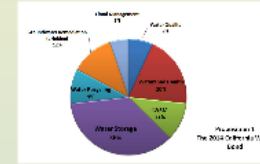
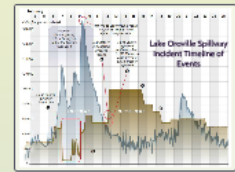


California Water Action Plan

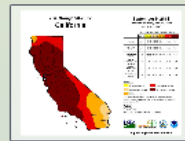
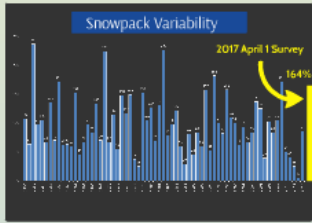
1. Maximize water conservation efficiency
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**Prop 1
\$7.5 billion water bond
Implementation of the Water
Action Plan**



Sustainable Groundwater Management Act, 2014



"Manage groundwater so it is available for future generations while reducing the environmental impacts of overmanagement"

Mark Green

- Sustainable land management at the local, regional level
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SAF-040: The maximum quantity of water that can be used without addition from a groundwater basin without adverse effect.

Department of Water Resources

- \$10M Integrated Regional Water Management
- \$10M Water Use Efficiency and Conservation
- \$5.5M Desalination
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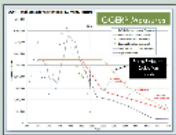
**The Big Ask
Work With Us**

SGMA: Flooding, Water Storage, Ecosystem Services, Carbon Sequestration, Healthy Soils, Data Management, Modeling, Ocean Health

Bea Miller, Director
Environmental and Technical
Climate Change Program

510.228.4280
bea@dmr.water.ca.gov

California WaterFix

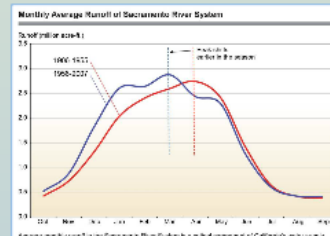


March 14, 2017
(Released Thursday March 16, 2017)
Valid 8 a.m. EDT

Statistic Type	Traditional Percent Area	Exportable	DD D4	D1 D4	D2 D4	D3 D4	D4
Current 2017-03-14	79.54	22.46	8.24	1.95	9.30	9.00	9.00
Last Week 2017-03-07	79.54	23.46	8.24	1.19	9.55	9.00	9.00
3 Weeks Ago 2017-01-31	12.16	87.84	73.34	93.27	42.80	21.34	
Start of Calendar Year 2015-12-22	17.47	82.53	68.87	57.76	48.60	18.31	
Start of Water Year 2015-09-27	0.88	100.00	83.53	62.27	42.80	21.34	
One Year Ago 2016-03-14	0.42	99.57	93.28	73.84	55.31	34.74	

Legend: 0% (Green), 10-20% (Yellow), 21-40% (Orange), 41-60% (Red), 61-80% (Dark Red), 81-100% (Black)

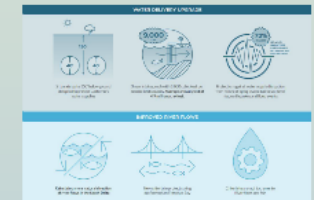
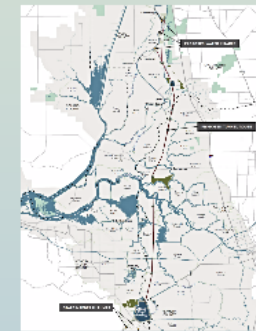
Drought



Shifts in Runoff Timing



WaterFix is a \$1.5 billion project to improve water delivery to the Delta and Central Valley. It includes a new water tunnel, a new water pump, and a new water treatment plant. The project is expected to be completed by 2025.



Turbulence and Leadership in California's Dynamic Hydrology

Climate change is felt
in our hydrology

2016-09-27						
One Year Ago 2016-03-15	0.43	99.57	93.28	73.64	55.31	34.74

Intensity:

- D0 (Abnormally Dry) ● D2 (Severe Drought) ● D4 (Exceptional Drought)
- D1 (Moderate Drought) ● D3 (Extreme Drought)

<http://droughtmonitor.unl.edu/Home/StateDroughtMonitor.aspx?CA>

0.0 Oct No
Average monthly r
Flood protection a
However, the timin
nearly a month ea
continue to move e
reservoirs after the

Shift

Turbulence and Leadership in California's Dynamic Hydrology

February

4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

Cubic feet per second (cfs)

180,000

160,000

140,000

120,000

100,000

80,000

60,000

40,000

20,000

Between February 6-10, 12.8 inches of rain fall in the Feather River Basin

Inflows to Lake Oroville reach 190,435 cfs, significantly higher than forecasted

Mandatory evacuation order is issued

Flood Control Spillway outflows raised to 100,000 cfs to ease pressure on Emergency Spillway

Flood Control Spillway inspection

INFLOWS

OUTFLOWS

Lake Oroville Spillway Incident Timeline of Events

1

2

4

4

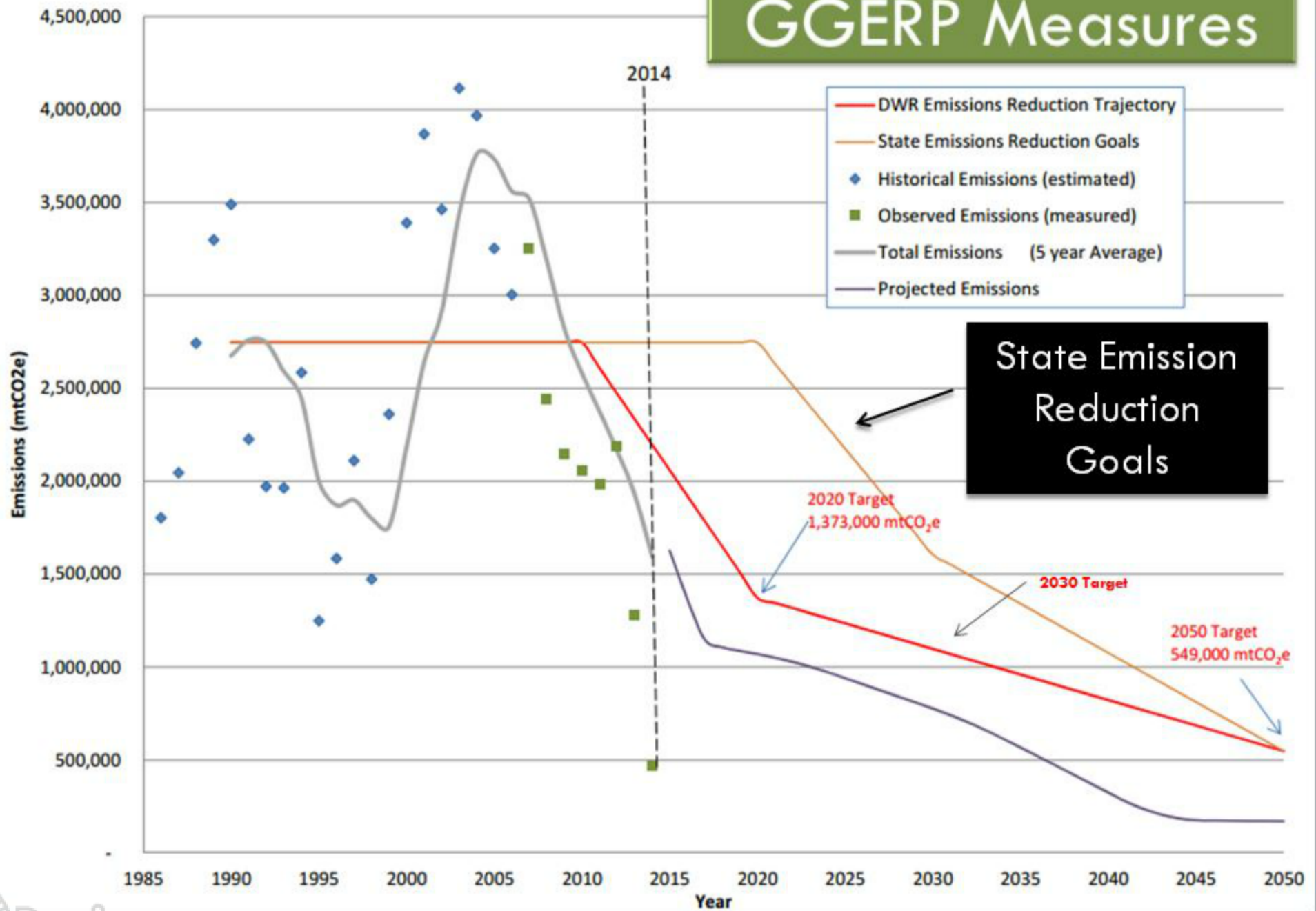
7

8



DWR Total Emissions (Historic, Current, Future)

