



East Contra Costa Groundwater Sustainability Workshop

Thursday, July 9, 2020 3:30 – 5:15 PM

Workbook

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Meeting Agenda

Thursday, July 9, 2020

3:30 – 5:15 PM

#	Time	Content	Presenter
1.	3:30 p.m.	Formal Convening <ul style="list-style-type: none"> • Welcome and Greetings • Introductions • Ground Rules 	Contra Costa County Supervisor Diane Burgis and Lisa Beutler, Stantec
2.	3:37 p.m.	SGMA 101: Brief Overview of SGMA and its requirements <ul style="list-style-type: none"> • Intro to SGMA • Sustainability Criteria • Q&A 	Bill Brewster, Senior Engr. Geologist, CA Department of Water Resources
3.	4:05 p.m.	Groundwater Basin Concepts <ul style="list-style-type: none"> • Hydrologic cycle, water budget, aquifers, compaction • Groundwater and Surface Water Interconnection 	Vicki Kretsinger Grabert, Luhdorff & Scalmanini, Consulting Engineers (LSCE)
4.	4:20 p.m.	East Contra Costa Subbasin and SGMA <ul style="list-style-type: none"> • Boundaries • ECC GSAs • GSP content, funding, timeline 	Ryan Hernandez, Contra Costa County Water Agency
5.	4:35 p.m.	Technical Work and Findings to Date <ul style="list-style-type: none"> • Basin setting: Hydrogeologic Conceptual Model • Groundwater Conditions: Groundwater levels, groundwater quality, subsidence • ECC Sustainability Indicators • GSP schedule 	Vicki Kretsinger Grabert
6.	5:55 p.m.	Introduction to Chapters 1 & 2	Debbie Cannon (LCSE)
7.	5:00	Public Comment	Lisa Beutler
8.	5:10 p.m.	Closing Comments, Adjourn	Ryan Hernandez

Working Group Representatives

This workshop is sponsored by the eight local agencies that overlay the East Contra Costa (ECC) Groundwater Subbasin.

On May 9, 2017, the agencies entered into a Memorandum of Understanding to collaborate and develop a single Groundwater Sustainability Plan (GSP) for the subbasin. The member agencies designated a representative to participate in a Working Group responsible for shepherding the plan development. The points of contact for the GSP Working Group follow:

City of Antioch	Scott Buenting	sbuenting@ci.antioch.ca.us	(925) 779-6129
City of Brentwood	Eric Brennan	ebrennan@brentwoodca.gov	(925) 516-6020
Byron Bethany Irrigation District	Rick Gilmore	r.gilmore@bbid.org	(209) 835-0375
Contra Costa County	Ryan Hernandez	ryan.hernandez@dcd.cccounty.us	(925) 674-7824
Contra Costa Water District	Jill Mosley	jmosley@ccwater.com	(925) 688-8127
Diablo Water District	Dan Muelrath	dmuelrath@diablowater.org	(925) 625-3798
Town of Discovery Bay	Mike Davies	mdavies@todb.ca.gov	925-625-6159
East Contra Costa Irrigation District	Aaron Trott	atrott@eccid.org	(925) 634-3544

Common Terms

ECC Subbasin – East Contra Costa Subbasin

GSA – Groundwater Sustainability Agency

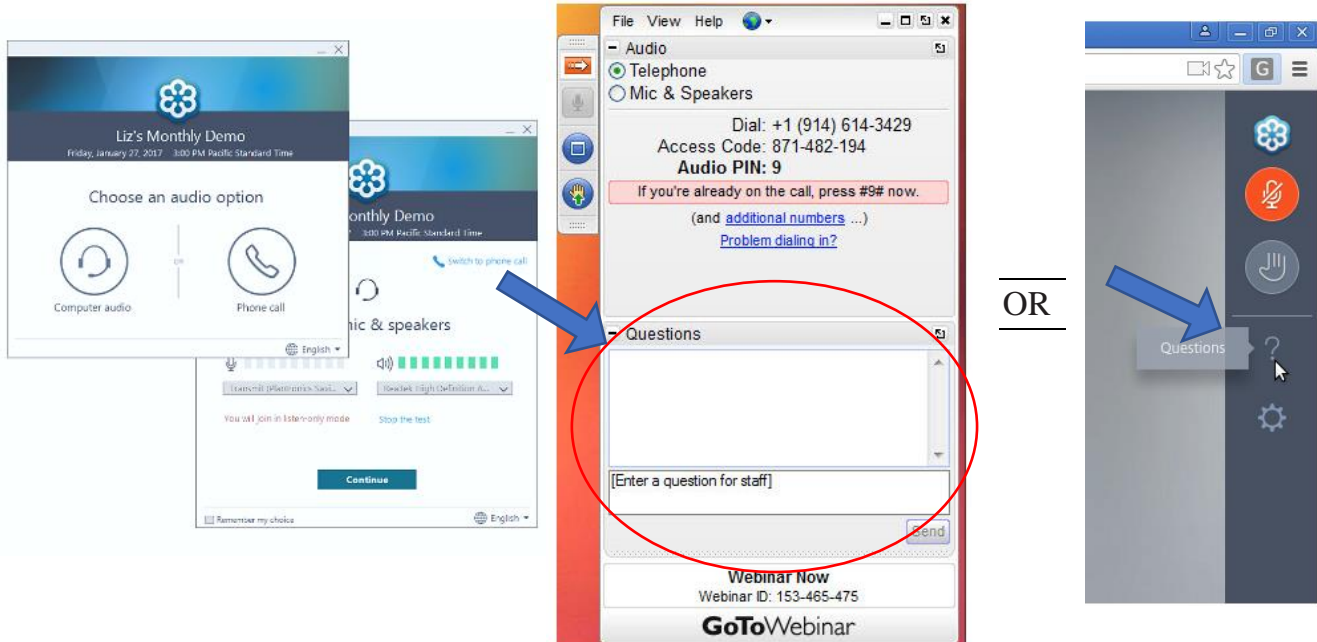
GSP – Groundwater Sustainability Plan

SGMA – Sustainable Groundwater Management Act

A copy of the PRESENTATION POWERPOINT and VIDEO RECORDING will be available after the session. Links to materials will be sent via email to everyone that sent an RSVP to the meeting. It will also be available at:
<https://www.eccc-irwm.org/about-sgma>

Participation Practices

Participants are invited to submit questions and comments via the webinar written question box.



You will also have an opportunity to raise your hand and offer ideas verbally.

The important controls look like this:

Make sure to mute yourself when not speaking.

JOIN THE DISCUSSION

The best way to join the session is with a headset. If you are on your phone you must enter the ACCESS code that came with your log in information AND the PIN number that is in your control panel once you log in.

The phone number is also located in the Audio Section on the tool bar on your screen once you are logged in.

AUDIO CHALLENGES?

If you have audio issues it often works to switch to your phone or log-out and log in again.

Key agreements to allow for productive outcomes:

- Use common conversational courtesy.
- All ideas and points of view have value.
- Encourage innovation by listening to all ideas.
- Humor is welcome.
- Be comfortable.

ASKING QUESTIONS AFTER THE MEETING: Email groundwaterinfo@dcd.cccounty.us

The Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA), effective January 1, 2015, established a framework of priorities and requirements to facilitate sustainable groundwater management throughout California. The intent of the SGMA mandate is for groundwater to be managed by local public agencies (Groundwater Sustainability Agencies [GSAs]) to ensure a groundwater basin is operated within its sustainable yield through the development and implementation of a Groundwater Sustainability Plan (GSP or Plan).

Groundwater Sustainability Agencies and Groundwater Sustainability Plans

Any local public agency that has water supply, water management, or land use responsibilities in a basin can decide to become a GSA. A single local agency can decide to become a GSA, or a combination of local agencies can decide to form a GSA by using either a Joint Power Authority, a memorandum of agreement, or another legal agreement. If no agency assumes this role the GSA responsibility defaults to the County; however, the County may decline.

A GSP may be any of the following (California Water Code Section 10727[b]):

- A single plan covering the entire basin developed and implemented by one GSA.
- A single plan covering the entire basin developed and implemented by multiple GSAs.

Sustainability Goal

Each GSP must include a sustainability goal for the basin to manage groundwater in a manner that avoids undesirable results within 20 years of the statutory deadline (i.e., by or before January 31, 2042). “Undesirable result means one or more of the following effects caused by groundwater conditions occurring throughout the basin” (Water Code §10721.x):

1. Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. 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.
2. Significant and unreasonable reduction of groundwater storage.
3. Significant and unreasonable seawater intrusion.
4. Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies.
5. Significant and unreasonable land subsidence that substantially interferes with surface land uses.
6. Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water.

SGMA and the East Contra County Subbasin

The ECC Subbasin, also referred to as San Joaquin Valley-East Contra Costa (5-022.19), is a medium priority groundwater basin based on the Groundwater Basin Prioritization by the State Department of Water Resources (DWR) (**Figure 1**). The ECC Subbasin's boundaries are generally defined by the San Joaquin River on the north, Old River on the East, the Contra Costa County boundary on the south, and the non-water bearing geologic units on the west. As mentioned above, the ECC Subbasin is contained entirely within Contra Costa County and underlies all or portions of the Cities of Antioch, Oakley, Brentwood, the Town of Discovery Bay and the communities of Bethel Island, Byron and Knightsen.

Boundary Modification

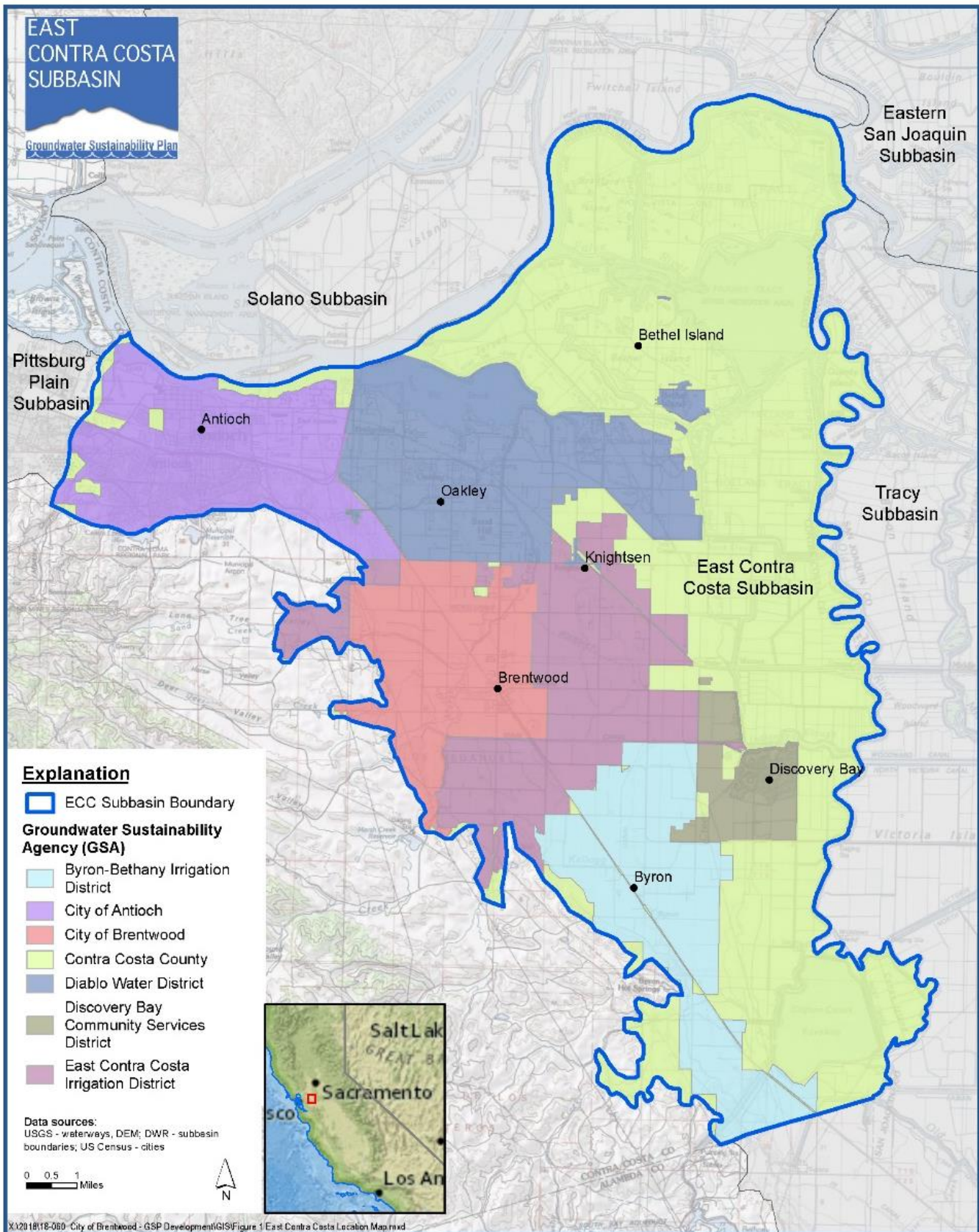
The original boundary of the Tracy Groundwater Subbasin included the jurisdiction of multiple cities and the counties of Contra Costa and San Joaquin. To streamline the development of the required GSP, the GSAs in Contra Costa and San Joaquin Counties, on September 6, 2018 applied to the State to divide the Tracy Subbasin along the border of Contra Costa and San Joaquin Counties. On February 11, 2019, the Department of Water Resources approved the division and established the East Contra Costa Subbasin.

East Contra Costa Subbasin and GSP Decision Making

Eight local agencies that overlay the Basin entered into a Memorandum of Understanding (MOU) on May 9, 2017 to collaborate and develop a single GSP for the East CC Basin. With the exception of Contra Costa Water District, each member agency has also become Groundwater Sustainability Agency (GSA). Following are the seven GSAs incorporated into the new ECC Subbasin:

1. City of Brentwood GSA
2. East Contra Costa Irrigation District GSA
3. County of Contra Costa GSA
4. Discovery Bay Community Services District GSA
5. Diablo Water District GSA
6. City of Antioch GSA
7. Byron-Bethany Irrigation District GSA

See page 7 for a map of the GSAs and the ECC subbasin.



Public Participation

SGMA includes required actions to ensure that GSPs are developed and implemented in close coordination with stakeholders, interested parties, and members of the public. Examples of this legislative intent include required public hearings, public notifications and establishment of an interested party database. These requirements were then rolled up within Water Code Section 10723.8 (a)(4), and obligate each GSA to provide a detailed explanation of how the interests of beneficial users would be considered in the development and operation of the GSA and development and implementation of the GSP.

It is the responsibility of each GSA to conduct outreach to its constituencies and fulfill the outreach and engagement requirements of SGMA. In the ECC Subbasin, a Communications Subcommittee coordinates these activities across the GSAs to engage stakeholders more efficiently and effectively.

Beneficial Users

California Water Code requires each GSA to consider the interests of all beneficial users and users of groundwater within the Subbasin, as well as those responsible for implementing GSPs. Following are the Required Interested Parties for the purpose of mandated outreach:

- Holders of overlying groundwater rights, including:
- Agricultural users.
- Domestic well owners.
- Municipal well operators.
- Public water systems.
- Local land use planning agencies.
- Environmental users of groundwater.
- Surface water users, if there is a hydrologic connection between surface and groundwater bodies.
- The federal government, including, but not limited to, the military and managers of federal lands.
- California Native American tribes.
- Disadvantaged communities, including, but not limited to, those served by private domestic wells or small community water systems.
- Entities listed in Section 10927³ that are monitoring and reporting groundwater elevations in all or a part of a groundwater basin managed by the groundwater sustainability agency.

Groundwater Sustainability Plans (GSPs)

Under SGMA, Groundwater Sustainability Plans must include:

- Basin setting and description of groundwater conditions
- Hydrogeologic conceptual model (i.e., how aquifers react to stresses in the basin and the interaction of surface and groundwater systems)
- Determine data gaps and uncertainties
- Water budget accounting for surface and groundwater inflows and outflows
- Baseline conditions for supply, demand, hydrology and surface water supply reliability
- Sustainable management criteria
- Establish minimum thresholds and measurable objectives for each sustainability indicator
- Establish monitoring network and protocols for each sustainability indicator
- Identify projects and management actions to achieve or maintain sustainability
- Public communication and engagement

Contact: groundwaterinfo@dcc.cccounty.us
 Website: https://www.ecc-irwm.org/sgma

GSP Table of Contents

Below is the East Contra Costa GSP Table of Contents. Chapters 1 and 2 are now available online [here](#). Comments submitted before July 20, 2020 will be reflected in the next draft. You can respond via a form found [here](#). The subsequent chapters are forthcoming in the remainder of 2020 and early 2021.

