# The State Water Project
# Draft Delivery Capability Report 2025

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State of California
California Natural Resources Agency
Department of Water Resources

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## Content

## Tables

## Figures

## Acronyms and Abbreviations

| | |
|---|---|
| ANN | Artificial Neural Network |
| AWMP | Agricultural Water Management Plan |
| BiOps | Biological Opinions |
| CASP | California Aqueduct Subsidence Program |
| CESA | California Endangered Species Act |
| CDFW | California Department of Fish and Wildlife |
| COA | Coordinated Operation Agreement |
| CVP | Central Valley Project |
| CY | Calendar/Contract Year |
| D-1641 | State Water Board's Water Right Decision 1641 (D-1641), issued in December 1999 and updated in March 2000 |
| DCD | Delta Channel Depletion |
| DCP | Delta Conveyance Project |
| DCR | Delivery Capability Report |
| DSC | Delta Stewardship Council |
| DWR | Department of Water Resources |
| E/I | Delta Exports to Inflow ratio |
| EcoRestore | Governor Brown's Delta habitat restoration plan |
| EIR | Environmental Impact Report |
| ESA | Endangered Species Act |
| FCWCD | Flood Control and Water Conservation District |
| HRL | Healthy Rivers and Landscapes |
| ITP | Incidental Take Permit for Long-Term Operation of the State Water Project |
| LOC | Level of Concern |
| MAF | Million Acre-Feet |
| NMFS | National Marine Fisheries Service |
| OMR | Old Middle River |
| RoC on LTO | Re-initiation of Consultation on the Long-Term Operations (of the Central Valley Project and State Water Project) |
| RPA | Reasonable and Prudent Alternative |

| | |
|---|---|
| SLR | Sea Level Rise |
| SWP | State Water Project |
| SWRCB | State Water Resources Control Board |
| TAF | Thousand Acre-Feet |
| USBR | United States Bureau of Reclamation |
| USFWS | United States Fish and Wildlife Service |
| UWMP | Urban Water Management Plan |
| VA | Voluntary Agreements |
| WaterFix | Water transfer component of the Bay Delta Conservation Plan |
| WSD | Water Storage District |
| WSI-DI | Water Supply Index vs. Demand Index Relationship |
| WQCP | Water Quality Control Plan (for the San Francisco Bay/Sacramento–San Joaquin Delta) |
| X2 | Distance in kilometers from Golden Gate, where salinity concentration in the Delta is 2 parts per thousand |

# 1 Reasons to Assess State Water Project Water Delivery Capability

Three major factors underscore the importance of regularly assessing the State Water Project (SWP) water delivery capability: the effects of population growth on California's balance of water supply and demand, State legislation intended to help maintain a reliable water supply, and impact of potential climate change-driven shifts in hydrologic conditions.

Drone footage provides a view of water pumped from the Harvey O. Banks Delta Pumping Plant into the California Aqueduct at 9,790 cubic feet per second after January storms.

## 1.1 Population Growth, Land Use, and Water Supply

California's population has grown rapidly in recent years, with resulting changes in land use; from 1990 to 2005, California's population increased from about 30 million to about 36 million. Based on California Department of Finance's recently issued interim population projections (California Department of Finance, 2025), California's 2020 population was about 39.5 million. However, the population for 2030 is expected to be about 39.6 million- less growth than expected based on previous census data; further, the population growth for 2060 is expected to be 40.4 million- a slight increase compared with the 2020 population.

The amount of water available in California can vary greatly from year to year. Some areas may receive two inches of rain a year, while others are deluged with 100 inches or more. As land uses have changed, population centers have emerged in many locations without enough local water supply. Thus, Californians have always been faced with the problem of how best to conserve, control, and move water from areas of abundant water to areas of water need.

The final California Water Plan (CWP) Update 2023 sets forth objectives, recommendations, and actions for promoting climate change adaptation, supporting California's regions, and strengthening water equity. Action 2.4.1 of the CWP, *Improve SWP Delivery Capability Report*, recommends The Department of Water Resources (DWR) provide assurance that SWP water users and the public have transparent, risk-informed information about SWP capabilities by making key improvements to the SWP Delivery Capability Report (DCP). In support of this action, the 2025 DCR (DWR 2025) includes use of climate-adjusted hydrology, evaluation of system risk-informed future scenarios, and model updates for recent operational, regulatory, and physical conditions.

For more information on the CWP Update 2023, visit: https://water.ca.gov/Programs/California-Water-Plan/Update-2023.

## 1.2 Legislation on Ensuring a Reliable Water Supply

The laws described below impose specific requirements on both urban and agricultural water suppliers. These laws increase the importance of SWP water delivery capability estimates to local and regional water purveyors.

### 1.2.1 Urban Water Management Planning Act

The Urban Water Management Planning Act was enacted in 1983 (California Water Code, Sections 10610–10656). As amended, this law requires all public urban water purveyors to adopt Urban Water Management Plans (UWMPs) every five years and submit those plans to DWR. DWR reviews the submitted plans to report to the legislature on the status of these plans and for the purposes of grant eligibility requirements.

UWMPs must include an estimate of water supply and demand for a 20-year planning horizon and three water-year types, normal, single dry year, and a drought lasting five consecutive years. SWP contractors use SWP delivery capability to estimate their long-term water supply needs from other sources available to them. DWR publishes a guidebook to assist water suppliers with preparing their urban water management plans.

Further information is available at: https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Urban-Water-Management-Plans.

### 1.2.2 Water Conservation Act of 2009: SB X7-7

California became the first state to adopt urban water use efficiency targets with the enactment of the Water Conservation Act of 2009 (SB X7-7, Steinberg 2009). This act mandated the State achieve a 20% reduction in urban per capita water use by 2020. It directed urban water suppliers to develop individual targets based on a historical per capita baseline and report interim progress in their 2015 UWMPs and full compliance of their 2020 plans.

In addition, the act requires agricultural water suppliers serving more than 25,000 irrigated acres (excluding recycled water deliveries) to adopt and submit to DWR an Agricultural Water Management Plan (AWMP). These plans must include reports on the implementation status of specific Efficient Water Management Practices, including the measurement and volumetric pricing of water deliveries. Agricultural water suppliers can submit individual plans or collaborate and submit regional plans if the plans meet the requirements of SB X7-7. Agricultural water suppliers that provide water to between 10,000 and up to 25,000 irrigated acres (excluding recycled water) are not required to prepare or submit AWMPs under SB X7-7 unless State funds are made available to support this.

### 1.2.3 Water Conservation Legislation of 2018 (AB 1668 and SB 606)

In 2018, new landmark water conservation legislation was signed into law. Together, AB 1668 (Friedman 2018) and SB 606 (Hertzberg 2018), lay out a new long-term water conservation framework for California. This new framework is far-reaching for both the urban and agricultural sectors of California and represents a major shift in focus. Programs and initiatives are organized around four primary goals: (1) use water more wisely, (2) eliminate water waste, (3) strengthen local drought resilience, and (4) improve agricultural water use efficiency and drought planning.

The 2018 legislation defined a process to establish new, standards-based, urban water use objectives (targets) that go beyond the 2020 targets set in the Water Conservation Act of 2009. It also calls for the establishment of performance measures for commercial, industrial, institutional water use, methods to strengthen local drought resilience including more robust water shortage contingency plans, a new five-year Drought Risk Assessment, and an annual water supply and demand assessment by urban water suppliers. DWR is required to prepare and submit an annual report to the Water Board summarizing the annual assessment results, water shortage conditions, and a regional and statewide analysis of water supply conditions. To improve countywide drought planning, the legislative code requires DWR to conduct a water shortage vulnerability study of rural and small communities and report back to the legislature with recommendations on implementation of drought contingency plans for rural small water systems.

Measures to improve agricultural water use efficiency include strengthened or new agricultural water management planning requirements that include annual water budgets, water management objectives, the quantification of agricultural water use efficiency within an agricultural water supplier's service area, and new drought planning for periods of limited supply.

To fully plan, develop, and implement the new framework, DWR is responsible for numerous studies and investigations over the next three years which include the development of the following:

- Standards.
- Guidelines and methodologies.
- Performance measures.
- Web-based tools and calculators.
- Data and data platforms.
- Reports.
- Recommendations to the State Water Resources Control Board (SWRCB) for adoption of new regulations.

A detailed outline of the key authorities, requirements, timeline, roles, and responsibilities of State agencies, water suppliers, and other entities during implementation of actions described in the 2018 water conservation legislation can be found in the summary report "Making Water Conservation a California Way of Life—Primer of 2018 Legislation on Water Conservation and Drought Planning, Senate Bill 606 (Hertzberg), and Assembly Bill 1668 (Friedman)" prepared by DWR and the Water Board.

Additional information on agricultural water use efficiency, water management plans, and supplier compliance can be found in the Agricultural Water Use Efficiency webpage maintained by DWR's Water Use and Efficiency Branch.

## 1.3 Potential Climate Change Driven Shifts in Hydrologic Conditions

DWR continuously reviews and analyzes hydrologic conditions in California and has been monitoring potential shifts in hydrology. The recent hydrologic conditions have been notable for warmer average temperatures, more extreme precipitation (larger storms and drier periods), a change in the form of precipitation to more rain and less snow, and a decreasing Sierra Nevada snowpack which impacts the timing and magnitude of snowmelt runoff volumes. DWR has multiple efforts underway to compare and evaluate recent and long-term hydrologic characteristics. These studies have identified several trends in hydrologic conditions that have shifted the distributions of these conditions outside of the long-term historical distribution.

DWR recognizes the risk posed by climate change to both current and future hydrologic and water supply conditions. The 2025 DCR incorporates analysis of the potential impact of climate change on delivery capability identical to the comprehensive manner presented in the 2023 DCR. This report includes substantial peer reviewed enhancements to the methods and information provided in previous reports. DWR will continue to work with state water contractors and the scientific community to further improve and expand the information in future DCRs to provide contractors with decision relevant information for their climate change adaptation planning needs.

# 2 Regulatory Restrictions on SWP Water Delivery Capability

Multiple objectives converge in the Sacramento-San Joaquin Delta (Delta): to protect a fragile ecosystem, to support Delta recreation and farming, and to provide water for agricultural and urban needs throughout most of California. Various regulatory requirements are placed on the SWP's Delta operations to protect special-status species such as Delta smelt and spring- and winter-run Chinook salmon. As a result, restrictions on SWP operations imposed by State and federal fish and wildlife agencies contribute substantially to the challenge of accurately determining the SWP's water delivery capability in any given year.

Key policies pertaining to Delta operations are undergoing discussions as of the publication of this report. Namely, updates to the Water Quality Control Plan (WQCP) and Agreements to Support Healthy Rivers and Landscapes (HRL)- sometimes referred to as Voluntary Agreements. The re-initiation of Consultation for Long-Term Operations has been finalized, so this report assumes the 2024 BiOps and its associated Incidental Take Permit (ITP).

## 2.1 Regulations Related to Endangered Species

### 2.1.1 Biological Opinions on Effects of Coordinated State Water Project and Central Valley Project Operations

Several fish species listed under the federal Endangered Species Act (ESA) as threatened or endangered are found in the Delta. The health and the viability of their populations are impacted by various factors, including SWP and CVP operations, nonnative species, predation, Delta salinity, water quality and contaminants, sediment supply, physical alterations to the Delta, land subsidence, pelagic organism decline, methylmercury and selenium, invasive aquatic vegetation, low dissolved oxygen levels, and illegal harvest.

Because of the decline of these species, the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) have issued several Biological Opinions (BiOps) since the 1990s on the effects of coordinated SWP/CVP operations on several listed species. Examples are the USFWS BiOp for Delta smelt protection and NMFS BiOp for salmonids, green sturgeon, and Southern Resident killer whales.

These BiOps affect the SWP's water delivery capability in two ways. Most notably, they include terms that restrict SWP exports in the Delta to specific amounts at certain times under certain conditions. The BiOps also include Delta outflow requirements during certain times of the year, consequently reducing the available supply for export or storage.

The first BiOp on the effects of SWP (and CVP) operations was issued in February 1993 (NMFS BiOp) on the effects of project operations on winter-run Chinook salmon, and in March 1995 (USFWS BiOp) on project effects on Delta smelt and splittail. Among other requirements, the BiOps contained requirements for Delta inflow, Delta outflow, and export pumping restrictions to protect listed species. These requirements imposed substantial constraints on Delta water supply operations. Many were incorporated into the 1995 Water Quality Control Plan for the San Francisco Bay/Sacramento–San Joaquin Delta (1995 WQCP), as described in the Section 2.2, "Water Quality Objectives".

The terms of the USFWS and NMFS BiOps have become increasingly restrictive over the years. In 2004, the US Bureau of Reclamation (USBR) sought a new BiOp from USFWS regarding the operation of the CVP and the SWP (referred to collectively as Projects). USFWS issued the opinion in 2005, finding that the proposed coordinated operations of the Projects were not likely to jeopardize the continued existence of the Delta smelt or result in the destruction or adverse modification of its critical habitat. After judicial review, the 2005 BiOp was vacated and USFWS was ordered to prepare a new one. USFWS found that the proposed operations of the Project would result in jeopardy to the Delta smelt and in December 2008 issued a Jeopardy BiOp which included a Reasonable and Prudent Alternative (RPA) with more protective export restrictions and other actions intended to protect the Delta smelt.

Similarly, in 2004 NMFS issued a BiOp on the effects of the coordinated operation of the Projects on salmonids, green sturgeon, and Southern Resident killer whales and found that the proposed operations of the Projects were not likely to jeopardize the continued existence of the listed species or result in the destruction or adverse modification of their critical habitat. After judicial review, the 2004 BiOp was rescinded, and NMFS was ordered to prepare a new one. In June 2009, NMFS issued a Jeopardy BiOp covering effects on winter-run and spring-run Chinook salmon, steelhead, green sturgeon, and killer whales. Like the 2008 smelt BiOp, the salmon BiOp included an RPA with more protective export restrictions and other actions intended to protect listed species.