GGERP Measures



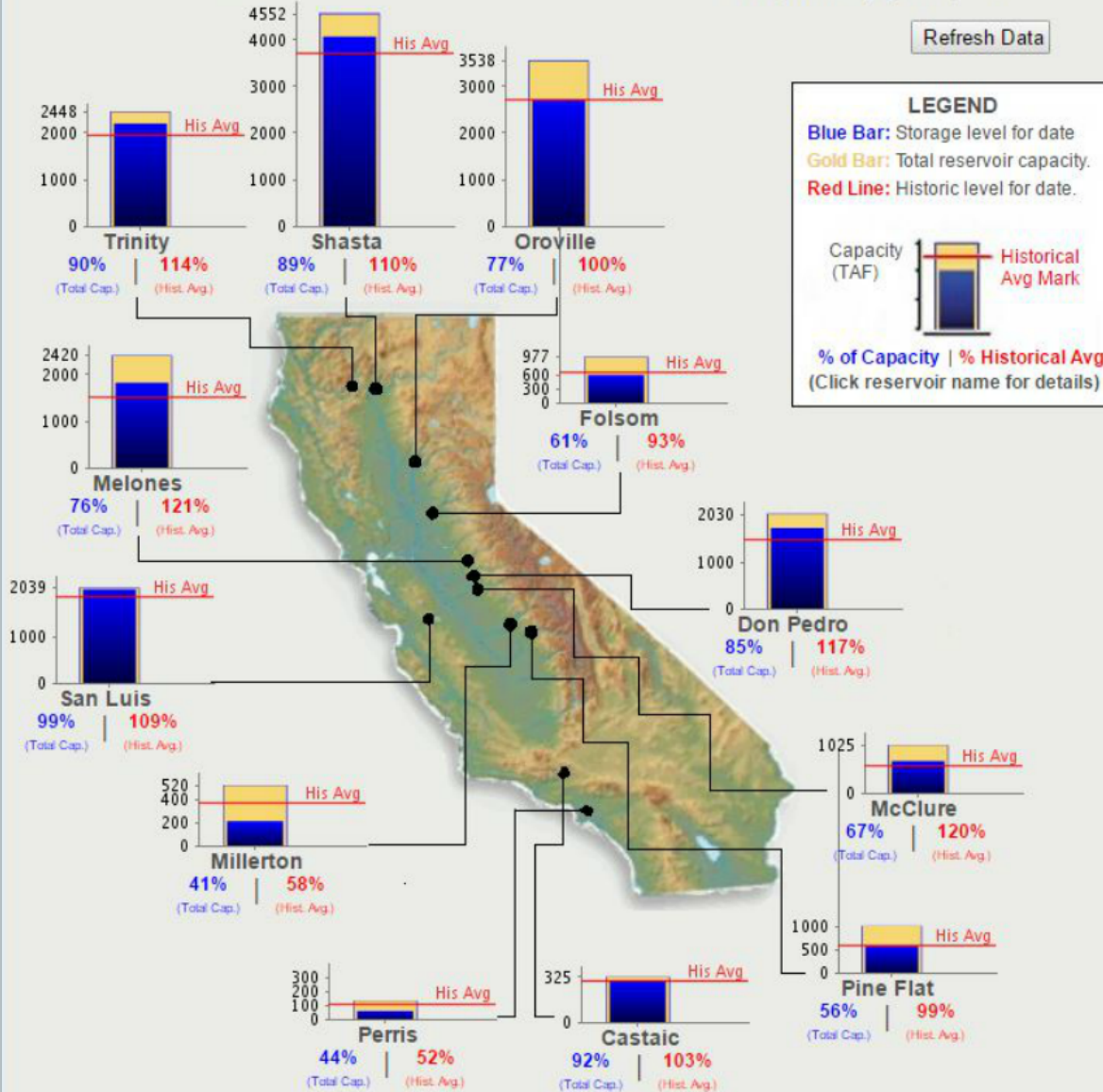
California Data Exchange Center - Reservoirs

CONDITIONS FOR MAJOR RESERVOIRS: 03-APR-2017

Data as of Midnight: 03-Apr-2017

Change Date:

[Refresh Data](#)



[Click for printable version of current data.](#)

Report Generated: 04-Apr-2017 7:16 AM



U.S. Drought Monitor

California

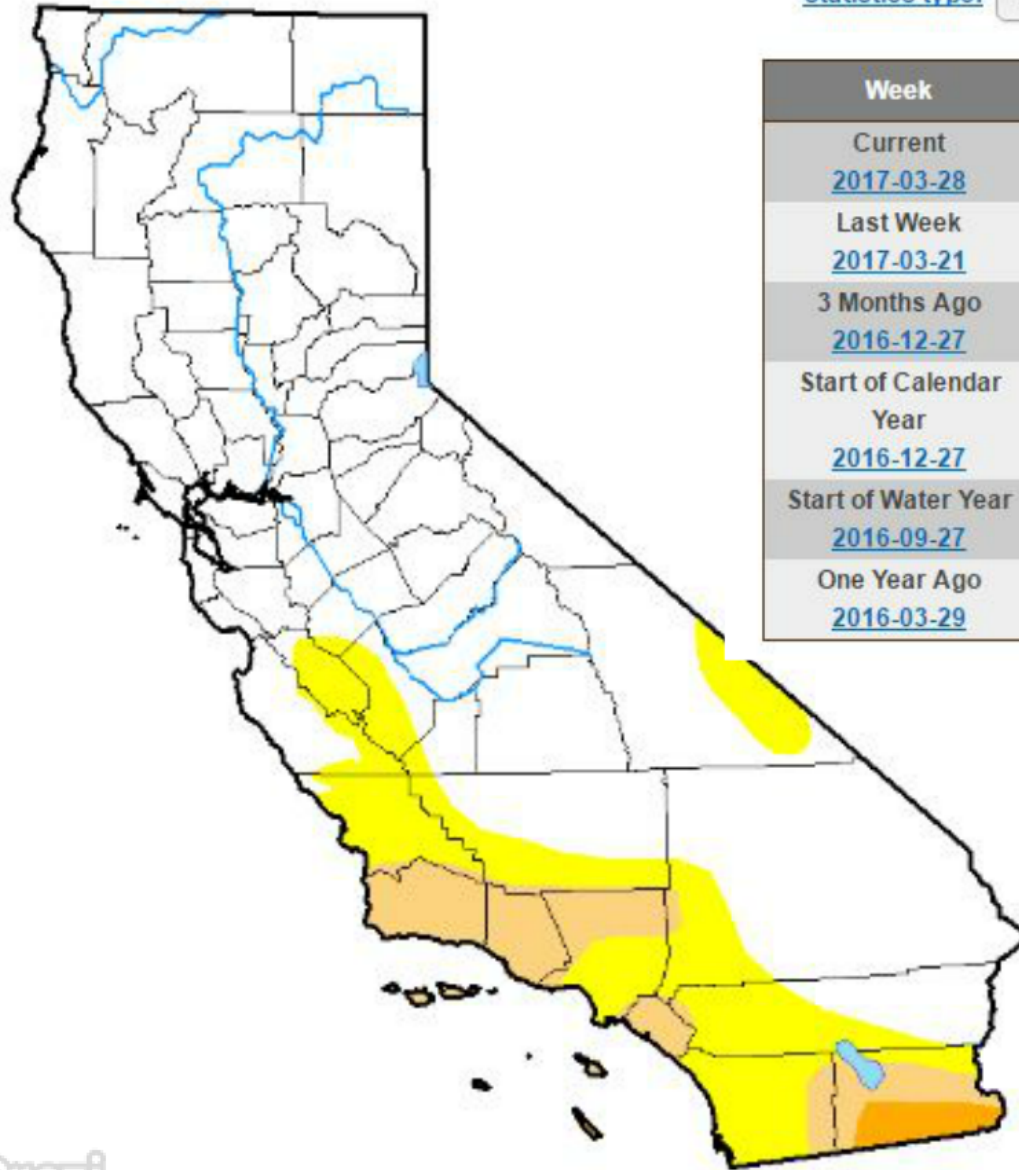
March 28, 2017

(Released Thursday March 30, 2017)

