

NOTICE OF SPECIAL MEETING

Pursuant to Section 54956 of the Government Code of the State of California, a Special meeting of the **Tracy City Council** is hereby called for:

Date/Time: Tuesday, March 17, 2020 at 6:30 p.m.
(or as soon thereafter as possible)

Location: Council Chambers, City Hall
333 Civic Center Plaza, Tracy

THIS SPECIAL MEETING WILL BE CONDUCTED PURSUANT TO THE PROVISIONS OF THE GOVERNOR'S EXECUTIVE ORDER N-25-20 WHICH SUSPENDS CERTAIN REQUIREMENTS OF THE RALPH M. BROWN ACT

RESIDENTS ARE STRONGLY ENCOURAGED TO PARTICIPATE REMOTELY AT THE MARCH 17, 2020 MEETING

Remote Access to City of Tracy Council Meeting:

In accordance with the guidelines provided in Executive Order N-25-20 on social distancing measures, the City of Tracy will allow for remote participation at the upcoming City Council meeting on Tuesday, March 17, 2020. The public may still attend the meeting in person.

As always, the public may view the City Council meetings live on the City of Tracy's website at www.CityofTracy.org or on Channel 26. To view from the website, select "Watch Live Council Meetings" from the drop down menu "Select an Online Service" at the top of the City's homepage. You will be directed to the "Council Meeting Videos" page where you may select the video for the appropriate date under "Upcoming Events."

Remote Public Comment:

During the upcoming City Council meeting public comment will be accepted via email. If you would like to comment remotely, please follow the protocols below:

- *Send comments via email to publiccomment@cityoftracy.org*
- *Identify the item you wish to comment on in your email's subject line. Emailed comments will be accepted for the "Items from the Audience/Public Comment" and "Regular Items" portions of the agenda.*
- *Emailed comments for the "Items from the Audience/Public Comment" portion of the agenda must be received by the time the Mayor opens that portion of the agenda for discussion.*
- *Emailed comments on each Regular Item will be accepted until the Mayor announces that public comment for that item is closed.*
- *Each emailed comment will be read aloud by a City staff member for up to five minutes.*

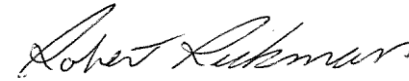
Emails received by publiccomment@cityoftracy.org outside of the comment period outlined above will not be included in the record.

In Person Public Comment:

You will be required to maintain appropriate social distancing, i.e., maintain a 6-foot distance between yourself and other individuals. Public comments are limited to five (or three) minutes.

Government Code Section 54954.3 states that every public meeting shall provide an opportunity for the public to address the Tracy City Council on any item, before or during consideration of the item, however no action shall be taken on any item not on the agenda.

1. Call to Order
2. Roll Call
3. Items from the Audience - Items from the audience - *In accordance with Council Meeting Protocols and Rules of Procedure*, adopted by Resolution 2019-240, a five-minute maximum time limit per speaker will apply to all individuals speaking during "Items from the Audience/Public Comment". For non-agendized items, Council Members may briefly respond to statements made or questions posed by individuals during public comment; ask questions for clarification; direct the individual to the appropriate staff member; or request that the matter be placed on a future agenda or that staff provide additional information to Council.
4. CONSENT CALENDAR
 - 4.A ADOPTION OF THE CITY OF TRACY LOCAL HAZARD MITIGATION PLAN
5. APPROVE A PROCLAMATION CONFIRMING THE EXISTENCE OF A LOCAL EMERGENCY RELATING TO THE NOVEL CORONAVIRUS (COVID-19) AND DISCUSS CITY EFFORTS TO RESPOND TO THIS EMERGENCY
6. Adjournment



Mayor

Posting Date: Monday, March 16, 2020

The City of Tracy complies with the Americans with Disabilities Act and makes all reasonable accommodations for the disabled to participate in public meetings. Persons requiring assistance or auxiliary aids in order to participate should call City Hall (209-831-6105), at least 24 hours prior to the meeting.

Any materials distributed to the majority of the Tracy City Council regarding any item on this agenda will be made available for public inspection in the City Clerk's office located at 333 Civic Center Plaza, Tracy, during normal business hours.

AGENDA ITEM 4.A

REQUEST

ADOPTION OF THE CITY OF TRACY LOCAL HAZARD MITIGATION PLAN

EXECUTIVE SUMMARY

Finance staff coordinated the development of a Local Hazard Mitigation Plan (LHMP) for the City. A Request for Proposal was issued and Wood Environmental was selected as the consultant to assist the City in developing a LHMP that would be accepted by Cal OES and FEMA.

The completed plan was submitted to the California Office of Emergency Services (Cal OES) for review and approval and Cal OES moved the LHMP on to the Federal Emergency Management Agency (FEMA). FEMA completed its review and notified the City of Tracy in October 2019 that the plan was eligible for final approval pending adoption by the City of Tracy.

DISCUSSION

The Disaster Mitigation Act of 2000 (DMA2000) established a national program for pre-disaster mitigation, which provides federal funding for projects that are not dependent on a presidential disaster declaration and streamlines the administration of disaster relief. In order to be eligible for federal disaster relief, DMA2000 requires that local agencies conduct a disaster mitigation planning process that includes drafting a LHMP.

On April 1, 2018, the City issued a Request for Proposal for hazard mitigation consulting services. Wood Environmental was selected as the consultant to assist the City with coordinating the development of the LHMP. The development and planning process began in September 2018 and included participation from all City departments, area stakeholders, and the public. The consultant's planning process involved four phases:

Phase 1: Organize Resources

- Organize Resources
- Involve the Public
- Coordinate with Other Agencies

Phase 2: Identify Hazards and Assess Risks

- Assess the Hazard
- Assess the Problem

Phase 3: Develop a Mitigation Strategy

- Set Goals
- Review Possible Activities
- Draft Action Plan

Phase 4: Implement and Monitor the Plan

- Adopt the Plan
- Implement, evaluate, and Revise

It was projected that the entire process in developing the LHMP to plan submittal to Cal OES and FEMA would take approximately 12 months.

On September 30, 2019, a draft City of Tracy LHMP was submitted to Cal OES for review, and the City was notified on October 8, 2019 that FEMA acknowledged receipt from Cal OES of the plan. FEMA has completed its review, and has determined that the plan was eligible for final approval pending adoption by the City of Tracy.

STRATEGIC PLAN

This agenda item supports Public Safety Strategic Goal 4: Enhance Citywide Emergency Management Capabilities.

FISCAL IMPACT

The adoption of the LHMP allows the City to become eligible to pursue federal funding through FEMA for future hazard mitigation funds, and streamline the administration of disaster relief.

RECOMMENDATION

That the City Council, by resolution, adopt the City of Tracy Local Hazard Mitigation Plan (LHMP).

Prepared by: Karin Schnaider, Finance Director

Reviewed by: Midori Lichtwardt, Assistant City Manager

Approved by: Jenny Haruyama, City Manager

ATTACHMENT

Attachment A - City of Tracy Local Hazard Mitigation Plan (LHMP)

Attachment B - Preliminary FEMA Approval Letter dated October 23, 2019



City of Tracy
Local Hazard Mitigation Plan



wood.

Public Review Draft Plan | July 2019

Prepared for:
City of Tracy
333 Civic Center Plaza
Tracy, California 95376

Prepared by:
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Executive Summary

The purpose of hazard mitigation is to reduce or eliminate long-term risk to people and property from hazards. The City of Tracy developed this Local Hazard Mitigation Plan (LHMP) update to make the City and its residents less vulnerable and more resilient to future hazard events. This plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 so that Tracy would be eligible for the Federal Emergency Management Agency's (FEMA) Pre-Disaster Mitigation and Hazard Mitigation Grant programs.

The City followed a planning process prescribed by FEMA, which began with the formation of a hazard mitigation planning committee (HMPC) comprised of key City representatives, and other regional stakeholders. The HMPC conducted a risk assessment that identified and profiled hazards that pose a risk to the City of Tracy, assessed the City's vulnerability to these hazards, and examined the capabilities in place to mitigate them. The City is vulnerable to several hazards that are identified, profiled, and analyzed in this plan. Floods, wildfires, severe weather, and earthquake hazards are among the hazards that can have a significant impact on the City.

Based on the risk assessment review and goal setting process, the HMPC identified the following four goals, which provide the direction for reducing future hazard-related losses within the City of Tracy Planning Area:

- **Goal 1:** Minimize loss of life and property from hazards;
- **Goal 2:** Support community resilience through continuity of essential services during a hazard event;
- **Goal 3:** Increase education and awareness of vulnerability to and mitigation of hazards; and
- **Goal 4:** Improve City coordination and capabilities to mitigate hazards.

To meet identified goals, the plan recommends 20 mitigation actions, which are summarized in the table that follows. This plan has been formally adopted by the City and will be updated every five years at a minimum.

Table ES.1. Mitigation Action Summary Table

Mitigation Action Title	Priority	Addresses Current Development	Addresses Future Development
Dam Failure/Levee Failure			
Work with dam owners, reclamation districts, and San Joaquin County to update dam and levee assessments on potential impacts and inundation areas and develop land use standards and emergency response and evacuation plans based on the information	Low	X	X
Create Emergency Action Plans for dams and levees posing a risk of flooding	Low	X	X
Drought			
Public outreach campaign on water conservation practices during drought conditions	Low	X	X
Groundwater supply augmentation	Low	X	X



Mitigation Action Title	Priority	Addresses Current Development	Addresses Future Development
Earthquake			
Earthquake building safety and retrofitting	Medium	X	
Earthquake drill and safety education	Low	X	X
Severe Weather: Extreme Heat			
Extreme heat outreach campaign	Low	X	X
100/500-Year Flood Hazards, Localized Flooding			
Flood safety and adopt and drain program	Low	X	X
Consider joining Community Rating System (CRS) to promote affordable flood insurance	Medium	X	X
Hazardous Materials			
Hazardous materials spill preparedness	Medium	X	X
Severe Weather: Heavy Rain, Thunderstorms, Dense Fog			
Consider becoming a Storm Ready® community	Low	X	X
Severe Weather: Wind and Tornadoes			
Enhance local building code to incorporate wind-resistant design features that address wind and tornado hazards	Low	X	X
Plan around forced blackouts	High	X	X
Fire: Urban and Wildland			
Fire Wise public education	High	X	X
Create and modify automatic aid agreements	High	X	X
Enhance local building code to address wildfire resilience	Low	X	X
Multi-Hazard			
Family preparation planning for emergency preparedness	High	X	X
Hazard Awareness GIS Mapping Application	High	X	X
Update Comprehensive Emergency Management Plan	High	X	X
Establish routine inspection and maintenance of City infrastructure	High	X	X



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Appendix D: Adoption Resolution





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1 Introduction

The City of Tracy prepared this Local Hazard Mitigation Plan (LHMP) to guide hazard mitigation planning to better protect the people and property of the City from the effects of hazard events. This plan demonstrates the community's commitment to reducing risks from hazards and serves as a tool to help decision makers direct mitigation activities and resources. This plan was also developed so the City of Tracy can be eligible for certain federal disaster assistance, specifically, the Federal Emergency Management Agency's (FEMA) Hazard Mitigation Assistance grants including the Hazard Mitigation Grant Program, Pre-Disaster Mitigation program, the Flood Mitigation Assistance (FMA) program and the National Public Infrastructure Pre-Disaster Hazard Mitigation Grant Program.

1.1 Background and Scope

Each year in the United States, natural disasters take the lives of hundreds of people and injure thousands more. Nationwide, taxpayers pay billions of dollars annually to help communities, organizations, businesses, and individuals recover from disasters. These monies only partially reflect the true cost of disasters, because additional expenses to insurance companies and nongovernmental organizations are not reimbursed by tax dollars. Many natural disasters are predictable, and much of the damage caused by these events can be alleviated or even eliminated.

Hazard mitigation is defined by FEMA as "any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event." The results of a three-year, congressionally mandated independent study to assess future savings from mitigation activities provides evidence that mitigation activities are highly cost-effective. On average, each dollar spent on mitigation saves society an average of \$4 in avoided future losses in addition to saving lives and preventing injuries (National Institute of Building Science Multihazard Mitigation Council 2005). An update to this report in 2017 (*Natural Hazard Mitigation Saves: 2017 Interim Report*) indicates that mitigation grants funded through select federal government agencies, on average, can save the nation \$6 in future disaster costs, for every \$1 spent on hazard mitigation.

Hazard mitigation planning is the process through which hazards that threaten communities are identified, likely impacts of those hazards are determined, mitigation goals are set, and appropriate strategies to lessen impacts are determined, prioritized, and implemented. This plan documents the City of Tracy's hazard mitigation planning process and identifies relevant hazards and vulnerabilities and strategies the City will use to decrease vulnerability and increase resiliency and sustainability in Tracy.

This LHMP is a single jurisdictional plan for the City of Tracy that geographically covers everything within the City of Tracy's jurisdictional boundaries and its Sphere of Influence (SOI) (hereinafter referred to as the Planning Area).

This plan was prepared pursuant to the requirements of the Disaster Mitigation Act of 2000 (Public Law 106-390) and the implementing regulations set forth by the Interim Final Rule published in the Federal Register on February 26, 2002, (44 CFR §201.6) and finalized on October 31, 2007. (Hereafter, these requirements and regulations will be referred to collectively as the Disaster Mitigation Act or DMA.) While the act emphasized the need for mitigation plans and more coordinated mitigation planning and implementation efforts, the regulations established the requirements that LHMPs must meet in order for a local jurisdiction to be eligible for certain federal disaster assistance and hazard mitigation funding under the Robert T. Stafford Disaster Relief and Emergency Act (Public Law 93-288). This planning effort also

follows FEMA's 2013 Local Mitigation Plan Guidance. Because the City of Tracy planning area is subject to many kinds of hazards, access to these programs is vital.

Information in this plan will be used to help guide and coordinate mitigation activities and decisions for local land use policy in the future. Proactive mitigation planning will help reduce the cost of disaster response and recovery to communities and their residents by protecting critical community facilities, reducing liability exposure, and minimizing overall community impacts and disruptions. The City of Tracy's planning area has been affected by hazards in the past and is thus committed to reducing future impacts from hazard events and becoming eligible for mitigation-related federal funding.

1.2 Plan Organization

The City of Tracy's LHMP is organized as follows:

- Chapter 2: Community Profile
- Chapter 3: Planning Process
- Chapter 4: Risk Assessment
- Chapter 5: Mitigation Strategy
- Chapter 6: Plan Adoption
- Chapter 7: Plan Implementation and Maintenance
- Appendices

2 Community Profile

The City of Tracy is located in San Joaquin County, approximately 68 miles south of Sacramento and 60 miles east of San Francisco (Figure 2-1). The City of Tracy developed as a small agricultural community centered on several rail lines and it eventually became the San Joaquin Valley headquarters for the Central Pacific Railroad (City of Tracy 2011). It incorporated in 1910 and grew rapidly after the first irrigation district was established in 1915. Throughout the 20th Century, the City transitioned from an agricultural community to primarily a residential community, as more people arrived from the San Francisco Bay Area seeking affordable housing. Tracy's proximity to the San Francisco Bay Area and Silicon Valley has made it an attractive place for home buyers who want to live in a place with a "small town" atmosphere and affordable housing (City of Tracy 2016). As a result of the increased attraction to the City, it has grown substantially over the past 50 years, but growth slowed during the recent recession between 2008 and 2012. However, recently several planned subdivisions have been adopted to accommodate future growth which is anticipated to reach 109,000 by 2030.

2.1 Location and Geography

The City lies in the San Joaquin Valley, and east of the Coastal Range that separates California's Central Valley from the San Francisco Bay Area. Interstate 205 runs through the northern portion of the City and connects to Interstate 580 and Interstate 5, a major north-south interstate corridor east of the City of Tracy. These three interstate highways form the triangle that surrounds the city. Elevations in the City range from 600 feet above mean sea level (msl) in the foothills along the southwestern boundary of the City's Planning Area to 10 feet above msl at the northern portion of the City's Planning Area. The City of Tracy is situated adjacent to several major water infrastructure conveyance systems, including the State Water Project's (SWP) California Aqueduct, the Delta-Mendota Canal (DMC), and Old River. Old River flows east to west north of Tracy. Three railroads also intersect the City, and the City is served by a municipal airport and the Altamont Corridor Express transit station that provides commuter rail service to Silicon Valley in the Bay Area.

The San Joaquin Valley is 25 miles wide and 250 miles long surrounded by mountain ranges and its Mediterranean climate is characterized by wet winters and dry hot summers. The climate is temperate with an average annual high of 75 degrees and an average low of 47 degrees (US Climate Data 2019).

2.2 Land Ownership

The incorporated area of the City of Tracy covers approximately 25.96 square miles (City of Tracy 2018c). The City's SOI is the area outside the City limits that the City expects to annex and urbanize in the future. It is the physical limit of the City based on current GIS information. The SOI, which is also the City's Planning Area for purposes of this plan encompasses 41.89 square miles, and is roughly 16 miles larger than the City limits (incorporated area) (Figure 2-1) (City of Tracy 2018c). The Hazard Mitigation Planning Committee (HMPC) selected the SOI as the Planning Area for this plan because it represents the City's boundaries at the planned buildout. Any changes to the SOI are subject to approval by the San Joaquin Local Agency Formation Commission (LAFCo).

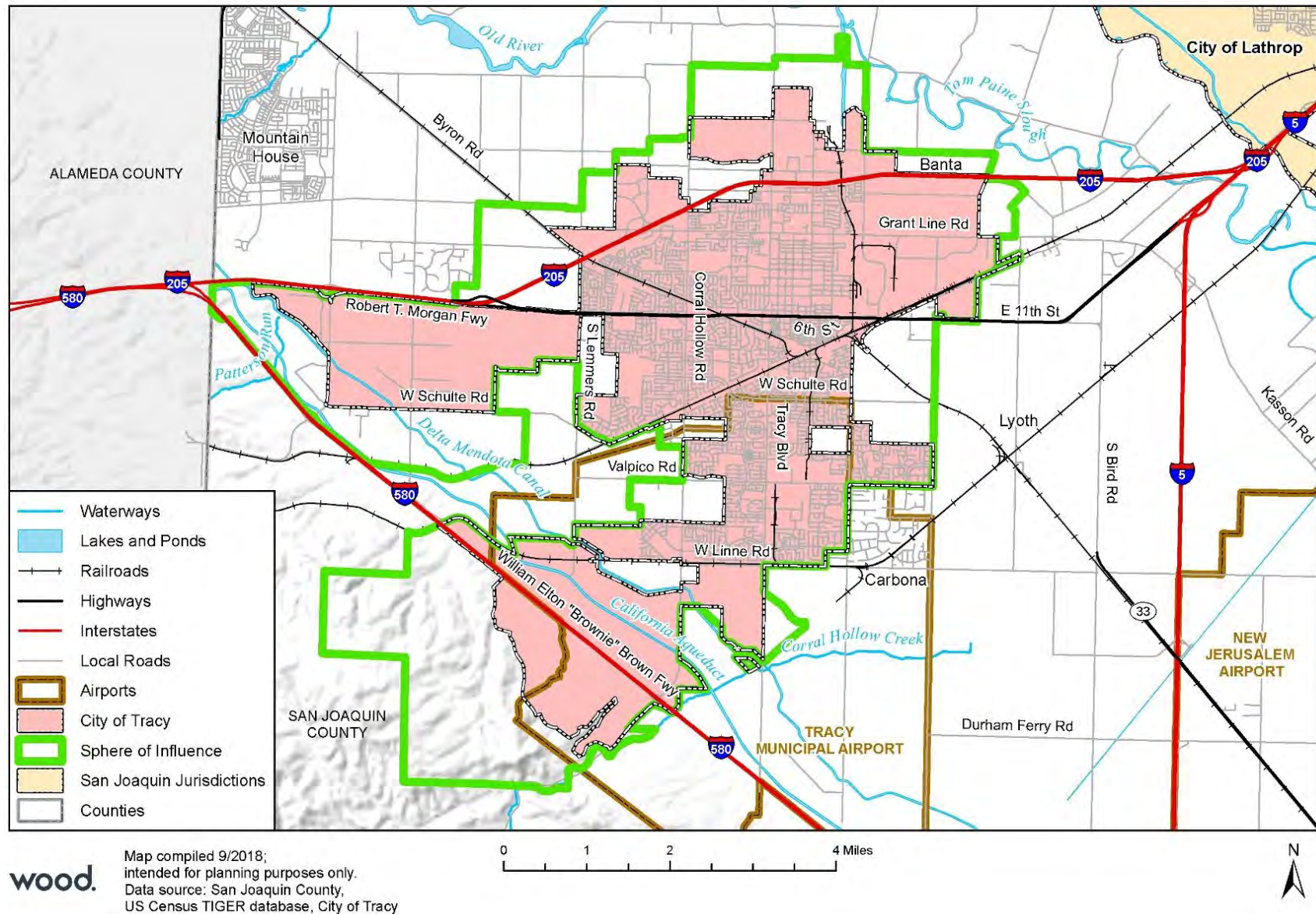
It should be noted that the "planning area" defined in the Local Hazard Mitigation Plan (LHMP) is different than the "planning area" defined in the City's General Plan. State law allows cities to identify a planning area during their General Plan process. This is typically an area outside of city boundaries and generally



outside the SOI. It is designed to act as a signal to the County and other nearby local authorities that Tracy recognizes that planning and development within these areas.



Figure 2-1: City of Tracy Base Map



2.3 History

Until the 1860's, the area that is now the City of Tracy was populated by the Yokuts tribe. The Yokuts livelihood revolved around subsistence from foods provided by local rivers and creeks in the region. The Yokuts were displaced by Spanish immigrants, and later by Mexican and American immigrants.

In 1869, the Central Pacific Railroad (now Southern Pacific) completed a rail line through the area now known as the City of Tracy. The rail line ran from Sacramento through Stockton and over Altamont Pass. After the construction of the rail line, a new town known as Lathrop Junction developed approximately nine miles west of Stockton (City of Tracy 2019). Lathrop Junction consisted of a roundhouse, railroad shop, and yards of hotels for railroad employees. This community became the center of the railroad business and the headquarters for the Central Pacific Railroad in San Joaquin Valley. As the railroad business expanded so did the need for additional railroad buildings and infrastructure, and soon a coaling station called Ellis was constructed at the base of Altamont Pass, about 14 miles west of Lathrop Junction (City of Tracy 2019). By 1870, this new coaling station had 45 buildings serving the needs of the railroad employees and families (City of Tracy 2019).

In 1878, a new rail line was constructed from Oakland that connected to Martinez and the Central Pacific Railroad at a point three miles east of the new coaling station in Ellis (City of Tracy 2019). The line was built to make it possible to avoid hills and eliminate the expense of helper engines. As the new rail line was built in 1878, the City of Tracy was established. The City was named after Lathrop J. Tracy, a grain merchant and railroad director. The establishment of the new line to Tracy meant discontinuing the line to the coaling station at Ellis and relocation to Lathrop and the new Tracy station. Over the years, the City grew as a railroad hub. A new rail line was later constructed through Los Banos as a faster way to travel to Los Angeles. Then, in March 1894, the railroad headquarters in Lathrop were moved to Tracy.

In 1910, the City of Tracy incorporated and it gradually transitioned from a railroad town to a small agricultural community after the first irrigation district was established in 1915 (City of Tracy 2011). As railroad operations slowed in the 1950s, the City of Tracy grew as an agricultural area. During the 20th Century, the City transitioned again, this time from an agricultural community to a residential community, as people arrived from the San Francisco Bay Area seeking a small town and affordable housing.

2.4 Demographics

2.4.1 Population and Growth Projections

From 1990 and 2004 the population of Tracy increased from 33,500 to 74,070 residents (City of Tracy 2011). Between 2010 and January 1, 2018 the City's population increased by 13,137 persons, and between 1990 and 2000, the City's population increased by 23,371 persons (US Census Bureau 2010; City of Tracy 2015). This growth was the highest of any San Joaquin County city during the 1990 to 2000 census period. Most recently, from 2017 to 2018, the City population grew from 91,051 to 92,553 people, a 1.6 percent increase in a one-year period (DOF 2018).

As the population has grown and diversified, so has the economy. Today, several companies have established distribution facilities in the City to take advantage of land near the three major freeways. As a result, the number of jobs in Tracy has increased, as well as the diversity of job types. There is now over 8,000 jobs in the professional and retail sectors, and over 4,000 jobs in the manufacturing sector (City of Tracy 2011). While the recent recession hindered some of this growth from 2008 through 2012, many of these trends continue today.



The dominant trend in the City of Tracy has been the increase in population from 2000 to 2010 and the associated housing construction (City of Tracy 2015). Tracy's population is expected to continue to grow with the new residential and commercial development approvals, but not as rapidly in the past, due to the City's Growth Management Ordinance (GMO). The City of Tracy is not completely built out and is expected to continue to grow in population. Buildout is the point at which the City will have grown to its maximum anticipated size within the SOI, or Planning Area. This growth is anticipated to take more than 30 years given current growth rates. According to the City's General Plan, the City is projected to have a population of 109,000 people by 2025.¹ Table 2-1 breaks down the growth changes in that timeframe.

Table 2-1 City of Tracy Populations Changes (counts), 2010-2018

Year	Total Population
2018	92,553
2017	91,051
2010	82,922
2000	56,929
1990	33,558

Sources: 2018/2017 data are from the California DOF; 2010 data are from the U.S. Census Bureau, 1990/2000 data are from the 2015-2023 Housing Element

Comprehensive data on the City of Tracy demographics was obtained from the U.S. Census Bureau's American Community Survey (ACS) five-year estimates (2013-2017). Table 2-2 breaks down Tracy's demographics for select characteristics.

Table 2-2: The City of Tracy's Demographic and Social Characteristics, 2013-2017

Characteristic	
Gender/Age	
Median Age	33.8
Male, percentage	50.8%
Female, percentage	49.2%
Under 5 Years, percentage	6.4%
Under 18 Years, percentage	29%
65 Years and Over, percentage	8.2%
Race/Ethnicity**	Percentage
White	58.4%
Hispanic or Latino (Any Race)	39.3%
Asian	15.3%
Some Other Race	9.7%
Black or African American	5.3%
American Indian/Alaska Native	0.3%

¹ This number was estimated in the City's General Plan. It is based on the number of residential units allowed per year according to the Growth Management Ordinance (GMO) multiplied by the number of years multiplied by the number of people per residential unit (units x years x people per unit), and adding that to the population of Tracy in 2000 (which was approximately 57,000 people).



Characteristic	
Native Hawaiian and Other Pacific Islander	0.9%
Education	Percentage
High School Graduate or Higher	85.3%
Bachelor's Degree or Higher	22.1%

Source: U.S. Census Bureau American Community Survey, 2013-2017, www.census.gov/

**Of the 90 % reporting one race Note: The ACS 2013-2017 used a population estimate of 87,380 persons

2.4.2 Age

Based on the ACS data, the age distribution of Tracy residents between 2009 and 2013 was as follows: nine percent, children under the age of 5; 22 percent, school age children; 10 percent, college age; 28 percent, young adults/early middle age; 23 percent, middle-age/near retirement; and eight percent, seniors. According to the City's 2015-2023 Housing Element, the City's age distribution reflects an aging and family-oriented community, where those nearing retirement age and seniors make up an increasingly significant portion of the population. There is also a high percentage of children and youth and middle-aged adults. Tracy's future service areas, or areas proposed for residential development, are anticipated to attract a similar mix of ages, including families.

Housing tenure for City of Tracy was also obtained through ACS and shows the majority of residents live in a home they own. Table 2-3 breaks down the differences in housing tenure.

Table 2-3 City of Tracy Housing Tenure, 2013-2017

Characteristic	Estimates
Owner Occupied	53,319
Renter Occupied	34,061

Source: U.S. Census Bureau American Community Survey, 2013-2017, www.census.gov/

Note: The ACS used total population estimates of 87,380 persons

Also according to the City's 2015-2023 Housing Element, the City of Tracy has a much larger share of married couples and family households with children than the state average. In 2008, the average household size in Tracy was 3.27 people, and in 2017 the average household size decreased slightly to 2.96 people (U.S. Census 2018).

2.4.3 Race and Ethnicity

Like other jurisdictions throughout California, Tracy has become more racially and ethnically diverse over time. The percentage of White residents has been declining since 2000, and the percentage of Hispanic and Asian residents is increasing. Between 2000 and 2010, the non-Hispanic White population in the City decreased from 54 percent to 36 percent. During the same time period, the proportion of all other minority residents, except Native Americans, increased in Tracy (City of Tracy 2015). Also, by 2010, the City's racial and ethnic diversity had matched that of both San Joaquin County and California. According to ACS data provided in the 2015-2023 Housing Element, the racial/ethnic distribution of Tracy residents between 2009 and 2013 was as follows: 35 percent White, 39 percent Hispanic, 16 percent Asian, six percent Black, and four percent Other. Table 2-3 summarizes the City's race and ethnicity between 2000 and 2010.

Table 2-4 City of Tracy Race and Ethnicity, 2000-2010

Race/Ethnicity	2010			Percent Distribution Change: 2000 - 2010		
	Tracy	County	California	Tracy	County	California
White	36%	36%	40%	-18%	-11%	-7%
Black	7%	7%	6%	2%	1%	-1%
Native American	0%	0%	0%	0%	0%	0%
Asian or Pacific Islander	15%	14%	13%	7%	3%	2%
Other	5%	3%	3%	1%	0%	0%
Hispanic	37%	39%	38%	9%	8%	5%

Source: U.S. Census Bureau American Community Survey, 2000-2010, www.census.gov/

2.4.4 Income and Poverty

Individual households are commonly expected to use private resources and funds to prepare for, respond to and recover from disasters. This means that households living in poverty are automatically disadvantaged when confronting natural and human-caused hazards. Households living in poverty may also occupy poorly built or inadequately maintained housing. These housing types may be more susceptible to damage in earthquakes or flood events than other types of housing. In urban areas, such as the City of Tracy, households living in poverty may also live in older houses and multi-family housing that is constructed of un-reinforced masonry, a building type that is particularly susceptible to damage during earthquakes. Further, residents living below the poverty level are less likely to have insurance to compensate for the losses incurred from natural disasters.

The City of Tracy has a mix of residents with lower and higher income levels. The average household income in 2017 was \$84,162 (U.S. Census 2018). During the same year, household incomes in nearby counties in the Bay Area ranged from \$85,743 to \$96,265 (Alameda and San Francisco counties), which is much higher than median household income in San Joaquin County at \$57,813 (U.S. Census 2018). Families living in Tracy can be disproportionately affected by poverty. According to the 2013-2017 ACS data, 9.6 percent of the City's total residents were living in poverty (Table 2-5). However, according to the 2018 Draft Municipal Services Review (MSR) prepared for the City of Tracy there are no identified Disadvantaged Unincorporated Communities (or DUCs) in the City's Planning Area (City of Tracy 2018c). According to Section 39711 of the California Health and Safety Code, a DUC is a low-income area that is disproportionately affected by environmental pollution or other hazards that can lead to negative health effects, exposure, or environmental degradation.

No DUCs were identified in the City of Tracy Planning Area based on a review of the 2018 Tracy Municipal Service Review, 2000 Census data, and the recent ACS data (2012 – 2016) at the block group level. Based on the data sources, none of the block groups within the City's SOI had a median income of \$37,994 (80 percent of the Census 2000 California median household income of \$47,493) or less as of the 2000 Census (City of Tracy 2018c). Also, none of the block groups within the SOI had a median income of \$51,027 or less based on a review of the ACS data (City of Tracy 2018c).

Additional demographic data and information on growth can be found below in Section 2.8 Growth and Development Trends.

2.5 Economy and Employment

The City of Tracy is known for its affordable lifestyle, small community, and pleasant “small town” center. Yet, many of Tracy’s residents commute to surrounding communities in other counties with larger office and industrial economic bases, greater professional opportunities, and higher wage jobs. The most comprehensive economic data available for the City of Tracy comes from the U.S. Census Bureau ACS data and the California Department of Finance. Select estimates of economic characteristics for City of Tracy are summarized below.

Between 1990 and 2000, the City’s labor force grew by almost 50 percent, compared to approximately 6 percent in San Joaquin County and the three top counties most Tracy residents commute to, including: Alameda, Santa Clara, and Contra Costa (City of Tracy 2011). Unemployment rates in Tracy have been historically more similar to San Joaquin County than Alameda, Santa Clara, and Contra Costa counties in the Bay Area. In 1990, Tracy’s unemployment rate was 8.1 percent, compared to 9.7 percent for the County and only 4 percent for the other counties. In 2000, Tracy’s unemployment rate dropped to 5.8 percent and was more similar to the neighboring counties rate of 4.7 percent than San Joaquin County at 10.3 percent.

Today, Tracy’s unemployment rate is 3.4 percent and mirrors the 2.7 percent rate in the three neighboring Bay Area counties compared to 6.1 percent in San Joaquin County (EDD 2019). In summary, low unemployment rates in the City of Tracy and the neighboring counties reflected an exceptionally strong economy and demand for labor (City of Tracy 2011). Table 2-5 summarizes the City’s general economic characteristics.

Table 2-5: The City of Tracy’s Economic Characteristics, 2008

Characteristic	City of Tracy	
	2008	2017/2018
Families below Poverty Level	6.7%	7.4%
All People below Poverty Level	8.4%	9.6%
Median Family Income	\$88,755	\$99,229
Median (Nonfamily) Household Income	\$48,030	\$89,936
Per Capita Income	\$28,270	\$31,441
Population in Labor Force	45,129	44,100
Population Employed*	41,756	42,600
Unemployment	5.1%	3.4%

Source: U.S. Census Bureau American Community Survey, 2013-2017, www.census.gov/; 2018 data was obtained from the California Employment and Development Department (EDD 2019).

*Excludes active duty armed forces

Between 1990 and 2000, Tracy’s employment base grew from approximately 11,112 jobs to 20,972 jobs, an increase of 9,860 jobs in the 10-year period (US Census Bureau 2010). This overall growth has changed the composition of Tracy’s employment base. Agriculture and transportation jobs declined, while the service and retail sector jobs increased. Also, as noted in the City’s General Plan, there has been a growing finance, insurance, and real estate sector. Table 2-6 illustrates the breakdown of employment by industry in City of Tracy from 2013-2017, as well as the number of people employed by each industry, and Table 2-7 lists the City’s major employers and approximate number of employees.

Table 2-6: The City of Tracy's Employment by Industry, 2013-2017

Industry	# Employed	% Employed
Agriculture, Forestry, Fishing, Mining	327	0.8
Construction	4,093	9.8
Manufacturing	5,085	12.2
Transportation and warehousing, and utilities	3,212	7.7
Information	916	2.2
Wholesale Trade	1,474	3.5
Retail Trade	5,971	14.3
Finance, Insurance, Real Estate and rental and leasing	2,133	5.1
Arts, entertainment, and recreation, and accommodation, and food services	3,785	9.1
Educational services and Health care and social assistance	6,660	15.9
Professional, scientific, and management, and administrative and waste management services	4,826	11.6
Other services	1,495	3.6
Public Administration	1,779	4.3
Totals	41,756	100

Source: U.S. Census Bureau American Community Survey, 2013/2017 www.census.gov/

*Civilian population 16 or older

Table 2-7: The City of Tracy's Major Employers

Employer	Products and Services	# of Employees
Safeway Distribution Center	Distribution	2,000
Tracy Unified School District	Education	1,600
Defense Depot San Joaquin	Government Agency	1,375
Deuel Vocational Institute	State Prison Facility	1,375
Sutter Tracy Community Hospital	Medical Care	568
City of Tracy	Municipal Services	461
Taylor Farms Pacific	Food Processor	408
Owens-Illinois, Inc.	Glass Container Manufacturer	400
Adesa Golden Gate	Car Auction	360
Costco Distribution Center	Distribution Perishable	329

Source: City of Tracy Housing Element 2015-2023

Housing development in the City is also now meeting the demands of many Bay Area employees who are priced out of home ownership in the areas where they work. While this impacts the local residents employed in Tracy who tend to have lower wages, the housing market has been influenced by people commuting to the Bay Area for work and their willingness and ability to pay higher home or rent prices. In turn, and according to the City's 2015-2023 Housing Element, this has presented challenges in meeting the housing needs of people who live and work in Tracy (City of Tracy 2015).

2.6 Commuter Population

Tracy's strategic location offers the opportunity for over 70,000 residents in the greater San Joaquin Valley and the City to commute to the Bay Area (City of Tracy 2016). A large amount of skilled and affordable employees reside in the City and primarily commute to the Bay Area for professional work opportunities and higher wages. Based on ACS data, between 2008 and 2013, nearly 55 percent of Tracy's workforce travelled to another county for employment (City of Tracy 2015). This rate was more than double that of San Joaquin County at 26 percent and the highest among surrounding communities. Studies also found that the vast majority, or 77 percent of Tracy residents drove alone to work (City of Tracy 2015).

According to the 2013 Interregional Multimodal Commute Trip Planning Study, commuters from the counties of San Joaquin, Merced, and Stanislaus primarily travel to the Bay Area for work. While the objective of this study was to establish a "one-stop shop" for commuters to get travel mode alternatives information, the study was also completed to understand how to shift people away from single occupant vehicles to other modes to reduce air quality problems and peak period traffic congestion.

According to a similar and more recent study, the 2018 Commuter Survey Analysis, which is part of "Defining Tracy's Labor Force to Attract Tech Business," most Tracy residents live there for its low costs and commute for better job opportunities and higher wages (Newmark Knight Frank 2018). The purpose of the 2018 Commuter Survey Analysis was to evaluate where residents work, how the commute, and why they commute. The study found that most residents commute to work to the Dublin and Livermore corridor with the rest of the commuters going to the Bay Area, primarily South Bay (Newmark Knight Frank 2018). The study found that 69 percent drive alone and approximately 19 percent ride public transit. And similar to the 2013 study, this study also conducted a survey of residents and found that 70 percent of those surveyed lived in Tracy because of the low cost of living, 56 percent commuted for higher wages, and 40 percent commuted for job availability (Newmark Knight Frank 2018).

With the high rate of residents working in other counties comes longer commute times for most Tracy residents and increased congestion on the surrounding freeways. According to the 2015-2023 Housing Element, approximately 24 percent of employed Tracy residents either worked at home or lived relatively close to their place of employment. In other words, they had travel commute times less than 20 minutes. However, the other 24 percent had commute times between 20 and 44 minutes, and the remaining 42 percent had commutes 45 minutes or longer. In summary, a substantial portion of the working population in the City of Tracy commutes each day. These commuting patterns increase congestion on regional freeways and local roads. Commute congestions is also anticipated to affect the City's transportation infrastructure, as well as how the City responds to hazard events that may limit the commuting population's ability to safely return to Tracy after an event.

2.7 Growth and Development Trends

The City of Tracy adopted a residential Growth Management Ordinance (GMO) in 1987, which was amended in 2000 by a voter-initiated measure. The purpose of the GMO is to achieve steady and orderly growth that allows for adequate provision of services and community facilities, while providing a balance of housing opportunities. Under the GMO, builders must obtain a Residential Growth Allocation (RGA) to secure a residential building permit. The GMO limits the number of RGAs and building permits to an average of 600 housing units per year for market rate housing, with a maximum of 750 units in any single year (City of Tracy 2011). However, exceptions are made for affordable housing.

Since the mid-1990s through 2015, numerous specific plan and large-scale planned unit developments (PUDs) were adopted within the Tracy city limits and SOI. The current and future development areas outlined in this plan are based on future service areas summarized in the City's infrastructure plans. These service areas include 19 development areas within the City's SOI; they do not include areas recently built out, such as the Tracy residential area specific plans and Plan C area. Table 2-8 identifies each future development area, its estimated acreage, and the projected number of housing units (based on 2012 data derived from the water infrastructure plan).

2-8: City of Tracy Future Development Areas

Future Development Area	Estimate Land Area (acres)	Estimated Housing Units
Westside Residential	337	2,051
Alvarez (Urban Reserve)	780	2,929
Ellis Specific Plan	321	2,250
South Linne	120	0
Tracy Hills Specific Plan	2,604	5,491
Tracy Gateway	410	0
Cordes Ranch	1,723	0
Bright Triangle	185	750
Catellus	700	60
Filios	43	0
I-205 Expansion	172	0
West Side Industrial	485	0
East Side Industrial	368	0
Larch Clover	489	0
Chrisman Road	113	0
Rocha	91	727
Berg/Byron	54	450
Kagehiro	47	250
Keenan	130	1,011
Total	9,172	15,969

Source: City of Tracy Water Infrastructure Master Plan Land Use Assumptions; Ellis Specific Plan information added based on EIR information.

Summaries of the major development areas are provided below and shown in Figure 2-2:

- **Westside Residential:** Located west of the current city limits, Westside Residential is bounded by I-205, Eleventh Street, and Lammers Road. Proposed land uses for this 337-acre service area include approximately 2,050 new residential units, plus office space and other commercial uses. Westside Residential is composed of three urban reserves: UR 5 (Bright), UR 7 (Bright), and UR 8 (Fahmy).
- **Alvarez & Others (UR1):** Located on the eastern side of Tracy, Alvarez and Others is 780 acres. This area is anticipated to include residential development supported by businesses, parks and public schools. More than 2,900 new residential units are forecasted for this future service area, which could make it the second largest in terms of new population growth.



- **Ellis:** Ellis will consist of 321 acres in a future service area located between Lammers Road and Corral Hollow Road, north of the Union Pacific railroad. Ellis would be the third largest residential growth area in Tracy. Currently, Ellis has an adopted Specific Plan that proposes development as an urban village with a mix of residential housing, businesses, parks, and recreation facilities, including a Family Swim Center (Serpa Aquatic Center). It would permit up to 2,250 residential units.
- **South Linne (UR11):** Located west of Corral Hollow Road, the 120-acre South Linne service area is planned for industrial uses.
- **Tracy Hills:** At approximately 2,604 acres within the city limits, Tracy Hills is located on the south side of the city (total area covers 6,175 acres). Nearly 5,500 new residential units are forecasted for Tracy Hills, making it the largest future service area in terms of new residential growth. The Tracy Hills Specific Plan was planned as a mix of residential, commercial, office and light industrial uses. Approximately 400 acres were designated for parks, schools, a golf course and other open space. Additionally, over 3,500 acres (outside of the city limits) were proposed as permanent open space for habitat conservation. According to the HMPC, while all approvals and building permits have been authorized, Tracy Hills Specific Plan has not yet been constructed.
- **Tracy Gateway:** At approximately 410 acres, Tracy Gateway is located at the western edge of the City, south of I-205 at the Eleventh Street off-ramp. This future service area is anticipated to include office space, commercial uses and retail uses that support residents and workers. It consists of 5.8 million square feet of offices uses, commercial uses, and retail uses.
- **Cordes Ranch (UR6):** Also located on the western edge of Tracy, the 1,723-acre Cordes Ranch service area is zoned primarily for industrial uses. However, properties along Mountain House Parkway and I-205 are anticipated to include business development with an emphasis on commercial, low-rise office and office uses.
- **Bright Triangle (UR4):** Located just west of the current city limits, the 185-acre Bright Triangle is bounded by I-205, Eleventh Street and Lammers Road. Forecasted land uses include high-density residential, office and commercial space.
- **Catellus (UR3):** Located north of I-205, this 700-acre area is anticipated to support industrial and office uses, and potentially, low-density residential development. Plans also include low-intensity uses in the north and west, or a significant landscape buffer that may include low-maintenance landscaping and equestrian trails.
- **Filios (UR2):** A 43-acre, triangular area on the northwestern side of the City that is bounded by Grant Line Road to the north, Lammers Road to the east and Byron Road and the Union Pacific railroad to the southwest. Given its proximity to the I-205 Regional Commercial Area and frontage along major arterials, a majority of this area is planned for commercial and office uses.
- **I-205 Expansion:** The I-205 Expansion service area includes approximately 172 acres of land in northwest Tracy, adjacent to the interstate. This area is zoned to support shopping centers, auto plazas, and general retail uses. It may also include residential, commercial, and light industrial development.
- **West Side Industrial:** Located west of Lammers Road, the West Side Industrial area is zoned to support 485 acres of industrial development.
- **East Side Industrial:** The East Side Industrial area includes approximately 368 acres in the northeast corner of the City. Anticipated land uses include a mixture of manufacturing, warehousing, and distribution centers, including rail-dependent industries and “flex-tech” light industrial.

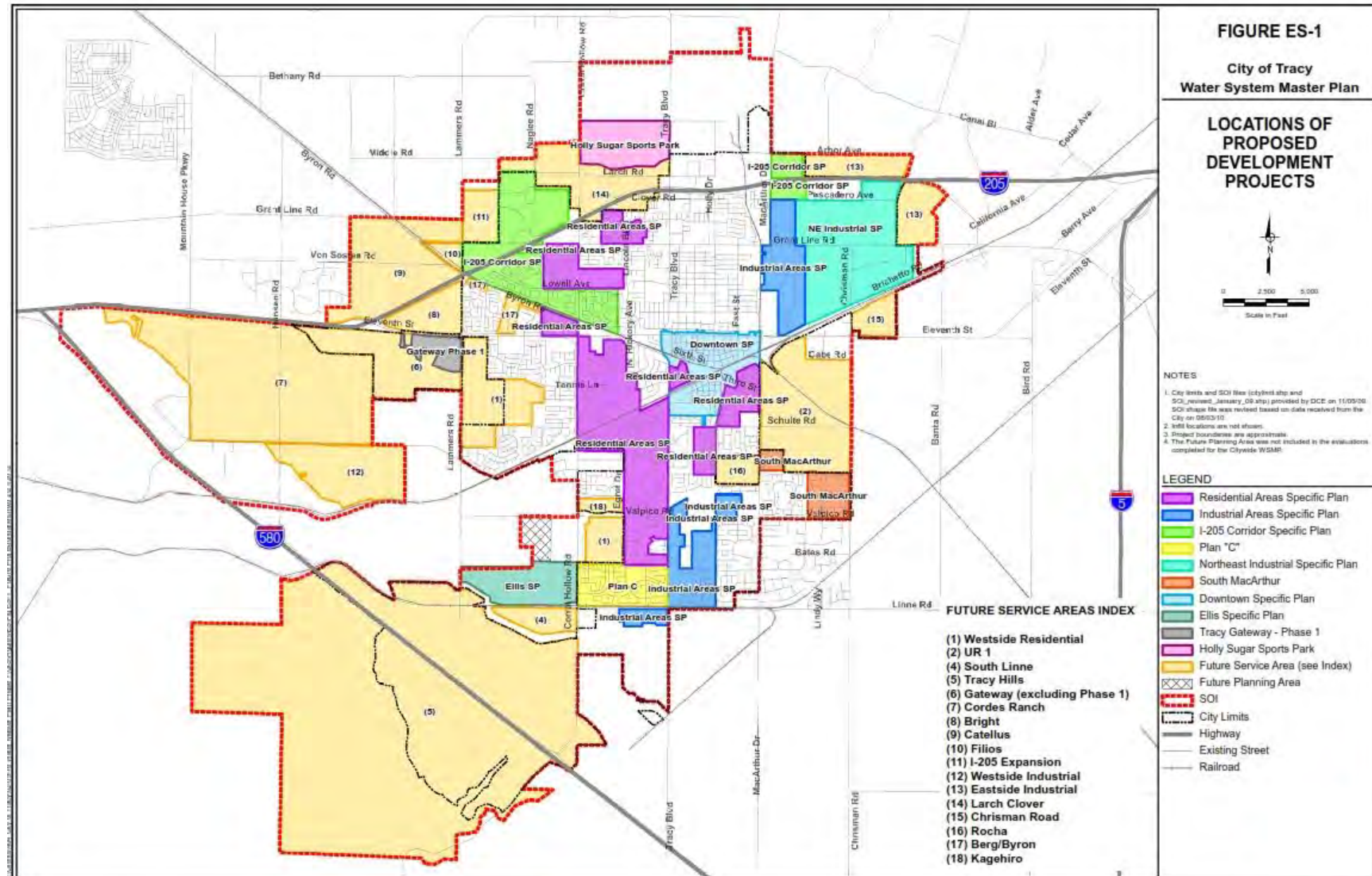




- **Larch Clover:** The Larch Clover area is approximately 498 acres in size, located north of Tracy along Larch and Clover Roads. The majority of the area (approximately 85 percent) contains existing residential ranchettes, scattered businesses and places of worship. Due to the area's visibility from I-205 and its proximity to other commercial development, the long term vision is to gradually transition to commercial uses.
- **Chrisman Road:** The Chrisman Road service area includes 113 acres on the northeast corner of Chrisman Road and Eleventh Street.
- **Rocha:** At approximately 91 acres, the Rocha service area is located in the southeast portion of the City. Low-density and high-density development is planned for the Rocha area.
- **Berg/Byron:** The Berg/Byron service area is located north of Eleventh Street, south of Byron Road. At approximately 54 acres, this area is zoned to include 450 medium-density units on 50 acres, as well as retail space on four acres.
- **Kagehiro:** The 47-acre Kagehiro service area is located in central Tracy, west of Egret Drive. Part of this site is adjacent to the existing Gretchen Talley Park. This future service area is anticipated to include approximately 250 low-density residential units.
- **Keenan:** The 130-acre site is located just south of the City center and contains approximately 1,011 units.



Figure 2-2: City of Tracy Future Development Areas



Source: City of Tracy Water System Master Plan 2012 (prepared by West Yost Associates)

Tracy's share of regional future housing needs is 4,976 units for the 2014 to 2023 period (City of Tracy 2015). The allocation is distributed into five income categories including 10.3 percent of extremely low income housing, 9.4 percent very low income housing, 14.2 percent low income housing, 16.6 percent moderate income housing, and 49.5 percent above moderate income housing (City of Tracy 2015).

While the housing market collapsed in parts of San Joaquin County in late 2007, and housing prices significantly decreased from 2008 through 2012 (decreases were as high as 52 percent from 2007 to 2009 in Tracy), home prices have stabilized (City of Tracy 2015). Many of the future development areas described in this plan have obtained entitlements, and building authorizations for several of the plan areas have been obtained. The City of Tracy HMPC also indicated that in the 5-year horizon they forecast 3,000 new homes and the 10-year horizon they forecast 8,000 new homes, resulting in a population increase of approximately 20,000 residents (Schneider 2018).

2.8 Mitigation Capability Assessment

During the development of this plan the City's planning team completed a mitigation capability assessment. When combined with the risk assessment the mitigation capability assessment this results in the City's net vulnerability to disasters, and more accurately focuses the goals and proposed actions of this plan.

The HMPC used a two-step approach to conduct this assessment for the City. First, an inventory of common mitigation activities was made through the use of a matrix. The purpose of this effort was to identify policies and programs that were either in place, needed improvement, or could be undertaken if deemed appropriate. Second, the HMPC conducted an inventory and review of existing policies, regulations, plans, and programs to determine if they contributed to reducing hazard-related losses or if they inadvertently contributed to increasing such losses.

Similar to the HMPC's effort to describe hazards, risks, and vulnerability of the City of Tracy, this mitigation capability assessment describes the City's existing capabilities, programs, and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This assessment is divided into four sections: regulatory mitigation capabilities, administrative and technical mitigation capabilities, fiscal mitigation capabilities, and mitigation outreach and partnership.

2.8.1 City of Tracy Regulatory Mitigation Capabilities

Table 2-9 lists planning and land management tools typically used by local jurisdictions to implement hazard mitigation activities, and indicates those that are in place in the City of Tracy. Excerpts from applicable policies, regulations, and plans and program descriptions follow to provide more detail on existing mitigation capabilities.

Table 2-9 The City of Tracy's Regulatory Mitigation Capabilities

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
General Plan	Yes	The City's General Plan was last updated and amended in 2011. The Housing Element was last updated and amended in 2015. Both planning documents are the City's most comprehensive land use and development tools. Together, they establish the vision for the buildout of the City of Tracy through 2025. They also include a set of broad-based goals and objectives to guide development in the City. Upon adoption of the LHMP, the City should update the General Plan Safety Element and amend the General Plan to include the LHMP.
Zoning Ordinance	Yes	The City's Zoning Ordinance is Title 10 of the Tracy Municipal Code. It guides current development through standards and regulations relating to allowable land uses, conditionally allowable land uses, height, setbacks, parking, and signage.
Subdivision Ordinance	Yes	Title 12 of the Tracy Municipal Code contains the City's subdivision provisions, procedural requirements, tentative subdivision maps, parcels maps, dedications, and improvements. It also outlines streets, alleys, and other public right-of-way or easements for emergency access.
Growth Management Ordinance	Yes	The City adopted the Growth Management Ordinance in 1987.
Floodplain Ordinance	Yes	<p>Title 9 of the Tracy Municipal Code contains the City's building regulations, and Chapter 9.52 contains their Floodplain Regulations. Special flood hazard areas in the City are based on the January 24, 1991 Flood Insurance Study (FIS) and recent Flood Insurance Rate Map (FIRM).</p> <p>It limits development of projects in the flood hazard zone unless the project demonstrates flood management facilities will protect the project to the urban level of flood protection, implements conditions on the permit or project entitlement that protect the project to standard flood protection standards, or is intended to be protected by project levees.</p> <p>Chapter 9.52.150 summarizes the standards of construction for new projects, and new construction or substantial improvements shall have the lowest floor elevation, including basements, elevated to or above base flood elevation (BFE). Upon completion of construction, the elevation of the lowest flood shall be certified by a registered professional engineer or verified by the community building inspector. The certification shall be provided to the Floodplain Administrator.</p>
Other special purpose ordinance (e.g., stormwater, steep slope, wildfire)	Yes	Title 12 of the Tracy Municipal Code contains the City's subdivision provisions. Section 12.16.020 ensures each lot is designed to avoid development on steep slopes exceeding 12 percent as measured by 10 foot intervals unless a geotechnical report includes measures to ensure slope stability and erosion prevention.
Building Code	Yes	The City adopted the 2016 California Building Code. Adoption and reference to the 2016 CBC is outlined in Title 9, section 9.50.030.



Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Fire department Insurance Services Office (ISO) rating	Yes	City of Tracy Class 2 Tracy Rural Fire Protection District Class 3/3Y
Erosion or Sediment Control Program	Yes	<p>Title 11 of the Tracy Municipal Code contains storm water management and discharge control and requirements.</p> <p>In 2017 the City of Tracy adopted a Construction Erosion and Sediment Control Plan as part of its Storm Water Management Program. The plan contains erosion and sediment control guidance, permit requirements, site plan and BMP implementation plans, minimum control measures for small construction projects, and dewatering BMP information. More information is available here: https://www.ci.tracy.ca.us/documents/Erosion_and_Sediment_Control_Plan.pdf</p>
Storm Water Management Program	Yes	<p>The City of Tracy (in coordination with other small cities in San Joaquin County) implemented development standards to protect water quality under the "General Permit for Waste Discharge Requirements for Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (also known as MS4 permits).</p> <p>They City complies with requirements under MS4 Order No. 2013-0001-DWQ, which was updated in 2013 as part of the second Phase II Small MS4 General Permit (adopted July 2013). They City is implementing a Storm Water Management Plan that contains processes that will be used to meet mandatory requirements under the updated order.</p> <p>The City's 2015 Multi-Agency Post-Construction Storm Water Standards Manual and 2013 Storm Water Management Plan are located here: https://www.ci.tracy.ca.us/index.cfm?navId=1679</p>
Site Plan Review Requirements	Yes	Discretionary projects involve site plan review as part of the planning and approval process conducted by the City's Development Services Department. The Land Development Division of Engineering also provides review and permit processing. This division reviews subdivision maps, construction plans, public improvement, and grading plans for all residential, commercial, and industrial projects.
Capital Improvements Plan	Yes	<p>The Capital Improvement Division (Design Group) of the Engineering Department is responsible for the planning and design of all City of Tracy CIP projects. These include projects, such as construction, repair, and improvements of public streets, utility pipelines, pump stations, bridges, bike paths, public buildings, and public parks.</p> <p>The Capital Improvement Division follows design standards, and standard plans and specifications for all street, utility, parks, streetscape, and storm water projects. Most projects are outlined in the Infrastructure Master Plan documents available here: https://www.ci.tracy.ca.us/?navId=2101</p>



Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
Economic Development Plan	Yes	The Economic Development Department contains various business development and incentive and program resources for commercial, retail, and property owners. Oversight of the Community Block Grant (CDBG) and Housing Program are functions of the City's Economic Development Department.
Local Emergency Operations Plan	Yes	The City of Tracy adopted their Comprehensive Emergency Management Plan in 2008.
Other special plans	Yes	The City of Tracy Fire Department and Tracy Rural Fire Protection District merged in 1999 to form the South County Fire Authority (SCFA). In 2018, both agencies dissolved the SCFA and formed the South San Joaquin County Fire Authority (SSJCFA). The SSJCFA provides fire protection and emergency medical services to the entire jurisdictional area of both the city limits and surrounding rural community. The SSJCFA is directed by a four-person Joint Powers Authority (JPA) Board.
Flood Insurance Study or other engineering study for streams	Yes	The City joined the NFIP on June 28, 1974. The City began implementing their NFIP floodplain regulations in 1980. The first FIS for the City of Tracy was completed on January 24, 1991. The most recent FIS for the City was completed on October 20, 2016.
Elevation certificates	Yes	See Chapter 4, Section 4.3.5 Flood: 100/200/500 Year and Localized Stormwater/Wastewater Flooding. There are 200 properties in the floodplain within the City's Planning Area. Of the 200 properties, 57 properties occur within the city limits. Eleven of these properties were constructed before flood insurance rate maps were available, 41 properties have BFE certifications, and 5 properties lack BFE certificates.
Other	Yes	The City of Tracy contains numerous infrastructure master plans for new development in the City's Planning Area. These include the Citywide Parks Master Plan, Public Facilities Master Plan, Public Safety Master Plan, Wastewater Master Plan, Water System Master Plan, Transportation Master Plan, Storm Drainage Master Plan, and the Sustainability Action Plan. Additional information on each plan is provided below.

Source: HMPC Data Collection Guide

As indicated in the table above, The City of Tracy has several plans and programs that guide the City's development in hazard-prone areas. Starting with the City of Tracy's General Plan, which is the most comprehensive of the City's plans when it comes to mitigation, some of these are described in more detail below.

City of Tracy Growth Management Ordinance (1987)

In 1987 the Tracy City Council adopted a Residential Growth Management Plan, commonly referred to as the Growth Management Ordinance, or GMO. The GMO was amended several times between 2000 and 2014. The purpose of the GMO is to determine residential growth allotments and building permit activities, and define residential growth allocation exemptions. The GMO also defines primary growth areas, the development agreement process, vesting process, and specific requirements for new development, primarily specific plan projects.



City of Tracy General Plan (2011)

The City's General Plan provides a blueprint for the future by establishing a framework for how Tracy should grow and change over the next two decades (Year 2025). The General Plan contains goals, objectives, policies, and actions that empower the City and community to achieve their future vision. The General Plan is the City's principal policy and planning document to guide future conservation, enhancement, and development in the City. It addresses all aspects of development organized in 10 elements, including six required by State law and four elements prepared to meet local needs and concerns. The seven mandatory elements include the Land Use Element, Housing Element, Circulation Element, Open Space Element, Conservation Element, Safety Element, and Noise Element. The four remaining elements include the Community Character Element, Economic Development Element, Public Facilities and Services Element, and Air Quality Element.

City of Tracy 2015 – 2023 Housing Element

The City prepared the last Housing Element in 2015. The Housing Element is one of the seven mandatory elements of the General Plan. The Housing Element provides a long-term comprehensive plan to address the housing needs for all economic segments of the community. It addresses existing and projected housing demand and establishes goals, objectives, policies, and actions to assist the City in implementing the plan in accordance with other General Plan policies. The 2015-2023 Housing Element was prepared under a separate timeline and under different detailed State criteria.

City of Tracy Water System Plan (2012)

The purpose of the Citywide Water System Master Plan is to evaluate the required potable and recycled water system facilities required to serve the buildout of the City's General Plan. It includes several objectives designed to help the City meet their future water demands and develop performance and operational criteria. It also presents the City's capital improvement program for recommended potable and recycled water system facilities. These range from costs associated with land acquisition, storage reservoir development, groundwater wells, booster pump stations, new pipelines, and interconnection facilities. Several of the objectives and the sustainability principles outlined in the plan will help the City minimize drought hazards.

Floodplain Management Regulations and NFIP Participation (1974)

The City of Tracy has participated in the National Flood Insurance Program (NFIP) since 1974, by administering floodplain management regulations that meet the minimum requirements of the NFIP. The purpose of these regulations is to promote the public health, safety, and general welfare and to minimize public and private losses due to flood conditions in specific areas. These regulations apply to all areas of special flood hazards within the jurisdiction of Tracy identified in FEMA's most recent FIS completed for the City on October 20, 2016. The Special Flood Hazard Area (SFHA), also known as the base flood, 100 year flood (1 percent annual chance flood) in the City is mapped as Zone A or AE. Floodplain management is administered through the City's Planning and Building Department. The City maintains records of BFE certificates for the properties within the SFHA and the NFIP is administered by the City of Tracy's Chief Building Official/Floodplain Manager (Jorgensen 2018).

Citywide Parks Master Plan (2013)

The Parks Master Plan identifies the City's infrastructure needs for parks, public facilities, water, roadways, stormwater, wastewater, and public safety. It specifically identifies policies, design guidelines, and preliminary capital costs associated with building new parks infrastructure to serve future residential areas. Based on the plan, the City has approximately 335 acres of park land spread across at 73 mini park, neighborhood park, and community park facilities. The plan forecasts demographic and recreation trends to identify park needs for the future. The plan also emphasizes the need to co-locate parks with other facilities, such as bike paths, and detention basins or with other joint-use facilities.



The HMPC referenced the Citywide Parks Master Plan during planning meetings, and specifically the approximate 228 acres at Legacy Fields (formerly Holly Sugar) that has recently been developed with sport fields. Portions of Legacy Fields are within the 100-year floodplain and while significant investment was made into the facilities now developed at the park (i.e. sport fields, picnic areas, bathrooms), these open fields can also function as detention basins to help filtrate and absorb surface water runoff and flood waters during major flood events.

Citywide Public Facilities Master Plan (2013)

The Citywide Public Facilities Master Plan (CPFMP) is a guideline document for the identification of public facilities needed to serve future land development projects under the buildout condition for the City's Planning Area (i.e. SOI). It identifies public facility upgrades needed to adapt existing spaces to new or expanded uses. The study area for this plan was also the City's SOI. The CPFMP found that at buildout Tracy will have 54,500 new residents and 147,200 new workers. These new residents and workers will occupy approximately 27,200 new public safety facilities and will also need approximately 126,400 square feet of new public facilities of building space. The CPFMP references several major public facilities that will need renovation in future years, including, but not limited to support services facilities. These include the Police Department headquarters, Development Services Department, Engineering Division, Parks and Recreation Department, a new community recreation building, library renovations, and improvements and expansion plans at the Public Work facilities and Boyd Service Center buildings.

One key outcome of the CPFMP is to provide the City of Tracy with updated public facilities that survive disaster events, but also remain operational for service delivery long after the onset of an event. As a result, all proposed improvements, whether they are renovations or expansions of existing facilities, will be designed to support the delivery of services during post-disaster scenarios, even during protracted events beyond the capacity of onsite emergency generator power generation. Other features noted in the CPFMP include photovoltaic power for critical needs, isolated and protected critical utilities, seismic dampening, energy-efficient design, natural lighting, and improved ventilation.

Citywide Public Safety Master Plan (2013)

Like the CPFMP, the Citywide Public Safety Master Plan (CPSMP) is a guideline document for the identification of public safety facilities needed to service future buildout in the City's Planning Area. While its findings are similar to the CPFMP, the CPSMP adds four new fire stations to the City, notes upgrade needed at the downtown Fire Administration building, and identifies an offsite location for a new Police Department. It leaves Dispatch, Emergency Operations Center (EOC), Evidence Storage, and a downtown Police Station to operate as a Public Safety Center.

Also outlined in the CPSMP, in addition to the new Police Department Service Center are needs for a police and fire department training facility, and a radio communications tower. The radio communication tower is key infrastructure that is consistent with the San Joaquin County Radio Master Plan, which establishes a county-wide public safety digital simulcast infrastructure to serve as the building block for interoperability. It allows public safety agencies to conduct emergency communications during disasters.

Tracy Wastewater Master Plan (2012)

The Wastewater Master Plan (WMP) addresses the expansion of existing wastewater conveyance and treatment infrastructure in the City of Tracy. In 2012, the City's population of approximately 81,000 people generated an average dry weather flow of 7.6 million gallons per day (mgd). This flow is treated at the City's wastewater treatment plant (WWTP), which has an average dry weather flow design capacity of 10.8 mgd. Future average dry weather flow within the City's Planning Area is estimated to be 21.1 mgd with the addition of proposed development. The WMP determines infrastructure requirements based on future wastewater flows and future regulations that would impact permitted discharge limits and biosolid disposal requirements.

Also outlined in the plan is a summary of the current WWTP that serves the City located on Holly Drive in the northern portion of the City. The WWTP contains a pretreatment pond, industrial holding ponds, sludge drying beds, and a biosolids storage area. Additionally, the plan addresses another WWTP option: the secondary option assumes that a second treatment facility will be constructed at the southern end of the existing City limits. The majority of all wastewater generated within the City would be directed toward the existing WWTP located on Holly Drive. The second and proposed WWTP would process flow from one of the future service areas, such as Tracy Hills.

Citywide Roadway and Transportation Master Plan (2012)

The Transportation Master Plan (TMP) builds upon the goals and objectives defined in the Circulation Element of the City's General Plan, as well as the Sustainability Action Plan (SAP). While the General Plan planning horizon considers 2025 conditions, the TMP looks out another ten years to Horizon Year 2035 to provide maximum possible infrastructure planning and to be consistent with the San Joaquin Council of Governments travel demand mode update for Year 2035. The overall framework of the TMP consists of a forecast of horizon year conditions, assessment of horizon year roadway network conditions, identification of horizon year roadway improvements, and identifying capital costs for improvements needed.

Storm Drainage Master Plan (2012)

The Storm Drainage Master Plan (SDMP) includes hydrologic and hydraulic analyses, a conceptual plan for new storm drainage infrastructure needed to serve new development and existing development areas, and cost opinions for new storm drainage infrastructure. It also summarizes drainage policies and impact fee programs. Generally, it is intended to be utilized as a guideline document for the identification of storm drainage facilities needed to serve future land development projects under buildout conditions, as well as facility upgrades needed to correct existing deficiencies.

City of Tracy Comprehensive Emergency Management Plan (2008)

The City's Comprehensive Emergency Management Plan was drafted in 2008. It includes a basic plan that addresses the City of Tracy's responsibilities in emergencies associated with natural disaster, human-caused emergencies, and technological incidents. It provides a framework for coordination of response and recovery efforts within the City and in coordination with local, state, and federal agencies. The plan establishes emergency organization staff to direct and control operations during a period of emergency by assigning responsibilities to specific personnel. The plan also meets the requirements of San Joaquin County's policies on Emergency Response and Planning, the Standardized Emergency Management System (SEMS), and defines the primary and support roles for City agencies and departments in after-incident assessment and reporting.

The scope of the plan addresses earthquakes, hazardous materials emergencies, flooding, and wildfires. It includes procedures for emergencies that may or may not require the full or partial activation of an EOC. At the time of preparation, the 2008 Comprehensive Emergency Management Plan intended to include the City's Hazard Mitigation Plan. However, a Hazard Mitigation Plan was never prepared or included as part of the appendix in the 2008 plan.

Sustainability Action Plan (2011)

The City of Tracy adopted a Sustainability Action Plan (SAP) in 2011 as part of the City's on-going efforts to transform Tracy into a leader for environmental, economic, and social sustainability. The SAP is a detailed, long-range strategy to achieve sustainability in the sectors of greenhouse gas (GHG) emissions, energy, transportation and land use, solid waste, water, agriculture and open space, biological resources, air quality, public health, and economic development. It establishes targets for a range of sustainability topics and sets forth measures to assist the City in achieving those goals.



2.8.2 City of Tracy Administrative/Technical Mitigation Capabilities

Table 2-10 identifies the County personnel responsible for activities related to mitigation and loss prevention in the City of Tracy.

Table 2-10 The City of Tracy's Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position
Planner/engineer with knowledge of land development/land management practices	Yes	Development Service Director
Engineer/professional trained in construction practices related to buildings and/or infrastructure	Yes	Chief Building Official (Development Services)
Planner/engineer/scientist with an understanding of natural hazards	Yes	Chief Building Official (Development Services) GIS Specialist/Meter Reader (Public Works)
Personnel skilled in GIS	Yes	GIS Technician (Information Technology/GIS Department)
Full-time building official	Yes	Chief Building Official (Development Services)
Floodplain manager	Yes	Chief Building Official (Development Services)
Emergency manager	Yes	Risk Analyst II (Human Resources/Risk Assessment)
Grant Writer	Yes	No one is identified at this time.
GIS data—Hazard areas	Yes	GIS Specialist/Meter Reader (Public Works) GIS Technician (Information Technology/GIS Department)
GIS data—Critical facilities	Yes	GIS Specialist/Meter Reader (Public Works) GIS Technician (Information Technology/GIS Department)
GIS data—Building footprints	Yes	GIS Specialist/Meter Reader (Public Works) GIS Technician (Information Technology/GIS Department)
GIS data—Land use	Yes	GIS Specialist/Meter Reader (Public Works) GIS Technician (Information Technology/GIS Department)
GIS data—Assessor's data	Yes	GIS Specialist/Meter Reader (Public Works) GIS Technician (Information Technology/GIS Department) IT Specialist (Information Technology/GIS Department)
Warning Systems/Service (Reverse 911, cable override, outdoor warning signals)	Yes	Alert OC – A City-wide mass notification system: Reverse 911
Channel 26 Staff – City Manager's Office		City cable channel

Source: HMPC Data Collection Guide

City Departments/Agencies

The City of Tracy is a general-law city with a City Manager form of government. The City Council appoints the City Manager and the City Attorney. The City Manager is the chief administrative officer for the City and is accountable to the City Council.





