

The Role of SGMA in a Resilient Water Future



SEPTEMBER 25, 2015

PRESENTER: Alyson Watson, P.E.

California is in the Midst of its Fourth Year of Drought

Current California Drought Is Driest In State's History; Scientists Fear 'Megadroughts' On Their Way

California Farms Going Thirsty as Drought Burns \$5 Billion Hole

THE SACRAMENTO BEE
Friday, January 24, 2014
DROUGHT'S ONE FOR THE BOOKS
Capitol

S.J. officials declare drought emergency

City breaks a record - dard
47TH RAINLESS DAY TOPS THE MARK SET IN 1884

By MATT WEISER
In the annals of weather records, this is one nobody wanted to break.
On Thursday, downtown Sacramento recorded its 47th continuous winter day without measurable rainfall, breaking a record that has stood since 1884, according to the National Weather Service. It appears to be the longest such streak in the state's history.

Redmond said that, for California as a whole, the dry trend is actually much longer. Based on records dating to 1895, the 30 months ending in December 2013 were drier than any similar period ever recorded in the state.
"It's just seeming to find a new way to not rain every few days," he said. "I think at this point, people would like to see just a little bit of precipitation."

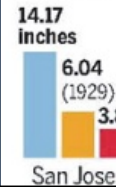
KELLY REDMOND, a climatologist and deputy director of the Western Regional Climate Center in Reno

California drought: 17 communities could run out of water within 60 to 120 days, state says

By Paul Rogers
progers@mercurynews.com

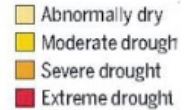
U.S. Drought Monitor California

RECORDS FALL IN DRIEST YEAR



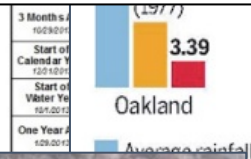
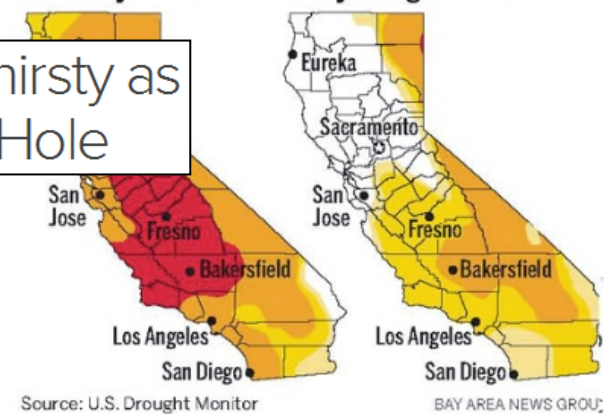
A very dry year

The map of California drought conditions as of Dec. 24 shows nearly 85 percent of the state with severe to extreme drought. One year ago the red and orange categories covered just a quarter of the state.



Currently Dec. 24, 2013

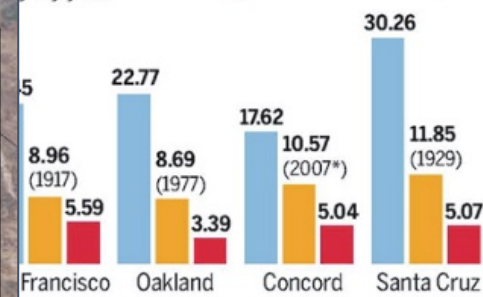
One year ago Dec. 25, 2012



records

are experiencing dry year.

