

CITY OF GARDEN GROVE ANNEX

The City of Garden Grove (Garden Grove) is a participant Member Agency (MA) in the Orange County Water and Wastewater Multi-Jurisdictional Hazard Mitigation Plan (HMP). As a participant MA, Garden Grove 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 Garden Grove.

This Annex supplements information contained in the primary Plan and describes how Garden Grove’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 Garden Grove 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 Garden Grove and coordinated the hazard mitigation planning efforts with Garden Grove staff:

Primary Point of Contact

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Alternate Point of Contact

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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 Garden Grove’s internal hazard mitigation planning development team.

Representative	Title	How Participated
Sam Kim	Water Services Manager	Review process/Update
Robert Bermudez	Water Production Supervisor	Review process/Update
Brent Hayes	Sanitation Supervisor	Review process/Update
Brenda Lai	Water Intern	Review process/Update

JURISDICTION PROFILE (Service Population: 177,300)

The City of Garden Grove, recognizing the importance of the groundwater basin underlying the City, established a Municipal Water Department in 1958. The Department is the principle water retailer within the boundaries of Garden Grove. Imported water is purchased by Garden Grove from MET through MWDOC to alleviate over depletion of the groundwater basin. The percentage of import to well water changes periodically and is dependent upon OCWD groundwater projections.

Garden Grove has 13 wells strategically located throughout the City, with a pumping capacity of over 35,000 gallons per minute. In 2010, the sale of water bonds allowed the City to take on many capital improvement projects to provide a safe and abundant water supply for the citizens of Garden Grove. The improvements included building a new water supply well, two new reservoirs, and upgrades to the City’s

import water connections and water distribution system. Careful planning and management of utility services ensures that a reliable source of potable water is readily available to the City's water users, now at a population of 177,300.

HAZARDS

Detailed hazard profiles for the planning area are provided in Section 3. Garden Grove is located inland and therefore is not subject to coastal hazards such as coastal storms/erosion and tsunamis. However, the City 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 climate change, drought, ground shaking from earthquakes, geologic hazards, and high wind. The City contains large areas of land in the 100-year flood zones primarily in the southeastern portion of the City and nearly the rest of the City is within the 500-year FEMA flood zone. The City contains no high or very high fire hazard severity zones. Human-caused hazards and power outages are also hazards that could impact the City. There are no hazards that are unique to Garden Grove.

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

**Table G-1
Garden Grove Hazard Identification**

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/Severity	Significance
Climate Change	Significant	Likely	Limited	Low
Contamination/ Salt Water Intrusion	Significant	Unlikely	Limited	Low
Dam/Reservoir Failure	Significant	Unlikely	Critical	Medium
Drought	Significant	Likely	Limited	Low
Earthquake Fault Rupture & Seismic Hazards	Extensive	Likely	Catastrophic	High
Flood	Extensive	Occasional	Limited	Medium
Geologic Hazards	Significant	Likely	Limited	Low
High Winds/Santa Ana Winds	Significant	Likely	Negligible	Low
Human-Caused Hazards	Significant	Occasional	Critical	Medium
Power Outage	Significant	Highly Likely	Negligible	Medium
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 G-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 either potable water or wastewater systems, as applicable.

VULNERABILITY AND RISK ASSESSMENT

Assets Susceptible to Hazard Events

Table G-2, Garden Grove Infrastructure and Exposure to Hazards, identifies Garden Grove’s water and wastewater infrastructure assets that are located within the mapped hazard zones, identified above.

**Table G-2
Garden Grove Infrastructure and Exposure to Hazards**

Hazard		Infrastructure Type						
		Lift Station (#)	Interties (#)	Pump Stations (#)	Reservoirs (#)	Wells (#)	Potable Pipeline (miles)	Wastewater Pipeline (miles)
Fire Hazard Zone	Moderate	0	0	0	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	1	0	0	0	3	9.0	4.2
	500-Year	2	10	5	5	10	44.9	19.5
Alquist-Priolo Rupture Zone		0	0	0	0	0	0	0
Ground Shaking	Moderate	0	0	0	0	0	0	0
	High	2	13	4	4	11	46.9	20.1
	Extreme	2	0	1	1	2	11.0	4.9
Liquefaction	Moderate	3	2	2	4	5	23.6	8.7
	High	1	3	1	0	3	17.5	9.1
	Very High	0	0	0	0	0	0	0
	Unknown	0	0	2	1	3	12.0	5.6
Landslide Zone		0	0	0	0	0	0	0
Tsunami Zone		0	0	0	0	0	0	0

A majority of the City and its associated infrastructure are located within a 500-year flood zone with a smaller portion located within a 100-year flood zone. The entire City and a majority of its potable water and wastewater infrastructure are located within an area identified as having a high or extreme risk of ground shaking during an earthquake. A sizable portion of the City is also located in areas identified as having moderate or high risk for liquefaction during an earthquake.

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 Garden Grove 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 G-3a through G-3d 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. The agency has the ability to create or expand existing policies and programs to implement mitigation programs.

