

Drought Response and Recycled Water Outlook for 2016

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Manager*



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Who we serve

2,000,000 people

15 cities

4,700 direct well
owners

13 local water
providers



Economic Impact of Water Shortage



Water reduction 10%-30%

**Decrease in local sales losses of
\$900 million to \$10 billion !!!!**



Risks to Water Supply Reliability

- **Ongoing/ severe droughts**
- **Climate change**
- **Reduced import of water**
- **Population growth**

Lake Oroville 2011

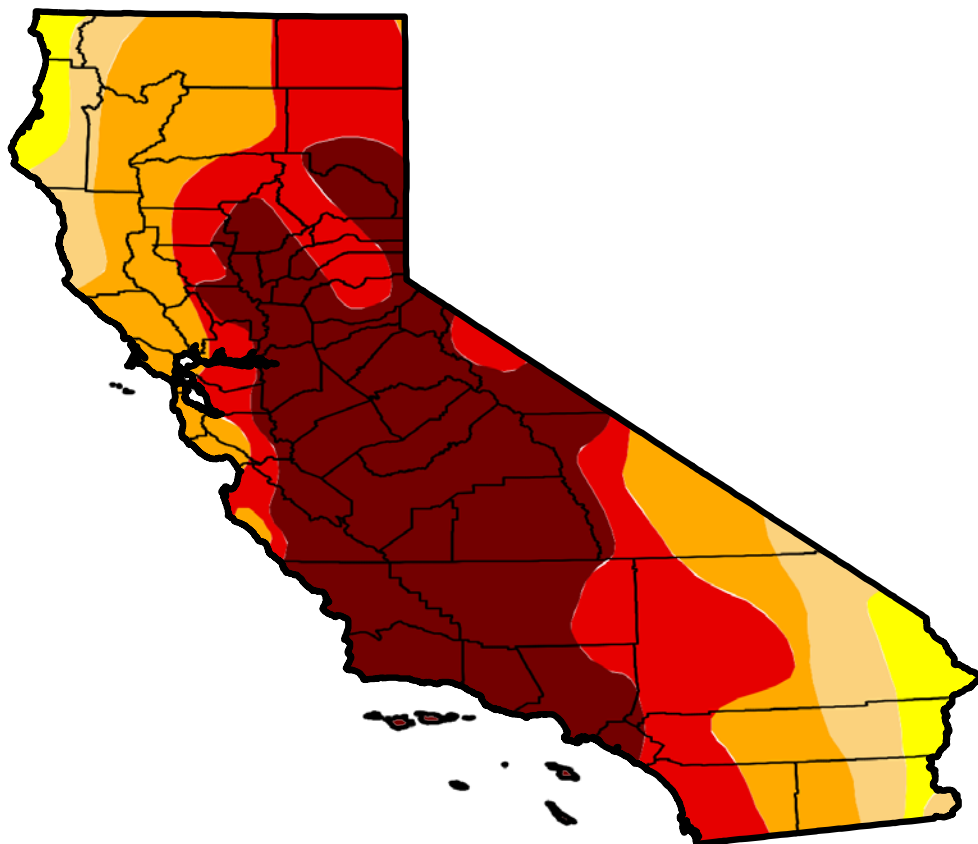


Lake Oroville 2014



February 2016 Drought Status Report

U.S. Drought Monitor California



February 2, 2016
(Released Thursday, Feb. 4, 2016)

Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	95.26	86.13	63.90	39.41
Last Week 1/26/2016	0.00	100.00	95.35	86.13	63.96	40.21
3 Months Ago 11/3/2015	0.14	99.86	97.33	92.27	70.55	44.84
Start of Calendar Year 12/29/2015	0.00	100.00	97.33	87.55	69.07	44.84
Start of Water Year 9/29/2015	0.14	99.86	97.33	92.36	71.08	46.00
One Year Ago 2/3/2015	0.16	99.84	98.13	93.57	77.46	39.99

Intensity:

