

# Chapter 6

## Water Shortage Contingency Plan

This Water Shortage Contingency Plan (WSCP) addresses the plan preparation requirements in Water Code Section 10632 of the Urban Water Management Planning Act (The Act). The WSCP is incorporated into the 2020 Urban Water Management Plan (UWMP) and used by Mojave Water Agency (MWA) to respond to water shortage contingencies in the MWA service area as they may arise.

MWA provides wholesale water to retail agencies within its service area. The retail agencies are the direct purveyor of water service to retail customers. As such, MWA relies on a coordinated approach to water shortage management with the retail water agencies within its service area. MWA's efforts in Water Shortage Contingency Planning are focused on maintaining and augmenting groundwater supplies in order to mitigate against extended drought conditions and catastrophic water outages. And because MWA is a wholesale urban water supplier, elements that pertain only to retail water suppliers are not addressed in this WSCP.<sup>60</sup> This chapter will address all aspects of MWA's WSCP actions and address specific outage scenarios that MWA's water management actions alleviate.

Section 10631 of the Urban Water Management Plan Act lists the following required elements for wholesale water purveyors:

1. An analysis of water supply reliability
2. Procedures for conducting an annual water supply and demand assessment
3. Six standard water shortage levels corresponding to progressive ranges of up to 10, 20, 30, 40, and 50 percent shortages and greater than 50 percent shortage and the shortage response actions that align with the defined shortage levels.
4. Communication protocols and procedures
5. A description of legal authorities
6. A description of financial consequences
7. Reevaluation and improvement procedures
8. Special Water Feature Distinction (10632(b))
9. Plan Adoption, Submittal, and Availability

<sup>60</sup> Water Code sections 10632(a)(6), 10632(a)(8)(C), and 10632(a)(9) apply exclusively to retail urban purveyors.

This WSCP is a stand-alone plan that may be adopted independently from the UWMP and may be amended or refined and readopted as needed over coming months and years independently from the UWMP.

## 6.1 Water Supply Reliability Analysis

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Mojave Water Agency is a special act district created in 1960 under Chapter 97 of the California Water Code Water Appendices. MWA service area covers 4,900 square miles in San Bernardino County and delivers water for regional groundwater management that is used by numerous retail water purveyors, ten of which are required to prepare an UWMP under the Urban Water Management Planning Act. Regional water supplies consist of naturally recharged groundwater, return flows, wastewater imports and imported State Water Project supplies. These supplies are discussed in greater detail in Chapter 3.

The water demands in the MWA service area currently serve a population approaching 500,000 people that is expected to grow to nearly 700,000 people by 2065.<sup>61</sup> MWA's service area demand analysis includes both the population assessment and relevant land use information provided by each retail provider. In short, the MWA service area demands are set to increase from 129,645 acre-feet per year in 2020 to over 142,000 acre-feet per year in 2045. Moreover, MWA's regional demands projection for 2065 exceed 150,000 acre-feet. These long-term demands are included in the 2020 UWMP in order to improve long-term water management and planning actions. These demands are discussed in detail in Chapter 4.

MWA has sufficient available regional supplies to meet the regional demands through 2065. These supplies include not only the sources noted above, but also stored water within the SWP system and groundwater storage within the MWA service area. In concert with the supplies noted above, these stored supplies allow MWA to provide reliable water supplies to retail agencies in dry year conditions. Accordingly, as shown in Chapter 5, MWA has reliable water supplies available to meet normal, single dry, and five consecutive dry year water demands through 2065.

## 6.2 Annual Water Supply and Demand Assessment Procedures

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The WSCP describes MWA's procedural methodology for managing shortages and developing its Annual Water Supply and Demand Assessment (Annual Assessment). The Annual Assessment will be submitted to DWR by July 1 each year with the first Annual Assessment due July 1, 2022. The Annual Assessment examines MWA's anticipated water reliability for the current year and one additional dry year to determine what, if any, water shortages stages may be triggered during the required period. The Annual Assessment will be used by MWA decisionmakers to prepare for and initiate implementation of any needed response actions, as well as to inform customers, the general public, interested parties, and local, regional, and state government entities to prepare for such required actions, if necessary.

