APPENDIX G: DROUGHT RISK ASSESSMENT

APPENDIX G – 5 Year Drought Risk Assessment

TO: **SCV Water**

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RE: **2025 UWMP – 5 Year Drought Risk Assessment**

1. Introduction

In accordance with California Water Code (CWC) Sections 10612 and 10635(b), Santa Clarita Valley Water Agency (SCV Water) prepared a Drought Risk Assessment (DRA) planning scenario evaluating the risk to water service reliability should a five-consecutive-year drought occur beginning in 2026. The DRA examines supply availability, projected demands, and operational constraints over the period 2026–2030 and informs development of demand management measures and supply programs included in the 2025 Urban Water Management Plan (UWMP).

This technical memorandum (TM) will compare supplies to projected demands to determine supply sufficiency for 2026 – 2030, assuming that there is an upcoming 5 year drought. The assumptions described in this TM form the basis for evaluating supply reliability relative to demand in the UWMP. This TM provides the detailed data, assumptions, and analytical methods used to quantify supply availability and evaluate reliability across planning scenarios. **Table 1** lists the applicable California Water Code (CWC) requirements addressed by this memorandum.

a. Applicable Water Code Sections

TABLE 1: APPLICABLE WATER CODE SECTIONS

UWMP Requirement
CWC 10612 "Drought Risk Assessment" means a method that examines water shortage risks based on the driest five-year historic sequence for the agency's water supply, as described in subdivision (b) of Section 10635.
CWC Section 10635(b) Every urban water supplier shall include, as part of its urban water management plan, a drought risk assessment for its water service to its customers as part of information considered in developing the demand management measures and water supply projects and programs to be included in the urban water management plan. The urban water supplier may conduct an interim update or updates to this drought risk assessment within the five-year cycle of its urban water management plan update. The drought risk assessment shall include each of the following:

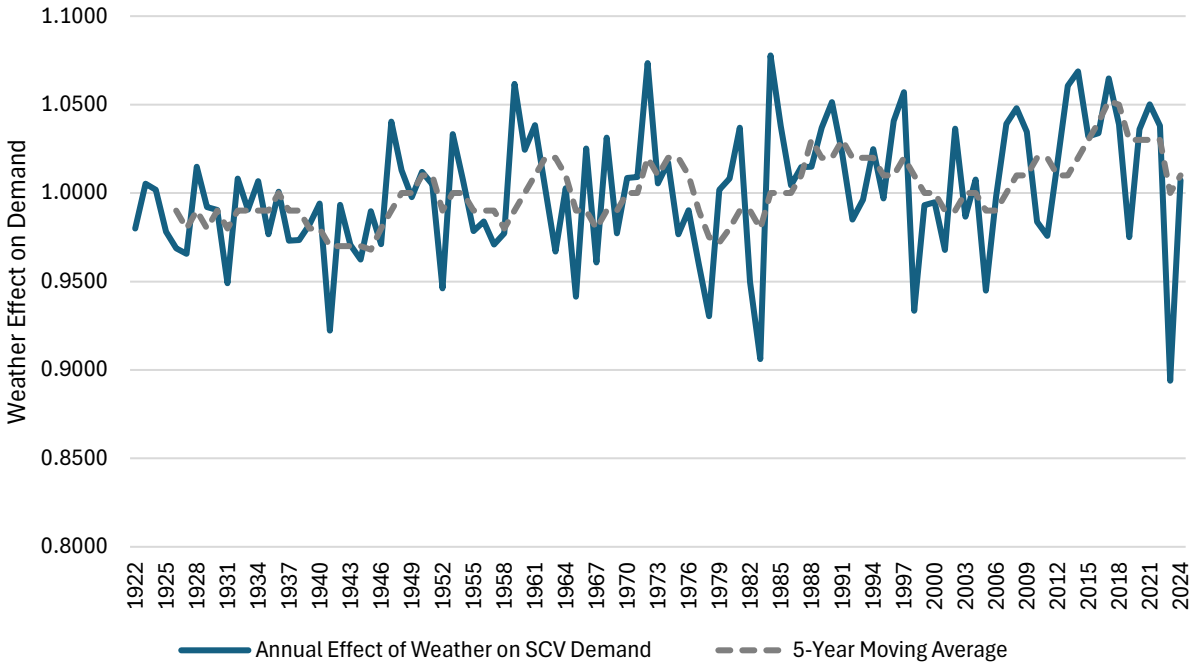
UWMP Requirement
(1) A description of the data, methodology, and basis for one or more supply shortage conditions that are necessary to conduct a drought risk assessment for a drought period that lasts five consecutive water years, starting from the year following when the assessment is conducted. (2) A determination of the reliability of each source of supply under a variety of water shortage conditions. This may include a determination that a particular source of water supply is fully reliable under most, if not all, conditions. (3) A comparison of the total water supply sources available to the water supplier with the total projected water use for the drought period. (4) Considerations of the historical drought hydrology, plausible changes on projected supplies and demands under climate change conditions, anticipated regulatory changes, and other locally applicable criteria.

