



# YSGA BOARD OF DIRECTORS MEETING

January 22, 2024

# Agenda

## **1. Call to Order and Determination of Quorum**

2. Adding Items to the Posted Agenda
3. Public Forum
4. CONSIDERATION - Consent Items
5. Report of the Chair and Executive Officer
6. PRESENTATION - Groundwater Accounting Platform
7. CONSIDERATION - Approve Entering Into Contracts Funded by SGMA Implementation Grant
8. CONSIDERATION - 2-Tier Well Permit Review Procedures
9. Member's Reports and Future Agenda Items
10. Next Meeting - March 18, 2024
11. Adjournment

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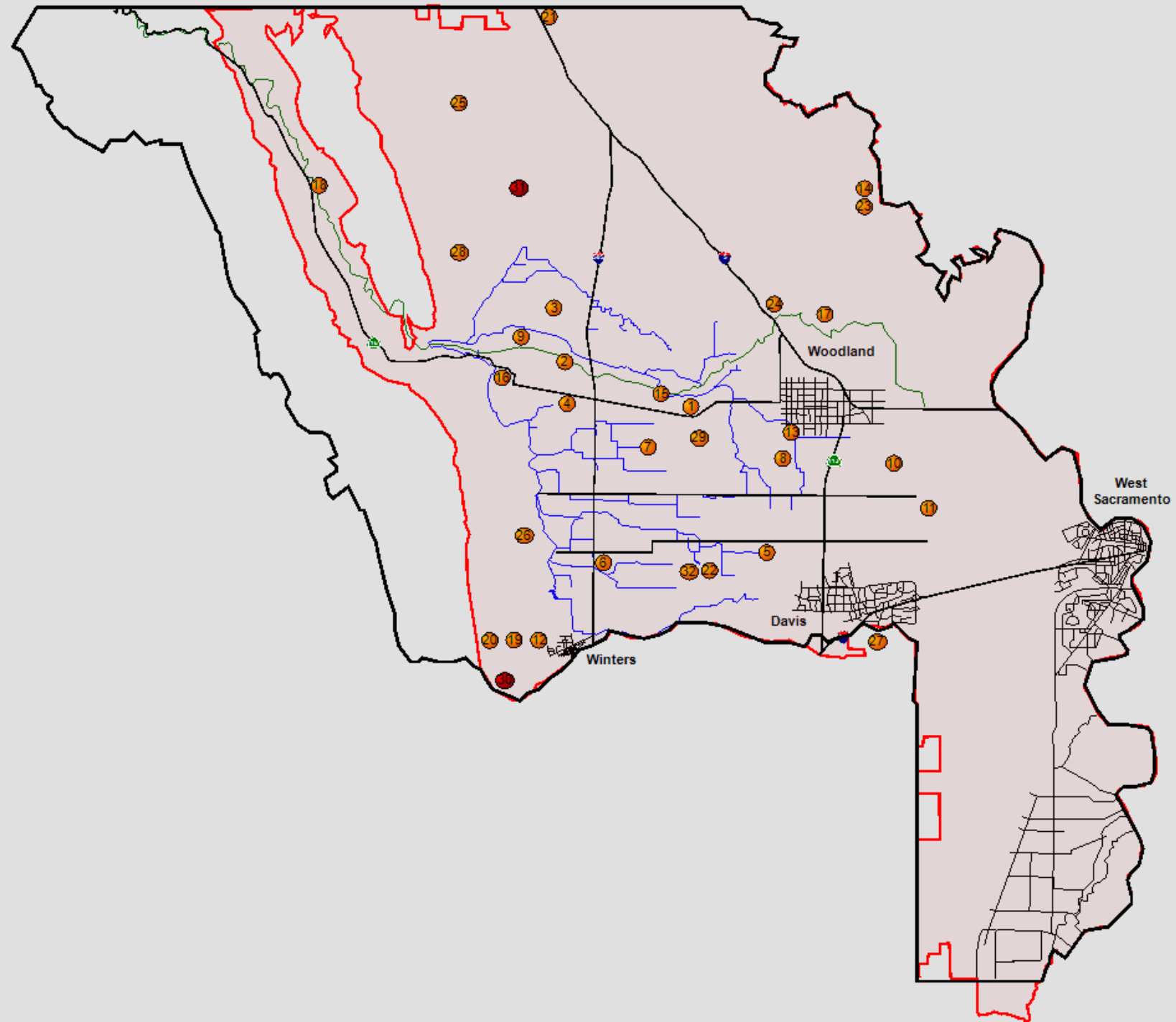
# Consideration: Consent Items

- a) Approve November 20, 2023 Board of Directors Meeting Minutes
- b) Receive Fiscal Year 23/24 Financial Statements: 11/18/23 – 1/16/24
- c) Receive minutes of Executive Committee: 11/14/23
- d) Approve Payment of Bills
  - *Yolo County Flood Control & Water Conservation District* in the amount of \$63,687.33 for services provided October 1 to December 31, 2023

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**Well Monitoring**  
Continuous



SCADA Links

Comparison Trends

Comparison Table

**Legend**

- Real-Time Site 
- Data Logger Site 
- YSGA 
- County 



**Well Monitoring**  
Continuous

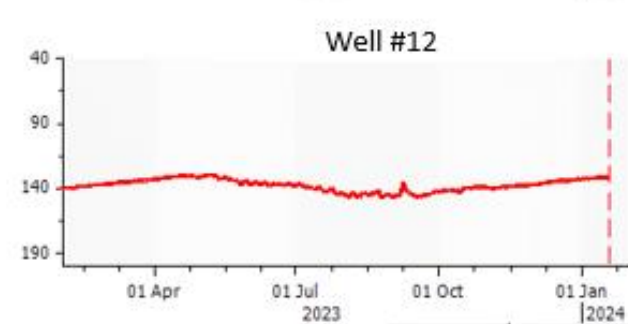
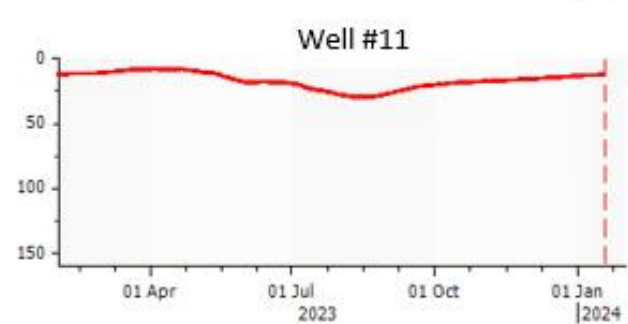
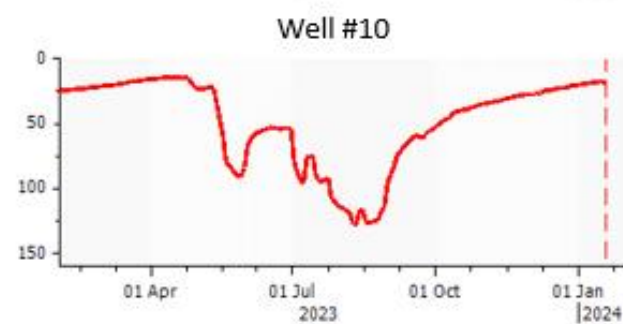
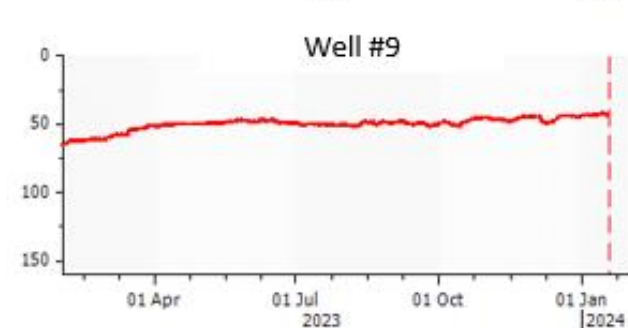
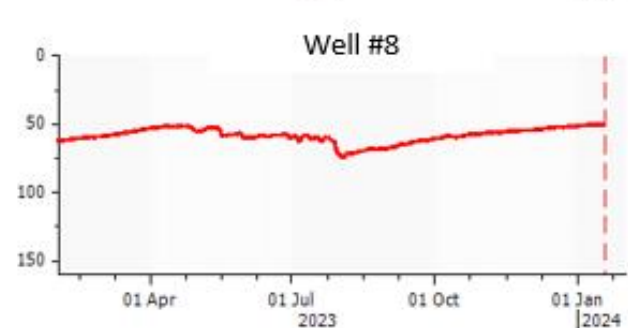
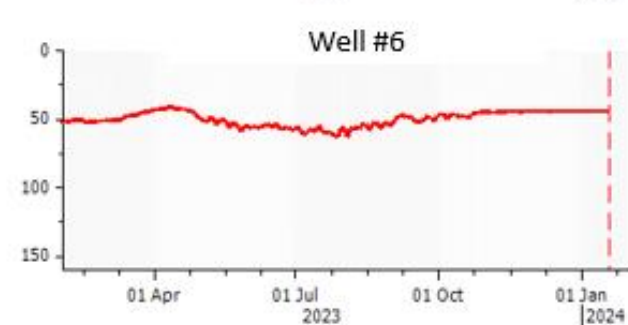
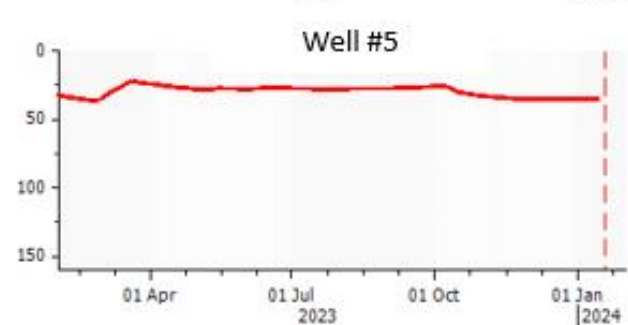
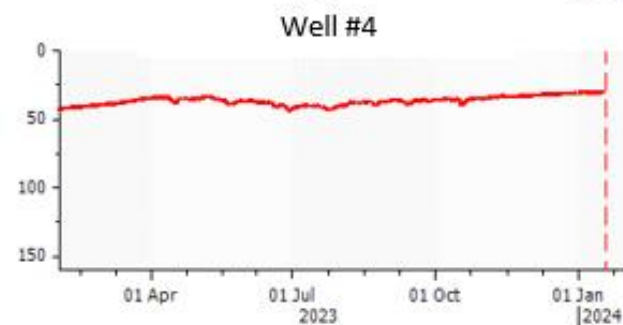
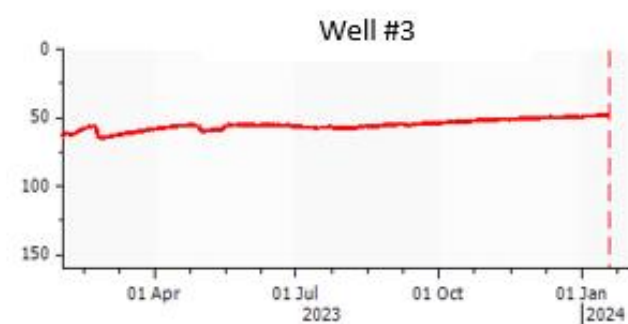
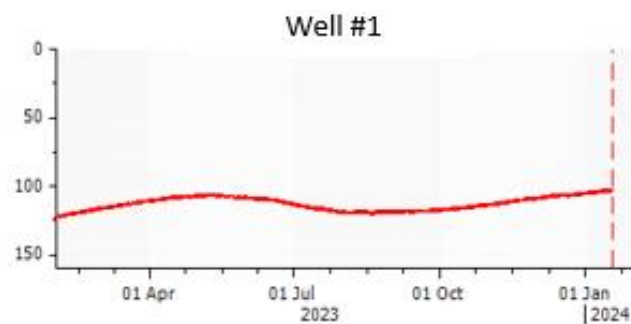
SCADA Links  
Comparison Trends  
Comparison Table