TOPIC	TIMELINE
<p>1 Introduction</p> <p>1.1 Background</p> <p>1.1.1 Purpose of the Groundwater Sustainability Plan</p> <p>1.1.2 Sustainability Goal</p> <p>1.1.3 Descriptions of the East Contra Costa Subbasin</p> <p>1.2 Agency Information</p> <p>1.2.1 GSAs in the East Contra Costa Subbasin</p> <p>1.2.2 Agency Names and Mailing Addresses</p> <p>1.2.3 Agencies’ Organization, Management Structure, and Legal Authority of the GSAs and CCWD</p> <p>1.2.4 Governance Structure</p> <p>1.2.5 Description of Initial Notification</p> <p>1.3 Report Organization and Elements Guide</p> <p>1.4 References</p> <p>2 Plan Area (§ 354.8)</p> <p>2.1 Description of Plan Area</p> <p>2.1.1 Summary of Jurisdictional Areas and Other Features</p> <p>2.1.2 Density of Wells</p> <p>2.2 Water Resources Monitoring and Management Programs</p> <p>2.2.1 CASGEM and Historical Groundwater Level Monitoring</p> <p>2.2.2 Department of Water Resources (DWR) and Water Data Library (WD)</p> <p>2.2.3 Groundwater Ambient Monitoring and Assessment Program (GAMA)</p> <p>2.2.4 GeoTracker</p> <p>2.2.5 California Division of Drinking Water (DDW)</p> <p>2.2.6 U.S. Geological Survey (USGS)</p> <p>2.2.7 Subsidence Monitoring</p>	<p>April 2020</p>

TOPIC	TIMELINE
<ul style="list-style-type: none"> 2.2.8 Climate Monitoring 2.2.9 Incorporating Existing Monitoring Programs into the GSP 2.2.10 Limits to Operational Flexibility 2.2.11 Conjunctive Use 2.3 Land Use Elements or Topic Categories of Applicable General Plans <ul style="list-style-type: none"> 2.3.1 Current and Historic Land Use Plans 2.3.2 Disadvantaged Areas DAC, SDAC and EDA 2.3.3 Water Use Sector and Water Source Type 2.3.4 General Plans 2.3.5 Water Management Plans 2.4 County Well Construction, Destruction and Permitting <ul style="list-style-type: none"> 2.4.1 Wellhead Protection and Well Permitting 2.5 Additional Plan Elements 	<p>April 2020</p>
<ul style="list-style-type: none"> 3 Basin Setting <ul style="list-style-type: none"> 3.1 Overview 3.2 Hydrogeologic Conceptual Model <ul style="list-style-type: none"> 3.2.1 Regional Geological and Structural Setting 3.2.2 Bedrock Geological Setting 3.2.3 Basin Boundaries 3.2.4 Principal Aquifers and Aquitards 3.2.5 Soil Characteristics and 3.2.6 Recharge and Discharge Areas 3.2.7 HCM Data Gaps and Uncertainty 3.3 Groundwater and Surface Water Conditions <ul style="list-style-type: none"> 3.3.1 Groundwater Elevations and Groundwater Storage 3.3.2 Groundwater Flows 3.3.3 Seawater Intrusion 3.3.4 Water Quality 3.3.5 Groundwater Contamination Site 3.3.6 Land Subsidence 3.3.7 Interconnected Surface Water 3.3.8 Groundwater Dependent Ecosystems 3.3.9 Surface Water Conditions 3.4 References 	<p>Q3 2020</p>

TOPIC	TIMELINE
<p>4 Historical, Current, and Projected Water Supply</p> <ul style="list-style-type: none"> 4.1 Land Uses and Population Trends 4.2 Water Supplies and Utilization by Sector 4.3 Total East Contra Costa Subbasin Water Use <p>5 Water Budget (§ 354.18)</p> <ul style="list-style-type: none"> 5.1 East Contra Costa Subbasin Hydrologic Base Period 5.2 Summary of Water Year 2015 Hydrologic Conditions 5.3 Projected 50-Year Hydrology 5.4 Water Budget Framework 	<p>Q4 2020</p>
<p>6 East Contra Costa Subbasin Sustainability Goal</p> <ul style="list-style-type: none"> 6.1 Sustainability Goal <ul style="list-style-type: none"> 6.1.1 Surface Water Inflows and Outflows 6.1.2 Groundwater Inflows and Outflows 6.1.3 Change in Storage 6.2 Groundwater/Surface Water Flow Model <ul style="list-style-type: none"> 6.2.1 Evaluation of Existing Integrated Hydrologic Models 6.2.2 Selection of and Refinements to Model Platform 6.2.3 Projected (Future) model scenario(s) 6.3 Subbasin Water Budget Results <ul style="list-style-type: none"> 6.3.1 Subbasin Inflows Description 6.3.2 Subbasin Outflows Description 6.3.3 Quantification of Total Surface Water Entering and Leaving the Basin 6.3.4 Quantification of Groundwater Inflow 6.3.5 Quantification of Groundwater Outflow 6.3.6 Change in Groundwater Storage 6.3.7 Water Year Types 6.3.8 Historic Water Budget 6.3.9 Summary of Water Year 2015 Water Budget Results 6.3.10 Projected 50-Year Water Budget 6.3.11 Water Budget Summary 6.4 Groundwater Level Change in Storage Analysis 6.5 Model Sensitivity Analysis 6.6 East Contra Costa Subbasin Sustainable Yield 6.7 GSA Area Water Budget Results 	<p>Q1 2021</p>
<p>7 East Contra Costa Subbasin Sustainability Goal</p> <ul style="list-style-type: none"> 7.1 Sustainability Goal <ul style="list-style-type: none"> 7.1.1 East Contra Costa County Subbasin Sustainability Goal 7.2 Sustainability Indicators and Undesirable Results <ul style="list-style-type: none"> 7.2.1 Define sustainability indicators and list of undesirable results, following SGMA definitions 7.2.2 Determination of any significant and unreasonable effects occurring throughout the basin 7.3 Representative Monitoring Sites 	<p>Q4 2020</p>

TOPIC	TIMELINE
7.3.1 Demonstration of Short-Term, Seasonal and Long-Term Trends 7.3.2 Sustainability Indicators Applicable to Representative Sites	
7.4 Minimum Thresholds	
7.4.1 Minimum Thresholds for Chronic Lowering of Groundwater Levels	
7.4.2 Minimum Thresholds for Reduced Groundwater Storage	
7.4.3 Minimum Thresholds for Seawater Intrusion	
7.4.4 Minimum Thresholds for Degraded Groundwater Quality	
7.4.5 Minimum Thresholds for Land Subsidence	
7.4.6 Minimum Thresholds for Streamflow Depletion	
7.5 Measurable Objectives	

TOPIC	TIMELINE
<p>7.5.1 Measurable Objectives for Chronic Lowering of Groundwater Levels 7.5.2 Measurable Objectives for Reduced Groundwater Storage 7.5.3 Measurable Objectives for Seawater Intrusion 7.5.4 Measurable Objectives for Degraded Groundwater Quality 7.5.5 Measurable Objectives for Land Subsidence 7.5.6 Measurable Objectives for Streamflow Depletion</p> <p>7.6 Management Area 7.6.1 Rationale for Management Area Delineation 7.6.2 Sustainability Criteria for Management Areas 7.6.3 Representative Monitoring Sites for Management Areas</p> <p>8 Monitoring Data Management and Reporting 8.1 Groundwater Data Management 8.2 Data Management Overview 8.3 Data Management System (DMS) 8.4 Data Use and Disclosure 8.5 Data Submittals 8.6 Reporting 8.6.1 Annual Groundwater Conditions Reports 8.6.2 Annual CASGEM Reporting (this will be transitioning to SGMA reporting) 8.6.3 SGMA Annual Report 8.6.4 SGMA Five-Year Update and Evaluation of Management Efforts</p> <p>9 Sustainable Groundwater Management: Projects and Management Actions 9.1 Goals, Policies, and Ordinances 9.1.1 Achieving/Maintaining Sustainability 9.1.2 Benefits of Projects and Management Actions 9.1.3 Preliminary Evaluation of Projects and Management Actions 9.1.4 Projects and Management Actions: Public Noticing, Permitting, and Authorities 9.1.5 Evaluation of Projects/Management Actions Effectiveness 9.1.6 Approach to Groundwater Management During Droughts 9.1.7 Planned Response to Minimum Threshold Exceedances/Undesirable Results</p> <p>9.2 Education and Collaboration 9.2.1 GSAs' Collaboration 9.2.2 Well Owner Outreach and Education 9.2.3 Participation in IRWMPs/GMPs/SNMPs/etc.</p> <p>9.3 Projects and Management Actions and Cost Feasibility 9.4 Ongoing Evaluation of Groundwater Management Efforts 9.5 Best Management Practices (BMPs)</p> <p>10 Section 9 Plan Implementation 10.1 Summary of GSP Sections 10.2 Recommendations 10.3 Summary of Annual Report Guidelines 10.4 Summary Guidelines for Periodic Evaluation by GSA Collaborative</p> <p>11 References</p>	<p>Q4 2020</p>



Contact: groundwaterinfo@dcc.cccounty.us
Website: https://www.ecc-irwm.org/sgma

Protecting Groundwater in the East Contra Costa Subbasin

A Vital Resource

Families, farms and businesses throughout the East Contra Costa Subbasin rely on our critically important groundwater supply. Groundwater supports fish, wildlife, and natural habitats as well.

Groundwater is water below ground contained in formations known as aquifers, which supply significant quantities of water to wells and springs. It is essential that we:

- Preserve the quality and availability of local and imported water supplies;
- Sustain groundwater supplies and meet water needs during future droughts;
- Anticipate and avoid negative environmental impacts due to groundwater use;
- Protect the long-term availability and quality of groundwater through collaborative, proactive local management.

Our Collective Commitment

Counties and agencies within the East Contra Costa Subbasin have monitored groundwater resources for decades. With long-term data and recent studies providing key guidance, we're committed to:

- Develop and implement refined groundwater data collection procedures;
- Provide detailed reporting on annual groundwater conditions and trends and;
- Work together to implement an action plan as required by the Sustainable Groundwater Management Act (SGMA).

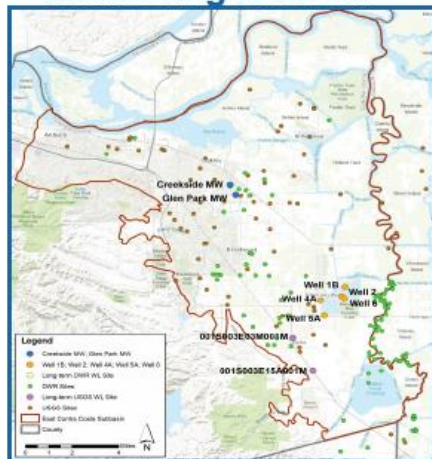
Providing for the Future

SGMA provides us with an opportunity to gain a deeper understanding of our local groundwater, ensuring we sustainably manage this important supply for future generations.

We will focus on the following issues:

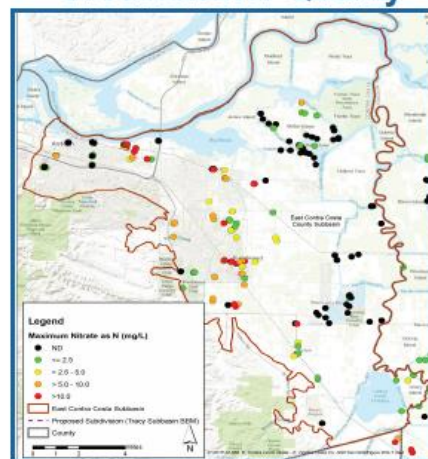
- How does groundwater move through our aquifer system?
- What is the overall status of the groundwater aquifers within the subbasin?
- What are the amounts of loss and replenishment to creeks, rivers, and aquifers?
- What are the key relationships between groundwater and surface water in our creeks, rivers and other bodies of water?

Monitoring Network



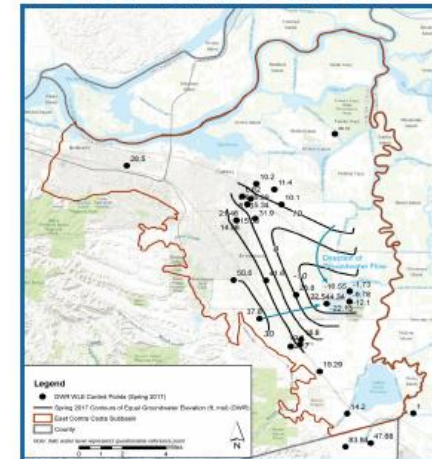
A combination of municipal wells, agricultural wells, dedicated monitoring wells, & other surface water or groundwater monitoring sites across multiple agencies can be used for monitoring and understanding surface water and groundwater conditions.

Groundwater Quality



California has an enforceable drinking water regulation for Nitrate as Nitrogen, (e.g. Maximum Contaminant Level of 10 mg/L [10 ppm]) that is based on the best available science to prevent potential health problems.

Groundwater Levels



The California Department of Water Resources maintains the California Statewide Groundwater Elevation Monitoring (CASGEM) Program since 2009 to track seasonal and long-term groundwater elevation trends in groundwater basins statewide. Additional groundwater level monitoring data are also collected in the East Contra Costa Subbasin by local entities.

Groundwater Monitoring

Sustainable Groundwater Management Program

July 9, 2020

Bill Brewster, P.G.
Senior Engineering Geologist
North Central Region Office, DWR



1

SGMA BACKGROUND AND OVERVIEW

2



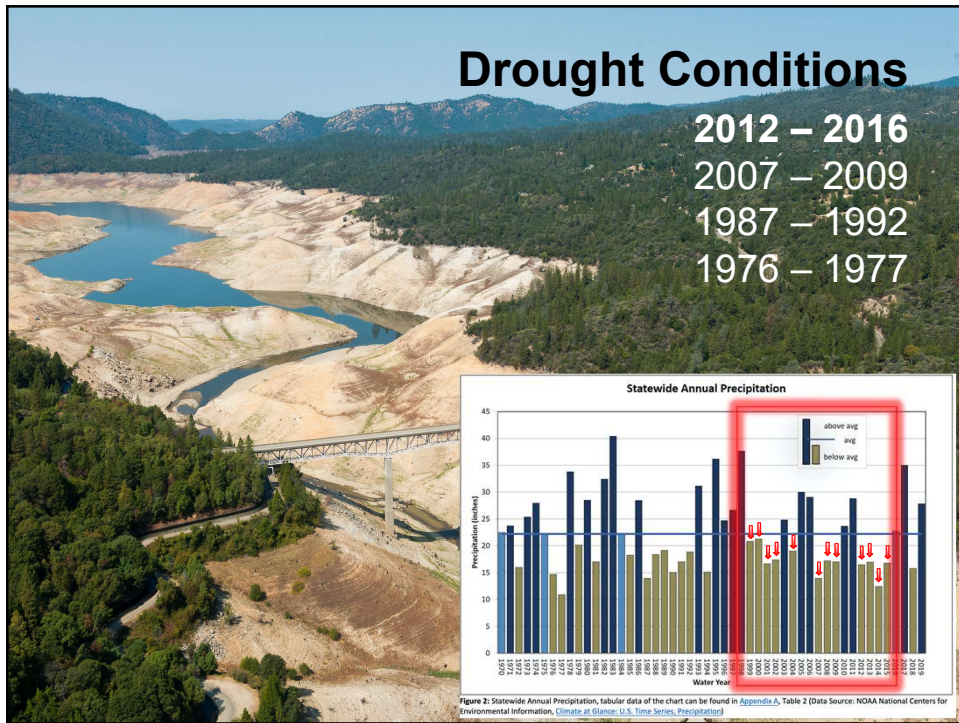
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4



5



6

Sustainable Groundwater Management Act 2014

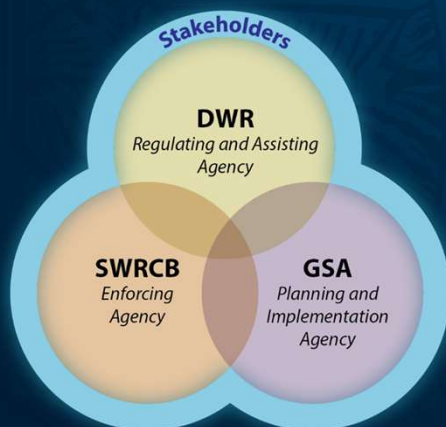


September 16, 2014

“A central feature of these bills is the recognition that groundwater management in California is best accomplished locally.” – Governor Edmund G. Brown Jr.

7

Agency Roles



8



9

Sustainability Indicators

Lowering of GW Levels

Reduction of GW Storage

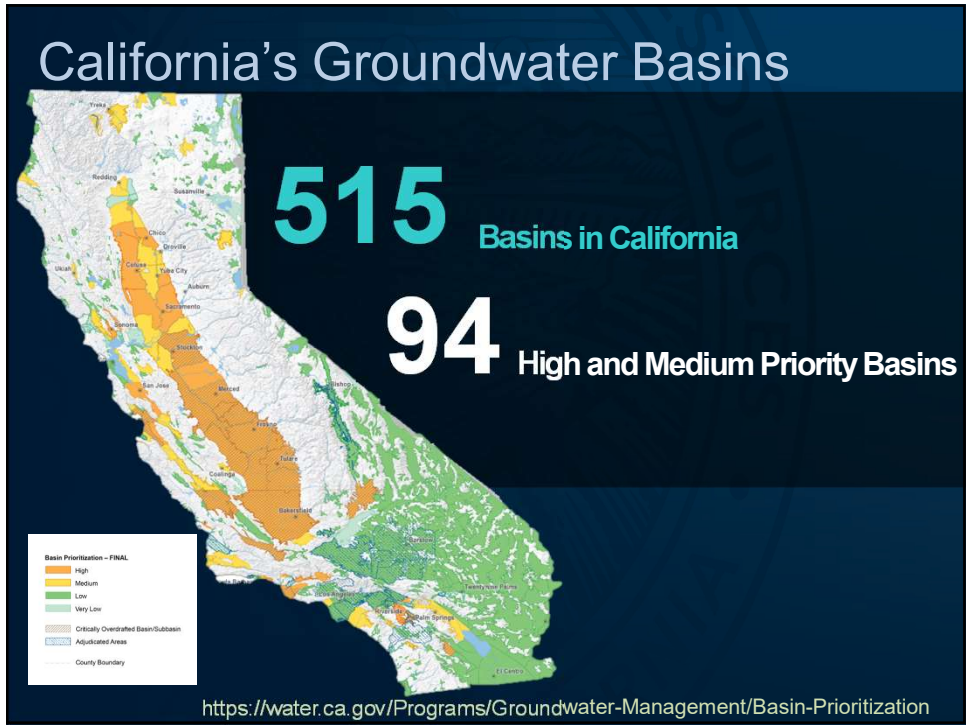
Seawater Intrusion

Degraded Water Quality

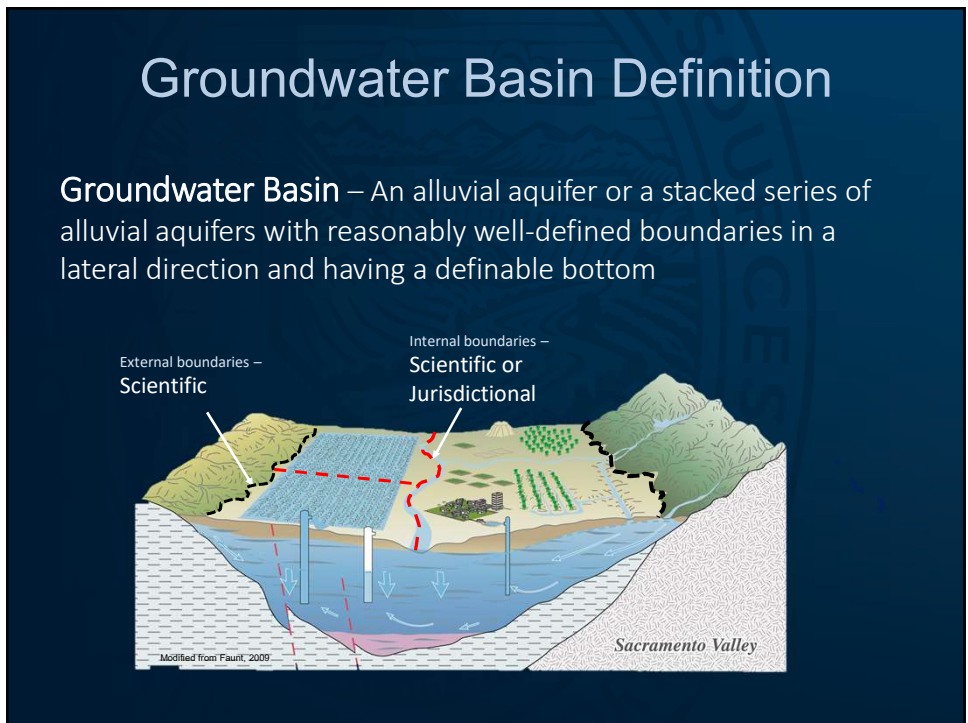
Land Subsidence

Depletion of Inter-connected Streams

10



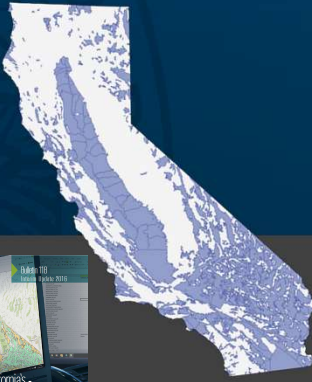
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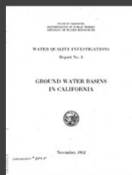