- Average rainfall to date
- Previous record low
- Rainfall to date this year



data goes only goes back to 1992

Source: National Weather Service

BAY AREA NEWS GROUP

Snowpack Typically Provides About 30% of California's Water Supply



Source: NASA Earth Observatory

Reservoir Storage is Critically Low

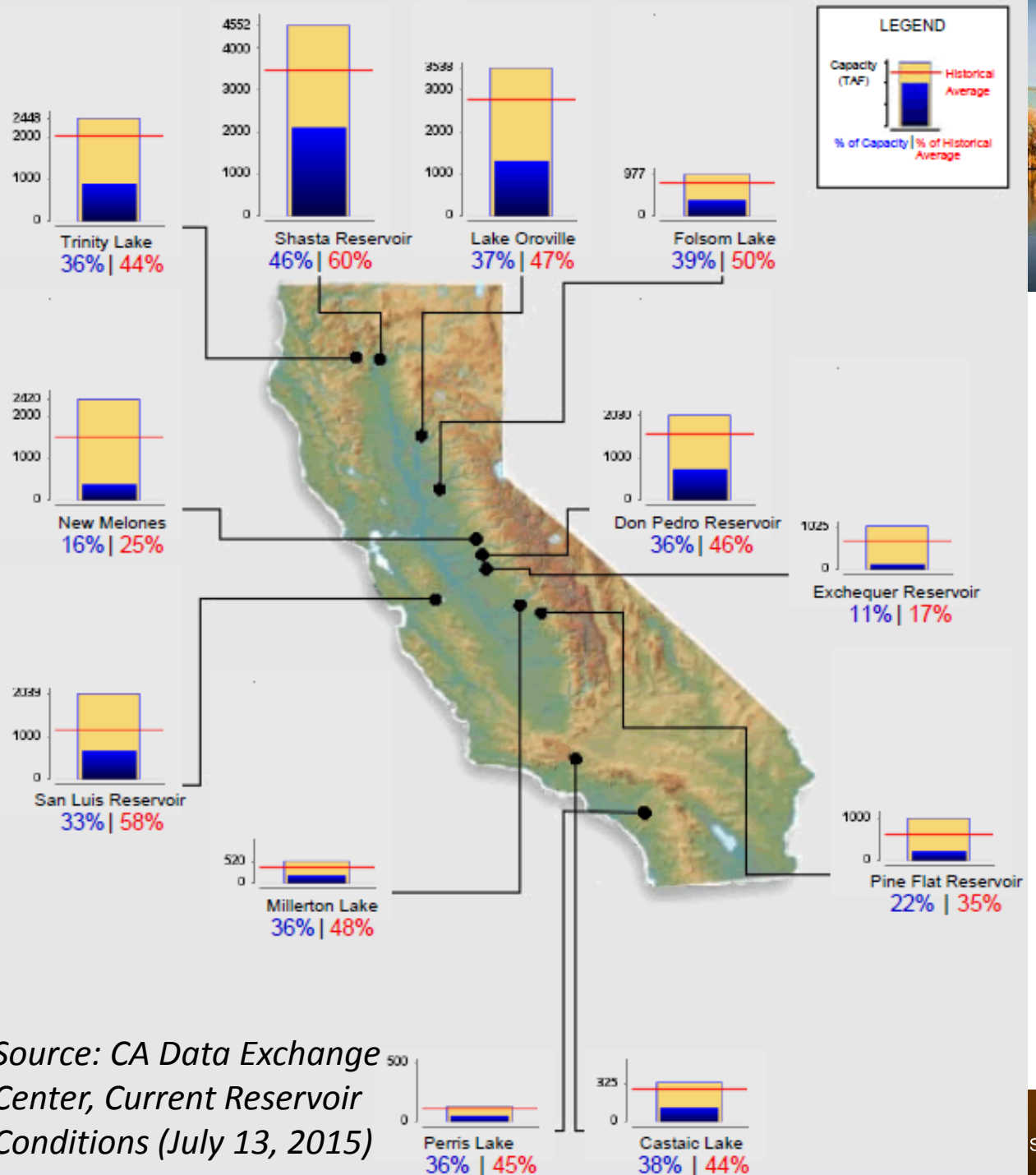
July 20, 2011



Source: Paul Hames/California Department of Water Resources via Getty Images

Bidwell Marina, Lake Oroville

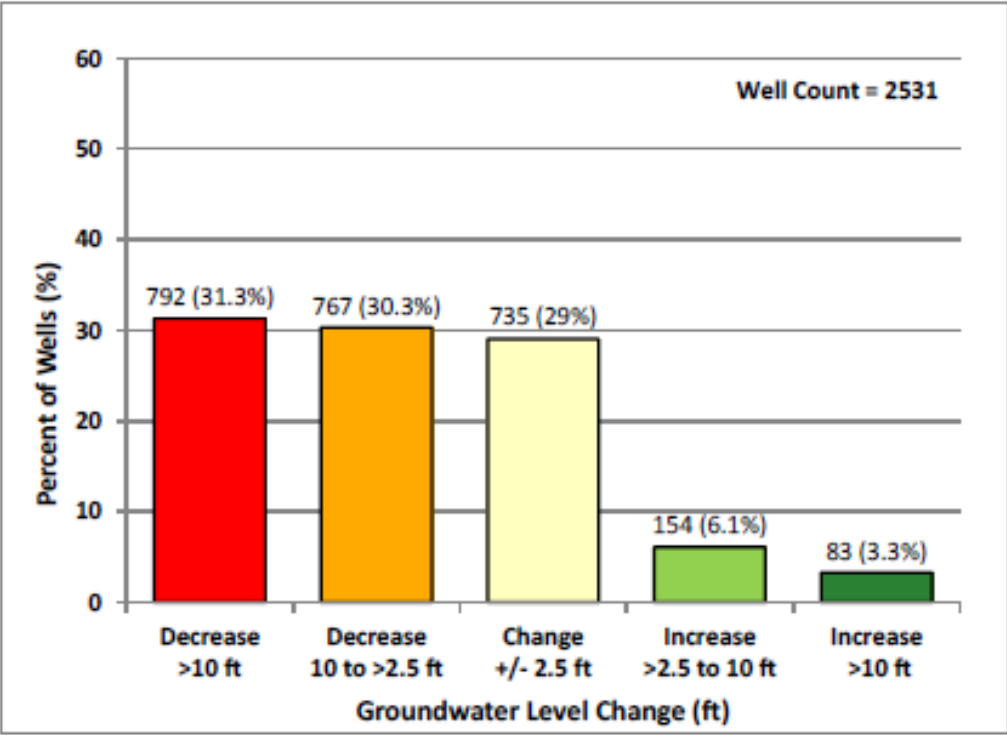
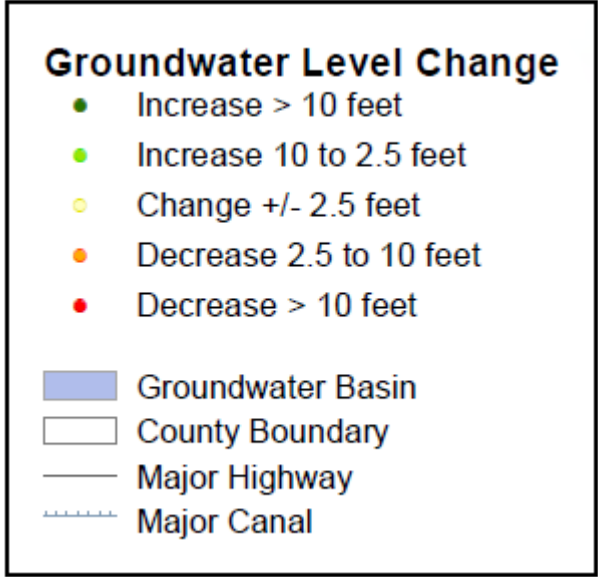
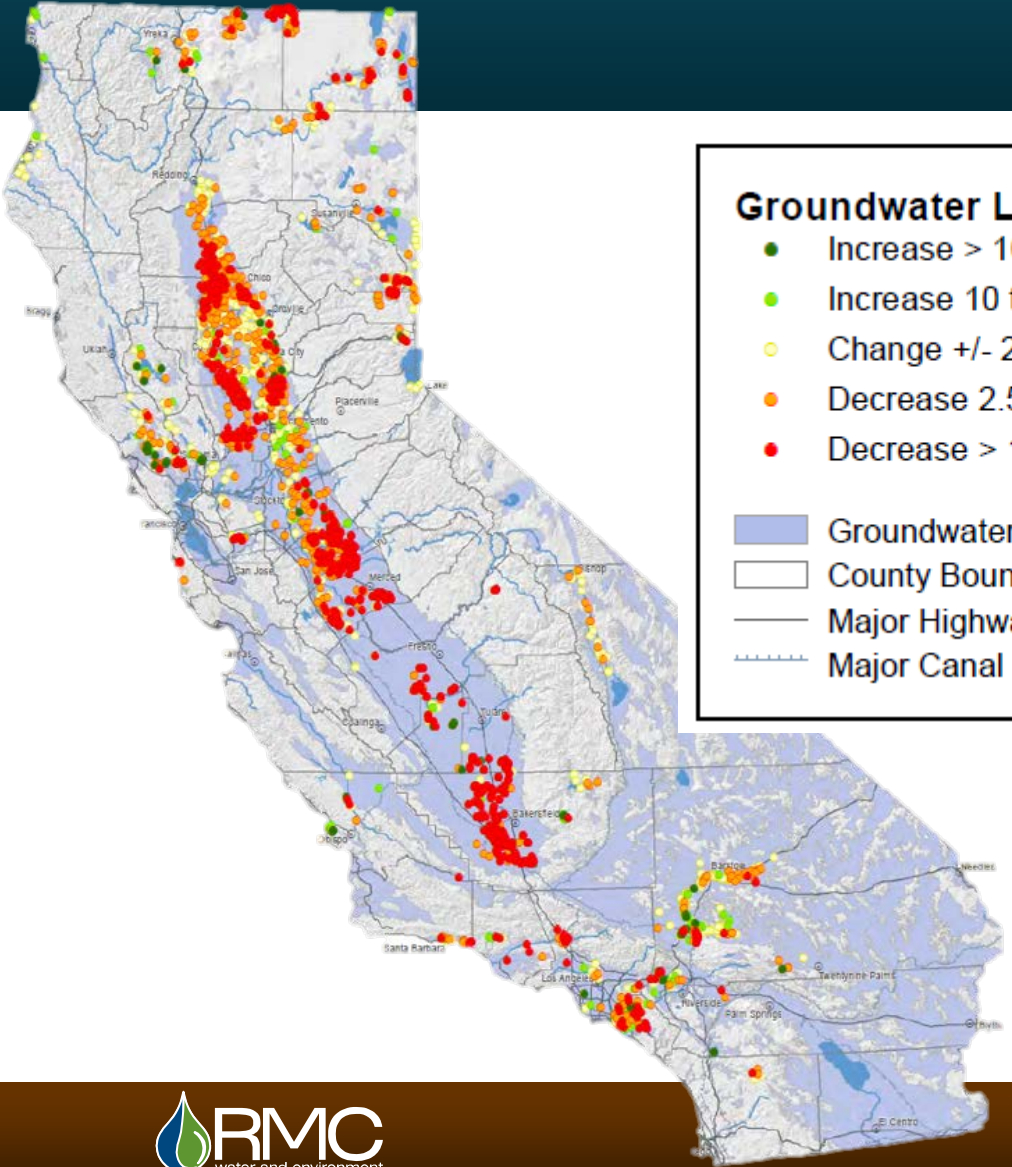
August 10, 2014



Source: CA Data Exchange Center, Current Reservoir Conditions (July 13, 2015)



