From:	Toby Goddard
To:	DWR Water Use Efficiency
Subject:	Govenor"s Executive Order
Date:	Friday, September 2, 2016 11:30:34 AM
Attachments:	image002.png Comparison of AWWA M60 and UWMP Act 10632.pdf 2016 Water Supply Outlook.pptx Information Report - Initial Water Supply Outlook January_25 2016.doc

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Good morning –

This input is directed to Kent Frame and Greg Young in response to the August 31, 2016 Water Shortage Contingency Planning Workshop held in Sacramento this week.

As the Project Team Staff looks to "strengthen requirements for urban Water Shortage Contingency Plans", in accordance with the Governor's Executive Order, there is already a wealth of valuable guidance that currently exists that would help improve on the current requirements in Water Code Section 10632. These include the State's own 2008 Urban Drought Guidebook, and AWWA M60 – Drought Preparedness and Response.

The "analysis" that is currently required as a part of the 5-year Urban Water Management Planning cycle only touches on a few selected items in these two guidance documents, and therefore does not really result in comprehensive water shortage planning. As a result, it is not surprising that some feel that water shortage "plans" summarized in UWMPs are not adequate. Attached please find a comparison I did that lists the sections and elements of AWWA M60 against the nine requirements in in Water Code 10632. It shows how the current UWMP act does not address some of the key steps needed and important considerations that go into developing a comprehensive water shortage contingency plan. My suggestion is to review these documents and consider requiring a plan that is consistent with these guidebooks, yet appropriately scaled for local agencies. Our own Water Shortage Contingency Plan is available at:
http://www.cityofsantacruz.com/departments/water/conservation/more-information/water-shortage-contingency-plan

Also, there was a request at the meeting for examples of short-term (one-year) water shortage assessments currently being done by agencies (like EBMUD). I have attached a recent Initial Water Supply Outlook report (in Word) that we do about halfway through every winter season. We follow this up with a revised outlook in February and a final outlook in later March/early April, when the winter water season pretty much over for the year ahead. These reports are used to update City Council, the public, other local water agencies, and the media on our ongoing water supply conditions. I have also attached a PowerPoint presentation on our final outlook for 2016 for your consideration.

I hope this information is helpful, and please feel free to contact me is you have question or need further information.

Toby

Toby Goddard
Santa Cruz Water Department

Celebrating 150 Years of Creating Community

Comparison of AWWA M60 and UWMP Act, Section 10632

Step	Element	Included in 10632?	Comments
1	**Form a Water Shortage Response Team**	No	
	Selecting the Team	No	
	Setting Priorities	No	
	Establishing Schedules	No	
	Coordination, Cooperation, Communication	No	
2	**Forecasting Supply in Relation to Demand**	Partly	The required 3-year estimate based on driest sequence in 10632 (a) (2) does not equate to real time supply/demand comparison
	Data Collection	No	
	Data Analysis	No	
	Determination of Water Shortage	No	
	Wholesaler Actions	No	
	Catastrophic Supply Interruptions	Yes, 10632 (a) (3)	
3	**Balancing Supply and Demand, Assess Mitigation Options**	Partly	All of Step 3 is advance planning done well ahead of actual incident or event
	Supply Augmentation Methods		
	Demand Reduction Options:		
	- Public information		
	- Regulations and Restrictions		
	- Pricing		
	- Rationing Allocations		
	- Enforcement	Yes, 10632 (a) (6)	The act only referes to penalties and charges as it relates to excessive use
4	**Establishing Trigger Levels**	No	
	Trigger Mechanisms	No	
	Consequences of Delayed Implementation	No	
	Criteria for Curtailment (Timing, Savings, Season, Costs)	No	*Really important step!*
5	**Develop Stage Demand Reduction Program**	Yes	
	Establish Stages	Yes, 10632 (a) (1)	
	Select Measures	Yes, 10632 (a) (4), (5)	
6	**Adopt the Plan**	Yes, as part of UWMP	
	Community Involvement	Yes, as part of UWMP	
	Revenue Program	Yes, 10632 (a) (7)	
	Cooperation with Local Agencies	Yes, as part of UWMP	
	Review, Finalize Plan	Partly 10631 (a) (8)	
7	**Implement the Plan**	No	
	Timeline and Process for Declaring Water Shortage	No	*Really important step!*
	Personnel, Office Space, Equipment, Budget, etc	No	
	Utility Billing Capablity	No	
	Pubic Notification and Coordination	No	*Really important step!*

INFORMATION REPORT

DATE: February 3, 2016

TO: City Manager

DEPARTMENT: Water

SUBJECT: Initial Water Supply Outlook for 2016

APPROVED: DATE:

This report provides an overview of current water conditions and presents the Water Department's first formal outlook covering the City's water supply situation for Water Year 2016. The end of January represents the mid-point of the winter wet season. The outlook will be updated as the 2016 wet season progresses and a final water supply outlook will be prepared toward the end of March, when the bulk of the wet season has passed and the water supply situation becomes more certain.

Rainfall

Rainfall returned to the Central Coast in early November, and weather conditions have been consistently wet in the three months since then. In the City of Santa Cruz, a total of 22.0 inches of rain has fallen so far, which is 140% of average rainfall for the season to date. As shown in Figure 1, rainfall has been above normal for November, December, and January in this strong El Niño period. While none of the storm systems to date have been extremely wet or powerful, the pattern has been consistently wet over the Santa Cruz Mountains, a welcome development after four consecutive years of extreme drought, especially compared to last January, when no rainfall was recorded the entire month.

