Memorandum

Date: April 24, 2015

To:
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3. Paul A. Marshall, Chief
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From: Sina Darabzand
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Department of Water Resources

Subject: State Water Project Delivery Capability Report 2015

The attached report, "State Water Project Delivery Capability Report 2015", is submitted for your review and approval to print multiple copies for distribution to public entities in compliance with the requirements spelled out in the Attachment B to the Monterey Plus Settlement Agreement of May 2003: "*Commencing in 2003, and every two years thereafter, the Department of Water Resources (DWR) shall prepare and deliver to all State Water Project (SWP) contractors, all city and county planning departments, and all regional and metropolitan planning departments within the project service area a report which accurately sets forth, under a range of hydrologic conditions, the then existing overall delivery capability of the project facilities and the allocation of that capacity to each contractor. The range of hydrologic conditions shall include the historic extended dry cycle and long-term average. The biennial report shall also disclose, for each of the ten years immediately preceding the report, the total amount of project water delivered and the amount of project water delivered to each contractor. The information presented in each report shall be presented in a manner readily understandable by the public.*"

The attached report presents the existing overall delivery capability of the SWP system and the allocation of that capacity to each of the contractors under a range of hydrologic conditions. Appendices to this report are available in electronic form. Appendix A of this report briefly introduces and compares the assumptions for the 2015 Delivery Capability Report (DCR) Base scenario and the following alternatives: Early Long-Term (ELT), Existing Conveyance High Outflow (ECHO), Existing Conveyance Low Outflow (ECLO), and Bay-Delta Conservation Plan (BDCP) Alternative 4 H3 study (Alt 4). The other appendices to this report present model updates, model assumptions, and input and output data for the simulation runs under Existing Conditions scenario (Appendix B), the ELT scenario (Appendix C), the ECHO scenario derived for the BDCP planning process (Appendix D), the ECLO scenario which is a similar simulation to the ECHO scenario, without the Fall X2 and enhanced spring outflow requirements (Appendix E), and the BDCP Alternative 4 H3 study (Appendix F).

Approved:

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Erik Reyes, Chief
Central Valley Modeling Section

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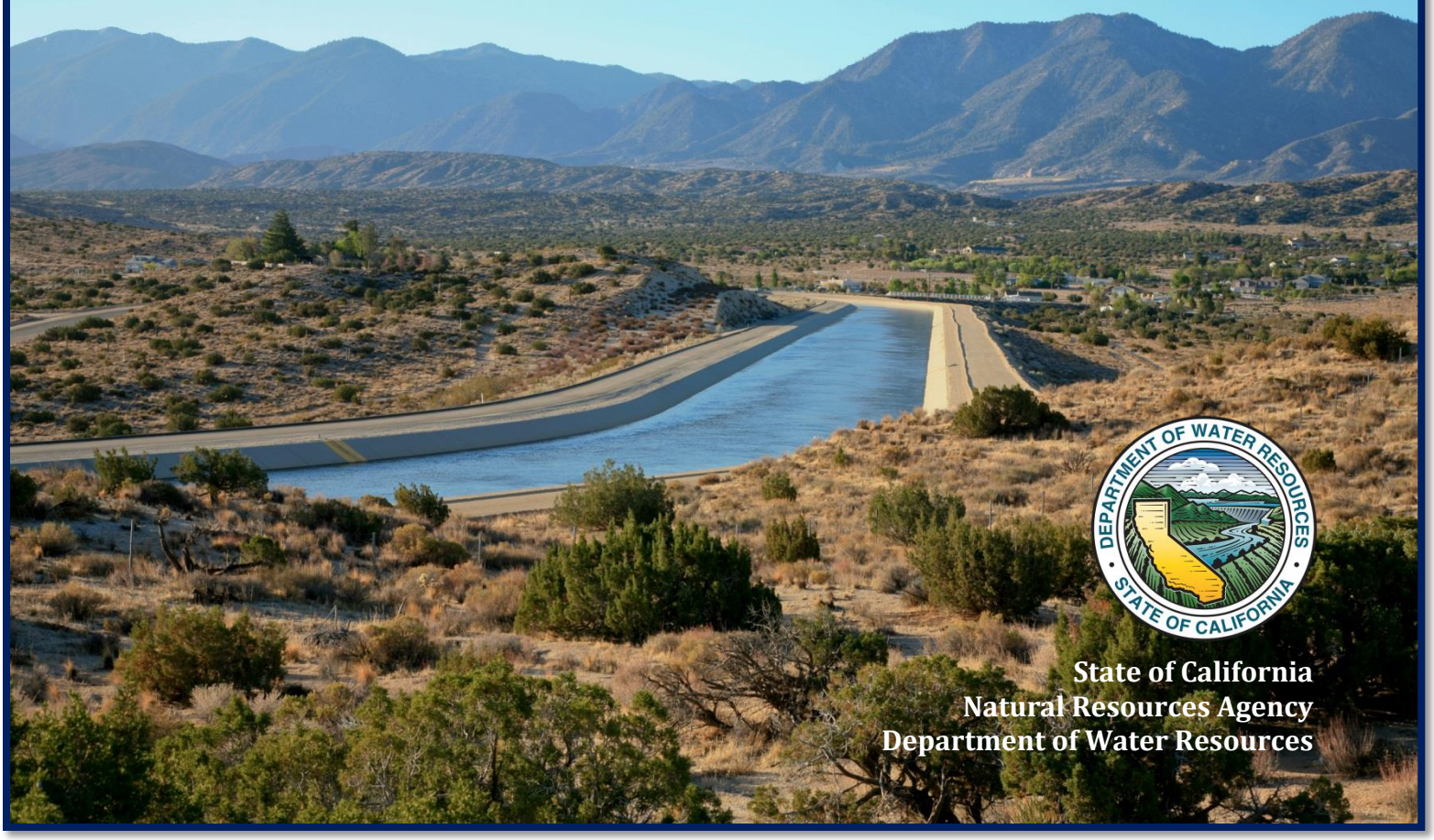
The State Water Project
Draft Delivery Capability Report 2015

April 2015



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Department of Water Resources

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Summary

This report is intended to inform the public about key factors important to the operation of the State Water Project (SWP) and an estimate of its current delivery capability.

For many SWP water contractors, water provided by the SWP is a major component of the water supplies available to them. SWP contractors include cities, counties, urban water agencies, and agricultural irrigation districts. These local utilities and other public and private entities provide the water that Californians use at home and work every day and that helps to nourish the state's bountiful crops. Thus, the availability of water from the SWP is an important component to the water supply planning of its recipients and ultimately affects the amount of water that local residents and communities can use.

The availability of these water supplies may be highly variable. A wet water year may be followed by a dry or critically dry year. Knowing the probability that they will receive a certain amount of SWP water in a given year—whether it be a wet water year, a critical year, or somewhere in between—gives contractors a better sense of the degree to which they may need to implement increased conservation measures or plan for new additional, or back up sources of water supply to meet their needs.

The Delta is the key to the SWP's ability to deliver water to its agricultural and urban contractors in the North Bay, the South Bay, California Central Valley, and Southern California. All but five of the 29 SWP contractors receive water deliveries from the Delta (pumped by either the Harvey O. Banks or Barker Slough pumping plants).

Yet the Delta faces numerous challenges to its long-term sustainability. For example, climate change poses the threat of increased variability in floods and droughts, and sea level rise complicates efforts to manage salinity levels and preserve water quality in the Delta so that the water remains suitable for urban and agricultural uses. Among the other challenges are continued subsidence of Delta islands, many of which are already below sea level, and the related threat of a catastrophic levee failure as water pressure increases on fragile levees.

Protection of endangered and threatened fish species, such as the delta smelt, is also an important factor of concern for the Delta environment. Ongoing regulatory restrictions, such as those imposed by federal biological opinions on the effects of SWP and Central Valley Project (CVP) operations on these species also contribute to the challenges of determining the SWP's water delivery capability.

Two large-scale plans for the Delta that are being developed could affect SWP water delivery capability: the Delta Plan and the Bay Delta Conservation Plan (BDCP). When complete, the BDCP will provide the basis for issuing endangered species permits to operate the SWP and CVP. The BDCP seeks to improve the health of the ecological system as a whole.

The analyses in this report factor in all of the regulations governing SWP operations in the Delta and upstream, and assumptions about water uses in the upstream watersheds. Analyses were conducted that considered the amounts of water that SWP

contractors use and the amounts of water they choose to hold for use in a subsequent year.

Many of the same specific challenges to SWP operations described in the *State Water Project Delivery Reliability Report 2013* remain in 2015. Most notably, the effects on SWP pumping caused by issuance of the 2008 and 2009 federal biological opinions (BOs), which were reflected in the 2013 Report, continue to affect SWP delivery capability today. Hence, the differences between the 2013 and 2015 reports can be attributed primarily to updates in the assumptions and inputs to the simulation studies.

SWP exports have decreased since 2005, although the bulk of the change occurred by 2009 as the federal BOs went into effect, restricting operations. These effects are also reflected in the SWP delivery estimates. The most salient findings in this report are as follows:

- Under existing conditions, the average annual delivery of Table A water estimated for this 2015 Report is 2,550 taf/year, 3 taf less than the 2,553 taf/year estimated for the 2013 Report.

- The likelihood of existing-condition SWP Article 21 deliveries (supplemental deliveries to Table A water) being greater than 20 taf/year has decreased by 3% relative to the likelihood presented in the 2013 Report.

Section 1

Reasons to Assess SWP Water Delivery Capability

Two major factors underscore the importance of assessing the SWP's water delivery capability: the effects of population growth on California's balance of water supply and demand, and State legislation intended to help maintain a reliable water supply.

Population Growth, Land Use, and Water Supply

California's population has grown rapidly in recent years, with resulting changes in land use. This growth is expected to continue. From 1990 to 2005, California's population increased from about 29.8 million to about 36 million. Based on this trend, California's population has been projected to be more than 40.8 million by 2020. The "current trends" scenario depicted in the *California Water Plan 2013* for year-2050 conditions, based on the California Department of Finance's projections of 2010 U.S. Census data, assumes a population of nearly 51 million—a 75% increase in the 1990 population.

The amount of water available in California—or in different parts of the state—can vary greatly from year to year. Some areas may receive 2 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 sufficient local water supplies. 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 and use.

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 water suppliers.

California 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 urban water suppliers to adopt urban water management plans (UWMPs) every 5 years and submit those plans to DWR. DWR reviews submitted plans to report to the legislature on the status of submitted plans and for the purposes of grant eligibility requirements.

UWMPs must include an estimate of water supply and demand for the 20-year planning time frame for three water year types, normal, single dry year and multi dry years. SWP contractors rely on the SWP water delivery capability estimates to develop the water supply estimates.

The most recent round of UWMPs (2010) was required to be adopted by July 1, 2011 and submitted to DWR by August 1, 2011.

Urban Water Conservation Law requires that the State of California reduce urban per capita water use statewide by 10% by the end of 2015 and 20% by the end of 2020. Water suppliers calculated baseline water use and set 2015 and 2020 water use targets in their 2010 UWMPs. Water suppliers will report on water use target compliance in the 2015 and 2020 UWMPs. DWR is required to report to the Legislature on progress toward meeting the State's 20% by 2020 goals.

DWR publishes a guidebook to assist water suppliers prepare their urban water management plans. DWR is currently updating the guidebook for the 2015 round of plans. Guidance documents are available at http://www.water.ca.gov/urbanwatermanagement.

The municipalities and water districts that have adopted 2010 UWMPs and submitted them to DWR are listed at http://www.water.ca.gov/urbanwatermanagement/2010uwmps/.

Water Conservation Act

The Water Conservation Act of 2009 (Senate Bill X7.7, Steinberg), enacted in November 2009, includes requirements for urban and agricultural suppliers. Water suppliers report on compliance with these requirements in either the urban or agricultural water management plans. DWR reviews submitted plans for consistency with Water Conservation Act requirements.

In addition, as part of the Water Conservation Act, agricultural water suppliers with 25,000 acres or more of irrigated land were required to prepare and adopt agricultural water management plans and submit the plans to DWR by the end of 2012 and then once every five years beginning in 2015. The Act also required suppliers to measure volumetrically water deliveries to farms and base the price of water sales at least in part on the volume of water delivered. Water suppliers were required to report on water measurement and water pricing in their water management plans.

In November 2012, DWR released a guidebook for developing agricultural water management plans: http://www.water.ca.gov/wateruseefficiency/sb7/docs/AgWaterManagementPlanGuidebook-FINAL.pdf.

