JOSHUA BASIN WATER DISTRICT

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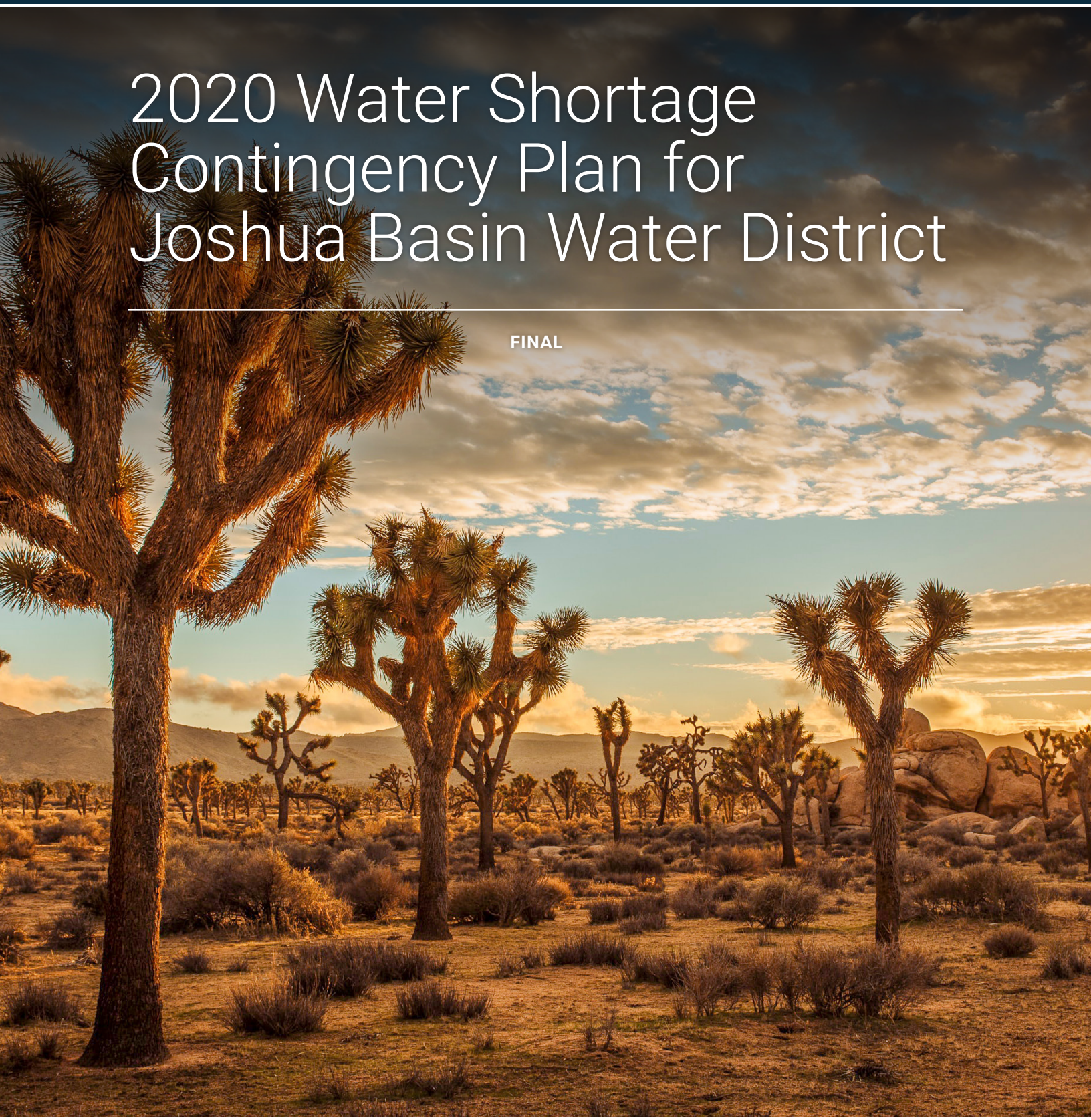
September 2022

2020 Water Shortage Contingency Plan for Joshua Basin Water District

FINAL



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2020 Water Shortage Contingency Plan
FINAL

September 2022

Prepared for

Joshua Basin Water District
61750 Chollita Road
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KJ Project No. 2044221

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Acronyms

AF	Acre-Feet
AFY	Acre-Feet per Year
AWWA	American Waterworks Association
CCF	hundred cubic feet
DWR	Department of Water Resources
GPCD	Gallons Per Capita Per Day
HMP	Hazard Mitigation Plan
JBWD	Joshua Basin Water District
LHMP	Local Hazard Mitigation Plan
MWA	Mojave Water Agency
SWP	State Water Project
UWMP	Urban Water Management Plan
WSCP	Water Shortage Contingency Plan

DWR Checklist Table for WSCP

Water Code Section	Summary as Applies to UWMP/WSCP	2020 WSCP Location
Subject: Water Shortage Contingency Planning | 2020 UWMP Guidebook Location: Appendix J		
10632(a)	Provide a water shortage contingency plan (WSCP) with specified elements below.	Full Document
10632(a)(2)(A)	Provide the written decision-making process and other methods that the supplier will use each year to determine its water reliability.	Section 2.5
10632(a)(2)(B)	Provide data and methodology to evaluate the supplier's water reliability for the current year and one dry year pursuant to factors in the code.	Section 2
10632(a)(3)(A)	Define six standard water shortage levels of 10, 20, 30, 40, 50 percent shortage and greater than 50 percent shortage. These levels shall be based on supply conditions, including percent reductions in supply, changes in groundwater levels, changes in surface elevation, or other conditions. The shortage levels shall also apply to a catastrophic interruption of supply.	Section 3.1
10632(a)(3)(B)	Suppliers with an existing water shortage contingency plan that uses different water shortage levels must cross reference their categories with the six standard categories.	Section 3.1
10632(a)(4)(A)	Suppliers with water shortage contingency plans that align with the defined shortage levels must specify locally appropriate supply augmentation actions.	Section 3.3

10632(a)(4)(B)	Specify locally appropriate demand reduction actions to adequately respond to shortages.	Section 3.4
10632(a)(4)(C)	Specify locally appropriate operational changes.	Section 3.5
10632(a)(4)(D)	Specify additional mandatory prohibitions against specific water use practices that are in addition to state- mandated prohibitions are appropriate to local conditions.	Section 3.7.4
10632(a)(4)(E)	Estimate the extent to which the gap between supplies and demand will be reduced by implementation of the action.	Section 3.4, 3.7
10632(a)(5)(A)	Suppliers must describe that they will inform customers, the public and others regarding any current or predicted water shortages.	Section 4.1
10632(a)(5)(B) 10632(a)(5)(C)	Suppliers must describe that they will inform customers, the public and others regarding any shortage response actions triggered or anticipated to be triggered and other relevant communications.	Table 4.1
10632(a)(7)(A)	Describe the legal authority that empowers the supplier to enforce shortage response actions.	Section 6
10632(a)(7)(B)	Provide a statement that the supplier will declare a water shortage emergency Water Code Chapter 3.	Chapter 3
10632(a)(7)(C)	Provide a statement that the supplier will coordinate with any city or county within which it provides water for the possible proclamation of a local emergency.	Section 4.1
10632(a)(8)(A)	Describe the potential revenue reductions and expense increases associated with activated shortage response actions.	Section 7.1
10632(a)(8)(B)	Provide a description of mitigation actions needed to address revenue reductions and expense increases associated with activated shortage response actions.	Section 7.3
10632(a)(8)(C)	Describe the cost of compliance with Water Code Chapter 3.3: Excessive Residential Water Use During Drought.	Table 7-1
10632(a)(9)	Retail suppliers must describe the monitoring and reporting requirements and procedures that ensure appropriate data is collected, tracked, and analyzed for purposes of monitoring customer compliance.	Section 5.2
10632(a)(10)	Describe reevaluation and improvement procedures for monitoring and evaluation the water shortage contingency plan to ensure risk tolerance is adequate and appropriate water shortage mitigation strategies are implemented.	Section 1.4
10632(b)	Analyze and define water features that are artificially supplied with water, including ponds, lakes, waterfalls, and fountains, separately from swimming pools and spas.	Section 3.4

Section 1: Introduction

Water supplies may be interrupted or reduced significantly in a number of ways, such as a drought that limits supplies, an earthquake that damages water delivery or storage facilities, a regional power outage or a toxic spill that affects water quality. This Plan addresses the requirements in the California Water Code Section 10632, which requires that every urban water supplier shall prepare and adopt a Water Shortage Contingency Plan (WSCP, Plan) as part of its Urban Water Management Plan (UWMP). This WSCP serves as a guide for the intended actions by Joshua Basin Water District (JBWD, the District) during water shortage conditions to improve preparedness for droughts and other impacts on water supplies by describing the process used to address varying degrees of water shortages.

This plan describes the actions JBWD will take to identify and respond to water shortage per requirements of the Urban Water Management Act, Section 10632 of the California Water Code.

1.1 Declaration of Purpose of WSCP

The WSCP adopts regulations and restrictions on outdoor water use through the six standard water shortage stages, including domestic (residential), commercial/institutional/industrial, landscape, parks, and golf courses, and agriculture. These regulations are effective immediately and shall be effective until the District Board of Directors (Board) finds that water shortage no longer exists.

The overall principle of the District's WSCP is to reliably meet water demands during shortages caused by droughts, supply reductions and emergency conditions.

The purpose of the WSCP is to:

- Monitor and compare anticipated supplies and demands consistent with Water Code Section Water Code Section 10632(a)(2);
- Keep water use within supply and delivery capability;
- Define procedures to be used when supply cannot meet demand or continuing pumping will result in harm to supply source;
- Familiarize all of JBWD customers (residential, business, industrial, institutional/governmental and others) with procedures to be implemented when voluntary or mandatory water restrictions are in effect.

The District has developed a Draft Water Shortage Contingency Ordinance (included in Appendix A) that provides a framework and guides the District actions in the event of a water shortage emergency. The draft ordinance includes voluntary and mandatory stages to address a reduction in water supply, at various levels reduce demand by up to 50%. Prohibitions, penalties, and financial impacts of shortages have been developed by the District and are summarized in Section 7.

1.2 Reduced Water Use During Water Shortage Events

This WSCP establishes changes that may be imposed on water users during Water Shortage Events. Such events may be a lengthy drought that has limited groundwater supplies, the sudden presence of an unforeseen toxin, which may require shutting the main groundwater pumping system, or an emergency condition brought about by an earthquake, fire, or other interruption in water delivery to the system. These actions are discussed in later sections of this WSCP.

A consideration for planning is water needed (gallons per capita per day [GPCD]) to maintain health and safety. The American Water Works Association (AWWA 2011) suggests that on the high end, water necessary for health and safety is 58 GPCD. AWWA suggests that with water savings fixtures and habit changes water needed for health and safety can be as low as 30 GPCD (AWWA 2011). These estimates are consistent with the amount of water recommended for health and safety by the US Bureau of Reclamation, which uses 50 GPCD for drought planning purposes (Reclamation 2010).

1.3 Plan Preparation, Adoption, Submittal and Availability

JBWD began preparation of this Plan in 2021. The public hearing for the Water Shortage Contingency Plan was noticed in the local newspapers (The Desert Star), as prescribed in Government Code 6066, which included the time and place of the hearing (August 17, 2022 at the District's office located at 61750 Chollita Road in Joshua Tree), as well as the location where the plan was available for public inspection. Interested parties, including other local agencies, were notified of the public hearing. The 2020 UWMP was made available from the District's website for public inspection prior to the public hearing, so that comments could be received and discussed by the District's Board of Directors prior to plans adoption on August 17, 2022 at the District's office.

The final draft of the Plan was adopted by the Board of Directors (provided in Appendix D of the UWMP) and was submitted to the Department of Water Resources (DWR) within 30 days of approval. Additionally, the adopted plan will be made available per the requirements of the Water Code.

Starting in 2020, urban water suppliers are required to report and submit information related to the Water Shortage Contingency Plan in standardized tables developed by DWR. These standardized tables are provided as Appendix C of this document.

1.4 Water Shortage Contingency Plan Refinement Procedures

JBWD will convene the following departmental staff as needed to refine the WSCP:

- Engineering Staff
- Administrative Staff
- Operational Staff

The WSCP will be updated and refined as appropriate and needed following significant changes to JBWD's supply portfolio or significant changes to the water allocation plans of its supply agencies (Mojave Water Agency [MWA]), but no less than every 5 years.

1.5 Relationship to the Urban Water Management Plan

Water Code Section 10632(a) requires that every urban water supplier prepare and adopt a water shortage contingency plan as part of its urban water management plan. While the water shortage contingency plan is a stand-alone document it is updated and adopted in concert with the UWMP. Content of the water shortage are informed by the analysis of water supply reliability conducted to Water Code Section 10635 (contained in Section 6 of the UWMP). The reliability analysis of the UWMP is considered “normal”, “single-dry”, and “5-year drought”. The reliability analysis in the 2020 UWMP found in Section 6 of the UWMP.

Factors in the District’s reliability include infrastructure (e.g., aging wells, need for new wells) and drought. While it is necessary for the District to implement planned water supply projects and WSCP actions, total supplies are anticipated to be higher than projected gross water use. The District may call on existing customers to undertake conservation, if needed.

TABLE 1-1. NEAR-TERM WATER SUPPLY RELIABILITY ASSUMING 5-YEAR DROUGHT

Parameter	2021	2022	2023	2024	2025
Gross Water Use	1,313	1,304	1,296	1,287	1,279
Surplus/Shortfall w/o WSCP Action	(139)	(111)	(85)	(56)	(25)
WSCP - supply augmentation benefit	139	111	85	56	25
WSCP - use reduction savings benefit	N/A	N/A	N/A	N/A	N/A
Revised Surplus/(shortfall)	N/A	N/A	N/A	N/A	N/A
Resulting % Use Reduction from WSCP action	12%	9%	7%	5%	2%

Note: Reformatted from UWMP Guidebook, Table 7-5 Five-Year Drought Risk Assessment Tables to address Water Code Section 10635(b)

Section 2: Procedures for Annual Water Supply and Demand Assessment

California Water Code Division 1, Section 350, states:

> "The governing body of a distributor of a public water supply, whether publicly or privately owned and including a mutual water company, shall declare a water shortage emergency condition to prevail within the area served by such distributor whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the distributor to the extent that there would be insufficient water for human consumption, sanitation, and fire protection."

These Annual Assessment procedures described herein are one tool to be used to determine if a water shortage is to be declared.

New provisions in Water Code Section 10632.1. require that an urban water supplier such as JBWD, conduct an annual water supply and demand assessment ("Annual Assessment"), on or before July 1 of each year, to be submitted to DWR. An urban water supplier that relies on imported water from the State Water Project (SWP) or the Bureau of Reclamation shall submit its Annual Assessment within 14 days of receiving its final allocations, or by July 1 of each year, whichever is later. The requirement to perform the Annual Assessment begins in July 2022.

Droughts occur with unpredictable frequency, intensity, and duration. Developing and maintaining a healthy groundwater supply to serve its customers has always been an ongoing District priority, and the District wants to be prepared for drought and water shortages. The District regularly monitors its water supplies and demands and produces a Consumer Confidence Report (CCR) annually.

Water supply projections and hydrologic conditions are significant components in deciding when a drought response is needed. The amount of the water supply shortage contributes to the severity of drought declared and the necessary level of response from the District and customers.

2.1 Timeline for Conducting the Annual Assessment

Table 2-1 provides targets for performing the Annual Assessment. The table outlines actions for the current year and one year of drought. By starting to plan in 2022, JBWD will get a snapshot of conditions and can start lining up the resources to mitigate supply and start outreach to customers to manage demand. Major actions are proposed in February, when an initial estimate of supply is made and compared to demand. A final annual assessment is proposed in May 2023.

TABLE 2-1. CALENDAR FOR PERFORMING ANNUAL ASSESSMENT

Target Date	Action
Oct-Jan	Monitor groundwater supply Monitor demand trends
Feb	Confirm anticipated weather (e.g., National Weather Service Climate Prediction Center, La Niña, US Drought Seasonal Outlook) Prepare initial assessment of supplies (*Supply Table 1*) Make initial assessment of unconstrained demand (*Demand Tables 1, 2, 3*) Make initial estimate of shortage If shortage anticipated, form Water Shortage Task Force
Mar	Prepare informational item to the Board of Directors confirming assessment of supplies and identify any additional supply mitigations
Apr	Start public outreach Identify supplier efficiency actions Complete Draft Annual Assessment and present to the Board of Directors
May	Continue public outreach Finalize Annual Water Assessment and submit to DWR If necessary, prepare notices of public hearing on water shortage
Jun-Sept	Continue public outreach If necessary, declare water shortage and implement supply mitigations and demand reduction actions Monitor customer response to water shortage messaging and other actions

2.2 Factors Affecting Demand and Supply

Weather affects the District's supply in multiple ways. Due to drought conditions the area has recently received far less than the historical average of approximately five inches of annual rainfall. There is negligible infiltration of direct precipitation in areas where alluvial deposits are thick, and substantial amount of available runoff is lost to evaporation after flowing into the basin.

Even without population changes, water demand could increase. Precipitation and temperature influence water demand for outdoor landscaping and irrigated agriculture. Evaporative coolers and outdoor water use are large components of water demands in the District's service area.

2.2.1 Weather Outlook

Lower spring rainfall increases the need to apply irrigation water. Further, warmer temperatures increase crop evapotranspiration, which increases water demand.

While no long-term study or correlation between weather parameters and the local groundwater supply have been performed, there are general "rules of thumb" that can be considered when looking at the groundwater supply.

- Potential for La Niña. ENSO (El Niño Southern Oscillation) is the warming and cooling of the ocean water along the Equator in the Eastern Pacific Ocean near South America. The warm phase is called El Niño and the cold phase is called La Niña. When the Eastern Pacific Ocean is 0.5 degrees Celsius above normal for 5 consecutive 3-month average periods, an El Niño is declared. When the Eastern Pacific Ocean is 0.5 degrees Celsius below normal for 5 consecutive 3-month average periods, a La Niña is declared. The El Niño and La Niña are declared as Weak, Moderate, or Strong depending on how far from normal the water temperature gets. When the temperature is above 1.5 degrees Celsius, it is declared as strong. When the temperature is above 1.0 degrees Celsius, it is declared as Moderate. When the temperature is above 0.5 degrees Celsius, it is declared as Weak. The effect on the District trends to be wetter with El Niños and drier with La Niñas. The National Weather Service Climate Prediction Center provides information on potential for La Niña conditions.

- US Drought Information Seasonal Outlook. The National Weather Service Climate Prediction Center provides information geographically on drought conditions and categorizes geographies as "Drought Persists", "Drought Remains but Improves", "Drought Removal Likely", and "Drought Development Likely".

2.3 Current Year Unconstrained Demand

DWR guidance for the Annual Assessment is to consider the expected water use in the upcoming year, based on recent water use, and before any projected response actions a Supplier may trigger under its WSCP.

2.3.1 Land Use

In order to evaluate water demand, the District will examine current use and coordinate and with the County of San Bernardino to understand near-term projected land uses. The land use evaluation will start with the current general plan and a summary of built dwelling-units (residential) and square footage (non-residential). Using known development projects constructed since the adoption of the general plan, a summarized total of the existing land use within the District's service area through the end of the recent calendar year will be developed.

The District will coordinate with the County to help identify pending and approved projects that are anticipated to utilize water in the in current calendar year and one future calendar year.

2.3.2 Current Demand

The District will create a table that will summarize the total water consumption (potable and untreated) for each consumption category within the District's water service area for the most recent 10-year average, by month (*Demand Table 1*). Based on anticipated weather, the District may adjust *Demand Table 1* to assume an increase in current demands. *Demand Table 1* will estimate existing demand in the current calendar year and demand in the subsequent calendar year. For the purposes of the analysis the subsequent year will be assumed to be a drought year.

2.3.3 Potential Demand

JBWD will create a table showing anticipate demands from "Under Construction and Approved Projects" (*Demand Table 2*). In *Demand Table 2* anticipated water use will be forecasted by month. The calculations in Demand Table 2 will use the most recently developed demand factors inclusive of water loss and including a contingency to account for annual demand variations that are likely to occur.

2.3.4 Total Near-Term Demands

Near-Term Demands (*Demand Table 3*) will be the sum of the demands reflected in *Demand Table 1* plus *Demand Table 2*.

2.4 Assessing Supply in Current Year and One Dry Year

JBWD will evaluate the local water sources available including Joshua Tree Basin groundwater, Copper Mountain Basin groundwater, and SWP water. Table 2-2 summarizes the factors to be considered.

Using Table 2-2 above as a guide, JBWD will develop a summary of each water source available in the upcoming year assuming the subsequent year will be a dry year. JBWD will develop *Supply Table 1*, in which a quantified summary of each anticipated supply source is provided for the upcoming year assuming the subsequent year is a dry year. Anticipated water supply will be forecasted by month using past supply patterns.

TABLE 2-2 ANNUAL ASSESSMENT OF SUPPLY

Source	Factors to be Evaluated in Current Year	Establishing Supply in Assumed Subsequent Dry Year
SWP Water/Mojave Water Agency (MWA)	What is anticipated SWP Allocation for upcoming 12 months	What is anticipated SWP dry year allocation
	Any constraints on supply due to infrastructure or water quality	Any constraints on supply due to infrastructure or water quality
	Any constraints on wheeling water to Mojave Water Agency (MWA)/JBWD system	Any constraints on wheeling water to MWA/JBWD system
Joshua Tree Groundwater Basin	Regulatory limitations	Regulatory limitations
	Annual extractions past 10-years	Annual extractions past 10-years
	Any constraints on supply due to infrastructure or water quality	Any constraints on supply due to infrastructure or water quality
	Consider if supply would be managed differently if it is known subsequent year will be dry year	
Copper Mountain Groundwater Basin	Regulatory limitations	Regulatory limitations
	Annual extractions past 10-years	Annual extractions past 10-years
	Any constraints on supply due to infrastructure or water quality	Any constraints on supply due to infrastructure or water quality
	Consider if supply would be managed differently if it is known subsequent year will be dry year	

2.5 Assessing Water Supply Reliability

JBWD will compare *Supply Table 1* and *Demand Table 3* and determine if a supply shortage is anticipated, the level of shortage, and prepare if necessary to implement its WSCP.

2.6 Coordination with Cities and Counties

Should a water shortage be declared, JBWD, will coordinate with any District or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code, and also to ensure that City/County facilities are being operated in a water efficient manner. Coordination will also include other agencies within the District's service area such as schools, parks, and others.

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Section 3: Six Standard Water Shortage Levels

3.1 Stages of Action to Respond to Water Shortages

As required by California Water Code Section 10632(a)(3)(A), this WSCP is framed around six standard water shortage stages, which correspond to progressive ranges of percent supply reductions from zero to more than fifty percent. Table 3-1 presents a description of the six water supply shortage stages, defined as stages I to VI.

Each stage may be triggered by a declaration from federal or state authorities, or JBWD to address events that result in a water shortage. The stages and applicable triggers are summarized in Table 3-2.

Table 3-1. Rationing and Reduction Goals (DWR Table 8-1)

Deficiency or State Mandated Reduction	Stage	Demand Reduction Goal	Type of Program	Water Shortage Condition
1-10%	1	10% reduction	Voluntary	Minor Shortage
11-20%	2	20% reduction	Mandatory	Moderate Shortage
21-30%	3	30% reduction	Mandatory	Severe Shortage
31-40%	4	40% reduction	Mandatory	Critical Shortage
41-50%	5	50% reduction	Mandatory	Emergency Shortage
>50%	6	>50% reduction	Mandatory	Catastrophic Failure

TABLE 3-2 STAGES OF JBWD WATER SHORTAGE CONTINGENCY PLAN

Stage	Percent Supply Reduction	Triggers
I	Up to 10%	• Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • State declaration due to drought or system maintenance • Unplanned JBWD water system maintenance
II	Up to 20%	• Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • State declaration due to drought or system maintenance • Unplanned JBWD water system maintenance requiring more time to repair

Stage	Percent Supply Reduction	Triggers
III	Up to 30%	• Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • State determination due to drought or significant system failure • State outdoor irrigation restriction; and/or • Unplanned JBWD water system failure or emergency
IV	Up to 40%	• Federal, state, or local disaster declaration that may impact water supplies • State determination due to drought or significant system failure • State outdoor irrigation restriction; and/or • Unplanned JBWD water system failure or emergency
V	Up to 50%	• Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • State determination due to drought or significant system failure • State outdoor irrigation restriction; and/or • Advanced JBWD water system failure or emergency
Stage VI	50% or higher	• Results of the Annual Assessment • Federal, state, or local disaster declaration that may impact water supplies • MWA failure to supply SWP for groundwater recharge • State determination due to drought or significant system failure • Natural or human-caused catastrophe disrupting delivery of water to, or within the service area • Severe JBWD water system failure

3.1.1 Procedures for Water Shortage Level Determination

The results of the Annual Assessment will be used to determine the water shortage level. In case of emergencies, a special meeting may be called by a majority of the Board on less than twenty-four-hour notice and without an agenda to deal with the disruption of service. If an emergency arises which would ordinarily be brought to the attention of the Board, but insufficient time exists, the General Manager has administrative authority to take action as deemed appropriate and reasonable.

3.2 Water Shortage Response Actions

Once a shortage stage is declared, JBWD may implement shortage response actions required by the customer and through operational changes, as listed in Section 3.5. These actions will be supported by communication protocols (discussed in Section 4), enforcement actions (discussed in Section 3.8.2) and monitoring and reporting efforts (discussed in Section 5) activities appropriate at each shortage stage level.

TABLE 3-3 CUSTOMER AND JBWD WATER SHORTAGE ACTIONS

Stage	District Actions	Customer Actions
Stage I	• Initiate public information campaign • Increase awareness of conservation measures • Commence enforcement of conservation measures • Promote methods to reduce water use • Conduct focused outreach to large water users • Publish Water Shortage Contingency Plan stages and actions per stage	• Voluntary water conservation • Adhere to conservation measures • Consider conversion to more efficient irrigation methods
Stage II	• Expand public information campaign • Step up enforcement of conservation measures • Continue previous actions	• Comply with mandatory conservation regulations • Continue previous actions
Stage III	• Continue previous actions • Intensify public information campaign • Expand enforcement of conservation measures • Provide incentives to single metered multi-family units to install individual meters or sub-meters • Send direct notices to all customers • Provide regular media, District Board, and County briefings • Activate emergency connections with mutual aid agencies • Suspend issuance of potable construction meters. • Evaluate size of monetary fines for water waste	• Continue previous actions • Limit washing of sidewalks, driveways, walkways, parking lots, or any other hard-surfaced area by hose or flooding unless otherwise necessary • Comply with prohibited outdoor irrigation of ornamental landscape or turf with potable water through an irrigation system between 9:00 am and 6:00 pm and limit system use to two days a week
Stage IV	• Continue previous actions	• Continue previous actions • Obligation to fix leaks, breaks, or malfunctions within 48 hours
Stage V	• Continue previous actions • Compel mandatory water consumption goals and allocations for all customers and users	• Prohibit all outdoor irrigation with potable water • Continue previous actions
Stage VI	• Continue previous actions • Implement crisis communication plan • Activate Emergency Operations Center • Coordinate actions with regulatory agencies • Coordinate actions with public safety agencies to address enforcement and fire protection issues • Recall all temporary meters and activate water fill stations • Suspend issuance of new development approvals and new water connections other than those required to be processed by state law	• Continue previous actions • Terminate outdoor water use for irrigation, pools, and fountains • Water may only be used outdoors for public health and safety purposes • Be on alert for Boil Water Orders if they become necessary

3.3 Supply Augmentation

Any water shortage event should trigger a review of potential sources for supplemental water supply. The groundwater basins in the District's area are the limiting factor in groundwater production but are expected to continue to produce reliable supplies even in a catastrophe. Water stored in the District's distribution system storage tanks are monitored and managed to not allow the reservoir volumes to drop to very low levels. Standard practice is to maintain, at a minimum, the required emergency and fire flow within all tanks at all times. In an emergency, these stored water volumes are available for distribution or truck delivery, as necessary.

Potential sources for supplemental water include pumping additional groundwater or imported water supply from MWA. Any supplemental water supply project or improvements to existing facilities to allow for entitled flows should be a priority for consideration in immediate capital projects if shortage (e.g., demands exceeding supplies) greater than ten percent is anticipated or when a Stage 3 Water Shortage Event continues for more than 18 months. Supply augmentation in near term is presented in Table 3-4 below.

TABLE 3-4 SUPPLY AUGMENTATION ACTIONS

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier *(based on DWR's WUE database categories)*	How much is this going to reduce the shortage gap?	Additional Explanation or Reference
3	Groundwater	158 AF	Pump Additional Groundwater
3	State Water Project	Will vary	Amounts would vary depending on if SWP is available and the amount
4	Groundwater	215 AF	Pump Additional Groundwater
4	State Water Project	Will vary	Amounts would vary depending on if SWP is available and the amount
5	Groundwater	473 AF	Pump Additional Groundwater
5	State Water Project	Will vary	Amounts would vary depending on if SWP is available and the amount
6	Groundwater	631 AF	Pump Additional Groundwater
6	State Water Project	Will vary	Amounts would vary depending on if SWP is available and the amount

3.4 Demand Reduction Actions

Currently, JBWD implements water conservation measures and irrigation practices aimed at increasing everyday water use efficiency. Those measures, plus those to be enacted in the various stages, are presented in Table 3-5.

TABLE 3-5 PROHIBITIONS DURING DIFFERENT SHORTAGE STAGES

Stage	Prohibition/Requirement
In Effect at All Times	Water waste is prohibited at all times. Water waste includes but is not limited to: • Application of potable water to driveways and sidewalks is prohibited. • Use of hose that dispenses potable water to wash a motor vehicle is prohibited, except where the hose is fitted with a shut-off nozzle or device • Water leaks shall be repaired in a timely manner and sprinklers shall be adjusted to eliminate over-spray. • Hosing of hardscape surfaces, except where health and safety needs dictate, is prohibited. Other • Water for construction purposes, including but not limited to de-brushing of vacant land, compaction of fills and pads, trench backfill, and other construction uses shall be in an efficient manner. • All new construction, including residential, commercial, and industrial, shall be equipped with low flow toilets and fixtures.
Stage I	• No watering of outdoor landscapes within 48 hours of measurable rainfall. • Car washing and outside cleaning activities prohibited except when performed with buckets and automatic hose shutoff devices. • The serving of drinking water other than upon request in eating or drinking establishments is prohibited. • Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom.
Stage II	• All restrictions/prohibitions/initiatives from Stage I are in effect • Landscape watering between the hours of 1000 and 1800 hours is prohibited • Outdoor watering is limited to 3 days per week. • Irrigation with potable water outside of newly constructed homes and buildings not delivered by drip or microspray is prohibited.
Stage III	• All restrictions/prohibitions/initiatives from Stage I and Stage II are in effect and are mandatory. • Irrigation with potable water of ornamental turf on public street medians is prohibited. • Outdoor watering is limited to 2 days per week. • Potable water cannot be used to maintain fountains, reflection

Stage	Prohibition/Requirement
	ponds and decorative water bodies for aesthetic or scenic purposes, except where necessary to support aquatic life.
Stage IV	• All restrictions/prohibitions/initiatives from Stage I, Stage II, and Stage III are in effect and are mandatory. • Outdoor watering is limited to 1 day per week. • Filling of new swimming pools, spas, hot tubs, or the draining and refilling of existing pools, etc. is prohibited. Topping off is allowed to the extent that the designated water allocation is not exceeded. • Meters will only be installed for new accounts where the building permit was issued prior to the declaration of the water shortage.
Stage V	• Filling of new swimming pools, spas, hot tubs, or the draining and refilling of existing pools, etc. is prohibited. Topping off is allowed to the extent that the designated water allocation is not exceeded. • Meters will only be installed for new accounts where the building permit was issued prior to the declaration of the water shortage
Stage VI	• All restrictions/prohibitions/initiatives from previous Shortage Stages are in effect and are mandatory. • No meters will be installed for new accounts. • Outdoor irrigation is prohibited, with the exception of drip or hand watering to preserve established trees.

As described in the table above, prohibitions and restrictions on water features that are artificially supplied with water, such as ornamental lakes, ponds and decorative fountains are treated differently from swimming pools and spas, as defined in Section 115921 of the California Health and Safety Code.

3.4.1 Shortage Stage Allocation

Besides prohibitions, when shortage is greater than 30%, the District may implement allocation limits for each customer class. At the direction of the General Manager each customer will be classified and assigned a monthly allotment according to the methods described in the Draft Water Shortage Contingency Ordinance. Customers will be notified of their classification and allotment by mail before the date when allocation goes into effect. In a disaster, prior notice of allotment may not be possible. In such cases, notice may be provided by other means, such as telephone, radio, television, or newspaper. Customers may appeal the classification on the basis of use or the allotment on the basis of incorrect calculation. The appeals process is set forth in the Draft Water Shortage Contingency Ordinance and described in Section 6.

Specific water allotments for Shortage Stages 4 through 6 shortages were developed using the California Water Code Stage 2, 3, and 4 health and safety allotments of 58 GPCD, or 28 hundred cubic feet (CCF) per person per year as the basis.

3.5 Operational Changes

The District shall comply with the restrictions similar to those implemented for the public to the extent possible and not inconsistent with the restrictions provided for the District in this section. The District will encourage all water customers to cooperate with the water restrictions imposed by each stage.

Limit use of potable water to irrigate newly planted street, park and/or golf course trees, street medians, and general irrigation on all District properties. Non-potable water from wastewater treatment shall be used by District personnel if available for such purposes. No new plantings shall be installed by the District during Stage 3 or higher Water Shortage Events, unless necessary for erosion control. Other actions include efficient water use practices identified in Table 3-5, such as minimizing waste of water in construction, following a modified outdoor landscape watering schedule for District facilities depending on shortage stage, and fixing any identified leaks in the distribution system or other related water infrastructure components.