In the City's watershed, rainfall has measured between 22 and 25 inches, with the gauge at the dam reading 24.1 inches. Normally, the watershed experiences considerably higher rainfall totals than in the City, but this year, the amounts are comparable, and represents about 90 percent of historic average in the Ben Lomond area for the season to date.

The short term forecast has a chance of rain returning to California at the end of January. Long-term, the National Weather Service Climate Prediction Center is showing the probability of above normal precipitation across all of California in its outlook over the next one to three months.

Stream Flow

Water Year 2016 began with near record low stream flows in the San Lorenzo River during the month of October. Since then, river flow has gradually but steadily risen with onset of the wet weather in

November and December. It was not until January, however, that significant flows in the river were observed. Unlike rainfall patterns, stream flow in the San Lorenzo River has measured below the long-term average flow all winter long, a reflection of how dry the soils in the watershed were after an extended and unusually warm period of drought.

Figure 2 shows mean monthly stream flows in the San Lorenzo River for the season to date, along with the long-term average values for comparison. Also shown is a print of the daily discharge of the San Lorenzo River in Felton since early October. It shows the river responding to 13 different storm systems, but despite all the rain, it wasn't until just recently in mid-January that daily stream flows in the river began to exceed the long-term median flow.

Reservoir Storage

Loch Lomond Reservoir is presently 74.5% full, after reaching a low of 65.3% at the end of December. Storage has increased by about 260 million gallons since early January in response to all the recent rainfall. The Felton Diversion facility is in inflated but operators are waiting for the turbidity in the San Lorenzo River to drop down to acceptable levels for treatment before resuming pumping up to the lake. The water surface elevation is between 13 and 14 feet below the spillway elevation. Another 720 million gallons would be needed to reach full capacity, or about three times the amount of runoff received so far this season.

In early 2014, a temporary urgency petition was approved by the State Water Resources Control Board reducing the required flow release from Loch Lomond Reservoir from 1.0 to 0.20 cubic feet per second (cfs). The State extended its order three times, which is set to expire in February 2016. Over 330 million gallons of water has been retained in storage since the petition was granted. Whether the Water Department will request another extension will depend on weather conditions going forward, but it is assumed now that the temporary flow release will be allowed to expire.

Water Year Classification

The Water Department uses a water year classification system to characterize the City's overall annual water supply condition. Under this classification system, the water year beginning October 1 is designated as one of four types – Wet, Normal, Dry, or Critically Dry - depending on the total annual discharge of the San Lorenzo River, measured at the stream gage in Felton, and expressed in acre-feet[1].

[1] Discharge refers to the accumulated volume of runoff. One acre-foot of water is equal to 325,851 gallons. 3.07 acre-feet equals one million gallons.

Annual discharge of the San Lorenzo River is regarded as the best individual benchmark of the City's water supply condition for two reasons. First, the river is the city's single largest source of drinking water, providing about half the normal annual supply. Second, about three quarters of all the water used by city water customers is obtained from a flowing source of supply. In general, the higher the volume discharged from the San Lorenzo River means that:

- the local watersheds in the Santa Cruz mountains are more saturated;
- the stream sources will flow at higher levels later into the dry season; and
- there is more water available from all surface water sources, including the reservoir, to meet system demands over the course of the year.

Cumulative discharge currently measures **16,793** acre-feet, roughly half the long-term average for the water year to date. Annual discharge from the San Lorenzo River must reach a threshold of **29,000** acre-feet to be classified as Dry, and **49,000** acre-feet for the year to be classified as Normal, about three times as much runoff as has been produced to date. After getting off to a slow start, though, more and more runoff is being generated with each passing storm system, as the watershed becomes increasingly saturated.

Cumulative discharge From October 1, 2014 through January 24, 2016 is shown in Figure 3.

U.S. Drought Monitor

The U.S. Drought Monitor map for January 19, 2016 continues to show the majority of California experiencing extreme to exceptional drought conditions. It serves as a stark reminder of this historic drought and indicator of just how much water would be required in the form of rain and snow around to state before conditions improve. The map dated January 19, 2016 is included in Figure 4.

Initial Outlook for 2016

At this time, the water supply outlook for 2016 is encouraging. There has been a seemingly constant parade of moderate storms over the northern half of the state, including the Central Coast region, serving to replenish soil moisture and restore some badly need flow to local streams. But despite the auspicious start, it will take more than three wet months to make up for the hydrologic deficit experienced after four long years of drought. Long-range weather models continue to show above average chances of precipitation over the area between February and April, the period that is most closely associated with wetter than average weather when El Niño conditions are present (Figure 5). Yet much uncertainty exists. Southern California is where the heaviest impacts of El Niño-related weather was predicted to occur, but so far, most of the storm energy has been tracking across the northern half of the state.

Even without El Niño, February and March are historically wet months and much time remains in this water year to continue the process of reestablishing base flow in the City's water supply watersheds and building storage for the dry season ahead.

The Water Department will continue to monitor water supply conditions, and will reevaluate the water supply outlook in early March. At that time, staff should have enough information on which to make a monthly projection of the City's water supply availability and evaluate the adequacy of this supply to meet expected water demands within the City's water service area for the rest of 2016. Coming out of two back-to-back years of water rationing, expectations are that system demand will not recover fully to pre-drought levels but continue to remain somewhat depressed, even in the absence of any local water restrictions. Whether the City of Santa Cruz will be required by the state to meet the same conservation target in 2016 as it was in 2015 is yet to be determined, and won't be finalized unitl later this spring.