Water agencies filing agricultural water management plans as of July 2013 are listed on a Web page maintained by DWR's Water Use and Efficiency Branch: http://www.water.ca.gov/wateruseefficiency/sb7/docs/2012_AWMPs_Received_07-16-2013.pdf.

Section 2
Regulatory Restrictions on SWP Delta Exports

Multiple needs converge in the Delta: the need to protect a fragile ecosystem, to support Delta recreation and farming, and to provide water for agricultural and urban needs throughout much 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, as described below, restrictions on SWP operations imposed by State and federal agencies contribute substantially to the challenges of accurately determining the SWP's water delivery capability in any given year.

Biological Opinions on Effects of Coordinated SWP and CVP Operations

Several fish species listed under the federal Endangered Species Act (ESA) as threatened or endangered are found in the Delta. The continued viability of populations of these species in the Delta depends in part on Delta flow levels. For this reason, the U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) have issued several BOs since the 1990s on the effects of coordinated SWP/CVP operations on several listed species.

These BOs affect the SWP's water delivery capability for two reasons. Most notably, they include terms that restrict SWP exports from the Delta to specific amounts at certain times under certain conditions. In addition, the BOs' requirements are predicated on physical and biological conditions that occur daily while DWR's water supply models are based on monthly data.

The first BOs on the effects of SWP (and CVP) operations were issued in February 1993 (NMFS BO on effects of project operations on winter-run Chinook salmon) and March 1995 (USFWS BO on project effects on delta smelt and splittail). Among other things, the BOs contained requirements for Delta inflow, Delta outflow, and export pumping restrictions in order 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 under "Water Quality Objectives" later in this section.

The terms of the USFWS and NMFS BOs have become increasingly restrictive over the years. In 2004 the United States Bureau of Reclamation (Reclamation) sought a new BO from USFWS regarding the operation of the CVP and SWP (collectively, 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 BO 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 BO 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 BO 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 BO was also vacated and NMFS was ordered to prepare a new one. In June 2009, NMFS issued a new Jeopardy BO covering effects on winter-run and spring-run Chinook salmon, steelhead, green sturgeon, and killer whales. Like the 2008 smelt BO, the salmon BO included an RPA with more protective export restrictions and other actions intended to protect listed species.

The USFWS BO includes requirements on operations in all but 2 months of the year. The BO calls 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. USFWS determines the required target flow, with the reductions accomplished primarily by reducing SWP and CVP exports. Because this flow restriction is determined based on fish location and decisions by USFWS staff, predicting the flow restriction and corresponding effects on export pumping with any great certainty poses a challenge. The USFWS BO also includes an additional salinity requirement in the Delta for September and October in wet and above-normal water years, calling for increased releases from SWP and CVP reservoirs to reduce salinity. Among other provisions included in the NMFS BO, limits on total Delta exports have been established for the months of April and May. These limits are mandated for all but extremely wet years.

The 2008 and 2009 BOs were issued shortly before and shortly after the Governor 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 BO 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 BOs to protect delta smelt and other species. Both the 2008 USFWS and 2009 NMFS BOs were challenged in federal court on various grounds, including the failure by the services to use the best available science in the development of the BOs. U.S. District Judge Oliver Wanger found both BOs were not legally sufficient and remanded them to the agencies for further review and analysis. Both decisions were appealed to the Ninth Circuit, and in two separate decisions (March 2014 for the USFWS BO and December 2014 for the NMFS BO) the Ninth Circuit reversed in part and affirmed in part Judge Wanger’s rulings, finding the BOs complied with the ESA and upholding them in their entirety. As a result, the operational rules specified in the 2008 and 2009 BOs continue to be legally required and are the rules used in the analyses presented in Section 6 of this report.

The California Department of Fish and Wildlife (DFW) issued consistency determinations for both BOs under Section 2080.1 of the California Fish and Wildlife Code. The consistency determinations stated that the USFWS BO and the NMFS BO

would be consistent with the California Endangered Species Act (CESA). Thus, DFW 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 Reclamation to obtain a separate State-issued permit.

Delta Inflows

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).

The type of water year is also an important factor affecting the volume of Delta inflows. When hydrology is analyzed, water years are designated by DWR as “wet” (W), “above normal” (AN), “below normal” (BN), “dry” (D), or “critical” (C). 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 pumping.

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 water demands and flow and water quality requirements.

Water Quality Objectives

Because the Delta is an estuary, salinity is a particular concern. In the 1995 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 U.S. Bureau of Reclamation). Those 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 Decision 1641 (D-1641), issued in December 1999 and updated in March 2000.

DWR and Reclamation must monitor the effects of diversions and SWP and CVP operations to ensure compliance with existing water quality standards.

Among the objectives established in the 1995 WQCP and D-1641 are the “X2” objectives. X2 is defined as the distance in kilometers from 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.

D-1641 mandates the X2 objectives so that the State Water Board can regulate the location of the Delta estuary's salinity gradient during the 5-month period of February–June.

For the X2 objective to be achieved, the X2 position must remain downstream of Collinsville in the Delta for the entire 5-month period, 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 must be at certain specified levels at certain times, which 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 also improves 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 February through June and 65% of inflow from July through January.

Section 3
Ongoing Environmental and Policy Planning Efforts

It is hard to overstate the Delta's importance to California's economy and natural heritage. 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 almost a quarter of its average water supply from the Delta; Kern County, which produces nearly $3 billion annually in grapes, almonds, pistachios, milk, citrus and carrots, 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; and 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 salt water 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.

In order to respond to these concerns considerable effort by government agencies and California water community as a whole 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 and the Bay Delta Conservation Plan (BDCP) are two large-scale plans that are in development. Both plans could affect SWP water delivery capability in different ways, and at different scales.

Delta Plan

After years of concern about the Delta amid rising water demand and habitat degradation, the Delta Stewardship Council 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 a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem. The coequal 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 final Delta Plan was adopted by the Council on May 16, 2013. The Delta Plan contains a set of 14 regulatory policies that will be enforced by the Delta Stewardship Council's appellate authority and oversight. The Delta Plan also contains 73 recommendations, which are non-regulatory but call out actions essential to achieving the coequal goals. The State Office of Administrative Law (OAL) approved the 14 regulations to implement the Delta Plan, which became effective with legally-enforceable regulations on September 1, 2013.

The 14 regulatory policies approved by the OAL include:

- Requiring those who use water from the Delta to certify in their water management plans that they are implementing all feasible efforts to use water efficiently and are developing additional local and regional water supplies;
- Reserving six high-priority areas for habitat restoration;
- Protecting agricultural land by requiring developers to locate new residential, commercial, or industrial development in areas planned for urban use;
- Requiring state and local agencies to locate, when feasible, water management facilities, ecosystem projects, and flood management infrastructure in ways that would reduce or avoid conflicts with agriculture and other existing planned uses; and requiring those agencies to consider locating the facilities on public land before using private land;
- Prohibiting encroachment on floodways and floodplains;
- Requiring developers of new residential subdivisions to include a level of flood protection that anticipates sea levels rising due to climate change; and
- Setting priorities for State investment in Delta flood levees.

Among the 73 recommendations in the Delta Plan are:

- Updating statewide water-use efficiency goals, groundwater management plans for areas using Delta water, streamlining water transfer procedures and developing a statewide system for reporting how much water is used;
- Having the State Water Resources Control Board update water quality objectives for the Sacramento and San Joaquin Rivers, controlling or reducing other Delta stressors such as contaminants and invasive species, expanding floodplains and riparian habitats and locating habitat restoration to accommodate sea-level rise;
- Encouraging agritourism, wildlife friendly farming practices, and recreational opportunities in the Delta; and

- Creating a Delta Flood Risk Management District to provide adequate funding for flood control and emergency preparedness.

In 2014, the Delta Stewardship Council launched the Delta Levees Investment Strategy (DLIS) that will combine economics, engineering, and decision-making techniques to identify funding priorities and assemble a comprehensive investment strategy for the Delta levees.

This investment strategy will be developed in collaboration with state agencies, local reclamation districts, Delta landowners and businesses, and other important stakeholders. It will be based on the best available data, research, and lessons learned from other state and local programs and planning efforts.

Bay Delta Conservation Plan (BDCP)

The Bay Delta Conservation Plan (BDCP) is a comprehensive plan prepared by a group of local water agencies, environmental and conservation organizations, State and federal agencies, and other interest groups to address a wide array of challenges that the water community in California has been facing for decades in the Sacramento-San Joaquin Delta.

The BDCP is being developed in compliance with the Federal Endangered Species Act (ESA) and the California Natural Communities Conservation Planning Act (NCCPA). When complete, the BDCP will provide the basis for the issuance of endangered species permits for the operation of the state and federal water projects. In the most basic sense, the BDCP provides a regulatory vehicle for project proponents to agree to implement a suite of habitat restoration measures, other stressor reduction activities, and water operations criteria in return for regulatory agency approval of the necessary long-term permits for the various projects and water operations (covered activities) to proceed. The heart of the BDCP is a long-term conservation strategy that sets forth actions needed for a healthy Delta.

The BDCP approach to addressing the Delta's challenges reflects a significant departure from the species-by-species approach utilized in previous efforts to manage Delta-specific species and habitats. Instead, the BDCP seeks to improve the health of the ecological system as a whole. Each conservation measure plays a part in an interconnected web of conservation activities designed to improve the health of natural communities and, in so doing, improve the overall health of the Delta ecosystem.

The BDCP attempts to balance contributions to the conservation of species in a way that is feasible given the variety of important uses in the Delta including flood protection, agriculture, and recreation, to name a few. Implementation of the Plan will occur over a 50-year time frame by a number of agencies and organizations with specific roles and responsibilities as prescribed by the Plan. A major part of implementation will be monitoring conservation measures to evaluate effectiveness, and revising actions through the adaptive management decision process.

The Plan, which has been in development since 2006, is undergoing intensive environmental review in the form of a state Environmental Impact Report and federal Environmental Impact Statement (EIR/S) to evaluate the impact of the Plan on all aspects of the environment, including the human environment, and identify alternatives and potential mitigation actions.

The draft BDCP and its associated EIR/S were released for public review in late 2013. Public comments were received until mid-2014. Partially-recirculated public draft documents are scheduled to be released in mid-2015. The reports are targeted to be final in 2016, after which a decision to proceed with the program would be made.

Section 4
Delta Levee Failure and the Delta Risk Management Strategy

The fragile Delta faces a multitude of risks that could affect millions of Californians. Foremost among those risks, as they could affect the SWP's water delivery capability, are the potential for levee failure and the ensuing flooding and water quality issues.

The Delta Risk Management Strategy (DRMS) was initiated in response to Assembly Bill 1200 (2005), which directed DWR to use 50-, 100-, and 200-year projections to evaluate the potential impacts on Delta water supplies associated with continued land subsidence, earthquakes, floods, and climate change. The discussions below describe DRMS Phase 1, which evaluated the risks, and DRMS Phase 2, which is proposing various solutions. Also discussed are other efforts currently being undertaken by DWR and other agencies to reduce risks to the Delta, enhance emergency response capabilities, and reduce the risk of interruption of Delta water exports by the SWP and CVP.

Effects of Emergencies on Water Supplies: Delta Risk Management Strategy (DRMS), Phase 1

Phase 1 of the DRMS, completed in 2008, assessed the performance of Delta and Suisun Marsh levees under various stressors and hazards and evaluated the consequences of levee failures to California as a whole.

The Delta is protected by levees built about 150 years ago. The levees are vulnerable to failure because most original levees were simply built with soils dredged from nearby channels, and were never engineered. Most islands in the Delta have flooded at least once over the past 100 years. For example, on June 3, 2004, a huge dry-weather levee failure occurred without warning on Upper Jones Tract in the south Delta, inundating 12,000 acres of farmland with about 160,000 acre-feet of water. Because many Delta islands are below sea level, deep and prolonged flooding could occur during a levee failure event, which could disrupt the quality and use of Delta water.

Levee failure can result from the combination of high river inflows, high tide, and high winds; however, levees can also fail in fair weather—even in the absence of a flood or seismic event—in a so-called "sunny day event." Damage caused by rodents, piping (in which a pipe-like opening develops below the base of the levee), or foundation movement could cause sunny-day levee breaches.

A breach of one or more levees and island flooding may affect Delta water quality and SWP operations. Depending on the hydrology and the size and locations of the breaches and flooded islands, a large amount of salt water may be pulled into the interior Delta from Suisun and San Pablo bays. When islands are flooded, DWR may

need to drastically decrease or even cease SWP Delta exports to evaluate the distribution of salinity in the Delta and avoid drawing saltier water toward the pumps.