3.6 Actions to Prepare for Catastrophic Interruption

The distribution infrastructure within groundwater basins from which the District relies are the limiting factor in groundwater production but is expected to continue to produce reliable supplies even in a catastrophe with the management action items identified herein and in the Local Hazard Mitigation Plan described below. Water stored in the District's distribution system storage tanks are monitored and managed to not allow the reservoir volumes to drop to very low levels. Standard practice is to maintain, at a minimum, the required emergency and fire flow within all tanks at all times. In an emergency, these stored water volumes are available for distribution or truck delivery as necessary. Potential supply impacts from catastrophic interruption of SWP supplies are provided for in the MWA WSCP.

3.7 Local Hazard Mitigation Plan

Per the Water Code Section 10632.5, Suppliers are required to assess seismic risk to water supplies as part of their WSCP. The plan also must include 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.

Pursuant to Water Code, the seismic risk assessment must include a description of the vulnerability of each of its water system(s) facilities. Suppliers are encouraged to assess the vulnerability of external facilities or components that extend outside the Supplier's service distribution area (e.g., transmission pipes, delivery canals, surface water diversion pumps) since failure of them would still ultimately disrupt the Supplier's ability to serve their customers.

The Local Hazard Mitigation Plan (LHMP) for the District was developed and adopted in June 2019 to formulate mitigation measures for the future protection of JBWD's critical infrastructure and the community's safety. The LHMP was completed with the coordination and involvement of the JBWD staff and representatives from the local community. The following plans were utilized to obtain information on the hazards that face the area and the mitigation goals of the County of San Bernardino:

- Bighorn Desert View LHMP
- Twentynine Palms Water District LHMP
- San Bernardino County Hazard Mitigation Plan (HMP)
- USGS Golden Guardian Shake Out 2008
- Joshua Basin Water District's Water Master Plan
- California HMP 2013
- San Bernardino County Flood Control
- FEMA Flood Insurance Study for San Bernardino County

The goal of the LHMP is to reduce the future impacts of a hazard, including property damage, disruption to local and regional economies, and the amount of public and private funds spent for recovery. The District has identified the following hazards to be the most likely to affect District's service area:

- Earthquake: There are many faults running through the District's service area.
- Terrorist Event: A major terrorist event at the Marine Base Twentynine Palms could have a negative effect on the water supply or damage the infrastructure utilized by the District, leaving the District with no power and no water in the system due to ruptured pipelines, contamination, or other damages.
- Lightning Strikes: Lightning strikes on wells, pumps, motors, and electrical equipment are common and can happen at any location in the District Service area. The area is prone to lightning storms during monsoon season from July to September each year.
- Flash Flooding: Flash flooding is very common in the San Bernardino County deserts and happens almost yearly. These events uncovered pipelines installed within paved and unpaved roads throughout the distribution system. USGS and the County of San Bernardino do not keep records on the events of flash flooding and there are no flood control systems in the Joshua Basin.
- Climate Change/Drought: The District relies on groundwater and the impacts from climate change are long-term. Climate change could affect the groundwater extraction, increase flash flood risks, decrease groundwater recharge, and cause increased pumping costs in the water supply wells.

The District has identified hazards in the community, assessed those hazards that pose the most significant risk, and identified projects to help reduce and/or eliminate those risks. Global measures that apply across all hazards include:

- Continually improve the community's understanding of potential impacts due to hazards, and the measures needed to protect lives and critical infrastructure
- Provide public outreach to inform the public of the hazards identified to the drinking water system in emergencies, how to conserve water in the event of a disaster and how to obtain drinking water when water may not be available

- Continually provide State and Local Agencies with updated information about hazards, vulnerabilities, and mitigation measures at the District
- Review local codes and standards to verify that they protect human life and the District's facilities
- Review and verify that the District's owned and operated infrastructure meet minimum standards for safety
- Review the District's facilities and developments in high-risk areas to verify that these areas are appropriately protected from potential hazards

The information contained in the Plan is intended to guide staff and inform other emergency responding agencies and includes plans and procedures for the response team.

The LHMP is included in Appendix D.

3.8 Benefit of Shortage Response Actions

As discussed above, supply actions and actions within JBWD operations will help reduce water shortage. Closing the "gap" between supplies and demands through customer actions, will include:

- Public Information
- Enforcement
- Restrictions on Non-Essential Water Uses
- Pricing

The water shortage response actions and their anticipated effect are summarized in Table 3-5.

3.8.1 Public Information

Without exception, experience has shown that a well-informed public is generally more willing to heed requests to voluntarily conserve or alter water use patterns and will be more likely to comply if mandatory water use restrictions become necessary. DWR (2008) estimates that public information campaigns have alone reduced demand in the range of 5 to 20 percent, depending on the time, money, and effort spent. Public information supports voluntary and mandatory measures by educating and convincing the public that a critical water shortage exists and provides information on how water is used and how they can help. The DWR Drought Guidebook highlights that when the public perceives the drought to be severe, they changed behaviors (such as flushing the toilet less often).

The information provided to the public should include a description of the conditions that will trigger implementation of shortage stages as well as a description of what the plan entails (restrictions, enforcement provisions, etc.). It is also advisable to provide practical "consumer" information that will help water users comply with the plan. For example, information about restrictions on lawn watering might be accompanied with information about watering practices.

Based on past experience, with minimal public outreach, a water savings of 5 percent is assumed, with extensive public outreach a water savings of 7 percent is assumed, public information combined with enforcement (Section 3.7.2) is assumed to achieve a savings of up to 22 percent.

3.8.2 Enforcement

A study examining the effectiveness of drought management programs in reducing residential water-use (Virginia Polytechnic Institute 2006) showed considerable variation in the effectiveness of drought management programs and highlighted the importance of public information and enforcement. Results, shown in Table 3-6, indicate that overall reductions in residential water-use ranged from 0-7 percent for voluntary restrictions and from 0-22 percent for mandatory restrictions. The observed differences were statistically attributed to information efforts for voluntary restrictions and both information and enforcement efforts for mandatory restrictions.

TABLE 3-6 DROUGHT PROGRAM MANAGEMENT VARIABLES EFFECT ON RESIDENTIAL WATER-USE

Classification	Estimated change in Water-Use	Statistically Different than no effect?
Voluntary Restrictions		
Little or no information disseminated	-2%	No
Moderate level of information	-2%	No
Aggressive information dissemination	-7%	Yes
Mandatory Restrictions		
Low information and low enforcement	-5%	No
Moderate information and low enforcement	-6%	Yes
Aggressive information and low enforcement	-12%	Yes
Low information and moderate enforcement	-4%	No
Moderate information and enforcement	-9%	Yes
Aggressive information and moderate enforcement	-15%	Yes
Moderate information and aggressive enforcement	-20%	Yes
Aggressive information and enforcement	-22%	Yes

Source: Virginia Polytechnic Institute 2006.

The analysis highlights the key role that public outreach and information plays in the success of drought response actions. Voluntary restriction programs with little to moderate levels of information dissemination had no appreciable effect on water-use. Voluntary restriction programs with active promotional efforts, however, reduced water-use by an estimated 7 percent from what would have otherwise occurred without any restriction program. Thus, for voluntary restrictions, only the most intense programs had even a moderate level of success in reducing water-use.

Mandatory restriction programs without a significant enforcement component broadly mirrored the outcomes achieved by the voluntary programs. Programs with mandatory restrictions that invested minimal effort in information dissemination did not appreciably reduce residential water-use. Programs with no active enforcement efforts but with moderate to high levels of informational dissemination achieved 6 and 12 percent reductions in water-use, respectively. These estimated reductions are similar to those achieved by voluntary programs with aggressive informational campaigns.

The experience the City of Santa Cruz had implementing its Drought Contingency Plan and successfully reaching its reduction goals supports the importance of a strong public information program. Analysis of the implementation program identified the key ingredient to its success was "the public's understanding, awareness, and belief that the District was confronted with a true water shortage problem. Media coverage of water problems across California reinforced the

situation. Without that sense of a real and imminent problem, it's likely the level of cooperation and willingness demonstrated by the community in making changes they did might have been considerably reduced." (Santa Cruz 2010)

Delivering accurate and timely information to water users, news media and local governments with updates on conditions, restrictions, and helpful contact information is key.

With aggressive information dissemination and enforcement its assumed JBWD could achieve a 22 percent water savings.

3.8.3 Restrictions on Non-Essential Water Uses

The Stages of Action focus on curtailing water waste and non-essential water use. Outdoor water use, including washing sidewalks and watering ornamental landscapes are targeted. These uses are typically considered to be discretionary or nonessential, are highly visible, and therefore relatively easy to monitor, and often are a substantial component of water demand, particularly during the summer months when drought conditions are likely most severe.

AWWA estimates that voluntary outdoor water use limits can result in a water savings of up to 10 percent and mandatory outdoor water limits can achieve up to a 56 percent reduction in outdoor water use (AWWA 2008, AWWA 2011). There have not been detailed studies on outdoor water use in the JBWD service area. However, a comparison of low water use months, when water use is assumed to be primarily indoor (January and February) with high-water use months when outdoor water use is greatest has been used to estimate the percent of outdoor water demand. Based on this comparison, it is estimated that outdoor water use may make up between 20 to 50 percent of District water use. To be conservative and so as to not overestimate the savings that could be achieved by curtailing outdoor water use, this Plan assumes outdoor water use is 30% of the JBWD demand:

- Voluntary outdoor water limits could save 10% of outdoor water use or about 35 AFY (about 3% of total water use)
- Restricting water use to twice a week could reduce outdoor water use by 33 percent or about 114 AFY (about 10% of total water use)
- Restricting water use to once a week could reduce outdoor water use by 56 percent or about 193 AFY (about 17% of total water use)
- Eliminating outdoor water use would reduce demand by approximately 30%, about 343 AFY.

3.8.3.1 Additional Mandatory Restrictions

The State, through the State Water Board, adopted drought emergency conservation regulations in July 2014. The Board expanded, updated, extended, and readopted the emergency regulations several times and in the prohibitions on wasteful water use practices were in place until November 25th, 2017.

As directed by Executive Order B-40-17, the State Water Board is conducting a rulemaking to put in place permanent prohibitions on wasteful water use practices. This rulemaking is part of the broader legislation, *Making Water Conservation a California Way of Life*.

The specific outcome of the permanent prohibitions cannot be known at this time. The emergency conservation regulations in effect through November 2017 included the following prohibitions:

- 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;
- The use of a hose that dispenses potable water to wash a motor vehicle, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use
- The application of potable water to driveways and sidewalks
- The use of potable water in a fountain or other decorative water feature except where the water is part of a recirculating system
- The application of potable water to outdoor landscapes during and within 48 hours after measurable rainfall
- The serving of drinking water other than upon request in eating or drinking establishments
- Irrigation with potable water of ornamental turf on public street medians.

JBWD's water use restrictions are consistent with the State's prohibitions to prevent water waste.

TABLE 3-7 EFFECTIVENESS DEMAND REDUCTION AND OTHER ACTIONS

Shortage Level	Demand Reduction Actions	Reduction in Shortage Gap	Explanation	Penalty, Charge, or Other Enforcement?
1	Expand Public Information Campaign	7%	Based on AWWA 2008 assumes savings of 7%	No
2	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
2	Implement or Modify Drought Rate Structure or Surcharge	10%	Based on AWWA 2011 assumes savings of 10%	Yes
3	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes

3	Implement or Modify Rate Structure	10%	Based on AWWA 2011 assumes savings of 10%	Yes
3	Landscape - Other landscape restriction or prohibition	3%	Outdoor water limited to 3 days a week. Based on AWWA 2011	Yes
4	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
4	Implement or Modify Rate Structure	15%	Based on AWWA 2011 assumes savings of 15%	Yes
4	Landscape - Other landscape restriction or prohibition	10%	Outdoor water limited to 2 days a week. Based on AWWA 2011.	Yes
5	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
5	Implement or Modify Rate Structure	15%	Based on AWWA 2011 assumes savings of 15%	Yes
5	Landscape - Other landscape restriction or prohibition	17%	Outdoor water limited to 1 day a week. Based on AWWA 2011.	Yes
6	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
6	Implement or Modify Rate Structure	15%	Based on AWWA 2011 assumes savings of 15%	Yes
6	Landscape - Other landscape restriction or prohibition	30%	Outdoor water use prohibited	Yes

Section 4: Communications Protocols

The District will periodically provide the public with information about the WSCP, including its implementation. Such information will include, but will not be limited to, stages of action, restrictions on water use, water-saving tips, monetary assessment, and fines for noncompliance of prohibited activities for water conservation, water use efficiency, and failure to achieve water budget reductions redefined in the WSCP.

4.1 Customer Outreach

Customer participation is a key element in responding to a supply shortage. While general media coverage of a drought is likely to increase awareness, JBWD should still develop and implement a specific and comprehensive outreach program. The goals of the outreach program will be to:

- Educate customers and public about state and local drought conditions
- Make water shortage stages and customer responsibilities clear
- Target specific customer groups with specialized messaging
- Provide information to customers and general public that will assist them in reducing water demand

JBWD regularly communicates with its customers and has a long history of promoting conservation. Staff continues to implement customer outreach programs. Ongoing outreach activities are summarized in Table 4-1. Conservation giveaways also provide a means for JBWD to interact with customers for water efficiency messaging.

TABLE 4-1 JBWD OUTREACH PROGRAMS

		Years Implemented				
Action	**Description**	*2016*	*2017*	*2018*	*2019*	*2020*
Monthly E-Newsletter	The monthly Tier Drop Newsletter provides information on capital improvement projects, conservation programs, public meetings, workshops, and special events.	x	x	x	x	x
Website	JBWD regularly updates the website with FAQs, public notices, water quality data, water conservation information, public meeting information, project updates, and more.	x	x	x	x	x
Outreach Events	15-20 public outreach events per year, consisting of job fairs, District-sponsored events, Chamber of Commerce events, with giveaways and informational handouts.	x	x	x	x	x
Social Media	JBWD maintains a presence on Facebook and, YouTube.	x	x	x	x	x

Action	Description	Years Implemented				
		2016	*2017*	*2018*	*2019*	*2020*
Public Engagement Materials	Water quality Consumer Confidence Report. Brochures "Protecting our Pipes"; "Understanding Water and Wastewater Charges"; "Customer Assistance Program"; "Water Disaster Preparedness"; and "Fats, Oils, and Grease".	x	x	x	x	x
Targeted Outreach	Brochures, annual mailer, postcards, and door hangers.	x	x	x	x	x
Conservation Giveaways	JBWD continues to offer customers water conservation giveaways including materials such as "Doing Our Part to Save Water" yard signs, low-flow showerheads, faucet aerators, toilet leak detection kits, shower times, dish squeegees, and more.	x	x	x	x	x

Public outreach will be enhanced during anticipated water shortages. In additional to traditional outreach (monthly e newsletter, billing statements), JBWD will consider utilizing new and innovative outreach efforts using social media. Proposed outreach should include, but not be limited to:

- Multi-media Tear Drop *Conservation Stories*, a campaign that will include testimonial water conservation case studies, experiences and lessons learned from a variety of JBWD customer types (residential, institutional, and commercial). This campaign can be published in the monthly newsletter.
- Social media sites (YouTube, Facebook) to distribute *Conservation Stories* and other messaging.
- Specific JBWD website section dedicated to the drought.
- Customized state and regional partner outreach materials and links.
- Water shortage declarations provided as inserts to monthly water bills.
- Post-cards and mailings to JBWD customers.
- Targeted outreach (contact by letters and phone calls) to large water users
- Employee outreach and education to ensure consistent organization messages concerning drought and conservation.
- Enhanced community presence of JBWD materials (handouts at schools, plumbing centers, hardware stores, farmers markets, and community events).

Proposed coordination with retail water agencies and land use agencies is summarized below:

Outreach Target	Goals of Coordination	Schedule
All customers of JBWD	Educate customers and public about drought conditions	Feb of first year of drought and ongoing through drought
General Public	Make water shortage stages and customer responsibilities clear	
	Target specific customer groups with specialized messaging	
	Provide information to customers and general public that will assist them in reducing water demand	

Table 4-2 provides a summary of public outreach actions and the applicable water shortage stage when this action would be employed.

TABLE 4-1 WATER SHORTAGE PUBLIC OUTREACH PLAN

Element	Description	Applicable Drought Stage I-II	III	IV	V	VI
Quarterly Newsletter	Quarterly newspaper that discusses regular JBWD news. Will be enhanced to specifically provide information on: Water supplies/ Actions JBWD taking to improve supply Water Conservation Tips Actions JBWD taking to reduce JBWD's water use News Items - *Conservation Stories* Feature Stories - Any Proposed Water Shortage Declaration Feature Stories - Any Applicable Restrictions Feature Stories - Proposed and Applicable Allocations	◆	◆	◆	◆	◆
Website	"Report Water Waste" link on home page Rotator Message graphic on Home Page Water supplies/ Actions JBWD is taking to improve supply Comprehensive Customer Conservation actions section Actions JBWD is taking to reduce JBWD's water use News Items - *Conservation Stories* Home Page Stories - Any Proposed Water Shortage Declaration Home Page Stories - Any Applicable Restrictions Home Page Stories - Proposed and Applicable Allocations	◆	◆	◆	◆	◆
Billing Messages	Conservation messages within monthly bills Any proposed Water Shortage Declaration Any applicable restrictions Any applicable allocations		◆	◆	◆	◆

Element	Description	Applicable Drought Stage I-II	III	IV	V	VI
Talking Points	Develop talking points related to conservation and drought for: Board of Directors Management Customer Service Staff	◆	◆	◆	◆	◆
Media Contact	Contact the following media with information on water supply, conservation, and drought: Hi-Desert Star	◆	◆	◆	◆	◆
Enhanced Media Contact	JBWD will develop a media kit that will include: Press Release on Water Shortage Declaration Frequently Asked Questions Information Sheet/Brochure Photographs Conservation Partner Links JBWD will present Letters to the Editor from Board Members, Management, and key constituents concerning the Water Shortage Declaration.		◆	◆	◆	◆
Collateral Materials	Water Conservation Tip Handouts Restaurant table cards Hotel room notices	◆	◆	◆	◆	◆
Enhanced Collateral Materials	Distribution of materials at plumbing centers, hardware stores, schools, farmers markets: Water conservation tips Print materials related to "Conservation Stories"		◆	◆	◆	◆

Element	Description	Applicable Drought Stage I-II	III	IV	V	VI
Partner Resources	JBWD should continue to utilize partnership opportunities to share conservation messages and links that are being implemented by state and regional agencies and organizations, including: State of California Water Conservation Programs Association of California Water Agencies Programs	◆	◆	◆	◆	◆
Customized Partner Materials	JBWD will work with regional and state partner organizations to utilize and customize conservation related materials specific to the Joshua Tree area, including: Broadcast public service announcements Print Ads Web banners and links Posters Print materials		◆	◆	◆	◆
Conservation Stories Outreach Campaign Materials	JBWD will produce "Conservation Stories", a public outreach campaign that will feature residents and representatives from businesses and organizations who are taking steps to conserve water in the Joshua Tree Area. Campaign shall include: Informational Video Podcast style audio segments Broadcast public service announcements Print advertisements Web banners on JBWD website Conservation postcards Posters, pop-up banners and collateral materials Social media "Conservation Stories"	◆	◆	◆	◆	◆

Element	Description	Applicable Drought Stage				
		I-II	*III*	*IV*	*V*	*VI*
Establish and Maintain Social Media Presence	JBWD will develop and maintain social media sites including YouTube, Twitter, and Facebook to share "Conservation Stories" and images with the public. The YouTube site will be uses as an operational tool for uploading videos that will then be embedded directly on the JBWD website. Social media icons that link to JBWD social media sites will be added to the JBWD website Home Page. Facebook will be used to post "Conservation Stories" briefs and images along with drought and conservation related news items, links, and graphics. Flicker will be used to upload photos to galleries related to drought and conservation efforts. The JBWD Twitter site will be linked to other JBWD social media resources to automatically provide updates when new items are posted.	◆	◆	◆	◆	◆
Targeted Outreach	JBWD will conduct focused targeted outreach to specific customer segments, including the Top 10 water users by sector. Outreach will include: Phone calls Letters Postcards Letters	◆				
Enhanced Targeted Outreach	JBWD will conduct focused targeted outreach to specific customer segments, including the Top 20 water users by sector. Outreach will include: Phone calls Letters Postcards Letters		◆			
Additional Targeted Outreach	JBWD will conduct focused targeted outreach to specific customer segments, including the Top 30-50 water users by sector. Outreach will include: Phone calls Letters Postcards			◆	◆	◆

Element	Description	Applicable Drought Stage I-II	III	IV	V	VI
	Letters					
JBWD Customer Touch-Points	JBWD will utilize existing customer touch-point opportunities to share drought information with the public, including: JBWD vehicle signage Facility conservation signage and materials Door hangers and notices	◆	◆	◆	◆	◆
Enhanced JBWD Customer Touch-Points	JBWD will undertake customer outreach activities at local and regional events. JBWD will staff table/booths to provide information on: low flow shower heads low flow faucet aerators toilet leak detectors low flow garden hose nozzles drought tolerant landscape guides native seed coasters		◆	◆	◆	◆
JBWD Employee Communications	JBWD will conduct outreach to employees in order to promote consistent organizational messages concerning drought and conservation.	◆	◆	◆	◆	◆
Individualized letters to all customers	Letters communicating specific restrictions and allocations applicable to their account		◆	◆	◆	◆
Townhalls/Public Meetings	JBWD will plan and host meetings to share water shortage information with residents and provide an opportunity for residents to voice concerns.		◆	◆	◆	◆
Customer Assisted Enforcement	Maintain water-waste hotline		◆	◆	◆	◆

4.2 Neighboring Retail Water Agencies and Land Use Agencies

The purpose of meeting with neighboring water agencies and land use agencies is to ensure that residents in the District are receiving consistent messages about the drought, drought severity, and are aware of the actions they can take to reduce demand. Key agencies would include the Mojave Water Agency (MWA), Bighorn-Desert View Water Agency (BDVWA), Hi-Desert Water District (HDWD), Twentynine Palms Water District (TPWD), Marine Corps Air Ground Combat Center (MCAGCC), and the County of San Bernardino.

In June 2015, JBWD joined the Emergency Response Network of the Inland Empire (ERNIE). ERNIE facilitates public agency preparedness for, response to, and recovery from local and regional disasters to ensure the delivery of critical public services through mutual aid and communications. ERNIE meets monthly and provides regular training for utilities in emergency response and long-term emergency planning. Through the ERNIE network JBWD can receive mutual aid from other local water districts. JBWD may also provide mutual aid to its sister agencies if resources are not needed within the District itself. JBWD maintains an emergency intertie with Hi-Desert Water District.

If a disaster overwhelms the local resources, JBWD will coordinate with the California Water/Wastewater Agency Response Network (CalWARN) system for statewide mutual aid. JBWD will immediately contact the State Water Resources Control Board Division of Drinking Water, San Bernardino County Fire, Operations of Emergency Services, and the California Utilities Emergency Association to coordinate mutual aid and assistance. If local resources are overwhelmed by the disaster, the County of San Bernardino Fire Operations of Emergency Services will contact the State of California Governor's Office of Emergency Services for assistance.

All the agencies listed below participate in the Alliance for Water Awareness and Conservation (AWAC), whose mission is to achieve water conservation goals within the 4,900 square mile service area of Mojave Water Agency. The members of AWAC are known to each other, and it would be relatively simple to add a special drought subcommittee to this group. The intent of these meetings will be to develop a common message to the community about the drought and to find opportunities to share costs (e.g., share costs of radio announcements and newspaper advertisements). As the drought progresses, the meetings will serve to refine the drought messaging to address any common misconceptions or common customer questions. Monthly meetings are proposed, starting in February, ongoing through the drought.

Should a water shortage be declared, JBWD will coordinate with any District or county within which it provides water supply services for the possible proclamation of a local emergency, as defined in Section 8558 of the Government Code.

Proposed coordination with retail water agencies and land use agencies is summarized below:

Participants	Goals of Coordination	Schedule
Apple Valley Heights County Water District Bighorn-Desert View Water Agency City of Adelanto Golden State Water Company - Apple Valley Golden State Water Company - Barstow Helendale Community Services District Hesperia Water District Hi-Desert Water District Indian Wells Valley Water District Juniper Riviera Water District Liberty Utilities Mariana Ranchos Water District Phelan Pinon Hills Community Services District San Bernardino County Special Districts Water and Sanitation Twentynine Palms Water District Thunderbird County Water District Victorville Water District	Identify opportunities to share public outreach costs Develop common brochures Develop common website messages Refine drought messaging based on customer response Determine need for proclamation of local emergency	Feb to Aug

Section 5: Monitoring and Reporting

Certain aspects of water conservation can be readily monitored and evaluated, such as metered water use and production quantities. Other aspects such as public education are more difficult to measure in terms of effectiveness. Additionally, weather patterns make it more difficult to compare one year's water demand and conservation results with another year's usage.

When severe shortages occur and some degree of mandatory reduction is required, a program's effectiveness can be judged directly by water billings. In these cases, targeted results must be met, and even reluctant customers will, on the whole, meet the goals. Specific methods to evaluate effectiveness of water conservation programs to be employed by the District are:

1. Monitoring of Metered Water Usage – This will determine how much has been used. Compiling statistics to track usage of customer groups to determine trends is currently being done through the water billing computer system. Meter readings/billings can be compared and analyzed to determine the effectiveness of conservation for all customer classes.
2. Monitoring Production Quantities – In normal water supply conditions, production figures are recorded daily by the District's automated system. The Water Production Supervisor and the Production Lead monitor the accuracy of the monthly production totals. The totals are incorporated into the monthly water supply report to the State by the Water Treatment Supervisor.

To verify that conservation reduction goals are being met, production and metered usage reports will be provided to the JBWD General Manager and Water Utility Manager during each stage of the conservation period. Water production figures will be compared to previous year production figures for the same time period to ascertain if conservation goals are being reached. Results will be posted on the JBWD website.

Additional actions available to JBWD include:

1. Transition current customer water meters to "smart meters" to allow timely monitoring by customer of water use patterns..
2. Provide incentives to property owners to install individual meters or sub-meters in multi-family structures for resident/property owners to track water usage.
3. The District shall develop means to distribute reclaimed water to interested users for landscape irrigation and other non-potable uses.

Section 6: Enforcement

Enforcement of restrictions shall be in accordance with California Water Code Section 375, water waste prohibited. The provisions of the section apply to all persons using District water, both in and outside the District, and within the District water service areas.

6.1 Enforcement of the Water Waste Prohibition

Prohibited actions and penalties for violating the Water Waste Ordinance are specified in the Municipal Code. JBWD's ordinance on water use efficiency is included in Appendix A.

6.1.1 Civil Penalties

For the first violation of any of the provisions of the code, a written notice is to be given.

For the second violation of any of the provisions of the code, a non-compliance charge is imposed in an amount of $50, payable as part of the water bill, by the customer at the premises at which the violation occurred.

For the third violation of any of the provisions of the code a non-compliance charge is imposed in an amount equal to $100. This penalty is payable as part of the water bill, by the customer at the premises at which the violation occurred.

6.1.2 Notices

The District will give notice of each violation to the customer at the premises at which the violation occurred, as follows:

- For a first, second or third violation, the District may give written notice of the fact of such violation to the customer personally or by regular mail.
- If the penalty assessed is, or includes the installation of a flow restrictor or the discontinuance of water service to the customer for any period of time whatever, notice of the violation will be given in the following manner:
    - By giving written notice thereof to the customer personally; or
    - If the customer is absent from or unavailable at either the customer's place of residence or place of business, by leaving a copy with an adult at either place, and sending a copy through the United States mail addressed to the customer at either the customer's place of business or residence; or
    - If such place of residence and business cannot be ascertained, or an adult cannot be found on the premises, then by affixing a copy in a conspicuous place on the property where the failure to comply has occurred and also by delivering a copy to a person residing at the premises, if such person can be found, and also by sending a copy through the United States mail addressed to the customer at the customer's billing address and to the place where the property is situated;

- All notices will contain, in addition to the facts of the violation, a statement of the possible penalties for each violation, a statement informing the customer of the customer's right to a hearing on the violation, a brief summary of the appeal process specified herein, and the date and time termination will occur.

6.1.3 Appeals

Any customer against whom a penalty is to be levied shall have a right to an appeal, in the first instance by the District General Manager, with the right of appeal to the District Board of Directors, on the merits of the alleged violation, upon the written request of that customer to the District clerk within 15 days of the date of notification of the violation. Penalties, including termination of water service, will be stayed until a decision is reached and a written decision is made by the District General Manager or their designee.

A request for an appeal must be in writing and filed with the District secretary. The filing by a customer of a request for an appeal for any form of relief must be made within 15 days of the decision of the water superintendent. Filing of such a request will automatically stay the implementation of the proposed course of action, pending the decision of the District's General Manager. No other or further stay will be granted. The appeal hearing will be scheduled to occur within a reasonable, prompt period of time following the written notice of appeal. The water user may present any evidence which would tend to show that the alleged wasteful water use has not occurred. Formal rules of evidence will not apply, and all relevant evidence customarily relied upon by reasonable persons in the conduct of serious business affairs will be admissible, unless a sound objection warrants its exclusion by the District public works director. The decision of the District public works director shall be final.

Where water service is disconnected, it will be reconnected upon correction of the condition or activity and the payment of the estimated reconnection charge.

6.2 Enforcement of Water Reductions

The JBWD Board of Directors may choose to take actions through ordinance and resolution that establish mandatory water regulations that may include enforcement actions such as those previously implemented which includes:

A customer who does not meet the mandatory reduction above the health and safety baseline (6 CCF bimonthly use) shall pay a surcharge.

The JBWD General Manager may prescribe rules and regulations for the implementation of ordinance provisions.

Section 7: Financial Consequences of Actions During Shortages

Consumption reduction will impact revenues by decreasing the amount of water sold to customers. Water shortages may also impact construction activities. A reduction in construction activities will reduce water service connection fees collected by the District.

As consumption decreases, some expenditures are expected to increase. Staff costs for community education, enforcement of ordinances, monitoring and evaluation of water use, drought planning, and dealing with customer questions and complaints are expected to rise. Operations and maintenance costs may also increase because of the need to identify and quickly repair all water losses. A shift to alternative sources would change pumping, purchase, and treatment costs as different water supplies incur different purchase, treatment, and distribution costs.

JBWD has structured its rates into two main components: a fixed service charge and a commodity rate. The fixed service charge has been set with the intent of covering the water utility's fixed costs (meter infrastructure, billing, administration). The fixed service charge is meant to provide a fixed amount of income to JBWD independent of water consumption. Currently about 25 percent of JBWD's revenue comes from the fixed service charge. The commodity rate is a cost per unit consumed by the customer and is meant to recover the District's variable costs for providing water service. The commodity charge also sends the customer a price signal and rewards customers who conserve water. A decrease in consumption would impact revenue from the commodity charges as estimated in Table 7-1 below:

TABLE 7-1 REVENUE IMPACTS OF REDUCED WATER DEMAND

Demand Reduction	Annual Revenue Reduction ($ million)	% of ~$24M Water Base Revenue
10%	-$1.73 M	- 7%
20%	-$3.45 M	- 14%
30%	-$5.18 M	- 22%
40%	-$6.90 M	- 29%
50%	- $8.63 M	- 36%

A reduction in water revenue could be mitigated substantially through deferral or avoidance of capital fund expenditures. This would meet short-term cash flow needs, although it should only be considered on a short-term basis.

The water purchases, utility costs and chemical costs are not a linear function of the water usage reduction. However, in order to provide an estimate of the cost savings, it is assumed that if there is a ten percent reduction in usage, there will also be a ten percent reduction in associated costs.

7.1 Revenue Impacts of Reduced Sales and Increased Costs

Water Shortage Rates would be implemented when mandatory stages are enacted by the District Board of Directors. A rate schedule has been created for each mandatory stage of this plan. The rates would resume to normal rates once the Water Shortage Event is retracted based on triggers in this plan.

1. Goals of Water Shortage Rates:
   - Meet community expectations to provide safe and reliable water supply during shortages at rates that are fair and as low as possible.
   - Maintain fiscal stability in the event of a sudden or long-term water shortage.
   - Achieve state mandates and legal requirements.

2. Principles of the Water Shortage Rates:
   - The rates will be increased for each stage of mandatory conservation to ensure full revenue loss recovery.
   - Any additional expenses from the water wholesaler or regulatory agencies due to drought will be passed onto customers through a water shortage pass-through when the District's Water Enterprise is charged.

3. Codifying the Water Shortage Rates:
   - Customers will be given 30 days-notice prior to the rates going in effect unless the District Board takes extraordinary action.

JBWD prepared water shortage rates as part of its 2015 Water Shortage Rates Study. JBWD implemented drought shortage rates in FY16, FY17, FY18, FY19, FY20. An update to the water shortage rates are being studied as part of JBWD's current rate study.

In the case of future water use reductions resulting from the implementation of the WSCP, JBWD would likely experience impacts to operating revenue and would draw as necessary and as possible from reserves. Depending on the level of mandatory water reductions, the District could experience a decrease in revenue between 3 to 33%, based on water use reductions of 5 to 50%, respectively. Future or continued reductions in consumption would ultimately cause a rate structure adjustment, or the District may consider implementation of a drought surcharge rate that would generate enough revenue to fund operations without drawing from reserves.

7.2 Mitigation Actions to Address Revenue Reductions

A reduction in water revenue could be mitigated by use of the established reserve fund, deferral or avoidance of capital fund expenditures, use of less costly water supplies (if possible), and implementation of drought surcharge rates. This would meet short-term cash flow needs, although it should only be considered on a short-term basis.

A summary of measures to overcome revenue and expenditure impacts is provided in Table 7-1.