The 2008 USFWS BiOp included requirements on operations in all but two months of the year. The BiOp called for "adaptively managed" (adjusted as necessary based on the results of monitoring) flow restrictions in the Delta intended to protect Delta smelt at various life stages. One such requirement is Fall X2, a component to improve fall habitat for Delta smelt through increasing Delta outflow. In September, October and November in wet and above-normal water years, additional outflow—achieved through export reductions and reservoir releases—is required to meet salinity targets. In the event there is an increase in storage during any November this action applies, the increase in reservoir storage is released in December to augment the December outflow requirements in SWRCB D-1641. Because this flow restriction was determined based on fish location and decisions by USFWS staff, predicting the flow restriction and corresponding effects on export pumping with any great certainty posed a challenge.

Among the provisions included in the 2009 NMFS BiOp were reducing exports to limit negative flows on Old Middle River (OMR) between January and June, as well as restricting total Delta exports in the months of April and May, based on San Joaquin River flows for all but extremely wet years.

The 2008 and 2009 BiOps were respectively issued shortly before and after Governor Arnold Schwarzenegger proclaimed a statewide water shortage state of emergency in February 2009, amid the threat of a third consecutive dry year. NMFS calculated that implementing its BiOp would reduce SWP and CVP Delta exports by a combined 5 to 7%, but DWR's initial estimates showed an impact on exports closer to 10% in average years, combined with the effects of pumping restrictions imposed by the BiOps to protect Delta smelt and other species. The California Department of Fish and Wildlife (CDFW) issued consistency determinations under Section 2080.1 of the California Fish and Game Code for these BiOps. The consistency determinations stated that the USFWS and the NMFS BiOps would be consistent with the California Endangered Species Act (CESA). Thus, CDFW allowed incidental take of species listed under both the federal ESA and CESA to occur during SWP and CVP operations without requiring DWR or the USBR to obtain a separate State-issued permit. In addition to the consistency determination, CDFW issued a separate ITP for the incidental take of Longfin Smelt, which is not a listed species under the ESA.

In August 2016, the USBR and DWR requested a Reinitiation of Consultation for Long-term Operations (RoC on LTO) of the CVP and SWP with NMFS and USFWS because of new information and science on declining listed fish species populations. On October 21, 2019, the USFWS and NMFS released their new BiOps. USBR released a final Environmental Impact Statement on the RoC on LTO on December 19, 2019, and approved a Record of Decision that finalized environmental review on February 18, 2020. The USBR began to operate according to the new operations plan in early 2020.

Since then, DWR has been working with USBR and partners at the state and federal agencies fish agencies to update the 2019 BiOps. As with previous permits, DWR ensured meeting the California Environmental Quality Act requirements independent of federal partners. Consequently, the coordinated effort resulted in: CDFW issuing the 2024 ITP on November 4, 2024, USFWS issuing their 2024 BiOp on November 9, 2024, and NMFS issuing their BiOp on December 6, 2024.

### 2.1.2 Incidental Take Permit

The 2008 USFWS and 2009 NMFS BiOps were consistent with CESA requirements. As such, further authorizations with respect to species listed under both ESA and CESA were not required. Under section 2081 of the California Fish and Wildlife Code, DWR held an ITP from the CDFW related to Longfin Smelt.

With the expiration of the ITP at the end of December 2019 and the decision to pursue a separate State permit to ensure the SWP's compliance with CESA rather than relying on a consistency determination with federal permits, DWR pursued a new ITP.

The ITP covers species listed under CESA subject to incidental take through long-term operation of the SWP, including Delta smelt (*Hypomesus transpacificus*), longfin smelt (*Pirinchus thaleichthys)*, winter-run Chinook salmon (*Oncorhynchus tshawytscha*), and spring-run Chinook salmon. An Environmental Impact Report (EIR) on the new ITP was issued in November 2019, an ITP application was submitted to CDFW in December 2019, and the new ITP was issued on March 31, 2020. DWR began to operate according to the ITP in April 2020.

To address the challenge of climate change, state and federal agencies coordinated to the 2024 ITP approved on November 4, 2024 by CDFW. Further, the key elements of DWR's updated long-term operations of the SWP through the ITP include:

- Incorporating new genetic technology that allows real-time differentiation of listed salmonids from non-listed salmonids for real-time operational adjustments.
- Completing tidal marsh and floodplain restoration projects that support spawning and rearing habitat for listed species.

- Improving fish passage in critical migration corridors.
- Supporting adaptive annual investments in salmon that are responsive to climate change stressors, including droughts.
- Supporting hatchery production actions for listed species

For more information, see the Final EIR for the SWP Long-Term Operations: New Operating Permit Issued for California's State Water Project to Preserve Water Supply While Protecting Endangered Species.

### 2.1.3 Re-initiation of Consultation for Long-Term Operations

On September 30, 2021, the USBR again requested RoC on LTO. The reinitiation was requested because of anticipated modifications to the Proposed Action that may cause effects to ESA-listed species or designated critical habitats not analyzed in the 2019 USFWS and NMFS BiOps. Under this 2021 RoC on LTO, which was approved, the new BiOps were developed for the CVP and SWP. DWR was also an applicant in the consultation, and CDFW facilitated the process of DWR updating their ITP for SWP operations. On November 1, 2023, DWR submitted a new ITP application. Given it was approved on November 4, 2024, the modeling analysis in this report assumes the 2024 BiOps and 2024 ITP.

For more information on the RoC on LTO, visit:

https://www.usbr.gov/mp/bdo/lto/

## 2.2 Water Quality Objectives

### 2.2.1 1995 Bay-Delta Water Quality Control Plan (D-1641)

Because the Delta is an estuary, salinity is a concern. In the 1995 Bay-Delta WQCP, the State Water Board set water quality objectives to protect beneficial uses of water in the Delta and Suisun Bay. The objectives must be met by the SWP and federal CVP as specified in the water right permits issued to DWR and the USBR. These objectives—minimum Delta outflows, limits on SWP and CVP Delta exports, and maximum allowable salinity levels—are enforced through the provisions of the State Water Board's Water Right D-1641, issued in December 1999 and updated in March 2000, which officially instated the 1995 WQCP.

Both DWR and the USBR must monitor the effects of their respective diversions and project operations to ensure compliance with existing water quality objectives.

Among the objectives established in the 1995 WQCP and D-1641 are the "X2" objectives. X2 is defined as the distance in kilometers from the Golden Gate, where salinity concentration in the Delta is 2 parts per thousand. The location of X2 is used as a surrogate measure of Delta ecosystem health.

For the X2 objective to be achieved, the X2 position must remain downstream of Collinsville in the Delta, February through June, and downstream of other specific locations in the Delta on a certain number of days each month from February through June. This means that Delta outflow, which among other factors controls the location of X2, must be at certain specified levels at certain times. This can limit the amount of water the SWP may pump at those times at its Harvey O. Banks Pumping Plant in the Delta.

Because of the relationship between seawater intrusion and interior Delta water quality, meeting the X2 objective can also improve water quality at Delta drinking water intakes; however, meeting the X2 objectives can require a relatively large volume of water for outflow during dry months that follow months with large storms.

The 1995 WQCP and D-1641 also established an export/inflow (E/I) ratio. The E/I ratio is designed to provide protection for the fish and wildlife beneficial uses in the Bay Delta estuary. The E/I ratio limits the fraction of Delta inflows that are exported. When other restrictions are not controlling, Delta exports are limited to 35% of total Delta inflow from March through June and 65 % of inflow from July through January. The February E/I ratio can vary from 35 % to 45 % depending on the January Eight River Index (8RI). The 8RI is the sum of the Sacramento River and San Joaquin River runoff. This index is used from December through May to set flow objectives as implemented in SWRCB D-1641.

In December 2018, the SWRCB updated the WQCP for the San Joaquin River flows and southern Delta salinity. The SWRCB is in the process of updating the WQCP for Sacramento/Delta flows and cold water habitat, Delta outflows, and interior Delta flows. A primary focus of the WQCP update is on additional flows for the beneficial use of fish and wildlife. Based on the environmental documentation that has been produced up to this date by the SWRCB, it is likely that the implementation of these flow requirements will affect SWP contractor deliveries.

The San Joaquin River portion of the WQCP update was approved in December 2018 but not implemented. For implementation, there would need to be a Decision (like Decision-1641) that amends the water rights license and permits for the SWP and CVP (the Projects collectively) to require the Projects and others to meet the Bay-Delta Plan before the SWP operates to the approved San Joaquin River portion of the update. As a result, this Report assumes the existing Decision-1641 in its modeling.

### 2.2.2 D-1641 Water Year Types

Delta inflows vary considerably from season to season, and from year to year. For example, in an above-normal year, nearly 85 % of the total Delta inflow comes from the Sacramento River, more than 10 % comes from the San Joaquin River, and the rest comes from the three eastside streams (the Mokelumne, Cosumnes, and Calaveras rivers).

All other factors (such as upstream level of development) being equal, much less water will flow into the Delta during a dry or critical water year (that is, during a drought) than during a wet or above-normal water year. Fluctuations in inflows are a substantial overall concern for the Delta, and a specific concern for the SWP; such fluctuations affect Delta water quality and fish habitat, which in turn trigger regulatory requirements that constrain SWP Delta exports.

Delta inflows will also vary by time of year as the amount of precipitation varies by season. About 80 % of annual precipitation occurs between November and March, and very little rain typically falls from June through September. Upstream reservoirs regulate this variability by reducing flood flows during the rainy season and storing water to be released later in the year to meet regulatory requirements and water demands.

To characterize these varying hydrology conditions, SWRCB Decision 1641 defined the Sacramento 40-30-30 Water Year type (Water Rights Programs-Decision 1641). This water year type is discussed here because it is used extensively in defining regulations both in D-1641 and in Biological Opinions. These water year types are defined based on the Sacramento Valley Water Year Index (Index), which is calculated using the sum of unimpaired flow in million acre-feet (MAF) at the following locations:

- Sacramento River above Bend Bridge.
- Feather River at Oroville (inflow to Lake Oroville).
- Yuba River near Smartville.
- American River (inflow to Folsom Reservoir).

The exact calculation of the Index is 0.4 * Current Apr-Jul Runoff Forecast (in MAF) + 0.3 * Current Oct-Mar Runoff in (MAF) + 0.3 * Previous Water Year's Index (if the Previous Water Year's Index exceeds 10.0, then 10.0 is used). The Index is converted into one of five Water Year types using the thresholds shown in **Table 2-1**. The final determination of the Index and Water Year Type is based on 50 % exceedance forecast of flows as of May 1.

**Table 2-1. Sacramento Valley Index Year Type Classification Thresholds in MAF**

| Year type classification | Threshold criteria (MAF) |
|---|---|
| Wet | Equal to or greater than 9.2 |
| Above Normal | Greater than 7.8, and less than 9.2 |
| Below Normal | Greater than 6.5, and equal to or less than 7.8 |
| Dry | Greater than 5.4, and equal to or less than 6.5 |
| Critical | Equal to or less than 5.4 |

### 2.2.3 Agreements to Support Healthy Rivers and Landscapes

DWR and CDFW are working to establish the Agreements to Support Healthy Rivers and Landscapes with participating water users following adoption by SWRCB of the San Joaquin River/southern Delta salinity WQCP update. The approach is sometimes referred to as the "Voluntary Agreements" (VAs) because state, federal, and local agencies came together to propose it. As stated in Section 2.2, "Water Quality Objectives", the San Joaquin River/southern Delta salinity portion of the WQCP update was approved in December 2018 but not implemented.

The VAs involve the development of projects that provide flow augmentation, modified storage releases, and non-flow actions such as floodplain inundation to enhance Delta conditions. Both departments are continuing the effort to develop and evaluate proposed agreements. On March 1, 2019, DWR and CDFW submitted documents to the SWRCB that reflect progress on the previously submitted framework. The objectives are to improve conditions for fish through targeted river flows and a suite of habitat-enhancing projects including floodplain inundation and physical improvement of spawning and rearing areas.

On March 29, 2022, a "Memorandum of Understanding" was released that outlined the terms of an eight-year program for the VAs. The program would provide new flows for the environment above existing regulatory requirements, create new and restored habitat for fish and wildlife, provide funding for environmental improvements and water purchases, and start a collaborative science program for monitoring and adaptive management. In summary, the VAs have not been officially finalized. However, to be consistent with the modeling in the recently published SWP Adaptation Strategy, the modeling in this report includes Cumulative Projects with all VAs despite them not being officially finalized at this time.

## 2.3 SWP-CVP Coordinated Operation Agreement

Originally negotiated and signed in 1986, the Coordinated Operation Agreement (COA) establishes the shared responsibility for the SWP and CVP each to meet water quality and regulatory standards. Between 1986 and 2018, the SWRCB imposed additional restrictions, including new Delta outflow requirements, which further restricted Delta exports and affect CVP and SWP operations. In response to these changes, a joint review of the 1986 agreement was conducted by both projects. At the conclusion of this review in December 2018, DWR and the USBR agreed to a COA addendum to reflect the current regulatory environment and operations of the projects. The 2018 agreement addendum is included in the modeling analysis in this report.

# 3 Ongoing Environmental, Infrastructure, and Policy Planning Efforts and Projects

The Delta's importance to California's economy and natural heritage cannot be overstated. The Delta supplies a large share of the water used in the state. California would not be the same without that water—hundreds of billions of dollars of economic activity depend upon it. Southern California, with half of the state's population, gets approximately 30 % of its average water supply from the Delta; Kern County, which produces about $7 billion annually in grapes, almonds, pistachios, milk, citrus, and other agricultural products, depends on the Delta for about a fifth of its irrigation supply. The west side of the San Joaquin Valley also produces billions of dollars' worth of food and depends on the Delta for about three-quarters of its irrigation supply; the San Francisco Bay Area, including the innovation hub of Silicon Valley, takes about half of its water supply from the Delta and its tributaries.