Attachments:

Figure 1: Monthly Rainfall, City of Santa Cruz
Figure 2: Monthly Streamflow, San Lorenzo River at Big Trees
Figure 3: Cumulative Runoff and Water Year Classification
Figure 4: U.S. Drought Monitor Map, California
Figure 5: National Weather Service/Climate Prediction Center's Three Month Precipitation Outlook

2016 Water Supply Outlook

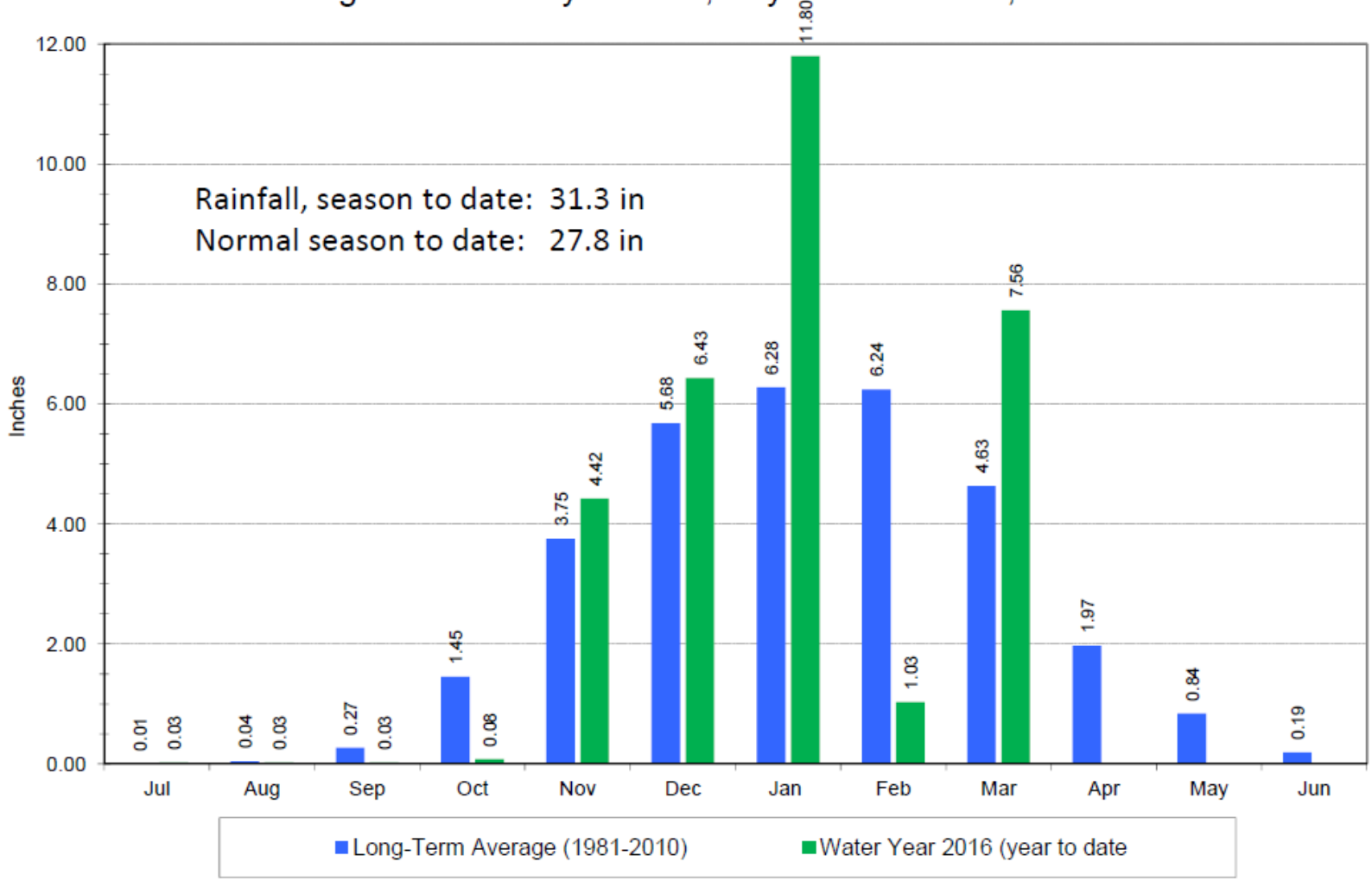
Santa Cruz City Council
April 12, 2016

Presentation Overview

- Current Water Conditions
- 2016 Water Production Forecast and Projected Reservoir Drawdown
- Recommendations
- Status of State Emergency Regulation
- Questions, Discussion