12


Groundwater in CA Bulletin 118

- CA groundwater resources & management:
 - Conditions of critical overdraft

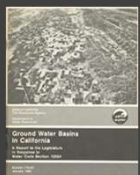





1952




Bulletin 118
1975



Bulletin 118
1980



Bulletin 118
2003



Bulletin 118
Interim update 2016
Basins Refined by 2016 BB Modifications

<https://water.ca.gov/Programs/Groundwater-Management/Bulletin-118>

13


SGMA Steps

1. Form GSA
June 2017


2. Develop GSP
Jan 2020/22

3. Implement GSP
Over 20 yrs

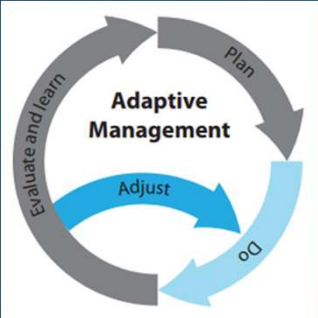
4. Achieve Sustainability
2040/42



>260 GSAs Formed*



135 GSP Notifications*



Adaptive Management

*As of March, 2019.

14

GSP Options

1 GSA
1 PLAN

GSA 1
GSA 2
GSA 3
1 PLAN

GSA 1
PLAN 1
GSA 2
PLAN 2
GSA 3
PLAN 3
GSA 4
PLAN 4

Groundwater Sustainability Plan(s) must cover the entire basin

15

GSP Components

Who

- Administrative Information -

What

- Basin Setting -

Where

- Sustainable Management Criteria -
- Monitoring Network -

- Lowering GW Levels of Storage
- Reduction of Storage
- Seawater Intrusion
- Degraded Quality
- Land Subsidence
- Surface Water Depletion

How

- Projects & Management Actions -

16



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Article 5. Plan Contents

1. Administrative Information	3. Sustainable Management Criteria
§354.4. General Information	§354.24. Sustainability Goal
§354.6. Agency Information	§354.26. Undesirable Results
§354.8. Description of Plan Area	§354.28. Minimum Thresholds
§354.10. Notice & Communication	§354.30. Measurable Objectives
2. Basin Setting	4. Monitoring Networks
§354.14. Hydrogeologic Conceptual Model	§354.34. Monitoring Network
§354.16. Groundwater Conditions	§354.36. Representative Monitoring
§354.18. Water Budget	§354.38. Assessment & Improvement
§354.20. Management Areas	§354.40. Reporting Monitoring Data to the Department
	5. Projects and Management Actions
	§354.44. Projects & Management Actions

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Article 5. Plan Contents

1. Administrative Information

- §354.4. General Information
- §354.6. Agency Information
- §354.8. Description of Plan Area
- §354.10. Notice & Communication

2. Basin Setting

- §354.14. Hydrogeologic Conceptual Model
- §354.16. Groundwater Conditions
- §354.18. Water Budget
- §354.20. Management Areas

3. Sustainable Management Criteria

- §354.24. Sustainability Goal
- §354.26. Undesirable Results
- §354.28. Minimum Thresholds
- §354.30. Measurable Objectives

4. Monitoring Networks

- §354.34. Monitoring Network
- §354.36. Representative Monitoring
- §354.38. Assessment & Improvement
- §354.40. Reporting Monitoring Data to the Department

5. Projects and Management Actions

- §354.44. Projects & Management Actions

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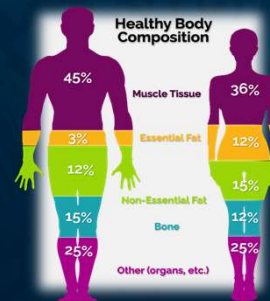
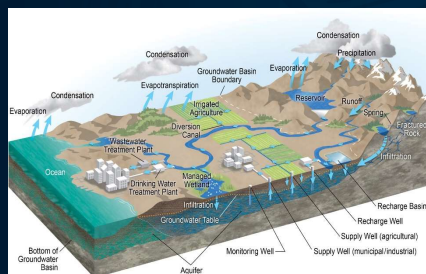
SGMA Terms Explained

SGMA Term

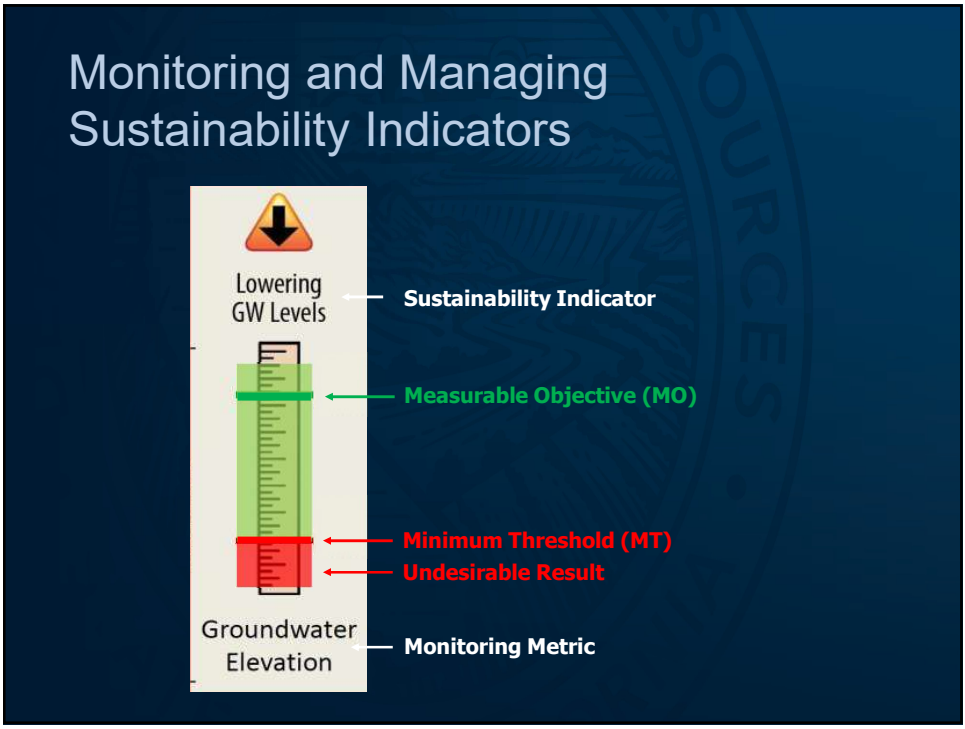
- Sustainability Goal
- Sustainability Indicators
- Measurable Objective
- Minimum Threshold
 - Undesirable Result
- Significant and Unreasonable

Health Analogy

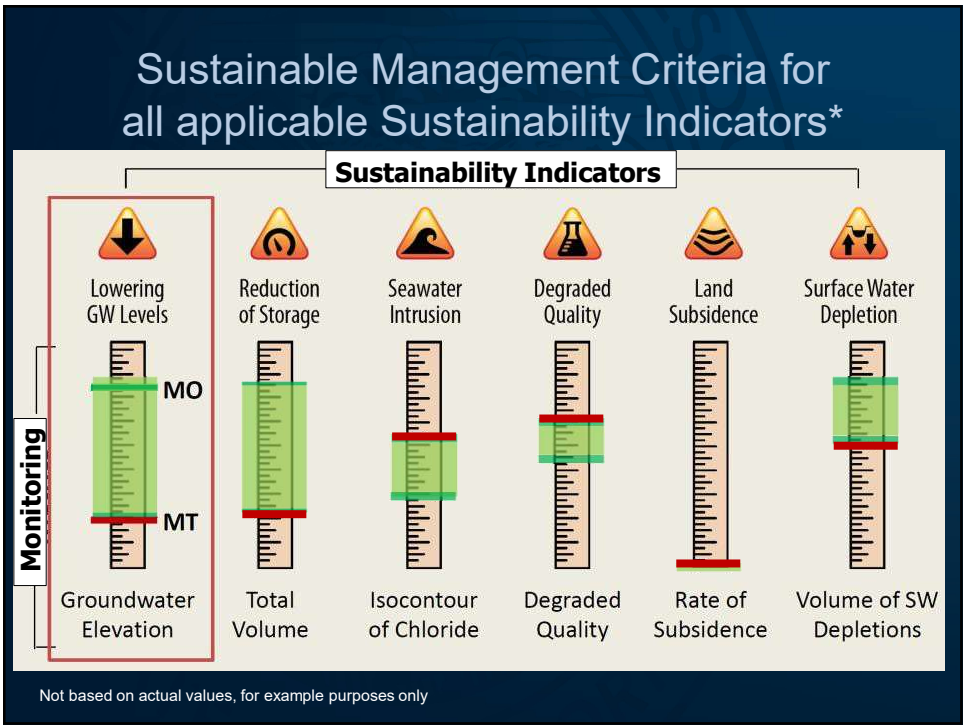
- Staying healthy, fit, happy
- Temp, Weight/BMI, BP, etc
- Doctors recommendations
- Healthy limit
 - When limit is surpassed
- Urgent care



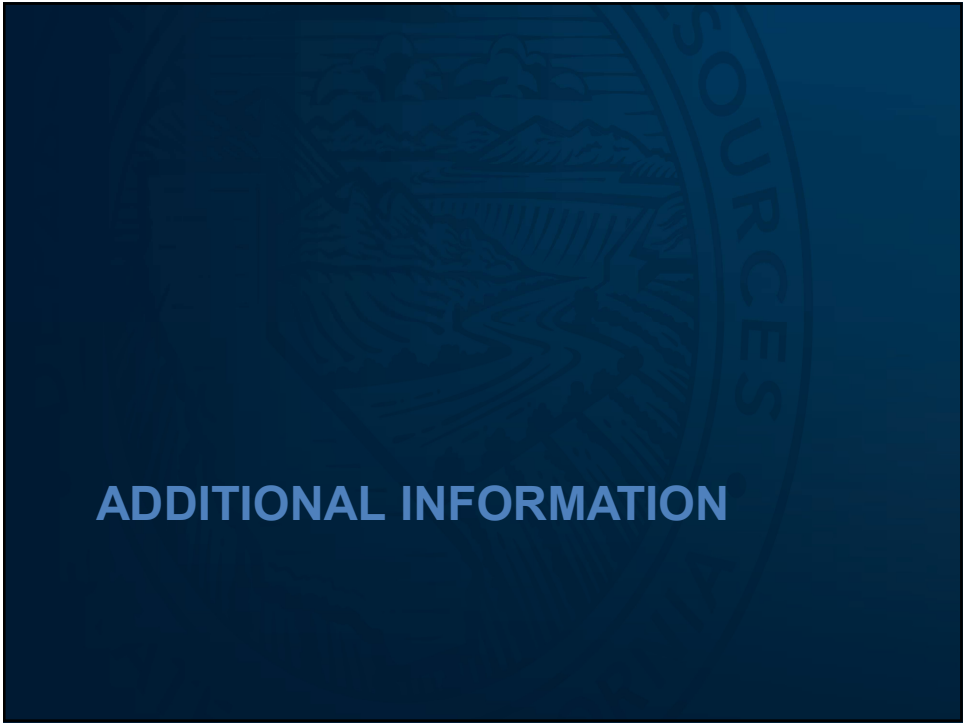
20



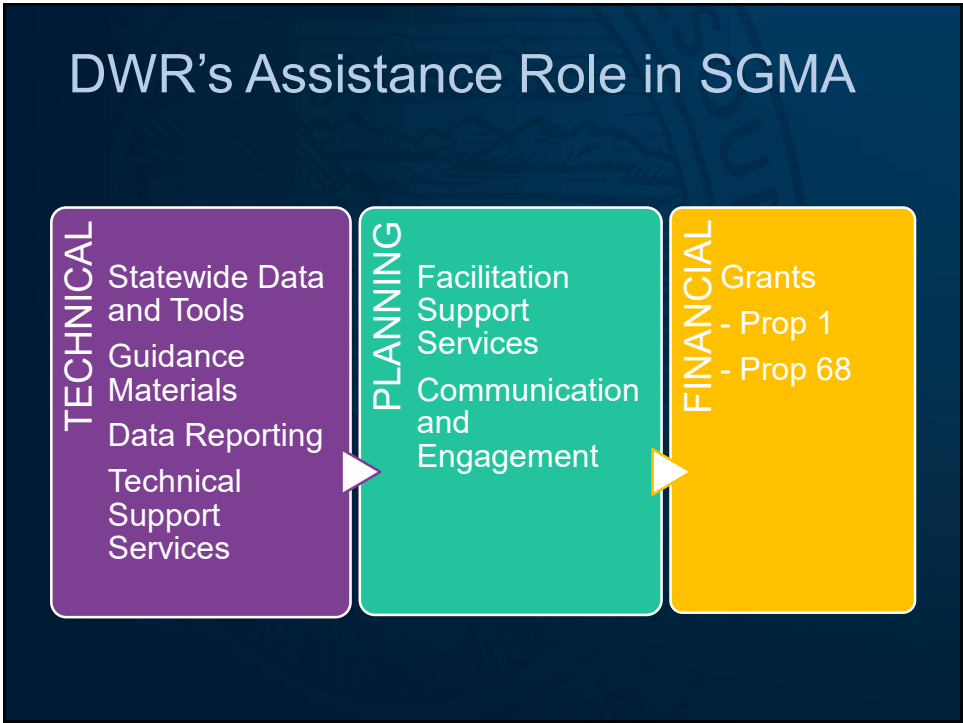
21



22








23

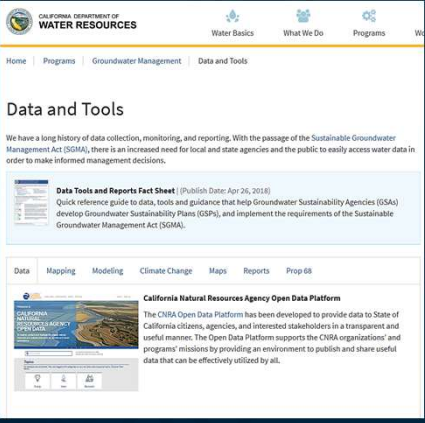


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Statewide Datasets and Tools

-  **Data, Tools, and Reports Webpage**
-  **Download Data**
-  **Groundwater Tools**
-  **Climate Change Data/Tools**
-  **Maps and Reports**

<https://water.ca.gov/Programs/Groundwater-Management/Data-and-Tools>



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DWR Communications

- Sustainable Groundwater Management Program Updates listserv
 - Email updates regarding SGM Program implementation for stakeholders and interested parties
 - Event announcements
 - Subscribe at: <https://bit.ly/2HdRRGK>
- DWR's SGMA Groundwater Management Website
 - Bookmark on your web browser, <https://www.water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management>

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SGMA STEPS

1. Form GSA (2017)
2. Develop GSP (2022)
3. Implement GSP
4. Achieve Sustainability (2042)

QUESTIONS?