2. DRA Data and Methods

a. Changes to Demand

Demand projections for the 2026–2030 DRA are based on the demand forecast described in Chapter 4 of the UWMP and adjusted using year-specific weather multipliers derived from observed demand responses. **Figure 1** displays the yearly weather multiplier on SCV Water's demand, with values below 1 indicating decreased demand and values above 1 indicating increased demand. It also includes a 5-year moving average of weather's effect. After 1985, the moving average stayed above 1 except for 2001-2002 and 2005-2006. The highest single-year impact was in 1984 (1.078), the highest three-year moving average was in 2015 (1.054), and the highest five-year moving average was in 2017 (1.052). These multipliers reflect the influence of elevated temperatures, increased evapotranspiration (ETo), and higher outdoor irrigation demand during severe drought conditions. Applying year specific adjustment factors rather than a uniform escalation allows the analysis to capture the variability in demand response observed during most recent drought conditions.

FIGURE 1: ANNUAL EFFECT OF WEATHER ON SCV DEMAND



The 2026-2030 DRA used yearly demand adjustment factors that account for weather changes observed during severe droughts. The most significant consecutive drought (2013–2017) for the SCV service area was chosen to estimate how demand might be affected by a drought beginning in 2026. **Table 2** presents projected demand for 2026-2030, including normal year estimates, the reference drought year, the annual weather effect multipliers from **Figure 1**, and the final DRA demand projections.

TABLE 2: PROJECTED CHANGES TO DEMAND FOR 2026 - 2030

Projected Years	2026	2027	2028	2029	2030
Normal Year Demand Projection (AFY)	61,259	61,844	62,618	63,261	64,025
Drought Reference Year	2013	2014	2015	2016	2017
Demand Adjustment Factor	+1.0606	+1.0688	+1.0320	+1.0339	+1.0647
Multiple Dry Year Demand (AFY)	**64,971**	**66,099**	**64,622**	**65,406**	**68,167**

By applying year-specific adjustment factors rather than a uniform escalation, the DRA captures interannual variability in demand response during sustained drought, consistent with the historic hydrologic sequence used for supply modeling.

b. Changes to Supplies

The DRA evaluates the expected quantity and reliability of each supply source over the five-consecutive-year drought period beginning in 2026.

i. State Water Project (SWP) Availability

SWP reliability under drought conditions is subject to:

- Northern California precipitation variability
- Delta conveyance and regulatory constraints
- Climate-adjusted delivery capability projections
- Current storage levels

The DRA analysis for the SWP availability uses the worst historic five consecutive year drought sequence in the 100-year hydrologic record, specifically 1929 through 1933. Under the Department of Water Resources (DWR) Draft Delivery Capability Report (DCR) specific to SCV Water characterization of this period, SWP allocations during those five years were 6 percent (1929), 34 percent (1930), 3 percent (1931), 11 percent (1932), and 19 percent (1933) rounded to the nearest %. The SWP values provided in this TM and the report reflect the calculation from the precise % provided in the DCR for SCV Water. Applied to SCV Water's Table A entitlement of 95,200 acre feet, this results in approximately 5,438 AF of imported supply in 2026 and approximately 17,892 AF by 2030 during sustained drought conditions. This sequence demonstrates both the severity and interannual variability that can occur during prolonged drought. The average allocation across the sequence is approximately 15 percent.