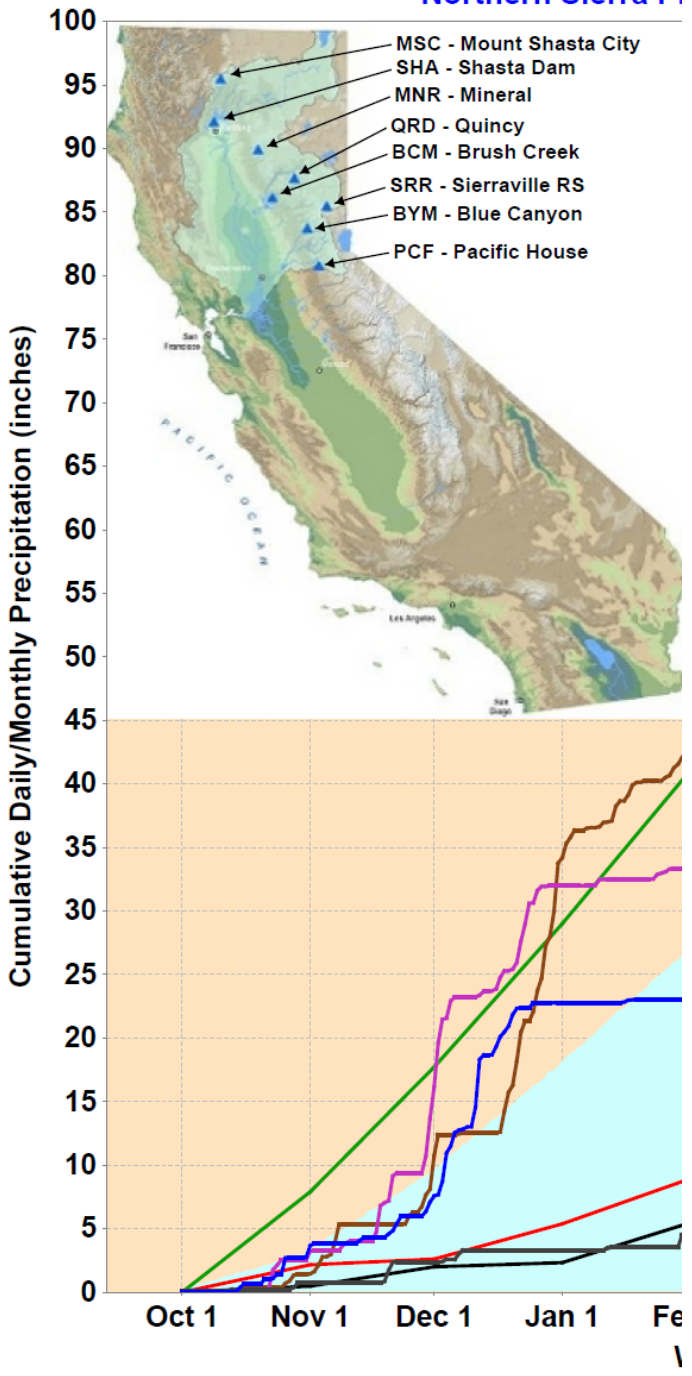
Groundwater Levels are Declining



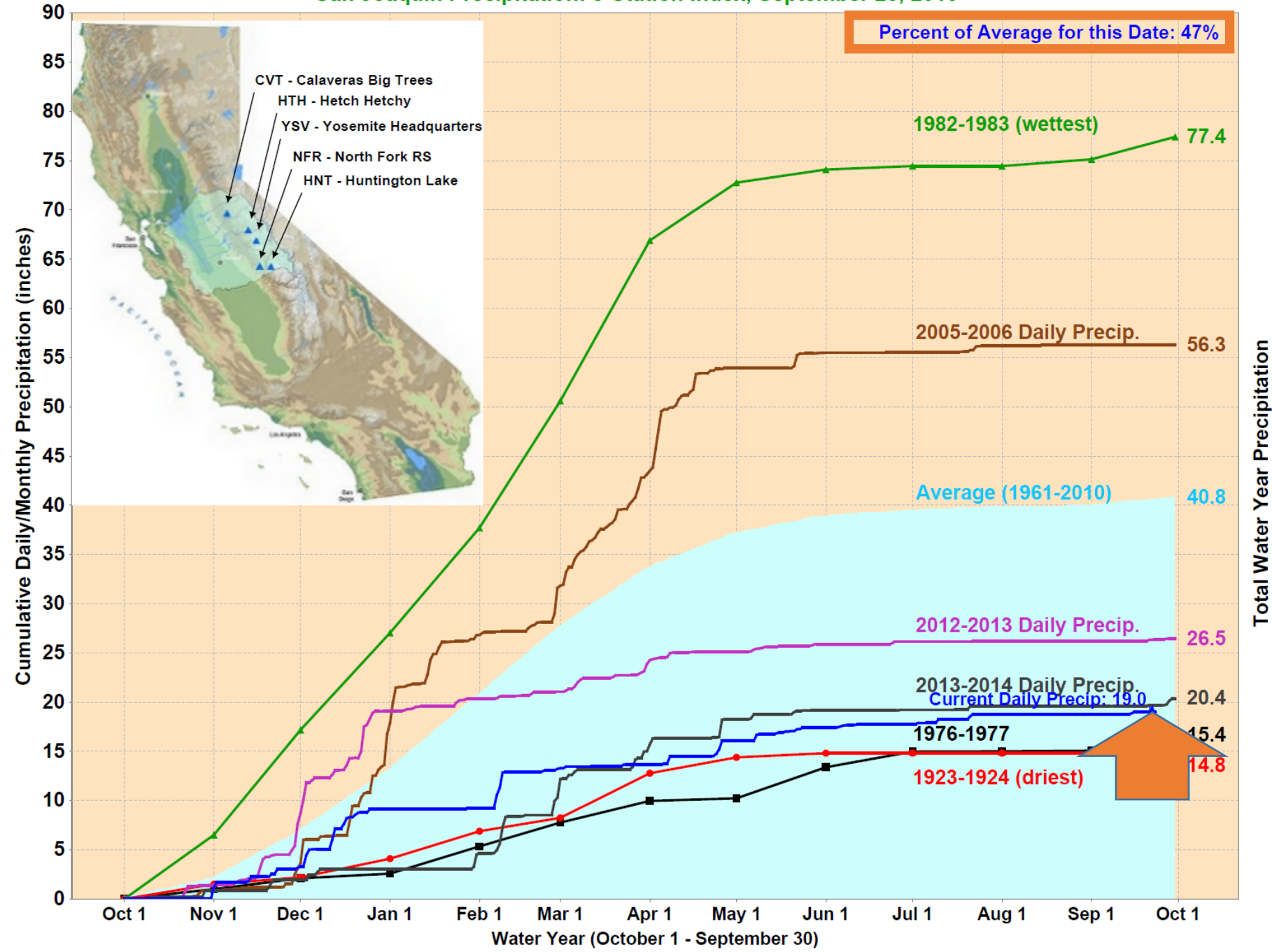
Groundwater level change (Fall 2009 – Fall 2014)

Source: DWR Groundwater Information Center

Northern Sierra Pt



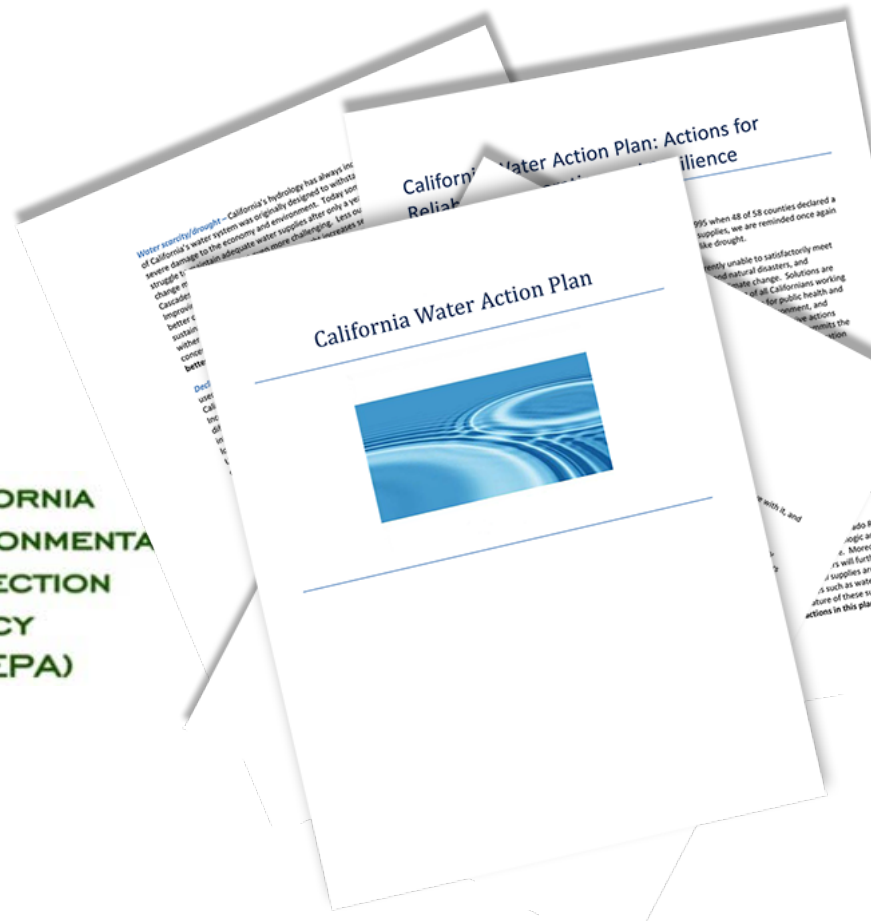
San Joaquin Precipitation: 5-Station Index, September 23, 2015



With Great Challenge Comes Great Opportunity



The California Water Action Plan (CWAP) was developed with interagency coordination to establish a pathway to water resiliency

