

## Notice of Public Meeting

### COORDINATING COMMITTEE REGULAR BUSINESS MEETING

**Date:** Wednesday, May 11, 2022

**Time:** 10:00 – Noon

**Location:** Hosted remotely by Yolo County

**Coordinating Committee Members Attending:**

County		Representative		Alternate
Solano	✓	Sabrina Snyder, SCWA		Chris Lee, SCWA Max Stevenson, SCWA
Napa	✓	Chris Silke, NC Flood Control District		Richard Thomasser, NC Flood District
Yolo	✓	Elisa Sabatini, WRA	✓	Sarah Leicht, Yolo Subbasin Groundwater Agency
Lake	✓	Marina Deligiannis, Lake County Water Resources Dept.	✓	Angela DePalma-Dow, Lake County Water Resources Dept.

**Others present:** Yolanda Garibay, Lake County Special Districts, Scott Harter, Lake County Special Districts, Katie Burdick, Burdick & Co, Laura Foglia, LWA: Dunnigan Water District, Ryan Fulton, LWA: Dunnigan Water District, Richard Tsai, City of Davis, Stephen McCord, MEI, Angela Islas, CivicWell, Matti Siltanen, DWR, Alyssa Gordon, Hidden Valley Lakes CSD, Vishal Mehta, Stockholm Environmental Institute, Charles Young, Stockholm Environmental Institute, Marisa Escobar, Stockholm Environmental Institute, Kate Reza, Yolo County RCD/ Westside IRWMP

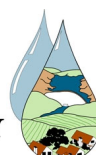
### AGENDA

1. **Call Meeting to Order and Introductions** – Chair Snyder called the meeting to order at 10:01 AM.
2. **\* Reconsider the circumstances of the state of emergency and determine that (i) The state of emergency continues to directly impact the ability of the members to meet safely in person and/or (ii) State or local officials continue to impose or recommend measures to promote social distancing.** Chair Snyder proposed that given the uptick in Covid cases and for the sake of convenience, continue to meet virtually. Ms. Sabatini moved to meet virtually in July, Ms. Deligiannis seconded, approved (Deligiannis, Sabatini, Snyder).
3. **\*Approve Consent Agenda**
  - a. **Approve Today’s Agenda**
  - b. **Approve Minutes for March 9 & March 31 2022 virtual meetings**
  - c. **YCRCD Financial Update**
  - d. **Coordinating Committee Financial Report**

No questions or comments. Ms. Deligiannis motioned to approve the consent agenda, Ms. Sabatini seconded, approved (Deligiannis, Sabatini, Snyder).
4. **\*\*\* Public Comment:** There was no public comment.
5. **DWR Update** – Mr. Siltanen reviewed the information on the handout provided in the packet, paying special attention to the highlighted items and answering questions.



**SOLANO COUNTY**  
**WATER AGENCY**



6. **DACI Update** – Katie Burdick – Ms. Burdick provided an overview of the status of the DACI program. It is in its last year. The work for the WS IRWM region involves preparation of Capital Improvement Plans (CIPs) for small disadvantaged water systems. The systems are: Lake Port, Grimes, El Rio Villa – these systems are very responsive. First piece is data collection and inventory assessment, then development of transparent ranking criteria to be applied to asset list. Almost completed with all three jurisdictions. Next phase: locating funding for improvements – rate increases, grants, loans, bonds. Will be working with finance experts in each jurisdiction to develop 20-year plan in 5-year increments. Project complete by end of summer, with drafts complete for each jurisdiction by August. Once jurisdictions approve, will be brought to WS IRWM CC for review/ approval.
7. **CivicWell Water Team Project Manager self-introduction** – Angela Islas – Ms. Islas introduced herself as a new program manager with CivicWell; she is experienced with sustainable groundwater management, integrated regional water management, and hoping for future collaboration.
8. **\*Consideration of Projects for inclusion in Westside IRWM plan project list.**
  - a. **Hidden Valley Lakes CSD Hidden Valley Lake CSD Multi-Benefit Water-Energy Resilience Project– Alyssa Gordon**  
Ms. Gordon described FLASHES project: Firemain Linked Auxiliary Supply/Hydraulic Energy Storage. Partnering with private developer (Trane) to pump water uphill through solar and store. Energy produced by water going back downhill is harvested. Water utility receives water reliability for the CSD and fire protection – hydrants installed to provide fire fighting capabilities. Microgrid capabilities for Hidden Valley Lake if public safety power shutoffs occur.
  - b. **Dunnigan Area Groundwater Recharge Demonstration and Pilot Project – Laura Foglia**  
The Nature Conservancy will provide funding for water purchase for recharge if the project can get 600 acres to commit to the program. Flooding is expected to start September, October 2022, monitoring equipment being sourced. May expand to RD 108 through TNC partnership. Questions regarding costs from chair Snyder – wanting to keep track of the funding going towards the projects within the plan. Ms. DePalma-Dow asked about advertising project, Ms. Foglia stated that they are open, there will be advertising through TNC. Ms. Leicht offered to advertise outcome through YSGA.
  - c. **Lake County Rehabilitation and Implementation of Conjunctive Use Projects for Enhanced Aquifer Recharge and Fish Spawning Habitat in the Big Valley Groundwater Basin – Marina Deligiannis**  
Kelsey and Adobe Creeks have potential to be connected to groundwater. Ephemeral streams, better understanding of hydrologic conditions necessary – big priority in this basin. Kelsey Creek rehab – construction of structure, actively seeking funding. ACCU = modifications of Highland Springs Reservoir to increase recharge in Big Valley Basin – have been unsuccessful in obtaining funding so far.  
Ms. Sabatini motioned to approve all projects with Dunnigan project to be updated with respect to budget, second from Mr. Silke, unanimous (Deligiannis, Sabatini, Silke, Snyder).
9. **Presentation:** Stockholm Environment Institute – WEAP Model. WEAP in use internationally, and locally with Yolo GSP. Detailed description of Yolo model development and projections.
10. **\*Emergency Funding Protocol and PIF, Project Evaluation Criteria** Protocol presented for CC approval. Motion to approve protocol for emergency funding: Ms. Deligiannis, second: Mr. Silke, unanimous, (Deligiannis, Sabatini, Silke, Snyder). Develop evaluation criteria ASAP.
11. **\*MEI Project Assistance for Lake County 319h Stormwater Planning grant proposal & WS IRWM CC Letter of Support for project** – Angela DePalma-Dow



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Draft letter of support for project; funds remaining for MEI. Lake County would like some of the MEI hours to apply for the 319h non-point source funds for development of a stormwater resource plan. Would like to get assistance from McCord as he's applied for and been successful getting 319h funds, while Lake County has been unsuccessful about 6 times. MEI contract runs out in a couple months, 17 hours remaining on contract. Proposal is due June 24<sup>th</sup>, Lake County would like to use the rest of the available time. Lake County can pay for any overage. Ms. Sabatini: Motion to use the remaining MEI funding for Lake County and their grant proposal; second: Mr. Silke, unanimous (Deligiannis, Sabatini, Silke, Snyder). Mr. Silke: motion for IRWM letter to be e-signed; second: Ms. Sabatini. Unanimous: (Deligiannis, Sabatini, Silke, Snyder).

12. **Draft Workplan review** – Draft workplan to be sent out to committee in next couple of weeks, with comments to be incorporated in draft for consideration for adoption in July.
13. **\*YCRC D Proposal for Westside Support 2022-23** – Ms. Reza presented the proposed budget for Fiscal Year 22-23 for Yolo County RCD's administrative services to the Westside Sac IRWM. Mr. Silke: motion that committee adopt proposed budget; Ms. Sabatini second, unanimous (Deligiannis, Sabatini, Silke, Snyder).
14. **WRA-YSGA Merge** – Ms. Reza spoke with Kristin Sicke last week and there is no news on merger, but it will be happening. Sarah Leicht, YSGA is expected to be the Yolo County alternate after the next YSGA meeting.
15. **Drought Roundtable Discussion** – Ms. Deligiannis brought up the Lake County Drought Task Force as it relates to SB552. She got an update from the state re: guidance and next steps – how to make counties compliant – other members should be getting this information too. Lake County asked for SGMA funding assistance. Ms. Snyder stated that she will bring water conservation updates for next meeting. Mr. Silke stated that Napa has convened a drought task force, has adopted a drought ordinance, applied for drought funding, and with respect to water shortage contingency planning, most cities in Napa are at stage 2.
16. **CC Member and Administrative Coordinator Reports, Regional Activities and Updates** – At next meeting, each county will try to bring their water conservation folks for an intra-region drought and planning discussion. Ms. DePalma-Dow will be out for the July meeting (maternity leave) will be back for September meeting. CC members wished her well.
17. **Confirm Next Meeting Date and Location** – Wednesday, July 13, 2022, 10:00 am, hosted by Lake County virtually.
18. **Adjourn** at: 12:09.

\*Indicates Action Item

\*\* Consideration of items not on the posted agenda: items must fit one of the following categories: 1) a majority determination that an emergency (as defined by the Brown Act) exists; or 2) a three-fourths vote by Coordinating Committee members present that the need to take action arose subsequent to the agenda being posted.

\*\*\* Members of the public may address any subject that is not otherwise on the agenda during Public Comment. Reasonable time limits will be imposed.

I declare under penalty of perjury that the foregoing was posted prior to 10 am on November 5<sup>th</sup>, 2021 on the door of the offices of the Lake County Water Resources Dept., Napa County Flood Control, Solano County Water Agency, Yolo County Flood Control and Water Conservation District, and the Yolo County Resource Conservation District.