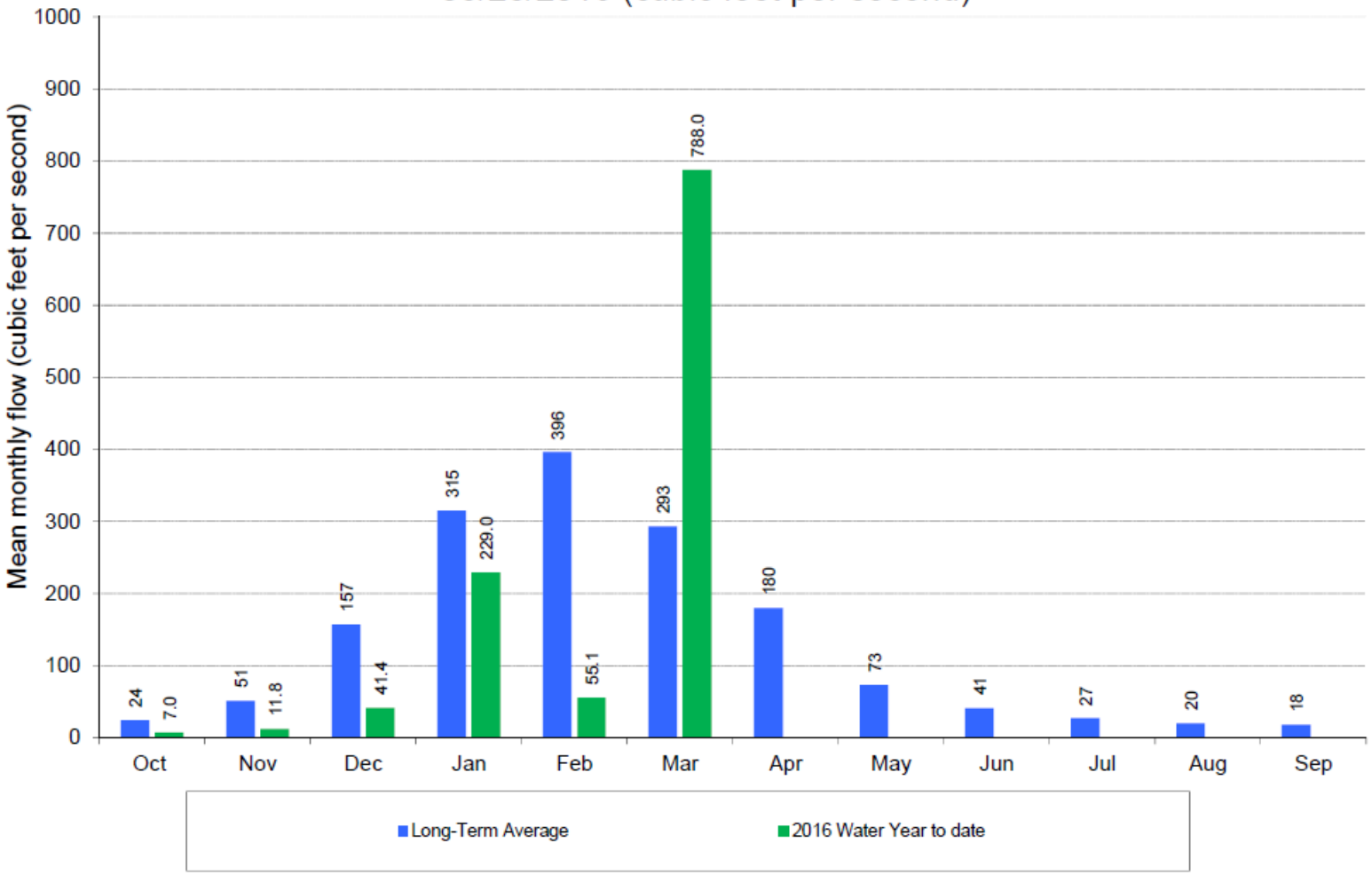
Rainfall

Figure 1. Monthly Rainfall, City of Santa Cruz, 03/28/2016



Runoff

Figure 2. Mean Monthly Streamflow, San Lorenzo River at Big Trees, 03/28/2016 (cubic feet per second)

