2024

Orange County Water and Wastewater
Multi-Jurisdictional Hazard Mitigation Plan

Annex B: Orange County Water District

WATER EMERGENCY RESPONSE ORGANIZATION OF ORANGE COUNTY
WEROC

Contents

Exhibits

ORANGE COUNTY WATER DISTRICT ANNEX

Orange County Water District (OCWD) is a participant (Member Agency [MA]) in the Orange County Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). As a participant MA, OCWD representatives were part of the MJHMP planning process and served on the planning team responsible for the plan update; refer to **Section 2** of the MJHMP. The base plan, including the MJHMP procedural requirements and planning process apply to OCWD.

This annex details the hazard mitigation planning elements specific to OCWD and describes how OCWD's risks vary from the planning area. This annex is not intended to be a standalone document but supplements the information contained in the base plan. All sections of the base MJHMP, including the planning process and other procedural requirements, apply to and were met by OCWD. The base plan treats the entire county as the planning area and identifies which MAs are subject to a profiled hazard. The purpose of this annex is to provide additional information specific to OCWD with a focus on the risk assessment and mitigation strategies.

B.1 HAZARD MITIGATION PLAN POINT OF CONTACT AND DEVELOPMENT TEAM

The representative listed in **Exhibit B-1** lead the OCWD planning team, attended meetings on behalf of OCWD, and coordinated the hazard mitigation planning efforts with OCWD staff and the consultant team supporting the effort.

Exhibit B-1. Planning Team Lead

Primary Point of Contact
Name: Paula Bouyounes
Title: Risk & Safety Manager
Telephone: 714-378-3310
Email: pbouyounes@ocwd.com

OCWD followed the planning process detailed in **Section 2** and formed an internal team to support and provide information for the plan update. The following staff served as OCWD's internal hazard mitigation planning development team.

Exhibit B-2. Internal Hazard Mitigation Planning Development Team

Name	Title
Benjamin Smith	Director of Recharge and Wetlands Operations
Patel Mehul	Executive Director of Operations/Water Production
Chris Olsen	Executive Director of Engineering
Lenyss Bahena	Safety Assistant

Outreach to the public within OCWD's service area was performed to ensure residents could access information on this planning effort. To reach the largest number of people possible, OCWD published a webpage with information on the MJHMP process. The MJHMP survey was posted to their social media platforms on Facebook and X (formerly known as Twitter) to increase engagement.

Public Affairs included survey information and link in the District's August newsletter. Also, there was a direct link to the survey on the district's website homepage for about a month.

Note to Staff: Please add any additional outreach efforts you have undertaken.

B.2 JURISDICTION PROFILE

Service Population: 2,400,000

OCWD manages the large groundwater basin that provides reliable, high-quality groundwater to 19 cities and water utilities and their 2.4 million customers. OCWD was formed in 1933 by a special act of the California Legislature [Water Code App §40-1 et seq.], which authorized OCWD to represent water users and landowners in litigation (with upstream users) and empowered OCWD to protect the water supply and protect the groundwater basin. The mission of OCWD is to provide local water retailers with a reliable, adequate, high-quality water supply at the lowest reasonable cost in an environmentally responsible manner. With years of proper planning and investment, OCWD has more than doubled the output of the groundwater basin. Today, OCWD is managed by a ten-member Board of Directors, with three appointed from the cities of Anaheim, Fullerton and Santa Ana, and the remainder of the Board publicly elected from geographic divisions within the OCWD service area.

The groundwater basin, which underlies north and central Orange County, provides between 65 and 85 percent of the water needed in that area. Imported water meets the balance of the water demand. Groundwater is pumped by water utilities before being delivered to customers. Groundwater is a great value at approximately one-half the cost of imported water. OCWD purchases through MWDOC some imported water supplies for recharge operations and for operating and maintaining the seawater intrusion barrier.

OCWD is known internationally for its “tradition of innovation.” OCWD built the first advanced wastewater purification plant to provide water to prevent seawater intrusion into Orange County’s groundwater basin. Today, OCWD and OC San are partners in the world’s largest advanced wastewater purification project, called the Groundwater Replenishment System (GWRS) that is currently being expanded to provide 134,000 acre-feet per year (AF/yr) of water for seawater barrier and groundwater replenishment purposes.

One of OCWD’s core activities is refilling or replenishing the Basin to balance the removal of groundwater by pumping. Sources of recharged water include Santa Ana River baseflow and storm flow, Santiago Creek flows, imported supplies purchased from Metropolitan, supplemental supplies from the upper Santa Ana River Watershed, and purified wastewater from the GWRS plant. OCWD works closely with the U.S. Army Corps of Engineers, which operates Prado Dam on the Santa Ana River in Riverside County, to conserve storm water on lands behind the dam for use in OCWD’s recharge efforts. The Basin is not operated on an annual safe-yield basis, which means the water withdrawn may exceed replenishment in any given year; however, over the long term, the Basin must be maintained in an approximate balance to ensure long-term viability.

B.3 HAZARDS

This section is intended to profile the hazards and assess the vulnerabilities that OCWD faces, distinct from that of the county-wide planning area. The hazard profiles in the base plan discuss overall impacts to the planning area and describe the hazard problem description, hazard extent, magnitude/severity, previous occurrences of hazard events, and the likelihood of future occurrences. For more information on risk assessment methodologies, see **Section 3**.

OCWD's service area is subject to most of the other hazards identified for the planning area. Many of these hazards are dispersed and may affect the entire region, including power outages, drought, seismic shaking, and windstorms. Based on the risk assessment, the OCWD development team discussed which hazards should or should not be profiled in the base plan. This discussion resulted in the identification of the following hazards that affect OCWD and summarized their probability of future occurrence, level of impact and significance as outlined in **Exhibit B-3.** Detailed hazard profiles for the planning area are provided in **Section 3** of the base plan.

Exhibit B-3. OCWD Hazard Identification

Hazard Type	Occurrence Probability*	Affected Area*	Primary Impact*	Secondary Impact*	Hazard Planning Consideration*	Significance to OCWD
Human-Caused Hazards: Power Outage	Highly Likely	Medium	Catastrophic	High	High	Medium
Wildfire	Highly Likely	Medium	Critical	High	High	Medium
Human-Caused Hazards: Terrorism (Cyber Threat)	Highly Likely	Medium	Critical	Limited	High	High
Seismic Hazards: Seismic Shaking	Likely	Medium	Catastrophic	High	High	High
Seismic Hazards: Seismic Liquefaction	Likely	Medium	Catastrophic	High	High	High
Severe Weather: Windstorm	Highly Likely	Large	Limited	Negligible	Medium	Medium
Severe Weather: Extreme Heat	Likely	Medium	Critical	Moderate	Medium	Medium
Severe Weather: Drought	Highly Likely	Large	Negligible	Negligible	Medium	Medium
Dam/Reservoir Failure	Somewhat Likely	Medium	Catastrophic	High	Medium	High
Flood	Likely	Medium	Limited	Negligible	Medium	High
Coastal Hazards: Coastal Storms	Likely	Small	Limited	Limited	Medium	Low
Coastal Hazards: Coastal Erosion	Likely	Isolated	Limited	Limited	Medium	Low
Seismic Hazards: Fault Rupture	Somewhat Likely	Isolated	Catastrophic	Limited	Medium	High
Geological Hazards: Landslide and Mudflow	Somewhat Likely	Small	Limited	Moderate	Medium	Low
Coastal Hazards: Sea Level Rise	Likely	Isolated	Limited	Negligible	Medium	High
Human-Caused Hazards: Contamination/ Saltwater Intrusion	Unlikely	Small	Critical	High	Low	High
Human-Caused Hazards: Terrorism (MCI)	Unlikely	Isolated	Critical	Moderate	Low	Medium
Human-Caused Hazards: Hazardous Materials	Unlikely	Isolated	Limited	Moderate	Low	Medium
Urban Fire	Unlikely	Isolated	Limited	Negligible	Low	Medium
Geological Hazards: Land Subsidence	Unlikely	Isolated	Negligible	Limited	Low	High
Geological Hazards: Expansive Soils	Unlikely	Isolated	Negligible	Limited	Low	High
Coastal Hazards: Tsunami	Unlikely	Isolated	Negligible	Negligible	Low	Low

