



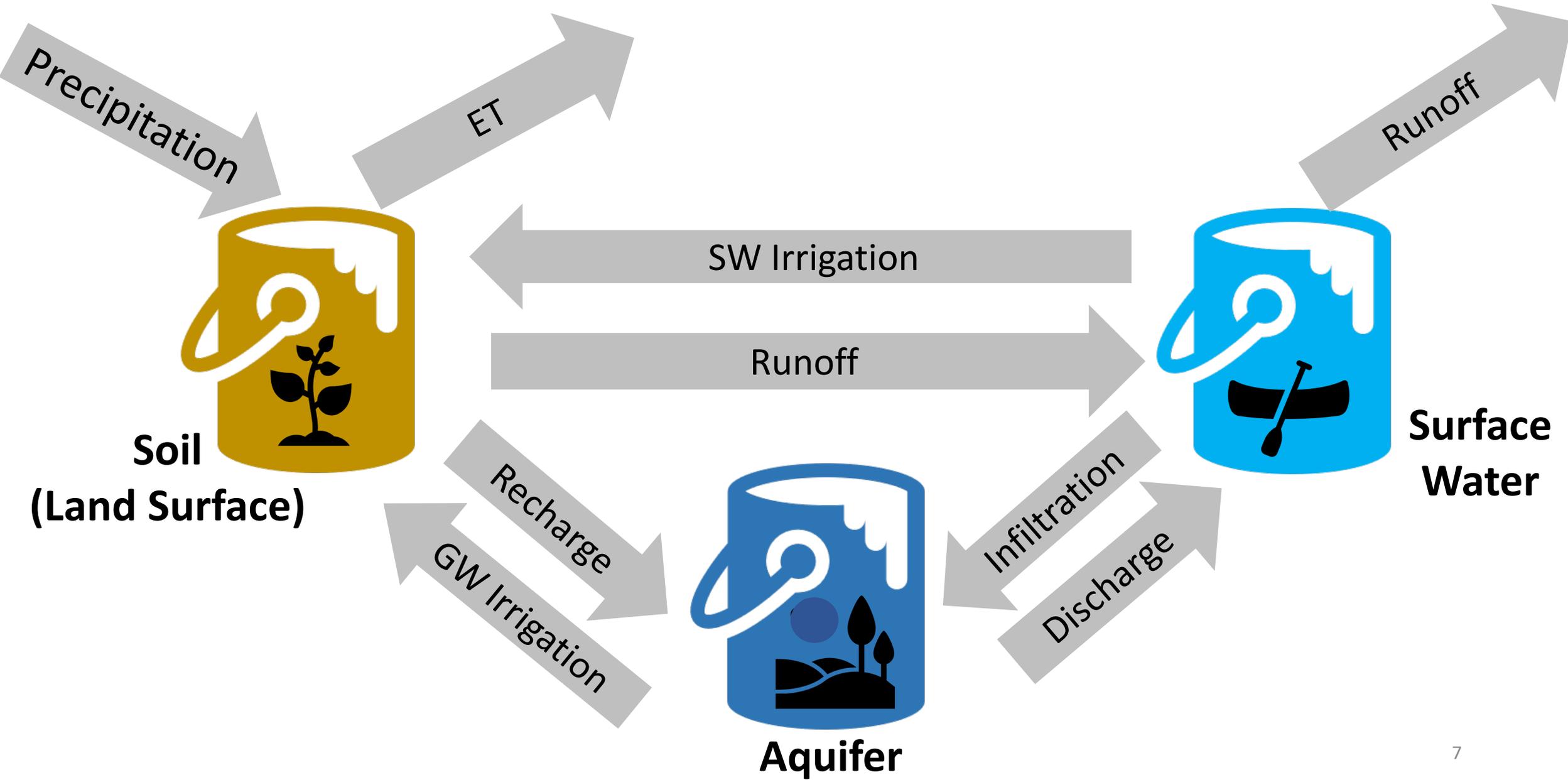
**Sierra Valley
Groundwater
Management District**