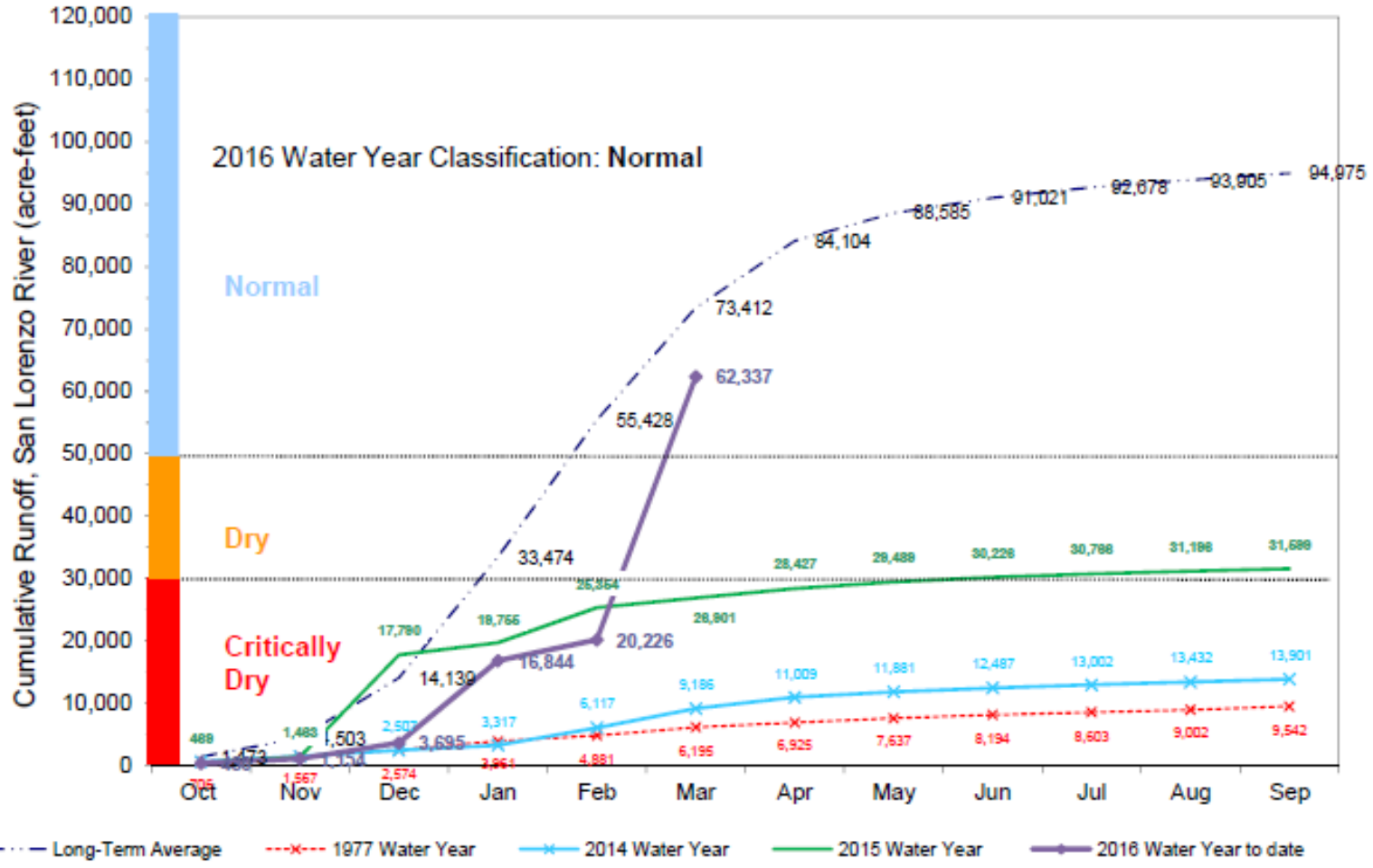


Reservoir Storage

March 14, 2016 – Base of Spillway

Water Year Classification

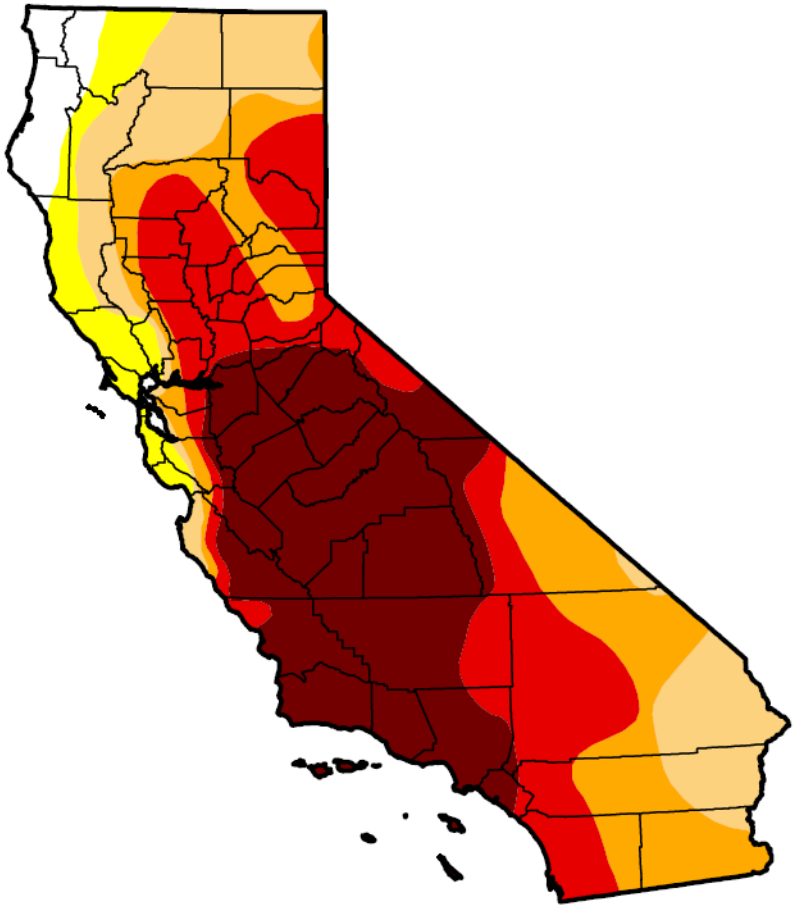
Figure 3. Cumulative Runoff and Water Year Classification, 03/28/2016
(acre-feet)



Is the Drought Over?

U.S. Drought Monitor

California



April 5, 2016

(Released Thursday, Apr. 7, 2016)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	3.55	96.45	90.58	74.37	55.25	31.68
Last Week *3/29/2016*	3.55	96.45	90.58	72.82	55.25	34.74
3 Months Ago *1/5/2016*	0.00	100.00	97.33	87.55	69.07	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 *4/7/2015*	0.15	99.85	98.11	93.44	66.60	44.32

Intensity:

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

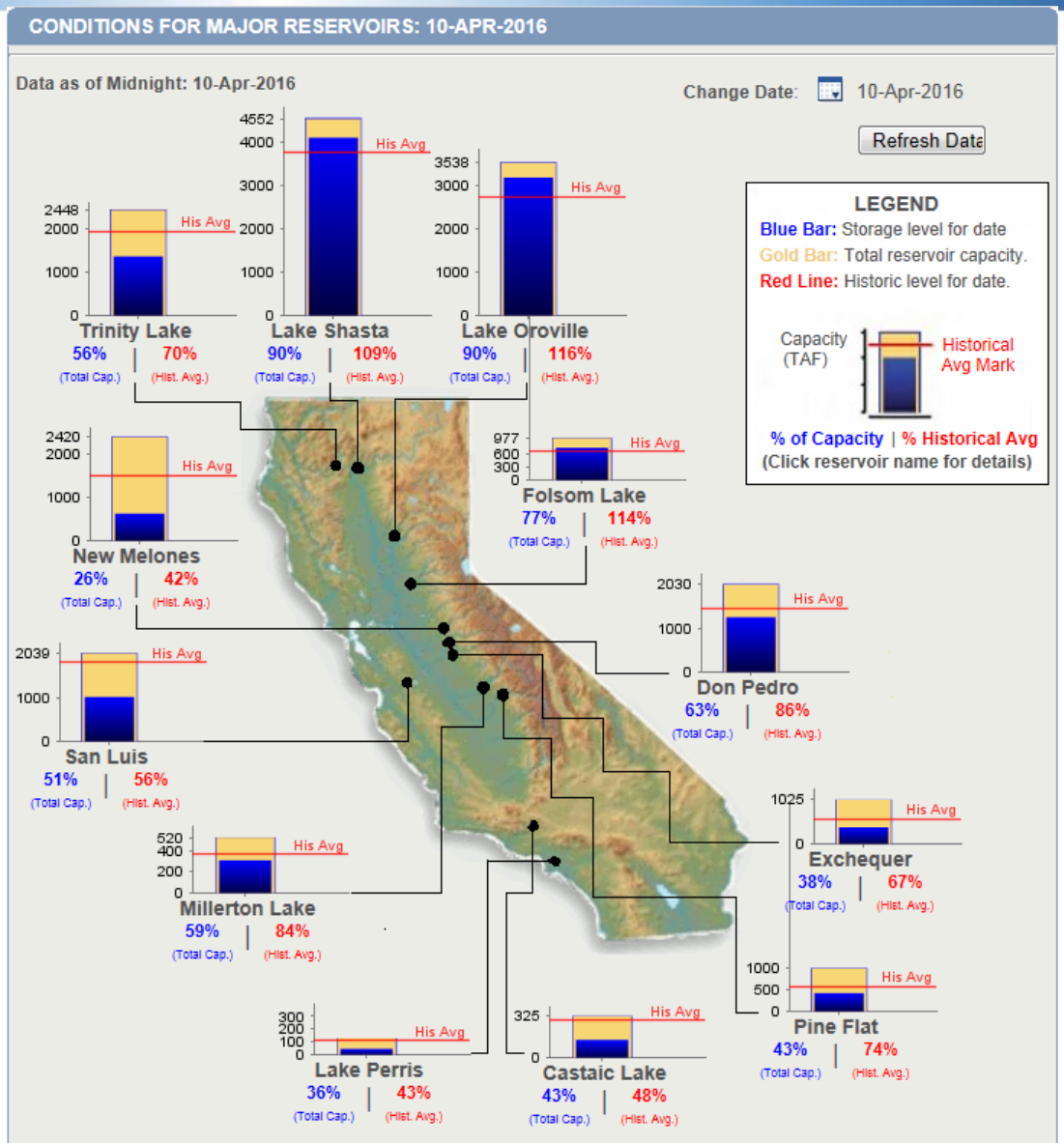
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
Richard Tinker
CPC/NOAA/NWS/NCEP

