2016-2021
Local Hazard Mitigation Plan

Approved by FEMA:
Adopted by Fremont City Council:

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Figures

Maps

***Note: all maps have been condensed to fit into this report.**
Full Sized maps are available in Appendix A – Full Sized Maps

Tables

List of Acronyms

ABAG	Association of Bay Area Governments
AC Transit	Alameda County Transit
ACE	Altamont Corridor Express
ACFC/WCD	Alameda County Flood Control and Water Conservation District
ACWD	Alameda County Water District
ADSRP	Anderson Dam Seismic Retrofit Project
BART	Bay Area Rapid Transit
CalOES	California Governor's Office of Emergency Services
CalFire	California Department of Forestry and Fire Protection
Caltrans	California Department of Transportation
CBC	California Building Code
CCSF	City/County of San Francisco
CDE	California Department of Education
CDF	California Department of Forestry
CEQA	California Environmental Quality Act
CERT	Community Emergency Response Team
CGS	California Geological Survey
CIP	Capital Improvement Program
CRS	Community Rating System
DMA	Federal Disaster Mitigation Act of 2000
DMA 2000	Disaster Mitigation Act of 2000
DOF	California Department of Finance
DWR	California Department of Water Resources
EB	East bound
EBRPD	East Bay Regional Park District
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMC	Fremont Municipal Code
FRA	Federal Responsibility Areas
FUSD	Fremont Unified School District
GIS	Geographic Information System
I –	Interstate
LHMP	Local Hazard Mitigation Plan
M	Magnitude
MHHW	Mean Higher High Water
MMI	Modified Mercalli Intensity
NB	North bound

NFIP	National Flood Insurance Program
NOAA	National Oceanic and Atmospheric Administration
NRC	National Research Council
OC	Overcrossing
PEP	Personal Emergency Preparedness
PG&E	Pacific Gas and Electric Company
PUC	Public Utilities Commission
SB	South bound
SFHA	Special Flood Hazard Area
SFPUC	San Francisco Public utilities Commission
SLR	Sea Level Rise
SR –	State Route
SRA	State Responsibility Area
SWP	California State Water Project
UC	Undercrossing
UCERF3	Uniform California Earthquake Rupture Forecast 3
UPRR	Union Pacific Railroad
USD	Union Sanitary District
USGS	United States Geological Survey
VTA	Santa Clara Valley Transportation Authority
WB	West bound
WUI	Wildland-Urban Interface

Section 1 Executive Summary

1.1 Introduction

Fremont's residents and businesses are at risk of natural disasters that could occur within the City, or those which occur in the greater Bay Area and further impact the City. Natural and human-caused disasters can cause different levels of disruption to everyday life, including death, injury, property damage and interruption to typical business and governmental services.

While it is impossible to predict every potential scenario from a disaster, the City can mitigate known risks as identified from local knowledge including City departments, stakeholders and residents in addition to known research provided by Association of Bay Area Governments (ABAG), California Governor's Office of Emergency Services (Cal OES), Cal-Adapt, and Federal Emergency Management Agency (FEMA). The 2016 Local Hazard Mitigation Plan (LHMP) recognizes the need for a plan to constantly prepare for and mitigate risks associated with natural and manmade hazards.

1.2 Background

In 2000, Congress passed the Disaster Mitigation Act of 2000 (DMA 2000), which focuses on hazard mitigation before a disaster occurs, rather than after, disasters such as earthquakes, fires and floods. Congress' goal was to encourage local governments and states to develop plans and undertake projects to mitigate the impact of natural disasters before they happen and streamline administration of disaster relief.

1.3 Plan Purpose and Authority

The City of Fremont believes in preparing itself, residents and key stakeholders for a natural disaster and mitigating the known risks. The DMA 2000 has formalized this process since 2005, and incorporates different City plans to understand and reduce risk of known vulnerabilities in the City. The purpose of the LHMP is to implement both short-term and long-term mitigation activities that reduce the cause or occurrence of hazards; reduce exposure to hazards; or reduce effects of hazards through various means to include preparedness, response and recovery measures. The 2016 Local Hazard Mitigation Plan continues the ongoing process to evaluate the risks that pose hazards to Fremont, and engage key stakeholders in identifying the most important steps that can be taken to reduce these risks. The City's ability to prepare and mitigate risks associated with a natural disaster makes its residents and businesses much safer, and will better prepare the City to handle a natural disaster and reduce the impacts of a natural disaster.

DMA 2000 requires that states review Local Hazard Mitigation Plans as part of their state hazard mitigation planning process. The intent is three-fold: (1) to gather hazard, vulnerability, and mitigation information from the local level for use in state-level planning; (2) to ensure that state and local hazard mitigation planning is coordinated to the greatest extent practical and (3) to ensure that local jurisdictions are made aware of the hazards and vulnerabilities within their jurisdiction and to develop strategies to reduce those vulnerabilities. This process ensures that mitigation actions are based on sound planning processes that account for the risks and capabilities of California communities.

The Disaster Mitigation Act requires all local governments to develop and adopt a Local Hazard Mitigation Plan in order to be eligible for Hazard Mitigation Grant Program project grants for disasters declared after November 1, 2004, and for future mitigation project funding awarded through the Flood Mitigation Assistance program, the Pre-Disaster Mitigation grant program, and the U.S. Small Business Administration's low-interest, pre-disaster, small business loan program.

Cal OES reviews all LHMPs in accordance with DMA 2000 regulations and coordinates with local jurisdictions to ensure compliance with FEMA's Local Mitigation Plan Review Guide, dated October 2011. Once Cal OES planning staff find the LHMP to be "approvable," the plan is forwarded to FEMA Region IX mitigation planning staff for final review and approval. Adoption by the City Council demonstrates the City's commitment to fulfilling the mitigation goals and objectives outlined in the LHMP.[i]

1.4 Plan Description

The City of Fremont 2016 Local Hazard Mitigation Plan consists of the following functions:

1.4.1 Local Planning Process

Section 2 (Local Planning Process) describes the planning process used to update the Plan. This section identifies the planning team members, meetings held related to the plan update, stakeholders contacted about the plan update and outreach activities to engage citizens. This section also addresses how the plan will be approved and adopted.

1.4.2 Community Profile

Section 3 (Community Profile) provides a general history and background on Fremont and historical trends on the government, population, demographic and economic conditions that have shaped the community. This section also provides an analysis of the major facilities located in Fremont and information on the assets, facilities and services outside stakeholders maintain. All stakeholders identified in this section were engaged in the process of preparing this Local Hazard Mitigation Plan.

1.4.3 Hazards Assessment & Characterization

Section 4 (Hazards Assessment & Characterization) provides a comprehensive background on the different hazards in Fremont. The hazards assessment includes the type, extent, history, location and probability of each hazard. Maps of the hazards are included throughout this section, and full sized 11"x17" inch maps are provided in Appendix A – Full Sized Maps.

1.4.4 Risk Assessment

Section 5 (Risk Assessment) identifies the citywide assets within Fremont that were evaluated. Each citywide asset was evaluated for all of the hazards described in Section 4. This section also includes information on repetitive loss properties. The information in this section was compiled using Geographic Information System (GIS) data, which was the most current information available. The results identify the most vulnerable areas of Fremont and what populations, services and facilities would be impacted by each type of hazard. This section identifies repetitive loss properties and participation in the National Flood Insurance Program.

1.4.5 Mitigation Goals and Objectives

Section 6 (Mitigation Goals and Objectives) provides the strategies that will be utilized over the next five years to reduce the risks associated with the identified hazards in Fremont. Stakeholders and departments were involved in developing a list of mitigation actions, and prioritizing these strategies. This section describes the process used to develop these strategies. Each strategy includes a strategy matrix table which includes the strategy, supporting activities, completed activities, what hazards are addressed, the strategy type, implementation mechanisms, responsible departments, partner agencies, related policies from other plans, priority level, timeline and funding source.

1.4.6 Plan Update

Section 7 (Plan Update Process) provides the information on how the Local Hazard Mitigation Plan will remain current. The plan update section provides information on who is responsible for the update, what mechanism will trigger an annual update, and the process for the next full plan update in five years. This section highlights public outreach efforts to ensure the public is involved in the update process.

1.4.7 References

Section 8 (References) is a list of sources that were referenced in the preparation of the Local Hazard Mitigation Plan.

1.4.8 Appendices

Section 9 (Appendices) are meant to provide additional information. The appendices include the following documents:
Appendix A – Full Sized Maps
Appendix B – Meeting Records
Appendix C – Fremont Open City Hall Statement
Appendix D – Approval Documentation

1.4.9 Endnotes

Section 10 (Endnotes) provides specific reference to quotes and statistics used throughout the Local Hazard Mitigation Plan.

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Section 2 Local Planning Process

2.1 Previous Hazard Mitigation Planning Efforts

The process of preparing this plan was familiar to the City of Fremont since the City has previously completed two LHMP's. In compliance with the FEMA guidelines, the LHMP must be updated every five years. In 2006, the City approved joining (annexing) the Association of Bay Area Governments' (ABAG) region-wide plan as the most efficient way for the City to meet this FEMA requirement. In September 2009, the 2010 Update to the LHMP was posted on the City's website and the Council conducted a public hearing on December 15, 2009, to accept comments on the update. After the public comment period ended, the update was forwarded by ABAG to FEMA for approval. At the Council meeting of March 6, 2012, the Council approved a resolution adopting the ABAG report, "Taming Natural Disasters," as supplemented by the City of Fremont's LHMP Annex (including the City of Fremont Hazard Mitigation Strategies), as the City of Fremont's Local Hazard Mitigation Plan. The City Council approval was conditional, pending formal FEMA approval, which was granted in 2012. (Please note the 2012 LHMP was adopted in 2012, but the majority of the work took place in 2011.)

However, the 2016 LHMP is different, in that local agencies were requested to prepare their own LHMP that was not an annex to the Multi-Jurisdiction Hazard Mitigation Plan prepared by ABAG. As a result, the 2016 LHMP is the first plan prepared entirely by the City to reflect the City's specific hazards, and steps being taken to mitigate those hazards prior to a natural disaster. The 2016 LHMP encompasses all land within the Fremont City limits, and also addresses hazards outside of the city limits, that could induce secondary hazards within the City. Some information from the 2012 Annex to the Multi-Jurisdictional Hazard Mitigation Plan is referenced; however, this Plan provides a more focused evaluation on Fremont specific hazards. This document will provide a baseline for evaluating future hazards in Fremont, that addresses specific Fremont hazards, rather than hazards across the nine county Bay Area region.

2.2 City of Fremont Planning Team

Key City staff met to identify and prioritize mitigation strategies appropriate for the City. The 2016 LHMP was managed by staff in the City Manager's Office and included representatives from most City departments. A list of all participants involved in the preparation and review of the LHMP are included in the Acknowledgements section. Key members of the team include the Police and Fire Chiefs and command staff, Deputy City Manager, Public Works Director, Community Services Director, Deputy Director of Community Development, Deputy Director of Maintenance and Business Operations, City Engineer, Environmental Services Manager, Sustainability Coordinator, Chief Building Official and Facilities and Real Property Manager.

Staff held a kickoff meeting on January 25, 2016, to review the City's general priorities, taking into account the priorities identified in 2005, the 2010 regional priorities and the 2012 Fremont LHMP Annex to the ABAG Report, "Taming Natural Disasters." The Fremont Planning Team met a total of three times throughout the update process. Additional smaller meetings between team members occurred on a weekly basis. The City of Fremont Core Team (see Acknowledgements - City of Fremont Staff Core Team) with ABAG staff on one occasion and

had ongoing communication by email. Staff also participated in conference calls and webinars hosted by ABAG and FEMA.

Typically, each person at the Fremont Planning Team meetings was responsible for communicating existing efforts and thoughts on appropriate future action in their area of operation and expertise. Additionally, each department provided updates on what strategies have been addressed since the 2012 LHMP Annex, identification of strategies that remain current and addition of new strategies based on changes since 2012. These individuals provided local, subject matter experts related to City operations, key facilities and stakeholders.

Table 1 – Plan Development Meetings and Milestones provides an overview of the meetings that took place with the Fremont Planning Team. This summary table includes the dates of the meeting, description of the meeting, and number of attendees. Not included in this table are the weekly meetings that took place between the Deputy City Manager and Management Analyst working on this project. Appendix B – Meeting Records provides more comprehensive information on the planning meetings that took place. This includes the attendance log from all of the meeting, core planning meeting agendas, and Outlook Calendar events for these events.

Table 1 – Plan Development Meetings and Milestones

Date	Event	Description	Attendance
1/25/16	Core Planning Team Meeting # 1	• Introduction of LHMP Update • Introduction of Core Team Members Selected • Overview of planning process by ABAG	19 core team members & 1 ABAG staff
2/9/16	Core Planning Team Meeting # 2	• Reviewed 2010 mitigation strategies • Summarized completed strategies • Identified new strategies to be addressed • Discuss impact of Compact of Mayors	16 core team members
2/23/16	Meeting with Public Works Team Members	• Reviewed completed strategies • Identified new strategies • Received information on key development and assets maintained by Public Works	3 core team members & 2 support staff
2/24/16	Meeting with GIS	• Provided data and established parameters on mapping that was required	1 core team member & 2 support staff
2/29/16	Meeting with Social Media Team	• Developed a comprehensive social media plan for raising awareness. (Open City Hall, Twitter, Facebook, City Newsletter)	1 core team member & 2 support staff
4/7/16	Meeting with	• Reviewed completed strategies	4 core team members

	Community Services Team Members	• Identified new strategies • Reviewed the waste management contract	
4/7/16	Meeting with Police Team Members	• Reviewed completed strategies • Identified new strategies • Received information on key public safety concerns • Discussed the impact of man induced vs. natural disasters	3 core team members
4/11/16	Meeting with Public Works Team Members	• Reviewed completed strategies • Identified new strategies • Received information on key development and assets maintained by Public Works	5 core team members
4/11/16	Meeting with Community Development Team Members	• Reviewed completed strategies • Identified new strategies • Received information on key development • Discussed Building Code Update • Discussed what information was available for property owners and developers	6 core team members
4/15/16	Meeting with Fire Department Team Members	• Reviewed completed strategies • Identified new strategies • Received information on key public safety concerns • Reviewed draft strategies submitted by all other departments and evaluated them for a comprehensive plan	5 core team members
5/24/16	Core Planning Team Meeting #3	• Reviewed final list of comprehensive strategies • Ranked the ordering of strategies based on level of importance • Discussed plan update mechanisms to ensure LHMP would remain updated	14 core team members & 1 support staff
5/26/16	Follow Up Review with Fire Department Team Member	• Brief follow up meeting with Fire Department to review the Fire Hazard Maps and data utilized	2 core team members

* The City of Fremont Core Team (see Acknowledgements - City of Fremont Staff Core Team)

2.3 Outside Partner Agencies and Stakeholders

Given Fremont's large geographic area, staff reached out and coordinated efforts with other governmental agencies and stakeholders who have a significant investment in infrastructure and service delivery within the City. These agencies and stakeholders play a significant role in preparing for a natural disaster, responding to a natural disaster, and serving vulnerable populations following a disaster. Understanding these agencies' assets, services and response plans is vital to mitigating future natural disasters. Outside agencies and stakeholders were contacted by phone and/or email. All comments received as part of the ongoing communication with these stakeholders was documented and included in this plan. Stakeholders were asked to identify any additional areas of concern the City had not identified, and any specific plans that had been developed to prepare for and mitigate known hazards that would affect their site location, services or additional infrastructure. The stakeholders contacted include:

2.3.1 Education:

- Fremont Unified School District (FUSD)
- Ohlone Community College District
- California Department of Education
    - California School for the Deaf
    - California School for the Blind

2.3.2 Energy Transport:

- Chevron Corporation
- Kinder Morgan

2.3.3 Gas and Electric:

- Pacific Gas and Electric (PG&E)

2.3.4 Medical Facilities:

- Kaiser Permanente Medical Center, Fremont
- Palo Alto Medical Foundation, Fremont
- Washington Hospital Healthcare System, Fremont

2.3.5 Water, Wastewater and Flood Control:

- Alameda County Flood Control and Water Conservation District (ACFCWCD)
- Alameda County Water District (ACWD)
- California Department of Water Resources (DWR)
- San Francisco Public Utilities Commission (SFPUC)
- Union Sanitary District (USD)

2.3.6 Parks:

- East Bay Regional Park District (EBRPD)

2.3.7 Transportation:

- Alameda-Contra Costa Transit District (AC Transit)
- Altamont Corridor Express Train (ACE Train)

- Amtrak Capitol Corridor Train (Amtrak)
- Bay Area Rapid Transit District (BART)
- California Department of Transportation (Caltrans)
- Santa Clara Valley Transportation Authority (VTA)
- Union Pacific Railroad (UPRR)

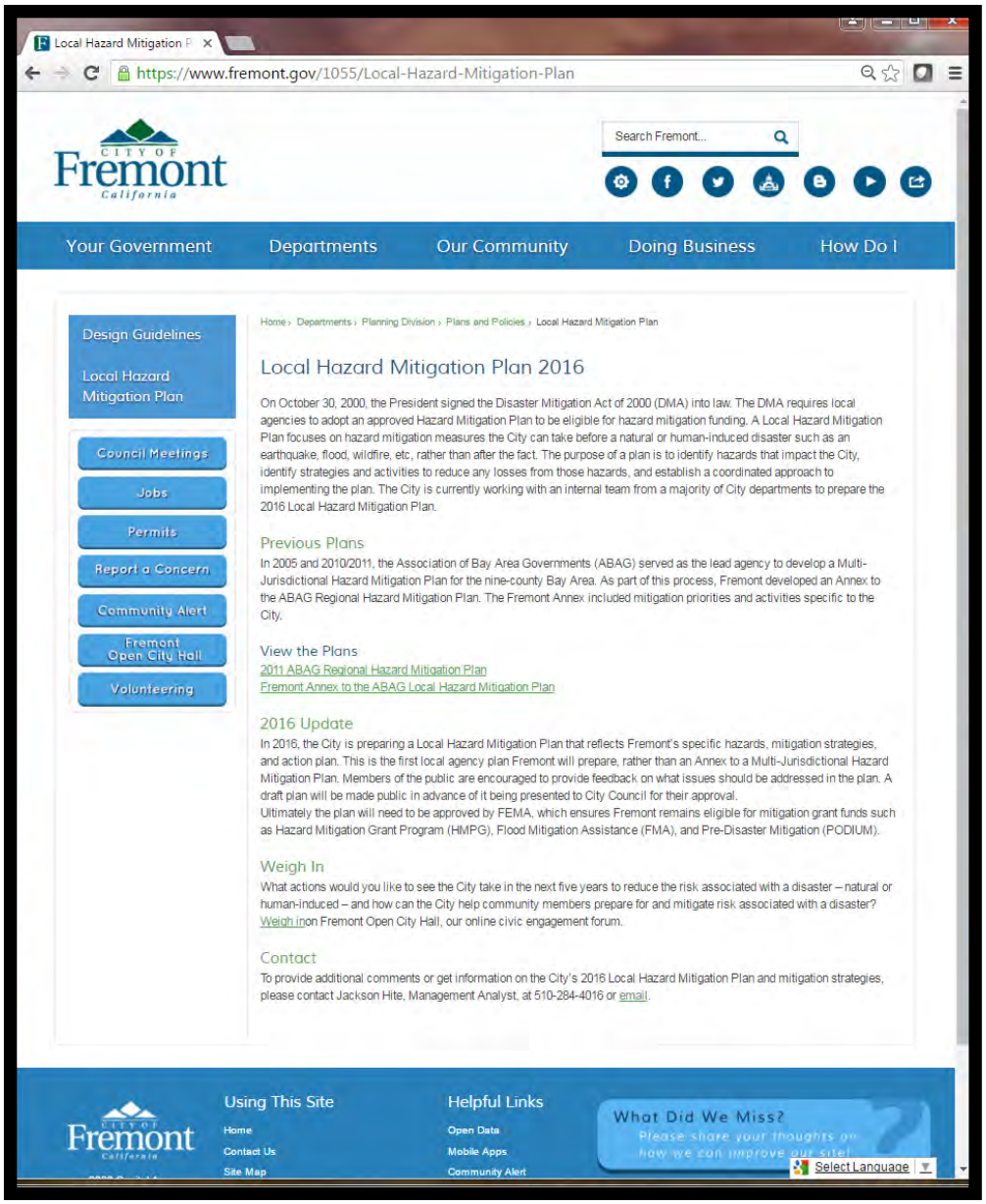
2.4 Public Outreach and Engagement

Public participation is important in mitigation planning to ensure the public is engaged and aware of what measures are taking place. The public outreach and engagement strategy included five components: a website, community newsletter, social media, news article and Open City Hall.

2.4.1 Website

The City updated the Local Hazard Mitigation Page of the website to include efforts related to the 2016 LHMP. Stakeholders, residents and members of the public were able to contact staff and provide input on the plan through this website.

Figure 1 – Local Hazard Mitigation Plan Website

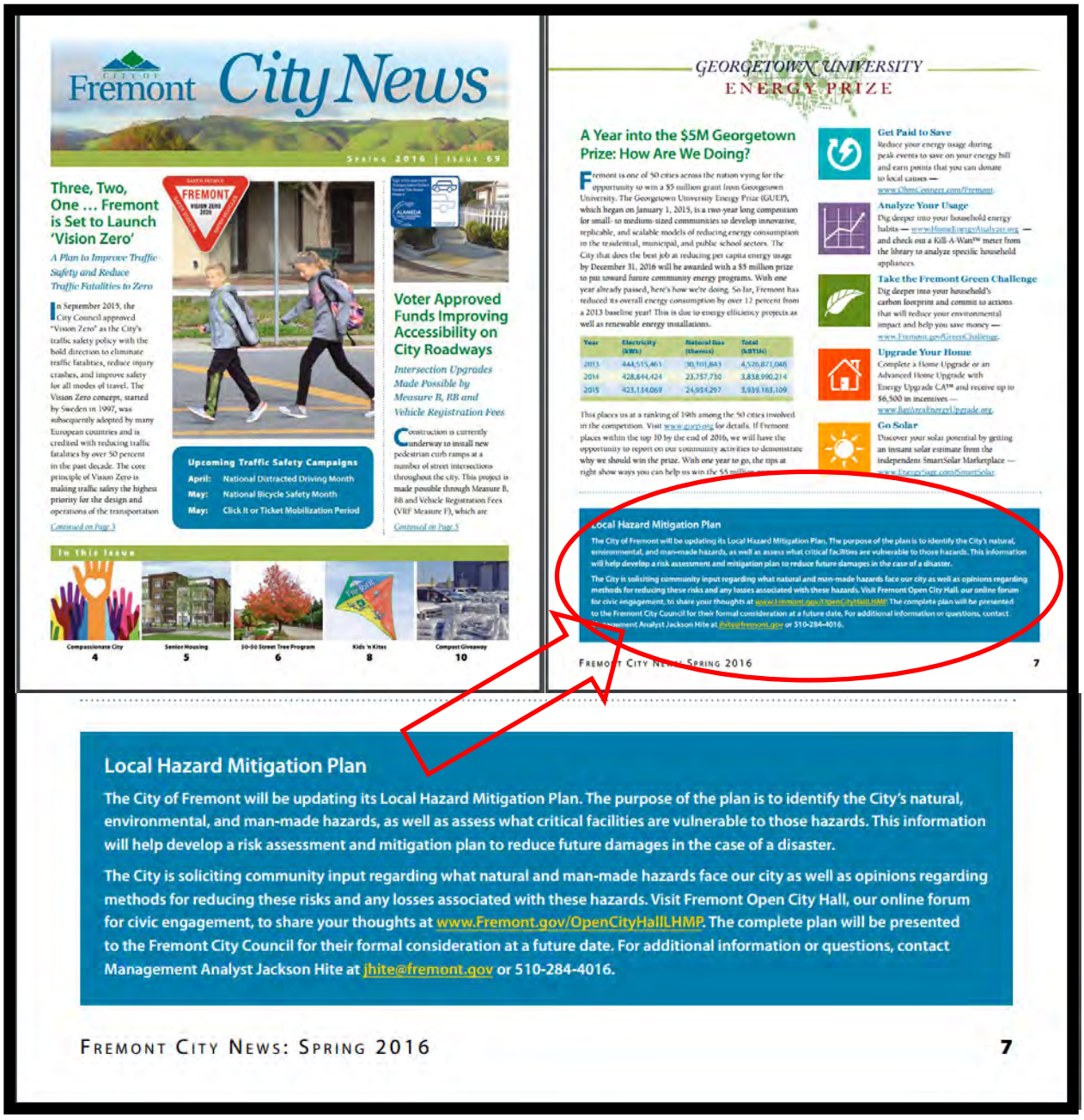


2.4.2 Newsletter

The City of Fremont publishes the *City of Fremont City News*, three times per year. City News provides information and updates on the Fremont community. 80,000 copies are printed, with 78,000 being delivered to households and the remaining copies are distributed at City facilities.

The bottom third of Page 7 of the Spring 2016 edition was dedicated to promoting awareness about the Local Hazard Mitigation Plan, and ways for residents to give feedback and share their ideas.

Figure 2 – *City of Fremont City News*, Spring 2016



2.4.3 Social Media

The City actively engages residents across a variety of social media platforms. To share information and get feedback on the Local Hazard Mitigation Plan, the City utilized Twitter, Facebook and Google+. The City has approximately 4,300 followers on Twitter, 3,700 likes on Facebook and 161 followers on Google+.

Figure 3 – Twitter Posts provides screenshots of the Twitter posts, along with data on the number of views of each post. There were a total of 8 tweets which resulted in: 8,354 impressions, with 42 users who clicked on the link to the Open City Hall survey, 16 retweets and one response.

Figure 4 – Facebook Posts provides screenshots of the Facebook posts, along with data on the number of views and likes for each post. There were a total of 6 Facebook posts which resulted in: a reach of 4,447 users, three likes and one share. All Facebook posts were also shared via Google+; however, Google+ only has an audience of approximately 161 users. Each Google+ post received one "+1".

2.4.4 Open City Hall

Open City Hall allows 24/7 engagement with residents on a variety of topics. The City posted a question to Open City Hall to solicit resident feedback. In addition to the question, the Open City Hall forum allows for background information on the question asked, residents can view each other's comments and all participants are notified of the outcome of their comments. The newsletter and all social media posts linked to the Open City Hall question. The Open City Hall question was sent to all residents who have completed Community Emergency Response Teams (CERT) training. In total, 150 people visited the Open City Hall topic and 16 statements were provided (9 on forum and 7 off forum). The Open City Hall topic was open for a total of 62 days. Staff reviewed each comment, and incorporated community concerns into the document. A list of the 16 statements can be found in Appendix B – . Figure 5 – Open City Hall Question shows the Open City Hall question as it was published online.

2.4.5 News Article

The *Fremont Bulletin* which is published by *The Mercury News* wrote an article on Fremont's efforts related to the Local Hazard Mitigation Plan. The article was published on Thursday, May 12, 2016.[ii]

2.4.6 Comprehensive Engagement Results

In total, outreach efforts included contacting 78,000 households; engagement with 8,354 Twitter users; engagement with 4,447 Facebook followers; and, 160 viewers of the Open City Hall topic. These outreach efforts led to 24 comments on the plan. The breakdown for how comments were received is:

- 16 statements via Open City Hall (9 on forum / 7 off forum)
- 1 statement via Twitter
- 3 emails
- 4 phone calls

All comments received were considered and incorporated when preparing the Local Hazard Mitigation Plan.

Figure 3 – Twitter Posts

718 impressions | 2 link clicks | 1 retweet

1,717 impressions | 12 link clicks | 4 retweets

1,605 impressions | 5 link clicks | 0 retweets

893 impressions | 6 link clicks | 3 retweets

1370 impressions | 14 link clicks | 4 retweets

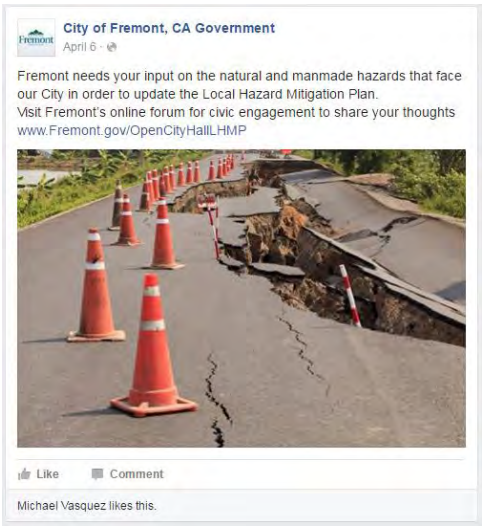
563 impressions | 0 link clicks | 2 retweets

783 impressions | 2 link clicks | 1 retweets

705 impressions | 1 link clicks | 1 retweets

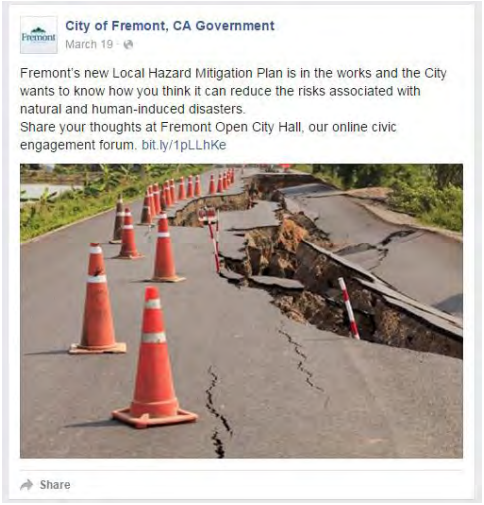
Figure 4 – Facebook Posts

607 reach | 0 likes



772 reach | 1 like

662 reach | 1 share

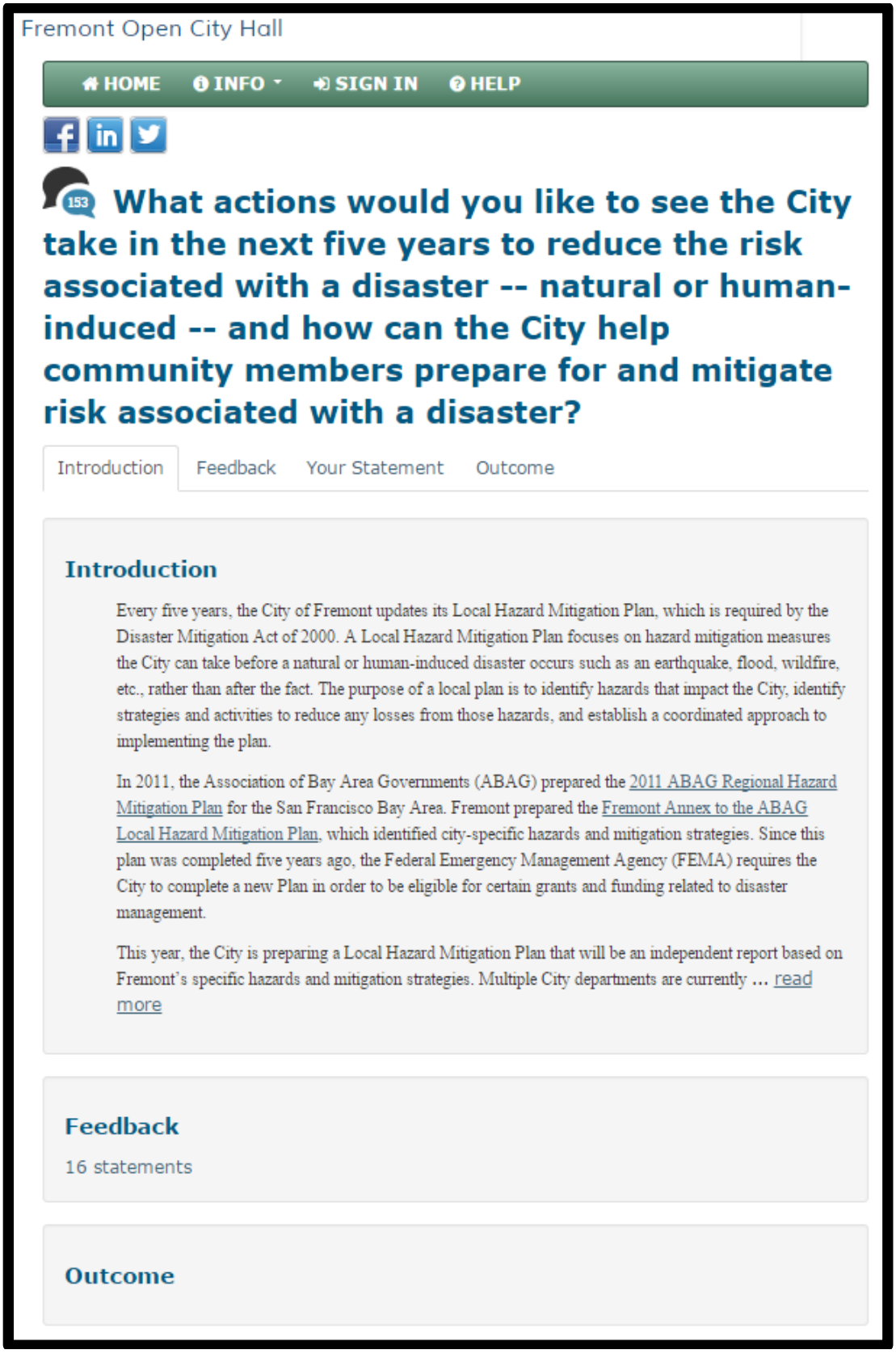


945 reach | 1 like

889 reach | 1 like

572 reach | 1 like

Figure 5 – Open City Hall Question



2.5 Review and Incorporation of Existing Information

Due to the change from a multi-jurisdictional hazard mitigation plan to a local hazard mitigation plan, significant information related to Fremont was developed, and the formatting of the plan changed from an annex to a stand-alone plan. This process involved consideration of both the hazard and risk information developed by ABAG. The identified hazards were examined at a local level in Fremont. Maps were prepared to identify the impact of these hazards on City facilities and other vital infrastructure that provides basic services to residents. The City examined existing plans and programs in place that address disaster mitigation and planning. The primary plans reviewed were:

- Capital Improvement Program (CIP) (FY 2015/16 through 2019/20)
- Climate Action Plan (adopted November 13, 2012)
- Community Rating Systems (entered into system in 2001 with a rating of Class 7)
- County of Alameda 2016 Local Hazard Mitigation
- General Plan 2030 Safety Element (adopted December 13, 2011)
- *Taming Natural Disasters* – Multi-Jurisdictional Local Hazard Mitigation Plan for the Bay Area and Fremont Annex (2012)

The Capital Improvement Program is updated biannually. The CIP forecast and allocates resources the City will use to build and maintain its infrastructure between FY 2015/16 and FY 2019/20. The plan allocates money for capital projects and the maintenance of existing infrastructure for two years, but it defines a plan that looks forward five years. The CIP is a budget, but it is also a tool to facilitate strategic though and comprehensive capital planning. Certain components of the CIP address public health, safety and critical assets.

The City's Climate Action Plan goals were to identify specific and achievable actions for reducing greenhouse gas emissions in Fremont. Additionally, the Climate Action Plan is to serve as a resource for continued engagement, education, motivation and inspiration of the community and City organization as we work together on this critical initiative. The Climate Action Plan is meant to provide a roadmap, while maintaining the flexibility to respond to opportunities, such as partnerships and funding mechanisms, when they arise.

The Flood Disaster Protection Act of 1973 and the National Flood Insurance Reform Act of 1994 requires the purchase of flood insurance as a condition of Federal or Federally related financial assistance for buildings within Special Flood Hazard Areas. With the City's floodplain ordinance, monitoring of development and construction practices help reduce flood losses and high government costs associated with flood disasters. The City of Fremont entered into a Community Rating System in 2001 with a rating of Class 7. The rating provides property owners within Special Flood Hazard Areas a 15% reduction in premiums for flood insurance.

The City has a Safety Element to its General Plan 2030 that includes a discussion of fire, earthquake, flooding, and landslide hazards. The purpose of the Safety element of the General Plan is to guide decision making that helps reduce risks associated with environmental hazards.

Taming Natural Disasters – Multi-Jurisdictional Local Hazard Mitigation Plan for the Bay Area and Fremont Annex are the 2012 plans which were used as the baseline of previous efforts by ABAG and the City for hazard mitigation planning purposes.

The City also reviewed regional plans for consistency and collaboration while preparing the LHMP. The county and state plans reviewed included:

- County of Alameda 2016 Local Hazard Mitigation Plan
- 2013 State of California Multi-Hazard Mitigation Plan

In addition, the City routinely enforces the requirements of the California Environmental Quality Act (CEQA), which, since 1988, have required mitigation for identified natural hazards. The City's effort has focused on building on these pre-existing programs and identifying gaps that may lead to disaster vulnerabilities in order to work on ways to address these risks through mitigation.

2.6 Adoption of Plan at Public Meeting

Following review and approval by California Governor's Office of Emergency Services and Federal Emergency Management Agency, the Fremont Planning Commission and City Council will review and consider the Local Hazard Mitigation Plan as a public hearing at a public meeting. Staff's recommendation will be for the City Council to adopt the Local Hazard Mitigation Plan via an official Resolution as an Appendix to the General Plan's Safety Element. Public meetings are open to the public and any member of the public can speak on any agenda item.

2.6.1 Adoption Documentation

Appendix D – Approval Documentation will be used to identify the approval of the Local Hazard Mitigation Plan by Federal Emergency Management Agency. At a minimum, the documentation will include:

- The staff report from the Fremont Planning Commission meeting
- The staff report and resolution from the Fremont City Council meeting
- Approval letter from FEMA

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Section 3 Community Profile

3.1 Community Overview

The purpose of this section is to provide information on the City of Fremont, including the population demographics, geography, government, housing and economy, infrastructure and facilities inventory, and recent and projected development activities. As with most organizations, these components are constantly evolving, which makes it important to understand the community's vulnerabilities and how to best prepare for hazard mitigation and responses.

3.2 Demographics

Fremont was incorporated on January 23, 1956 when the City had a population of 22,443. Since that time, Fremont has grown extensively and has 229,324 residents, as of January 1, 2016. According to the 2010 census, the City had a population of just over 214,089. [iii] The number of people living in Fremont has grown by over 15,000 in the past six years. Fremont is the 95th most populous city in the nation, California's 16th largest city, fourth most populous city in the Bay Area, and the second largest in Alameda County. Looking ahead, the Fremont General Plan predicts the population being approximately 256,000 by 2035.

Fremont grew rapidly as a young city – by almost 600% between 1956 and 1990. Growth has since slowed substantially. Fremont's population increased by about 17% between 1990 to 2000, and since 2000, it has grown by about 5%.This growth rate is expected to continue through 2035.

Table 2 – City of Fremont and Alameda County Population

Year	Fremont	Alameda County
1956	22,443	-
1960 Census	43,790	908,209
1970 Census	100,869	1,073,184
1980 Census	131,945	1,105,379
1990 Census	173,339	1,279,182
2000 Census	203,413	1,443,741
2010 Census	214,089	1,510,271
2016 (DOF)	229,324	1,627,865

Source: California Department of Finance and 1960-2010 Census [iv] [v]

Fremont's population has experienced many changes in demographics over time. The population is getting older, with a large increase in the population aged 65 and over. In 1990, 6.5% of Fremont's population was over the age of 65. In 2010, that number has grown to about 10.2%.

Table 3 – Population Age Distribution, 1990-2010[vi]

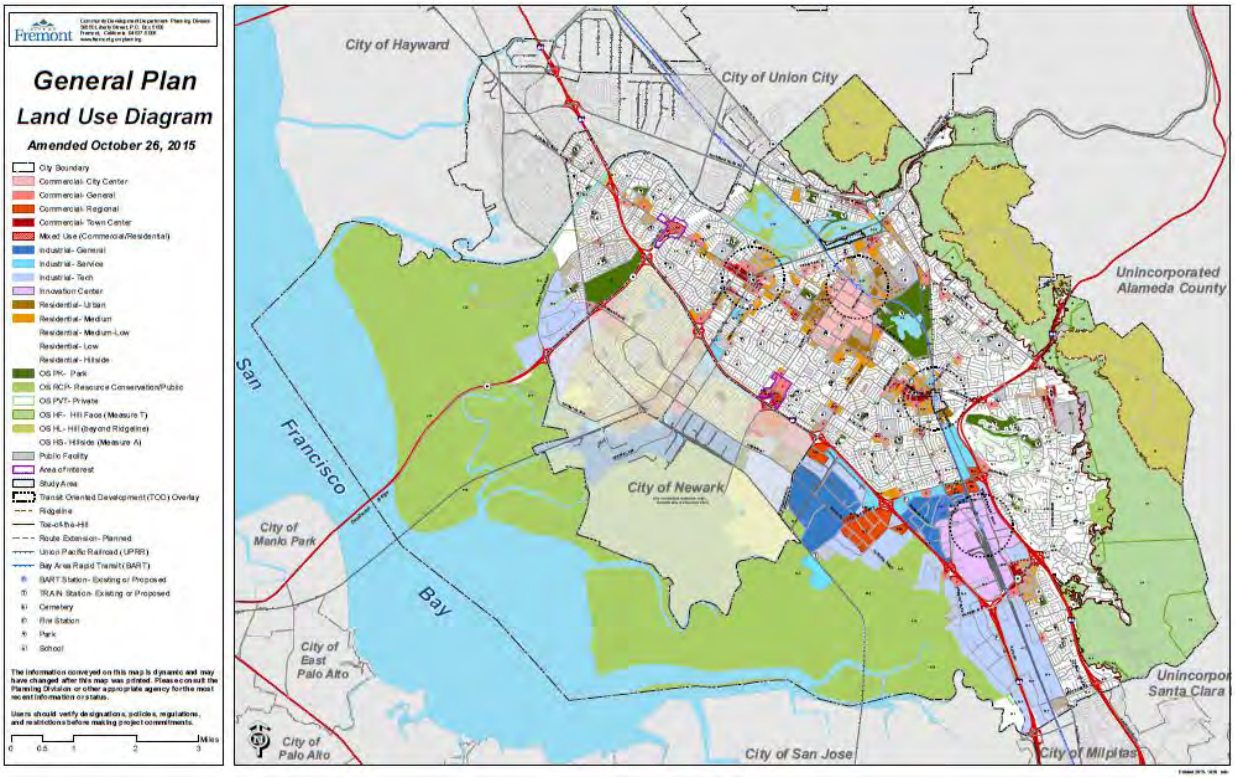
Age Group	1990	2000	2010
Under 5	8.2%	7.4%	7.1%
5-17	17.7%	18.4%	17.7%
18-64	67.6%	65.9%	65.0%
65 and over	6.5%	8.3%	10.2%

Fremont has become a very diverse community. When reviewing the Census data from 1990 through 2010, it is clear that Fremont continues to change. In 1990, the percentage of Asian population was approximately 19%, and by 2010, the Asian population had increased to about 50%. At the same time the non-Hispanic White population is steadily declining and in 2010 represented 33% of the population. The Hispanic population accounts for another 14% of the population; and 3% are Black / African American. [vii] As Fremont's population grows, becomes more diverse and gets older, the City will need to continue to evolve to meet the community's needs and changing demographics. This is relevant for the LHMP as the City works to prepare and interact with these residents that have different needs in terms of communication, cultural sensitivity and aging needs.

3.3 Land Use and Geography

The General Plan is the foundation upon which all development decisions are based and sets priorities and goals for the future. The Zoning Ordinance implements the policies of the General Plan by classifying and regulating the uses of land and structures within the City. Map 1 – General Plan Land Use Diagram depicts the current land use identified by the General Plan.

Map 1 – General Plan Land Use Diagram

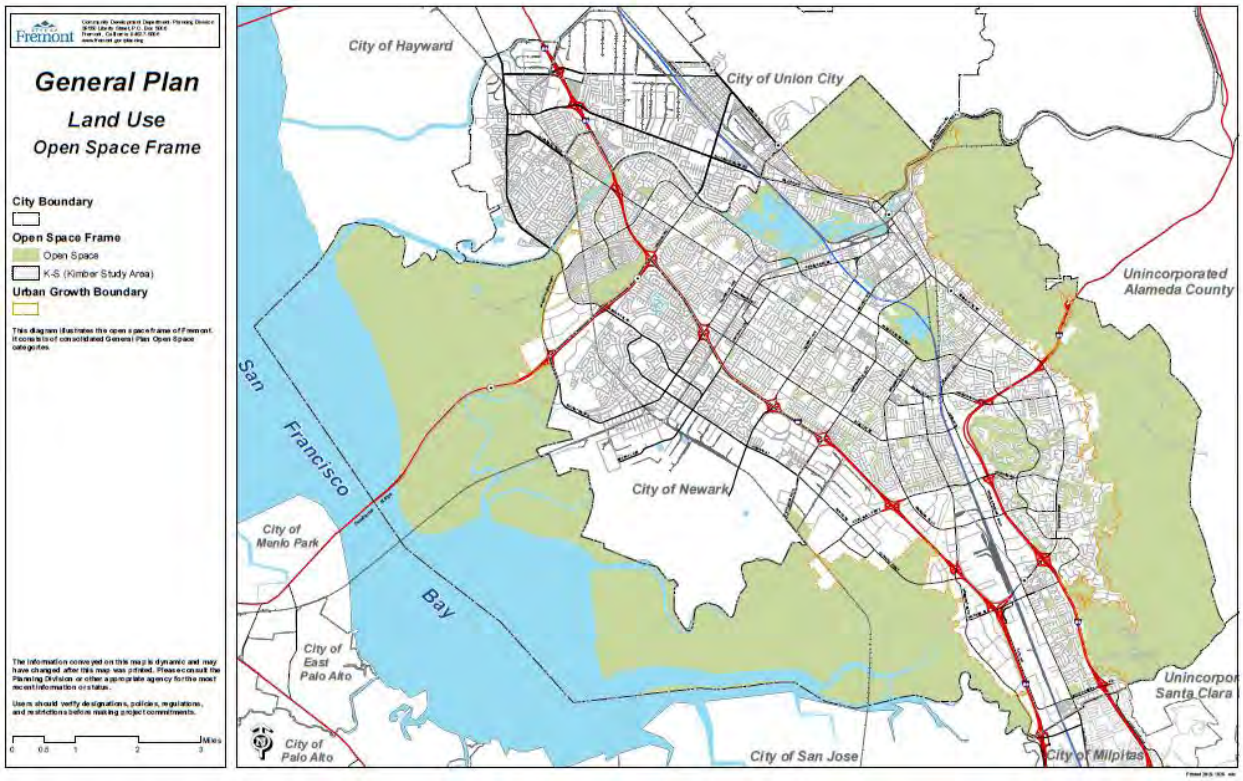


* A full size map can be found in Appendix A

Located on the southeast side of the San Francisco Bay, Fremont encompasses an area of 92-square miles. However, over half of this area is located in the Hills, Baylands, and Bay itself. These parts of the City are designated as open space and have little, if any, development

potential. The City's boundaries are roughly defined by the Fremont hills to the east, the Baylands to the west and open space to the northwest. The City's Open Space is identified by Map 2 – General Plan Open Space Frame. Its overall position within the urban context of the Bay Area is defined by its topography and adjacent communities; Union City to the North, Milpitas to the South, and the City of Newark to the West. [viii]

Map 2 – General Plan Open Space Frame



* A full size map can be found in Appendix A

3.4 Government

Fremont is a General Law City that operates under the Council/Manager form of government. The City Council consists of a Mayor and four Councilmembers. The Mayor is directly elected and serves a four year term, while the councilmembers serve four year overlapping terms.

The City's budget in FY 2015/16 was $289.4M, with the General Fund accounting for $174.3M. The proposed budget in FY 2016/17 is $288.5 million, with the General Fund accounting for $183.1 million. The FY 2015/16 – 2019/20 Adopted Capital Improvement Program has a five year total of approximately $161.5 million. The total number of employees, represented as full-time equivalent positions, is 882. The City provides both local police and fire services.[ix]

3.5 Housing and Economy

Fremont has a diverse economy. Fremont has become a technology hub feeding off of its location in Silicon Valley and has a variety of businesses related to computer hardware, software, manufacturing, research and development, and more recently, biotechnology, life sciences and "green" technology. The City's industrial areas are located primarily in the south and southwestern portion of the City and support a wide range of activities including high technology, biotechnology, vehicle assembly, manufacturing, warehousing and distribution. In 2008, Fremont had approximately 54,000 professional and manufacturing jobs. This number is expected to increase to about 75,000 over the next 20-25 years.

Fremont also includes a large number of service and retail jobs. In 2008, Fremont had about 18,000 retail, service and related jobs with this number expected to increase to about 28,000 in the next 20-25 years. The majority of these jobs are found in Fremont's retail areas.

Health care and education are also leading industries in Fremont with approximately 22,000 health care and education jobs. That number is expected to grow over the next 20-25 years. The majority of the healthcare jobs are found at the hospitals. Fremont Unified School District and Ohlone College provide the majority of the education jobs.

Overall, the largest employers (listed alphabetically) are: Asteel Flash, Boehringer Ingelheim, Boston Scientific, City of Fremont, Fremont Unified School District, Kaiser Permanente, Lam Research, Mattson Technology, Mentor Graphics, Office Depot, Palo Alto Medical Foundation, Quanta Computer, Sanmina-SCI, Seagate, Synnex, Sysco Food Services, Tesla Motors, Thermo Fischer Scientific, Washington Hospital and Western Digital.[x]

As employment grows, Fremont will be challenged to provide adequate housing and services to these workers. In fact, over time job growth has outpaced housing growth resulting in increases in housing costs and an imbalance between housing and jobs. [xi] The 2013 projections from ABAG indicate that there will be a 24% increase in housing unit growth from 2010 to 2040, while during the same time there will be a 33% increase in job growth. ABAG's projections indicate 90,010 total jobs in 2010 and an anticipated 120,000 jobs in 2040 in Fremont. In terms of housing, there were 73,990 units in 2010, and 91,620 housing units are anticipated in 2040. [xii]

3.6 Building Inventory

The City owns or rents many facilities for different government functions. Additionally, there are other public facilities identified in the General Plan that serve important functions for the rest of the community. These other facilities include public school sites and facilities.

3.6.1 Primary City Facilities

Map 3 – City Buildings depicts a majority of City owned facilities.

3.6.1.1 Public Safety

The Police Building includes administration, jail, evidence warehouse and dispatch for all 9-1-1 calls. Additionally, the Animal Shelter is on site. There are 11 fire stations and a public safety

training center. The City's Emergency Operations Center is located at the Public Works Maintenance Facility.

3.6.1.2 General Government

The general government facilities include City Hall, Council Chambers, Fremont Development Services Center and Fremont Family Resource Center.