Yellow D0 Abnormally Dry

Light Orange D1 Moderate Drought

Orange D2 Severe Drought

Red D3 Extreme Drought

Dark Red D4 Exceptional Drought

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

Author:

Anthony Artusa

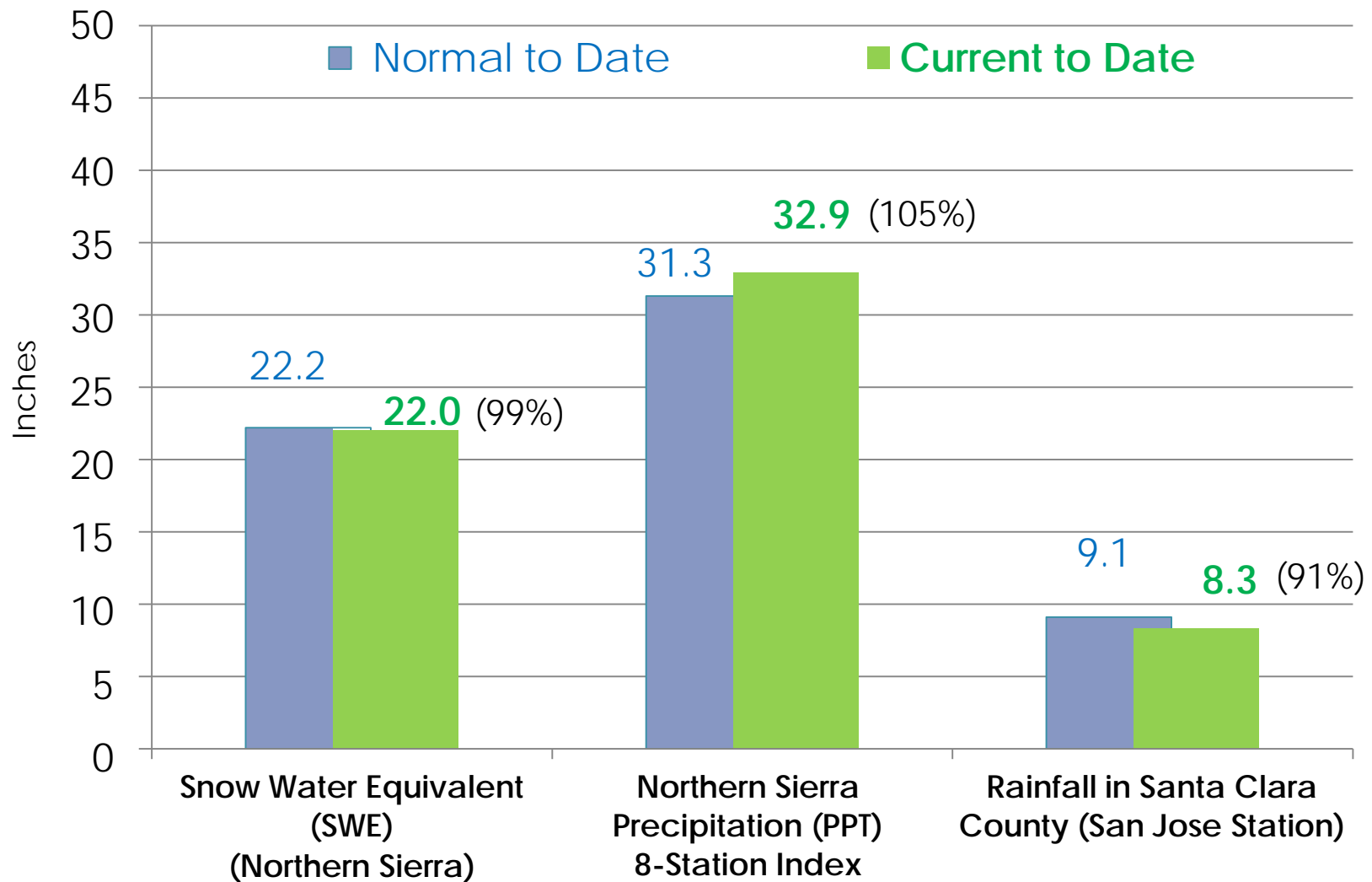
NOAA/NWS/NCEP/CPC

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

Drought Response Strategies

Supply and Operations	Water Use Reduction	Drought Response Opportunities	Administrative and Financial Management
1. Secure imported water supplies	4. Reduce 2015/16 water use by 30%	7. Advance long-term water conservation	12. Secure legislative support to offset drought impacts, accelerate programs
2. Manage surface water and groundwater supplies	5. District facilities model water conservation	8. Accelerate recycled water program	13. Leverage EOC to assist drought efforts
3. Optimize treated water quality and availability	6. Minimize drought impacts to stakeholders	9. Maintain uniquely accessible District assets	14. Adjust District resource allocations
		10. Further develop the District's workforce	15. Support the Board
		11. Advance knowledge of District services	