**The values within these columns are representative of the entire planning area of Orange County and are not narrowed down to OCWD's service area.*

Geographic Affected Area	Significance
▪ Isolated: Less than 10% of planning area ▪ Small: 10-30% of planning area ▪ Medium: 30-60% of planning area ▪ Large: 60-100% of planning area	▪ Low: Minimal potential impact ▪ Medium: Moderate potential impact ▪ High: Widespread potential impact
Probability of Future Occurrences	**Magnitude/Severity**
▪ Highly Likely: Near 100% chance of occurrence in next year or happens every year. ▪ Likely: Between 10 and 100% chance of occurrence in next year or has a recurrence interval of 10 years or less. ▪ Occasional: Between 1 and 10% chance of occurrence in the next year or has a recurrence interval of 11 to 100 years. ▪ Unlikely: Less than 1% chance of occurrence in next 100 years or has a recurrence interval of greater than every 100 years	▪ Catastrophic: More than 50% of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths. ▪ Critical: 25-50% of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability. ▪ Limited: 10-25% of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable; does not result in permanent disability. ▪ Negligible: Less than 10% of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid

The FEMA Local Mitigation Planning Handbook requires each agency to identify the magnitude/severity of each hazard to their infrastructure. The identification of hazards provided in **Exhibit B-3** is highly dependent on the location of facilities within each agency's jurisdiction and takes into consideration the history of the hazard and associated damage (if any), information provided by agencies specializing in a specific hazard (e.g., FEMA, California Geological Survey), and relies upon each agency's expertise and knowledge. The table was created with input from the Water Emergency Response Organization of Orange County (WEROC), consultant staff, and OCWD.

B.4 HAZARD MAPS

The following maps show the location of hazard zones within the jurisdiction relative to potable water systems, as applicable.

