ORANGE COUNTY SANITATION DISTRICT ANNEX

The Orange County Sanitation District (OCSD) is a participant (Member Agency [MA]) in the Orange County Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan (HMP or Plan). As a participant MA, OCSD representatives were part of the HMP Planning Process and served on the Planning Team responsible for the Plan Update; refer to Section 2 of the Plan. The primary Plan, including the hazard mitigation plan procedural requirements and planning process apply to OCSD.

This Annex supplements information contained in the primary Plan and describes how OCSD's risks vary from the planning area. The Risk Assessment (Section 3) summarizes the hazards and risks that pose a threat to Orange County. 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 OCSD with a focus on the risk assessment and mitigation strategy.

HAZARD MITIGATION PLAN POINT OF CONTACT AND DEVELOPMENT TEAM

The following representatives attended the Planning Team meetings on behalf of OCSD and coordinated the hazard mitigation planning efforts with OCSD staff:

Primary Point of Contact	**Alternate Point of Contact**
Rod Collins	Derek Harp
Safety and Health Supervisor	Security and Emergency Planning
rcollins@ocsd.com	dharp@ocsd.com
714-573-7832	714-593-7192

In addition to participating on the Planning Team, an internal team was also formed to support Planning Team representatives and provide information for the Plan update. The following staff served as OCSD's internal hazard mitigation planning development team.

Representative	**Title**	**How Participated**
Richard Spencer	Human Resources/Risk Manager	Project Manager
George Rivera	Security/Emergency Planning Specialist	Data Collection

JURISDICTION PROFILE (Service Population: 2.5 million)

OCSD 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, OCSD serves 2.6 million residents in 20 cities, four special districts and the unincorporated areas within north and central Orange County. The District 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.

OCSD 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 is reclaimed each day for use by the 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, OCSD is also concerned about ocean water quality and protecting the coastline from urban runoff contamination. Therefore, OCSD's charter was modified to allow OCSD to accept dry weather urban runoff contaminated with bacteria in the sewer system. The dry weather urban runoff is then treated with the raw sewerage entering the plants and disinfected before it is released to the ocean outfall system. Currently, OCSD 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.

HAZARDS

Detailed hazard profiles for the planning area are provided in Section 3. OCSD's service area includes most of central and northwest Orange County. Compared to southern Orange County, it has less area susceptible to wildfire but more area susceptible to flooding, extreme ground shaking, and liquefaction. There are no hazards that are unique to OCSD.

Based on the risk assessment, the OCSD development team identified the following hazards that affect OCSD and summarized their geographic extent, probability of future occurrence, magnitude/severity and significance; refer to Table C-1.

Table C-1
OCSD Hazard Identification

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/Severity	Significance
Climate Change	Limited	Unlikely	Negligible	Low
Coastal Storms/Erosion	Limited	Likely	Limited	Low
Tsunami	Limited	Likely	Limited	Low
Contamination/Salt Water Intrusion	Significant	Unlikely	Limited	Medium
Dam/Reservoir Failure	N/A	N/A	N/A	N/A
Drought	Limited	Unlikely	Negligible	Low
Earthquake Fault Rupture & Seismic Hazards	Extensive	Highly Likely	Catastrophic	High
Flood	Significant	Likely	Limited	Medium
Geologic Hazards	Significant	Occasional	Limited	Medium
High Winds/Santa Ana Winds	Limited	Unlikely	Limited	Low
Landslide/Mudflow	Significant	Occasional	Limited	Low
Wildland/Urban Fire	Significant	Likely	Critical	Medium
Human-Caused Hazards	Significant	Occasional	Critical	Medium
Power Outage	Extensive	Highly Likely	Catastrophic	High

Geographic Extent
Limited: Less than 10% of planning area
Significant: 10-50% of planning area
Extensive: 50-100% of planning area

Probability of Future Occurrences
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.

Magnitude/Severity
Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths.
Critical—25-50 percent 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 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability.
Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid.

Significance
Low: Minimal potential impact
Medium: Moderate potential impact
High: Widespread potential impact

The identification of hazards provided in Table C-1 is highly dependent on the location of facilities within each agencies 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 agencies' expertise and knowledge.

