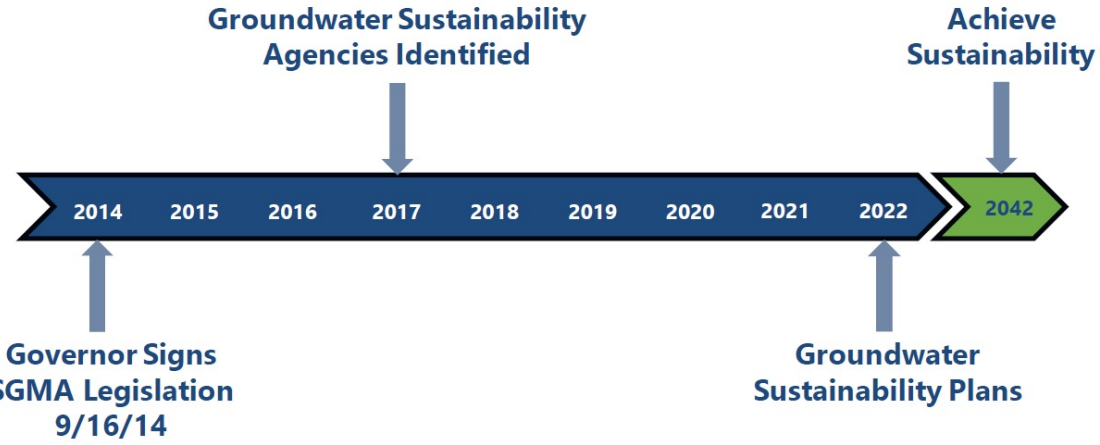
- A friendly, “good read”
- Supported by Technical Memorandums and other appendices
- Draft Sections: Periodic Review in Advance of Full Draft GSP Delivery

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
- Chapter 3 – SMCs (in development)
- Chapter 4 – Projects and Management Actions
- Chapter 5 – GSP Implementation

TIMELINE FOR SUSTAINABLE MANAGEMENT



GSP Chapter 1 Development

TEHAMA COUNTY
Flood Control and Water Conservation District

TABLE OF CONTENTS

ES Executive Summary.....

1 Introduction.....

1.1 Purpose of Groundwater Sustainability Plan.....

1.1.1 Justification for Management Area (If Applicable).....

1.2 Sustainability Goal.....

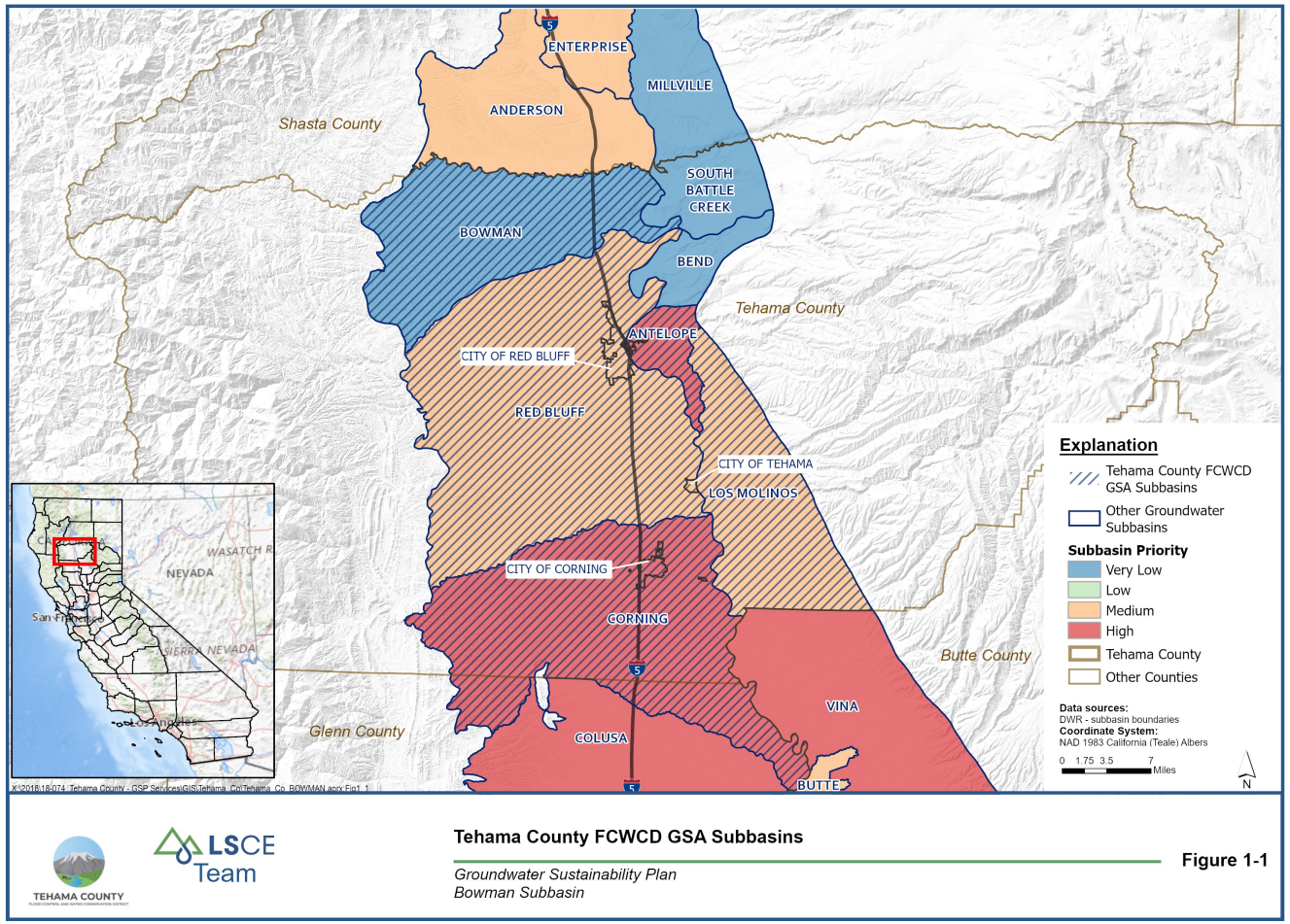
1.3 Agency Information.....

1.3.1 Organization and Management Structure of the GSA....

1.3.2 Legal Authority of the GSA.....

1.3.3 Estimated Cost of Implementing the GSP.....

1.4 GSP Organization.....



GSP Chapter 2A Plan Area Development

TEHAMA COUNTY
Flood Control and Water Conservation District

TABLE OF CONTENTS

1 INTRODUCTION 1-5

2 SUBBASIN PLAN AREA AND BASIN SETTING (REG. § 354.8) 2-5

2.1 Description of Plan Area 2-5

2.1.1 Summary of Jurisdictional Areas and Other Features 2-5

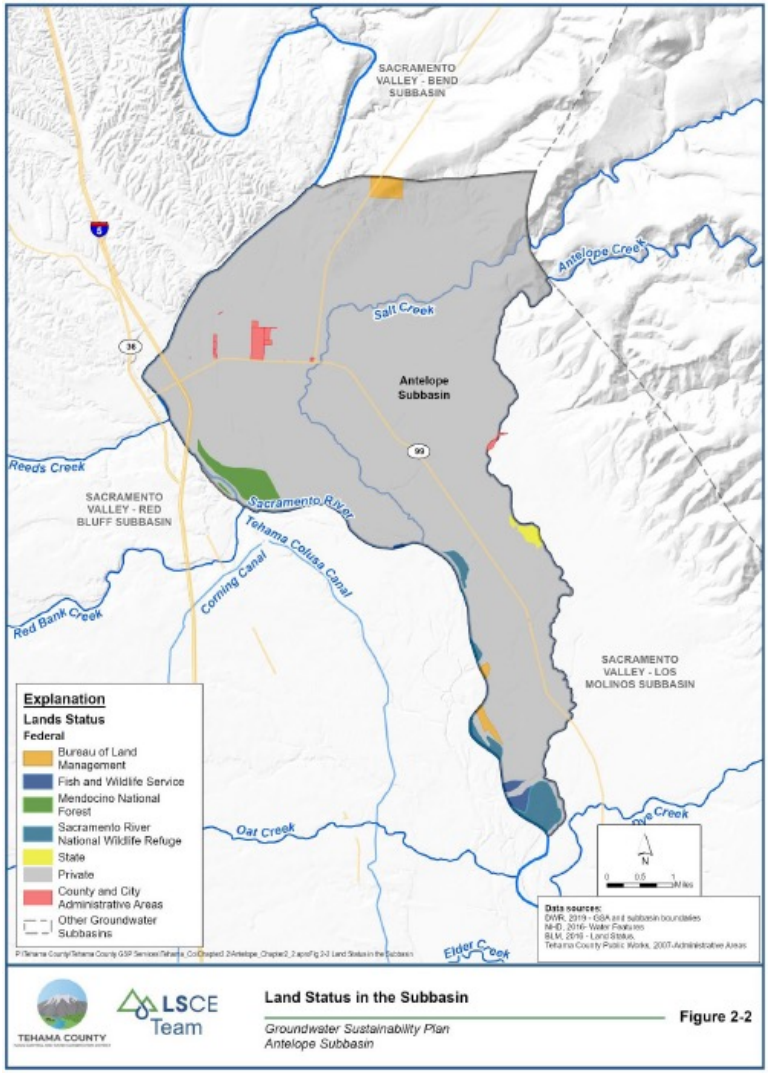
2.1.2 Water Resource Monitoring Entities, Management Programs, and Data Sources 2-17

2.1.3 Land Use Elements or Topic Categories of Applicable General Plans 2-30

2.1.4 Additional GSP Elements 2-36

2.1.5 Notice and Communication 2-40

REFERENCES 2-53



GSP Chapter 2B Basin Settings

TEHAMA COUNTY
Flood Control and Water Conservation District

TABLE OF CONTENTS

1 Introduction 1-1

2 SUBBASIN PLAN AREA AND BASIN SETTING (REG. § 354.8) 2-1

2.1 Description of Plan Area 2-1

2.2 Basin Setting 2-1

2.2.1 Hydrogeologic Conceptual Model 2-1

2.2.1.1 Subbasin Boundaries 2-1

2.2.1.2 Topographic Information 2-5

2.2.1.3 Geologic Setting 2-5

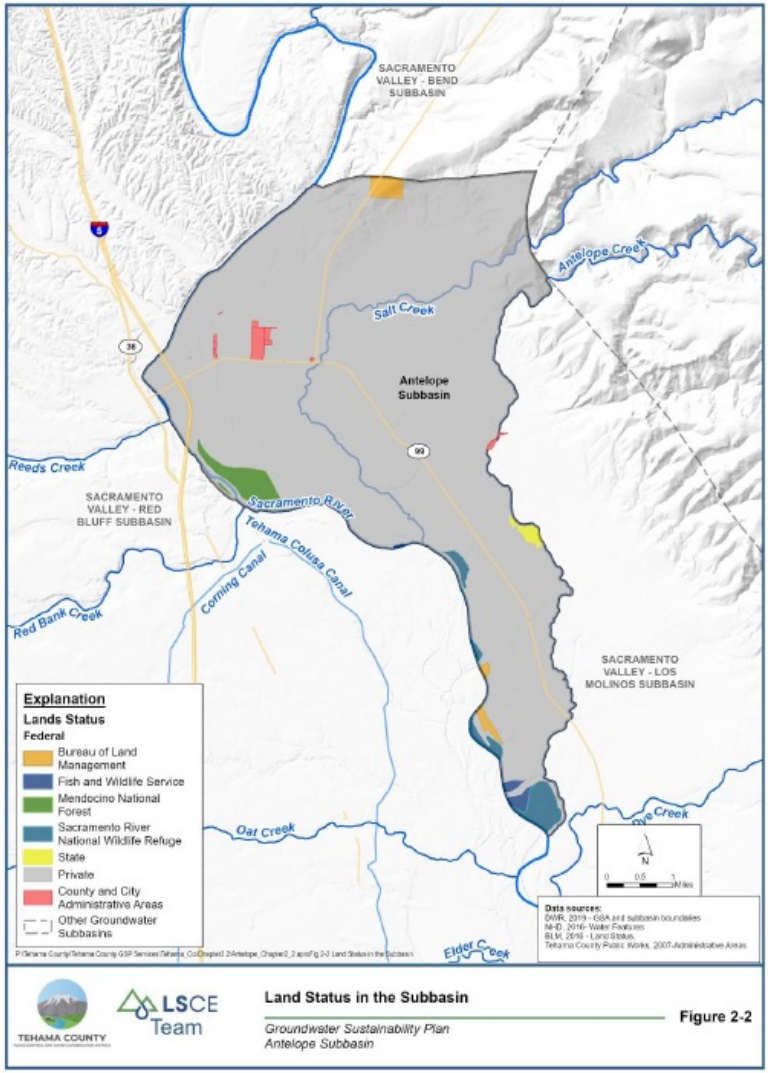
2.2.1.4 Soil Characteristics 2-25

2.2.1.5 Identification/Differentiation of Principal Aquifers 2-32

2.2.1.6 Definable Bottom of Basin 2-34

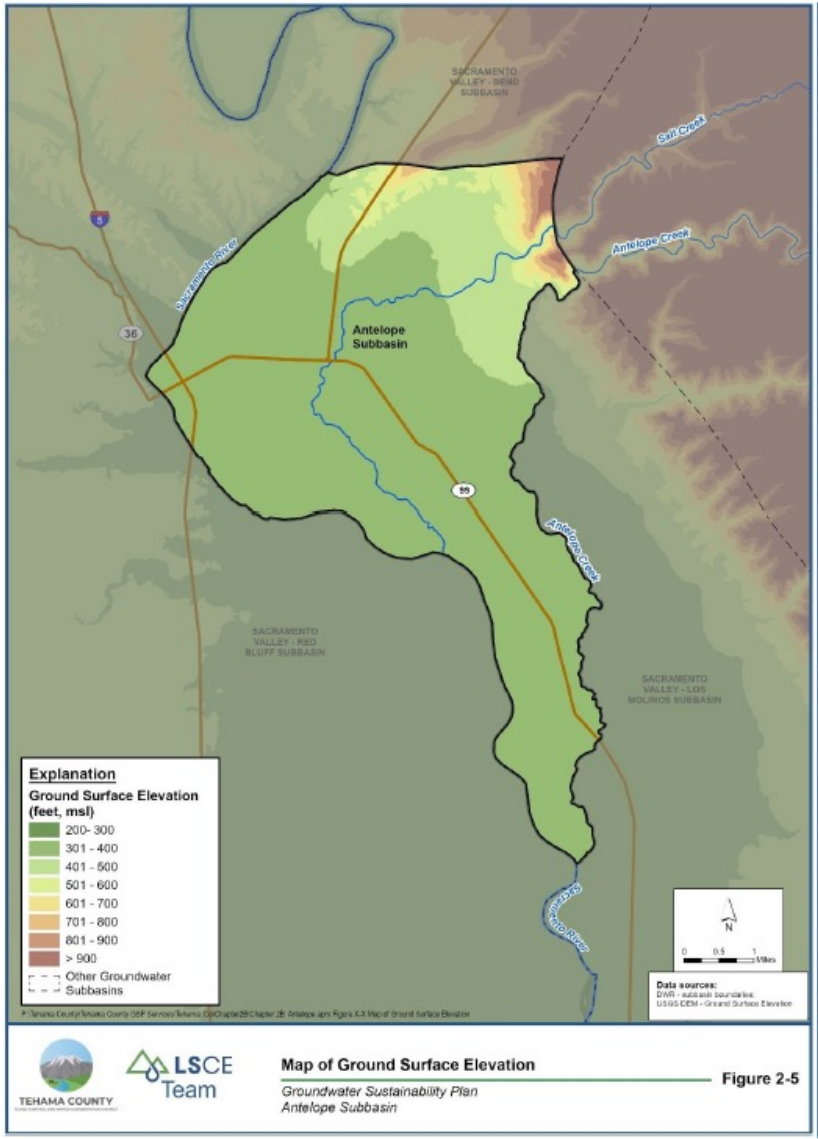
2.2.1.7 Surface Water Features and Areas of Recharge 2-34