Exhibit B-4. Fire Hazard and OCWD District Potable Water Infrastructure

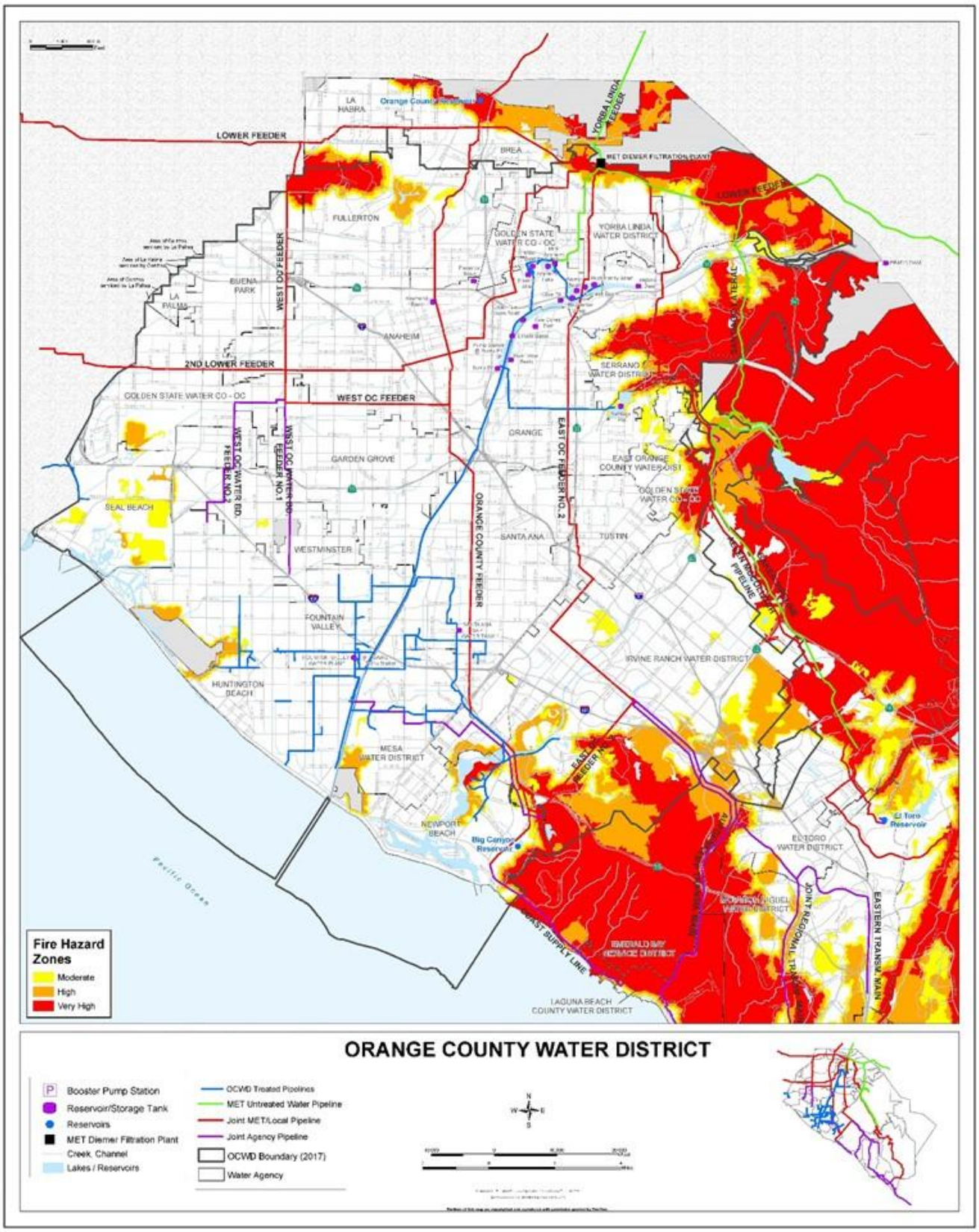


Exhibit B-5. Flood Hazard and OCWD Potable Water Infrastructure

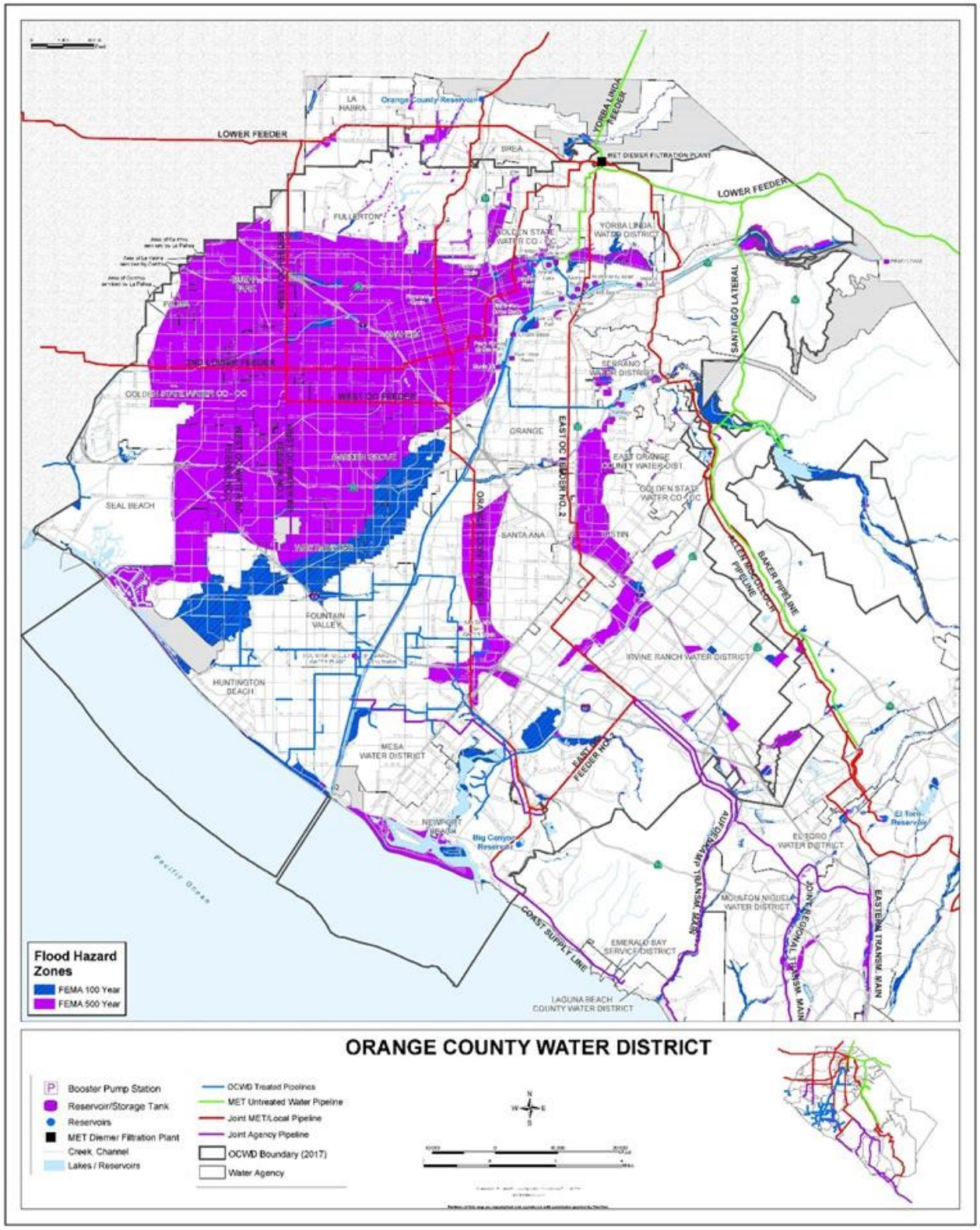


