

**MINUTES**  
**WATER RESOURCES COMMITTEE**  
**Tuesday, March 1, 2022, at 9 a.m.**  
**UNITED WATER CONSERVATION DISTRICT**  
**Boardroom, 1701 N. Lombard Street, Oxnard CA 93030**

**Committee Members Present:**

Chair Daniel Naumann  
Director Maulhardt  
Director McFadden

**Staff Present:**

Mauricio Guardado, Jr., general manager  
Anthony Emmert, assistant general manager  
Dan Detmer, water resources manager  
Dr. Zachary Hanson, hydrogeologist  
Kathleen Kuepper, hydrogeologist  
John Lindquist, senior hydrogeologist  
Murray McEachron, principal hydrologist  
Josh Perez, chief human resources officer  
Zachary Plummer, technology systems manager  
Bram Sercu, senior hydrologist  
Daryl Smith, controller  
Jason Sun, principal hydrogeologist – modeler

**Public Present:** (see attached)

Sam Collie, OPV Coalition  
Tony Morgan, DBS&A  
Betsy Cooper, Ventura Water

**OPEN SESSION:** 9:01 a.m.

Chair Naumann called the Water Resources Committee Meeting to order at 9:01 a.m.

**1. Public Comment**

Chair Naumann asked if there were any public comments for the Water Resources Committee. None were offered.

**2. Approval of Minutes - Motion**

Motion to approve the January 4, 2022, Water Resources Committee meeting minutes, Director McFadden; Second, Director Maulhardt. Voice vote: three ayes (Maulhardt, McFadden and Naumann); none opposed; motion carries 3/0.

**3. A Path to Achieving Water-Supply Sustainability in the OPV Basins** (see attached slides)

Senior Hydrogeologist John Lindquist made a presentation on achieving water sustainability in the Oxnard and Pleasant Valley (OPV) Basins. This presentation was also delivered to the Fox Canyon Groundwater Management Agency (FCGMA) at their February 23 Board of Directors Meeting.



He explained how basin needs will be met by 2030 and how it can be done without implementing painful impacts such as reduced pumping, all while improving water quality and resilience.

Director McFadden asked how well the presentation was received by FCGMA. Mr. Lindquist stated that Director Gene West has requested staff return with updates, and also asked for presentations from other project proponents. Director Maulhardt stated that many attendees were pleased with United's presentation.

General Manager Mauricio E. Guardado, Jr. emphasized that work is being conducted across the region. He believes that money should be directed towards funding projects that identify solutions, rather than legal attorney fees to help identify what are the problems. He added, local water managers should work collectively to help achieve these targets. Chair Naumann stated that he and Mr. Lindquist have been invited to present these updates to the City of Camarillo.

#### **4. Santa Paula Basin Annual Report for 2020** (see attached slides)

Hydrogeologist Kathleen Kuepper made a presentation updating the Committee of the Santa Paula Basin (SP Basin) annual report. She stated that the SP Basin is adjudicated and managed differently than basins with GSPs. Ms. Kuepper highlighted aspects of the water budget and presented future simulated water levels for two wells which include the Department of Water Resources (DWR) climate change scenarios.

Director Maulhardt asked if there is a better way to track the historical groundwater extractions data, potentially considering farm acreage changes, changing cropping patterns, and periods when agricultural land is fallowed. Water Resources Manager, Dan Detmer stated acreage data is collected through United's semi-annual pumping statements. Director Maulhardt suggested that staff evaluate existing data points and identify if additional points are required for better analysis. Mr. Guardado, Jr. stated that he will work with Water Resources staff to identify a few options.

#### **5. Update on ongoing Groundwater Model Development Tasks** (see attached slides)

Principal Hydrogeologist – Modeler Dr. Jason Sun addressed the Committee, presenting updates on ongoing Groundwater Model development tasks. Director Maulhardt asked if vertical leakage is a direct result of well casing failures or if it is caused by natural geography. Dr. Sun stated that vertical flow simulated by the model is related to natural geological structures and vertical pressure gradients. He explained that leakage related to wells screened across multiple aquifers also occurs. Dr. Sun explained that thinning of the aquitards between the aquifers allows brackish water to leak down to deeper aquifers in specific areas.

Director Maulhardt stated that upstream (areas north of the coast) pumping patterns cause a drop in pressure which have direct effects near the coast. The modeling supports the concept that even if we are not in a drought, we are now able to address the downgradient depression so that the flow direction is not upstream. Mr. Detmer agreed that the proposed extraction barrier addresses those issues. He added, Oxnard and Mugu are the main targets for the Extraction Barrier and Brackish Water Treatment (EBB Water) Project. Staff is considering some extraction from the Fox Canyon aquifer as well.

Dr. Sun also described his initial efforts to develop a break-out model for the Semi-perched aquifer in the EBB Water Project area. A layered model will be developed, allowing simulation of the seawater density wedge at the base of the aquifer, and lateral and vertical flow within the aquifer.



#### **6. Water Resources Department Update**

Mr. Detmer provided updates on the recent department activities including progress on EBB Water Project. He stated that staff recently traveled to Iowa for the Vertical Slot physical modeling effort. He also stated that Dr. Hanson, Dr. Sercu, and Mr. Lindquist were utilizing Dr. Sun's modeling tools for basin optimization efforts.

Chair Naumann acknowledged Betsy Cooper's attendance in the audience and stated that United is available to share information to the City of Ventura's Water Commission if or when Susan Rungren (General Manager of Ventura Water) would like.

#### **7. Groundwater Sustainability Agencies Update**

Mr. Detmer provided updates on GSA activities for the Fillmore and Piru Basins, Mound Basin and FCGMA (Oxnard, Pleasant Valley and Las Posas Valley basins). He stated that staff is working to get a license in place with the Navy for the work that will be authorized under the SGM Grant for EBB Water.

Mr. Detmer explained that United has modeled the pumping of Recycled Water Pumping Allocations (RWPAs) as requested by the City of Oxnard. The FCGMA has a Resolution that conditions when RWPAs can be used. Director Maulhardt stated that he was one of the key voices in charge of the FCGMA policy for the pump back allocations. He emphasized that the right to pump back is only appropriate when basin conditions are right, and he explained that there was never an intention for a sunset process for the pumping allocations. Director Maulhardt stated that there might have been misinterpretation of the Resolution and he recommended staff go back and review the rules. Mr. Detmer stated he would do so and report back on the issue.

The committee members recommended staff to present updates on achieving water sustainability in the OPV Basins, updates on groundwater flow model development, and a few visuals from the SP Basin annual report, at the March 9 Board Meeting.

#### **FUTURE AGENDA ITEMS**

Committee members offered no suggestions

#### **ADJOURNMENT**

Chair Naumann adjourned the meeting at 11:23 am.

I certify that the above is a true and correct copy of the minutes of the Water Resources Committee Meeting of March 1, 2022.

ATTEST:

A blue ink signature of Daniel Naumann, written in a cursive style, is positioned above a horizontal line. The signature is written in blue ink.

Daniel Naumann, Chair



Board of Directors  
Bruce E. Dandy, President  
Sheldon G. Berger, Vice President  
Lynn E. Maulhardt, Secretary/Treasurer  
Mohammed A. Hasan  
Edwin T. McFadden III  
Michael W. Mobley  
Daniel C. Naumann

General Manager  
Mauricio E. Guardado, Jr.

Legal Counsel  
David D. Boyer

## ATTENDANCE LIST

**MEETING DATE: Tuesday, March 1, 2022 at 9:00 am**

**MEETING: UWCD Water Resources Committee Meeting**

The signing or registering of your name on this sign-up form is not required but is voluntary. All persons may attend the meetings of the Board of Directors of United Water Conservation District without signing or registering their names on this form.


Name (Please Print)

Representing

*Tony Morabian*  
Sam Collie


*DRSEA*  
OPV Coalition



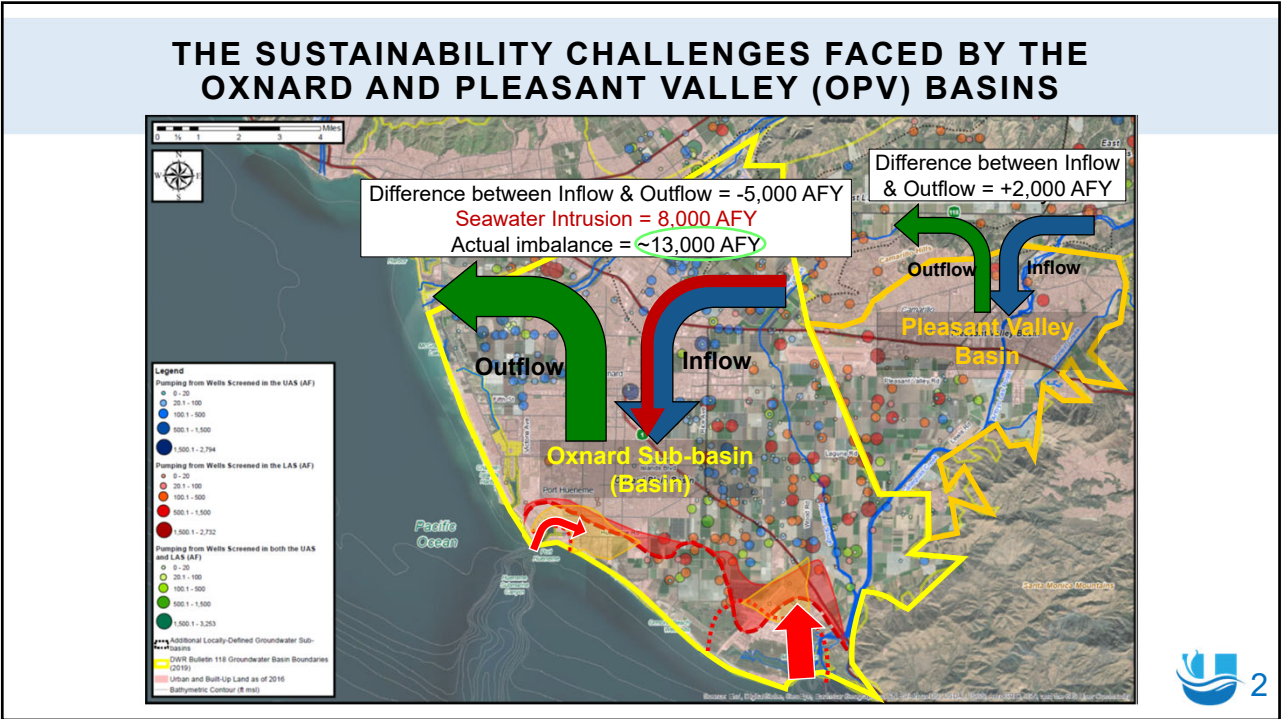


# A Path to Achieving Water-Supply Sustainability in the OPV Basins before 2030, without Rampdowns

Presented by John Lindquist, Senior Hydrogeologist  
Water Resources Committee Meeting  
March 1, 2022