TABLE 7-1 MEASURES TO OVERCOME REVENUE IMPACTS DURING SHORTAGE

Measure	Summary of Effects
Use of Reserve Funds	Use of reserves may provide short-term rate stabilization but would require delays in capital expenditures and rebuilding of reserves after the water shortage.
Re-evaluate Capital Expenditure Plans	Delay major construction projects for facilities as well as upgrades and replacements.
Shift Water Sources to Less Costly Supplies if Possible	Reduce costs associated with purchase, treatment, and distribution of water.
Shortage Rates	Increase revenue.

It should be noted that expenditure impacts could be reduced 2-10 percent during mandatory conservation efforts less than 50 percent because of the reduction in costs associated with the treatment and deliver of potable water. Rate adjustments could also be employed either solely or in conjunction with capital expenditure reductions.

7.3 Financial Consequences of Limiting Excessive Water Use

Per the California Water Code Section 365 et al., retail water suppliers are required to prohibit or discourage excessive water use. Reporting this is not a required part of the UWMP; however, Water Code Section 10632(a)(8)(C) requires the financial consequences of these actions be reported as part of the UWMP.

Water Code Section 367 states that there are three types of drought emergencies:

- Declared statewide drought emergency
- When a supplier implements its mandatory reductions per their WSCP
- A declared local drought emergency

Water Code Section 366 states that a retail water supplier must prohibit excessive use through one of two strategies:

- Rate structure, specifically, a rate structure that includes block tiers, water budgets, or rate surcharges over and above base rates for excessive water use by a residential water customer.

- An excessive water use ordinance, specifically an ordinance that includes a procedure to identify and address excessive water use by metered single-family residential customers and customers in multiunit housing complexes in which each unit is individually metered or submetered and may include a process to issue written warnings to a customer and perform a site audit of customer water usage prior to deeming the customer in violation.

Section 8: References

American Water Works Association, 2011. Drought Preparedness and Response. Manual of Water Supply Practices, M60.

American Water Works Association. 2008. Forecasting Urban Demand. Second Edition.

California Department of Water Resources (DWR). 2008. Preparing for California's Next Drought : Changes Since 1987-92.

District of Santa Cruz Water Department, Water Conservation Office, December 2010. The 2009 Water Shortage An Evaluation of Water Management Strategies, Actions, and Results.

JBWD. 2022. 2020 Urban Water Management Plan.

US Bureau of Reclamation. 2010. Central Valley Project Municipal and Industrial Water Shortage Policy Review.

Virginia Polytechnic Institute and State University Blacksburg, Virginia, 2006. The Effectiveness of Drought Management Programs in Reducing Residential Water-Use in Virginia. http://water.ky.gov/wa/Documents/AdditlDroughtResources/VirginiaStudyonDroughtProgramEffectiveness.pdf

Joshua Basin Water District

2020 Water Shortage Contingency Plan

Appendices

Kennedy Jenks

Appendix A: Joshua Basin Draft Water Shortage Contingency Ordinance(s)

ORDINANCE NO. 15-9

AN ORDINANCE OF THE BOARD OF DIRECTORS OF THE JOSHUA BASIN WATER DISTRICT ("DISTRICT") SUPERSEDING ORDINANCE 14-8 REQUIRING WATER USE EFFICIENCY MEASURES AND THE PREVENTION OF WATER WASTE PURSUANT TO CALIFORNIA WATER CODE SECTION 375 et seq.

Recitals, Findings, and Determinations.

A. On January 17, 2014, Governor Brown declared a drought state of emergency and on April 25, 2014, the Governor signed an Executive Order ("Executive Order") calling on the State Water Resources Control Board ("State Water Board") to adopt emergency regulations to ensure that urban water suppliers implement drought response plans to limit outdoor potable water irrigation and prohibit other wasteful water practices; and

B. On July 15, 2014, the State Water Board adopted Emergency Regulations ("State Regulations") effective July 29, 2014 that prohibit certain outdoor water uses and require urban water agencies to implement mandatory outdoor water use restrictions under their local water shortage contingency plans. The State Regulations will remain in effect for a minimum of 270 days or nine months. The State Regulations require urban water agencies to report monthly water production data, GPCD (Gallons per Capita per Day), conservation-related implementation measures and/or enforcement actions by the 15th of each month starting with August. With regard to reporting GPCD, the State Water Board acknowledged that the GPCD reporting requirement will be delayed to October 15 in order for the state to develop guidance on how the GPCD should be calculated. Water production data for each preceding month will be compared to a similar month in 2013. The State will develop an electronic reporting portal that will include applicable data fields. Nothing in the State Regulations or in the enforcement provisions of the State Regulations, preclude a local agency from exercising its authority to adopt more stringent conservation measures; and

C. On March 17, 2015 the State Water Board adopted Resolution No. 2015-0013 which expanded the State Regulations ("Expanded Regulations") to safeguard the state's remaining water supplies as California enters a fourth consecutive dry year. The Expanded Regulations became effective on March 27, 2015 and remain in place for 270 days unless extended by the State Water Board. The regulations are set forth in Title 23, Sections 863-865 of the California Code of Regulations; and

D. On April 1, 2015, Governor Brown issued Executive Order B-29-15, effective immediately and in addition to other requirements mandates a 25% statewide reduction in urban water use, and provides that the orders in the January 17, 2014 and April 25, 2014 proclamations and Executive Orders B-26-14 and B-28-14 also remain in full force except as modified by Executive Order B-29-15. The Governor directed the State Water Board to impose restrictions to achieve the statewide 25% reduction; and

E. On April 7, 2015, the State Water Board proposed a mandatory Regulatory Framework that apportions water reductions according to consumption. The State Water Board revised the apportionment of water reductions on April 18 and April 28 and the conservation savings for all urban water suppliers are now allocated across nine tiers of increasing levels of residential water use (R-GPCD) to reach the statewide 25% reduction mandate. Agencies in Tier 7, including JBWD, must reduce water use by 28%. On May 5, the State Water Board approved its Emergency Regulation Implementing the 25% Conservation Standard which includes a prohibition against certain irrigation practices and an order that all urban water suppliers reduce their total potable water production by a defined percentage which has been applied to each urban water supplier; and

F. The water conservation measures and restrictions on water use identified by this Ordinance provide certainty to water users and enable the District to control water use and plan and implement water measures and restrictions in a fair and orderly manner for the benefit of the public. This Ordinance is further intended to comply with the mandates of the State Water Board Regulations applicable to the District.

NOW, THEREFORE, THE BOARD OF DIRECTORS OF THE JOSHUA BASIN WATER DISTRICT DOES ORDAIN AS FOLLOWS:

SECTION 1. <u>Conservation Water Use Restrictions and Measures.</u>

Except where necessary to address an immediate health and safety need or to comply with a term or condition in a permit issued by a state or federal agency, the following water use restrictions and conservation measures shall apply:

a) 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;

b) The application of potable water to outdoor landscapes during and within 48 hours after measure rainfall is prohibited;

c) The irrigation with potable water of ornamental turf on public street medians is prohibited;

d) The irrigation with potable water of landscapes outside of newly constructed homes and buildings in a manner inconsistent with regulation or other requirements established by the California Building Standards Commission and the Department of Housing and Community Development is prohibited;

e) The use of a hose that dispenses potable water to wash a motor vehicle is prohibited, except where the hose is fitted with a shut-off nozzle or device attached to it that causes it to cease dispensing water immediately when not in use;

f) The application of potable water to driveways and sidewalks is prohibited;

g) The use of potable water in a fountain or other decorative water feature is prohibited, except where the water is part of a recirculating system;

h) Water shall not be permitted to leak from any water line, faucet or other facility on any premises. Any leak shall be repaired in a timely manner;

i) All conventional (overhead) spray irrigation systems shall be scheduled to run between the hours of 8 pm and 9am.

j) No use of potable water is permitted to irrigate, water or sprinkle grass, lawns, groundcover, shrubbery, crops, vegetation and trees between the hours of 9:00 a.m. and 5 p.m. during the high use season which begins June 1 and terminates September 30 of each year. During this season, watering shall be permitted on any three days of the week, of the customer's choice, but shall not exceed three (3) days of any week.

k) Water for construction purposes, including but not limited to debrushing of vacant land, compaction of fills and pads, trench backfill and other construction uses, shall be used in an efficient manner;

l) All new construction, including residential, commercial and industrial, shall be equipped with low flow toilets and fixtures;

m) All new model homes and commercial and industrial development, when landscaped, shall include low water use, drought tolerant or native plant material, and drip irrigation systems. Irrigation systems shall include a smart irrigation controller or equivalent technology;

n) Dedicated (separate) landscape water meters shall be installed for all irrigated

landscape areas in excess of 2500 square feet, except for single family residences.

o) Water used for cooling systems must be recycled to the extent possible;

p) Evaporation resistant covers are required for all new swimming pools and hot tubs and are encouraged on existing pools;

q) To promote water conservation, operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom using clear and easily understood language;

r) The serving of drinking water other than upon request in eating or drinking establishments, including but not limited to restaurants, hotels, cafes, cafeterias, bars, or other public places where food or drink are served and/or purchased is prohibited;

s) All water customers are encouraged to install flow reducers and faucet aerators.

SECTION 2. <u>Non-Compliance Charges and Penalties.</u>

a) Non-Compliance Charges: The following will apply to persons or entities failing to comply with any provision of this Ordinance:

1. First Instance of Non-Compliance: The District will issue a written warning and send it along with an explanation of the violation.

2. Second Instance of Non-Compliance: A second instance of non-compliance with this Ordinance is subject to a non-compliance charge of fifty dollars ($50.00) on the water bill.

3. Third Instance of Non-Compliance: A third instance of non-compliance with this Ordinance is subject to a non-compliance charge of one hundred dollars ($100.00) on the water bill.

SECTION 3. <u>Appeals.</u>

A. Any person or entity wishing to appeal a non-compliance charge, action or penalty shall do so in writing to the District's General Manager.

B. The District's General Manager and/or his designee shall review and make a decision on the appeal.

C. If the applicant disagrees with the decision, the applicant may appeal the decision to the District's Board of Directors for consideration.

SECTION 4. Purpose and Intent.

It is the purpose and intent of this Ordinance to limit the use of water to beneficial purposes only and to prohibit and restrict the unnecessary and wasteful use of water.

SECTION 5. Ordinance Controlling.

The provisions of this Ordinance shall prevail and control in the event of any inconsistency between this Ordinance and any other rule, regulation or code of this District, except as later amended by resolution or emergency rule.

SECTION 6. Effective Date.

This Ordinance shall be effective upon its adoption.

SECTION 7. Publication. The District's General Manager or his designee is hereby directed to publish this Ordinance in full within 10 days of August 20, 2014 pursuant to Section 376 of the Water code of the State of California.

ADOPTED, SIGNED, AND APPROVED by the following vote this day of , 2015.

AYES:

NOES:

ABSTAIN:

ABSENT:

JOSHUA BASIN WATER DISTRICT

_____

VICTORIA FULLER, President
Joshua Basin Water District and the
Board of Directors thereof

ATTEST:

_____

CURT SAUER, General Manager/Secretary
Joshua Basin Water District and the
Board of Directors thereof

Ordinance (XXXX)

An ordinance enacted as a measure establishing rules and regulations for allocating water during a water shortage and establishing penalties for violations thereof

Be it ordained by the Board of Directors of Joshua Basin Water District as follows:

Section 1: Purpose and Scope

This ordinance adopts regulations to deal with water shortages, which the Board has found to exist. These regulations are effective immediately and shall be effective until the Board finds that water shortage no longer exists.

Section 2: Findings

The Board finds, determines and declares that the following facts are true:

1. California Water Code Section 350 provides that the Board of Directors has the authority to declare water shortage emergency conditions. California Water Code Section 353 enables the Board of Directors to adopt regulations and restrictions to conserve the water supply for the greatest public benefit.
2. This Board has conducted public meeting on (INSERT DATE) to determine whether a water shortage emergency exists and, if so, what regulations should now be adopted in response to that shortage.
3. This Board adopts the following regulations, and finds that the regulations set forth herein are necessary and proper to protect the water supply for human consumption, sanitation, and fire protection during the duration of the shortage.

Section 3: Definitions

The following terms are defined for the purpose of the ordinance:

a. “Agricultural water user” or “Agricultural” means water use for the growing of food crops, livestock, and ornamental landscape plants.

b. “Commercial water user” or “Commercial” means any water user whose purpose is to provide or distribute a product or service, such as hotels, restaurants, office buildings, commercial businesses or other places of commerce. A “Commercial” water user does not include multi-family residences, agricultural users, or customers that fall within the industrial or institutional classifications.

c. "Customer" means a person receiving water from the water distribution system of the District.

d. "District" means Joshua Basin Water District.

e. "General Manager" means the general manager of the District, or the Manager's designate.

f. “Landscape Irrigation water use” or “Landscape Irrigation” means water used for maintaining outdoor areas of golf courses, community parks, business parks, and common areas in

homeowner associations. “Landscape Irrigation” customers have a dedicated outdoor use meter.

g. “Single family residential" which consists of water service to land improved with structures designed to serve as a residence for a single family.

h. “Stage I Shortage” when total supply is 90 to 99 percent of normal for the next twelve months, there will be imposed a 10% voluntary demand reduction goal.

i. “Stage II Shortage, when total supply is 80 to 89 percent of normal for the next twelve months, there will be imposed a 20% voluntary demand reduction goal.

j. “Stage III Shortage” when total supply is 70 to 79 percent of normal for the next twelve months, there will be imposed a 30% mandatory demand reduction goal.

k. “Stage IV Shortage” when total supply is 60 to 69% of normal for the next twelve months, there will be imposed a 40% mandatory demand reduction goal.

l. “State V Shortage” when total supply is less than 60% of normal for the next twelve months, there will be imposed a 50% or greater mandatory demand reduction goal.

Section 4: Prohibitions of Certain Uses

a. Water waste, including the following, is prohibited at all times

    1. Application of potable water to outdoor landscapes in a manner that causes runoff.

    2. Watering of outdoor landscapes within 48 hours of measurable rainfall.

b. Efficient water use is required at all times:

    1. Water for construction purposes, including but not limited to debrushing of vacant land, compaction of fills and pads, trench backfill and other construction uses shall be in an efficient manner.

    2. All new construction including residential, commercial and industrial, shall be equipped with low flow toilets and fixtures.

    3. All new homes and commercial and industrial development, when landscaped, shall include a predominance of low water use, drought tolerant or native plant material, and drip irrigation systems.

    4. Dedicated (separate) landscape meters shall be installed for all irrigated landscape areas in excess of 2500 square feet except for single family residences.

    5. Water used for cooling systems must be recycled to the extent possible.

    6. Evaporation resistant covers are required for all new swimming pools and hot tubs.

c. During a Stage I water shortage, the following restrictions are in effect:

    1. No hosing of hardscape surfaces, except where health and safety needs dictate.

    2. No car washing and outside cleaning activities except when performed with buckets and automatic hose shutoff devices.

3. Water leaks shall be repaired in a timely manner, but in no more than 48 hours, and sprinklers shall be adjusted to eliminate over-spray.

4. Operators of hotels and motels shall provide guests with the option of choosing not to have towels and linens laundered daily. The hotel or motel shall prominently display notice of this option in each guestroom.

5. The serving of drinking water other than upon request in eating or drinking establishments is prohibited.

These restrictions shall be voluntary or mandatory at the Board of Directors discretion.

d. During a Stage II water shortage, the following voluntary restrictions are in effect:

1. Extension of voluntary requests from Stage I.

2. No landscape watering between 0800 and 1700 hours.

3. Outdoor watering is limited to 3 days per week.

These restrictions shall be voluntary or mandatory at the Board of Directors discretion.

e. During a Stage III water shortage, the following mandatory restrictions are in effect:

1. Voluntary requests from Stage I and Stage II are mandatory

2. Irrigation with potable water or ornamental turf on public street medians is prohibited.

3. Outdoor watering is limited to 2 days per week.

4. Mandatory use prohibitions will be enforced through water patrol personnel

f. During a Stage IV water shortage, the following mandatory restrictions are in effect:

1. All prohibitions of Stage III will be in force

2. No new meters will be issued.

3. Use of construction meters is prohibited.

4. Water cannot be used to maintain fountains, reflection ponds and decorative water bodies for aesthetic or scenic purposes, except where necessary to support aquatic life

5. Filling of new swimming pools, spas, hot tubs or the draining and refilling of existing pools is prohibited. Topping off is allowed to the extent that any designated water allocation is not exceeded.

g. During a Stage V water shortage, the following mandatory restrictions are in effect:

1. All prohibitions of Stages I through IV will be in force.

2. Outdoor irrigation is prohibited.

Section 5: Allocation

a. In the event that a Stage IV or Stage V water shortage occurs, in addition to prohibitions, the District will establish mandatory annual allotments for each connection.

b. The General Manager or designee shall classify each customer and calculate each customer's allotment. Each customer shall receive notice of the allotment specified above, or as modified in accordance with Section 4 herein, on each monthly billing for service. To the extend feasible, each new customer shall be notified of the General Manager's determination by first class mail before the allocations take effect.

c. Any customer may contest the General Manager's classification on the basis of use or the General Manager's allotment on the basis of hardship or incorrect calculation. Appeals shall be processed as set forth below.

d. During a Stage IV Shortage, allocations shall be based on the following formula

    1. Each residential connection will receive no more than 63 CCF per year (58 GPCD minimum water requirement x 2.2 persons per household x 365 days = 46,574 gallons = 63 CCF) plus 15% of average annual usage of the past 3 years in excess of 63 CCF.

    2. Each commercial, industrial, and governmental connection will receive no more than 70% of average annual usage of the past 3 years.

    3. Each landscaping connection will receive 20% of average annual usage of the past 3 years, unless the specific account has been determined by District staff to meet the District's guidelines for Xeriscaping, irrigation, and maintenance, in which case it will receive 70% of average annual usage of the past 3 years.

    4. No meters will be installed for new accounts during the declared water shortage emergency.

e. During a Stage V Shortage, allocations shall be based on the following formula

    1. Each residential connection will receive no more than 63 CCF per year (58 GPCD minimum water requirement x 2.2 persons per household x 365 days = 46,574 gallons = 63 CCF) plus 5% of average annual usage of the past 3 years in excess of 63 CCF.

    2. Each commercial, industrial, and governmental connection will receive no more than 65% of average annual usage of the past 3 years.

    3. Each landscaping connection will receive 10% of average annual usage of the past 3 years, unless the specific account has been determined by District staff to meet the District's guidelines for Xeriscaping, irrigation, and maintenance, in which case it will receive 65% of average annual usage of the past 3 years.

    4. No meters will be installed for new accounts during the declared water shortage emergency.

Section 5: Limits on Use during Shortage

a. Water use in excess of the monthly amounts established below shall be subject to a charge at an increased rate in accordance with Section 7, herein.

Section 6: Appeals

Appeals Procedure:

1. Any person who wishes to appeal their customer classification or allotment must do so in writing, using forms provided by the District.
2. Appeals will be reviewed by District staff; site visits will be scheduled if required.
3. One of the conditions of approval will be that all applicable plumbing fixtures or irrigation systems be-replaced or modified for maximum water conservation.
4. Increased allotments may be approved for the following:
    a. Substantial medical requirements
    b. Residential connections with three or more residents in a household. These connections can receive additional allotments based upon the same calculations used for the standards applied in Stages IV and V per additional person. A census may be conducted to determine the actual number of residents per dwelling unit. Additional water will be approved for permanent residents only; permanent residents are defines as people who live in the specific residence a minimum or five days per week, nine months per year.
    c. Commercial/Industrial/Intuitional customers for which water supply reductions will result in unemployment or decreased production; a District water auditor must first confirm that the customer has instituted all applicable water efficiency improvements.
    d. Non-agricultural customers can appeal for an additional allotment of 12 CCF per year per horse, cow, or other large animal, and 6 CCF per year for each efficiently irrigated mature fruit tree.
    e. Government agencies (parks, schools, county, etc.) may have separate account allotments combined into one agency allotment.
5. In the event that an appeal for an additional allotment is requested for irrigation of trees or vegetation in residential categories or for any agricultural use, District staff may use the services of a qualified consultant in determining the validity of the request.
6. District staff will approve or deny appeals and report all appeals to the District's Board of Directors monthly.
7. If District staff and the applicant are unable to reach agreement, the appeal will then be heard by the District's General Manager, who will make the final determination.
8. All appeals will be reported monthly to the District's Board of Directors.

Section 7: Citations for Violations of Water Use Restrictions and Water Limitations

During any declared water shortage emergency, a customer who exceeds the established allotment will pay a surcharge of two times the highest rate tier per CCF of water for excess water

delivered during the first and second billing period, and a surcharge of four times the highest rate tier per CCF for excess water delivered during the third and subsequent consecutive billing periods.

If a customer exceeds the allotment usage for three consecutive billing periods, the District will install a flow restrictor at the service meter with a capacity of two gallons per minute (gpm) for meters up to one and one-half inch sizes (and comparatively sized restrictors for larger meters). The customer must pay a flow restrictor installation and removal charge of $100 before the normal service will be restored.

Section 8: Rule Making

The General Manager shall present periodical reports to the Board concerning the effectiveness of this ordinance, including a report within four months of the date of adoption of this ordinance concerning the first 3 months of ordinance administration. Said Reports shall review the nature and scope of appeals and exceptions. The Board shall periodically consider the adoption of rules implementing this ordinance in light of the Manager's reports. Such rules shall be adopted by the Board by resolution and shall deal with the administration of this ordinance. Any proposal to change the meaning of this ordinance shall be adopted by the Board by ordinance following a duly-noticed public hearing.

Section 9: Urgency

This ordinance is an urgency ordinance. It is necessary that the regulations set forth in this ordinance be adopted as forth herein in order to protect the supply of water for human consumption, sanitation and fire protection.

Appendix B: Joshua Basin Water District Adoption of WSCP

RESOLUTION NO. 22-1044

RESOLUTION OF THE BOARD OF DIRECTORS ADOPTING, DIRECTING FILING OF, AND IMPLEMENTING THE JOSHUA BASIN WATER DISTRICT 2020 URBAN WATER MANAGEMENT PLAN AND 2020 WATER SHORTAGE CONTINGENCY PLAN

WHEREAS, the California Legislature enacted Assembly Bill 797 during the 1983-1984 Regular Session of the California Legislature, creating Part 2.6 (commencing with Section 10610) of Division 6 of the California Water Code, known as the Urban Water Management Plan Act (the "Act");

WHEREAS, the Act mandates that every urban water supplier of water providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually, prepare, and every five (5) years thereafter update, its Urban Water Management Plan, (the "UWMP" or "Plan"), the primary objective of which is to plan for the conservation and efficient use of water; and

WHEREAS, the Joshua Basin Water District ("JBWD") is an urban water supplier as defined by the Act as it is a publicly owned supplier providing water for municipal purposes either directly or indirectly to more than 3,000 customers; and

WHEREAS, JBWD prepared and filed a UWMP with the California Department of Water Resources in 2015; and

WHEREAS, JBWD has now prepared its 2020 Urban Water Management Plan ("2020 UWMP") and 2020 Water Shortage Contingency Plan ("2020 WSCP"), as required by the Act, each of which is hereby incorporated herein by this reference; and

WHEREAS, on or about October 19, 2020, JBWD provided notice to the County of San Bernardino, Mojave Water Agency, Bighorn Desert View Water Agency, Hi-Desert Water District, Twentynine Palms Water District, and the Marine Air Ground Task Force Training Command ("MAGTFTC") that JBWD was in the process of preparing the 2020 UWMP and 2020 WSCP, and invited their consultation and comment on such documents; and

WHEREAS, JBWD made the 2020 UWMP and 2020 WSCP available for public inspection, commencing on or about August 1, 2022, both by posting on its website (jbwd.com) and sending out public notices to the County of San Bernardino, Mojave Water Agency, Bighorn Desert View Water Agency, Hi-Desert Water District, Twentynine Palms Water District, and the Marine Air Ground Task Force Training Command ("MAGTFTC"); and

WHEREAS, on August 3, 2022, and August 10, 2022, JBWD published notice in the *High Desert News* of both (1) the availability of the 2020 UWMP and 2020 WSCP for public inspection, and (2) a public hearing to be held at the JBWD Board of Directors ("Board") meeting on August 17, 2022, to be held at 5:30 p.m. or as soon thereafter as reasonably possible ("Public Hearing"); and

WHEREAS, on August 17, 2022, the Board held a noticed public hearing to receive public comment on the 2020 UWMP and 2020 WSCP; and

WHEREAS, the Board has received and had an opportunity to review the 2020 UWMP and 2020 WSCP, along with any and all public comments received; and

WHEREAS, the 2020 UWMP and 2020 WSCP have been prepared in accordance with the requirements of the Act; and

WHEREAS, the 2020 UWMP and 2020 WSCP are general information documents that are intended to provide an analysis of the current and alternative water demand and supplies and conservation activities of JBWD, including effects and measures of coping with short-term and chronic water shortages within the JBWD boundaries.

NOW, THEREFORE, BE IT RESOLVED by the Board of the Directors of the Joshua basin Water District as follows:

1. The recitals set forth herein are true and correct and shall hereinafter constitute findings of the Board.

2. The 2020 UWMP and 2020 WSCP, as presented to the Board, are hereby approved and adopted by JBWD.

3. The General Manager, or her designee, is directed to: (1) submit copies of the 2020 UWMP and 2020 WSCP to the Department of Water Resources as soon as practical, and to the California State Library and the County of San Bernardino, by no later than September 16, 2022; and (2) makes copies of the 2020 UWMP and 2020 WSCP available for public review during normal business hours no later than September 16, 2022.

4. The General Manager, or her designee, are further authorized to take any action reasonably necessary to effectuate the purpose or intent of this Resolution, to implement the 2020 UWMP and/or 2020 WSCP, or otherwise comply with the Act, including, when required by conditions contained within the 2020 UWMP and/or 2020 WSCP, declare a Water Shortage Emergency and to implement water conservation programs as detailed in the 2020 UWMP or 2020 WSCP, including recommendations to the Board of Directors regarding necessary procedures, rules and regulations to carry out effective and equitable water conservation programs.

5. This Resolution shall take effect immediately upon adoption by the Board.

PASSED AND ADOPTED this 17th day of August, 2022, pursuant to the following votes:

AYES:	Delph, Doolittle, Floen, and Jarlsberg
NOES:	_____
ABSENT:	_____
ABSTAIN:	_____

By: _____
Thomas Floen, President, Board of Directors

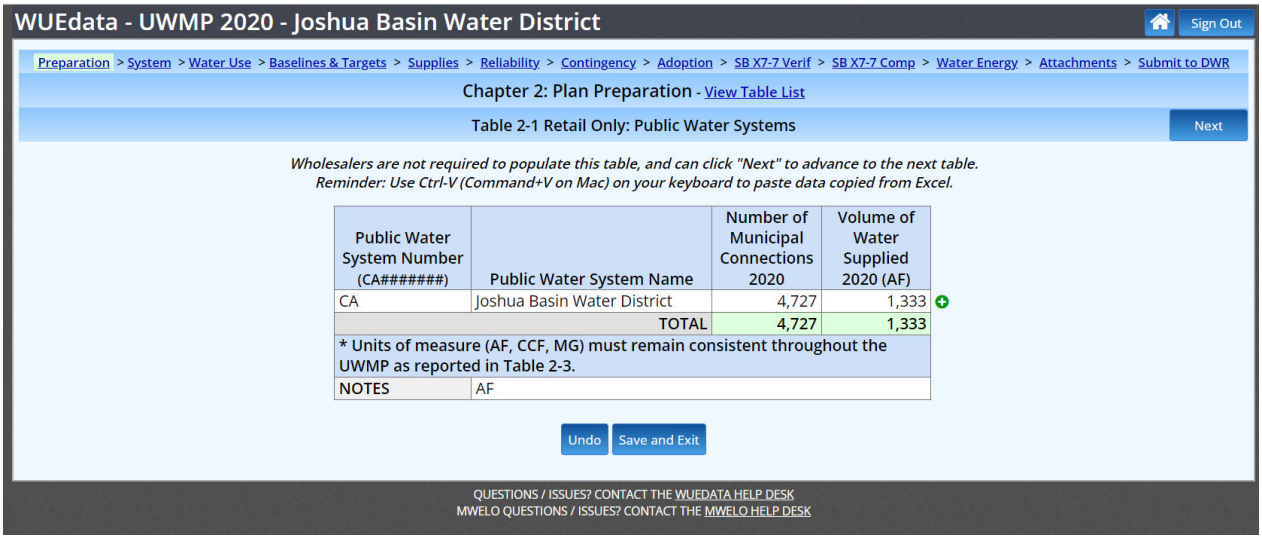
Respectfully submitted,

_____
Sarah Johnsen, General Manager & Board Secretary

Appendix C: DWR Standardized Tables

APPENDIX B

Joshua Basin Water District
2020 Urban Water Management Plan
DWR Standard Tables



WUEdata - UWMP 2020 - Joshua Basin Water District

Sign Out

Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR

Chapter 2: Plan Preparation - View Table List

Table 2-1 Retail Only: Public Water Systems

Next

Wholesalers are not required to populate this table, and can click "Next" to advance to the next table.
Reminder: Use Ctrl-V (Command+V on Mac) on your keyboard to paste data copied from Excel.

Public Water System Number (CA#######)	Public Water System Name	Number of Municipal Connections 2020	Volume of Water Supplied 2020 (AF)
CA	Joshua Basin Water District	4,727	1,333
	TOTAL	4,727	1,333
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.			
NOTES	AF		

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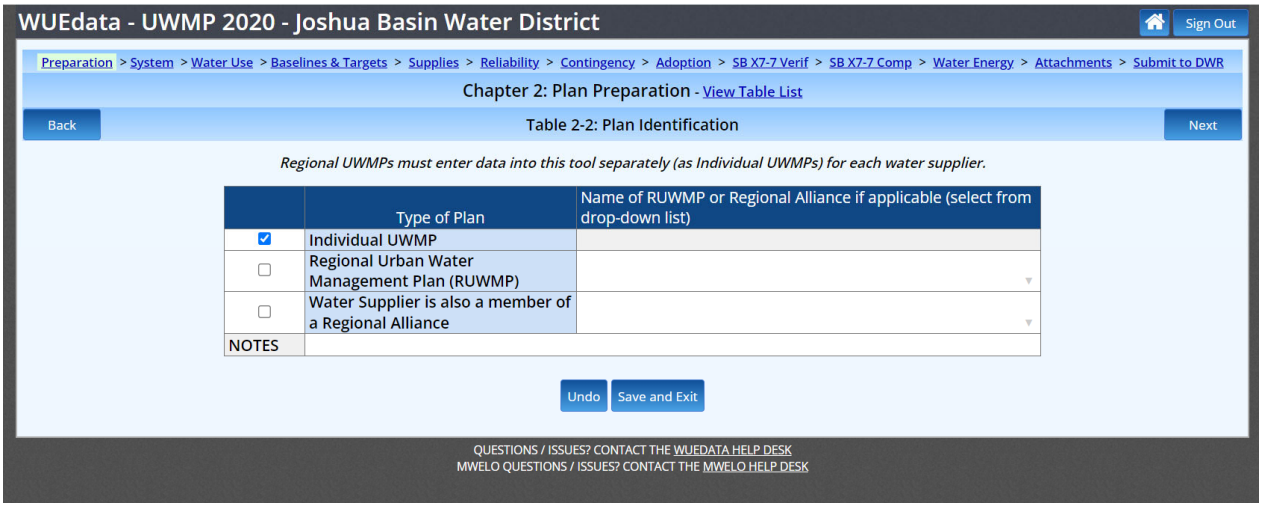
QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK



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Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR

Chapter 2: Plan Preparation - View Table List

Back

Table 2-2: Plan Identification

Next

Regional UWMPs must enter data into this tool separately (as Individual UWMPs) for each water supplier.