2.2.1.8 Data Gaps and Uncertainty 2-38

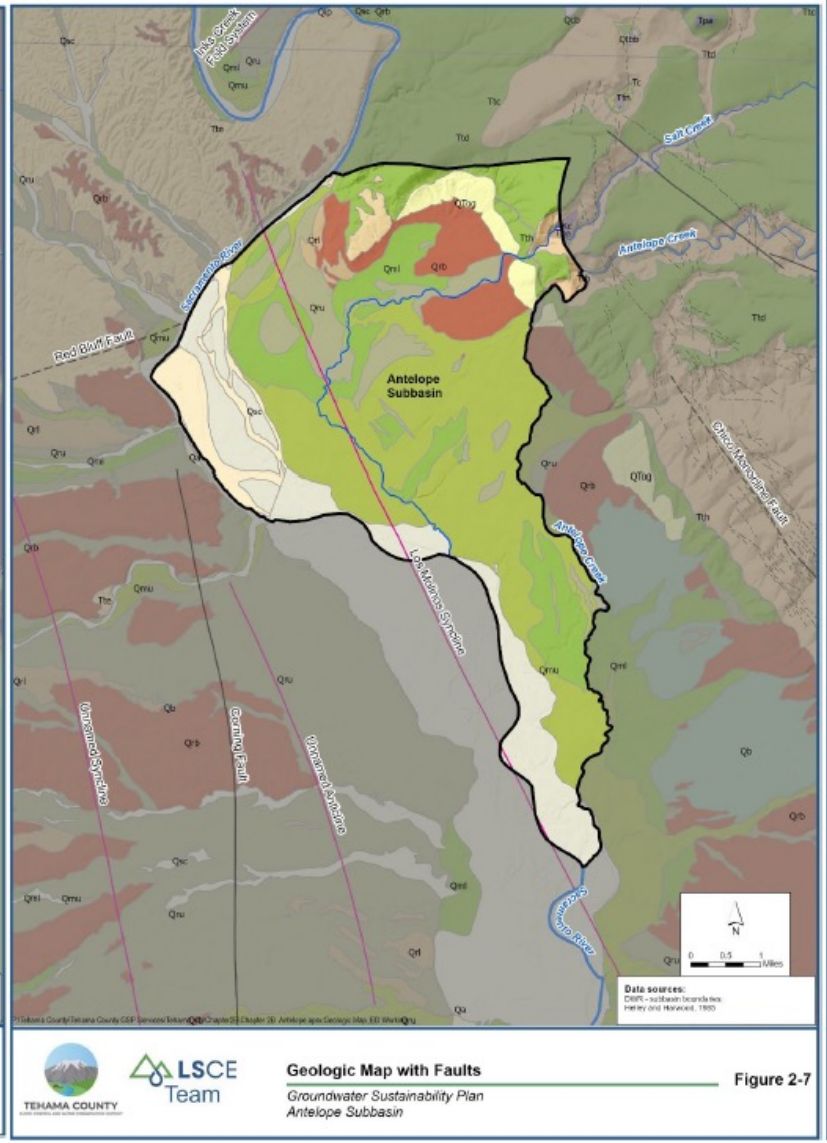


GSP Chapter 2B Basin Settings

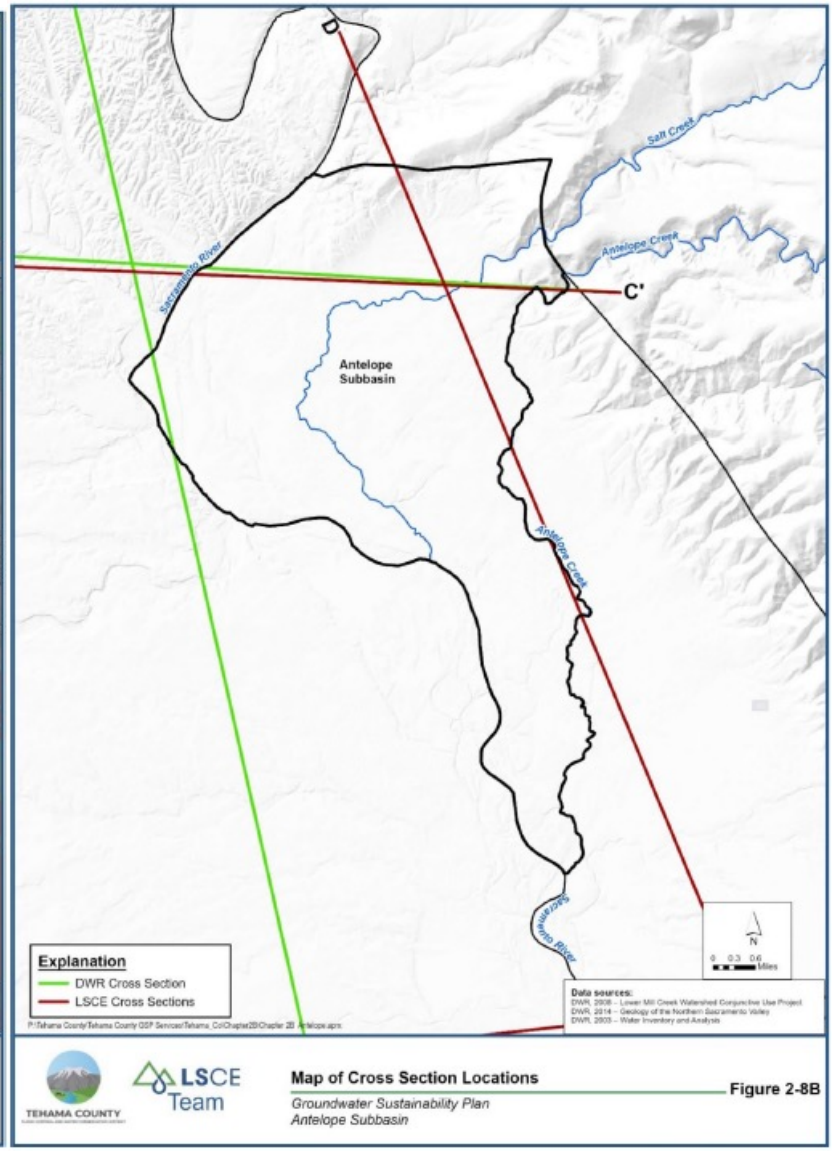
TEHAMA COUNTY
Flood Control and Water Conservation District



Map of Ground Surface Elevation — Figure 2-5
Groundwater Sustainability Plan
Antelope Subbasin



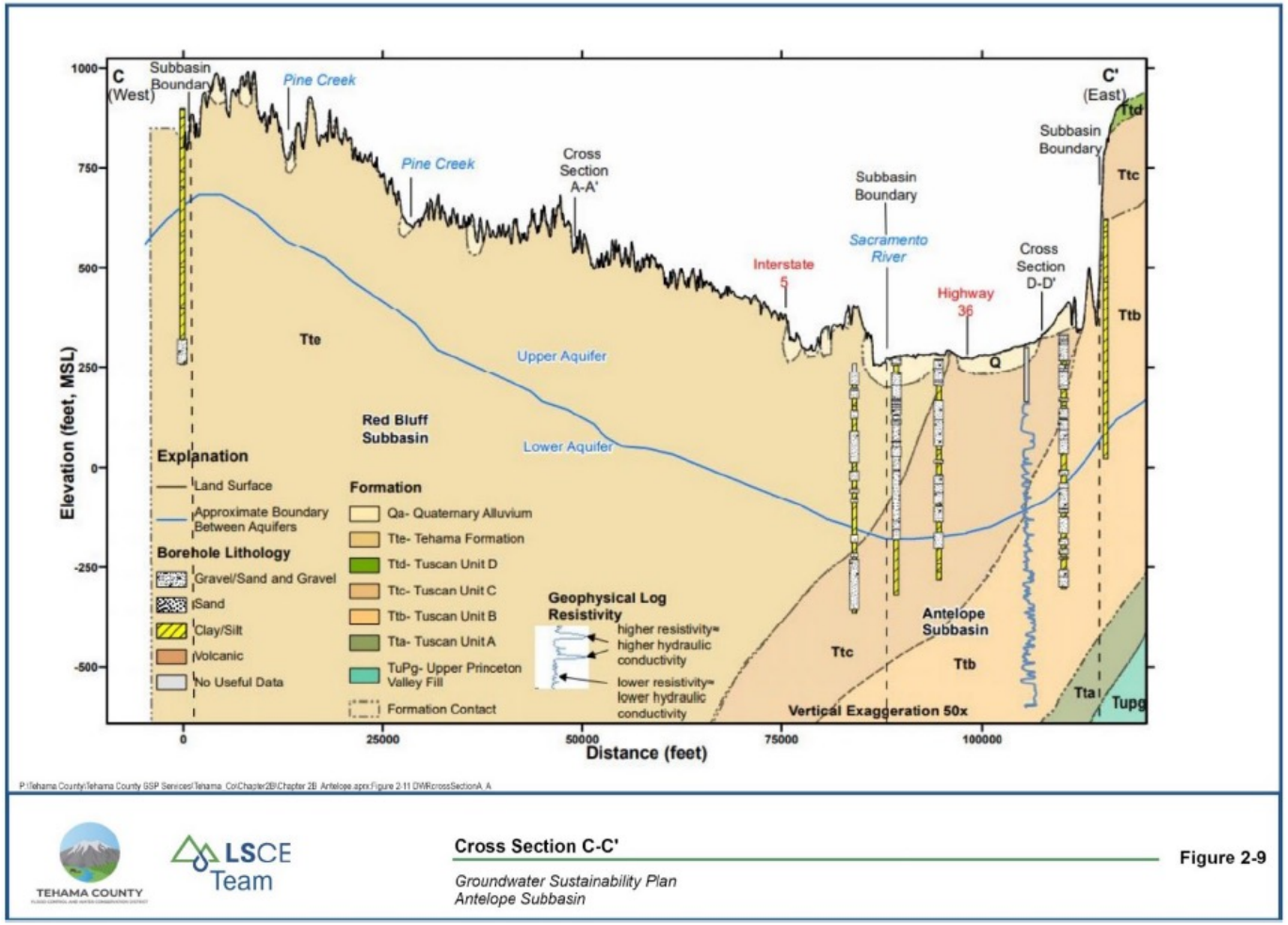
Geologic Map with Faults — Figure 2-7
Groundwater Sustainability Plan
Antelope Subbasin



Map of Cross Section Locations — Figure 2-8B
Groundwater Sustainability Plan
Antelope Subbasin

GSP Chapter 2B Basin Settings

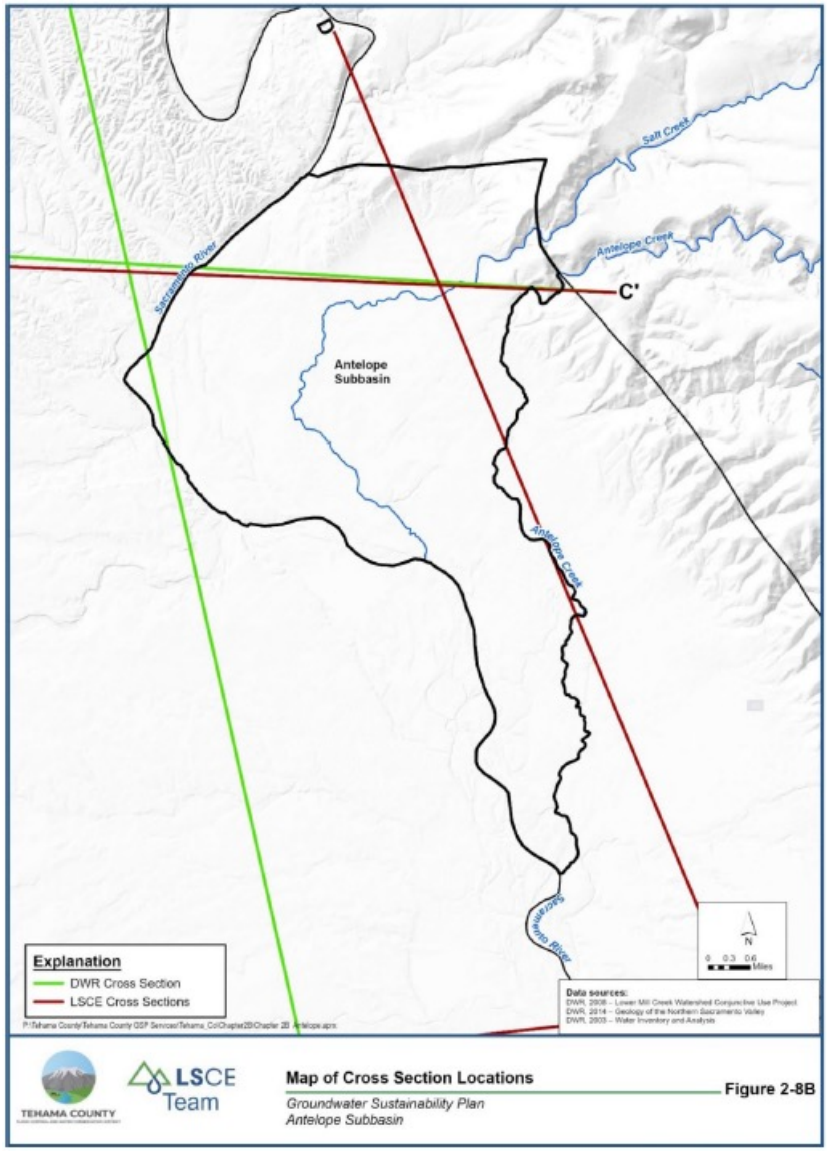
TEHAMA COUNTY
Flood Control and Water Conservation District



LSCE Team

Cross Section C-C' — Figure 2-9

Groundwater Sustainability Plan
Antelope Subbasin



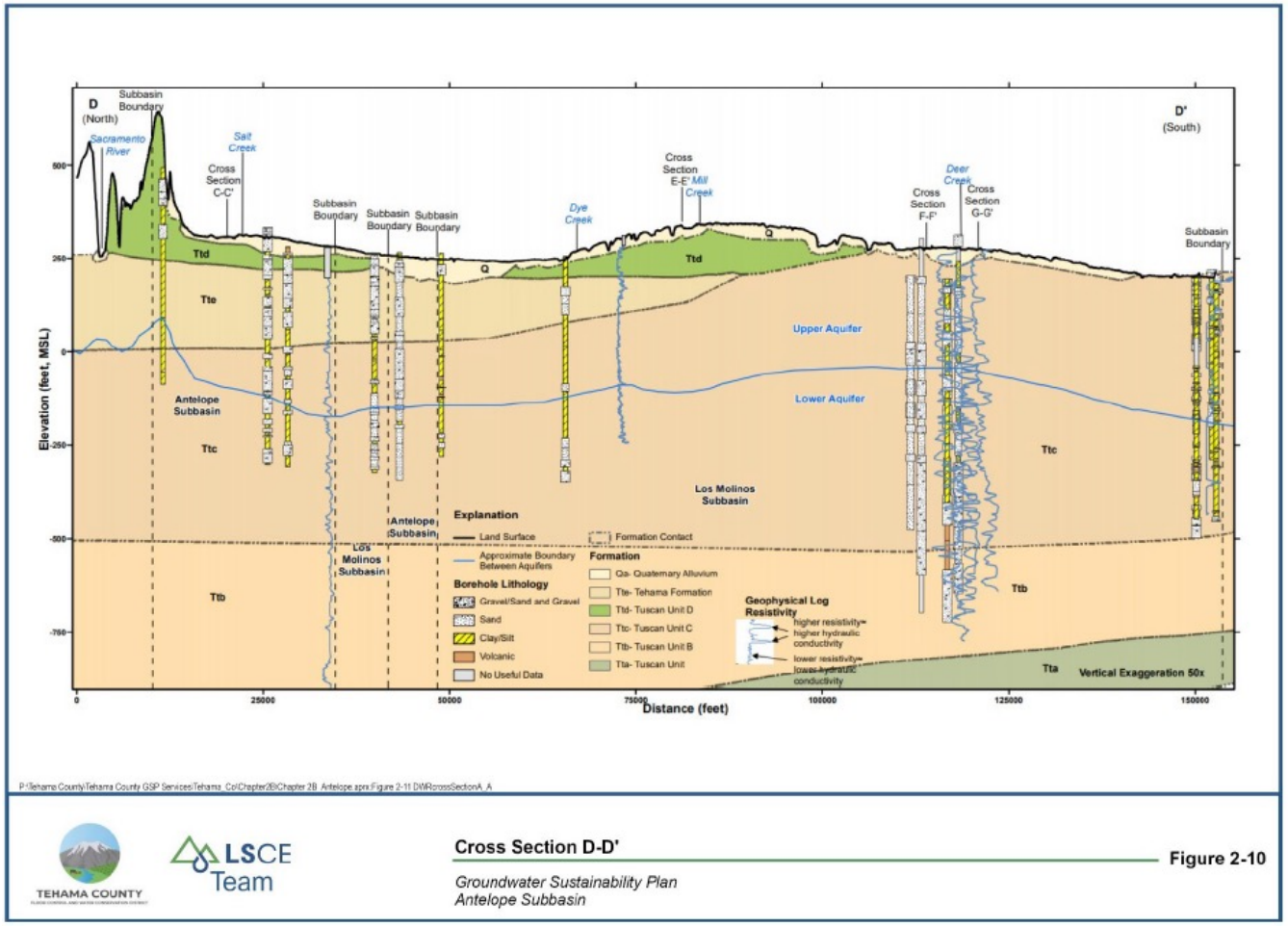
LSCE Team

Map of Cross Section Locations — Figure 2-8B

Groundwater Sustainability Plan
Antelope Subbasin

GSP Chapter 2B Basin Settings

TEHAMA COUNTY
Flood Control and Water Conservation District

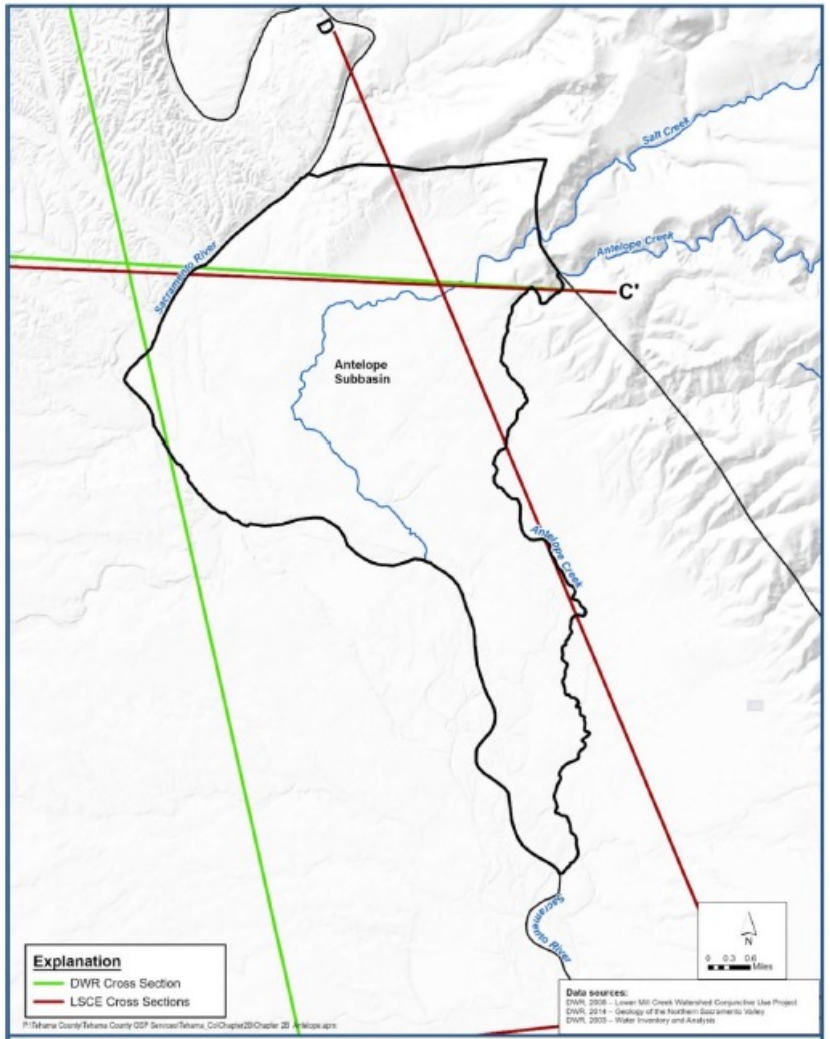


P:\Tehama County\Tehama County GSP Services\Tehama_Co\Chapter2B\Chapter 2B_Antelope.aprx\Figure 2-11 DWRcrossSectionA_A

