MONTECITO WATER DISTRICT

2018 HAZARD MITIGATION ANNEX

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1.0 PLANNING PROCESS

§201.6(b): In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process **shall** include:

(1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;

(2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and

(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

§201.6(c)(1): [The plan **shall** document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Hazard mitigation planning is a dynamic process built on realistic assessments of past and present information that engages Montecito Water District (District) personnel to anticipate future hazards and develop meaningful strategies to address possible impacts and identified needs. The hazard mitigation planning process involves the following tasks:

- Organizing resources
- Assessing risks
- Developing mitigation strategies, goals, and priorities
- Adopting a plan
- Implementing the plan
- Monitoring progress
- Revising the plan as necessary

The overall approach to the Hazard Mitigation Plan (HMP) Annex development included building off the baseline understanding of hazards as defined in the 2017 Santa Barbara County Multi-

Jurisdictional Hazard Mitigation Plan, determining ways to reduce those risks, and prioritizing those recommendations for implementation.

1.1 Planning Team / Public Involvement

While District personnel and Risk Management Professionals had lead responsibility for the development of the District's annex, neighboring communities, agencies, and other interested parties were invited to participate on the Planning Team to review the annex during each phase of the document development. Each participating member of the Planning Team had the opportunity to impact all aspects of the planning process. In addition, District and Risk Management Professionals personnel assessed community support through active community involvement. Engaging the public through open planning meeting invitations, online review opportunities, and a public meeting

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§201.6(c)(1): [The plan **shall** document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

The District solicited participation in the HMP Annex Planning Team by contacting both internal and external stakeholders via email. Internal stakeholders included members of the various District departments. External stakeholders were comprised of representatives from local agencies and the public.

The Planning Team met twice during the course of the project to discuss project progress and obtain valuable input and information for documenting the annex. In additional, a flyer was posted on the District website advertising the date and location of the initial meeting to allow the public an opportunity to learn more about the hazard mitigation planning process and provide feedback regarding the direction planning should go. No members of the public participated in the planning process. The meetings held by the Planning team are detailed over the subsequent pages.

1.2 Planning Team Meeting Descriptions

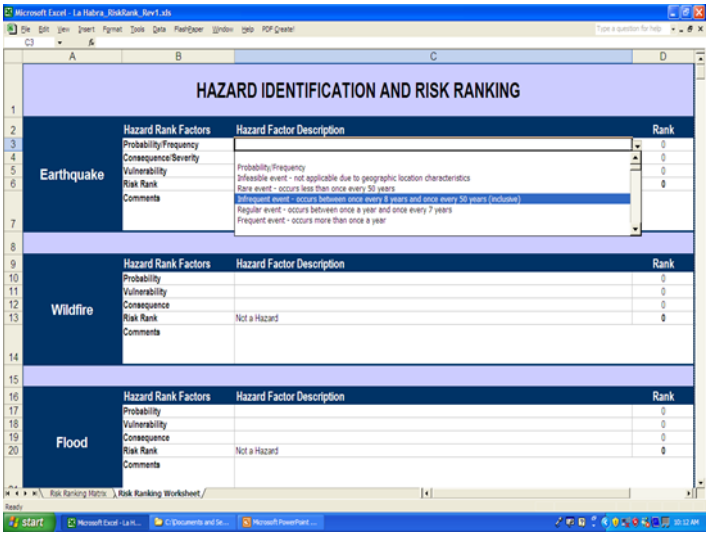
Planning Team Meeting #1 – Project Initiation, Hazard Identification, and Information Collections

July 19, 2018

Attendees:

- Ryan Bray
- Michael Dyer
- Martha Lange
- Nick Turner

During the Project Initiation, Hazard Identification, and Information Collection Meeting, Risk Management Professionals provided a project overview that detailed the objectives and scope of the annex development. After a review of the project schedule and key tasks, the Planning Team participant's areas of expertise, resultant member responsibilities, and the public meeting was discussed.



The Planning Team meeting also served as a mechanism to determine the hazards the annex would profile. To effectively characterize the District's risk and vulnerability, Risk Management Professionals facilitated a discussion of the historical hazards with the Planning Team during this meeting. This meeting also served as a forum to discuss any background information and obtain asset inventory specifics.

The Planning Team determined the initial hazard profile ranking through a facilitated exercise using an automated interactive spreadsheet that asked specific questions regarding potential hazards and then assigned a relative value to each potential hazard accordingly, including numerical rankings (1-5) for the following criteria:

- Consequence/Severity – How wide spread is the impact area?
- Secondary Effects – Could the event trigger another event and separate response?
- Probability/Frequency – Historical view of how often this type of event occurs locally and projected recurrence intervals.
- Warning/Onset – Advance warning of the event, or none.
- Duration – Length of elapsed time where response resources are active.
- Recovery – Length of time until lives and property return to normal.

Section 3 outlines the methodology used for hazard rankings. All Planning Team participants were requested to provide existing plans and technical studies and identify existing mitigation features as part of a detailed information request.

Additionally, the Plan's mitigation goals and objectives were updated with the intention of reducing or eliminating the potential hazard impacts, which also provided the basis for determining the associated mitigation projections. The Planning Team reviewed the goals and objectives from the the California State Multi-Hazard Mitigation Plan, and the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan as a baseline for determining the District's current mitigation goals.

1.3 Review and incorporation of Existing Plans

§201.6(b): In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process **shall** include:

(3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.

While developing the District's annex, the Planning Team reviewed existing plans (detailed below) and incorporated relevant information into the planning efforts.

2013 State of California Multi-Hazard Mitigation Plan

The State of California Multi-Hazard Mitigation Plan was reviewed to ensure consistency between the State and District plan with respect to identified hazards and vulnerability, goals and objectives, and mitigation actions. The State goals served as the basis for developing the goals at the District level. District goals and objectives are outlined in Section 4.

Santa Barbara County 2017 Multi-Jurisdictional Hazard Mitigation Plan

Like the California Multi-Hazard Mitigation Plan, the County HMP was reviewed to ensure consistency between the County Plan and the District annex. County Plan goals were adopted as the District's goals in addition to utilizing hazard profile information as the basis for determining the hazards which impact the District.

2012 California Adaptation Planning Guide

FEMA, Cal OES, and the California Natural Resources Agency developed the California Adaptation Planning Guide to assist municipalities in recognizing local climate change and to provide guidance addressing potential vulnerabilities. The information was used to develop potential hazards and to provide background information that allowed the Planning Team to make

educated decisions regarding mitigation actions designed to alleviate the effects of climate change.

2.0 Planning Area Profile

The District, located in the southern coastal portion of Santa Barbara County California, was formed in 1921, under the name Montecito County Water District, to provide potable water. The District serves the unincorporated communities of Montecito and Summerland with a total service area of approximately 9,888 acres and provides retail water supply to about 11,380 people.

The District is supplied by multiple water sources: Lake Cachuma, the State Water Project, supplemental purchases, and local natural sources including Jameson Lake, Doulton Tunnel, and groundwater basin.

A five-member Board of Directors governs the District. Each director is elected by the District's registered voters for staggered four-year terms.

The District's climate is a temperate Mediterranean style that generally consists of cool wet winters and mild dry summers with coastal fog in some of the summer months. As stated in the District's 2015 Urban Water Management Plan, temperatures in the winter rarely fall below freezing. Spring conditions remain mild with light amounts of rain and fog. During the summer and fall, the climate is usually dry and warm, moderate conditions; however, the area often experiences the hot dry Santa Ana winds during the late summer and early fall periods.

The map on the following page provides an overview of the District' service area.