At the same time, the hundreds of miles of river channels that crisscross the Delta's farmed islands provide a migratory pathway for Chinook salmon, which support an important west coast fishing industry. Other native fish species depend upon the complex mix of fresh and saltwater in the Delta estuary. Multiple stressors have impaired the ecological functions of the Delta, and concerns have been growing over the ability to balance the many needs of both people and the ecosystem.

To respond to these concerns, considerable effort by government agencies and the California water community has been spent during the past several decades to study ways that the problems in the Delta can be addressed, and the more recent attention to the effects of climate change has helped the water community to realize the urgency of addressing these problems. The essential part of all these efforts has been to find a comprehensive solution that brings various, sometimes competing, interests together in a coordinated and concerted set of actions. The Delta Plan, Delta Conveyance Project (DCP), California EcoRestore, and the California Aqueduct Subsidence program are four large-scale statewide efforts. Since 2010, the Delta Stewardship Council (DSC) has developed, amended, and begun implementing the Delta Plan. The DCP, on the other hand, is currently under development. The California EcoRestore celebrated its first five years in 2020 and was on track to exceed initial targets. Lastly, the California Aqueduct Subsidence program is continuing further studies to analyze water delivery capacities.

## 3.1 Delta Plan

After years of concern about the Delta amid rising water demand and habitat degradation, the DSC was created in legislation to achieve State-mandated coequal goals for the Delta. As specified in Section 85054 of the California Water Code:

"Coequal goals" means the two goals of providing more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. These goals shall be achieved in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place.

The DSC is required to review the Delta Plan at least every five years. The first Delta Plan was adopted by the DSC on May 16, 2013. The State Office of Administrative Law approved the 14 regulations to implement the Delta Plan, which became effective, with legally enforceable regulations, on September 1, 2013.

To be responsive to changing circumstances and in accordance with commitments made in the 2013 Plan, the DSC amended the Delta Plan twice in 2016. The latest Delta Plan was released April 2018 and amended July 2019. The Delta Plan contains a set of 14 regulatory policies as well as 95 recommendations, which are non-regulatory but identify actions essential to achieving the coequal goals. The next five-year review of the Delta Plan is slated for 2023.

## 3.2 Delta Conveyance Project

Delta conveyance refers to SWP infrastructure in the vast network of waterways comprising the Sacramento-San Joaquin Delta. Modernization of this infrastructure through construction of intakes in the northern Delta and a north-to-south water conveyance tunnel has been planned under previous projects (Bay-Delta Conveyance Plan and California WaterFix). On May 2, 2019, Governor Gavin Newsom officially ended California WaterFix and announced a new approach to modernize Delta Conveyance through a single tunnel alternative. Governor Newsom also released Executive Order N-10-19, which directed State agencies to inventory and assess the new planning for the single tunnel project.

DWR approved the DCP, a modernization of the infrastructure system that delivers water to millions of Californians. DWR has certified the EIR and completed an extensive environmental review of the DCP on December 21, 2023. DWR selected the "Bethany Reservoir Alignment" for further engineering, design and permitting.

The environmental review included a 142-day public comment period in which DWR received more than 700 letters and 7,000 individual comments. Outreach began in 2020 and has included a multitude of webinars, workshops, briefings, multi-language informational materials, email updates, videos, animations, tabling at local events, and a comprehensive Delta survey. The Final EIR responds to all substantive comments.

For more information about the project, visit water.ca.gov/deltaconveyance. For more information about permitting and to view the final EIR, visit deltaconveyanceproject.com

## 3.3 EcoRestore

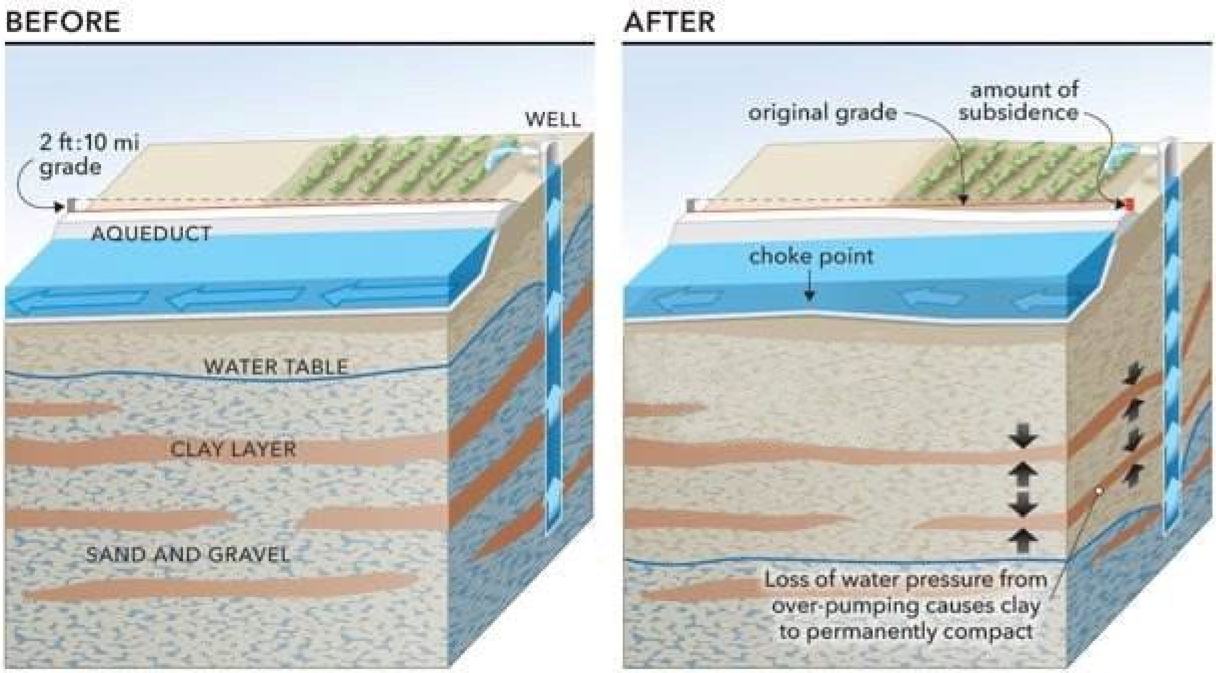
Governor Brown announced the creation of the California EcoRestore program in April 2015, committing to restore more than 30,000 acres of Delta habitat by 2020. This comprehensive suite of habitat restoration actions under the California EcoRestore program includes specific targets for floodplain, tidal and sub-tidal, managed wetlands, and fish passage improvements to benefit native fish species and a commitment to adaptive management. As of January 2021, more than 38,000 acres are projected to be restored under the EcoRestore program, with over 6,500 acres already restored.

For more information, visit https://water.ca.gov/Programs/All-Programs/EcoRestore.

## 3.4 California Aqueduct Subsidence Program

Subsidence, or the sinking of land, has been documented throughout California for almost a century, with the primary cause being deep groundwater pumping. The land underlying the California Aqueduct has sustained an alarming and unprecedented increase in subsidence rates in recent years, affecting conveyance capacity of the Aqueduct. For example, in the three years of the drought from 2013 through 2016, areas of the aqueduct sunk nearly three feet. In addition to reducing flow capacity of the system, subsidence also leads to operational difficulties. The goal of the California Aqueduct Subsidence Program (CASP) is to address ongoing subsidence while developing solutions and funding sources to preserve the Aqueduct’s ability to deliver water. The studies in this report do not consider the diminished capacity of the California Aqueduct due to subsidence. The future rates of subsidence are dependent on future groundwater pumping, and consequently the future actions taken by local Groundwater Sustainability Agencies. This report does not make assumptions regarding the timing, location, or nature of those future actions. CASP includes a rigorous methodology for evaluating many potential futures that account for the uncertainty in these variables. Work is ongoing to incorporate the Risk-Informed Methodology into the methods used by the CASP project.

For more information, visit: https://water.ca.gov/Programs/Engineering-And-Construction/Subsidence.




California Aqueduct subsidence graphic.

# 4 State Water Project Historical Deliveries

This section presents the average total recorded contractor combined deliveries during calendar years 2015-2024.

**Figure 4-1** shows that the historical deliveries from 2015–2024 of SWP Table A water, including the carryover water deliveries, range from a minimum of 277 thousand acre-feet (TAF)/year (2022) to a maximum of 3,100 TAF/year (2017), with an average 1,659 TAF/year.

**Figure 4-1. Historical Deliveries of SWP Table A and Carryover Water, 2015–2024**

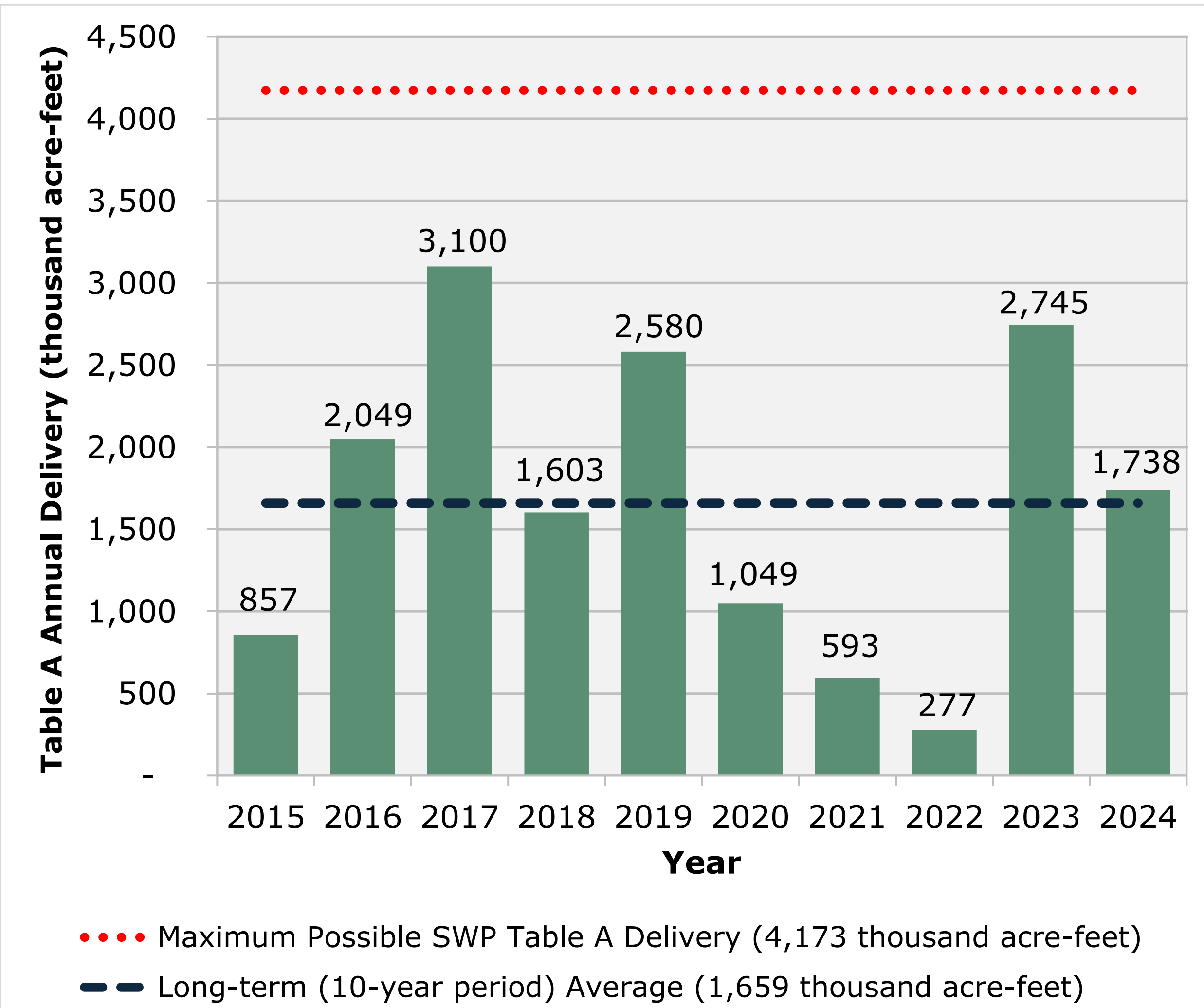



**Table 4-1** lists the 2025 maximum annual SWP Table A water contract amounts for SWP contractors. **Table 4-1** is based on most up to date Appendix B, Bulletin 132-24. These are the same values used in DCR 2023.