Hazard Maps

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

Figure 1
Fire Hazard and OCSD Wastewater Infrastructure

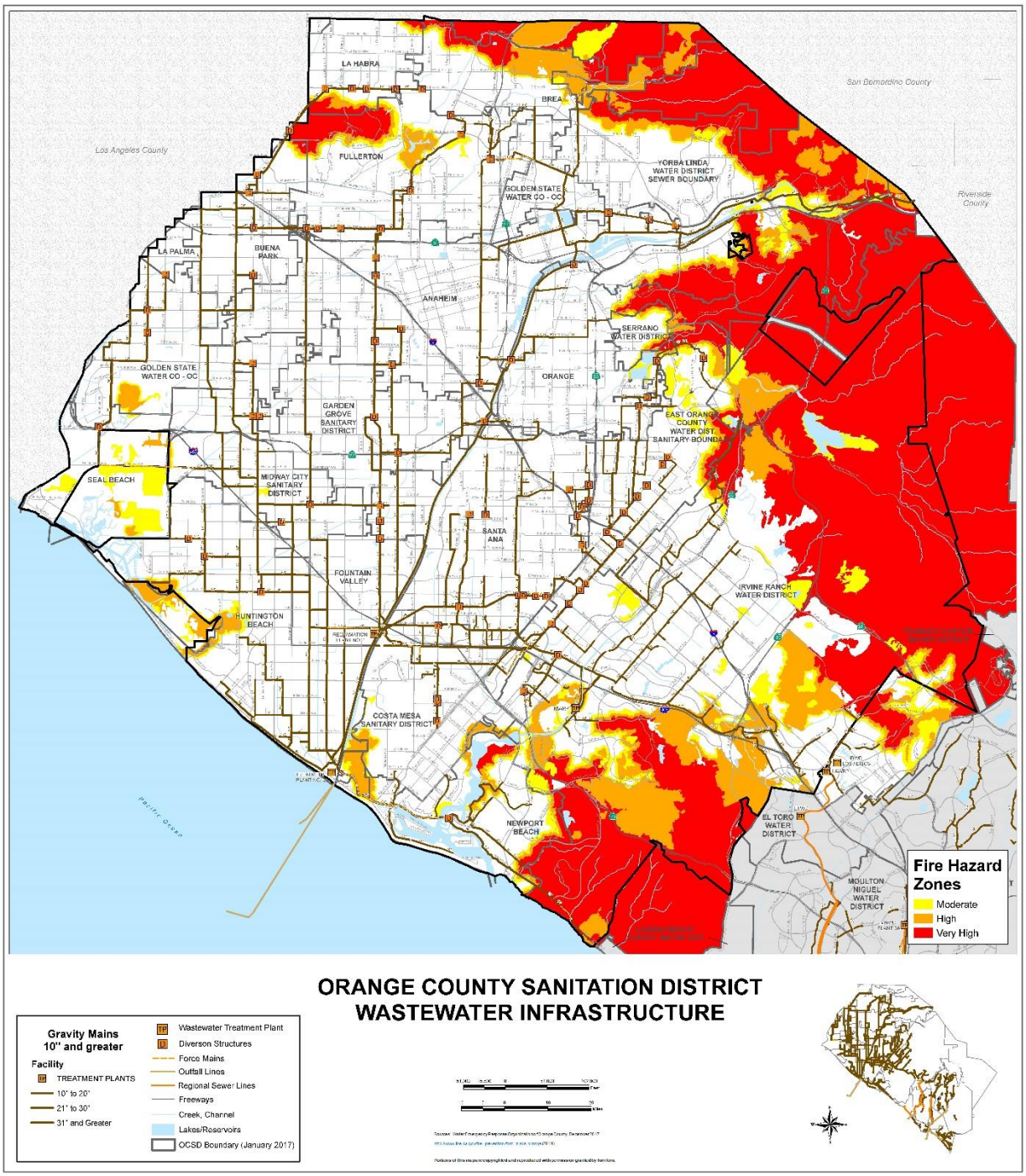


Figure 2