Valid 8 a.m. EDT

Statistics type: Traditional Percent Area

Export table:   



Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current 2017-03-28	76.54	23.46	8.24	1.06	0.00	0.00
Last Week 2017-03-21	76.54	23.46	8.24	1.06	0.00	0.00
3 Months Ago 2016-12-27	17.47	82.53	68.87	57.79	40.60	18.31
Start of Calendar Year 2016-12-27	17.47	82.53	68.87	57.79	40.60	18.31
Start of Water Year 2016-09-27	0.00	100.00	83.59	62.27	42.80	21.04
One Year Ago 2016-03-29	3.55	96.45	90.58	72.82	55.25	34.74

U.S. Drought Monitor California

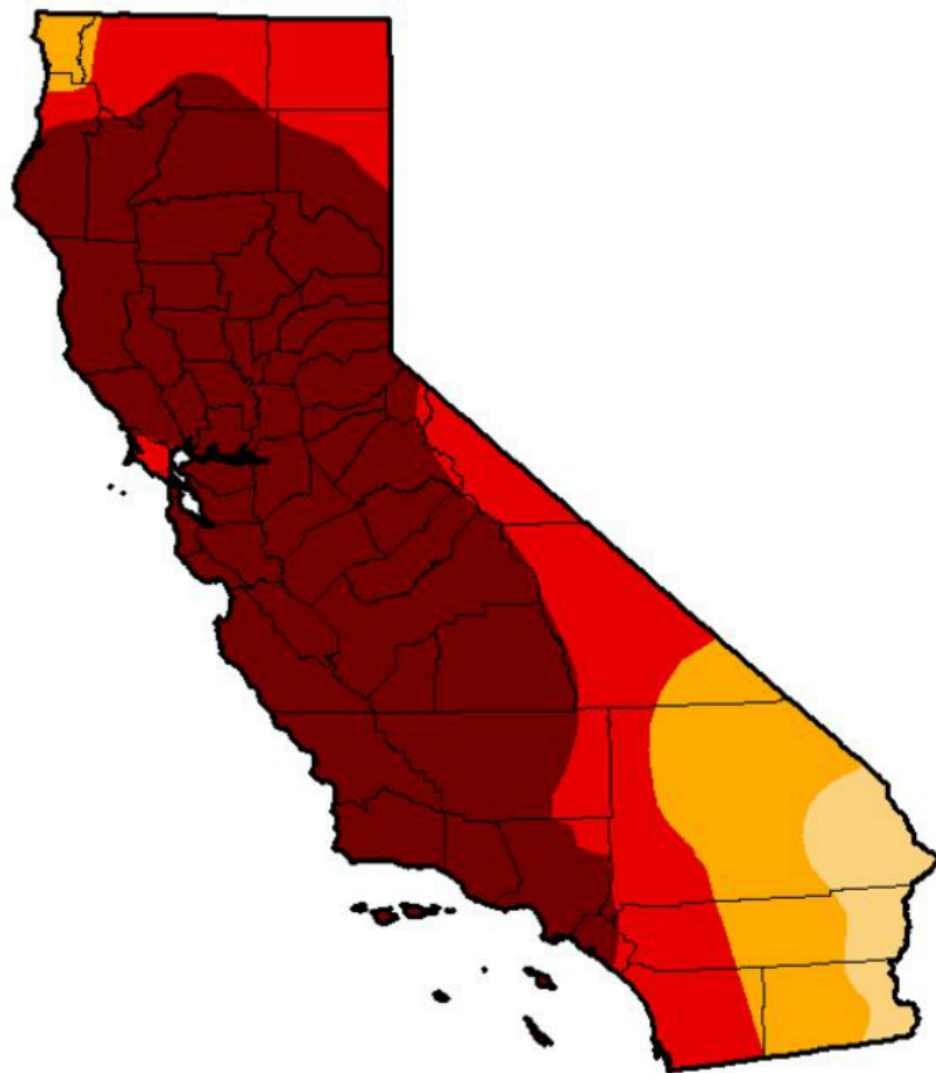
September 9, 2014

(Released Thursday, Sep. 11, 2014)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	95.42	81.92	58.41
Last Week 9/2/2014	0.00	100.00	100.00	95.42	81.92	58.41
3 Months Ago 6/9/2014	0.00	100.00	100.00	100.00	76.68	24.77
Start of Calendar Year 12/31/2013	2.61	97.39	94.25	87.53	27.59	0.00
Start of Water Year 10/1/2013	2.63	97.37	95.95	84.12	11.36	0.00
One Year Ago 9/9/2013	0.00	100.00	97.08	92.94	11.36	0.00



Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

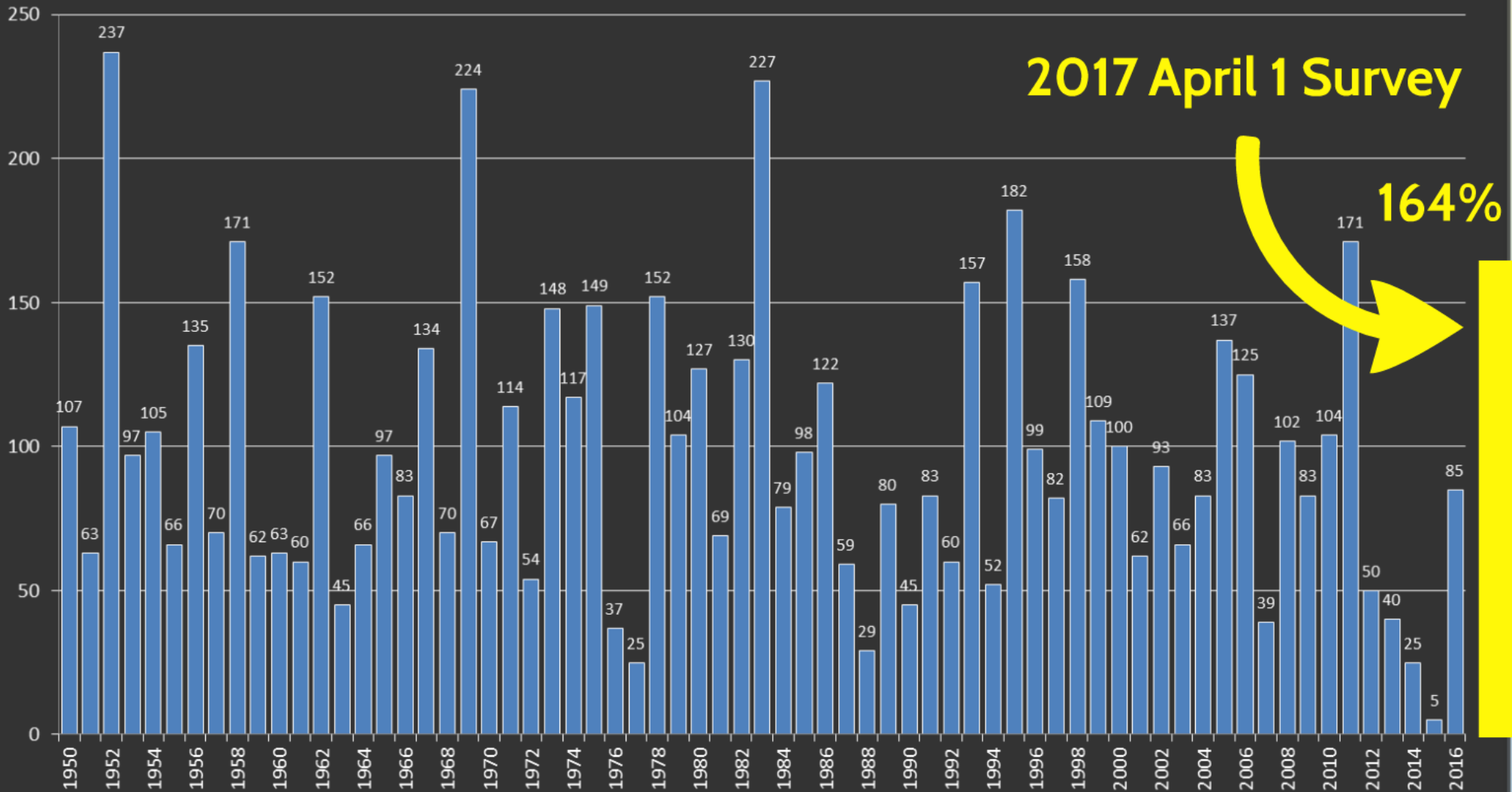
Brian Fuchs

National Drought Mitigation Center



<http://droughtmonitor.unl.edu/>

Snowpack Variability



California Water Action Plan

1. Make conservation a California way of life
2. Increase regional self reliance and integrated water management across all levels of government
3. Achieve 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

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Sustainable Groundwater Management Act, 2014

"Manage groundwater so it's available for future generations while balancing for the immediate needs of our economy"

- Mark Cowin

- Groundwater best managed at the local/ regional level
- DWR provides guidance and technical support
- SWRCB steps in in an interim basis if needed

2017)

Export table:   

	D2-D4	D3-D4	D4
	1.06	0.00	0.00
	1.06	0.00	0.00
	57.79	40.60	18.31
	57.79	43.91	18.31
	62.27	42.20	21.04
	72.03	65.16	24.74



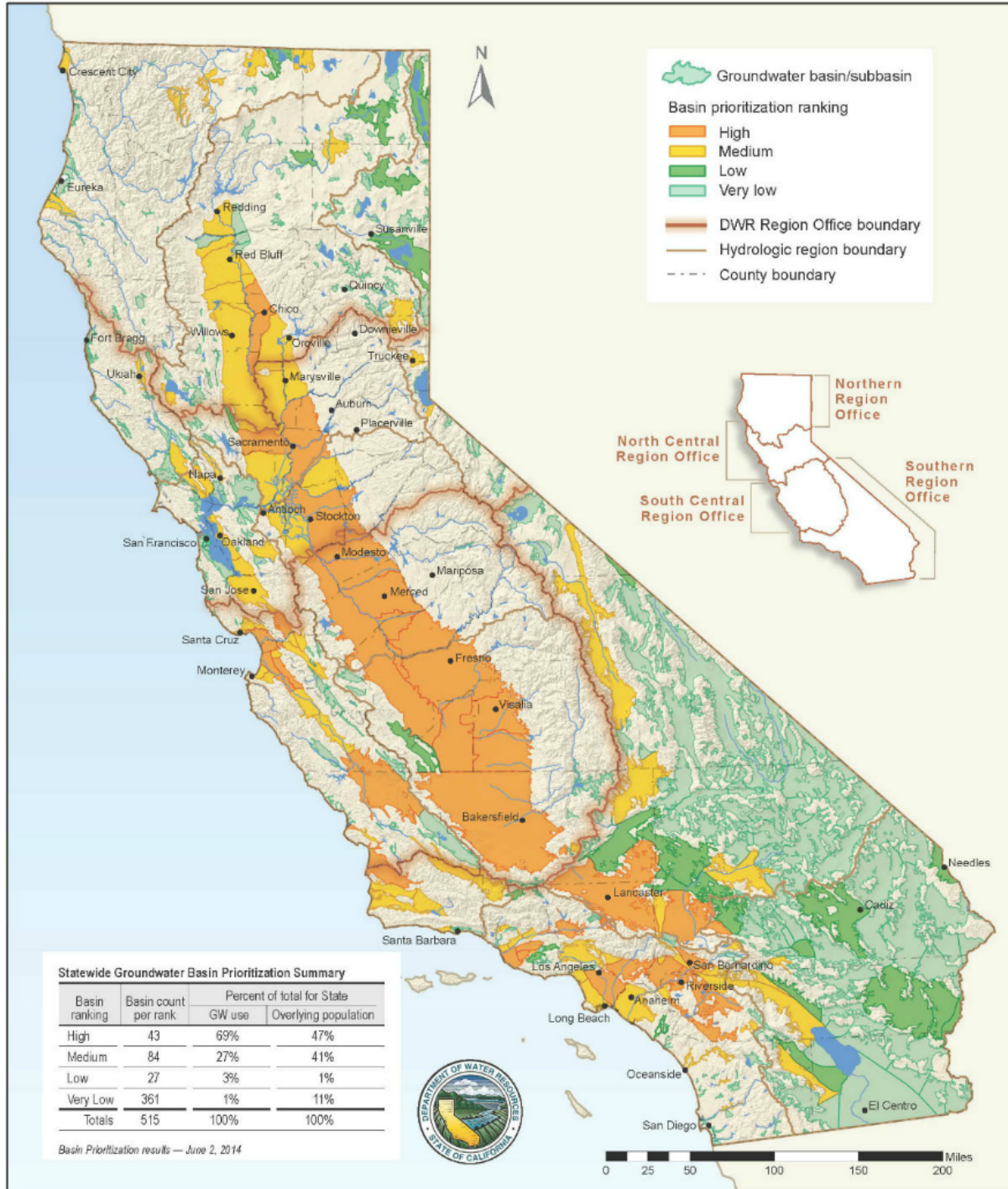
"Manage groundwater so it's available for future generations while balancing for the immediate needs of our economy"

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- **Groundwater best managed at the local/ regional level**
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Safe Yield- The maximum quantity of water that can be continuously withdrawn from a groundwater basin without adverse effect.

