2024

OC SAN
ORANGE COUNTY SANITATION DISTRICT

Orange County Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan

Annex C: Orange County Sanitation District

WATER EMERGENCY RESPONSE ORGANIZATION OF ORANGE COUNTY
WEROC

Contents

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ORANGE COUNTY SANITATION DISTRICT ANNEX

Orange County Sanitation District (OC San) is a participant (Member Agency [MA]) in the Orange County Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). As a participant MA, OC San 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 primary plan, including the MJHMP procedural requirements and planning process apply to OC San.

This annex details the hazard mitigation planning elements specific to OC San and describes how OC San's risks vary from the planning area. This annex is not intended to be a standalone document but supplements the information contained in the primary plan. All sections of the primary MJHMP, including the planning process and other procedural requirements, apply to and were met by OC San. The primary 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 OC San with a focus on the risk assessment and mitigation strategies.

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

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

Exhibit C-1. Planning Team Lead

Primary Point of Contact
Name: John Frattali
Title: Safety and Health Manager
Telephone: 714-593-7162
Email: jfrattali@ocsan.gov

OC San 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 OC San's internal hazard mitigation planning development team.

Exhibit C-2. Internal Hazard Mitigation Planning Development Team

Name	Title
Krystal Aleman	Security and Emergency Planning Specialist

Outreach to the public within OC San's service area was performed to ensure residents could access information on this planning effort. To reach the largest number of people possible, OC San published a news release on their website and posted the MJHMP survey to their social media platforms.

C.2 JURISDICTION PROFILE

Service Population: 2.6 million

OC San is responsible for safely collecting, treating, and disposing wastewater (sewage) and industrial waste in central and northwest Orange County. Owning 396 miles of wastewater pipeline, OC San serves 2.6 million residents in 20 cities, four special districts and the

unincorporated areas within north and central Orange County. OC San is governed by a board of 25 individuals; 24 board members are elected officials appointed by the cities and special districts served, and one is a representative from the Orange County Board of Supervisors.

OC San treats approximately 185 million gallons of wastewater each day at either Plant No. 1 in Fountain Valley or Plant No. 2 in Huntington Beach and releases it into the ocean five miles from shore and approximately 200 feet below the surface. The one-mile-long diffuser section on the five-mile ocean outfall contains 503 portholes through which treated wastewater are slowly released. Up to 70 million gallons of treated wastewater are reclaimed each day for use by the Orange County Water District (OCWD) to supplement the recharge of the groundwater basin, landscape irrigation, and injection into the sweater intrusion barrier along the coast.

In addition to its primary role of managing wastewater for north and central Orange County, OC San is also concerned about ocean water quality and protecting the coastline from urban runoff contamination. Therefore, OC San's charter was modified to allow OC San to accept dry weather urban runoff contaminated with bacteria in the sewer system. The dry weather urban runoff is then treated with the raw sewage entering the plants and disinfected before it is released to the ocean outfall system. Currently, OC San recycles all biosolids produced for beneficial use by the agricultural industry and runs an award-winning ocean monitoring program that evaluates water quality, sediment quality and sea life.

C.3 HAZARDS

This section is intended to profile the hazards and assess the vulnerabilities that OC San faces, distinct from that of the county-wide planning area. The hazard profiles in the primary MJHMP 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**.

OC San'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 OC San development team discussed which hazards should or should not be profiled in the primary plan. This discussion resulted in the identification of the following hazards that affect OC San and summarized their probability of future occurrence, level of impact and significance as outlined in **Exhibit C-3.** Detailed hazard profiles for the planning area are provided in **Section 3** of the primary plan.

Exhibit C-3. OC San Hazard Identification

Hazard Type	Probability	Impact			Total Score	OC San Hazard Planning Consideration	Countywide Hazard Consideration
		Affected Area	Primary Impact	Secondary Impact			
Human-Caused Hazards: Power Outage	4	3	4	4	57.6	High	High
Flood	3	4	4	3	45	High	Medium
Seismic Hazards: Fault Rupture	3	4	4	3	45	High	Medium
Human-Caused Hazards: Terrorism (Cyber Threat)	4	3	3	2	44	High	High
Coastal Hazards: Tsunami	3	3	4	4	43.2	High	Low
Human-Caused Hazards: Terrorism (MCI)	3	3	4	4	43.2	High	Low
Seismic Hazards: Seismic Shaking	3	3	4	4	43.2	High	High
Seismic Hazards: Seismic Liquefaction	3	3	4	4	43.2	High	High
Human-Caused Hazards: Contamination/Saltwater Intrusion	2	3	4	3	26.8	Medium	Low
Coastal Hazards: Coastal Storm	3	2	2	2	24	Medium	Medium
Human-Caused Hazards: Hazardous Materials	3	2	2	1	21	Medium	Low
Coastal Hazards: Coastal Erosion	3	1	2	2	19.2	Medium	Medium
Geological Hazards: Land Subsidence	2	3	2	2	19.2	Medium	Low
Geological Hazards: Expansive Soils	2	2	3	2	18.8	Medium	Low
Coastal Hazards: Sea Level Rise	3	1	2	1	16.2	Medium	Medium
Severe Weather: Windstorm	2	2	1	1	11.2	Low*	Medium
Wildfire	2	2	1	1	11.2	Low*	High
Severe Weather: Drought	2	1	1	1	8	Low*	Medium
Severe Weather: Extreme Heat	1	2	1	2	6.6	Low*	Medium
Urban Fire	1	1	2	1	5.4	Low*	Low
Geological Hazards: Landslide and Mudflow	1	1	1	1	4	Low*	Medium
Dam/Reservoir Failure	N/A	N/A	N/A	N/A	N/A	N/A	Medium

Orange highlights indicate differences between hazard planning consideration levels for OC San and the overall planning area. Blue highlights indicate N/A hazards.
**Any hazards identified as a low priority for OC San have not been analyzed nor have mitigation strategies been developed.*

Exhibit C-3. OC San Hazard Identification (cont.)

Geographic Affected Area ▪ 1 = Isolated, less than 10% of planning area ▪ 2 = Small, 10-30% of planning area ▪ 3 = Medium, 30-60% of planning area ▪ 4 = Large, 60-100% of planning area	**Primary Impacts** ▪ 1 = Negligible, little to no damage ▪ 2 = Limited, some damage, loss of service for days ▪ 3 = Critical, devastating damage, loss of service for months ▪ 4 = Catastrophic, catastrophic damage, uninhabitable conditions
Probability of Future Occurrences ▪ 1 = Unlikely, less than 1% chance of occurrence in next 100 years or has a recurrence interval of greater than every 100 years. ▪ 2 = Occasional, between 1 and 10% chance of occurrence in the next year or has a recurrence interval of 11 to 100 years. ▪ 3 = Likely, between 10 and 100% chance of occurrence in next year or has a recurrence interval of 10 years or less. ▪ 4 = Highly Likely, near 100% chance of occurrence in next year or happens every year.	**Secondary Impacts** ▪ 1 = Negligible, no loss of function, downtime, and/or evacuations ▪ 2 = Limited, minimal loss of function, downtime, and/or evacuations ▪ 3 = Moderate, some loss of functions, downtime, and/or evacuations ▪ 4 = High, major loss of function, downtime, and/or evacuation

The Federal Emergency Management Agency (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 C-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 OC San.

