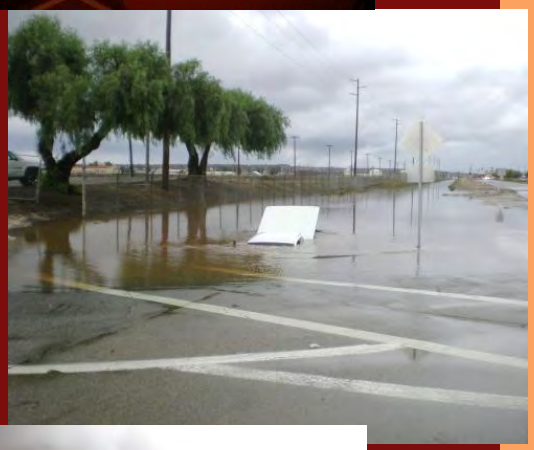

City of Moreno Valley

Local Hazard Mitigation Plan

October 4, 2011
Revised: May 2017

Revised By:
Abdul R. Ahmad, Fire Chief
Moreno Valley Fire Department

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Figures

Plan Adoption

The City of Moreno Valley will submit the revised plan to the Governor's Office of Emergency Services (Cal OES) for review prior to being submitted to the Federal Emergency Management Agency (FEMA). In addition, the City of Moreno Valley will wait to receive an "Approval Pending Adoption" before taking the plan to our local governing body for adoption.

Upon approval, the City of Moreno Valley will insert the signed resolution.

RESOLUTION NO. 2017-55

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, ADOPTING THE CITY OF MORENO VALLEY LOCAL HAZARD MITIGATION PLAN AS REQUIRED BY THE FEDERAL DISASTER MITIGATION AND COST REDUCTION ACT OF 2000.

WHEREAS, the Disaster Mitigation and Cost Reduction Act of 2000 (DMA 2000) was signed into law on October 30, 2000 by the President of the United States; and

WHEREAS, the DMA 2000 requires all jurisdictions to be covered by a Local Hazard Mitigation Plan to be eligible for Federal Emergency Management post-disaster funds; and

WHEREAS, the City of Moreno Valley is concerned about mitigating potential losses from natural disaster before they occur and the Local Hazard Mitigation Plan identifies potentials hazards, potential losses, and potential mitigation measures to limit losses; and

WHEREAS, the Office of Emergency Management for the City of Moreno Valley has updated the Local Hazard Mitigation Plan for 2017 that is specific for Moreno Valley;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MORENO VALLEY, CALIFORNIA, DOES HEREBY RESOLVE AS FOLLOWS:

1. Resolution 2011-102 and all prior enactments on the same subject are hereby repealed.

2. The City of Moreno Valley Local Hazard Mitigation Plan 2017 is adopted effective immediately.

APPROVED AND ADOPTED this 9th day of November, 2017.

Yxstian Gutierrez, Mayor

ATTEST:

Pat Jacquez-Nares, City Clerk

APPROVED AS TO FORM:

Martin Koczanowicz, City Attorney

RESOLUTION JURAT

STATE OF CALIFORNIA)
COUNTY OF RIVERSIDE) ss.
CITY OF MORENO VALLEY)

I, Pat Jacquez-Nares, City Clerk of the City of Moreno Valley, California, do hereby certify that Resolution No. 2017-55 was duly and regularly adopted by the City Council of the City of Moreno Valley at a regular meeting thereof held on the 9th day of November, 2017 by the following vote:

AYES: Council Members Giba, Marquez, Cabrera, Mayor Pro Tem Baca, and Mayor Gutierrez

NOES: None

ABSENT: None

ABSTAIN: None

(Council Members, Mayor Pro Tem and Mayor)

PAT JACQUEZ-NARES, CITY CLERK

(SEAL)

Executive Summary

The City of Moreno Valley's Local Hazard Mitigation Plan (LHMP) is designed to identify the city's hazards, estimate the probability of future occurrences, and set goals to mitigate potential risks to reduce or eliminate long-term natural or man-made hazard risks to human life and property for the City of Moreno Valley and its residents.

The 2017 LHMP is an update to Moreno Valley's 2011 LHMP which the Moreno Valley City Council adopted on October 25, 2011 (Resolution No. 2011-102). The 2011 LHMP completely replaced the 2004 Riverside County Operational Area Multi-Jurisdictional Local Hazard Mitigation Plan which Moreno Valley City Council adopted on January 25, 2005 (Resolution No. 2005-11). Both the 2011 LHMP, as well as this 2017 update, are more specific and focused to the City of Moreno Valley, rather than summarized in 'fill-in the blank forms' and 'yes' and 'no' questionnaires utilized in the 2004 multi-jurisdiction plan. As such, and according to the FEMA's 2008 Local Multi-Hazard Mitigation Planning Guidance, the 2011 LHMP involved a major plan rewrite, of which the 2017 LHMP is an update.

The City of Moreno Valley LHMP is written so that all stakeholders can understand Moreno Valley's hazard risks and the city's corresponding mitigation strategy. The city's mitigation efforts are continuous with a goal to develop and maintain a viable plan. Hazard mitigation responsibility rests with everyone and the City of Moreno Valley encourages its citizens to do mitigation planning at every level – at home, in the workplace and in their communities.

The City of Moreno Valley LHMP was prepared pursuant to the requirements of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended by Section 322 of the Disaster Mitigation Act of 2000 and the 44 Code of Federal Regulations (CFR) Part 201 – Mitigation Planning, 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 goals of the plan are to: **1) Protect life, property and the environment**; **2) Provide public awareness**; **3) Protect the continuity of government**; and **4) Improve emergency management, preparedness, collaboration and outreach**.

The mitigation plan is divided into 3 parts.

- Part 1 provides a profile of the City of Moreno Valley and describes the local planning process, as well as, public participation. It also provides a process for monitoring, evaluating and updating the plan.

- Part 2 provides a detailed assessment of the risks associated with each hazard and historical information on past occurrence. Part 2 also discusses vulnerabilities from each hazard, the impact to Moreno Valley and its citizens and when data is available, it provides information on the potential loss.

- Part 3 provides information about the city's mitigation goals to reduce or avoid long-term vulnerabilities to the hazards that may affect the City of Moreno Valley and an action plan for those goals, with an emphasis on prioritization and implementation.

The plan will be implemented upon FEMA approval.

PART 1

INTRODUCTION

Chapter 1: Community Profile

1.1 Planning Area Description

The City of Moreno Valley officially incorporated on December 3, 1984, as a California general law municipality. Moreno Valley is comprised of three, once-rural communities (Sunnymead, Edgemont and Moreno Beach) and is located in the northwestern portion of Riverside County, approximately 66 miles east of Los Angeles, 42 miles west of Palm Springs, and 100 miles north of San Diego. Moreno Valley is situated in a crescent of land bounded by the Box Springs Mountains to the north, the hills of the Badlands to the east and the mountains of Lake Perris State Recreation Area to the southeast. The surrounding and adjacent jurisdictions include: the City of Riverside; the City of Perris; March Air Reserve Base; the San Jacinto Wildlife Area; and Lake Perris State Recreation Area.

Moreno Valley is approximately 51.56 square miles and is situated along two major transportation corridors: State Route 60 (SR-60) runs east-west and bisects the city and Interstate 215 (I-215), which runs north-south against the westerly city limits.

The elevation of Moreno Valley ranges from a low of approximately 1,550 feet to a high of 1,800 feet. Moreno Valley gradually slopes to the south and southwest with the higher elevations north of SR-60 and the lower elevations southerly near March Air Reserve Base. The City of Moreno Valley rests primarily on bedrock geology known as the Perris Block, a large mass of granitic rock generally bounded by the San Jacinto Fault, the Elsinore Fault, the Santa Ana River and a non-defined southeast boundary.

There are a few small ponds and lakes scattered throughout the city. In addition, Lake Perris is located south of the City. Moreno Valley is located within the Santa Ana River and the San Jacinto River watersheds, with the majority of the city being within the watershed of the San Jacinto River.

The topography and climate combine to make the air basin an area of high air pollution potential. The basin fails to meet state and federal air quality standards for four of the six criteria pollutants including: ozone; nitrogen dioxide; carbon monoxide; and fine particulate matter.

The natural habitat is largely disturbed by urban development, weed abatement or agricultural activities. The city also supports other native, semi-native and non-native plants. Moreno Valley has a rich diversity of wildlife species located mostly in undeveloped portions of the city including: mule deer; coyotes; bobcats; badgers; and gray fox. The city also includes a few species listed under the Endangered Species Act such as: Stephen's kangaroo rat; the California gnatcatcher; the Least Bell's Vireo; and the San Bernardino kangaroo rat. Potentially listed species include: the orange throated whiptail; the San Diego horned lizard; and the short nosed pocket mouse.

1.2 Population/Demographics

The City of Moreno Valley is among California's fastest growing cities with an annual growth rate of 5.7%[1]. Moreno Valley is the second most populous city in Riverside County and the 21st largest in the State of California. According to the 2010 United States Census, the population of the City of Moreno Valley was reported at 193,365. In 2016, the population increased to 207,675 with a population of 2,302,607 within a 20-mile radius. Population growth is expected to reach nearly 219,640 by 2021, thus creating more community exposure to natural and man-made hazards.

Table 1-2: Population

Population	
207,675	2016 Estimate
219,640	Projected by 2021
Source: The Nielsen Company	

The 2010 United States Census reported the racial makeup of Moreno Valley was 80,969 White, 34,889 African American, 1,721 Alaska Native, 11,867 Asian, 1,117 Pacific Islander, 51,741 were from other races and 11,061 were from two or more races. Hispanic or Latino of any race was 105,169. In 2016, those numbers are:

Table 1-2.1: Ethnic Breakdown

2016 Population		
Description	**Total**	**Percent**
White Alone	84,126	40.51%
African American	34,181	16.46%
Native American	1,954	0.94%
Asian Alone	11,484	5.53%
Pacific Islander	1,199	0.58%
Some Other Race Alone	62,516	30.10%
Two or More Races	12,215	5.88%
Source: The Nielsen Company		

[1] The Nielsen Company (2016), an industry leader in analyzing key population indicators, to provide a comprehensive view of the most relevant demographic trends and projections affecting the city.

The median age in Moreno Valley is 30.8. According to the 2010 Census, Moreno Valley had over 43,173 households. Nielson reports 54,927 households in 2016 and projects that number to increase to 58,024 within the next five years. Approximately 83.5% of Moreno Valley's households are made up of families and 16.5% are non-families. The average household size is 3.7.

1.3 Climate

Moreno Valley is in a semi-arid area of western Riverside County just east of the San Bernardino Mountains and south of the San Gabriel Mountains. Within the Köppen climate classification system, which is a widely used global climate classification system, Moreno Valley is located in the CSA (Mediterranean Climate) class.

The average annual mean temperature for January is 56 degrees. In July, the average mean temperature is 78 degrees. The highest recorded temperature was 117 degrees in September 2016. During the summer, the average high temperature ranges from 90 to 100 degrees Fahrenheit. According to the California Department of Water Resources, annual rainfall can vary greatly from year to year, but averages in the region are from 11 to 14 inches annually.

Table 1-3: Moreno Valley Climate by Month[2]

Month	High	Low	Average	Precipitation
January	68.1°F (20.0°C)	46.9°F (8.3°C)	56.4°F (13.5°C)	1.61" (40.9 mm)
February	67.8°F (19.9°C)	45.4°F (7.4°C)	55.5°F (13.1°C)	1.40" (35.5 mm)
March	72.7°F (22.6°C)	47.4°F (8.6°C)	59.0°F (15.0°C)	0.66" (16.7 mm)
April	75.9°F (24.4°C)	49.5°F (9.7°C)	61.5°F (16.4°C)	0.69" (17.5 mm)
May	80.3°F (26.8°C)	53.3°F (11.8°C)	65.4°F (18.5°C)	0.21" (5.3 mm)
June	89.2°F (31.8°C)	58.1°F (14.5°C)	72.3°F (22.4°C)	0.01" (0.1 mm)
July	94.3°F (34.6°C)	63.7°F (17.6°C)	77.5°F (25.3°C)	0.37" (9.3 mm)
August	96.0°F (35.5°C)	64.8°F (18.2°C)	78.8°F (26.0°C)	0.22" (5.5 mm)
September	93.0°F (33.9°C)	64.3°F (17.9°C)	77.0°F (25.0°C)	0.15" (3.8 mm)
October	82.7°F (28.2°C)	57.6°F (14.2°C)	68.6°F (20.4°C)	0.32" (8.1 mm)
November	73.3°F (22.9°C)	50.2°F (10.1°C)	60.5°F (15.8°C)	0.81" (20.5 mm)
December	64.4°F (18.0°C)	44.9°F (7.2°C)	53.5°F (11.9°C)	2.98" (75.6 mm)

1.4 Land Use

Land use within Moreno Valley has been primarily residential, which includes approximately 60,000 homes/apartments. Other land uses include commercial and industrial. There are approximately 2,005 commercial businesses, with several planned developments on the horizon which will increase the amount of residential use and commercial business within the city. Current development trends as shown in Appendix

[2] http://weathercurrents.com/morenovalley/Climate.do Retrieved October 2016

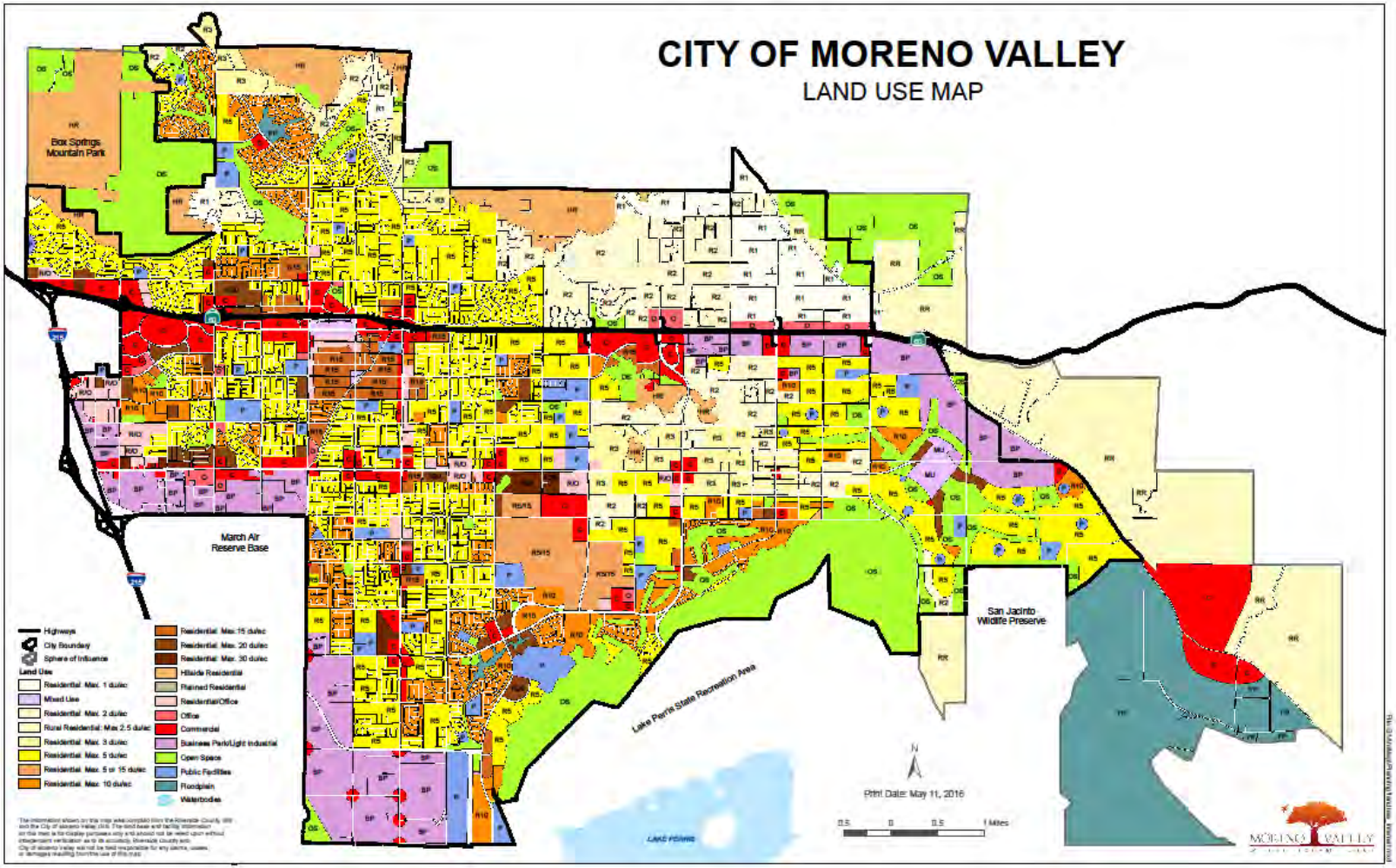
C illustrate upcoming development projects which are distributed throughout the city and are situated in various hazard-prone areas. As development continues, it will follow established zoning and land use requirements in accordance with the city's General Plan.

Ongoing development may potentially increase the City's vulnerability to identified hazards. The changes in land use associated with development can affect water flow as removing vegetation and soil, grading the land surface, and constructing drainage networks, can serve to increase and change runoff from rainfall. Increases to impervious cover connected with development also alter the natural water ways, further shifting flow. This cover, structures such as roofs, parking lots, driveways and streets, creates areas in landscape where rain and water cannot soak into the ground and, consequently, increases runoff to already impacted water ways. The effects are most pronounced in moderate storms following extended dry periods and the frequency of moderate flooding can increase substantially after development. Greater frequency and severity of flooding, channel erosion, and modification of established water habitat commonly follow watershed urbanization. However, the use of fire resistant materials for development in the wild land-urban interface (WUI) areas may help in mitigation. Further, ongoing development brings inherent rises in population and, consequently, increased risk to structures and infrastructure as they are more likely to be in a known hazard area.

Agricultural production land is concentrated in the eastern portion of the city. A joint civilian and military airport is located at the southwestern boundary. The State of California owns and operates two regional recreation and open space areas: the San Jacinto Wildlife Area and the Lake Perris State Recreation Area at the southern boundary (See Figure 1.4).

Neighboring land uses include the San Jacinto Wildlife Area, which is located near the southeastern boundary of the City of Moreno Valley and was created by the State of California as mitigation for the loss of wildlife habitat. Part of the San Jacinto Wildlife Area is within the historic floodplain of the San Jacinto River and is subject to periodic flooding. The resulting floodwater, known as Mystic Lake, has been known to inundate the area for months or years at a time. The neighboring area of Lake Perris State Recreation Area is situated along the southern boundary of the city. Riverside County operates Box Springs Mountain Park along the northwest city boundary.

Figure 1-4 Land Use Map



Chapter 2: The Planning Process

2.1 Planning/Coordination

The overall approach to the City of Moreno Valley Local Hazard Mitigation Plan was to develop an understanding of the natural and man-made hazards to the City of Moreno Valley and to determine ways to reduce those risks, and to prioritize and outline potential mitigation strategies.

To complete these objectives, the City of Moreno Valley assigned Office of Emergency Management (OEM) staff to coordinate and collaborate with city departments, local agencies, neighboring communities, businesses, academia, and other stakeholders. During the process, OEM staff participated in Operational Area Planning Committee meetings and workshops where the Local Hazard Mitigation Plan process was discussed with multiple agencies and non-profits throughout Riverside County. The dates for the planning process are as follows:

- March 2016 review process started
- 4/14/16 Regional LHMP Planning Meeting – Operational Area Planning Committee (OAPC)
- July 2016 Planning committee identified hazard risk and established new priorities
- 8/8/16 LHMP Planning meeting and map review
    - The members of the LHMP Planning Meeting are listed below and a copy of the sign-in sheet of the meeting is included in Appendix B
    - Jacquelyn Lankhorst – Senior Administrative Assistant
    - Janice Nollar-Conrad – Senior GIS Analyst
    - Rix Skonberg – Purchasing and Facilties Division Manager
    - Jackie Melendez – Economic Development Program Manger
    - Nick Henderson – Building and Safety Supervisor
    - Claudia Manrique – Associate Planner
    - Jeanette Olko – Electric Utility Division Manager
    - Mark Williams – Battalion Chief
    - Paul Villalobos – Assistant Fire Marshal
    - Alia Rodriguez – OEM Program Manager
    - Mel Alonzo – Parks and Community Services Division Manager
    - Lt. Zach Hall – Lieutenant / Division Commander
    - Robert Lemon – Maintenance and Operations Division Manager
    - Andrew Cheng – OEM Program Specialist
    - Quang Nguyen – Senior Engineer, P.E.
    - Dena Heald – Financial Operations Division Manager
    - Shayne Bradshaw – Temp Intern II
    - Lt. Tyler Clark – Lieutenant Special Teams

- 9/15/16-10/27/16 Planning committee compiled information
- 10/27/16 Distributed Planning committee assignments
- 11/9/16 Meeting with region to discuss updates to plan
- 12/15/16 Public forum to provide input for LHMP update

The 2017 update to the city's LHMP was undertaken and prepared in accordance with FEMA standards and 44 CFR §201.6(d)(3). During the 2011 state and FEMA review, no city requirements or elements were rated as "Needs Improvement" under the Plan Review Crosswalk. In the 2017 update, consideration was given to the Reviewer's Comments under Requirement 4, Element D, which sought strengthen the update.

In early 2016, OEM began the informal process of the five year update of the LHMP. Key subject-matter-experts (SMEs), department-level contacts, and personnel from city departments were identified for participation in the update process. Concurrently, a more in-depth review of the existing plan was undertaken to identify areas of update and areas needing improvement or additional shoring. Several outdated metrics and maps were immediately identified and added to the update task list.

Further, each plan chapter and section was dissected and a responsible and appropriate city department was assigned. Consideration was taken to assign the section to the appropriate SME and contact. The task list ultimately became the List of Duties by Department and was used for task assignments and tracking.

On August 8, 2016, OEM hosted the formal LHMP Planning Meeting. Attendees included the LHMP Planning Team comprised of city departments, divisions and programs including: Building and Safety; Capital Projects; Economic Development; Electric Utility; Facilities; Finance; Fire; GIS; Land Development; Maintenance & Operations; Parks and Community Services; Planning; Police; and Transportation Engineering. This meeting served to reintroduce the LHMP and outline the List of Duties by Department, expectations and project deadlines. City Management lent much needed support to the OEM staff to relay the criticality and importance of participation in the update process by all city departments. The members of the LHMP Planning Meeting are listed on page 19 and a copy of the sign-in sheet of the meeting is included in Appendix B.

Shortly after the LHMP Planning Meeting, the List of Duties by Department was distributed via electronic mail (e-mail) with a deadline required to review/revise the sections, chapters, narratives and supplemental information. OEM staff created a simple tracking log to monitor distribution and ensure compliance with established timelines. Revised metrics, timelines, updated maps and narratives were reviewed and implemented into the LHMP adjusting only for clarity for fit into the surrounding plan.

OEM and SMEs continued to collaborate to review hazards, conduct risk assessment/analysis for each hazard, and identify and outline possible mitigation strategies. Discussions also included an updated history of disasters, mitigation efforts and a ranking of local hazards. These meetings included discussion of municipal laws and upcoming adoption of building codes as related to hazard mitigation.

Neighboring communities were invited to participate in the update of the city's LHMP during the quarterly Operational Area Planning Committee (OAPC) meeting. All of the neighboring communities are in the process of updating their respective LHMP's and the city cross referenced mitigation hazards and risks to identify potential mitigation projects that may lead to collaboration efforts.

As sections were finalized and established thresholds met, the draft revision of the LHMP update was readied for public release and discussion.

2.2 Public Participation

Moreno Valley conducted meetings to solicit public participation for the LHMP update process. Public comment opportunities will also be provided through the public hearing portion of City Council meetings for plan adoption. The following meetings were open for public comment:

In October 2016, the City of Moreno Valley Fire Chief prepared a written report on the LHMP update for presentation to the city's Public Service Safety Subcommittee (PSSC) at its November 16, 2016 public meeting. The item was placed on the agenda as a written only OEM report and advertised as per city notification standards. The written report was also included in the advertisement and posted to the city's public website (http://www.moval.org/city_council/agendas.shtml) as part of the notification. Fire Department personnel were on hand to answer any questions from the subcommittee members or the public. A copy of the agenda and announcement of the meeting is included in Appendix B.

In November 2016, city Fire personnel met with representatives from Riverside County Emergency Management Department's (EMD) Operational Area (OA) to review status of the city's LHMP update. During that meeting, an LHMP update item was added to the agenda of the North West Committee (NWComm) for inclusion and discussion at its December 15, 2016 meeting. NWComm is open to the public and comprised of emergency managers from all disciplines in Western Riverside County (including Jurupa Valley, Eastvale, Corona, Norco, Moreno Valley and Riverside). Fire Department personnel were on hand to answer any questions from the committee members or the public. A copy of the agenda and sign in sheet are included in Appendix B.

On November 22, 2016, city Fire and OEM personnel had an informal discussion with a representative from Riverside County EMD. This discussion included dialog about the next steps in the update process and confirmation of the upcoming NWComm meeting and LHMP discussion.

On December 7, 2016, city staff partnered with the Moreno Valley Chamber of Commerce and participated in their weekly Business in Action (BIA) meeting. The meeting is an excellent opportunity to meet with business and community leaders and to market a business as well as becoming informed on upcoming events and activities. The objective was to inform members of the overall mitigation plan, discuss the hazards identified that may impact businesses, provide an update on the current status and obtain comments. Fire Department personnel were on hand to answer any questions from the members in attendance or the public. The weekly meeting is advertised through the Chamber's website at http://www.movalchamber.org/events/details/business-in-action-b-i-a-12-07-2016-576. A copy of the meeting advertisement and sign in sheet are included in Appendix B. This free-form meeting has no formal agenda.

On December 14, 2016, a public meeting was held at the city's Emergency Operations Center (EOC) and open to the public. The meeting was advertised on the city's website and through the city's social media account. The objective was to inform residents and attendees of the overall mitigation plan, discuss the hazards identified that may impact residents, provide an update on the current status and obtain comments. Fire Department personnel were on hand to answer any questions from members of the public. A copy of the announcement, agenda and sign in sheet are included in Appendix B.

On December 15, 2016, city staff partnered with the Moreno Valley Chamber of Commerce and participated in their annual Leadership MoVal Public Safety Session. The session is an excellent opportunity to demonstrate efforts and activities related to facets of public safety. The objective was to inform members of the overall mitigation plan, discuss the hazards identified that may impact businesses and residents, provide an update on the current status and obtain comments. School district representatives in attendance asked about engaging with the two school districts in the city on future hazard mitigation efforts; this will be considered for our next annual plan review/revision. A copy of the agenda is included in Appendix B.

Moreno Valley City Council, who remains engaged in hazard mitigation through regular updates at the Public Safety Subcommittee and through review and adoption of municipal codes and policies and approval of projects that support the city's mitigation goals, strategies and actions, formally adopted the initial plan on October 27, 2011. This televised meeting was open to the public and advertised in advance on the city's website and posted strategically at locations within the city, which allowed for public comment. After FEMA approval of the

updated plan, it will also be presented to City Council for adoption at which time the item is again advertised, open and available for public comment.

2.3 Plan Maintenance

The City of Moreno Valley LHMP remains an important tool to reduce the effects of hazards within the city. According to 44 Code of Federal Regulations §201.6(c)(4), the plan must have a maintenance strategy that includes a method and schedule for monitoring, evaluating and updating the plan; a process for incorporating into existing planning mechanisms; and a strategy for continuing public involvement.

Method/Schedule for Monitoring the Plan:

The LHMP includes mitigation strategies that look to reduce long-term vulnerabilities to the hazards identified. This provides a framework for activities that the city can choose to implement over the next five years. The effectiveness of the plan depends on the incorporation of the action items into existing city plans, policies, and programs.

OEM staff, under direction of the Fire Chief, will assume the lead role of monitoring the mitigation plan and coordinating with appropriate departments, divisions and programs within the city to ensure that the identified mitigation goals and actions are incorporated into plans, policies and existing city programs.

OEM will confer with city staff annually to perform annual reviews of the LHMP and its implementation. The goal will be to discuss any hazard events that occurred during the prior year and their impact on the City of Moreno Valley; evaluate the mitigation goals and actions to determine if the timeline is appropriate; determine what plans, policies and procedures need to be updated as a result of the LHMP; and to determine if additional mitigation actions need to be added; and to discuss new mitigation grant funding opportunities.

Evaluating and Updating the Plan:

As required by the 44 Code of Federal Regulations §201.6(d)(3), the City of Moreno Valley will update the LHMP every five years. OEM staff is responsible for the update every five years and will follow the following process during the update:

- OEM will convene the hazard mitigation planning committee consisting of representatives from: Building and Safety; Capital Projects; Electric Utility; Finance; Fire; GIS; Land Development; Maintenance and Operations; Parks and Community Services; Police; Planning; Special Districts; and Transportation Engineering, as well as representatives from local school districts, hospitals and other agencies and stakeholders.

- Using the best available guidance, information and technology, regulatory policies and procedures, each chapter will be reviewed and updated to determine if changes are needed.

- The mitigation strategies will be reviewed and revised to account for any initiatives completed, discontinued and/or changed and to account for changes in the risk assessment or new city policies identified through other planning mechanisms, as appropriate (such as the general plan).
- The draft update will be sent to the hazard mitigation planning committee, SMEs, and other stakeholders for review and comment.
- After the comments have been reviewed and implemented, the public will be given an opportunity to comment on the update prior to adoption. OEM will request the mitigation area of the city website be updated for ease of public review and comments of the draft plan. OEM will request that a slide be added to the city's cable television channel (MVTV-3), notifying the public of hazard mitigation planning meetings held and inviting them to attend.
- After the public comments have been reviewed and implemented, OEM will forward the revised LHMP to CalOES for state review/approval and FEMA for final review and approval.
- After FEMA approval, OEM will forward the revised LHMP to Moreno Valley City Council for adoption via Resolution. The resolution will be inserted into the Plan and it will be considered active.

Incorporation into existing planning mechanisms:

The hazard mitigation plan process provided the City of Moreno Valley with an opportunity to review and expand on policies, plans and existing city programs. The LHMP will be provided to those involved in development of the General Plan; Environmental Impact Report; Emergency Operations Plan (EOP); Evacuation, Mass Care, and Terrorism EOP annexes; and city ordinances to insure that consistency is maintained. Whenever there are substantive changes to the LHMP, those involved in planning mechanisms will be included in the review process.

Regulatory Tool	Comments
General plan	Comprehensive General Plan for the City of Moreno Valley, 2006 Utilized safety elements to incorporate and develop mitigation strategies.
Master Drainage Plan	Planning guide for the location and sizing of local drainage facilities to be constructed by developers and others within the area, updated

	and adopted October 13, 2015. Utilized for public outreach and educational awareness.
Zoning ordinance	Municipal Code Chapter 9.02-14 Planning and Zoning. Utilized for development trends.
Subdivision ordinance	Municipal Code Chapter 9.14 Land Divisions. Utilized for development trends.
Site plan review requirements	Municipal Code Chapter 9.02.030. Utilized for development trends
Floodplain ordinance	Municipal Code Chapter 8.12 includes flood damage prevention and implementation of national flood insurance program (NFIP). Utilized for public outreach and educational awareness.
Water conservation ordinance	Municipal Code Chapter 9.17 addresses water conservation. Utilized for public outreach and educational awareness.
Stormwater ordinance	Municipal Code Chapter 8.10.010-200 Storm water/urban runoff management and discharge controls. Utilized for public outreach and educational awareness.

Regulatory Tool	Comments
Wildfire ordinance	Municipal Code Chapter 6.04.010-130 Abatement of Public Nuisances. Utilized for public outreach and educational awareness.
Building Standards Code	Utilize Approved 2016 California Building Codes; Latest adoption expected late 2016 with effective date of January 1, 2017.
Fire and Safety Standards	Utilize Approved 2016 Fire and Safety Standards; Latest adoption expected late 2016 with effective date of January 1, 2017.
Fire department ISO rating	Rating: class 4 urban/9 rural
Erosion or sediment control program	Municipal Code Chapter 8.21.160 Erosion Control; Municipal Code Chapter 9.17.110 Erosion Control/Slope Planting. Utilized for public outreach and educational awareness.
Riverside County Flood Control and Water Conservation District Master Drainage Plan	3 master drainage plans (Sunnymead Area, West End, Moreno). Utilized for public outreach and educational awareness.
Regional Water Quality Control Board Regulations	All proposed septic systems must comply; prevents groundwater contamination.
Santa Ana Watershed Project Authority Water Resources Plan	Protects water quality in the Santa Ana watershed. Eastern Municipal Water District (which serves the City of Moreno Valley) is a part of the Santa Ana Watershed.
National Pollutant Discharge Elimination System	Protects water resources from pollutants in runoff.
Capital Improvements Plan	Capital improvements list updated annually. Utilized to develop project budget, priorities, and develop mitigation strategies.
Economic Development Plan	2-year plan, 2011. Utilized for community profile.
Local Emergency Operations Plan	Emergency Operations Plan, March 2009
Specific Plan 208	Industrial Area Plan, March 2002

Strategy for Continuing Public Involvement:

The City of Moreno Valley will continue its public involvement including making the most up-to-date LHMP available for review on the city website and at the public library; encouraging public comments; and involving the public in the update process. These strategies will include the use of traditional media and social media outlets, such as the local newspaper and city website. All of these mechanisms will be facilitated by OEM and will include the OEM staff member phone number and email address for ease of public comments and for tracking.

PART 2

RISK ASSESSMENT

Chapter 3: Risk Assessment Overview

3.1 Introduction

A risk assessment provides the factual basis for determining strategies to reduce losses from identified hazards. Conducting a risk assessment can provide information on the location of hazards, the probability, the severity, and the risk to life, property and the environment. This chapter will provide information about the impact of each hazard and the severity, probability and potential losses.

3.2 Inventory of Assets

To assist in assessing the risks of hazards that may affect the City of Moreno Valley, critical facilities, historical sites, and other assets are identified below. Where possible, HAZUS-MH was utilized. HAZUS-MH is a regional earthquake loss estimation model that was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences.

Critical/Essential Facilities: The impact to critical/essential facilities has the potential to be significant, not only for the financial loss, but also it would severely affect the city's ability to respond to, and recover from, incidents.

Building and Lifeline Inventory

Building Inventory
Hazus estimates that there are 56 thousand buildings in the region which have an aggregate total replacement value of 15,595 (millions of dollars).

Transportation and Utility Lifeline Inventory
Within Hazus, the lifeline inventory is divided between transportation and utility lifeline systems. There are seven (7) transportation systems that include highways, railways, light rail, bus, ports, ferry and airports. There are six (6) utility systems that include potable water, wastewater, natural gas, crude & refined oil, electric power and communications. The lifeline inventory data are provided in Tables 3-2 and 3-2.1.

The total value of the lifeline inventory is over 12,570.00 (millions of dollars). This inventory includes over 1,908 kilometers of highways, 71 bridges, 16,606 kilometers of pipes.

Table 3-2: Transportation System Lifeline Inventory

System	Component	# of Locations/Segments	Replacement value (millions of dollars)
Highway	Bridges	71	111.60
	Segments	658	11824.90
	Tunnels	0	0.00
		Subtotal	**11936.50**
Railways	Bridges	0	0.00
	Facilities	0	0.00
	Segments	174	414.20
	Tunnels	0	0.00
		Subtotal	**414.20**
Light Rail	Bridges	0	0.00
	Facilities	0	0.00
	Segments	8	53.70
	Tunnels	0	0.00
		Subtotal	**53.70**
Bus	Facilities	0	0.00
		Subtotal	**0.00**
Airport	Facilities	1	10.70
	Runways	1	38.00
		Subtotal	**48.60**
		Total	**12453.00**

Source: Hazus

Table 3-2.1: Utility System Lifeline Inventory

System	Component	# of Locations	Replacement value (millions of dollars)
Potable Water	Distribution Lines	N/A	166.10
	Facilities	1	39.30
	Pipelines	0	0.00
		Subtotal	**205.40**
Waste Water	Distribution Lines	N/A	99.60
	Facilities	1	78.60
	Pipelines	0	0.00
		Subtotal	**178.20**
Natural Gas	Distribution Lines	N/A	66.40
	Facilities	0	0.00
	Pipelines	0	0.00
		Subtotal	**66.40**
Electric Power	Facilities	0	0.00
		Subtotal	**0.00**
Communication	Facilities	5	0.60
		Subtotal	**0.60**
		Total	**450.60**

Source: Hazus

* Note: Value estimates are based on insured values which were established through an appraisal conducted in 2015 by the Public Employer Risk Management Association (PERMA).