City Manager's Office

The City of Tracy's City Manager's Office directs strategic priorities, which may change based on City Council direction. As of 2019, the four strategic priorities are economic development, public safety, quality of life, and governance. These four strategic priorities reflect the community's desire to have a fiscally responsible and efficiently-operated City organization that is committed to maintaining its fiscal health. Additionally, a number of economic development efforts have been the focus with job creation being the most important.

City Attorney's Office

The City Council appoints a City Attorney, which is staffed by one Assistant City Attorney, one Deputy City Attorney, and one legal secretary. The City Attorney's office provides legal advice to the City Council, Commissions, and City staff. They attend all City Council and Planning Commission meetings. They also assist in the preparation of legal documents, ordinances, and resolutions; prepare negotiations and contracts, and prosecute code violations.

City's Clerk Office

The City Clerk's office provides a variety of administrative services in support of the City Council. The office prepares City Council agendas and minutes, maintains the City's official records, recruits for City Council appointed boards and commissions, and the City Clerk serves as a filing officer.

The City Manager department provides oversight to the following eight departments. A representative from each department listed here participated on the HMPC.

Development Services Department

The Development Services Department consists of the Building Safety and Fire Prevention Division, Code Enforcement Division, Planning Department Division, Economic Development Division, and Engineering Division. Each division is described below:

- **Building Safety and Fire Prevention Division.** The Building Safety and Fire Prevention Division is dedicated to improving the safety of the residents of Tracy through professional and technical services. This department implements and enforces building and fire codes, conducts site plan and building permit review, and coordinates daily development review, permit issuance, and inspections.
- **Code Enforcement Division.** The Code Enforcement Division promotes public health, safety, and welfare and maintains community standards. The Division is primarily responsible for enforcing local and state codes related to building code violations, hazard conditions, California State Housing Law, illegal dumping, illegal signage, graffiti, zoning requirements, and recreational vehicles used as primary living space.
- **Planning Department Division.** The Planning Division is responsible for implementing City policies that direct the physical development and community character of the City. Implementation of City development policies involves analysis and establishing conformance to local implementing plans, including various Specific Plans, the Zoning Ordinance, the Growth Management Ordinance and Guidelines, PUDs, and the City's Design Guidelines. Project development and approvals also involve environmental analysis to determine environmental impacts, as required by the California Environmental Quality Act.
- **Economic Development Division.** The Economic Development Division promotes and pursues commercial, industrial, and office development within the City to create a diversified and sustainable economic base for the community. This base provides a stable tax revenue structure for the City, as well as a full range of retail shopping, services, and employment opportunities for its residents. The Economic Development Division provided various commuter studies and traffic analyses to the HMPC to include in the vulnerability analysis for the LHMP.





- **Engineering Division.** The Engineering Division provides design and construction administration for all capital improvement programs including streets, buildings, parks, utilities, and pavement maintenance. The Division reviews plans for all private developments including residential, commercial and industrial development to ensure conformance with City standards. The Engineering Division consists of the following four sections: land development, capital improvement, traffic engineering, and construction management.

Finance Department

The Finance Department is responsible for City budget preparation and compliance, accounting and financial reporting, debt issuance and management, accounts payable, City employee payroll preparation, utility billing, business licensing, accounts receivable, cashiering and sales. The department also ensures the fiscal foundation necessary to deliver community services. The department's Finance Director was the Project Lead responsible for coordinating the HMPC and overseeing the preparation of the LHMP.FIS

Fire Department

The City of Tracy Fire Department merged with the Tracy Rural Fire Protection District (TRFPD) in 1999 to form the South County Fire Authority (SCFA). The SCFA was a joint powers authority created to provide fire protection services to the jurisdictional area of both the corporate city limits and the surrounding rural community. In 2018, both agencies dissolved the SCFA and formed the South San Joaquin County Fire Authority (SSJCFA) to streamline fire governance and to simplify cost-sharing for fire services. The SSJCFA currently provides all-risk fire protection services to an approximate 170 square mile service area.

The SSJCFA contracts with the City of Tracy to serve as the employer of record for its personnel and to provide employee services to the Authority. Two members of the Tracy City Council and two members of the TRFPD Board of Directors comprise the SSJCFA Board of Directors. The SSJCFA appointed Fire Chief functions as the Chief Executive Officer of the Authority and serves at the will of the board. Meetings of the SSJCFA Board of Directors are held monthly or as the Authority directs.

Human Resources Department

The Human Resources Department supports City training and development programs. The Department also oversees and manages the Risk Management Division.

Parks and Recreation Department

The Parks and Recreation Department oversees the City's parks and community facilities, public transportation system and bikeways, library, and other recreational programs.

Police Department

The Police Department ensures Tracy is a safe place to live and work. The Field Operations Division is led by a Police Captain and four Police Lieutenants, and seven Police Sergeants and one Animal Services Supervisor. The Support Operations Division is one of three major divisions comprising the Tracy Police Department. It has four specialized units including the records unit, communications unit, fiscal management and planning unit, and forensic services unit. The Special Operations Division is comprised of a variety of specialized units: general investigation unit, special investigations unit, and the professional standards unit.

Public Works Department

The Public Works Department provides maintenance services for streets, trees, traffic control systems, parks, landscape maintenance districts, City buildings and vehicles, graffiti removal, solid waste, and recycling. The department also maintains water distribution, sewer collection and drainage systems.

Utilities Department

The Utilities Department oversees the operation and maintenance of several facilities. These facilities include the John Jones Water Treatment Plant, Wastewater Treatment Plant, Storm Water Management



facilities, Utilities Laboratory, and other water management infrastructure. The Utilities Department also maintains, repairs, and replaces mechanical and electrical plant equipment.

2.8.3 City of Tracy Fiscal Mitigation Capabilities

Table 2-11 identifies financial tools or resources that the City could potentially use to help fund mitigation activities.

Table 2-11 The City of Tracy's Fiscal Mitigation Capabilities

Financial Resources	Accessible/Eligible to Use (Yes/No)	Comments
Community Development Block Grants	Yes	The City is currently participating in the 2017-2018 CDBG and Home Investment Partnership Program. The funds, granted through the U.S. Department of Housing and Urban Development (HUD) target programs and/or projects geared towards assisting low and moderate-income persons by providing decent housing, a suitable living environment, and expanding economic opportunity.
Capital Improvements Project funding	Yes	Ongoing
Authority to levy taxes and assessments for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	Yes	The City oversees a comprehensive development impact fee program.
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	
Incur debt through private activities	Yes	
Withhold spending in hazard prone areas	No	

2.8.4 Mitigation Outreach and Partnership Capabilities

Central Valley Flood Protection Plan (2017)

The Central Valley Flood Protection Plan (CVFPPP) provides a comprehensive framework for system-wide management and flood risk reduction planning for the Sacramento and San Joaquin River Basins. This plan is updated every five years and the first update was in 2017. The latest update refines the overall near-term and long-term investments established in the CVFPP, and includes recommendations on policies and financing that aim to support comprehensive flood risk management actions locally, regionally, and system-wide.

San Joaquin County Local Hazard Mitigation Plan (2017)

The San Joaquin County LHMP provides strategies for the County and other local jurisdictions to identify and implement mitigation actions for reducing damages from various potential natural and technological disasters. The LHMP covered 34 natural and man-made hazards, including animal pests, plant pathogens,

terrorism, earthquakes, soil erosion, wildland fires, excessive rain, noise pollution, extreme temperatures, and dense fog. Wildland fire hazards and earthquake hazards were omitted from further analysis as they had low past occurrences in the County (e.g. low fire hazard zones, lack of local fault lines).

The LHMP also addresses needed revisions to the General Plan, including suggestions for planning guidance for hazard mitigation goals, objectives, actions, and implementing strategies. The LHMP only covers the unincorporated portions of San Joaquin County. Jurisdictions, like the City of Tracy, can participate in hazard mitigation with the County by providing their mitigation actions and strategies individually to be included in the County's LHMP. These strategies can be identified individually by jurisdiction.

San Joaquin County Delta Flood Readiness Project (Under Development)

The Delta Flood Readiness Plan is a current grant planning project as of 2019. The purpose of the grant project is for local emergency responders from protected incorporated city and county governments to work with Levee Maintaining Agencies (LMA's) to improve local flood emergency preparedness and response. Work completed will improve public safety and satisfy a requirement of the Central Valley Flood Protection Act of 2008. There are currently LMA's that regulate the levees on the north side of the City of Tracy.

The Delta Flood Readiness Plan will address planning and training. Planning is needed as many jurisdictions lack flood planning resources, response reference maps, and an understanding of federal and state standardized systems on flood hazards. Training will address Water Code Section 9650 requirements on Flood Safety Plans and the need for local governments to develop emergency plans for flood response. The plan covers the Delta-boundary LMAs in the Sacramento-San Joaquin River Delta and will involve collaboration with cities and counties in the Delta, such as the City of Tracy.

San Joaquin County Hazardous Material Area Plan Program

The Hazardous Materials Business Program Plan is administered by the County and designed to protect the public health and safety and the environment by establishing business and area plans relating to the handling and release or threatened release of hazardous materials. Most of the hazardous waste facilities in the City of Tracy are overseen and regulated by both the City and the San Joaquin County Environmental Health Department.

2.8.5 Opportunities for Enhancement

Based on the capabilities assessment, the City of Tracy has several existing mechanisms in place that already help to mitigate hazards. In addition to these existing capabilities, there are also opportunities for the City to expand or improve on these policies and programs to further protect the community. Required future opportunities for enhancement include amending the City's General Plan Safety Element to include the LHMP. Future improvements may include providing training for staff members related to hazards or hazard mitigation grant funding in partnership with the County and Cal OES. Additional training opportunities will help to inform City staff members on how best to integrate hazard information and mitigation projects into their departments. Continuing to train City staff on mitigation and the hazards that pose a risk to the City of Tracy will lead to more informed staff members who can better communicate this information to the public.

3 Planning Process

44 U.S. Code of Federal Regulations Requirements §201.6 Local Mitigation Plans (b) and §201.6(c)(1): An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:

- 1) An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;*
 - 2) An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia, and other private and nonprofit interests to be involved in the planning process; and*
 - 3) Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.*
- [The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.*

3.1 Background on Mitigation Planning in the City of Tracy

This multi-hazard, single-jurisdictional Local Hazard Mitigation Plan (LHMP) is the first plan of its kind for the City of Tracy. The City of Tracy, as the Lead Agency, recognized the need and importance of this plan and was responsible for initiating its development. The City contracted with Wood Environment & Infrastructure Solutions, Inc. (Wood) in 2018 to facilitate and develop the plan. Wood's role was to:

- Assist in establishing the Hazard Mitigation Planning Committee (HMPC) as defined by the Disaster Mitigation Act (DMA) of 2000 (Public Law 106-390) commonly known as the 2000 Stafford Act Amendments;
- Meet the DMA requirements as established by federal regulations and follow FEMA's planning guidance;
- Facilitate the entire planning process based on a Community Engagement Strategy;
- Identify the data requirements that HMPC participants could provide and conduct the research and documentation necessary to augment that data;
- Assist in facilitating the public input process;
- Produce the draft and final plan documents; and
- Coordinate California Office of Emergency Services (OES) and FEMA Region IX plan reviews.

The remainder of this chapter provides a narrative description of the steps taken to prepare the LHMP.

3.2 Local Government Participation

The LHMP is a single-jurisdictional plan that covers the City of Tracy Planning Area, which is the same boundary as the City's Sphere of Influence (SOI). The DMA planning regulations and guidance stress that each local government seeking FEMA approval of their mitigation plan must participate in the planning effort in the following ways:

- Participate in the process as part of the HMPC
- Identify potential mitigation actions; and
- Formally adopt the plan.

For the City of Tracy's HMPC, "participation" was defined at the outset of the planning process as the following:

- Providing facilities for meetings;
- Attending and participating in the HMPC meetings;
- Completing and returning the Wood Data Collection Guide;
- Collecting and providing other requested data (as available);
- Managing administrative details;
- Engaging stakeholders and facilitating a formal Stakeholder's Workshop;
- Making decisions on plan process and content;
- Identifying mitigation actions for the plan;
- Reviewing and providing comments on plan drafts;
- Informing the public, local officials, and other interested parties about the planning process and providing opportunity for them to comment on the plan;
- Advertising, coordinating, and participating in the public input process; and
- Coordinating the formal adoption of the plan by the City Council.

The City of Tracy met all FEMA's requirements for plan participation. The City brought together a local planning team with representatives from each City of Tracy department to help collect data, identify mitigation actions and implementation strategies, and review and provide data on plan drafts. The City engaged several federal, state, regional, and local stakeholder representatives from various agencies and municipalities. In most cases, one or more representatives from each City department and each agency attended the HMPC meetings described in Table 3.2.

The preparation of the LHMP was also intended to assist the City of Tracy in reducing its risk from natural and man-made hazards by identifying resources, information, and strategies for risk reduction. For the City's HMPC, the intention of the plan is to help guide and coordinate mitigation activities throughout the City's various departments, as this is their first LHMP. As a result, the HMPC set out to develop a plan that would meet the objectives summarized below.

- The plan would meet or exceed program requirements specified under the DMA of 2000.
- The plan would not only meet Cal OES and FEMA requirements, but also the needs of the City.
- The plan would coordinate existing and ongoing plans and programs already established at the City so that high priority initiatives and projects to mitigate possible disaster impacts would be funded and implemented.
- The plan would create a linkage between the LHMP and established plans such as the City's 2011 General Plan, Sustainability Action Plan, Water and Infrastructure Master Plans, and Comprehensive

Emergency Management Plan so that existing planning mechanisms can be integrated to help the City achieve successful mitigation.

Given plan integration is a key strategy in the success of LHMP implementation, the HMPC focused on consistency between plans and programs at the City of Tracy, as well as ensuring each HMPC Department representative consulted with their individual departments in between meeting to ensure existing capabilities were adequately documented in the LHMP and that mitigation actions were thoroughly reviewed and developed by a range of department leads throughout the City of Tracy.

Appendix A provides additional information and documentation of the planning process.

3.3 The 10-Step Planning Process

Wood established the planning process for the City of Tracy's LHMP using the DMA planning requirements and FEMA's associated guidance. This guidance is structured around a four-phase process:

- 1) Organize Resources
- 2) Assess Risks
- 3) Develop the Mitigation Plan
- 4) Implement the Plan and Monitor Progress

Into this process, Wood integrated a more detailed 10-step planning process used for FEMA's Community Rating System (CRS) and Flood Mitigation Assistance programs. Thus, the modified 10-step the requirements of the Hazard Mitigation Assistance grants (HMA, including Hazard Mitigation Grant Program – HMGP; Pre-Disaster Mitigation program, PDM; Flood Mitigation Assistance, FMA), CRS, and the flood control projects authorized by the U.S. Army Corps of Engineers (USACE). FEMA's March 2013 Local Mitigation Planning Handbook recommends a nine step process within the four-phase process. Table 3.1 summarizes the four-phase DMA process, the detailed CRS planning steps and work plan used to develop the plan, the nine handbook planning tasks from FEMA's 2013 Local Mitigation Planning Handbook, and where the results are captured in the Plan. The sections that follow describe each planning step in more detail.

Table 3-1: Mitigation Planning Processes Used to Develop the City of Tracy's LHMP

FEMA 4 Phase Guidance Phases	Community Rating System (CRS) Planning Steps	2013 FEMA Local Mitigation Planning Handbook Steps (44 CFR Part 201)	Location in LHMP
Phase 1: Organize Resources	Step 1. Organize Resources	1: Determine the Planning Area and Resources	Chapters 1, 2, and 3
		2: Build the Planning Team 44 CFR 201.6(c)(1)	Chapter 3, Section 3.3.1
	Step 2. Involve the public	3: Create an Outreach Strategy 44 CFR 201.6(b)(1)	Chapter 3, Section 3.3.1
	Step 3. Coordinate with Other Agencies	4: Review Community Capabilities 44 CFR 201.6(b)(2) & (3)	Chapter 2, Section 2.2; Chapter 3, Section 3.3.1
Phase 2: Identify Hazards and Assess Risks	Step 4. Assess the hazard	5: Conduct a Risk Assessment 44 CFR 201.6(c)(2)(i) 44 CFR 201.6(c)(2)(ii) & (iii)	Chapter 4, Sections 4.1 through 4.3
	Step 5. Assess the problem		Chapter 4, Sections 4.1 through 4.3
	Step 6. Set goals		Chapter 5, Section 5.2

FEMA 4 Phase Guidance Phases	Community Rating System (CRS) Planning Steps	2013 FEMA Local Mitigation Planning Handbook Steps (44 CFR Part 201)	Location in LHMP
Phase 3: Develop a Mitigation Strategy	Step 7. Review possible activities	6: Develop a Mitigation Strategy 44 CFR 201.6(c)(3)(i); 44 CFR 201.6(c)(3)(ii); and 44 CFR 201.6(c)(3)(iii)	Chapter 5, Section 5.3
	Step 8. Draft an action plan		Chapter 5, Section 5.4
Phase 4: Implement and Monitor the Plan	Step 9. Adopt the plan	8: Review and Adopt the Plan	Chapter 6, Appendix C
	Step 10. Implement, evaluate, and revise	7: Keep the Plan Current	Chapter 7
		9: Create a Safe and Resilient Community 44 CFR 201.6(c)(4)	Chapter 7

3.3.1 Phase 1: Organize Resources

Planning Step 1: Organize the Planning Effort

With the City's commitment to develop the plan, Wood worked with the City's Finance Director and Public Information Officer (PIO) to establish the framework and organization for the planning process.

Organizational efforts were initiated with the City to inform and educate the plan participants of the purpose and need for the City, single-jurisdictional LHMP. Wood held an initial call to discuss the organizational aspects of this planning process with City's Finance Director, who took the lead on this project. Invitations to the kickoff meeting were extended to key City departments, and federal and state agencies, San Joaquin County, neighboring municipalities and key stakeholders. Using FEMA planning guidance, representatives from each City of Tracy department established the base membership for the HMPC. The HMPC also included representatives from San Joaquin County; federal, state, and local agencies; and stakeholders from local school districts, community hospitals, and other organizations. The list of agencies and individuals invited to participate is included in Appendix B with documentation of participation included in Appendix A.

The HMPC was established as a result of this effort, as well as through interest generated through outreach conducted for this project, which is outlined in more detail in the Community Engagement Strategy. The HMPC collectively developed the plan with leadership from the City and facilitation by Wood. The HMPC meetings also had participation from other agency stakeholders with an interest in hazard mitigation, which are described in Planning Step 3. Representatives from the following City departments and other agencies participated on the HMPC:

City of Tracy

- City Manager's Office
- City Clerk Office
- City Attorney's Office
- Public Information Office
- Public Works Department
- Utilities Department
- Human Resources Department
- Risk Management
- Finance Department

- Fire Department
- Development Services Department
 - Building Safety
 - Code Enforcement
 - Engineering
 - Economic Development
 - Planning Division
- Parks and Recreation Department
- Police Department

San Joaquin County

- Office of Emergency Services
- Public Health Services
- Environmental Health Department
- Fire Department

Other Agency and Organization Stakeholders

- Tracy Unified School District
- Pacific Gas & Electric
- Sutter Tracy Community Hospital
- California Department of Forestry and Fire Protection (Cal FIRE)
- California Conservation Corps

A list of participating HMPC representatives is included in Appendix B. This list includes all HMPC members that attended one or more HMPC meetings detailed in Table 3-2. The City also utilized the support of many other City staff in order to collect and provide requested data and to conduct timely reviews of draft documents. Note, that the core HMPC group was also supplemented by input from other government and stakeholder representatives that contributed to the planning process as identified in Planning Step 3: Coordinate with Other Department and Agencies.

The planning process officially began with a kick-off meeting on September 25, 2018. The meeting covered the scope of work and an introduction to the DMA requirements. Participants were provided with a Data Collection Guide, which included worksheets to facilitate the collection of information necessary to support development of the plan. Using FEMA guidance, Wood designed these worksheets to capture information on past hazard events, identify hazards of concern to the jurisdiction, quantify values at risk to identified hazards, inventory existing capabilities, and record possible mitigation actions. A copy of Wood's Data Collection Guide for this project is included in Appendix A. The City completed and returned the worksheets in the data collection guide to Wood staff for incorporation into the plan.

During the planning process, the HMPC also communicated through face-to-face meetings, email, telephone conversations, an online Dropbox cloud storage site), and the LHMP Website. Draft documents were also distributed via email. The HMPC met three times during the planning period (September 25,

2018-February 12, 2019) and during a Stakeholder Workshop held in the evening hours (7:00 p.m. to 9:00 p.m.) to encourage greater stakeholder participation.

Figure 3-1: Goal Development Brainstorm Session at HMPC Meeting #2



The dates and purposes of these meetings are described in Table 3-2. The HMPC also met internally in between meetings to help the City's lead project manager track deliverables, worksheet materials, and public outreach documentation.

Table 3-2: Schedule of Planning Meetings

Meeting Type	Meeting Topic	Meeting Date(s)
HMPC #1	Kick-off meeting: introduction to DMA, the planning process, and hazard identification	September 25, 2018
HMPC #2	Risk assessment overview and work session on goal development	December 20, 2018
HMPC #3	Development of mitigation actions; selection and prioritization of mitigation recommendations	February 12, 2019

Agendas and for each of the meetings and lists of attendees are included in Appendix A.

Planning Step 2: Involve the Public

Early discussions with the City of Tracy established the initial plan for public involvement. At the kick-off meeting, the HMPC discussed options for public involvement and agreed to an approach using established public information mechanisms and resources within the community. This approach was outlined in the project's Community Engagement Strategy (Appendix C). The approach was also supported and implemented by the City's Public Information Officer and Media Service Coordinator.

Public outreach was initiated during the plan development process with an informational press release to notify the public of the purpose of DMA and the hazard mitigation planning process for the City of Tracy. Public involvement activities included the development of the project website, public workshops, press

releases, an online survey, public information booths at weekend Farmer's Markets, transit stop and bus poster announcements, and the collection of public comments on the draft plan.

Project Website

At the beginning of the planning process, the City Public Information Office created a LHMP Webpage linked to the City's Main Website to keep the public informed on hazard mitigation, the development of the LHMP and the planning process, and as a place to solicit public input. The LHMP Webpage include a background section on hazard mitigation planning and the DMA. It also highlighted recent natural hazard events that have occurred in the City of Tracy and adjacent unincorporated San Joaquin County. The LHMP Web page publicized on all media releases, mailings, newsletters, surveys, and public meeting advertisements. It also has a sidebar with all the meeting agenda's, minutes, sign-in sheets, and presentations from the various HMPC meetings and public workshops. The Webpage contained a section for the public to sign up for project email updates. The City also intends to keep the LHMP Webpage active after the plan is completed to keep the public informed about the status of the mitigation actions. Figure 3-2 shows the LHMP Webpage.

Figure 3-2: City of Tracy Local Hazard Mitigation Planning Website



Public Workshops

Public meetings were held during the draft-plan development process and prior to finalizing the plan as further described in Table 3-3. Where appropriate, stakeholder and public comments were incorporated into the final plan, including the sections that address mitigation goals and strategies. All press releases and website postings are on file with the City of Tracy PIO (see 6 for an example of a press release). The plan will be available online at www.ci.tracy.ca.us/?navid=9460. The public outreach activities described here were coordinated and fully supported by the City of Tracy. The Stakeholder and Public Workshops are detailed in Table 3.3.

Table 3-3: Public Meetings

Meeting Topic	Meeting Dates	Meeting Locations
Stakeholder Workshop	November 14, 2018	Tracy Transit Center
Public Workshop	February 12, 2019	City Council Chambers

A Stakeholder Workshop was held to solicit stakeholder input prior to drafting the plan. Outreach for this workshop targeted government agencies and organizations, and included an email invitation, notice of meeting, and other advertisements. Fifteen people attended the Stakeholder Workshop. Stakeholders suggested that the hazard profiles cover extreme temperatures, including both extreme cold and extreme hot temperatures. A representative from the Sutter Tracy Community Hospital emphasized the number of cases they have each year from homeless people suffering from both hypothermia and heat exposure. General comments from the stakeholder group covered specific wildfire hazards, human-health hazards, and flooding hazards that have occurred in the past. San Joaquin County and South County Fire Authority staff also discussed the impacts of natural hazards on the major freeways surrounding the City of Tracy.

A Public Workshop was held to solicit public and stakeholder input prior to finalizing the plan. Public outreach included an email distribution with a notice of the public meeting to the broader HMPC with direction to share with other associations, boards and committees and postings around the work place. The meeting notice was also posted on the homepage of the City of Tracy Website and the City of Tracy LHMP Webpage. Three people attended the Public Workshop, which was also live broadcast on the local public access channel. Two of the three attendees asked about whether there was a Search and Rescue Unit at the City of Tracy or San Joaquin Sheriff's Office. They indicated there may be opportunities to establish or improve the Search and Rescue Unit within both the City of Tracy Police Department and San Joaquin County's Sheriff's Office. All participants reviewed the mitigation actions developed at the HMPC Meeting that occurred during the afternoon. They were provided colored dot stickers and asked to place a green sticker on mitigation actions they think should be prioritized and a red sticker on mitigation actions they think should not be carried forward for further consideration.

The planning process scope and schedule were discussed, along with the list of hazards addressed in the plan, followed by a presentation that summarized hazard vulnerability. The group was asked what hazards presented the greatest concern. This led to further discussion and the prioritization of mitigation actions developed at the HMPC Meeting #3 by the public.

Where appropriate, stakeholder and public comments and recommendations were incorporated into the final plan, including the risk assessment and sections that address mitigation goals and strategies. A summary of the meeting was shared with the HMPC and are included in Appendix A.

Prior to finalization of the plan a draft will be made available on the City's LHMP Webpage for a three week public comment period in June 2019. An electronic form will be posted with the plan to capture electronic comments.

Online Survey

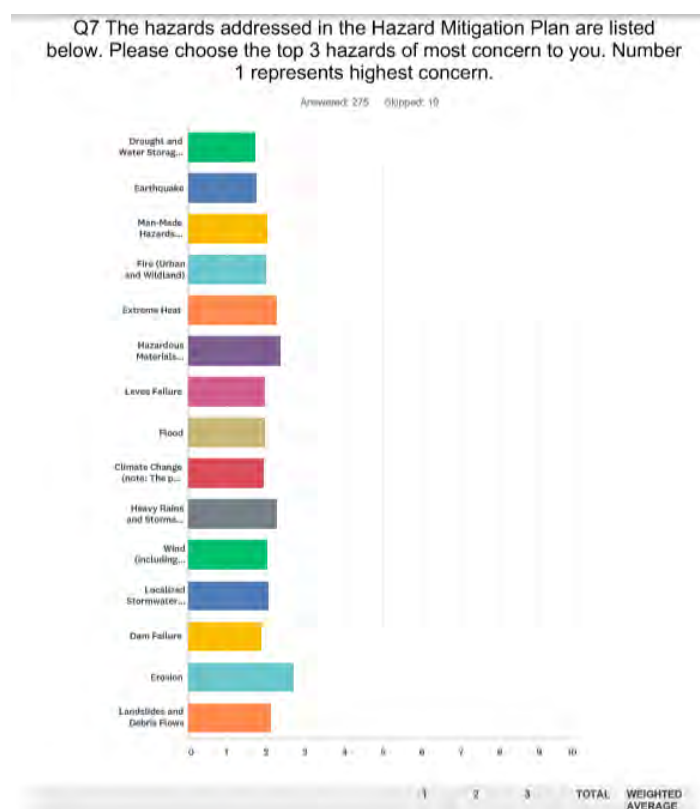
During the planning process and drafting stage, a web-based public survey was developed as a tool to gather public input. The survey was for the public to provide feedback to the HMPC on topics related to hazard concerns and reducing hazard impacts. It was also available in both English and Spanish versions. The survey provided an opportunity for public input during the planning process, prior to finalization of the plan. The survey gathered public feedback on concerns about wildfires, floods, winter storms and other hazards and solicited input on strategies to reduce their impacts. The survey was released as an online tool on December 31, 2018 and closed on February 26, 2019 (eight-week comment period). The HMPC provided links to the public survey by distributing it using social media, email, posting the link on the City's LHMP Webpage, and making it available on tablets at informational booths at four Farmer's

Markets. 294 responses were received on the English survey and 4 responses were received on the Spanish survey. This information was shared with the HMPC to inform the process.

The survey included a total of 18 questions. There was a short section of questions on demographics, specifically on whether participants were residents of the City or the unincorporated portion of San Joaquin County. These questions also inquired about homeownership, insurance, and commute patterns. The next section included questions on ranking hazard significance. The results generally track with the significance levels noted in Chapter 4 of this plan, with drought and water storage, earthquake, and man-made hazards being considered the most significant. Wildfire, extreme heat, and climate change also ranked highly in significance based on the public input. The last section of the survey focused on questions related to mitigation actions that the City should consider in the plan. The results indicated that public education/awareness, planning/zoning, critical facilities protection, stormwater drainage improvements, indoor/outdoor warning systems, and wildland fuels treatment projects were popular topics to the public. These results were shared with the HMPC and considered during the planning process.

According to the City's 2015-2013 Housing Element, the racial/ethnic distribution of Tracy residents between 2009 and 2013 included 35 percent White, 39 percent Hispanic, 16 percent Asian, 6 percent Black, and 5 percent Other. As a result, the online survey was available in both English and Spanish. Figure 3-3 shows an example of one of the public survey responses from the English version of the survey. The full results of the both the English and the Spanish versions of the survey are included in Appendix C Planning Process Documentation.

Figure 3-3: Example of Public Survey Response



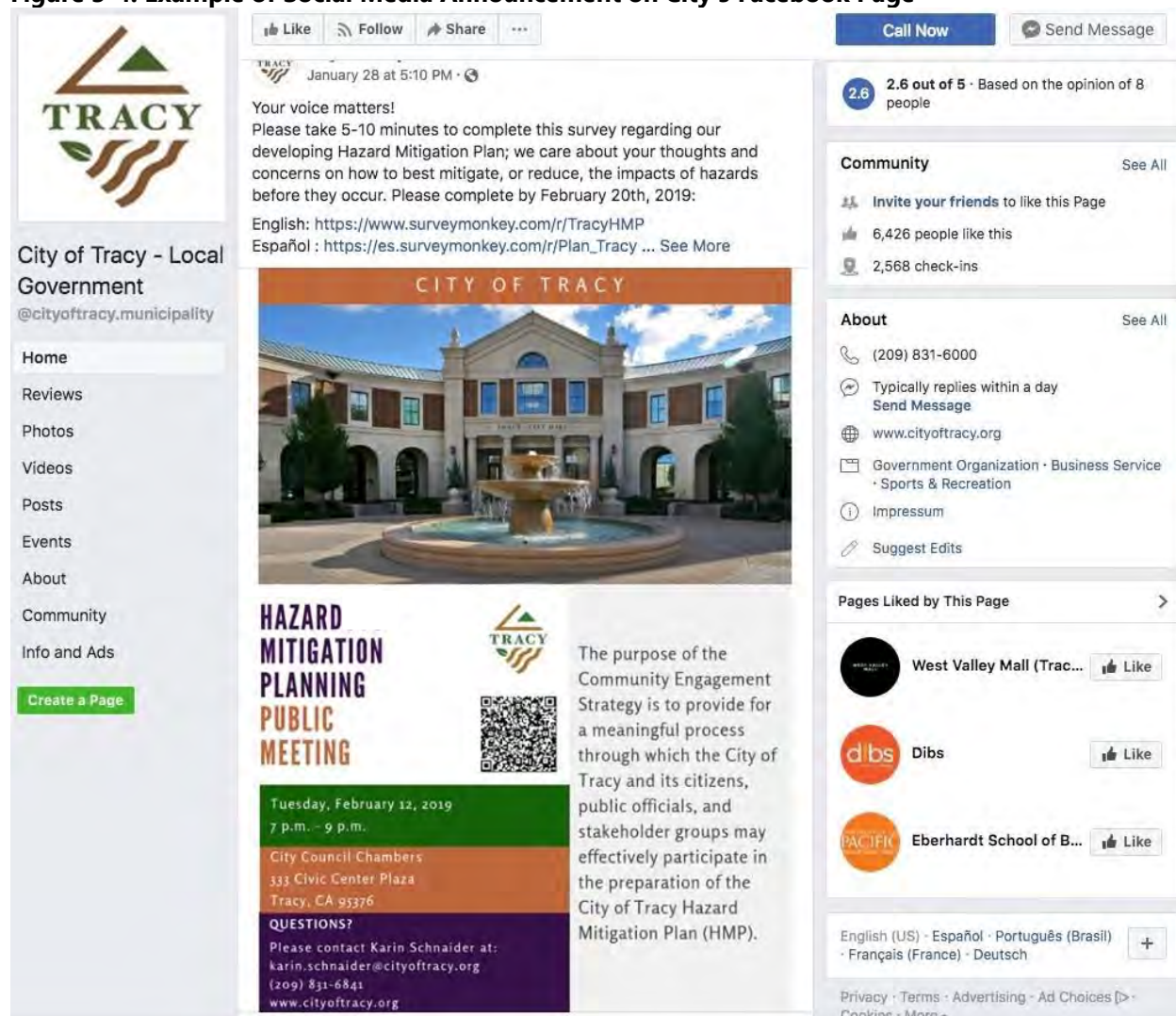
Social Media

The City of Tracy PIO used the following social media platforms to circulate information on the LHMP:

- City Facebook (6,000+ followers);
- City Twitter (2,500+ followers); and
- Instagram (1,500+ followers).

The three social media platforms announced the kick-off of the LHMP planning process, advertise the City's LHMP Webpage and other events, included a link to the online survey, notified the public about meetings and workshops, and announced the availability of the plan for public input and comment. Figure 3-4 is an example of a news feed from the City's Facebook page.

Figure 3-4: Example of Social Media Announcement on City's Facebook Page



The screenshot shows the City of Tracy Facebook page. The post, dated January 28 at 5:10 PM, is titled "Your voice matters!" and asks users to take 5-10 minutes to complete a survey regarding the developing Hazard Mitigation Plan. The post includes links for English and Spanish versions of the survey. Below the text is a photo of the City of Tracy building and a QR code. To the right of the QR code, it states the purpose of the Community Engagement Strategy. The post also includes the date, time, and location of the public meeting, along with contact information for Karin Schnaider.

City of Tracy - Local Government
@cityoftracy.municipality

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Like **Follow** **Share** **...**

TRACY January 28 at 5:10 PM · 🌐

Your voice matters!
Please take 5-10 minutes to complete this survey regarding our developing Hazard Mitigation Plan; we care about your thoughts and concerns on how to best mitigate, or reduce, the impacts of hazards before they occur. Please complete by February 20th, 2019:
English: <https://www.surveymonkey.com/r/TracyHMP>
Español : https://es.surveymonkey.com/r/Plan_Tracy ... See More

CITY OF TRACY

HAZARD MITIGATION PLANNING PUBLIC MEETING

Tuesday, February 12, 2019
7 p.m. – 9 p.m.

City Council Chambers
333 Civic Center Plaza
Tracy, CA 95376

QUESTIONS?
Please contact Karin Schnaider at:
karin.schnaider@cityoftracy.org
(209) 831-6841
www.cityoftracy.org

The purpose of the Community Engagement Strategy is to provide for a meaningful process through which the City of Tracy and its citizens, public officials, and stakeholder groups may effectively participate in the preparation of the City of Tracy Hazard Mitigation Plan (HMP).

2.6 **2.6 out of 5** · Based on the opinion of 8 people

Community See All
👤 **Invite your friends** to like this Page
👍 6,426 people like this
📍 2,568 check-ins

About See All
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💬 Typically replies within a day
[Send Message](#)
🌐 www.cityoftracy.org
📁 Government Organization · Business Service · Sports & Recreation
📄 Impressum
✎ Suggest Edits

Pages Liked by This Page >

West Valley Mall (Tracy) Like
dbs Dibs Like
PACIFIC Eberhardt School of B... Like

English (US) · Español · Português (Brasil) · Français (France) · Deutsch +

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Newspapers

The following regional and local print newspapers were used to circulate and advertise information on the LHMP, specifically the announcement of the public workshop:

- Tracy Press;
- The Tracy Edition/Tri Valley Herald; and
- Stockton Record.

Figure 3-5 is an example of a press release published in the Tracy Press on the public workshop.

Figure 3-5: Example of Public Meeting Ad Installed at a Transit Stop

2 | DATEBOOK.

Tracy Press

FRIDAY, FEB. 8, 2019

datebook

MOUNTAIN HOUSE

SUNDAY, FEB. 10
Farmers market
WHEN: 9 a.m.-1 p.m.
WHERE: Wickland Park, 551 Historic St.
INFO: 831-2300

FRIDAY, FEB. 15
Seniors' Night Out
WHEN: 8-10 p.m.
WHERE: Bankhead Theater, 2400 First St., in Livermore
DETAILS: The Mountain House Seniors are planning a night out at The Second City's comic show "It's Not You, It's Me." Some will also gather for dinner before the show.
COST: \$45
INFO: momac_59@att.net

SATURDAY, FEB. 16
Valley Link workshop
WHEN: 10:30 a.m.-noon
WHERE: Mountain House Community Services District, 230 S. Sterling Drive
DETAILS: The Tri-Valley-San Joaquin Valley Regional Rail Authority will provide information and take feedback at a community planning workshop for the proposed Valley Link light rail station for Mountain House.
COST: Free
INFO: 831-2300

Boosters crab feed
WHEN: 7-10:30 p.m.
WHERE: Tracy Elks Lodge, 6400 W. 11th St.
DETAILS: The fourth annual MHHS Athletic Booster Club Crab Feed will raise money for all sports at Mountain House High School. The meal includes fresh crab, salad, pasta, bread and dessert (alternative available). Doors open at 6 p.m., and a raffle and an auction are planned.
COST: \$55
INFO: Victoria Vaughn, 346-3570; Lani Opiana, 221-1558; http://mhhsboosters.wikisite.com/website

MONDAY, MARCH 4
'Plastic Paradise'
WHEN: 6-8 p.m.
WHERE: Mountain House Branch Library, 250 E. Main St.
DETAILS: The Delta Chapter of the Sierra Club will show the movie "Plastic Paradise: The Great Pacific Garbage Patch" (2013), a documentary by Angela Sun.
COST: Free
INFO: Patricia Brandes, 836-1778; dalapatt83@comcast.net

SUNDAY, FEB. 10
Magic: The Gathering
WHEN: Noon-3 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: New and experienced players age 12 and older are invited to play "Magic: The Gathering," a trading card game where wizards duel with magic, creatures and more.
COST: Free
INFO: www.ssjcpl.org

Moose bingo
WHEN: 2-5 p.m.
WHERE: Tracy Moose Lodge, 35 E. Sixth St.
DETAILS: Adults, 18 and older, are encouraged to arrive early for the best seats. A total of 14 games will be played, including four games with higher payouts.
COST: \$10 for a 10-pack, plus \$1 each for special games
INFO: Moose Lodge, 835-4366

MONDAY, FEB. 11
Free produce market
WHEN: 10-11 a.m.
WHERE: Guadalupe Center, 126 W. First St.
DETAILS: Anyone can take a reusable bag and pick up free produce at a mobile farmers market coordinated by the South Side Community Organization.
COST: Free
INFO: www.facebook.com/SouthSideCommunityOrg

Kiwanis Club of Tracy
WHEN: Noon
WHERE: HOP, 3129 Nagle Road
DETAILS: Kiwanis is a service club that meets weekly and serves the needs of the local community.
COST: Price of meal
INFO: Tony and Dianne Montalbo, montalboja@aol.com, 839-8806

Griefshare
WHEN: 6:30-8:30 p.m.
WHERE: Call for location
DETAILS: This 13-week class is designed to help people who have lost a loved one. Call St. Paul's Lutheran Church, 835-7438, to learn more.
COST: Free

TUESDAY, FEB. 12
Golden Agers
WHEN: 9:30-11:30 a.m.
WHERE: Tracy Transit Station, 50 E. Sixth St.
DETAILS: Men and women 55 and older are invited to monthly meetings to plan trips, tours, bowling, luncheons and fundraising. Annual dues are \$36 and meetings are free.
INFO: Mary McGill, 769-1338

Story time
WHEN: 10:30 a.m. for babies (0-2 years) and 11:15 a.m. for preschoolers (ages 3-5)
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Parents and caregivers can take little ones for a half-hour of stories, rhymes, songs and fun. Older siblings are welcome.
COST: Free

Lunch & A Movie
WHEN: 11 a.m.-2 p.m.
WHERE: Grand Theatre Center for the Arts, 715 Central Ave.
DETAILS: Men and women age 50 and older can have lunch in the lobby of the Grand Theatre and watch a Valentine's Day movie on the big screen.
COST: \$5 for lunch, movie and popcorn
INFO: Amanda Jensen, 831-6240, amanda.jensen@cityoftracy.org

Teen Valentine's craft
WHEN: 4-5 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Teens in eighth through 12th grades can learn to make a handmade, multilayered "exploding box" as a Valentine's Day gift. Materials will be supplied, and teens can take pictures to include in their boxes.
COST: Free
INFO: www.ssjcpl.org

NAMI Family Support Group
WHEN: 6-7:30 p.m.
WHERE: Tracy Family Resource Center, 35 E. 10th St., Ste. 8
DETAILS: Anyone who has a family member living with mental health challenges can attend the monthly meetings organized by the local chapter of the National Alliance on Mental Illness.
COST: Free
INFO: NAMI San Joaquin, 468-3755, www.namisanjoaquin.org

Tracy Clutch Burners
WHEN: 7 p.m.
WHERE: Perko's Café, 1321 W. 11th St.
DETAILS: The Tracy Clutch Burners car club welcomes owners of pre-1972 cars and anyone else who is interested.
COST: Free
INFO: Mike Conners, 836-0592

Hazard planning meeting
WHEN: 7-9 p.m.
WHERE: City Council chambers, City Hall, 333 Civic Center Plaza
DETAILS: Tracy residents are invited to learn about the hazard mitigation plan the city is developing, which is designed to lessen the impact of future natural disasters.
COST: Free
INFO: Karin Schneider, 831-6841, karin.schneider@cityoftracy.org

WEDNESDAY, FEB. 13
Crafter's Corner
WHEN: 3-6 p.m.
WHERE: Wadsworth Room, Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: People are invited to take their projects and meet other crafters each week.
COST: Free
INFO: whitewolfprod57@gmail.com, 346-9026

Homework help
WHEN: 3:30-5 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Volunteers and online tutors provide drop-in homework help for elementary, middle and

high school students. Computers with Microsoft Office and internet are available for use. Teens and adults who want to volunteer can ask for an application at the checkout desk.
COST: Free
INFO: www.ssjcpl.org

Railtown Off-Road 4x4 Club
WHEN: 6-8 p.m.
WHERE: Perko's Café, 1321 W. 11th St.
DETAILS: Railtown Off-Road welcomes off-road enthusiasts of all ages. Newcomers are welcome to join club members for dinner at 6 and the monthly meeting at 7.
COST: Price of meal
INFO: www.railtownoffroad.org

THURSDAY, FEB. 14
Kids' Valentine craft
WHEN: 4-5 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Kids can make a stained "glass" heart as a gift.
COST: Free
INFO: www.ssjcpl.org

Open mic night
WHEN: 5:30-8 p.m.
WHERE: Tracy Branch Library, Wadsworth Room, 20 E. Eaton Ave.
DETAILS: Monthly open mic nights at the library are open to all ages. Drop-ins are welcome. Featured performers are Gabriel De Los Santos, guitarist and songwriter; Frank Spikes, drummer; and Pablo Pineda.
COST: Free

SATURDAY, FEB. 16
Magic: The Gathering tournament
WHEN: 10 a.m.-5 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Adults and kids age 12 and up can play for prizes (60-card decks and commander). Both new and experienced players are welcome.
COST: Free
INFO: www.ssjcpl.org

Library book club
WHEN: 11 a.m.-noon
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: All adults in the community are invited to read and discuss this month's book: "Everyone Brave is Forgiven" by Chris Cleave. Any available copies are kept at the checkout desk.
COST: Free
INFO: www.ssjcpl.org

Crab feed
WHEN: 5-11 p.m.
WHERE: Portuguese Hall-Tracy Ballroom, 400 W. Ninth St.
DETAILS: The Polynesian dance school Hula Ikaika Ohana 'O Ka'awai-E Hono Ihi E will have a

crab feed fundraiser beginning with no-host cocktails at 5 p.m. Dinner will be served at 6 p.m., with a Polynesian show at 7 and raffles, music and dancing at 9.
COST: \$50
INFO: renee.kaawai@gmail.com, 321-5723

MONDAY, FEB. 18
Mobile farmers market
WHEN: 10:30-11:30 a.m.
WHERE: Tracy Family Resource Center-Healthy Connections, 35 E. 10th St., Ste. A
DETAILS: Stockton Emergency Food Bank provides food for up to 70 people, first come, first served; take your own bag.
COST: Free
INFO: David Eveler, 229-4922, devaler@cpsj.org

TUESDAY, FEB. 19
Tracy Seniors Association
WHEN: 12:30-2 p.m.
WHERE: Tracy Family Resource Center, 35 E. 10th St.
DETAILS: Tracy Seniors Association promotes health, wellness and safety to improve the experience of people 65 and older in Tracy. All are welcome to attend the group's meetings, which include lunch.
COST: Free
INFO: Cindy Gustafson, 815-1101, cindygustafson5@gmail.com; http://tracyseniorsassn.com

Teen STEM: Computer Hardware 101
WHEN: 4-5 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Eighth- through 12th-graders can learn about the components of every computer, tablet and phone by dismantling a computer. Space is limited; sign up in person or by calling 866-05-7323.
COST: Free
INFO: www.ssjcpl.org

NAMI Connection
WHEN: 6-7:30 p.m.
WHERE: Healthy Connections, 35 E. 10th St., Ste. B2
DETAILS: This free, confidential support group for people coping with mental health challenges meets twice a month.
COST: Free
INFO: info@namisanjoaquin.org, 468-3755

His Scoop Study
WHEN: 6:45-8:30 p.m.
WHERE: Calvary Chapel, 125 Gandy Dancer Drive, Unit 140
DETAILS: Scoop Ministries has organized a non-denominational Bible study for women on the book of Numbers, using a

DATEBOOK, CONTINUED ON PG. 10

Celebration of Life for
Barbara Fitzpatrick

Sunday, February 24, 2019
Celebration at 1:30 p.m.
First United Methodist Church
1610 East Street, Tracy

Reception at 3:00 p.m.
at Elks Lodge, 6400 11th Street, Tracy
All Welcome!

Job Fair MHCWC

SATURDAY, February 9, 2019
10:00 am-2:00pm
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Tracy, CA 95376

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Press Releases

The City was encouraged to distribute and circulate press releases over the course of the LHMP development. The City's Project Manager and Wood staff also encouraged HMPC participants and stakeholders to distribute press releases during the project. Press releases were distributed as informational flyers, advertisements, posters, and public notices handed out during community events. These communication platforms were used to spread the news about the LHMP and invite the public to participate in the process. The press releases were published in both English and Spanish.

Advertisements and press releases announced the kick-off of the HMP planning process, advertised the City's LHMP website and other events, included links to the public survey, notified the public about meetings and workshops, and announced the availability of the plan for public input and comment. Press releases were distributed to multiple print news agencies, as well as the following print, digital, and radio media contacts:

- 104.1 The Hawk
- 89.5 FM KYNJ
- ABC 10
- Associated Press
- Bay Area News Group
- Bloomberg Businessweek
- Capital Public Radio
- CBS 13
- Central Valley Business Times
- Common Ground – KCRA-TV
- Comstock's Business – California Capital Region Edition
- Forum – KQUED-FM
- KNBR-AM
- Fox 40 News
- KXJZ-FM
- KCRA
- KFBK
- KLOVE
- KOVR
- KWUED
- KRON-TV
- KUVS-TV
- Lodi News
- Manteca Bulletin

- Central Valley Business
- National Public Radio (NPR)
- Record Metro Editor
- Tracy Press
- The Modesto Bee
- The Record
- Univision

Figure 3-6 is an example of a press release mounted at a local transit stop. Figure 3-7 is an example of a press release in English used to announce the public workshop in February 2019. Figure 3-8 is an example of a press release in Spanish used to announce the public workshop.

Figure 3-6: Example of Public Meeting Ad Installed at a Transit Stop



Figure 3-7: Example of Press Releases Used to Encourage Participation at Public Workshop

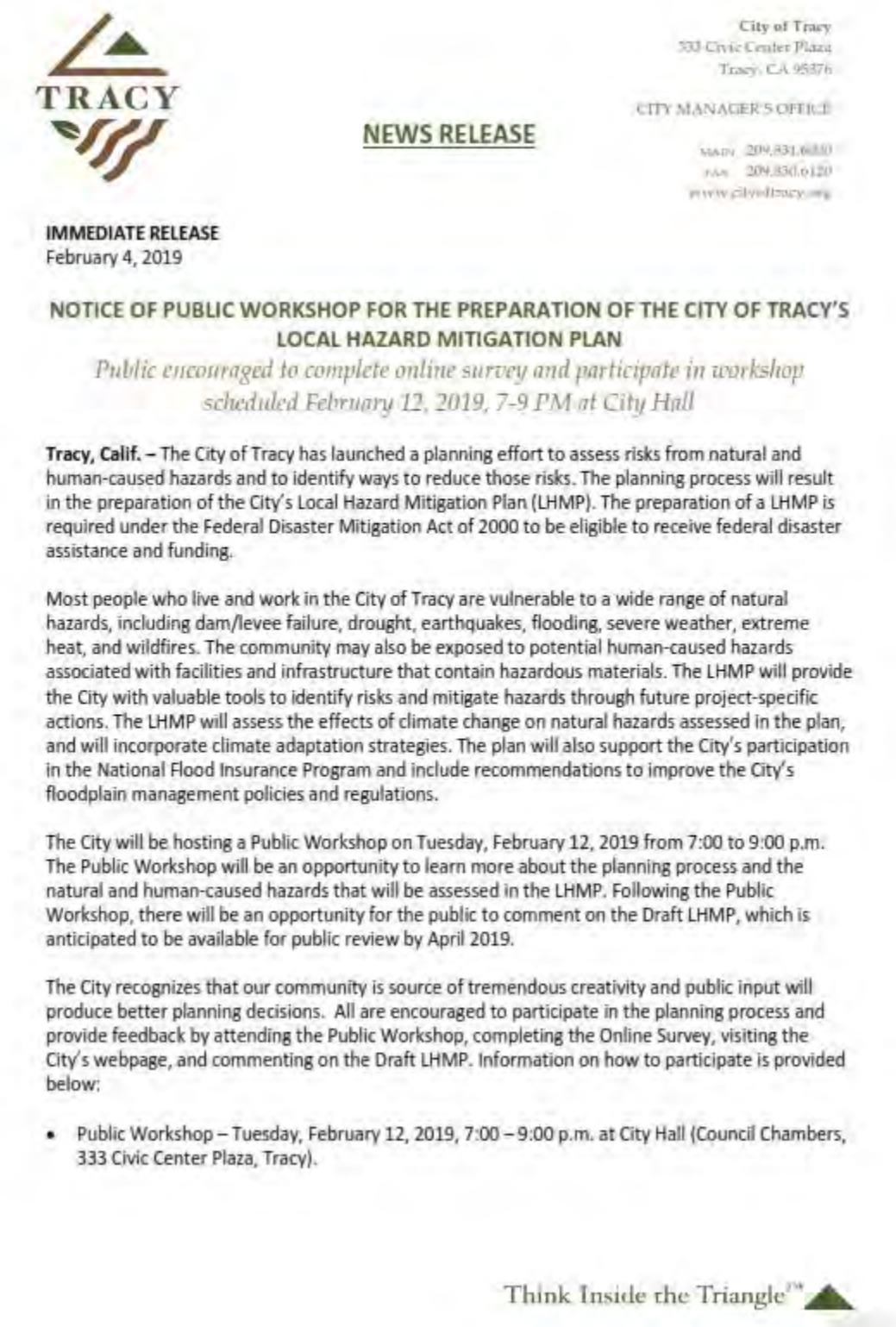


Figure 3-8: Example of Press Releases Used to Encourage Participation at Public Workshop



Informational Booths

The City was encouraged to advertise the LHMP and seek public input at informational booths during local events or booths displayed at the local library or other public repositories. The City of Tracy focused on advertising the plan at four Farmer's Market events. A City of Tracy informational booth was staffed by HMPC participants, and other City staff volunteers during four Farmer's Markets in January and February.

At the informational booth, tablets were available for the public to review information on the plan and for easy access to the online survey. Information, such as map displays, handouts, and flyers were also displayed at City Hall. Figure 3-9 shows one of the informational booths set up at the Farmer's Market.

3-9: Weekend Farmer's Market Informational Booth



Local Events

The City advertised the LHMP development during the following event:

- "2018 Preseason Flood Coordination Meeting" scheduled on October 24, 2018 at 9:00 AM at San Joaquin County Office of Emergency Services, Robert J. Cabral Agricultural Center, 2101 E. Earhart Avenue, Stockton, CA 95206

This event was sponsored by San Joaquin County and included presentations from agencies, such as the National Weather Service, Department of Water Resources, U.S. Army Corps of Engineers, California Office of Emergency Services, Cal Fire, California Conservation Corps, and Pacific Gas & Electric. At the same time the City of Tracy was initiating the planning process for the development of their LHMP, the County was finalizing their LHMP. Therefore, the City's Project Manager attended this hazard awareness event to allow

the City's HMPC to connect with federal, state, and local agencies that participated on the 2018 San Joaquin County LHMP. The City also attended the meeting as an opportunity to invite their planning committee to participate on the HMPC.

Planning Step 3: Coordinate with Other Departments and Agencies

Early in the planning process, the HMPC determined that data collection, mitigation strategy development, and plan approval would be greatly enhanced by inviting state and federal agencies and organizations to participate in the process. Based on their involvement in hazard mitigation planning, their landowner status in the County, and/or their interest as a neighboring jurisdiction, representatives from the following agencies were invited to participate on the HMPC:

- American Red Cross
- Cal EMA
- CAL FIRE
- California Department of Water Resources
- California Geological Survey
- FEMA Region IX – Hazard Mitigation
- National Weather Service
- San Joaquin County Agricultural Commissioner
- San Joaquin County Assessor
- San Joaquin County Fire Authority
- San Joaquin County Floodplain Manager
- San Joaquin County Information Services/GIS
- San Joaquin County Office of Emergency Services
- San Joaquin County Planning and Development
- San Joaquin County Public Works
- San Joaquin County Housing and Redevelopment
- Salvation Army
- US Army Corp of Engineers
- US Bureau of Reclamation
- US Forest Service

The HMPC also used technical data, reports, and studies from the following agencies and groups:

- American Red Cross
- California Department of Finance
- California Department of Fish and Game
- California Department of Forestry and Fire Protection (Cal Fire)
- California Department of Parks and Recreation Office of Historic Preservation
- California Department of Public Health
- California Department of Water Resources
- California Emergency Management Agency
- California Geological Survey
- San Joaquin County Environmental Health Department
- U.S. Army Corps of Engineers
- U.S. Center for Disease Protection
- U.S. Bureau of Land Management
- U.S. Bureau of Reclamation
- U.S. Fish and Wildlife Service
- U.S. Forestry Service
- U.S. Geological Survey
- U.S. Census Bureau
- Federal Emergency Management Agency
- National Weather Service
- National Oceanic and Atmospheric Administration, National Climatic Data Center
- National Resource Conservation Service

Several opportunities were provided for the above groups to participate in the planning process. At the beginning of the planning process, invitations were extended to these groups to actively participate on the HMPC. Specific participants from these groups are detailed in Appendix A. Others assisted in the process by providing data directly as requested in the Data Collection Guide or through data contained on their websites or as maintained by their offices. These groups were also invited to participate through the public outreach process which included public meetings as previously described, as well as the Stakeholder Workshop. Further as part of the HMPC and public outreach processes, all groups were invited to review and comment on the plan prior to submittal to Cal EMA and FEMA.

Other Community Planning Efforts and Hazard Mitigation Activities

Coordination with other community planning efforts is paramount to the success of this plan. Hazard mitigation planning involves identifying existing policies, tools, and actions that will reduce a community's risk and vulnerability to hazards. The City of Tracy uses a variety of comprehensive planning mechanisms, such as general plans and ordinances, to guide growth and development. Integrating existing planning efforts and mitigation policies and action strategies into this plan establishes a credible and comprehensive plan that ties into and supports other community programs. The development of this plan incorporated information from the following existing plans, studies, reports, and initiatives listed in Table 3-4. Other related planning efforts were inventoried in the capability assessment in Chapter 2.

Table 3-4: Incorporated Planning Mechanisms

City of Tracy Plans	How Plan is Incorporated in LHMP
City of Tracy General Plan (2011)	<ul style="list-style-type: none"> • Incorporated relevant hazard information from the Safety Element into the LHMP • Reviewed the Safety Element goals and objectives in HMPC Meeting #2 and integrated them into the LHMP • Reviewed the 5-year planning mechanisms for the General Plan to determine if plan updates occurred, when, how often, and whether the next update can integrate the LHMP into the Safety Element • Discussed whether a General Plan Advisory Group (or GPAC) could participate and provide a consistency review with the City's General Plan Safety Element • Assembly Bill 2140 requires the adoption of LHMPs into the General Plan Safety Element after LHMP Approval; this topic was discussed during each HMPC meeting • LHMP emphasizes need to ensure General Plan is amended to include the LHMP after it's approved by City Council
City of Tracy Flood Insurance Study (2016)	<ul style="list-style-type: none"> • Study discussed in the flood profile and that it develops flood-risk data for the City of Tracy • DFIRMS were updated in early February 2019 and 100-year and 500-year floodplains were compared and integrated into the LHMP • Reviewed DFIRMS and base flood elevation (BFE) data for critical facilities and properties identified within the flood hazard zones • Detailed vulnerability analysis conducted and integrated 2001 FEMA audit on all properties construction in 100-year floodplain • LHMP integrates information on 57 properties in the City in a flood hazard zone: 11 were constructed pre-DFIRM mapping, 41 have BFE certificates on file, and 5 lack BFE certificates.

City of Tracy Growth Management Ordinance (1987)	<ul style="list-style-type: none"> City's GMO is summarized in the Community Profile in Chapter 2 and as it relates to growth and development trends in the City's Planning Area GMO is also summarized in the City's Capability Assessment, also in Chapter 2 as a tool to ensure new development integrates appropriate site specific measures to reduce natural hazards
City of Tracy Water System Plan (2012)	<ul style="list-style-type: none"> The Water System evaluates the potable and recycled water system facilities that serve the City and was reviewed to understand how it may mitigate drought hazards Integrates availability and reliability information on the City's existing and future water supplies into the LHMP Cross references goals and projects outlined in the Water System Master Plan, specifically those related to new potable water facilities (pipelines, storage facilities, and pumping facilities) as similar mitigation actions were prioritized by the HMPC Incorporates information on a shift in water demand at buildout where residential consumption decrease and commercial and industrial uses will generally increase Integrates water conservation principles and strategies developed in the plan related to storm drainage, water, wastewater, and recycled water Includes future City water supplies anticipated to supplement existing supplies (additional Central Valley Project supplies, Semitropic storage, aquifer storage and recovery wells)
Citywide Parks Master Plan (2013)	<ul style="list-style-type: none"> HMPC discussed the parks and recreation amenities outlined in the Parks Master Plan and how large open spaces and passive recreation facilities near or within flood zones or wildland areas may be good locations for City to acquire land for open space (e.g. open space preservation). LHMP qualitatively discusses and assesses vulnerability to park and open space areas in the City's Planning Area, as well as areas with known environmental and cultural resources. LHMP notes the potential to co-locate park uses with fuel breaks and hazard mitigation projects.
Citywide Public Facilities Master Plan (2013)	<ul style="list-style-type: none"> LHMP reviewed the list of public facilities listed in the CPFMP to ensure all critical facilities and assets in the GIS database were included in the risk assessment LHMP referenced consolidated city services at the downtown civic center (City Hall), as well as other notable city facilities, such as the police and fire department headquarters, and major Public Works facilities as places that should be upgraded to meet current seismic standards, and other requirements, if not already completed. LHMP includes mitigation actions focused on ensuring vulnerable populations are aware of safe places to go to during disaster event, some of which may be existing city facilities.
Citywide Public Safety Master Plan (2013)	<ul style="list-style-type: none"> LHMP incorporated public safety facilities outlined in the CPSMP Various public safety facilities summarized in the CPSMP were discussed among the HMPC during various planning meetings, specifically the Public Safety Center. Key recommendations on future upgrades needed for City of Tracy public safety facilities were reviewed and integrated into the mitigation strategy Radio Master Plan was reviewed and the plans for the new radio communication tower were discussed and integrated into mitigation strategy in the LHMP

Tracy Wastewater Master Plan (2012)	<ul style="list-style-type: none"> LHMP included the City's WWTP as a critical facility and its location is noted on several dam inundation and flood zone maps Some of the chemicals transported and used at the WWTP are also referenced in the Hazardous Materials hazard profile LHMP addressed the future site location and conceptual plan for a second WWTP in the vulnerability section following wildfire hazards.
Citywide Roadway and Transportation Master Plan (2012)	<ul style="list-style-type: none"> The LHMP address information outlined in the TMP in several locations, primarily the Community Profile and the vulnerability assessment sections on the transportation infrastructure in and out of the City and within the City LHMP touches on goods movement as it is a significant element of travel demand in Tracy and the I-205 and I-58- freeways carry heavy truck volumes Integrates general commuter information into the LHMP as Tracy is also a connection point for regional transit trips to and from the Bay Area and Central Valley. Vulnerability assessment sections each address transportation infrastructure, specifically freeway and highway traffic, commuter bus services, and the rail service.
Storm Drainage Master Plan (2012)	<ul style="list-style-type: none"> City of Tracy watersheds were described based on information in the Storm Drainage Master Plan, and this information was integrated directly into the LHMP Integrates regional drainage facilities noted in the SDMP LHMP summarized the local drainage setting based on the SDMP; this section also incorporated information on the storm that has a 1/10 chance of occurrence in any given year, as some of the City's older storm drains have capacity less than the 10-year occurrence storm
City of Tracy Comprehensive Emergency Management Plan (2008)	<ul style="list-style-type: none"> Critical facilities and emergency response centers identified and discussed in the Comprehensive Emergency Management Plan were identified in the GIS data used for the LHMP The need to update the Comprehensive Emergency Management Plan was identified and discussed in the LHMP
Sustainability Action Plan (2011)	<ul style="list-style-type: none"> Various Sustainability Action Plan (SAP) targets were discussed during HMPC Meeting #3, specifically those that relate to climate adaptation and resilience. While discussions regarding the SAP at the HMPC meetings were general, the consultant team reviewed the 84 measures outlined in the SAP to ensure any measures related to the LHMP mitigation actions were cross-referenced
Other Plans	
Tracy Municipal Services Review (2011)	<ul style="list-style-type: none"> The City of Tracy's 2011 Municipal Services Review (MSR) identifies the future needs for the extension of infrastructure and the provision of services from the City to new development within the planning horizon. Consultant staff reviewed this plan to ensure facility and infrastructure needs were integrated into the LHMP Based on findings from the City's MSR, it is structured to meet the needs of the development that is proposed within the SOI. The LHMP notes that the City's ability to serve the anticipated growth within the SOI is not anticipated to have any adverse effects on the City, as

	<p>there are several mechanisms in place to effectively expand facilities and services.</p> <ul style="list-style-type: none"> The LHMP emphasizes that several water and infrastructure mater plans, many of which were developed from 2011 through 2013, address fire protection, law enforcement, water supply, wastewater conveyance and treatment, and flood protection.
San Joaquin County Local Hazard Mitigation Plan (2017)	<ul style="list-style-type: none"> Hazard profile information from the 2017 San Joaquin County LHMP was incorporated throughout the LHMP, where appropriate. HMPC reviewed the San Joaquin County LHMP goals during the development of the City of Tracy LHMP goals and objectives There are comparative tables on the hazards profiled in the state and county plan to those addressed in the Safety Element of the City's General Plan Several San Joaquin County stakeholders participated in the HMPC meetings and workshops and provided mitigation goals and action strategies to consider developing in the City's LHMP LHMP integrated input from San Joaquin County OES Department
California State Hazard Mitigation Plan (2018)	<ul style="list-style-type: none"> Reviewed goals and objectives in the State Hazard Mitigation Plan (SHMP) and noted the new and revised hazards related to community resilience Reviewed the hazards profiled in the SHMP and compared those with the hazards summarized in the City's Safety Element and the County's 2018 LHMP Integrated disaster declaration information and other key findings on major hazards from the SHMP into the City's LHMP Under 44 CFR Section 201.6, local hazard mitigation plans must be consistent with the state's hazard mitigation plan. In updating this plan, HMPC and consultant staff reviewed California's 2018 State Hazard Mitigation Plan to identify key relevant state plan elements

Other documents were reviewed and considered, as appropriate, during the collection of data to support Planning Steps 4 and 5, which include the hazard identification, vulnerability assessment, and capability assessment. Appendix B References identifies additional documents and community planning efforts utilized in the development of this plan. Specific references relied on in the development of this plan are also sourced throughout the document as appropriate.

3.3.2 Phase 2: Assess Risks

Planning Steps 4 and 5: Identify the Hazards and Assess the Risks

Wood E&IS led the HMPC in a comprehensive research effort to identify and document all the hazards that have, or could, impact the Planning Area. Data collection worksheets were developed and used in this effort to aid in determining hazards and vulnerabilities and where risk varies across the Planning Area. Geographic information systems (GIS) were used to display, analyze, and quantify hazards and vulnerabilities. The HMPC also conducted a capability assessment to review and document the Planning Area's current capabilities to mitigate risk and vulnerability from hazards. By collecting information about existing government programs, policies, regulations, ordinances, and emergency plans, the HMPC could assess those activities and measures already in place that contribute to mitigating some of the risks and vulnerabilities identified. Using this information, Wood developed the risk assessment portion of the plan, which contained the hazard identification, the vulnerability assessment, and the capability assessment. A more detailed description of the risk assessment process and the results are included in Chapter 4 Risk Assessment.

3.3.3 Phase 3: Develop the Mitigation Plan

Planning Steps 6 and 7: Set Goals and Review Possible Activities

Wood facilitated brainstorming and discussion sessions with the HMPC including a description of the purpose and process of developing planning goals, as well as discussion of a comprehensive range of mitigation alternatives, and a method of selecting and defending recommended mitigation actions using a series of selection criteria. Additional details of the process to develop goals and actions is included in Chapter 5 Mitigation Strategy. Documentation on the process the HMPC used to develop the goals and strategy is in Appendix A.

Planning Step 8: Draft an Action Plan

Based on input from the HMPC regarding the draft risk assessment and the goals and activities identified in Planning Steps 6 and 7, Wood produced a complete first draft of the plan. This complete draft was posted for HMPC review and comment on project's cloud storage Dropbox site. It was also distributed via email to the entire HMPC. HMPC and agency comments were integrated into the second draft, which was advertised and distributed to collect public input and comments. Wood integrated comments and issues from the public and stakeholders, as appropriate, along with additional agency and other stakeholder internal review comments and produced a final draft for Cal OES and FEMA Region IX staff to review and approve, contingent upon final adoption by Tracy City Council.

3.3.4 Phase 4: Implement the Plan and Monitor Progress

Planning Step 9: Adopt the Plan

In order to secure buy-in and officially implement the plan, the plan was reviewed by the planning commission and adopted by the Tracy City Council on the dates included in the corresponding resolution in Appendix D: Adoption Resolution.

Planning Step 10: Implement, Evaluate, and Revise the Plan

The true worth of any mitigation plan is in the effectiveness of its implementation. In the previous steps of the planning process the HMPC's efforts have been directed at researching data, gathering information for the plan, and developing appropriate mitigation actions. Each recommended action includes key descriptors, such as a lead entity and possible funding sources, to help initiate implementation. An overall implementation strategy is described in Chapter 7 Plan Implementation and Maintenance.

Finally, there are numerous organizations within the City of Tracy's Planning Area whose goals and interests interface with hazard mitigation. Coordination with these other planning efforts, as addressed in Planning Step 3, is key to the ongoing success of this plan and mitigation in the City of Tracy and is addressed further in Chapter 7. A plan update and maintenance schedule and a strategy for continued public involvement are also included in Chapter 7.



4 Risk Assessment

44 U.S. Code of Federal Regulations Requirement §201.6 Local Mitigation Plans (c)(2): [The plan shall include] A risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.

As defined by the Federal Emergency Management Agency (FEMA), risk is a combination of hazard, vulnerability, and exposure. "It is the impact that a hazard would have on people, services, facilities, and structures in a community and refers to the likelihood of a hazard event resulting in an adverse condition that causes injury or damage."

The risk assessment process identifies and profiles relevant hazards and assesses the exposure of lives, property, and infrastructure to these hazards, as well as the vulnerabilities of a community. The process allows for a better understanding of a jurisdiction's potential risk to hazards and provides a framework for developing and prioritizing mitigation actions to reduce risk from future hazard events.