CASGEM Groundwater Basin Prioritization



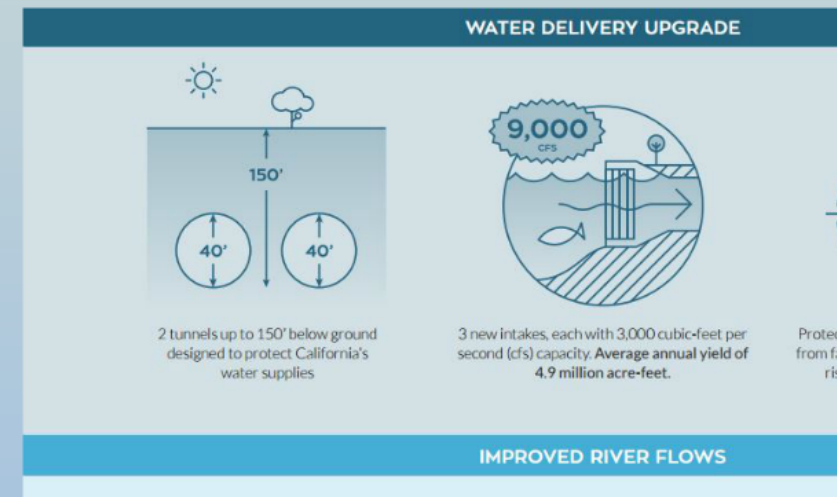
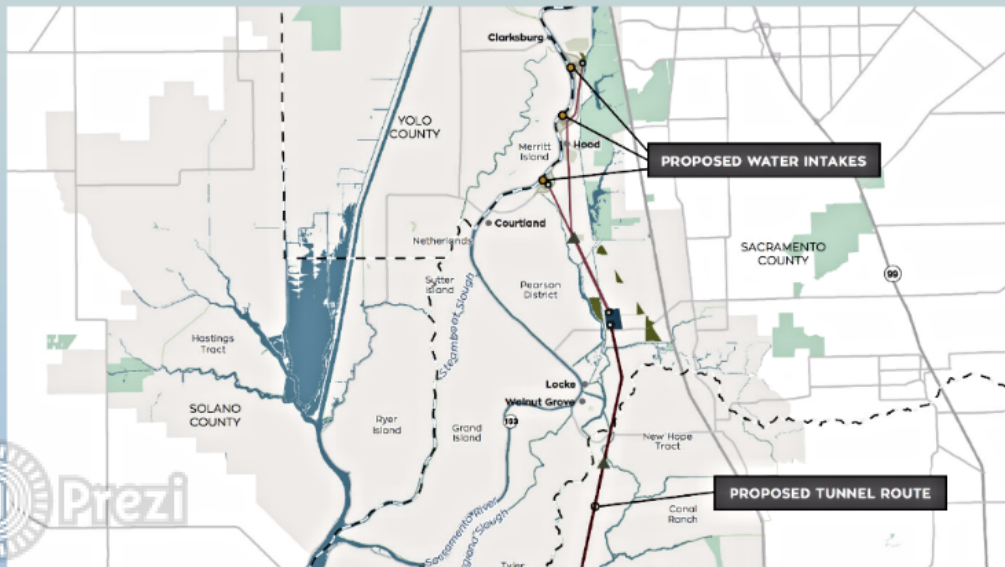
- \$395 Flood Management (DWR and the Central Valley Flood Protection Board)

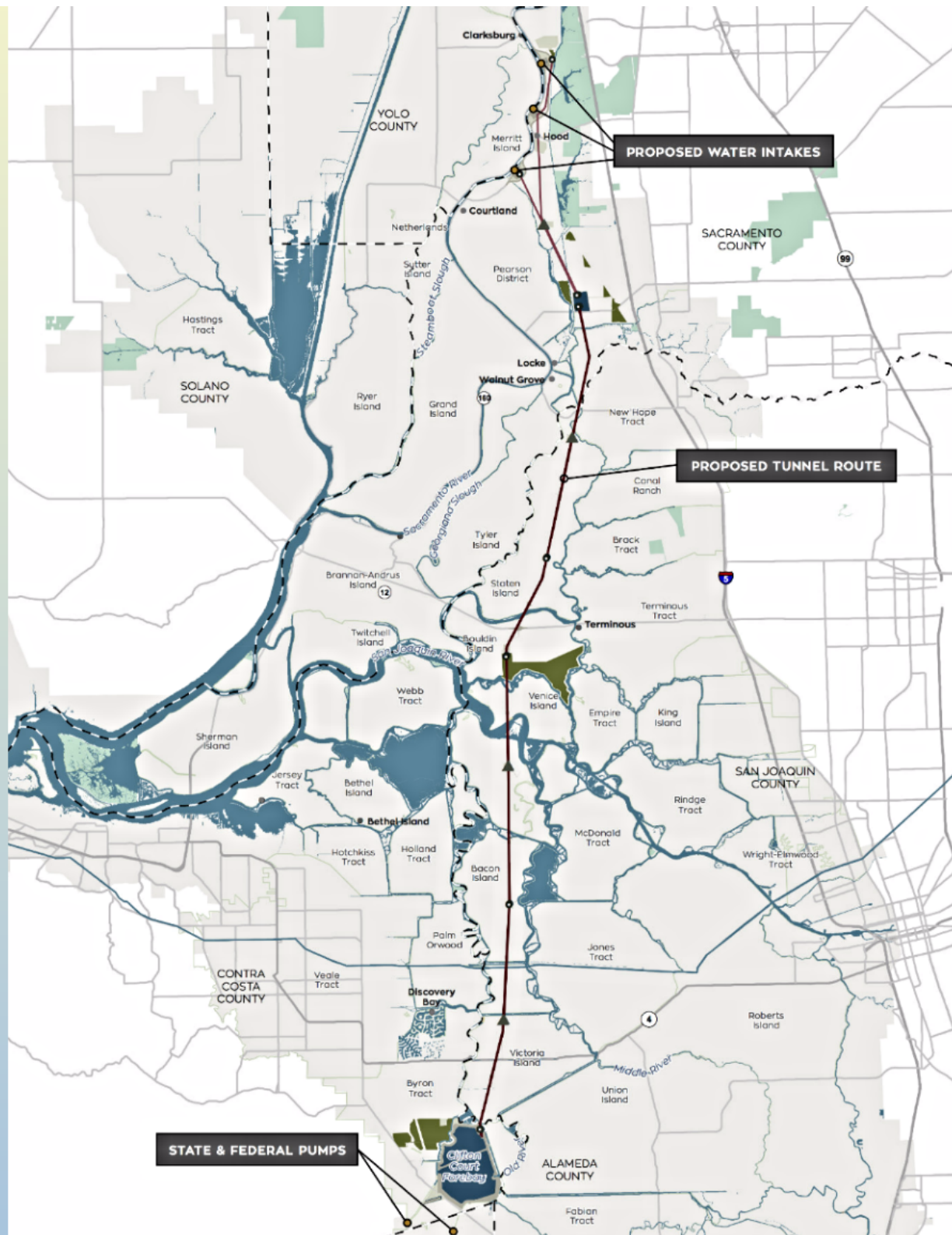


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California WaterFix

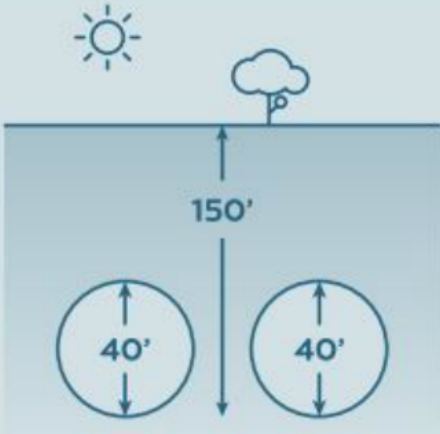




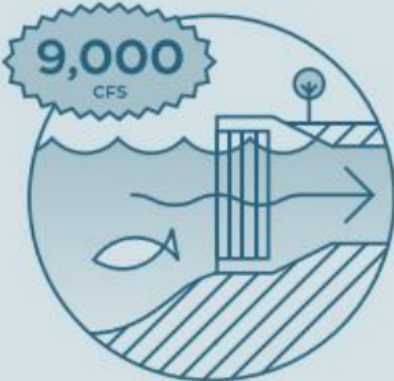
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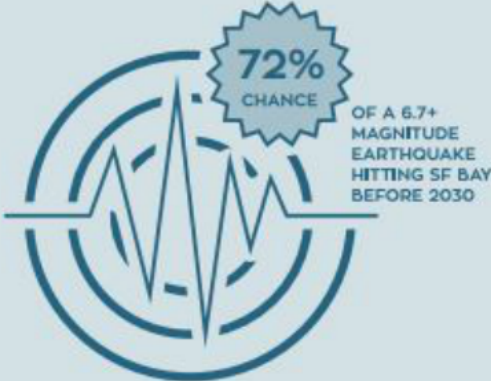
WATER DELIVERY UPGRADE



2 tunnels up to 150' below ground designed to protect California's water supplies



3 new intakes, each with 3,000 cubic-feet per second (cfs) capacity. Average annual yield of 4.9 million acre-feet.