TEHAMA COUNTY LSCE Team

Cross Section D-D' — **Figure 2-10**

Groundwater Sustainability Plan
Antelope Subbasin



P:\Tehama County\Tehama County GSP Services\Tehama_Co\Chapter2B\Chapter 2B_Antelope.aprx

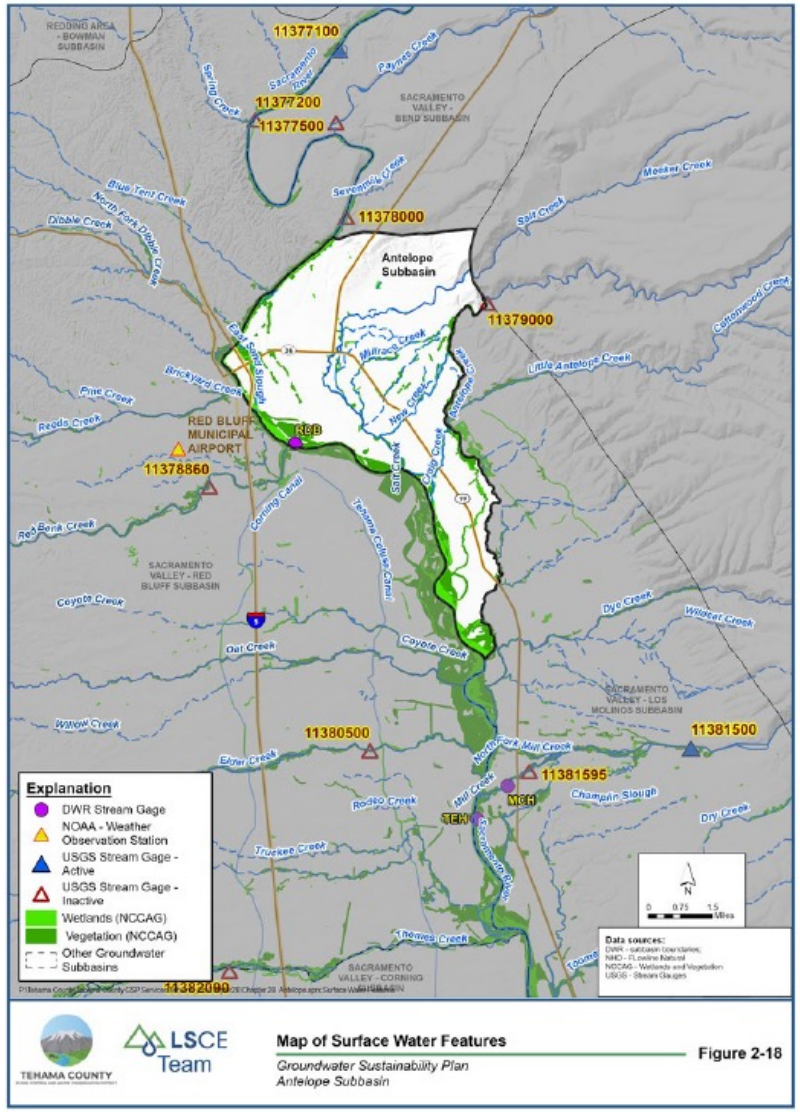
TEHAMA COUNTY LSCE Team

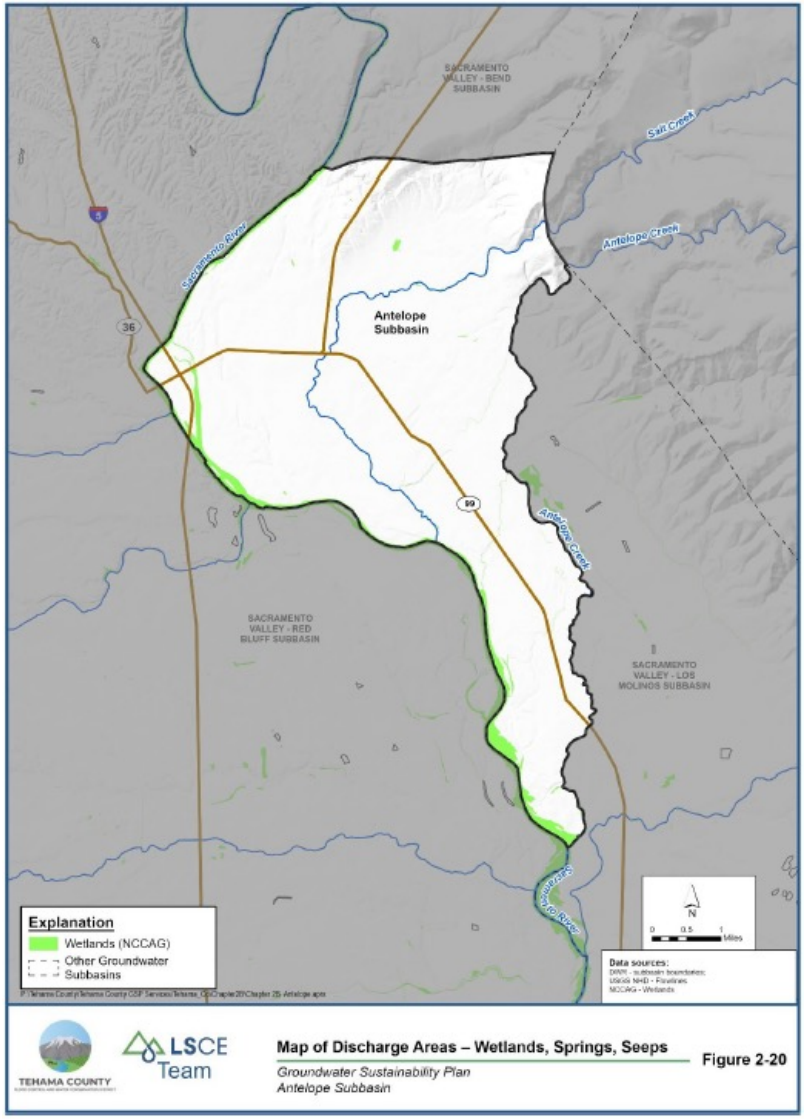
Map of Cross Section Locations — **Figure 2-8B**

Groundwater Sustainability Plan
Antelope Subbasin

GSP Chapter 2B Basin Settings

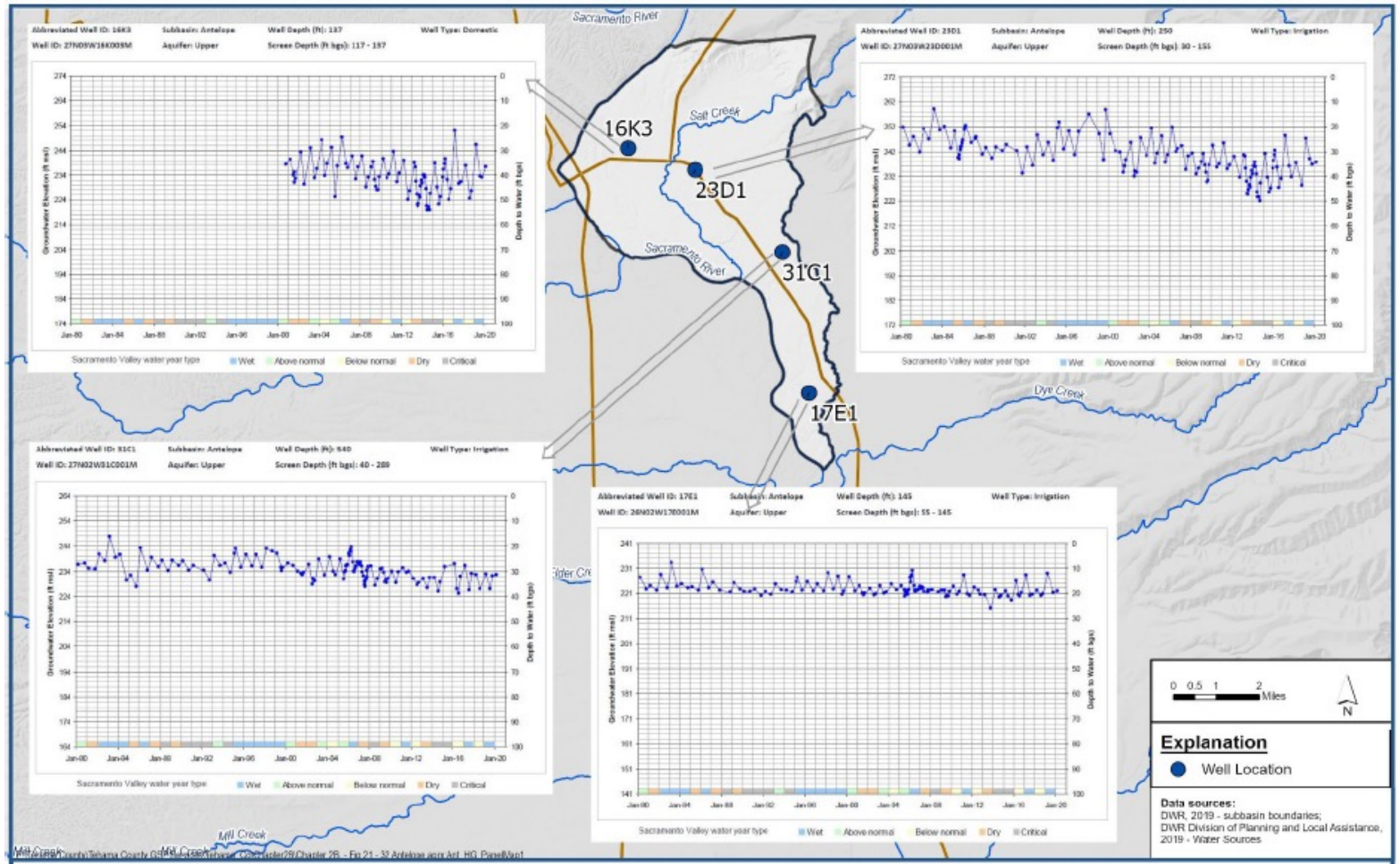
TEHAMA COUNTY
Flood Control and Water Conservation District





GSP Chapter 2B Basin Settings

TEHAMA COUNTY
Flood Control and Water Conservation District



TEHAMA COUNTY

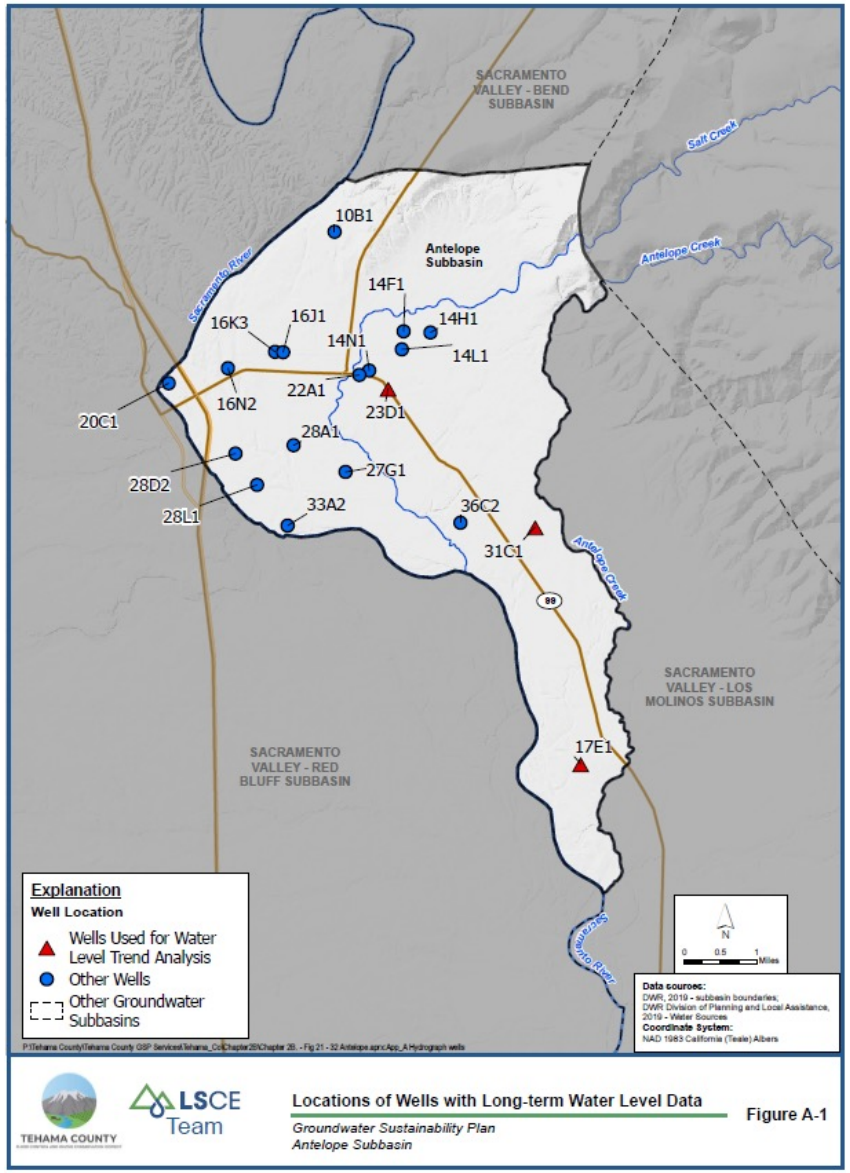
LSCE Team

Panel Map of Selected Groundwater Elevation Hydrographs — **Figure 2-21**

Groundwater Sustainability Plan
Antelope Subbasin

GSP Chapter 2B Basin Settings

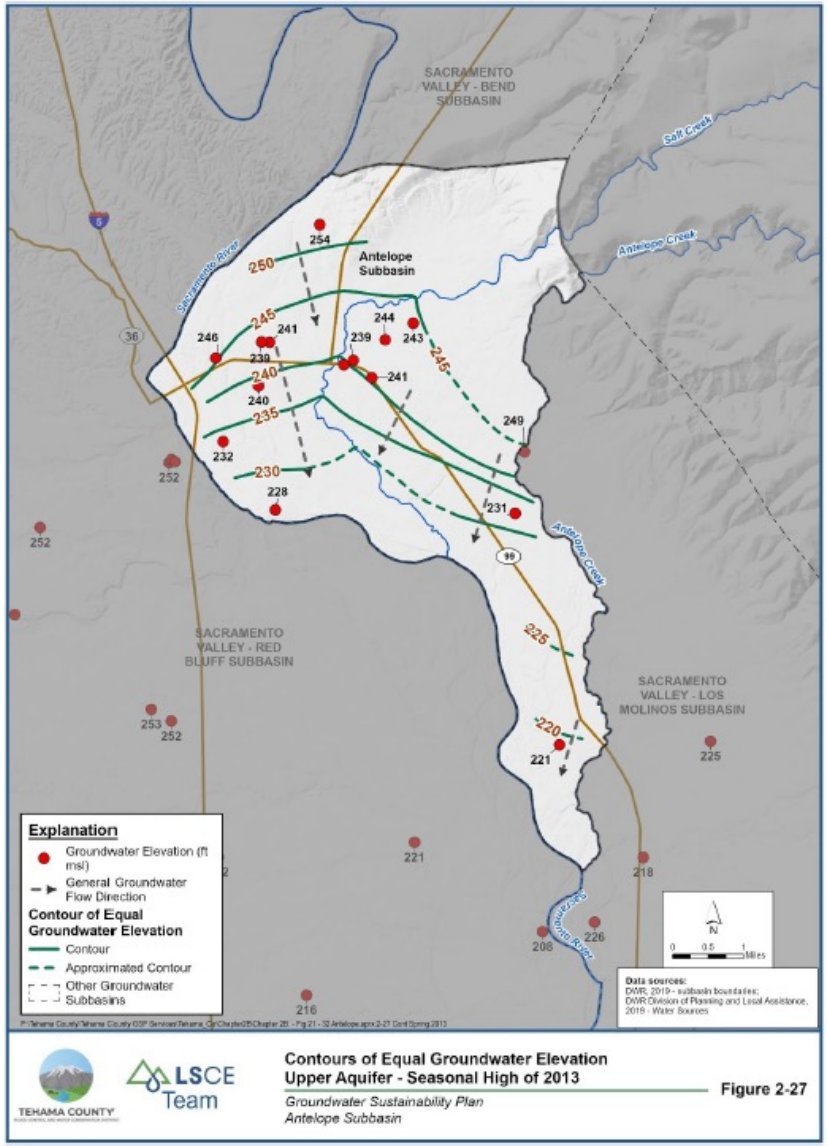
TEHAMA COUNTY
Flood Control and Water Conservation District