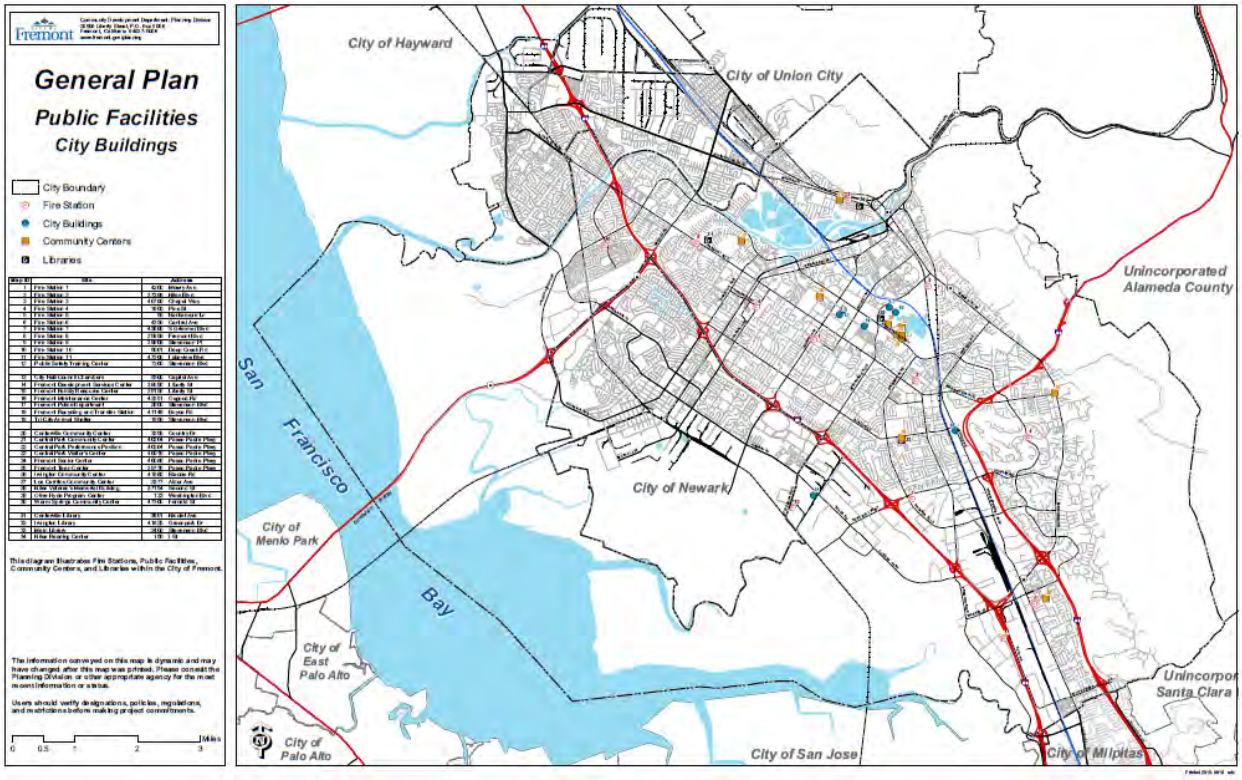
3.6.1.3 Libraries and Community Centers

The community centers include: Centerville Community Center, Central Park Community Center, Central Park Performance Pavilion, Central Park Visitor's Center, Fremont Senior Center, Fremont Teen Center, Irvington Community Center, Los Cerritos Community Center, Niles Veteran's Memorial Building, Olive Hyde Program Center and Warm Springs Community Center. The City owns three library buildings which are leased to Alameda County Library System which operates the libraries. They are: Centerville Library, Irvington Library and Main Library. Alameda County Library also operates the Niles Reading Center branch in Fremont.

3.6.1.4 Public Works and Maintenance

The City's maintenance center administration, maintenance shop, vehicle maintenance, roll off shelter, materials storage, fueling station, wash rack, equipment enclosure and emergency operations center are located on Osgood Road.

Map 3 – City Buildings



* A full size map can be found in Appendix A

3.6.2 Educational Buildings

3.6.2.1 Fremont Unified School District

Public schools in Fremont are operated by the Fremont Unified School District (FUSD), which is governed by a five-member elected board. FUSD has 28 elementary schools serving grades kindergarten through 6, one elementary school serving grades K through 3, one elementary school serving grades 3 through 6, five junior high schools serving grades 7 and 8, five high schools serving grades 9 through 12, and one continuation school. The District also operates an adult school and is a participating District in a regional occupational program. The total enrollment of the School District was 33,935 students in school year 2014/15. [xiii]

In 2002 Fremont voters approved a $157 million "Health and Safety Bond" measure. As part of that bond, $43 million was spent on seismic retrofits, $18 million on heating and cooling and $8 million on fire alarms, all of which reduces the vulnerability associated with the FUSD facilities. In 2014, Fremont voters approved a $650 million bond measure which includes abatement of all remaining asbestos and other safety and security measures, along with technology improvements and capacity expansion.

3.6.2.2 Private Schools

There are additional private schools in Fremont that are not government operated facilities. It's estimated that the private schools have an enrollment of approximately 3,500 students. The different private schools were not evaluated as part of this report.

3.6.2.3 State of California Schools

The State of California operates two schools in Fremont: The School for the Blind and the School for the Deaf. Both schools are on a shared site and are under the jurisdiction of the State Office of Education.

California School for the Blind is a public education institution for blind children in grades K-12. The School for the Blind is a statewide resource offering expertise in the low prevalence disabilities of visual impairment and deaf blindness, through innovative model programs, assessment, consultation and technical assistance, professional development, research and publications, advocacy and outreach. The campus is approximately 25 acres and serves approximately 100 students.

California School for the Deaf is a publicly accredited school in the State of California that serves Deaf children in grades K-12. The school serves approximately 500 students and approximately half of the students live on campus.

3.6.2.4 Ohlone Community College District

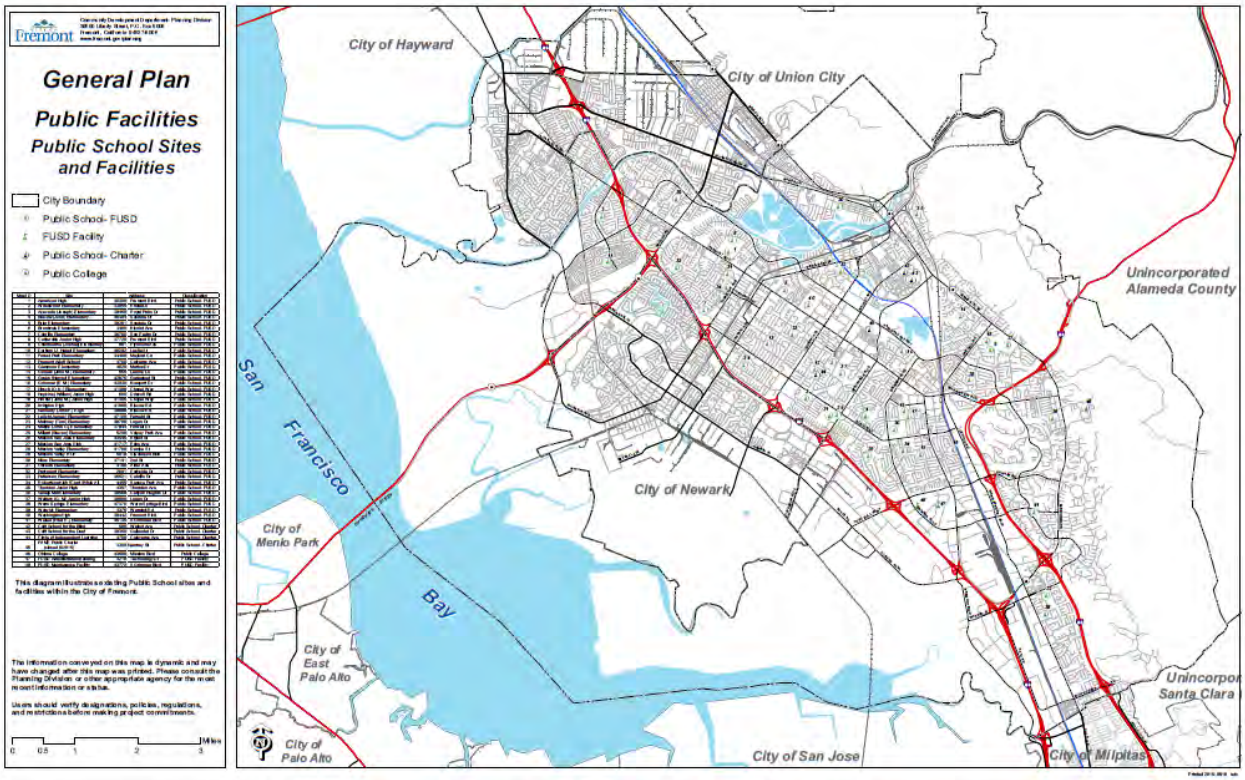
The Ohlone Community College District serves the cities of Fremont, Newark and parts of Union City. Ohlone College's Fremont campus is one of the two campuses operated by the district, and the only one that is located in the City. The other campus is located in Newark. The two campuses serve approximately 11,500 students with 465 staff members.

In November 2010, voters of the Ohlone Community College District passed Measure G, a $349 million General Obligation Bond. The purpose of the bond was to continue renovation efforts

initiated in 2002 when a $150 million general obligation bond was passed, upgrade facilities for earthquake and fire, improve disabled access and address infrastructure issues.

Map 4 – Public School Sites and Facilities depicts all of the public educational facilities.

Map 4 – Public School Sites and Facilities



* A full size map can be found in Appendix A

3.6.3 Healthcare Buildings

Hospitals are not operated or owned by City government, but they are critical to disaster response. Following a disaster, hospitals must be able to care for existing patients, and any new patients who were impacted by the disaster. Additionally, a hospital must be functional following a disaster to ensure it can continue to operate and provide necessary services.

Following the 1971 San Fernando earthquake, when a hospital collapsed, the State passed the Alfred E. Alquist Seismic Safety Act which requires every hospital in California with acute care patient facilities to be built to higher standards than other buildings so they can be reoccupied after a major earthquake. Following the 1994 Northridge earthquake, Senate Bill 1953 expanded the scope of the 1973 Act to require:

- By 2002, all critical non-structural components in surgery and emergency medical rooms be retrofitted;

- By 2013, all hospital buildings built before 1973 be replaced or retrofitted so they can reliably survive earthquakes without collapsing or posing threats of significant loss of life; and
- By 2030, all existing hospitals (including those built after 1973) be seismically evaluated and retrofitted, if needed so they are reasonably capable of providing services to the public after disasters.

The Office of Statewide Health Planning and Development develops and regulates seismic performance standards for hospitals. Fremont has three primary medical services providers which are Kaiser Permanente Medical Center, Palo Alto Medical Foundation – Fremont Center and Washington Hospital.

3.6.3.1 Kaiser Permanente

Kaiser Permanente is an integrated managed care consortium and operates the Kaiser Permanente Fremont Medical Center and Offices in Fremont. The Fremont location provides emergency care, a pharmacy and many other services; however, it does not have an urgent care facility on site.

3.6.3.2 Palo Alto Medical Foundation

The Palo Alto Medical Foundation's Fremont Center has provided family-centered health care for Fremont and Tri-City area residents since 1984. The Fremont center includes doctors' offices, a laboratory, radiology and urgent care.

3.6.3.3 Washington Hospital

The Washington Hospital in Fremont is part of the Washington Hospital Healthcare System. As the local health care district, the hospital's mission is to meet the health care needs of the District's residents.

The current hospital is a 341-bed acute-care hospital. In February 2015, Washington Hospital broke ground on a new $339 million emergency and critical care facility. The new emergency and critical care facility will have 48 private beds in the coronary care unit and intensive care unit. The pavilion will provide an additional 68 private medical-surgical beds and support space. As part of the construction, the new facility is being built with the latest seismic technology to ensure the emergency and critical care facility will remain intact and functional following an earthquake.

3.6.3.4 Oher Medical Facilities

There are additional urgent cares and a multitude of medical offices that provide other non-emergency medical services. The City does not own or operate these buildings or facilities; however, health services are vital following a disaster. Due to the number of these offices, they were not gathered and included as part of this plan.

3.6.4 Parks

The City owns and maintains 52 parks which consist of 850 acres of land. East Bay Regional Park District (EBRPD) is a system of parklands and trails in Alameda and Contra Costa County. The entire system includes 120,536 acres in 65 parks, including 1,250 miles of trail. EBRPD has six parks in Fremont, which include:

- Ardenwood Historic Farm
- Coyote Hills Regional Park
- Mission Peak Regional Preserve
- Ohlone Regional Wilderness
- Quarry Lakes Regional Recreational Area
- Vargas Plateau Regional Park

The East Bay Park District's facilities are located along the eastern and western edges of Fremont. The facilities are large spaces that allow for recreational activities such as biking, walking, hiking and bird watching.

A portion of the Don Edwards San Francisco Bay National Wildlife Refuge is located in Fremont and managed by the U.S. Fish and Wildlife Service. The refuge is located in Alameda, San Mateo and Santa Clara counties and consists of 300,000 acres of open bay, salt pond, salt marsh, mudflat, upland and vernal pool habitats.

3.7 Utility Inventory

Utilities are provided by other government entities and private agencies. These include overhead utilities (power, telecom), underground-dry (power, telecom, gas), underground-wet (water, sanitary sewer, storm drain), waste management (garbage and recycling) and utility buildings (substations, telecom switching, pump stations). California Public Utilities Commission regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit and passenger transportation companies in California.

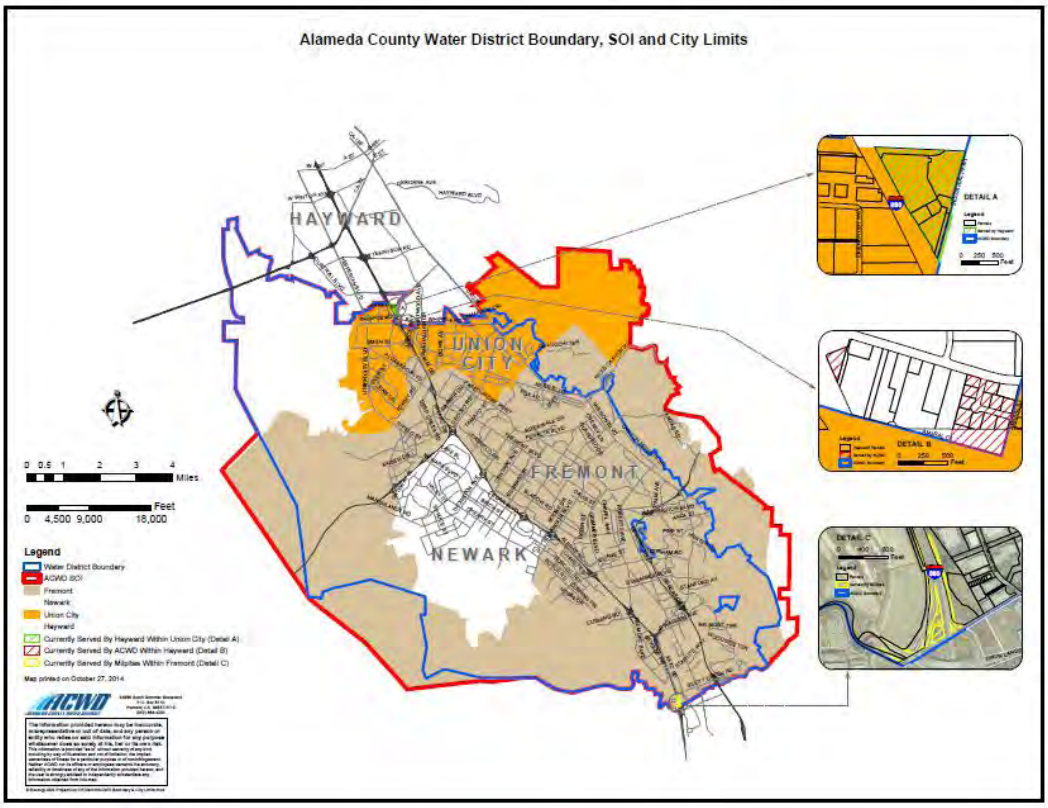
3.7.1 Water Supplier

The Alameda County Water District (ACWD) provides potable water to Fremont. ACWD currently has three primary sources of water. About 40 percent of the total water supply is purchased from the State Water Project. Approximately 20 percent of the total water supply originates from the San Francisco Regional Water System, which is operated by the San Francisco Public Utilities Commission (SFPUC). The remainder – about 40 percent of the total water supply – originates locally from the Del Valle Reservoir, Alameda Creek Watershed and the Niles Cone groundwater basin. ACWD distributes water to customers via a series of treated water storage facilities, water mains and laterals located throughout Fremont.

ACWD is responsible for maintaining the distribution network. Much of the Hill Area is served by private on-site wells because of the low number of residences and the difficulty of providing water distribution to this area. ACWD maintains approximately 880 miles of pipe in their 3-city service area of Fremont, Newark and Union City, which is approximately 104.8 square miles. ACWD has one active surface water treatment plant in Fremont, a Blending Facility, San Francisco Regional Water Supply System direct takeoffs, and the Newark Desalination Facility. Customers receive their water from ACWD through underground pipes that connect with transmission lines.

Map 5 – ACWD Service Territory depicts ACWD's sphere of influence.

Map 5 – ACWD Service Territory



* A full size map can be found in Appendix A

3.7.2 Water Management

There are two water agencies which have pipelines that pass through Fremont; however, they are not the direct water distributor for commercial or residential purposes. Department of Water Resources (DWR) and San Francisco Public Utilities Commission (SFPUC) provide water throughout the Bay Area Region, and also have dams located east of Fremont. These dams are used for water storage and regulation. While they are located outside of Fremont's City limits, they do pose a risk in the event of dam inundation. Santa Clara Valley Water District (SCVWD) also owns a dam southeast of Fremont which poses a risk in the event of dam inundation.

3.7.2.1 Department of Water Resources

DWR planned, designed, constructed and operates the State Water Project (SWP). The main purpose of the SWP is water supply, including storage and distribution to member agencies.

The South Bay Aqueduct has been conveying water to Alameda County since 1962. The South Bay Aqueduct transports water from Bethany Reservoir through many pumping units and pipelines before a junction point where a portion is diverted to Lake Del Valle. Beyond the Lake Del Valle junction, water flows by pipeline past Sunol, through Mission Tunnel and then south to the termination point which is 5 miles east of downtown San Jose. Fremont's water supply is diverted from this line to Alameda County Water District which is responsible for the local water delivery.

DWR owns and maintains Lake Del Valle on the Arroyo Valle, which was completed in 1968 and has a total capacity of 77,100 acre feet.

3.7.2.2 San Francisco Public Utilities Commission

SFPUC maintains the complex water supply system, Hetch Hetchy Regional Water System, stretching from the Sierra Nevada to San Francisco. The system provides water for all San Francisco residents, and delivers wholesale supplies to 26 suburban agencies in Alameda, Santa Clara and San Mateo County.

Approximately 85% of San Francisco's Water comes from the Hetch Hetchy Regional Water System. An additional 15% comes from the Alameda and Peninsula Watersheds. The Alameda watershed is located in Alameda and Santa Clara Counties, with water stored in the Calaveras and San Antonio Reservoirs.

The water from Hetch Hetchy Regional Water System goes through Fremont in several pipelines that enter the City on the eastern side of the City. Three pipelines extend to the western edge of the City and go under the San Francisco Bay in a new Bay Tunnel to the San Francisco peninsula. Another two pipelines extend south out of the City limits and loop around the southern portion of San Francisco Bay.

Water collection in the Alameda Water Shed is stored just outside of Fremont in the Calaveras and San Antonio Reservoirs. Calaveras Reservoir was completed in 1925 and has a total capacity of approximately100,000 acre feet. Currently SFPUC does not let this reservoir exceed 40% of capacity due to seismic concern of the dam. A new dam is expected to be completed at Calaveras Reservoir in 2018.

The San Antonio Reservoir sits behind the James H. Turner dam on San Antonio Creek, which was completed in 1964, and holds 50,500 acre feet.

3.7.2.3 Santa Clara Valley Water District

The Santa Clara Valley Water District owns the Leroy Anderson dam on the Coyote River. This dam was completed in 1950 and has a total capacity of 91,300 acre feet.[xiv]

Findings of a seismic stability evaluation performed in 2007 on Anderson Dam indicated that the downstream and upstream embankments could become unstable during a very large magnitude earthquake and the rupture of faults underlying the dam may have adverse impact on the outlet pipes and intake structure. Currently, a storage restriction of about 45 feet below the dam crest has been put in place to protect the public with a reduced storage capacity of 61,810 acre feet. The water district has initiated a capital project, (ADSRP), to complete the planning, design and construction of the seismic retrofit of the dam. The project is currently in the design and environmental (CEQA) process phase. The construction work of the ADSRP is planned to start in 2018.

3.7.3 Wastewater

The Union Sanitary District (USD) is an independent fee-supported special district that provides wastewater collection, treatment, and disposal services to the residents and businesses of the cities of Fremont, Newark and Union City. USD serves a total of 60.2 square miles, including 36.4 square miles in Fremont. Areas not served by USD include isolated portions of Fremont near the Baylands, Hill Area and North Fremont area. There are no residents or commercial users in the Baylands, and therefore no need for wastewater collection. Portions of the Hill Area outside the USD service area are served by private septic systems on site. As of 2015, USD maintains approximately 811 miles of sewer infrastructures and treats approximately 21.85 million gallons of wastewater daily.

Wastewater generated within the USD service area is collected and conveyed by gravity sewers to three major pump stations. The Irvington Pump Station serves the southern portion of the service area, the Newark Pump Station serves the central portion of the service area and the Alvarado Pump Station serves the northern portion of the service area. Wastewater collected in the southern and central areas is transported to the Alvarado Wastewater Treatment Plant in Union City via force mains prior to outfall in the San Francisco Bay after treatment.

3.7.4 Flood Control and Water Conservation

The Alameda County Flood Control and Water Conservation District (ACFC/WCD) and the City of Fremont share the responsibility for storm drainage to San Francisco Bay. The City is responsible for ownership and maintenance of all local street drainage systems that drain into the District's flood control major underground pipe systems and open channels. Alameda County Flood Control and Water Conservation District's primary focus is to plan, design and construct flood control projects. Alameda County Flood Control and Water Conservation District has delineated watersheds into management (Flood Control) zones.

Fremont has two management zones. Zone 5 is one of the largest zones and incorporates over 36 miles of natural waterways including Alameda Creek, Crandall Creek, Dry Creek, and Plummer Creek. It also includes 50 miles of engineered flood control channels. Stormwater in this watershed travels through channels, pipelines, and underground culverts to three pump stations which lift and discharge stormwater to San Francisco Bay.

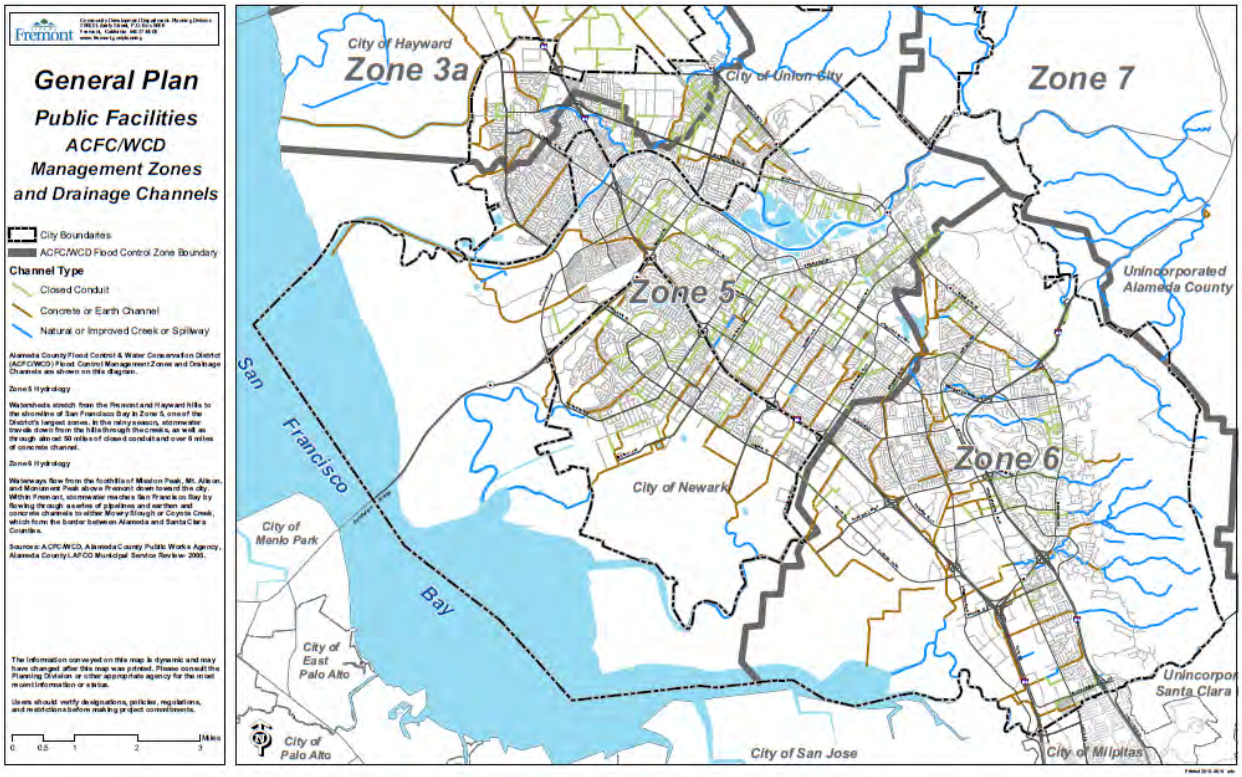
Zone 6 includes the following creeks: Laguna, Mission, Canada del Aliso, Agua Caliente, Agua Fria, Toroges and Scott. Water from these creeks flow through a series of pipelines and channels that discharge to either Coyote Creek or Mowry Slough, before continuing to San Francisco Bay. Lake Elizabeth is a reservoir in Zone 6. The City and District have a partnership to manage Lake Elizabeth and the adjacent silt pond. The 83 acre lake was created by the Alameda County Flood Control and Water Conservation District for flood control purposes, but the City manages it for recreational use.

Alameda Creek, as well as all the creeks and channels that compromise Alameda County Flood Control and Water Conservation District drainage facilities, along with Lake Elizabeth, accommodate flood-water for purposes of stormwater management. The City of Fremont has responsibility for maintaining the majority of the storm drainage system and ensuring that

adequate storm drain facilities are built to support new development. The City maintains local storm drains, replacing pipes, and other facilities as needed.

Map 6 – ACFC/WCD Management Zones and Drainage Channels depicts the channel types, locations and boundaries.

Map 6 – ACFC/WCD Management Zones and Drainage Channels



* A full size map can be found in Appendix A

3.7.5 Electric & Natural Gas

Pacific Gas & Electric Company (PG&E) provides natural gas and electric service to approximately 15 million people throughout a 70,000 square mile service area in northern and central California, including Fremont. PG&E brings power into Fremont on overhead transmission lines crossing the City from east to west in an alignment parallel with Durham Road. Three substations receive incoming transmissions and then power is stepped down at the substations and fed into supply lines throughout the City. The three substations are: Newark substation, located west of I-880 on Auto Mall Parkway and Boyce Roads; Fremont substation, located at Paseo Padre Parkway and Grimmer Road; and the Jarvis substation on Decoto Road in Union City.

Natural gas is provided to Fremont through an interconnected network of underground pipelines and distribution mains. PG&E maintains two primary north/south pipelines that roughly parallel Highway 880 from Union City at the north, to the Alameda County / Santa Clara County border at the south. There are several gas lines that extend from the Bayside area, northeast towards Sunol. There are no LNG plants or terminals located in Fremont.

3.7.6 Telecommunications
Telecommunications include telephone service, cable television and wireless services. AT&T maintains infrastructure for providing landlines, while Comcast provides cable television. A variety of cellular and wireless service companies operate in Fremont and provide access points in the form of cellular towers, wireless antennas and equipment.

3.7.7 Utility Easements
Chevron, Kinder Morgan and San Francisco Public Utilities Commission maintain utility easements to transport utilities (natural gas and fuel). Utility easements are often in the form of linear corridors where other land uses are limited to those that do not adversely impact the utility. The utilities listed here are all in the form of in ground pipelines.

Chevron maintains a utility easement in Fremont for a pipeline to transport petroleum products. Chevron utilizes in ground piping that enters the City along the eastern edge, runs through the Warm Springs area and exits the City at the Alameda/Santa Clara County border. There are no breakout tanks or terminals located in Fremont.

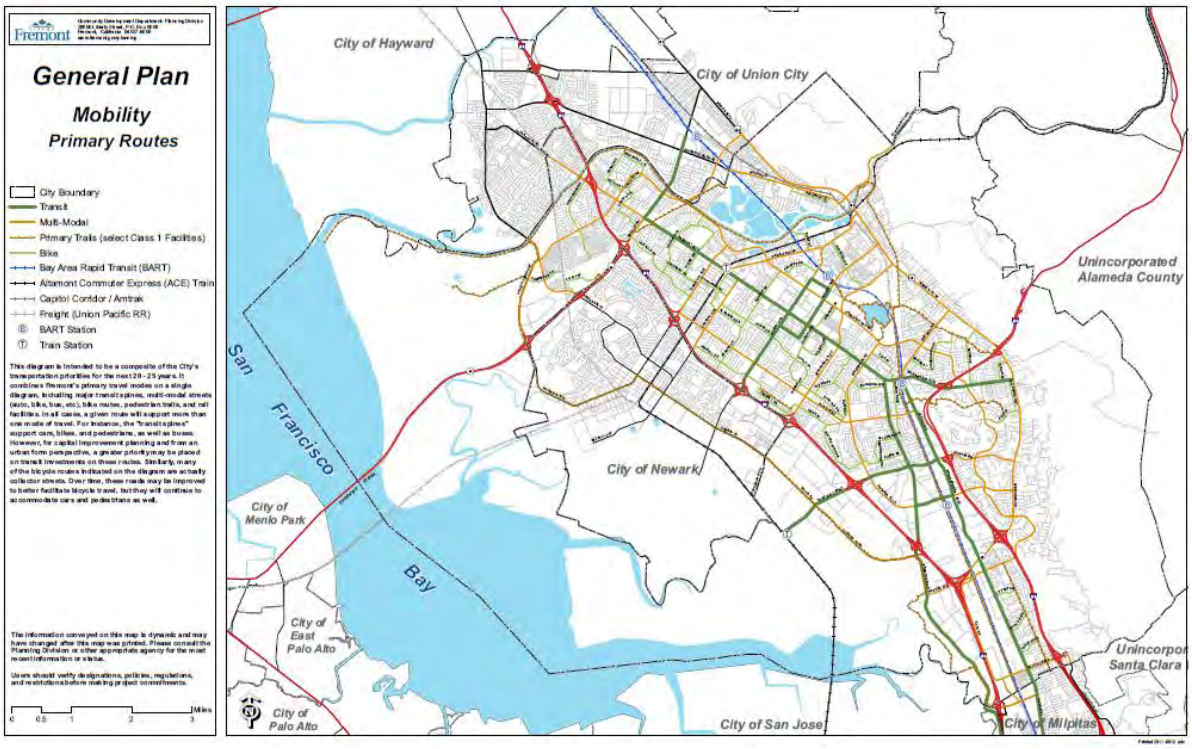
Kinder Morgan maintains a utility easement in Fremont for a pipeline to transport petroleum products. Kinder Morgan utilizes in ground piping that enters the City along the eastern edge that is north of Highway 680, runs through the Irvington and Warm Springs area before exiting the City at the Alameda County / Santa Clara County border. There are no breakout tanks or terminals located in Fremont.

US Department of Transportation – Pipeline and Hazardous Materials Safety Administration establishes national policy, sets and enforces standards, educates and conducts research to prevent incidents in the transportation of energy and other hazardous materials.

3.7.8 Waste Management
All residential and business properties are required to have garbage and recycling service which is provided by Republic Services, the City's exclusive franchised hauler. The Fremont Recycling and Transfer Station provides collection for electronic and household hazardous waste as well as garbage and recycling. Solid waste is then transported to the Altamont landfill near Livermore.

3.8 Transportation Inventory
Fremont's transit network includes many forms of transit which are provided by local streets, public transit, state highways and freight transit. These forms of transit allow for multi-modal transit options in the form of trains, rapid transit, buses, vehicles, bicycles and walking. The City's primary mobility routes are found in Map **7 –** Mobility Primary Routes.

Map 7 – Mobility Primary Routes



* A full size map can be found in Appendix A

3.8.1 Local Streets

At the local level, the City of Fremont has a Transportation Engineering Division that coordinates citywide transportation projects; plans and designs bicycle, pedestrian and street improvement projects; operates and maintains the City's traffic signal system; analyzes the transportation impacts of new development. The City's Maintenance Services Division handles street maintenance and repair, street sweeping, and other duties to keep the system operating safely. The City maintains 1,100 road miles of local streets in addition to local bridges.

3.8.2 Public Transit

Fremont has been an end of the line station for the Bay Area Rapid Transit (BART) system for over 35 years, and will be served by two new stations as the system is extended south to San Jose. Fremont is served by two regional bus systems, Alameda County Transit (AC Transit) and Valley Transportation Authority (VTA), which provide service within the City and between the City and other Bay Area cities. The City is also served by two passenger rail lines—Altamont Commuter Express (ACE) and Amtrak - which serve Stockton and Sacramento respectively. Map 8 – Transit Routes depicts the public transit routes through Fremont on AC Transit, ACE, Amtrak, and VTA.

3.8.2.1 Alameda County Transit

AC Transit is the local bus service for 13 cities and adjacent unincorporated areas in Alameda and Contra Costa counties. AC Transit's service area serves approximately 1.5 million people in 364 square miles. Collectively, AC Transit has a weekday ridership of 178,000. There are 151 bus lines throughout the systems with approximately 5,500 stops. AC Transit buses connect with

16 other public and private bus systems, 25 BART stations, six Amtrak stations, and three ferry terminals. Additional service is provided to downtown San Francisco, Foster City, San Mateo, Stanford and Palo Alto. While not all lines originate in Fremont, it's important to note the interconnectivity of this system with the entire Bay Area region and other transit partners.

AC Transit does not have any facilities located in Fremont. They offer 11 local lines, 2 transbay lines, 4 supplementary lines and 1 all-nighter line. The Fremont BART station is the primary transit hub as it provides a key stop for 11 lines of service.

3.8.2.2 Altamont Corridor Express

ACE is a passenger rail service that provides 4 trains a day, each way, from Stockton to San Jose. The trains travel west in the morning, and return to the east in the evening. ACE maintains one station in Fremont which is known as the Centerville Depot. This station provides transit connections to Amtrak's Capitol Corridor line and AC Transit buses. The tracks are owned by Union Pacific Railroad. As of 2015, ACE provides service to 1.33 million riders annually.

3.8.2.3 Amtrak

Amtrak is a bus and rail service that provides transportation throughout the US. Amtrak's Fremont station is at the Centerville Depot which provides service for Amtrak trains and thruway bus service connections to Capitol Corridor Trains. The Capitol Corridor provides service from San Jose to Sacramento which has 14 weekday stops in Fremont. Union Pacific Railroad owns the tracks that Amtrak uses. Amtrak also has a Fremont bus stop on Mission Blvd. very close to Highway 680. This bus stop is for those travelling on a thruway bus connection from San Jose to Stockton.

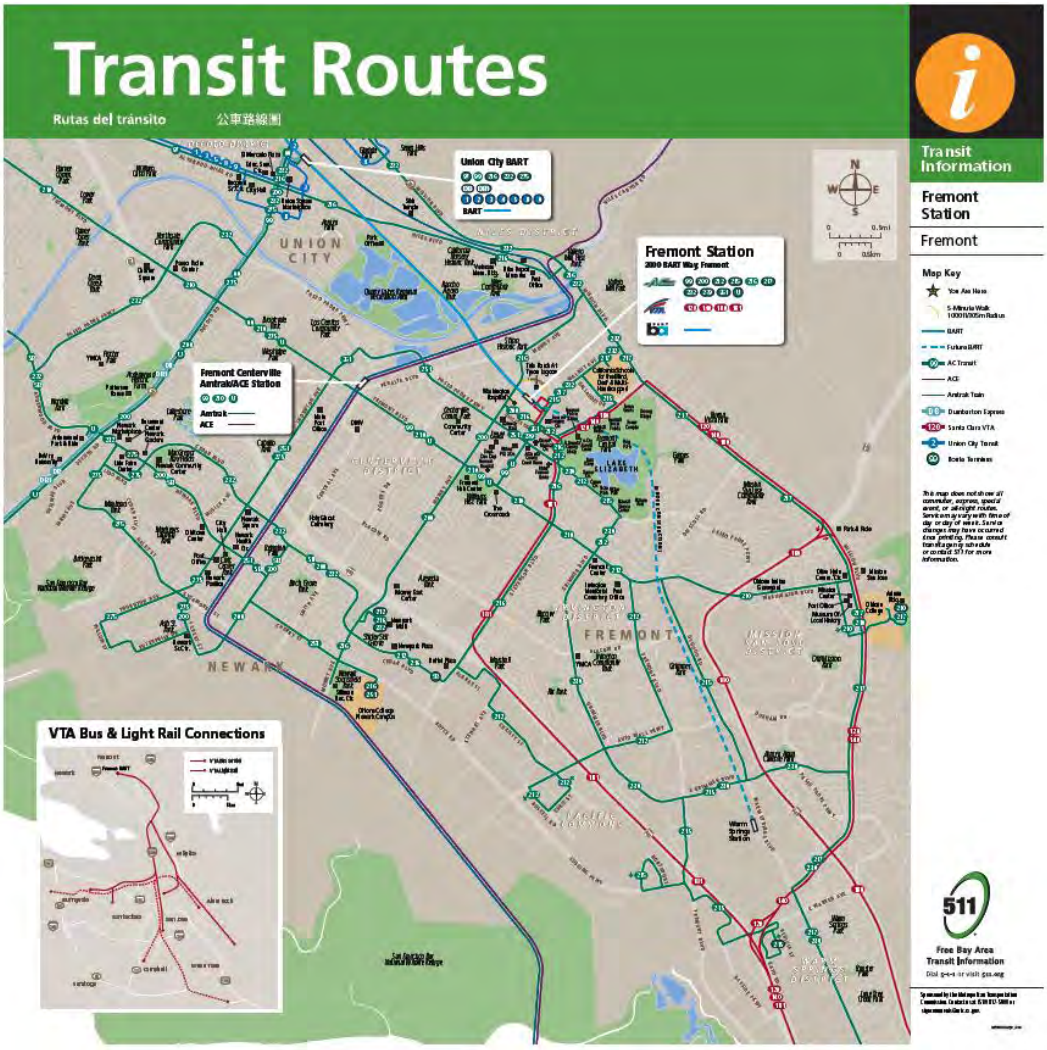
3.8.2.4 BART

BART is one of the San Francisco Bay Area's most vital transportation links throughout the East Bay and between the East Bay and San Francisco, carrying an average of 392,300 passenger trips a day. BART currently has one station in Fremont as the southern terminus of the Fremont/Richmond line and Fremont/Daly City line. BART has been working on a 5.4 mile Warm Springs Expansion which will include a Warm Springs/South Fremont station. This station is expected to open later in 2016 and will be a multi-modal transit hub. Additionally, there are long term plans for an Irvington Station which will be funded by Measure BB. BART is currently being extended to Silicon Valley. Phase I will extend the line south 10 miles and include two stations in Milpitas and Berryessa, which are planned to start service in 2018. Phase II will extend the BART line an additional 6 miles and will include four stations at Alum Rock, Downtown, Diridon and Santa Clara. This service is expected to begin in 2025.

3.8.2.5 Santa Clara Valley Transit Authority

VTA is located in Santa Clara County's regional public transit provider; however they provide transit service to Fremont along four bus lines. The four lines provide service to/from the Fremont BART Station with locations in Santa Clara County. These lines provide connections to Mission College, Lockheed Martin Transit Center/Moffett Park, Great Mall/Main Transit center and San Jose Diridon Transit Center.

Map 8 – Transit Routes



* A full size map can be found in Appendix A

3.8.3 Caltrans

California Department of Transportation (Caltrans) manages the state highway system and has five major routes that go through Fremont. Fremont is within Caltrans District 4. Caltrans owns and maintains all bridges that are in the Caltrans Right of Way. The Caltrans maintained routes in Fremont are:

- Interstate 880 (I-880): I-880 runs north and south from Oakland to San Jose. There are seven exits in Fremont.
- Interstate 680 (I-680): I-680 runs north and south from Fairfield to San Jose. There are six exits in Fremont.
- State Route 84 (SR-84): SR-84 is a split section California State Highway that runs from San Gregorio to Livermore, and then from Rio Vista to West Sacramento. The primary portion in Fremont begins at the 880 interchange and extends east to SR 238 (Mission Blvd) where it has a short overlap, and then continues east through Niles Canyon to

Sunol. The portion from I-880 to Mission Boulevard is subject to an improved east-west connector, with construction estimated to be completed in 2019. On the west side of Newark and within Fremont's City limits, SR-84 extends west across the San Francisco Bay via the Dumbarton Bridge.

- State Route 262 (SR-262): SR-262 is a state highway that is also known as Mission Boulevard. SR 262 is a one mile east-west segment that connects I-880 with I-680.
- State Route 238 (SR-238): SR-238 is a north south multi-lane highway that connects I-580 in Castro Valley with I-680 in Fremont.

3.8.4 Freight Transit

Fremont is served by three Union Pacific Railroad (UPRR) lines that provide for the movement of container freight and other goods in and out of the city. There are two primary rail lines which run north and south, connecting Fremont to Union City and Milpitas. There is an additional rail line which goes east and west, connecting both north and south lines and then continuing east through Niles Canyon. Amtrak and ACE utilize Union Pacific's tracks for passenger rail service through Fremont.

3.9 Other Assets

Due to the nature of some assets, there were some which were excluded from the inventory of key infrastructure. The Local Hazard Mitigation Plan does not include any facilities owned by Alameda County, State of California or Federal governments. The City believes it is best for these agencies to prepare their own Hazard Mitigation Plans related to their specific assets. The one exception is that State bridges were included in the critical assets due to the interconnectivity of the transportation network. Examples of facilities not evaluated as part of this plan include County Administrative Offices, California Highway Patrol Offices, Social Security Administration Offices, etc.

3.10 Recent and Potential Development

The City maintains a list and map of all ongoing development projects on the City's website. These are fluid documents that are updated regularly. The *Development Activity Map* and *Development Activity Table* can be accessed at https://www.fremont.gov/611/Maps for the most up to date information.

The City also maintains a map of *Lands with Additional Development Potential* on the Planning Division's website, https://www.fremont.gov/611/Maps. This map identifies vacant and underutilized land throughout the City. As noted on the map, this diagram is still subject to the General Plan Text and other Land Use Overlay diagrams which constitute the development policy for the City of Fremont. This map was created as part of the General Plan Update in 2011, and therefore does not include some recent development that has taken place.

In the near future, the City projects new development in the Downtown and Warm Springs areas of town. Downtown is 110-acres anchored by Fremont City Hall and within walking distance to the Fremont Bart Station. The Downtown Community Plan is the blueprint that will guide the

work. This provides the community with the direction and certainty that they need to invest in our community, while preserving the goals and vision the community has for the downtown.

The Warm Springs Community Plan covers 879 acres generally bounded by I-880, I-680, Auto Mall Parkway and Mission Boulevard. The Community Plan sets the framework for a transformation of the area into an Innovation District and employment center focused around the synergy of the new BART station and adjacent undeveloped land.

BART is nearing completion of a 5.4 mile expansion to South Fremont / Warm Springs. The Station is expected to open in late 2016, and will serve as a catalyst for the Warm Springs Community Plan area.

3.11 Past Occurrences of Disasters

The past occurrences of natural disasters that have impacted Fremont are described below. More information on the date, location, amount and type of damage is included for each hazard type described in Section 4 - Hazards Assessment & Characterization.

Earthquakes occur throughout the entire Bay Area region on a frequent basis, yet not all of these cause damage. The Bay Area has experienced earthquakes every year; however, no major damage has been recorded in Fremont. USGS has one record of an earthquake over a M4.0 in Fremont. That earthquake was a M4.2 that occurred on March 3, 1981, at 10:45am. The epicenter was located in close proximity to I-680 and Mission Boulevard and resulted in ground shaking. This earthquake did not result in liquefaction, landslides, fault rupture or fire following and earthquake . There was no reported damage from this earthquake. Other minor earthquakes less than a M4.0 have occurred more frequently; however, have not resulted in any significant damage. Anything below a M5.0 don't typically cause significant damage.

The City had a notable large landslide in 1998 on the east side of the City near Mission Peak. The landslide was approximately a mile long and 800 to 1,400 feet across. While there was no major damage to any facilities, there was rocks, mud and debris flow in the back yards of several houses. The landslide did not damage any homes. A landslide assessment of the general area in the vicinity of the toe of this landslide, covering approximately 1250 parcels, identified 97 parcels that were potentially relatively more at risk from future recurring landslide hazards. The City Council consequently revised the entire hillside ordinance to cover all 11,000 hill parcels. The ordinance now requires additional appropriate geotechnical peer review for landslide hazard when development or permit activity occurs in this area. As a result of this landslide, the City has an outside consultant conduct ongoing landslide monitoring for the 1998 Mission Peak Landslide. The CIP includes $15,000 in funding for CIP# SP25, which is the monitoring of the Mission Peak 1998 landslide. The $15,000 is expected to be spent in 2016/17.

According to NOAA and local data, the only notable flooding in Fremont occurred in 1998 along Alameda Creek. The levee breached along Arroyo Mocha (a dry creek) and caused damage to roads and property. The damage was estimated at $200,000 and did not result in any injuries or death. There was no local, state or federally declared disaster, although the information was reported to the Alameda County Emergency Operations Manager and subsequently to NOAA.

In 1958, approximately 288 acres of grass burned in the Overacker fire. This fire occurred in the Mission Hills Mountain range almost due east of Ohlone College. The fire was located on the City boundary, with some of the fire burning in Fremont and the rest in the area controlled by CalFire. Other fires have occurred in the City's history; however, CalFire only tracks brush fires greater than 50 acres, grass fires greater than 300 acres, and fires that destroy three or more residential dwellings or commercial structures.

California's most significant historical statewide droughts were the six-year drought of 1929-34, the two year drought of 1976-77, the six-year event of 1987-92 and the current drought which began in 2012. No direct damage occurred in Fremont as a result of these droughts.

Over the past century, sea level has risen nearly 8 inches along the California coast; however, none of this has directly impacted the City of Fremont since the western boundary of the city is the eastern shoreline of the San Francisco Bay which abuts open space. This open space includes the Coyote Hills Regional Park and Don Edwards San Francisco Bay National Wildlife Refuge. Open space has been lost to increasing sea level, but there has been no damage to structures.

Fremont has averaged 4 extreme heat days per year, which are classified as being greater than 89 °F since 1950. Extreme heat emergencies typically build over time with cumulative effects. The most number of extreme heat days observed in a calendar year occurred in 2007, when there was 26 extreme heat days. NOAA issues Extreme Heat Warnings; however, the exact dates and times of these warnings have not been tracked.

The City researched all types of natural disasters to come up with this comprehensive list of past occurrences of disaster. While some events have not occurred historically, or been observed in modern times, there is always the probability that natural disasters could severely impact Fremont based on the documentation provided in Section 4 - Hazards Assessment & Characterization.

Section 4 Hazards Assessment & Characterization

4.1 Overview

The City identified potential hazards, screened them, and created a profile for hazards that are likely to occur in Fremont. The hazards are assessed and characterized.

4.2 Hazard Identification and Screening

The planning team reviewed the list of hazards included in other plans to determine if the hazards needed to be included in the 2016 LHMP. The plans considered included:

- Climate Action Plan (adopted November 13, 2012)
- County of Alameda 2016 Local Hazard Mitigation (2016)
- General Plan 2030 Safety Element (adopted December 13, 2011)
- Local Hazard Mitigation Plan (2005)
- *Taming Natural Disasters* – Multi-Jurisdictional Local Hazard Mitigation Plan for the Bay Area and Fremont Annex (2012)

There had been no changes to the hazards identified since 2005. However, with the adoption of the Climate Action Plan in 2012 and the signing onto of Compact of Mayors in 2015, it seemed appropriate to add Extreme Heat and Sea Level Rise to the hazards assessed as part of the 2016 Local Hazard Mitigation Plan.

The other hazards identified in the plan since 2005 remain unchanged and include: earthquake, landslide, flooding and fire. The six subcomponents of earthquake include: fault rupture; shaking; earthquake induced landslides; liquefaction; tsunami and seiches; and fire following an earthquake.

Given climate change's ability to change long-term weather patterns, it was determined that an overall climate change category should assess the drought, extreme heat and sea level rise hazards. Over the next century, increasing atmospheric greenhouse gas concentrations are expected to cause a variety of changes including sea level rise, more frequent heat waves and extended periods of drought.

The Federal Emergency Management Agency and Department of Homeland Security (DHS) maintain Ready.gov as a national public service advertising campaign that is designed to educate and empower Americans to prepare for and respond to natural and man-made disasters. For the purposes of this report, only natural disasters were considered due to the available data and ability of the City to work on associated mitigation measures. While not directly analyzed as part of this report, technological and accidental hazards, terrorist hazards and man-made hazards pose a risk to the entire Bay Area region. While these man-made hazards aren't explored in depth, stakeholders involved acknowledged the importance in developing plans and preparing for any type of disaster, whether natural or human induced. Many of the strategies and activities associated with the natural hazards can also address mitigation measures for these man-made hazards. Staff will continue to evaluate Fremont's ability to mitigate and assess these disasters.

4.3 Hazard Profiles

The hazards assessment information provided below comes from the research ABAG conducted about each risk; and localized information was added for the City of Fremont. Maps of these hazards and risks are shown in each section below. The maps included in this document indicate the potential for these hazards to exist; however, property owners should always conduct additional project-specific hazard mapping. In many cases, the City requires specific hazard mapping and mitigation measures to eliminate or mitigate impacts from these identified hazards. Each hazard profile includes information on the type of hazard, extent, location where it occurs, historical occurrences of these hazards and the probability of a future hazard affecting Fremont.

4.3.1 Earthquake

Type: Earthquakes occur when two tectonic plates slip past each other beneath the earth's surface, causing sudden and rapid shaking of the surrounding ground. Earthquakes originate on fault planes below the surface, where two or more plates meet. As the plates move past each other, they tend to not slide smoothly and become "locked," building up stress and strain along the fault. Eventually the stress causes a sudden release of the plates, and the stored energy is released as seismic waves, causing ground acceleration to radiate from the point of release.

Earthquakes are often not isolated events, but are likely to trigger a series of smaller aftershocks along the fault plane, which can continue for months to years after a major earthquake, producing additional damage.

Extent: The total amount of energy released in an earthquake is described by the earthquake magnitude. The moment magnitude scale (abbreviated as M) is logarithmic; the energy released by an earthquake increases logarithmically with each step of magnitude.[xv] For example, a M6.0 earthquake releases 33 times more energy than a M5.0, and a M7.0 earthquake releases 1,000 times more energy than a M5.0 event.

The quantified size or measurement of an earthquake is dependent on factors that include the length of the fault and the ease with which the plates slip past one another. In the Bay Area, technical specialists have observed varied fault behaviors, giving some sense of which faults may or may not produce a large, damaging earthquake. Earth scientists are most concerned about the San Andreas and Hayward faults, believed most likely to produce large, regionally damaging earthquakes.