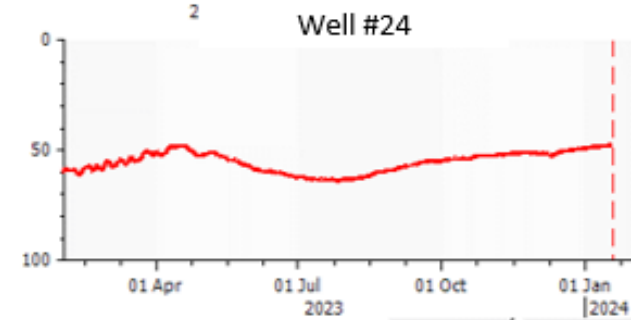
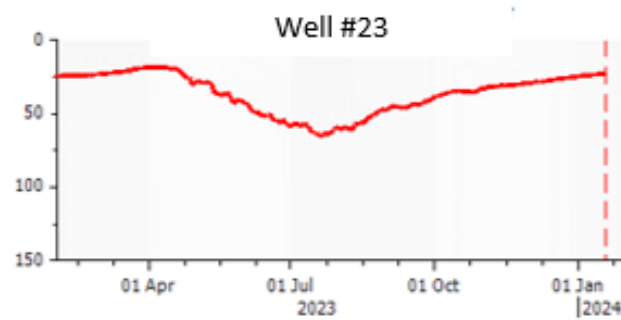
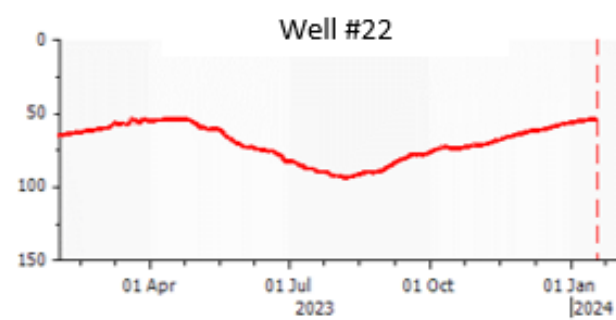
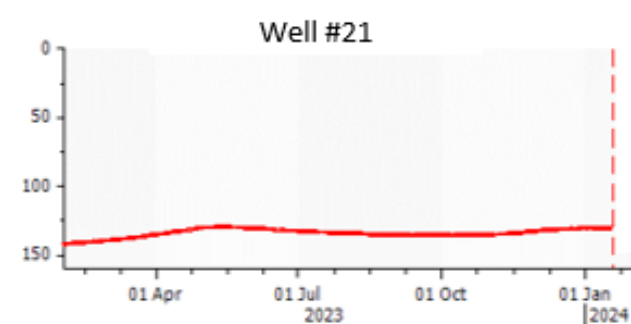
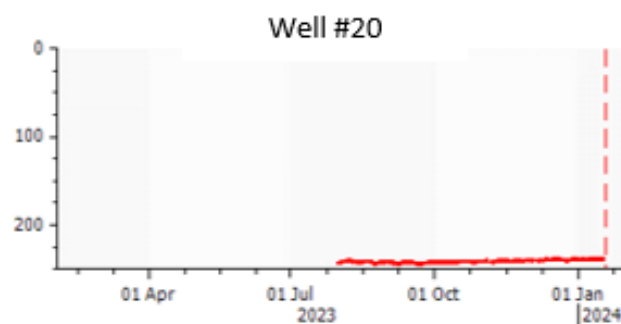
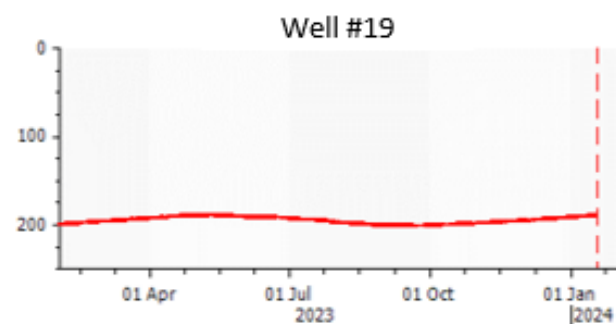
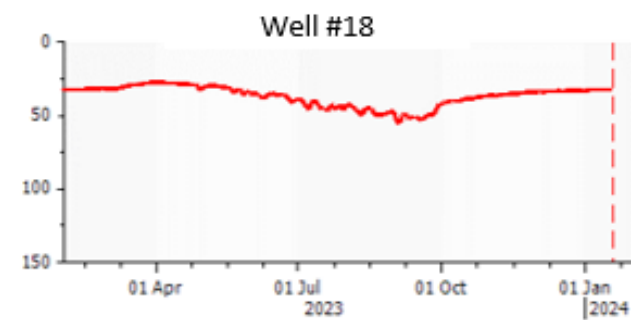
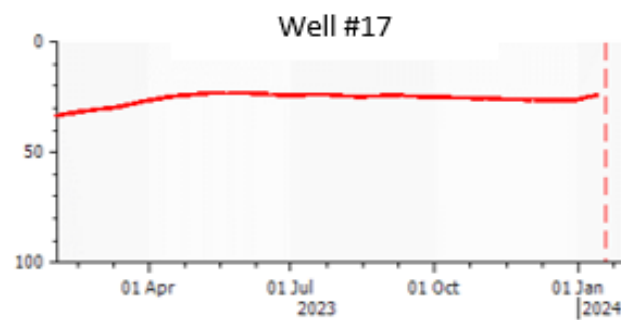
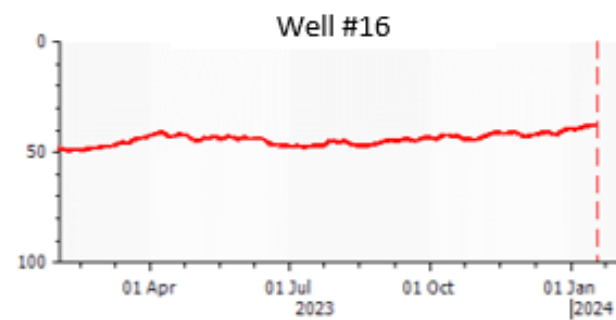
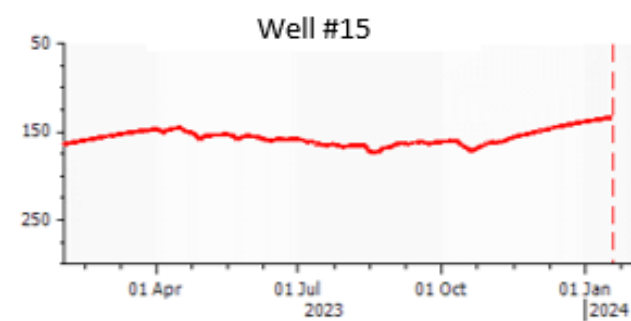
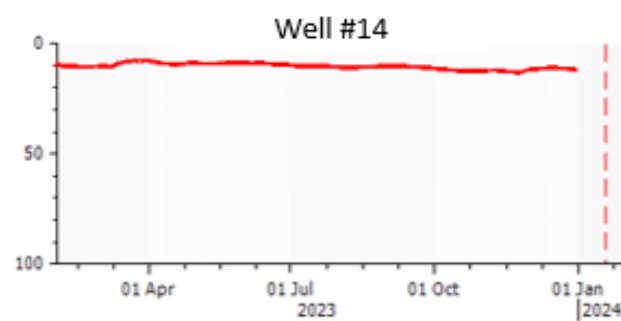
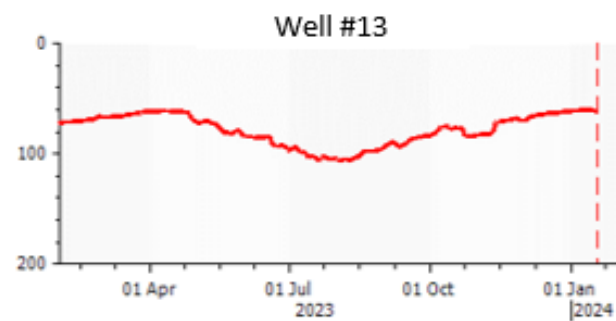
**Legend**

- Real-Time Site (Orange circle)
- Data Logger Site (Red circle)
- Cache Creek (Green line)
- Canal System (Blue line)
- Roadway (Black line)

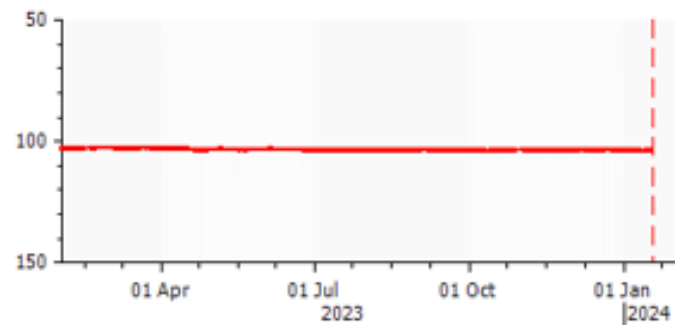
Winters, Woodland, Davis

[illegible]