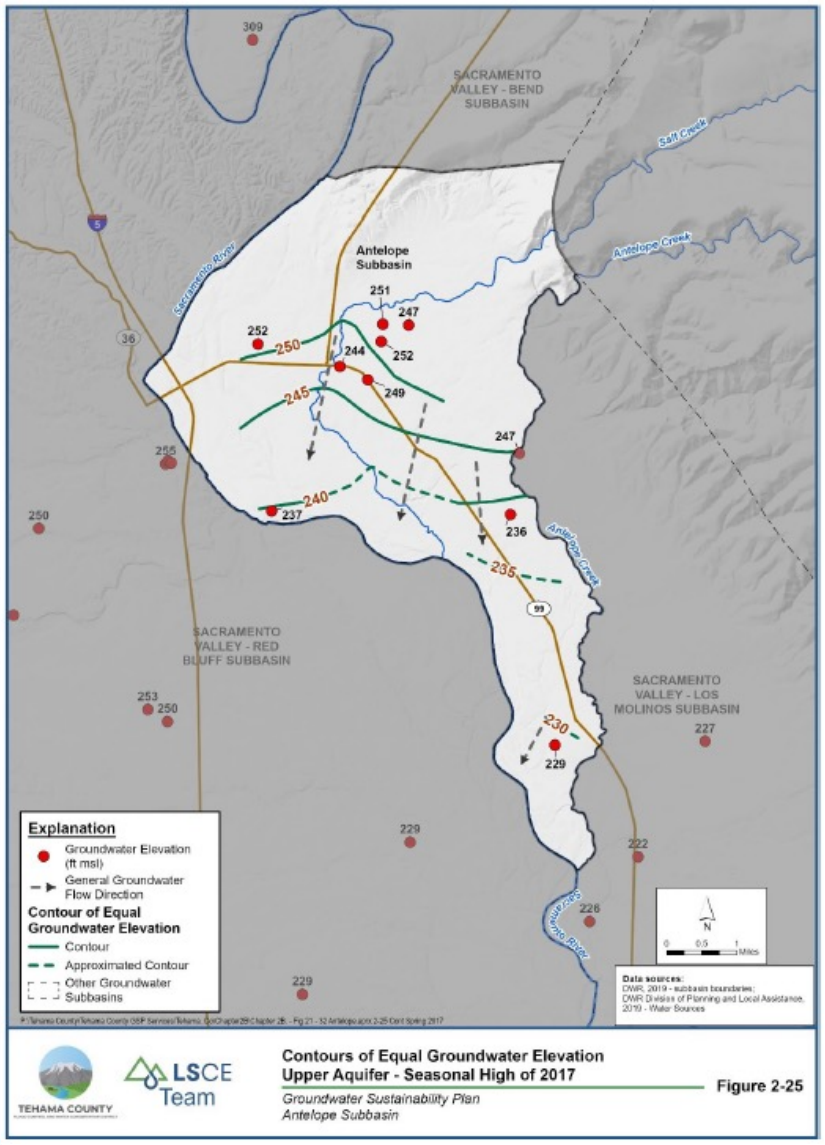
Water Year	Water Year Index	Wetater Year Type
1980	9.04	Above Normal
1981	6.21	Dry
1982	12.76	Wet
1983	15.29	Wet
1984	10.00	Wet
1985	6.47	Dry
1986	9.96	Wet
1987	5.86	Dry
1988	4.65	Critical
1989	6.13	Dry
1990	4.81	Critical
1991	4.21	Critical
1992	4.06	Critical
1993	8.54	Above Normal
1994	5.02	Critical
1995	12.89	Wet
1996	10.26	Wet
1997	10.82	Wet
1998	13.31	Wet
1999	9.80	Wet
2000	8.94	Above Normal
2001	5.76	Dry
2002	6.35	Dry
2003	8.21	Above Normal
2004	7.51	Below Normal
2005	8.49	Above Normal
2006	13.20	Wet
2007	6.19	Dry
2008	5.16	Critical
2009	5.78	Dry
2010	7.08	Below Normal
2011	10.54	Wet
2012	6.89	Below Normal
2013	5.83	Dry
2014	4.07	Critical
2015	4.00	Critical
2016	6.71	Below Normal
2017	14.14	Wet
2018	7.14	Below Normal
2019	10.34	Wet

GSP Chapter 2B Basin Settings

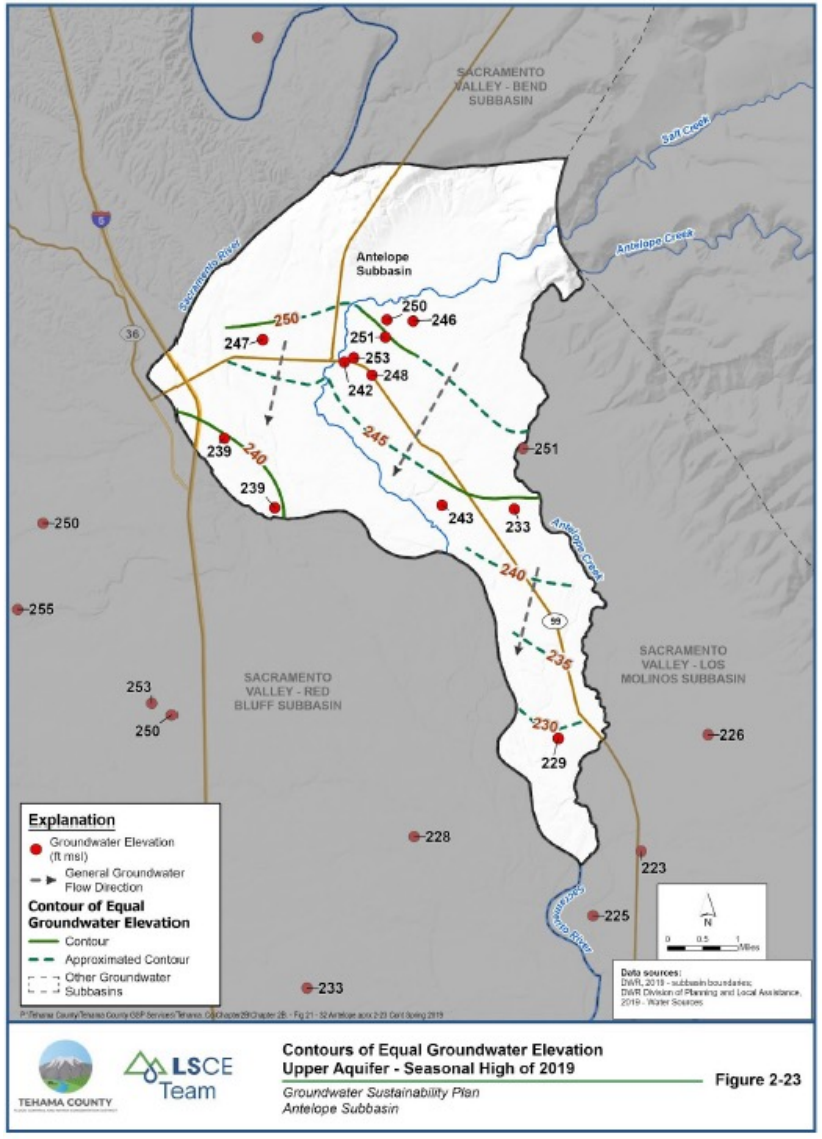
TEHAMA COUNTY
Flood Control and Water Conservation District



Contours of Equal Groundwater Elevation
Upper Aquifer - Seasonal High of 2013
Figure 2-27
Groundwater Sustainability Plan
Antelope Subbasin



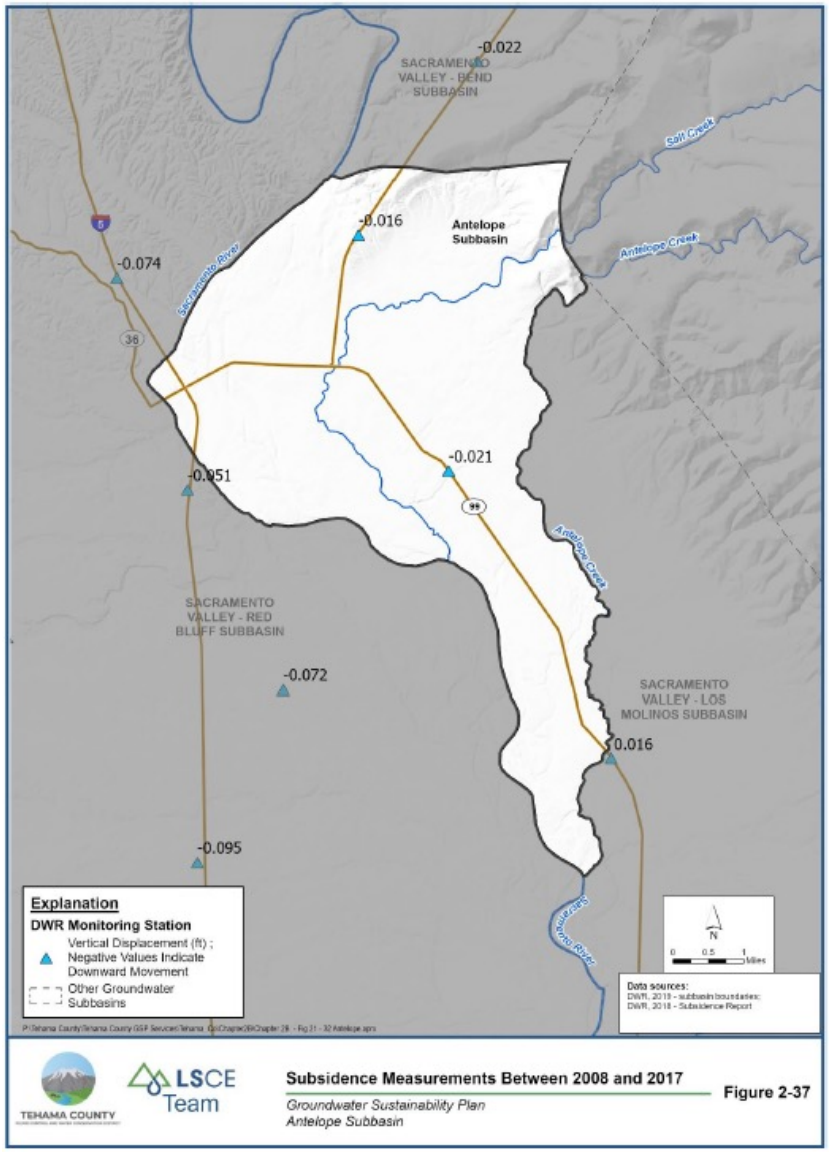
Contours of Equal Groundwater Elevation
Upper Aquifer - Seasonal High of 2017
Figure 2-25
Groundwater Sustainability Plan
Antelope Subbasin

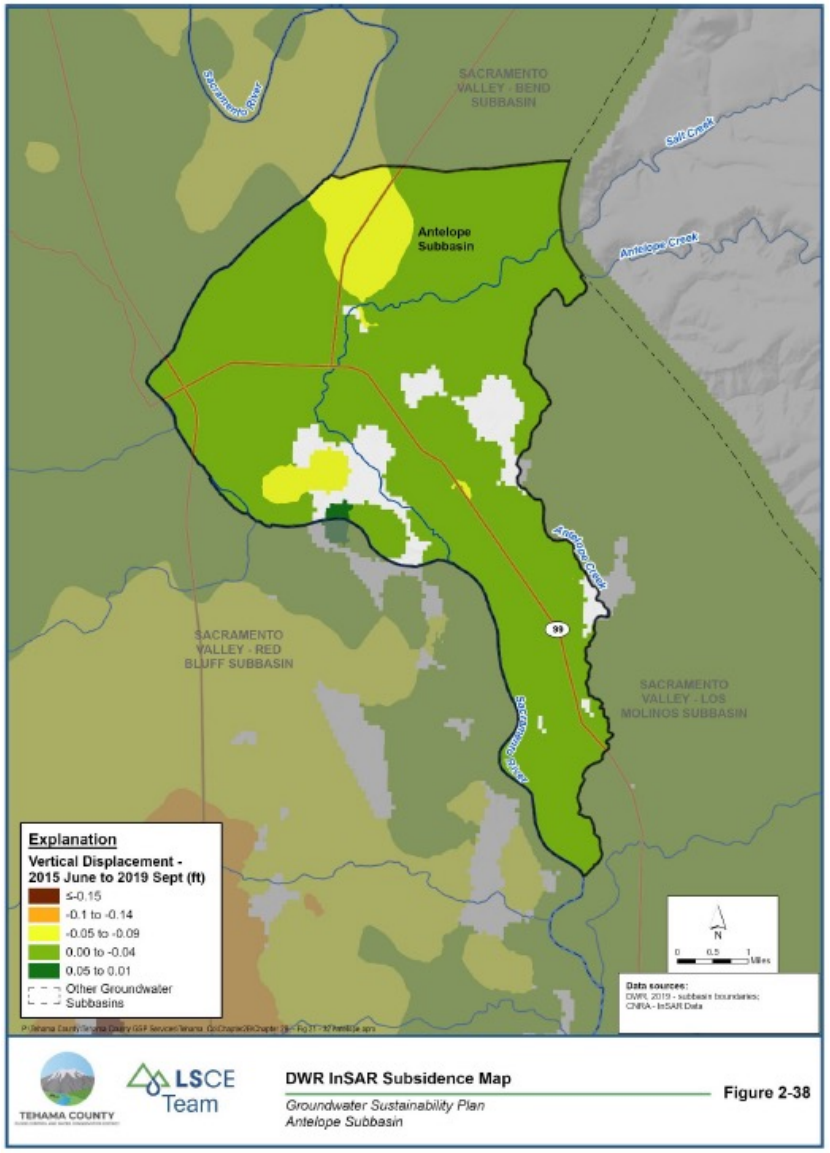


Contours of Equal Groundwater Elevation
Upper Aquifer - Seasonal High of 2019
Figure 2-23
Groundwater Sustainability Plan
Antelope Subbasin

