



February 24, 2014

**TO:** LOCSD Board of Directors  
**FROM:** Robert Miller, District Engineer  
**SUBJECT:** **Agenda Item 12B – 3/6/2014 Board Meeting**  
Water Shortage Contingency Plan Decision Points

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### DESCRIPTION

In 2013, the Board requested that the Utility Advisory Committee (UAC) consider revisions to Title 2 of the District's Code, specifically the subsection that addresses water shortage planning. On February 12, 2014, the UAC discussed key decision factors in two subject areas including:

1. The identification of measurable triggers applicable to current basin conditions. Previous triggers contained in the current District Code are not viable in a coastal basin with seawater intrusion.
2. The establishment of numerical water reduction goals, including the allocation of specific daily water volumes for various stages of water shortage.

Staff is seeking Board input on these two issues prior to advancing to the next steps in the process.

### STAFF RECOMMENDATION

Staff recommends that the Board review the two memoranda provided, and provide concurrence or further direction on 1) recommended water shortage triggers, and 2) numerical reduction goals and the associated allowable water volumes.

### DISCUSSION

The attached memorandum dated February 12, 2014 (Exhibit A) was prepared by a sub-committee of the UAC comprised of Ron Munds and Rob Miller. In a meeting on February 12, 2014, the UAC voted in support of the trigger mechanisms and numerical reduction goals, which were based on a 2013 water demand baseline. However, the committee asked that staff review three years of baseline consumption data (2011 through 2013) and make adjustments as necessary for the Board discussion, as long as the adjustments did not exceed 15%. After reviewing 2011 and 2012 data, staff prepared the attached follow up memorandum (Exhibit B) recommending a revised baseline. The revised baseline is approximately 8% below the value considered by the UAC.

Board and public input on the triggers and water reduction goals would be helpful at this point in the Code revision process. Once these factors are solidified, staff can proceed to the next steps in the process including:

- Consultation with Golden State Water Company and S&T Water Company in an attempt to provide continuity of water shortage planning within the urban areas of the community.
- Identification of similar water reduction criteria for commercial and multifamily customers within the District's water service area.
- Completion of a financial analysis to define the likely loss of revenue to the water enterprise fund, along with the quantification of customer penalties for water use above allocated volumes. The penalties would serve the dual purpose of making up for diminished revenues while providing a financial incentive for customer compliance with the reduction goals.
- Compliance with legal requirements to incorporate the edits within the District code, including ordinance processing and proposition 218 proceedings for the implementation of penalties or other financial incentives.

### **FINANCIAL IMPACT**

Mandatory water conservation has the potential of substantially impacting the water enterprise fund through reduced water sales. Staff will provide a financial analysis and related recommendations as a next step in the process.

Exhibit A: Original Memorandum dated February 12, 2014 as  
considered by the UAC

# MEMORANDUM

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To: Utility Advisory Committee  
From: Water Shortage Contingency Plan Sub-Committee  
Date: February 12, 2014  
Subject: Water Shortage Contingency Plan Decision Points

In 2013, the LOCSD (District) Board of Directors requested that the Utility Advisory Committee (UAC) look at revising Chapter 2 of the District's code. The section of the code dealing with water shortage planning was delegated to a sub-committee comprised of Rob Miller and Ron Munds. The intent of this memorandum is to identify key decision points as ascertained by the sub-committee and to gather input from the UAC on these points so that they can be incorporated into the update.

The following is a summary of the discussions the sub-committee has had regarding the various components of the water shortage plan and the subsequent decision points previously referenced. The recommendations provided are based on the information and data provided to the committee.

## **Decision Points**

### **1. Trigger Mechanisms and Number of Stages**

**Recommendation:** 1) Approve using a combination of rainfall and water quality standards to trigger the action levels and 2) change the number of stages from the current four to five.