	Type of Plan	Name of RUWMP or Regional Alliance if applicable (select from drop-down list)
☑	Individual UWMP	
☐	Regional Urban Water Management Plan (RUWMP)	
☐	Water Supplier is also a member of a Regional Alliance	
NOTES		

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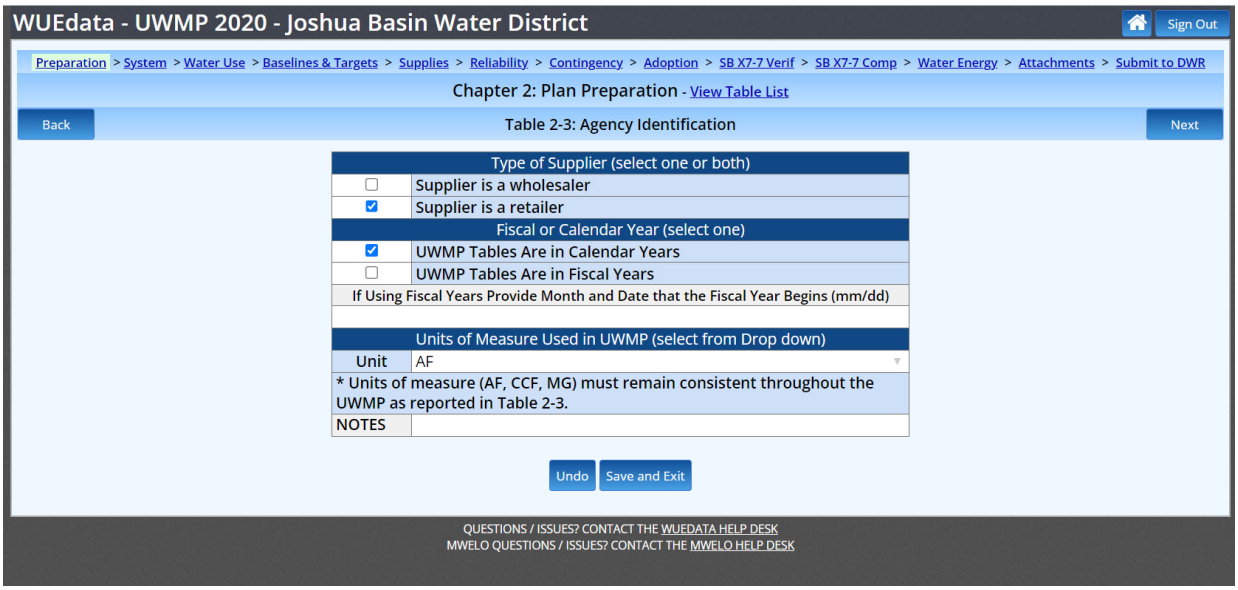
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Chapter 2: Plan Preparation - View Table List
Back
Table 2-3: Agency Identification
Next
Type of Supplier (select one or both)
Supplier is a wholesaler
Supplier is a retailer
Fiscal or Calendar Year (select one)
UWMP Tables Are in Calendar Years
UWMP Tables Are in Fiscal Years
If Using Fiscal Years Provide Month and Date that the Fiscal Year Begins (mm/dd)
Units of Measure Used in UWMP (select from Drop down)
Unit
AF
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.
NOTES
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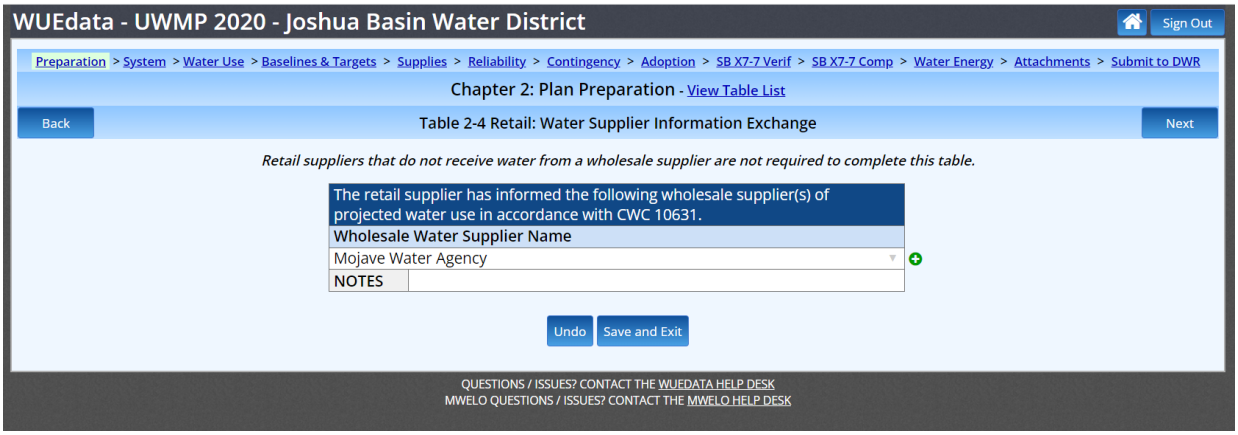
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Chapter 2: Plan Preparation - View Table List
Back
Table 2-4 Retail: Water Supplier Information Exchange
Next
Retail suppliers that do not receive water from a wholesale supplier are not required to complete this table.
The retail supplier has informed the following wholesale supplier(s) of projected water use in accordance with CWC 10631.
Wholesale Water Supplier Name
Mojave Water Agency
NOTES
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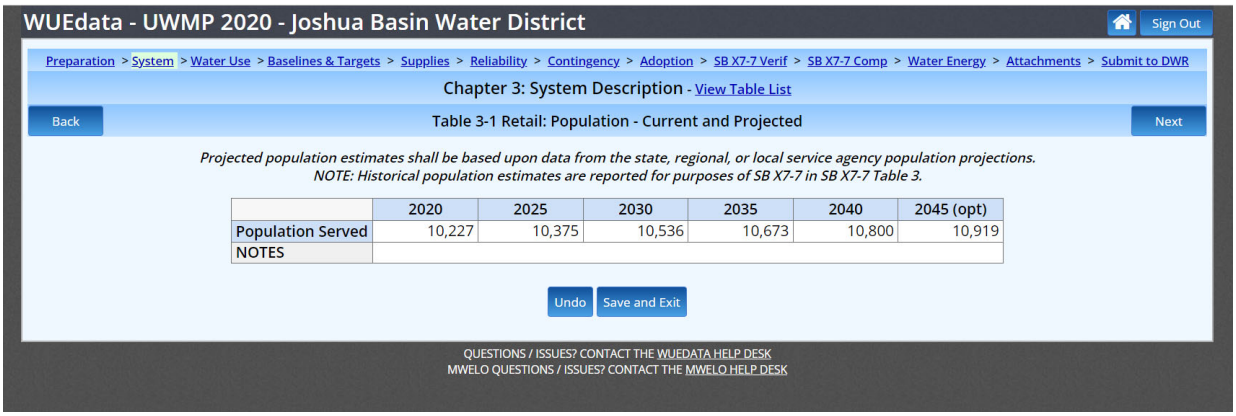
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK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Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR
Chapter 3: System Description - View Table List
Back
Table 3-1 Retail: Population - Current and Projected
Next
Projected population estimates shall be based upon data from the state, regional, or local service agency population projections.
NOTE: Historical population estimates are reported for purposes of SB X7-7 in SB X7-7 Table 3.
2020
2025
2030
2035
2040
2045 (opt)
Population Served
10,227
10,375
10,536
10,673
10,800
10,919
NOTES
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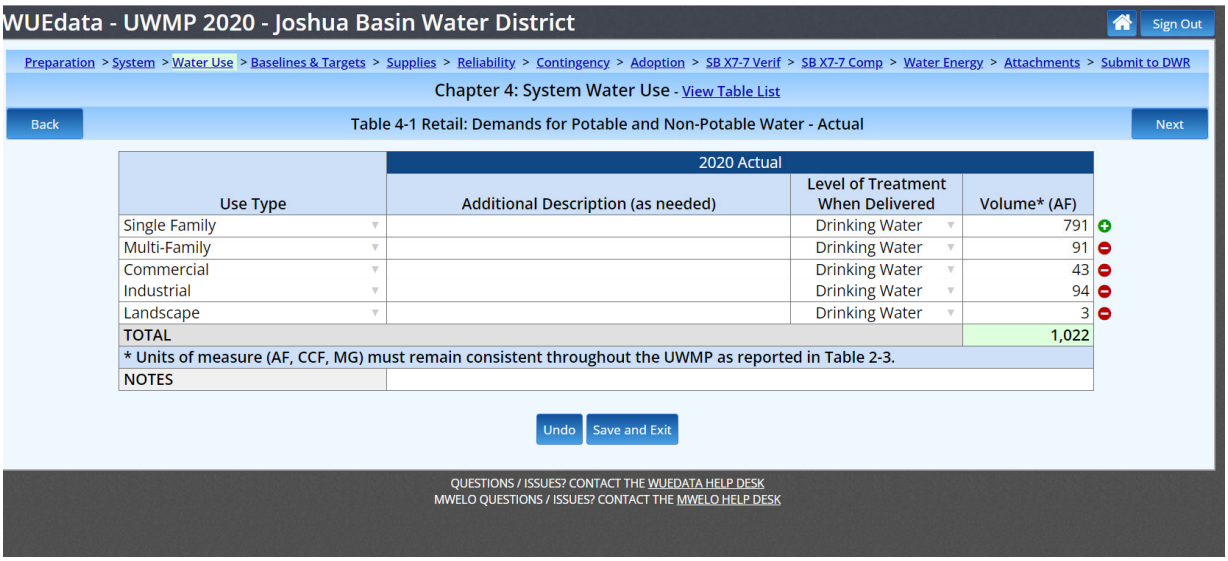
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK



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Sign Out

Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR

Chapter 4: System Water Use - View Table List

Back | Table 4-1 Retail: Demands for Potable and Non-Potable Water - Actual | Next

Use Type	2020 Actual		
	Additional Description (as needed)	Level of Treatment When Delivered	Volume* (AF)
Single Family		Drinking Water	791
Multi-Family		Drinking Water	91
Commercial		Drinking Water	43
Industrial		Drinking Water	94
Landscape		Drinking Water	3
TOTAL			1,022
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.			
NOTES			

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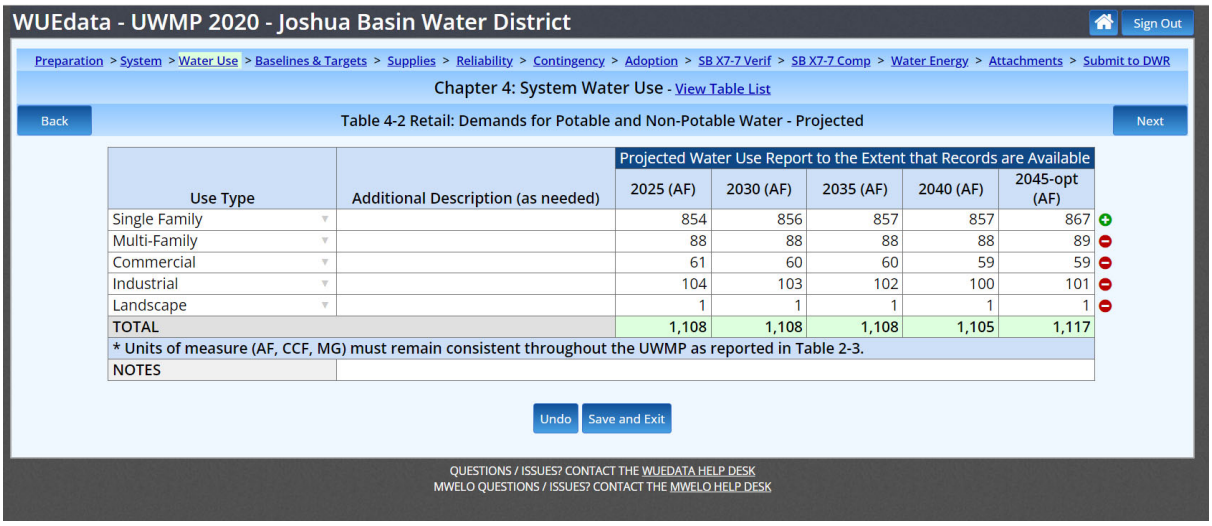
QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK



WUEdata - UWMP 2020 - Joshua Basin District

Sign Out

Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR

Chapter 4: System Water Use - View Table List

Back | Table 4-2 Retail: Demands for Potable and Non-Potable Water - Projected | Next

Use Type	Additional Description (as needed)	Projected Water Use Report to the Extent that Records are Available				
		2025 (AF)	2030 (AF)	2035 (AF)	2040 (AF)	2045-opt (AF)
Single Family		854	856	857	857	867
Multi-Family		88	88	88	88	89
Commercial		61	60	60	59	59
Industrial		104	103	102	100	101
Landscape		1	1	1	1	1
TOTAL		1,108	1,108	1,108	1,105	1,117
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.						
NOTES						

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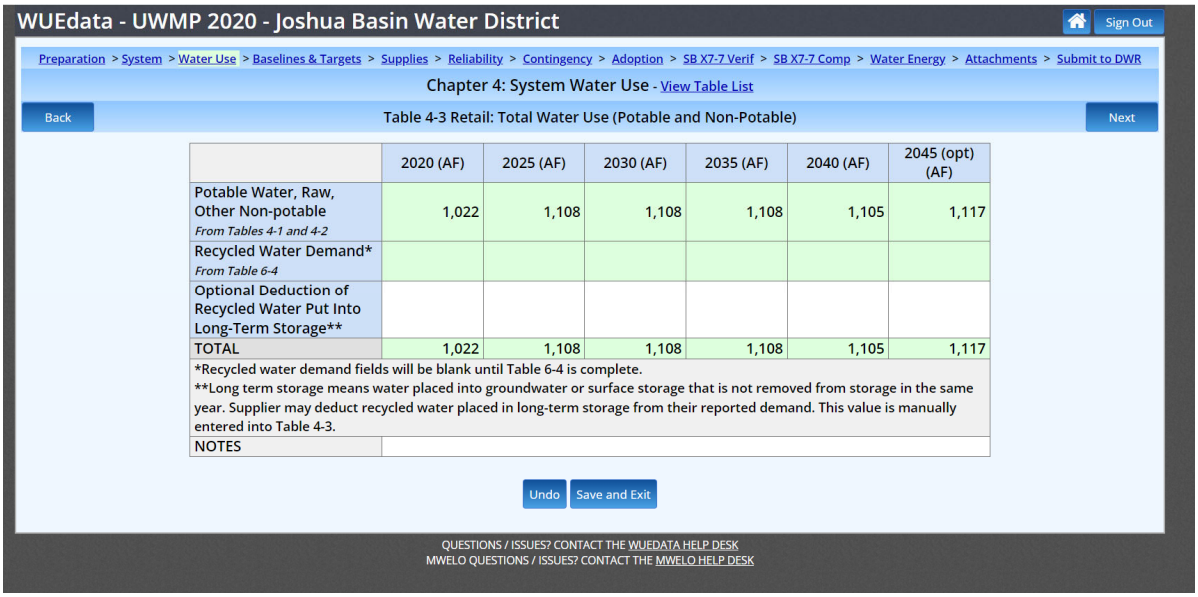
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK



WUEdata - UWMP 2020 - Joshua Basin Water District

Sign Out

Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR

Chapter 4: System Water Use - View Table List

Back | Table 4-3 Retail: Total Water Use (Potable and Non-Potable) | Next

	2020 (AF)	2025 (AF)	2030 (AF)	2035 (AF)	2040 (AF)	2045 (opt) (AF)
Potable Water, Raw, Other Non-potable *From Tables 4-1 and 4-2*	1,022	1,108	1,108	1,108	1,105	1,117
Recycled Water Demand* *From Table 6-4*						
Optional Deduction of Recycled Water Put Into Long-Term Storage**						
TOTAL	1,022	1,108	1,108	1,108	1,105	1,117
*Recycled water demand fields will be blank until Table 6-4 is complete. **Long term storage means water placed into groundwater or surface storage that is not removed from storage in the same year. Supplier may deduct recycled water placed in long-term storage from their reported demand. This value is manually entered into Table 4-3.						
NOTES						

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QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
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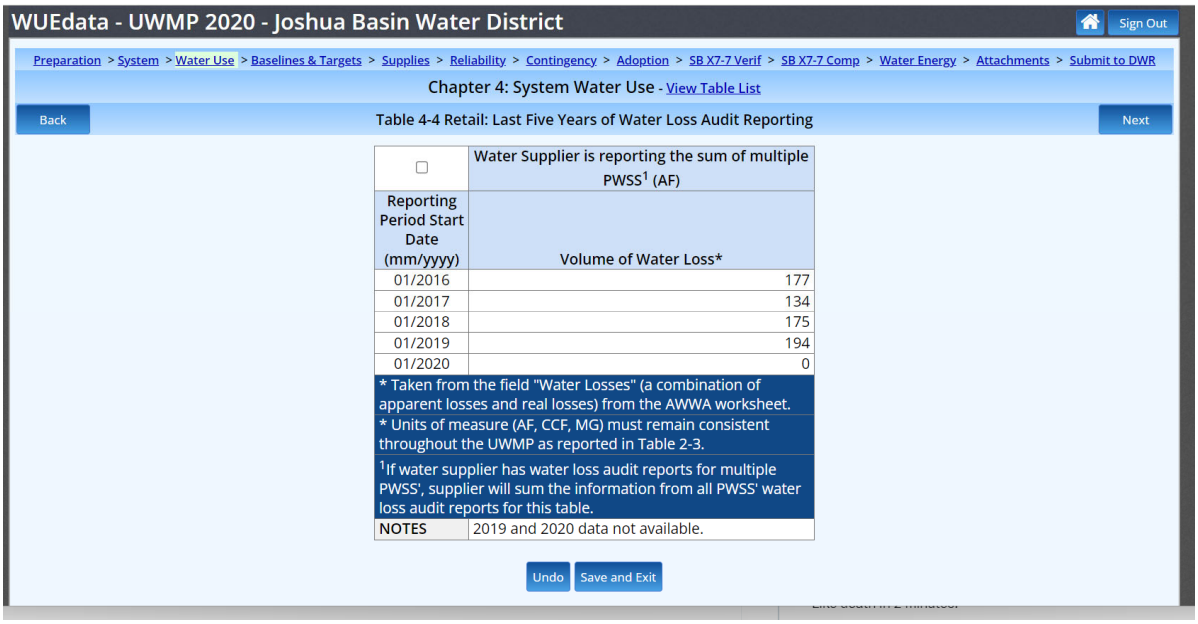

WUEdata - UWMP 2020 - Joshua Basin Water District

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Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR

Chapter 4: System Water Use - View Table List

Back | Table 4-4 Retail: Last Five Years of Water Loss Audit Reporting | Next

☐	Water Supplier is reporting the sum of multiple PWSS[1] (AF)
Reporting Period Start Date (mm/yyyy)	Volume of Water Loss*
01/2016	177
01/2017	134
01/2018	175
01/2019	194
01/2020	0
* Taken from the field "Water Losses" (a combination of apparent losses and real losses) from the AWWA worksheet.	
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.	
[1]If water supplier has water loss audit reports for multiple PWSS', supplier will sum the information from all PWSS' water loss audit reports for this table.	
NOTES	2019 and 2020 data not available.

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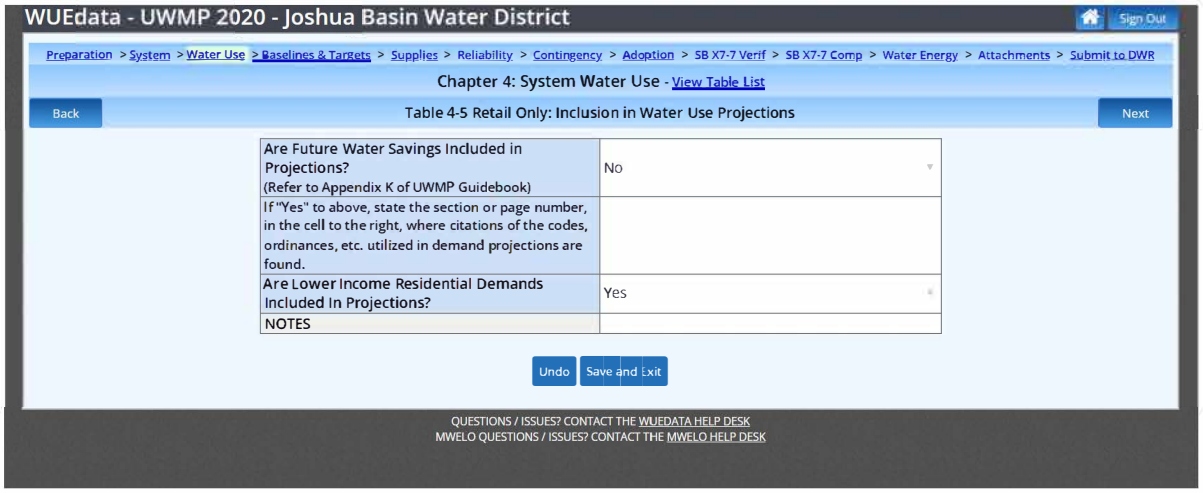
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Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR
Chapter 4: System Water Use - View Table List
Back
Table 4-5 Retail Only: Inclusion in Water Use Projections
Next
Are Future Water Savings Included in Projections? (Refer to Appendix K of UWMP Guidebook)
No
If "Yes" to above, state the section or page number, in the cell to the right, where citations of the codes, ordinances, etc. utilized in demand projections are found.
Are Lower Income Residential Demands Included In Projections?
Yes
NOTES
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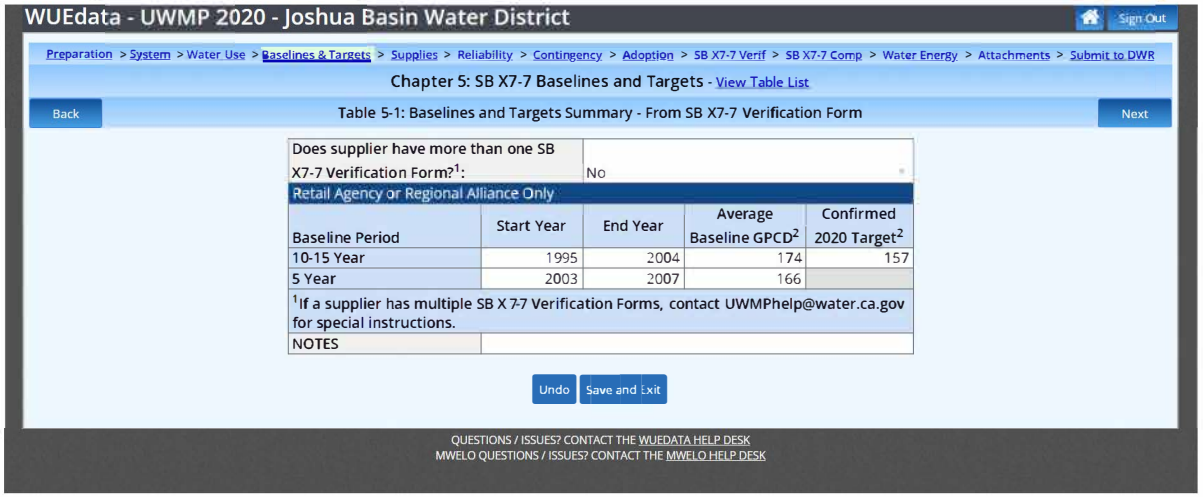
QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK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Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR
Chapter 5: SB X7-7 Baselines and Targets - View Table List
Back
Table 5-1: Baselines and Targets Summary - From SB X7-7 Verification Form
Next
Does supplier have more than one SB X7-7 Verification Form?[1]:
No
Retail Agency or Regional Alliance Only
Baseline Period
Start Year
End Year
Average Baseline GPCD[2]
Confirmed 2020 Target[2]
10-15 Year
1995
2004
174
157
5 Year
2003
2007
166
[1]If a supplier has multiple SB X 7-7 Verification Forms, contact UWMPhelp@water.ca.gov for special instructions.
NOTES
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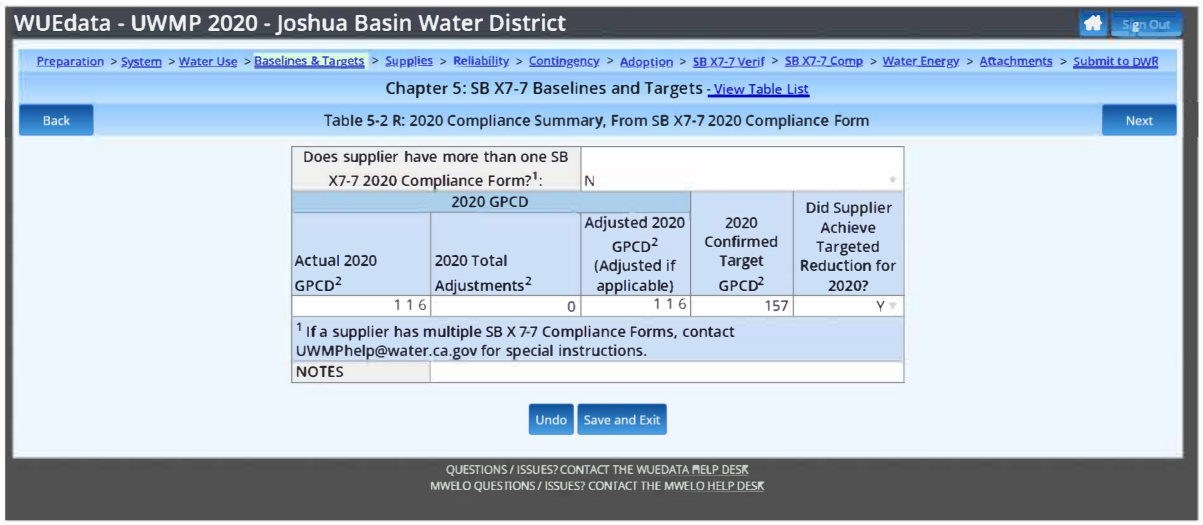
Save and Exit
QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK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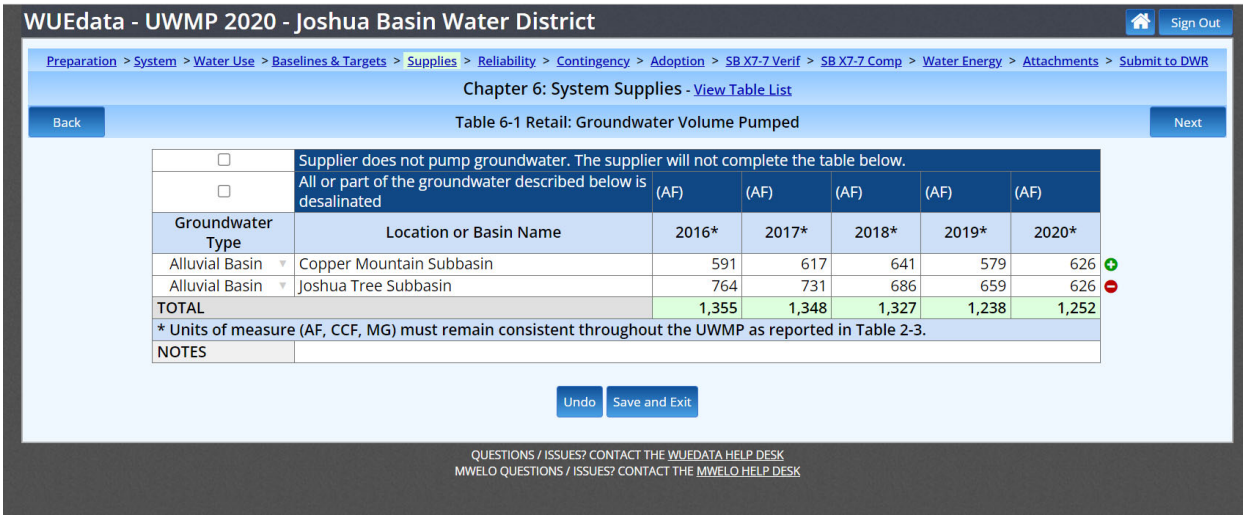
Sign Out
Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR
Chapter 5: SB X7-7 Baselines and Targets - View Table List
Back
Table 5-2 R: 2020 Compliance Summary, From SB X7-7 2020 Compliance Form
Next
Does supplier have more than one SB X7-7 2020 Compliance Form?[1]:
N
2020 GPCD
Actual 2020 GPCD[2]
2020 Total Adjustments[2]
Adjusted 2020 GPCD[2] (Adjusted if applicable)
2020 Confirmed Target GPCD[2]
Did Supplier Achieve Targeted Reduction for 2020?
116
0
116
157
Y
[1] If a supplier has multiple SB X 7-7 Compliance Forms, contact UWMPhelp@water.ca.gov for special instructions.
NOTES
Undo
Save and Exit
QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK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Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR
Chapter 6: System Supplies - View Table List
Back
Table 6-1 Retail: Groundwater Volume Pumped
Next
Supplier does not pump groundwater. The supplier will not complete the table below.
All or part of the groundwater described below is desalinated
(AF) (AF) (AF) (AF) (AF)
Groundwater Type
Location or Basin Name
2016* 2017* 2018* 2019* 2020*
Alluvial Basin Copper Mountain Subbasin 591 617 641 579 626
Alluvial Basin Joshua Tree Subbasin 764 731 686 659 626
TOTAL 1,355 1,348 1,327 1,238 1,252
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.
NOTES
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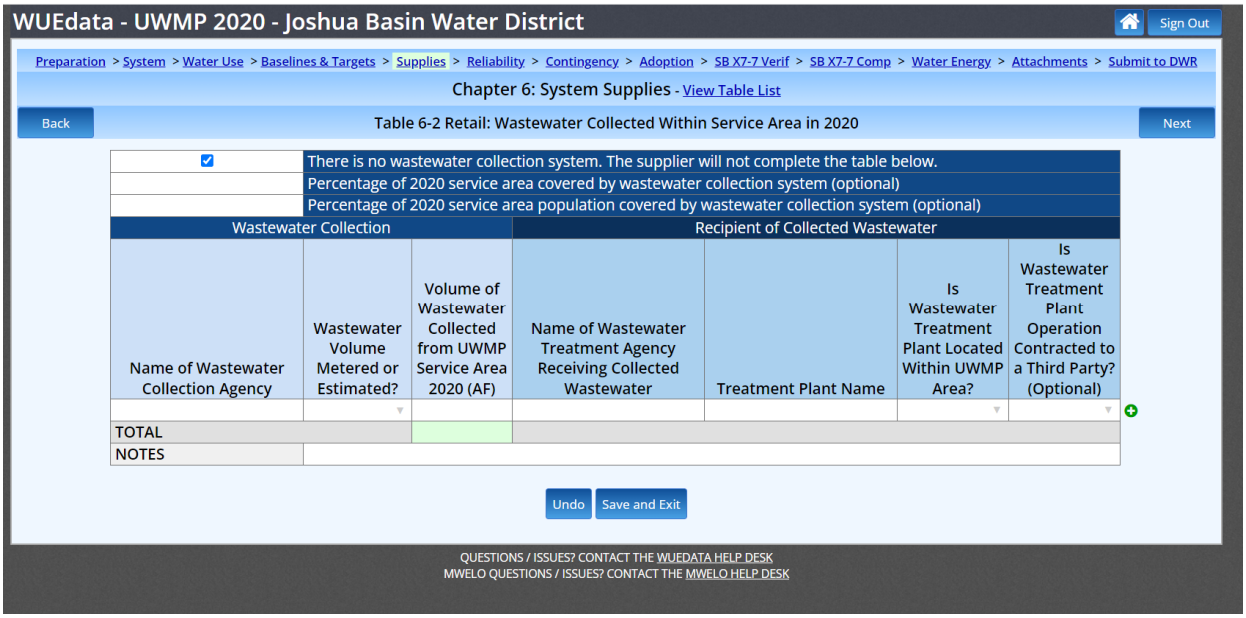
QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK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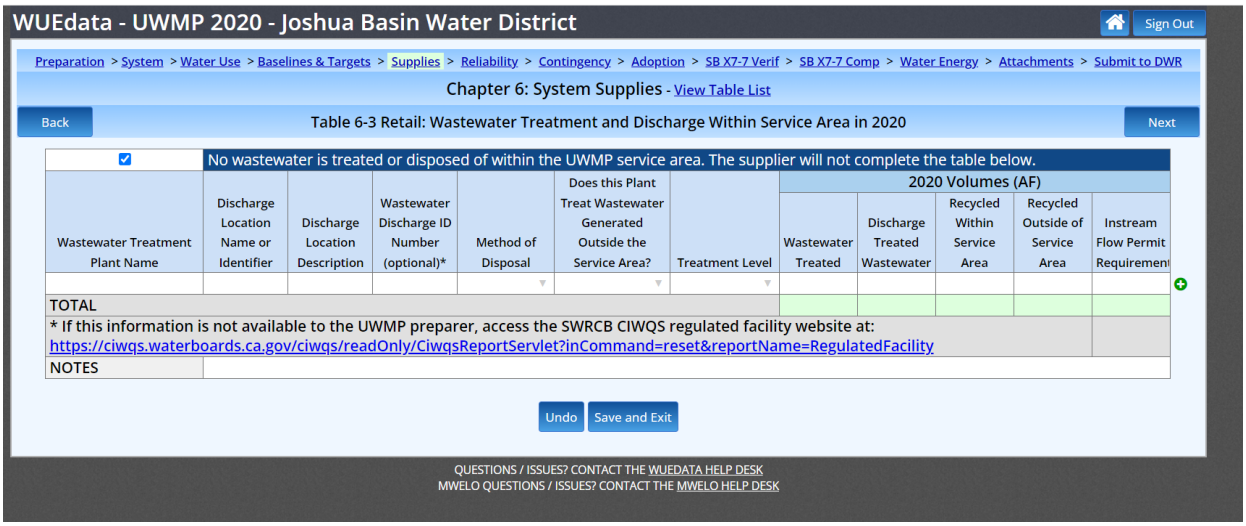
Chapter 6: System Supplies - View Table List
Back
Table 6-2 Retail: Wastewater Collected Within Service Area in 2020
Next
There is no wastewater collection system. The supplier will not complete the table below.
Percentage of 2020 service area covered by wastewater collection system (optional)
Percentage of 2020 service area population covered by wastewater collection system (optional)
Wastewater Collection
Recipient of Collected Wastewater
Name of Wastewater Collection Agency
Wastewater Volume Metered or Estimated?
Volume of Wastewater Collected from UWMP Service Area 2020 (AF)
Name of Wastewater Treatment Agency Receiving Collected Wastewater
Treatment Plant Name
Is Wastewater Treatment Plant Located Within UWMP Area?
Is Wastewater Treatment Plant Operation Contracted to a Third Party? (Optional)
TOTAL
NOTES
Undo
Save and Exit
QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK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Chapter 6: System Supplies - View Table List
Back
Table 6-3 Retail: Wastewater Treatment and Discharge Within Service Area in 2020
Next
No wastewater is treated or disposed of within the UWMP service area. The supplier will not complete the table below.
Wastewater Treatment Plant Name
Discharge Location Name or Identifier
Discharge Location Description
Wastewater Discharge ID Number (optional)*
Method of Disposal
Does this Plant Treat Wastewater Generated Outside the Service Area?
Treatment Level
2020 Volumes (AF)
Wastewater Treated
Discharge Treated Wastewater
Recycled Within Service Area
Recycled Outside of Service Area
Instream Flow Permit Requirement
TOTAL
* If this information is not available to the UWMP preparer, access the SWRCB CIWQS regulated facility website at:
https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/CiwqsReportServlet?inCommand=reset&reportName=RegulatedFacility
NOTES
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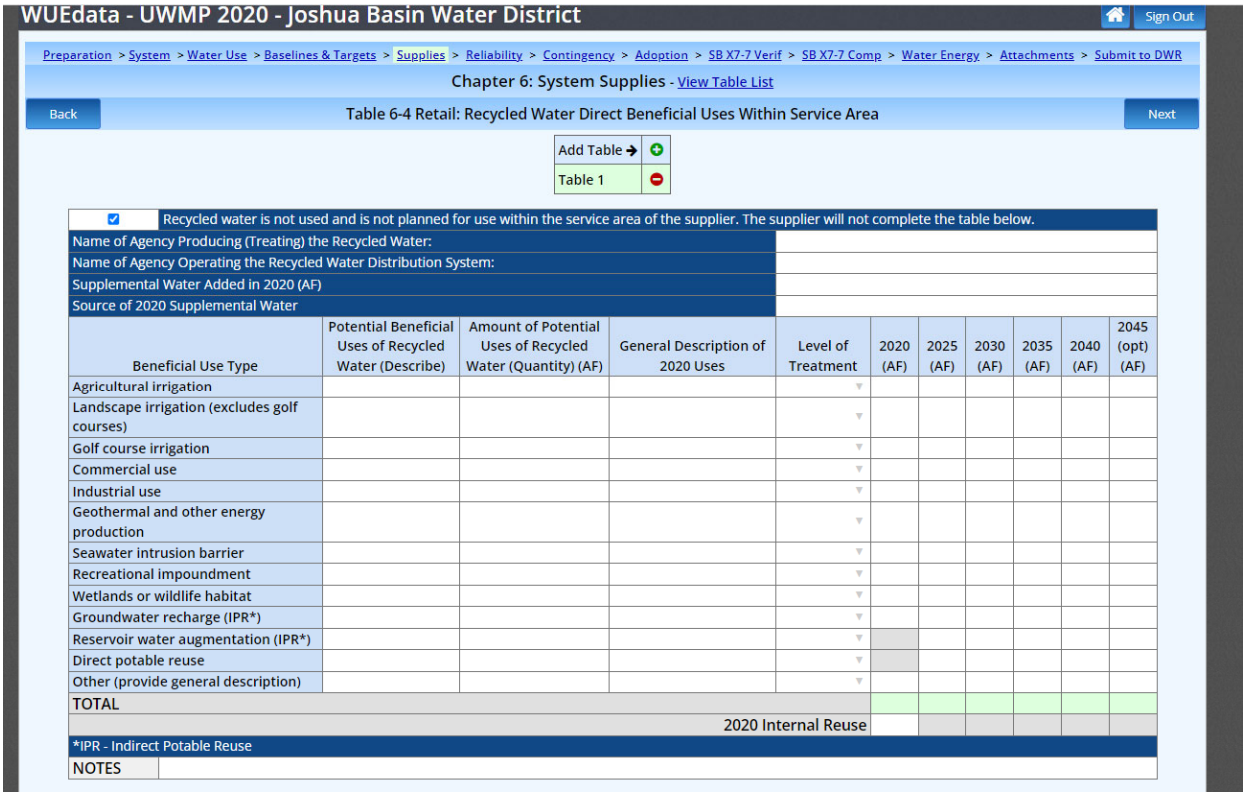
QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK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Chapter 6: System Supplies - View Table List
Back
Table 6-4 Retail: Recycled Water Direct Beneficial Uses Within Service Area
Next
Add Table
Table 1
Recycled water is not used and is not planned for use within the service area of the supplier. The supplier will not complete the table below.
Name of Agency Producing (Treating) the Recycled Water:
Name of Agency Operating the Recycled Water Distribution System:
Supplemental Water Added in 2020 (AF)
Source of 2020 Supplemental Water
Beneficial Use Type
Potential Beneficial Uses of Recycled Water (Describe)
Amount of Potential Uses of Recycled Water (Quantity) (AF)
General Description of 2020 Uses
Level of Treatment
2020 (AF)
2025 (AF)
2030 (AF)
2035 (AF)
2040 (AF)
2045 (opt) (AF)
Agricultural irrigation
Landscape irrigation (excludes golf courses)
Golf course irrigation
Commercial use
Industrial use
Geothermal and other energy production
Seawater intrusion barrier
Recreational impoundment
Wetlands or wildlife habitat
Groundwater recharge (IPR*)
Reservoir water augmentation (IPR*)
Direct potable reuse
Other (provide general description)
TOTAL
2020 Internal Reuse
*IPR - Indirect Potable Reuse
NOTES

