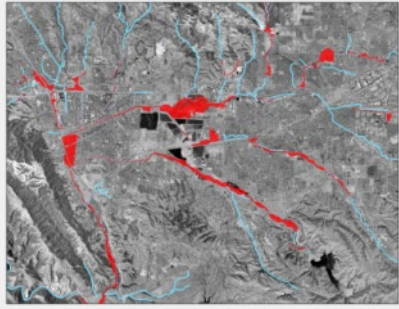


Zone 7 Water Agency Water Supply Long-term and Near-term



Valerie Pryor, General Manager

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Water Supply

In any given year, Zone 7 meets demands (avg. 40,000 AF) using **incoming supplies** and **water from storage**.

- **Normal years:** Demands are met through a combination of imported supplies (largely State Water Project), local surface water, and groundwater (primarily for peak demands).
- **Dry years:** Water from the Kern County groundwater banks, dry year transfers, and Yuba Accord supplement supplies; additional groundwater is also pumped locally. Stored water in the form of SWP Carryover and Lake Del Valle storage are also used to supplement dry year supplies.

INCOMING SUPPLIES

Imported Supplies:

- **SWP – Table A:** Table A amount of 80,619 AF, average of 50,000 AF per year; additional minor amounts available
- **Transfers:** As needed, when available

Local Surface Water:

- Arroyo Valle: Runoff during the year captured in Lake Del Valle, average of 7,300 AF per year

SUPPLIES IN STORAGE

- SWP Carryover:** Typically target 7,000-10,000 AF; as of end of 2017: 10,100 AF (unused Table A)
- Lake Del Valle:** Varies depending on hydrology up to about 7,500 AF; as of end of 2017: 5,600 AF
- Main Basin:** Water artificially recharged by the Agency into local groundwater basin using imported and local supplies with total capacity of 254,000 AF; emergency storage capacity: 128,000 AF; operational storage capacity: 126,000 AF; storage as of end of 2017: 246,000 AF
- Kern County Groundwater Banks:** Agreements with Semitropic Water Storage District and Cawelo Water District provides 198,000 acre-feet of storage capacity; storage as of end of 2017: 104,100 AF



Water Supply Evaluation Process

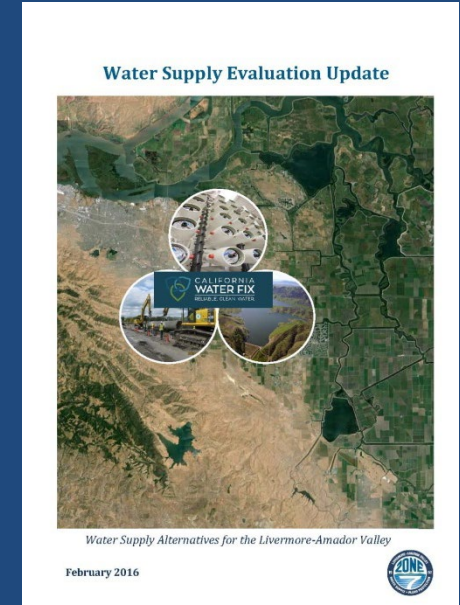
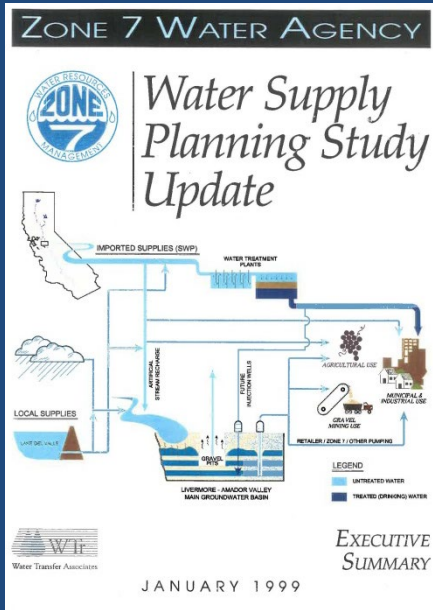
- 2015 Urban Water Management Plan identified for additional water supply
- Recent drought showed a need for additional water supply reliability (portfolio diversification)
- Zone 7 is currently reviewing water supply programs
 - Los Vaqueros Reservoir Expansion, Sites Reservoir, California Water Fix, Potable Reuse, Regional desalination, transfers
- All options will have significant costs
- 2019 Water Supply Evaluation will facilitate decision-making
 - Updated demands
 - Updated State Water Project reliability



Water Supply Evaluation Schedule

- Presented to Water Resources Committee on December 21, 2018
- Will be presented to Zone 7 Board of Directors on January 16, 2019
- Will be presented to Liaison Committee on January 23, 2019

Water supply planning over the last 20 years



- Demand on Zone 7 at 2020 buildout: app. **100,000 AF**
 - Planning for 100% reliability
 - Based on average yields and historical hydrologic pattern:
 - 1977: 11% Table A
 - 1987-1992: 42% average Table A
 - Led to additional Table A transfers and groundwater banking
- Demand on Zone 7 at 2040 buildout: **65,000 AF**
 - Metrics: cost, max shortage, frequency of shortages, and impacts on groundwater storage
 - New risk-based approach
 - Identified over 30 potential water supply options
 - Evaluated three portfolios: (1) CWF, (2) In-Valley, and (3) Intertie
 - Resulted in new reliability policy
- Demand on Zone 7 at 2040 buildout: **60,000 AF**
 - Portfolios: Current Plan (CWF), potable reuse, desalination
 - Incorporated lessons learned from drought and other new info
 - New key metrics: average reliability and minimum supply availability. Other 'lower priority metrics': local control, diversification, energy use.