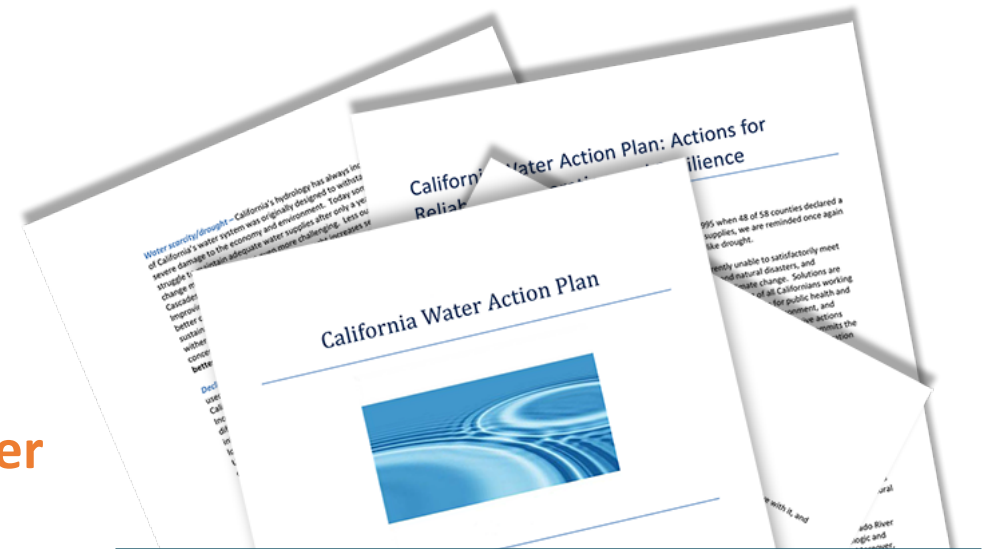


CWAP: Focus on Reliability, Restoration, and Resilience



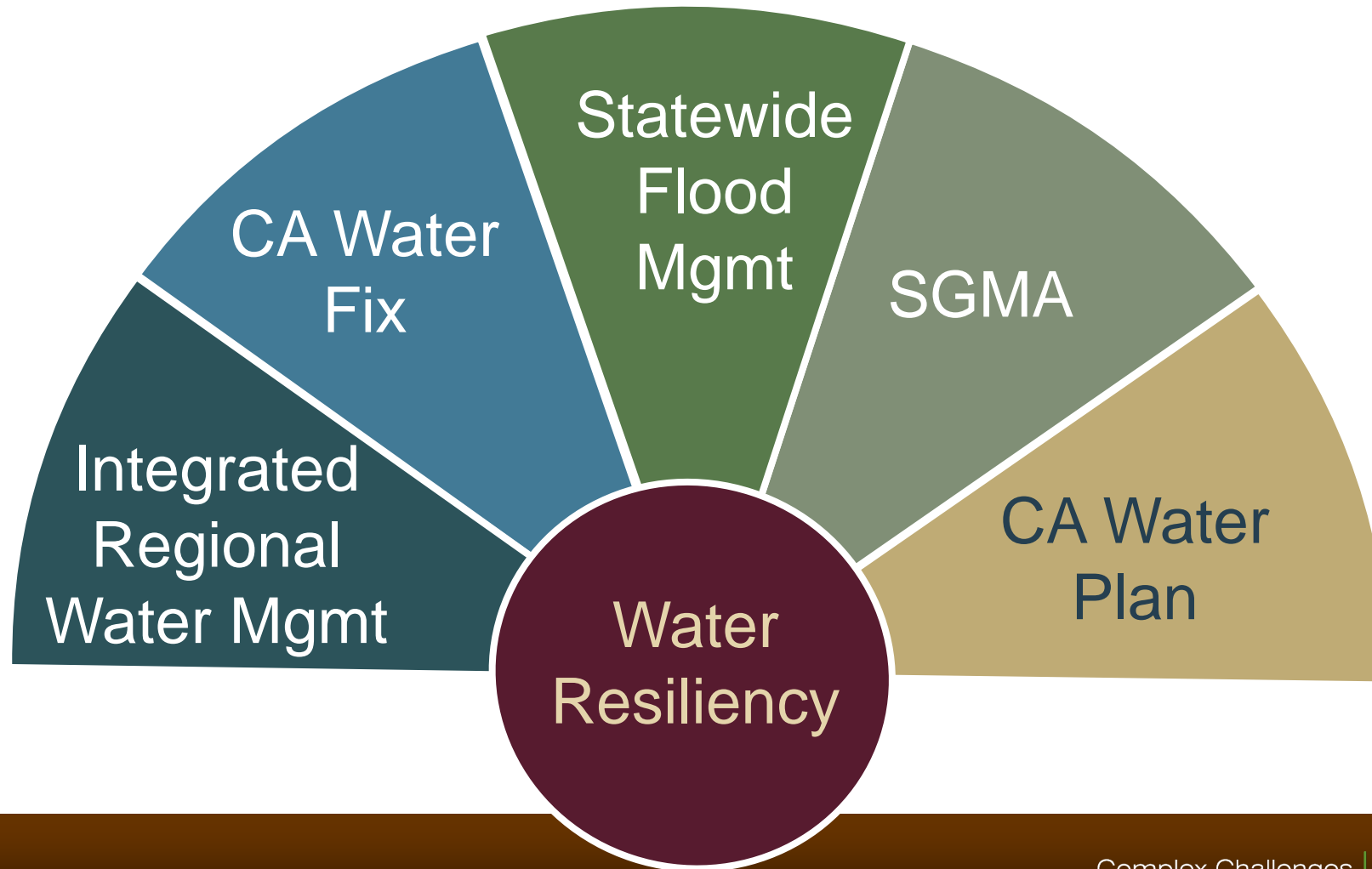
California Water Action Plan Priority Actions

1. Make **conservation** a California way of life
2. Increase regional self-reliance and **integrated water management** across all levels of government
3. Achieve the **co-equal goals for the Delta**
4. Protect and restore important **ecosystems**
5. Manage and **prepare for dry periods**
6. Expand **water storage** capacity and improve **groundwater management**
7. Provide **safe water** for all communities
8. Increase **flood protection**
9. Increase **operational and regulatory efficiency**
10. Identify sustainable and integrated **financing** opportunities

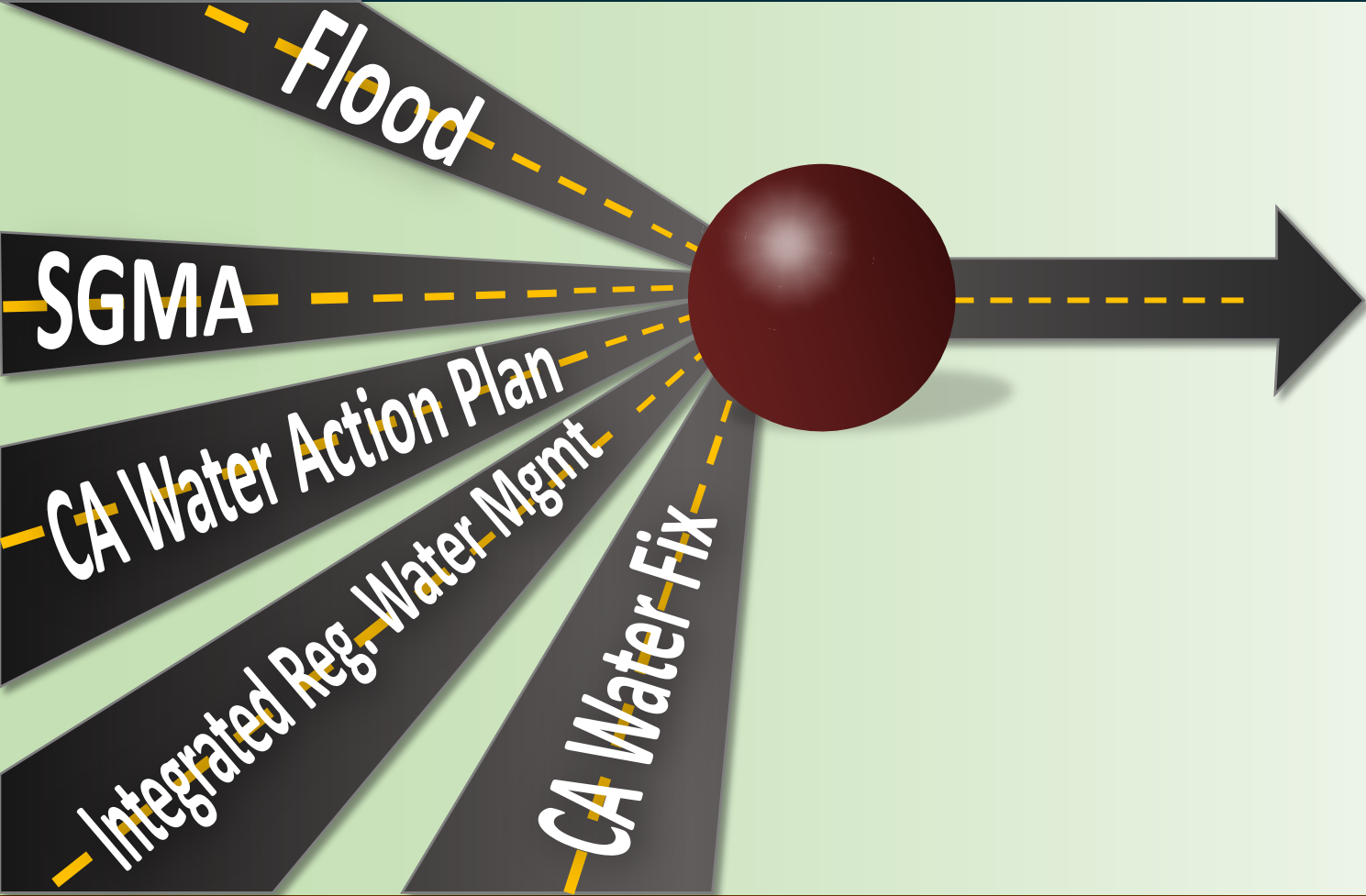


“All Californians have a stake in our water future. These actions set us on a path toward reliability, restoration, and resilience in California water.”