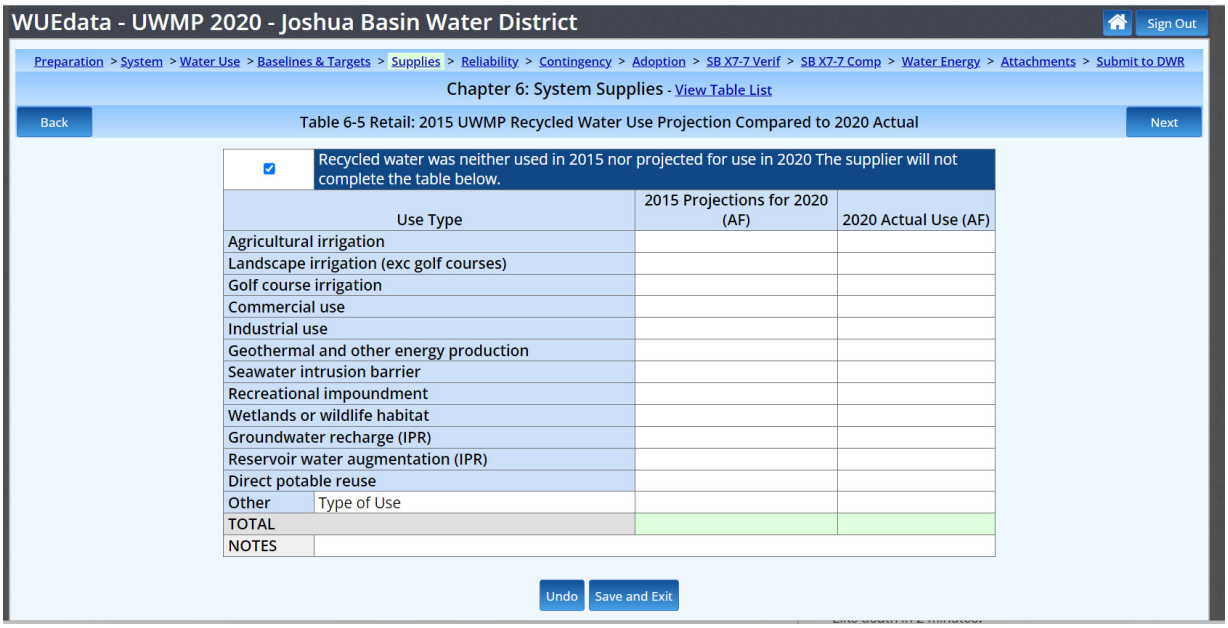
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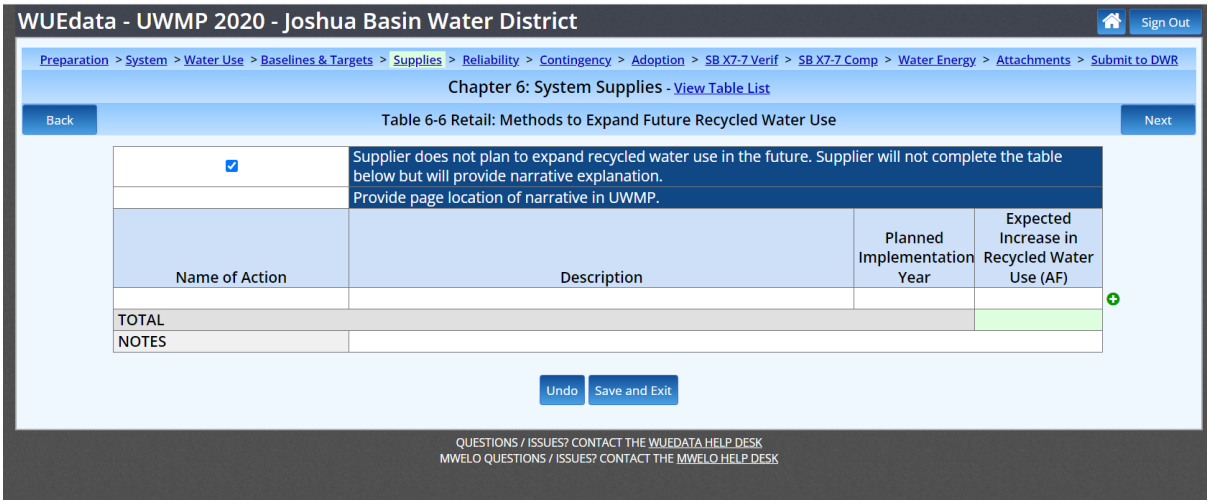
Table 6-5 Retail: 2015 UWMP Recycled Water Use Projection Compared to 2020 Actual
Next
Recycled water was neither used in 2015 nor projected for use in 2020 The supplier will not complete the table below.
Use Type
2015 Projections for 2020 (AF)
2020 Actual Use (AF)
Agricultural irrigation
Landscape irrigation (exc golf courses)
Golf course irrigation
Commercial use
Industrial use
Geothermal and other energy production
Seawater intrusion barrier
Recreational impoundment
Wetlands or wildlife habitat
Groundwater recharge (IPR)
Reservoir water augmentation (IPR)
Direct potable reuse
Other
Type of Use
TOTAL
NOTES
Undo
Save and Exit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Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR
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Table 6-6 Retail: Methods to Expand Future Recycled Water Use
Next
Supplier does not plan to expand recycled water use in the future. Supplier will not complete the table below but will provide narrative explanation.
Provide page location of narrative in UWMP.
Name of Action
Description
Planned Implementation Year
Expected Increase in Recycled Water Use (AF)
TOTAL
NOTES
Undo
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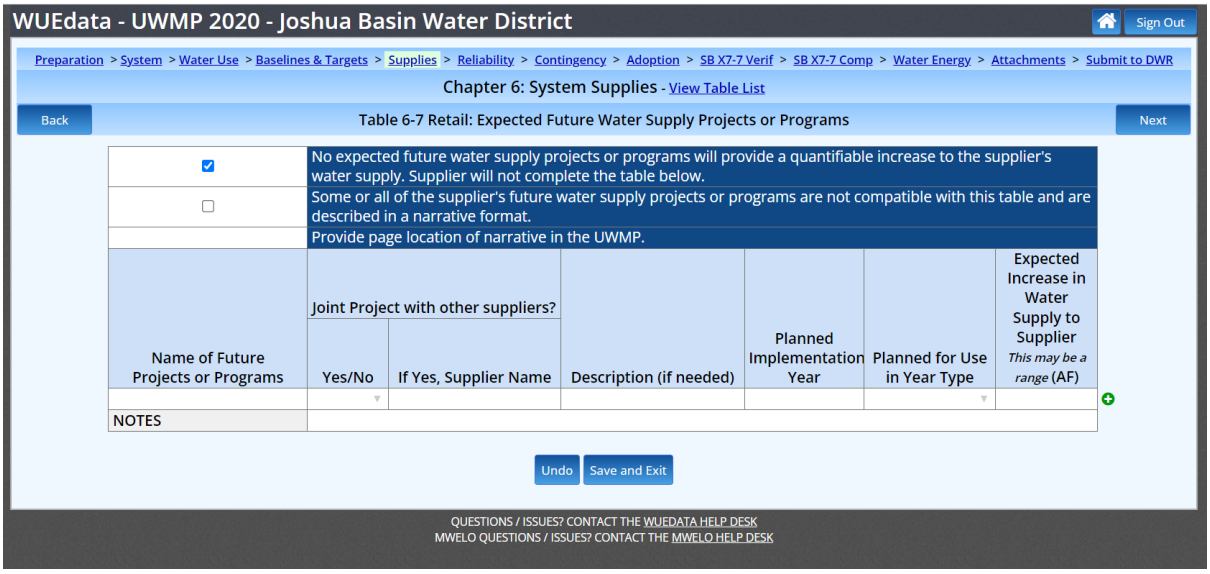
QUESTIONS / ISSUES? CONTACT THE WUEDATA HELP DESK
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK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Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR
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Table 6-7 Retail: Expected Future Water Supply Projects or Programs
Next
No expected future water supply projects or programs will provide a quantifiable increase to the supplier's water supply. Supplier will not complete the table below.
Some or all of the supplier's future water supply projects or programs are not compatible with this table and are described in a narrative format.
Provide page location of narrative in the UWMP.
Name of Future Projects or Programs
Joint Project with other suppliers?
Yes/No
If Yes, Supplier Name
Description (if needed)
Planned Implementation Year
Planned for Use in Year Type
Expected Increase in Water Supply to Supplier This may be a range (AF)
NOTES
Undo
Save and Exit
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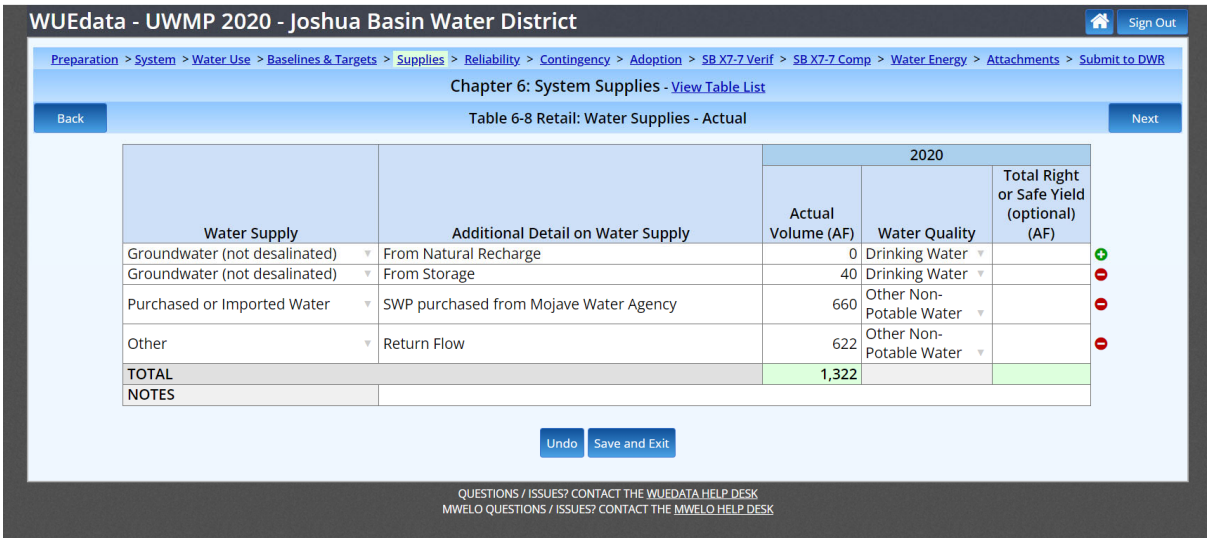
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK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Chapter 6: System Supplies - View Table List
Back
Table 6-8 Retail: Water Supplies - Actual
Next
Water Supply
Additional Detail on Water Supply
2020
Actual Volume (AF)
Water Quality
Total Right or Safe Yield (optional) (AF)
Groundwater (not desalinated) From Natural Recharge 0 Drinking Water
Groundwater (not desalinated) From Storage 40 Drinking Water
Purchased or Imported Water SWP purchased from Mojave Water Agency 660 Other Non-Potable Water
Other Return Flow 622 Other Non-Potable Water
TOTAL 1,322
NOTES
Undo
Save and Exit
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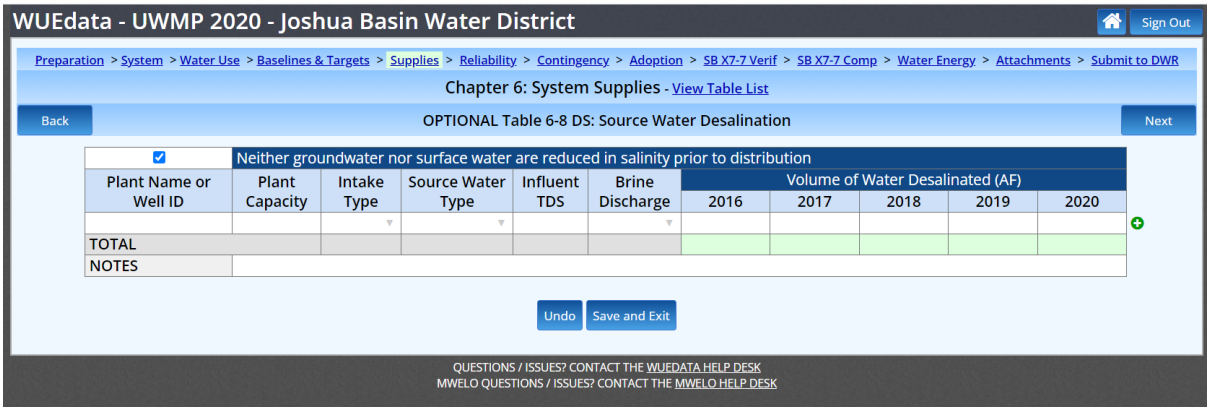
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK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Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR
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OPTIONAL Table 6-8 DS: Source Water Desalination
Next
Neither groundwater nor surface water are reduced in salinity prior to distribution
Plant Name or Well ID
Plant Capacity
Intake Type
Source Water Type
Influent TDS
Brine Discharge
Volume of Water Desalinated (AF)
2016
2017
2018
2019
2020
TOTAL
NOTES
Undo
Save and Exit
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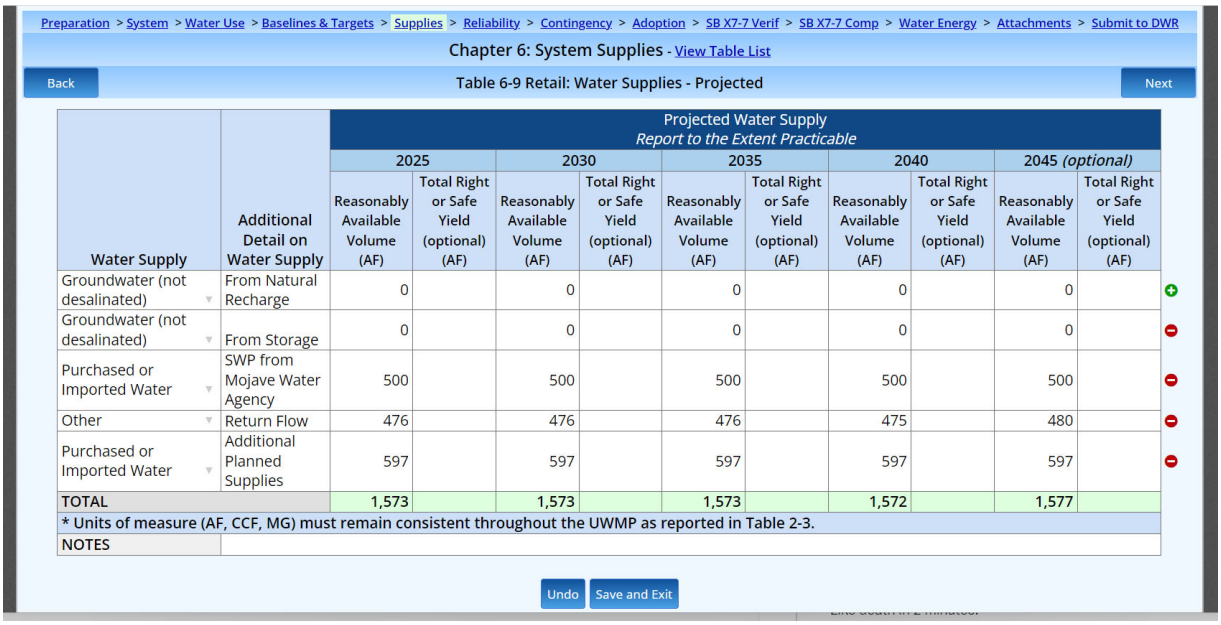
MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK



Preparation > System > Water Use > Baselines & Targets > Supplies > Reliability > Contingency > Adoption > SB X7-7 Verif > SB X7-7 Comp > Water Energy > Attachments > Submit to DWR

Chapter 6: System Supplies - View Table List

Back | Table 6-9 Retail: Water Supplies - Projected | Next

Water Supply	Additional Detail on Water Supply	Projected Water Supply *Report to the Extent Practicable*									
		2025		2030		2035		2040		2045 *(optional)*	
		Reasonably Available Volume (AF)	Total Right or Safe Yield (optional) (AF)	Reasonably Available Volume (AF)	Total Right or Safe Yield (optional) (AF)	Reasonably Available Volume (AF)	Total Right or Safe Yield (optional) (AF)	Reasonably Available Volume (AF)	Total Right or Safe Yield (optional) (AF)	Reasonably Available Volume (AF)	Total Right or Safe Yield (optional) (AF)
Groundwater (not desalinated)	From Natural Recharge	0		0		0		0		0	
Groundwater (not desalinated)	From Storage	0		0		0		0		0	
Purchased or Imported Water	SWP from Mojave Water Agency	500		500		500		500		500	
Other	Return Flow	476		476		476		475		480	
Purchased or Imported Water	Additional Planned Supplies	597		597		597		597		597	
TOTAL		1,573		1,573		1,573		1,572		1,577	
* Units of measure (AF, CCF, MG) must remain consistent throughout the UWMP as reported in Table 2-3.											
NOTES											

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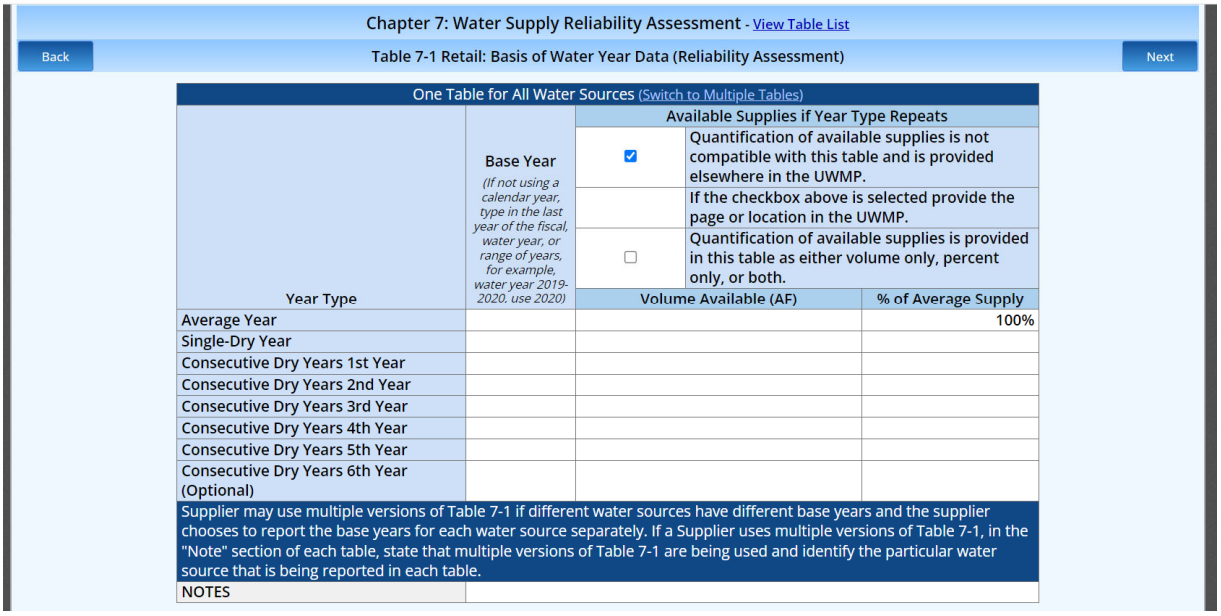

Chapter 7: Water Supply Reliability Assessment - View Table List

Back | Table 7-1 Retail: Basis of Water Year Data (Reliability Assessment) | Next

One Table for All Water Sources (Switch to Multiple Tables)

Year Type	Base Year *(If not using a calendar year, type in the last year of the fiscal, water year, or range of years, for example, water year 2019-2020, use 2020)*	Available Supplies if Year Type Repeats	
		☑	Quantification of available supplies is not compatible with this table and is provided elsewhere in the UWMP.
			If the checkbox above is selected provide the page or location in the UWMP.
		☐	Quantification of available supplies is provided in this table as either volume only, percent only, or both.
		Volume Available (AF)	% of Average Supply
Average Year			100%
Single-Dry Year			
Consecutive Dry Years 1st Year			
Consecutive Dry Years 2nd Year			
Consecutive Dry Years 3rd Year			
Consecutive Dry Years 4th Year			
Consecutive Dry Years 5th Year			
Consecutive Dry Years 6th Year (Optional)			
Supplier may use multiple versions of Table 7-1 if different water sources have different base years and the supplier chooses to report the base years for each water source separately. If a Supplier uses multiple versions of Table 7-1, in the "Note" section of each table, state that multiple versions of Table 7-1 are being used and identify the particular water source that is being reported in each table.			
NOTES			

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Chapter 7: Water Supply Reliability Assessment - View Table List

Back | Table 7-2 Retail: Normal Year Supply and Demand Comparison | Next

	2025 (AF)	2030 (AF)	2035 (AF)	2040 (AF)	2045 (opt) (AF)
Supply totals (autofill from Table 6-9)	1,573	1,573	1,573	1,572	1,577
Demand totals (autofill from Table 4-3)	1,108	1,108	1,108	1,105	1,117
Difference	465	465	465	467	460
NOTES					

Undo | Save and Exit

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Chapter 7: Water Supply Reliability Assessment - View Table List

Back | Table 7-3 Retail: Single Dry Year Supply and Demand Comparison | Next

	2025 (AF)	2030 (AF)	2035 (AF)	2040 (AF)	2045 (opt) (AF)
Supply totals	1,254	1,256	1,255	1,253	1,264
Demand totals	1,254	1,256	1,255	1,253	1,264
Difference	0	0	0	0	0
NOTES					

Undo | Save and Exit

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MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK

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Chapter 7: Water Supply Reliability Assessment - View Table List

Back | Table 7-4 Retail: Multiple Dry Years Supply and Demand Comparison | Next

		2025	2030	2035	2040	2045 (opt)
First Year	Supply totals (AF)	1,762	1,784	1,843	1,898	1,960
	Demand totals (AF)	1,762	1,784	1,843	1,898	1,960
	Difference (AF)	0	0	0	0	0
Second Year	Supply totals (AF)	1,762	1,784	1,843	1,898	1,960
	Demand totals (AF)	1,762	1,784	1,843	1,898	1,960
	Difference (AF)	0	0	0	0	0
Third Year	Supply totals (AF)	1,762	1,784	1,843	1,898	1,960
	Demand totals (AF)	1,762	1,784	1,843	1,898	1,960
	Difference (AF)	0	0	0	0	0
Fourth year	Supply totals (AF)	1,762	1,784	1,843	1,898	1,960
	Demand totals (AF)	1,762	1,784	1,843	1,898	1,960
	Difference (AF)	0	0	0	0	0
Fifth year	Supply totals (AF)	1,762	1,784	1,843	1,898	1,960
	Demand totals (AF)	1,762	1,784	1,843	1,898	1,960
	Difference (AF)	0	0	0	0	0
Sixth year *(optional)*	Supply totals (AF)					
	Demand totals (AF)					
	Difference (AF)	0	0	0	0	0
NOTES						

Undo | Save and Exit

Chapter 7: Water Supply Reliability Assessment - View Table List

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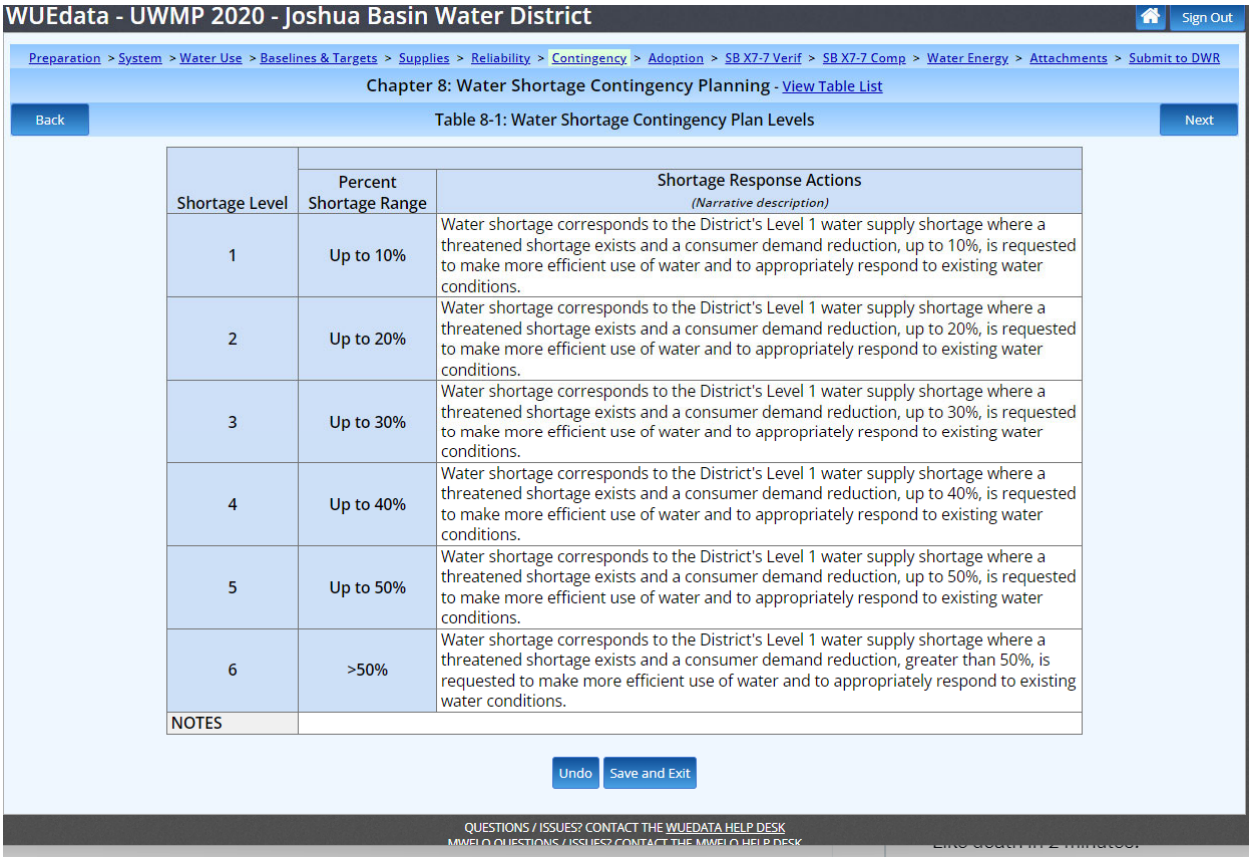
Table 7-5: Five-Year Drought Risk Assessment Tables

Next

2021	Total
Total Water Use	1,174
Total Supplies	1,174
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Action (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	0
Resulting % Use Reduction from WSCP action	0%
2022	**Total**
Total Water Use	1,304
Total Supplies	1,193
Surplus/Shortfall w/o WSCP Action	-111
Planned WSCP Action (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	-111
Resulting % Use Reduction from WSCP action	0%
2023	**Total**
Total Water Use	1,296
Total Supplies	1,211
Surplus/Shortfall w/o WSCP Action	-85
Planned WSCP Action (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	-85
Resulting % Use Reduction from WSCP action	0%
2024	**Total**
Total Water Use	1,287
Total Supplies	1,231
Surplus/Shortfall w/o WSCP Action	-56
Planned WSCP Action (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	
WSCP - use reduction savings benefit	
Revised Surplus/(shortfall)	-56
Resulting % Use Reduction from WSCP action	0%
2025	**Total**
Total Water Use	
Total Supplies	
Surplus/Shortfall w/o WSCP Action	0
Planned WSCP Action (use reduction and supply augmentation)	
WSCP - supply augmentation benefit	1,279
WSCP - use reduction savings benefit	1,254
Revised Surplus/(shortfall)	2,533
Resulting % Use Reduction from WSCP action	0%
NOTES	



Shortage Level	Percent Shortage Range	Shortage Response Actions *(Narrative description)*
1	Up to 10%	Water shortage corresponds to the District's Level 1 water supply shortage where a threatened shortage exists and a consumer demand reduction, up to 10%, is requested to make more efficient use of water and to appropriately respond to existing water conditions.
2	Up to 20%	Water shortage corresponds to the District's Level 1 water supply shortage where a threatened shortage exists and a consumer demand reduction, up to 20%, is requested to make more efficient use of water and to appropriately respond to existing water conditions.
3	Up to 30%	Water shortage corresponds to the District's Level 1 water supply shortage where a threatened shortage exists and a consumer demand reduction, up to 30%, is requested to make more efficient use of water and to appropriately respond to existing water conditions.
4	Up to 40%	Water shortage corresponds to the District's Level 1 water supply shortage where a threatened shortage exists and a consumer demand reduction, up to 40%, is requested to make more efficient use of water and to appropriately respond to existing water conditions.
5	Up to 50%	Water shortage corresponds to the District's Level 1 water supply shortage where a threatened shortage exists and a consumer demand reduction, up to 50%, is requested to make more efficient use of water and to appropriately respond to existing water conditions.
6	>50%	Water shortage corresponds to the District's Level 1 water supply shortage where a threatened shortage exists and a consumer demand reduction, greater than 50%, is requested to make more efficient use of water and to appropriately respond to existing water conditions.
NOTES		

Chapter 8: Water Shortage Contingency Planning - View Table List

Back | Table 8-2: Demand Reduction Actions | Next

Enter at least one row (or more) for each of the six shortage levels. If no demand-related actions are relevant for a certain stage, select the blank option from the drop down list for the "Demand Reduction Actions" column.