Historical Sites: The potential impact from natural or man-made hazards to historic buildings and structures could be significant. The most important historic structure in Moreno Valley is a Mission style structure with wood and stucco siding and arched entry. The former Old Moreno School, located at 28780 Alessandro Boulevard, may be eligible for the California Register of Historical Resources. Renovation of the structure to convert it for use as a private residence was approved by the city in 2004. The historical sites in Moreno Valley are valued at a little over 2 million.

Table 3-2.3: Moreno Valley Historical Sites

Historical Site	Approx. Year Built	Description	Value of Structure (Assessor's data)
21730 Bay Ave	1947	A bungalow style house, located on the north side of Bay Avenue, east of Edgemont Street.	$
21613 Cottonwood Ave	1930	A vernacular wood frame style house that is located on the south side of Cottonwood Avenue and east of the Old I-215 Frontage Road.	$
21768 Cottonwood Ave	1941	A moorish style house located at the northeast corner of Cottonwood Avenue and Edgemont Street. This house appears eligible for listing in the California Register of Historical Resources.	$
13694 Edgemont St	1920	A vernacular wood frame style house that is located on the east side of Edgemont Street between Brill Road and Bay Avenue.	$
24638 Fir Ave	1915	A vernacular wood frame style house that is located on the north side of Fir Avenue and east of Indian Street next to the flood control channel.	$
23741 Hemlock Ave	1910	A vernacular wood frame style house that is located on the south side of Hemlock Avenue and east of Graham Street.	$
24215 Fir Ave	1891	The New English style First Congregational Church thought to be built in 1891 and was relocated to the current address.	$
28780 Alessandro Blvd	1928	A Mission style structure with wood and stucco siding and arched entry. The former Old Moreno School may be eligible for the California Register of Historical Resources. Renovation of the structure to convert it for use as a private residence was approved by the city in 2004.	$
27476 Cottonwood Ave	1928	Vernacular adobe style residence that is located on the north side of Cottonwood Avenue, east of Nason Street.	$
12130 Theodore St.	1920	Vernacular wood frame style house located on the east side of Theodore Street and south of Ironwood Avenue.	$

Historical Site	Approx. Year Built	Description	Value of Structure (Assessor's data)
12400 Theodore St.	1915	There are three homes on the property that are part of the Anco Ranch, which was built sometime around 1915.	
27913 Cottonwood Ave	1885 1937 1940	There are three structures on the property which include a wood frame residence built in 1885, an adobe style block building that was moved to the site in 1937 and a large concrete block building dating from the 1940's. This site was designated as a city landmark by the City's Environmental and Historical Preservation Board on 09/12/11.	No value identified, city owned property.
		TOTAL:	

Commercial and Residential Properties: The City of Moreno Valley has approximately 43,913 residential homes and apartments, valued at approximately _____ The Nielson Report projects the residential housing in Moreno Valley to increase to 60,191 in 2017. There are approximately 2,005 commercial businesses located in Moreno Valley.

3.3 Summary of Hazards

This section will provide a summary of the hazards that impact the City of Moreno Valley, along with information on the severity and probability of each hazard, as well as, the relationships of each hazard to other hazards.

Severity and Probability Methodology
Collaboration between departments, divisions, programs, surrounding agencies, citizens and other stakeholders identified and ranked natural and man-made hazards that would likely affect the City of Moreno Valley (Table 3-3). 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 damage/injuries

Probability
0 – Does not apply
1 – Unlikely to happen
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 3-3: Moreno Valley Hazard Location, Severity and Probably

Hazard	Location	Severity (0-4)	Probability (0-4)
Earthquake	Citywide	4	3
Wildland and Urban Fires	Citywide, especially at Box Springs (northwest area), San Timoteo Canyon (north end), Reche Canyon (northeast area)	3	3
Flooding	Citywide, especially on the east end of the city	3	3
Drought	Citywide	2	3
Landslide	Mostly in the eastern portion of the city	2	2
Insect Infestation	Citywide	1	2
Extreme Weather	Citywide	2	3
Severe Wind	Citywide	2	3
Dam Failure/Inundation	Perris Dam inundation southeast corner of Moreno Valley and Pigeon Pass Dam (during periods of extensive flooding along the downstream watercourse)	2	2
Pipeline	Citywide	2	2
Transportation	Citywide and SR-60 and I-215; San Timoteo Canyon, north of city and along I-215; west end, near March Air Reserve Base	2	2
Power Outage	Citywide	3	4
Hazardous Materials	Citywide	3	2
Terrorist Attack	Citywide	4	2
Civil Unrest	Citywide	2	2
Pandemic Flu/Disease	Citywide	3	2

Relationships of Hazards

Table 3-3.1 shows a summary of the relationships between hazards, often called cascading hazards. For example a flood may trigger other hazards, such as a landslide. A civil disorder may cause fires or may be a cause of terrorism. Another example is earthquakes, which may cause fires, pipeline incidents, hazardous materials incidents and power outages.

Table 3-3.1: Summary of Relationships of Hazards

May Cause → Other Hazards / Hazard Description	Earthquake	Fire	Flooding	Drought	Landslide	Insect Infestation	Extreme Weather	Dam Failure	Pipeline	Transportation	Power Outage	Hazardous Materials	Nuclear	Terrorist Attack	Civil Unrest	Pandemic/Disease
Earthquake	X	X	X		X			X	X	X	X	X			X	
Fire		X	X		X				X	X	X	X			X	
Flooding			X		X	X		X	X	X	X	X			X	X
Drought		X	X	X		X									X	
Landslide			X		X				X	X	X	X				
Insect Infestation						X										X
Extreme Weather							X		X	X	X	X			X	
Dam Failure			X		X			X	X	X	X	X				
Pipeline			X						X	X		X			X	X
Transportation		X								X	X	X			X	
Power Outage										X	X				X	X
Hazardous Materials		X										X			X	
Nuclear													X		X	
Terrorist Attack		X	X			X		X	X	X	X	X	X	X	X	X
Civil Unrest		X	X						X	X	X	X			X	
Pandemic/Disease										X					X	X

Summary of Major Declarations

Table 3-3.2 shows a list of major declarations affecting the City of Moreno Valley and surrounding areas.

Table 3-3.2: Major Declarations[3]

Year	Disaster Type	Federal/State Cost	Riverside County Cost	Moreno Valley Cost	Disaster Programs Given	Categories
1993	Severe Storms DR-979	N/A	$2,303,998	N/A	PA, IA & HMGP	A-G
1993	Fires, Severe Storms DR-1005	N/A	$511,311	N/A	PA, IA & HMGP	A-G
1995	Severe Storms DR-1044	N/A	$498,347	N/A	PA, IA & HMGP	A-G
1995	Severe Storms DR-1046	N/A	$151,027	N/A	PA, IA & HMGP	A-G
1998	Severe Storms DR-1203	N/A	$657,162	N/A	PA, IA & HMGP	A & B
2003	Wildfires DR-1498	$133 million	$240,568	N/A	PA, IA & HMGP	A & B
2005	Severe Storms DR-1577	$228 million	$1,327,801	$23,164	PA, IA & HMGP	A-G
2005	Severe Storms DR-1585	$75 million	$1,485,753	$16,275	PA & HMGP	A & G
2007	Severe Freeze DR-1689	$23 million	N/A	N/A	HMGP	
2007	Wildfires DR-1731	$146 million	$264,977	$7,220	PA, IA & HMGP	A & B
2008	Wildfires DR-1810	$59 million	$20,377	N/A	PA, IA & HMGP	A & B

[3] http://www.fema.gov/news/disasters_state.fema?id=6 Retrieved September 27, 2011

Year	Disaster Type	Federal/State Cost	Riverside County Cost	Moreno Valley Cost	Disaster Programs Given	Categories
2010	Severe Winter Storms DR-1884	N/A	$452,105	Preliminary Damage Report $195,000	PA, IA & HMGP	A-G
2011[4]	Severe Winter Storms DR-1952	$37 million	$262,945	N/A	PA & HMGP	A-G

3.4 Profiling Hazards

Hazard profiles are designed to assist in evaluating the hazards that can impact the Moreno Valley area by comparing a number of hazard factors. Each type of hazard has unique characteristics and the impact associated with a specific hazard can vary depending on the severity and location of each event. Further, the probability of occurrence of a hazard in a given location impacts the priority assigned to that hazard. Beginning in Chapter 4, each identified hazard will be profiled with an overview of the hazard that includes previous occurrences, probability of future events, its impact and potential losses.

[4] https://www.fema.gov/disasters/grid/state-tribal-government/77 Retrieved November 18, 2016

Chapter 4: Earthquake

Moreno Valley Rating: **Severity = 4**
Probability = 3

4.1 Earthquake Profile – Overview/Location

There are three major faults/fault zones that directly affect Moreno Valley. They are the southern section of the San Andreas Fault, the San Jacinto Fault Zone, and the Elsinore Fault Zone. The San Jacinto Fault Zone is considered to be the most active fault in Southern California. It is the closest fault to Moreno Valley and runs through the eastern portion of the city, followed by the Elsinore Fault Zone which is located approximately 12-18 miles south of Moreno Valley. The San Andreas Fault Zone is located approximately 15-20 miles north of Moreno Valley (see Figure 4-1.1). The largest earthquake to occur within 100 miles of Moreno Valley was the 7.4 magnitude Hector Mine earthquake in 1999.

San Andreas Fault

The San Andreas Fault Zone is a major geologic feature of North America and consists of several major and numerous minor, branches, especially in southern California. This fault zone runs approximately 4 to 10 miles under the Earth's crust, making earthquakes from the San Andreas Fault Zone more destructive in nature.

The San Andreas Fault Zone enters the Inland Empire through the Cajon Pass, separating the San Gabriel Mountains from the San Bernardino Mountains. The fault becomes extremely complex in this area, dividing into several right-lateral elements that run somewhat parallel to each other. Principal among these, are two fault zones that have a significant impact on Moreno Valley. They are the San Jacinto Fault Zone and the Elsinore Fault Zone. The slip rate on the southern section of the San Andreas Fault Zone, which runs from the Mojave Desert south towards the Salton Sea before reaching the United States border with Mexico, is 24 millimeters per year. Earthquakes along this section of the San Andreas Fault are typically above 6.0 in magnitude. Geologists estimate that this fault could produce an 8.2 magnitude earthquake.

The last significant earthquake that occurred over the section of the San Andreas Fault that runs south from Cajon Pass was on December 8, 1812. Geologists estimate that the earthquake was over 7.0 in magnitude with an epicenter near the City of Wrightwood. Shortly after that earthquake, in 1857, an earthquake ruptured the San Andreas Fault from Monterey down to the Cajon Pass.

San Jacinto Fault Zone

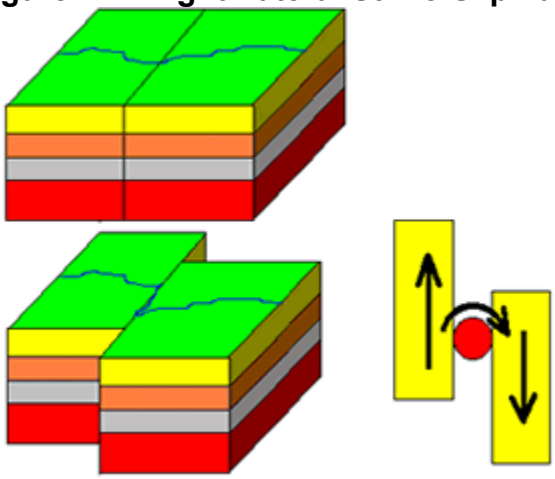
The San Jacinto Fault Zone extends for 180 miles through the counties of San Bernardino, Riverside, San Diego, and Imperial and is comprised of the very active Imperial and Superstition Hill faults. The San Jacinto Fault Zone is a right lateral strike-

slip fault (Figure 4-1) that branches westward from the San Andreas Fault and runs parallel to the Elsinore Fault. It is also considered one of the more seismically active fault zones in Southern California with a slip rate of 12 millimeters per year. Both the San Jacinto fault and Elsinore fault are classified as part of the San Andreas Fault system. The San Jacinto Fault Zone does extend through the eastern part of Moreno Valley and has the potential to host a 7.2 magnitude earthquake.

Elsinore Fault Zone

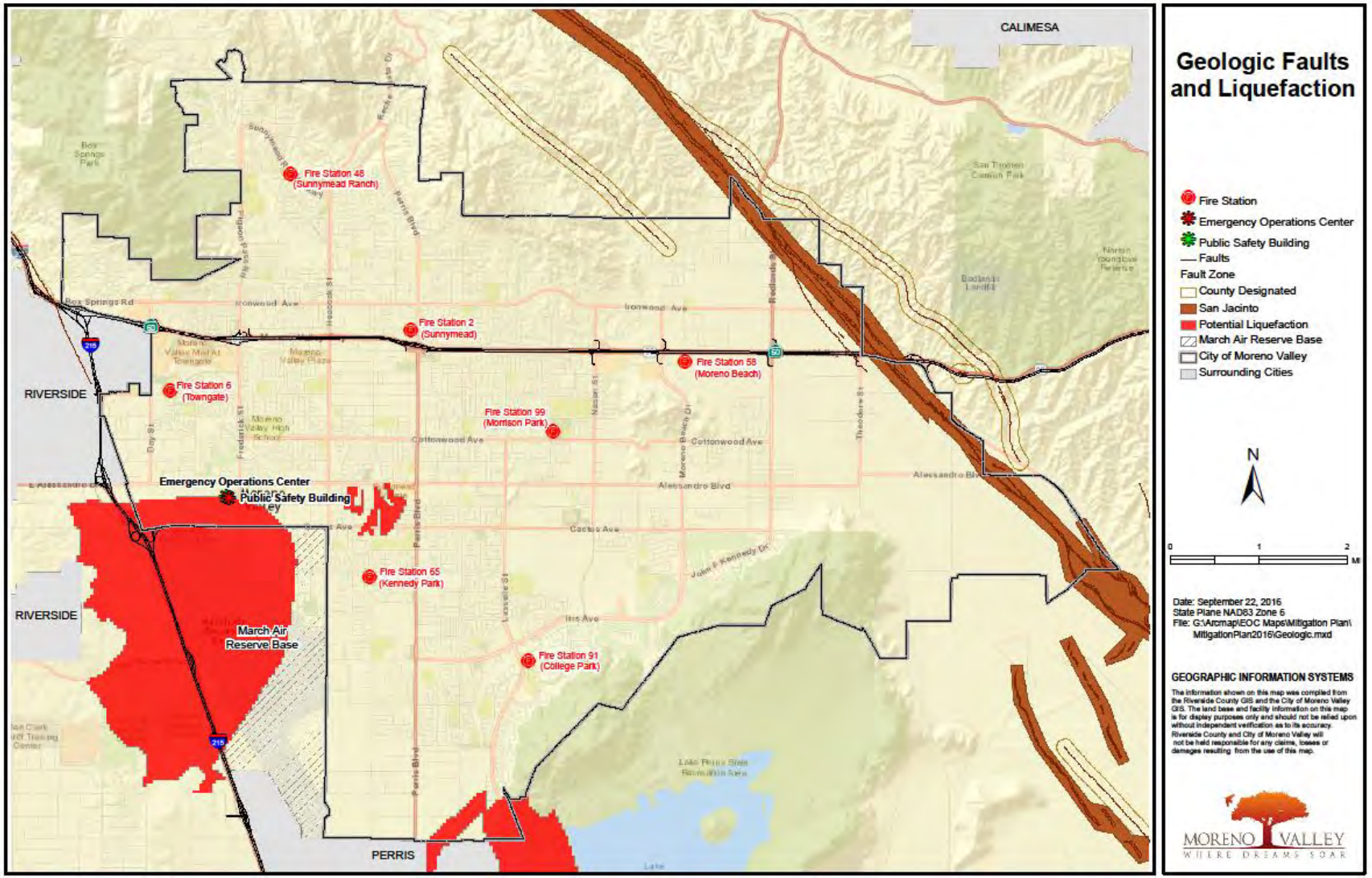
The Elsinore Fault is a large right-lateral strike-slip fault (Figure 4-1) and is part of the trilateral split of the San Andreas Fault and runs parallel to that fault. Though its 111 miles in length makes it one of the larger faults in the area, it is extremely quiet. This fault zone forms a complex series of pull-apart basins, with the largest basin being known as La Laguna. The La Laguna basin is partially filled with water from Lake Elsinore and is the terminus for the San Jacinto River. The slip rate of this fault is 4 millimeters per year and is capable of producing a quake of 6.5 - 7.5 in magnitude. Geologists estimate that the interval between major rupture events on the Elsinore is 250 years. The last known major earthquake occurred northwest of the City of Lake Elsinore in 1910.

Figure 4-1: Right-Lateral Strike-Slip Fault[5]



[5] US Geological Survey

Figure 4-1.1: Moreno Valley Geologic Faults and Liquefaction



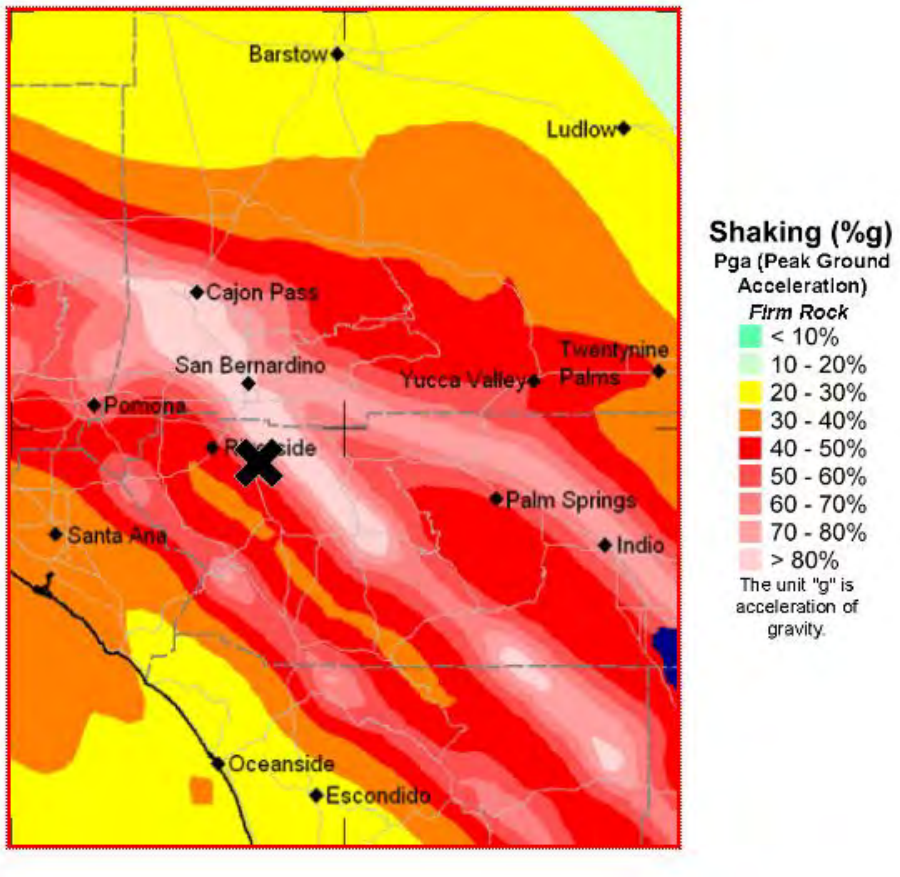
Earthquake Related Hazards

Ground shaking, landslides, liquefaction, and amplification are the specific hazards associated with earthquakes. The severity of these hazards depends on several factors, including soil and slope conditions, proximity to the fault, earthquake magnitude, and the type of earthquake.

Ground Shaking

Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by the earthquake. It is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault, and distance from the epicenter. Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock. Figure 4-1.2 shows the shaking intensity for the City of Moreno Valley. The darker shaded areas indicate greater potential for shaking.

Figure 4-1.2: Moreno Valley Area Ground Shaking Map[6]



[6] http://redirect.conservation.ca.gov/cgs/rghm/pshamap/pshamap.asp Retrieved September 29, 2011

Earthquake-Induced Landslides

Earthquake-induced landslides are secondary earthquake hazards that occur from ground shaking. They can destroy roads, buildings, utilities, and other critical facilities necessary to respond and recover from an earthquake. Many communities in Southern California have a high likelihood of encountering such risks, especially in areas with steep slopes. The abundant shales and siltstones underlying the Badlands are highly porous in the Moreno Valley area and do not hold together well when wet, which can lead to slope instability and landslides.

Liquefaction

Liquefaction occurs when ground shaking causes surface soils, primarily sands and silts, to become saturated with water and temporarily lose strength, causing it to become sticky liquid. This results in the loss of soil strength and the soil's ability to support weight. Buildings and their occupants are at risk when the ground can no longer support these buildings and structures. Many communities in Southern California are built on ancient river bottoms and have sandy soil. In some cases this ground may be subject to liquefaction, depending on the depth of the water table.

Although the city has seen no evidence of liquefaction events occurring in the community nor has any geotechnical report recently submitted to the city identify liquefaction hazards, the Riverside County General Plan has identified a range of liquefaction susceptibility in Moreno Valley from very low with deep groundwater in the northern and eastern portions of the community to very high with shallow groundwater generally west of Perris Boulevard.

Amplification

Soils and soft sedimentary rocks near the earth's surface can modify ground shaking caused by earthquakes. One of these modifications is amplification. Amplification increases the magnitude of the seismic waves generated by the earthquake. The amount of amplification is influenced by the thickness of geologic materials and their physical properties. Buildings and structures built on soft and unconsolidated soils can face greater risk. Amplification can also occur in areas with deep sediment filled basins and on ridge tops.

4.1.1 Earthquake Profile – Previous Occurrences

Table 4-1 shows some of the more notable earthquakes in the Southern California region, many of which were felt in the City of Moreno Valley.

Table 4-1: History of Major Southern California Earthquakes[7]

Year	Richter Scale Magnitude	Description
1812	7.0	Occurred on the southern section of the San Andreas fault near Wrightwood.
1857	7.9	Occurred 60 miles northwest of Fort Tejon and ruptured 225 miles of the San Andreas fault.
1890	6.5	Occurred in the "San Jacinto or Elsinore Fault region" on the Rockhorse Truck Trail, north of the Borrego Valley Airport.
1890	6.5	Occurred in the same region as the 1890 earthquake.
1899	6.4	San Jacinto earthquake destroys San Jacinto and Hemet, and was strongly felt in Moreno Valley.
1910	5.0	Occurred on the Elsinore fault northwest of the City of Lake Elsinore.
1918	6.9	San Jacinto earthquake strikes the same area that was damaged by an earthquake 19 years earlier.
1923	6.3	North San Jacinto Fault earthquake damaged the San Bernardino and Redlands area. This the last known time that this fault, which runs under the I-215/I-10 interchange, ruptured in this area. The epicenter was located just northeast of Moreno Valley in San Timoteo Canyon.
1937	6.0	Terwilliger Valley earthquake was in the same general area as the 1890 earthquake.
1942	6.3	Fish Creek Mountains earthquake was south of the Ocotillo airport.
1954	6.2	Arroyo Salada earthquake was west of the Salton Sea.
1968	6.5	Borrego Mountain Earthquake was northeast of Ocotillo Wells
1987	6.6	Superstition Hills earthquake near the Salton Sea
1992	7.2	Occurred near Landers, California and caused the rupture of five different faults. Those faults were: Johnson Valley, Landers, Homestead Valley, Emerson, and Camp Rock.
1992	7.3	Occurred 3 hours after the Landers Earthquake with an epicenter near Big Bear, CA, just 34.4 miles from Moreno Valley.
1994	6.8	Northridge Earthquake occurs in a neighborhood of the City of Los Angeles and is located 78.8 miles from Moreno Valley
1999	7.4	Hector Mine Earthquake, located 25 miles from the Landers Earthquake and just 61 miles from Moreno Valley
2010	5.4	Borrego Springs earthquake believed by seismologists to have been possibly triggered by the strong earthquake which occurred near Calexico in 2010.
2016	4.3	Cal OES issued an earthquake advisory for all Southern California counties following a series of small magnitude earthquakes that occurred in Bombay Beach (located in Imperial County and south of where the San Andreas fault ends). This swarm included a 4.3 magnitude quake on Sept. 26.

[7] http://pasadena.wr.usgs.gov/info/cahist_eqs.html Retrieved September 24, 2011

4.1.2 Earthquake Profile – Probability of Future Events

The probably rating for this hazard is a 3, which means that there is a 10% to 100% chance that it will occur within the next year.

The City of Moreno Valley could be affected by large earthquakes occurring in many parts of the Southern California region. However, the degree to which the earthquakes are felt, and the damages associated with them may vary. At risk from earthquake damage are critical facilities, buildings, bridges, highways and roads; hazardous materials facilities; sewer, water, and natural gas pipelines; earth dams; petroleum pipelines; and private property located in the city. The relative or secondary earthquake hazards, which are liquefaction, ground shaking, amplification, and earthquake-induced landslides, can be just as devastating as the earthquake.

The USGS estimates that there is a greater than 99% chance of a major earthquake occurring within 31 miles of Moreno Valley within the next 50 years (Figure 4-1-1).

Table 4-1.1: Probability of an Earthquake near Moreno Valley[8]:

Richter Scale Magnitude	Probability
5.0	99.501%
5.5	94.990%
6.0	87.448%
6.5	76.579%
7.0	54.907%
7.1	50.349%
7.2	45.852%
7.3	40.525%
7.4	34.995%
7.5	28.236%
7.6	20.881%
7.7	14.239%
7.8	9.058%
7.9	5.362%
8.0	2.562%

[8] US Geological Survey 2009 Earthquake Probability Mapping https://geohazards.usgs.gov/eqprob/2009/ Accessed November 18, 2016

4.2 Earthquake Vulnerability – Overview/Impact

The severity rating for this hazard is a 4, which means that there is a potential for catastrophic damage, causing multiple deaths, complete shutdown of critical facilities for 30 days or more and/or more than 50% of property has a potential to be damaged.

As shown in Figure 4-1.1, the probability of a major earthquake occurring near Moreno Valley within the next 50 years is close to 100%. Even if a major earthquake is located in the surrounding area, it will have a severe impact to the City of Moreno Valley. Seismic shaking and aftershocks associated with the earthquake can cause damage to a wide-spread area. The hazards associated with aftershocks are the same as the main shock and may cause significant damage or disruption as well.

4.2.1 Earthquake Vulnerability – Potential Impact and Losses

Earthquakes can cause devastating injuries and loss of life and damage to infrastructure, structures, personal belongings and more. Earthquakes and its aftershocks can cause other hazards such as pipeline ruptures, dam failures, landslides, soil liquefaction, flooding, fires, power outages, hazardous materials incidents and civil unrest. There are no known repetitive loss properties.

HAZUS-MH Summary: For purposes of analyzing the impact and estimating potential loss for the City of Moreno Valley, HAZUS-MH was utilized.

The scenario for the HAZUS-MH earthquake risk assessment was an event measuring 6.5 on the Richter magnitude scale occurring on the San Jacinto Fault. The longitude of the scenario epicenter was 33°57'10.8"N 117°08'52.8"W (33.952999, -117.148003). The depth of the scenario event was 10.00 km (6.21 miles), with a rupture length of 18.20 km (11.3 miles).

Current residential count was found using the Riverside County Assessor Parcel Layer (October 2016). Parcels were overlaid onto the zoning layer. All of the parcels that fell within a residential zone were selected out. From that selection, another query was run to pull all the parcels out with a structure value over $10,000. The final query returned all records that fall within Residential Zoning and have a structure value over $10,000. The count on the residential buildings is 43,913. The structure value is derived from the Assessor Parcel table. The value total for the selected parcels is $8,248,802,141.

The business license layer was created from the business layer spreadsheet received from the city's Finance Department in September 2016. The commercial business licenses were found by querying out all records with a location of commercial (Location type = commercial). This resulted in a selection set of data that are identified by the Finance Department as a commercial business. The count of businesses in the city based on the 2016 Business License database is 2005.

The Critical Facilities layer was comprised of the Business License layer and existing Moreno Valley GIS layers. Residential Care Facilities (134), Hospitals (2), Urgent Care (2), and Pharmacies (19) were created from the Business License database. The rest of the Critical Facilities were created from existing GIS layers resulting with a total of 259 facilities.

Four overcrossing bridges on SR-60 were built in 1964 and are outdated. They consist of: SR-60/Indian Street Overcrossing; SR-60/Moreno Beach Drive Overcrossing; SR-60/Redlands Avenue Overcrossing; and SR-60/Theodore Street Overcrossing. All are two-lane bridges over the SR-60 freeway. With respect to federal inspection coding standards, SR-60/Indian and SR-60/Moreno Beach are considered to be structurally deficient, and SR-60/Redlands is considered to be functionally obsolete. All of these structures could experience varying levels of damage in an earthquake event and could severely impact regional traffic. Three of the four structures (SR-60/Moreno, SR-60/Redlands, and SR-60/Theodore) are located in the “severe” area of ground shaking shown on Figure 4-2.1. All four structures have inadequate vertical clearance according to current standards, and could severely impact transportation of goods and oversized loads.

Development Trends: Future development of buildings, residential structures, critical facilities and infrastructure are expected to comply with the most recent Uniform Building Code seismic design standards. New development is shown in Appendix C.

Potential Impact and Losses: On the next several pages, you will find information about the potential impact and losses that may be experienced in the City of Moreno Valley. HAZUS-MH was utilized to analyze the impact and cost.

Building Damage

Building Damage

Hazus estimates that about 8,797 buildings will be at least moderately damaged. This is over 16.00 % of the buildings in the region. There are an estimated 305 buildings that will be damaged beyond repair.

Table 4-2 below summarizes the expected damage by general occupancy for the buildings in the region.

Table 4-2: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	27	0.10	19	0.10	14	0.20	5	0.46	2	0.65
Commercial	729	2.59	425	2.16	385	5.27	141	11.73	34	11.23
Education	45	0.16	27	0.14	19	0.26	6	0.53	1	0.47
Government	19	0.07	9	0.05	7	0.10	3	0.24	1	0.27
Industrial	153	0.54	98	0.50	100	1.37	41	3.38	12	3.80
Other Residential	821	2.91	746	3.79	939	12.89	614	51.10	156	51.23
Religion	72	0.25	41	0.21	32	0.44	12	1.01	3	1.07
Singly Family	26,315	93.38	18,336	93.07	5,794	79.47	379	31.55	96	31.28
Total	**28,181**		**19,700**		**7,290**		**1,202**		**305**	

Source: Hazus

Essential Facility Damage

Before the earthquake, the region had 419 hospital beds available for use. On the day of the earthquake, the model estimates that only 236 hospital beds (56.00%) are available for use by patients already in the hospital and those injured by the earthquake. After one week, 93.00% of the beds will be back in service. By 30 days, 100.00% will be operational.

Table 4-2.1: Expected Damage to Essential Facilities

Classification	Total	# of Facilities		
		At Least Moderate Damage > 50%	Complete Damage > 50%	With Functionality > 50% on Day 1
Hospitals	2	0	0	2
Schools	68	0	0	41
EOCs	0	0	0	0
Police Stations	1	0	0	1
Fire Stations	2	0	0	2

Source: Hazus

Transportation and Utility Lifeline Damage

Table 4-2.2 provides damage estimates for the transportation system.

Table 4-2.2 Expected Damage to the Transportation Systems

System	Component	Number of Locations				
		Locations/ Segments	With at Least Mod. Damage	With Complete Damage	With Functionality > 50%	
					After Day 1	After Day 7
Highway	Segments	658	0	0	634	634
	Bridges	71	5	0	66	68
	Tunnels	0	0	0	0	0
Railways	Segments	174	0	0	174	174
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	8	0	0	0	0
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Bus	Facilities	0	0	0	0	0
Airport	Facilities	1	0	0	1	1
	Runways	1	0	0	1	1

Source: Hazus

Tables 4-2.3 through 4-2.5 provide information on the damage to the utility lifeline systems. Table 4-2.3 provides damage to the utility system facilities. Table 4-2.4 provides estimates on the number of leaks and breaks by the pipelines of the utility systems. For electric power and potable water, Hazus performs a simplified system performance analysis. Table 4-2.5 provides a summary of the system performance information.

Table 4-2.3: Expected Utility System Facility Damage

System	# of Locations				
	Total #	With at Least Moderate Damage	With Complete Damage	With Functionality > 50%	
				After Day 1	After Day 7
Potable Water	1	1	0	0	1
Waste Water	1	0	0	0	1
Natural Gas	0	0	0	0	0
Oil Systems	0	0	0	0	0
Electrical Power	0	0	0	0	0
Communication	5	0	0	5	5

Source: Hazus

Table 4-2.4: Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	8,303	1296	324
Waste Water	4,982	929	232
Natural Gas	3,321	266	67
Oil	0	0	0

Source: Hazus

Table 4-2.5: Expected Potable Water and Electric Power System Performance

	Total # of Households	Number of Households without Service				
		At Day 1	At Day 3	At Day 7	At Day 30	At Day 90
Potable Water	58,002	6,661	4,545	1,261	0	0
Electric Power		0	0	0	0	0

Source: Hazus

Social Impact

Casualties

Hazus estimates the number of people that will be injured and killed by the earthquake. The casualties are broken down into four (4) severity levels that describe the extent of the injuries. The levels are described as follows:

- Severity Level 1: Injuries will require medical attention but hospitalization is not needed.
- Severity Level 2: Injuries will require hospitalization but are not considered life-threatening
- Severity Level 3: Injuries will require hospitalization and can become life threatening if not promptly treated.
- Severity Level 4: Victims are killed by the earthquake.

The casualty estimates are provided for three (3) times of day: 2:00 AM, 2:00 PM and 5:00 PM. These times represent the periods of the day that different sectors of the community are at their peak occupancy loads. The 2:00 AM estimate considers that the residential occupancy load is maximum, the 2:00 PM estimate considers that the educational, commercial and industrial sector loads are maximum and 5:00 PM represents peak commute time.

Table 4-2.6 provides a summary of the casualties estimated for this earthquake.

Table 4-2.6: Causality Estimates

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	4	1	0	0
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	7	2	0	0
	Other-Residential	60	11	1	2
	Single Family	112	13	0	1
	Total	**184**	**26**	**2**	**3**
2 PM	Commercial	248	58	8	16
	Commuting	0	0	0	0
	Educational	100	22	3	6
	Hotels	0	0	0	0
	Industrial	55	13	2	3
	Other-Residential	13	2	0	0
	Single Family	24	3	0	0
	Total	**439**	**98**	**14**	**26**
5PM	Commercial	178	42	6	12
	Commuting	2	3	5	1
	Educational	8	2	0	0
	Hotels	0	0	0	0
	Industrial	34	8	1	2
	Other-Residential	22	4	0	1
	Single Family	43	5	0	0
	Total	**287**	**63**	**12**	**16**

Source: Hazus

Economic Loss

The total economic loss estimated for the earthquake is 1,073.70 (millions of dollars), which includes building and lifeline related losses based on the region's available inventory. The following three sections provide more detailed information about these losses.

Building-Related Losses

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses were 1,040.08 (millions of dollars); 13 % of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies which made up over 75 % of the total loss. Table 4-2.7 below provides a summary of the losses associated with the building damage.