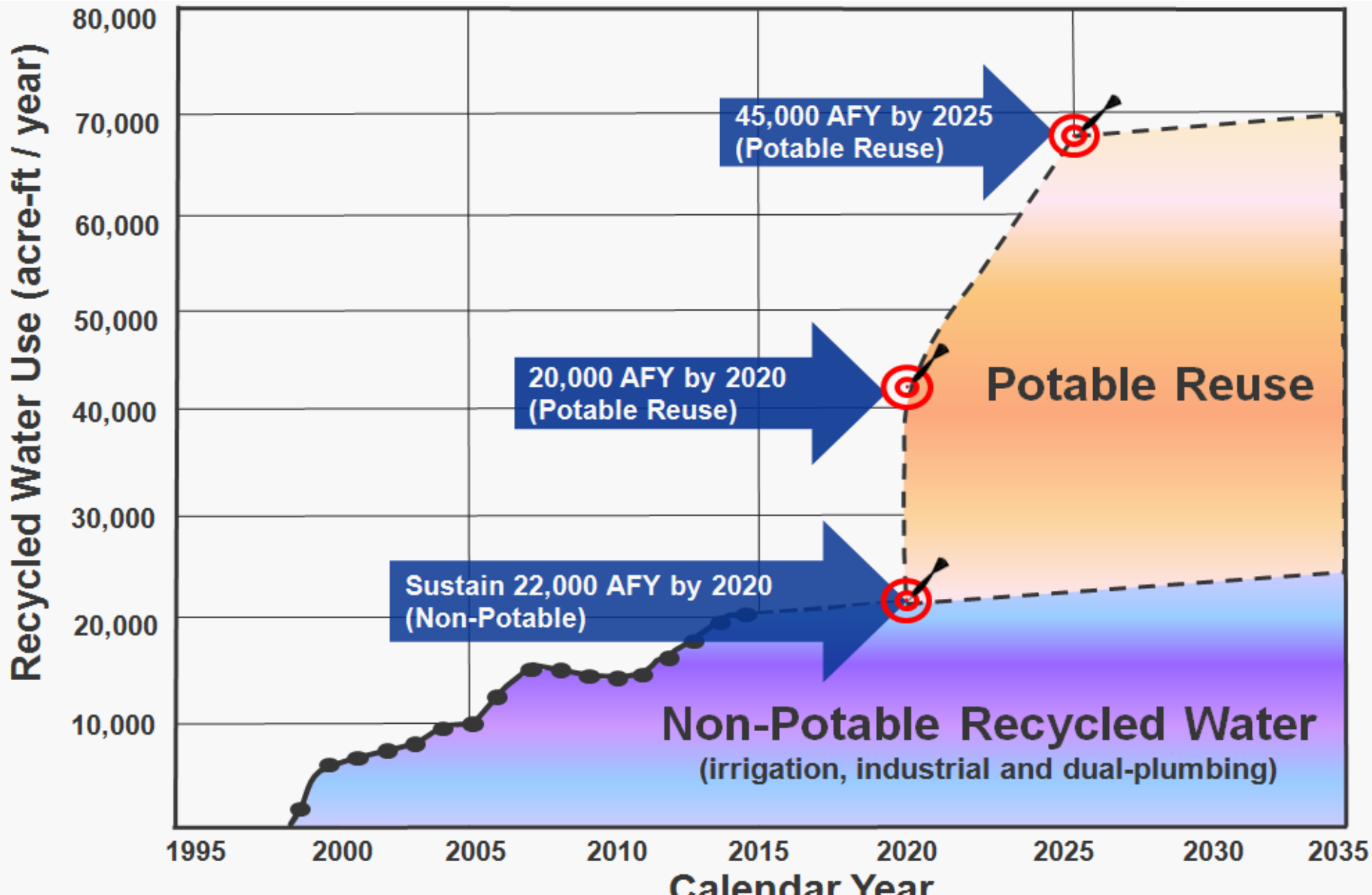
Precipitation as of Feb 16, 2016



Recycled Water Can Fill the Gap

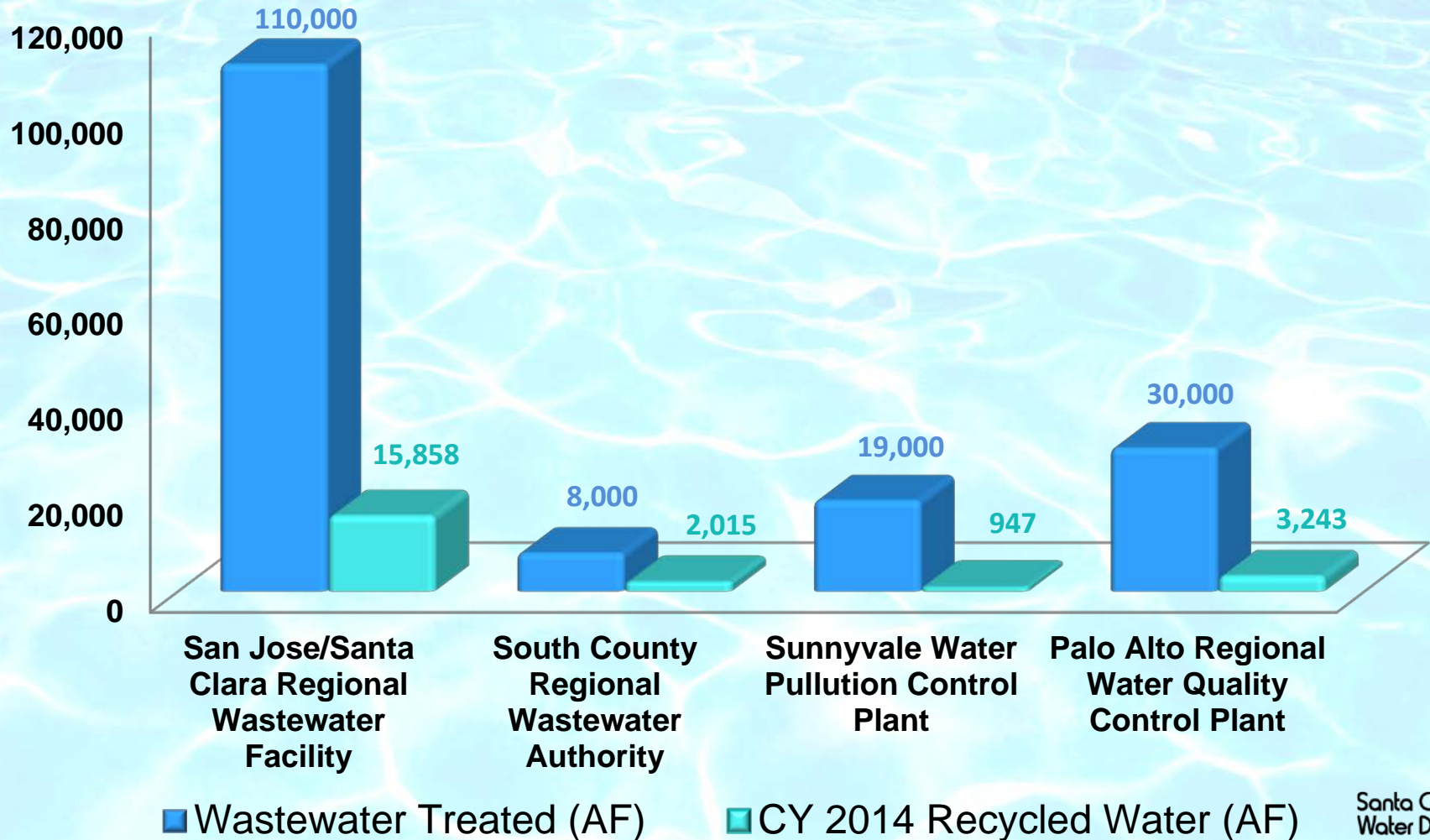
- Reusable source
- Locally-controlled source
- Purified through treatment
- Drought-proof
- Replicates natural water cycle