Exhibit B-6. Fault Rupture Hazard and OCWD Potable Water Infrastructure

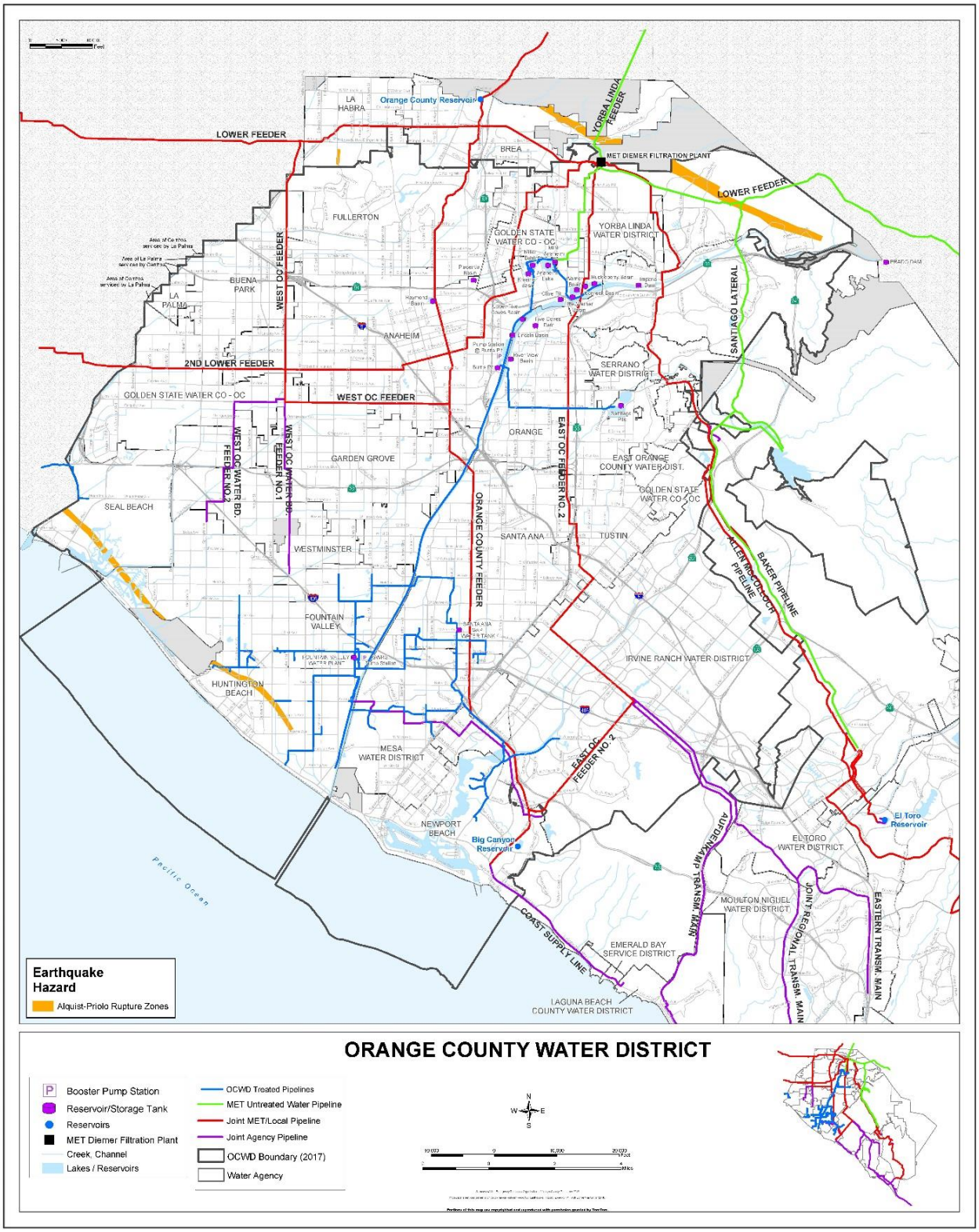


Exhibit B-7. Seismic Shaking Hazard and OCWD Potable Water Infrastructure

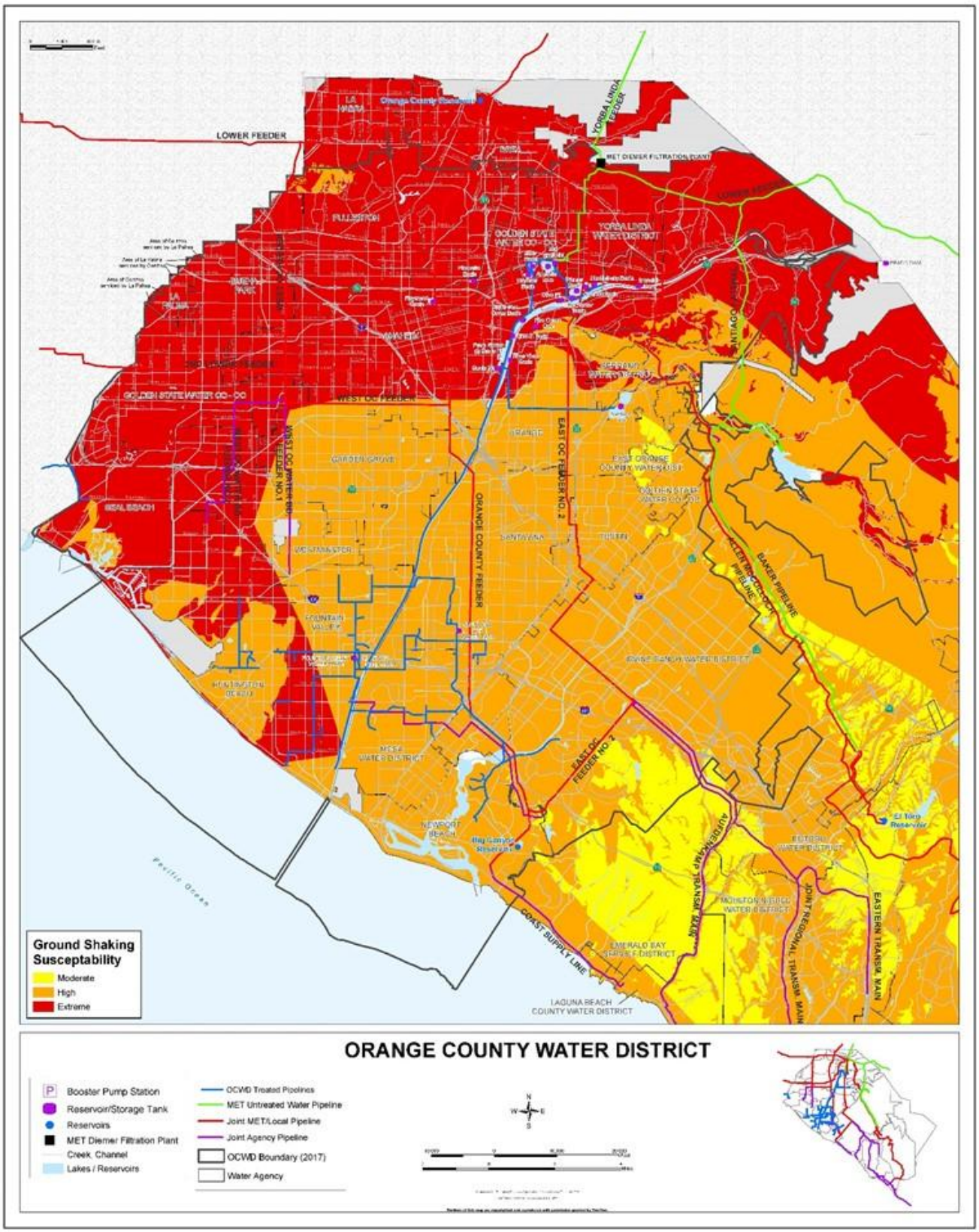


