

SECTION 8: CONTINGENCY PLANNING

Reservoirs, such as the City's 25 MG raw water reservoir (pictured) provide City with a backup supply of water in case of short-term interruptions of outside water supply sources.



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CONTINGENCY PLANNING

Large storage reservoirs, such as the City's 25 MG raw water reservoir (pictured), help with droughts or sudden catastrophes.

8.1 OVERVIEW

In addition to the drought concerns facing the State discussed in **Section 6**, water supplies may be suddenly interrupted in several ways other than drought, such as an earthquake which damages water delivery or storage facilities, a regional power outage, a toxic spill that affects water quality, or structural failure of water facilities. As the population of Southern California continues to increase and as environmental regulations restrict imported and local water supplies, it is important that each agency manage its water consumption and prepare their own emergency storage

supplies in the event that outside supplies are cut off. Long term, this can be accomplished through conservation and supply augmentation. Short term, this is probably best handled through prohibitions under penalty of law. This Section describes how the City plans to respond to sudden, irregular interruptions of water supply, which also apply to the long-term, less catastrophic drought scenarios discussed in **Section 6**.

8.2 RECENT STATEWIDE CONCERNS

At the statewide level, droughts have the ability of initiating action that can bring



about preparedness for more sudden emergencies that this Section seeks to address. For instance, the recent drought of 2011-2016, as discussed in **Section 6**, significantly depleted the State's supply of water and posed a challenge to many agencies throughout the State. The 2014 State Water Resources Control Board (SWRCB) Resolution 2014-0038 and 2015 Gov. Brown Executive Order B-29-15 (25% reduction in water use) created public awareness of water shortages and created more pressure on agencies to look at enacting new ordinances or modifying existing ordinances.

Recent Catastrophes Limiting Water Supplies

Fortunately, over the course of the last several years (since the 2010 UWMP), there have not been any catastrophes that have cut off water supplies on a state-wide level. However, as of the writing of this UWMP (2017), the Oroville Reservoir (Northern California) nearly had a moderate structural failure of its spillway which may have affected a large amount of that reservoir's water supply for that region.

8.3 RECENT LOCAL CONCERNS

City of Calexico

In 2010, the El Mayor earthquake caused moderate to heavy damage throughout Calexico and across the border in Mexicali.

Measuring 7.2 on the Richter scale, the quake was centered about 40 miles south of the U.S.-Mexico border near Mexicali. A state of emergency was declared and officials cordoned off parts of the City. Two buildings partially collapsed and water mains broke. More importantly, the Calexico water treatment plant sustained severe damage. As a result, the City has drafted goals in its 2015 General Plan aimed at emergency preparedness.



Figure 8.1: Sinkholes caused by the El Mayor Quake

8.4 EMERGENCY RESPONSE EFFORTS

During a catastrophe, the City's response efforts will consist of City municipal efforts to coordinate with its citizens (i.e. customer relations, penalties, prohibitions, etc.) as well as City water staff efforts to manage water production, treatment, and distribution. The City will also work with IID to ensure water supplies are being fed to the City. These combined efforts will help ensure that in the most extreme conditions, rationing of supplies and allocation to customers will be accomplished.



Imperial Irrigation District

IID is considered a special district in the eyes of the state and the federal government, and thus must meet emergency preparedness and emergency management requirements of cities. As such, IID and the County require the cities

IID requires a 10-day emergency storage of its members in the event that supplies are cut off.

in the Imperial Unit have a ten-day storage holding capacity requirement. During or immediately after any water supply emergency, IID staff implements the Emergency Preparedness Plan, which responds to events that impair water operation of canals, laterals, drains, dams, and other facilities. In the event of a natural and or man-made disaster, IID would also open its Emergency Operations Center located at headquarters in Imperial, California. IID would then notify the Operational Area, which is the Imperial County Office of Emergency Services. Depending on the backlog of Imperial County Staff, requests for additional aid could go up the chain of command.

8.4.1 CITYWIDE MUNICIPAL RESPONSE

Upon a catastrophic water supply reduction, mandatory provisions to reduce water use will be placed into effect. During

a shortage, the City would increase media attention to the water supply situation and would step up public water education programs, encourage property owners to apply for landscape and interior water use surveys and continue to advertise the importance of customers installing efficient plumbing fixtures.

When a shortage declaration appears imminent, the City Manager can activate a City water shortage response team. The team includes: water, fire, planning, health, emergency services, public affairs, parks and recreation, and the Mayor's Office. During a declared water shortage, the City will accept applications for new building permits but will not issue permits until the shortage declaration is rescinded. An appeal process is available and ends at the City Council.

8.4.2 CITY WATER STAFF RESPONSE

Power Outage

In the event of extended regional power outages, the City water staff will use standby diesel generators that will power critical functions at the water treatment plant. The fuel would be brought in every two days. In this way, the residents of Calexico would not lose supply of potable water.



