

7.0 WATER SHORTAGE CONTINGENCY PLAN

7.1 Introduction

During water shortages, Municipal Water District of Orange County (MWDOC) manages its water supply to ensure it meets the demands of its member (retail) water agencies. In turn, retail water agencies must manage their local supplies and supplies they receive from MWDOC utilizing various mechanisms to ensure the reliability of their supply. Water shortages may result from variations in weather and natural and unnatural catastrophes such as, but not limited to, earthquakes, pipeline failures, supply contamination, and transmission facility failures. The discussion in this chapter focuses on MWDOC's water shortage planning efforts.

7.2 Stages of Drought Action

MWDOWC is responsible for exercising its authority over water it sells in a manner that is consistent with law, conditions of use placed on the water by Metropolitan Water District of Southern California (Metropolitan), and that reasonably meets the needs of its customers. MWDOC will determine specific stages of shortage actions in conjunction with local ordinances of member agencies and other relevant water actions by local government. Thus, as in the past, MWDOC will adopt Board Resolution urging its retail agencies to develop and implement water shortage plans, calling upon each agency to adopt and enforce regulations prohibiting the waste of water, and implementing an allocation plan for available imported water consistent with reductions, incentives, and penalties imposed on MWDOC by the Metropolitan

MWDOC receives its imported water from Metropolitan. Metropolitan has a *Water Surplus and Drought Management (WSDM) Plan* for the management of its imported water. The WSDM Plan has identified seven stages of water shortages caused by dry years and drought, with each one getting significantly more severe (see Table 7-2-A).

It is anticipated that water shortages would have to be extremely severe for Metropolitan to implement the action listed for stage 7, which is to allocate its imported water supplies to its member agencies. For example, even with significant reductions in Colorado River water supplies and a repeat of the 1987-1992 drought on the State Water Project, Metropolitan could meet all retail water needs of its member agencies by implementing stages one through six of the WSDM Plan until 2025 (*Metropolitan Integrated Resources Plan Update*, 2004).

Table 7-2-A: Water Supply Shortage Stages and Conditions (Metropolitan’s Water Surplus and Drought Management Plan)

Water Supply Shortage Stages and Conditions Rationing Stages	
Stage No.	Actions
1	Withdraw stored water from Diamond Valley Lake
2	Stage 1 plus draw from out of region groundwater storage
3	Stage 2 plus curtail/temporarily suspend deliveries to local groundwater and surface storage replenishment in accordance with their discounted rates
4	Stage 3 plus draw from local Conjunctive Use Groundwater Programs & SWP terminus reservoirs
5	Stage 4 plus extraordinary conservation through coordinated outreach and curtail Interim Agricultural Water Program deliveries in accordance with discounted rates
6	Stage 5 plus exercise water transfer option contracts and/or buy water on open market for consumptive use or for delivery to regional storage facilities
7	Stage 6 plus allocation of imported water to member agencies based upon adopted principles of fairness and need

Source: Metropolitan, *Water Surplus and Drought Management Plan*

Although Metropolitan’s WSDM Plan did not specify the exact formula for how imported water would be allocated in Stage 7, it did include some principles for allocation. Metropolitan’s board of directors adopted the WSDM Plan and principles for imported water allocation in 1999.

Should the severity of drought warrant the need to allocate imported water, Metropolitan would do so following an overall principle of equity, and on the basis of meeting agencies’ retail needs. Metropolitan will consider the following in the equitable allocation of imported water:

1. Impact on retail water customers and economy;
2. Investments in recycling and conservation;
3. Population change;
4. Overall investment in local resources;
5. Changes and/or loss of local supply;
6. Participation in Metropolitan’s non-firm (interruptible) programs; and
7. Investment in Metropolitan’s facilities.

During a severe water shortage (such as a Stage 7 supply reduction as defined by Metropolitan), the MWDOC Board would exercise its authority consistent with law, giving due consideration to the Metropolitan WSDM Plan and to the contingency plans of its retail agencies.

MWDOC's authority for stages of drought action relate only to the imported water MWDOC provides. As Metropolitan moves through its stages of action, MWDOC would assist and facilitate actions at the retail agency level within MWDOC's service area. Under the WSDM Plan, imported water only becomes allocated at the Stage 7 drought condition as declared by Metropolitan. Therefore, the requirements stated in Urban Water Management Act Section 10632 (a) for defining stages of water supply shortage up to a 50% reduction are not applicable to MWDOC. It is more appropriate for the stages of drought action to be implemented to the public through the retail agencies.