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<sup>61</sup> *Mojave Water Agency Population Forecast, 2020 Edition*, August 2020, UC Riverside School of Business Center for Economic Forecasting and Development

### 6.2.1 Analytical and Decision-making Processes

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MWA plans to conduct its Annual Assessment according to the following timeline and process:

- By February 1** Initial data collection, analysis, and coordination with retail agencies
- By March 1** Preliminary Draft Annual Assessment subject to internal review
- By April 1** Draft Annual Assessment and results briefing for MWA decision-makers
- By May 1** Approval of Annual Assessment to MWA Decision-makers
- By June 1** Public Release of Annual Assessment and Public Notifications
- By July 1** Submit Annual Assessment to DWR in advance of July 1 deadline

MWA will prepare its Annual Assessment using the following key data and analytical methods:

- Prepare supply estimates for each water source for the analysis period.
- Update unconstrained regional demand and estimate anticipated actual water use for the analysis period.
- Update infrastructure assessment, including estimated water supply production capability on a monthly basis for the analysis period.
- Identify and quantify any locally applicable factors that may influence or disrupt supplies during the analysis period.

For the purposes of conducting the Annual Assessment, MWA’s definition of “dry year” mimics characteristics of 2014-2015 water year.

### 6.2.2 Submittal Procedure

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MWA will submit its Annual Assessment to DWR via email by July 1 each year. At the time of DWR submittal, MWA will also notify all retail water agencies, the public, and other stakeholders concerning the results of the Annual Assessment and where it is available for review.

## 6.3 Six Standard Water Shortage Stages and Shortage Response Actions

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The WSCP requires water suppliers to adopt six water shortage stages, which correspond to progressively severe water shortage conditions (up to 10%, 20%, 30%, 40%, 50%, and greater than 50% percent shortage) as compared to the normal reliability condition. These water shortage stages have been standardized to allow for a consistent regional and statewide approach to conveying the relative severity of water supply shortage conditions. Changes in supply availability will trigger an appropriate water shortage stage. MWA will then implement the response actions as specified below.

The WSCP is required to identify locally appropriate shortage response actions that align with the defined shortage stages and include demand reduction actions, supply augmentation actions, system

operational changes, and mandatory prohibitions against specific water use practices that are in addition to state-mandated prohibitions and appropriate to the local conditions. For each response action the WSCP is to provide an estimate of the extent to which the gap between supplies and demand will be reduced by implementation of the action.

MWA has grouped the actions to be taken during a water shortage condition into six stages, providing flexibility to address water shortages up to and exceeding the 50 percent shortage level condition. The following is an overview of the staged response MWA could follow during a given water shortage condition including sequential Stages (1-6) based on shortage severity, relative supply conditions for each stage, and percent shortage reduction levels. MWA will adopt the six standard water shortage stages for this 2020 WSCP as shown in Table 6-1.

Table 6-1: Shortage Stages and Response Actions

Shortage Stage	Shortage Percentage	Shortage Response	
1	Up to 10%	<ul style="list-style-type: none"> <li>• Access Stored Supplies, as needed</li> <li>• Access Flexible Supplies, as needed</li> <li>• Implement Voluntary Demand Reduction</li> </ul>	<ul style="list-style-type: none"> <li>• 0-100% met by Storage</li> <li>• 0-100% met by Flexible Supplies</li> <li>• 0-10% met by communicating voluntary demand reduction</li> </ul>
2	10%-20%	<ul style="list-style-type: none"> <li>• Access Stored Supplies, as needed</li> <li>• Access Flexible Supplies, as needed</li> <li>• Implement Voluntary Demand Reduction</li> <li>• Reduce R<sup>3</sup> Deliveries</li> </ul>	<ul style="list-style-type: none"> <li>• 0-100% met by Storage</li> <li>• 0-100% met by Flexible Supplies</li> <li>• 0-20% met by communicating voluntary demand reduction</li> <li>• 0-20% through reduced R<sup>3</sup> deliveries</li> </ul>
3	20%-30%	<ul style="list-style-type: none"> <li>• Access Stored Supplies, as needed</li> <li>• Access Flexible Supplies, as needed</li> <li>• Implement Voluntary Demand Reduction</li> <li>• Reduce R<sup>3</sup> Deliveries</li> </ul>	<ul style="list-style-type: none"> <li>• 0-100% met by Storage</li> <li>• 0-100% met by Flexible Supplies</li> <li>• 0-30% met by communicating voluntary demand reduction</li> <li>• 0-30% through reduced R<sup>3</sup> deliveries</li> </ul>
4	30%-40%	<ul style="list-style-type: none"> <li>• Access Stored Supplies, as needed</li> <li>• Access Flexible Supplies, as needed</li> </ul>	<ul style="list-style-type: none"> <li>• 0-100% met by Storage</li> <li>• 0-100% met by Flexible Supplies</li> <li>• 0-30% met by communicating voluntary demand reduction</li> </ul>