**Table G-3a
Planning and Regulatory Capabilities Summary**

Ordinance, Plan, Policy, Program	Responsible Agency or Department	Description/Comments
Building Code	Planning/Code Enforcement, City of Garden Grove; Garden Grove Fire Department, Air Quality Management Department	Regulates construction standards and ensures enforcement of the City's adopted standards. The City enforces the California Building Code with modifications.
Zoning Ordinance	Planning Department; City of Garden Grove	Controls land use to protect public health, welfare and safety. Through the zoning code, the City controls and limits the type and density of development.
Subdivision Ordinance or Regulations	Planning Department; City of Garden Grove	Regulates the development of housing, commercial, industrial, and other uses, including associated public infrastructure, as land is subdivided into buildable lots for sale or future development.
Special Purpose Ordinance	County of Orange, Regional Water Quality Control Board	Adhere to State and county ordinances.
Growth Management Ordinances	Planning Department, City of Garden Grove; County of Orange, LAFCO	Adhere to City and county ordinances.
Site Plan Review Requirements	Planning, Garden Grove Fire Department, Public Works Department, County of Orange	Adhere to City and county ordinances.
General Plan	Planning Department; City of Garden Grove	Adhere to City and county plan.
Capital Improvements Plan	City CIP for water and wastewater	Guides the scheduling of spending on Capital Improvement Projects (CIP), and serves as a mechanism to guide future development (water and wastewater facilities).
Economic Development Plan	Planning Department; City of Garden Grove	Included in the City's General Plan.
Emergency Response Plan	Garden Grove EOC	Maintains an Emergency Operations Plan.
Post-Disaster Recovery Plan	City/County	Rely on the County for assistance.
Post-Disaster Recovery Ordinance	Local cities, County of Orange, State of California, FEMA	Rely on the County for assistance.
Water Discharge Requirements	State Water Resources Control Board	Adhere to State regulations.

**Table G-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	Community Development Department, City of Garden Grove.	The City employs expertise in land development practices. Collaborate with Engineering and city to comply with all requirements.
Engineer(s) or Professional(s) Trained in Construction Practices Related to Buildings and/or Infrastructure	District coordinates with outside consultants, in-house and consultants, engineering department.	The City employs 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	Outside consultants in coordination with the Planning or Engineering Department.	City staff utilizes an outside consultant with input from staff, as necessary.
Floodplain manager	County of Orange.	The county provides this service for the City.
Surveyors	Outside consultant.	City staff utilizes an outside consultant with input from staff.
Staff with Education or Expertise to Assess the Community's Vulnerability to Hazards	County of Orange, WEROC.	Require the expertise of the county and WEROC.
Personnel Skilled in GIS and/or HAZUS	IT Department, City of Garden Grove.	The City employs GIS personnel.
Emergency Manager	Garden Grove Fire Department.	The city fire department employs a full time emergency manger.
Grant Writers	City Admin Analysts, City of Garden Grove.	The City regularly seeks federal and state grants.
Lab Specialist	Contractual lab.	City staff utilizes an outside consultant.

**Table G-3c
Financial Capabilities Summary**

Financial Resources	Agency or Department
Community Development Block Grants (CDBG)	Finance Department; City of Garden Grove
Capital Improvements Project Funding	Finance Department; City of Garden Grove
Authority to Levy Taxes for Specific Purposes	Finance Department; City of Garden Grove
Fees for Water, Sewer, Gas, or Electric Service	Finance Department; City of Garden Grove
Impact Fees for Homebuyers or Developers for New Developments/Homes	Finance Department; City of Garden Grove
Incur Debt Through General Obligation Bonds	Finance Department; City of Garden Grove
Incur Debt Through Private Activity Bonds	Finance Department; City of Garden Grove
Withhold Spending in Hazard-Prone Areas	Finance Department; City of Garden Grove
Grants	Finance Department; City of Garden Grove

**Table G-3d
Education and Outreach Capability Summary**

Resource/Programs	Agency or Department	Description/Comments
Community Emergency Preparedness	City of Garden Grove Fire Department	Residents are encouraged to visit ReadyOC.com for information on how to prepare for emergencies.
Community Emergency Response Team	City of Garden Grove Fire Department	The Fire Department, in collaboration with the Orange Fire Department, offers the Community Emergency Response Team (CERT) training. CERT is about readiness, people helping people, rescuer safety and doing the greatest good for the greatest number of people.
Emergency Alert System	City of Orange Police Department	Residents are encouraged to sign up for emergency alerts with the City.
AlertOC	County of Orange	Residents are encouraged to sign up for emergency alerts with the City.
City Website	City of Garden Grove	The City promotes various emergency preparedness programs through its website.

MITIGATION STRATEGY

Mitigation Goals

Garden Grove 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 G-4, Garden Grove Mitigation Actions, identifies the mitigation actions, including the priority, hazard addressed, risk, timeframe, and potential funding sources.