Table 4-2.7: Building-Related Economic Loss Estimates (Millions of Dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Loss							
	Wage	0.00	2.21	17.33	1.03	1.14	21.70
	Capital-Related	0.00	0.94	14.58	0.62	0.30	16.44
	Rental	12.75	4.72	7.98	0.31	0.56	26.33
	Relocation	44.86	6.31	12.66	1.35	4.85	70.03
	Subtotal	**57.61**	**14.18**	**52.56**	**3.30**	**6.84**	**134.50**
Capital Stock Losses							
	Structural	70.96	13.01	20.99	5.19	5.77	115.92
	Non-Structural	397.99	71.01	65.54	18.58	18.88	572.00
	Content	141.12	17.37	33.40	12.56	9.62	214.08
	Inventory	0.00	0.00	0.93	2.54	0.11	3.58
	Subtotal	**610.07**	**101.40**	**120.86**	**38.87**	**34.39**	**905.58**
	Total	**667.68**	**115.58**	**173.41**	**42.17**	**41.24**	**1,040.08**

Source: Hazus

Transportation and Utility Lifeline Losses

For the transportation and utility lifeline systems, Hazus computes the direct repair cost for each component only. There are no losses computed by Hazus for business interruption due to lifeline outages. Table 4-2.8 provide a detailed breakdown in the expected lifeline losses.

Hazus estimates the long-term economic impacts to the region for 15 years after the earthquake. The model quantifies this information in terms of income and employment changes within the region.

Table 4-2.8: Transportation System Economic Losses (Millions of Dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	11,824.90	$0.00	0.00
	Bridges	111.58	$5.37	4.81
	Tunnels	0.00	$0.00	0.00
	Subtotal	**11936.50**	**5.40**	
Railways	Segments	414.23	$0.00	0.00
	Bridges	0.00	$0.00	0.00
	Tunnels	0.00	$0.00	0.00
	Facilities	0.00	$0.00	0.00
	Subtotal	**414.20**	**0.00**	
Light Rail	Segments	53.67	$0.00	0.00
	Bridges	0.00	$0.00	0.00
	Tunnels	0.00	$0.00	0.00
	Facilities	0.00	$0.00	0.00
	Subtotal	**53.70**	**0.00**	
Bus	Facilities	0.00	$0.00	0.00
	Subtotal	**0.00**	**0.00**	
Airport	Facilities	10.65	$2.33	21.83
	Runways	37.96	$0.00	0.00
	Subtotal	**48.60**	**2.30**	
	Total	**12453.00**	**7.70**	

Source: Hazus

Chapter 5: Wildland and Urban Fires

Moreno Valley Rating: **Severity = 2**
Probability = 3

5.1 Wildland and Urban Fires Profile – Overview

The City of Moreno Valley is subject to both wildland and urban fires. The natural vegetation in the area is highly prone to fire, as well as, the urbanized portions of the city are subject to structural fires. The vegetation and geographical landscape consists of rolling hills covered in annual grasses with sage brush with no tree top canopy. The vegetation typically comes on an annual basis from annual rains which occur between the months of January and March.

A wildland fire is an uncontrolled fire in combustible vegetation that is typically found in a rural or wilderness area. Also known as a vegetation fire, brush fire, forest fire or grass fire, a wildland fire differs from other fires by its extensive size and the speed by which it can spread. These types of fires have a great potential to change direction unexpectedly and can frequently jump roads and fire breaks, making them difficult to control. Wildland fires pose a great danger to urban areas where lives and property can be severely affected.

Within the City of Moreno Valley, wildfire poses a threat to the northern and eastern portions of the city, as those areas are within the high fire hazard area. Also, the southeast area contains the largest potential for state land threat, Lake Perris, which is a California State Park that falls under the direct protection of the City of Moreno Valley for structure and wildland protection. This area also includes a wildlife refuge area which has a 'no fire retardant dropping area.' Other areas of concern include Box Springs (northwest area), San Timoteo Canyon (north end) and Reche Canyon (northeast area).

5.1.1 Wildland and Urban Fires Profile – Previous Occurrences

Between 2003 and 2016 today, there were 803 wildland fires located within the City of Moreno Valley varying in size and impact. Of those, there were 11 that were over 50 acres in size.[9] The table below outlines fires exceeding 50 acres in size that impacted Moreno Valley. Since 2011, the total incident costs for fires over 50 acres is $1,178,679.17.

Table 5-1: History of Fire in Moreno Valley and Surrounding Areas

Year	Description
2002	April 21, 2002 – Redlands Fire – San Timoteo E/O Redlands Blvd. burned 150 acres. No damage information was available.

[9] Riverside County Fire

Year	Description
2003	August 18, 2003 – Locust Fire: wildfire at Redlands Blvd, East end of Moreno Valley burned 1,600 acres with urban interface. Significant voluntary evacuations with major livestock movement. No other damage information was available.
2003	October 21, 2003 – Pass Fire; wildfire at Reche Canyon, ½ mile North of Moreno Valley burned 2,360 acres and damaged 2 single family dwellings, 2 mobile homes, 8 outbuildings and other structures and vehicles.[10]
2007	March 4, 2007 - Wildfire at Gilman Springs Road x Alessandro burned 680 acres. No damage information was available.
2009	May 27, 2009 - Wildfire at Via del Lago x Alta Calle burned 503 acres near the North entrance of Lake Perris State Recreational Area. No damage information was available.
2011	June 27, 2011 – A wildfire at Camino Real x Oliver burned 52 acres near the North entrance of Lake Perris State Recreational Area. No damage information was available.
2011	July 20, 2011 – A wildfire at San Timoteo Canyon Road east of Redlands Boulevard burned 71.13 acres. No damage to structure, personal property or city infrastructure. Incident cost: $253,274.89.
2011	August 6, 2011 – A wildfire at SR-60 at Gilman Springs Road burned 1,026 acres. No damage to structures, personal property or city infrastructure Incident cost: $391,725.84.
2013	May 25, 2013 – A wildfire at Gilman Hot Springs Road east of Alessandro Boulevard burned 126.64 acres. There was no damage to structures, personal property or city infrastructure. Incident cost: $97,626.58.
2013	July 16, 2013 – A fire near Redlands Boulevard east of San Timoteo Canyon Road burned 168.09 acres. There was damage to two outbuildings and personal property with unknown dollar damage. Mandatory evacuations ordered. No damage to city infrastructure. Incident cost: $99,218.15.
2015	July 1, 2015 – A wildfire at Merwin Road east of Alessandro Boulevard burned 181.43 acres. A mandatory evacuation was ordered to a residential community and a fire threat was issued to a natural animal preserve. There was city damage sustained to a City of Moreno Valley water tower and property fence. There was no residential structure damage. Incident cost: $336,833.71.

5.1.2 Wildland and Urban Fires Profile – Probability of Future Events

The probably rating for this hazard is a 3, which means that there is a 10% to 100% chance that it will occur within the next year.

Due to the natural topography, terrain, volatile fuel types and climate conditions, wildfire in Moreno Valley will continue to be an ongoing threat. Fuel, like weather, is an ever-changing variable in the fire environment and must be addressed in any fire behavior forecast. Fuel type, loading, horizontal continuity, vertical

[10] Pass Fire Damage Report, Riverside County Office of Emergency Services, October 23, 2003

arrangement, size and shape, moisture content, chemical content, fuel bed depth and live-fuel-to-dead-fuel ratio have a profound effect on fire behavior.

The potential for large and damaging fires to Moreno Valley is present throughout much of the year. In autumn and winter, when the Santa Ana winds typically blow, the potential for a large and damaging wildfire fire is increased significantly. As the southern region of California continues to stay in a record drought conditions due to lower than expected rain fall totals, the potential for large vegetation fires in or near the City of Moreno Valley is highly predictable for major fires. With the population size and dense residential housing in the city, the threat for larger financial loss is also highly predictable.

5.2 Wildland and Urban Fires Vulnerability – Overview/Impact

The severity rating for this hazard is a 3, which means that there is a potential for critical damage, causing injuries and/or illnesses resulting in permanent disability, complete shutdown of critical facilities for two weeks and/or 25% to 49% of property is severely damaged.

Impact to Population and Structures: Injuries and/or deaths may occur during fires. In addition, portions of the population could be affected by smoke inhalation and heat from the fire, as well as, poisonous gases that cause disorientation and drowsiness. Those affected could be requested to evacuate their homes and businesses, causing both emotional and financial hardship. Seniors and individuals with access and functional needs may need special assistance to evacuate. Structures, vehicles and personal belongings could be damaged or destroyed by fire. This may cause civilians to take independent action which raises the threat level and situational awareness for firefighters and other public safety entities.

Impact to Essential Facilities/Historical Sites: Damage to essential facilities would impact the ability to appropriately respond to emergencies. Damage to historical sites would be particularly devastating as they would be difficult to replace.

Impact to Infrastructure: Firefighting can cause an increased demand to the water supply. Infrastructure could be affected by fires and/or evacuations. Internal Emergency Operations Centers are activated under the auspices of the Fire Department supervision. They would coordinate evacuation centers and assist with civilian evacuations and repopulation of an area once the threat of fire has been mitigated.

Future Development Trends: With the current and expected development of commercial and residential construction, the potential and expected threat will rise. New development is shown in Appendix C.

5.2.1 Wildfire Vulnerability – Potential Loss

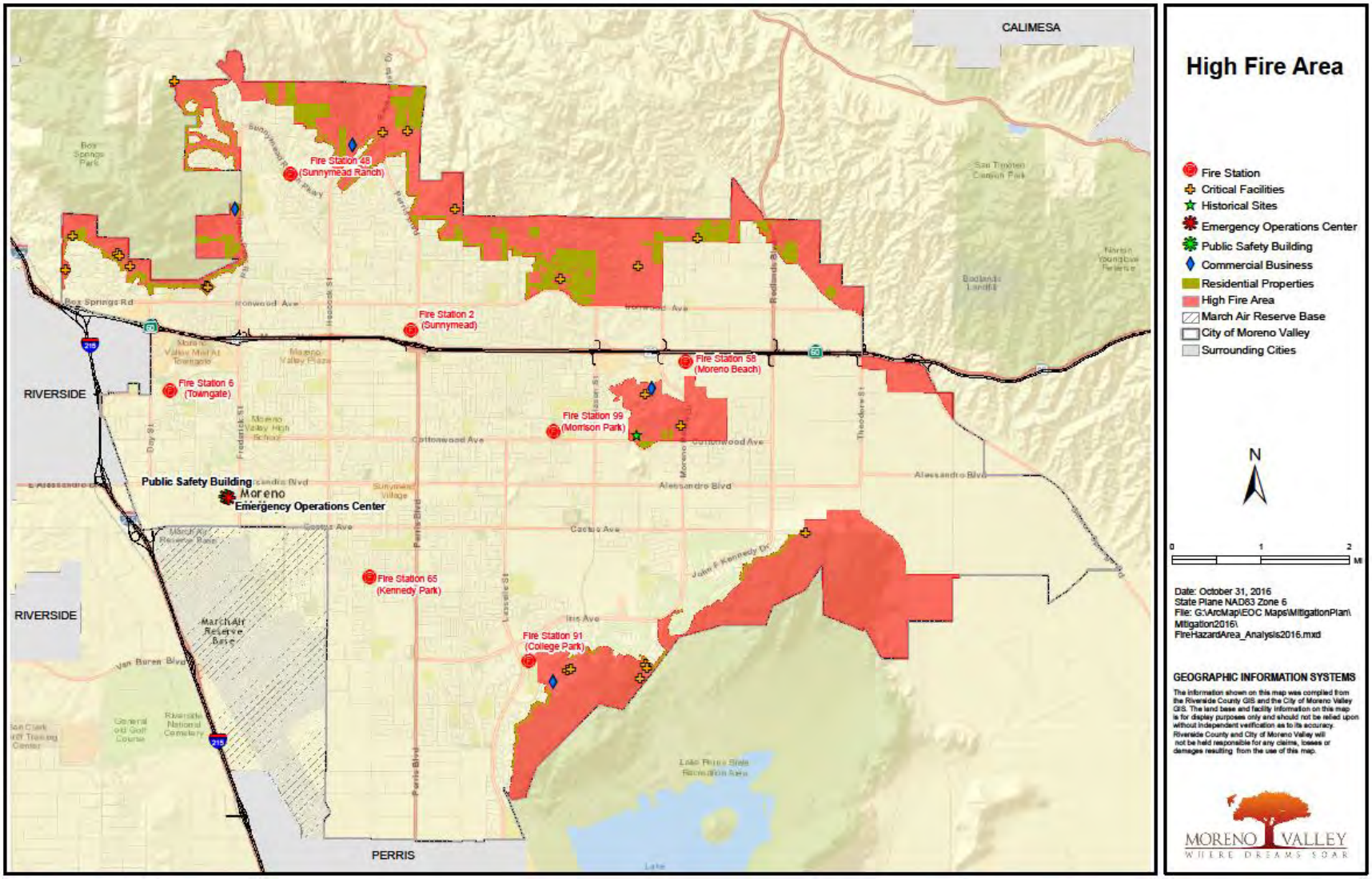
As shown on Figure 5-2 (map), there is vulnerability to residential property, businesses and essential facilities that are located in or near high fire areas within the City of Moreno Valley. Utilizing Moreno Valley and Riverside County Assessor Data, potential loss was calculated (no contents) and the results are:

Table 5-2: Potential Financial Loss Near High Fire Area by Type

Building Type	High Fire Area (#, Value)
Residential	1,395 - $ 323,762,617
Commercial	4 - $ 36,330,426
Critical Facilities	22 - $ 993,486
Historic Sites	0 - $ 0

If a wildfire siege such as the one that occurred in California from October to November 1993 were to occur and damage occurred to 50% of the structures located in the wildfire area, the potential loss would be $571 million. There are no known repetitive loss properties.

Figure 5-2: Moreno Valley High Fire Area Map



Chapter 6: Flooding

Moreno Valley Rating: **Severity = 3**
Probability = 3

6.1 Flooding Profile – Overview

There are four types flooding conditions that exist within the Moreno Valley area: flooding in defined watercourses; ponding; sheet flow; and dam inundation. Flooding within defined watercourses occurs within drainage channels and immediately adjacent floodplains. Ponding occurs when water flow is obstructed due to manmade obstacles such as the embankments of SR-60 and other roadways, where they cross-defined watercourses. Sheet flow occurs when capacities of defined watercourses are exceeded and water flows over broad areas.

Known flood-prone areas as noted in the General Plan as well as recorded in city maintenance files, include:

- Along the Quincy Channel between Cottonwood Avenue and Cactus Avenue.
- An extensive floodplain that extends along the Oliver Street alignment from a point north of Alessandro Boulevard to John F. Kennedy Drive and extending in a southwesterly direction as far as the northeast corner of Morrison Street and Filaree Avenue and the northeast corner of Nason Street and Iris Avenue.
- Along Heacock Street and Lateral A of the Perris Valley Channel between Cactus Avenue and a point north of the intersection of Lateral A and Indian Street (next to March Air Reserve Base).
- Along Sunnymead Boulevard between Frederick Street and Graham Street.
- Along Pigeon Pass Road, between Sunnymead Ranch Parkway and Lawless Road.
- Along Moreno Beach Boulevard, between Juniper Avenue and Locust Avenue.
- Along Highland Avenue, between Redlands Boulevard and Alessandro Boulevard.

- Along Locust Avenue, between Moreno Beach Boulevard and northerly city Limits.
- Along Heacock Street, between Lake Summit Drive and Reche Vista Drive.
- Along Hubbard Street, between Skyland Drive and Ironwood Avenue.
- Along Cottonwood Avenue, between Nason St and Martha Crawford Street.
- Alessandro Boulevard, between Gilman Springs Road and Theodore Street.
- Neighborhood bounded by Alessandro Boulevard, Brodiaea Avenue, Redlands Boulevard, and Merwin Street.
- Miramontes Court, north of Via Solana Court.
- Easterly side of neighborhood east of Perris Boulevard, between Covey Road and Manzanita Avenue.

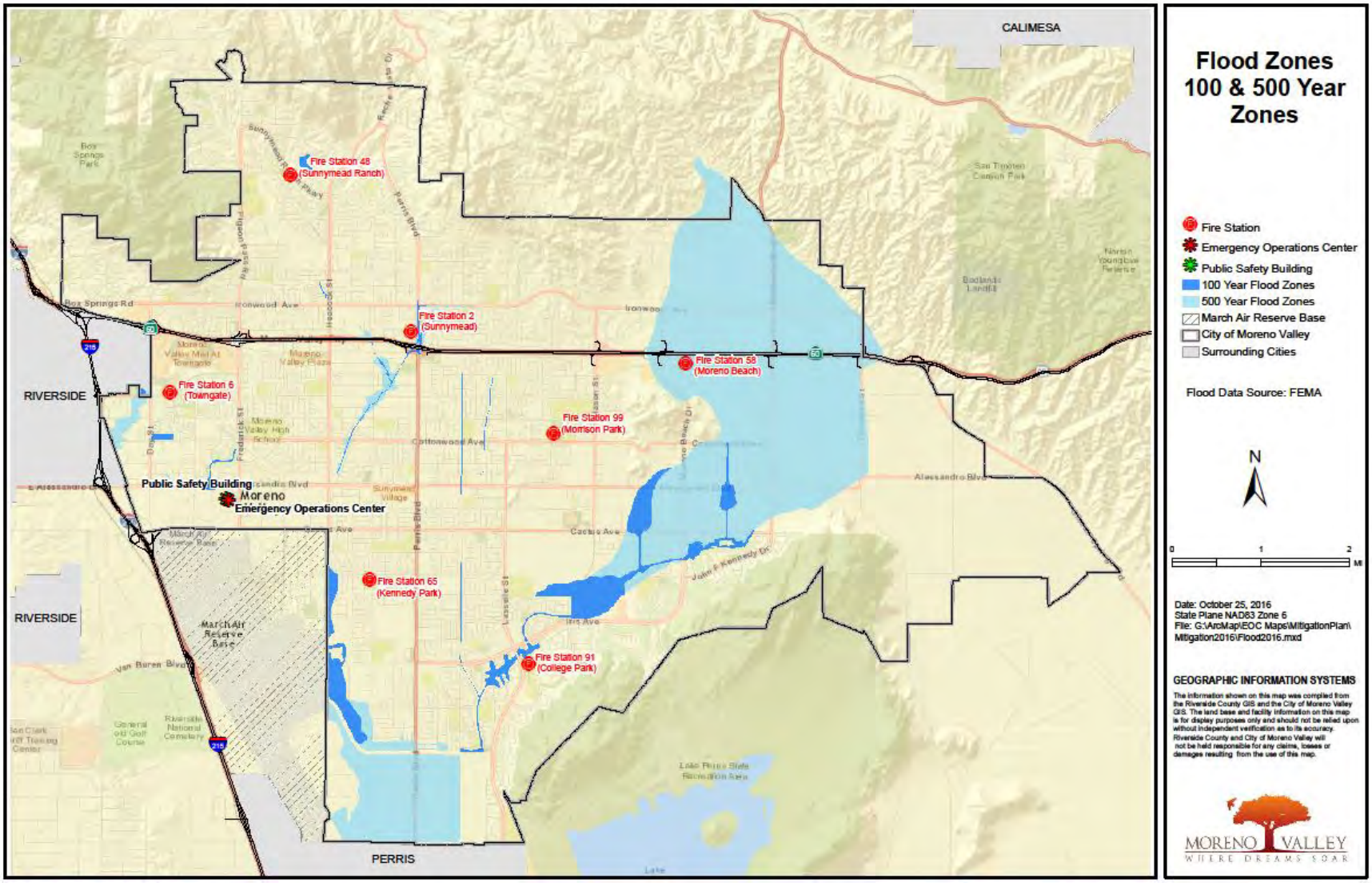
The city maintains 18,420 linear feet of open channels as ahown in the chart below:

Table 6-1: City Maintained Open Channels

Area	Street	From	To	Linear Feet
1	Old 215	Bay Ave.	Alessandro Blvd.	95
2	Davis St.	Ironwood Ave.	Hemlock Ave.	1,070
3	Redlands Blvd.	Juniper Ave.	SR-60	6,100
4	Redlands Blvd.	Eucalyptus Ave.	Dracaea Ave.	1,260
5	Wilmont St.	Bay Ave.	Brodiaea Ave.	2,575
6	Redlands Blvd.	Bay Ave.	Alessandro Blvd.	1,260
7	Theodore St.	SR-60	Alessandro Blvd.	4,200
8	Quincy St.	Brodiaea Ave.	Cactus Ave. (S/s)	1,590
9	Cactus Ave. (S/s)	Wilmont St. (E/o)	Redlands Blvd. (W/o)	270

Several portions of the Moreno Valley area are subject to a 100-year flood, meaning a flood with a one percent chance of occurring in any given year. 100 year and 500 year floods, as well as dam inundation, are shown on Figure 6-1.

Figure 6-1: Moreno Valley Flood Zones 100 & 500 Year Zones



6.1.1 Flooding Profile – Previous Occurrences

Moreno Valley has a long history of being affected by flooding. Notable flooding incidents since 2005 include:

Table 6-1.1: History of Flooding in Moreno Valley

Year	Description
2005	DR-1577, January 2005, 12 homes were damaged throughout the city from flooding. Asphalt and pavement were washed out at various sites throughout the city. Heacock and Cactus channel flooded and block public right of way. $23K public assistance.
2005	DR-1585, February 2005, flooding in the area of Reche Vista, Ironwood and Davis St., Heacock channel north of JFK Blvd; 15 homes throughout the city with minor flood damage. $16K public assistance.
2010	DR-1884 Jan 2010 – Flooding damage/road closures throughout the city. Example of damage included: erosion of Heacock Channel (south of Iris north of Cactus) causing encroachment to the roadway. Slope and down drain repair at Reche vista; damage to retention basin/drainage swales on Redlands Blvd; and debris /road cleanup throughout city. Damage assessment for the Heacock Channel area resulted in an approximate cost of $58 million, which included damages to infrastructures (roadway and utilities), commercial and residential structures, and undevelopable industrial and commercial lands due to flood plain.
2010	DR-1952, December 2010, Flooding was citywide. Heacock channel, 10 city parks, several home were damaged from flooding. Damage to the Indian Basin while under construction for improvement; flooding of Sunnymead Boulevard and surrounding businesses between Frederick Street and Graham Street. Preliminary damage assessment $998K.
2012	Severe rain and flooding citywide resulted in numerous residential flooding east of Redlands Blvd. in the Campbell Ave., Gifford Ave., and Hotchkiss St. neighborhood areas. Numerous visual sightings of tornadoes were reported.
2015	Flash flood caused flooding damages citywide. Severe damage was reported for the residential areas located on Hubbard Street and Dunlavy Court, residential area on Kitching Street-Ivy Lane Neighborhood, on Lawless Road – Pigeon Pass Street, and Camino Del Coronado Street-Sunnymead Ranch were also affected.

6.1.2 Flooding Profile – Probability of Future Events

The probably rating for this hazard is a 3, which means that there is a 10% to 100% chance that it will occur within the next year.

Climate change is having a profound impact on California water resources, as evidenced by changes in snowpack, sea level, and river flows. These changes are expected to continue in the future. This potential change in weather patterns can also increase flood risks.[11]

[11] http://www.water.ca.gov/climatechange/ Accessed November 10, 2016

6.2 Flooding Vulnerability – Overview/Impact

The severity rating for this hazard is a 3, which means that there is a potential for critical damage, causing injuries and/or illnesses resulting in permanent disability, complete shutdown of critical facilities for two weeks and/or 25% to 49% of property is severely damaged. Flooding could cause cascading hazards such as landslides, dam failure, pipeline hazards, transportation incidents, power outages, hazardous materials incidents, civil unrest, diseases and insect infestations.

Impact to Population and Structures: Flooding can cause a huge impact to both the population and structures. Injuries and/or deaths could occur from drowning or traffic collisions, as well as, from cascading hazards such as power lines down, landslides and other hazards. Communications could be impacted by flooding and people could be evacuated from dangerous areas. Seniors and individuals with access and functional needs may need special assistance to evacuate. Structures could be damaged, as well as, property.

Impact to Essential Facilities/Historical Sites: Essential facilities fall within the 100 year and 500 year flood zones and therefore could suffer damage from flooding. Historical sites could also suffer damage.

Impact to Infrastructure: Flooding could cause power outages, which would affect traffic lights and transportation. Damage to pipelines and communication infrastructure could occur. Mud and debris could affect infrastructure.

Future Development Trends: Future development will result in an increased demand for flood control and drainage services. Moreno Valley participates in the NFIP as well as the voluntary CRS, which is administered by FEMA. The NFIP program provides federal flood insurance and federally financed loans for property owners in flood prone areas. For more information about the city's participation in NFIP and CRS, see Chapter 20.4 National Flood Insurance Program. To qualify for federal flood insurance, the city must identify flood hazard areas and implement a system of protective controls. In addition, all development is required to comply with Riverside County Flood Control and Water Conservation District requirements for construction of master drainage plan facilities. New development is shown in Appendix C.

6.2.1 Flooding Vulnerability – Repetitive Loss

There are no repetitive loss properties.

6.2.2 Flooding Vulnerability – Potential Loss

The city was unable to utilize HAZUS-MH for flooding because the data only includes river overflows. Utilizing Moreno Valley and Riverside County Assessor Data, potential loss was calculated (no contents) and the results are:

Table 6-2: Potential Financial Loss in Flood Zones by Type

Building Type	100 Year Flood (#, Value)	500 Year Flood (#, Value)
Residential	115 – $27,418,423	2,607 – $640,584,254
Commercial	30 – $10,932,260	97 – $668,845,383
Critical Facilities	1 – N/A*	22 – $ 73,299,820
Historic Sites	0	3 – $ 852,675

* Note: Structure value not in assessor data

Chapter 7: Drought

Moreno Valley Rating: **Severity = 2**
Probability = 3

7.1 Drought Profile – Overview

Drought is an extremely dry climatic period where the available water falls below statistical average for a particular region. Drought is defined by factors including rainfall, vegetation conditions, agricultural productivity, soil moisture, water levels in reservoirs and lakes, and stream flow. The three forms of drought include: meteorological drought; agricultural drought; and hydrologic drought.

A meteorological drought is defined as prolonged periods of less than average precipitation; an agricultural drought is defined as insufficient moisture for an average crop yield; a hydrologic drought is defined water levels falling below sustainable levels.

While drought is generally a gradual phenomenon, it is also additive in that prolonged events continue to effects

7.1.1 Drought Profile – Previous Occurrences

The City of Moreno Valley has an early history of drought when, in 1887, Frank E. Brown sought to provide water to the barren plain that is now Moreno Valley. Mr. Brown built a dam at Bear Valley in the San Bernardino Mountains and formed the Bear Valley Land and Water Company. This company provided water to the City of Redlands, and communities of Alessandro and Moreno

Due to a drought affecting Southern California in 1899, Mr. Brown had to terminate the water supply to what would later become the City of Moreno Valley as the City of Redlands had first rights to the water supply. As a result of the loss of water delivery, the residents of Moreno Valley were forced to leave the area in search of a more livable environment. By 1901, few people resided in Moreno Valley, and those who remained turned primarily to the dry farming of hay, grain, and grapes.[12]

Table 7-1 shows a chronological list of dates of severe droughts that have occurred in California:

[12] http://mvhistoricalsociety.com/history.htm Retrieved September 24, 2011

Table 7-1: History of Droughts

Year	Description
1929-1934	The most severe drought in California's history at that time[13]
1943-1951	The more severe in southern California[14]
1959-1962	Was more severe in the Sierra Nevada[15]
1976-1977	The single driest year on record for California[16]
1987-1992	Caused 23 of California's 58 counties to declare county-wide local states of emergency in 1991[17]
2007-2009	One of the more severe droughts in California's history with 2007 setting records in the southern coastal region as one of the driest years on record.[18]
2012-2014	Driest three-year period in the measured record of statewide precipitation.[19]

7.1.2 Drought Profile – Probability of Future Events

The probably rating for this hazard is a 3, which means that there is a 10% to 100% chance that it will occur within the next year.

Based on the climate change impacts and predictors, it is highly probable that Moreno Valley will be impacted by additional periods of drought over the next 10-20 years. By the end of this century, the Sierra snowpack is projected to experience a 48-65 percent loss from the historical April 1st average. This loss of snowpack means less water will be available for Californians to use.[20]

Climate change is having a profound impact on California water resources, as evidenced by changes in snowpack, sea level, and river flows. These changes are expected to continue in the future and could add additional challenges for water supply reliability.[21]

7.2 Drought Vulnerability – Overview/Impact/Development Trends

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property that is severely

[13] http://www.calwatercrisis.org/pdf/ACWA.WS.RecordDrought%202007.pdf Retrieved September 24, 2011
[14] http://geochange.er.usgs.gov/sw/impacts/hydrology/state_fd/cawater1.html Retrieved September 24, 2011
[15] http://geochange.er.usgs.gov/sw/impacts/hydrology/state_fd/cawater1.html Retrieved September 24, 2011
[16] http://www.water.ca.gov/drought/docs/CalDrought.pdf Retrieved September 24, 2011
[17] http://www.water.ca.gov/drought/docs/CalDrought.pdf Retrieved September 24, 2011
[18] http://www.water.ca.gov/drought/docs/timeline-present.pdf Retrieved September 24, 2011
[19] http://www.water.ca.gov/waterconditions/docs/California_Signficant_Droughts_2015_small.pdf Retrieved November 1, 2016
[20] http://www.water.ca.gov/climatechange/ Retrieved November 10, 2016
[21] http://www.water.ca.gov/climatechange/ Retrieved November 10, 2016

damaged. Drought could cause cascading incidents such as fires, flooding, insect infestations and civil unrest.

Impact to Population and Structures: Drought could impact the population by the imposition of water usage restrictions, thus impacting crops, livestock, land, vegetation and urban water supplies. One of the most significant impacts could be its effect on wildfire protection. Dry vegetation has a potential to increase wildfires in and around the City of Moreno Valley. In addition, firefighting efforts may be hindered due to inadequate water supplies. Drought may also cause soil to compact and not absorb water well, thus making an area more susceptible to flooding.

Impact to Essential Facilities/Historical Sites: Essential facilities and historical sites could be impacted by inadequate water supplies and the potential for flooding in and around the site. Firefighting efforts may be hindered due to inadequate water supplies and damage to landscaping may occur.

Impact to Infrastructure: The impact of drought to infrastructure could be severe as the availability of water could be affected. Drought could affect the stream flow, snowpack, lakes, reservoirs and groundwater levels.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure could be impacted by drought. A potential of inadequate water supply during periods of drought may need to be considered for future development. New development is shown in Appendix C.

7.2.1 Drought Vulnerability – Potential Loss

Drought's characteristics along with its far-reaching impacts make its effects on society, economy, and environment difficult, though not impossible, to identify and quantify.[22] Due to the limitation of data, it is not possible to analyze the potential loss for Moreno Valley. However, there would be a significant loss from its related impact to wildfires, and the significant costs incurred to replace landscaping. There are no known repetitive loss properties.

[22] Understanding the Drought Phenomenon: The Role of Definitions (Wilhite & Glantz, 1985) http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1019&context=droughtfacpub Retrieved November 10, 2016

Chapter 8: Landslide

Moreno Valley Rating: **Severity = 2**
Probability = 2

8.1 Landslide Profile – Overview

The primary factors that determine an area's susceptibility to slope instability are the underlying geologic and soils characteristics. The abundant shales and siltstones underlying the Badlands are highly porous and do not hold together well when wet, which can lead to slope instability and landslides. Cascading hazards contributing to the possibility of landslides include rain storms and earthquakes. A "slow moving" landslide reportedly exists along Gilman Springs Road in the eastern portion of the Moreno Valley area.

A 2002 report prepared for the California Department of Transportation states that there have been over 8,500 landslides mapped within the corridor area between Gilman Springs Road and Jack Rabbit Trail. Of those, only 281 are the relatively deep, slower-moving types of landslides that typically cause damage to roadways.

The majority of the larger and deeper landslides that were mapped are dormant-mature based on the landslide features and level of erosion. Dormant-mature in this area may only mean a low level of activity over several decades. The small number of historic rock-slides that was mapped does suggest, however, that the deeper and slower moving slides are not a very frequent occurrence in this highway corridor.

In contrast, small, shallow, rapidly-moving debris flows are very abundant in the San Timoteo Badlands. Thousands of individual flows were triggered by the storms of 1969, and hundreds of additional slides were triggered by the storms of 1998. Overall the debris flow process is probably the main erosional force on the slopes of the badlands.[23]

Figure 8-1 shows the area and slope angle analysis of potential instability hazards.

[23] http://www.consrv.ca.gov/cgs/rghm/landslides/SR_186/Documents/CT60riv.pdf Retrieved October 1, 2011

Figure 8-1: Moreno Valley Slope Analysis

8.1.1 Landslide Profile – Previous Occurrences

Table 8-1 shows a recent history of landslides in the Moreno Valley area.

Table 8-1: History of Landslides

Year	Description
2005	Slope failure in the Bonita Heights area of Moreno Valley. Amount of damage unknown. Debris:1 cubic yard – 1 ton
2010	Slope failure due to winter storm impacting Duckbill and Mallow drive in Moreno Valley. Voluntary evacuations of 6 houses. Debris: 80 cubic yards – 80 tons.
2015	Mud flowing down Pigeon Pass Road and into homes on Whitewater Circle in Moreno Valley. The mud ran off private property at the northeast corner of Pigeon Pass and Lawless roads[24]. Debris: 100 cubic yards – 100 tons

8.1.2 Landslide Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

8.2 Landslide Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged. Landslides could cause cascading hazards such as hazardous materials incidents, transportation incidents, power outages and pipeline incidents.

Impact to Population and Structures: There could be injuries and/or deaths from landslides due to debris flow and/or flooding. Damage to structures and personal property could occur due to the debris flow and/or flooding. People could be asked to evacuate and/or detour. Seniors and individuals with access and functional needs may need special assistance to evacuate.

Impact to Essential Facilities/Historical Sites: Essential facilities and/or historical sites are not located near landslide areas; however they could be impacted from failure of smaller slopes, debris flow and flooding.

Impact to Infrastructure: There could be plugging of culverts and related flooding and erosion of basin overflows. Transportation corridors could be impacted, causing traffic to be detoured. Evacuations could occur.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure would not be impacted. New development is shown in Appendix C.

[24] http://www.pe.com/articles/storm-774196-city-insurance.html Retrieved November 7, 2016

8.2.1 Landslide Vulnerability – Potential Loss

If there was a landslide affecting the SR-60 San Timoteo Badlands area, the potential loss would be to people traveling on SR-60 and may not involve Moreno Valley residents. As a heavily-travelled transportation corridor for products, goods and services, any prolonged impact to the highway could result in financial impacts to haulers, consumers and impacted businesses. The California Department of Transportation (Caltrans) would be responsible for losses related to the highway. There are no known repetitive loss properties.

Chapter 9: Insect Infestation

Moreno Valley Rating: **Severity = 1**
Probability = 2

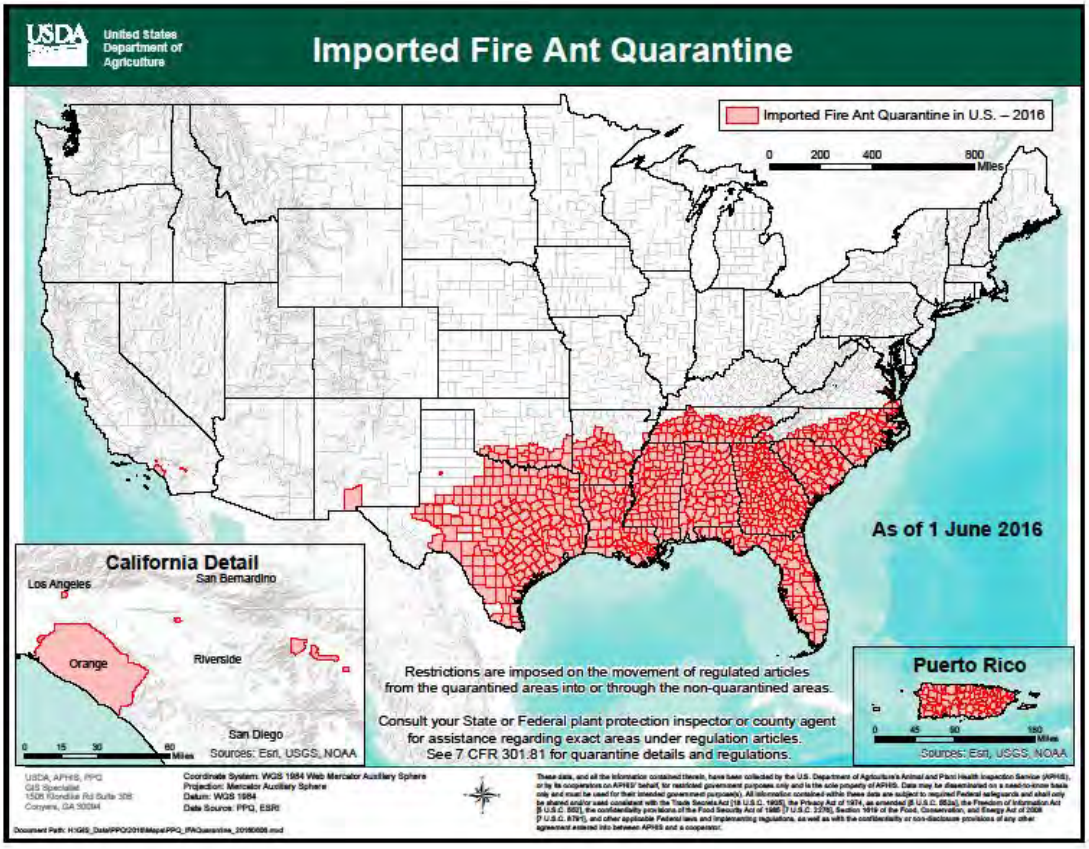
9.1 Insect Infestation Profile – Overview

The City of Moreno Valley is vulnerable to various insect infestations such as Africanized Honey Bees, Red Imported Fire Ants, and mosquitoes which can cause vector-borne diseases. By 1998, the red imported fire ants were found in most of Orange County and in parts of Riverside County. These ants can become highly-aggressive if their nests are disturbed. Further, structural problems up to and including collapse are possible if nests have been built under essential facilities, structures, or in areas of future development such as pavement and foundations. Not only can the red imported fire ants cause damage or destroy structures, they can also damage equipment and impact business, land, and property values.