Changes to Risk/Vulnerability between OC San and the Planning Area

Hazard	Justification for Concern Adjustment
Coastal Hazards: Tsunami	OC San has assets along the coast within tsunami zones, increasing the impacts a tsunami may have compared to other MAs further inland.
Flood	OC San has multiple large rivers running through their service area with assets located within floodplains, increasing their potential impacts from a flooding event.
Geological Hazards: Expansive Soils	OC San serves the northern portion of Orange County and therefore has a moderately increased risk of land subsidence due to soil types within their service area.
Geological Hazard: Land Subsidence	OC San serves the northern portion of Orange County and therefore has a moderately increased risk of land subsidence due to soil types within their service area.
Human-Caused Hazards: Contamination/Saltwater Intrusion	With assets located in proximity to the coastline, OC San has higher impacts from saltwater intrusion potentially damaging assets and pipelines.
Human-Caused Hazards: Hazardous Materials	Multiple large highways and major transportation routes run through the OC San service area. Hazardous materials may be

Hazard	Justification for Concern Adjustment
	transported along these routes, increasing the potential for spills to occur.
Human-Caused Hazards: Terrorism (MCI)	OC San has an increased concern regarding terrorism attempts due to their proximity to high profile targets and increased civil unrest within their community.
Seismic Hazards: Fault Rupture	OC San serves the northern half of Orange County and has assets located in close proximity to large fault lines, increasing their impacts from fault rupture.
Low Priority Hazards	Due to the number of hazards identified in the Planning Area, these low priority hazards have not been analyzed further by OC San to allow greater focus on the other hazards of concern.
Dam/Reservoir Failure	These hazards are not applicable to OC San due to lack of dams under their jurisdiction.