District Recycled and Purified Water Goals

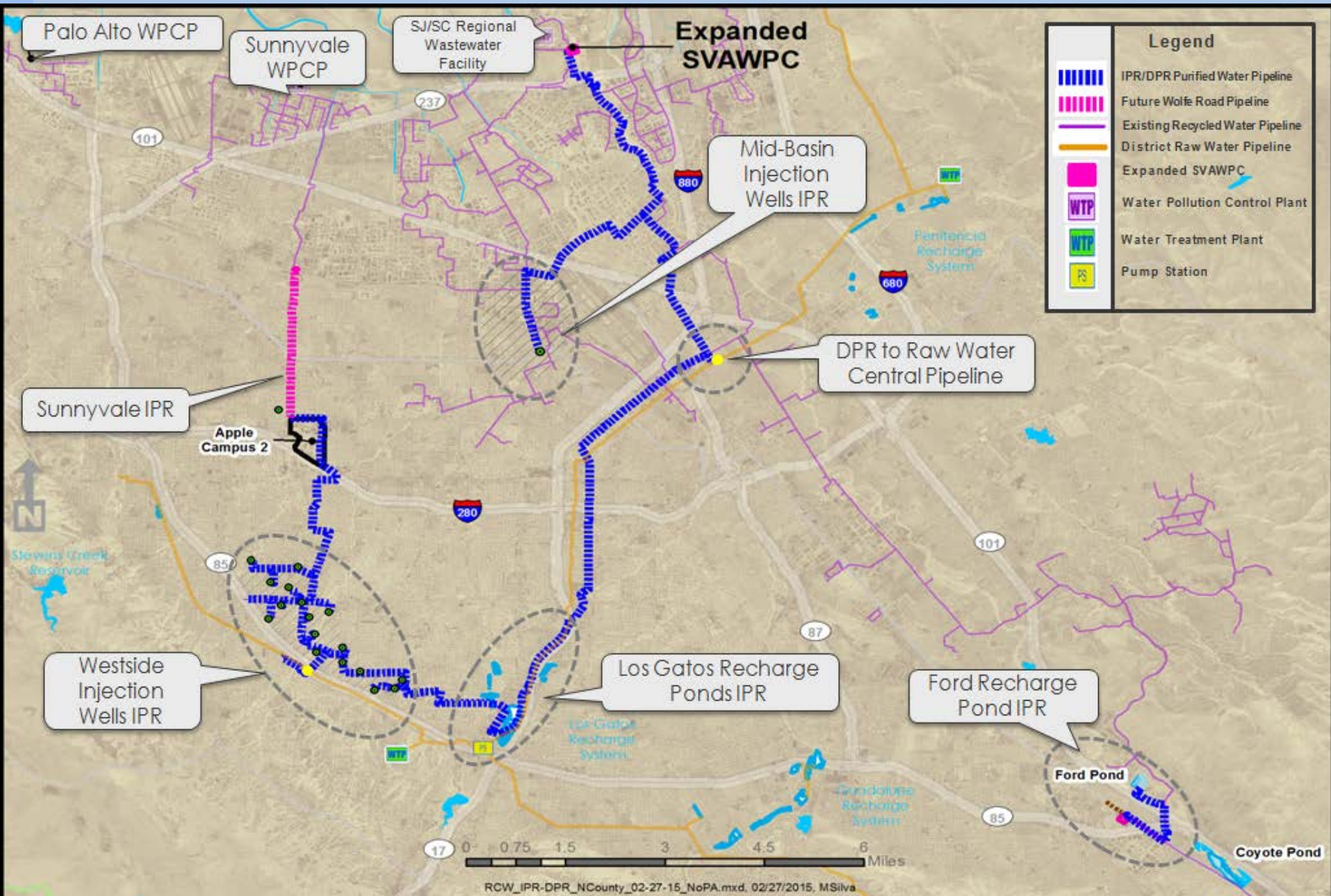


Current Recycled Water Use

Wastewater Treated vs. Recycled Water



Proposed Projects for Purified Water Expansion



Proposed Projects for Purified Water Expansion

Description	Capacity (AFY)	Est. Capital Costs (\$M)	Est. Total O&M Costs (\$M/Year)
Ford Recharge Ponds IPR	4,200	\$ 70	\$ 4.0
Mid-Basin Injection Wells IPR	5,600	\$ 140	\$ 3.5
Los Gatos Recharge Ponds IPR	20,200	\$ 260	\$ 10.0
Westside Injection Wells IPR (or Central Pipeline DPR)	5,000 (5,000)	\$ 120 (\$ 65)	\$ 4.0 (\$ 4.5)
Sunnyvale IPR	10,000	\$ 210	\$ 2.0
Total	45,000	\$ 800	\$ 23.5

DPR Could Be Future Complement to IPR