Minutes respectfully submitted by Kate Reza, YCRC D, Approved by WS Sacramento IRWM on \_\_\_\_\_  
Sabrina Colias, Chair \_\_\_\_\_ Date \_\_\_\_\_



SOLANO COUNTY  
WATER AGENCY





# Rehabilitation and Implementation of Conjunctive Use Projects for Enhanced Aquifer Recharge and Fish Spawning Habitat in the Big Valley Groundwater Basin

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*A PROPOSED PROJECT TO SUBMIT UNDER THE 2021 URBAN AND MULTIBENEFIT  
DROUGHT RELIEF PROGRAM*

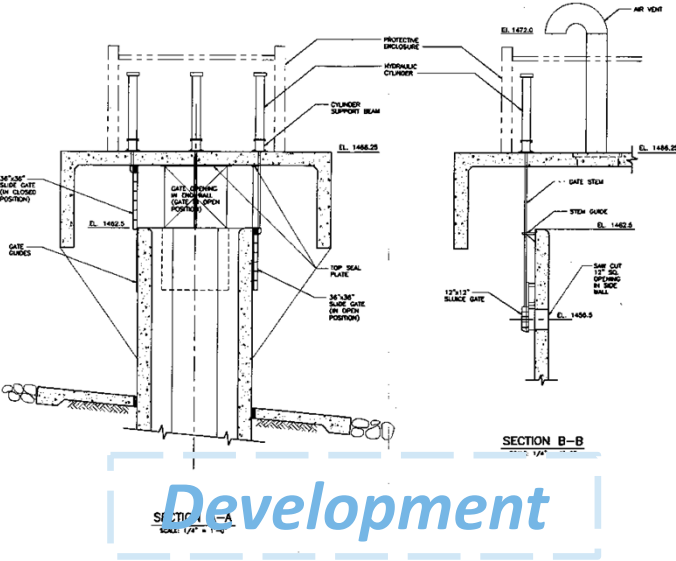
**LAKE COUNTY WATERSHED PROTECTION**

# Project Scope

## The Rehabilitation of the Kelsey Creek Detention Structure



## The Development of the Adobe Creek Conjunctive Use Project





# Project Impact: Groundwater Dependent Communities



*Image Description: Clear Lake Hitch spawning  
Image Source: Fred Feyre, USGS.*



**Table 5-4. Tier 2 Projects and Management Actions**

Name	Project Category	Description	Cost Estimate*
Implement Adobe Creek Conjunctive Use Project	Water supply augmentation	The proposed project involves modifications to the Highland Springs Reservoir and its operations, including consideration of multi-benefit features. The objective of this project is to increase groundwater recharge in Big Valley Basin.	\$0.8M (2002 cost estimate)
Rehabilitate Kelsey Creek Detention Structure	Water supply augmentation	This project involves rehabilitating the middle gate engine base at the Kelsey Creek Detention Structure. The purpose of the project is to ensure the continued use of Kelsey Creek Detention Structure for groundwater recharge.	\$9,000 - \$10,500
Improve Water Demand Estimates	Monitoring and data management	This project would refine these water demand estimates with additional data. The purpose is to improve the water budget and water management and support potential demand management policies.	\$40,000 - \$70,000
Investigate recharge locations and benefits	Water supply augmentation	This project would investigate the feasibility of recharge locations in the Basin. From the initial investigation, it is possible that the GSA may elect to carry out groundwater recharge implementation. The objective of this project is to improve water supply reliability and water management.	\$10,000 - \$35,000
Investigate stormwater capture for in lieu use	Water supply augmentation	This project involves investigating stormwater capture to augment water supply. The objective of the proposed project is to reduce groundwater demand and minimize surface water depletion.	\$15,000 - \$25,000
Conduct video survey of RMS wells	Monitoring and data management	This project would involve video surveys of select wells to confirm well construction information, including screening depth. The purpose of this project is to improve the Big Valley Basin RMS Network.	\$10,000

**Notes:**

\* The cost estimates are based on similar projects from other published GSPs. These costs may be further refined during GSP implementation.

**Key:**

GSA = Groundwater Sustainability Agency

RMS Network = Representative Monitoring Site Network

# Project Budget & Timeline

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	BUDGET CATEGORY	Grant Amount	All Other Cost	Total Cost
(a)	Project Administration	10,000	10,000	
(b)	Land Purchase / Easement	400,000		
(c)	Planning / Design / Engineering / Environmental Documentation	175,000		
(d)	Construction / Implementation	17,000	350,000	
	<b>TOTAL COSTS</b>	<b>602,000</b>	<b>360,000</b>	<b>962,000</b>

(a)	Project Administration	7/1/2022	3/31/2026
(b)	Land Purchase / Easement	7/1/2022	12/21/2025
(c)	Planning/ Design / Engineering / Environmental Documentation	7/1/2022	12/21/2025
(d)	Construction/ Implementation	1/1/2025	12/31/2025

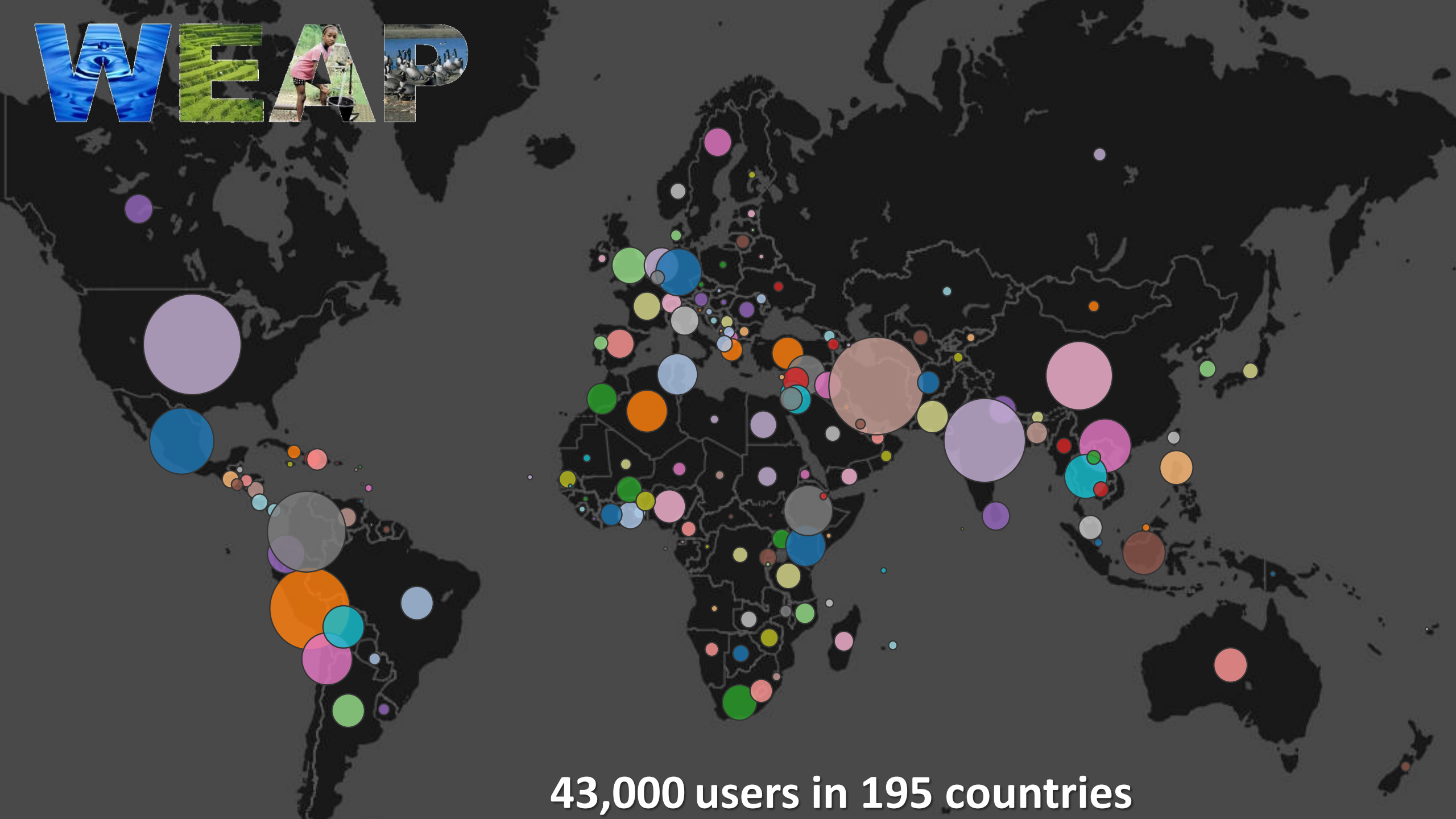
# WEAP Introduction

Presented to: Westside IRWM Stakeholders

Vishal Mehta  
Chuck Young  
Marisa Escobar



Water Evaluation And Planning system



43,000 users in 195 countries

# Why WEAP?

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## Strengths of WEAP

- Diverse components modeled together
- Fast calculations
- Simple user-interface
- Visual watershed schematic
- Flexible structure (*simple or complex*)

100 universities teaching WEAP

800 peer-reviewed studies using WEAP

## Applications of WEAP

- Integrated water resources management
- Evaluate future infrastructure, climate, or policies
- Decision-support with non-technical parties



# What questions can WEAP answer?

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## What results does WEAP produce?

### *Water supplies:*

- Water allocation, stream-flows, reservoirs
- Water temperature, pollutants
- Groundwater use, levels, storage

### *Food-Water-Energy Nexus*

- Crop water needs, yield
- Hydropower production
- Financial costs, revenue

### *Custom results?*

- User-defined results

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## What inputs go into WEAP?