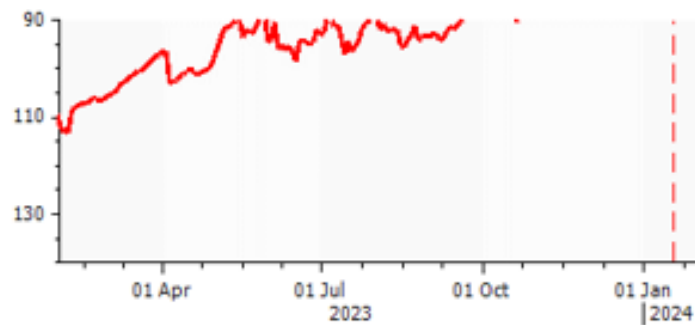




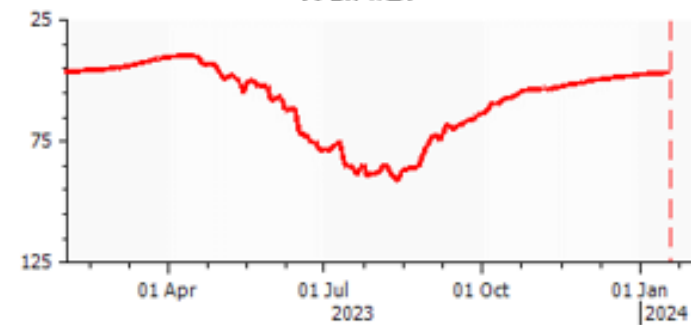
Well #25



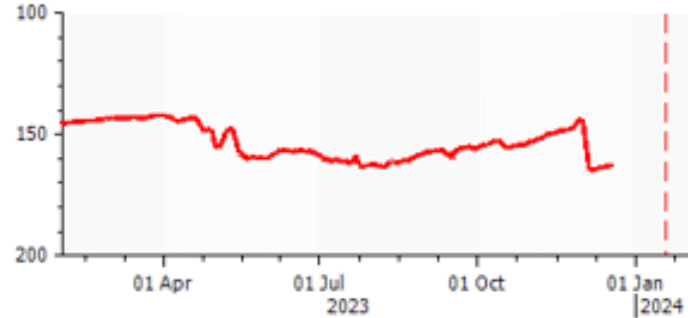
Well #26



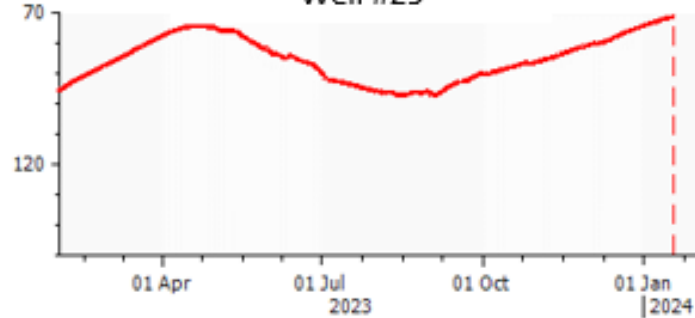
Well #27



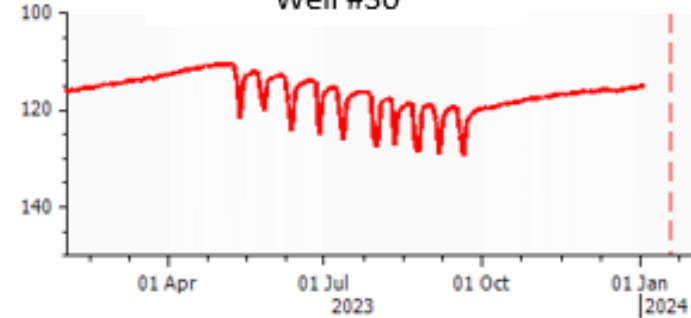
Well #28



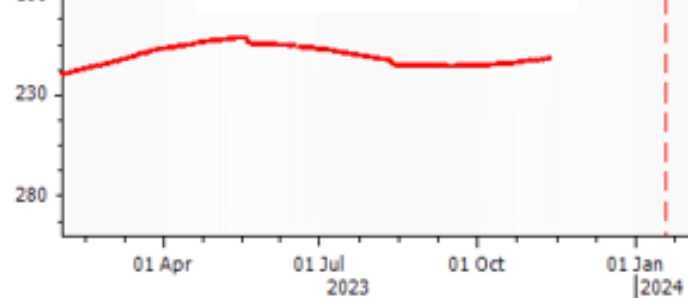
Well #29



Well #30

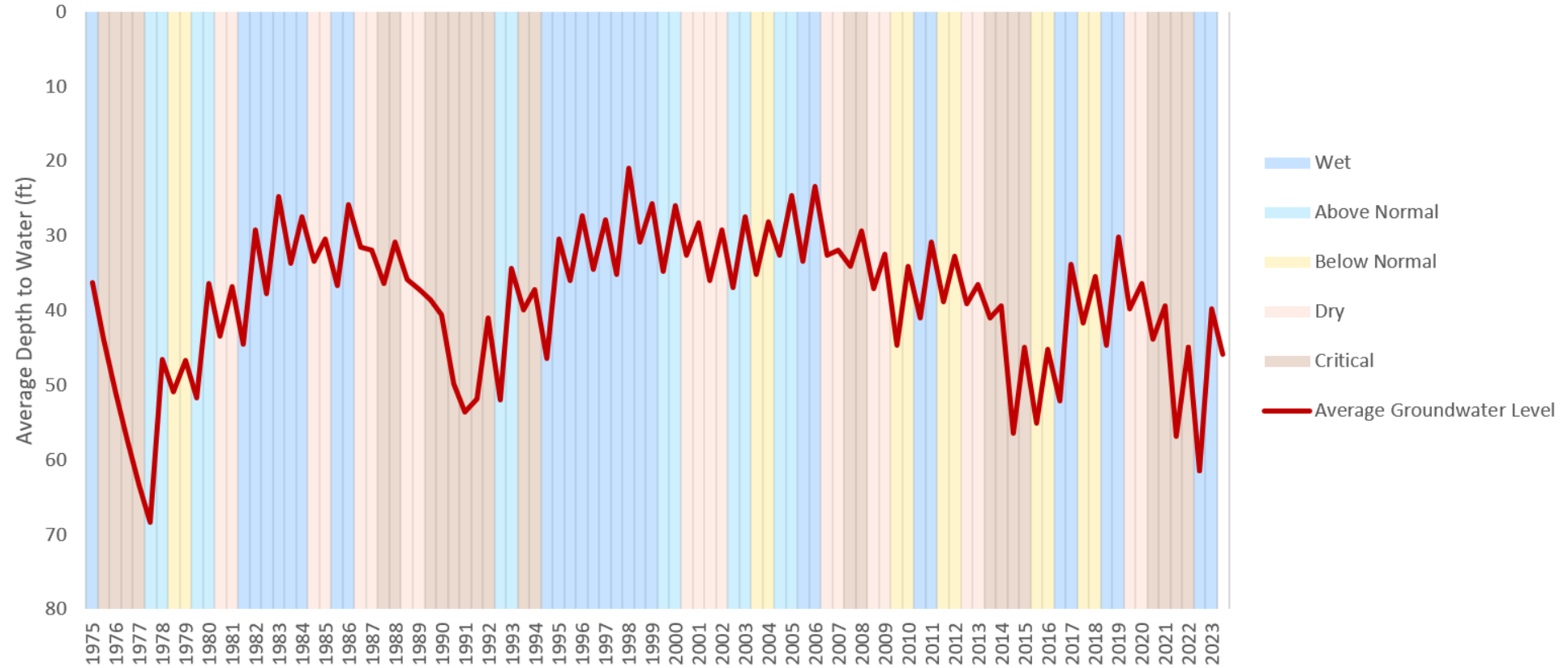


Well #31



## Yolo Subbasin Average Groundwater

*Representative Wells - Depth by Season (62 Wells)*



September 2022 Average Depth to Water ~ 62 feet

October 2023 Average Depth to Water ~ 46 feet

Of Note:

Fall 1975 to Fall 1977 Drawdown ~ 25 feet

2014 Drawdown from Spring to Fall ~ 17 feet

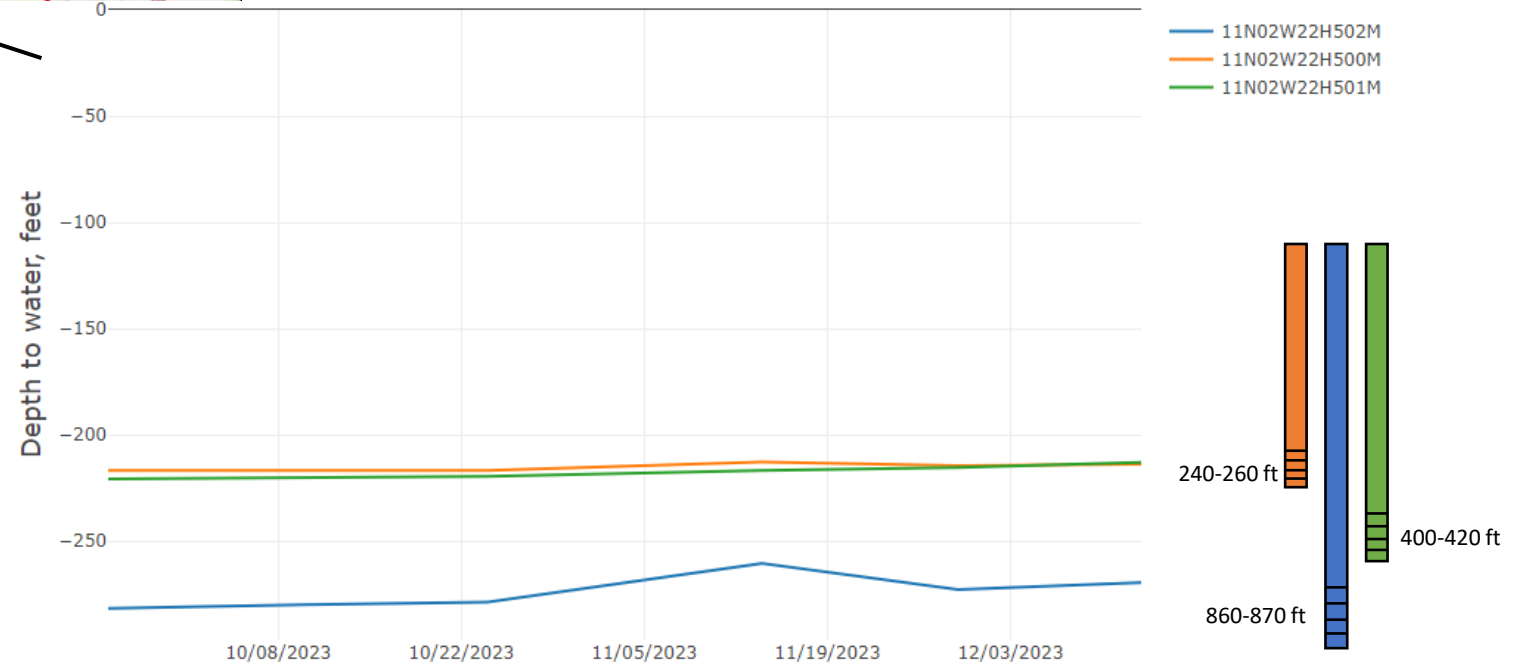
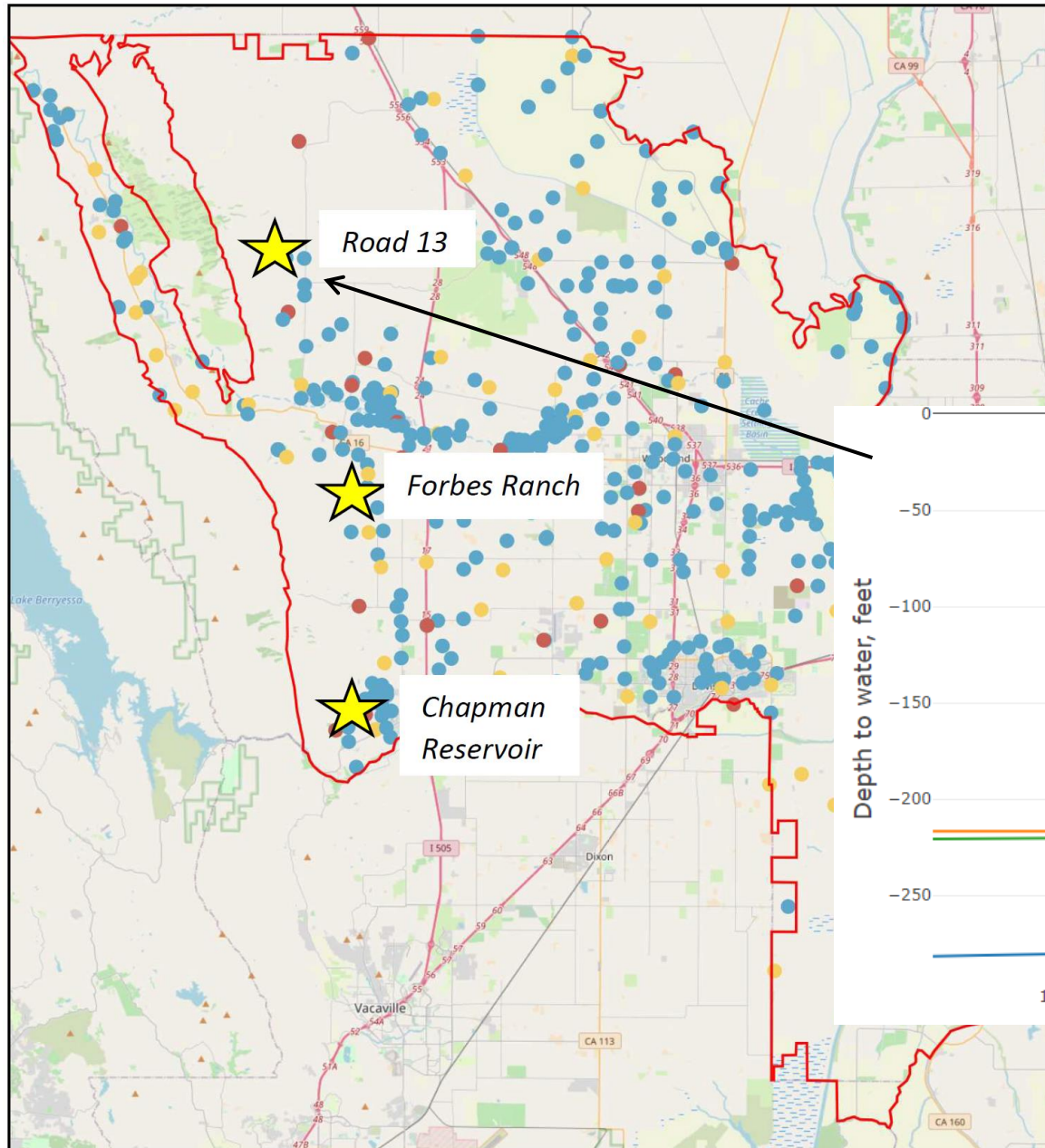
2019 Drawdown from Spring to Fall ~ 9.5 ft