Board of Directors Meeting

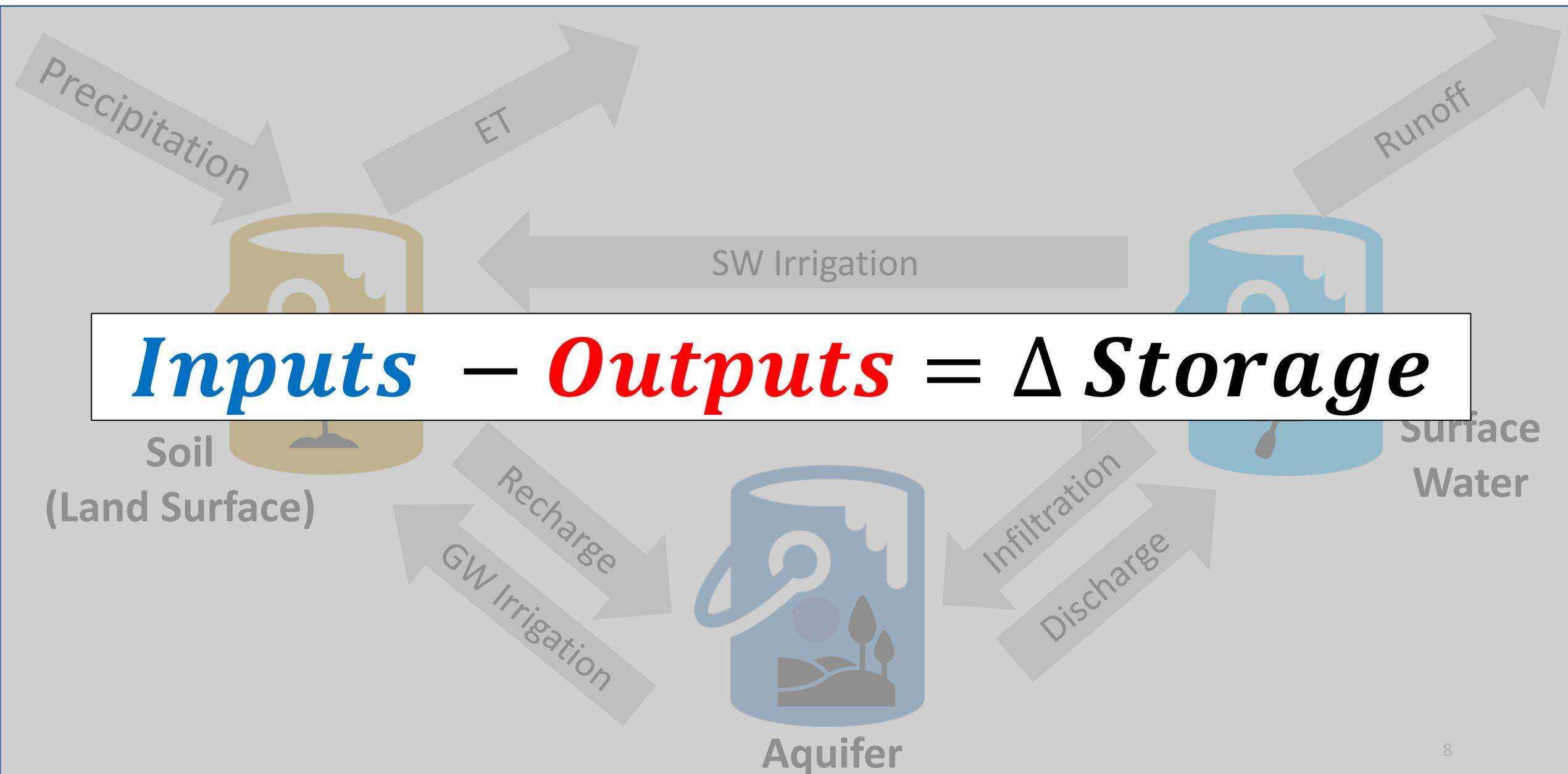
April 19, 2021



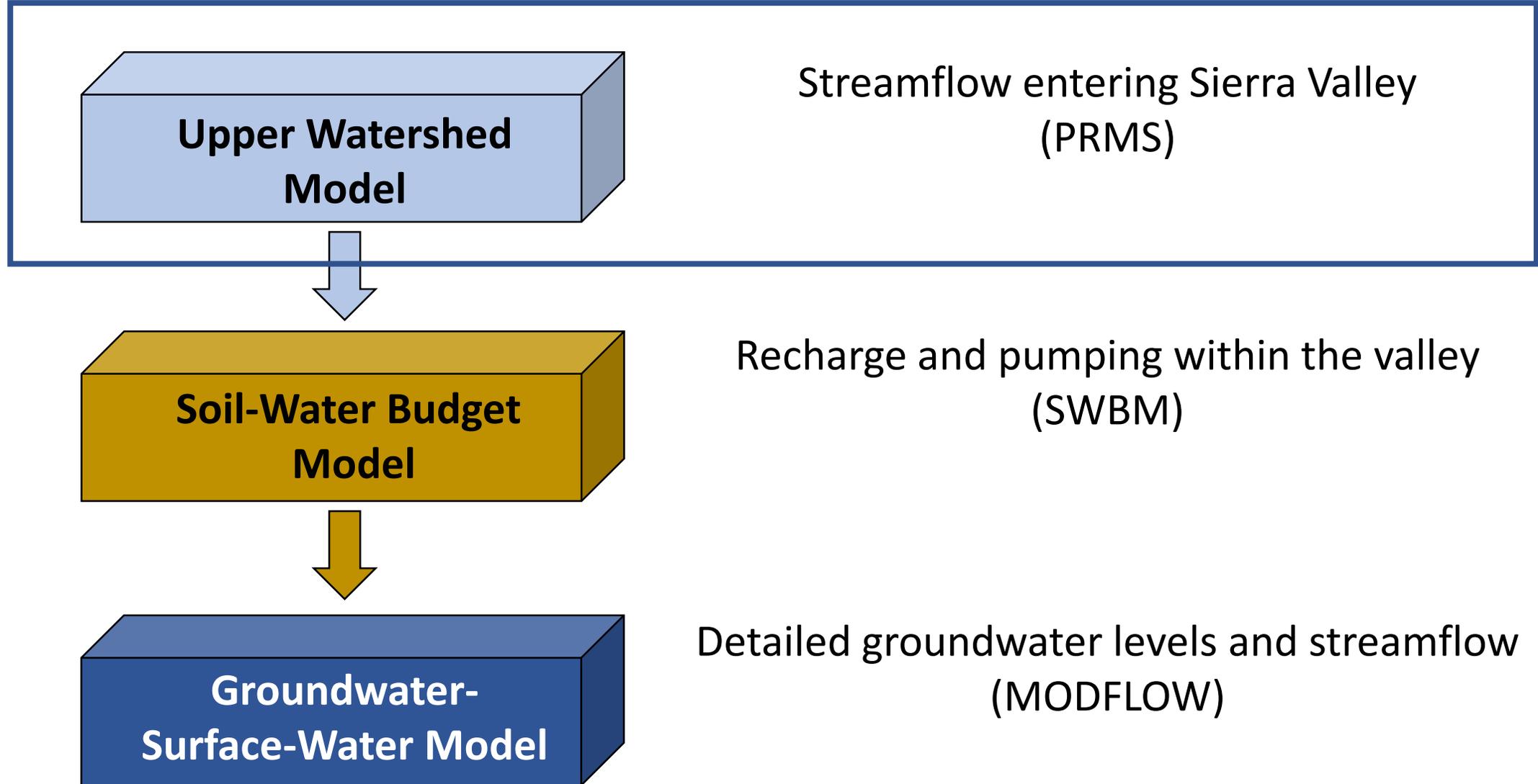
Water Budget: Three Subsystem Approach

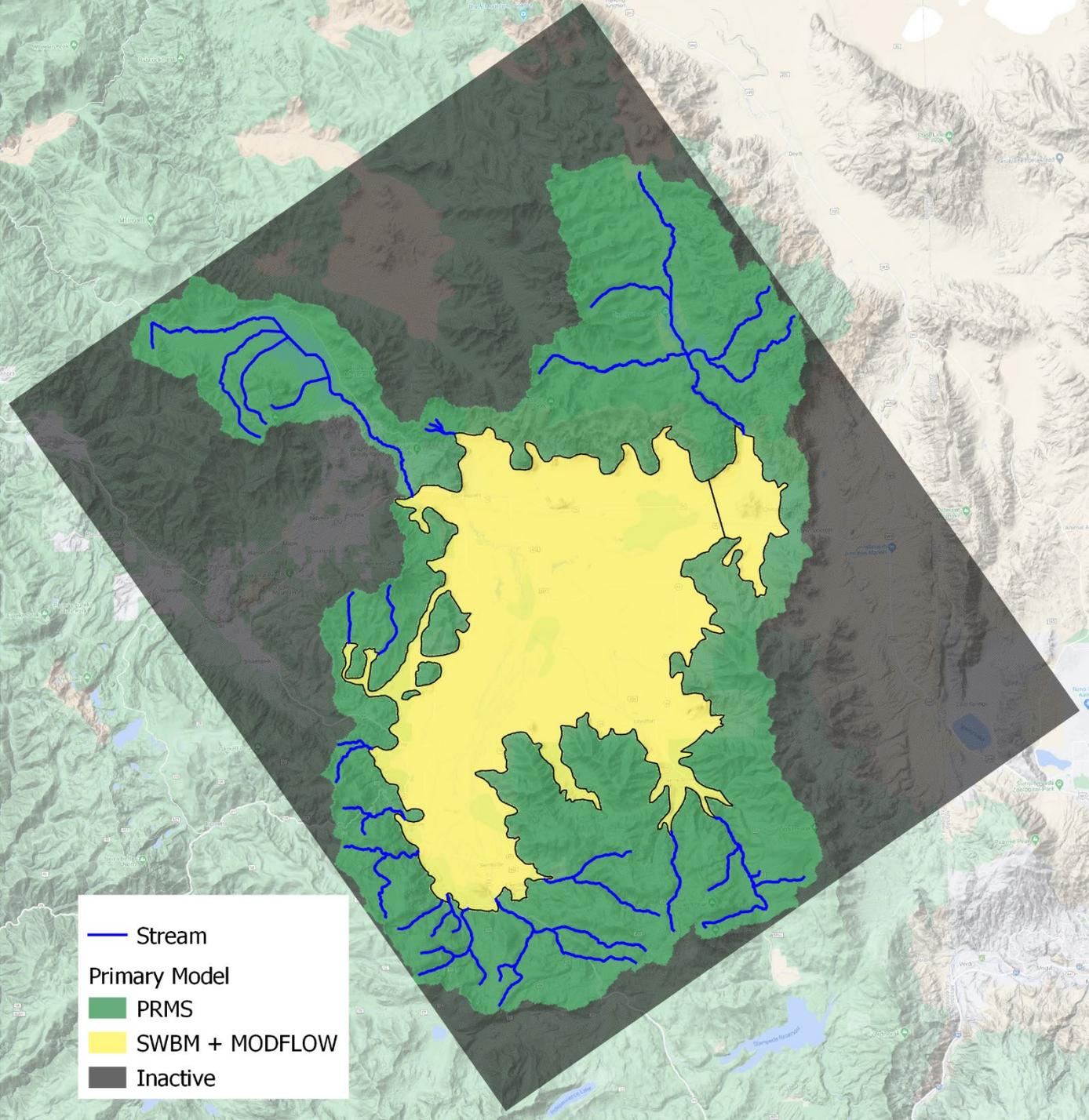


Water Budget: Three Subsystem Approach



The Sierra Valley Integrated Hydrologic Model is the combination of three different models.



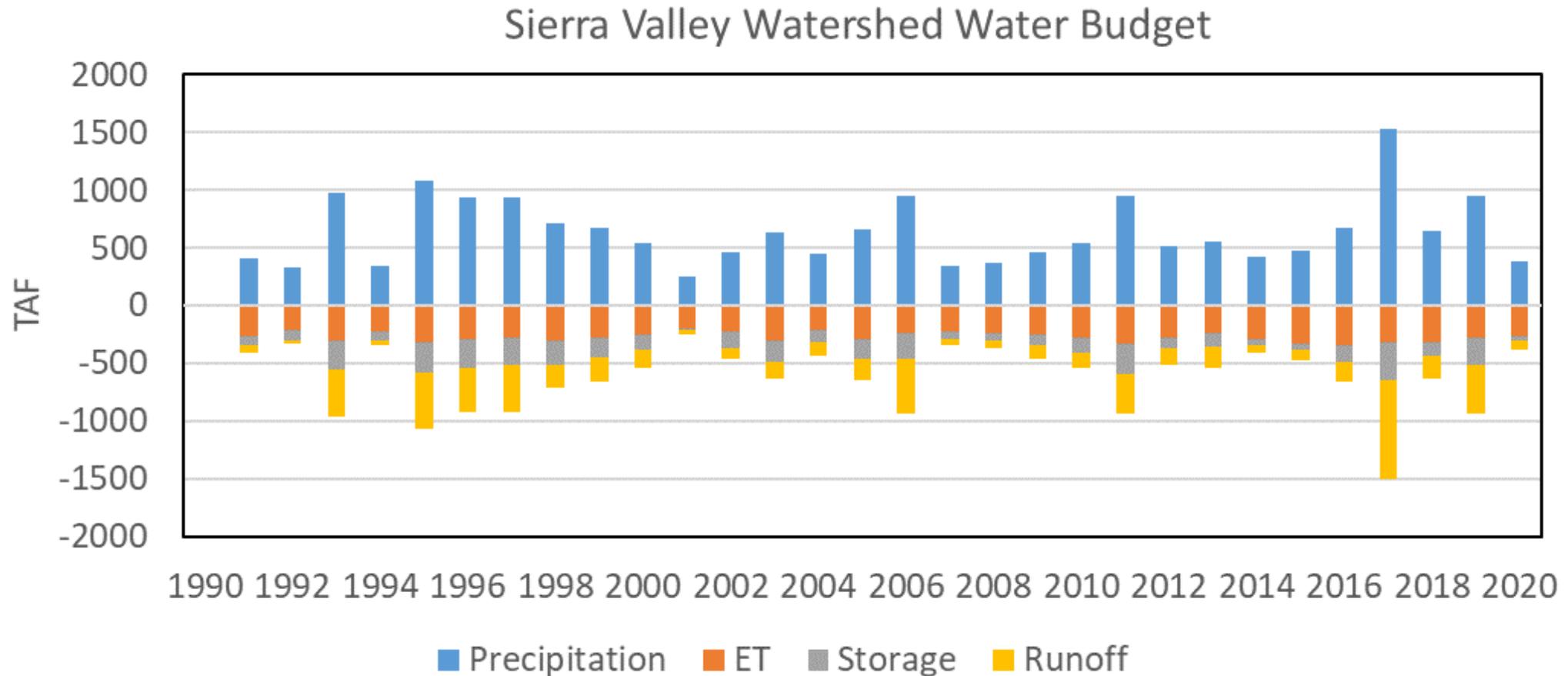


PRMS Goals:

1) Stream Inflows to the Valley Floor

2) Insights into Mountain Front Recharge (MFR)

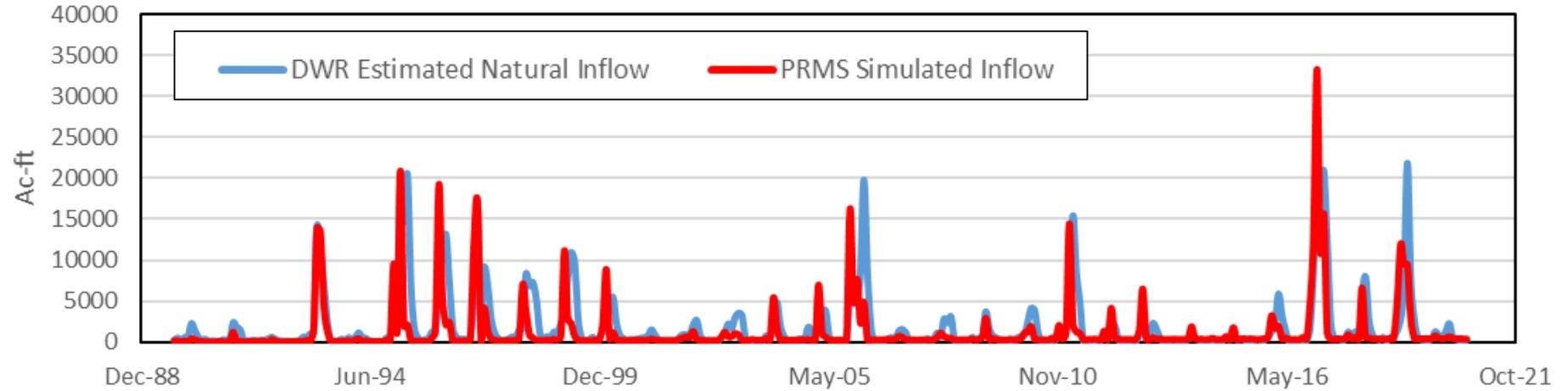
PRMS Water Budget



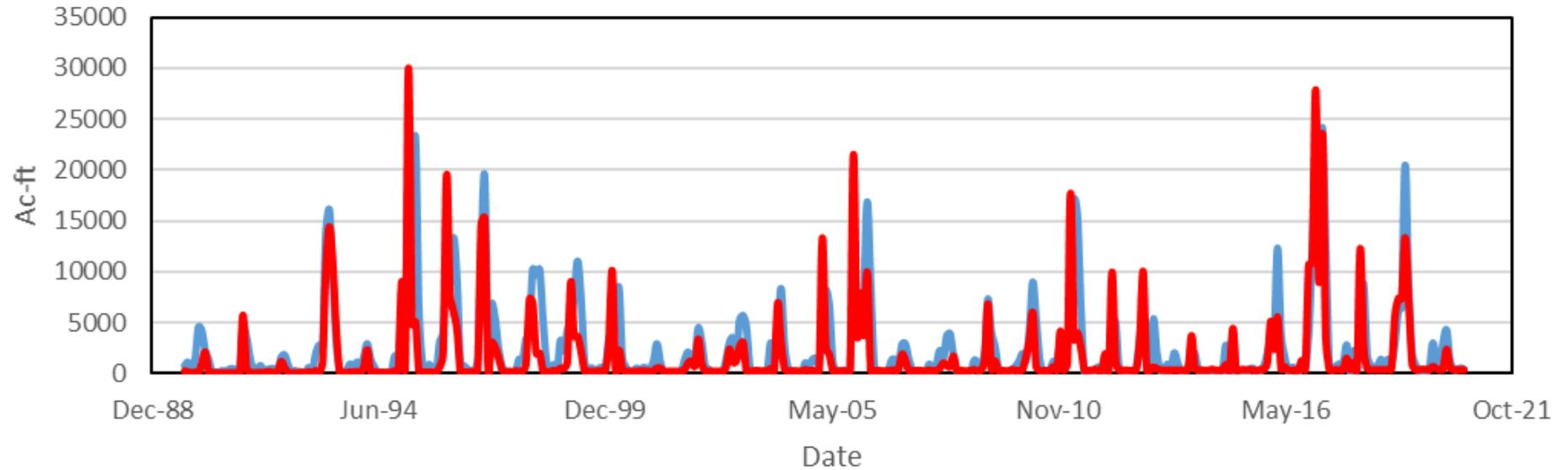
**PRELIMINARY DRAFT
SUBJECT TO REVISION**