Exhibit B-8. Liquefaction Hazard and OCWD Potable Water Infrastructure

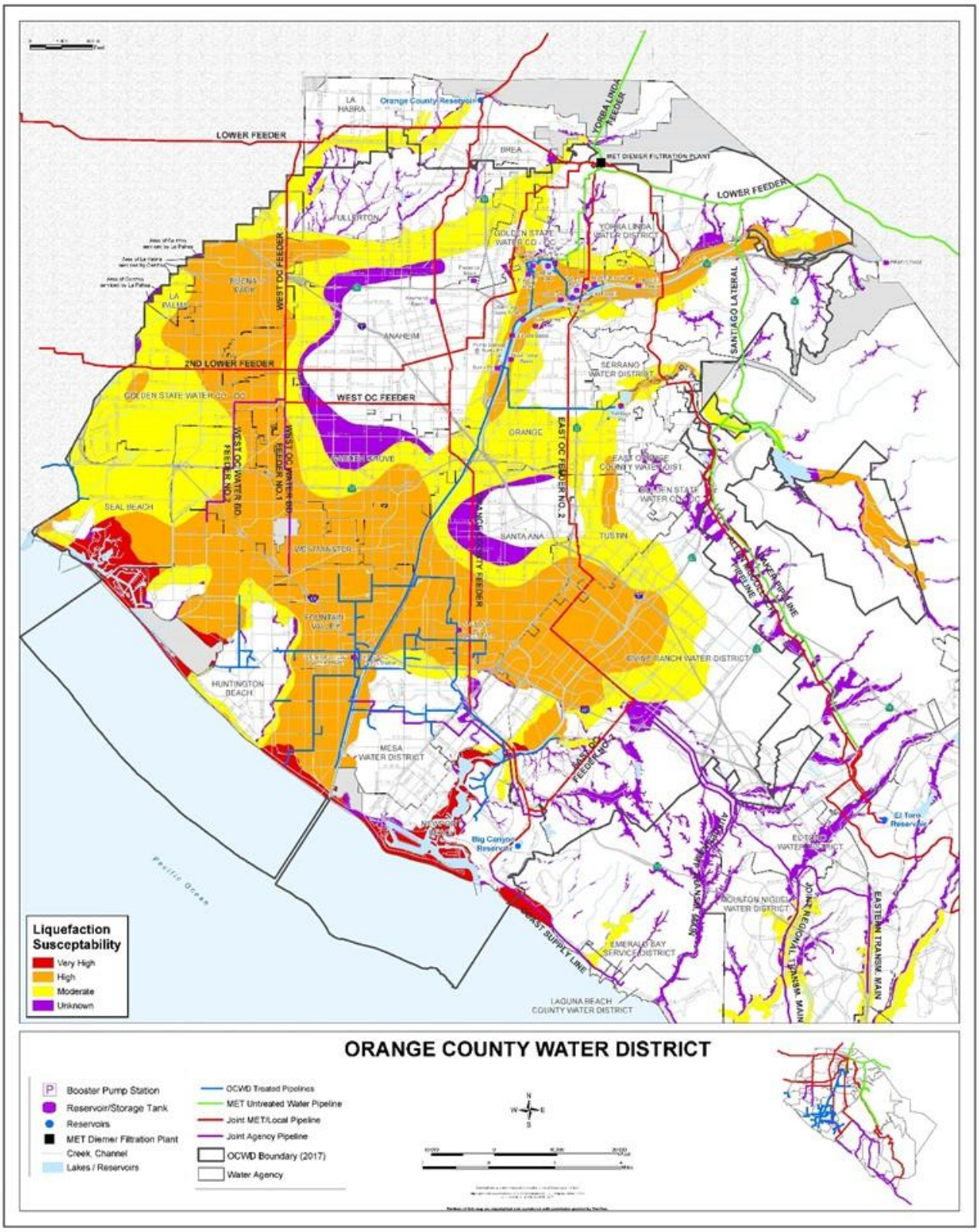


Exhibit B-9. Landslide Hazard and OCWD Potable Water Infrastructure

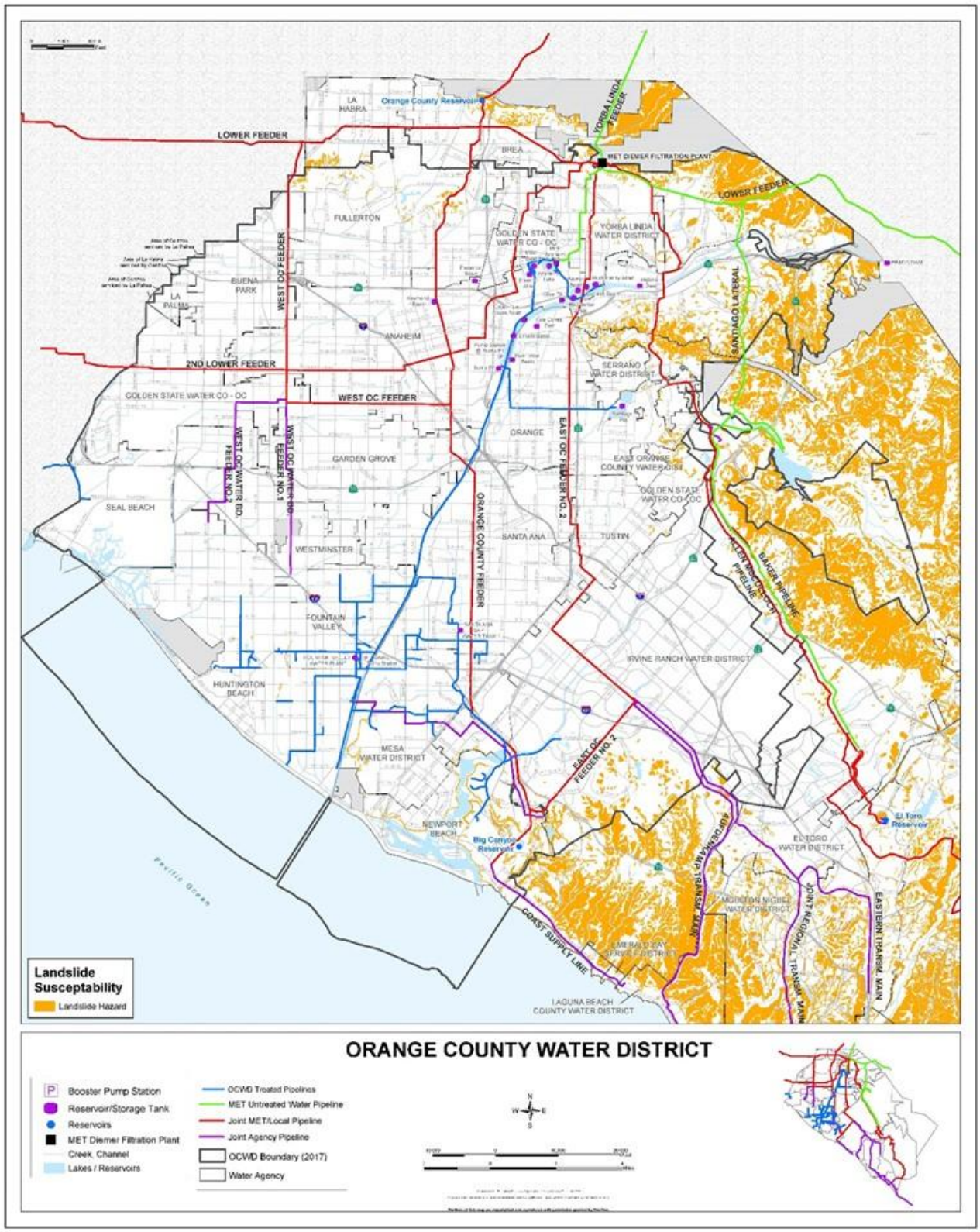
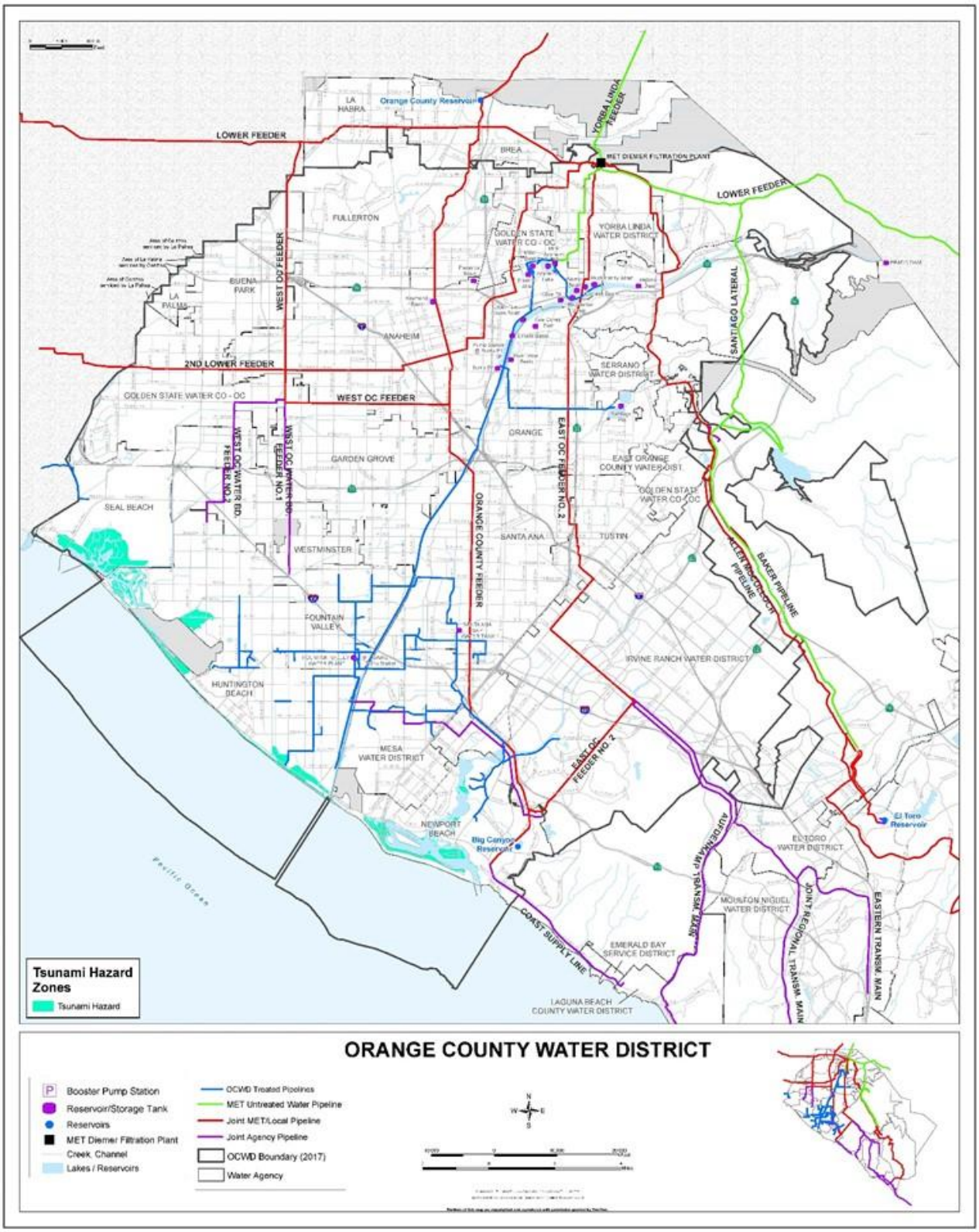