Flood Hazard and OCSD Wastewater Infrastructure

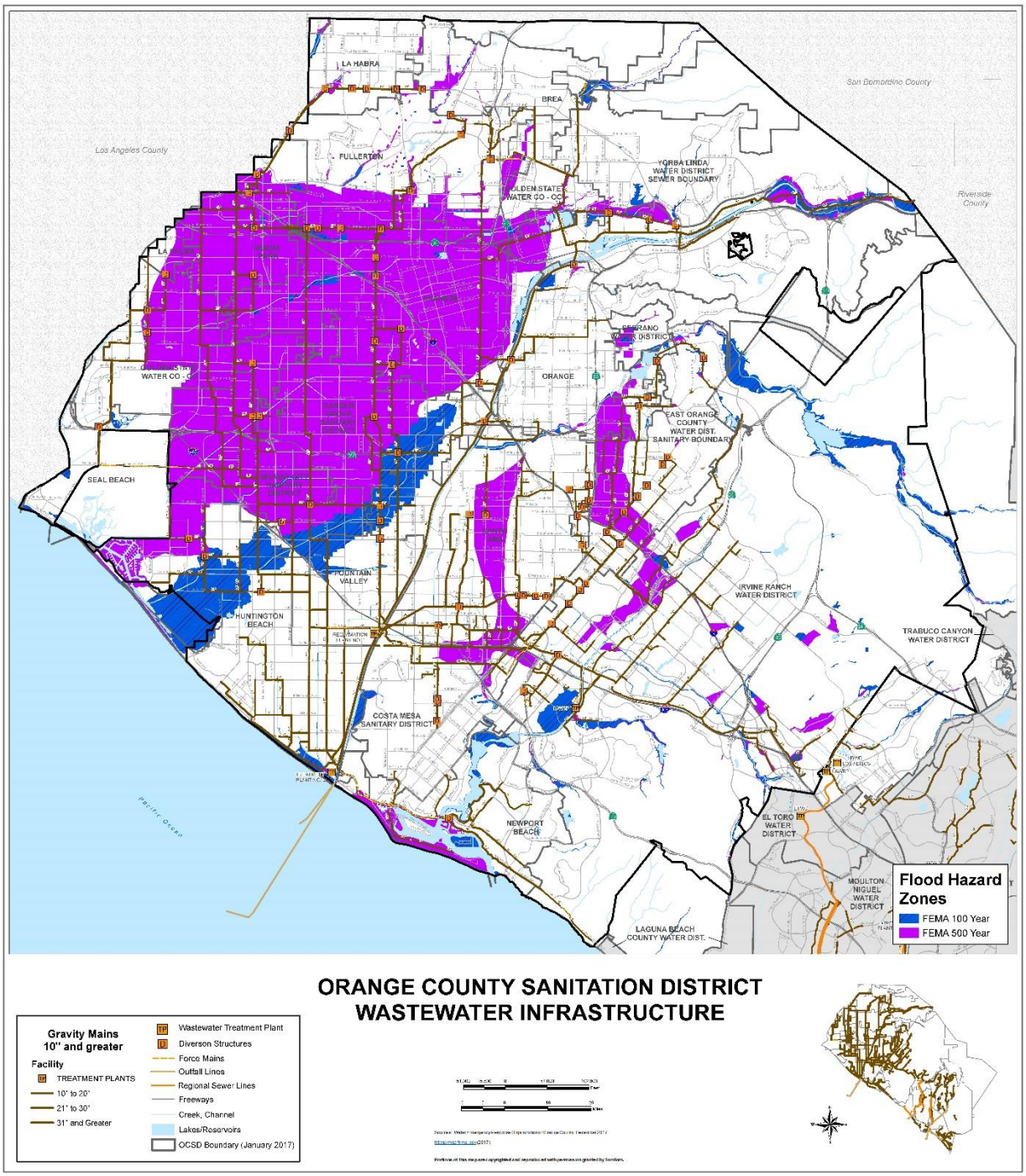


Figure 3
Fault Rupture Hazard and OCSD Wastewater Infrastructure

Figure 4