Model Simulations of Runoff

**Frenchman
Lake**

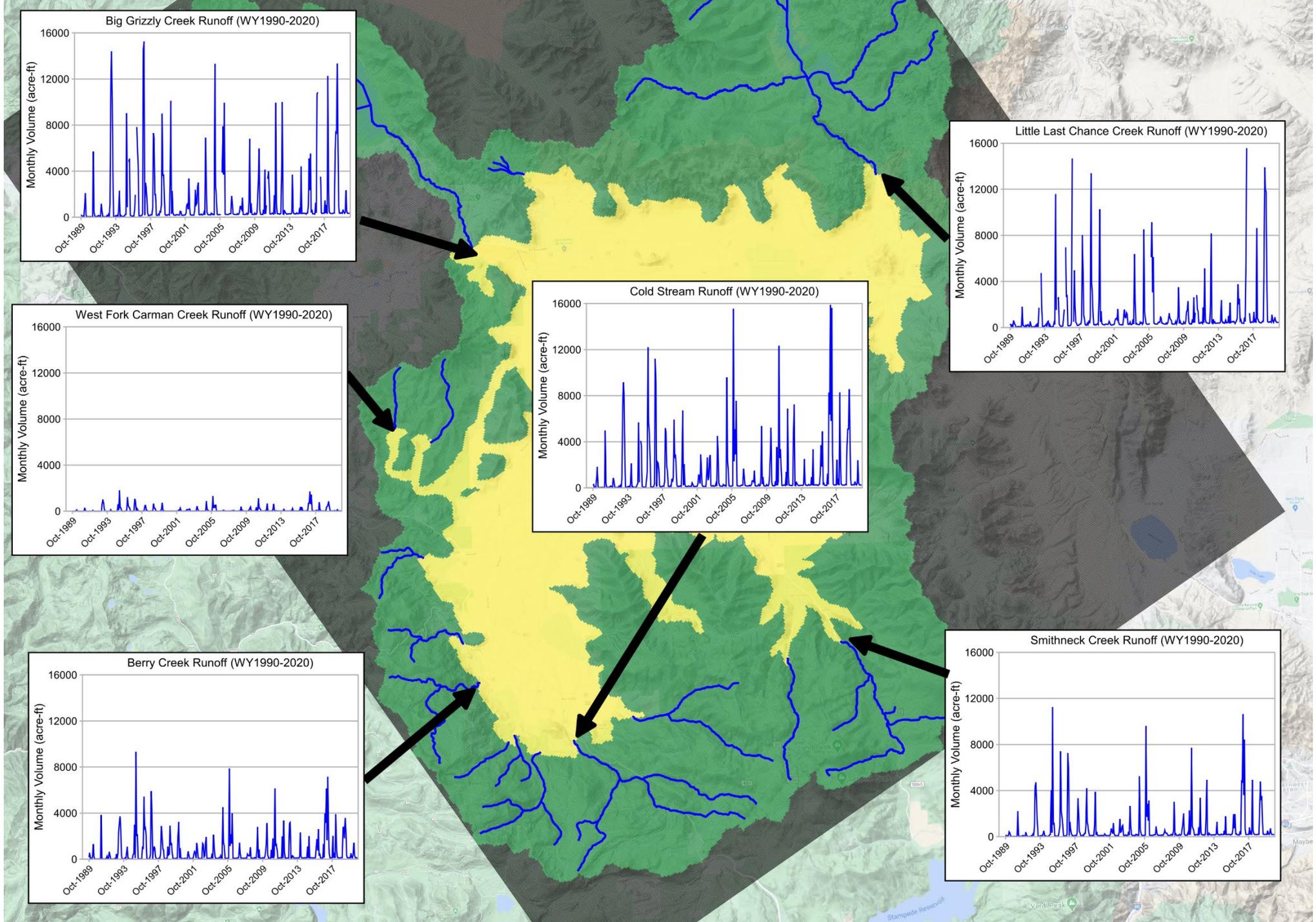
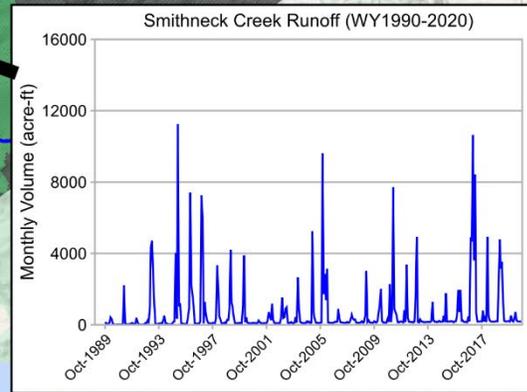
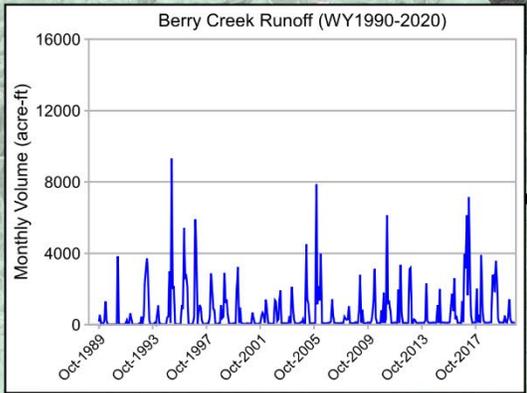
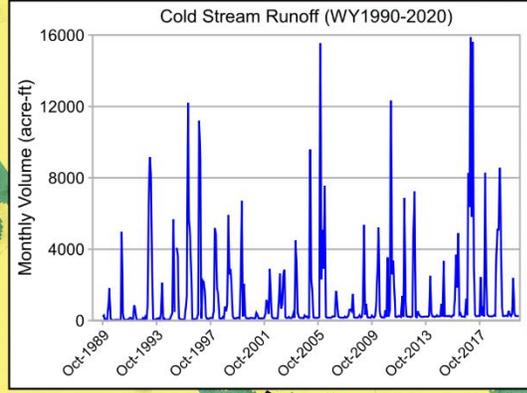
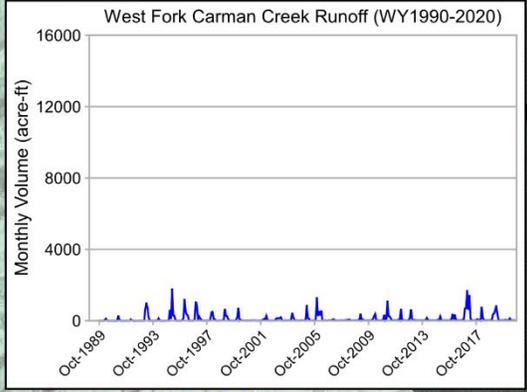
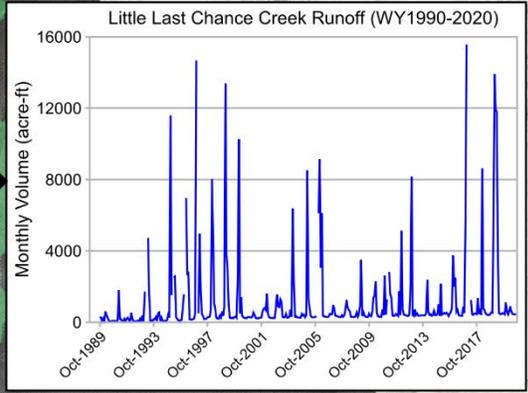
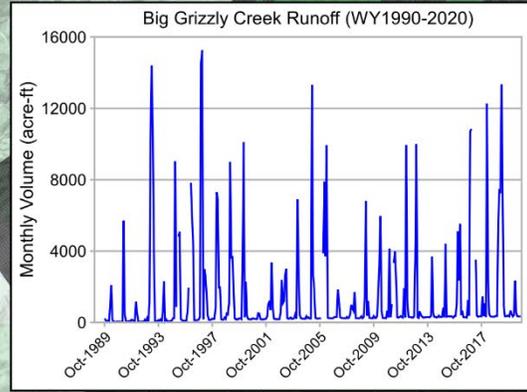


**Lake
Davis**

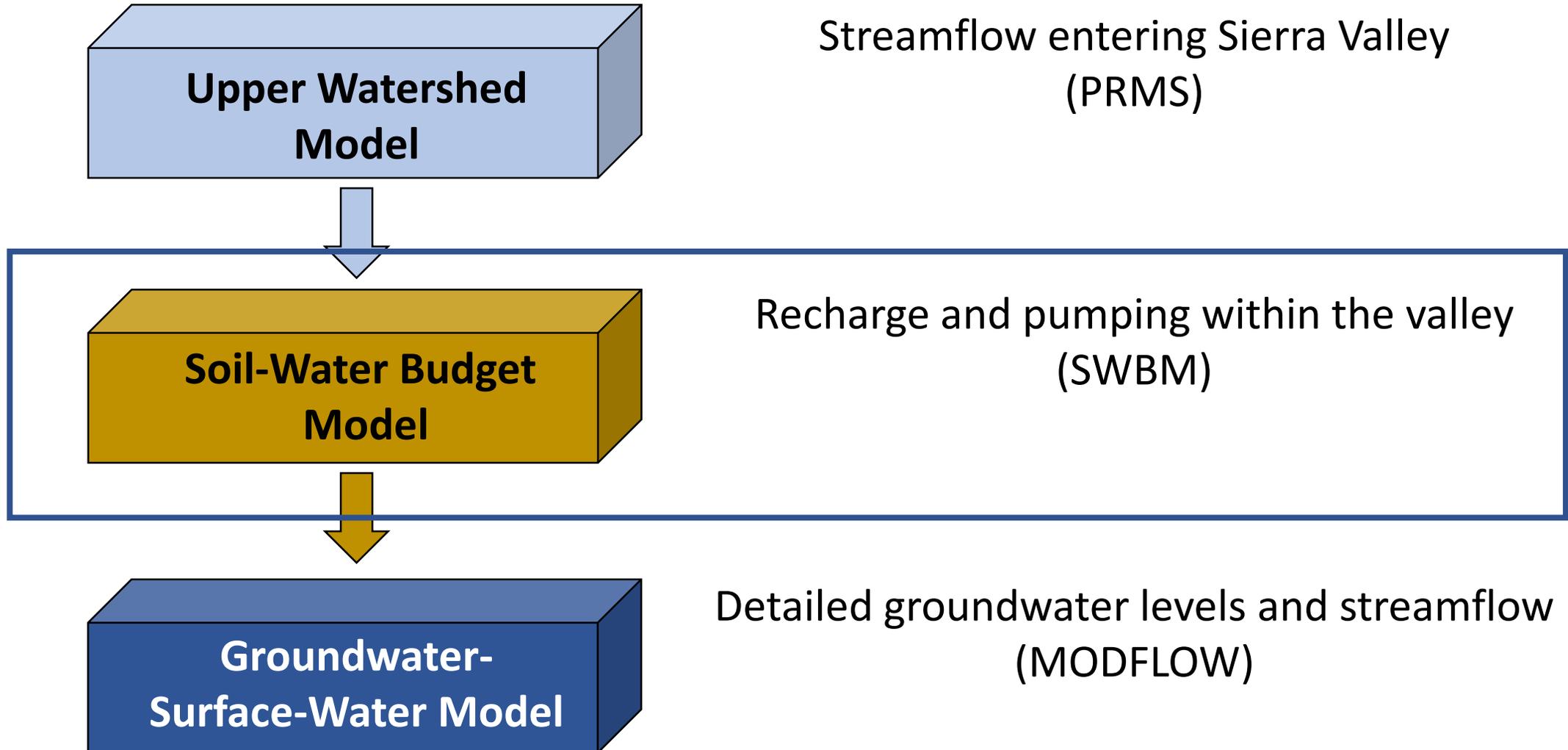


— DWR Estimated Natural Inflow — PRMS Simulated Inflow

**PRELIMINARY DRAFT
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The Sierra Valley Integrated Hydrologic Model is the combination of three different models.