2022 Drawdown from Spring to Fall ~ 17 feet

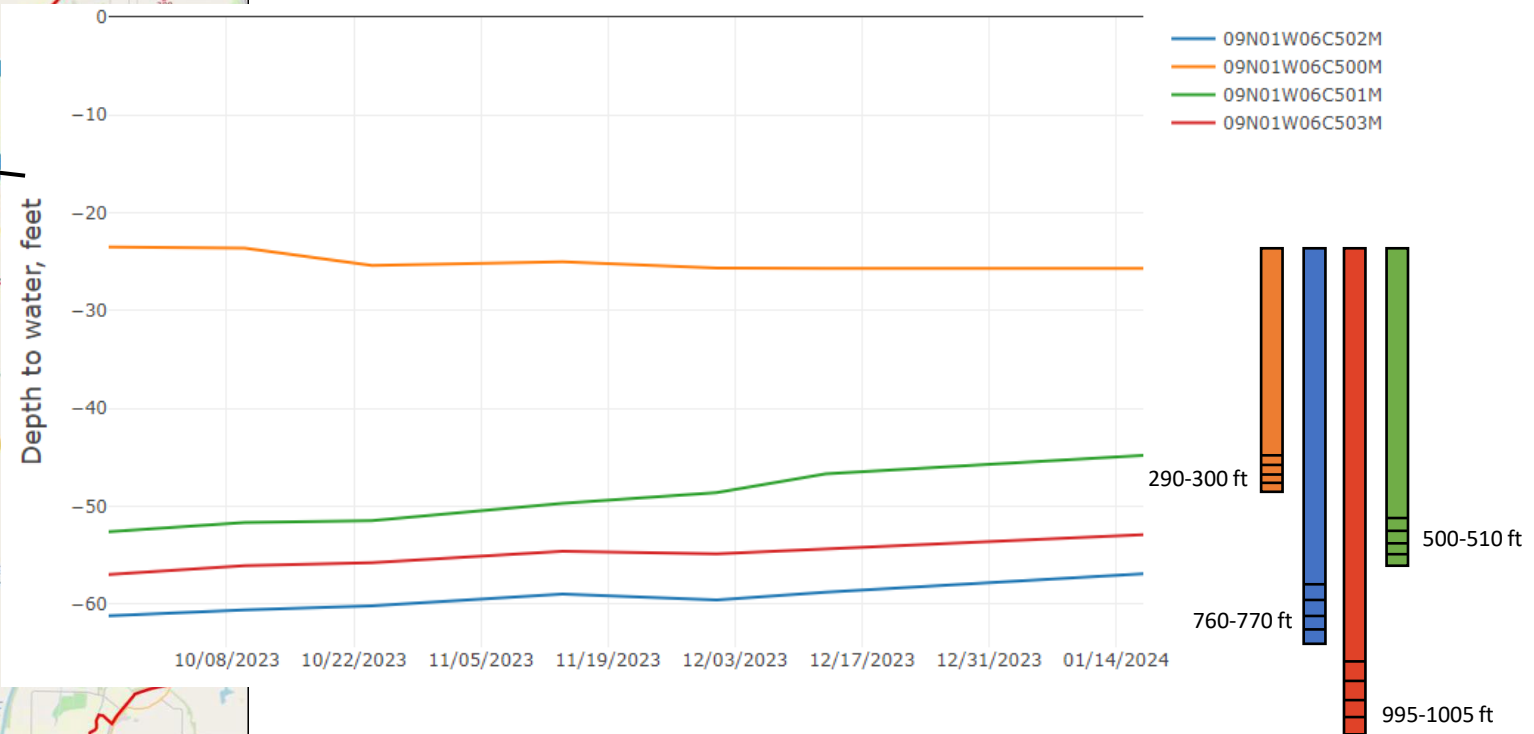
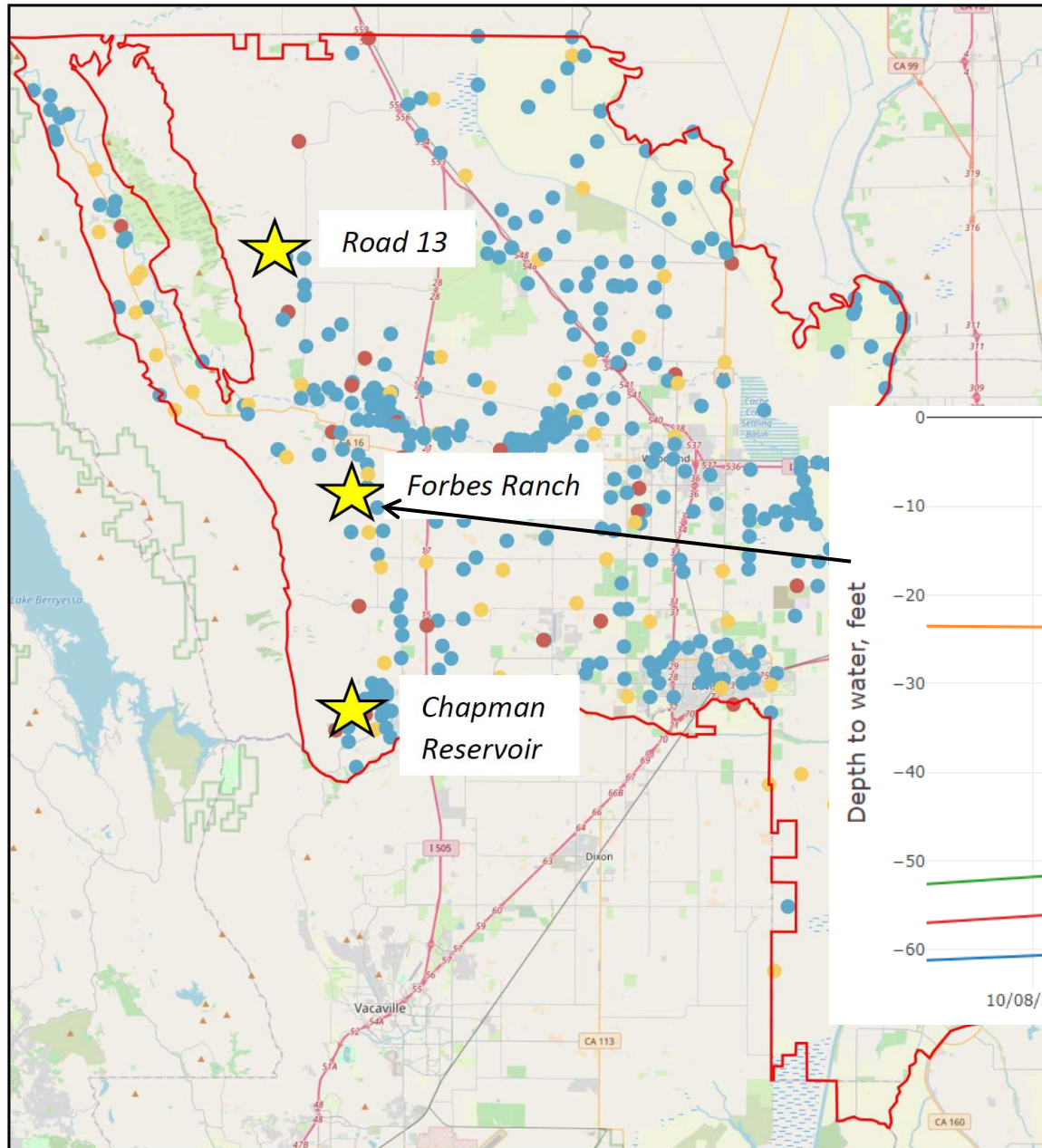
2023 Drawdown from Spring to Fall ~ 6 feet



# Multi-Completion Monitoring Well Screen Intervals

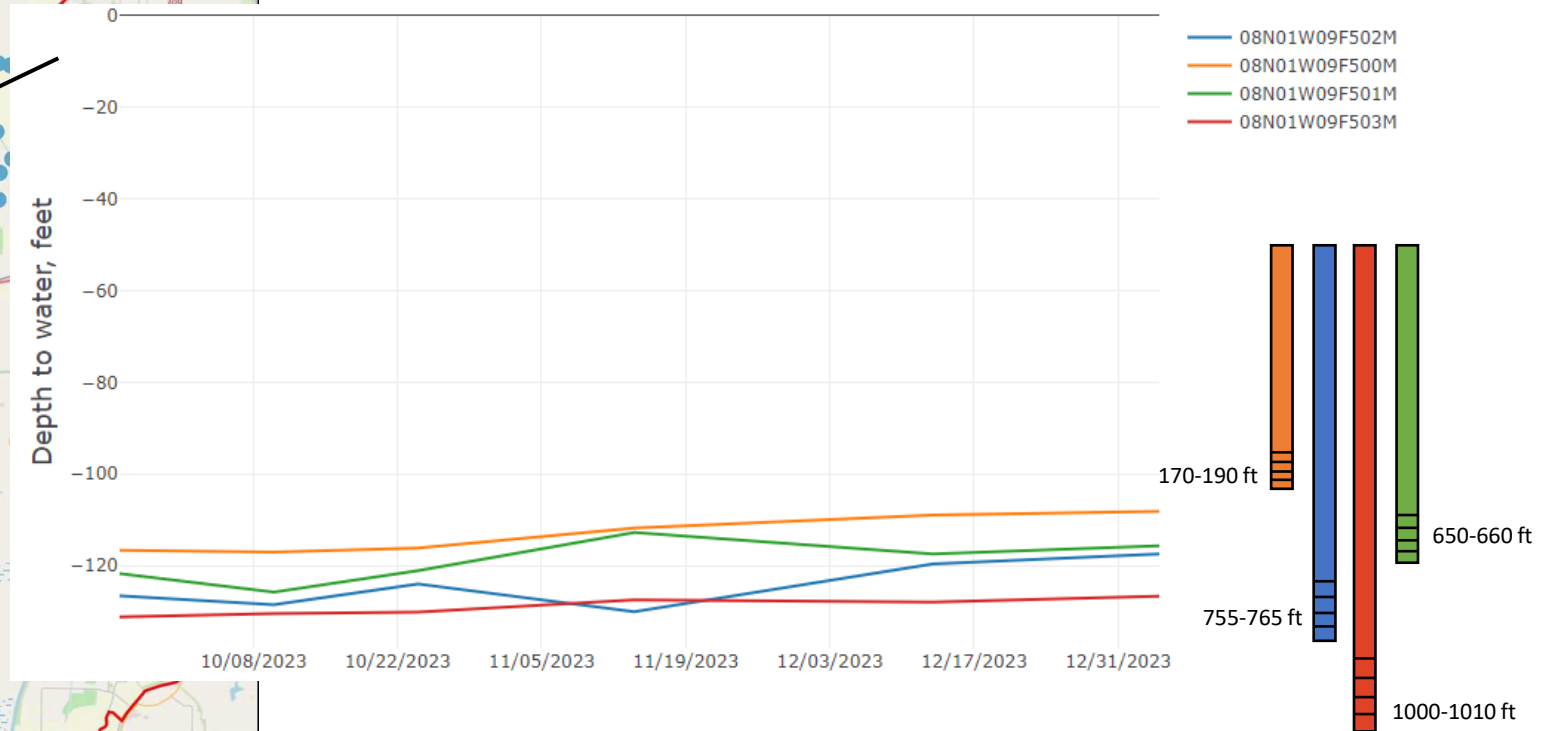
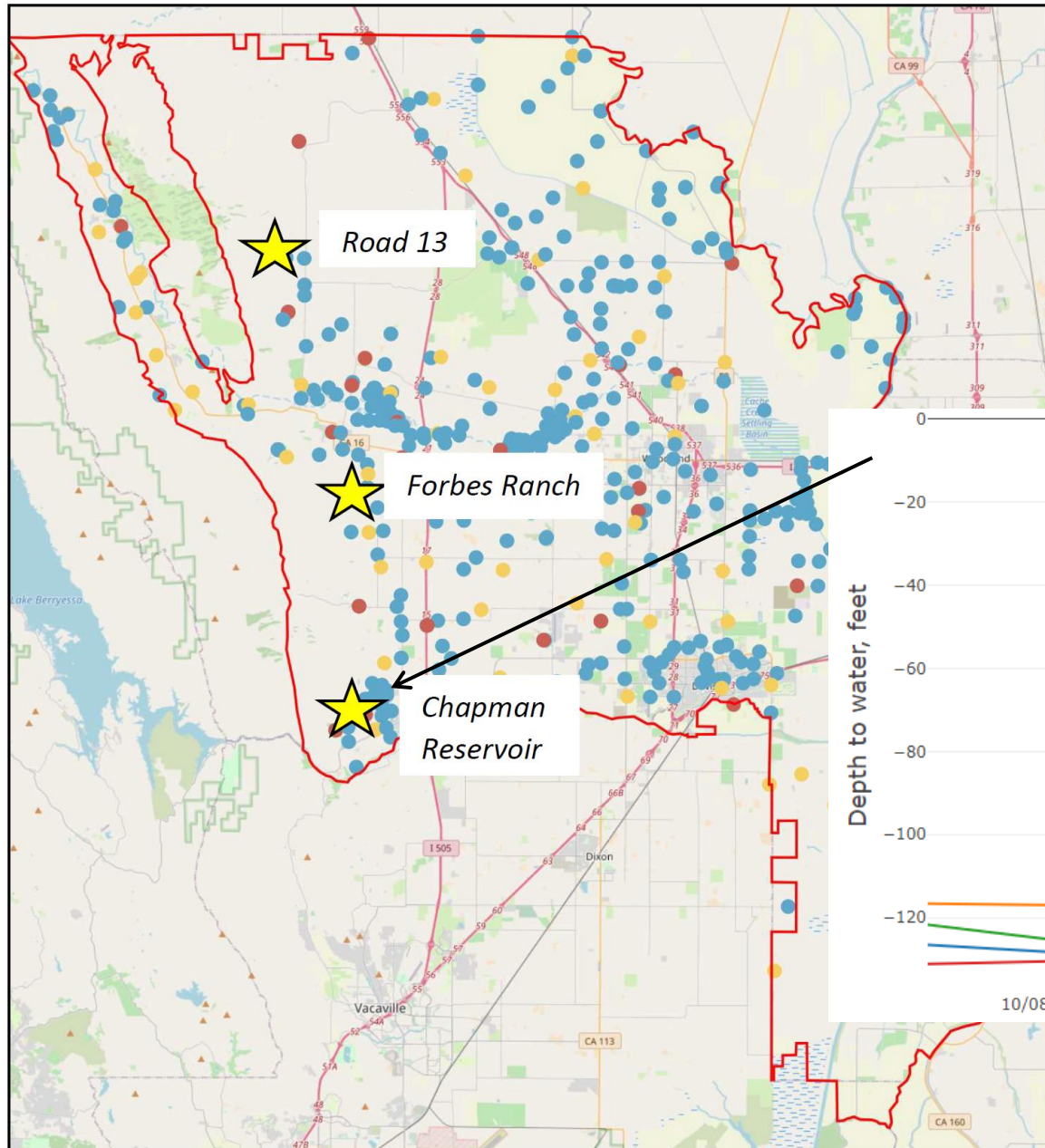


# Multi-Completion Monitoring Well Screen Intervals





# Multi-Completion Monitoring Well Screen Intervals





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## California Groundwater Accounting Platform

### Yolo Subbasin Groundwater Agency

Mike Myatt | Senior Director, Environmental Defense Fund

John Burns | Technology Services Lead, Environmental Science Associates

January 22, 2024

# Presentation Overview

- Project Background
- Platform Overview
- Questions and Comments

# Project Vision

The **Groundwater Accounting Platform** is an accessible open-source water accounting platform that integrates data from a variety of sources and effectively communicates this information to support individual, local, regional, and state water management decisions.

