

LOCAL HAZARD MITIGATION PLAN

2022



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City of Coachella

12/1/2022

CONTACT INFORMATION

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PLAN ADOPTION/RESOLUTION

The City of Coachella will submit plans to Riverside County Emergency Management Department who will forward to California Governor's Office of Emergency Services (CAL OES) for review prior to being submitted to the Federal Emergency Management Agency (FEMA). In addition, we will wait to receive an "Approval Pending Adoption" letter from FEMA before taking the plan to our local governing bodies for adoption. Upon approval, the City of Coachella will insert the signed resolution.

EXECUTIVE SUMMARY

The purpose of this local hazard mitigation plan is to identify the City's hazards, review and assess past disaster occurrences, estimate the probability of future occurrences, and set goals to mitigate potential risks to reduce or eliminate long-term risk to people and property from natural and man-made hazards.

The plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 to achieve eligibility and potentially secure mitigation funding through Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance, Pre-Disaster Mitigation, and Hazard Mitigation Grant Programs.

The City of Coachella's continual efforts to maintain a disaster-mitigation strategy is on-going. Our goal is to develop and maintain an all-inclusive plan to include all jurisdictions, special districts, businesses, and community organizations to promote consistency, continuity, and unification.

The City's planning process followed a methodology presented by FEMA and CAL-OES which included conducting meetings with the Operational Area Planning Committee (OAPC) coordinated by Riverside County Emergency Management Department (EMD) comprised of participating Federal, State and local jurisdictions agencies, special districts, school districts, non-profit communities, universities, businesses, tribes, and the general public.

The plan identifies vulnerabilities, provides recommendations for prioritized mitigation actions, evaluates resources, identifies mitigation shortcomings, provides future mitigation planning and maintenance of existing plan.

The plan will be implemented upon FEMA approval.

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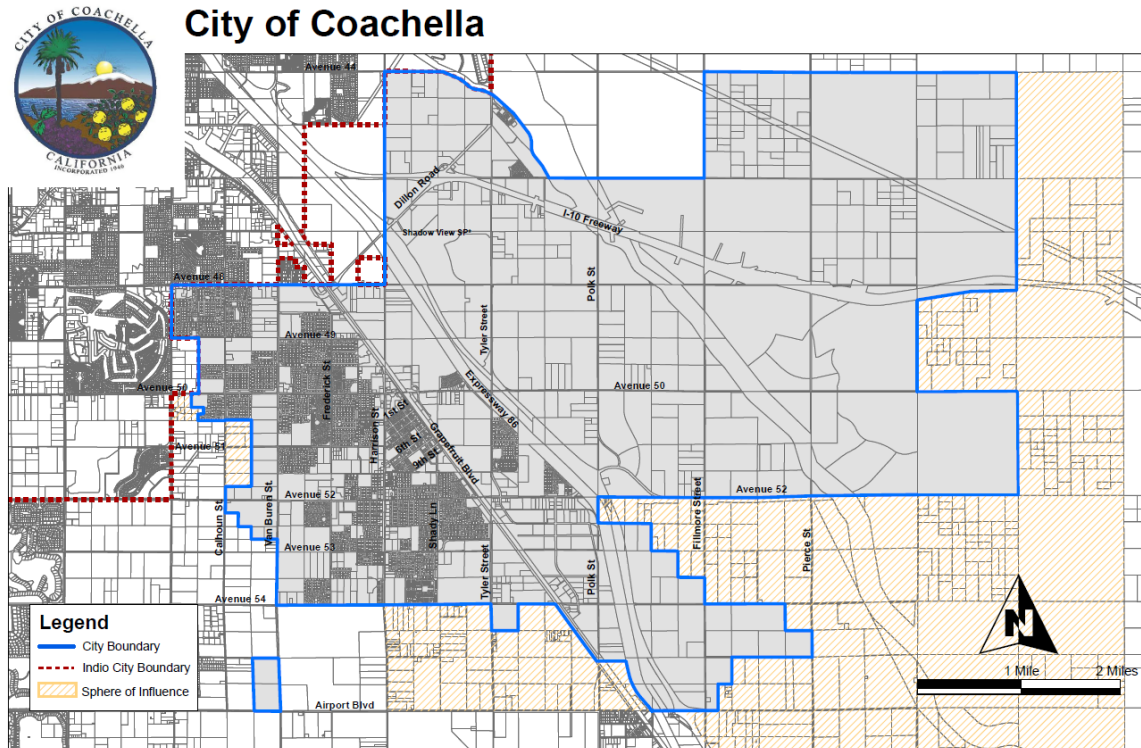
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SECTION 1.0 - COMMUNITY PROFILE

1.1 CITY MAP

Figure 1-1: Map of Coachella Planning Area



1.2 GEOGRAPHY AND CLIMATE DESCRIPTION

Coachella is a city in Riverside County, California; it is the easternmost city in the region collectively known as the Coachella Valley. It is located 28 miles east of Palm Springs, 72 miles east of Riverside, and 130 miles east of Los Angeles.

The eastern half of the Coachella Valley is below sea level, and the area's average elevation is 68 feet (35 m) below sea level. The Salton Sea, a saltwater lake located about 10 miles (16 km) South of Coachella, lies 227 feet (69 m) below sea level.

The city also lends its name to the Coachella grapefruit; the town's stretch of State Route 111 is named Grapefruit Boulevard in its honor. Coachella is an area which contains large year-round agricultural corporate farms and fruit groves, particularly of citrus (lemons, oranges, grapefruit) and date palms;

Harrison Street or State Route 86 is declared historic U.S. Route 99, the major thoroughfare that connects with Interstate 10 a few miles north of town.

1.3 BRIEF HISTORY

Known as the "City of Eternal Sunshine", Coachella is largely a rural, agricultural, family-oriented community in the desert and one of the state's fastest growing cities in the late 20th century. When it first incorporated back in 1946, it had 1,000 residents.

The city was originally founded as Woodspur in 1876, when the Southern Pacific Railroad built a rail siding on the site. In the 1880s the indigenous Cahuilla tribe sold their land plots to the railroads for new lands east of the current town site, and in the 1890s, a few hundred triquetrous took up settlement along the tracks.

The origin of the name Coachella is unclear, but in 1901 the citizens of Woodspur voted on a new name for their community; at their town hall meeting, the homeowners settled on "Coachella". Some locals believe it was a misspelling of Conchilla, a Spanish word for the small white snail shells found in the valley's sandy soil, vestiges of a lake which dried up over 3,000 years ago.

Coachella began as a 2.5-square-mile (6.5 km²) territory gridded out on the mesquite-covered desert floor. Not until the 1950s did Coachella begin to expand into its present range, about 32 square miles (83 km²), an area which contained large year-round agricultural corporate farms and fruit groves, particularly of citrus (lemons, oranges, grapefruit) and date palms.

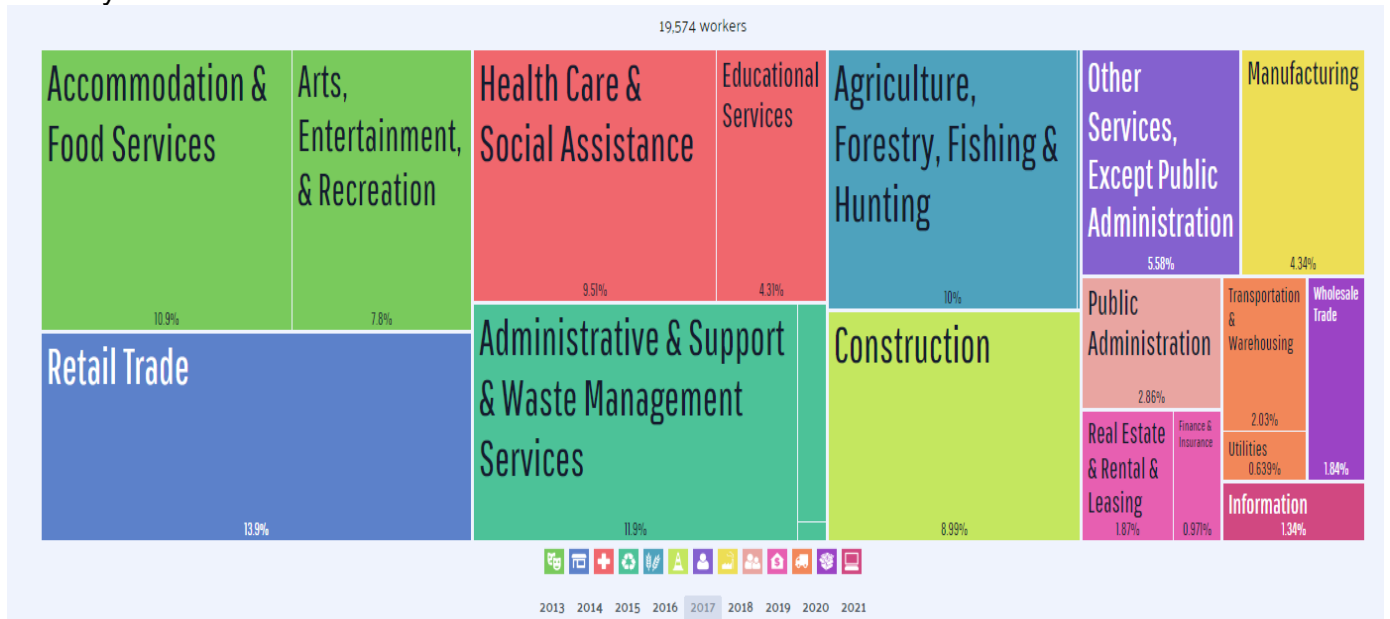
Coachella became a city in 1946. During the incorporation voting process, the first city council was tentatively elected: Lester C. Cox, T. E. Reyes, John W. Westerfield, Lester True, and Paul S. Atkinson. Also elected on November 26, 1946, were City Clerk Marie L. Johnson and City Treasurer John C. Skene. John Westerfield was appointed mayor at the first meeting.

1.4 ECONOMY DESCRIPTION

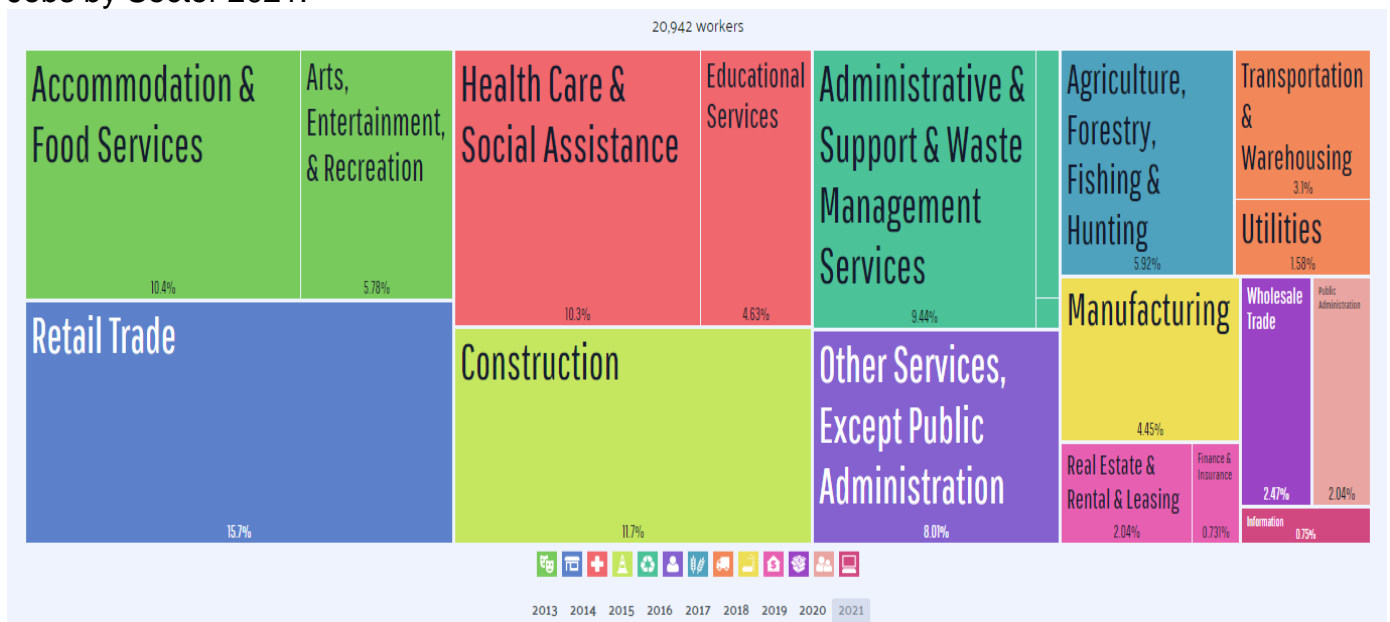
The Coachella Valley economy is based primarily on service-related industries and agriculture. Most of the jobs are in retail, tourism & hospitality, construction, and healthcare. Next to retail and tourist services, which are primarily in Palm Springs and Palm Desert, agriculture is the largest industry in the Coachella Valley with over 10% of the companies in the agri-business sector. Local farmers rank within the top 10 in California. The Coachella Valley's main cash crops include over 30 varieties of grove and vegetable crops such as citrus fruits, dates, table grapes, melons, corn, lettuce, carrots, and broccoli. In addition, a number of specialty vegetables are grown including avocados, figs, persimmons and greenhouse peppers. Much of the packing and distribution of agricultural products is done around Indio.

