

# LAKE ARROWHEAD COMMUNITY SERVICES DISTRICT

## MEMORANDUM

**DATE:** MAY 23, 2023

**TO:** BOARD OF DIRECTORS  
Lake Arrowhead Community Services District

**FROM:** CATHERINE CERRI, General Manager

**SUBJECT:** CONSIDER APPROVING THE ANNUAL WATER SUPPLY AND DEMAND ASSESSMENT AND DIRECT THE GENERAL MANAGER TO FILE THE ASSESSMENT WITH THE DEPARTMENT OF WATER RESOURCES

### A. RECOMMENDATION

It is recommended that the Board of Directors (Board) approve the Annual Water Supply and Demand Assessment (Assessment) and direct the General Manager to file the Assessment with the Department of Water Resources (DWR).

### B. REASON FOR RECOMMENDATION

In 2018, the California Legislature enacted into law new requirements for urban water suppliers to increase drought resilience and to improve communication of water shortage response actions. Each urban water supplier is required to prepare the Assessment and submit it to DWR on or before July 1 every year. This year's Assessment indicates that the District has enough supply to meet demand.

### C. BACKGROUND INFORMATION

All urban water suppliers in California are required to annually assess their supply and demand to determine if there will be a shortage under dry conditions in the coming year. The method for preparing the Assessment is outlined in the District's Water Shortage Contingency Plan which utilizes prior calendar year data to assess current conditions and estimate supplies for the coming year. The results are required to be presented to the Board of Directors (Board) for approval by the end of June. Throughout the year, the Board is updated on a monthly basis with the preliminary results through the General Manager's Report and the Operations Manager's Report.

**D. FISCAL IMPACT**

There is no direct fiscal impact related to this item.

**E. ENVIRONMENTAL IMPACT**

This is an administrative action with no direct environmental impact.

**F. ATTACHMENTS**

Annual Water Supply and Demand Assessment

# Annual Water Supply and Demand Assessment

May, 2023



## **Lake Arrowhead Community Services District**

PO Box 700, Lake Arrowhead, CA 92352

27307 State Highway 189, Blue Jay, CA 92317

## Annual Water Supply and Demand Assessment

To prepare this Annual Water Supply and Demand Assessment (Assessment), the District considered multiple sources of data, assessed its own supply assuming dry conditions, and estimated future water demand. Using the applicable key data inputs, the District estimated the planned water uses for the current year while anticipating that the next year will be dry. This method is in accordance with the Water Shortage Contingency Plan.

### Key Data Inputs

- A. The following key data inputs and assessment methodology were used to evaluate LACSD's water supply reliability for the current year and one dry year:
  - I. Current year unconstrained demand considering weather, growth and other influencing factors to meet demand objectives in future years.
  - II. Current year available supply considering hydrologic and regulatory conditions in the current year and one dry year.
  - III. Existing infrastructure capabilities and plausible constraints.
  - IV. A defined set of locally applicable evaluation criteria that are consistently relied upon for each annual assessment.
  - V. A description and quantification of each source of water supply.

The data used for the analysis included lake level, groundwater production, precipitation, State Water Project (SWP) allocations, and current unconstrained demand with no additional conservation measures to evaluate supply reliability for the coming year. Multiple precipitation gages were used to measure rainfall due to the many micro-climates in the Lake Arrowhead area. The analysis also considered operational conditions and capital projects that may have an effect on distribution. All of this data was input into a combined spreadsheet that captured prior year, current year and estimated the next year assuming it will be dry. This data was provided to the Board every month through the General Manager's Report. Additionally, the Water Operations Department prepared an analysis of all water supply uses which was distributed to staff and the Board on a monthly basis.

Demand was assessed through three data points: water delivered to distribution from the Water Operations Department, meter data provided by the Meter Technology Department and billing data from the Finance Department. All of these were assessed and compared to evaluate trends.

Due to the District's multiple supply sources, there is flexibility in its utilization. Depending on lake level and availability from the SWP, there may be a preferred supply mix that is different than the actual supply available. The District analyzed different scenarios to determine if there is an anticipated shortage of a particular supply or of total supply. This year's Assessment indicates that the District has enough supply to meet demand. See Table 1 for more information.