GSP Chapter 2B Basin Settings

TEHAMA COUNTY
Flood Control and Water Conservation District



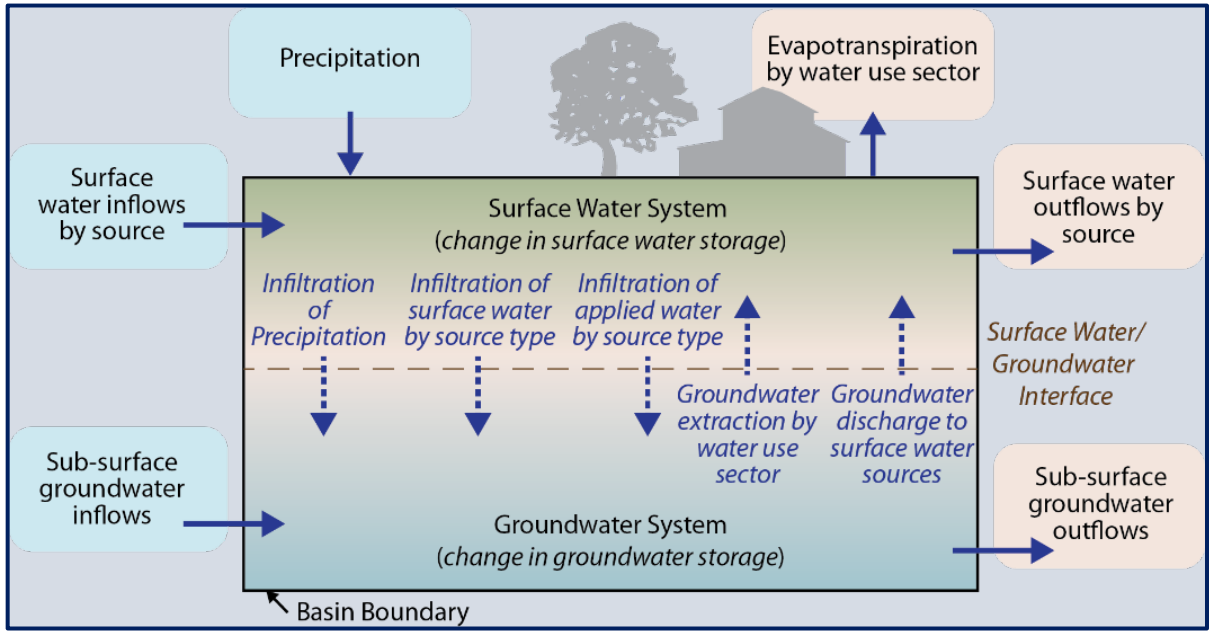


GSP Chapter 2C Water Budget

TEHAMA COUNTY
Flood Control and Water Conservation District

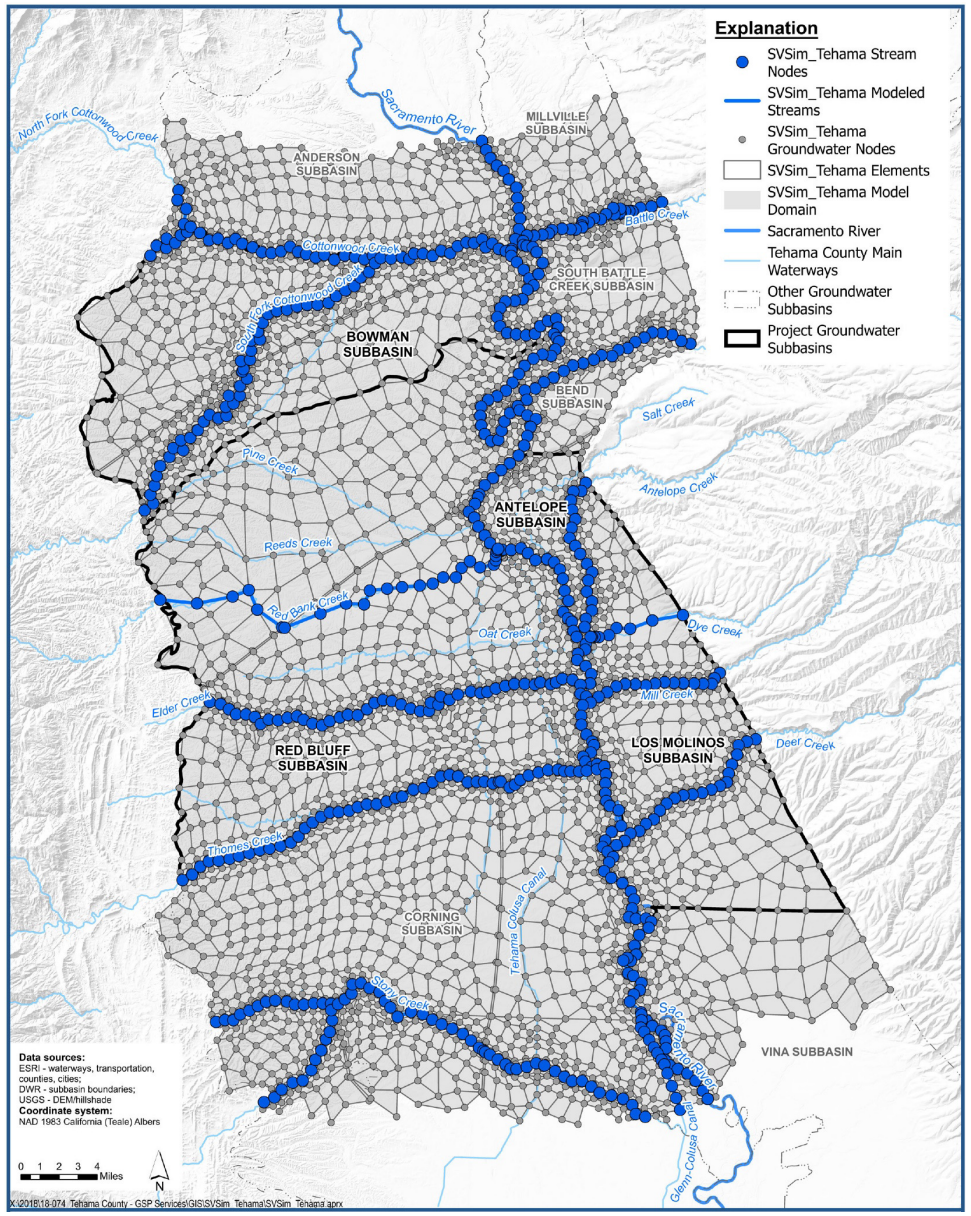
TABLE OF CONTENTS

1 Introduction 1-1
2 Subbasin Plan Area and Basin Setting (Reg. § 354.8) 2-1
2.1 Description of Plan Area 2-1
2.2 Basin Setting 2-1
2.3 Water Budget (Reg. § 354.18) 2-1
2.3.1 Water Budget Conceptual Model 2-2
2.3.1.1 Water Budget Structure 2-3
2.3.2 Water Budget Analysis Period 2-6
2.3.3 Surface Water System (SWS) Water Budget Description 2-7
2.3.3.1 General SWS Water Budget Components and Calculations 2-8
2.3.3.2 Detailed SWS Water Budget Accounting Centers and Components 2-9
2.3.4 Groundwater System (GWS) Water Budget Description 2-13
2.3.4.1 GWS Water Budget Components and Calculations 2-13
2.3.5 Historical Water Budget 2-15
2.3.5.1 Surface Water System Water Budget Results 2-20
2.3.5.2 Groundwater System Water Budget Results 2-58
2.3.5.3 Historical Water Budget Summary 2-73
2.3.6 Current Water Budget 2-77
2.3.6.1 Surface Water System Water Budget Results 2-77
2.3.6.2 Groundwater System Water Budget Results 2-79
2.3.7 Projected Water Budget (STILL IN PROGRESS) 2-80
2.3.7.1 Approach to Developing Projected Water Budget 2-80
2.3.7.2 Surface Water System 2-80
2.3.7.3 Groundwater System 2-80
2.3.7.4 Uncertainty in Projected Water Budget Estimates 2-80
2.3.7.5 Estimate of Sustainable Yield 2-80



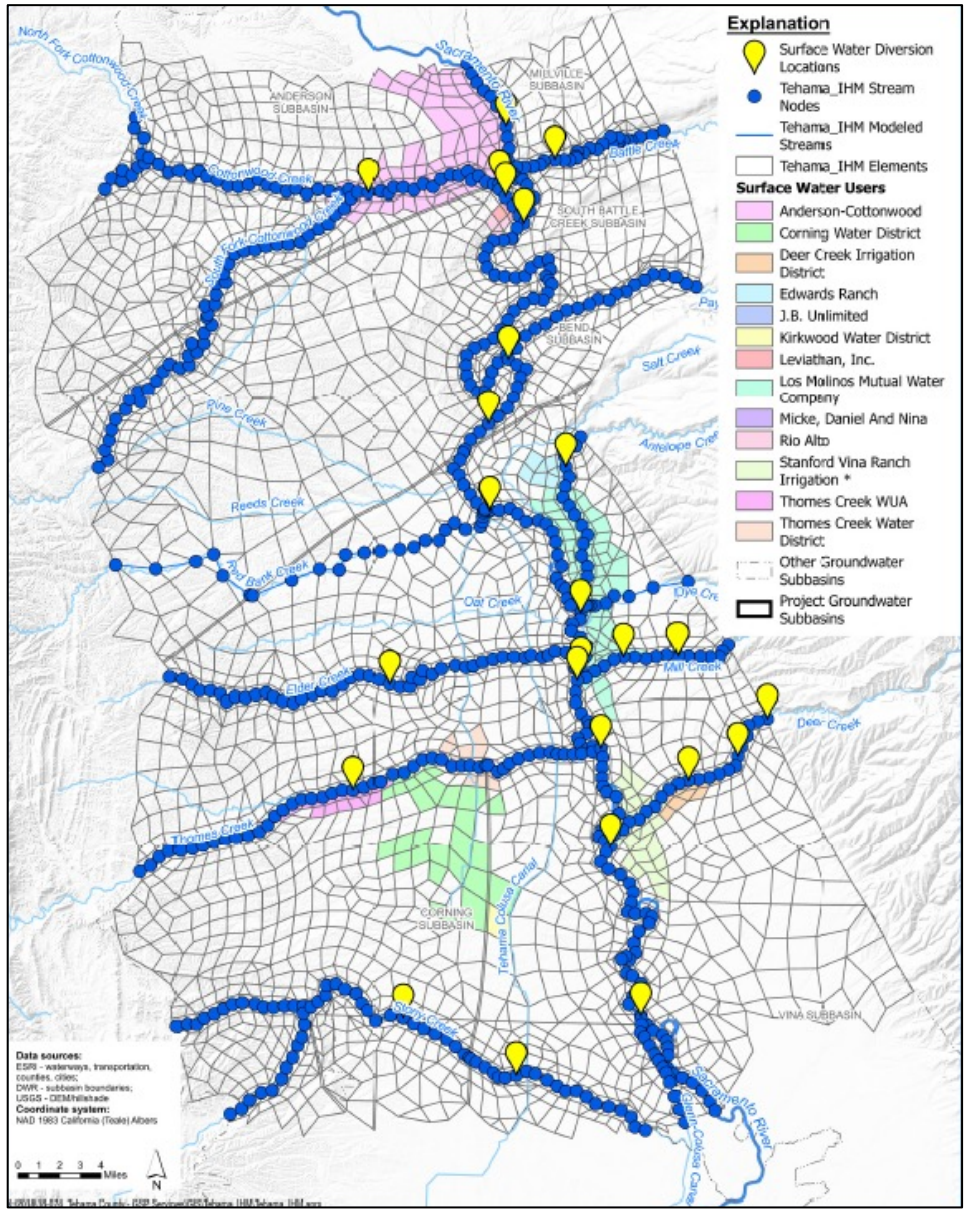
Tehama County Integrated Hydrologic Model:

- Historical Water Budget
  - 1990-2018
- Current Water Budget
  - Average of three most recent water years (WY 2016-2018)
- Project Water Budget
  - 50-year hydrology
  - Reflects historic wet and dry sequences

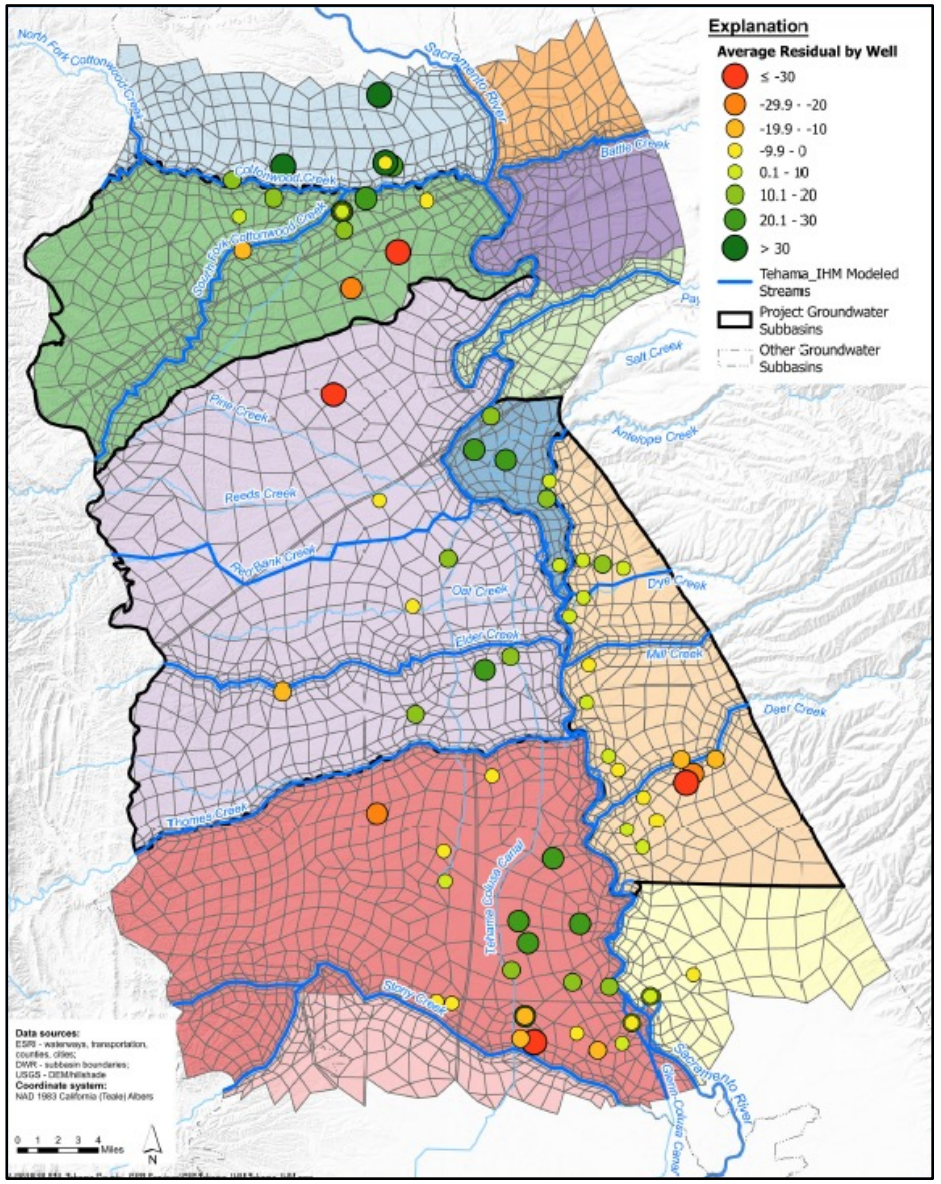


Tehama County Integrated Hydrologic Model:
Model Development

- Refinements
  - Extend through WY 2018
  - Refine textural model
  - Refine Root Zone component
  - Refine SW diversions
  - Refine vertical discretization of pumping
  - Refine initial conditions and boundary conditions



Tehama County Integrated Hydrologic Model:
Model Calibration – Water Levels

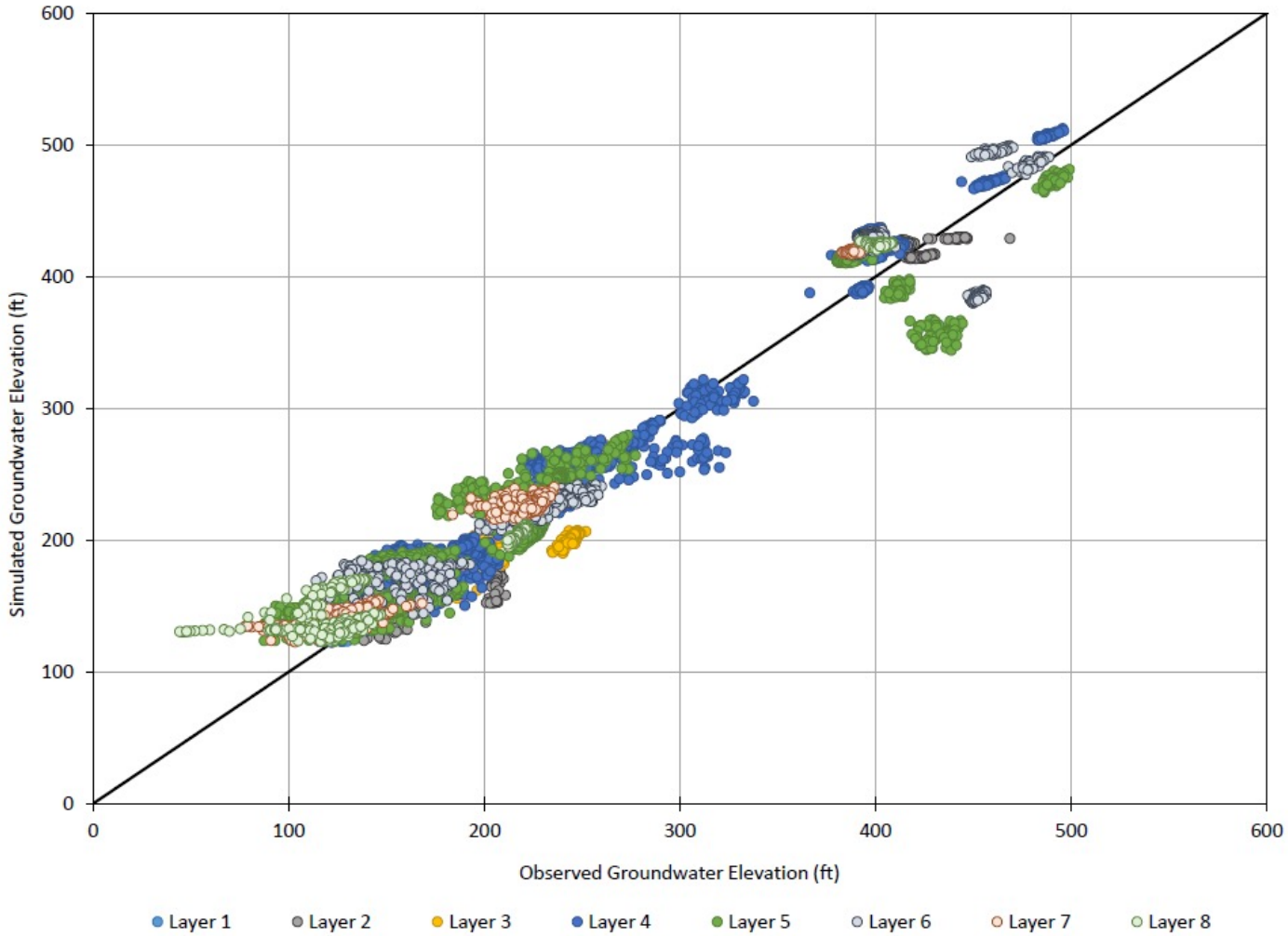


- Water Level Calibration
  - Select calibration wells
  - Evaluate residual water levels (simulated minus observed)
  - Calculate model statistics
    - Target RSME: 0.10-0.15
    - Target Correlation Coefficient: 1.00

Calibration Statistics:	
Mean Residual	5.21
Absolute Mean Residual	15.73
Normalized RSME	0.12
Correlation Coefficienct	0.98

Tehama County Integrated Hydrologic Model:
Model Calibration – Water Levels

Model Residuals (Simulated minus Observed)