Figure 1-2: Jobs by Sector for the City of Coachella

Jobs by Sector 2017:



Jobs by Sector 2021:



Source: datausa.io

Table 1-1: List of Major Employers for the City of Coachella

Company Name	Category	Employment
Coachella Valley USD	Public School District	502
Spotlight 29 Casino	Entertainment	496
Ernie Ball/Paladar	Manufacturer	392
Armtec Defense (Subsidiary of Esterline Defense Tech)	Ordnance & Accessories	232
Coachella Valley Water District	Public Water Agency	192
Teserra Outdoors (formerly California Pools)	Pool Builder	184
Augustine Casino	Entertainment	179
Valley Pride	Agriculture	116
Cardenas Market	Grocery Store	110
Coca-Cola Enterprises Inc	Distribution	100

1.5 POPULATION AND HOUSING

Table 1-2: Population and Housing Characteristics for the City of Coachella

All Topics	Coachella city, California	Riverside County, California
Population Estimates, July 1, 2022, (V2022)	42,835	2,473,902
PEOPLE		
Population		
Population Estimates, July 1, 2022, (V2022)	42,835	2,473,902
Population estimates base, April 1, 2020, (V2022)	41,938	2,418,177
Population, percent change - April 1, 2020 (estimates base) to July 1, 2022, (V2022)	2.1%	2.3%
Population, Census, April 1, 2020	41,941	2,418,185
Population, Census, April 1, 2010	40,704	2,189,641
Age and Sex		
Persons under 5 years, percent	4.9%	5.8%
Persons under 18 years, percent	19.7%	24.0%
Persons 65 years and over, percent	10.1%	15.3%
Female persons, percent	51.1%	49.7%
Race and Hispanic Origin		
White alone, percent	20.0%	78.4%
Black or African American alone, percent (a)	0.7%	7.5%
American Indian and Alaska Native alone, percent (a)	0.8%	2.0%
Asian alone, percent (a)	0.2%	7.8%
Native Hawaiian and Other Pacific Islander alone, percent (a)	0.0%	0.5%
Two or More Races, percent	19.6%	3.9%
Hispanic or Latino, percent (b)	96.6%	52.0%
White alone, not Hispanic or Latino, percent	2.3%	31.3%
Population Characteristics		
Veterans, 2017-2021	195	114,259
Foreign born persons, percent, 2017-2021	40.9%	21.5%
Housing		
Housing units, July 1, 2022, (V2022)	X	868,020
Owner-occupied housing unit rate, 2017-2021	70.3%	68.1%
Median value of owner-occupied housing units, 2017-2021	\$262,200	\$390,400
Median selected monthly owner costs -with a mortgage, 2017-2021	\$1,685	\$2,195
Median selected monthly owner costs -without a mortgage, 2017-2021	\$514	\$627
Median gross rent, 2017-2021	\$895	\$1,552
Building permits, 2022	X	10,284

source: census.gov

1.6 DEVELOPMENT TRENDS AND LAND USE

During the past economic boom ending in 2007 many housing developments were left unfinished. Many of these are to the west and in the center of the City of Coachella and if not built out have begun to build again. This construction activity has significantly increased Coachella’s residential density infill. The construction activity will provide many residential communities with mobility connectivity and drainage infrastructure that had remained unfinished.

Since 2020 the City has also seen a significant amount of high density housing constructed in the city’s center and this has increased population in the City’s center. Regional improvements needed to address significant flood events are still unfunded and continue to pose a hazard to flood prone areas; the increase in population to the city’s center has increased the city’s vulnerability for flood prone events. The increased residential density infill has not increased the city’s vulnerability for heat or earthquake events as the new structures are seismic in their design qualities and near critical infrastructure to support downtown residents.

Table 1-3: Housing Characteristics for the City of Coachella

Housing Type	Number of Units	Percent of Total Units
Single Family Detached	7,509	70.6 %
Single Family Attached	329	3.1 %
Multi-family: 2 to 4 units	1,002	9.4 %
Multi-family: 5 units plus	1,162	10.9 %
Mobile Home	629	5.9 %
Total	10,631	100 %

SECTION 2.0 - PLANNING PROCESS

2.1 LOCAL PLANNING PROCESS

Representatives from multiple County (City, District) departments met several times to identify and prioritize appropriate mitigation strategies. Personnel involved in these meetings included senior management and staff from the following divisions: Emergency Services Division (Emergency Management Coordinator), Development Services Department (Development Services Director, Planning Manager) Public Works Department (Public Works Director and Street Supervisor) and Engineering Department (Engineering Technician). The group was made up of planners, building department officials, facility managers, civil engineers, and emergency managers. Each staff member was invited to participate in the updating process of the LHMP and attend meetings via emails and phone calls.

The local Planning Committee Meetings included a discussion of updates from the regional meetings and focused on the local planning process. All meetings included the attendees noted above. Meetings were held at the City's EOC and the meetings were each focused at different topics correspondent to available existing resources and identifying how to address hazards. The focus of each meeting was as follows: Identify and discussed hazards, discussed Hazards and departments to confirm data, discussed future infrastructure and planning projects, and discussed hazards addressed by these future improvements. We also reviewed drafts of planning sections of LHMP and requested revisions to certain sections.

Table 2-4: Hazard Mitigation Planning Committee

Agency	Department	Name & Title
City of Coachella	Administration	Gabriel Martin, City Manager
City of Coachella	Economic Development	Celina Jimenez, Economic Development Director
City of Coachella	Development Services	Gabriel Perez, Development Services Director
City of Coachella	Public Works	Maritza Martinez, Public Works Director
City of Coachella	Public Works	Alex Alarcon, Streets Supervisor
City of Coachella	Engineering	Andrew Simmons, City Engineer
Riverside County	Sherriff	Lieutenant Randy Vasquez, Assistant Chief of Police
CalFire	Fire	Richard Tovar, Division Chief
Riverside County	EMD	Maricarmen Aguirre, Emergency Services Coordinator

2.2 PARTICIPATION IN REGIONAL (OA) PLANNING PROCESS

The City of Coachella participated in various Riverside County meetings to obtain the support in updating the City's LHMP:

- OAPC (Operational Area Planning Committee) Meetings
 - March 24, 2022
 - May 26, 2022
 - July 28, 2022
 - November 3, 2022
- LHMP One-On-One Meetings
 - September 27, 2022
 - October 18, 2022

2.3 DATES AVAILABLE FOR PUBLIC COMMENT

The City of Coachella conducted opportunities for the public to comment and provide suggestions throughout the updating process of the plan.

- City of Coachella Website
 - Dates posted: **11/17/2022 – 12/31/2022**
 - A screenshot of this public opportunity is provided in Appendix A
 - Responses were collected and given consideration when the city developed their mitigation plan
- Community outreach and engagement
 - Teen CERT class: **07/18/2022 – 07/20/2022**
 - A screenshot of the agenda is provided in Appendix A

2.4 PLANS ADOPTED BY RESOLUTION

Upon approval by FEMA, the LHMP will be presented to the Coachella City Council in a public meeting for adoption via an official Resolution.

SECTION 3.0 – UPDATES AND MITIGATION ACTIONS

3.1 UPDATES TO 2022 LHMP PLAN

Coachella’s planning team has reviewed the hazards that affect the City and summarized their frequency of occurrence, spatial extent, potential magnitude, and significance specific to Coachella and determined there are no new hazards or priorities since approval of the 2017 LHMP.

3.2 HAZARD UPDATES

The hazard identified in the 2022 LHMP update remain similar to the 2017 LHMP.

3.3 MITIGATION ACTIONS AND UPDATES

3.3.1 GOALD AND OBJECTIVES

- ❖ Goal 1: Aggressive public education campaign in light of predictions.
- ❖ The mitigation actions highlighted are focused on the City’s high priority hazards: flood, earthquake and extreme heat.
 - Objective 1.1: Provide timely notification and direction to the public of imminent and potential hazards.
 - Objective: 1.2: Increase public awareness about the nature and extent of hazards they are exposed to, where they occur, what is vulnerable, and recommended responses to identified hazards (i.e. both preparedness and response).
 - 1.2.1: Create/continue an outreach program, provide educational resources, develop and provide training
- ❖ Goal 2: Reinforce emergency response facilities.
- ❖ Goal 3: Fire sprinkler ordinance for all structures.

3.4 2017 PLAN MITIGATION ACTIONS (HISTORICAL REFERENCE)

The 2017 mitigation strategies and projects are listed in the following table:

Table 3-5: 2017 Plan Mitigation Actions

2017 LHMP Mitigation Actions Table					
Type of Hazard	Mitigation Actions	Departments/Jurisdictions	Status Update	Funding Source	Status of moving to

					2022 LHMP
Extreme Heat	Staff has received training and the city's senior center and/or community center will be available for cooling and warming centers in addition to the regular hours that they serve	City of Coachella Public and Senior Center	Ongoing	City Funding	Yes
Flood	Coachella Valley Storm Water Channel – Physical Map Revision (CVSC PMR): Places a portion of the City within a special flood hazard area	Coachella Valley Water District	Effective early 2018	Proposition 1	No
Flood	Storm Water Master Plan: This master plan identifies facilities and locations to manage the flood hazards identified in the CVSC PMR and for other areas (Oasis, Mecca, North Shore, etc.)	Coachella Valley Water District	Completed 2021	Proposition 1	No
Flood	Coachella Valley Storm Water Channel	Coachella Valley Water District	Completed	Proposition 1 and Coachella Valley Mountain	No

	Improvement Project: Avenue 54 to the Thermal Drop Structure; This will manage the flooding hazard identified by the Coachella Valley Storm Water Channel			Conservancy Fund	
Earthquake	EOC activation training and table-top exercises for city staff allied agencies	City of Coachella	Annual and Ongoing	Emergency Management Performance Grant	No
Fire	Home Fire Campaign Install smoke detectors in older homes in the city	Red Cross, Riverside County Fire Department, Riverside County Sherriff, AmeriCorps, City of Coachella	Completed February 2017	Red Cross Campaign	No
Fire	Design of a second Fire Station: A secondary location will provide for adequate response times to its community	City of Coachella - City Engineer	Not moving forward at this time	Development Fees	No
Flood	Coachella Valley Storm Water Channel – Physical Map Revision (CVSC PMR): Places a portion of the City within a special flood hazard area	Coachella Valley Water District	Effective early 2018	Proposition 1 and Coachella Valley Mountain Conservancy Fund	No

3.5 2022 LHMP MITIGATION ACTIONS

The City of Coachella has identified its high priority hazards as earthquake, extreme heat, and flood which is why its mitigation actions listed below are its main focus and considered high priority. (See Section 4.1)

The 2022 mitigation strategies and projects are listed in the following table.

Table 3-6: 2022 Plan Mitigation Actions

2022 LHMP Mitigation Actions Table				
Type of Hazard	Mitigation Actions	Departments/Jurisdictions	Status Update	Funding Source
Extreme Heat	City has acquired a property that can be used as a cooling center; tenant improvement are ongoing. Cooling and Heating Centers are open in the City year-round Monday-Friday.	City of Coachella Public and Senior Center	Ongoing 2022-2027	City funding
Extreme Heat	The City added over 300 trees this fiscal year and we actively search for additional urban greening and forestry funding to fund the expansion of the City's urban forest	City of Coachella Public Works and Engineering	Ongoing (2022-2027)	Urban Greening and Proposition 1
Extreme Heat	Develop heat-action plan specific to vulnerable populations, such as the elderly and individuals with chronic health conditions. Coordinate with	City of Coachella Public Works Department and Emergency Management Department	2022-2027	Emergency Management Performance Grant

	healthcare providers and social services to ensure at-risk individuals receive appropriate support.			
Earthquake	Invest and promote in earthquake early warning systems that provide residents and businesses with crucial seconds to minutes of warning before strong shaking.	City of Coachella Development Services Department	2022-2027	City
Earthquake	Require new builds to adhere to the current updated Seismic building standards.	City of Coachella Development Services Department	Annual and Ongoing (2022-2027)	City
Earthquake	Community Shelters: purchase a large facility that can be used as a community shelter and improved to serve community.	City of Coachella Public Works Department	Purchased 2023 Tenant Improvements Needed 2023-2027	City
Flood	State Route 86/Avenue 50 Interchange Project Construct a new Avenue 50 bridge structure over the Whitewater River/Coachella Valley Stormwater Channel (CVSC).	City of Coachella Engineering Department and Caltrans	2022-2027	HBP (State Highway Bridge Program) and CVAG (Coachella Valley Association of Governments)

3.6 Critical Facilities and Infrastructures

Critical facilities are facilities that pose unacceptable risks if severely damaged or become non-operational. Below is a table of critical facilities in the City of Coachella.

