

## MEMORANDUM

TO: Misha Anderson  
State Water Resources Control Board  
Division of Drinking Water

FROM: David Long  
Dyanna Stetina

SUBJECT: Timber Cove County Water District (TCCWD)  
Conservation Action Plan for Source Capacity Study  
B&R File No. 3535.10

DATE: February 22, 2021



---

The 2016 Source Capacity Study, in combination with a follow-up memo that evaluated diversion and reservoir storage data from 2016 to 2020, has been tentatively approved by DDW with the stipulation that TCCWD submit a Conservation Action Plan (Plan) to DDW. Once implemented, the Plan is intended to ensure that the Source Capacity remains confidently sufficient during key periods of each year when unusual weather and/or demand conditions are present and potentially persistent. The proposed Plan was discussed during our November 10<sup>th</sup> video conference with DDW staff and TCCWD representatives. The plan has since evolved to account for additional complexities but does not greatly differ from the initial concept.

The primary goals of the Plan are to:

- Provide TCCWD Operations staff with a tool to help them optimize surface water diversions.
- Raise awareness regarding the seasonal and critical nature of following a diversion strategy.
- Provide DDW and TCCWD with Plan criteria that are easy to understand and effective, without imposing overly restrictive measures.

In creating the Plan, we considered typical patterns of rainfall and diversion potential from Timber Cove Creek, as well as recent atypical drought-related patterns. These patterns were used to define three distinct periods during an annual cycle that exhibit unique functional dependency for the TCCWD water source (surface water diversions and storage).

A detailed description of the proposed Plan follows.

## A. Plan Period Definitions

1. Reservoir Emptying Period: May through November of each year. During the Reservoir Emptying Period, the volume remaining in the surface water reservoir should be equal to or greater than an estimate of total potable water demand that will occur during the months remaining until December 31<sup>st</sup>, plus a minimum reserve volume of 2.0 million gallons (MG). The demand will be estimated using the prior year's demand for the months in question. ***If additional water is available to be diverted during this Period, TCCWD is encouraged to fill the reservoir as much as possible.***
2. Reservoir Sustaining Period: December and January of each year. During the Reservoir Sustaining Period, rainfall accumulation and diversions from the creek shall equal or exceed the rate of production plus any evaporation such that the water level in the reservoir is sustained. ***If additional water is available to be diverted during this Period, TCCWD is encouraged to fill the reservoir as much as possible.***
3. Reservoir Filling Period: February through April of each year. During the Reservoir filling period, TCCWD will elevate its attention to surface (raw) water reservoir storage volumes, taking steps to supplement rainfall accumulation with daily diversions from Timber Cove Creek at a rate necessary to ensure that the reservoir's water surface elevation is substantially full by May 1<sup>st</sup>. A "substantially full" reservoir is defined as water surface elevation being equal to or greater than 615.8 feet above mean sea level. This elevation corresponds to 0.2' below the reservoir overflow rim, and a useable volume of approximately 8.13 MG. If additional water is available to be diverted, up to the limits of the diversion permits, TCCWD is encouraged to reach a substantially full reservoir as early as possible and maintain the reservoir at this level until at least May 1<sup>st</sup>.

## B. Plan Implementation

1. Conditions and data for each of the above Plan Periods will be monitored and logged, respectively, on a daily basis. On the first day of each month, data for the preceding month will be reviewed and compared to the Plan Period Threshold for that month. Plan Period Thresholds are defined in units of useable reservoir volume (e.g., gallons or million gallons, assuming minimum water surface is at 6 feet of depth), not feet of reservoir water depth. Actual reservoir volumes will be determined by reading reservoir depth and identifying the corresponding volume from the depth-capacity chart provided in Appendix B. Straight-line interpolation between whole feet of depth provides sufficient accuracy. For convenient analytical purposes, a best-fit polynomial curve formula for this data was utilized during the production of this Plan and yields negligibly different volumes when compared to the straight-line method.

Plan Period Thresholds for each month will be calculated as shown in Table 1.

**Table 1: Plan Period Thresholds**

Test Date	Applicable Plan Period	Plan Period Threshold
May 1	Filling	Volume = 8.13 MG
Jun 1	Emptying	Volume = Prior year demands for Jun 1-Dec 31 + 2.0 MG
Jul 1	Emptying	Volume = Prior year demands for Jul 1-Dec 31 + 2.0 MG
Aug 1	Emptying	Volume = Prior year demands for Aug 1-Dec 31 + 2.0 MG
Sep 1	Emptying	Volume = Prior year demands for Sep 1-Dec 31 + 2.0 MG
Oct 1	Emptying	Volume = Prior year demands for Oct 1-Dec 31 + 2.0 MG
Nov 1	Emptying	Volume = Prior year demands for Nov 1-Dec 31 + 2.0 MG
Dec 1	Emptying	Volume = Prior year demands for Dec 1-Dec 31 + 2.0 MG
Jan 1	Sustaining	Volume = Volume on Dec 1, or 2.0 MG, whichever is greater.
Feb 1	Sustaining	Volume = Volume on Dec 1, or 2.0 MG, whichever is greater.
Mar 1	Filling	Volume = Volume on Feb 1 + [(1/3) * (8.13 MG – Volume on Feb 1)]
Apr 1	Filling	Volume = Volume on Feb 1 + [(2/3) * (8.13 MG – Volume on Feb 1)]