Ground Shaking Hazard and OCSD Wastewater Infrastructure

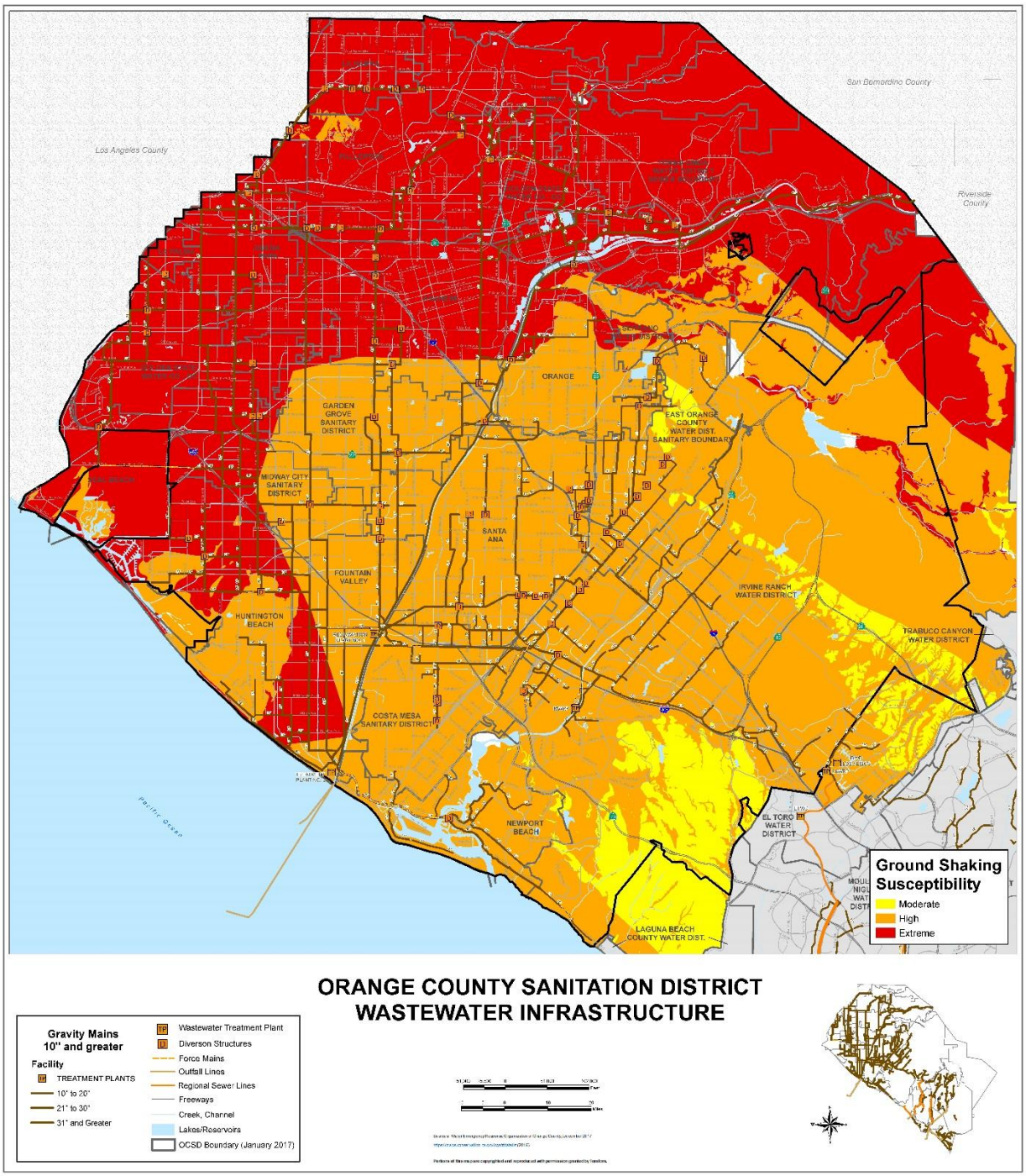


Figure 5
Liquefaction Hazard and OCSD Wastewater Infrastructure