Critical Facilities and Infrastructures

Critical Facilities Type	Number
Emergency Operations Center	1
City Hall	1
Fire Stations	1
Water Reservoirs	2
Water Treatment Plants	6
Waste Water Treatment Plants	1
Maintenance Yards	1
Senior Community Centers	1
Schools	8
Radio Repeaters	1

3.7 Estimated Property Loss 2022

No. of properties

9,625

Total assessed value

\$2.77 B

Type	Count	Total	Median
Agricultural	133	\$91.57 M	\$688,475
Business / Personal Property	377	\$144.02 M	\$382,019
Commercial	430	\$552.72 M	\$1.29 M
Other	15	\$17.92 M	\$1.19 M
Residential	7,865	\$1.62 B	\$206,094
Vacant Land	743	\$210.96 M	\$283,934
NA	62	\$130.25 M	\$2.1 M

Source: Riverside County Assessor

3.8 Table Replacement Values

Name of Asset	Replacement Value (\$)	Occupancy/ Capacity #	Hazard Specific Info.
City Hall	2,200,500	165	Unreinforced masonry
Fire Department	1,500,000	60	secured perimeter
Corporate Yard	3,750,000	800	secured perimeter
Coachella Valley Unified School District (10 schools)			

Bobby G. Duke Middle School	\$34,000,000	900	secured campuses
Cesar Chavez Elementary	\$26,000,000	669	secured
Coachella Valley HS	\$90,000,000	1712	secured
Coral Mountain Academy	\$26,000,000	900	secured
Valley View Elementary	\$23,000,000	580	secured
Palm View Elementary	\$25,000,000	630	secured
Peter Pendleton Elementary	\$22,000,000	560	secured
Valle del Sol Elementary	\$26,000,000	900	secured
Coachella Community Center	\$1,350,000	120	Unsecured perimeter
Public Utilities (Water / Wastewater)	\$37,590,000	n/a	

SECTION 4.0 – HAZARD IDENTIFICATION AND RISK ASSESSMENT

4.1 Hazard Identification

The Hazard Mitigation Planning Committee conducted a hazard identification study to determine the hazards that threaten the planning area. The following data sources were used for this hazard identification: 2015 City of Coachella General Plan, 2022 Riverside County LHMP Survey, 2018 Riverside County MJLHMP, FEMA Disaster Declaration Database, and FEMA National Risk Index (NRI) Comparison Report. Using existing natural hazards and input gained through the kickoff planning meeting, the Hazard Mitigation Planning Committee agreed upon a list of hazards that could affect the City.

To assist in ranking the identified hazards, the following scale for rating was utilized.:

Severity

- 0- Does not apply
- 1- Negligible damage/injuries
- 2- Limited damage/injuries
- 3- Critical damage/injuries
- 4- Catastrophic damages

Probability

- 0- Does not apply
- 1- Unlikely (<1% chance in next 100 years)
- 2- Possible (1%-10% chance in next year)
- 3- Likely (10%-100% chance in next 10 years)
- 4- Highly likely (near 100% in next year)

Table 4-7: City of Coachella Hazard Identification risk Matrix 2022

Hazard	SEVERITY 0 - 4	PROBABILITY 0 - 4	RANKING 1-24	MITIGATION PRIORITY
EARTHQUAKE	3	3	1	High
FIRE	1	2	7	Medium
FLOOD	1	4	3	High
AQUEDUCT FAILURE	1	1	16	Low
DROUGHT	1	2	5	Low
STORM	2	3	4	Low
INSECT INFESTATION	1	2	17	Low

LANDSLIDE	0	0	24	Low
TORNADO	0	0	25	Low
EXTREME WEATHER - HEAT	2	4	2	High
CIVIL DISORDER	2	2	12	Low
COMMUNICATIONS FAILURE	1	2	11	Low
CYBER ATTACK/ CYBER TERRORISM	1	2	8	Low
DAM FAILURE	0	0	23	Low
ELECTRICAL FAILURE	3	3	6	Medium
HAZARDOUS MATERIALS INCIDENT	2	1	18	Low
JAIL/PRISON EVENT	2	2	15	Low
NUCLEAR INCIDENT	4	2	20	Low
PIPELINE DISRUPTION	2	3	19	Low
RADIOLOGICAL INCIDENT	2	1	21	Low
TERRORIST EVENT – MASS CASUALTY	2	2	13	Low
TRANSPORTATION FAILURE	2	4	10	Low
WATER SUPPLY DISRUPTION /	1	2	22	Low
EMERGENT DISEASE / CONTAMINATION	2	2	14	Low
PANDEMIC	2	2	9	Low

4.2 LIST OF COUNTY AND CITY HAZARDS

The City of Coachella and Riverside County have similar hazards that affect their jurisdiction; however, the rankings of their hazards are slightly different. Below is a table that illustrates the difference between each of their hazards for the 2022 LHMP.

Table 4-8: Ranking of County and City Hazards

Riverside County 2017 Hazards	Ranking	City of Coachella 2022 Hazards	Ranking
Earthquake	1	Earthquake	1
Pandemic Flu	2	Extreme Weather – Heat	2
Wildland Fire	3	Flood	3
Electrical Failure	4	Storm	4
Emergent Disease/Contamination	5	Drought	5
Cyber Attack	6	Electrical Failure	6
Terrorist Event	7	Fire	7
Communications Failure	8	Cyber Attack/Cyber Terrorism	8
Flood	9	Pandemic	9
Civil Disorder	10	Transportation Failure	10
Drought	11	Communications Failure	11
Nuclear/Radiological Incident	12	Civil Disorder	12

Extreme Weather	13	Terrorist Event – Mass Casualty Incident (MCI)	13
Transportation Failure	14	Emergent Disease/Contamination	14
Dam Failure	15	Jail/Prison Event	15
Aqueduct	16	Aqueduct Failure	16
Tornado	17	Insect Infestation	17
Insect Infestation	18	Hazardous Materials Incident	18
Jail/Prison Event	19	Pipeline Disruption	19
Pipeline Disruption	20	Nuclear Incident	20
Landslide	21	Radiological Incident	21
HazMat Incident	22	Water Supply Disruption/Contamination	22
Water Supply Disruption/Contamination	23	Dam Failure	23

4.3 Disaster Declaration History

One method to identify hazards based on past occurrences is to look at what events triggered federal and/or state disaster declarations within the Operational Area (OA). Disaster declarations are granted when the severity and magnitude of the event’s impact surpass the ability of the local government to respond and recover. When the local government’s capacity has been surpassed, a state disaster declaration may be issued, following the local agency’s declaration, allowing for the provision of state assistance. Should the disaster be so severe that both the local and state government’s capacity is exceeded, a federal disaster declaration may be issued allowing for the provision of federal disaster assistance.

Riverside County has experienced 50 federal declarations since 1990 and 10 state declarations since 2015. Out of these 61 declarations 1 was associated with an earthquake event, 2 from biological events, 2 from freezing events, 3 from flooding events, 14 from severe storms, 34 from fires, 1 with hurricane (for evacuations stemming from Hurricane Katrina in 2005).

Table 4-9: Summary of Federal Declarations in Riverside County 1990 to 2022

Year	Disaster Type	Disaster Cause	County	Disaster Number	Federal Declaration Date
1990	Fire	Fires	Riverside	DR-872	6/30/1990
1991	Freezing	Severe Freeze	Riverside	DR-894	2/11/1991
1992	Earthquake	Earthquake & Aftershocks	Riverside	DR-947	7/2/1992

1993	Flood	Severe Winter Storm, Mud & Landslides, & Flooding	Riverside	DR-979	2/3/1993
1994	Fire	Fires, Mud/Landslides, Flooding, Soil Erosion	Riverside	DR-1005	10/28/1993
1995	Severe Storm	Severe Winter Storms, Flooding Landslides, Mud Flow	Riverside	DR-1046	3/12/1995
1995	Severe Storm	Severe Winter Storms, Flooding Landslides, Mud Flows	Riverside	DR-1044	1/10/1995
1998	Severe Storm	Severe Winter Storms and Flooding	Riverside	DR-1203	2/9/1998
2003	Fire	CA – Locust Wildfire	Riverside	FM-2491	8/19/2003
2003	Fire	CA – Railroad Fire	Riverside	FM-2475	7/3/2003
2003	Fire	Canyon Fire	Riverside	FM-2487	7/25/2003
2004	Fire	Wildfires, Flooding, Mudflow and Debris Flow	Riverside	DR-1498	10/27/2003
2004	Fire	CA – Pleasure Fire	Riverside	FM-2515	4/26/2004
2004	Fire	CA – Cerritos Fire	Riverside	FM-2517	5/4/2004
2004	Fire	CA – Eagle Fire	Riverside	FM-2516	5/4/2004
2004	Fire	CA – Melton Wildfire	Riverside	FM-2533	7/18/2004
2004	Fire	Pass Fire	Riverside	FM-2500	10/21/2003
2004	Fire	CA – Leakview	Riverside	FM-2530	7/14/2004

2004	Fire	CA – Mountain Fire	Riverside	FM-2507	10/26/2003
2005	Hurricane	Hurricane Katrina Evacuation	Riverside	EM-3248	9/13/2005
2005	Severe Storm	Severe Storms, Flooding, Landslides, and Mud and Debris Flows	Riverside	DR-1585	4/14/2005
2005	Severe Storm	Severe Storms, Flooding, Debris Flows, and Mudslides	Riverside	DR-1577	2/4/2005
2006	Fire	Orchard Fire	Riverside	FM-2676	9/17/2006
2006	Fire	Woodhouse Fire	Riverside	FM-2584	10/6/2005
2006	Fire	Sierra Fire	Riverside	FM-2630	2/6/2006
2007	Fire	Esperanza Fire	Riverside	FM-2678	10/26/2006
2007	Freezing	Severe Freeze	Riverside	DR-1689	3/13/2007
2008	Fire	Wildfires, Flooding, Mud Flows, and Debris Flows	Riverside	DR-1731	10/24/2007
2008	Fire	Wildfires	Riverside	EM-3279	10/23/2007
2009	Fire	Wildfires	Riverside	DR-1810	11/18/2008
2009	Fire	Freeway Fire Complex	Riverside	EM-2792	11/15/2008
2010	Severe Storm	Severe Winter Storms, Flooding, and Debris and Mud Flows	Riverside	DR-1884	3/8/2010
2011	Flood	Severe Winter Storms, Flooding, and Debris and Mud Flows	Riverside	DR-1952	1/26/2011

2013	Fire	Summit Fire	Riverside	FM-5023	5/1/2013
2013	Fire	Falls Fire	Riverside	FM-5040	8/6/2013
2013	Fire	Silver Fire	Riverside	FM-5041	8/8/2013
2017	Fire	Canyon Fire	Riverside	FM-5213	9/26/2017
2017	Flood	Severe Winter Storms, Flooding, and Mudslides	Riverside	DR-4305	3/16/2017
2018	Fire	Wildfires	Riverside	EM-3396	12/8/2017
2018	Fire	Holy Fire	Riverside	FM-5268	8/9/2018
2018	Fire	Cranston Fire	Riverside	FM-5260	7/25/2018
2018	Fire	Canyon 2 Fire	Riverside	FM-5223	10/9/2017
2019	Severe Storm	Severe Winter Storms, Flooding, Landslides, and Mudslides	Riverside	DR-4431	5/1/2019
2020	Biological	COVID-19	Riverside	EM-3428	3/13/2020
2020	Biological	COVID-19 Pandemic	Riverside	DR-4482	3/22/2020
2020	Fire	Hill Fire	Riverside	FM-5299	10/30/2019
2020	Fire	Apple Fire	Riverside	FM-5325	8/2/2020
2020	Fire	46 Fire	Riverside	FM-5300	10/31/2019
2021	Fire	Blue Ridge Fire	Riverside	FM-5381	10/26/2020
2022	Fire	Fairview Fire	Riverside	FM-5451	9/6/2022

Source: OpenFEMA DataSet: Disaster Declaration Summaries

Table 4-10: Summary of State Declarations in Riverside County 2015 to 2022

Year	Month	Disaster	County	Disaster Code	Governor Declared
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2015	July	Severe Rainstorms	Riverside	65	Yes
2017	January	January Winter Storms	Riverside	77	Yes
2018	July	Cranston Fire	Riverside	102	Yes
2018	August	Holy Fire	Riverside	106	Yes
2019	January – February	Atmospheric River Storm System	Riverside	109	Yes
2019	October	Eagle, Reche, Saddleridge, Sandalwood, and Wolf Fires	Riverside	112	Yes
2019	October	Extreme Wind and Fire Weather Conditions	All California counties	114	Yes
2020	August – September	Fires and Extreme Weather Conditions	Declared by Governor only: All other California counties not listed above	115	Yes
2022	September	Fairview & Mosquito Fires	Riverside	133	Yes
2022	September	Tropical Storm Kay	Riverside	135	Yes

Source: State of California Franchise Tax Board

4.4 Hazard Profiles

The Hazard Mitigation Planning Committee decided to only list the hazards with the highest mitigation priority.

Each hazard is profiled in the following format:

- **Hazard Description** — This section gives a description of the hazard and details on the hazard specific to the Planning Area.
- **Location** — Location is the geographic areas within the planning area that are affected by the hazard (e.g., floodplain).
- **Extent** — Extent is the strength or magnitude of the hazard. Extent can be described in a combination of ways depending on the hazard, such as: the value on an established scientific scale or measurement system, other measures of magnitude such as water depth or wind speed, the speed of onset, or the duration of hazard events.
- **Previous occurrences** — This section includes the history of previous hazard events for each hazard. This helps estimate the likelihood of future events and helps predict potential impacts.
- **Probability of future events** — The frequency of past events is used in this section to gauge the likelihood of future occurrences. Where possible, frequency was calculated based on existing data. It was determined by dividing the number of events observed by the number of years on record and multiplying by 100. This gives the percent chance of the event happening in any given year. Likelihood of future occurrences is categorized into one of the following classifications:
 - 4 — Highly Likely — Near 100 percent chance of occurrence in the next year
 - 3 — Likely — Between 10 and 100 percent chance of occurrence in the next 10 years
 - 2 — Possible — Between 1 and 10 percent chance of occurrence in the next year
 - 1 — Unlikely — Less than 1 percent chance of occurrence in the next 100 years
 - 0 — Does not apply

4.4.1 Earthquake - Severity - 3, Probability - 3, Ranking - 1

Hazard Description: An earthquake is a natural geological phenomenon characterized by the sudden release of energy in the Earth's crust that creates seismic waves. This release of energy is typically caused by the movement of tectonic plates beneath the Earth's surface. Earthquakes can vary in size, from minor tremors that are barely felt to massive events that can cause widespread destruction. The intensity of an earthquake is commonly measured using the Richter scale or the moment magnitude scale (Mw), which quantifies the amount of energy released during the quake.