### Unconstrained Customer Demand

Customer use in 2023 has been declining compared to 2022. The Lake Arrowhead area received excessive amounts of precipitation in the 2023 Water Year. On April 25, 2023, the District Board of Directors lowered the Water Shortage Level from Level 3 to Level 2. The efforts from a declared Level 2 Water Shortage are designed

to affect a 10% decline in consumption compared to unconstrained demand. Due to the very wet conditions, it is expected that irrigation will be minimal in the spring and early summer. Subsequently, this analysis assumes 2023 demand will be 8% lower than unconstrained demand. Assuming the next year will be dry, greater reductions are anticipated in 2024 at 15%. See Table 2 for more information.

### Supply

The District has a total supply available that may be different than the preferred supply that is managed. Although the District's surface water withdrawal right is fixed, regardless of hydrologic conditions, the multiple beneficial uses of Lake Arrowhead increase the public's interest in a higher lake level. Currently, the lake is full and overflowing which is the optimal condition to utilize this supply and allow the groundwater wells to recharge. Currently, two of the District's groundwater wells are offline for repairs. In April, 2023, SWP allocations were increased to 100%. The District plans to purchase a small amount of water to cover the usage in an overlapping service area and specific construction activities may necessitate additional purchases.

Groundwater production was analyzed by each well individually. Groundwater production rates are currently higher than prior year due to the wet conditions but total production is lower due to required repairs. This trend is expected to continue for the remainder of 2023. The Water Operations Department has enhanced their pumping operation which has resulted in higher yields from existing wells. In 2024, all wells should be operational but the analysis assumes dry conditions. The District's groundwater wells typically don't experience a decline in production until the third consecutive dry year. See Table 3 for quantification of the District's anticipated water supply.

### Infrastructure Considerations

Certain construction and maintenance activities of the District may change the supply mix for the coming year. In 2023 and 2024, one of the District's reservoirs will be offline while being rebuilt. Because the District cannot meet summer demand without this reservoir online, the project is scheduled to start in September, 2023. During this time, a temporary, emergency intertie has been created to the Crestline-Lake Arrowhead Water Agency in case of a sudden loss in water pressure.

### Hydrologic Conditions

Precipitation of less than 30" in a year is considered to be dry conditions in Lake Arrowhead. So far, the area has received more than 60" in the 2023 Water Year. Each precipitation gage is analyzed separately due to the microclimates in the service area. By the end of April, hydrologic conditions can be predicted for the remainder of the year with a high degree of accuracy. Normally, the service area will have received 90% of the total annual precipitation by that time.

Lake level can also be predicted. The lake typically loses 4' of water level per year to evaporation and 1' for every 800 acre-feet of water withdrawn. Evaporation rates are higher in the summer. Using projected lake withdrawals, lake level can be estimated for the remainder of the year. In May, 2023, the level of Lake Arrowhead was overflowing at 5,107.11' which is 7" above full. This is 3.5' higher than lake level at the same time last year. With no more significant rainfall, the lake will end the year at approximately 3' below full. See Table 4 for more details.

### Annual Water Supply and Demand Assessment

Table 1

Potable (AF)	Normal	Prior Year	Prior Year	Prior Year	Prior Year	Current Year	Next Year (Dry)
	2016-19	2019	2020	2021	2022	2023	2024
Total Supply	1,827	1,811	1,792	1,804	1,817	1,800	1,799
Unconstrained Demand	(1,366)	(1,277)	(1,507)	(1,484)	(1,381)	(1,337)	(1,337)
<b>Surplus/(Shortage)</b>	<b>461</b>	<b>533</b>	<b>285</b>	<b>320</b>	<b>436</b>	<b>463</b>	<b>462</b>
Managed Supply	1,417	1,351	1,503	1,477	1,305	1,304	1,301
Unconstrained Demand	(1,366)	(1,277)	(1,507)	(1,484)	(1,381)	(1,337)	(1,337)
<b>Surplus/(Shortage)</b>	<b>51</b>	<b>73</b>	<b>(4)</b>	<b>(7)</b>	<b>(76)</b>	<b>(33)</b>	<b>(36)</b>
Is there an anticipated shortage?	No	No	No	No	No	No	No
Lake level (Dec 31)		5,105.52	5,103.14	5,102.38	5,103.00	5,103.18	5,100.43
Is Lake level a concern?		No	No	Yes	Yes	No	Yes
Demand Management Measures				(73)	(148)	(107)	(201)
<b>Revised Surplus/(Shortage)</b>	<b>51</b>	<b>73</b>	<b>(4)</b>	<b>66</b>	<b>72</b>	<b>74</b>	<b>165</b>
<b>Nonpotable Deliveries (AF)</b>							
Recycled Water	227	211	269	222	215	208	220