C.4 HAZARD MAPS

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

Exhibit C-4. Fire Hazard and OC San Wastewater Infrastructure

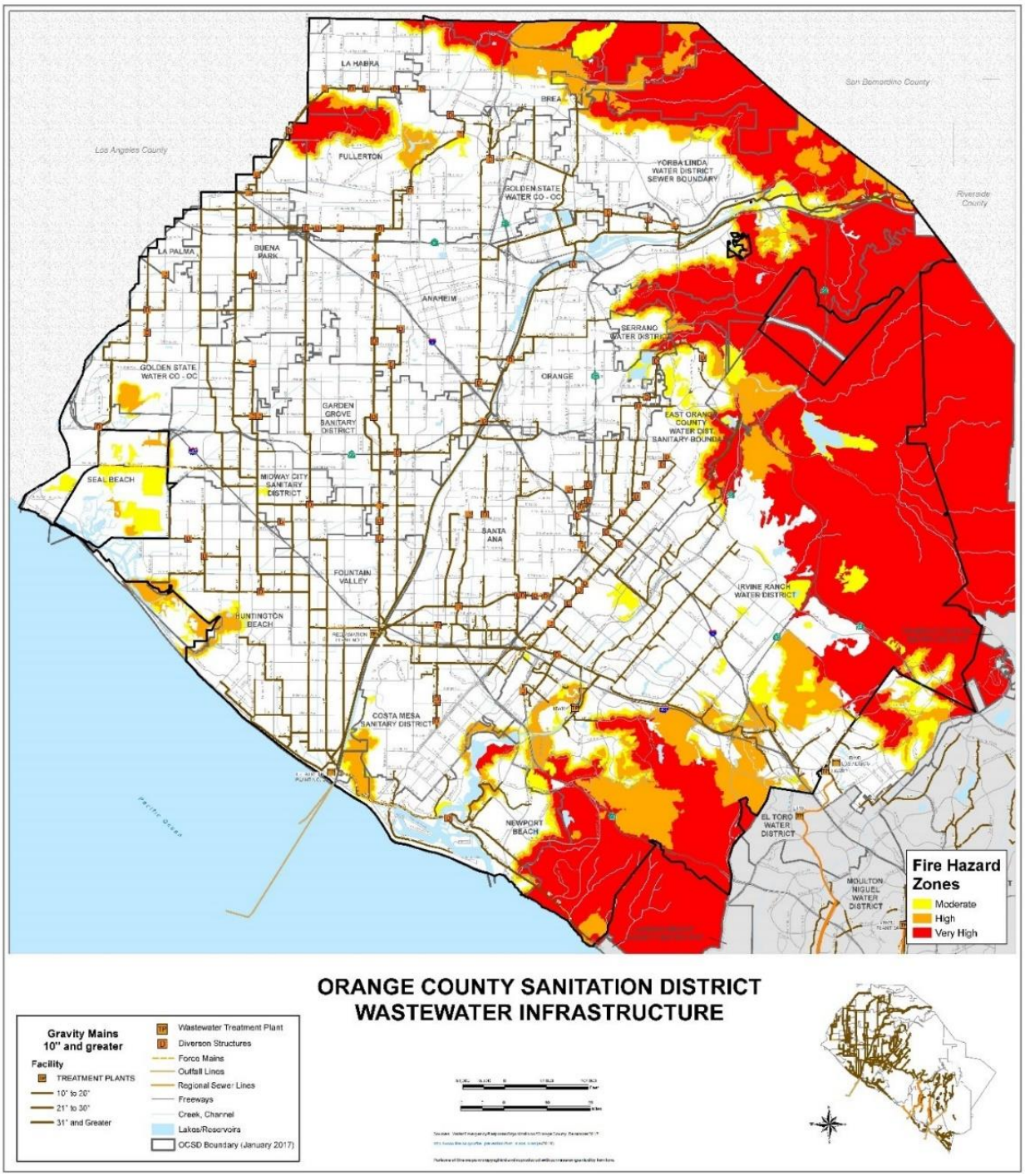


Exhibit C-5. Flood Hazard and OC San Wastewater Infrastructure

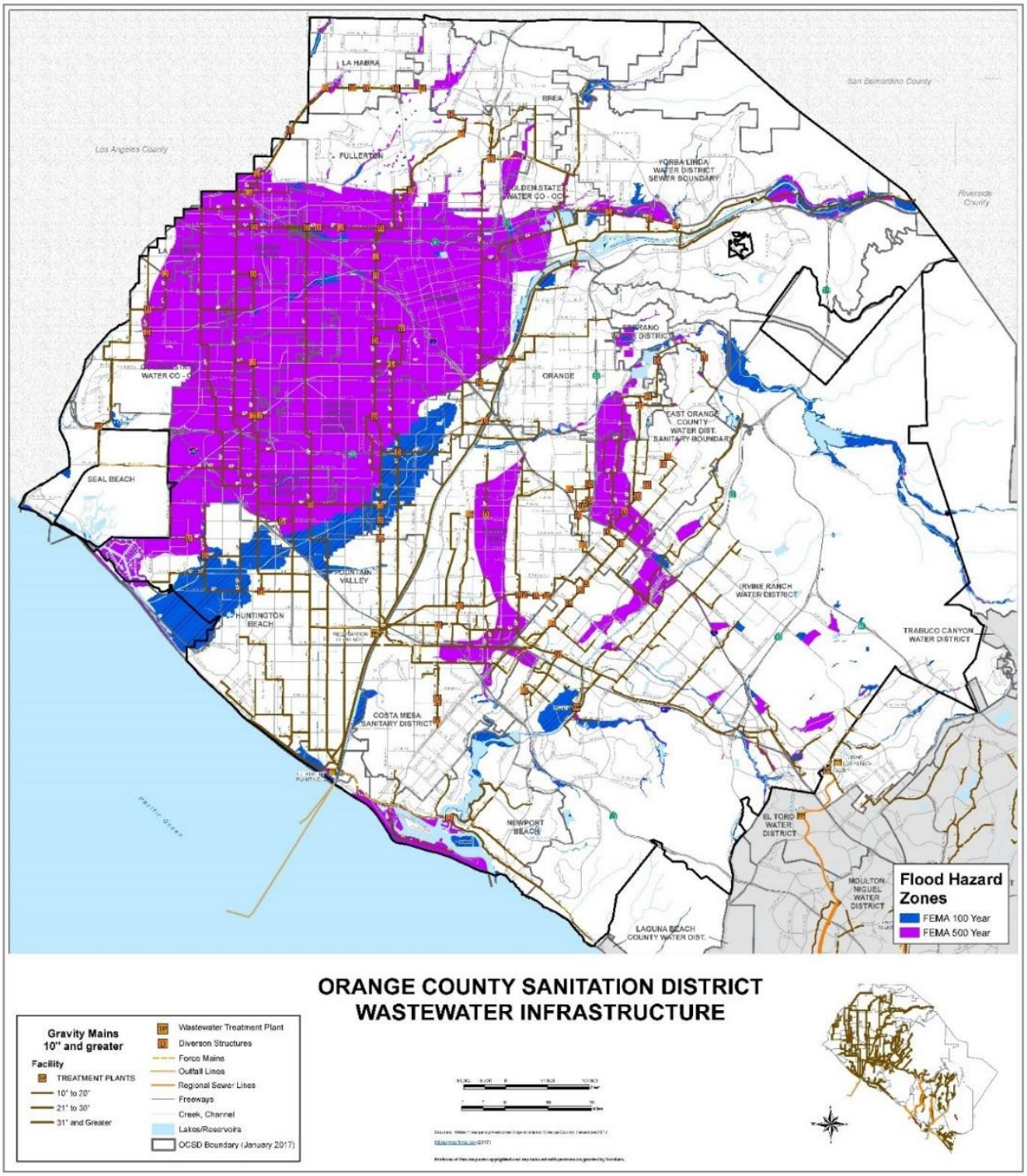


Exhibit C-6. Fault Rupture Hazard and OC San Wastewater Infrastructure

Exhibit C-7. Seismic Shaking Hazard and OC San Wastewater Infrastructure

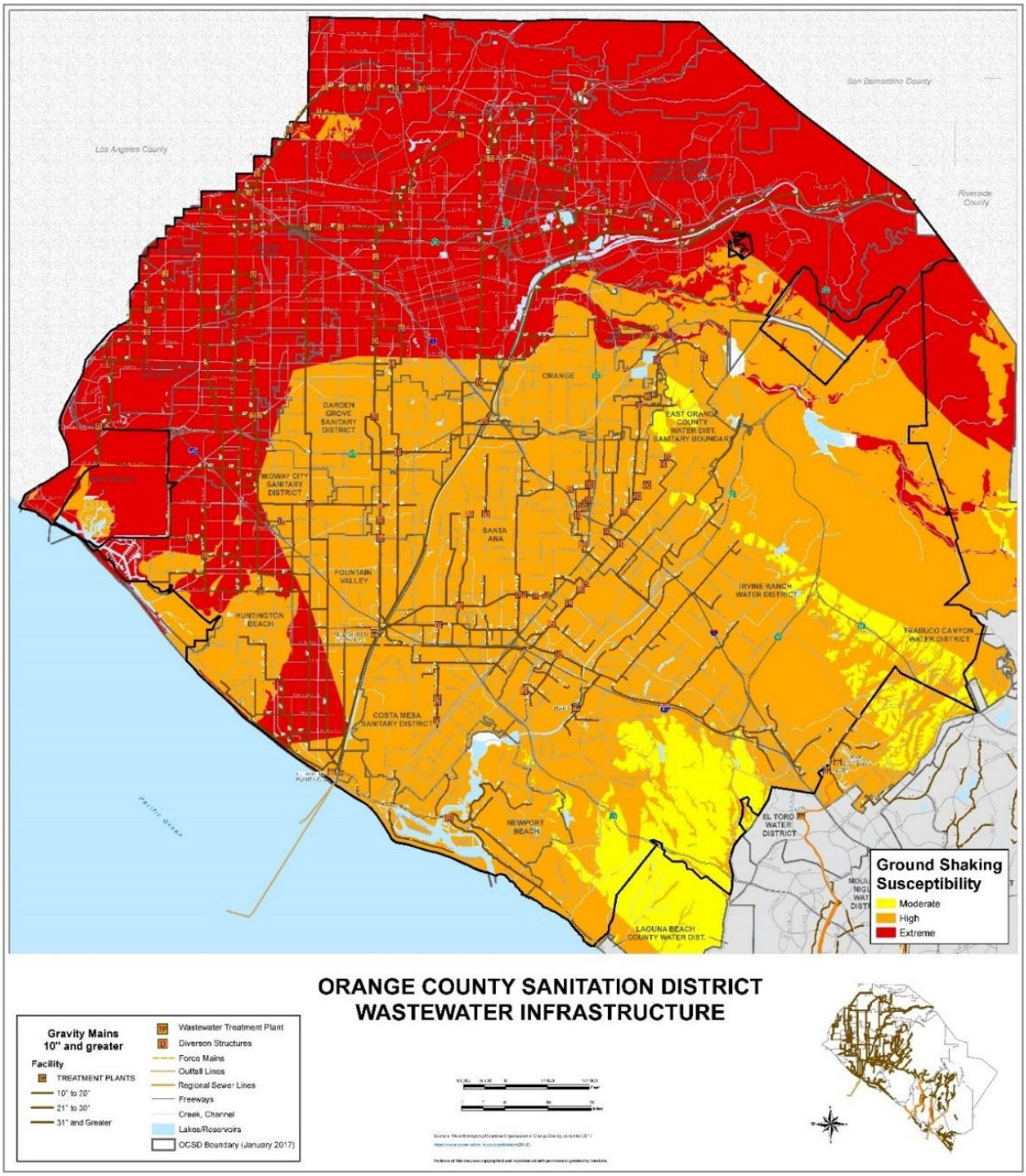


Exhibit C-8. Liquefaction Hazard and OC San Wastewater Infrastructure

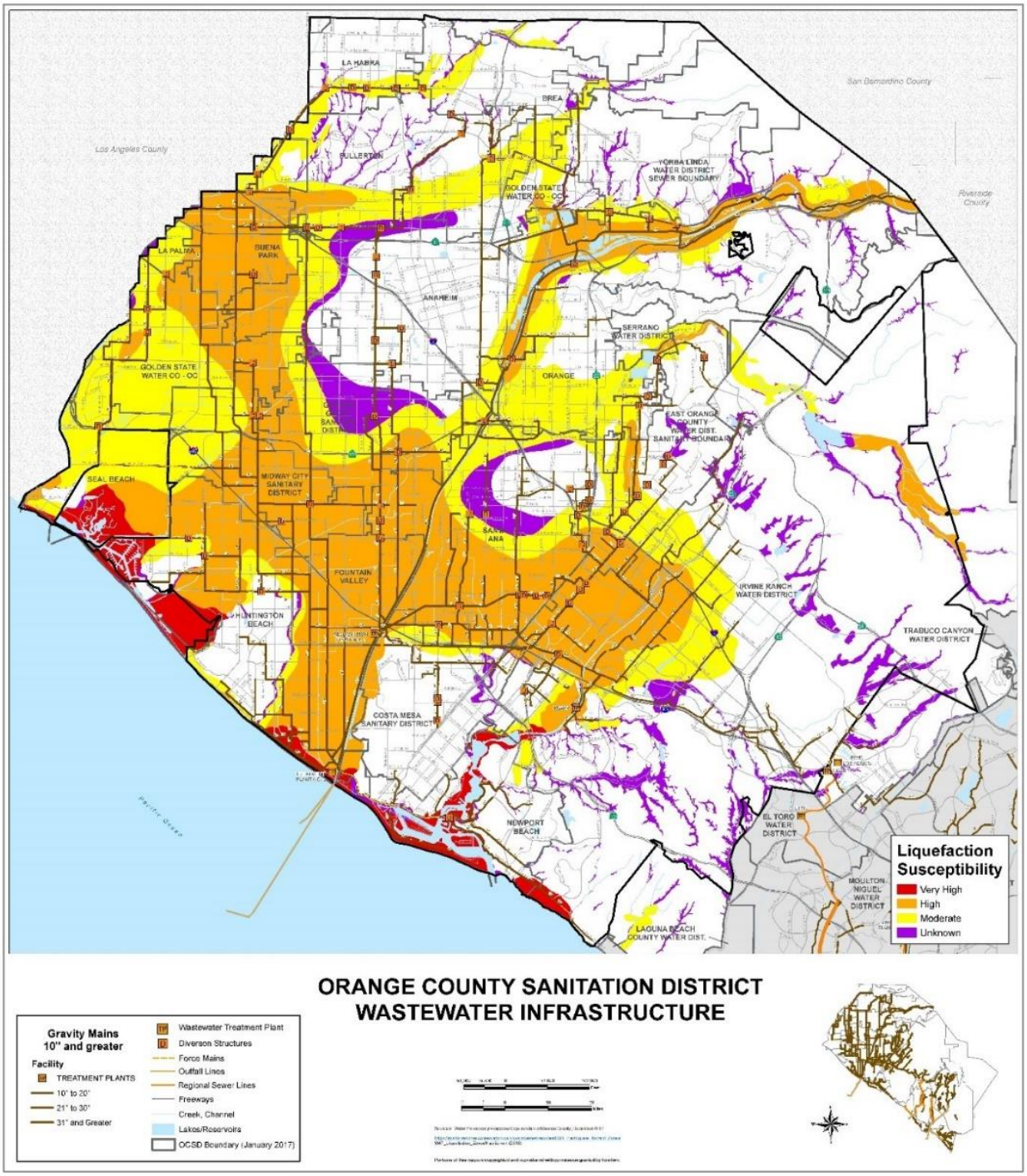


Exhibit C-9. Landslide Hazard and OC San Wastewater Infrastructure

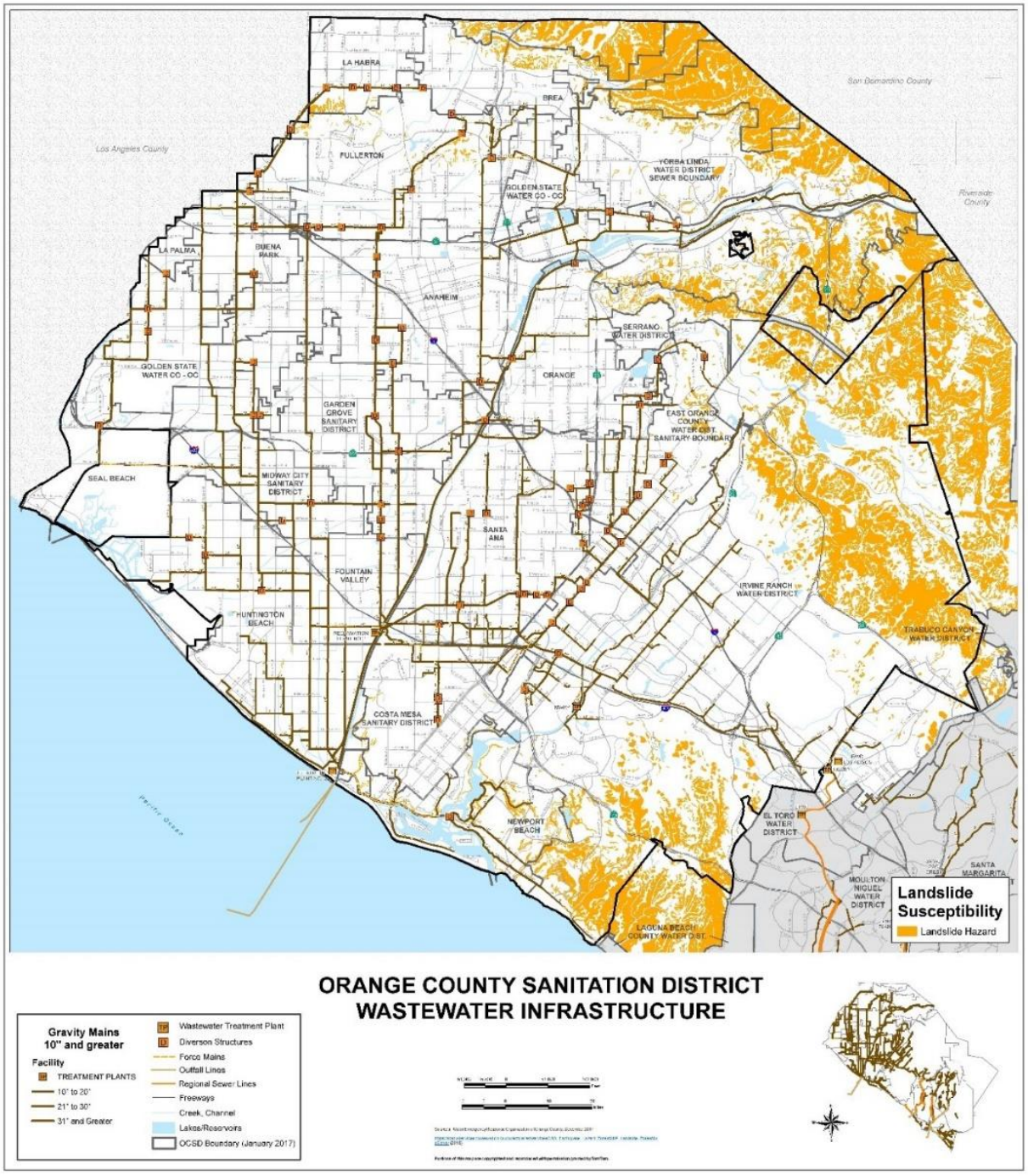
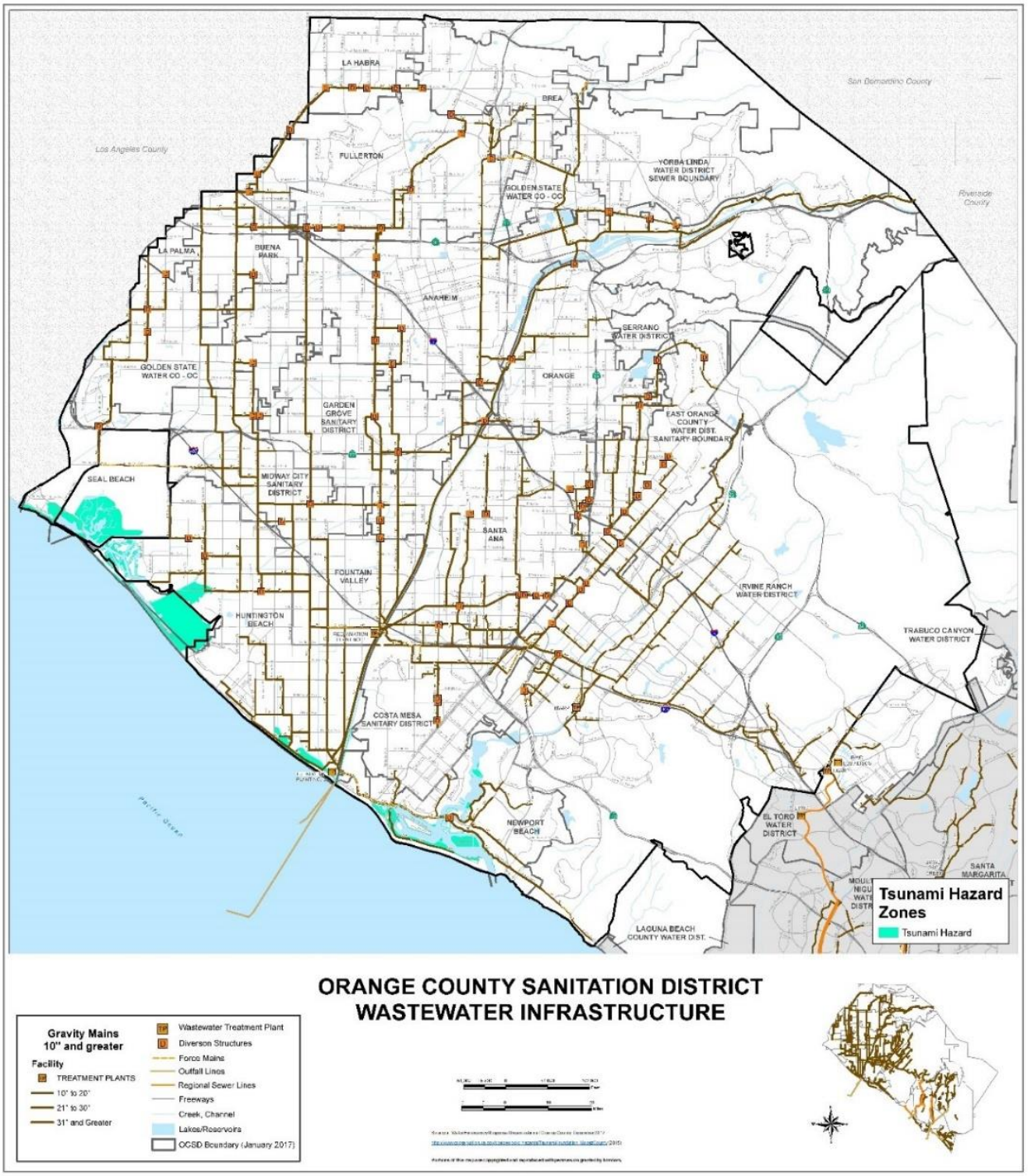


Exhibit C-10. Tsunami Hazard and OC San Wastewater Infrastructure



C.5 VULNERABILITY AND RISK ASSESSMENT