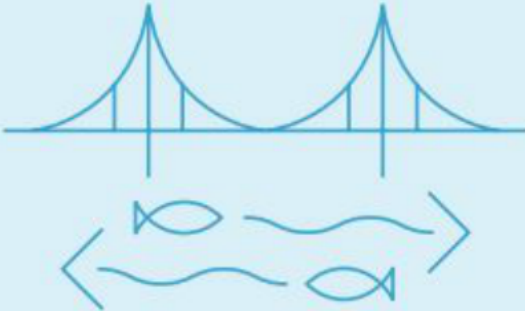


Protection against water supply disruption from failure of aging levees due to sea-level rise, earthquakes and flood events

IMPROVED RIVER FLOWS



Reinstate a more natural direction of river flows in the South Delta

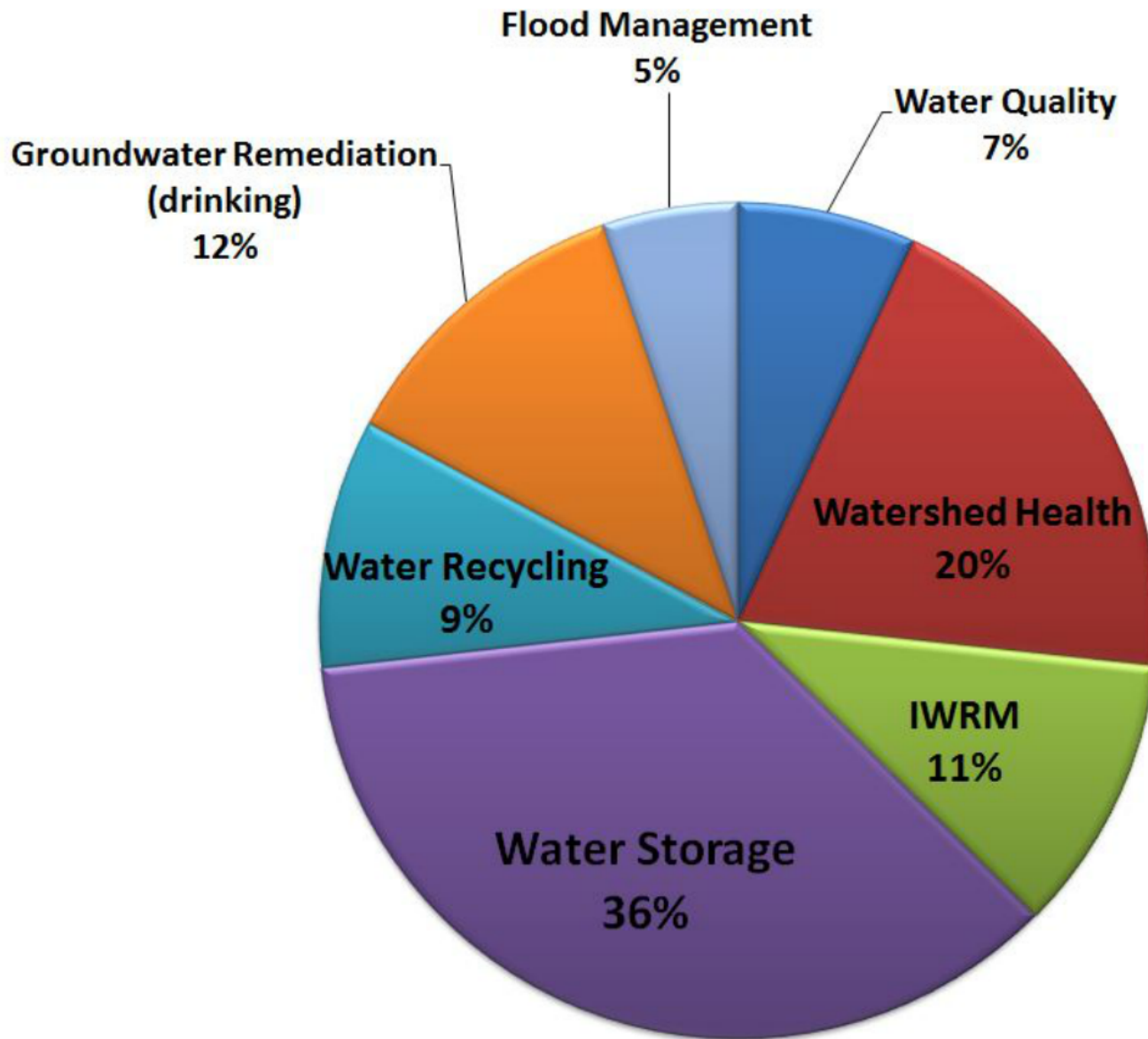


New criteria to protect spring outflow to San Francisco Bay



Criteria to protect Sacramento River flows and fish

Prop 1
\$7.5 billion water bond
Implementation of the Water
Action Plan



**Proposition 1
The 2014 California Water
Bond**

Department of Water Resources:

- \$510M Integrated Regional Water Management**
- \$100M Water Use Efficiency and Conservation**
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The Big Ask

Work With Us

SGMA

Flooding

Water Storage

Ecosystem Services

Carbon Sequestration

Healthy Soils

Data Management

Modeling

Ocean Health

"You have responsibilities, in short, to use your talents for the benefit of the society which helped develop those talents. You must decide, as Goethe put it, whether you will be an anvil or a hammer, whether you will give to the world in which you were reared and educated the broadest possible benefits of that education. Of the many special obligations incumbent upon an educated citizen, I would cite three as outstanding: your obligation to the pursuit of learning, your obligation to serve the public, your obligation to uphold the law.

If the pursuit of learning is not defended by the educated citizen, it will not be defended at all. For there will always be those who scoff at intellectuals, who cry out against research, who seek to limit our educational system.

Modern cynics and skeptics see no more reason for landing a man on the moon, which we shall do, than the cynics and skeptics of half a millennium ago saw for the discovery of this country. They see no harm in paying those to whom they entrust the minds of their children a smaller wage than is paid to those to whom they entrust the care of their plumbing.

But the educated citizen knows how much more there is to know. He knows that "knowledge is power," more so today than ever before. He knows that only an educated and informed people will be a free people, that the ignorance of one voter in a democracy impairs the security of all, and that if we can, as Jefferson put it, "enlighten the people generally ... tyranny and the oppressions of mind and body will vanish, like evil spirits at the dawn of day." **And, therefore, the educated citizen has a special obligation to encourage the pursuit of learning, to promote exploration of the unknown, to preserve the freedom of inquiry, to support the advancement of research, and to assist at every level of government the improvement of education for all Americans, from grade school to graduate school.**

Secondly, the educated citizen has an obligation to serve the public. He may be a precinct worker or President. He may give his talents at the courthouse, the State house, the White House. He may be a civil servant or a Senator, a candidate or a campaign worker, a winner or a loser. But he must be a participant and not a spectator."

John F. Kennedy Speeches

Remarks in Nashville at the 90th Anniversary Convocation of Vanderbilt University, May 18, 1963

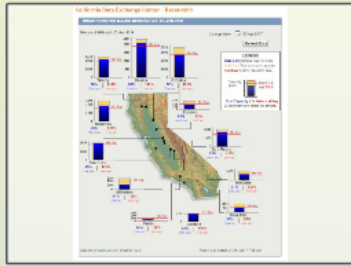




Jennifer Morales
Environmental Scientist
Climate Change Program

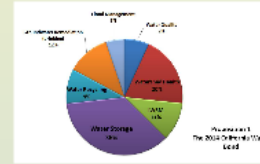
559-230-3381

Jennifer.Morales@water.ca.gov

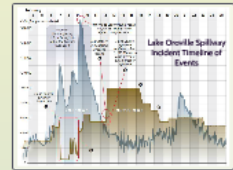


California Water Action Plan

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Prop 1 \$7.5 billion water bond Implementation of the Water Action Plan

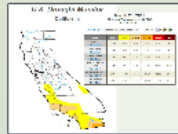
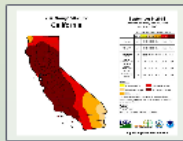
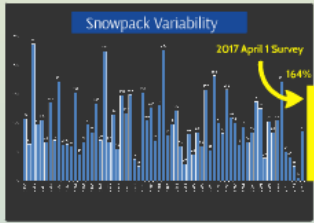


Sustainable Groundwater Management Act, 2014

- Department of Water Resources
- SSGM Integrated Regional Water Management
 - SSGM Water Use Efficiency and Conservation
 - SSGM Reclamation
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The Big Ask Work With Us