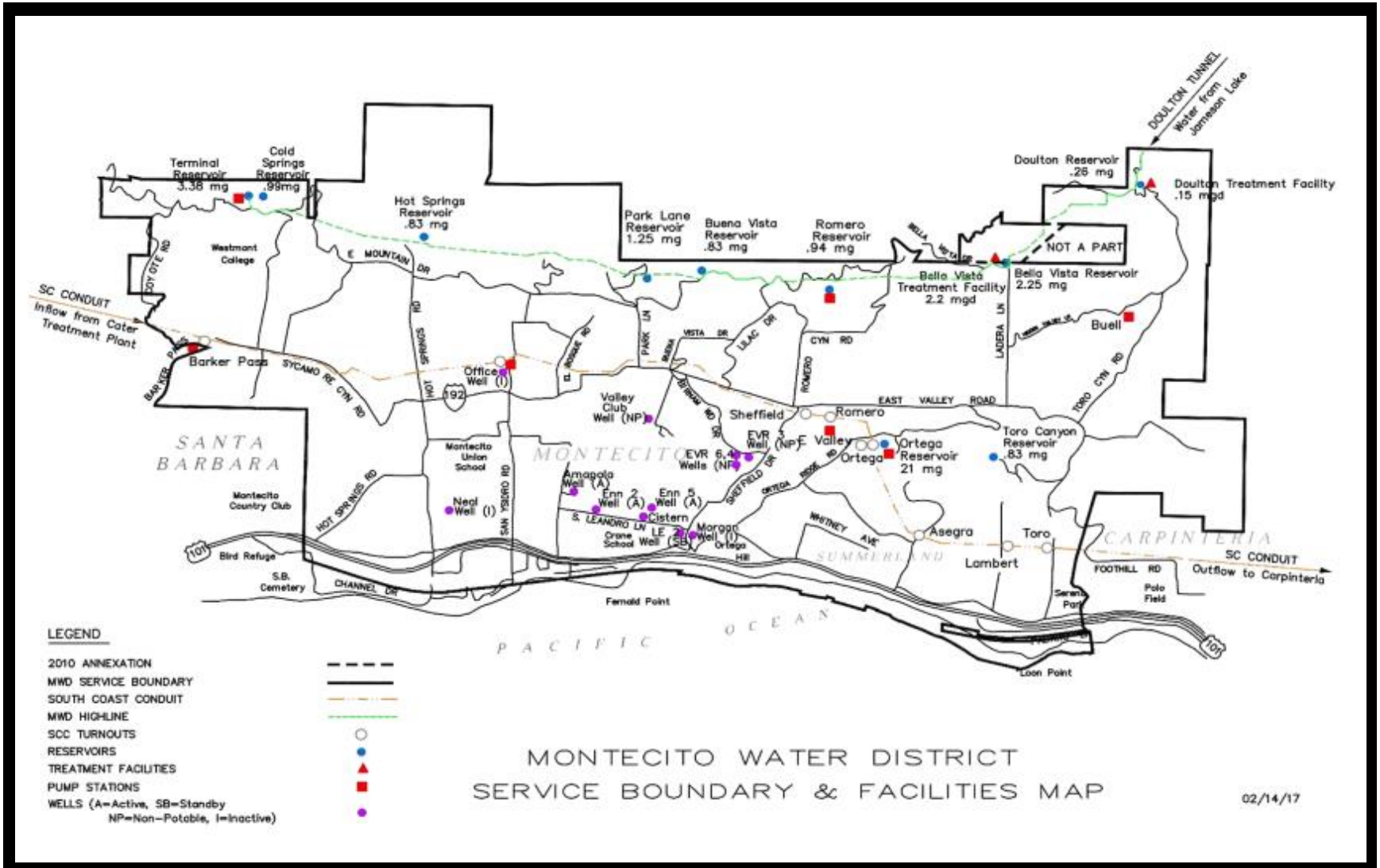


Figure 2.1: Montecito Water District Service Area Map

2.1 Development Trends

§201.6(c)(2)(ii)(C): [The plan **should** describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

The District has a customer base that is approximately 92% residential which, during periods of normal water supplies and hydrologic conditions, accounts for approximately 71% of the water use in the District. The remaining 7% of the customer base is made up of commercial, institutional, and agricultural entities with a few remaining non-potable water users. Table 2.1, taken from the 2015 Urban Water Management Plan, outlines water usage for the District and illustrates how the vast majority of the District service area is comprised of residential customers.

Table 2.1: Water Use By Customer Classification 2015

Customer Type	Percent of Total Service Connections	Percent of Total Water Use
Single-Family Residential	91.8%	70.6%
Multi-Family Residential	1.4%	1.9%
Commercial	3.0%	6.9%
Institutional	2.7%	8.8%
Agricultural	1.0%	8.9%
Non-Potable	0.2%	3.0%

The areas within the District's service area boundary are generally built out, so sharp increases in population and the need for additional infrastructure development are unlikely. Currently, there are no plans to expand the current water infrastructure system. However, following damage sustained due to the Thomas Fire in late 2017 and 2018, there are plans to make repairs to current infrastructure and mitigate further impacts of ground movement.

3.0 RISK ASSESSMENT

The Risk Assessment consists of three steps: Hazard Identification, Hazard Profiling, and Loss Estimates. This section includes the Hazard Identification and Hazard Profiling steps to evaluate the hazards of primary concern to local decision-makers to provide a basis for loss estimates which is also included within this chapter. Additionally, the Risk Assessment provides a foundation for the evaluation of mitigation measures that can help reduce the impacts of a potential hazard event. As an annex to the County's multi-jurisdictional hazard mitigation plan, the Planning Team used the information found in the County's Plan as a basis for elements of the Risk Assessment.

Step 1: Identify Hazards: This step identified the natural and man-made hazards that might affect the District and then narrowed the list to the hazards that are most likely to occur. These hazards included natural, technical, and human-caused events, with an emphasis on the effect disasters may have on critical facilities. The Planning Team participated in a Hazard Identification exercise to identify and rank the potential hazards within the District.

Step 2: Profile Hazard Events: The hazard event profiles are mostly products of the County's multi-jurisdictional Plan. The Planning team utilized the basic understanding of each hazard from the County Plan and then considered how that hazard would impact the District specifically.

Step 3: Loss Estimates: The loss estimate step relied on detailed information regarding the hazard probability and maps that were completed as part of the hazard profiles. This information was utilized to apply the hazard probabilities and recurrence intervals to the assets and inventory (buildings and infrastructure) of the District. This step was critical in determining which assets were subject to the greatest potential damages and which hazard event was likely to produce the greatest potential losses.

The conclusion of this step precipitated a comprehensive loss estimate (vulnerability assessment) for each identified hazard for each specific asset in terms of damages, economic loss, and the associated consequences for the District.

3.1 Hazard Identification

§201.6(c)(2)(i): [The risk assessment **shall** include a] description of the type, location, and extent of all-natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

§201.6(c)(2)(ii): [The risk assessment **shall** include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description **shall** include an overall summary of each hazard and its impact on the community.

§201.6(c)(2)(ii): [The risk assessment] **must** also address National Flood Insurance Program (NFIP) insured structures that have been repetitively damaged by floods.

§201.6(c)(2)(iii): For multi-jurisdictional plans, the risk assessment **must** assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

The hazard identification and ranking were obtained primarily from a Hazard Identification Exercise completed during the initial Planning Team meeting. Each hazard profile includes a summary of the Hazard Identification Exercise identified risk factors and overall rank for each hazard, in addition to the detailed hazard description, historical occurrences, and projected future probability, magnitude, and frequency.