2. If on the first day of each month any threshold is not equaled or exceeded, TCCWD shall send a Stage 1 Water Conservation Notice to all customers with their water bills informing them that the surface water storage volume has fallen below the threshold (i.e., the volume normally expected at this time of year) and that a voluntary water conservation goal of 10% is now instituted. Sample conservation notices are provided in Appendix A.
3. If on the first day of any month following a month when a Stage 1 Water Conservation Notice was in effect, the Period Threshold is **not** equaled or exceeded, the following Conservation Actions will be considered and implemented as indicated.
  - a. If the surface water storage volume is between 1% and 10% below the threshold, the Stage 1 Water Conservation Notice will remain in effect.
  - b. If the surface water storage volume is greater than 10% below the threshold, a Stage 2 Water Conservation Notice will be sent to all customers informing them that the surface water storage volume has fallen to a critically low level and that the voluntary water conservation goal is increased to 20%.
4. If on the first day of any month following a month when a Stage 2 Water Conservation Notice was in effect, the Period Threshold is greater than 1% below the threshold, the Stage 2 Water Conservation Notice will remain in effect.
5. If on the first day of any month following a month when a Stage 1 or a Stage 2 Water Conservation Notice has been sent, the Period Threshold is equaled or exceeded, the voluntary water conservation goal may be cancelled.

**C. Demonstration of Conservation Action Plan**

1. Table 2 uses production data from May 2018 to May 2019 and reservoir level/volume data from May 2019 to May 2020 to calculate the Plan Period Thresholds and demonstrate if the proposed thresholds would have been met.

**Table 2: May 2019 to May 2020 Plan Period Thresholds**

Month-Year	Prior Year Production (gal)	Actual Volume (1st of month) (gal)	Threshold Volume (1st of month) (gal)	Surplus (Shortfall) (gal)
May-19	339,580	7,409,119	8,127,414	(718,295)
Jun-19	363,516	8,237,037	4,579,830	3,657,207
Jul-19	435,321	8,217,645	4,216,314	4,001,331
Aug-19	505,889	7,878,386	3,780,993	4,097,393
Sep-19	392,439	7,329,068	3,275,104	4,053,964
Oct-19	334,929	6,743,787	2,882,665	3,861,122
Nov-19	316,735	6,213,982	2,547,736	3,666,246
Dec-19	231,001	5,852,548	2,231,001	3,621,547
Jan-20	333,750	7,533,018	5,852,548	1,680,469
Feb-20	314,523	8,301,826	5,852,548	2,449,277
Mar-20	464,578	8,191,819	8,127,414	64,405
Apr-20	348,088	8,127,414	8,127,414	0
May-20	298,857	8,127,414	8,127,414	0

**D. Monitoring and Reporting**

TCCWD currently monitors daily meter readings for diversion and plant production, and daily reservoir levels and includes them in monthly reports to DDW. TCCWD will continue this monitoring and reporting, and additionally provide monthly reporting of actual and threshold volumes and any conservation action triggered. A blank Conservation Plan Monitoring and Reporting Form is included in Appendix B.

## **Appendix A:** Sample Water Conservation Notices

# Stage 1 Water Conservation Notice

**Effective immediately Timber Cove County Water District is implementing a 10% conservation goal for all customers in response to restricted water supply conditions.**

Timber Cove County Water District relies on a surface water storage reservoir to deliver potable water to its customers throughout the year. The reservoir is filled with diversions from Timber Cove Creek and direct rainfall. The combination of diversions, rainfall and storage are adequate to meet the normal demands of the District but are subject to varying degrees of stress and uncertainty when unusually low rainfall patterns occur.

To ensure water supplies remain reliable throughout each year, the District operates under the terms of a Conservation Action Plan developed in 2021 to meet requirements imposed by the State Water Resources Control Board. The Conservation Action Plan has established thresholds for reservoir storage volume that are tested on the first day of each month.

The storage volume on the first day of this month was below the threshold volume identified in the Conservation Action Plan; therefore a Stage 1 Water Conservation Notice is now in effect. The Notice will remain in effect for at least one month and until further notice.

Under a Stage 1 Conservation Notice, **all customers are asked to reduce their water usage by a minimum of 10%**. Thank you for your cooperation.