An earthquake could also put Delta levees, and thus SWP water supplies, at risk. In 2008, the 2007 Working Group on California Earthquake Probabilities estimated a probability of 63% that a magnitude 6.7 or greater earthquake would strike the San Francisco Bay Area in the next 30 years. An earthquake could severely damage Delta levees, causing islands to flood with salty water. The locations most likely to be affected by an earthquake are the west and southwest portions of the Delta because these areas are closer to potential earthquake sources. Flooding of the west and southwest Delta is also more likely to interfere with conveyance of freshwater to export pumps.

Modeling of the effects of earthquakes on Delta islands was conducted by DWR for the DRMS Phase 1 report. Described in the *California Water Plan Update 2009,* the assessment found a 40% probability that a major earthquake occurring between 2030 and 2050 would cause 27 or more islands to flood at the same time. If 20 islands were flooded as a result of a major earthquake, the export of freshwater from the Delta could be interrupted by about a year and a half. Water supply losses of up to 8 million acre-feet would be incurred by SWP (and CVP) contractors and local water districts.

Managing and Reducing Risks: Delta Risk Management Strategy (DRMS), Phase 2

The Phase 2 report for the DRMS, issued in June 2011, evaluates alternatives to reduce the risk to the Delta and the state from adverse consequences of levee failure. “Building blocks” (individual improvements or projects, such as improving levees or raising highways) and trial scenarios (various combinations of building blocks) were developed for the DRMS Phase 2 report. The building blocks fall into three main categories:

- Conveyance improvements/
  flood risk reduction and life safety,
- Infrastructure risk reduction, and
- Environmental risk mitigation.

The first of these categories is most relevant to the SWP in terms of reducing the risk of disruption of SWP Delta exports, but the environmental risk mitigation category includes a building block calling for reduction of water exports from the Delta.

Four trial scenarios were developed to represent a range of possible risk reduction strategies:

- Trial Scenario 1—Improved Levees: Improve the reliability of Delta levees against flood-induced failures by providing up to 100-year flood protection.

- Trial Scenario 2—Armored Pathway (Through-Delta Conveyance): Improve the reliability of water conveyance by creating a route through the Delta that has high reliability and the ability to minimize saltwater intrusion into the south Delta.

- Trial Scenario 3—Isolated Conveyance Facility: Provide high reliability for conveyance of export water by building an isolated conveyance facility on the east side of the Delta.

- Trial Scenario 4—Dual Conveyance: Improve reliability and flexibility for conveyance of export water by constructing an isolated conveyance facility and a through-Delta conveyance. (This scenario would be much like a combination of Trial Scenarios 2 and 3.)

The findings of the DRMS Phase 2 report on these scenarios, as they apply to seismic risk and potential for disruption of SWP Delta exports, are as follows:

- Trial Scenario 1 (Improved Levees) would not reduce the risk of potential water export interruptions, nor would it change the seismic risk of most levees.

- Trial Scenario 2 (Armored Pathway [Through-Delta Conveyance]) would have the joint benefit of reducing the likelihood of levee failures from flood events and earthquakes and of significantly reducing the likelihood of export disruptions.

- The effects of Trial Scenario 3 (Isolated Conveyance) would be similar to those for the Armored Pathway scenario, but Trial Scenario 3 would not reduce the seismic risk of levee failure on islands that are not part of the isolated conveyance facility.

- Trial Scenario 4 (Dual Conveyance) would avoid the vulnerability of water exports associated with Delta levee vulnerability and would offer flexibility in water exports from the Delta and/or the isolated conveyance facility. However, seismic risk would not be reduced on islands not part of the export conveyance system or infrastructure pathway.

As noted in the discussion of the “enhanced emergency preparedness/response” building block in the DRMS Phase 2 report, analyses on resuming water exports after a levee failure were conducted by the Metropolitan Water District of Southern California, an SWP contractor. The studies found that a promising way to resume water exports would be to place structural barriers at selected channel locations in the Delta and complete strategic levee repairs, thus isolating an emergency freshwater conveyance “pathway” through channels that may be surrounded by islands flooded with saline water.

The DRMS study was the first comprehensive risk-based assessment of Delta levee failure and potential consequences to the State. Since the completion of the DRMS report several projects funded under the Delta Knowledge Improvement Program (DKIP) have been completed to fill the data gaps identified in DRMS. A goal of the DKIP is to complete bathymetry surveys of the entire Delta. Approximately 20% of the Delta has been surveyed thus far. Major on-going activities being funded by DKIP

include an economic study to assist the Delta Stewardship Council develop a comprehensive investment strategy for the Delta levees, a feasibility study to assist the Delta Protection Commission make recommendations on how to implement a Delta Flood Risk Management Assessment District, an investigation to determine how Delta levees on peat soils respond under seismic loading and development of potential designs of setback levees in the Delta to meet stability requirements while also incorporating desired habitat features.

Section 5

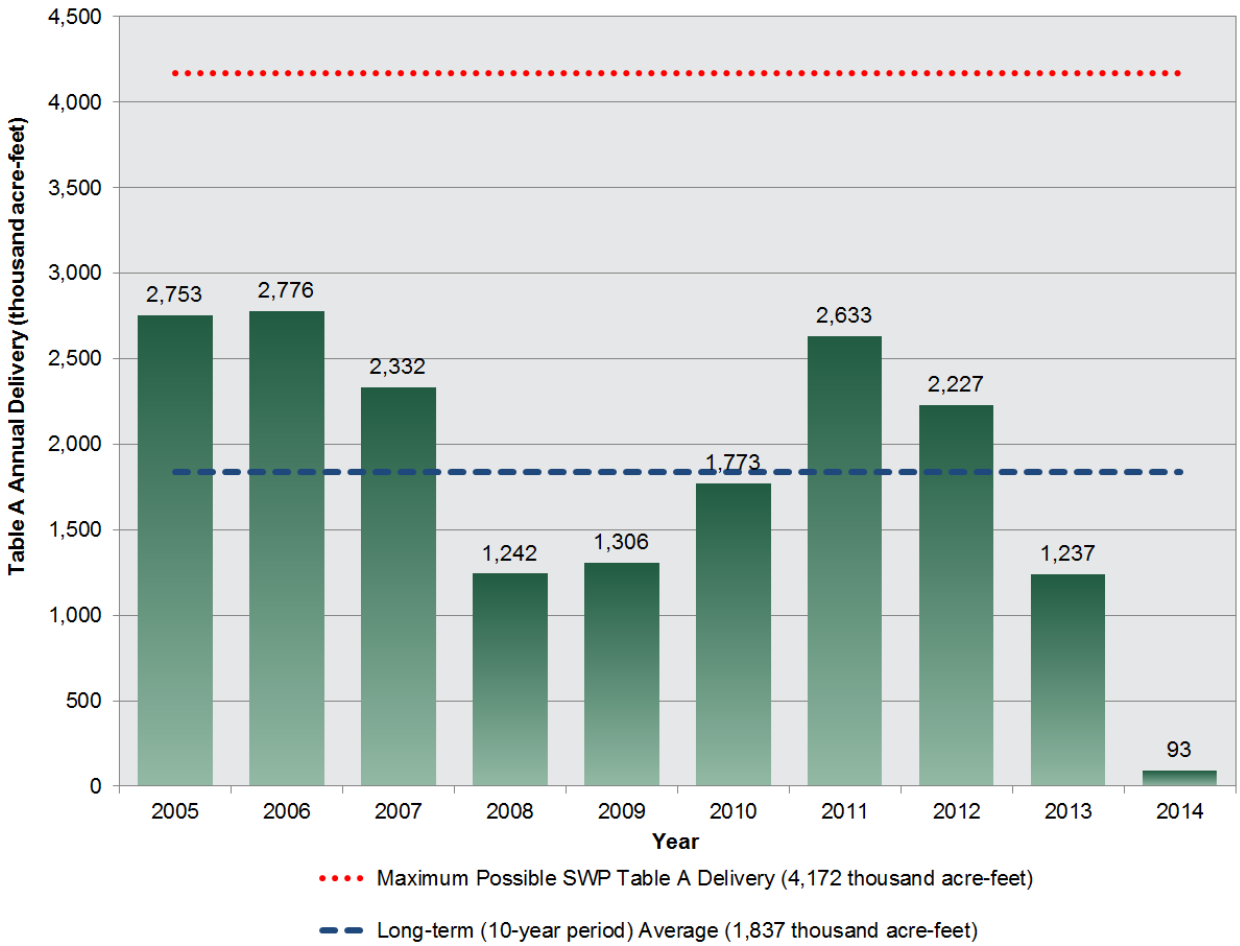
State Water Project Historical Delivery Capability (2005-2014)

Section 7 of this report includes tables listing annual historical deliveries by various water classifications for each SWP contractor for 2005–2014.

Table 5-1 lists the maximum annual SWP Table A water delivery amounts for SWP Contractors. Figure 5-1 shows that deliveries of SWP Table A water for 2005–2014 range from an annual minimum of 93 taf to a maximum of 2,776 taf, with an average of 1,837 taf. Historical deliveries of SWP Table A water over this 10-year period are less than the maximum of 4,172 taf/year.

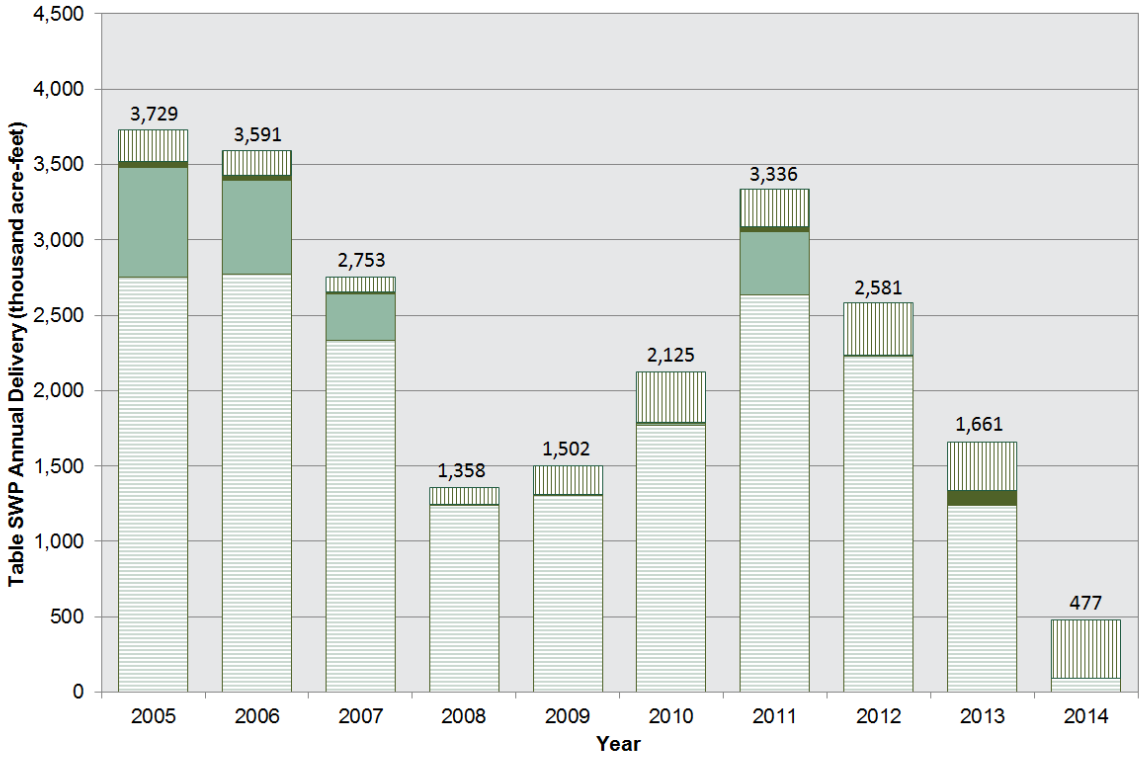
Total historical SWP deliveries, including Table A, Article 21, turnback pool, and carryover water, range from 3,729 to 477 taf/ year, with an average of 2,311 taf/year for the period of 2005–2014 (Figure 5-2).