Exhibit B-10. Tsunami Hazard and OCWD Potable Water Infrastructure



B.5 VULNERABILITY AND RISK ASSESSMENT

Assessing vulnerabilities shows the unique characteristics of individual hazards and begins the process of narrowing down locations within OCWD's service area that are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying method for examining such vulnerabilities more in depth. Using these methods vulnerable populations, infrastructure, and potential losses from hazards can be estimated.

Assets Susceptible to Hazard Events

OCWD's infrastructure is outlined in **Exhibit B-11**, which lists the number of OCWD's infrastructure assets are located within the mapped hazard zones identified above.

Exhibit B-11. OCWD Infrastructure and Exposure to Hazards

Hazard		Infrastructure Type						
		Administration Buildings (#)	Pump Stations (#)	Reservoirs (#)	Water Storage Tanks (#)	Wells (#)	Potable Pipelines (miles)	Wastewater Pipelines (miles)
Fire Hazard Zone	Moderate	0	0	1	0	0	0	0
	High	0	0	0	0	0	0	0
	Very High	0	0	0	0	0	0	0
FEMA Flood Zone	100-Year	0	0	15	0	0	11.6	0
	500-Year	0	0	0	0	0	0.4	0
Alquist-Priolo Rupture Zone		0	0	0	0	0	0	0
Seismic Shaking	Moderate	0	0	0	0	0	0	0
	High	1	1	1	1	1	12.1	0
	Extreme	1	1	17			5.7	0
Liquefaction	Moderate	0	0	2	0	0	3.8	0
	High	2	2	14	1	1	13.4	
	Very High	0	0	0	0	0	0	0.8
	Unknown	0	0	0	0	0	0.1	2.5
Landslide Zone		0	0	0	0	0	0	0
Tsunami Zone		0	0	0	0	0	0	0

Several miles of OCWD's potable pipeline system and reservoirs are in areas susceptible to flooding and within an area identified as having a high or extreme risk for seismic shaking and high risk of liquefaction during an earthquake.

Changes in Land Use and Development

Orange County is a highly developed county with expanding cities and growing population numbers. OCWD supplies groundwater to Orange County, meaning their service is impacted by land use changes and development that occurs across the 19 cities they serve. Some major developments that have happened includes the construction of Orange Heights' 1,066 single family homes and 114 multifamily units. One major development project performed by OCWD in partnership with OC San was the expansion of the Groundwater Replenishment System.

Vulnerabilities Associated with Climate Change

Hazard	Climate Change Vulnerabilities
Hazards of High Concern	
Coastal Hazards: Sea Level Rise	The anticipated impacts to vulnerability to sea level rise for OCWD from climate change will mirror the impacts discussed in the base plan. Since managing the groundwater basin is a major priority for OCWD, impacts associated with sea level rise affecting groundwater resources will be closely monitored.
Dam/Reservoir Failure	There are no expected climate change impacts on dam/reservoir failure. However, fluctuations in the amount of precipitation and intensity of events could cause stress on dam/reservoir facilities not previously anticipated during initial design. These types of issues could increase the vulnerability of these facilities, which is described in the base plan.
Flood	Climate change is expected to cause some higher-level flood waters within OCWD, and the 100-year flooding event may expand into the 500-year flood zones on a more frequent basis.
Geological Hazards: Expansive Soils	Climate change is not expected to impact expansive soils within OCWD's service area. The vulnerability follows that described in the base plan.
Geological Hazards: Land Subsidence	OCWD's vulnerability to land subsidence is not expected to change due to climate change and is anticipated to be similar to those described in the base plan.
Human-Caused Hazards: Contamination/Saltwater Intrusion	Changes in contamination and saltwater intrusion vulnerability due to climate change are expected to follow the changes outlined in the base plan.
Human-Caused Hazards: Terrorism (Cyber Threat)	Connections between climate change and cyber based terrorism have not been identified.
Seismic Hazards: Seismic Shaking	Climate change is not expected to cause any changes to the frequency or intensity of seismic shaking occurring within OCWD's service area.
Seismic Hazards: Seismic Liquefaction	Climate change is anticipated to impact liquefaction potential within the OCWD service area as periods of both intense rain and drought could potentially increase or decrease groundwater elevations affecting the risk of liquefaction, depending on the circumstances.
Seismic Hazards: Fault Rupture	There are no expected changes to the frequency or intensity of fault ruptures occurring within OCWD's service area as a result of climate change.
Hazards of Medium Concern	
Human-Caused Hazard: Power Outage	Climate change will likely increase OCWD's vulnerability to power outages as local electric companies implement protocols such as rolling blackouts or targeted shutoffs that may impact OCWD facilities.
Human-Caused Hazards: Terrorism (MCI)	Climate change has no direct link to human-caused hazards and is expected to follow the impacts described in the base plan.
Human-Caused Hazards: Hazardous Materials	Climate change has the potential of increasing hazardous materials releases resulting from transportation crashes or damage to storage vessels.
Severe Weather: Drought	Droughts are expected to increase in length and frequency due to climate change and impact OCWD as described in the base plan.

Hazard	Climate Change Vulnerabilities
Severe Weather: Extreme Heat	Temperatures are expected to increase due to climate change and impact OCWD's service area as described in the base plan.
Severe Weather: Windstorm	The challenges to OCWD from climate change's impacts on Windstorms is expected to follow the impacts described in the base plan.
Urban Fire	There is no anticipated impact to how climate change could influence the ignition or behavior of urban fires.
Wildfire	Climate change is expected to increase the risk wildfires within OCWD's service area especially in the northeastern rural hill areas of OCWD.
Hazards of Low Concern	
Coastal Hazards: Coastal Erosion	The anticipated impacts associated with coastal erosion to OCWD's service area from climate change will mirror the impacts discussed in the base plan.
Coastal Hazards: Coastal Storms	The anticipated impacts associated with coastal storms to OCWD's service area climate change will mirror the impacts discussed in the Base Plan.
Coastal Hazards: Tsunami	OCWD's vulnerability to tsunamis is not expected to change due to climate change.
Geological Hazards: Landslide and Mudflow	Climate change could indirectly affect the conditions for landslides around the eastern and southern portions of OCWD as increased precipitation and storm intensities may cause more moisture-induced landslides.