Each member of the Planning Team participated in the Hazard Identification Exercise to identify the potential hazards within the District's service area. The Hazard Identification Workshop was facilitated using an interactive spreadsheet program that asks specific questions on potential hazards and then rates them accordingly. These questions guided the Planning Team in the correct facilitation and application of the program. Table3.1 summarizes the Hazard Identification Workshop risk factors, lists the descriptions of each factor, provides the specific descriptor choices for each risk factor and description, and summarizes the risk ranking associated with each hazard:

Table 3.1: Hazard Identification Risk Factors

Risk Factor	Description	Descriptors	Value
Probability/ Frequency	Prediction of how often a hazard will occur in the future	Infeasible event - not applicable due to geographic location characteristics	0
		Rare event - occurs less than once every 50 years	1
		Infrequent event - occurs between once every 8 years and once every 50 years (inclusive)	2
		Regular event - occurs between once a year and once every 7 years	3
		Frequent event - occurs more than once a year	4
Consequence/ Severity	Physical Damage - structures and lifelines Economic Impact – loss of function for power, water, sanitation, roads, etc.	No damage	1
		Minor/slight damage to buildings and structures, no loss of lifelines	2
		Moderate building damage, minor loss of lifelines (less than 12 hours)	3
		Moderate building damage, lifeline loss (less than 24 hours)	4
		Extensive building damage, widespread loss of lifelines (water, gas, electricity, sanitation, roads), loss of life	5
Vulnerability	Impact Area - area impacted by a hazard event Secondary Impacts - Capability of triggering additional hazards Onset - Period of time between initial recognition of an approaching hazard and when the hazard begins to impact the community	No physical damage, no secondary impacts	1
		Localized damage area	2
		Localized damage area, minor secondary impacts, delayed hazard onset	3
		Moderate damage area, moderate secondary impacts, moderate warning time	4
		Widespread damage area, significant secondary impacts, no warning time	5

Each hazard was assigned a risk rank (ranging from no/low hazard to severe/high hazard) based on the risk factors determined during the Hazard Identification Workshop. The risk score is calculated by Risk = Probability x Consequence x Vulnerability. Table 3.2 provides the risk ranking matrix used to calculate the risk score.

Table 3.2: Risk Ranking Matrix

Probability/Frequency Description	Risk Ranking Matrix						
Rare Event: Occurs less than once every 50 years	Probability/Frequency Value	1	Consequence/ Severity 1	2	3	4	5
	Vulnerability		1	2	3	4	5
		2	2	4	6	8	10
		3	3	6	9	12	15
		4	4	8	12	16	20
		5	5	10	15	20	25
Infrequent Event: Occurs between once every 8 years and once every 50 years (inclusive)	Probability/Frequency Value	2	Consequence/ Severity 1	2	3	4	5
	Vulnerability	1	2	4	6	8	10
		2	4	8	12	16	20
		3	6	12	18	24	30
		4	8	16	24	32	40
		5	10	20	30	40	50
Regular Event: Occurs between once a year and once every 7 years	Probability/Frequency Value	3	Consequence/ Severity 1	2	3	4	5
	Vulnerability	1	3	6	9	12	15
		2	6	12	18	24	30
		3	9	18	27	36	45
		4	12	24	36	48	60
		5	15	30	45	60	75
Frequent Event: Occurs more than once a year	Probability/Frequency Value	4	Consequence/ Severity 1	2	3	4	5
	Vulnerability	1	4	8	12	16	20
		2	8	16	24	32	40
		3	12	24	36	48	60
		4	16	32	48	64	80
		5	20	40	60	80	100

The final risk score yields a profile ranking of each hazard, as illustrated in Table 3.3.

Table 3.3: Risk Rank Categorization

Risk Rank Categorization	
High Hazard	**50 to 100**
Moderately High Hazard	**25 to 49**
Moderate Hazard	**15 to 24**
Moderately Low Hazard	**5 to 14**
Low Hazard	**1 to 4**

The following illustrates the final hazard ranking developed by the Planning Team to rank each of the identified hazards in order of the highest perceived vulnerability to lowest.

Table 3.4: Hazard Ranking Summary

Hazard Rank	Score
High	
Moderately High	
Wildfire	48
Earthquake	40
Energy Shortage & Resiliency	36
Earth Movement	30
Moderate	
Drought	24
Terrorism	16
Moderately Low	
Flood	12
Dam Failure	8
Low	
HazMat Release	4

3.2 Wildfire Hazard Profile

Wildfire Risk Assessment Summary	
Risk Rank: Moderately High	
Probability/ Frequency:	Regular event – occurs between once a year and once every 7 years
Consequence/ Severity:	Moderate building damage, lifeline loss (less than 24 hours), severe injury or disability
Vulnerability:	Moderate damage area, moderate secondary impacts, moderate warning time
Hazard Risk Rank Score:	48

Wildfire vulnerability for the region is described in the County's Multi-jurisdictional Hazard Mitigation Plan. The areas north and east of the District's service area were identified as very high fire hazard severity zones in maps prepared by the Santa Barbara County Fire Department in the County's Plan.

The Planning Team discussed that during the recent Thomas Fire in 2017/2018, the District only sustained minimal damage. However, the fire was followed by rain and extensive debris flows which caused severe damage to the District. Earth Movement, including debris flow, is discussed in Section 3.5.

Additionally, the Planning team discussed how the impacts of climate change may result in a fire hazard. Increased usage of fossil fuels for transportation and electricity, along with increased deforestation has led to the overloading of the atmosphere with greenhouse gases such as carbon dioxide (CO2). These heat-trapping emissions act as a blanket and increase the overall atmospheric temperature, thus warming the planet. As summers get hotter and longer, the conditions for wildfires increase exponentially. Wildfires in the U.S. have been on an increasing trend and the effects of climate change has shown to aggravate the frequency and duration of wildfires.

3.3 Earthquake Hazard Profile

Earthquake Risk Assessment Summary	
Risk Rank: Moderately High	
Probability/ Frequency:	Infrequent event - occurs between once every 8 years and once every 50 years (inclusive)
Consequence/ Severity:	Moderate building damage, lifeline loss (less than 24 hours), severe injury or disability
Vulnerability:	Widespread damage area, significant secondary impacts, no warning time
Hazard Risk Rank Score:	40

Earthquake vulnerability for the region is described in the County's Multi-jurisdictional Hazard Mitigation Plan. According to maps developed by the County off Santa Barbara Office of Emergency Management, the Montecito area has minor fault lines running through the District's service area, with some areas being subject to moderate severity liquefaction. When considered by the Planning Team, it was decided that the pipeline and infrastructure were most likely to be vulnerable to the impacts of an earthquake. However, a mainline would need to be impacted before water service to end users would be interrupted. To date, an earthquake has not been the cause of pipe breakage, but the District is cognizant of the possible damage during a large seismic event.

3.4 Energy Shortage & Resiliency Hazard Profile

Energy Shortage & Resiliency Risk Assessment Summary	
Risk Rank: Moderately High	
Probability/ Frequency:	Regular event - occurs between once a year and once every 7 years
Consequence/ Severity:	Moderate building damage, minor loss of lifelines (less than 12 hours), lost time injury but no disability
Vulnerability:	Moderate damage area, moderate secondary impacts, moderate warning time
Hazard Risk Rank Score:	36

Energy Shortage & Resiliency vulnerability for the region is described in the County's Multi-jurisdictional Hazard Mitigation Plan. There is currently no system to anticipate the probably of energy shortage without evaluating the failure as a cascade effect from natural hazards (i.e., earthquakes). However, California has implemented numerous conservation measures to ensure an adequate power supply. The Planning Team noted that all parts of the District's service area are vulnerable to power shortages.

3.5 Earth Movement Hazard Profile

Earth Movement Risk Assessment Summary	
Risk Rank: Moderately High	
Probability/ Frequency:	Infrequent event - occurs between once every 8 years and once every 50 years (inclusive)
Consequence/ Severity:	Extensive building damage, widespread loss of lifelines (water, gas, electricity, sanitation, roads), loss of life
Vulnerability:	Localized damage area, minor secondary impacts, delayed hazard onset
Hazard Risk Rank Score:	30

Landslide and Earth Movement vulnerability for the region is described in the County's Multi-jurisdictional Hazard Mitigation Plan. The Planning Team discussed its specific vulnerabilities and determined that debris flows, although not specifically outlined in the County's Plan, represented the most viable hazard to the District.