This risk assessment followed the methodology described in the FEMA publication "Understanding Your Risks—Identifying Hazards and Estimating Losses" (FEMA 386-2, 2002), which breaks the assessment into a four-step process:

1. Identify hazards
2. Profile hazard events
3. Inventory assets
4. Estimate losses

In other words, this risk assessment evaluates potential loss from hazards by assessing the vulnerability of the City's population; services; critical facilities; and buildings and infrastructure. Data collected through this process has been incorporated into the following sections of this chapter:

- Section 4.1 Hazard Identification: Natural Hazards identifies the natural hazards that threaten the City of Tracy Planning Area (Planning Area) and describes why some hazards have been omitted from further consideration.
- Section 4.2 Asset Summary describes the methodology for determining vulnerability of the Planning Area to the identified hazards.
- Section 4.3 Hazard Profiles and Risk Assessment discusses the threat to the Planning Area and describes previous occurrences of hazard events and the likelihood of future occurrences. All the hazards identified in Section 4.1 are profiled and assessed individually in this section. Research and information from the City of Tracy Hazard Mitigation Planning Committee (HMPC) is integrated into this section. This section also includes the identified vulnerability to each of the priority hazards, describing the impact that each hazard would have on the City. The vulnerability assessment quantifies (to the extent possible) using best available information, assets at risk to hazards and estimates potential losses.
- Section 4.4 Human-Caused Hazards identifies the hazards that threaten the Planning Area resulting not from nature, but by human actions.





- Section 4.5 Hazards Summary summarizes the results of the hazard identification and hazard profiles for the Planning Area based on the hazard identification data and input from the HMPC.

This risk assessment covers the entire geographical extent of the City of Tracy Sphere of Influence (SOI), referred herein as the City's Planning Area. According to the Local Agency Formation Commission (LAFCo) in California, a SOI is a plan for the probable and ultimate physical boundary and service area of a local government agency, such as the City of Tracy. It is determined by the maximum service area an agency can support, range of services the agency can provide, projected future population growth, development occurring in a planned area, and the probable future service needs of the area. The HMPC agreed that the City's SOI should also be the Planning Area for the LHMP.

Additional information on the City's Planning Area as it pertains to this plan is provided in Chapter 2, Community Profile.

4.1 Hazard Identification: Natural Hazards

Requirement §201.6(c)(2)(i): [The risk assessment shall include a] description of the type...of all natural hazards that can affect the jurisdiction.

The first step in developing a risk assessment is identifying the hazards. The HMPC conducted a hazard identification study to determine the hazards that threaten the Planning Area.

4.1.1 Methodology and Results

Using existing natural hazards data and input gained through planning meetings, the HMPC agreed upon a list of natural and human-caused hazards that could affect the City of Tracy. Hazards data was examined to identify and assess the significance of these hazards to the Planning Area. The sources of data included information from the California Office of Emergency Services (Cal OES), FEMA, the National Oceanic and Atmospheric Administration (NOAA), San Joaquin County OES, and other sources as referenced in this assessment. The assessment also relied on previously prepared hazard mitigation plans and relevant City planning documents, such as the City's 2011 General Plan Safety Element.

Table 4-1 below provides a crosswalk of the hazards identified in the 2011 General Plan Safety Element, 2017 Draft San Joaquin County Local Hazard Mitigation Plan, and 2018 California State Multi-Hazard Mitigation Plan. Numerous hazards were identified in the state and county plan, including seven natural hazards identified in the City's General Plan Safety Element. The crosswalk was used to develop a list of preliminary hazards for the HMPC to evaluate which were most relevant to the City's Planning Area.

The significance of each hazard was measured in general terms and focused on key criteria such as frequency and resulting damage, which includes deaths, injuries, and property and economic damage. The natural and human-caused hazards evaluated as part of this plan include those that occurred in the past or have the potential to cause significant human and/or monetary losses in the future.



Table 4-1 Crosswalk with Other Hazard Mitigation Plans

Hazard	2011 City of Tracy General Plan Safety Element	2017 San Joaquin County Local Hazard Mitigation Plan	2018 California Enhanced Multi-Hazard Mitigation Plan
Avalanche			√
Climate Change		√	√
Dam Failure	√	√	√
Drought	√	√	√
Earthquake	√		√
Flood	√	√	√
Landslide	√	√	√
Levee Failure	√	√	√
Sea Level Rise			√
Severe Weather		√	√
Tsunami			√
Volcanoes			√
Wildfires	√		√

In alphabetical order, the natural hazards identified and investigated for the City of Tracy Local Hazard Mitigation Plan (LHMP) include:

- Dam Failure
- Drought
 - Human-Health Hazards: Valley Fever (Coccidiomycosis)
- Earthquake Hazards
- Wildfire
- Flood
 - 100/500-Year Flood
 - Localized Storm Water Flooding
- Hazardous Materials
 - Fixed Hazardous Facilities
 - Gas Pipeline Leaks
 - Chemical Facilities
- Severe Weather
 - Extreme Heat
 - Heavy Rain/Thunderstorm/Hail/Lightning
 - Wind and Tornado





Based on discussions at the early planning meetings, the HMPC eliminated the natural hazards listed below from further consideration in this risk assessment because of a lack of past occurrences in the City of Tracy or based on minimal potential impacts.

- Agricultural Hazards
- Landslides and Debris Flows
- Tsunami
- Sea Level Rise
- Hurricanes
- Coastal Erosion
- Volcanoes

While agricultural hazards may occur in nearby San Joaquin Valley, these hazards are generally associated with agricultural land uses, most of which are scattered outside the City's Planning Area. Further, agricultural hazards are more likely to impact agricultural farming operations and commodities and most of these facilities are situated to the west of the Planning Area in San Joaquin County. However, given there has been a high rate of Valley Fever in the City of Tracy, this human health hazard is generally discussed as a secondary hazard under Drought, as weather patterns, particularly drought conditions combined with wind and disturbed soil have been shown to be potential factors. Landslide and debris flow hazards were profiled in preparation for early planning and stakeholder meetings (i.e. HMPC #1, Stakeholder Workshop). However, given the limited extent of the hazard in the City's Planning Area and lack of past occurrences the hazard was acknowledged, but not further analyzed.

The City of Tracy is situated approximately 40 miles east of San Francisco Bay, therefore tsunami, sea level rise, hurricane, and coastal erosion hazards were not further analyzed in this plan. According to the 2018 California Enhanced State Hazard Mitigation Plan, only ten volcanic eruptions have occurred in California in the last 1,000 years and the likelihood of another eruption in the state is low. Further, most of the potentially hazardous volcanoes are located 80 to 100 miles away near the Clear Lake and Lassen areas to the north and 120 miles to the east in the Sierra Nevada Mountains.

Overall Hazard Significance Summary

Overall hazard significance was based on a combination of geographic extent, probability and potential magnitude/severity as defined below in Table 4-2. The individual ratings are based on or interpolated from the analysis of the hazards in the sections that follow.

FEMA's Hazus-MH 4.0 Loss Estimation Tool

Hazus Multi-Hazard Loss Estimation tool (Hazus-MH) is FEMA's standardized method for modeling and estimating potential losses from earthquakes, floods, strong wind-caused events, and hurricanes. For the purposes of this plan, Hazus-MH Version 4.0 was used with Geographic Information System (GIS) software to estimate economic and social impacts from the occurrence (or potential occurrence) of natural hazards (FEMA, 2018b).





Table 4-2 City of Tracy Hazard Significance Summary

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/Severity	Significance
Dam Failure	Limited	Unlikely	Limited	Low
Drought	Extensive	Likely	Limited	Medium
Earthquake	Extensive	Occasional	Critical	Medium
Flood: 100/500 Year, Localized Flooding	Limited	Occasional	Limited	Medium
Severe Weather: Extreme Heat	Extensive	Highly Likely	Limited	Medium
Severe Weather: Heavy Rain/Thunderstorms/Hail/Lighting	Extensive	Highly Likely	Negligible	Medium
Severe Weather: Wind and Tornado	Extensive	Likely	Negligible	Low
Fire: Urban and Wildfire	Limited	Likely	Limited	Medium
Hazardous Materials	Significant	Highly Likely	Limited	Medium
Geographic Extent Limited: Less than 10% of Planning Area Significant: 10-50% of Planning Area Extensive: 50-100% of Planning Area		Magnitude/Severity Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths Critical—25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability Limited—10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid Significance Low: minimal potential impact Medium: moderate potential impact High: widespread potential impact		
Probability of Future Occurrences Highly Likely: Near 100% chance of occurrence in next year, or happens every year. Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less. Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years. Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.				

Hazus-MH 4.0 provides tabular outputs as well as graphic and illustrative results of identified high-risk areas due to the profiled hazards of interest, with reports summarizing losses or damages from structures and critical facilities, populations affected or at risk, and debris generated from an event. Hazus-MH 4.0 is a key component of the pre-disaster planning process and is used for mitigation and recovery, given its ability to estimate potential losses and damages on a community, county, and multi-regional context. Throughout this LHMP, Hazus-MH was used to estimate effects from a probabilistic 2,500-year earthquake scenario, and the software is referenced in the dam failure and flooding sections to point out methodologies applied to the vulnerability assessments as indicated in Hazus-MH loss calculation procedures (e.g. the FEMA flood depth damage functions per the Benefit Cost Analysis application) (FEMA 2018a).





4.1.2 Disaster Declaration History

One method the HMPC used to identify hazards was researching past events that triggered federal and state emergency or disaster declarations in the Planning Area. Federal and state disaster declarations may be granted when the severity and magnitude of an event surpasses the ability of the local government to respond and recover. Disaster assistance is supplemental and sequential. When the local government's capacity has been surpassed, a state disaster declaration may be issued, allowing for the provision of state assistance. Should the disaster be so severe that both the local and state governments' capacities are exceeded, a federal presidential emergency or disaster declaration may be issued allowing for the provision of federal assistance to help disaster victims, business, and public agencies.

The federal government may issue a disaster declaration through FEMA, the U.S. Department of Agriculture (USDA), or the Small Business Administration (SBA). FEMA also issues emergency declarations which are more limited in scope and without the long-term federal recovery programs of major disaster declarations (Farm Service Agency 2018). The quantity and types of damage are the determining factors in the type of declaration issued. This section focuses on state and federal disaster and emergency declarations.

Details on federal and state disaster declarations were obtained by the HMPC, FEMA, and the California Office of Emergency Services (Cal OES) and compiled in chronological order in Table 4-3. Most disaster declarations are issued on a county-wide basis. In some limited instances a city or area within a county is specifically designated. A review of state and federally declared disasters indicates that the City of Tracy has received one disaster declaration as a result of suffering damages from the Loma Prieta Earthquake in 1989. In comparison, San Joaquin County has received 42 state declarations between 1950 and 2017, 36 of which also received federal disaster declarations. Of the 42 state declarations, 19 were associated flooding, 4 of which were caused by levee breaks and 15 caused by severe storms; 14 for drought events; 3 for excessive rain, 2 of which were also associated with hail and high winds; 1 for an earthquake; 3 for freezes; 1 for agricultural losses; and 1 for Hurricane Katrina Evacuations.¹

Since 2012, there have been 12 drought declarations issued by the Secretary of Agriculture for San Joaquin County, 8 of which were "Fast Track Secretarial Disaster" designations. According to the Secretary of Agriculture, a Fast Track designation is for a severe drought and provides an automatic designation when any portion of the county meets the severe drought intensity value for eight consecutive weeks during the growing season.

This combined federal and state disaster history suggests that San Joaquin County (and the City of Tracy) experiences a major event worthy of a disaster declaration every 1.6 years. The County has a 63 percent chance of receiving a disaster declaration in any given year. Further, a review of these events helps the City identify risk reduction targets and ways to improve their capabilities to avoid large-scale hazard events in the future.

¹ San Joaquin County assisted during the Hurricane Katrina Evacuation by providing disaster assistance, relief, and shelter for evacuees during the event





Table 4-3 The City of Tracy's State and Federal Disaster Declarations, 1950-2017

Hazard Type	Disaster Cause	Disaster #	Year	State Declaration	Federal Declaration	Location	Damage*
Flooding		OCD 50-01	1950	11/21/50	--	Statewide	9 deaths; \$32,183,000
Flooding		DR-47	1955	12/22/55	12/23/1955	Statewide	74 deaths; \$200,000,000
Storm & Flooding		--	1958	4/2/58	4/4/1958	Statewide	13 deaths; several injuries \$24,000,000
Flooding	Storms	DR-253	1969	--	1/26/1969	San Joaquin County (and 39 other counties)	47 deaths; 161 injuries \$300,000,000
Freeze	Freeze	--	1970	5/1/70, 5/19/70, 6/8/70, 6/10/70, 7/24/70	--	San Joaquin County (and 4 other counties)	\$19,749,200
Freeze	Freeze	--	1972	4/17/72, 5/22/72, 5/31/72	--	San Joaquin County (16 other counties)	\$111,517,260
Drought	Drought		1976	2/9/76, 2/13/76, 2/24/76, 3/26/76, 7/6/76	--	San Joaquin County (and 30 other counties)	\$2,664,000,000
Flooding – Delta Levee	Levee Break	EM-3078	1980	1/23/1980	1/23/1980	San Joaquin County (and 2 other counties)	\$17,388,013
Flooding – Jones Tract Levee	Levee Break	DR-633	1980	9/30/1980	9/30/1980	San Joaquin County	\$21,510,956.
Flooding	Storms	DR-651	1982	1/5/82- 1/9/82	1/7/1982	San Joaquin County (and 9 other counties)	33 deaths, 481 injuries \$273,850,00
Flooding	Levee Break	DR-669	1982	8/24/1982	8/24/1982	McDonald Island (San Joaquin County)	\$11,561,870
Excessive Rains (causing ag. losses)	Storms	GP	1982	10/26/1982	--	San Joaquin County (and 10 other counties)	\$345,195,974





Table 4-3 The City of Tracy's State and Federal Disaster Declarations, 1950-2017 (Continued)

Hazard Type	Disaster Cause	Disaster #	Year	State Declaration	Federal Declaration	Location	Damage*
Flooding	Storms	--	1982	12/8/1982	--	San Joaquin County (and 2 other counties)	\$6,964,998
Flooding – winter storms	Flood	DR-677	1982	12/8/82-3/21/83	2/9/1983	San Joaquin County (and 43 other counties)	\$523,617,032
Flooding – River Junction Storms	Storms	GP 83-02	1983	3/1983	--	San Joaquin County	--
Flooding – Storms	Storms	DR-758	1986	2/18/86-3/12/86	2/18/1986	San Joaquin County (and 38 other counties)	13 deaths, 67 injuries \$407,538,904
Earthquake-Loma Prieta Earthquake	Earthquake	DR-845	1989	10/18/89-10/30/89	10/18/1989	City of Tracy (and 1 city and 10 other counties)	63 deaths, 3,757 injuries \$888,662,382
Freeze	Freeze	DR-894	1990	12/19/90-1/18/91	2/11/1991	San Joaquin County (and 32 other counties)	\$856,329,675
Flooding – Late Winter Storms	Storms	DR-1046	1995	--	1/10/1995	All counties except Del Norte	\$132,040,111
Flooding – January Flood	Storms	DR-1155	1997	1/2/97-1/31/97	1/4/1997	San Joaquin County (and 47 other counties)	8 deaths, \$194,342,509
Flooding –El Nino	Storms	DR-1203	1998	--	2/2/1998	San Joaquin County (and 39 other counties)	17 deaths \$385,141,192
Flooding-San Joaquin Levee Break	Levee Break	DR-1529	2004	6/4/2004	6/30/2004	San Joaquin County	\$27,214,428
Economic-Hurricane Katrina Evacuations	Hurricane	EM-3248	2005	--	9/13/2005	Statewide	\$763,576





Table 4-3 The City of Tracy's State and Federal Disaster Declarations, 1950-2017 (Continued)

Hazard Type	Disaster Cause	Disaster #	Year	State Declaration	Federal Declaration	Location	Damage*
Flooding – Winter Storms	Storms	DR-1628	2005-2006	--	2/3/2006	San Joaquin (29 other counties and statewide HM)	\$203,050,747
Flooding- June Storms	Storms	DR-1646	2006	--	6/5/2006	San Joaquin (16 other counties and statewide HM)	\$45,219,721
Drought	Drought	S3452	2012	--	--	San Joaquin County	--
Drought	Drought	S3379	2012	--	--	San Joaquin County	--
Drought – Fast Track	Drought	S3268	2012	--	--	San Joaquin County	--
Drought	Drought	S3248	2012	--	--	San Joaquin County	--
Drought – Fast Track	Drought	S3569	2013	--	--	San Joaquin County	--
Drought – Fast Track	Drought	S3547	2013	--	--	San Joaquin County	--
Drought	Drought	S3743	2014	--	--	San Joaquin County	--
Drought – Fast Track	Drought	S3626	2014	--	--	San Joaquin County	--
Drought – Fast Track	Drought	S3784	2015	--	--	San Joaquin County	--
Excessive Rain, High Winds, Cold temps, and Hail	Severe Storms	S4170	2016	--	--	San Joaquin County	--
Excessive Rain and high winds	Severe Storms	S4164	2016	--	--	San Joaquin County	--
Drought – Fast Track	Drought	S3952	2016	--	--	San Joaquin County	--
Excessive Rain	Storms	S4237	2016-2017	--	--	San Joaquin County	--
Drought - Fast Track	Drought	S4163	2016-2017	--	--	San Joaquin County	--



Table 4-3 The City of Tracy's State and Federal Disaster Declarations, 1950-2017 (Continued)

Hazard Type	Disaster Cause	Disaster #	Year	State Declaration	Federal Declaration	Location	Damage*
Drought - Fast Track	Drought	S4144	2017	--	--	San Joaquin County	--
Flooding and Mudslides – Storms	Storms	DR-4308, GP2017-03	2017	3/7/2017	4/1/2017	San Joaquin County (42 other counties and 1 tribe)	8 deaths, \$199,834,925 (DR) \$331,137,000 (GP)

Source: California Emergency Management Agency (now Cal OES), FEMA

*Damage amounts, deaths, and injuries reflect totals for all impacted counties

4.2 Asset Summary

In order to estimate potential losses and damages from assets exposed to the various identified hazards, the risk assessment takes into account properties from the parcel dataset provided by the HMPC as well as information (e.g. structure values, assessor data) provided by San Joaquin County. Critical facilities and other essential assets at risk are also analyzed. The following section summarizes the City assets that were analyzed as part of the risk analyses where the baseline datasets utilized include:

- Total assets at risk
- Critical and city facility inventory
- Cultural, historical, and natural resources
- Population statistics, including demographic profiles and growth/development trends

Total Assets at Risk

A spatial parcel dataset containing attributes such as structure values and year of property construction was provided by San Joaquin County's GIS Department, in coordination with the County's Assessor's Office. Building counts and valuations in this plan are based on data from the County Assessor's Office.

Once the dataset was reviewed and organized, the parcel layer was clipped to the boundaries of the City of Tracy's Sphere of Influence, i.e., Planning Area, and converted into centroids to represent buildings so that the building layer could be overlaid with the various hazard layers to be analyzed. The table below shows a summary of the total property inventory values grouped by property type. Content values were estimated as a percentage of building value based on their property type, using FEMA/HAZUS-MH estimated content replacement values. This includes 100 percent of the structure value for non-residential structures and 50 percent for residential structures.

Critical and City Facility Inventory

A critical facility is defined (within the context of this plan) as a facility that is essential in providing utilities or support during the response to an emergency or during a recovery operation. FEMA's Hazus-MH 4.0 loss estimation software uses these three categories to differentiate critical assets:

- Essential Facilities: those that if damaged would have devastating impacts on disaster response and/or recovery (e.g. prevention of timely response).





- High Potential Loss Facilities: those that would have a high loss or impact on the community. Some of the high potential loss facilities are listed in Table 4-4 under the exempt government building, municipal utility property, and water district categories.

Table 4-4 The City of Tracy's Total Property Exposure Broken by Property Type

Property Type	Total Properties	Structure Value	Contents Value	Total Exposure
Agricultural	135	\$29,643,974	\$29,643,974	\$59,287,948
Pasture	35	\$2,254,131	\$2,254,131	\$4,508,262
Residential	22,689	\$5,347,444,149	\$2,673,722,074.50	\$8,021,166,224
Mobile Home	28	\$10,431,090	\$5,215,545	\$15,646,635
Multi-Family Unit	627	\$338,372,287	\$169,186,143.50	\$507,558,431
Duplex	400	\$64,712,370	\$32,356,185	\$97,068,555
Residential Vacant Land	542	\$501,193	--	\$501,193
Commercial	723	\$737,722,537	\$737,722,537	\$1,475,445,074
Commercial Vacant Land	139	\$3,666,097	--	\$3,666,097
Industrial	277	\$1,131,196,111	\$1,696,794,166.50	\$2,827,990,278
Industrial Vacant Land	96	\$3,307,497	--	\$3,307,497
Exempt (e.g., Government Buildings)	255	\$-	--	\$-
Municipal Utility Property	17	\$-	--	\$-
Water District	46	\$-	--	\$-
Unknown	1	\$220,000	--	\$220,000
TOTAL	26,010	\$7,669,471,436	\$5,346,894,757	\$13,016,366,193

Source: Wood Analysis based on San Joaquin County's GIS Department and Assessor's Office Data 2018

- Transportation and Lifeline Facilities:

Examples of these types of critical facilities include, but are not limited to:

- Schools and other publicly owned facilities;
- Hospitals, nursing homes, and housing likely to have occupants who may not be sufficiently mobile to avoid injury or death during a major disaster;
- Police stations, fire stations, vehicle and equipment storage facilities, and emergency operations centers that are needed for response activities before, during, and after an event;
- Public and private utility facilities that are vital to maintaining or restoring normal services to damaged areas before, during, and after an event; and
- Structures or facilities that produce, use, or store highly volatile, flammable, explosive, toxic, and/or water-reactive materials.

The City of Tracy also provided key facilities that it deems essential. The following list includes both critical facilities obtained from the Homeland Infrastructure Foundation-Level Data (HIFLD 2018), a federal dataset, as well as the City-provided structure data. Figure 4-0 shows the City's critical facilities.





Table 4-5 The City of Tracy's Critical Facilities

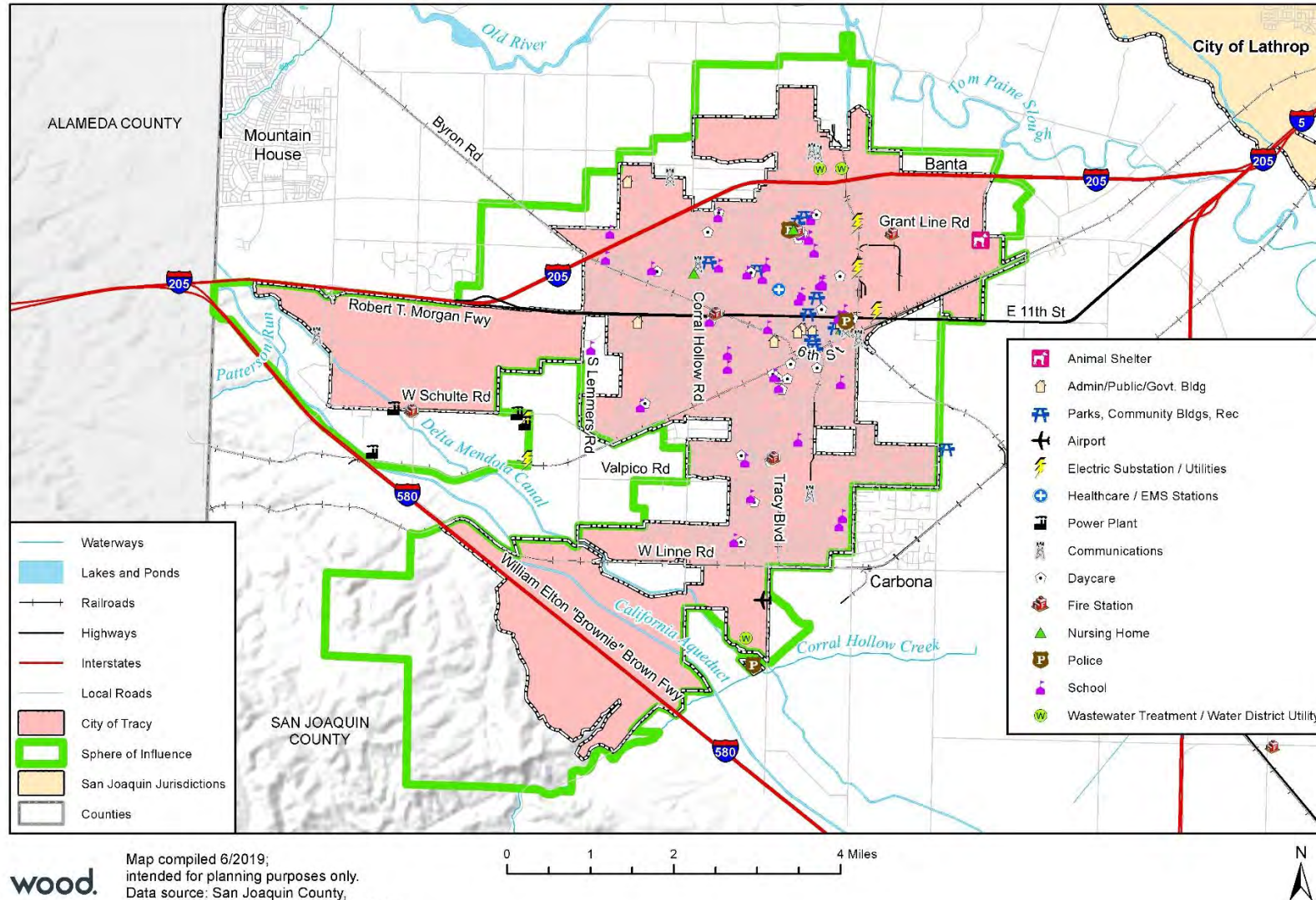
Facility Type	Facility Count ¹
Admin/Public Building	11
Airport	1
Animal Shelter	1
Cellular Towers	2
Day Care Facilities	24
Electric Substations	5
EMS Stations	5
EPA FRS Power Plants	2
Fire Stations	6
Hospitals	1
Local Law Enforcement	2
Microwave Service Towers	18
Nursing Homes	3
Parks, Community Bldgs., Rec	10
Police	3
Power Plants	2
Schools	35
Wastewater Treatment Plant	3
TOTAL	134

1 – According to the HMPC, there is one hospital in the City of Tracy: Sutter Tracy Community Hospital.

Source: HIFLD 2018; City of Tracy 2018



Figure 4-0 City of Tracy Critical Facilities and Infrastructure





4.3 Hazard Profiles and Risk Assessment

Requirement §201.6(c)(2)(i): The risk assessment shall include a] description of the...location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.

Requirement §201.6(c)(2)(ii): The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.

Requirement §201.6(c)(2)(ii)(A): The plan should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas.

Requirement §201.6(c)(2)(ii)(B): The plan should describe vulnerability in terms of an estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(i)(A) of this section and a description of the methodology used to prepare the estimate.

Requirement §201.6(c)(2)(ii)(C): The plan should describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

The hazards identified in Section 4.1 Hazard Identification: Natural Hazards are profiled individually in this section. In general, information provided by planning team members is integrated into this section with information from other data sources. These profiles set the stage for the vulnerability assessment for each natural hazard that follow the detailed hazard profiles.

Each hazard is profiled in the following format:

- **Hazard/Problem Description** - This section gives a description of the hazard and associated issues followed by details on the hazard specific to the Planning Area. Where known, this includes information on the hazard extent, seasonal patterns, speed of onset/duration, and magnitude and/or secondary effects.
- **Location** - The geographic location of the hazard is discussed.
- **Extent (Magnitude/Severity)** - This section gives a description of the potential strength or magnitude of the hazard as it pertains to the City of Tracy. Different hazards may have different measures of extent.
- **Previous Occurrences** - This section contains information on historical incidents, including impacts where known. The extent or location of the hazard within or near the Planning Area is also included here. Historical incident worksheets and other data sources were used to capture information on past occurrences.
- **Probability of Future Occurrence** - The frequency of past events is used in this section to gauge the likelihood of future occurrences. Where possible, frequency was calculated based on existing data. It was determined by dividing the number of events observed by the number of years on record and multiplying by 100. This gives the percent chance of an event happening in any given year (e.g., three droughts over a 30-year period equates to a 10 percent chance of a drought in any given year). The likelihood of future occurrences is categorized into one of the following classifications:
 - **Highly Likely** - Nearly 100 percent chance of occurrence in next year or happens every year.





- **Likely** - Between 10 and 99 percent chance of occurrence in next year or has a recurrence interval of 10 years or less.
 - **Occasional** - Between 1 and 10 percent chance of occurrence in the next year or has a recurrence interval of 11 to 100 years.
 - **Unlikely** - Less than 1 percent chance of occurrence in next 100 years or has a recurrence interval of every 100 years or greater.
- **Climate Change Considerations** – Climate change refers to a long-term change in the earth’s temperature, precipitation, humidity, and seasons. This section addresses the probable effects of climate change qualitatively and as a secondary impact for each identified hazard. Generally, it is perceived that climate change will have a measurable impact on the frequency and severity of natural hazards. Impacts can include water supply shortages, changes in the frequency, intensity, and extent of drought and extreme heat events, more precipitation and flooding risks, and increasing temperatures.

The discussion relies on information from the Fifth Assessment Report from the Intergovernmental Panel on Climate Change (IPCC) *Climate Change 2013: The Physical Science Basis Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* (IPCC 2018). It also relies on numerous California publications including:

- *California’s Fourth Climate Assessment* (California Natural Resources Agency 2018a);
- *Safeguarding California Plan: 2018 Update – California’s Climate Adaptation Strategy* (Cal-Adapt 2018);
- *2014 Safeguarding California: Reducing Climate Risk* (California Natural Resources Agency 2014); and
- *2009 California Climate Adaptation Strategy* (CAS) (California Natural Resources Agency 2009).

The discussion also integrates climate information from Cal-Adapt, a website that gathers data on how climate change might affect California at the local level based on the state’s scientific and research community (CEC 2018). Climate change is addressed in the plan as a secondary impact for each hazard.

- **Vulnerability Assessment** – The vulnerability of the Planning Area to a specific natural hazard is assessed through the study of potential impacts to specific sectors:
 - Property
 - People (includes Commuter Population)
 - Critical Facilities and Transportation Infrastructure
 - Historic, Cultural, and Natural Resources
 - Economy
 - Future Development
- **Risk Summary** – A summary of key findings and risk based on threat, vulnerability and consequences to the Planning Area from the specific hazard.

The significance of each hazard was determined based on the hazard profile, focusing on key criteria such as frequency and resulting damage, including deaths/injuries, and property and economic damage. This





assessment was used by the HMPC to prioritize those hazards of greatest significance to the Planning Area thereby allowing the City to focus resources where they are most needed. The following sections provide profiles of the natural hazards, listed alphabetically that the HMPC identified in Section 4.1 Identifying Hazards. Human-caused hazards are addressed in Section 4.4.

4.3.1 Dam Failure

Hazard/Problem Description

Dams are man-made structures built for a variety of uses, including flood protection, power generation, agriculture, water supply, and recreation. When dams are constructed for flood protection, they usually are engineered to withstand a flood with a computed risk of occurrence. For example, a dam may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any one year. If prolonged periods of rainfall and flooding occur that exceed the design requirements, that structure may be overtopped and fail. Overtopping (when water flows over the dam top) is the primary cause of earthen dam failure in the United States.

Dam failures can also result from any one or a combination of the following causes:

- Earthquake
- Inadequate spillway capacity resulting in excess overtopping flows
- Internal erosion caused by embankment or foundation leakage or piping or rodent activity
- Improper design
- Improper maintenance
- Negligent operation
- Failure of upstream dams on the same waterway

Water released by a failed dam generates tremendous energy and can cause a flood that is catastrophic to life and property. A catastrophic dam failure could challenge local response capabilities and require evacuations to save lives. Impacts to life safety will depend on the warning time and the resources available to notify and evacuate the public. Major loss of life could result as well as potentially catastrophic effects to roads, bridges, and homes. Associated water quality and health concerns could also become issues. Factors that influence the potential severity of a full or partial dam failure are the amount of water impounded; the density, type, and value of development and infrastructure located downstream; and the speed of failure.

In general, there are three types of dams: concrete arch or hydraulic fill, earth-rock fill, and concrete gravity. Each type of dam has different failure characteristics. A concrete arch or hydraulic fill dam can fail almost instantaneously: the flood wave builds up rapidly to a peak then gradually declines. An earth-rock fill dam fails gradually due to erosion of the breach: a flood wave will build gradually to a peak and then decline until the reservoir is empty. A concrete gravity dam can fail instantaneously or gradually with a corresponding build-up and decline of the flood wave.

Common practice among federal and state dam safety offices, such as the Federal Energy Regulatory Commission Dam Safety Program, U.S. Army Corps of Engineers Dam Safety Program, and the California Division of Safety of Dams is to classify a dam according to the potential impact a dam failure (breach) or



mis-operation (unscheduled release) would have on upstream and/or downstream areas or at locations remote from the dam. The three classification levels are as follows:

- **Low Hazard Potential** - Dams assigned the low hazard potential classification are those where failure or mis-operation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's personal property. As such, these dams will not be profiled in greater detail in this plan.
- **Significant Hazard Potential** - Dams assigned the significant hazard potential classification are those dams where failure or mis-operation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or can impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure. These dams are profiled in greater detail in this plan.
- **High Hazard Potential** - Dams assigned the high hazard potential classification are those where failure or mis-operation will probably cause loss of human life. These dams will be profiled in greater detail in this plan.

Location

According to the State of California jurisdictional-sized dams dataset, maintained by the state's Department of Water Resources (DWR), there are five jurisdictional dams in close proximity to the City of Tracy. Only one of these dams, the Maria Dam, poses a risk to the City, being classified as High Hazard dam. The Maria Dam is located slightly to the west of the City boundaries. The other three nearby dams that are also classified as High Hazard structures are the Dyer Dam, the Bethany Forebay Dam (both to the northwest of Tracy but within Alameda County), and the Patterson Dam, located within Alameda County as well but to the west of Tracy. These, while relatively close to Tracy's (Planning Area), should not pose a risk to the City due to the fact that they drain to the north or west rather than toward the City. The Clifton Court Forebay Dam is also found upstream of the City, but given its low hazard rating it is not further analyzed.

All five dams found close to Tracy are summarized in Table 4-6 and illustrated in Figure 4-1. Additional upstream dams that could pose a risk to the City Planning Area if they flood (based on the dam inundation maps provided by San Joaquin County OES), are also noted in the table below (DWR 2018; SJC OES 2017; SJC GIS 2018, NID 2015).

Table 4-6 Jurisdictional Dams Near Tracy or with Potential to Cause Damaging Floods in the City of Tracy's Sphere of Influence

Dam	Hazard Class	Owner	Stream	Type	Dam Height (feet)	Normal Storage Capacity (Acre-feet)*	Year Built
Nearby Dams Not Likely to Pose a Risk to the City							
Bethany Forebay	High	CA Department of Water Resources	California Aqueduct	Earthen	95	5,000	1961
Dyer	High	CA Department of Water Resources	Unnamed/Off Stream	Earthen	30	525	2011



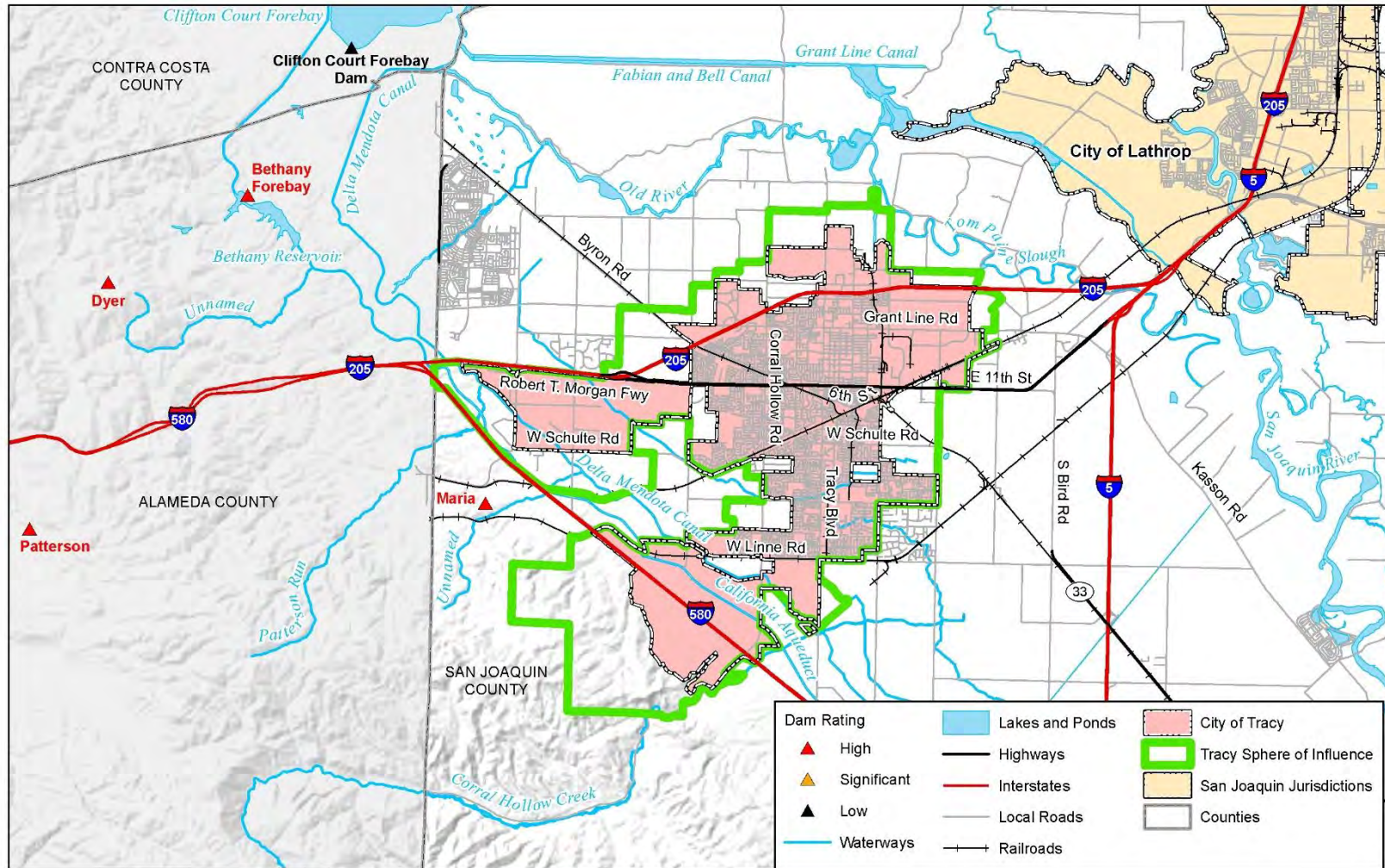
Dam	Hazard Class	Owner	Stream	Type	Dam Height (feet)	Normal Storage Capacity (Acre-feet)*	Year Built
Nearby Dams Not Likely to Pose a Risk to the City							
Clifton Court Forebay	Low	CA Department of Water Resources	TR Old River	Earthen	34	29,000	1970
Patterson	High	CA Department of Water Resources		Earthen	39	104	1962
Upstream Dams Posing a Risk of Flooding to the City							
Maria	High	Studley Company	Unnamed/Off Stream	Earthen	48	277	2003
San Luis (B.F. Sisk)	High	US Bureau of Reclamation/CA Department of Water Resources	San Luis Creek	Earthen	305	2,041,000	1967
Lake McClure (New Exchequer)	Low	Merced Irrigation District	Merced River	Concrete-faced Rock Filled	490	1,024,600	1967
New Melones	Low	US Bureau of Reclamation	Stanislaus River	Earth and Rock Filled	578	2,400,000	1979

Source: State of California Jurisdictional Dams - Department of Water Resources, National Inventory of Dams 2015

*One acre-foot = approximately 326,000 gallons



Figure 4-1 Jurisdictional Dams Near the City of Tracy's Sphere of Influence



wood.

Map compiled 11/2018;
intended for planning purposes only.
Data source: San Joaquin County,
US Census TIGER database, City of Tracy,
CA Dept. of Water Resources, CalFish

0 2 4 8 Miles



Extent (Magnitude/Severity)

Standard practice among federal and state dam safety offices is to classify a dam according to the potential impact a dam failure (breach) or mis-operation (unscheduled release) would have on downstream areas. The hazard potential classification system categorizes dams based on the probable loss of human life and the impacts on economic, environmental and lifeline facilities. Dams are classified in three categories that identify the potential hazard to life and property:

- High hazard indicates that a failure would most probably result in the loss of life;
- Significant hazard indicates that a failure could result in appreciable property damage;
- Low hazard indicates that failure would result in only minimal property damage and loss of life is unlikely.

Dam failure can be catastrophic to all life and property downstream of a dam and the extent of impacts depends on the nature of failure and location of the dam. In the event of dam failure, inundation extent will also depend on flood intensity, but these can be often estimated based on the publicly available dam inundation maps (for larger structures), or state-maintained data and water resource studies indicating this information.

The population and residential and commercial closest to the dam's breach location and the inundation area (again, as indicated by inundation maps and flooding studies) will suffer the most damage. The magnitude or severity of impacts on Tracy will further depend on the specific dam that fails, response time, dam evacuation procedures in place. A worst-case event is expected to be similar to the 500-year flood event in terms of depth of flooding in the northern section of the City, with moderate potential impacts. This is described further in the Vulnerability Assessment section.

Previous Occurrences

There are no known dam failure events that have affected the City of Tracy in recent years. However, levee and other flood control structural failure has occurred; these issues are noted in more detail under Chapter 4.3.5 Flood: 100/200/500 Year and Localized Storm water/Wastewater Flooding.

Probability of Future Occurrences

Unlikely – While there is some risk of dam failures from the three high hazard dams upstream (shown in Figure 4-1) plus the Lake McClure, New Melones, and San Luis Dams farther away to the east as displayed in the dam inundation maps from Figure 4-2 and Figure 4-3, the likelihood of a failure affecting the City is low.

Climate Change Considerations

The potential for climate change to affect the likelihood of dam failure is not fully understood at this point in time. With a potential for more extreme precipitation events, a result of climate change, this could change a river's flow behavior and result in large inflows of water to reservoirs. Also, while climate change may not increase the probability of a catastrophic dam failure, it could increase the likelihood of periodic design failures. For example, if water inflow changes then dam operators may need to release more reservoir water earlier during a storm to maintain capacity for safety reasons. These releases can then increase flood potential downstream. However, this could be offset by generally lower reservoir levels if storage water resources become more limited or stretched in the future due to climate change, drought conditions, and/or population growth. Alternatively, extreme drought events could worsen dam structural

integrity due to erosion, increased sedimentation or scouring, and indirectly increased maintenance costs, possibly making dam failure events due to structural issues more frequent.

Figure 4-2 New Melones Dam Inundation Map and Effects on San Joaquin County Jurisdictions

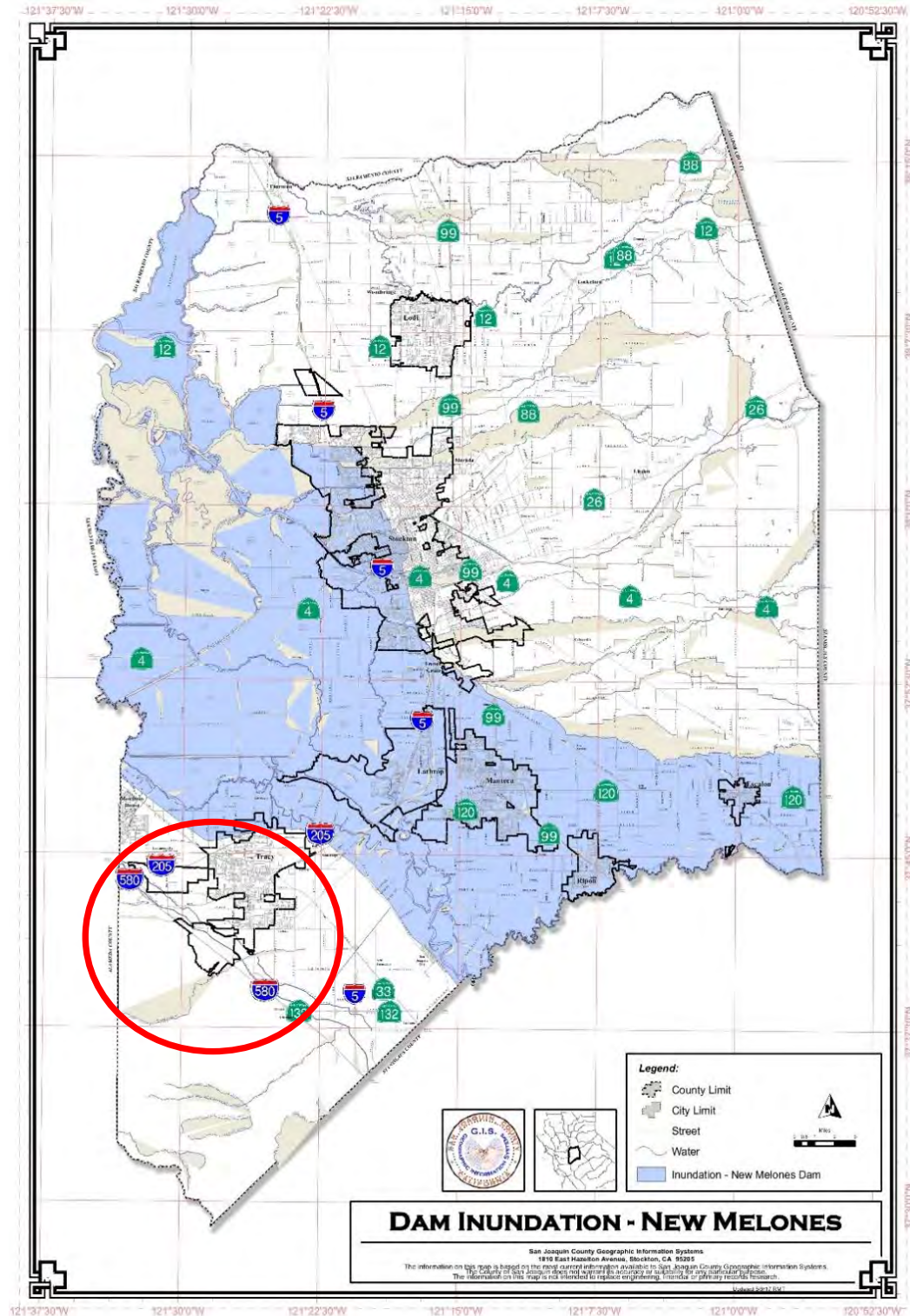
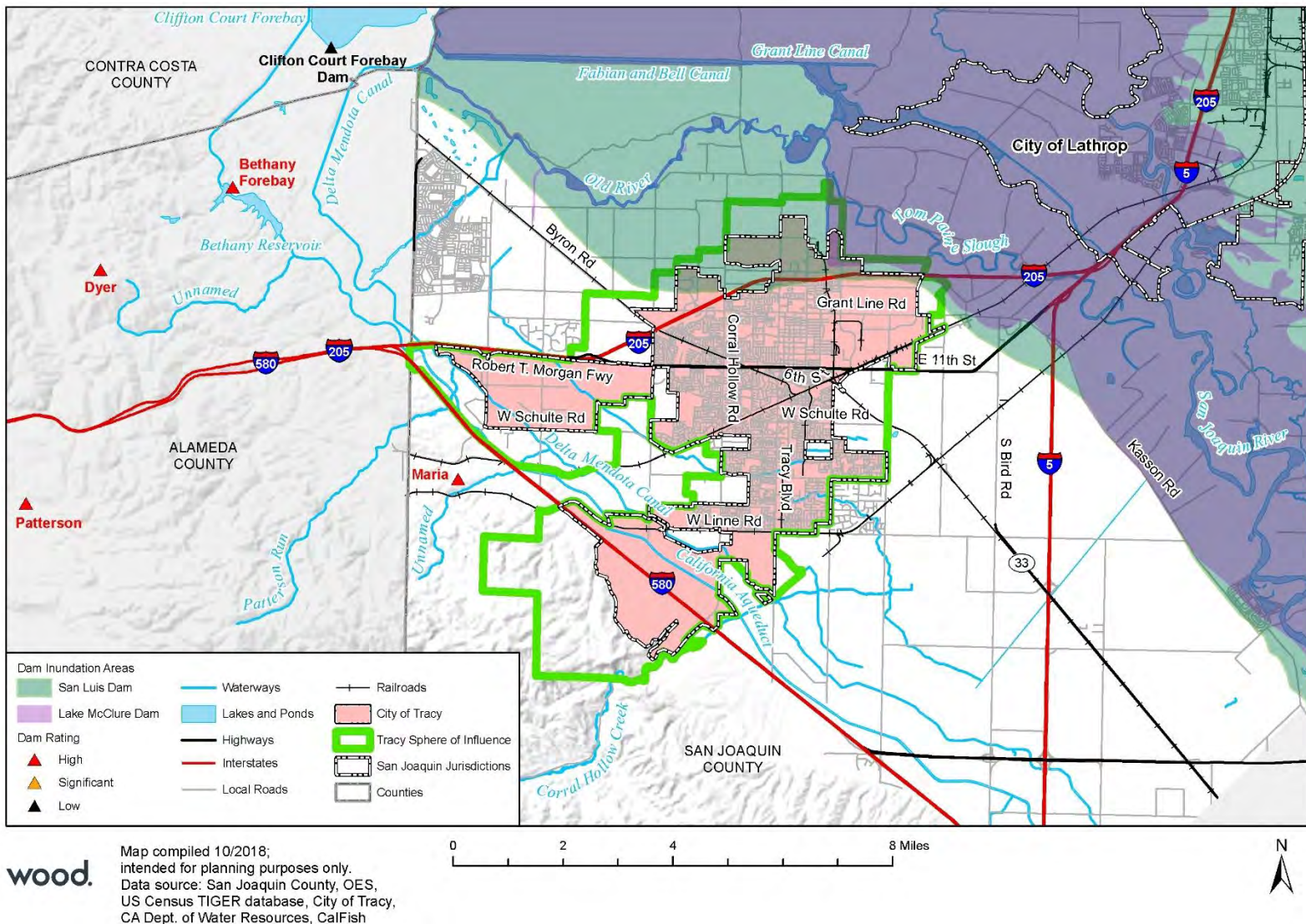


Figure 4-3 Lake McClure Dam and San Luis Dam Inundation Map and Effects on San Joaquin County Jurisdictions





Scientific studies, referenced in the California's Fourth Climate Assessment, indicate that there is a significant potential for frequent and severe water availability shortages and water quality problems resulting from increased volatility of precipitation, decreased snowpack, unsustainable use of groundwater, and decreases in soil moisture (California Natural Resources Agency 2018). California's unique hydrology and statewide water infrastructure amplify the complexity of managing water resources associated with changing climatic conditions (Natural Resources Agency 2018). Large sections of California's statewide water infrastructure system traverse the City's Planning Area (i.e. Delta Mendota Canal, California Aqueduct). This extensive network of water conveyance facilities are situated near the southern portion of the City of Tracy. They each convey surface water to major agricultural and urban areas in the Central Valley and southern California. Furthermore, in the nearby San Joaquin Delta, over 1,000 miles of levees are vulnerable to collapse from earthquakes, rising sea levels, and increasingly severe storms (Natural Resources Agency 2018).

Previous climate assessment reports found that water storage and conveyance system performance may decline due to climate change, including a decline in reservoir carryover storage (water available in reservoirs before the start of the wet season in October). Previous assessments also found that climate change could reduce Delta water exports and diminish drought resilience and operational controls to meet downstream river flow requirements (Natural Resources Agency 2018). Furthermore, while climate change impacts associated with large dams is not well understood, new measurements from mean subsidence rates for some of the levees in Sacramento-San Joaquin Delta are approximately 0.4 to 0.8 inches per year. This data suggests subsidence compounds the risk that sea-level rise and storms could cause associated with overtopping or levee failure. This may, in turn, expose nearby natural gas pipelines and other infrastructure to damage or structural failure (Natural Resources Agency 2018).

Vulnerability to Dam Failure - Low

Dam failure flooding can occur as the result of partial or complete collapse of an impoundment. Dam failures often result from prolonged rainfall and flooding. The primary danger associated with dam failure is the high velocity flooding of those properties downstream of the dam and limited warning times for evacuation. A dam failure can range from a small, uncontrolled release to a catastrophic failure. Vulnerability to dam failures is generally confined to the areas subject to inundation downstream of the facility. Secondary losses would include loss of the multi-use functions of the facility and associated revenues that accompany those functions (e.g. due to increased maintenance).

Based on the Draft San Joaquin County Hazard Mitigation Plan, revised in 2017, there are three dams located far from the City (two or more counties away from San Joaquin) that can impact the Planning Area if they were to fail and cause flooding downstream. These dams are the New Melones, Lake McClure, and San Luis. The New Melones Dam forms the New Melones Lake a few miles west of Jamestown, on the boundary between Calaveras County and Tuolumne County, and is considered a high hazard dam. Its normal reservoir storage is about 2,720,004 acre-feet. According to the dam inundation map for this structure (Figure 4-2), New Melones would flood west and north if it failed, slightly impacting Tracy on the northern edge of the City limits. The Lake McClure Dam, also known as the Exchequer Main Dam, is found within Mariposa County on the Merced River, near Snelling. It has a normal storage capacity of about 1,024,600 acre-feet and is considered a high hazard dam. The inundation map for the Lake McClure dam is displayed on Figure 4-3. Were the dam to fail, flooding would occur northwest, affecting Tracy and its sphere of influence on northeast edge of the City limits. Finally, the San Luis Dam (also known as the B.F. Sisk Dam) is a high hazard dam located in Merced County on the Diablo Range, forming the San Luis Reservoir. It is about 10 miles west of Los Banos and is the largest off-stream dam in the United States.



This dam can store over 2 million acre-feet of water, and most of its water comes more man-made aqueducts and other structures in northern California.

Property

Based on the dam inundation spatial layers provided by the County of San Joaquin GIS Department, the New Melones Dam, the McClure Dam, and the San Luis Dam have the potential to impact the Planning Area, although they are not within City limits. A catastrophic failure of any of these three dams could have a significant impact on the City of Tracy. The failure of any of these dams would cause downstream flooding and would likely result in loss of life and property. The potential magnitude of a dam failure depends on the time of year and the base flow of the stream when the failure occurs. It is also possible that the three high hazard dams which do fall within or very close to the City limits, could also impact the City based on their classification; however, inundation mapping was not available to substantiate the level of potential impact from these dams closer to the City.

Dam failure exposure estimates were generated using both City parcel data and San Joaquin County Assessor information. Table 4-7 below summarizes the number of properties affected by the potential failure of each dam.

Table 4-7 Dams with Potential to Significantly Impact the Planning Area

Dam	Capacity (Acre-Feet)	Number of Properties at Risk
New Melones	2,400,000	402
San Luis	2,041,000	391
Lake McClure	1,024,600	11

Sources: San Joaquin County GIS 2018; City of Tracy 2018; Wood Parcel Analysis

The City's parcel layer was used as the basis for the inventory of developed parcels/properties and content values. In some cases, there were parcels in multiple dam inundation zones. Due to this, GIS was used to overlay the inundation layers with the parcel layers, so that where the inundation zone intersected a parcel boundary it was assigned that hazard zone for the entire parcel. For purposes of this analysis, it was assumed that every parcel with an improved value greater than zero was developed in some way, even if marked as "vacant." Therefore, only improved parcels and the value of their improvements were analyzed. The parcels were then segregated by property type. The results of the analysis, which also take into account potential population affected based on the U.S. Census Bureau average household size for the City of Tracy (i.e., 3.43 people per home), are summarized in Table 4-8 in the following section.

Once the number of parcels and their values were determined, content values were estimated based on flood depth damage functions applied in FEMA's Benefit Cost Analysis tool as well as the Hazus MH 4.0 software. The flood depth damage loss estimated depicts the expected losses from flood events (or, in this case, a dam inundation event) for various structures based the type of structure flooded. As such, content values are as follows: 50 percent for residential occupancy properties (including multi-unit residential, mobile homes, and duplexes); 100 percent for commercial and agricultural properties/parcels; and 150 percent for industrial properties. Vacant properties did not have content values calculated, even those properties with structural values provided. For the purposes of flooding, if a multi-unit home had more than one floor or level, it was assumed that only the first floor would be exposed to the inundation from the dam failure event, and the total structural value was divided by the number of floors to estimate the final structure value that would be affected (or at risk) to this hazard.





Table 4-8 The City of Tracy's Dam Inundation Risk by Property Type

Property Type	Total Structures	Structure Value	Content Value	Total Value	Loss Estimate	Percent of Total Value	Population
Industrial	102	\$105,652,381	\$158,478,572	\$264,130,953	\$396,196,429	14.0%	--
Residential	195	\$27,108,613	\$13,554,307	\$40,662,920	\$20,331,460	0.3%	669
Residential Vacant Land	3	\$22,648	--	\$22,648	\$22,648	4.5%	--
Commercial	63	\$119,797,883	\$119,797,883	\$239,595,766	\$239,595,766	16.2%	--
Agricultural	17	\$1,007,176	\$1,007,176	\$2,014,352	\$2,014,352	3.4%	--
Commercial Vacant Land	2	\$264,287	--	\$264,287	\$264,287	7.2%	--
Mobile Home	7	\$2,709,167	\$1,354,584	\$4,063,751	\$2,031,875	13.0%	24
Multi-Family Unit	12	\$16,473,384	\$8,236,692	\$24,710,076	\$12,355,038	2.4%	41
Duplex	1	\$267,285	\$133,643	\$400,928	\$200,464	0.2%	3
TOTAL	402	\$273,302,824	\$302,562,855	\$575,865,679	\$673,012,319	5.2%	737

Source: San Joaquin County GIS; City of Tracy; Wood Parcel Analysis

Based on this parcel analysis, the City of Tracy's Planning Area would have 402 structures/properties at risk for a total of \$575,865,679 in value at risk. Out of that total amount, \$273,302,824 is from structure values, whereas \$302,562,855 come from content values calculated for the various property types. Commercial structures would be affected the most, with 16.2 percent of their total value at risk based on the exposure amounts and what would be at risk of loss (displayed in the table below). Industrial and mobile home properties would follow, with 14 percent and 13 percent at risk based on their total value, respectively.

People

Of greatest concern in the event of a dam failure is the potential for loss of life. Populations at risk consist of all people residing downstream of a dam failure that are incapable of leaving an affected area within a reasonable timeframe. This population includes elderly and young people who may be unable to leave the inundation area safely and quickly. This population also includes those who may not have been aware of warnings from television, radio warning systems, or reverse 911 notifications and cell phone alerts. This potential loss of life is also related to the capacity of evacuation routes in the inundation area.

The City of Tracy 2017 U.S. Census estimates indicate number of average household members for the City. The mean population per household is 3.43. This metric was multiplied by the number of properties at risk of dam failure inundation to determine the total potential affected population per property type (only for those parcel types that would have people living in them, i.e., residential, mobile homes, multi-family homes, and duplexes). The results were totaled for the entire dam inundation area regardless of which dam could fail. As shown in Table 4-8, there are 737 potential people at risk of being impacted by flooding caused by any of the three high hazard dams, if they were to fail.

As indicated under the Property, People, and Critical Facilities/Transportation Infrastructure sections, a dam inundation event is likely to negatively impact structures and populations. This would in turn impact





those populations' ability to comfortably live (as they may require relocation or temporary shelter), work, and commute. It may also change their day-to-day lifestyles, particularly if road closures occur and other transportation lifelines are seriously affected.

Critical Facilities and Transportation Infrastructure

Critical facilities are those community assets that are most necessary to withstand the impacts of a disaster. An analysis was performed using GIS to determine where critical facilities are located within dam inundation areas, by overlaying the original 134 critical facilities found for the City of Tracy with the dam inundation layers. Figure 4-4 shows the eight critical facilities in the City that would be affected by a failure of the San Luis, Lake McClure, or New Melones Dams, as those were the only three for which inundation maps were available. However, additional flooding could occur from other dams upstream (e.g. Maria Dam) but a more detailed spatial analysis is not available due to lack of data for flooding potential or dam inundation mapping for those dams.

The major transportation infrastructure within and around the City's Planning Area is outside the dam inundation area for the high hazard dams. However, local city and county roads will be impacted.

Table 4-9 Tracy's Critical Facilities within Dam Inundation Areas

Facility Type	Sub Type	Count
Government Office	Admin/Public Building	1
Wastewater Treatment Plant	Wastewater Treatment Plant	2
Cellular Towers	Communications	1
Microwave Service Towers	Communications	4
TOTAL		8

Source: City of Tracy; HIFLD 2017

Other utilities that are vulnerable to dam inundation include linear transportation facilities in low-lying areas, such as highways, roads, railroads, bridges. Overhead power lines, gas pipelines, levees, and communication facilities are also vulnerable, and if affected they could create exacerbate emergency response if there are power outages, levee failures, and a temporary loss of communication facilities.

Historic, Cultural, and Natural Resources

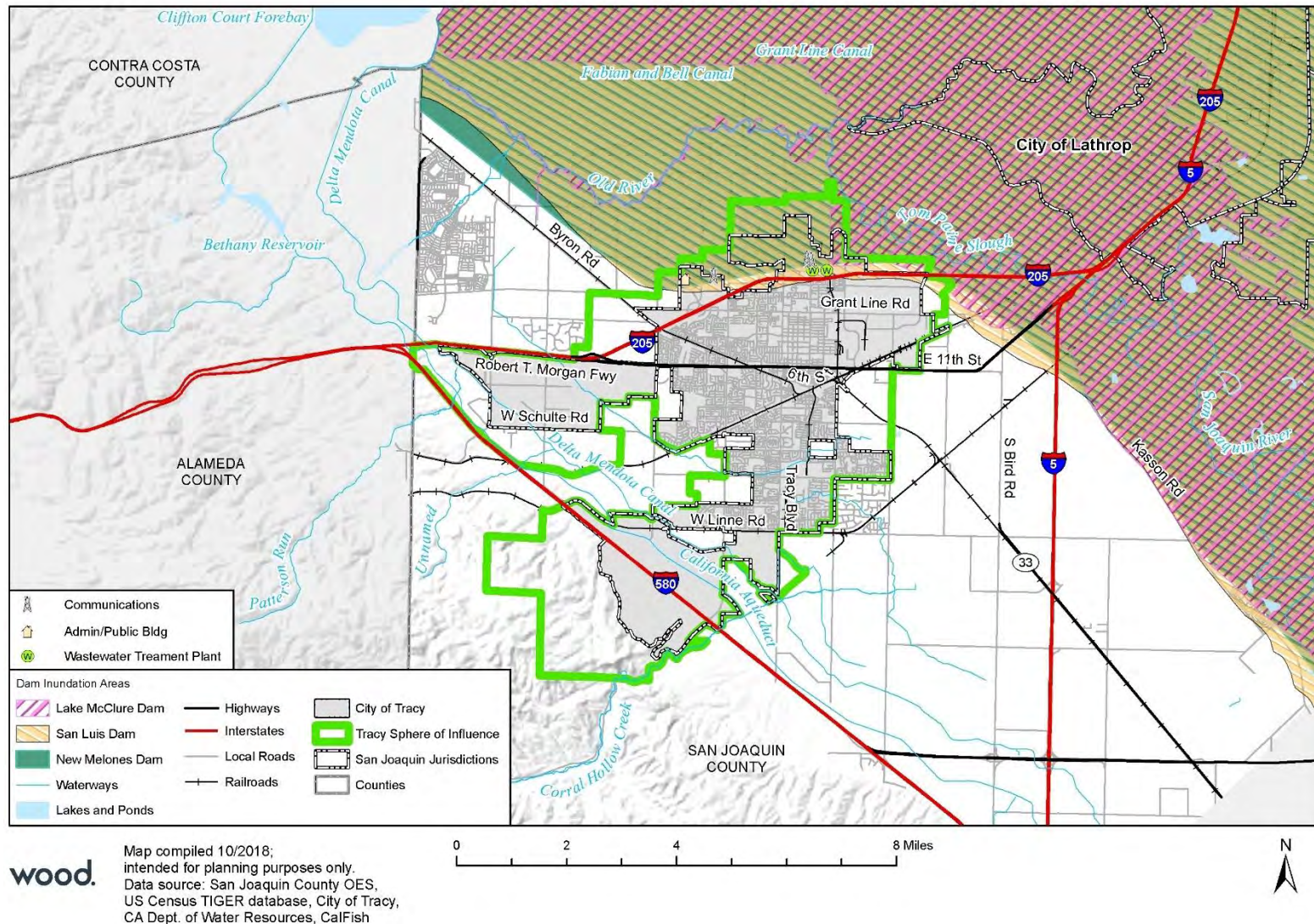
Within the City of Tracy there are five cultural resource buildings, according to the National Register of Historic Places (NRHP) database. These are summarized in the table below. These resources are outside of the dam inundation flooding areas mapped in Figure 4-4 and are not vulnerable.

Table 4-10 Cultural Resource Buildings Within Tracy

Building Name	Qualifying Criteria
Bank of Italy	Architecture/Engineering
Bank of Tracy	Architecture/Engineering
Tracy City Hall and Jail	Architecture/Engineering
Tracy Inn	Architecture/Engineering
West Side Bank	Architecture/Engineering

Source: National Register of Historic Places, 2018 - <https://www.nps.gov/subjects/nationalregister/index.htm>

Figure 4-4 Tracy Critical Facilities within Dam Inundation Areas





Economy

The specific location and characteristics of a possible dam failure event has an effect on the impacts on the local economy. Waters can flood and ruin buildings, and wash out culverts, roads, bridges and other transportation systems. Depending on what the water damages, the economic impacts will vary but could be long-term and affect the tourism and recreation economy. Further, a dam inundation event is likely to negatively impact structures and populations, in turn impacting those populations ability to comfortably live (as they may require relocation or temporary shelter), work and commute, and overall change their day-to-day lifestyles, secondarily affecting the various economic sectors in the City of Tracy.

Future Development

Population growth and development in the City of Tracy is on the rise. According to the 2010 U.S. Census the City had a population of 82,922, while the 2018 estimates show a total of 92,553 people, a 10 percent increase over the past eight years. Continued growth and development within or around dam inundation areas is expected to increase the risk and vulnerability of the Planning Area to a dam failure hazard. The City's General Plan regulates the land use development in hazard area. While dam failure is not specifically addressed in the City's General Plan Safety Element, flood hazards are addressed, and the City has developed flood regulations in flood hazard areas (i.e. Floodplain Regulations). These Safety Element policies and flood regulations may also complement risks associated with dam failure hazards and ensure that future development is not directed to these hazards areas; and for development that is proposed in a dam inundation area that it is protected through the implementation of applicable flood regulations. In addition, future development in Tracy may be subject to more stringent flood protection requirements due to the City's participation in the Central Valley Flood Protection Plan given its location within the San Joaquin River Basin and the Sacramento-San Joaquin Valley.

Risk Summary

- Three high hazard dams close to the City's Planning Area. Only one dam (Maria) poses a risk to the City.
- No known dam failure events in recent years, but levee and flood control structural failures have occurred.
- 402 structures/properties are at risk of structural damage.
- Commercial structures are most at risk of being impacted with \$575,864,679 total values at risk.
- Eight critical facilities are located within the dam inundation areas.
- Local City and County roads will be impacted by a dam failure, but major transportation infrastructure is located outside inundation areas for high hazard dams.
- Safety Element policies and flood regulations may complement risk associated with dam failure hazards and ensure future development is not directed to these hazards areas.
- Overall the significance of dam failure is low.

4.3.2 Drought

Hazard/Problem Description

Drought is a gradual phenomenon. Although droughts are sometimes characterized as emergencies, they differ from typical emergency events. Most natural disasters, such as floods or forest fires, occur relatively rapidly and afford little time for preparing for disaster response. Droughts occur slowly, many times over a multi-year period, and it is often not obvious or easy to quantify when a drought begins and ends.



Drought is a complex issue involving many factors—it occurs when a normal amount of moisture is not available to satisfy an area’s usual water-consuming activities. Drought can often be defined regionally based on its causes or effects:

- **Meteorological** drought is usually defined by a period of below average water supply.
- **Agricultural** drought occurs when there is an inadequate water supply to meet the needs of the state’s crops and other agricultural operations such as livestock.
- **Hydrological** drought is defined as deficiencies in surface and subsurface water supplies. It is generally measured as streamflow, snowpack, and as lake, reservoir, and groundwater levels.
- **Socioeconomic** drought occurs when a drought impacts health, well-being, and quality of life, or when a drought starts to have an adverse economic impact on a region.

The California Department of Water Resources (DWR) says the following about drought:

“One dry year does not normally constitute a drought in California. California’s extensive system of water supply infrastructure—its reservoirs, groundwater basins, and inter-regional conveyance facilities—mitigates the effect of short-term dry periods for most water users. Defining when a drought begins is a function of drought impacts to water users. Hydrologic conditions constituting a drought for water users in one location may not constitute a drought for water users elsewhere, or for water users having a different water supply. Individual water suppliers may use criteria such as rainfall/runoff, amount of water in storage, or expected supply from a water wholesaler to define their water supply conditions.”

The drought issue in California is further compounded by water rights. Water is a commodity possessed under a variety of legal doctrines. The prioritization of water rights between farming and federally protected fish habitats in California is part of this issue.