		<ul style="list-style-type: none"> <li>• Implement Voluntary Demand Reduction</li> <li>• Reduce R<sup>3</sup> Deliveries</li> </ul>	<ul style="list-style-type: none"> <li>• 0-30% through reduced R<sup>3</sup> deliveries</li> </ul>
5	40%-50%	<ul style="list-style-type: none"> <li>• Access Stored Supplies, as needed</li> <li>• Access Flexible Supplies, as needed</li> <li>• Implement Voluntary Demand Reduction</li> <li>• Reduce R<sup>3</sup> Deliveries</li> </ul>	<ul style="list-style-type: none"> <li>• 0-100% met by Storage</li> <li>• 0-100% met by Flexible Supplies</li> <li>• 0-30% met by communicating voluntary demand reduction</li> <li>• 0-30% through reduced R<sup>3</sup> deliveries</li> </ul>
6	More than 50%	<ul style="list-style-type: none"> <li>• Access Stored Supplies, as needed</li> <li>• Access Flexible Supplies, as needed</li> <li>• Implement Voluntary Demand Reduction</li> <li>• Reduce R<sup>3</sup> Deliveries</li> </ul>	<ul style="list-style-type: none"> <li>• 0-100% met by Storage</li> <li>• 0-100% met by Flexible Supplies</li> <li>• 0-30% met by communicating voluntary demand reduction</li> <li>• 0-30% through reduced R<sup>3</sup> deliveries</li> </ul>

**Stage 1 (up to 10 percent shortage)** – When Stage 1 is implemented, voluntary water conservation is encouraged. The drought situation is explained to the public and governmental bodies. MWA explains the possible subsequent water shortage stages in order to forecast possible future actions for the retail agencies. The activities performed by MWA during this stage include, but are not limited to:

- Implementation of all Voluntary Water Conservation Measures to a level addressing up to 10% water conservation savings.
- Public information campaign consisting of distribution of literature, speaking engagements, website updates, bill inserts, and conversation messages printed in local newspapers.
- Educational programs in area schools.
- Initiating a Conservation Hotline, a toll-free number with trained Conservation Representatives to answer customer questions about conservation and water use efficiency.
- Access stored supplies to address supply deficits, as needed
- Access alternative water supplies to address supply deficits, as needed

**Stage 2 (11 - 20 percent shortage)** – When Stage 2 is implemented, voluntary water conservation is strongly encouraged. MWA coordinates actions with regional retail water purveyors. The drought situation is explained to the public and governmental bodies. MWA explains the possible subsequent water shortage stages in order to forecast possible future actions for the customer base. The activities performed by MWA during this stage include, but are not limited to:

- Implementation of all Voluntary Water Conservation Measures to a level addressing up to 20% water conservation savings.

- Public information campaign consisting of distribution of literature, speaking engagements, website updates, bill inserts, and conversation messages printed in local newspapers.
- Educational programs in area schools.
- Expanding the Conservation Hotline, a toll-free number with trained Conservation Representatives to answer customer questions about conservation and water use efficiency.
- Access stored supplies to address supply deficits, as needed
- Access alternative water supplies to address supply deficits, as needed
- Reduce R<sup>3</sup> deliveries as appropriate with retail agencies

**Stage 3 (21 - 30 percent shortage)** – When Stage 3 is implemented, voluntary water conservation is strongly encouraged and demand reduction measures are repeatedly communicated. MWA coordinates actions with regional retail water purveyors and emphasizes MWA’s ability to assist with supply re-allocation. The seriousness of the drought situation is explained to the public and governmental bodies. MWA explains the possible subsequent water shortage stages in order to forecast possible future actions for the customer base. The activities performed by MWA during this stage include, but are not limited to:

- Implementation of all Voluntary Water Conservation Measures to a level addressing up to 30% water conservation savings.
- Aggressive public information campaign consisting of distribution of literature, speaking engagements, website updates, bill inserts, and conversation messages printed in local newspapers.
- Educational programs in area schools.
- Expanding the Conservation Hotline, a toll-free number with trained Conservation Representatives to answer customer questions about conservation and water use efficiency.
- Access stored supplies to address supply deficits, as needed
- Access alternative water supplies to address supply deficits, as needed
- Reduce R<sup>3</sup> deliveries as appropriate with retail agencies

**Stage 4 (31 - 40 percent shortage)** – When Stage 4 is implemented, voluntary water conservation is strongly encouraged and demand reduction measures are repeatedly communicated. MWA coordinates actions with regional retail water purveyors and assesses opportunities for supply reallocation among participating retail water purveyors. The seriousness of the drought situation is explained to the public and governmental bodies. MWA explains the possible subsequent water shortage stages in order to forecast possible future actions for the customer base. The activities performed by MWA during this stage include, but are not limited to:

- Implementation of all Voluntary Water Conservation Measures to a level addressing up to 30% water conservation savings.
- Aggressive public information campaign consisting of distribution of literature, speaking engagements, website updates, bill inserts, and conversation messages printed in local newspapers.
- Educational programs in area schools.