Earthquake

In the event of an earthquake that damages critical components of the water treatment plant, the City water staff can divert irrigation water into the potable water distribution system. The water could be delivered by diesel powered pumps to the City's distribution system. Under this scenario, non-potable water would be delivered to City customers and the water must be boiled by each customer prior to potable water use. The water could be delivered by diesel powered pumps to the City's distribution system.



Figure 8.2: Backup Generator Pumps

Damages to Water Conveyance Facilities

If the All-American or Central Main Canal is damaged and unable to transmit water, the City water staff will direct the Council to enforce strict conservation measures. The City will have approximately ten days of raw water storage (from their 25 MG raw water

reservoir -see Section cover photo) to rely on from the time of the emergency (assuming reduced consumption is in place).

8.4.3 PRIORITIES

As mentioned in the 2010 UWMP, priorities for use of available potable water during shortages were based on input from the City Emergency Response Team, citizen groups, and legal requirements set forth in the California Water Code, Sections 350-358. Water allocations are established for all customers according to the following ranking system:

1. **First Priority:** Minimum health and safety allocations for interior residential needs (includes single family, multi-family, hospitals and convalescent facilities, retirement and mobile home communities, and student housing, and fire-fighting and public safety)
2. **Second Priority:** Commercial, industrial, institutional/governmental operations (where water is used for manufacturing and for minimum health and safety allocations for employees and visitors), to maintain jobs and economic base of the community (not for landscape uses)



- 3. **Third Priority:** Existing landscaping.
- 4. **Fourth Priority:** New customers, proposed projects without permits when shortage declared.

Health & Safety Requirements (1st Priority)

To assess the amount of water that should be available at a bare minimum (1st Priority Level), the amount personal hygiene household water use must be quantified. Based on commonly accepted estimates of interior residential water use in the United States, health and safety water use is approximated to be as follows:

Table 8.1
Water Fixtures: Health & Safety
Personal Use Per Day (gal)

Item	Regular	Voluntary Conservation	Fixture Change
Toilet	14	10.5	6.5
Shower	15	12	10
Washer	12	11	10
Kitchen	4	3	3
Other	4	4	4
Total	49 gal	40.5 gal	33.5 gal

Since the City currently has a population of about 40,000 residents, at a voluntary conservation rate of 40 GPCD, the City will need at least 5 AF per day to provide for the health and safety of its residents during water supply interruptions, if conservation

is voluntary. Accomplishing this may prove to be difficult unless most or all of the City’s citizens are aware of the water supply shortages.

8.5 CITY CONTINGENCY POLICIES

Per the City’s 2010 UWPM, the City adopted a resolution which stipulated a four-stages of water shortage (see Section 8.5.2). Since this four-stage system is better handled by the City water staff, the City recently codified Ordinances 1155 and 1156 which established a two-level conservation response for water shortages (i.e. “on” or “off”) as described in the following sub-section.

8.5.1 CITY WATER CONSERVATION PLAN

The City adopted Resolution 2014-68 in 2014 in response to the SWRCB resolution. The resolution helped codify new water conservation policies for the City. The City’s code was amended to include a two-level water use restriction policy (City Code 13.40) that the City uses to deal with its customers. The relatively new changes to the City’s code do not disregard the four-stage rationing and consumption reduction

Although aimed at addressing droughts, conservation ordinances can help manage supplies during catastrophes.



methods outlined in the 2010 UWMP. Rather, the two-level system allows the City to apply water reduction methods in a more municipal-civil manner. This two-level system also seeks to apply conservation more easily, which will help increase overall conservation.

Limitations/Prohibitions

Per the City's code 13.40.060, the Level 2 water restrictions are as follows:

1. Watering of lawns and ornamental landscapes shall be limited to three times per week on the following days:
 - a. Properties located North of Highway 98 shall water on Tuesdays, Thursdays, and Saturdays only
 - b. Properties located South of Highway 98 shall water on Mondays, Wednesdays, and Fridays only;
2. Watering of lawns and ornamental landscapes is prohibited between the hours of nine a.m. and six p.m.
3. The application of potable water to outdoor landscapes in a manner that causes runoff such that water flows onto adjacent property, non-irrigated areas, private and public walkways, roadways, parking lots, or structures is prohibited

4. The use of a hose that dispenses potable water to wash a motor vehicle is prohibited, unless the hose is fitted with a shut-off nozzle or other device attached to the hose that causes it to cease dispensing water immediately when not in use;
5. The application of potable water to driveways and sidewalks is prohibited;
6. The use of potable water in a fountain or decorative water feature is prohibited unless the water is re-circulated.

Penalties for Non-Compliance

Per City code 13.40.070, penalties for Non-Compliance of the restrictions listed above include:

“All means of enforcement authorized under this code may be used to address violations of this chapter, including, but not limited to: criminal actions, nuisance abatement, civil actions, and administrative citations. Violations of this chapter are punishable as an infraction and subject to fine of up to five hundred dollars per violation, per day.”

Also, per City code IV.13.40.090:



“In addition to the penalties provided in this chapter, any condition caused or permitted to exist in violation of any of the provisions of this chapter shall be deemed a public nuisance and may be, by the city, summarily abated as such, and each day such condition continues shall be regarded as a new and separate offense.”