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### MAIN POINTS OF THIS PRESENTATION




Expansion of existing proven sources

+




New supplies proposed by stakeholders


=




“Balanced” pumping and recharge before 2030



Seawater intrusion can be contained, and even reversed

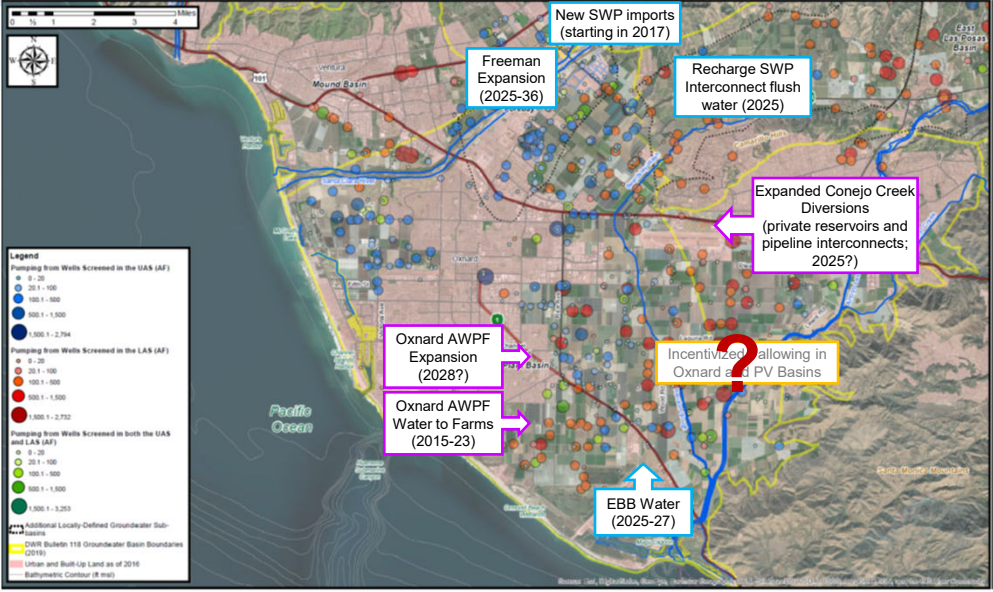



Proposed projects have additional benefits



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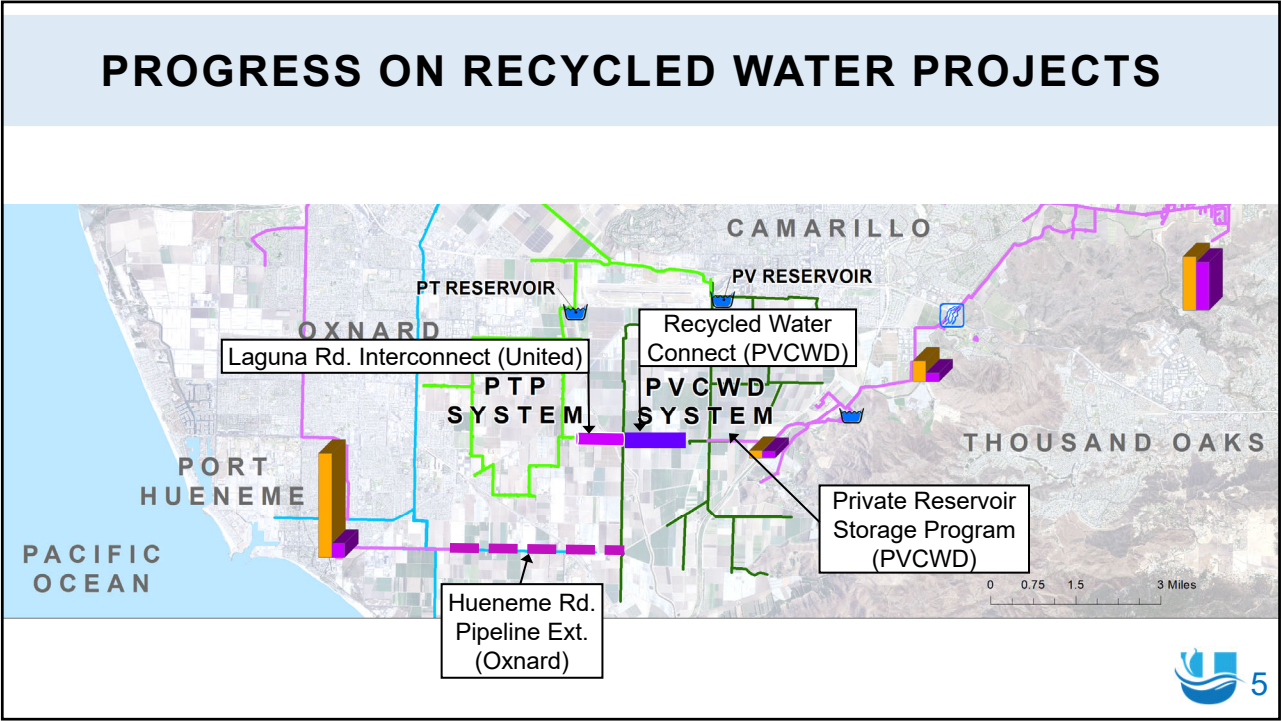
### PROJECTS PROPOSED TO ACHIEVE BALANCE BETWEEN DISCHARGE AND RECHARGE (SUPPLY AND DEMAND)





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RECENT EXTRA SWP IMPORTS IN RECENT YEARS  
(WE'VE EXCEEDED OUR 6,000 AFY TARGET!)

Recent Purchases, Exchanges, and Transfers of State Water			
Year	Volume AF	Type	Partner
2017	10,000	Art 21	
2017	2,678	Table A	
2018	1,103	Table A	
2019	15,000	Art 21	FCGMA
2019	1,000	Exchange	SCVWA
2019	2,362	Table A	
2020	5,625	Transfer	Ventura
2020	788	Table A	
2021	2,362	Transfer	Casitas
2021	1,263	Transfer	Casitas/Ventura
Total	44,071 AF	(~25,000 AF "extra" 2019-21)	

Focused on increasing recharge at Saticoy and El Rio

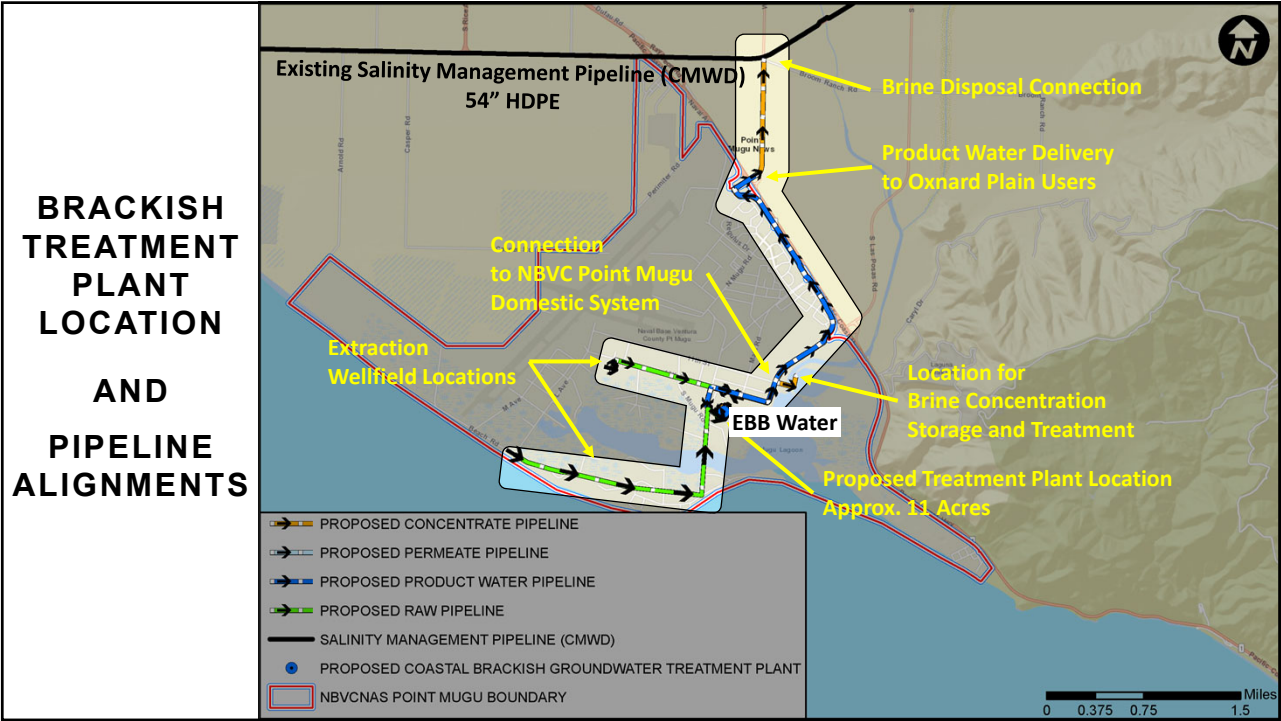
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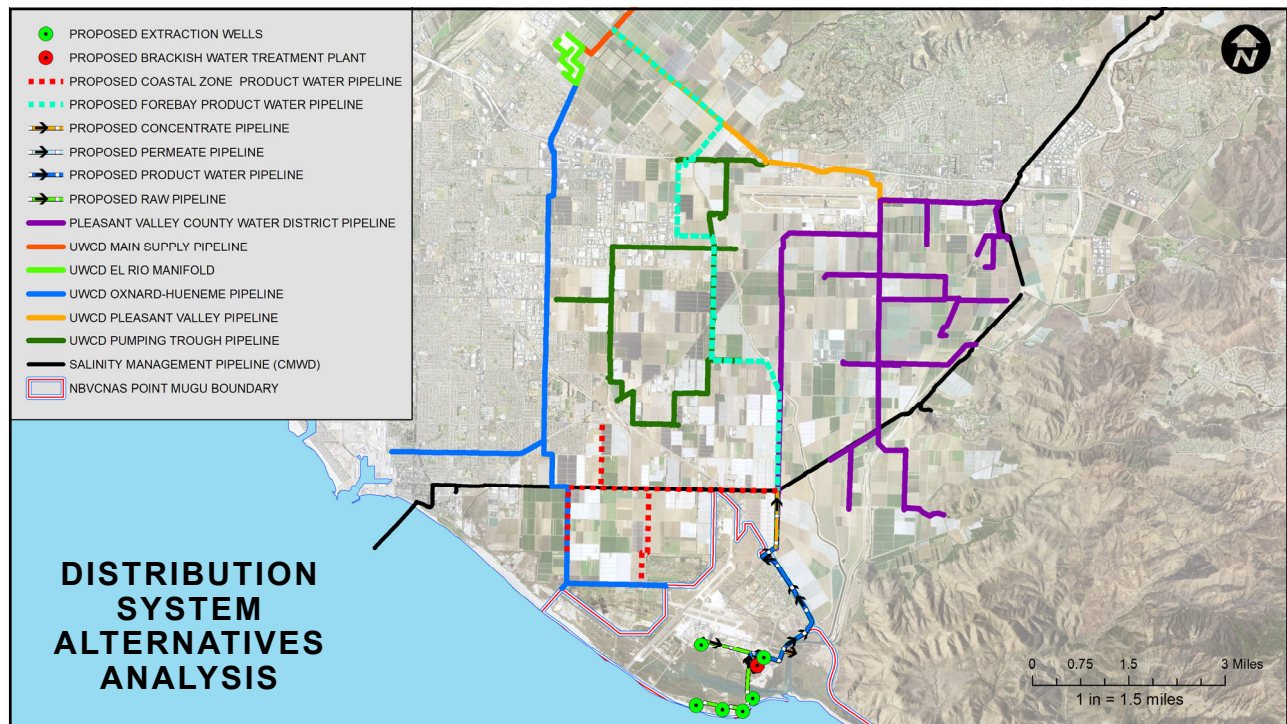