Assessing vulnerabilities shows the unique characteristics of individual hazards and begins the process of narrowing down locations within OC San'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

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

Exhibit C-11. OC San Infrastructure and Exposure to Hazards

Hazard		Infrastructure Type					
		Admin Buildings (#)	Manholes (#)	Lift Stations (#)	Treatment Plants (#)	Diversion Structures (#)	Wastewater Pipeline (miles)
Fire Hazard Zone	Moderate	0	0	4	0	2	8.7
	High	0	0	0	0	0	11.0
	Very High	0	0	3	0	0	6.3
FEMA Flood Zone	100-Year	0	9	1	2	39	96.8
	500-Year	0	33	9	0	6	266.1
Alquist-Priolo Rupture Zone		0	0	0	0	0	1.8
Seismic Shaking	Moderate	0	0	0	0	0	0.61
	High	1	55	11	4	45	444.9
	Extreme	0	48	8	0	29	355.5
Liquefaction	Moderate	0	76	0	0	22	395.7
	High	1	0	0	2	31	186.2
	Very High	0	0	0	1	1	15.9
	Unknown	0	0	0	0	4	29.6
Landslide Zone		0	0	2	0	5	5.3
Tsunami Zone		1	0	3	1	0	5.0

Several miles of OC San's pipeline system along with two treatment plants are located within areas identified as susceptible to flooding. Lift stations are also located within areas mapped as a very high fire hazard zone. Similarly, several miles and facilities, including lift stations, diversion structures and treatment plants are located within areas identified as having a high or extreme risk of ground shaking and a moderate, high, and very high risk of liquefaction during an earthquake. In addition, a pipeline in Huntington Beach crosses a mapped fault zone three times and lift stations and a treatment plant are located within a tsunami zone.

Vulnerabilities/Impacts to Hazard Events

OC San provides wastewater services across the central and northwestern portion of Orange County. Approximately 2.6 million people reside in the service area.