#### ***Trigger Mechanisms***

The current water shortage plan uses triggers associated with predictions of degrees of water shortage in the groundwater basin; i.e. "the threat of an X% shortage in potable water available for distribution." Because of the hydrology of the basin, predicting a shortage in potable water supply is difficult because of the seawater intrusion that occurs when pumping exceeds recharge. Typically where a groundwater basin is not influenced by seawater intrusion, declining well levels can be used to predict the available water supply. Since there isn't sufficient information or data to support the current trigger method, the sub-committee is recommending a different approach as indicated in attachment 1.

#### ***Number of Stages***

The current water shortage plan has four stages as follows:

Stage	Reduction
Stage I	10%
Stage II	20%
Stage III	35%
Stage IV	50%

As previously discussed, these stages are based on available water supply which cannot be determined using the groundwater model and other tools available at this time. Because of the severity of seawater intrusion and other water quality issues facing the groundwater basin, the sub-committee is recommending a five stage program with the first stage being voluntary in nature. Though in all likelihood the District will be in Stage I frequently, the sub-committee believes that because of the condition of the basin this would be a more prudent direction to follow. The following table summarizes the recommended action levels.

Stage	Reduction
Stage I Alert	5%
Stage II Warning	15%
Stage III Emergency	25%
Stage IV Severe	35%
Stage V Critical	50%

\*An alternative method to determining Stage V is outlined in the next section

## 2. Base Allocations

**Recommendation:** For single and multi-family customers determine a base allocation based on a three person household and allocate additional water for each additional resident; for non-residential customers establish a base allocation based on a percent reduction methodology.

As previously discussed, the current plan identifies a percent reduction requirement based on a projected shortfall in water supply. The plan also identifies residential allocations in gallons per household per day and CCF per billing cycle for each stage and requires a 35% and 50% reduction in water use in the commercial sector Stages III and IV. The following is a summary of the current requirements.

Stage	Residential	Commercial	Penalties
Stage I	Voluntary	Voluntary	n/a
Stage II	234/day (19 CCF)	Voluntary	Double the rate
Stage III	192/day (15 CCF)	35% reduction	Four times the rate
Stage IV	148/day (12 CCF)	50% reduction	Four times the rate

### *Single Family Residential*

It appears that the current single family residential allocations are based on a three person household based on the amount of water allocated and the time period that the

plan was written (for instance Stage I equates to 78 gpcd). After reviewing the 2010 census information, the sub-committee is recommending that the residential base allocations continue to be based on three person household. The following table summarizes the 2010 census information.

2010 Household Size Statistics	Los Osos, CA	
<b>Households</b>	5,692*	
<b>Average Household Size</b>	2.20	
<b>Median Household Size</b>	2.61	
<b>1 Person</b>	1,472	25.86%
<b>2 Person</b>	2,261	39.72%
<b>3 Person</b>	861	15.13%
<b>4 Person</b>	712	12.51%
<b>5 Person</b>	264	4.64%
<b>6 Person</b>	72	1.26%
<b>7 or More Person</b>	50	0.88%

\*This number represents all single family households in Los Osos

In order to not penalize larger households, the sub-committee also recommends that households larger than three persons be given an additional 2 units of allocation per person upon providing verification of occupancy of all residents. Though this will require added staffing resources initially, it is the sub-committee's opinion that this is the fairest way to allocate water.

There are two methodologies that the UAC can consider when deciding on a household base allocation. The first would be to take the average household water use for calendar year 2013 (209 gallons per household) and reduce the amount by the desired goal in each stage. The following table summarizes the reduction goals for a five stage plan and a three person household.

Stage	Percent Reduction	Household Allocation in Gallons per Day
<b>Stage I Alert</b>	5%	199 (16.2 CCF)
<b>Stage II Warning</b>	15%	178 (14.6 CCF)
<b>Stage III Emergency</b>	25%	157 (12.8 CCF)
<b>Stage IV Severe</b>	35%	136 (11.1 CCF)
<b>Stage V Critical</b>	50%	105 (8.5 CCF)

A drawback with using this methodology is when the reduction goal reaches 50%, the per capita rate is at 35 gpcd which is below a reasonable health and safety standard for indoor water use.

An alternative or second methodology would be to establish the minimum health and safety standard for indoor water use; i.e. 42 to 50 gpcd and having Stage V be set at this level. The following table summarizes the reduction goals using this methodology and using 42 gpcd as the minimum health and safety standard.