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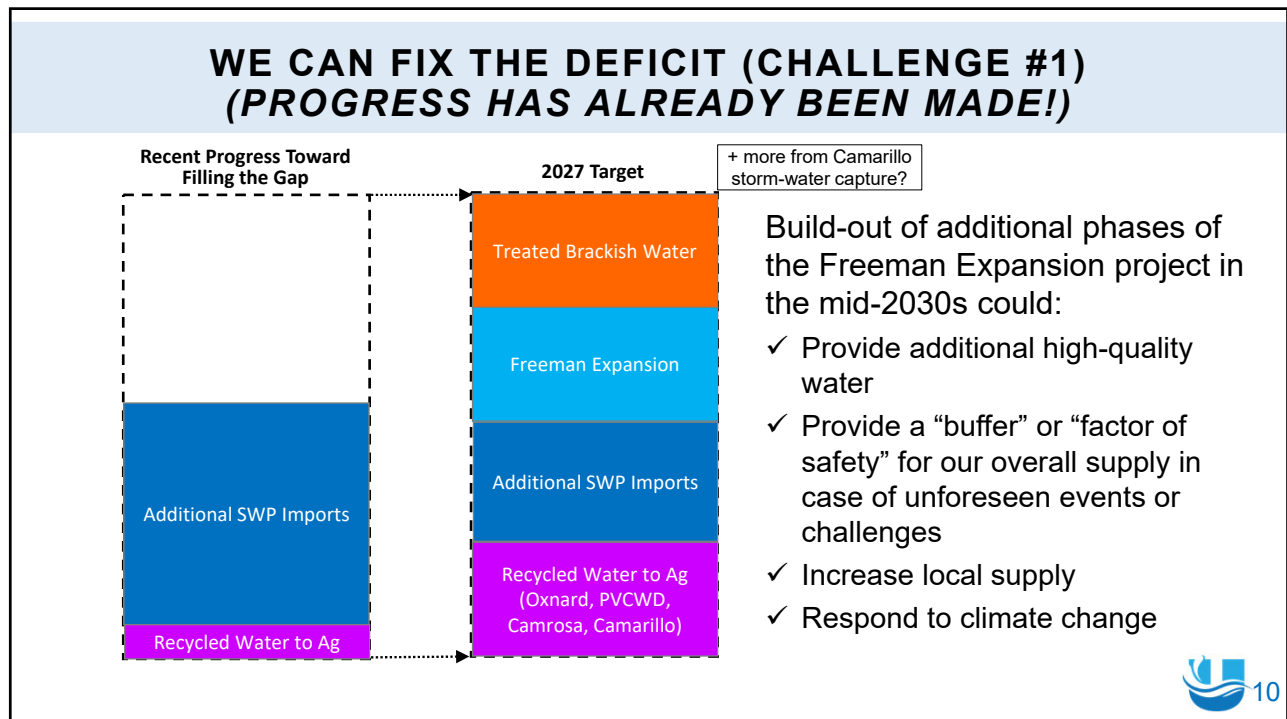


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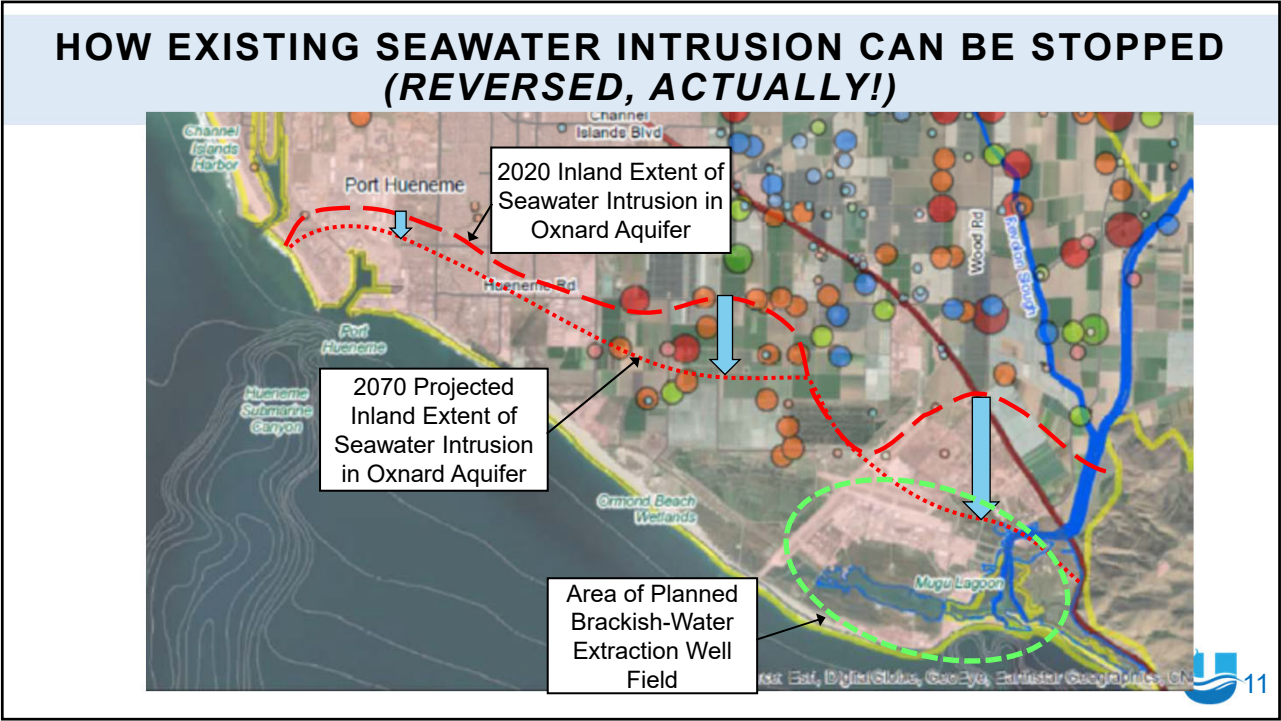




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OTHER BENEFITS OF NEW PROJECTS

Project	Resilience (drought-proof)	Water Quality	Reduce GHGs	Help DACs	Preserve Farmland	Low Cost for Water
Purchase more SWP water	✓	✓		✓	✓	✓
Freeman Expansion		✓	✓	✓	✓	✓
Extraction Barrier and Brackish Treatment (product water + sustainable yield gain)	✓	✓		✓	✓	
Recycled Water	✓	✓			✓	
Conejo Creek and PV Private Reservoirs			✓		✓	✓
Combined Benefit	✓✓✓	✓✓✓✓	✓✓	✓✓✓	✓✓✓✓	✓✓✓


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## SO, WHAT HAS BEEN ACCOMPLISHED TO DATE?




United and other agencies have responded to FCGMA's call for new water supply projects

- ✓ Projects are now part of the GSPs (through 2021 Annual Reports)
- ✓ Submittal of SGM Grant application




United is achieving its 6,000 AFY (average) goal for increasing SWP imports

- ✓ Collaboration with other agencies has been critical for success




Oxnard is completing their Hueneme Road Pipeline Extension, now capable of delivering much more recycled water to agriculture



Design and planning already underway for new projects

- ✓ Expansion of proven sources
- ✓ New EBB Water project to prevent seawater intrusion and provide water

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### TOGETHER, THE PLANNED PROJECTS COMPRISE A PHYSICAL SOLUTION THAT CAN MEET THE CURRENT GROUNDWATER NEEDS OF PUMPERS, WELL BEFORE THE 2040 DEADLINE TO ACHIEVE SUSTAINABILITY

**Legend**

**Pumping from Wells Screened in the UAS (AF)**

- 0-20
- 20.1-100
- 100.1-500
- 500.1-1,500
- 1,500.1-2,794

**Pumping from Wells Screened in the LAA (AF)**


- 0-20
- 20.1-100
- 100.1-500
- 500.1-1,500
- 1,500.1-2,732

**Pumping from Wells Screened in both the UAS and LAA (AF)**

- 0-20
- 20.1-100
- 100.1-500
- 500.1-1,500
- 1,500.1-3,253

**Additional Locally Defined Groundwater Sub-Basins**

- DWR Bulletin 118 Groundwater Basin Boundaries (2019)
- Urban and Built-Up Land as of 2016
- Bathymetric Contour (ft msl)


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### NEXT STEPS




Advance project design approaches to meet stakeholder needs:

- Refine project details, costs, and options
- Listen to input on critical factors for success



Refine, optimize, and work out details:


- Inject or extract to limit seawater intrusion at Port Hueneme?
- Input from Navy on number and location of extraction well sites
- Consider alternatives, refine cost/benefit analysis as designs advance




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DO, OR DO NOT...  
THERE IS NO TRY  
-YODA

QUESTIONS?