Hazard	Impact on OC San's Vulnerable Populations
Coastal Hazards: Coastal Erosion	Coastal erosion does not have a direct impact on vulnerable populations within the service area.
Coastal Hazards: Coastal Storm	Residents living along the coast are most impacted by increased coastal storms. Populations living in public areas along the coast (unhoused) may experience greater impacts.
Coastal Hazards: Sea Level Rise	Sea level rise does not have a direct impact on vulnerable populations within the service area.
Coastal Hazards: Tsunami	Tsunami impact is most impactful on populations along the coastline that may be living in public areas (unhoused), those without access to transportation or limited options, individuals with limited mobility that cannot escape within a tsunami zone.
Flood	Populations living in drainages (unhoused), those without access to transportation or limited options, individuals with limited mobility, and populations with language limitations may experience greater impacts.
Geological Hazards: Expansive Soils	Expansive soil does not have a direct impact on vulnerable populations within the service area.
Geological Hazards: Land Subsidence	Land subsidence does not have a direct impact on vulnerable populations within the service area.
Human-Caused Hazards: Contamination/Saltwater Intrusion	Contamination can be most impactful on populations without access to news outlets for do not use notifications and populations with language limitations that may not understand boil water notices or contamination announcements. Saltwater Intrusion does not have a direct impact on vulnerable populations within the service area.
Human-Caused Hazards: Hazardous Materials	All populations within the service area are equally vulnerable to this threat.
Human-Caused Hazards: Power Outage	The entire population within the service area is susceptible to potential outages, however increased vulnerabilities exist for residents and facilities reliant on electricity-dependent medical equipment such as ventilators and monitoring equipment.
Human-Caused Hazards: Terrorism (Cyber Threat)	All populations within the service area that use the internet are equally vulnerable to this threat.
Human-Caused Hazards: Terrorism (MCI)	All populations within the service area are equally vulnerable to this threat.
Seismic Hazards: Fault Rupture	Populations living along major fault lines are vulnerable to fault ruptures. The highest vulnerabilities exist for populations located directly on or next to the faults.
Seismic Hazards: Seismic Shaking	All populations within the service area are vulnerable to seismic shaking. The highest vulnerabilities exist for populations with older housing that has not been retrofitted to withstand strong earthquakes
Seismic Hazards: Seismic Liquefaction	The major liquefaction zone exist throughout most of the OC San service area, causing increased vulnerabilities to all neighborhoods and shopping centers within the these areas.

Changes in Land Use and Development

With a large service demand, OC San's service area has experienced various land use changes and development over the past five years. Past development projects performed by OC San include the expansion of the Groundwater Replenishment System in partnership with Orange County Water District. To meet growing demand, OC San is in the process of developing multiple facilities including large projects at the Fountain Valley Reclamation Plant and a treatment plant in Huntington Beach, as well as having recently completed a project at their Headquarters.

Vulnerabilities Associated with Climate Change

Hazard	Climate Change Vulnerabilities
Hazards of High Concern	
Coastal Hazards: Tsunami	OC San's vulnerability to tsunamis is not expected to change due to climate change.
Flood	Climate change is expected to cause some higher-level flood waters within OC San service area along the Santa Ana River, Black Star Canyon and other creeks and rivers throughout the county. The 100-year flooding event may expand into the 500-year flood zones on a more frequent basis.
Human-Caused Hazard: Power Outage	Climate change will likely increase OC San's vulnerability to power outages as local electric companies implement protocols such as rolling blackouts or targeted shutoffs that may impact OC San facilities.
Human-Caused Hazards: Terrorism (Cyber Threat)	Connections between climate change and cyber based terrorism have not been identified.
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.
Seismic Hazards: Fault Rupture	There are no expected changes to the frequency or intensity of fault ruptures occurring within OC San's service area as a result of climate change.
Seismic Hazards: Seismic Shaking	Climate change is not expected to cause any changes to the frequency or intensity of seismic shaking occurring within OC San's service area.
Seismic Hazards: Seismic Liquefaction	Climate change is anticipated to impact liquefaction potential within OC San, especially within the north, west, and central portions of the 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.
Hazards of Medium Concern	
Coastal Hazards: Coastal Erosion	The anticipated impacts associated with coastal erosion to OC San'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 OC San's service area from climate change will mirror the impacts discussed in the base plan.
Coastal Hazards: Sea Level Rise	The anticipated impacts to vulnerability to sea level rise for OC San from climate change will mirror the impacts discussed in the base plan.
Geological Hazards: Expansive Soils	Climate change is not expected to impact expansive soils within OC San's service area. The vulnerability follows that described in the base plan.

Hazard	Climate Change Vulnerabilities
Geological Hazards: Land Subsidence	OC San's vulnerability to land subsidence is not expected to change due to climate change.
Human-Caused Hazards: Contamination/ Saltwater Intrusion	Vulnerability changes in contamination and saltwater intrusion within OC San due to climate change are expected to follow the changes outlined 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.

C.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. OC San'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 C-12a through C-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. OC San 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 C-12a. Planning and Regulatory Capabilities Summary

Ordinance, Plan, Policy, Program	Responsible Agency or Department	Description/Comments
Building Code	City/County; Engineering Department	OC San complies with applicable building codes and works with the cities within OC San's service area. **Expansion and Improvements:** As retrofits and replacement projects are identified, OC San will anticipate meeting or exceeding the latest building codes to ensure greater resilience is incorporated into their infrastructure.
Zoning Ordinance	City/County	OC San complies with applicable zoning ordinances and works with cities within OC San's service area.
Subdivision Ordinance or Regulations	City/County	OC San complies with applicable subdivision ordinances or regulations and works with cities within OC San's service area.
Special Purpose Ordinance	City/County	OC San complies with applicable special purposes ordinances and works with cities within OC San's service area.
Growth Management Ordinances	City/County	OC San complies with applicable growth management ordinances and works with cities within OC San's service area.

Ordinance, Plan, Policy, Program	Responsible Agency or Department	Description/Comments
		Expansion and Improvements: Growth management ordinances need to take into account wastewater needs and available supplies for existing and future populations. Working closely with the Cities and County in the region, OC San can help better understand how growth management ordinances could impact these resources.
Site Plan Review Requirements	City/County	OC San complies with applicable site plan review requirements and works with cities within OC San's service area. **Expansion and Improvements:** 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.
General Plans	City/County	OC San complies with applicable General Plan requirements and works with cities within OC San's service area.
Capital Improvements Plan (CIP)	Engineering Department	OC San maintains a capital improvement plan. **Expansion and Improvements:** Incorporation of mitigation strategies into the CIP can help support future funding of improvements necessary to enhance water/wastewater systems.
Economic Development Plan	City/County	OC San complies with applicable economic development plans and works with cities within OC San's service area.
Integrated Emergency Response Plan (IERP)	Risk Management Division	The IERP is designed to address organized response to emergency situations associated with natural or manmade incidents. **Expansion and Improvements:** Continued improvement and enhancement of emergency response plans can help ensure OC San is better prepared for future incidents and can anticipate their communities' needs.
Continuity of Operations Plan (COOP)		Preparation of a COOP allows OC San to understand operational needs during an outage or event that can impact agency functions. **Expansion and Improvement:** Development and update of this plan should focus on integration of the risk probabilities of event types and nature of potential impacts, to better inform the COOP planning and process.
Post-Disaster Recovery Plan	Risk Management Division	This is a component of the IERP.
Emergency Public Notification	Public Affairs Division	OC San has identified personnel who carry out responsibilities of public information.
Emergency Communications	Risk Management Division	OC San has the capability to communicate with WEROC and the Orange County Operational Area.

Ordinance, Plan, Policy, Program	Responsible Agency or Department	Description/Comments
Emergency Operations Center (EOC)	OC San	OC San has a 24-hour operational capability of the EOC staffing, feeding, and fuel for generators.
Damage Assessment Teams (DAT)	Engineering Department	The DAT will conduct preliminary damage assessments to structures, critical facilities, and infrastructure.
Human Resources	Human Resources Division	HR supports OC Sanin a variety of administrative functions including employee training and identification of new staff positions. Hazard mitigation activities are the responsibility of this department.