- Expanding the Conservation Hotline, a toll-free number with trained Conservation Representatives to answer customer questions about conservation and water use efficiency.
- Access stored supplies to address supply deficits, as needed
- Access alternative water supplies to address supply deficits, as needed
- Reduce R<sup>3</sup> deliveries as appropriate with retail agencies

**Stage 5 (41 - 50 percent shortage)** – When Stage 5 is implemented, voluntary water conservation is stressed to all regional purveyors and demand reduction measures are repeatedly communicated. MWA coordinates actions with regional retail water purveyors and assesses opportunities for supply reallocation among participating retail water purveyors. The dire situation caused by the water shortage is explained to the public and governmental bodies. MWA explains the possible subsequent water shortage stages in order to forecast possible future actions for the customer base. The activities performed by MWA during this stage include, but are not limited to:

- Implementation of all Voluntary Water Conservation Measures to a level addressing up to 30% water conservation savings.
- Aggressive public information campaign consisting of distribution of literature, speaking engagements, website updates, bill inserts, and conversation messages printed in local newspapers.
- Educational programs in area schools.
- Expanding the Conservation Hotline, a toll-free number with trained Conservation Representatives to answer customer questions about conservation and water use efficiency.
- Access stored supplies to address supply deficits, as needed
- Access alternative water supplies to address supply deficits, as needed
- Reduce R<sup>3</sup> deliveries as appropriate with retail agencies

**Stage 6 (greater than 50 percent shortage)** – When Stage 6 is implemented, voluntary water conservation is stressed to all regional purveyors and demand reduction measures are repeatedly communicated. MWA coordinates actions with regional retail water purveyors and assesses opportunities for supply reallocation among participating retail water purveyors. The emergency situation caused by the water shortage is explained to the public and governmental bodies. MWA explains conditions leading to supply reductions to all retail purveyors. The activities performed by MWA during this stage include, but are not limited to:

- Implementation of all Voluntary Water Conservation Measures to a level addressing up to 30% water conservation savings.
- Aggressive public information campaign consisting of distribution of literature, speaking engagements, website updates, bill inserts, and conversation messages printed in local newspapers.
- Educational programs in area schools.
- Expanding the Conservation Hotline, a toll-free number with trained Conservation Representatives to answer customer questions about conservation and water use efficiency.
- Access stored supplies to address supply deficits, as needed
- Access alternative water supplies to address supply deficits, as needed



- Reduce R<sup>3</sup> deliveries as appropriate with retail agencies

### 6.3.1 Supply Augmentation Actions

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The following water supply augmentation actions may be used as response actions for the appropriate Water Shortage Stage. MWA may access its stored water sources in various locations inside and outside its service area. This storage occurs as carryover water in the SWP as well as groundwater storage within the MWA Service Area. These stored supplies may be transferred or exchanged with other purveyors that can assist in providing water supplies to MWA's service area. In addition, MWA will work with the California Department of Water Resources (DWR) to access supplies that may be made available in the statewide conveyance systems. Lastly, MWA may take additional supply augmentation actions that become available during the identified water shortage condition like acquiring water from other entities through transfers or exchanges that may be delivered into MWA's service area.

### 6.3.2 Operational Changes

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The following water system operational changes may be used as response actions for the appropriate Water Shortage Stage. MWA may use its water storage and conveyance facilities to expedite water acquisitions, transfers, and exchanges that may alleviate identified water shortage conditions. MWA will assess the utility associated with full operational capacity at its R<sup>3</sup> facility and coordinate operational actions with retail agencies that will help address water shortage conditions. Moreover, where operational flexibility exists in MWA's six turnouts from the East Branch of the State Water Project, MWA may exercise operational options to facilitate water shortage mitigation actions.

### 6.3.3 Emergency Response Plan for Catastrophic Water Shortages

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This section identifies actions to be undertaken by MWA to prepare for, and implement during, a catastrophic interruption of water supplies. A catastrophic interruption could result from natural and man-made events that causes a water shortage severe enough to trigger a Stage 1-6 water supply shortage condition. In addition, MWA's SWP water supplies are conveyed through the California Aqueduct system operated by DWR, and DWR has created several emergency plans to address catastrophic outages. This section addresses the catastrophic outage scenarios and relevant actions that MWA will undertake should a catastrophic outage occur.