### *Existing conditions:*

#### **Hydrology:**

- Climate
- Hydrogeological parameters
- Cropping patterns and parameters

#### **Human operations & infrastructure:**

- Demands (agriculture, industry, domestic)
- Infrastructure: Reservoirs, canals, irrigation
- Operating rules

### *Future changes:*

#### **Hydrology changes:**

- Climate change

#### **Human changes:**

- Population growth
- Land use
- Production levels (agriculture/industry)

### *Decision-support:*

#### **Water management:**

- Infrastructure construction
- Water conservation policies
- Environmental flow policies

# Decision-makers using WEAP

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## **Africa:**

- Lesotho Highlands Development Authority
- Namibia Hydrological Services
- Rwanda Water Resources Board

## **Asia/Middle East:**

- Jordan Ministry of Water and Irrigation
- Lebanese Ministry of Energy and Water
- Republic of Korea

## **North America:**

- California Department of Water Resources
- California State Water Resources Control Board
- Massachusetts Water Resources Authority
- Local water utilities in the United States (California, Colorado, Florida, Oregon and Texas)

## **South America:**

- Bolivia Ministry of Environment and Water
- Chile General Director of Water
- Colombia Ministry of Environment and Sustainable Development
- Colombia Regional Environment Authorities
- Ecuador Quito Water Utility
- Peru National Water Authority and Local Water Authorities

# WEAP in Yolo County since 2010



## Agricultural Water Management

Volume 117, 31 January 2013, Pages 70-82

### Irrigation demand and supply, given projections of climate and land-use change, in Yolo County, California

Vishal K. Mehta <sup>a</sup>, Van R. Haden <sup>b</sup>, Brian A. Joyce <sup>a</sup>, David R. Purkey <sup>a</sup>, Louise E. Jackson <sup>c</sup>

[Show more](#)

## Environmental Modelling & Software

2017 / 10 Vol. 96

### Integrating water supply constraints into irrigated agricultural simulations of California

[Winter, Jonathan M.](#), [Young, Charles A.](#), [Mehta, Vishal K.](#), [Ruane, Alex C.](#), [Azarderakhsh, Marzieh](#), [Davitt, Aaron](#), [McDonald, Kyle](#), [Haden, Van R.](#), [Rosenzweig, Cynthia](#)

Volume:	96	Language:	English
Journal:	Environmental Modelling & Software	DOI:	10.1016/j.envsoft.2017.06.048
Date:	October, 2017	File:	PDF, 1.61 MB

[www.yologroundwater.org](http://www.yologroundwater.org)

## California Agriculture

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### How can we support the development of robust groundwater sustainability plans?


CALIFORNIA AGRICULTURE > VOLUME 72 > NUMBER 1 > RESEARCH ARTICLE [< PREVIOUS](#) | [TABLE OF CONTENTS](#)

[↶](#) [✉](#) [🖨](#)

#### Authors

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Susan R. Bresney, *Stockholm Environment Institute*  
Daniel S. Spivak, *UC Irvine School of Social Ecology*  
Jonathan M. Winter, *Dartmouth College*

Authors  
Abstract  
Full text



## Yolo Subbasin Groundwater Agency

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### Yolo Subbasin Groundwater Sustainability Plan

**Adopted Yolo Subbasin Groundwater Sustainability Plan**

The Yolo Subbasin GSP was adopted by the Board of Directors at a [Public Hearing on January 24, 2022](#). The GSP was submitted to the California Department of Water Resources on January 28. To review the adopted plan, please use the links below. The Plan is also available for review at the [YSGA Office - contact us](#).

- [Groundwater Sustainability Plan](#) +
- [Annual Reports](#) +
- [Older Versions](#) +



# Timeline of YSGA model development and SEI's engagement (2017-2020)\*

2017	<p>USDA grant supported</p> <ul style="list-style-type: none"> <li>- Initial outreach and meetings</li> <li>- Data collection begins</li> <li>- Model calibration begins</li> <li>- DWR GSP planning grant finalized</li> <li>- Interaction with entities</li> </ul>	<p>Important meetings:</p> <p>WRA 2/2; WG 9/11</p>
2018	<p>USDA grant supported</p> <ul style="list-style-type: none"> <li>- Data collection continued</li> <li>- MODFLOW Model development</li> <li>- DWR grant awarded</li> <li>- Groundwater graphing tool</li> <li>- Interaction with entities</li> </ul>	<p>Important meetings:</p> <p>1/24: GSP Planning meeting                  2/7: YSGA WG meeting  <b>5/3: First water budget presented</b>                  5/31: Urban entity feedback meeting                  8/13: RD feedback meeting                  12/20: YCFC planning meeting</p>
2019	<p>USDA and DWR supported</p> <ul style="list-style-type: none"> <li>- Data collection continued</li> <li>- Interaction with entities</li> <li>- Interactions with GEI</li> <li>- Capay workshop</li> </ul>	<p>Important meetings:</p> <p>1/4: Water Budgets and Well analysis presented                  4/3: Water budgets write-up provided to entities</p>
2020	<p>DWR Supported</p> <ul style="list-style-type: none"> <li>- Budgets at Management Area Scale</li> <li>- TAC and YSGA WG Meetings</li> <li>- Consultant group interactions</li> <li>- First draft and review</li> <li>- Second draft</li> </ul>	<p>Important meetings:</p> <p>TAC Meetings (7/9;8/5;9/3)  <b>10/27: Water Budgets Draft 1 delivered</b>  <b>11/20: Water Budgets Draft 2 and Model Documentation Draft 1 delivered</b></p>

\* Work done in 2021 just before GSP submission is not included in this table

# Data Collection: Assumptions and System Operations

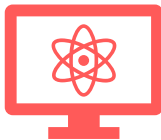
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**Reports:** Urban water management plans, Groundwater Management Plans, Ag Water Management Plans, Stormwater Management Plans, Master Plans, Sewer System Plans, Municipal Service Review and Sphere of Influence Studies, Various other studies conducted in the county, YCIGSM and Capay IGSM Documentation



**In person meetings and phone calls:** YCFC, cities, UCD, RDs, as requested/needed

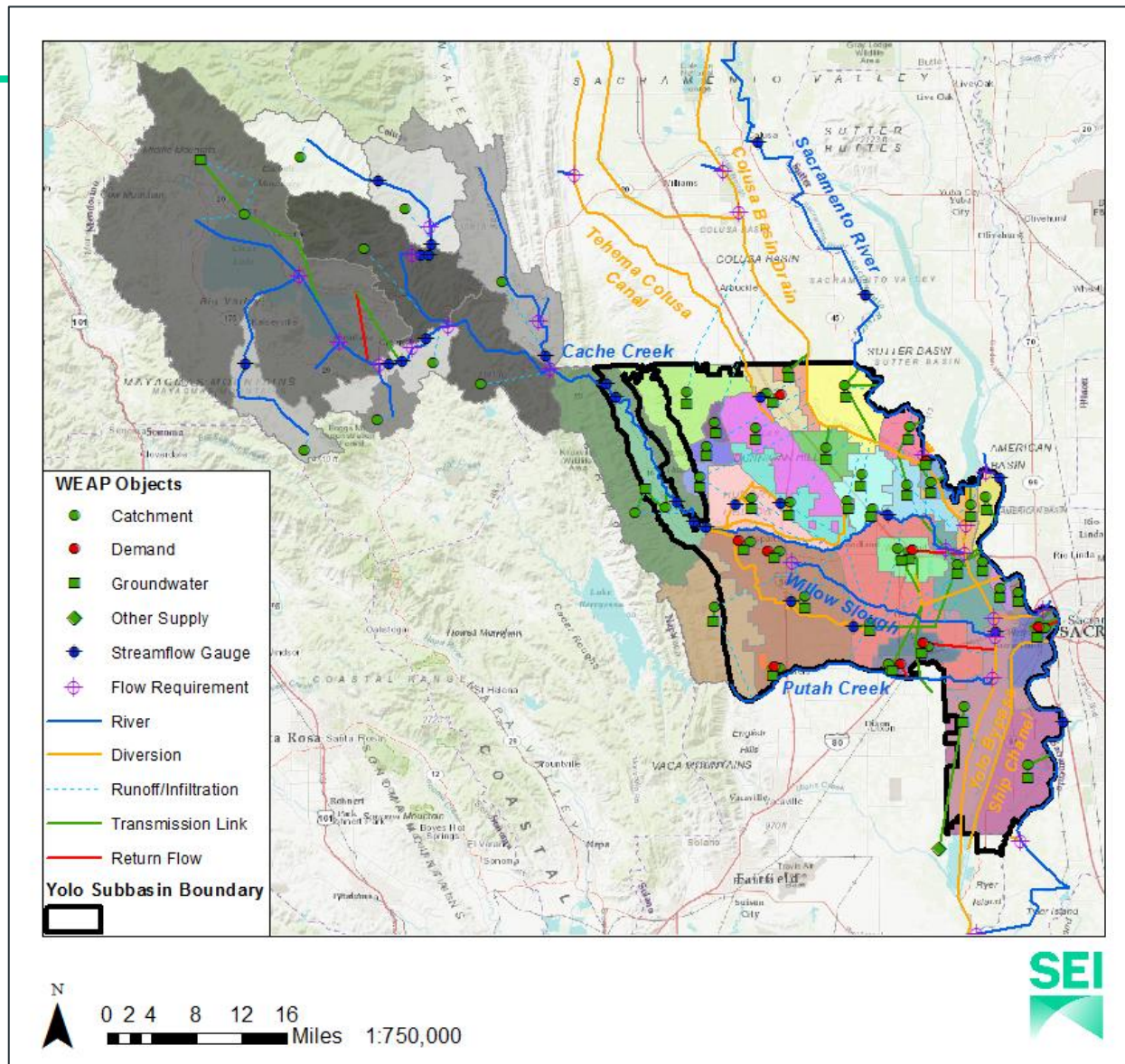


**Databases and Datasets:** eWRIMS Water Rights database, Settlement Contracts, Drinc Portal data, Additional data sets provided by entities, previously developed models