Earthquakes can trigger multiple types of seismic hazards, causing varying severity of damage in different locations. The energy released in earthquakes can produce six different types of hazards:

- Fault rupture
- Ground shaking
- Liquefaction
- Earthquake-induced landslides
- Tsunamis and Seiches
- Fire Following an Earthquake

The following sections describe each earthquake hazard in greater detail.

Location: The Hayward fault runs through Fremont, while the Calaveras Fault is within 5 miles of the eastern side of the City, and the San Andreas Fault is west of the City.

The Hayward fault bisects Fremont and generally runs north and south through the City and could cause major damage and displacement due to its prominent location. It branches from the Calaveras fault in the eastern part of San Jose. The San Andreas Fault travels through much of the coastal area of California, traversing San Mateo County, and west of Fremont on the San Francisco peninsula. A seismic event on any of these major faults could cause serious damage in Fremont. In addition to the large surface fault rupturing events, the Hayward fault is

characterized by fault creep, the relatively slow, gradual fault displacement that has resulted in continuing damage to curbs, streets and structures in Fremont.

Map 9 – Bay Area Alquist Priolo Fault Zones

* A full size map can be found in Appendix A

History: The Bay Area has experienced significant, well-documented earthquakes. Moderate earthquakes (larger than an M5.0) are much more common in the Bay Area; twenty-two have occurred in the last 178 years, averaging one every eight years.[xvi] As faults restore their stress and energy builds again, the region may have a more seismically active future.

There have been six earthquake-related declared state and federal disasters in the Bay Area since 1950, with only one occurring in Alameda County:[xvii] The one that occurred in Alameda County did not occur in Fremont. Fremont received an MMI of 5-7 depending on the part of the City; however, no major damage was reported.

There has not been any earthquake that occurred in Fremont that was a local, state or federally declared disaster. Minor earthquakes (less than M5.0) have occurred; however major earthquakes have not historically impacted Fremont. There are no reports of major property damage caused by earthquakes, including surface fault rupture, ground shaking, liquefaction, earthquake induced landslide, tsunami and seiches and fire following an earthquake. There is always the probability that earthquakes could happen based on the documentation provided.

Table 4 – Alameda County State and Federally Declared Disasters *

Disaster	State Proclamation	Federal Declaration	Counties Declared	Damage
M7.1 Loma Prieta earthquake	October 18, 1989	October 18, 1989	Alameda, Monterey, San Benito, San Mateo, Santa Clara, Santa Cruz, San Francisco, Contra Costa, Marin, Solano	$5.9 billion in damage, 23,408 homes damaged, 3,530 businesses damaged, 1,018 homes destroyed, 366 businesses destroyed

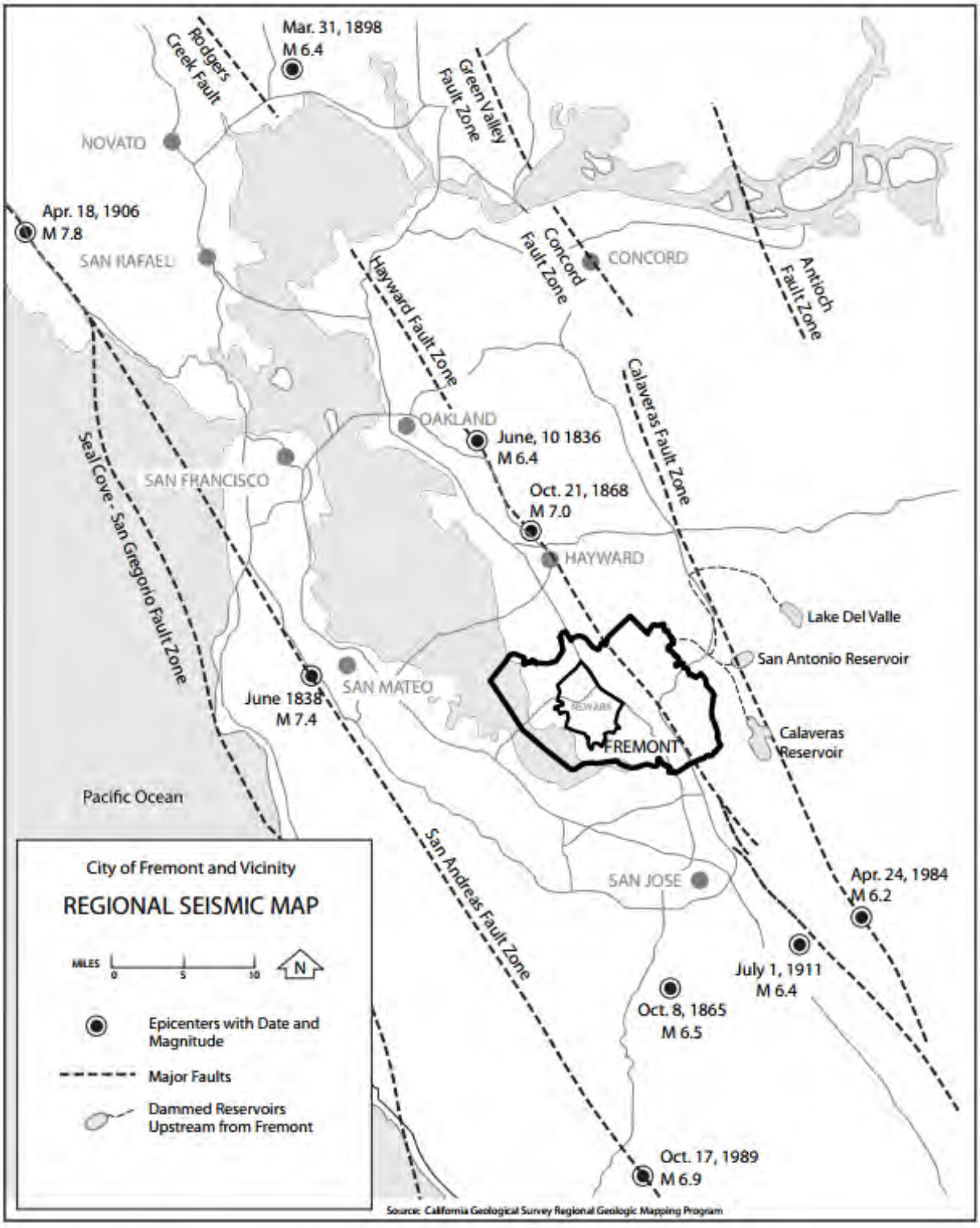
The other five earthquake-related declared disasters since 1950 have been in Counties outside of Alameda County; however, they indicate the severity an earthquake can cause in damage. **Map 10 – Regional Seismic Activity Map** provides a graphic indicating where previous earthquakes have occurred in comparison to major fault lines.

Table 5 – Bay Area State and Federally Declared Disasters *

Disaster	State Proclamation	Federal Declaration	Counties Declared	Damage
M6.0 South Napa earthquake	August 24, 2014	September 11, 2014	Napa and Solano Counties	$362 million - $1 billion in damage
Tsunami resulting from M8.9 Honshu, Japan earthquake	March 11, a	April 18, 2011	Del Norte, Monterey, Santa Cruz	$39 million in damage
M5.2 Napa earthquake	September 6, 2000	September 14, 2000	Napa County	$15-70 million in estimated damage
M6.2 Morgan Hill earthquake		April 25, 1984	Santa Clara County	$7.265 million in damage to public and private businesses
Tsunami warning resulting from earthquake in Alaska	September 15, 1964	Not declared	Marin County	No damage

*See Map 9 – Bay Area Alquist Priolo Fault Zone for list of faults and counties

Map 10 – Regional Seismic Activity Map



* A full size map can be found in Appendix A

Probability: A powerfully damaging earthquake similar to the 1906 earthquake or 1989 Loma Prieta earthquake is rare but likely to occur in the next 30 years. The United States Geological Survey (USGS) estimates there is a 72% chance of one or more magnitude 6.7 or larger earthquakes in the next 30 years on one of the Bay Area's faults.[xviii] Smaller magnitude earthquakes are more likely to occur, potentially producing significant local damage, as experienced in the 2014 South Napa earthquake.

Scientists continually study which Bay Area faults are more likely to produce large earthquakes, and how often. In March 2015, the USGS released an update to its 2008 earthquake probabilities for California faults. The Uniform California Earthquake Rupture Forecast 3 (UCERF3) provides detailed assessment on the likelihood of each fault segment producing M6.7, M7.0 and M8.0 and greater earthquakes. These probabilities are based on data such as fault length; how much energy the faults release annually through fault slip; and, known historical return periods for the fault. The faults with the three highest probabilities to produce a M6.7 earthquake over the next 30 years include San Andreas (33% probability), Hayward (28% probability) and Calaveras (24% probability).[xix]

4.3.1.1 Surface Fault Rupture

Type: A fault is a point of displacement along the fractures of the earth's crust caused by shifting tectonic plates. When an earthquake occurs, there is a rupture on a fault as built-up energy is suddenly released. Active faults are those that have ruptured in the past 11,000 years.[xx]

Extent: Surface fault rupture varies in size and can change over time. Generally, a large magnitude earthquake can generate a longer rupture and greater displacement, though the surface expression of the displacement can vary widely. Additionally, though the majority of displacement occurs during the actual earthquake event, surface displacement can occur in the days, weeks, and even months after the event.

In a large earthquake on the Hayward Fault the fault rupture displacement could reach 8 feet in some areas. Most of the displacement would occur during the shaking, and in the first day following the earthquake, but as much as 20 percent of the total afterslip could occur in the time between one month and 12 months after the quake the fault continuing to displace a full year after the earthquake.[xxi]

Location: Often the rupture occurs deep within the earth, but it is possible for the rupture to extend to the surface and create visible above- ground displacement, called "surface rupture." Map 9 – Bay Area Alquist Priolo Fault Zones show the most comprehensive depiction of fault traces that can rupture the surface, and the zones directly above and surrounding the fault traces. The Alquist-Priolo Earthquake Fault Zoning Act requires special geologic studies within these zones to prevent construction of human-occupied structures. For buildings already in these zones, the surface rupture hazard must be disclosed in real estate transactions.

History: See Section 4.3.1 for additional information on the history of earthquakes in Fremont. There has not been any surface fault rupture that occurred in Fremont that was a local, state or federally declared disaster. There is always the probability that surface fault ruptures could happen based on the documentation provided.

In the greater Bay Area, the M6.9 1989 Loma Prieta Earthquake had no surface fault rupture, while the 1906 Earthquake along the San Andreas Fault had surface rupture displacements that were greater than 20 feet in some location; however no known surface rupture occurred in Fremont.[xxii]

Probability: The probability of surface fault rupture from an Earthquake in Fremont is highly likely over the next thirty years, given the location of Hayward Fault running through the City. The Hayward Fault has a 28% probability to produce a M6.7 earthquake in the next 30 years.

4.3.1.2 Ground Shaking

Type: When faults rupture, the slip generates vibrations or waves in the earth that are felt as ground shaking. Larger magnitude earthquakes generally cause a larger area of ground to shake, and to shake more intensely. As a result, one factor in determining anticipated levels of shaking hazard in any given location is the magnitude of expected earthquakes. The intensity of ground shaking felt in one area versus another, however, is based on the magnitude and other factors including distance to the fault; direction of rupture; and, the type of geologic materials at the site.

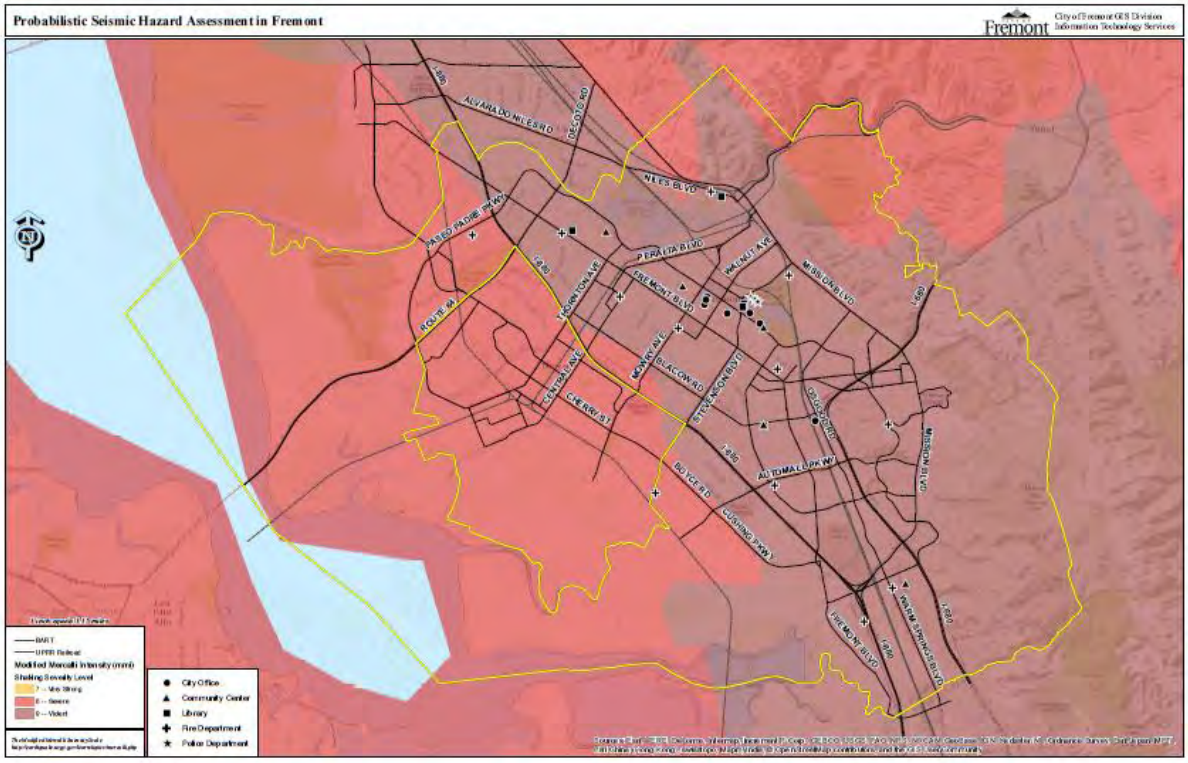
Extent: Ground shaking is commonly characterized using the Modified Mercalli Intensity (MMI) scale, which illustrates the intensity of ground shaking at a particular location by considering the effects on people, objects, and buildings. The MMI scale describes shaking intensity on a scale of 1-12. MMI values less than 5 don't typically cause significant damage; MMI values greater than 10 have not been recorded.

Table 6 – Modified Mercalli Intensity (MMI)

Intensity	Building Contents	Masonry Buildings	Multi-Family Wood-Frame Buildings	1&2 Story Wood-Frame Buildings
MMI 6	Some things thrown from shelves, pictures shifted, water thrown from pools	Some walls and parapets of poorly constructed buildings crack.	Some drywall cracks.	Some chimneys are damaged, some drywall cracks. Some slab foundations, patios, and garage floors slightly crack.
MMI 7	Many things thrown from walls and shelves. Furniture is shifted.	Poorly constructed buildings are damaged and some well-constructed buildings crack. Cornices and unbraced parapets fall.	Plaster cracks, particularly at inside corners of buildings. Some soft-story buildings strain at the first floor level. Some partitions deform.	Many chimneys are broken and some collapse, damaging roofs, interiors, and porches. Weak foundations can be damaged.
MMI 8	Nearly everything thrown down from shelves, cabinets, and walls. Furniture overturned.	Poorly constructed buildings suffer partial or full collapse. Some well-constructed buildings are damaged. Unreinforced walls fall.	Soft-story buildings are displaced out of plumb and partially collapse. Loose partition walls are damaged and may fail. Some pipes break.	Houses shift if they are not bolted to the foundation, or are displaced and partially collapse if cripple walls are not braced. Structural elements such as beams, joists, and foundations are damaged. Some pipes break.
MMI 9	Only very well anchored contents remain in place.	Poorly constructed buildings collapse. Well-constructed buildings are heavily damaged. Retrofitted buildings damaged.	Soft-story buildings partially or completely collapse. Some well-constructed buildings are damaged.	Poorly constructed buildings are heavily damaged, some partially collapse. Some well-constructed buildings are damaged.
MMI 10	Only very well anchored contents remain in place.	Retrofitted buildings are heavily damaged, and some partially collapse.	Many well-constructed buildings are damaged.	Well-constructed buildings are damaged.

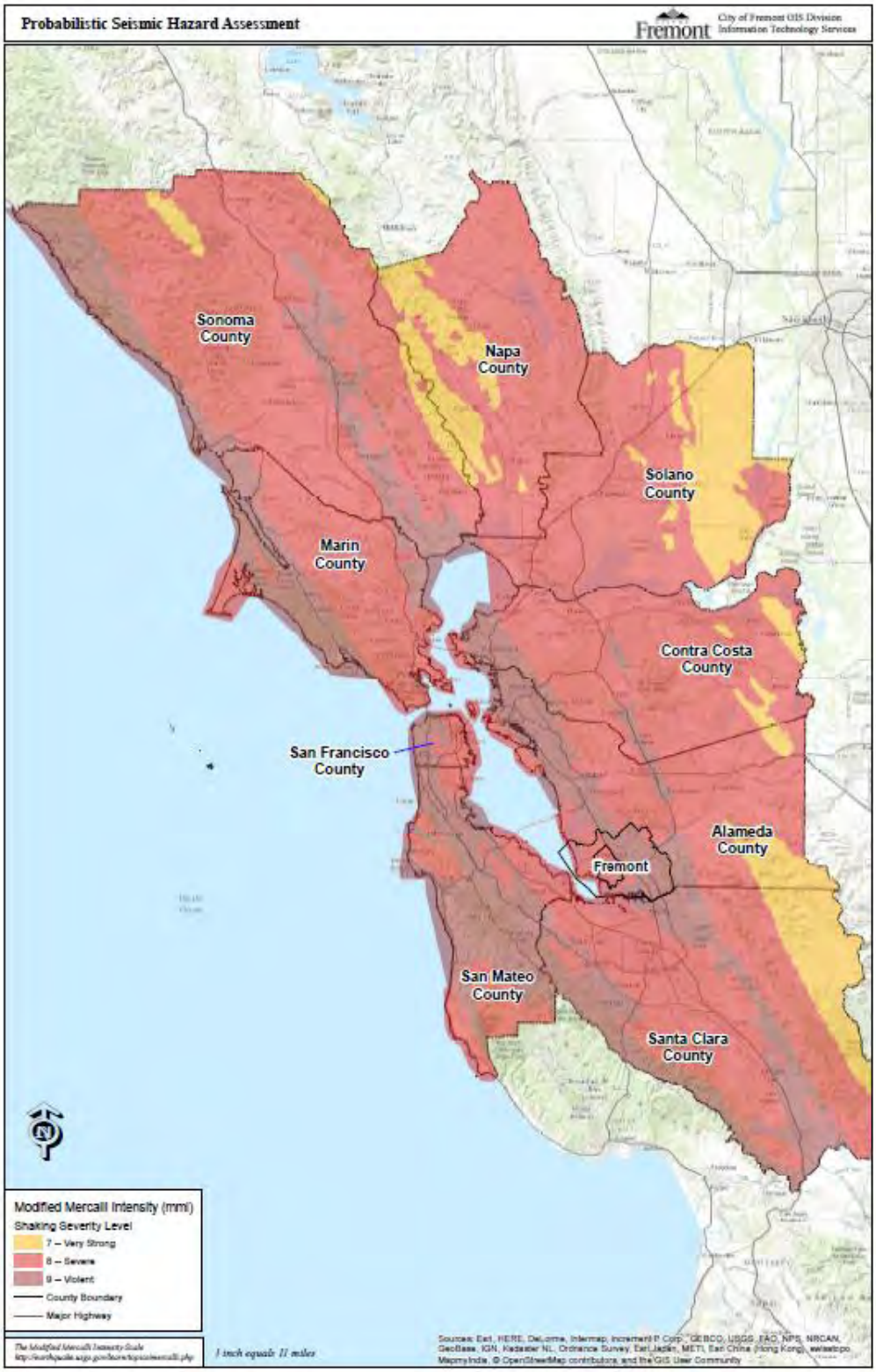
Location: As described, there are a number of different faults than contribute to the seismic hazard in the Bay Area. ABAG and the USGS worked collaboratively to characterize which fault contributes most to an area's seismic hazard. Map 11 – Probabilistic Seismic Hazard Assessment – Fremont identifies the areas in Fremont that are most susceptible to shaking. As identified on the Map, the entire City of Fremont has a probabilistic seismic hazard of either MMI 8 (Very Strong) or MMI 9 (Violent). As indicated by Table 6 – Modified Mercalli Intensity (MMI) above, there would be significant damage to a majority of buildings in Fremont. Map 12 – Probabilistic Seismic Hazard Assessment – Bay Area identifies which areas of the Bay Area are most susceptible to shaking. Based on the table, the greatest damage would occur to poorly constructed buildings and soft-story buildings.

Map 11 – Probabilistic Seismic Hazard Assessment – Fremont



* A full size map can be found in Appendix A

Map 12 – Probabilistic Seismic Hazard Assessment – Bay Area



* A full size map can be found in Appendix A

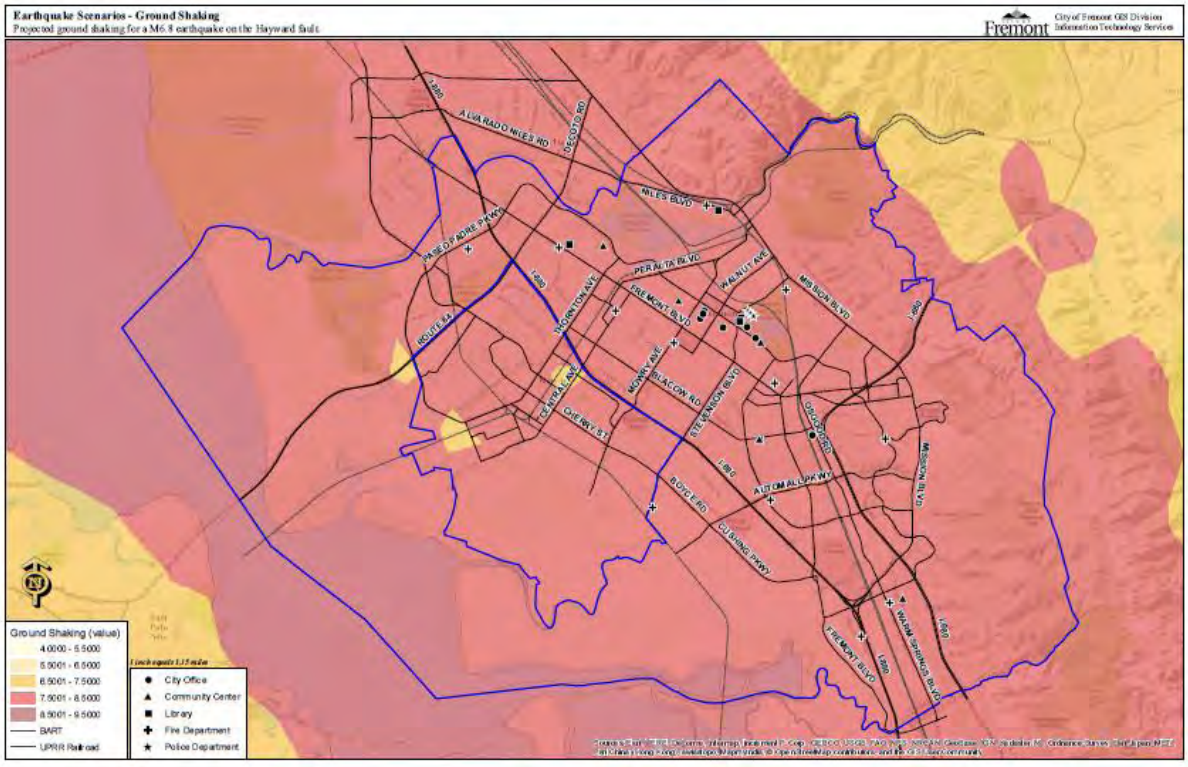
History: USGS has one record of an earthquake over a M4.0 in Fremont. That earthquake was a M4.2 that occurred on March 3, 1981, at 10:45am. The epicenter was located in close proximity to I-680 and Mission Boulevard and resulted in ground shaking. This earthquake did not result in liquefaction, landslides, fault rupture or fire following and earthquake . There was no reported damage from this earthquake. Other minor earthquakes less than a M4.0 have occurred more frequently; however, have not resulted in any significant damage. Anything below a M5.0 don't typically cause significant damage.

Probability: The USGS estimates there is a 72% chance of one or more magnitude 6.7 or larger earthquakes in the next 30 years on one of the Bay Area Faults. Given Fremont is in close proximity to multiple faults, it is likely that ground shaking would occur in Fremont.

ABAG provided data on different shaking scenarios which were inserted into Fremont's GIS. The three earthquake scenarios which would cause the most ground shaking in Fremont were a M6.8 on the Hayward Fault; a M7.0 on the Hayward Fault; and a M7.8 on the San Andreas Fault. ABAG provided several scenarios; however, these should not be considered the only potential earthquakes that could happen. Maps of these different scenarios are included as:

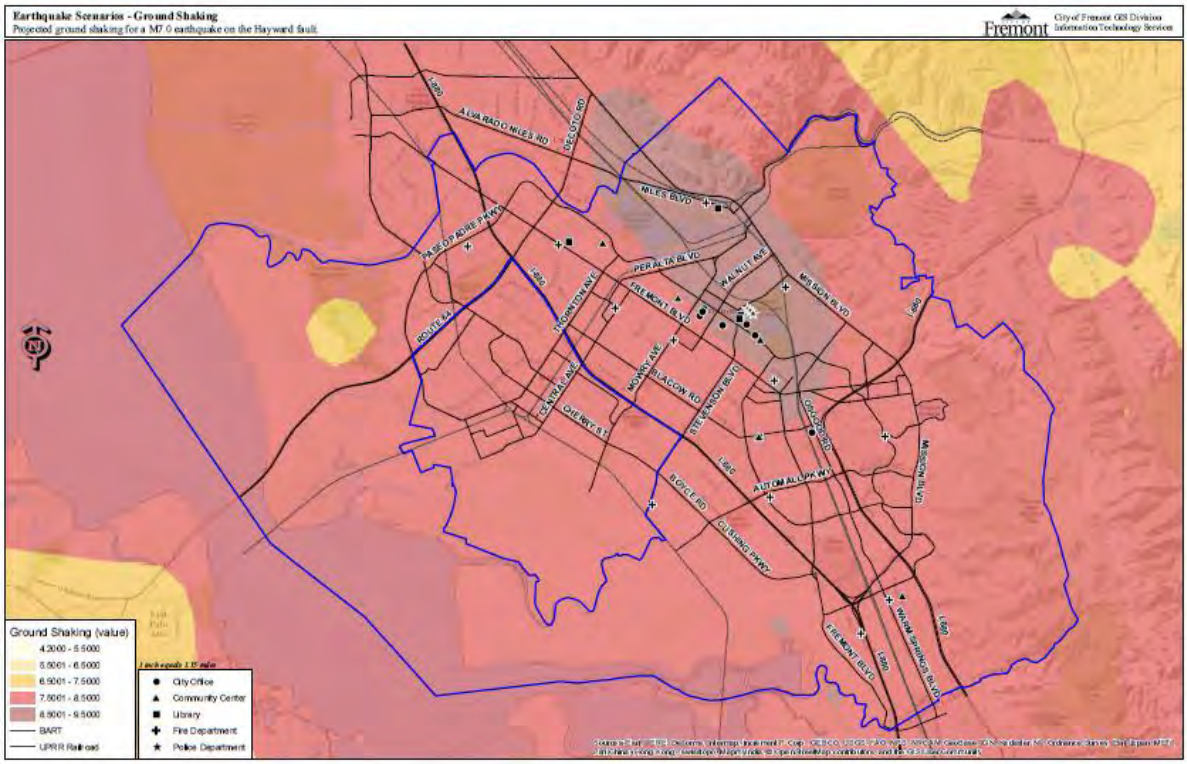
- Map 13 – Earthquake Scenario – M6.8 on Hayward Fault
- Map 14 – Earthquake Scenario – M7.0 on Hayward Fault
- Map 15 – Earthquake Scenario – M7.8 on San Andreas Fault

Map 13 – Earthquake Scenario – M6.8 on Hayward Fault



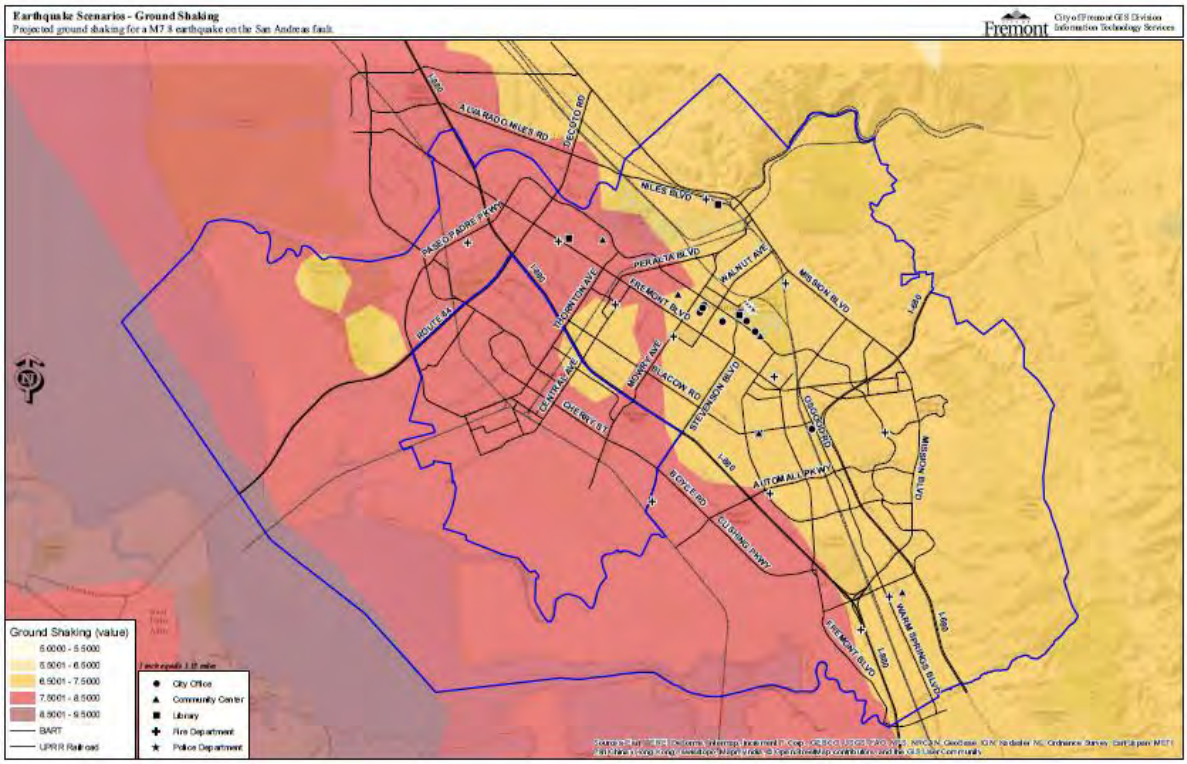
* A full size map can be found in Appendix A

Map 14 – Earthquake Scenario – M7.0 on Hayward Fault



* A full size map can be found in Appendix A

Map 15 – Earthquake Scenario – M7.8 on San Andreas Fault



* A full size map can be found in Appendix A

4.3.1.3 Liquefaction

Type: Soil that is loose, sandy, silty, or saturated with water can result in soil liquefaction if it is shaken intensely for an extended period.

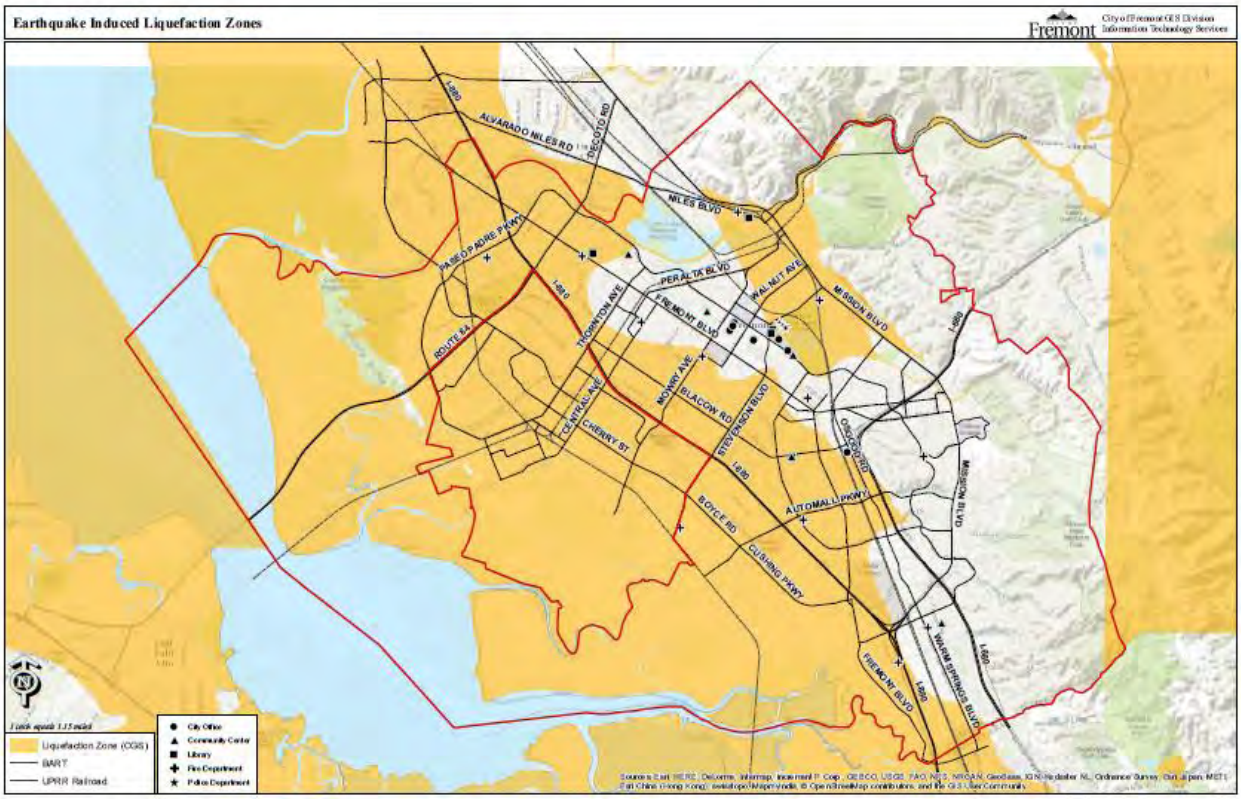
Loose Soils	The soils must be loose, such as uncompacted or unconsolidated sand and silt without much clay. This happens most often along the Bay shoreline, near creeks or waterways, on dry creek beds, and areas of man-made fill.
Soggy Soils	The sand and silt must be soggy and saturated with water due to a high water table.
Ground Shaking	The ground must be shaken long and hard enough by the earthquake to trigger liquefaction.

Extent: When ground liquefies in an earthquake, it behaves like a liquid and may sink, spread, or erupt in sand boils. This can cause pipes to break, roads and sidewalks to buckle, and building foundations to be damaged. Liquefaction can only occur under certain circumstances:[xxiii]

Location:

Map 16 – Liquefaction Zones indicates that a majority of the City is identified as being located in a liquefaction hazard zone. However, liquefaction may not necessarily occur even if all three conditions are present. Additionally, if liquefaction does occur, the ground may not move enough to have significant impact on the built environment.

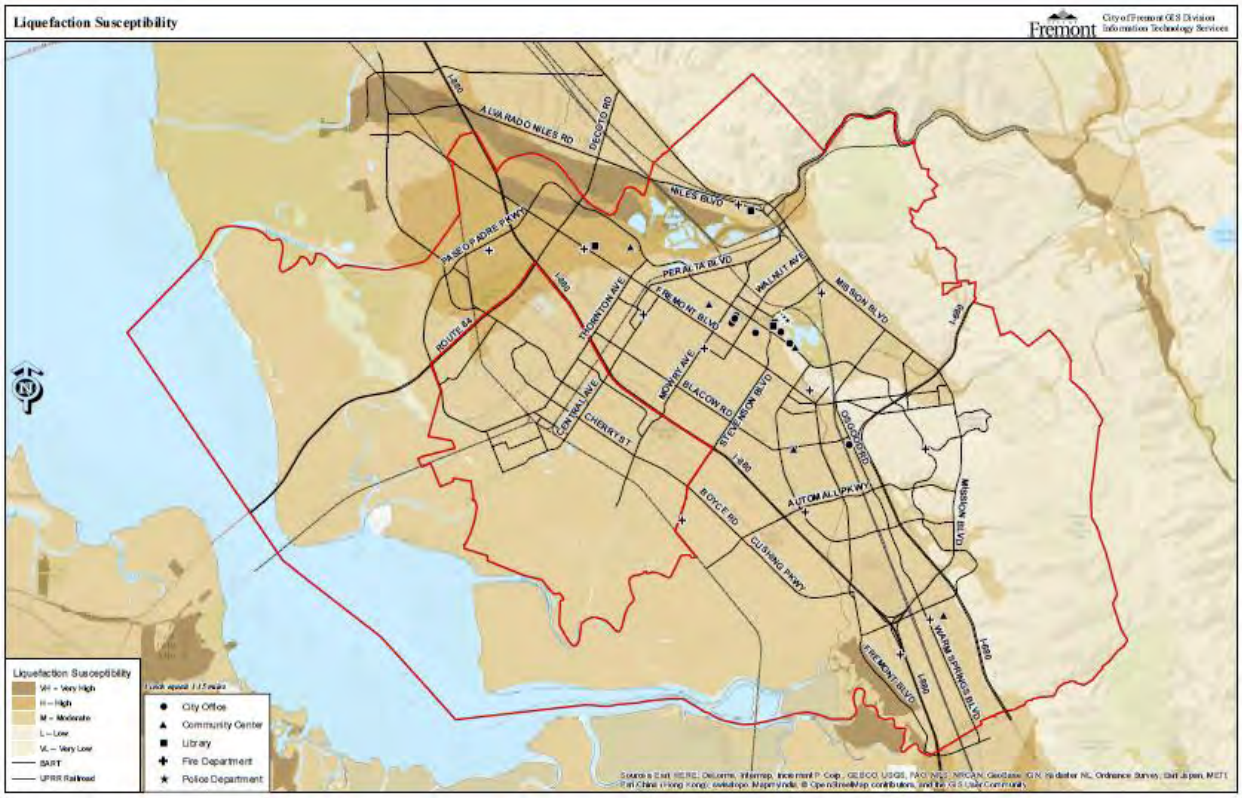
Map 16 – Liquefaction Zones



* A full size map can be found in Appendix A

Liquefaction susceptibility maps show areas with soil types known to have the potential to liquefy with intense shaking. Map 17 – Liquefaction Susceptibility Map shows liquefaction susceptibility for Fremont based on USGS soil type maps. However, site-specific investigations are needed to confirm liquefactions susceptibility on any given site.

Map 17 – Liquefaction Susceptibility Map



* A full size map can be found in Appendix A

Unless areas of liquefaction susceptibility are subject to significant ground shaking, they are not likely to liquefy. Liquefaction hazard maps express where the ground is both susceptible to liquefaction, and where the ground is likely to be shaken long and intensely in an earthquake.

History: There has not been any major liquefaction resulting from an earthquake that occurred in Fremont that was a local, state or federally declared disaster. There is always the probability that liquefaction could happen based on the documentation provided.

Probability: The majority of Fremont is identified as having moderate susceptibility to liquefaction. It is expected that about 20-30% of future liquefaction occurrences will be located within areas mapped as moderate susceptibility. Somewhat stronger shaking (Peak Ground Acceleration > 0.1 to 0.2g) is required to cause liquefaction of deposits mapped with moderate susceptibility.[xxiv]

Other portions of Fremont are identified as having very high and high susceptibility to liquefaction. It is expected that about 20-30% of future liquefaction occurrences will be located

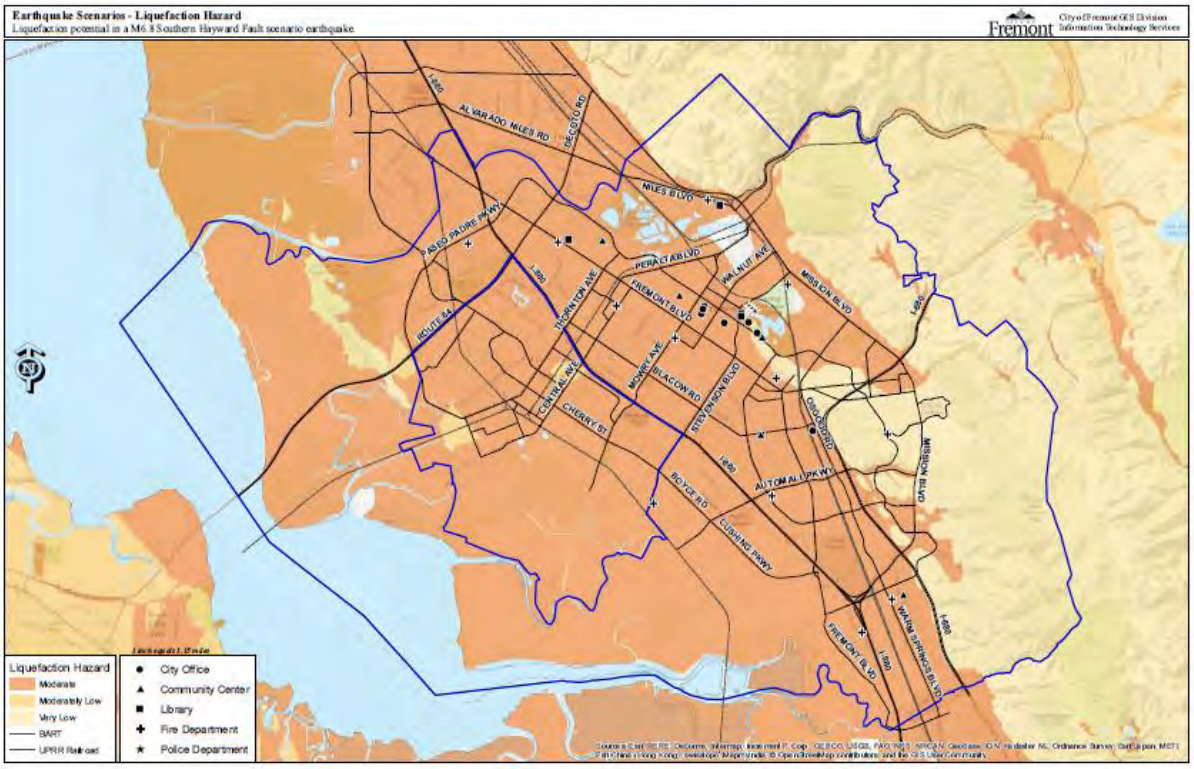
within areas mapped as high susceptibility. It is expected that about 40-50% of future liquefaction occurrences will be located within areas mapped as very high susceptibility. Only modest shaking is required to cause liquefaction of deposits mapped with very high susceptibility.

Moving east away from the Baylands, into the hillside results in a very low and low susceptibility to liquefaction. Less than 2% of future liquefaction occurrences will be located within the area mapped as very low and low susceptibility.[xxv]

ABAG provided data on different liquefaction scenarios based on different earthquakes which were inserted into Fremont's GIS. The three liquefaction scenarios were the same scenarios ran for earthquake ground shaking in the Section 4.3.1.2. The three earthquake ground shaking scenarios which would cause the most liquefaction in Fremont were a M6.8 on the Hayward Fault; a M7.0 on the Hayward Fault; and a M7.8 on the San Andreas Fault. ABAG provided several scenarios; however, these should not be considered the only potential earthquakes that could result in liquefaction. Maps of these different scenarios are included as:

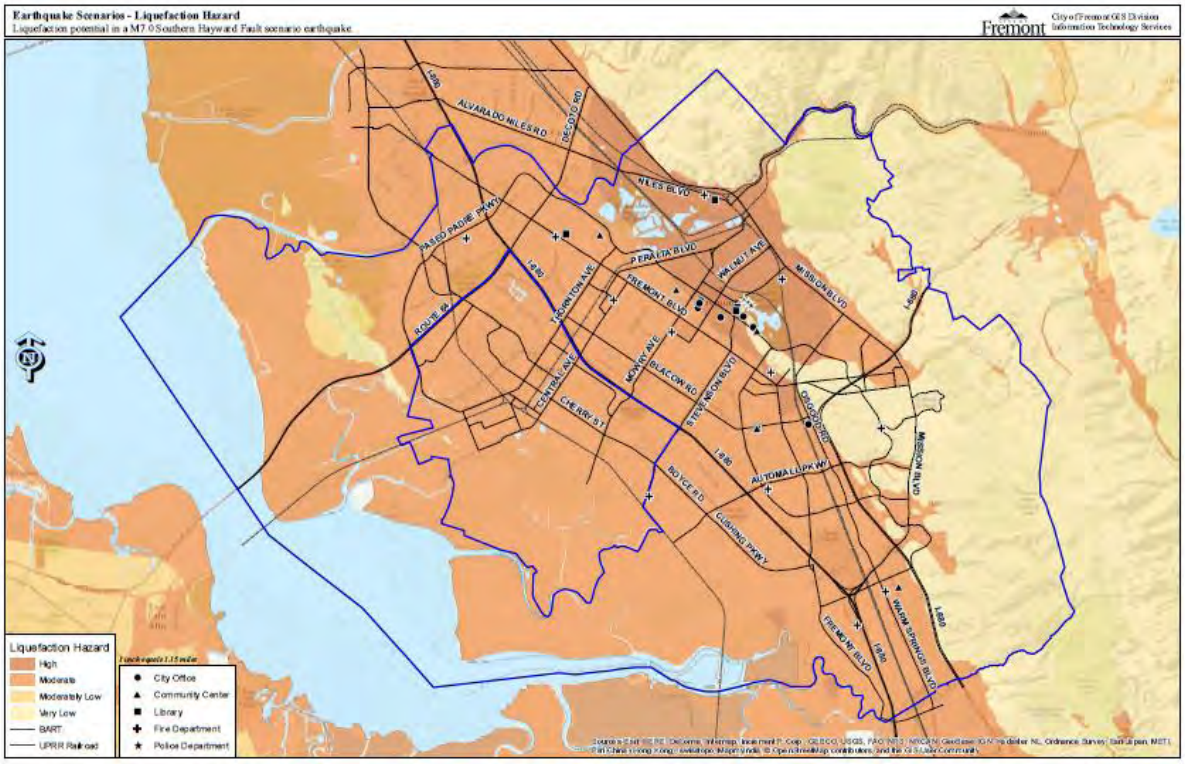
- Map 18 – Earthquake Liquefaction Scenario – M6.8 on Hayward Fault
- Map 19 – Earthquake Liquefaction Scenario – M7.0 on Hayward Fault
- Map 20 – Earthquake Liquefaction Scenario – M7.8 on San Andreas Fault

Map 18 – Earthquake Liquefaction Scenario – M6.8 on Hayward Fault



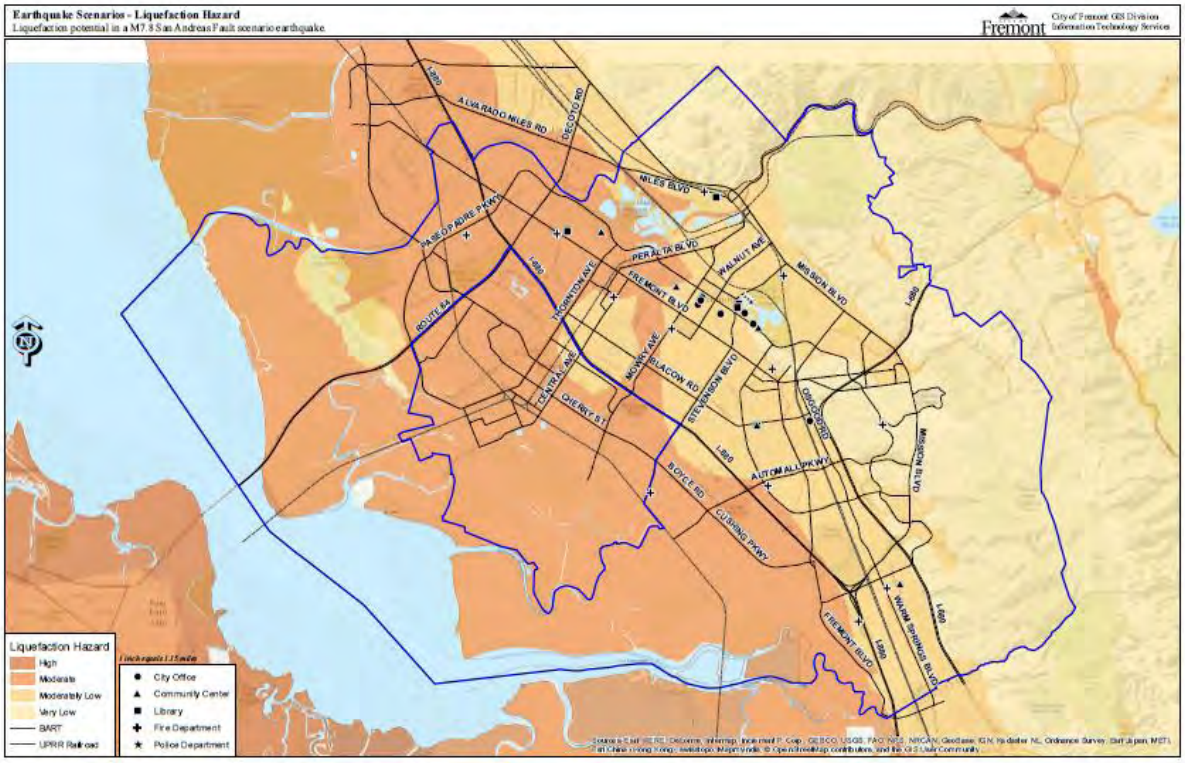
* A full size map can be found in Appendix A

Map 19 – Earthquake Liquefaction Scenario – M7.0 on Hayward Fault



* A full size map can be found in Appendix A

Map 20 – Earthquake Liquefaction Scenario – M7.8 on San Andreas Fault



* A full size map can be found in Appendix A

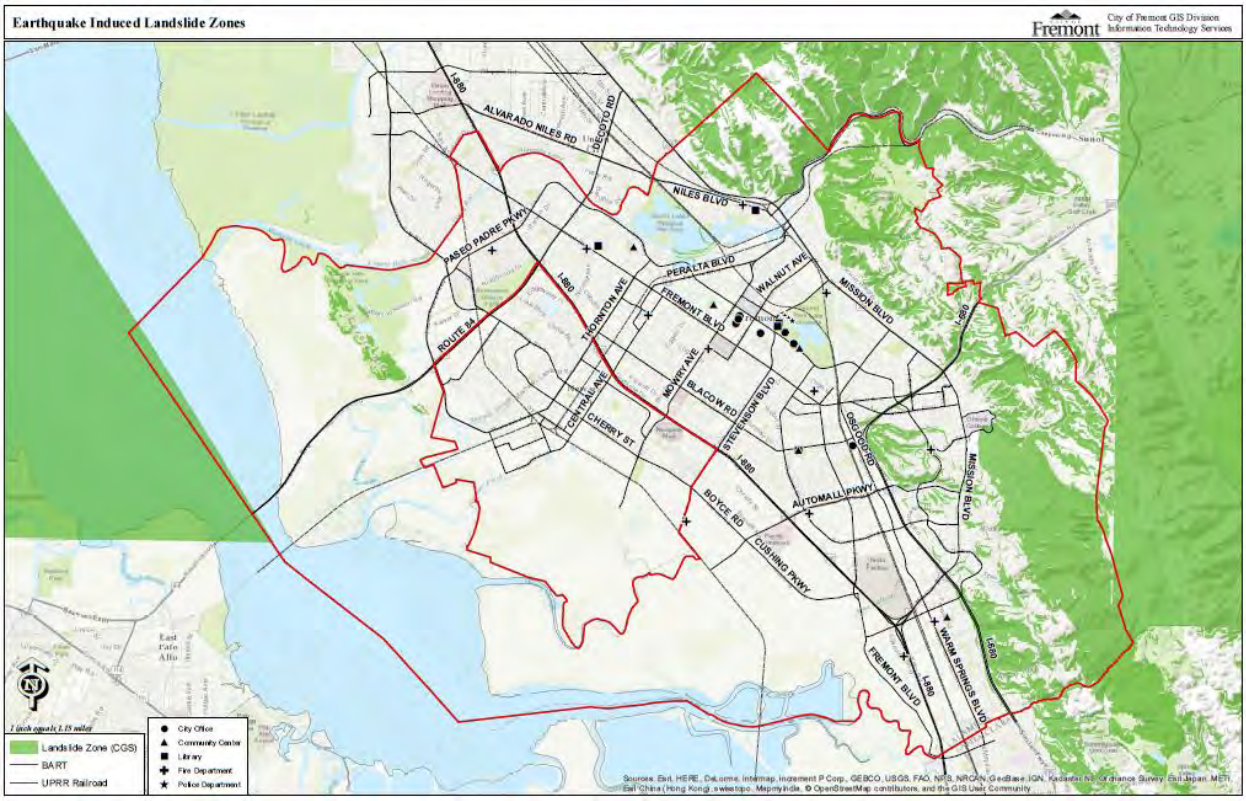
4.3.1.4 Earthquake-Induced Landslides

Type: Ground shaking can also lead to ground failure on slopes, triggering earthquake-induced landslides. Landslides tend to occur in weak soil and rock on sloping terrain.