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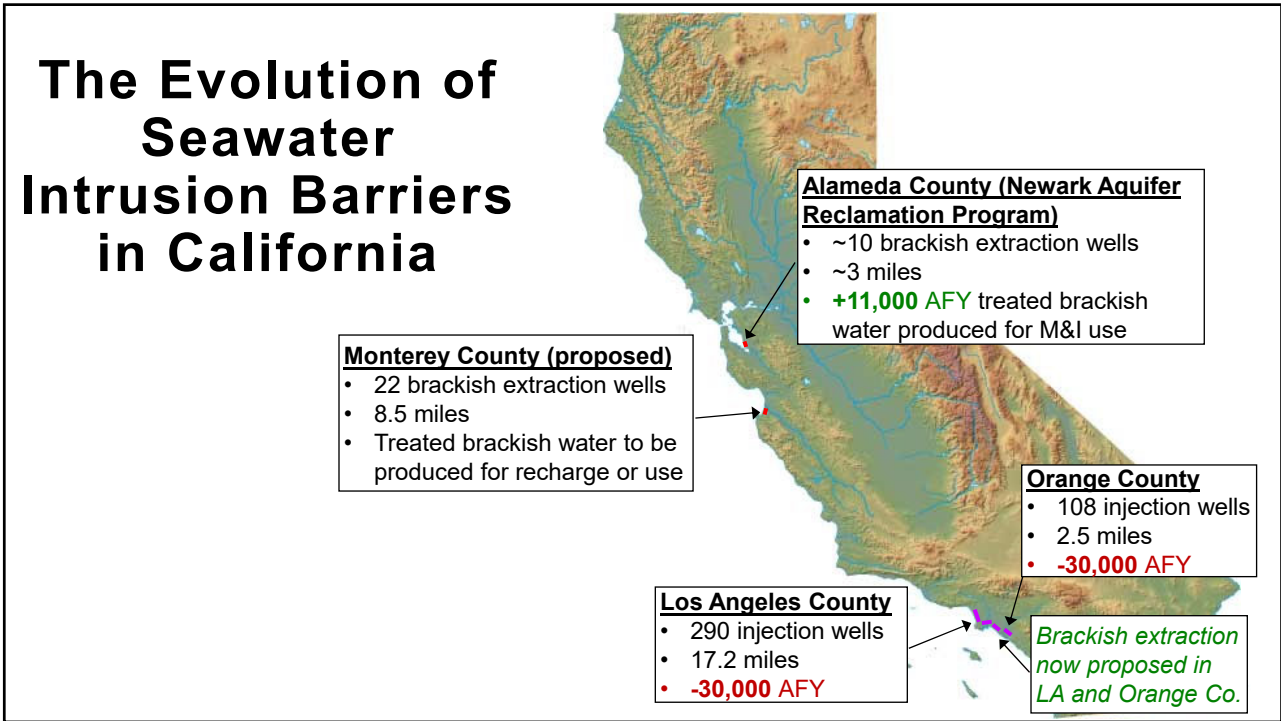


# Supporting Slides

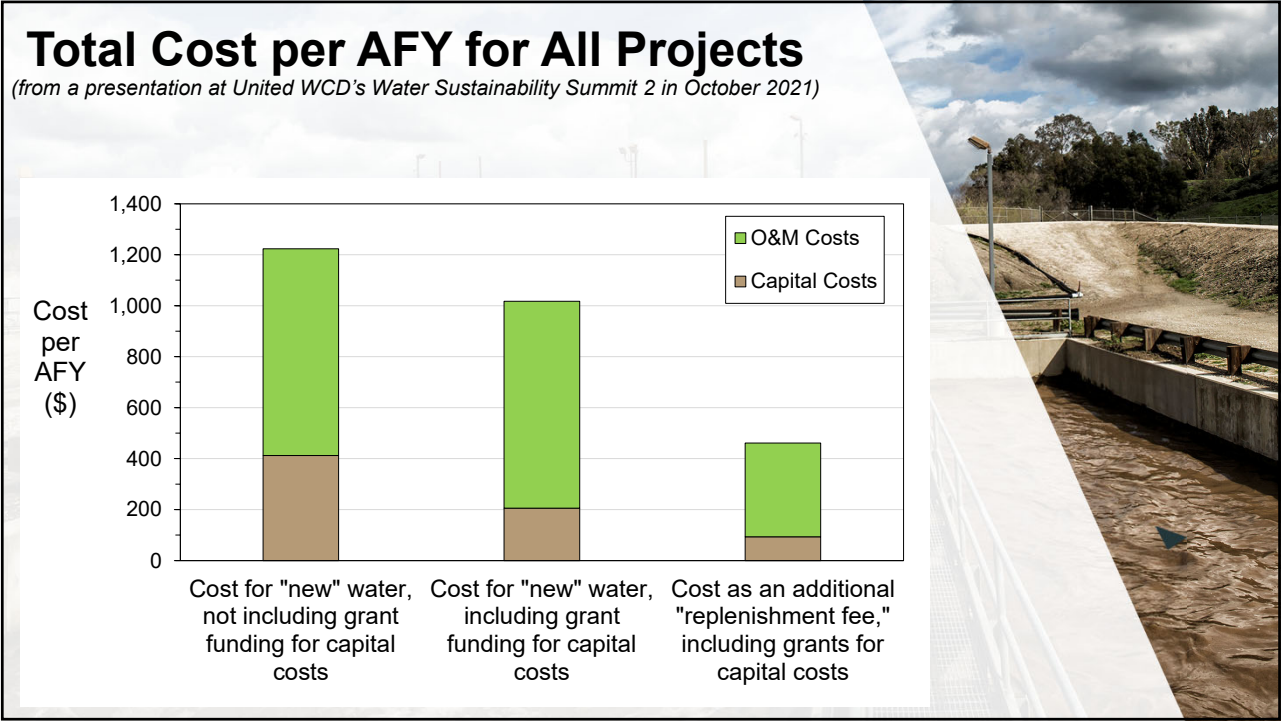
*(for responding to potential questions)*



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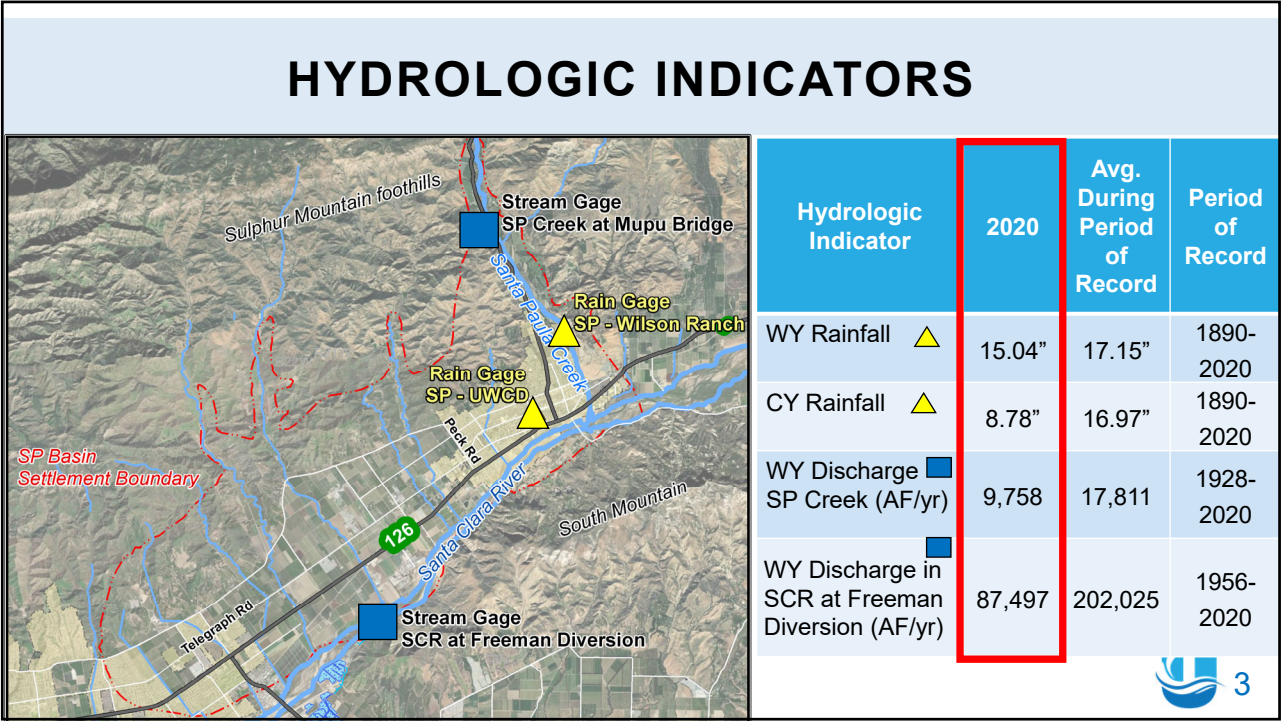
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# OUTLINE

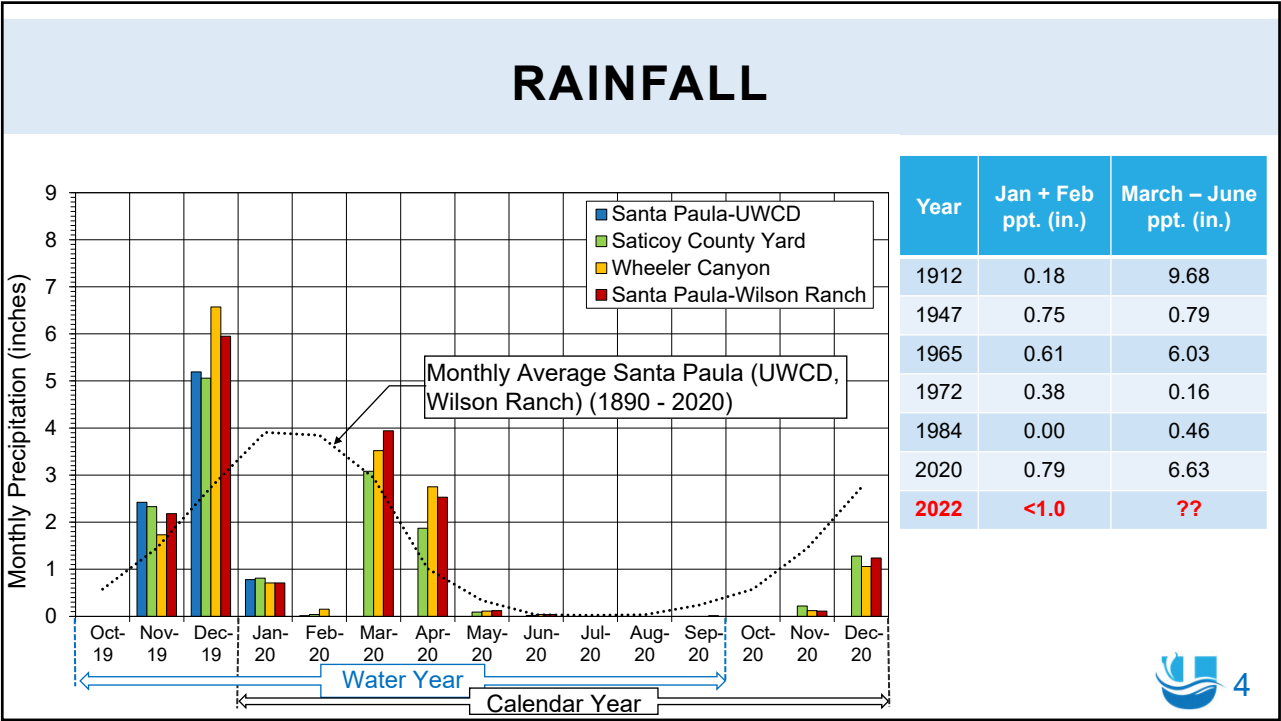
- ✓ 2020 Santa Paula basin conditions
- ✓ Water budget information from United GW model
- ✓ Model forecasts of future conditions