How can these capabilities be expanded and improved to reduce risk?
▪ Evaluate and update OC San's IERP and COOP annually to ensure alignment with best industry practices and needs of the organization. Identify aspects of the MJHMP that are to be included in the IERP/COOP. ▪ Identify external sources that can provide damage assessment and/or expand damage assessment training internally. ▪ 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. ▪ Train employees annually on OC San's IERP/COOP.

Exhibit C-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	Engineering Department	OC San staff utilizes an outside consultant with input from engineering staff.
Engineer(s) or Professional(s) Trained in Construction Practices Related to Buildings and/or Infrastructure	Engineering Department	Licensed Civil Engineers and certified building evaluators (Safety Assessment Program certified by Cal OES).
Planners	Engineering Department	Regional General Plan (RGP).
Floodplain manager	County of Orange Floodplain Manager	Adhere to county standards.
Surveyors	Engineering Department	OC San utilizes an outside consultant with input from engineering staff.
Staff with Education or Expertise to Assess the Community's Vulnerability to Hazards	Risk Management Division, WEROC, County of Orange, OCIAC	OC San has an emergency coordinator that coordinates with WEROC and the County to assess vulnerabilities.
Personnel Skilled in GIS and/or HAZUS	Information Technology Division	OC San has staff skilled in GIS.
Scientists Familiar with the Hazards of the Community	Risk Management Division, WEROC, County of Orange	OC San has an emergency coordinator that coordinates with WEROC, the County, and the cities in our service area to identify hazards.
Emergency Manager	Risk Management Division	OC San employs a full-time emergency coordinator.

Staff/Personnel or Type of Resource	Responsible Agency or Department	Description/Comments
Grant Writers	Risk Management Division; Public Affairs Division	OC San has employees within the Risk Management and Public Affairs Divisions that can write grants.

How can these capabilities be expanded and improved to reduce risk?
▪ Provide initial and refresher training to OC San's registered engineers and other qualified individuals regarding ATC-20, ATC-45, and FEMA P-154 for building inspections. ▪ Provide gran management training to individuals in Risk Management and Public Affairs.

Exhibit C-12c. Financial Capabilities Summary

Financial Resources	Agency or Department	Description/Comments
Community Development Block Grants (CDBG)	Public Affairs Division	Prepared, submitted, and received funding for various construction projects. Includes but not limited to State Revolving Fund Loan.
Capital Improvements Project Funding	Public Affairs Division	OC San contributes funds to the capital improvement project fund on a yearly basis. **Expansion and Improvements:** During annual budgeting OC San can highlight hazard mitigation strategies that support funding needs for the CIP.
Fees for Water, Sewer, Gas, or Electric Service	Finance Division	Charge producers for sewer fees. **Expansion and Improvements:** Analysis of future fees for services should analyze potential mitigation funding support opportunities to capture funding for these projects.
Incur Debt Through General Obligation Bonds	Finance Division	Use revenue refunding bonds to refinance existing debt.
Grants	Public Affairs Division	OC San actively applies for federal and state grants. **Expansion and Improvements:** OC San can coordinate with the Municipal Water District of Orange County (MWDOC) to better understand how grant support could be conducted that benefits the agency and the entire planning area as a whole.
Incur Debt Through Revenue Bonds		OC San has the ability to incur debt through revenue bonds.

How can these capabilities be expanded and improved to reduce risk?
▪ Provide grant management training to individuals who develop grants.

Exhibit C-12d. Education and Outreach Capability Summary

Resource/ Programs	Agency or Department	Description/Comments
Agency website	Public Affairs	OC San informs residents of special events, emergency information, and news.
Social media	Public Affairs	OC San informs residents of special events, emergency information, and news. **Expansion and Improvements:** Increase the use of social media resources for hazard mitigation related content and information.

Resource/ Programs	Agency or Department	Description/Comments
Memorandums	Public Affairs	OC San informs residents of special events, emergency information, and news. **Expansion and Improvements:** Incorporate mitigation information and analysis into memorandums to continue sharing information.

How can these capabilities be expanded and improved to reduce risk?
▪ Develop standardized messaging for known or potential disaster response efforts. Ensure that messaging will work for the general community, as well as the Access, Disability, and Functional Needs community specific to our utility. ▪ Continue to identify opportunities to communicate hazard mitigation and emergency planning information to the public and partner agencies.

C.7 MITIGATION STRATEGY

C.7.1 Mitigation Goals

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

C.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 C-13,** OC San Mitigation Actions, identifies the mitigation actions, including the priority, hazard addressed, risk, timeframe, and potential funding sources.

Exhibit C-13. OC San Mitigation Actions

Action/Task/Project Description	Location/ Facility	Hazard	Cost	Responsible	Timeframe	Possible Funding Sources	Status
HIGH							
Perform a seismic study analysis for all structures and facilities.	District Wide	Seismic Shaking, Seismic Liquefaction, Fault Rupture	$1 Million per structure	Engineering	Immediate (1-2 years)	Budget	Ongoing
P1-137 Support Building Seismic Improvements at Plant No.1.	Plant No. 1	Seismic Shaking, Seismic Liquefaction, Fault Rupture	$27.6 Million	Engineering	Immediate (1-2 years)	Budget	In Progress
PS23-06 Seismic Resilience Study at Plant No.2.	Plant No. 2	Seismic Shaking, Seismic Liquefaction, Fault Rupture	$964,000	Engineering	Immediate (1-2 years)	Budget	In Progress
P1-105: Headworks Rehabilitation at Plant 1: Refurbish, rehab, and build new structures at Plant 1 Headworks so that it can operate with no major issues for the next 20 years providing redundancy and resiliency to the process area.	Plant No. 1	All Hazards	$340 Million	Engineering /Operations	Long-Term (>5 years)	Budget	In Progress
P1-126 Primary Sedimentation Basins 3-5 Replacement at Plant No. 1: The replacing circular clarifiers and odor control systems with new, as well as replacing gravity systems from headworks to AS-1.	Plant No. 1	Contamination/ Saltwater Intrusion	$183 Million	Engineering /Operations	Immediate (1-2 years)	Budget	In Progress
P2-98A A-Side Primary Clarifiers Replacement at Plant No. 2: The project is replacing circular clarifiers and odor control systems with new clarifiers.	Plant No. 2	Contamination/ Saltwater Intrusion	$166 Million	Engineering /Operations	Immediate (1-2 years)	Budget	In Progress
Identify locations and install sensors/alarms for harmful contaminants entering the treatment system.	District Wide	Contamination/ Saltwater Intrusion	Unknown	Operations	Short Term (3-5 years)	Budget	Ongoing
MEDIUM							
Conduct routine site inspections of structures and facilities and follow-up on any reported structural deficiencies or mitigation measures.	District Wide	All Hazards	$500,000 per Year	Operations	Long-Term (>5 years)	Budget	Modified
Follow the Asset Management Plan for replacement and refurbishment of facilities.	District Wide	All Hazards	$200 Million	Engineering	Long-Term (>5 years)	Budget	Ongoing