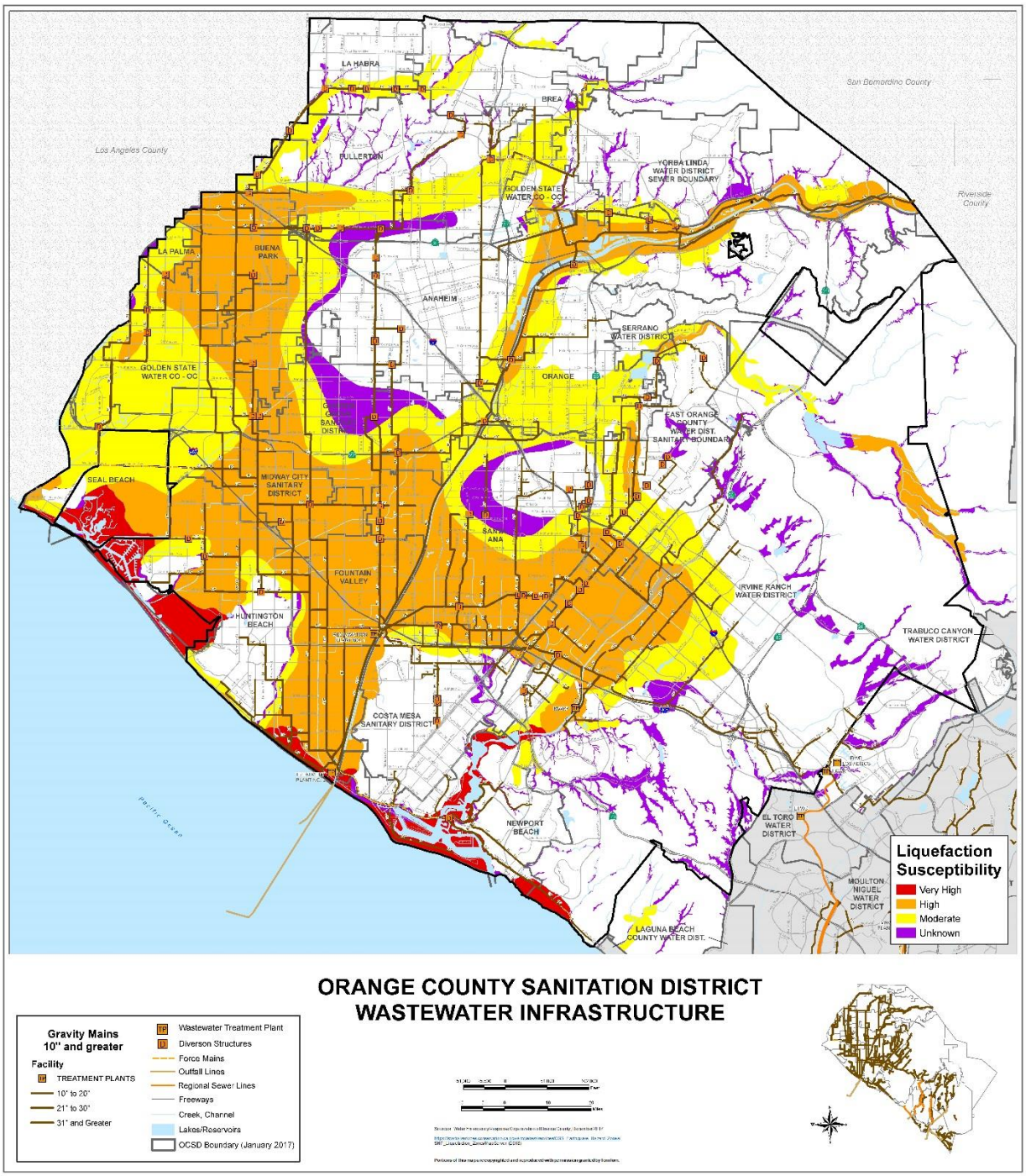


Figure 6
Landslide Hazard and OCSD Wastewater Infrastructure

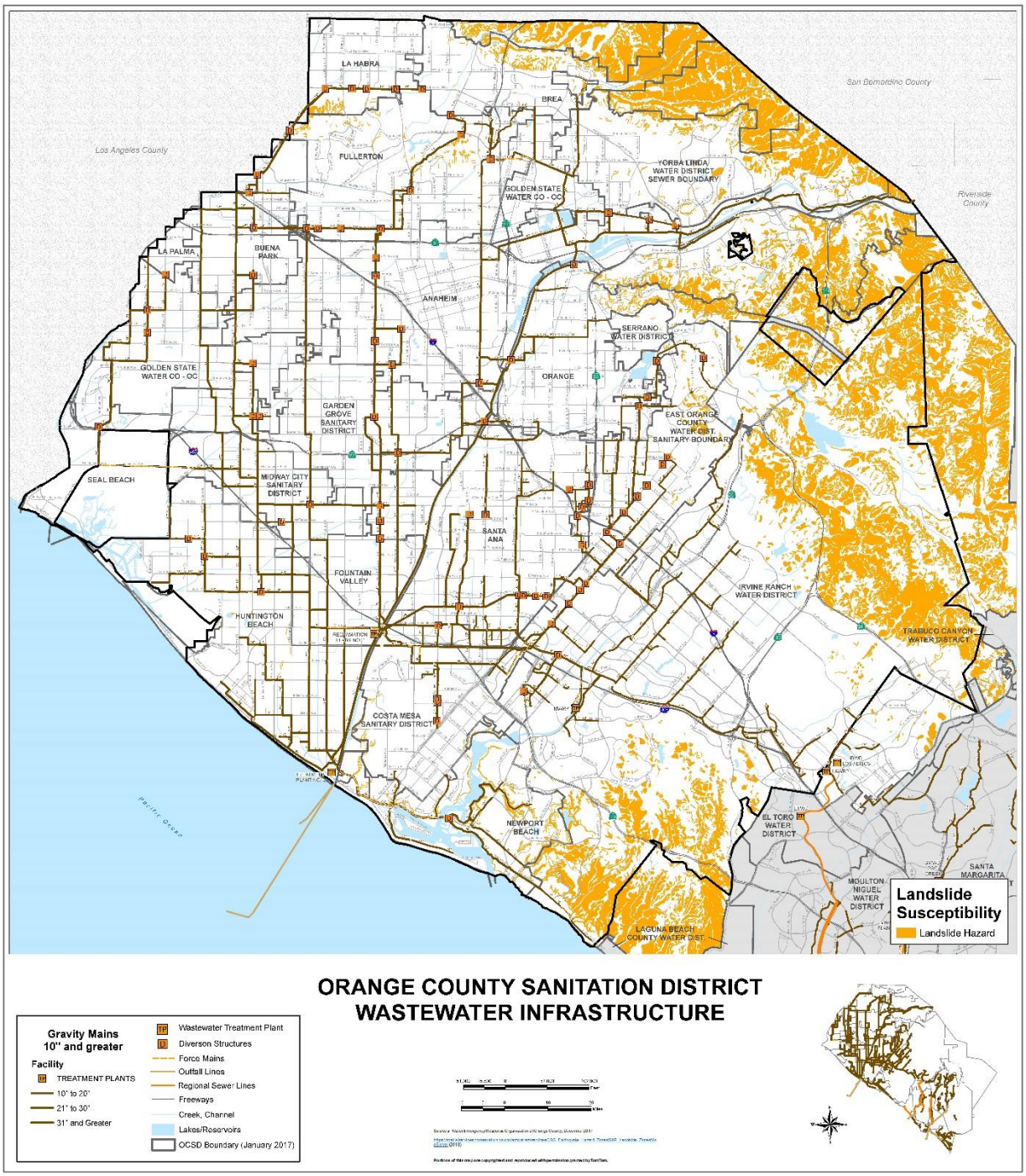
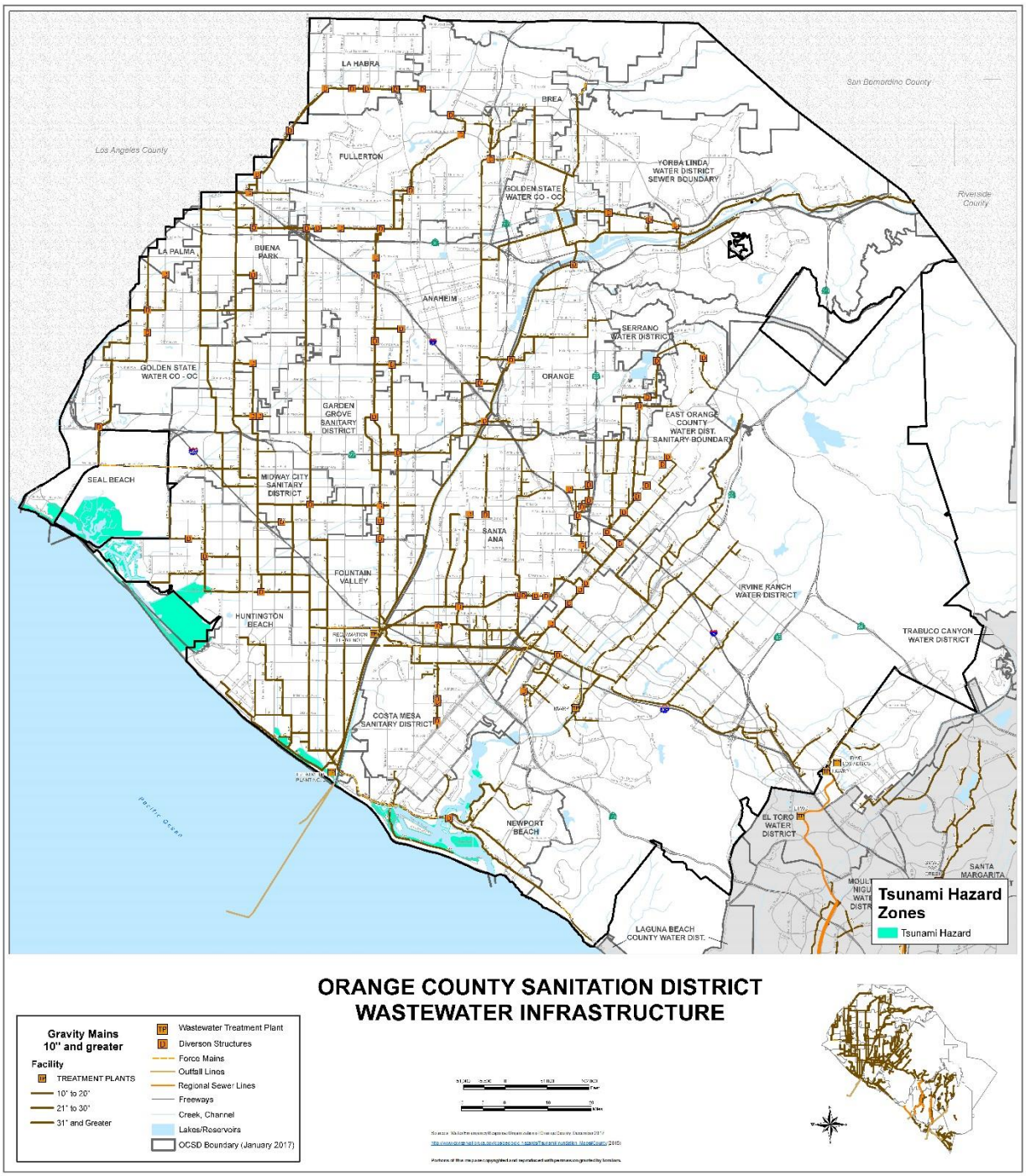