Bill Brewster
DWR – North Central Region Office
bill.brewster@water.ca.gov

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Understanding Groundwater in the East Contra Costa Subbasin

July 9, 2020 Public Meeting

Vicki Kretsinger

Luhdorff & Scalmanini, Consulting Engineers

Ryan Hernandez, Contra Costa County

Debbie Cannon, LSCE

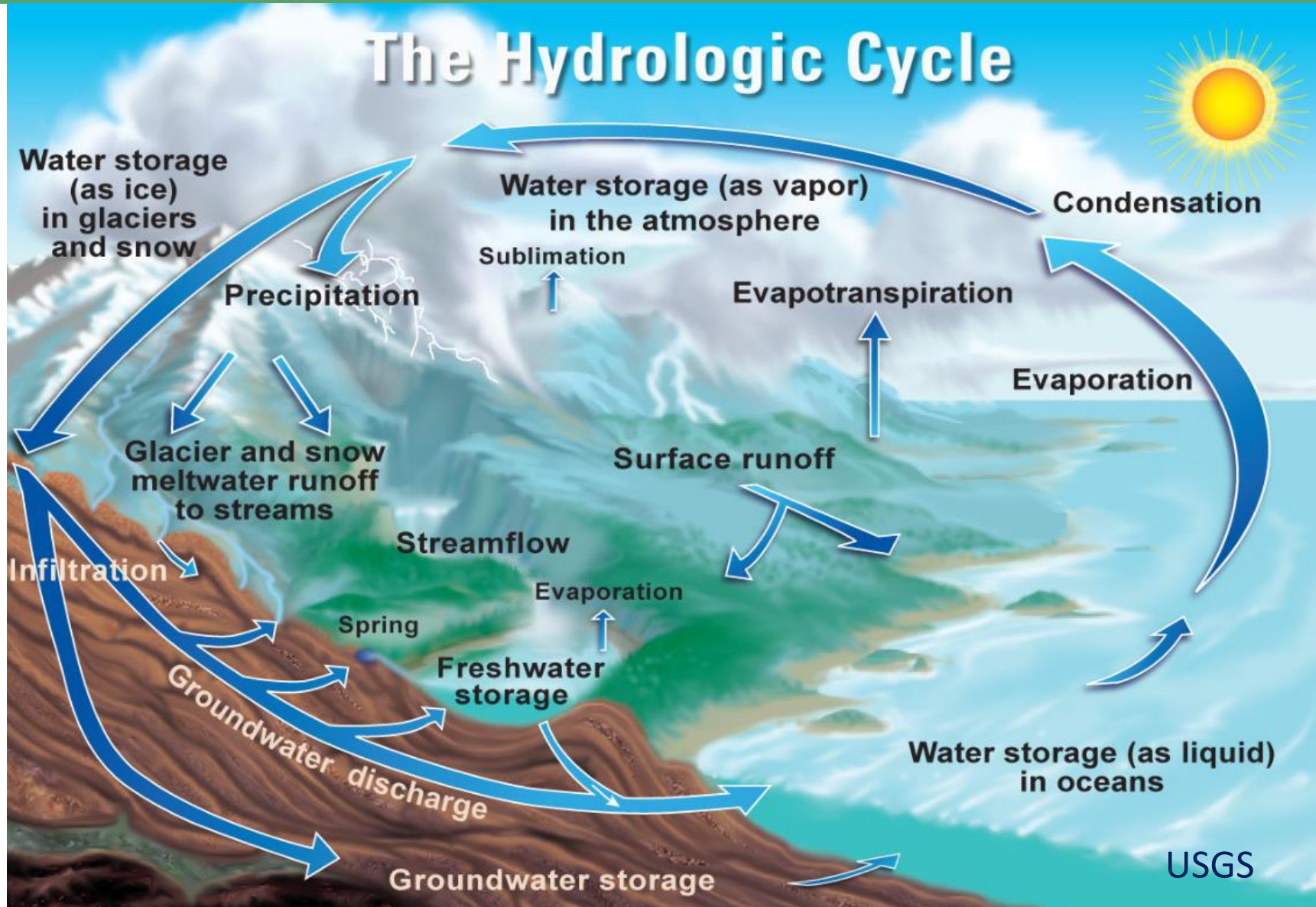




Groundwater: Basic Concepts

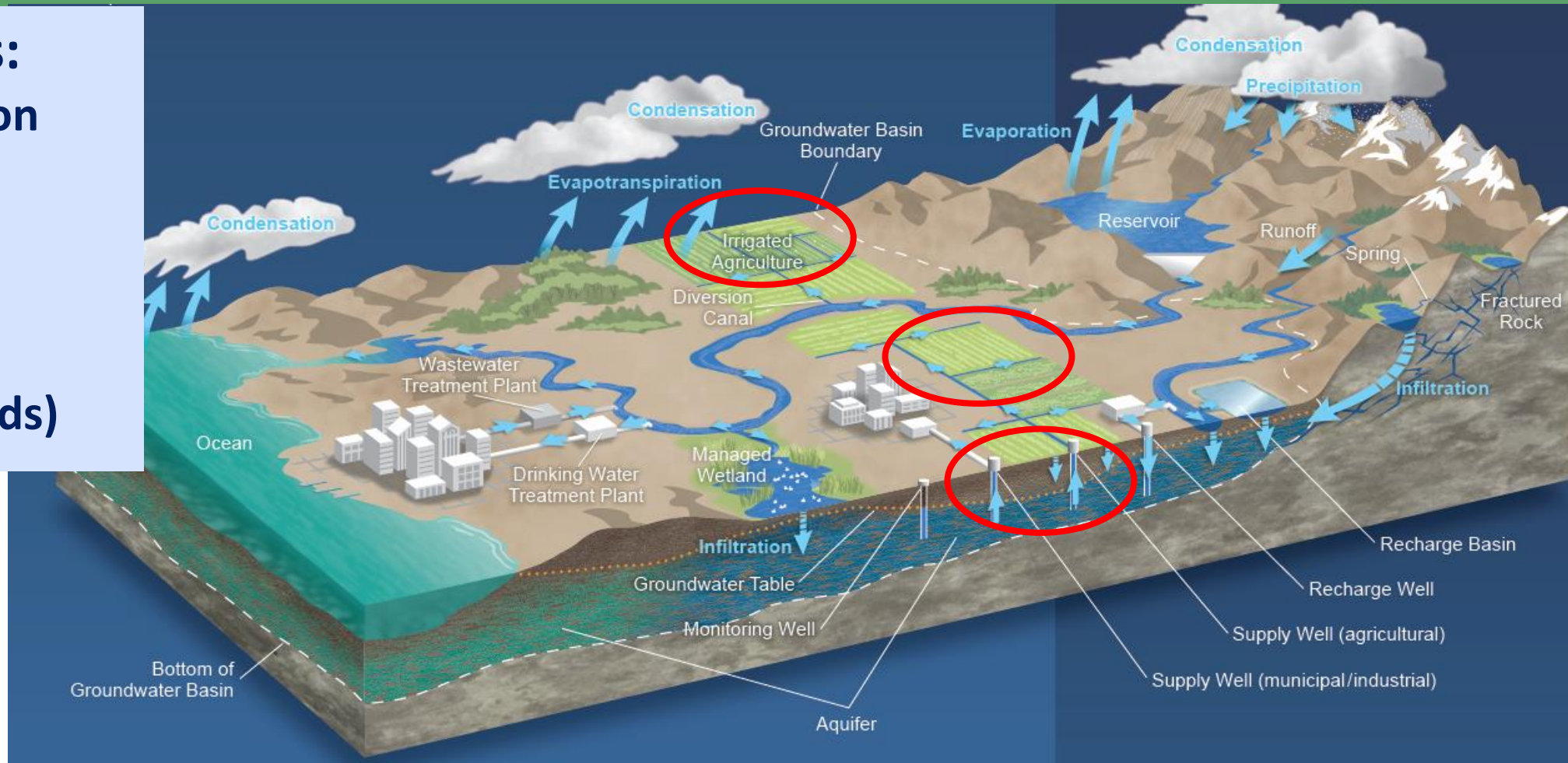
Maintaining a Sustainable East Contra Costa Subbasin

Where Does Groundwater Come From and Go To?



Other Groundwater Discharge

- A Few Examples:**
- Evapotranspiration (crops)
 - GW pumping
 - Drains
 - Evaporation (wastewater ponds)



DWR, 2017

Account for Water with a “Budget”

Inflows

- Precipitation;
- SW inflow & infiltration;
- Intentional recharge (ponds, ditches, etc.);
- Applied water, net recharge (e.g., irrigation);
- Unintentional recharge (leaky pipelines);
- Subsurface inflows from outside basin.

Outflows

- GW extraction by wells;
- GW discharge to SW/springs;
- Evapotranspiration; and
- Subsurface outflow from basin.

$$\text{Inflows} - \text{Outflows} = \Delta S$$

Change in GW Storage

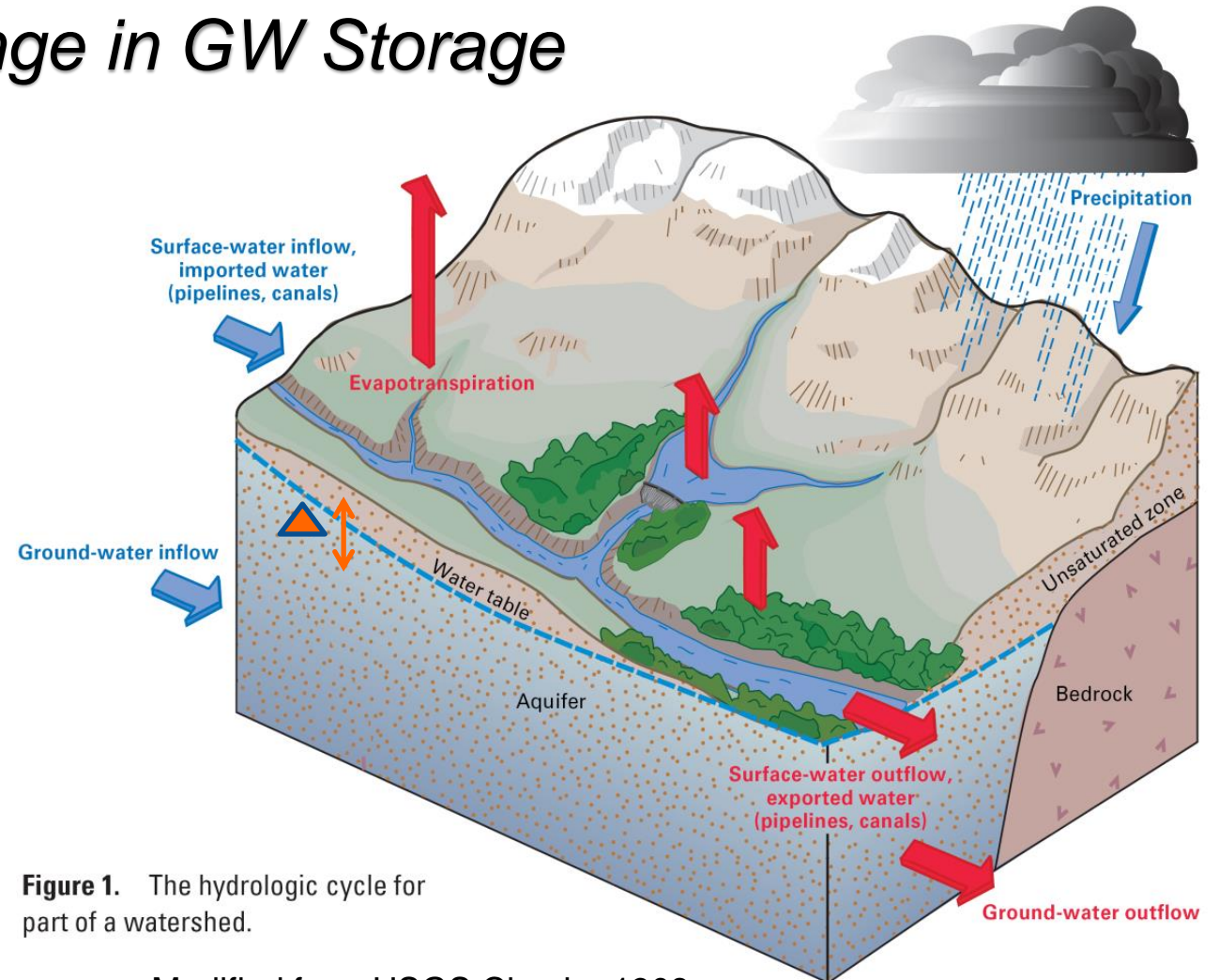
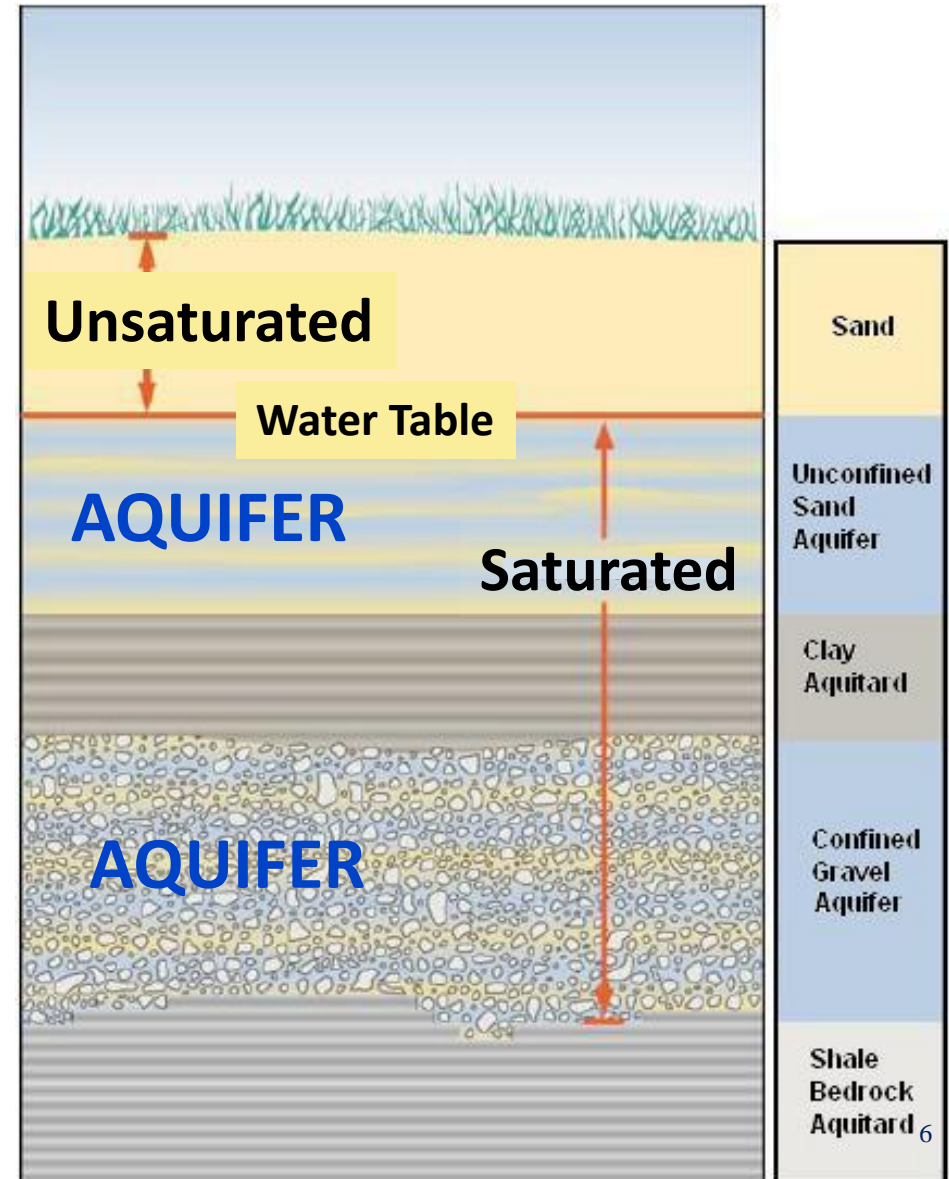
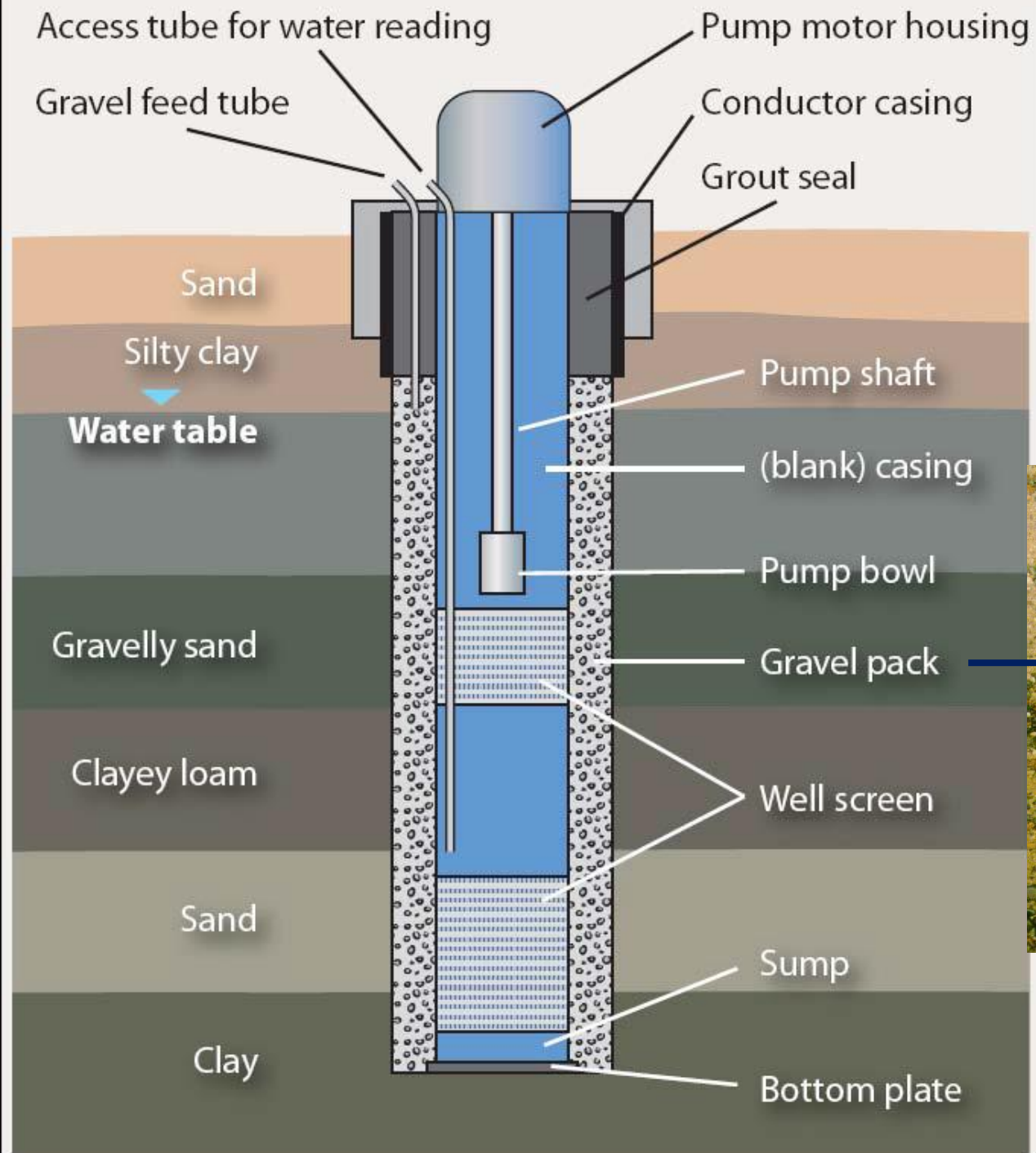


Figure 1. The hydrologic cycle for part of a watershed.