Location

Drought impacts are wide-reaching, regional, and may be economic, environmental, or societal. In other words, drought affects all aspects of the economy and environment and the community simultaneously. The most significant impacts associated with drought in the City’s Planning Area are those related to water intensive activities such as municipal usage and general water supply (e.g. irrigation for parks and open spaces), wildfire protection (including relief and response activities), commerce, and tourism, due to reduced water availability. Voluntary conservation measures are typically implemented during extended droughts, and surcharges or increased costs for water may also play a part. A reduction of electric power generation and water quality deterioration are other potential problems. Drought conditions can also cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding, debris flow, erosion, or other such secondary hazards and conditions.

According to City of Tracy’s General Plan and the Tracy Water System Master Plan (City of Tracy 2012), the City obtains its water from both surface and groundwater sources, with surface water generally making up about 50-60 percent of the total water supply (these estimates vary annually with greater surface water usage in recent years). These water supply sources and projected acre-feet (AF) available by 2025 are displayed in Table 4-11.

Table 4-11 Tracy’s Current Water Supply Sources and Projected Availability for 2025

Water Supply	2005 Usage	2025 Projected Availability
US Bureau of Reclamation (e.g. Central Valley Project)	10,000 AF	10,000 AF





WSID/BCID Assignment to US Bureau Contract	7,500 AF	7,500 AF
South County Surface Water Supply Contract (with water from the Stanislaus River)	10,000 AF	10,000 AF
Groundwater (from Tracy Aquifer and San Joaquin Valley groundwater basin)	6,000 AF	2,500 AF
TOTAL	33,500 AF	30,000 AF

Sources: City of Tracy General Plan 2011. Tracy Citywide Water System Master Plan 2012.

Note: One Acre-Foot = 43,560 cubic feet. WSID: West Side Irrigation District. BCID: Banta Carbona Irrigation District.

As of 2012, Tracy served a population of over 81,000 people, with an estimated potable water production of 16,693 acre-feet per year (or about 182 gallons per capita per day). Future water demands for building within Tracy's Planning Area is expected to increase potable water demands to about 36,300 AF/year (City of Tracy 2012). As shown in Table 4-11, project water supply (about 30,000 AF in 2025) may not keep up with projected demand. Upon City buildout in the next few years, it is predicted that residential consumption of water will account for 63 percent of the total consumption (lower than current annual consumption rates, which stand at 74 percent), while commercial and industrial land uses' needs will increase (from about 13 percent to 30 percent). However, landscape irrigation consumption should reduce in the next five years, from the current 10 percent to about 4 percent.

Over the last years, the City of Tracy has been in the process of securing additional surface water sources from the West Side Irrigation District (WSID), the Banta Carbona Irrigation District (BCID), South County Water Supply Project (SCWSP), and the Byron-Bethany Irrigation District (BBID), to supplement water supply as the population grows and developments are approved (according to the HMPC some recent developments have provided alternate sources of water). These new or acquired water resources would be necessary given the future available water supply predictions are lower than current availability.

To further aid in the overall conservation of water and reduction of use in the City for the coming years certain measures have been incorporated, to include (among others): a water recycling program/Water Exchange Program (which should be a key determination factor in reducing water use for landscape irrigation), the development of Best Management Practices (BMPs) (detailed in Tracy's Urban Water Management Plan, adopted in 2015), establishing of water demand reduction standards, and similar actions and policies within planning mechanisms and City codes.

Extent (Magnitude/Severity)

Extent can be measured according to a scale developed by the United States Drought Monitor. The US Drought Monitor measures drought in five categories, from "abnormally dry," "moderately dry," to "severely dry," "extremely dry," to "exceptionally dry" (scale is depicted in Figure 4-6). In summary, the City of Tracy is vulnerable to all levels of drought, which further subject to climate change, precipitation trends, and wet and dry periods. Drought can also have a widespread impact on the environment and economy in the Planning Area, but it typically does not result in the loss of life or damage to property. Rather impacts may have an impact on agriculture, business, and the movement of goods and services related to agricultural, commodities, tourism and recreation, and water supply sectors.

Given that the City of Tracy's water users fall within the categories of residential, commercial/office, industrial, institutional, and irrigation, it can be assumed that three main factors have an effect on water demands: climatic, demographic, and economic. These are described below and are expected to influence water demands in the future as they have in the past.



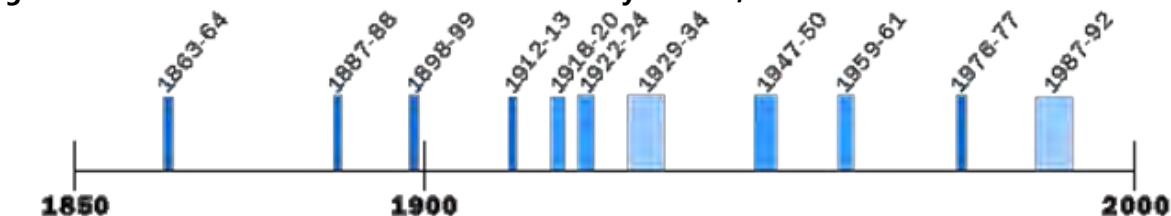
- **Climatic.** The weather in Tracy is mild with a mean annual temperature of 61 degrees Fahrenheit. Average annual precipitation is about 13 inches. Climate has the most dramatic annual effect on water demands, and severe deviations from normal temperatures and average rainfall can increase or decrease annual water demands. Although Tracy's municipal supply doesn't fully rely on surface water sources, precipitation shortages can have negative effects on what the City receives and can process for potable and other key uses.
- **Demographic.** Since water use is related to demographics and population change, an accurate description of population and housing stock in the service area serves as a basis for water planning activities described in the City's Urban Water Management Plan (UWMP) or other planning mechanisms. Population projections for the City indicate an increase from approximately 89,503 in the year 2015 to 126,110 by 2035, or an increase of about 1,831 people per year (City of Tracy 2015).
- **Economic.** Since Tracy was incorporated in 1910 it has grown and developed rapidly after its first irrigation district was established just five years later. Due to its history in prospering as an agricultural area, Tracy's economy has been closely tied to water, as it relies in part on this natural resource to empower its other economic sectors and services (e.g. shipping and transportation, retail). Economic recessions, particularly the last one from 2008-2012, have historically had negative effects to the central sectors in the City and overall San Joaquin County, especially when coupled with dry periods or times of increased demand (such as large construction and development efforts), which in turn impact other aspects of the local community and people's livelihoods (including their health) (San Joaquin County 2013).

The magnitude or severity of a drought across the City could vary and is difficult to predict. However, understanding the total population affected as well as economy and resources vulnerable provides insight on how to estimate potential losses and damages to the City's assets; drought related information can be obtained and measured from the National Drought Mitigation Center's Impact Reporter and Drought Monitor tools (United States Drought Monitor 2018; United States Drought Impact Reporter 2018).

Previous Occurrences

Historically, California has experienced multiple severe droughts. According to California's Department of Water Resources (DWR), droughts exceeding three years are relatively rare in Northern California, the source of much of the state's developed water supply. The 1929-34 drought established the criteria commonly used in designing storage capacity and yield of large Northern California reservoirs. Figure 4-5 depicts California's multi-year historical dry periods from 1850-2000.

Figure 4-5 California's Multi-Year Historical Dry Periods, 1850-2000



Source: California Department of Water Resources, www.water.ca.gov/

Notes: Dry periods prior to 1900 estimated from limited data; covers dry periods of statewide or major regional extent

Since the year 2000 there have been more cases of multi-year droughts across California; these are described below:

2007-2009 – This time marked the first drought for which a statewide proclamation of emergency was issued. Water years 2007-2009 were the seventh driest three-year period in the measured record for



state-wide precipitation and the fifteenth driest three-year period for the Department of Water Resources (DWR) 8-station precipitation index (a rough indicator of potential water supply available to the State Water Project and Central Valley Project).

2012-2017 - The water years of 2012-14 stand as California's driest three consecutive years in terms of statewide precipitation. The drought occurred at a time of record warmth in California, with new climate records set in 2014 for statewide average temperatures. On January 17, 2014, California declared a drought state of emergency and during this time the state assisted farmers and communities that were most impacted by the drought conditions and helped with drinking water shortages. The state also directed all state agencies to use less water and expand their water conservation campaigns. During this time, these factors have led to excessively dry conditions in the City of Tracy and the surrounding areas in past years, often requiring disaster declarations to be enacted to combat drought conditions. This drought period now marks the second time a statewide proclamation of emergency has been issued for this hazard. On April 17, 2017 Executive Order B-40-17 was issued, which officially ended the drought state of emergency in California, except for Fresno, Kings, Tulare, and Tuolumne counties.

Table 4-12 summarizes the drought-related disaster declarations proclaimed either for Tracy or nearby parts of San Joaquin County, since 1976 and up to 2018. These declarations include those from FEMA, the USDA Secretary of Agriculture's (Farm Service Agency 2018), and events noted in the State of California's 2018 State Hazard Mitigation Plan.

Table 4-12 Disaster Declarations and Proclamations Related to Drought in San Joaquin County

Declaration or Order	Date
1976 Drought (State)	1976
EM-3023 (FEMA)	1/20/1977
S3248 (Secretary of Agriculture)	2012
S3268 (Secretary of Agriculture)	2012
S3379 (Secretary of Agriculture)	2012
S3452 (Secretary of Agriculture)	2012
S3547 (Secretary of Agriculture)	2013
S3558 (Secretary of Agriculture)	2013
S3569 (Secretary of Agriculture)	2013
S3626 (Secretary of Agriculture)	2014
S3743 (Secretary of Agriculture)	2014
S3784 (Secretary of Agriculture)	2015
S3952 (Secretary of Agriculture)	2016
S4163 (Secretary of Agriculture)	2016-2017
S4144 (Secretary of Agriculture)	2017

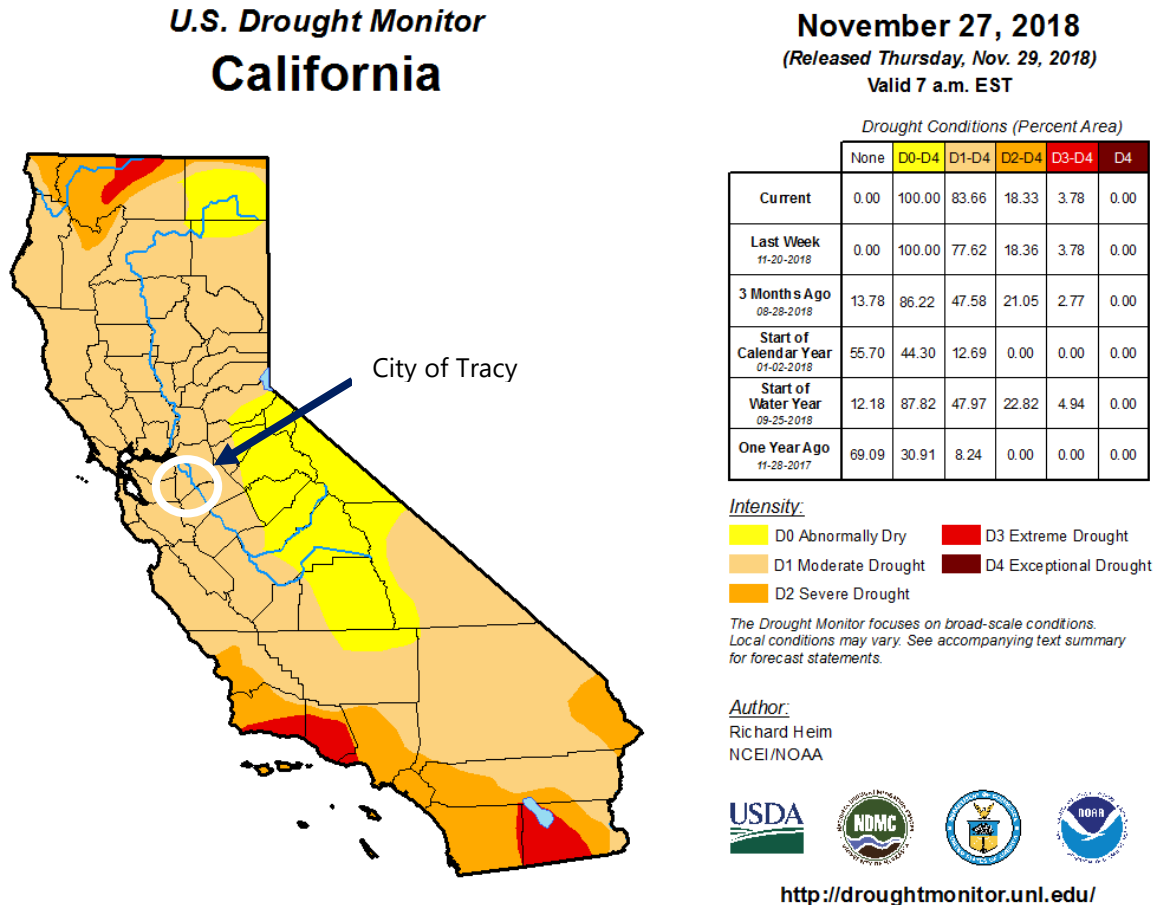
Source: USDA Disaster Designations 2018; State of California Hazard Mitigation Plan; FEMA

Figure 4-6 provides a "snapshot in time" of the recent drought conditions in California as of November 2018. This map was extracted from the National Drought Mitigation Center and considers several factors including the Palmer Drought Index, Soil Moisture Models, U.S. Geological Survey (USGS) Weekly



Streamflows, Standardized Precipitation Index, and Satellite Vegetation Health Index (United States Drought Monitor 2018).

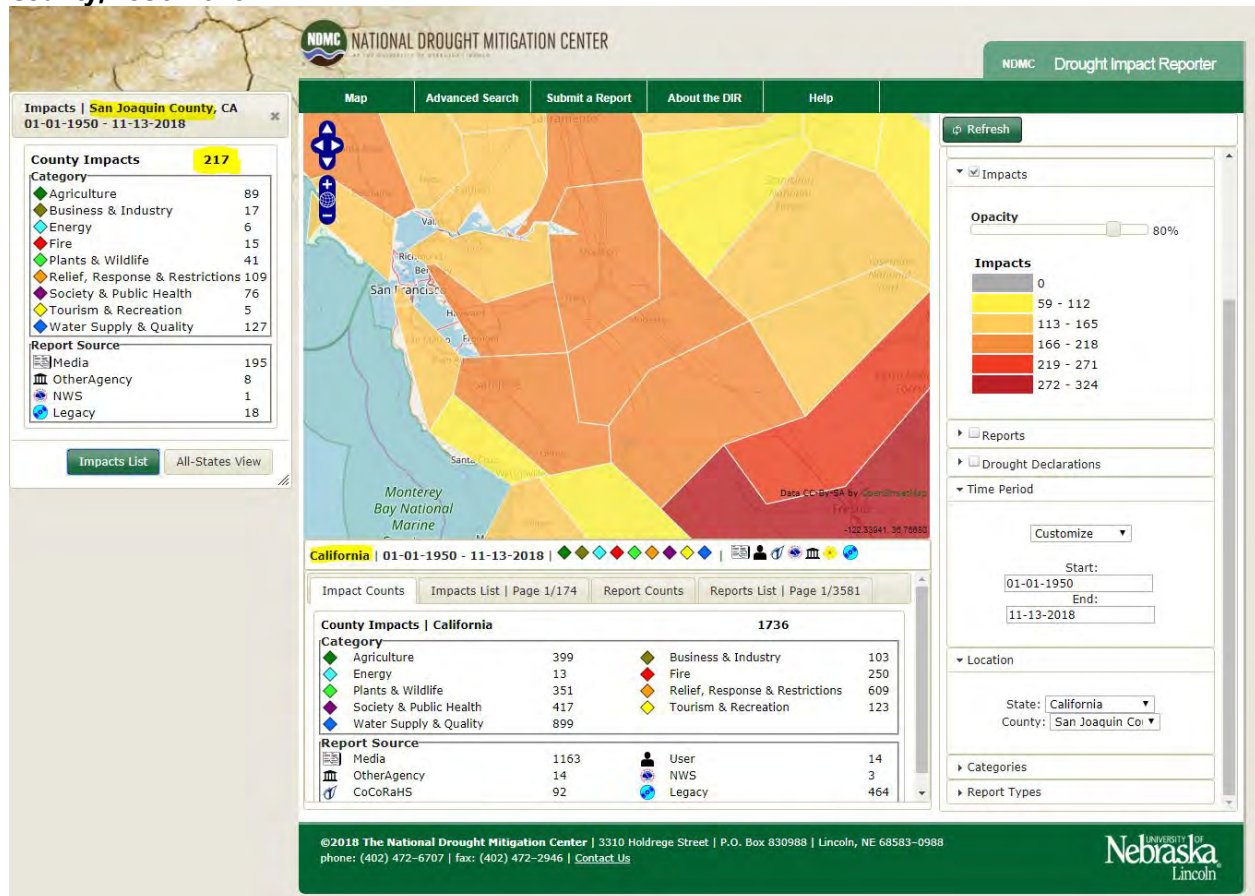
Figure 4-6 U.S. Drought Monitor Conditions for California, November 29, 2018



Source: National Drought Mitigation Center, 2018

Figure 4-7 graphically displays the amount of drought-related reported impacts to San Joaquin County (United States Drought Impact Reporter 2018). While it is difficult to extract the specific impacts affecting Tracy, a total of 217 reports were made within San Joaquin County between January 1, 1950 and November 13, 2018. It is assumed that these drought-related impacts for areas across San Joaquin County are likely to have also affected Tracy at some point or to some extent. Based on the summary of negative effects to the county since 1950 the categories of water supply/quality have had the most reports, followed by relief, response, and restrictions operations and finally the agriculture sector. Society/public health and plants and wildlife have also suffered the effects of drought but to a lesser extent.

Figure 4-7 Drought Impact Reporter Summarizing Impacts at the County Level in San Joaquin County, 1950-2018



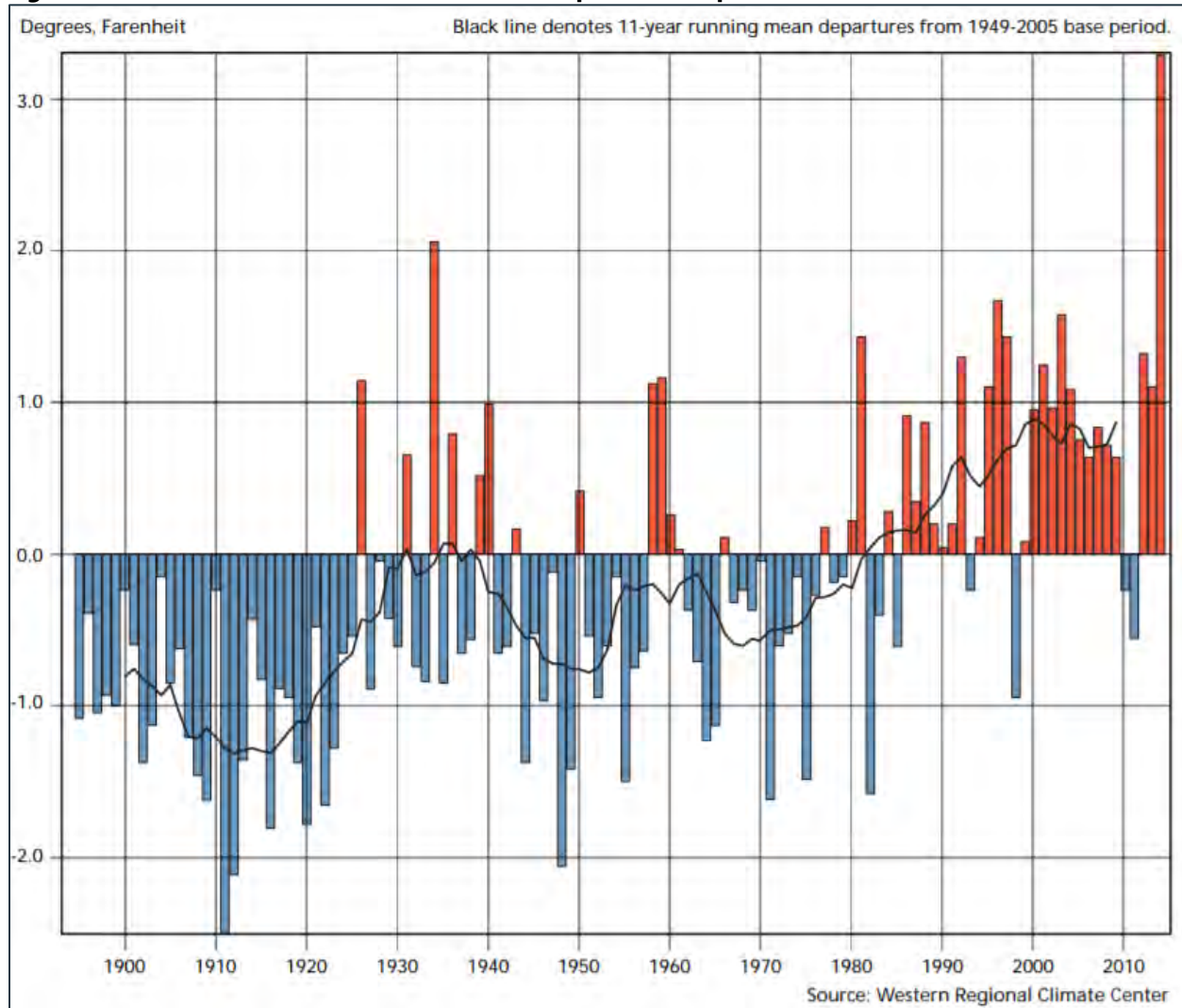
Source: National Drought Mitigation Center Drought Impact Reporter, 2018

Probability of Future Occurrences

Likely - Historical drought data for California and more particularly the San Joaquin County municipalities indicate there have been significant droughts and negative effects from water shortages in past and present. Based on this data, it is predicted that droughts are likely to affect the City's Planning Area and surrounding parts at least once every few years.

The California statewide mean temperature departures are displayed in the figure below, from the 1900s to mid-2010s. This graphically highlights the general warming trend across the state, and how climate change can have significant implications in future water supply availability, higher mean temperatures, and drought overall.

Figure 4-8 California's Statewide Mean Temperature Departure, 1900-2014



Source: Drought in California Report (CA DWR; Natural Resources Agency; State of California, 2015)

Human-Health Hazards: Valley Fever (Coccidiomycosis)

Valley Fever, or "cocci" is a known, but poorly understood secondary effect of drought conditions, and possibly a combination of wind and drought events followed by a rainy season. Valley Fever is an infection caused by a fungus (*Coccidioides immitis*) that lives in soil and dirt and in areas with low rainfall, high summer temperatures, and moderate winter temperatures. Valley Fever is primarily a disease of the lungs that is common in the southwestern United States and northwestern Mexico. Valley Fever derives its name from its discovery in the San Joaquin Valley of California. These fungal spores become airborne when the soil is disturbed by winds, construction, farming and other activities. In susceptible people and animals, infection occurs when a spore is inhaled. Within the lung, the spore changes into a larger, multicellular structure called a spherule. The spherule grows and bursts, releasing endospores which develop into spherules and eventually into pneumonia. The pneumonia will spread until the body develops immunity to the fungus and thereby contains and suppresses the infection, or until a medication effective in destroying the fungus or in retarding the growth of the fungus is given. Valley Fever is not a "contagious" disease, meaning it is not passed from person to person. Second infections are rare.



About two weeks after a susceptible person – one who is not immune to the disease - inhales the Valley Fever arthrospores, the symptoms of the disease begin. These symptoms typically include fever, aching, chills, sweats, fatigue, cough, and headache symptoms, which are commonly associated with the “flu”. The severity of symptoms – and the severity of the lung infection – are probably related to the number of arthrospores inhaled. The more spores inhaled, the worse the disease.

Over half of those infected have no symptoms at all and in many others symptoms can be very mild. The person may develop what amounts to a slight cold, which quickly subsides, and they will never know that the “cold” was really a mild case of Valley Fever. Fever and cough are prominent. Skin rashes may occur. Joint aches - especially those involving the knees - are also common. It may take six months or more for these symptoms, particularly the tiredness and joint aches, to completely subside. Meningitis – the most lethal complication of disseminated Valley Fever – may cause a stiff neck, severe and persistent headache, nausea, vomiting, and various other central nervous system symptoms such as disorientation, loss of balance or equilibrium, inability to think clearly, and loss of consciousness. Three medicines taken orally and two medicines given intravenously are approved by the United States Food and Drug Administration (FDA) for use against Valley Fever. Most cases of valley fever need no treatment

A person (or animal) with a positive skin test has had a Valley Fever infection and has developed immunity to the fungus and therefore will never contract Valley Fever again. Almost everyone who lives long in an area where the disease is prevalent has been infected themselves or knows someone who has had the disease. The social, medical, and economic impacts of the disease are considerable.²

While the extent of Valley fever varies from southwestern United States, northern Mexico, and some parts of Central and South America, the known endemic area in California include portions of the Sacramento Valley, all of the San Joaquin Valley, and desert regions and southern portions of California. Individuals are likely to be affected by Valley Fever if they live in an area where the cocci fungus is prevalent. For instance, in 2018 there were more than 119 cases reported in San Joaquin County and in 2017 there were 197 cases, the 7th highest incident rate in California (San Joaquin County 2017b). Also, between 2013 and 2017, the number of cases more than tripled in the County, with the highest rates in the southwest corner of the County near the City of Tracy (San Joaquin County 2017b).

Between 2017 and 2018, San Joaquin County Public Health Services released several health advisories on reported cases of Valley Fever and the increase in San Joaquin County, with the majority of the cases being reported in November and December (San Joaquin County 2017c). While there is no vaccine to prevent Valley Fever, there are measures that can be taken to reduce the risk of infection. The infection is not spread from person to person or from animals to people. San Joaquin County advises people to avoid areas with dusty air where the fungus is common. In these areas, when it is windy outside and the air is dusty, they advise people to stay inside and keep windows and doors closed. While driving, keep car windows closed and use recirculating air conditioning. Also, the risk for exposure to the cocci spores are highest during the dry months of the summer and fall. Those exposed to dust during their jobs or other outside activities should consider using respiratory protection, such as wearing a close-fitting dust mask. Other measures include controlling dust, such as use of watering at construction sites. Early recognition of symptoms and seeking prompt medical care is important.

In summary, an estimated 7,500 new cases of Valley Fever are anticipated annually within the United States, with an estimated treatment cost of \$60 million.³ In 2017, there were 14,364 cases of Valley Fever reported to the Center for Disease and control Prevention (CDC) and most of these cases were in people

² www.valleyfever.com

³ <http://www.cdph.ca.gov/Programs/CID/DCDC/Pages/Coccidioidomycosis.aspx>





living in California (CDC 2017). While San Joaquin County public health officials emphasize they do not want the public to be alarmed, they do want them to understand the cause and symptoms of the disease and how to take steps to decrease the risk of getting infected. The HMPC has emphasized the same needs during the preparation of the plan. As such, while the natural health hazard is not addressed as a stand-alone natural hazard, relevant information and details on the hazard, extent, past occurrences, and probability of future occurrences has been incorporated into the plan, as it relates to drought.

Climate Change Considerations

Scientific studies prepared for various California climate assessments and adaptations strategies show that drought conditions in California are likely to become more frequent and persistent over the next century due to climate change. Temperatures are warming, heat waves are more frequent, and precipitation has become increasingly variable (Natural Resources Agency 2018a). Water resources are also already experiencing the following stresses: population growth, poor water quality, groundwater overdraft, and aging water infrastructure.

The recent drought conditions over the past decade underscore the need to examine water supply and distribution management, conservation, and use policies. California and the San Joaquin Valley have experienced a succession of dry spells and with warmer temperatures the impacts of drought conditions have increased (OEHHA 2018). In an average year, approximately 40 percent of the state's total water supply comes from groundwater, and during a dry year this increases to more than half of the state's water supply, with groundwater acting as a critical buffer against the impacts of drought and climate change (California Natural Resources Agency 2018a). Historically, the City of Tracy also used 40 to 50 percent groundwater for their supply (City of Tracy 2015). While groundwater use has decreased since 2000 due to increasing surface water supplies from contractual entitlements, it is expected to remain a critical buffer during drought conditions and emergencies.

According to California's Climate Adaptation Strategy, also referred to as "Safeguarding California Plan: 2018 Update," climate change is likely to significantly diminish California's future water supply. As a result the state must change its water management, as climate change will create greater competition for limited water supplies (California Natural Resources Agency 2018b). These water management concerns will also impact the City's water suppliers, including the CVWP users, such as WSID, BCID, and the BBID. Similar concerns will also affect the South County Water Supply Project (SCWSP) and other water management agencies (e.g. City of Manteca, City of Escalon, City of Lathrop, San Joaquin Irrigation District).

Vulnerability to Drought – Medium

Property

Drought impacts are wide-reaching and may be economic, environmental, and societal. The most significant impacts associated with drought in the City's Planning Area are those related to water intensive activities, such as agriculture, municipal water use, commerce, tourism, and recreation. The vulnerability of a water intensive activity to the effects of drought usually depends on its water demand, whether the demand is met, and what water supplies are available to meet the demand. For the City of Tracy, water allocations go down during a drought, and the City's contractual surface water entitlements may be reduced. According to the 2015 UWMP because the City relies more on surface water supplies, they can also use available groundwater supplies as a buffer during drought conditions. Water restrictions and other conservation measures are typically implemented during extended droughts, and these can actually result in economic impacts on water utilities managed by the City of Tracy. For those few property owners that rely on groundwater wells, those with shallow wells may be more impacted as there is an increased



demand on groundwater resources. Drought conditions can also cause soil to compact and not absorb water efficiently, potentially making areas more susceptible to flooding.

According to the Drought Impact Reporter the City of Tracy recorded a total of 217 impacts to drought in the survey period between 1/1/1950 and 11/13/2018 (70-year period). Of these, the majority of the impacts were associated with Water Supply and Quality; Relief, Response, and Restrictions, and Agriculture. These statistics are also shown in Figure 4-7. While the Drought Impact Reporter data reflects impacts at the county-level, the data should be used to develop an ongoing record of drought impacts that can be more specifically tied to events that occur within the City's Planning Area to better understand city-specific vulnerable sectors and impacts.

People

According to the City of Tracy 2015-2023 Housing Element, the City's population has increased between 2000 and 2010 from 56,929 to 82,922 people (City of Tracy 2015). According to the California Department of Finance (DOF) as of 2015 the City population was around 85,296, an additional 2.9 percent increase since 2010, but closer to a 9 percent increase over the 10-year period. The City's population is now around 92,553 people (DOF 2018). While the recent recession and the Growth Management Ordinance (GMO) impacted growth in the region from 2008 and 2012 it has since steadily increased through 2019, as the City has seen a renewed interest in residential, commercial, industrial development. As a result, the population is expected to continue to increase in the future, particularly with the recent approvals of several large subdivision developments. According to the 2015 UWMP, population is expected to increase to 91,601 by 2020 and 96,542 by 2025 (City of Tracy 2015).

This projected population growth would add additional strain to the surface and groundwater supplies. However, because there are several water providers within the City's Planning Area, partnerships and agreements with the multiple water purveyors that serve the City (e.g. U.S. Bureau of Reclamation, South San Joaquin Irrigation District, Banta-Carbona Irrigation District, West Side Irrigation District) will be important to discuss water deliveries during dry years and to assess the availability and reliability of multiple water sources (City of Tracy 2015). There are also several initiatives in the UWMP (and water contingency plan and groundwater management policies) that emphasize sustaining groundwater so the existing groundwater remains operational during severe drought conditions and readily available during emergencies.

Drought can also cause public health problems related to poor water quality, and health problems can become exacerbated due to dust. Generally, drought may require conservation of water resources, which means that water use is restricted to essential uses, which may reduce watering for landscaping.

Critical Facilities and Transportation Infrastructure

Critical facilities, such as transportation infrastructure surrounding the City of Tracy should continue to remain operational during a severe drought. Landscaping around city facilities may no longer be maintained during water restrictions, but the risk within the Planning Area will be largely aesthetic. Further, the conversion to native and drought-tolerant landscaping should minimize any aesthetic impacts.

The biggest impact of drought will be on the City's water supply. Because of this, any critical facility that relies on a steady supply of surface water would experience the greatest impacts during a severe drought. These include power plants, hospitals, such as Sutter Tracy Community Hospital, and medical facilities. Drought can also directly affect the water storage, treatment, and distribution and conveyance systems.



Historic, Cultural, and Natural Resources

Severe, prolonged drought can impact the natural environment. Wildlife and natural habitats can be affected, including the shrinkage of habitat, habitat fragmentation, reduced food supply for wildlife, and possibly the migration of species in the nearby hillsides outside the City of Tracy. Prolonged drought can also cause poor soil quality, loss of wetlands, and increased soil erosion. One of the most prevailing impacts of drought to the natural environment is the increased risk of wildfires, as seen during the recent 2017-2018 wildfire seasons. Wildfires now burn larger and more intensely during dry conditions and are happening outside the typical fire season. Lastly, drought conditions can cause soil to compact and not absorb water well, potentially making an area more susceptible to flooding.

Impacts to the City's historic and cultural building inventory may be negligible. Also, while environmental resources may be impacted, some of the resources within the City's open spaces and park and public lands can be protected through ecosystem restoration and natural process-type engineering.

Economy

Drought impacts to the local or even regional economy can be difficult to quantify but can be extensive and long-lasting depending on the circumstances during, and after a severe drought event. If water resources are limited, effects would be more severe for industries that rely on large amounts of water and any prolonged drought would intensify these impacts. Sectors critical to the economy such as commerce, distribution, agriculture, tourism, related environmental resources, municipal and industrial water supply, key city assets, energy generation, and even socioeconomic aspects can be affected due to lack of, or even reduced quality of water resources.

While there are few water intensive agricultural uses within the City's Planning Area, compared to nearby San Joaquin Valley, long lasting droughts can be indirectly detrimental to the industries in the City of Tracy that rely on the agricultural operations (e.g. agricultural distribution centers).

Future Development

Future development and water availability is the focus of each update to the City of Tracy's UWMP and this planning process specifically address drought conditions and water contingencies. In 2015, the City of Tracy provided water to more than 24,000 customers, and the UWMP describes how current and future water resources and demands within the City's service area will be managed to provide adequate and reliable water supply.

Tracy's proximity to the San Francisco Bay Area and Silicon Valley has made it an attractive place for home buyers who want to live in a place with a "small town" atmosphere and affordable housing (City of Tracy 2016). It is also accessible to the fast-growing Bay Area economy and the availability of jobs. As a result, numerous planned developments have recently been adopted within the City limits and the Planning Area (i.e. SOI) to accommodate the future growth. There are currently over two dozen identified Planning Areas within the City's Planning Area, as identified by City planning staff (City of Tracy 2016).

The City obtains water from both surface and groundwater sources and the amount it uses each year is based on contractual agreements, annual precipitation, and City water management policies. Historically, the City relied on both equal amounts of surface and groundwater, but recently the City's reliance on groundwater has greatly decreased. From 2011 to 2015, the City's annual production of surface water ranged from 14,041 acre-feet in 2015 to 18,587 acre-feet in 2013. During this period, surface water sources, including Delta Mendota Canal and Central Valley Project water sources and SCWSP water comprised more than 96 percent of total water production. The maximum groundwater extraction during the same time was just 680 acre-feet in 2014. Future water production is anticipated to be closer to 36,300 acre-feet per year (City of Tracy 2012).



In summary, as the City and other parts of California continue to experience drought conditions, the City will have to revise their reliability and supply projections from the various surface water purveyors, such as the SCWSP. Water suppliers, such as SCWSP and South San Joaquin County Irrigation District (SSJID) may reduce water deliveries, as water levels in major reservoirs decrease (i.e. New Melones Reservoir). Therefore, as new development occurs in the City's Planning Area it will be important to assess the availability and reliability of multiple water sources. New development in the City is already required to include recycled water distribution systems in accordance with the City's Recycled and Non-Potable Water Ordinance. The City's Water System Master Plan also includes water demands for build out of the City and assumptions specific to new development through 2013. And, consistent with Senate Bill 610, any proposed developments in the City are mandated to estimate future water uses and identify water supplies that may be used to meet their uses. This water supply assessment process is intended to ensure that adequate water supplies exist to support new growth. Lastly, the City recently formed their own Groundwater Sustainability Agency (GSA) consistent with the 2014 Sustainable Groundwater Management Act (SGMA) (DWR 2019). These policies, ordinances, plans, and efforts will help the City become more resistant during future drought events.

Risk Summary

- There have been six multi-year droughts since 1950 and three major droughts since 2000; the most recent drought lasted from 2012 to 2017 and resulted in a declared state of emergency.
- 217 reports were made within San Joaquin County between, 1950 and 2018.
- Significant impacts associated with drought are related to water intensive activities, such as municipal usage and general water supply.
- Tracy's water comes from both surface and groundwater sources, with surface water making up about 50 to 60 percent of the total water supply in an average year.
- As of 2012, the City of Tracy had an estimated potable water production of 16,693 acre-feet per year, and future water demands are expected to increase potable water needs to about 36,300 acre-feet per year.
- While groundwater use has decreased since 2000 due to increasing surface water supplies from contractual entitlements, it is expected to remain a critical buffer during emergency drought conditions, when major suppliers, such as the CVWP and SCWSP reduce allocations.
- Population is expected to increase to 91,601 by 2020 and 96,542 by 2025; this projected growth would add additional strain to the surface and groundwater supplies, particularly during future severe drought events.
- Water suppliers, such as SCWSP and SSJID may reduce water deliveries during drought conditions, as water levels in major reservoirs decrease. As a result, it will be important for the City to continually assess the availability and reliability of multiple water sources during updates to the UWMP and other plan documents.
- Policies and planning processes, such as the City's Recycled and Non-Potable Water Ordinance and regular updates to the UWMP, as well as the formation of a GSA will help ensure the City of Tracy is more resistant to drought events in the future.
- Overall the significance of drought hazards is medium.

4.3.3 Earthquakes

Hazard/Problem Description

An earthquake is caused by a sudden slip on a fault. Stresses in the earth's outer layer push the sides of the fault together. Stress builds up, and the rocks slip suddenly, releasing energy in waves that travel through the earth's crust and cause the shaking that is felt during an earthquake. The amount of energy released during an earthquake is usually expressed as a magnitude and is measured directly from the earthquake as recorded on seismographs. Another measure of earthquake severity is intensity. Intensity is an expression of the amount of shaking at any given location on the ground surface (see discussion in Extent section). Seismic shaking is typically the greatest cause of losses to structures during earthquakes.

Seismic Hazards

Earthquakes can cause structural damage, injury, and loss of life, as well as damage to infrastructure networks, such as water, power, gas, communication, and transportation. The degree of damage depends on many interrelated factors. Among these are the magnitude, focal depth, distance from the causative fault, source mechanism, duration of shaking, high rock accelerations, type of surface deposits or bedrock, degree of consolidation of surface deposits, presence of high groundwater, topography, and the design, type, and quality of building construction.

Primary hazards associated with earthquakes include surface rupture along faults, ground shaking, and associated building failure. Secondary hazards result from the interaction of ground shaking with existing ground instabilities and include liquefaction, settlement and landslides. The following analysis of regional faults and seismic hazards comes from the City of Tracy General Plan Update (City of Tracy 2011) as well as the Environmental Impact Analysis for the San Joaquin Council of Governments Regional Transportation Plan and Sustainable Communities Strategy (San Joaquin COG 2018). Both plans have more detailed discussion on these factors.

Ground Shaking

When movement occurs along a fault, the energy generated is released as waves, which cause ground shaking. Ground shaking intensity varies with the magnitude of the earthquake, the distance from the epicenter, and the type of rock or sediment through which the seismic waves move. The geological characteristics of an area thus can be a greater hazard than its distance to the earthquake epicenter.

The City of Tracy is situated within an area of moderate seismic activity, the faults and fault systems within and around the City as well as other regional faults, have the potential to produce earthquakes that could impact the City of Tracy. A high-magnitude earthquake on one of these faults could cause moderate to high ground shaking in the City of Tracy. Figure 4 4-9 below is an earthquake shaking map for the City of Tracy that is based on the 2 percent probability of occurrence in 50 years, based on USGS analyses of nearby faults and represents a worst case shaking scenario. The map shows that the City of Tracy is located farther from active faults compared to communities west of the City in the Bay Area. However, the City will still experience shaking, which has the potential to be damaging, supporting the conclusion that the Planning Area is at least a moderate risk to future damaging earthquakes.

Liquefaction Potential

Liquefaction can be defined as the loss of soil strength or stiffness due to a buildup of pore-water pressure during a seismic event and is associated primarily with relatively loose, saturated fine to medium-grained unconsolidated soils. Seismic ground shaking of relatively loose, granular soils that are saturated or submerged can cause the soils to liquefy and temporarily behave as a dense fluid. If this layer is at the surface, its effect is much like that of quicksand for any structure located on it. If the liquefied layer is in the subsurface, the material above it may slide laterally depending on the confinement



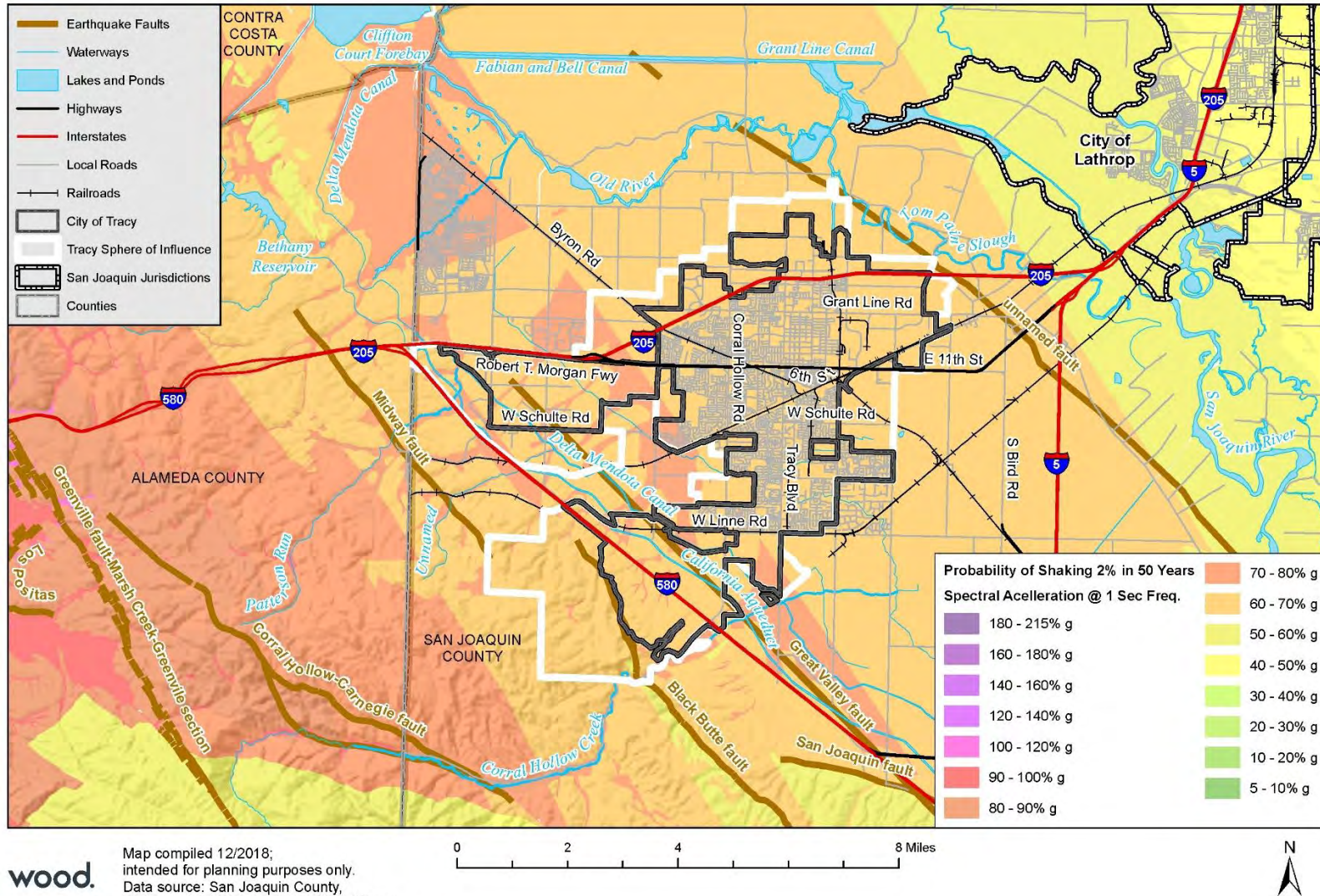
of the unstable mass. Liquefaction is caused by a sudden temporary increase in pore-water pressure due to seismic densification or other displacement of submerged granular soils. Liquefiable soil conditions are not uncommon in alluvial deposits in moderate to large canyons and could also be present in other areas of alluvial soils where the groundwater level is shallow (i.e., 50 feet below the surface). Bedrock units, due to their dense nature, are unlikely to present a liquefaction hazard.

According to the California Department of Conservation, there are no liquefaction zones identified within San Joaquin County. Despite this classification, according to the Environmental Impact Statement for the 2018 Regional Transportation Plan and Sustainable Communities Strategy for San Joaquin County, there are areas within the County that may be at risk of liquefaction due to high groundwater levels (San Joaquin COG 2018). Also, according to the HMPC there are other site-specific areas within the City's Planning Area that are susceptible to liquefaction, including the area near Kimball High School on Lammers Road. The area near the high school required site-specific compaction due to sandy soils and liquefaction potential. However, in most portions of the Planning Area, the City of Tracy has a shallow depth to groundwater due to the surface soils being predominantly clay or sand with high silt and clay content. Because of the clay content, the soils within the Planning Area are not considered to be susceptible to liquefaction, however future development should be evaluated on a site-by-site basis.

Other Hazards

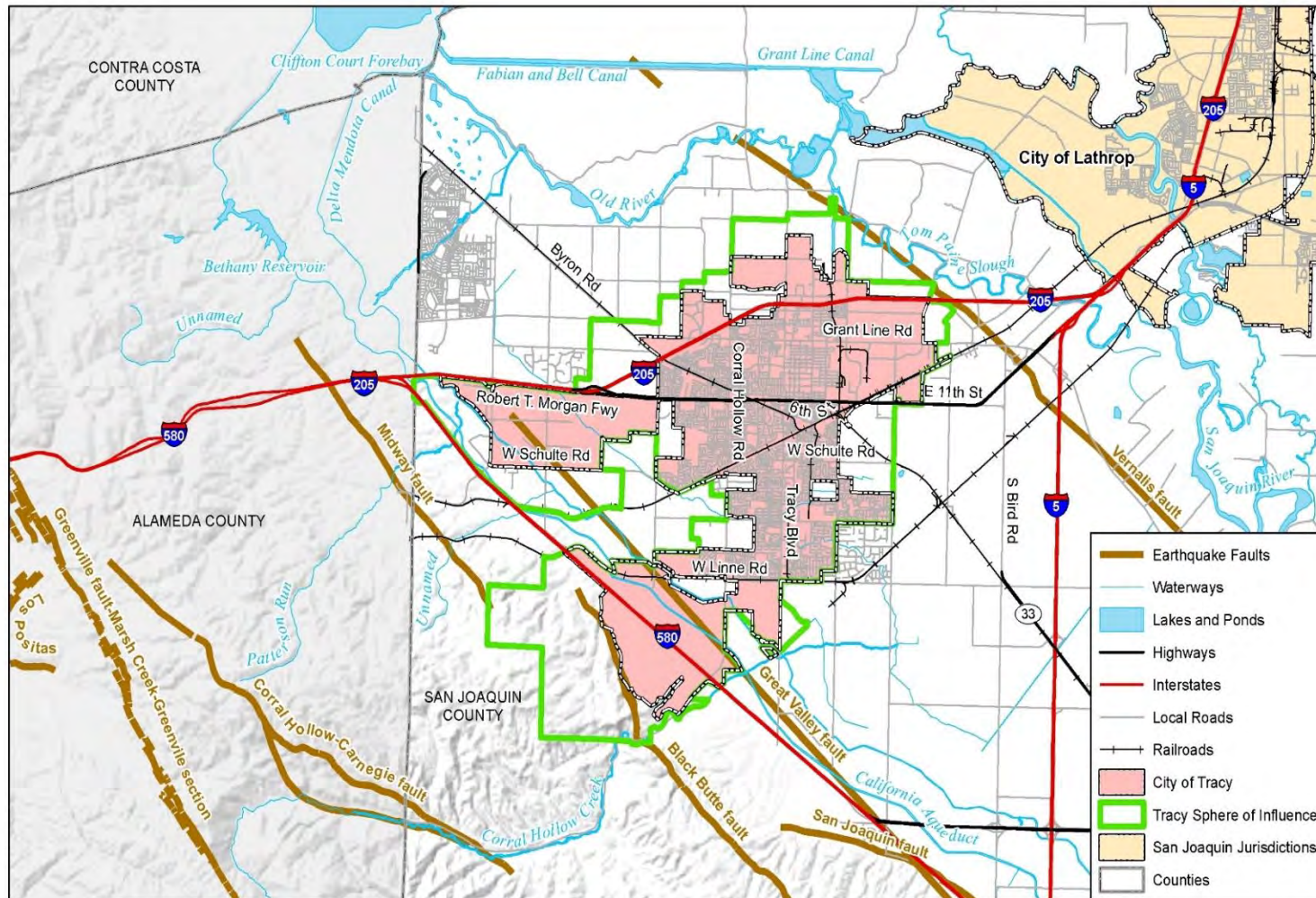
Earthquakes can also lead to secondary hazards including flooding, building structure failure and fire. The Planning Area is at risk of flooding from dam or levee failure as well as risk of broken pipelines in the area. There is one high hazard dam (Maria Dam) that is located west of the city boundaries and in an area of moderate seismicity. Refer to Section 4.3.1 Dam Failure for more information on the dam and levee failure profile and vulnerability assessment.

Figure 4-9 The City of Tracy's Earthquake Shaking Potential



wood.

Figure 4-10 Earthquake Faults near Planning Area



wood.

Map compiled 11/2018;
intended for planning purposes only.
Data source: San Joaquin County,
US Census TIGER database, City of Tracy,
CA Dept. of Water Resources, CalFish, USGS



The California Aqueduct and Delta-Mendota Canal, located southeast of the City, are both large water delivery systems that bring water to communities down slope. The two canals are located adjacent to the future Tracy Hills Development as well as the Greenville Fault system and San Joaquin Fault, both of which are considered active. According to the Tracy Hills Specific Plan Environmental Impact Report (EIR), Appendix E-2, seismic shaking poses the greatest risk to these structures and if failure was to occur a massive flooding event would likely follow. Comments received from the California DWR on the 1997 Tracy Hills Development EIR, indicate that failure of the aqueduct could generate a maximum flow of 10,300 cubic feet second (cfs) with an initial surge of 25,000 cfs posing a risk to communities' down slope (north) of the Aqueduct and Delta-Mendota Canal (City of Tracy 1997). The 2015 EIR Appendix E-5 for the Tracy Hills Specific Plan evaluated the structures and performed a probabilistic and deterministic seismic hazard analysis for a 6.5 magnitude earthquake in the area. The analysis found that area between the Aqueduct and Delta-Mendota Canal are at most risk of flooding caused by seismic shaking due to the water elevations and adjacent ground elevations (City of Tracy 2015b). Refer to Section 4.2.5 Flood: 100/200/500 Year and Localized Stormwater/Wastewater Flooding for more information on the flooding risk and vulnerability of these structures.

There are five liquid petroleum pipelines located within the Planning Area, two of which (a 16-inch diameter Conoco Phillips 66 Pipeline LLC and a 20-inch diameter Shell Oil Company pipeline) are adjacent to the California Aqueduct and Delta-Mendota Canal. Ground shaking poses the greatest risk to these structures and could lead to flash fire, liquid pool fire or surface flow of crude oil that could enter future and existing drainage culverts. The Tracy Hills Specific Plan EIR, Appendix E-2 analyzed the potential risk of severe seismic shaking on these two pipelines and the potential impacts of a future school site adjacent to the pipelines within Tracy Hills (City of Tracy 2015b). The EIR found that the potential of complete failure of the pipelines is low but should be considered in future development plans. Refer to Section 4.4.1 *Hazardous Materials* for more information on these hazards.

Faults

California is a seismically active area with numerous faults throughout the region. An active fault is defined by the California Geological Survey (CGS) as a fault that has had surface rupture or displacement within the last 11,000 years (Holocene times). This does not mean, however, that faults having no evidence of surface displacement within the last 11,000 years are necessarily inactive. For example, the 1975 Oroville earthquake, the 1983 Coalinga earthquake, and the 1987 Whittier Narrows earthquakes occurred on faults not previously recognized as active. Potentially active faults are those that have shown displacement within the last 1.8 million years (Quaternary) but have not moved within the Holocene times. Any fault older than Pleistocene (> 1.8 million years) is considered inactive and dormant.

Location

There are a number of active and potentially active faults within and adjacent to the City of Tracy. The faults within the Planning Area are illustrated in Figure 4-10. There are active and potentially active faults that fall outside the Planning Area as well but have historically been the source of earthquakes felt in Tracy. The local and regional faults are described below. The following descriptions were taken from the City of Tracy General Plan as well as applicable specific plans within the City of Tracy and neighboring Alameda County.

San Andreas Fault. The San Andreas Fault is located approximately 50 miles west of the Planning Area. It is a shallow fault and is considered the most active fault in California. Historically, the San Andreas Fault is one of the faults that is responsible for the earthquakes felt in the Planning Area.





Calaveras Fault. The Calaveras Fault is considered active over a distance of more than 80 miles from Danville on the north to Hollister on the south. Seismic activity along the Calaveras Fault has been felt in the central San Joaquin Valley as recently as April 1984. The California Division of Mines and Geology (CDMG) database lists two segments near the City of Tracy, with maximum moment magnitudes ranging from 6.2 to 6.8 and slip rates ranging from 6.0 to 15.0 millimeters per year. The Calaveras Fault is located approximately 13 miles west of the Planning Area.

Hayward Fault. The Hayward Fault is located approximately 21 miles west of the Planning Area and is one of the regional faults that has historically been the source of earthquakes felt in the City. The fault lies parallel to the San Andreas Fault and is considered active. The largest earthquake recorded on the fault was estimated to be a magnitude 7 in 1868 and lead to the destruction of downtown Hayward as well as several deaths and injuries. According to the California Geologic Survey, the Hayward fault is capable of producing a magnitude 7.5 earthquake.

Corral Hollow-Carnegie Fault. The Corral Hollow-Carnegie Fault runs southeast of the City of Tracy and is considered active. The fault runs northeast-southeast along the southern boundary of the Lawrence Livermore National Laboratory Site 300 located in Alameda County.

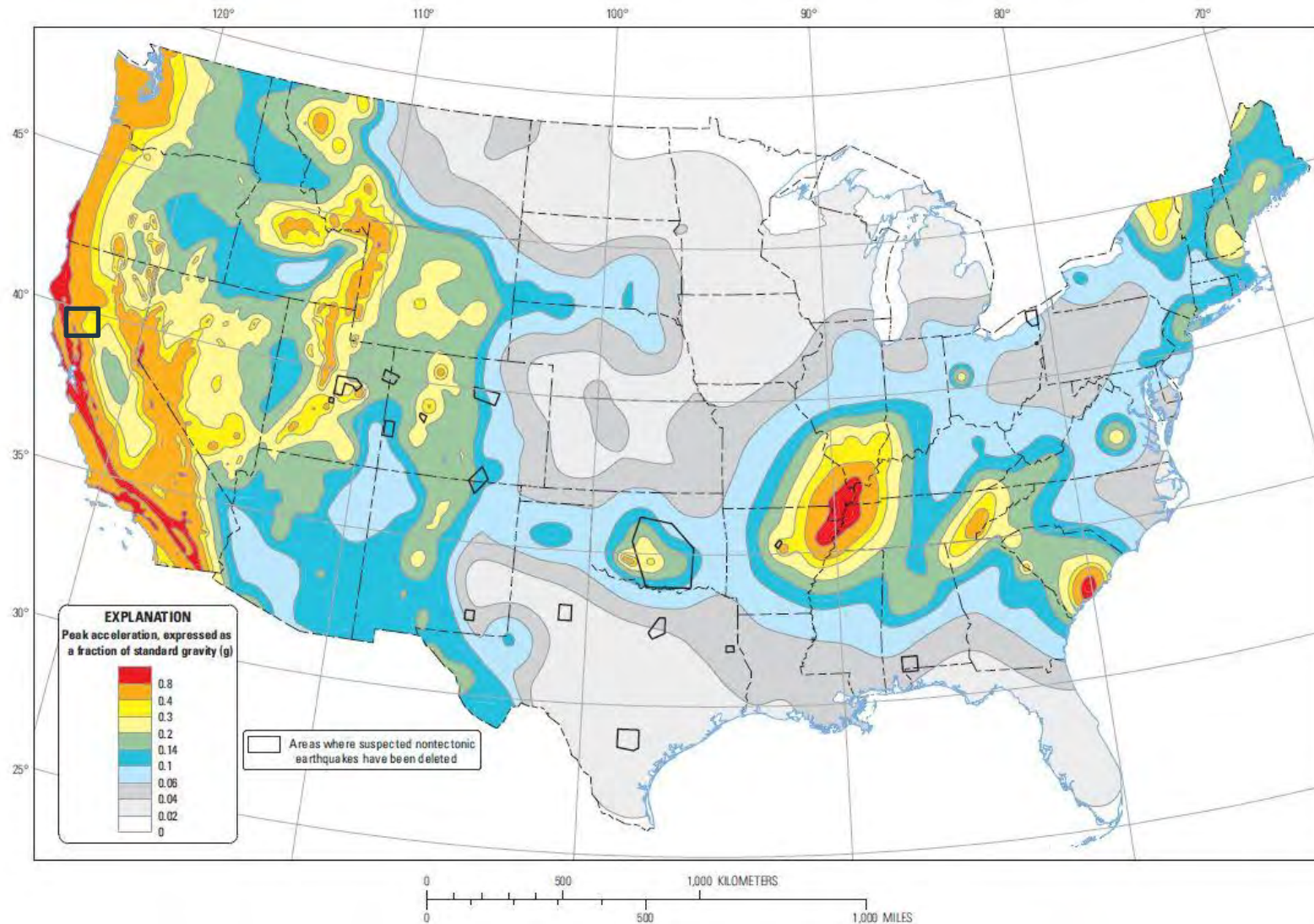
Greenville Fault. The Greenville Fault is northwest trending, strike-slip fault that extends for approximately 30 miles. It's a parallel secondary system to the San Andreas Fault credited with the 5.8 magnitude Livermore earthquake in 1980. The Greenville Fault is southwest of the Planning Area.

Great Valley Fault System. The San Joaquin segment of the Great Valley Fault has a projected surface expression located approximately 4 miles to the west of Tracy. The Great Valley Fault is a blind thrust fault. Portions of the Great Valley Fault are considered seismically active thrust faults; however, since the Great Valley Fault segments are not known to extend to the ground surface, the State of California has not defined Earthquake Fault Hazard Zones around the postulated area of the fault. The Working Group on Northern California Earthquake Potential identified 14 segments (GV01 through GV14) of the Great Valley blind thrust fault system within the Central Valley. Overall the southerly 12 segments including GV07 have a slip rate of approximately 1.5 millimeters per year.

Other faults include, the Black Butte and Midway Faults, and are both considered potentially active. Others such as the Elk Ravine Fault, which lies between the Carnegie-Corral Hollow, Black Butte, Midway faults, and the Tracy-Stockton fault, which passes beneath the City of Tracy, are both considered inactive. Also, seismic risk is not limited to identified faults. A significant fraction of small to moderately large earthquakes occurs on faults not previously recognized. Such earthquakes are characterized as "background seismicity" or "floating earthquakes," which mean that the expected sources and locations of such earthquakes are unknown.

The USGS issues National Seismic Hazard Maps as reports every few years. These maps provide various acceleration and probabilities for time periods. Figure 4-11 below depicts the peak horizontal acceleration (percent g) with 10 percent probability of occurrence in 50 years. The black square is an estimation of the Planning Area. The figure demonstrates that the city falls between the 4 percent g and 3 percent g area. This data indicates that the expected severity of earthquakes in the region is limited, as damage from earthquakes typically occurs at peak accelerations of 30 percent g or greater. However, as demonstrated by the Hazus modeling, the potential, though remote, does exist for damaging earthquakes to occur in the Planning Area.

Figure 4-11 Peak Horizontal Acceleration with 2 Percent Probability of Occurrence in 50 Years



Source: USGS National Seismic Hazard Maps – 2014 Long-term Mode



Extent (Magnitude/Severity)

For extent, the severity of an earthquake, or the amount of energy released during an earthquake is usually expressed in terms of intensity or magnitude and is measured directly from the earthquake as recorded on seismographs.

Intensity represents the observed effects of ground-shaking at any specified location and earthquake shaking decreases with distance from the earthquake epicenter. Intensity is an expression of the amount of shaking at any given location on the ground surface based on felt or observed effects. Seismic shaking is typically the greatest cause of losses to structures during earthquakes. Intensity is measured with the Modified Mercalli Intensity (MMI) scale.

Magnitude represents the amount of seismic energy released at the hypocenter of an earthquake and is based on the amplitude of the earthquake waves recorded. Seismologists have developed several magnitude scales; one of the first was the Richter Scale, developed in 1932 by the late Dr. Charles F. Richter of the California Institute of Technology. The Moment Magnitude Scale is used to quantify the magnitude or strength of the seismic energy released by an earthquake

Table 4-13 below compares magnitude and the felt effects associated with the MMI scale. Damage typically occurs in MMI VII or above and some areas of the City, particularly on the southwest of the Planning Area boundaries are susceptible to this level of shaking based on the 2 percent in 50 years probabilistic ground-shaking level of 60-80 percent as shown in Figure 4.10 (roughly equivalent to MMI of VII-IX).

Previous Occurrences

Earthquakes have occurred in the Planning Area in the past. According to the US Geological Survey, the CGS has identified 11 past earthquake events that were fairly minor in magnitudes ranging from 2.5 to 3.5. The California Geological Survey identifies one magnitude 6 earthquake that occurred in the Planning Area in 1866. Due to the earthquake being historic there is not much information available on the event itself. The 1989 Loma Prieta earthquake which caused mass destruction in the bay area also led to significant damage to Tracy's old City Hall and Fire Station 1. The Loma Prieta earthquake also led to a disaster declaration for the City of Tracy. Refer to 4.1.2 Disaster Declaration History.

Probability of Future Occurrence

Occasional- With only two magnitude 6.0 or greater earthquakes identified causing damage in the City of Tracy between 1886 and 2018 the likelihood of a severely damaging earthquake occurring is occasional. According to the City of Tracy General Plan, the faults and fault systems that lie along the southwestern boundaries of Tracy, as well as other regional faults, have the potential to produce high magnitude earthquakes throughout the City. The epicenter of the 1989 Loma Prieta earthquake occurred along the regional San Andreas fault and still amounted in a disaster declaration for the City of Tracy.

Climate Change Considerations

While climate change is not expected to directly affect earthquake frequency or intensity; it could exacerbate indirect or secondary impacts of earthquakes. For example, climate change could increase the frequency and intensity of extreme precipitation events, in turn increasing the probability of landslides and liquefaction events during an earthquake if the earthquake coincided with a wet cycle. Also, in the nearby Delta, more than 1,000 miles of levees may become vulnerable to collapse from earthquakes, rising sea-levels, and potentially increasing severe storms. In summary, levees may not be able to withstand or rebound from climate change due to aging infrastructure, deferred maintenance, funding constraints, and ongoing technological changes (Natural Resources Agency 2018a).

Table 4-13 Richter Scale Measurements and Associated Characteristics

Magnitude	Mercalli Intensity	Effects	Frequency
Less than 2.0	I	Micro-earthquakes, not felt or rarely felt; recorded by seismographs.	Continual
2.0-2.9	I to II	Felt slightly by some people; damages to buildings.	Over 1M per year
3.0-3.9	II to IV	Often felt by people; rarely causes damage; shaking of indoor objects noticeable.	Over 100,000 per year
4.0-4.9	IV to VI	Noticeable shaking of indoor objects and rattling noises; felt by most people in the affected area; slightly felt outside; generally, no to minimal damage.	10K to 15K per year
5.0-5.9	VI to VIII	Can cause damage of varying severity to poorly constructed buildings; at most, none to slight damage to all other buildings. Felt by everyone.	1K to 1,500 per year
6.0-6.9	VII to X	Damage to a moderate number of well-built structures in populated areas; earthquake-resistant structures survive with slight to moderate damage; poorly designed structures receive moderate to severe damage; felt in wider areas; up to hundreds of miles/kilometers from the epicenter; strong to violent shaking in epicentral area.	100 to 150 per year
7.0-7.9	VIII <	Causes damage to most buildings, some to partially or completely collapse or receive severe damage; well-designed structures are likely to receive damage; felt across great distances with major damage mostly limited to 250 km from epicenter.	10 to 20 per year
8.0-8.9	VIII <	Major damage to buildings, structures likely to be destroyed; will cause moderate to heavy damage to sturdy or earthquake-resistant buildings; damaging in large areas; felt in extremely large regions.	One per year
9.0 and Greater	VIII <	At or near total destruction - severe damage or collapse to all buildings; heavy damage and shaking extends to distant locations; permanent changes in ground topography.	One per 10-50 years

Vulnerability to Earthquakes - Medium

Ground shaking is the primary earthquake hazard. Many factors affect the survivability of structures and systems from earthquake-caused ground motions. These factors include proximity to the fault, direction of rupture, epicentral location and depth, magnitude, local geologic and soils conditions, types and quality of construction, building configurations and heights, and comparable factors that relate to utility, transportation, and other network systems. Ground motions become structurally damaging when average peak accelerations reach 10 to 15 percent of gravity, average peak velocities reach 8 to 12 centimeters per

second, and when the Modified Mercalli Intensity Scale is about VII (18-34 percent peak ground acceleration), which is considered to be very strong (general alarm; walls crack; plaster falls).

Fault rupture itself contributes very little to damage unless the structure or system element crosses the active fault. In general, newer construction is more earthquake resistant than older construction because of improved building codes and enforcement. Manufactured housing is very susceptible to damage because rarely are their foundation systems braced for earthquake motions. Locally generated earthquake motions, even from very moderate events, tend to be more damaging to smaller buildings, especially those constructed of unreinforced masonry.

Common impacts from earthquakes include damage to infrastructure and buildings (e.g., crumbling of unreinforced masonry, failure of architectural facades, rupturing of underground utilities, and road closures). Earthquakes also frequently trigger secondary hazards, such as dam and levee failures, explosions, and fires that can become disasters themselves.

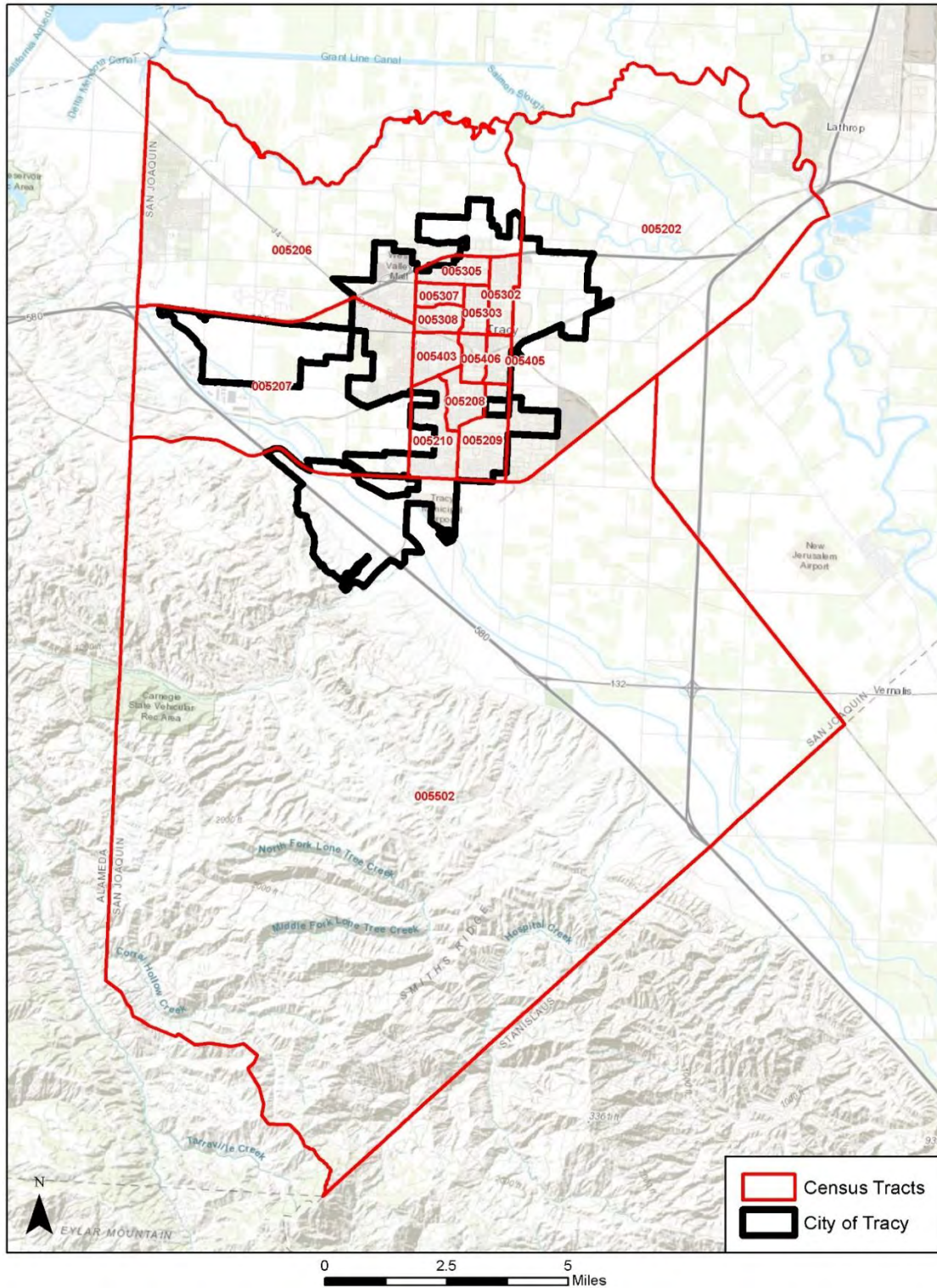
FEMA's loss estimation software, Hazus-MH, was used to analyze the City's vulnerability to earthquakes, at the census tract level (for 15 tract units that cover the City of Tracy, displayed in below). Refer to Section 4.1.1 and FEMA's Hazus-MH 4.0 Loss Estimation Tool for more information on the Hazus tool. This methodology was chosen as it is a national standard for modelling earthquake loss. Earthquake losses will vary across the Planning Area depending on the source and magnitude of the event. To evaluate potential losses associated with earthquake activity in the Planning Area, a Hazus-MH 2,500-year probabilistic scenario was run for the Planning Area. The 2,500-year scenario represents a worst-case level of shaking that considers multiple faults in the region. Hazus-MH estimates the number of people displaced, the number of buildings damaged, the number of casualties, and the damage to transportation systems and utilities.

