

Appendix J

Addendum to the Antelope Valley – East Kern Water Agency
2015 Urban Water Management Plan

Quantifying Regional Self-Reliance and
Reduced Reliance on Water Supplies
from the Delta Watershed
(FINAL, August 2021)

Technical Memorandum



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Project: 2020 UWMP

SUBJECT: QUANTIFYING REGIONAL SELF-RELIANCE AND REDUCED RELIANCE ON WATER SUPPLIES FROM THE DELTA WATERSHED

1 Background

Under the Sacramento-San Joaquin Delta Reform Act of 2009, state and local public agencies proposing a covered action in the Delta, prior to initiating the implementation of that action, must prepare a written certification of consistency with detailed findings as to whether the covered action is consistent with applicable Delta Plan policies and submit that certification to the Delta Stewardship Council. Anyone may appeal a certification of consistency, and if the Delta Stewardship Council grants the appeal, the covered action may not be implemented until the agency proposing the covered action submits a revised certification of consistency, and either no appeal is filed, or the Delta Stewardship Council denies the subsequent appeal.

An urban water supplier that anticipates participating in or receiving water from a proposed covered action such as a multi-year water transfer, conveyance facility, or new diversion that involves transferring water through, exporting water from, or using water in the Delta should provide information in their 2015 and 2020 Urban Water Management Plans (UWMPs) that can then be used in the covered action process to demonstrate consistency with Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (WR P1).

WR P1 details what is needed for a covered action to demonstrate consistency with reduced reliance on the Delta and improved regional self-reliance. WR P1 subsection (a) states that:

(a) Water shall not be exported from, transferred through, or used in the Delta if all of the following apply:

(1) One or more water suppliers that would receive water as a result of the export, transfer, or use have failed to adequately contribute to reduced reliance on the Delta and improved regional self-reliance consistent with all of the requirements listed in paragraph (1) of subsection (c);

(2) That failure has significantly caused the need for the export, transfer, or use; and

(3) The export, transfer, or use would have a significant adverse environmental impact in the Delta.

WR P1 subsection (c)(1) further defines what adequately contributing to reduced reliance on the Delta means in terms of (a)(1) above.

(c)(1) Water suppliers that have done all the following are contributing to reduced reliance on the Delta and improved regional self-reliance and are therefore consistent with this policy:

(A) Completed a current Urban or Agricultural Water Management Plan (Plan) which has been reviewed by the California Department of Water Resources for compliance with the applicable requirements of Water Code Division 6, Parts 2.55, 2.6, and 2.8;

(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta; and

(C) Included in the Plan, commencing in 2015, the expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance. The expected outcome for measurable reduction in Delta reliance and improvement in regional self-reliance shall be reported in the Plan as the reduction in the amount of water used, or in the percentage of water used, from the Delta watershed. For the purposes of reporting, water efficiency is considered a new source of water supply, consistent with Water Code section 1011(a).

The analysis and documentation provided below include all the elements described in WR P1(c)(1) that need to be included in a water supplier's UWMP to support a certification of consistency for a future covered action.

2 Methodology

As stated in WR P1(c)(1)(C), the policy requires that, commencing in 2015, UWMPs include expected outcomes for improved regional self-reliance and measurable reduction in Delta reliance. WR P1 further states that those outcomes shall be reported in the UWMP as the reduction in the amount of water used, or in the percentage of water used, from the Delta. The expected outcomes for AVEK regional self-reliance and reduced Delta reliance were developed using the approach and guidance described in Appendix C of DWR's Urban Water Management Plan Guidebook 2020 issued in March 2020 (Guidebook Appendix C).

The methodology used to determine AVEK's improved regional self-reliance and reduced Delta reliance is consistent with the approach detailed in DWR's UWMP Guidebook Appendix C, including the use of narrative justifications for the accounting of supplies and the documentation of specific data sources. Some of the key assumptions include:

- All data were obtained from the current 2020 UWMP or previously adopted UWMPs and represent average or normal water year conditions.
- All analyses were conducted at the service area level, and all data reflect the total contributions of AVEK and its customers as well as their customers.