Shortage Level	Demand Reduction Actions	How much is this going to reduce the shortage gap Include units used (volume type or percentage)	Additional Explanation or Reference *(optional)*	Penalty, Charge, or Other Enforcement? *For Retail Suppliers Only*
Shortage Level 1	Expand Public Information Campaign	7%	Based on AWWA 2008 assumes savings of 7%	No
Shortage Level 2	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
Shortage Level 3	Implement or Modify Drought Rate Structure or Surcharge	10%	Based on AWWA 2008 assumes savings of 10% with enforcement	Yes
Shortage Level 3	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
Shortage Level 3	Landscape - Other landscape restriction or prohibition	3%	Outdoor water limited to 3 days a week. Based on AWWA 2011	Yes
Shortage Level 4	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
Shortage Level 4	Implement or Modify Drought Rate Structure or Surcharge	15%	Based on AWWA 2008 assumes savings of 15% with enforcement	Yes
Shortage Level 4	Landscape - Other landscape restriction or prohibition	10%	Outdoor water limited to 2 days a week. Based on AWWA 2011	Yes
Shortage Level 5	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
Shortage Level 5	Implement or Modify Drought Rate Structure or Surcharge	15%	Based on AWWA 2008 assumes savings of 15% with enforcement	Yes
Shortage Level 5	Landscape - Other landscape restriction or prohibition	17%	Outdoor water limited to 1 day a week. Based on AWWA 2011	Yes
Shortage Level 6	Expand Public Information Campaign	22%	Based on AWWA 2008 assumes savings of 22% with enforcement	Yes
Shortage Level 6	Implement or Modify Drought Rate Structure or Surcharge	15%	Based on AWWA 2008 assumes savings of 15% with enforcement	Yes
Shortage Level 6	Landscape - Other landscape restriction or prohibition	30%	Outdoor water use prohibited	Yes
Shortage Level 2	Implement or Modify Drought Rate Structure or Surcharge	10%	Based on AWWA 2008 assumes savings of 10% with enforcement	Yes
NOTES				

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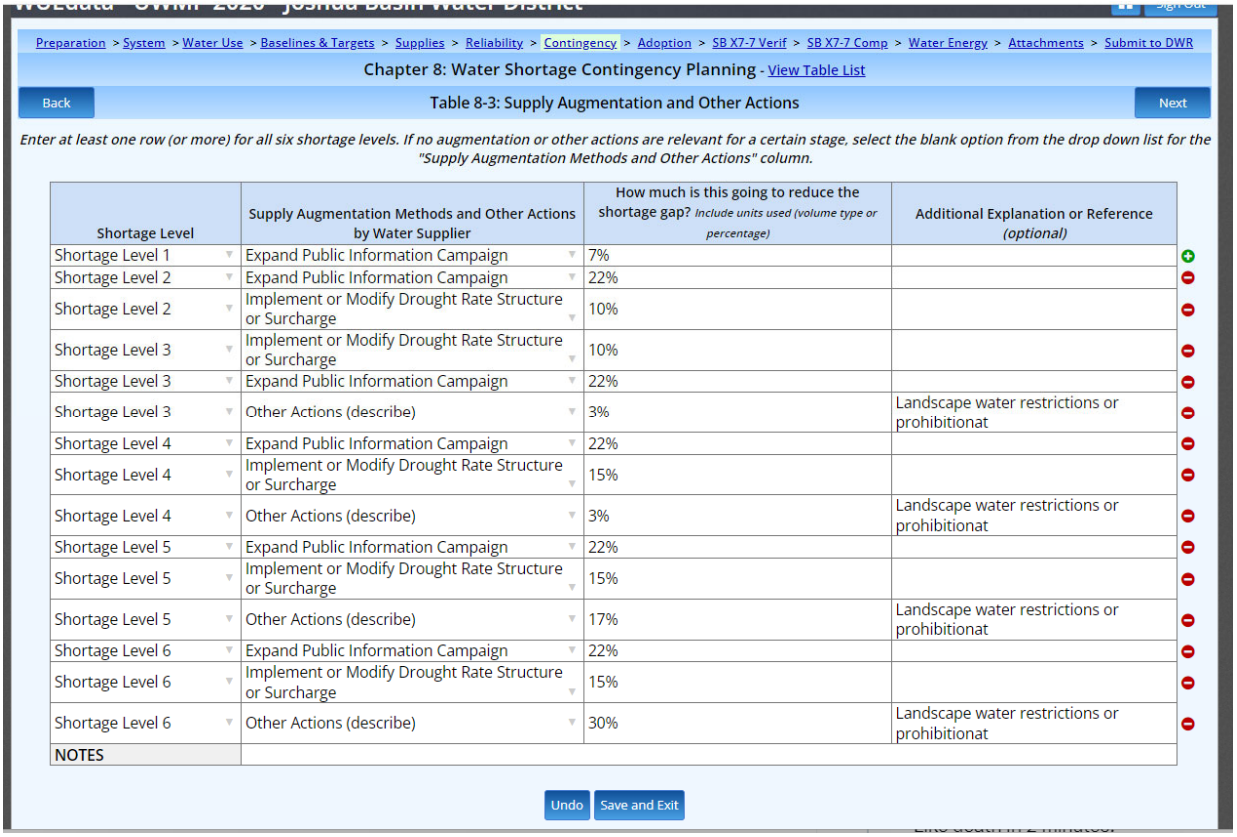

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Chapter 8: Water Shortage Contingency Planning - View Table List

Back | Table 8-3: Supply Augmentation and Other Actions | Next

Enter at least one row (or more) for all six shortage levels. If no augmentation or other actions are relevant for a certain stage, select the blank option from the drop down list for the "Supply Augmentation Methods and Other Actions" column.

Shortage Level	Supply Augmentation Methods and Other Actions by Water Supplier	How much is this going to reduce the shortage gap? *Include units used (volume type or percentage)*	Additional Explanation or Reference *(optional)*
Shortage Level 1	Expand Public Information Campaign	7%	
Shortage Level 2	Expand Public Information Campaign	22%	
Shortage Level 2	Implement or Modify Drought Rate Structure or Surcharge	10%	
Shortage Level 3	Implement or Modify Drought Rate Structure or Surcharge	10%	
Shortage Level 3	Expand Public Information Campaign	22%	
Shortage Level 3	Other Actions (describe)	3%	Landscape water restrictions or prohibitionat
Shortage Level 4	Expand Public Information Campaign	22%	
Shortage Level 4	Implement or Modify Drought Rate Structure or Surcharge	15%	
Shortage Level 4	Other Actions (describe)	3%	Landscape water restrictions or prohibitionat
Shortage Level 5	Expand Public Information Campaign	22%	
Shortage Level 5	Implement or Modify Drought Rate Structure or Surcharge	15%	
Shortage Level 5	Other Actions (describe)	17%	Landscape water restrictions or prohibitionat
Shortage Level 6	Expand Public Information Campaign	22%	
Shortage Level 6	Implement or Modify Drought Rate Structure or Surcharge	15%	
Shortage Level 6	Other Actions (describe)	30%	Landscape water restrictions or prohibitionat
NOTES			

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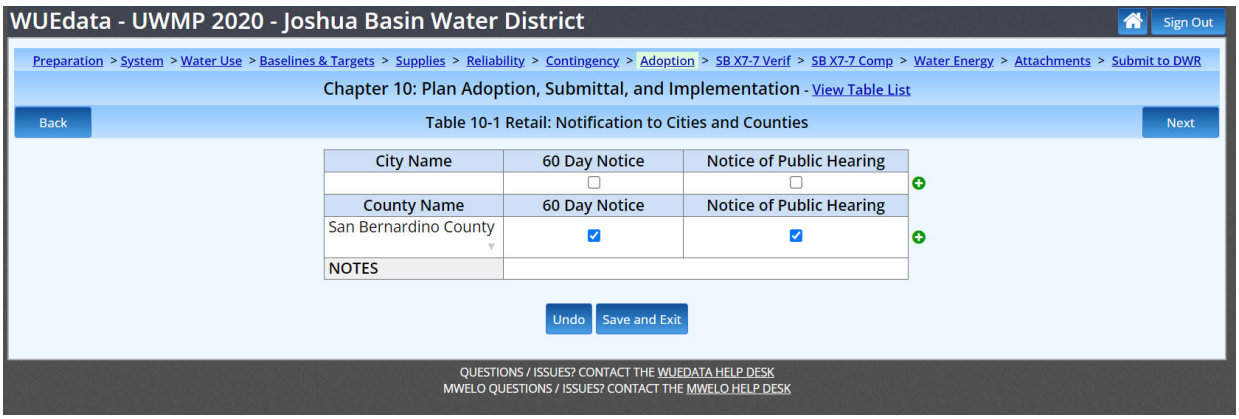

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Chapter 10: Plan Adoption, Submittal, and Implementation - View Table List

Back | Table 10-1 Retail: Notification to Cities and Counties | Next

City Name	60 Day Notice	Notice of Public Hearing
	☐	☐
County Name	**60 Day Notice**	**Notice of Public Hearing**
San Bernardino County	☑	☑
NOTES		

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MWELO QUESTIONS / ISSUES? CONTACT THE MWELO HELP DESK

Appendix D: Local Hazard Mitigation Plan

Local Hazard Mitigation Plan

Joshua Basin Water District

Joshua Tree, California

Joshua Basin Water District's Board Adoption Date: 06-19-2019

Approved by FEMA: 05/24/2019

Revised:

PRIMARY POINT OF CONTACT UNTIL FEMA APPROVAL

GARY STURDIVAN

GSTURDIVAN@ME.COM

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SECTION 1: INTRODUCTION

1.1 Purpose of the Plan

Emergencies and disasters can leave people injured or displaced; result in fatalities; cause significant damage to our communities, businesses, public infrastructure and our environment; and cost tremendous amounts in terms of response and recovery dollars and economic loss. Hazard mitigation reduces the risk of personal damages, loss of life, and property damages caused by emergencies and disasters.

Repairs and reconstruction after disasters are often completed to simply restore infrastructure to pre-disaster conditions. Such efforts expedite a return to normalcy; however, merely replicating pre-disaster conditions results in a cycle of damage, reconstruction, and repeated damage. Hazard mitigation attempts to break this cycle by reducing hazard vulnerability.

While we cannot prevent disasters from happening, their effects can be reduced or minimized through preparedness and mitigation. For those hazards that cannot be fully mitigated, the community must be prepared to provide efficient and effective response and recovery to emergencies. This can be accomplished through well-organized public education and awareness efforts.

The purpose of this Local Hazard Mitigation Plan (LHMP) is to identify potential hazards to the Joshua Basin Water District (District) and formulate mitigation measures for the future protection of the District's critical infrastructure and the community's safety with respect to the District's facilities and services. Approval of this LHMP by the State of California Office of Emergency Services (CalOES) will also allow the District to become eligible to receive federal funding assistance under the Local Hazard Mitigation Grant Program or the Pre-Disaster Mitigation Program.

1.2 Authority

The Joshua Basin Water District is a independent Special District, formed and operating pursuant to California Water Code Section 3000 et. Seq. (County Water District Law). The District is governed by a five-member Board of Directors, elected at-large from within the District's service area.

The Board of Directors employs a general manager. The general manager administers the day-to-day operations of the District in accordance with policies and procedures established by the Board of Directors. The general manager employs an assistant general manager of operations, assistant general manager of finance, executive secretary, human resources/contracting, and GIS/development coordinator. There are 21 full-time employees at the District, and of these, 13 employees are union employees hired by the general manager.

As required by the Department of Homeland Security's Federal Emergency Management Administration (FEMA), LHMPs must be updated, adopted, and approved every five years. This is the District's first LHMP.

1.3 Community Profile

The Joshua Basin Water District serves the unincorporated area known as Joshua Tree, California. The District pumps water from two underground aquifers and distributes it to the customer. The available water supply is local ground water. There is a system intertie with Hi-Desert Water District. The District imports water through the Mojave Water Agency, who is the wholesaler of the State Water Project in the area.

The District serves a population of approximately 9,814 residents within a 96-square-mile area and maintains approximately 5,400 metered services, 310 miles of pipeline, and 14 million gallons of water storage capacity. When physical operations began in 1963, the District served residents within an area of 26.7 square miles and 1,422 metered services were fed by approximately 94 miles of leaky, undersized, and substandard pipeline. The community's water storage capacity amounted to less than 200,000 gallons.

1.3.1 Physical Setting

Joshua Tree is a unique High Desert community on the southern boundary of the Mojave Desert in San Bernardino County, just north of Little San Bernardino and the Pinto Mountains. Located 35 miles north of Palm Springs at an elevation between 2,280 and 4,920 feet, the area is known for its pure water, crystal clear air, and deep blue skies. It is nestled between Joshua Tree National Park to the south and the Marine Corps Air Ground Combat Center, the largest Marine Corps Base in the world, to the north.

1.3.2 Community of Joshua Tee

The community of Joshua Tree consists of an eclectic mix of retirees, artisans, and low-income citizens. Joshua Tree is the primary gateway to Joshua Tree National Park, with over 3 million visitors transiting through Joshua Tree into the park annually.

County of San Bernardino

The County of San Bernardino has a population of more than 2,000,000 people as of the 2010 census, which is up from the reported 1,709,434 in the 2000 census. With an area of 20,105 square miles, San Bernardino County is the largest county in the United States by area. It is larger than nine States, including New Jersey, Massachusetts, and Maryland.

Located in the southeast section of California, thinly populated deserts and mountains cover most of this vast county. The bulk of the County’s population resides in two Census County Divisions, where approximately 1,400,000 people live as of the 2010 census. San Bernardino County is bordered by the Colorado River on the east, Riverside County on the south, Los Angeles, Orange and Kern Counties on the west, and Inyo County on the north.

1.3.3 Demographics

The area of Joshua Tree is considered a disadvantaged community by the State of California. Per the 2010 United States census, Joshua Tree had a Median Household Income (MHI) of $34,976 with 30% of the population living below the federal poverty line. The MHI is approximately 55% of the State MHI of $63,783.

1.3.4 Existing Land Use

The existing land use is housing, commercial, and light industry. The County of San Bernardino is responsible for land use, as Joshua Tree is an unincorporated area in the county. The District does not have authority to regulate land use in the area.

1.3.5 Development Trends

Development in the Joshua Tree area was reduced during the housing industry crash of 2008. Currently, the Joshua Tree area is seeing only individual or speculation homes being built primarily as vacation rentals and part-time second homes. There are no housing tracks being developed within the District's service boundary. Home prices in the area are increasing at a higher rate than other communities in the High Desert area and at a much lower rate than in the State of California overall.

SECTION 2: PLAN ADOPTION

2.1 Adoption by Local Governing Body

The completed Local Hazard Mitigation Plan (LHMP) will be presented to the District's governing body, the Board of Directors, for adoption. Upon adoption, the District's Board of Directors meeting minutes will be included within the LHMP.

The plan will then be forwarded to CalOES and then to FEMA for approval. If any sections of the plan are changed during the process, the document will be sent back to the District's Board of Directors for final adoption.

2.2 Promulgation Authority

This Local Hazard Mitigation Plan was reviewed and approved by the elected members of the Joshua Basin Water District Board of Directors:

Ms. Mickey Luckman
Board President
Description of Involvement: President, Joshua Basin Water District Board of Directors

Mr. Robert (Bob) Johnson
Vice-President
Description of Involvement: Vice-President, Joshua Basin Water District Board of Directors

Mr. Tom Floen
Director
Description of Involvement: Director, Joshua Basin Water District Board of Directors

Mr. Geary Hund
Director
Description of Involvement: Director, Joshua Basin Water District Board of Directors

Ms. Rebecca Unger
Director
Description of Involvement: Director, Joshua Basin Water District Board of Directors

Mr. Curt Sauer
General Manager
Description of Involvement: General Manager, Joshua Basin Water District

Mr. Curt Sauer
Board Secretary
Description of Involvement: Board Secretary, Joshua Basin Water District

2.3 Primary Point of Contact

The Point of Contact for information regarding this plan prior to approval by FEMA is:

Gary Sturdivan
Sturdivan Emergency Management Consulting, Inc.
gsturdivan@me.com

SECTION 3: PLANNING PROCESS

This section documents the planning process used to review and compile information that leads to an effective LHMP. A comprehensive description of the planning process informs citizens and other readers how the plan was developed and provides a permanent record of how decisions were reached. These decisions can be understood, reconsidered, replicated, or modified in future updates. An integral part of the planning process is documentation of how the public was engaged throughout the process.

This LHMP was completed with the coordination and involvement of the Joshua Basin Water District staff and representatives from the local community. These team members have a vested interest in the performance and resiliency of the District. Team members from the local community are part of the Joshua Basin Water District's Citizens Advisor Committee (CAC) and are residents of the community. This team developed and implemented the planning process.

San Bernardino County Office of Emergency Services reviewed the plan and the contents of this plan for items that should be included from the County HMP.

This section includes a list of the Planning Team members, a summary of the meetings held, coordination efforts with the surrounding communities/groups, and public outreach efforts.

3.1 Preparing for the Plan

The Planning Team reviewed FEMA's "Hazard Mitigation Plan Crosswalk," and San Bernardino County OES supplied information on past events that affected the service area.

The San Bernardino County OES completed a FEMA Hazard Profile of the area. Each of the maps were submitted to the District for use in this LHMP. The Hazard Profile maps were used in the planning meetings to show past flood areas, earthquakes, flash floods and other disasters that have affected the area. The team discussed the different events that have happened in the community such as flash flooding, earthquakes, windstorms, power outages, and freezing events. Members of the planning team have been longtime residents of the community and have lived through many of these emergency events.

The planning process consisted of:

- Documenting past events
- Incorporating data
- Engaging the Planning Team
- Posting the meeting agendas, meeting minutes, and draft LHMP onto the District's website and asking for public input and comments on the planning process
- Sharing information at the monthly Board of Directors' meetings
- Conducting public outreach

During the process the Planning Team utilized the following plans to gain information on the hazards that face the area and the mitigation goals of the County of San Bernardino.

- Bighorn Desert View LHMP
- Twentynine Palms Water District LHMP
- San Bernardino County HMP
- USGS Golden Guardian Shake Out 2008
- Joshua Basin Water District's Water Master Plan
- California HMP 2013
- San Bernardino County Flood Control
- FEMA Flood Insurance Study for San Bernardino County

Table 1 Plans Reviewed

Study Plan	**Key Information**
Bighorn Desert View LMHP	Layout of an LHMP for water agencies
Twentynine Palms Water District LHMP	Hazard identification, mitigation measures
San Bernardino County HMP	Hazards, mitigation goals and measures
USGS Golden Guardian Shake Out 2008	Earthquakes, effects, planning
Joshua Basin Water District's Water Master Plan	Land use for area, future projects
California HMP 2013	Goals for the State of California
San Bernardino County Flood Control	Future flood control projects
FEMA Flood Insurance Study for San Bernardino County	Flood history

Table 2 Financial Resources for Future Mitigation Projects

Local	Revenues	Amount
The District's Budgets and Financial Planning Documents	Water sales, new construction	Varies from year to year
FEMA Grants	None	None
State Revolving Funds Draft Application	None	None
Prop. 84 Funding	None	None
FEMA Mitigation Grants	District has not applied for FEMA funding in the past	As funding and approval are obtained
Future Budget Funds Considerations	Water sales	Varies as funding is available each year
Prop. One Grants	District has not applied for this grant in the past	None

3.2 Planning Team

The Planning Team compiled information and reviewed this LHMP under the authorization of the District's Board of Directors. The Planning Team members include:

Mr. Curt Sauer
Joshua Basin Water District, General Manager and Board Secretary
Description of Involvement: Internal Planning Team Member

Mr. Sauer is the General Manager and Board Secretary for the District. He has been employed with the District since February 2014, bringing over 25 years of successful management to the District. Mr. Sauer supervises and coordinates the involvement of internal staff and external CAC input from involved citizens.

Mr. Gary Sturdivan
LHMP Consultant
Description of Involvement: Planning Team Lead

Mr. Sturdivan, as a consultant to the District, is the team leader for the LHMP. Mr. Sturdivan develops the agendas for each LHMP meeting, leads the discussions, compiles the meeting minutes and other information for public comment, and prepares draft text for the LHMP. Mr. Sturdivan provides informational updates to the District's Board of Directors and incorporates the Board's comments into the planning process and LHMP. Mr. Sturdivan has a vast knowledge of Mitigation Planning, Grant Funding, and Emergency Management. Mr. Sturdivan worked in the water industry for 25 years, with 8 years as the Director of Safety/Regulatory Affairs/Emergency Management and Grants for East Valley Water District prior to becoming a consultant in 2011.

Mr. Thomas S. Carpenter
Maintenance and Construction 1
Description of Involvement: Internal Planning Team Member:

Mr. Carpenter serves as a Maintenance and Construction 1. He has been employed at the Joshua Basin Water District since June 2017. Previously Mr. Carpenter served as Senior Non-Commissioned in the United States Army for over 23 years, where he was involved in daily risk assessment planning, as well as, risk assessment and risk mitigation during three deployments to Iraq.

Mr. Stephen J. Corbin
Water Production Operator II
Description of Involvement: Internal Planning Team Member

Mr. Corbin is currently working with the Pumping Plant as a Water Production Operator II. He has 10 years of experience in water works and 34 years of experience in electro-mechanical manufacturing and repair, and metal fabrication and welding.

Ms. Gail Emery
Accounts Receivable Technician
Description of Involvement: Internal Planning Team Member

Ms. Emery began working at the District in 2016. Some of her primary responsibilities include preparing monthly water statements, reviewing account aging and maintaining the parcel database. She also serves as a customer service representative for the District. Ms. Emery holds a B.A. in Communications and has 10 plus years of bookkeeping experience. She has resided in the desert since 2008 and has lived 23 years in California, during which time she witnessed the widespread damage caused by the 1989 Loma Prieta earthquake.

Ms. Gayle Austin
Joshua Tree Resident and Business Owner
Description of Involvement: External Planning Team Member

Gayle Austin has resided in Joshua Tree and 29 Palms for over 20 years. She became a full-time resident in Joshua Tree three years ago and has two businesses. Ms. Austin is active in community non-governmental organizations (NGOs) and became a member of the (CAC) in December of 2017.

Mr. Tom Kayne

Retired
Description of Involvement: External Planning Team Member

Tom Kayne is retired and moved to Joshua Tree in 2016. He became a member of the CAC in June of 2017.

Dr. Karen Tracy
Resident
Description of Involvement: External Planning Team Member

Karen Tracey is a long-time resident of Joshua Tree and has been on the CAC for 10 years. She serves as Chairperson of the Committee.

3.3 Coordination with Other Jurisdictions, Agencies, and Organizations

The County of San Bernardino OES was invited to be on the Planning Team, but were unable to attend. However, the County OES provided guidance in the planning of this document. In addition, San Bernardino County OES LHMP Officer Miles Wagner has reviewed and commented on the draft LHMP, and his comments have been incorporated into the final LHMP. Mr. Sturdivan contacted Mr. Wagner by phone. Mr. Sturdivan contacted by phone and in person, Mr. Ray Kolisz, General Manager of Twentynine Palms Water District. Marina West, General Manager of Bighorn Desert View Water Agency was also contacted by Mr. Sturdivan by phone and email. Mr. Kolisz and Ms. West reviewed the completed LHMP, before the plan was sent for review to CalOES.

3.4 Public Involvement/Outreach

The Planning Team, which included three water system customers who expressed interest to the Board of Directors, participated in monthly meetings to coordinate efforts, provide input, and receive support for the LHMP. The External Planning Team consisted of Dr. Karen Tracy, Ms. Gayle Austin and Mr. Tom Kayne all of whom attended meetings and reviewed all content of the document as the documents was developed.

The support included receiving technical expertise, resource materials, and tools. The District facilitated the LHMP process and provided sufficient information to follow FEMA requirements for the program. The tools, resource materials, and other project related information are maintained on a project portal on the District's website www.jbwd.com. Click on "about JBWD" Click on "documents" and scroll down to "Hazard Mitigation Plan. A notice; where customers could find the LHMP was printed on the customer's monthly water bills. This site allowed access to the information by all participants and the public. All questions comments and concerns were directed to Mr. Gary Sturdivan. The Public was informed about the development of the plan and could attend the monthly Board of Directors meetings where the public could make comments directly to Mr. Sturdivan and the Board of Directors.

The 2018 board meeting agendas, meeting minutes, and sections of the LHMP were posted on the District's website as the LHMP was written. Requests were made on the website for public comments and informed the public that comments could be made by e-mailing Mr. Sturdivan at gsturdivan@me.com or by calling Mr. Sturdivan at 909-658-5974.

No public comments were received by Mr. Sturdivan or by the District staff.

See the Appendices for the details of the public involvement process such as the meetings dates, purpose, agendas, sign-in sheets, minutes and public comments, as well as a screen shot of the webpage showing requests for public participation.

3.5 Assess the Hazards

A critical component of the LHMP process is to assess the likely hazards that may impact the District's facilities and operations. It is important to have a thorough understanding of these hazards without over-analyzing remote or highly unlikely hazards.

This LHMP has been developed through an extensive review of available information on hazards the District has faced in the past and most likely will face in the future. The Planning Team reviewed and discussed items that have happened in the State of California as well as disasters that have happened in other desert areas of the United States. The Planning Team reviewed documents such as engineering drawings, photographs, and available geotechnical and geologic data both from the Internet and other sources such as FEMA Hazard Maps, San Bernardino County Hazard Map, as well as documents from the District on past events.

The Planning Team completed the assessment of the various hazards in a group setting. The team members have many years of personal experience working in the local area and many working with a water utility. Team members know the history of past hazardous or emergency events, such as the 1992 Landers Earthquake, a 7.3 magnitude earthquake that severely impacted the region. This earthquake's epicenter was only 10 miles northwest of Joshua Tree in Landers and Flamingo Heights, California.

Joshua Basin Water District sustained more than $1M in damages as a result of the 1992 Landers Earthquake. The most significant damage was at two reservoirs on the south side of the District that were critically damaged and were replaced. The District offices had foundation damage and other more minor interior damage. Well over 100 leaks occurred over a period of weeks as a result of the earthquake and the District incurred material costs as well as substantial overtime to make repairs.

3.6 Set Mitigation Goals

The Planning Team set the goals for the 2018 LHMP. The team members understand the issues facing the District with respect to the District's Mission Statement:

Our mission is to provide a high standard of water quality and customer service at responsible cost; to protect the water resources of Joshua Basin Water District; to promote cooperation and respect with customers, employees, neighboring communities and public – private agencies.

The process of identifying mitigation goals began with a review and validation of damages caused by specific hazards at similar agencies in the surrounding area. Damages to other agencies outside the area were also considered. In addition, the Planning Team estimated damages using engineering budget estimates for anticipated response and replacement costs. The Planning Team completed an assessment of the likelihood and damages for each identified hazard and discussed whether each of the mitigation goals was valid. This discussion led to the opportunity to identify new goals and objectives for mitigation in the LHMP. From this, the Planning Team determined the best mitigation goals to reduce or avoid long-term vulnerabilities.

3.7 Review and Propose Mitigation Measures

Meetings were held with the Planning Team to review the identified hazards and solicit input on appropriate mitigation measures for each critical piece of infrastructure. Each meeting focused on specific hazards, risk assessment, and mitigation strategy. Three meetings were held each month, one for the internal team, one for the external team, and one public meeting at the beginning of the monthly Board of Directors meetings. It took seven months from the kick-off meeting to the completion of the review and adoption by the Board.

3.8 Draft Local Hazard Mitigation Plan

The District's consultant led the Planning Team and prepared the draft LHMP with input from the Planning Team, Board of Directors, and the public. The Planning Team reviewed and commented on the draft LHMP, and subsequent changes were made before the LHMP was finalized and adopted by the Board of Directors. All meeting agendas, meeting minutes, and draft documents were posted on the District's website. Notices were sent to all water customers in the service area stating that all LHMP documents were posted on the website and asked for comments. Each board meeting was opened with a public comment period. The consultant, Gary Sturdivan, addressed all comments and concerns.

The LHMP was reviewed in comparison to the FEMA-designed Crosswalk. The Crosswalk links the federal requirements and identifies the sections in the LHMP where the information can be found and provides a rating as to the level of compliance with the federal regulations.

3.9 Adoption of the Plan

The draft LHMP was posted on the District's website for 30 days, asking for comments from the public. The public could comment by e-mail, telephone, or in person at the monthly Board of Directors Meeting. There were no public comments.

The LHMP was submitted to the District's Board of Directors for adoption after incorporating any final comments. The 2018 LHMP was adopted at the District's regularly scheduled Board of Directors Meeting on 06/20/2018. The LHMP was then sent to the State of California Office of Emergency Services before being sent to FEMA for final approval.

SECTION 4: RISK ASSESSMENT

The goal of mitigation is to reduce the future impacts of a hazard, including property damage, disruption to local and regional economies, and the amount of public and private funds spent for recovery. Mitigation decisions are based on risk assessments where the probability of an event is evaluated with respect to the anticipated damages caused by such an event.

The purpose of this section is to understand the hazards and their risks in the District's service area. There are generally four steps in this process: 1) hazard identification 2) vulnerability analysis 3) risk analysis and 4) vulnerability assessment, including an estimation of potential losses. Technically, these are four different items, but the terms are sometimes used interchangeably.

4.1 Hazard Identification

The Planning Team discussed potential hazards and evaluated their probability of occurrence. The following subsections describe this process and the results.

4.1.1 Hazard Screening Criteria

The intent of screening the hazards is to help prioritize which hazards create the greatest concern to the District. A list of the natural hazards to consider was obtained from Federal Emergency Management Agency's State and Local Mitigation Planning How-to Guide: Understanding Your Risks (FEMA 386-1). The Planning Team used the Stafford Act and the California Emergency Service Act and guidance from the American Water Works Association standards, G-440 and J-100 RAMCAP. Each risk was ranked with a 1 – 4: with (1) being a "Highly Likely" event, (2) being "Likely" (3) being "Somewhat Likely" event, and (4) being "Least Likely" event. The Planning Team reviewed each hazard on the list using their experience and historical data pertaining to each hazard and developed the following ranked list.

Hazards:

- Earthquake = 1
- Terrorist Event = 1
- Lightning Strikes = 2
- Flash Flooding = 2
- Climate Change/Drought = 3

The following natural hazards were considered not to affect or be a risk to the District and were given a ranking of 4 or not applicable to the District's location.

- Volcanoes
- Tsunami
- Windstorms
- Wildfire

4.1.2 Hazard Assessment Matrix

The District used a qualitative ranking system for the hazard screening process consisting of generating a high/medium/low style of rating for the probability and impact of each screened hazard.

- For **Probability**, the ratings are: Highly Likely, Likely, or Somewhat Likely
- For **Impac**t, the ratings are: Catastrophic, Critical, or Limited

The screening assessment matrix was used for the District's hazards. The hazards have been placed in the appropriate/corresponding box/cell of the corresponding "Screening Assessment Matrix" based on the Planning Team's collective experience as shown in Table 3 below. Prioritization of the hazards is discussed in the following section.

Table 3: Screening Assessment Matrix

Probability	***Impact***			
		Catastrophic	**Critical**	**Limited**
	Highly Likely 1 (100 – 75 %) Of the District is affected	Earthquake Terrorist Event		
	Likely 2 (75 – 50%) Of the District Is affected			Lightning Strikes Flash Flooding
	Somewhat Likely 3 (Less than 50%) Of the District is affected		Climate Change/Drought	

4.1.3 Hazard Prioritization

Using the hazard screening criteria and assessment matrix, the Planning Team identified the following hazards to be the most likely to affect the District.

Earthquake: There are many faults running through the District's service area. The 1992 Landers Earthquake caused significant damage to the distribution system of Bighorn Desert View Water Agency and Hi-Desert Water District wells and reservoirs. The District also incurred significant damages of more than $1M. FEMA funding replaced portions of the pipelines after the 1992 Landers Earthquake. The local faults running around, though, and near the service area could

potentially damage 100% of the District's critical facilities. The last earthquake that affected the District, was the 1992 Landers earthquake, which caused major damage to the infrastructure.

Terrorist Event: The largest Marine Corp base in the world is located within four miles of the District's northern boundary. There are two off-base housing structures in the District's service area that receive water from the District. A major terrorist event at the Marine Base could have a negative effect on the water supply or damage the infrastructure of the District, leaving the District with no power and no water in the system due to ruptured pipelines, contamination, or other damages. Since the terrorist attack in San Bernardino, governmental agencies have had to rethink their security precautions of buildings, infrastructure, staff, and the public. There have been no terrorist events that have affected the District, however, it is a major concern.

1. **Lightning Strikes:** The High-Desert's weather is much different than most of Southern California's weather. This area is cooler than the communities in the low desert area of Palm Springs. The winters in the Palm Springs area are mild; however, the winters in the High-Desert can be much colder and often result in lightning storms during the warmer monsoon seasons. Lighting strikes on wells, pumps, motors, and electrical equipment is common during the spring and fall. Lightning strikes that affect the District, last happened in September of 2018. Lightning struck a well motor, which melted the wiring in the motor and related power equipment. Lightning strikes happen throughout the District and can happen at any location in the District service area. The area is prone to lightning storms during monsoon season from July to September each year.

2. **Flash Flooding**: Flash flooding is very common in the San Bernardino County deserts and happens almost yearly. The last flooding event in the Joshua Basin was in 2017 and prior to that in 2015. These events uncovered pipelines installed within paved and unpaved roads throughout the distribution system. Flooding is a yearly occurrence during Monsoon Session, which is in the late summer. The last flooding occurred in August of 2018. This event caused minor damage to pipelines in the District. Flash flooding occurs each year and also take pace during monsoon season as well. USGS and the County of San Bernardino do not keep records on the events of flash flooding and there are no flood control systems in the Joshua Basin.