# Platform Background

- Initially developed in 2018 by EDF and Rosedale-Rio Bravo Water Storage District
  - Accessible web application for use by water managers, landowners, and farmers
  - Functionality informed by direct input from stakeholder via a series of workshop in 2018 - 2020
  - Software is “open-source” to allow public investment available to any interested users

# Platform Background

- California Water Data Consortium joined project team in 2020 to advance scaling across California
  - Secured funding from Department of Water Resources and US Bureau of Reclamation to advance scaling objectives
  - Roadmap guided by advisory team comprised of state, local, industry, and community representatives
  - Identified pilot user community to inform detailed Platform developed

# Project Team

- California Water Data Consortium
- Environmental Defense Fund
- Environmental Science Associates
- Olsson





# Pilot Platform Community



Y O L O   C O U N T Y  
FLOOD CONTROL &  
WATER CONSERVATION  
DISTRICT





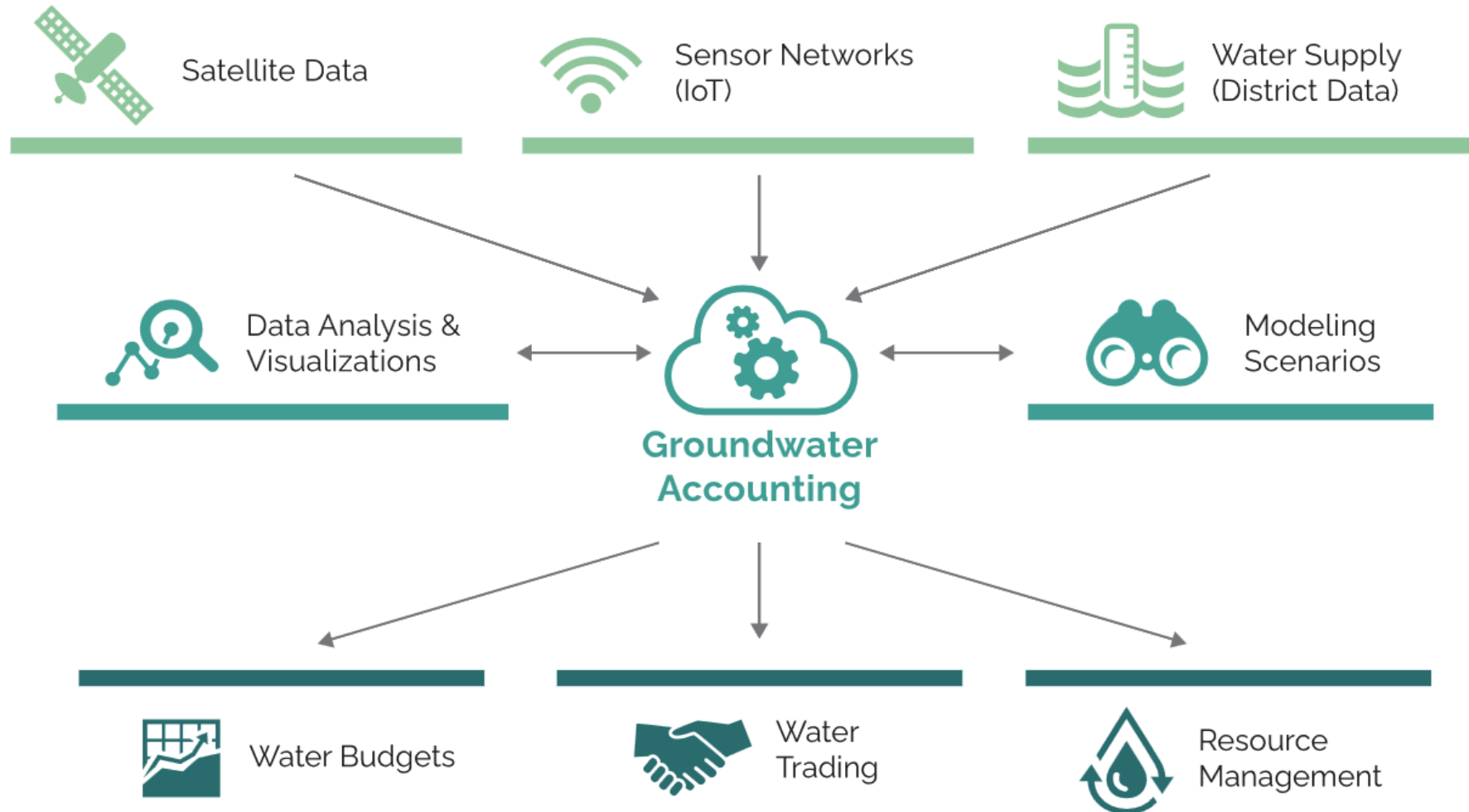
Why is this  
important?

Why now?

A statewide accounting platform can...

- Provide a consistent approach while reducing costs
- Be tailored to local conditions
- Support local understanding and decision-making
- Improve water management outcomes
- Promote intra- and inter-basin coordination, regional analyses and review