How would DPR work?

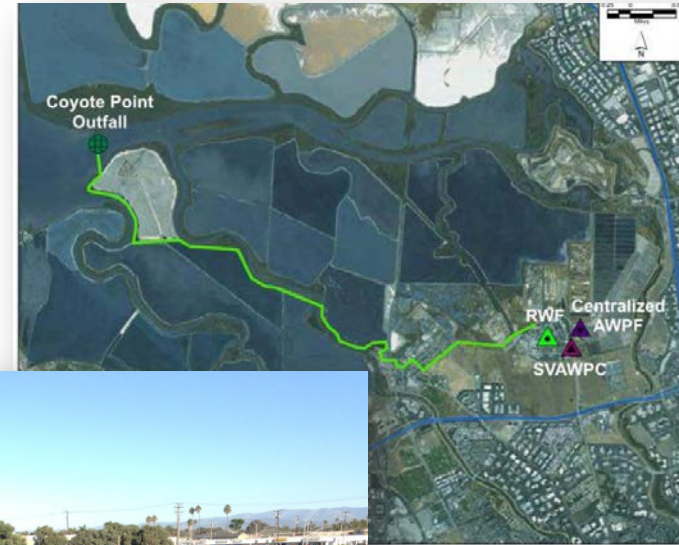
- Purified water pumped into raw water line
- Treated at drinking water treatment plants

Program Benefits

- Less infrastructure required:
 - Pipelines shorter
 - No injection wells or ponds
 - Capitalizes on drinking water treatment plant ozonation/BAF
- Simpler operations

RO Concentrate Management Options

- Discharge to existing shallow water Bay outfall with dilution water
- Treatment wetlands, then discharge to the Bay
- Pre-treatment to produce a brackish supply for wetlands restoration
- Discharge to a sewer line that goes to a regional wastewater treatment plant
- Discharge to deep Bay outfall