Table 5-1. Maximum Annual SWP Table A Water Delivery Amounts for SWP Contractors	
Contractor	Maximum Table A Delivery Amounts (acre-feet)
Feather River Area Contractors	
Butte County	27,500
Yuba City	9,600
Plumas County Flood Control and Water Conservation District	2,700
Subtotal	**39,800**
North Bay Area Contractors	
Napa County Flood Control and Water Conservation District	29,025
Solano County Water Agency	47,506
Subtotal	**76,531**
South Bay Area Contractors	
Alameda County Flood Control and Water Conservation District, Zone 7	80,619
Alameda County Water District	42,000
Santa Clara Valley Water District	100,000
Subtotal	**222,619**
San Joaquin Valley Area Contractors	
Dudley Ridge Water District	50,343
Empire West Side Irrigation District	2,000
Kern County Water Agency	982,730
Kings County	9,305
Oak Flat Water District	5,700
Tulare Lake Basin Water Storage District	88,922
Subtotal	**1,139,000**
Central Coastal Area Contractors	
San Luis Obispo County Flood Control and Water Conservation District	25,000
Santa Barbara County Flood Control and Water Conservation District	45,486
Subtotal	**70,486**
Southern California Area Contractors	
Antelope Valley–East Kern Water Agency	141,400
Castaic Lake Water Agency	95,200
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	82,800
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
Ventura County Watershed Protection District	20,000
Subtotal	**2,623,100**
TOTAL TABLE A AMOUNTS	**4,171,536**



Note: The differences in historical deliveries from the State Water Project Delivery Reliability Report 2013 are due to reclassification of the various components of water delivered to SWP contractors

Figure 5-1. Historical Deliveries of SWP Table A Water, 2005–2014



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Carryover	207	160	95	110	188	333	251	346	325	382
Turnback	38	34	16	3	2	11	31	8	99	1
Article 21	731	621	310	3	6	8	421	0	0	1
Table A	2753	2776	2332	1242	1306	1773	2633	2227	1237	93

Note: The differences in historical deliveries from the State Water Project Delivery Reliability Report 2013 are due to reclassification of the various components of water delivered to SWP contractors

Figure 5-2. Total Historical SWP Deliveries, 2005–2014 (by Delivery Type)

Section 6
Existing SWP Water Delivery Capability (2015)

This Section presents estimates of the SWP's existing (2015) water delivery capability. The estimates are presented below, alongside the results obtained from the 2013 Report. Like this 2015 Report, the 2013 Report incorporated the requirements of BOs issued by USFWS and NMFS in December 2008 and June 2009, respectively, on the effects of coordinated operations of the SWP and CVP. These BOs are discussed in detail in Section 2, "Regulatory Restrictions on SWP Delta Exports."

The discussions of SWP water delivery capability in this Section presents the results of DWR's updated modeling of the SWP's water delivery capability. A tabular summary of the modeling results is presented in Appendix B of this report, which is available online at http://baydeltaoffice.water.ca.gov/.

Appendix B also contains annual delivery probability curves (i.e., exceedence plots) to graphically show the estimated percentage of years in which a given annual delivery is equaled or exceeded.

Hydrologic Sequence

SWP delivery amounts are estimated in this 2015 Report for existing conditions using computer modeling that incorporates the historic range of hydrologic conditions (i.e., precipitation and runoff) that occurred from water years 1922 through 2003. The historic hydrologic conditions are adjusted to account for land-use changes (i.e., the current level of development) and upstream flow regulations that characterize 2015. By using this 82-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.

Existing Demand for Delta Water

Demand levels for the SWP water users in this report are derived from historical data and information from the SWP contractors themselves. The amount of water that SWP contractors request each year (i.e., demand) is related to:

- The magnitude and type of water demands,
- The extent of water conservation measures,
- Local weather patterns, and
- Water costs.

The existing level of development (i.e., the level of water use in the source areas from which the water supply originates) is based on recent land uses, and is assumed to be representative of existing conditions for the purposes of this 2015 Report.

SWP Table A Water Demands

The current combined maximum Table A amount is 4,172 taf/year. See Table 5-1 in Section 5, "State Water Project Historical Delivery Capability (2005-2014). Of the combined maximum Table A amount, 4,132 taf/year is the SWP's maximum Table A water available for delivery from the Delta.

The estimated demands by SWP contractors for deliveries of Table A water from the Delta under existing conditions is assumed to be the maximum SWP Table A delivery amount for the 2015 Report, similar to the 2013 Report (Table 6-1). Due to the fact that SWP contractors have been requesting the full amount in recent years, the 2013, and the 2015 Reports more accurately reflect the trend in demand.

Table 6-1. Comparison of Estimated Average, Maximum, and Minimum Demands for SWP Table A Water (Existing Conditions, in taf/year)

	2013 Report	2015 Report
Average	4,132	4,132
Maximum	4,132	4,132
Minimum	4,132	4,132

SWP Article 21 Water Demands

Under Article 21 of the SWP's long-term water supply contracts, contractors may receive additional water deliveries only under the following specific conditions:

- Such deliveries do not interfere with SWP Table A allocations and SWP operations;
- Excess water is available in the Delta;
- Capacity is not being used for SWP purposes or scheduled SWP deliveries; and
- Contractors can use the SWP Article 21 water directly or can store it in their own system (i.e., the water cannot be stored in the SWP system).

The demand for SWP Article 21 water by SWP contractors is assumed to vary depending on the month and weather conditions (i.e., amounts of precipitation and runoff). For the purposes of this discussion of SWP Article 21 water demands, a Kern wet year is defined as a year when the annual Kern River flow is projected to be greater than 1,500 taf. Kern River inflows are important because they are a major component of

the local water supply for Kern County Water Agency (KCWA), which is the second largest SWP contractor and possesses significant local groundwater recharge capability. During Kern wet years, KCWA uses more Kern River flows to recharge its groundwater storage and reduce its demand for Article 21 water.

As shown in Figure 6-1, existing demands for SWP Article 21 water estimated for this 2015 Report are assumed to be high during the spring and late fall in non–Kern wet years (214 taf/month) because the contractors cannot rely as heavily on the Kern River flows to recharge their groundwater storage. Demand for Article 21 water is also high during the winter months of December through March in all year types (202 taf in Kern wet years and 414 taf in non–Kern wet years). Demands are assumed to be very low (2 taf/month) from April through November of Kern wet years (because high Kern River flows provide groundwater recharge water) and from July through October of Kern dry years.

These demand patterns for SWP Article 21 water are identical to what was presented in the 2013 Report for existing conditions.

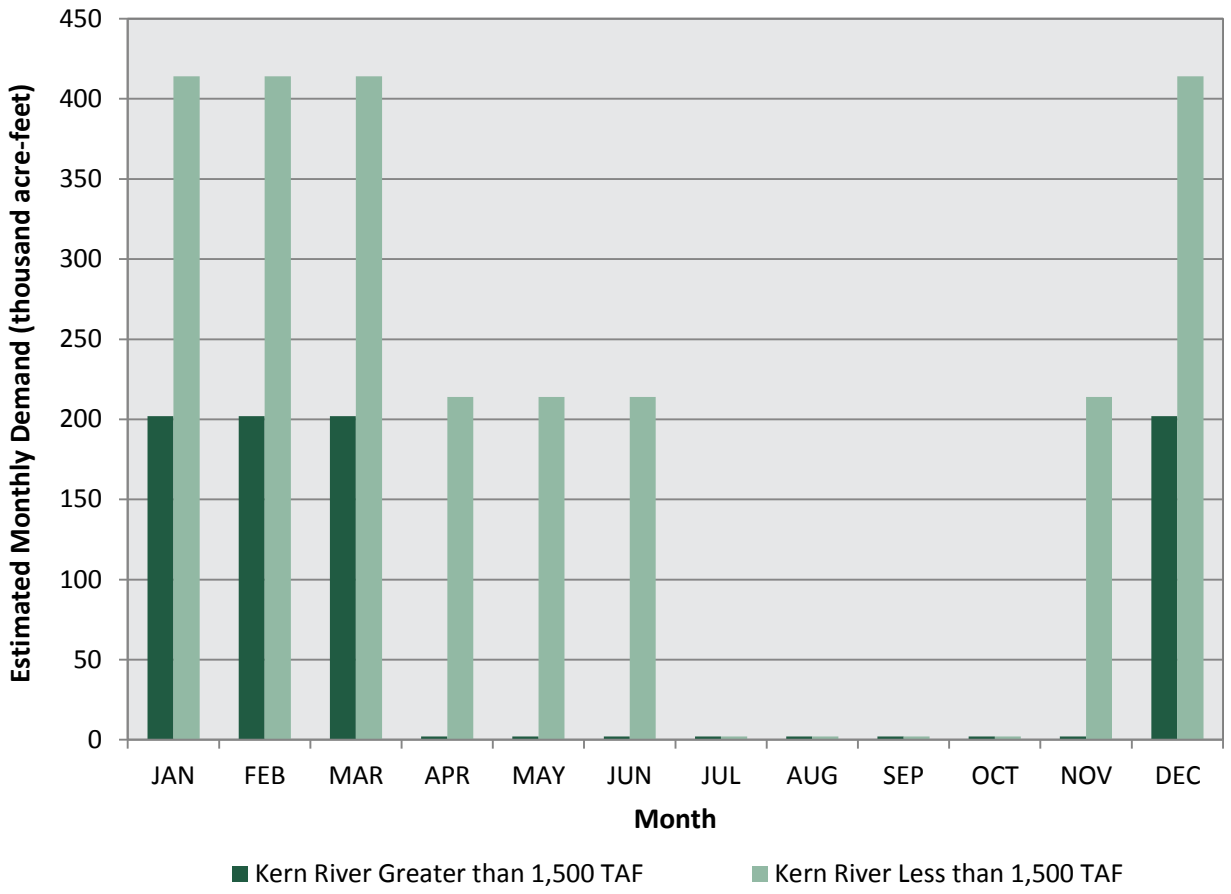
Estimates of SWP Table A Water Deliveries

Table 6-2 presents the annual average, maximum, and minimum estimates of SWP Table A deliveries from the Delta for existing conditions, as calculated for the 2013 and 2015 Reports. The average, maximum, and minimum Table A deliveries are relatively close in the 2013 and 2015 Reports. The maximum and minimum values are different primarily due to the similar demand patterns assumed in the two reports.

Table 6-2. Comparison of Estimated Average, Maximum, and Minimum Deliveries of SWP Table A Water (Existing Conditions, in taf/year)

	2013 Report	2015 Report
Average	2,553	2,550
Maximum	3,996	4,055
Minimum	495	454

Assumptions about Table A and Article 21 water demands, along with operations for carryover water, have been updated in the model based on discussions with State Water Contractors staff and DWR's Operations and Control Office.



Note: Values shown are the maximum amount that can be delivered monthly. However, the actual capability of SWP water contractors to take this amount of SWP Article 21 water is not the sum of these maximum monthly values.

Figure 6-1. SWP Article 21 Demands during Non–Kern Wet Years and Kern Wet Years (Existing Conditions)

Figure 6-2 presents the estimated likelihood of delivery of a given amount of SWP Table A water under the existing conditions scenario, as estimated for both the 2013 and 2015 Reports. This figure shows that there is a 74% likelihood (79% with the 2013 Report) that more than 2,000 taf/year of Table A water will be delivered under the current estimates. The distribution of the delivery ranges has also changed since the 2013 Report. For example, Figure 6-2 shows a shift of Table A deliveries from the 2,500–3,000 taf/year range to the 3,000–3,500 taf/year range.