**Table 4-1.** 2025 Maximum Annual SWP Table A Water Contract Amounts for SWP Contractors

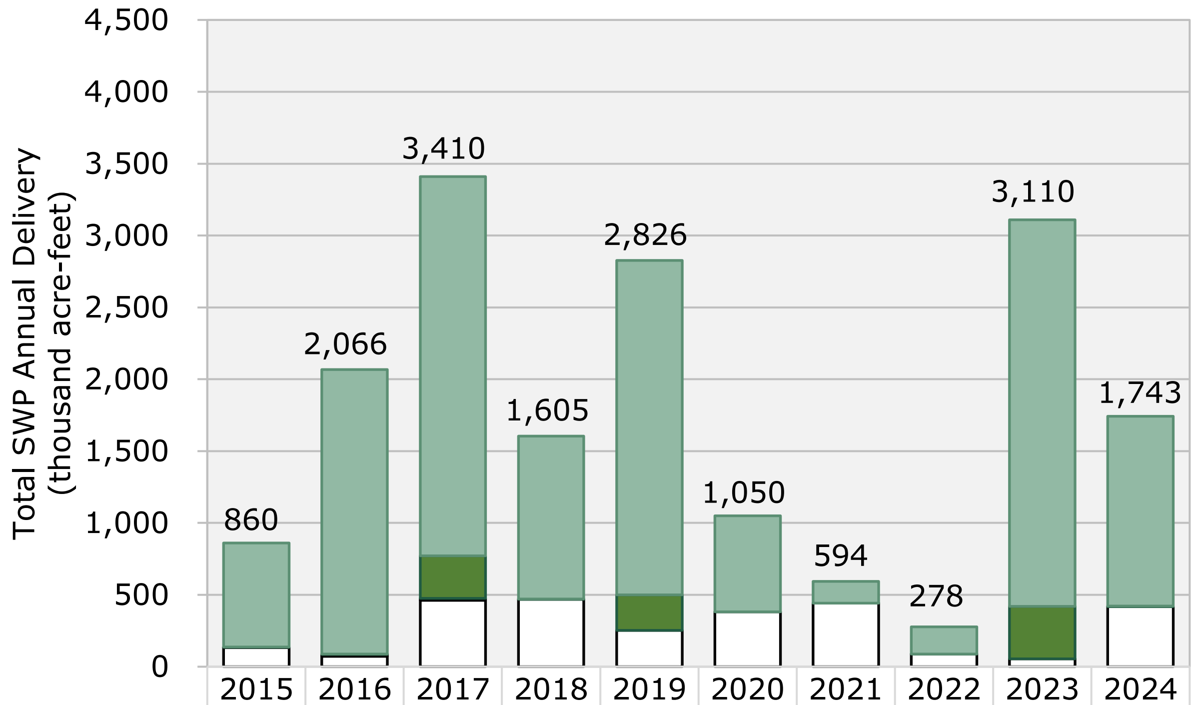
| Contractor | Maximum Table A delivery amounts (acre-feet) |
|---|---|
| **Feather River Area Contractors** | — |
| Butte County | 27,500 |
| Plumas County Flood Control and Water Conservation District (FCWCD) | 2,700 |
| Yuba City | 9,600 |
| Feather River Area Contractors Total | 39,800 |
| **North Bay Area Contractors** | — |
| Napa County FCWCD | 29,025 |
| Solano County Water Agency | 47,756 |
| North Bay Area Contractors Total | 76,781 |
| **South Bay Area Contractors** | — |
| Alameda County FCWCD, Zone 7 | 80,619 |
| Alameda County Water District | 42,000 |
| Valley Water (also known as Santa Clara Valley Water District) | 100,000 |
| South Bay Area Contractors Total | 222,619 |
| **San Joaquin Valley Area Contractors** | — |
| Dudley Ridge Water District | 41,350 |
| Empire West Side Irrigation District | 3,000 |
| Kern County Water Agency | 982,730 |
| Kings County | 9,305 |
| Oak Flat Water District | 5,700 |
| Tulare Lake Basin Water Storage District | 87,471 |
| San Joaquin Valley Area Contractors Total | 1,129,556 |
| **Central Coastal Area Contractors Area Contractors** | — |
| San Luis Obispo County FCWCD | 25,000 |
| Santa Barbara County FCWCD | 45,486 |
| Central Coastal Area Contractors Area Contractors Total | 70,486 |
| **Southern California Area Contractors** | — |
| Antelope Valley-East Kern Water Agency | 144,844 |
| Coachella Valley Water District | 138,350 |
| Crestline-Lake Arrowhead Water Agency | 5,800 |
| Desert Water Agency | 55,750 |
| Littlerock Creek Irrigation District | 2,300 |
| Metropolitan Water District of Southern California | 1,911,500 |
| Mojave Water Agency | 89,800 |
| Palmdale Water District | 21,300 |
| San Bernardino Valley Municipal Water District | 102,600 |
| San Gabriel Valley Municipal Water District | 28,800 |
| San Gorgonio Pass Water Agency | 17,300 |

| Contractor | Maximum Table A delivery amounts (acre-feet) |
|---|---|
| Santa Clarita Valley Water Agency | 95,200 |
| Ventura County Watershed Protection District | 20,000 |
| Southern California Area Contractors Total | 2,633,544 |
| **Grand Total** | **4,172,786** |

Located at the base of the Tehachapi Mountains in Kern County, California, the A.D. Edmonston Pumping Plant provides the largest lift within the State Water Project.

Contractor’s deliveries are presented as four different delivery types: Table A delivery, Article 21 delivery, carryover delivery, or turnback delivery. These delivery types are briefly described below. **Figure 4-2** shows the total contractor deliveries for these delivery types.

**Figure 4-2. Total Historical SWP Deliveries, 2015-2024 (by Delivery Type)**




| | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
|---|---|---|---|---|---|---|---|---|---|---|
| Table A | 724 | 1,977 | 2,639 | 1,135 | 2,327 | 668 | 152 | 189 | 2,691 | 1,321 |
| Article 21 | 1 | 3 | 297 | 2 | 246 | 1 | 1 | 1 | 365 | 4 |
| Turnback | 3 | 14 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Carryover | 132 | 72 | 461 | 468 | 254 | 381 | 441 | 87 | 54 | 417 |
| Total | 860 | 2,066 | 3,410 | 1,605 | 2,826 | 1,050 | 594 | 278 | 3,110 | 1,743 |

***Table A Water*** is an exhibit to the SWP's water supply contracts. The maximum Table A amount is the basis for apportioning water supply and costs to the SWP contractors. Once the total amount of water to be delivered is determined for the year, all available water is allocated in proportion to each contractor's annual maximum SWP Table A amount. Table A water is given priority for delivery over other types of SWP water. Contractors have several options for what to do with the water that is allocated to them: use it, store it for later use, or transfer it to another contractor.

***Article 21 Water*** (so named because it is described in Article 21 of the water contracts) is water that SWP contractors may receive on intermittent, interruptible basis in addition to their Table A water, if they request it. Article 21 water is used by many SWP contractors to help meet demands when allocations are less than 100 percent. The availability and delivery of Article 21 water cannot impact the Table A allocation of any contractor's water, nor can it negatively impact normal SWP operations.

***Carryover Water***, also known as Article 56 water, is SWP water that is allocated to an SWP contractor and approved for delivery to that contractor each year, but not used by the end of the year. This water is exported from the Delta by the Banks Pumping Plant, but instead of being delivered to the contractor, it is stored in the SWP's share of San Luis Reservoir, when space is available, for the contractor to use in the following year.

***Turnback Pool Water*** SWP contractors may offer a portion of their Table A water that has been allocated in the current year and exceeds their needs to a "turnback pool," where another contractor may purchase it. Contractors that sell their extra Table A water in a turnback pool receive payments from contractors that buy this water.

# 5 Existing SWP Water Delivery Capability

As with previous releases of the DCR, contextual information about the evolution of SWP water delivery capability will be informed by a comparative analysis between the current baseline and the previous baseline. This section of the report will compare the DCR 2023 Baseline with the DCR 2025 Baseline (both of which assume Adjusted Historical Hydrology). The outcomes of the comparison reveal the effects from implementing the 2024 LTO Proposed Project plus Cumulative Projects with all VAs.

The DCR 2025 Baseline CalSim 3 model is identical to baseline model used in the recently published SWP Adaptation Strategy. The Adaptation Strategy was released recently—August 2025—and those CalSim 3 studies represent the latest revision of the model and hydrology. For additional modeling details, please refer to the SWP Adaptation Strategy and its Modeling Assumptions Appendix.

## 5.1 Existing Conditions Hydrology

SWP delivery amounts are estimated in this report for existing conditions using CalSim 3 modeling that incorporates the adjusted historic range of hydrologic conditions, known as the Adjusted Historical Hydrology (referred to as *Existing Hydrology* in this report). The Adjusted Historical Hydrology was developed by adjusting the standard deviation and monthly distribution of historical streamflow for the first 70 years of the period of record to match the statistics of the last 30 years using a combination of statistical scaling methods (DWR, 2023). By using this adjusted 100-year historical flow record, the delivery estimates modeled for existing conditions reflect a reasonable range of potential hydrologic conditions from wet years to critically dry years.

**CalSim 3** is the statewide planning model used by DWR and Reclamation to simulate how the State Water Project and Central Valley Project operate under different hydrologic and regulatory conditions. It uses a monthly timestep and linear programming to represent major reservoirs, rivers, Delta operations, and deliveries.

The model provides a consistent framework for long-term planning studies by showing how changes in hydrology, regulations, or system capacity could affect projects operations.

## 5.2 State Water Project Water Demands

The total Table A amount is 4,173 TAF/year. Of the combined maximum

Table A amount, 4,133 TAF/year is the SWP's maximum Table A water available for delivery from the Delta (Excluding Butte County, Yuba City, and Plumas County FCWCD). CalSim 3 assumes full Table A contract demands in all years, and these demands do not vary from year to year in the model.

Contractor demands for Article 21 are characterized by an annual total demand specified for each contractor. These annual demands are based on historical data and contractor input. Water is delivered in CalSim 3 depending on the availability of water, the capacity to deliver that water, and whether a contractor's total annual demand has been met. Work was undertaken during the DCR 2023 development cycle to update Article 21 contractor demands in CalSim 3 to include contractor requests up to 2023. Article 21 requests for Draft DCR 2025 are unchanged from the DCR 2023.

Carryover Requests were similarly updated during the DCR 2023 development cycle. Initial Request Data from 2020-2024 was used to update Article 56 demands. Carryover requests for Draft DCR 2025 are unchanged from the DCR 2023. See **Table 5-1.**

**Table 5-1. SWP Table A and Article 21 Demand Assumptions (TAF)**

| | Final DCR 2021 | Final DCR 2023 | Draft DCR 2025 |
|---|---|---|---|
| Table A Demands | 4,133 | 4,133 | **4,133** |
| Maximum Article 21 Requests | 1,131 | 1,226 | **1,226** |
| Carryover Requests at 50% Allocation (Article 56) | 222 | 320 | **320** |

## 5.3 Estimates of SWP Table A Water Deliveries Under Existing Conditions (Adjusted Historical Hydrology)

**Table 5-2** shows the comparison between the Final DCR 2023 and Draft DCR 2025 SWP Table A deliveries under existing conditions over the long-term and for wet/dry periods. The Draft DCR 2025 provides an increase in Table A deliveries over the long-term average and notable wet and dry periods. This is primarily because of the increased exports in April-May from the revised spring outflow requirement[1] of the Agreements to Support Healthy Rivers and Landscapes.

**Table 5-2. SWP Table A Deliveries under Existing Conditions, TAF/year (Percent Allocation)**

| | | Final DCR 2023 Existing Conditions | Draft DCR 2025 Existing Conditions | Change |
|---|---|---|---|---|
| **Long-term Average** | | **2202 (53%)** | **2234 (54%)** | **+32** |
| **Wet Periods** | Single Wet Year (1983) | 3794 (92%) | 3869 (94%) | +75 |
| | Single Wet Year (1998) | 3904 (94%) | 3970 (96%) | +66 |
| | Single Wet Year (2017) | 3372 (82%) | 3469 (84%) | +97 |
| | 2-Year (1982-1983) | 3605 (87%) | 3640 (88%) | +35 |
| | 4-Year (1980-1983) | 3110 (75%) | 3118 (75%) | +8 |
| | 6-Year (1978-1983) | 3060 (74%) | 3085 (75%) | +25 |
| | 10-Year (1978-1987) | 2849 (69%) | 2896 (70%) | +47 |
| **Dry Periods** | Single Dry Year (1977) | 184 (4%) | 237 (6%) | +53 |
| | Single Dry Year (2014) | 251 (6%) | 321 (8%) | +70 |
| | Single Dry Year (2021) | 378 (9%) | 397 (10%) | +19 |
| | 2-Year Drought (1976-1977) | 922 (22%) | 936 (23%) | +14 |
| | 2-Year Drought (2014-2015) | 360 (9%) | 403 (10%) | +43 |
| | 6-Year Drought (1929-1934) | 597 (14%) | 627 (15%) | +30 |
| | 6-Year Drought (1987-1992) | 860 (21%) | 897 (22%) | +37 |

[1] SWP export reduction by water year type (TAF):0 in Wet years; 117.5 in above normal years; 92.5 in below normal years; 92.5 in dry years; 0 in critical years. In the DCR 2025, SWP no longer operates to the spring outflow requirement from the 2019 ITP.

**Figures 5-1** through **5-2** compare SWP Table A water delivery estimates under the Final DCR23 Existing Conditions and the Draft DCR25 Existing Conditions.

**Figure 5-1** presents the estimated likelihood of a given amount of SWP Table A water delivery, with a 61% chance of SWP Table A water delivery of more than 2,000 TAF for the Final DCR23 Existing Conditions versus 63% for the Draft DCR25 Existing Conditions. **Figure 5-2** presents the SWP Table A water delivery estimates during notable wet periods for the Final DCR23 Existing Conditions and the Draft DCR25 Existing Conditions. **Figure 5-3** presents the SWP Table A water delivery estimates during notable dry periods for the Final DCR23 Existing Conditions and the Draft DCR25 Existing Conditions.