Figure 7
Tsunami Hazard and OCSD Wastewater Infrastructure



VULNERABILITY AND RISK ASSESSMENT

Assets Susceptible to Hazard Events

Table C-2, OCSD Infrastructure and Exposure to Hazards, identifies OCSD's wastewater infrastructure assets that are located within the mapped hazard zones, identified above.

Table C-2
OCSD Infrastructure and Exposure to Hazards

Hazard		Infrastructure			
		Wastewater Pipeline (miles)	Lift Stations	Diversion Structures	Treatment Plants
Fire Hazard Zone	Moderate	8.7	4	2	0
	High	10.2	0	0	0
	Very High	5.2	3	0	0
FEMA Flood Zone	100-Year	41.8	1	39	2
	500-Year	129.7	9	6	0
Alquist-Priolo Rupture Zone		0.7	0	0	0
Ground Shaking	Moderate	0.01	0	0	0
	High	230.9	11	45	4
	Extreme	177.2	8	29	0
Liquefaction	Moderate	99.7	0	22	0
	High	186.2	0	31	2
	Very High	15.9	0	1	1
	Unknown	29.6	0	4	0
Landslide Zone		1.0	2	5	0
Tsunami Zone		5.0	3	0	1

Several miles of the district'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 very 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.

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 Plan. The OCSD internal development team revised the capabilities identified in the 2012 plan and collaborated to identify current local capabilities and mechanisms available to the MA for reducing damage from future hazard events. Tables C-3a through C-3d assess the authorities, policies, programs, and resources that the authority 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. The agency has the ability to create or expand existing policies and programs to implement mitigation programs