# Platform Functionality



# User Roles



**Landowner / Operator:** View and manage water budget for their parcels in one or more geographies (i.e. GSAs)

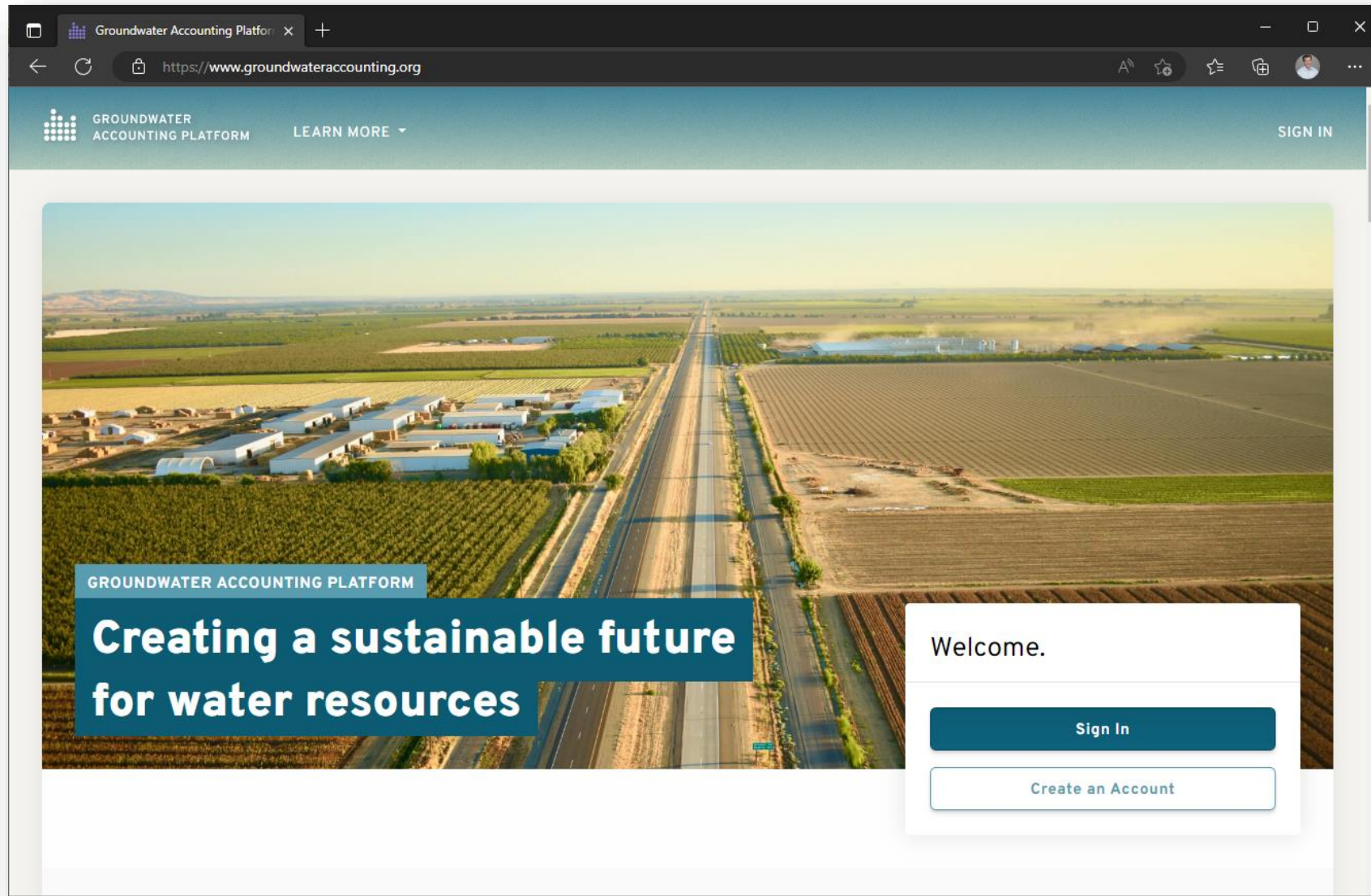


**Water Manager:** Configure accounting rules for their geography and administer roll-up water budgets



**Platform Administrator:** Platform operations and configuration across geographies

# Platform Overview



<https://groundwateraccounting.org>

# Landowner User Experience

DEMO WATER DASHBOARD

WATER ACCOUNT

Chicken Little's Egg Emporium (#13148) / Demo

Water Budget

Account Activity

Account Map

User Permissions

YEAR

2022

PERIOD

Calendar Year

UNITS

ac-ft/ac

ac-ft

TOTAL SUPPLY

3.65

ac-ft/ac

TOTAL USAGE

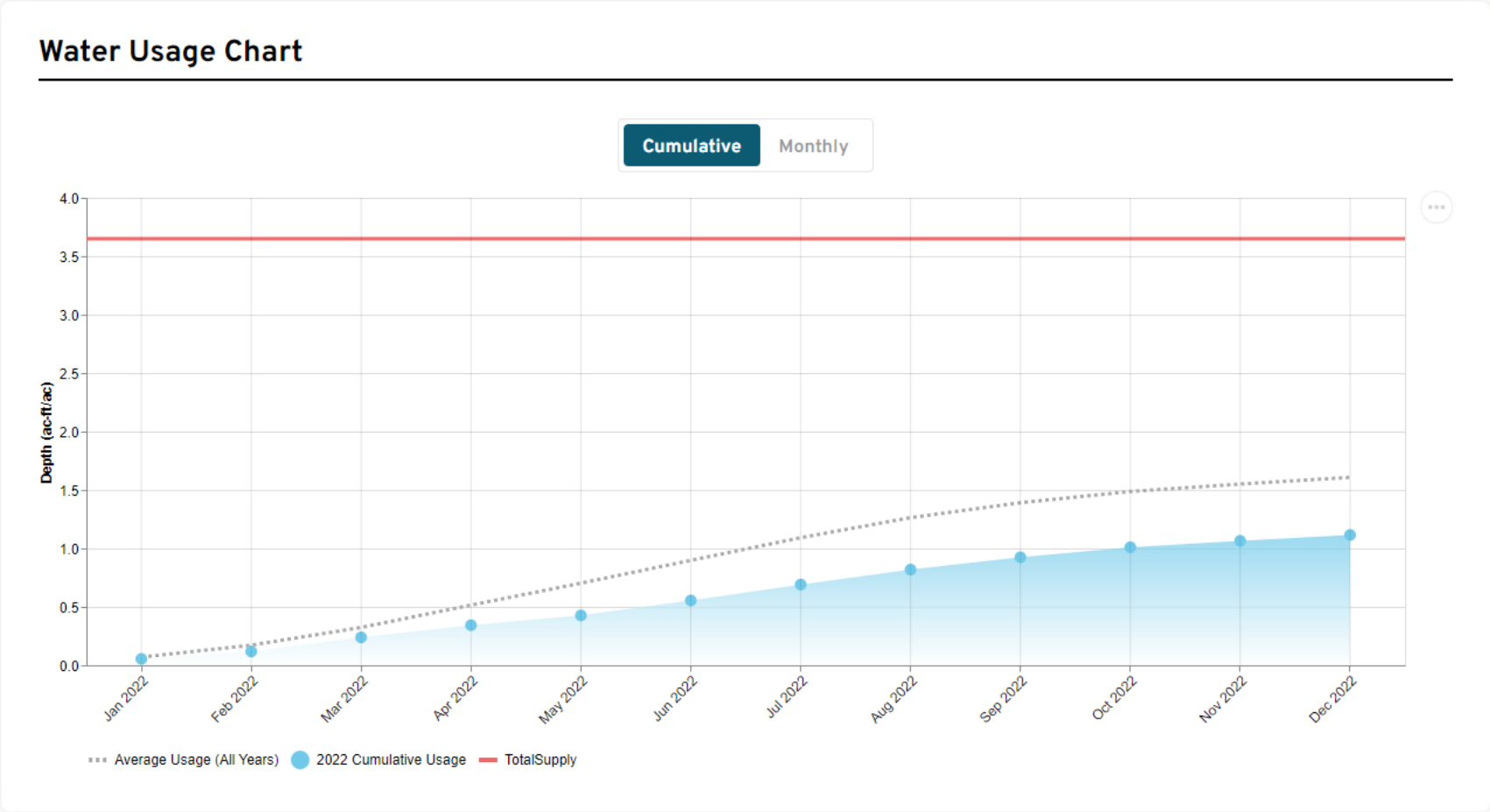
1.11

ac-ft/ac

BALANCE

2.54

ac-ft/ac



DEMO WATER DASHBOARD

WATER ACCOUNT

Chicken Little's Egg Emporium (#13148) / Demo

Water Budget

Account Activity

Account Map

User Permissions

YEAR

2022

PERIOD

Calendar Year

UNITS

ac-ft/ac

ac-ft

TOTAL SUPPLY

1,854.28

ac-ft

TOTAL USAGE

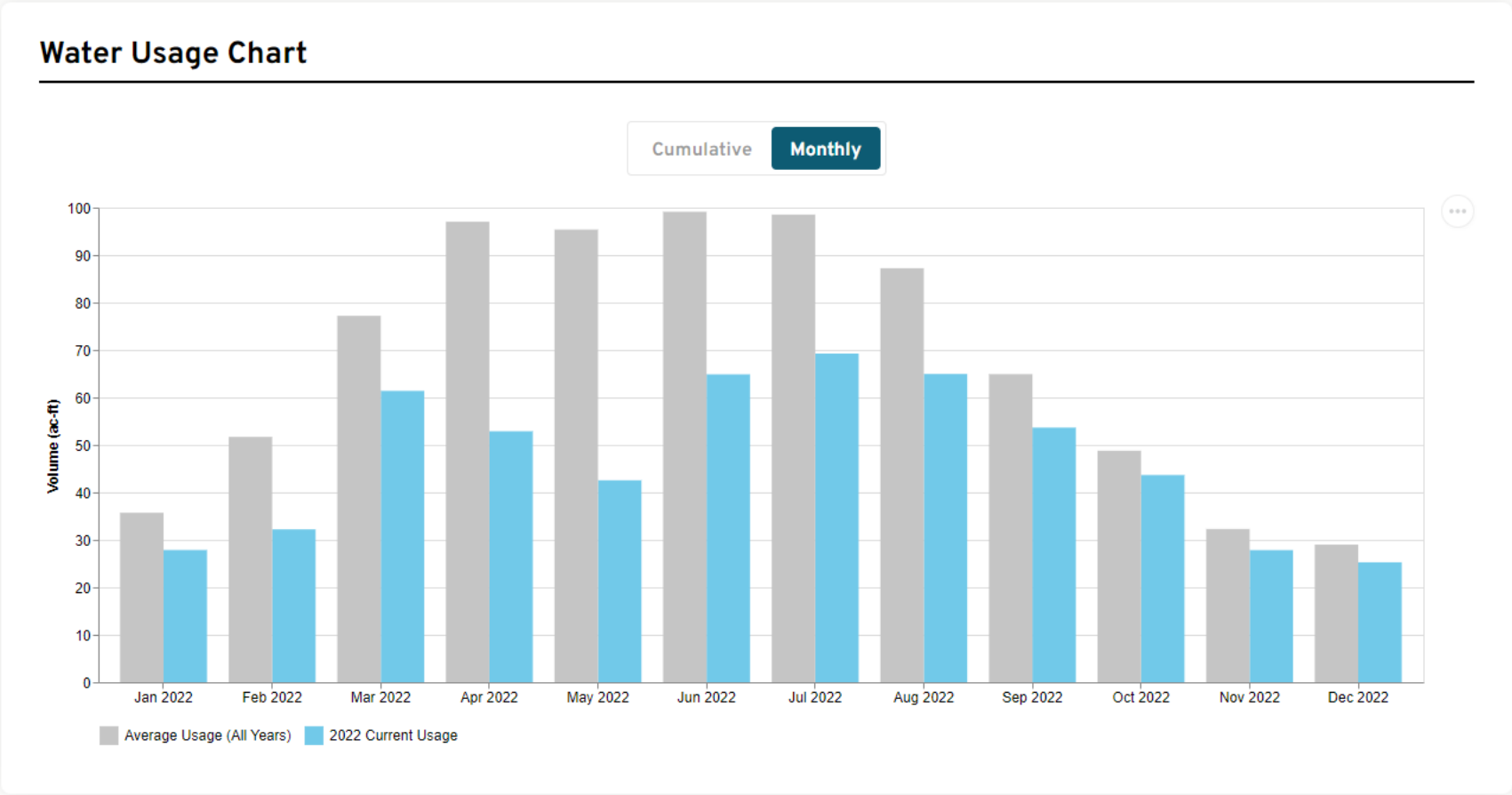
566.38

ac-ft

BALANCE

1,287.90

ac-ft



## Chicken Little's Egg Emporium (#13148) / Demo

 Water Budget

#### Account Activity

 Account Map

 User Permissions

2022

Calendar Year

ac-ft/ac

ac-ft

2.54

ac-ft/ac

**-0.05 ac-ft/ac**

Effective Dec 31, 2022

### Recent Transactions

All Transactions

EFFECTIVE DATE

TRANSACTION

QUANTITY

Dec 31, 2022



## OpenET Usage

## 2 Parcels

-0.05 ac-ft/ac

Balance: 2.54 ac-ft/ac

•

Nov 30, 2022



## OpenET Usage

## 2 Parcels

-0.05 ac-ft/ac

Balance: 2.58 ac-ft/ac

1

APN	Effective Date	Transaction Date	Transaction	Amount
555-030-03	11/30/2022	5/3/2023	Usage Estimate	0.04 ac-ft/ac
555-087-71	11/30/2022	5/3/2023	Usage Estimate	0.08 ac-ft/ac
				-0.05 ac-ft/ac

Oct 31, 2022



## OpenET Usage

2 Parcels

-0.09 ac-ft/ac

Balance: 2.64 ac-ft/ac

•

Sep 30, 2022



## OpenET Usage

-0.11 ac-ft/ac

•





SWITCH GEOGRAPHY

Demo Geography

MANAGER TOOLS

Activity Center

Geography Statistics

Water Account Budgets

Zones

Allocation Plans

Water Transactions

Water Measurements

OpenET Integration

Water Accounts

Parcels

# Allocation Plans

Select a Water Type and a Zone to view and edit an Allocation Plan.

WATER TYPE

Project Water

MANAGEMENT ZONES

Zone 1

Zone 2

Zone 3

Zone 4

## Project Water / Zone 1

Last Updated: 2 months ago (10/31/23, 8:55 AM)

Copy From Existing

Allocation Period	2022	2023	2024	2025	2026	2027	2028
2022 Project Water <a href="#">Edit</a> <a href="#">Delete</a>	3.00 ac-ft/ac 75% of Remaining Carry-Over						
2023 Project Water <a href="#">Edit</a> <a href="#">Delete</a>		2.70 ac-ft/ac 75% of Remaining Carry-Over					
2024 Project Water <a href="#">Edit</a> <a href="#">Delete</a>			2.40 ac-ft/ac 75% of Remaining Carry-Over				
2025 Allocation Period <a href="#">Edit</a> <a href="#">Delete</a>				2.10 ac-ft/ac 75% of Remaining Carry-Over			



DEMO WATER DASHBOARD

WATER ACCOUNT

Chicken Little's Egg Emporium (#13148) / Demo

Water Budget

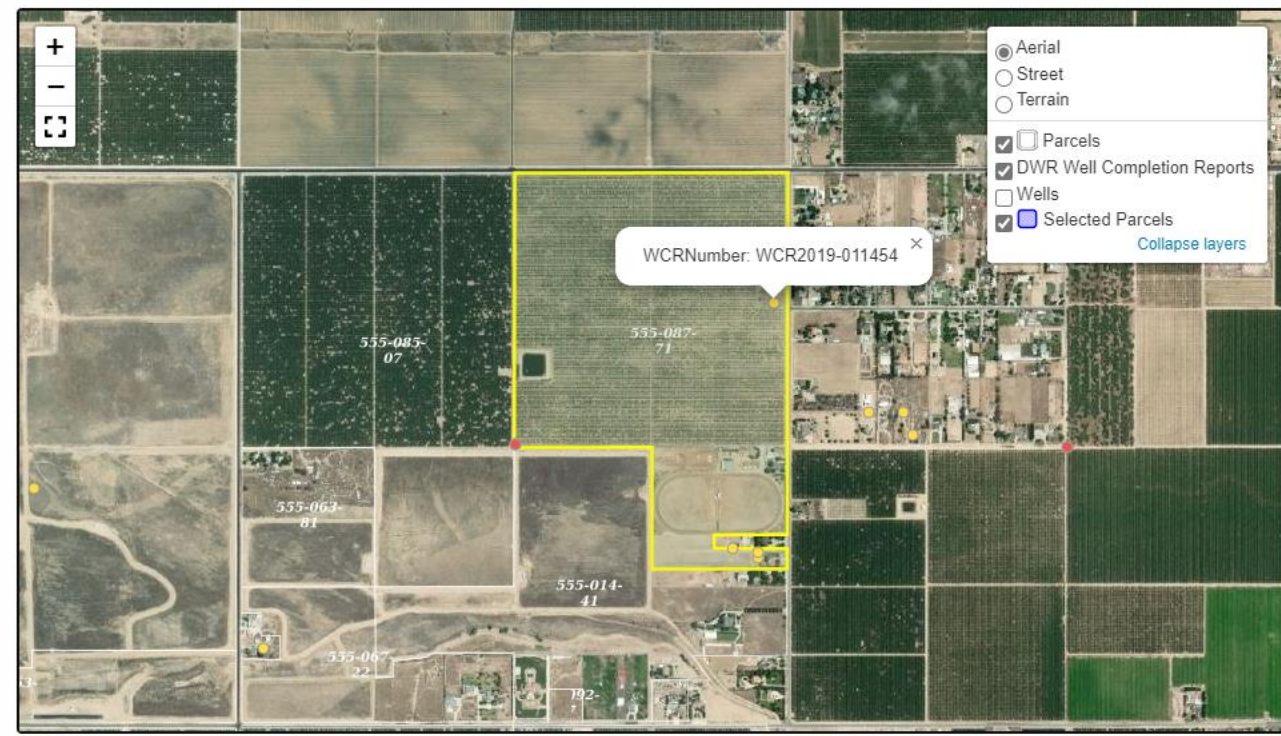
Account Activity

Account Map

User Permissions

ACCOUNT MAP

Chicken Little's Egg Emporium (#13148)




ALL PARCELS

555-030-03  
Acres: 317.81


555-087-71  
Acres: 190.22


# Water Manager Tools





GROUNDWATER ACCOUNTING PLATFORM


DEMO MANAGER TOOLS


 Geography Statistics


 Water Account Budgets


 Zones


 Water Transactions

 Usage Estimates

 OpenET Integration

 Water Accounts

 Parcels

 Wells

# Geography Statistics

Data last updated through 12/31/2022

YEAR

2022

PERIOD

Calendar Year

UNITS

ac-ft/ac

ac-ft

TOTAL SUPPLY

3.65

ac-ft/ac

TOTAL USAGE

2.93

ac-ft/ac

BALANCE

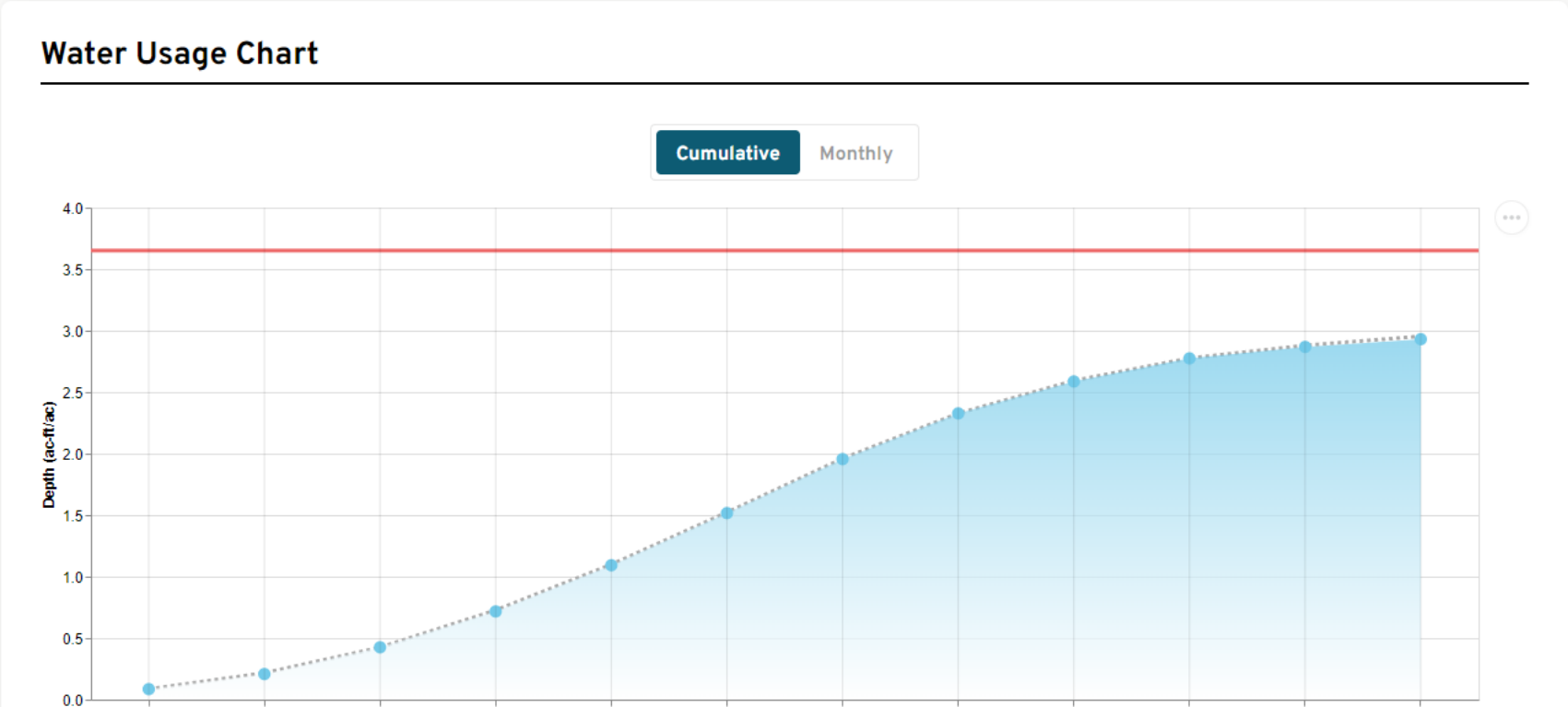
0.72

ac-ft/ac

ACRES MANAGED

36,380.51

ac-ft



reporting period to view a specific time period.