Earlier lab studies have seemed to indicate that the ants may be attracted to electrical fields causing them to build at the base (slab) or near housings of electrical units.[25] As worker ants are attracted to electricity, they can swarm electrical equipment and destroy it. Also, there are reports indicating people who are allergic to their venom have died.[26] In the past, Moreno Valley has been subject to quarantine limiting the movement of plants and soil (Figure 9-1).

[25] https://articles.extension.org/pages/42552/are-fire-ants-attracted-to-electricity Retrieved June 19, 2017
[26] https://www.ars.usda.gov/arsuserfiles/60360510/publications/Klotz_et_al-2003(M-3789).pdf Retrieved November 8, 2016

Figure 9-1: Imported Fire Ant Quarantine[27]



The Africanized Honey Bee is virtually indistinguishable from the common honey bee, but the Africanized Honey Bees are more aggressive in defending their home or when disturbed. These bees will swarm in the hundreds to thousands in order to sting anything perceived as a threat. These attacks can be deadly in nature due to the sheer number of bee stings that an animal or person receives, resulting in onset of anaphylactic shock. Africanized honey bees build nests any place that provides some protection from the weather.

Colonies are known to build hives in walls or empty structures, essential facilities, or in areas of future development such as hollow trees, stumps, and animal holes[28]. They have been found to nest underground in irrigation pipes, meter boxes and drainage ditches. The only known Africanized Honey Bee hive in Moreno Valley was located in 1998 at the Moreno Valley Unified School District; however, the Africanized Honey Bee has been in California since 1994 and has completely colonized numerous counties, including Riverside County.

[27] http://www.aphis.usda.gov/plant_health/plant_pest_info/fireants/downloads/fireant.pdf
Retrieved November 7, 2016
[28] https://content.statefundca.com/safety/safetymeeting/SafetyMeetingArticle.aspx?ArticleID=1
Retrieved on June 19, 2017

Vector-borne disease – Vector-borne diseases are among the most complex to prevent and control[29]. These bacterial and viral diseases are transmitted by mosquitoes, ticks, and fleas. Due to the difficulty in tracking vector behavior vector-borne diseases pose a major public health concern and can impact populations, businesses, and can strain the Emergency Medical System m(EMS); fire department, ambulances, urgent cares, and hospitals.

9.1.1 Insect Infestation Profile – Previous Occurrences

Table 9-1: History of Insect Infestation

Year	Description
1998	Red imported fire ant, Latin name *Solenopsis invicta,* caused 1 square mile of Moreno Valley to be quarantined.[30]
1998	An Africanized Honey Bee, Latin name *Apis mellifera scutellata Lepeletier,* attack occurred in October at the Moreno Valley Unified School District located on Perris Boulevard.[31]
2000	A resident in Banning, CA is killed by swarm of bees. Banning is located 22 miles north of Moreno Valley.[32]
2006	Red imported fire ant hive found on the football field at Canyon Springs High School. Football field was out of service for approximately one month due to the infestation.[33]
2010	Two horses are killed by swarming bees in the City of Menifee which is located just 17.8 miles south of Moreno Valley.[34]
2011	Bee attack in the Arlanza area of the City of Riverside kills a horse, owner is hospitalized. Riverside is a neighboring jurisdiction to Moreno Valley.[35]
2011	Swarm of bees in Wildomar neighborhood attack dog. Wildomar is located 35 miles south of Moreno Valley.[36]
2013	A total of 35 confirmed West Nile Virus human cases reported in Riverside County.

[29] http://www.cdc.gov/ncezid/dvbd/about.html Retrieved November 7, 2016
[30] http://issg.org/database/species/reference_files/solinv/jetter2002.pdf Retrieved November 7, 2016
[31] http://articles.latimes.com/1998/dec/17/local/me-54929 Retrieved September 25, 2011, Verified November 7, 2016
[32] http://www.stingshield.com/2000news.htm Retrieved September 27, 2011
[33] http://www.pe.com/localnews/sbcounty/stories/PE_News_Local_S_fireants29.6ed14e.html?npc Retrieved September 27, 2011
[34] http://www.sandiegouniontribune.com/sdut-menifee-horses-killed-by-swarming-bees-2010jun24-story.html Retrieved November 8, 2016
[35] http://latimesblogs.latimes.com/lanow/2011/07/horse-killed-bees-riverside.html Retrieved September 27, 2011, Verified November 8, 2016
[36] http://www.nbclosangeles.com/news/local/Bees-Sward-Riverside-Neighborhood-125669843.html Retrieved September 27, 2011, Verified November 8, 2016

Year	Description
2014	A total of 15 confirmed West Nile Virus human cases reported in Riverside County.
2014	Bark beetle found as far south as San Diego, as far east as the City of Eastvale which is located approximately 18 miles west of Moreno Valley. 37
2015	Two confirmed human cases of West Nile Virus in Riverside County. A 37-year-old man and 53-year-old woman.38
2015	A 77-year-old man who recently died tested positive for the West Nile virus. Other underlying health conditions may have been a contributing factor.39
2016	First confirmed case of Zika virus reported in July of 2016 in Riverside County.40

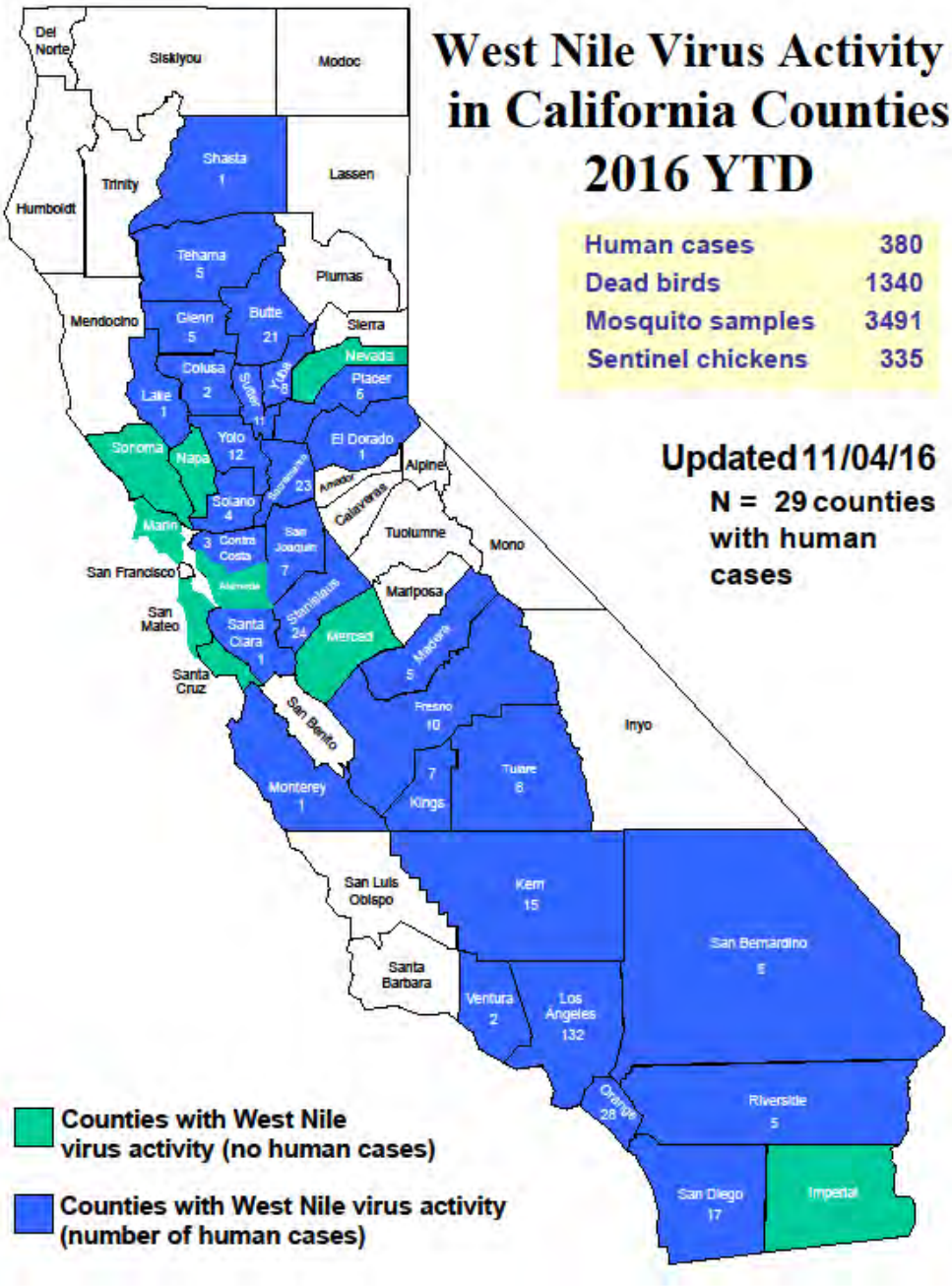
In Riverside County, mosquito-borne diseases, such as West Nile Virus and Zika Virus, have been of increased concern. The West Nile Virus is a seasonal epidemic that flares up in the summer and typically continues into fall. As of November 2016, the California Department of Public Health reported 5 human cases, 16 dead birds, and 32 mosquito samples that tested positive for West Nile in Riverside County[41] Figure 9-2 shows the West Nile Virus activity in California Counties as of November 2016.

Zika is spread through mosquito bites, during blood transfusions, during sex with a person infected with Zika, and from a pregnant woman to her fetus during pregnancy or around the time of birth. The Zika virus has been detected in several counties surrounding Moreno Valley. The first case in Riverside County was identified in July 2016 in a man who traveled outside the United States.[42] In August 2016, the second case in Riverside County was identified when a woman became infected while traveling outside the country and is expected to completely recover, according to a press release from Riverside University Health System.[43]

On May 26, 2016, the California Department of Public Health issued a Health and Travel Advisory to Californians to avoid mosquito bites during travel to Latin American countries and the Caribbean where there has been increased reports of mosquito-borne disease, including Zika, chikungunya and dengue.[44]

[37] http://www.latimes.com/science/la-sci-beetle-trees-20140530-story.html Retrieved April 3, 2017
[38] http://countyofriverside.us/NewsHighlights/TabId/96/ArtMID/487/ArticleID/259/First-two-West-Nile-virus-cases-for-2015-reported-in-Riverside-County.aspx Retrieved November 7, 2016
[39] http://countyofriverside.us/NewsHighlights/TabId/96/ArtMID/487/ArticleID/271/Riverside-County-man-who-died-tests-positive-for-West-Nile-virus.aspx Retrieved November 7, 2016
[40] http://abc7.com/news/1st-case-of-zika-virus-confirmed-in-riverside-county/1414481/ Retrieved November 7, 2016
[41] http://westnile.ca.gov/ Retrieved November 8, 2016
[42] http://thedesertreview.com/health-officials-announce-first-zika-virus-case-confirmed-in-riverside-county/ Retrieved November 8, 2016
[43] http://www.pe.com/articles/county-810271-infected-zika.html Retrieved November 8, 2016
[44] https://www.cdph.ca.gov/HealthInfo/discond/Documents/CDPHZikaVirusHealthAdvisory.pdf Retrieved November 7, 2016

Figure 9-2: West Nile Virus Activity in California 2016[45]



[45] http://westnile.ca.gov/ Retrieved November 8, 2016

9.1.2 Insect Infestation Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

9.2 Insect Infestation Vulnerability – Overview/Impact

The severity rating for this hazard is a 1, which means that there is a potential for negligible damage, causing injuries and/or illnesses treatable with first aid, minor quality of life lost, shutdown of critical facilities and services for 24 hours or less and/or no more than 1% of property is severely damaged. Insect infestation could cause cascading hazards such as pandemic flu or disease.

Impact to Population and Structures: Injuries and/or deaths from insect infestations are likely. The amount of injuries and/or deaths is not expected to be high. Insects pose an impact to vegetation as well as structures. The bark beetle and goldspotted oak borer, for instance, devastate forests and trees and pose deadly fire and structure damage through falling into structures.

Common city trees, such as American sweetgum and maple, could become public branch-dropping hazards. Further, native trees such as the California sycamore and the coast live oak have started to succumb, creating a fire risk in the form of dead, dry tinder.[46]

Impact to Essential Facilities/Historical Sites: There could be an impact to essential facilities and historical sites, as well as, landscaping.

Impact to Infrastructure: No impact is expected.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure could be impacted by insect infestations. Eradication costs may need to be considered. New development is shown in Appendix C.

9.2.1 Insect Infestation Vulnerability – Potential Loss

Insect infestation and vector-borne diseases could impact the City of Moreno Valley. Due to the difficulty in tracking vector behavior, the risk for vector-borne diseases is high. The actual cost is not known. There are no known repetitive loss properties.

[46] http://www.latimes.com/science/la-sci-beetle-trees-20140530-story.html Retrieved April 3, 2017

Chapter 10: Extreme Weather

Moreno Valley Rating: **Severity = 2**
Probability = 3

10.1 Extreme Weather Profile – Overview

For purposes of profiling the extreme weather hazard for this plan, extreme weather includes lightning, hail, freezing and heat. Flooding is profiled in chapter 6 and severe wind is profiled in chapter 11. Extreme weather could affect the entire City of Moreno Valley.

Lightning – Lightning is a discharge of electrical energy which creates a "bolt" when the buildup of positive and negative charges becomes strong enough.[47] Lightning can strike anywhere and typically follows the shortest, easiest path to the earth, striking buildings, trees or other objects such as poles and metal objects. Lightning can enter a building through a direct strike by striking a metal object that is attached to the building or by following a power line or unground wire fence that is attached to a building.

Hail/Freezing – Hail is a form of solid precipitation. It consists of balls or irregular lumps of ice, each of which is referred to as a hail stone. Hail formation requires environments of strong, upward motion of air with the parent thunderstorm (similar to tornadoes) and lowered heights of the freezing level (< 32 °Fahrenheit, 0 Celsius). Hail is most frequently formed in the interior of continents within the mid-latitudes of Earth, with hail generally confined to higher elevations within the tropics.[48]

Heat – As climate change continues to impact weather, the once summer-only heat continues to extend to other parts of the calendar year. Extreme heat may occur in the summer.

10.1.1 Extreme Weather Profile – Previous Occurrences

Table 10-1 shows the history of extreme weather for the City of Moreno Valley and surrounding area.

[47] Mitigation Ideas: A Resource for Reducing Risk to Natural Hazards https://www.fema.gov/media-library-data/20130726-1904-25045-0186/fema_mitigation_ideas_final508.pdf Retrieved November 10, 2016
[48] http://en.wikipedia.org/wiki/Hail

Table 10-1: History of Extreme Weather

Year	Description
1972	Lightning struck the Riverside and Norco area. One boy was killed.[49]
1995	July, 27-28, Heat wave: 111° Banning, Moreno Valley, and Sun City[50]
2005	February 24, Lightning struck a girl in Moreno Valley. [51]
2007	September 1-3, Heat wave - 110° in the Inland Empire and high deserts, and 115° in the lower deserts. At least six deaths from heat related illnesses. [52]
2008	May 22, Hail on Moreno Beach Drive at the 60 Freeway in Moreno Valley. The nickel size hail downpour was brief, and it melted quickly. Awnings, trees and vehicles were damaged. [53]
2008	May, 22, Heavy rain from thunderstorms. 28 residences were flooded and damaged in the northeast Moreno Valley. [54]
2008	December 26, Freezing temperatures in Moreno Valley, (31°)[55]
2010	December 30, Freezing temperatures in Moreno Valley, (32°)[56]
2012	August 30 – Flooding and Heavy Rain in Moreno Valley. Rainfall of 1.53 inches fell in one hour at March AFB in Riverside.[57]
2012	September 28 – Extreme Heat in surrounding areas. Temperatures expected to range between 99 to 109 degrees Fahrenheit.[58]
2013	December 5 – Freezing weather in the surrounding area. A storm is delivering a quarter-inch of rain and 4 to 8 inches of snow in the mountains.[59]
2015	July 21 – Flooding and Heavy Rain in Moreno Valley. downpour dumped 1.5 inches of rain on the northwest portion of the city in 45 minutes.[60]
2016	June 20 – Extreme Heat Conditions in the region. National Weather Service reported the lowest of the highs today will be about 109. Low humidity makes fire danger high.[61]

10.1.2 Extreme Weather Profile – Probability of Future Events

The probably rating for this hazard is a 3, which means that there is a 10% to 100% chance that it will occur within the next year.

[49] http://www.wrh.noaa.gov/sgx/document/weatherhistory.pdf
[50] http://www.wrh.noaa.gov/sgx/document/weatherhistory.pdf
[51] http://www.wrh.noaa.gov/sgx/document/weatherhistory.pdf
[52] http://www.wrh.noaa.gov/sgx/document/weatherhistory.pdf
[53] http://weathercurrents.com/morenovalley/PhotoDisplay.do?Id=9&Story=main/22May2008Hail
[54] http://www.wrh.noaa.gov/sgx/document/weatherhistory.pdf
[55] http://weathercurrents.com/morenovalley/NewsItemDisplay.do?Id=527
[56] http://weathercurrents.com/morenovalley/NewsItemDisplay.do?Id=704
[57] http://www.pe.com/articles/valley-652399-storm-moreno.html Retrieved November 10, 2016
[58] https://www.ncdc.noaa.gov/stormevents/ Retrieved November 10, 2016
[59] http://www.pe.com/articles/cold-682944-plants-snow.html Retrieved November 10, 2016
[60] http://www.pe.com/articles/storm-774196-city-insurance.html Retrieved November 10, 2016
[61] http://www.pe.com/articles/day-806247-heat-power.html Retrieved November 10, 2016

10.2 Extreme Weather Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged.

Extreme weather can cause cascading hazards such as pipeline incidents, transportation incidents, power outages, hazardous materials incidents and civil unrest.

The city will open Warm and Cool centers at the Senior Center and the Library to provide drop-in sites for vulnerable individuals, seniors, the disabled, and others in need of temporary relief from the extreme weather.

To ensure the safety of the population, the city follows guidelines to prepare and respond to the effects of extreme weather that exceed what is considered normal for the geographic locale. Riverside University Health System Public Health issues extreme weather advisories in partnership with National Weather Service (NWS) as outlined below.

Table 10-2: National Weather Service Weather Advisories

Advisory	Description
Heat Advisory Excessive Heat Outlooks	Outlooks are issued when the potential exists for an excessive heat event in the next 3-7 days. An Outlook provides information to those who need considerable lead-time to prepare for the event.
Excessive Heat Watches	Heat watches are issued when conditions are favorable for an excessive heat event in the next 24 to 72 hours. A Watch is used when the risk of a heat wave has increased but its occurrence and timing is still uncertain.
Heat Advisory	A heat advisory is issued within 12 hours of the onset of extremely dangerous heat conditions. The general rule for this Advisory is when the maximum heat index temperature is expected to be 100° or higher for at least 2 days and night time air temperatures will not drop below 75°. Inland Empire: 103° or higher (June-Sept) / 100° or higher (Oct) Mountains: 95° or higher (June-Sept) / 90° or higher (Oct) Low Desert: 112° or higher (June-Sept) / 108° or higher (Oct)

Advisory	Description
Excessive Heat Warning	Excessive heat warning is issued within 12 hours of the onset of extremely dangerous heat conditions. The general rule for this Warning is when the maximum heat index temperature is expected to be 105° or higher for at least 2 days and night time air temperatures will not drop below 75°. Inland Empire: 108° or higher (June-Sept) / 105° or higher (Oct) Mountains: 100° or higher (June-Sept) / 95° or higher (Oct) Low Desert: 115° or higher (June-Sept) / 113° or higher (Oct)
Cold Warning	A Cold Warning is issued when temperatures are expected to fall below 40˚.

Source: Community Action Partnership[62]

Impact to Population and Structures: The impact to the population from lightning strikes, hail or freezing and/or extreme heat could involve injuries and/or deaths. For heat, the city's population is susceptible to heat exhaustion and heat stroke. The elderly, children, people with functional needs and those that have pre-existing medical conditions are especially susceptible to heat injuries during extreme heat. Structures may be vulnerable to damage from varying types of extreme weather. Extreme heat also has potential to impact vegetation.

Impact to Essential Facilities/Historical Sites: Essential facilities and/or historical sites may be susceptible to damage from types of extreme weather. Extreme heat may also impact vegetation.

Impact to Infrastructure: Extreme weather may cause power outages and disruptions to communications and transportation.

Development Trends: Since vulnerability to extreme weather is citywide, future development trends are not expected to impact the vulnerability to extreme weather. New development is shown in Appendix C.

10.2.1 Extreme Weather Vulnerability – Potential Loss

Multiple structures throughout the city have the potential to be impacted by extreme weather. For example, if a lightning event were to damage the Conference and Recreation Center, located on Frederick Street, the potential loss could be from structural and infrastructure damage. The value of the building

[62] http://www.capriverside.org/ Retrieved March 30, 2017

is $12,252,110 (does not include contents). It is estimated that the potential loss could be 1% of the value, which would be $122,521. There are no known repetitive loss properties.

Chapter 11: Severe Wind

Moreno Valley Rating: **Severity = 2**
Probability = 3

11.1 Severe Wind Profile – Overview

Winds around Moreno Valley are generally cyclic, blowing from the southwest and west, especially in the summer and during the day. At night, especially during the winter, a weak off-shore breeze occurs. Occasionally in the fall these cyclical breezes are interrupted by strong, dry, warm desert winds (Santa Anas) from the north/northeast.

Riverside County follows wind warnings based on NWS criteria as shown below.

Table 11-1: National Weather Service Wind Advisories

Advisory	Description
High Wind Watch	A High Wind Watch is issued when the following conditions are possible: 1) sustained winds of 40 mph or higher for one hour or more OR 2) wind gusts of 58 mph or higher for any duration.
High Wind Warning	A High Wind Warning is issued when the following conditions are expected: 1) sustained winds of 40 mph or higher for one hour or more OR 2) wind gusts of 58 mph or higher for any duration.
Wind Advisory	A Wind Advisory is issued when the following conditions are expected: 1) sustained winds of 31 to 39 mph for an hour or more. AND/OR 2) wind gusts of 46 to 57 mph for any duration.
Extreme Wind Warning	An Extreme Wind Warning is issued for surface winds of 100 knots (115 MPH) or greater associated with non-convective, downslope, derecho (NOT associated with a tornado), or sustained hurricane winds are expected to occur within one hour.

Source: National Weather Service[63]

[63] http://www.weather.gov/lwx/WarningsDefined Retrieved on March 30, 2017

11.1.1 Severe Wind Profile – Previous Occurrences

The City of Moreno Valley and surrounding area has a history of chronic windstorms. While extremely rare, the Moreno Valley area is also susceptible to tornadoes. In May of 2008, two tornadoes barreled across I-215 south of March Air Reserve Base, knocking over a tractor trailer and several box cars from a nearby train.[64]

Figure 11-1: May 2008 Two Tornadoes Touch Down Across I-215[65]

[64] http://www.pe.com/articles/zone-788341-elsinore-lake.html Retrieved November 08, 2016
[65] Photo From Anonymous Author

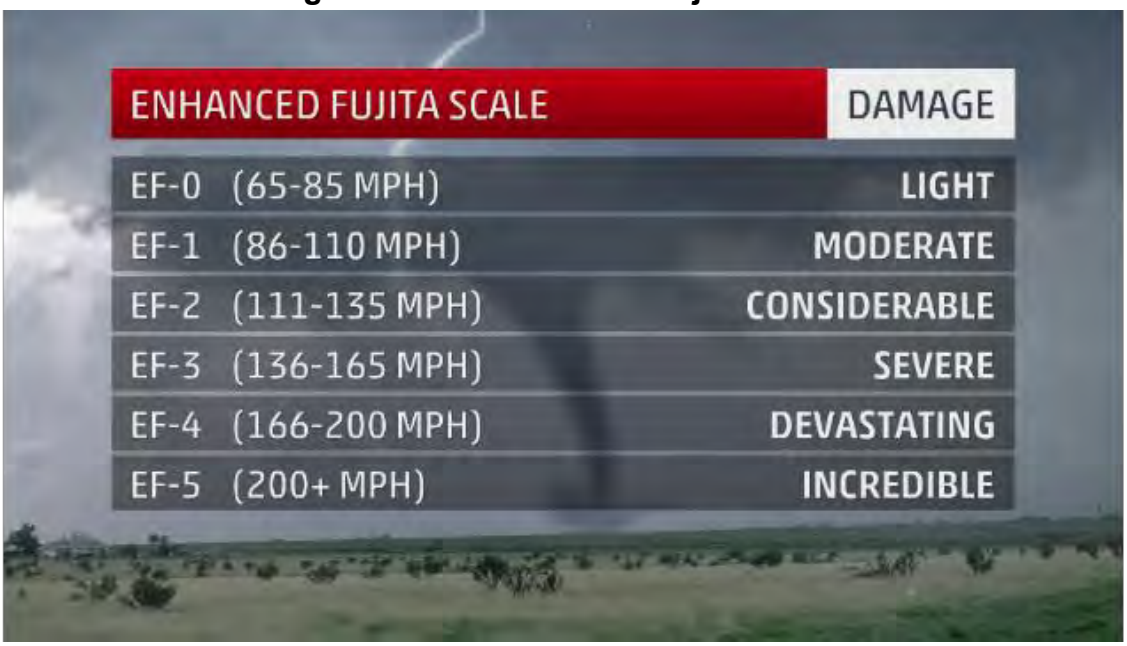
Table 11-2: History of Severe Wind/Tornadoes Near Moreno Valley

Year	Description
1955	Tornado north of Moreno Valley[66]
1982	Tornado in Riverside.
1993	Funnel cloud in Moreno Valley.
1996	Two funnel clouds southwest of Moreno Valley.
1996	Tornado in Cabazon. Threw a 5 ton mobile home 30 feet. Minor damage to six other mobile homes.
1998	Tornado in Homeland, Funnel clouds in in Homeland and Moreno Valley. Damage to mobile homes on Homeland.
2005	A tornado hit Hemet. A funnel cloud was reported in Mira Loma. The tornado picked up a storage shed in Diamond Valley and threw it into a power pole.
2005	A tornado struck Hemet. Trees downed.
2005	60 -70 mph winds hit the Hemet, Canyon Lake and Menifee region.
2006	50 mph+ winds demolished the "M" on Box Springs Mountain, above Moreno Valley
2008	May 22, Four Tornadoes touched down near Moreno Valley, one was rated on the Enhanced Fujita Scale an EF-2 and was on the ground for an exceptional 21 minutes. 9 railroad cars were derailed. A semi-truck was lifted 30 -40 feet in the air, severely injuring the driver. Damage to roofs, trailers and sheds occurred.[67]
2015	Wind speeds of up to 52 mph hit Moreno Valley, causing major limb loss and or uprooting.

The original Fujita scale, which was developed in 1971 and ranges from F0 to F5, is based upon the type and severity of damage a tornado produced. The Enhanced Fujita (EF) Scale was devised by a panel of meteorologists and engineers convened by the Wind Science and Engineering Research Center at Texas Tech University[68].

[66] http://www.wrh.noaa.gov/sgx/document/weatherhistory.pdf Retrieved September 28, 2011
[67] http://abc7.com/archive/6160384/ Retrieved November 10, 2016
[68] https://weather.com/storms/tornado/news/enhanced-fujita-scale-20130206 Retrieved November 7, 2016

Figure 11-1.1: Enhanced Fujita Scale[69]



11.1.2 Severe Wind Profile – Probability of Future Events

The probably rating for this hazard is a 3, which means that there is a 10% to 100% chance that it will occur within the next year.

11.2 Severe Wind Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged. Severe wind could cause cascading hazards such as transportation and hazardous materials incidents, power outages, fires and pipeline incidents.

Impact to Population and Structures: Severe wind and/or tornadoes could cause major injuries. The potential for impaled objects exists as well. Severe wind and/or tornadoes also pose damage to structures and cause an increased chance of fires.

Impact to Essential Facilities/Historical Sites: Severe wind and/or tornadoes could cause damage to essential facilities and/or historical sites and cause an increased chance of fires.

[69] https://weather.com/storms/tornado/news/enhanced-fujita-scale-20130206 Retrieved November 7, 2016

Impact to Infrastructure: Severe wind and/or tornadoes could cause power outages.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure could be impacted by severe winds and/or tornadoes; however, there are no recommendations for changes to development trends. New development is shown in Appendix C.

11.2.1 Severe Wind Vulnerability – Potential Loss

Multiple structures throughout the city have the potential to be impacted by severe wind. For example, if a severe wind event were to occur, causing a power outage near the Moreno Valley Mall area during mall hours, the potential loss could be loss of retail sales and the cost to restore power. Due to limitation of data available, it is not possible to estimate the potential loss. There are no known repetitive loss properties.

Chapter 12: Dam Failure/Inundation

Moreno Valley Rating: **Severity = 2**
Probability = 2

12.1 Dam Failure/Inundation Profile – Overview

Dam inundation is a potential flood hazard in several portions of Moreno Valley from two dams: Pigeon Pass Dam (Poorman's Reservoir) and Perris Dam.

Pigeon Pass Dam: Failure of the Pigeon Pass Dam (Poorman's Reservoir) could result in extensive flooding along the downstream watercourse. The risk of flooding due to dam failure is limited to the period during and immediately after major storms. The reservoir does not retain water throughout the year.

Perris Dam: Failure of the Perris Dam would only affect a very small area south of Nandina Avenue along the Perris Valley Storm Drain and the Mystic Lake area in the southeast corner of Moreno Valley.

In 2005, a study by the state found that the Perris Dam likely would crumble in the range of a 7.5 magnitude earthquake, unleashing billions of gallons of water across western Riverside County. After that, the lake was dropped 25 feet to a safer level and will remain there until repairs can be completed. The seismic repairs began in October 2014 and are expected to continue for three years.[70]

During remediation, the state plans to inject cement and soil into the deepest and most unstable parts of the dam's foundation so it will better withstand shaking from an earthquake. A stability berm would be built on top of the new foundation, allowing the lake to be taken to its previous level. A new outlet tower to funnel lake water into the regional drinking water system also would be built.

A two-mile-long emergency channel would be constructed next to the Ramona Expressway so large water releases during a disaster would be directed away from neighborhoods and into a storm drain.

Dam remediation is currently underway.[71]

[70] http://www.water.ca.gov/lakeperris/ Retrieved October 28, 2016
[71] http://www.water.ca.gov/lakeperris/seismic_remediation_process.cfm Retrieved November 8, 2016

Figure 12-1: Perris Dam Construction Project[72]

A map of Moreno Valley 100-year flood, 500-year flood, and dam inundation is included in Chapter 6 (Figure 6-1). Table 12-1 shows a summary of Pigeon Pass and Perris Dam information.

Table 12-1: Pigeon Pass and Perris Dam Information Summary

Dam	Height	Storage (acre-feet)	Year Built	Drainage Area (square miles)
Pigeon Pass	36	900 (approx. 293,000 gal)	1958	8.71
Perris	130	2,340 (approx. 42,834,000 gal)	1973	10

12.1.1 Dam Failure/Inundation Profile – Previous Occurrences

There are no previous occurrences of dam failure/inundation.

[72] http://www.water.ca.gov/lakeperris/ Retrieved November 7, 2016

12.1.2 Dam Failure/Inundation Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

12.2 Dam Failure/Inundation Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged. For information about flooding, see Chapter 6. Dam failure/inundation could cause cascading hazards such flooding, pipeline hazards, transportation, power outages and hazardous materials incidents.

Impact to Population and Structures: The population in the dam inundation areas could be requested to evacuate. Seniors and individuals with access and functional needs may need special assistance to evacuate. An evacuation map (Figure 12-2) shows the nearby population to the inundation area. There could be damage to structures in the inundation areas affected by flood waters.

Impact to Essential Facilities/Historical Sites: Failure of the Perris Dam would only affect a very small area south of Nandina Avenue along the Perris Valley Storm Drain and the Mystic Lake area in the Southeast corner of Moreno Valley. While two schools, Rancho Verde High School and El Potrero Elementary School, are not located in the inundation area, they may be impacted by an evacuation. The schools near (not in) the inundation area are shown on the evacuation map (Figure 12-2). No historical sites are within the dam inundation area.

Impact to Infrastructure: An evacuation could impact transportation routes.

Development Trends: Future development will result in an increased demand for flood control and drainage services. Moreno Valley participates in the NFIP as well as the voluntary CRS, which is administered by FEMA. The NFIP program provides federal flood insurance and federally financed loans for property owners in flood prone areas. For more information about the city's participation in NFIP and CRS, see Chapter 20.4: National Flood Insurance Program. To qualify for federal flood insurance, the city must identify flood hazard areas and implement a system of protective controls. In addition, all development is required to comply with Riverside County Flood Control and Water Conservation District requirements for construction of master drainage plan facilities. New development is shown in Appendix C.

12.2.1 Dam Failure/Inundation Vulnerability – Potential Loss

If a dam failure occurred at Perris Dam, the potential loss would be limited to a very small area south of Nandina Avenue along the Perris Valley Storm Drain in the southeast corner of Moreno Valley. See Chapter 6 for losses related to flooding. There are no repetitive loss properties.

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Chapter 13: Pipeline

Moreno Valley Rating: **Severity = 2**
Probability = 2

13.1 Pipeline Profile – Overview

Natural gas, oil, water and sewer are transported via pipeline, mostly by underground pipes in developed and urban areas.

Water: Most of the city's water is imported via the California Aqueduct from northern and central California. Box Springs Mutual Water Company serves a small portion of the community, while Eastern Municipal Water District (EMWD) has been the primary purveyor of water in Moreno Valley since the early 1950[73].

EMWD completed a major water supply line along Perris Boulevard in 1954 through which water became available in 1955. The existing water companies were responsible for connecting to the main water supply system, including the Edgemont Gardens Mutual Water Company and the Sunnymead Mutual Water Company. An underground segment of the aqueduct runs from the northwest corner of Moreno Valley to Lake Perris. Water from Lake Perris is pumped to the Mills Filtration Plant in the City of Riverside before it is distributed to Moreno Valley customers.

Natural Gas: The Southern California Gas Company maintains a comprehensive system of distribution and service lines throughout the city. In addition to local lines, two major 30-foot wide transmission lines cross Moreno Valley. Line number "2001" is located on Cottonwood Avenue and line number "2000" is located on Brodiaea Avenue. Both lines run east-west through the entire city.

There are also 8-inch and 12-inch major distribution supply lines located on Indian Avenue, running north from Brodiaea Ave through Moreno Valley. All of these are considered "high-pressure" lines, meaning that they contain over 60 pounds per square inch (psi).

There is also an aviation fuel line that runs through Moreno Valley, however, this line no longer provides fuel to March Air Reserve Base.