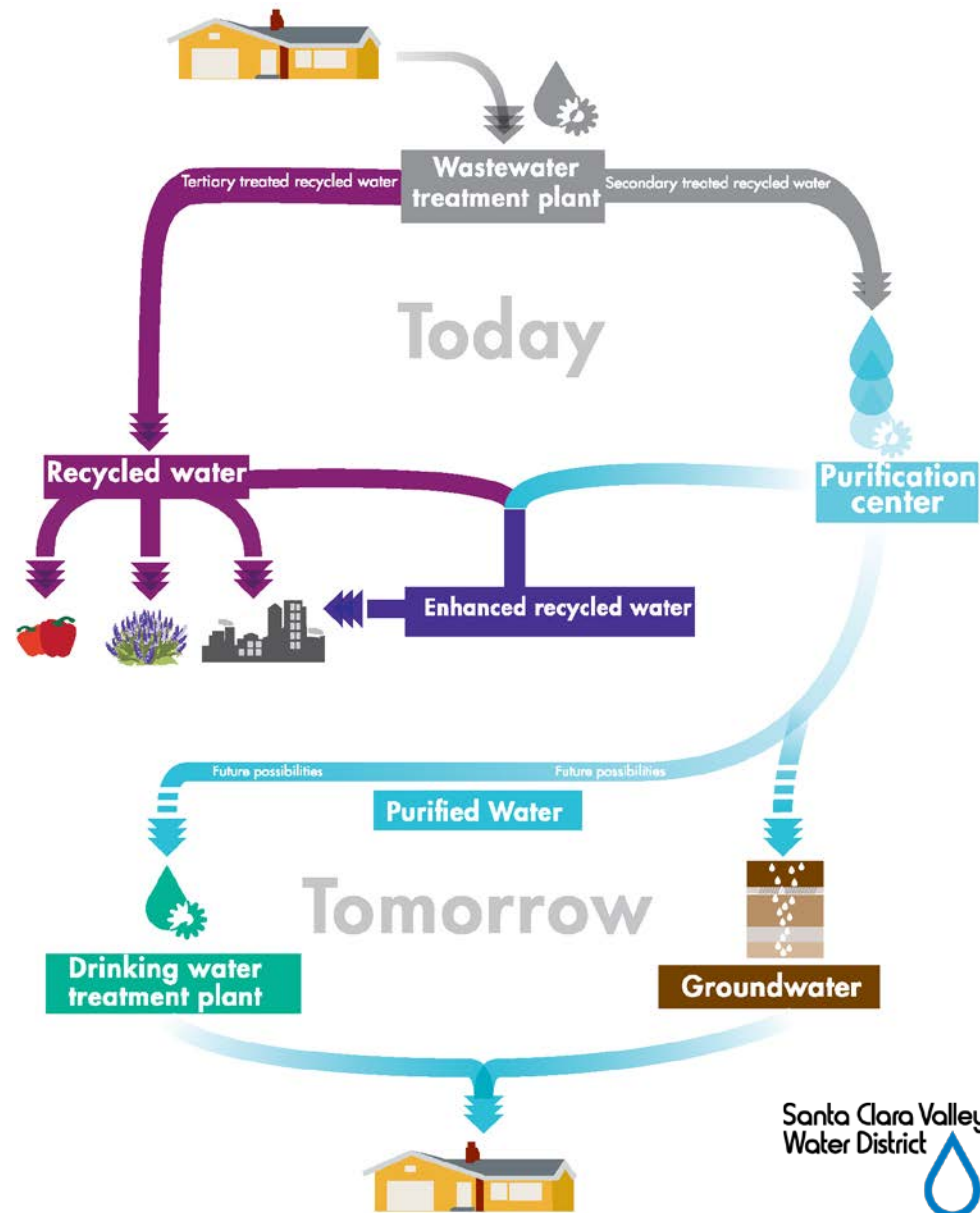


Silicon Valley Advanced Water Purification Center

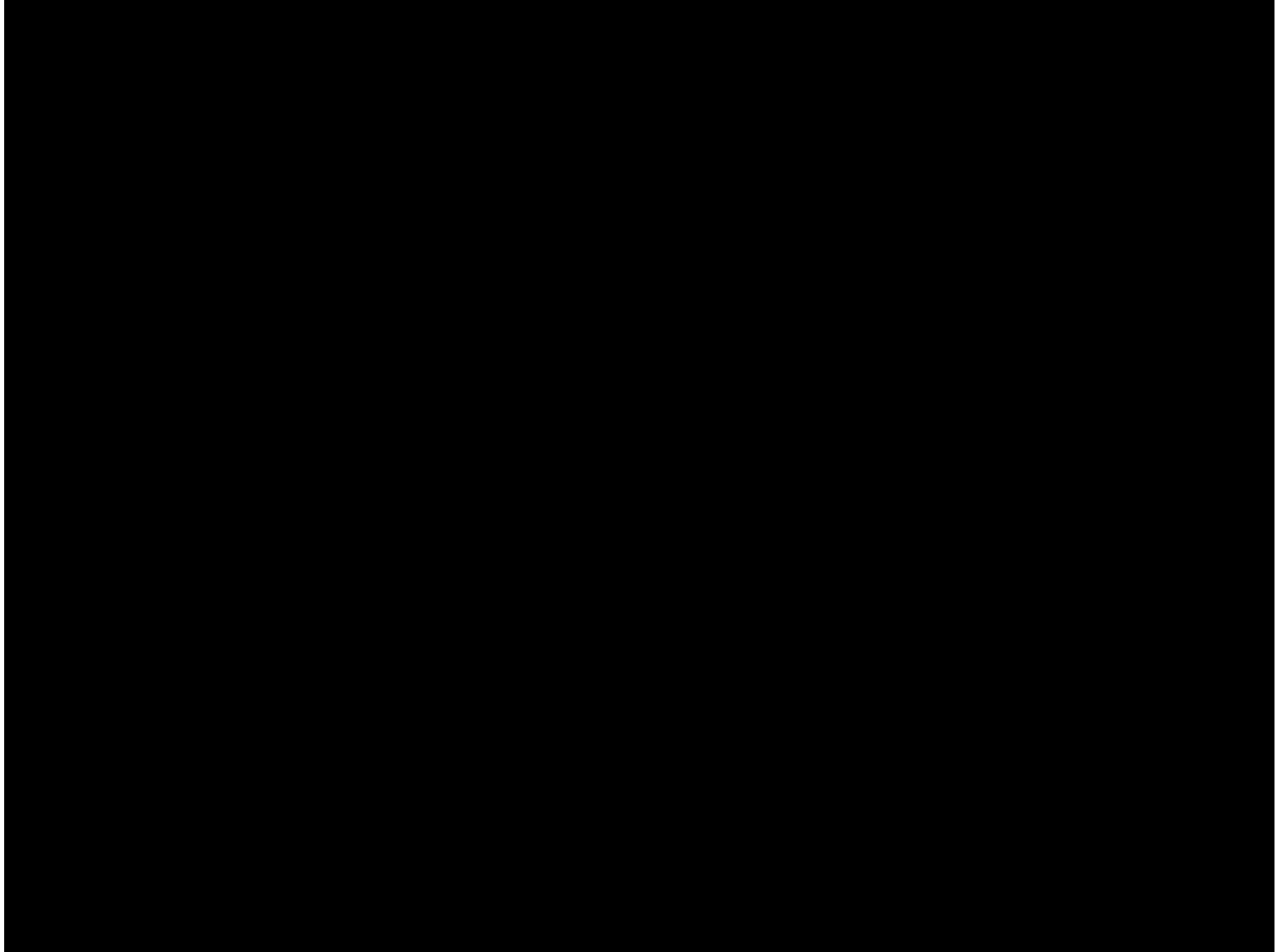


Path to Potable Reuse

- Demonstrate technology at Silicon Valley Advanced Water Purification Center
- Conduct potable reuse studies
- Collaboration with recycled water producers
- Engage the public
- Select & build project



Silicon Valley Advanced Water Purification Center



[video](#)

Questions