Extent: Most sloping ground has some potential for landslides simply due to the effects of gravity. An earthquake can be one factor that will cause an unstable hillside to fail. When a landslide occurs, creeks and streams below the slide area may become dammed with debris and cause flooding.

Location: Landslides are a significant hazard in parts of Fremont, particularly along the eastern boundary of the City in the Hill Area, as indicated by Map 21 – Earthquake Induced Landslide Zones.

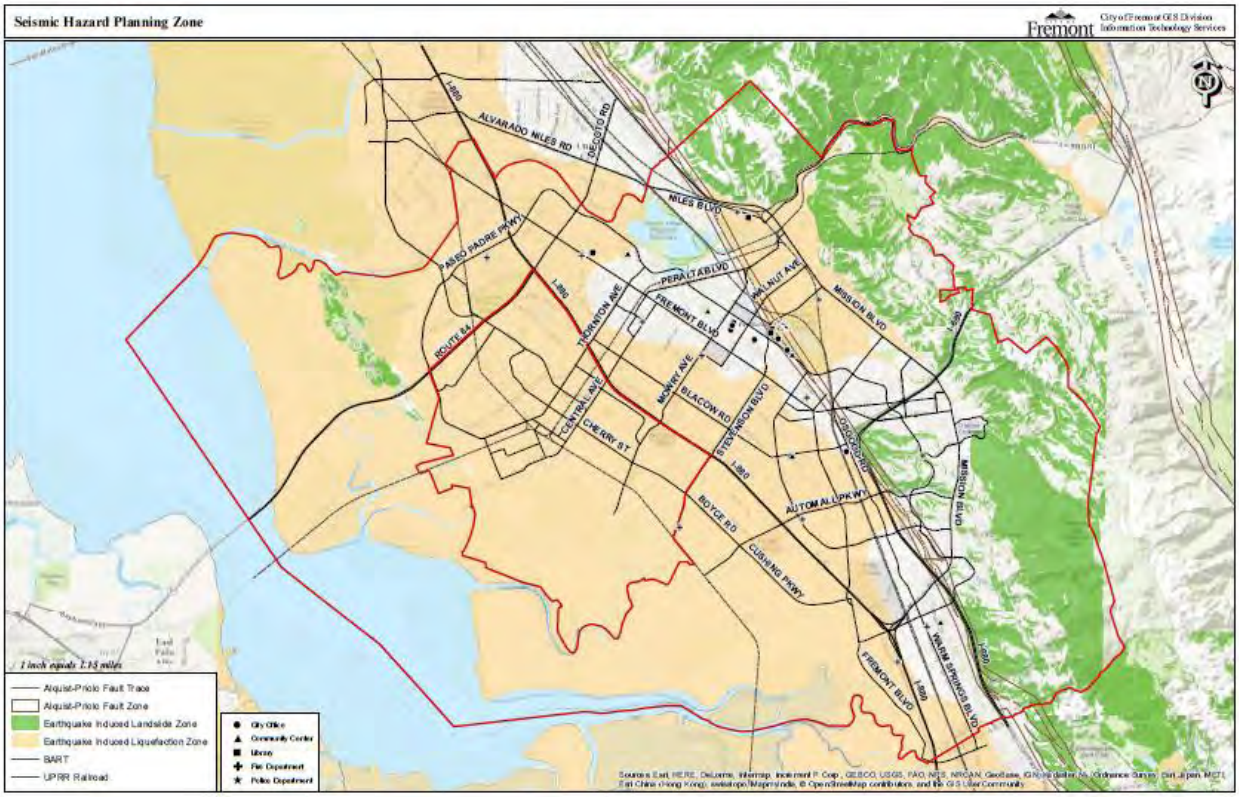
Map 21 – Earthquake Induced Landslide Zones



* A full size map can be found in Appendix A

The impact of earthquake induced landslides and liquefactions cover a majority of the City of Fremont. Map 22 – Seismic Hazard Planning Zone combines the maps of the earthquake induced landslides and liquefaction zones. As indicated by this map, many of the City facilities are located in areas as landslide or liquefaction susceptibility zones.

Map 22 – Seismic Hazard Planning Zone



* A full size map can be found in Appendix A

History: There has not been any major earthquake induced landslide that occurred in Fremont that was a local, state or federally declared disaster. There is always the probability that an earthquake induced landslide could happen based on the documentation provided.

Probability: The probability of all earthquakes in the Bay Area and Fremont is described in depth in Section 4.3.1. Given the Hayward Fault bisects the City and the Calaveras Fault is just east of the city limits, it is likely the Mission Hills mountain range could result in an earthquake induce landslide during or following a major earthquake.

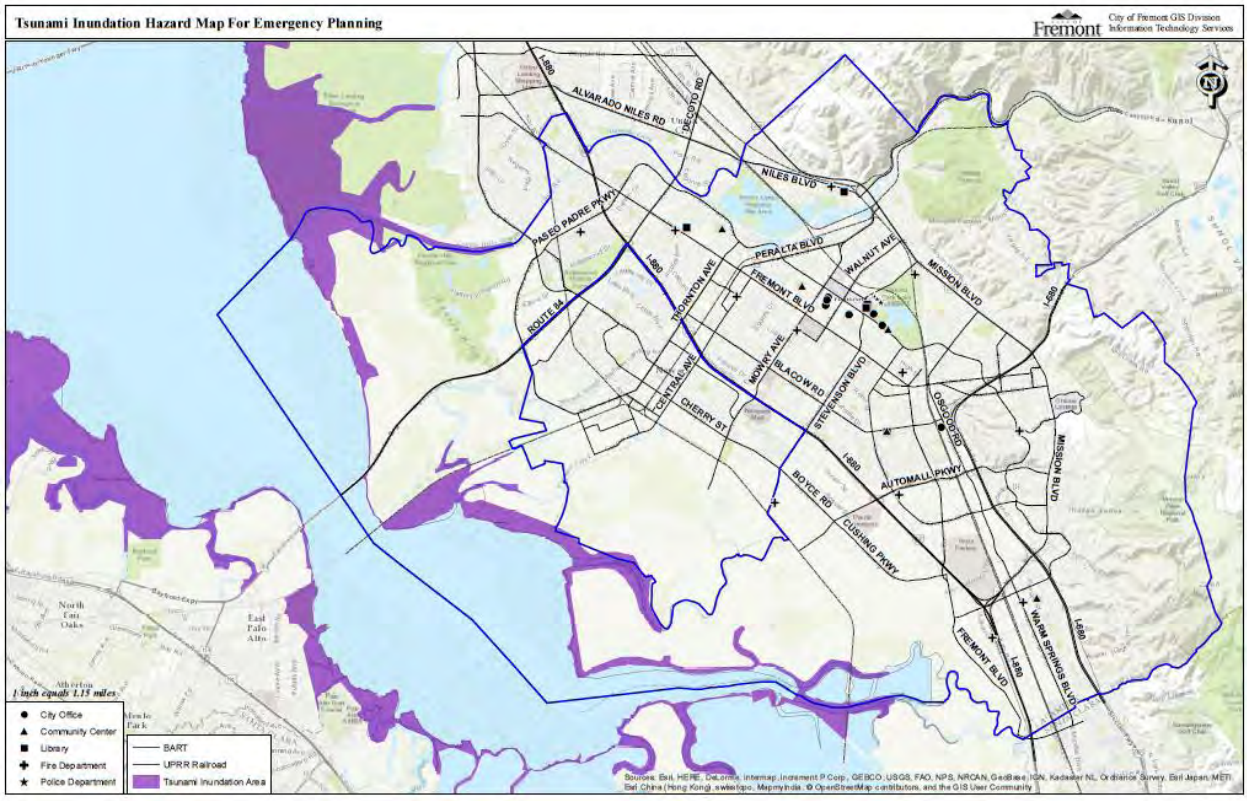
4.3.1.5 Tsunamis and Seiches

Type: Large underwater displacements from major underwater earthquake fault ruptures or landslides can lead to ocean waves called "tsunamis." Seiches are standing waves created on rivers, reservoirs, ponds, and lakes when seismic waves from an earthquake pass through an area.

Extent: Tsunamis can result from off-shore earthquakes within the Bay Area or from distant events. It is most common for tsunamis to be generated by offshore subduction faults. Tsunami waves generated at far-off sites can travel across the ocean and can reach the California coast with several hours of warning time. Local tsunamis can also be generated from offshore strike-slip faults. Because of their close proximity, we would have little warning time. Since tsunamis have high velocities, the damage from a particular level of inundation is far greater than in a normal flood event. Similarly, water sloshing in lakes during an earthquake, called "seiche," is also capable of producing damage.

Location: Map 23 – Tsunami Inundation Area is based on modeling a number of potential earthquake sources and hypothetical extreme undersea, near-shore landslide sources. In addition to the scenario inundation maps, Cal OES developed tsunami evacuation maps indicating areas that should evacuate if a warning is given. The Cal OES tsunami map is not associated with a particular event but instead represent the worst-case scenario at any given location by combining a suite of extreme, but plausible, inundation scenarios.

Map 23 – Tsunami Inundation Area



* A full size map can be found in Appendix A

Seiches can have similar effects to a tsunami, and could affect the City of Fremont by causing any of the reservoirs (Anderson, Calaveras, Del Valle and Turner) in the hills to overtop their dams, leading to inundation or flooding in Niles Canyon and other portions of the city.

History:
See Section 4.3.1 for additional information on the history of earthquakes in Fremont. There has not been any major tsunami or seiches that occurred in Fremont that was a local, state or federally declared disaster. There is always the probability that a tsunami or seiches could happen based on the documentation provided.

Probability:
The Bay Area faults that pass through portions of the Pacific coastline or under portions of the Bay are not likely to produce significant tsunamis because they move side to side, rather than up and down, which is the displacement needed to create significant tsunamis. They may have slight vertical displacements, or could cause small underwater landslides, but overall there is a minimal risk of any significant tsunami occurring in the Bay Area from a local fault. The greatest risk to the Bay Area is from tsunamis generated by earthquakes elsewhere in the Pacific.

Map 23 – Tsunami Inundation Area includes no information about the probability of a tsunami affecting an area at any given time. Because of this, it is not intended to show locations of probable inundation but should be used for evacuation planning only. Fremont is located at the southern end of the San Francisco Bay which protects it from many of the effects other coastal communities could experience from a Tsunami. As indicated by the Map, Fremont's largest potential areas for Tsunami Inundation and evacuation area are in the Baylands and along Alameda Creek at the northern edge of the City. Due to the undeveloped nature of the Baylands, a tsunami would have little impact on Fremont's population.

While dams can fail from earthquakes, dam inundation is examined as part of the Flood section. Due to management by dam owners and regulations of dams by Division of Dam Safety, seiches are unlikely to occur other than during an earthquake or immediately following a severe storm.

4.3.1.6 Fire Following Earthquake

Type: Earthquakes are often responsible for igniting fires which can contribute to a considerable share of the overall damage in a disaster. The fires can start from a variety of sources: appliances with natural gas pilot lights may tip, damaged electrical equipment may spark, and gas line connections may break.

Extent: Fire following earthquake is especially tricky because there are often multiple ignitions at once; typical water supply for fighting fire may be reduced or unavailable; and, maneuvering fire crews to the ignition can be difficult if streets are blocked by road damage or by debris that blocks the streets. The problem is heightened when many simultaneous ignitions can lead to a firestorm, and single fires can more quickly and easily move structure to structure. If there is a higher likelihood of building damage, there is also a higher likelihood that an ignition occurs. If a building collapses there is a high risk for gas or electrical lines to start "seed" fires that then impact undamaged neighboring structures.

Location: Areas of liquefaction are more vulnerable to fire because of the greater potential for underground gas mains to break due to the ground displacements, and because the water lines in the area may also be damaged – preventing the ability to fight a fire with regular water resources. There is added concern in areas with hazardous materials with the potential for explosion, or with the potential to produce toxic smoke. Industrial facilities and labs are a high concern because of the hazardous and flammable materials they store at their facilities. Additional information on Fire Hazard Severity is covered in Section 4.3.4.

History: See Section 4.3.1 for additional information on the history of earthquakes in Fremont. There has not been any major fire following an earthquake that occurred in Fremont that was a local, state or federally declared disaster. There is always the probability that a fire following an earthquake could happen based on the documentation provided.

Probability: The improvements in fire and building safety since the 1906 earthquakes and subsequent building and fire codes reduces the probability of significant damage from a fire following an earthquake. However, it is still possible for there to be a fire following an earthquake because of the significant damage that can occur from ground shaking, liquefaction, surface rupture and landslide following an earthquake. Fremont's close proximity to multiple faults could result in an earthquake that could trigger fire following an earthquake.

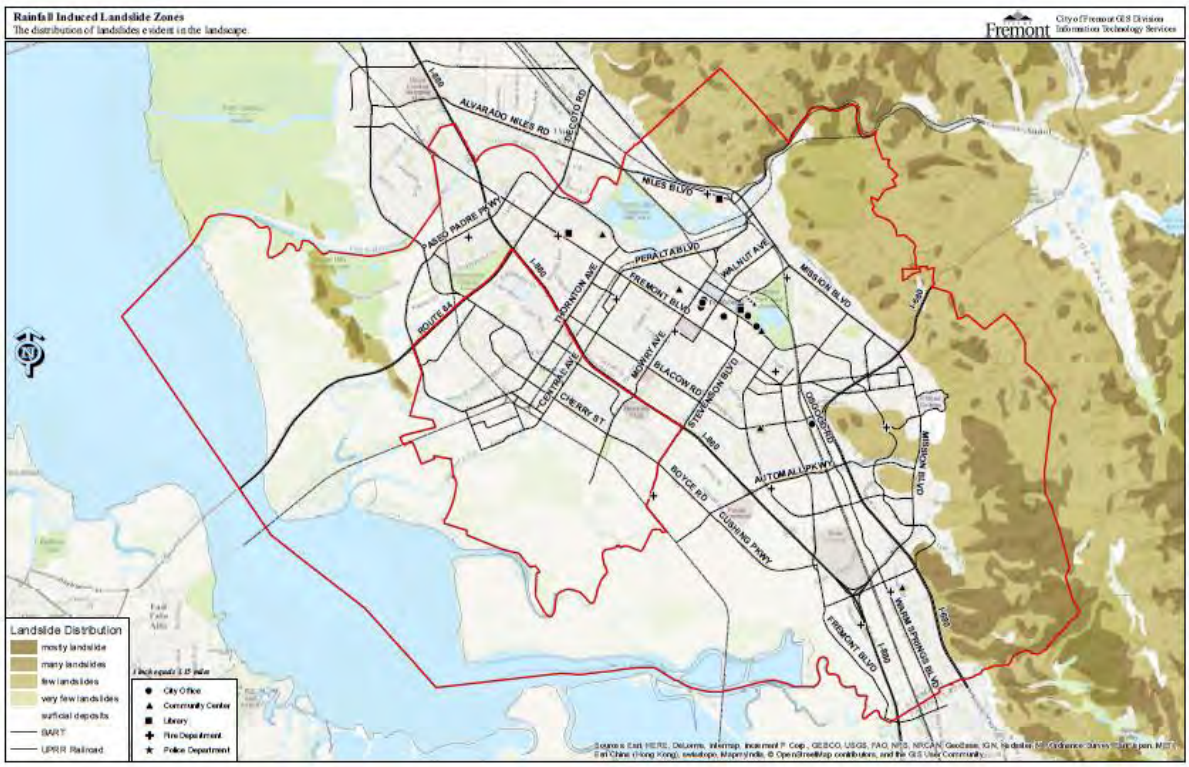
4.3.2 Landslides

Type: In the Bay Area landslides typically occur as a result of either earthquakes (earthquake-induced landslides), or during heavy and sustained rainfall events (rainfall-induced landslides).

Extent: A given area can be at risk for both earthquake-induced landslides as well as landslides caused by rain-saturated soils but the variables that contribute to each landslide risk are different. Typically an earthquake-induced landslide occurs when seismic energy at the top of a slope gets concentrated and breaks off shallow portions of rock. In rainfall-induced landslides, the slide can begin much deeper in the slope, in very-saturated layers of soil.

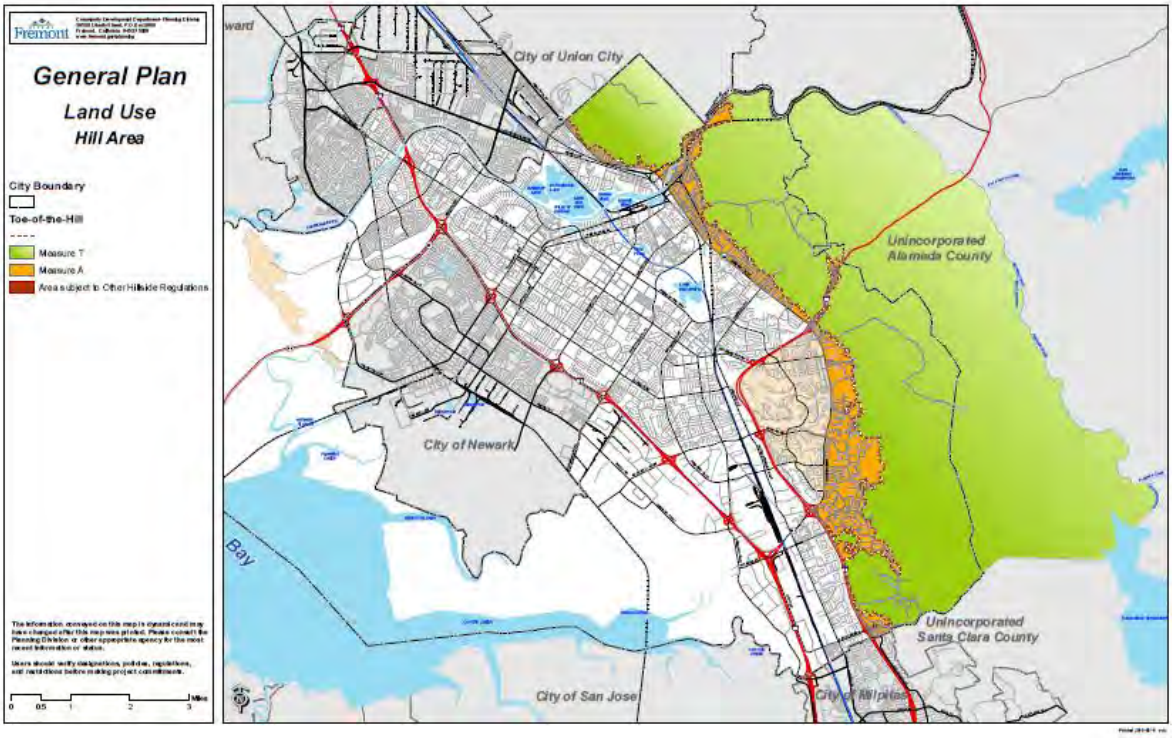
Location: The majority of the area subject to landslides is located in Fremont's hillside. Map 24 – Rainfall Induced Landslide Zone depicts the landslide distribution in the City. Much of Fremont's hillside is preserved as Hill Area Open Space designation. Fremont voters approved Measure A (Hillside Initiative of 1981) and Measure T (Hill Area Initiative of 2002). Measure T applied to all eastern Hill area and includes all land above the Toe of the Hill, extending south and east to Alameda Creek and Calaveras Creek. The Toe of the Hill is the line along the base of the hills where the natural grade first becomes 20% or more. Measure A and T preserve the open space found in the hillside and limit a significant amount of development, thereby reducing the risk associated with having a large population in the hillside area. Landslides can still occur and cause damage to development should the landslide flow towards development. A map depicting the open space preserved by Measures A and T is included as Map 24 – Rainfall Induced Landslide Zone.

Map 24 – Rainfall Induced Landslide Zone



* A full size map can be found in Appendix A.

Map 25 – Land Use Hill Area



* A full size map can be found in Appendix A.

History: Flooding and landslides associated with severe storms have been among the most common disasters in the Bay Area during the period from 1950 to 2009. Extensive landslides in the Bay Area have occurred 24 times since 1950, approximately once every three years.[xxvi] In March 1998, Mission Peak had a large landslide that was approximately a mile long and 800 to 1,400 feet across. While there was no major damage to any facilities, there was rocks, mud and debris flow in the back yards of several houses.

The Mission Peak Landslide was not a a local, state or federally declared disaster. There is always the probability that a rainfall induced landslide could happen based on the documentation provided.

Probability: There are not currently methods available to estimate the probabilities of future landslides at a local, or jurisdictional, scale. Steep slopes and varied types of underlying soils can influence the likelihood of landslides. Additionally, surface and subsurface drainage patterns also affect landslide hazard, and vegetation removal can increase landslide likelihood. Future landslides are most likely to occur within and around the places where they have previously occurred.[xxvii] Earthquake-induced landslides were previously addressed in this report in Section 4.3.1.4

As described above, landslides are typically triggered by earthquakes or prolonged severe wet seasons. Climate change is not expected to change the seismic risk, but climate change could change the behavior of winter storms. If winters are compressed, with more rain falling in fewer months, or if individual years are more extreme the chance of rainfall-induced landslide will

increase. Additionally, if fires burn greater portions of vulnerable hillsides, removing vegetation and increasing storm runoff, the landslide probability will increase. Currently, there is not enough evidence to suggest with certainty that future landslide probabilities will increase across the region.

Winter rain storms can impact hillsides by triggering fast-moving debris flows, or mudslides, and other slower-moving landslides. In general, landslides are most likely during periods of higher than average rainfall or El Niño winter storms. In addition, the ground must be saturated prior to the onset of a major storm for significant landsliding to occur. But there is currently no method to estimate the scale of individual landslides in terms of size or extent based on these maps, or to assign specific probabilities to these areas in terms of the likelihood of future landslides.

4.3.3 Floods

Type: Flooding is a temporary condition that causes the partial or complete inundation of land that is normally dry. Flooding occurs when streams, rivers, lakes, reservoirs, or coastal water bodies are abnormally high and overflow into adjacent low-lying areas, areas at risk of recurring floods known as floodplains.

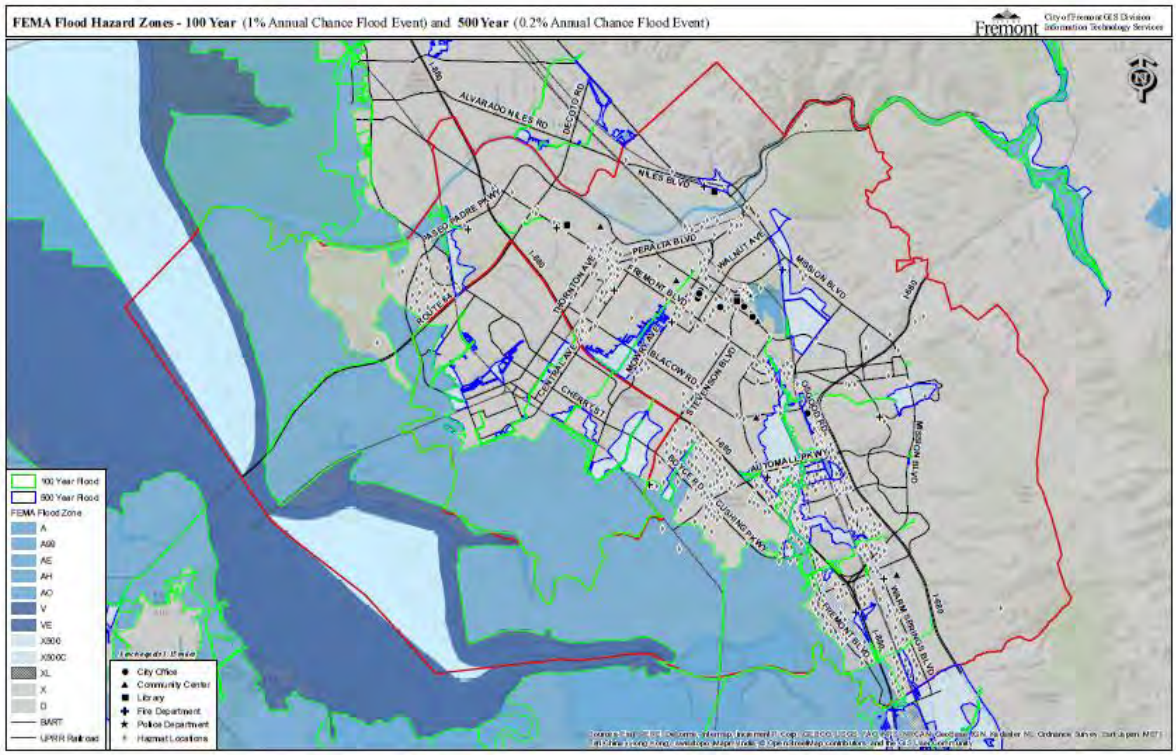
Extent: Coastal flooding is generally associated with Pacific Ocean storms from November through February when high tides coincide with strong winds both on the outer coast and within the Bay. The frequency and severity of coastal flooding can also be attributed to astronomical tides, storm surges, wind waves, El Niño events and sea level rise. Riverine flooding, also known as overbank flooding, can occur if there is excessive rainfall especially in conjunction with high tides and strong winds. The frequency and severity of riverine flooding can also be attributed to the rainfall intensity and duration, watershed conditions, natural features within a watershed, flood control features, velocity of flow, and sediment in the waterway. Riverine floodplains range from narrow, confined channels in the steep valleys of mountainous and hilly regions to wide, flat areas in plains and coastal regions. The potential for flooding of a floodplain is a function of the size and topography of the contributing watershed, the regional and local climate, and land use characteristics. The lower portions of coastal rivers are more likely to flood during high tides with backwater conditions that lead to overbank flooding.

Dams can be damaged by large storms and the associated runoff, an earthquake, slope failures, or a man-made disaster. While dam failure is rare, their failure can be catastrophic, destroying downstream structures and killing people, while reducing water storage in the Bay Area until the dam is rebuilt.

Location: The rivers and streams for which FEMA has prepared detailed engineering studies may also have designated floodways. The floodway is the channel of a watercourse and portion of the adjacent floodplain that is needed to convey the base or 1% annual chance (100-year flood) event without increasing flood levels by more than 1 foot and without significantly increasing flood velocities. The floodway must be kept free of development or other encroachments.

Map 26 – 1% and 0.2% Annual Chance (100 & 500 Year) Floodplain indicates the 1% and 0.2% annual chance (100 and 500 year) FIRMs prepared by FEMA. The map indicates flooding from a 100-year or greater flood could affect portions of the North Fremont surrounding Coyote Hills and portions for the City's industrial area west of I-880 and south of Stevenson Boulevard. Most of the areas prone to historical flooding are located in the western portions of the City and have been designated primarily for permanent open space uses such as habitat preservation, salt ponds, and federal and regional parks and preserves. Other areas of the City where inundation from flooding is possible include Alameda Creek through Niles Canyon; the area surrounding Lake Elizabeth, extending into the Mission Valley neighborhood; Laguna Creek; the Crandall Creek area west of Deep Creek Road; and the KGO radio transmitter site along the approach to the Dumbarton Bridge. There is also localized flooding potential along the urban fringe near the base of the hills and in scattered flatland areas.

Map 26 – 1% and 0.2% Annual Chance (100 & 500 Year) Floodplain



* A full size map can be found in Appendix A.

The majority of Fremont's urbanized areas are at risk of inundation as a result of dam failures. Four dams have the potential to result in flooding in the city. These dams are listed in Table 7 – Dam and Reservoir Details.

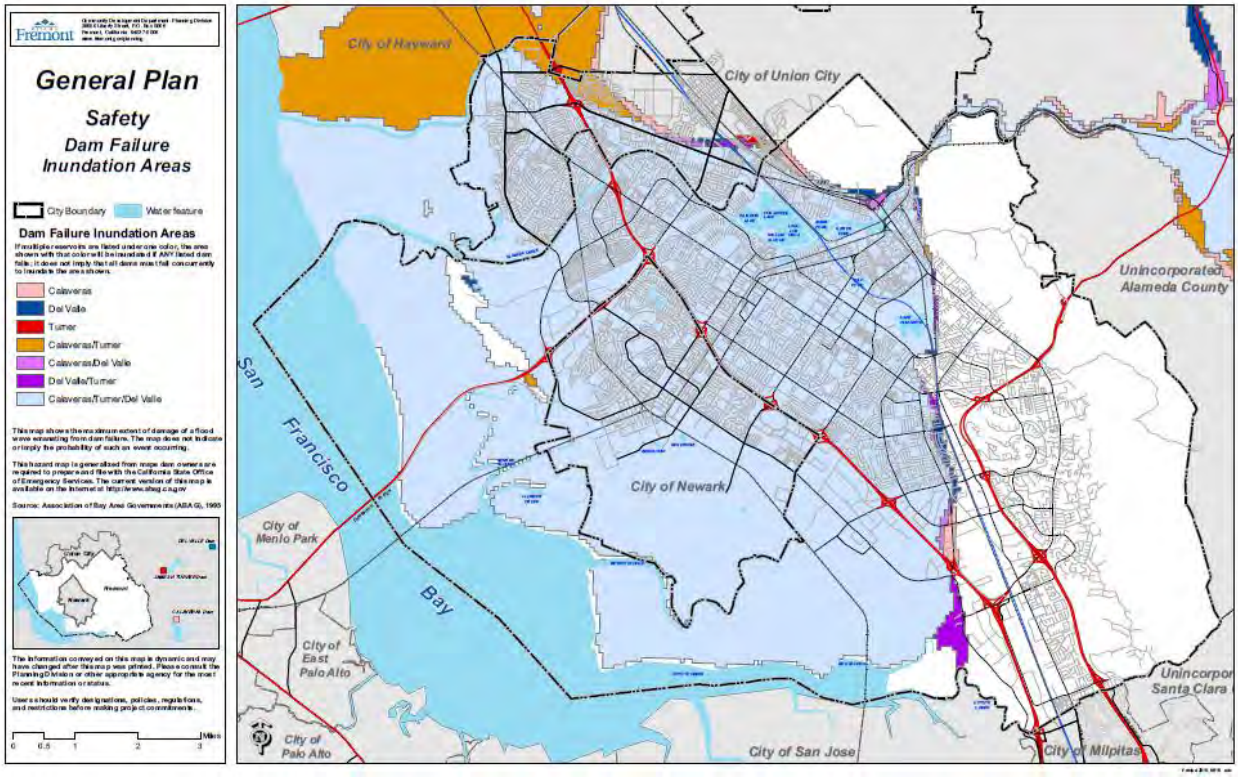
Table 7 – Dam and Reservoir Details

Dam / Reservoir	Owner	Year Built	Acre-Feet Capacity	Inundation Area
Anderson Dam and Reservoir	SCVWD	1950	91,300[xxviii]	Unknown
Calaveras Reservoir	CCSF	1925	110,000[xxix]	41.25 square miles
Del Valle Dam / Lake Del Valle	DWR	1968	77,100	97.98 square miles
James H. Turner Dam / San Antonio Reservoir	CCSF	1964	50,500	Unknown

As indicated by Map 27 – Dam Inundation Map the impact of an individual dam failure in the Alameda Watershed would result in a flow coming through Niles Canyon along Highway 84, before making its way to the San Francisco Bay. This map assumes that each reservoir is filled to capacity and the maximum extent of damage that could exist from a dam failure. Niles Canyon would serve as the mouth of the flooding caused by a dam failure at Calaveras, Dell Valle or San

Antonio Reservoirs, resulting in a very similar flooding inundation area. Calaveras would have the largest impact in terms of total inundation area covered because of the larger capacity of the reservoir. The map is based on generalized maps prepared by dam owners and submitted to California State Office of Emergency Services.

Map 27 – Dam Inundation Map



* A full size map can be found in Appendix A

The County of Alameda 2016 Local Hazard Mitigation Plan identifies other dams within the County that are not identified in the City's General Plan. These dams can be identified for potential failure hazard; however, the inundation area is not available for all of them.

Table 8 – Dam and Reservoir Details (County of Alameda 2016 LHMP)[xxx]

Dam / Reservoir	Owner	Year Built	Acre-Feet Capacity	Inundation Area
Decoto Reservoir	ACWD	1966	46	0.29 square miles
Mayhew Reservoir	ACWD	Unknown	Unknown	0.22 square miles
Middlefield Reservoir	ACWD	1958	22	0.26 square miles
Patterson (1065-000)	ACWD	1962	46	Unknown
Quarry Pits	ACWD	1977	3,360	Unknown

Rubber Dam 1	ACWD	Unknown	Unknown	Unknown
Rubber Dam 3	ACWD	1990	154	Unknown
Shinn	ACWD	1987	390	Unknown

Due to the small size, and lack of data available on these dams, they were not further evaluated for inundation; however, that does not mean they could have an impact on surrounding properties.

History: National Climatic Data Center (NCDC) indicates that Alameda County has experienced 29 flood events since 1950. According to this data, the only flooding in Fremont occurred in 1998 along Alameda Creek. The levee breached along Arroyo Mocha (a dry creek) and caused damage to roads and property. The damage was estimated at $200,000 and did not result in any injuries or death. There was no local, state or federally declared disaster, although the information was reported to the Alameda County Emergency Operations Manager and subsequently to NOAA. There is a probability that flooding could continue to happen in the future based on the documentation provided.

In California's history, there have been a total of 4 dam failures which have resulted in 619 fatalities, none of which have occurred in the Bay Area. The dam failures include:

- Baldwin Hills Reservoir, Los Angeles 1963
- Sweetwater Dam, San Deigo,1916
- Lower Otay Dam, San Diego, 1916
- St Francis Dam, Los Angeles, 1928

There has not been any major dam break or dam inundation that occurred or flowed into Fremont that was a local, state or federally declared disaster. There is always the probability that dam failure or inundation could occur based on the documentation provided.

Probability: The magnitude of flood used as the standard for floodplain management in the United States is a flood having a probability of occurrence of one percent in any given year, also known as the 1% annual chance (100-year flood) or base flood. The most readily available source of information regarding the % annual chance (100-year flood) is the system of Flood Insurance Rate Maps (FIRMs) prepared by FEMA. These maps are used to support the National Flood Insurance Program (NFIP) and show the 1% annual chance flood (formerly referred to as 100-year flood) boundaries for identified flood hazards. These areas are also referred to as Special Flood Hazard Areas (SFHAs) and are the basis for flood insurance and floodplain management requirements under the NFIP. FIRMs also show floodplain boundaries for the 0.2% annual chance flood (formerly referred to as 500-year flood), which is the flood having a 0.2 percent chance of occurrence in any given year.

There has been no determination as to the likelihood or probability of a dam inundation failure; however, it seems unlikely all dams would be damaged at the same time. The greatest risk to Fremont would occur when the water volume is the highest, or following extensive storms when the reservoirs are near capacity. Dam owners are obligated to lower water levels when there are known risks associated with the dam. Anderson and Calaveras Dams are currently undergoing

seismic upgrades, which has resulted in a reduction in water storage at both reservoirs until the seismic upgrades are completed.

4.3.4 Fire

Type: Fires are typically characterized into three categories: urban fires, wildland-urban interface fires, and wildland fires. Urban fires occur within a developed area and pose a direct risk to development. Wildland-urban interface (WUI) fires occur where the built environment and natural areas is intermixed (fringe of urban areas). Wildland fires exist in wilderness land.

Extent: Fires in the urban environment and in the wildland-urban interface result in direct damage to the built environment and can injure or kill residents. Wildland fires can cause damage to linear infrastructure systems that serve the Bay Area, causing outages downstream of the failure; can impact the air quality in cities during the duration of the fire; and can impact water quality in watersheds impacted by a wildland fire. Wildland and wildland-urban interface fires can also damage natural environments, such as recreational areas, and can cause lasting impacts to slopes and soils. Wildfire risk increases due to climate change because of higher temperatures and longer dry periods over a longer fire seasons. Additionally, wildfire risk will also be influenced by potential changes in vegetation.[xxxi]

The impacts of a fire are felt long after the fire is extinguished. In addition to the loss of property in fires, the loss in vegetation and changes in surface soils alters the environment. When supporting vegetation is burned, hillsides become destabilized and prone to erosion. The burnt surface soils are harder and absorb less water. When winter rains come, this leads to increased runoff, erosion, and landslides in hilly areas.

Location: Fire areas fall into three Categories – Federal Responsibility Areas (FRA); State Responsibility Areas (SRA), where CalFire is responsible for fire protection; and Local Responsibilities, where Fremont Fire Department has responsibility. As depicted by the map, Fremont Fire Department is responsible for the majority of land within City limits, while the Baylands are considered Federal Responsibility Areas. CalFire is responsible for areas outside of Fremont's City limits. These fire areas are depicted in Map 28 – Fire Responsibility Area.

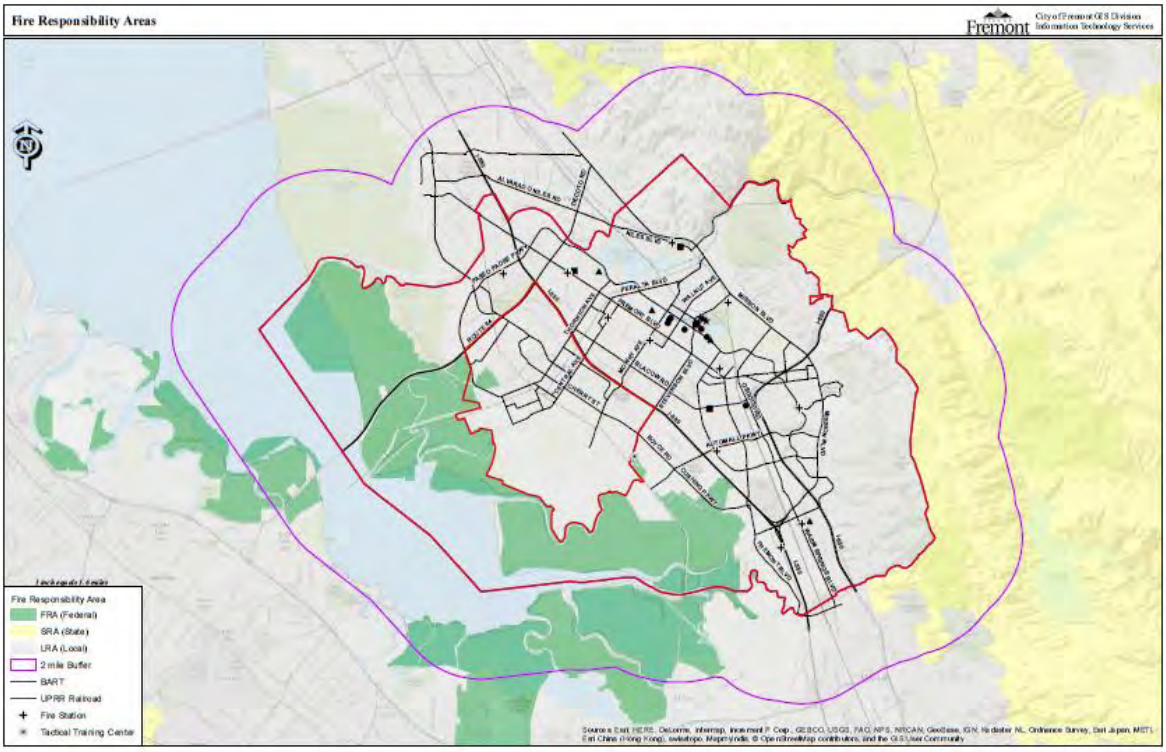
Fremont's fire department has 11 fire stations which provide emergency medical and fire service to the City. Each fire department has a typical district that it will send emergency response to for the most efficient deployment of resources. However, each station's crews can provide aid to other areas of the City when there is increased demand. The location of each Fire Station and the district that it provides primary coverage to is included in

Map 29 – Fire Station Locations.

Fremont provides, or receives mutual aid from other jurisdictions. Mutual aid is provided through written agreements between each city and neighboring fire service organizations provide mutual response on jurisdictional borders. Fremont provides or receives mutual aid from the following fire agencies:

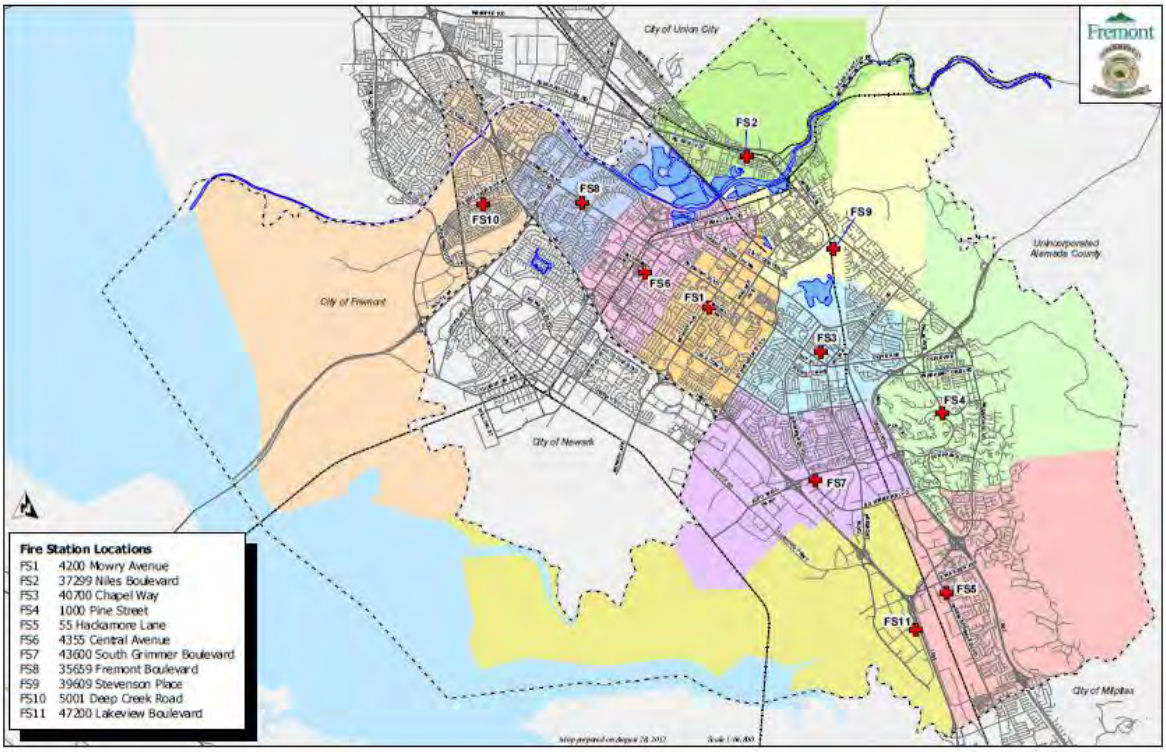
- Newark Fire Department
- Union City Fire Department
- Milpitas Fire Department
- California Department of Forestry and Fire Protection (CDF / CalFire)
- Alameda County Fire Department
- Hayward Fire Department
- Menlo Park Fire Protection District

Map 28 – Fire Responsibility Area



* A full size map can be found in Appendix A.

Map 29 – Fire Station Locations



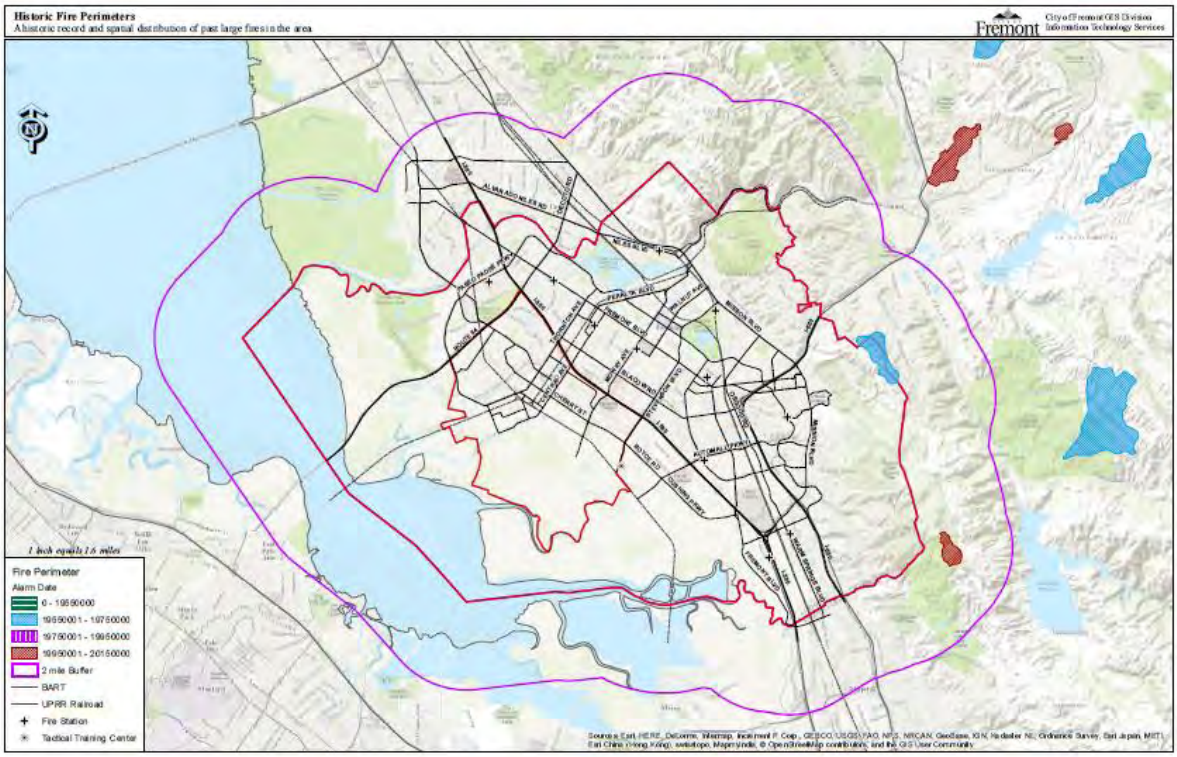
* A full size map can be found in Appendix A.

History: The only significant wildfire that has occurred in Fremont occurred in July 1958 on the Mission Hills mountain range between Mission Peak and I-680 at Mission Pass. While smaller fires have occurred, CalFire only tracks brush fires greater than 50 acres, grass fires greater than 300 acres, and fires that destroy three or more residential dwellings or commercial structures. As indicated by

Map 30 – Historic Fire Perimeters, the majority of the 288 acre fire was in Fremont; however parts of it extended beyond Fremont City limits and into the SRA which is CalFire' s jurisdiction.

This wildfire was not a local, state or federally declared disaster; however, assistance was provided by CalFire. There is always the probability that a wildfire could happen based on the documentation provided.

Map 30 – Historic Fire Perimeters



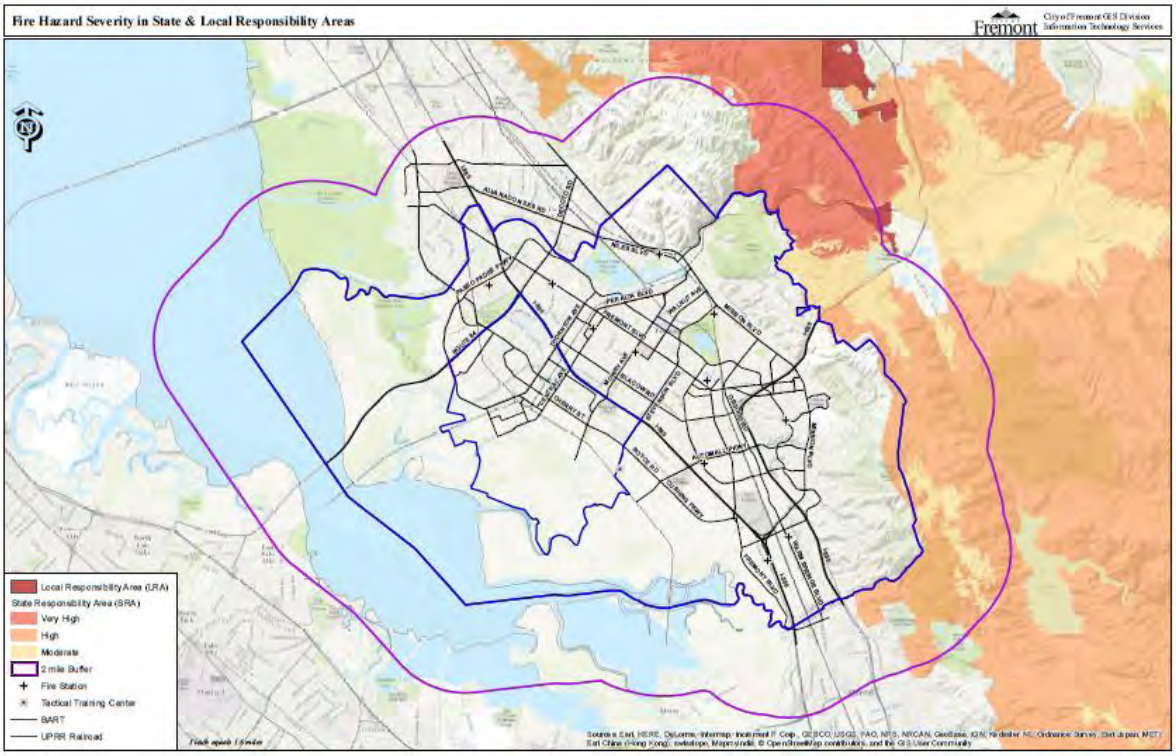
* A full size map can be found in Appendix A.