A debris flow is a geological phenomenon in which water-laden masses of soil and fragmented rock rush down mountain sides, funnel into stream channels, collect objects in their paths, and form thick, muddy deposits on valley floors. Some debris flows are very fast. In areas of steep slopes, geology.com states that some debris flows can reach speeds of over 100 miles an hour.

Debris flows can be triggered in several different ways including the following.

Addition of Moisture A sudden flow of water from heavy rain, or rapid snowmelt, can be channeled over a steep valley filled with debris that is loose enough to be mobilized. The water soaks down into the debris, lubricates the material, adds weight, and triggers a flow

Removal of Support: Streams often erode materials along their banks. This erosion can cut into thick deposits of saturated materials

stacked high up the valley walls. This erosion removes support from the base of the slope and can trigger a sudden flow of debris.

Failure of Landslide Deposits: Some debris flows originate from older landslides. These older landslides can be unstable masses perched up on a steep slope. A flow of water over the top of the old landslide can lubricate the slide material, or erosion at the base can remove support. Either of these can trigger a debris flow.

Wildfires or Timbering: Some debris flows occur after wildfires have burned the vegetation from a steep slope or after logging operations have removed vegetation. Before the fire or logging, the vegetation's roots anchored the soil on the slope and removed water from the soil. The loss of support and accumulation of moisture can result in a catastrophic failure. Rainfall that was previously absorbed by vegetation now runs off immediately. A moderate amount of rain on a burn scar can trigger a large debris flow

On January 9th, 2018, the areas of Montecito and Carpinteria experienced a debris flow event as a secondary impact of the 2017 Thomas Fire and subsequent rain fall. According to the event's After-Action Report, millions of tons of mud and rocks flowed out of the mountains toward the ocean creating destruction along the way. There were multiple significant incidents including: natural gas pipeline explosions, structure fires in Montecito, flooded structures, and persons trapped in structures, attics, and roofs that required rescuing. Helicopters transported multiple burn victims, individuals stranded, and people with traumatic injuries. The debris flow ultimately led to 23 deaths, including two missing persons and numerous injuries.

The District sustained damages as a result of the 2018 debris flow and is currently in the process of repairing facilities while mitigating future debris flow events.

Debris flows, landslides and other earth movement events are a geologic hazard common to every U.S. State, including California's central coast area. According to a US Geological Survey report, landslides cause more than $1 billion in damages and 25 to 50 deaths in the U.S. each year. Earth movement in California is caused mainly due to increased precipitation and earthquakes. Large winter storms and earthquakes are usually accompanied by landslides that result in fatalities and property damage. The Planning Team reviewed its vulnerability and estimated the entire District is vulnerable to the impacts of a debris flow.

3.6 Drought & Water Shortages Hazard Profile

Drought & Water Shortages Risk Assessment Summary	
Risk Rank: Moderate	
Probability/ Frequency:	Regular event - occurs between once a year and once every 7 years
Consequence/ Severity:	Minor/slight damage to buildings and structures, no loss of lifelines, first aid injury and no disability
Vulnerability:	Moderate damage area, moderate secondary impacts, moderate warning time
Hazard Risk Rank Score:	24

Drought & Water Shortages vulnerability for the region is described in the County's Multi-jurisdictional Hazard Mitigation Plan. During the recent California drought from 2012-2017, the District was able to provide sufficient water to its end-users. However, conservation efforts lead to a decrease in water usage which resulted in less revenue for the District. The Planning Team identified that, while water shortage doesn't impact District assets and typically does not prevent water service, the District is vulnerable to high water costs and revenue impacts of reduced water usage.

The Planning Team also discussed Water Shortage as an impact of climate change. Increased population and exploitation of fossil fuels during the past century has led to longer and more prevalent droughts in many parts of the U.S. The global warming phenomenon has led to increased rainfall instead of snowfall in many regions resulting in increased flooding. This, combined with earlier and rapid melting of snow, has led to fluctuation in water availability and resulted in increased floods in wet regions and drought in dry regions. As Southern California temperatures rise and water sources are depleted, the potential for droughts in California, including the District's service area, are expected to continue to increase.

District personnel would recognize decreased water supply and decreased precipitation, common impacts of climate change, as a drought scenario. As mitigation activities focused on water supply reliability are indifferent to the root cause of water shortage, the Planning

Team has chosen to blend the applicable impacts of climate change with its drought mitigation efforts. All mitigation actions for drought described in Section 4 also consider the impacts of climate change.

3.7 Terrorism Hazard Profile

Terrorism Risk Assessment Summary	
Risk Rank: Moderate	
Probability/ Frequency:	Rare event - occurs less than once every 50 years
Consequence/ Severity:	Moderate building damage, lifeline loss (less than 24 hours), severe injury or disability
Vulnerability:	Moderate damage area, moderate secondary impacts, moderate warning time
Hazard Risk Rank Score:	16

Terrorism vulnerability for the region is described in the County's Multi-jurisdictional Hazard Mitigation Plan. In 2004, the District completed a Security Vulnerability Assessment which determined the different avenues by which the District could be impacted by acts of Terrorism. For security purposes, a discussion of those vulnerabilities is not included in this annex. However, the Planning Team reviewed the safeguards that have been utilized to prevent a malevolent attack and discussed the areas of vulnerability that remain. For the purpose of this Annex, it should be noted that the Planning Team is conscious of the specific areas that are vulnerable to an act of terrorism.

3.8 Flood Hazard Profile

Flood Risk Assessment Summary	
Risk Rank: Moderately Low	
Probability/ Frequency:	Infrequent event - occurs between once every 8 years and once every 50 years (inclusive)
Consequence/ Severity:	Minor/slight damage to buildings and structures, no loss of lifelines, first aid injury and no disability
Vulnerability:	Localized damage area, minor secondary impacts, delayed hazard onset
Hazard Risk Rank Score:	12

Flood vulnerability for the region is described in the County's Multi-jurisdictional Hazard Mitigation Plan. As demonstrated in the maps developed by the Santa Barbara County Office of Emergency Management in the County's Plan, the District's service area is not prone to flooding. The area is built on a natural slope which allows rain waters to flow toward the coast and into the ocean. Only local flooding in a few specific areas is expected for the area but will likely not severely affect the District. The Planning Team identified the Morgan Well and a cistern tank as the assets recently impacted by flooding following the Thomas Fire and were identified as points of vulnerability.

3.9 Dam Failure Hazard Profile

Dam Failure Risk Assessment Summary	
Risk Rank: Moderately Low	
Probability/ Frequency:	Rare event - occurs less than once every 50 years
Consequence/ Severity:	Minor/slight damage to buildings and structures, no loss of lifelines, first aid injury and no disability
Vulnerability:	Moderate damage area, moderate secondary impacts, moderate warning time
Hazard Risk Rank Score:	8

Dam Failure vulnerability for the region is described in the County's Multi-jurisdictional Hazard Mitigation Plan. According to maps developed by the Santa Barbara County Office of Emergency Management, the District service area is not within any inundation zones for dam failure. However, some water supply comes from Jameson Lake. If the Juncal Dam, associated with the lake, were to fail, it would impact, not only the District water supply, but a District facility and employee nearby.

3.10 HazMat Release Hazard Profile

HazMat Release Risk Assessment Summary	
Risk Rank: Low	
Probability/ Frequency:	Rare event - occurs less than once every 50 years
Consequence/ Severity:	Minor/slight damage to buildings and structures, no loss of lifelines, first aid injury and no disability
Vulnerability:	Localized damage area
Hazard Risk Rank Score:	4

HazMat Release vulnerability for the region is described in the County's Multi-jurisdictional Hazard Mitigation Plan. The County Plan outlines how hazardous materials traverse the County via roadways and railways daily exposing communities to risk. The Planning Team discussed the District's vulnerability to roadway/railway hazards and determined it to be very low. The Planning Team argues that an accident would need to be so severe that it damaged underground water infrastructure in order to impact the District. This scenario was determined to be unlikely. Instead, the District's vulnerability focused on the District's small chlorination system. While hazard assessments have determined that it is unlikely for a chlorine release will impact offsite areas, staff still have a minimal risk of exposure at the location.