Within MWDOC's service area local retail agencies have adopted or are in the process of developing ordinances that address urban water shortage requirements. Table 7-2-B shows two examples of shortage action plans prepared by MWDOC's local retail agencies:

Table 7-2-B: Examples of Water Shortage Stage and Action, Irvine Ranch Water District and Santa Margarita Water District

Irvine Ranch Water District			
Stage	Water Supply Condition	% Shortage	Action
1	Drought Warning and low level shortage condition	10%	See Appendix 7-B "IRWD Water Shortage Contingency Plan"
2	Significant drought condition	10% to 25%	See Appendix 7-B "IRWD Water Shortage Contingency Plan"
3	Emergency condition	25% to 40%	See Appendix 7-B "IRWD Water Shortage Contingency Plan"
Final Stage	Crisis condition of water supply shortage	40%+	See Appendix 7-B "IRWD Water Shortage Contingency Plan"
Santa Margarita Water District			
Stage	Water Supply Condition	% Shortage	Action
1	Voluntary Conservation	10%	Customers are encouraged to voluntarily conserve water
2	Mandatory Conservation - Drought	20%	Prohibit using potable water for street washing
			Prohibit using potable water for dust control for construction activity
3	Mandatory Conservation - Serious Drought	30%	Limiting outdoor irrigation to restricted times
			Prohibit washing of vehicles
			Refilling or filling artificial lakes by permit only
			Prohibit using potable water for operation of fountains
4	Mandatory Conservation - Severe Drought	40%	Use of potable water for construction by permit only
			Prohibit using potable water for outdoor irrigation
			Prohibit filling ponds, artificial lakes, pools and spas
			Prohibit using potable water for construction

Sources:

Irvine Ranch Water District 2005 Urban Water Management Plan (Draft)

Santa Margarita Water District 2005 Urban Water Management Plan (Draft)

7.3 Three-Year Minimum Water Supply

Through its modeling efforts, MWDOC has determined minimum water supplies available for retail consumption for each of the next three years, 2006-2008. Table 7-3-A compares supplies available under normal conditions and supplies available under a hypothetical repeat of the historical driest three-year period for MWDOC's service area, 1959-1961. During multiple dry years, less local supplies are available for retail consumption and retail demands increase, resulting in the use of increased imported supplies from Metropolitan to offset the reduction in local supplies.

Even with decreased local supplies available, MWDOC is expected to meet all retail consumption during a three-year dry period of 2006-2008 based on the three

driest years on record. Metropolitan is expected to be able to supply all of MWDOC's imported water during the same period. Metropolitan's 2005 Regional Urban Water Management Plan (Draft) indicates that Metropolitan can provide 100% of the supply demanded by its member agencies until 2030.

Table 7-3-A: Three-Year Estimated Minimum Water Supply for Direct Consumption in MWDOC's Service Area– Based on Multiple Dry Years

Source	Acre-feet per Year					
	Normal			Multiple Dry Year		
	2006	2007	2008	2006	2007	2008
Local Supplies	272,824	295,193	320,046	263,142	270,408	305,886
Imported Supply	253,756	239,271	221,919	299,887	285,695	267,948
Total	526,580	534,464	541,965	563,029	556,102	573,833

Source: Municipal Water District of Orange County, output of "Water Balance" Model

7.4 Catastrophic Supply Interruption Plan

From a regional perspective, Orange County and all of Southern California is heavily dependent upon imported water supplies from Metropolitan. Imported water is conveyed through the State Water Project (SWP) and Colorado River Aqueduct (CRA), which travel hundreds of miles to reach urban Southern California, and specifically to Orange County. Additionally, this water is distributed to customers through an intricate network of pipes and water mains that are susceptible to damage from earthquakes and other disasters. Regional storage for Southern California and Orange County is provided by Metropolitan to mitigate an outage of either the SWP or CRA. The recently completed Diamond Valley Lake is an 800,000 acre-foot reservoir, of which about 400,000 acre-feet of water is reserved for catastrophic emergencies. In fact, protection from catastrophic events such as earthquakes was a major reason for the construction of Diamond Valley Lake.