Probability:

Map 31 – Fire Hazard Severity – CalFire and Map 32 – Fire Hazard Severity – indicate the fire severity levels Fire hazard severity takes into account the amount of vegetation, the topography, and weather (temperature, humidity, and wind), and represents the likelihood of an area burning over a 30-50 year time period.[xxxii]

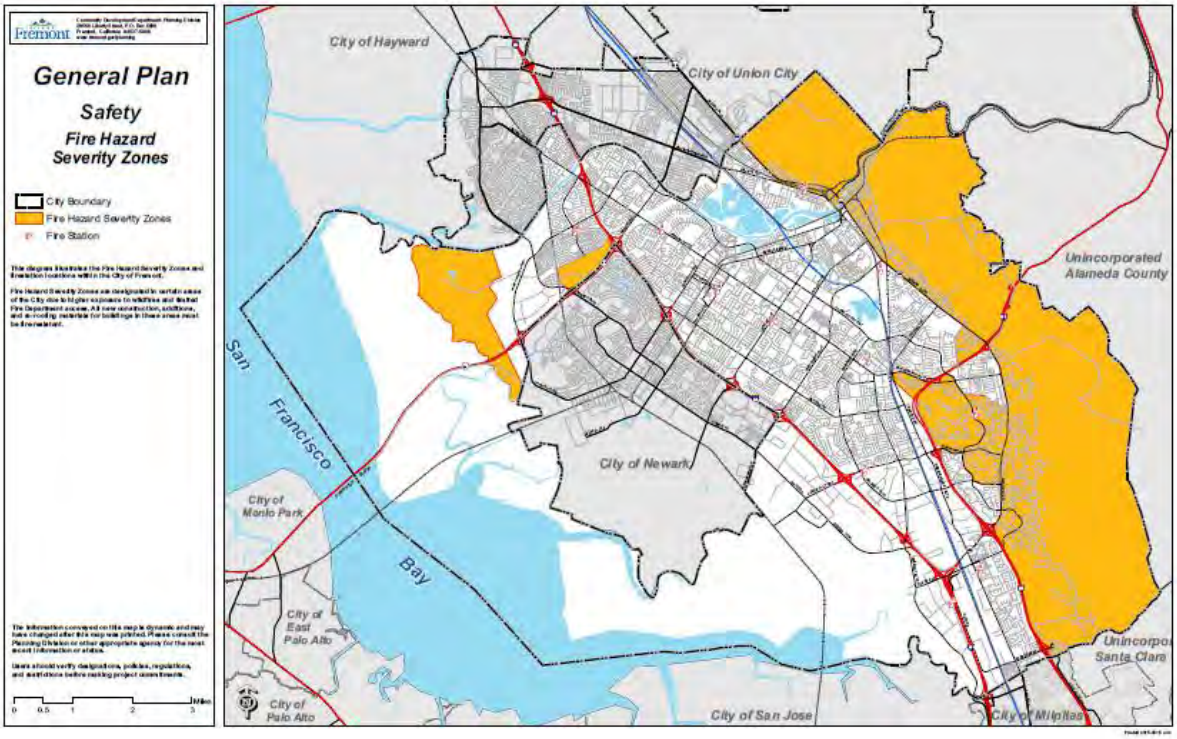
In 2007, Fremont adopted Wildland-Urban Interface Area to the Fremont Municipal Code which designated the locations and boundaries of the Very High Fire Hazard Severity Zones. Map 33 – Fire Hazard Severity – Very High Fire Hazard Severity Zone (FMC 7-13102) provides a more in depth analysis of the location of the Very High Fire Hazard Severity Zone.

Map 31 – Fire Hazard Severity – CalFire



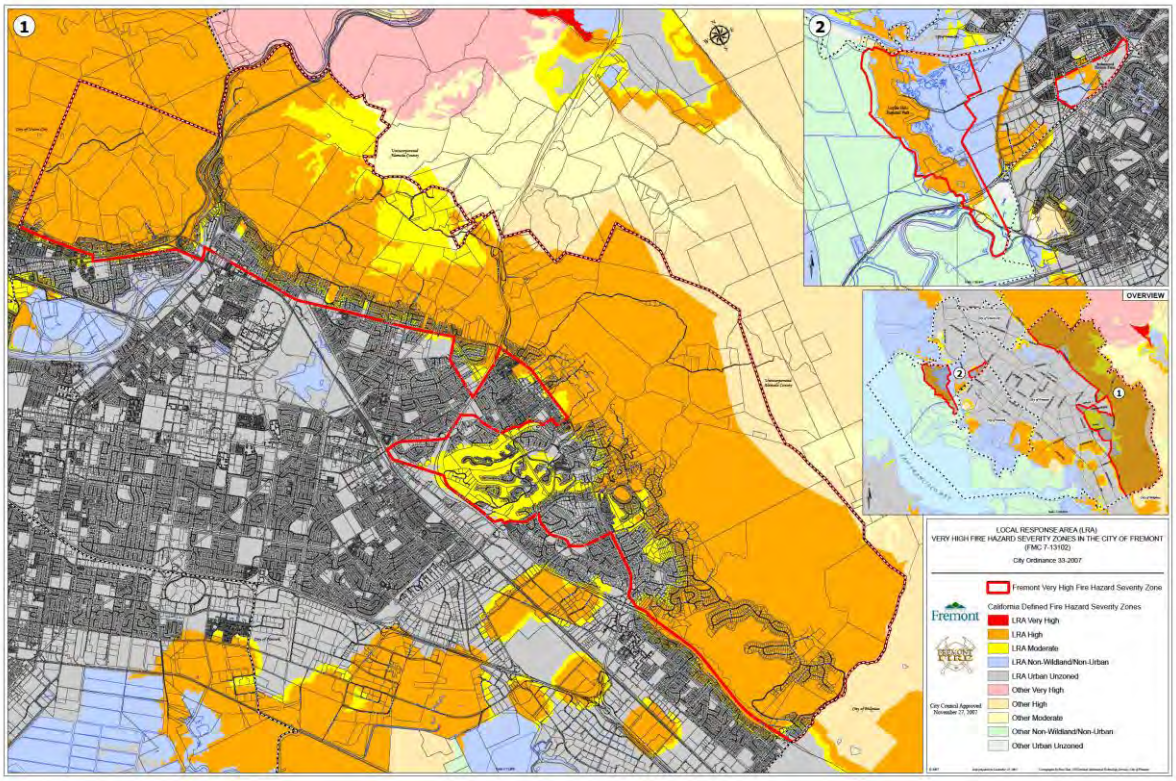
* A full size map can be found in Appendix A.

Map 32 – Fire Hazard Severity – Local Response Area



* A full size map can be found in Appendix A.

Map 33 – Fire Hazard Severity – Very High Fire Hazard Severity Zone (FMC 7-13102)



* A full size map can be found in Appendix A.

4.3.5 Climate Change

Fremont is subject to three hazards caused by climate change. These hazards are drought, extreme heat and sea level rise.

4.3.5.1 Drought

Type: A drought is a gradual phenomenon that occurs over several dry years, depleting reservoirs and groundwater basins without the expected annual recharge from winter precipitation.

Extent: While drought does not have any primary impacts in the Bay Area, prolonged periods of drought can cause secondary impacts that can affect the region. Regional and statewide impacts include reduced water supply for urban water supply, crops and livestock feed; increased wildfire hazard; and subsidence.

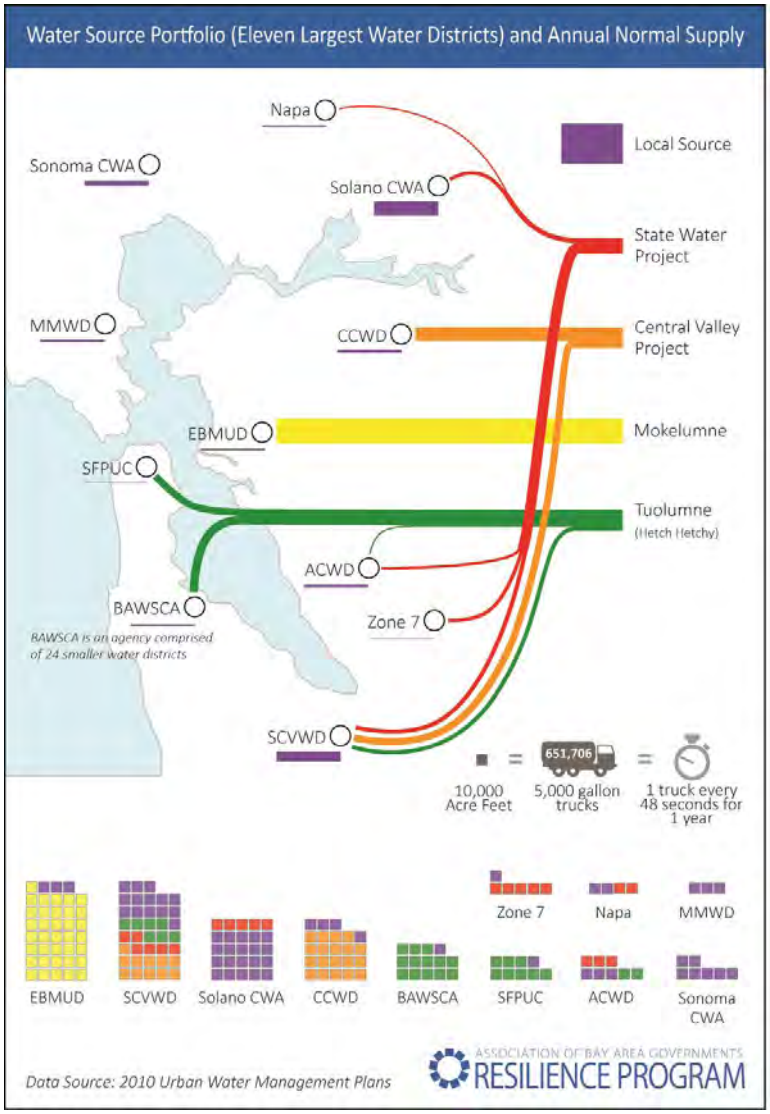
Drought is not localized, but occurs simultaneously across the region, and may extend statewide or across a larger expanse of western states. The impacts of the drought are locally unique, based on local water supply systems, soil conditions, and the typical climate and vegetation land covering. The effects of drought are managed in the Bay Area through the importation of water and the storage of water in reservoirs.

The reduction in snowpack does not have direct impacts on Fremont, since there is rarely accumulation of snow. Shortages in precipitation in the Sierra Nevada can have a more pronounced impact on water supply in the region than a drought in the Bay Area itself because of the reliance of the region on water from the Sierra's. Currently, Alameda County Water District receives 40% of the water from the State Water Project; 20% from San Francisco Public Utilities Commission; and 40% from Alameda Creek Watershed Runoff. That means that over 60% of the water is imported to Fremont from beyond the Bay Area. Climate change will have an impact since snowfall accumulation will decrease in the winter. Snow that accumulates will melt earlier in the year with warmer weather throughout California.

Location: There are a number of water purveyors in the Bay Area, and each has different sources of water.

Figure 6 – Water Source Portfolio and Annual Normal Supply illustrates where the largest water districts in the region collect water. Only a third of the water used in the Bay Area is from local rainfall collection and groundwater pumping; the remainder comes from runoff in the Sierra Nevada Mountains.

Figure 6 – Water Source Portfolio and Annual Normal Supply



History: On April 1, 2015, Governor Brown issued an executive order to mandate substantial water reductions across the State as a result of a multi-year drought. The executive order implemented mandatory water reductions in cities and towns across California to reduce water usage by 25%. Local water agencies were authorized to adjust rate structures to implement conservation pricing. In January, 2016 the California State Water Board adopted a revised emergency regulation on urban water conservation through October 2016. Under the revised regulation, the statewide water conservation goal is to exceed 20% in savings of 2013 water use. This took into consideration factors that influence water use in different parts of the state, such as hotter than average climate, population growth and investments in different forms of water supplies such as water recycling and desalination. Governor Brown and the California State Water Board are implementing policies due to the data that suggests drier conditions are becoming a new normal for California and southwestern states.[xxxiii] As of May 5, 2015 Fremont was in Stage 3 – Extreme Drought, and much of the rest of the bay area was equally in a drought or worse as indicated by Map 34 – Drought Severity.

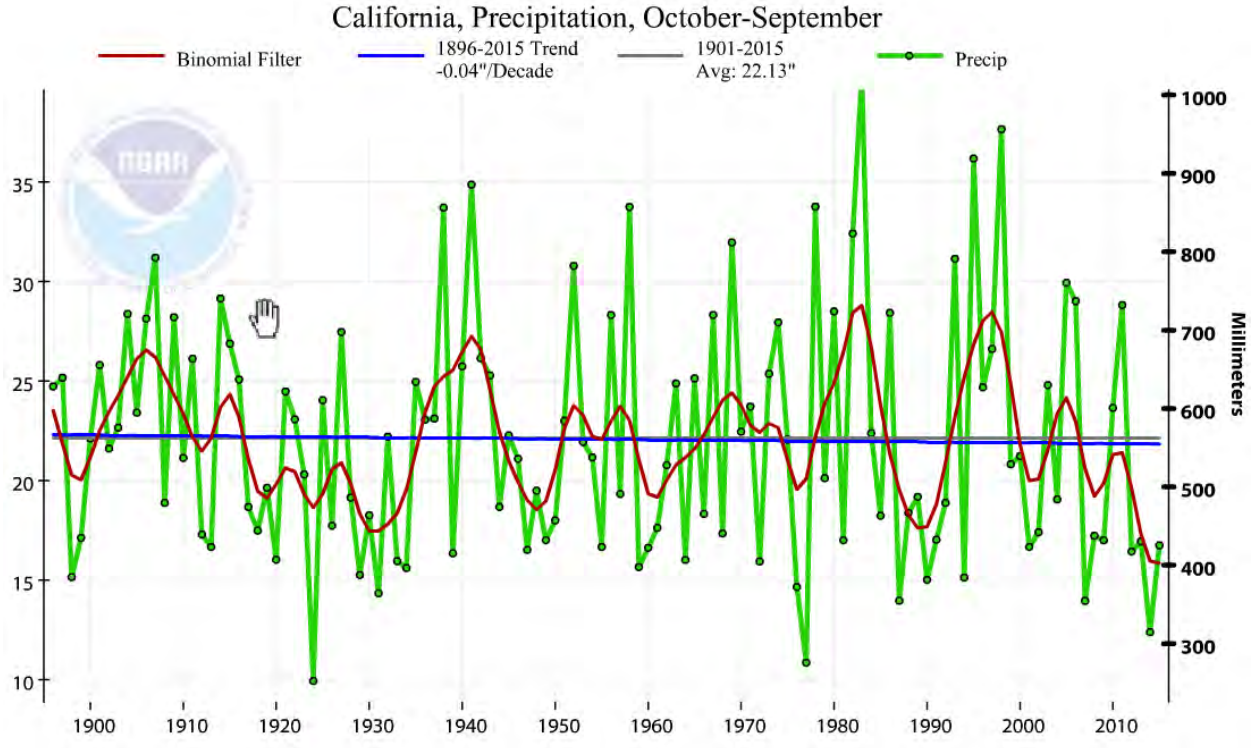
Map 34 – Drought Severity

* A full size map can be found in Appendix A.

California's most significant historical statewide droughts were the six-year drought of 1929-34, the two year drought of 1976-77, the six-year event of 1987-92 and the current drought which began in 2012. California droughts are becoming more common due to decreased precipitation and increased average temperatures statewide. Sustained multi-year dry periods have been relatively infrequent in the historical record in California; however, there are only approximately 100 years of data recorded, which is minimal in the context of California's existence.

The droughts in Fremont's history were declared emergencies at the state level; however there was no direct damage that affected Fremont. There is always the probability that a drought could happen based on the documentation provided.

Figure 7 – California Precipitation History



Source: NOAA National Centers for Environmental Information[xxxiv]

Probability: Climate change is likely to increase the number and severity of future droughts. The cumulative impact of climate change impacts will result in drier conditions, and will alter the timing and efficiency of the Bay Area water supply. An increase in temperature and a reduction in snow pack are the two most direct effects of climate change that will result in a drier state with fewer natural water resources than historically have been available.

Fire hazard increases where drought conditions are high. There are multiple drought related factors that contribute to increased fire hazard: longer fire season, drier vegetation, and hot days. Additionally, drought reduces the water supplies available to fight wildfires, leading to larger and more extended fires. When in a drought, the fire risk is greater, and the impacts remain the same.

4.3.5.2 Sea Level Rise

Type: Globally, sea levels are rising due to thermal expansion caused by the ocean warming and the melting of land-based ice such as glaciers and polar ice caps.

Extent: The rate of sea level rise is affected by other processes, including changes in land elevation (subsidence or uplift), coastal erosion, wind and ocean currents, ocean temperature and salinity, atmospheric pressure, and large-scale climate regimes.[xxxv]

The National Research Council (NRC) *Sea-Level Rise for the Coasts of California, Oregon, and Washington* study provides regionally specific sea level rise projections for the Coasts of California, Oregon, and Washington. Because there is significant uncertainty in how much sea level will raise, the range in projected values increases over time.

Table 9 – Regional Sea Level Rise Projections Relative to Year 2000 for California Coast

	Sea Level Rise (inches)		
Year	**NRC 2012 Projection** (mean ± the standard deviation for the A1B Scenario[xxxvi])	**Low** (mean of the B1 scenario)	**High** (mean of the A1F1 scenario)
2030	**5.6** (±1.9)	2	12
2050	**11.0** (±3.6)	5	24
2100	**36.1** (±10)	17	66

Sea level rise has the potential to influence the impact of coastal, riverine and localized nuisance flooding. In particular, without intervention rising sea levels may cause more frequent flooding, longer-duration flooding, erosion, overtopping and increased salinity intrusion.

Rising sea levels can lead to more frequent flooding of existing flood-prone areas, including more frequent overtopping and overbank flooding of riverine systems that already flood when rainfall coincides with high tides due to the increased backwater effect. In addition, gravity drained and pumped systems that discharge stormwater into flood control channels can have reduced performance, causing backups and flooding of streets.

As sea levels rise there is the potential that storm events will flood larger areas for longer periods of time and that there will be new overtopping and overbank flooding of riverine systems that do not currently cause flooding. Sea level rise can cause shoreline protection, such as levees, berms and revetments, to be damaged or fail due to increased tidal and wave energy. There is also the potential that shoreline protection will be overtopped during storm events when there are extreme tide levels and wind-driven waves, flooding inland areas, including homes and community services that are currently protected.

Levee failure poses a great risk to life and property in areas where levees protect surrounding property from sea level rise, surge and flooding. The City has two primary levees. One is located along Alameda Creek protecting North Fremont and the other along Coyote Creek protecting the south Baylands area. If the levees were to fail then property adjacent to these areas would be

susceptible to sea level rise flooding and flood damage. The Alameda County Flood Control District has jurisdictional authority over the maintenance of the levees. Recent natural disasters and current concerns over rising sea levels have brought attention to the risk of levee failure.

As sea levels rise, groundwater and salinity levels are also predicted to rise. This will cause damage to below grade living spaces and electrical/mechanical equipment that is below or at-grade. In addition, increasing groundwater levels may increase liquefaction susceptibility, and require the use of pumping of stormwater for flood management, which will increase both operations and maintenance costs.

Sea level rise can cause areas that are not currently exposed to regular high tide inundation to be flooded, resulting in the need to either protect or move people and infrastructure, and the loss of permanent open space uses such as habitat preservation, salt ponds, and federal and regional parks and preserves. In addition, increased tidal scour due to increased tidal prism in riverine systems can trigger changes in channel geometry and sediment transport processes.

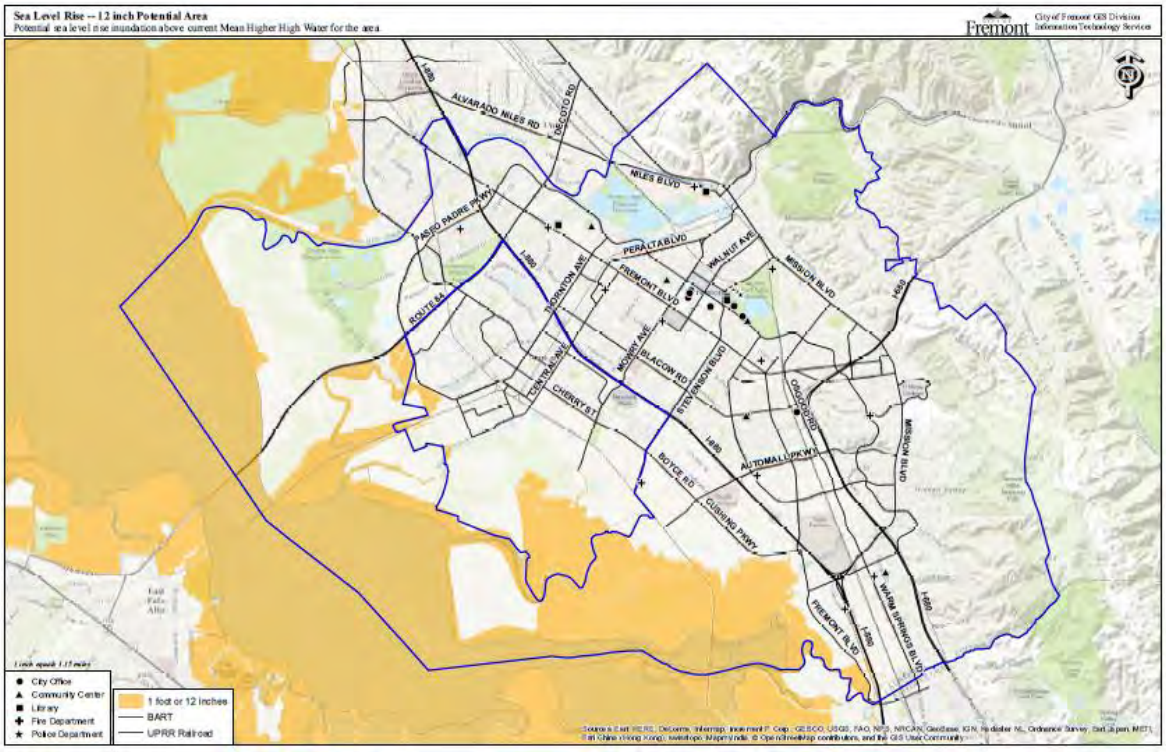
In the Bay Area, the potential for new or prolonged flooding as sea level rises will not be confined to the shoreline. Sea level rise will increase the likelihood of major flood events around the Bay Area because higher water levels in tidal creeks and flood control channels will reduce capacity to discharge rainfall runoff. While some creeks already flood when rainstorms coincide with high tides, rising sea levels will cause flooding during smaller, more frequent rainfall events.

Location: Sea level rise inundation maps (
Map 35, Map 36, Map 37) help visually assess under what conditions assets may be impacted by sea level rise and storm events and how far reaching the consequences may be if they are impacted. To understand these factors it is helpful to evaluate a range of possible future sea level rise scenarios. The "total water level" approach presented below simplifies this process and reduces the number of maps needed. In this approach each inundation map represents a number of different unique combinations of sea level rise and extreme tide conditions.[xxxvii]

Map 35 – Sea Level Rise Map (1ft SLR) indicates a total water level of 12 inches (1 foot) above Mean Higher High Water (MHHW), which represents a new "daily" high tide with 12 inches of sea level rise. This amount of sea level rise, which is a likely projection for 2050, could result in regular, e.g., permanent, tidal inundation. This total water level can also represent today's 1 year King Tide. Extreme tide events that are larger than daily high tide levels can result in episodic, short duration, or temporary, flooding.

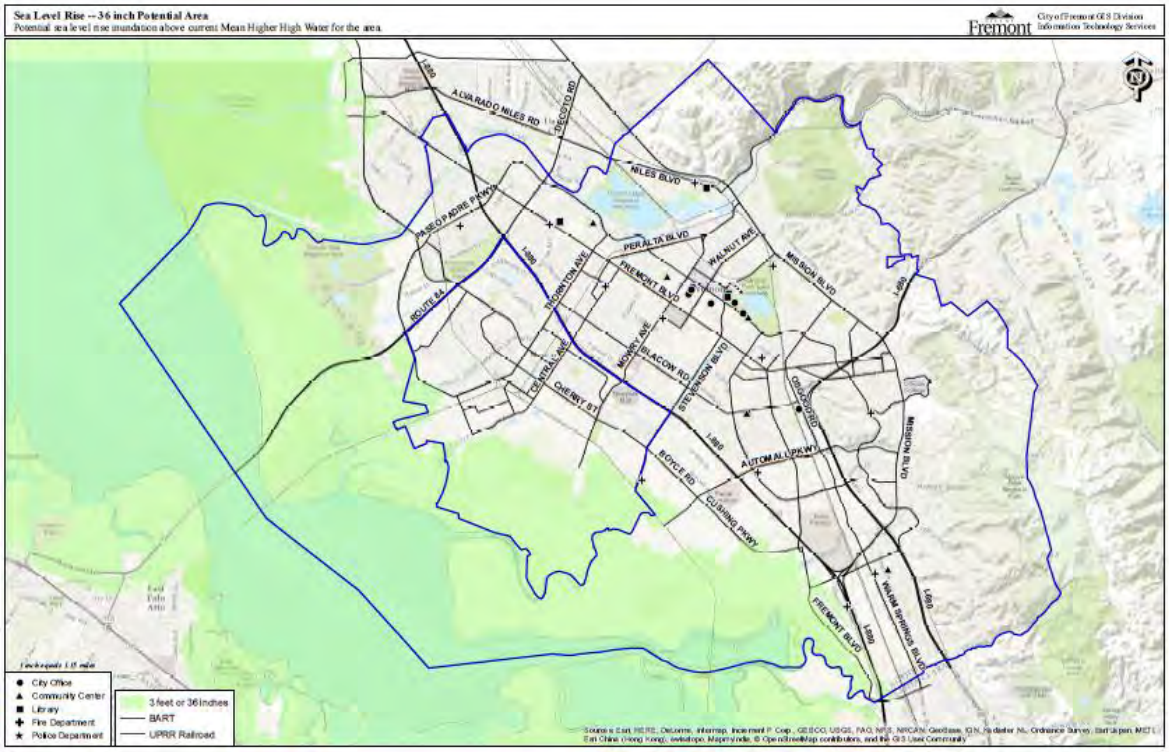
Map 36 – Sea Level Rise Map (3ft SLR) indicates a total water level of 36 inches (3 feet) above MHHW, which represents a new "daily" high tide with 36 inches of sea level rise. This amount of sea level rise, which is a likely projection for 2100, could result in regular, e.g., permanent, tidal inundation. This total water level can also represent today's 50-year extreme tide level, a one-year extreme tide level with 24 inches of sea level rise, or a five-year extreme tide level with 12 inches of sea level rise, which is a likely 2050 projection. Extreme tide events that are larger than daily high tide levels can result in episodic, short duration, or temporary, flooding.

Map 35 – Sea Level Rise Map (1ft SLR)



* A full size map can be found in Appendix A.

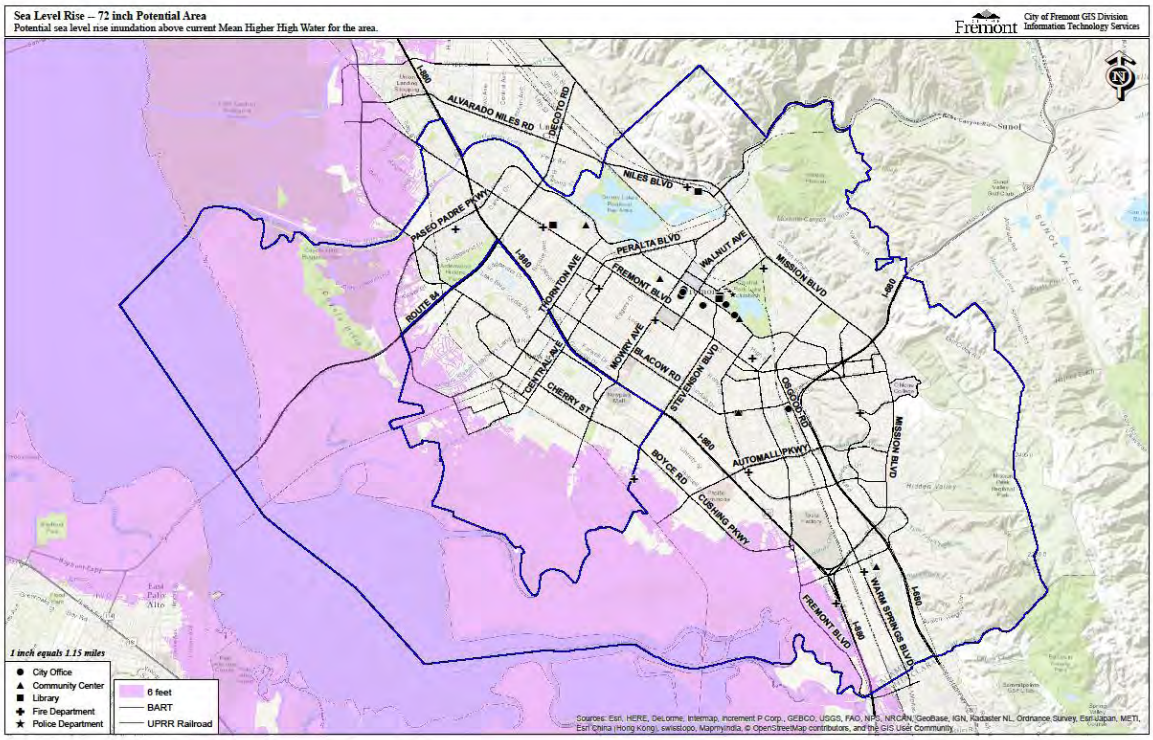
Map 36 – Sea Level Rise Map (3ft SLR)



* A full size map can be found in Appendix A.

Map 37 – Sea Level Rise Map (6ft SLR) indicates a total water level of 72 inches (6 feet) above MHHW, which represents a new "daily" high tide with 72 inches of sea level rise. This amount of sea level rise, which is unlikely to occur prior to 2100; however, it could occur during extreme tidal events, such as a 5 year king tide, with a 4 foot rise in sea level or a 100 year king tide with a 2 foot rise in sea level. Extreme tide events that are larger than daily high tide levels can result in episodic, short duration, or temporary, flooding.

Map 37 – Sea Level Rise Map (6ft SLR)



* A full size map can be found in Appendix A.

History:

A paper prepared by the California Climate Change Center, and funded by California Energy Commission and California Environmental Protection agency indicates that over the past century, sea level has risen nearly 8 inches along the California coast.[xxxviii] However, none of this has directly impacted the City of Fremont since the western boundary of the city is the eastern shoreline of the San Francisco Bay which abuts open space. This open space includes the Coyote Hills Regional Park and Don Edwards San Francisco Bay National Wildlife Refuge. Open space has been lost to increasing sea level, but there has been no damage to any structures.

There is always the probability that sea level rise could happen based on the documentation provided.

Probability:

The matrix of numbers presented in
Table 10 – Matrix showing combinations of Sea Level Rise and Extreme Tide Level can be used to understand a range of total water levels, from 0 to 95 inches above MHHW, represented both in terms of today's tides and future tides as sea level rises. Each total water level represents a combination of sea level rise (0 to 60") and tide levels (MHHW to a 100-year extreme event). As an example, the likely mid-century daily high tide is projected to be 12" above today's high tide, or 12"+MHHW. This water level is color coded in red in Table 10 – Matrix showing combinations of Sea Level Rise and Extreme Tide Level
This total water level is approximately the level observed during King Tide today, which is an astronomical tide that occurs approximately twice per year when the Moon and the Sun simultaneously exert their gravitational influence on the Earth.

Because of the uncertainties associated with modeling and mapping sea level rise it is reasonable to allow for a +/- 3-inch range when interpreting the total water levels in Table 9.

Table 10 – Matrix showing combinations of Sea Level Rise and Extreme Tide Level [xxxix] [xl]

Time Frame	Sea Level Rise	Total water level above today's daily high tide, MHHW (inches NAVD88), by tide recurrence interval							
		MHHW (≈ daily high tide)	1-yr (≈ King Tide)	2-yr	5-yr	10-yr	25-yr	50-yr	1% annual chance (100-yr)
Today		0	12	19	23	27	32	36	41
	+6	6	18	25	29	33	38	42	47
Likely Mid-Century	+12	12	24	31	35	39	44		53
	+18	18	30	37	41	45	50	54	59
	+24	24	36	43	47	51	56	60	65
	+30	30	42	49	53	57	62	66	71
Likely End-Century	+36	36	48	55	59	63	68	72	77
	+42	42	54	61	65	69	74	78	83
	+48	48	60	67	71	75	80	84	89

Color Code	Map Scenario (inches above MHHW)
	12
	24
	36
	48
	72

4.3.5.3 Extreme Heat

Type: Fremont can experience extreme heat days, where the Heat Index, a function of heat and relative humidity, is high. Extreme heat days pose a public health threat, causing symptoms such as exhaustion, heat cramps, and sunstroke if the Heat Index is over 90°F.

Extent: The National Weather Service has developed a Heat Index Program Alert which gets triggered when high temperatures are expected to exceed 105° to 110° for at least two consecutive days. Heat emergencies occur when residents are subject to heat exhaustion and heatstroke, and are more likely to occur in areas not adapted to heat and without air conditioning, cooling centers, or vegetation to mediate heat impacts in exposed areas. Certain populations are typically the most at risk during extreme heat emergencies, including people with disabilities, chronic diseases, the elderly, and children.[xli]

Location: Due to Fremont's relatively small size in comparison to the Bay Area region, Extreme Heat would impact the entire City. Areas with tree coverage may provide additional protection from heat compared to areas without shade coverage.

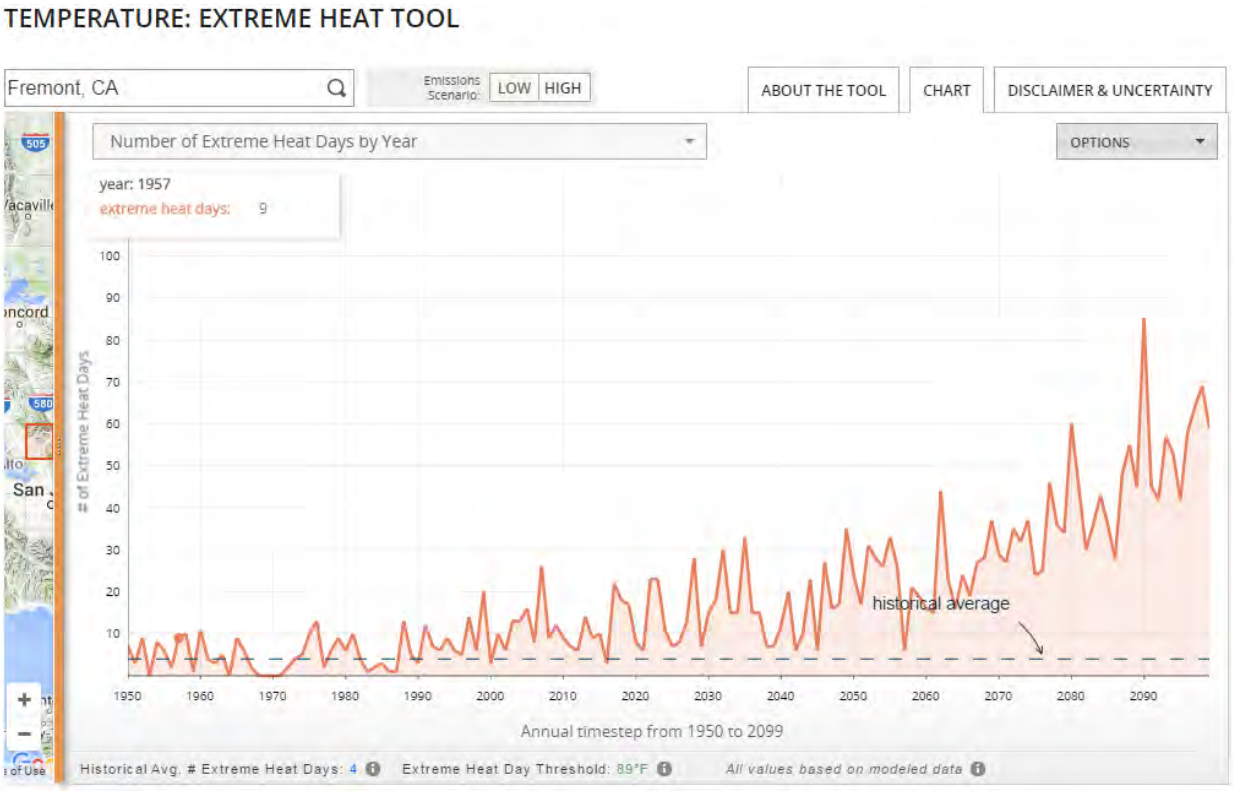
History: Fremont has averaged 4 extreme heat days per year, which are classified as being greater than 89 °F since 1950. The most number of extreme heat days observed in a calendar year occurred in 2007, when there was 26 extreme heat days. NOAA issues Extreme Heat Warnings; however, the exact dates and times of these warnings have not been tracked. Extreme heat emergencies typically build over time with cumulative effects. Because of this, and the fact that they do not cause substantial physical damage to the built environment, they do not elicit the same immediate response that other hazards do. However, they claim many lives in comparison to other disasters. The California Climate Adaptation Strategy, citing a California Energy Commission Study, states that heat waves have claimed more lives in California than all other disaster events combined.[xlii]

There has not been any major extreme heat event that occurred in Fremont that was a local, state or federally declared disaster. There is always the probability that an extended period of extreme heat could happen based on the documentation provided.

Probability: Climate change is expected to generate an increase in ambient average air temperature, particularly in the summer. Alameda County will likely experience an increase in temperatures from the historical average of 3.3°F to 5.8°F. The frequency, intensity, and duration of extreme heat events and heat waves are also expected as regional climate impacts.[xliii]

Figure 8 – Extreme Heat Projection is Cal-Adapt's tool to show the projected number of extreme heat days over the next century. Based on the projections, Fremont could exceed 89 °F up to 85 days a year in 2090 with the decadal average at 60 days of extreme heat per year.

Figure 8 – Extreme Heat Projection



* Source: Cal-Adapt Temperature: Extreme Heat Tool

Section 5 Risk Assessment

5.1 Citywide Assets

A list of citywide assets was compiled to assess their vulnerabilities to the hazards identified in Section 4. The citywide assets and infrastructure included key infrastructure as described in Section 3.5 through 3.7. There are a few citywide assets located outside of the City limits; however, they provide utility services to the City and were therefore included.

Table 11 – Citywide Assets

Category	Type	Name	Address
CMTY	Com. Center	Centerville Park Community Center	3355 Country Drive
CMTY	Com. Center	Irvington Community Center	41885 Blacow Road
CMTY	Com. Center	Los Cerritos Community Center	3377 Alder Ave
CMTY	Com. Center	Warm Springs Community Center	47300 Fernald Street
CMTY	Recreation	Stivers Lagoon	40600 Paseo Padre Parkway
CMTY	Recreation	Nature Learning Center	40224 Paseo Padre Parkway
CMTY	Recreation	Niles Tiny Tots	470 School Street
CMTY	Recreation	Performance Pavilion	40204 Paseo Padre Parkway
CMTY	Recreation	Teen Center	39770 Paseo Padre Parkway
CMTY	Rental Building	Culture Arts Commission Bldg.	3375 Country Drive
CMTY	Rental Building	Fremont Community Center	40204 Paseo Padre Parkway
EDUC	CDE	California School For The Blind	500 Walnut Ave
EDUC	CDE	California School For The Deaf	39350 Gallaudet Drive
EDUC	FUSD	American High	36300 Fremont Boulevard
EDUC	FUSD	Blacow Elementary School	40404 Sundale Drive
EDUC	FUSD	Brookvale Elementary School	3400 Nicolet Ave
EDUC	FUSD	Cabrillo Elementary	36700 San Pedro Drive
EDUC	FUSD	Centerville Jr High School	37720 Fremont Boulevard
EDUC	FUSD	E M Grimmer Elementary School	43030 Newport Drive
EDUC	FUSD	FUSD District Office	4210 Technology Drive
EDUC	FUSD	G M Walters Junior High School	39600 Logan Drive
EDUC	FUSD	Glankler School	39207 Sundale Drive
EDUC	FUSD	Glenmoor Elementary School	4620 Mattos Drive
EDUC	FUSD	Harvey Green Elementary School	42875 Gatewood Street
EDUC	FUSD	Hirsch Elementary	41399 Chapel Way
EDUC	FUSD	Hopkins Jr High School	600 Driscoll Road
EDUC	FUSD	Irvington High School	41800 Blacow Road
EDUC	FUSD	J Haley Durham Elementary School	40292 Leslie Street
EDUC	FUSD	James Leitch Elementary School	47100 Fernald Street
EDUC	FUSD	John F Kennedy High School	39999 Blacow Road

EDUC	FUSD	John M Gomes Entary School	555 Lemos Lane
EDUC	FUSD	Joseph Azevada Elementary School	39450 Royal Palm Drive
EDUC	FUSD	Joshua Chadbourne Elementary School	801 Plymouth Ave
EDUC	FUSD	Linda Vista School	2650 Bruce Drive
EDUC	FUSD	Maloney Elementary School	38700 Logan Drive
EDUC	FUSD	Millard Elementary School	5200 Valpey Park Ave
EDUC	FUSD	Mission San Jose Elementary	43545 Bryant Street
EDUC	FUSD	Mission Valley Elementary	41700 Denise Street
EDUC	FUSD	Mission Valley Regional Occupational Program	5019 Stevenson Boulevard
EDUC	FUSD	Mission San Jose High School	41717 Palm Ave
EDUC	FUSD	Oliveira Elementary School	4180 Alder Ave
EDUC	FUSD	Parkmont Elementary School	2601 Parkside Drive
EDUC	FUSD	Patterson Elementary School	35521 Cabrillo Drive
EDUC	FUSD	Robertson High School	4455 Seneca Park Ave
EDUC	FUSD	Thornton Junior High School	4357 Thornton Ave
EDUC	FUSD	Vallejo Mill Elementary School	38569 Canyon Heights Drive
EDUC	FUSD	Warm Springs Elementary School	47370 Warm Springs Boulevard
EDUC	FUSD	Warwick Elementary School	3375 Warwick Road
EDUC	FUSD	Washington High School	38442 Fremont Boulevard
EDUC	FUSD	Weibel Elementary School	45135 S Grimmer Boulevard
EDUC	FUSD	Ardenwood Elementary School	33955 Emilia Lane
EDUC	FUSD	Forest Park Elementary School	34400 Maybird Circle
EDUC	FUSD	Mattos Elementary School	37944 Farwell Drive
EDUC	OCCD	Ohlone Community College	43600 Mission Boulevard
GOV	Government	Administration Center Building "A"	3300 Capitol Ave
GOV	Government	Administrative Center Building "B"	39100 Liberty Street
GOV	Government	Development Center	39550 Liberty Street
GOV	Human Services	Family Resource Center #1	39155 Liberty Street
GOV	Human Services	Family Resource Center #2	39175 Liberty Street
GOV	Human Services	Senior Citizen's Center	40086 Paseo Padre Parkway
GOV	Human Services	Tri-City Volunteers	37354 Joseph Street
GOV	Museum	Niles Freight & Passenger Depot	37592 Niles Boulevard
HEALTH	Medical	Kaiser Permanente Fremont Medical Center And Offices	39400 Paseo Padre Parkway
HEALTH	Medical	Palo Alto Medical Foundation	3200 Kearney Street
HEALTH	Medical	Washington Hospital	2000 Mowry Ave
LIB	Library	Centerville Library	3801 Nicolet Ave
LIB	Library	Fremont Main Library	2400 Stevenson Boulevard
LIB	Library	Irvington Library	41825 Greenpark Drive

PARK	City Park	Arroyo Agua Caliente Park	Gardenia Way
PARK	City Park	Azevada Park	39450 Royal Palm Drive
PARK	City Park	Bill Ball Civic Park	37292 Fremont Boulevard
PARK	City Park	Blacow Park	40404 Sundale Drive
PARK	City Park	Booster Park	Gable Drive
PARK	City Park	Brookvale Park	Nicolet Ave
PARK	City Park	Brookvale Trail	From Brookvale Park To Isherwood
PARK	City Park	Buena Vista Park	Macintosh & Mission Boulevard
PARK	City Park	Cabrillo Trail	Cabrillo Drive& Cadiz Drive
PARK	City Park	Centerville Community Park	3375 Country Lane
PARK	City Park	Crandall Creek Park	Blackstone Way & Pecos Ave
PARK	City Park	David Jones Park	Lowry Rd & Lark Way
PARK	City Park	East Bay Greenway Trail Corridor	Btw Paseo Padre Parkway & Farallon Commons
PARK	City Park	Fremont Central Park	Paseo Padre & Stevenson
PARK	City Park	Fremont Park Golf Club	Paseo Padre & Stevenson
PARK	City Park	Gomes Park	827 Lemos Lane
PARK	City Park	Irvington Community Park	41885 Blacow Road
PARK	City Park	Irvington Monument Plaza	Fremont Boulevard & Bay Street
PARK	City Park	Isherwood Park (Underdeveloped Designated Park Land)	Isherwood Way
PARK	City Park	Lone Tree Creek Park	500 Starlite Way
PARK	City Park	Los Cerritos Community Park	3377 Alder Ave
PARK	City Park	Lowry Park	Great Salt Lake Drive& Lake Mead Drive
PARK	City Park	Marshall Park	5301 Curtis Drive
PARK	City Park	Mission San Jose Community Park	41403 Mission Boulevard
PARK	City Park	Niles Community Park	470 School Street
PARK	City Park	Niles Town Plaza	37592 Niles Boulevard
PARK	City Park	Noll Park	Logan Drive& Wheeler Drive
PARK	City Park	Northgate Park	34501 Rowland Drive
PARK	City Park	Northgate Trail	Chaucer & Sterne Place
PARK	City Park	Old Mission Park	Paseo Padre & Pine Street
PARK	City Park	Patterson Park	35475 Cabrillo Drive
PARK	City Park	Peralta/Dusterberry Park (Underdeveloped Designated Park Land)	Peralta Boulevard & Dusterberry Way
PARK	City Park	Plaza Park	37771 Madera Court
PARK	City Park	Plomosa Park	Plomosa Road
PARK	City Park	Rancho Arroyo Park	Montecito Drive& Posado Way

PARK	City Park	Rancho Higuera Park	37300 Rancho Higuera
PARK	City Park	Rix Park	43100 Isle Royal Street
PARK	City Park	Sabercat Historic Park	Paseo Padre Parkway / Sabercat Road
PARK	City Park	Shinn Historic Park	1251 Peralta Boulevard
PARK	City Park	Surry Park	Surry Place(North End)
PARK	City Park	Sylvester Harvey Park	3590 Grand Lake Drive
PARK	City Park	Vallejo Mill Historical Park	Mission Boulevard & Niles Canyon Road
PARK	City Park	Vallejo Mill School Park	Orangewood Drive
PARK	City Park	Warm Springs Park	47300 Fernald Street
PARK	City Park	Weibel Historic Park	Stanford Ave & Vineyard Ave
PARK	City Park	Westridge Park	36025 Fremont Boulevard
PARK	City Park	Williams Historical Park	39169 Fremont Boulevard
PARK	City Park	California Nursery Historic Park	36501 Niles Boulevard
PARK	City Park	California Terrace Park	Terrace & Stonebridge
PARK	City Park	Deep Creek Park	Deep Creek & Macbeth
PARK	City Park	Frank Fischer Park	Deep Creek & Maybird Circle
PARK	City Park	Nordvik Park	Commerce & Ardenwood
PARK	City Park	Pacific Commons Sports Park (Underdeveloped Designated Park Land)	6900 Auto Mall Parkway
PARK	City Park	Peregrine Park	Peregrine Drive& Falcon Drive
PARK	City Park	Warbler Park	Warbler Loop & Falcon
PARK	EBRPD	Mission Peak Regional Preserve	43600 Mission Boulevard
PARK	EBRPD	Ohlone Regional Wilderness	Not Applicable
PARK	EBRPD	Quarry Lakes Regional Recreation Area	2100 Isherwood Way
PARK	EBRPD	Ardenwood Historic Farm	34600 Ardenwood Boulevard
PARK	EBRPD	Coyote Hills Regional Park	8000 Patterson Ranch
PARK	EBRPD	Vargas Plateau Regional Park	2536 Morrison Canyon
PW	Public Works Building	Central Park Service Center	39800 Paseo Padre Parkway
PW	Public Works Building	Maintenance Center Administration; Maintenance Shop; Vehicle Maintenance; Roll Off Shelter; Materials Storage; Fueling Station; Wash Rack; Equipment Enclosure; Emergency Operations Center	42551 Osgood Road A
PW	Public Works Building	Maintenance Center Shops	42551 Osgood Road B
SAFETY	Fire Building	Fire Station #01, Argonaut/Mowry	4200 Mowry Ave
SAFETY	Fire Building	Fire Station #02, Niles	37299 Niles Boulevard
SAFETY	Fire Building	Fire Station #03, Irvington	40700 Chapel Way
SAFETY	Fire Building	Fire Station #04, Pine	1000 Pine Street