To calculate the expected outcomes for improved regional self-reliance and reduced Delta reliance, a baseline is needed to compare against. This analysis uses a normal water year representation of 2010 as the baseline, which is consistent with the approach described in the Guidebook Appendix C. Data for the 2010 baseline were taken from AVEK's 2005 UWMP as the UWMPs generally do not provide normal water year data for the year that they are adopted (i.e., 2005 UWMP forecasts begin in 2010, 2010 UWMP forecasts begin in 2015, and so on).

Consistent with the 2010 baseline data approach, the expected outcomes for improved regional self-reliance and reduced Delta reliance for 2015 and 2020 were taken from AVEK’s 2010 and 2015 UWMPs, respectively. Expected outcomes for 2025-2045 are from the current 2020 UWMP. Documentation of the specific data sources and assumptions are included in the discussions below.

3 Demonstration of Regional Self-Reliance

Service Area Demands without Water Use Efficiency

In alignment with the Guidebook Appendix C, this analysis uses normal water year demands, rather than normal water year supplies to calculate expected outcomes in terms of the percentage of water used. Using normal water year demands serves as a proxy for the amount of supplies that would be used in a normal water year, which helps alleviate issues associated with how supply capability is presented to fulfill requirements of the UWMP Act versus how supplies might be accounted for to demonstrate consistency with WR P1.

Because WR P1 considers water use efficiency savings a source of water supply, water suppliers such as AVEK that do not explicitly quantify water use efficiency savings in their UWMPs can calculate their embedded water use efficiency savings based on changes in forecasted per capita water use since the baseline.

Agencies that explicitly calculate and report water use efficiency savings in their UWMP will need to make an adjustment to properly reflect normal water year demands in the calculation of reduced reliance. As explained in the Guidebook Appendix C, water use efficiency savings must be added back to the normal year demands to represent demands without water use efficiency savings accounted for; otherwise the effect of water use efficiency savings on regional self-reliance would be overestimated. Table 1 shows the results of this adjustment for AVEK. Supporting narratives and documentation for all the data shown in Table 1 are provided below.

Service Area Demands with Water Use Efficiency

The service area demands shown in Table 1 represent the total water demands for AVEK’s service area. The demand data shown in Table 1 were collected from the following sources:

- Baseline (2010): AVEK 2005 UWMP, Table 7 and Table 8
- 2015: AVEK 2010 UWMP, Table 4 and Table 5
- 2020: AVEK 2015 UWMP, Table 4-2
- 2025-2045: AVEK 2020 UWMP, Table ES-2

Service Area Population

The population data shown in Table 1 were collected from the following sources:

- Baseline (2010): AVEK 2010 UWMP, Table 2
- 2015: AVEK 2015 UWMP, Table 3-1
- 2020-2045: AVEK 2020 UWMP, Table ES-1

Estimated Water Use Efficiency Since Baseline

Calculated using “Potable Service Area Demands with Water Use Efficiency” divided by “Service Area Population” and then calculating Estimated Water Use Efficiency Since Baseline by comparing with 2010 Per Capita Water Use.

Service Area Water Demands without Water Use Efficiency

Add “Service Area Demands with Water Use Efficiency” to “Estimated Water Use Efficiency Since Baseline.”

Supplies Contributing to Regional Self-Reliance

For a covered action to demonstrate consistency with the Delta Plan, WR P1 subsection (c)(1)(C) states that water suppliers must report the expected outcomes for measurable improvement in regional self-reliance. Table 2 shows expected outcomes for supplies contributing to regional self-reliance both in amount and as a percentage. The numbers shown in Table 2 represent efforts to improve regional self-reliance for AVEK’s entire service area and include the total contributions of AVEK and its customers. Supporting narratives and documentation for all of the data shown in Table 2 are provided below.

Water Use Efficiency

The water use efficiency information shown in Table 2 is taken directly from Table 1.