Located in the city, the Moreno Valley Pressure Limiting Station (PLS) is capable of receiving 800 million standard cubic feet per day (MMscfd) of natural gas at 850 pounds per square inch gage (psig) from the Adelanto Compressor Station. The Moreno Valley PLS will allow gas from the new Adelanto to Moreno

[73] http://www.emwd.org/home/showdocument?id=107 Retrieved November 7, 2016

Pipeline and from the new Moreno to Whitewater Pipeline to flow into any of the existing lines at the Moreno Valley PLS.[74]

Sewer: Eastern Municipal Water District operates over 356 miles of sewer mains (12" and above) and six sewage lift stations to provide wastewater collection services within Moreno Valley. All wastewater is collected and conveyed to the Moreno Valley Regional Water Reclamation Facility located in the southwestern portion of the city and has a capacity to treat 16 million gallons of wastewater per day (mgd) and a capacity to expand to 41 mgd. Sewer services for the southwestern Moreno Valley are provided by the Edgemont Community Services District. The District provides wastewater treatment under contract with the City of Riverside. According to the District, the pipes that transmit sewage to the City of Riverside Water Quality Control Plant are over 50 years old and are in need of repair.

[74] https://www.socalgas.com/regulatory/documents/a-13-12-013/Att%20A%20to%20Buczkowski%20Supp%20Testmy%20032814%20Updated%20Revised_Redacted.pdf Retrieved April 3, 2017

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13.1.1 Pipeline Profile – Previous Occurrences

Moreno Valley and the surrounding area have a history of pipeline ruptures, spillage and vandalism to natural gas and sewer lines. Table 13-1 shows incidents dating from 1991.

Table 13-1 Moreno Valley Area Natural Gas and Sewer Line Incidents

Year	Description
1991	Two inch natural gas pipe ruptured by back hoe. Occurred at 9:45 a.m. in the 12700 block of Pembridge Drive, south of SR-60. No explosion, but gas did ignite when it contacted the backhoe's muffler. Incident was contained within one hour.[75]
2001	Eastern Municipal Water District estimates 46,000 gallons of sewage spilled due to a block sewer line in the area north of John F. Kennedy Drive and east of Moreno Beach Drive in a vacant lot. [76]
2002	Eastern Municipal Water District estimates 2,500 gallons of sewage spilled out of a manhole at the intersection of Indian Avenue and John F. Kennedy Drive.[77]
2005	Vandalism causes $61,696 in damage to Southern California Gas Company gas line.[78]
2007	69 gallons of sewer discharged at 24512 Filaree due to a blocked manhole[79]
2007	420 gallons of sewage discharged at 16674 Century Street[80]
2007	300 gallons of sewage discharged at 21880 Winding Road[81]
2008	450 gallons of sewage discharged at 13874 Rockcrest Drive[82]

[75] Press Enterprise Article *Punctured gas line sparks fire* published on unknown date in 1991
[76] http://www.emwd.org/news/news-archives/news_01/mv-sewer_0710.html Retrieved September 25, 2011
[77] http://www.emwd.org/news/news-archives/news_02/mv-sewer_412.html Retrieved September 25, 2011
[78] http://www.pstrust.org/library/docs/gt1986to2009.xls Retrieved September 25, 2011
[79] https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportSSOServlet?reportId=sso_overview_region&reportAction=generate&region=8&agency=EasternMunicipalWaterDistrict&collSys=Eastern Municipal Water District CS&count=10&curpage=0&pagesize=25&sortop=y Retrieved September 25, 2011
[80] https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportSSOServlet?reportId=sso_overview_region&reportAction=generate&region=8&agency=EasternMunicipalWaterDistrict&collSys=Eastern Municipal Water District CS&count=10&curpage=0&pagesize=25&sortop=y Retrieved September 25, 2011
[81] https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportSSOServlet?reportId=sso_overview_region&reportAction=generate&region=8&agency=EasternMunicipalWaterDistrict&collSys=Eastern Municipal Water District CS&count=10&curpage=0&pagesize=25&sortop=y Retrieved September 25, 2011
[82] https://ciwqs.waterboards.ca.gov/ciwqs/readOnly/PublicReportSSOServlet?reportId=sso_overview_region&reportAction=generate&region=8&agency=EasternMunicipalWaterDistrict&collSys=Eastern Municipal Water District CS&count=10&curpage=0&pagesize=25&sortop=y Retrieved September 25, 2011

Year	Description
2008	1,500 gallons of sewage discharged at 12080 Pigeon Pass[83]
2008	450 gallons of sewage discharged at 13874 Rockcrest Drive[84]
2009	2,590 gallons of sewage released at Ironwood and Talbor[85]
2009	270 gallons of sewage released at Pan Am and Eucalyptus[86]
2009	7,000 gallons of sewage released at 23650 Hemlock[87]
2009	Two inch underground gas line broke on Daimler Street between Margarita Street and Bay Avenue at 2 p.m. Two homes were evacuated. Repairs took three hours.[88]
2011	A four to five inch natural gas main was ruptured on Cactus Avenue east of Moreno Beach Drive at a construction site.[89]
2011	1,140 gallons of sewage discharged at 12640 Memorial Way[90]
2011	6,500 gallons of sewage discharged at 12926 Indian Street[91]
2011	4-inch gas main was struck by a back hoe at Cactus Avenue and Wilmot. [92]
2016	Contractor breached 4-inch natural-gas line at Karma Automotive in the 17000 block of Perris Blvd.[93]

83 http://www.CalOES.ca.gov/HazardousMaterials/Documents/HazMat%20Spill%20Reports%20200 8.xls Retrieved September 26, 2011

84 http://www.CalOES.ca.gov/HazardousMaterials/Documents/HazMat%20Spill%20Reports%20200 8.xls Retrieved September 26, 2011

85 http://www.CalOES.ca.gov/HazardousMaterials/Documents/Hazmat%20Spill%20Reports%20200 9.xls Retrieved September 26, 2011

86 http://www.CalOES.ca.gov/HazardousMaterials/Documents/Hazmat%20Spill%20Reports%20200 9.xls Retrieved September 26, 2011

87 http://www.CalOES.ca.gov/HazardousMaterials/Documents/Hazmat%20Spill%20Reports%20200 9.xls Retrieved September 26, 2011

88 Press Enterprise *Gas line breaks, two homes evacuated*, June 18, 2009

89 http://www.swrnn.com/2011/05/23/moreno-valley-natural-gas-line-ruptures-at-construction-site/ Retrieved September 25, 2011

90 http://www.CalOES.ca.gov/HazardousMaterials/Documents/HazMat%20Spill%20Reports%20201 1.xls Retrieved September 25, 2011

91 http://www.CalOES.ca.gov/HazardousMaterials/Documents/Hazmat%20Spill%20Reports%20200 9.xls Retrieved September 26, 2011

92 http://www.CalOES.ca.gov/HazardousMaterials/Documents/HazMat%20Spill%20Reports%20201 1.xls Retrieved September 25, 2011

93 http://www.pe.com/articles/dug-808104-perris-evacuated.html Retrieved November 7, 2016

13.1.2 Pipeline Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

13.2 Pipeline Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged. Pipeline incidents could cause cascading hazards such as flooding, transportation and hazardous materials incidents, civil unrest and pandemic flu or disease.

Impact to Population and Structures: Pipeline incidents could impact the population by causing injuries, illness or death. People affected may have to be evacuated or asked to shelter in place. Seniors and individuals with access and functional needs may need special assistance to evacuate. People could be asked to drink bottled water or to boil their water before drinking, if sewage were to contaminate the water. Damage to structures and/or property may occur.

Impact to Essential Facilities/Historical Sites: Essential facilities and/or historical sites could be affected by pipeline incidents. Pipeline incidents could hinder emergency operations due to lack of water or evacuation of essential facilities.

Impact to Infrastructure: A pipeline incident would have a large effect on infrastructure. For instance, a sewer line rupture could contaminate water; a water line rupture could limit emergency responder's ability to fight fires; and a natural gas rupture could cause fires, evacuations and more.

Development Trends: An increase in development is expected to result in incremental increased demand for infrastructure. Future planned development is expected to be constructed utilizing Uniform Building Codes and design standards. New development is shown in Appendix C.

13.2.1 Pipeline Vulnerability – Potential Loss

Multiple structures throughout the city have the potential to be impacted by pipeline vulnerabilities. For example, if a gas line explosion were to occur at City Hall, the damage to the building and infrastructure could be significant and is estimated at $20 million. Additionally, a mainline event could disrupt gas delivery to and from the Adelanto area. There are no known repetitive loss properties.

Chapter 14: Transportation

Moreno Valley Rating: **Severity = 2**
Probability = 2

14.1 Transportation Profile – Overview

The City of Moreno Valley has an extensive transportation network that includes state highways, arterials and local streets, public transit, and nearby rail. For purposes of this plan, transportation emergencies involve highways, arterials and surface streets, as well as, rail and air.

Highways and Arterials - SR-60 is a major regional east-west highway linking Moreno Valley to both neighboring and outlying communities. Additional regional east-west travel is provided by Box Springs Road/Ironwood Avenue, Sunnymead Boulevard and Alessandro Boulevard, all of which are maintained by the city. Sunnymead Boulevard serves as the traditional commercial corridor of Moreno Valley. Alessandro Boulevard serves as a major commercial and industrial corridor at its westerly end. Other major east-west routes within the city include: Eucalyptus Avenue; Cottonwood Avenue; and Cactus Avenue.

I-215 is immediately to the west of the city and is the primary regional route for north-south travel linking Moreno Valley to both neighboring and outlying communities. Additional regional north-south routes include Perris Boulevard, Heacock Street, Redlands Boulevard, and Gilman Springs Road. Other north-south access is provided by Moreno Beach Drive and Pigeon Pass Road/Frederick Street.

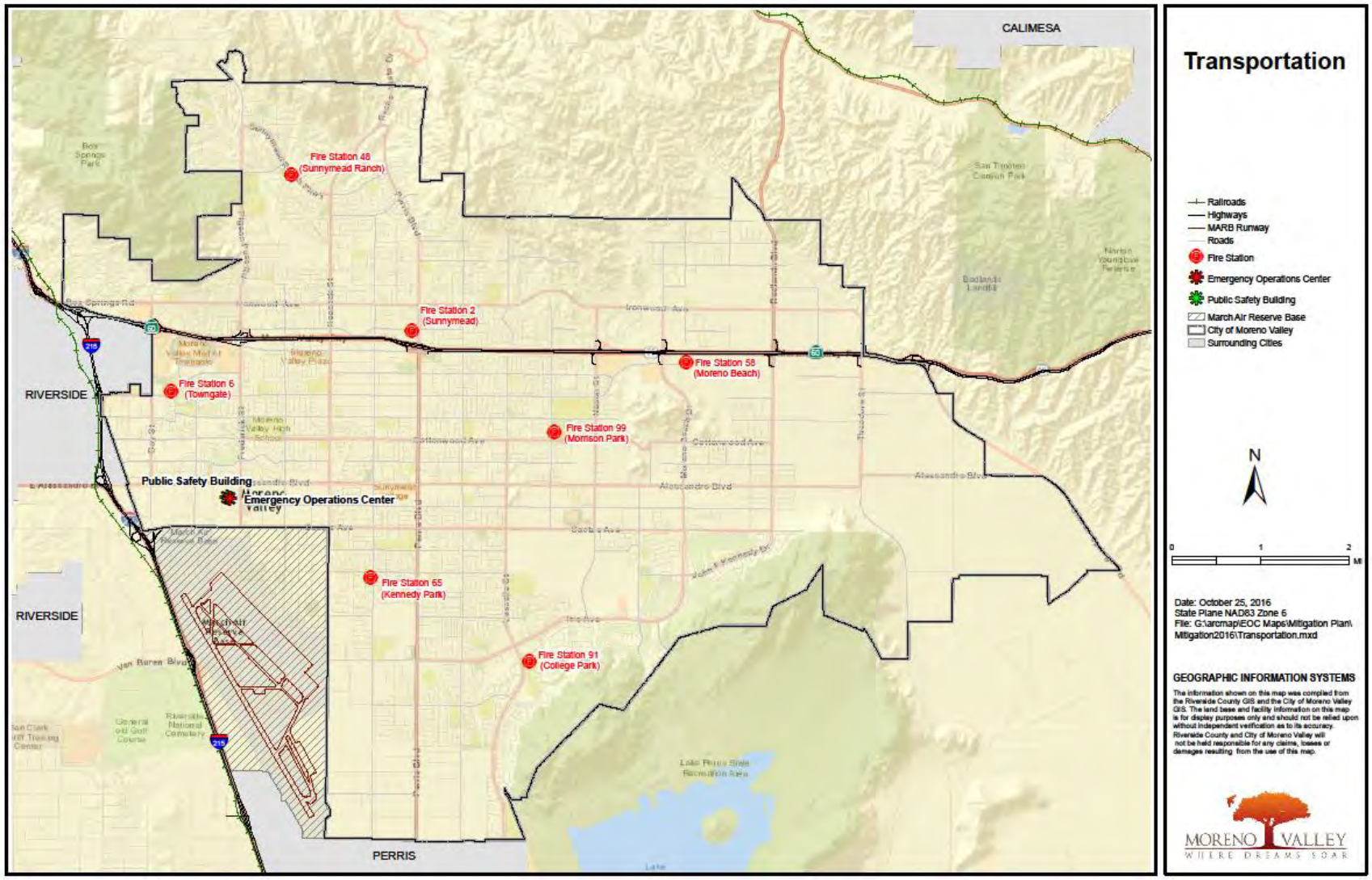
Rail - The nearest railway is the Burlington Northern Santa Fe railway which runs parallel to I-215. A major train derailment could impact the City of Moreno Valley if the crash involved a hazardous materials spill.

Air - There is an airfield located southwest of the city limits. The airfield is operated by two entities: March Air Reserve Base and the March Inland Port Airport Authority. The land at each end of the runway is subject to significant danger of aircraft accidents during takeoff and landing, or by collision. The land below the landing approach is designated as the clear zone and is located at the northeast corner of Heacock Street and Oleander Avenue in the city.

Air crash zones are mapped into various categories: areas on or adjacent to the runway; areas within the areas within the clear zone; Accident Potential Zone (APZ) I; and Accident Potential Zone (APZ) II. The risk is greatest immediately under the takeoff and landing zone located at either end of the runway(s). The accident potential within the clear zone, which extends 3,000 feet from each end of the runway, is considered to be of such high risk that few uses are acceptable. A small area at the extreme southwest corner of the city is within the clear zone.

Figure 14-1 is a map of various Moreno Valley transportation components.

Figure 14-1: City of Moreno Valley Transportation Map



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14.1.1 Transportation Profile – Previous Occurrences

Table 14-1 shows a history of transportation incidents in Moreno Valley and the surrounding area.

Table 14-1: Moreno Valley Transportation History of Incidents

Year	Description
1998	Union Pacific train derailment occurred with 4,000 gallons of hazardous fuel near Moreno Valley in San Timoteo Canyon. Damage costs were estimated at $1.3 million.[94]
1998	UP 967, SP 8617, SP 8651, and SP 9206 were involved in a train wreck at Redlands, Calif., on 8 July 1998. Redlands, Calif., is located at the west end of Beaumont Hill, east of Colton. The collision occurred after speeds reached 84 mph.[95]
1999	Amateur built airplane crashes in a parking lot one mile from March Air Reserve Base.[96]
2003	18-wheeler tanker drives off the SR-60 overpass at Perris Boulevard.[97] Tanker truck explodes shortly after impact and there was a hazardous material spill.
2003	Train derailment in San Timoteo Canyon scatters 22 rail cars and three locomotives from two trains along the tracks.[98]
2005	Moreno Valley Fire Department fire engine rolls off eastbound Interstate 10 at SR-60 during severe rain storm.[99]
2006	Seven of nine engines derail in San Timoteo Canyon after locomotives reach speeds of 80 mph, causing San Timoteo Canyon to be closed between Alessandro Road and Redlands Boulevard. [100]
2010	Private plane runs out of fuel and crash lands in Moreno Valley at Cactus Avenue and Redlands Boulevard.[101]
2010	Plane crashes near Lake Perris, killing the pilot.[102]
2011	18-wheeler truck turned on its side on eastbound SR-60 at Theodore due to the truck being driven too fast for the conditions. Driver was killed.
2011	An 18-wheeler semi-truck caught fire and exploded on eastbound SR-60 at Frederick Street. The 50-foot trailer had been fully loaded but it was unclear if the materials were flammable. [103]

[94] Press Enterprise, 1998
[95] http://utahrails.net/articles/up-wrecked-units.php Retrieved September 26, 2011
[96] http://aircrashed.com/cause/cLAX00LA052.shtml Retrieved September 26, 2011
[97] Press Enterprise *Rib plunges off overpass* January 8, 2003
[98] http://articles.latimes.com/2003/sep/26/local/me-sbriefs26.2 Retrieved September 26, 2011
[99] Press Enterprise *Firefighter dies in truck accident* August 7, 2005
[100] http://www.pe.com/localnews/inland/stories/PE_News_Local_H_train29.380729f.html Retrieved September 26, 2011
[101] http://myvalleynews.com/local/single-engine-plane-makes-emergency-landing/ Retrieved November 17, 2016
[102] http://www.swrnn.com/2010/12/20/rivco-deputies-searching-for-possible-plane-down-near-moreno-valley-perris/ Retrieved September 26, 2011
[103] http://www.swrnn.com/2011/01/26/highway-60-in-moreno-valley-closed-tuesday-night-by-crash-and-fire/ Retrieved September 26, 2011

Year	Description
2011	18-wheeler semi-truck collides with RV on eastbound SR-60 at Perris Boulevard. 40 gallons of diesel fuel spill. [104]
2015	Construction equipment on a flatbed truck struck the westbound SR-60 overpass at Theodore Street. Pieces of the overpass fell into westbound lanes, striking some vehicles.[105]

14.1.2 Transportation Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

14.2 Transportation Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged

Impact to Population and Structures: Highway, arterial roads and streets as well as air and/or rail incidents could cause severe injuries and/or deaths. They could also cause burns and/or illness due to exposure to fires and/or potential hazardous materials on board. Structures could be damaged or could be used for sheltering.

Impact to Essential Facilities/Historical Sites: Essential facilities could be damaged or impacted by cascading hazards such as power outages, pipeline ruptures or hazardous materials incidents from transportation hazards.

Impact to Infrastructure: Infrastructure could be impacted by cascading hazards such as power outages, pipeline ruptures or hazardous materials incidents from transportation hazards.

Development Trends: Development is expected to increase demand on transportation infrastructure. New residential developments in the eastern portion of the city will require the installation of additional infrastructure such as new roadways, water systems, and sewage disposal to serve these areas. Future development will comply with adopted land use standards, policies, and ordinances and will be compatible with land uses in surrounding areas. For air hazards, only open space uses are appropriate within the clear zone. New development is shown in Appendix C.

[104] http://www.kesq.com/news/27710556/detail.html Retrieved September 26, 2011
[105] http://www.pe.com/articles/bridge-759303-westbound-struck.html Retrieved October 31, 2016

14.2.1 Transportation Vulnerability – Potential Loss

Air: There are 3 historical sites valued at $81,170 and 27 commercial businesses valued at $42,134,023 located within the air crash zone. Data is based on the structure value received from Riverside County Assessor (October 2016). No contents were valued.

Due to the limitation of data related to rail and highway losses within Moreno Valley, it is not possible to analyze the potential loss. There are no known repetitive loss properties.

Chapter 15: Power Outage

Moreno Valley Rating: **Severity = 3**
Probability = 4

15.1 Power Outage Profile – Overview

A power failure can range in magnitude and impact from a relatively modest power outage to a catastrophic regional blackout. Power outages may affect a specific area of the City of Moreno Valley or the entire city.

15.1.1 Power Outage Profile – Previous Occurrences

The City of Moreno Valley has been affected by power outages in the past for various reasons, such as severe winds, storms and damaged power equipment and equipment failures. Table 15-1 shows a history of power outages affecting the City of Moreno Valley.

Table 15-1: History of Power Outages in Moreno Valley

Year	Description
1998	Power outage affects Moreno Valley causing Canyon Springs High School to delay basketball games. [106]
2003	High winds cause power outage in Moreno Valley. [107]
2005	Power outage for the Lasselle circuit occurs due to a storm. 466 Moreno Valley Utility customers are without power for 2 hours, 5 minutes. [108]
2006	1,175 residents are without power for 2 hours when Moreno Valley Utility's Lasselle Circuit goes down. [109]
2006	1,245 residents are without power for 3 ½ hours when Moreno Valley Utility's Cactus circuit goes down. [110]
2006	950 residents are without power for 1 hour 5 minutes when Moreno Valley Utility's Globe circuit goes down. [111]
2006	1,175 residents are without power for 5 hours, 50 minutes when Moreno Valley Utility's Lasselle circuit goes down. [112]
2006	1,245 residents are without power for 3 ½ hours when Moreno Valley Utility's Cactus circuit goes down. [113]

[106] http://www.socalhoops.tierranet.com/archive/prepnotes/Feb98/riv211c.htm Retrieved September 27, 2011
[107] MTV-3 provided photographs of wind event that occurred in 2003 showing downed power lines
[108] Information provided by Moreno Valley Utility on September 27, 2011
[109] Information provided by Moreno Valley Utility on September 27, 2011
[110] Information provided by Moreno Valley Utility on September 27, 2011
[111] Information provided by Moreno Valley Utility on September 27, 2011
[112] Information provided by Moreno Valley Utility on September 27, 2011
[113] Information provided by Moreno Valley Utility on September 27, 2011

Year	Description
2006	Power outage due to a prolonged heat wave affects Moreno Valley.[114]
2007	Planned power outage by Southern California affects 800 residents in the area between Moreno Beach Drive and Redlands Boulevard, and extends from Eucalyptus and Dracaea avenues on the north, to Cottonwood and Bay avenues on the south.[115]
2009	Southern California Edison power outage affects 268,000 residents in Riverside County for 10 minutes, including residents in Moreno Valley.[116]
2010	Southern California Edison power outage affects residents in Riverside County, including Moreno Valley.[117]
2010	3,906 Moreno Valley Utility customers lose power for 58 minutes.[118]
2010	890 Moreno Valley Utility customers lose power for 1 hour 6 minutes.[119]
2010	High winds caused power outages statewide, 4,000 residents affected in Moreno Valley.[120]
2010	200 Moreno Valley Utility customers lose power for 14 hours 37 minutes when a vehicle collides with a capacitor bank.[121]
2011	Massive power outage affecting electric customers in western Arizona, Southern California, and northern Baja, Mexico has an impact on Moreno Valley as residents from those areas travel to cities with power.[122]
2011	Blackout continues to affect 1,808 homes and businesses in Moreno Valley where officials are uncertain of the cause and when repairs will be completed.[123]
2012	Power to more than 2,500 customers was cut after downed power lines draped over roofs, fences and into pools in Moreno Valley.[124]
2013	Equipment failure caused power outage for 1,115 Moreno Valley Utility customers for 73 minutes.[125]

[114] http://www.edison.com/pressroom/pr.asp?bu=sce&year=0&id=6317 Retrieved September 27, 2011
[115] http://www.pe.com/localnews/morenovalley/stories/PE_News_Local_R_rpower19.5eda61.html Retrieved September 27, 2011
[116] http://weathercurrents.com/morenovalley/NewsItemDisplay.do?Id=548 Retrieved September 27, 2011
[117] http://www.nbclosangeles.com/news/local/Large-Power-Outage-in-Riverside-County.html Retrieved September 27, 2011
[118] Information provided by Moreno Valley Utility on September 27, 2011
[119] Information provided by Moreno Valley Utility on September 27, 2011
[120] http://www.fema.gov/emergency/reports/2010/nat012010.shtm September 27, 2011
[121] Information provided by Moreno Valley Utility on September 27, 2011
[122] http://en.wikipedia.org/wiki/2011_Southwestern_United_States_blackout Retrieved September 27, 2011
[123] http://www.pe.com/articles/area-628481-began-lasselle.html Retrieved November 3, 2016
[124] http://www.nbclosangeles.com/news/local/Moreno-Valley-Downed-Power-Lines-146915005.html Retrieved November 3, 2016
[125] Information provided by Moreno Valley Utility on November 3, 2016

Year	Description
2014	5,597 Moreno Valley Utility customers without power for 3 minutes.[126]
2015	All-day blackout affected 369 Moreno Valley homes, businesses[127]
2016	Moreno Valley blackout affected 10,000 homes[128]

15.1.2 Power Outage Profile – Probability of Future Events

The probably rating for this hazard is a 4, which means that it is highly likely and there is a near 100% chance that it will occur within the next year.

15.2 Power Outage Vulnerability – Overview/Impact

The severity rating for this hazard is a 3, which means that there is a potential for critical damage, causing injuries and/or illnesses resulting in permanent disability, complete shutdown of critical facilities for two weeks and/or 25% to 49% of property is severely damaged. Power outages could cause cascading hazards such as transportation incidents, civil unrest and disease.

Loss of electric power could have a major impact on the City of Moreno Valley and its citizens.

Impact to Population and Structures: The impact to the population from loss of power may include disruption of power to critical medical devices. Medical conditions could be affected by an increase of temperatures due to loss of the use of air conditioners or fans. Loss of lighting and the inability to keep perishables refrigerated would also impact the population. Structures would be impacted due to loss of power to elevators, lighting, air conditioning, communications and other systems that may not operate without a generator or alternate power sources.

Impact to Essential Facilities/Historical Sites: Essential facilities would be impacted due to loss of power to elevators, lighting, air conditioning, communications and other systems that may not operate without a generator or alternate power sources. A power outage could impact emergency operations. Historical sites within Moreno Valley would be impacted the same as structures listed above.

[126] Information provided by Moreno Valley Utility on November 3, 2016
[127] http://www.pe.com/articles/homes-769043-blackout-moreno.html Retrieved November 3, 2016
[128] http://www.pe.com/articles/website-818261-nov-california.html Retrieved November 15, 2016

Impact to Infrastructure: Loss of power would severely impact infrastructure. It would affect traffic signals, which would increase in the probabilities of traffic collisions, and various types of communication infrastructure which could fail after prolonged power outage.

Development Trends: New development will result in an additional demand for electricity; however, General Plan objectives and associated policies encourage the efficient use of energy, including passive cooling with landscaping and the use of solar power. New development is shown in Appendix C.

15.2.1 Power Outage Vulnerability – Potential Loss

If a power outage were to occur citywide for eight hours, the potential would be limited to loss of perishables, cost of fuel to run generators, potential for damage to vehicles from traffic accidents and loss of income to commercial businesses. Potential losses from days-long or longer outages could escalate exponentially in terms of financial and human costs as powered medical infrastructure fails. There are no repetitive loss properties.

Chapter 16: Hazardous Materials Accident

Moreno Valley Rating: **Severity = 3**
Probability = 3

16.1 Hazardous Materials Profile – Overview

Hazardous materials are any substance or combination of substances that may pose a risk to human health and safety or to the environment. Hazardous materials include toxic, corrosive, infectious, flammable, explosive and radioactive materials. Businesses, public or private institutions and private households all use or generate hazardous materials to some extent. Some of the larger businesses use certain classes of hazardous materials that require accidental release scenario modeling in order to plan, prepare and respond to the worst case scenario.

Hazardous materials are routinely manufactured, used, stored or transported in nearly every community and could therefore occur throughout the City of Moreno Valley. The probability of hazardous materials spills is accentuated with the city being bordered by two major transportation corridors and that the region is susceptible to earthquakes. Loss of human and wildlife, as well as, significant effects on the environment and substantial cleanup costs could have a large impact on the city.

A hazardous chemical release in the City of Moreno Valley would most likely occur either by transportation of chemicals, the use of chemicals at a business, or illegal dumping of chemical waste.

City of Moreno Valley Records indicate there is currently one business located in the city which exceeds the Federal and California threshold for storing chemicals and is required to file both Federal and California response plans. According to the County of Riverside Department of Environmental Health, the City of Moreno Valley has 38 sites permitted as underground or above ground storage tank facilities; 208 sites permitted as hazardous waste generator facilities; and 314 sites permitted as hazardous chemical disclosure facilities[129]. Figure 16-1 shows locations of hazardous material sites throughout Moreno Valley.

[129] Data provided electronically November 2, 2016 by County of Riverside Department of Environmental Health at city's Request

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16.1.1 Hazardous Materials Profile – Previous Occurrences

The following table describes hazardous materials incidents that have impacted Moreno Valley and surrounding area.

Table 16-1: Moreno Valley Hazardous Materials Incident History

Year	Description
2003	18-wheeler tanker drives off the SR-60 overpass for Perris Boulevard. Tanker truck explodes shortly after impact. [130].
2008	Unknown amount of digester gas released at 17140 Kitching Street by Eastern Municipal Water District[131]
2008	30,000 cubic feet of methane gas released due to power outage at 17140 Kitching Street[132]
2008	70 gallons mineral oil at 21272 O'Casey Ct. due to an equipment failure of a pad mount transformer.[133]
2008	70 gallons mineral oil at 25944 Andre Ct due to an equipment failure of a pad mount transformer. [134]
2009	Westbound SR-60 just east of mile marker 24 in Moreno Valley is an 80 gallon diesel fuel spill.[135]
2010	46,885 cubic feet of digester gas was released at the EMWD facility located at 17140 Kitching Street. Attributed to a power loss to the pressure gauge that controls flare offs.[136]
2011	An 18-wheeler semi-truck caught fire on eastbound SR-60 at Frederick Street. The fuel tank ruptured which caused the fire as well as a freeway closure for several hours. [137]
2011	Westbound SR-60 is closed from Beaumont to Moreno Valley due to a 100 gallon fuel spill.[138]

[130] Press Enterprise *Rig plunges off overpass* January 18, 2003
[131] http://www.CalOES.ca.gov/HazardousMaterials/Documents/HazMat%20Spill%20Reports%202008.xls Retrieved September 26, 2011
[132] http://www.CalOES.ca.gov/HazardousMaterials/Documents/HazMat%20Spill%20Reports%202008.xls Retrieved September 26, 2011
[133] http://www.CalOES.ca.gov/HazardousMaterials/Documents/HazMat%20Spill%20Reports%202008.xls Retrieved September 26, 2011
[134] http://www.CalOES.ca.gov/HazardousMaterials/Documents/HazMat%20Spill%20Reports%202008.xls Retrieved September 26, 2011
[135] http://www.CalOES.ca.gov/HazardousMaterials/Documents/Hazmat%20Spill%20Reports%202009.xls Retrieved September 26, 2011
[136] http://www.CalOES.ca.gov/HazardousMaterials/Documents/Hazmat%20Spill%20Reports%202010.xls Retrieved September 26, 2011
[137] http://www.swrnn.com/2011/01/26/highway-60-in-moreno-valley-closed-tuesday-night-by-crash-and-fire/ Retrieved September 26, 2011
[138] http://www.kpsplocal2.com/news/local/story/100-Gallon-Fuel-Spill-Prompts-Badlands-Freeway/X7WvEkjOW0-5ghMaXD5h7g.cspx?rss=2276 Retrieved September 25, 2011

Year	Description
2011	68 gallons of Mineral Oil spilled by Southern California Edison at 23343 Hemlock[139]
2011	500 gallons of Ferric Chloride spilled at 17140 Kitching Street by EMWD. Spill was contained by their containment area. [140]
2014	An unknown chemical leak – in gas form – sent a firefighter and three police officers to hospital and closed down a high school in Riverside.[141]

16.1.2 Hazardous Materials Profile – Probability of Future Events

The probably rating for this hazard is a 3, which means that there is a 10% to 100% chance that it will occur within the next year. From hazardous materials disclosures of existing businesses on file, County of Riverside Department of Environmental Health has identified 560 businesses with varying quantities, forms, and types of hazardous materials on site both interior and exterior.

16.2 Hazardous Materials Vulnerability – Overview/Impact

The severity rating for this hazard is a 3, which means that there is a potential for critical damage, causing injuries and/or illnesses resulting in permanent disability, complete shutdown of critical facilities for two weeks and/or 25% to 49% of property is severely damaged.

Impact to Population and Structures: Severe or prolonged exposure to hazardous materials is expected to cause injuries and/or deaths. In addition, people may be evacuated or asked to shelter in place during a hazardous materials incident. Seniors and individuals with access and functional needs may need special assistance to evacuate. People may also be required to be decontaminated to remove the hazard from their structures, property and clothing. There may be economic impacts as well due to cleanup and removal of hazardous materials.

Impact to Essential Facilities/Historical Sites: Exposure to hazardous materials could impact essential facilities and historical sites. Essential facilities may be closed for decontamination, thus causing an interruption to services.

Impact to Infrastructure: Runoff from hazardous materials has a potential to affect the waterways and drainage systems, as toxic substances may leach into local groundwater supplies. Also, transportation systems could be impacted due to decontamination and increased congestion from evacuation efforts.

[139] http://www.CalOES.ca.gov/HazardousMaterials/Documents/HazMat%20Spill%20Reports%202011.xls Retrieved September 26, 2011
[140] http://www.CalOES.ca.gov/HazardousMaterials/Documents/HazMat%20Spill%20Reports%202011.xls Retrieved September 26, 2011
[141] http://www.nbclosangeles.com/news/local/Unknown-Gas-Leak-Prompts-Evacuations-in-Areas-of-Riverside-280540172.html Retrieved November 8, 2016

Development Trends: Future development of buildings, residential structures, critical facilities and infrastructure are expected to be constructed according to the most recent Uniform Building Codes and design standards and are expected to carefully consider for adding to vulnerability from hazardous materials. New development is shown in Appendix C.

16.2.1 Hazardous Materials Vulnerability – Potential Loss

Analysis of the one business located in Moreno Valley that exceeds the Federal and California threshold for storing chemicals shows that a worst case scenario could have a significant environmental and financial impact to the City of Moreno Valley. Due to the limitation of data available and the range of potential impacts, it is not possible to calculate the potential loss. There are no known repetitive loss properties.

Chapter 17: Terrorist Attack

Moreno Valley Rating: **Severity = 4**
Probability = 2

17.1 Terrorist Attack Profile – Overview

Terrorism, as defined by the FBI, is "the unlawful use of force against persons or property to intimidate or coerce a government, the civilian population or any segment thereof, in the furtherance of political or social objectives."[142] The act of terrorism could involve chemicals, biological, radiological, or nuclear agents, explosives, or cyber-terrorism.

A specific location for a terrorist attack is not known; however some of the most likely targets could be Moreno Valley locations including: March Air Reserve Base (MARB); Riverside University Health System (RUHS); Kaiser Hospital; and the San Diego Gas & Electric (SDG&E) Moreno natural gas compressor station. These are some considered high-profile targets, but acts of terrorism could occur anywhere within the City of Moreno Valley and has the potential to impact a portion or all of the City of Moreno Valley.

17.1.1 Terrorist Attack Profile – Previous Occurrences

Terrorism attacks can take many forms, from incendiary devices to biological weapons to weapons of mass destruction. On September 11, 2001, the United States of America was attacked by terrorists when four airplanes were hijacked by members of Al-Qaeda. Two of these planes were crashed into the World Trade Center, one into the Pentagon, and the fourth never reached its destination as the passengers retook control of the airplane and crashed it into a field in Pennsylvania. These major terrorist attacks were followed one week later by the mailing of anthrax to two United States Senators and several news media offices, killing five people and infecting 17 others.[143]

Shortly after the 2011 attacks, the City of Moreno Valley experienced four incidents of potential terror attacks in the form of unmarked white powder being left at area school campuses. These fours incidents occurred in October 2001, and all four incidents involved white powder being left on campus. After testing, all white-powders were later determined to be non-hazardous.

Although not occurring in the City of Moreno Valley, the 2015 terrorist attack at the Inland Regional Center (IRC) did occur in the adjacent city of San Bernardino, which is approximately a 10 mile drive from the City of Moreno Valley. The IRC is a regional medical center whose primary mission is to assist people with developmental disabilities.

[142] http://www.nij.gov/topics/crime/terrorism/pages/welcome.aspx Retrieved November 3, 2016
[143] http://en.wikipedia.org/wiki/2001_anthrax_attacks

On December 2, 2015, a mass shooting and attempted bombing incident occurred at the IRC located in the City of San Bernardino. In this attack, two suspects shot the victim-employees during a training meeting at the IRC. As a result of the incident, 14 victims were killed, and another 22 were wounded. A brief encounter with police also resulted in the deaths of the two suspects. Preliminary reports about the incident indicate that the suspects may have been on an Islamic jihadist mission against America.