It is important to clarify that the selection of the 1929–1933 drought sequence is not based on its recurrence interval, but rather on the planning assumption that the most severe drought on record could occur again, providing a conservative basis for stress testing supply reliability. While this approach is consistent with prior UWMPs, it acknowledges that climate change may increase drought frequency or intensity in the future; however, the methodology is designed to ensure the system can withstand conditions at least as severe as the historical worst case.

In addition to the projected SWP allocation, the DRA assumes that approximately 10,500 AF of SWP Carryover Supply would be available in 2026. SWP carryover supplies represent Article 56 water stored by SCV Water from prior SWP allocations and carried forward into the subsequent year. The assumed carryover volume reflects the amount available to SCV Water at the end of the 2025 water year as described in Chapter 6 of the UWMP. **Table 3** summarizes the projected SWP supplies for 2026 – 2030 for a projected near term drought. Normal Year SWP projections for the same time frame are shown for reference and comparison for the drought risk assessment.

TABLE 3: PROJECTED SWP SUPPLIES FOR 2026 - 2030

Projected Years	2026	2027	2028	2029	2030
Drought Reference Year	1929	1930	1931	1932	1933
Annual SWP Allocation (from 95,200 AFY)[1]	6%	34%	3%	11%	19%
Additional SWP Carryover Supply	10,500				
Multiple Dry Year SWP Supply Availability (AFY)	**15,938**	**32,540**	**2,523**	**10,781**	**17,892**
Normal Year SWP Supply Projection (AFY) SWP Average Reliability 48% (from 95,200 AFY) [2]	45,696				

Note: [1]Rounded to nearest whole percent. [2] The Normal Year is added for comparison purposes only.

ii. Groundwater

SCV Water overlies the Santa Clara River Valley East Subbasin (DWR Basin No. 4-4.07 or Basin), which is the sole source of groundwater supply for SCV Water. The Santa Clarita Valley Groundwater Sustainability Agency (SCV-GSA) prepared a Groundwater Sustainability Plan (GSP) (https://scvgsa.org/wp-content/uploads/2022/02/Santa-Clara-River-Valley-East-Groundwater-Subbasin-GSP.pdf) to comply with California's Sustainable Groundwater Management Act (SGMA) and to maintain long term groundwater sustainability over the required 20-year planning horizon. The GSP was completed in 2022 and approved by DWR in January 2024.

Alluvial Aquifer: Under sustained drought conditions, due to low rainfall, recharge to the Alluvial Aquifer is reduced. Groundwater production is increased relative to Normal conditions but remains within the groundwater pumping scenarios evaluated in the 2022 GSP. Reliability of the Alluvial Aquifer under drought conditions is considered moderate and subject to recharge variability; however, modeling demonstrates no chronic decline in groundwater levels under the assumed drought sequence.

Saugus Formation: The Saugus Formation provides increased opportunities for groundwater production under drought conditions, particularly as additional well capacity (including Saugus Wells 5 and 6) is not yet incorporated into the portfolio until after 2035. Saugus 3 and 4 assumes capacity starting in 2027. Reliability is higher under drought conditions due to operational flexibility and deeper storage availability. Planned groundwater production is consistent with the GSP planned production.

Under normal conditions, total groundwater production in the Basin is projected at ~37,500 – 55,000 AFY, with the Alluvial Aquifer providing ~30,000 – 40,000 AFY and the Saugus Formation providing ~7,500 – 15,000 AFY. **Table 4** describes how basin operations shift during dry years, total production increases as the basin shifts reliance toward the deeper Saugus Formation. This pattern reflects an adaptive use approach in which Alluvial supplies are maintained and Saugus Formation pumping is adaptively increased to meet demands and mitigate surface water shortages during prolonged dry sequences.

TABLE 4: GROUNDWATER OPERATING PLAN FOR BASIN

Aquifer	Normal Years (AF)	Dry Year 1 (AF)	Dry Year 2 (AF)	Dry Year 3 (AF)
Alluvium	30,000–40,000	30,000–35,000	30,000–35,000	30,000–35,000
Saugus	7,500–15,000	15,000–25,000	21,000–25,000	21,000–35,000
Total	37,500–55,000	45,000–60,000	51,000–60,000	51,000–70,000

iii. Recycled Water

Recycled water availability is largely independent of precipitation and imported water export conditions. During the 2026–2030 drought sequence, recycled water is assumed to remain stable relative to baseline

projections. Minor reductions may occur if conservation reduces wastewater flows, but these are not projected to materially affect availability.