Local and Regional Water Supply and Storage Programs

The local and regional water supply and storage programs data shown in Table 2 represent groundwater pumping estimates by AVEK and entities within AVEK’s service area. The estimates were complicated because the Antelope Valley Groundwater Basin Judgment (Judgment) did not go into effect until 2016 and roughly half of annual pumping rights are associated with imported water return flows, which is dependent on total demands in the AVEK service area. Now that the Judgment is in place, the following categories were totaled to estimate annual pumping rights

- Exhibit 3 – Non-Overlying Producers Production Rights
 - Production Rights
 - Rights from Return Flows
- Exhibit 4 – Overlying Producers Production Rights
 - Production Rights
 - Rights from Return Flows

Based on this information, groundwater pumping data was estimated from the following sources:

- Baseline (2010): Prior to the Judgment, there were not estimates of groundwater pumping within AVEK service area so the 2010 pumping value was assumed to be equivalent to the 2015 estimate
- 2015: Groundwater accounting for the Judgment started in 2016 so the 2016 production rights values for 2016 from the 2016 Annual Report from the Antelope Valley Watermaster were used for 2015 values
- 2020: 2020 groundwater sources from the Annual Report from the Antelope Valley Watermaster
- 2025-2045: Judgment production rights plus estimated return flows based on projected AVEK demands presented in the 2020 UWMP

Other Programs and Projects that Contribute to Regional Self-Reliance

Other Programs and Projects that Contribute to Regional Self-Reliance includes non-SWP water supply acquired by AVEK in 2017 through a long-term lease of annual supply originally belonging to the Nickel Family, a farming interest in Kern County. AVEK acquired the rights to 1,700 acre-feet of water made available for a period of 35 years (with an option to extend for 35 more years), even in dry years.

Conclusions

The results shown in Table 2 demonstrate that AVEK’s service area is measurably improving its regional self-reliance. In the near-term (2025), the expected outcome for normal water year regional self-reliance is expected to increase by 57,500 AFY from the 2010 baseline; this represents an increase of about 39 percent of 2025 normal water year retail demands. In the long-term (2045), the expected outcome for normal water year regional self-reliance is expected to increase by more than 83,100 AFY from the 2010 baseline, this represents an increase of about 38 percent of 2045 normal water year retail demands (Table 2). The results show that as a region, AVEK and its customers are measurably reducing reliance on the Delta and improving regional self-reliance, both as an amount of water used and as a percentage of water used.

4 Demonstration of Reduced Reliance on the Delta

AVEK’s service area reduces reliance on the Delta through investments in non-Delta water supplies, local water supplies, and regional and local demand management measures. For reduced reliance on supplies from the Delta Watershed, the data used in this analysis represent the total regional efforts of AVEK and its customers, and were developed in conjunction with AVEK customers as part of the UWMP coordination process (as described in Chapter 2 of AVEK’s 2020 UWMP). In accordance with UMWP requirements, several of AVEK’s customers also report demands and supplies for their service areas in their respective UWMPs. The data reported by those agencies are not additive to the regional totals shown in AVEK’s UWMP, rather their reporting represents subtotals of the regional total and should be considered as such for the purposes of determining reduced reliance on the Delta.

Calculation of Reliance on Water Supplies from the Delta Watershed

The calculation of reliance on water supplies from the Delta watershed, shown in Table 3, is based on the following assumptions. AVEK water supplies from the Delta watershed include “CVP/SWP Contract Supplies.”

CVP/SWP Contract Supplies

The supply data shown in Table 3 is for AVEK’s SWP Table A allocation and were collected from the following sources:

- Baseline (2010): AVEK 2005 UWMP, Table 10
- 2015: AVEK 2010 UWMP, Table 6
- 2020: AVEK 2015 UWMP, Table 6-9
- 2025-2045: AVEK 2020 UWMP, Table ES-3

Total Water Supplies from the Delta Watershed

Total Water Supplies from the Delta Watershed is equivalent to CVP/SWP Contract Supplies.

Change in Supplies from the Delta Watershed

Calculates changes in Total Water Supplies from the 2010 baseline value with future values.

Percent Change in Supplies from the Delta Watershed

Divides “Water Supplies from the Delta Watershed” by “Service Area Demands without Water Use Efficiency” and calculates changes from the 2010 baseline.

Conclusions

The following provides a summary of the near-term (2025) and long-term (2045) expected outcomes for AVEK’s Delta reliance on supplies from the Delta watershed:

- Near-term (2025) – Normal water year reliance on supplies from the Delta watershed decreased by 18,600 AF from the 2010 baseline, this represents a decrease of 28 percent of 2025 normal water year demands without water use efficiency (Table 3).
- Long-term (2045) – Normal water year reliance on supplies from the Delta watershed decreased by 25,100 AF from the 2010 baseline, this represents a decrease of 46 percent of 2025 normal water year demands without water use efficiency (Table 3).