3.11 Climate Change

With the release of the California Adaptation Planning Guide (APG) in March 2015, the District aimed to include the effects of climate change into the Annex. As identified in the "Understanding Regional Characteristics" portion of the APG, the District is located in the Central Coast Region of California. As a result, the Planning Team considered the following climate change impacts as recommended by the APG:

- Increased Temperatures
- Reduced Precipitation
- Reduced Agricultural Productivity
- Sea Level Rise
- Biodiversity Threat
- Public Health Threats
- Reduced Tourism

The Planning Team engaged in a discussion to determine which impacts posed a viable threat to the District. While some impacts clearly applied, others required additional research. Studies were conducted to look at recorded trends for sea level rise, wildfire, and regional temperature increases. The result of the study was the following list of perceived, feasible impacts that might affect the District over the next 5 to 10 years:

- Increased Temperatures
- Reduced Precipitation

After reviewing the results of each of these impacts, the Planning Team decided to include hazards in the Plan update that represented how the impacts would be felt by the District. For example, increased temperatures and reduced precipitation would be recognized as a drought. Additionally, increased temperatures and reduced precipitation might result in a wildfire. Therefore, the Planning Team identified Drought and Wildfire as perceived hazards. Any information regarding the effects of these impacts on the District will be found under the hazard profiles listed above. Additionally, mitigation strategies that apply to these impacts will be classified under Drought and Wildfire in the mitigation actions identified in Section 4

3.12 Loss Estimates

The loss estimate began with a review of the District's asset inventory. The Asset Inventory Summary Tables are presented on the following tables.

Table 3.5: Asset Inventory Summary

Type	Name	TOTAL
Wells	Various Well sites	$1,260,058.00
Building	Administration Property	$1,920,650.00
Pump Station	Barker Pass Pump Station	$320,580.00
Water Facility	Bella Vista Treatment Facility	$4,179,995.00
Water Facility	Doulton Treatment Plant	$875,287.00
Dam	Juncal Dam Site	$771,139.00
Reservoir	Ortega Reservoir	$6,388,866.00
Pump Station	East Valley Pumping Station	$352,700.00
Pump Station	Ortega Ridge Pump Station	$458,651.00
Pump Station	East Mountain Pump Station	$314,460.00
Pump Station	Romero Reservoir Pump Station	$375,971.00
Pump Station	Buell Pump Station	$77,891.00
Water Facility	Picay Hydroelectic Plant	$142,584.00
Water Facility	Alder Creek Flume	$15,918.00
	Total	**$17,454,750**

Note: Several of the asset were damaged in the Thomas Fire. The figures provided above the insured value of the assets at the time of the Fire. Actual damage and restoration values would likely be much higher than the figure provided above.

The Planning Team reviewed each asset category and assigned a potential percentage of damage expected due to each identified hazard. In addition, if there were identified water service interruptions the loss of function values was also included. The tables of the following pages identify each asset category, name, total value, and the percent damage/damage value for each asset. The damages for each asset are totaled for each hazard to obtain the overall loss estimate for each hazard.

Table 3.6: Vulnerability Assessment Calculations

Montecito Water District Vulnerability Assessment Calculations			Wildfire		Earthquake		Energy Shortage & Resiliency		Earth Movement		Drought	
Type	Name	TOTAL	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate	% Damage	Loss Estimate
Wells	Various MWD Wells	$1,260,058.00	30%	$378,017	90%	$1,134,052	10%	$126,006	10%	$126,006	0%	$0
Building	MWD Administration Property	$1,920,650.00	100%	$1,920,650	90%	$1,728,585	5%	$96,033	2%	$38,413	0%	$0
Pump Station	Barker Pass Pump Station	$320,580.00	5%	$16,029	10%	$32,058	10%	$32,058	0%	$0	0%	$0
Water Facility	Bella Vista Treatment Facility	$4,179,995.00	80%	$3,343,996	40%	$1,671,998	0%	$0	10%	$418,000	0%	$0
Water Facility	Doulton Treatment Plant	$875,287.00	100%	$875,287	90%	$787,758	0%	$0	20%	$175,057	0%	$0
Dam	Juncal Dam Site	$771,139.00	10%	$77,113	100%	$771,139	0%	$0	0%	$0	0%	$0
Reservoir	Ortega Reservoir	$6,388,866.00	5%	$319,443	10%	$638,887	0%	$0	0%	$0	0%	$0
Pump Station	East Valley Pumping Station	$352,700.00	50%	$176,350	90%	$317,430	10%	$35,270	5%	$17,635	0%	$0
Pump Station	Ortega Ridge Pump Station	$458,651.00	10%	$45,865	90%	$412,786	10%	$45,865	0%	$0	0%	$0
Pump Station	East Mountain Pump Station	$314,460.00	50%	$157,230	90%	$283,014	10%	$31,446	0%	$0	0%	$0
Pump Station	Romero Reservoir Pump Station	$375,971.00	5%	$18,798	90%	$338,374	10%	$37,597	0%	$0	0%	$0
Pump Station	Buell Pump Station	$77,891.00	50%	$38,945	90%	$70,102	10%	$7,789	0%	$0	0%	$0
Water Facility	Picay Hydroelectic Plant	$142,584.00	100%	$142,584	90%	$128,326	0%	$0	0%	$0	0%	$0
Water Facility	Alder Creek Flume	$15,918.00	50%	$7,959	100%	$15,918	0%	$0	30%	$4,775	0%	$0
Water Service		$1,807,800.00	25%	$451,950	100	$1,807,800	85%	$1,536,630	40%	$723,120	$723,120	25%

Wildfire	$7,970,219	Earthquake	$10,138,226	Energy Shortage & Resiliency	$1,948,694	Earth Movement	$1,503,006	Drought	$451,950

Table 3.7: Vulnerability Assessment Calculations Continued

Montecito Water District Vulnerability Assessment Calculations			Terrorism		Flood		Dam Failure		HazMat Release	
Type	**Name**	**TOTAL**	**% Damage**	**Loss Estimate**	**% Damage**	**Loss Estimate**	**% Damage**	**Loss Estimate**	**% Damage**	**Loss Estimate**
Wells	Various MWD Wells	$1,260,058.00	2%	$25,201	10%	$126,006	0%	$0	5%	$18,901
Building	MWD Administration Property	$1,920,650.00	2%	$38,413	1%	$19,207	0%	$0	1%	$19,207
Pump Station	Barker Pass Pump Station	$320,580.00	2%	$6,412	1%	$3,206	0%	$0	0%	$0
Water Facility	Bella Vista Treatment Facility	$4,179,995.00	2%	$83,600	1%	$41,800	0%	$0	0%	$0
Water Facility	Doulton Treatment Plant	$875,287.00	2%	$17,506	1%	$8,753	0%	$0	0%	$0
Dam	Juncal Dam Site	$771,139.00	2%	$15,423	100%	$771,139	100%	$771,139	0%	$0
Reservoir	Ortega Reservoir	$6,388,866.00	2%	$127,777	1%	$63,889	0%	$0	0%	$0
Pump Station	East Valley Pumping Station	$352,700.00	2%	$7,054	1%	$3,527	0%	$0	0%	$0
Pump Station	Ortega Ridge Pump Station	$458,651.00	2%	$9,173	1%	$4,587	0%	$0	20%	$9,173
Pump Station	East Mountain Pump Station	$314,460.00	2%	$6,289	1%	$3,145	0%	$0	0%	$0
Pump Station	Romero Reservoir Pump Station	$375,971.00	2%	$7,519	1%	$3,760	0%	$0	0%	$0
Pump Station	Buell Pump Station	$77,891.00	2%	$1,558	1%	$779	0%	$0	0%	$0
Water Facility	Picay Hydroelectic Plant	$142,584.00	2%	$2,852	1%	$1,426	0%	$0	0%	$0
Water Facility	Alder Creek Flume	$15,918.00	2%	$318	1%	$159	0%	$0	0%	$0
Water Service		$1,807,800.00	2%	$36,156	15%	$271,170	0%	$0	40%	$180,780
			Terrorism	$385,251	Flood	$1,322,550	Dam Failure	$1,042,309	HazMat Release	$228,060

Table 3.8 summarizes the loss estimates for each hazard

Table 3.8: Loss Estimate Summary

Hazard	Estimated Losses
Earthquake	$10,138,000
Wildfire	$7,970,000
Energy Shortage & Resiliency	$1,949,000
Earth Movement	$1,503,000
Flood	$1,323,000
Dam Failure	$1,042,000
Drought	$452,000
Terrorism	$385,000
HazMat Release	$228,000

Note: Values are rounded to the nearest thousand

4.0 MITIGATION STRATEGIES

§201.6(c)(3)(i): [The hazard mitigation strategy **shall** include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

As an extension of the County's Multi-jurisdictional Hazard Mitigation Plan, the Planning Team felt it was important to continue with the goals and objectives laid out in the County's plan. The goals listed below guided the Planning Team in the development of mitigation activities that align with the objectives being upheld throughout the region.