Action/Task/Project Description	Location/ Facility	Hazard	Cost	Responsible	Timeframe	Possible Funding Sources	Status
PSA2022-001 Coating Inspection Services to provide ongoing assessments of coatings and make recommendations for repairs.	District Wide	Contamination/ Saltwater Intrusion	$500,000 per Year	Operations	Long-Term (>5 years)	Budget	Ongoing
MP2-004 Digester K Dome Structural Analysis at Plant No. 2 to perform a structural analysis of Digester K and make recommendations for repairs.	Plant No. 2	Seismic Shaking, Seismic Liquefaction, Fault Rupture	$500,000	Operations	Long-Term (>5 years)	Budget	Ongoing
Protect and reinforce facilities within flood plain areas, rivers, and creeks, or relocate facilities out of harm's way.	District Wide. South Perimeter Wall and Plant No. 2	Flood	Unknown	Engineering /Operations	Immediate (1-2 years)	Budget	In Progress
Improve security at key facilities and install surveillance equipment. MP1-008 EJB Security Lighting Improvements at Plant 1 to install motion detection lights at an offsite structure.	Plant 1	Human-Caused Hazards – Terrorism (MCI)	$100,000	Operations and Security	Immediate (1-2 years)	Budget	In Progress
Improve security at key facilities and install surveillance equipment. SCE23-02 EJB Security Fence Replacement: Upcoming project to replace chain link fence with 8-foot-tall wrought iron fence.	Plant 1	Human-Caused Hazards – Terrorism (MCI)	$100,000	Operations and Security	Immediate (1-2 years)	Budget	In Progress
J-120A Process Control Systems Upgrades: This project is upgrading the existing Supervisory Control and Data Acquisition (SCADA) systems for the treatment plants and pump stations based on vendor system selected as part of SP-196 study. The project will replace existing obsolete HMI, databases, and software programs.	District Wide	Human-Caused Hazards – Terrorism (Cyber Threat)	$37 Million	Operations /Contractor	Immediate (1-2 years)	Budget	In Progress
Standardized and upgrade older lift station electrical and instrumentation systems.	Yorba Linda Pumping Station, Bitter Point Pumping Station, Rocky Point Pumping Station, Crystal Cove Pumping Station, MacArthur Pumping Station, and Edinger Pumping Station	All Hazards	$160 Million	Operations	Long-Term (>5 years)	Budget	Ongoing
3-67 Seal Beach Pump Station: The project is replacing the existing pump station with a new pump station as well as making modifications to the existing gravity sewers and force mains.	Seal Beach Pumping Station	All Hazards	$134 Million	Operations	Immediate (1-2 years)	Budget	In Progress

Action/Task/Project Description	Location/ Facility	Hazard	Cost	Responsible	Timeframe	Possible Funding Sources	Status
5-67 Bay Bridge Pump Station: The project is replacing the existing pump station with a new pump station as well as making modifications to the existing gravity sewers and force mains.	Bay Bridge Pump Station	All Hazards	$145 Million	Operations	Immediate (1-2 years)	Budget	In Progress
LOW							
Exterior Lighting Study at Plant Nos. 1 and 2	Plant Nos. 1 and 2	Human Caused Hazards – Terrorism (MCI)	$345,000	Engineering /Operations	Long-Term (>5 years)	Budget	Modified and In-Progress
J-117B/P2-107 Ocean Outfall Booster Pump Station and Supervisory Upgrades: The project will construct improvements to implement a power monitoring and control system. The project is replacing existing fiber network with a series of looped networks and network switches, creating an ICS to be used to improve reliability and allow automatic load shedding. The project installs two new server rooms.	Plant No. 2	Human-Caused Hazards: Power Outage; Human-Caused Hazards: Terrorism (Cyber Threat)	$140 Million	Operations	Long-Term (>5 years)	Budget	Modified and Ongoing

C.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:** Wastehauler Station Safety & Security Improvements
  - **Status:** Completed 2024. The project installed access control systems at our wastehauler station to prohibit illegal dumping.
- **Mitigation:** Follow the Asset Management Plan for replacement and refurbishment of facilities.
  - **Status:** Complete 2023. Updates to OC San's Asset Management Plan were made and approved by the Board of Directors in 2023. OC San knows the condition of assets owned and has a plan to operate and maintain the assets to deliver the required level of service, at the lowest life cycle cost, with an acceptable level of risk.
- **Mitigation:** South Perimeter Security and Utility Improvements at Plant No. 1
  - **Status:** Completed 2023. Project replaced the perimeter chain link fence at Plant No. 1 along Ward Street from Garfield Avenue to Falcon Avenue with a security wall with an 8-feet tall split-face concrete masonry unit (CMU) wall with landscaping inside and outside the CMU wall. A permanent Guardhouse at Garfield Avenue Gate, interior perimeter lighting, video surveillance, and electronic security systems along Ward Avenue and Garfield Avenue were installed.
- **Mitigation:** Pump Station Portable Generator Connectors
  - **Status:** Completed. The project installed connectors at the pump stations for backup power supply connections.
- **Mitigation:** Seismic Evaluation of Structures at Plant 1 and 2
  - **Status:** Complete 2020. Evaluated seismic resiliency of structures at Plants 1 and 2 that were constructed prior to the 2001 California Building Code. Quantified the seismic vulnerability of these structures. Developed mitigation measures and costs that would address vulnerabilities and improve reliability. Prioritized seismic projects (ranked list of structures) and made recommendations.
- **Mitigation:** 2-41 Santa Ana Regional Interceptor (SARI) Realignment
  - **Status:** Completed in 2019. A 4-mile vulnerable segment of the SARI line between the Green River Golf course and Savi Ranch that was in the flood plain of the Sanat Ana River was relocated in 2015, outside of the flood plain and protected with launched rip rap against major flood events and lateral erosion from high releases from the U.S. Army Corps of Engineers' Prado Dam. The SARI pipeline crossings have been lowered within encased siphons to withstand major riverbed degradation. Overall, this segment of the SARI line is protected and does not need additional relocation or protection.
- **Mitigation:** Install joint less pipelines in all creek crossings and slope easements.
  - **Status:** Removed, deemed cost prohibitive.

- **Mitigation:** Strictly enforce standard separation between water and wastewater infrastructure.
  - **Status:** Removed, not applicable.
- **Mitigation:** Survey and improve site fencing and other forms of hardening deterrence to facilities including the use of camera and wireless communications.
  - **Status:** Removed, repeat mitigation action.
- **Mitigation:** Examine opportunities for online water quality sensing relative to potential human induced contamination and implement if feasible.
  - **Status:** Removed, deemed not applicable.

C.8 PLAN INTEGRATION

OC San's capital budget, Wastewater Master Plan, and the Integrated Emergency Response Plan are all used to implement mitigation initiatives identified in this annex. After adoption of the MJHMP, OC San will continue to integrate mitigation priorities into these documents.

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

- Incorporation of mitigation initiatives into the Water Master Plan.

The risk assessment information was used to update the hazard analysis in OC San's Emergency Response Plan.

OC San 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.