Multiple Efforts are Being Implemented In Concert to Achieve CWAP Actions



California's Water Future Stands at a Crossroad



SUSTAINABILITY

- Groundwater Management
- Water Supply
- Economic Prosperity
- Ecosystem Protection
- Societal Benefits

SGMA Key Principles



- Groundwater is best managed at the local /regional level
- Groundwater must be managed sustainably
- Local agencies should have necessary authority & tools to implement the regulations
- State will provide assistance and oversight but only intervene when needed

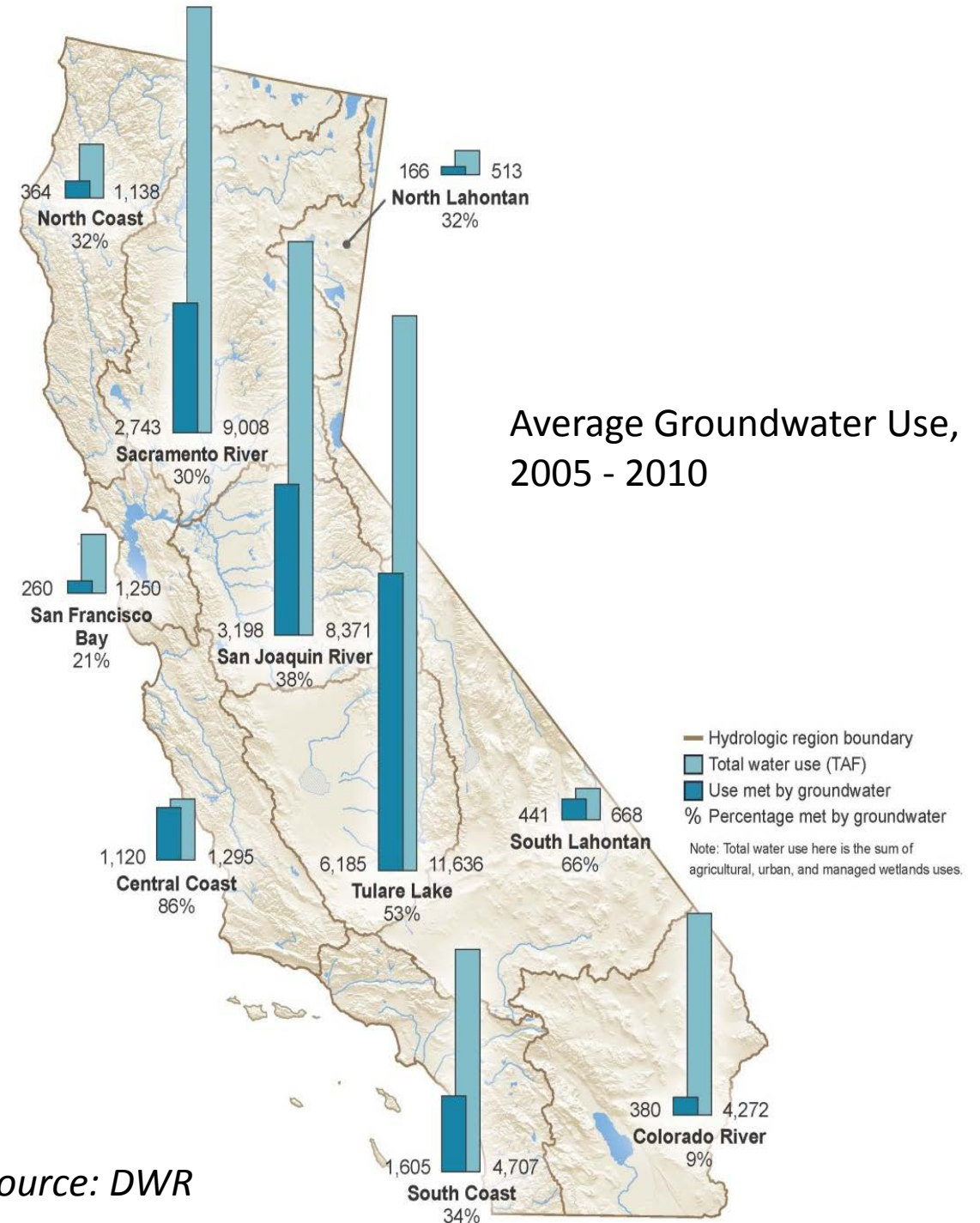


Groundwater Typically Comprises Nearly 40% of California's Water Use

Regions with Greatest Groundwater Use

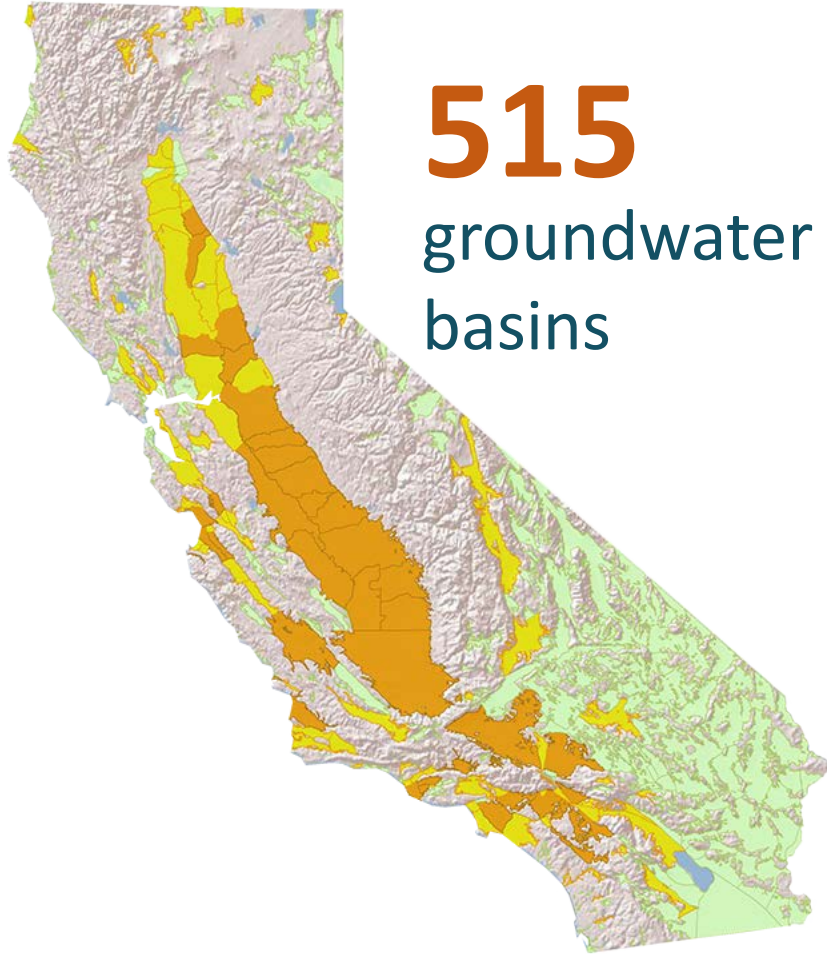
- Tulare Lake (38% of statewide total)
- San Joaquin River (19% of statewide total)
- Sacramento River (18% of statewide total)
- South Coast (10% of statewide total)

Central Coast and Tulare Lake are most reliant on local groundwater (86% and 53% of local water use, respectively)



Source: DWR

Groundwater Management is Highly Decentralized



515
groundwater
basins

21
critically
overdrafted
groundwater
basins

22
adjudicated
basins

Up to **200**
Groundwater
Sustainability
Agencies and Plans

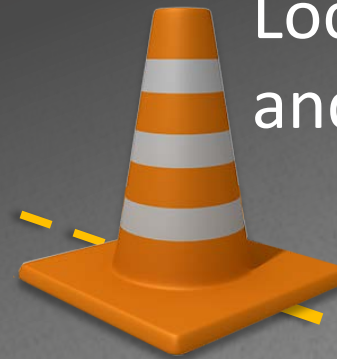
There are Challenges Along the Road to Success