Table 17-1: History of Moreno Valley Terrorist Attack Incidents of Concern

Year	Description
2001	White powdery substance is found at Canyon Springs High School and was treated as an anthrax incident.[144]
2001	White powdery substance is discovered at Sunnymead Middle School. Substance was treated as if it was anthrax.[145]
2001	White powdery substance located next to a cargo container on Moreno Valley Unified School District property. Incident was initially responded to as an anthrax incident until it was determined that the white powder was chalk for marking athletic fields.[146]
2001	White powdery substance found at Bayside Elementary School and treated as an anthrax incident.[147]
2004	On the five year anniversary of the Columbine High School attacks, a backpack with a bomb threat note is located at Canyon Springs High School. Riverside Sheriff's Department Hazardous Device Team detonates the backpack. Upon investigation, no parts to a bomb device were located after the backpack was detonated. On the same day, another bomb threat was received for March Mountain High School but no device was located. [148]
2004	The city receives a phone call stating that there is a bomb located inside City Hall. The building is evacuated while the Riverside Sheriff's Department conducts a search of the facility for any potential hazardous device. No device is located.[149]
2010	A bomb threat note was found at Canyon Springs High School causing the campus to be evacuated while the Riverside Sheriff's Department searched for the device. No bomb was located.[150]

[144] Notes from meeting with Moreno Valley Unified School District
[145] http://en.wikipedia.org/wiki/2001_anthrax_attacks
[146] http://en.wikipedia.org/wiki/2001_anthrax_attacks
[147] http://en.wikipedia.org/wiki/2001_anthrax_attacks
[148] http://www.pe.com/localnews/morenovalley/stories/PE_News_Local_bomb21.f0b0.html Retrieved September 27, 2011
[149] Meeting notes on debriefing for the evacuation of City Hall due to a bomb threat
[150] http://www.instantriverside.com/2010/04/canyon-springs-high-school-bomb-threat/ Retrieved September 27, 2011

Table 17-1: History of Moreno Valley Terrorist Attach Incidents of Concern (cont'd)

Year	Description
2015	A mass shooting incident occurred in the neighboring City of San Bernardino. Two suspects shot and wounded 22 people, and killed another 14, before being killed during the incident. Preliminary reports after the incident indicate the suspects may have been committing Islamic Jihad against America.
2016	A cardboard box filled with assorted harmless items prompted a bomb scare that closed off a major intersection. It was determined there was nothing dangerous inside the box and the area was reopened to traffic.[151]

17.1.2 Terrorist Attack Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

17.2 Terrorist Attack Vulnerability – Overview/Impact

The severity rating for this hazard is a 4, which means that there is a potential for catastrophic damage, causing multiple deaths, complete shutdown of critical facilities for 30 days or more and more than 50% of property has a potential to be damaged.

Impact to Population and Structures: A terrorist attack is expected to cause multiple deaths and injuries and extensive damage to structures. The amount of expected injuries and deaths is dependent on the type of terrorist event.

Impact to Essential Facilities/Historical Sites: Government buildings, schools, hospitals, critical infrastructure, special events and historical sites are especially vulnerable to terrorist attacks. The impact could be devastating, and could severely interrupt emergency response efforts, as well as, government services.

Impact to Infrastructure: Depending on the type of attack, it is expected that a terrorist attack would have a severe impact on infrastructure. Depending on the type of incident, this could involve loss of electricity, water, sewer and communications.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure could be impacted by a terrorist attack, depending on the location of the incident. The environmental impact of biological, chemical and/or radiological contamination may need to be considered prior to the determination of the location of future development. New development is shown in Appendix C.

[151] http://www.pe.com/articles/bomb-805907-box-moreno.html Retrieved November 3, 2016

17.2.1 Terrorist Attack Vulnerability – Potential Loss

If a terrorist attack were to occur at City Hall, the structural and infrastructure damage could be approximately $25 million. There are no repetitive loss properties.

Chapter 18: Civil Unrest

Moreno Valley Rating: **Severity = 2**
Probability = 2

18.1 Civil Unrest Profile – Overview

Civil unrest typically begins as non-violent gatherings and progresses to violence. These types of incidents have a potential to escalate into destruction of property, purposefully-set fires, and injury to others. Often times, injuries are restricted to police and individuals observed to be breaking the law. Out of control crowds have been known to throw bottles, rocks, and other projectiles. Civil unrest incidents could happen in any location, but they typically occur near government buildings.

18.1.1 Civil Unrest Profile – Previous Occurrences

The City of Moreno Valley does not have a history of violent civil unrest. Fortunately, the civil demonstrations included were non-violent in nature.

Table 18-1: History of Moreno Valley Civil Demonstrations

Year	Description
2001	Protestors marched in front of the Moreno Valley police station regarding the shooting of an African American male by a Riverside County Sheriff Deputy.[152] This was a non-violent protest.
2006	1,000 demonstrators gathered at Moreno Valley Community Park to demonstrate against the passage of House of Representatives Bill 4377 (H.R. 4377), a Federal law aimed at illegal immigration. Protestors then marched to City Hall and conducted a non-violent protest regarding the passage of this Federal legislation.[153]
2013	Hundreds of protestors gathered at Moreno Valley City Hall to demonstrate against city council member recalls and major warehousing projects. Protestors were peaceful and conducted a non-violent protest.
2016	200 protestors gathered at Sunnymead Park to demonstrate against the shooting of African Americans throughout the nation. Protestors then peacefully marched to the Moreno Valley Mall and conducted a non-violent protest.

[152] http://la.indymedia.org/news/2001/03/5706_comment.php?theme=2 Retrieved September 26, 2011
[153] http://www.pe.com/localnews/morenovalley/stories/PE_News_Local_M_mprotest02.7f76ec.html Retrieved September 26, 2011

18.1.2 Civil Unrest Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

18.2 Civil Unrest Vulnerability – Overview/Impact

The severity rating for this hazard is a 2, which means that there is a potential for limited damage, causing injuries and/or illnesses, complete shutdown of critical facilities for more than one week and/or 10% of property is severely damaged.

Impact to Population and Structures: Injuries could occur to protestors or demonstrators and are often a result of resisting arrest and exposure to tear gas or mace, but could also be due to protestors throwing bottles or other projectiles. Impacts to buildings and structures could involve physical damage including: smashed windows; building destruction; and fire damage.

Impact to Essential Facilities/Historical Sites: Protestors could damage facilities and/or historical sites during civil unrest. Impact to essential facilities and/or historical sites could involve smashed windows, building destruction and fire damage.

Impact to Infrastructure: Protestors could damage facilities and/or historical sites during civil unrest. The impact could involve loss of electricity, water, sewer and communications.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure would not be impacted by civil unrest. New development is shown in Appendix C.

18.2.1 Civil Unrest Vulnerability – Potential Loss

If civil unrest were to occur at the Public Safety Building involving, perhaps, fire, the potential loss could be $13.5 million. There are no repetitive loss properties.

Chapter 19: Pandemic Flu/Disease

Moreno Valley Rating: **Severity = 3**
Probability = 2

19.1 Pandemic Flu/Disease Profile – Overview

A pandemic is an epidemic of world-wide proportions. Throughout history there have been a number of pandemics such as small pox, tuberculosis, measles and polio. In recent years, pandemics include HIV/AIDS, Influenza, and Pertussis (whooping cough).

Significant public health emergencies have been affecting populations for centuries. Some of the notable pandemics in history are:

14th century, Black Death – The Black Death was a medieval pandemic that killed approximately 25 million people in Europe. This pandemic lingered for centuries.[154]

1918–1919, Spanish Flu – The Spanish Flu caused an estimated 50 million deaths worldwide with nearly 675,000 of those deaths in the United States.[155]

1968, Influenza (H3N2) – An estimated 1 million deaths occurred worldwide with 100,000 in the United States. Most excessive deaths were in people 65 years or older.[156]

2005-2015 (at its peak), HIV/AIDS – HIV/AIDS has killed more than 36 million people since 1981. From 2005-2012, the annual global deaths from HIV/AIDS dropped from 2.2 million to 1.6 million.[157]

19.1.1 Pandemic Flu/Disease Profile – Previous Occurrences

In 2009, Moreno Valley was impacted by the H1N1 influenza epidemic in which California proclaimed a State of Emergency (April 28, 2009). From April 23, 2009 until August 28, 2010, the California Department of Public Health reported 116 severe cases, 108 intensive care unit cases, and 41 deaths in Riverside County[158]. The public health emergency required the activation of the Moreno Valley Emergency Operations Center in order to track the epidemic; provide daily statistics to Riverside County Public Health on the status of our employees; to participate in regular conference calls; and to outreach information about appropriate precautions as well as provide information about vaccination.

[154] http://science.nationalgeographic.com/science/health-and-human-body/human-diseases/plague-article/ Retrieved November 3, 2016
[155] http://www.flu.gov/pandemic/history/ Retrieved November 3, 2016
[156] http://www.cdc.gov/flu/pandemic-resources/basics/past-pandemics.html Retrieved November 7, 2016
[157] http://www.mphonline.org/worst-pandemics-in-history/ Retrieved November 7, 2016
[158] http://www.cdph.ca.gov Retrieved September 25, 2011

According to the County of Riverside Department of Public Health's Influenza Surveillance Weekly Update for week ending November 5, 2016, 2.3% of deaths were due, in part, to pneumonia or influenza. Compared to historical data, this is below normal limits. During the same time, overall influenza activity was "Sporadic" in California.

Pertussis (also known as whooping cough) is a highly contagious bacterial disease. People with pertussis experience severe coughing attacks that can last for months. During 2010, over 9,000 cases of pertussis were reported in California, including 10 infant deaths. Table 19-1 identifies disease outbreaks, including Influenza[159] and Pertussis,[160] in Riverside County.

Table 19-1: Disease Outbreaks in the Moreno Valley Area

Year	Disease	Number of Cases
2009-2010	Influenza (H1N1)	265
2010	Pertussis	461
2010-2011	Influenza	11
2011	Pertussis	176
2011-2012	Influenza	16
2012	Pertussis	31
2012-2013	Influenza	19
2013-2014	Influenza	66
2014-2015	Influenza	15

19.1.2 Pandemic Flu/Disease Profile – Probability of Future Events

The probably rating for this hazard is a 2, which means that there is between a 1% and 10% chance that it will occur within the next year.

19.2 Pandemic Flu/Disease Vulnerability – Overview/Impact

The severity rating for this hazard is a 3, which means that there is a potential for critical damage, causing injuries and/or illnesses resulting in permanent disability, complete shutdown of critical facilities for two weeks and/or 25% to 49% of property is severely damaged.

[159] https://www.cdph.ca.gov/HealthInfo/discond/Documents/CA%20Year%20End%20Flu%20Summary_2014-2015_final.pdf Retrieved November 7, 2016
[160] http://www.rivco-diseasecontrol.org/Services/Pertussis.aspx Retrieved November 7, 2016

Impact to Population and Structures: Due to the geographic extent of a pandemic, the entire population is vulnerable to illness, injuries and casualties. There is no expected damage to structures; however there could be a quarantine which would prevent people from coming or going from a particular structure or area.

Impact to Essential Facilities/Historical Sites: Essential facilities and/or historical sites could be affected if there was a quarantine initiated by Public Health. Essential functions may be limited if a large percentage of the workforce was unable to report to work.

Impact to Infrastructure: Travel could be restricted during a pandemic, quarantine, and/or disease outbreak.

Development Trends: Future development of buildings, structures, critical facilities and infrastructure could be impacted if there were disease outbreaks requiring special treatment of development areas prior to building. New development is shown in Appendix C.

19.2.1 Pandemic Flu/Disease Vulnerability – Potential Loss

If a pandemic flu or disease outbreak were to occur, it would be citywide. While it would not likely involve a loss to structures, there could be a significant loss of income and services if the workforce were unable to report to work. Transportation losses could occur if travel is limited. There are no repetitive loss properties.

PART 3

MITIGATION STRATEGY

Chapter 20: Mitigation Strategy

20.1 Introduction

Chapter 20 provides information about the City of Moreno Valley's mitigation strategies, which is the blueprint for reducing losses from the identified hazards that may affect the city. This chapter will provide an assessment of Moreno Valley's capabilities; identification of hazard mitigation strategies and status; analysis of mitigation actions; and National Flood Insurance Program compliance information. The city's identified hazards, and their respective mitigation strategies, were developed using a Threat and Hazard Identification and Risk Assessment (THIRA) approach which includes probabilities, priorities and potential severities.

20.2 Capability Assessment

The City of Moreno Valley's capabilities for implementing mitigation strategies to reduce hazards that may affect the city include legal and regulatory capabilities, administrative and technical capabilities, fiscal capabilities and outreach and other capabilities.

Legal and Regulatory Capabilities: Moreno Valley formally adopts, regularly reviews and updates regulatory policies such a general plan, along with implementing regulations such as zoning ordinances, subdivision ordinances, and specific plans. Table 20-1 is an example of regulatory capabilities that assist the City of Moreno Valley in its mitigation strategies.

Table 20-1: Example of Regulatory Capabilities

Regulatory Tool	Comments
General plan	Comprehensive General Plan for the City of Moreno Valley, 2006 Utilized safety elements to incorporate and develop mitigation strategies.
Master Drainage Plan	Planning guide for the location and sizing of local drainage facilities to be constructed by developers and others within the area, updated and adopted October 13, 2015. Utilized for public outreach and educational awareness.
Zoning ordinance	Municipal Code Chapter 9.02-14 Planning and Zoning. Utilized for development trends.
Subdivision ordinance	Municipal Code Chapter 9.14 Land Divisions. Utilized for development trends.
Site plan review requirements Growth management ordinance	Municipal Code Chapter 9.02.030. Utilized for development trends.

Regulatory Tool	Comments
Floodplain ordinance	Municipal Code Chapter 8.12 includes flood damage prevention and implementation of national flood insurance program (NFIP). Utilized for public outreach and educational awareness.
Water conservation ordinance	Municipal Code Chapter 9.17 addresses water conservation. Utilized for public outreach and educational awareness.
Stormwater ordinance	Municipal Code Chapter 8.10.010-200 Storm water/urban runoff management and discharge controls. Utilized for public outreach and educational awareness.
Wildfire ordinance	Municipal Code Chapter 6.04.010-130 Abatement of Public Nuisances. Utilized for public outreach and educational awareness.
Building Standards Code	Utilize Approved California Building Codes; Latest adoption expected late 2016 with effective date of January 1, 2017.
Fire and Safety Standards	Utilize Approved 2016 Fire and Safety Standards; Latest adoption expected late 2016 with effective date of January 1, 2017.
Fire department ISO rating	Rating: class 4 urban/9 rural
Erosion or sediment control program	Municipal Code Chapter 8.21.160 Erosion Control; Municipal Code Chapter 9.17.110 Erosion Control/Slope Planting. Utilized for public outreach and educational awareness.
Riverside County Flood Control and Water Conservation District Master Drainage Plan	3 master drainage plans (Sunnymead Area, West End, and Moreno). Utilized for public outreach and educational awareness.
Regional Water Quality Control Board Regulations	All proposed septic systems must comply; prevents groundwater contamination
Santa Ana Watershed Project Authority Water Resources Plan	Protects water quality in the Santa Ana watershed. Eastern Municipal Water District (which serves the City of Moreno Valley) is a part of the Santa Ana Watershed.
National Pollutant Discharge Elimination System	Protects water resources from pollutants in runoff.
Capital Improvements Plan	Capital improvements list updated annually. Utilized to develop project budget, priorities, and develop mitigation strategies.
Economic Development Plan	2-year plan, 2011. Utilized for community profile.
Local Emergency Operations Plan	Emergency Operations Plan, March 2009
Specific Plan 208	Industrial Area Plan, March 2002
Ability to expand on and improve on the noted resources:	
Through the city's review process we are able to make updates and keep plans and resources current. The city also has the ability to keep ordinances up-to-date, as well implement new ordinances as needed. The city partners with the OA to ensure we are apprised of all regional efforts being made.	

Several mitigation goals and objectives are included in the city's General Plan to assist with mitigation efforts. A good example is Goal 6.1, along with a few corresponding objectives and policies:

Goal 6.1: To achieve acceptable levels of protection from natural and man-made hazards to life, health, and property.

Objective 6.1: Minimize the potential for loss of life and protect residents, workers, and visitors to the city from physical injury and property damage due to seismic ground shaking and secondary effects.

Policies: 6.1.1 Reduce fault rupture and liquefaction hazards through the identification and recognition of potentially hazardous conditions and areas as they relate to the San Jacinto fault zone and the high and very high liquefaction hazard zones. During the review of future development projects, the city shall require geologic studies and mitigation for fault rupture hazards in accordance with the Alquist-Priolo Special Study Zones Act. Additionally, future geotechnical studies shall contain calculations for seismic settlement on all alluvial sites identified as having high or very high liquefaction potential. Should the calculations show a potential for liquefaction, appropriate mitigation shall be identified and implemented.

Objective 6.15: Ensure that property in or adjacent to wildland areas is reasonably protected from wildland fire hazard, consistent with the maintenance of a viable natural ecology.

Policies: 6.15.1 Encourage programs to minimize the fire hazard, including but not limited to the prevention of fuel build-up where wildland areas are adjacent to urban development.

Another example of regulatory capabilities is Moreno Valley Municipal Code, Chapter 9.17, which addresses water conservation and waste. Specifically, 9.17.160 Landscape Water Use Efficiency Enforcement, states that the city will coordinate with the local water purveyors and encourage landscape water use efficiency such as tiered water rate structure; allocation-based conservation water pricing structure; irrigation audits and/or irrigation surveys.

Administrative/Technical Capabilities: Table 20-1.1 gives an example of the personnel responsible for activities related to mitigation for the City of Moreno Valley.

The City's planning mechanisms for hazard mitigation share information across plans. The most recent approved update of the General Plan for the City of Moreno Valley was in 2006 followed by a partial update to Chapter 8 approved in 2014. The City's General Plan is anticipated to undergo a review and update in 2018 and will incorporate the 2017 LHMP following its adoption.

Table 20-1.1: Example of Administrative and Technical Capabilities

Personnel Resources	Department/Position
Planner/Engineer with knowledge of land development/land management practices	Public Works Department/City Engineer
Engineer/Professional trained in construction practices related to buildings and/or infrastructure	Community and Economic Development/Building Official
Planner/Engineer with an understanding of natural hazards	Public Works Department /City Engineer
Floodplain manager	Public Works Department /City Engineer
Personnel skilled in GIS applications	Financial & Administrative Services Department/GIS Analyst
Building official	Community and Economic Development/Building Official
Scientist familiar with local natural hazards	N/A
Emergency Manager	Fire/Office of Emergency Management Program Manager
Grant writers	All Departments
Cost benefit/analysis staff	Financial and Administrative Services and Public Works Departments

Example of Fiscal Capabilities: Table 20-1.2 shows an example of financial tools and resources that the city could potentially use to help fund mitigation activities.

Table 20-1.2: Fiscal Mitigation Capabilities

Financial Resources	Comments
Community Development Block Grants	Requires council approval
Capital improvements project funding	Requires council approval
Authority to levy taxes for specific purposes	Requires voter approval
Fees for water, sewer, gas, or electric services	Utility tax; voter approval
Impact fees for new development	Requires council approval
Incur debt through general obligation bonds	Requires voter approval
Incur debt through special tax bonds	Requires voter approval
Mitigation and other grants	Apply regularly when available

An example of a successful grant mitigation award is a storm drain project the city applied for as a result of a presidentially-declared winter storm disaster (DR-1731). The project is to install a storm drain system in the middle of the tract bounded by Redlands Boulevard and Merwin Street, from Alessandro Boulevard to Campbell Avenue, and connected to an existing open channel on the southwest corner of Redlands Boulevard and Brodiea Avenue. The project would provide the Moreno Townsite area with 100-year storm level of protection. The lack of a proper storm drain system in the neighborhood has resulted in flooding events in almost every storm. The project is under design using grant funds.

Outreach and Other Capabilities

The city provides fire safety classes, through the Community Emergency Response Team (CERT) program to the community several times a year and partners with businesses and local agencies to provide information outreach during community events. The city also participates in regional mass care and shelter planning and incorporates planning for access and functional needs individuals. In addition, the city has designated a cooling center if needed during a heat emergency and a heating center for cold, winter days. The Police Department and the California Department of Transportation have a plan to divert traffic from Highway in the event of major traffic accidents.

20.3 Local Hazard Mitigation Strategies and Progress

The next several pages will provide a summary of the mitigation strategies that were chosen for reducing the potential losses identified in the hazard risk assessment. Each

mitigation strategy shows the priority ranking, responsible department/division/program, timeframe, funding, cost and the status. In addition, the associated hazard(s) and relevant chapter from the LHMP is identified for each mitigation measure. The LHMP's overall goals were identified in the Executive Summary in the beginning of the plan. They are:

1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Priority Ranking: Several factors were considered to determine the mitigation priority ranking for each mitigation measure. The highest priority ranking was assigned to those mitigation measures that met three criteria: 1) greatest potential for protecting life and property; 2) greatest potential for maintaining critical city functions and operability following a disaster; and 3) achievability in terms of community support, and cost effectiveness. Each mitigation action is assigned a priority ranking as follows:

Critical: Most important goals/actions (may be short-term or long-term)
High: To be implemented in the short-term future
Moderate: To be implemented when funding/resources become available.

Benefit/Cost Review: The benefits of proposed projects were weighed against costs as a part of the project prioritization process to determine if the proposed project should be ranked critical, high or moderate. Where possible, an actual benefit/cost analysis ratio was provided.

Previous Mitigation Projects from 2011 LHMP: Below are listed various mitigation projects from the city's 2011 LHMP that were completed between 2011 and 2015:

Hazard Mitigated = All Hazards
Morrison Park Fire Station No. 99: The project included construction of a new fire station at 13400 Morrison Street. As call demands and population increased, it was essential the city expand its fire station and emergency medical capabilities. This station will maintain the capacity for the city to respond to emergency situations within department-accepted timelines. Groundbreaking ceremony was held and construction began in October 2011. **The project was completed in December 2012**.

Hazard Mitigated = All Hazards
Conference and Recreation Center Emergency Power: The project included providing emergency power to the Conference and Recreation Center (CRC) as it serves as an Emergency Operations Center (EOC) Family Care Center and as a backup EOC. City Council authorized approval to proceed with construction on September 25, 2012. **The project was completed in July 2013.**

Hazard Mitigated = Flood
The Moreno Master Drainage Plan Line F: The project included construction of a concrete channel of the Moreno Master Drainage Plan Line "F", Stage 2 Channel Improvements. The project construction is approximately 4,500 feet long and starts at 800 feet west of Oliver Street to join the existing improved channel in the proximity of the Grande Vista Drive and Iris Avenue intersection. The project improved the existing earthen trapezoidal flood control channel with a concrete lining; the construction also provided access roads, maintenance ramps, and storm drain lateral stubs. The project improved the flooding protection system in the city center for the existing neighborhoods and new developments. With $4 million in construction costs funded by Public Works Capital Projects Fund, **the construction was completed in 2014.**

Hazard Mitigated = Earthquake
SR-60/Nason Street Interchange: The project included the replacement of a two-lane bridge with a four-lane bridge and complete the SR-60/Nason interchange improvements. The project provided a new Nason Street overcrossing SR-60 bridge that meets current seismic standards/requirements. **The project was completed in July 2014.**

Hazard Mitigated = Flood
East Sunnymead Boulevard Storm Drain: The project included the installation of underground storm drain improvements along Sunnymead Boulevard, between Indian Street and SR-60/Perris Boulevard Eastbound off-ramp. This section of Sunnymead Boulevard had been experiencing frequent flooding during major storm events affecting access to the adjacent businesses. Flooding has caused street closures as well as disruption of traffic and emergency/public services. The storm drains included a number of catch basins on both sides of the street which allows the systems to effectively convey and discharge storm water runoffs during a storm event. Miscellaneous street improvements were also included in this project to accommodate the proposed storm drain. This section of Sunnymead Boulevard is within the Community Development Block Grant (CDBG) target area and eligible to receive CDBG funds for infrastructure improvements. **Construction was completed in December 2015.**

Hazard Mitigated = Flood
City Drainage Facilities: The project included the identification, inspection and cleanup of 14 city-maintained drainage facilities comprising 44,070 linear feet. By working proactively, city crews helped minimize property damage by maintaining proper drainage flows within city-maintained drainage facilities. Benefits to the city include public safety, property protection, soil and water control/containment, and reduced hazards by clearing/removing debris and vegetation from draining facilities. **Cleanup was completed in December 2015.**

Mitigation Strategies and Status: Beginning on the next page, grouped by identified hazard, is a summary of the city's new and updated strategies that serve to mitigate the hazards that may affect the City of Moreno Valley.

Chapter 4 – Earthquake

4.1 Mitigation Strategy: **New Mitigation Strategy –** Minimize the potential for loss of life and protect the community from the physical injury and property damage due to seismic ground shaking and secondary effects. Require all new development projects, existing critical and essential facilities and structures to comply with the City of Moreno Valley Municipal Code.

Priority:	Critical
Responsible Dept:	Building & Safety; Land Development
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1

Status: Continuing and ongoing.

Chapter 4 – Earthquake

4.2 Mitigation Strategy: **Mitigation Update –** Reduce fault rupture and liquefaction hazards through the identification and recognition of potentially hazardous conditions and areas as they relate to the San Jacinto fault zone and the high and very high liquefaction hazard zones. Require all new development projects produce geologic studies and comply with mitigation for fault rupture hazards in accordance with the Alquist-Priolo Special Study Zones Act.

Priority:	Critical
Responsible Dept:	Capital Projects; Land Development; Planning
Timeframe:	Ongoing
Funding/Cost:	Pending Securing Funding
Plan Goal(s)*:	1

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 4 – Earthquake

4.3 Mitigation Strategy: **New Mitigation Strategy –** Reduce potential for loss of life, property and damage from earthquake events. Encourage public participation and usage of Cal OES' MyHazards tool to discover hazards in their area (earthquake, flood, fire, and tsunami) and learn steps to reduce personal risk.

Priority:	High
Responsible Dept:	Office of Emergency Management
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2

Status: Continuing and ongoing.

Chapter 4 – Earthquake

4.4 Mitigation Strategy: **Mitigation Update –** Protect historic buildings from geologic hazards. Evaluate historic buildings relative to the need for mitigation of geologic hazards, while weighing their historical value against the potential hazard of their collapse.

Priority:	Moderate
Responsible Dept:	Building & Safety; Planning
Timeframe:	Ongoing
Funding/Cost:	Pending securing funding
Plan Goal(s)*:	1

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 4 – Earthquake

4.5 Mitigation Strategy: **Mitigation Update –** Replace the existing structurally deficient SR-60/Moreno Beach Drive two-lane bridge with a six-lane bridge and complete the SR-60/Moreno Beach improvements. Obtain funds and request City Council approval to complete design and perform construction.

Priority:	Critical
Responsible Dept:	Capital Projects
Timeframe:	December 2017 to July 2019 (tentative)
Funding/Cost:	No funds identified; Federal and TUMF-eligible
Plan Goal(s)*:	1

Status: The project could provide a new Moreno Beach Drive/SR-60 bridge that meets current seismic standards/requirements. The project could mitigate earthquake hazards by providing a new bridge that meets current seismic standards. The project is under the right-of-way phase. Design completion and construction funds are not identified.

Chapter 4 – Earthquake

4.6 Mitigation Strategy: **Mitigation Update –** Replace the existing structurally deficient SR-60/Indian Street Overcrossing two-lane bridge with a two or four-lane bridge. Obtain funds and request Caltrans and City Council approval to perform environmental studies, design, and construction.

Priority:	Critical
Responsible Dept:	Capital Projects
Timeframe:	TBD
Funding/Cost:	No funds identified; possible Federal bridge fund eligibility
Plan Goal(s)*:	1

Status: The project could provide a new Indian Street bridge that meets current seismic standards/requirements. The project is under preliminary study for timeline and funding opportunities.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 4 – Earthquake

4.7 Mitigation Strategy: **Mitigation Update –** Replace the existing functionally obsolete SR-60/Redlands Avenue Overcrossing two-lane bridge with a four-lane bridge. Obtain funds and request Caltrans and City Council approval to perform environmental studies, design, and construction.

Priority:	Critical
Responsible Dept:	Capital Projects
Timeframe:	TBD
Funding/Cost:	No funds identified; possible Federal bridge fund eligibility
Plan Goal(s)*:	1

Status: The project could provide a new Redlands Avenue bridge that meets current seismic standards/requirements. The project is under preliminary study for timeline and funding opportunities.

Chapter 4 – Earthquake

4.8 Mitigation Strategy: **Mitigation Update –** Replace the existing functionally obsolete SR-60/Theodore Avenue Overcrossing two-lane bridge with a four or six-lane bridge. Obtain funds and request Caltrans and City Council approval to perform environmental studies, design, and construction.

Priority:	Critical
Responsible Dept:	Capital Projects
Timeframe:	January 2019 to December 2020 (tentative)
Funding/Cost:	Funds identified for environmental studies and preliminary engineering; funds needed for design and construction
Plan Goal(s)*:	1

Status: The project could provide a new Theodore Street bridge that meets current seismic standards/requirements. The project is under environmental and preliminary engineering studies.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 5 – Wildland and Urban Fires

5.1 Mitigation Strategy: **Mitigation Update –** Ensure that property in or adjacent to wildland areas is reasonably protected from wildland fire hazard, consistent with the maintenance of a viable natural ecology. Continue ongoing inspection programs for hazardous fuel and abatement on occupied and vacant parcels. Encourage programs to minimize the fire hazard, including but not limited to, the prevention of fuel build-up where wildland areas are adjacent to urban development. For new construction and significant tenant improvement, continue adherence to existing city Municipal Code standards.

Priority:	High
Responsible Dept:	Code Enforcement; Fire
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1

Status: Continuing and ongoing.

Chapter 5 – Wildland and Urban Fires

5.2 Mitigation Strategy: **Mitigation Update –** Ensure that uses within urbanized areas are planned and designed consistent with applicable provisions of relevant regulatory policies. Ensure that ordinances, resolutions and policies relating to urban development are consistent with the requirements of acceptable fire safety, including requirements for smoke detectors, emergency water supply and automatic fire sprinkler systems.

Priority:	Critical
Responsible Dept:	Building & Safety; Fire; Planning
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 5 – Wildland and Urban Fires

5.3 Mitigation Strategy: **Mitigation Update –** Protect life and property from the potential fire hazard from improper or careless use, storage, treatment, and disposal of hazardous materials and waste. Require all land use applications and approvals to be consistent with applicable provisions of relevant regulatory policies.

Priority:	Critical
Responsible Dept:	Fire; Land Development; Planning; Riverside County Department of Environmental Health
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1

Status: Continuing and ongoing.

Chapter 5 – Wildland and Urban Fires

5.4 Mitigation Strategy: **Mitigation Update –** Protect life and property from potential fire hazard by limiting development in safety zones according to identified land uses. Within the safety zones (e.g. Air Crash Hazard Zones and Clear Zones), residential uses shall not be permitted, and business uses shall be restricted to low intensity uses as defined in regulatory policies including the March Air Reserve Base Air Installation Compatible Use Zone Report, as amended from time to time.

Priority:	High
Responsible Dept:	Planning; March Joint Powers Authority (JPA); March Air Reserve Base
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 5 – Wildland and Urban Fires

5.5 Mitigation Strategy: **New Mitigation Strategy –** Identify areas of high fire risk. Work with GIS to identify and create a special wildfire layer to designate high risk areas for use on the city's website.

Priority:	High
Responsible Dept:	Fire; GIS
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2

Status: Continuing and ongoing.

Chapter 5 – Wildland and Urban Fires

5.6 Mitigation Strategy: **New Mitigation Strategy –** Reduce potential for damage from fire. Outreach and education to property owners about defensible space around structures and general abatement on vacant parcels.

Priority:	High
Responsible Dept:	Code Enforcement; Fire
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 6 – Flooding

6.1 Mitigation Strategy: **Mitigation Update –** Reduce the potential from flood damage. Permit only acceptable land use development in 100-year floodplain. Review project proposals to ensure that they meet the accepted land use for the location. Require all land use applications and approvals to be consistent with applicable provisions of relevant regulatory policies.

Priority:	High
Responsible Dept:	Capital Projects, Land Development; Planning
Timeframe:	Ongoing
Funding/Cost:	Current funding
Plan Goal(s)*:	1

Status: Continuing and ongoing.

Chapter 6 – Flooding

6.2 Mitigation Strategy: **Mitigation Update –** Locate critical facilities, such as hospitals, fire stations, police stations, public administration buildings and schools outside of flood hazard areas. Review land use and flood maps to ensure proposed critical facilities are not within flood prone areas.

Priority:	High
Responsible Dept:	Capital Projects; Office of Emergency Management; GIS
Timeframe:	Ongoing
Funding/Cost:	Current funding
Plan Goal(s)*:	1

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 6 – Flooding

6.3 Mitigation Strategy: **Mitigation Update –** Improve storm and water flow. Design, construct and maintain street and storm drain flood control systems to accommodate 10 year and 100 year storm flows, respectively. Determine potential projects to mitigate known flood areas due to inadequate storm drain and flood control channels.

Priority:	High
Responsible Dept:	Capital Projects; Land Development
Timeframe:	Ongoing
Funding/Cost:	Pending securing funding
Plan Goal(s):	1

Status: Pending project identification.

Chapter 6 – Flooding

6.4 Mitigation Strategy: **Mitigation Update** – Improve/widen the existing 1.8 mile of incised earthen channel with concrete side walls and invert along Heacock Street from Cactus Avenue to Perris Valley Drain Lateral "A".

Priority:	High
Responsible Dept:	Capital Projects
Timeframe:	2017-2018
Funding/Cost:	Joint venture with March Joint Powers Authority, March Air Reserve Base, and Riverside County Flood Control and Water Conservation District; $18.7 million
Plan Goal(s)*:	1

Status: The project, currently under design, could provide the area along Heacock Channel with 100-year storm level of protection. The existing channel currently cannot carry 10-year flood. Threat to residential areas and March Air Reserve Base properties. Flooding events threaten to undermine the road and underlying utilities, resulting in closures affecting ingress and egress of 700 residences and businesses and resulting in damages to March Air Reserve Base's pump house and transformer which interrupt their operations and emergency missions. A Flood Damage Reduction Study was completed in 2007 with a purpose of finding funding for the project.

Estimated Benefit-to-Cost Ratio*: 3.0

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 6 – Flooding

6.5 Mitigation Strategy: **Mitigation Update –** Improve/widen the existing 1.5 mile of incised earthen channel with concrete side walls and invert along Cactus Avenue from Elsworth Street to Heacock Street and connecting to Heacock Channel.

Priority:	High
Responsible Dept:	Capital Projects
Timeframe:	N/A
Funding/Cost:	No funding secured; $7.5 million
Plan Goal(s)*:	1

Status: The project could provide the area along Cactus Channel with 100-year storm level of protection capacity. The existing channel currently cannot carry 10-year flood. The existing Cactus Channel has limited capacities which result in overtopping and flooding to residential areas and March ARB properties. Flooding events threaten to undermine the road and underlying utilities, result in closures affecting ingress and egress of businesses, and result in damages to March ARB's pump house and transformer which interrupt March ARB's operations and emergency missions. A Flood Damage Reduction Study was completed in 2007 with a purpose of finding funding for the project. This project was identified in 2004 multi-jurisdictional plan.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 6 – Flooding

6.6 Mitigation Strategy: **Mitigation Update –** Reconstruct/upsize storm drain system on Redlands Boulevard from Alessandro Boulevard to south of Brodiaea Avenue and connect to the existing open channel on the southwest corner of Redland Boulevard and Brodiaea Avenue.

Priority:	High
Responsible Dept:	Capital Projects
Timeframe:	November 2014 to November 2017
Funding/Cost:	Hazard Mitigation Grant (DR-1731) and Moreno Area Drainage Plan (ADP) fees; $3.5 million
Plan Goal(s)*:	1

Status: The project could provide the Moreno Town site area with 100-year storm level of protection. The lack of proper storm drain system in the neighborhood has resulted in flooding events in almost every storm season. The implementation of the project could mitigate flooding hazards to the Moreno Town site area, including damages to roadway and properties, closures of roadways, health issues, disruptions of traffic and public services.