SGMA: Flooding, Water Storage, Ecosystem Services, Carbon Sequestration, Healthy Soils, Data Management, Modeling, Ocean Health

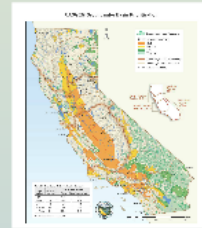


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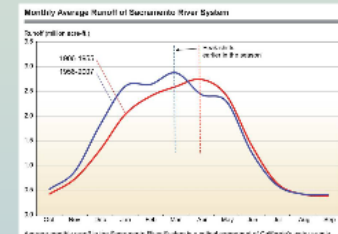
California WaterFix



March 14, 2017
(Released Thursday March 16, 2017)
Valid 8 a.m. EDT

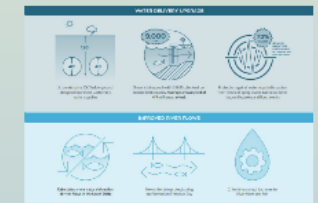
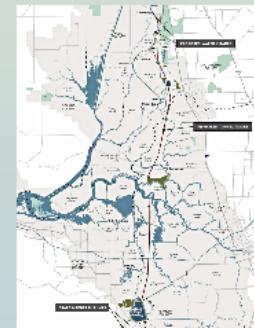
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One Year Ago 2016-03-14	0.42	99.57	93.28	73.84	55.31	34.74	

Drought



Shifts in Runoff Timing

As a result of climate change, the timing of runoff in California's major river basins is shifting. This is due to a combination of factors, including a decrease in snowpack and a shift in the timing of precipitation. This shift in runoff timing is causing significant changes in the hydrology of California's major river basins, and is having a major impact on the state's water resources.



Turbulence and Leadership in California's Dynamic Hydrology

Climate change is felt in our hydrology

Drought

March 14, 2017
(Released Thursday March 16, 2017)
Valid 8 a.m. EDT

Statistics type: Traditional Percent Area

Export table:



Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
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Intensity:

D0 (Abnormally Dry)

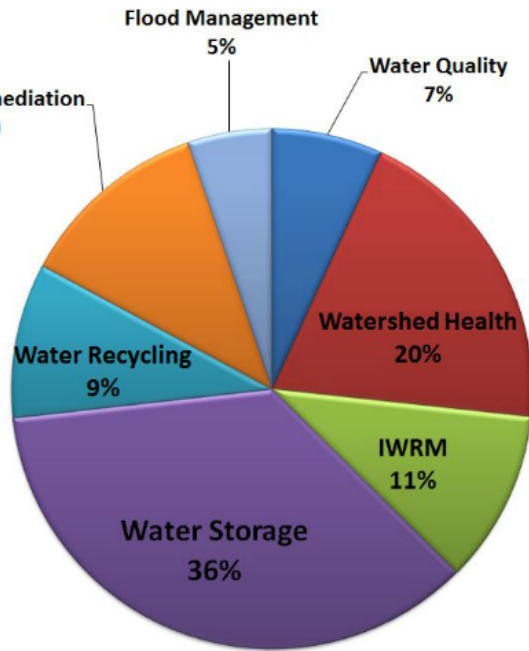
D2 (Severe Drought)

D4 (Exceptional Drought)

D1 (Moderate Drought)

D3 (Extreme Drought)

Prop 1 \$7.5 billion water bond Implementation of the Water Action Plan

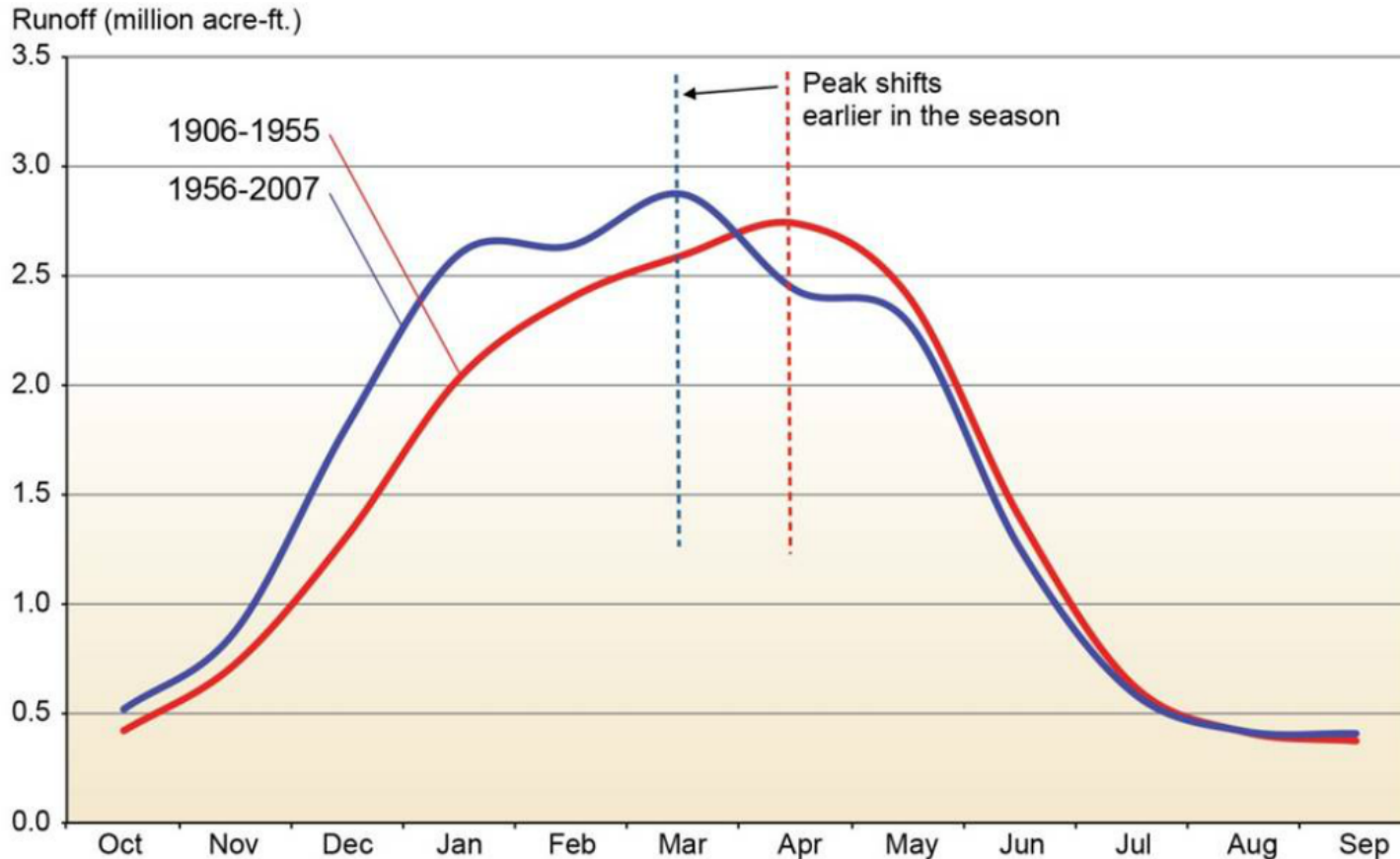


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Monthly Average Runoff of Sacramento River System