The region is capable of experiencing earthquakes with magnitudes greater than 7.0, which can cause severe damage to infrastructure and pose a threat to public safety. The city has a

mix of older structures and newer construction. Older buildings, particularly those constructed before modern seismic codes were established, may be more vulnerable to earthquake damage. The city's infrastructure, including roads, bridges, utilities, and lifeline systems, could be significantly impacted by a major earthquake, leading to disruptions in transportation, communication, and emergency response.

Location: The City of Coachella is susceptible to seismic activity due to its proximity to major fault lines. It is situated within Seismic Zone 3, which indicates a high seismic hazard potential. The city is near the San Andreas Fault, which is a major fault capable of generating significant earthquakes. Other nearby faults, such as the San Jacinto Fault and the Elsinore Fault, also contribute to the seismic risk.

San Andreas Fault

The San Andreas Fault Zone is a major structural feature that forms at the boundary between the North American and Pacific tectonic plates. It extends from the Salton Sea in Southern California to north of Point Arena Along the northern California coast, where the fault trace extends out into the Pacific Ocean. In the south, the San Gabriel Mountains roughly denote the path of the San Andreas Fault. The San Andreas Fault is a strike-slip-type fault³ that traverses Los Angeles County and has experienced movement within the last 150 years.

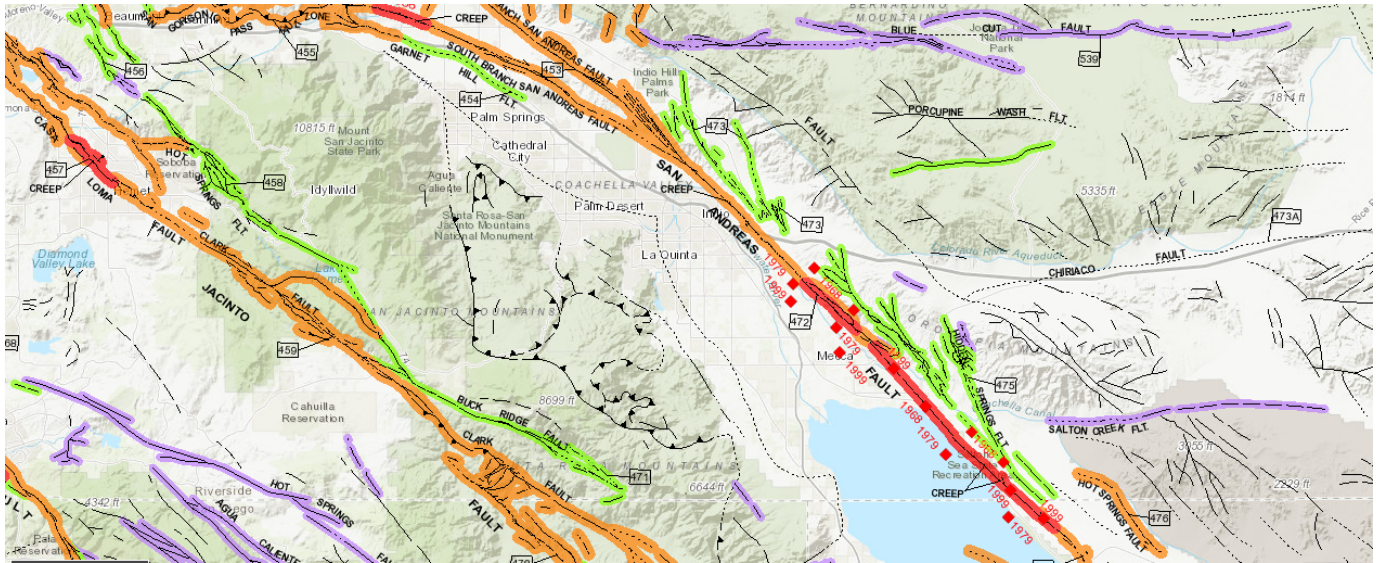
San Jacinto Fault

The San Jacinto Fault is the most seismically active fault in southern California, with significant earthquakes (>M5.5), including surface rupturing earthquakes in 1968 (M6.6 Borrego Mountain earthquake) and 1987 (M6.6 Superstition Hills and M6.2 Elmore Ranch earthquakes), and numerous smaller shocks within each of its main sections. The fault zone is divided from north to south into: San Bernardino section, San Jacinto Valley section, Anza section, Coyote Creek section, Borrego Mountain section, Superstition Hills section, and Superstition Mountain section. Slip rates in the northern half of the fault system are around 12 mm/yr but are only around 4 mm/yr for faults in the southern half where strands overlap or are sub-parallel.

Whittier-Elsinore Fault

The Whittier-Elsinore Fault is a major strike-slip fault zone that is part of the San Andreas Fault system. The fault has been divided into sections, from north to south: Whittier section, Chino section, Glen Ivy section, Temecula section, Julian section, Coyote Mountain section, and Laguna Salada section. Research studies have been done to assess faulting on most of the sections, and have documented Holocene activity for the length of the fault zone with a slip rate around 4-5 mm/yr. Multiple events have only been dated on the Whittier fault and Glen Ivy North fault strand, so interaction between faults and adjacent sections is not well-known. Although no known historic earthquakes have occurred on this fault, at least one surface rupturing earthquake has occurred in the past 9,598 yr.

Figure 4-3: Fault Activity Map in Region



FAULT CLASSIFICATION COLOR CODE
(Indicating Recency of Movement)



Source: California Department of Conservation

Extent: The speed of onset of earthquake is short. Duration of shaking is also short, though aftershocks may continue to occur for a period of time. The amount of energy released during an earthquake is usually expressed as a magnitude and is measured directly from the earthquake as recorded on seismographs. An earthquake’s magnitude is expressed in whole numbers and decimals (e.g., 6.8).

Previous occurrences: Since 1990 there has only been one Presidential Declaration due to an earthquake

Table 4-11: Riverside County Disaster Declarations from Earthquakes

Year	Disaster Type	Disaster Cause	County	Disaster Number	Federal Declaration Date

1992	Earthquake	Earthquake Aftershocks	&	Riverside	DR-947	7/2/1992
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Source: FEMA, California Tax Franchise Board

Probability of future events:

Major earthquakes in the City of Coachella can be classified as 2 — Possible — Between 1 and 10 percent chance of occurrence in the next year

4.4.2 Severe Weather: Extreme Heat- Severity- 2, Probability - 4, Ranking- 2

Hazard Description: Extreme heat is a hazardous weather phenomenon characterized by abnormally high temperatures over an extended period. It occurs when there is a prolonged period of excessively hot weather, often accompanied by high humidity levels, leading to dangerous and potentially life-threatening conditions. Extreme heat events are marked by temperatures that significantly exceed the local average for a given season. These events can result in daytime highs above 100 degrees Fahrenheit and nighttime lows that offer little relief. Extreme heatwaves can last for several days to weeks, with little to no respite from the elevated temperatures. Prolonged exposure to these conditions increases the risk to human health. In comes cases, extreme heat may be accompanied by high humidity, which can intensity the heat stress experienced by individuals. High humidity makes it harder for the body to cool down through sweating.

Heat is a significant hazard faced by the City of Coachella. Extreme heat events can have a significant impact on human health, the environment, and critical infrastructure. The impacts to human health include heat exhaustion, heat stroke, and other heat-related illnesses. Vulnerable populations including the elderly, young children, and individuals with preexisting medical conditions are particularly at risk. Extreme heat can have adverse effects on the environment, including drought conditions, reduced air quality, and stress on ecosystems. It can also contribute to wildfires, especially in regions with dry vegetation. The prolonged exposure to high temperature can stress critical infrastructure, including power grids, transportation systems, and water supplies. Power outages and transportation disruptions are common during extreme heat events.

Location: Coachella’s desert location and low elevation contribute to its susceptibility to extreme heat, particularly during the summer months. Extreme heat events affect the entire city and the surrounding areas within Riverside County. The extent of the impact is widespread, with elevated temperatures impacting both urban and rural communities.

Extent: Extreme heat events are frequent in Coachella, typically occurring from May to September. Prolonged heatwaves, lasting several days to weeks, can lead to severe heat-related impacts. Prolonged exposure to high temperatures poses a risk to the health and well-being of the population, particularly vulnerable groups such as the elderly, young children, outdoor workers, and individuals with pre-existing health conditions. Extreme heat can cause a range of health issues, including heat exhaustion and heat stroke, particularly in vulnerable

populations. High temperatures can also increase the demand for electricity for cooling, which can stress the power grid and lead to outages.

Factors such as high temperatures, low humidity, and limited nighttime cooling contribute to elevated heat indices. Heat indices can significantly exceed the actual air temperature, intensifying the heat stress experienced by residents. Below is a chart depicting possible heat disorders in high-risk groups in relation to temperature and relative humidity.

Figure 4-4: Heat Index Chart

HEAT INDEX °F (°C)													
The heat index is an accurate measure of how hot it really feels when the affects of humidity are added to high temperature.													
Temp.	RELATIVE HUMIDITY (%)												
	40	45	50	55	60	65	70	75	80	85	90	95	100
110 (47)	136 (58)												
108 (43)	130 (54)	137 (58)											
106 (41)	124 (51)	130 (54)	137 (58)										
104 (40)	119 (48)	124 (51)	131 (55)	137 (58)									
102 (39)	114 (46)	119 (48)	124 (51)	130 (54)	137 (58)								
100 (38)	109 (43)	114 (46)	118 (48)	124 (51)	129 (54)	136 (58)							
98 (37)	105 (41)	109 (43)	113 (45)	117 (47)	123 (51)	128 (53)	134 (57)						
96 (36)	101 (38)	104 (40)	108 (42)	112 (44)	116 (47)	121 (49)	126 (52)	132 (56)					
94 (34)	97 (36)	100 (38)	103 (39)	106 (41)	110 (43)	114 (46)	119 (48)	124 (51)	129 (54)	135 (57)			
92 (33)	94 (34)	96 (36)	99 (37)	101 (38)	105 (41)	108 (42)	112 (44)	116 (47)	121 (49)	126 (52)	131 (55)		
90 (32)	91 (33)	93 (34)	95 (35)	97 (36)	100 (38)	103 (39)	106 (41)	109 (43)	113 (45)	117 (47)	122 (50)	127 (53)	132 (56)
88 (31)	88 (31)	89 (32)	91 (33)	93 (34)	95 (35)	98 (37)	100 (38)	103 (39)	106 (41)	110 (43)	113 (45)	117 (47)	121 (49)
86 (30)	85 (29)	87 (31)	88 (31)	89 (32)	91 (33)	93 (34)	95 (35)	97 (36)	100 (38)	102 (39)	105 (41)	108 (42)	112 (44)
84 (29)	83 (28)	84 (29)	85 (29)	86 (30)	88 (31)	89 (32)	90 (32)	92 (33)	94 (34)	96 (36)	98 (37)	100 (38)	103 (39)
82 (28)	81 (27)	82 (28)	83 (28)	84 (29)	84 (29)	85 (29)	86 (30)	88 (31)	89 (32)	90 (32)	91 (33)	93 (34)	95 (35)
80 (27)	80 (27)	80 (27)	81 (27)	81 (27)	82 (28)	82 (28)	83 (28)	84 (29)	84 (29)	85 (29)	86 (30)	86 (30)	87 (31)

Category	Heat Index	Possible heat disorders for people in high risk groups
Extreme Danger	130°F or higher (54°C or higher)	Heat stroke or sunstroke likely.
Danger	105 - 129°F (41 - 54°C)	Sunstroke, muscle cramps, and/or heat exhaustion likely. Heatstroke possible with prolonged exposure and/or physical activity.
Extreme Caution	90 - 105°F (32 - 41°C)	Sunstroke, muscle cramps, and/or heat exhaustion possible with prolonged exposure and/or physical activity.
Caution	80 - 90°F (27 - 32°C)	Fatigue possible with prolonged exposure and/or physical activity.

Source: National Weather Service

Previous occurrences: There have been no state or federal declarations for extreme heat. The National Risk Index lists 142 heat wave events for the planning area and the planning committee has historical knowledge of multiple days of extreme heat over 100 degrees Fahrenheit.

Probability of future events: 4 — Highly likely — Temperature extremes are likely to continue to occur annually in the planning area. Temperatures at or above 100 degrees typically occur during the summer months in the city.

4.4.3 Flooding - Severity - 1, Probability - 2, Ranking – 3

Hazard description: Flooding is natural hazard characterized by the overflow of water onto normally dry land, resulting in inundation. Flooding in the City of Coachella can occur due to various factors, including heavy rainfall, flash foods, storm surges, and the overflow of rivers and canals. Flooding can have several adverse impacts, including:

- Property damage: can cause structural damage to buildings, homes, and other infrastructure.
- Disruption of utilities: can damage electrical, water, and sewage systems leading to service interruptions.
- Environmental impacts: can result in soil erosion, water contamination, and damage to ecosystems.