The results show that as a region, AVEK and its customers (including AVEK) as well as their customers are measurably reducing reliance on the Delta and improving regional self-reliance, both as an amount of water used and as a percentage of water used.

5 UWMP Implementation

In addition to the analysis and documentation described above, WR P1 subsection (c)(1)(B) requires that all programs and projects included in the UWMP that are locally cost-effective and technically feasible, which reduce reliance on the Delta, are identified, evaluated, and implemented consistent with the implementation schedule. WR P1 (c)(1)(B) states that:

(B) Identified, evaluated, and commenced implementation, consistent with the implementation schedule set forth in the Plan, of all programs and projects included in the Plan that are locally cost effective and technically feasible which reduce reliance on the Delta[.]

In accordance with Water Code Section 10631(f), water suppliers must already include in their UWMP a detailed description of expected future projects and programs that they may implement to increase the amount of water supply available to them in normal and single-dry water years and for a period of drought lasting five consecutive years. The UWMP description must also identify specific projects, include a description of the increase in water supply that is expected to be available from each project, and include an estimate regarding the implementation timeline for each project or program.

Chapter 6 of AVEK’s 2020 UWMP summarizes the implementation plan and continued progress in developing a diversified water portfolio to meet the region’s water needs.

6 2015 UWMP Appendix J

The information contained in this appendix is also intended to be a new Appendix J attached to AVEK’s 2015 UWMP consistent with WR P1 subsection (c)(1)(C) (Cal. Code Regs. tit. 23, § 5003). AVEK provided notice of the availability of the draft 2020 UWMP, 2021 WSCP, and a new Appendix J to the 2015 UWMP and the public hearing to consider adoption of the documents in accordance with CWC Sections 10621(b) and 10642, and Government Code Section 6066, and Chapter 17.5 (starting with Section 7290) of Division 7 of Title 1 of the Government Code. The public review drafts of the 2020 UWMP, Appendix J to the 2015 UWMP, and the 2021 WSCP were posted on AVEK’s website, avek.org, on April 6, 2021, more than 60 days in advance of the public hearing on June 8, 2021. The notice of availability of the documents was sent to AVEK’s customers, as well as cities and counties in AVEK’s service area. Copies of the notification letter sent to the customers and cities and counties in AVEK’s service area are included in the 2020 UWMP Appendix D. Thus, this Appendix C to AVEK’s 2020 UWMP, which was adopted with AVEK’s 2020 UWMP, will also be recognized and treated as Appendix J to AVEK’s 2015 UWMP.

AVEK held the public hearing for the draft 2020 UWMP, draft Appendix J to the 2015 UWMP, and draft 2021 WSCP on June 8, 2021, at a regular Board of Directors meeting, held online due to COVID-19 concerns. On August 24, 2021, AVEK’s Board of Directors determined that the 2020 UWMP and the 2021 WSCP accurately represent the water resources plan for AVEK’s service area. In addition, AVEK’s Board of Directors determined that Appendix J to both the 2015 UWMP and the 2020 UWMP includes all of the elements described in Delta Plan Policy WR P1, Reduce Reliance on the Delta Through Improved Regional Water Self-Reliance (Cal. Code Regs. tit. 23, § 5003), which need to be included in a water supplier’s UWMP to support a certification of consistency for a future covered action. As stated in Resolution No. R-21-08, the AVEK Board of Directors adopted the 2020 UWMP, Appendix J to the 2015 UWMP, and the 2021 WSCP and authorized their submittal to the State of California. Copies of the resolutions are included in the 2020 UWMP Appendix E.