**Figure 5-1. Estimated Likelihood of SWP Table A Water Deliveries, by Increments of 500 TAF (Existing Conditions).**

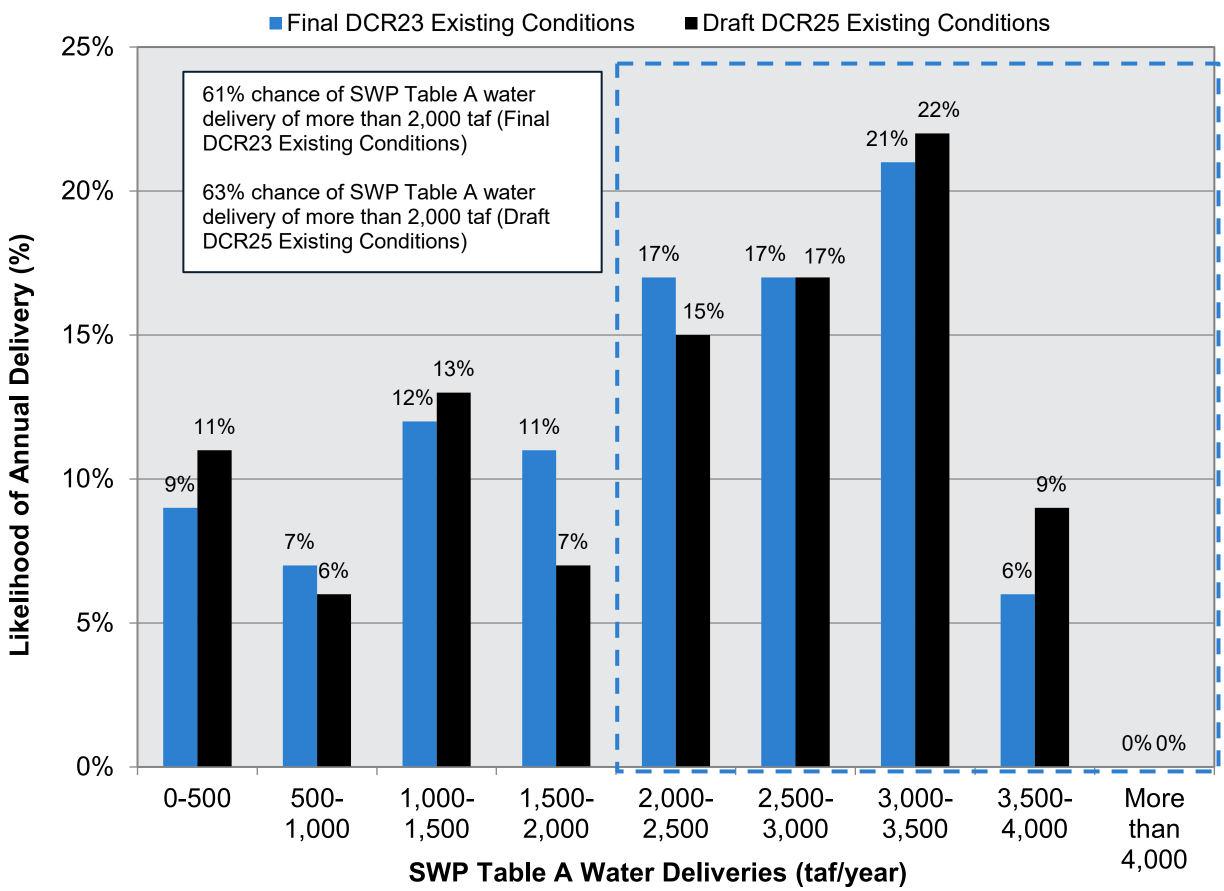


**Figure 5-2.** **Estimated Wet-Period SWP Table A Water Deliveries (Existing Conditions)**

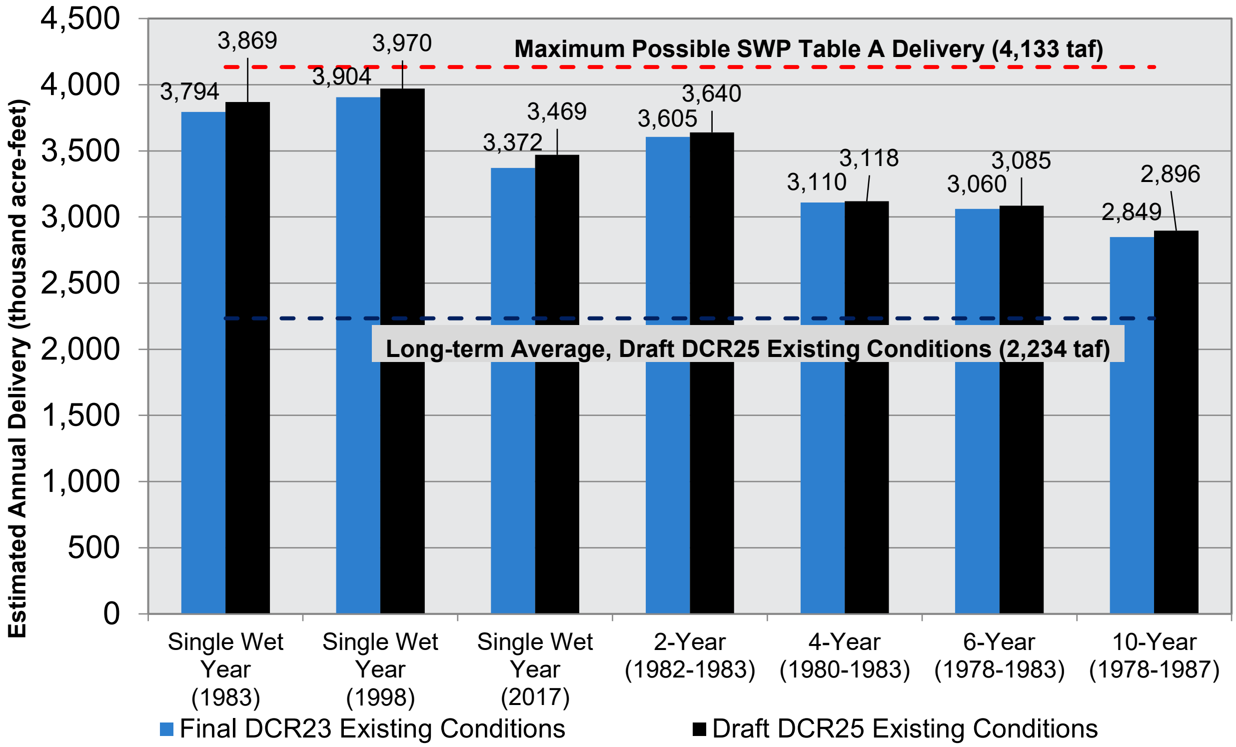
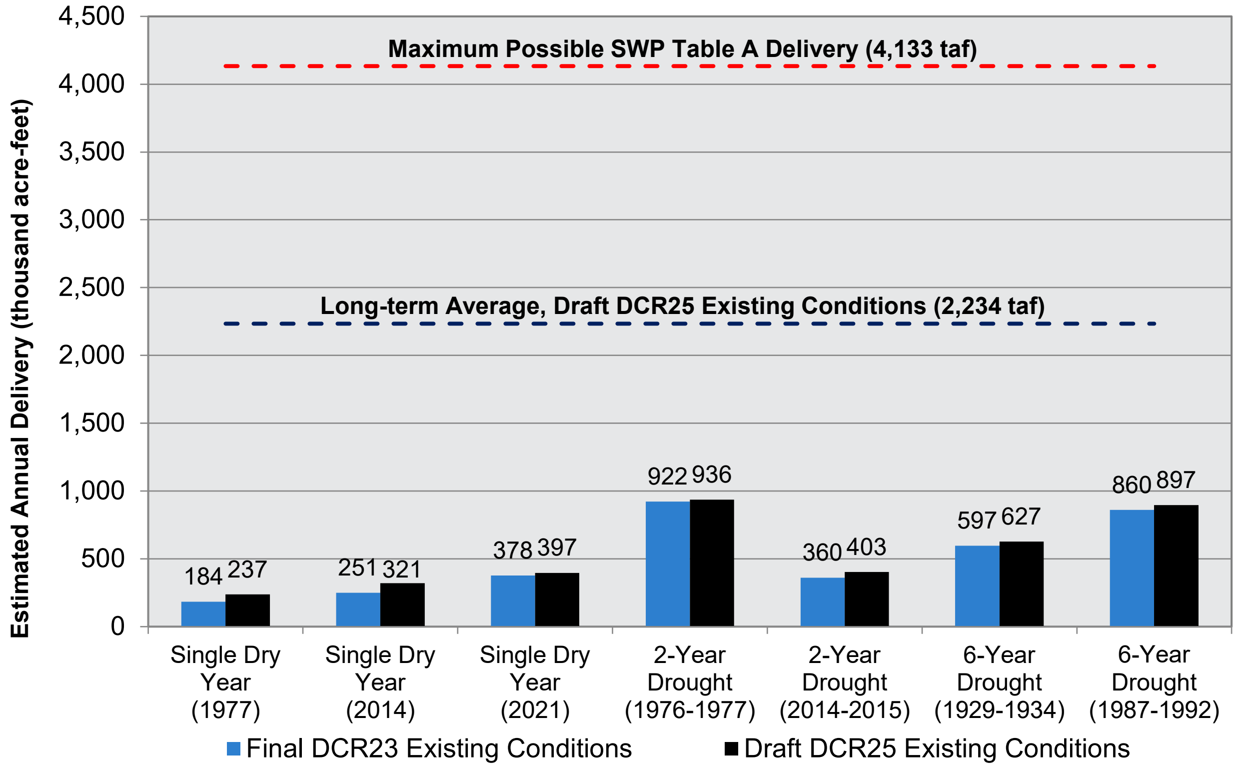


**Figure 5-3. Estimated Dry-Period SWP Table A Water Deliveries (Existing Conditions)**



## 5.4 Estimates of SWP Article 21 Water Deliveries Under Existing Conditions (Adjusted Historical Hydrology)

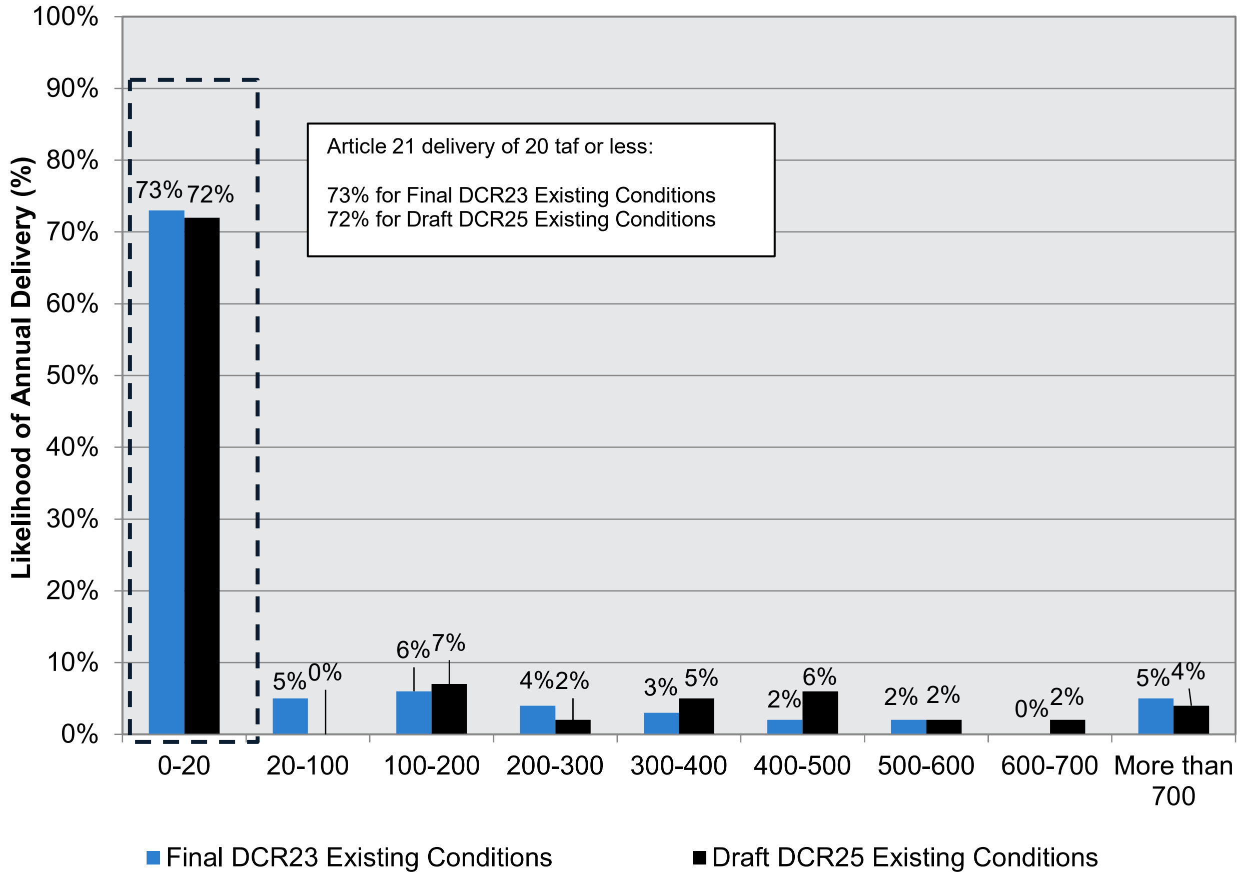
**Table 5-3** shows the comparison between the Final DCR 2023 and Draft DCR 2025 SWP Article 21 deliveries under existing conditions over the long-term and for wet/dry periods. As indicated in the "Change" column, the Draft DCR 2025 provides an increase in Article 21 deliveries over the long-term average and most wet periods. There is no significant change in the dry year periods.

**Table 5-3. SWP Article 21 Deliveries under Existing Conditions, TAF/year**

| | | Final DCR 2023 Existing Conditions | Draft DCR 2025 Existing Conditions | Change |
|---|---|---|---|---|
| | **Long-Term Average (1922-2021)** | **101** | **123** | **+22** |
| **Wet Periods** | Single Wet Year (1983) | 1025 | 918 | -107 |
| | Single Wet Year (1998) | 271 | 403 | +132 |
| | Single Wet Year (2017) | 353 | 546 | +193 |
| | 2-Year (1982-1983) | 878 | 820 | -58 |
| | 4-Year (1980-1983) | 564 | 525 | -39 |
| | 6-Year (1978-1983) | 385 | 420 | +35 |
| | 10-Year (1978-1987) | 269 | 309 | +40 |
| **Dry Periods** | Single Dry Year (1977) | 4 | 4 | 0 |
| | Single Dry Year (2014) | 7 | 5 | -2 |
| | Single Dry Year (2021) | 5 | 5 | 0 |
| | 2-Year Drought (1976-1977) | 3 | 3 | 0 |
| | 2-Year Drought (2014-2015) | 5 | 5 | 0 |
| | 6-Year Drought (1929-1934) | 7 | 6 | -1 |
| | 6-Year Drought (1987-1992) | 5 | 4 | -1 |

**Figure 5-4** presents the estimated likelihood of a given amount of SWP Article 21 water delivery for the Final DCR23 Existing Conditions and the Draft DCR25 Existing Conditions; **Figure 5-4** shows a 73% chance of SWP Article 21 water delivery of 20 TAF or less for the Final DCR23 Existing Conditions versus 72% for the Draft DCR25 Existing Conditions.