In 1983, the Orange County water community developed a *Water Supply Emergency Preparedness Plan* to respond effectively to disasters impacting the regional water distribution system. This plan was jointly funded by three regional water agencies; MWDOC, Coastal Municipal Water District (later merged with MWDOC), and Orange County Water District (OCWD), with the support and guidance from the Orange County Water Association. The collective efforts of these agencies resulted in the formation of the Water Emergency Response Organization of Orange County (WEROC) to coordinate emergency response on behalf of all Orange County water agencies, develop an emergency plan to respond to disasters, and conduct disaster training exercises for the Orange County water community. WEROC is unique in its ability to provide a single point of contact for representation of all water utilities in Orange County during a disaster. This representation is to the county, state, and federal disaster coordination agencies. Within the Orange County Operational Area, WEROC is the recognized contact for emergency disaster response for the water community. Table 7-4-A summarizes

possible catastrophe scenarios and actions that would be taken in response to a catastrophe.

Each local water utility is responsible for developing its own disaster preparedness and response plan to meet emergencies within their service area. WEROC performs coordination of information and mutual-aid requests among water agencies, and with Metropolitan.

In the event of a major emergency or regional disaster WEROC would perform the following functions:

- Collect damage assessment reports from Orange County water utilities;
- Assess the overall condition of Orange County water supply system;
- Identify needs of water utilities;
- Quantify available resources;
- Determine optimal use of resources;
- Establish repair priorities;
- Recommend water allocations;
- Liaison with water utilities, Metropolitan, and County Operational Area; and
- Document remedial actions taken during the disaster operation.

Two dedicated WEROC Emergency Operations Centers (EOCs) are located within Orange County. Both sites are maintained in a state of readiness in the event that they will be activated following a major emergency disaster. WEROC EOCs are staffed by trained personnel from the water community. WEROC's Emergency Radio Communication System consists of two mountain-top radio repeaters and several control stations. WEROC is a flexible and dynamic program that continues to make improvements to its emergency preparedness plan, emergency response facilities, and its training program to address new issues as they surface.

During a disaster, WEROC will work cooperatively with Metropolitan through their Member Agency Response System to facilitate the flow of information and requests for mutual-aid within Metropolitan's 5,100 square mile service area. WEROC also provides updated information to Metropolitan's EOC at Eagle Rock.

Table 7-4-A: Preparation Actions for a Catastrophe

Possible Catastrophe	Summary of Actions*
Regional power outage	Coordinate communication with So. CA. Edison and Sempra Energy Co. for restoration of services. Provide contacts for vendors of rental generators and initiate mutual assistance between unaffected and affected agencies for emergency backup power. Consult with the California Department of Health for water quality concerns and public notices.
Earthquake	Coordinate the resources necessary for repair of the Orange County retail water agencies' infrastructure. Facilitate mutual aid from outside agencies through Metropolitan, California Utilities Emergency Association, and the Orange County Operational Area. Utilize vendor lists to identify available water haulers, temporary water lines, piping, heavy equipment, etc.
Tsunami	If time allows, notify coastal agencies to shut down operations in inundation zone, including but not limited to: wells and pumps. Request California Department of Health Services support in evaluating water contamination via salt water intrusion and backflow of raw sewer water. Support agency efforts to restore water flow in unique conditions of flooding (safety) and probably lack of electricity (refer to above actions). Continue support similar to an earthquake response.
Malicious Act	Since such an incident typically involves a long term response with law enforcement, WEROC could support the agency with staff, communications with the County, and temporary water facilities/pipelines. In addition, coordination of WEROC water quality advisors, California Department of Health Services, and public information officers will be critical.
Flooding	Coordination with the Orange County Resource and Development Management Department for flood control support. Coordination of mutual assistance for repair of infrastructure.
Dam Failure	Coordinate communications of inundation zone evacuation through the local law enforcement. Identify water losses and what the loss means for the county during the current weather season and conditions. Evaluate the need and ability for immediate reconstruction and restoration of services.
SONGS - Nuclear Release	Work with Orange County retailers that have open water sources: consider shutting down those systems. Work with California Department of Health Services for effects and countermeasures. Also work with agencies within the fall out zone to determine future use of infrastructure in the affected area.
Wild Land Fire	Coordinate with the Orange County Fire Authority to ensure that they have enough water for fire flow. Refer to "Actions To a Regional Power Outage" for loss of power to pumps due to fire. Identify available emergency generators for backup power supply. If ongoing, fire response may coordinate county wide water reduction campaign, and reallocate and move water towards incident area. If infrastructure is within the fire path, identify secondary routes of delivery and services depending on the location of the incident.
Water Contamination	Contamination can be from multiple sources: malicious, sewer leak, underground contaminate plume, etc. WEROC would work with the agency to coordinate with California Department of Health Services and local laboratory to identify the contaminate and action needed. Will utilize Orange County retail agency support in trying to reroute water where possible, and to provide water haulers when needed. The WEROC Public Information Officer will work with the agency and the media to ensure proper information is provided to the public for their health and safety.
Hazardous Materials Spill/Release	Depending on the material the response would vary. Any aerosolized material release would require coordination with the local law enforcement for evacuation, and would only affect open source water supplies. Notification of agencies with open source water supplies to adjust their water supply to non-open source if available. A release within a particular agency's facility that is contained would require coordination of cleanup and potentially a secondary water supply for only that agency. Lastly, the release of a liquid hazard would require coordination with the local sanitation agency for treatment of cleanup byproduct.