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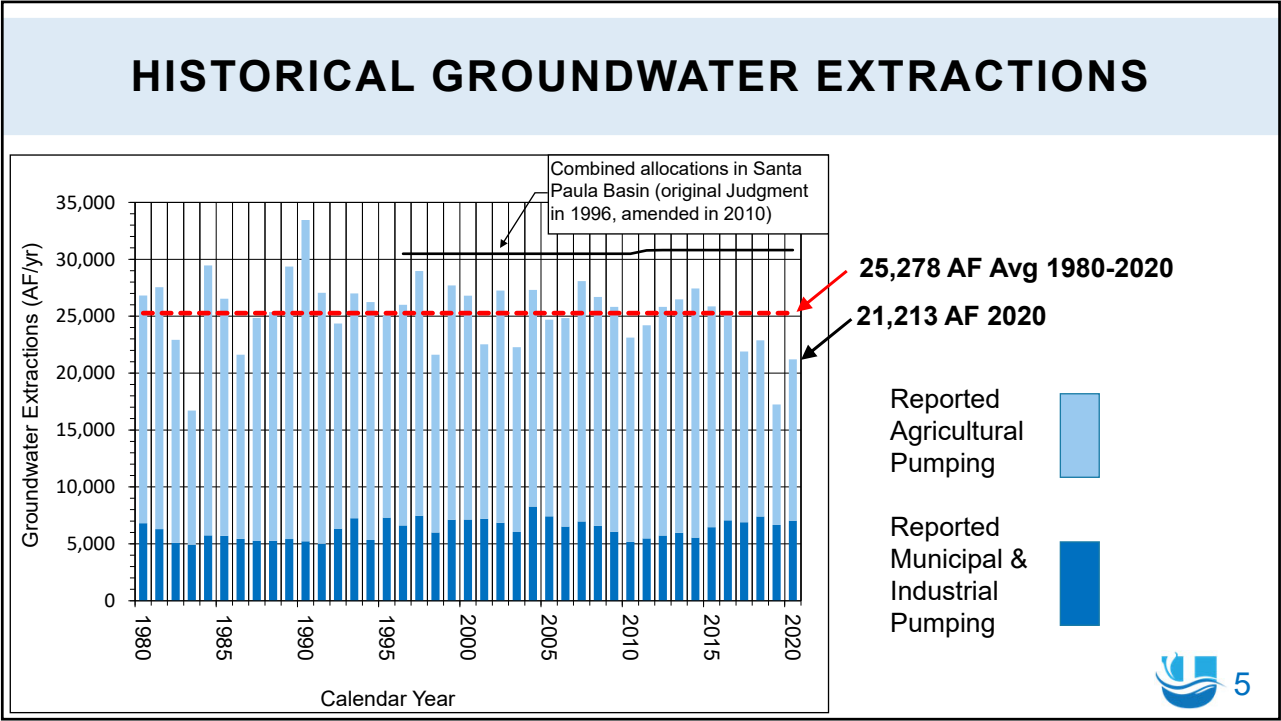


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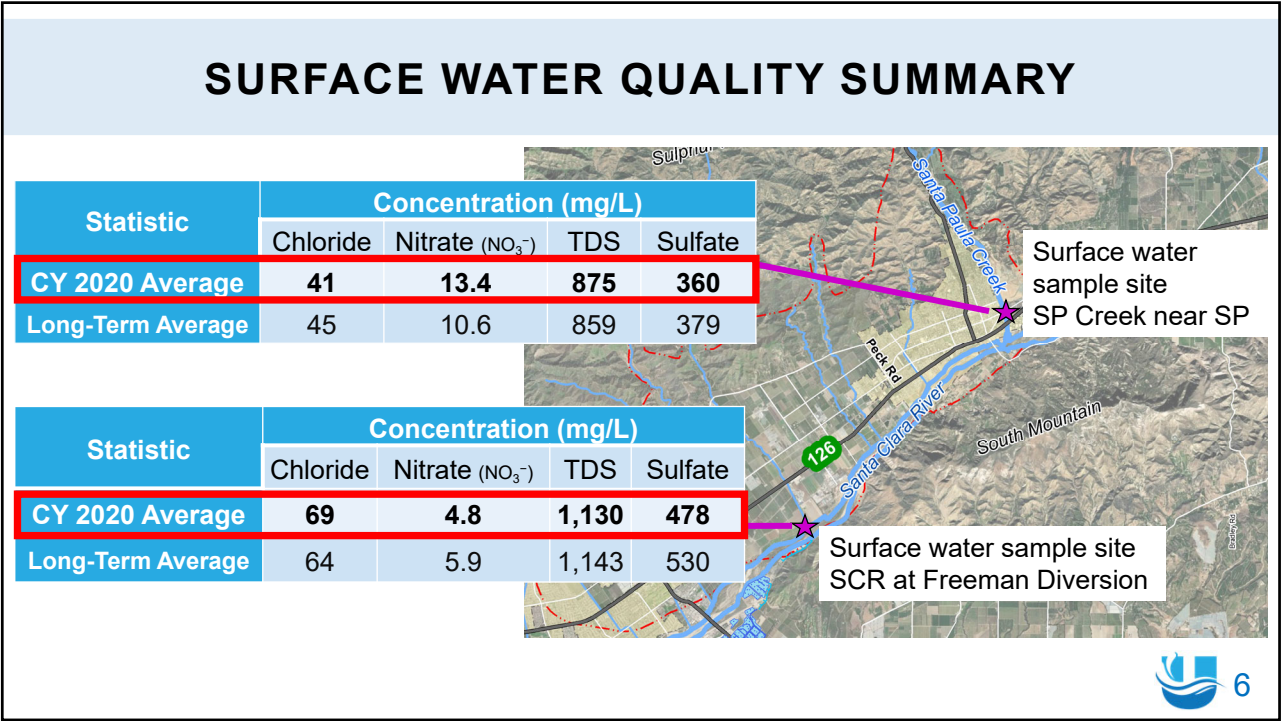


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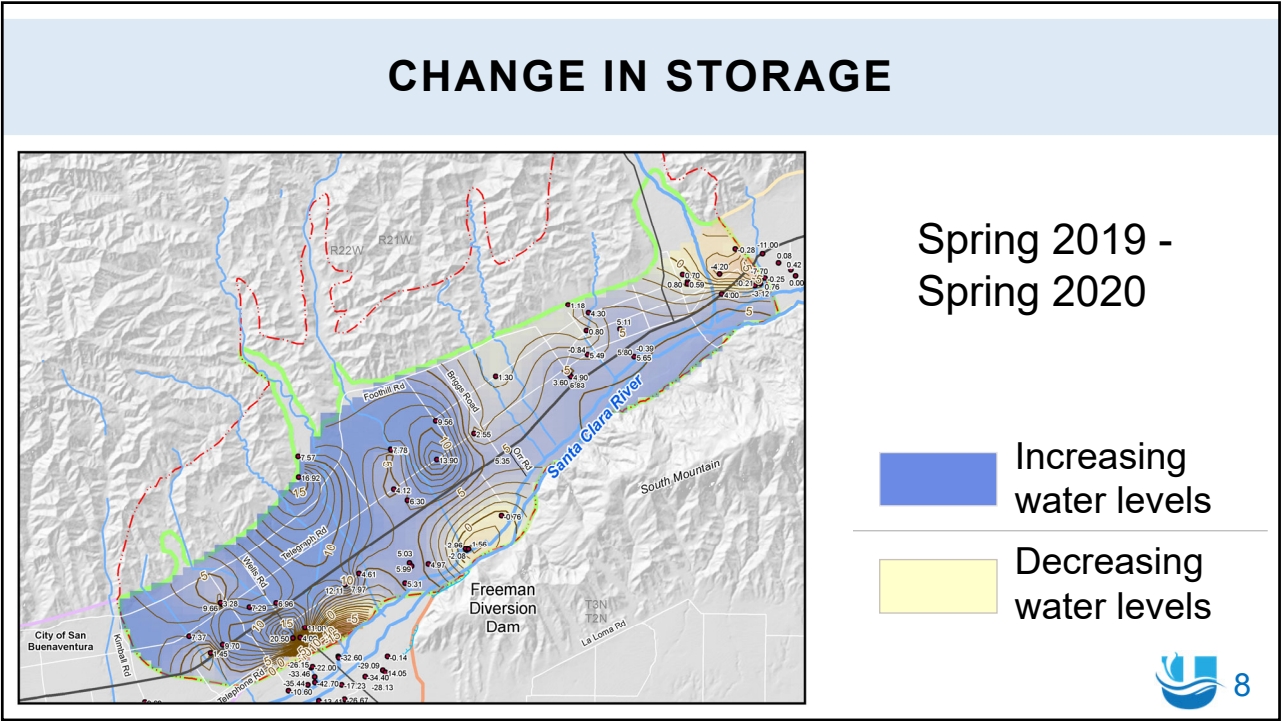
GROUNDWATER QUALITY SUMMARY				
Statistic	Concentration (mg/L)			
	Chloride	Nitrate (NO <sub>3</sub> <sup>-</sup> )	TDS	Sulfate
CY 2020 Average	72.1	7.2	1,290	548
Long-Term Average	69.8	10.2	1,308	541