Long-term- 2019 Water Supply Evaluation Update

- Steady annual transfers in interim are needed
 - meeting 99% reliability goal requires large interim transfers up to 10,000 AFY
- Multiple, new water supply reliability projects will be needed
- A diversified portfolio is best for reliability
 - consider factors such as wet-year, dry-year, steady supply
- West Yost's demand study shows potential for further demand reductions of additional 5,000 AFY on average at buildout
 - highly uncertain, must weigh against risk of underestimating demand
 - demand forecasts will continue to be refined
- Risk Model shows Los Vaqueros emergency storage of limited benefit; however, expected benefits from increased operational flexibility, particularly on a monthly time-scale, are not reflected in the model



Draft Recommendations pt. 1/3

1. Continue to support WaterFix

- restores reliability by safeguarding existing SWP supplies against Delta outages, climate change, and increased environmental restrictions
- protects ~11,000 AFY of average supply
- low \$/AF relative to other long-term projects

2. Continue to participate in Sites Reservoir for net yield of up to 10,000 AFY

- potential for large supply reliability benefits due to dry-year availability
- adds operational flexibility with access to both storage and supply
- complements CA WaterFix, which has higher yield during wet years
- one of the lowest-cost water supply options

3. Continue to participate in Los Vaqueros Expansion

- adds significant operational flexibility to the system
- can store recovered water from Kern County during off-peak seasons, and deliver during peak summertime demand
- Transfer Bethany Pipeline increases emergency conveyance options, providing redundancy, especially during Delta outages

Draft Recommendations pt. 2/3

4. Pursue short-term transfers of at least 5,000 AFY through 2030

- reduces short-term risk while other projects develop

5. Conduct technical studies to support selection of best potable reuse option

- potable reuse has a high unit cost and public acceptance challenges but offers a locally-controlled reliable supply
- continue to advance as an option while monitoring progress on other water supply options, long-term conservation, and potable reuse regulations

6. Continue to investigate brackish water desalination with other agencies

- desalination has a high unit cost and environmental challenges but offers a relatively local supply, reliable except in the most critically dry conditions
- a regional project that pairs water supply with Los Vaqueros storage may be a viable option

Draft Recommendations pt. 3/3

- 7. Continue to pursue other water supply opportunities especially at the Bay Area regional level**
- 8. Consider revising Zone 7's Reliability Policy**
 - difficult and very expensive to meet current policy
 - ~10,000 AFY additional supply to meet 99% reliability policy goal in the near-term
 - incorporate lessons from the drought
- 9. Complete a more comprehensive regional demand and water conservation program study over the next two years**
- 10. Develop a regional plan for meeting the long-term conservation framework**
- 11. Enhance public outreach program to engage the public on water supply reliability issues**
 - large investments will be required
 - major changes to behavior, landscaping. etc. likely required from the public to meet conservation goals
 - need meaningful input and support from the public



2019 Operations

- DWR announced a 10% allocation
- The allocation will likely change throughout the first part of the year
- How will Zone 7 meet demands?



Zone 7 Water Agency: Preliminary Water Operations Plan 2019 General Water Supply & Use Plan

	Source	10% SWP Allocation	30% SWP Allocation	50% SWP Allocation	60% SWP Allocation	2018 Actuals (35% Alloc.)
		Annual Amt	Annual Amt	Annual Amt	Annual Amt	Annual Amt
Available Supply	SWP - (Table A)	8,100	24,200	40,300	48,400	28,200
	SWP - Carryover (2018 to 2019)	7,000	7,000	7,000	7,000	15,700
	Yuba Transfer	1,000	2,000	1,000	200	2,000
	LDV Local Yield - 2018 Carryover	1,200	1,200	1,200	1,200	0
	Other Water Transfers	1,000	1,000	0	0	650
	GW Production ¹	14,000	13,000	10,800	10,800	5,300
	GW Production Disposal to brine	500	400	400	400	350
	Semitropic-(Pumpback)	9,100	3,000	0	0	0
	Semitropic-(Exchange)	0	1,600	0	0	0
	Cawelo	5,000	0	0	0	0
	LDV Local Yield - 2019	500	3,000	5,000	6,000	1,200
Total		47,400	56,400	65,700	74,000	53,400

	Water Use	10% SWP Allocation	30% SWP Allocation	50% SWP Allocation	60% SWP Allocation	2018 Actuals (35% Alloc.)
		10% Conservation	5% Conservation	No Conservation	No Conservation	4% Conservation ²
		Annual Amt	Annual Amt	Annual Amt	Annual Amt	Annual Amt
Planned Usage	Treated Water Requested	38,300	38,300	38,300	38,300	36,400
	Treated Water (Projected)	34,600	36,700	38,300	38,300	35,000
	Agricultural	4,500	5,000	5,500	5,500	5,400
	A Valle Artificial Stream Recharge	200	2,500	2,000	1,500	3,100
	A Valle Shadow Cliffs Diversion	0	500	500	400	550
	A Mocho Artificial Stream Recharge	0	1,000	2,000	2,000	700
	Demin Concentrate-Brine	500	400	400	400	350
	Cawelo Storage ³	0	0	0	3,000	0
	Semitropic Storage ³	0	0	3,000	8,000	0
	Local Water Carryover	500	3,000	5,000	6,000	1,200
	SWP Carryover (2019 to 2020)	7,000	6,800	8,400	8,200	7,000
	Lake Del Valle Evap Losses	100	500	600	700	100
Total		47,400	56,400	65,700	74,000	53,400

¹ Local Groundwater Bal is 118 TAF

² Conservation % based on projected vs requested. In 2013, production was 43,200 AF.

³ Kern Groundwater Storage Bal is 104 TAF

Legend:

SWP - State Water Project

GW - Groundwater

LDV - Lake Del Valle



- Questions and Discussion