3. **Climate Change/Drought:** Climate change is altering California's water supply throughout the state. Northern California is experiencing warmer winters, less snow pack, and longer periods between wet seasons. This affects water supply throughout the Central Valley and urban Southern California. The State has been in a prolonged drought; however, the winter of 2016/2017 delivered more snow pack and rain, which relieved most of the State from the drought restrictions of the last seven years. The District relies on groundwater and the impacts from climate change are long-term. Higher temperatures may increase water use and groundwater extraction, which will lower the groundwater table. Increased storm events will increase flash flood risks and will decrease groundwater recharge because the water will runoff instead of infiltrating to recharge the underground aquifer and groundwater. Over time the District could experience increased pumping costs and water supply wells may become too shallow and will need to be replaced with deeper wells. Climate change could mean that the ground water becomes higher in the aquifer, which

would mean that Joshua Basin Water District has an overabundance of water. Climate change has not caused any concerns to the District at this time, but Climate Change and how it affects the underground water table is a concern to the District.

4.2 Hazard Profiles

4.2.1 Earthquake

Probability: **Highly Likely**
Impact: **Catastrophic**

General Definition: An earthquake is a sudden, rapid shaking of the Earth caused by the breaking and shifting of rock beneath the Earth's surface. For hundreds of millions of years, the forces of plate tectonics have shaped the Earth as the huge plates that form the Earth's surface move slowly over, under, and past each other. Sometimes the movement is gradual. Increased movement occurs when the plates become locked together and unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates break free causing the ground to shake. Most earthquakes occur at the boundaries where the plates meet. However, some earthquakes occur in the middle of plates.

Ground shaking from earthquakes can collapse buildings and bridges; disrupt gas, electric, water utilities, and phone service; and trigger landslides, avalanches, fires, and destructive ocean waves, including tsunamis. Buildings with foundations resting on unconsolidated landfill and other unstable soil, as well as homes not tied to their foundations are at risk because they can be shaken off their mountings even during a mild earthquake. When an earthquake occurs in a populated area, it may cause deaths, injuries, and extensive property damage.

Earthquakes strike suddenly without warning. Earthquakes can occur at any time of the year and at any time of the day or night. On a yearly basis, 70 to 75 damaging earthquakes occur throughout the world. Estimates of losses from a future earthquake in the United States approach $200 billion.

There are 45 states and territories in the United States at moderate to very high risk from earthquakes, and they are in every region of the country. California experiences the most frequent damaging earthquakes; however, Alaska experiences the greatest number of large earthquakes - mostly located in uninhabited areas. The nearby Southern Section of the San Andreas Fault is ranked in the top 5 most likely faults to cause major damage in the U.S. by USGS (www.USGS.org).

A source for the earthquake profile was a report that describes a new earthquake rupture forecast for California developed by the 2007 Working Group on California Earthquake Probabilities (WGCEP 2007). The Earthquake Working Group was organized in September 2005 by the U.S. Geological Survey (USGS), the California Geological Survey (CGS), and the Southern California Earthquake Center (SCEC) to better understand the locations of faults in California. The group produced a revised, time-independent forecast for California for the National Seismic Hazard Map.

Table 4 Historic Southern California Earthquakes

Date	Area	Location	Mag	MI	Total damage / notes
3/28/2014	Los Angeles Area		5.1 M_w	VI	$10.8 million
5/13/2013	Eastern	Canyon dam Earthquake	5.7 M_w	VIII	Damage at Canyon dam
7/29/2008	Los Angeles Area	Chino Hills Earthquake	5.5 M_w	VI	Limited
10/16/1999	Eastern	Hector Mine Earthquake	7.1 M_w	VII	Limited
1/17/1994	Los Angeles Area	Northridge Earthquake	6.7 M_w	IX	$13–$40 billion
6/28/1992	Inland Empire	Big Bear Earthquake	6.5 M_w	VIII	Moderate/Triggered
6/28/1992	Inland Empire	Landers Earthquake	7.3 Mw	IX	$92 million
4/22/1992	Inland Empire	Inland Empire	6.3 Mw	VII	Light–moderate
6/28/1991	Los Angeles Area	Sierra Madre Earthquake	5.6 M_w	VII	$33.5–40 million
2/28/1990	Los Angeles Area	Upland Earthquake	5.7 M_w	VII	$12.7 million
11/24/1987	Imperial Valley	Imperial Valley	6.5 M_w	VII	Triggered
11/23/1987	Imperial Valley	Imperial Valley	6.1 M_w	VI	$3 million
10/1/1987	Los Angeles Area	Whittier Narrows Earthquake	5.9 M_w	VIII	$213–358 million
7/21/1986	Eastern	Chalfant Valley Earthquake	6.2 M_w	VI	$2.7 million / sequence
7/13/1986	South Coast		5.8 M_w	VI	$700,000
7/8/1986	Inland Empire	North Palm Springs Earthquake	6.0 M_w	VII	$4.5–6 million
4/26/1981	Imperial Valley	Imperial Valley	5.9 M_w	VII	$1–3 million
5/25/1980	Eastern	Eastern Sierra's	6.2 M_w	VII	$1.5 million/Swarm
10/15/1979	Imperial Valley	Imperial Valley Earthquake	6.4 M_w	IX	$30 million

2/21/1973	South Coast	Point Magu Earthquake	5.8 M_w	VII	$1 million
2/9/1971	Los Angeles Area	San Fernando Earthquake	6.5–6.7 M_w	XI	$505–553 million
4/8/1968	Imperial Valley	Imperial Valley	6.5 M_w	VII	Damage / rockslides
12/4/1948	Inland Empire	Desert Hot springs Earthquake	6.4 M_w	VII	Minor
11/14/1941	Los Angeles Area	Los Angeles Area	5.4 Mw	VIII	$1.1 million
6/30/1941	Central Coast		5.9 M_w	VIII	$100,000
5/18/1940	Imperial Valley	El Centro Earthquake	6.9 M_w	X	$6 million
3/10/1933	South Coast	Long Beach Earthquake	6.4 M_w	VIII	$40 million
6/21/1920	Los Angeles Area		4.9 Mw	VIII	More than $100,000
4/21/1918	Inland Empire	San Jacinto Earthquake	6.7 M_w	IX	$200,000
6/22/1915	Imperial Valley		5.5 M_w	VIII	Additional damage / doublet
6/22/1915	Imperial Valley		5.5 M_w	VIII	$900,000 / doublet
4/18/1906	Imperial Valley		6.3 M_w	VIII	Damage / triggered

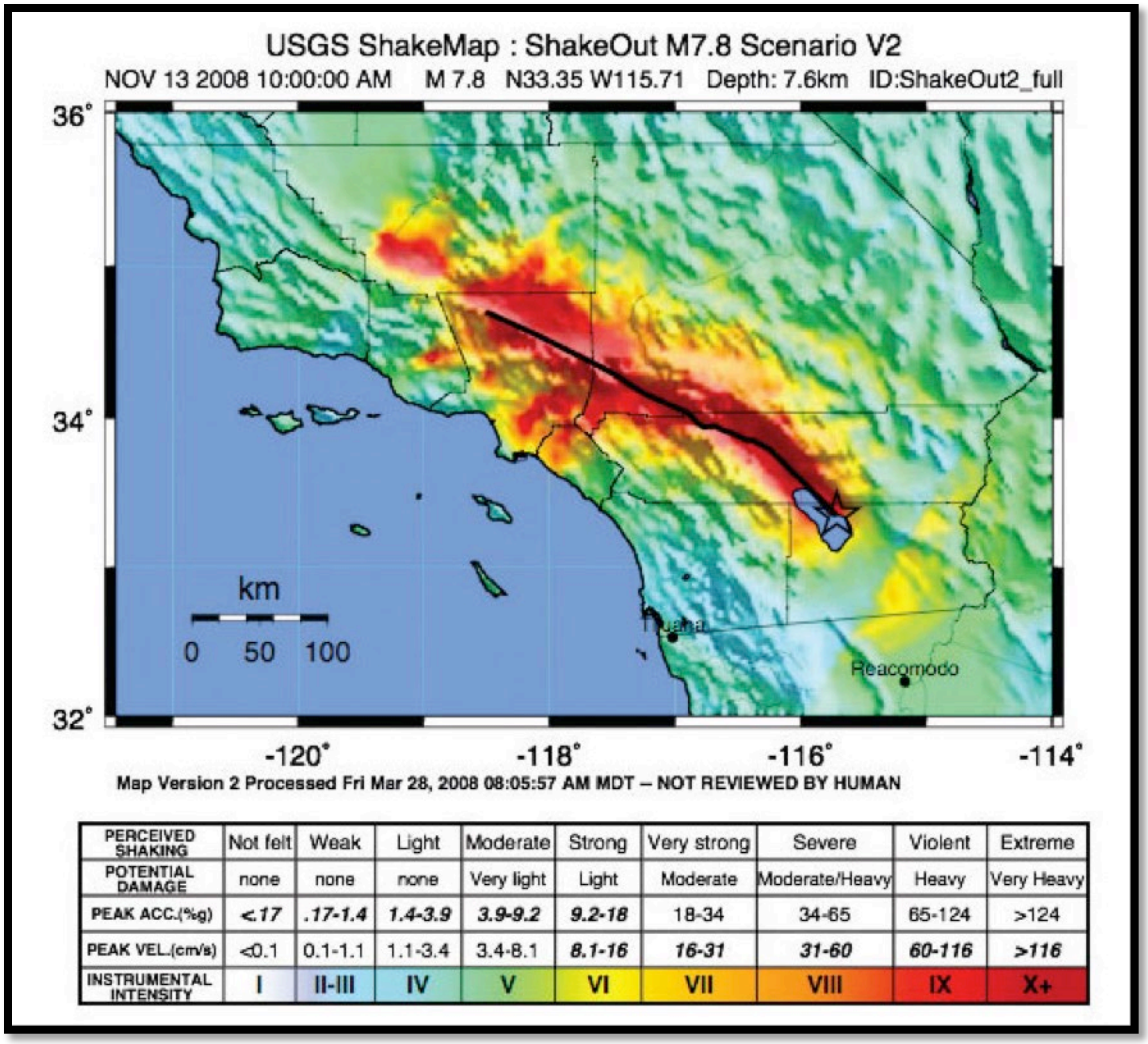


Figure 1 USGS ShakeMap: ShakeOut M7.8 Scenario

Figure 2 Examples of Earthquake Damage to Water Utility Facilities

These examples were from the 1992 Landers Earthquake

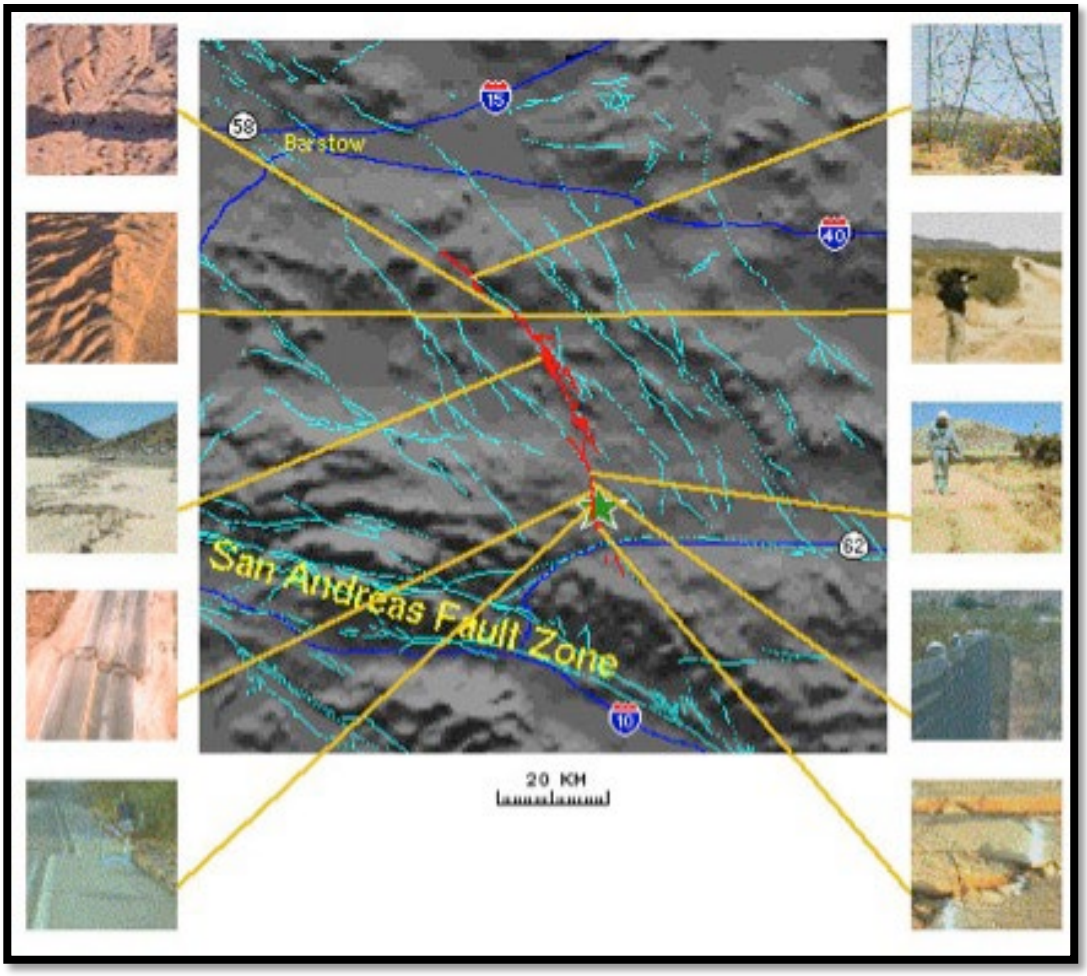


Figure 3 Landers Earthquake 1992

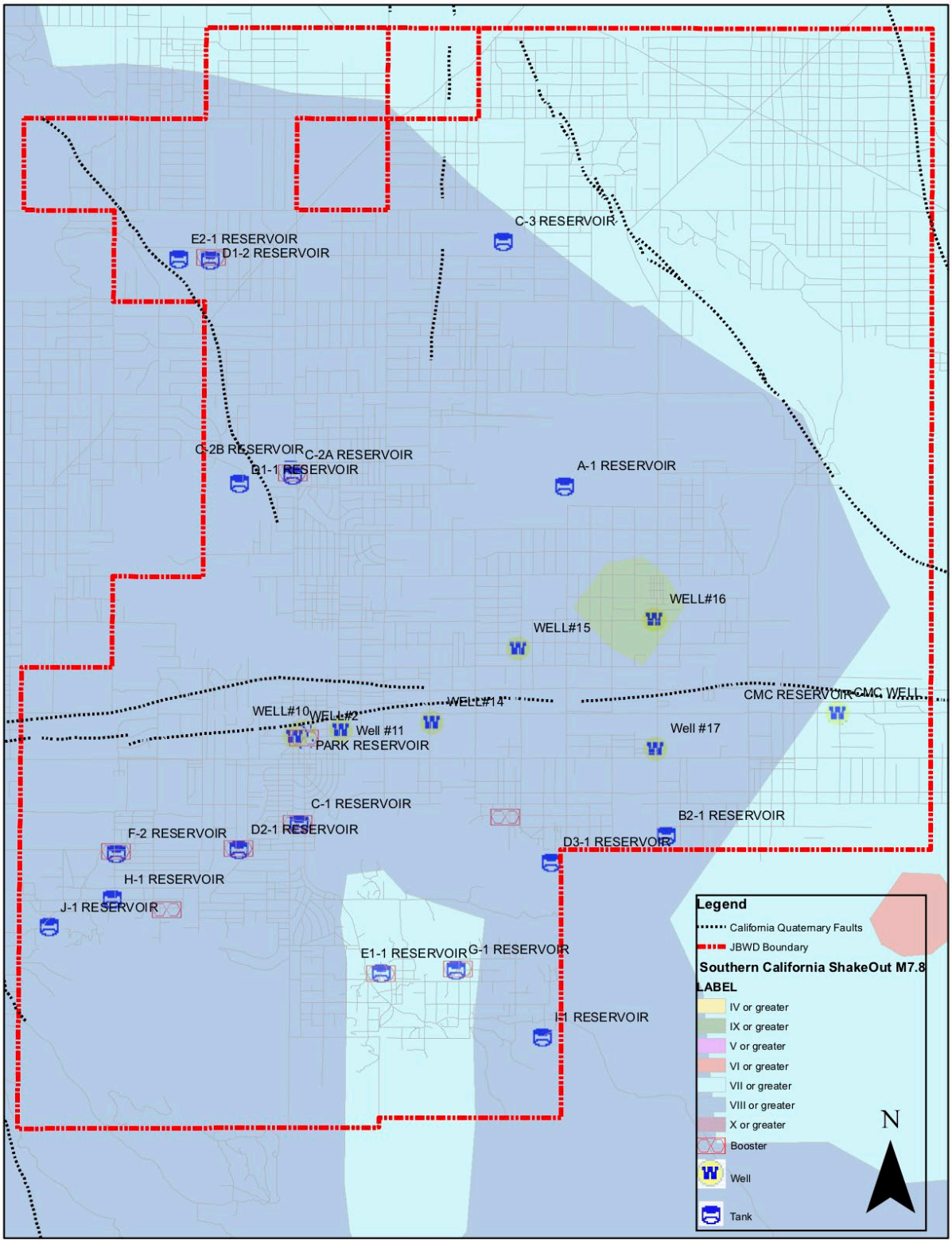


Figure 4 Earthquake Faults with District Boundaries

Description: There are several earthquake faults located within the District's service area. The District sustained more than $1M in damages as a result of the 1992 Landers Earthquake. The most significant damage was at two reservoirs on the south side of the District that were critically damaged and were replaced. The District offices had foundation damage minor interior damage to the District office building. In excess of 100 leaks occurred over a period of weeks as a result of the earthquake and the District incurred material costs as well as substantial overtime costs to make repairs.

Mitigation: Projects to help mitigate damage from earthquakes range from installing seismic shut-off valves on all water reservoirs in the District to flexible pipe joints that can be installed at reservoirs, wells, and booster pumps. Flexible pipe joints can also be installed in sections of water pipelines to allow the pipelines more flexibility during earth movement. Block walls can be installed around facilities to help ensure the security of critical facilities and control water that may escape from reservoirs. The District has flex couplings on all of the reservoirs but does not have seismic shut-off valves on any reservoir.

4.2.2 Terrorist Event

Probability: **Highly Likely**

Impact: **Catastrophic**

General Definition: When a person or group of people strikes mayhem within a population by threatening the trust of a population. To kill or injure people to make a point to the terrorist cause and to cause fear with the population to further their cause.

Description: In the case of a public water system, to make the water non-drinkable by polluting the water or render the water in the system or the system infrastructure useless to serve water to the public. As this document is a public document, discussion of what could be impacted and how it could be impacted will not be discussed.

Mitigation: This document will not discuss the mitigation measures determined upon by the Project Team. This is a public drinking water system and will not discuss contamination or ways to contaminate a drinking water system.

4.2.3 Lightning Strikes

Probability: **Likely**

Impact: **Limited**

General Definition:

A lightning strike is an electric discharge between the atmosphere and an earth-bound object, such as the ground, tree, building equipment or a person standing outside of a building. Lightning is a sudden electrostatic discharge that occurs typically during a thunderstorm.

Description:

During electrical storms lightning either transfers the electrical current between each group of clouds or transfer the lightning to the ground or objects on the ground. When lightning strikes a water well, electrical panel or a booster pump a large amount of electrical current enters the electrical system of the motor and power system of the equipment; causing a fire. This surge of energy burns out the pump, booster pump and related equipment and even feeds back into the Southern California Edison system. This surge of electricity causes thousands of dollars of damage to the water infrastructure each year.

Mitigation:

To mitigate lightning from striking well motors and related infrastructure, all wells, pumps, motors and electrical panels need to be housed inside a structure. These structures need to be built of wood or block and have grounding ability built into the structure.

4.2.4 Flash Flooding

Probability: **Likely**
Impact: **Limited**

General Definition: An unusually heavy rain in a concentrated area, over a short or long period that collects on the ground in low areas of the land. Flash flooding occurs when there are large amounts of rainfall in areas where the water runs off to lower elevations. Typically, flash flooding happens in the desert where there is little vegetation to hold or stop the water.

Description: Flash flooding can occur in the summer as well as the winter. Monsoon season is typically in June and July of each year. During monsoons, heavy rainstorms that form in the Gulf of Mexico move into Arizona, New Mexico, Texas, and the deserts of California. These storms bring powerful winds and heavy rains within a short period and can produce two to five inches of rain within a half-hour period. San Bernardino County Flood Control currently has no flood control infrastructure in the Joshua Tree area. Many roads in the District's service area are unpaved, dirt roads.

As shown below on the FEMA 500-year Flood Map, 500-year flooding is only in a small portion of the service area along the river bottom area where most of the District's water supply wells are located. Most of the well's motors are installed on elevated concrete pads that raise the well's motor to a height above the 500-year high water elevation. The District's Office and Shop are in the middle of the 100/500-year flood plain, as identified by FEMA and can't be elevated, but must be re-located in the future. Raising the elevation of the land the buildings are built on would mitigate the damage from a 100-year flood.

Flooding only happens when water can collect in valleys or lower laying areas. The District is located in a large desert valley, where water runs off from higher mountainous areas on its way to the dry lake area and dry riverbed on the desert floor. These waters are very dangerous since the waters can come from many miles away at very fast speeds. These waters rage through the

jurisdiction from the west to the east, collecting in the wash area noted on the Figure 5 below. These washes run from the south to the north through the District's service area.

Mitigation: Install flood control walls to direct flash flood waters away from facilities and lower pipelines where needed.

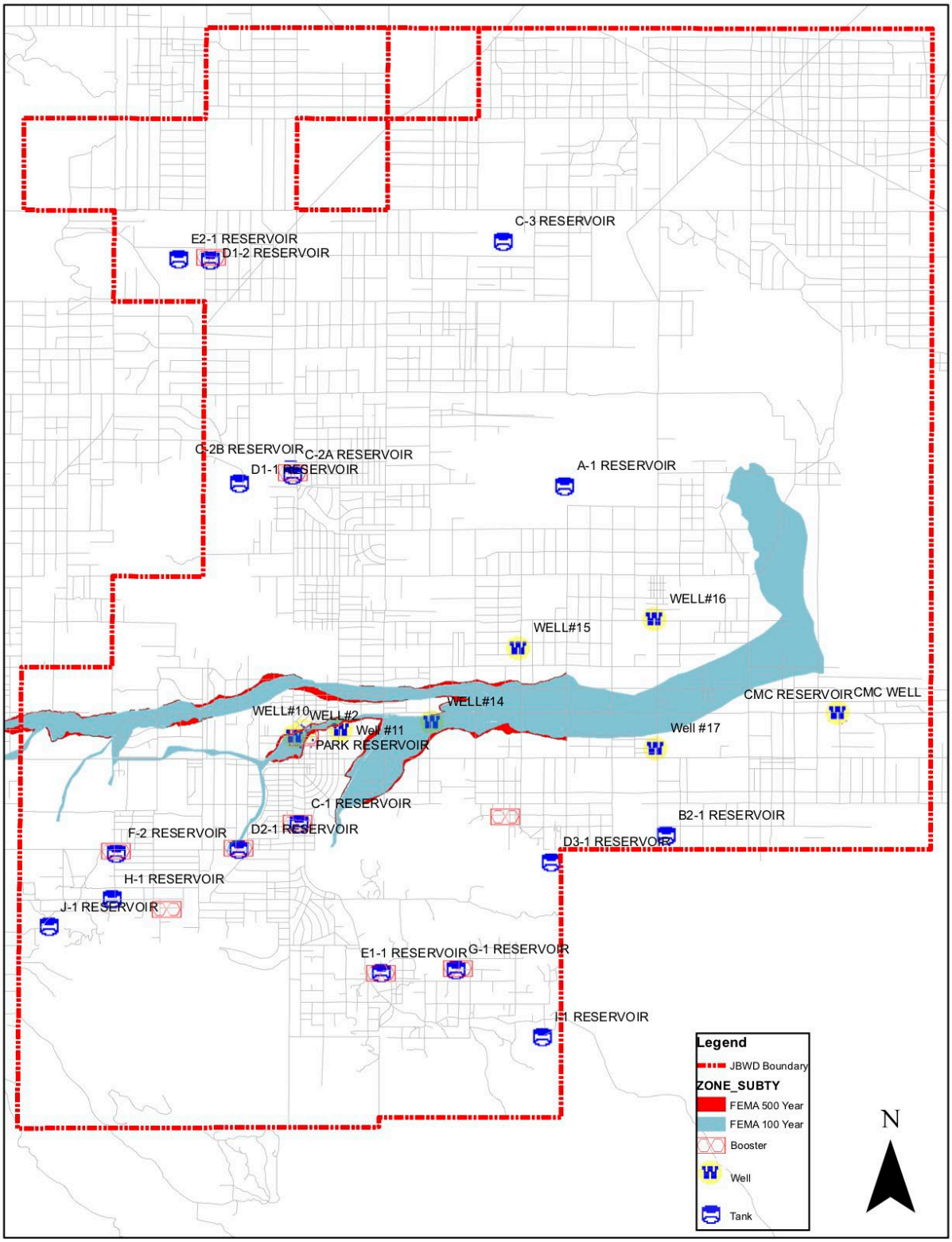


Figure 5 District Facilities in 100/500-Year Flood Plain

4.2.5 Climate Change/Drought

Climate Change

Probability: **Somewhat Likely**
Impact: **Critical**

General Definition: Climate Change is a change in the statistical distribution of weather patterns when that change lasts for an extended period (i.e., decades to millions of years). Climate change may refer to a change in average weather conditions, or in the time variation of weather around longer-term average conditions (i.e., more or fewer extreme weather events). Climate change is caused by factors such as biotic processes, variations in solar radiation received by Earth, plate tectonics, and volcanic eruptions. Certain human activities have also been identified as significant causes of recent climate change, often referred to as global warming.

Description: Climate change could increase water demands while lowering the groundwater table. This would result in increased pumping costs and may require installing deeper water supply wells. Extreme weather events will increase runoff and flash flooding, potently increasing natural recharge of the Joshua Tree Sub Basin.

Mitigation: Monitor groundwater levels and evaluate long-term trends. Study the long-term viability of the groundwater aquifer. Evaluate and possibly implement obtaining water from the State Water Project (SWP).

Long-Term Drought

Probability: Somewhat Likely
Impact: Critical

General Definition: California has a long history of droughts. Droughts occur when there are long periods of no rainfall in the State. The cycle of droughts and wet periods are a result of El Niño and La Niña weather patterns. A drought is a prolonged period of below-average precipitation in a given region resulting in prolonged shortages in water supply. This is a growing concern in California, as the State has been in a drought for the last 7 years. Northern California has experienced some relief in the winter of 2016, although the El Niño effect that was expected to relieve the drought statewide did not materialize in Southern California. The lack of rain and most importantly the lack of snowfall in the Sierra Nevada mountain range have severally impacted the residents of California; however, the recent 2017 winter season did improve drought conditions somewhat.

Table 5 California Drought History
(extracted from USGS, California Drought History

1841	The drought was so bad that "a dry Sonoma was declared entirely unsuitable for agriculture"[1]
1864	This drought was preceded by the torrential floods of 1861-1862, showing the fluctuation in climate back in the 1800s.
1924	This drought encouraged farmers to start using irrigation more regularly because of the fluctuation in California weather the need for consistent water availability was crucial for farmers.
1929–1934	This drought was during the infamous Dust Bowl period that ripped across the plains of the United States in the 1920s and 1930s. The Central Valley Project was started in the 1930s in response to drought.
1950s	The 1950s-drought contributed to the creation of the State Water Project.
1976–77	1977 had been the driest year in state history to date. According to the Los Angeles Times, "Drought in the 1970s spurred efforts at urban conservation and the state's Drought Emergency Water Bank came out of drought in the 1980s."
1986–1992	California endured one of its longest droughts ever observed from late 1986 through early 1992. Drought worsened in 1988 as much of the United States also suffered from severe drought. In California, the six-year drought ended in late 1992 as a significant El Niño event in the Pacific Ocean (and the eruption of Mount Pinatubo in June 1991) most likely caused unusual persistent heavy rains.
2007–2009	2007–2009 saw three years of drought conditions, the 12th worst drought period in the state's history, and the first drought for which a statewide proclamation of emergency was issued. The drought of 2007–2009 also saw greatly reduced water diversions from the state water project. The summer of 2007 saw some of the worst wildfires in Southern California history.
2011-2017	From December 2011 to March 2017, the state of California experienced one of the worst droughts to occur in the region on record. The period between late 2011 and 2014 was the driest in California history since record keeping began.

Progression of the Drought from December 2013 to July 2014

(extracted from USGS, California Drought History)

The period between late 2011 and 2014 was the driest in California history since record keeping began. In May 2015, a state resident poll conducted by Field Poll found that two out of three respondents agreed that it should be mandated for water agencies to reduce water consumption by 25%.

The 2015 prediction of El Niño to bring rains to California raised hopes of ending the drought. In the spring of 2015, the National Oceanic and Atmospheric Administration named the probability of the presence of El Niño conditions until the end of 2015 at 80%. Historically, sixteen winters between 1951 and 2015 had created El Niño. Six of those had below-average rainfall, five had average rainfall, and five had above-average rainfall. However, as of May 2015, drought conditions had worsened, and above average ocean temperatures had not resulted in large storms. The drought led to Governor Jerry Brown's instituting mandatory 25 percent water restrictions in June 2015.

Many millions of California trees died from the drought - approximately 102 million, including 62 million in 2016 alone. By the end of 2016, 30% of California had emerged from the drought,

mainly in the northern half of the state, while 40% of the state remained in the extreme or exceptional drought levels. Heavy rains in January 2017 were expected to have a significant benefit to the state's northern water reserves, despite widespread power outages and erosional damage in the wake of the deluge. Among the casualties of the rain was 1,000 year-old Pioneer Cabin Tree in Calaveras Big Trees State Park, which toppled on January 8, 2017.

The winter of 2016–17 turned out to be the wettest on record in Northern California, surpassing the previous record set in 1982–83. Floodwaters caused severe damage to Oroville Dam in early February. Which, prompted the temporary evacuation of nearly 200,000 people north of Sacramento in response to the heavy precipitation, which flooded multiple rivers and filled most of the state's major reservoirs, Governor Brown declared an official end to the drought on April 7.

Description: The District is not as affected by drought because it receives most of the water supply from groundwater and is dependent on underground water aquifers. The District does purchase water from the State Water Project (SWP) and has a physical connection to the SWP. The District's underground aquifers are in overdraft, a portion of the District's wells have elevated levels hexavalent chromium. It is challenging for the District to find alternative water supplies from underground aquifers that meet California's water quality standards without constructing additional water treatment facilities.

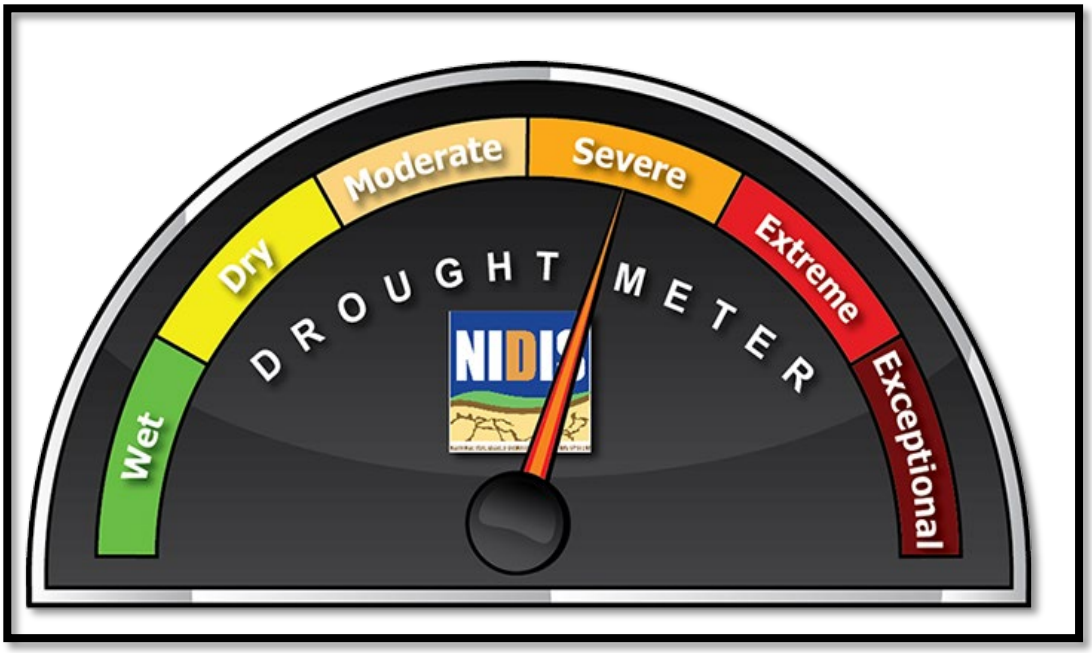


Figure 6 Current Drought Condition for Joshua Tree, May 19, 2018

Mitigation: Construct more water storage capacity. Drill more wells. Develop ways to capture rainwater from the higher elevations during flash flooding events and divert these waters to percolation ponds to recharge the underground aquifers. Increase purchases of State water project water to recharge the aquifer.

4.3 Inventory Assets

This section provides an overview of the assets in the District and the hazards to which these facilities are susceptible.

4.3.1 Facilities Overview

As of May 2018, the District operates and maintains the following facilities:

- 14 pressure zones
- 16 existing reservoirs including the hydro pneumatic tank with a total storage capacity of 13.58 million gallons
- 5 existing wells with a total maximum pumping capacity of 7.28 MGD
- 1 waste water treatment plant owned by Hi-Desert Medical Center (Maintenance only)
- 310 miles of distribution and transmission facilities of pipe sizes of 2 inches to 20 inches in diameter

Figure 7 is a map of the District's facilities. The map illustrates how the facilities are arranged to provide potable drinking water to the residents of the service area. Water demands in the service area vary throughout the year with maximum daily summer demands estimated at 3.89 million gallons per day in June. The District relies on groundwater for their raw water supply but can purchase water from the State Water Project, purchasing water from the Mojave Water Agency, which is one of the State's water retailers.