GSP Chapter 2C Water Budget

TEHAMA COUNTY
Flood Control and Water Conservation District

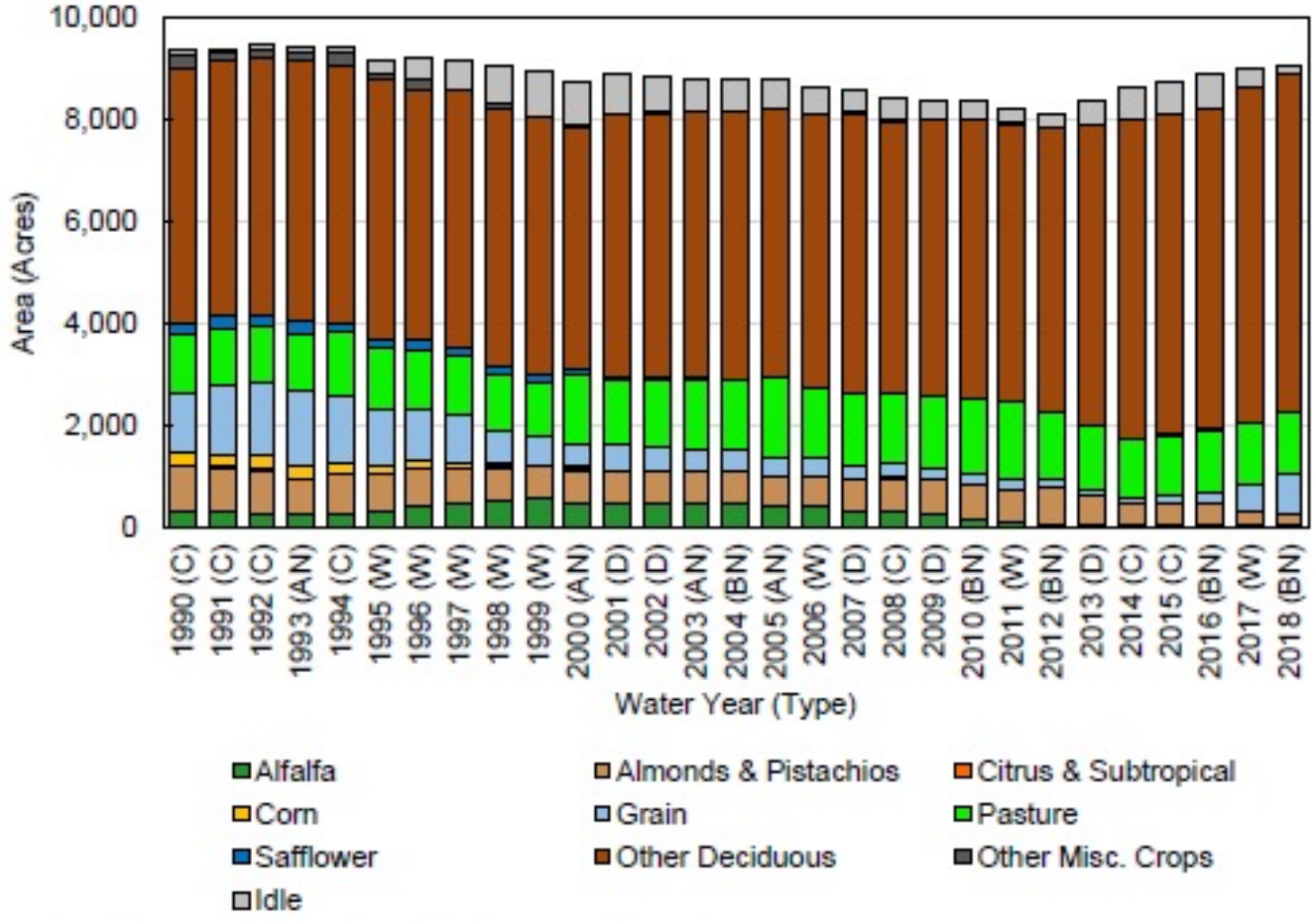


Figure 2-44. Antelope Subbasin Agricultural Land Use Areas

GSP Chapter 2C Water Budget

TEHAMA COUNTY
Flood Control and Water Conservation District

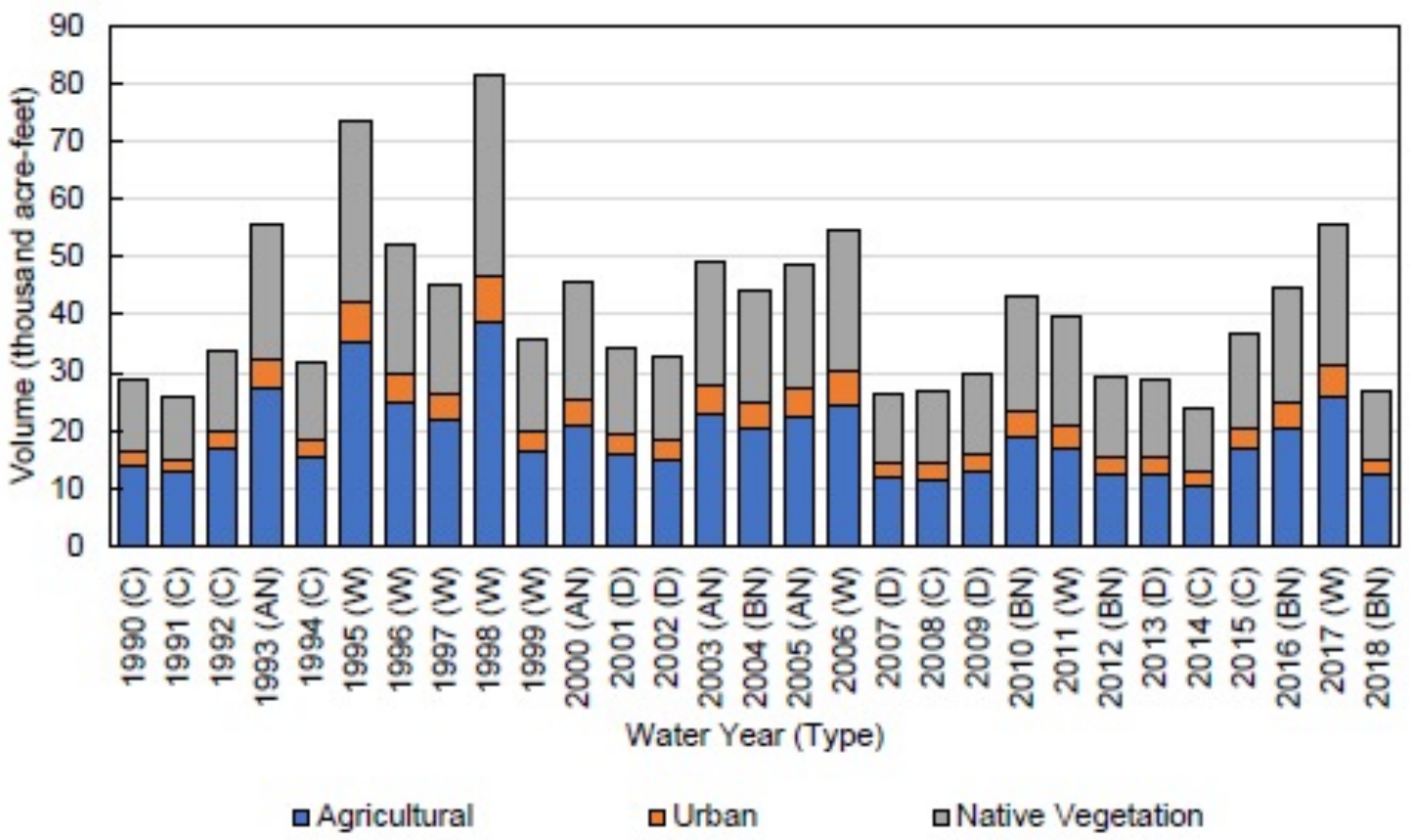


Figure 2-46. Antelope Subbasin Precipitation, by Water Use Sector

GSP Chapter 2C Water Budget

TEHAMA COUNTY
Flood Control and Water Conservation District

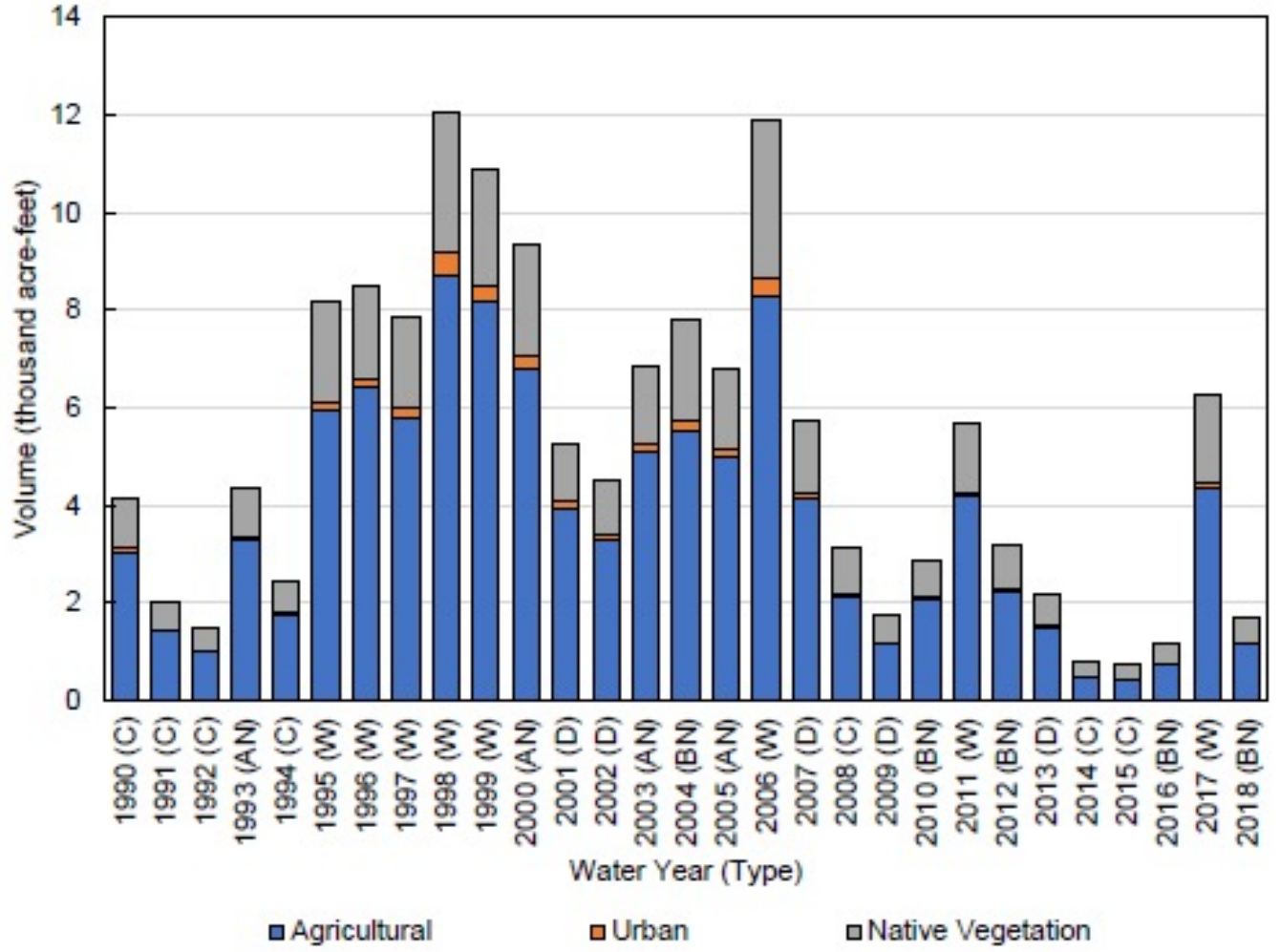


Figure 2-48. Antelope Subbasin Groundwater Uptake, by Water Use Sector

GSP Chapter 2C Water Budget

TEHAMA COUNTY
Flood Control and Water Conservation District

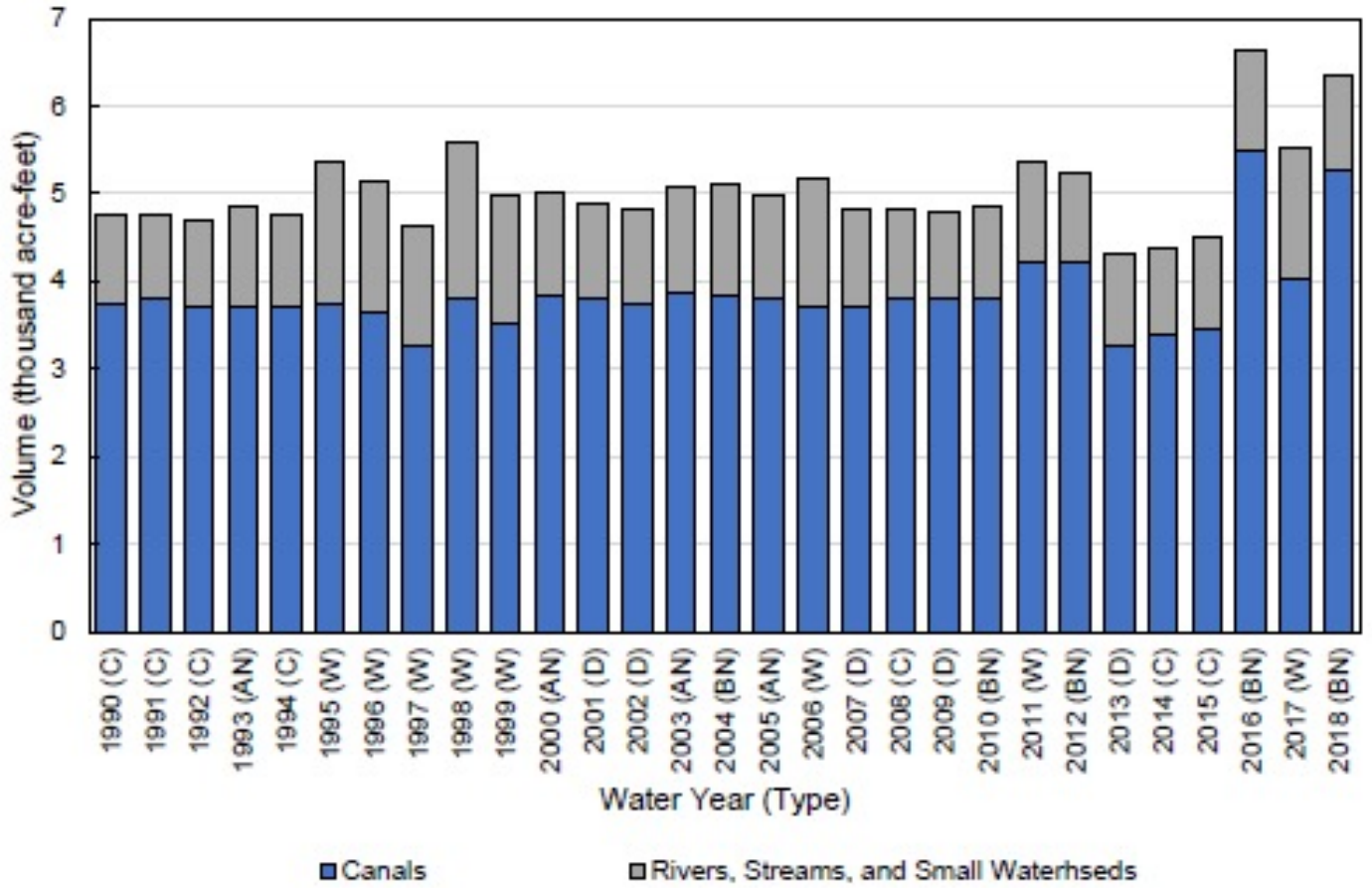


Figure 2-58. Antelope Subbasin Infiltration of Surface Water, by Water Use Sector

GSP Chapter 2C Water Budget

TEHAMA COUNTY
Flood Control and Water Conservation District

Table 2-34. Antelope 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)		-117,770	9,130	120,190	-12,160	-4,130	-4,480	-4,480
1991 (C)		-105,530	6,410	110,520	-12,920	-1,990	-3,250	-7,730
1992 (C)		-101,000	8,330	106,660	-14,470	-1,460	-1,680	-9,410
1993 (AN)		-103,760	15,760	108,260	-8,400	-4,330	7,790	-1,620
1994 (C)		-109,260	8,270	111,440	-12,160	-2,440	-3,890	-5,500
1995 (W)		-107,340	21,000	109,590	-6,320	-8,190	9,020	3,510
1996 (W)		-121,490	17,840	120,970	-7,970	-8,510	1,130	4,640
1997 (W)		-122,750	14,800	122,460	-8,470	-7,830	-1,510	3,130
1998 (W)		-128,290	27,260	124,140	-3,220	-12,040	8,140	11,270
1999 (W)		-134,680	15,430	132,200	-6,530	-10,870	-4,170	7,100
2000 (AN)		-128,400	15,740	126,870	-5,630	-9,350	-500	6,600
2001 (D)		-122,830	10,310	123,790	-10,930	-5,250	-4,640	1,960
2002 (D)		-115,010	11,410	118,040	-11,760	-4,530	-1,580	380
2003 (AN)		-116,470	16,520	118,040	-8,350	-6,850	3,170	3,540
2004 (BN)		-120,250	15,280	122,520	-9,910	-7,810	110	3,650
2005 (AN)		-126,520	15,350	125,080	-6,400	-6,780	1,010	4,660
2006 (W)		-124,970	20,300	124,950	-4,360	-11,910	4,300	8,950
2007 (D)		-123,920	8,140	123,480	-8,890	-5,730	-6,630	2,320
2008 (C)		-110,730	8,630	115,470	-15,280	-3,120	-4,770	-2,440
2009 (D)		-101,740	6,990	106,900	-12,350	-1,760	-1,690	-4,140
2010 (BN)		-106,110	12,780	108,170	-9,480	-2,870	2,760	-1,380
2011 (W)		-108,280	15,030	109,330	-5,600	-5,680	5,080	3,700
2012 (BN)		-109,680	8,070	111,130	-11,810	-3,190	-5,200	-1,500
2013 (D)		-99,510	12,210	102,600	-14,410	-2,180	-1,020	-2,520
2014 (C)		-90,800	6,370	95,770	-16,420	-790	-5,600	-8,120
2015 (C)		-85,670	10,280	93,770	-20,050	-710	-2,120	-10,240
2016 (BN)		-83,740	11,080	92,320	-14,160	-1,170	4,590	-5,650
2017 (W)		-97,390	18,160	102,890	-10,990	-6,250	6,690	1,040
2018 (BN)		-97,060	6,150	103,810	-16,570	-1,670	-5,060	-4,020
Average (1990-2018)		-111,070	12,860	113,500	-10,550	-5,150	-140	
1990-2018	W	-118,150	18,730	118,320	-6,680	-8,910	3,590	
	AN	-115,580	15,880	117,130	-7,720	-5,990	3,990	
	BN	-100,100	10,740	105,050	-12,680	-2,980	300	
	D	-112,600	9,810	114,960	-11,670	-3,890	-3,110	
	C	-102,970	8,200	107,690	-14,780	-2,090	-3,680	