**Figure 5-4. Estimated Likelihood of Annual Deliveries of SWP Article 21 Water (Existing Conditions)**



## 5.5 Estimates of SWP Deliveries Under Historical Conditions

For many years, the Delivery Capability Report relied on Historical Hydrology as its primary baseline for assessing SWP system performance under existing conditions. However, as climate conditions have changed, the unadjusted historical record (referred to as Historical Hydrology in this report) no longer accurately reflects present-day hydrology. Beginning with DCR 2023, DWR transitioned to the Adjusted Historical Hydrology, a detrended representation of the 1922-2021 historical period, as described in Section 5.1. The Adjusted Historical Hydrology now serves as the baseline for subsequent DCRs.

Historical Hydrology remains a familiar reference point for many DCR readers. Therefore, for DCR 2025, a Historical Hydrology scenario was developed to allow a direct comparison with the Historical scenario prepared for DCR 2023. This comparison helps illustrate how model updates, refinements to operating logic, and other technical changes between DCR 2023 and DCR 2025 influence outcomes when the same underlying hydrology is applied.

**Table 5-4. SWP Table A Deliveries under Historical Hydrology, TAF/year (Percent Allocation)**

| | | Final DCR 2023 Historical Hydrology | Draft DCR 2025 Historical Hydrology | Change |
|---|---|---|---|---|
| | **Long-Term Average (1922-2021)** | **2,261 (55%)** | **2,290 (55%)** | **+29** |
| **Wet Periods** | Single Wet Year (1983) | 3,792 (92%) | 3,868 (94%) | +76 |
| | Single Wet Year (1998) | 3,909 (95%) | 3,971 (96%) | +62 |
| | Single Wet Year (2017) | 3,371 (82%) | 3,468 (84%) | +97 |
| | 2-Year (1982-1983) | 3,613 (87%) | 3,640 (88%) | +27 |
| | 4-Year (1980-1983) | 3,145 (76%) | 3,092 (75%) | -53 |
| | 6-Year (1978-1983) | 3,035 (73%) | 2,992 (72%) | -43 |
| | 10-Year (1978-1987) | 2,871 (69%) | 2,867 (69%) | -4 |
| **Dry Periods** | Single Dry Year (1977) | 161 (4%) | 160 (4%) | -1 |
| | Single Dry Year (2014) | 253 (6%) | 340 (8%) | +87 |
| | Single Dry Year (2021) | 387 (9%) | 388 (9%) | +1 |
| | 2-Year Drought (1976-1977) | 1,093 (26%) | 1,068 (26%) | -25 |
| | 2-Year Drought (2014-2015) | 363 (9%) | 409 (10%) | +46 |
| | 6-Year Drought (1929-1934) | 859 (21%) | 886 (21%) | +27 |
| | 6-Year Drought (1987-1992) | 934 (23%) | 984 (24%) | +50 |

**Table 5-5. SWP Article 21 Deliveries under Historical Hydrology, TAF/year**

| | | Final DCR 2023 Historical Hydrology | Draft DCR 2025 Historical Hydrology | Change |
|---|---|---|---|---|
| | **Long-Term Average (1922-2021)** | **95** | **120** | **+25** |
| **Wet Periods** | Single Wet Year (1983) | 1,025 | 916 | -109 |
| | Single Wet Year (1998) | 275 | 408 | +133 |
| | Single Wet Year (2017) | 344 | 549 | +205 |
| | 2-Year (1982-1983) | 648 | 806 | +158 |
| | 4-Year (1980-1983) | 453 | 525 | +72 |
| | 6-Year (1978-1983) | 305 | 369 | +64 |
| | 10-Year (1978-1987) | 222 | 286 | +64 |
| **Dry Periods** | Single Dry Year (1977) | 5 | 4 | -1 |
| | Single Dry Year (2014) | 7 | 5 | -2 |
| | Single Dry Year (2021) | 5 | 5 | 0 |
| | 2-Year Drought (1976-1977) | 5 | 4 | -1 |
| | 2-Year Drought (2014-2015) | 5 | 5 | 0 |
| | 6-Year Drought (1929-1934) | 9 | 12 | +3 |
| | 6-Year Drought (1987-1992) | 13 | 6 | -7 |

The comparisons in **Table 5-4** and **Table 5-5** show that the directional trends between DCR 2023 and DCR 2025 are consistent in both the Adjusted Historical and Historical Hydrology simulations. When each hydrology type is compared to its counterpart, the relative changes in SWP deliveries move in the same direction, indicating that the updates introduced in DCR 2025 (primarily the revised spring outflow requirement as part of the Agreements to Support Healthy Rivers and Landscapes) affect outcomes similarly across both baselines.

Under the Historical Hydrology baseline, DCR 2025 produces higher SWP deliveries, with increases of approximately +29 TAF/year in Table A deliveries and +25 TAF/year in Article 21 deliveries relative to DCR 2023. The Adjusted Historical Hydrology comparison shows a similar pattern, reinforcing that the model updates and refinements incorporated into DCR 2025 tend to increase SWP delivery capability regardless of which hydrologic dataset is applied.

# 6 Future SWP Water Delivery Capability

## 6.1 Interpretation of Delivery Capability Estimates Under Future Climate Change Conditions

Like the DCR 2023, this report analyzes Project delivery capability under multiple risk-informed climate scenarios (50%, 75%, and 95% level of concern) for the year 2043. These risk-informed climate scenarios provide: (1) explicit representation of climate change uncertainties, (2) improved transparency and information for local planners, and (3) maintaining the utility of the DCR and the information it provides. These risk-informed climate scenarios were developed using a bottom-up stress test and use a climate-model-informed probability density function to develop "level of concern" scenarios at specified climate-informed system performance levels. For example, a 95 % level of concern scenario depicts a future condition in which 95 % of model-informed climate outcomes result in better SWP system reliability. **Table 6-1** shows the key characteristics of the three climate scenarios. These details are further explained in the Risk-Informed Future Climate Scenario Development for SWP DCR (California Department of Water Resources, 2023).

The future climate change conditions scenarios in the Draft DCR 2023 are identical to the respective 2043 Baseline Maintain System Portfolio models used in the recently published SWP Adaptation Strategy. in which investments are made to maintain and restore existing infrastructure. In this portfolio the California Aqueduct is restored to its full design capacity. In addition, the Operations and Maintenance Strategic Asset Management Plan (DWR 2023) continues to be fully implemented delivering an operational availability of Valley String Pumping Plants of 84.6%. No other major climate adaptation investments are made.

The Agreements to Support Healthy Rivers and Landscapes and the 2021 Reinitiation of Consultation for Long-Term Operations of the CVP and SWP are included in all the DCR 2025 modeling.

**Table 6-1. Hydrologic Parameter Changes for each 2043 Climate Change Scenario by Level of Concern**

| | Change in temp. (°C) | Change in average precip. (%) | Change in precip. intensification (%) | Sea level rise* | Regulations | CAA capacity |
|---|---|---|---|---|---|---|
| Existing Conditions (Adjusted Historical Hydrology) | -- | -- | -- | 0 cm | 2024 LTO Proposed Project plus Cumulative Projects with all HRL. | Design |
| Future 50% Level of Concern (LOC) | +1.5 | +1.5% | +11% | 15 cm | | |
| Future 75% LOC | +1.7 | +0.1% | +12% | 30 cm | | |
| Future 95% LOC | +1.8 | -1.8% | +13% | 30 cm | | |

* The sea level rise projections align with updated 2024 Ocean Protection Council guidance, which indicates that by the year 2040, sea levels are most likely to rise 0.6 ft (18 cm) to 0.8 ft (24 cm) for the intermediate and high scenarios, respectively.

The three-risk informed future climate scenarios provided in the DCR are described in plain language below. These descriptions are intended to further describe the climate and delivery capability conditions that each scenario simulates. For information on the methods used to develop the future climate conditions from these parameters, refer to the Risk-Informed Future Climate Scenario Development for SWP DCR (California Department of Water Resources, ).

### 6.1.1 Plain Language Description of 50th Percentile Level-of-Concern Scenario

The 50th percentile level of concern scenario represents a 2043 middle-of-the-road or central tendency future for the SWP. It includes:

- A temperature increase over current average temperatures of 1.5 degrees Celsius (2.7 degrees Fahrenheit [°F]).
- 1.5 % wetter average precipitation than current conditions.
- 10.5 % increase in the 99th percentile daily precipitation event.
- 15 cm of SLR at the Golden Gate Bridge.

Land use is representative of existing levels of development, and regulations are represented by current regulations, including the 2019 U.S. Fish and Wildlife Service (USFWS) and NMFS biological opinions, its associated ITP, and the 2018 addendum to the Coordinated Operations Agreement between the SWP and CVP. Ongoing processes, such as the Agreements to Support Healthy Rivers and Landscapes and the 2021 Reinitiation of Consultation for Long-Term Operations of the CVP and SWP, are not included in the modeling.

Users of this scenario should assume that current climate model simulations indicate that actual 2043 climate conditions would have an approximate equal chance of either being worse than conditions represented in this scenario or as being better than the conditions represented in this scenario—better or worse generally meaning higher or lower SWP water supply deliveries. Put another way, there is an approximate 50 % chance that planning only this scenario would leave an agency under-planned and potentially under prepared for the actual climate conditions to which they would need to operate. Nonetheless, this scenario could also be considered the statistically expected future level of performance of the SWP system. This scenario may be appropriate for use in certain types of planning documents, such as California Environmental Quality Act environmental impact reports which require agencies to consider “reasonably foreseeable indirect physical change in the environment.” (Public Resources Code section 21065).

### 6.1.2 Plain Language Description of 75th Percentile Level-of-Concern Scenario

The 75th percentile level of concern scenario represents a 2043 worse than average future for the SWP. It includes:

- A temperature increase above current average temperatures of 1.7 °C (3°F).
- Average precipitation amount that is very similar to current conditions.
- 12 % increase in the 99th percentile daily precipitation event.
- 30 cm of SLR at the Golden Gate Bridge.

Land use is representative of existing levels of development and regulations are represented by current regulations, including the 2019 USFWS and NMFS biological opinions, its associated ITP and the 2018 addendum to the Coordinated Operations Agreement between the SWP and CVP. Ongoing processes, such as the Agreements to Support Healthy Rivers and Landscapes and the 2021 Reinitiation of Consultation for Long-Term Operations of the CVP and SWP, are not included in the modeling.

Users of this scenario should assume that current climate model simulations indicate that actual 2043 climate conditions would have about a 25 % chance of being worse than the conditions represented in this scenario. Put another way, there is an approximate 25 % chance that planning to *only* this scenario would leave an agency under-planned and potentially under prepared for the actual climate conditions to which they need to operate. This scenario may be considered a moderate risk aversion scenario, as it provides significantly more challenging future conditions than the 50th percentile level of concern but does not provide the most extreme planning conditions.

### 6.1.3 Plain Language Description of 95th Percentile Level-of-Concern Scenario

The 95th percentile level of concern scenario represents a 2043 much worse than average future for the SWP. It includes:

- A temperature increase over current average temperatures of 1.8°C (3.2°F).
- Average precipitation amount that is 1.8 % drier than current conditions.
- 12.6 % increase in the 99th percentile daily precipitation event.
- 30 cm of SLR at the Golden Gate Bridge.

Land use is representative of existing levels of development and regulations are represented by current regulations, including the 2019 USFWS and NMFS biological opinions, its associated ITP and the 2018 addendum to the Coordinated Operations Agreement between the SWP and CVP. Ongoing processes, such as the Agreements to Support Healthy Rivers and Landscapes and the 2021 Reinitiation of Consultation for Long-Term Operations of the CVP and SWP, are not included in the modeling.

Users of this scenario should understand that current climate model simulations indicate that actual 2043 climate conditions would have an approximate 5 % chance of being worse than the conditions represented in this scenario. Put another way, there is only an approximate 5 % chance that planning for *only* this scenario would leave an agency under-planned and potentially under-prepared for the actual climate conditions to which they need to operate. This scenario may be considered a high-risk aversion scenario, as it provides significantly more challenging future conditions than the 50th and 75th percentile levels-of-concern. This scenario provides the most extreme planning conditions for DCR users provided in this report.

## 6.2 Overall Effects of Climate Change

The cumulative effects of climate change on the hydrologic conditions relevant to the Delivery Capability of the SWP can be categorized into three parts: (1) Changes to monthly patterns of flows, (2) more extreme events, and (3) lower reservoir storage levels. Each of these changes impacts the delivery capability of the SWP in overlapping and related ways but categorizing the effects can help to understand the complex influences of climate change.

Climate change predicts more precipitation to fall as rain instead of snow. The monthly patterns of flows into reservoirs and into the Delta are expected to be higher in winter months, and lower flows the rest of the year. Increased flows during the winter months are not stored as effectively in reservoirs as inflows that occur later in the water year. This is because storage during the winter months is subject to stricter flood control levels. These levels are set to mediate the risk of reaching critical operational thresholds in each reservoir. Due to these limits, even when there are higher flows in winter months in the future climate scenarios, much of the additional flow cannot be stored.

Sacramento Weir gates were opened based on forecasted conditions indicating the amount of water heading down the Sacramento River could overtop riverbanks in the urban areas of Greater Sacramento.

The ability to export these additional flows is constrained by infrastructure limitations, permitted capacity, and regulatory constraints on existing SWP facilities in the Delta. Climate change will lead to increased events in which more water supply through Delta flows is available during times when capturing additional water is already limited, impacting operational flexibility.