# Data Collection: Input data

Category	Variable	Historical		Future Projections	
		Sources	Model use	Sources	Model use
Climate	Precipitation	PRISM <sup>1</sup>	Input data	Historical, modified by Climate Change factors provided by DWR	Input data
	ETo	CIMIS <sup>2</sup>	Calibration	Historical, modified by Climate Change factors provided by DWR	Input data
	Minimum Temperature	PRISM <sup>1</sup>	Input data	NA	
	Maximum Temperature	PRISM <sup>1</sup>	Input data	NA	
	Wind speed	(Livneh et al., 2013); CIMIS <sup>2</sup>	Input data	NA	
	Humidity	PRISM <sup>1</sup>	Input data	NA	
Land Use	Agricultural land use	DWR Land Use Surveys <sup>3</sup> ; Yolo County Annual Agriculture Commissioner Reports; DWR SGMA Portal (LandIQ dataset)	Input data	Agricultural landuse kept constant to Current Year	Input data
	Non-agricultural land uses	DWR Land Use Surveys <sup>3</sup> ;	Input data	Growth projections from urban master plans <sup>6</sup>	Input data
Irrigation	Schedule	Sacramento-San Joaquin basin Study <sup>4</sup> (Reclamation, 2015)	Input data	Same as historical	Input data
	Crop coefficients	Sacramento-San Joaquin basin Study <sup>4</sup> (Reclamation, 2015)	Input data; Calibration	Same as historical	Input data
	Irrigation efficiency	NA	Calibration	Same as historical	Input data
	Applied Water	DWR Applied Water Estimates <sup>5</sup> , Groundwater management plans and personal communication <sup>6</sup>	Calibration	NA	
	Water sources and supply	SWRCB eWRIMS water rights database <sup>7</sup> , personal communication <sup>6</sup>	Input Data	Same as historical	Input Data
Urban	Water demand, including population	Urban water plans and personal communication <sup>6</sup> ; CA Department of Finance Population data <sup>8</sup>	Input data	Growth projections from urban master plans <sup>6</sup>	Input data
	Water sources and supply	Urban water plans and personal communication <sup>6</sup> ; SWRCB eWRIMS water rights database <sup>7</sup>	Input data (water rights)	Urban water plans <sup>6</sup>	Input data (water rights)
Hydrology	Stream flows	USGS <sup>9</sup> ; CDEC <sup>10</sup>	Calibration	NA	
	Stream flows	USGS <sup>9</sup> ; CDEC <sup>10</sup>	Input Data	Same as historical	
	Initial groundwater conditions	WRID <sup>11</sup> ; SGMA <sup>12</sup> ; IWFM model (Flores Arenas, 2016)	Input data	Historical model end-of simulation set as future model run initial conditions	Input data
	Groundwater boundary conditions	IWFM model (Flores Arenas, 2016)	Input data, calibration	NA	
	Groundwater elevations (time series)	WRID <sup>11</sup> ; SGMA <sup>12</sup> ; WDL <sup>13</sup> ;	Calibration, Model output	NA	
	Reservoir operations (storage levels, outflows)	CDEC <sup>10</sup> ; Conversations with and data supplied by YCFC <sup>6</sup>	Calibration, Model output	NA	
	In-stream flow requirements	CDEC <sup>10</sup> ; Conversations with and data supplied by YCFC <sup>6</sup>	Input data	Same as historical	Input data

# YSGA Model Overview



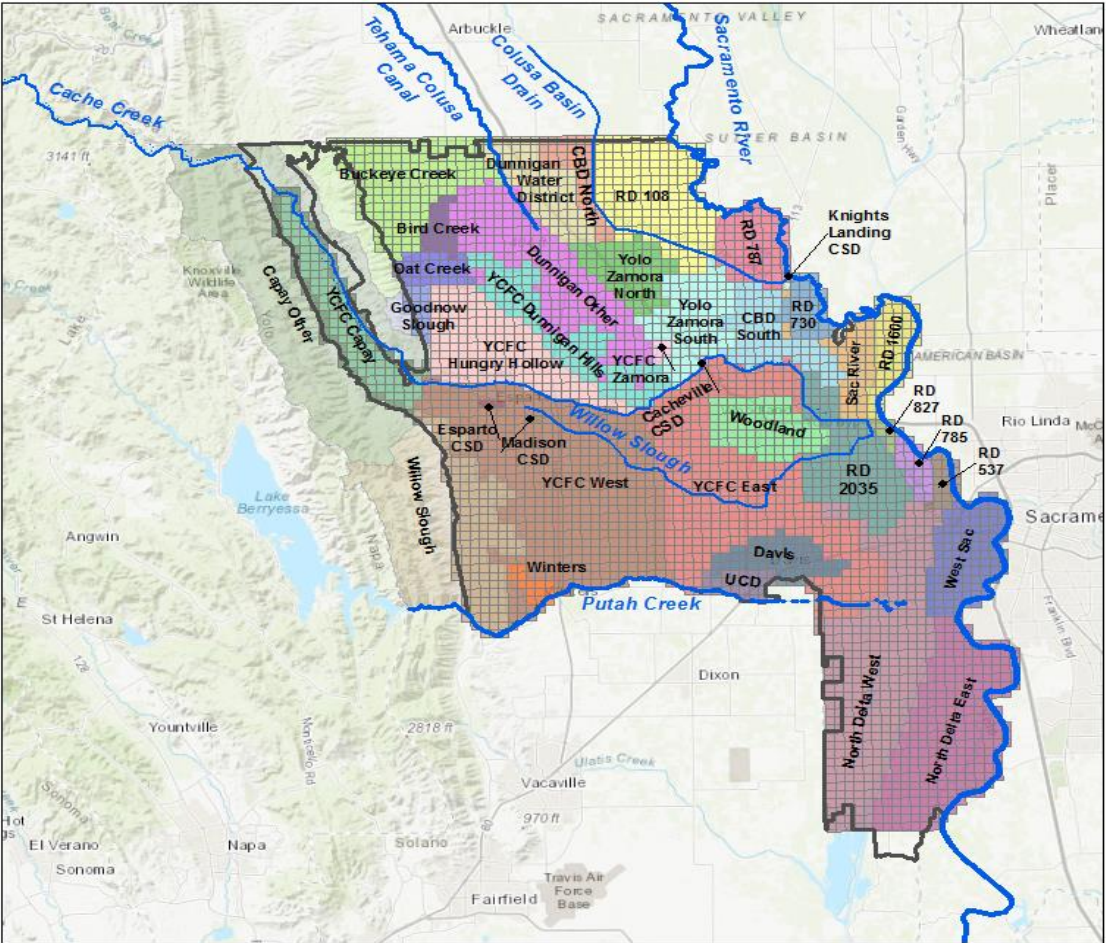
- Includes entire Cache Creek hydrology and reservoir operations
- Valley floor divided into 38 catchments that represent all entities
- Valley floor groundwater coupled to a MODFLOW model

# YSGA Model Overview

Water Year	Water Year Index	Water Year Type	Water Year	Water Year Index	Water Year Type
1971	10.37	W	1995	12.89	W
1972	7.29	BN	1996	10.26	W
1973	8.58	AN	1997	10.82	W
1974	12.99	W	1998	13.31	W
1975	9.35	W	1999	9.80	W
1976	5.29	C	2000	8.94	AN
1977	3.11	C	2001	5.76	D
1978	8.65	AN	2002	6.35	D
1979	6.67	BN	2003	8.21	AN
1980	9.04	AN	2004	7.51	BN
1981	6.21	D	2005	8.49	AN
1982	12.76	W	2006	13.2	W
1983	15.29	W	2007	6.19	D
1984	10.00	W	2008	5.16	C
1985	6.47	D	2009	5.78	D
1986	9.96	W	2010	7.08	BN
1987	5.86	D	2011	10.54	W
1988	4.65	C	2012	6.89	BN
1989	6.13	D	2013	5.83	D
1990	4.81	C	2014	4.07	C
1991	4.21	C	2015	4.00	C
1992	4.06	C	2016	6.71	BN
1993	8.54	AN	2017	14.14	W
1994	5.02	C	2018	7.14	BN

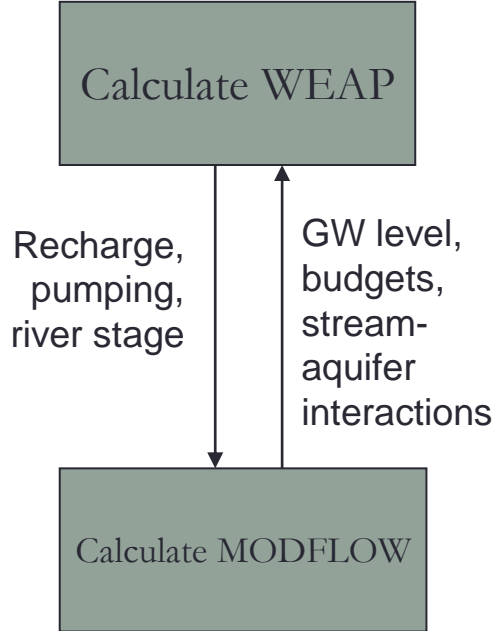
- WY 1971 – WY 2018
- Monthly Timestep
- Covers a large spread of water year types