Stage	Percent Reduction	Household Allocation in Gallons per Day
Stage I Alert	5%	199 (16.2 CCF)
Stage II Warning	15%	178 (14.6 CCF)
Stage III Emergency	25%	157 (12.8 CCF)
Stage IV Severe	35%	136 (11.1 CCF)
Stage V Critical	40%	126 (10.2 CCF)

**Multi-family Residential**

The current water shortage plan does not specify allocations for multi-family customers. The sub-committee recommends that dwelling unit based allocation be applied to multi-family accounts then reduced in a similar manner as single family residential. In order to calculate the base allocation, the number of multi-family dwelling units (not customers) in the LOCSD service area is needed.

**Commercial**

Commercial water use can vary significantly depending on business type. In order to minimize the economic impact to the commercial sector but still require a reduction in their water use, the sub-committee recommends that a percent reduction methodology be used as in the current plan but require the percent reductions in each stage (current plan includes commercial reductions in Stage III and IV).

Additionally, since Los Osos Middle School is considered a commercial customer, the sub-committee would recommend that an alternative allocation/ percent reduction method be employed so that the turf irrigation is curtailed at a faster rate.

**3. Penalties**

**Recommendation:**

The current water shortage plan imposes penalties as follows:

Stage	Residential	Commercial	Penalties
Stage I	Voluntary	Voluntary	n/a
Stage II	Mandatory	Voluntary	Double the rate
Stage III	Mandatory	Mandatory	Four times the rate
Stage IV	Mandatory	Mandatory	Four times the rate

The sub-committee would recommend that the penalties stay at double the rate through all the stages but include a provision to install a flow restrictor if a customer exceeds their allocation more than two times in a twelve month period.

Additionally, though not directly linked to the penalties structure, the sub-committee recommends that a revenue analysis be performed to address the decreased sales resulting from the required reduction in water use in each stage.

**4. Prohibitions**

**Recommendation:** Enact regulations that prohibit water runoff from irrigation and leaks attributed to sub-standard plumbing devices regardless of a water shortage declaration. Maintain the other prohibitions/regulations in the current water shortage plan.

The current plan lists prohibitions that are required during Stages I through IV. The following is a summary of each stage.

<b>Stage</b>	<b>Prohibitions</b>
<b>Stage I</b>	<ul style="list-style-type: none"> <li>• All outdoor irrigation of vegetation shall occur only between the hours of 8 p.m. and 7 a.m.</li> <li>• The use of potable water to wash sidewalks, walkways, driveways, parking lots, open ground and other hard-surface areas by direct application shall be prohibited.</li> <li>• The use of non-drinking-water fountains, except for those using recirculated water, shall be prohibited.</li> <li>• Use of water which results in flooding or run-off in gutters or streets shall be prohibited.</li> </ul>
<b>Stage II</b>	<p>In addition to Stage I conservation measures;</p> <ul style="list-style-type: none"> <li>• Use of water from fire hydrants shall be limited to fire suppression and/or other activities immediately necessary to maintain health, safety and welfare of residents within the boundaries of the Los Osos Community Services District.</li> <li>• The use of District potable water for construction projects shall be prohibited.</li> <li>• The washing of automobiles, trucks, trailers, boats and other types of mobile equipment not occurring upon the immediate premises of a commercial car wash and/or commercial service station shall be prohibited.</li> <li>• The use of potable water to irrigate grass, lawns, ground cover, shrubbery, crops, vegetation, trees, etc., shall be limited to Saturdays, Mondays and Wednesdays for even numbered addresses and Sundays, Tuesdays and Thursdays for odd numbered addresses, or as otherwise established by resolution of the Board of Directors.</li> <li>• Water main flushing shall only occur in emergency situations as declared by the General Manager.</li> </ul>