* As a wholesale water district the Municipal Water District of Orange County has no facilities of its own to ensure their protection and integrity. The Water Emergency Response Organization of Orange County (WEROC) was created to ensure that the water supply to all of Orange County is protected and restored in as efficiently a manner as possible. This is done through the coordination of WEROC with Metropolitan, the Orange County Operational Area, and all of the Orange County retail water districts to ensure the sharing of resources and a unified response. The WEROC program includes a Regional Emergency Response Plan, two emergency operation centers, and a communications system that includes a dedicated radio communications system, cell and landline phones, fax, and internet.

Source: Municipal Water District of Orange County

Day-to-day management of WEROC is provided by MWDOC, and program oversight is conducted by the WEROC Executive Committee. The Executive Committee includes representatives from MWDOC and OCWD. A WEROC Steering Committee serves as an advisory group providing general guidance to the program, and includes representatives from member agencies, Metropolitan, California Department of Health Services, and the County Operational Area.

Additional emergency services in the State of California include the Master Mutual Aid Agreement, California Water Agencies Response Network (WARN), and Plan Bulldozer. The Master Mutual Aid Agreement includes all public agencies that have signed the agreement, and is coordinated out of the California Office of Emergency Services. WARN includes all public water and wastewater utilities that have signed the agreement to WARN, and provides mutual aid assistance. It is managed by a State Steering Committee. Plan Bulldozer provides mutual aid for construction equipment to any public agency for the initial time of disaster when danger to life and property exists.

7.5 Water Reduction Mechanisms

Working with its member agencies, MWDOC is able to reduce its demands on Metropolitan during water shortages. Although MWDOC requires more water during water shortages to offset losses of local supplies, it is able maintain this demand at a lower level than would be possible if water reduction mechanisms were not implemented. A variety of mechanisms, such as mandatory prohibitions, consumption reductions, and penalties and charges has been and can be implemented during water shortages.

7.5.1 Mandatory Water Use Prohibitions

Because MWDOC's powers to enforce restriction of use are confined to imported water, as a practical matter, mandatory use prohibitions would be difficult for MWDOC to enforce given the different sources of water accessed by end users. The establishment of mandatory prohibitions on water usage during water shortages are therefore not part of MWDOC's Plan under Water Code Section 10620 (c). However, historically MWDOC has focused its activity in developing shortage allocation plans that include water purchase allocations and penalties. In addition, MWDOC has urged its retail agencies to develop specific shortage management plans to meet targeted reduction in total water demand during a shortage. Retail agencies of MWDOC will address mandatory prohibitions during water shortages in their individual UWMPs.

7.5.2 Water Reduction Methods

As mentioned in Section 7.5.1 of this Plan, MWDOC's powers to enforce the restriction of use of water are confined to imported water. Therefore, it is more appropriate for water reduction methods to be applied to the public through the retail agencies. Reductions in water consumption by

MWDOC's retail agencies during water shortages will ultimately reduce MWDOC's overall demands on Metropolitan. MWDOC's Board has the authority to provide for a method of allocation for available supplies, as the Board may determine necessary, through adoption of a Water Shortage Management Plan for all classes of service. Each retail agency decides how it will allocate supplies it receives from MWDOC during water shortages. Retail agencies of MWDOC will address water reduction methods during water shortages in their individual UWMPS.

7.5.3 Penalties for Excessive Water Use

Should Metropolitan have to allocate imported water during a severe water shortage, as identified in Stage 7 of its Water Surplus and Drought Management Plan, Metropolitan can impose surcharges (penalty pricing) on water consumption in excess of the imported water allocation. Penalties are expected to be severe, as much as three times Metropolitan's full service water rate.

MWDOC's Board has the authority to adjust water rates to reflect any penalties imposed by Metropolitan under Metropolitan's WSDM Plan or other allocation programs as determined necessary by the Board. Rates may also be adjusted based on any Water Shortage Management Plan or other allocation program implemented by MWDOC as determined necessary by the Board.