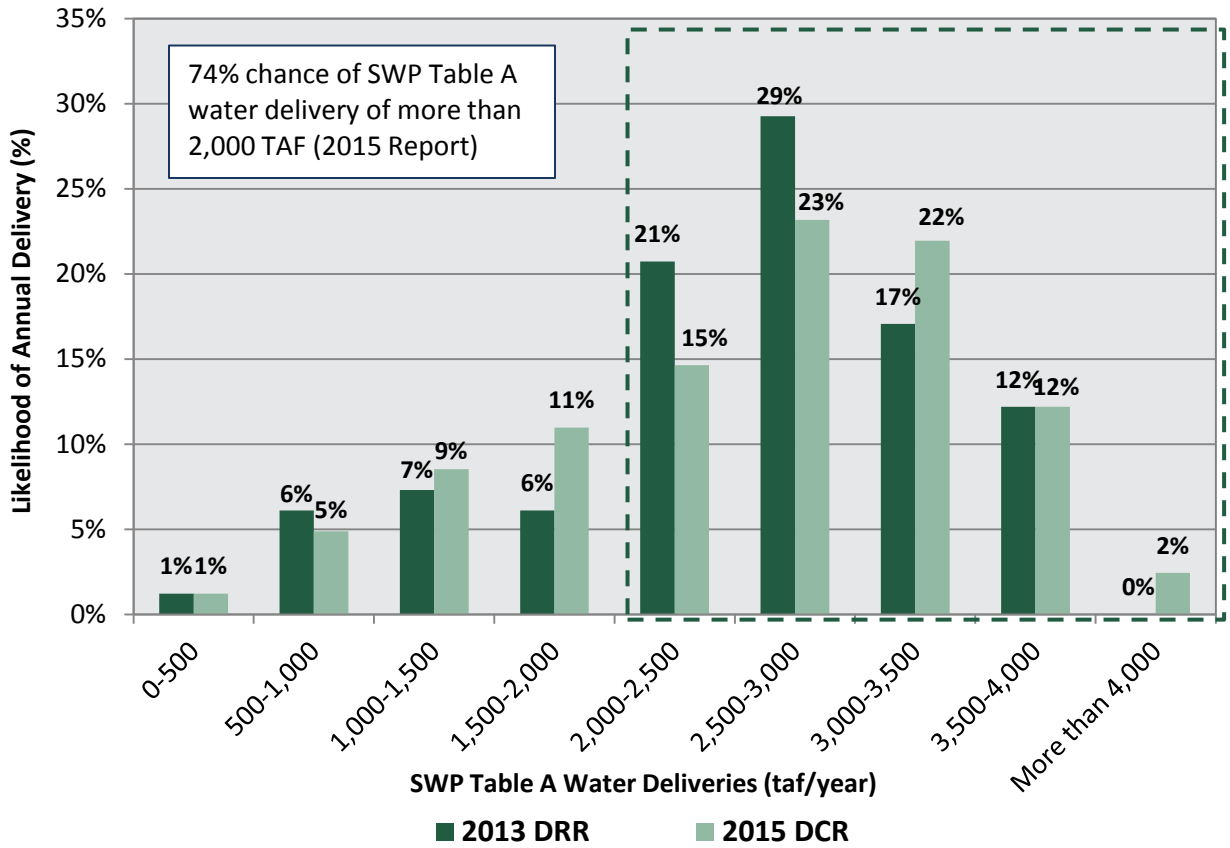


Figure 6-2. Estimated Likelihood of SWP Table A Water Deliveries, by Increments of 500 taf (Existing Conditions)

Wet-Year Deliveries of SWP Table A Water

Table 6-3 and Figure 6-3 present estimates of SWP Table A water deliveries under existing conditions during possible wet conditions and compares them with corresponding delivery estimates calculated for the 2013 Report. Wet periods for 2015 are analyzed using historical precipitation and runoff patterns from 1922–2003 as a reference, while accounting for existing 2015 conditions (e.g., land use, water infrastructure). For reference, the wettest single year on record was 1983.

The results of modeling existing conditions over historical wet years indicate that SWP Table A water deliveries during wet periods can be estimated to range between yearly averages of 4,055 to 3,123 taf.

Table 6-3 shows that the 2015 deliveries of SWP Table A water increased in wet periods (in comparison to the 2013 Report).

Table 6-3. Estimated Average and Wet-Period Deliveries of SWP Table A Water (Existing Conditions, in taf/year) and Percent of Maximum SWP Table A Amount, 4,132 taf/year

	Long-term Average (1921–2003)		Single Wet Year (1983)		Wet Periods							
					2 Years (1982–1983)		4 Years (1980–1983)		6 Years (1978–1983)		10 Years (1978–1987)	
2013 Report	2,553	62%	3,996	97%	3,880	94%	3,501	85%	3,361	81%	3,086	75%
2015 Report	2,550	62%	4,055	98%	3,946	95%	3,558	86%	3,414	83%	3,123	76%

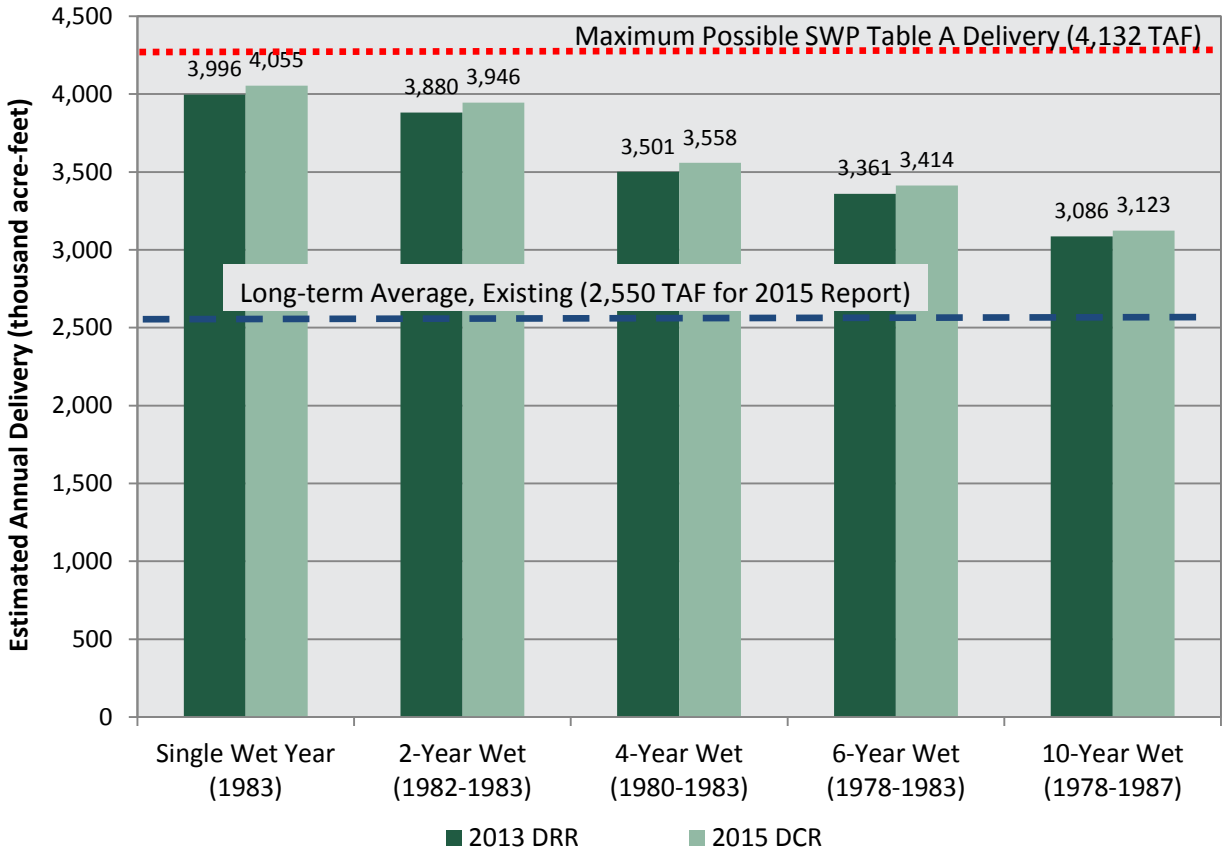


Figure 6-3. Estimated Wet-Period SWP Table A Water Deliveries (Existing Conditions)

Dry-Year Deliveries of SWP Table A Water

Table 6-4 and Figure 6-4 display estimates of existing-conditions deliveries of SWP Table A water during possible drought conditions and compares them with the corresponding delivery estimates calculated for the 2013 Report. Droughts are analyzed using the historical drought-period precipitation and runoff patterns from 1922 through 2003 as a reference, although existing 2015 conditions (e.g., land use, water infrastructure) are also accounted for in the modeling. For reference, the worst multiyear

drought on record was the 1929–1934 drought, although the brief drought of 1976–1977 was more intensely dry.

The results of modeling existing conditions under historical drought scenarios indicate that SWP Table A water deliveries during dry years can be estimated to range between yearly averages of 454 and 1,356 taf.

On average, the dry-period deliveries of Table A water are higher in this 2015 Report than in the 2013 Report because of model refinements (discussed in detail in Appendix B).

Table 6-4. Estimated Average and Dry-Period Deliveries of SWP Table A Water (Existing Conditions, in taf/year) and Percent of Maximum SWP Table A Amount, 4,132 taf/year

	Long-term Average (1921–2003)		Single Dry Year (1977)		Dry Periods							
					2-Year Drought (1976–1977)		4-Year Drought (1931–1934)		6-Year Drought (1987–1992)		6-Year Drought (1929–1934)	
2013 Report	2,553	62%	495	12%	1,269	31%	1,263	31%	1,176	28%	1,260	30%
2015 Report	2,550	62%	454	11%	1,165	28%	1,356	33%	1,182	29%	1,349	33%

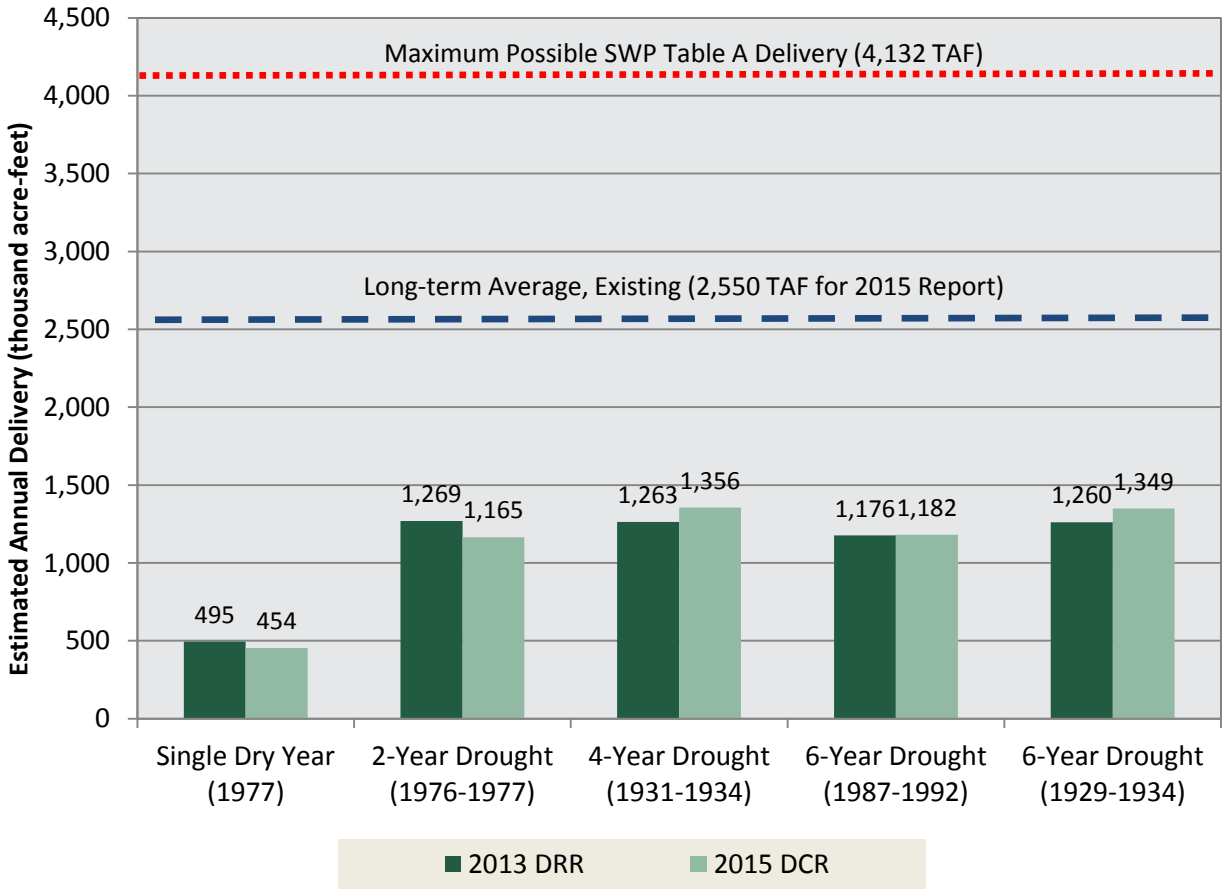


Figure 6-4. Estimated Dry-Period SWP Table A Water Deliveries (Existing Conditions)

Estimates of SWP Article 21 Water Deliveries

SWP water delivery is a combination of deliveries of Table A water and Article 21 water. Some SWP contractors store Article 21 water locally when extra water and capacity are available beyond that needed by normal SWP operations. Deliveries of SWP Article 21 water vary not only by year, but also by month. The estimated range of monthly deliveries of SWP Article 21 water is displayed in Figure 6-5. In May through October, essentially no Article 21 water is estimated to be delivered. In the late fall and winter (November through April), maximum monthly deliveries range from 82 to 339 taf/month.