In addition to the discussions above regarding changes in the timing and magnitude of reservoir and Delta inflows, rising sea levels influence operations in the Delta. Rising mean sea levels tend to push saltier water into the Delta, which increases the required Delta outflow volumes to meet salinity and X2 requirements. These Delta outflows are supported by reservoir releases. This increased reliance on reservoir releases, and the limitations on storing increased winter reservoir inflow both tend to cause lower average annual reservoir storage levels.

## 6.3 Recommendations on the Use of the Future Climate Change Scenarios

The choice of which scenario or scenarios to use for planning should be made by the users after careful consideration of several factors. DWR recommends that users of these DCR scenarios evaluate at least two of the scenarios to gauge the sensitivity of their analysis to the choice of scenario. Guidance and other considerations regarding the use of these scenarios is given in Chapter 7 of the "Risk-Informed Future Climate Scenario Development for the State Water Project Delivery Capability Report", (CNRA, 2023).

Users should understand that the three potential future climate change scenarios in this report only consider existing regulations, existing infrastructure, and current project operations. Put another way, no adaptation actions, nor future degradation of infrastructure are included. The purpose of these studies is to evaluate the baseline risks and impacts of climate change on the Delivery Capability of the SWP. Climate change adaptation strategies being evaluated in other efforts by DWR and its partners include, but are not limited to:

- Climate Change Adaptation Studies
- Advancement of Forecast-Informed Reservoir Operations (FIRO)
- California Aqueduct subsidence and remediation
- Delta Conveyance Project
- Ground and surface water storage enhancement
- Enhanced SWP asset management

For more information about how DWR is addressing climate change through programs, projects, and activities, view the Climate Action Plan here: https://water.ca.gov/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan.

## 6.4 Estimates of SWP Table A Water Deliveries Under Future Conditions

**Table 6-2** shows the comparison between the Draft DCR 2025 and the future scenarios for SWP Table A deliveries over the long-term and for wet/dry periods. As climate conditions get more extreme, there is a decrease in the long-term average of SWP Table A deliveries.

**Table 6-2. SWP Table A Deliveries under Existing and Future Conditions, TAF/year (Percent Table A Allocation)**

| | | Draft DCR 2025 Existing Conditions | Draft DCR 2025 2043 50% LOC | Draft DCR 2025 2043 75% LOC | Draft DCR 2025 2043 95% LOC |
|---|---|---|---|---|---|
| | **Long-Term Average (1922-2021)** | **2,234 (54%)** | **1,993 (48%)** | **1,902 (46%)** | **1,770 (43%)** |
| **Wet Periods** | Single Wet Year (1983) | 3,869 (94%) | 3,868 (94%) | 3,867 (94%) | 3,867 (94%) |
| | Single Wet Year (1998) | 3,970 (96%) | 3,945 (95%) | 3,913 (95%) | 3,889 (94%) |
| | Single Wet Year (2017) | 3,469 (84%) | 3,378 (82%) | 3,393 (82%) | 3,437 (83%) |
| | 2-Year (1982-1983) | 3,640 (88%) | 3,629 (88%) | 3,631 (88%) | 3,629 (88%) |
| | 4-Year (1980-1983) | 3,118 (75%) | 2,970 (72%) | 2,843 (69%) | 2,810 (68%) |
| | 6-Year (1978-1983) | 3,085 (75%) | 2,850 (69%) | 2,718 (66%) | 2,624 (63%) |
| | 10-Year (1978-1987) | 2,896 (70%) | 2,554 (62%) | 2,439 (59%) | 2,333 (56%) |
| **Dry Periods** | Single Dry Year (1977) | 237 (6%) | 79 (2%) | 21 (1%) | 80 (2%) |
| | Single Dry Year (2014) | 321 (8%) | 255 (6%) | 233 (6%) | 265 (6%) |
| | Single Dry Year (2021) | 397 (10%) | 341 (8%) | 279 (7%) | 183 (4%) |
| | 2-Year Drought (1976-1977) | 936 (23%) | 597 (14%) | 536 (13%) | 494 (12%) |
| | 2-Year Drought (2014-2015) | 403 (10%) | 355 (9%) | 348 (8%) | 366 (9%) |
| | 6-Year Drought (1929-1934) | 627 (15%) | 563 (14%) | 580 (14%) | 518 (13%) |
| | 6-Year Drought (1987-1992) | 897 (22%) | 629 (15%) | 621 (15%) | 544 (13%) |

**Table 6-3** shows the percent change between the Draft DCR 2025 and the future scenarios SWP Table A deliveries over the long-term and for wet/dry periods. In the 2043 50 % LOC scenario, the estimated average annual delivery of Table A water is 241 TAF/year (11 %) lower than under existing conditions. In the 2043 75 % LOC scenario, the estimated average annual delivery of Table A water is 332 TAF/year (15 %) lower than under existing conditions. In the 2043 95 % LOC scenario, the estimated average annual delivery of Table A water is 464 TAF/year (21 %) lower than under existing conditions.

### Table 6-3. Change in SWP Table A Deliveries Compared to Existing Conditions, TAF/year (Percent Change vs. Existing)

| | | Draft DCR 2025 Existing Conditions | 2043 50% LOC change from existing conditions | 2043 75% LOC change from existing conditions | 2043 95% LOC change from existing conditions |
|---|---|---|---|---|---|
| | **Long-Term Average (1922-2021)** | **2,234** | **-241 (-11%)** | **-332 (-15%)** | **-464 (-21%)** |
| **Wet Periods** | Single Wet Year (1983) | 3,869 | -1 (0%) | -2 (0%) | -2 (0%) |
| | Single Wet Year (1998) | 3,970 | -25 (-1%) | -57 (-1%) | -81 (-2%) |
| | Single Wet Year (2017) | 3,469 | -91 (-3%) | -76 (-2%) | -32 (-1%) |
| | 2-Year (1982-1983) | 3,640 | -11 (0%) | -9 (0%) | -11 (0%) |
| | 4-Year (1980-1983) | 3,118 | -148 (-5%) | -275 (-9%) | -308 (-10%) |
| | 6-Year (1978-1983) | 3,085 | -235 (-8%) | -367 (-12%) | -461 (-15%) |
| | 10-Year (1978-1987) | 2,896 | -342 (-12%) | -457 (-16%) | -563 (-19%) |
| **Dry Periods** | Single Dry Year (1977) | 237 | -158 (-67%) | -216 (-91%) | -157 (-66%) |
| | Single Dry Year (2014) | 321 | -66 (-21%) | -88 (-27%) | -56 (-17%) |
| | Single Dry Year (2021) | 397 | -56 (-14%) | -118 (-30%) | -214 (-54%) |
| | 2-Year Drought (1976-1977) | 936 | -339 (-36%) | -400 (-43%) | -442 (-47%) |
| | 2-Year Drought (2014-2015) | 403 | -48 (-12%) | -55 (-14%) | -37 (-9%) |
| | 6-Year Drought (1929-1934) | 627 | -64 (-10%) | -47 (-7%) | -109 (-17%) |
| | 6-Year Drought (1987-1992) | 897 | -268 (-30%) | -276 (-31%) | -353 (-39%) |

**Figures 6-1** through **6-3** compare SWP Table A water delivery estimates for the Draft DCR25 Existing Conditions, the 2043 50 % LOC, the 2043 75 % LOC, and the 2043 95 % LOC.

**Figure 6-1** presents the estimated likelihood of a given amount of SWP Table A water delivery, with a 63 % chance of SWP Table A water delivery of more than 2,000 TAF for the Draft DCR25 Existing Conditions whereas the 2043 50 % LOC has a 55 % chance, the 2043 75 % LOC has a 47 % chance, and the 2043 95 % LOC has a 45% chance. **Figure 6-2** presents the SWP Table A water delivery estimates during particular wet periods for the Draft DCR25 Existing Conditions, the 2043 50 % LOC, the 2043 75 % LOC, and the 2043 95 % LOC. **Figure 6-3** presents the SWP Table A water delivery estimates during particular dry periods for the Draft DCR25 Existing Conditions, the 2043 50 % LOC, the 2043 75 % LOC, and the 2043 95 % LOC.