SAFETY	Fire Building	Fire Station #05, Warm Springs	55 Hackamore Lane
SAFETY	Fire Building	Fire Station #06, Centerville (Old)	37412 Fremont Boulevard
SAFETY	Fire Building	Fire Station #06, Centerville; Storage Building	4355 Central Ave
SAFETY	Fire Building	Fire Station #07, Grimmer; Foam Storage; Storage Building	43600 Grimmer Boulevard
SAFETY	Fire Building	Fire Station #08, Fremont Boulevard	35659 Fremont Boulevard
SAFETY	Fire Building	Fire Station #09, Stevenson	39609 Stevenson Place
SAFETY	Fire Building	Fire Station #11	47200 Lakeview Boulevard
SAFETY	Fire Building	Fire Station #10, Ardenwood; Storage Building	5001 Deep Creek Road
SAFETY	Fire Building	Fire Tactical Training Center & Tower	7200 Stevenson Boulevard
SAFETY	Police Building	Animal Shelter	1950 Stevenson Boulevard
SAFETY	Police Building	Jail/Evidence Warehouse	1990 Stevenson Boulevard
SAFETY	Police Building	Police Department / Police Department Ancillary Building / Motorcycle Storage	2000 Stevenson Boulevard
SAFETY	Police Building	Police Department Fuel Station	1970 Stevenson Boulevard
SAFETY	Police Building	Police Department Shooting Range	1996 Stevenson Boulevard
TRANS	Local Bridge	Old Canyon Rd / Alameda Creek	Not Applicable
TRANS	Local Bridge	Alvarado Boulevard / Alameda Flood Control Chanel	Not Applicable
TRANS	Local Bridge	Isherwood Way / Alameda Flood Control Channel	Not Applicable
TRANS	Local Bridge	Fremont Boulevard / Arroyo de la Laguna	Not Applicable
TRANS	Local Bridge	Auto Mall Parkway / Union Pacific Railroad	Not Applicable
TRANS	Local Bridge	Cushing Parkway / Wetlands	Not Applicable
TRANS	Local Bridge	Cushing Parkway / Flood Control Line	Not Applicable
TRANS	Local Bridge	Bell Street / Flood Control Channel	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad & BNSF RY / Grimmer Boulevard	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad / Grimmer Boulevard	Not Applicable
TRANS	Local Bridge	Blacow Rd / Laguna Creek	Not Applicable
TRANS	Local Bridge	Delaware St / Laguna Creek	Not Applicable
TRANS	Local Bridge	Grimmer Boulevard / Laguna Creek	Not Applicable
TRANS	Local Bridge	Mission Boulevard / Mission Creek	Not Applicable
TRANS	Local Bridge	Morrison Canyon Rd / Morrison Creek	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad / Niles Boulevard	Not Applicable
TRANS	Local Bridge	Niles Boulevard / BART & Union Pacific Railroad	Not Applicable
TRANS	Local Bridge	Paseo Padre Parkway / North Canyon Crossing	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad/Paseo Padre Parkway	Not Applicable
TRANS	Local Bridge	BART / Paseo Padre Parkway	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad / Paseo Padre Parkway	Not Applicable
TRANS	Local Bridge	Washington Boulevard / Union Pacific Railroad	Not Applicable

TRANS	Local Bridge	Ardenwood Boulevard / Alameda Flood Control Chanel	Not Applicable
TRANS	Local Bridge	Ardenwood Boulevard / Union Pacific Railroad	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad / Lowry Road	Not Applicable
TRANS	Local Bridge	Paseo Padre Parkway / Union Pacific Railroad	Not Applicable
TRANS	Public Transit	Centerville Train Station - Amtrak/ACE	37260 Fremont Boulevard
TRANS	Public Transit	Amtrak Bus Stop	Upper Mission Boulevard (Hwy 238) at I-680
TRANS	Public Transit	BART Station - Fremont	2000 Bart Way
TRANS	Public Transit	BART Station - Warm Springs/South Fremont	45079 Warm Springs
TRANS	State Bridge	I-880 / Aqua Caliente Creek	Not Applicable
TRANS	State Bridge	SR-238 / Alameda Creek	Not Applicable
TRANS	State Bridge	I-880 / Arroyo de la Laguna Creek	Not Applicable
TRANS	State Bridge	Auto Mall Parkway / I-880 OC	Not Applicable
TRANS	State Bridge	Auto Mall Parkway / I-680 OC	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / East Niles Underpass	Not Applicable
TRANS	State Bridge	I-680 SB / East Warren Ave. UC	Not Applicable
TRANS	State Bridge	I-680 NB / East Warren Ave UC	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / Edenvale Underpass	Not Applicable
TRANS	State Bridge	Fremont Boulevard OC / I-880	Not Applicable
TRANS	State Bridge	I-680 SB / 680 / 237 Separation (Proposed)	Not Applicable
TRANS	State Bridge	I-680 NB / 680 / 237 Separation (Proposed)	Not Applicable
TRANS	State Bridge	I-680 SB / Grimmer Boulevard UC	Not Applicable
TRANS	State Bridge	I-680 NB / Grimmer Boulevard UC	Not Applicable
TRANS	State Bridge	I-680 SB / Mission Boulevard Separation 680 /262	Not Applicable
TRANS	State Bridge	I-680 NB / Mission Boulevard Separation 680 /262	Not Applicable
TRANS	State Bridge	I-680 / Mission San Jose Separation	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / Niles Junction underpass	Not Applicable
TRANS	State Bridge	I-680 SB / North DWR. UC	Not Applicable
TRANS	State Bridge	I-680 NB / North DWR. UC	Not Applicable
TRANS	State Bridge	Union Pacific Railroad SPUR / North Niles Underpass	Not Applicable
TRANS	State Bridge	Palm Ave OC / I-680	Not Applicable
TRANS	State Bridge	Paseo Padre Parkway OC / I-680	Not Applicable
TRANS	State Bridge	I-880 / Patterson Slough	Not Applicable
TRANS	State Bridge	BART / Peralta Union Pacific Railroad	Not Applicable
TRANS	State Bridge	S 880/E 262 Connector Separator / I-880	Not Applicable
TRANS	State Bridge	S 880/W 84 Connector Separator / Pedestrian Walkway	Not Applicable
TRANS	State Bridge	I-880 / Scott Creek	Not Applicable

TRANS	State Bridge	I-680 SB / Scott Creek Rd UC	Not Applicable
TRANS	State Bridge	I-680 NB / Scott Creek Rd UC	Not Applicable
TRANS	State Bridge	I-680 SB / South DWR. UC	Not Applicable
TRANS	State Bridge	I-680 NB / South DWR. UC	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / South Niles Underpass	Not Applicable
TRANS	State Bridge	Stevenson Boulevard OC / I-880	Not Applicable
TRANS	State Bridge	I-680 / Vargas Road UC	Not Applicable
TRANS	State Bridge	SB Off-ramp Vargas / Vargas Road UC	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / Warm Springs Underpass SR 262	Not Applicable
TRANS	State Bridge	Warren Avenue OC (NB I-880 / EB SR 262)	Not Applicable
TRANS	State Bridge	Warren Avenue OOC (I-880)	Not Applicable
TRANS	State Bridge	Washington Boulevard OC / I-680	Not Applicable
TRANS	State Bridge	WB SR262 / SB I-880 Connector/Separator	Not Applicable
TRANS	State Bridge	SR-84 / Beard Creek	Not Applicable
TRANS	State Bridge	Central Avenue OC / I-880 WB	Not Applicable
TRANS	State Bridge	Central Avenue OC / I-880 EB	Not Applicable
TRANS	State Bridge	I-880 / Crandall Creek	Not Applicable
TRANS	State Bridge	SR-238 / Decoto Road Separation	Not Applicable
TRANS	State Bridge	Dumbarton Toll Plaza POC	Not Applicable
TRANS	State Bridge	SR-84 WB / Dumbarton Toll Plaza Tunnel	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / East Newark Underpass	Not Applicable
TRANS	State Bridge	I-880 / Hetch Hetchy Aqueduct	Not Applicable
TRANS	State Bridge	Mowry Ave WB OC / I-880	Not Applicable
TRANS	State Bridge	Mowry Ave EB OC / I-880	Not Applicable
TRANS	State Bridge	Paseo Padre Parkway OC / I-880	Not Applicable
TRANS	State Bridge	PG&E Pipeline / I-880	Not Applicable
TRANS	State Bridge	Union Pacific Railroad SPUR / Rosewarnes UP / SR-84	Not Applicable
TRANS	State Bridge	Thornton Avenue (SR-84) / I-880 Separator	Not Applicable
UTILITY	ACWD - Water	Blending Facility	1111 Mowry Avenue
UTILITY	ACWD - Water	Mission San Jose Water Treatment Plant	42500 Vargas Road
UTILITY	ACWD - Water	Treatment Plant No. 2	42436 Mission Boulevard
UTILITY	ACWD - Water	Newark Desalination Facility	6833 Redeker Place
UTILITY	PG&E - Electric	Dixon Landing Substation	49211 Milmont Drive
UTILITY	PG&E - Electric	Fremont Substation	40501 Paseo Padre
UTILITY	PG&E - Electric	Dumbarton Substation	34403 Tupelo Street
UTILITY	USD - Sewer	Irvington Pump Station	46525 Fremont Boulevard
UTILITY	Waste Management	Fremont Transfer Station	41149 Boyce Road

UTILITY - OUTSIDE FREMONT	PG&E - Electric	Newark Distribution Substation	43320 Nobel Drive
UTILITY - OUTSIDE FREMONT	PG&E - Electric	Newark Substation	42695 Boyce Road
UTILITY - OUTSIDE FREMONT	PG&E - Electric	Jarvis Substation	920 Decoto Road
UTILITY - OUTSIDE FREMONT	PG&E - Electric	Sunol Substation	700 Calaveras Road
UTILITY - OUTSIDE FREMONT	USD - Sewer	Alvarado Pump Station	5072 Benson Road
UTILITY - OUTSIDE FREMONT	USD - Sewer	Alvarado Wastewater Treatment Plant	5072 Benson Road
UTILITY - OUTSIDE FREMONT	USD - Sewer	Newark Pump Station	37159 Hickory Street

Due to the intricate nature of many assets, some were not included on this list and the subsequent sections. Assets that were excluded include property owned by County, State and Federal governments. The City believes these agencies are the best responsible parties to prepare information on how these assets are owned, operated and utilized; and what mitigation measures are necessary to mitigate damage from a natural disaster. Roads, sidewalks, channels, bus lines, rail lines, pipelines and transmission lines traverse the entire City and are not limited to an isolated location. Therefore they were not included as citywide assets for the purpose of this assessment; however, the Local Hazard Mitigation Plan acknowledges these assets would be impacted in the event of a natural disaster. Additionally, service facilities for transportation systems (i.e. bus maintenance facilities and storage yards) were not included because they are outside of City limits.

5.2 Methodology

Each citywide asset was evaluated using GIS to determine if it is located in an area that is at risk to any of the natural hazards evaluated in Section 4 - Hazards Assessment & Characterization. The hazard analysis prepared utilized the best available current data from a variety of sources. Due to data limitations and uncertainties, there was not an analysis done for the impacts of drought and extreme heat. The total inundation area in the event of a dam failure was calculated for each of the dams that could result in dam inundation flooding. This information is not available for all dams; however inundation maps were reviewed. Therefore an analysis of citywide assets impacted by dam inundation was not prepared.

5.3 Hazards Analysis

The following subsections and tables provide an analysis for each type of hazard, and which citywide assets would be impacted by disasters and the level of severity.

5.3.1 Earthquake Analysis

Table 12 and Table 13 break out the citywide assets based on the Modified Mercalli Intensity Scale. Fremont is located in areas that have an MMI of either 8 or 9. Information on how MMI is calculated can be found in Section Ground Shaking.

Table 12 – Citywide Assets MMI 9

Category	Type	Name	Address
CMTY	Com. Center	Centerville Park Community Center	3355 Country Drive
CMTY	Com. Center	Irvington Community Center	41885 Blacow Road
CMTY	Com. Center	Los Cerritos Community Center	3377 Alder Ave
CMTY	Recreation	Stivers Lagoon	40600 Paseo Padre Parkway
CMTY	Recreation	Nature Learning Center	40224 Paseo Padre Parkway
CMTY	Recreation	Niles Tiny Tots	470 School Street
CMTY	Recreation	Performance Pavilion	40204 Paseo Padre Parkway
CMTY	Recreation	Teen Center	39770 Paseo Padre Parkway
CMTY	Com. Center	Warm Springs Community Center	47300 Fernald Street
CMTY	Rental Building	Culture Arts Commission Bldg.	3375 Country Drive
CMTY	Rental Building	Fremont Community Center	40204 Paseo Padre Parkway
EDUC	FUSD	American High	36300 Fremont Boulevard
EDUC	FUSD	Blacow Elementary School	40404 Sundale Drive
EDUC	FUSD	Brookvale Elementary School	3400 Nicolet Ave
EDUC	FUSD	Cabrillo Elementary	36700 San Pedro Drive
EDUC	CDE	California School For The Blind	500 Walnut Ave
EDUC	CDE	California School For The Deaf	39350 Gallaudet Drive
EDUC	FUSD	Centerville Jr High School	37720 Fremont Boulevard
EDUC	FUSD	E M Grimmer Elementary School	43030 Newport Drive
EDUC	FUSD	FUSD District Office	4210 Technology Drive
EDUC	FUSD	G M Walters Junior High School	39600 Logan Drive
EDUC	FUSD	Glankler School	39207 Sundale Drive
EDUC	FUSD	Glenmoor Elementary School	4620 Mattos Drive
EDUC	FUSD	Harvey Green Elementary School	42875 Gatewood Street
EDUC	FUSD	Hirsch Elementary	41399 Chapel Way
EDUC	FUSD	Hopkins Jr High School	600 Driscoll Road
EDUC	FUSD	Irvington High School	41800 Blacow Road
EDUC	FUSD	J Haley Durham Elementary School	40292 Leslie Street
EDUC	FUSD	James Leitch Elementary School	47100 Fernald Street
EDUC	FUSD	John F Kennedy High School	39999 Blacow Road
EDUC	FUSD	John M Gomes Elementary School	555 Lemos Lane
EDUC	FUSD	Joseph Azevada Elementary School	39450 Royal Palm Drive
EDUC	FUSD	Joshua Chadbourne Elementary School	801 Plymouth Ave

EDUC	FUSD	Linda Vista School	2650 Bruce Drive
EDUC	FUSD	Maloney Elementary School	38700 Logan Drive
EDUC	FUSD	Millard Elementary School	5200 Valpey Park Ave
EDUC	FUSD	Mission San Jose Elementary	43545 Bryant Street
EDUC	FUSD	Mission Valley Elementary	41700 Denise Street
EDUC	FUSD	Mission Valley Regional Occupational Program	5019 Stevenson Boulevard
EDUC	FUSD	Mission San Jose High School	41717 Palm Ave
EDUC	OCCD	Ohlone Community College	43600 Mission Boulevard
EDUC	FUSD	Oliveira Elementary School	4180 Alder Ave
EDUC	FUSD	Parkmont Elementary School	2601 Parkside Drive
EDUC	FUSD	Patterson Elementary School	35521 Cabrillo Drive
EDUC	FUSD	Robertson High School	4455 Seneca Park Ave
EDUC	FUSD	Thornton Junior High School	4357 Thornton Ave
EDUC	FUSD	Vallejo Mill Elementary School	38569 Canyon Heights Drive
EDUC	FUSD	Warm Springs Elementary School	47370 Warm Springs Boulevard
EDUC	FUSD	Warwick Elementary School	3375 Warwick Road
EDUC	FUSD	Washington High School	38442 Fremont Boulevard
EDUC	FUSD	Weibel Elementary School	45135 S Grimmer Boulevard
GOV	Government	Administration Center Building "A"	3300 Capitol Ave
GOV	Government	Administrative Center Building "B"	39100 Liberty Street
GOV	Human Services	Family Resource Center #1	39155 Liberty Street
GOV	Human Services	Family Resource Center #2	39175 Liberty Street
GOV	Government	Development Center	39550 Liberty Street
GOV	Human Services	Senior Citizen's Center	40086 Paseo Padre Parkway
GOV	Human Services	Tri-City Volunteers	37354 Joseph Street
GOV	Museum	Niles Freight & Passenger Depot	37592 Niles Boulevard
HEALTH	Medical	Kaiser Permanente Fremont Medical Center And Offices	39400 Paseo Padre Parkway
HEALTH	Medical	Palo Alto Medical Foundation	3200 Kearney Street
HEALTH	Medical	Washington Hospital	2000 Mowry Ave
LIB	Library	Centerville Library	3801 Nicolet Ave
LIB	Library	Fremont Main Library	2400 Stevenson Boulevard
LIB	Library	Irvington Library	41825 Greenpark Drive
PARK	City Park	Arroyo Agua Caliente Park	Gardenia Way
PARK	City Park	Azevada Park	39450 Royal Palm Drive
PARK	City Park	Bill Ball Civic Park	37292 Fremont Boulevard
PARK	City Park	Blacow Park	40404 Sundale Drive
PARK	City Park	Booster Park	Gable Drive
PARK	City Park	Brookvale Park	Nicolet Ave

PARK	City Park	Brookvale Trail	From Brookvale Park To Isherwood
PARK	City Park	Buena Vista Park	Macintosh & Mission Boulevard
PARK	City Park	Cabrillo Trail	Cabrillo Drive& Cadiz Drive
PARK	City Park	Centerville Community Park	3375 Country Lane
PARK	City Park	Crandall Creek Park	Blackstone Way & Pecos Ave
PARK	City Park	David Jones Park	Lowry Rd & Lark Way
PARK	City Park	East Bay Greenway Trail Corridor	Btw Paseo Padre Parkway & Farallon Commons
PARK	City Park	Fremont Central Park	Paseo Padre & Stevenson
PARK	City Park	Fremont Park Golf Club	Paseo Padre & Stevenson
PARK	City Park	Gomes Park	827 Lemos Lane
PARK	City Park	Irvington Community Park	41885 Blacow Road
PARK	City Park	Irvington Monument Plaza	Fremont Boulevard & Bay Street
PARK	City Park	Isherwood Park (Underdeveloped Designated Park Land)	Isherwood Way
PARK	City Park	Lone Tree Creek Park	500 Starlite Way
PARK	City Park	Los Cerritos Community Park	3377 Alder Ave
PARK	City Park	Lowry Park	Great Salt Lake Drive& Lake Mead Drive
PARK	City Park	Marshall Park	5301 Curtis Drive
PARK	City Park	Mission San Jose Community Park	41403 Mission Boulevard
PARK	City Park	Niles Community Park	470 School Street
PARK	City Park	Niles Town Plaza	37592 Niles Boulevard
PARK	City Park	Noll Park	Logan Drive& Wheeler Drive
PARK	City Park	Northgate Park	34501 Rowland Drive
PARK	City Park	Northgate Trail	Chaucer & Sterne Place
PARK	City Park	Old Mission Park	Paseo Padre & Pine Street
PARK	City Park	Patterson Park	35475 Cabrillo Drive
PARK	City Park	Peralta/Dusterberry Park (Underdeveloped Designated Park Land)	Peralta Boulevard & Dusterberry Way
PARK	City Park	Plaza Park	37771 Madera Court
PARK	City Park	Plomosa Park	Plomosa Road
PARK	City Park	Rancho Arroyo Park	Montecito Drive& Posado Way
PARK	City Park	Rancho Higuera Park	37300 Rancho Higuera
PARK	City Park	Rix Park	43100 Isle Royal Street
PARK	City Park	Sabercat Historic Park	Paseo Padre Parkway / Sabercat Road
PARK	City Park	Shinn Historic Park	1251 Peralta Boulevard
PARK	City Park	Surry Park	Surry Place(North End)

PARK	City Park	Sylvester Harvey Park	3590 Grand Lake Drive
PARK	City Park	Vallejo Mill Historical Park	Mission Boulevard & Niles Canyon Road
PARK	City Park	Vallejo Mill School Park	Orangewood Drive
PARK	City Park	Warm Springs Park	47300 Fernald Street
PARK	City Park	Weibel Historic Park	Stanford Ave & Vineyard Ave
PARK	City Park	Westridge Park	36025 Fremont Boulevard
PARK	City Park	Williams Historical Park	39169 Fremont Boulevard
PARK	EBRPD	Mission Peak Regional Preserve	43600 Mission Boulevard
PARK	EBRPD	Ohlone Regional Wilderness	Not Applicable
PARK	EBRPD	Quarry Lakes Regional Recreation Area	2100 Isherwood Way
PW	Public Works Building	Central Park Service Center	39800 Paseo Padre Parkway
PW	Public Works Building	Maintenance Center Administration; Maintenance Shop; Vehicle Maintenance; Roll Off Shelter; Materials Storage; Fueling Station; Wash Rack; Equipment Enclosure; Emergency Operations Center	42551 Osgood Road A
PW	Public Works Building	Maintenance Center Shops	42551 Osgood Road B
SAFETY	Fire Building	Fire Station #01, Argonaut/Mowry	4200 Mowry Ave
SAFETY	Fire Building	Fire Station #02, Niles	37299 Niles Boulevard
SAFETY	Fire Building	Fire Station #03, Irvington	40700 Chapel Way
SAFETY	Fire Building	Fire Station #04, Pine	1000 Pine Street
SAFETY	Fire Building	Fire Station #05, Warm Springs	55 Hackamore Lane
SAFETY	Fire Building	Fire Station #06, Centerville (Old)	37412 Fremont Boulevard
SAFETY	Fire Building	Fire Station #06, Centerville; Storage Building	4355 Central Ave
SAFETY	Fire Building	Fire Station #07, Grimmer; Foam Storage; Storage Building	43600 Grimmer Boulevard
SAFETY	Fire Building	Fire Station #08, Fremont Boulevard	35659 Fremont Boulevard
SAFETY	Fire Building	Fire Station #09, Stevenson	39609 Stevenson Place
SAFETY	Fire Building	Fire Station #11	47200 Lakeview Boulevard
SAFETY	Police Building	Animal Shelter	1950 Stevenson Boulevard
SAFETY	Police Building	Jail/Evidence Warehouse	1990 Stevenson Boulevard
SAFETY	Police Building	Police Department / Police Department Ancillary Building / Motorcycle Storage	2000 Stevenson Boulevard
SAFETY	Police Building	Police Department Fuel Station	1970 Stevenson Boulevard
SAFETY	Police Building	Police Department Shooting Range	1996 Stevenson Boulevard
TRANS	Public Transit	Centerville Train Station - Amtrak/ACE	37260 Fremont Boulevard
TRANS	Public Transit	Amtrak Bus Stop	Upper Mission Boulevard (Hwy 238) at I-680
TRANS	Public Transit	BART Station - Fremont	2000 Bart Way
TRANS	Public Transit	BART Station - Warm Springs/South Fremont	45079 Warm Springs
TRANS	Local Bridge	Old Canyon Rd / Alameda Creek	Not Applicable

TRANS	Local Bridge	Alvarado Boulevard / Alameda Flood Control Chanel	Not Applicable
TRANS	Local Bridge	Isherwood Way / Alameda Flood Control Channel	Not Applicable
TRANS	Local Bridge	Fremont Boulevard / Arroyo de la Laguna	Not Applicable
TRANS	Local Bridge	Auto Mall Parkway / Union Pacific Railroad	Not Applicable
TRANS	Local Bridge	Cushing Parkway / Wetlands	Not Applicable
TRANS	Local Bridge	Cushing Parkway / Flood Control Line	Not Applicable
TRANS	Local Bridge	Bell Street / Flood Control Channel	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad & BNSF RY / Grimmer Boulevard	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad / Grimmer Boulevard	Not Applicable
TRANS	Local Bridge	Blacow Rd / Laguna Creek	Not Applicable
TRANS	Local Bridge	Delaware St / Laguna Creek	Not Applicable
TRANS	Local Bridge	Grimmer Boulevard / Laguna Creek	Not Applicable
TRANS	Local Bridge	Mission Boulevard / Mission Creek	Not Applicable
TRANS	Local Bridge	Morrison Canyon Rd / Morrison Creek	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad / Niles Boulevard	Not Applicable
TRANS	Local Bridge	Niles Boulevard / BART & Union Pacific Railroad	Not Applicable
TRANS	Local Bridge	Paseo Padre Parkway / North Canyon Crossing	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad/Paseo Padre Parkway	Not Applicable
TRANS	Local Bridge	BART / Paseo Padre Parkway	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad / Paseo Padre Parkway	Not Applicable
TRANS	Local Bridge	Washington Boulevard / Union Pacific Railroad	Not Applicable
TRANS	State Bridge	I-880 / Aqua Caliente Creek	Not Applicable
TRANS	State Bridge	SR-238 / Alameda Creek	Not Applicable
TRANS	State Bridge	I-880 / Arroyo de la Laguna Creek	Not Applicable
TRANS	State Bridge	Auto Mall Parkway / I-880 OC	Not Applicable
TRANS	State Bridge	Auto Mall Parkway / I-680 OC	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / East Niles Underpass	Not Applicable
TRANS	State Bridge	I-680 SB / East Warren Ave. UC	Not Applicable
TRANS	State Bridge	I-680 NB / East Warren Ave UC	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / Edenvale Underpass	Not Applicable
TRANS	State Bridge	Fremont Boulevard OC / I-880	Not Applicable
TRANS	State Bridge	I-680 SB / 680 / 237 Separation (Proposed)	Not Applicable
TRANS	State Bridge	I-680 NB / 680 / 237 Separation (Proposed)	Not Applicable
TRANS	State Bridge	I-680 SB / Grimmer Boulevard UC	Not Applicable
TRANS	State Bridge	I-680 NB / Grimmer Boulevard UC	Not Applicable
TRANS	State Bridge	I-680 SB / Mission Boulevard Separation 680 /262	Not Applicable
TRANS	State Bridge	I-680 NB / Mission Boulevard Separation 680 /262	Not Applicable

TRANS	State Bridge	I-680 / Mission San Jose Separation	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / Niles Junction underpass	Not Applicable
TRANS	State Bridge	I-680 SB / North DWR. UC	Not Applicable
TRANS	State Bridge	I-680 NB / North DWR. UC	Not Applicable
TRANS	State Bridge	Union Pacific Railroad SPUR / North Niles Underpass	Not Applicable
TRANS	State Bridge	Palm Ave OC / I-680	Not Applicable
TRANS	State Bridge	Paseo Padre Parkway OC / I-680	Not Applicable
TRANS	State Bridge	I-880 / Patterson Slough	Not Applicable
TRANS	State Bridge	BART / Peralta Union Pacific Railroad	Not Applicable
TRANS	State Bridge	S 880/E 262 Connector Separator / I-880	Not Applicable
TRANS	State Bridge	S 880/W 84 Connector Separator / Pedestrian Walkway	Not Applicable
TRANS	State Bridge	I-880 / Scott Creek	Not Applicable
TRANS	State Bridge	I-680 SB / Scott Creek Rd UC	Not Applicable
TRANS	State Bridge	I-680 NB / Scott Creek Rd UC	Not Applicable
TRANS	State Bridge	I-680 SB / South DWR. UC	Not Applicable
TRANS	State Bridge	I-680 NB / South DWR. UC	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / South Niles Underpass	Not Applicable
TRANS	State Bridge	Stevenson Boulevard OC / I-880	Not Applicable
TRANS	State Bridge	I-680 / Vargas Road UC	Not Applicable
TRANS	State Bridge	SB Off-ramp Vargas / Vargas Road UC	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / Warm Springs Underpass SR 262	Not Applicable
TRANS	State Bridge	Warren Avenue OC (NB I-880 / EB SR 262)	Not Applicable
TRANS	State Bridge	Warren Avenue OOC (I-880)	Not Applicable
TRANS	State Bridge	Washington Boulevard OC / I-680	Not Applicable
TRANS	State Bridge	WB SR262 / SB I-880 Connector/Separator	Not Applicable
UTILITY	ACWD - Water	Blending Facility	1111 Mowry Avenue
UTILITY	ACWD - Water	Mission San Jose Water Treatment Plant	42500 Vargas Road
UTILITY	ACWD - Water	Treatment Plant No. 2	42436 Mission Boulevard
UTILITY	PG&E - Electric	Dixon Landing Substation	49211 Milmont Drive
UTILITY	PG&E - Electric	Fremont Substation	40501 Paseo Padre
UTILITY	USD - Sewer	Irvington Pump Station	46525 Fremont Boulevard
UTILITY - OUTSIDE FREMONT	PG&E - Electric	Jarvis Substation	920 Decoto Road
UTILITY - OUTSIDE FREMONT	PG&E - Electric	Sunol Substation	700 Calaveras Road

Table 13 – Citywide Assets MMI 8

Category	Type	Name	Address
EDUC	FUSD	Ardenwood Elementary School	33955 Emilia Lane
EDUC	FUSD	Forest Park Elementary School	34400 Maybird Circle
EDUC	FUSD	Mattos Elementary School	37944 Farwell Drive
PARK	City Park	California Nursery Historic Park	36501 Niles Boulevard
PARK	City Park	California Terrace Park	Terrace & Stonebridge
PARK	City Park	Deep Creek Park	Deep Creek & Macbeth
PARK	City Park	Frank Fischer Park	Deep Creek & Maybird Circle
PARK	City Park	Nordvik Park	Commerce & Ardenwood
PARK	City Park	Pacific Commons Sports Park (Underdeveloped Designated Park Land)	6900 Auto Mall Parkway
PARK	City Park	Peregrine Park	Peregrine Drive& Falcon Drive
PARK	City Park	Warbler Park	Warbler Loop & Falcon
PARK	EBRPD	Ardenwood Historic Farm	34600 Ardenwood Boulevard
PARK	EBRPD	Coyote Hills Regional Park	8000 Patterson Ranch
PARK	EBRPD	Vargas Plateau Regional Park	2536 Morrison Canyon
SAFETY	Fire Building	Fire Station #10, Ardenwood; Storage Building	5001 Deep Creek Road
SAFETY	Fire Building	Fire Tactical Training Center & Tower	7200 Stevenson Boulevard
TRANS	Local Bridge	Ardenwood Boulevard / Alameda Flood Control Chanel	Not Applicable
TRANS	Local Bridge	Ardenwood Boulevard / Union Pacific Railroad	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad / Lowry Road	Not Applicable
TRANS	Local Bridge	Paseo Padre Parkway / Union Pacific Railroad	Not Applicable
TRANS	State Bridge	SR-84 / Beard Creek	Not Applicable
TRANS	State Bridge	Central Avenue OC / I-880 WB	Not Applicable
TRANS	State Bridge	Central Avenue OC / I-880 EB	Not Applicable
TRANS	State Bridge	I-880 / Crandall Creek	Not Applicable
TRANS	State Bridge	SR-238 / Decoto Road Separation	Not Applicable
TRANS	State Bridge	Dumbarton Toll Plaza POC	Not Applicable
TRANS	State Bridge	SR-84 WB / Dumbarton Toll Plaza Tunnel	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / East Newark Underpass	Not Applicable
TRANS	State Bridge	I-880 / Hetch Hetchy Aqueduct	Not Applicable
TRANS	State Bridge	Mowry Ave WB OC / I-880	Not Applicable
TRANS	State Bridge	Mowry Ave EB OC / I-880	Not Applicable
TRANS	State Bridge	Paseo Padre Parkway OC / I-880	Not Applicable
TRANS	State Bridge	PG&E Pipeline / I-880	Not Applicable
TRANS	State Bridge	Union Pacific Railroad SPUR / Rosewarnes UP / SR-84	Not Applicable
TRANS	State Bridge	Thornton Avenue (SR-84) / I-880 Separator	Not Applicable

UTILITY	ACWD - Water	Newark Desalination Facility	6833 Redeker Place
UTILITY	PG&E - Electric	Dumbarton Substation	34403 Tupelo Street
UTILITY	Waste Management	Fremont Transfer Station	41149 Boyce Road
UTILITY - OUTSIDE FREMONT	PG&E - Electric	Newark Distribution Substation	43320 Nobel Drive
UTILITY - OUTSIDE FREMONT	PG&E - Electric	Newark Substation	42695 Boyce Road
UTILITY - OUTSIDE FREMONT	USD - Sewer	Alvarado Pump Station	5072 Benson Road
UTILITY - OUTSIDE FREMONT	USD - Sewer	Alvarado Wastewater Treatment Plant	5072 Benson Road
UTILITY - OUTSIDE FREMONT	USD - Sewer	Newark Pump Station	37159 Hickory Street

5.3.2 Liquefaction Analysis

Table 14, Table 15, Table 16, Table 17, and Table 18 break down the citywide assets located in the different areas of liquefaction susceptibility. The liquefaction susceptibility ranges in Fremont include: Very High, High, Medium, Low and Very Low. More information on liquefaction susceptibility can be found in Section 4.3.1.3.

Table 14 – Citywide Assets Very High Liquefaction Susceptibility

Category	Type	Name	Address
CMTY	Recreation	Niles Tiny Tots	470 School Street
EDUC	FUSD	Warwick Elementary School	3375 Warwick Road
PARK	City Park	Isherwood Park (Underdeveloped Designated Park Land)	Isherwood Way
PARK	City Park	Niles Community Park	470 School Street
PARK	City Park	Northgate Park	34501 Rowland Drive
PARK	City Park	Northgate Trail	Chaucer & Sterne Place
PARK	City Park	Rancho Arroyo Park	Montecito Drive& Posado Way
SAFETY	Fire Building	Fire Station #03, Irvington	40700 Chapel Way
TRANS	Local Bridge	Old Canyon Rd / Alameda Creek	Not Applicable
TRANS	Local Bridge	Fremont Boulevard / Arroyo de la Laguna	Not Applicable
TRANS	Local Bridge	Cushing Parkway / Flood Control Line	Not Applicable
TRANS	Local Bridge	Blacow Rd / Laguna Creek	Not Applicable
TRANS	Local Bridge	Delaware St / Laguna Creek	Not Applicable
TRANS	Local Bridge	Grimmer Boulevard / Laguna Creek	Not Applicable

TRANS	Local Bridge	Niles Boulevard / BART & Union Pacific Railroad	Not Applicable
TRANS	State Bridge	I-880 / Scott Creek	Not Applicable
UTILITY	PG&E - Electric	Fremont Substation	40501 Paseo Padre
UTILITY - OUTSIDE FREMONT	USD - Sewer	Alvarado Pump Station	5072 Benson Road
UTILITY - OUTSIDE FREMONT	USD - Sewer	Alvarado Wastewater Treatment Plant	5072 Benson Road

Table 15 – Citywide Assets High Liquefaction Susceptibility

Category	Type	Name	Address
CMTY	Com. Center	Los Cerritos Community Center	3377 Alder Ave
EDUC	FUSD	Ardenwood Elementary School	33955 Emilia Lane
EDUC	FUSD	Forest Park Elementary School	34400 Maybird Circle
EDUC	FUSD	American High	36300 Fremont Boulevard
EDUC	FUSD	Brookvale Elementary School	3400 Nicolet Ave
EDUC	FUSD	Patterson Elementary School	35521 Cabrillo Drive
LIB	Library	Centerville Library	3801 Nicolet Ave
PARK	City Park	Deep Creek Park	Deep Creek & Macbeth
PARK	City Park	Frank Fischer Park	Deep Creek & Maybird Circle
PARK	City Park	Nordvik Park	Commerce & Ardenwood
PARK	City Park	Peregrine Park	Peregrine Drive& Falcon Drive
PARK	City Park	Warbler Park	Warbler Loop & Falcon
PARK	City Park	Brookvale Park	Nicolet Ave
PARK	City Park	Brookvale Trail	From Brookvale Park To Isherwood
PARK	City Park	Cabrillo Trail	Cabrillo Drive& Cadiz Drive
PARK	City Park	Crandall Creek Park	Blackstone Way & Pecos Ave
PARK	City Park	David Jones Park	Lowry Rd & Lark Way
PARK	City Park	Los Cerritos Community Park	3377 Alder Ave
PARK	City Park	Lowry Park	Great Salt Lake Drive& Lake Mead Drive
PARK	City Park	Patterson Park	35475 Cabrillo Drive
PARK	City Park	Surry Park	Surry Place(North End)
PARK	City Park	Sylvester Harvey Park	3590 Grand Lake Drive
PARK	City Park	Vallejo Mill Historical Park	Mission Boulevard & Niles Canyon Road
PARK	City Park	Vallejo Mill School Park	Orangewood Drive
PARK	City Park	Westridge Park	36025 Fremont Boulevard

PARK	EBRPD	Quarry Lakes Regional Recreation Area	2100 Isherwood Way
SAFETY	Fire Building	Fire Station #10, Ardenwood; Storage Building	5001 Deep Creek Road
SAFETY	Fire Building	Fire Station #08, Fremont Boulevard	35659 Fremont Boulevard
TRANS	Local Bridge	Ardenwood Boulevard / Alameda Flood Control Chanel	Not Applicable
TRANS	Local Bridge	Ardenwood Boulevard / Union Pacific Railroad	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad / Lowry Road	Not Applicable
TRANS	Local Bridge	Paseo Padre Parkway / Union Pacific Railroad	Not Applicable
TRANS	Local Bridge	Alvarado Boulevard / Alameda Flood Control Chanel	Not Applicable
TRANS	Local Bridge	Isherwood Way / Alameda Flood Control Channel	Not Applicable
TRANS	State Bridge	I-880 / Crandall Creek	Not Applicable
TRANS	State Bridge	SR-238 / Decoto Road Separation	Not Applicable
TRANS	State Bridge	Paseo Padre Parkway OC / I-880	Not Applicable
TRANS	State Bridge	SR-238 / Alameda Creek	Not Applicable
TRANS	State Bridge	Fremont Boulevard OC / I-880	Not Applicable
TRANS	State Bridge	I-880 / Patterson Slough	Not Applicable
TRANS	State Bridge	S 880/W 84 Connector Separator / Pedestrian Walkway	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / South Niles Underpass	Not Applicable
UTILITY	PG&E - Electric	Dumbarton Substation	34403 Tupelo Street

Table 16 – Citywide Assets Medium Liquefaction Susceptibility

Category	Type	Name	Address
CMTY	Com. Center	Centerville Park Community Center	3355 Country Drive
CMTY	Com. Center	Irvington Community Center	41885 Blacow Road
CMTY	Com. Center	Warm Springs Community Center	47300 Fernald Street
CMTY	Recreation	Stivers Lagoon	40600 Paseo Padre Parkway
CMTY	Recreation	Teen Center	39770 Paseo Padre Parkway
CMTY	Rental Building	Culture Arts Commission Bldg.	3375 Country Drive
EDUC	CDE	California School For The Blind	500 Walnut Ave
EDUC	CDE	California School For The Deaf	39350 Gallaudet Drive
EDUC	FUSD	Mattos Elementary School	37944 Farwell Drive
EDUC	FUSD	Blacow Elementary School	40404 Sundale Drive
EDUC	FUSD	Cabrillo Elementary	36700 San Pedro Drive
EDUC	FUSD	Centerville Jr High School	37720 Fremont Boulevard
EDUC	FUSD	E M Grimmer Elementary School	43030 Newport Drive
EDUC	FUSD	FUSD District Office	4210 Technology Drive
EDUC	FUSD	G M Walters Junior High School	39600 Logan Drive
EDUC	FUSD	Glankler School	39207 Sundale Drive

EDUC	FUSD	Glenmoor Elementary School	4620 Mattos Drive
EDUC	FUSD	Harvey Green Elementary School	42875 Gatewood Street
EDUC	FUSD	Hirsch Elementary	41399 Chapel Way
EDUC	FUSD	Hopkins Jr High School	600 Driscoll Road
EDUC	FUSD	Irvington High School	41800 Blacow Road
EDUC	FUSD	J Haley Durham Elementary School	40292 Leslie Street
EDUC	FUSD	James Leitch Elementary School	47100 Fernald Street
EDUC	FUSD	John F Kennedy High School	39999 Blacow Road
EDUC	FUSD	John M Gomes Elementary School	555 Lemos Lane
EDUC	FUSD	Joseph Azevada Elementary School	39450 Royal Palm Drive
EDUC	FUSD	Joshua Chadbourne Elementary School	801 Plymouth Ave
EDUC	FUSD	Maloney Elementary School	38700 Logan Drive
EDUC	FUSD	Millard Elementary School	5200 Valpey Park Ave
EDUC	FUSD	Mission Valley Regional Occupational Program	5019 Stevenson Boulevard
EDUC	FUSD	Mission San Jose High School	41717 Palm Ave
EDUC	FUSD	Oliveira Elementary School	4180 Alder Ave
EDUC	FUSD	Parkmont Elementary School	2601 Parkside Drive
EDUC	FUSD	Robertson High School	4455 Seneca Park Ave
EDUC	FUSD	Thornton Junior High School	4357 Thornton Ave
EDUC	FUSD	Vallejo Mill Elementary School	38569 Canyon Heights Drive
EDUC	FUSD	Warm Springs Elementary School	47370 Warm Springs Boulevard
EDUC	FUSD	Washington High School	38442 Fremont Boulevard
EDUC	FUSD	Weibel Elementary School	45135 S Grimmer Boulevard
GOV	Government	Administration Center Building "A"	3300 Capitol Ave
GOV	Government	Administrative Center Building "B"	39100 Liberty Street
GOV	Government	Development Center	39550 Liberty Street
GOV	Human Services	Family Resource Center #1	39155 Liberty Street
GOV	Human Services	Family Resource Center #2	39175 Liberty Street
GOV	Human Services	Tri-City Volunteers	37354 Joseph Street
GOV	Museum	Niles Freight & Passenger Depot	37592 Niles Boulevard
HEALTH	Medical	Kaiser Permanente Fremont Medical Center And Offices	39400 Paseo Padre Parkway
HEALTH	Medical	Palo Alto Medical Foundation	3200 Kearney Street
HEALTH	Medical	Washington Hospital	2000 Mowry Ave
LIB	Library	Fremont Main Library	2400 Stevenson Boulevard
LIB	Library	Irvington Library	41825 Greenpark Drive
PARK	City Park	California Nursery Historic Park	36501 Niles Boulevard
PARK	City Park	California Terrace Park	Terrace & Stonebridge

PARK	City Park	Pacific Commons Sports Park (Underdeveloped Designated Park Land)	6900 Auto Mall Parkway
PARK	City Park	Arroyo Agua Caliente Park	Gardenia Way
PARK	City Park	Azevada Park	39450 Royal Palm Drive
PARK	City Park	Bill Ball Civic Park	37292 Fremont Boulevard
PARK	City Park	Blacow Park	40404 Sundale Drive
PARK	City Park	Booster Park	Gable Drive
PARK	City Park	Buena Vista Park	Macintosh & Mission Boulevard
PARK	City Park	Centerville Community Park	3375 Country Lane
PARK	City Park	Fremont Central Park	Paseo Padre & Stevenson
PARK	City Park	Fremont Park Golf Club	Paseo Padre & Stevenson
PARK	City Park	Gomes Park	827 Lemos Lane
PARK	City Park	Irvington Community Park	41885 Blacow Road
PARK	City Park	Irvington Monument Plaza	Fremont Boulevard & Bay Street
PARK	City Park	Lone Tree Creek Park	500 Starlite Way
PARK	City Park	Marshall Park	5301 Curtis Drive
PARK	City Park	Mission San Jose Community Park	41403 Mission Boulevard
PARK	City Park	Niles Town Plaza	37592 Niles Boulevard
PARK	City Park	Noll Park	Logan Drive& Wheeler Drive
PARK	City Park	Peralta/Dusterberry Park (Underdeveloped Designated Park Land)	Peralta Boulevard & Dusterberry Way
PARK	City Park	Plaza Park	37771 Madera Court
PARK	City Park	Plomosa Park	Plomosa Road
PARK	City Park	Rancho Higuera Park	37300 Rancho Higuera
PARK	City Park	Rix Park	43100 Isle Royal Street
PARK	City Park	Shinn Historic Park	1251 Peralta Boulevard
PARK	City Park	Warm Springs Park	47300 Fernald Street
PARK	City Park	Weibel Historic Park	Stanford Ave & Vineyard Ave
PARK	City Park	Williams Historical Park	39169 Fremont Boulevard
PARK	EBRPD	Ardenwood Historic Farm	34600 Ardenwood Boulevard
PARK	EBRPD	Coyote Hills Regional Park	8000 Patterson Ranch
PARK	EBRPD	Vargas Plateau Regional Park	2536 Morrison Canyon
PW	Public Works Building	Maintenance Center Administration; Maintenance Shop; Vehicle Maintenance; Roll Off Shelter; Materials Storage; Fueling Station; Wash Rack; Equipment Enclosure; Emergency Operations Center	42551 Osgood Road A
PW	Public Works Building	Maintenance Center Shops	42551 Osgood Road B
SAFETY	Fire Building	Fire Tactical Training Center & Tower	7200 Stevenson Boulevard

SAFETY	Fire Building	Fire Station #01, Argonaut/Mowry	4200 Mowry Ave
SAFETY	Fire Building	Fire Station #02, Niles	37299 Niles Boulevard
SAFETY	Fire Building	Fire Station #05, Warm Springs	55 Hackamore Lane
SAFETY	Fire Building	Fire Station #06, Centerville (Old)	37412 Fremont Boulevard
SAFETY	Fire Building	Fire Station #06, Centerville; Storage Building	4355 Central Ave
SAFETY	Fire Building	Fire Station #07, Grimmer; Foam Storage; Storage Building	43600 Grimmer Boulevard
SAFETY	Fire Building	Fire Station #09, Stevenson	39609 Stevenson Place
SAFETY	Fire Building	Fire Station #11	47200 Lakeview Boulevard
SAFETY	Police Building	Animal Shelter	1950 Stevenson Boulevard
SAFETY	Police Building	Jail/Evidence Warehouse	1990 Stevenson Boulevard
SAFETY	Police Building	Police Department / Police Department Ancillary Building / Motorcycle Storage	2000 Stevenson Boulevard
SAFETY	Police Building	Police Department Fuel Station	1970 Stevenson Boulevard
SAFETY	Police Building	Police Department Shooting Range	1996 Stevenson Boulevard
TRANS	Local Bridge	Auto Mall Parkway / Union Pacific Railroad	Not Applicable
TRANS	Local Bridge	Cushing Parkway / Wetlands	Not Applicable
TRANS	Local Bridge	Bell Street / Flood Control Channel	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad & BNSF RY / Grimmer Boulevard	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad / Grimmer Boulevard	Not Applicable
TRANS	Local Bridge	Mission Boulevard / Mission Creek	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad / Niles Boulevard	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad/Paseo Padre Parkway	Not Applicable
TRANS	Local Bridge	BART / Paseo Padre Parkway	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad / Paseo Padre Parkway	Not Applicable
TRANS	Local Bridge	Washington Boulevard / Union Pacific Railroad	Not Applicable
TRANS	Public Transit	Centerville Train Station - Amtrak/ACE	37260 Fremont Boulevard
TRANS	Public Transit	Amtrak Bus Stop	Upper Mission Boulevard (Hwy 238) at I-680
TRANS	Public Transit	BART Station - Fremont	2000 Bart Way
TRANS	Public Transit	BART Station - Warm Springs/South Fremont	45079 Warm Springs
TRANS	State Bridge	Central Avenue OC / I-880 WB	Not Applicable
TRANS	State Bridge	Central Avenue OC / I-880 EB	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / East Newark Underpass	Not Applicable
TRANS	State Bridge	I-880 / Hetch Hetchy Aqueduct	Not Applicable
TRANS	State Bridge	Mowry Ave WB OC / I-880	Not Applicable
TRANS	State Bridge	Mowry Ave EB OC / I-880	Not Applicable
TRANS	State Bridge	PG&E Pipeline / I-880	Not Applicable
TRANS	State Bridge	Thornton Avenue (SR-84) / I-880 Separator	Not Applicable
TRANS	State Bridge	I-880 / Aqua Caliente Creek	Not Applicable

TRANS	State Bridge	I-880 / Arroyo de la Laguna Creek	Not Applicable
TRANS	State Bridge	Auto Mall Parkway / I-880 OC	Not Applicable
TRANS	State Bridge	Auto Mall Parkway / I-680 OC	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / East Niles Underpass	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / Edenvale Underpass	Not Applicable
TRANS	State Bridge	Fremont Boulevard OC / I-880	Not Applicable
TRANS	State Bridge	I-680 SB / Grimmer Boulevard UC	Not Applicable
TRANS	State Bridge	I-680 NB / Grimmer Boulevard UC	Not Applicable
TRANS	State Bridge	I-680 SB / Mission Boulevard Separation 680 /262	Not Applicable
TRANS	State Bridge	I-680 NB / Mission Boulevard Separation 680 /262	Not Applicable
TRANS	State Bridge	I-680 / Mission San Jose Separation	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / Niles Junction underpass	Not Applicable
TRANS	State Bridge	Union Pacific Railroad SPUR / North Niles Underpass	Not Applicable
TRANS	State Bridge	BART / Peralta Union Pacific Railroad	Not Applicable
TRANS	State Bridge	S 880/E 262 Connector Separator / I-880	Not Applicable
TRANS	State Bridge	Stevenson Boulevard OC / I-880	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / Warm Springs Underpass SR 262	Not Applicable
TRANS	State Bridge	Warren Avenue OC (NB I-880 / EB SR 262)	Not Applicable
TRANS	State Bridge	Warren Avenue OOC (I-880)	Not Applicable
TRANS	State Bridge	WB SR262 / SB I-880 Connector/Separator	Not Applicable
UTILITY	ACWD - Water	Newark Desalination Facility	6833 Redeker Place
UTILITY	ACWD - Water	Blending Facility	1111 Mowry Avenue
UTILITY	ACWD - Water	Mission San Jose Water Treatment Plant	42500 Vargas Road
UTILITY	ACWD - Water	Treatment Plant No. 2	42436 Mission Boulevard
UTILITY	PG&E - Electric	Dixon Landing Substation	49211 Milmont Drive
UTILITY	USD - Sewer	Irvington Pump Station	46525 Fremont Boulevard
UTILITY	Waste Management	Fremont Transfer Station	41149 Boyce Road
UTILITY - OUTSIDE FREMONT	PG&E - Electric	Newark Distribution Substation	43320 Nobel Drive
UTILITY - OUTSIDE FREMONT	PG&E - Electric	Newark Substation	42695 Boyce Road
UTILITY - OUTSIDE FREMONT	PG&E - Electric	Jarvis Substation	920 Decoto Road
UTILITY - OUTSIDE FREMONT	PG&E - Electric	Sunol Substation	700 Calaveras Road

UTILITY - OUTSIDE FREMONT	USD - Sewer	Newark Pump Station	37159 Hickory Street
UTILITY - OUTSIDE FREMONT	USD - Sewer	Alvarado Pump Station	5072 Benson Road

Table 17 – Citywide Assets Low Liquefaction Susceptibility

Category	Type	Name	Address
CMTY	Recreation	Nature Learning Center	40224 Paseo Padre Parkway
CMTY	Recreation	Performance Pavilion	40204 Paseo Padre Parkway
CMTY	Rental Building	Fremont Community Center	40204 Paseo Padre Parkway
EDUC	FUSD	Linda Vista School	2650 Bruce Drive
EDUC	FUSD	Mission San Jose Elementary	43545 Bryant Street
EDUC	FUSD	Mission Valley Elementary	41700 Denise Street
EDUC	OCCD	Ohlone Community College	43600 Mission Boulevard
GOV	Human Services	Senior Citizen's Center	40086 Paseo Padre Parkway
PARK	City Park	East Bay Greenway Trail Corridor	Btw Paseo Padre Parkway & Farallon Commons
PARK	EBRPD	Mission Peak Regional Preserve	43600 Mission Boulevard
PARK	EBRPD	Ohlone Regional Wilderness	Not Applicable
PW	Public Works Building	Central Park Service Center	39800 Paseo Padre Parkway
TRANS	State Bridge	Palm Ave OC / I-680	Not Applicable
TRANS	State Bridge	Paseo Padre Parkway OC / I-680	Not Applicable
TRANS	State Bridge	Washington Boulevard OC / I-680	Not Applicable

Table 18 – Citywide Assets Very Low Liquefaction Susceptibility

Category	Type	Name	Address
PARK	City Park	Old Mission Park	Paseo Padre & Pine Street
PARK	City Park	Sabercat Historic Park	Paseo Padre Parkway / Sabercat Road
SAFETY	Fire Building	Fire Station #04, Pine	1000 Pine Street
TRANS	Local Bridge	Morrison Canyon Rd / Morrison Creek	Not Applicable
TRANS	Local Bridge	Paseo Padre Parkway / North Canyon Crossing	Not Applicable
TRANS	State Bridge	SR-84 / Beard Creek	Not Applicable
TRANS	State Bridge	Dumbarton Toll Plaza POC	Not Applicable
TRANS	State Bridge	SR-84 WB / Dumbarton Toll Plaza Tunnel	Not Applicable
TRANS	State Bridge	Union Pacific Railroad SPUR / Rosewarnes UP / SR-84	Not Applicable
TRANS	State Bridge	I-680 SB / East Warren Ave. UC	Not Applicable
TRANS	State Bridge	I-680 NB / East Warren Ave UC	Not Applicable

TRANS	State Bridge	I-680 SB / 680 / 237 Separation (Proposed)	Not Applicable
TRANS	State Bridge	I-680 NB / 680 / 237 Separation (Proposed)	Not Applicable
TRANS	State Bridge	I-680 SB / North DWR. UC	Not Applicable
TRANS	State Bridge	I-680 NB / North DWR. UC	Not Applicable
TRANS	State Bridge	I-680 SB / Scott Creek Rd UC	Not Applicable
TRANS	State Bridge	I-680 NB / Scott Creek Rd UC	Not Applicable
TRANS	State Bridge	I-680 SB / South DWR. UC	Not Applicable
TRANS	State Bridge	I-680 NB / South DWR. UC	Not Applicable
TRANS	State Bridge	I-680 / Vargas Road UC	Not Applicable
TRANS	State Bridge	SB Off-ramp Vargas / Vargas Road UC	Not Applicable

5.3.3 Landslide Analysis

Fremont has different levels of landslide susceptibility. The majority of the land fits into three categories: mostly landslides, few landslides or surficial deposits. Table 19 and – Few Landslides Table 20 depict critical assets located in the mostly and few landslide characterization. Critical assets that are located in areas of surficial deposits were not included due to the low probability of a landslide occurring in this location. More information on landslide susceptibility can be found in Section 4.3.2.