Table 4.1: Hazard Mitigation Planning Goals

Goal 1	Promote disaster resiliency for future development to help them become less vulnerable to hazards
Goal 2	Promote disaster resiliency for existing assets (critical facilities/infrastructure and public facilities) and people to help them become less vulnerable to hazards
Goal 3	Enhance hazard mitigation coordination and communication

Note: Goals are taken from the Santa Barbara County Multi-Jurisdictional Hazard Mitigation Plan

4.1 Identification of Mitigation Recommendations

§201.6(c)(3)(ii): [The mitigation strategy **shall** include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

§201.6(c)(3)(iv): For multi-jurisdictional plans, there **must** be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Mitigation actions are administrative and/or engineering project recommendations to reduce the District's vulnerability to the identified hazards. During the second Planning Team meeting, a team-based approach was used to brainstorm mitigation projects based on the identified hazards and associated loss. In addition, the Federal Emergency Management Agency's (FEMA) Local Mitigation Planning Handbook and the California Adaptation Planning Guide were used to identify actions to mitigate the effects of climate change.

Table 4.2 provides an overview of the mitigation actions, and other relevant information, in no specific order. Following the identification of the mitigation action, a Cost-Benefit Review was conducted in order to determine a prioritization of the items.

Table 4.2: Mitigation Activity Worksheet

Mitigation Activity	Hazards Mitigated	Corresponding Plan Goal	Responsible Agencies/Departments	Resources	Estimated Project Cost	Timeframe	Protects New Buildings	Protects Existing Buildings
2018HMP.01 - Cistern Tank Retaining Wall - Construct a 3-5-foot-high retaining wall within the existing fenced area approximately 80 feet long surrounding the existing cistern	Flood/ Earth Movement	Goal 2	Engineering	Grant Funding	$25,000	Short	N	Y
2018HMP.02 - Jameson Lake Sedimentation Prevention – Install erosion control within the Jameson Lake watershed to prevent sedimentation in the lake and water quality issues.	Fire/ Earth Movement	Goal 2	Engineering	Grant Funding	$200,000	Short	N	N
2018HMP.03 - Bella Vista Automatic Transfer Switch – Install an automatic transfer switch at BVPT that would automatically transfer power from Edison to the existing backup generator in the event of power loss.	Fire/ Energy Shortage and Resiliency	Goal 2	Engineering	Grant Funding	$100,000	Short	N	Y
2018HMP.04 - Office Automatic transfer Switch - Install an automatic transfer switch at MWD Office that would automatically transfer power from Edison to the existing backup generator in the event of power loss.	Fire/ Energy Shortage and Resiliency	Goal 2	Engineering	Grant Funding	$120,000	Short	N	Y
2018HMP.05 - Barker Pass Backup Generator – Install a backup generator at the Barker Pass Pump Station	Fire/ Energy Shortage and Resiliency	Goal 2	Engineering	Grant Funding	$180,000	Short	N	Y
2018HMP.06 - Implement structural integrity project at critical facilities	Earthquakes	Goal 2	Engineering	Capital Improvement/ Grant Funding	$2,000,000 per project	Medium	N	Y

Mitigation Activity	Hazards Mitigated	Corresponding Plan Goal	Responsible Agencies/Departments	Resources	Estimated Project Cost	Timeframe	Protects New Buildings	Protects Existing Buildings
2018HMP.07 - Ensure new structures are built with considerations for seismic activity and earth movement	Earthquake/ Earth Movement	Goal 1	Engineering	Insurance Coverage/ Capital Improvement	$10,000,000 per project $750,000 in project planning/consultant fees	Short	Y	N
2018HMP.08 - Develop a policy for purchasing and distributing emergency water supply when water service is interrupted	Earthquake/ Fire/ Drought/ Terrorism	Goal 3	General Manager	Staff Time	Staff Time	Short	Y	N
2018HMP.09 - Update Emergency Plan and train critical in ICS Emergency Management	All-Hazard	Goal 3	General Manager	General Fund	$20,000 in planning and training costs	Short	N	N
2018HMP.10 - Enhance protective structures surrounding critical facilities.	Earth Movement	Goal 2	Engineering	Capital Improvements/ Grant Funding	$200,000 per project	Short	N	N
2018HMP.11 - Update Water Shortage Contingency Plan implementing lessons learned from the 2013 CA drought.	Drought	Goal 3	Finance/ Engineering	General Fund	$50,000 in planning costs	Short	N	N
2018HMP.12 - Develop evacuation Plan and acquire backup communication a for the District's Dam caretaker staff to provide safe egress in a Dam failure scenario	Dam Failure	Goal 3	Engineering	General Fund/ Grant Funding	$150,000	Medium	N	Y
2018HMP.13 - Upgrade technology (including SCADA) and security systems to withstand the impacts of a cyber-attack. Mention sensitive customer data and better protect sensitive client information.	Terrorism	Goal 3	IT Department	General/ Grant Funding	$75,000	Medium	Y	Y

Mitigation Activity	Hazards Mitigated	Corresponding Plan Goal	Responsible Agencies/Departments	Resources	Estimated Project Cost	Timeframe	Protects New Buildings	Protects Existing Buildings
2018HMP.14 - Install pressure management system to monitor the water system for malevolent disturbance.	Terrorism	Goal 2	Engineering	Capital Improvements/ Grant Funding	$1,000,000	Long	N	Y
2018HMP.15 - Conduct security& Awareness training to prepare staff to appropriately react to cyber and in-person attacks.	Terrorism	Goal 3	Administration	General Fund	$10,000	Medium	N	N
2018HMP.16 - Install Back-up power supply for critical facilities	Energy Shortage	Goal 2	Engineering	Capital Improvements/ Grant Funding	$100,000 per facility	Medium	N	Y
2018HMP.17 - Update all critical facilities with surge protection equipment	Energy Shortage	Goal 2	Engineering	Capital Improvement Project	$10,000 per unit	Medium	N	N

4.2 Prioritization of Mitigation Recommendations

§201.6(c)(3)(iii): [The mitigation strategy section **shall** include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization **shall** include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

A simplified Benefit-Cost Review was applied in order to prioritize the mitigation recommendations for implementation. The priority for implementing mitigation recommendations depends upon the overall cost effectiveness of the recommendation, when considering monetary and non-monetary costs and benefits associated with each action. Additionally, the following questions were considered when developing the Benefit-Cost Review:

- How many people will benefit from the action?
- How large an area is impacted?
- How critical are the facilities that benefit from the action?
- Environmentally, does it make sense to do this project for the overall community?