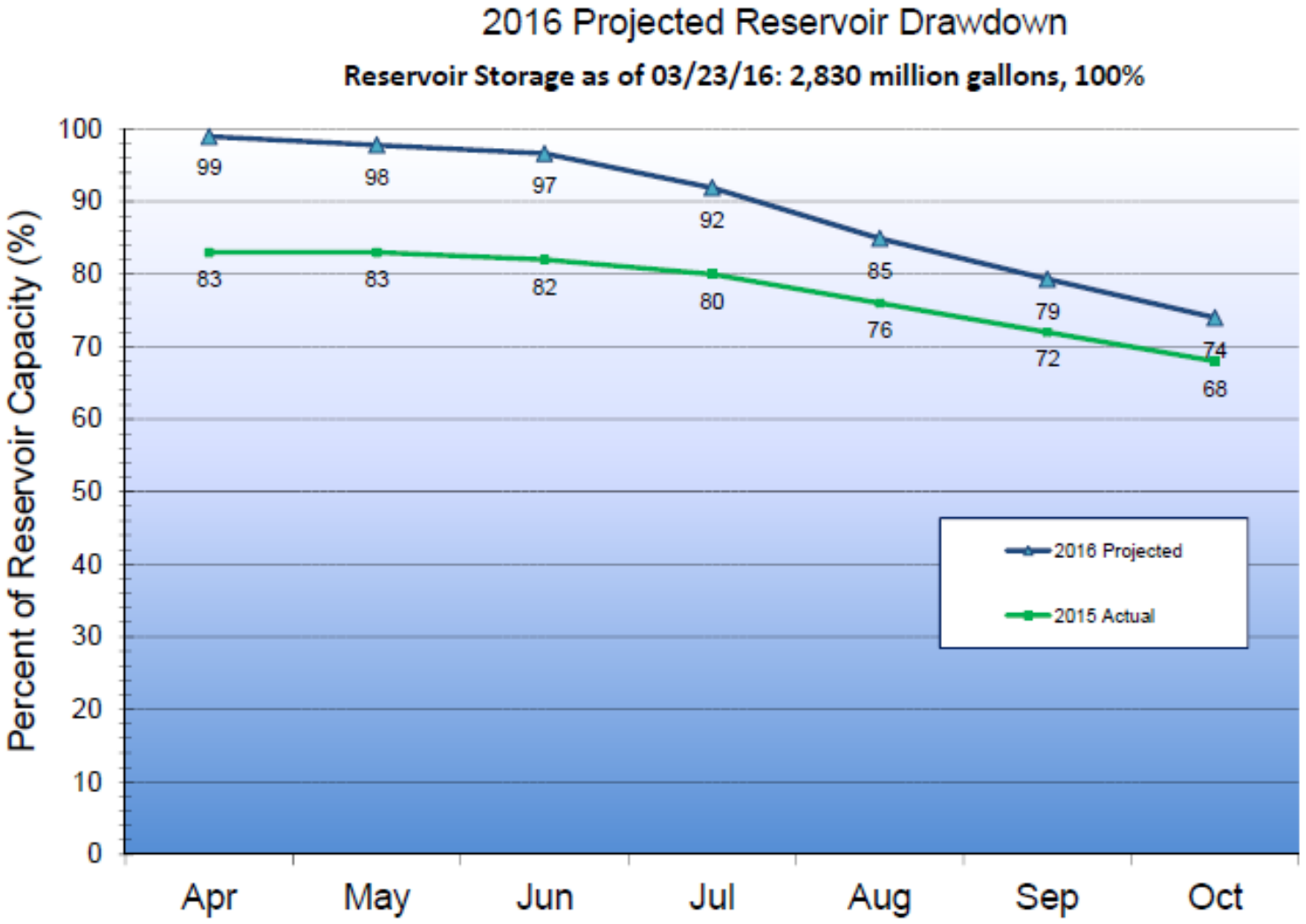
USDA National Drought Mitigation Center

http://droughtmonitor.unl.edu/

Statewide Conditions



2016 Water Production Forecast



Recommendations

- No water shortage declaration in 2016
- Transition from mandatory cutbacks and excessive use penalties to voluntary water conservation
- Transition from short-term curtailment to long-term program development
- Discontinue Drought Cost Recovery Fee in June