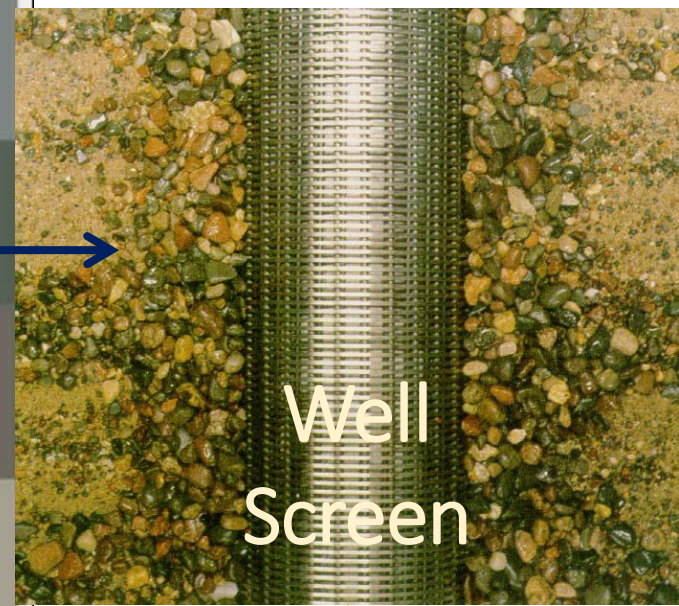
What is an Aquifer?

- A body of rock or sediment that is sufficiently porous and permeable to store, transmit, and yield significant or economic quantities of groundwater to wells and springs (DWR)
- From *aqua* or water and *ferre* to bear or carry





Groundwater Well



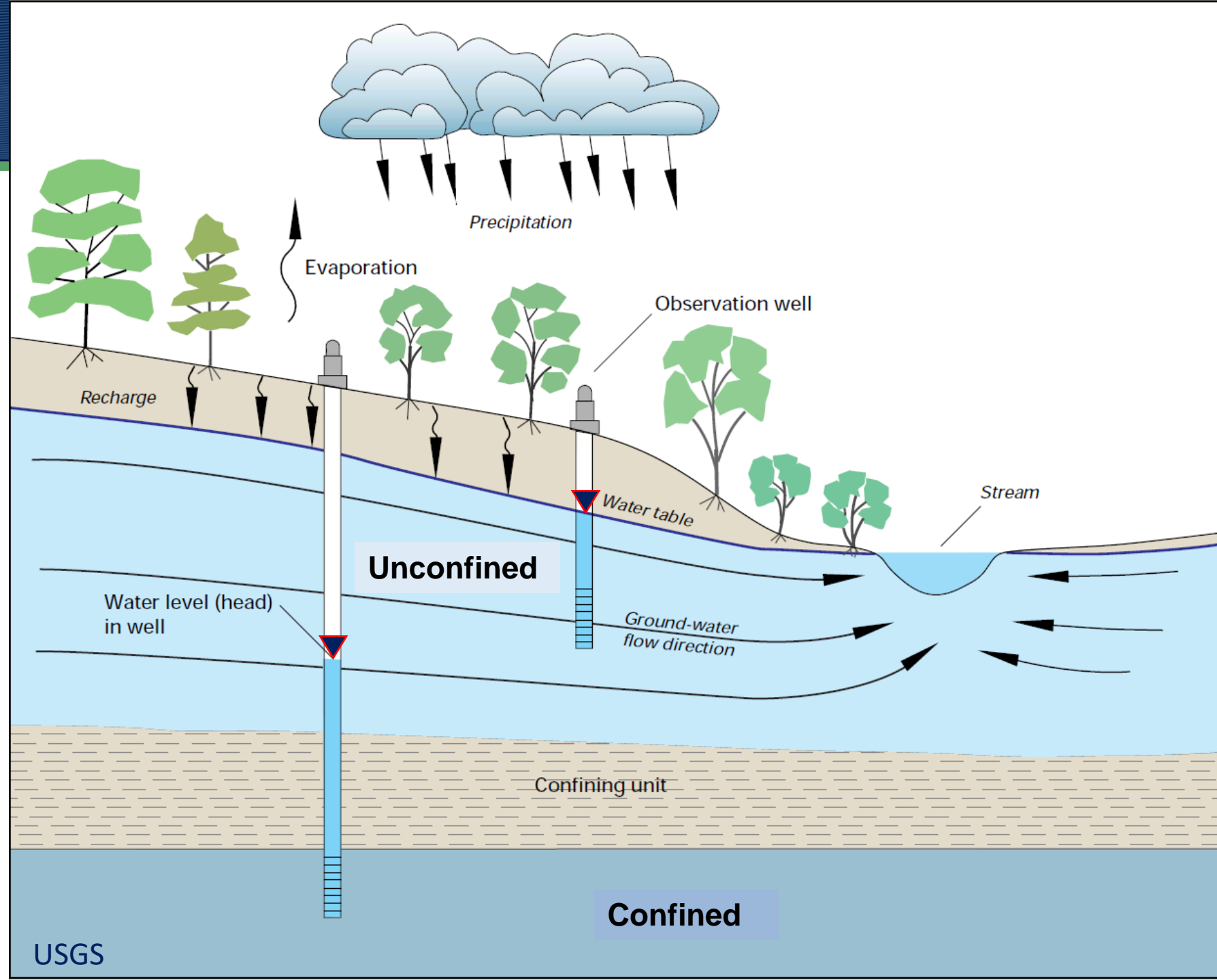
Groundwater: Unconfined & Confined

Unconfined:

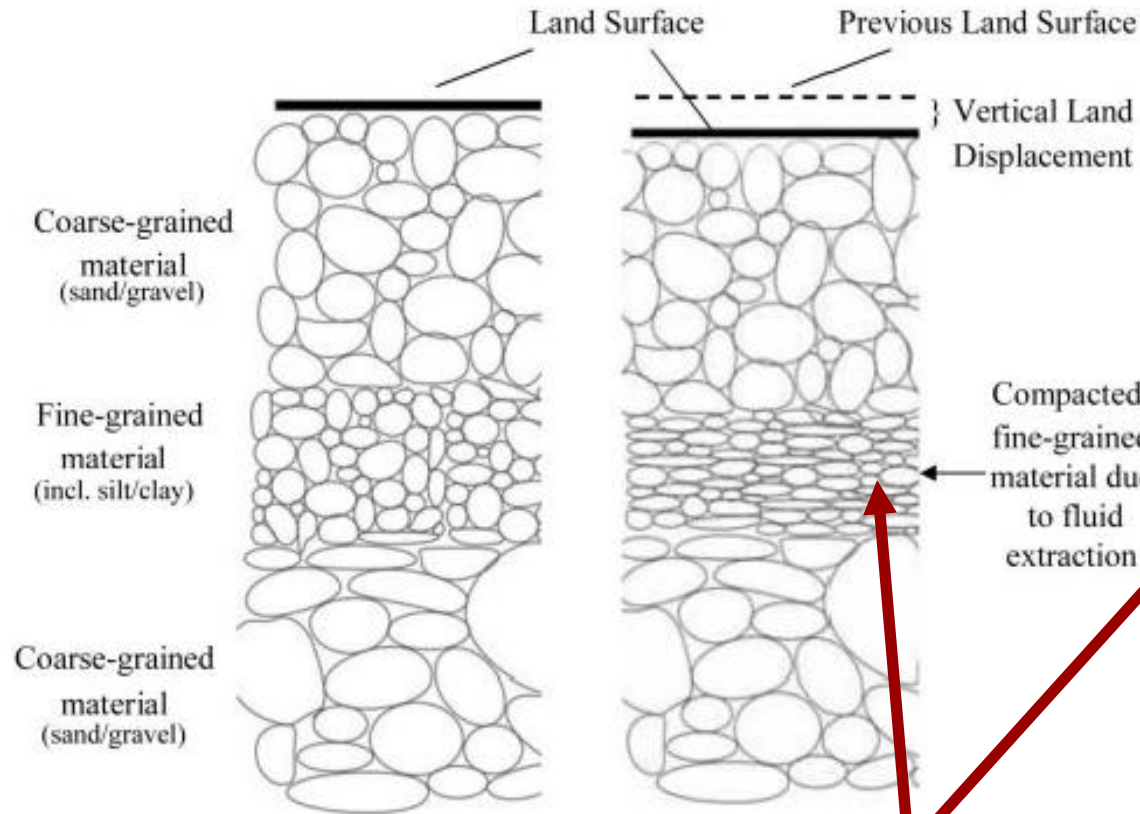
At atmospheric pressure;
no overlying low
Permeability materials

Confined:

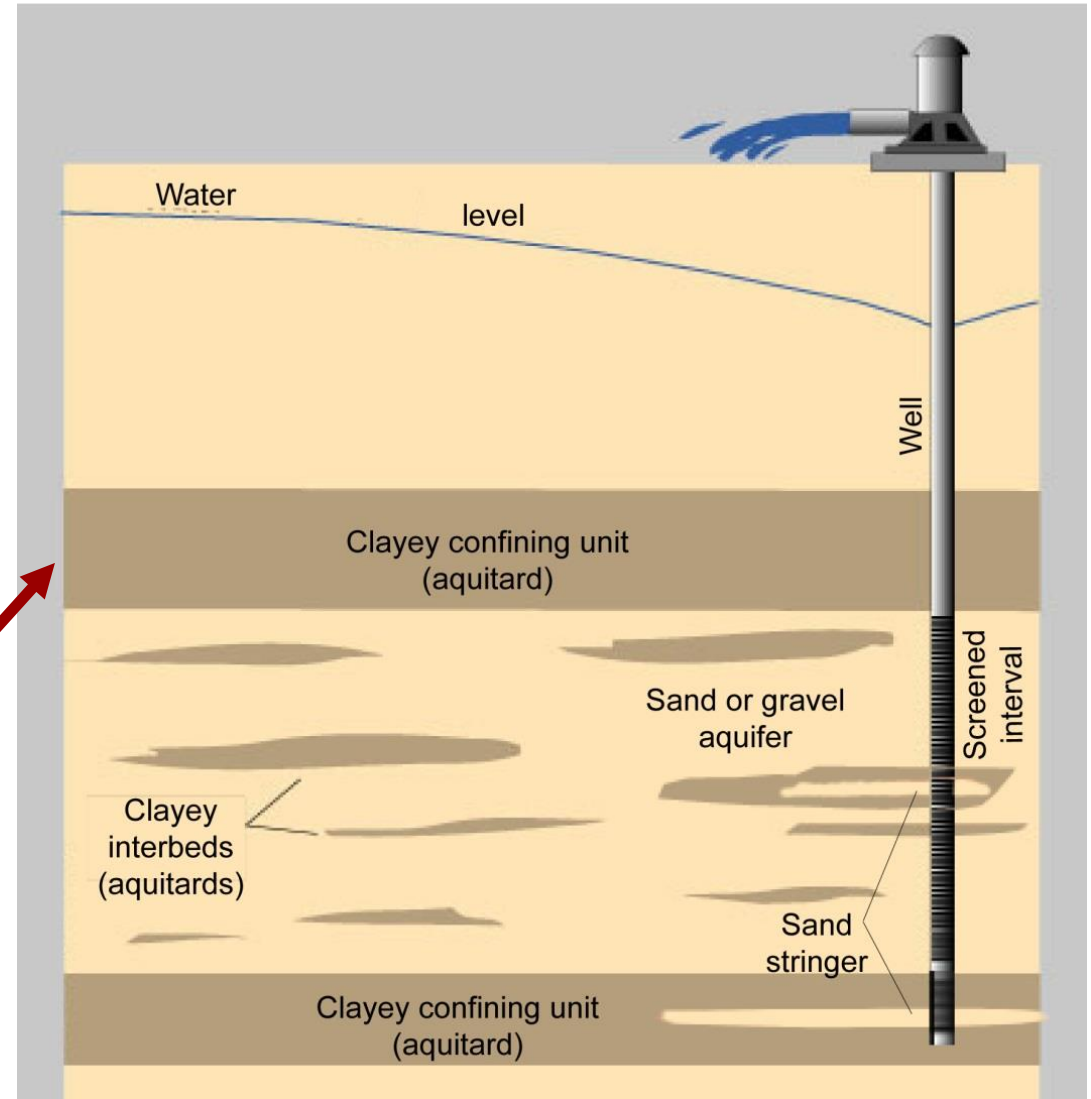
Groundwater under
pressures greater than
atmospheric by overlying
low permeability
(confining) materials