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

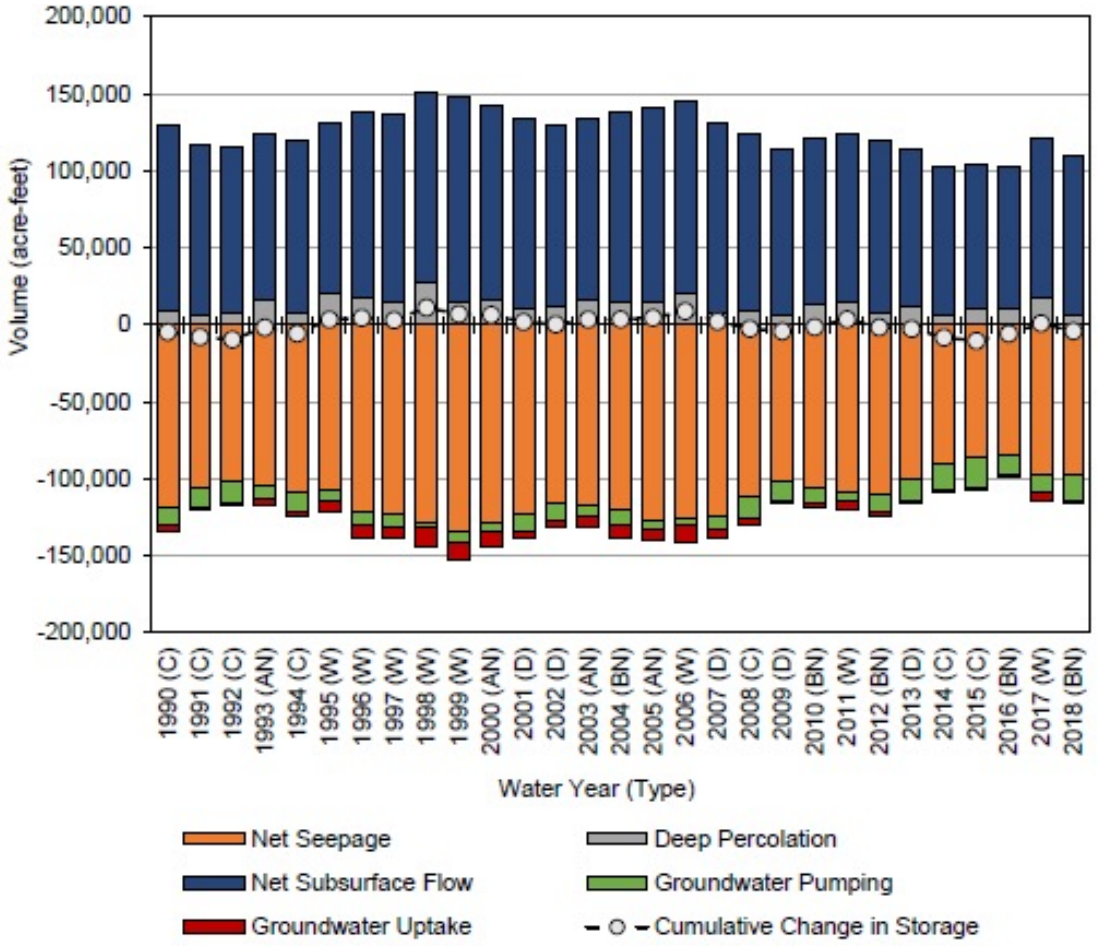


Figure 2-70. Antelope Subbasin Historical Water Budget Summary

DRAFT

GSP Chapter 2C Water Budget

TEHAMA COUNTY
Flood Control and Water Conservation District

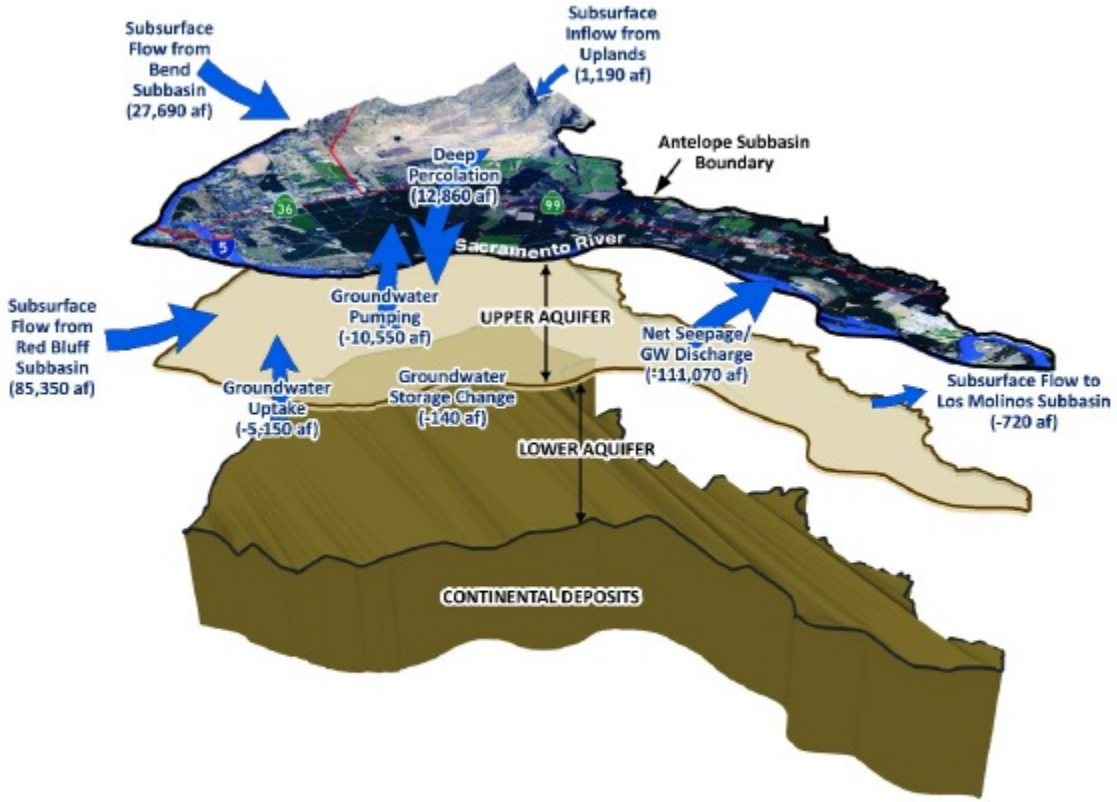


Figure 2-71. Diagram of the Antelope Subbasin Historical Average Annual Water Budget (1990-2018)

Table 2-36. Comparison of Recent GWS Water Budget Periods (acre-feet, rounded)

GWS Water Budget Component	Recent Water Budget Periods				
	Recent 10 Years (2009-2018)	Recent 5 Years (2014-2018)	Recent 3 Years (2016-2018)	Recent 1 Year 2018	Recent 1 Year 2019
Net Seepage	-98,000	-90,930	-92,730	-97,060	-99,630
Deep Percolation	10,710	10,410	11,800	6,150	17,190
Net Subsurface Flows	102,670	97,710	99,670	103,810	102,040
Groundwater Pumping	-13,180	-15,640	-13,910	-16,570	-9,570
Groundwater Uptake	-2,630	-2,120	-3,030	-1,670	-4,650
Annual Groundwater Storage Change[1]	*-200*	*-300*	*2,100*	*-5,100*	*5,600*

[1] Annual storage change volumes rounded to 100 af.
Note: positive values indicate inflows/increasing storage, negative values indicate outflows/decreasing storage.

Proposed SMC Development Process

TEHAMA COUNTY
Flood Control and Water Conservation District

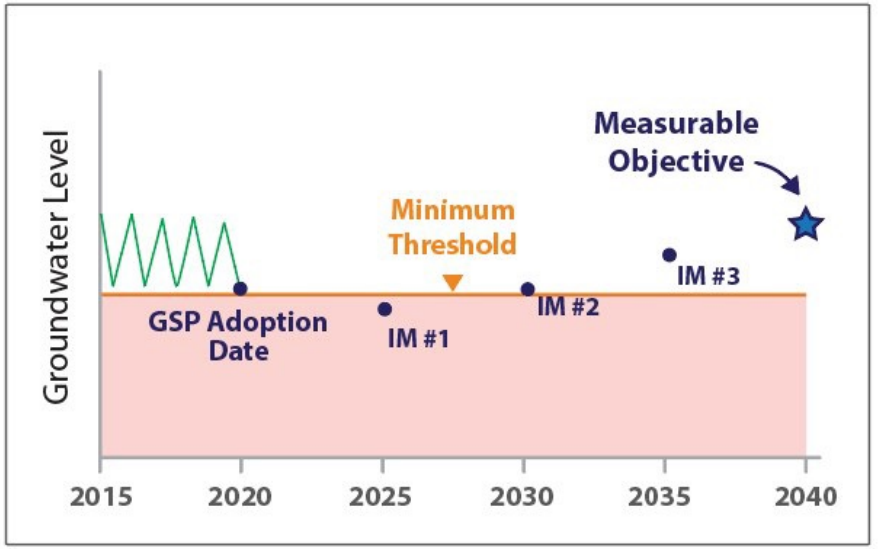
The charge under SGMA is to build a “thermometer” for each of the six groundwater sustainability indicators

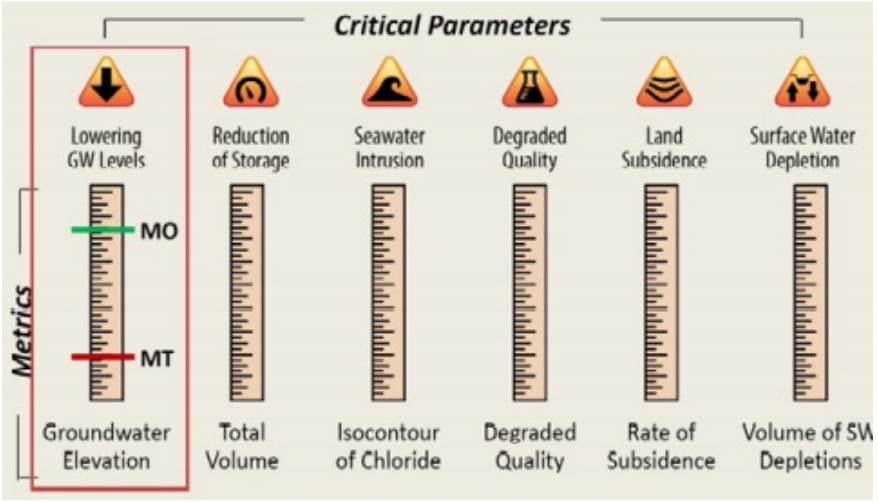
1. Define what is healthy/sustainable
2. Define what is unhealthy/unsustainable
3. Determine what to do when not healthy or close to not healthy

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



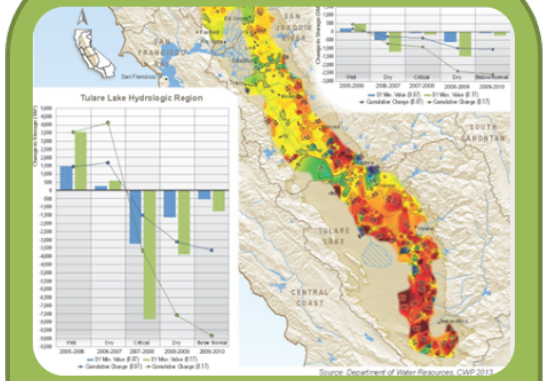


Sustainability Indicator Examples

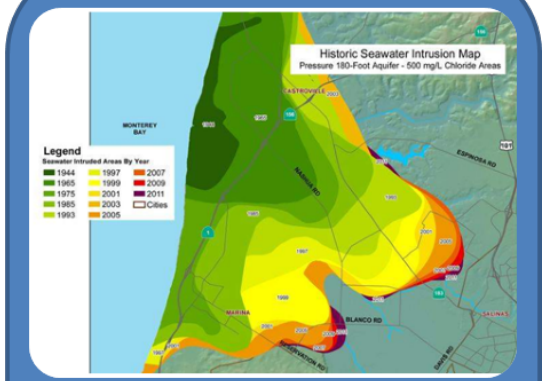
TEHAMA COUNTY
Flood Control and Water Conservation District



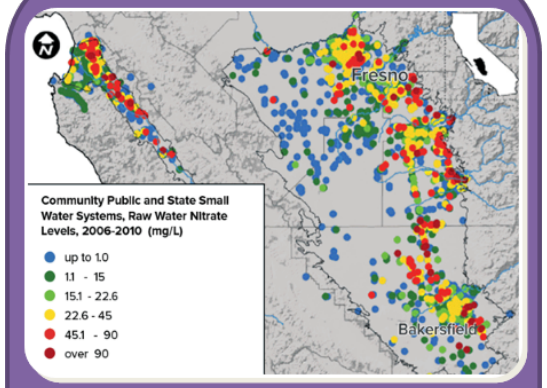
Lowering of GW Levels



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

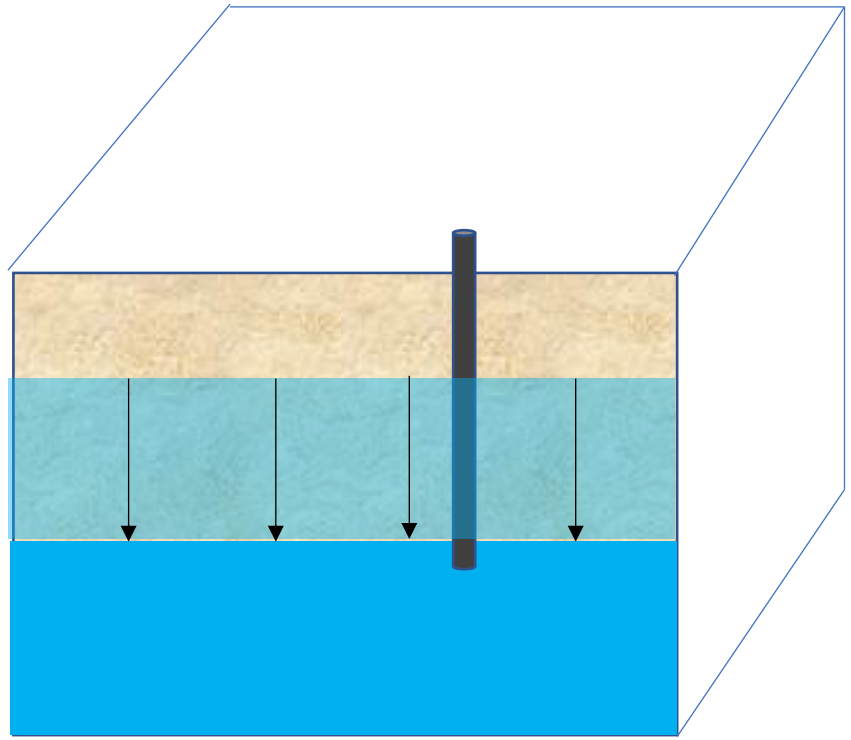
Interim Milestones

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

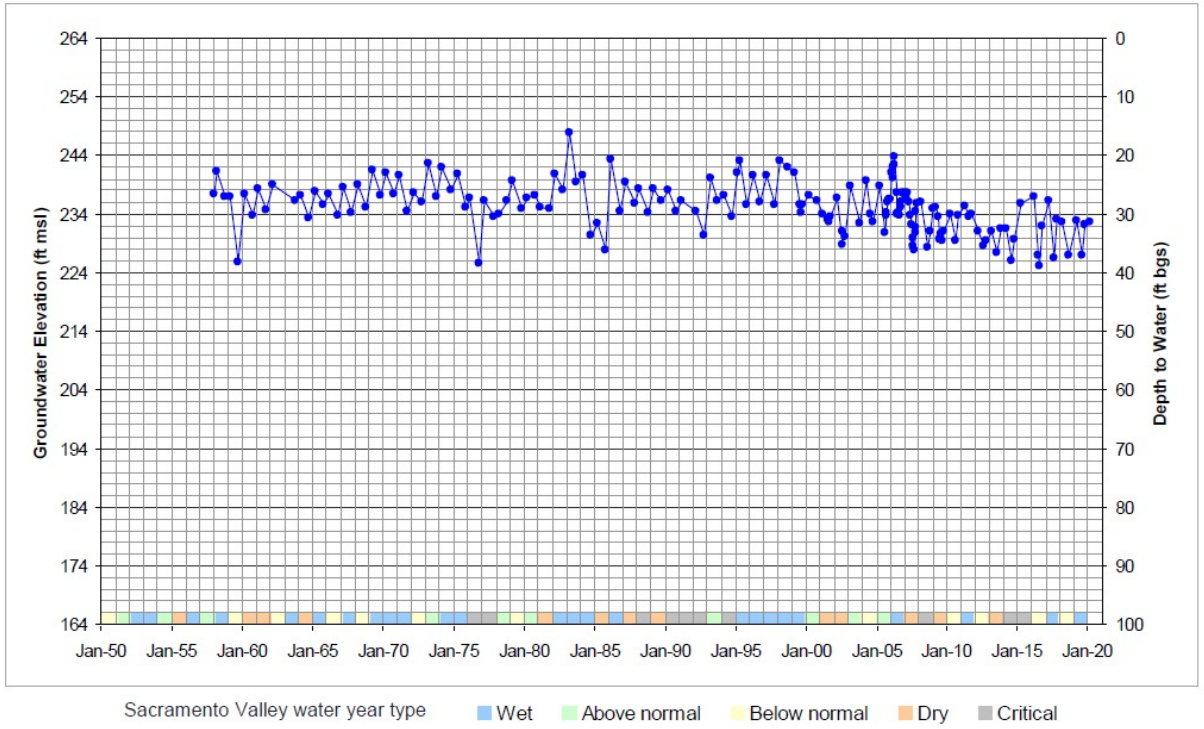
- Overdraft during a period of drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and recharge are managed as necessary to ensure that reductions during a period of drought are offset by increases during other periods

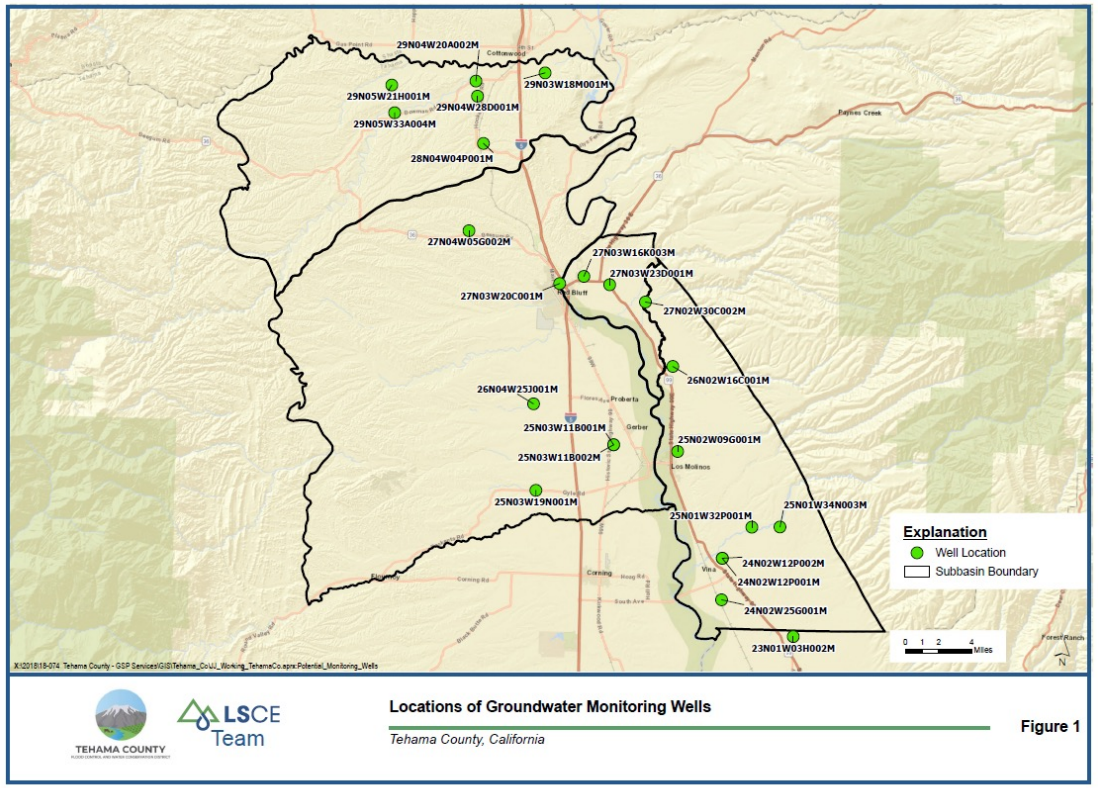
GSP Chapter 3 Sustainable Management Criteria