### Demand Assessment

Table 2

Acre-feet (AF)	Actual	Actual	Actual	Actual	Unconstrained		
	2016-19	2019	2020	2021	2022	2023	2024
Normal							
Residential	995	971	1,181	1,102	931	989	1,000
Commercial	96	87	86	75	76	86	86
Institutional	19	21	27	26	24	25	25
Irrigation	21	21	24	23	24	25	25
Unbilled Metered	13	20	11	5	-	-	-
Hydrant/FP	1	1	1	1	1	1	1
<b>Customer Water Use</b>	<b>1,145</b>	<b>1,121</b>	<b>1,330</b>	<b>1,233</b>	<b>1,056</b>	<b>1,126</b>	<b>1,137</b>
Water Loss	221	156	177	178	184	210	199
<b>Total Potable</b>	<b>1,366</b>	<b>1,277</b>	<b>1,507</b>	<b>1,411</b>	<b>1,240</b>	<b>1,337</b>	<b>1,337</b>
Recycled	227	211	269	222	215	208	220
<b>Total Demand</b>	<b>1,593</b>	<b>1,488</b>	<b>1,776</b>	<b>1,632</b>	<b>1,455</b>	<b>1,545</b>	<b>1,557</b>

### Supply Assessment

Table 3	Actual					Projected	
	2016-19	2019	2020	2021	2022	2023	2024
AW Supply (AF)	Normal						
<u>Total Supply</u>							
Surface Water	1,566	1,566	1,566	1,566	1,566	1,566	1,566
Groundwater	156	198	180	188	201	184	183
CLAWA I	50	47	46	50	50	50	50
CLAWA II	55	-	-	-	-	-	-
	<b>1,827</b>	<b>1,811</b>	<b>1,792</b>	<b>1,804</b>	<b>1,817</b>	<b>1,800</b>	<b>1,799</b>
<u>Drawn Supply</u>	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Actual</u>	<u>Proj</u>	<u>Proj</u>
Surface Water	1,075	1,106	1,277	1,120	1,052	1,071	1,071
Groundwater (Del to Dist)	156	198	180	187	201	181	179
CLAWA I	55	47	46	45	53	53	53
CLAWA II	131	-	-	124	0	0	0
	<b>1,417</b>	<b>1,351</b>	<b>1,503</b>	<b>1,477</b>	<b>1,305</b>	<b>1,304</b>	<b>1,301</b>

### Hydrologic Assessment

Table 4	Actual					Projected	
		2019	2020	2021	2022	2023	2024
Average							
<b>Precipitation Gage (in)</b>	Annual	Total	Total	Total	Total	Total	Total
Cedar Glen (SE)	33.06	66.26	24.52	35.55	29.43	69.44	12.20
BJ Admin (SW)	34.26	57.74	23.85	30.39	29.19	74.28	12.37
Bernina USGS (W)	30.67	51.60	20.86	24.03	25.61	69.24	13.37
LACC (GV W)	19.72	38.61	14.69	16.42	28.37	50.85	12.85
EW9934 Hospital (NE)		17.19	12.69	20.16	20.76	48.86	13.43
Fire Sta #1, 5140 (S)	36.70	60.46	28.66	50.04	36.3	70.51	23.72
Fire Sta #4, 5280 (W)	28.46	59.59	26.57	39.8	33.89	68.75	17.84
<b>Precipitation (in)</b>	<b>33.32</b>	<b>49.62</b>	<b>20.99</b>	<b>29.48</b>	<b>29.08</b>	<b>64.56</b>	<b>15.11</b>
SWP Table A	64%	10-75%	10-20%	5%	5%	100%	50%
<u>Lake Level Analysis</u>							
Lake Level (last day of month)	5101.96	5105.52	5103.14	5102.38	5103.00	5103.18	5100.43
Lake Level vs. full	-4.74	-1.18	-3.56	-4.32	-3.70	-3.52	-6.27
Evaporation losses	-4.00	-4.00	-4.00	-4.00	-3.80	-4.00	-4.00
Lake withdrawals (feet)	-2.19	-1.41	-1.63	-1.43	-1.34	-1.37	0.00
Precipitation (feet)	2.78	11.99	2.67	3.98	5.08	6.49	1.26