B.6 CAPABILITIES ASSESSMENT

The capabilities assessment is designed to identify existing local agencies, personnel, planning tools, public policy and programs, technology, and funds that have the capability to support hazard mitigation activities and strategies outlined in this MJHMP. OCWD's internal development team revised the capabilities identified in the 2019 plan and collaborated to identify current local capabilities and mechanisms available to the MA for reducing damage from future hazard events. **Exhibits B-12a through B-12d** assess the authorities, policies, programs, and resources that the jurisdiction has in place that are available to help with the long-term reduction of risk through mitigation. These capabilities include planning and regulatory tools, administrative and technical resources, financial resources, and education and outreach programs. OCWD has the ability to expand on and improve existing emergency management policies and programs to implement mitigation programs. In some instances, methods of expansion and improvement have been identified within a specific capability, while a majority of these capabilities are anticipated to be expanded and improved upon through additional projects/initiatives underway by the Agency. These have been included at the bottom of each table.

Exhibit B-12a. Planning and Regulatory Capabilities Summary

Ordinance, Plan, Policy, Program	Responsible Agency or Department	Description/Comments
Building Code	Engineering Department, OCWD	OCWD complies with applicable building codes and works with the cities within the service area. **Expansion and Improvement:** As retrofits and replacement projects are identified, OCWD will anticipate meeting or exceeding the latest building codes to ensure greater resilience is incorporated into their infrastructure.

Ordinance, Plan, Policy, Program	Responsible Agency or Department	Description/Comments
Zoning Ordinance	City/County	OCWD complies with applicable zoning ordinances and works with the cities within the service area.
Subdivision Ordinance or Regulations	City/County	OCWD complies with applicable subdivision ordinance or regulations and works with the cities within the service area.
Special Purpose Ordinance	City/County	OCWD complies with applicable special purpose ordinances and works with the cities within the service area.
Growth Management Ordinances	City/County	OCWD complies with applicable growth management ordinances and works with the cities within the service area. **Expansion and Improvement:** Growth management ordinances need to take into account water needs and available supplies for existing and future populations. Working closely with the Cities and County in the region, OCWD can help better understand how growth management ordinances could impact these resources.
Site Plan Review Requirements	City/County	OCWD complies with applicable site plan review requirements and works with the cities within the service area. **Expansion and Improvement:** Developing better methods and techniques to support site plan reviews within Orange County can help ensure adequate planning, design, and engineering analysis is available to Cities and the County when new subdivisions are proposed.
Urban Water Management Plan	City/County	Prepared by California's urban water suppliers to support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. **Expansion and Improvement:** Integration of future projects from UWMPs into Local Hazard Mitigation Plans can ensure both plans are supporting the necessary improvements needed to ensure future water supplies and minimize risks to hazards and disasters.
Capital Improvements Plan	Engineering, Hydrogeology, Field Headquarters	Construction Projects, Well Construction, Infrastructure Improvement Projects. Annual Board approval. **Expansion and Improvement:** Incorporation of mitigation strategies into the CIP can help support future funding of improvements necessary to enhance water/wastewater systems.
Emergency Response Plan	Risk & Safety, OCWD	Maintains Emergency Response Plan. **Expansion and Improvement:** Continued improvement and enhancement of emergency response plans can help ensure OCWD is better prepared for future incidents and can anticipate their communities' needs.
Post-Disaster Recovery Plan	Risk & Safety, OCWD	Business Continuity Plan; Partial recovery information in the Emergency Response Plan.

Ordinance, Plan, Policy, Program	Responsible Agency or Department	Description/Comments
Water Discharge Requirements	Regional Water Quality Control Board (RWQCB); Regulatory Affairs; Water Quality & Technical Resources, Water Production	Permits related to GWRS and Green Acres Operations; RWQCB.

How can these capabilities be expanded and improved to reduce risk?

- Conduct a risk and resilience assessment (RRA) and create corresponding Emergency Response Plan (ERP) per the America's Water Infrastructure Act of 2018 (AWIA). Consider this plan as a resource to meet the AWIA requirements.
- Conduct disaster response fuel analysis and contingency planning with WEROC as a component of the Southern California Catastrophic Plan.
- Evaluate ability to contract with local fuel distributors and gas stations for emergency backup supply.
- OCWD will update their Business Continuity Plan
- OCWD will participate in a Forecast Informed Reservoir Operations study to improve weather projections and the operations of Prado Dam to capture water supplies and prevent flooding in Orange County.
- OCWD will include a "Production Limitation" on annual groundwater pumping by its member agencies to ensure unexpected large amounts of groundwater are not pumped, keeping more water for storage in critical periods.

Exhibit B-12b. Administrative and Technical Capabilities Summary

Staff/Personnel or Type of Resource	Responsible Agency or Department	Description/Comments
Planner(s) or Engineer(s) with Knowledge of Land Development and Land Management Practices	Planning & Natural Resources and Property Management, OCWD	Environmental Planners with expertise in land development practices. Collaborate with Engineering and cities to comply with all requirements.
Engineer(s) or Professional(s) Trained in Construction Practices Related to Buildings and/or Infrastructure	Engineering Department; OCWD	Licensed Civil Engineers and certified building evaluators (Safety Assessment Program certified by Cal OES). Evaluators certification through 2019.
Planners or Engineer(s) with an Understanding of Natural and/or Human-Caused Hazards	Engineering, Planning & Natural Resources, and Risk & Safety	Regional General Plan (RGP).
Surveyors	Engineering; OCWD	GPS Surveying Capabilities.
Staff with Education or Expertise to Assess the Community's Vulnerability to Hazards	Risk & Safety; OCWD, WEROC	Cal ARP Tank Assessment.
Personnel Skilled in GIS and/or HAZUS	Hydrogeology	Dedicated GIS staff.
Emergency Manager	Risk & Safety; OCWD	Prepare, implement and provide emergency training to staff. Trained personnel in the following: Emergency Response Team; Confined Space Rescue Team; HAZMAT.

Staff/Personnel or Type of Resource	Responsible Agency or Department	Description/Comments
Grant Writers	Engineering Department; OCWD, Planning Department	Prepared, submitted, and received several grants for various projects. Includes but not limited to Proposition 1, Proposition 84, Measure M.
Water Quality Lab	Water Quality	Collects and analyzes water samples from ground water wells on routine basis. Samples include ground water, surface water, and treatment plant.

How can these capabilities be expanded and improved to reduce risk?
▪ Evaluate participation in MWDOC Water Loss Control Program, including meter testing and leak detection through training of internal staff or through MWDOC's Choice program. ▪ Have all agency-registered engineers and other qualified individuals attend California Governor's Office of Emergency Services (CalOES) Safety Assessment Program (SAP) training for building inspections. ▪ OCWD will enter into the Santa Ana River Conservation and Conjunctive Use program with four other watershed agencies to store excess water supplies in the groundwater basin for drought periods. ▪ OCWD will purchase and train staff to operate drones which can be used to assess damage from natural disasters.