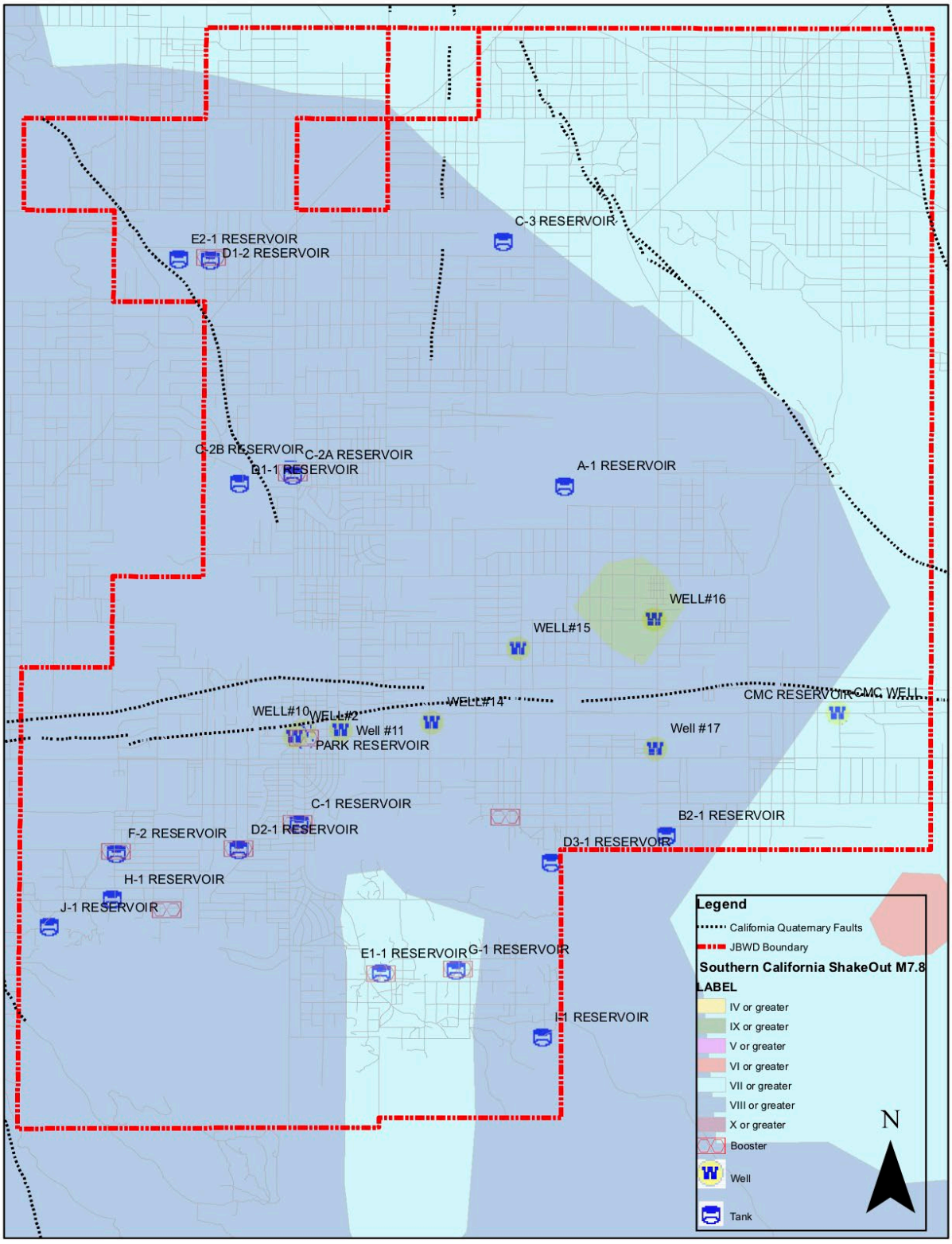


Figure 7 Joshua Basin Water District Facilities Map

4.3.2 Critical Facility List

This section provides a listing of the District's critical facilities as developed by the Planning Team.

Table 6 Critical Facilities List

Facility Name	Site Information	Economic Value
District Offices	Staff and Operations	$1.5 Million
Shop/warehouse	Operations and Maintenance	$1.1 Million
SCADA System	System control	$800,000
K-1	Hydromatic Station	$200,000
Reservoirs		
D-2	520,000 gallons	$710,000
D-3	110,000 gallons	$1.1 Million
C-3	400,000 gallons	$600,000
F-2	431,000 Gallons	$600,000
H-1	225,000 Gallons	$500,000
J-1	577,000 Gallons	$800,000
E-1	304,000 Gallons	$500,000
G-1	257,000 Gallons	$200,000
I-1	169,000 Gallons	$300,000
B-1	1.2 Million Gallons	$1.1 Million
A-1	272,000 Gallons	$500,000
C-1	441,000 Gallons	$700,000
D-1-2	577,000 Gallons	$800,000
E-2	272,000 Gallons	$400,000
D-1-1	441,000 Gallons	$600,000
C-2-B	5.6 Million Gallons	$3.5 Million
Wells		
Well-16	Well Only	$250,000
Well-17	Well Only	$250,000
Well 10	Well Only	$250,000
Well 14	Well Only	$250,000
Well 15	Well Only	$250,000
Booster Stations		
E-1 Booster @ C-1	Booster Station	$150,000
D-2 Booster @ C-1	Booster Station	$150,000
H-1 Booster @ F-2	Booster Station	$150,000
J-1	Booster Station	$150,000
G-1	Booster Station	$200,000
D-1-1	Booster Station	$150,000
D-3	Booster Station	$150,000
I-1	Booster Station	$150, 000
E-2-1	Booster Station	$150,000
F2	Booster Station	$150,000

4.4 Vulnerability Assessment

The Planning Team reviewed pictures of each of the District's facilities. The pictures were presented with a map of the area to convey the location within the system as well as the site-specific characteristics of the facility. The team members each have a long history in the area and knowledge of the potential disasters and emergencies that can occur in and around the community. The internal team members have the knowledge to assess the system and give valuable input into the assessment and vulnerabilities to the system.

4.4.1 Methodology

The Planning Team reviewed the District's facilities and applied their local and operational knowledge to evaluate how vulnerable each facility is to a potential hazard. The team ranked the facilities by their importance to the District's production and delivery of drinking water, and then using this ranking the team developed an estimate of potential economic impact that could be caused by the six high-priority hazards. A percentage based on ranking was applied to the District's projected 2017-2018 annual operating revenue of $5.7 million to obtain the annual economic impact for each facility.

4.4.2 Earthquake Vulnerability Analysis

Population: Approximately 100% of the District's population is vulnerable.

Critical Facilities: Approximately 100% of the District's critical facilities are vulnerable.

All facilities are vulnerable in the event of a major earthquake within the District's boundaries. There are many nearby faults that could affect the District's facilities: Emerson, Camp Rock, Big Bear, Garlock, Blue Cut, Pinto Mountain, and the San Andreas fault. If any of these faults experience a rupture of 6.5 magnitude or more, it would have a negative effect on the District's facilities.

Estimated Losses: The economic loss resulting from this hazard is approximately $8 million. The loss from damage to structures and pipelines from this hazard is approximately $25 million.

Losses are estimated assuming:

1. All of the District's critical facilities are at risk, including 80% of the District's pipelines
2. Without the critical facilities, no revenue can be generated for the District
3. Time to restore the system to full function is 24 months
4. Lost revenue from water sales for 12 months based upon the 2017-2018 projected Joshua Basin Water District revenue

4.4.3 Terrorist Event Vulnerability Analysis

Population: 100% of the District's population is vulnerable.

The Joshua Basin Water District has a large population of U.S Marines living in the community due to the close proximity of the world's largest U.S Marine Base. Terrorist events could happen at any time. This region is vulnerable since an event could have a big impact on the public and the U.S Military. Terrorist events could range from water contamination events to dirty bombs. Water contamination events are the main concern of the Planning Team.

Cyber hacking and attacks have now become our nation's number one threat to utility infrastructure, including water and wastewater, from terrorism and criminal organizations. The ability for a foreign terrorist group, hostile government or criminal group to hack into our county's computer and network system is an increasing and forever changing risk. Hackers can steal information, control SCADA systems, hold ransom a complete computer network or damage and delete critical files and programs.

Loss from an attack of this type has the potential to stop water production completely, damage or destroy computer files and programs, steal personal information of customers and employees, and interfere with operations.

Critical Facilities: 75% of the District's facilities are vulnerable to terrorist activity due to the fact that most are in remote locations. The most vulnerable are the wells and reservoirs, as this is a major concern and potential entry point for contamination to the potable water system.

Estimated Losses: Losses to the system are difficult to determine as the source and type of contamination will determine the extent of damage; however, the team estimated the damage to the system at the highest cost possible, which would be the worst-case scenario. This estimate is $50 million.

4.4.4 Lightning Strikes Vulnerability Analysis

Population: 100% of the District's population is vulnerable.

Critical Facilities: Approximately 100% of the critical facilities are vulnerable.

During Monsoon season, cumulous clouds cause lighting to appear. During lightning storms, lightning strikes objects on the ground, sometimes people. During these events it is not uncommon for lightning to strike a water well motor and/or an electrical panel control. When this happens, the motor and all controls are destroyed and must be replaced. It takes several days for Southern California Edison to make the repairs to their equipment, before the repairs to the water system can be accomplished.

Estimated Losses: Losses to the system can range into the hundreds of thousands of dollars. Well pumps, electric motors and controls vary in cost from $20,000 to $75,000 not including labor to install or repair. The loss of pumping water into the system, means a loss of revenue

from water sales, but also, means there is a shortage water being delivered to the residents that depend on the agency for water service.

4.4.5 Flash Flooding Vulnerability Analysis

Population: Approximately 40% of the District's population is vulnerable.

Critical Facilities: Approximately 40% of the District's critical facilities are vulnerable.

Flash flooding only happens when heavy and concentrated rains occur in steep basin areas where runoff is channeled through limited areas. The District is in the foothills of the valley floor where water runs off from higher mountainous areas on its way to the dry lake areas on the desert floor. These waters are very dangerous because they can originate many miles away and travel at fast speeds. Flash flood waters rage through the service area from the south or the north and collect in the wash area or low land areas, mostly on the south side of the valley.

The District has not utilized the National Flood Insurance Program (NFIP), and there has not been any repeated District infrastructure damage from flooding in the past.

Estimated Losses: The economic loss resulting from this hazard is approximately $8 million. The loss from damage to structures and pipelines from this hazard is approximately $25 million. Need info on NFIP Insured structures.

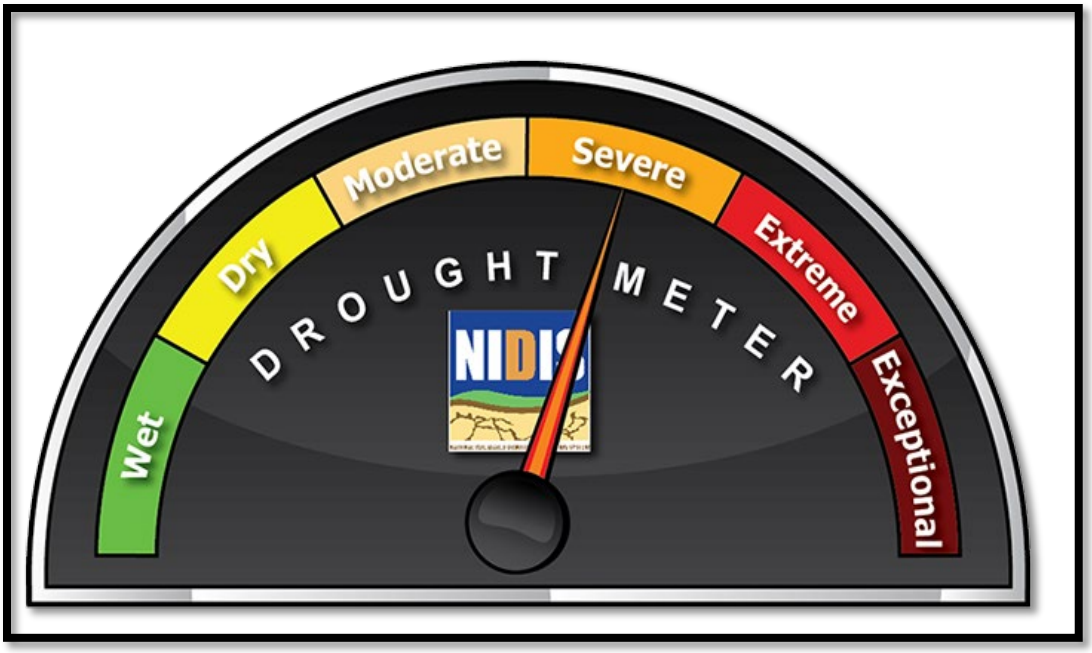
4.4.6 Climate Change/Drought Vulnerability Analysis

Climate Change

Population: 100% of the District's population is vulnerable to climate change.

Critical Facilities: The groundwater aquifer is the most vulnerable component of the District's critical facilities (or resources). Without the aquifer, there is no water supply.

As climate change results in more extreme weather patterns, the District would need to become more resilient in the management of groundwater resources. Planning for lower groundwater tables may include monitoring and studying the aquifer in greater detail, as well as installing deeper water supply wells. Enhanced groundwater recharge opportunities may also be explored and implemented.



The National Integrated Drought Information System (NIDIS) is a tool that measures the drought-related risks in certain areas of the country. Figure 6 below shows that the San Bernardino area is currently in a moderate drought event and is moving to a severe drought event as Southern California moves into the summer months

Drought

Population: Approximately 100% of the District's population is vulnerable.

Critical Facilities: Approximately 100% of District's critical facilities are vulnerable.

The wells are critical to drought because they supply groundwater for the District. During a long-term drought, the probability of State Water Project water being available greatly diminishes. Without annual recharge the aquifers will be drawn down an average of 1 foot per year, at current production rates. As groundwater levels become lower. Pumping costs will increase due to greater lift required. It is also possible that wells and pumps may be too shallow if the groundwater level drops significantly. In these instances, the pump shaft and bowls may need to be lowered deeper in the well. In extreme cases, a new deeper well may be required.

Of the critical facilities listed, 5 are wells. Currently, these wells are operating without significant hardship during the ongoing drought. Reservoirs are not considered critical into a drought; however, pipelines can collapse if the system is left with no water.

The District adopted Resolution 14-8 and 15-9, passed on August 20, 2014, and June 3, 2015, respectively, which established the policy and conservation measures needed during drought conditions. California Governor Jerry Brown declared a Water State of Emergency for the entire State in 2014 and 2015. The mandate was lifted in 2016. The District continues conservation

measures with a recommended voluntary goal to conserve 20 percent compared to the 2013 baseline figures.

Estimated Losses: The economic loss resulting from this hazard is approximately $60,000 a month. The loss or damage to structures from this hazard is approximately $2 million due to collapsed pipelines, booster pumps, and contamination to the system.

4.4.8 Potential Loss Estimate

Replacement costs listed in this section were arrived by utilizing the District's insurance documentation. The Joint Powers Insurance Authority (JPIA) has listed the replacement cost value for each facility. The team has communicated with the JPIA on the values listed below and was assured that the estimated costs are accurate. Table 7 summarizes the economic impacts on the critical facilities within the District.

Table 7 Economic Impacts on Critical Facilities for the District

Facility Name	Site Information	Economic Value
District Offices	Staff and Operations	$1.5 Million
Shop/warehouse	Operations and Maintenance	$1.1 Million
SCADA System	System control	
K-1	Hydromatic Station	$200,000
Reservoirs		
D-2	Reservoir Size	$150,000
D-3	110,000 gallons	$1.1 Million
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Well 14	Well Only	$250,000
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G-1	Booster Station	$200,000
D-1-1	Booster Station	$150,000
D-3	Booster Station	$150,000
I-1	Booster Station	$150, 000
E-2-1	Booster Station	$150,000
F2	Booster Station	$150,000

SECTION 5: COMMUNITY CAPABILITY ASSESSMENT

5.1 Agencies and People

To help mitigate the potential impacts of disasters, the District joined the Emergency Response Network of the Inland Empire (ERNIE). This organization consists of water agencies within San Bernardino and Riverside counties. The ERNIE group of agencies coordinates mutual aid to help each member respond and recover from local emergency issues. The District is also a member of the California Water/Wastewater District Response Network (CalWARN). This organization focuses on mutual aid throughout the State of California. The District staff attends quarterly meetings with the ERNIE group and also attends twice yearly meetings at the American Water Works Association meetings with CalWARN and Arizona WARN members.

The District employs 21 people. With the capabilities of ERNIE and CalWARN, the District has the potential of having hundreds of mutual aid workers at its disposal within hours of an emergency.

The District participates in the following groups to help plan, detect, prevent, respond and mitigate cyber and terrorist attacks. The District's Terrorism Liaison Officer (TLO) works with the different groups to ensure the safety and security of the water and the community the District serves.

InfraGard: InfraGard is a partnership between the FBI and members of the private sector. The InfraGard program provides a vehicle for seamless public-private collaboration with government that expedites the timely exchange of information and promotes mutual learning opportunities relevant to the protection of Critical Infrastructure. With thousands of vetted members nationally, InfraGard's membership includes business executives, entrepreneurs, military and government officials, computer professionals, academia and state and local law enforcement; each dedicated to contributing industry specific insight and advancing national security.

Joint Regional Intelligence Center (JRIC): The Joint Regional Intelligence Center (JRIC) is the fusion center collaboration between federal, state, and local law enforcement and public safety agencies to integrate criminal and terrorism threat intelligence and provide intake, analysis, fusion, synthesis, and dissemination of that information. The JRIC converts the information into operational intelligence to detect, deter, and defend against terrorist attacks and major criminal threats within the seven-county jurisdiction of the FBI Los Angeles field office. The JRIC is a 24-hour reporting center.

Water Information Sharing and Analysis Center (WaterISAC): WaterISAC was authorized by Congress in 2002 and is managed by the water sector. It is a nationwide center with the mission to keep drinking water and wastewater utility managers informed about potential threats and risks to the nation's water infrastructure from all hazards, such as intentional contamination, terrorism and cyber-crime, and to provide information about response, mitigation and resilience.

San Bernardino / Riverside Counties (Inland) Terrorism Early Warning Group (TEWG): TEWG is co-hosted by the San Bernardino County Sheriff's Department and the Riverside County Sheriff's Department and provides information to local response agencies through a network of membership representatives. Membership network members include Law enforcement, Fire service, Hazmat teams, EMS, Hospitals, Public Health, Highway Patrol, Transportation agencies,

FBI, CIA, Military, Water and Power utilities, private companies and railroads. The District meets with this group monthly with the goal to share information related to terrorism and crime.

5.2 Existing Plans

The following emergency related plans apply as appropriate:

- ERNIE Emergency Operations Plan
- CalWARN Emergency Operations Plan
- The District's Illness Injury Prevention Plan (IIPP)
- The District's Water Master Plan

In addition, the District has mutual aid agreements within San Bernardino and Riverside counties and within the State of California. As a government entity (Special District within California Law), the District can access the Emergency Managers Mutual Aid (EMMA) and the Emergency Management Assistance Compact (EMAC) for national mutual aid and the National WARN System though the American Water Works Association. District staff attends the San Bernardino County Office of Emergency Services quarterly meetings at various locations in the County. The final HMP will be used in the updated Water Master Plan and the Master Plan will be used in the next update of the HMP. Knowing the hazards and the ramification of the hazards on the water system is important to the Master Plan and how the plan is developed in the future. Also, the Master Plan is a good tool for future updates to the HMP and will be utilized in the future.

5.3 Regulations, Codes, Policies, and Ordinances

The Urban Water Management and Planning Act was passed in 2010 and requires water suppliers to estimate water demands and available water supplies. The District's updated Urban Water Management Plan (UWMP) was completed in January 2017. UWMPs are required to evaluate the adequacy of water supplies including projections of 5, 10, and 20 years. These plans are also required to include water shortage contingency planning for dealing with water shortages, including a catastrophic supply interruption.

UWMPs are intended to be integrated with other urban planning requirements and management plans. Some of these plans include city and county General Plans, Water Master Plans, Recycled Water Master Plans, Integrated Resource Plans, Integrated Regional Water Management Plans, Groundwater Management Plans, Emergency Response Plans, and others. The District participates with other local area water agencies in preparing Water Master Plans that benefit all of the regional water agencies. The HMP can help the agency developed better emergency planning, as the earthquake, flood maps can show where resources can be placed. As stated in section 5.2 above: "Knowing the hazards and the ramification of the hazards on the water system is important to the Master Plan and how the plan is developed in the future. Also, the Master Plan is a good tool for future updates to the HMP and will be utilized in the future".

The District has an Emergency Response Plan that details how the District will respond to various emergencies and disasters. The District must be prepared to respond to a variety of threats that require emergency actions, including:

- Operational incidents, such as power failure or bacteriological contamination of water associated with the District's facilities
- Outside or inside malevolent acts, such as threatened or intentional contamination of water, intentional damage/destruction of facilities, detection of an intruder or intruder alarm, bomb threat, or suspicious mail
- Natural disasters, such as earthquakes or floods and power failures
- Water Conservation Regulations

The District is also required to follow Standard Emergency Management System (SEMS), the National Incident Management System (NIMS), and the Incident Command System (ICS) when responding to emergencies.

5.4 Mitigation Programs

The District is always looking for mitigation ideas and new techniques and attends workshops conducted by the ERNIE group, Rural Water Authority and the American Water Works Association, vendor fairs, and meetings with other water organizations.

5.5 Fiscal Resources

Fiscal resources for the District include the following:

- Revenue from water sales
- Monthly Service Charge fee
- Water Availability Assessment (on property taxes)
- Meter Installation fee
- If necessary, local bond measures and property taxes

Through the California Department of Water Resources, local grants and/or loans are available for water conservation, groundwater management, and studies and activities to enhance local water supply quality and reliability. Project eligibility depends on the type of organization(s) applying and participating in the project, and the specific type of project. More than one grant or loan may be appropriate for a proposed activity. Completing the LHMP will facilitate obtaining grant funding in the future.

SECTION 6: MITIGATION STRATEGIES

6.1 Overview

The purpose of this analysis is to identify projects (actions) that help the District meet the goals and objectives for each priority hazard. The District has identified hazards in the community, assessed those hazards that pose the most significant risk, and identified projects to help reduce and/or eliminate those risks.

6.2 Mitigation Goals, Objectives, and Projects

As discussed in Section 3.5 Assess the Hazards, the process of identifying goals began with a review and validation of the San Bernardino County 2010 Operational Area LHMP. Using the County's 2015 LHMP, the District's Planning Team completed an assessment/discussion of whether each of the goals was valid.

Overall, the primary goal is to protect lives and prevent damages to infrastructure that disrupt water services. Global measures that apply across all hazards include:

- Continually improve the community's understanding of potential impacts due to hazards, and the measures needed to protect lives and critical infrastructure
- Provide public outreach to inform the public of the hazards identified to the drinking water system in emergencies, how to conserve water in the event of a disaster and how to obtain drinking water when water may not be available
- Continually provide State and Local Agencies with updated information about hazards, vulnerabilities, and mitigation measures at the District
- Review local codes and standards to verify that they protect human life and the District's facilities
- Review and verify that the District's owned and operated infrastructure meet minimum standards for safety
- Review the District's facilities and developments in high-risk areas to verify that these areas are appropriately protected from potential hazards

The six high-profile hazards for the District are earthquake, terrorist events, lightning strikes, flash flooding, climate change/drought, and freezing. The District's priority and focus for the mitigation projects will be for the six high-profile hazards.

6.2.1 Earthquake - Impact Rating (1)

Description: The District agrees that strengthening of buildings and fire codes are critical to the protection of property, life, and the reduction of seismic-caused damages. These codes help water utilities design and construct reservoirs, pump stations, groundwater wells, and pipelines to resist the forces of nature.

Objectives:

- Design new facilities and upgrade existing facilities to withstand an 8.0 earthquake
- Encourage property protection measures for structures located in the area
- Adopt cost-effective codes/standards to protect life, properties, and critical infrastructure
- Establish partnerships with other levels of government and the business community to improve and implement methods to protect property

Mitigation Projects:

- See Table 8
-

*** Earthquake retrofit means all of the above items (Table 7)**

6.2.2 Terrorist Events - Impact Rating (1)

Description: A person or group of persons willingly causes damage to people or property to forward their goals through intimidation or coercion of a civilian population, to influence the policy of a government either large or small, and to affect a government entity.

Objectives:

- Prevent damage to critical water facilities
- Educate the public on terrorism
- Enhance safety within the region

Mitigation Projects:

- See Table 8

6.2.3 Lightning Strikes - Impact Rating (2)

Description: A sudden failure of the electric distribution system to a large geographical area that includes water wells and booster pumps thereby limiting water deliveries.

Objectives:

- Provide proper operation of critical facilities during power failures

- Provide water delivery for firefighting and other critical needs

Mitigation Projects:

- See Table 8.

6.2.4 Flash Flooding - Impact Rating (2)

Description: A sudden, localized flood of great volume and short duration typically caused by unusually heavy rain in a semiarid area. Flash floods can reach its peak volume in a matter of a few minutes and often carry large amounts of mud and rock fragments. Flash flooding is common in the arid desert areas of California, Arizona, Nevada, and New Mexico.

Objectives:

- Prevent damage to water distribution facilities
- Protect loss of critical facilities
- Mitigate cost of damages during and after a flash flood

Mitigation Projects:

- See Table 8

6.2.5 Climate Change and Long-Term Drought, Impact Rating (3)

Description: Due to Climate Change, the District can expect greater fluctuations in weather patterns, including prolonged dry periods which can be mitigated over the long-term. The objectives listed below have been taken from the declaration of a *Drought, State of Emergency for California*, signed by Governor Jerry Brown in May of 2015.

Objectives:

- Increase water supply - creating innovative ways to generate new supplies
- Improve operational efficiency
- Reduce water demand - water conservation has become a viable long-term supply option because it saves considerable capital and operating costs for the District

Mitigation Projects:

- Increase public awareness of water conservation
- Develop water catch basins ponds for flood waters
- Monitor groundwater elevations and evaluate trends
- Increase water pumping capabilities
- Increase groundwater supplies
- Study system interties with other water systems in the area

- Generators and generator hookups
- Improve communications at the local radio station

Mitigation measures, budget and timeline are listed in Table 8 below

Mitigation

Earthquake Mitigation (EM) = Seismic shut-off valves, Flex couplings at Reservoir, reservoir venting, bolt down infrastructure.
Flooding Mitigation (FM) = Block Walls and or diversion walls.
Security (S) = Updated Security Camera's, updated SCADA systems, Employee card ID readers.
Generators (G) = Generators and automatic switching equipment.

Funding Source

Grants (G) = When available
Budgeting (B) = When Funds are available

Critical infrastructure has a "* "in front of the site name

Table 8

Facility Name	Funding Source	Budget	Timeline	Mitigation	Responsible person
*District Offices	G, B	$150,000	1-2 years	FM, S, G	General Manager
*Shop/warehouse	G, B	$700,000	1-2 years	FM, S, G	General Manager
SCADA System	G	$80,000	1-year	S, G	General Manager
Reservoirs					General Manager
*D-2	G,	$60,000	1-3 years	EM, FM, S	General Manager
*D-3	G, B	$335,000	1-3 years	EM, FM, S	General Manager
*C-3	G,	$40,000	1-3 years	EM, FM, S	General Manager
*F-2	G, B	$80,000	1-3 years	EM, FM, S	General Manager
*H-1	G, B	$55,000	1-3 years	EM, FM, S	General Manager
*J-1	G,	$80,000	1-3 years	EM, FM, S	General Manager
*E-1	G, B	$80,000	1-3 years	EM, FM, S	General Manager
*G-1	G,	$35,000	1-3 years	EM, FM, S	General Manager
*I-1	G,	$150,000	1-3 years	EM, FM, S	General Manager
*B-1	G,	$250,000	1-3 years	EM, FM, S	General Manager
*A-1	G, B	$55,000	1-3 years	EM, FM, S	General Manager
*C-1	G, B	$75,000	1-3 years	EM, FM, S	General Manager
*D-1-2	G, B	$85,000	1-3 years	EM, FM, S	General Manager
*E-2	G, B	$75,000	1-3 years	EM, FM, S	General Manager
*D-1-1	G,	$75,000	1-3 years	EM, FM, S	General Manager
*C-2-B	G, B	$450,00	1-3 years	EM, FM, S	General Manager
Wells					

*Well-16	G, B	$35,000	1-2 years	EM, S, G	General Manager
*Well-17	G, B	$35,000	1-2 years	EM, S, G	General Manager
*Well 10	G, B	$135,000	1-2 years	EM, S, G	General Manager
*Well 14	G, B	$135,000	1-2 years	EM, S, G	General Manager
*Well 15	G,	$135,000	1-2 years	EM, S, G	General Manager
Facility Name	**Mitigation**	**Budget**	**Timeline**	**Rating**	**Responsible person**
Boaster Station					
*E-1 Booster @ C-1	G,	$150,000	1-2 years	EM, G	General Manager
*D-2 Booster @ C-1	G,	$150,000	1-2 years	EM	General Manager
*H-1 Booster @ F-2	G, B	$40,000	1-2 years	EM	General Manager
J-1	G, B	$40,000	1-2 years	EM, G	General Manager
G-1	G, B	$45,000	1-2 years	EM. G	General Manager
D-1-1	G, B	$35,000	1-2 years	EM, G	General Manager
D-3	G,	$150,000	1-2 years	EM, G, S	General Manager
I-1	G,	$150,000	1-2 years	EM, G,	General Manager
F2	G,	$150,000	1-2 years	EM, G, S	General Manager

The implementation strategy is intended to successfully mitigate the hazards identified in this plan within a reasonable amount of time. The District is currently operating within its annual budget and has been fortunate that the recession of the past 8 years did not cause major issues with the budget or revenue. The District's revenues have remained strong throughout the recession. Capital improvement projects have remained a priority. The District staff will review the LHMP each year before obtaining the next year's fiscal budget. The plan will also be reviewed by the Board of Directors for items to be included in the new fiscal budget. District staff will also look for ways to obtain Hazard Mitigation Grants each year to offset the impacts to the fiscal budget and to provide some relief for the residents of a disadvantaged community. Before funding either

by District resources or when appalling for a grant the District will conduct a Benefit Cost Analysis to ensure the District gets the best outcome for the projects listed in the HMP. The mathematical formula is as follows.

** $$B/C = \left[\frac{B_0}{(1+i)^0} + \ldots + \frac{B_T}{(1+i)^T}\right] \div \left[\frac{C_0}{(1+i)^0} + \ldots + \frac{C_T}{(1+i)^T}\right]$$

Mitigation Projects Funding Source

There is currently no mitigation money in the District's budget. The District will include mitigation into the budgeting process when funding becomes available and look at which mitigation projects could be funded in future budget cycles.

Timeframe

Over the next five years, the District will incorporate mitigation into all capital improvement projects that the District undertakes. The District has a Capital Improvement Program (CIP). When money is available for the CIP, the District replaces outdated pipelines, reservoirs, wells, and buildings.

The District will apply for mitigation grants as the opportunities become available in the State of California, County of San Bernardino each year. The District will consider all mitigation items during the annual budget workshops conducted each spring.

SECTION 7: PLAN MAINTENANCE

7.1 Monitoring, Evaluating, and Updating the Plan

The LHMP will be monitored and evaluated by staff during the year and progress will be reported as part of the annual budget workshop each spring. Annually, staff and the Board of Directors will review funding and determine the Capital Improvement Projects to be included in the next fiscal year's budget.

The Board Secretary will include the LHMP in all budget workshops and grant planning meetings. This will allow open discussion, evaluation, and assessment of the plan to achieve goals, allowing addition and removal of mitigated items.

A full review of the plan will be performed at 5-year intervals by staff in the same manner as the initial LHMP. Progress in reaching mitigation goals, assessment of new and existing hazards, development of new mitigation strategies and goals will be tackled by a planning team that will include the District's staff and the community served by the District. The public will be asked to participate in the update process. The District's budget is a public document and is reviewed by the public before the Board of Directors adopts the updated LMHP.

7.2 Implementation through Existing Programs

Once the State of California OES and FEMA approve the LHMP, the District will incorporate the LHMP into capital improvement projects, capital replacement programs, building design, and any updates or repairs to the water distribution system. The District will submit Notice of Intents to the State of California to help facilitate funding opportunities in obtaining FEMA and State funding to mitigate hazards within the service area.

The District's General Manager or his/her appointee will be responsible for the implementation of the LHMP and ensuring the LHMP's recommended goals and objectives are met. The General Manager or his/her appointee will be responsible to place the LHMP on the District's website and incorporate the LHMP into the annual budget workshops. The General Manager or his/her appointee will verify that the LHMP is updated and rewritten on a 5-year cycle. The District will start the update process one and a half years before the expiration date on this document. The approved HMP will be included in all project planning stages throughout the district planning. This will be helpful in understanding the hazards in the District in regard to location of infrastructure and hazards. This will ensure that new or revamping infrastructure is built to withstand the hazards at different locations in the service area. The HMP will be reviewed each year to ensure the HMP identified projects are completed. The District Engineering Department and the General Manager are responsible for maintaining he HMP.

7.3 Continued Public Involvement

The approved LHMP will be posted on the District's website with contact information. In the spring of each year at the District's Board of Directors' budget workshop, public comments will be taken in regard to the LHMP, and projects will be considered that could possibly be included in the next year's budget. As new facilities are incorporated into the District, the LHMP will be updated to include new facilities, as well as new hazards, if warranted. When the LHMP is rewritten and updated, a public committee will be utilized to review and concur on the changes in the document. The District has a public advisory Committee, which consists of local residents. This advisory committee will review the HMP yearly and make recommendations to the General Manager each year.