Implementable regulations



Agreement on data and tools



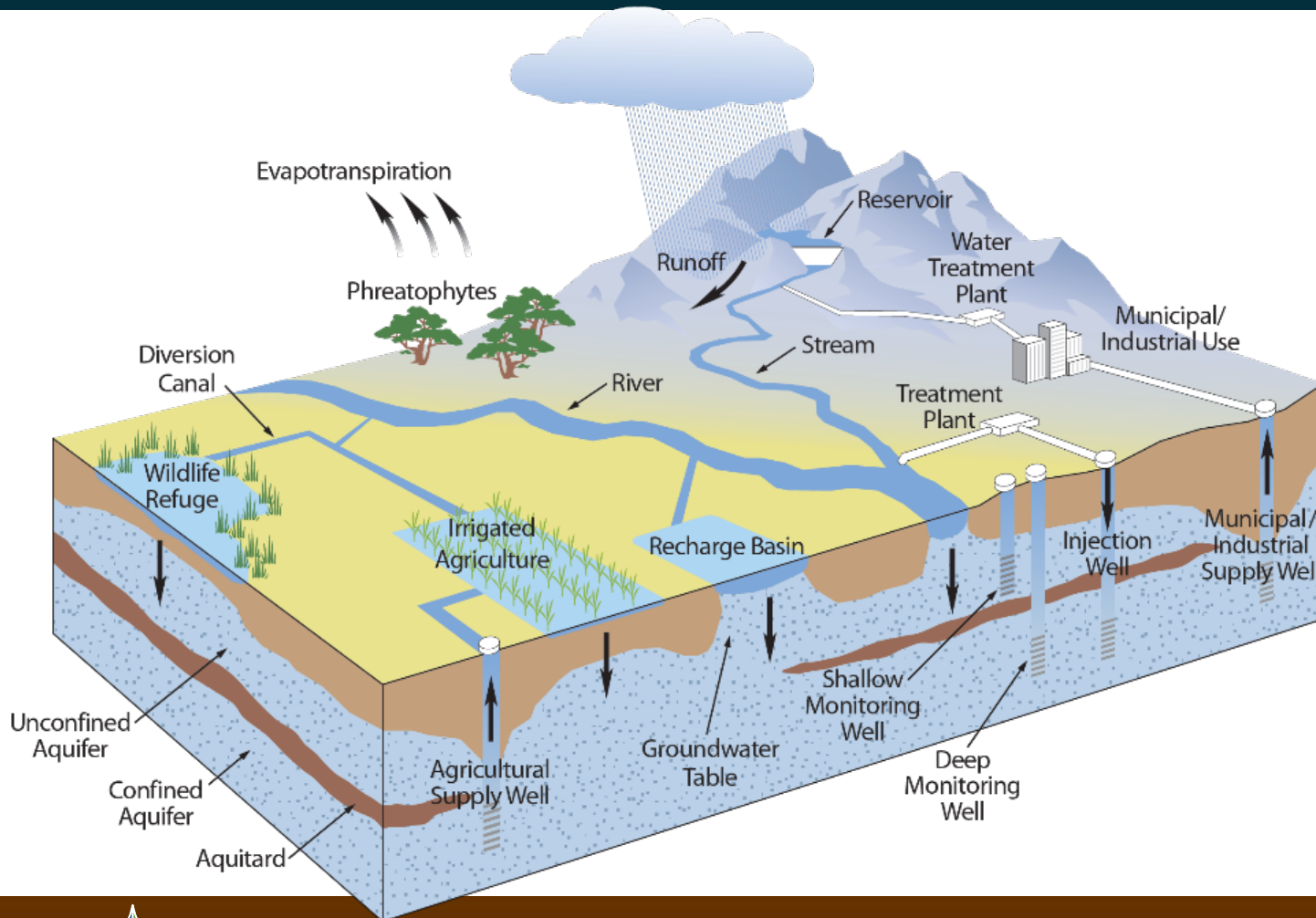
Local buy-in and support



DWR's Phased Approach to Implementing SGMA



The Water Budget is the Heart of the Groundwater Sustainability Plan (GSP)



(+) INFLOW

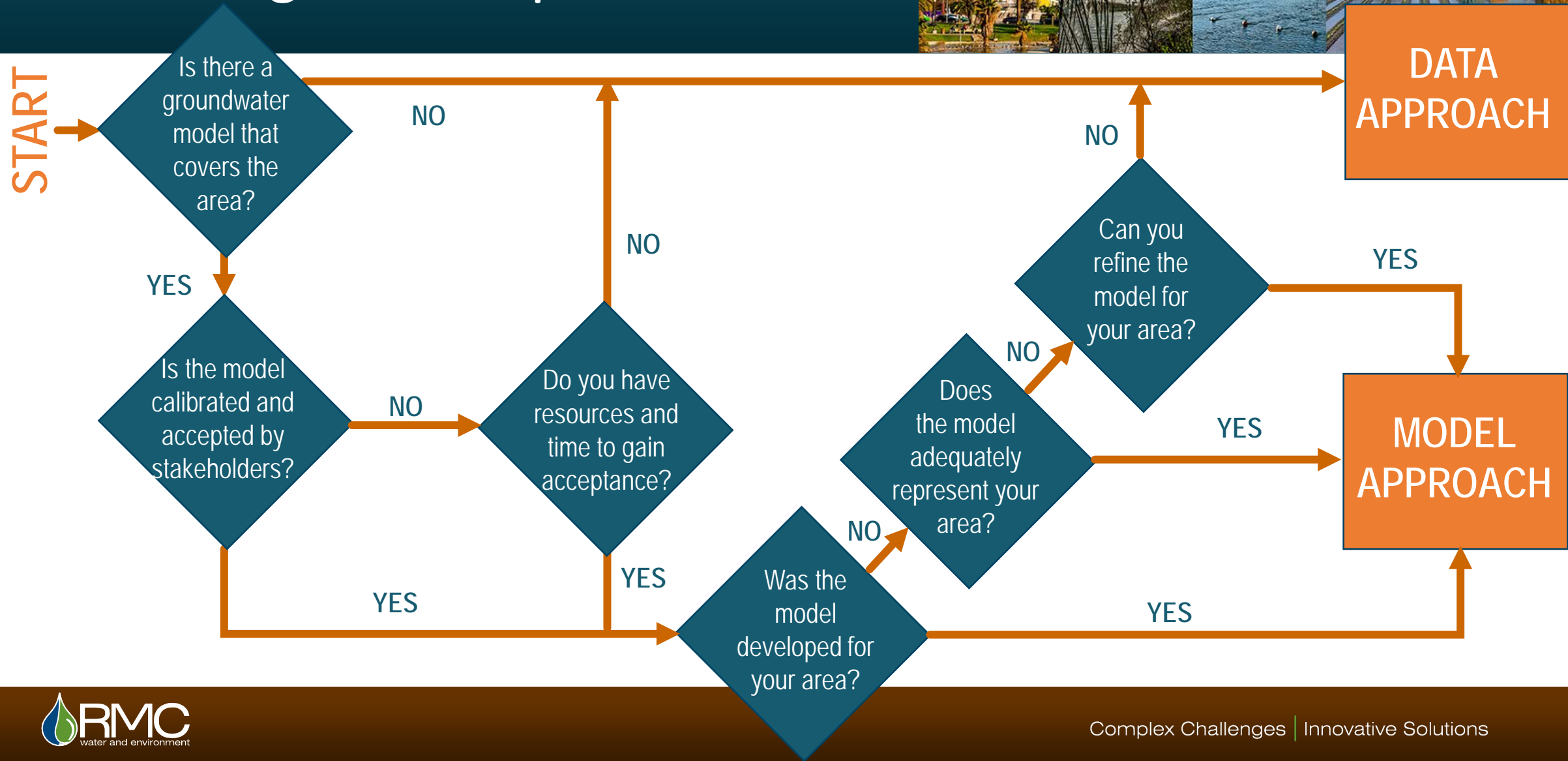
- Precipitation (+)
- Infiltration – Applied Water (+)
- Infiltration – Surface Sources (+)
- Infiltration – Managed Recharge (+)
- Subsurface Inflow (+)