iv. Firm Contractual Transfer Supplies

SCV Water uses transfers and exchanges as tools to improve, dry-year reliability, operational flexibility and avoid wasting available supplies. Long-term water purchase transfer agreements like Buena Vista Rosedale-Rio Bravo (BVRRB) and future Nickel Water – Newhall Land & Farm (NLF) supplies are critical in supplementing dry-year water supply constraints, as these supplies are not impacted by weather variability. Other short term transfers and exchanges, like Yuba Accord water, are not relied upon as a primary supply in normal years; instead, they are used selectively when (1) water is available beyond near-term demand and planned storage capacity, or (2) short-term conditions create a need to shift water to a different place or time in order to preserve as much of the supply as possible. Chapter 6 of the UWMP goes into further details of the available water transfer and exchange supply sources for SCV Water. Firm contractual supplies, including BVRRB, provide consistent annual quantities during the drought sequence. These supplies are not directly dependent on annual hydrology and are considered highly reliable within contractual and physical delivery limits. NLF is not considered in this analysis because it is not available until 2035. **Table 5** highlights that 12,000 AFY of firm contractual transfer supplies are available to SCV Water for 2026 – 2030.

TABLE 5: AVAILABLE CONTRACTUAL TRANSFER SUPPLIES FOR 2026 - 2030

AFY	2026	2027	2028	2029	2030
BVRRB	11,000	11,000	11,000	11,000	11,000
Nickel Water - NLF	0	0	0	0	0
Yuba Accord Water	1,000	1,000	1,000	1,000	1,000

v. Banking and Storage Programs (Drought Activated Supplies)

The following sources are assumed to be activated during drought conditions and are therefore characterized as shortage mitigation supplies. These supplies are not relied upon during Normal conditions but are deployed during drought to offset imported water reductions. Their reliability is subject to:

- Stored balance availability
- Contractual recovery limits
- Physical conveyance capacity

Table 6 summarizes the groundwater banking and flexible storage supplies assumed available for the five-consecutive-year drought period beginning in 2026. The table identifies the stored balances entering the drought period and the annual maximum allowable recovery volumes used in the DRA. These recovery limits reflect contractual terms, physical conveyance constraints, and operational assumptions applied in the DRA modeling. Together, these programs represent the primary drought-response reserves that supplement local groundwater and reduced imported supplies during sustained dry conditions.

SCV Water's flexible storage account is located in Castaic Lake. This supply is utilized to help meet peak summer demands if needed when other supply deliveries are constrained during the summer months. This supply can be used to help offset some of those constraints when needed. Once these supplies are used,

SCV Water can utilize other supplies to refill flexible storage during later months of the year, making sure that emergency supply is always available for use when needed.

TABLE 6: END OF YEAR BALANCES FOR STORAGE PROGRAMS (2025)

Banking / Flexible Storage Program	Current Storage Amount at End of 2025 (AF)	Annual Maximum Allowable Recovery During 2026–2030 (AFY)	Available Storage if Maximum was Recovered each year of the DRA
Rosedale Banking	98,000	20,000 (10,000 AFY Firm assumed in DRA)	48,000
Semitropic Banking	38,540	5,000	13,540
NLF Semitropic Banking	0	0 (not assumed available until 2035)	Not applicable
Flexible Storage Accounts	6,060	6,060	Not applicable

Notes: Annual maximum allowable recovery values reflect the dry-year supplies assumed for the DRA five-consecutive-year drought period beginning in 2026. NLF Semitropic Banking is assumed to begin providing supply in 2035 to meet water demand associated with the buildout of the Newhall Ranch Specific Plan in accordance with the Specific Plan EIR after sufficient stored water is accumulated; therefore it is not assumed available during the 2026–2030 DRA period. Flexible Storage availability reflects the Ventura lease terms assumed for the DRA period.

3. DRA Results

As illustrated in **Table 7,** total available supply remains above projected demand in each year of the five-year drought period. While imported water availability varies across the drought sequence consistent with the historic allocation pattern applied, groundwater production and activation of drought-response reserves adjust accordingly to maintain reliability. Groundwater production increases during the later years of the drought period, reflecting operational flexibility within SGMA limits, and dry-year reserves remain available to offset reductions in imported supplies.