Table 19 – Mostly Landslides

Category	Type	Name	Address
PARK	City Park	Sabercat Historic Park	Paseo Padre Parkway / Sabercat Road
PARK	EBRPD	Mission Peak Regional Preserve	43600 Mission Boulevard
PARK	EBRPD	Ohlone Regional Wilderness	Not Applicable
PARK	EBRPD	Coyote Hills Regional Park	8000 Patterson Ranch
TRANS	Local Bridge	Morrison Canyon Rd / Morrison Creek	Not Applicable

Table 20 – Few Landslides

Category	Type	Name	Address
PARK	City Park	Vallejo Mill Historical Park	Mission Boulevard & Niles Canyon Road
PARK	City Park	Rancho Higuera Park	37300 Rancho Higuera
PARK	City Park	Shinn Historic Park	1251 Peralta Boulevard
PARK	City Park	Old Mission Park	Paseo Padre & Pine Street
PARK	EBRPD	Vargas Plateau Regional Park	2536 Morrison Canyon
TRANS	State Bridge	SR-84 / Beard Creek	Not Applicable
TRANS	State Bridge	Dumbarton Toll Plaza POC	Not Applicable
TRANS	State Bridge	SR-84 WB / Dumbarton Toll Plaza Tunnel	Not Applicable
TRANS	State Bridge	I-680 NB / East Warren Ave UC	Not Applicable

TRANS	State Bridge	I-680 SB / North DWR. UC	Not Applicable
TRANS	State Bridge	I-680 NB / North DWR. UC	Not Applicable
TRANS	State Bridge	I-680 / Vargas Road UC	Not Applicable
TRANS	State Bridge	SB Off-ramp Vargas / Vargas Road UC	Not Applicable
UTILITY	ACWD - Water	Mission San Jose Water Treatment Plant	42500 Vargas Road

5.3.4 Floodplain Analysis

Each citywide asset was evaluated to see if it was located in a known floodplain. Citywide Assets located in either the 1% or 0.2% annual chance floodplain (100 year or 500 year) are included in the Table 21 and Table 22 below. More information on flooding can be found in Section 4.3.3.

Table 21 – Located within 1% annual chance Floodplain

Category	Type	Name	Address
PARK	City Park	Gomes Park	827 Lemos Lane
PARK	City Park	Sabercat Historic Park	Paseo Padre Parkway / Sabercat Road
PARK	City Park	Pacific Commons Sports Park (Underdeveloped Designated Park Land)	6900 Auto Mall Parkway
PARK	City Park	Fremont Central Park	Paseo Padre & Stevenson
PARK	City Park	Fremont Park Golf Club	Paseo Padre & Stevenson
PARK	EBRPD	Coyote Hills Regional Park	8000 Patterson Ranch
SAFETY	Fire Building	Fire Tactical Training Center & Tower	7200 Stevenson Boulevard
SAFETY	Police Building	Animal Shelter	1950 Stevenson Boulevard
SAFETY	Police Building	Jail/Evidence Warehouse	1990 Stevenson Boulevard
SAFETY	Police Building	Police Department / Police Department Ancillary Building / Motorcycle Storage	2000 Stevenson Boulevard
SAFETY	Police Building	Police Department Fuel Station	1970 Stevenson Boulevard
TRANS	Local Bridge	Ardenwood Boulevard / Alameda Flood Control Chanel	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad / Lowry Road	Not Applicable
TRANS	Local Bridge	Paseo Padre Parkway / Union Pacific Railroad	Not Applicable
TRANS	Local Bridge	Alvarado Boulevard / Alameda Flood Control Chanel	Not Applicable
TRANS	Local Bridge	Isherwood Way / Alameda Flood Control Channel	Not Applicable
TRANS	Local Bridge	Auto Mall Parkway / Union Pacific Railroad	Not Applicable
TRANS	Local Bridge	Cushing Parkway / Wetlands	Not Applicable
TRANS	Local Bridge	Old Canyon Rd / Alameda Creek	Not Applicable

TRANS	Local Bridge	Fremont Boulevard / Arroyo de la Laguna	Not Applicable
TRANS	Local Bridge	Cushing Parkway / Flood Control Line	Not Applicable
TRANS	State Bridge	SR-84 / Beard Creek	Not Applicable
TRANS	State Bridge	SR-238 / Alameda Creek	Not Applicable
TRANS	State Bridge	I-880 / Patterson Slough	Not Applicable
TRANS	State Bridge	I-880 / Arroyo de la Laguna Creek	Not Applicable
TRANS	State Bridge	Fremont Boulevard OC / I-880	Not Applicable
TRANS	State Bridge	I-880 / Scott Creek	Not Applicable
TRANS	State Bridge	Union Pacific Railroad SPUR / Rosewarnes UP / SR-84	Not Applicable
UTILITY	PG&E - Electric	Dixon Landing Substation	49211 Milmont Drive
UTILITY	USD - Sewer	Irvington Pump Station	46525 Fremont Boulevard
UTILITY - OUTSIDE FREMONT	USD - Sewer	Newark Pump Station	37159 Hickory Street
UTILITY - OUTSIDE FREMONT	USD - Sewer	Alvarado Pump Station	5072 Benson Road
UTILITY - OUTSIDE FREMONT	USD - Sewer	Alvarado Wastewater Treatment Plant	5072 Benson Road

Table 22 – Located within 0.2% annual chance Floodplain

Category	Type	Name	Address
EDUC	FUSD	Mission San Jose Elementary	43545 Bryant Street
EDUC	FUSD	FUSD District Office	4210 Technology Drive
EDUC	FUSD	Harvey Green Elementary School	42875 Gatewood Street
EDUC	FUSD	John M Gomes Elementary School	555 Lemos Lane
EDUC	OCCD	Ohlone Community College	43600 Mission Boulevard
GOV	Museum	Niles Freight & Passenger Depot	37592 Niles Boulevard
PARK	City Park	Niles Town Plaza	37592 Niles Boulevard
PARK	EBRPD	Ardenwood Historic Farm	34600 Ardenwood Boulevard
SAFETY	Fire Building	Fire Station #02, Niles	37299 Niles Boulevard
SAFETY	Fire Building	Fire Station #09, Stevenson	39609 Stevenson Place
TRANS	Local Bridge	Blacow Rd / Laguna Creek	Not Applicable
TRANS	Local Bridge	Delaware St / Laguna Creek	Not Applicable
TRANS	Local Bridge	Grimmer Boulevard / Laguna Creek	Not Applicable
UTILITY	Waste Management	Fremont Transfer Station	41149 Boyce Road

*All Citywide Assets located in the 1% annual chance (100 year) floodplain are also subject to the 0.2% annual chance (500 year) floodplain

5.3.5 Very High Fire Hazard Severity Zone Analysis

Citywide Assets located in Fremont's Very High Fire Severity Zone are included in Table 23. More information related to Wildland Urban Interface and Fremont's Very High Fire Severity Zone can be found in Section 4.3.4.

Table 23 – Located within Fremont's Very High Hazard Severity Zone

Category	Type	Name	Address
EDUC	FUSD	Linda Vista School	2650 Bruce Drive
EDUC	OCCD	Ohlone Community College	43600 Mission Boulevard
GOV	Museum	Niles Freight & Passenger Depot	37592 Niles Boulevard
PARK	City Park	Sabercat Historic Park	Paseo Padre Parkway / Sabercat Road
PARK	City Park	Niles Town Plaza	37592 Niles Boulevard
PARK	City Park	Vallejo Mill Historical Park	Mission Boulevard & Niles Canyon Road
PARK	City Park	Rancho Higuera Park	37300 Rancho Higuera
PARK	City Park	Old Mission Park	Paseo Padre & Pine Street
PARK	City Park	Buena Vista Park	Macintosh & Mission Boulevard
PARK	City Park	Weibel Historic Park	Stanford Ave & Vineyard Ave
PARK	EBRPD	Coyote Hills Regional Park	8000 Patterson Ranch
PARK	EBRPD	Ardenwood Historic Farm	34600 Ardenwood Boulevard
PARK	EBRPD	Vargas Plateau Regional Park	2536 Morrison Canyon
PARK	EBRPD	Mission Peak Regional Preserve	43600 Mission Boulevard
PARK	EBRPD	Ohlone Regional Wilderness	Not Applicable
SAFETY	Fire Building	Fire Station #04, Pine	1000 Pine Street
TRANS	Local Bridge	Old Canyon Rd / Alameda Creek	Not Applicable
TRANS	Local Bridge	Morrison Canyon Rd / Morrison Creek	Not Applicable
TRANS	Local Bridge	Mission Boulevard / Mission Creek	Not Applicable
TRANS	Local Bridge	Union Pacific Railroad / Niles Boulevard	Not Applicable
TRANS	Local Bridge	Niles Boulevard / BART & Union Pacific Railroad	Not Applicable
TRANS	Local Bridge	Paseo Padre Parkway / North Canyon Crossing	Not Applicable
TRANS	Public Transit	Amtrak Bus Stop	Upper Mission Boulevard (Hwy 238) at I-680
TRANS	State Bridge	SR-84 / Beard Creek	Not Applicable
TRANS	State Bridge	Dumbarton Toll Plaza POC	Not Applicable
TRANS	State Bridge	SR-84 WB / Dumbarton Toll Plaza Tunnel	Not Applicable
TRANS	State Bridge	SR-238 / Alameda Creek	Not Applicable
TRANS	State Bridge	Union Pacific Railroad SPUR / Rosewarnes UP / SR-84	Not Applicable
TRANS	State Bridge	I-680 NB / East Warren Ave UC	Not Applicable

TRANS	State Bridge	I-680 / Vargas Road UC	Not Applicable
TRANS	State Bridge	SB Off-ramp Vargas / Vargas Road UC	Not Applicable
TRANS	State Bridge	Paseo Padre Parkway OC / I-680	Not Applicable
TRANS	State Bridge	Washington Boulevard OC / I-680	Not Applicable
TRANS	State Bridge	Union Pacific Railroad / Edenvale Underpass	Not Applicable
TRANS	State Bridge	I-680 / Mission San Jose Separation	Not Applicable
TRANS	State Bridge	Union Pacific Railroad SPUR / North Niles Underpass	Not Applicable
TRANS	State Bridge	I-680 SB / East Warren Ave. UC	Not Applicable
TRANS	State Bridge	I-680 SB / 680 / 237 Separation (Proposed)	Not Applicable
TRANS	State Bridge	I-680 NB / 680 / 237 Separation (Proposed)	Not Applicable
TRANS	State Bridge	I-680 SB / Scott Creek Rd UC	Not Applicable
TRANS	State Bridge	I-680 NB / Scott Creek Rd UC	Not Applicable
TRANS	State Bridge	I-680 SB / South DWR. UC	Not Applicable
TRANS	State Bridge	I-680 NB / South DWR. UC	Not Applicable
UTILITY	ACWD - Water	Mission San Jose Water Treatment Plant	42500 Vargas Road

5.3.6 Sea Level Rise

Each citywide asset was evaluated to determine the impact sea level rise would have on the facility. Citywide Assets that would be impacted by a Sea Level Rise of 1 foot, 3 feet, or 6 feet are included in Table 24, Table 25 and Table 26. More information related to Sea Level Rise can be found in Section 4.3.5.2.

Table 24 – Located within 1 foot Sea Level Rise

Category	Type	Name	Address
TRANS	State Bridge	SR-84 / Beard Creek	Not Applicable
TRANS	Local Bridge	Bell Street / Flood Control Channel	Not Applicable

Table 25 – Located within 3 foot Sea Level Rise

Category	Type	Name	Address
CMTY	Regional Park	Coyote Hills Regional Park	8000 Patterson Ranch
SAFETY	Fire Building	Fire Tactical Training Center & Tower	7200 Stevenson Boulevard
TRANS	Local Bridge	Cushing Parkway / Wetlands	Not Applicable
UTILITY	USD - Sewer	Irvington Pump Station	46525 Fremont Boulevard
UTILITY - OUTSIDE FREMONT	USD - Sewer	Newark Pump Station	37159 Hickory Street

UTILITY - OUTSIDE FREMONT	USD - Sewer	Alvarado Pump Station	5072 Benson Road
UTILITY - OUTSIDE FREMONT	USD - Sewer	Alvarado Wastewater Treatment Plant	5072 Benson Road

*All Citywide Assets affected by the 1 foot Sea Level Rise would also be affected by the 3 foot Sea Level Rise

Table 26 – Located within 6 foot Sea Level Rise

Category	Type	Name	Address
PARK	EBRPD	Coyote Hills Regional Park	8000 Patterson Ranch
SAFETY	Fire Building	Fire Tactical Training Center & Tower	7200 Stevenson Boulevard
TRANS	Local Bridge	Cushing Parkway / Wetlands	Not Applicable
UTILITY	USD - Sewer	Irvington Pump Station	46525 Fremont Boulevard
UTILITY - OUTSIDE FREMONT	USD - Sewer	Newark Pump Station	37159 Hickory Street
UTILITY - OUTSIDE FREMONT	USD - Sewer	Alvarado Pump Station	5072 Benson Road
UTILITY - OUTSIDE FREMONT	USD - Sewer	Alvarado Wastewater Treatment Plant	5072 Benson Road

*All Citywide Assets affected by the 1 & 3 foot Sea Level Rise would also be affected by the 6 foot Sea Level Rise

5.3.7 Tsunami Analysis

Each citywide asset was evaluated to see if it is located in an area that is at risk to an earthquake, liquefaction, flooding

Table 27 – Located within Tsunami Inundation Zone

Category	Type	Name	Address
PARK	EBRPD	Coyote Hills Regional Park	8000 Patterson Ranch

5.3.8 Dam Inundation Analysis

The known inundation area and acre-feet capacity for each dam is included in the Table 28 – Dam Inundation Area. Staff has reviewed the maps of the inundation areas; however, did not map which citywide asssets would be impacted by dam inundation.

Table 28 – Dam Inundation Area

Dam / Reservoir	Owner	Year Built	Acre-Feet Capacity	Inundation Area
Anderson Dam and Reservoir	SCVWD	1950	91,300[xliv]	Unknown
Calaveras Reservoir	CCSF	1925	110,000[xlv]	41.25 square miles

Decoto Reservoir	ACWD	1966	46	0.29 square miles
Del Valle Dam / Lake Del Valle	DWR	1968	77,100	97.98 square miles
James H. Turner Dam / San Antonio Reservoir	CCSF	1964	50,500	Unknown
Mayhew Reservoir	ACWD	Unknown	Unknown	0.22 square miles
Middlefield Reservoir	ACWD	1958	22	0.26 square miles
Patterson (1065-000)	ACWD	1962	46	Unknown
Quarry Pits	ACWD	1977	3,360	Unknown
Rubber Dam 1	ACWD	Unknown	Unknown	Unknown
Rubber Dam 3	ACWD	1990	154	Unknown
Shinn	ACWD	1987	390	Unknown

5.4 Summary of Impacts

To best understand how the facilities described in Sections 3.6 to 3.8 would be affected by a disaster, a brief summary is provided for each type of citywide asset and susceptibility to the hazards identified in Fremont. The citywide assets that are susceptible to the hazards highlighted in red in each matrix. Information regarding the time required to rebuild or repair following a disaster, and vulnerable communities affected are provided below the matrixes in the following section. Section 5.4 - Summary of Impacts reiterates information in the tables in Section 5.3 and also provides additional information which was shared by stakeholders and key partners.

5.4.1 Buildings

5.4.1.1 Primary City Facilities

Due to the number of different public safety facilities, it is unlikely that all facilities would be impacted at once; and not all facilities are subject to the same types of hazards.

5.4.1.1.1 Public Safety

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

The public safety facilities are subject to the hazards identified above. The time required to repair or rebuild these facilities would be based on the extent of the damage but could range from a few months to several years.

5.4.1.1.2 General Government

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone

Landslide		Floodplain		Sea Level Rise			Tsunami
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

The general government facilities are subject to the hazards identified above. The time required to repair or rebuild these facilities would be based on the extent of the damage but could range from a few months to several years.

5.4.1.1.3 Libraries and Community Centers

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

The libraries and community center facilities are subject to the hazards identified above. The time required to repair or rebuild these facilities would be based on the extent of the damage but could range from a few months to several years.

5.4.1.1.4 Public Works and Maintenance

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

The public works and maintenance facilities are subject to the hazards identified above. The time required to repair or rebuild these facilities would be based on the extent of the damage but could range from a few months to several years.

5.4.1.2 Educational Buildings

School sites primarily serve students under the age of 18 for educational purposes. This concentration of students creates a large vulnerable population at each school site. If a disaster were to occur, teachers and staff would need to manage the students until parents could arrive. The time required to repair or rebuild these facilities would be based on the extent of the damage but could range from a few months to several years.

5.4.1.2.1 Fremont Unified School District

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

Fremont Unified School District school sites are located within areas that are susceptible to the natural hazards listed above. Each school site could be impacted differently by a disaster, which may require coordination of services between different school sites, while repairs are made.

5.4.1.2.2 Private Schools

Private schools were not evaluated.

5.4.1.2.3 State of California Schools

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

The California School for the Blind and California School for the Deaf campuses are located in an area of Fremont that is susceptible to the hazards listed above. Any damage to dormitory or classroom buildings could impact the entire student body, based on the severity of the event. Any significant damage could require months to repair or rebuild school infrastructure that was impacted.

5.4.1.2.4 Ohlone Community College District

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

Ohlone Community College's campus is located in an area of Fremont that is susceptible to the hazards listed above. Any of these natural disasters could impact the structures at the campus. The campus could be closed for any length of time to recover from these issues. The time required to repair or rebuild these facilities would be based on the extent of the damage but could range from a few months to several years.

5.4.1.3 Healthcare Buildings

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

Kaiser Permanente, Palo Alto Medical Foundation and Washington Hospital are subject to the hazards identified above. Any of these disasters could impact the structures; however, existing measures in place should allow the facility to remain functional following an earthquake. Following a natural disaster in the community, the hospital could see a surge in patients who need treatment, some of whom need acute care and others who need basic triage. The Office of Statewide Health Planning and Development develops and regulates seismic performance standards for hospitals. The time required to repair or rebuild these facilities would be based on the extent of the damage but could range from a few months to several years.

5.4.2 Parks

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

Parks in Fremont (City of Fremont Parks and East Bay Regional Park District Parks) are susceptible to the hazards identified above. These hazards could have a significant impact on the parks. However, since these parks are primarily preserved as open space and lack development, any disaster would reduce the direct impact to residents. Any replanting, vegetation management and facility repairs required, could take months depending on the severity of any damage, during which time the public's access to the facilities may be limited.

East Bay Regional Park District's facilities are vulnerable to wind-driven fire due to the large space, accumulation of natural vegetation and the geography. EBRPD promotes mitigation measures through fire safety information, fire weather information and safety tips. EBRPD's parks located in Fremont are all within the South West Fire Danger Rating Area maintained by EBRPD.

5.4.3 Utilities

Due to the mass network of utilities, and the need to connect thousands of properties in Fremont, there are pipelines (water, wastewater, natural gas, and gas), overhead wires (telecom, electricity), underground wires (telecom, electricity), switching, and pump stations throughout the City. The summary tables below only identify stationary assets included in the citywide assets table, and do not include the network of transmission lines that connects these utilities to the end user. The time required to repair or rebuild utilities would be based on the extent of the damage but could range from a few hours to several months.

5.4.3.1 Water Supplier

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

ACWD's facilities are susceptible to the hazards identified in the table above. Since water transmission pipelines run throughout Fremont, they are susceptible to all of the natural disasters; however, the largest concern is the underground exposure to liquefaction, landslides and earthquakes. ACWD distributes all of the water through underground pipelines from the water treatment facilities and direct takeoffs. Any damage to pipelines could pose a risk in getting potable water to residents and having water available for fighting fires. The time required to repair or rebuild this infrastructure would be based on the extent of the damage but could range from a few months to several years.

5.4.3.2 Water Management

There are three water management agencies (Department of Water Resources, San Francisco Public Utilities Commission and Santa Clara Valley Water District) that have reservoirs that could impact Fremont through dam inundation. They do not maintain physical facilities in Fremont; however, two of the agencies have pipelines that run through Fremont and provide water to other jurisdictions in the Bay Area.

While none of the reservoirs are located in Fremont, any failure of the three dams (Calaveras, San Antonio and Turner) would result in wan inundation of water to Fremont through Niles Canyon on its way to the San Francisco Bay. If Anderson Dam were to fail, the impact would be

in the southwest quadrant of Fremont; however, there are variations as to the exact impact from different inundation maps that are available. The specific damage to Fremont would be based on the current water storage levels in the reservoirs, and the extent of damage that occurs to the dam resulting in flooding. Each dam owner maintains a flood inundation area map on file with the California State Office of Emergency Services. The time required to repair or rebuild dams would be based on the extent of the damage but could range from a few months to several years.

Department of Water Resources and San Francisco Public Utilities Commission also maintain pipelines that run through Fremont. The primary concern for these pipelines is related to an earthquake, landslide or liquefaction which could result in displacement and movement in the pipelines. Any movement or breakage could require significant repairs to ensure water delivery. This could result in a loss of service for the customers while repairs are made. The time required to repair or rebuild this infrastructure would be based on the extent of the damage but could range from a few months to several years.

5.4.3.3 Wastewater

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

USD's facilities are susceptible to the hazards identified in the table above. The sanitary sewer system is primarily located below ground. Since the entire system is spread out across Fremont, it has the potential to be impacted by every type of natural hazard in Fremont. The hazards of primary concern relate to earthquake, landslide and liquefaction because of the movement in the earth that could cause breaks in the pipelines. Damage to the system would interrupt the system's ability to maintain wastewater collection. The time required to repair or rebuild this infrastructure would be based on the extent of the damage but could range from a few weeks to several months.

5.4.3.4 Flood Control and Water Conservation

The Flood District's channels, pipelines and waterways are in locations susceptible to natural hazards. The primary concerns will be related to flooding, sea level rise and significant rain storms which would impact the flood control channels. The flood control channels are also susceptible to the other natural hazards in Fremont which include earthquakes, liquefaction and landslides.

5.4.3.5 Electric & Natural Gas

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

PG&E's transmission and substation facilities are susceptible to the hazards identified in the table above. Not identified in the table is the transmission network which distributes electricity and natural gas to Fremont customers.

PG&E's pipelines are located within areas that are primarily susceptible to earthquakes, liquefaction and landslides. Any of these hazards could result in ground displacement and movement of pipelines. Ground failure poses the biggest potential loss due to the damage of pipes underground. This could result in hundreds of breaks in mains, valves and service connections. Broken gas mains could fuel street fires while broken service connections could result in structural fires. The pipelines are also in areas that are subject to wildland urban interface fires and tsunamis; however, it is believed these would have minimal impacts given the pipelines run under ground, and these disasters would occur above ground. Restoration of services across the Bay Area could take as long as two months for customers because individual connections will need to be inspected. There are no LNG plants or terminals located in Fremont.

Electrical infrastructure exists throughout Fremont and is susceptible to all hazards within Fremont. Above ground electrical systems are subject to earthquakes and liquefaction which could cause utility poles to fall or collapse. Severe storms or earthquakes could also result in trees or structures falling onto utility lines. Above ground utility lines are also vulnerable to a wildland urban interface fire. Underground cables that cross liquefiable and weak soils are also vulnerable. Damaged sections in the transmission and distribution system will need to be repaired or bypassed. Before electrical circuits are energized, inspection for gas leaks in impacted areas will be necessary. Under normal circumstances, it takes 2-3 days to restore a transmission system. Impeded accessibility as well as workforce shortages will, at the minimum, double restoration times. PG&E's electrical system provides energy for street lights, traffic lights and citywide assets. Any prolonged exposure to these facilities would have a significant impact to Fremont residents.

5.4.3.6 Telecommunications

Telecommunications facilities were not evaluated.

5.4.3.7 Utility Easements

Chevron and Kinder Morgan's utility easements are for pipelines transporting fuel and natural gas. These pipelines are in areas that are susceptible to earthquakes and liquefaction. Any of these hazards could result in ground displacement and movement of pipelines. Underground damage is harder to detect and repair. Any damage to the pipelines could result in a loss of service for customers while repairs are made. The time required to repair or rebuild this infrastructure would be based on the extent of the damage but could range from a few months to several years. The pipelines are also in areas that are subject to wildland urban interface fires, floods and tsunamis; however, it is believed these would have minimal impacts given the pipelines run under ground, and these disasters would occur above ground. There are no LNG plants or terminals located in Fremont.

5.4.3.8 Waste Management

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

The Fremont Recycling and Transfer Station is susceptible to the hazards identified in the table above.

5.4.4 Transportation

Transportation networks are very broad and allow for multi-modal transportation and connection with the region. Different types of transportation utilize these networks which provide connectivity throughout the City and Bay Area region. The time required to repair or rebuild transportation networks would be based on the extent of the damage but could range from a few months to several years.

5.4.4.1 Local Streets

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

Bridges maintained by Fremont are susceptible to the hazards identified in the table above.

The City maintains 1,100 road miles of local streets. The local streets run throughout the City and are susceptible to every natural disaster described in this Plan. The primary concern is the impact caused by an earthquake, liquefaction or landslide. If highways are damaged from earthquake, liquefaction or landslide vehicles can be vulnerable to accidents from changed road conditions.

5.4.4.2 Public Transit

Impact to any form of public transit, would cause secondary impacts to the users of alternative forms of transportation that are not impacted.

5.4.4.2.1 Alameda County Transit

Alameda County Transit does not maintain any physical facilities in Fremont. However, the BART station is used as the primary transit hub. The roadways used for bus routes in Fremont are susceptible to nearly every type of disaster. Each disaster has the potential to disrupt service, damage road infrastructure and signage, and cause accidents. Following a disaster public transit could be impacted by requiring stop relocation or change of existing routes, based on the severity of damage. The time required to repair or rebuild this infrastructure would be based on the extent of the damage but could range from a few weeks to several months.

5.4.4.2.2 Altamont Corridor Express

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

The Amtrak Station that Altamont Corridor Express uses is susceptible to the hazards identified in the table above. The majority of the tracks ACE uses in Fremont are susceptible to liquefaction and earthquake ground shaking. Additionally, ACE's path of travel is located in areas that are susceptible to landslides, fires, tsunamis, dam failure, flooding and sea level rise. If

railroad infrastructure is damaged due to a natural disaster, trains are more vulnerable to accidents. Any damage to track infrastructure could impact the passenger rail service through Fremont, depending on the severity of damage, and alternate routes available. The time required to repair or rebuild this infrastructure would be based on the extent of the damage but could range from a few months to several years. Union Pacific is responsible for the tracks and track maintenance that ACE uses.

5.4.4.2.3 Amtrak

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

The Amtrak Station and Amtrak bus stop are susceptible to the hazards identified in the table above. The majority of the tracks Amtrak uses in Fremont are located within areas susceptible to liquefaction and earthquake ground shaking. Additionally, Amtrak's path of travel is located in areas that are susceptible to fires, tsunamis, dam failure, flooding and sea level rise. If railroad infrastructure is damaged due to a natural disaster, trains are more vulnerable to accidents. Any damage to track infrastructure could impact the passenger rail service through Fremont, depending on the severity of damage, and alternate routes available. Union Pacific is responsible for the tracks and track maintenance that Amtrak uses.

5.4.4.2.4 BART

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

The BART stations are susceptible to the hazards identified in the table above.

The BART tracks travel over areas that are susceptible to natural hazards including earthquake, liquefaction, and floods. Any impact from these disasters could impact BART service until repairs have been made. The time required to repair or rebuild this infrastructure would be based on the extent of the damage but could range from a few months to several years.

In 2002 BART completed a study of the earthquake vulnerability of the entire system, analyzing multiple earthquakes, predicting damage, and assessing cost-effectiveness of retrofits. This study was the most comprehensive evaluation of BART facilities since the original construction of the system. It involved one and one-half years of engineering and statistical analyses. The study also incorporated information from the 1994 Northridge and 1995 Kobe, Japan earthquakes.

The results of the Seismic Vulnerability Study indicated that if the BART system was not strengthened, it would take years to restore service after a major earthquake. The study found that portions of the system most susceptible to earthquake damage included the Transbay Tube, various aerial structures, stations and equipment. The study recommended that priority be given to the Transbay Tube, where soil backfill is prone to liquefaction. Though the consequences of liquefaction on the Tube are uncertain, a worst-case scenario could cause excessive movement of

the seismic joints and structural stress that could result in significant damage. Work to upgrade the Transbay Tube seismic joints was completed in 2010. BART continues to secure the Transbay Tube to a higher level of strength against future large earthquakes.

Through its Earthquake Safety Program, BART is working to prepare the entire BART system to better withstand future earthquakes. Upgrades to the system are being funded by $980 million in General Obligation Bonds, authorized by voters in Alameda, Contra Costa, and San Francisco counties, supplemented with an additional $240 million from other sources. BART anticipates the completion of all earthquake upgrades by 2022. BART's investment in earthquake retrofit is strengthened by its earthquake early warning system, which can help prevent train derailments in the system by slowing or stopping trains upon notification of an earthquake. Currently, BART has a system in place, which is activated when an earthquake larger than magnitude 4 or 5 is experienced within the BART system. BART is working with UC Berkeley and others to implement a statewide earthquake early warning system. This system would issue notification to operators such as BART upon detection of P-waves. Upon notification, BART would automatically slow or stop trains within the system. The length of advance warning depends on how far away the earthquake originates.

5.4.4.2.5 Santa Clara Valley Transit Authority

VTA does not maintain any facilities in Fremont. However, the BART station is used as the primary transit hub. The roadways used for bus routes in Fremont are susceptible to nearly every type of disaster. Each disaster has the potential to disrupt service, damage road infrastructure and signage, and cause accidents. Following a disaster public transit could be impacted by requiring stop relocation or change of existing routes, based on the severity of damage.

5.4.4.3 Caltrans

MMI		Liquefaction					Fire
8	9	Very High	High	Medium	Low	Very Low	Within Zone
Landslide		**Floodplain**		**Sea Level Rise**			**Tsunami**
Mostly	Few	100	500	1 foot	3 foot	6 foot	Within Zone

Caltrans bridges are susceptible to the hazards identified in the table above.

Portions of each of the highways in Fremont are within areas susceptible to earthquakes, liquefaction, landslide, flooding, sea level rise and wildfire. Caltrans launched a comprehensive review of earthquake safety on highways throughout the state following the 1989 Loma Prieta earthquake. A program to retrofit vulnerable structures was started. Retrofits are designed to prevent collapse in a major earthquake; however, they do not guarantee these structures can be used after an earthquake. Caltrans emergency response teams are trained to inspect their facilities and manage some elements of traffic flow after a major earthquake.

If highways are damaged from earthquake or liquefaction, vehicles can be vulnerable to accidents from changed road conditions. People can also be vulnerable to exposure from hazardous materials if transportation accidents occur involving vehicles carrying hazardous materials. Any serious damage to the highways could put a strain on the movement of people and goods between Fremont and other Bay Area locations while repairs are made. The time required

to repair or rebuild this infrastructure would be based on the extent of the damage but could range from a few months to several years.

5.4.4.4 Freight Transit

The majority of Union Pacific railroad tracks in Fremont are located in areas susceptible to earthquakes and liquefaction. Additionally some infrastructure is located in areas that are susceptible to landslides, fires, tsunamis, dam failure, flooding and sea level rise. If railroad tracks are damaged due to a natural disaster, trains are more vulnerable to accidents and people could be exposed to hazardous materials if trains were carrying hazardous materials. Any damage to track infrastructure could impact the movement of goods through Fremont, depending on the severity of damage, and alternate routes available. The time required to repair or rebuild this infrastructure would be based on the extent of the damage but could range from a few months to several years.

Union Pacific completes track inspections in compliance with Federal Railroad Administration guidelines to enable to safe, reliable and efficient movement of people and goods. Union Pacific also conducts special inspections around severe weather events. Union Pacific maintains safety technology for their infrastructure to decrease derailments and enhance safety. Union Pacific also partners with public agencies and emergency management organizations to help minimize the impact on a community should a derailment occur. Amtrak and ACE Train utilize Union Pacific's tracks.

5.5 National Flood Insurance Program

The City of Fremont has been a participant in the National Flood Insurance Program (NFIP) since 1983. The City also participates in the Community Rating System and is currently a Class 7.

As a participant of the NFIP, the City of Fremont enforces floodplain management regulations and ensures that new buildings or substantially improved buildings are protected from flood damage. To measure the City's compliance with the NFIP, the Community Assistance Program (a state support service), monitors the City's floodplain management.

Like any project, time and resources are needed to implement an effective NFIP. Funding and staff time on a project can be a hurdle for a community at the initial phases of implementing the program. Time and resources include coordination efforts among the different departments to ensure the City meets or exceeds the program requirements.

In addition to being a participant in the NFIP, the City is also part of the Community Rating System (CRS) program since 2001. Currently, the City of Fremont is rated at a Class 7, which provides a 15% reduction in premiums for high-risk policies. To maintain this class rating, the City participates in several CRS activities annually. The City has been given credit for the following activities:

Activity 310 – Elevation Certificates: The Engineering Department maintains elevation certificates for new and substantially improved buildings. Copies of elevation certificates are made available upon request. Elevation Certificates are also kept for post-FIRM and listed on the

community's website. Elevation Certificates, plans, regulations and other records are maintained in a secure location away from the permit office.

Activity 320 – Map Information Service: Credit is provided for furnishing inquirers with flood zone information from the community's latest Flood Insurance Rate Map (FIRM), publicizing the service annually and maintaining records.

Activity 330 – Outreach Projects: An outreach brochure is mailed annually to all properties in the community's Special Flood Hazard Area (SFHA). The community also provides flood information through displays at public buildings.

Activity 340 – Hazard Disclosure: Credit is provided for state regulations requiring disclosure of flood hazards.

Activity 350 – Flood Protection Information: Documents relating to floodplain management are available in the reference section of the Alameda County Library.
Credit is also provided for floodplain information displayed on the community's website.

Activity 360 – Flood Protection Assistance: The community provides material on how to select a contractor.

Activity 410 – Additional Flood Data: Credit is provided for conducting and adopting flood studies for areas not included on the flood insurance rate maps and that exceed minimum mapping standards.

Activity 420 – Open Space Preservation: Credit is provided for preserving approximately 1137 acres in the SFHA as open space.

Activity 430 – Higher Regulatory Standards: Credit is provided for enforcing state mandated regulatory standards, for a BCEGS Classification of 3/3 and for the adoption of the International Building Codes.

Activity 440 – Flood Data Maintenance: Credit is provided for maintaining and using digitized maps in the day to day management of the floodplain. Credit is also provided for maintaining copies of all previous FIRMs and Flood Insurance Study Reports.

Activity 450 – Stormwater Management: The community enforces regulations for stormwater management, freeboard in non-SFHA zones, soil and erosion control, and water quality.

Section 502 - Repetitive Loss Category: The City of Fremont is a Category A community for CRS purposes and no action is required.

Activity 540 – Drainage System Maintenance: A portion of the community's drainage system is inspected regularly throughout the year and maintenance is performed as needed by the Alameda County Flood Control and Water Conservation District. Records are being maintained

for both inspections and required maintenance. The community also enforces a regulation prohibiting dumping in the drainage system.

Activity 630 – Dam Safety: All California communities currently receive CRS credit for the state's dam safety program.

5.6 Repetitive Loss Properties

In spite of the areas of the City located in flood-prone areas, there are no repetitive loss properties in the City. In the 2004 and 2012 Local Hazard Mitigation Plans, there was no repetitive loss property that was outside the flood plain. Therefore, repetitive loss properties are not included in the vulnerability analysis.

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Section 6 Mitigation Goals and Objectives

6.1 Overview

The goal of the LHMP is to maintain and enhance a disaster-resistant City by reducing the potential for loss of life, property damage, and environmental degradation from natural disasters, while accelerating economic recovery from those disasters. This goal is unchanged from the 2005 and 2012 plan and continues to be the goal of the City of Fremont.

In order to continually improve the City's ability to handle a natural disaster, the City has prepared strategies that will be used in helping make Fremont a safer place that is capable of handling a natural disaster. Over time, we are committed to developing better hazard and risk information to use in this decision making process. We are not trying to create a disaster-proof region, but a disaster-resistant one. The strategies outlined in this section are the roadmap the City intends to follow to mitigate the damage caused by any future natural disasters in Fremont.

6.2 Transition from Regional Hazard Mitigation Plan to Local Hazard Mitigation Plan

The City's 2012 Hazard Mitigation Plan was an annex to the ABAG Regional Hazard Mitigation Plan. The 350 strategies in this Plan were based on the same Mitigation Worksheet matrix that ABAG had each participating jurisdiction fill out. As a result, many of the strategies were not applicable to Fremont and it didn't make sense to include all of these strategies in the 2016 Plan Update.

Due to the complexity of the 2012 Strategy Matrix, there wasn't a direct nexus from the 2012 Plan to the 2016 Plan to identify each strategy that was completed, outdated, carried over, or new ones were added. This is partly because many strategies were combined and/or consolidated to be consistent with how the City of Fremont organization is structured and operates.

As a result, during internal meetings, the City of Fremont Core Team (see Acknowledgements - City of Fremont Staff Core Team) reviewed and analyzed the 2010 strategies. Rather than evaluate all 350 strategies, each individual strategy was evaluated to see if it had been completed or was still pending. In Section 6.5 - Mitigation Strategies, completed activities were identified in the heading "Completed Activities in past 5 years". Meanwhile, activities that weren't completed were morphed into the new strategies developed for this local plan and are identified under the "Description of Activities to Occur" heading in Section 6.5 - Mitigation Strategies. Consequently there isn't a direct reference to the 2012 Strategy numbers; however, strategies that were carried over or completed from the 2012 Plan are noted in the following strategy tables.

All actions that were carried over from the 2012 LHMP are marked in Section 6.5 - Mitigation Strategies with an asterisk " * ". Those activities without an asterisk " * " are new for the 2016 LHMP.

6.3 Methodology

After identifying the known hazards in Fremont, a list of strategies to mitigate these hazards was developed. These mitigation strategies are meant to assist Fremont in being a disaster-resilient community that can plan, prepare and mitigate potential hazards. The City identified the buildings, infrastructure and stakeholders that are critical for the City to operate, and how best to prepare each of these assets for a disaster and mitigate the extent of the damage.

The City departments identified the following list of 23 strategies to best prepare for and mitigate the impacts of damage from a disaster. The City focused on engaging key lifeline partners, residents and staff in addressing the specific strategies and actions that can be implemented to reduce the effects of each hazard identified as having the potential to cause damage.

Each strategy matrix table includes:

- Strategy number
- Strategy name
- Description of activities to occur
- Completed activities in the past 5 years
- Hazards addressed by the strategy
- Target development type
- Scale of the benefit
- Strategy type
- Process / implementation mechanism
- Responsible department
- Related policies from other plans
- Priority level
- Timeline
- Potential funding source
    - ***Note: Funding allocations are made through the Citywide budget process. Listing a specific potential funding source does not commit resources to the action.***

6.4 Prioritization of Mitigation Strategies

Staff was not involved in the regional ranking of the 2012 Multi-Jurisdictional Hazard Mitigation Plan and therefore is unsure of how the strategies were ranked for that Plan. For this plan update, the City of Fremont Staff Core Team collectively ranked and placed these strategies at the last meeting following the completion of all other sections of the plan. The following ranking was based on the benefit-cost review where the benefits that would result from a mitigation action versus the cost. Strategies which had benefits valued higher than the costs were evaluated higher on the list.

The other criteria the team used to evaluate the strategies were the perceived and expected benefits from: life safety, property protection, political, environmental and administrative feasibility. The life safety element was used to determine how effectively the action will protect lives and prevent injuries. Property protection was based on how significant a given strategy would be at reducing damages to structures and infrastructure. The political feasibility was based

on the public support and City Council to support such measures based on previous policies and policy direction. Environmental impacts were evaluated based on environmental regulations and existing policies within the City. Finally, each strategy was evaluated for administrative feasibility to determine if it was possible to implement the strategy with the existing personnel and budget constraints. Each of these criteria were used in the evaluation of the goals. The City of Fremont Core Team (see Acknowledgements - City of Fremont Staff Core Team) was then asked to rank their highest priority actions for implementation. A lengthy hour long discussion took place to determine the final ranking after everyone's initial input was provided. Strategies were ranked high, medium and low. High priority strategies are strategies that have a level of urgency and ability to be significantly accomplished in the next 5 years. Medium priority strategies were based on goals that are very important, but the City does not have the abilities to currently address all of the implementation strategies. Low priority strategies were deemed to not provide the cost benefit analysis or were stretch goals that will require a significant shift in political, administrative or environmental feasibility to implement.

Strategies from the 2012 LHMP that had not yet been completed and were still relevant were included as "Description of Activities to Occur" heading in Section 6.5 - Mitigation Strategies. During the prioritization, it was decided that the action strategies were better to include that the overall strategies since the City's strategies were different than the strategies used in the Multi-Jurisdictional LHMP. Staff prioritized the outstanding activities from the 2012 Plan utilizing the same methodology, and grouped similar activities under an umbrella strategy.

While the strategies were prioritized as part of the process of the 2016 LHMP, they are subject to change based on a variety of factors. Staff will continually evaluate the strategies and order of prioritization based on the available funding, politics, technological advances, current events, and following any disasters.

The mitigation strategies are ranked in descending order of importance and broken down by their priority level.

6.4.1 High Priority Strategies

1. Perform appropriate seismic and fire safety analysis based on current and future use for all City-owned facilities and structures.
2. Strengthen, rehabilitate or replace City facilities and structures, based on the seismic and fire safety analysis, as funding is available.
3. Conduct ongoing training for first responders and City personnel to ensure they have the necessary training and equipment to deal with a hazard (including natural and man-made disasters).
4. Reduce seismic and fire risk in existing development through building and fire code updates and enforcement.
5. Explore local legislation to regulate the storage of hazardous materials to be protected from flood zones, rising sea levels and tsunami inundation areas.
6. Coordinate disaster preparation and mitigation practices with private sector, public institutions and other public bodies.
7. Protect vulnerable water facilities to ensure an adequate water supply during emergencies and disaster recovery.

8. Protect vulnerable electric systems and facilities and build resiliency so disruption to the system is minimized during and following disasters. Ensure adequate redundancy and fuel is available to maintain critical facilities.
9. Improve the disaster-resistance of the natural gas delivery system to increase public safety and to minimize damage and service disruption following a disaster.
10. Protect vulnerable wastewater facilities to ensure wastewater is treated during emergencies and disaster recovery.
11. Perform hazard vulnerability analysis for solid waste management facilities utilized by the City.
12. Integrate Climate Action Plan goals and actions with the Local Hazard Mitigation Plan goals and actions, if determined feasible.
13. Integrate climate change research and adaptation planning into City operations and services.

6.4.2 Medium Priority Strategies

14. Rehabilitate the City's storm water system to reduce local flooding of nearby streets, utilities and buildings, caused by storm drainage during storms, high tides, sea level rise, seismic events and power outages.
15. Streamline the permitting process to rebuild residential and commercial structures following disasters.
16. Provide outreach activities related to hazard mitigation and disaster preparedness.
17. Reduce hazard vulnerabilities for non-City-owned buildings throughout Fremont.
18. Utilize vegetation management to reduce risks in existing development.

6.4.3 Low Priority Strategies

19. The City's Soft-Story Residential Building Program, Existing Tilt-Up Concrete and Reinforced Masonry Buildings Programs were to be completed by 2008. All known buildings have been retrofitted and removed from the list of buildings out of compliance. If additional buildings are found to be out of compliance, the City will continue to implement the programs.
20. Continue the City's participation in the National Flood Insurance Program.
21. Establish cooling centers and encourage landscaping improvements to reduce Fremont resident's vulnerability to extreme heat events, severe storms, and associated hazards.
22. Collaborate with ACWD, local, state, regional and federal partners to increase the security of Fremont's water supply from climate change impacts.
23. Mitigate the impacts of sea level rise in Fremont, by making shoreline and Bay lands facilities more resilient to earthquake, storm and high water elevation hazards in order to maintain functionality and protect inland facilities. Define any associated tsunami hazards and mitigation.

6.5 Mitigation Strategies

All actions that were carried over from the 2012 LHMP are marked in Section 6.5 - Mitigation Strategies with an asterisk " * ". Those activities without an asterisk " * " are new for the 2016 LHMP.

<table>
<tr><td>Strategy Name</td><td colspan="4">Perform appropriate seismic and fire safety analysis based on current and future use for all City-owned facilities and structures.</td><td>Strategy #1</td></tr>
<tr><td colspan="6">Description of Activities to Occur</td></tr>
<tr><td colspan="6">1. Complete analysis of structures supporting critical emergency response and recovery functions, and make recommendations for structural and nonstructural improvements.*
2. Prioritize analysis of remaining structures based on occupancy and structure type. *
3. Consider the future use of all buildings, and secondary uses those buildings can support in the case of a disaster.*</td></tr>
<tr><td colspan="6">Completed Activities in past 5 years</td></tr>
<tr><td colspan="6">1. In 2002, residents passed Measure R, a Fire Safety Bond that allotted $51 million in general obligation bonds to fund the replacement of three fire stations and modernization, including seismic upgrades to the remaining stations. All 11 fire stations meet current seismic standards.</td></tr>
<tr><td colspan="6">Hazard(s) Addressed</td></tr>
<tr><td>Climate Change</td><td>Earthquake</td><td>Floods</td><td>Landslide</td><td>Liquefaction</td><td>Wildfire</td></tr>
<tr><td colspan="2">Target Development Type(s)</td><td colspan="4">Scale of Benefit(s)</td></tr>
<tr><td>Existing</td><td>New</td><td>Businesses</td><td>Critical Facility</td><td>Residential</td><td>Utilities</td></tr>
<tr><td colspan="6">Strategy Type(s)</td></tr>
<tr><td>Coordination</td><td>Education / Outreach</td><td>Evaluation</td><td>Plans / Policy Development</td><td>Program / Operation</td><td>Other Types</td></tr>
<tr><td colspan="6">Process / Implementation Mechanism(s)</td></tr>
<tr><td>Capital Planning</td><td>Emergency Planning</td><td>Land Use Planning</td><td>Long – Range Planning</td><td>New Initiatives</td><td>Operations</td></tr>
<tr><td colspan="2">Responsible Department(s)</td><td colspan="4">Fire Department; Community Development Department; Public Works Department</td></tr>
<tr><td colspan="2">Partner Agencies</td><td colspan="4">• N/A</td></tr>
<tr><td colspan="2">Related Policies from Other Plans</td><td colspan="4">• General Plan Policy 10.2-4 (Location of Critical Facilities)
• General Plan Policy 10.3-5 (Critical Facilities Locations)</td></tr>
<tr><td colspan="2">Priority Level</td><td colspan="4">High</td></tr>
<tr><td colspan="2">Timeline</td><td colspan="4">Short Term (1-3 years)</td></tr>
<tr><td colspan="2">Potential Funding Source</td><td colspan="4">CIP #103 & 607; PWC 8651; PWC 8393</td></tr>
</table>

Strategy Name	Strengthen, rehabilitate or replace City facilities and structures, based on the seismic and fire safety analysis, as funding is available.	Strategy #2

Description of Activities to Occur

1. Use analysis to make recommendations for structural and nonstructural improvements.*
2. Integrate unsafe structures into a prioritized program for retrofit or replacement. *
3. Seek funding to seismically strengthen or replace additional City buildings in a prioritized order.*
4. Periodically assess the need for new or relocated critical facilities including police and fire stations and emergency facilities.
5. Construct resilient facilities and structures that have minimal water and energy needs.

Completed Activities in past 5 years

1. The City is currently working on the Downtown Initiative which will include a new Civic Center which will house all departments and services with the exception of Police, Detention, Animal Control and Maintenance which will remain off-site. The project is currently in the design phase. Construction of Phase 1 and 2 of the Civic Center is estimated to span from 2017 to 2022.

Hazard(s) Addressed					
Climate Change	**Earthquake**	Floods	Landslide	Liquefaction	**Wildfire**

Target Development Type(s)		**Scale of Benefit(s)**			
Existing	**New**	Businesses	**Critical Facility**	Residential	Utilities

Strategy Type(s)					
Coordination	Education / Outreach	Evaluation	Plans / Policy Development	Program / Operation	**Other Types**

Process / Implementation Mechanism(s)					
Capital Planning	Emergency Planning	Land Use Planning	Long – Range Planning	New Initiatives	**Operations**

Responsible Department(s)	Fire Department; Community Development Department; Public Works Department
Partner Agencies	• N/A
Related Policies from Other Plans	• General Plan Policy 10.2-4 (Location of Critical Facilities) • California Green Building Standards Code
Priority Level	High
Timeline	Long Term (3-5 years)
Potential Funding Source	CIP #103 & 607; PWC 8651; PWC 8393

Strategy Name	Conduct ongoing training for first responders and City personnel to ensure they have the necessary training and equipment to deal with a hazard (including natural and man-made disasters).	Strategy # 3

Description of Activities to Occur

1. Support an interoperable communications system in case of compromised communications during a natural disaster.*
2. Continually train employees on the incident command system and utilizing the Emergency Operations Center (EOC).*
3. Periodically assess the need for new training, skills and equipment that will be valuable in responding to an emergency.*
4. Consistently use and test equipment in order to provide personnel with adequate gear and communications ability to respond to an emergency.