Exhibit B-12c. Financial Capabilities Summary

Financial Resources	Agency or Department	Description/Comments
Capital Improvements Project Funding	Engineering and Finance Departments, OCWD	Prepared, submitted, and received funding for various construction projects. Includes but not limited to State Revolving Fund Loan. **Expansion and Improvement:** During annual budgeting OCWD can highlight MJHMP strategies that support funding needs for the CIP.
Fees for Water, Sewer, Gas, or Electric Service	Finance Department, OCWD	Charge producers for recycled and ground water. **Expansion and Improvement:** Analysis of future fees for services should analyze potential mitigation funding support opportunities to capture funding for these projects
Incur Debt Through Special Tax and Revenue Bonds	Finance Department, OCWD	Use revenue refunding bonds to refinance existing debts.

How can these capabilities be expanded and improved to reduce risk?
▪ Learn about how to utilize post-disaster mitigation grants (Section 406) and incorporate it into the utility's disaster recovery strategy. ▪ Funding will be increased and annually included in the water reserve fund to give OCWD additional options to increase amounts of reported water purchased and stored in the groundwater basin for critical periods. ▪ OCWD will increase its rate to generate additional annual funding for necessary capital projects.

Exhibit B-12d. Education and Outreach Capability Summary

Resource/ Programs	Agency or Department	Description/Comments
Agency Website and Social Media	Administration Staff and Public Affairs; OCWD	The district informs residents of special events, emergency information, and news.

Resource/ Programs	Agency or Department	Description/Comments
		Expansion and Improvement: Increase use of social media resources for hazard mitigation related content and information.
Great ShakeOut	Risk & Safety and Public Affairs Department; OCWD	Participation in the annual drill, training and social media.
WEROC	Risk & Safety and Public Affairs Department; OCWD	Participation in WEROC.
Public Agency Safety Management Association (PASMA) and Red Cross Disaster Program/Conference	Risk & Safety Department; OCWD	PASMA and Red Cross emergency training and Conferences.
Workplace Violence Program	Risk & Safety Department; OCWD	Education and training provided to OCWD staff.

How can these capabilities be expanded and improved to reduce risk?
▪ Participation in WEROC-led efforts to develop standardized messaging for water outages, dam events, and general disaster response. Ensure that messaging will work for the general community, as well as the Access, Disability, and Functional Needs community specific to OCWD. ▪ OCWD will stress the importance of water infrastructure at the annual Orange County Water Summit. ▪ Tours of the OCWD facilities will include information on the critical nature of the water treatment facilities ▪ Implement employee emergency alert system via Alert OC & WEROC

B.7 MITIGATION STRATEGY

B.7.1 Mitigation Goals

OCWD adopts the hazard mitigation goals developed by the planning team; refer to **Section 4**.

B.7.2 Mitigation Actions

The internal development team reviewed the mitigation actions identified in the 2019 plan and the updated risk assessment to determine if the mitigation actions were completed, required modification, should be removed because they are no longer relevant, and/or should remain in the MJHMP update. New mitigation actions to address the updated risk assessment and capabilities identified above were also considered and added. **Exhibit B-13,** OCWD Mitigation Actions, identifies the mitigation actions, including the priority, hazard addressed, risk, timeframe, and potential funding sources.

Exhibit B-13. OCWD Mitigation Actions

Action/Task/Project Description	Location/ Facility	Hazard	Cost	Responsible	Timeframe	Possible Funding Sources	Status
HIGH PRIORITY							
Stream bank erosion threatening Villa Park Road in Santiago reservoirs' Smith pit.	Smith pit in Orange/Villa Park.	Dam/Reservoir Failure	$4 M	Engineering/ Operations	Short Term	General Fund	In Progress
Upgrade pipeline along Ellis to seismic standards.	Fountain Valley	Seismic Hazard-Seismic Shaking	$6 M	Engineering	Long Term	General Fund	Ongoing
Sunset Seawater Barrier		Coastal Hazards – Coastal Storms and Sea Level Rise				General Fund	New
PFAS Treatment Project		Human-Caused Hazards – Contamination/Saltwater Intrusion				General Fund	New
MEDIUM PRIORITY							
Seismic structure assessment for Administration Building.	Administration building in Fountain Valley.	Seismic Hazard-Seismic Shaking	$40,000	Engineering	Short Term	General Fund	Ongoing
Seismic structure assessment for Field Headquarters (FHQ) Building.	FHQ building in Anaheim.	Seismic Hazard-Seismic Shaking	$20,000	Engineering	Short Term	General Fund	Ongoing
Construct fencing on all sites. Ensure regular maintenance.	All Locations	Human-Caused Hazards – Terrorism (MCI)	$25,000	Engineering/ Operations	Immediate	General Fund	In Progress
Update SCADA System to ensure anomalies in the water system are detected.	All Locations	Human-Caused Hazards – Terrorism (Cyber Threat)	$50,000	Engineering/ Operations	Short Term	General Fund	In Progress

Action/Task/Project Description	Location/ Facility	Hazard	Cost	Responsible	Timeframe	Possible Funding Sources	Status
Enforce sea water barrier	All locations	Coastal Hazards – Coastal Storms and Sea Level Rise	$5 M	Engineering	Long Term	General Fund	In Progress
Monitor Prado Dam run off. Ensure maintenance is completed after each rainstorm.	Prado Dam	Dam/Reservoir Failure	$10,000	Engineering/ Operations	Short Term	General Fund	In Progress
Investigate installing back-up power supplies at the Burris Pump Station and the Forebay Headquarters	Burris Pump Station and Forebay Headquarters	Human-Caused Hazards: Power Outage		Engineering	Short Term	General Fund	Ongoing

B.7.3 Completed or Removed Mitigation Initiatives

The following mitigation actions from the 2019 plan have been completed or are in progress and therefore are removed from this plan update.

Mitigation: Completion of the Santiago saddle repair following the 2010 storms.

- **Status:** Complete.

- **Mitigation:** Reconstruction/maintenance of levees & diversion structure in Prado Wetlands.
  - **Status:** Completed in 2019.
- **Mitigation:** Acquire mobile emergency power generator system.
  - **Status:** Removed in 2019. OCWD no longer needed this action due to back-up power supply.

B.8 PLAN INTEGRATION

OCWD's Capital Improvement Program is used to implement mitigation initiatives identified in this annex. After adoption of the MJHMP, the District will continue to integrate mitigation priorities into this document.

- The OCWD Capital Improvement Program (CIP) Projects have the following progression of stages:
  - A project is budgeted and included in the fiscal year CIP budget.
  - A feasibility study is prepared which describes the project with potential alternatives, a cost estimate and schedule.
  - Once approved by our Board of Directors, an Engineer's Report and the environmental documentation is prepared.
  - Upon approval, a design services request for proposals is advertised, an agreement awarded for design services, and project plans and specifications prepared.
  - The construction project is publicly advertised, awarded and the construction activities performed to completion.

Since the previous Plan Update, OCWD incorporated information from the MJHMP in its CIP, in addition to the following planning mechanisms:

- Orange County Reliability Study (2016 and 2018 update) identifies threats to local water supplies and new planning scenarios to potentially address those threats.
- The risk assessment information was used to update the hazard analysis in OCWD's Emergency Response Plan.
- The Risk and Resilience Assessment conducted in compliance with AWIA 2018 was informed by the risk assessment completed in the 2019 MJHMP.

OCWD will continuously monitor the progress of mitigation actions implemented through these other planning mechanisms and, where appropriate, their priority actions will be incorporated into updates of this Plan.