Table 1. Calculation of Service Area Water Demands without Water Use Efficiency (UWMP Table C-1 and Table C-2)

Table C-1: Optional Calculation of Water Use Efficiency -To be completed if Water Supplier does not specifically estimate Water Use Efficiency as a supply								
Service Area Water Use Efficiency Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands with Water Use Efficiency Accounted For	111,031	91,075	83,680	73,420	80,400	83,850	87,520	91,200
Non-Potable Water Demands								
Potable Service Area Demands with Water Use Efficiency Accounted For	111,031	91,075	83,680	73,420	80,400	83,850	87,520	91,200
Total Service Area Population								
Total Service Area Population	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Population	291,063	359,500	320,571	345,335	370,100	394,864	420,967	447,071
Water Use Efficiency Since Baseline								
Water Use Efficiency Since Baseline (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Per Capita Water Use (GPCD)	341	226	233	190	194	190	186	182
Change in Per Capita Water Use from Baseline (GPCD)		(114)	(108)	(151)	(147)	(151)	(155)	(158)
Estimated Water Use Efficiency Since Baseline		46,062	38,607	58,314	60,781	66,778	73,065	79,343
Table C-2: Calculation of Service Area Water Demands Without Water Use Efficiency								
Total Service Area Water Demands (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands with Water Use Efficiency Accounted For	111,031	91,075	83,680	73,420	80,400	83,850	87,520	91,200
Reported Water Use Efficiency or Estimated Water Use Efficiency Since Baseline		46,062	38,607	58,314	60,781	66,778	73,065	79,343
Service Area Water Demands without Water Use Efficiency Accounted For	111,031	137,137	122,287	131,734	141,181	150,628	160,585	170,543

Table 2. Calculation of Supplies Contributing to Regional Self-Reliance (UWMP Table C-3)

Water Supplies Contributing to Regional Self-Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Water Use Efficiency		46,062	38,607	58,314	60,781	66,778	73,065	79,343
Water Recycling								
Stormwater Capture and Use								
Advanced Water Technologies								
Conjunctive Use Projects								
Local and Regional Water Supply and Storage Projects	35,870	35,870	33,280	33,330	33,760	36,320	36,660	37,960
Other Programs and Projects the Contribute to Regional Self-Reliance			1,700	1,700	1,700	1,700	1,700	1,700
Water Supplies Contributing to Regional Self-Reliance	35,870	81,932	73,587	93,344	96,241	104,798	111,425	119,003

Service Area Water Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands without Water Use Efficiency Accounted For	111,031	137,137	122,287	131,734	141,181	150,628	160,585	170,543

Change in Regional Self Reliance (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Water Supplies Contributing to Regional Self-Reliance	35,870	81,932	73,587	93,344	96,241	104,798	111,425	119,003
Change in Water Supplies Contributing to Regional Self-Reliance		46,062	37,717	57,474	60,371	68,928	75,555	83,133

Percent Change in Regional Self Reliance (As Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Percent of Water Supplies Contributing to Regional Self-Reliance	32.3%	59.7%	60.2%	70.9%	68.2%	69.6%	69.4%	69.8%
Change in Percent of Water Supplies Contributing to Regional Self-Reliance		27.4%	27.9%	38.6%	35.9%	37.3%	37.1%	37.5%

Table 3. Reliance on Water Supplies from the Delta Watershed (UWMP Table C-4)

Water Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
CVP/SWP Contract Supplies	100,394	87,688	85,460	81,840	79,660	77,490	75,320	75,320
Delta/Delta Tributary Diversions								
Transfers and Exchanges								
Other Water Supplies from the Delta Watershed								
Total Water Supplies from the Delta Watershed	100,394	87,688	85,460	81,840	79,660	77,490	75,320	75,320

Service Area Water Demands without Water Use Efficiency (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Service Area Water Demands without Water Use Efficiency Accounted For	111,031	137,137	122,287	131,734	141,181	150,628	160,585	170,543

Change in Supplies from the Delta Watershed (Acre-Feet)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Water Supplies from the Delta Watershed	100,394	87,688	85,460	81,840	79,660	77,490	75,320	75,320
Change in Water Supplies from the Delta Watershed		(12,706)	(14,934)	(18,554)	(20,734)	(22,904)	(25,074)	(25,074)

Percent Change in Supplies from the Delta Watershed (As a Percent of Demand w/out WUE)	Baseline (2010)	2015	2020	2025	2030	2035	2040	2045 (Optional)
Percent of Water Supplies from the Delta Watershed	90.4%	63.9%	69.9%	62.1%	56.4%	51.4%	46.9%	44.2%
Change in Percent of Water Supplies from the Delta Watershed		-26.5%	-20.5%	-28.3%	-34.0%	-39.0%	-43.5%	-46.3%