Location: The city is in proximity to several bodies of water, including the Coachella Valley Stormwater Channel and Whitewater River, making it susceptible to various types of flooding events.

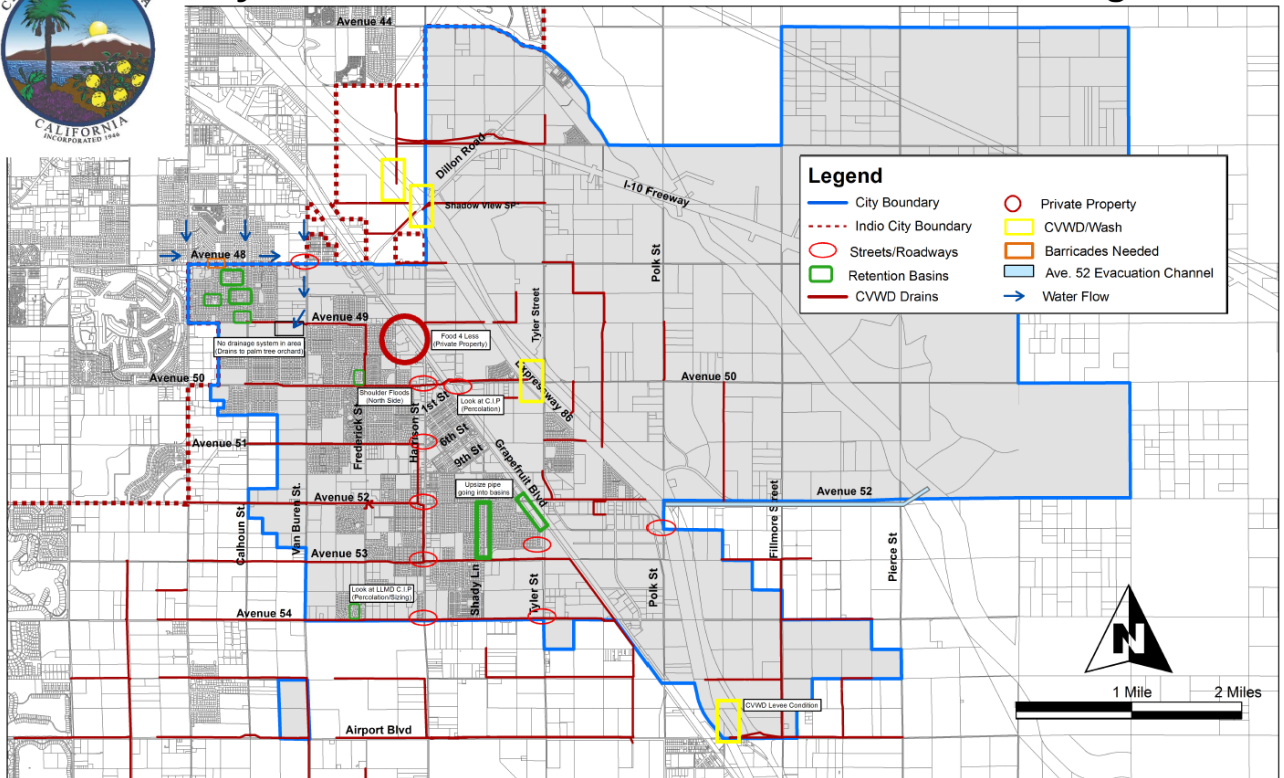
Extent: Flooding events in Coachella can vary in extent and severity. Depending on the cause, flooding can impact localized areas, such as streets and low-lying neighborhoods, or more extensive regions of the city and surrounding areas within Riverside County. Flash floods in particular can develop rapidly and affect specific locations without much warning.

As a result of high flood events from 2014 – 2022 the below map is a reflection of high flood prone areas within the city limits. The below map identifies where higher risk damages are for city facilities and is supported by modeling completed in the City’s Stormdrain Master Plan.

Figure 4-5: City of Coachella Flood Prone Areas



City of Coachella Flood Prone Areas/Master Drainage Plan



Previous occurrences: There have been two state declarations for flooding/severe storms in Riverside County since the last LHMP update in 2018 and a total of 10 federal declarations for Riverside County for flooding/severe storms since 1990.

In February 2014, the Coachella Valley experienced severe flash floods following a heavy rainstorm, resulting in property damage and road closures.

Table 4-12: Riverside County Disaster Declarations from Flood and Severe Storms

Disaster Type	State Declaration		Federal Declaration	
	Count	Years	Count	Years
Flood	-	-	3	1993, 2011, 2017
Severe Storm	2	2019, 2022	7	1995, 1998, 2005, 2010, 2019

Source: FEMA, California Tax Franchise Board

Probability of future events: 4 — Highly Likely — Near 100 percent chance of occurrence in the next year. With the increase in atmospheric rivers and change in weather patterns heavy rain falls over a short period of time are becoming a multi-year event.

4.5 Vulnerability Assessment

An estimate of the vulnerability of the city to each identified hazard, in addition to the estimate of likelihood of future occurrence, is provided in each of the hazard specific sections that follow. Vulnerability is measured in general, qualitative terms and is a summary of the potential impact based on past occurrences, spatial context, damage and casualty potential. It is categorized into the following classifications.

- Low – minimal impact. The occurrence and potential cost of damage to life and property is minimal.
- Medium – moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- High – widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.

4.5.1 Earthquake Vulnerability Assessment

Likelihood of Future Occurrence (major earthquake): 1 — Unlikely — Less than 1 percent chance of occurrence in the next 100 years

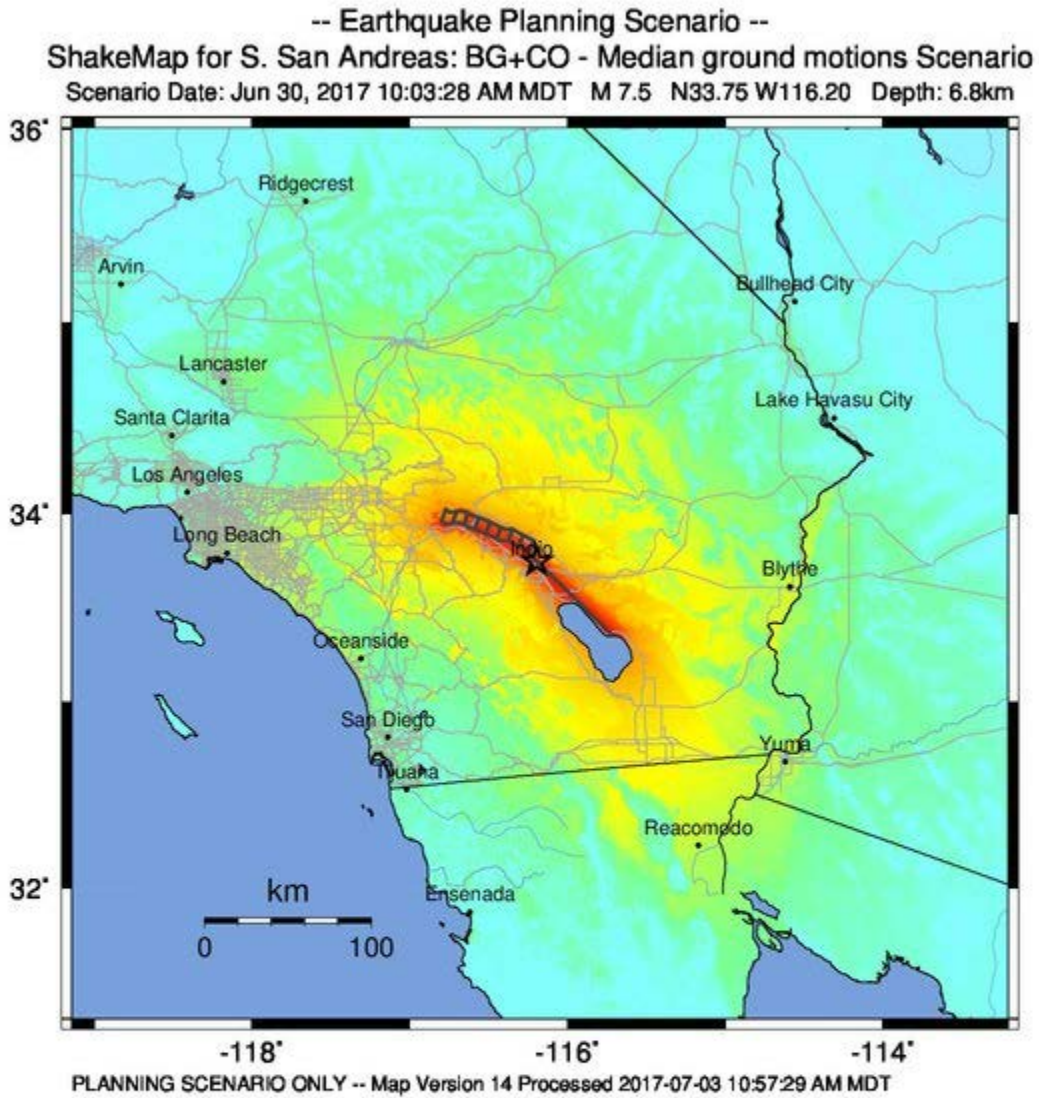
Vulnerability – High

The city has a mix of building structures, including older constructions and newer developments. Older buildings, especially those built before modern seismic codes were established, may be more vulnerable to earthquake damage. Retrofitting and strengthening of older structures are essential to reduce the risk of structural failures and protect occupants. The planning committee has identified approximately 36 unreinforced masonry buildings in the City. The majority of the unreinforced masonry buildings are downtown, which is very much a community asset. The downtown area is the community's major attraction. City Hall is the only critical facility that is an unreinforced masonry building. Critical infrastructure, including roads, bridges, utilities, and lifeline systems (water, power, gas), may be significantly impacted by a major earthquake. Damage to the infrastructure can lead to disruptions in transportation, communication, and emergency response efforts. The city's vulnerability is further compounded by its location near the San Andreas Fault, increasing the potential for ground shaking and infrastructure damage.

The San Andreas Fault was focused on for the assessment. USGS earthquake shake map for a 7.5 magnitude earthquake on the San Andreas Fault, Figure 4-6, was used to establish potential damage estimates. This map classified shaking as "Violent", this was then assigned

a value of .10 and multiplied by the total “Exposure-Building Value” from the NRI data for Planning Area.

Figure 4-6: USGS Shake Map San Andreas



PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

Scale based upon Worden et al. (2012)

Table 4-13: Earthquake Total Value Loss for Structures in the City of Coachella

Census Tract	Earthquake - Exposure - Building Value	Value Loss
045703	\$ 371,507,000	\$ 37,150,700
045704	\$ 231,242,000	\$ 23,124,200

045706	\$	313,621,000	\$	31,362,100
045707	\$	556,679,000	\$	55,667,900
045708	\$	349,521,000	\$	34,952,100
045709	\$	268,519,000	\$	26,851,900
Total Value Loss =			\$	209,108,900

A magnitude of 7.0 or higher earthquake would impact the entire planning area including all of the critical facilities within the planning area. It would be catastrophic to the entire community. The shaking can result in various impacts, including:

- Building and infrastructure damage: may cause structural damage to buildings, freeways, roads, bridges, and other critical infrastructure, jeopardizing public safety.
- Disruption of essential services: may interrupt the supply of electricity, water, gas, and communication networks, impacting emergency response and recovery efforts.
- Ground failure: can trigger landslides, liquefaction, and other ground failures, further damaging infrastructure and posing risks to residents.
- Secondary hazards: can trigger secondary hazards such as fires, gas leaks, train derailments, and hazardous materials incidents.

4.5.2 Heat Wave Vulnerability Assessment

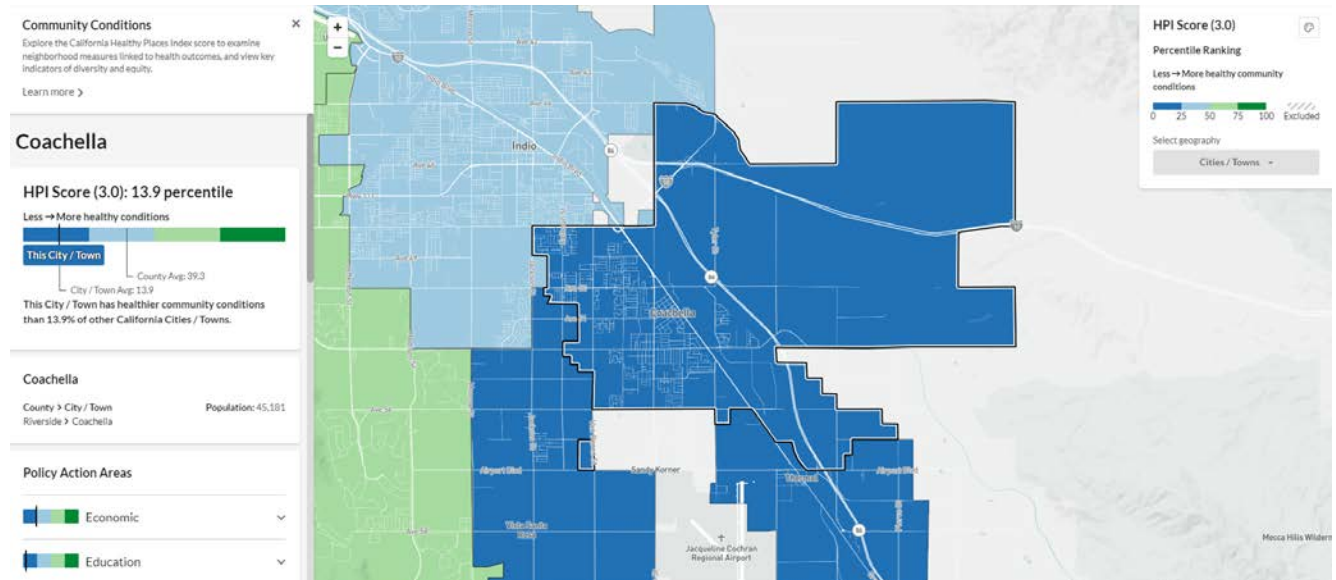
Likelihood of future occurrence: 4 — Highly Likely — Near 100 percent chance of occurrence in the next year

Vulnerability – Medium

Heat is a significant hazard faced by the City of Coachella. Heatwaves are common during the summer months, with temperatures often exceeding 100 degrees Fahrenheit. Prolonged exposure to high temperatures poses a risk to the health and well-being of the population, particularly vulnerable groups such as the elderly, young children, outdoor workers, and individuals with pre-existing health conditions.