Model Input Summary Tables

Landuse	Area (acres)
Alfalfa/Grain (Irrigated)	7,641.16
Pasture (Irrigated)	24,988.57
Native Vegetation	51,341.83
Urban/Barren	848.09
Water	108.66
Alfalfa/Grain (Non-Irrigated)	3,997.21
Pasture (Non-Irrigated)	33,796.03
Total	122,721.54

Irrigation Type	Actual Area (acres)
Flood	24,821.08
Wheel Line	854.31
Center Pivot	7,076.46
Non-Irrigated	89,969.68
Total	122,721.54

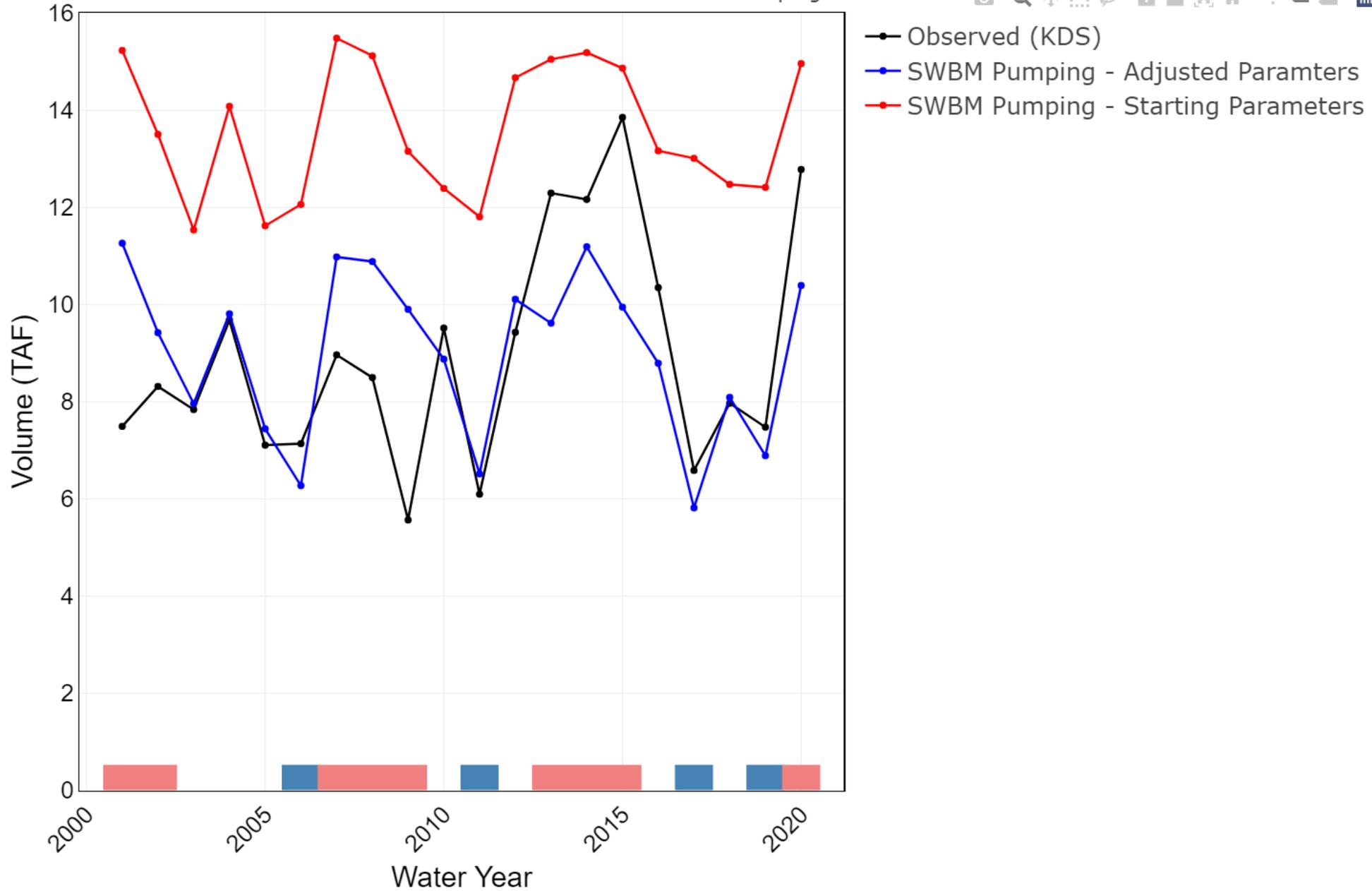
Water Source	Area (acres)
Surface-Water	25,761.12
Mixed	735.28
Groundwater	6,255.45
Non-Irrigated	89,969.68
Total	122,721.54

Model Input Summary Tables

Landcover	Irrigation Begins	Irrigation Ends	Irrigation Threshold (SWC)	Flood Irrigation Efficiency	Wheel Line Irrigation Efficiency	Center Pivot Irrigation Efficiency	Effective Root Depth (ft)
Alfalfa (Irrigated)	Mar-25	Aug-31	0.35	0.80	1.40	1.70	20.01
Grain (Irrigated)	Mar-16	Jul-10	0.35	0.80	1.40	1.70	6.00
Pasture (Irrigated)	Apr-15	Oct-15	0.35	0.70	1.10	1.30	12.00
Native /Vegetation			0.00	0.00	0.00	0.00	20.01
Urban /Barren			0.00	0.00	0.00	0.00	0.00
Water			0.00	0.00	0.00	0.00	6.56
Alfalfa (Non-Irrigated)			0.00	0.00	0.00	0.00	20.01
Grain (Non-Irrigated)			0.00	0.00	0.00	0.00	6.00
Pasture (Non-Irrigated)			0.00	0.00	0.00	0.00	12.00

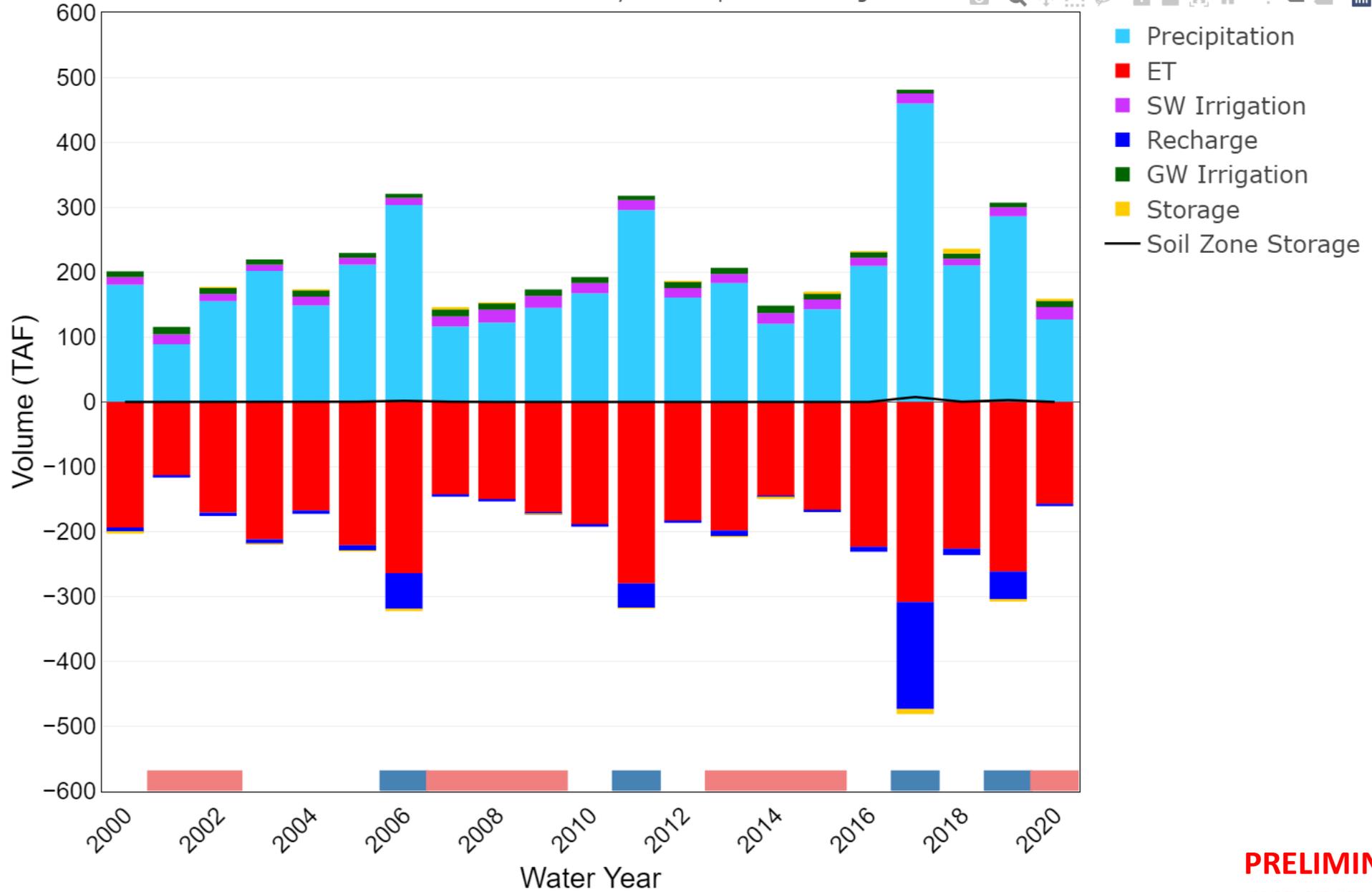
**PRELIMINARY DRAFT
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Simulated and Observed Pumping Volumes