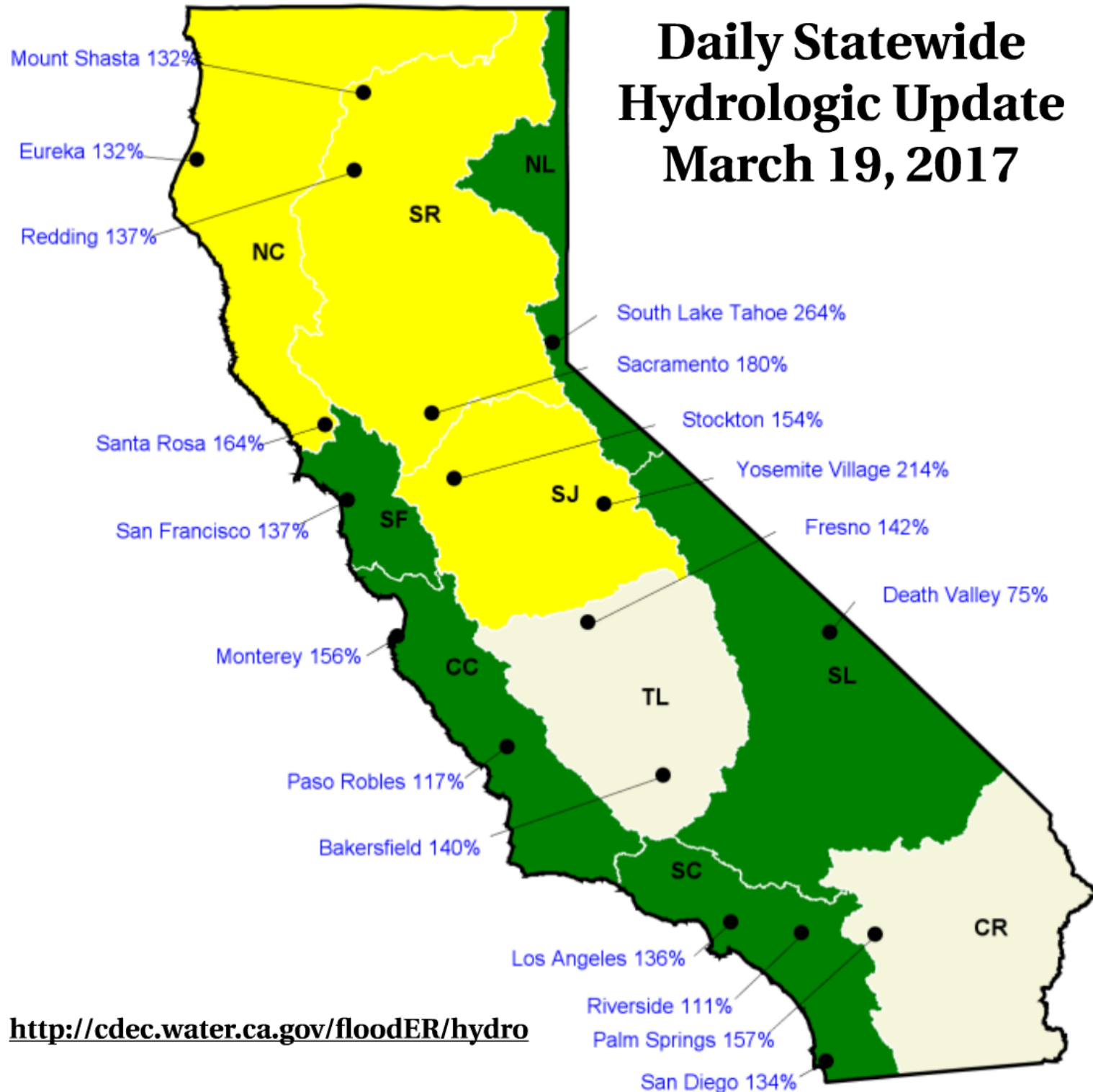


Average monthly runoff in the Sacramento River System is a critical component of California's water supply. Flood protection and water supply infrastructure have been designed and optimized for historical conditions. However, the timing of peak monthly runoff between 1906-1955 (redline) and 1956-2007 (blue line) has shifted nearly a month earlier indicating that this key hydrology metric is no longer stationary. Timing is projected to continue to move earlier in the year, further constraining water management by reducing the ability to refill reservoirs after the flood season has passed.

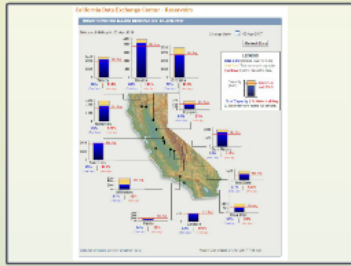
Shifts in Runoff Timing

City: % of Normal Precip (Since Oct. 1)

Daily Statewide Hydrologic Update March 19, 2017

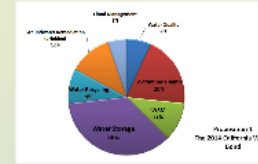


<http://cdec.water.ca.gov/floodER/hydro>

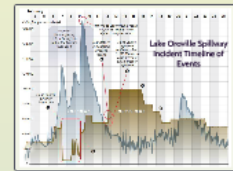


California Water Action Plan

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"Manage groundwater basins to be available for future generations while reducing the environmental impacts of overuse"

- Groundwater basins managed at the local, regional level
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- DWRCC helps to plan basins, track progress

SGM VAD - The minimum quantity of water that can be used without addition from a groundwater basin without adverse effect.

Department of Water Resources

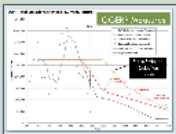
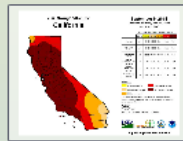
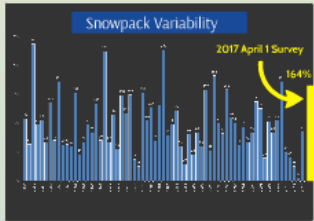
- SSGM Integrated Regional Water Management
- SSGM Water Use Efficiency and Conservation
- SSGM Desalination
- SSGM Groundwater Management Planning
- SSGM Flood Management (DWR and the Central Valley Flood Protection Board)

**The Big Ask
Work With Us**

- SGMA: Flooding, Water Storage
- Emergency Services, Carbon Sequestration
- Healthy Soils, Data Management
- Modeling, Ocean Health

Bea Miller-Morales
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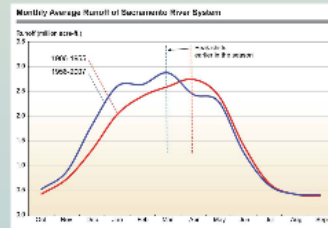


March 14, 2017
(Released Thursday March 16, 2017)
Valid 8 a.m. EDT

Drought

Statistic Type	Traditional Percent Area	Exportable	DL D4	D1 D4	D2 D4	D3 D4	D4
Current 2017-03-14	79.54	22.46	8.24	1.95	0.55	0.05	0.05
Last Week 2017-03-07	79.54	23.46	8.24	1.19	0.55	0.05	0.05
3 Weeks Ago 2017-01-31	12.16	87.84	73.34	93.27	42.80	21.34	
Start of Calendar Year 2015-12-22	17.47	82.53	68.87	57.75	48.60	18.31	
Start of Water Year 2015-09-27	0.88	100.00	83.53	62.27	42.80	21.34	
One Year Ago 2016-03-14	0.42	89.57	93.28	73.84	55.31	34.74	

Legend: DL D4 (Dark Blue), D1 D4 (Blue), D2 D4 (Light Blue), D3 D4 (Yellow), D4 (Orange), No Drought (Green), All Basins Drought (Red), All Basins Drought (Dark Red)

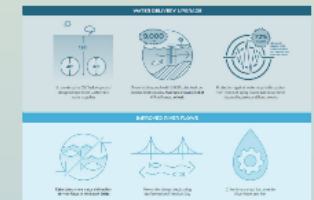
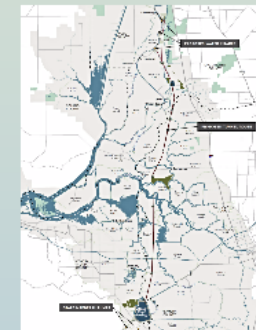


Shifts in Runoff Timing



Climate change is altering the timing and amount of precipitation in California. This is leading to shifts in runoff timing and volume, which can impact water availability and ecosystem health. The Sacramento River system is particularly vulnerable to these changes, with runoff occurring earlier and more frequently than in the past.

California WaterFix



Turbulence and Leadership in California's Dynamic Hydrology

Climate change is felt
in our hydrology