Heat waves will have limited impact on damage to physical structures and limited loss risk associated with them. The greatest risk is to the vulnerable populations throughout the planning area. The Public Health Alliance of Southern California created an index to identify health disadvantage areas within the state. Areas that have a low Healthy lace Index (HPI) would be at greater risk during heat waves. Figure X is a map of the HPI for the Planning Area.

Figure 4-7: Healthy Places Index Map for Coachella



Source: Public Health Alliance of Southern California

Due to the low HPI all of the residents within the planning area would be susceptible to heat waves.

The City of Coachella has developed a strategic plan for the activation of Cooling and Warming Centers. In circumstances of extreme heat, the City has a cooling station plan and identifies city facilities as cooling stations open to the public. The Centers will be activated based on the following conditions:

- The forecast anticipated temperatures of 100+ degrees for three consecutive days or extreme cold.
- The Riverside County Department of Public Health, after contact with the National Weather Service, issues a “Heat Warning” for affected areas.
- Heat Warning announcements posted on media outlets; television, radio, local newspaper and posting on the Summer Crisis Hotline.
- Activation of Cooling or Warming Centers by the Community Action Partnership of Riverside County.

4.5.3 Flooding Vulnerability Assessment

The vulnerability assessment for flooding in the City of Coachella highlights structures, systems, populations, and community assets susceptible to damage and loss from flood-related hazards.

Structures:

1. Residential Buildings: Many residential structures in Coachella are susceptible to flood damage due to their proximity to water bodies and varying levels of flood-resistant construction.
2. Commercial and Industrial Buildings: Businesses and industries located in flood-prone areas may experience damage to their facilities, inventory, and equipment.
3. Critical infrastructure: Key infrastructure, including bridges, roads, electrical substations, and wastewater treatment plants, is vulnerable to flooding, potentially leading to service interruptions and costly repairs.

Systems:

1. Stormwater Management: Outdates or inadequate stormwater drainage systems can contribute to localized flooding, exacerbating flood risks.
2. Utilities: Water supply, power, gas, and telecommunications systems may be disrupted during flooding events, affecting essential services and communication.

Populations:

1. Vulnerable Populations: Low income communities, the elderly, young children, and individuals with disabilities may face increased risks due to limited resources, mobility challenges, and difficulties accessing emergency services.
2. Tourists and Seasonal Residents: Coachella attracts tourists and seasonal residents. Lack of familiarity with local flood risks and evacuation routes can put the populations at higher risk vulnerability.

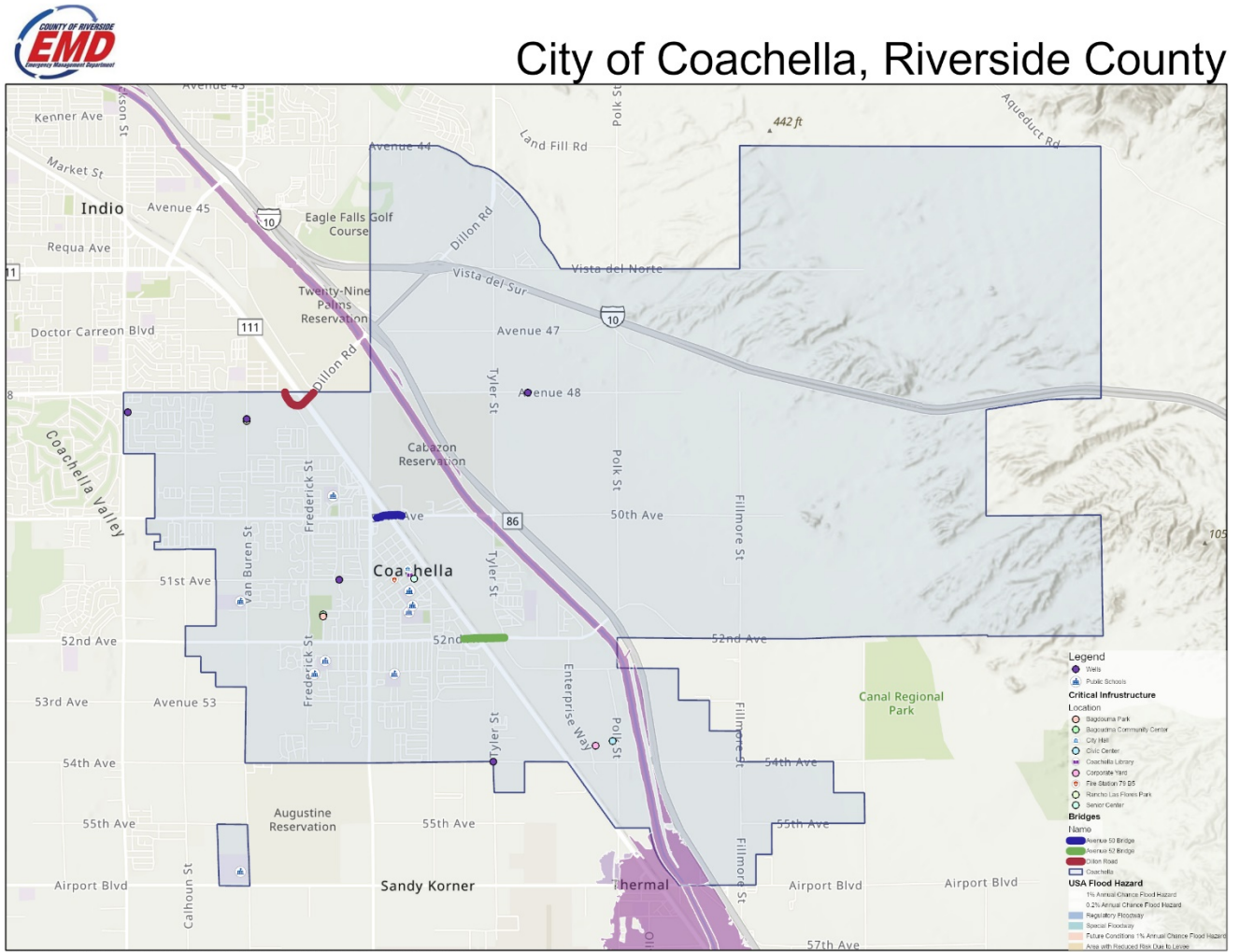
Community Assets:

1. Agricultural Lands: Coachella's economy relies on agriculture. Flooding can damage crops, impacting the livelihoods of farmers and the local economy.
2. Cultural and Historic Sites: Flooding poses a risk to Coachella's cultural heritage, including historic structures, artifacts, and cultural landmarks.
3. Emergency Services: Floods can overwhelm emergency services, hindering response efforts and potentially putting first responders at risk.
4. Educational Institutions: Schools and educational facilities are essential assets. Flooding can disrupt education, impacting student's academic progress and the community's well-being.

The City of Coachella is vulnerable to flooding due to its geographic location, proximity to water bodies, population density, and historical flood events. Vulnerable structures, systems, populations, and community assets are at risk of damage and loss in the event of flooding.

Below is a map of the critical infrastructure in the City of Coachella overlaid on FEMA's National Flood Hazard Layer.

Figure 4-8: Critical Infrastructure and FEMA's Flood Hazard Layer



SECTION 5.0 – COMMUNITY RATING SYSTEM

5.1 REPETITIVE LOSS PROPERTIES

There are no repetitive loss properties in the City of Coachella.

5.2 NATIONAL FLOOD INSURANCE PROPERTIES

The City of Coachella does participate in the National Flood Insurance Program (NFIP) - # 060249 since 09/30/80.

- a. Describe participation in NFIP, including any changes since previously approved plan.** There are no changes since the 2018 Local Hazard Mitigation Plan.
- b. Date first joined NFIP.** 09/30/1980
- c. Identify actions related to continued compliance with NFIP.**
Continually monitoring all streets, flood control channels, washes, and hillsides. Upgrade flood maps as identified by the Community Action Visit and as additional incorporation areas become part of the City.
- d. CRS member?** N/A
- e. CRS class?** N/A
- f. Describe any data used to regulate flood hazard area other than FEMA maps.**
N/A
- g. Have there been issues with community participation in the program?**
None
- h. What are the general hurdles for effective implementation of the NFIP?**
None
- i. Summarize actions related to continued compliance with NFIP (c-2 and c-4)**
N/A

SECTION 6.0 - CAPABILITIES ASSESSMENT

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment is divided into five sections –

- Regulatory Mitigation Capabilities
- Administrative And Technical Mitigation Capabilities
- Fiscal Mitigation Capabilities
- Mitigation Outreach And Partnerships
- Funding Sources

6.1 REGULATORY MITIGATION CAPABILITIES

Regulatory mitigation capabilities can be expanded and improved in the following ways:

Providing incentives and financial assistance for property owners to retrofit their buildings for hazard resilience. This can include grants, low-interest loans, or tax incentives for improvements.

Implementing and enforcing zoning regulations that restrict development in high-risk areas, such as floodplains. Encourage smart land use planning to minimize exposure to hazards.

Table 6-14 lists planning and land management tools typically used by jurisdictions to implement hazard mitigation activities and those that are currently active in the city. The column that indicates “Yes” or “No” defines if the City has that capability currently.

Table 6-14: Regulatory Mitigation Capabilities for the City of Coachella

Regulatory Tool	Yes/No	Comments
General plan	Yes	Updated 2015; This plan helps with the City’s long-term changes and improvements, which include developing new infrastructure or policies on topics like land use, mobility, and public safety. It also includes a discussion of fire, earthquake, flooding, and severe weather. This plan assists with the integration of mitigation actions.
Zoning ordinance	Yes	Title 17-Chapter 17.08

Subdivision ordinance	Yes	Title 15 – Chapter 15.08.030
Site plan review requirements	Yes	
Floodplain ordinance	No	
Other special purpose ordinance (storm water, water conservation, wildfire)	Yes	2015 Model Water Efficient Landscape Ordinance
Building code	Yes	California Code, Title 15; This code indicates how new developed structures can be built. This code can support with some of the mitigation actions the City may consider doing in revising and updating this code in order to enforce stricter building regulations to prevent disaster risks such as fires and earthquakes.
Fire department ISO rating	Yes	
Erosion or sediment control program	No	
Storm water management program	Yes	
Capital improvements plan	Yes	Five year plan, updated annually
Economic development plan	Yes	Comprehensive General Plan
Local emergency operations plan	Yes	Updated 2021
Flood Insurance Study or other engineering study for streams	Yes	Panel 2300

6.2 ADMINISTRATIVE/TECHNICAL MITIGATION CAPABILITIES

Administrative/technical mitigation capabilities can be expanded or approved upon in the following ways:

Implementing an advanced early warning system for different hazards, such as flood forecasting and earthquake early warning systems. Early warning systems detect and inform at-risk communities before disasters, enable early action, save lives and reduce impact of disasters.

Table 6-15 is a list of City Departments that can have a role in activities related to hazard mitigation. The column that indicates “Yes” or “No” defines if the City has that capability currently.

Table 6-15: Administrative and Technical Capabilities for the City of Coachella.

Personnel Resources	Yes/No	Department/Position
Planner/engineer with knowledge of land development/land management practices	Yes	Development Director
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	City Engineer and Building Official
Engineer with an understanding of natural hazards	Yes	City Engineer and Development Director
Personnel skilled in GIS	Yes	Planning Department
Full time building official	Yes	Building Division
Floodplain manager	No	
Emergency manager	Yes	Public Works/ESC
Grant writer	Yes	Administration
GIS Data—Land use	Yes	Planning Department
GIS Data—Links to Assessor’s data	Yes	Planning Department
Warning systems/services (Reverse 9-11, outdoor warning signals)	No	

6.3 FISCAL MITIGATION CAPABILITIES

Fiscal mitigation capabilities can be expanded or improved upon by seeking federal, state, and regional grant opportunities that provide funding for hazard mitigation projects. This could include programs like the Federal Emergency Management Agency’s (FEMA) Hazard Mitigation Assistance (HMA) grants. Be diligent in applying for available grants and maximizing the use of external funds for mitigation projects.

Table 6-16 identifies financial tools or resources that the city could potentially use to help fund mitigation activities.