Should you have any questions, please call the District office at (707) 847-3880.

# Stage 2 Water Conservation Notice

**Effective immediately Timber Cove County Water District is implementing a 20% conservation goal for all customers in response to severely restricted water supply conditions.** A Stage 2 Water Conservation Notice is issued whenever the results of a Stage 1 conservation effort by customers fall short of preserving sufficient volume in the District's surface water storage reservoir and/or unusually low rainfall patterns persist.

Timber Cove County Water District relies on a surface water storage reservoir to deliver potable water to its customers throughout the year. The reservoir is filled with diversions from Timber Cove Creek and direct rainfall. The combination of diversions, rainfall and storage are adequate to meet the normal demands of the District but are subject to varying degrees of stress and uncertainty when unusually low rainfall patterns occur.

To ensure water supplies remain reliable throughout each year, the District operates under the terms of a Conservation Action Plan developed in 2021 to meet requirements imposed by the State Water Resources Control Board. The Conservation Action Plan has established thresholds for reservoir storage volume that are tested on the first day of each month.

The storage volume on the first day of this month was more than 10% below the threshold volume identified in the Conservation Action Plan; therefore a Stage 2 Water Conservation Notice is now in effect. The Notice will remain in effect for at least one month and until further notice.

Under a Stage 2 Conservation Notice, **all customers are asked to reduce their water usage by a minimum of 20%.** Thank you for your cooperation.

Should you have any questions, please call the District office at (707) 847-3880.

# Water Conservation Notice Cancellation

Due to the diligent conservation efforts by all customers, the water storage volumes in our reservoir have returned to normal and the Stage \_\_\_ Water Conservation Notice that has been in effect since \_\_\_\_\_ is now cancelled.

Although our water supplies are now considered normal for this time of year, water is a finite resource and your continued attention to using water in a responsible manner is always appreciated. Your collective efforts allow everyone in our community to rest assured that water can be delivered to you whenever it is needed.

The Timber Cove County Water District staff and Board of Directors thank you for your cooperation and participation.

Should you have any questions, please call the District office at (707) 847-3880.



**Appendix B:** Conservation Plan Monitoring and Reporting Form

Timber Cove County Water District					
Conservation Plan Monitoring and Reporting Form					
Year					

Note: All volumes are useable volumes (not including bottom 6').

Month	Starting Reservoir Depth (feet)	Starting Reservoir Volume <sup>1</sup> (gal)	Prior Year Production (gal)	Threshold Volume (gal) (1st of month)	Conservation Action Triggered (Yes/No)
Prior December					
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					

<sup>1</sup> Estimate Volume from Depth-Capacity Chart

Threshold Volume Calculation

Depth-Capacity Chart

Month	Threshold Volume	Depth (ft)	Useable Volume (gal)	Useable Volume (MG)
December	Prior year demands for Dec 1-Dec 31 + 2.0 MG	(ft)	(gal)	(MG)
January	Volume on Dec 1, or 2.0 MG, whichever is greater.	25	8,276,605	8.28
February	Volume on Dec 1, or 2.0 MG, whichever is greater.	24	7,627,983	7.63
March	Volume on Feb 1 + [(1/3) * (8.13 MG – Volume on Feb 1)]	23	7,005,239	7.01
April	Volume on Feb 1 + [(2/3) * (8.13 MG – Volume on Feb 1)]	22	6,408,003	6.41
May	8.13 MG	21	5,835,906	5.84
June	Prior year demands for Jun 1-Dec 31 + 2.0 MG	20	5,288,578	5.29
July	Prior year demands for Jul 1-Dec 31 + 2.0 MG	19	4,765,649	4.77
August	Prior year demands for Aug 1-Dec 31 + 2.0 MG	18	4,266,748	4.27
September	Prior year demands for Sep 1-Dec 31 + 2.0 MG	17	3,791,484	3.79
October	Prior year demands for Oct 1-Dec 31 + 2.0 MG	16	3,339,455	3.34
November	Prior year demands for Nov 1-Dec 31 + 2.0 MG	15	2,910,252	2.91
December	Prior year demands for Dec 1-Dec 31 + 2.0 MG	14	2,503,468	2.50
		13	2,118,696	2.12
		12	1,755,528	1.76
		11	1,413,526	1.41
		10	1,092,139	1.09
		9	790,734	0.79
		8	508,670	0.51
		7	245,305	0.25
		6	0	0.00
<u>Notes:</u>	a. Below 6 feet depth approximately 1.1 MG of storage remains but is set aside for solids accumulations and water that could be difficult/inefficient to treat.	5	0	0.00
		4	0	0.00
		3	0	0.00
		2	0	0.00
		1	0	0.00
	b. For volumes between whole feet of depth use straight line interpolation	0	0	0.00