Table 4.3 provides a detailed benefit-cost review for each mitigation recommendation, as well as a relative priority rank (High, Medium, and Low) based upon the judgment of the Planning Team. The general category guidelines are listed below:

- High – Benefits are perceived to exceed costs without further study or evaluation
- Medium – Benefits are perceived to exceed costs, but may require further study or evaluation prior to implementation
- Low – Benefits and costs evaluation requires additional evaluation prior to implementation

It should be noted that values for costs are estimates only

Table 4.3: Benefit Cost Review Summary

Mitigation Activity	Benefits (Pros)	Costs (Cons)	Priority
2018HMP.01 - Cistern Tank Retaining Wall -Construct a 3-5-foot-high retaining wall within the existing fenced area approximately 80 feet long surrounding the existing cistern	• Avoided Property Damages • Avoided Emergency Management Costs • Avoided Service Interruptions	• $25,000 in construction costs • Staff Time	High
2018HMP.02 - Jameson Lake Sedimentation Prevention – Install erosion control within the Jameson Lake watershed to prevent sedimentation in the lake and water quality issues.	• Avoided Property Damages • Avoided Emergency Management Costs • Avoided Service Interruptions	• $200,000 in construction costs • Staff Time	Medium
2018HMP.03 - Morgan Well Retaining Wall – Construct a 3-5-foot-high retaining wall around the wellhead approximately 30 feet long.	• Avoided Property Damages • Avoided Emergency Management Costs • Avoided Service Interruptions	• $40,000 in construction costs • Staff Time	High
2018HMP.04 - Bella Vista Automatic Transfer Switch – Install an automatic transfer switch at BVPT that would automatically transfer power from Edison to the existing backup generator in the event of power loss.	• Avoided loss of power • Avoided Emergency Management Costs • Avoided Loss of Services	• $100,000 in construction Costs	High

2018HMP.05 - Office Automatic transfer Switch - Install an automatic transfer switch at MWD Office that would automatically transfer power from Edison to the existing backup generator in the event of power loss.	• Avoided loss of power • Avoided Emergency Management Costs • Avoided Loss of Services	• $120,000 in construction costs • Staff Time	High
2018HMP.06 - Barker Pass Backup Generator – Install a backup generator at the Barker Pass Pump Station	• Avoided loss of power • Avoided Emergency Management Costs • Avoided Loss of Services	• $180,000 in construction Costs	Medium
2018HMP.07 - Implement structural integrity project at critical facilities	• Avoided Property Damage • Avoided Injury/Fatality • Avoided Emergency Management Costs	• $2,000,000 per project	Low
2018HMP.08 - Ensure new structures are built with considerations for seismic activity and earth movement	• Avoided Property Damage • Avoided Injury/Fatality • Avoided Emergency Management Costs	• $10,000,000 per project $750,000 in project planning/consultant fees	Low
2018HMP.09 - Develop a policy for purchasing and distributing emergency water supply when water service is interrupted	• Avoided Injury/Fatality • Avoided Emergency Management Costs	• Staff Time	High

2018HMP.10 - Update Emergency Plan and train critical staff in ICS Emergency Management	• Avoided Emergency Management Costs	• $20,000 in planning and training costs	High
2018HMP.11 - Enhance protective structures surrounding critical facilities.	• Avoided Property Damage • Avoided Injury/Fatality • Avoided Emergency Management Costs	• $200,000 per project	Low
2018HMP.12 - Update Water Shortage Contingency Plan implementing lessons learned from the 2013 CA drought.	• Avoided Service Interruptions • Improved Water Supply reliability	• $50,000 in planning costs	Medium
2018HMP.13 - Develop evacuation Plan and acquire backup communication a for the District's Dam caretaker staff to provide safe egress in a Dam failure scenario	• Improved Emergency Management • Avoided Injury/Fatality	• $150,000 in planning costs	Medium
2018HMP.14 - Upgrade technology (including SCADA) and security systems to withstand the impacts of a cyber-attack and better protect sensitive client information.	• Improved Resilience to malevolent acts • Avoided Emergency Management Costs • Improved information security for customers	• $75,000 in equipment costs	Medium

2018HMP.15 – Install pressure management system to monitor the water system for malevolent disturbance.	• Avoided Property Damage • Avoided Service Interruptions	• $1,000,000 in construction costs	Low
2018HMP.16 – Conduct security& Awareness training to prepare staff to appropriately react to cyber and in-person attacks.	• Avoided injury/fatality • Avoided Emergency Management Costs	• $10,000 in training costs	High
2018HMP.17 – Install Back-up power supply for critical facilities	• Avoided loss of Power • Avoided service interruptions	• $100,000 per facility	Medium
2018HMP.18 - Update all critical facilities with serge protection equipment	• Avoided loss of Power • Avoided service interruptions • Avoided property damage	• $10,000 per unit	Medium

5.0 PLAN MAINTENANCE

The Mitigation Strategies section of this annex identifies mitigation actions that have been prioritized based on the loss estimates and the probability of each hazard, which will typically be implemented according to the priority rank. To thoroughly track hazard mitigation status, the District must continuously monitor and document the progress of the implementation of the mitigation actions. Though mitigation actions may be delegated to different departments within the District, the District Engineer will have the responsibility of monitoring overall progress.

5.1 Planning Mechanisms

§201.6(c)(4)(ii): [The plan **shall** include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.

The District maintains the following processes to incorporate mitigation strategies into planning mechanisms. The following resources were identified by the Planning Team as being most inherent to District operations and most likely to be avenues for the first steps in hazard mitigation implementation. Also, lists of identified resources are described in Tables 5.1 through 5.5 later in this section.

District Board of Directors

The Board of Directors is responsible for approving projects and programs on a District-wide level. By providing mitigation planning concepts to the Board of Directors, mitigation actions and concepts will be incorporated into relevant planning efforts.

Office of the General Manager

The General Manager provides leadership in the management of the District and execution of District policies. The General Manager serves as the District's chief executive officer and oversees the day-to-day operations of the District's departments. The General Manger will can expand integration of hazard mitigation with the planning, direction, and management of District operations.

Engineering Department

The Engineering Departments oversee the Capital Improvement Program, Water Resources Management, Development Services, and Property Management, and Geographic Information System. Through these programs, the District can incorporate key mitigation actions.

Operations Department

This department operates and maintains the District's own distribution systems and facilities. The Operations Department can expand implementation of hazard mitigation projects on an ongoing basis into the District’s infrastructure.

Resource Tables

This section serves as a high-level capability assessment of the District’s resources through which hazard mitigation objectives may be achieved. The following subsections attempt to document the Regulatory, Administrative/Technical, Fiscal, Grant funding, and Outreach/Partnerships resources available to the District.

Table 5.1 Regulatory Tools Table

Regulatory Tool	Comments
Urban Water Management Plan	The Plan outlines forecasts for drought probability and magnitude while expanding upon awareness of drought hazard vulnerability.
Capital Improvement Plan	The plan outlines proposed efforts for capital projects and programs needed to carry out the goals and objectives of the District; including those regarding hazard mitigation.
Juncal Dam Inundation Mapping and Emergency Response Plan	The inundation flood maps identify flooding ones downstream of the District owned Juncal Dam and the Emergency Response Plan identifies mitigation efforts in the event of a dam breach.
Emergency Response Plan – District-Wide	The plan outlines the procedures for responding to fire, flood, earthquakes, and other disasters that could occur in the District.