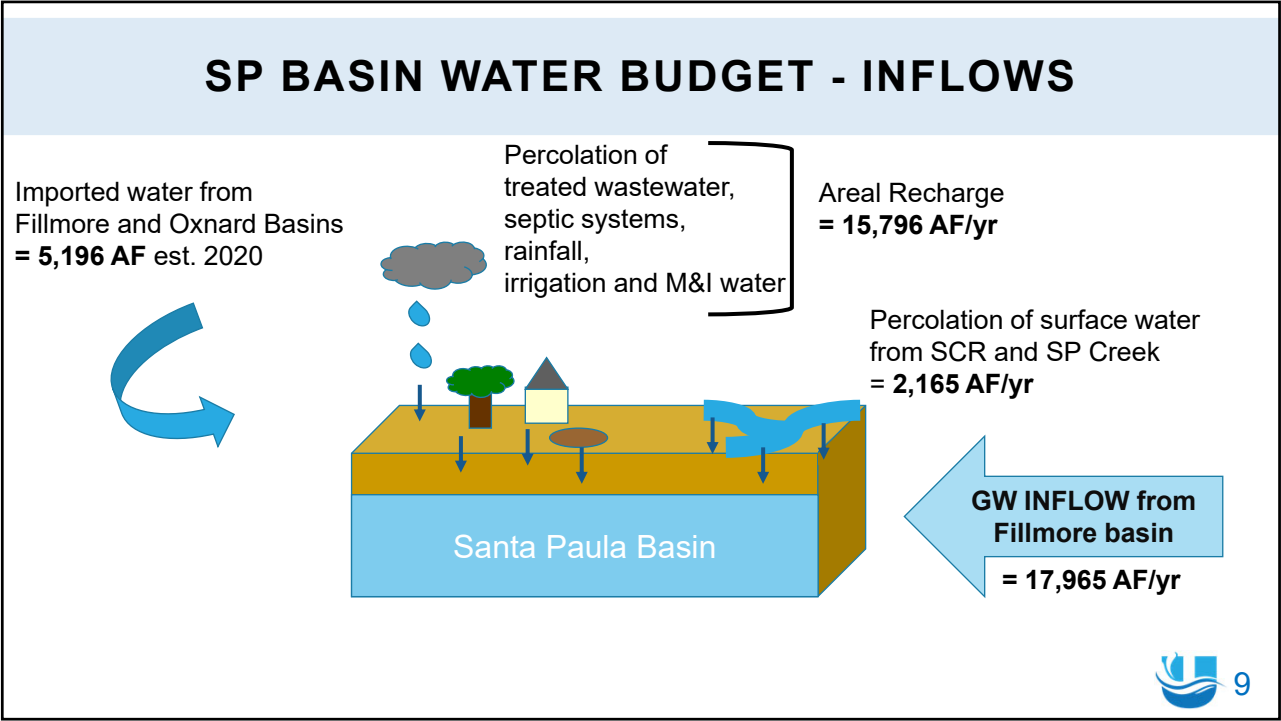
Statistic	Concentration (mg/L)			
	Hardness	Alkalinity	Iron	Manganese
CY 2020 Average	646	263	0.075	0.233
Long-Term Average	646	269	0.146	0.244

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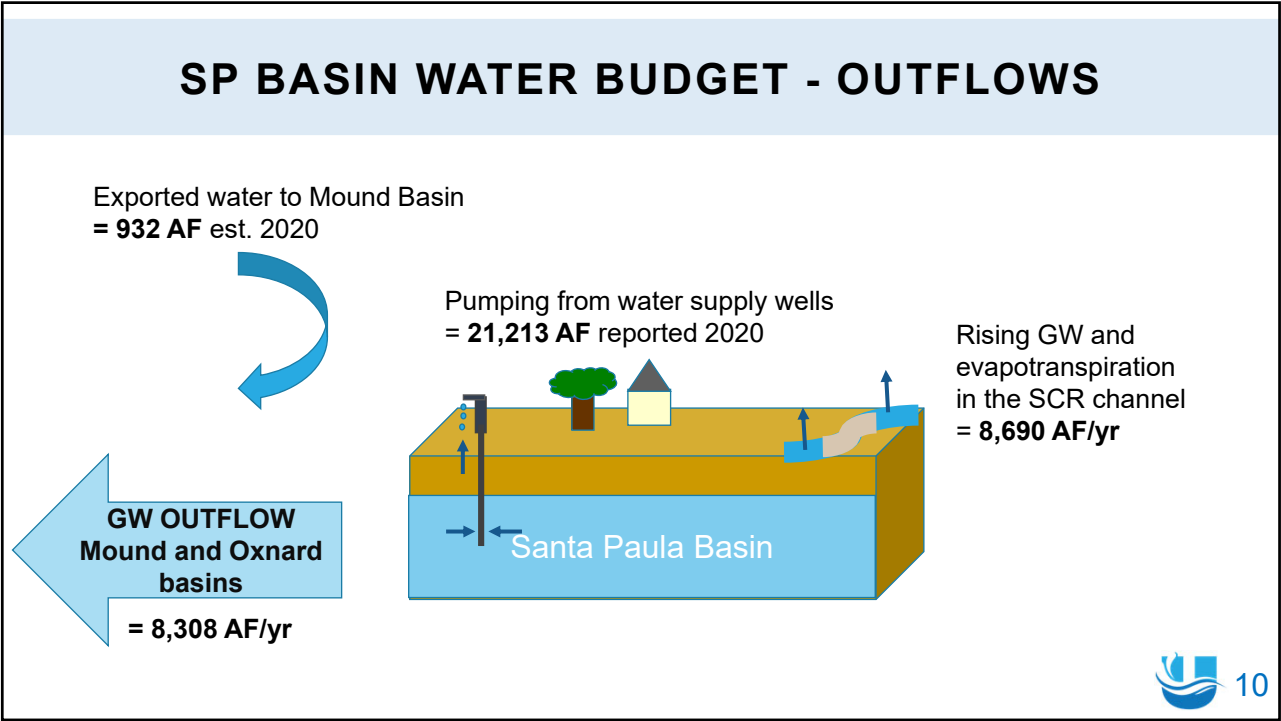
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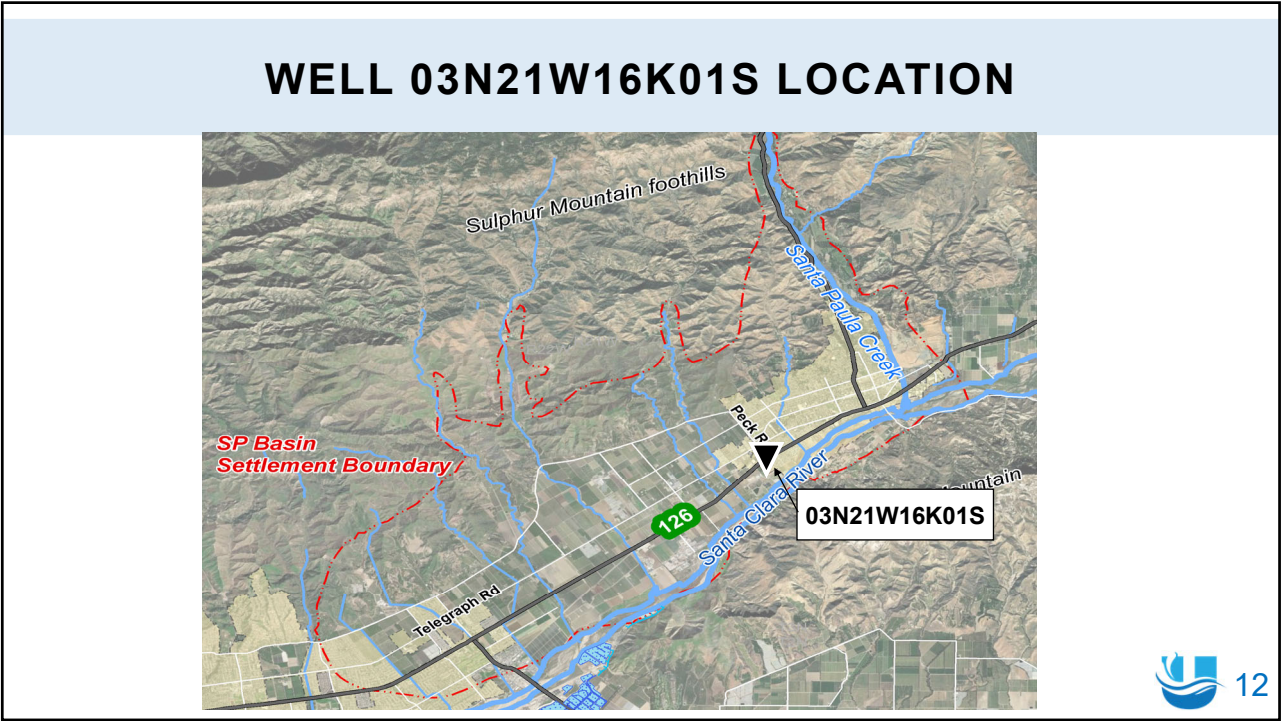
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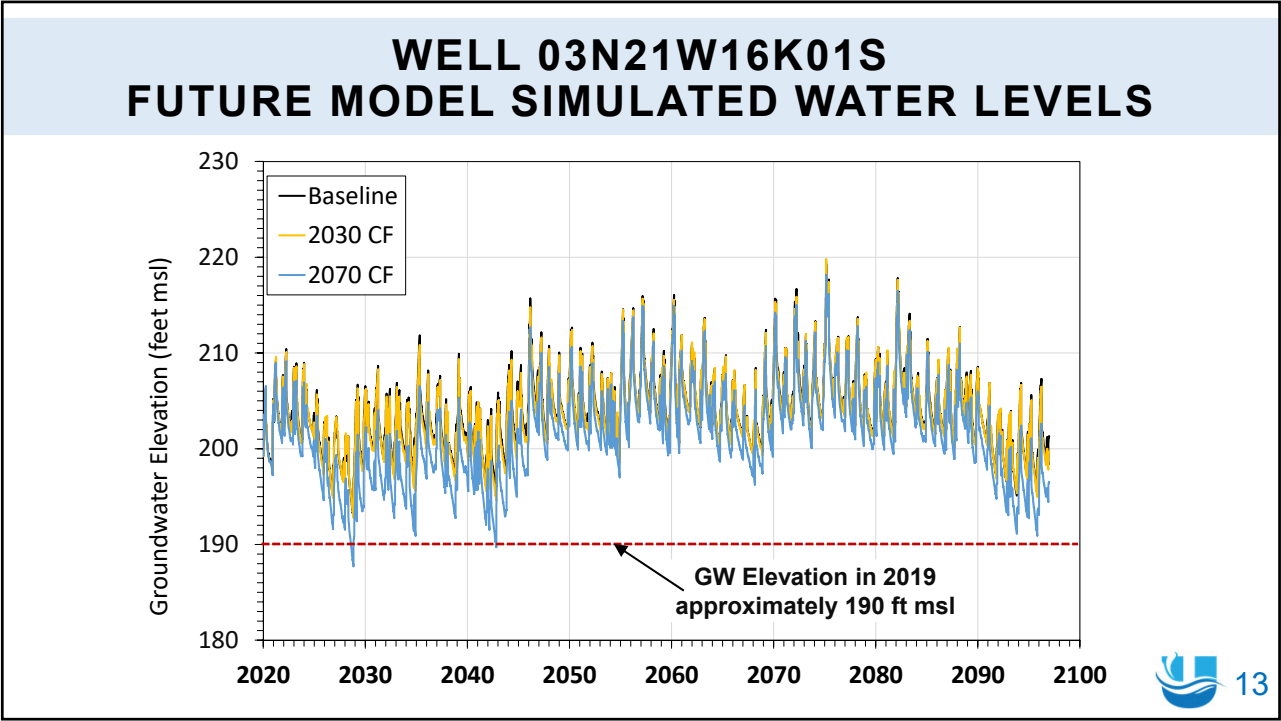
SUMMARY OF ESTIMATES RELATED TO GROUNDWATER INFLOW AND OUTFLOW					
← GW OUTFLOW		Santa Paula Basin		← GW INFLOW	
Outflow (AF/yr)	Representative Years	Source	Inflow (AF/yr)	Representative Years	Source
7,200	1936 - 1951	DWR, 1956	11,500	1936 - 1951	DWR, 1956
1,800	1936 - 1957	Mann, 1959	5,400	1936 - 1957	Mann, 1959
1,800	1956 - 1990	Law/Crandall, 1993	3,900	1956 - 1990	Law/Crandall, 1993
9,100	1996 - 2012	LWA and others, 2015	16,990	1996 - 2012	LWA and others, 2015
7,350	1999 - 2012	DBS&A and RCS, 2017	19,700	1947 - 2014	Bachman, 2015
8,308	1985 - 2015	UWCD, 2021	25,244	1999 - 2012	DBS&A and RCS, 2017
8,308	1985 - 2015	UWCD, 2021	17,965	1985 - 2015	UWCD, 2021