**Table G-4
Garden Grove Mitigation Actions**

Priority (High, Medium, or Low)	Action/Task/Project Description	Location/Facility	Risk (High, Medium, or Low)	Cost	Timeframe (Immediate, Short Term, or Long Term)	Possible Funding Sources	Status/Progress (New, Existing, Modified)	Status Rationale
Medium	Update SCADA software, install new monitors, and install fiber optic links. To be conducted in four phases.	Throughout Garden Grove Service Area	High	\$1,000,000	Immediate	Water Fund	Modified	Phase 1 complete. Phase 2 will begin in FY 18/19 and remaining phases will be completed as funding becomes available. All Hazards.
Low	Replace sewer main lines as per the Sewer Master Plan.	Throughout Garden Grove Service Area	Medium	\$4,500,000/year	Immediate	Sewer Fund	Modified	Ongoing. Approximately 1 mile of sewer mains are replaced every year. EQ, flood, liquefaction.
Medium	Replace existing force mains, if necessary.	Tiffany, Partridge, and Belgrave Lift Stations	Low	\$200,000	Long Term	Sewer Fund	Complete	All force mains are either new or constructed and are less than 10 years old. EQ, flood, liquefaction.
High	Improve response time to alarm and emergency events.	Tiffany, Partridge, and Belgrave Lift Stations	High	\$1,000/year	Long Term	Sewer Fund	Complete	Designated emergency standby staff member. Human caused, contamination, power outage.
High	Modify SCADA system, when feasible, to look for additional parameters of operation that may indicate problem areas.	Tiffany, Partridge, and Belgrave Lift Stations	High	Part of all LS Costs	Immediate	Sewer Fund	Modified	Phase 1 complete.

**Table G-4 [continued]
Garden Grove Mitigation Actions**

Priority (High, Medium, or Low)	Action/Task/Project Description	Location/ Facility	Risk (High, Medium, or Low)	Cost	Timeframe (Immediate, Short Term, or Long Term)	Possible Funding Sources	Status/ Progress (New, Existing, Modified)	Status Rationale
High	Identify all major fuel pipelines, rail transportation corridors, manufacturing facilities, and their relative vulnerability relative to hazardous material releases.	Throughout Garden Grove Service Area	High	\$15,000/Year	Long Term	Water Fund or Grants	Existing	Updating information as it becomes available. Earthquake.
High	Update system GIS maps to reflect current condition/hazards.	Throughout Garden Grove Service Area	Medium	\$500,000	Short Term	Water Fund or Grants	Modified	Maps are up to date. Future updates will be addressed as needed. Earthquake.
Low	Reconfigure piping, valves, and add metering devices of intertie facilities bordering Anaheim.	Bordering City of Anaheim	Medium	\$200,000	Short Term	Water Fund or Grants	Existing	Enhance reliability of intertie for supply. An upgrade has been completed. Future upgrades to be addresses as needed. Earthquake. Power Outage.
High	Examine opportunities for on-line water quality sensing relative to potential human induced contamination and implement if feasible.	Throughout Garden Grove Service Area	Medium	Unknown	Long Term	Water Fund	Existing	Research new technologies and their applicability to the city. Human Caused Hazard. Contamination.
Medium	Continue and expand education for administrative and field personnel on possible human caused hazards and vulnerability assessment.	Public Works Municipal Facilities Yard, 13802 Newhope Street.	Low	\$2,000/year	Long Term	Sewer Fund	Existing	Ongoing training. Human Caused Hazard.
Medium	Survey and improve site fencing and other forms of hardening facility deterrence.	Public Works Municipal Facilities Yard and select Well Sites	High	\$50,000/year	Long Term	Water Fund	Existing	Complete as funding becomes available. Human Caused Hazard. High Winds.
Medium	Protect facilities within flood plain areas.	Throughout Garden Grove Service Area	Medium	\$250,000	Long Term	Water Fund or Grants	Existing	Complete as funding becomes available. Flood.

Completed or Removed Mitigation Initiatives

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

Mitigation: Eliminate old lift station / force main and replace with rerouted gravity sewer main.

Status: Complete.

Mitigation: Demolish and replace Tiffany Lift Station with new wet well sized for storage until emergency pumps can be mobilized. Install Emergency generator.

Status: Complete.

Mitigation: Construct new lift station due to storm drain improvements with the SR 22 improvements.

Status: Complete.

Mitigation: Demolish and replace Belgrave Lift Station with new wet well sized for storage until emergency pumps can be mobilized. Install Emergency generator.

Status: Complete.

Mitigation: Conduct system wide reservoir condition evaluation and recommendations. This includes seismic evaluation.

Status: Complete.

Mitigation: Install beam detection and alert notification system and upgrade security video surveillance system.

Status: Complete.

Mitigation: Survey and improve site fencing and other forms of hardening facility deterrence.

Status: Complete.

PLAN INTEGRATION

Garden Grove's General Plan, Capital Improvement Plan, Municipal Code, Water Master Plan, Wastewater Master Plan and Emergency Operations Plan, and Two Year Citywide Budget are all used to implement mitigation initiatives identified in this annex. After adoption of the HMP, the City will continue to integrate mitigation priorities into these documents.

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