Table 6-16: Fiscal Mitigation Capabilities for the City of Coachella

Financial Resources	Accessible/Eligible to Use (Yes/No)	Comments
Community Development Block Grants, HMPG, or other federal infrastructure finding	Yes	EMPG, SHSP
Capital improvements project funding	Yes	
Authority to levy taxes for specific purposes	Yes	With voter approval

Fees for water, sewer, gas, or electric services	Yes	Water & Sewer
Impact fees for new development	Yes	
Incur debt through general obligation bonds	Yes	With voter approval
Incur debt through special tax bonds	Yes	With voter approval
Incur debt through private activities	No	
Withhold spending in hazard prone areas	N/A	
Other		

6.4 MITIGATION OUTREACH AND PARTNERSHIPS

The City of Coachella has engaged in mitigation outreach efforts to educate residents, businesses, and community organizations about the importance of disaster preparedness and mitigation.

The City trains residents in emergency preparedness through Teen CERT classes that are available once per year. CERT training prepares residents to assist the City of Coachella and emergency personnel during hazardous situations and mitigates the likelihood of loss of life or injury in the process.

The City has provided emergency preparedness presentations to the older adults that convene at the Senior Center.

The City regularly interacts with the City of Coachella’s Emergency Services representative. City of Coachella has regular discussions and attends meetings held by the County of Riverside Emergency Management Department, to include the Riverside County Operational Planning Committee (OAPC) meetings.

The City participates in the Great ShakeOut annually with all staff.

The City of Coachella Fire Department has an automatic aid agreement for fire and emergency medical services with the Riverside County Fire.

6.5 FUNDING OPPORTUNITIES

FEMA HMA Grants: Cal OES administers three main types of HMA grants: (1) Hazard Mitigation Grant Program, (2) Pre-Disaster Mitigation Program, and (3) Flood Mitigation Assistance Program. Eligible applicants for the HMA include state and local governments, certain private non-profits, and federally recognized Indian tribal governments. While private

citizens cannot apply directly for the grant programs, they can benefit from the programs if they are included in an application sponsored by an eligible applicant.

FEMA Public Assistance Section 406 Mitigation: The Robert T. Stafford Disaster Relief and Emergency Assistance Act provides FEMA the authority to fund the restoration of eligible facilities that have sustained damage due to a presidentially declared disaster. The regulations contain a provision for the consideration of funding additional measures that will enhance a facility's ability to resist similar damage in future events.

Community Development Block Grants: The California Department of Housing and Community Development administers the State's Community Development Block Grant (CDBG) program with funding provided by the U.S. Department of Housing and Urban Development. The program is available to all non-entitlement communities that meet applicable threshold requirements. All projects must meet one of the national objectives of the program – projects must benefit 51 percent low- and moderate-income people, aid in the prevention or clearance of slum and blight or meet an urgent need. Grant funds can generally be used in federally declared disaster areas for CDBG eligible activities including the replacement or repair of infrastructure and housing damaged during, or because of, the declared disaster.

SECTION 7.0 - PLAN IMPLEMENTATION AND MAINTENANCE PROCESS

The City will monitor its LHMP on an annual basis as it evaluates and submits budget requests for its Emergency Operations Division and submits projects to be funded by its Capital Improvement Program. Limitations will exist and dependent on available funding. Our Public Works Department will be in charge of review, monitoring, evaluation and updating our LHMP. If through this process we discover changes have occurred during the review/evaluation, we will update the LHMP Revision Page and notify OES to update our Annex.

The evaluation process will include assessments of the following components of the LHMP:

- Reassess our hazards and mitigations. Reaffirm if those identified are still accurate.
- Assess if the nature, magnitude, and/or type of risks have changed.
- Identify planning tools that must be refined and/or developed.
- Identify resources available to respond to the hazards identified and what resources are lacking.
- Identify regional resources and relationships we need to build upon and refine.
- Obstacles identified as a result of training or real incidents.
- Evaluate whether the agencies and other partners participation was as anticipated.

The City of Coachella has several existing planning mechanisms where hazard mitigation information and actions will interconnect. These mechanisms include:

Comprehensive plan: The comprehensive plan, also known as a general plan, is a long-range policy document that guides the physical, social, and economic development of a city. It typically includes land use goals, objectives, and policies. Hazard mitigation information and actions can be integrated into the comprehensive plan by incorporating specific land use regulations, development standards, and policies that address hazard-prone areas, resilient infrastructure, and disaster preparedness.

Capital Improvement Plan: The Capital Improvement Plan outlines the city's proposed public infrastructure projects and major investments over a specified period. By incorporating hazard mitigation information and actions into the Capital Improvement Plan, the city will prioritize projects that enhance resilience and reduce vulnerability to hazards. This includes projects such as flood control measures and retrofitting critical infrastructure.

Zoning and Building Codes: Zoning regulations and building codes play a crucial role in shaping land use and development within a city. By integrating hazard mitigation principles into zoning ordinances and building codes, the city can ensure that new development projects adhere to resilient design standards, setback requirements, and other measures that mitigate risks posed by hazards. This could include regulations for building in flood zones, seismic safety requirements, or wildfire-resistant construction practices.

Permitting Processes: Permitting processes provide the framework for reviewing and approving development projects. Incorporating hazard mitigation into the permitting process allows the city to assess potential risks and ensure that proposed projects comply with applicable hazard mitigation measures. This may involve conducting environmental assessments, requiring hazard impact studies, or incorporating hazard mitigation conditions as part of the permitting requirements.

It is critical to engage stakeholders and the community throughout the process. This includes involving relevant departments within the local government, such as planning, public works, emergency management, and community development, in the integration process. Additionally, public participation through workshops, meetings, and feedback mechanisms should be encouraged to gather input and ensure community buy-in.

SECTION 8.0 INCORPORATION INTO EXISTING PLANNING MECHANISMS

The City of Coachella will integrate mitigation goals, information, and actions from its 2022 LHMP into the Safety Element of the General Plan upon the next update in 2035. The LHMP is already implemented into the following planning mechanisms.

- Building and Construction Codes

- Fire Codes
- Capital Improvement Plan
- Storm Drain Master Plan
- Stormwater ordinance required by MS4
- Efficient Landscape Irrigation Ordinance required by MS4

The LHMP will be reviewed by key staff to incorporate the identified hazards within the City. Some of these identified hazards will also include review with the County of Riverside Emergency Management Department personnel to help address potential funding opportunities. All of the identified hazards within the plan will be considered in building, modernizing, and maintaining city facilities.

SECTION 9.0 - CONTINUED PUBLIC INVOLVEMENT

After the City of Coachella Planning Committee reviews the Scheduled Plan Maintenance Process, we will notify the public of any changes and request input from the public to the LHMP by posting the LHMP on the city's website, announcing the request for input at public events and meetings. In addition, we discuss hazard mitigation planning during all CERT courses and refresher trainings.

APPENDIX A – PUBLIC NOTICES AND MAPS

Figure A – 9: Public Opportunity City Website Screenshot

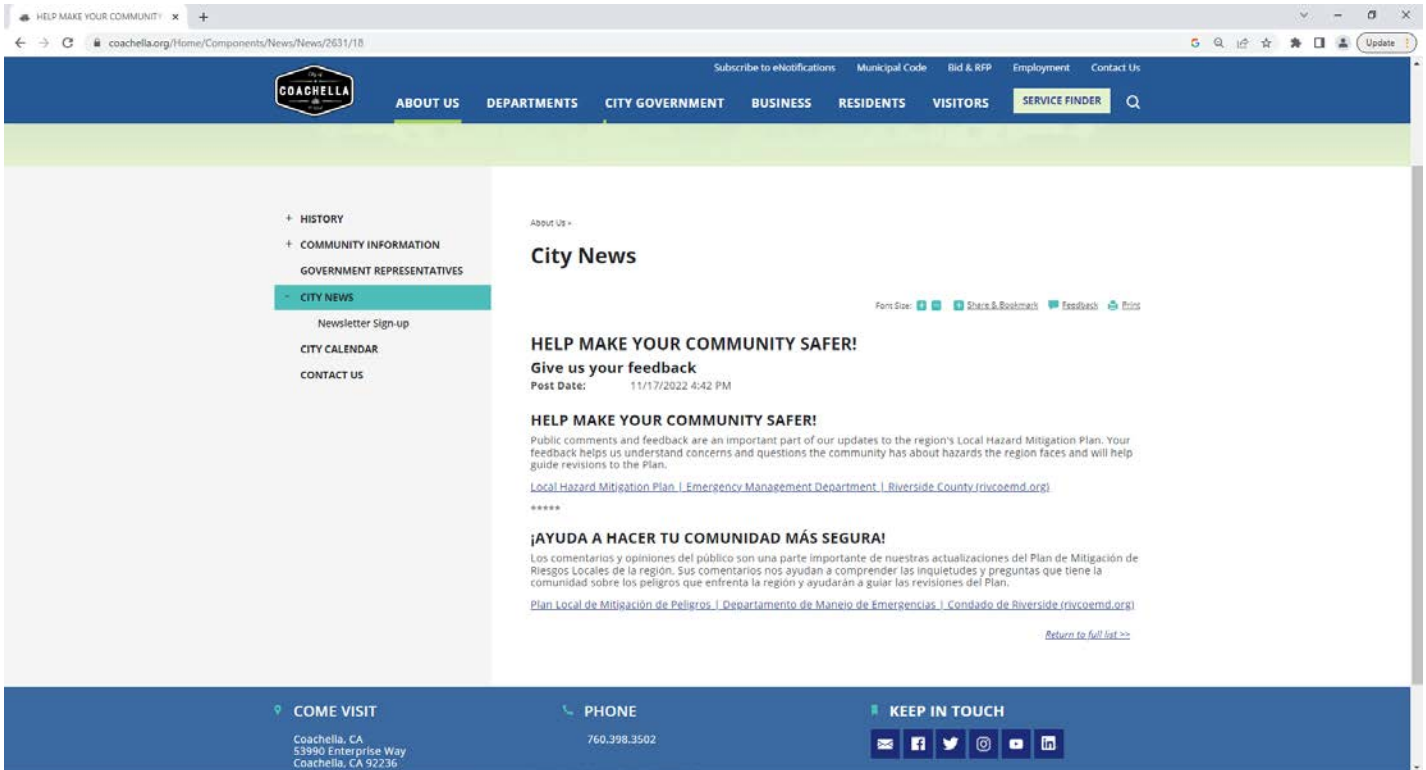


Figure A – 10: Public Opportunity Survey Questions

1. What city or unincorporated area do you live and work in?
2. Are you responding as:
 - a. Resident
 - b. Community Organization
 - c. Local Business
 - d. Non-Profit Organization
3. Are you aware that Riverside County has a Local Hazard Mitigation Plan?
 - a. Yes
 - b. No
4. Please select the one hazard you think is the highest threat to your neighborhood:
 - a. Extreme Weather
 - b. Flood
 - c. Insect Infestation
 - d. Landslide
 - e. Tornado
 - f. Wildland Fire
 - g. Civil Disorder
 - h. Communications Failure
 - i. Cyber Attack
 - j. Dam Failure
 - k. Electrical Failure
 - l. HazMat Incident
 - m. Jail/Prison Event
 - n. Nuclear Incident
 - o. Pipeline Disruption
 - p. Terrorist Event – Mass Casualty Incident
 - q. Transportation Failure
 - r. Water Supply Disruption/Contamination
 - s. Emergency Disease/Contamination
 - t. Pandemic Flu
5. Please select the one hazard you think is the second highest threat to your neighborhood:
 - a. Extreme Weather
 - b. Flood
 - c. Insect Infestation
 - d. Landslide
 - e. Tornado
 - f. Wildland Fire
 - g. Civil Disorder
 - h. Communications Failure
 - i. Cyber Attack
 - j. Dam Failure
 - k. Electrical Failure
 - l. HazMat Incident

- m. Jail/Prison Event
 - n. Nuclear Incident
 - o. Pipeline Disruption
 - p. Terrorist Event – Mass Casualty Incident
 - q. Transportation Failure
 - r. Water Supply Disruption/Contamination
 - s. Emergency Disease/Contamination
 - t. Pandemic Flu
6. In your opinion, what are some steps your local government could make to reduce or eliminate the risk of future damages in your neighborhood?
 7. Are there any other issues regarding the reduction of risk and loss associated with hazards or disasters in the community that you think are important?
 8. A number of community-wide activities can reduce our risk from hazards. In general, these activities fall into one of the following six broad categories. Please tell us how important you think each one is for your community to consider pursuing.

Prevention – Administrative or regulatory actions that influence the way land is developed and buildings are constructed (Example – Planning and zoning building codes, etc).

- a. Very Important
- b. Somewhat Important
- c. Not Important

Property Protection – Actions that involve the modification of existing buildings or structures to protect them from a hazard or remove them from the hazard area (Example – Retrofits, relocation, acquisition, etc).

- a. Very Important
- b. Somewhat Important
- c. Not Important

Public Education and Awareness – Actions to inform and educate residents, elected officials and property owners about the hazards and potential ways to mitigate them (Example – Outreach, real estate disclosure, school-age and adult education).

- a. Very Important
- b. Somewhat Important
- c. Not Important

Natural Resource Protection – Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems (Example – Erosion control, stream restoration, etc).

- a. Very Important
- b. Somewhat Important
- c. Not Important

Emergency Services – Actions that protect people and property during and immediately after a disaster or hazard event (Example – Warning systems, protection of official facilities, etc).