DEMO MANAGER TOOLS

🏠

Geography Statistics

📊

Water Account Budgets

🏠

Zones

↔

Water Transactions

⬇

Usage Estimates

☁

OpenET Integration

👤

Water Accounts

📖

Parcels

🔧

Wells

YEAR

2022

PERIOD

Calendar Year

📄

Download as CSV

WATER ACCOUNT ?	WATER ACCOUNT...	TOTAL SUPPLY (AC-FT)	TOTAL USAGE (AC-FT)	CURRENT AVAILABLE (AC-FT) ↑	GROUNDWATER ?	NATIVE YI
Rooster Run Farm	13180	2,261.03	2,982.53	-721.51	2,168.11	
Willow Creek Farms	13181	3,913.17	4,323.20	-410.03	3,752.35	
Farmyard Frenzy	13167	2,195.20	2,560.42	-365.22	2,104.99	
Spud-tacular Farms	13171	1,678.48	1,932.24	-253.76	1,609.50	
Baa Baa Black Sheep...	13147	1,146.86	1,397.38	-250.52	1,099.73	
Hootenanny Farms	13144	1,818.03	2,053.34	-235.32	1,743.31	
Apple Bottom Farms	13154	1,575.40	1,791.95	-216.55	1,510.65	
Cheesy Acres	13152	1,012.49	1,211.56	-199.07	970.88	
Barneyard Bonanza	13183	865.58	1,026.26	-160.67	830.01	
Chirpy Chicken Farms	13162	721.53	873.31	-151.79	691.88	
Corny Acres	13143	1,620.37	1,743.73	-123.36	1,553.78	
Happy Hooves Farms	13168	516.01	584.58	-68.56	494.80	
Big Red Tomato Farms	13174	431.70	467.48	-35.79	413.96	
Piggy Wiggly Produce	13146	1,396.94	1,404.15	-7.21	1,339.53	
Cedar Ridge Farms	13165	2,181.19	2,181.21	-0.01	2,091.56	
Rootin' Tootin' Far...	13157	135.87	131.83	4.03	130.28	



📊

GROUNDWATER ACCOUNTING PLATFORM

DEMO MANAGER TOOLS

🏠

Geography Statistics

💰

Water Account Budgets

🏠

Zones

↔️

Water Transactions

⬇️

Usage Estimates

☁️

OpenET Integration

👤

Water Accounts

📄

Parcels

🔧

Wells

Zones

Zones and Zone Groups are configurable Parcel classifications for analysis, reporting, and application of business rules. ?

Zones will often correspond to a sub-area within a geography such as a management area, political boundary, geological characteristic.

Geography Status

A classification system of parcels that receive groundwater supply from a water district recharging groundwater vs white lands that must balance their sustainable usage or acquire additional water privately.

Explore Data

Zones	Parcels	Acres	Description	Color
Districted Lands	113	33,359.15	These parcels are within water districts and receive allocation	<div></div>
White Lands	13	3,021.36	These parcels do not receive supply from a water district	<div></div>

The Groundwater Accounting Platform is developed using open-source software under the [GNU Affero General Public License \(AGPL\)](#). It can be redistributed and/or modified under the terms of AGPL. Source code is available on [GitHub](#).



## Create Single Transaction

## Create Bulk Transaction

### Upload Supply Transactions (CSV)

TRANSACTION HISTORY

This grid displays a history of transactions created using either the Bulk Transaction or Spreadsheet Upload form.

Download as CSV

EFFECTIVE DATE	TRANSACTION	CREATED BY	SUPPLY TYPE	TOTAL PARCELS	TOTAL ACRES AF	TRANSACTION DEPTH	TRANSACTION VOLUME



 SCENARIO PLANNER



Models



Scenario Runs

 KERN - C2VSIMFG-KERN



Model Overview



Add a Well



Recharge


## Kern - C2VSimFG-Kern

To aid water management planning in the Central Valley, the Department of Water Resources (DWR) developed the Fine-Grid California Central Valley Groundwater Surface Water Simulation model (C2VSimFG). The model is a valley-wide regional scale groundwater model designed to simulate surface water and groundwater flow through the Central Valley. Since groundwater flow does not abide by jurisdictional boundaries, C2VSimFG uses hydrogeologic boundaries, to the extent known, to constrain the occurrence and movement of water. One of the primary purposes of C2VSimFG v1.0 is technical assistance for groundwater sustainability planning efforts of Groundwater Sustainability Agencies (GSAs) in the Central Valley groundwater subbasins.

### Actions

#### ADD A WELL

Run scenarios that forecast the impact of adding wells that extract additional groundwater from the aquifer.

 Add a Well

#### RECHARGE

Run scenarios that forecast the impact of managed recharge events that add groundwater from the aquifer.

 Recharge





SCENARIO PLANNER

Models

Scenario Runs

MERCED WATER RESOURCES  
MODEL

Model Overview

Example

Add a Well

Recharge

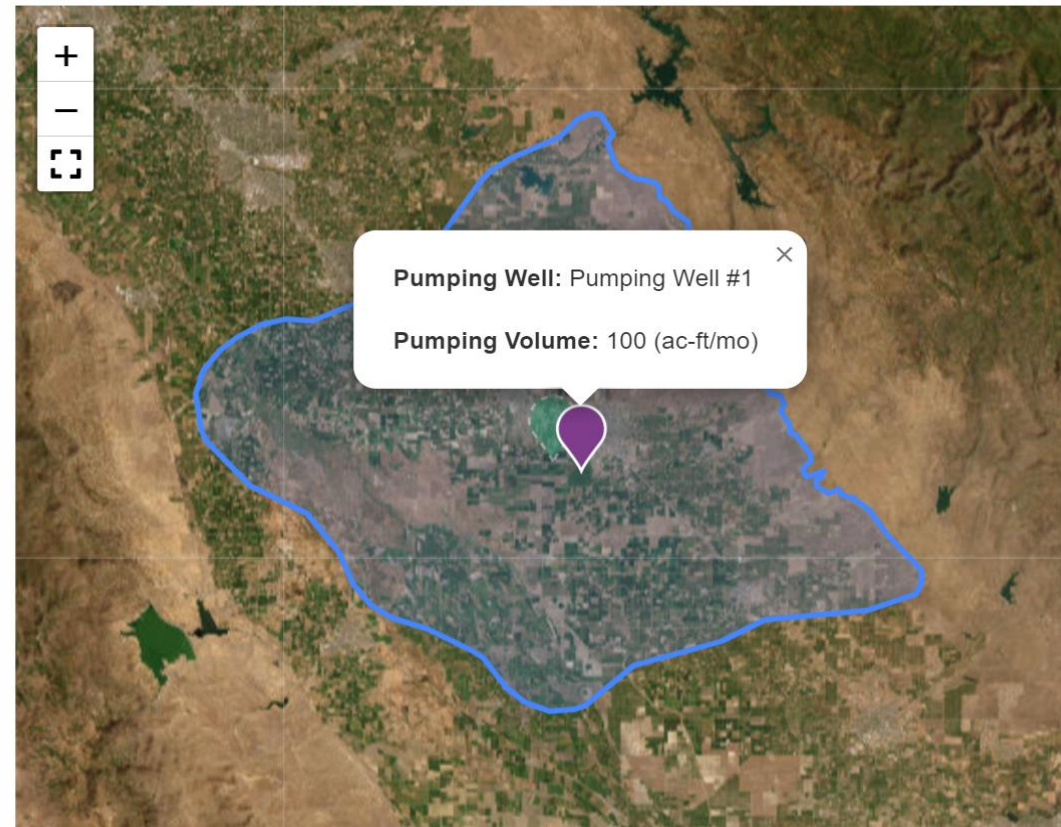
ADD A WELL

Example

MERCED-WRM

Complete | Jan 2, 2024, 3:47:24 PM

Download JSON Results



AVERAGE CHANGE IN WATER LEVEL

-0.60 feet

As of the end of the model run (Sep 29, 2020)

TOTAL CHANGE IN AQUIFER STORAGE

-10,560.10 ac-ft

Change in the aquifer(s) volume of water.

TOTAL CHANGE IN PUMPING

-23,502.30 ac-ft

As of the end of the model run (Sep 29, 2020)

# Thank you!



**Environmental  
Defense  
Fund**

Mike Myatt - Senior Director, Climate  
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# Agenda

1. Call to Order and Determination of Quorum
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10. Next Meeting - March 18, 2024
11. Adjournment

# Consideration: Contracts Funded by SGMA Implementation Grant

- a) Authorize Entering into Contracts with Stockholm Environment Institute (SEI) and Leafbird Consulting for Updating the YSGA Model
- b) Authorize Entering into Contract with Websoft Developers, Inc. for Database Upgrade Project
- c) Authorize Entering into a Contract with Water and Land Solutions for the Yolo-Zamora (China Slough) Groundwater Recharge Pilot Project

# A. Enter Into Contracts for Model Updates

11/20: Contract with SEI approved  
\$474,000 (*will not be executed*)

```
graph TD; A["11/20: Contract with SEI approved  
$474,000 (will not be executed)"] --> B["Contract with SEI  
$300,976"]; A --> C["Leafbird Consulting  
(Vishal Mehta)  
$173,024"];
```

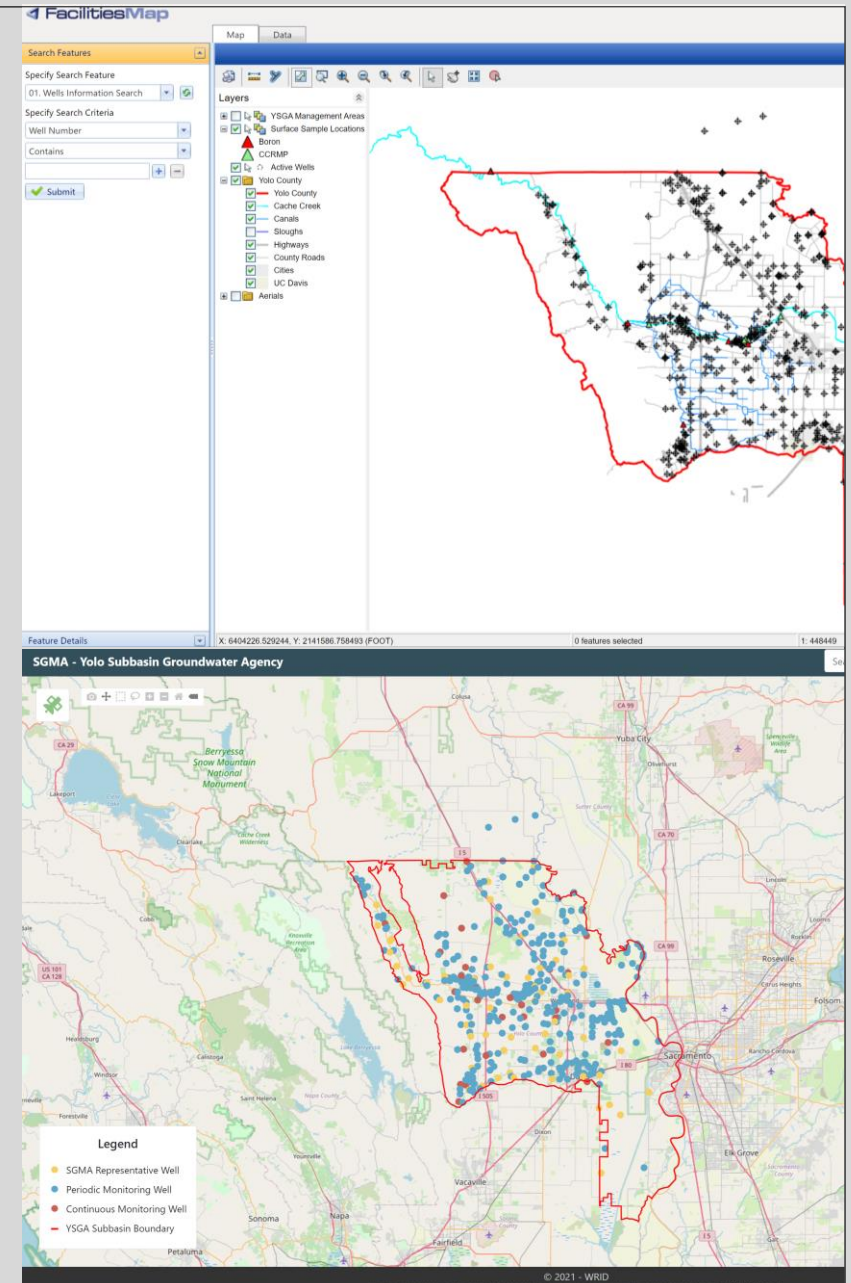
Contract with SEI  
\$300,976

Leafbird Consulting  
(Vishal Mehta)  
\$173,024

- Activities Include:
  - Preparation of Annual Reports
  - Land Use Improvements
    - Future land use change scenarios
    - Managed Wetland corrections
  - Model Projects and Management Actions
  - Analysis of Capay IGSM Model
  - Hungry Hollow Area Water Budget