TEHAMA COUNTY
Flood Control and Water Conservation District

Abbreviated Well Name: 31C1 Subbasin: Antelope Well Depth (ft): 540 Well Type: Irrigation

Well Name: 27N02W31C001M Aquifer: Upper Screen Depth (ft bgs): 40 - 289



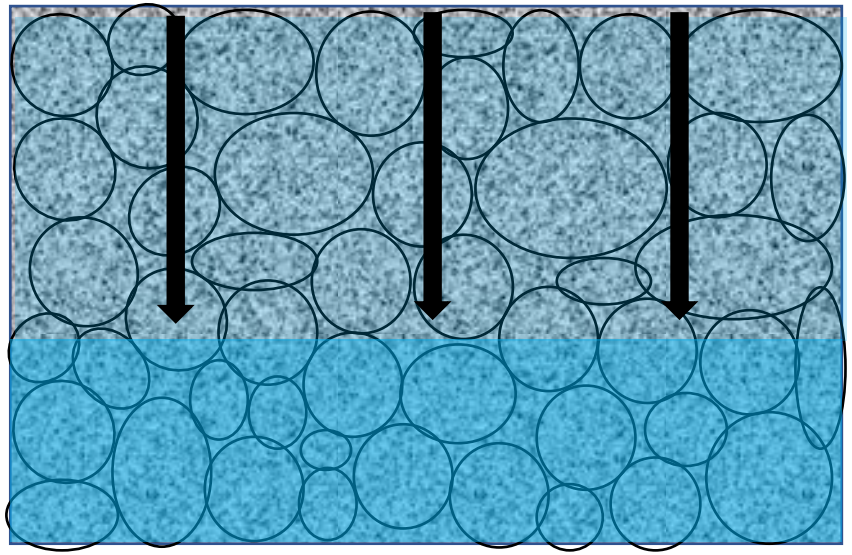


Reduction of Groundwater Storage

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.

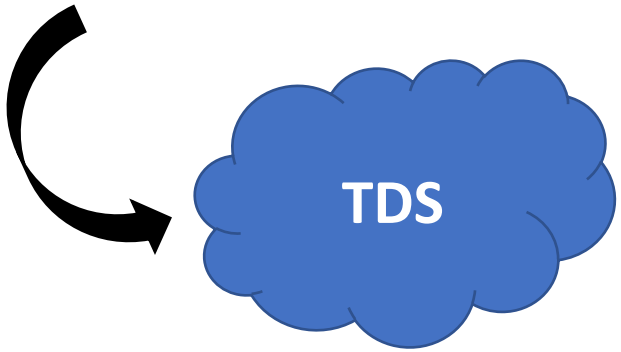
- Projects and/or Management actions would be required to mitigate these reductions in storage.



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)

Land Subsidence

TEHAMA COUNTY
Flood Control and Water Conservation District

- Historically, Tehama County has experienced minor levels of subsidence

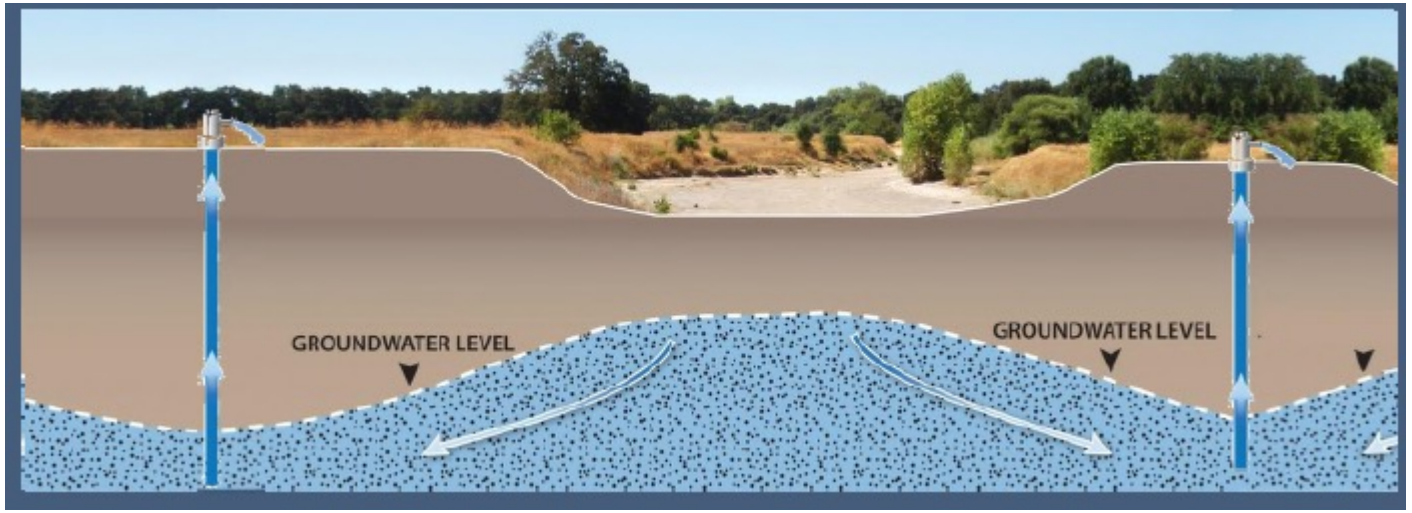
- Typically (Not the case in Tehama County), in areas near significant infrastructure minimal amounts of additional subsidence could be significant and unreasonable due to the susceptibility of infrastructure to subsidence



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)

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.)

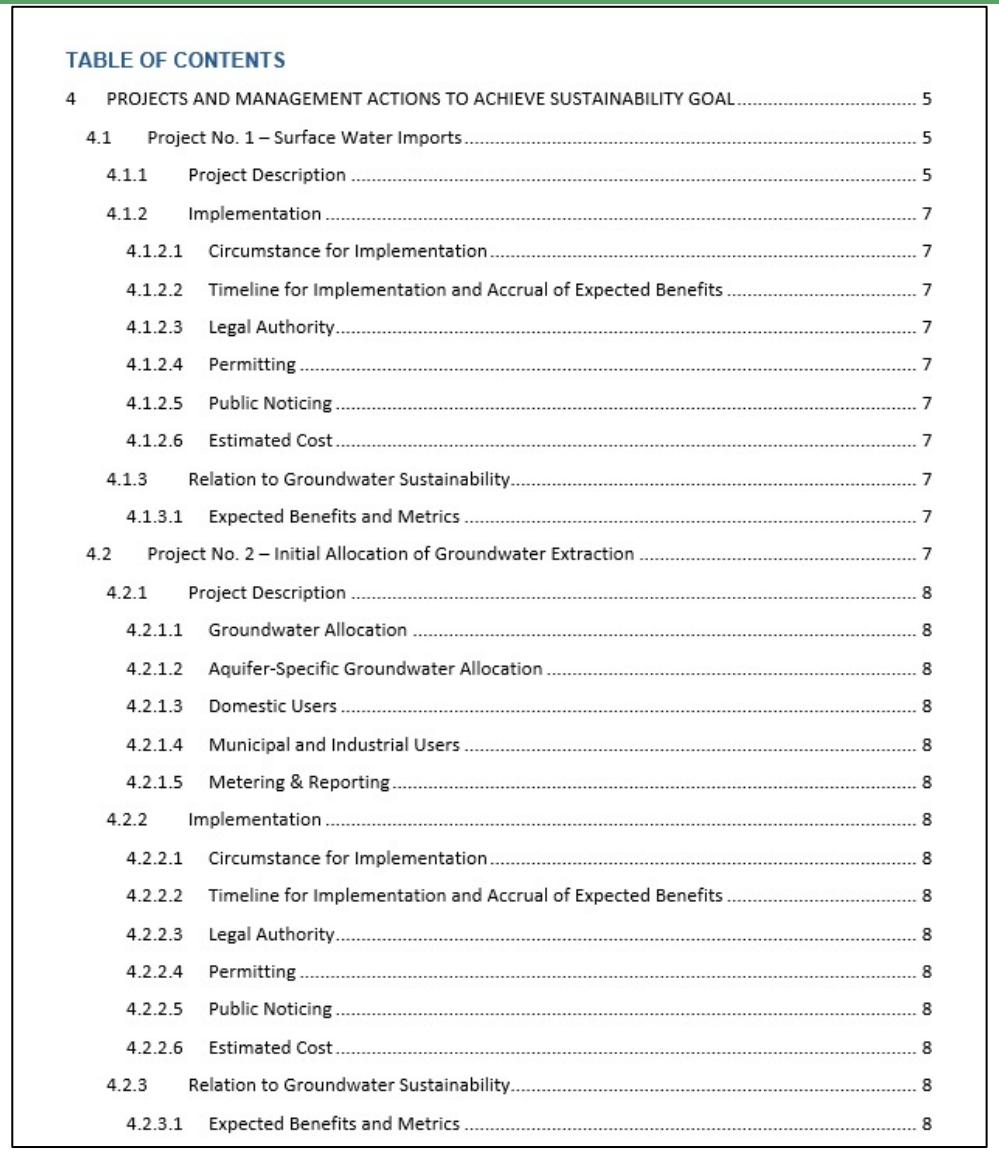


TABLE OF CONTENTS

4 PROJECTS AND MANAGEMENT ACTIONS TO ACHIEVE SUSTAINABILITY GOAL 5
4.1 Project No. 1 – Surface Water Imports 5
4.1.1 Project Description 5
4.1.2 Implementation 7
4.1.2.1 Circumstance for Implementation 7
4.1.2.2 Timeline for Implementation and Accrual of Expected Benefits 7
4.1.2.3 Legal Authority 7
4.1.2.4 Permitting 7
4.1.2.5 Public Noticing 7
4.1.2.6 Estimated Cost 7
4.1.3 Relation to Groundwater Sustainability 7
4.1.3.1 Expected Benefits and Metrics 7
4.2 Project No. 2 – Initial Allocation of Groundwater Extraction 7
4.2.1 Project Description 8
4.2.1.1 Groundwater Allocation 8
4.2.1.2 Aquifer-Specific Groundwater Allocation 8
4.2.1.3 Domestic Users 8
4.2.1.4 Municipal and Industrial Users 8
4.2.1.5 Metering & Reporting 8
4.2.2 Implementation 8
4.2.2.1 Circumstance for Implementation 8
4.2.2.2 Timeline for Implementation and Accrual of Expected Benefits 8
4.2.2.3 Legal Authority 8
4.2.2.4 Permitting 8
4.2.2.5 Public Noticing 8
4.2.2.6 Estimated Cost 8
4.2.3 Relation to Groundwater Sustainability 8
4.2.3.1 Expected Benefits and Metrics 8

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

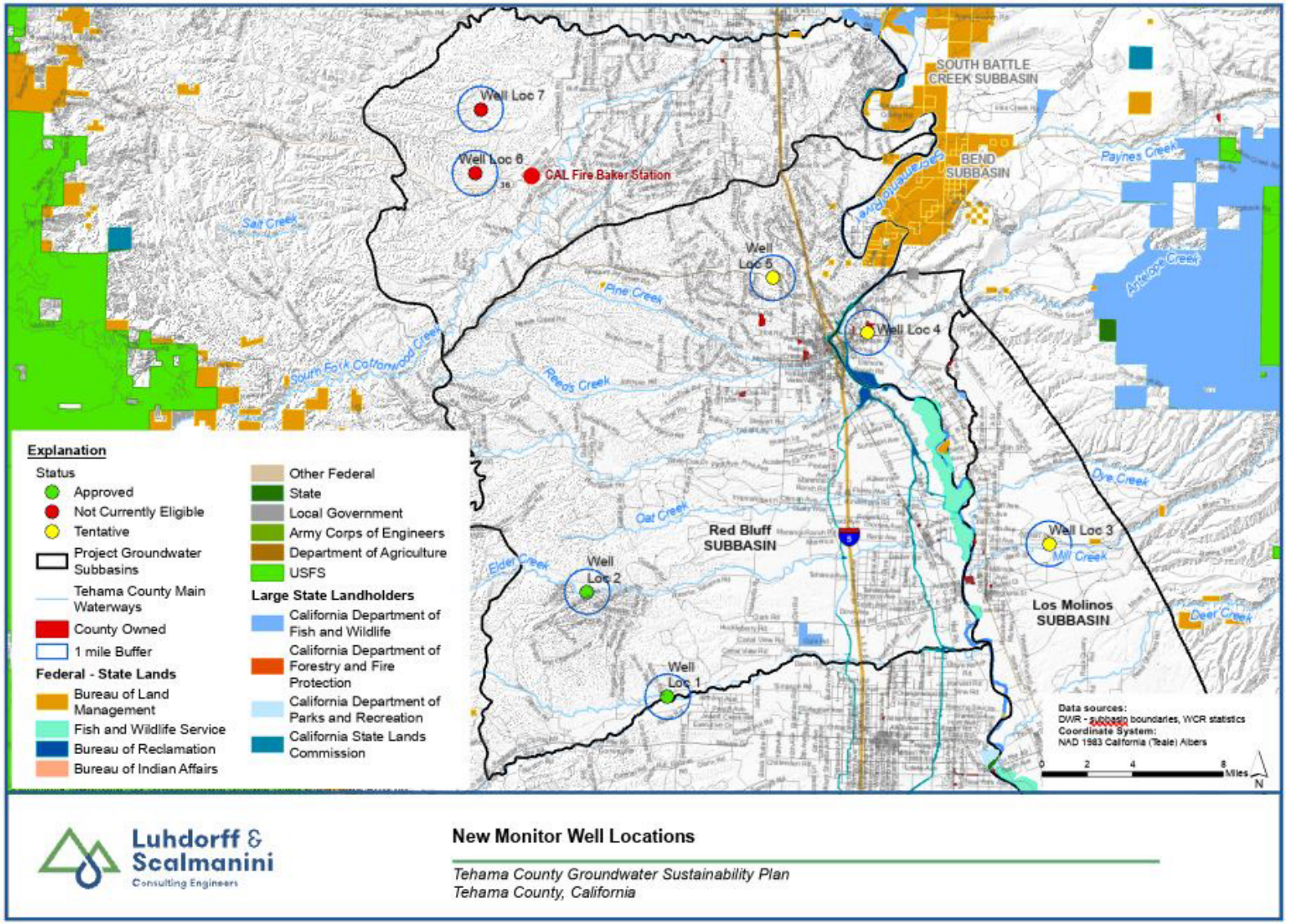
Financial Assurance Plan

GSA Financial Assurance Plan (Table of Contents)

- Section 1: Introduction
- Section 2: GSA Financial Requirements
- Section 3: GSA Other Sharing Arrangements
- Section 4: GSA Funding Sources
- Section 5: GSA Financial Strategies
- Section 6: GSA Financial Plan
- Appendix A: GSA Governance Agreement
- Appendix B: Funding source information

Other Activities – New Monitoring Wells

TEHAMA COUNTY
Flood Control and Water Conservation District



Luhdorff & Scalmanini
Consulting Engineers

New Monitor Well Locations

Tehama County Groundwater Sustainability Plan
Tehama County, California

Other Activities – Database Management System

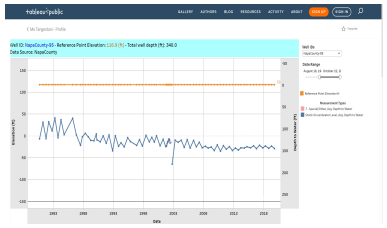
TEHAMA COUNTY
Flood Control and Water Conservation District



ArcGIS Online Map

Hyperlink

MS Access



Tableau

- Cost-effective
- Easy to learn and set up
- Integrates well with other systems
- Ability to create charts, data tables, reports
- Nearby subbasins like Corning use Access too
- Combine the strong mapping ability of ArcGIS with visualization ability of Tableau

What's Next?

TEHAMA COUNTY
Flood Control and Water Conservation District

1. Develop Projected Water Budgets
2. Agree on Sustainable Management Criteria
3. Finalize New Monitoring Well Locations
4. Develop Project and Management Actions (Chapter 4)
5. Additional Webinars Planned for Summer 2021
6. Current GSP sections 1 & 2 are available for review
7. Final complete draft available in September 2021



Q&A Session

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

- Ryan Teubert, 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

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** Public Workshops Regular GSA meetings*	**Administrative Draft GSPs in development** 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*

Special meetings: April 28 • May 6 at 6:00p | **Regular meetings**: May 26 • June 23 at 8:30a

District Board Meetings | 3rd Mondays @ 11:00a | Next meeting May 17

Corning Subbasin Advisory Board Meetings | 1st Wednesdays @ 1:30p | Next meeting May 5

PUBLIC MEETINGS

4th Webinar / Meeting – late spring/summer 2021

GSP Implementation, Projects & Management Actions

5th Webinar / Meeting – fall 2021

Draft GSP workshop

WEBSITE: DRAFT GSP SECTIONS

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

SURVEYS

Domestic Well Owner: www.surveymonkey.com/r/TehamaSGMA_WellOwners
Potential Projects & Management Actions Ideas: www.surveymonkey.com/r/TehamaSGMA_PMA-Ideas

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

- Ryan Teubert, GSA Project Manager
- rteubert@tcpw.ca.gov
- 530.385.1462, ext. 3020

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