Completed Activities in past 5 years

1. $270,000 of capital investments in Emergency Operations Center Facility and Infrastructure Upgrade.*
2. Placed new joint Police/Fire Mobile Command Unit into service.
3. The Fire Department is currently conducting a recruitment to fill the vacant Emergency Services Coordinator position (vacant since 1999) and anticipates the position to be filled in Q1 of FY 16/17.

Hazard(s) Addressed

Climate Change	Earthquake	Floods	Landslide	Liquefaction	Wildfire

Target Development Type(s)		Scale of Benefit(s)			
Existing	**New**	**Businesses**	**Critical Facility**	**Residential**	**Utilities**

Strategy Type(s)

Coordination	Education / Outreach	Evaluation	Plans / Policy Development	Program / Operation	Other Types

Process / Implementation Mechanism(s)

Capital Planning	Emergency Planning	Land Use Planning	Long – Range Planning	New Initiatives	Operations

Responsible Department(s)	All City Departments
Partner Agencies	• Alameda County Emergency Managers' Association
Related Policies from Other Plans	• General Plan Policy 10-5.3 (Emergency Response Training) • General Policy 10-5.4 (Emergency Operations Center) • General Plan Policy 10-6.7 (Emergency Action Plan) • General Plan Goal 10-7 (Community Emergency Preparedness)
Priority Level	High
Timeline	Ongoing
Potential Funding Source	Outside grants when available; annual operating budget

Strategy Name	Reduce seismic and fire risk in existing development through building and fire code updates and enforcement.	Strategy # 4

Description of Activities to Occur

1. Update and adopt the Building and Fire Codes with local amendments to incorporate the latest knowledge and design standards to protect people and property against known risks in both structural and non-structural building site components.*
2. Maintain Fire Department Efforts to reduce fire risk through:*
    a. Regularly scheduled inspections
    b. Hazardous material inspections
    c. Evaluate inspection procedures regularly
3. Maintain fire apparatus access roads for ingress and egress to aide emergency response times and evacuation.

Completed Activities in past 5 years

1. The 2013 California Building and Fire Codes with local amendments were adopted by Council in 2013. *
2. The City has identified areas within the City that are Very High Fire Hazard Zones and are defined in the Wildland-Urban Interface Area. Ordinance was adopted in 2007. *

Hazard(s) Addressed					
Climate Change	**Earthquake**	Floods	Landslide	Liquefaction	**Wildfire**

Target Development Type(s)		**Scale of Benefit(s)**			
Existing	**New**	**Businesses**	Critical Facility	**Residential**	Utilities

Strategy Type(s)					
Coordination	Education / Outreach	Evaluation	**Plans / Policy Development**	**Program / Operation**	Other Types

Process / Implementation Mechanism(s)					
Capital Planning	**Emergency Planning**	Land Use Planning	Long – Range Planning	New Initiatives	**Operations**

Responsible Department(s)	Fire Department
Partner Agencies	• Cal-Fire • International Code Council
Related Policies from Other Plans	• Fremont Municipal Code Title 15: Section 15.35 (Fire Code) • Fremont Municipal Code Title 15: Section 15.60 (Central Corridor Retrofit) • Fremont Municipal Code Title 15: Section 15.65 (Wildland Urban Interface Area) • General Plan Goal 10-4(Fire Hazards) • General Plan Goal 10-5 (Emergency Response)
Priority Level	High
Timeline	Ongoing
Potential Funding Source	Outside grants when available; annual operating budget
Timeline	Ongoing

Strategy Name	Explore local legislation to regulate the storage of hazardous materials to be protected from flood zones, rising sea levels and tsunami inundation areas.				Strategy # 5
Description of Activities to Occur					
1. Continue to assess the potential impact from hazardous materials stored and transported through Fremont. 2. Consult with federal, state and regional patterns to identify legislative best practices in regulating hazardous materials.					
Completed Activities in past 5 years					
1. The Fire Department maintains Hazardous Materials Inventory Statement on file for all Hazardous Materials Facilities.*					
Hazard(s) Addressed					
Climate Change	**Earthquake**	**Floods**	Landslide	Liquefaction	Wildfire
Target Development Type(s)		**Scale of Benefit(s)**			
Existing	**New**	**Businesses**	**Critical Facility**	Residential	**Utilities**
Strategy Type(s)					
Coordination	Education / Outreach	**Evaluation**	Plans / Policy Development	**Program / Operation**	Other Types
Process / Implementation Mechanism(s)					
Capital Planning	**Emergency Planning**	Land Use Planning	Long – Range Planning	New Initiatives	**Operations**
Responsible Department(s)	Fire Department				
Partner Agencies	• Environmental Protection Agency • California Office of Emergency Service • California Department of Toxic Substances Control • CalFire, Office of the State Fire Marshall				
Related Policies from Other Plans	• Fremont Municipal Code Chapter 8.35 (Hazardous Materials management) and Chapter 15.35.10 (Fremont Fire Code) • Hazardous Materials Business Plan • California Accidental Release Program (CAL-ARP) • General Plan Policy 7-3.1.B (Protection of Niles Canyon) • General Plan Policy 7-3.2.A (Prevent Spills and Leakages) • General Plan Policy 7-7.4.C (Review and Update Hazardous Materials Policy) • General Plan Policy 7-7.4.D (Review Truck and Train Routes)				
Priority Level	High				
Timeline	Ongoing				
Potential Funding Source	Outside grants when available; annual operating budget				

Strategy Name	Coordinate disaster preparation and mitigation practices with private sector, public institutions and other public bodies.	Strategy # 6

Description of Activities to Occur

1. Support and encourage efforts to plan for and finance disaster-resistance measures undertaken by key lifeline providers (Utility providers, transportation agencies, educational facilities and healthcare facilities):*
    a. Seismic repairs and upgrades
    b. Disaster preparedness planning
    c. Collaboration among different agencies and stakeholder
    d. Implementation of disaster mitigation measures and risk reduction techniques
    e. Plans for evacuation and reunification of individuals
    f. Recovery process following a disaster
2. Continue to provide Community Emergency Response Team (CERT) training and Neighborhood Crime Watch Program. As part of the training provide education on how to shut off utilities and prepare for disasters.*
3. Maintain an emergency notification system (reverse 9-1-1) to deliver community alerts.*
4. Partner with the Association of Bay Area Governments and California Office of Emergency Services to incorporate Fremont's vulnerabilities into regionally managed hazard maps.*
5. Seek guidance from Cal OES and other local governments on how to best work and educate private sector about business resilience.

Completed Activities in past 5 years

1. Communicated with 21 other agencies (utility providers, transportation agencies, educational facilities and healthcare facilities) and ABAG as part of the LHMP process.*
2. Revitalized mass notification system / Community Alert System.*
3. Police and Fire Department regularly offer classes on: Personal Emergency Preparedness (PEP), Community Emergency Response Team (CERT) Program, and Neighborhood Crime Watch.*

Note: In 2016, ABAG's Regional Planning Committee will be working with city and county elected and senior staff to collaborate and work with water districts. It is expected this plan will expand outward in future years to incorporate all other key lifeline providers.

Hazard(s) Addressed					
Climate Change	**Earthquake**	**Floods**	**Landslide**	**Liquefaction**	**Wildfire**
Target Development Type(s)		**Scale of Benefit(s)**			
Existing	**New**	**Businesses**	**Critical Facility**	**Residential**	**Utilities**
Strategy Type(s)					
Coordination	**Education / Outreach**	**Evaluation**	**Plans / Policy Development**	**Program / Operation**	Other Types
Process / Implementation Mechanism(s)					
Capital Planning	**Emergency Planning**	Land Use Planning	Long – Range Planning	New Initiatives	**Operations**
Responsible Department(s)	All City Departments				

Partner Agencies	• Key lifeline providers
Related Policies from Other Plans	• General Plan Goal 10-7 (Community Emergency Preparedness) • General Plan Goal 9-3 (Water, Sewer and Flood Control) • General Plan Policy 9-4.2 (Infrastructure Improvements) • General Plan Goal 9-9 (Educational Facilities) • General Plan Policy 10-2.4 (Location of Critical Facilities) • General Plan Policy 10-3.5 (Critical Facilities Locations)
Priority Level	High
Timeline	Ongoing
Potential Funding Source	Outside grants when available; annual operating budget

Strategy Name	Protect vulnerable water facilities to ensure an adequate water supply during emergencies and disaster recovery.	Strategy # 7

Description of Activities to Occur

1. Coordinate with ACWD to expedite replacement of problem pipelines in neighborhoods with exposure to Wildland-urban interface fire, seismic ground failure and landslides.*
2. Coordinate with ACWD to ensure that pipeline replacement projects and upgrades are coordinated prior to street repaving and/or maintenance.
3. On an annual basis, provide a list of critical facilities to ACWD to aid in the prioritization of restoring water service to these facilities.*
4. On an ongoing basis, check with SFPUC and State Water Project regarding system upgrades within Fremont, and focus on areas that are susceptible to seismic ground failure, liquefaction and landslides.

Completed Activities in past 5 years

1. In 2013, the Fire Department placed a 2,000 gallon Water Tender in service for waters supply on incidents, but it can also be used as a potable water source during disaster or water emergencies.
2. Fire Department has worked in partnership with ACWD to maintain three (3) Hose Containers located at three (3) different Fire Stations all filled with 5" water supply lines that can be used to circumvent fractured underground water mains or to augment supply.*
3. Contacted ACWD and SFPUC as part of the LHMP 2016 process.

Hazard(s) Addressed					
Climate Change	**Earthquake**	Floods	**Landslide**	**Liquefaction**	**Wildfire**
Target Development Type(s)		**Scale of Benefit(s)**			
Existing	**New**	Businesses	**Critical Facility**	Residential	**Utilities**
Strategy Type(s)					
Coordination	Education / Outreach	Evaluation	Plans / Policy Development	Program / Operation	Other Types
Process / Implementation Mechanism(s)					
Capital Planning	Emergency Planning	Land Use Planning	Long – Range Planning	New Initiatives	**Operations**

Responsible Department(s)	Public Works Department; Fire Department
Partner Agencies	• Alameda County Water District • San Francisco Public Utilities Commission • State Water Project
Related Policies from Other Plans	• General Plan Goal 9-3 (Water, Sewer and Flood Control) • General Plan Policy 10-4-2.A (Fire Code Compliance)
Priority Level	High
Timeline	Ongoing
Potential Funding Source	Outside grants when available; annual operating budget

Strategy Name	Protect vulnerable electric systems and facilities and build resiliency so disruption to the system is minimized during and following disasters. Ensure adequate redundancy and fuel is available to maintain critical facilities.	Strategy # 8

Description of Activities to Occur

1. On a continuing basis, provide a list of critical facilities and infrastructure to Pacific Gas and Electric to aid in the prioritization of energy restoration following an energy outage. Make sure PG&E coordinates with other utility providers of water and wastewater (ACWD and USD) to ensure ongoing service can be provided.*
2. Identify key City facilities that support emergency operations and estimate the facilities' energy supply and demand to remain operational during an emergency.*
3. Prepare the localized energy supply and demand needed for each critical facility, key infrastructure and traffic systems.
4. Identify and develop a plan to have substantial backup power in the form of photovoltaic, generation, battery storage systems, energy efficiency and mobile generators for sites with unmet energy supply sources.
5. On an ongoing basis, check with SFPUC regarding transmission line upgrades within Fremont, and focus on areas that are susceptible to seismic ground failure and landslides.

Completed Activities in past 5 years

1. Contacted PG&E as part of the LHMP 2016 process.
2. List of critical facilities was shared with PG&E in 2014.*
3. Developed solar carports and battery storage at three fire stations to allow for continuous power supply in the event of a disaster.

Hazard(s) Addressed					
Climate Change	**Earthquake**	Floods	**Landslide**	**Liquefaction**	Wildfire

Target Development Type(s)		**Scale of Benefit(s)**			
Existing	New	Businesses	**Critical Facility**	Residential	**Utilities**

Strategy Type(s)					
Coordination	Education / Outreach	Evaluation	**Plans / Policy Development**	**Program / Operation**	Other Types

Process / Implementation Mechanism(s)					
Capital Planning	**Emergency Planning**	Land Use Planning	Long – Range Planning	**New Initiatives**	**Operations**

Responsible Department(s)	Public Works
Partner Agencies	• Pacific Gas and Electric • San Francisco Public Utilities Commission
Related Policies from Other Plans	• General Plan Goal 7-9 (Energy Conservation) • General Plan Goal 9-2 (Green City Buildings) • Climate Action Plan E-P5 • Climate Action Plan E-P7 • Climate Action Plan M-19
Priority Level	High
Timeline	Ongoing

Strategy Name	Improve the disaster-resistance of the natural gas delivery system to increase public safety and to minimize damage and service disruption following a disaster.	Strategy # 9

Description of Activities to Occur

1. Work with the Public Utilities Commission, utilities and oil companies to strengthen, relocate, or otherwise safeguard natural gas and other pipelines where they extend through areas of high liquefaction potential, cross potentially active faults, or traverse potential landslide areas, or areas that may settle differentially during an earthquake.
2. Advocate for the use of automatic shut off valves and remote shut off valves that could be activated in the case of an emergency. Incorporate automatic residential shut off into the building code.
3. As part of the Community Emergency Response Team (CERT), provide education on how to shut off gas lines to private properties.*

Completed Activities in past 5 years

1. Contacted PG&E, Kinder Morgan and Chevron as part of the LHMP 2016 process.
2. List of critical facilities was shared with PG&E in 2014.

Hazard(s) Addressed					
Climate Change	**Earthquake**	Floods	**Landslide**	**Liquefaction**	Wildfire

Target Development Type(s)		**Scale of Benefit(s)**			
Existing	New	**Businesses**	**Critical Facility**	**Residential**	**Utilities**

Strategy Type(s)					
Coordination	Education / Outreach	Evaluation	**Plans / Policy Development**	Program / Operation	Other Types

Process / Implementation Mechanism(s)					
Capital Planning	**Emergency Planning**	Land Use Planning	Long – Range Planning	New Initiatives	**Operations**

Responsible Department(s)	Public Works
Partner Agencies	• Pacific Gas and Electric • Kinder Morgan • Chevron Pipe Line Company • Pipeline and Hazardous Materials Safety Administration
Related Policies from Other Plans	• General Plan Policy 9-4.2 (Infrastructure Improvements)
Priority Level	High
Timeline	Ongoing
Potential Funding Source	Outside grants when available; annual operating budget

Strategy Name	Protect vulnerable wastewater facilities to ensure wastewater is treated during emergencies and disaster recovery.				Strategy # 10
Description of Activities to Occur					
1. Coordinate with USD to expedite replacement of problem pipelines in neighborhoods with exposure to seismic ground failure and landslides.* 2. Coordinate with USD to ensure that pipeline replacement projects and upgrades are coordinated prior to street repaving and/or maintenance. 3. Provide a list of critical facilities to USD to aid in the prioritization of restoring wastewater service to these facilities.*					
Completed Activities in past 5 years					
1. Contacted USD as part of the LHMP 2016 process.					
Hazard(s) Addressed					
Climate Change	**Earthquake**	Floods	**Landslide**	**Liquefaction**	Wildfire
Target Development Type(s)		**Scale of Benefit(s)**			
Existing	**New**	Businesses	**Critical Facility**	Residential	**Utilities**
Strategy Type(s)					
Coordination	Education / Outreach	Evaluation	Plans / Policy Development	Program / Operation	Other Types
Process / Implementation Mechanism(s)					
Capital Planning	Emergency Planning	Land Use Planning	Long – Range Planning	New Initiatives	**Operations**
Responsible Department(s)	Public Works				
Partner Agencies	• Union Sanitary District				
Related Policies from Other Plans	• General Plan Goal 9-3 (Water, Sewer and Flood Control)				
Priority Level	High				
Timeline	Ongoing				
Potential Funding Source	Outside grants when available; annual operating budget				

Strategy Name	Perform hazard vulnerability analysis for solid waste management facilities utilized by the City.	Strategy # 11

Description of Activities to Occur

1. Complete an analysis of facilities supporting the critical disaster debris and solid waste management functions, and make recommendations for structural and nonstructural improvements.
2. Update franchise service agreements to support emergency debris management.
3. Update Fremont's disaster debris management plan, a supplement to the Regional Catastrophic Earthquake Debris Removal Plan.

Completed Activities in past 5 years

1. Alameda County passed Mandatory Recycling Ordinance
2. Bay Area Urban Area Security Initiative adopted a Regional Catastrophic Earthquake Debris Removal Plan

Hazard(s) Addressed

Climate Change	**Earthquake**	**Floods**	**Landslide**	**Liquefaction**	Wildfire

Target Development Type(s)		**Scale of Benefit(s)**			
Existing	New	**Businesses**	**Critical Facility**	**Residential**	**Utilities**

Strategy Type(s)

Coordination	Education / Outreach	Evaluation	**Plans / Policy Development**	**Program / Operation**	Other Types

Process / Implementation Mechanism(s)

Capital Planning	**Emergency Planning**	Land Use Planning	Long – Range Planning	New Initiatives	**Operations**

Responsible Department(s)	Community Services
Partner Agencies	• Republic Services
Related Policies from Other Plans	• Regional Catastrophic Earthquake Debris Removal Plan • General Plan Policy 10.2-4 (Location of Critical Facilities) • General Plan Policy 10.3-5 (Critical Facilities Locations) • General Plan Policy 7-7.4.D (Review Truck and Train Routes)
Priority Level	High
Timeline	1-3 years
Potential Funding Source	Outside grants when available; annual operating budget

Strategy Name	Integrate Climate Action Plan goals and actions with the Local Hazard Mitigation Plan goals and actions, if determined feasible.	Strategy # 12

Description of Activities to Occur

1. On an annual basis, have the Environmental Sustainability Commission assess the progress on meeting goals established in the Climate Action Plan.*
2. Reevaluate results observed thus far, and consider modifying implementable actions to meet those goals, or additional actions to exceed those goals.
3. Following the update to the Climate Action Plan (expected 2017), review and update the Hazard Mitigation Plan to incorporate any goals and actions related to climate vulnerability.
4. Following StopWaste's climate-related hazard assessment, review and update the Hazard Mitigation Plan to incorporate any strategies related to climate and waste vulnerability.

Completed Activities in past 5 years

1. In February 2008, Fremont City Council set a citywide greenhouse gas reduction goal of 25% below 2005 baseline levels by the year 2020. In November 2012, the City Council adopted the Climate Action Plan, which offers a framework for achieving this goal.*
2. Environmental Sustainability Commission was established in 2012 to advise the City Council on emerging issues related to environmental sustainability and provide updates on the Climate Action Plan.
3. Fremont is a member of StopWaste and is partnering on a climate-related hazard assessment.*

Hazard(s) Addressed

Climate Change	Earthquake	Floods	Landslide	Liquefaction	Wildfire

Target Development Type(s)		**Scale of Benefit(s)**			
Existing	**New**	**Businesses**	**Critical Facility**	**Residential**	**Utilities**

Strategy Type(s)

Coordination	Education / Outreach	Evaluation	**Plans / Policy Development**	Program / Operation	Other Types

Process / Implementation Mechanism(s)

Capital Planning	Emergency Planning	Land Use Planning	**Long – Range Planning**	New Initiatives	Operations

Responsible Department(s)	Community Development Department
Partner Agencies	• Fremont Environmental Sustainability Commission • Stop Waste
Related Policies from Other Plans	• Climate Action Plan (2012) • General Plan Policy 7-8.1 (Climate Action Plan) • General Plan Policy 10-3.6.D (Climate Action Plan)
Priority Level	High
Timeline	Ongoing
Potential Funding Source	Outside grants when available; annual operating budget

Strategy Name	Integrate climate change research and adaptation planning into City operations and services.	Strategy # 13

Description of Activities to Occur

1. Research and oversee integration of climate change adaptation into City Operations and Services and implement adaptation measures through current operations and services procedures.*
2. Maintain the City's participation in the Compact of Mayors, to address climate change by pledging to reduce greenhouse gas emissions, tracking progress and preparing for the impacts of climate change through implementing adaptation measures.
3. Update and Maintain the following elements of the Climate Action Plan:
    a. Greenhouse Gas Emissions Inventory
    b. Actions to Reduce GHG Emissions
    c. Further enhance the use of photovoltaics to power City facilities

Completed Activities in past 5 years

1. Fremont's Mayor signed onto the Compact of Mayors, a global coalition of City leaders dedicated to reducing greenhouse gas (GHG) emissions, making their communities more resilient to climate change and regularly reporting their progress publicly.
2. In 2015, Fremont was named a semifinalist competitor in the Georgetown University Energy Prize, a two year national competition among 50 small to mid-size communities to develop innovative, replicable, and scalable models of energy efficiency.
3. In 2015, the City installed 1.2 megawatts of solar on its own facilities.
4. Residents are offered a group solar purchase option through the East Bay Sun Shares.
5. Conducted an update of the City's emissions inventory which found that Fremont's GHG emissions declined 11% between 2005 and 2010.*

Hazard(s) Addressed					
Climate Change	Earthquake	Floods	Landslide	Liquefaction	Wildfire

Target Development Type(s)		**Scale of Benefit(s)**			
Existing	**New**	**Businesses**	**Critical Facility**	**Residential**	**Utilities**

Strategy Type(s)					
Coordination	Education / Outreach	**Evaluation**	**Plans / Policy Development**	**Program / Operation**	**Other Types**

Process / Implementation Mechanism(s)					
Capital Planning	Emergency Planning	Land Use Planning	**Long – Range Planning**	**New Initiatives**	**Operations**

Responsible Department(s)	Community Development Department
Partner Agencies	• Fremont Environmental Sustainability Commission • US Compact of Mayors
Related Policies from Other Plans	• Climate Change Action Plan – Chapter Six • Compact of Mayors
Priority Level	High
Timeline	Ongoing
Potential Funding Source	CIP #102090

Strategy Name	Rehabilitate the City's storm water system to reduce local flooding of nearby streets, utilities and buildings, caused by storm drainage during storms, high tides, sea level rise, seismic events and power outages.	Strategy # 14

Description of Activities to Occur

1. Coordinate with ACFC/WCD to ensure that a hydraulic analysis of watersheds flood capacity is completed.*
2. Coordinate with ACFC/WCD to repair and replace pipelines, pump stations and culverts on an ongoing basis.*
3. Encourage the use of permeable surfaces to minimize stormwater flow and volume impact; while being mindful of conflicts with mitigating heat island impacts.
4. Encourage water conservation techniques, including the use of local, recycled compost and mulch, that encourage the on-site retention and use of stormwater run-off consistent with Regional Water Quality Control Board policies and requirements.

Completed Activities in past 5 years

1. Contacted ACFC/WCD as part of the LHMP 2016 process

Hazard(s) Addressed					
Climate Change	**Earthquake**	**Floods**	**Landslide**	**Liquefaction**	Wildfire

Target Development Type(s)		Scale of Benefit(s)			
Existing	**New**	Businesses	**Critical Facility**	Residential	**Utilities**

Strategy Type(s)					
Coordination	Education / Outreach	Evaluation	Plans / Policy Development	**Program / Operation**	Other Types

Process / Implementation Mechanism(s)					
Capital Planning	**Emergency Planning**	**Land Use Planning**	Long – Range Planning	New Initiatives	**Operations**

Responsible Department(s)	Public Works; Community Development; Community Services
Partner Agencies	• Alameda County Flood Control and Water Conservation District
Related Policies from Other Plans	• General Plan Policy 7-3.3 (Enforce Water Quality Requirements) • General Plan Policy 7-4.1 (Water Conservation) • General Plan Policy 7-6.2 (Minimize Soil Erosion) • General Plan Goal 10-3 (Flood Hazards) • National Pollutant Discharge Elimination System (NPDES) permit • ACFC/WCD Zone 5 and 6 Drainage Master Plans
Priority Level	Medium
Timeline	Ongoing
Potential Funding Source	CIP #326; PWC 7926

Strategy Name	Streamline the permitting process to rebuild residential and commercial structures following disasters.	Strategy # 15

Description of Activities to Occur

1. Outreach to property owners about the ability to rebuild following a disaster, and clarify the documentation process needed of the current property conditions.*
2. For all non-conforming structures that are damaged, impose higher building standards before buildings are rebuilt under this code.
3. Authorize property owners to hire qualified structural engineers to create building-specific post-disaster inspection plans, known as Building Occupancy Resumption Plan (BORP). Allow these engineers to become inspectors in the event of a disaster. This will increase efficiencies and allow more buildings to return to regular use sooner. Regularly review this program to address any changes made to the building code, inspection team and properties covered. Strongly encourage hospitals to engage in this program.*
4. Prepare an informational handout for property owners and contractors on steps to rebuild following a disaster.
5. Review and identify improvements to the existing policies, codes and ordinances related to post-disaster recovery, repair and reconstruction.

Completed Activities in past 5 years

1.

Hazard(s) Addressed

Climate Change	Earthquake	Floods	Landslide	Liquefaction	Wildfire

Target Development Type(s)		Scale of Benefit(s)			
Existing	New	**Businesses**	**Critical Facility**	**Residential**	Utilities

Strategy Type(s)

Coordination	**Education / Outreach**	Evaluation	**Plans / Policy Development**	**Program / Operation**	Other Types

Process / Implementation Mechanism(s)

Capital Planning	Emergency Planning	**Land Use Planning**	Long – Range Planning	New Initiatives	**Operations**

Responsible Department(s)	Community Development Department
Partner Agencies	• International Code Council
Related Policies from Other Plans	• General Plan Policy 10-7.4.B (Post-Disaster Recovery) • Fremont Municipal Code Chapter 15.85 (Post Disaster Placards) • Fremont Municipal Code Chapter 15.90 (Post Disaster Demolition Ordinance) • Fremont Municipal Code, Title 18.180.060 (Post Disaster repair/reconstruction of nonconforming structures) • Fremont Municipal Code, Title 18.180.070 (Post disaster nonconforming land use)
Priority Level	Medium
Timeline	Ongoing
Potential Funding Source	Outside grants when available; annual operating budget

Strategy Name	Provide outreach activities related to hazard mitigation and disaster preparedness.	Strategy # 16

Description of Activities to Occur

1. Provide information on Fremont specific hazards and risk reduction techniques to Fremont organizations, community groups, nonprofits, businesses, vulnerable populations, HOA's, school district and general public. Encourage mitigation activities.*
2. Collect and share updated hazard maps with the public.*
3. Create printed material, and material on the website to address key elements of the Hazard Mitigation Plan; and, how to better prepare for a disaster.

Completed Activities in past 5 years

1. Revitalized Local Hazard Mitigation Plan website (https://www.fremont.gov/1055/Local-Hazard-Mitigation-Plan) to share information with residents.
2. Police and Fire Department regularly offer classes on: Personal Emergency Preparedness (PEP), Community Emergency Response Team (CERT) Program, and Neighborhood Crime Watch.

Hazard(s) Addressed

Climate Change	Earthquake	Floods	Landslide	Liquefaction	Wildfire

Target Development Type(s)		Scale of Benefit(s)			
Existing	**New**	Businesses	Critical Facility	**Residential**	Utilities

Strategy Type(s)

Coordination	**Education / Outreach**	Evaluation	Plans / Policy Development	Program / Operation	Other Types

Process / Implementation Mechanism(s)

Capital Planning	Emergency Planning	Land Use Planning	Long – Range Planning	**New Initiatives**	**Operations**

Responsible Department(s)	All City Departments
Partner Agencies	• Key lifeline providers
Related Policies from Other Plans	• General Plan Goal 10-7 (Community Emergency Preparedness)
Priority Level	Medium
Timeline	Ongoing
Potential Funding Source	Annual operating budget

Strategy Name	Reduce hazard vulnerabilities for non-City-owned buildings throughout Fremont.	Strategy # 17

Description of Activities to Occur

1. Continually update and adopt the California Building Standards Code with local amendments to incorporate the latest knowledge and design standards to protect people and property against known seismic, fire, flood and landslide risks in both structural and non-structural building and site components. *
2. Explain building requirements and provide guidance to owners of potentially hazardous structures to facilitate retrofit or replacement.
3. Work with private property owners to prioritize gathering spaces and critical facilities for seismic upgrades.*

Completed Activities in past 5 years

1. Adopted the 2013 California Building and Fire Codes with local amendments.*
2. Ongoing monitoring of 1998 Mission Peak Landslide.

Hazard(s) Addressed					
Climate Change	**Earthquake**	**Floods**	**Landslide**	**Liquefaction**	**Wildfire**
Target Development Type(s)		**Scale of Benefit(s)**			
Existing	**New**	**Businesses**	**Critical Facility**	**Residential**	Utilities
Strategy Type(s)					
Coordination	**Education / Outreach**	Evaluation	**Plans / Policy Development**	**Program / Operation**	Other Types
Process / Implementation Mechanism(s)					
Capital Planning	Emergency Planning	**Land Use Planning**	Long – Range Planning	New Initiatives	**Operations**

Responsible Department(s)	Community Development Department; Fire Department
Partner Agencies	• California Building Standards Commission
Related Policies from Other Plans	• Fremont Municipal Code Title 15: Sections 15.10 (Fremont Building Code) • Fremont Municipal Code Title 15: Sections 15.50 (Building Security) • General Plan Goal 10-1 (Geologic Hazards) • General Plan Goal 10-2 (Seismic Hazards) • General Plan Goal 10-3 (Flood Hazards) • General Plan Goal 10-4(Fire Hazards)
Priority Level	Medium
Timeline	Ongoing
Potential Funding Source	CIP #SP25; PWC 8362

Strategy Name	Utilize vegetation management to reduce risks in existing development.	Strategy # 18

Description of Activities to Occur

1. Increase awareness of vegetation management standards for fire fuel reduction.*
2. Maintain Fire Abatement Standards, especially in the hillside and Wildland-Urban Interface areas.*
3. Encourage property owners to proactively maintain trees prior to storm season to prevent damage to buildings and/or utility lines.*
4. Conduct a baseline tree inventory to have a baseline of existing vegetative conditions.
5. Periodically review CalFire generated maps to understand existing vegetation and evaluate management strategies.
6. Encourage the use of least flammable mulches, such as coarse compost.

Completed Activities in past 5 years

1. Participated in the development of the Alameda County Community Wildfire Protection Plan.*

Hazard(s) Addressed

Climate Change	Earthquake	Floods	Landslide	Liquefaction	Wildfire

Target Development Type(s)		Scale of Benefit(s)			
Existing	**New**	**Businesses**	Critical Facility	**Residential**	**Utilities**

Strategy Type(s)

Coordination	Education / Outreach	Evaluation	Plans / Policy Development	Program / Operation	Other Types

Process / Implementation Mechanism(s)

Capital Planning	Emergency Planning	Land Use Planning	Long – Range Planning	New Initiatives	Operations

Responsible Department(s)	Community Services Department; Fire Department
Partner Agencies	• Private property owners • East Bay Regional Park District
Related Policies from Other Plans	• Minimum Fire Abatement Standards • Fremont Municipal Code Title 15: Section 15.35 (Fire Code) • General Plan Goal 10-4(Fire Hazards) • Alameda County Community Wildfire Protection Plan
Priority Level	Medium
Timeline	Ongoing
Potential Funding Source	Outside grants when available; annual operating budget

Strategy Name	The City's Soft-Story Residential Building Program, Existing Tilt-Up Concrete and Reinforced Masonry Buildings Programs were to be completed by 2008. All known buildings have been retrofitted and removed from the list of buildings out of compliance. If additional buildings are found to be out of compliance, the City will continue to implement the programs.	Strategy # 19

Description of Activities to Occur

1. Inform impacted property owners of the requirement to retrofit their building.*
2. Work with owners of soft story, tilt-up concrete and reinforced masonry buildings to obtain structural analyses of their buildings and to improve seismic resistance or to remove the buildings and replace them with buildings built to current building and fire codes.*

Completed Activities in past 5 years

1. All known buildings have been removed from the City's Soft-Story Residential Building Program, Tilt-Up Concrete and Reinforced Masonry Building Programs following retrofit and/or remediation measures.*

Hazard(s) Addressed					
Climate Change	**Earthquake**	**Floods**	**Landslide**	**Liquefaction**	Wildfire

Target Development Type(s)		Scale of Benefit(s)			
Existing	New	**Businesses**	Critical Facility	**Residential**	Utilities

Strategy Type(s)					
Coordination	Education / Outreach	Evaluation	Plans / Policy Development	**Program / Operation**	Other Types

Process / Implementation Mechanism(s)					
Capital Planning	Emergency Planning	**Land Use Planning**	Long – Range Planning	New Initiatives	**Operations**

Responsible Department(s)	Community Development Department; Fire Department
Partner Agencies	• N/A
Related Policies from Other Plans	• Fremont Municipal Code Title 15: Section 15.70 (unreinforced masonry buildings retrofit) • Fremont Municipal Code Title 15: Section 15.75 (soft story residential buildings retrofit) • Fremont Municipal Code Title 15: Section 15.80 (Tilt-up concrete and reinforced masonry buildings retrofit) • General Plan Policy 10.2-5 (Removal of Susceptible Structures)
Priority Level	Low
Timeline	Ongoing
Potential Funding Source	Outside grants when available; annual operating budget

Strategy Name	Continue the City's participation in the National Flood Insurance Program.	Strategy # 20

Description of Activities to Occur

1. Administer local requests for FEMA map updates and monitor activities.*
2. Maintain the Community Rating System rating.*
3. Incorporate FEMA guidelines and suggested activities into City plans and procedures for managing flood hazards.*

Completed Activities in past 5 years

1. Fremont has been a participant in the National Flood Insurance Program since 1983.*
2. In 2001, FEMA accepted the City into the Community Rating System with a rating of Class 7.*

Hazard(s) Addressed					
Climate Change	Earthquake	**Floods**	Landslide	Liquefaction	Wildfire

Target Development Type(s)		**Scale of Benefit(s)**			
Existing	**New**	**Businesses**	Critical Facility	**Residential**	Utilities

Strategy Type(s)					
Coordination	Education / Outreach	Evaluation	**Plans / Policy Development**	**Program / Operation**	Other Types

Process / Implementation Mechanism(s)					
Capital Planning	**Emergency Planning**	Land Use Planning	Long – Range Planning	New Initiatives	**Operations**

Responsible Department(s)	Public Works Department
Partner Agencies	• Federal Emergency Management Agency
Related Policies from Other Plans	• General Plan Policy 10-3.1 (Limit Construction in Floodplain) • Fremont Municipal Code Chapter 18.200 (Flood Damage Prevention)
Priority Level	Low
Timeline	Ongoing
Potential Funding Source	Outside grants when available; annual operating budget

Strategy Name	Establish cooling centers and encourage landscaping improvements to reduce Fremont resident's vulnerability to extreme heat events, severe storms, and associated hazards.	Strategy # 21

Description of Activities to Occur

1. Monitor and support efforts of Association of Bay Area Government, California Energy Commission, Cal-Adapt and California Office of Emergency Services, to forecast the impact of climate change on temperatures and extreme heat events.*
2. Integrate extreme heat readiness into City operations and services.
3. Support sufficient soil volumes to create an urban tree cover and the use of vegetation to reduce temperatures and increase air quality.
4. Encourage the use of compost berms, blankets, and socks for erosion and sedimentation control.
5. Support landscape management plans and practices to protect bare soil with local recycled compost and mulch.
6. Continue to implement energy efficiency ordinances for existing residential and commercial buildings to improve building comfort, including in extreme weather conditions, and to reduce energy usage.*

Completed Activities in past 5 years

1. Fremont has been a 20 year member of Tree City USA.
2. The City adopted the most recent update to the State Title 24 (Green Building Standards Code) in 2011.*
3. The City adopted a renewable Energy ordinance to promote wind and solar power generation in 2012.*

Hazard(s) Addressed					
Climate Change	**Earthquake**	Floods	**Landslide**	**Liquefaction**	**Wildfire**

Target Development Type(s)		Scale of Benefit(s)			
Existing	**New**	**Businesses**	**Critical Facility**	**Residential**	**Utilities**

Strategy Type(s)					
Coordination	Education / Outreach	**Evaluation**	**Plans / Policy Development**	**Program / Operation**	Other Types

Process / Implementation Mechanism(s)					
Capital Planning	Emergency Planning	Land Use Planning	**Long – Range Planning**	New Initiatives	**Operations**

Responsible Department(s)	Community Development Department
Partner Agencies	• Association of Bay Area Governments • California Energy Commission • Cal-Adapt • California Office of Emergency Services
Related Policies from Other Plans	• General Plan Policy 10-3.6.D (Climate Action Plan) • General Plan Policy 7-8.1 (Climate Action Plan) • General Plan Policy 7-3.3.H (Green Roofs) • General Plan Policy 7-1.8 (Urban Forest)

	• General Plan Goal – 9-2 (Green City Buildings) • Climate Action Plan E-C1 and E-C4 • Climate Action Plan E-P2
Priority Level	Low
Timeline	Ongoing
Potential Funding Source	Outside grants when available; annual operating budget

Strategy Name	Collaborate with ACWD, local, state, regional and federal partners to increase the security of Fremont's water supply from climate change impacts.	Strategy # 22

Description of Activities to Occur

1. Encourage the use of water conservation in the design of new buildings and landscaping.*
2. Encourage water recycling and gray water use.
3. Encourage private property owners and public agencies to use sustainable landscaping techniques that require less water.
4. Encourage the use of compost blankets, socks, and berms for erosion control during and after construction.
5. Ensure property owners and the City complies with the State's Water Efficient Landscape Ordinance and Bay Friendly Landscaping Guidelines.
6. As funding permits, retrofit City buildings with low flow water fixtures (such as aerators, low flow toilets, etc.) and drought tolerant landscaping.*
7. Consider replacing irrigation controls with weather based irrigation controls.*

Completed Activities in past 5 years

1. ACWD put together a comprehensive Drought Resource Center with information on current water supply conditions, mandatory water-use restrictions and water.
2. Save Our Water provided rebates for turf replacement and toilet replacement.
3. Mandatory Water-Use Restrictions are currently in place.*
4. Entered contract in 2016 to retrofit City buildings with low flow water fixtures and to install weather-based irrigation controls – expected completion date is early 2017.

Hazard(s) Addressed					
Climate Change	Earthquake	Floods	Landslide	Liquefaction	Wildfire
Target Development Type(s)		**Scale of Benefit(s)**			
Existing	**New**	**Businesses**	Critical Facility	**Residential**	**Utilities**
Strategy Type(s)					
Coordination	**Education / Outreach**	Evaluation	Plans / Policy Development	**Program / Operation**	Other Types
Process / Implementation Mechanism(s)					
Capital Planning	Emergency Planning	Land Use Planning	Long – Range Planning	**New Initiatives**	**Operations**

Responsible Department(s)	Community Development Department; Community Services Department
Partner Agencies	• Alameda County Water District • California Department of Water Resources • StopWaste.Org • Association of California Water Agencies
Related Policies from Other Plans	• ACWD's Urban Water Management Plan • California Water Efficient Landscape Ordinance • Bay Friendly Landscaping Guidelines • General Plan Goal 7-3 (Water Quality)

	• General Plan Goal 7-4 (Water Conservation) • Climate Action Plan W-C1 through W-C6 • California Governor's Executive Order B-29-15 (Drought Declaration & Water Restrictions)
Priority Level	Low
Timeline	Ongoing
Potential Funding Source	Outside grants when available; annual operating budget

Strategy Name	Mitigate the impacts of sea level rise in Fremont, by making shoreline and Bay lands facilities more resilient to earthquake, storm and high water elevation hazards in order to maintain functionality and protect inland facilities. Define any associated tsunami hazards and mitigation.	Strategy # 23

Description of Activities to Occur

1. Document and explore potential tsunami hazard mitigation measures for Fremont's Baylands areas, and implement if feasible.*
2. Monitor and participate in regional, state and federal research on projected sea level rise in the Bay Area region and incorporate findings into future analysis and adaptation measures.*
3. Continue to maintain the Baylands as Resource Conservation and Public Open Space.

Completed Activities in past 5 years

1. Regularly participate in webinars with FEMA and ABAG on sea level rise, floodplain mapping and Bay resiliency.
2. City Council supported, and voters approved Measure AA which will provide $500 million over 20 years to preserve and enhance wetland habitat along the Bay shoreline.

Hazard(s) Addressed

Climate Change	**Earthquake**	**Floods**	Landslide	Liquefaction	Wildfire

Target Development Type(s)		**Scale of Benefit(s)**			
Existing	New	Businesses	**Critical Facility**	Residential	Utilities

Strategy Type(s)

Coordination	Education / Outreach	**Evaluation**	**Plans / Policy Development**	**Program / Operation**	Other Types

Process / Implementation Mechanism(s)

Capital Planning	Emergency Planning	**Land Use Planning**	**Long – Range Planning**	New Initiatives	Operations

Responsible Department(s)	Community Development Department ; Public Works Department
Partner Agencies	• Association of Bay Area Governments • Bay Conservation and Development Commission • Cal-Adapt • California Office of Emergency Services • East Bay Regional Park District • Federal Emergency Management Agency
Related Policies from Other Plans	• General Plan Policy 7-1.4 (Open Space Frame) • General Plan Policy 10-3.6 (Flood Impacts from Sea Level Rise)
Priority Level	Low
Timeline	Ongoing
Potential Funding Source	Annual operating budget; outside grants when available; Measure AA funds

Section 7 Plan Update Process

7.1 Monitoring and Updating the Plan

As required by the Disaster Mitigation Act of 2000, the City of Fremont will ensure that the 2016 Local Hazard Mitigation Plan remains an applicable document. The City plans to review the document annually, and prepare a comprehensive update every 5 years.

The City Manager's Office will ensure that monitoring of this Plan will occur on an on-going basis. At least once a fiscal year, the City Manager's Office will review the Local Hazard Mitigation Plan with either the City of Fremont Core Team (see Acknowledgements - City of Fremont Staff Core Team) that prepared the 2016 LHMP or Department leaders at a regularly scheduled meeting. At that meeting, the staff will focus on evaluating the Plan in light of technological and political changes during the past year or other significant events. Staff will be responsible for determining if the plan should be updated.

The City will utilize changes to other planning documents to review the Local Hazard Mitigation Plan. Such other documents will include the Safety Element to the General Plan, the Capital Improvement Plan and the Climate Action Plan. As each of those plans are reviewed and or updated, staff will ensure the Local Hazard Mitigation Plan is reviewed and updated for consistency.

Every 4 years, the City Manager or their designee shall work with ABAG, Cal OES or FEMA to verify the current requirements for the Local Hazard Mitigation Plan are used. The City will convene a Local Hazard Mitigation Plan Core Team (see Acknowledgements - City of Fremont Staff Core Team) to update the 2016 Local Hazard Mitigation Plan. The City of Fremont Core Team (see Acknowledgements - City of Fremont Staff Core Team) will work with the appropriate departments and local organizations to update the Local Hazard Mitigation Plan. Any changes to state law or federal policy will be incorporated into the changes. Any changes in known hazards, key stakeholders and recent development activity and previous disasters will be included in the document. Public input will be sought for inclusion into the plan prior to the plan being submitted to Cal OES and FEMA for approval. City Council will adopt all revisions and new documents related to the Local Hazard Mitigation Plan.

7.2 Implementation of Changes through existing documents

Following the adoption of the 2016 Local Hazard Mitigation Plan, this plan will be incorporated into other documents and policies as they are updated; and as new plans and policies are developed. The following internal plans will prompt a review of the 2016 Local Hazard Mitigation Plan.

The following known activities are anticipated to occur over the next five year period:

- The Capital Improvement Program is updated biannually. Implementation measures identified by the City as a high priority will be incorporated into the City's Capital Planning process. This will be dependent on securing funding for projects and programs from outside funding sources. However, the City's Capital Improvement Program routinely includes public improvements which address public health and safety. Any long term funding needs

identified by the Local Hazard Mitigation Plan will be evaluated during the preparation of the CIP to the extent the budget allows.

- The Climate Action Plan will be updated in 2017. Measures studied and identified in the Local Hazard Mitigation Plan will be considered when updating the Climate Action Plan. Conversely, any changes to the Climate Action Plan may result in updates to the Local Hazard Mitigation Plan.
- As required by SB 379 (2015), any revisions to the Safety Element of the General Plan or Hazard Mitigation Plan will be reviewed and incorporated into the corresponding document. The Safety Element includes a discussion of fire, earthquake, flooding, landslides and other hazards that are addressed through land use.
- The City enforces the requirements of the California Environmental Quality Act (CEQA), which, since 1988, requires mitigation for identified natural hazards.

The City has used these pre-existing programs as a basis for identifying gaps that may lead to disaster vulnerabilities in order to work on ways to address these risks through mitigation. The City is committed to reviewing and updating this plan annex at least once every five years, as required by the Disaster Mitigation Act of 2000.

7.3 Ongoing Public Involvement

The City of Fremont is committed to public participation. All City Council meetings are open to the public and the public is invited to comment on items on the City Council Agenda. The public will continue to be involved whenever the plan is updated and as appropriate during the monitoring and evaluation process. Prior to adoption of updates, the City will provide the opportunity for the public to comment on the updates. A public notice will be posted prior to the meeting to announce the comment period and meeting logistics.

The City will look for additional ways to raise awareness related to the Local Hazard mitigation Plan. The City will seek to share this information at city-sponsored events. Additionally, the Police and Fire Departments can share this report and associated information as part of the CERT, PEP and Block Captain classes.

7.4 Mitigation Plan Point of Contact

To contact Fremont's Local Hazard Mitigation Core Team, please contact:

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Section 9 Appendices

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9.1 Appendix A – Full Sized Maps

See attached Appendix A

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9.2 Appendix B – Meeting Records

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9.3 Appendix C – Fremont Open City Hall Statement

See attached Appendix C

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9.4 Appendix D – Approval Documentation

See attached Appendix D

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Section 10 Endnotes

[i] http://www.caloes.ca.gov/for-governments-tribal/plan-prepare/hazard-mitigation-planning/local-hazard-mitigation-program
[ii] http://www.mercurynews.com/high-school-sports/ci_29883824/fremont-works-plan-reduce-disaster-risks-and-damage
[iii] For complete Census information, see http://www.bayareacensus.ca.gov/.
[iv] http://www.dof.ca.gov/research/demographic/reports/estimates/e-1/view.php
[v] http://www.bayareacensus.ca.gov/cities/Fremont.htm
[vi] http://www.bayareacensus.ca.gov/cities/Fremont.htm
[vii] http://www.bayareacensus.ca.gov/cities/Fremont.htm
[viii] Fremont General Plan
[ix] FY 15-16 budget
[x] FY 15-16 budget
[xi] Fremont General Plan
[xii] Bay Area Plan - 2013
[xiii] http://www.fremont.k12.ca.us/cms/lib04/CA01000848/Centricity/Domain/79/EnrollmentAnalysis1.23.15.pdf
[xiv] According to California Department of Water Resources. Santa Clara Valley Water Authority indicates it has a total capacity of 89,073 acre-feet.
[xv] USGS (2014)
[xvi] Ellsworth, W.L. (1990)
[xvii] State of California Multi-Hazard Mitigation Plan, Appendix M, California Governor's Office of Emergency Services
[xviii] Field, E.H., et al, (2013)
[xix] Uniform Earthquake Rupture Forecast, Version 3 (2014)
[xx] Bryant, W.A., and Hart, E.W., (2007)
[xxi] Aagaard, B., Lienkaemper, J., Schwartz, D. (2012)
[xxii] Thatcher W., Marshall, G., Lisowski, M., (1997)
[xxiii] Perkins, J.B., (2001)
[xxiv] http://geomaps.wr.usgs.gov/sfgeo/liquefaction/shell/key_details.html
[xxv] http://geomaps.wr.usgs.gov/sfgeo/liquefaction/shell/key_details.html
[xxvi] State of California Multi-Hazard Mitigation Plan, Appendix M, California Governor's Office of Emergency Services,
[xxvii] USGS (1999)
[xxviii] According to California Department of Water Resources. Santa Clara Valley Water Authority indicates it has a total capacity of 89,073 acre-feet. Currently at 35 feet below the dam with seismic upgrades to begin in 2018. (http://www.valleywater.org/services/andersondamandreservoir.aspx)
[xxix] Currently at less than 40% of capacity due to seismic concerns. Replacement dam expected to be complete in late 2018. (http://sfwater.org/modules/showdocument.aspx?documentid=8069)
[xxx] County of Alameda 2016 Local Hazard Mitigation Plan, Pages 4-4 through 4-7; Appendix E; Map Figure 1 Dam Inundation Zones)
[xxxi] California Climate Change Center, (2012)
[xxxii] CDF Fire and Resource Assessment Program
[xxxiii] 4387 Lake Santa Clara Drive
[xxxiv] https://www.ncdc.noaa.gov/cag/time-series/us/4/0/pcp/12/9/1895-2015?base_prd=true&firstbaseyear=1901&lastbaseyear=2016&trend=true&trend_base=10&firsttrendyear=1895&lasttrendyear=2016&filter=true&filterType=binomial
[xxxv] Committee on Sea Level Rise in California, Oregon, and Washington, and Board on Earth Sciences and Resources and Ocean Studies Board, Division on Earth and Life Studies, (2012)
[xxxvi] The A1 scenario family assumes high economic growth, low population growth that peaks mid-century, and the rapid introduction of more efficient technologies (A1B is balanced and A1FI is fossil fuel intensive). The B1 scenario family assumes the same low population growth as the A1 scenarios, but a shift toward a lower-emission service and information economy and cleaner technologies.

[xxxvii] Extreme tides are the maximum high tide level that has occurred over a specific return period (recurrence interval) that correlates to a specific occurrence probability. For example a 100-year extreme tide has a return period of 100 years, and therefore a one percent chance of occurring in any given year.
[xxxviii] The Impacts of Sea Level Rise on the San Francisco Bay, A White paper from the California Energy Commission's Climate Change Center. July 2012.
[xxxix] Existing condition water levels in the first row of
Table 10 are based on FEMA model results for Central San Francisco Bay, http://www.r9map.org/Pages/San-Francisco-Coastal-Bay-Study.aspx, and are being used by Alameda and San Francisco Counties.
[xl] The values presented in
Table 10 are generally applicable to central San Francisco Bay and are therefore appropriate for local and regional scale climate adaptation planning, although it may not be as precise for some areas of south and north Bay. In addition, because tide levels do vary around the Bay, additional information about tide levels should be used for site-scale planning. The values are based on an analysis that does not include the effects of local wind waves and assumes that future storms will behave like past storms.
[xli] State of California Multi-Hazard Mitigation Plan, California Governor's Office of Emergency Services
[xlii] Messner, S. et al. (2009)
[xliii] Drechsler D. M., et al, (2006)
[xliv] According to California Department of Water Resources. Santa Clara Valley Water Authority indicates it has a total capacity of 89,073 acre-feet. Currently at 35 feet below the dam with seismic upgrades to begin in 2018. (http://www.valleywater.org/services/andersondamandreservoir.aspx)
[xlv] Currently at less than 40% of capacity due to seismic concerns. Replacement dam expected to be complete in late 2018. (http://sfwater.org/modules/showdocument.aspx?documentid=8069)