Table 5.2: Administrative/Technical Tools Table

Administrative/Technical Tool	Personnel/Resources
Board of Directors	The Board of Directors can review and approve mitigation proposal for implementations
Administration	Administration is a multi-faceted resource. The District may utilize experts in its many departments for mitigation activity implementation

Table 5.3: Fiscal Tools Table

Fiscal Tool	Available
General Fund	Yes, with Board approval
Capital Improvement Plan	Yes, with Board approval

Table 5.4 Grant Funding Tools Table

Grant Funding Tool	Agency	Purpose	Contact
Pre-Disaster Mitigation Program (PDM)	U.S. Department of Homeland Security, Federal Emergency Management Agency	To provide funding for States, and communities for cost-effective hazard mitigation activities which complement a comprehensive hazard mitigation program and reduce injuries, loss of life, and damage and deconstruction of property.	FEMA 500 C. Street, SW Washington, DC 20472 Phone: (202) 646-4621 www.fema.gov
Hazard Mitigation Grant Program	U.S. Department of Homeland Security, Federal Emergency Management Agency	To prevent future losses of lives property due to disasters; to implement State of local hazard mitigation plans; to enable mitigation measures to be implemented during immediate recovery from a disaster;	FEMA 500 C Street S.W. Washington, DC 20472 Phone (202) 646-4621

		and to provide funding for previously identified mitigation measures to benefit the disaster area.	www.fema.gov
Flood Mitigation Assistance (FMA)	U.S. Department of Homeland Security, Federal Emergency Management Agency	To help States and communities plan and carry out activities designed to reduce the risk of flood damage to structures insurable under the NFIP.	FEMA 500 C Street S.W. Washington, DC 20472 Phone (202) 646-4621 www.fema.gov
Emergency Management Performance Grants (EMPG)	U. S. Department of Homeland Security; Federal Emergency Management Agency	To encourage the development of comprehensive emergency management at the State and local level and to improve emergency management planning, preparedness, mitigation, response, and recovery capabilities.	FEMA 500 C Street S.W. Washington, DC 20472 Phone (202) 646-4621 www.fema.gov
Community Development Grant Program (CDBG)	U.S. Department of Housing and Urban Development	To develop viable urban communities by providing decent housing and a suitable living	HUD 451 7th Street, S. W. Washington, DC 20410-7000

		environment. Principally for low-to-moderate income individuals.	Phone: (202) 708-3587 www.hud.gov
Public Assistance Program (PA)	U.S. Department of Homeland Security, Federal Emergency Management Agency	To provide supplemental assistance to States, local governments, and certain private nonprofit organizations to alleviate suffering and hardship resulting from major disasters or emergencies declared by the President. Under Section 406, Public Assistance funds may be used to mitigate the impact of future disasters.	FEMA 500 C Street S.W. Washington, DC 20472 Phone (202) 646-4621 www.fema.gov
Emergency Watershed Protection	U.S. Department of Agriculture, Natural Resource Conservation Service	To provide emergency technical and financial assistance to install or repair structures that reduce runoff and prevent soil erosion to safeguard life and property.	NRCS PO BOX 2890 Washington, DC 20013 Phone: (202) 720-3527 www.nrcs.usda.gov
Disaster Mitigation and Technical Assistance Grants	U.S. Department of Commerce, Economic	To help States and localities to develop and /or implement a variety of disaster mitigation strategies.	EDA Herbert C. Hoover Building

	Development Administration		Washington, DC 20230 Phone: (800) 345-1222 www.eda.gov
Watershed Surveys and Planning	U.S. Department of Agriculture, Natural Resource Conservation Service	To provide planning assistance to Federal, State, and local agencies for the development of coordination water and related land resources programs in watersheds and river basins	NRCS PO Box 2890 Washington, DC 20013 Phone: (202) 720-3527 www.nrcs.usda.gov
National Earthquake Hazards Reduction Program (NEHRP)	U.S. Department of Homeland Security, Federal Emergency Management Agency	To mitigate earthquake losses that can occur in many parts of the nation providing earth science data and assessments essential for warning of imminent damaging earthquakes, land-use planning, engineering design, and emergency preparedness decisions.	FEMA 500 C Street S.W. Washington, DC 20472 Phone (202) 646-4621 www.fema.gov
Engineering for Natural Hazards	National Science Foundation	Supports fundamental research that advances knowledge for understanding and mitigating the	National Science Foundation Phone: (703) 292-7024 https://www.nsf.gov

		impact of natural hazards on constructed civil infrastructure	
Pre-Disaster Mitigation Program (PDM)	U.S. Department of Homeland Security, Federal Emergency Management Agency	To provide funding for States, and communities for cost-effective hazard mitigation activities which complement a comprehensive hazard mitigation program and reduce injuries, loss of life, and damage and deconstruction of property.	FEMA 500 C. Street, SW Washington, DC 20472 Phone: (202) 646-4621 www.fema.gov

Table 5.5 Outreach and Partnerships Tools Table

Outreach/Partnership Tools	Comments
District Website	The District website is an open forum for providing hazard information and for accepting ongoing comments from the public. The website will likely be the main avenue for maintaining an open dialogue with the public for hazard mitigation throughout the planning period.
Public Outreach	The District holds several outreach opportunities throughout the year. Public outreach will be able to be expanded to include a broader spectrum of hazard-specific information to improve hazard awareness.
Mutual Aid Agreements	As part of expanding its resilience to the impacts of hazard events, the District intends to review its current mutual aid agreements, identify gaps, and secure new agreements to expand it available mutual resources, if required.

5.2 Periodic assessment Requirements

§201.6(c)(4)(i): [The plan maintenance process **shall** include a] section describing the method and schedule of monitoring, **evaluating**, and updating the mitigation plan within a five-year cycle.

Planning is an ongoing process and, as such, this annex should be treated as a living document that must grow and adapt in order to keep pace with changes within the District. An annual assessment will be completed to document the changes in site hazards (e.g., updated FIRM maps, contemporary seismic studies, etc.) or the installation and purchase of new equipment (e.g., back-up generators, emergency response equipment, etc.), to ensure they do not have any major effects on the District's hazard vulnerabilities that would impact the conclusions or actions associated with the Plan. Prior to the fifth year of the revision cycle, these annual observations will be reviewed to determine what changes should be implemented in the required Plan update. The results of the annual evaluations will be folded back into each phase of the planning process and should yield decisions on how to update each section of the Plan.

The District Engineer has the responsibility of implementing these annual and five-year requirements. During the annual review, if any updates are deemed minor, then the District Engineer will perform the updates. However, if more major updates are required, then the Planning Team will be reconvened to discuss the effects on the Plan. For the fifth-year revision, the entire Planning Team will reconvene in order to use their expertise to update the Plan in its entirety. Each of the annual assessments will be utilized as an opportunity to evaluate the progress of hazard mitigation action implementation. The District Engineer will be responsible for reviewing the mitigation actions annually, determining which have the potential to be accomplished over the next year, and encouraging implementation with the proper departments. If the Plan is not meeting its goals, the District Engineer will document the shortcomings, suggest modifications, and implement changes to the plan as appropriate.

In addition to these periodic requirements, any significant modification to the District's facilities should be considered with respect to a possible impact on the Plan. All Planning Team members are responsible for providing updates for the District Engineer as necessary. As noted in the following section, the completed Plan will be available on the District's website to allow the public to continue to be involved during these periodic reviews.

5.3 Update Requirements

§201.6(c)(4)(i): [The plan maintenance process **shall** include a] section describing the method and schedule of monitoring, evaluating, and **updating** the mitigation plan within a five-year cycle.

§201.6(c)(4)(iii): [The plan maintenance process **shall** include a] discussion on how the community will continue public participation in the plan maintenance process.

The Emergency Management and Assistance regulations (44 CFR Part 201) state that it is the responsibility of local agencies (i.e., the District) to "at a minimum, review and, update the local mitigation plan every five years from date of plan approval to continue program eligibility". The evaluation procedures listed below will provide insight into the major changes that need to be included in the five-year update and resubmission to FEMA:

- Annual HMP review with respect to changes in hazard vulnerability (e.g., additional hazards identified, natural hazard events, etc.)
- Annual HMP review with respect to development of new facilities
- Five-year comprehensive update to address the findings of the annual reviews
- Re-submittal of the updated HMP to California Governor's Office of Emergency Services (Cal OES)/FEMA

Additionally, the risk assessment portion of the plan will be reviewed to determine if the information should be updated or modified. Each department responsible for the various implementation actions will report on:

- Status of their projects
- Implementation processes
- Any difficulties encountered
- How coordination efforts are proceeding
- Which strategies should be revised