Table C-3a
Planning and Regulatory Capabilities Summary

Ordinance, Plan, Policy, Program	Responsible Agency or Department	Description/Comments
Building Code	City/County	OCSD complies with applicable building codes and works with the cities within the District service area.
Zoning Ordinance	City/County	OCSD complies with applicable zoning ordinances and works with cities within the District service area.
Subdivision Ordinance or Regulations	City/County	OCSD complies with applicable subdivision ordinances or regulations, and works with cities within the District service area.
Special Purpose Ordinance	City/County	OCSD complies with applicable special purpose ordinances, and works with cities within the District service area.
Growth Management Ordinances	City/County	OCSD complies with applicable growth management ordinances, and works with cities within the District service area.
Site Plan Review Requirements	City/County	OCSD complies with applicable site plan review requirements, and works with cities within the District service area.
General Plan	City/County	OCSD complies with applicable General Plan requirements, and works with cities within the District service area.
Capital Improvements Plan	Finance Department	OCSD maintains a capital improvement plan
Economic Development Plan	City/County	OCSD complies with applicable economic development plans, and works with cities within the District service area.
Integrated Emergency Response Plan	Risk Communications Division; OCSD	The IERP is designed to address organized response to emergency situations associated with natural or manmade incidents.
Post-Disaster Recovery Plan	Risk Communications Division; OCSD	This is a component of the IERP.
Emergency Public Notification	Public Affairs; OCSD	OCSD has identified personnel who carry out responsibilities of public information.
Emergency Communications	Risk Management; OCSD	OCSD has the capability to communicate with WEROC and the Orange County OA.
Emergency Operations Center	Risk Management; OCSD	OCSD has a 24-hour operational capability of the EOC staffing, feeding, fuel, for generators.
Damage Assessment Teams	Risk Management; OCSD	DAT will conduct preliminary damage assessments to structures, critical facilities, and infrastructure.
Human Resources	Human Resources Department; OCSD	HR supports the district in 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?		
Conduct disaster response fuel analysis and contingency planning with WEROC as a component of the CA Southern California Catastrophic Plan. Evaluate ability to contract with local fuel distributors and gas stations for emergency backup supply. The OCSD Continuity of Operations Plan (COOP) is designed to address and ensure integrated wastewater continuity and emergency response within the service area. Identify whether aspects of the HMP should be incorporated into the COOP. OCSD works with WEROC and other partner agencies in the integration of existing capabilities and shared resources to achieve common planning goals and initiatives. Work with the OCSD Public Affairs office to use district social media to inform residents of special events, emergency information and news.		

Table C-3b
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	Outside consultants in coordination with the OCSD	OCSD staff utilizes an outside consultant with input from staff.
Engineer(s) or Professional(s) Trained in Construction Practices Related to Buildings and/or Infrastructure	Engineering Department; OCSD	Licensed Civil Engineers and certified building evaluators (Safety Assessment Program certified by Cal OES).
Planners or Engineer(s) with an Understanding of Natural and/or Human - Caused Hazards	Engineering Department; OCSD	Regional General Plan (RGP).
Floodplain manager	County of Orange Floodplain Manager	Adhere to county standards.
Surveyors	Outside consultant in coordination with OCSD	City staff utilizes an outside consultant with input from staff.
Staff with Education or Expertise to Assess the Community's Vulnerability to Hazards	Emergency Management Department, WEROC, County of Orange, OCIAC	OCSD has an emergency coordinator and coordinates with WEROC and the County to assess vulnerabilities.
Personnel Skilled in GIS and/or HAZUS	Outside consultant in coordination with OCSD	City staff utilizes an outside consultant with input from staff.
Scientists Familiar with the Hazards of the Community	Emergency Management Department, WEROC, County of Orange	The district coordinates with WEROC, the County, and the cities in our service area to identify hazards.
Emergency Manager	Director of Operations, Risk Management	OCSD employs a full time emergency manager.
Grant Writers	Outside consultant in coordination with OCSD	City staff utilizes an outside consultant with input from staff.
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 CalOES Safety Assessment Program (SAP) training for building inspections. Continue to work with the OCSD Public Affairs Office on opportunities to communicate hazard mitigation and emergency planning information to the public and partner agencies. Identify how in house environmental capabilities (performance of sampling, monitoring, analysis and recommendations for collection system, treatment process and marine sediments) can be integrated into hazard mitigation planning.		

Table C-3c
Financial Capabilities Summary

Financial Resources	Agency or Department	Description/Comments
Community Development Block Grants (CDBG)	Finance Department; OCSD	Prepared, submitted, and received funding for various construction projects. Includes but not limited to State Revolving Fund Loan.
Capital Improvements Project Funding	Finance Department; OCSD	The district contributes funds to the capital improvement project fund on a yearly basis.
Fees for Water, Sewer, Gas, or Electric Service	Finance Department; OCSD	Charge producers for recycled and ground water.
Incur Debt Through General Obligation Bonds	Finance Department; OCSD	Use revenue refunding bonds to refinance existing debt.
Grants	Finance Department; OCSD	The district actively applies for federal and state grants.
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.		

Table C-3d

Education and Outreach Capability Summary

Resource/Programs	Agency or Department	Description/Comments
Agency website	Public Affairs; OCSD	The district informs residents of special events, emergency information, and news.
Twitter	Public Affairs; OCSD	The district informs residents of special events, emergency information, and news.
Memorandums	Public Affairs; OCSD	The district informs residents of special events, emergency information, and news.
How can these capabilities be expanded and improved to reduce risk?		
Participate in WEROC lead 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 our utility.		

MITIGATION STRATEGY

Mitigation Goals

OCSD adopts the hazard mitigation goals developed by the Planning Team; refer to Section 4.