Earthquakes are an issue of concern in the Mojave Basin region. The southern portion of the San Andreas Fault borders the western edge of Mojave Water Agency's Service Area and an earthquake on that fault could significantly impact water service and infrastructure. The California Department of Water Resources (DWR) has noted that an earthquake could damage the California Aqueduct conveyance system through structural damage or electrical failures which could potentially halt water deliveries to MWA. In short, an earthquake may create regional turmoil that could impact local infrastructure or cause power outages for extended periods of time.

DWR has a contingency California Aqueduct outage plan for restoring the California Aqueduct to service should a major break occur because of an earthquake or other catastrophic reason. DWR estimates that a major break in the California Aqueduct would take approximately four months to repair. Although extended water supply shortages may manifest for MWA's imported water supplies, the retail agencies



and MWA have alternative water supplies available to meet fundamental customer demands. Retail agencies have access to managed groundwater throughout the MWA Service Area and MWA has stored imported water supplies that could be used to meet crisis conditions. Local effects of a catastrophic outage on local water systems may require additional cooperative efforts among regional water purveyors.

In addition to earthquakes, the SWP could experience other emergency outage scenarios. Past examples include slippage of aqueduct side panels into the California Aqueduct near Patterson in the mid-1990s, the Arroyo Pasajero flood event in 1995 (which also destroyed part of Interstate 5 near Los Baños), flood damage to the East Branch of the Aqueduct in 2015, and various subsidence and leakage repairs needed along the Main Branch and East Branch of the Aqueduct since the 1980s. All of these outages were short-term in nature (on the order of weeks to several months), and DWR's Operations and Maintenance Division worked diligently to devise methods to keep the Aqueduct in operation and continue SWP deliveries while repairs were made. Thus, the SWP contractors generally experienced no interruption in total annual deliveries but local actions to mitigate the outage were implemented.

It is important to note that all of MWA's SWP imported supply is used to replenish groundwater recharge facilities. These groundwater augmentation efforts insulate regional purveyors against an outage of the SWP system. As noted in Chapter 3, MWA has over 200,000 acre-feet of stored water available for extraction and use in the MWA service area. Combining this stored water with other stored supplies by the local retail agencies as well as the existing groundwater supplies in the region, MWA and its wholesale member agencies may sustain water supplies in a catastrophic outage of the SWP delivery systems. Even an interruption in SWP supplies for several months would not provide any immediate threat to potable water deliveries from groundwater production wells.

MWA developed its Regional Recharge and Recovery Project, known as "R<sup>3</sup>," to increase flexibility in its water system. The R<sup>3</sup> project is a basin management tool and conjunctive use project that distributes stored water via groundwater wells pumping from the Mojave Basin to local retail water purveyors. This groundwater pumping production is done to benefit each of the retail water agencies and in lieu of pumping from other groundwater production facilities of these retail agencies. This groundwater management project allows water to be pumped in a portion of the basin to be used in lieu of other groundwater production in other portions of the basin so that the various areas of the basin can be actively managed. The R<sup>3</sup> project includes groundwater recharge facilities, groundwater production wells, booster pumps, storage reservoirs, interconnections to the retail customer water system, water meters, and chlorination facilities. The R<sup>3</sup> facilities provide redundant capacity to the retail agencies during catastrophic outage events. Although MWA may stop deliveries in the R<sup>3</sup> facilities to the retail agencies at any time, the facilities may help provide water supplies during crisis conditions. In short, working in parallel with the retail agencies, the R<sup>3</sup> facilities can be used to supplement the facilities that each retail water agency may have to handle catastrophic outages.

The R<sup>3</sup> facilities also have a separate Emergency Response Plan (ERP).<sup>62</sup> This ERP identifies emergency procedures, response actions, and responsible personnel that would be activated in the event of an emergency with the R<sup>3</sup> facilities. Specifically, the ERP addresses responses to leaks or service

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<sup>62</sup> R<sup>3</sup> System Emergency/Disaster Response Plan Update 2019, Mojave Water Agency.

interruptions, low pressure, power outage, contamination, and physical destruction of the R<sup>3</sup> facilities.<sup>63</sup> Accordingly, MWA's R<sup>3</sup> ERP provides an additional buffer against emergency and catastrophic outage that may impact Statewide, regional, or local water distribution and treatment facilities.

The area's water sources are generally of good quality, and no insurmountable problems resulting from industrial or agricultural contamination are foreseen. If contamination did result from a toxic spill or similar problematic event, the contamination would be isolated and should not significantly impact the total water supply in the region. In addition, such an event would be addressed in the retailers' emergency response plan as well as the R<sup>3</sup> ERP.