Estimated Benefit-to-cost Ratio: 3.62**

**Benefit to cost ratio, which is an indicator, used in cost-benefit analysis.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 6 – Flooding

6.7 Mitigation Strategy: **Mitigation Update –** Install storm drain system in the San Timoteo Foothill Neighborhood, running along Carrie Lane, from Locust Avenue to Kalmia Avenue, then west along Kalmia Avenue to Pettit Street and to be tied into existing storm drain on Pettit Street.

Priority:	High
Responsible Dept:	Capital Projects
Timeframe:	November 2015 to November 2017
Funding/Cost:	Hazard Mitigation Grant (DR-1810) and Moreno ADP fees; total cost $2.5 million
Plan Goal(s)*:	1

Status: The project could provide the San Timoteo Foothill Neighborhood with 100-year storm level of protection. The lack of proper storm drain system in the neighborhood has resulted in flooding events in almost every storm season. The implementation of the project could mitigate flooding hazards to the San Timoteo Foothill Neighborhood, including damages to roadway and properties, closures of roadways, health issues, disruptions of traffic and public services.

Estimated Benefit-to-Cost Ratio: 6.26**

**Benefit to cost ratio, which is an indicator, used in cost-benefit analysis.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 6 – Flooding

6.8 Mitigation Strategy: **Mitigation Update –** Install storm drain systems at two locations on Sunnymead Boulevard; at east of Frederick Street from Hemlock Avenue to 100 feet south of Sunnymead Boulevard and Graham street from Hemlock Avenue to Sunnymead Boulevard and connected.

Priority:	High
Responsible Dept:	Capital Projects
Timeframe:	N/A
Funding/Cost:	Will apply for future hazard mitigation grant; Measure "A" for local match; total cost $45 million
Plan Goal(s)*:	1

Status: The proposed project could provide the businesses, public and private properties along Sunnymead Boulevard with 100-year storm level of protection. The existing storm drain systems are inadequate which result in flooding events in almost every storm season. The preliminary engineering has been done for the project in the efforts of getting enough information for filling out future HMGP grant application when it becomes available.

Chapter 6 – Flooding

6.9 Mitigation Strategy: **Mitigation Update –** Install a storm drain system in Perris Boulevard from Perris Valley Storm Drain Lateral "A" to north of Suburban Lane in the Perris Valley ADP.

Priority:	High
Responsible Dept:	Capital Projects; Riverside County Flood Control and Water Conservation District
Timeframe:	N/A
Funding/Cost:	Perris ADP fees; $600,000
Plan Goal(s)*:	1

Status: The project could provide 100-year storm level of protection for the lands around Perris Boulevard south of Suburban Lane. Projected to be completed in the next LHMP review period.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 6 – Flooding

6.10 Mitigation Strategy: **New Mitigation Strategy –** Install a storm drain system Line K-1 (Stage 1) in Ironwood Avenue west of Moreno Beach Drive to Pettit Street.

Priority:	High
Responsible Dept:	Capital Projects; Riverside County Flood Control and Water Conservation District
Timeframe:	N/A
Funding/Cost:	Moreno ADP fees; $2 million
Plan Goal(s)*:	1

Status: The proposed project could provide 100-year storm level of protection for the area north of Ironwood Avenue between Moreno Beach Drive and Pettit Street.

Chapter 6 – Flooding

6.11 Mitigation Strategy: **New Mitigation Strategy –** Install a storm drain system Line K parallel with Moreno Beach Drive from Ironwood Avenue to north of Kalmia Avenue.

Priority:	High
Responsible Dept:	Capital Projects; Riverside County Flood Control and Water Conservation District
Timeframe:	N/A
Funding/Cost:	Moreno ADP fees; $4 million
Plan Goal(s)*:	1

Status: The project could provide 100-year storm level of protection for the area west of Moreno Beach Drive south of Locust Avenue.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 6 – Flooding

6.12 Mitigation Strategy: **New Mitigation Strategy –** For the flooding problems at Kitching Street-Ivy Lane Neighborhood, the ultimate solution is to construct a storm drain system to collect flows from the upstream end, run off along Kitching Street and carry them to the existing Line B-16 on Ironwood Avenue in the City of Moreno Valley. The proposed storm drain system includes approximate 2,900 feet of reinforced concrete pipes and lateral basins. The proposed storm drain system is identified as Line B-16 A within Sunnymead Master Drainage Plan.

Priority:	High
Responsible Dept:	Capital Projects; Riverside County Flood Control and Water Conservation District
Timeframe:	N/A
Funding/Cost:	Pending securing funding; $1.4 million
Plan Goal(s)*:	1

Status: The project could provide 100 year storm level protection for the area of Kitching Street-Ivy Lane Neighborhood.

Chapter 6 – Flooding

6.13 Mitigation Strategy: **New Mitigation Strategy –** For the flooding problems at Hubbard Street and Dunlavy Court neighborhood, the ultimate solution is to construct a storm drain system to collect flows from the upstream end, run off along Hubbard Street with inlets at Dunlavy Court and lateral streets and carry them to the existing Line H-1 on Ironwood Avenue in the City of Moreno Valley.

Priority:	High
Responsible Dept:	Capital Projects; Riverside County Flood Control and Water Conservation District
Timeframe:	2017-2018
Funding/Cost:	City of Moreno Valley and Riverside County Flood Control and Water Conservation District; $1.5 million
Plan Goal(s)*:	1

Status: The project could provide 100 year storm level protection for the area of Hubbard Street and Dunlavy Court Neighborhood.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 6 – Flooding

6.14 Mitigation Strategy: **New Mitigation Strategy –** Ensure that minimum building standards are implemented to safeguard life, limb, health, property and public welfare by regulating and controlling the design, construction, quality of materials, use and occupancy, location and maintenance of all buildings and structures within the City of Moreno Valley. Adopt current California Building Standards Code, California Code of Regulations, Title 24, the California Building Code, California Mechanical Code, California Residential Code, California Plumbing Code, California Fire Code, and the California Electrical Code and adopting other regulations relating to Building and Fire Prevention requirements.

Priority:	Critical
Responsible Dept:	Building & Safety; Fire
Timeframe:	2017
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2

Status: The City Council oversaw 1st reading of the Ordinance on November 1, 2016, with the 2nd reading and adoption on November 15, 2016. The Ordinance has an effective date of January 1, 2017, in compliance with the Building Standards Commission.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 7 – Drought

7.1 Mitigation Strategy: **New Mitigation Strategy –** Decrease water usage on public and private parcels. Promote adoption of drought tolerant xeriscaping and potential incentives for landscaping replacement and continue removal and replacement of city-owned landscaping. Encourage contractors for residential and commercial developments to offer options promoting partnering agencies' programs.

Priority:	High
Responsible Dept:	Facilities; Parks and Community Services; Planning; Public Works (Special Districts); EMWD
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	2

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 8 – Landslide

8.1 Mitigation Strategy: **New Mitigation Strategy –** Reduce potential for loss of life, property and damage of critical facilities from landslide damage. Work with GIS to identify, inventory, and map critical facilities subject to landslides.

Priority:	High
Responsible Dept:	Building & Safety; Fire; GIS; Public Works (Land Development)
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 3, 4

Status: Continuing and ongoing.

Chapter 8 – Landslide

8.2 Mitigation Strategy: **New Mitigation Strategy –** Increase public awareness of current and potential threats. Educate residents about potential erosion control resources and measures.

Priority:	High
Responsible Dept:	Office of Emergency Management
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 9 – Insect Infestation

9.1 Mitigation Strategy: **New Mitigation Strategy –** Increase public awareness of current and potential threats. Educate residents about potential infestation control resources and measures.

Priority:	High
Responsible Dept:	Code Enforcement; Fire; Technology Services;
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2

Status: Continuing and ongoing.

Chapter 9 – Insect Infestation

9.2 Mitigation Strategy: **New Mitigation Strategy –** Work with the Riverside County Department of Environmental Health to ensure continued compliance with Vector Control Program for mosquito treatment citywide. Continue to inspect reports of stagnant water and work with property owners to educate and abate with county assistance as needed.

Priority:	High
Responsible Dept:	Code Enforcement; Riverside County Department of Environmental Health
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 10 – Extreme Weather

10.1 Mitigation Strategy: **New Mitigation Strategy –** Reduce potential impacts of extreme weather. Encourage public participation and usage of Cal OES' MyHazards tool to discover hazards in their area (earthquake, flood, fire, and tsunami) and learn steps to reduce personal risk.

Priority:	High
Responsible Dept:	Office of Emergency Management
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2

Status: Continuing and ongoing.

Chapter 10 – Extreme Weather

10.2 Mitigation Strategy: **New Mitigation Strategy –** Reduce potential impacts of extreme temperatures. Increase public awareness of extreme temperatures including shelter locations and cooling and warming centers.

Priority:	High
Responsible Dept:	Office of Emergency Management; Parks & Community Services; Technology Services
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 11 – Severe Wind

11.1 Mitigation Strategy: **New Mitigation Strategy –** Reduce potential impacts and damage from severe wind events. Encourage public participation and usage of Cal OES' MyHazards tool to discover hazards in their area (earthquake, flood, fire, and tsunami) and learn steps to reduce personal risk.

Priority:	High
Responsible Dept:	Office of Emergency Management
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2

Status: Continuing and ongoing.

Chapter 11 – Severe Wind

11.2 Mitigation Strategy: **New Mitigation Strategy –** Minimize potential impacts and damage from windy conditions. Encourage maintenance or removal of overgrown or dead trees that may pose a falling hazard in windy conditions. Ensure city-owned trees are continued to be similarly maintained.

Priority:	High
Responsible Dept:	Parks and Community Services; Public Works; Special Districts
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2, 3

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 12 – Dam Failure/Inundation

12.1 Mitigation Strategy: **New Mitigation Strategy –** Increase public awareness of current and potential threats. Encourage public participation and usage of Cal OES' MyHazards tool to discover hazards in their area (earthquake, flood, fire, and tsunami) and learn steps to reduce personal risk.

Priority:	High
Responsible Dept:	Fire; Parks and Community Services (Maintenance); Public Works (Maintenance & Operations)
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	2

Status: Continuing and ongoing.

Chapter 13 – Pipeline

13.1 Mitigation Strategy: **New Mitigation Strategy –** Minimize potential damage to infrastructure and pipelines. Work with pipeline owners and appropriate state and federal inspectors to promote and encourage continued compliance with inspection, maintenance, signage and notification requirements in accordance with local, state, and federal regulations. Continue to require all development applications and approvals to be consistent with applicable provisions of relevant regulatory policies.

Priority:	High
Responsible Dept:	Land Development; Planning; March ARB
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 14 – Transportation

14.1 Mitigation Strategy: **New Mitigation Strategy –** Minimize potential transportation impacts. Continue to utilize existing city and intersection cameras to monitor and adjust traffic flows. Continue traffic and speed studies with enforcement.

Priority:	High
Responsible Dept:	Police; Traffic Engineering
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1

Status: Continuing and ongoing.

Chapter 14 – Transportation

14.2 Mitigation Strategy: **New Mitigation Strategy –** Minimize potential transportation impacts. Continue to adjust intersection signal timing during peak periods or around special events. Develop and implement a Commercial Vehicle Enforcement program.

Priority:	High
Responsible Dept:	Police; Traffic Engineering
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 15 – Power Failure

15.1 Mitigation Strategy: **New Mitigation Strategy –** Minimize potential impact from power failures. Promote and encourage compliance with state- and utility-mandated conservation efforts during peak periods.

Priority:	High
Responsible Dept:	MVU
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	2

Status: Continuing and ongoing.

Chapter 15 – Power Failure

15.2 Mitigation Strategy: **New Mitigation Strategy –** Minimize potential impact from power failures. Ensure continued compliance with California Public Utilities Commission orders and rules regarding required line clearance where vegetation exists and encroaches on power lines.

Priority:	High
Responsible Dept:	MVU
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 3

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 16 – Hazardous Materials Accident

16.1 Mitigation Strategy: **New Mitigation Strategy –** Reduce potential for loss of life, property and environmental damage from hazardous materials impacts. Ensure continued compliance with materials code and local, state, federal regulations and relevant regulatory policies regarding generation and storage of hazardous materials.

Priority:	High
Responsible Dept:	Fire Prevention; Riverside County Department of Environmental Health
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2

Status: Continuing and ongoing.

Chapter 17 – Terrorist Attack

17.1 Mitigation Strategy: **Mitigation Update –** Minimize opportunities for crime found in the present and future build environment, and by creating and maintaining a high level of community awareness and support of crime prevention. Promote the establishment of neighborhood and business watch programs to encourage community participation in the patrol of neighborhood areas, and increased awareness of any suspicious activity.

Priority:	High
Responsible Dept:	Police
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2, 4

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 18 – Civil Unrest

18.1 Mitigation Strategy: **New Mitigation Strategy –** Minimize opportunities for crime found in the present and future build environment, and by creating and maintaining a high level of community awareness and support of crime prevention. Promote the establishment of neighborhood and business watch programs to encourage community participation in the patrol of neighborhood areas, and increased awareness of any suspicious activity.

Priority:	High
Responsible Dept:	Police
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2, 4

Status: Continuing and ongoing.

Chapter 19 – Pandemic Flu/Disease

19.1 Mitigation Strategy: **Mitigation Update –** Collaborate and coordinate with the Riverside County Public Health Department to support community awareness to prevention and protections from communicable disease and/or pandemic flu. Assist in providing information to the public regarding prevention and protection against communicable disease and/or pandemic flu. Increase public awareness of current and potential threats.

Priority:	Moderate
Responsible Dept:	Office of Emergency Management; Technology Services; Riverside University Health Systems - Public Health
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2, 3, 4

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

Chapter 19 – Pandemic Flu/Disease

19.2 Mitigation Strategy: **Mitigation Update –** Minimize risk and threat of infection or disease. Encourage and promote participation in seasonal immunization efforts.

Priority:	High
Responsible Dept:	Administrative Services; Office of Emergency Management
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2, 3, 4

Status: Continuing and ongoing.

All Hazards

AH.1 Mitigation Strategy: **Mitigation Update –** Provide a satellite EOC traffic management center LED or LCD wall display and computers to better manage emergency operations from the EOC and provide a backup to the city's traffic management center.

Priority:	High
Status:	Carryover from City's 2011 LHMP
Responsible Dept:	Capital Projects; Traffic Engineering
Timeframe:	2016-2017
Funding/Cost:	FY10 EOC grant; $25K
Plan Goal(s)*:	3, 4

Status: Met with Technology Services and other personnel to determine needs. Next, order equipment, install and test.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

All Hazards

AH.2 Mitigation Strategy: **Mitigation Update –** Encourage public participation in the city's hazard mitigation update process by designating a Hazard Mitigation web page in the Emergency Section of the city website that is specific to the City of Moreno Valley Local Hazard Mitigation Plan.

Priority:	Moderate
Responsible Dept:	Office of Emergency Management; Technology Services
Timeframe:	Ongoing
Funding/Cost:	Current funding; cost unknown
Plan Goal(s)*:	1, 2, 4

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

All Hazards

AH.3 Mitigation Strategy: **Mitigation Update –** Promote a greater community awareness and understanding of the effects of natural and man-made hazards. Provide FEMA Community Emergency Response Team Training regularly to the community.

Priority:	High
Responsible Dept:	Office of Emergency Management
Timeframe:	Ongoing
Funding/Cost:	Homeland Security Grant Program and General Fund
Plan Goal(s)*:	1, 2, 4

Status: Continuing and ongoing. The Office of Emergency Management has provided the 2 ½ day training to the community since 1998 and to date has provided training to over 1,125 members of the community and citizens, businesses, church members, school employees and others.

All Hazards

AH.4 Mitigation Strategy: **New Mitigation Strategy –** Provide emergency preparedness presentations to service clubs, homeowner's associations and other organizations to enhance preparedness.

Priority:	Moderate
Responsible Dept:	Office of Emergency Management
Timeframe:	Ongoing
Funding/Cost:	
Plan Goal(s)*:	1, 2, 4

Status: Continuing and ongoing.

* Plan Goals:
1. Protect life, property and the environment;
2. Provide public awareness;
3. Protect continuity of government; and
4. Improve emergency management, preparedness, collaboration and outreach.

20.4 National Flood Insurance Program

The last component of the city's mitigation strategy is participation in the National Flood Insurance Program. The City of Moreno Valley has participated in the NFIP since June 16, 1987.

The NFIP aims to reduce the impact of flooding on private and public structures. It does so by providing affordable insurance to property owners and by encouraging communities to adopt and enforce floodplain management regulations.

The NFIP seeks to minimize the socio-economic impact of disasters by encouraging and promoting the purchase and retention of general risk insurance, but also flood insurance, specifically, to homes and businesses located in Special Flood Hazard Areas (SFHA). The land area covered by the floodwaters of the base flood is the SFHA on NFIP maps.

Per City Municipal Code, the City of Moreno Valley regulates new development and substantial improvement to existing structures in the SFHA or to build safely above Base Flood Elevation (BFE) to reduce damage to new construction. The program is based on mapping areas of flood risk, and requiring local implementation to reduce flood damage primarily requiring the elevation of structures above the BFE including revising the Flood Insurance Rate Maps (FIRMs) by processing Letters of Map Revisions (LOMR) with FEMA prior to issuance of certificates of occupancy. The city completes the NFIP Biennial Report and returns that information to FEMA in a timely manner. There have been no negative issues from participating in the NFIP.

In 2008, the city updated its Municipal Code, adopting the August 28, 2008, Flood Insurance Study (FIS), Flood Boundary and Floodway Maps (FBFM) and attendant FIRMs. The FIS, FBFM and FIRM are on file at Public Works Department, Land Development Division.

The City of Moreno Valley requires Flood Plain Development Permits for all construction or other development, including manufactured homes, within any SFHA. Flood Insurance may be required in these zones as a condition of loan or grant assistance. Elevation Certificates are required as part of the Development Permit, issuance of a building permit and issuance of final occupancy. The Elevation Certificate is a form published by FEMA and required to be maintained and filed in Moreno Valley as a participating community in the NFIP.

The Moreno Valley Master Drainage Plan was updated in early 2015 and adopted by City Council on October 13, 2015. The Master Drainage plan proposes the construction of detention basins, debris basins, open channels and a network of underground storm drains. When implemented, it shall provide flood protection from the 100-year storm event. In addition, it also serves as a planning guide for the location and sizing of local drainage facilities to be constructed by developers and others within the area.

Discretionary projects located in an SFHA are required, as a condition of approval, to construct necessary storm drain improvements per the city's Master Drainage Plan and process a Letter of Map Revision, thus removing property from SFHA.

Repetitive Loss Properties: There are no repetitive loss properties.

Other Data Used to Regulate Flood Hazard Areas: The City of Moreno Valley utilizes past Hydrology/Hydraulic (H/H) studies prepared by the Riverside County Flood Control and Water Conservation District, developers and others prepared in the past in areas known for shallow flooding within Zone X to determine finish floor elevations for proposed structures.

Community Rating System (CRS): Beginning October 1, 1991, the City of Moreno Valley has maintained its member participation in the CRS and is rated at a Class 8. FEMA conducts NFIP-CRS field verifications on a five year cycle to determine if communities remain in compliance with NFIP regulations. The City of Moreno Valley's most recent field verification was conducted in April 2012 and found the city to be in compliance. The NFIP-CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted by 10% for SFHA zones and 5% for non-SFHA zones to reflect the reduced flood risk resulting from the community actions. These efforts are aligned with the three goals of the CRS:

1. Reduce flood damages to insurable property;
2. Strengthen and support the insurance aspects of the NFIP; and
3. Encourage a comprehensive approach to floodplain management.

APPENDIX A

ABBREVIATIONS, ACRONYMS, AND INITIALISMS

Abbreviations, Acronyms and Initialisms

ADP	Area Drainage Plan
APZ	Accident Potential Zone
BFE	Base Flood Elevation
BIA	Business In Action
CALTRANS	California Department of Transportation
CERT	Community Emergency Response Team
CFR	Code of Federal Regulations
CRC	Community and Recreation Center
CRS	Community Rating System
DNA	Deoxyribonucleic Acid
DR	Disaster
E-MAIL	Electronic Mail
EMS	Emergency Medical System
EMWD	Easter Municipal Water Department
EOC	Emergency Operations Center
FBFM	Flood Boundary and Floodway Maps
FBI	Federal Bureau of Investigations
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
GIS	Geological Information Systems
H/H	Hydrology/Hydraulic
HIV	Human Immunodeficiency Virus
HMGP	Hazard Mitigation Grant Program
H.R.	House of Representatives
IRC	Inland Regional Center
LHMP	Local Hazard Mitigation Plan
LOMR	Letter of Map Revisions
MMscfd	Million Standard Cubic Feet per Day
MVTV-3	Moreno Valley Cable Television Channel
MVU	Moreno Valley Utility
N/A	Not Available
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Association
NWS	National Weather Service
OEM	Office of Emergency Management
PLS	Pressure Limiting Station
PSIG	Per Square Inch Gage
RCC	Riverside Community College

RCFC/WCD	Riverside County Flood Control and Water Conservation District
RDA	Redevelopment Agency
RUHS	Riverside University Health System
RV	Recreational Vehicle
SBA	Small Business Administration
SDG&E	San Diego Gas & Electric
SFHA	Special Flood Hazard Area
SME	Subject Matter Expert
SONGS	San Onofre Nuclear Generating System
SR	State Route
TBD	To Be Determined
THIRA	Threat and Hazard Identification and Risk Assessment
TUMF	Transportation Uniform Mitigation Fee
UP	Union Pacific
USGS	United States Geological Services
WCD	Wastewater Control District
WUI	Wildland-urban interface

APPENDIX B

MEETINGS DOCUMENTATION

Regional LHMP Planning Meeting – Operational Area Planning Committee (OAPC) – 04/14/2016 Sign in Sheet

Riverside County
DISASTER COUNCIL /
Quarterly OAPC Meeting
Thursday, April 14, 2016

FOUO

NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Accurso, Anne	RivCo EMD Preparedness			
Adams, Michelle	City of Corona			
Ahmad, Abdul	CalFire/RivCo Fire			
Aleman, Michelle Disaster Program Mgr	Red Cross CV/MC Chapter			
Alexiou, Dimitrios	Hospital Assoc. of California (HASC)			
Alvarez, Felipe	Ironwood State Prison			
Annas, Mark Emerg. Mgt Administrator	City of Riverside			
Arellano, Melinda	RivCo Probation			
Aryan, Steve	City of Palm Desert			
Avila, Aaron	RivCo Sheriff's Dept.			
Avila, Rene	City of Perris			
Aylward, Terri	Fire Prevention Coordinator Murrieta Fire Department			
Baldi, Lynn	San Gorgonio Memorial Hospital			
Banning, Bill	Cabazon Band of Mission Indians			
Banos, Roger	Caltrans TMC			
Barnes, Susan Robinson, Sam	Eastern Municipal Water District Safety /Emergency Mgt Officer			
Bassett, Mark Program Manager	RivCo EMD Operations			
Bates, Daniel	RivCo EMD Operations			
Baxter, Martin	RivCo EMD Preparation			

** Please make changes as needed **

**Titles are under those that attended

Riverside County
DISASTER COUNCIL /
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Thursday, April 14, 2016

NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Beach, Steve	CalFire/RivCo Fire	FOUO		
Bell, David	Red Cross			
Boiko, Joan	Palm Springs USD			
Bolowich, Hans	CalFire City of Temecula			
Bonker, Crystal	Alvord Unified School District			
Bontty, Mona Regional Administrator	CalOES			
Bradshaw, Steve	City of Riverside Police /UASI/EOC			
Bratcher, Gregg	CalFire/RRU			
Bricker, Zuzzette	RivCo EMD Readiness			
Brooker, Steven	CalFire/RivCo Fire			
Bowers, Michael	RivCo HR – Safety			
Burch, Chris	Pechanga Fire			
Burns, Victoria Deputy Director EMD	RivCo EMD Administration			
Burr, Lhoran	City of Indian Wells			
~~Cabrera, Celina~~	~~City of Beaumont~~			
Cadden, Eric Emergency Services Coordinator	RivCo EMD Readiness			
Caldwell, Michelle	RivCo EMD Readiness			
Canales, Victoria Emergency Services Coordinator	Agua Caliente			
Cardenas, Roberto Fiscal Services Manager	City of Temecula			
Cardoza, Lilly Disaster Preparedness Coordinator	Community Action Partnership of RivCo (CAP)			

** Please make changes as needed **

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NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Carreon, Carlos	Parkview Comm. Hospital	FOUO		
Chadd, Dan	City of Lake Elsinore			
Chapman, Les Public Works Superintendant/ESC	City of Wildomar			
Chavez, Tim	Cal Fire			
Chvilicek, Rich	CalFire Riverside County Fire Department			
Cloyd, Kirk	Valley Sanitary District			
Cochrane, Dave (No title)	Southern Baptist/VOAD			
Coletta, Anthony	City of Riverside			
Collins, Michael	San Jacinto USD			
Conrad, Deby	City of LaQuinta			
Contreras, Jose	Imperial Irrigation District OEM			
Cooley, Dorian Division Chief	CalFire/RivCo Fire			
Cooper, Pat	Legislative Assistant to Supervisor Benoit			
Corvino, Frank	RivCo Animal Services			
Covington, Marlayna	RivCo Sheriff TLO			
Crain, Nicholas	RivCo Environmental Health Haz Mat			
Craven, Karen	RivCo EMD Preparedness			
Curley, Steve	CalFire/RivCo Fire			
D'Amico, Michael Safety and Emergency Prep. Coordinator	RCOE			
Dana, Kim	RivCo EMD Administration			

** Please make changes as needed **

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NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Davila, Adrian	Caltrans EOC			
Davis, Marie	Hemet Fire Dept.			
Day, Dennis Emergency Services Coordinator	RivCo EMD Readiness			
De Armond, Michelle	RivCo BOS Spvr. Benoit			
DeForge, Brian	Beaumont USD			
De Los Santos, Maria Operations Director	211 Riverside County			
Deming, Rebecca	City of Beaumont			
De Santiago, Rick Public Works Superintendant/ESC	City of Lake Elsinore			
Detwiler, Ross	Lake Hemet Municipal Water District			
Dressel, Lucy	Hemet USD			
Dumaguet, June	Kindred Hospital Riverside			
Dixson, Ann	RivCo Parks			
Donovan, Kelley	RivCo Transportation Department			
Douville, Trevor Senior EMS Specialist	RivCo EMD EMS			
Ellis, Steve	Corona-Norco Unified			
Ellsworth, David EOC Deputy Director	Morongo Band of Mission Indians			
Elzig, Lecia	Red Cross/VOAD			
Evans, Mareesa	Beaumont USD			
Faler, Jennifer	RivCo DPSS			
Faraclas, Nick	City of Riverside			

** Please make changes as needed **

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Thursday, April 14, 2016

NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Ferguson, Scott	Murrieta Fire Dept.	FOUO		
Foster, Lorna	Caltrans Native American Liaison			
Frankforter, Kristen	Lake Hemet Municipal Water District			
French, Bob, ESC	City of Calimesa			
Fulcher, David	Cal Fire			
Gaines, Kevin Fire Chief	Morongo Fire Dept.			
Galbraith, Joshua Corporal	Beaumont Police			
Gallegos, Connie	CalFire/RVC Fire			
Garafalo, Robert Admin. Service3s Manager	RivCo DPSS			
Garberoglio, Marcie	Assessor County Clerk Recorder (ACR)			
Ghods, Komy Senior Civil Engineer	RivCo Flood Control			
Gilbert, Janell	WMWD			
Goetting, Brian	City of Menifee Volunteer Emergency Management			
Gomez, Lynn	SGMH – Executive Director			
Gomez, Michelle	163rd Cal Air National Guard			
Gonzales, Joseph	City of Menifee			
Granada, Michael Officer	Beaumont P.D.			
Gray, Jodie Battalion Chief	Calfire/RivCo Fire			
Groom, Laronte Administrative Serv. Analyst	RivCo EMD Administration			
Guevara, Pastor Emergency Services Coordinator	CalOES			

** Please make changes as needed **

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Thursday, April 14, 2016

NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Gutierrez, Rita	RivCo Animal Services			
Hagemann, Jody	CalFire/RivCo Fire			
Hagen, Jerry Emergency Services Coordinator	RivCo EMD Readiness			
Harrison, Michael	RivCo Waste Resources			
Hatfield, Gary	Imperial Irrigation District			
Hauser, Eric	Cathedral City Fire Dept.			
Hawkins, Chief John	CalFire/RivCo Fire			
Hefley, Doug	Eastern Municipal Water Dist			
Henderson, Kathleen Emergency Services Coordinator	RivCo EMD Readiness			
Hernandez, Rosa	Imperial County OES			
Herrera, Mike	Coachella Valley Water District			
Holk, Deb	Riverside USD			
Holliday, Timothy	March Field Fire Dept.			
Horton, Tracy	Alvord Unified School Dist.			
Hongkham, Scott	CalTrans – Traffic			
Hull, John	Yucaipa Valley Water Dist			
Huls, Doug **Deputy Regional Administrator**	CalOES			
Indrawan, Joe	City of Eastvale			
Janssen, Josh	CalFIRE/Riverside – Training			

FOUO

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Riverside County
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NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Jensen, Steve EMS Specialist	RivCo EMD Preparedness			
Jimenez, Al	Torres Martinez Desert Cahuilla Indians			
Johnson, Alva	Agua Caliente Band of Cahuilla Indians			
Johnson, Angie Admin. Analyst	RivCo EMD Operations			
Johnson, Rob	City of Menifee			
Johnston, Zander	RivCo EMD Readiness / City of La Quinta			
Jolley, Jason	City of Riverside			
Kaiser, Cameron	RivCo Dept. of Public Health County Health Officer			
Keeling, Jason	Pechanga Fire			
Kelly, Stacie	RivCo EMD Preparedness			
Kem, Chief Billy	City of Blythe			
Ketcham, Thomas C. Legislative Assistant	Board of Supervisors Dist. 1 – Kevin Jeffries			
King, Jennifer	March Air Reserve Base			
King, Ken	RivCo – Code Enforcement			
Knight, Brenda	City of Beaumont			
Kondrit, Dave	RivCo Sheriffs Dept.			
Kothlow, Rick	Spotlight 29 Palms Public Safety			
Kwong, Cyrin	CalTrans – TMC			
Landeros, Rick	RivCo Flood Control			

** Please make changes as needed **

**Titles are under those that attended

Riverside County
DISASTER COUNCIL /
Quarterly OAPC Meeting
Thursday, April 14, 2016

FOUO

NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Lankhorst, Jacquelyn	City of Moreno Valley OEM			
Lauritzen, Verne	Supervisor Washington COS			
Lawrence, Dawn	San Jacinto USD			
Layton, Nancy	Idyllwild Mountain Disaster Preparedness			
Lebsock, Anjila	City of Palm Springs Fire Dept.			
Lederman, Jeff	RivCo D.A.			
Lee, Debbie	City of Wildomar			
Leon, Ramon Program Director	RivCo EMD Preparedness			
Lombardo, Shelli	Caltrans PIO			
Lovato, Rudy	RivCo Probation Dept.			
Love, Samuel	RivCo HR/Safety Division			
Lozano, Arthur	Beaumont Unified School District			
Lytle, Preston	RivCo Transportation			
Mack, Sarah	Riverside University Health System (RivCo RUHS)			
Madkin, Darren	City of Perris			
Mah, Benjamin	RivCo Waste Management			
Malouf, Matt	Caltrans – TMC			
Martin, Dean	City of Banning			
Martinez, David	City of Perris			

** Please make changes as needed **

**Titles are under those that attended

Riverside County
DISASTER COUNCIL /
Quarterly OAPC Meeting
Thursday, April 14, 2016

FOUO

NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Martinez, Robert Emergency Services Coordinator	City of Perris			RM
Mata, Lynn, ESC Emergency Manager	City of Corona			
Mayer, Donna	~~CalOES Southern Region Training and Exercises~~			
McCartney, Jess	Yucaipa Valley Water District			
McConnell, Michael	DPSS			
McCray, Robert	Dept. of Veterans Affairs			
McGarrey, Deborah	So Cal Gas			
McGee, Kara	Mt. San Jacinto College			
McLaughlin, Bret	FCC/NDMS Coord. VA Medical Ctr Loma Linda			
McMillen, Tom	Western Municipal Water Dist			
Mellman, Mitch Safety and Training Coordinator	Desert Aids Project			mm
Mendoza, Kari	City of Beaumont			
Mendoza, Patricia	RivCo Probation Dept.			
Merrick, Jan Emergency preparedness Coordinator	SGMH – Disaster Prep			
Mesa, Ralph Emergency Services Coordinator	~~Imperial Irrigation District~~ ~~OEM~~ Riverside County EMD			RM
Messerli, Phil	Ironwood State Prison			
Michael, Robert	CalFire/RivCo Fire			
Mitchell, Lisa	RivCo Environmental Health			
Moran-McGough, Gina Program Manager	RivCo EMD Readiness			

** Please make changes as needed **

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Riverside County
DISASTER COUNCIL /
Quarterly OAPC Meeting
Thursday, April 14, 2016

FOUO

NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Morrison, Dave	Rancho Water District (RCWD) Temecula			
Mueller, Jody	Caltrans Maintenance Support			
Muhr, John	City of Cathedral City			
Mulherin, Robert	RivCo Agriculture Commissioner			
Murphy, Dennis	CalFire/City of Temecula			
Murphy, John Sergeant	Morongo Tribal Security			
Nelson, Wendy	RivCo Economic Development Agency			
Nnah, Prince	San Gorgonio Hospital			
Norman, Robert W.	Lake Hemet Municipal Water Dist.			
Novak, Sgt. Robert	RivCo Sheriff's SERT			
Nunez, Jr., Steve So. Region Exercise Planner	CalOES/CSTI Southern Region			
Olivas, Yanira Emergency Mgt. /Credentialing Coord.	CDSDD Clinicas de Salud CDSDP			
Oommen, Shawn Samuel	163rd CA Air Nat'l Guard EM			
Opliger, Rocky W.	USDA Forest Services/BDF			
Ortego, James (Tony) Mental Health Services Administrator	RivCo Behavioral Health			
Ortega, Juan	Chuckawalla State Prison			
Ortiz, Sebastian	Loma Linda – Murrieta			
Outlaw, Ingrid	RivCo Probation			
Paiz, Carlos	Coachella Valley Water Dist			

** Please make changes as needed **

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Riverside County
DISASTER COUNCIL /
Quarterly OAPC Meeting
Thursday, April 14, 2016

NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Pemberton, Geoff	City of Norco			
Perdue, Lt. Robert	RivCo Sheriffs SERT			
Perez, Gina	City of Riverside Fire Dept., OES			
Petersen, Christine	RivCo Assessors Office			
Petersen, Lea	So Cal Gas			
Petersen, Robert	CalFIRE/RCFD			
Peterson, Thomas	RivCo Behavioral Health			
Philpott, Paige	RivCo EMD Administration			
Plascencia, Alida	RivCo CAP			
Powell, Robert	Torres-Martinez Tribe			
Quintero, Carlos	Santa Ana Watershed Project Authority (SAWPA)			
Radford, Lyle Safety and Security Technician	Hemet USD			
Ramirez, David	Cal. Air National Guard			
Rawlings, Phil	Cal Fire			
Read, Vincent	Kindred Hospital			
Reese, Annette Secratary	RivCo EMD Operations			
Reichardt, Shane Emergency Services Coordinator	RivCo EMD Preparedness			
Reitz, Chief Patrick	Idyllwild Fire			
Remm, Jan	Hospital Association of Southern California (HASC)			

FOUO

** Please make changes as needed **

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Riverside County
DISASTER COUNCIL /
Quarterly OAPC Meeting
Thursday, April 14, 2016

FOUO

NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Reneker, Steve Chief Information Officer	RivCo RCIT	951-955-3778		
Resler, Sara	Coachella Valley USD – Risk Manager	760-399-5137		
Reyes, Dwayne Biomedical Engineer 2/Disaster Coord.	Parkview Community Hospital	949-214-8562 951-352-5405		
Reyes, Mike	Spotlight 29 Casino	760-574-3704		
Rivas, David	RivCo DPSS	951-358-3182		
Rockot, Diana Emergency Services Coordinator	RivCo EMD Operations	951-955-5276		
Roderick, Walter	29 Palms Band of Mission Indians – Spotlight 29	760-625-7874		
Rodriguez, Alia Program Manager	City of Moreno Valley Office of Emergency Management	951-413-3809		
Rojas, Octavio	Riverside Community College District Police	951-906-5474		
Rollings, Terri	City of Jurupa Valley, ESC	951-332-6464 951-358-9676		
Roughton, Laura	Major City of Jurupa Valley	951-743-8163		
Rowe, Kirsten	City of Canyon Lake	951-244-2955		
Russell, Paul Highway Operations Superintendent	RivCo Transportation Dept.	951-955-6899		
Sadler, Jason	Caltrans EOC	909-520-5526		
Saenz, Gabriel	Spotlight 29 Casino	760-863-2448		
Salas, Kris	Fuel Relief Fund	909-322-1481		
Salas, Timothy	RivCo Sheriff Thermal Station	760-863-7962		
Salcedo, Jorge	Ironwood State Prison	760-921-3000		
Salgado, Rose	RivCo EDA	951-955-8177		

** Please make changes as needed **

**Titles are under those that attended

Riverside County
DISASTER COUNCIL /
Quarterly OAPC Meeting
Thursday, April 14, 2016

FOUO

NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Sankey, Corrie Disaster Coordinator	Kaiser Permanente			
Sappington, Jim Environmental Health	RivCo Environmental Health			
Saruwatari, Kim Director EMD	RivCo EMD Director			
Schulte, Gale Grant Administrator	City of Riverside – Fire/UASI			
Selegue, Phillip	Cal Fire – San Jacinto			
Seumalo, Ken	City of Indian Wells			
Shaw, Bruce	Menifee Union School Dist			
Sick, Bill	San Jacinto Leadership Academy			
Smith, David	Jurupa Community Services District			
Smith, Jennifer Volunteer Programs Coordinator	RivCo EMD Readiness			
Smith, Mike	CalFire			
Snedaker, Bob Owner	Simpler Life			
Soqui, Chief Bill	City of Cathedral City			
Soulliere, Brenda	Cabazon Band of Mission Indians			
Spelman, Lucas	CalFire/RivCo Fire			
Spencer, Paul	RivCo Waste Mgmt. Dept.			
Starr, Ashley	City of Beaumont			
Steinberg, Steve	RivCo Behavioral Health			
Stewart, Kile	March Field Fire Dept.			