# YSGA Model Overview



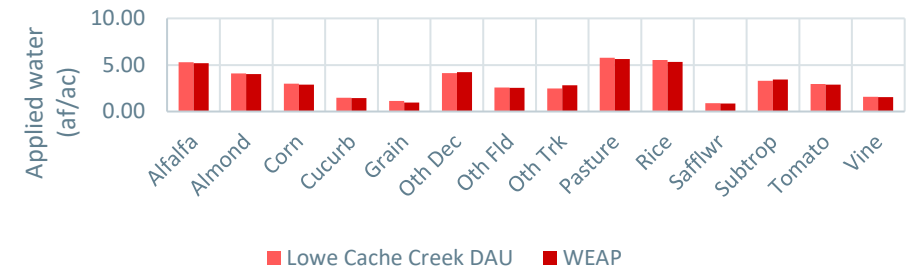
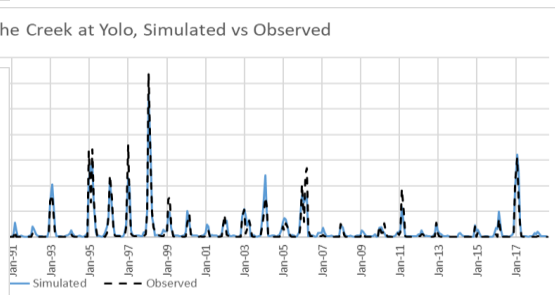
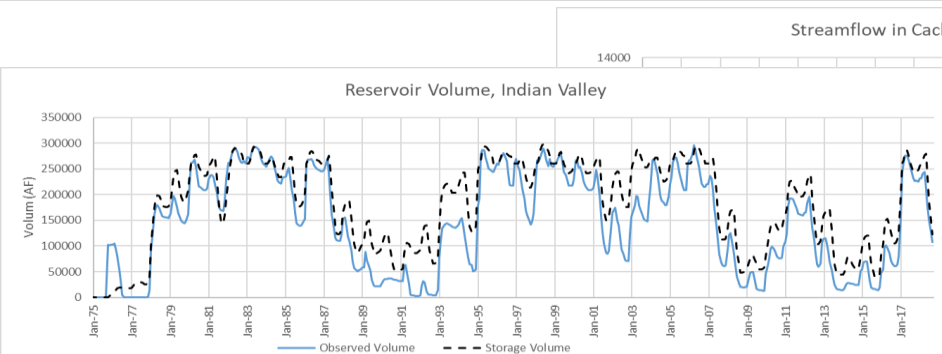
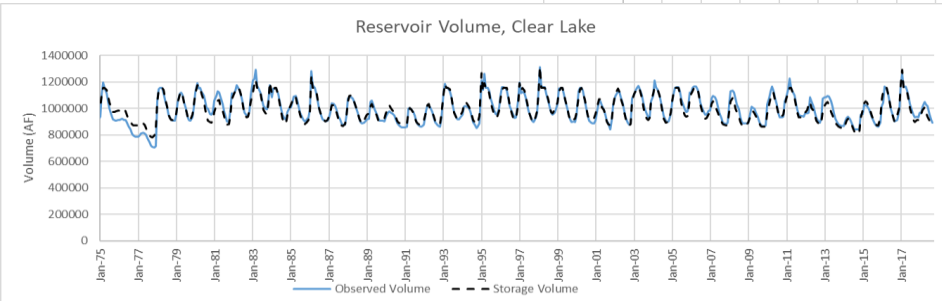
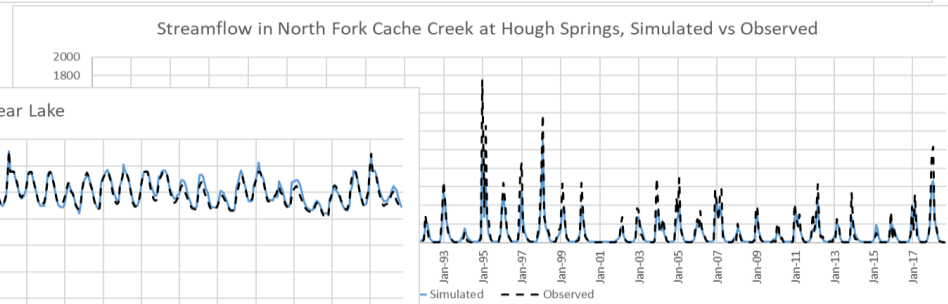
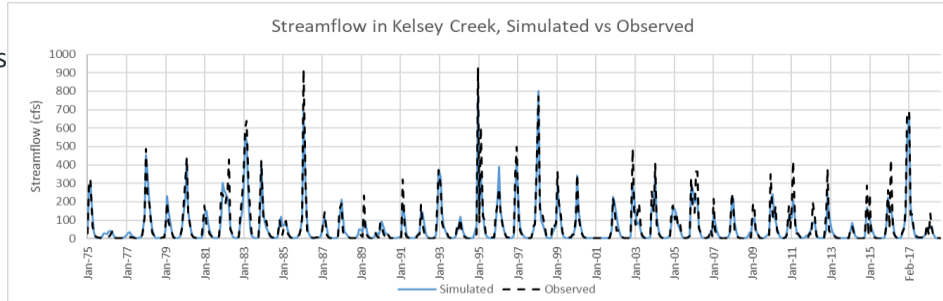
- MODFLOW model divides valley floor into 6800 cells, each half mile across

For each stress period

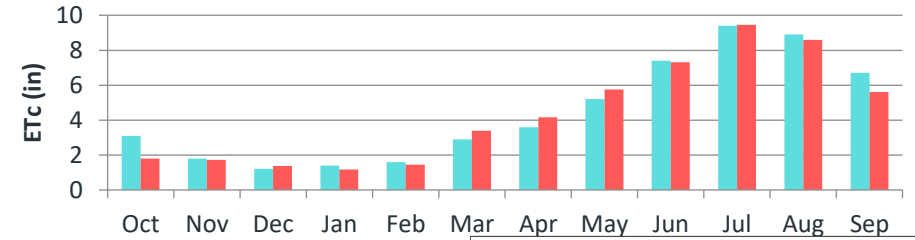


# YSGA Model Calibration

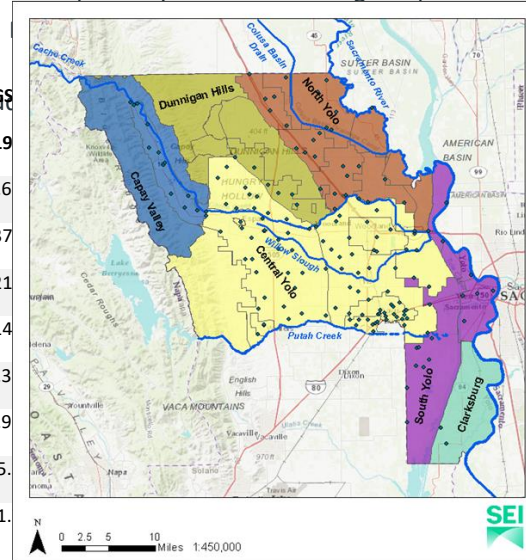
- Upper watershed
  - Rainfall runoff
  - Reservoir operations
- Lower watershed
  - Crop ET
  - Irrigation management
- Groundwater
  - Groundwater heads
  - Stream seepage



## Almond



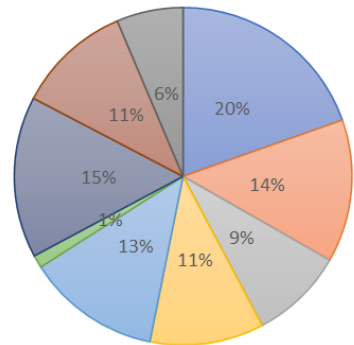
Stream Reach	Simulated Value (1971-2000)	Basin Storage
Upper Cache Creek	7.9	2.6
Lower Cache Creek	-34.9	-37
Putah Creek	-13.9	-21
Willow Slough	0.0	-14
Colusa Basin Drain	0.0	1.3
Knights Landing Ridge Cut	1.6	4.9
Sacramento River	-1.0	15.0
Yolo Bypass	33.0	41.0