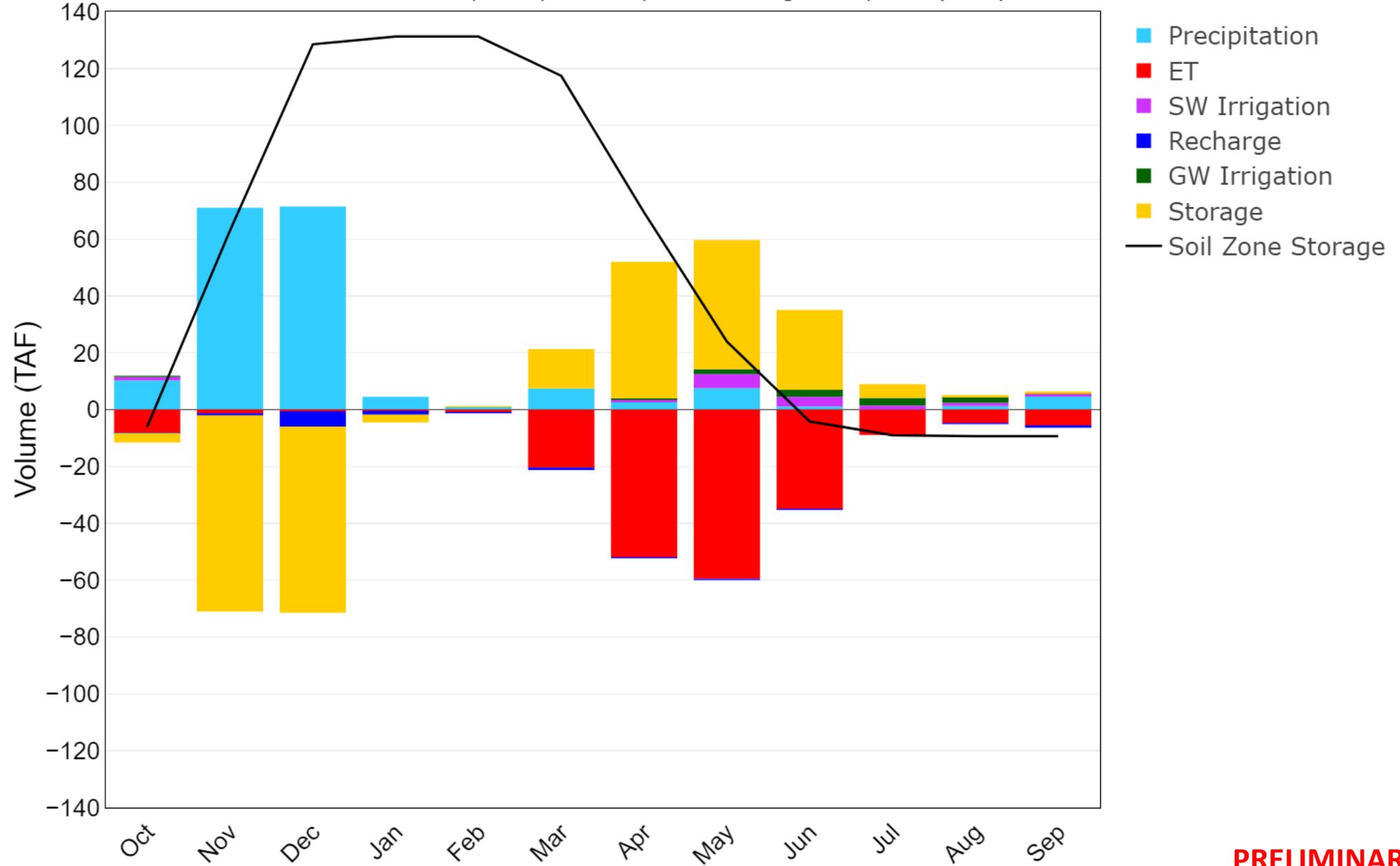
**PRELIMINARY DRAFT
SUBJECT TO REVISION**

Annual Valley Landscape Water Budget



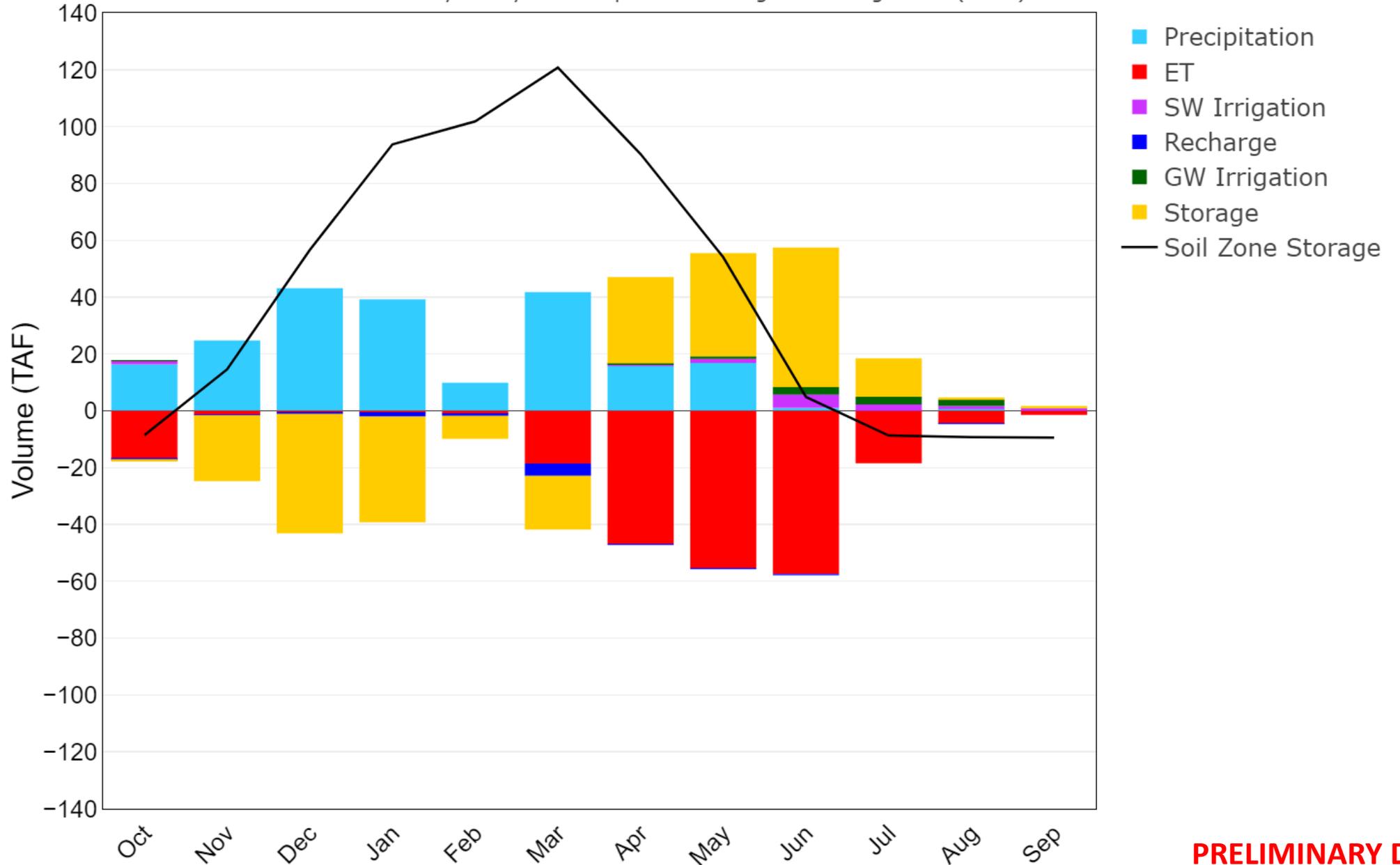
**PRELIMINARY DRAFT
SUBJECT TO REVISION**

Monthly Valley Landscape Water Budget - Dry Year (2013)