Mechanics of Aquifer System Compaction



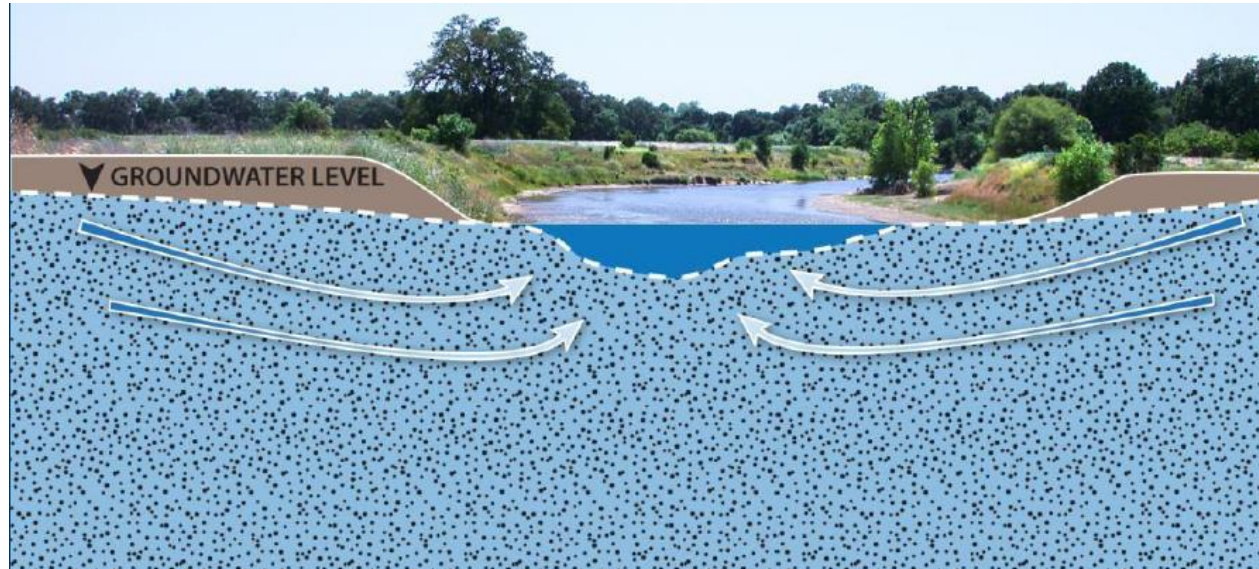
Compaction of fine-grained material



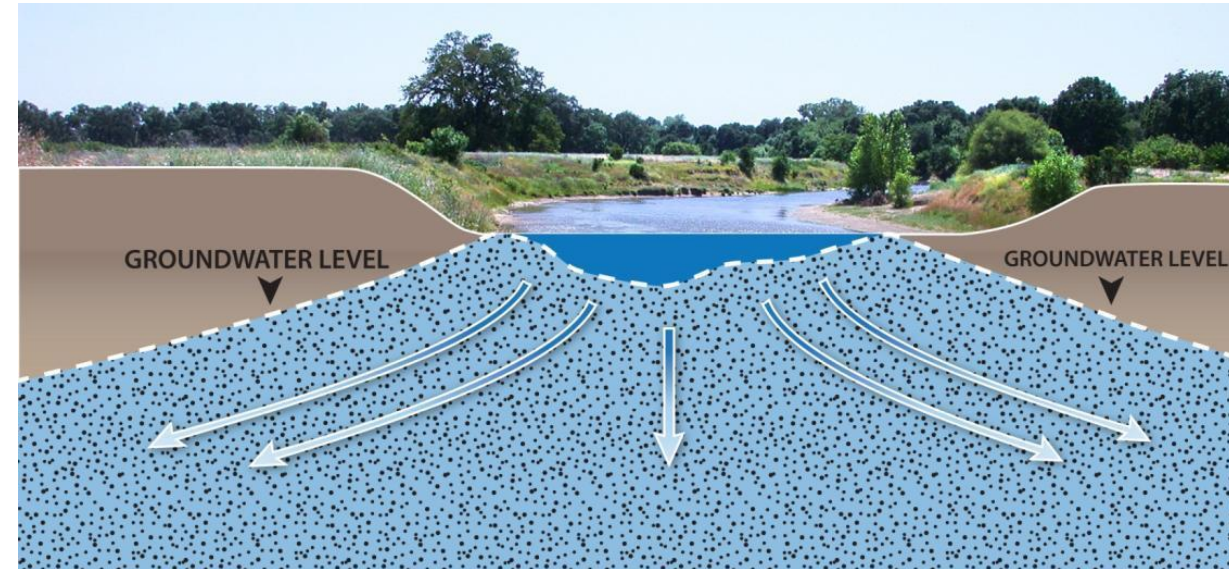


Groundwater and
Surface Water: One
Way or Another it is
all Connected

Gaining and Losing Stream Conditions

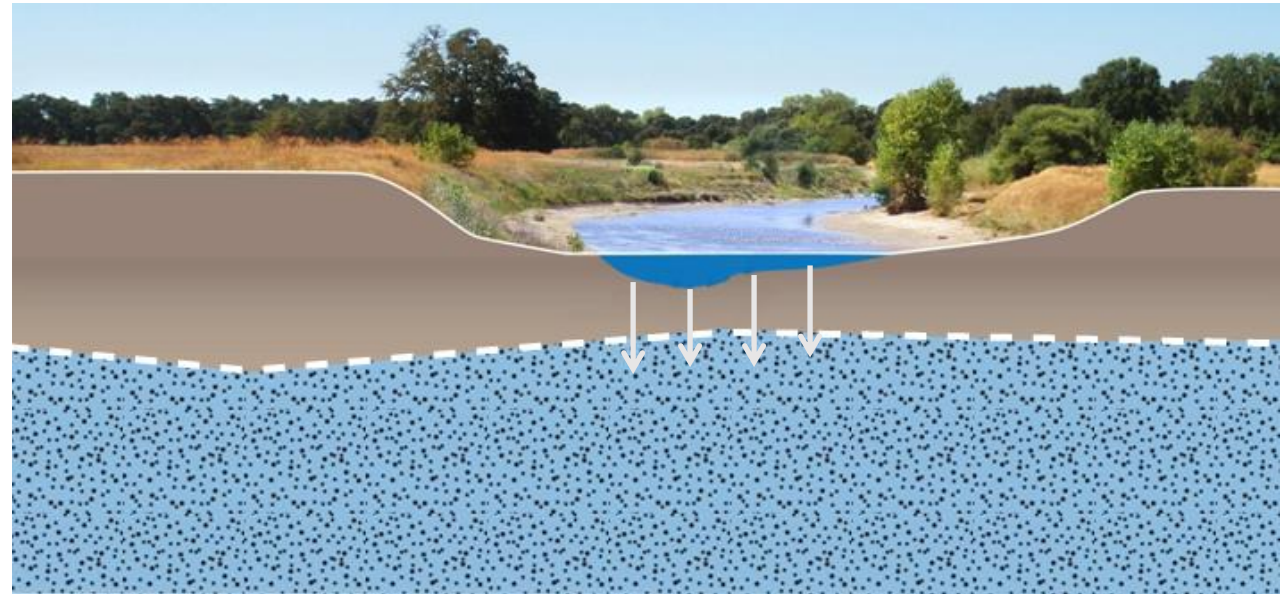


**Gaining Stream:
Groundwater Provides
Baseflow to Stream**



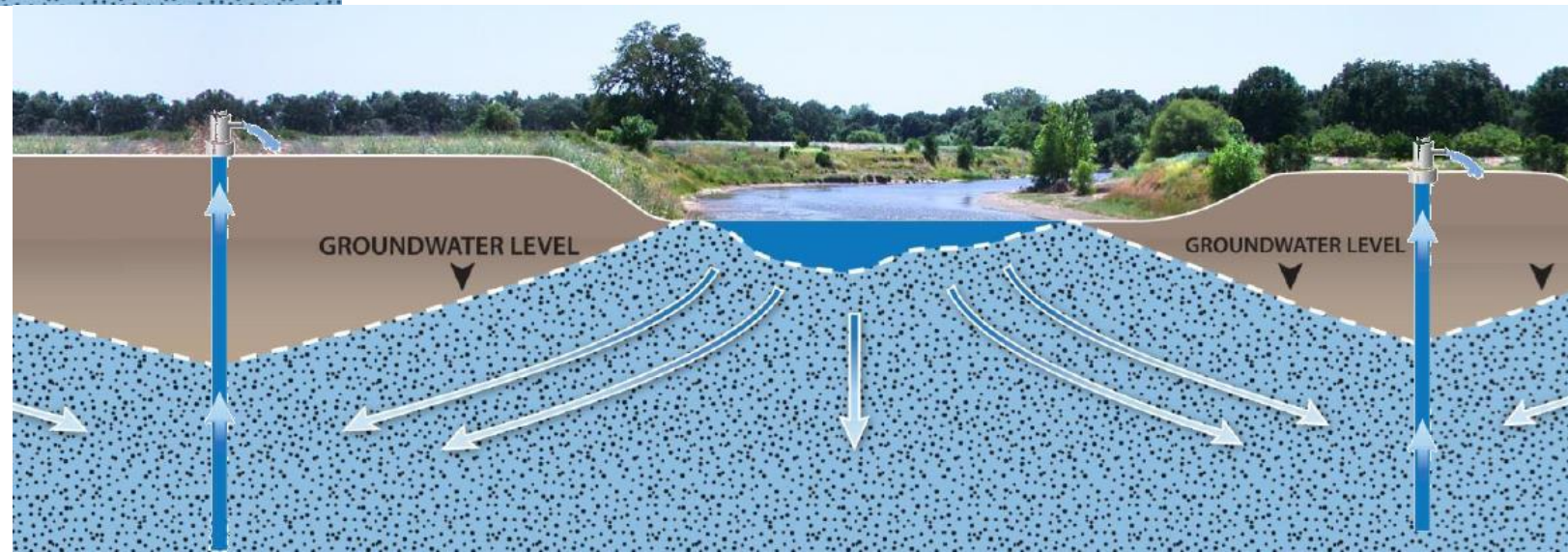
**Losing Stream:
Stream Recharges Groundwater**

Recharge and Streamflow Depletion



**Disconnected Stream:
Stream Recharges Groundwater**

**Streamflow Depletion from
Groundwater Pumping**

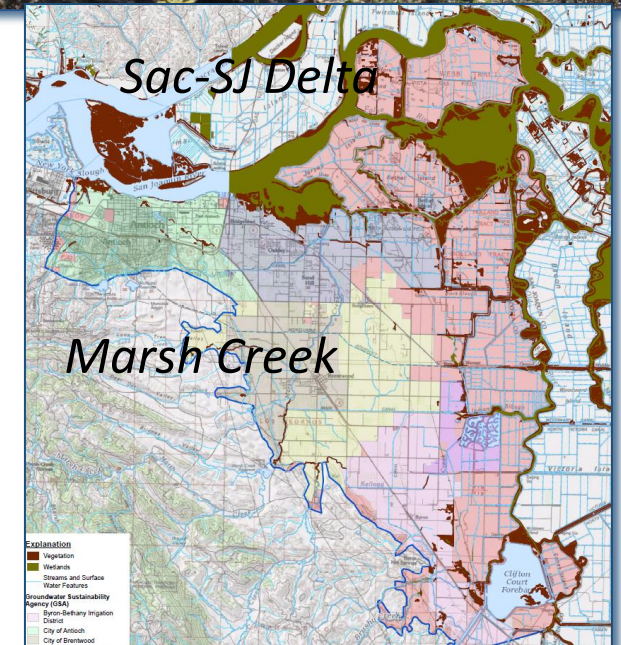


Groundwater and Surface Water Interaction: A Key Sustainability Indicator

- Monitoring data and hydrogeologic understanding to characterize SW/GW relationship
 - Surface water infiltrating below stream channels and/or groundwater contributing flow to stream channels
 - Groundwater Dependent Ecosystems (GDEs)

“ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface” (CA Code of Regulations, Groundwater Sustainability Plans § 351(m))

- Establish baseline data to accurately assess whether groundwater pumping is influencing streamflow





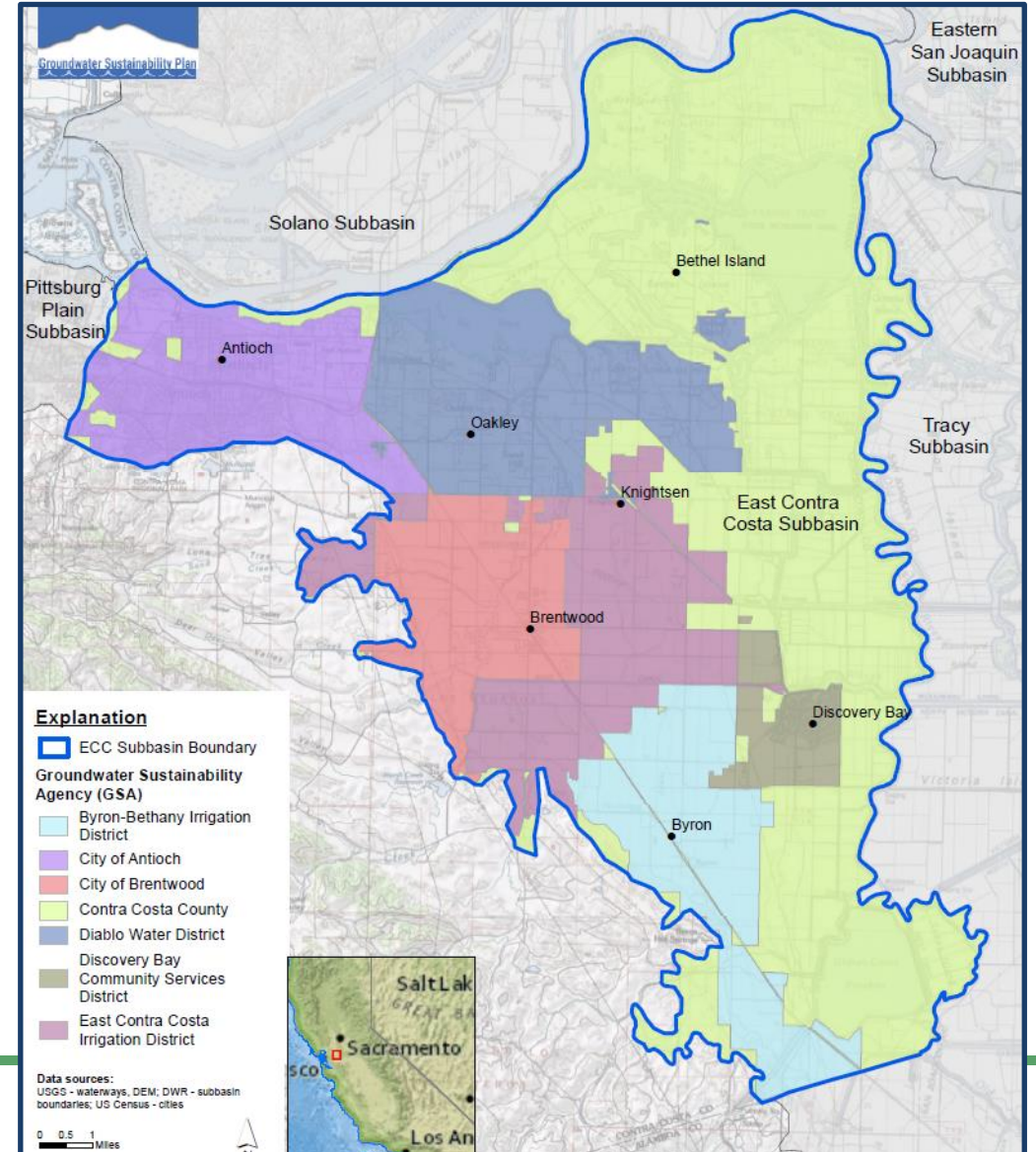
East Contra Costa
Subbasin and SGMA
Ryan Hernandez

Maintaining a Sustainable East Contra Costa Subbasin

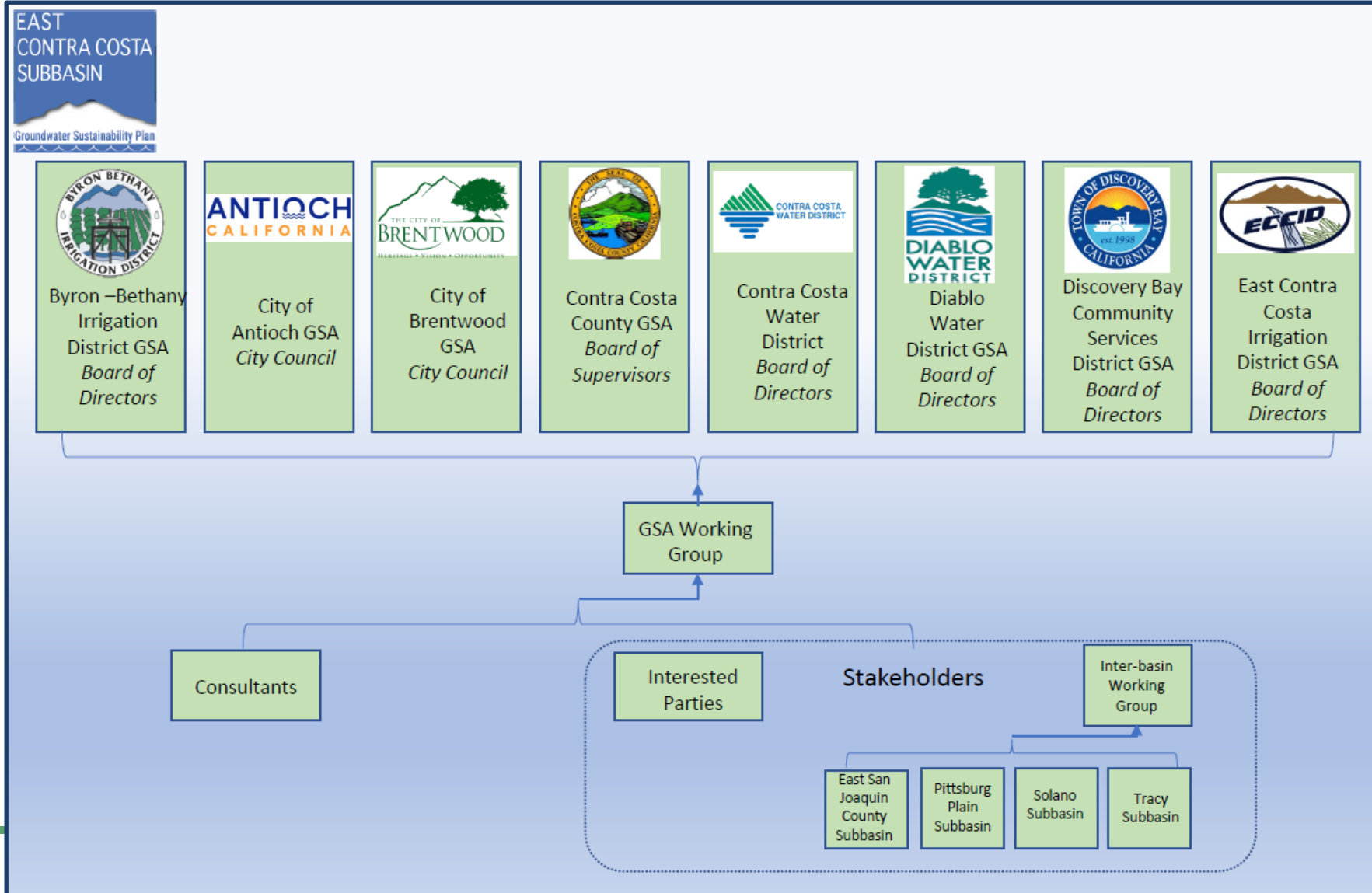
East Contra Costa Subbasin Entities



- ECC Subbasin-106,600 acres
- 7 GSAs
 - Byron-Bethany Irrigation District
 - City of Antioch
 - City of Brentwood
 - Contra Costa County
 - Diablo Water District
 - Discovery Bay
 - East Contra Costa Irrigation District
- CCWD



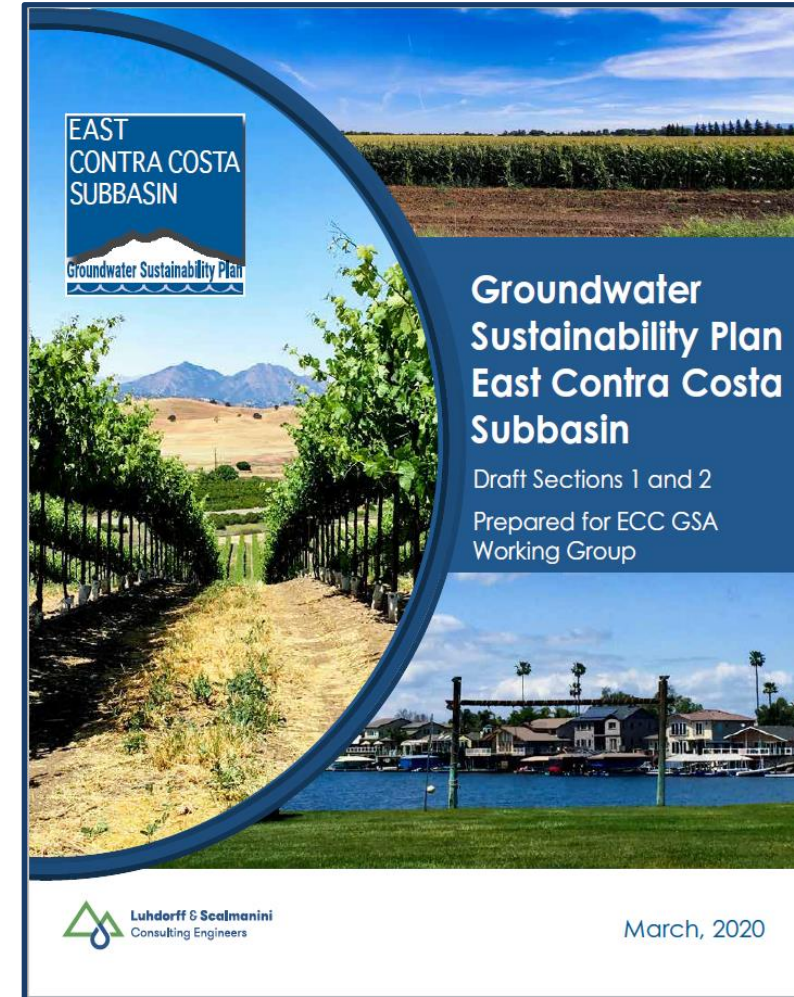
East Contra Costa Subbasin Governance



ECC Groundwater Sustainability Plan

Groundwater Sustainability Plan Sections

1. Introduction-Agency Information
2. Plan Area-Water Resources Programs, Land Uses Elements
3. Basin Setting-Hydrogeologic Conceptual Model, Groundwater and Surface Water Conditions
4. Water Supply
5. Water Budget
6. ECC Sustainability Goal
7. Monitoring Data Management and Reporting
8. Sustainable Groundwater Management
9. Plan Implementation



Paying for ECC GSP

- Grants (Prop 1 and 68) \$1,616,905
- Cost Share (ECC Entities) \$575,933
- Total = \$2,192,838



\$108,600 grant funds are contingent upon future appropriation of Prop 1 funding.