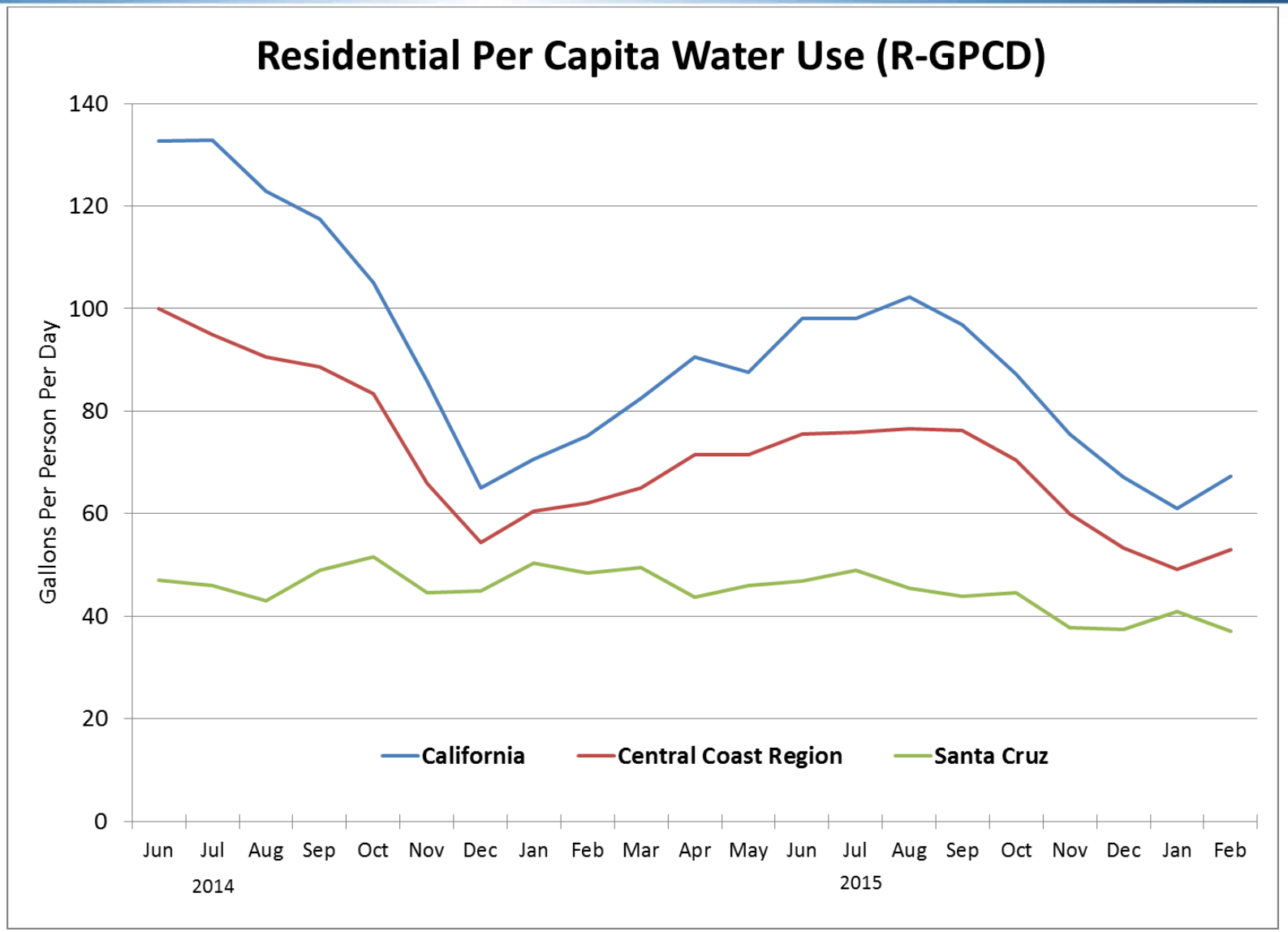
Recommendations

- Continue to enforce ongoing prohibition on water waste – SCMC 16.02
  - Operate Leak Line: 420-LEAK
  - Document water waste - utility service reps, distribution crews and other City field staff
  - Investigate customer complaints
  - Resolve cases
- Notify customers of possible leaks/high consumption

Status of State Emergency Regulation

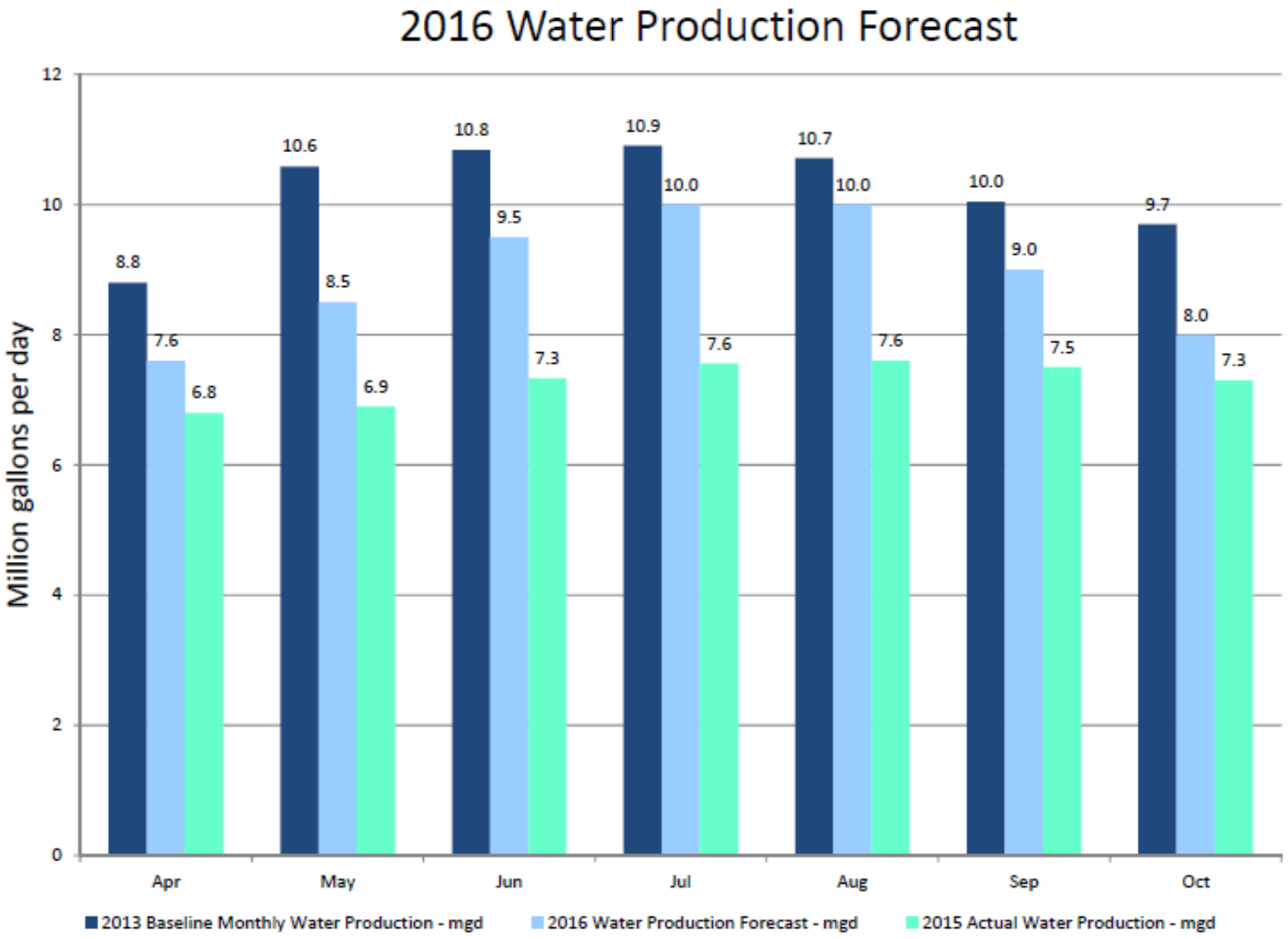
Date	Action
May 2015	Emergency Regulations adopted (mandatory conservation targets, monthly production reporting)
Feb 2016	Emergency regulations amended, extended to October
Apr 2016	Public Workshop to consider modifications, regional differences
May 2016	State Board action expected

Status of State Emergency Regulation



Questions/Discussion

2016 Water Production Forecast



26 Percent Overall Reduction