The City’s Code 13.40.060 & 13.40.090 are included in **Appendix H** of this UWMP.

8.5.2 2010 UWMP ORDINANCE

Per the City’s 2010 UWMP, the City adopted a resolution which acknowledged a four-stage shortage system, with the following shortage levels and response types:

**Table 8.2
Water Shortage Stages**

Shortage Stage	(%)	Type
I	15%	Voluntary
II	25%	Mandatory
III	35%	Mandatory
IV	50%	Mandatory

City Code 13.40 (adopted more recently), does not replace this four-level system, since the four-level system was not codified (resolution only). It can be said that Level Two of the City Code 13.40 covers stages II, III, and IV listed above. The good thing about the City’s two-level system is that it does not place the burden of figuring out

the percentages of water use reduction on the customer. Rather, City water staff will still monitor the situation using the four-stages and coordinate with Council as to the appropriate action. The action is then taken as “on” or “off”, which simplifies the customer’s efforts while not understating the seriousness of the shortage. In short, the City’s water shortage response is designed to provide a minimum of 50% of normal supply during a severe or extended water shortage.

Limitations/Prohibitions

The 2010 Ordinance stipulated Restrictions During a Declared Water-Shortage Emergency. The following restrictions are effective during a declared Water-Shortage Emergency:

1. There shall be no water used for irrigation or landscaping purposes.
2. There shall be no private or commercial car washing.
3. No restaurant, hotel, cafe, cafeteria or other public place where food is sold, served or offered for sale, shall serve drinking water to any customer unless requested.
4. Use of potable water for construction, compaction, dust control, street or parking lot sweeping, building wash down shall be prohibited.



5. Use of potable water for sewer system maintenance or fire protection training shall be prohibited without prior approval by the Mayor
6. Use of potable water for any purpose in excess of the amount allocated shall be prohibited.
7. Other restrictions and prohibitions may become necessary during a declared Water Shortage Emergency, to safeguard the adequacy of the water supply for domestic, sanitation, fire protection, and environmental requirements.

8.5.3 DEVELOPMENT RESTRICTIONS

Although not specifically mentioned in City code, per the 2010 UWMP and as mentioned in **Section 8.4.1**, the City also has the option to restrict new development for the period of time until the water shortage is remediated.

8.6 METHODS TO ASSESS REDUCTIONS

Using the City’s water billing records, the City will be able to identify not only the conserved volumes, but also to determine which customers are in violation of the Level 2 conservation. In addition to monitoring customer use, the City also has the ability to monitor production volumes to determine if the supplies have been

reduced. **Table 8.3** lists the City’s general water use monitoring mechanisms:

**Table 8.3
Monitoring Mechanisms**

Item	Data Analyzed
Production Meters	Daily Production
AMI Meters	Monthly Consumption

More specifically, if the City desires to determine violations of on-day or off-day irrigation, the City can install, if they have not already, AMI meters which will allow the City to view consumption daily.

8.7 FISCAL IMPACTS

Impacts to Revenue

During times of long-term or short-term water supply interruptions, there are obvious fiscal impacts to the City **Table 8.4** below lists the current water rates for single-family residences which were in effect at the time this Plan was prepared:

**Table 8.4
Current City Single Family Water Rates**

Tier	Pricing
Tier 1 (0-3 CCF)	\$43.89 (tot.)
Tier 2 (> 3 CCF)	\$2.22 (Excess per 100 cu. ft.)

Although fiscal impacts can be mitigated by considering changes to the City’s water rate



fee structure (last updated in 2008), any changes should maintain a base rate for water (currently at \$43.89). This base rate allows the City to not be impacted by revenue decreases during times of water use restrictions described in this Section.

Impacts to Reserve Funds

The City carries reserves in the water system accounts, to fund for needed improvements to its water system. The balance of reserves the City has is maintained primarily for facility repair and replacement. Under a shortage crisis to handle extreme fluctuations in revenue and expenses, flexibility would exist to dip into these reserves.

8.8 THREE YEAR MINIMUM SUPPLY

The minimum estimated water supply available during a three-year multiple-dry year event in the next three years (2017-2019) as of the writing of this UWMP is shown in **Table 8.5**. During periods of

drought, IID stipulates in their EDP that, for urban customers, a minimum supply of year 2006 base use plus a per capita rate times the population growth differential from 2006 will be used to determine minimum supply. As such, the supply amounts are a bit above half the capacity of the City’s water treatment plant.

**Table 8.5
Three-Year Minimum Supply* (AF)**

Year	Supply (AF)	Demand (AF)
2016	9,790	7,189
2017	9,992	7,389
2018	10,195	7,595

**See Tables 6.3 – 6.9 for detailed breakdown.*

Of course, the three-year minimum supplies shown above are only considering drought conditions. Minimum estimated supply does not take into consideration threats to supplies other than droughts, such as consideration a catastrophic interruption to local or imported supplies, or emergency power outages.



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