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<b>Stage III</b>	In addition to Stage I & II conservation measures; <ul style="list-style-type: none"><li>• The use of potable water to irrigate grass, lawns, ground cover, shrubbery, crops, vegetation, trees, etc., shall be prohibited.</li></ul>
<b>Stage IV</b>	In addition to Stage I, II & III conservation measures; <ul style="list-style-type: none"><li>• New water connections to the District water system shall be prohibited.</li></ul>

## Attachment 1

<b>Summary of Climate and Water Quality Triggers</b>				
<b>Stage</b>	<b>Reduction Target</b>	<b>Climate Trigger</b>	<b>Chloride Trigger (8th or 10th Street Wells - Zone D)</b>	<b>TDS Trigger (8th or 10th Street Wells - Zone D)</b>
Stage I Alert	5%	Rainfall total as March 31: < than median (17 in.) for current year	N/A	N/A
Stage II Warning	15%	Stage 1 plus rainfall total as of March 31: <= 32 in. for over two yrs or <= 48 in. over three yrs. or 65 in. over four yrs. or 81 in. over five years	N/A	N/A
Stage III Emergency	25%	Stage 1 plus rainfall total as of March 31: <= 29 in. for over two yrs or <= 43 in. over three yrs. or 58 in. over four yrs. or 72 in. over five years	150 mg/l	700 mg/l
Stage IV Severe	35%	Stage 1 plus rainfall total as of March 31: <= 26 in. for over two yrs or <= 38 in. over three yrs. or 51 in. over four yrs. or 64 in. over five years	250 mg/l	850 mg/l
Stage V Critical	50%	Stage 1 plus rainfall total as of March 31: <= 17 in. for over two yrs or <= 26 in. over three yrs. or 34 in. over four yrs. or 43 in. over five years	500 mg/l	1,000 mg/l

## Attachment 2

Historical Data for Various Water Quality Parameters									
Year	8th Street Well			10th Street Well			Palisades Well		
	Chloride	Sodium	TDS	Chloride	Sodium	TDS	Chloride	Sodium	TDS
2005	78	53	440	29	22	140	130	42	510
2006									
2007									
2008				37	38	330	250	44	680
2009	87	54	460				294		
2010									
2011	90	54	440	35	37	300	398	47	890
2012									
2013							85	39	

Notes: 1. All water quality results are reported in mg/L

2. The Palisades well was rehabilitated in 2013 (Zone E abandonment), resulting in lower Cl levels

Exhibit B: Memorandum dated February 25, 2014 describing  
recommended adjustments in the residential baseline and water use  
allocations

# MEMORANDUM

**To:** LOCSD Board of Directors  
**From:** Water Shortage Contingency Plan Sub-committee  
**Date:** February 25, 2014  
**Subject:** Adjustments in Residential Baseline Water Use and Allocations

During the Utility Advisory Committee's (UAC) discussion regarding the base allocations for single family residential customers during the different stages of mandatory water conservation, committee members were interested in looking at more than just the 2013 water consumption data to determine the baseline water use of 209 gallons per household per day. From the discussion, the UAC requested that staff review water consumption data from 2011 and 2012 to see if the 2013 water use was indicative of the single family residential customers water use over the three year timeframe. The committee agreed to have staff modify the baseline water use number if the additional information provided good reason to do so.

Further analysis by staff shows that the 2013 may be high when looking back at historical water use as shown below. In 2013, a number of factors may have contributed to higher water use, including the lack of rainfall and the associated increase in outdoor water demand. Staff would recommend using a lower number of 193 gallons per household per day for the residential baseline, consistent with 2011 and 2012 data.

Year	Gallons/Household/day
2013	209
2012	193
2011	192

Based on the recommended change in the baseline water use number, staff is also recommending that the water shortage plan stages be slightly modified to step the community's water use down at reasonable levels and still meet the health and safety needs during Stage V. The table below shows the recommended stages and water use reductions.

Stage	Percent Reduction	Household Allocation in Gallons per Day
Stage I Alert	5%	183 (15 CCF)
Stage II Warning	10%	174 (14 CCF)
Stage III Emergency	20%	154 (13 CCF)
Stage IV Severe	30%	135 (11 CCF)
Stage V Critical	35%	125 (10 CCF)