The methodology used probabilistic seismic hazard contour maps developed by the U.S. Geological Survey (USGS) for the 2014 update of the National Seismic Hazard Maps that are included with Hazus-MH. The USGS maps provide estimates of potential ground acceleration and spectral acceleration at periods of 0.3 second and 1.0 second, respectively. The 2,500-year return period analyzes ground shaking estimates from the various seismic sources in the area with a 2 percent probability of being exceeded in 50 years.

A summary of the results of the scenario are captured in Table 4.14. Key losses included the following:

- Total economic loss estimated for the earthquake was \$1.96 billion, which includes building losses and lifeline losses based on the Hazus-MH inventory.
- Building-related losses, including direct building losses and business interruption losses, totaled \$1.81 billion.
- 10,510 buildings (34 percent of total in the region) were at least moderately damaged; 671 buildings were damaged beyond repair.
- Residential structures made up 61 percent of total loss.
- 14 percent of the estimated losses were related to business interruptions.
- The mid-day earthquake (2 p.m.) caused the most injuries: 1,026 injuries and 94 casualties.
- 16,919 households experienced a loss of potable water and 22,785 experienced a loss of electric power the first day after the earthquake.

Figure 4-12 Census Tracts Analyzed in the 2,500-Year Probabilistic Hazus-MH Earthquake Scenario for Tracy



Source: Hazus-MH



Table 4-14 Hazus-MH Earthquake Loss Estimation: 2,500-Year Scenario Summary of Results

Type of Impact	Impacts to City
Total Buildings Damaged	Slight: 11,893 Moderate: 8,232 Extensive: 1,607 Complete: 671
Building-Related Losses (Includes direct building losses and business interruption losses associated with inability to operate a business because of damage sustained)	\$1.81 billion 14 percent of losses related to business interruption 61 percent of losses related to damage sustained by residential occupancies
Total Economic Losses (Includes building, income and lifeline losses)	\$1.96 billion
Causalities (Based on 2 a.m. time of occurrence)	Without requiring hospitalization: 243 Requiring hospitalization: 48 Life threatening: 5 Fatalities: 8
Causalities (Based on 2 p.m. time of occurrence)	Without requiring hospitalization: 1,026 Requiring hospitalization: 296 Life threatening: 49 Fatalities: 94
Causalities (Based on 5 p.m. time of occurrence)	Without requiring hospitalization: 605 Requiring hospitalization: 174 Life threatening: 42 Fatalities: 53
Damage to Transportation Systems	2 highway bridges, complete damage 14 highway bridges, moderate damage 1 light rail facility, moderate damage 1 bus facility, moderate damage 1 airport facilities, moderate damage
Damage to Essential Facilities	0 hospital, 0 schools, 0 police stations, 0 fire stations at least moderately damaged
Damage to Utility Systems	1 waste water systems, moderate damage 1 oil system, moderate damage 1 electrical power systems, moderate damage 3 communication systems, moderate damage Potable water pipeline breaks: 421 Waste water pipeline breaks: 302 Natural gas pipeline breaks: 87
Households without Power/Water Service (Based on 29,810 total households)	Power loss, Day 1: 22,785 Power loss, Day 3: 14,820 Power loss, Day 7: 6,529 Power loss, Day 30: 1,347 Power loss, Day 90: 30 Water loss, Day 1: 16,919 Water loss, Day 3: 15,042 Water loss, Day 7: 10,391 Water loss, Day 30: 0 Water loss, Day 90: 0
Displaced Households	912 households
Shelter Requirements	712 persons
Debris Generation	0.34 million tons of debris 13,720 truckloads (@25tons/truck)

Source: Hazus-MH 4.0



Property

Significant earthquakes can cause damages to buildings, private and public property, and other infrastructure. The number of properties at risk is also based on when the majority of development was constructed in the City's Planning Area and whether that development was developed after the City adopted the latest state seismic code. The California State Building Code was modified several times since 1960, which resulted in code requirements that directly affected the structural integrity of development in California. According to the HMPC, the City of Tracy adopted the 2016 California Building Code, which included the building and seismic code improvements and most development in the City's Planning Area occurred during the past 40 years when the City enforced these new code requirements. The Hazus-MH results accounted for the improved seismic codes in the model.

Hazus estimates that 10,510 buildings (out of 30,000 in the region) would be at least moderately damaged, and 671 buildings would be damaged beyond repair by an earthquake event. This would mean that approximately thirty-four (34) percent of the buildings in the modeled area would be affected. A majority of the buildings experiencing damage are residential structures. The figures below summarize the specific estimated damages to buildings based first on occupancy type.

Figure 4-13 Estimated Building Damage by General Occupancy Type

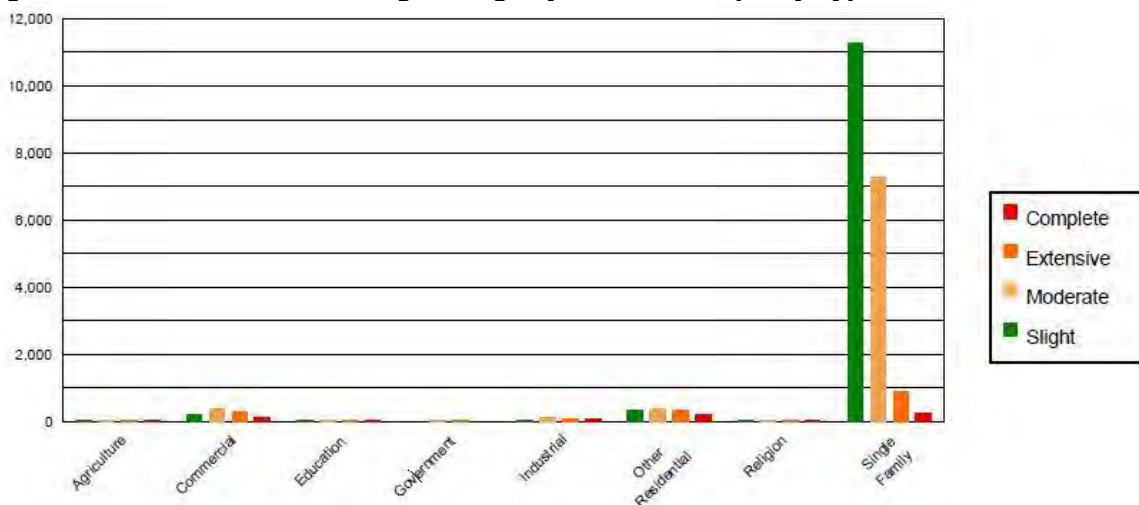


Table 3: Expected Building Damage by Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	16	0.18	23	0.19	29	0.35	20	1.22	13	1.95
Commercial	109	1.30	184	1.54	372	4.52	276	17.19	140	20.89
Education	7	0.08	10	0.08	15	0.18	10	0.63	5	0.68
Government	3	0.03	4	0.03	8	0.10	7	0.42	4	0.54
Industrial	26	0.31	47	0.39	106	1.28	89	5.51	54	8.07
Other Residential	214	2.54	317	2.67	372	4.52	309	19.21	192	28.57
Religion	13	0.15	18	0.15	27	0.33	20	1.25	11	1.63
Single Family	8,038	95.40	11,291	94.94	7,303	88.72	877	54.57	253	37.67
Total	8,425		11,893		8,232		1,607		671	

Source: Hazus-MH

The building inventory in the region vary in terms of construction types. With a majority of the buildings in the Planning Area are residential, Hazus estimates that 92 percent of the buildings in the region are wood frame construction. The building inventory also includes unreinforced masonry buildings and manufactured housing, although the number of these building types are less than other building types in the region both which are vulnerable to ground shaking in an earthquake event. Figure 4-14 below describes the Hazus results of expected building damage by building type.

Figure 4-14 Expected Building Damage by Building Type (All Design Levels)

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Wood	8,225	97.62	11601	97.54	7,494	91.04	884	54.98	267	39.73
Steel	18	0.22	34	0.29	116	1.41	125	7.77	73	10.86
Concrete	24	0.28	52	0.43	102	1.24	88	5.50	51	7.53
Precast	27	0.32	43	0.36	111	1.35	91	5.66	48	7.17
RM	120	1.43	119	1.00	227	2.76	158	9.85	49	7.30
URM	6	0.07	12	0.10	25	0.30	22	1.34	24	3.61
MH	5	0.06	33	0.28	156	1.89	240	14.91	160	23.79
Total	8,425		11,893		8,232		1,607		671	

*Note:

RM Reinforced Masonry
URM Unreinforced Masonry
MH Manufactured Housing

Source: Hazus-MH

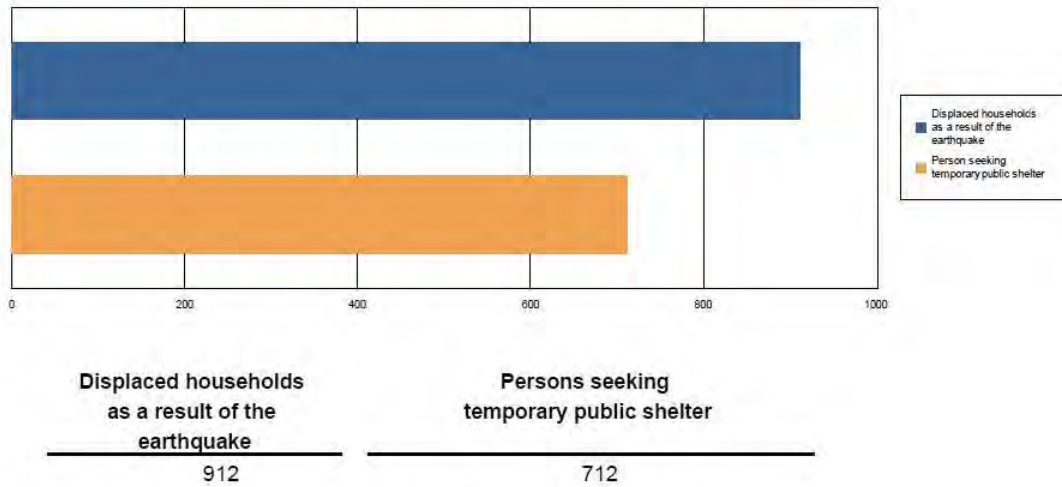
People

Table 4-14 notes the potential casualties and displaced households. The casualties vary based on the time of day. The 2 p.m. time has the greatest potential for fatalities.

Some populations in the Planning Area may be more vulnerable to an earthquake event than others. For example, those with mobility issues as well as the elderly may have challenges with evacuating or traveling to a shelter without assistance if they cannot stay in their homes. Other vulnerable populations may be those who English is not their native language. According to American Community Survey estimates for 2013-2015, 41 percent of individuals in the City of Tracy speak a language other than English in their home, with most individuals (23 percent) speaking Spanish at home. These individuals may not receive or understand evacuation information including where shelters are located or where to receive resources to aid in recovery process.

Figure 4-15 below shows the Hazus report estimates for the total number of household expected to be displaced as result of the earthquake. The report estimates 912 households to be displaced and of those 712 individuals (out of a total population of 100,985 in the region) will be seeking temporary shelter in public shelters. It should be noted that this does not take into account future population growth.

Figure 4-15 Displaced Households/Persons Seeking Short Term Public Shelter Estimates



Source: Hazus-MH Injuries and Casualties Estimates

Hazus-MH estimates the number of people that would be injured or killed by the 2,500-probabilistic earthquake scenario. The casualties are broken down into four severity levels, level one being injuries occur but do not need hospitalization and level four being victims are killed by the earthquake. The estimates are also provided for three times of day that represent the periods of day that different sectors of the community are at their peak occupancy loads. As shown in Figure 4-16 below, the highest number of injuries and casualties are estimated to occur in the afternoon with the greatest impacts on the commercial and educational sectors when those sector loads are considered to be at their maximum.

Figure 4-16 Casualty and Injury Estimates from Hazus Results

		Level 1	Level 2	Level 3	Level 4
2 AM	Commercial	10	3	0	1
	Commuting	0	0	0	0
	Educational	0	0	0	0
	Hotels	0	0	0	0
	Industrial	18	5	1	2
	Other-Residential	62	16	2	4
	Single Family	153	24	1	2
	Total	243	48	5	8
2 PM	Commercial	572	167	27	54
	Commuting	0	1	1	0
	Educational	276	82	14	27
	Hotels	0	0	0	0
	Industrial	135	39	6	12
	Other-Residential	13	3	0	1
	Single Family	29	5	0	0
	Total	1,026	296	49	94
5 PM	Commercial	411	119	20	38
	Commuting	7	9	16	3
	Educational	20	6	1	2
	Hotels	0	0	0	0
	Industrial	85	24	4	7
	Other-Residential	23	6	1	1
	Single Family	59	9	1	1
	Total	605	174	42	53

Source: Hazus-MH

Critical Facilities and Transportation Infrastructure

Large seismic events could have catastrophic effects on the Planning Area, possibly damaging transportation and utility lifelines, bridges, railroads, and other critical facilities and infrastructure. Hazus estimates impacts to essential facilities including hospitals, schools, Emergency Operations Centers (EOCs), police stations and fire stations.

According to Hazus there are that there is one (1) hospital, thirty-six (36) schools, 1 (1) police station and four (4) fire stations in the Planning Area (NOTE: There are actually six fire stations in the Planning Area). Hazus estimates that none of these essential facilities are expected to suffer moderate or complete damage and will be 98 percent operational within 30 days of the earthquake. However, the linear transportation systems and the utility systems in the Planning Area are expected to suffer from damage.

The figures below show the expected damage from the Hazus scenario for each type of transportation system and utility system including pipelines in the area. The economic losses expected from the damage to transportation and utility systems are described under *Economic Loss Estimates* earlier in this section.

Figure 4-17 Expected Damage to the Transportation Systems

System	Component	Locations/ Segments	Number of Locations			
			With at Least Mod. Damage	With Complete Damage	With Functionality > 50 %	
					After Day 1	After Day 7
Highway	Segments	146	0	0	146	146
	Bridges	123	14	2	109	113
	Tunnels	0	0	0	0	0
Railways	Segments	35	0	0	35	35
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	0	0	0	0	0
Light Rail	Segments	2	0	0	2	2
	Bridges	0	0	0	0	0
	Tunnels	0	0	0	0	0
	Facilities	1	1	0	0	1
Bus	Facilities	1	1	0	0	1
Ferry	Facilities	0	0	0	0	0
Port	Facilities	0	0	0	0	0
Airport	Facilities	1	1	0	0	1
	Runways	2	0	0	2	2

Source: Hazus-MH

Figure 4-18 Expected Utility System Facility Damage

System	Total #	# of Locations			
		With at Least Moderate Damage	With Complete Damage	with Functionality > 50 %	
				After Day 1	After Day 7
Potable Water	0	0	0	0	0
Waste Water	1	1	0	0	1
Natural Gas	1	1	0	0	1
Oil Systems	1	1	0	0	0
Electrical Power	1	1	0	0	1
Communication	3	3	0	0	3

Source: Hazus-MH

Figure 4-19 Expected Utility System Pipeline Damage (Site Specific)

System	Total Pipelines Length (kms)	Number of Leaks	Number of Breaks
Potable Water	3,430	1686	421
Waste Water	2,058	1208	302
Natural Gas	1,372	346	87
Oil	0	0	0

Source: Hazus-MH

Historic, Cultural, and Natural Resources

An earthquake in the Planning Area could cause cascading secondary effects, including dam or pipeline failure that would impact the natural environment in different ways, depending on the scope of the cascading hazard. For example, earthquake-induced landslides or debris flows could significantly damage habitat and re-route streams and waterways causing water quality impacts. Other types of ground deformation could result as well.

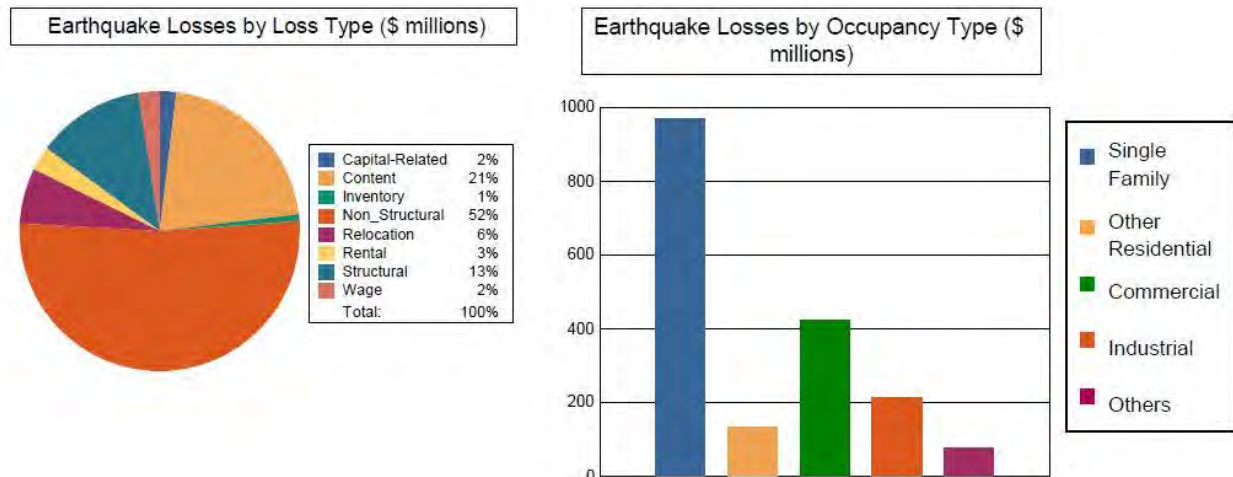
Economy

Earthquakes can have a severe impact on local and regional economies. Impacts can be both direct damages to commercial and residential structures as well as having cascading effects of an earthquake event such as business interruptions due to employees being displaced from their homes or damages to transportation infrastructure that cause employees to be unable to get to work. Based on the Hazus results, a magnitude 6.9 earthquake could potentially cause a total of \$1,816 billion in economic losses. This amount includes both income losses (estimated to be \$246 million) as well as capital stock losses (\$1,570 billion).

Another secondary impact of an earthquake is business disruption and the resulting economic loss as a result of that disruption. Hazus-MH describes business interruption losses as those losses associated with the inability to operate a business because of the damage sustained by the earthquake and includes the temporary living expenses for individuals displaced from their homes.

Hazus-MH estimates the total building-related losses, which includes business interruption losses as well as direct building losses (the estimated costs to repair or replace the damage caused to buildings and its contents) to be \$1,816 billion, 14 percent of which are related to business interruption in the area. As shown in Figure 4-20 below the largest loss in this scenario was sustained by residential occupancies, making up 61 percent of total loss. The following figures from the Hazus-MH report show the estimate of losses by loss type, occupancy type and the total estimates for building-related loss.

Figure 4-20 Economic Loss Estimates by Loss Type and Occupancy Type



Source: Hazus-MH

Figure 4-21 Building-Related Economic Loss Estimates (Millions of dollars)

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Losses							
	Wage	0.00	3.40	37.40	2.62	1.89	45.31
	Capital-Related	0.00	1.45	32.50	1.60	0.55	36.10
	Rental	19.69	7.77	17.00	1.14	1.08	46.69
	Relocation	71.30	5.69	26.70	5.58	8.53	117.81
	Subtotal	91.00	18.32	113.61	10.94	12.04	245.91
Capital Stock Losses							
	Structural	112.46	14.60	61.35	27.55	13.22	229.20
	Non_Structural	563.97	79.64	166.41	99.04	34.95	944.01
	Content	202.79	19.46	78.49	67.51	16.50	384.75
	Inventory	0.00	0.00	2.73	9.86	0.40	13.00
	Subtotal	879.22	113.70	308.98	203.97	65.07	1,570.94
	Total	970.22	132.01	422.59	214.92	77.11	1,816.85

Source: Hazus-MH

In addition to economic losses experienced by building-related losses, Hazus-MH estimates the economic losses as a result of transportation and utility lifeline losses and the direct repair cost for each component. As shown in the figures below it is estimated that \$36.6 million will be lost as a result of damages to transportation components and \$102.52 million are expected to be lost as result of utility system damage.



Figure 4-22 Transportation System Economic Losses (Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Highway	Segments	1,394.34	\$0.00	0.00
	Bridges	206.35	\$29.22	14.16
	Tunnels	0.00	\$0.00	0.00
	Subtotal	1,601	29.20	
Railways	Segments	91.51	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Subtotal	92	0.00	
Light Rail	Segments	37.41	\$0.00	0.00
	Bridges	0.00	\$0.00	0.00
	Tunnels	0.00	\$0.00	0.00
	Facilities	2.66	\$1.35	50.54
	Subtotal	40	1.30	
Bus	Facilities	1.29	\$0.60	46.58
	Subtotal	1	0.60	
Ferry	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Port	Facilities	0.00	\$0.00	0.00
	Subtotal	0	0.00	
Airport	Facilities	10.65	\$5.38	50.54
	Runways	75.93	\$0.00	0.00
	Subtotal	87	5.40	
	Total	1,820.10	36.60	

Source: Hazus-MH





Figure 4-23 Utility System Economic Losses (Millions of dollars)

System	Component	Inventory Value	Economic Loss	Loss Ratio (%)
Potable Water	Pipelines	0.00	\$0.00	0.00
	Facilities	0.00	\$0.00	0.00
	Distribution Lines	68.60	\$7.58	11.06
	Subtotal	68.60	\$7.58	
Waste Water	Pipelines	0.00	\$0.00	0.00
	Facilities	78.60	\$28.70	36.51
	Distribution Lines	41.20	\$5.44	13.21
	Subtotal	119.75	\$34.13	
Natural Gas	Pipelines	0.00	\$0.00	0.00
	Facilities	1.30	\$0.57	44.06
	Distribution Lines	27.40	\$1.56	5.68
	Subtotal	28.73	\$2.13	
Oil Systems	Pipelines	0.00	\$0.00	0.00
	Facilities	0.10	\$0.06	49.75
	Subtotal	0.12	\$0.06	
Electrical Power	Facilities	129.80	\$58.46	45.04
	Subtotal	129.80	\$58.46	
Communication	Facilities	0.40	\$0.16	44.35
	Subtotal	0.35	\$0.16	
	Total	347.35	\$102.52	

Source: Hazus-MH

Future Development

The Hazus scenario only estimates damage and casualties for existing building inventory and populations and does not take into account future development plans. The City of Tracy has experienced growth in the past eight years (2010-2018) that is not expected to slow (Refer to Chapter 2 Community Profile for further discussion on demographics and population changes). For example, the Tracy Hills Development located in the southwest portion of the City of Tracy is located in an area of moderate seismic activity. The 2,700-acre development consists of planned residential, commercial office, industrial and recreational land uses and is expected to be built out in 20 years. The Specific Plan is permitted for a maximum of 5,499 residential units in an area of the City that is currently undeveloped. According to the HMPC, the





development has been approved and building permits have been secured, but no construction has not started.

As Tracy Hills and other specific plan areas are developed, and infill areas in the City are redeveloped it will be important for the City to meet its stated goal and objectives in the City General Plan of reducing risks to the community from earthquakes and other geologic hazards. The General Plan Safety Element establishes standards and requirements for the protection from seismic hazards. Building and development will also be regulated through building standards.

Risk Summary

- Business interruptions and economic losses from major earthquakes are estimated to be \$1.86 billion.
- Earthquakes would result in the loss of water, electricity, phone and internet, which could impact emergency responders and/or area residents.
- While impacts from a strong earthquake could have moderate to severe impacts, the overall significance of the earthquake hazard is considered medium due to the occasional probability of occurrence.
- Overall the significance of earthquake hazards is medium.

4.3.4 Fire: Urban and Wildfire

Hazard/Problem Description

Wildfires are any uncontrolled fires that occur on undeveloped land that require fire suppression. They are caused by lightning, or by human-activities, such as smoking, arson, equipment misuse, and from electrical infrastructure. Wildfires are a significant concern throughout California. In recent years wildfires have occurred in the densely vegetated areas in the vicinity of the City of Tracy. However, due to its urbanized nature, wildfire is of a lessor concern for the City or City Planning Area. With that said, wildfires in surrounding areas, even in areas as far north as Butte County, can create significant impacts to the City, including issues created by intense smoke and high pollutant levels, as well as restrictions on regional traffic. In November 2018, some of these air quality impacts resulted in traffic restrictions, school closures, and even temporary closure of City facilities following the Camp Fire in Butte County. Generally, the fire season extends from June through October of each year during the hot, dry months. Fire conditions arise from a combination of high temperatures, intense sunlight, low rainfall and humidity, an accumulation of vegetation, and high winds.

Throughout California, communities are increasingly concerned about wildfire safety as increased development in the foothills and mountain areas and subsequent fire control practices have affected the natural cycle of the ecosystem. While wildfire risk is predominantly associated with wildland-urban interface areas, significant wildfires can also occur in heavily populated areas. The wildland-urban interface is a general term that applies to development adjacent to landscapes that support wildfire.

Location

Wildfires affect grass, forest, and brushlands, as well as any structures located within them. Where there is human access to wildland areas the risk of fire increases due to a greater chance for human carelessness and historical fire management practices. In other areas, large concentrations of highly flammable brush and grasslands located in flat open spaces are also quite susceptible to wildfire. CAL FIRE's Fire and Resource Assessment Program models and maps wildfire hazards using a science-based approach and

computer model that classifies moderate, high, and very high fire severity zones (FHSZ). The model uses existing CAL FIRE data and hazard information based on fuel, weather, and terrain (CAL FIRE 2018).

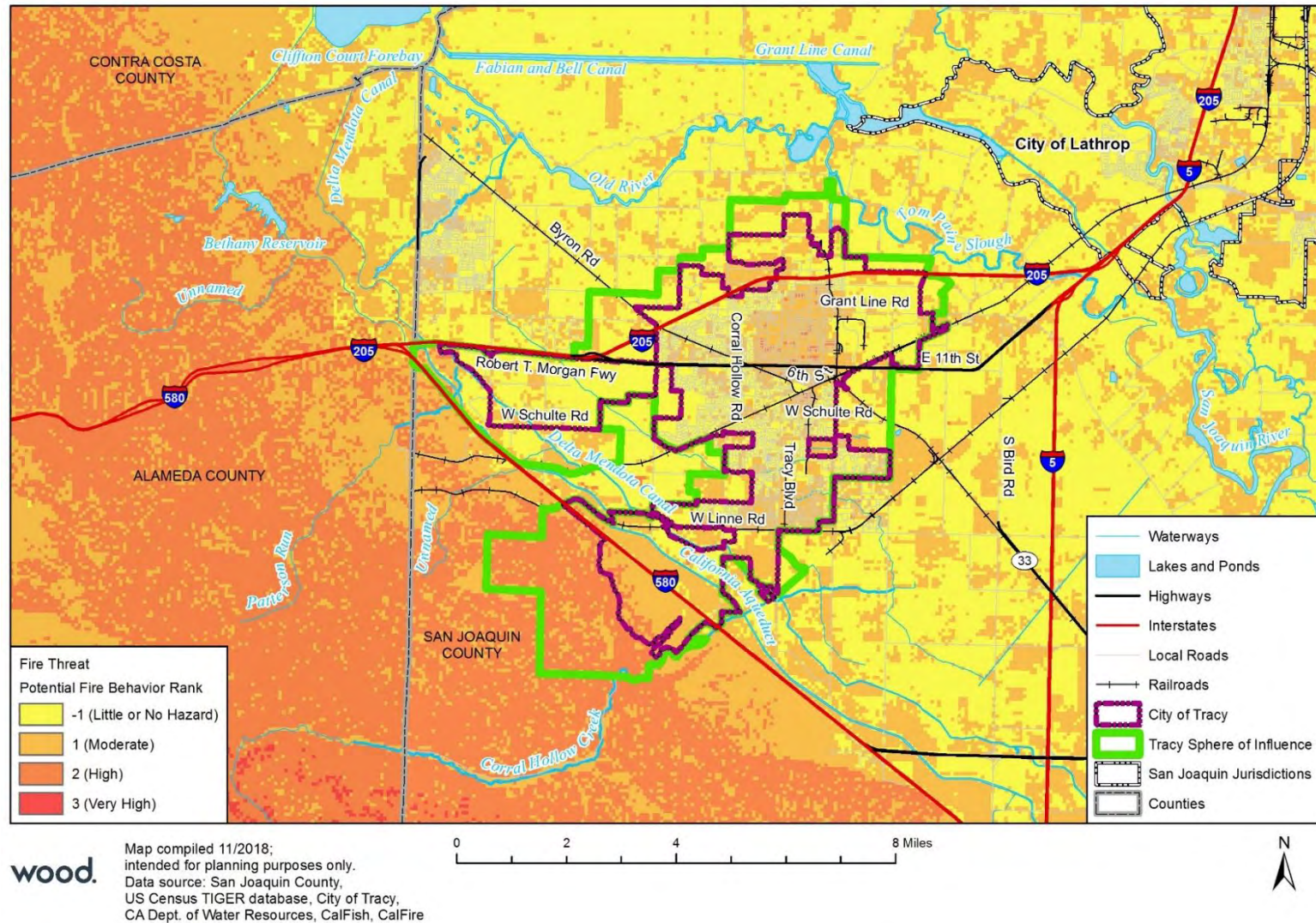
Potential losses from wildfire include human life, structures and other improvements, natural and cultural resources, quality and quantity of water supplies, cropland, timber, and recreational opportunities. Economic losses could also result. Smoke and air pollution from wildfires can be a severe health hazard. In addition, catastrophic wildfire can create favorable conditions for other hazards such as flooding, landslides, and erosion during the rainy season. Typically, the potential for significant damage to life and property exists in areas designated as “wildland urban interface” areas, also called WUIs, where development is adjacent to densely vegetated area.

Generally, there are three major factors that sustain wildfires and predict a given area’s potential to burn. These factors are fuel, topography, and weather.

- **Fuel** - Fuel is the material that feeds a fire and is a key factor in wildfire behavior. Fuel is generally classified by type and by volume. Fuel sources are diverse and include everything from dead tree leaves, twigs, and branches to dead standing trees, live trees, brush, and cured grasses. Manmade structures, such as homes and other associated combustibles are also fuel sources. The type of prevalent fuel directly influences the behavior of wildfire. Fuel is the only factor that is under human control. Fuel types within the City include seasonal grasses, and mature landscaping, such as deciduous and evergreen oaks, and conifers. Fuel types surrounding the City Planning Area include mainly seasonal grasslands and brush.
- **Topography** - An area’s terrain and land slopes affect its susceptibility to wildfire spread. Both fire intensity and rate of spread increase as slope increases due to the tendency of heat from a fire to rise via convection. The arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes.
- **Weather** - Weather components such as temperature, relative humidity, wind, and lightning also affect the potential for wildfire. High temperatures and low relative humidity dry out fuels that feed wildfires, creating a situation where fuel will more readily ignite and burn more intensely. Thus, during periods of drought, the threat of wildfire increases. Wind is the most treacherous weather factor. The greater a wind, the faster a fire will spread and the more intense it will be. Lightning can also ignite wildfires, often in difficult to reach areas for firefighters.

Figure 4-24 displays the fire threat hazards in and around the city based on fire hazard severity zones potential fire behavior. The south and western-most portions of Tracy are at highest risk, with smaller sections throughout the city (near the downtown area north of 6th Street) also exposed to moderate, high, or very high threat. Based on feedback from the HMPC, grassland fires located west and south of the City are easily ignited during the dry season, but relatively easy to control if they can be quickly reached by fire equipment. And, while brush is naturally adapted to frequent fires, as fuels accumulate, these brush fires tend to burn fast and very hot, thereby threatening nearby homes and major interstate and state highways in the region. The HMPC also noted that most fires stop near the Delta Mendota Canal and the California Aqueduct.

Figure 4-24 Fire Threat Rankings in and Around the City of Tracy





Extent (Magnitude/Severity)

Potential losses from wildfire include human life, structures, infrastructure, and cultural and natural resources. There are no recorded incidents of loss of life from wildfires in the Planning Area, or San Joaquin County. However, numerous fires in the broader region from 2017 to 2018 have resulted in the loss of lives and thousands of homes. The smoke and air pollution from wildfires are also severe health hazards particularly for sensitive populations including the elderly, children, and people with respiratory and cardiovascular diseases. Wildfires can also threaten the health and safety of those fighting the fires, so the overall magnitude or severity of fires can be wide-reaching and incur many types of impacts. Nevertheless, wildfire severity can usually be quantified in terms of acres burned during an event, number and cost of properties/structures damaged (including critical facilities), money lost from disruption of services, and population affected by the fires (e.g. people displaced).

Previous Occurrences

Wildfires are of significant concern throughout California. According to the California Department of Forestry and Fire Protection (CAL FIRE), vegetation fires occur within their jurisdiction (across the state) on a regular basis; most can be controlled and contained early with limited damage. For those ignitions that are not readily contained and become wildfires, damage can be extensive. There are many causes of wildfire, from naturally caused lightning fires to human-caused fires linked to activities such as smoking, campfires, debris burning, equipment use, and arson. Recent studies conclude that the greater the population density in an area, the greater the chance of an ignition.

Although not fully representative of annual fire activity, the CAL FIRE system reported six fires affecting the City in recent times. Table 4-15 shows summaries of fires that occurred in or around Tracy from 2011 to 2018 and were reported to CAL FIRE, while Table 416 summarizes those fires that took place from 2000 to 2018 and were recorded to federal fire databases.

Table 4-15 The City of Tracy Recent Fires Summary (CAL FIRE)

Fire Name	Date	Location	Acres Burned	Details
Chrisman Fire	7/5/2011	I-580 and Chrisman Rd, south of Tracy	400	The Chrisman Fire burned in July 2011 near I-580 and Chrisman Rd, south of Tracy, San Joaquin County.
Flynn Fire	7/14/2011	West of Tracy in the Altamont pass	400	The Flynn Fire burned in July 2011 near West of Tracy in the Altamont pass, 5 miles west of Tracy in Alameda County.
Grant Fire	7/4/2013	Off Grant Ln Rd & I-580 in the Altamont Pass, 5 miles west of Tracy	50	The Grant Fire burned in July 2013 off Grant Line Road and I-580 in the Altamont Pass, 5 miles west of Tracy in Alameda County.
Tesla Fire	8/22/2015	Off Tesla Rd near Corral Hollow, between Livermore and Tracy	2,700	Tesla Fire burned 2500 acres off Tesla Road near Corral Hollow, between Livermore and Tracy in Alameda County in August 2015.
Bird Fire	8/20/2016	Off of Bird Rd & I-580, south of Tracy	147	The Bird Fire started on August 20, off of Bird Rd & I-580, south of Tracy in San Joaquin County.
Corral Fire	4/5/2018	Off Corral Hollow Road, South of Tracy	155	The Corral Fire started on September 19, 2017 off Corral Hollow Road, South of Tracy (Alameda County).

Source: Cal Fire, 2018





Table 4-16 Fires In or Near The City of Tracy As Reported to Federal Sources (Years 2000-2018)

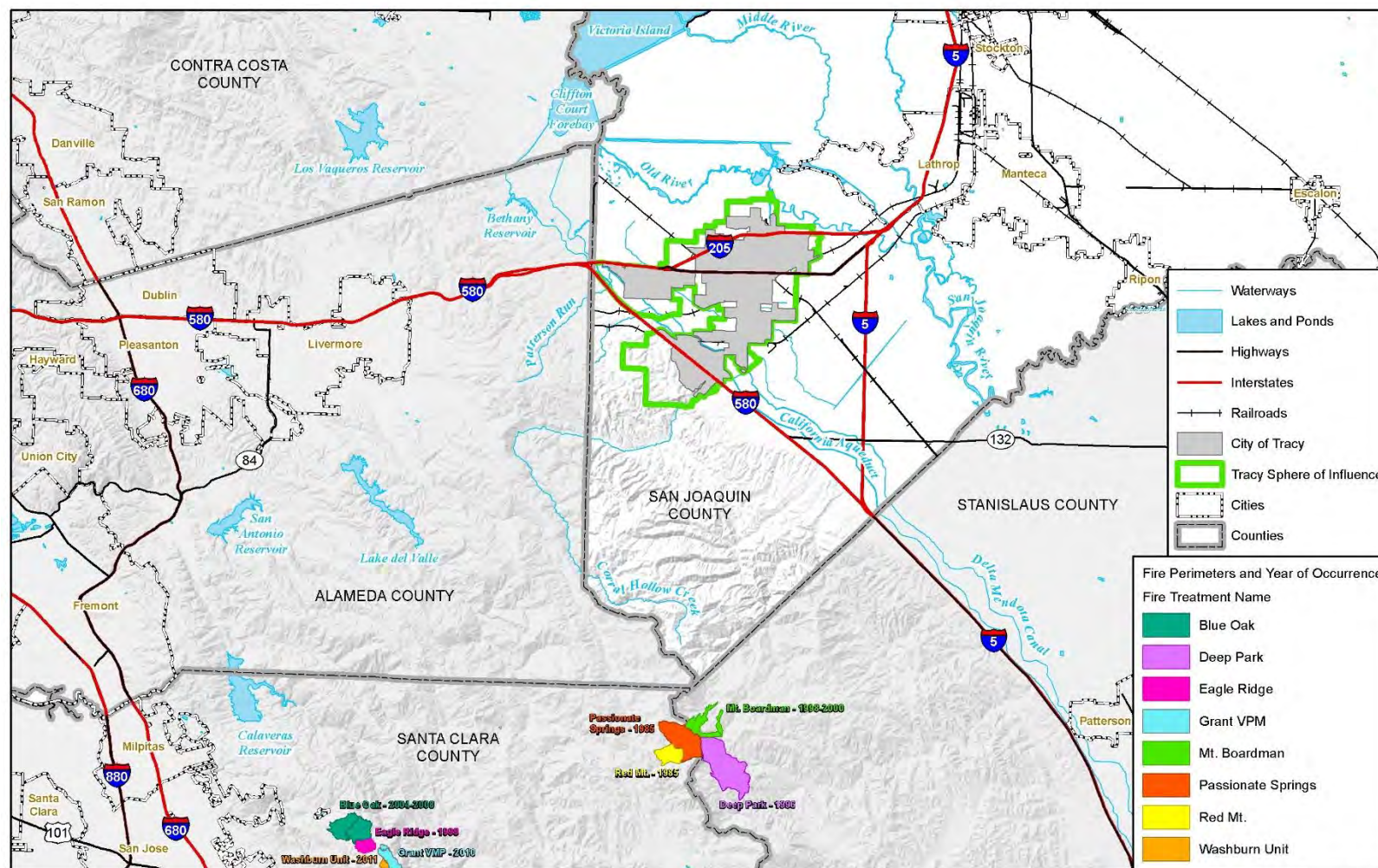
Year	Fire Name	Acres Burned
2000	CORRAL	105.46
2000	PATTERSON PASS #2	238.32
2001	DEL VALLE	120.16
2002	BETHANY	99.29
2002	PATTERSON	233.82
2002	VIEUX	1,028.24
2003	BIRD 1	7,874.34
2003	BIRD 2	105.89
2003	BUCKEYE	4.56
2003	STRIKE	88.60
2004	CORRAL HOLLOW	875.50
2005	BRUNS	445.00
2005	BYRON	202.73
2005	TESLA	6,437.72
2005	UPRR Fire	51.05
2005	VASCO	347.70
2006	MIDWAY	5,655.02
2009	CORRAL	15,732.52
2009	EXPLOSIVES	2,029.50
2010	DIABLO	458.77
2011	BIRD	144.97
2011	CHRISMAN	431.73
2011	FLYNN	517.37
2011	TOP	516.96
2015	TESLA	2,989.93

Source: USGS, BLM, FS, NPS, 2018

The foothills and mountain areas of California have experienced numerous devastating fires over the last 100 years, with the fire risk significantly increasing in recent years due to high fuel loads and expansion of development into the WUI areas. Utilizing CAL FIRE data, historic fires surrounding the Tracy Planning Area are illustrated in Figure 4-25. Figure 4-26 displays the fire events and their acreage, as reported to federal sources such as United States Geological Survey (USGS), Bureau of Land Management (BLM), Forest Service (FS), and National Park Service (NPS), and contains a more comprehensive record of fires in the Planning Area. The most recent significant fires near the City of Tracy in terms of acreage burned and severity have been the Tesla Fire, which took place in 2015 and burned 2,700 acres, and the Corral Fire which affected 155 acres near Interstate 580 on April 2018. While small in size, the Corral Fire resulted in substantial traffic along Interstate 580, and the inability for Bay Area commuters to return to Tracy and their homes and families for many hours. Both are described in more detailed in the tables above.

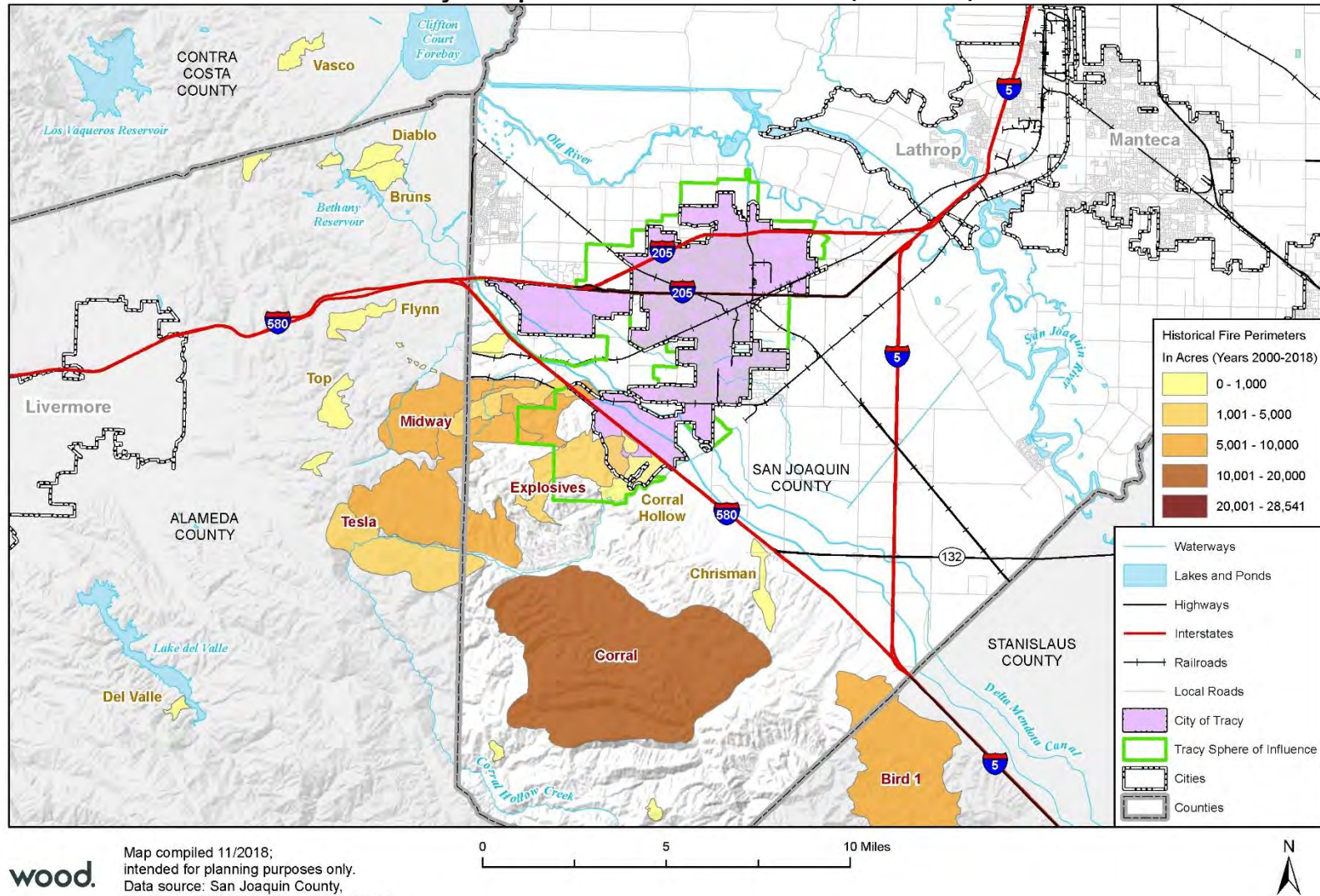


Figure 4-25 Recent Fire History and Fire Perimeters Near Tracy



wood.
Map compiled 11/2018;
intended for planning purposes only.
Data source: San Joaquin County,
US Census TIGER database, City of Tracy,
CA Dept. of Water Resources, CalFish, CalFire

Figure 4-26 Fire Occurrences In or Near Tracy As Reported to Federal Data Sources (2000-2018)



wood.

Map compiled 11/2018;
intended for planning purposes only.
Data source: San Joaquin County,
US Census TIGER database, City of Tracy,
CA Dept. of Water Resources, CalFish,
USGS, BLM, FS, NPS



Probability of Future Occurrences

Occasional – Consideration of the local fuels, weather conditions, and the rather flat topography in the area combined with a lack of extensive WUI development, damaging fires may only occur occasionally in or immediately surrounding the Planning Area. A widely damaging wildland fire within the City is considered to only occur occasionally.

Climate Change Considerations

Growing amounts of greenhouse gases coupled with population growth and development are expected to continue impacting California forests and natural resources. Likewise, the effects of climate change have the potential to impact wildfire behavior, the frequency of ignitions, fire management, and fuel loads. Increasing temperatures may intensify wildfire threat and susceptibility to more frequent wildfires in the grasslands that surround the Planning Area.

Uncertainty exists in how climate change will affect total precipitation, but models suggest that there is a tendency for wetter conditions in the northern part of the state and drier conditions in the south (California Natural Resources Agency 2018a). Forests are also sensitive to variable precipitation events, as the 2012-2017 drought contributed to widespread tree mortality as warmer temperatures stressed trees and made them more susceptible to pests and pathogens (California Natural Resources Agency 2018). While the surrounding hillsides near the City's Planning Area consist of mostly grasslands, there are emerging studies that indicate that hot and dry winds can influence shrubland and grassland fires. Studies noted in California's Fourth Assessment report note climate change impacts on wind patterns may strongly affect forests, potentially serving as a trigger mechanism for conversion of forest to other types of vegetation (California Natural Resources Agency 2018).

While the CAL FIRE program actively collaborates with state, local, and national agencies to reduce climate change impacts, current scientific models expect California will be affected by increased numbers of forest fires with added intensity due to longer warmer seasons, reduced distribution of biodiversity, lack of moisture, changes in ecosystems, drought impacts (e.g. pest diseases and continued spread of invasive species), and other impacts in coming years. As such, wildfire hazards should be carefully studied with regards to its future negative effects in or near the city Planning Area due to expected growth and development, even if it does not prove a prominent danger to Tracy and its residents in present times. And, as seen with the 2017 -2018 wildfires, more damage occurred in developed areas like Santa Rosa in Sonoma County, Montecito in Santa Barbara County, and Paradise in Butte County. As a result, more research is needed to understand near-term wildfire risk in urban areas that can happen during red flag conditions and with little warning.

Vulnerability to Wildfire - Medium

Due to the lack of widespread WUI areas in or immediately around Tracy's Planning Area, the City's wildfire risk and vulnerability is a medium concern, though risk in the city varies across its Planning Area. The City is also vulnerable to the impacts associated with wildfires occurring in and around other urbanized areas in the region as seen recently with the devastating northern and central California wildfires. The City's Planning Area is also particularly vulnerable given it is surrounded by Interstate 205, Interstate 580, and Interstate 5. Recent wildfires along these major transportation roads (i.e. Interstate 580) have resulted in traffic and the inability for Bay Area commuters to take alternative routes around the City to return home.

During the May to October fire season, the dry vegetation and hot sometimes windy weather, combined with a growing population, results in an increase in the number of potential ignitions. Any fire, once ignited, has the potential to quickly become a large, out-of-control fire. Because of the City's central



location, being surrounded by major transportation routes, any wildfire that prevents essential goods or services from entering or leaving the city could negatively affect local residents and businesses (e.g. limited access to jobs, daycare, schools, resources, and residences).

The most current fire hazard severity zone data from CAL FIRE is displayed in Figure 4-27 for the Tracy Planning Area. Fire stations are also included in the figure for context. The fire hazard model considers wildland fuels, topography, weather, crown fire potential, ember production, and movement; however, the model does not consider risk. The result is the identification of fire hazard severity zones rated moderate, high, or very high fire hazard along with urban unzoned areas for context. Specifically, wildfire hazard zones represent areas of variable size with relatively homogeneous characteristics regarding expected burn probability and potential fire behavior attributes based on climax fuel conditions. With regards to fire responsibility areas, CalFire also publishes which areas are managed by federal versus state or local agencies. These responsibility areas include Federal Responsibility Areas, State Responsibility Areas, and Local Responsibility Areas. Those are displayed in Figure 4-28.

Using the latest CAL FIRE hazard severity zones, an initial assessment of wildfire risk in the Planning Area was made following the methodology detailed below. The results are summarized in the tables and maps that follow.

The City's parcel layer was used as the basis for the inventory of developed parcels, with the fire threat layer ranked by threat severity as the spatial layer on which to intersect the parcels (to determine risk by threat ranking). Therefore, GIS was used to overlay the CALFIRE fire threat zones layer with the parcel layer, so that hazard zones were assigned for all the parcels based on where the wildfire hazard zone intersected a property based on a calculated centroid for each parcel's structure. For purposes of this analysis, it was assumed that every parcel with a structural value greater than zero was developed in some way. Only these properties/structures with values were analyzed. The properties were segregated by property type, with content values calculated as follows: for residential properties, the contents were valued at 50 percent of the structure value; commercial and agricultural properties' contents were valued at 100 percent of their structural values; and, industrial properties' contents were valued at 150 percent of their structural value based on FEMA's methodology for estimating contents that is consistent with HAZUS-MH.

Those properties at risk of wildfire are listed in Table 4-17 while a general summary of all structure value, contents value, and population at risk is presented in Table 4-18. As both Figure 4-27 and Figure 4-28 illustrate, the most significant fire threat and hazard areas are found along the southwest portion of the City's Planning Area, on the western boundaries with Alameda County, and within smaller areas of threat scattered closer to the city's downtown and heavily populated areas.



Figure 4-27 The City of Tracy Fire Hazard Severity Zones and Local Fire Stations

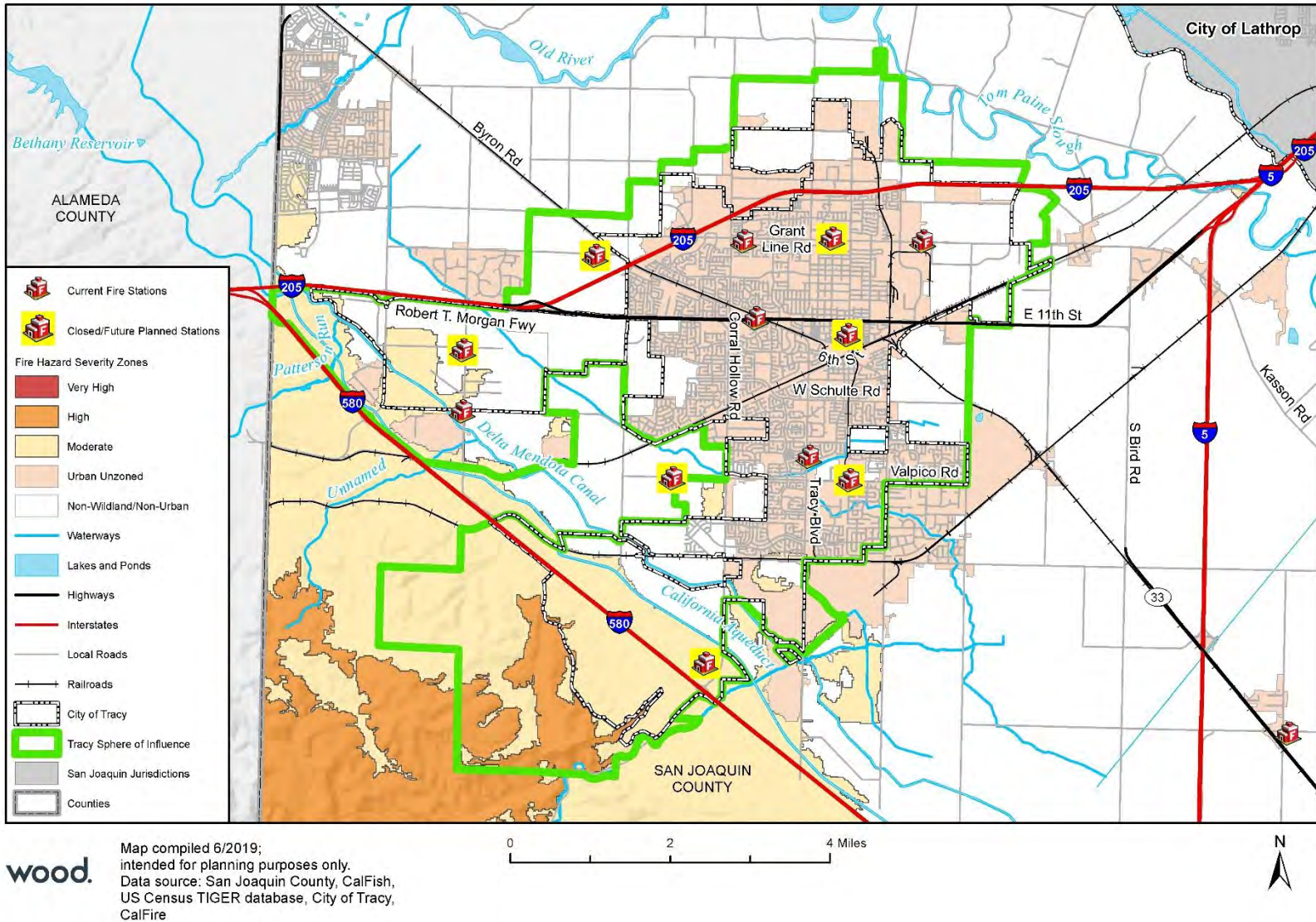
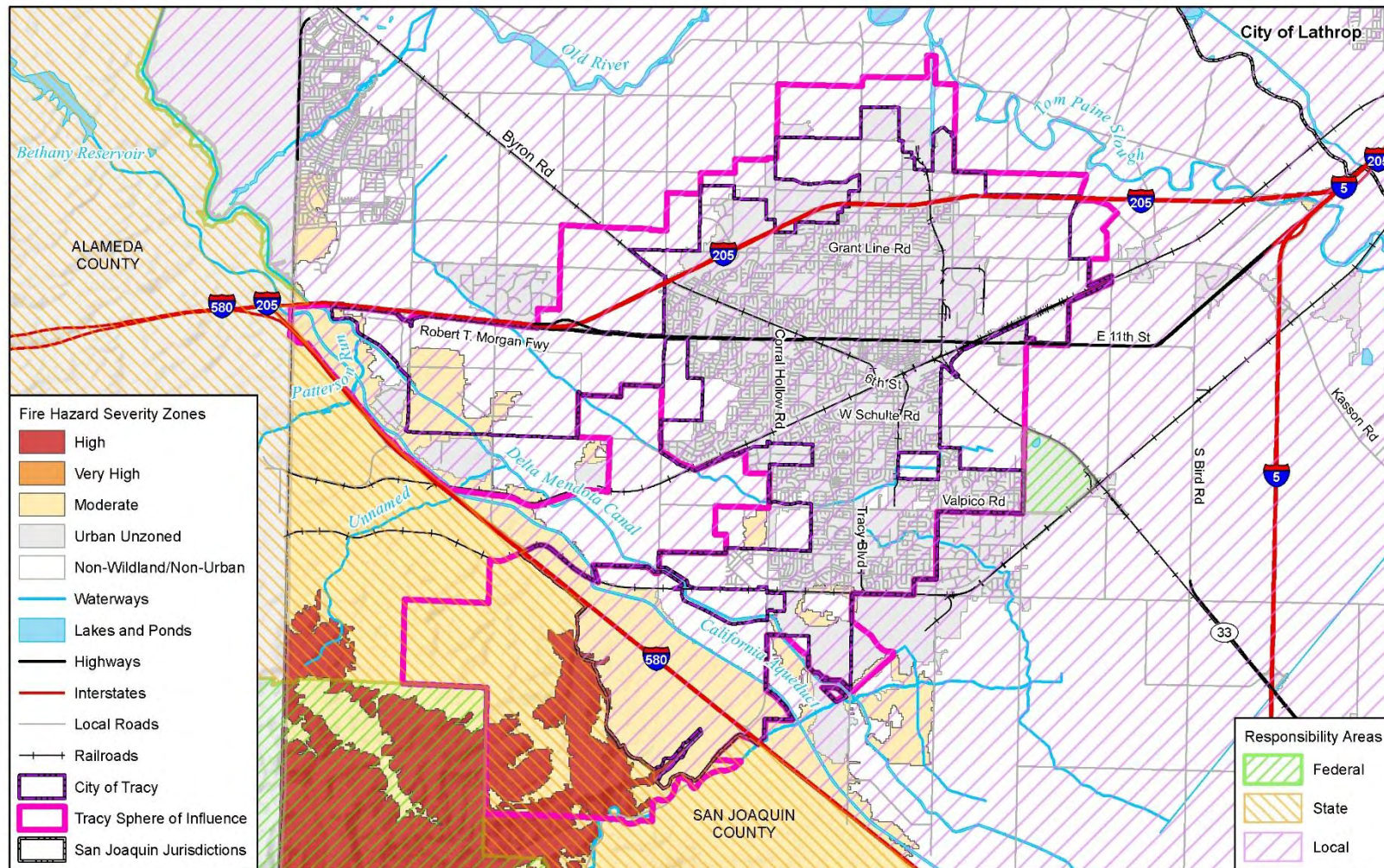


Figure 4-28 The City of Tracy Fire Responsibility Areas with Fire Hazard Severity Zones



wood.

Map compiled 11/2018;
intended for planning purposes only.
Data source: San Joaquin County, CalFish,
US Census TIGER database, City of Tracy,
CalFire

0 1 2 4 Miles





Property

After overlaying the fire threat zones with the City parcel layer, the City Tracy Planning Area has many properties at risk to wildfire as detailed in Table 4-17. According to this analysis, the City of Tracy's Planning Area has 12,242 properties valued at \$4,926,980,108 in the Moderate to High Fire Threat Areas.

Table 4-17 Properties at Risk from Wildfire in the City of Tracy

Fire Threat Ranking	Property Type	Total Structures	Structure Value	Contents Value	Total Value	Population at Risk
Moderate	Agricultural	31	\$ 23,750,344	\$ 23,750,344	\$ 47,500,688	--
	Commercial	505	\$ 349,603,150	\$ 349,603,150	\$ 699,206,300	--
	Commercial Vacant Land	82	\$ 543,374	--	\$ 543,374	--
	Duplex	265	\$ 34,452,719	\$ 17,226,360	\$ 51,679,079	909
	Industrial	118	\$ 200,957,347	\$ 301,436,021	\$ 502,393,368	--
	Industrial Vacant Land	46	\$ 3,096,616	--	\$ 3,096,616	--
	Mobile Home	21	\$ 7,521,318	\$ 3,760,659	\$ 11,281,977	72
	Multi-Family Unit	488	\$ 172,144,549	\$ 86,072,275	\$ 258,216,824	1,674
	Pasture	15	\$ 664,198	\$ 664,198	\$ 1,328,396	--
	Residential	9,849	\$ 2,146,945,440	\$ 1,073,472,720	\$ 3,220,418,160	33,782
	Residential Vacant Land	326	\$ 417,347	--	\$ 417,347	--
	TOTAL	11,746	\$ 2,940,096,402	\$ 1,855,985,726	\$ 4,796,082,128	36,437
High	COMMERCIAL	18	\$ 5,554,743	\$ 5,554,743	\$ 11,109,486	--
	DUPLEX	16	\$ 2,460,478	\$ 1,230,239	\$ 3,690,717	55
	MULTI-FAMILY UNIT	19	\$ 21,517,734	\$ 10,758,867	\$ 32,276,601	65
	RESIDENTIAL	443	\$ 55,880,784	\$ 27,940,392	\$ 83,821,176	1,519
	TOTAL	496	\$ 85,413,739	\$ 45,484,241	\$ 130,897,980	1,640

Source: City of Tracy GIS; CAL FIRE, Wood Parcel Analysis

People

Wildfire risk is of greatest concern to populations residing in the moderate, high, and very high wildfire threat zones. The 2017 U.S. Census average household data was used for the City of Tracy to estimate populations within the fire threat zones. For each residential property type (i.e., general residential, duplex, multi-family unit, mobile homes), an average household value of 3.43 people per home was applied to roughly estimate potential population at risk. Table 4-18 shows the population residing in each hazard zone along with the parcel analysis summary by fire threat area.





Table 4-18 The City of Tracy's Parcels at Risk to Wildfire

Fire Threat Zone	Property Count	Structure Value	Content Value	Total Value	Population
High	496	\$85,413,739	\$45,484,241	\$130,897,980	1,640
Moderate	11,746	\$2,940,096,402	\$1,855,985,726	\$4,796,082,128	36,437
TOTAL	12,242	\$3,025,510,141	\$1,901,469,967	\$4,926,980,108	38,076

Source: City of Tracy GIS; CalFire, Wood Parcel Analysis, U.S. Census 2017 estimates

Critical Facilities and Transportation Infrastructure

Critical facilities are those community components that are most needed to withstand the impacts of a disaster. A GIS analysis was performed to determine where critical facilities are located within wildfire severity zones ranked moderate or higher. Only those facilities located in moderate, high, or very high severity zones are noted as being at risk. Figure 4-29 shows the critical facilities located in the City. Table 4-19 details the seven facilities. A detailed description of all the critical facilities at risk is located in Appendix E in Table E.9.

Table 4-19 The City of Tracy's Critical Facilities at Risk to Wildfire

Facility Type	Count
EMS Station	2
Power Plant	3
Fire Station	2
Government Building	7
TOTAL	14

Source: City of Tracy, HIFLD 2017, CalFire, Wood Plc analysis

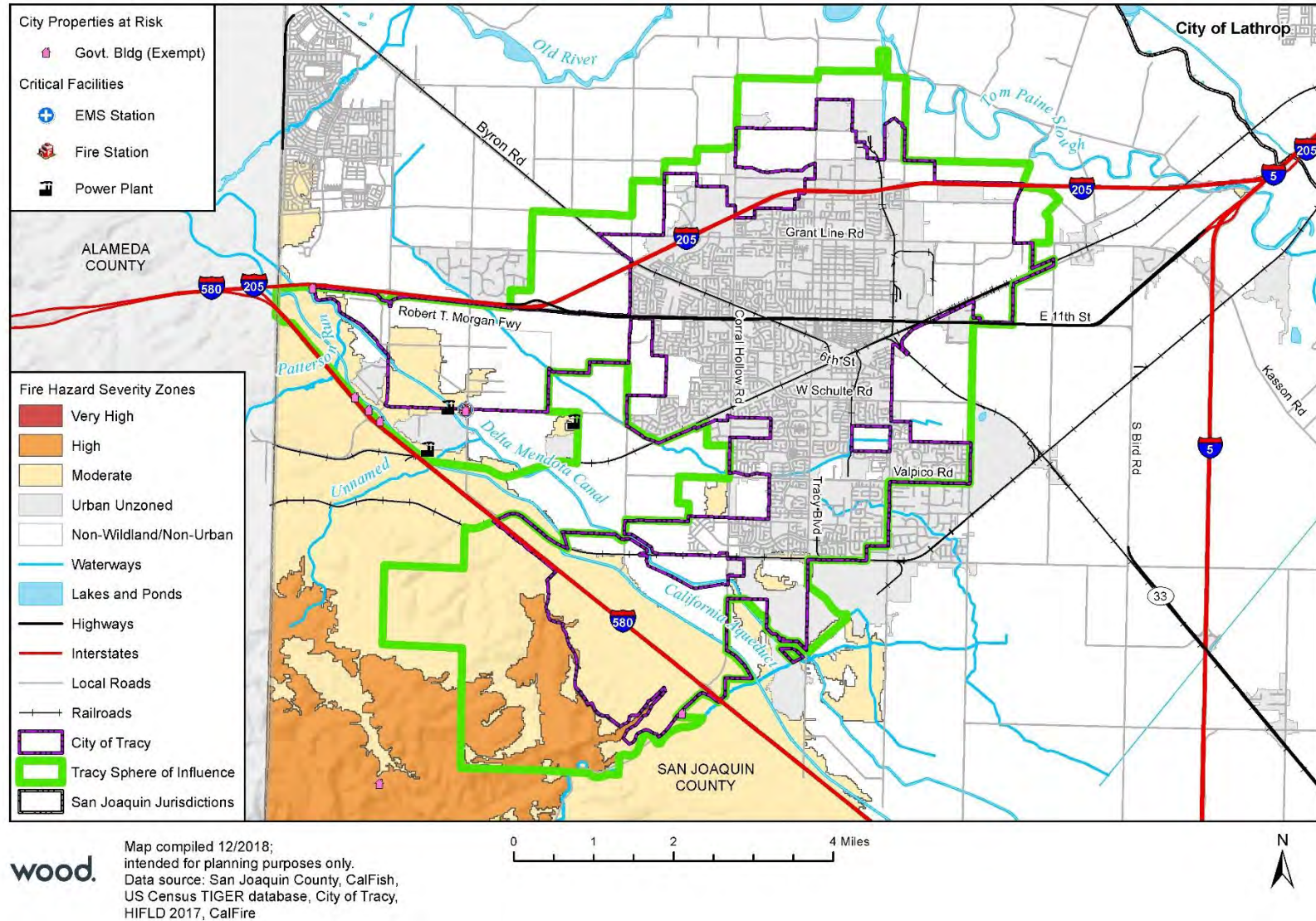
According to California's Fourth Climate Assessment, wildfire may be the biggest immediate threat to California's transportation system, as vegetation fuel accumulation continues to increase (California Natural Resources Agency). Wildfires also lead to mudslides and debris flows, which followed the 2018 Thomas Fire in southern California, and later resulted in the temporary closure of Highway 101. Studies cited in the most recent climate assessment also found that a considerable amount of infrastructure is exposed to wildfire risk, with the highest risk being roads and highways, such as Interstates 580, 205, and 5, as recent wildfire activity has occurred along Interstate 580 (based on HMPC input). Railroads may also be at risk of warping during wildfires, and smoke and fire-fighting operations can lead to temporary service disruptions that can affect movement of goods and services (California Natural Resources Agency 2018a).

Economy

Wildfires can be incredibly destructive depending on the circumstances of the event, particularly the type of resources and populations they affect due to fire size, location, and length of the burn. For example, fire damages to structures and properties are obvious impacts to the economy, though cascading negative effects on the economic sectors include road closures, lower revenue to the city based on reduced tourism and visitation, excessive costs of firefighting and relocating people or natural and man-made resources (thus indirectly impacting city revenues). Transportation lifelines being closed and/or damaged could seriously impede a majority of the population's ability to commute to nearby cities and the Bay Area, where many Tracy folks work or rely on being able to access on a frequent basis.



Figure 4-29 The City of Tracy Critical Facilities at Risk to Wildfire Based on Fire Threat Zones





Historic, Cultural, and Natural Resources

The Planning Area contains five cultural resource buildings, as summarized under Table 410 in Section 4.2.2. Since these structures are found near the downtown area of the City, in the Urban Unzoned areas of the fire severity rank, it is expected that they would not be at risk of wildfires based on the fire threats hazards map (Figure 4-29). However, other areas such as parks or natural spaces could also be at risk of a wildfire, but these places would need to be further studied to determine vulnerability and risk more specifically.

Future Development

Population growth and development in the City of Tracy is increasing, such as the future Tracy Hills development. While the highly urbanized portions of the Planning Area have little wildfire risk exposure, additional growth and development could affect wildfire risk to the citizens of Tracy particularly if development is sited in WUI areas. However, future development in the WUI can be managed with strong land use regulations and building code requirements. For example, recent development in the WUI has required 100-foot firebreaks between development and grasslands and easements, fire department access on all easements, and building construction compliant with CBC Chapter 7A, Building and Construction Methods for Exterior Wildfire Exposure.