#### 6.3.4 SWP Emergency Outage Scenarios

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There are numerous events that could result in significant outages and potential interruption of service. Examples of possible nature-caused events include a levee breach in the Delta near the Harvey O. Banks Pumping Plant, a flood, an earthquake event that severely damages the California Aqueduct along its San Joaquin Valley traverse, or an earthquake event along the East Branch of the California Aqueduct. Such events could impact some or all SWP contractors south of the Delta.

The response of DWR, MWA, and other SWP contractors to such events would be highly dependent on the type and location of any such event. In typical SWP operations, water flowing through the Delta is diverted at the SWP's main pumping facility, located in the southern Delta, and is pumped into the California Aqueduct. During the relatively heavier runoff period in the winter and early spring, Delta diversions generally exceed SWP contractor demands, and the excess is stored in San Luis Reservoir. The SWP California Aqueduct terminal reservoirs, such as Pyramid and Castaic Lakes, are also replenished during these periods. During the summer and fall, when diversions from the Delta are generally more limited and less than contractor demands, releases from San Luis Reservoir are used to make up the difference in deliveries to contractors. The SWP share of storage capacity at San Luis Reservoir is 1,062,000 AF.

MWA receives its SWP deliveries through the East Branch of the California Aqueduct. The other contractors receiving deliveries from the East Branch are Metropolitan Water District, Antelope Valley-East Kern Water Agency, Palmdale Water District, Crestline-Lake Arrowhead Water Agency, Desert Water Agency, San Gabriel Valley Municipal Water District, San Bernardino Valley Municipal Water District, San Geronimo Pass Water Agency, and Coachella Valley Water District. The East Branch has two terminal reservoirs, Silverwood Lake and Lake Perris, which were designed to provide emergency storage and regulatory storage (i.e., storage to help meet peak summer deliveries) for several of the East Branch contractors. However, MWA does not have contract rights to storage capacity in those reservoirs. Silverwood Lake is within the MWA service area and releases from the lake flow into the primary groundwater basins within the MWA service area. In addition to SWP storage south of the Delta in San Luis Reservoir and the terminal reservoirs, a number of contractors have stored water in groundwater banking programs in the San Joaquin Valley and more recently along the East Branch, and many also have surface and groundwater storage within their own service areas.

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<sup>63</sup> ERP at 2-3.

Three scenarios that could impact the delivery to MWA of its SWP supply or other supplies delivered to it through the California Aqueduct are described below. For each of these scenarios, it was assumed that an outage of six months could occur. MWA's ability to meet demands during the worst of these scenarios is presented following the scenario descriptions.

#### Scenario 1: Levee Breach near the Sacramento-San Joaquin Delta

The California Department of Water Resources (DWR) has estimated that in the event of a major earthquake in or near the Delta, regular water supply deliveries from the SWP could be interrupted for up to three years, posing a substantial risk to the California business economy. Accordingly, a post-event strategy has been developed which would provide necessary water supply protections. The plan has been coordinated through DWR, the Army Corps of Engineers (Corps), Bureau of Reclamation, California Office of Emergency Services (Cal OES), the Metropolitan Water District of Southern California, and the State Water Contractors. Full implementation of the plan would enable resumption of at least partial deliveries from the SWP in less than six months.

**DWR Delta Flood Emergency Management Plan (“Emergency Pathway”).** DWR has developed the Delta Flood Emergency Management Plan to provide strategies for a response to Delta levee failures, which addresses a range of failures up to and including earthquake-induced multiple island failures during dry conditions when the volume of flooded islands and saltwater intrusion are large. Under such severe conditions, the plan includes a strategy to establish an emergency freshwater pathway from the central Delta along Middle River and Victoria Canal to the export pumps in the south Delta. The plan includes the pre-positioning of emergency construction materials at existing and new stockpiles and warehouse sites in the Delta, and development of tactical modeling tools (DWR Emergency Response Tool) to predict levee repair logistics, water quality conditions, and timelines of levee repair and suitable water quality to restore exports. The Delta Flood Emergency Management Plan has been extensively coordinated with state, federal and local emergency response agencies. DWR, in conjunction with local agencies, the Corps and Cal OES, regularly conduct simulated and field exercises to test and revise the plan under real time conditions.

DWR and the Corps provide vital Delta region response to flood and earthquake emergencies, complementary to an overall Cal OES structure. Cal OES is preparing its Northern California Catastrophic Flood Response Plan that incorporates the DWR Delta Flood Emergency Management Plan. These agencies utilize a unified command structure and response and recovery framework. DWR and the Corps, through a Delta Emergency Operations Integration Plan, would integrate personnel and resources during emergency operations.