Surplus supplies are expected to be about 12,000 AF in 2026 and 38,000 AF in 2030, covering approximately 20% of projected demand in 2026 and 55% in 2030.

The DRA demonstrates that the supply portfolio responds dynamically to sustained drought conditions. Variability in imported supplies is balanced by increased local production and stored water recovery, resulting in a consistently positive supply margin throughout the modeled period.

The DRA confirms that SCV Water maintains adequate supply reliability under the five-consecutive-year drought scenario beginning in 2026. The diversified water portfolio provides resilience under sustained hydrologic stress without requiring additional emergency measures beyond those already incorporated into the modeled drought-response framework.

TABLE 7: 5 YEAR DROUGHT RISK ASSESSMENT

DWR Table 7-5: Five-Year Drought Risk Assessment					
	2026	**2027**	**2028**	**2029**	**2030**
Existing Supplies					
Existing Groundwater[a]					
Alluvial Aquifer	15,250	16,300	18,800	25,700	27,600
Saugus Formation	11,400	17,780	26,060	26,185	26,185
Total Groundwater	**26,650**	**34,080**	**44,860**	**51,885**	**53,785**
Recycled Water					
Recycled Water Existing[b]	450	450	450	450	450
Recycled Water New Drop or Future	880	1,040	1,199	1,357	1,515
Total Recycled	**1,330**	**1,490**	**1,649**	**1,807**	**1,965**
Imported Water					
State Water Project[c]	5,438	32,540	2,523	10,781	17,892
State Water Project Carryover Supply[d]	10,500	0	0	0	0
Flexible Storage Accounts[e]	6,060	6,060	6,060	6,060	6,060
BVRRB	11,000	11,000	11,000	11,000	11,000
Nickel Water - NLF[f]	0	0	0	0	0
Yuba Accord Water[g]	1,000	1,000	1,000	1,000	1,000
Total Imported	**33,998**	**50,600**	**20,583**	**28,841**	**35,952**
Existing Banking and Exchange Programs					
Rosedale Banking[h]	10,000	10,000	10,000	10,000	10,000
Semitropic Banking[h]	5,000	5,000	5,000	5,000	5,000
NLF Semitropic Banking[h][i]	0	0	0	0	0
Exchange Programs[j]	0	0	0	0	0
Total Bank/Exchange	**15,000**	**15,000**	**15,000**	**15,000**	**15,000**
Total Supplies	**76,978**	**101,170**	**82,092**	**97,533**	**106,658**
Passive Conservation Demands [k][l]	**64,971**	**66,099**	**64,622**	**65,406**	**68,167**
Surplus Supplies	**12,007**	**35,071**	**17,470**	**32,127**	**38,491**

Notes:

(a) Existing groundwater supplies represent the quantity of groundwater available to be pumped with existing wells and planned recovery wells increasing available capacity from 2026-2030.

(b) Existing recycled water is current average annual use.

(c) SWP supplies assume 1929-1933 hydrology (driest consecutive five years on record) from 2026-2030. Reference from DWR's Draft DCR.

(d) SWP carryover (Article 56) supplies are actual total for SCV Water in 2025.

(e) Includes both SCV Water and Ventura County entities flexible storage accounts.

(f) Existing NLF supplies committed under approved Newhall Ranch Specific Plan. Nickel Water is to be transferred to SCV Water once Newhall Ranch development is completed, but is currently available to meet supply shortfalls associated with the Newhall Ranch Specific Plan. Development assumed to be completed around 2035.

(g) Supply shown is average amount available in dry periods, after delivery losses. This supply would typically be used only during dry years and is available through 2030.
(h) Supplies shown are annual amounts that can be withdrawn using existing firm withdrawal capacity and would typically be used only during dry years.
(i) Existing NLF supply. Assumed to be transferred to SCV Water during Newhall Ranch development by 2035 to meet water demands associated with the Newhall Ranch Specific Plan.
(j) Recoverable exchange supplies are not assumed to be available as annual return balances are dependent on partner agencies operating circumstances.
(k) For completeness, LAWWD36 sales are included in demands.
(l) Demands are weather-adjusted for dry 2013-2017 hydrology.