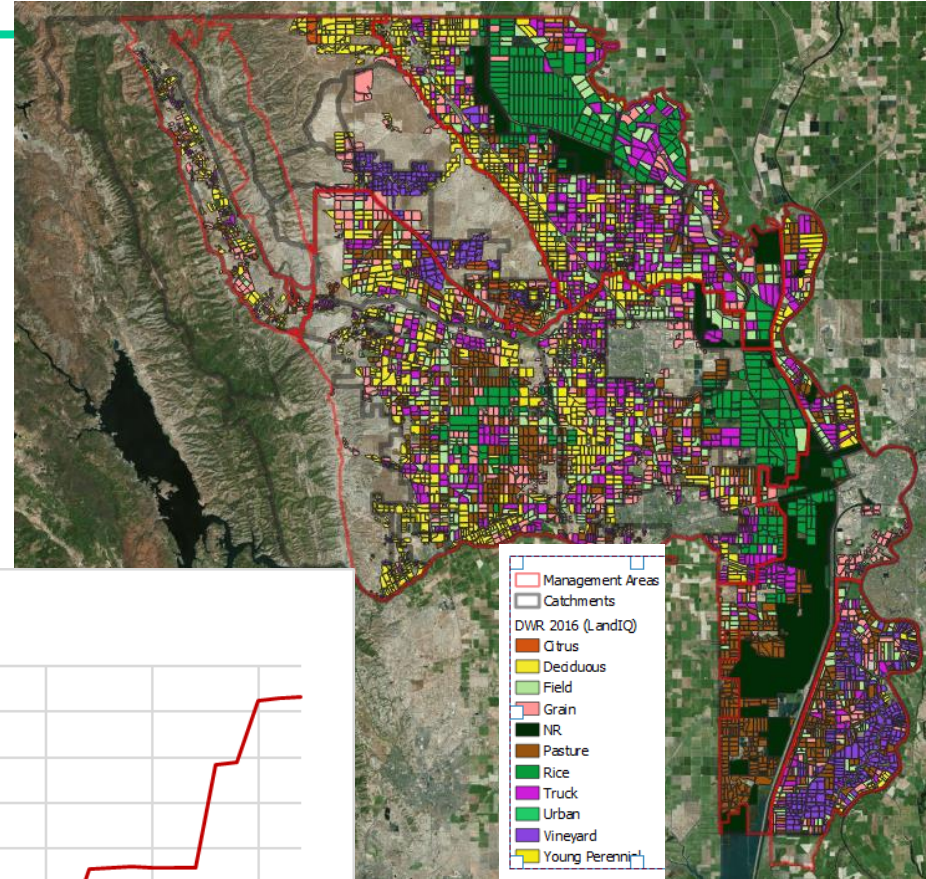
# Historical Water Budgets

# Part 2: Historical budgets

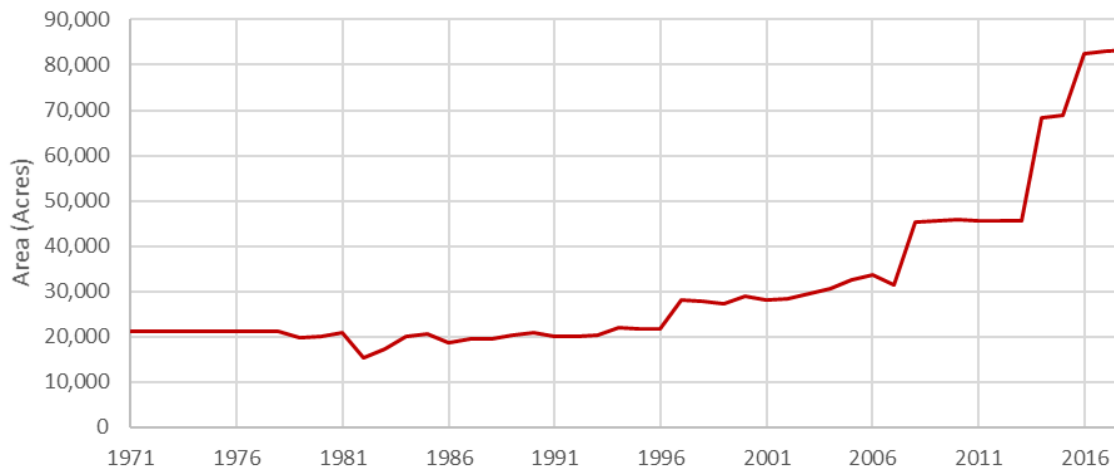
Recent Landuse Distribution



■ Deciduous ■ Field Crops ■ Grain  
■ Pasture ■ Rice ■ Subtropical  
■ Truck Crops ■ Urban ■ Vine

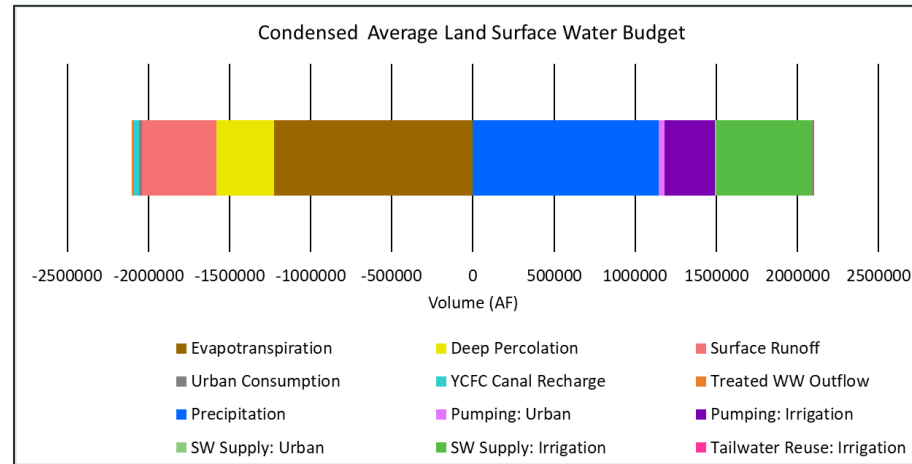


Total Perennial Acreage



Data sources: DWR, Yolo County Annual Crop Reports

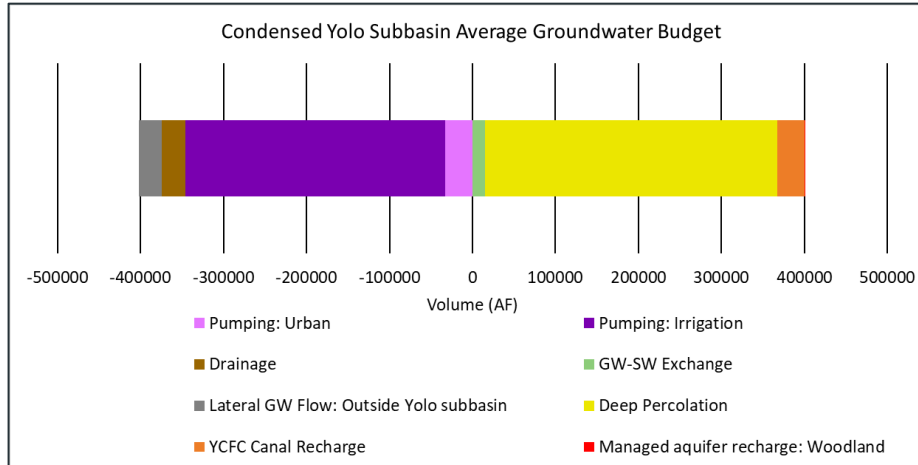
# Land surface water budget (LSWB)



Historical Average Annual Land Surface Water Budget (TAF)														
	Outflows							Inflows						
	Evapotranspiration	Deep Percolation	Surface Runoff	Urban Consumption	YFCF Canal Recharge	Treated WW Outflow	Total Outflows	Precipitation	Pumping: Urban	Pumping: Irrigation	SW Supply: Urban	SW Supply: Irrigation	Tailwater Reuse: Irrigation	Total Inflows
Entire Basin														
Historical	-1,227	-353	459	-18	-33	-13	-2,102	1,147	33	313	9	591	10	2,102