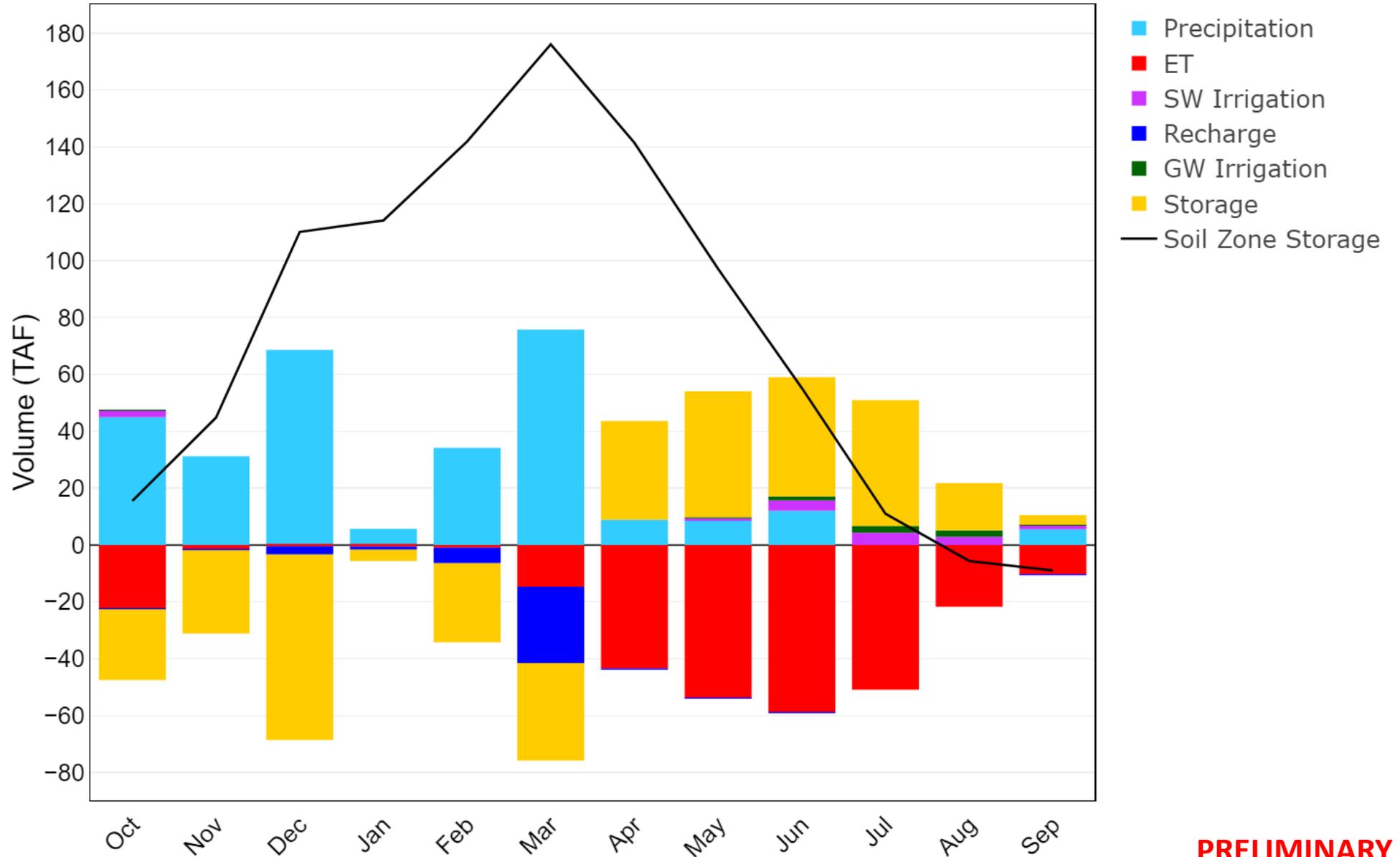
**PRELIMINARY DRAFT
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Monthly Valley Landscape Water Budget - Average Year (2016)



**PRELIMINARY DRAFT
SUBJECT TO REVISION**

Monthly Valley Landscape Water Budget - Wet Year (2011)



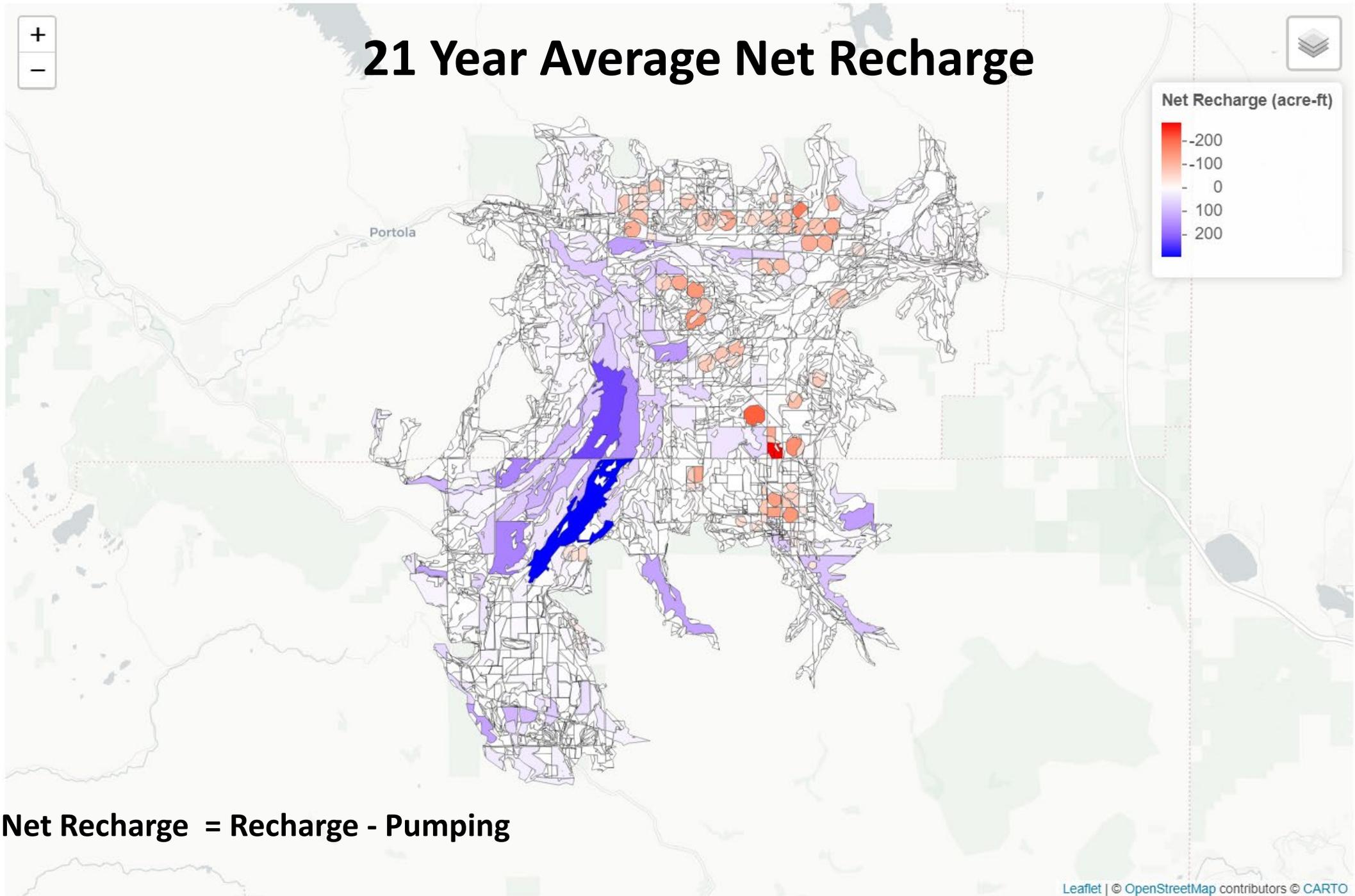
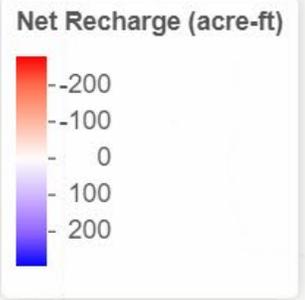
**PRELIMINARY DRAFT
SUBJECT TO REVISION**

21 Year Average Basin-wide Water Budget

Landcover	Precipitation (TAF)	Potential ET (TAF)	Actual ET (TAF)	Deficiency (TAF)	Total Irrigation (TAF)	SW Irrigation (TAF)	GW Irrigation (TAF)	Recharge (TAF)	Area (acres)
Alfalfa (Irrigated)	8.67	22.19	15.79	6.41	7.65	0.25	7.39	0.47	6,739.14
Grain (Irrigated)	1.35	1.52	1.20	0.32	0.53	0.04	0.49	0.74	1,029.84
Pasture (Irrigated)	39.35	90.87	50.69	40.18	15.15	14.04	1.11	3.81	25,402.39
Native Vegetation	84.06	171.36	79.98	91.39	0.00	0.00	0.00	4.09	56,364.65
Urban Barren	1.37	0.00	0.00	0.00	0.00	0.00	0.00	1.37	981.01
Water	0.18	0.65	0.18	0.47	0.00	0.00	0.00	0.00	118.61
Alfalfa (Non-Irrigated)	5.01	12.07	4.66	7.41	0.00	0.00	0.00	0.31	3,669.86
Grain (Non-Irrigated)	0.68	0.77	0.33	0.44	0.00	0.00	0.00	0.39	513.63
Pasture (Non-Irrigated)	51.57	123.52	44.82	78.71	0.00	0.00	0.00	6.75	34,530.45
Total	192.24	422.95	197.65	225.33	23.33	14.33	8.99	17.93	129,349.58