**Levee Improvements and Prioritization.** The DWR Delta Levees Subvention Program has prioritized, funded, and implemented levee improvements along the emergency freshwater pathway and other water supply corridors in the central and south Delta region. These efforts have been complementary to the DWR Delta Flood Emergency Management Plan, which along with use of pre-positioned emergency flood fight materials in the Delta, relies on pathway and other levees providing reasonable seismic performance to facilitate restoration of the freshwater pathway after a severe earthquake. Together, these two DWR programs have been successful in implementing a coordinated strategy of emergency preparedness for the benefit of SWP and CVP export systems. Moreover, levee improvements along the

pathway and Old River levees consisting of crest raising, crest widening, landside slope fill and toe berms meet the needs of local reclamation districts and substantially improve seismic stability to reduce levee slumping and create a more robust flood-fighting platform. Many urban water supply agencies have participated or are currently participating in levee improvement projects along the Old and Middle River corridors.

### Scenario 2: Complete Disruption of the California Aqueduct in the San Joaquin Valley

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The 1995 flood event at Arroyo Pasajero demonstrated vulnerabilities of the California Aqueduct (the portion that traverses the San Joaquin Valley from San Luis Reservoir to Edmonston Pumping Plant). Should a similar flood event or an earthquake damage this portion of the California Aqueduct, deliveries from San Luis Reservoir could be interrupted. DWR has informed the SWP contractors that a four-month outage could be expected in such an event. MWA's assumption is a six-month outage.

Arroyo Pasajero is located downstream of San Luis Reservoir and upstream of the primary groundwater banking programs in the San Joaquin Valley. Assuming an outage at a location near Arroyo Pasajero that resulted in the California Aqueduct being out of service for six months, supplies from San Luis Reservoir would not be available to those SWP contractors located downstream of that point. This would include MWA.

### Scenario 3: Complete Disruption of the East Branch of the California Aqueduct

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The East Branch of the California Aqueduct begins at a bifurcation of the California Aqueduct south of Edmonston Pumping Plant, which pumps SWP water through and across the Tehachapi Mountains. From the point of bifurcation, the East Branch is an open canal. If a major earthquake (e.g., an event similar to or greater than the 1994 Northridge Earthquake) were to damage a portion of the East Branch, deliveries could be interrupted. The exact location of such damage along the East Branch would be key to determining emergency operations by DWR and the East Branch SWP contractors. Specifically, MWA's six turnouts on the system could all be differently impacted, and some potentially not impacted at all. For this scenario, it was assumed that the East Branch would suffer a single-location break and deliveries of SWP water from north of the Tehachapi Mountains or of contractor water stored in groundwater banking programs in the San Joaquin Valley would not be available. It was also assumed that Silverwood and Perris dams would not be damaged by the event and that water in Silverwood and Perris Lakes would be available to the East Branch SWP contractors.

In any of these three SWP emergency outage scenarios, DWR and the SWP contractors would coordinate operations to minimize supply disruptions. Depending on the particular scenario or outage location, some or all of the SWP contractors south of the Delta might be affected. But even among those contractors, potential impacts would differ given each contractor's specific mix of other supplies and available storage. During past SWP outages, the SWP contractors have worked cooperatively to minimize supply impacts among all contractors. Past examples of such cooperation have included certain SWP contractors agreeing to rely more heavily on alternate supplies, allowing more of the outage-limited SWP supply to be delivered to other contractors, and exchanges among SWP contractors, allowing delivery of one contractor's SWP supply or other water to another contractor, with that water being returned after the outage was over.

Of these three SWP outage scenarios, the scenario of an East Branch outage along with no delivery of stored water from Silverwood Lake presents the worst-case scenario for MWA. In this scenario, MWA and retail agencies would continue to rely solely on local managed groundwater supplies (native water, natural recharge, return flow, and stored imported water). An assessment of the supplies available to meet demands in MWA’s service area during a six-month East Branch outage is presented in Table 6-2. The outage focuses on the supply-side of outage mitigation and does not include modified demand numbers that would likely occur at the retail level.

Table 6-2: Regional Available Supplies for Catastrophic Outage<sup>64</sup>

Emergency Outage	Native Supply	Wastewater Import	Return Flow	Stored Water	Total
Outage Year 1	57,349	2,800	44,415	25,145	129,709
Outage Year 2	57,349	2,800	44,415	25,209	129,773

### Seismic Risk Assessment and Hazard Mitigation Plan

Beginning January 2020, CWC Section 10632.5 mandates urban water suppliers include in their UWMP a seismic risk assessment and mitigation plan to assess the vulnerability of each of the various facilities of a water system and mitigate those vulnerabilities. This requirement can be met by submittal of a copy of the most recent adopted local hazard mitigation plan (LHMP) or multi-hazard mitigation plan under the federal Disaster Mitigation Act of 2000 (Public Law 106-390) if the local hazard mitigation plan or multi-hazard mitigation plan addresses seismic risk. MWA intends to submit a copy of the San Bernardino County Multi-Jurisdictional Hazard Mitigation Plan, approved by the Federal Emergency Management Agency (FEMA) on July 13, 2017 (HMP).<sup>65</sup> This Hazard Mitigation Plan is currently under review and may have updates before the next Urban Water Management Plan cycle in 2025.