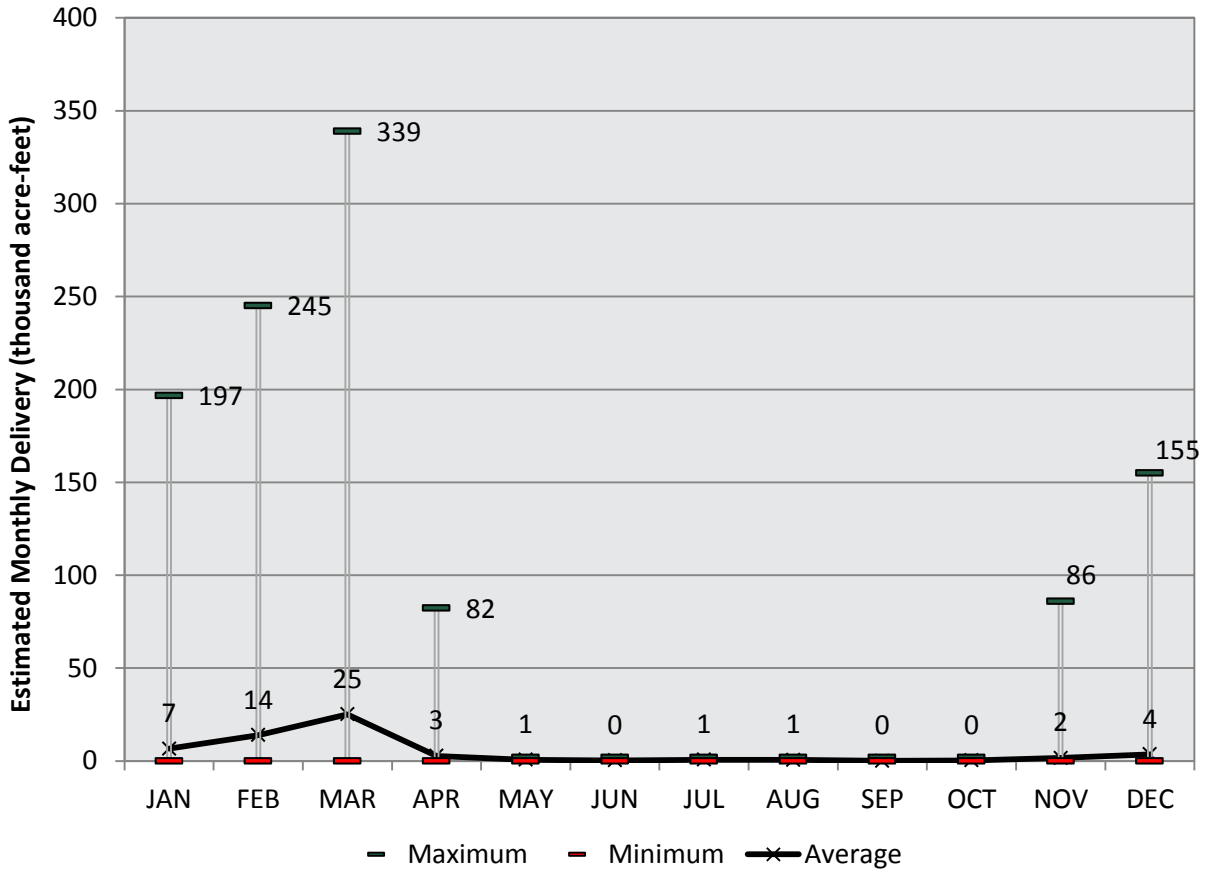


Figure 6-5. Estimated Range of Monthly Deliveries of SWP Article 21 Water (Existing Conditions)

The estimated likelihood that a given amount of SWP Article 21 water will be delivered is presented in Figure 6-6.

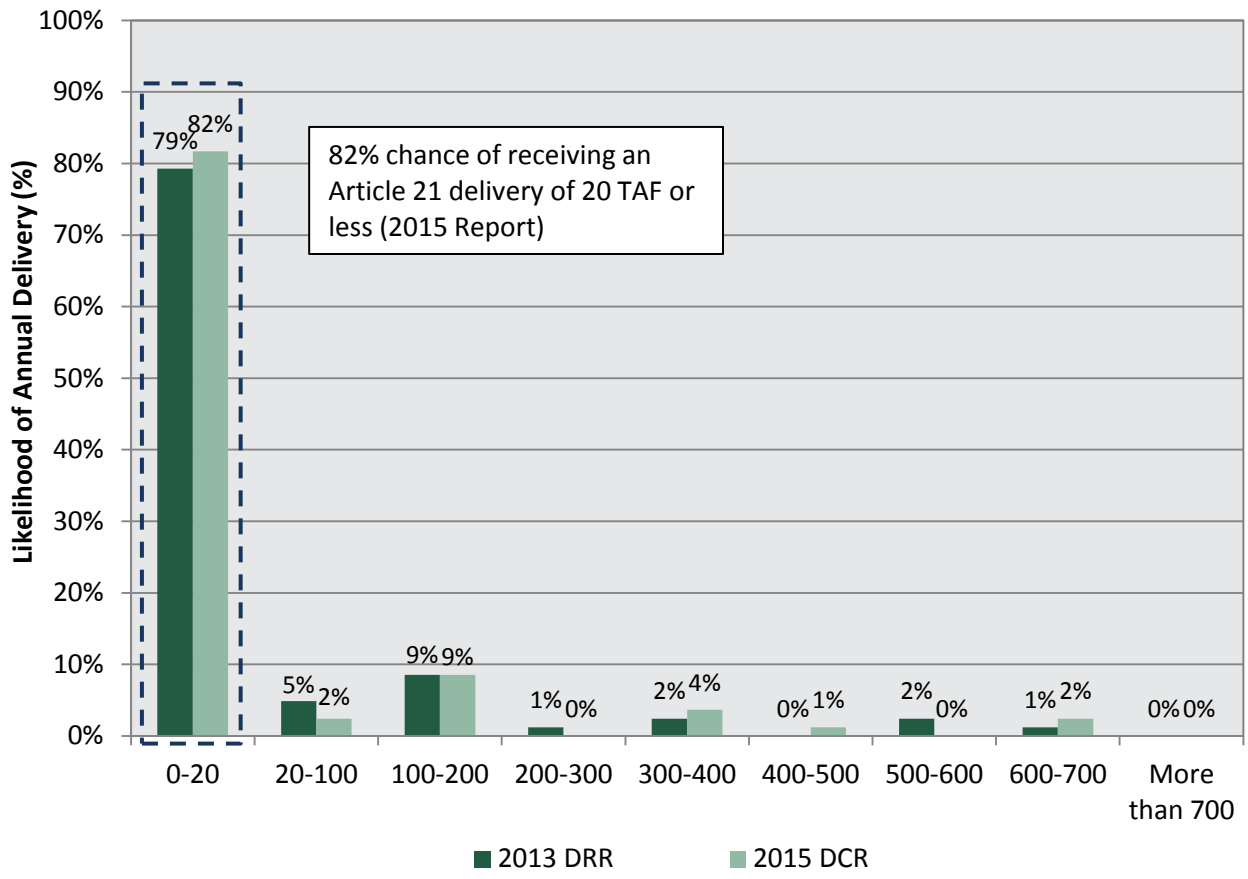


Figure 6-6. Estimated Likelihood of Annual Deliveries of SWP Article 21 Water (Existing Conditions)

Wet-Year Deliveries of SWP Article 21 Water

Table 6-5 shows the estimates of deliveries of SWP Article 21 water during wet periods under existing conditions. Estimated deliveries in wet years are approximately 1.7 to 5.6 times larger than the average existing-conditions delivery of SWP Article 21 water.

In general, the wet-period Article 21 deliveries in this 2015 Report are lower than in the 2013 Report.

Table 6-5. Estimated Average and Wet-Period Deliveries of SWP Article 21 Water (Existing Conditions, in taf/year)

	Long-term Average (1921–2003)	Single Wet Year (1983)	Wet Periods			
			2 Years (1982–1983)	4 Years (1980–1983)	6 Years (1978–1983)	10 Years (1978–1987)
2013 Report	58	333	265	196	135	152
2015 Report	56	316	204	134	93	134

Dry-Year Deliveries of SWP Article 21 Water

Although deliveries of SWP Article 21 water are smaller during dry years than during wet ones, opportunities exist to deliver SWP Article 21 water during multiyear drought periods. As modeled, deliveries in dry years are often small (less than 5 taf); however, longer drought periods can include several years that support Article 21 deliveries. Annual average Article 21 estimates for drought periods of 4 and 6 years vary greatly and can approach a significant fraction of the long-term average annual estimate, as shown in Table 6-6.

Table 6-6. Estimated Average and Dry-Period Deliveries of SWP Article 21 Water (Existing Conditions, in taf/year)

	Long-term Average (1921–2003)	Single Dry Year (1977)	Wet Periods			
			2-Year Drought (1976–1977)	4-Year Drought (1931–1934)	6-Year Drought (1987–1992)	6-Year Drought (1929–1934)
2013 Report	58	10	13	46	11	35
2015 Report	56	8	12	41	13	31

Section 7
Historical SWP Delivery Tables for 2005–2014

The State Water Project (SWP) contracts define several types of SWP water available for delivery to contractors under specific circumstances: Table A water, Article 21 water, turnback pool water, and carryover water. Many SWP contractors frequently use Article 21, turnback pool, and carryover water to increase or decrease the amount of water available to them under SWP Table A.

The Sacramento River Index, previously referred to as the "4 River Index" or "4 Basin Index," is the sum of the unimpaired runoff of four rivers: the Sacramento River above Bend Bridge near Red Bluff, Feather River inflow to Lake Oroville Reservoir, Yuba River at Smartville, and American River inflow to Folsom Lake. The five water year types used in the Sacramento River Index are as follows:

Table 7-1. Water year types used in the Sacramento River Index

Sacramento River Index	Water Year Type
1	Wet
2	Above Normal
3	Below Normal
4	Dry
5	Critical

Tables 7-2 through 7-11 list annual historical deliveries by SWP water type for each contractor for 2005 through 2014. Similar delivery tables are presented for years 2003–2012 in the *State Water Project Delivery Reliability Report 2013.* Any differences in values presented in this 2015 report and those in the 2013 report are due to reclassification of deliveries since the production of the 2013 report.

Table 7–2. Historical State Water Project Deliveries, Calendar Year 2005						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	527	–	–	–	527
	Plumas County FCWCD	–	–	–	–	–
	Yuba City	1,894	–	–	–	1,894
	Subtotal	**2,421**	**–**	**–**	**–**	**2,421**
North Bay Area	Napa County FCWCD	5,322	606	1,741	–	7,669
	Solano County WA	24,515	10,421	83	–	35,019
	Subtotal	**29,837**	**11,027**	**1,824**	**–**	**42,688**
South Bay Area	Alameda County FCWCD, Zone 7	38,388	–	7,849	275	46,512
	Alameda County WD	36,469	846	6,341	943	44,599
	Santa Clara Valley WD	89,476	6,298	12,133	342	108,249
	Subtotal	**164,333**	**7,144**	**26,323**	**1,560**	**199,360**
San Joaquin Valley Area	Dudley Ridge WD	51,609	28,197	821	1,286	81,913
	Empire West Side ID	1,448	1,799	587	–	3,834
	Kern County WA	950,644	453,078	11,611	22,397	1,437,730
	Kings County	8,100	11,504	–	202	19,806
	Oak Flat WD	4,067	–	–	127	4,194
	Tulare Lake Basin WSD	86,604	47,267	3,973	2,158	140,002
	Subtotal	**1,102,472**	**541,845**	**16,992**	**26,170**	**1,687,479**
Central Coastal Area	San Luis Obispo County FCWCD	4,006	245	–	–	4,251
	Santa Barbara County FCWCD	22,981	–	–	155	23,136
	Subtotal	**26,987**	**245**	**–**	**155**	**27,387**
Southern California Area	Antelope Valley–East Kern WA	-	–	-	–	-
	Castaic Lake WA	54,303	2,451	2,702	–	59,456
	Coachella Valley WD	26,984	–	12,819	2,716	42,519
	Crestline–Lake Arrowhead WA	807	–	–	–	807
	Desert WA	33,168	–	14,799	1,122	49,089
	Littlerock Creek ID	–	–	–	–	–
	Metropolitan WD of Southern California	1,247,183	168,300	128,140	6,530	1,550,153
	Mojave WA	10,360	–	1,201	–	11,561
	Palmdale WD	10,174	–	1,538	–	11,712
	San Bernardino Valley MWD	31,205	56	282	–	31,543
	San Gabriel Valley MWD	10,500	–	–	–	10,500
	San Gorgonio Pass WA	655	15	–	22	692
	Ventura County WPD	1,665	–	–	–	1,665
	Subtotal	**1,427,004**	**170,822**	**161,481**	**10,390**	**1,769,697**
TOTAL SWP DELIVERIES		**2,753,054**	**731,083**	**206,620**	**38,275**	**3,729,032**