GSP Timeline

1

July 2020-April 2021
Draft GSP Sections to
Public

2

August 2021
Draft GSP to Public

3

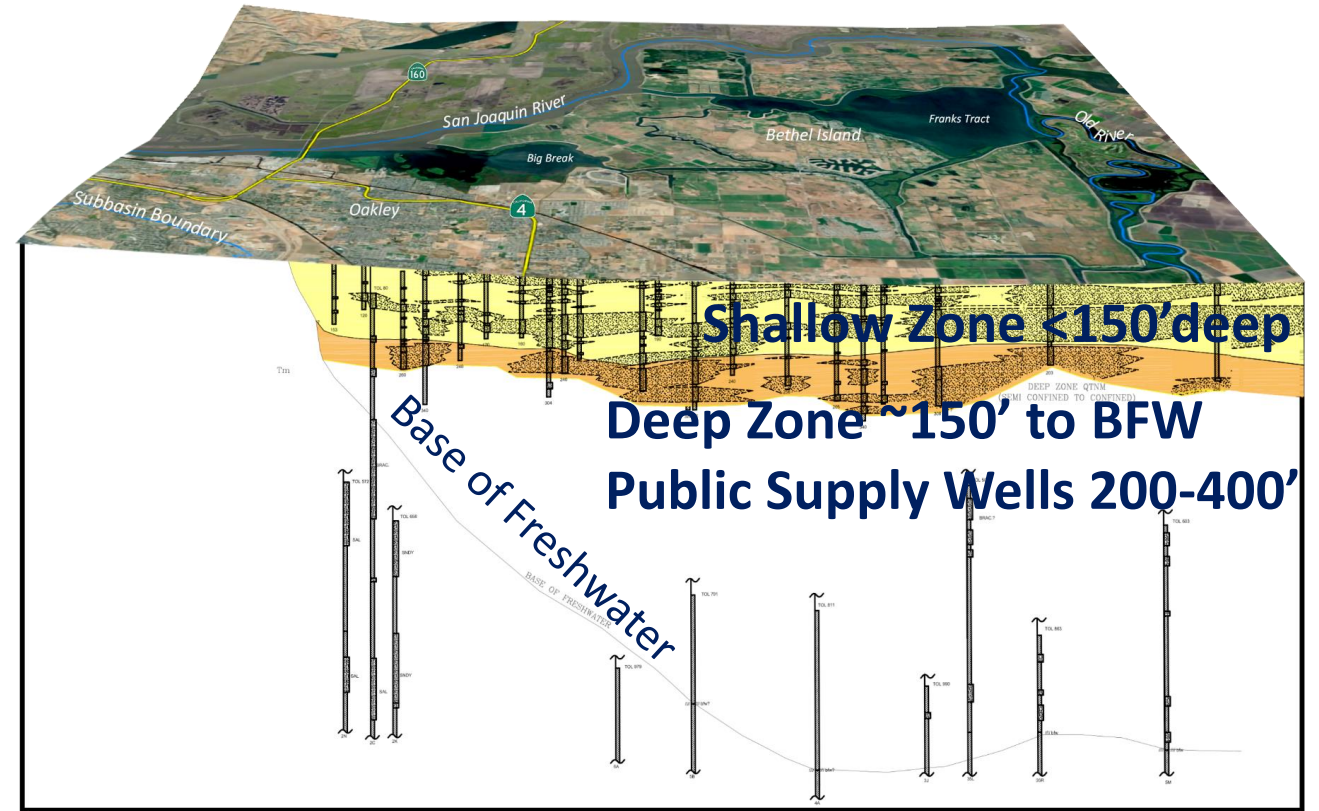
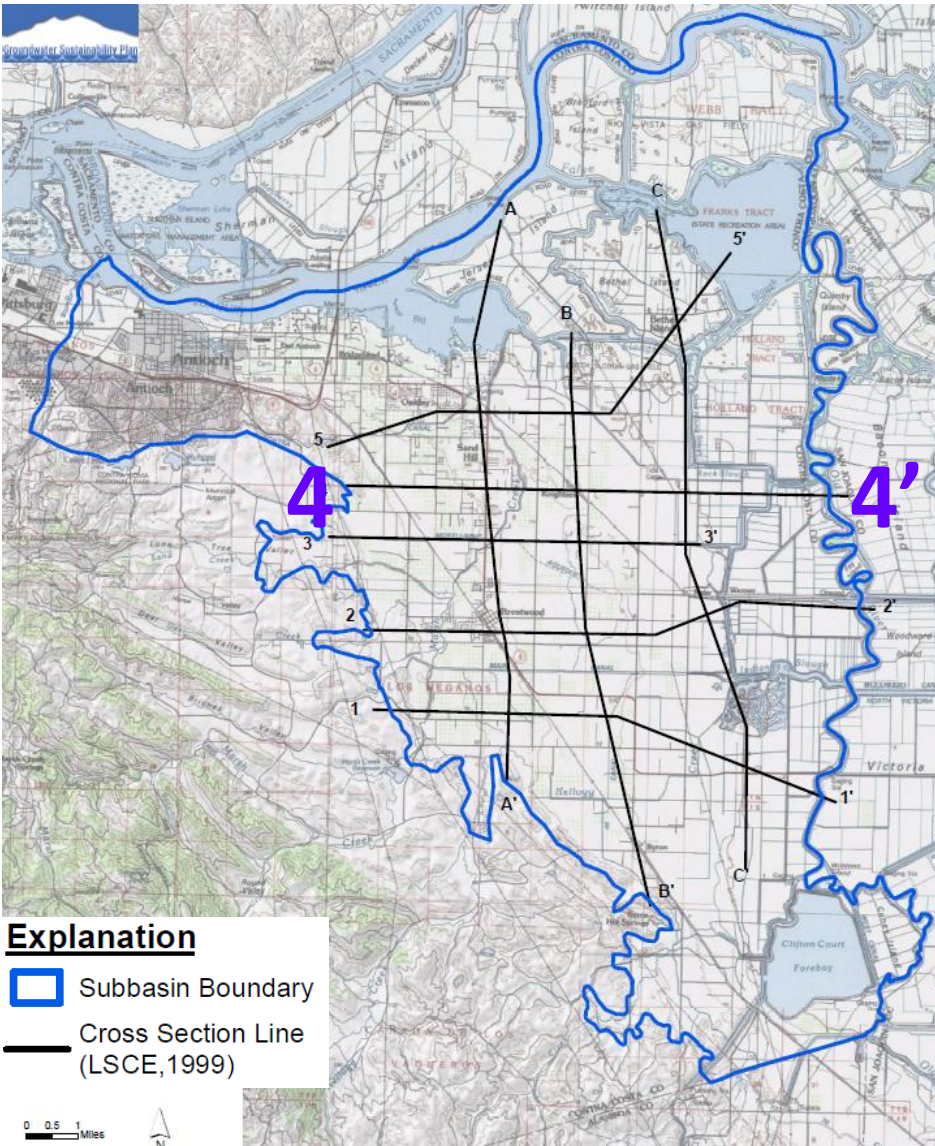
January 31, 2022
Adopted GSP to DWR



Groundwater Conditions: High Level Overview

Maintaining a Sustainable East Contra Costa Subbasin

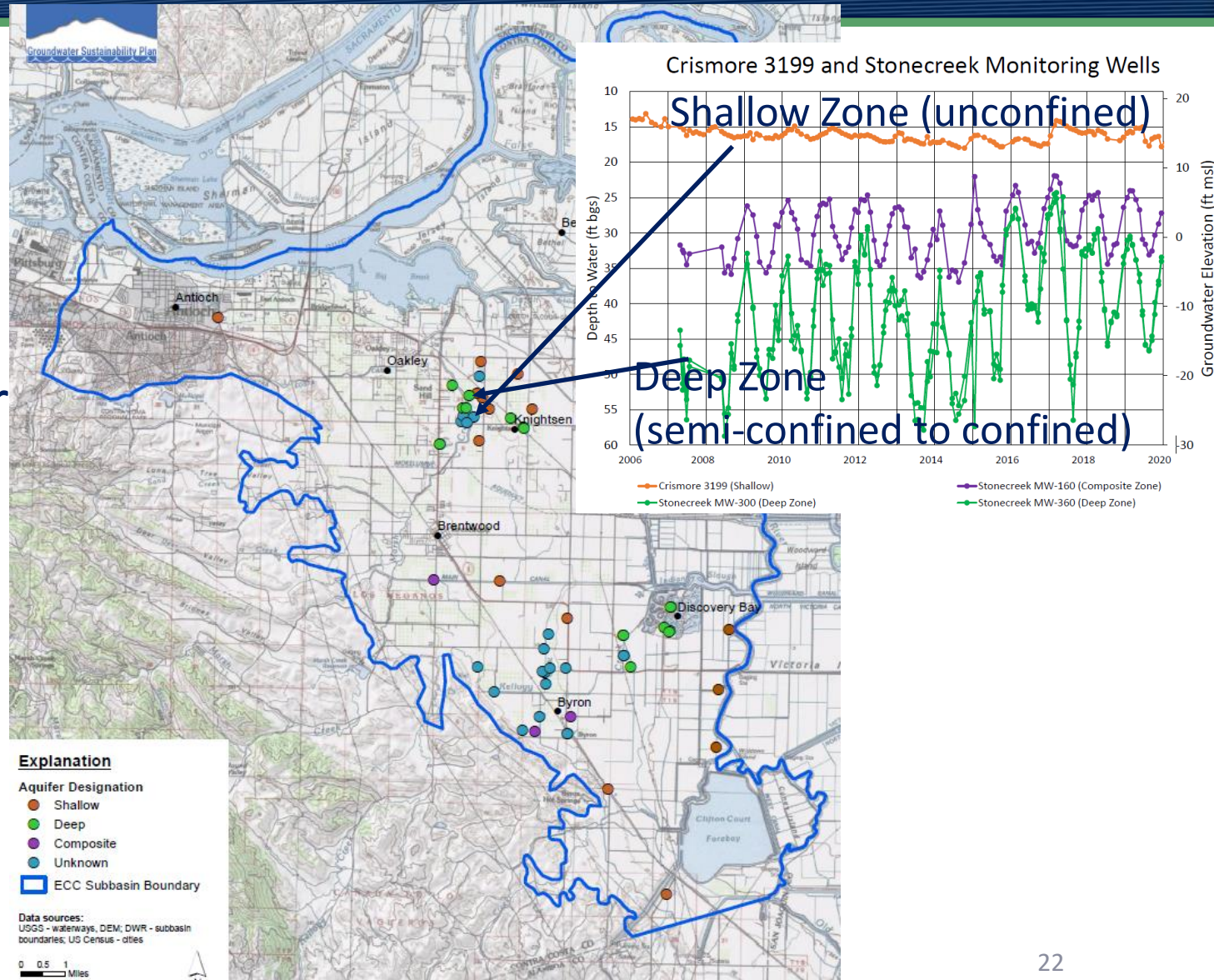
Hydrogeologic Setting: Hydrogeologic Conceptual Model



- East Contra Costa geologic cross sections; most wells less than 400 feet deep
- Understand groundwater system to understand response to recharge and pumping

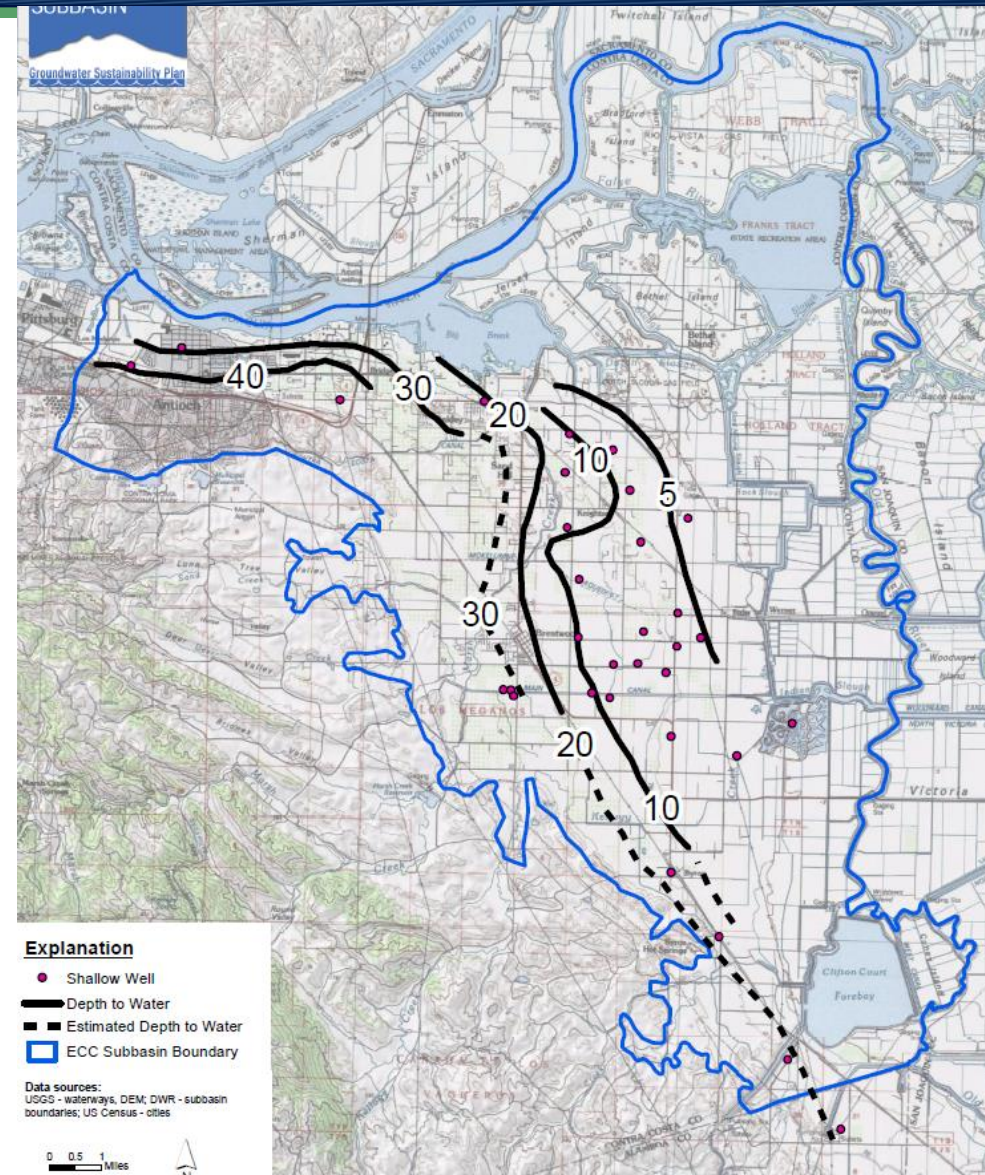
Groundwater Conditions-Stable Groundwater Levels

- Local agencies monitor water levels to understand groundwater conditions in the subbasin
 - Regionally stable groundwater conditions (2006-2019)
- Groundwater monitoring network in pumping centers
- Add additional monitoring as needed to meet local SGMA objectives and ensure sustainability



Groundwater Conditions-Shallow GW Levels

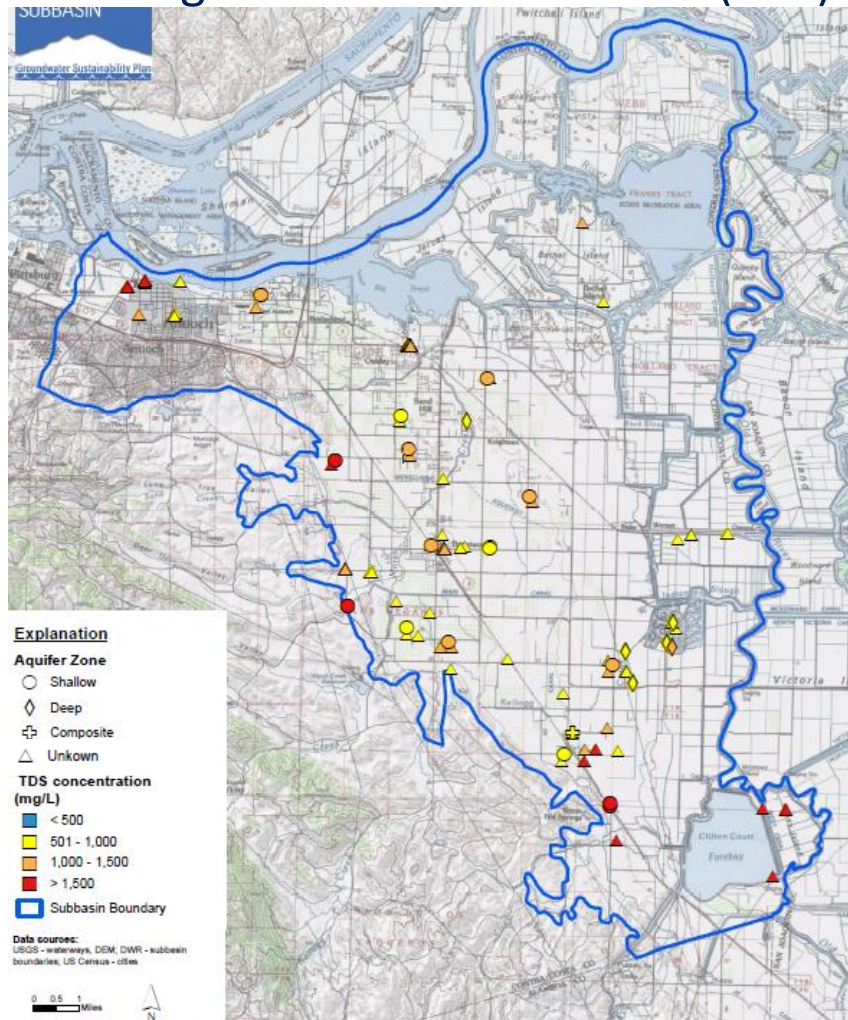
- Depth to Groundwater is very shallow in ECC Subbasin
 - Most of the Subbasin has depth to groundwater of less than 30 feet from ground surface