Note: these figures may be from a slightly older version of the model

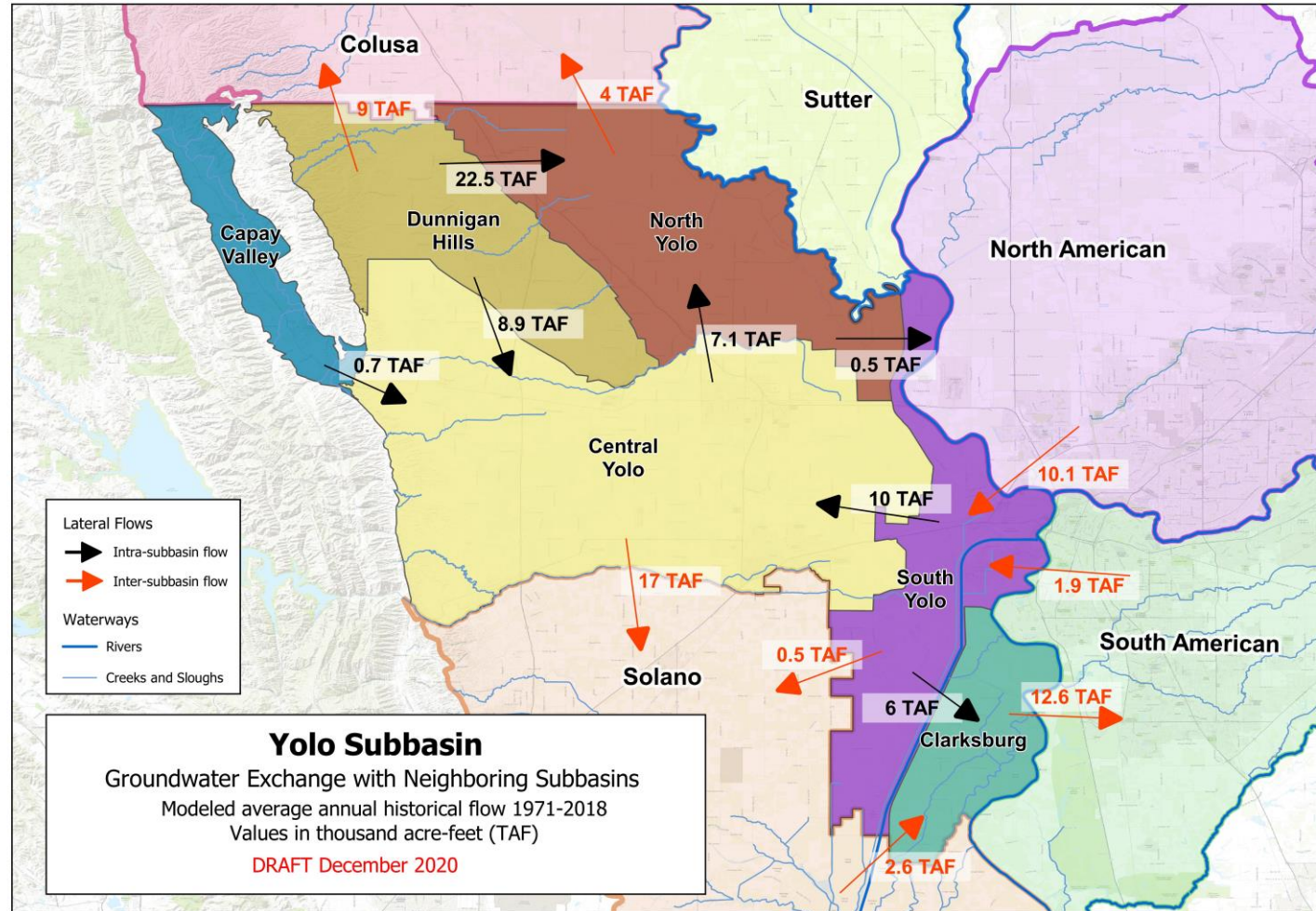
# Basin Groundwater Budget



Historical Average Annual Groundwater Budget (TAF)												
	Outflows				Varying Flows				Inflows			
	Pumping: Urban	Pumping: Irrigation	Drainage	Total Outflows	GW-SW Exchange	Lateral GW Flow: Outside	Lateral GW Flow	Total Varying Flows	Deep Percolation	YCFC Canal Recharge	Managed aquifer	Total Inflows
Entire Basin												
Historical	-33	-313	-28	374	15	-28	0.0	-13	353	33	0.04	386
				-								

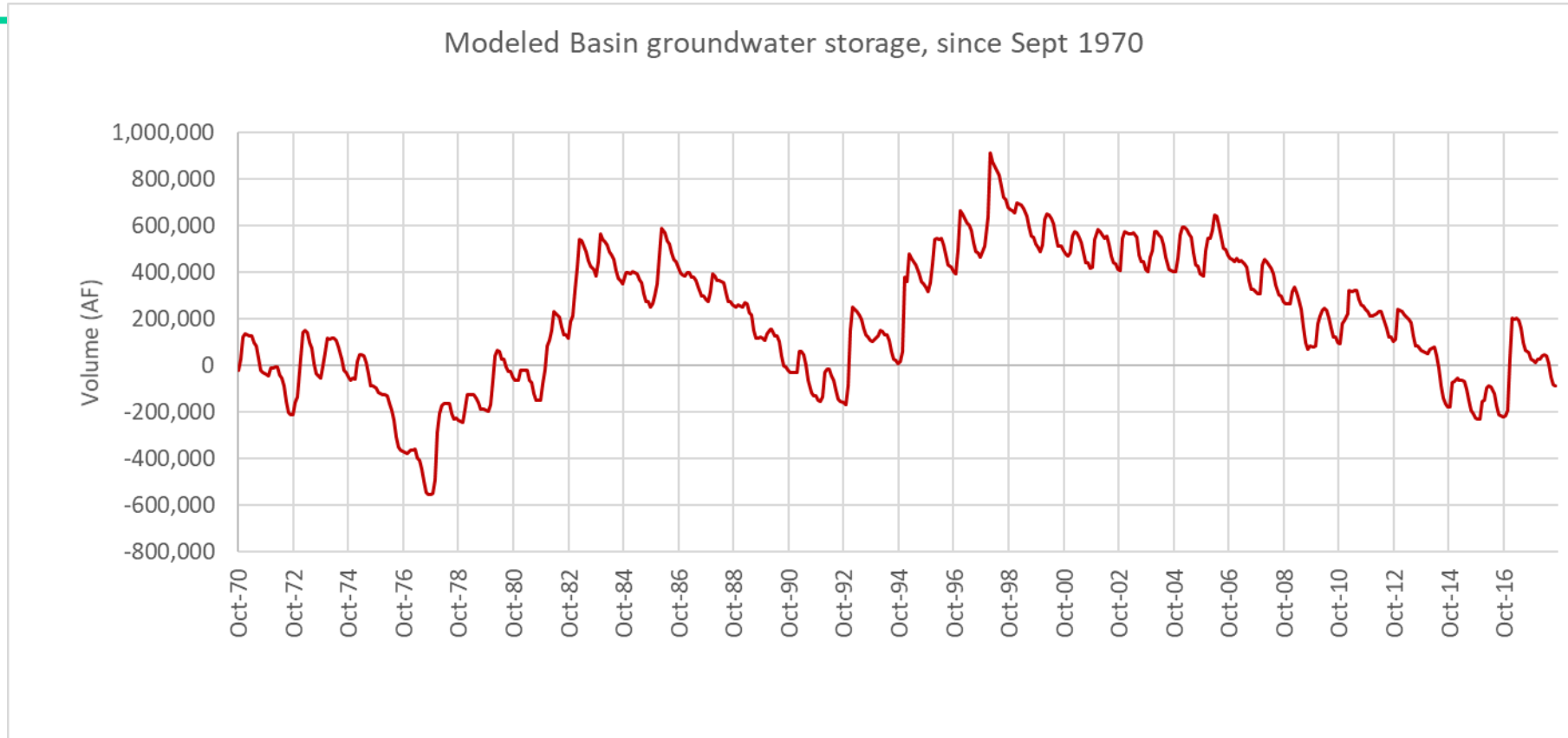
Note: these figures may be from a slightly older version of the model

# Lateral flows



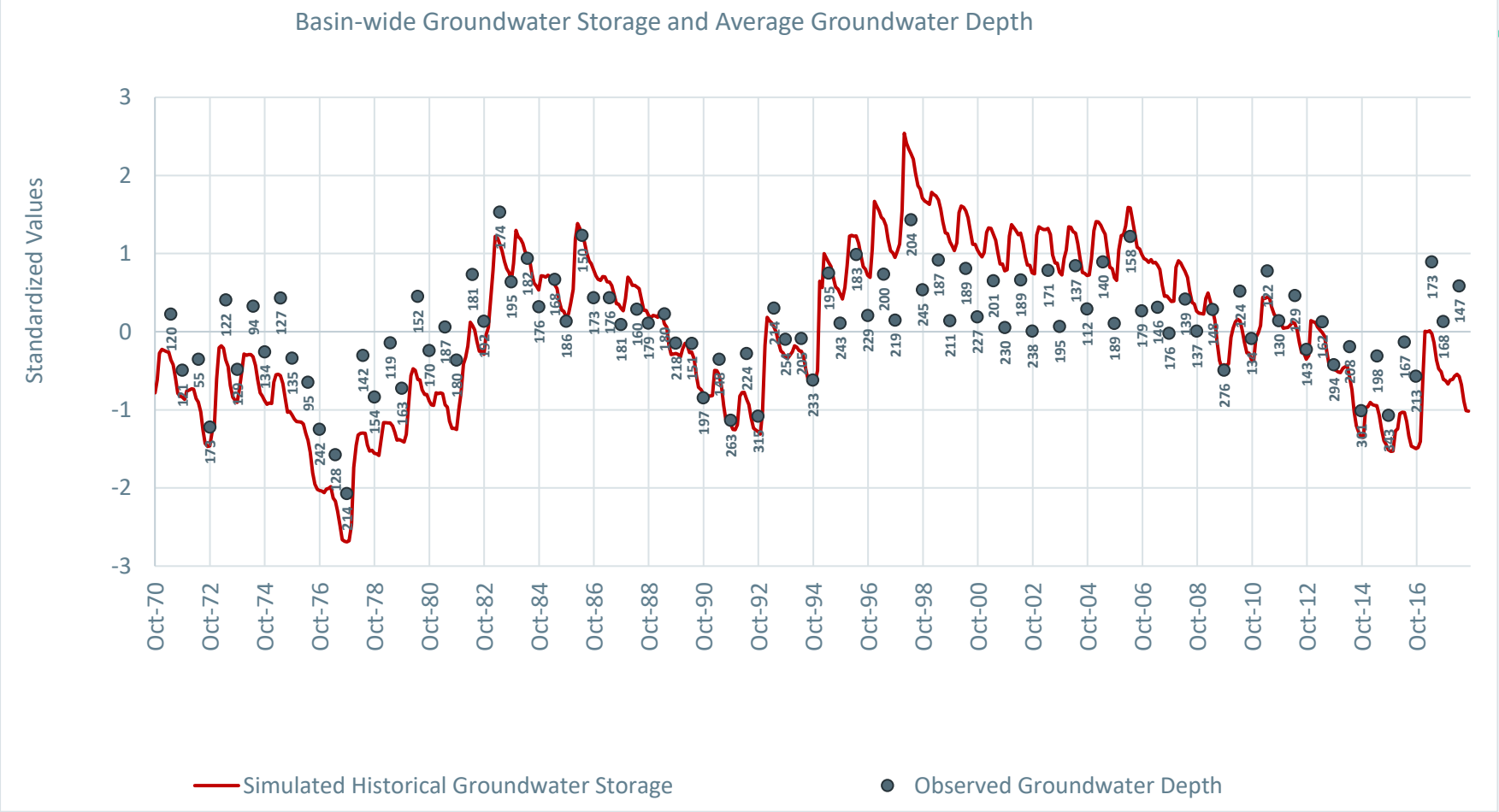
Note: these figures may be from a slightly older version of the model

# Yolo Subbasin simulated groundwater storage: Historical



Note: these figures may be from a slightly older version of the model

# Yolo Subbasin simulated groundwater storage: Historical



Note: these figures may be from a slightly older version of the model

# Messages: Basin scale, historical period

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- For the past nearly 50 years, there is no evidence of overdraft
- At the end of the simulation in the historical period, modeled Basin groundwater storage is lower than the initial level by 86 TAF.
- This value is less than 6% of overall range in fluctuation (-553 TAF to +913 TAF) modeled over the 48-year historical period
- Despite the dominant shift in land use from annual to perennial crops over this historical period, the groundwater storage trace implies that the climate signal has dominated over this historical period – at the scale of the Basin.