**** Please make changes as needed ****

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Riverside County
DISASTER COUNCIL /
Quarterly OAPC Meeting
Thursday, April 14, 2016

FOUO

NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Stone, Sherry Risk Management	Riverside Community College District			
Stowells, Jeff	Calfire/RivCo Fire			
Tabarez, Lisa	Morongo Band of Mission Indians			
Tarrats, Lisa	Beaumont USD			
Thuilliez, Sean	Beaumont Police			
Tisdale, Brian Legislative Analyst	Supervisor Washington's office			
Tomlinson, Patrick	CAL Fire//RLOFD DHS Battalion			
Toney, Jeff	CalOES Deputy Regional Administrator – Southern			
Torres, George, ESC Street Superintendent	City of Coachella			
Trujillo, Marc	163 Cal. Air National Guard			
Tucker, Marvin	MARB			
Turner, Bob Director Risk & Emergency management	Alvord USD			
~~Utley, Mark~~	~~RivCo EMD Readiness~~			
Valterria, Mary	RivCo EMD Administration			
Vejar, Daniel	RivCo DPSS			
Van Wagenen, Jeff	RivCo Economic Development			
Velasquez, Floyd Emergency Services Coordinator	Morongo Band of Mission Indians			
Villarreal, Rudy	Palm Springs USD			
Viray, Hector	RivCo Code Enforcement			

** Please make changes as needed **

**Titles are under those that attended

Riverside County
DISASTER COUNCIL /
Quarterly OAPC Meeting
Thursday, April 14, 2016

FOUO

NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Walter, George Corporal	Beaumont P.D.			
Wang, Kevin	163 MDG, March ARB			
Waltz, Michael	City of Jurupa Valley			
Weatherspoon, Carol	RivCo Probation			
Webb, Suzanne	RivCo – Bldg & Safety			
Weiser, Bill	CalFire/RivCo Fire			
Whitfield, Daniel	Val Verde USD			
Whyte, Ian Emergency Mgt. Program Mgr.	Metropolitan Water District o Southern California			
Williams, John	College of the Desert			
Williams, Mark	City of Desert Hot Springs			
Wilson, Britt	City of Rancho Mirage			
Yates, Grant	City of Lake Elsinore			
Zamudio, Anthony	Coachella Valley Water Dist.			
Zilliox, Mary	City of Lake Elsinore			
FRANKLIN, DEBBIE	Banning City Council Fire Marshal / ESC			JS
BAILEY, JASON	MURRIETA FIRE			
JAMES "KELLY" ANDERSON Assistant Director	RIVERSIDE COUNTY VETERANS' SERVICES			US
CHENG, ANDREW OEM Program Specialist	MORENO VALLEY FIRE OFFICE OF EMERG. MGMT			AC
STEVE HORN Senior Management Analyst	RIV CO EXEC OFFICE			

**** Please make changes as needed ****

**Titles are under those that attended

Riverside County
DISASTER COUNCIL /
Quarterly OAPC Meeting
Thursday, April 14, 2016

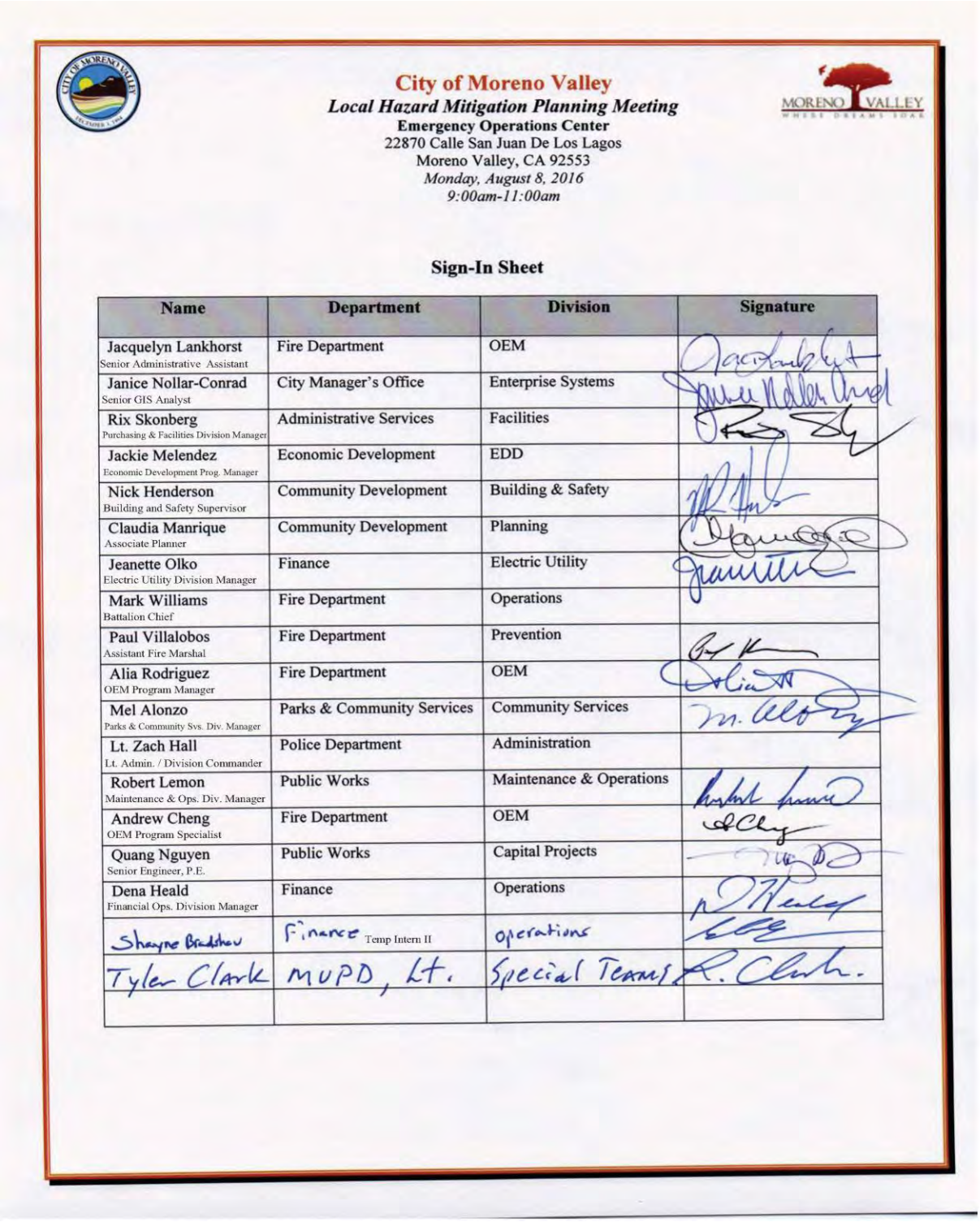
FOUO

NAME – ***PLEASE PRINT***	ORGANIZATION	PHONE NUMBER	E-MAIL ADDRESS	Please Initial
Khai Luu Safety and Security Officer	Riverside Transit Agency			TK
Tim Beringer	Dir. of Safety & Security, Emergency managemen Eisenhower Medical Center			TB
Sarah Burns	Health Education assistant 1 EMD			SB
Logan Wilson	TCHS / Fire explorer			LW
Tony McGregor	Branch chief RUHS - Public Heal			TM
Paul Fice	Disaster Coord. Corona Regional Medical Ctr			PF
Javier Dominguez	Disaster Coord WREC Hemet/Pearrer Hosp.			JD
John LaVallee	Director of Emergency Services Agua Caliente Band of Cahuilla Indians			JL
Diaz, Alex	Police Chief City of Banning			

** Please make changes as needed **

**Titles are under those that attended

LHMP Planning Meeting – 08/08/2016
Sign in Sheet



City of Moreno Valley

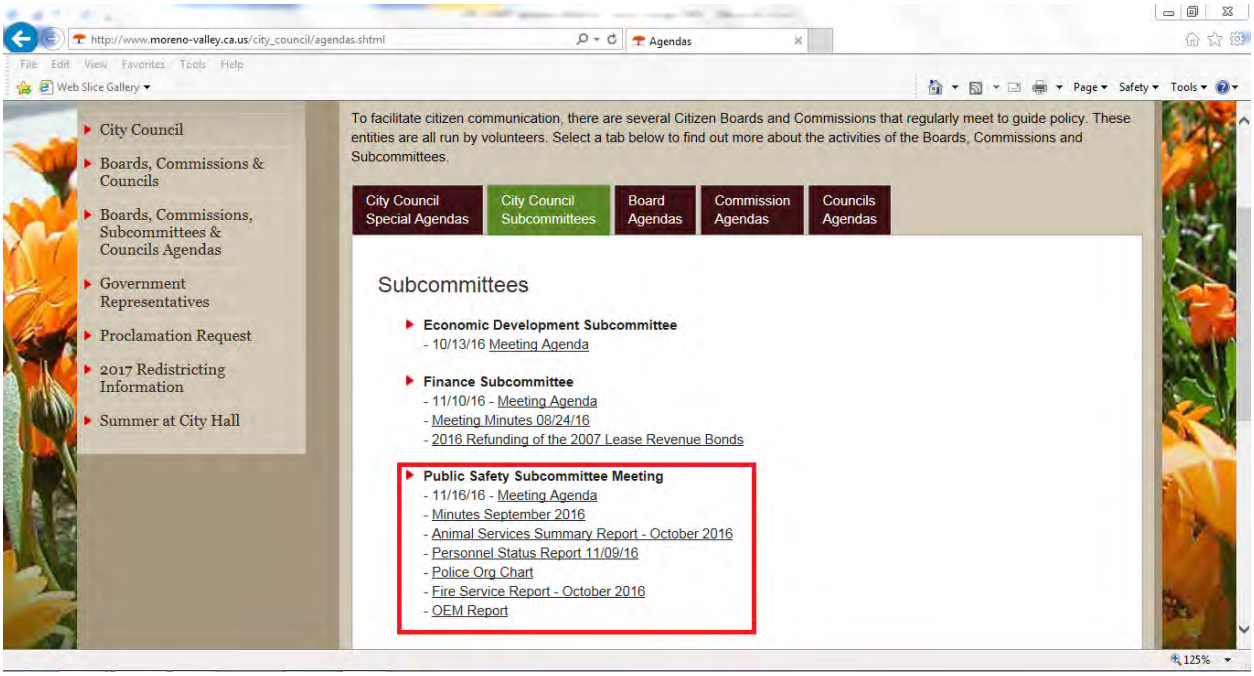
Local Hazard Mitigation Planning Meeting

Emergency Operations Center
22870 Calle San Juan De Los Lagos
Moreno Valley, CA 92553
Monday, August 8, 2016
9:00am-11:00am

Sign-In Sheet

Name	Department	Division	Signature
Jacquelyn Lankhorst Senior Administrative Assistant	Fire Department	OEM	
Janice Nollar-Conrad Senior GIS Analyst	City Manager's Office	Enterprise Systems	
Rix Skonberg Purchasing & Facilities Division Manager	Administrative Services	Facilities	
Jackie Melendez Economic Development Prog. Manager	Economic Development	EDD	
Nick Henderson Building and Safety Supervisor	Community Development	Building & Safety	
Claudia Manrique Associate Planner	Community Development	Planning	
Jeanette Olko Electric Utility Division Manager	Finance	Electric Utility	
Mark Williams Battalion Chief	Fire Department	Operations	
Paul Villalobos Assistant Fire Marshal	Fire Department	Prevention	
Alia Rodriguez OEM Program Manager	Fire Department	OEM	
Mel Alonzo Parks & Community Svs. Div. Manager	Parks & Community Services	Community Services	
Lt. Zach Hall Lt. Admin. / Division Commander	Police Department	Administration	
Robert Lemon Maintenance & Ops. Div. Manager	Public Works	Maintenance & Operations	
Andrew Cheng OEM Program Specialist	Fire Department	OEM	
Quang Nguyen Senior Engineer, P.E.	Public Works	Capital Projects	
Dena Heald Financial Ops. Division Manager	Finance	Operations	
Shayne Bradshaw	Finance Temp Intern II	operations	
Tyler Clark	MUPD, Lt.	Special Teams	

Meeting #1 – 11/16/2016
Advertisement



Meeting #1 – 11/16/2016
Agenda

MORENO VALLEY
CITY MANAGER'S OFFICE

City of Moreno Valley
PUBLIC SAFETY SUBCOMMITTEE

November 16, 2016 • 3:30 P.M.
City Hall – Training Room

AGENDA

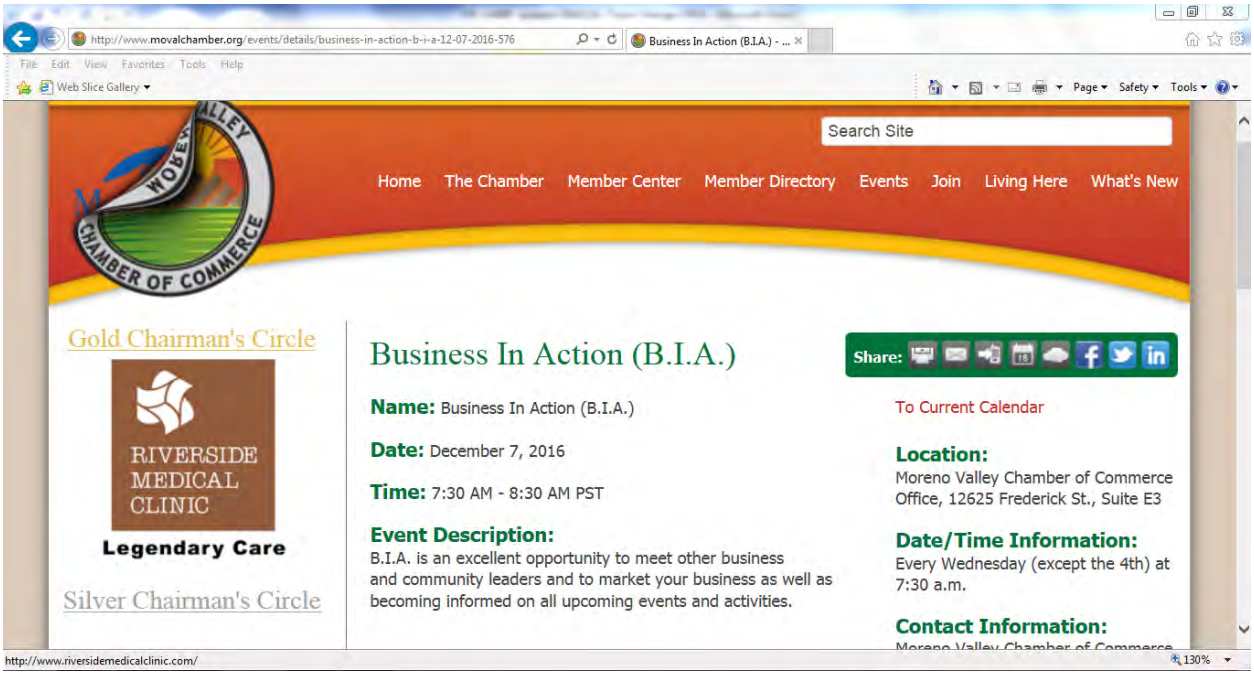
1. Introductions
2. Public Comments
3. Approval of Minutes
4. Animal Services
   A. Shelter Services and Activity Report (Written Report only)
5. Fire Services
   A. Fire Services Status Report (Written Report only)
   B. Fire Prevention Report (Written Report only)
   C. OEM Report (Written Report Only)
6. Police Services
   A. Fireworks Suppression Pilot Program (Verbal Report only)
   B. Police Personnel Status Report (Written Report only)
   C. Police Updated Organizational Chart (Written Report only)

Future Agenda Items

A. Ordinance Regarding Hotel Regulations

*Upon request, this invitation (news release/agenda/notification) will be made available in appropriate alternative formats to persons with disabilities, in compliance with the Americans with Disabilities Act of 1990. Any person with a disability who requires a modification or accommodation in order to participate in these activities should direct such requests to **Guy Pegan**, ADA Coordinator, at **951.413.3120** at least 72 hours before the activity. The 72 hour notification will enable the City to make reasonable arrangements to ensure accessibility and participation in this meeting or event.*

Meeting #2 – 12/07/2016
Advertisement



*** No Sign in sheet provided for attendees

Meeting #2 – 12/07/2016
Sign In Sheet

Moreno Valley Chamber of Commerce
Business In Action

Date Dec 7, 2016

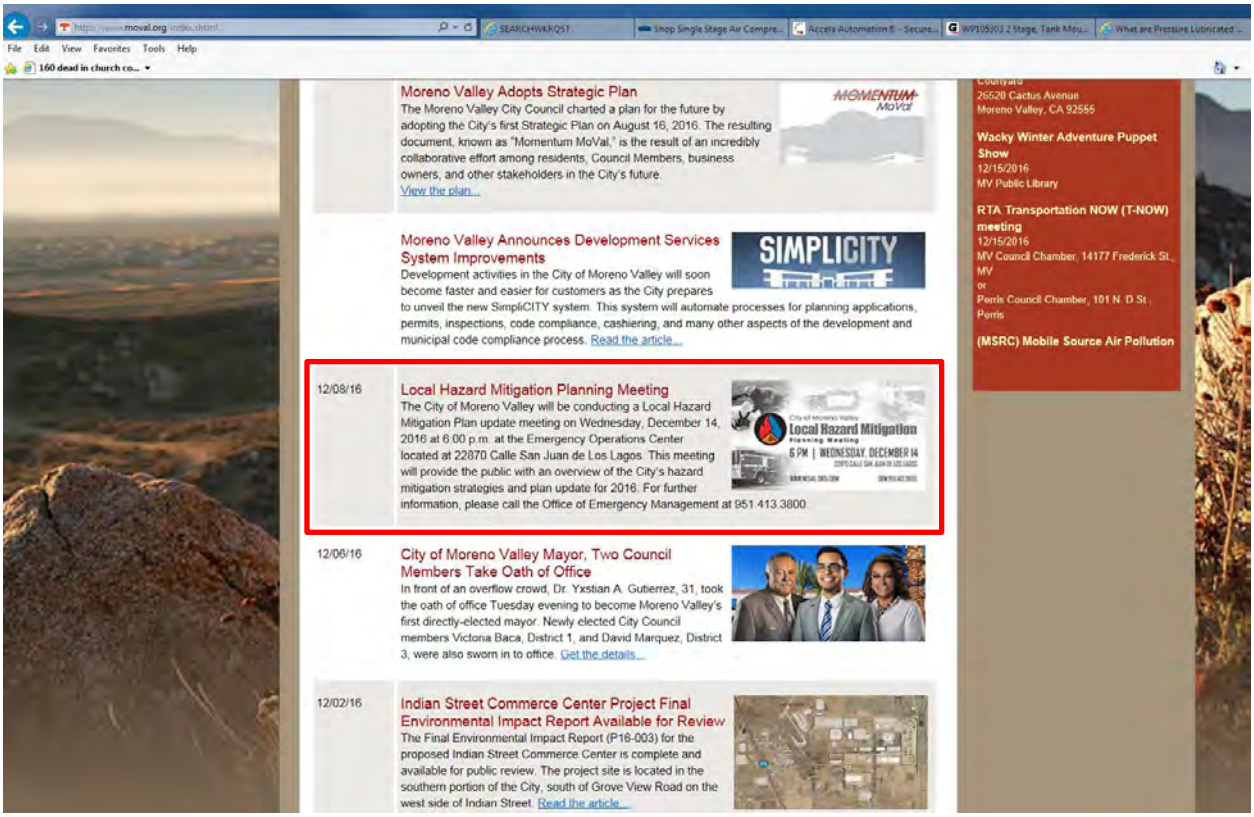
Name	Business Name	Phone	E-Mail
Esther Vivian	Castco		
Dwane Swafford	Dmc Promotions		
MIKE AVOOSKE	MVHMC		
Abdul Ahmad	Moreno Valley Fire		
Paul Villalobos	Moreno Valley Fire		
Steve Wilkinson	Moreno Valley Fire		
Marcus Canfield	M.V. Master Chorale		
Ed Vasquez	Edward Jones		
BLAISDELL			
John Hitchcock	All Solutions Inc		

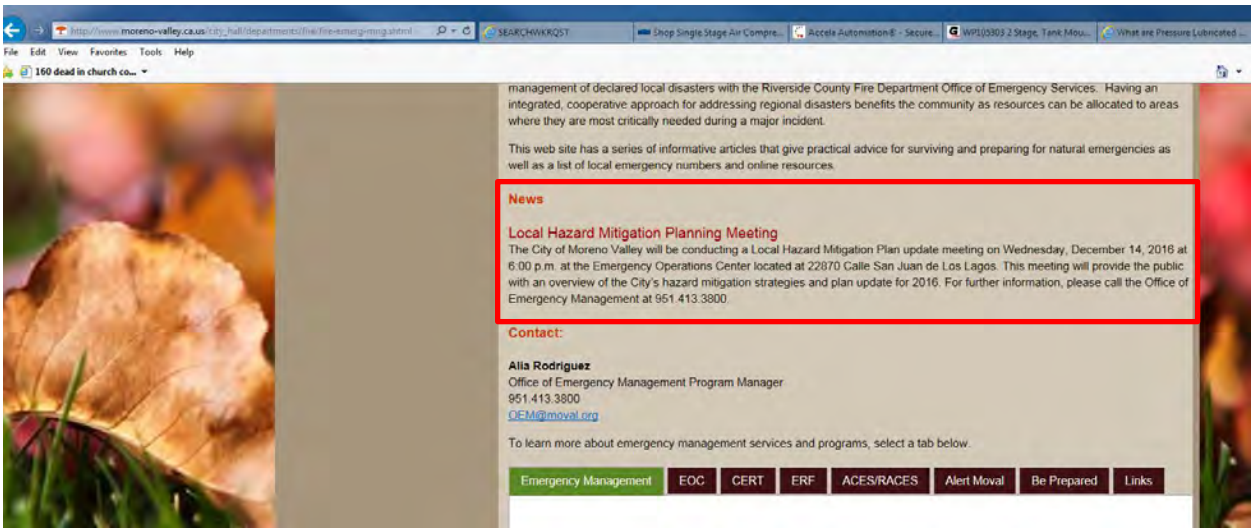
FOUO

Note: This is a community outreach commerce meeting, titles are not appropriate for attendees.

Meeting #3 – 12/14/2016
Advertisement

Meeting #3 – 12/14/2016
Advertisement





Meeting #3 – 12/14/2016
Advertisement

Meeting #3 – 12/14/2016
Agenda

Local Hazard Mitigation Plan Update Meeting
Wednesday – December 14, 2016
6:00 p.m.

Agenda

I. Welcome

II. Program Updates
   1. History
   2. Update

III. Next Steps
   1. Approvals
   2. Implementation

IV. Round Table and Closing Remarks
   1. Questions/Comments

Meeting #3 – 12/14/2016
Sign In Sheet

Local Hazard Mitigation Plan Update Meeting
Sign-In Sheet
Wednesday – December 14, 2016
6:00 p.m.

Name (Print)	Signature
ABDUL R AHMAD, Fire Chief	Abdul R Ahmad
Steve WILKINSON, Mgmt Analyst	
ANDREW CHENG — OEM Program Specialist	
Angel Gutierrez, SR Admin Assistant	

Meeting #4 – 12/15/2016
Agenda

"The only thing tougher than planning for a disaster is explaining why you didn't

NORTH WEST COMM

Jurupa Community Services District is hosting
North West Comm
December 15 2016 0900-1100
11201 Harrel Street
Jurupa Valley, Ca 91752

I. Call to order/Pledge of Allegiance
II. Welcoming and Introductions
III. LHMP—EMD
IV. LHMP– Moreno Valley
V. Upcoming Events/Roundtable

If you cannot attend, please send a representative so they can share information.

Meeting #4 – 12/15/2016
Sign In Sheet

NorthWest Comm.

FOUO

	Last Name:	First Name:	Email Address:	Phone:	Cell Phone:	Sign in
26	Ellis-Mark	Dottie				Program Manager
27	Arballo	Jose				Public Health PIO
28	Dellarmi	Dave				Navy
29	Mueller	Jody				Adopt a hwy Coord.
30	Gonzalez	Carolina				Intern
31	Gonzalez	Melanie				Intern
32	Thomas	Brandon				Water Operator II
33	Smith	David				Safety Coordinator
34	Rieger	Kim				Human Resources Mgr
35	Lane	Scott				Battalion Chief
36	Rodriguez	Silvia				Sr. Admin. Analyst
37	Cheng	Andrew				OEM Program Specialist
38						
39						
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Meeting #5 – 12/15/2016
Agenda

Leadership Moreno Valley
Creating Connections, Building Bonds of Community

PUBLIC SAFETY SESSION
December 15, 2016

Objective:

There are several agencies that provide services to the residents and business owners of Moreno Valley, including Police and Fire. Learn about their respective operations and the services rendered to protect and assist the public.

Hosts:	Joel Ontiveros, Police Chief Abdul Ahmad, Fire Chief
7:30 a.m.	Convene at the Moreno Valley Chamber of Commerce – 12625 Frederick St., Suite E3
8:00 a.m.	Public Safety Building - 22850 San Juan de Los Lagos, Moreno Valley. Briefing with Police Chief Ontiveros and Fire Chief Ahmad
8:30 a.m.	K-9 Demonstration at the Moreno Valley Police Department – Deputy Santistevan and Ozzi
10:30 a.m.	Less than Lethal Weapons Demonstration at the Moreno Valley Police Department – Deputy Reilly
11:45 a.m.	Depart for Ben Clark Training Center (BCTC) – 16888 Bundy Avenue, Riverside
12:00 p.m.	Lunch catered by Polly's Pies –Fire Dept. LHMP lunch presentation. BCTC – Drill Grounds/Fire Drill Tower tour and presentation to include live fire and auto extrication "jaws of life" demonstrations. Depart BCTC to Fire Station 99, 13400 Morrison St. for live medic presentation to include simulated 9-1-1 activation and cardiac arrest/CPR demonstration.
4:00	Return Chamber office Adjourn

• Legislative Action
• Promoting the Community
• Creating a Strong Local Economy

• Representing the Interests of Business with Government
• Providing Connecting Opportunities

Public Draft Plan Posting
City Website

APPENDIX C

CITY OF MORENO VALLEY FUTURE DEVELOPMENT

COMMERCIAL
development

The City of Moreno Valley is a growing city with a bright future. Strategically located in the Inland Empire of Southern California, with a market area of over two million people and abundant developable land, savvy developers and retailers continue to choose Moreno Valley for growth and success. The City of Moreno Valley is dedicated to fostering new businesses and well-managed growth to create a superb quality of life. *Take a look at what's happening!*

Commercial Centers

Center Name	Size (sq. ft.)	Traffic Counts (ADT) East/West	Traffic Counts (ADT) North/South
TownGate Highlands	251,900	270,000	24,200
Moreno Valley Mall	1,200,000	270,000	38,000
Stoneridge Towne Centre	579,295	163,000	20,100
TownGate Center/Plaza	465,000	257,000	33,700
Moreno Beach Plaza	350,000	139,000	14,900
Moreno Valley Plaza	341,000	15,300	24,900
TownGate Square	136,000	16,200	38,000
TownGate Crossing	237,000	270,000	38,000
TownGate Promenade	200,000	270,000	36,000
Moreno Beach Marketplace	175,000	8,400	17,300
Lakeside Plaza & Terrace	143,000	18,800	13,300
Lakeshore Village	140,000	9,400	--
*Alessandro & Lasselle	140,000	17,500	13,300
Moreno Marketplace	93,788	6,400	15,900
Iris Plaza	87,120	18,800	20,300
Elsworth Plaza	30,000	27,700	--
Cactus Commerce Center	16,000	36,100	--
*Rancho Belago Plaza	14,000	3,800	14,300

** Approved Projects*

Office/Medical

Map #	Name	Size (sq. ft.)
1	TownGate Square	170,000
2	Olivewood Plaza	22,758
3	Centerpointe Office Area	258,000
4	Moreno Valley Medical Plaza	217,000
5	Moreno Valley Medical Overlay Area	122,250
6	Renaissance Village	98,400
7	Riverside County Office Building	52,000
8	Fresenius Medical Care	12,000
9	Integrated Care Communities	44,000
10	Riverside University Health System Expansion	34,749
11	Kaiser Permanente Moreno Valley Emergency Room Expansion	8,500

Industrial/Job Centers

Areas	Occupied/ Leased (sq. ft.)	Available/ Approved (sq. ft.)	Proposed (sq. ft.)
Centerpointe Business Park	4,241,407	968,508	--
Moreno Valley Industrial Area	9,781,639	5,019,868	3,586,469
SR-60 Business Park Area	2,620,887	2,279,498	--
Approved World Logistics Center	—	—	40,600,000
Meridian Business Park	*Adjacent to the City of Moreno Valley, two business parks provide additional daytime population utilizing services within Moreno Valley.*		

Hospitality Development

Map #	Hotel Name	# Guest Rooms
	Centerpointe Hotel:	
1	Hawthorn Inn (approved)	79
	TownGate Hotels:	
2	The Quarter	216
3	Ayres Hotel & Spa	127
4	Hampton Inn & Suites	115
	Sunnymead Area Hotels:	
5	La Quinta Inn & Suites	58
6	Travelers Inn	55
7	Comfort Inn	92
8	Sleep Inn & Suites	66
9	Econo Lodge	51
10	Holiday Inn Express	153
11	Best Western Hotel & Suites	59

RESIDENTIAL

development

New Single-Family Development: 3,938 Units

Map #	Tract	Builder/Applicant	# of Units	Status
1	33626	Kincaid Development, Inc.	23	Approved
2	31394	Pigeon Pass Ltd.	78	Approved
3	29343	Professors Fund IV	58	Approved
4	32515	Mission Pacific Land Co.	184	Recorded
5	30268	Pacific Communities	83	Under
6	36401	Continental East Fund III, LLC	93	Approved Construction
7	34151	Moreno Valley Property Investment LLC	37	Approved
8	33810	David Boyle Engineering	16	Approved
9	31442	SKG Pacific Enterprises Inc.	63	Approved
10	33024	Adam Wislar	8	Approved
11	32716	Bob Rogers	57	Approved
12	36719	Kuo Ming Lee	34	In Process
13	32005	Red Hill Village, LLC	214	Approved
14	PA15-0039	Global Investment & DEV LLC.	181	In Process
15	32460	Sussex Capital Group	57	Approved
16	32459	Sussex Capital Group	11	Approved
17	30411	Pacific Communities	25	Approved
18	33962	The Industrial Group	31	Approved
19	30998	Pacific Communities	47	Approved
20	36983	Construction Specialist Group LLC.	53	In Process
21	31517	Professors Prop Six Winchesters Associates	83	Approved
22	31297	Randy McFarland	7	Approved
23	33436	Winchester Associates	105	Approved
24	28860	Professor's Fund IV, LLC Winchester Associates, Inc.	9	Approved
25	31592	CV Communities	139	Approved
26	33388	SCH Development, LLC	16	Approved
27	27251	RSI	104	Approved
28	35663	OFA	12	Approved
29	31621	Skyline Homes	12	Approved
30	36761	Right Solutions, LLC	7	In Process
31	33256	Pacific Communities	79	Under Construction
32	36372	Motlagh Family Trust	25	In Process
33	36436	CV Communities	159	Approved
34	32844	Winchester Associates	17	Approved
35	34043	RM3 Building and Development	12	Approved
36	36708	Nova Homes	127	In Process
37	22180	MPLC Legacy 140 Partners, LP	543	Recorded
38	36760	Mission Pacific Land Co.	189	In Process
39	34748	Rados	135	Approved
40	32284	Joe Anderson	32	Approved
41	36882	Frontier Homes	40	Approved
42	32548	Gabel, Cook and Associates	107	Approved
43	32218	Granite Capital Winchesters Associates	63	Approved
44	31305	Richmond American/ Richland Communities, Inc.	87	Approved
45	32126	Salvador Torres	35	Approved
46	PA16-0009	Macjones Holdings	16	In Process
47	32835	Beazer Homes	272	Approved
48	32408	Sandstone, Inc.	80	Approved
49	32645	Winchester Associates	53	Approved
50	31618	Frontier Homes	56	Under Construction

New Multi-Family Development: 2,420 Units

Map #	Tract	Builder/Applicant	# of Units	Status
1	PA15-0042	Latco SC Inc.	112	Approved
2	35414	Oak Park Partners	266	In Process
3	32215	Winchester Associates "Scottish Village"	194	Approved
4	PA14-0027	Tilak Chopra	38	In Process
5	32917	Continental East	227	Approved
6	32142	GHA	46	Approved
7	31814	Jesse Huizar	60	Approved
8	34544	Cottonwood 939 LLC	84	In Process
9	34216	Creative Design Assoc.	39	Approved
10	33771	Jian Qiang Liu	12	Approved
11	PA15-0031	Cal Choice Inv. Inc.	20	In Process
12	35663	Jimmy Lee	12	Approved
13	35369	Tason Myers Property	12	Approved
14	35769	Michael Chen	16	Approved
15	PA09-0006	Jim Nydam	15	Approved
16	35304	Jimmy Lee	12	Approved
17	33417	Jimmy Lee	60	Approved
18	34988	Status Properties	271	Approved
19	32756	Jimmy Lee	24	Approved
20	34681	Perris Pacific Company	49	Approved
21	33607	TL Group Corp.	52	Approved
22	PA15-0046	Granite Capitol	438	In Process
23	PA13-0006	Rancho Belago Developers, Inc.	141	Approved
24	PA14-0028	MV Bella Vista GP, LLC	220	In Process

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MORENO VALLEY
ECONOMIC DEVELOPMENT

New Projects Map with Commercial Development Activity, New Housing and Planned New Housing