7.6 Water Reduction Impacts on Revenues and Expenditures

During water shortages, MWDOC's revenues and expenditures simultaneously increase as MWDOC purchases more water from Metropolitan to offset reductions in local supplies. There are two potential revenue related issues for which MWDOC must plan: loss of Incremental Rate Revenue due to reduced water sales in a shortage, and increased cost to purchase Tier 2 water during high demand episodes caused by drought conditions.

MWDOC Incremental Water Rate

MWDOC's operating budget is funded from two rate components. One is a fixed annual Retail Meter Charge collected from MWDOC's member agencies for each retail water meter in their service area. This charge provides a stable source of revenue that does not vary with weather or water sales. The other is a commodity Incremental Water Rate (per acre foot of water sold). Revenue from this Incremental Rate increases when water sales rise, and decreases when sales fall. To the extent a water shortage causes water sales to drop, the shortfall in revenue would be made up from reserves held by MWDOC for this purpose.

Metropolitan Tiered Supply Rate and MWDOC Melded Supply Rate

Metropolitan charges for its supply to MWDOC using a Tiered Rate. MWDOC has the ability to buy up to 222,924 acre-feet at the Tier One supply rate. However, additional water purchased above pre-determined Tier One demand is at Metropolitan's Tier Two water rate. Tier Two water is sold at a higher price than Tier One water. MWDOC sells water to its retail agencies at a Melded Supply rate. The rate is set each year based on the expected combined cost of Tier One and Tier Two purchases – plus or minus any adjustment to add or decrease from reserves.

In June of 2002, MWDOC adopted a resolution establishing a Tier Two Contingency Fund to offset any Tier Two costs that MWDOC may incur. The goal of the Tier Two Contingency Fund is to maintain stable water rates regardless of weather variations or other unexpected increases in demand of imported water. The melded water supply rate is higher than Metropolitan's Tier One water supply rate. The revenue difference between MWDOC's Melded Supply rate and Metropolitan's Tier One rate is deposited into a restricted fund, the Tier Two Contingency Fund.

Uses of funds in the Tier Two Contingency Plan are restricted to the following:

- Payment of Tier Two costs if MWDOC's water purchases from Metropolitan exceed the Tier One level;
- Advances to the General Fund to pay charges imposed on MWDOC by Metropolitan, in which the revenues are collected in a period that is different than the payment date. All advances are repaid to the Fund when the charges are collected from the retail agencies; and
- If the funds are not immediately needed for the previous two items, the Board may utilize the funds to offset any increase in water rates or charges imposed by Metropolitan which would require a rate increase by MWDOC.

If the Board determines that any portion of the Tier Two Contingency Fund is no longer needed for the purposes they were designated, then the Board will declare those funds surplus. The Board may either adjust the melded rate to reflect the surplus or distribute the surplus to each retail water agency in proportion to the amount of the melded rate water each agency purchased in the preceding two fiscal years.

7.7 Water Shortage Contingency Ordinance

In a water shortage event, MWDOC will adopt a Water Shortage Management Resolution or Ordinance. In past shortages, MWDOC has adopted Board Resolutions urging its retail agencies to develop and implement water shortage plans, calling upon each member agency to adopt and enforce regulations prohibiting the waste of water, and implementing an allocation plan for available imported water consistent with reductions, incentives, and penalties imposed on

MWDOC by Metropolitan. MWDOC has adopted a resolution pertaining to water shortage conditions during the late 1980s and early 1990s drought. A copy of that resolution is provided in *Appendix 7-A*. In the event of a water shortage, MWDOC will adopt a Water Shortage Management Resolution that reflects the needs and conditions of the current drought. Such reflection would include the same allocation principles identified by Metropolitan at the time of the drought. However, as mentioned in Section 7.2 of this Plan, MWDOC will consult with the retail agencies regarding the development of local principles or adjustments to the Metropolitan allocation.

7.8 Methods to Determine Water Consumption Reductions

The establishment of a method to measure water consumption reductions during water shortages is necessary to determine the effectiveness of water reduction mechanisms. Although MWDOC, as a wholesale supplier, would have difficulty enforcing water reduction mechanisms upon end users, MWDOC does work closely with its member agencies to develop plans to meet targeted reductions. To monitor the effectiveness, MWDOC generally relies on monthly reading of Metropolitan's meter connection. Monthly reading would allow MWDOC to evaluate the trends of consumption at the retail agency level.

MWDOC's Retail agencies will address methods to determine water consumption reductions in their individual UWMPs.

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