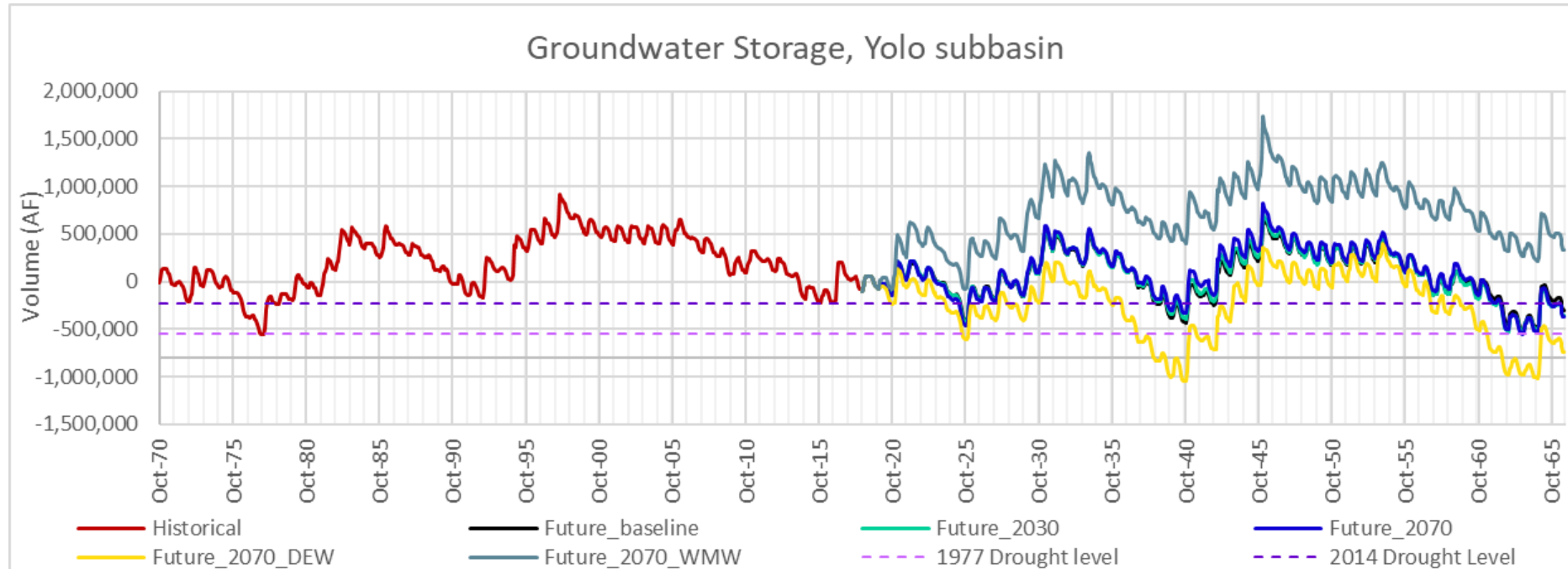
# Part 3 Future Scenarios

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- Historical climate repeating
- Climate projections (4)
- Each scenario includes
  - Urban demand projections
  - Constant recent cropping pattern

Scenario name	Summary
Future Baseline	Historical 1971-2018 climate repeats
Future_2030	Climate representing the central tendency from many downscaled climate models, centered around 2030
Future_2070	Climate representing the central tendency from many downscaled climate models, centered around 2070
Future_2070_DEW	Climate representing dry-extreme warming from many downscaled climate models, centered around 2070
Future_2070_WMW	Climate representing wetter-moderate warming from many downscaled climate models, centered around 2070

# Future scenarios: GW Storage



Note: these figures may be from a slightly older version of the model

# Next Steps for the Yolo model

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- Engagement in annual updates and 5 year revisions with the Yolo Subbasin Groundwater Agency (YSGA)
  - And improvements thereof, e.g.
    - Creating a landuse change scenarios
    - Updating the model to current year
    - ...

# Challenges

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- Certain areas lacking hydrogeological and groundwater level data
  - E.g. Northern (Bird Creek); Dunnigan Hills; Westernmost parts
- Surface water supply in some parts not well known (southern parts of Colusa Basin Drain)
- Urban pumping is known and recorded – Ag pumping is not, so model has to estimate. This adds considerable uncertainty to any modeling effort
- Water and land management in Yolo bypass not well understood
- Managed wetlands represented better in some areas than others
- General lack of knowledge on Groundwater Dependent Ecosystems (GDE's) and GW-SW interactions from a field perspective
- Lack of a robust Land-use database spanning 50 years

# Next Steps with Westside IRWM: Discussion

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## Prompts from SEI

- Extending to Westside IRWM Region
- Forecasting
- Online Scenario Explorers - WEAP in the Cloud
- Helping improve the Yolo model with your knowledge

## EMERGENCY PROJECT INFORMATION FORM

**Please complete a unique Project Information Form for each project for which funding is requested. There are no character limits on specific questions but the Project Information Form as a whole may not exceed 7 pages.**

1. Project Name: Click or tap here to enter text.
2. Local Project Sponsor: Click or tap here to enter text.
3. Date of Local Emergency Declaration: Click or tap here to enter text.
4. Local Agency Declaring Emergency: Click or tap here to enter text.
5. Type of Emergency: Click or tap here to enter text.
6. Please provide the latitude and longitude of the project site. For linear projects or those covering a large area, report the coordinates for a central point. If this information is confidential, it must be clearly labeled "confidential." You can find the latitude and longitude easily using google maps. You can find instructions at the following link:  
<https://support.google.com/maps/answer/18539?hl=en&co=GENIE.Platform%3DDesktop>  
Latitude: Click or tap here to enter text.      Longitude: Click or tap here to enter text.
7. Please briefly describe the proposed project: Click or tap here to enter text.
8. Please describe how this project is addressing the emergency to alleviate impacts to people, wildlife, and ecosystems. Click or tap here to enter text.
9. Each project must meet one of the following purposes as it relates to locally declared emergencies. Please select the appropriate purpose for your project.
  - a.  Address immediate impacts on human health and safety, including providing or improving availability of food, water, or shelter.
  - b.  Address immediate impacts on fish and wildlife resources.
  - c.  Provide water to persons or communities that lose or are threatened with the loss or contamination of water supplies.
10. Each project must respond to a current and active local emergency declaration and align with the goals and objectives of the Westside Sacramento Integrated Regional Water Management Plan. You can find the plan [here](#): (note: link is not live; this is a PDF of a Word form.)

Please identify the IRWM objective(s) your project addresses: Click or tap here to enter text.  
Please describe how your project addresses the objective(s): Click or tap here to enter text.



11. Describe the Primary Benefit of the project: Click or tap here to enter text.
12. Describe the Secondary Benefit of the project:  
Click or tap here to enter text.
13. Please briefly describe how the project will achieve the claimed benefits: Click or tap here to enter text.
14. In which county or counties is the project located? Click or tap here to enter text.
15. In which Westside IRWM planning area is the project located? You can access the plan [here](#): (note: link not live; this is a PDF of a Word form.)  
Click or tap here to enter text.
16. Briefly describe how the community/area benefiting from this project is being impacted by the current emergency: Click or tap here to enter text.
17. Describe how this project will alleviate the impacts described in your answer to Question 14: Click or tap here to enter text.
18. Please complete the following budget table for the project. (Identify any additional funding sources in Question 19)

	<b>BUDGET CATEGORY</b>	<b>Grant Amount</b>	<b>All Other Cost</b>	<b>Total Cost</b>
<b>(a)</b>	Project Administration			
<b>(b)</b>	Land Purchase / Easement			
<b>(c)</b>	Planning / Design / Engineering / Environmental Documentation			
<b>(d)</b>	Construction / Implementation			
	<b>TOTAL COSTS</b>			

19. Please describe why WS IRWM funding is needed for this project: Click or tap here to enter text.
20. If WS IRWM funding is not secured, describe what will happen with the project: Click or tap here to enter text.
21. Will the applicant provide cost share (encouraged but not required) and/or will this project require any additional funding from sources other than this solicitation? If so, please describe the funding source and indicate if the funding has been secured. If the funding has not been



secured, please describe the plan to secure the necessary funding. [Click or tap here to enter text.](#)

22. Is land acquisition or landowner permission required for this project? Yes  No

If yes, please briefly describe the status of the acquisition or agreement with the landowner. If the acquisition is not complete or permission not secured at the time of application, please describe the plan to complete it. [Click or tap here to enter text.](#)

23. Has planning and design for this project been completed? Yes  No

If no, please describe the status of planning and design: [Click or tap here to enter text.](#)

24. Are the CEQA / NEPA and permitting processes for this project complete? Yes  No

If not, please briefly describe the permits and CEQA (or NEPA) documents to be completed and projected schedule for completion: [Click or tap here to enter text.](#)

25. Please briefly describe the necessary construction/implementation for this project: [Click or tap here to enter text.](#)

26. Please complete the schedule below for the project. Projects must be complete by within eighteen months of the disaster declaration. Project administration should end at least three months after construction.

	Categories	Start Date	End Date
(a)	Project Administration		
(b)	Land Purchase / Easement		
(c)	Planning/ Design / Engineering / Environmental Documentation		
(d)	Construction/ Implementation		