(-) OUTFLOW

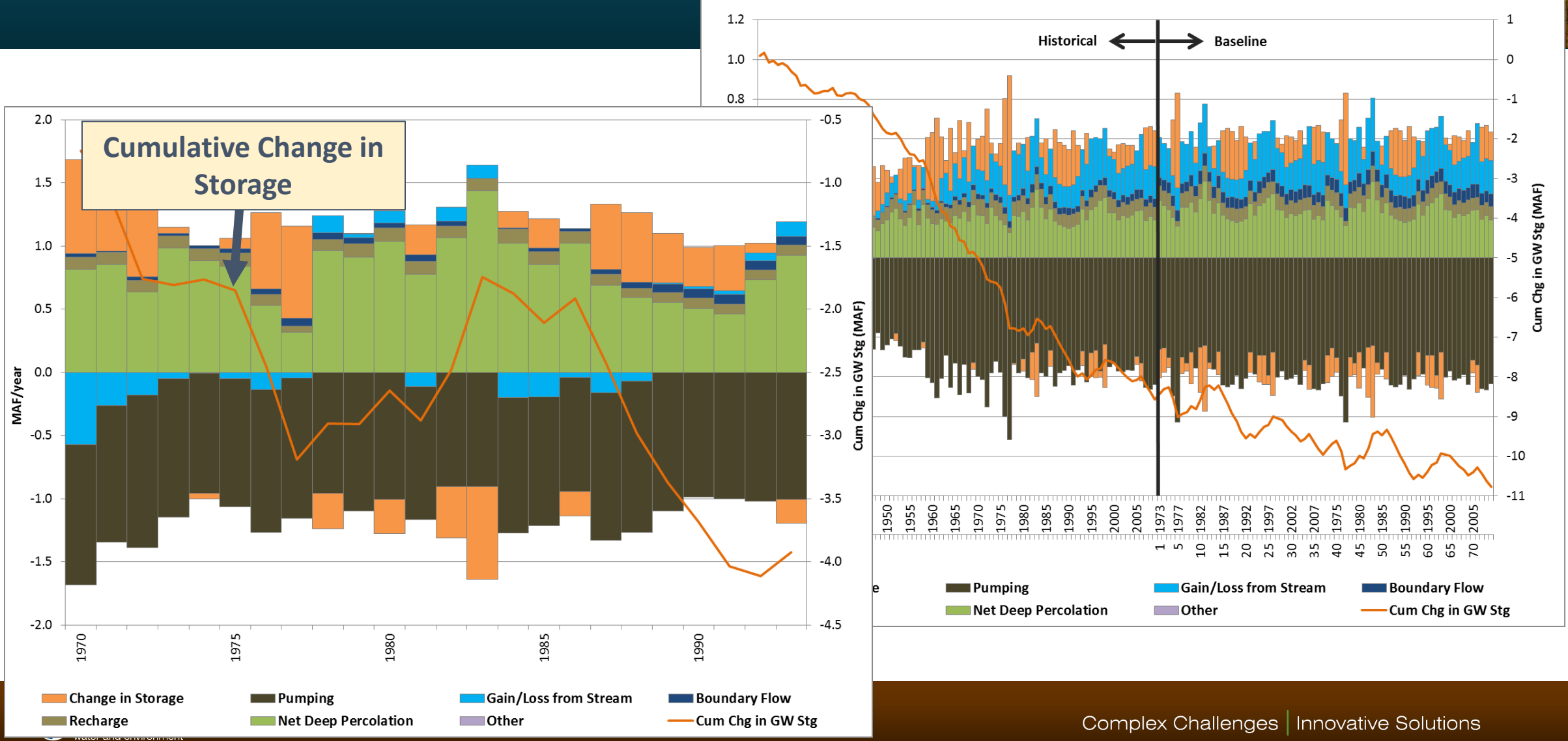
- GW Extraction
- Evapotranspiration
- Discharge to Surface Sources
- Subsurface Outflow

= Change in Storage

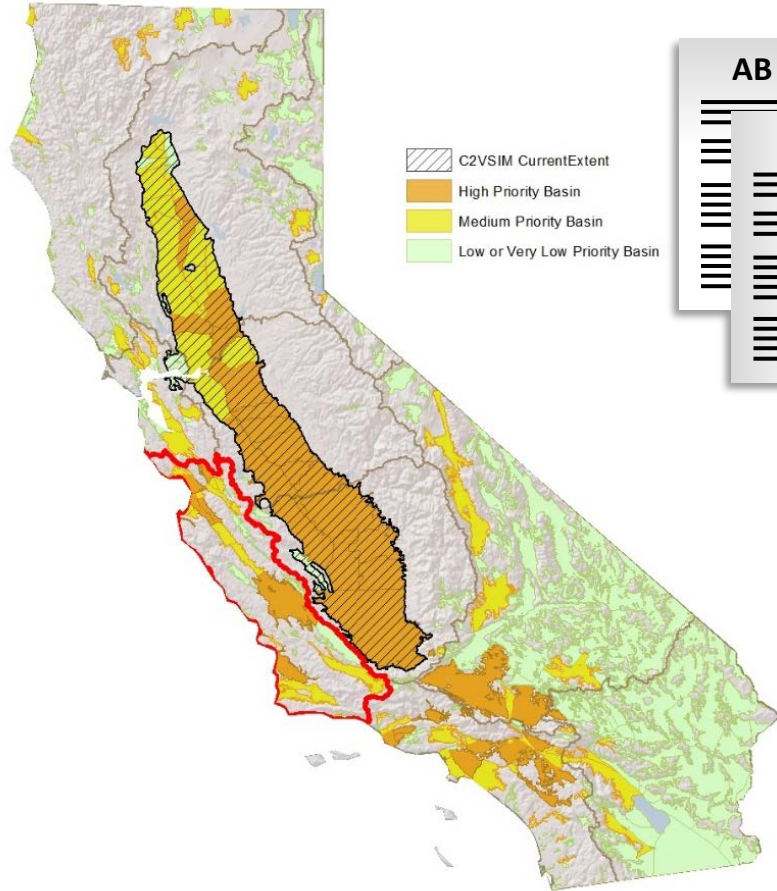
Available Data and Tools will Drive Water Budget Development



The Water Budget Provides a Long-Term View of Basin Conditions



The Key to GSP Acceptance will be Reconciliation of Data and Assumptions



▨ C2VSIM CurrentExtent
High Priority Basin
Medium Priority Basin
Low or Very Low Priority Basin

AB 1739

SB 1168

SB 1319

“The department shall periodically review the groundwater sustainability plans... **to evaluate** whether a plan conforms with Sections 10727.2 and 10727.4 and is likely to achieve the sustainability goal”

Close coordination with DWR will be necessary to validate data, assumptions, etc., prior to GSP submittal