- a. Very Important
- b. Somewhat Important
- c. Not Important

Structural Projects – Actions that involve the construction of structures to reduce the impact of a hazard (Example – Dams, floodwalls, etc).

- a. Very Important
- b. Somewhat Important
- c. Not Important

9. What would make you lose confidence in your jurisdiction’s ability to protect you and your community from hazards?

Non-disclosure of the hazards in my community

- a. Very Important
- b. Somewhat Important
- c. Not Important

Poor planning and response to an emergency or disaster

- a. Very Important
- b. Somewhat Important
- c. Not Important

Lack of follow-up in implementing carrying out mitigation projects

- a. Very Important
- b. Somewhat Important
- c. Not Important

No early alert and warnings notifications during an emergency or disaster

- a. Very Important
- b. Somewhat Important
- c. Not Important

Too many alert and warnings notifications regarding an emergency or disaster

- a. Very Important
- b. Somewhat Important
- c. Not Important

10. Please provide us your name, email, and telephone number. Riverside County will use this information only in instances where they need to respond to your questions or comments. We will not share this information with anyone.

- a. Name (Optional)
- b. Email Address (Optional)
- c. Phone Number (Optional)

Figure A – 11: Teen CERT Agenda





Basic CERT Course

AGENDA

DAY 1

Unit 1: Introduction to Disaster Preparedness

- Registration
- Introductions / Speakers
- Unit Overview
- Community Preparedness: Roles and Responsibilities
- Hazards and Their Potential Impact

Unit 2: CERT Organization

- Unit Overview
- CERT Organization
- CERT Mobilization

- Home and Workplace Preparedness
- Reducing the Impact of Hazards Through Mitigation
- CERT Disaster Response
- Additional Training for CERT Volunteers
- Local Hazard Mitigation Plan (LHMP)
- Unit Summary

Day 2

Unit 6: Fire Safety and Utility Controls

- Unit Overview
- Fire Chemistry
- Fire Size-up Considerations
- Firefighting Resources

Unit 3: Disaster Medical Operations – Part 1

- Unit Overview
- Treating Life- Threating Conditions

Unit 4: Disaster Medical Operations – Part 2

- Unit Overview
- Mass Casualty Incidents
- Functions of Disaster Medical Operations

Unit 5: Disaster Psychology

- Unit Overview
- Disaster Reactions
- Self-Care and Team Well-Being

- Fire Suppression Safety
- Fire and Utility
- Hazardous Materials
- Unit Summary

- Basic First Aid Care
- Unit Summary

- Establishing Medical Treatment Areas
- Conducting Head-to-Toe Assessments
- Public Health Considerations
- Unit Summary

- Working with Survivors' Emotional Responses
- Unit Summary

1

Unit 8: CERT and Terrorism

- Unit Overview
- Terrorist Goals and Tactics
- Preparing Your Community
- Active Shooter Situations
- Until Help Arrives
- Hazmat and CBRNE
- Unit Summary

DAY 3

Unit 7: Light Search and Rescue Operations

- Unit Overview
- Safety During Search and Rescue Operations
- Conducting Interior and Exterior Search Operations
- Conducting Rescue Operations
- Unit Summary

Unit 9: Course Review, Final Exam and Disaster Simulation

- Unit Overview
- Course Review
- Final Exam
- Disaster Simulation
- Exercise Critique and Summary

Figure A – 12 : City of Coachella's Flood Prone Areas Map

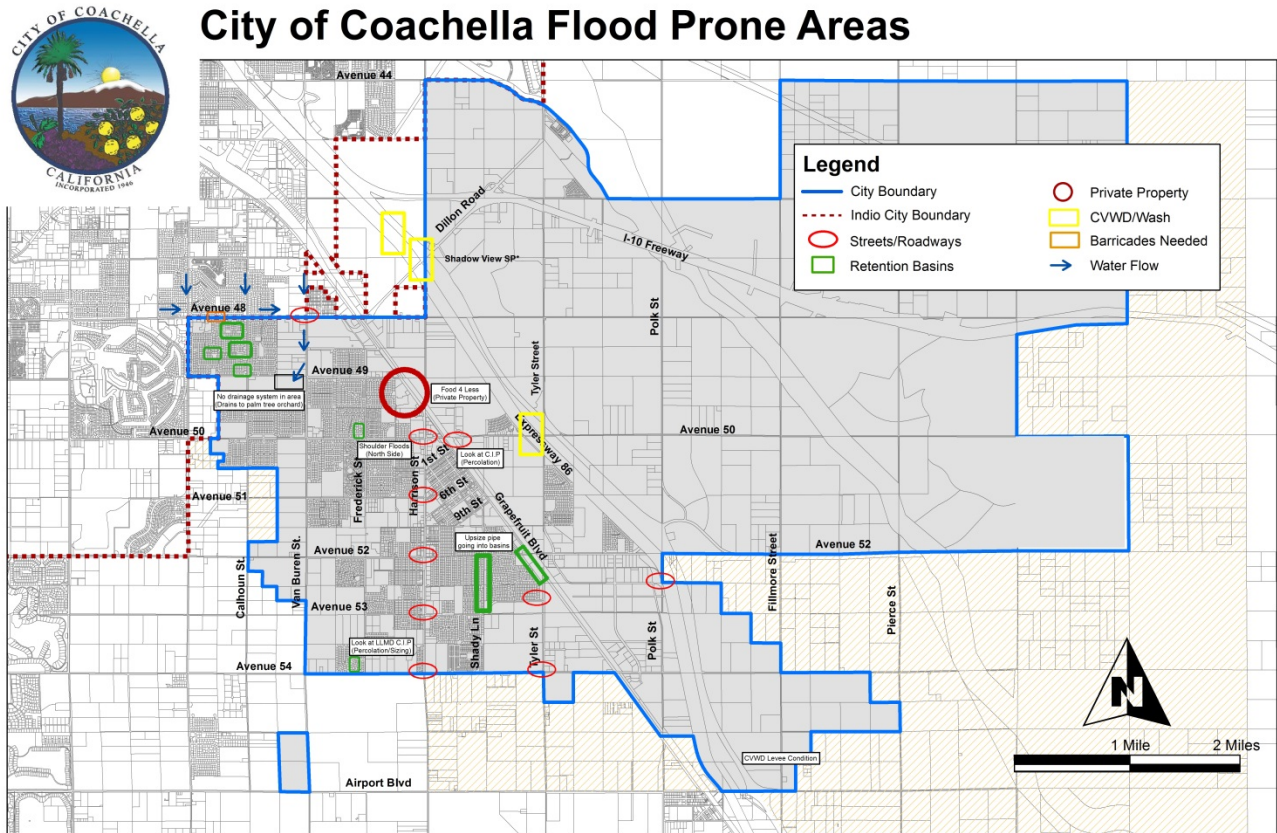
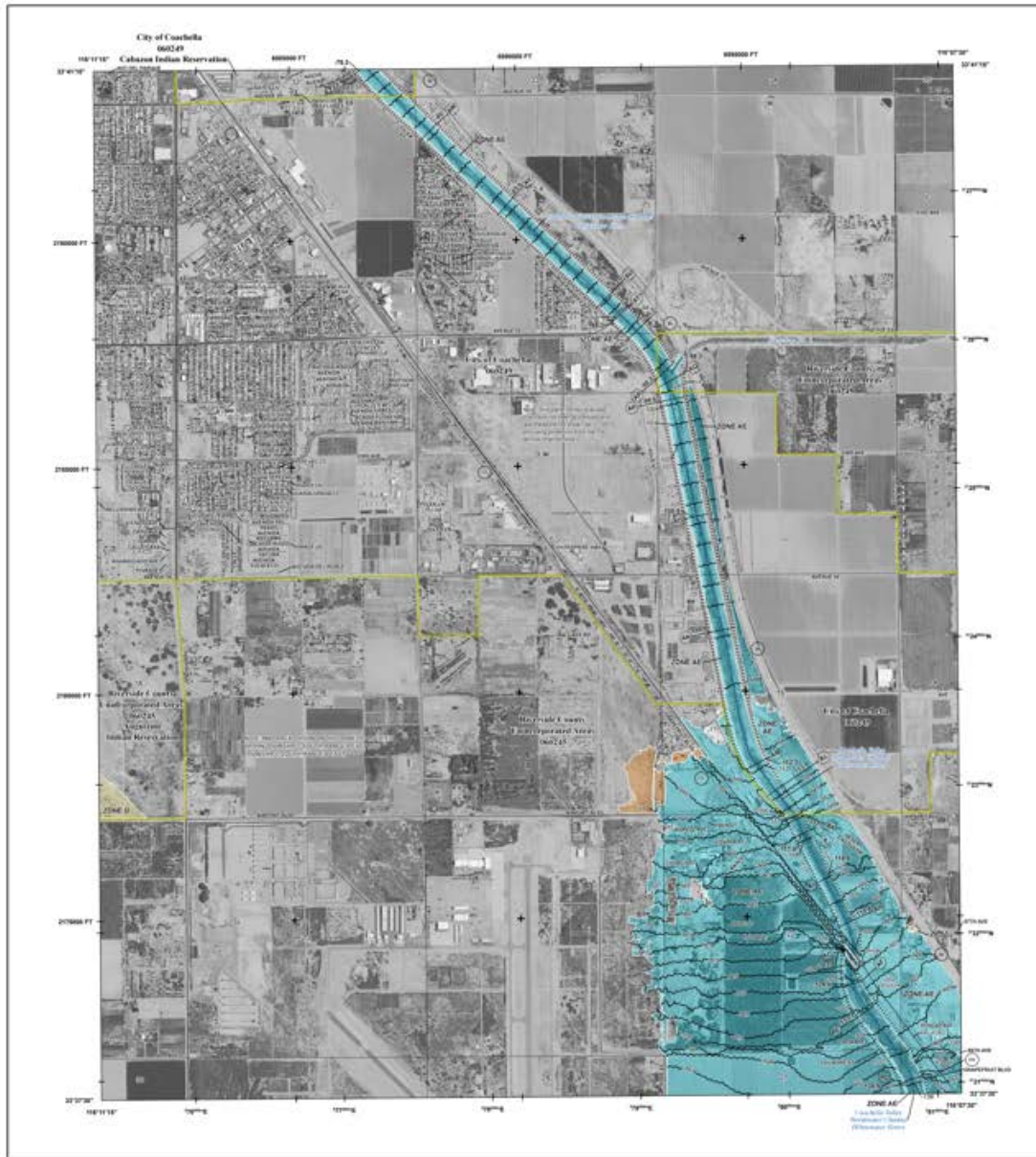


Figure A – 13: City of Coachella’s (FIRM) Flood Insurance Rate Map



FLOOD HAZARD INFORMATION

SEE THIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT.
THE INFORMATION EXPECTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT [HTTP://MS.C.FEMA.GOV](http://msc.fema.gov)

SPECIAL FLOOD HAZARD AREAS

- Without Base Flood Elevation (BFE) Zone 1
- With BFE or Depth Zone 0, 1, 2, 3, 4, 5, 6, 7, 8, 9
- Regulatory Floodway
- 0.2% Annual Chance Flood Hazard, Areas of 1% Annual Chance Flood with average depth less than one foot or with drainage areas of less than one square mile Zone 10
- Future Conditions 1% Annual Chance Flood Hazard Zone 11
- Area with Reduced Flood Risk due to Levee See Notes Zone 12

OTHER AREAS OF FLOOD HAZARD

OTHER AREAS

- Areas of Minimal Flood Hazard Zone 13
- Area of Undevelopment Flood Hazard Zone 14
- Channel, Culvert or Storm Sewer
- Accretion or Proximally Accreted Levee, Dike or Floodwall

GENERAL STRUCTURES

- Non-accreted Levee, Dike or Floodwall
- Open Sections with 1% Annual Chance Water Surface Elevation (WSE)
- Crestal Travers
- Crestal Travers Baseline
- Profile Baseline
- Hydrographic Features
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary

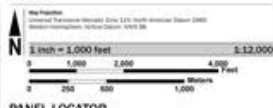
OTHER FEATURES

NOTES TO USERS

For information and questions about this map, available electronic products and the FIRM including technical assistance of the FIRM, visit a online product of the National Flood Insurance Program's website. Please call the toll-free number at 1-800-453-5867. Technical assistance may include information about the content of this product. If flood insurance is not available for a particular area, there may be a number of reasons why. For example, the area may not be covered by the FIRM, the area may not be eligible for FIRM coverage, or the area may be covered by the FIRM but not be eligible for FIRM coverage. For more information, visit the FIRM website at www.firm.gov.

Coordinates are given in decimal degrees. The FIRM was prepared in digital format by the Riverside County Flood Hazard and Control District. This map is not intended to be used for navigation purposes. The map is not intended to be used for navigation purposes. The map is not intended to be used for navigation purposes.

SCALE



PANEL LOCATOR



FEMA
National Flood Insurance Program

**NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP**
RIVERSIDE COUNTY, CALIFORNIA
Panel 2270 of 3805

FEMA
Federal Emergency Management Agency

Project Location:
COMMUNITY: COACHELLA VALLEY
COUNTY: RIVERSIDE COUNTY

NUMBER: 2270
PANEL: 019
SUFFIX: 4

VERSION NUMBER: 2.3.3.2
MAP NUMBER: 06960C2370H
MAP REVISED: MARCH 6, 2018

APPENDIX B – INVENTORY WORKSHEETS

SEE ATTACHMENTS

APPENDIX C – PLAN REVIEW TOOL/CROSSWALK

SEE ATTACHMENTS