Table 7–3. Historical State Water Project Deliveries, Calendar Year 2006						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	468	–	–	–	468
	Plumas County FCWCD	–	–	–	–	–
	Yuba City	4,148	1,194	–	–	5,342
	Subtotal	**4,616**	**1,194**	**–**	**–**	**5,810**
North Bay Area	Napa County FCWCD	7,317	300	172	–	7,789
	Solano County WA	12,070	18,195	390	–	30,655
	Subtotal	**19,387**	**18,495**	**562**	**–**	**38,444**
South Bay Area	Alameda County FCWCD, Zone 7	50,784	–	2,252	491	53,527
	Alameda County WD	39,570	1,922	1,331	256	43,079
	Santa Clara Valley WD	47,344	26,769	524	–	74,637
	Subtotal	**137,698**	**28,691**	**4,107**	**747**	**171,243**
San Joaquin Valley Area	Dudley Ridge WD	55,343	18,429	–	1,068	74,840
	Empire West Side ID	1,500	1,124	658	–	3,282
	Kern County WA	1,047,312	247,914	9,179	18,610	1,323,015
	Kings County	8,991	366	–	173	9,530
	Oak Flat WD	4,118	–	17	107	4,242
	Tulare Lake Basin WSD	48,361	58,059	–	1,787	108,207
	Subtotal	**1,165,625**	**325,892**	**9,854**	**21,745**	**1,523,116**
Central Coastal Area	San Luis Obispo County FCWCD	3,382	827	–	–	4,209
	Santa Barbara County FCWCD	19,255	4,020	–	–	23,275
	Subtotal	**22,637**	**4,847**	**–**	**–**	**27,484**
Southern California Area	Antelope Valley–East Kern WA	-	–	-	–	-
	Castaic Lake WA	56,758	2,089	3,905	–	62,752
	Coachella Valley WD	121,100	–	–	–	121,100
	Crestline–Lake Arrowhead WA	641	–	–	–	641
	Desert WA	50,000	–	–	–	50,000
	Littlerock Creek ID	–	–	–	–	–
	Metropolitan WD of Southern California	1,103,538	238,478	136,424	11,638	1,490,078
	Mojave WA	32,496	–	1,518	–	34,014
	Palmdale WD	10,374	1,653	335	130	12,492
	San Bernardino Valley MWD	31,902	–	3,427	–	35,329
	San Gabriel Valley MWD	13,524	–	–	–	13,524
	San Gorgonio Pass WA	4,278	–	–	–	4,278
	Ventura County WPD	1,850	–	–	–	1,850
	Subtotal	**1,426,461**	**242,220**	**145,609**	**11,768**	**1,826,058**
TOTAL SWP DELIVERIES		**2,776,424**	**621,339**	**160,132**	**34,260**	**3,592,155**

Table 7–4. Historical State Water Project Deliveries, Calendar Year 2007						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	720	–	–	–	720
	Plumas County FCWCD	–	–	–	–	–
	Yuba City	2,327	–	–	–	2,327
	Subtotal	**3,047**	**–**	**–**	**–**	**3,047**
North Bay Area	Napa County FCWCD	6,362	3,597	998	–	10,957
	Solano County WA	14,892	8,217	1,822	–	24,931
	Subtotal	**21,254**	**11,814**	**2,820**	**–**	**35,888**
South Bay Area	Alameda County FCWCD, Zone 7	32,972	912	2,895	378	37,157
	Alameda County WD	16,541	550	2,103	197	19,391
	Santa Clara Valley WD	38,812	4,840	8,161	469	52,282
	Subtotal	**88,325**	**6,302**	**13,159**	**1,044**	**108,830**
San Joaquin Valley Area	Dudley Ridge WD	28,457	8,953	2,000	269	39,679
	Empire West Side ID	397	1,172	515	–	2,084
	Kern County WA	666,882	99,861	24,009	4,683	795,435
	Kings County	4,924	474	305	43	5,746
	Oak Flat WD	3,420	41	69	27	3,557
	Tulare Lake Basin WSD	57,272	12,902	16,459	450	87,083
	Subtotal	**761,352**	**123,403**	**43,357**	**5,472**	**933,584**
Central Coastal Area	San Luis Obispo County FCWCD	3,752	24	–	–	3,776
	Santa Barbara County FCWCD	24,760	1,070	1,390	–	27,220
	Subtotal	**28,512**	**1,094**	**1,390**	**–**	**30,996**
Southern California Area	Antelope Valley–East Kern WA	-	–	-	–	-
	Castaic Lake WA	44,974	–	4,216	–	49,190
	Coachella Valley WD	72,660	–	–	568	73,228
	Crestline–Lake Arrowhead WA	1,768	–	–	–	1,768
	Desert WA	30,000	–	–	234	30,234
	Littlerock Creek ID	1,380	–	–	–	1,380
	Metropolitan WD of Southern California	1,146,900	166,517	28,098	8,962	1,350,477
	Mojave WA	45,372	–	737	–	46,109
	Palmdale WD	12,780	843	985	100	14,708
	San Bernardino Valley MWD	57,116	–	–	–	57,116
	San Gabriel Valley MWD	10,000	–	–	–	10,000
	San Gorgonio Pass WA	3,935	–	–	–	3,935
	Ventura County WPD	3,000	–	–	–	3,000
	Subtotal	**1,429,885**	**167,360**	**34,036**	**9,864**	**1,641,145**
TOTAL SWP DELIVERIES		**2,332,375**	**309,973**	**94,762**	**16,380**	**2,753,490**

Table 7–5. Historical State Water Project Deliveries, Calendar Year 2008						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	9,436	–	–	–	9,436
	Plumas County FCWCD	243	–	–	–	243
	Yuba City	1,923	–	–	–	1,923
	Subtotal	**11,602**	**–**	**–**	**–**	**11,602**
North Bay Area	Napa County FCWCD	3,636	1,219	7,363	21	12,239
	Solano County WA	10,436	1,510	12,389	–	24,335
	Subtotal	**14,072**	**2,729**	**19,752**	**21**	**36,574**
South Bay Area	Alameda County FCWCD, Zone 7	13,633	–	15,400	–	29,033
	Alameda County WD	4,206	–	8,659	37	12,902
	Santa Clara Valley WD	11,133	–	21,188	88	32,409
	Subtotal	**28,972**	**–**	**45,247**	**125**	**74,344**
San Joaquin Valley Area	Dudley Ridge WD	12,260	–	5,949	51	18,260
	Empire West Side ID	–	–	915	–	915
	Kern County WA	302,718	–	17,196	1,008	320,922
	Kings County	3,187	–	541	8	3,736
	Oak Flat WD	1,929	–	–	5	1,934
	Tulare Lake Basin WSD	32,302	–	281	85	32,668
	Subtotal	**352,396**	**–**	**24,882**	**1,157**	**378,435**
Central Coastal Area	San Luis Obispo County FCWCD	8,512	–	–	–	8,512
	Santa Barbara County FCWCD	11,311	–	2,532	40	13,883
	Subtotal	**19,823**	**–**	**2,532**	**40**	**22,395**
Southern California Area	Antelope Valley–East Kern WA	-	–	-	-	-
	Castaic Lake WA	18,710	–	12,146	–	30,856
	Coachella Valley WD	42,385	–	–	107	42,492
	Crestline–Lake Arrowhead WA	1,159	–	689	–	1,848
	Desert WA	17,500	–	–	44	17,544
	Littlerock Creek ID	805	–	–	–	805
	Metropolitan WD of Southern California	658,304	–	–	1,689	659,993
	Mojave WA	26,288	–	108	–	26,396
	Palmdale WD	4,226	–	–	19	4,245
	San Bernardino Valley MWD	26,562	–	4,444	–	31,006
	San Gabriel Valley MWD	10,080	–	–	–	10,080
	San Gorgonio Pass WA	5,419	–	300	–	5,719
	Ventura County WPD	3,798	–	–	–	3,798
	Subtotal	**815,236**	**–**	**17,687**	**1,859**	**834,782**
TOTAL SWP DELIVERIES		**1,242,101**	**2,729**	**110,100**	**3,202**	**1,358,132**

Table 7–6. Historical State Water Project Deliveries, Calendar Year 2009						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	10,206	–	–	–	10,206
	Plumas County FCWCD	200	–	–	–	200
	Yuba City	2,114	–	–	–	2,114
	Subtotal	**12,520**	**–**	**–**	**–**	**12,520**
North Bay Area	Napa County FCWCD	2,723	1,588	4,475	13	8,799
	Solano County WA	7,118	4,444	3,123	–	14,685
	Subtotal	**9,841**	**6,032**	**7,598**	**13**	**23,484**
South Bay Area	Alameda County FCWCD, Zone 7	11,745	–	14,932	–	26,677
	Alameda County WD	5,911	–	10,883	8	16,802
	Santa Clara Valley WD	9,188	–	29,679	54	38,921
	Subtotal	**26,844**	**–**	**55,494**	**62**	**82,400**
San Joaquin Valley Area	Dudley Ridge WD	13,185	–	7,810	32	21,027
	Empire West Side ID	1,034	–	–	–	1,034
	Kern County WA	336,925	–	74,775	621	412,321
	Kings County	3,153	–	70	5	3,228
	Oak Flat WD	1,825	–	66	3	1,894
	Tulare Lake Basin WSD	35,160	–	1,271	52	36,483
	Subtotal	**391,282**	**–**	**83,992**	**713**	**475,987**
Central Coastal Area	San Luis Obispo County FCWCD	9,723	–	–	–	9,723
	Santa Barbara County FCWCD	4,961	–	6,384	25	11,370
	Subtotal	**14,684**	**–**	**6,384**	**25**	**21,093**
Southern California Area	Antelope Valley–East Kern WA	-	–	-	-	-
	Castaic Lake WA	14,858	–	9,529	52	24,439
	Coachella Valley WD	40,845	–	–	66	40,911
	Crestline–Lake Arrowhead WA	1,000	–	893	–	1,893
	Desert WA	16,865	–	–	27	16,892
	Littlerock Creek ID	920	–	–	–	920
	Metropolitan WD of Southern California	696,817	–	10,721	1,042	708,580
	Mojave WA	30,300	–	242	–	30,542
	Palmdale WD	2,470	–	3,229	–	5,699
	San Bernardino Valley MWD	26,085	–	9,348	–	35,433
	San Gabriel Valley MWD	11,516	–	–	–	11,516
	San Gorgonio Pass WA	5,312	–	480	–	5,792
	Ventura County WPD	3,890	–	–	–	3,890
	Subtotal	**850,878**	**–**	**34,442**	**1,187**	**886,507**
TOTAL SWP DELIVERIES		**1,306,049**	**6,032**	**187,910**	**2,000**	**1,501,991**