Risk Summary

- The south and western portion of City is at the highest risk for wildfire hazards.
- Six fires have affected the City in recent history.
- The 2015 Tesla fire burned 2,700 acres near the City.
- The 2018 Corral Fire burned 155 acres and resulted in closure of I-508 and commuters' inability to make it home to the City of Tracy and surrounding region.
- 12,242 properties valued at \$4,926,980,108 are located in high fire threat areas.
- 38,076 persons reside in high to moderate fire threat zones.
- 14 critical facilities are at risk in the City's Planning Area.
- Transportation infrastructure (I-580, I-205, I-5) is most at risk of wildfire .
- Transportation lifelines closing or damaged due to wildfire will impact movement of goods and population in Tracy.
- Decreased water quality will occur in Tracy's watersheds.
- Wildfires in the region will result in decreased air quality.
- Wildfires will result in an increase in post-fire hazards such as flooding, sedimentation, and mudslides.
- There will be impacts on the overall mental health of the community.
- Overall the significance of urban and wildland fire is medium.



4.3.5 Flood: 100/200/500 Year and Localized Stormwater/Wastewater Flooding

Hazard/Problem Description

Floods are among the most frequent and costly natural disasters in terms of human hardship and economic loss and, are usually caused by weather events. Floods can cause substantial damage to structures, landscapes, and utilities as well as life safety issues. Certain health hazards are also common to flood events. Standing water and wet materials in structures can become breeding grounds for microorganisms such as bacteria, mold, and viruses. This can cause disease, trigger allergic reactions, and damage materials long after the flood. When floodwaters contain sewage or decaying animal carcasses, infectious disease also becomes a concern. Direct impacts such as drowning can be limited with adequate warning and public education about what to do during floods. Where flooding occurs in populated areas, warning and evacuation will be of critical importance to reduce life and safety impacts.

The area immediately adjacent to a channel is the floodplain. Floodplains are illustrated on inundation maps, which show areas of potential flooding and water depths. In its common usage, the floodplain most often refers to the area that is inundated by the 100-year flood, the flood that has a one percent chance in any given year of being equaled or exceeded. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the National Flood Insurance Program (NFIP). The 500-year flood is the flood that has a 0.2 percent chance of being equaled or exceeded in any given year. A 500-year flood event would be slightly deeper and cover a greater area than a 100-year flood event. The potential for flooding can change and increase through various land use changes and changes to land surface, which can result in a change to the floodplain. A change in environment can create localized flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. These changes are most often created by human activity.

Location

The Planning Area is susceptible to various types of flood events as described below.

- **Riverine Flooding** - Riverine flooding, defined as the condition when a watercourse (e.g. river or channel) exceeds its "bank-full" capacity, generally occurs as a result of prolonged rainfall, or rainfall that is combined with already saturated soils from previous rain events. This type of flood occurs in river systems whose tributaries may drain large geographic areas and include one or more independent river basins. The onset and duration of riverine floods may vary from a few hours to many days. Factors that directly affect the amount of flood runoff include precipitation amount, intensity and distribution, the amount of soil moisture, seasonal variation in vegetation, snow depth, and water-resistance of the surface due to urbanization. In the Planning Area, flooding is largely caused by heavy and continued rains, increased outflows from upstream dams, and heavy flow from tributary streams. These intense storms can overwhelm the local waterways as well as the integrity of any flood control structures. The warning time associated with slow rise floods assists in life and property protection.
- **Flash Flooding** - Flash flooding describes localized floods of great volume and short duration. This type of flood usually results from a heavy rainfall on a relatively small drainage area. Precipitation of this sort usually occurs in the winter and spring. Flash floods often require immediate evacuation.
- **Localized Flooding** - Localized flooding problems are often caused by flash flooding, severe weather, or an unusual amount of rainfall. Flooding from these intense weather events usually occurs in areas experiencing an increase in runoff from impervious surfaces associated with development and urbanization as well as inadequate storm drainage systems.



- **Dam or Levee Failure Flooding** - Flooding from failure of one or more upstream dams or water control structures such as levees is also a concern to the City of Tracy. A catastrophic flood control structural failure could easily overwhelm local response capabilities and require mass evacuations towards the north and east of the sphere of influence area to save lives. Impacts to life safety will depend on the warning time and the resources available to notify and evacuate the public. Loss of life could result, and there could be associated health concerns as well as negative effects to local buildings and infrastructure. Dam failure is addressed in more detail under Section 4.3.1 Dam Failure, while levee failures and other aspects related to localized flood problem areas are discussed throughout this chapter.

The City of Tracy Waterway and Flood Control Systems

The City of Tracy is primarily located within the Old River Watershed, which is part of the greater San Joaquin Delta Watershed (Hydrologic Unit Code 18040003); parts of the City also cross over the Corral Hollow Creek Watershed.

San Joaquin Delta Watershed

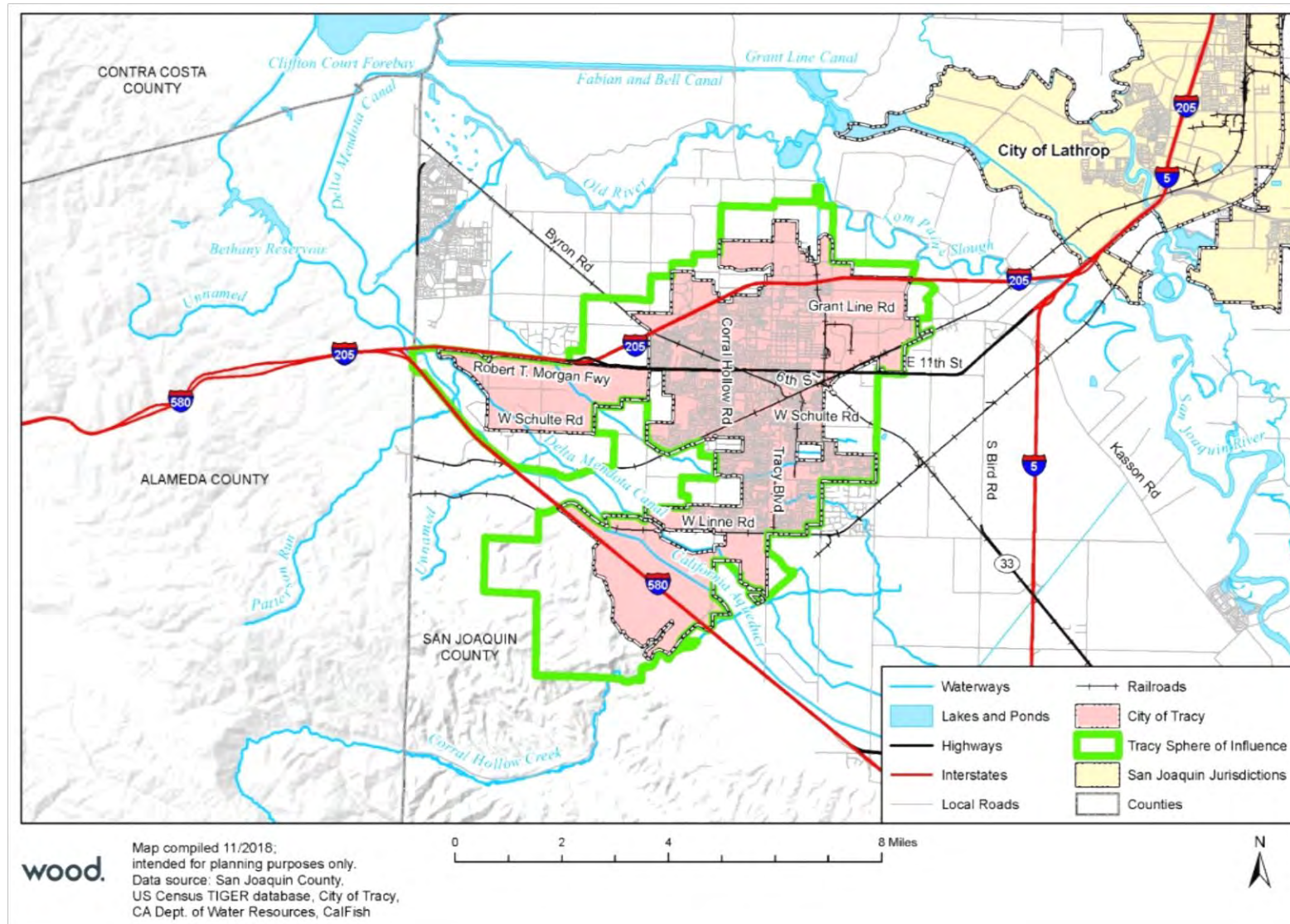
The larger San Joaquin Delta Watershed covers approximately 1,236 square miles and spans the counties of Contra Costa, Alameda, San Joaquin, Stanislaus, Calaveras, and Sacramento, all within California. The main tributary of this watershed, the San Joaquin River, is about 336 miles long and flows from the Sierra Nevada to the San Joaquin Valley before reaching the Pacific Ocean near San Francisco Bay. Historically, this river has been an important source of irrigation water, wildlife corridor, and among the most dammed as well as diverted river within California.

Other notable rivers and flowing water sources in the City or its surrounding areas (besides the San Joaquin River to the east) include: Corral Hollow Creek on the south; the Patterson Run on the west; the Old River and Tom Paine Slough towards the north; the Fabian and Bell Canal as well as the Grant Line Canal on the north; and the Delta Mendota Canal and California Aqueduct running southeast to central-west of the city. Notable water bodies near the area include the Bethany Reservoir and the Clifton Court Forebay on the northwest, though smaller lakes and ponds also exist. The City of Tracy is situated mostly on flat terrain, but a portion of the Planning Area traverses hillside grasslands towards the south and west.

The Citywide Storm Drainage Master Plan also defined five major sub-basin watersheds within the Planning Area—Eastside Channel Watershed, Westside Channel Watershed, Lammers Watershed, Mountain House Watershed, and the Tracy Hills Watershed. The Eastside Channel Watershed is roughly 9.8 square miles and generally includes the east half of the developed portion of the City and some undeveloped areas. The Westside Channel Watershed is approximately 12.9 square miles and generally includes the west half of the developed portion of the City and some undeveloped areas. The Lammers Watershed is approximately 8.6 square miles, lies to the west of the Westside Channel Watershed, and consists of mostly undeveloped areas that are proposed as future developments. The Mountain House Watershed is approximately 1.8 square miles within the Planning Area, is the westernmost watershed in the Planning Area, and generally includes some development and undeveloped areas that are proposed as future service areas. The Tracy Hills Watershed is the southernmost watershed within the Planning Area (City of Tracy Citywide Storm Drainage Master Plan, 2012).

Figure 4-30 below illustrates natural and manmade waterways and water features in the City, using data from the state's DWR, California's Cooperative Anadromous Fish and Habitat Data Program (CalFish), and San Joaquin County's GIS Department.

Figure 4-30 The City of Tracy Main Waterways and Water Features





Two distinct geographical features characterize the drainage conditions of the Planning Area. The easterly portion of the City consists primarily of a flat, broad valley floor with a gradual slope from the southwest to the northeast. The southern and southwestern portions of the Planning Area consist of steeper slopes between the hills to the south and the valley floor.

Regional Drainage Facilities

Major drainage features within the Planning Area include:

- California Aqueduct
- Delta Mendota Canal
- Union Pacific Railroad/Nearby Drainage Features
- West Side Irrigation District Upper Main Canal
- Offsite Watersheds
- West Side Irrigation District Tailwater Ditches
- Naglee Burk Irrigation District Tailwater Ditches
- City Storm Drainage Facilities
- Old River

Primary drainage features within the Eastside Channel Watershed are the Eastside Channel and the City Outfall Channel, which have the capacity to convey the 100-year 24-hour storm discharge and the 10-year 24-hour storm discharge, respectively.

Primary drainage features within the Westside Channel Watershed are the West Side Irrigation District Main Drain, which can carry the 10-year 24-hour in some portions of the drain system and more than the 100-year 24-hour storm discharge in other portions of the drain system for its 2-square mile drainage area, and the DET 10/11 detention basin, which can convey the 100-year 24-hour storm discharge.

Primary drainage features within the Lammers Watershed include the California Aqueduct and the Delta Mendota Canal, which are large water delivery canals that control and regulate discharges to downstream areas.

Primary drainage features within the Mountain House Watershed include the California Aqueduct, the Delta Mendota Canal, and Patterson Run.

Primary drainage features within the Tracy Hills Watershed include the California Aqueduct, the Delta Mendota Canal, the Union Pacific Railroad, and Interstate 580 (Ruggeri-Jensen-Azar, City of Tracy: Tracy Hills Storm Drainage Master Plan, 2014, as included in Appendix F-1 of Tracy Hills Specific Plan Recirculated Draft Subsequent Environmental Impact Report Volume III).

Local Drainage Facilities

According to the Citywide Storm Drainage Master Plan, storm drainage is generally well accommodated for the majority of Tracy's developed areas, which drain from south to north utilizing surface drainage via streets, underground storm drains, open channels and channel parkways, irrigation tailwater facilities, detention basins, pumping facilities, and temporary retention basins. Undeveloped areas consist of predominantly agricultural land that drains from south to north by tailwater ponds and tailwater ditches. Smaller drainage facilities which drain into the major channels are the responsibility of the City for construction, operation and maintenance.



For the most part, the existing local drainage facilities within the City of Tracy have capacity to carry flood flows for at least the 10-year recurrence storm (this would be the storm that has a 1/10 chance of occurrence in any given year, or a 10 percent chance of taking place). Some of the City's older storm drains have a capacity less than the 10-year recurrence storm. New storm drainage facilities recommended in the Citywide Storm Drainage Master Plan would convey the 100-year recurrence storm, with the exception of underground storm drains in existing development areas currently served by 10-year storm capacity systems. All new development projects, including Tracy Hills, will be required to provide drainage facilities consistent with the Citywide Storm Drainage Master Plan. The proposed Tracy Hills drainage facilities are designed to accommodate at least the 10-year recurrence storm and to be self-contained, meaning drainage in Tracy Hills will not impact other existing or proposed development areas.

According to the Tracy Municipal Service Review, published in 2011 for the San Joaquin LAFCO, two major project-specific improvements to the storm drainage system have been identified:

- The Tracy Gateway Stormwater Detention Facilities: The City has required that the Tracy Gateway developer fund and construct on-site stormwater detention facilities.
- The Northeast Industrial Area: Additional facilities are needed to support increased stormwater runoff from new industrial uses, as defined in the Northeast Industrial Area Storm Drainage Analysis and Fee Justification Study (City of Tracy Citywide Storm Drainage Master Plan 2012).

Floodplain Mapping

FEMA established standards for floodplain mapping studies as part of the NFIP (FEMA 2018d). The NFIP makes flood insurance available to property owners in participating communities adopting FEMA-approved local floodplain studies, maps, and regulations. Floodplain studies that may be approved by FEMA include federally funded studies; studies developed by state, city, and regional public agencies; and technical studies generated by private interests as part of property annexation and land development efforts. Such studies may include entire stream reaches or limited stream sections depending on the nature and scope of a study. A general overview of floodplain mapping is provided in the following paragraphs.

Flood Insurance Study (FIS)

The FIS develops flood-risk data for various areas of a community that is used to establish flood insurance rates and to assist the community in its efforts to promote sound floodplain management. The current City of Tracy FIS was included in a three-volume report along with other incorporated areas studied in San Joaquin County; this recent report is dated October 20, 2016.

Flood Insurance Rate Map (FIRM)

The FIRM is designed for flood insurance and floodplain management applications. For flood insurance, the FIRM designates flood insurance rate zones to assign premium rates for flood insurance policies. The designated flood zones are based on flood risk in the area. For floodplain management, the FIRM delineates 100- and 500-year floodplains, floodways, and the locations of selected cross sections used in the hydraulic analysis and local floodplain regulations.

Land areas that are high risk, within the 100-year floodplain (meaning they have a one percent annual chance of flooding), are called Special Flood Hazard Areas (SPHAs) (mapped as A zones). AE zones are those which are analyzed and hence mapped in more detail than the A zone floodplains, but which are subject to inundation by the 1 percent annual chance flood event; these floodplains additionally display Base Flood Elevations, or BFEs. In communities that participate in the NFIP, mandatory flood insurance purchase requirements apply to all Zones A and AE (i.e., those areas subject to a 100-year flood event).



The City of Tracy FIRMs have been replaced by new digital flood insurance rate maps as part of FEMA's Map Modernization program, which is discussed further below.

Letter of Map Revision (LOMR) and Letter of Map Amendment (LOMA)

LOMRs and LOMAs represent separate floodplain studies dealing with individual properties or limited stream segments that update the FIS and FIRM data (as revisions or amendments) between periodic FEMA publications of the FIS and FIRM products.

Digital Flood Insurance Rate Maps (DFIRM)

As part of their Map Modernization program, FEMA is converting paper FIRMs to digital FIRMs (DFIRMS). These digital maps:

- Incorporate the latest updates (LOMRs and LOMAs)
- Utilize community supplied data
- Verify the currency of the floodplains and refit them to community supplied base maps
- Upgrade the FIRMs to a GIS database format to set the stage for future updates and to enable manipulation, storage, and support for GIS analyses and other digital applications
- Solicit community participation

The most current DFIRMs for the City of Tracy and other jurisdictions within San Joaquin County are included in the county National Flood Hazard Layer, or NFHL database. The effective date for flood maps for Tracy is 10/16/09 and the County's mapping was updated 10/20/16. The spatial features available in this NFHL database, such as floodplains and levees, were used for the analyses and mapping in this plan.

Major Sources of Flooding

General rainfall floods, primarily associated with seasonal storms and thunderstorms, can occur in the City during winter and spring months. This type of flood results from prolonged heavy rainfall over tributary areas and is characterized by high peak flows of moderate duration. Flooding is more severe when antecedent rain has resulted in saturated ground conditions.

In the more developed areas of Tracy, flood problems intensify because the immediate areas are developed and contain mostly impervious surfaces, and the nearby open land available to absorb rainfall and runoff is being used for new development, which increases the amount of paved areas (i.e., impervious surfaces). In other words, the decrease in the amount of open land that can absorb precipitation increases the volume of water that must be carried away by waterways and developed infrastructure.

In addition, according to the Lower San Joaquin River and Delta South Regional Flood Management Plan, published in 2014, tides can influence flooding at the northern and northwest edge of Tracy. Also, often times, tides combined with rain or storm events can further compound and cause levee breaches or levee failure issues, and as such levees are known as prominent potential issue in terms of water infrastructure in the area.



The FEMA DFIRMs for San Joaquin County (FEMA 2009; FEMA 2018c) indicate that potential flooding is predominantly affecting the northern portions of Tracy, but there are other smaller flooding areas off of Corral Hollow Creek on the southeast of the city. According to FEMA records, the majority of flooding in Tracy is within designated Flood Zones A, AE, AH, and AO (for the 100-year flood event); flood mapping is also available for the 200- and 500-year event as displayed under Figure 4-31. This map also shows the local levees in and surrounding the Planning Area, as provided in the NFHL database from FEMA, while Figure 4-32 displays flooding calls that were reported to the City's Public Works department, alongside local stormwater infrastructure including drainage paths, pump stations, outfalls, and detention basins. According to the flood calls, portrayed by grey triangles, inundation has been known to take place near the downtown area of Tracy, towards the north, central portions, and near W. Linne Rd (to the east and west). This means that flooding is likely to take place, based on the evidence from flood reports which relate to localized stormwater infrastructure and drainage facilities, almost anywhere in the city. Some flooding may have also occurred due to failure or overflow of localized wastewater or stormwater infrastructure (e.g., drainage systems, pump stations), or perhaps due to flash flooding or riverine flooding.

Localized Flooding Problem Areas

Delta flooding has a long history in San Joaquin County and is an ongoing problem. However, according to the Citywide Storm Drainage Master Plan, drainage is generally well accommodated in the developed portions of the Planning Area, with a few exceptions. Many major storm drainage infrastructure projects have been implemented over the past 20 years and have eliminated many of the prior flooding problem areas. The Citywide Storm Drainage Master Plan largely focuses on improvements and additions to drainage facilities that are proposed to accompany future development in various portions of the City (City of Tracy 2012). Therefore, with the exception of various localized flooding issues (based on reported calls) that according to the HMPC are mainly due to debris clogs in the storm drains, most storm drainage infrastructure is adequately conveying surface water runoff.

Levees

In many locations in California, levees and flood control facilities have been built and are maintained by various public and private entities, including water, irrigation, and flood control districts; other state and local agencies; and private interests (National Levee Database 2018). Some of these facilities were constructed with flood control as secondary or incidental to their primary purpose. The City of Tracy does not own, operate, maintain, or have responsibility to maintain any levees within the Planning Area, but San Joaquin County and other local or regional flood management agencies do oversee levees within their boundaries.

Local levees Pico & Naglee and Pescadero, known as RD 1007 and RD 2058, respectively, are described in the Lower San Joaquin River and Delta South Regional Flood Management Plan (RFMP). The RFMP summarizes levee conditions, assessed risks and deficiencies associated with the levee systems, and history of inspections and other such aspects. Ways in which these and other local or regional levees could be compromised and possible affect communities downstream or nearby (including the City of Tracy) are also addressed in this RFMP and other planning mechanisms.

Figure 4-31 FEMA NFHL Flooding for the 100-, 200-, and 500-Year Flooding Events, With Levees

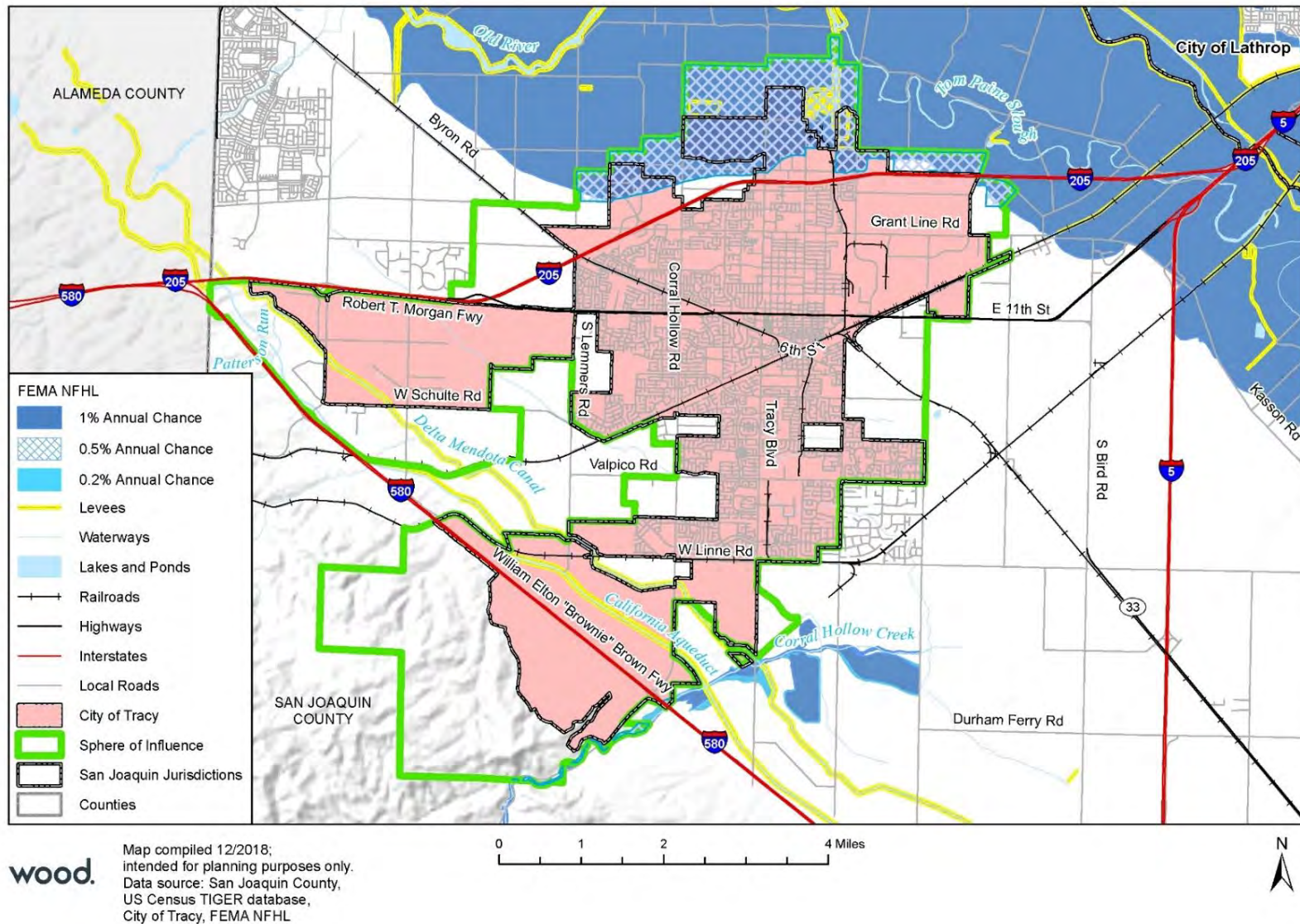
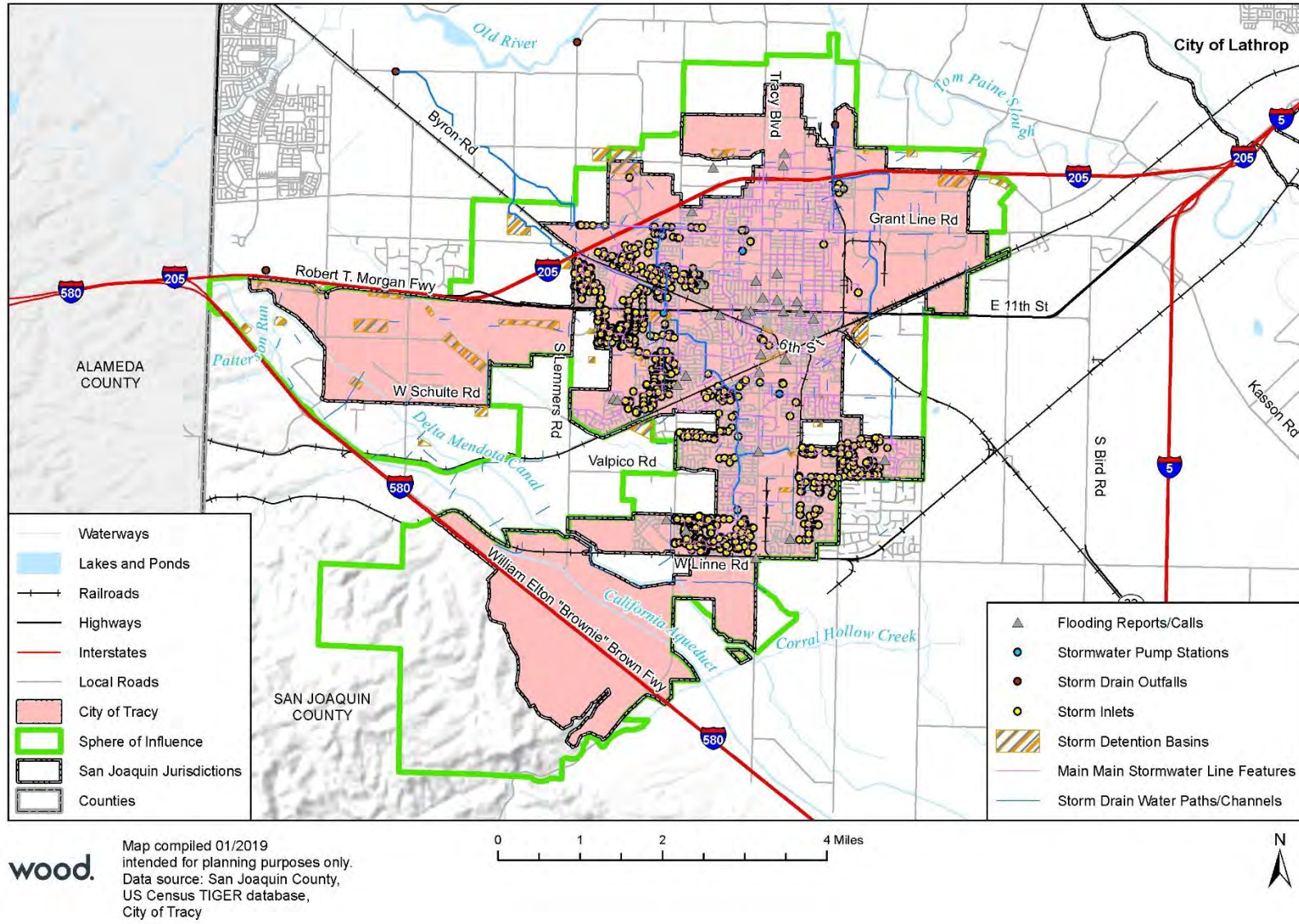


Figure 4-32 Stormwater Infrastructure and Related Flood Calls/Reports in Tracy





According to the San Joaquin County Flood Insurance Study from 2009, structural deficiencies associated with levees may result in flood hazards that have the potential to affect the City of Tracy:

“An unstable section of the left bank levee at mile 61 on the San Joaquin River, 7 miles east of Tracy and 2.4 miles upstream of Paradise Dam, constitutes a potential flood hazard to the City of Tracy. When levee overtopping occurs during the 100-year recurrence interval flood, flows are carried into Tracy by Tom Paine Slough, passing beneath the Western Pacific Railroad, Interstate Highways 5 and 205 and the Southern Pacific Railroad. The left bank levee along the Old River, protecting El Pescadero tract constitutes another potential flood hazard. It is considered unstable in the event of the 1-percent chance flood.”

Extent (Magnitude/Severity)

Flood maps can be used as an indicator of flood extent. Flood depth and velocity also affect the extent of flood hazards and resulting damage. The deeper and faster flood flows become, the more damage they can cause in a community. However, shallow flooding with high velocities (e.g., such as given a flash flood event caused by precipitation) can cause as much damage as deep flooding with a slow velocity (e.g., from a riverine flood event). This typically happens when a channel migrates over a floodplain and redirects flows and transports debris and sediment.

While cities can implement measures to prevent or reduce the severity and magnitude of flood hazards, some level of risk often remains. These types of threats include dam failure, infrastructure failure, and severe flood events that exceed flood design standards or drainage capacity. Flood severity can be determined by logging peak discharge flows. This information is tracked by both FEMA and the USGS. FEMA's BFE depth curve datasets can provide further insight as to how much gets flooded of a community and where exactly, enhancing the level of detail on the magnitude of flooding that can affect said community. Based on the NFHL database from FEMA (which includes these BFEs), the City of Tracy's Planning Area is expected to experience the worst flooding conditions across the north, with minor areas along Corral Hollow Creek to the south and southeast experiencing 500-year flood events as well. Localized flooding from the stormwater infrastructure, for example, is more difficult to estimate but could happen anywhere in the City and could be severe depending on the conditions causing the flood event.

Previous Occurrences

The City of Tracy has historically been impacted by flooding before from sources such as levee failure as well as general riverine and flash flooding from storms. Historical records are not complete, but some occurrence details are available from the National Centers for Environmental Information (NCEI) database, which is managed by NOAA. The NCEI-supplied information on the two largest flood events is summarized below for the years 1997-2017.

January 10, 1997 - A levee on the Tom Paine Slough broke, forcing some residents of the City of Tracy to evacuate. This event led to flash flooding but did not cause any property or crop damages.

February 2, 1998 - An almost month-long flooding event took place in the lower San Joaquin River system, affecting Tracy and other areas within San Joaquin County. Flooding on Corral Hollow Creek, failed levees, and overflowing irrigation ditches inundated 20 homes within Tracy alone. The town of Patterson nearby (southeast of Tracy) became inaccessible and people living there were unable to leave, as major transportation routes and roads flooded. A total of 103 homes were affected by flooding county-wide. A man died south of Tracy when flood waters swept him away while on a hunting trip near Hospital Creek, after his truck got stuck. Property damages for this multi-county flood event totaled \$4.3 million, and crop damages \$7.8 million.



Probability of Future Occurrences

100-Year Flood

Occasional - The 100-year flood is the flood that has a 1 percent chance in any given year of being equaled or exceeded, while the 200- and 500-year floods are expected to have a 0.5 percent chance and 0.2 percent chance of occurring (or being exceeded) in any year, respectively.

Climate Change Considerations

Emerging findings from California's Fourth Climate Assessment show that costs associated with direct climate change impacts by 2050 will be dominated by human mortality, coastal damage, and the potential for droughts and mega-floods (California Natural Resources Agency 2018a). Scientific studies outlined in the same assessment also indicated shifts in California's precipitation regime, which show more dry days, more dry years, a longer dry season, and increases in occasional heavy precipitation events and floods. Studies also project great storm intensity with climate change, resulting in more direct runoff and flooding (California Natural Resources Agency 2018a). As a result, high frequency flood events will increase with climate change. Also, with wildfires already being a problem in California, increasing periods of drought and lack of precipitation are expected to exacerbate conditions for fires to occur, and in turn worsen the potential for runoff and flooding associated with burned areas.

The Fourth Climate Assessment also indicates that climate change may impact the performance of many natural gas facilities, such as storage units and pipelines concentrated in the Sacramento-San Joaquin Delta, several of which extend across the City's Planning Area. As subsidence and sea level rise (in the Delta) continues it could compound the risk of levee overtopping, which would both expose natural gas pipelines and other infrastructure, and lead to levees failing to meet the federal levee height standards (California Natural Resources Agency 2018a).

Vulnerability to Flood - Medium

Historically, the Planning Area has been at risk to flooding primarily on the north and south/southeast. Normally, storm floodwaters are kept within defined limits by a variety of storm drainage and flood control measures (e.g. levees). But, occasionally, extended heavy rains result in floodwaters that exceed local drainage infrastructure capacity and cause damage.

Flooding has occurred in the past: within the 100-year floodplain and in other localized areas. In addition to damage to area infrastructure and city facilities, other problems associated with flooding include erosion, sedimentation, degradation of water quality, loss of environmental resources, certain health hazards, and the inconvenience or potential financial and accessibility issues that come with road closures and other such effects.

The City of Tracy has mapped flood hazard areas. For the vulnerability assessment, GIS was used to identify and quantify the possible impacts of flooding within the City's Planning Area. The following methodology was followed in creating these flood vulnerability maps and determining values at risk to the 100-, 200-, and 500-year flood events.

The latest NFHL datasets from FEMA were used as the floodplain layers. These datasets are the most comprehensive electronic representation of the 100- and 500-year floodplains for the entire Planning Area. The 200-year floodplain (or 0.5 percent annual flood chance) were provided by the San Joaquin County GIS Department, to supplement FEMA layers. Table 4-20 summarizes the flood zones included on these maps.



Table 4-20 The City of Tracy's Flood Zones

Flood Zone	Definition
Special Flood Hazard Areas (SFHA) Subject to Inundation by the 100-, 200-, or 500-Year Floods	
Zone A	100-year floodplain, or areas with a 1% annual chance of flooding. Because detailed analyses are not performed these areas, no depths or base flood elevations are shown in Zone A areas.
Zone AE	Detailed studies for the 100-year floodplain. The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 zones.
Zone AH	Areas with a 1% chance of shallow flooding, usually in the form of a pond with an average depth ranging from 1 to 3 feet. These are flood elevations derived from detailed analyses.
Zone AO	River or stream flood hazard areas and areas with a 1% or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. Average flood depths derived from detailed analyses.
0.2 Percent Annual Chance Flood Hazard	500-year floodplains.
Other Flood Areas	
Floodway	A regulatory floodway is the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.
Zone X (shaded)	Areas with a 0.2% annual chance flooding (1 in 500 chance), between the limits of the 100-year and 500-year floodplains. This zone is also used to designate base floodplains of lesser hazards, such as areas protected by levees from the 100-year flood, shallow flooding areas with average depths of less than one foot, or drainage areas less than 1 square mile.
Zone X (unshaded)	500-year floodplain (0.2% annual chance). Area of minimal flood hazard.

Source: FEMA Flood Map Service Center, 2018

The City's parcel layer was used as the basis for the inventory of developed parcels. GIS was used to create centroids, or points, to represent the center of each parcel polygon. The layer was then overlaid on the floodplain layers. For the purposes of this analysis, the flood zone in which the centroid was located was assigned as the flood zone for the entire parcel. This model assumed that every parcel with a structure value greater than zero was developed in some way. Only improved parcels and the value of their contents were analyzed, with properties summarized by type.

In order to calculate contents values for each property/structure, the following method was used: 50 percent of the structure value for residential occupancy properties (including multi-unit residential, mobile homes, and duplexes); 100 percent for commercial and agricultural properties/parcels; and, 150 percent for industrial properties. Vacant properties did not have contents values calculated, even those properties with structural values provided. For the purposes of flooding, if a multi-unit home had more than one floor or level, it was assumed that only the first floor would be exposed to the inundation from the dam failure event, and as such the total structural value was divided by the number of floors to arrive at the final structure value that would be affected (or at risk) to this hazard occurrence.





Following this methodology, maps were created that illustrate where properties are located within flooding areas in the City of Tracy's sphere of influence.

Insurance Coverage, and NFIP Claims and Losses

The City of Tracy joined the NFIP on June 28, 1974. The current effective map date is from October 16, 2009. The City does not participate in the Community Rating System (CRS). NFIP insurance data indicates that as of September 30, 2018 there were 84 policies in place in the City, resulting in \$32,490,400 of insurance in effect.

Since the City has participated in the NFIP, there have been 11 total losses, amounting to \$18,652,120 in payments. Seven cases are closed, and 4 of the loss cases fall under the CWOP category (losses that have been closed without payment).

According to the latest data from the state on NFIP Community Information System (CIS), the City of Tracy does not have any Repetitive Loss buildings as defined by FEMA located anywhere within the Planning Area, but this information needs to be verified with the City's Attorney Office. According to the City's Chief Building Official, property-specific information is considered sensitive and maintained by the City's Attorney Office (Jorgensen 2018).

Property

This section summarizes the vulnerabilities to properties and values at risk in the City's Planning Area. According to this information, the Planning Area has 200 properties valued at roughly \$82 million in both the 100- and 200-year floodplains. No properties were found at risk of the 500-year (0.2 percent annual chance) floodplain.

Applying the 25 percent damage factor as previously described, there is a 1 percent chance in any given year of a 100-year flood causing roughly \$39,998,456 in damage in Tracy, while a 200-year flood event could cause \$27,899 in losses, for a total of \$40,026,355 in damages given both events combined.

Table 4-21 and Table 4-22 summarize the values at risk in the City of Tracy's floodplains. The content of the two tables is explained below.

- The first table, Table 4-21, summarizes those properties at risk of flooding, broken up by property type, based on both the 100-year and 200-year flood events (as there were no structures/properties found to intersect with the 500-year flood event). All the properties summarized had a structure value greater than \$0. For flooding, a quarter (i.e., 25 percent) of the total value of a property or structure's total estimated value is taken to calculate the loss estimate, based on FEMA flood depth curves and accepted standards assuming a two-foot-deep flood. The table includes information on structural values, contents values, total values at risk, loss estimates, and finally the population exposed based on the average household value indicated in the U.S. Census Bureau estimate for 2017 (multiplied by the number of residential structures affected).
- The second table, Table 4-22 summarizes all the flood loss estimates, with these broken up by flood hazard zone rather than property type. Populations at risk are also included in this table.

According to this information, the Planning Area has 200 properties valued at roughly \$82 million in both the 100- and 200-year floodplains. No properties were found at risk of the 500-year (0.2 percent annual chance) floodplain.

Applying the 25 percent damage factor as previously described, there is a 1 percent chance in any given year of a 100-year flood causing roughly \$39,998,456 in damage in Tracy, while a 200-year flood event could cause \$27,899 in losses, for a total of \$40,026,355 in damages given both events combined.



Table 4-21 The City of Tracy's Properties in Floodplain by Type

Flood Hazard Zone	Property Type	Total Structures	Structure Value	Contents Value	Total Value	Loss Estimate	Population at Risk
100 Year Event	Agricultural	25	\$ 951,379	\$ 951,379	\$ 1,902,758	\$ 475,690	--
	Pasture	1	\$ 15,300	\$ 15,300	\$ 30,600	\$ 7,650	--
	Commercial	33	\$ 33,244,514	\$ 33,244,514	\$ 66,489,028	\$ 16,622,257	--
	Commercial Vacant Land	6	\$ 158,531	--	\$ 158,531	\$ 39,633	--
	Industrial	23	\$ 20,069,168	\$ 30,103,752	\$ 50,172,920	\$ 12,543,230	--
	Residential	75	\$ 11,060,863	\$ 5,530,432	\$ 16,591,295	\$ 4,147,824	257
	Multi-Family Unit	5	\$ 15,577,199	\$ 7,788,600	\$ 23,365,799	\$ 5,841,450	17
	Duplex	1	\$ 267,285	\$ 133,643	\$ 400,928	\$ 100,232	3
	Mobile Home	3	\$ 572,879	\$ 286,440	\$ 859,319	\$ 214,830	10
	Residential Vacant Land	24	\$ 22,648	--	\$ 22,648	\$ 5,662	--
	TOTAL	196	\$ 81,939,766	\$ 78,054,058	\$ 159,993,824	\$ 39,998,456	288
200 Year Event	Agricultural	4	\$ 55,797	\$ 55,797	\$ 111,594	\$ 27,899	--
	TOTAL	4	\$ 55,797	\$ 55,797	\$ 111,594	\$ 27,899	--

Source: The City of Tracy, San Joaquin County GIS Department, Wood Parcel Analysis, FEMA NFHL

Table 4-22 The City of Tracy's Flood Loss Estimates Summary

Flood Hazard Zone	Parcel Count	Structure Value	Content Value	Total Value at Risk	Loss Estimate	Population at Risk
1% Annual Chance	196	\$ 81,939,766	\$ 78,054,058	\$ 159,993,824	\$ 39,998,456	288
0.5% Annual Chance	4	\$ 55,797	\$ 55,797	\$ 111,594	\$ 27,899	--
0.2% Annual Chance	--	--	--	--	--	--
GRAND TOTAL		\$ 81,995,563	\$ 78,109,855	\$ 160,105,418	\$ 40,026,355	288

Source: The City of Tracy, San Joaquin County GIS Department, Wood Parcel Analysis, FEMA NFHL

However, further analysis that takes into account the year when a property was built shows that 16 properties constructed after 1980 (when the City of Tracy implemented NFIP flood protection codes) are still at potential risk of flooding based on their overlay with the 100-year floodplain (FEMA 2019). Because these properties were supposed to comply with the new flood protection codes with regards to building





in special flood hazard areas, it is assumed they were constructed one foot above the BFE. Also, no properties built after 1980 or later fall within the 200- or 500-year floodplains.⁴

To summarize, a total of 76 properties that were constructed previous to, or before 1980 are found in the 100-year floodplain, and so these would continue to be at risk of flooding. Table 4-23 summarizes the properties not built to comply with the one-foot above BFE. The total value of unmitigated properties in the floodplains amounts to \$15,030,699 while their loss estimate (or a 25 percent value of this total) is \$3,757,675.

Table 4-23 Properties in the 100-Year Floodplain Built On or Before Flood Mitigation Requirements from 1980

Flood Event	Property Type	Structure Values	Content Values	Total Values	Loss Estimates
100-Year	Agricultural	\$655,275	\$655,275	\$1,310,550	\$327,638
	Commercial	\$359,852	\$359,852	\$719,704	\$179,926
	Residential	\$6,148,623	\$3,074,312	\$9,222,935	\$2,305,734
	Residential Vacant Land	\$11,801	\$5,901	\$17,702	\$4,425
	TOTAL	\$7,175,551	\$4,095,339	\$11,270,890	\$2,817,723
200-Year	Agricultural	\$53,717	\$53,717	\$107,434	\$26,859
	TOTAL	\$53,717	\$53,717	\$107,434	\$26,859
GRAND TOTAL		\$7,229,268	\$4,149,056	\$11,378,324	\$2,844,581

Source: The City of Tracy, San Joaquin County GIS Department, Wood Parcel Analysis, FEMA NFHL

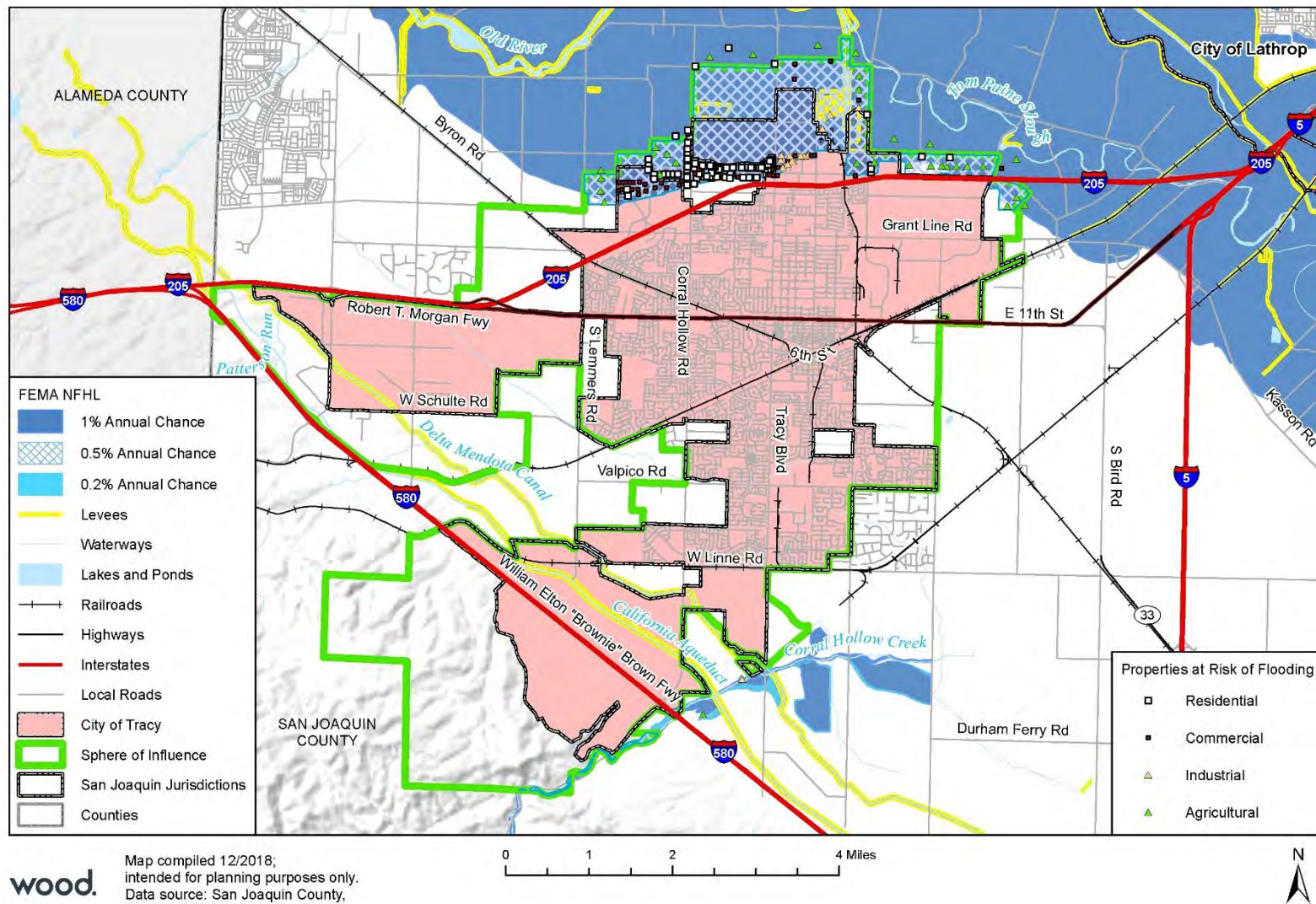
Also, of the 200 properties within the floodplain, approximately 128 are within the unincorporated portion of San Joaquin County and 57 are within the Tracy city limits.⁵ This means that currently only a portion of these properties are regulated by the City, with the remainder being under the jurisdiction of San Joaquin County. Further, according to the City's Chief Building Official, in 2001, FEMA conducted an audit of all properties constructed within the 100-year floodplain (Jorgensen 2018). The audit involved the collection of all BFE certificates, which are currently only available in hard copy format (Jorgensen 2018). Additional confirmation would be needed to verify whether the 57 properties in the City have BFE certificates, and similar confirmation with the San Joaquin County Floodplain Manager would be needed to verify whether the 128 properties in the County have BFE certificates.

⁴ Due to gaps in the parcel attribute dataset, only 92 out of the total 204 properties, which fall in the flood events analyzed herein contain information on year built. As a result, only those parcels with a construction year indicated can be queried in the database to filter which may have been built before or after the compliance codes were implemented. As such, total properties in the floodplain will not match total properties summarized below which separate before- and after-codes were adopted.

⁵ Approximately 180 properties were found to be within the 100-year and 200-year floodplain based on a GIS analysis that used the centroid-method for analysis. This means that additional parcels intersected with the floodplain (200 properties), but were not completely contained within the floodplain.



Figure 4-33 The City of Tracy's Properties in the 100-, 200-, and 500-Year Floodplains





People

Of greatest concern in the event of a flooding event is the potential for injury or loss of life. City of Tracy 2017 U.S. Census estimates were obtained, which indicate number of average household members for the City. The mean population per household is 3.43, and this metric was multiplied by the number of properties at risk of inundation to determine the total potential affected population per property type (only for those parcel types that would have people living in them, i.e., residential, mobile homes, multi-family homes, and duplexes). Population estimates of those living in the floodplain were then generated using the City parcel data that intersect with the 100-, 200-year, and 500-year floodplains. The results were totaled for all the flood hazard zones. As the previous two tables indicate, there are 200 people at risk of flooding caused by any of the flood events overlapping with residential properties, where 196 are found in the 100-year floodplain and 4 in the 200-year floodplain.

Critical Facilities and Transportation Infrastructure

Critical facilities are those community components that are most needed to withstand the impacts of disaster as previously described. GIS software was used to determine City essential facilities as well as critical facilities in Tracy's flood hazard areas. The NFHL flood layers previously discussed were used to identify the 100-, 200-, and 500-year floodplains. Figure 4-34 illustrates the locations of critical facilities and transportation infrastructure relative to the floodplains in the City. Those facilities that intersect with any of the flood hazard areas are displayed. Table 4-24 provides an inventory of these 18 facilities falling within any of the floodplains discussed. The impact to the community could be substantial if these critical facilities were damaged or destroyed during a flood event.

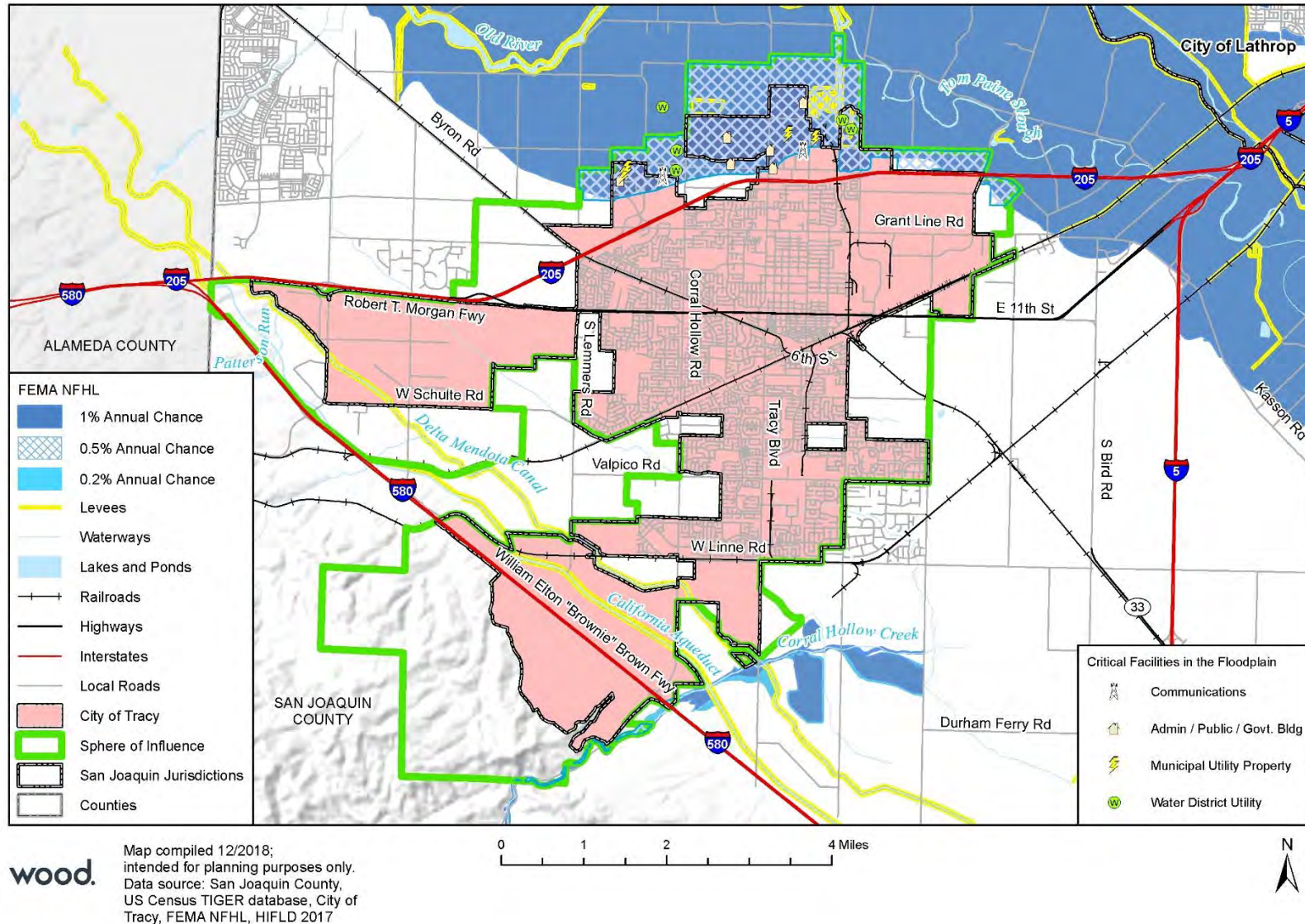
Table 4-24 The City of Tracy's Critical Facilities in the 100-, 200-, and 500-Year Floodplains

Facility Type	Total
Cellular Towers	1
Microwave Service Towers	2
Administrative/Public Building	1
Government Building/Exempt	5
Municipal Utilities	4
Water District Property	5
Total Facilities	18

Source: City of Tracy 2018; HIFLD 2017, Wood Parcel Analysis



Figure 4-34 The City of Tracy's Critical Facilities in the 100-, 200-, and 500-Year Floodplains





Historic, Cultural, and Natural Resources

The Planning Area has significant natural and agricultural resources located in or nearby the City as previously described (NRHP 2018). Climate change studies at the county and regional level indicate the likelihood that crops and food supplies, in particular, will be hindered by a warming climate and increase in dry periods, mixed in with unpredictable flash flooding from uncertainty in storm occurrence (leading to a worsening in erosion and sedimentation conditions). However, natural areas within the floodplain often benefit from periodic flooding as a naturally recurring phenomenon. These natural areas often reduce flood impacts by allowing absorption and infiltration of floodwaters.

Economy

Similar to a dam inundation event which would affect infrastructure (e.g. roads), homes, and populations (possibly displacing families), impacts to the local economy could include business interruptions, lost or reduced wages, infrastructure and resource downtime costs, and reduced city revenues from lack of tourism or ability to run certain services. Other secondary hazard impacts such as reduced water quality or resource availability, which could in turn raise costs of water processing and distribution, are also possible results from a bad flooding event, whether from riverine flooding, flash flooding, or an event caused by local stormwater/drainage infrastructure failures.

Future Development

The development trend in the City of Tracy's Planning Area is steady. From 2010 to 2018, the population in the City grew from 79,416 to 92,553. This is an increase of 13,137 or an average of 1,643 people per year. New communities such as Tracy Hills are expected to add even more population to the area. By 2025, the growth trends are likely to continue, and the City will keep diversifying and expanding its economic base due to proximity to the San Francisco Bay area and San Joaquin Valley cities (e.g. Stockton, Sacramento).

Recent annexations and upcoming developments expected in/near the City of Tracy include (according to the City's General Plan):

- Cordes Ranch
- Northeast expansion
- North or Larch Clover
- Tracy Hills Open Space
- Area to the west of the City limits
- Area to the northwest of the City limits
- Area to the northeast of City limits
- Area to the southeast of City limits

The potential for flooding may increase as stormwater is channelized due to land development. Such changes can create localized flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. Floodplain modeling and master planning should be based on buildout land use to ensure that all new development remains safe from future flooding. While local floodplain management, stormwater management, and water quality regulations and policies address these changes on a site-by-site basis (such as with the storm drainage plans and other engineering and planning mechanisms mentioned throughout this chapter), their cumulative effects can have a negative



impact on the floodplain. Water/flood control infrastructure such as dams and levees can additionally be stressed due to increased development and municipal water supply needs coupled with a changing environment which causes environmental and weather conditions to become more and more unpredictable (e.g. through storm events).

Local floodplain management ordinances require that new construction be built with the lowest floor elevated to or above the base flood (100-year) elevation. New development that adheres to the elevation requirements in addition to other requirements for maintaining elevation certificates and implementing stormwater program elements and erosion or sediment controls for all new development in the floodplain may help protect new constructions from 100-year floods.

The amount of growth in the City and nearby communities can also strain the capacity of the water management system, which includes water supply in addition to water control. When flood drainage and control structures are overwhelmed, the result is not only severe flooding. Significant losses to the water supply system may also occur.

Risk Summary

- Floods impacts will vary by location and severity and will likely only affect certain areas of the City at any one time.
- Based on the risk assessment, floods will continue to have economic impacts to certain areas of the City's Planning Area, and the estimated losses for properties amounts to \$39,998,456 (with a total of 288 people at risk), in addition to the 18 critical facilities which fall in the floodplains.
- 200 properties valued at roughly \$82 million are located in both the 100- and 200-year floodplains. No properties were found at risk of the 500-year (0.2 percent annual chance) floodplain.
- Of the 200 properties within the floodplain, approximately 128 are within the unincorporated portion of San Joaquin County and 57 are within the Tracy city limits.
- In 2001, FEMA conducted an audit of all properties constructed within the 100-year floodplain and there are BFE certificates on files for most of these properties.
- Many of the flood events that occurred in the past in the Planning Area are minor; localized flood events were described by residents (during flood calls) as more of a nuisance than a disaster.
- Impacts that are not directly quantified but could be anticipated in large future events include: 1) injury and loss of life; 2) disruption of and damage to public infrastructure; 3) disruption to trade, commerce, commuting, mobility, and other activities that may rely on the road networks; 4) health hazards associated with mold and mildew; 5) significant direct and indirect economic impact (jobs, sales, tax revenue) upon the community; and 6) negative impact on commercial and residential property values.
- Overall the significance of flood hazards is medium.

4.3.6 Severe Weather: General

Severe weather is generally any destructive weather event, but usually occurs in the Planning Area as localized thunderstorms that bring heavy rain, hail, and lightning.





The NOAA NCEI has been tracking severe weather since 1950. Their Storm Events Database tracks severe weather events on a county basis and contains data on the following: all weather events from 1993 to current (except from 6/1993-7/1993); and additional data from the Storm Prediction Center, which includes tornadoes (1950-1992), thunderstorm winds (1955-1992), and hail (1955-1992). This database contains 225 severe weather events that occurred in San Joaquin County between January 1, 1950, and December 31, 2017. Table 4-25 summarizes these events:

Table 4-25 NCEI Hazard Event Reports for the San Joaquin County* 1950-2017

Type	# of Events	Property Loss (\$)	Crop Loss (\$)	Deaths	Injuries
Dense Fog	10	890,000	0	3	6
Flash Floods	3	2,100,000	0	0	0
Floods	16	130,000	0	2	7
Funnel Clouds	10	0	0	0	0
Hail	2	0	0	0	0
Heavy Rain	12	750,000	200,400,000	0	0
High Winds	25	5,008,000	2,000	1	1
Lightning	2	0	0	0	4
Thunderstorm/Wind	3	1,015,000	0	0	0
Tornado: F0	16	118,530	80,000	0	0
Tornado: F1	2	27,500	0	0	0
Totals**	101	10,039,030	200,482,000	6	18

Source: NOAA's National Centers for Environmental Information <https://www.ncdc.noaa.gov/stormevents/>

*Note any reference to a coastal type weather event for San Joaquin County has been excluded from this table.

**Losses reflect totals for all impacted areas, inclusive of San Joaquin County

The NCEI table above summarizes severe weather events that have occurred in San Joaquin County. Only a few of the events actually resulted in state and federal disaster declarations. While the HMPC recognizes these inconsistencies, this data provides value in depicting the County's "big picture" hazard environment.

As previously mentioned, several of the City of Tracy's state and federal disaster declarations have been a result of severe weather. For this plan, severe weather is broken down as follows:

- Extreme Heat
- Heavy Rain/Thunderstorm/Hail/Lightning/Dense Fog
- High Wind/Tornado

Heavy snows and extreme cold were not carried forward for further analysis due to a lack of occurrences in the Planning Area and County.

4.3.7 Severe Weather: Extreme Heat

Hazard/Problem Description

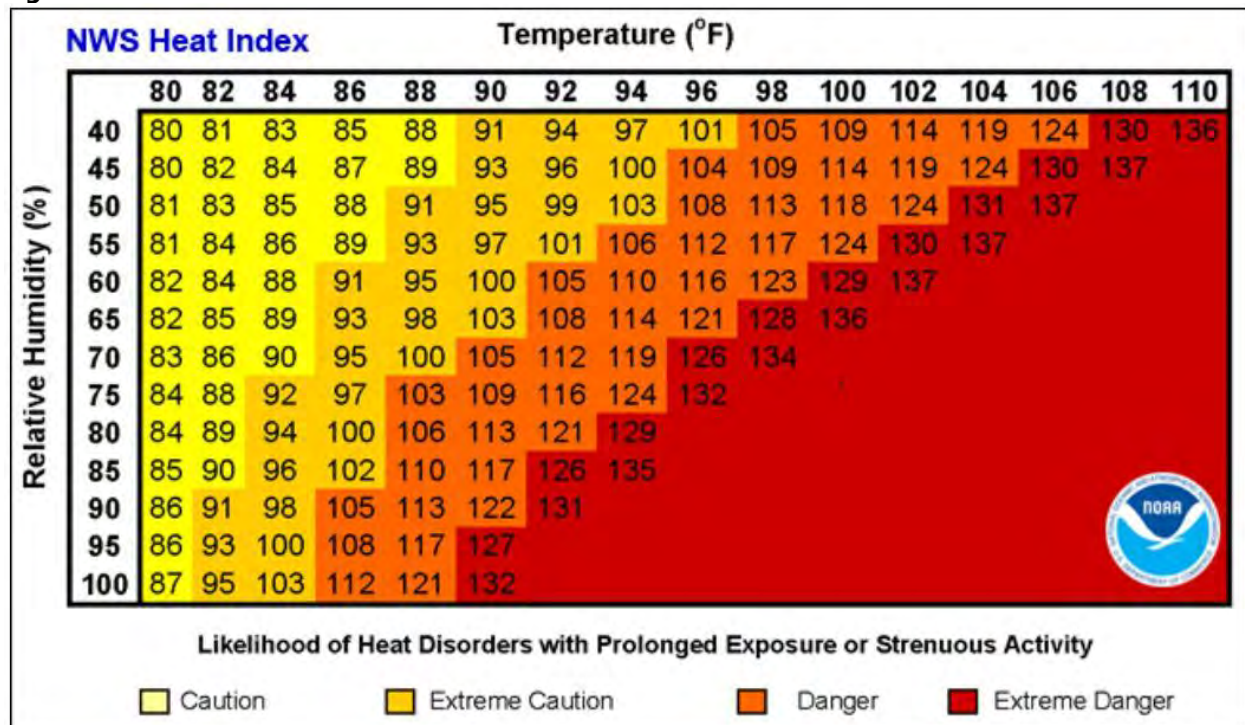
Extreme heat events can have severe impacts on human health and mortality, natural ecosystems, the agriculture sector and other economic sectors. According to information provided by FEMA, extreme heat



is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. Heat kills by taxing the human body beyond its abilities. In a normal year, about 175 Americans succumb to the demands of summer heat. According to the National Weather Service (NWS), among natural hazards, only the cold of winter—not lightning, hurricanes, tornadoes, floods, or earthquakes—takes a greater toll, however there are a lack of cold weather and extreme cold temperatures events in San Joaquin County. In comparison, during the 40-year period from 1936 through 1975, nearly 20,000 people were killed in the United States by the effects of heat and solar radiation. In the heat wave of 1980, more than 1,250 people died. The 2018 California State Hazard Mitigation Plan (SHMP) notes the heat wave during the summer of 2006 lead to 650 deaths in a 13-day period (Cal OES 2018) and in the past 15 years heat waves have claimed more lives in California than all other declared disaster events combined (California Climate Adaptation Strategy 2018).

Heat disorders generally have to do with a reduction or collapse of the body's ability to shed heat by circulatory changes and sweating or a chemical (salt) imbalance caused by too much sweating. When heat gain exceeds the level the body can remove, or when the body cannot compensate for fluids and salt lost through perspiration, the temperature of the body's inner core begins to rise, and heat-related illness may develop. The elderly, small children, patients with chronic medical conditions, those on prescription medication therapy, and people with weight and alcohol problems are particularly susceptible to heat reactions, especially during heat waves in areas where moderate climate usually prevails. Figure 4-35 illustrates the relationship of temperature and humidity to heat disorders.

Figure 4-35 National Weather Service Heat Index



Source: National Weather Service

Note: Since heat index values were devised for shady, light wind conditions, exposure to full sunshine can increase heat index values by up to 15°F. Also, strong winds, particularly with very hot, dry air, can be extremely hazardous.



Location

Severe weather events have the potential to happen anywhere in the Planning Area. According to the HMPC, extreme heat, occasional heavy rain and thunderstorms, as well as fog and wind events have occurred in the City Planning Area. Strong winds and thunderstorms have also been most damaging within the downtown Tracy area. The HMPC indicated that fallen trees and vegetation is often cleaned up within the City following a storm event. During more severe weather events, storm drains become clogged and wind storms may result in damaged power lines and power outages. As a result, wind events can be more damaging in neighborhoods that are heavily wooded or landscaped with older and larger trees.

- Extreme Heat
- Heavy Rain/Thunderstorm/Hail/Lightning/Dense Fog
- Wind/Tornado

Extent (Magnitude/Severity)

The City of Tracy begins to experience hot weather in May or June of each year, and the heat continues throughout the summer months. According to the Western Regional Climate Center (WRCC), the average high and low temperatures for the City of Tracy in August are 92.1°F and 55.7°F, respectively. Temperatures that are 10 degrees above normal are considered excessive. The “California OES Contingency Plan for Excessive Heat Emergencies” (2014) indicates that through the use of historical weather and mortality data, the NWS and the California Department of Public Health (CDPH) have identified five major types of climate regions within California to account for climate differences among regions in order to recognize what constitutes an excessive heat event in each of the regions. When temperatures spike for two or more consecutive days without an adequate drop in nighttime temperature to cool the outdoor and indoor environments, there is a significant increase in the risk to vulnerable populations.

The NWS has in place a system to initiate alert procedures (advisories, watches, and warnings) when high temperatures are expected to have a significant impact on public safety. The expected severity of the heat determines which type of alert is issued. San Joaquin County has its own heat alert in place that is issued during heat waves. The alert generally includes information and tips on how vulnerable populations can protect themselves from heat related illness (San Joaquin County 2017). During heat waves, the City of Tracy has designated cooling zones placed throughout the city, which are announced through a press release. During days when temperatures are forecast to be 100 degrees or above, the City’s public transportation system, TRACER, offer free rides to the public on a fixed route to the designated cooling zones.

Overall, extreme heat impacts would likely be limited in the Planning Area, with 10 to 25 percent of the Planning Area affected. Extreme heat will have an impact on vulnerable populations as well as impact livestock and crops if the event occurs during certain times of the year.

Previous Occurrences

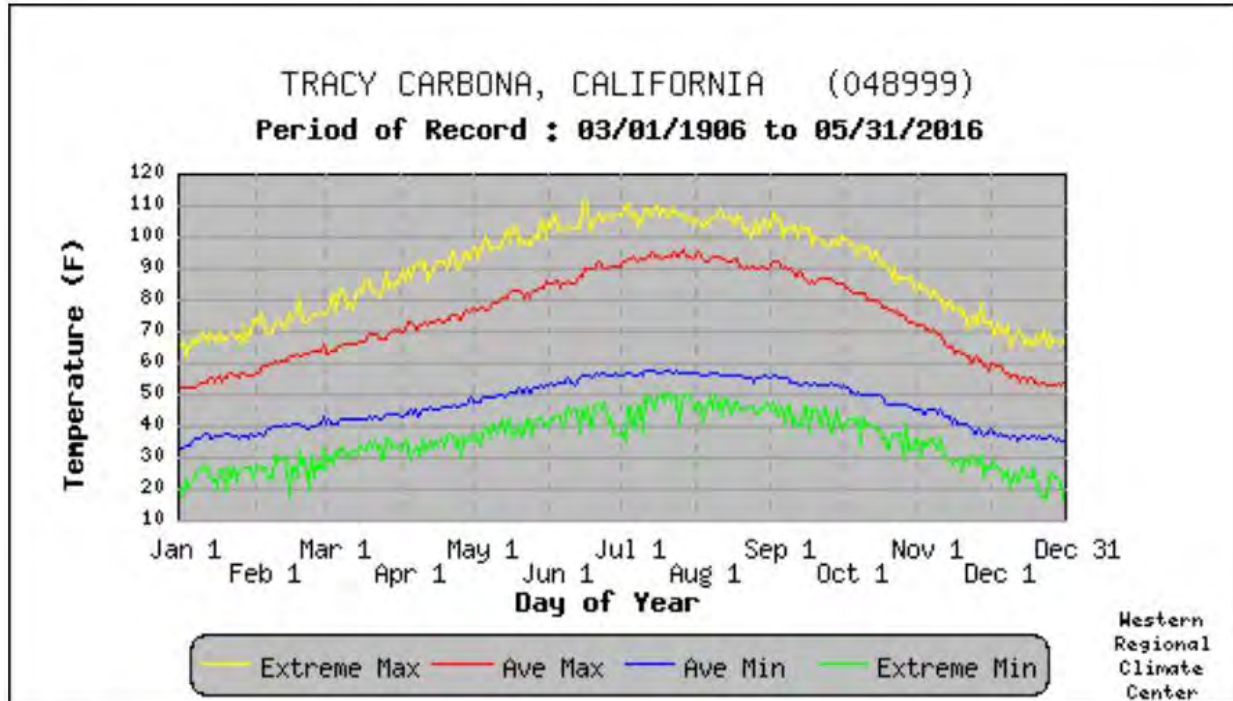
Information from the closest weather station with the most comprehensive data, the Tracy Carbona Weather Station (37° 42' by 121° 25', 140 ft above mean sea level (msl)), is summarized below and in Figure 4-36.