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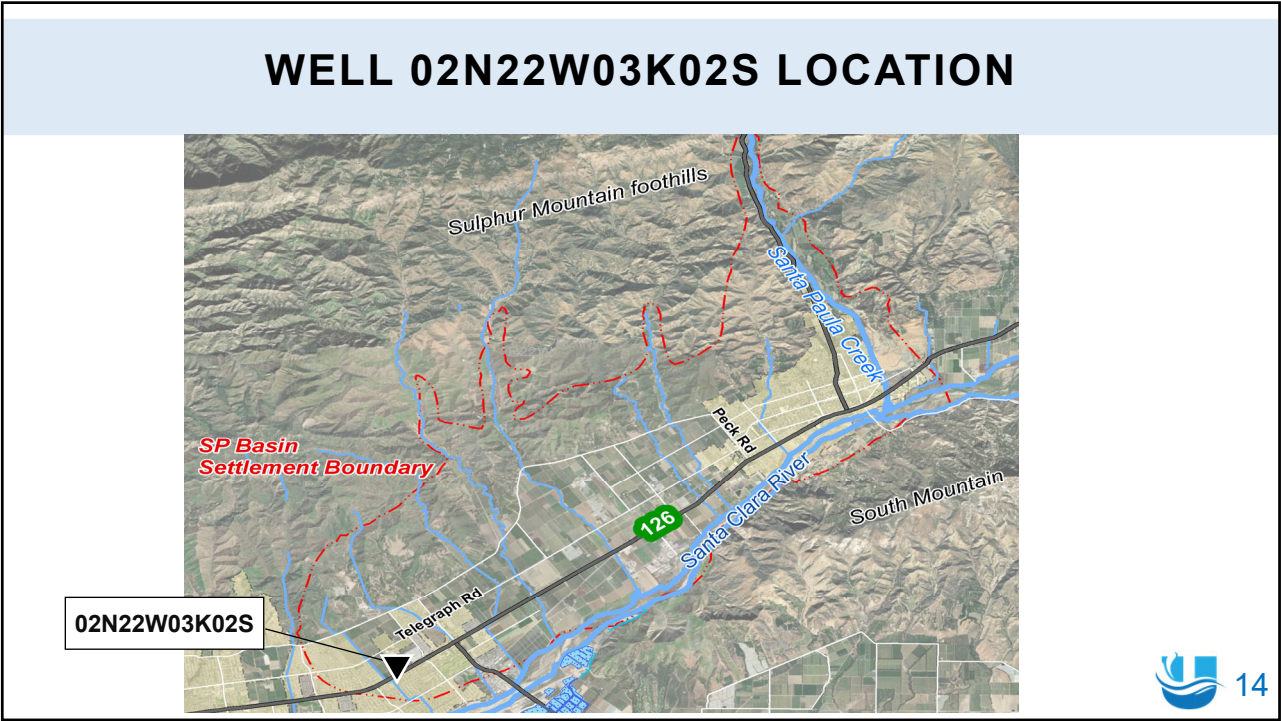


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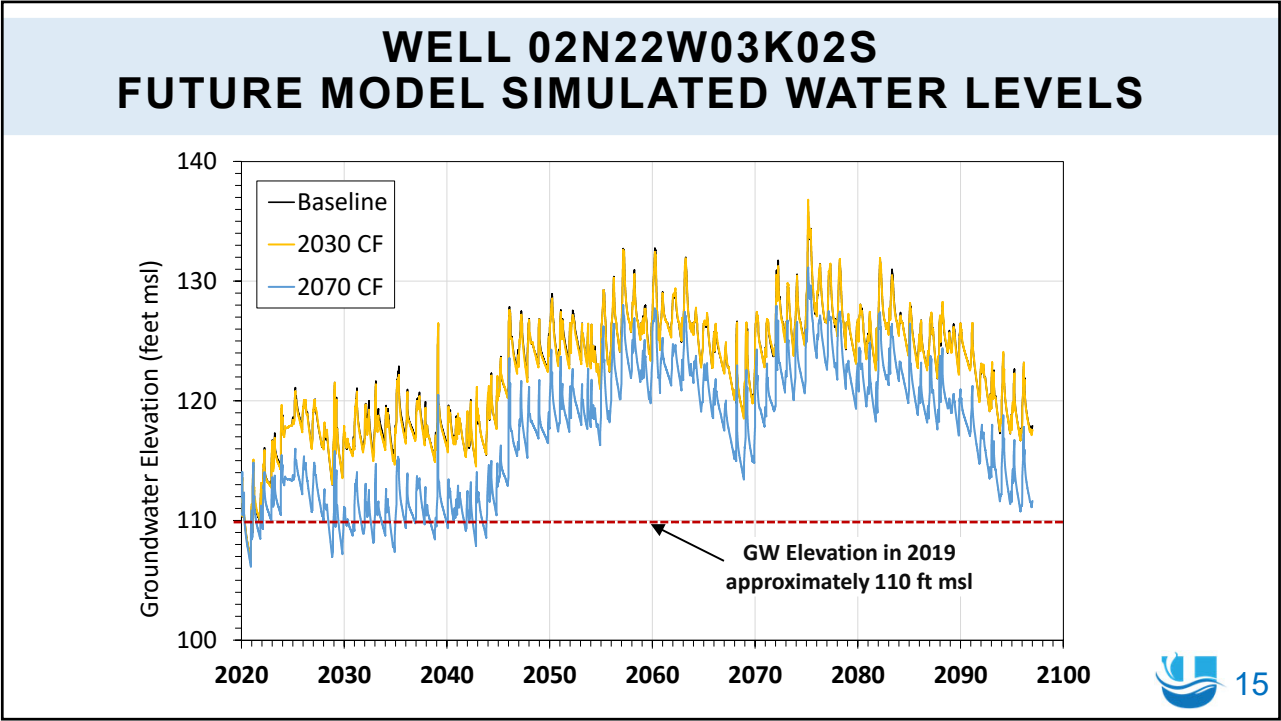




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## QUESTIONS?

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# Update on Groundwater Model

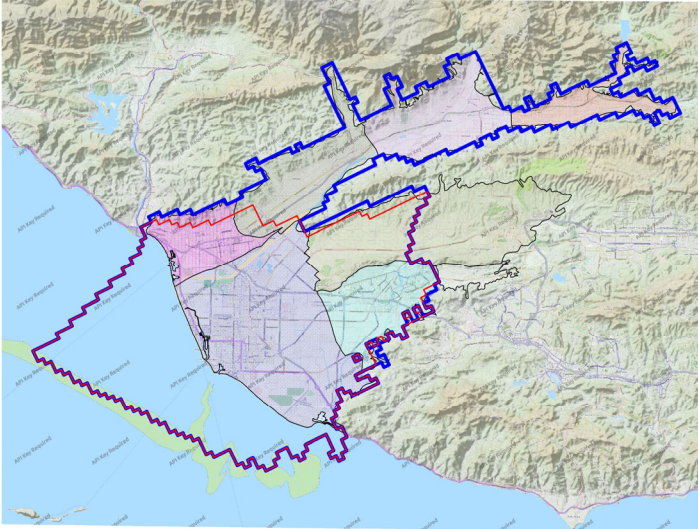
Presented by Dr. Jason Sun, Ph.D., P.E, Principal Hydrogeologist/Modeler  
Water Resources Committee Meeting  
March 1, 2022



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## THREE GROUNDWATER MODELS

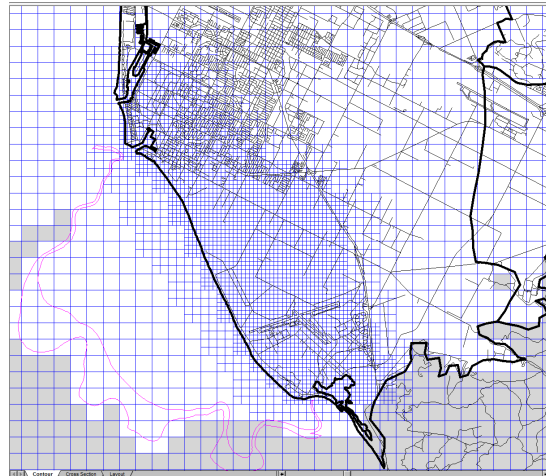
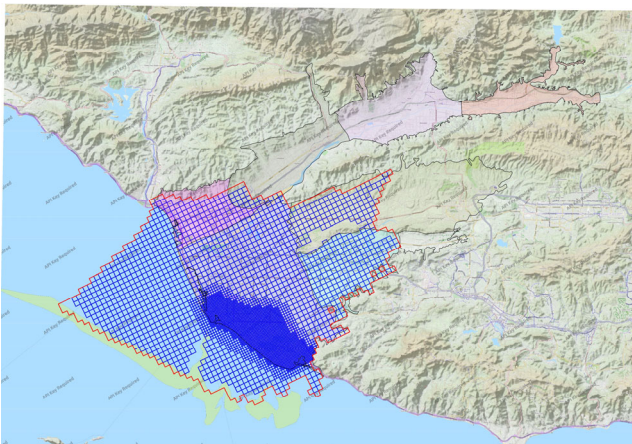
- Coastal Plain Model (2018 Model) in red line  
Monthly timestep 1985-2015
- Regional Model (2020 Model) in blue line  
Daily time step 1985-2019
- USG Model (Transport Model)  
Monthly timestep 1985-2015



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### USG MODEL (TRANSPORT MODEL) IS BASED ON THE COASTAL PLAIN MODEL WITH UNSTRUCTURED GRID (2000, 1000, 500 FT)