Table 7–7. Historical State Water Project Deliveries, Calendar Year 2010						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	807	–	–	–	807
	Plumas County FCWCD	243	–	–	–	243
	Yuba City	2,331	–	–	–	2,331
	Subtotal	**3,381**	**–**	**–**	**–**	**3,381**
North Bay Area	Napa County FCWCD	7,275	2,207	3,044	90	12,616
	Solano County WA	13,793	5,298	3,661	–	22,752
	Subtotal	**21,068**	**7,505**	**6,705**	**90**	**35,368**
South Bay Area	Alameda County FCWCD, Zone 7	28,694	–	16,356	249	45,299
	Alameda County WD	11,668	–	14,359	14	26,041
	Santa Clara Valley WD	37,850	–	28,809	34	66,693
	Subtotal	**78,212**	**–**	**59,524**	**297**	**138,033**
San Joaquin Valley Area	Dudley Ridge WD	19,650	–	9,750	156	29,556
	Empire West Side ID	380	–	166	–	546
	Kern County WA	446,168	–	76,232	3,482	525,882
	Kings County	4,094	–	522	29	4,645
	Oak Flat WD	2,412	–	455	18	2,885
	Tulare Lake Basin WSD	39,835	–	3,199	275	43,309
	Subtotal	**512,539**	**–**	**90,324**	**3,960**	**606,823**
Central Coastal Area	San Luis Obispo County FCWCD	3,480	–	277	–	3,757
	Santa Barbara County FCWCD	8,640	–	9,865	140	18,645
	Subtotal	**12,120**	**–**	**10,142**	**140**	**22,402**
Southern California Area	Antelope Valley–East Kern WA	-	–	-	-	-
	Castaic Lake WA	37,054	–	14,501	295	51,850
	Coachella Valley WD	69,175	–	7,595	429	77,199
	Crestline–Lake Arrowhead WA	1,357	–	–	–	1,357
	Desert WA	27,875	–	3,135	173	31,183
	Littlerock Creek ID	1,150	–	–	–	1,150
	Metropolitan WD of Southern California	900,210	–	123,323	5,922	1,029,455
	Mojave WA	41,132	–	20	–	41,152
	Palmdale WD	5,585	–	5,325	59	10,969
	San Bernardino Valley MWD	38,133	–	11,273	–	49,406
	San Gabriel Valley MWD	14,400	–	–	–	14,400
	San Gorgonio Pass WA	5,226	–	1,608	6	6,840
	Ventura County WPD	4,075	–	–	–	4,075
	Subtotal	**1,145,372**	**–**	**166,780**	**6,884**	**1,319,036**
TOTAL SWP DELIVERIES		**1,772,692**	**7,505**	**333,475**	**11,371**	**2,125,043**

Table 7–8. Historical State Water Project Deliveries, Calendar Year 2011						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	1,092	–	–	–	1,092
	Plumas County FCWCD	98	–	–	–	98
	Yuba City	2,297	–	–	–	2,297
	Subtotal	**3,487**	**–**	**–**	**–**	**3,487**
North Bay Area	Napa County FCWCD	9,426	–	1,189	–	10,615
	Solano County WA	9,620	14,739	–	–	24,359
	Subtotal	**19,046**	**14,739**	**1,189**	**–**	**34,974**
South Bay Area	Alameda County FCWCD, Zone 7	39,066	–	11,975	1,319	52,360
	Alameda County WD	24,813	1,959	7,840	506	35,118
	Santa Clara Valley WD	64,538	970	19,803	–	85,311
	Subtotal	**128,417**	**2,929**	**39,618**	**1,825**	**172,789**
San Joaquin Valley Area	Dudley Ridge WD	40,141	11,666	5,524	823	58,154
	Empire West Side ID	1,626	138	151	–	1,915
	Kern County WA	831,256	201,748	125,661	16,068	1,174,733
	Kings County	5,294	552	558	152	6,556
	Oak Flat WD	2,644	–	71	–	2,715
	Tulare Lake Basin WSD	39,056	6,909	4,626	1,454	52,045
	Subtotal	**920,017**	**221,013**	**136,591**	**18,497**	**1,296,118**
Central Coastal Area	San Luis Obispo County FCWCD	3,340	–	479	–	3,819
	Santa Barbara County FCWCD	29,132	–	6,587	–	35,719
	Subtotal	**32,472**	**–**	**7,066**	**–**	**39,538**
Southern California Area	Antelope Valley–East Kern WA	-	-	-	–	-
	Castaic Lake WA	34,067	400	9,332	–	43,799
	Coachella Valley WD	88,017	–	–	2,262	90,279
	Crestline–Lake Arrowhead WA	423	–	51	–	474
	Desert WA	36,139	–	–	240	36,379
	Littlerock Creek ID	–	–	–	–	–
	Metropolitan WD of Southern California	1,286,935	181,610	42,688	8,237	1,519,470
	Mojave WA	4,831	–	268	–	5,099
	Palmdale WD	12,294	–	5,019	–	17,313
	San Bernardino Valley MWD	30,916	–	7,210	–	38,126
	San Gabriel Valley MWD	23,040	–	–	–	23,040
	San Gorgonio Pass WA	8,884	–	1,619	–	10,503
	Ventura County WPD	4,000	–	–	–	4,000
	Subtotal	**1,529,546**	**182,010**	**66,187**	**10,739**	**1,788,482**
TOTAL SWP DELIVERIES		**2,632,985**	**420,691**	**250,651**	**31,061**	**3,335,388**

Table 7–9. Historical State Water Project Deliveries, Calendar Year 2012						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	17,875	–	–	–	17,875
	Plumas County FCWCD	79	–	–	–	79
	Yuba City	2,695	–	–	–	2,695
	Subtotal	**20,649**	**–**	**–**	**–**	**20,649**
North Bay Area	Napa County FCWCD	5,065	–	4,278	64	9,404
	Solano County WA	11,673	-	9,641	–	21,314
	Subtotal	**16,738**	**-**	**13,919**	**64**	**30,721**
South Bay Area	Alameda County FCWCD, Zone 7	32,301	–	21,257	179	53,737
	Alameda County WD	11,951	–	8,445	93	20,489
	Santa Clara Valley WD	34,612	–	16,261	222	51,095
	Subtotal	**78,864**	**–**	**45,963**	**494**	**125,321**
San Joaquin Valley Area	Dudley Ridge WD	17,694	–	–	112	17,806
	Empire West Side ID	1,468	–	774	–	2,242
	Kern County WA	636,663	–	65,331	2,180	704,174
	Kings County	5,337	–	2,001	21	7,359
	Oak Flat WD	2,596	–	612	–	3,208
	Tulare Lake Basin WSD	53,630	–	32,081	197	85,908
	Subtotal	**717,388**	**–**	**100,799**	**2,510**	**820,697**
Central Coastal Area	San Luis Obispo County FCWCD	3,111	–	833	–	3,944
	Santa Barbara County FCWCD	20,874	–	2,543	–	23,417
	Subtotal	**23,985**	**–**	**3,376**	**–**	**27,361**
Southern California Area	Antelope Valley–East Kern WA	5,000	–	-	–	5,000
	Castaic Lake WA	42,707	–	11,350	–	54,057
	Coachella Valley WD	89,928	–	22,663	307	112,898
	Crestline–Lake Arrowhead WA	624	–	–	–	624
	Desert WA	36,238	–	8,461	124	44,823
	Littlerock Creek ID	–	–	–	–	–
	Metropolitan WD of Southern California	1,086,084	–	75,484	4,241	1,165,809
	Mojave WA	4,672	–	6,572	–	11,244
	Palmdale WD	9,959	–	4,736	–	14,695
	San Bernardino Valley MWD	65,102	–	47,870	–	112,972
	San Gabriel Valley MWD	18,720	–	–	–	18,720
	San Gorgonio Pass WA	5,968	–	4,956	–	10,924
	Ventura County WPD	4,353	–	–	–	4,353
	Subtotal	**1,369,355**	**–**	**182,092**	**4,672**	**1,556,119**
TOTAL SWP DELIVERIES		**2,226,979**	**-**	**346,149**	**7,740**	**2,580,868**

Table 7–10. Historical State Water Project Deliveries, Calendar Year 2013						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	9,233	–	–	–	9,233
	Plumas County FCWCD	366	–	–	–	366
	Yuba City	3,360	–	1,490	–	4,850
	Subtotal	**12,959**	–	**1,490**	–	**14,449**
North Bay Area	Napa County FCWCD	2,963	-	9,075	-	11,978
	Solano County WA	5,355	-	17,805	–	26,000
	Subtotal	**8,318**	-	**26,880**	-	**35,198**
South Bay Area	Alameda County FCWCD, Zone 7	14,059	–	16,242	2,596	32,897
	Alameda County WD	4,241	–	13,324	50	17,615
	Santa Clara Valley WD	9,353	-	-	10,749	20,102
	Subtotal	**27,653**	-	**29,566**	**13,395**	**70,614**
San Joaquin Valley Area	Dudley Ridge WD	6,113	-	9,951	5,412	21,476
	Empire West Side ID	1,004	-	482	16	1,502
	Kern County WA	351,013	-	86,689	37,005	474,707
	Kings County	2,851	-	591	1,000	4,442
	Oak Flat WD	583	-	2,200	7	2,790
	Tulare Lake Basin WSD	27,803	-	4,172	8,400	40,372
	Subtotal	**389,367**	-	**104,082**	**51,840**	**545,289**
Central Coastal Area	San Luis Obispo County FCWCD	1,178	-	2,503	–	3,681
	Santa Barbara County FCWCD	3,252	-	9,733	-	12,985
	Subtotal	**4,430**	-	**12,236**	-	**16,666**
Southern California Area	Antelope Valley–East Kern WA	-	–	-	-	-
	Castaic Lake WA	33,320	-	28,434	-	61,754
	Coachella Valley WD	48,423	-	–	164	48,587
	Crestline–Lake Arrowhead WA	1,368	–	2,000	–	3,368
	Desert WA	19,513	-	–	66	19,579
	Littlerock Creek ID	–	–	–	–	–
	Metropolitan WD of Southern California	619,863	-	106,288	32,267	758,418
	Mojave WA	25,294	–	2,852	–	28,146
	Palmdale WD	4,559	–	3,122	–	7,681
	San Bernardino Valley MWD	26,159	-	4,426	–	30,585
	San Gabriel Valley MWD	10,080	-	–	–	10,080
	San Gorgonio Pass WA	2,339	–	3,729	1,000	7,068
	Ventura County WPD	2,890	–	–	–	2,890
	Subtotal	**793,808**	-	**150,851**	**33,497**	**978,156**
TOTAL SWP DELIVERIES		**1,236,535**	-	**325,105**	**98,732**	**1,660,372**

Table 7–11. Historical State Water Project Deliveries, Calendar Year 2014						
Contractor Location	SWP Contractor	SWP Water Type Delivered (acre–feet)				Total SWP Deliveries (acre–feet)
		Table A	Article 21	Carryover	Turnback	
Feather River Area	Butte County	2,631	–	–	–	2,631
	Plumas County FCWCD	251	–	–	–	251
	Yuba City	96	–	4,085	–	4,181
	Subtotal	**2,978**	**–**	**4,085**	**–**	**7,063**
North Bay Area	Napa County FCWCD	41	1,279	9,453	-	10,773
	Solano County WA	450	-	9,231	–	9,681
	Subtotal	**491**	**1,279**	**18,684**	**-**	**20,454**
South Bay Area	Alameda County FCWCD, Zone 7	1,367	–	17,657	–	19,024
	Alameda County WD	-	–	10,326	-	10,326
	Santa Clara Valley WD	-	-	12,150	79	12,229
	Subtotal	**1,367**	**-**	**40,133**	**79**	**41,579**
San Joaquin Valley Area	Dudley Ridge WD	1,783	-	16,718	40	18,541
	Empire West Side ID	104	-	349	–	453
	Kern County WA	3,661	-	34,444	631	38,736
	Kings County	112	-	360	-	472
	Oak Flat WD	-	–	1,052	-	1,052
	Tulare Lake Basin WSD	3,942	-	3,181	-	7,123
	Subtotal	**9,602**	**-**	**56,104**	**671**	**66,377**
Central Coastal Area	San Luis Obispo County FCWCD	379	-	2,693	–	3,072
	Santa Barbara County FCWCD	399	–	10,791	-	11,190
	Subtotal	**778**	**-**	**13,484**	**-**	**14,262**
Southern California Area	Antelope Valley–East Kern WA	-	–	-	–	-
	Castaic Lake WA	451	-	7,799	–	8,250
	Coachella Valley WD	6,918	–	-	-	6,918
	Crestline–Lake Arrowhead WA	83	–	658	–	741
	Desert WA	2,788	–	-	-	2,788
	Littlerock Creek ID	115	–	–	–	115
	Metropolitan WD of Southern California	61,159	-	223,358	-	284,517
	Mojave WA	3,347	–	2,228	–	5,575
	Palmdale WD	1,061	–	3,670	–	4,731
	San Bernardino Valley MWD	-	–	6,941	–	6,941
	San Gabriel Valley MWD	1,434	–	–	–	1,434
	San Gorgonio Pass WA	603	–	4,616	–	5,219
	Ventura County WPD	93	–	–	–	93
	Subtotal	**78,052**	**-**	**249,270**	**-**	**327,322**
	TOTAL SWP DELIVERIES	**93,268**	**1279**	**381,760**	**750**	**477,057**