Key Areas of Data Verification / Validation Likely to be Needed



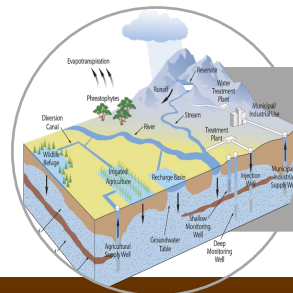
Total Pumping Data



Irrigation Practices

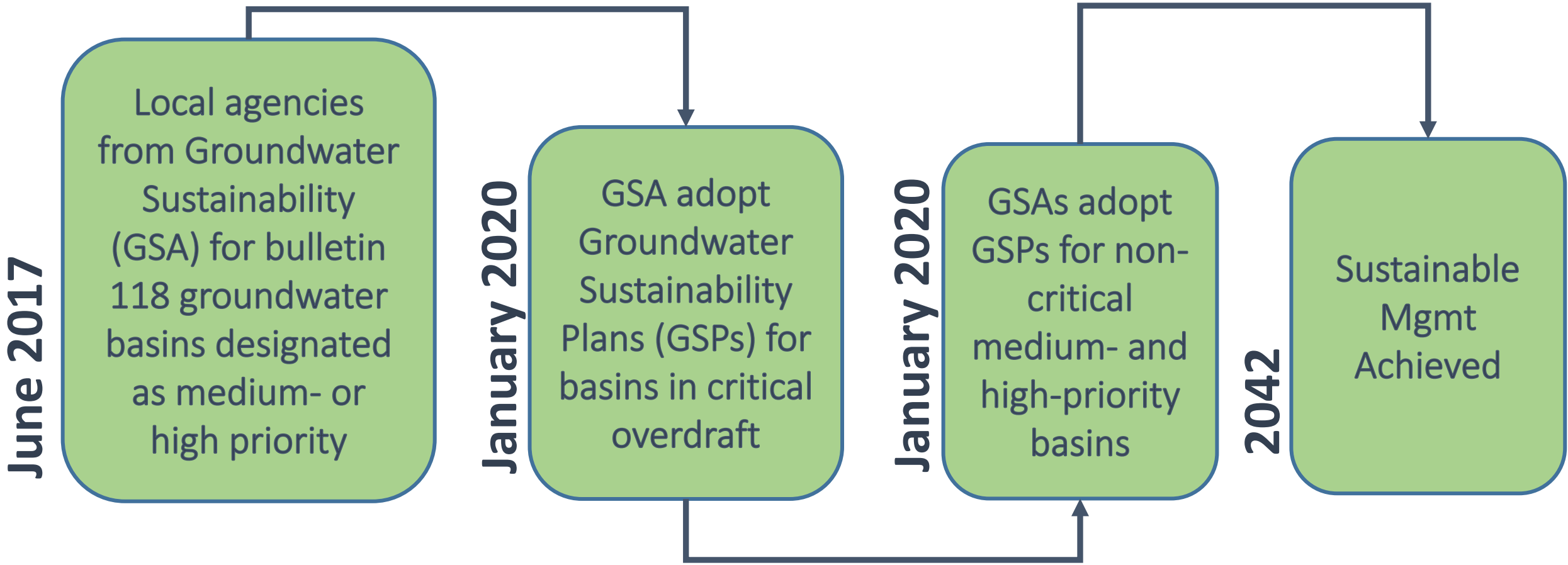


Land Use & Cropping Patterns

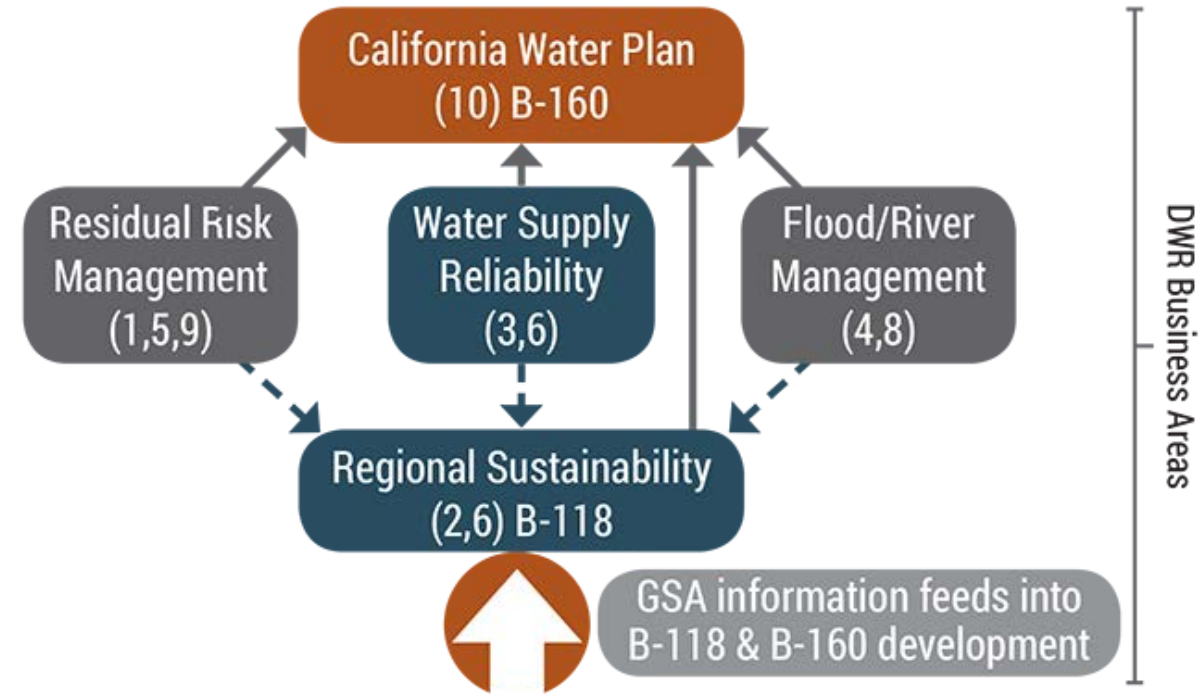


Subsurface Flows

Next Steps: Timeline for Achieving Sustainability



GSPs & Water Budgets will Provide the Foundation for Future Water Planning



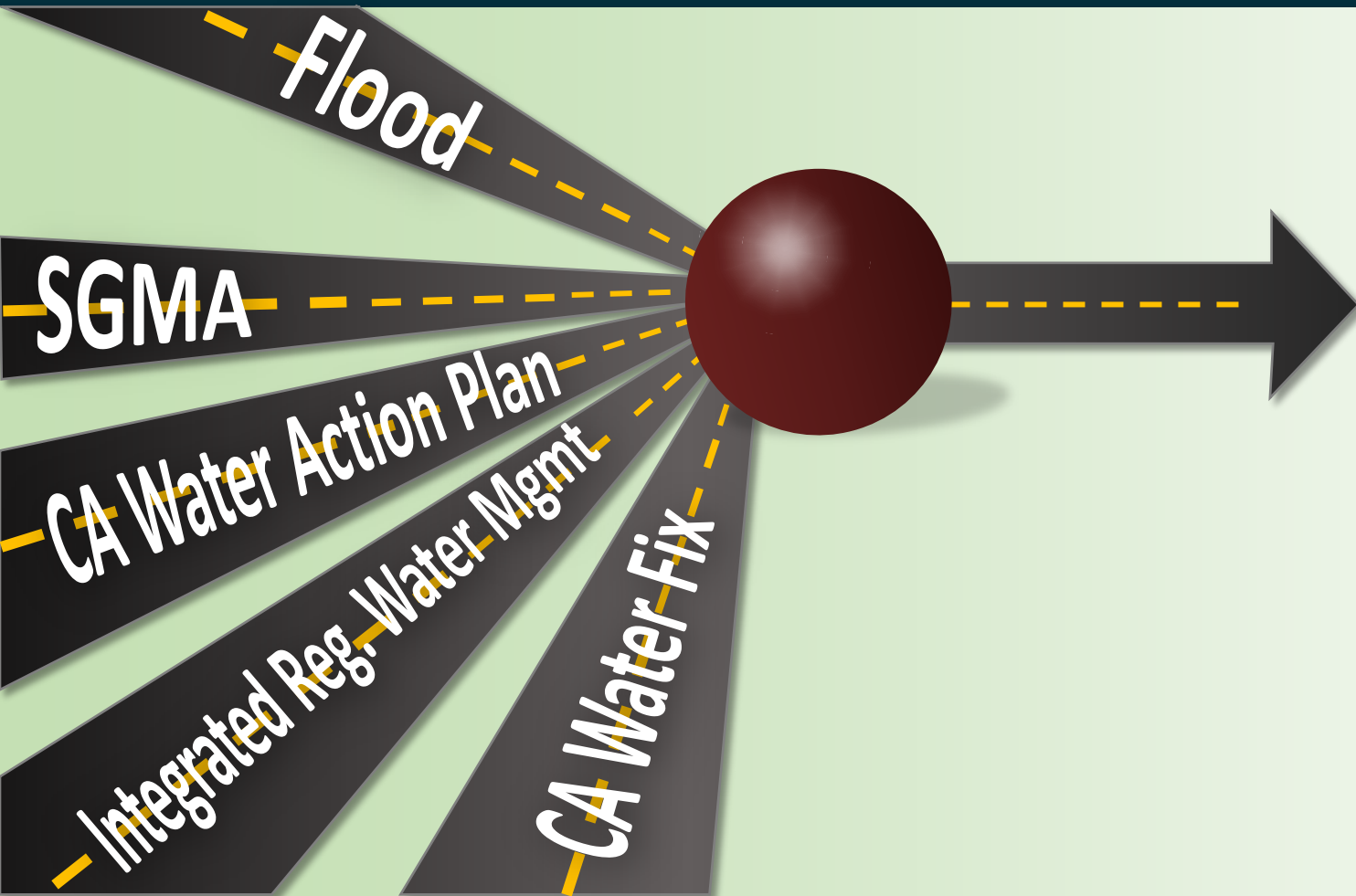
DWR Support	Basin 1 Water Budget	Basin 2 Water Budget	Basin 3 Water Budget
	Surface Supply	Surface Supply	Surface Supply
Supply Reliability/Replenishment Assessments	Imported Supply	Imported Supply	Imported Supply
Financial Assistance (i.e. IRWM)	Reuse/Additional Supply	Reuse/Additional Supply	Reuse/Additional Supply
Bulletin-118	Groundwater Supply ←*→	Groundwater Supply ←*→	Groundwater Supply ←*→
	Land Use	Land Use	Land Use

The table is categorized into **Supply** (rows 1-4) and **Demand** (row 5). A dashed box encloses the top four rows. Arrows indicate interaction between groundwater supplies in adjacent basins.

(#) Denotes CWAP Actions
 * Adjoining basin interaction

GSA develop multi-zone Water Reliability Maps (WRM's)
 ↓
 DWR develops Statewide WRM

SGMA Implementation will Pave the Way for A Sustainable Water Future



SUSTAINABILITY

- ✓ Groundwater Management
- ✓ Water Supply
- ✓ Economic Prosperity
- ✓ Ecosystem Protection
- ✓ Societal Benefits

Thank You!



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