The City of Tracy (Tracy Carbona Weather Station, Period of Record 1906 to 2016)

In the City of Tracy, monthly average maximum temperatures in the warmest months (May through September) range from the mid-80s to the upper 90s. Monthly average minimum temperatures from October through April range from the upper 30s to mid-40s. The highest recorded daily extreme was 112°F on June 16, 1961. The lowest recorded daily extreme was 17°F on December 1, 1995. In a typical year, maximum temperatures do not exceed 75°F and minimum temperatures do not fall below 47°F.

Figure 4-36 The City of Tracy's Daily Temperature Averages and Extremes



Source: Western Regional Climate Center, www.wrcc.dri.edu/

According to information obtained from the NCEI Storm Events Database, in the past 28 years (1990-October 2018) there have been 42 heat and excessive heat events in San Joaquin County. An excessive heat event is defined by NCEI as an excessive heat event as “a combination of temperatures well above normal and high humidity.” Excessive heat events are reported in the Storm Events Database when the heat index values meet or exceed locally/regionally established excessive heat warning thresholds. A heat event is by NCEI as the result of the combination of high temperatures and relative humidity and is reported when the heat index value exceeds locally/regionally established advisory thresholds. The following significant events that have occurred within San Joaquin County are highlighted below:

June 13 -15, 2000 – A heat event was reported as very hot weather persisted across Interior Northern California for three days. Maximum temperatures were fifteen to twenty degrees above normal through the valley and foothills. June 14th is reported to be the hottest of the three days, in which maximum temperatures reached 105 degrees in Modesto and 107 degrees in Stockton and Sacramento. One individual is reported to have died as a result of the extreme heat and sixteen people were treated for heat stroke in Sacramento and Solano counties.

May 8, 2007 – Daily temperature record of 98 degrees was tied at Modesto Airport. Previously set in 2001.



July 5, 2007 – New daily temperature records were set at the Stockton and Modesto Airports. Temperatures reached 109 degrees at the Stockton Airport, breaking the previous record of 106 degrees set in 1968. Temperatures reached 110 degrees at the Modesto Airport, breaking the record of 107 degrees set in 1940.

May 15, 2008 – Record daily high minimum temperatures were set and lingered until May 19th. The heat index was lower than the temperature, well below heat advisory criteria. A farmworker collapsed from heat exhaustion and later died in a hospital.

July 1, 2013 – High temperatures ranged from 104°F to 108°F for the Northern San Joaquin Valley for 7 consecutive days. Minimum temperatures ranged between mid-60s to lows 80s overnight. One individual is reported to have died from heat-related complications.

Probability of Future Occurrences

Highly Likely – Temperatures of extreme heat are likely to continue to occur annually in the Planning Area.

Climate Change Considerations

Heat waves are likely to become more frequent, which will have direct impacts on human health in terms of heat related illness. With the general trend of increased warming of average temperatures, extreme high temperatures will likely also increase. Cascading impacts include increased stress on water quantity and quality, degraded air quality, and increased potential for more severe or catastrophic natural events such as heavy rain, droughts, and wildfire. Another cascading impact includes increased duration and intensity of wildfires with warmer temperatures. According to the 2013 document, *“Preparing California for the Extreme Heat”*, Cal-Adapt projects that throughout California urban and rural population centers will experience an average of 40 to 53 extreme heat days by 2050 and an average of 40 days by 2099 (CalAdapt 2013). This compares to a historical average of 4 per year (CalAdapt 2013).

The phenomenon known as urban heat island effect, which currently exists in the City, is where urban areas are significantly higher in temperature than in surrounding less urbanized areas (on average daytime temperatures are 1-6°F higher than in rural areas and nighttime temperatures are 22°F higher) due to pavement and building materials absorbing sunlight and heat. With climate change, it is likely this trend will continue, although the City has taken steps to address urban heat island effect through several policies in the City’s General Plan, encouraging landscaping and shade trees.

Extreme heat has also been shown to accelerate wear and tear on the natural gas and electrical infrastructure (California Natural Resources Agency 2018). Projected increases in summer demand associated with rising temperatures may increase risks to energy infrastructure and may exceed the capacity of existing substations and distribution line infrastructure and systems.

Vulnerability to Severe Weather: Extreme Heat - Low

Property

Recent research indicates that the impact of extreme heat, particularly on populations, has been historically under-represented. The risks of extreme heat are often profiled as part of larger hazards, such as drought or wildfire. However, as temperature variances may occur outside of larger hazards, or outside of the expected seasons, but still incur large costs, it is important to examine them as stand-alone hazards. Extreme heat may overload demands for electricity to run air conditioners in homes and businesses during prolonged periods of exposure and presents health concerns to individuals who are outside.



Extreme heat may also be a secondary effect of droughts or may cause temporary drought-like conditions. For example, several weeks of extreme heat increases evapotranspiration and reduces moisture content in vegetation, leading to higher wildfire vulnerability for that time period even if the rest of the season is relatively moist. Extreme heat can cause infrastructure damage to roads. Potential degradation of road pavement was also noted by the HMPC, specifically whether the integrity of the roads is impacted after prolonged heat events. In summary, all property is vulnerable from extreme heat.

People

Traditionally, the very young and very old are considered at higher risk to the effects of extreme heat, but any populations outdoors during periods of extreme temperatures are exposed, including otherwise young and healthy adults and homeless populations. While everyone is vulnerable to extreme heat incidents, some populations are more vulnerable than others. Extreme heat poses the greatest danger to outdoor laborers, such as highway crews, police and fire personnel, and construction workers. The elderly, children, people in poor physical health, and the homeless are also vulnerable to exposure. Stakeholders also mentioned that there is a substantial number of cases reported each year at the Sutter Tracy Community Hospital related to the homeless population being exposed to extreme heat. Arguably, the young-and-otherwise-healthy demographic may also experience a higher vulnerability of exposure, due to the increased likelihood that they will be out in temperatures of extreme heat, whether due to commuting for work or school, conducting property maintenance such as snow removal or lawn care, or for recreational reasons.

It is difficult to isolate the City's specific vulnerability to this hazard, as the impacts from extreme heat can be spread across an entire state or region. In general, all the population of the City can be considered at-risk to this hazard.

Critical Facilities and Transportation Infrastructure

Extreme temperatures can affect road infrastructure (extreme heat), but direct impacts to critical infrastructure is expected to be minimal. Critical infrastructure that relies on public utility systems that could be overloaded may result in impacts during extreme heat events. The loss of utilities or power outages during extreme heat events could also result in adverse secondary impacts to sensitive populations.

Historic, Cultural, and Natural Resources

Extreme heat may cause temporary drought-like conditions. For example, several weeks of extreme heat increases evapotranspiration and reduces moisture content in vegetation, leading to higher wildfire vulnerability for that time period even if the rest of the season is relatively moist. Changing heating and cooling patterns globally can have destructive secondary impacts, intensifying a variety of weather-related disasters that directly impact jurisdictions.

Economy

Extreme heat impacts on the economy may be more indirect compared to other hazards. Infrastructure such as roads could be damaged and lead to the need for repaving. Critical facilities may be vulnerable to the indirect impact of prolonged excessive heat (i.e., electrical power outages), which may impact response capabilities or care capabilities for hospitals and clinics. Hospitals and clinics may see a surge in patients during the heat event as the exposed population suffers from the effects of the heat, but it is not anticipated that these increases will overwhelm the capacities of hospitals and clinics in Tracy. Essential infrastructure especially the electrical distribution system, is also posed to be stressed during extreme heat events as demand increases to run air conditioning. Peak demand exceeding the local utility's capacity for supply can lead to blackout or brownout conditions.

Future Development

Since structures are not usually directly impacted by severe temperature fluctuations, continued development is less impacted by this hazard than others in the plan. However, preemptive cautions such as those noted in the City's General Plan that encourage the construction of green buildings that require less energy to heat and cool, as well as requiring landscaping and shade trees specifically in and around parking lots in order to "create an attractive environment and reduce the impact of heat islands" (City of Tracy 2011). These efforts will help to minimize exposures to severe heat and may help increase the overall lifespan of the buildings and the community. Also, consistent enforcement of the code and regulations associated with General Plan policy will ensure new construction is designed to reduce extreme heat impacts in future development. Continued development also implies continued population growth, which raises the number of individuals potentially exposed to variations. Public education efforts should continue to help the population understand the risks and vulnerabilities of outdoor activities, property maintenance, and regular exposures during periods of extreme heat and cold.

Risk Summary

- 42 heat events occurred in the past 28 years in San Joaquin County.
- The highest recorded temperature in Planning Area is 112°F on June 16, 1961.
- Extreme heat can have severe impacts on human health, the natural environment and the economy.
- The very young, the elderly, people with poor physical health, and the homeless are more susceptible to the impacts of extreme temperatures.
- Overall the significance of extreme heat is medium.

4.3.8 Severe Weather: Heavy Rain/Thunderstorm/Hail/Lightning/Dense Fog**Hazard/Problem Description**

Storms in the Planning Area are generally characterized by heavy rain accompanied by strong winds, lightning and occasionally hail events. Approximately 10 percent of the thunderstorms that occur each year in the United States are classified as severe. A thunderstorm is classified as severe when it contains one or more of the following phenomena: hail that is three-quarters of an inch or greater, winds in excess of 50 knots (57.5 mph), or a tornado.

Hail

Hail is formed when water droplets freeze and thaw as they are thrown high into the upper atmosphere by the violent internal forces of thunderstorms. Hail is sometimes associated with severe storms within the Planning Area. Hail falls when it becomes heavy enough to overcome the strength of the updraft and is pulled by gravity towards the earth. Hailstorms occur throughout the spring, summer, and fall in the region, but are more frequent in late spring and early summer. Hailstones are usually less than two inches in diameter and can fall at speeds of 120 mph. Hail causes nearly \$1 billion in damage to crops and property each year in the United States. Hail is also one of the requirements which the National Weather Service uses to classify thunderstorms as 'severe.' If hail more than $\frac{3}{4}$ of an inch is produced in a thunderstorm, it qualifies as severe. Severe hailstorms can be quite destructive, causing damage to roofs, buildings, automobiles, vegetation, and crops.



The NWS classifies hail by diameter size, and corresponding everyday objects to help relay scope and severity to the population. Table 4-26 under the Extent subsection below indicates the hailstone measurements utilized by the NWS.

Dense Fog

Fog results from air being cooled to the point where it can no longer hold all of the water vapor it contains. For example, rain can cool and moisten the air near the surface until fog forms. A cloud-free, humid air mass at night can lead to fog formation, where land and water surfaces that have warmed up during the summer are still evaporating water into the atmosphere. This is called radiation fog. A warm moist air mass blowing over a cold surface also can cause fog to form, which is called advection fog.

The interior California valleys have a unique fog problem called the Tule fogs. The Tule fog is a radiation fog, which condenses when there is a high relative humidity, typically after a heavy rain, calm winds, and rapid cooling during the night. The longer nights during the winter months create this rapid ground cooling and results in a pronounced temperature inversion at a low altitude, creating a thick ground fog. Above the cold, foggy layer, the air is typically warm and dry. Once the fog has formed, turbulent air is necessary to break through the inversion. Daytime heating can also work to evaporate the fog in some areas. The Tule fogs get their name from the Tule reeds, which grew around the swamps and deltas of the great Tulare Lake that once covered the southern end of the San Joaquin Valley.

Lightning

Lightning is an electrical discharge between positive and negative regions of a thunderstorm. A lightning flash is composed of a series of strokes with an average of about four. The length and duration of each lightning stroke vary, but typically average about 30 microseconds.

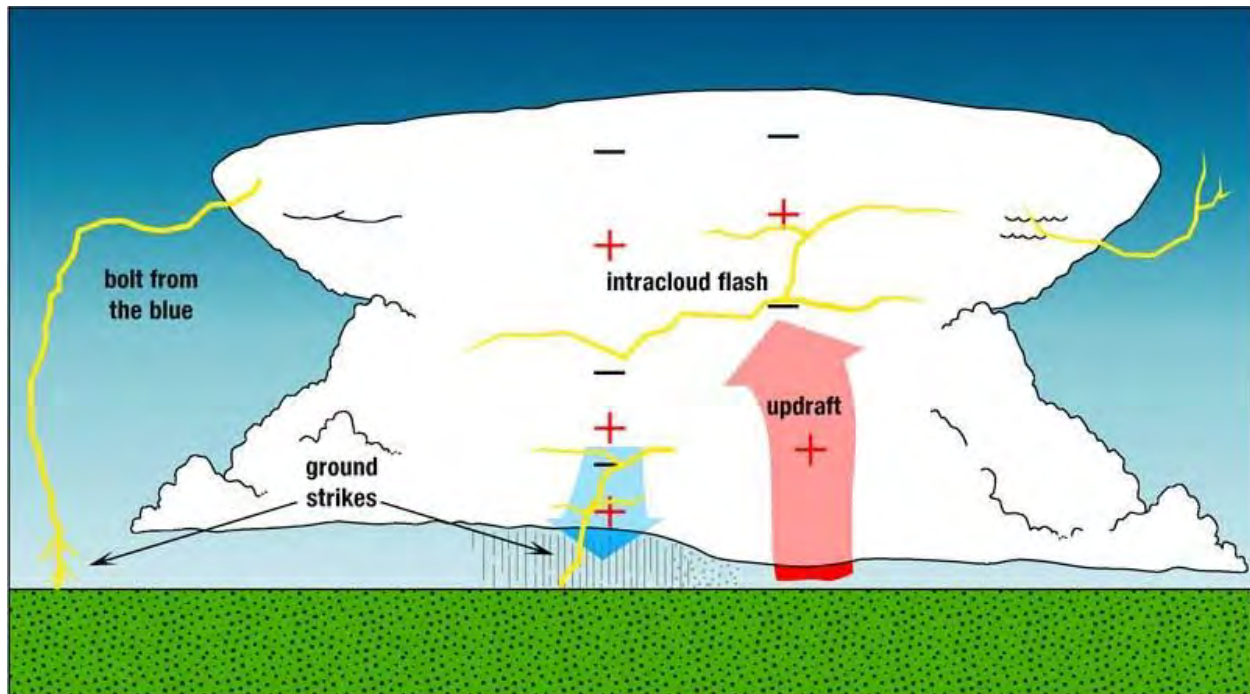
Lightning is one of the more dangerous weather hazards in the United States. Each year, lightning is responsible for deaths, injuries, and millions of dollars in property damage, including damage to buildings, communications systems, power lines, and electrical systems. Lightning also causes forest and brush fires, and deaths and injuries to livestock and other animals. According to the National Lightning Safety Institute, lightning causes more than 26,000 fires in the United States each year. The Institute estimates property damage, increased operating costs, production delays, and lost revenue from lightning and secondary effects to be in excess of \$6 billion per year. Impacts can be direct or indirect. People or objects can be directly struck, or damage can occur indirectly when the current passes through or near it.

Intra-cloud lightning is the most common type of discharge. This occurs between oppositely charged centers within the same cloud. Usually it takes place inside the cloud and looks from the outside of the cloud like a diffuse brightening that flickers. However, the flash may exit the boundary of the cloud, and a bright channel, similar to a cloud-to-ground flash, can be visible for many miles.

Cloud-to-ground lightning is the most damaging and dangerous type of lightning, though it is also less common. Most flashes originate near the lower-negative charge center and deliver negative charge to earth. However, a large minority of flashes carry positive charge to earth. These positive flashes often occur during the dissipating stage of a thunderstorm's life. Positive flashes are also more common as a percentage of total ground strikes during the winter months. This type of lightning is particularly dangerous for several reasons. It frequently strikes away from the rain core, either ahead or behind the thunderstorm. It can strike as far as 5 or 10 miles from the storm in areas that most people do not consider to be a threat (see Figure 4-37). Positive lightning also has a longer duration, so fires are more easily ignited. And, when positive lightning strikes, it usually carries a high peak electrical current, potentially resulting in greater damage.



Figure 4-37 Cloud to Ground Lightning



Source: National Weather Service Pueblo Office

The ratio of cloud-to-ground and intra-cloud lightning can vary significantly from storm-to-storm. Depending upon cloud height above ground and changes in electric field strength between cloud and earth, the discharge stays within the cloud or makes direct contact with the earth. If the field strength is highest in the lower regions of the cloud, a downward flash may occur from cloud to earth.

Location

Heavy rains and severe storms have the potential to occur anywhere in the Planning Area.

Extent (Magnitude/Severity)

Extent for severe weather, particularly severe storms that involve heavy rain and hail can be measured according to hail by diameter size, as it corresponds to everyday objects to define the severity to the population (Table 4-26).

Common problems associated with severe storms include the loss of utilities or immobility. Loss of life is uncommon but can occur during severe storms. Immobility can occur when roads become impassable due to dense fog, flooding, downed trees, ice, or a landslide. These severe weather hazards are all possible along the three major highways that surround the City of Tracy. These hazards can also occur along portions of these highways within adjacent counties. Fog specifically poses a risk to commuters and driving conditions as fog typically forms rapidly in the early morning hours. Tule fogs can last for days, sometimes weeks. Fog can have devastating effects on transportation corridors in the County. Nighttime driving in the fog is dangerous and multi-car pileups have resulted from drivers using excessive speed for the conditions and visibility.

Loss of utilities, specifically power lines can occur due to downed trees, high winds, ice storms, and heavy snows. While snow accumulation is unlikely within the Planning Area, high winds and downed trees are



known to result in power outages. Lightning can also cause severe damage and injury, particularly when it causes wildfires.

The National Weather Service classifies hail by diameter size, and corresponding everyday objects to help relay scope and severity to the population. Table 4-26 indicates the hailstone measurements utilized by the NWS.

Table 4-26 Hail Measurements

Average Diameter	Corresponding Household Object
.25 inch	Pea
.5 inch	Marble/Mothball
.75 inch	Dime/Penny
.875 inch	Nickel
1.0 inch	Quarter
1.5 inch	Ping-pong ball
1.75 inch	Golf-Ball
2.0 inch	Hen Egg
2.5 inch	Tennis Ball
2.75 inch	Baseball
3.00 inch	Teacup
4.00 inch	Grapefruit
4.5 inch	Softball

Source: National Weather Service

There is no clear distinction between storms that do and do not produce hailstones. Nearly all severe thunderstorms probably produce hail aloft, though it may melt before reaching the ground. Multi-cell thunderstorms produce many hailstones, but not usually the largest hailstones. In the life cycle of the multi-cell thunderstorm, the mature stage is relatively short so there is not much time for growth of the hailstone. Supercell thunderstorms have sustained updrafts that support large hail formation by repeatedly lifting the hailstones into the very cold air at the top of the thunderstorm cloud. In general, hail 2 inches (5 cm) or larger in diameter is associated with supercells (a little larger than golf ball size which the NWS considers to be 1.75 inch.). Non-supercell storms are capable of producing golf ball size hail.

In all cases, the hail falls when the thunderstorm's updraft can no longer support the weight of the ice. The stronger the updraft the larger the hailstone can grow. When viewed from the air, it is evident that hail falls in paths known as hail swaths. They can range in size from a few acres to area 10 miles wide and 100 miles long. In some instances, piles of hail in hail swaths have been so deep, a snow plow was required to remove them, and occasionally, hail drifts have been reported.

Lightning is measured by the Lightning Activity Level (LAL) scale, created by the National Weather Service to define lightning activity into a specific categorical scale. The LAL is a common parameter that is part of fire weather forecasts nationwide. The City of Tracy is at risk to experience lightning in any of these categories. The LAL is reproduced in Table 4-27.





Table 4-27 Lightning Activity Level Scale

Lightning Activity Level	
LAL 1	No thunderstorms
LAL 2	Isolated thunderstorms. Light rain will occasionally reach the ground. Lightning is very infrequent, 1 to 5 cloud to ground strikes in a five-minute period
LAL 3	Widely scattered thunderstorms. Light to moderate rain will reach the ground. Lightning is infrequent, 6 to 10 cloud to ground strikes in a five-minute period.
LAL 4	Scattered thunderstorms. Moderate rain is commonly produced. Lightning is frequent, 11 to 15 cloud to ground strikes in a five-minute period.
LAL 5	Numerous thunderstorms. Rainfall is moderate to heavy. Lightning is frequent and intense, greater than 15 cloud to ground strikes in a five-minute period.
LAL 6	Dry lightning (same as LAL 3 but without rain). This type of lightning has the potential for extreme fire activity and is normally highlighted in fire weather forecasts with a Red Flag warning.

Source: National Weather Service

Previous Occurrences

Heavy rains and severe storms occur in the Planning Area primarily during the late fall and winter, but have been documented in every month of the year. According to information obtained from the WRCC the majority of precipitation is produced by storms during January and other winter months. Precipitation during the summer months is in the form of rain showers and is rare. Snowstorms and ice storms occur infrequently in the City of Tracy and severe occurrences of any of these are very rare. The NCEI records 57 hail, heavy rain, lightning and dense fog events that have taken place in San Joaquin County in the past 67 years (1950 –2017). A summary of the most significant severe weather events are as follows:

April 1, 1996 – A line of severe thunderstorms produced strong westerly winds in the San Joaquin River Delta. The severe thunderstorm winds caused \$1,000,000 in property damages, a majority of which resulted in a boat marina. A local park also sustained damages when 30 oak trees of more than 2 feet in diameter were uprooted. The severe thunderstorm winds also caused two tractor trailers on Interstate 5 to be blown over on the highway.

May 1, 1998 – Abnormally heavy precipitation during the month of May led to significant damages to crop and livestock losses in San Joaquin County and many other counties in the Central Valley. Crop losses in San Joaquin County were approximately \$200,000. Due to record or near record rain events between February 1998 to May 1998 within the interior counties of northern California, the cost of crop damages is estimated to be in the billions.

September 22, 1999 – Moisture from a former Pacific hurricane spread northward into the Interior Center California causing locally heavy rain showers with thunderstorms to occur. Lightning strikes throughout the San Joaquin Valley caused 9,700 customers to lose power. Crop damages are reported to be \$5,000,000, taking place mostly within Tulare County when farm crews were unable to roll raisins on about 1,000 acres. This severe weather event mainly impacted southern San Joaquin County.



April 2, 2006 – Heavy precipitation along with high snow levels resulted in excessive runoff into the San Joaquin River system and the Delta region. The majority of flooding affected agricultural and rural properties along with flooding of homes and causing roads to be impassable. Countywide property damages were estimated to be \$650,000 and crop damages were reported to \$400,000. Despite the minimal damages to property and crops, it is reported that through the careful monitoring of levees and critical water management coordination among federal, state and local agencies, a serious flooding event was avoided.

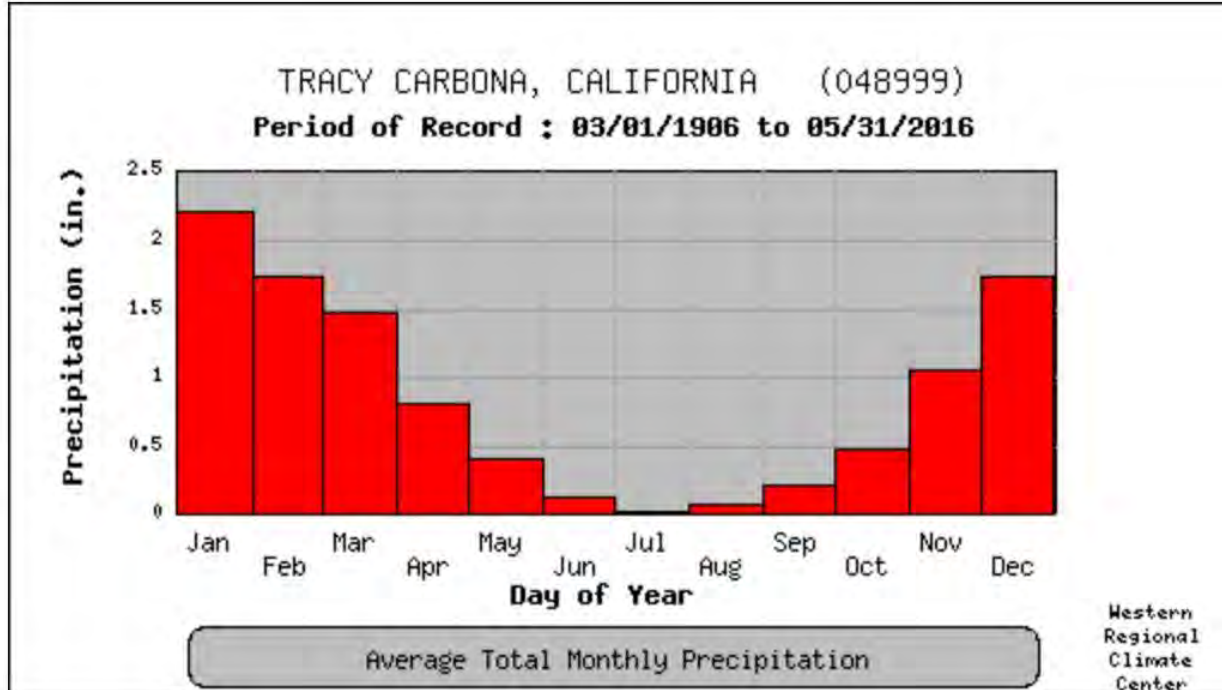
December 5, 2009 – Dense fog caused reduced visibility leading to a 33-vehicle pileup, after 13 separate collisions occurred on Interstate 5 near Lodi. Several injuries were reported and property damage is estimated to be \$700,000.

March 31, 2013 – Severe slow-moving thunderstorms brought heavy rain and produced copious amounts of hail at a diameter of 1 inch, the size of a quarter

City of Tracy—Tracy Carbona Weather Station (Period of Record 1906 to 2016)

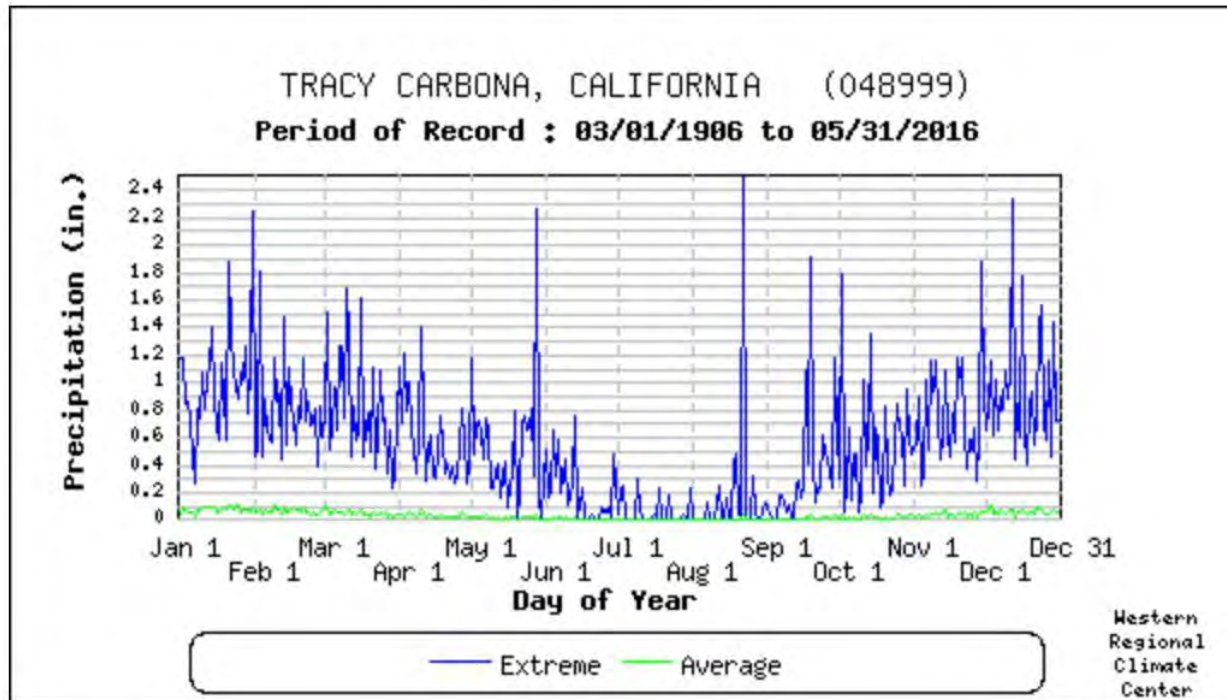
Information from the closest weather station with the most comprehensive data, the Tracy Carbona Weather Station (37° 42' by 121° 25', 140 ft above mean sea level (msl)), is summarized below in Figure 4-38 and Figure 4-39. Average annual precipitation in the Planning Area is 9.86 inches per year. The highest recorded annual precipitation was 21.14 inches in 1983; the highest recorded precipitation for a 24-hour period is 2.49 inches on August 22, 1968. The lowest recorded annual precipitation was 0.29 inches on July 9, 1974.

Figure 4-38 The City of Tracy's Monthly Average Total Precipitation



Source: Western Regional Climate Center, www.wrcc.dri.edu/

Figure 4-39 The City of Tracy's Daily Precipitation Average and Extreme



Source: Western Regional Climate Center, www.wrcc.dri.edu/

Probability of Future Occurrences

Highly Likely - Heavy rain, thunderstorms, hail, wind and dense fog are well-documented seasonal occurrences that will continue to occur annually in the Planning Area.

Climate Change Considerations

Pacific Northwest National Laboratory researchers found that atmospheric rivers will reach the West Coast more frequently if greenhouse gas pollution continues to rise sharply. Currently, the West receives rain or snow from these atmospheric rivers between 25 and 40 days each year. By the end of this century, days on which the atmospheric rivers reach the coast could increase by a third this century, between 35 and 55 days a year. Meanwhile, the number of days each year on which the atmospheric rivers bring "extreme" amounts of rain and snow to the region could increase by more than a quarter.

It is difficult at this point in time to summarize the effects climate change may have on these hazards. However, as average temperatures increase over time, this generally will result in higher extreme temperatures. More warming in the atmosphere can trigger climate changes, which could result in more frequent extreme weather events. Much of the U.S. has already experienced prolonged periods of heavy downpours and severe flooding as a result of more extreme heavy rain and thunderstorm events.

Vulnerability to Severe Weather: Heavy Rain/Thunderstorms/Hail/Lighting/Dense Fog - Medium Property

Based on historic information, the primary effect of these storms has not resulted in significant injury or damages to people and property, or the losses are typically covered by insurance. It is the secondary hazards caused by weather, such as floods, that have had the greatest impact on the City's Planning Area. But while the primary effects may not result in significant injury or property damage, all property is



vulnerable during severe weather events, and properties in poor condition or closer to overhead power lines and large trees may be more vulnerable to damage.

People

Exposure is the greatest danger to people from severe thunderstorms. People can be hit by lightning, pelted by hail, and caught in rising waters. However, serious injury and loss of human life is rarely associated with hailstorms.

Reduced visibility is the greatest risk to people when heavy fog is prevalent. Particularly when fog is dense, it can be hazardous to drivers, mariners and aviators and contributes to numerous accidents each year. To reduce injury and harm, people should avoid driving when dense fog is prevalent, if possible. If driving is pertinent, emergency services advise driving with lights on low beam, avoiding stopping on highways, and avoiding crossing traffic lanes.

While national data shows that lightning causes more injuries and deaths than any other natural hazard except extreme heat, there doesn't seem to be any trend in the data to indicate that one segment of the population is at a disproportionately high risk of being directly affected. Anyone who is outside during a thunderstorm is at risk of being struck by lightning. Aspects of the population who rely on constant, uninterrupted electrical supplies may have a greater, indirect vulnerability to lightning. As a group, the elderly or disabled, especially those with home health care services rely heavily on an uninterrupted source of electricity. Resident populations in nursing homes, residential facilities, or other special needs housing may also be vulnerable if electrical outages are prolonged. If they do not have a back-up power source, rural residents and agricultural operations reliant on electricity for heating, cooling, and water supplies are also especially vulnerable to power outages. Thunderstorms have the potential energy and strong winds to topple dead trees and injure people. As a result, power outages that occur from severe weather can be life threatening and these populations could face more exposure and could experience greater secondary effects of the hazard.

Critical Facilities and Transportation Infrastructure

Due to the unpredictability of severe thunderstorm strength and path, most critical infrastructure that is above ground is equally exposed to the storm's impacts. According to historical data the Planning Area has experienced power outages in the past due to severe storms, but due to the random nature of these hazards, a more specific risk assessment was not conducted for this plan. Heavy rain and thunderstorms, particularly those that result in hail could significantly impact motorists travelling along Interstate 580, 502, and 5. Depending on the severity of the storm, these events could slow traffic, reduce visibility, and increase the likelihood of vehicle accidents along the highway, which may result in greater traffic delays. These effects are also likely to occur along highway segments in adjacent counties.

Fog can have devastating effects on transportation corridors in the City and throughout the County. Dense fog may increase the potential for transportation accidents along Interstates 580, 205, and 5, which could in turn cause longer traffic delays and timely movement of goods and services. Multi-car pileups have resulted from drivers using excessive speed for the conditions and visibility.

These accidents can cause multiple injuries and deaths and could have serious implications for human health and the environment if a hazardous or nuclear waste shipment were involved. Other disruptions from fog include delayed emergency response vehicles and school closures.

Historic, Cultural, and Natural Resources

Severe thunderstorms are a natural environmental process. Environmental impacts include the sparking of potentially destructive wildfires by lightning and localized flattening of plants by hail. As a natural



process, the impacts of most severe thunderstorms by themselves are part of the overall natural cycle and do not cause long-term consequential damage.

Economy

Economic impacts of severe weather is typically short term. Lightning can cause power outages and fires. Hail can destroy exposed property; an example is car lots, where entire inventories can be damaged. Dense fog leads to reduced visibility, causing transportation accidents and property damage. Generally, long-term economic impacts center around hazards that cascade from a severe thunderstorm, including wildfires ignited by lightning and flooding.

Future Development

New critical facilities, such as communication towers should be built to withstand heavy rain, lighting, and hail damage. Population and commercial growth in the City will increase the potential for complications with traffic accidents and commerce interruptions associated with dense fog. Future development projects should also consider severe weather hazards at the planning, engineering and architectural design stage with the goal of reducing vulnerability. Storm water master planning and site plan review should account for building to withstand severe weather events and be considered for all new development. Thus, future development in the City is not expected to be vulnerable to the hazard, but all development will be affected by severe weather and storm events and population growth will increase potential exposure to hazards such as lightning and dense fog.

Risk Summary

- San Joaquin County has experienced 57 hail, heavy rain, lighting and dense fog events in past 67 years.
- The average annual precipitation is 9.86 inches.
- The highest recorded annual precipitation was 21.14 inches in 1983.
- The highest recorded precipitation for a 24-hour period was 2.5 inches on August 22, 1968.
- Overall significance for severe weather hazards such as heavy rain, thunderstorms, hail, lightning, and dense fog is medium.

4.3.9 Severe Weather: Wind and Tornado

Hazard/Problem Description

High winds, often accompanying severe thunderstorms, can cause significant property and crop damage, threaten public safety, and have adverse economic impacts from business closures and power loss. Windstorms in the City of Tracy are typically straight-line winds. Straight-line winds are generally any thunderstorm wind that is not associated with rotation (i.e., is not a tornado). It is these winds, which can exceed 100 mph and are responsible for most wind damage related to thunderstorms. These winds can overturn mobile homes, tear roofs off houses, topple trees, snap power lines, shatter windows, and sandblast paint from cars. Other associated hazards include utility outages, arcing power lines, debris blocking streets, dust storms, and an occasional structure fire.

Tornadoes are another severe weather hazard that can affect the City of Tracy, primarily during the rainy season. Tornadoes form when cool, dry air sits on top of warm, moist air. Tornadoes are rotating columns of air marked by a funnel-shaped downward extension of a cumulonimbus cloud whirling at destructive speeds of up to 300 miles per hour (mph), usually accompanying a thunderstorm. Tornadoes are the most

powerful storms that exist. They can have the same pressure differential that fuels 300-mile-wide hurricanes across a path only 300-yards wide or less. Figure 4-40 illustrates the potential impact and damage from a tornado.

Figure 4-40 Potential Impact and Damage from a Tornado

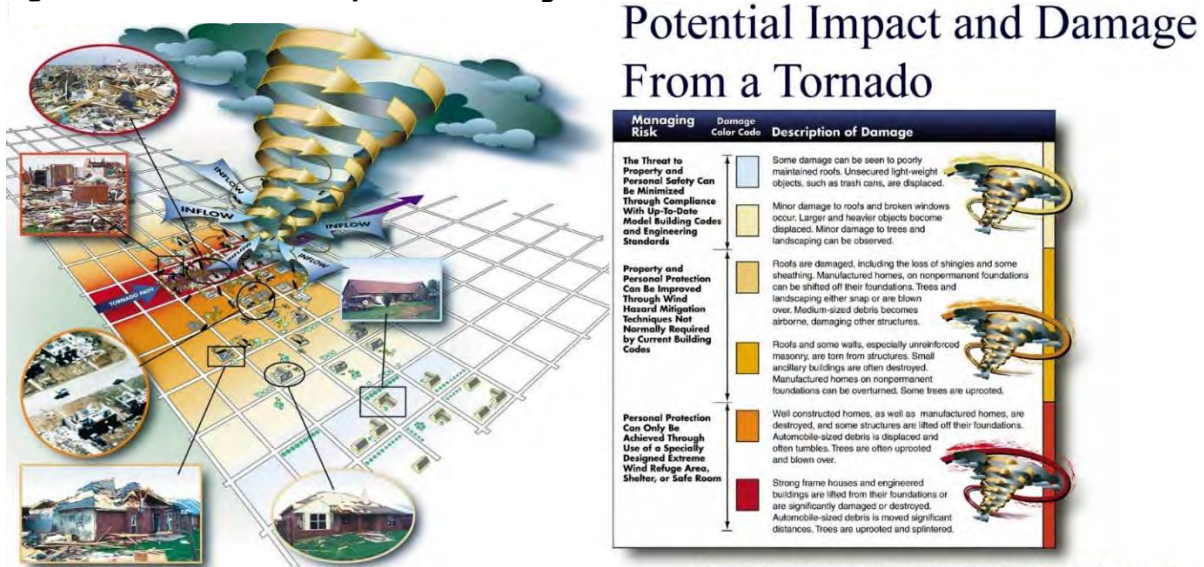


Figure 2-2 Potential damage table for impact of a tornado

Source: FEMA: Building Performance Assessment: Oklahoma and Kansas Tornadoes

Prior to February 1, 2007, tornado intensity was measured by the Fujita (F) scale. This scale was revised and is now the Enhanced Fujita scale. Both scales are sets of wind estimates (not measurements) based on damage. The new scale provides more damage indicators (28) and associated degrees of damage, allowing for more detailed analysis and better correlation between damage and wind speed. It is also more precise because it takes into account the materials affected and the construction of structures damaged by a tornado. Table 4-28 shows the wind speeds associated with the original Fujita scale ratings and the damage that could result at different levels of intensity. Table 4-29 shows the wind speeds associated and damage that could result with the Enhanced Fujita Scale ratings.

Table 4-28 Original Fujita Scale

Fujita (F) Scale	Fujita Scale Wind Estimate (mph)	Typical Damage
F0	< 73	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	158-206	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.



Fujita (F) Scale	Fujita Scale Wind Estimate (mph)	Typical Damage
F4	207-260	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown, and large missiles generated.
F5	261-318	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); trees debarked; incredible phenomena will occur.

Source: National Oceanic and Atmospheric Administration Storm Prediction Center, www.spc.noaa.gov/faq/tornado/f-scale.html

Table 4-29 Enhanced Fujita Scale

Enhanced Fujita (EF) Scale	Enhanced Fujita Scale Wind Estimate (mph)	Potential Damage
EF0	65-85	Minor damage. Peels surface off some roofs; some damage to gutters or siding; branches broken off trees; shallow-rooted trees pushed over. Confirmed tornadoes with no reported damage (i.e., those that remain in open fields) are always rated EF0.
EF1	86-110	Moderate damage. Roofs severely stripped; mobile homes overturned or badly damaged; loss of exterior doors; windows and other glass broken.
EF2	111-135	Considerable damage. Roofs torn off from well-constructed houses; foundations of frame homes shifted; mobile homes completely destroyed; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
EF3	136-165	Severe damage. Entire stories of well-constructed houses destroyed; severe damage to large buildings such as shopping malls; trains overturned; trees debarked; heavy cars lifted off the ground and thrown; structures with weak foundations are badly damaged.
EF4	166-200	Devastating damage. Well-constructed and whole frame houses completely leveled; cars and other large objects thrown, and small missiles generated.
EF5	Over 200	Incredible damage. Strong-framed, well-built houses leveled off foundations are swept away; steel-reinforced concrete structures are critically damaged; tall buildings collapse or have severe structural deformations; some cars, trucks, and train cars can be thrown approximately 1 mile (1.6 km).

Source: National Oceanic and Atmospheric Administration Storm Prediction Center, www.spc.noaa.gov/faq/tornado/ef-scale.html





Table 4-30 outlines the Beaufort scale, describing the damaging effects of wind speed.

Table 4-30 Beaufort Wind Scale

Wind Speed (mph)	Description—Visible Condition
0	Calm; smoke rises vertically
1-4	Light air; direction of wind shown by smoke but not by wind vanes
4-7	Light breeze; wind felt on face; leaves rustle; ordinary wind vane moved by wind
8-12	Gentle breeze; leaves and small twigs in constant motion; wind extends light flag
13-18	Moderate breeze; raises dust and loose paper; small branches are moved
19-24	Fresh breeze; small trees in leaf begin to sway; crested wavelets form on inland water
25-31	Strong breeze; large branches in motion; telephone wires whistle; umbrellas used with difficulty
32-38	Moderate gale whole trees in motion; inconvenience in walking against wind
39-46	Fresh gale breaks twigs off trees; generally, impedes progress
47-54	Strong gale slight structural damage occurs; chimney pots and slates removed
55-63	Whole gale trees uprooted; considerable structural damage occurs
64-72	Storm very rarely experienced; accompanied by widespread damage
73+	Hurricane devastation occurs

Source: NWS

High winds and tornadoes can cause damage to property and loss of life. While most tornado damage is caused by violent winds, most injuries and deaths result from flying debris. Property damage can include damage to buildings, fallen trees and power lines, broken gas lines, broken sewer and water mains, and the outbreak of fires. Agricultural crops and industries may also be damaged or destroyed. Access roads and streets may be blocked by debris, delaying necessary emergency response.

Location

Wind and tornadoes have the potential to happen anywhere in the City's Planning Area. The resulting damage from wind and tornado events may be most severe in the downtown area of the City where there are more large trees, infrastructure, and higher density development.

Extent (Magnitude/Severity)

According to the City of Tracy General Plan Safety Element, between March and November winds generally blow from the west near the City. High winds are likely to occur in winter months being caused by colder air from surrounding mountain flowing into the valley floor and out toward the Delta.

Based on NCEI records between 1950 and 2017 there have been 25 high wind events in San Joaquin County which has resulted in a total of \$5,008,008.000 in property damage. The most damaging event took place on January 1, 2008 and was being a 52-mph wind event that resulted in \$4,408,000 in property damages. High wind events in the County led to one (1) fatality and one (1) injury. Overall, high wind event impacts would likely be limited, with a majority of impacts being related to property damages caused my down trees as well as power outages.

In the past 67 years all of the tornado events that have taken place in San Joaquin County have been F0 and F1 tornadoes. However, it should be noted that although unlikely large tornadoes are possible to





occur. Should the County be hit by an EF-4 or EF-5 tornado, it can be extrapolated that because of its relative size and the potential size and length of a tornado's path a significant portion of the County could be impacted, resulting in property and crop damage and loss of life.

To calculate a magnitude and severity rating for comparison with other hazards, and to assist in assessing the overall impact of the hazard on the Planning Area, information from the event of record is used. Based on NCEI records, the event of record for tornadoes in San Joaquin County occurred on April 25, 1985. This event was a magnitude F2 tornado which resulted in \$25,000 in damages (in 1985 dollars).

Tornado impacts to the City would likely be negligible, with less than 10 percent of the Planning Area affected and events in the EF0-2 range, though stronger tornadoes are possible. The impact to quality of life or critical facilities and functions in the affected area would depend on where the tornado occurred. Injuries or deaths are possible due to wind thrown trees or property damage caused by wind events.

Overall, impacts from high wind and tornado events would likely be negligible, with less than 10 percent of property severely damaged and shutdown of facilities due to loss of power for 24 hours or less.

Previous Occurrences

According to the HMPC high wind events occur annually in Tracy and have frequently led to down trees in the downtown and power outages throughout the City. Details on specific events are listed in the sections that follow.

Based on data from 1950 to 1995, California ranks 32nd among the 50 states for frequency of tornadoes, 36th for injuries, and 31st for cost of damages. When compared to other states by the frequency per square mile, California ranks 44th for frequency and injuries per area and 40th for cost of damage per area. According to Figure 4-41, which shows tornado frequency by California county using NCEI data, San Joaquin County experienced 18 tornado events between 1950 to 2017.

Figure 4-41 California Tornadoes By County, 1998-2012



Source: Golden Gate Weather Services, https://www.ggweather.com/ca_tornado.htm

During the rainy season, the Planning Area is prone to relatively strong thunderstorms, sometimes accompanied by high winds and tornadoes. While tornadoes do occur occasionally, most often they are



of F0 or F1 intensity. The NCEI Storm Events Database does not record any F2 or F3 events that have occurred in the Planning Area in the past. Documented incidents of high wind and tornado events in San Joaquin County from the NCEI Database are listed in the following tables. The Storm Events Database notes two F0 tornado events that took place within the boundaries of the Planning Area. More details on those specific events follow the summary table.

Table 4-31 San Joaquin County High Wind Events, 1950-2017

Date	Magnitude (mph)	Property Damage	Crop Damage	Deaths	Injuries
January 16, 1996	-	\$10,000	0	0	0
April 11, 1996	66	\$150,000	0	0	0
April 2, 1997	50	0	0	0	1
December 21, 1997	40	0	0	0	0
February 6, 1998	47	0	0	0	0
February 7, 1998	40	\$300,000	0	0	0
June 16, 1998	42	0	0	0	0
October 16, 1998	38	\$100,000	0	0	0
November 7, 1998	40	0	0	0	0
November 30, 1998	35	0	0	0	0
April 3, 1999	38	\$20,000	\$2,000	0	0
April 22, 1999	34	\$20,000	0	0	0
October 15, 1999	41	0	0	0	0
January 12, 2000	35	0	0	0	0
February 11, 2000	37	0	0	0	0
March 19, 2000	36	0	0	0	0
June 17, 2000	45	0	0	1	0
October 21, 2000	39	0	0	0	0
January 10, 2001	35	0	0	0	0
February 7, 2001	40	0	0	0	0
February 24, 2001	41	0	0	0	0
March 4, 2001	37	0	0	0	0
January 4, 2008	52	\$4,408,000	0	0	0
January 20, 2010	44	0	0	0	0
January 18, 2017	53	0	0	0	0
Totals		\$5,008,000	\$2,000	1	1

Source: NOAA's National Climatic Data Center Storm Events Database, <https://www.ncdc.noaa.gov/stormevents/>



Table 4-32 San Joaquin County Tornadoes, 1950-2017

Type	# of Events	Property Damage	Crop Damage	Deaths	Injuries
Tornado: F0	14	\$93,530	\$80,000	0	0
Tornado: F1	2	\$25,000	0	0	0
Tornado: F2	0	0	0	0	0
Tornado: F3	0	0	0	0	0
Totals	16	\$118,530	\$80,000	0	0

Source: NOAA's National Climatic Data Center Storm Events Database, <https://www.ncdc.noaa.gov/stormevents/>

High Wind and Tornado Events in City of Tracy

This section summarizes tornado and high winds-caused events in and near the City of Tracy as reported to the NOAA NCEI storm database. Figure 4-42 and Figure 4-43 display those reported events, where the first figure focuses on the wind related occurrences from 1955 to 2017, and the second figure on tornado-specific occurrences from 1950-2017. Based on the historical evidence severe winds and tornadoes are not known to significantly affect the Planning Area.

High Wind Events

April 2, 1997 - Strong north winds blew a man off the top of his tractor trailer, injuring him critically in the northern San Joaquin Valley. The winds also aided the spread of dozens of small fires from the very dry downslope winds, injuring one firefighter.

February 6, 1998 - Strong synoptic scale pressure gradients developed strong winds in the Sacramento and Northern San Joaquin Valleys. The winds caused power outages for 26,740 customers in Amador, Calaveras, and San Joaquin Counties. They also did widespread but minor damage to trees, roofs, and fences.

October 16, 1998 - North winds fanned numerous grass fires and damaged utility poles leading to power loss for 16,200 PG&E customers. Grass fires destroyed 1 house near the town of Lockeford in San Joaquin County.

November 30, 1998 - Post-frontal winds exceeding 50 mph (in some areas of the county) downed power poles and trees. Over 75,000 PG&E customers temporarily lost power.

April 3, 1999 - Pre-frontal winds of 40 mph disrupted electrical service for 3,500 PG&E customers. Isolated stronger winds were also responsible for uprooting a total of 200 almond trees in Stockton and Chico as well as damaging a barn roof in Tracy. The event resulted in \$20,000 in property damage and \$2,000 in crop damages.

January 12, 2000 - Strong surface low pressure off the Pacific Northwest coast and a cold front draped over the state were responsible for gusty southwest to west wind and heavy rain across the Delta and sections of the Sacramento Valley. It reported that 11,000 PG&E customers temporarily lost power due to severed power lines and excessive moisture.

January 4, 2008 - A 60 mph gust was recorded at Stockton Airport and 44 mpg gust was recorded in Modesto. Numerous homes and business facilities were damaged due directly to the wind and/or by flying debris and falling trees and branches. A powerful Pacific storm brought widespread winds gusting to 60 mph and in some areas to more than 80 mph across interior Northern California, causing extensive damage and numerous power outages.

Figure 4-42 NOAA-Reported Wind Events Near the City of Tracy, 1955-2017

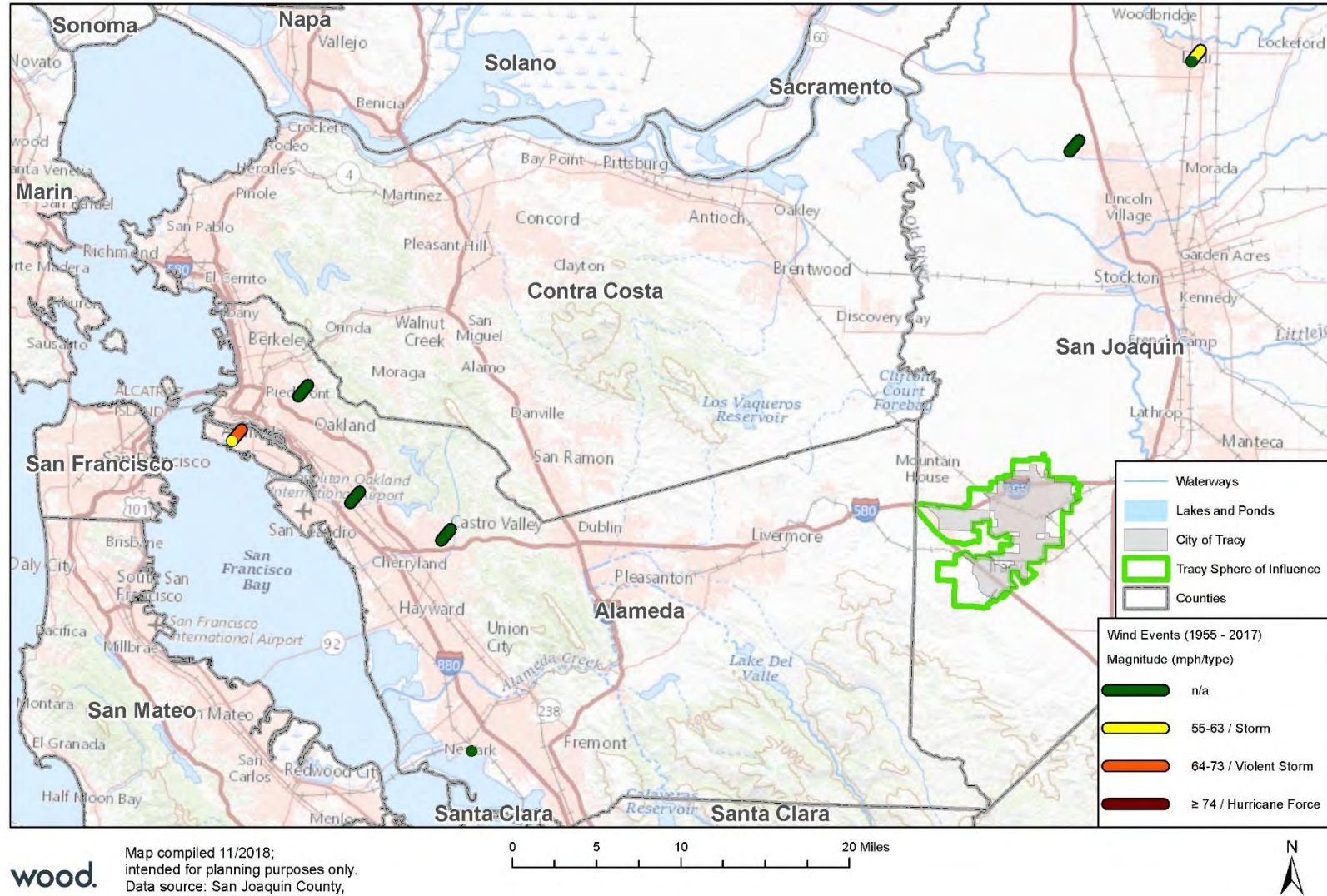
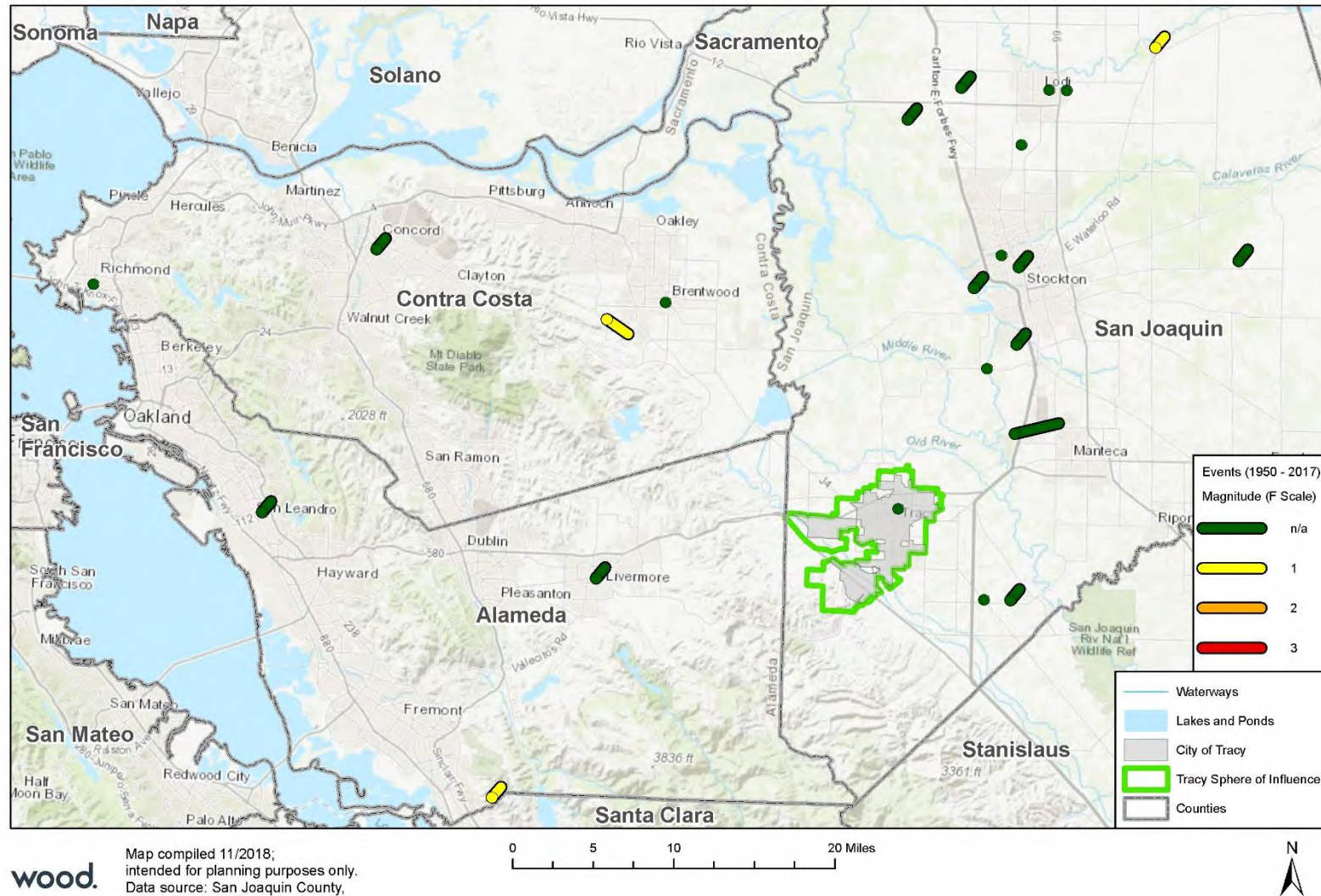


Figure 4-43 NOAA-Reported Tornado Events in and Near the City of Tracy, 1950-2017





January 20, 2010 - Wind gusts to 57 mph and sustained winds to 44 mph were measured at Stockton Airport. The wind knocked out power to 14,000 customers in the area.

January 18, 2017 - Strong winds (reported to be 53 mph) combined with saturated soils downed trees, some falling across cars, homes, and roads, caused tens of thousands of homes to lose power.

Tornado Events

March 28, 1998 – A small and brief F0 tornado ripped up to 60 feet of a back fence on one home lot, resulting in \$1,000 in property damage.

December 26, 2005 – A F0 tornado moved through a residential area in southern Tracy. The weak tornado damaged roof shingles and trees in the neighborhood. The event resulted in \$20,000 in property damage.

Probability of Future Occurrences

Likely – A total of 41 combined high wind (25 events) and tornado events (16 tornadoes) have occurred in San Joaquin County over 67 years of record keeping, which equates a wind event (both high wind and tornado events) occurring every 1.6 years, on average, and a 61 percent chance of occurrence in a given year. Specifically, for tornadoes, this equates to one tornado every 4.1 years, on average, and a 24 percent chance of a tornado occurring in any given year. Historical wind activity within the Planning Area indicates that the area will likely continue to experience high wind events and low intensity tornadoes during adverse weather conditions. The actual risk of a wind event to the City is dependent on the nature and location of any given tornado or the magnitude of a high wind event.

Climate Change Considerations

There presently is not enough data or research to quantify the magnitude of change that climate change may have related to tornado or wind frequency and intensity. NASA's Earth Observatory has conducted studies which aim to understand the interaction between climate change and tornadoes. Based on these studies meteorologists are unsure why some thunderstorms generate tornadoes and others don't, beyond knowing that they require a certain type of wind shear. Tornadoes spawn from approximately one percent of thunderstorms, usually supercell thunderstorms, that are in a wind shear environment that promotes rotation. Some studies show a potential for a decrease in wind shear in mid-latitude areas. Because of uncertainty with the influence of climate change on tornadoes, future updates to the mitigation plan should include the latest research on how the tornado hazard frequency and severity could change. The level of significance of this hazard should be revisited over time.

As for wind, studies referenced in California's Fourth Climate Assessment indicated that extreme fire weather, particularly in the form of hot and dry winds, can strongly influence shrub-land fire regimes. Strong winds have also been now associated with severe forest fires in California meaning climate change impacts on wind patterns may also affect forest health and wildfire susceptibility. Lastly, other ongoing research compiled in the recent climate assessment has resulted in different conclusions on the effect of climate change on wind regimes, particularly extreme wind events, such as the Santa Ana and Diablo winds that created some of the most devastating wildfires (California Natural Resources Agency 2018a). At this time, these changing factors are not well understood and are still being incorporated into state and regional research and risk analysis.



Vulnerability to Severe Weather: Wind and Tornadoes - Low

Property

General damages are both direct (what the wind event physically destroys) and indirect, which focuses on additional costs, damages and losses attributed to secondary hazards spawned by the event, or due to the damages caused by the wind event. Depending on the magnitude of the wind events as well as the size of the tornado and its path, a tornado is capable of damaging and eventually destroying almost anything. Construction practices and building codes can help maximize the resistance of the structures to damage.

Secondary impacts of damage caused by wind events often result from damage to infrastructure. Downed power and communications transmission lines, coupled with disruptions to transportation, create difficulties in reporting and responding to emergencies. These indirect impacts of a wind event put tremendous strain on a community. In the immediate aftermath, the focus is on emergency services.

People

Community members are the most vulnerable to high wind and tornado events. The availability of sheltered locations such as basements, buildings constructed using tornado-resistant materials and methods, and public storm shelters, all reduce the exposure of the population. However, there are also segments of the population that are especially exposed to the indirect impacts of high winds and tornadoes, particularly the loss of electrical power. These populations include the elderly or disabled, especially those with medical needs and treatments dependent on electricity. Nursing homes, community-based residential facilities, and other special needs housing facilities are also vulnerable if electrical outages are prolonged, since backup power generally operates only minimal functions for a short period of time.

Critical Facilities and Transportation Infrastructure

Public gathering places including (but not limited to) schools, community centers, shelters, nursing homes and churches, may have increased impacts at certain times of day if struck by a tornado. Due to the random nature of these hazards, a more specific risk assessment was not conducted for this plan.

While transportation infrastructure can be damaged from direct path of a tornado, roads may become impassable and damaged due to secondary hazards, such as mudslides and landslides given the major highways around the City of Tracy planning traverse nearby hillsides and mountain passes (i.e. Altamont Pass).

Historic, Cultural, and Natural Resources

High winds and tornadoes can cause massive damage to the natural environment, uprooting trees and other debris. This is part of a natural process, however, and the environment will return to its original state over time.

Economy

Winds typically don't have long-term impacts on the economy. Both winds and tornadoes may impact exposed critical infrastructure such as power lines; depending on the impact and the function, this could cause a short-term economic disruption. The most common problems associated with tornadoes and high winds are loss of utilities. Downed power lines can cause power outages, leaving large parts of the City isolated, and without electricity, water, and communication. Damage may also limit timely emergency response and the number of evacuation routes. Damaging winds can also cause fires, which may start along dry roadside grass vegetation outside the City's Planning Area. Downed electrical lines following a storm can also increase the potential for lethal electrical shock.



Future Development

As the City continues increasing in population, the number of people and housing developments exposed to the hazard increases. Proper education on building techniques and the use of sturdy building materials, basements, attached foundations, and other structural techniques may minimize the property vulnerabilities. Public shelters at parks and open spaces may help reduce the impacts of tornadoes on the recreational populations exposed to storms.

Risk Summary

- Injury and loss of life can occur due to limited warning times for tornadoes.
- Commercial and residential structural damage is often catastrophic.
- Increase in post-failure or secondary hazards such as flooding, mudslides, landslides, and long-term power outages can occur.
- Damage to natural resource habitats and other resources may result from severe weather associated wind and tornadoes.
- Severe weather events due to wind and tornadoes could result in the loss of water, communication lines, or power; closures to roads and transportation lifelines, which could impact, strand, and/or impair mobility for emergency responders and/or area residents.
- Economic losses (jobs, sales, tax revenue) associated with loss of commercial structures and/or inability to move through transportation lifelines could occur.
- There could be negative impact on commercial and residential property values.
- Severe wind hazards could result in loss or damages to historic and cultural resources, which could severely impact the social fabric downtown Tracy;
- There could be negative impacts to schools, which could severely impact the entire school system and disrupt families and teachers, as temporary facilities and relocations would likely be needed.
- Timely removal of debris, specifically downed trees must be addressed, as this can impact the severity of the severe weather events and the secondary impacts (e.g. localized flooding, loss of power).
- Overall the significance of severe weather associated with wind and tornadoes is medium.

4.4 Human-Caused Hazards

The DMA does not require an assessment of human-caused hazards, but the City of Tracy and HMPC decided to include human-caused hazards in this LHMP to several reasons. First, the City has indicated they want to the LHMP to inform the public about all hazards, including both natural and human-caused hazards. The City was also particularly interested in the impact human-caused hazards would have on their community and on the daily movement of goods and services through the City's Planning Area. Second, the City wanted to take a proactive approach to disaster preparedness and their HMPC agreed that preparation for and response to a human-caused disaster involves the same training and commitment of City resources as a natural hazard. Similar input and feedback was reiterated by stakeholder participation in the LHMP planning process. Third, given the presence of hazardous fixed and linear facilities in the City, such as chemical plants, gas pipelines and electrical power lines the City agreed



the likelihood of a human-caused hazard event in the Planning Area was greater than several of the natural hazard events identified in the plan.

The City also recognized that while San Joaquin County has several hazardous material management and planning procedures in place through their Certified Unified Program Agency (CUPA) administered through their Environmental Health Department, that it is equally important to highlight the hazardous material hazards present in the City's Planning Area in this plan for the purpose of public education and awareness. The City also wanted to ensure that these hazards would not exacerbate secondary impacts associated with natural hazard events. As a result, the following human-caused hazards are discussed in this plan: hazardous materials. Other potential human-caused hazards, such as human-health hazards and terrorism threats were dismissed from further study. The City and HMPC noted that human-health hazards are adequately covered by the planning mechanisms administered by the San Joaquin County's Environmental Health Department. While terrorism, cyber security threats, and other events have been increasing in California and causing casualties and fatalities, they were not covered in this plan.

4.4.1 Hazardous Materials

Hazard/Problem Description

Generally, a hazardous material is a substance or combination of substances which, because of quantity, concentration, or physical, chemical, or infectious characteristics, may either cause or significantly contribute to, an increase in mortality or an increase in serious, irreversible, or incapacitating reversible, illness. Hazardous materials may also pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported, disposed of, or otherwise managed. Hazardous material incidents can occur while a hazardous substance is stored at a fixed facility, or while the substance is being transported along a road corridor or railroad line or via an enclosed pipeline or other linear infrastructure.

The U.S. Department of Transportation (DOT), U.S. Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA) all have responsibilities relating to the transportation, storage, and use of hazardous materials and waste. The Right-to-Know Network (RTK NET), maintained by the EPA's National Response Center (NRC), is a primary source of information on the use and storage of hazardous materials, as well as data regarding spills and releases. The California EPA and Department of Toxic Substances Control (DTSC) are authorized by the U.S. EPA to enforce and implement federal hazardous materials laws and regulations within the state. At the local level, San Joaquin County's Environmental Health Department is the approved CUPA responsible for administration of permitting, inspections, and enforcement for hazardous waste and hazardous materials programs. The CUPA administers the Hazardous Material Business Plan (HMBPs), California Accidental Release Prevention (Cal-ARP) program, and the Aboveground Storage Act, as well as permitting and inspection activities for hazardous waste generators, and onsite hazardous waste treatment facilities, and underground storage tanks.

Hazardous materials can be divided into the following classes:

- Explosives
- Compressed gases: flammable, non-flammable compressed, poisonous
- Flammable liquids: flammable (flashpoint below 141 degrees Fahrenheit) combustible (flashpoint from 141 - 200 degrees)





- Flammable solids: spontaneously combustible, dangerous when wet
- Oxidizers and organic peroxides
- Toxic materials: poisonous material, infectious agents
- Radioactive material
- Corrosive material: destruction of human skin, corrodes steel

Location

Hazmat incidents can occur at a fixed facility or during transportation. Hazardous materials facilities are identified and mapped by the counties they reside in, along with the types of materials stored there; facilities generally reside in and around communities. The San Joaquin County Office of Emergency Services (San Joaquin County OES) administers the Emergency Planning and Community Right-to-Know program for the Tracy Planning Area. Under Chapter 6.95 of the California Health and Safety Code and the Federal Resource Conservation and Recovery Act (RCRA), any business storing quantities of hazardous materials greater than 55 gallons of liquid, 500 pounds of solid or 200 cubic feet of some compressed gasses must file a HMBP annually that establishes incident prevention measures, hazardous material handling protocols and emergency response and evacuation procedures.