**PRELIMINARY DRAFT
SUBJECT TO REVISION**

21 Year Average Net Recharge



Net Recharge = Recharge - Pumping

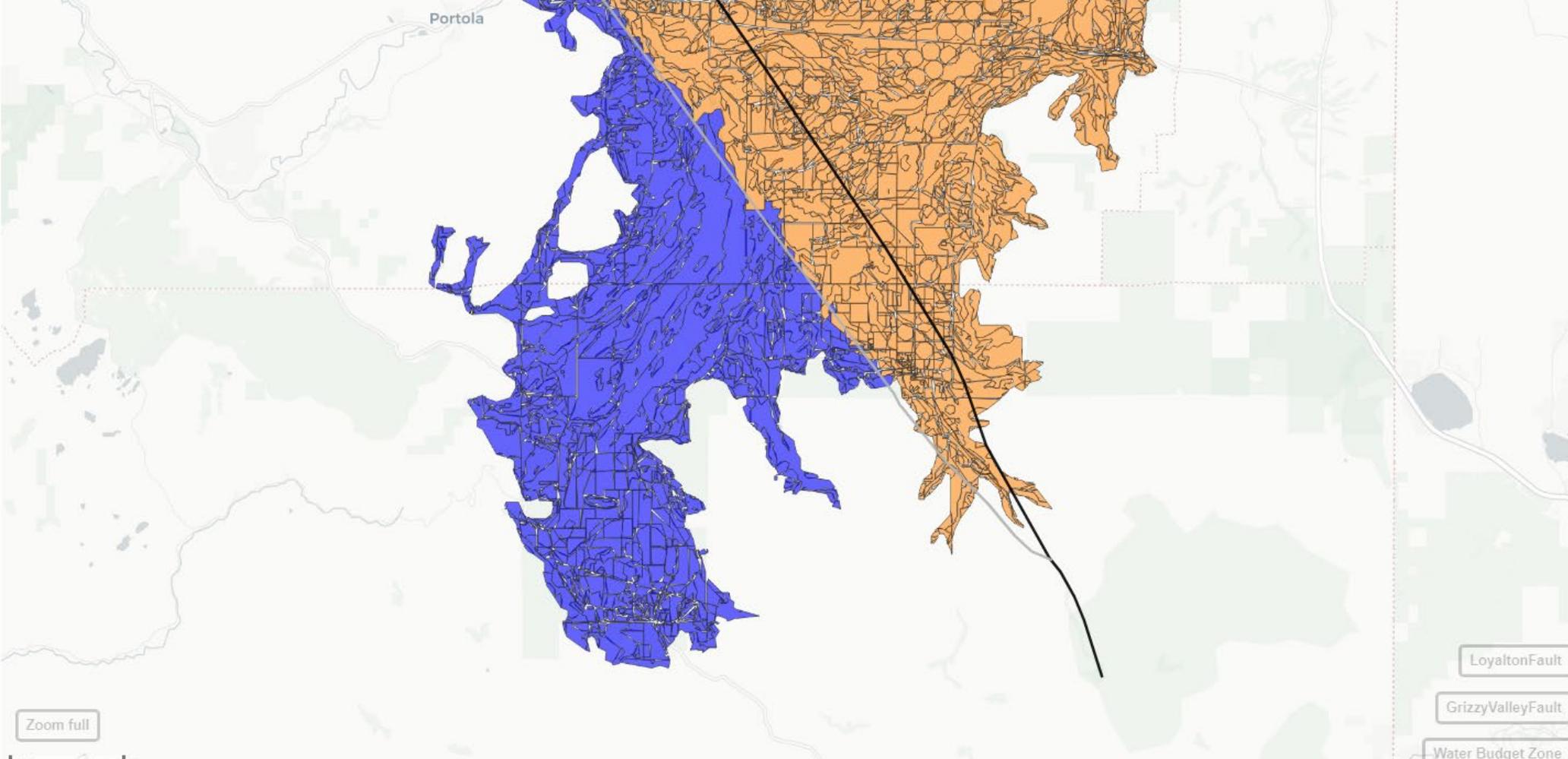


Water Budget Zone

- East Side
- West Side

GrizzlyValleyFault

LoyaltonFault



Zoom full

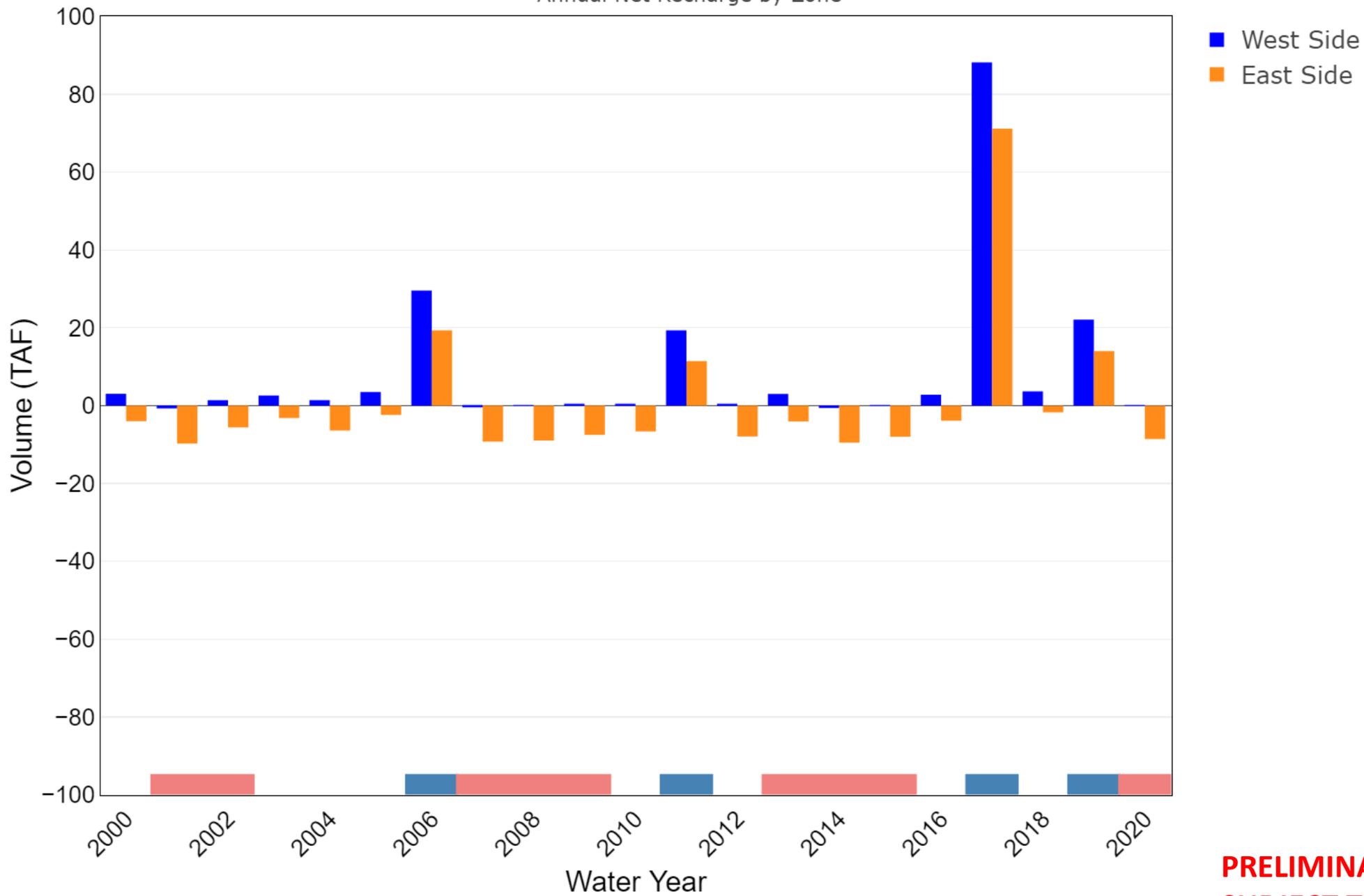


LoyaltonFault

GrizzlyValleyFault

Water Budget Zone

Annual Net Recharge by Zone



**PRELIMINARY DRAFT
SUBJECT TO REVISION**

Future Work

- Complete 3D hydrogeologic model of the subsurface
- Run MODFLOW using PRMS and SWBM results
- Compare model results with observations (model calibration)
- Simulate the effect of climate change
- Simulate project and management actions



**Sierra Valley
Groundwater
Management District**