# B. Contract for Database Updates

- Websoft Developers will:
  - Modernize WRID Application
    - New interface
    - Mobile data entry
    - Additional sustainability indicators
  - Make continued improvements to [sgma.yologroundwater.org](http://sgma.yologroundwater.org)
    - Support for mobile devices
    - Improved data display & navigation
- Contract not to exceed \$258,000
- Fully funded by SGMA Implementation Grant



# C. Contract for Yolo-Zamora GW Recharge

- **SGMA Implementation Grant - Component 3: Yolo-Zamora (China Slough) Groundwater Recharge Pilot Project**

- Divert up to 2,000 AF of excess Cache Creek storm flows per year through the YCFC&WCD canal system to China Slough and on-farm groundwater recharge sites

**Funding amount : \$1,221,050**



- **Contract with Water and Land Solutions to:**
  - Complete the Feasibility Study for China Slough Rehabilitation
  - Develop 100% Design, Environmental Compliance and Secure Permits for China Slough Rehabilitation
  - Complete a Water Availability Analysis
  - Implement Pilot Groundwater Recharge Project
- Contract not to exceed \$684,800



- YCFCWD & YSGA will complete:
  - Component administration
  - Planning, Design, and Engineering for Canal System Improvements
  - Acquire and Install Culverts, Checks, and Gates
- \$536,250



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# Consideration: 2-Tier Well Permit Review Procedures

- a) Update on *Draft* 2-Tier Well Permit Review Process
- b) Approve Amendment of Professional Services Agreement with West Yost
- c) Approve Draft 2-Tier Well Permit Review Process, Approve Public Comment Period for Draft Technical Memorandum and Focus Areas Map, and Authorize Drought Committee to Finalize Well Permit Review Procedures

# Background

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- YSGA Board direction to YSGA staff on November 20, 2023
  - Refine the guidelines and evaluation criteria and apply a tiered evaluation approach for hydrogeologist reports in the Focus Areas
  - Consider some level of analysis by YSGA staff to reduce costs to the well applicant
- Met with YSGA DCPC December 20, 2023 and proposed 2-tier process

# Original Outline of Hydrogeologist Report & Summary Form\*

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Original (submitted by well applicant/consultant)

- Property Owner Information
- Location of Proposed Well
- Description of the Proposed Well
- Design of the Proposed Well
- Hydrogeologic Evaluation
- Impact Assessment
- Conclusions


\* as presented at the 11/20 BOD meeting

# Updated Outline of Hydrogeologist Report & Summary Form (proposed)

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## Tier 1

- Property Owner Information
- Location of Proposed Well
- Description of the Proposed Well
- Design of the Proposed Well



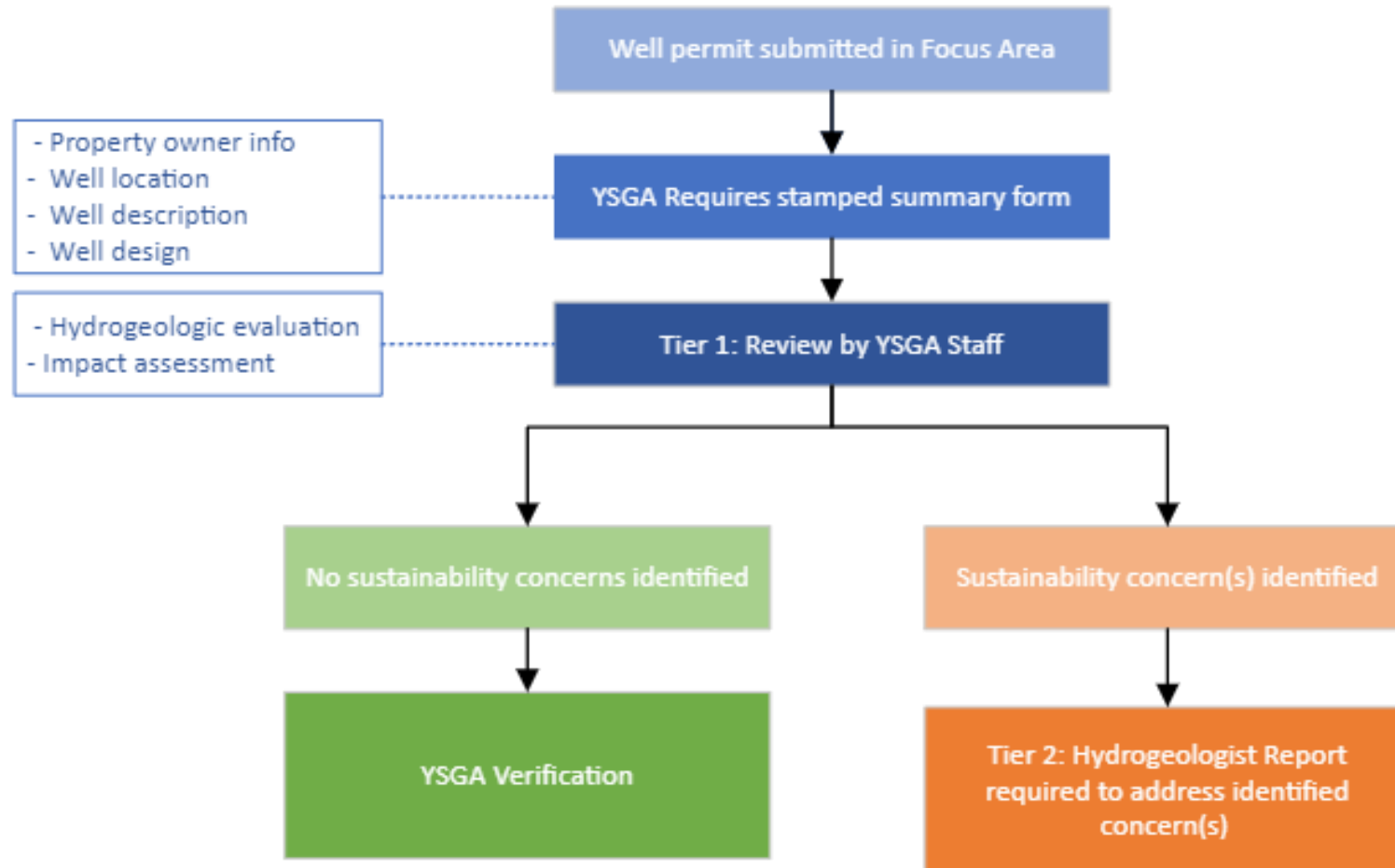
Provided via Summary Form and stamped by well applicant's consultant PG/CHG

- Hydrogeologic Evaluation
- Impact Assessment



Completed by YSGA staff

# Updated Outline of Hydrogeologist Report & Summary Form



# Cost Comparison of Well Permitting Approaches

Scope of Work		Estimated Cost	Time
<b>Originally Proposed 11/20</b>			
YSGA	Review well application	\$150 - \$350	1-2 hours
Well Applicant	Prepare well application and Hydrogeologist Report	\$5,000 - \$30,000	1-5 days
<b>PROPOSED TIERED APPROACH</b>			
YSGA Consultant	One-time cost for consultant to prepare Tier 1 Analysis Tools and Criteria	\$25,000	
<b>Tier 1</b>			
YSGA	Review well application and perform Tier 1 Analysis	\$300 - \$700	2-3 hours
Well Applicant	Prepare and submit well application	\$1,000	2-3 hours
<b>Tier 2</b>			
YSGA	Review Hydrogeologist Report and make determination	\$450 - \$1,050	2-4 hours
Well Applicant	Prepare and submit Hydrogeologist Report	\$5,000 - \$15,000	1-3 days



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Any questions on material covered  
so far?

# Overview of Tier 1 Analysis by YSGA Staff

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- Use location and depth of proposed well to assess hydrogeologic and groundwater conditions
- Extract YSGA Model aquifer properties from the location and depth of the proposed well
- Assess potential groundwater level impacts using appropriate analytical methods (Theis, Cooper-Jacob, etc.)
- Evaluate each SMC against criteria defined for Tier 1

Note: If YSGA determines a Tier 2 analysis is required, the well applicant can request a meeting to discuss the results from the Tier 1 analysis.

# Tier 1 Analysis – Impact Assessment Criteria

Well design provided by applicant

Aquifer properties

Analytical Model provided by West Yost determines anticipated drawdown

## Groundwater Levels

- Impacts on neighboring wells
- Effect on GW Level trends
- MT violation in nearby representative well

## Interconnected Surface Water & GDEs

- Impacts on surface water bodies
- Impacts on groundwater dependent ecosystems (GDEs)

## Water Quality

- Mobilization of brackish or saline water

## Inelastic Land Subsidence

- Impact on critical infrastructure
- Area prone to land subsidence

## GSP Sustainability Goals

- Impede achievement of sustainability goals
- Impacts to projects & management actions

# Tier 2 Analysis

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- Hydrogeologist Report and summary form is required to be completed by well applicant and submitted to YSGA.

Must include:

- Description of how the well is anticipated to impact each of the sustainability indicators that didn't meet the Tier 1 criteria. Relate to GSP defined SMCs and MTs. Relate impacts to each aquifer that the well will extract water from.
- Statement by PG or CHG that verifies (or does not verify) that the proposed well complies with the EO.
- Stamp of PG or CHG

Note: If the well cannot be verified to comply with the EO, well applicant may request meeting with YSGA and County staff to discuss possible modifications to well permit to identify a path for compliance to be achieved.

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Any questions on material covered  
so far?

# Cost Comparison

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# Cost Comparison

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- Original approach puts the cost on the well applicant
- Proposed Tiered approach shifts the cost mostly onto the YSGA. This will accomplish two key objectives:
  - Provide avenue for well applicants with low impact wells to pay less money overall
  - Still conduct a more thorough evaluation of a well permit for high impact wells



# Cost Comparison of Well Permitting Approaches

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# Discussion and Next Steps

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# Next Steps

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- Update Draft Technical Memorandum to incorporate 2-Tier Well Permit Review Process
- Post draft TM and Focus Areas Map for public review
- Provide summary of comments to YSGA DCPC and discuss next steps for finalizing Well Permit Review Procedures (with legal counsel)

# Consideration: 2-Tier Well Permit Review Procedures

- a) Update on *Draft* 2-Tier Well Permit Review Process
- b) Approve Amendment of Professional Services Agreement with West Yost**
- c) Approve Draft 2-Tier Well Permit Review Process, Approve Public Comment Period for Draft Technical Memorandum and Focus Areas Map, and Authorize Drought Committee to Finalize Well Permit Review Procedures

# B. Approve Amendment of Professional Services Agreement with West Yost

- Original Services Agreement - authorized 6/19/23: \$69,600
  - Delineate Focus Areas
  - Develop hydrogeology report criteria
  - Develop procedures presented thus far
- Requested amendment - increase the contract expenses from \$69,600 to \$99,600
  - Develop tools to allow for Tier 1 analysis by YSGA staff
  - Document review process and 2-tier approach

# Consideration: 2-Tier Well Permit Review Procedures

a) Update on *Draft* 2-Tier Well Permit Review Process

b) Approve Amendment of Professional Services Agreement with West Yost

**c) Approve Draft 2-Tier Well Permit Review Process;**

**Approve Public Comment Period for Draft Technical Memorandum and Focus Areas Map;**

**Authorize Drought Committee to Finalize Well Permit Review Procedures**

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