**Figure 6-1. Estimated Likelihood of SWP Table A Water Deliveries, by Increments of 500 TAF (Future Conditions)**

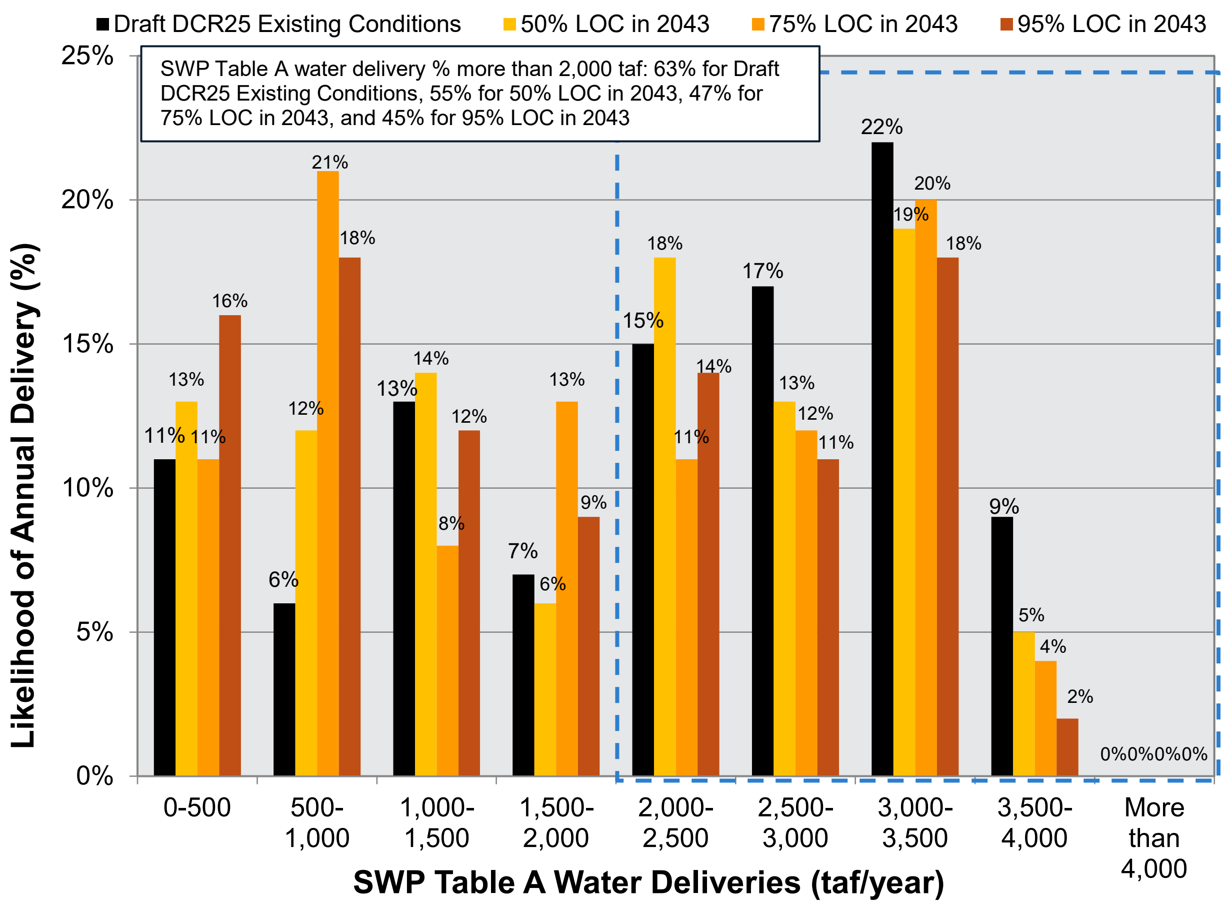


**Figure 6-2. Estimated Wet-Period SWP Table A Water Deliveries (Future Conditions)**

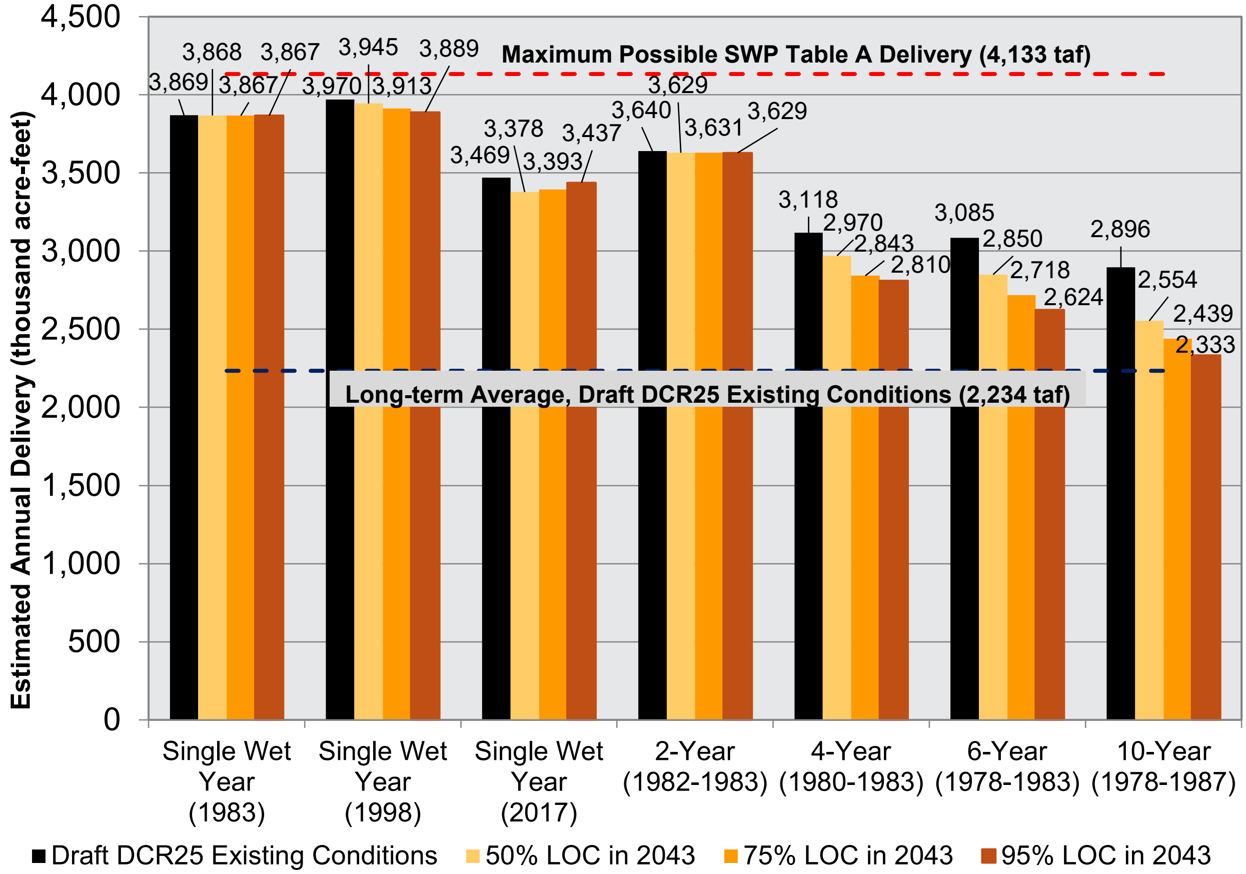
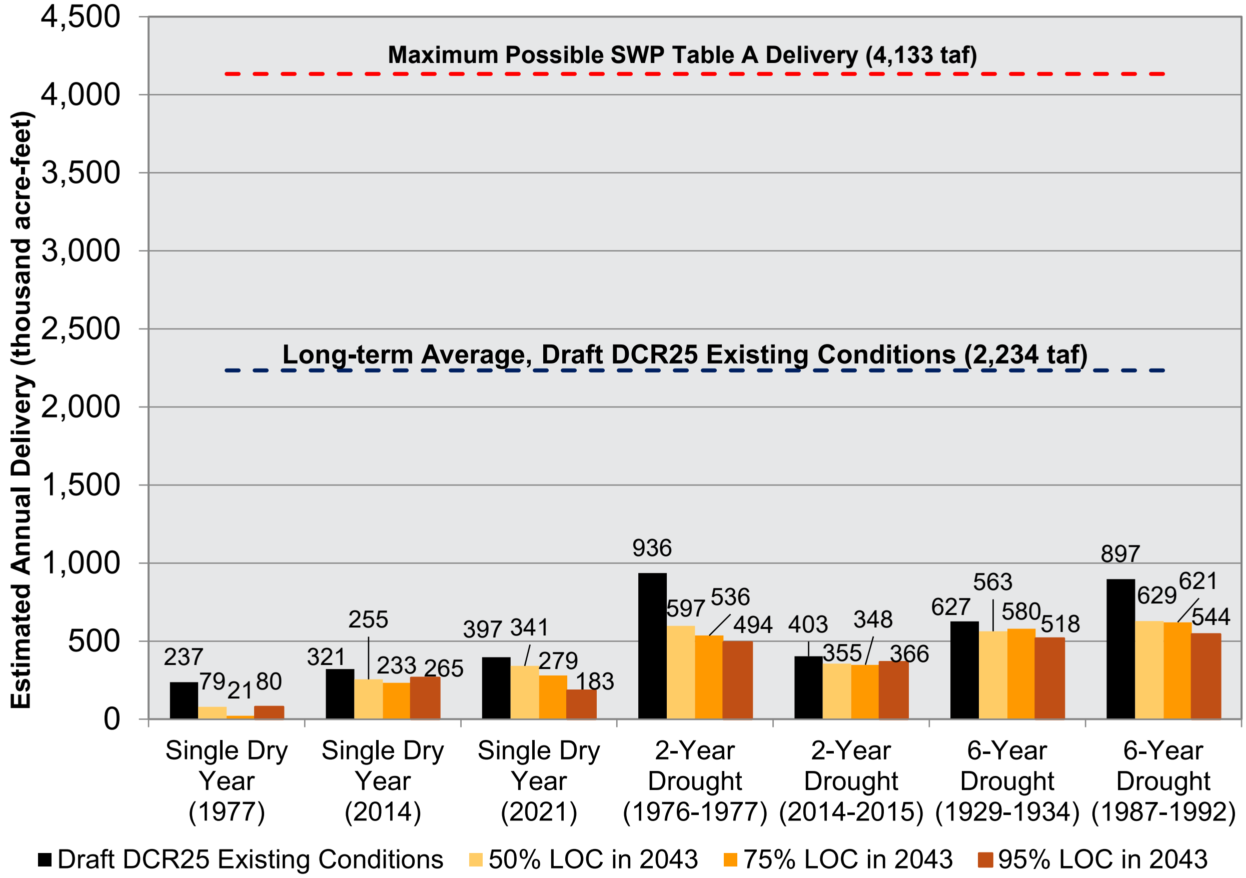


**Figure 6-3. Estimated Dry-Period SWP Table A Water Deliveries (Future Conditions)**



## 6.5 Estimates of SWP Article 21 Water Deliveries Under Future Conditions

**Table 6-4** compares SWP Article 21 deliveries between the Draft DCR 2025 Existing Conditions and the future scenarios. All 3 future scenarios indicate reductions in Article 21 deliveries due to climate change. These impacts occur primarily in wet years, when Article 21 water is typically available.

**Table 6-4. SWP Article 21 Deliveries under Existing and Future Conditions, TAF/year**

| | | Draft DCR 2025 Existing Conditions | Draft DCR 2025 2043 50% LOC | Draft DCR 2025 2043 75% LOC | Draft DCR 2025 2043 95% LOC |
|---|---|---|---|---|---|
| | **Long-Term Average (1922-2021)** | **123** | **112** | **107** | **89** |
| Wet Periods | Single Wet Year (1983) | 918 | 919 | 917 | 907 |
| | Single Wet Year (1998) | 403 | 437 | 451 | 308 |
| | Single Wet Year (2017) | 546 | 497 | 375 | 520 |
| | 2-Year (1982-1983) | 820 | 815 | 890 | 844 |
| | 4-Year (1980-1983) | 525 | 527 | 537 | 461 |
| | 6-Year (1978-1983) | 420 | 420 | 407 | 330 |
| | 10-Year (1978-1987) | 309 | 315 | 353 | 269 |
| Dry Periods | Single Dry Year (1977) | 4 | 3 | 3 | 3 |
| | Single Dry Year (2014) | 5 | 5 | 7 | 5 |
| | Single Dry Year (2021) | 5 | 4 | 4 | 2 |
| | 2-Year Drought (1976-1977) | 3 | 2 | 3 | 3 |
| | 2-Year Drought (2014-2015) | 5 | 4 | 5 | 5 |
| | 6-Year Drought (1929-1934) | 6 | 5 | 4 | 5 |
| | 6-Year Drought (1987-1992) | 4 | 5 | 6 | 4 |

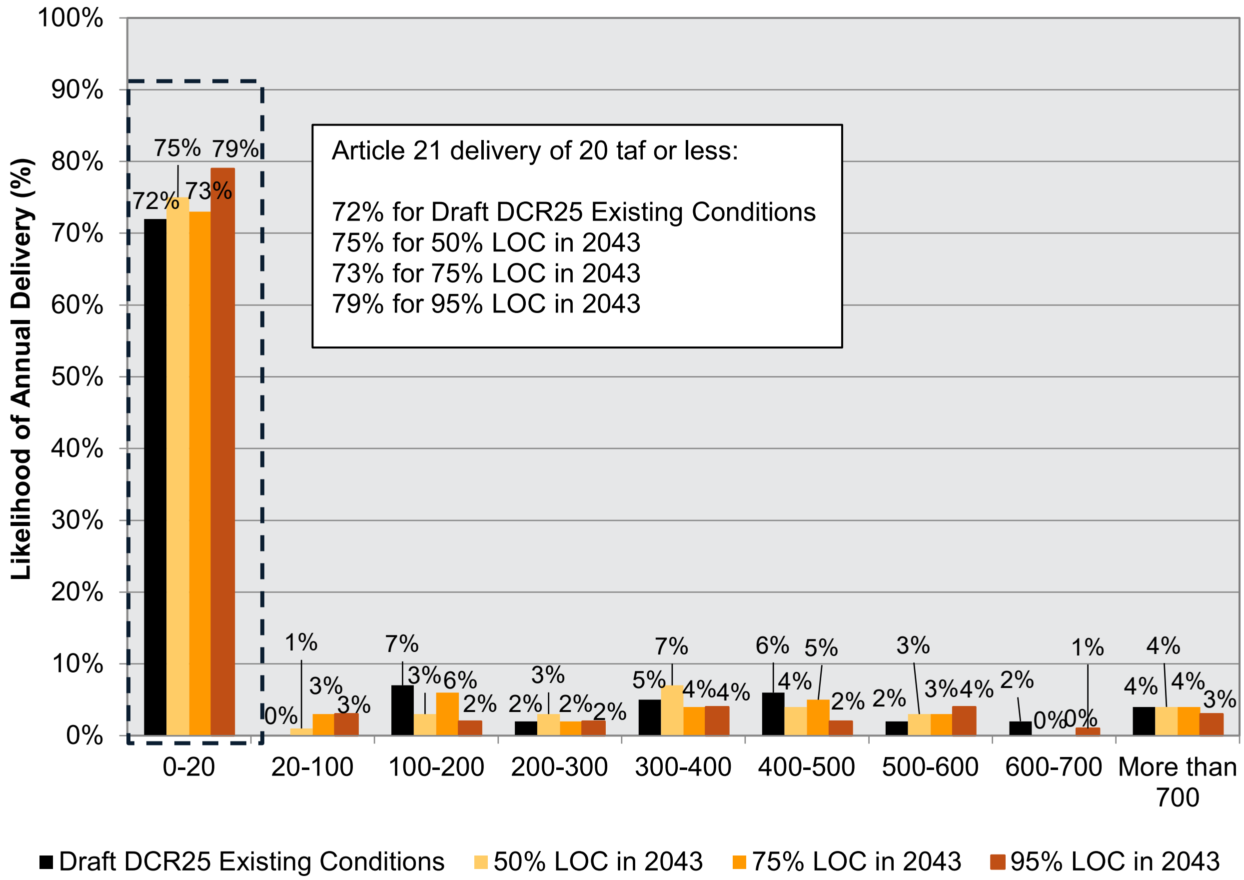
**Table 6-5** compares SWP Article 21 deliveries percent change between the Draft DCR 2025 Existing Conditions and the future scenarios. In the 2043 50 % LOC scenario, the estimated average annual delivery of Article 21 water is 11 TAF/year (9 %) lower than under existing conditions. In the 2043 75 % LOC scenario, the estimated average annual delivery of Article 21 water is 16 TAF/year (13 %) lower than under existing conditions. In the 2043 95 % LOC scenario, the estimated average annual delivery of Article 21 water is 34 TAF/year (28 %) lower than under existing conditions.

**Table 6-5. Change in SWP Article 21 Deliveries Compared to Existing Conditions, TAF/year (Percent Change vs. Existing)**

| | | Draft DCR 2025 Existing Conditions | 2043 50% LOC change from existing conditions | 2043 75% LOC change from existing conditions | 2043 95% LOC change from existing conditions |
|---|---|---|---|---|---|
| | **Long-Term Average (1922-2021)** | **123** | **-11 (-9%)** | **-16 (-13%)** | **-34 (-28%)** |
| **Wet Periods** | Single Wet Year (1983) | 918 | 1 (0%) | -1 (0%) | -11 (-1%) |
| | Single Wet Year (1998) | 403 | 34 (8%) | 48 (12%) | -95 (-24%) |
| | Single Wet Year (2017) | 546 | -49 (-9%) | -171 (-31%) | -26 (-5%) |
| | 2-Year (1982-1983) | 820 | -5 (-1%) | 70 (9%) | 24 (3%) |
| | 4-Year (1980-1983) | 525 | 2 (0%) | 12 (2%) | -64 (-12%) |
| | 6-Year (1978-1983) | 420 | 0 (0%) | -13 (-3%) | -90 (-21%) |
| | 10-Year (1978-1987) | 309 | 6 (2%) | 44 (14%) | -40 (-13%) |
| **Dry Periods** | Single Dry Year (1977) | 4 | -1 (-25%) | -1 (-25%) | -1 (-25%) |
| | Single Dry Year (2014) | 5 | 0 (0%) | 2 (40%) | 0 (0%) |
| | Single Dry Year (2021) | 5 | -1 (-20%) | -1 (-20%) | -3 (-60%) |
| | 2-Year Drought (1976-1977) | 3 | -1 (-33%) | 0 (0%) | 0 (0%) |
| | 2-Year Drought (2014-2015) | 5 | -1 (-20%) | 0 (0%) | 0 (0%) |
| | 6-Year Drought (1929-1934) | 6 | -1 (-17%) | -2 (-33%) | -1 (-17%) |
| | 6-Year Drought (1987-1992) | 4 | 1 (25%) | 2 (50%) | 0 (0%) |

**Figure 6-4** presents the estimated likelihood of a given amount of SWP Article 21 water delivery for the Draft DCR25 Existing Conditions, the 2043 50 % LOC, the 2043 75 % LOC, and the 2043 95 % LOC. Further, **Figure 6-4** shows a 72 % chance of SWP Article 21 water delivery of 20 TAF or less for the Draft DCR25 Existing Conditions whereas 2043 50 % LOC has a 75 % chance, 2043 75 % LOC has a 73 % chance, and the 2043 95 % LOC has a 79 % chance.

**Figure 6-4. Estimated Likelihood of Annual Deliveries of SWP Article 21 Water (Future Conditions)**



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