The fundamental hazards identified in this plan include Earthquake, Wildfire, Flood, Drought, Terrorism and Climate Change. The HMP addresses the vulnerabilities associated with these items, the other plans and financial issues that impact implementation of the HMP, as well as a comprehensive mitigation strategy. Accordingly, the HMP is incorporated by reference into MWA’s WSCP.

## 6.4. Communication Protocols

MWA will engage in specific communication protocols in developing and implementing the WSCP and coordinate with the Regional Water Purveyors and neighboring public agencies to communicate water shortage conditions. MWA will seek to engage customers and provide notice with locally relevant actions that further the water shortage response actions. These actions may include:

- Publishing information on MWA’s website.

<sup>64</sup> The total depicted in Table 6-2 represents projected demands in 2021 and 2022, respectively. As noted in Chapter 3, if these demands in this shortage condition are higher, the difference will be supplemented with additional stored water.

<sup>65</sup> [http://cms.sbcounty.gov/portals/58/Documents/Emergency\\_Services/Hazard-Mitigation-Plan.pdf](http://cms.sbcounty.gov/portals/58/Documents/Emergency_Services/Hazard-Mitigation-Plan.pdf)

- ◆ Establishing a telephone hotline.
- ◆ Coordinating through direct correspondence with local agencies on water supply management
- ◆ Preparing social media posts to communicate MWA actions.
- ◆ Advertising actions on other local audio and video media.
- ◆ Coordinating voluntary and mandatory water shortage condition activities with other local agencies.

Taken together, these communication actions will result in a more effective implementation of MWA's WSCP.

## 6.5 Legal Authorities

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MWA is empowered to implement and enforce its water shortage response actions specified in this section through the following legal authorities: California Water Code Water Appendix, Chapter 97, the Mojave Basin Area Adjudication, and the Warren Valley Judgment. MWA has authorities to manage water supplies in its service area, including management of SWP supplies and R<sup>3</sup> facilities. MWA's role as Watermaster under the Mojave Basin Area Adjudication empower it with the authorities to address excessive water use among participating agencies. The Warren Valley Judgment addresses unauthorized or excessive use issues among the participating agencies. However, MWA does not have direct authority to limit groundwater pumping within its service area.

## 6.6 Financial Consequences of WSCP

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MWA has assessed the financial conditions associated with developing and delivering water supplies within its service area boundary. As shown in Chapter 3, MWA has developed alternative water supplies that can be accessed to continue water deliveries during extended dry conditions. Accordingly, although MWA may experience minor financial fluctuations due to water shortage conditions, the redundancy in its water storage systems as well as its coordinated approach to managing dry conditions with the retail agencies will insulate MWA from significant financial consequences. Therefore, this WSCP does not anticipate that implementation of MWA's WSCP will create financial conditions that are detrimental to MWA.

## 6.7 Re-evaluation and Improvement Procedures

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MWA will continually review and assess its procedures for implementing the WSCP. Specifically, MWA will use the monitoring and reporting protocols identified above as a quality assurance and quality control measure to understand the effectiveness of water shortage activities. These re-evaluation and improvement procedures will include developing reports, memoranda, and presentations that assess the effectiveness of water shortage actions and the WSCP. These protocols will be continually assessed and updated by MWA management staff.

## 6.8 Special Water Feature Distinction

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MWA's water shortage response actions focus on health and safety issues and working with retail agencies to manage available supplies. MWA will work with the retail agencies on communicating and implementing those agencies' special water feature distinction issues that may arise during critical water shortage conditions.

## 6.9 Plan Adoption, Submittal, and Availability

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The WSCP has been adopted, submitted, and is available as required by the Urban Water Management Planning Act. As a stand-alone document, the WSCP is also subject to separate adoption, submittal, and availability processes, and whenever it is separately amended or revised in the future. MWA has followed all applicable law in adopting the WSCPs. The current adopted WSCP for the shall be available to its customers and to the to all local agencies in Mojave Water Agency's service area within San Bernardino County no less than 30 days before its adoption. A copy of the current WSCP is available for public inspection during business hours at [www.mojavewater.org](http://www.mojavewater.org) and is available for download at [www.mojavewater.org/planning.html](http://www.mojavewater.org/planning.html).