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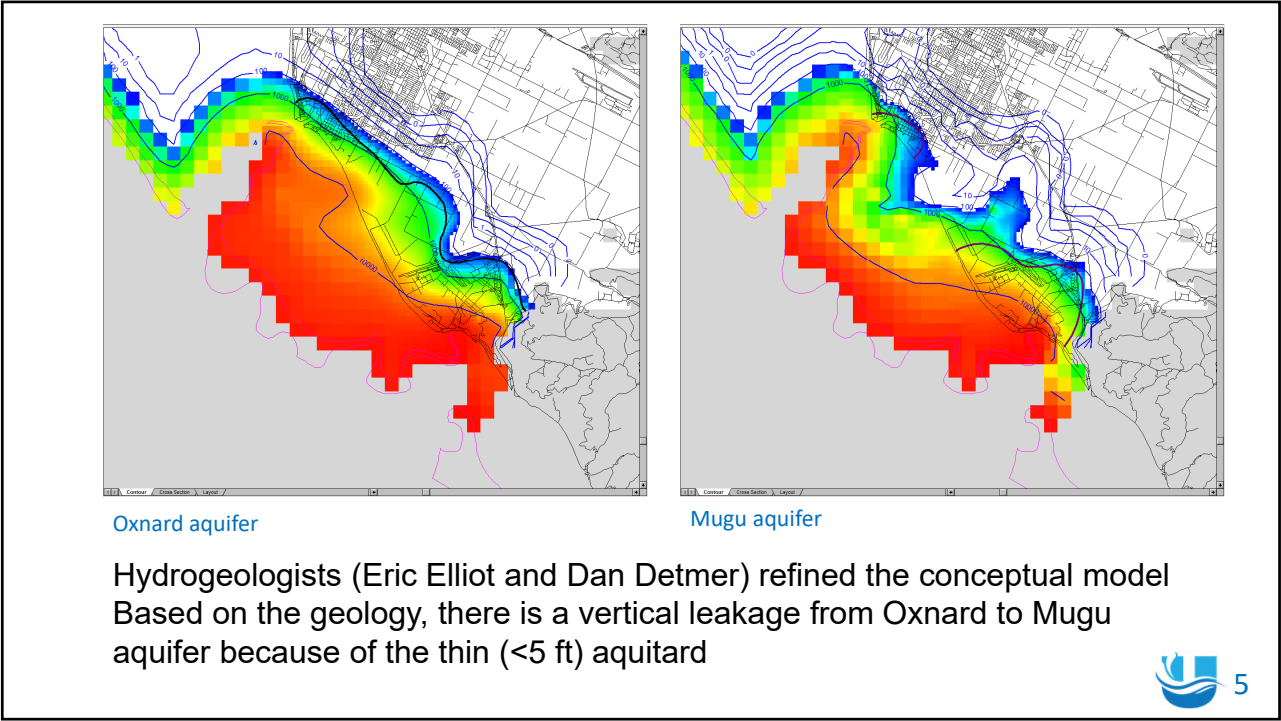
### SEAWATER INLAND EXTENT CALIBRATION

- Review the local geology near Mugu Canyon to better address the **vertical leakage** between aquifers
  - From Oxnard aquifer to Mugu aquifer
  - From Mugu aquifer to Hueneme, Fox Canyon aquifers
- Calibrated the USG Model to simulate the SWI extent in all aquifers including Oxnard, Mugu, Hueneme, Fox Canyon, and Grimes Canyon)
  - Prop 1 Grant was to simulate the Oxnard and Mugu aquifers
  - **LAS** (Hueneme, Fox Canyon, Grimes Canyon aquifers) is also included
- The calibration was completed in February 2022

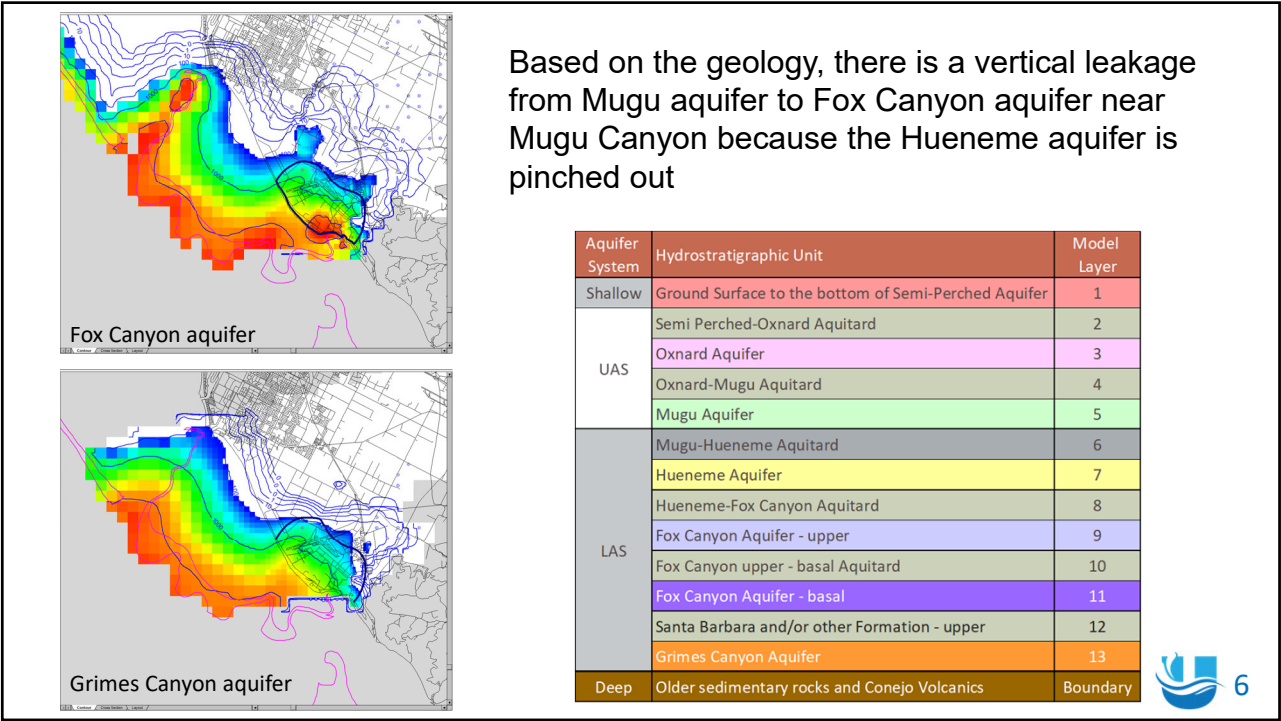


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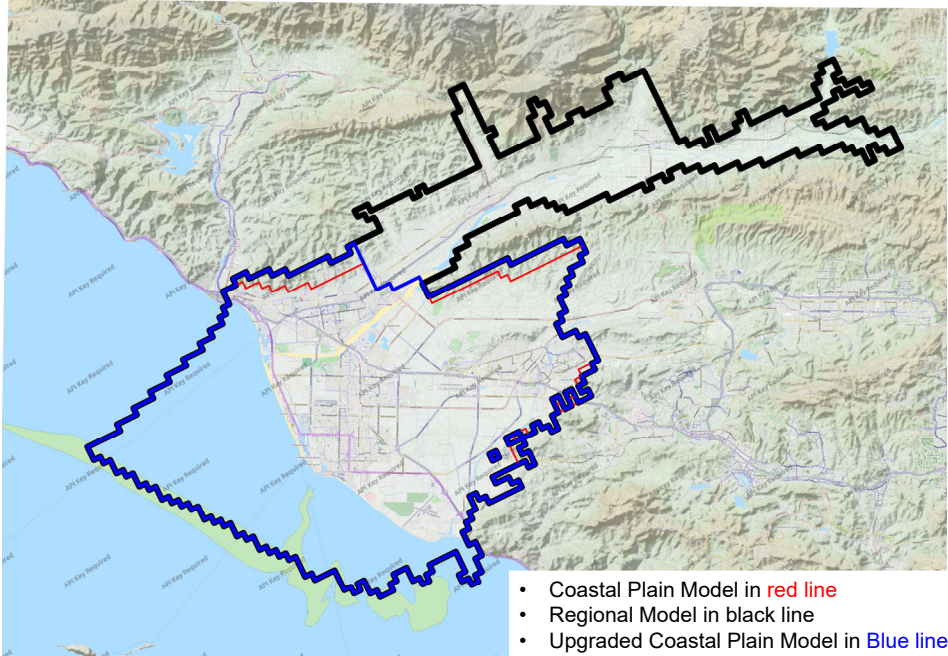
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## COASTAL PLAIN MODEL UPGRADE

- Add 2016-2019 to the current simulation period (1985-2015)
- Extend the active cell boundary to be consistent with the Regional Model
- Revise the boundary conditions with Santa Paula basin based on the Regional Model
- Apply upgrade to the USG Model
- The upgrade will be completed this week

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The upgraded Coastal Plain Model (2022 Model) will be more consistent with the Regional Model (2020 Model) than the 2018 Coastal Plain Model

The model consistency will benefit future model update/maintenance

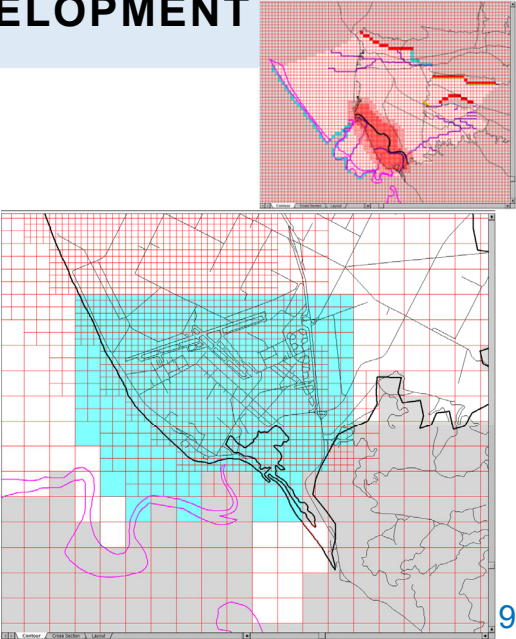
- Coastal Plain Model in red line
- Regional Model in black line
- Upgraded Coastal Plain Model in Blue line

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## FUTURE MODEL DEVELOPMENT

- Develop a break-out model near the Mugu area to better simulate the seawater density wedge in the Semi-Perched aquifer
  - Eric Elliot has refined the Semi-Perched aquifer with more detailed sub-units
  - Staff will simulate the Semi-Perched aquifer with **more (5) model layers** and **finer grid cells**
- Dr. Hanson will add land subsidence to the model simulation
- Transfer model input capability to young staff




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## QUESTIONS/COMMENTS?

UWCD Groundwater Model list

Coastal Plain Model	Coastal Plain Model Upgrade	Regional Model	USG Model
Flow	Flow	Flow	Flow + Transport + Density
GSPs for FCGMA		GSPs for Fillmore, Piru and Mound	Brackish water
Monthly	Monthly	Daily	Monthly
1985-2015	1985-2019	1985-2019	1985-2015 (2019)
2018 Model	2022 Model	2020 Model	

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