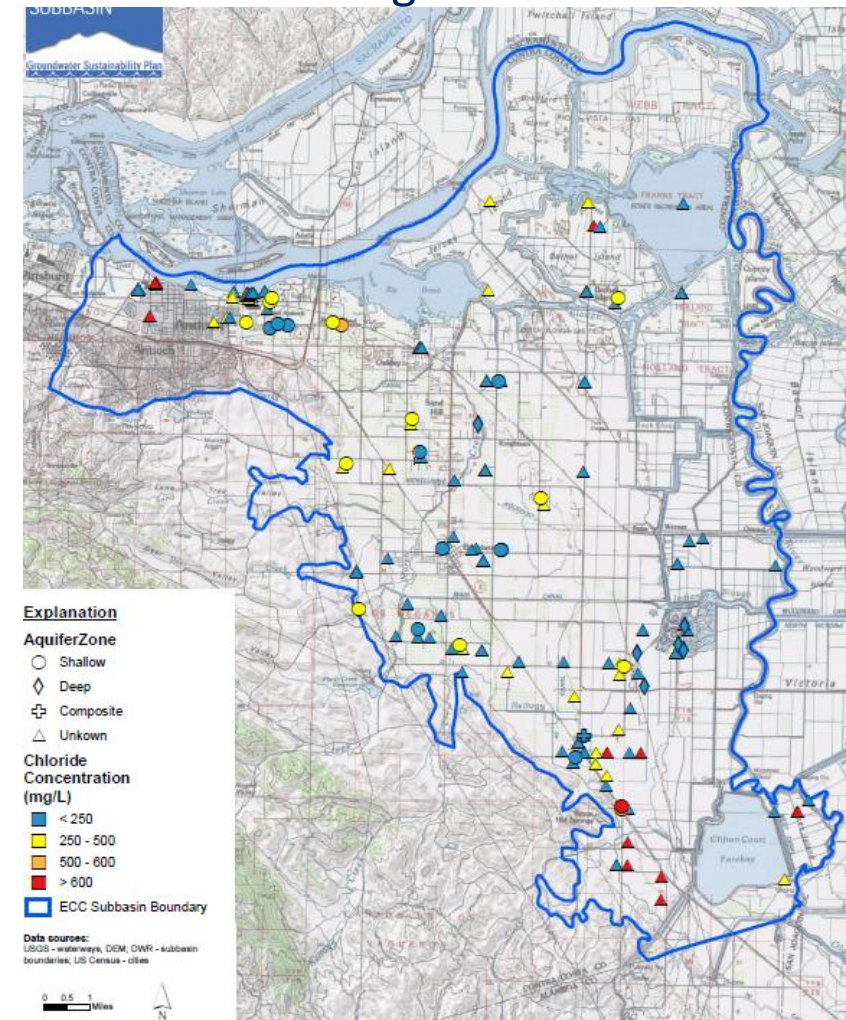
Groundwater Conditions-Groundwater Quality

- Subbasin has generally high salinity
 - TDS generally greater than 500 mg/L
 - Chloride often greater than 250 mg/L

Average Total Dissolved Solids (TDS)

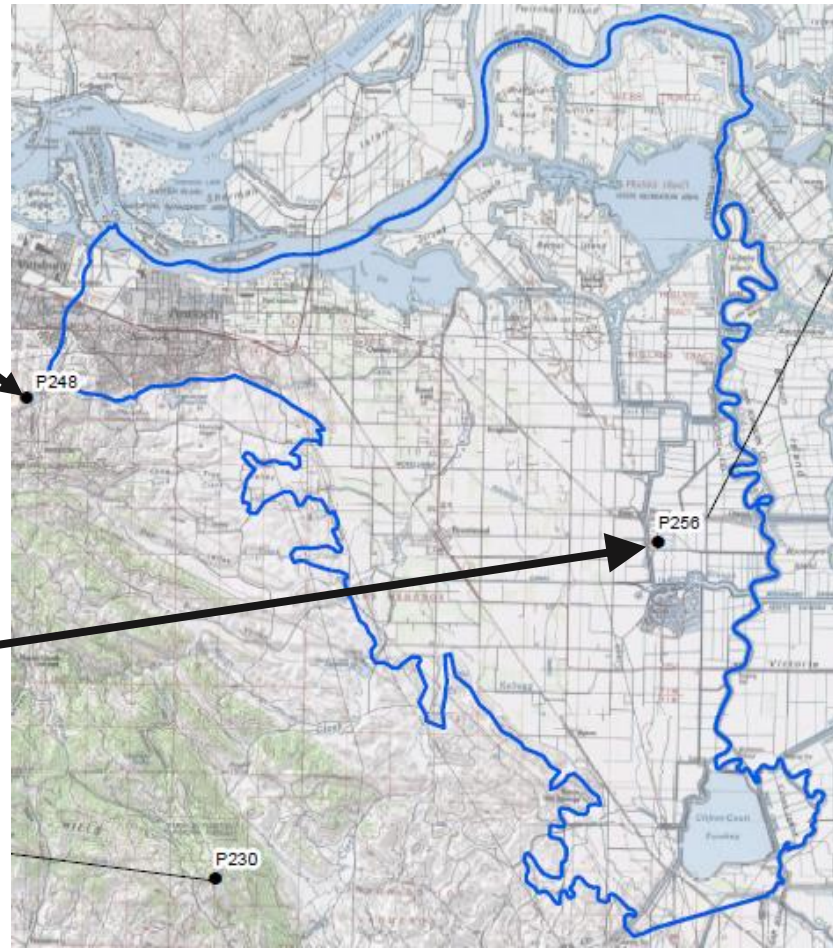
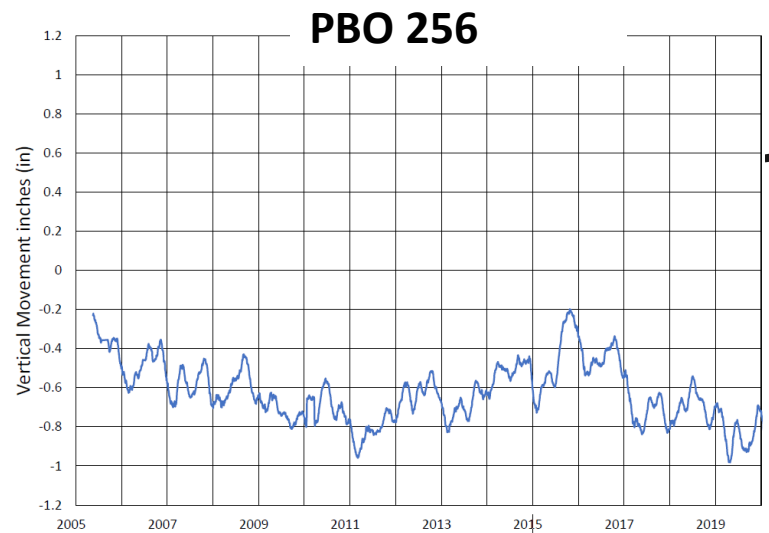
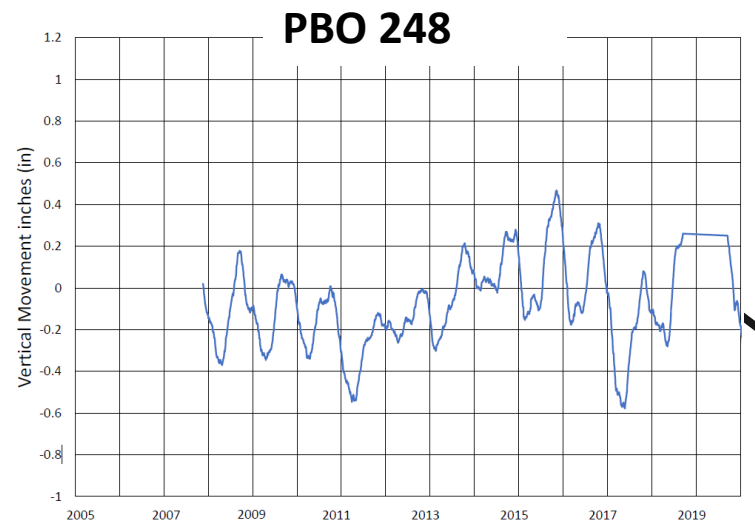


Average Chloride



Groundwater Conditions-No Subsidence

Plate Boundary Observation (PBO) Stations



- PBO stations:
- Can be used to monitor for land subsidence using vertical land surface measurements
 - Two stations in and near the ECC Subbasin show minor elastic (recoverable) displacement and **no inelastic (permanent) displacement of the land surface**

Preliminary Overview of ECC Sustainability Indicators



Lowering of
GW Levels

Reduction of
GW Storage

Seawater
Intrusion

Water
Quality
Degradation

Land
Subsidence

Depletion of
Surface
Water

OK:
GWs
stable

OK:
GWs
stable

Not present.
Not
bordered by
Ocean.

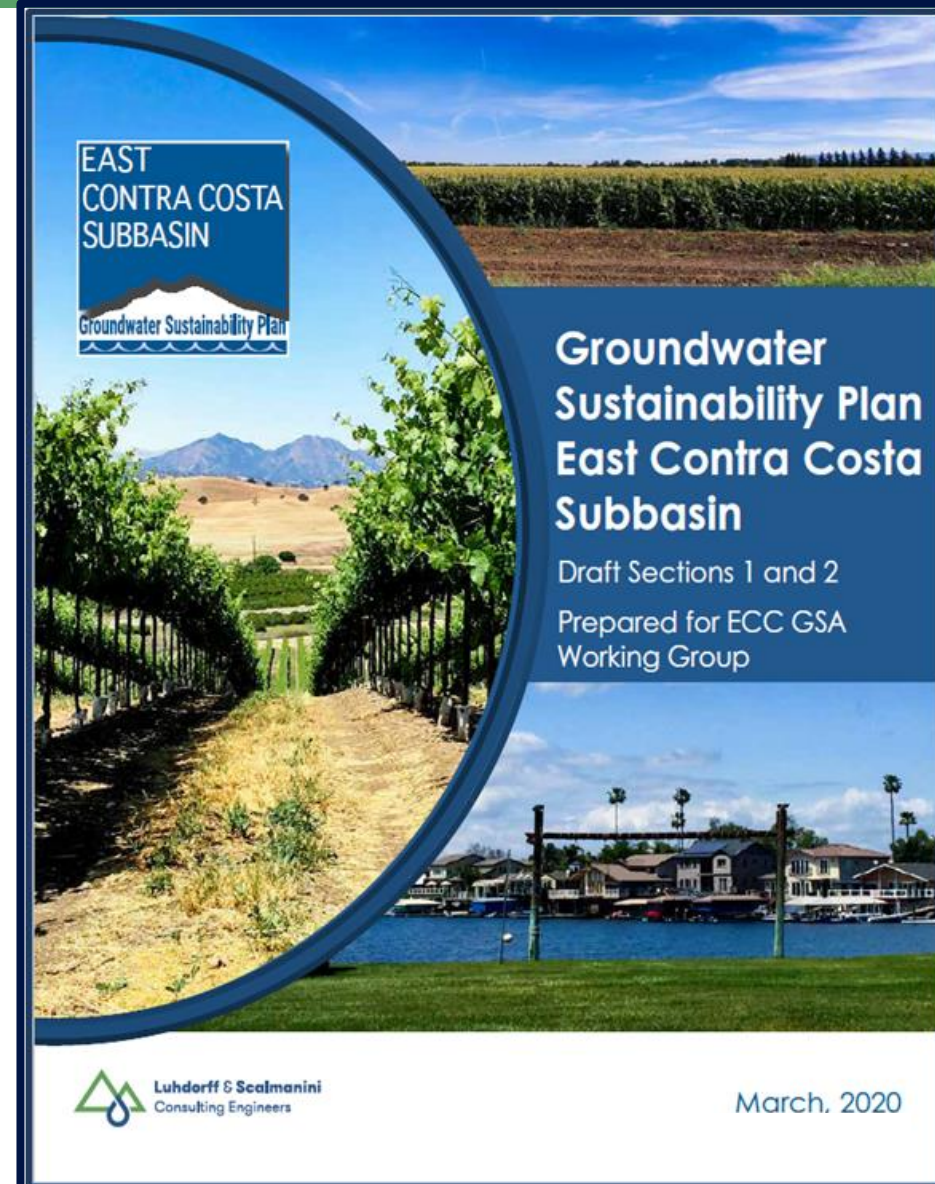
Regionally
higher
salinity; not
due to
groundwater
pumping.
GWs stable.

OK:
GWs
stable

OK:
GWs
stable

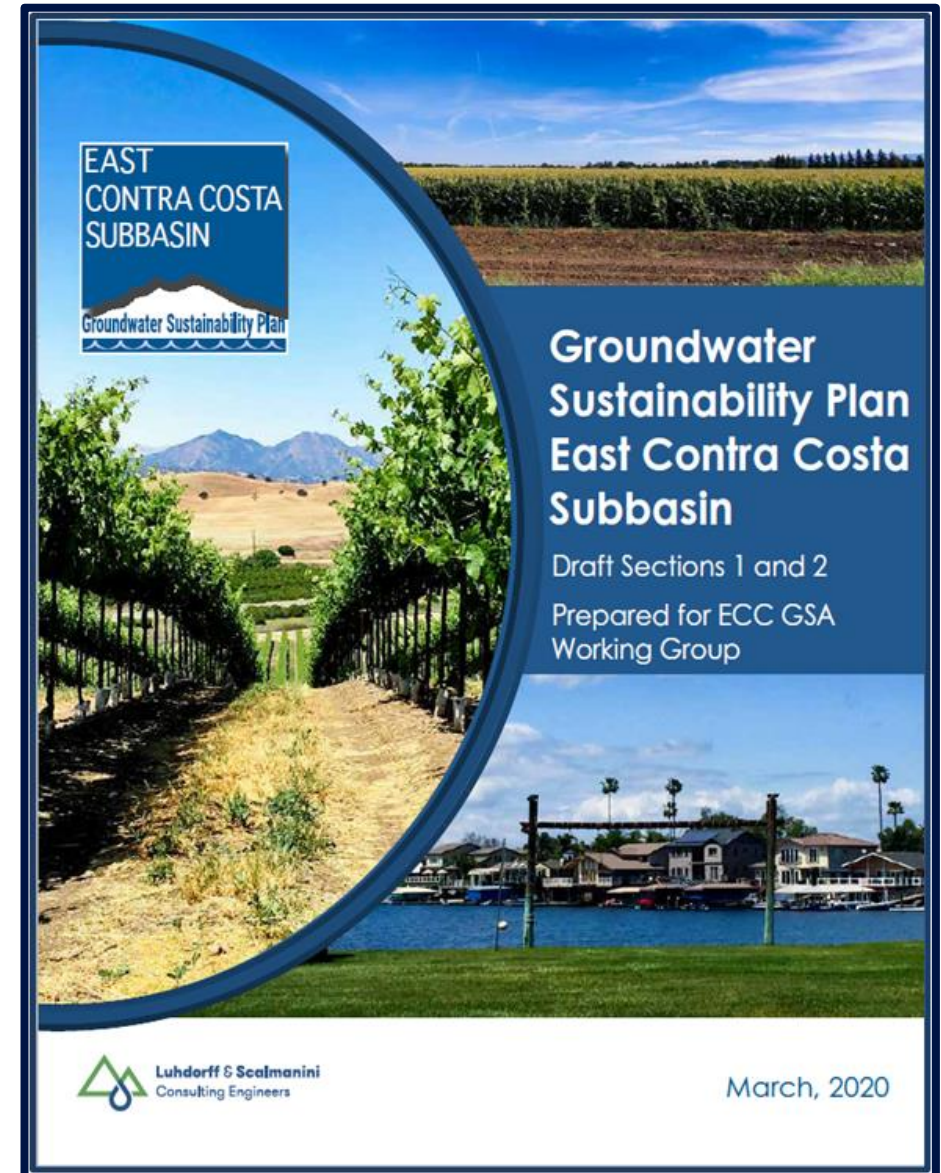
Looking Ahead: Draft GSP in 2021

- Much underway in 2020
- Draft GSP Sections 1 & 2 out for review
- Summer/Fall 2020: Defining sustainability criteria (including undesirable results)
- Fall 2020/Spring 2021: Develop concepts for projects and management actions
- Modeling: anticipate completion of model calibration and running project-related and future conditions scenarios in Fall 2020/Spring 2021
- Draft GSP Summer/Early Fall 2021



Draft GSP Sections 1 and 2

- Draft Sections 1 and 2 are available for public comment:
<http://tinyurl.com/ECCGSP-1>
- Table of Contents: Sections 1 and 2
 - Purpose of the Plan
 - Sustainability Goal
 - Planning Area
 - Current and Historical Water and Land Uses
 - Groundwater Wells in the Subbasin
- Comments due July 20, 2020





Thank You

Questions?

How to contact us:
groundwaterinfo@dcd.cccounty.us