Mitigation Actions

The internal development team reviewed the mitigation actions identified in the 2012 plan and the updated risk assessment to determine if the mitigation actions were completed, require modification, should be removed because they are no longer relevant, and/or should remain in the Plan Update. New mitigation actions to address the updated risk assessment and capabilities identified above were also considered and added. Table C-4, OCD Mitigation Actions, identifies the mitigation actions, including the priority, hazard addressed, risk, timeframe, and potential funding sources.

Table C-4
OCSD Mitigation Actions

Priority (High, Medium, or Low)	Action/Task/Project Description	Location/ Facility	Risk (High, Medium, or Low)	Cost	Responsible	Timeframe (Immediate, Short Term, or Long Term)	Possible Funding Sources	Status/ Progress (New, Existing, Modified)	Status Rationale
Low	Secure above-ground assets in all buildings, water reclamation plants, lift stations, pipelines and bridge crossings.	District Wide	High	Being evaluated	Engineering/ Operations	Long	Budget	Existing	Evaluating nonstructural components. Earthquake
high	Perform a seismic study analysis for all structures and facilities.	District Wide	High	1 Million	Engineering	Immediate	Budget	Existing	Earthquake

Table C-4 [continued]
OCSD Mitigation Actions

Priority (High, Medium, or Low)	Action/Task/Project Description	Location/ Facility	Risk (High, Medium, or Low)	Cost	Responsible	Timeframe (Immediate, Short Term, or Long Term)	Possible Funding Sources	Status/ Progress (New, Existing, Modified)	Status Rationale
Medium	Conduct routine site inspections of structures and facilities and follow-up on any reported structural deficiencies or mitigation measures.	District Wide	Medium	500K /Year	Operations	Long Term	Budget	Existing	Corrosion Management Program. All Hazards
Low	Provide redundant underground communication systems for critical facilities to insure reliability of operating systems.	District Wide	Low	N/A	Operations	Long Term	Budget	Existing	All Hazards
High	Build redundancy into the wastewater collection, treatment, disposal and non-potable distribution system to mitigate major structural defects.	District Wide	High	N/A	Engineering/ Operations	Long Term	Budget	Existing	All Hazards
Medium	Follow the Asset Management Plan for replacement and refurbishment of facilities.	District Wide	Medium	200 M	Engineering	Long Term	Budget	Existing	Capacity, Corrosion, Level of service failures
Medium	Protect and reinforce facilities within flood plain areas, rivers and creeks or relocate facilities out of harm's way (includes protection and/or relocation of SARI line).	District Wide	Low	N/A	Engineering/ Operations	Long Term	Budget	Existing	Flood
Low	Install joint less pipelines in all creek crossings and slope easements.	Collections System	Low	N/A	Engineering/ Operations	Long Term	Budget	Existing	Flood, Earthquake
High	Identify locations and install sensors/alarms for harmful contaminants entering the treatment system.	District Wide	Low	N/A	Operations	Short Term	Budget	Existing	Fire
Medium	Improve security at key facilities and install surveillance equipment.	District Wide	Medium	100K	Operations/ Security	Short Term	Budget	Existing	Upgrade CCTV, and lighting. Human Cause Hazard

Table C-4 [continued]
OCSD Mitigation Actions

Priority (High, Medium, or Low)	Action/Task/Project Description	Location/ Facility	Risk (High, Medium, or Low)	Cost	Responsible	Timeframe (Immediate, Short Term, or Long Term)	Possible Funding Sources	Status/ Progress (New, Existing, Modified)	Status Rationale
Medium	Upgrade SCADA system to existing sites as needed.	District Wide	High	200K	Operations/ Contractor	Short Term	Budget	Existing	Locations are currently being determined. Human Caused Hazard.
Medium	Standardize and upgrade older lift station electrical and instrumentation systems.	Yorba Linda Pumping Station, Seal Beach Pumping Station, Bitter Point Pump Station, Rocky Point Pump Station, Crystal Cove Pumping Station, Bay Bridge Pumping Station, MacArthur Pumping Station, Edinger Pumping Station	Low	160M	Operations	Long Term	Budget	Existing	A study is being conducted to determine priority. All hazards
Medium	Survey and improve site fencing and other forms of hardening deterrence to facilities including the use of camera and wireless communications.	District Wide	Medium	10K	Operations/ Security	Short Term	Budget	Existing	Conducting a study to determine prioritization. Human Caused hazard
Medium	Examine opportunities for on-line water quality sensing relative to potential human induced contamination, and implement if feasible.	District Wide	Low	N/A	Water Quality	Long Term	Budget	Existing	Conducting a study to determine prioritization. Human caused Hazard.

Completed or Removed Mitigation Initiatives

The following mitigation actions from the 2012 plan have been completed and therefore are removed from the Plan update.

Mitigation: Strictly enforce standard separation between water and wastewater infrastructure.

Status: Removed, Not applicable.

PLAN INTEGRATION

OCSD'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 HMP, the District will continue to integrate mitigation priorities into these documents.

Since the previous Plan Update, OCWD incorporated information from the HMP 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 OCSD's Emergency Response Plan.

OCSD 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.

This page intentionally left blank.