The California Accidental Release Prevention Program (CalARP) (administered under the San Joaquin County CUPA) is a statewide initiative to reduce the likelihood and severity of consequences of extremely hazardous materials releases. CalARP requires certain facilities (referred to as "stationary sources") which handle specified chemicals (termed "regulated substances") to take specified actions to proactively prevent and prepare for chemical accidents. Because the CalARP program is implemented at the local government level by the CUPAs, they can work directly with regulated facilities.

Some facilities contain extremely hazardous substances; these facilities are required to generate Risk Management Plans (RMPs) and resubmit these plans every five years. According to the RTK NET, there are currently 13 RMP facilities located in the City (RTK NET 2018). These 13 sites store over five million pounds of toxic chemicals, primarily chlorine (4.6 million pounds), anhydrous ammonia (375,000 pounds), and sulfur dioxide (40,000 pounds) (RTK NET 2018).

In transit, hazardous materials generally follow major transportation routes, including road, rail and pipelines, creating a risk area immediately adjacent to these routes. The City's nearby transportation network, primarily Interstates 580, 205, and 5 all have the potential for hazardous material incidents. Railroad lines (nearby Union Pacific lines) and airports may also transport hazardous materials.

The 2013 Interregional Goods Movement Study, prepared on behalf of the California Department of Transportation (Caltrans), San Joaquin Council of Governments (COG), Fresno County COG, and five other COGs, identified future preferred goods movement for the Valley (Fresno COG 2013). While the study primarily focuses on San Joaquin Valley, and not specifically the movement of goods from the Bay Area to the Valley or vice versa, it covers the same regional freight routes, issues, opportunities, and supply chain and logistic trends, but with a focus on the rapid population growth and transportation opportunities in the Valley region. These opportunities for economic growth are largely due to the agricultural commodities and major distribution of processed food products, and the growing logistics and distribution industry.

Many of these facilities, specifically regional and national distribution centers, are located in the Planning Area. Businesses located here to take advantage of the access to the national rail and interstate highway network, connections to nearby ports in Stockton and Oakland, and proximity to major consumer markets



in the Bay Area and Sacramento. The study focuses on various issues associated with traffic and bottlenecks in the transportation system, community and air quality impacts, and the importance of east-west corridors (Fresno COG 2013). It also makes recommendations and lists prioritized actions within the "goods movement system" in the San Joaquin Valley. Prioritized actions within or near the City's Planning Area related to increasing transportation capacity include adding truck climbing lanes along Interstates 205 and 580, planning the Altamont Pass Rail Corridor and San Joaquin Valley Rail Shuttle (CIRIS), and widening Interstate 5 between State Route 120 and Interstate 205 (Fresno COG 2013). Finally, the study discusses in various sections methods for alleviating safety hazards and effective commercial vehicle enforcement programs to reduce truck-involved crashes and ensure that hazardous materials are transported safely (Fresno COG 2013).

Shipments of radioactive waste from Lawrence Livermore National Laboratories and related facilities to the Waste Isolation Pilot Plant (WIPP) in southern New Mexico pass through the City of Tracy on Interstate 205. WIPP shipments use extremely sturdy shipping casks that have been constructed to withstand severe accidents without releasing their contents. The California Highway Patrol (CHP) inspects all shipments originating in California and escorts these shipments while in California. Prior to departure, trucks and casks must pass a rigorous vehicle safety inspection by CHP patrol inspectors and DOE. Shipments are also scheduled to avoid holidays and peak tourist events along routes.

Hazardous materials releases can also result from natural disasters, such as floods or earthquakes that may cause containment systems to fail. In summary, hazardous material incidents have the potential to occur in business and industrial areas (where fixed facilities are located). Often these facilities are concentrated in the Planning Area due to their manufacturing operations. Hazardous material incidents are also located in agricultural areas surrounding the Planning Area; these types of facilities typically use pesticides, fertilizers, and other agricultural chemicals that are harmful to people and the environment. For example, agricultural pesticides and fertilizers are often transported daily around the City's Planning Area in the nearby dairy farms, orchards, processing centers, and agricultural facilities. Illegal drug operations and dumping sites have also been known to pose a hazardous threat.

Lastly, numerous pipelines traverse the Planning Area. Information provided by the National Pipeline Mapping System (NPMS) indicate the approximate location of over two dozen pipelines in the Planning Area, many which the HMPC notes convey gas or hazardous liquids.

Extent (Magnitude/Severity)

Hazardous materials come in the form of explosives, flammable and combustible substances, poisons and radioactive materials. Hazards can occur during production, manufacturing, storage, transportation, use, or disposal. Numerous factors influence the impacts of a hazardous materials release, including method of release, the type of material, location of release, weather conditions, and time of day. This makes it difficult to predict precise impacts. Impacts from hazardous waste releases can include:

- Injury
- Loss of life (human, livestock, fish and wildlife)
- Evacuations
- Property damage
- Air pollution
- Surface or ground water pollution/contamination



- Interruption of commerce and transportation

The release or spill of hazardous materials also requires different emergency response depending on the amount, type, and location of the spill incident.

The Planning Area has energy pipelines, railroad tracks which carry many types of hazardous materials, and both state and Interstate highways running through its boundaries. A variety of hazardous materials originating in the Region or elsewhere are transported along these routes and could be vulnerable to accidental spills. Consequences can vary depending on whether the spill affects a populated area versus an unpopulated but environmentally sensitive area.

No specific hazardous materials routes or route restrictions are designated in the Planning Area; any routes used to carry hazardous materials introduce an element of risk of materials release to the area immediately adjacent to them. There may be petroleum and other flammable products that are transported by truck and rail, and many have mixed payloads that don't list material amounts.

Potential losses can vary greatly for hazardous material incidents. For even a small incident, there are cleanup and disposal costs. In a larger scale incident, cleanup can be extensive and protracted. There can be deaths or injuries requiring doctor's visits and hospitalization, disabling chronic injuries, soil and water contamination can occur, necessitating costly remediation. Evacuations can disrupt home and business activities. Large-scale incidents can easily reach \$1 million or more in direct damages.

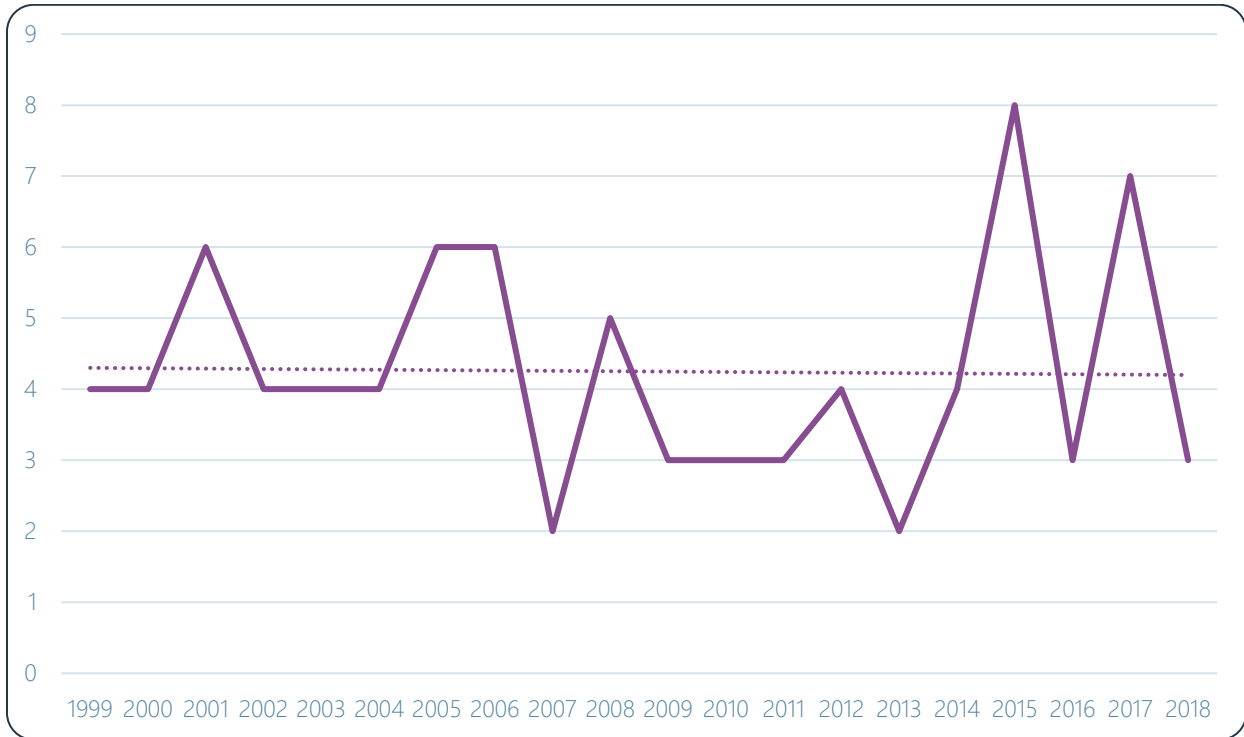
San Joaquin County has prepared a Hazardous Material Area Plan (HMAP), in accordance with the California Health and Safety Code (HSC) (Division 20, Chapter 6.95, §25500 et seq.) and California Code of Regulations (CCR) (Title 19, Article 3, §2270 et seq.). This plan is designed to protect human health and the environment through hazardous materials emergency planning, response and agency coordination and community right-to-know programs. The plan outlines the roles and responsibilities of federal, state, and local agencies in responding to hazardous material releases and incidents. The City of Tracy's Police and Fire Departments work with San Joaquin County to implement this plan.

The Safety Element of the City of Tracy General Plan contains goals, objectives, policies and actions to protect the City and residents from harmful effects of hazardous materials and waste. Additionally, the City implements its 2008 Comprehensive Emergency Management Plan, which thoroughly addresses the City's responsibilities in emergencies associated with both natural disasters, and human-caused emergencies. In the plan annexes, it specifically covers hazardous materials response.

Previous Occurrences

Figure 4-44 below shows the number of incidents within the City limits reported to RTK NET over the last twenty years. The numbers listed may not include all incidents, since many minor spills go unreported; but they nevertheless give a good picture of the frequency of significant incidents. According to the data, over the last twenty years the number of hazardous materials spills or accidents in the City has remained steady, averaging around four incidents per year.

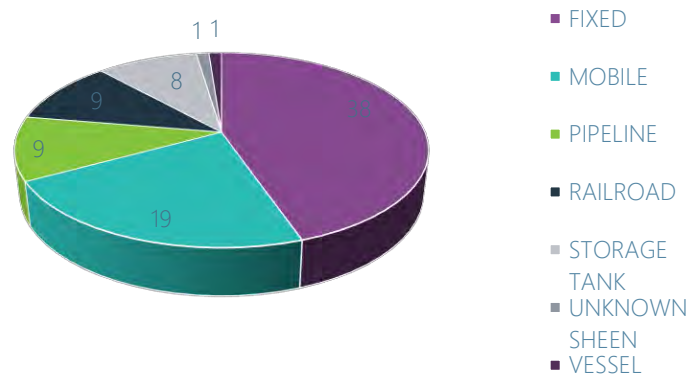
Figure 4-44 Hazardous Materials Spills/ Accidents in the City of Tracy Reported to the NRC: 1999-2018



Source: <http://www.rtk.net/>

The following chart shown in Figure 4-45 breaks down the 85 hazardous materials incidents reported to RTK NET in the last twenty years by type. Table 4-33 below identifies the industries associated with most hazardous materials releases in the City.

Figure 4-45 Reported Hazardous Materials Spills/ Accidents in the City of Tracy by Type: 1999-2018



Source: <http://www.rtk.net/>

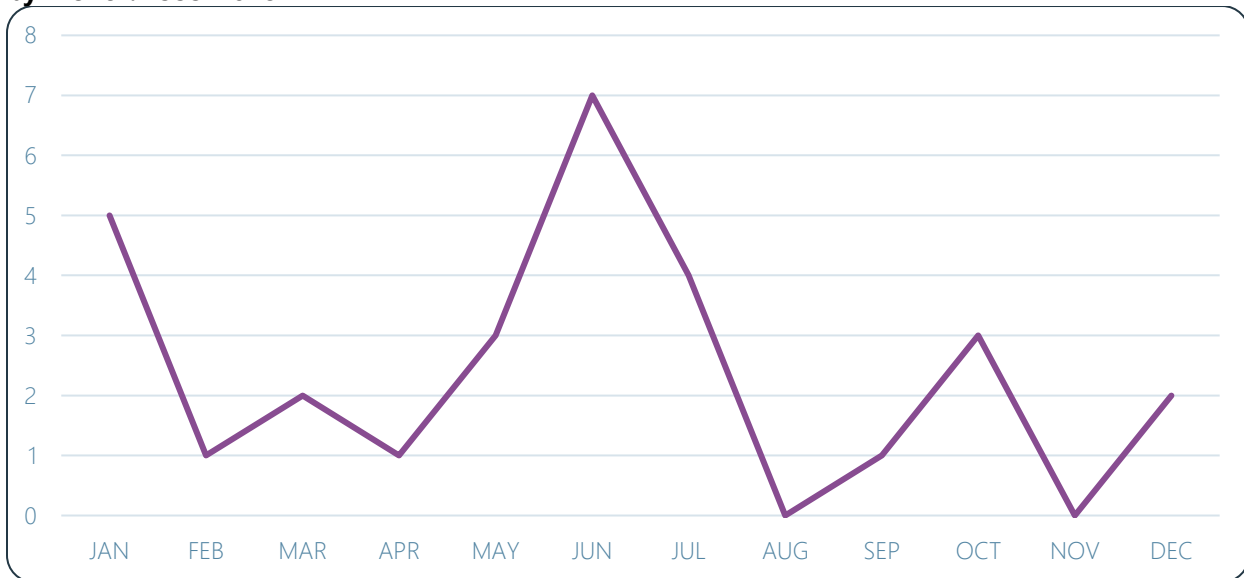
Table 4-33 Hazardous Materials Releases 1999-2018 by Industry

Industry	Pounds of Release
Food	2,972,895
Plastics and Rubber	872,011
Stone/Clay/Glass	684,683
Fabricated Metals	113,130
Miscellaneous (non-TRI industry, or no industry code)	44,729
Petroleum Bulk Terminals	31,238
Paper	13,235
Chemicals	11,786

Source: <http://www.rtk.net/>

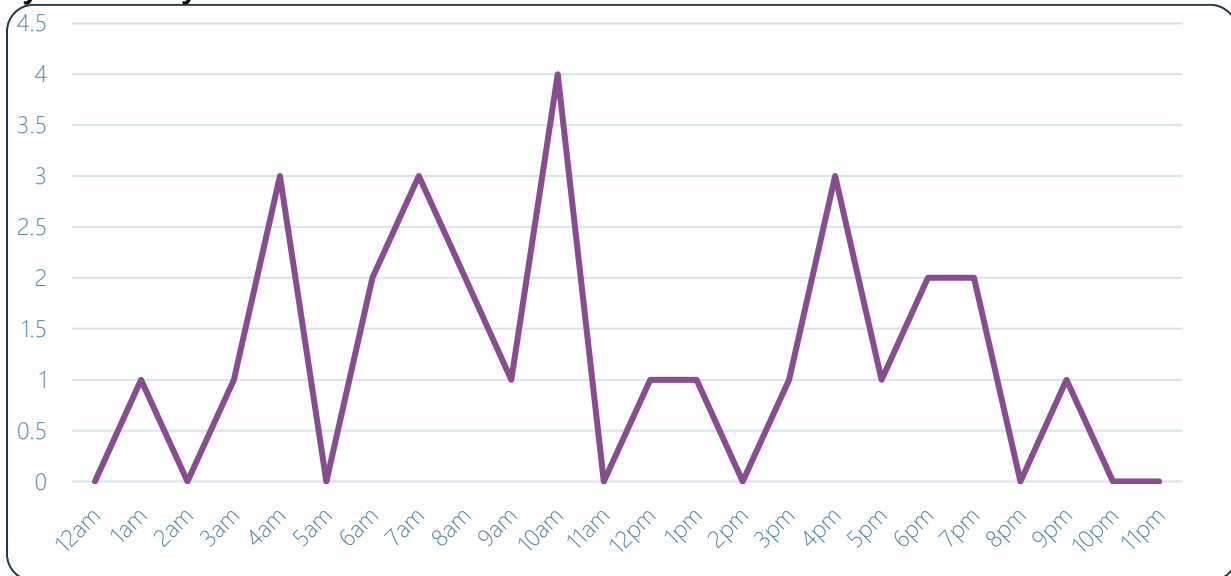
Of the 85 incidents since 1999, 29 (34 percent) were transportation related, consisting of mobile, rail, and vessel accidents. A further analysis of RTK NET data on date and time of transportation incidents can be found in Figure 4-46 and Figure 4-47. While the number of reported incidents is relatively small, the data shows that hazardous materials incidents are most common in the months of June, July, May, and January. Incidents involving transportation of hazardous materials can happen at any time of day, but the data indicates they are more common during morning and afternoon rush hours.

Figure 4-46 Reported Hazardous Materials Transportation Spills/ Accidents in the City of Tracy by Month: 1999-2018



Source: <http://www.rtk.net/>

Figure 4-47 Reported Hazardous Materials Transportation Spills/ Accidents in the City of Tracy by Time of Day: 1999-2018



Source: <http://www.rtk.net/>

Probability of Future Occurrence

The City experiences anywhere from two to eight reportable hazardous materials incidents per year, with various degrees of impact; there is effectively a 100 percent chance that the City will see a hazardous materials incident in any given year. They can also occur at any time and with little predictability given the presence of major transportation routes in the City's Planning Area, particularly three that enclose the City's Planning Area.

Climate Change Considerations

There are no known effects of climate change on human-caused hazards, such as hazardous material incidents.

Vulnerability to Hazardous Materials - Medium

Property

The impact of a fixed hazardous facility, such as a chemical processing facility, will likely be localized to the property where the incident occurs. The impact of a small spill (i.e. liquid spill) may also be limited to the extent of the spill and remediated if needed.

People

People living near hazardous facilities in the Planning Area may be at a higher risk of exposure, however; few people live near these facilities as most industrial land uses are sited away from residential land uses. Still, people living downstream and downwind from a hazardous material facilities (or hazardous material release) could be more vulnerable. For example, a toxic spill or a release of an airborne chemical in a populated area like the City of Tracy could have a greater potential for loss of life, particularly if it spreads towards residential areas surrounding the downtown area.

Critical Facilities and Transportation Infrastructure

Impacts from hazardous material incidents on critical facilities would be localized. That is, they will be limited to the area or facility where they occurred, such as at a transit station, airport, fire station, hospital,



or railroad. Whereas hazardous material incidents to major transportation infrastructure would be localized to some extent, but they may also be further reaching if they result in major delays in the movement of goods and services and if they result in long-term traffic delays and road closures. These incidents would be more severe if they result in traffic delays or road closures along Interstate 580, Interstate 205, and Interstate 5. These types of incidents may affect multiple neighboring counties, such as Alameda, Contra Costa, and Stanislaus counties, various industries, and many of the distribution depots situated in the City of Tracy. In summary, the losses would vary, and depend on the type of hazardous event. Nonetheless, hazardous material incidents will result in costs from lost business, delayed deliveries, property damage, and potential contamination.

Historic, Cultural, and Natural Resources

Hazardous material incidents may affect a small area at a regulated facility or cover a large area outside such a facility. Widespread effects occur when hazards contaminate the groundwater and eventually the municipal water supply, or they migrate to a major waterway or aquifer. For example, if a hazard spread into one of the surrounding water canals south of the City, such as the California Aqueduct or Delta-Mendota Canal, this environmental damage could be timely and costly to remediate.

Economy

Widespread hazardous material incidents may deter residents to relocate to the City of Tracy; they may also deter certain businesses. Large and publicized hazardous material-related events can deter tourists and recreationists too. If incidents occur along any of the interstate corridors they can temporarily close transportation routes and result in traffic delays. Economic effects from major transportation corridor closures can be significant.

Future Development

The amount of hazardous materials that are stored and transported across the Planning Area will likely increase over the next five years. Especially as more businesses relocate to the City. Future development is also expected to increase with several planning developments approved and anticipated for construction in the same timeframe with the largest proposed south of Interstate 580. As the population increases, the number of people vulnerable to the impacts of hazardous materials, and incidents from these materials, (spills, transportation incidents) may increase. Further, if population growth occurs along the major transportation corridors (e.g. Tracy Hills along Interstate 580), this will gradually increase the population's vulnerability to transportation-related hazardous materials spills.

Risk Summary

- Thirteen RMP facilities are located in the City that together store over five million pounds of toxic chemicals.
- Over the last 20 years the number of hazardous materials spills or accidents in the City averages around four incidents per year.
- Of the 85 incidents that occurred since 1999, 29 (34 percent) were transportation related, consisting of mobile, rail, and vessel accidents.
- The 2008 Comprehensive Emergency Management Plan thoroughly addresses the City's responsibilities in emergencies associated with human-caused emergencies, as it specifically covers hazardous materials response.
- Incidents to regulated hazardous facilities in the City's Planning Area will likely be localized to the property where the incident occurs.



- People living near, downstream, or downwind of hazardous facilities could be more vulnerable to airborne or water quality related contamination associated with a hazardous material incident.
- Most hazardous material incidents on critical facilities would be localized.
- Widespread hazardous material incidents may deter residents and business from relocating to the City of Tracy.
- Hazardous material incidents may affect small areas at a regulated facility or cover a large area outside such a facility, in which they could contaminate the groundwater, migrate into a local aquifer, and contaminate a municipal water supply.
- If growth occurs along the major transportation corridors, this will gradually increase the population's vulnerability to transportation-related hazardous materials spills.
- The City needs to ensure emergency preparedness information, including procedures related to human-caused hazards, such as hazardous material incidents to the public are provided.
- The City should continue to coordinate with San Joaquin County's CUPA and continue emergency preparedness training for police, fire, public works, engineering, public information officer teams, and other departments to ensure response is timely in the event of a hazardous material event.
- The City should ensure all emergency response staff and local government officials understand and implement the protocols contained in the San Joaquin County's HMAP, particularly the risks outlined in the 14 RMPs for facilities that are in the City's Planning Area.
- The City should work and coordinate with the private sector, tech industry, distribution depots, school districts, and hospitals to ensure that emergency preparedness plans and policies are comprehensive and adequately cover human-related hazardous material incidents.
- Overall significance level for hazardous materials is medium.

4.5 Hazards Summary

Table 4-34 summarizes the results of the hazard identification and hazard profiles for the Planning Area based on the hazard identification data and input from the HMPC. For each hazard profiled in Section 4.2 on natural hazards and in Section 4.3 on human-caused hazards, this table includes the likelihood of future occurrence and whether the hazard is considered a priority hazard for the Planning Area.





Table 4-34 Hazard Identification and Determination of Priority Hazard

Hazard	Priority Hazard
Dam Failure/Levee Failure	No
Drought	Yes
Earthquake Hazards	Yes
Flood: 100/500 Year/Localized Flooding	Yes
Fire: Urban and Wildfire	Yes
Extreme Heat	No
Heavy Rain/Thunderstorm/ Hail/Lightning	Yes
Wind/Tornado	No
Hazardous Materials	Yes

Source: HMPC 2018

The HMPC determined that drought, earthquake, flooding, heavy rain/thunderstorm/hail/lightning, and wildfire are the most significant hazards in the Planning Area. These hazards have also been categorized as priority hazards by the HMPC.





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5 Mitigation Strategy

44 U.S. CFR Requirement §201.6(c)(3): [The plan shall include] a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

This section describes the mitigation strategy process and mitigation action plan for the City of Tracy Local Hazard Mitigation Plan (LHMP). It describes how the City met the requirements for the following from the 10-step planning process:

- Planning Step 6: Set Goals
- Planning Step 7: Review Possible Activities
- Planning Step 8: Draft an Action Plan

The results of the planning process, the risk assessment, the goal setting, the identification of mitigation actions, and the participation of the HMPC led to the action plan in Section 5.3 Mitigation Action Plan. Taking all the above into consideration, the HMPC developed the following overall mitigation strategy:

- **Communicate** the hazard information collected and analyzed through this planning process so that the community better understands what can happen where and what they can do to be better prepared.
- **Implement** the action plan recommendations of this plan.
- **Use** existing rules, regulations, policies, and procedures already in existence. Given the flood hazard in the Planning Area, an emphasis should be placed on continued compliance with the National Flood Insurance Program (NFIP) and participation by all communities in the Community Rating System.
- **Monitor** multi-objective management opportunities so that funding opportunities may be shared and packaged, and broader constituent support may be garnered.

5.1 Goals and Objectives

Requirement §201.6(c)(3)(i): The hazard mitigation strategy shall include a) description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Up to this point in the planning process, the HMPC has organized resources, assessed hazards and risks, and documented mitigation capabilities. The resulting goals and mitigation actions were developed based on these tasks. The HMPC held a series of meetings and exercises designed to achieve a collaborative mitigation strategy as described further throughout this section.

During the initial goal-setting meeting, the HMPC reviewed the results of the hazard identification, vulnerability assessment, and capability assessment. This analysis of the risk assessment identified areas where improvements could be made and provided the framework for the HMPC to formulate planning goals and objectives and the ultimate mitigation strategy for the City of Tracy Planning Area.

Goals were defined for the purpose of this mitigation plan as broad-based public policy statements that:

- Represent basic desires of the community;
- Encompass all aspects of community, public and private;
- Are nonspecific, in that they refer to the quality (not the quantity) of the outcome;
- Are future-oriented, in that they are achievable in the future; and
- Are time-independent, in that they are not scheduled events.

Goals are stated without regard to implementation. Implementation cost, schedule, and means are not considered. Goals are defined before considering how to accomplish them so that they are not dependent on the means of achievement. Goal statements form the basis for objectives and actions that will be used as means to achieve the goals. Objectives define strategies to attain the goals and are more specific and measurable.

During the planning process, HMPC members were given a list of sample goals to consider from the California 2018 State Multi-Hazard Mitigation Plan (SHMP), the 2017 San Joaquin County Local Hazard Mitigation Plan, and the 2011 City of Tracy General Plan Safety Element. They were also provided a list of goal statements from neighboring city and county hazard mitigation plans. They were told that they could use, combine, or revise the statements provided or develop new ones, keeping the risk assessment in mind. Each member was each given three 3 by 5 inch sticky notes and asked to write a goal statement on each card. Goal statements were collected and grouped into similar themes and pasted onto the wall of the meeting room. The goal statements were then categorized into similar topics. The goal statements from the HMPC were discussed until the team came to consensus. Some of the statements were determined to be better suited as objectives or actual mitigation actions and were set aside for later use.

Next, the HMPC was asked whether they wanted to develop objectives that summarized strategies to achieve each goal. The HMPC agreed they would consider the development of objective statements at the next meeting. The HMPC revisited the goal statements prepared and categorized during the next HMPC meeting (HMPC Meeting #3). The Wood team explained that since the meeting, the team reviewed each goal, re-arranged them again by theme and removed duplicate goal statements. They stated the draft goals focused on loss of life and property prevention, emergency response coordination, public education, and community resilience.

Based on the risk assessment review and goal setting process, the HMPC identified the following four goals, which provide direction for reducing future hazard-related losses within the City of Tracy Planning Area.

- **Goal 1:** Minimize loss of life and property from hazards
- **Goal 2:** Support community resilience through continuity of essential services during a hazard event
- **Goal 3:** Increase education and awareness of vulnerability to and mitigation of hazards
- **Goal 4:** Improve City coordination and capabilities to mitigate hazards

5.1.1 Incorporation into Existing Planning Mechanisms

The information contained within this plan, including results from the Vulnerability Assessment, and the Mitigation Strategy will be used by the City to help inform updates and the development of local plans, programs and policies. The Engineering Department may utilize the hazard information when

implementing the City's Infrastructure Master Plans and the Planning and Building Safety and Fire Prevention Departments may utilize the hazard information when reviewing a site plan or other type of development applications. The City will also incorporate this LHMP into the Safety Element of their General Plan, as recommended by California's Assembly Bill (AB) 2140.

Lastly, the HMPC representatives report on efforts to integrate the hazard mitigation plan into local plans, programs and policies and will report on these efforts at the annual HMPC plan review meeting.

5.2 Identification and Analysis of Mitigation Actions

Requirement §201.6(c)(3)(ii): The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.

In order to identify and select mitigation actions to support the mitigation goals, each hazard identified in Section 4.1 Identifying Hazards: Natural Hazards was evaluated, as well as human-caused hazards identified in Section 4.4 Human-caused Hazards. Only those hazards that were determined to be a priority hazard were considered further in the development of hazard-specific mitigation actions.

The priority natural hazards are:

- Dam Failure
- Drought
- Earthquake
- Flood: 100/200/500-Year, Localized Flooding
- Severe Weather: Extreme Heat
- Severe Weather: Heavy Rains/Thunderstorms/Hail/Lightning/Dense Fog
- Severe Weather: Wind and Tornadoes
- Fire: Urban and Wildland

Hazardous materials incidents (releases from a fixed facility or transportation accidents) was also identified by the HMPC as a priority hazard, as noted in Section 4.4 Human-caused Hazards.

The HMPC eliminated the hazards identified below from further consideration in the development of mitigation actions because the risk of a hazard event in the County is unlikely or nonexistent, the vulnerability of the County is low, or capabilities are already in place to mitigate negative impacts. The eliminated hazards are:

- Agricultural Hazards
- Landslide and Debris Flows
- Tsunami
- Sea Level Rise
- Hurricanes
- Coastal Erosion
- Volcanoes

Once it was determined which hazards warranted the development of specific mitigation actions, the HMPC analyzed viable mitigation options that supported the identified goals and objectives. The HMPC was provided with the following list of categories of mitigation actions, which originate from the Community Rating System:

- **Prevention:** Administrative or regulatory actions or processes that influence the way land and buildings are developed and built.
- **Property Protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard or remove them from the hazard area.
- **Structural:** Actions that involve the construction of structures to reduce the impact of a hazard.
- **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems.
- **Emergency Services:** Actions that protect people and property during and immediately after a disaster or hazard event.
- **Public Information/Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them.

At the mitigation strategy meeting the HMPC was provided with a matrix showing examples of potential mitigation action alternatives for each of the above categories, for each of the identified hazards. The HMPC was also provided a handout that explains the categories and provided further examples. Another reference document titled “Mitigation Ideas” developed by FEMA was distributed to the HMPC during the mitigation strategy meeting. This document lists the common alternatives for mitigation by hazard. The HMPC was also instructed to consider both future and existing buildings in considering possible mitigation actions. A facilitated discussion then took place to examine and analyze the options. Appendix C provides the matrix of alternatives considered. Each proposed action was written on a large sticky note and posted on flip charts in meeting room underneath the hazard it addressed.

5.2.1 Prioritization Process

Once the mitigation actions were identified, the HMPC was provided with several decision-making tools, including FEMA’s recommended prioritization criteria, STAPLEE, to assist in deciding why one recommended action might be more important, more effective, or more likely to be implemented than another. STAPLEE stands for the following:

- **Social:** Does the measure treat people fairly? (e.g., different groups, different generations)
- **Technical:** Is the action technically feasible? Does it solve the problem?
- **Administrative:** Are there adequate staffing, funding, and other capabilities to implement the project?
- **Political:** Who are the stakeholders? Will there be adequate political and public support for the project?
- **Legal:** Does the jurisdiction have the legal authority to implement the action? Is it legal?
- **Economic:** Is the action cost-beneficial? Is there funding available? Will the action contribute to the local economy?

- **Environmental:** Does the action comply with environmental regulations? Will there be negative environmental consequences from the action?

In accordance with the Disaster Mitigation Act requirements, an emphasis was placed on the importance of a benefit-cost analysis in determining action priority. Other criteria used to assist in evaluating the benefit-cost of a mitigation action included:

- Does the action address hazards or areas with the highest risk?
- Does the action protect lives?
- Does the action protect infrastructure, community assets or critical facilities?
- Does the action meet multiple objectives (Multiple Objective Management)?
- What will the action cost?
- What is the timing of available funding?

The mitigation categories, multi-hazard actions, and criteria are included in Appendix C: Mitigation Categories, Alternatives, and Selection Criteria.

At the mitigation strategy meeting the HMPC used STAPLEE to determine which of the identified actions were most likely to be implemented and effective. With these criteria in mind, team members were given a set of four green sticky-dot stickers. The team was asked to use the dots to prioritize projects with the above criteria in mind, essentially voting on the projects. The projects with the most dots became the higher priority projects. This process provided both consensus and priority for the recommendations.

The process of identification and analysis of mitigation alternatives allowed the HMPC to come to consensus and to collectively prioritize recommended mitigation actions. During the voting process, emphasis was placed on the importance of a benefit-cost review in determining project priority; however, this was not a quantitative analysis. Benefit-cost was considered in greater detail in the development of the Mitigation Action Plan detailed below in Section 5.3. Specifically, each action developed for this plan contains a description of the problem and proposed project, the entity with primary responsibility for implementation, any other alternatives considered, a cost estimate, expected project benefits, potential funding sources, and a schedule for implementation. Development of these project details for each action led to the determination of a High, Medium, or Low priority for each action.

Recognizing the limitations in prioritizing actions from multiple departments and the regulatory requirement to prioritize by benefit-cost to ensure cost-effectiveness, the HMPC decided to pursue mitigation action strategy development and implementation according to the nature and extent of damages, the level of protection and benefits each action provides, political support, project cost, available funding, and individual jurisdiction and department priority. This process drove the development of a prioritized action plan for the City of Tracy. Cost-effectiveness will be considered in greater detail through a formal benefit-cost analysis when seeking FEMA mitigation grant funding for eligible actions associated with this plan.

5.3 Mitigation Action Plan

Requirement §201.6(c)(3)(iii): The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

This action plan was developed to present the recommendations developed by the HMPC for how the City of Tracy can reduce the vulnerability of people, property, infrastructure, and natural and cultural resources to future disaster losses. Over time, the implementation of these projects will be tracked as a measure of demonstrated progress on meeting the plan's goals.

5.3.1 Continued Compliance with NFIP

Recognizing the importance of the NFIP in mitigating flood losses, an emphasis will be placed on continued compliance with the NFIP by the City of Tracy. As a NFIP participant, Tracy will continue to make every effort to remain in good standing with NFIP. This includes continuing to comply with the NFIP's standards for updating and adopting floodplain maps and maintaining and updating the floodplain regulations. Other details related to NFIP participation are discussed in the flood vulnerability discussion in Chapter 4 and in the capability assessment in Chapter 2.

5.3.2 Mitigation Action Plan

This action plan presents the recommendations developed by the HMPC outlining how the City of Tracy can reduce the risk and vulnerability of people, property, infrastructure, and natural and cultural resources to future disaster losses. The mitigation actions developed by the HMPC are summarized in Table 5.1 and listed in detail in the mitigation action worksheets that follow. Table 5.1 is a summary table for quick reference. It identifies the mitigation action title, lead agency/department, hazards mitigated, priority and if the action mitigates losses to existing or future development. The 'Related Goal' column notes which of the four goals in Section 5.2 that the action helps achieve. The action worksheets that follow provide more background information, ideas for implementation, lead agency, partners, potential funding sources, cost estimates, benefits, and timeline for each identified action.

The City of Tracy has other existing, detailed action descriptions in other planning documents, such as General Plan Safety Element, Infrastructure Master Plans, Capital Improvement Program and Budgets, and other planning mechanisms. These actions are considered to be part of this plan, and the details, to avoid duplication, should be referenced in their original source document. The HMPC also realizes that new needs and priorities may arise as a result of a disaster or other circumstances and reserves the right to support new actions, as necessary, as long as they conform to the overall goals of this plan.

The actions included in this mitigation strategy are subject to further review and refinement; alternatives analyses; and reprioritization due to funding availability and/or other criteria. The City is not obligated by this document to implement any or all of these projects. Rather this mitigation strategy represents the desires of the City and the community to mitigate the risks and vulnerabilities from identified hazards.



Many of the action items included in this plan are also a collaborative effort among City of Tracy departments, San Joaquin County, and other state, regional, and local agencies and stakeholders in the City of Tracy Planning Area and greater San Joaquin Valley.





Figure 5.1. Mitigation Action Summary Table

Action ID	Action Title	Hazard(s) Mitigated	Lead Agency	Address Existing or Future Development	Priority	Related Goal
Dam and Levee Failure						
D-1	Work with dam owners, reclamation districts, and San Joaquin County to update dam and levee assessments on potential impacts and inundation areas and develop land use standards and emergency response and evacuation plans based on the information	Dam Failure, Levee Failure	Utilities Department	Both	Low	1, 3, 4
D-2	Create Emergency Action Plans for dams and levees posing a risk of flooding	Dam Failure, Levee Failure, 100/500-Year Flood Hazards	Utilities Department	Both	Low	1, 3, 4
Drought						
DR-1	Public outreach campaign on water conservation practices during drought conditions	Drought	Utilities Department	Both	Low	1, 3, 4
DR-2	Groundwater supply augmentation	Drought	Utilities Department	Both	Low	1, 2, 3, 4
Earthquake						
E-1	Earthquake building safety and retrofitting	Earthquake Hazards	Building Department	Both	Medium	1, 2, 3, 4
E-2	Earthquake drill and safety education	Earthquake Hazards	Building Department	Both	Low	1, 2, 3, 4
Severe Weather: Extreme Heat						
EH-1	Extreme heat outreach campaign	Severe Weather: Extreme Heat	Parks and Recreation Department	Both	Low	1, 3, 4





Action ID	Action Title	Hazard(s) Mitigated	Lead Agency	Address Existing or Future Development	Priority	Related Goal
100/500-Year Flood Hazards, Localized Flooding						
F-1	Flood safety and adopt and drain program	Flood Hazards	Public Works Department	Both	Low	1, 3, 4
F-2	Consider joining Community Rating System (CRS) to promote affordable flood insurance	100/500-Year Floods, Localized Flood Hazards	Development Services Department	Both	Medium	1, 3, 4
Hazardous Materials						
H-1	Hazardous materials spill preparedness	Hazardous Materials	Fire Department, Police Department	Both	Medium	1, 2, 4
Severe Weather: Heavy Rain, Thunderstorms, and Dense Fog						
S-1	Consider becoming a Storm Ready® community	Heavy Rain, Thunderstorms, Dense Fog	Public Works Department	Both	Low	1, 2, 3
Severe Weather: Wind and Tornadoes						
T-1	Enhance local building code to incorporate wind-resistant design features that address wind and tornado hazards	Severe Weather: Wind and Tornadoes	Building Department	Both	Low	1, 2, 3, 4
T-2	Plan around forced blackouts	Severe Weather: Wind and Tornadoes	City Manager Office	Both	High	2, 3, 4
Fire: Urban and Wildland						
W-1	Fire Wise public education	Fire: Urban and Wildland	Fire Department	Both	High	1, 2, 3, 4
W-2	Create and modify automatic aid agreements	Fire: Urban and Wildland	Fire Department	Both	High	1, 2, 4





Action ID	Action Title	Hazard(s) Mitigated	Lead Agency	Address Existing or Future Development	Priority	Related Goal
W-3	Enhance local building code to address wildfire resilience	Fire: Urban and Wildland	Fire Department	Both	Low	1, 2, 3, 4
Multi-Hazard Actions						
MH-1	Family preparation planning for emergency preparedness	Multi-Hazard, Dam Failure, Levee Failure, 100/500-Year Floods, Earthquake, Fire: Urban and Wildland	City Manager Office	Both	High	1, 3, 4
MH-2	Hazard Awareness GIS Mapping Application	Multi-Hazard, Dam Failure, Levee Failure, 100/500-Year Floods, Earthquake, Severe Weather, Fire: Urban and Wildland	Information Technology/Geographic Information Systems Department	Both	High	1, 3, 4
MH-3	Update Comprehensive Emergency Management Plan	Multi-Hazard, Dam Failure, Levee Failure, 100/500-Year Floods, Earthquake, Severe Weather, Fire: Urban and Wildland	Fire Department	Both	High	1, 2, 4
MH-4	Establish routine inspection and maintenance of City infrastructure	Multi-Hazard, Dam Failure, Levee Failure, 100/500-Year Floods, Earthquake, Severe Weather, Fire: Urban and Wildland	Public Works Department	Both	High	1, 2

The following mitigation actions provide project specific information and implementation details on each mitigation activity identified. They are groups by the type of hazard(s) they address.

D-1 *Work with dam owners, reclamation districts, and San Joaquin County to update dam and levee assessments on potential impacts and inundation areas and develop land use standards and emergency response and evacuation plans based on the information*

Mitigation Project Title	Work with dam owners, Reclamation Districts, and San Joaquin County to update dam and levee assessments on potential impacts and inundation areas and develop land use standards and emergency response and evacuation plans based on the information
Hazard(s) Mitigated	Dam Failure, Levee Failure
Project Description, Issue/Background	The risk assessment identified potential risk to populations in the City of Tracy living below two upstream high hazard dams. While the likelihood of dam failure is low, impacts could be catastrophic. There is a lack of available GIS-based inundation mapping for these dams. If this information becomes available it would enable the City of Tracy and San Joaquin County to identify specific downstream structures and populations at risk. Additional levee breach assessments can also be completed for the levees that surround the City of Tracy. By analyzing these risks in more detail, the City, in collaboration with San Joaquin County, can prioritize planning, warning, emergency response, and evacuation procedures and raise awareness of the hazard in targeted areas. The two dams are owned and operated by the US Bureau of Reclamation and California Department of Water Resources and Studley Company, a private company. The levees are owned by different reclamation districts and the Army Corps of Engineers. Collaboration with partner agencies and San Joaquin County can be initiated to allow for one of the partner agencies to develop dam assessments and develop dam inundation data layers.
Related planning mechanisms	Emergency Action Plans (EAPs)
Other Alternatives	Partner with agencies for infrastructure improvements assessments on dams and levees and public awareness of potential dam and levee failure impacts; Work with existing inundation mapping data or information provided in the existing EAPs.
Responsible Office/ Agency	Utilities
Partners	Dam Owners, Reclamation Districts, San Joaquin County, US Bureau of Reclamation, California Department of Water Resources, Studley Company, Neighboring counties (where dams are located outside of San Joaquin County)

Priority (High, Medium, Low)	Low
Cost Estimate	Varies, if dam inundation modelling is not available, modeling and inundation mapping costs depend on the size of the dam; \$45,000 - \$150,000
Benefits (Avoided Losses)	The risk to the City is low due to the distance between developed properties and dam locations. However, there is planned growth in the future that will need to be monitored for risk, and there is increased risk associated with levee failure given the number of levees situated to the north of the City. Educating home buyers of the upstream dams and flood protections should be considered in order to avoid loss of life and injuries if an event were to occur. Understanding the risk that could occur can improve warning and evacuation procedures.
Potential Funding	Homeowners should be encouraged to purchase flood insurance in areas near the dams and levees. Currently there is only open space and rural farms near the one privately operated dam (i.e. Maria Dam). FEMA Dam Safety Grants, Dam Owners
Schedule	2019-2021

D-2 *Create Emergency Action Plans for dams and levees posing a risk of flooding*

Mitigation Project Title	Create Emergency Action Plans for dams and levees posing a risk of flooding
Hazard(s) Mitigated	Dam Failure, Levee Failure, 100/500-Year Floods
Project Description, Issue/Background	According to the risk assessment in the LHMP, only two of the four upstream dams are classified as high hazard dams. Of these, only one has an existing EAP. The Maria Dam is a small 277 acre-feet capacity earthen dam owned and operated by the Studley Company that does not have an inundation map or EAP. There are also several levees that surround the northern portion of the City of Tracy. This mitigation action would ensure EAPs are developed for other dams that may affect the City of Tracy, and as needed for specified levee structures. EAPs can help identify communication and warning protocols in the event of an incident at a dam, thereby helping to mitigate loss of life through effective public notification and response during an emergency evacuation. The City of Tracy would collaborate with San Joaquin County and dam owners to assist in the development or update of EAPs. The City would also coordinate with the Reclamation Districts and the U.S. Army Corps of Engineers, if needed.
Related planning mechanisms	EAPs; 2008 Comprehensive Emergency Management Plan, County Emergency Operations Plan
Other Alternatives	Contacting responsible agencies for dams in San Joaquin County and neighboring counties (e.g. Contra Costa County, Alameda County)
Responsible Office/ Agency	Utilities Department
Partners	Dam Owners, Reclamation Districts, San Joaquin County, US Bureau of Reclamation, U.S. Army Corps of Engineers, California Department of Water Resources, Studley Company, Neighboring counties (where dams are located outside of San Joaquin County), Cal OES Dam Safety Planning Division
Priority (High, Medium, Low)	Low
Cost Estimate	Varies, if EAP updates are needed; \$35,000 - \$45,000
Benefits (Avoided Losses)	Current EAPs will allow both the City of Tracy and San Joaquin County to prepare and practice warning and evacuation procedures in the event a dam failure occurs.
Potential Funding	FEMA Dam Safety Grants, California Division of Safety of Dams (California Legislature did not allocate funding to help dam owners pay for inundation maps; however, Cal OES is administering grants that may be applicable) Cal OES Pre-Disaster Mitigation Program (PDMP) and Hazard Mitigation Grant Program (HMGP) Grants
Schedule	2019-2021

DR-1 *Public outreach campaign on water conservation practices during drought conditions*

Mitigation Project Title	Public outreach campaign on water conservation practices during drought conditions
Hazard(s) Mitigated	Drought
Project Description, Issue/Background	<p>The City of Tracy administers mandatory prohibitions and requirements during drought and other water emergency conditions, as promulgated in Chapter 11.28 Water Management of the City's Municipal Code. The code requirements include reduction goals in potable water consumption of 10 percent, 15 percent, 20 percent, and 30 percent or more as deemed necessary due to drought conditions. There is also a stage where up to 50 percent water reductions are required. The City Council can declare a drought and direct the City Manager to implement all provisions of the code requirements when certain conditions exist, such as declines in groundwater levels; reductions in surface water delivery supplies from major sources, such as the Central Valley Project or South San Joaquin Irrigation District; drought declaration are made by the Governor of California, and other unusual circumstances occur that affect the quantity or quality of water supply. The City also enforces a water waste prevention ordinance to minimize inefficient landscape irrigation.</p> <p>The City plans to enforce water restrictions over time by ensuring residents and business owners are educated about water conservation practices. The City intends to locate available water supplies and develop a communication plan to timely communicate with the public about water conservation.</p> <p>The City would also develop a public outreach campaign on saving/reducing water usage in a drought using social media, traditional media and print to meet the City's demographics. Some components of this plan are already being implemented through information the City distributes with utility billings, brochures, advertisements, education programs, and community events. Other components may include encouraging irrigation efficiency and appliance retrofits (e.g. low-flow toilets, faucets, shower heads) in residential homes and businesses.</p>
Related planning mechanisms	City's Municipal Code, Drought and Other Water Emergency Conditions Ordinance, Water Efficient Landscape Ordinance, Urban Water Management Plan (UWMP), City's Water Shortage Contingency Plan (part of UWMP)
Other Alternatives	<p>On-going water conservation efforts to mitigate the impacts to the water supply.</p> <p>Educate Residents on Water Saving techniques.</p> <p>Enforcement of existing ordinance requirements and state restrictions.</p>

Responsible Office/ Agency	Utilities Department
Partners	City, State and other agencies
Priority (High, Medium, Low)	Low
Cost Estimate	\$10,000 Annually
Benefits (Avoided Losses)	<p>The City of Tracy is located near the Central Valley of California that has cycle periods of wet and drought years. The last drought in California was longer and more devastating than prior droughts, due to both increased temperatures, climate change, and higher demand on public services. The City tracks the State's drought conditions and monitors regularly excess water users.</p> <p>Recycled water use is another long-term solution to mitigating the impacts of drought years. The City investment in recycled water storage and distribution system will provide a sustainable water solution to the City.</p>
Potential Funding	City, California Department of Water Resources (DWR) Cal Conserve Water Use Efficiency Loan Program, Agricultural Water Use Efficiency's DWR/Proposition 1 Funding, and other agency funding
Schedule	Ongoing through 2019-2023; State is still under drought conditions

DR-2 Groundwater supply augmentation

Mitigation Project Title	Groundwater supply augmentation
Hazard(s) Mitigated	Drought
Project Description, Issue/Background	<p>The City of Tracy obtains water from both surface and groundwater sources. The amount of water it uses varies each year based on contractual agreements, annual precipitation, and City policy about how to expand, utilize, and manage water resources. From 2011 through 2015, the City's annual production ranged from 14,041 acre feet in 2015 to 18,587 acre feet in 2013. Surface water sources comprise more than 95 percent of total water production. The maximum net groundwater extraction between 2011 and 2015 was 680 acre feet.</p> <p>The City of Tracy needs to provide alternative water supplies to supplement their groundwater supply. The City also needs to monitor areas that rely on groundwater for both supply and quality. An alternative groundwater supply would reduce water shortage and potential impacts on residents and agricultural operations. The City has implemented an aquifer storage and recovery program to store surplus treated surface water in a confined aquifer beneath the City to extract water from during peak demands or to supplement surface water sources during dry years. The City recently permitted and constructed a groundwater extraction well and in 2015 the new well was recommended by the California DWR for funding as part of the Proposition 84-funded Delta, San Joaquin, and Sacramento Rivers Water Quality Grant Program to help the City implement its Recycled Water Master Plan.</p>
Related planning mechanisms	City's Municipal Code, Drought and Other Water Emergency Conditions Ordinance, Water Efficient Landscape Ordinance, Urban Water Management Plan (UWMP), City's Water Shortage Contingency Plan (part of UWMP)
Other Alternatives	<p>On-going water conservation efforts to mitigate the impacts to the water supply.</p> <p>Educate Residents on Water Saving techniques.</p>
Responsible Office/ Agency	Utilities Department
Partners	City, California DWR, and other agencies
Priority (High, Medium, Low)	Low
Cost Estimate	\$10,000 Annually
Benefits (Avoided Losses)	The City of Tracy is located near the Central Valley of California that has cycle periods of wet and drought years. The last drought in California was longer and more devastating than prior droughts, due to both increased temperatures, climate change, and higher demand on public services. The City tracks the State's drought conditions and monitors regularly excess water users. Recycled water use is another long-term solution to mitigating the impacts of drought years. City investment in



	recycled water storage and distribution system will provide a sustainable water solution to the City.
Potential Funding	City, California DWR Sustainable Groundwater Planning Grants Program, DWR Proposition 84 Delta Water Quality Program, Integrated Regional Water Management (IRWM) Grant Programs, and other agencies
Schedule	Ongoing through 2019-2023; State is still under drought conditions



E-1 *Earthquake building safety and retrofitting*

Mitigation Project Title	Earthquake building safety and retrofitting
Hazard(s) Mitigated	Earthquake
Project Description, Issue/Background	<p>The City of Tracy adopted the 2016 California Building Code. The CBC governs the design, construction, and maintenance of buildings. In California, most cities adopt model building codes maintained by the International Building Code (IBC) and every few years the International Code Council (ICC) publishes new editions of the codes. The CBC requires specific tests for masonry to ensure that structures can adequately resist seismic forces during earthquakes. The City of Tracy has already identified properties in their jurisdiction that are vulnerable to seismic risk and have removed or retrofitted most of the City-owned buildings and facilities, specifically unreinforced masonry structures. The City of Tracy wants to enhance their earthquake building code standards, as well as enforce the updated building code(s) to minimize damages to buildings and structures in the City..</p> <p>This action involves enacting a local building ordinance that requires all existing privately-owned unreinforced masonry buildings to be upgraded to meet a higher level of safety according to the 2016 California Building Code including its seismic provisions. Existing homes that are not effectively tied/secured to a foundation shall also be required to be upgraded. The City of Tracy can make it's building stock safer and more resilient to earthquake hazards through seismic retrofitting by screening vulnerable buildings and properties in the City, and the City has already initiated retrofits at several City-owned buildings.</p> <p>The City can also conduct a survey of the structural condition at other critical facilities and prioritize surveys at buildings closer to major fault or liquefaction zones. Replacement and retrofits can then occur as funding becomes available. Various resources provided by FEMA and the American Society of Civil Engineers (ASCE) provide seismic retrofitting guidelines and techniques to strengthen the structural elements of buildings, and better protect non-structural components.</p>
Related planning mechanisms	Survey, evaluate, and prioritize existing structures and prioritize worst-case buildings and properties and repair these as funding becomes available.
Other Alternatives	<p>Update City's building code to exceed current state seismic and safety standards in order to minimize earthquake damage for new buildings and structures.</p> <p>Voluntary seismic retrofitting and encouraging property owners to exceed state seismic standards.</p>
Responsible Office/ Agency	Building Department
Partners	Neighboring Counties



Priority (High, Medium, Low)	Low
Cost Estimate	\$50,000-\$1,000,000 (varies depending on whether buildings have already been assessed and need retrofits)
Benefits (Avoided Losses)	Protecting life and property during an earthquake by removing the threat of loss, injury, and damage to people and property from building hazards.
Potential Funding	City and County
Schedule	2019-2021, Or within two years



E-2 *Earthquake drill and safety education*

Mitigation Project Title	Earthquake drill and safety education
Hazard(s) Mitigated	Earthquake
Project Description, Issue/Background	The City of Tracy would conduct an earthquake drill for the local community to ensure City residents understand safety procedures. The drills could be conducted by neighborhoods.
Related planning mechanisms	None
Other Alternatives	Annual Great Shakeout Earthquake Drill Events community participation Staying Safe Where the Earth Shakes: Bay Area Edition
Responsible Office/ Agency	Building Department
Partners	Neighboring Counties
Priority (High, Medium, Low)	Low
Cost Estimate	\$50,000
Benefits (Avoided Losses)	Protection of life and property during an earthquake.
Potential Funding	City funds
Schedule	2019-2012, Or within two years

EH-1 Extreme heat outreach campaign

Mitigation Project Title	Extreme heat outreach campaign
Hazard(s) Mitigated	Severe Weather: Extreme Heat
Project Description, Issue/Background	Public outreach for extreme heat hazards: The City of Tracy would develop a Public Outreach Campaign to inform the public where to go to find relief from extreme heat using social media, traditional media, and print. The campaign would be designed to meet and engage the City's demographics, including people with disabilities and elderly and low-income. The campaign may also identify public buildings that could serve as cooling centers in during extreme heat events.
Related planning mechanisms	City of Tracy General Plan
Other Alternatives	Expand availability for "cooling zone" including space for pets.
Responsible Office/ Agency	Parks and Recreation Department
Partners	San Joaquin County Public Health Services
Priority (High, Medium, Low)	Medium
Cost Estimate	\$50,000
Benefits (Avoided Losses)	Protection of life during heat events.
Potential Funding	City funds
Schedule	2019-2021

F-1 *Flood safety and adopt a drain program*

Mitigation Project Title	Flood safety and adopt a drain program
Hazard(s) Mitigated	100/500-year Floods; Localized Flooding
Project Description, Issue/Background	Provide safety instructions during floods and promote “adopt a drain” program to educate neighborhoods about localized flooding issues and costs. The adopt the drain program is designed to encourage property owners to maintain drainage structures prior to and during rain events. The flood safety and adopt and drain program addresses 100-year and 500-year flood events, as well as localized flooding. It includes education, safety instructions, and City and public monitoring to ensure that storm drainage systems are cleared on a regular basis to prevent flooding hazards.
Related planning mechanisms	Working with City of Tracy Public Works Department staff and interested residents and property owners to develop a system for training, maintaining, and documenting catch basin systems, localized flood hazards, or other area that require special cleaning, equipment, or training to keep clear of debris.
Other Alternatives	<p>Create easy access to sandbags and educate about flood safety.</p> <p>Partner with agencies for resources.</p> <p>Educate property owners about mandatory and voluntary flood insurance.</p> <p>City staff would monitor and clean catch basins with limited volunteer support.</p>
Responsible Office/ Agency	Public Works Department
Partners	San Joaquin County
Priority (High, Medium, Low)	Medium
Cost Estimate	\$10,000
Benefits (Avoided Losses)	Educates public about flood hazards, primarily localized flooding hazards in neighborhoods. It also relieves City staff from localized flood issues to focus on more significant drainage system issues and improvements.
Potential Funding	City funds
Schedule	Ongoing; 2019-2021

F-2 *Consider joining Community Rating System (CRS) to promote affordable flood insurance*

Mitigation Project Title	Consider joining Community Rating System (CRS) to promote affordable flood insurance
Hazard(s) Mitigated	100/500-Year Floods, Localized Flooding
Project Description, Issue/Background	<p>The CRS is a national program developed by FEMA under the National Flood Insurance Program (NFIP). The City of Tracy participates in the NFIP and enforces floodplain regulations to monitor and regulate development in flood hazard zones in order to minimize flood damage to new development.</p> <p>While the NFIP is effective in requiring new buildings to be protected from damage by a one percent chance flood, flood damage still results from floods that exceed the base flood or from flooding in unmapped areas. Under the CRS, the City of Tracy can be rewarded for doing more than enforcing their floodplain regulations. Under the CRS, residents are notified of the current hazards of living in a flood area and flood insurance premiums are discounted to reflect a community's work to reduce flood damage to existing buildings, manage development in areas not mapped by the NFIP, protect new buildings beyond the minimum NFIP protection level, and help people obtain flood insurance.</p> <p>This action would look at the cost/benefit of joining the CRS, compared to the number of flood prone properties and insurance policies. Being in the CRS includes, but is not limited to public notification, community education classes, and other measures to raise awareness of flood hazards and promote flood safety. Actions would need to be documented to allow FEMA/ISO (Insurance Services Office) to determine the appropriate class rating.</p>
Related planning mechanisms	Staff dedicated to managing resources to implement a CRS program.
Other Alternatives	No action
Responsible Office/ Agency	Development Services Department
Partners	None
Priority (High, Medium, Low)	TBD
Cost Estimate	\$0 - \$10,000
Benefits (Avoided Losses)	Reduction in flood insurance rates for the general public of the City of Tracy, greater understanding of flood hazards by City residents, better property protection
Potential Funding	Staff time
Schedule	2019-2023

H-2 *Hazardous materials spill preparedness*

Mitigation Project Title	Hazardous materials spill preparedness
Hazard(s) Mitigated	Hazardous Materials
Project Description, Issue/Background	There is potential for hazardous materials spills in fixed locations throughout the City of Tracy, but primarily at industrial and commercial sites and businesses that store, handle, and transport such materials. There is also potential for hazardous material incidents to occur on highway/freeway/roads, which could in turn result in traffic hazards. This action would create an educational program to inform the public of route detours to take during a hazardous materials spill incident. The program would also involve the development of mapping applications for motorists to follow during traffic hazards.
Related planning mechanisms	Integrates City's role in hazard mitigation/prevention during inspections in coordination with County and State inspections. Partnership with California Highway Patrol for access to highway closures and clean up. Education outreach for City Hazmat team.
Other Alternatives	No action
Responsible Office/ Agency	Fire Department, Police Department
Partners	San Joaquin County Certified Unified Program Agency (CUPA), San Joaquin County Public Health Services
Priority (High, Medium, Low)	Medium
Cost Estimate	\$100,000
Benefits (Avoided Losses)	Protecting life and property. Reduce risk to the environment and water shed.
Potential Funding	City, County, state, and federal funds
Schedule	Ongoing, 2019-2023

S-1 **Storm Ready® Community**

Mitigation Project Title	Storm Ready® Community
Hazard(s) Mitigated	Severe Weather: Heavy Rains, Thunderstorms, Lightning, Hail, Dense Fog; 100-500-Year Floods, Localized Flooding
Project Description, Issue/Background	<p>The City of Tracy would educate public on strong storms that may result in flood or property damage. The City would also consider developing a program that provides timely identification of impending flood threats, disseminates warning to appropriate floodplain residents and business owners, and coordinates flood response activities.</p> <p>The StormReady® program helps communities develop the communication and safety skills needed to save lives and protect property before, during, and after hazard events. It also helps communities develop and strengthen local safety programs. Currently, San Joaquin County is a designated StormReady® Community. The City of Tracy may also consider seeking designation as a Storm Ready® Community by the National Weather Service (NWS).</p>
Related planning mechanisms	NFIP Participation Efforts
Other Alternatives	Signage/instruction of what to do in extreme weather and where to go to get resources and places to avoid.
Responsible Office/ Agency	Public Works Department
Partners	San Joaquin County, NWS
Priority (High, Medium, Low)	Low
Cost Estimate	\$50,000 - 100,000
Benefits (Avoided Losses)	Protecting life and property in all hazard areas in the City of Tracy.
Potential Funding	City, County, state, and federal funds
Schedule	Ongoing, 2020-2022

T-1 *Enhance local building code to incorporate wind-resistant design features that address wind and tornado hazards*

Mitigation Project Title	Enhance local building code to incorporate wind-resistant design features that address wind and tornado hazards
Hazard(s) Mitigated	Tornadoes, Severe Weather: Wind and Tornadoes
Project Description, Issue/Background	Enhance local building codes and ordinances to ensure that new structures and remodels or improvements to buildings and structures incorporate wind-resistant design features to withstand high winds and tornadoes. This action would prevent wind and tornado damage through revisions to the existing building code and adopting standards for residential construction in high-wind regions. Construction techniques may include requiring structural bracing, straps and clips, anchor bolts, and impact-resistant glass, reinforced garage doors, window shutters, and interlocking roof shingles. Requiring tie-downs with anchors and ground anchors for manufactured homes may also be appropriate. There are also various site and building design standards that could be considered to minimize wind and tornado damage in new residential developments.
Related planning mechanisms	City Building Code, Municipal Code
Other Alternatives	None
Responsible Office/ Agency	Building Department, Building Safety and Fire Prevention
Partners	None
Priority (High, Medium, Low)	Low
Cost Estimate	\$50,000
Benefits (Avoided Losses)	Protecting life and property in the City of Tracy.
Potential Funding	City, County, state, and federal funds
Schedule	Ongoing, 2020-2023

T-2 *Plan around forced blackouts*

Mitigation Project Title	Plan Around Forced Blackouts
Hazard(s) Mitigated	Severe Weather: Wind and Tornadoes
Project Description, Issue/Background	<p>Northern California is facing the possibility of multiple long periods of power brownouts, or intentional blackouts by Pacific Gas & Electric (PG&E) during anticipated or actual wind events. There are raising concerns about the impact of PG&E's potential forced power brownouts or blackouts on their electrical grid and on at-risk or vulnerable residents. Although San Joaquin County and the City of Tracy have the lowest threat to this occurrence, the City's utility plants may not be able to sustain services past the first 24 to 36 hours. These forced power blackouts have never been tested as power outages have always been resolved within 12 hours in the City of Tracy. The City's Utilities Department needs more generators to serve as an alternative power supply for the utility plants. Most City buildings and facilities also lack generators, which would severely limit their ability to perform most day-to-day operations. The City understands the public's concerns and needs to be prepared to continue providing the basic health and safety services to its residents, as long as the blackouts are not for an extended period of time. The City is working on a contingency plan, which involves acquiring additional back-up generators and diesel fuel supplies to ensure the provision of services should this occur.</p> <p>In the event the electric power supply grid is de-energized by PG&E, the City of Tracy will serve its residents with uninterrupted potable water supply by using existing permanent and portable power generators as long as the diesel fuel supplies are available. The existing generators can function for approximately 10 hours with a single load of diesel supply. Water pressure and the volumes will be maintained at the fire hydrants.</p> <p>The City's sewage system will continue functioning for more than 8 hours during any event involving power blackout. The City can extend sewage system operation beyond 8 hours with the use of existing generators and holding tanks for the primary treated effluent at the Wastewater Treatment Plant (WWTP). The City is exploring options to increase its capacity to operate the WWTP.</p> <p>For traffic control, the City's 10 major intersections are equipped with back-up batteries that will last between 3 to 4 hours. The City has generators to make at least three major street intersection signals functional for 8 to 10 hours with a single load of diesel fuel supply. The other traffic signals in the City will become four-way stops.</p> <p>The City is working to ensure adequate diesel supplies are available during the blackouts to keep the generators running. This includes storing diesel in storage tanks or having contracts with reliable diesel suppliers. Other efforts include providing generators at the designated</p>

	cooling centers, which are already equipped with generators and have capacity to accommodate residents at risk or in need (i.e. residential care facilities; other at-risk or vulnerable populations).
Related planning mechanisms	Power Blackout Contingency Plans
Other Alternatives	None
Responsible Office/ Agency	City Manager's Office, Utilities Department
Partners	None
Priority (High, Medium, Low)	High
Cost Estimate	\$100,000 - \$500,000
Benefits (Avoided Losses)	Ensuring day-to-day operations continue at the City of Tracy administrative offices, water supply network, WWTP, and traffic control operations at major intersections. Reduced impacts to at-risk populations from rolling blackouts.
Potential Funding	City, County, state, and federal funds
Schedule	Effective Immediately, 2019-2020

W-1 *Fire Wise Public Education Program*

Mitigation Project Title	Fire Wise Public Education Program
Hazard(s) Mitigated	Fire: Urban and Wildland
Project Description, Issue/Background	The City of Tracy will develop a public outreach program designed to address wildfire hazards. The program will involve the development of a GIS Hazard Mapping Tool related to areas threatened by wildfires and education campaign on Defensible Space, Fuels Management, and Fire Wise programs. This action will provide the public information on health risks during a wildfire occurrence, promoting the use of face masks and/or clean air shelters from smoke due to wildfires. This action will educate homeowners about forest and grassland health, fire prevention, and defensible space and involve the distribution of information on fire prevention.
Related planning mechanisms	CALFIRE 2018 Santa Clara Unit Strategic Fire Plan
Other Alternatives	Ensure adequate clearance in housing areas bordering wildland areas; using mechanical, chemical, or biological (goats) to clear away annual grasses and brush as least 100 feet from residential areas (i.e. Tracy Hills)
Responsible Office/ Agency	Fire Department
Partners	CAL FIRE, San Joaquin County
Priority (High, Medium, Low)	High
Cost Estimate	\$50,000-\$100,000
Benefits (Avoided Losses)	Protecting life and property in the wildland urban interface and high fire hazard severity zones that surround the City of Tracy and areas where future development will occur.
Potential Funding	City, County, state, and federal funds
Schedule	Ongoing, 2020-2023

W-2 *Create and modify automatic aid agreements*

Mitigation Project Title	Create and modify automatic aid agreements
Hazard(s) Mitigated	Fire: Urban and Wildland; Multi-Hazard
Project Description, Issue/Background	This action involves the creation of automatic mutual aid agreements or the modification of such agreements with CALFIRE, San Joaquin County, and other counties and cities and fire protection agencies in the region. The action would ensure that necessary wildfire resources are available to the City and that automatic aid agreements are maintained, and modified to provide adequate resources for large-scale fires/disasters. This action would also provide necessary training with Auto/Mutual Aid companies, and ensure adequate staffing of fire department in both the City and rural areas around the City of Tracy.
Related planning mechanisms	CALFIRE 2018 Santa Clara Unit Strategic Fire Plan, 2008 Comprehensive Emergency Management Plan
Other Alternatives	Review and amend the zoning ordinance to include language that designates high risk areas for natural hazards in the City related to wildfires.
Responsible Office/ Agency	Fire Department
Partners	CAL FIRE, San Joaquin County, Other Cities
Priority (High, Medium, Low)	High
Cost Estimate	\$50,000-\$150,000
Benefits (Avoided Losses)	Protecting life and property in the wildland urban interface and high fire hazard severity zones that surround the City of Tracy.
Potential Funding	City, County, state, and federal funds
Schedule	Ongoing, 2020-2023

W-3 *Enhance local building code to address wildfire resilience*

Mitigation Project Title	Enhance local building code to address wildfire resilience
Hazard(s) Mitigated	Fire: Urban and Wildland
Project Description, Issue/Background	Enhance local building codes and ordinances to ensure that new structures and remodels or improvements help ensure buildings can adequately withstand wildfire damage. This may involve requiring fire-resistant construction techniques, the use of non-combustible materials (i.e., stone, brick, stucco) for new construction in wildfire hazard areas. It may also involve the use of fire-resistant roofing and other building materials in remodels, upgrades, and new construction.
Related planning mechanisms	City Building Code, Municipal Code
Other Alternatives	Maintain GIS Maps related to wildfire risk areas
Responsible Office/ Agency	Building Department, Building Safety and Fire Prevention
Partners	None
Priority (High, Medium, Low)	Low
Cost Estimate	\$50,000
Benefits (Avoided Losses)	Protecting life and property in the wildland urban interface and high fire hazard severity zones that surround the City of Tracy.
Potential Funding	City, County, state, and federal funds
Schedule	Ongoing, 2020-2023

MH-1 *Family education planning for emergency preparedness*

Mitigation Project Title	Family education planning for emergency preparedness
Hazard(s) Mitigated	Multi-Hazard, Dam Failure, Levee Failure 100/500-Year Floods, Fire: Urban and Wildland
Project Description, Issue/Background	The City of Tracy would develop Family Education Plans for emergency and disaster preparedness. These planning tools would cover all hazards in the City and would increase public awareness regarding disaster preparedness and emergency procedures for various neighborhoods in the City that are near wildfire hazard severity zones or special flood hazard zones. Family education planning would establish communication channels with the public to receive information in the event of an emergency that requires the public to get timely updates to information. The plan may also involve conducting outreach, establishing neighborhood evacuation routes, identifying disaster shelter locations, developing plans and procedures, and holding neighborhood evacuation drills.
Related planning mechanisms	The City Manager Office would oversee the process. The family education plans can also be updated, if evacuation plans change, or if there are updates to the City's 2008 Comprehensive Emergency Management Plan.
Other Alternatives	Increase hazard education and risk awareness by creating speakers bureau for disaster-related topics; enhance private sector awareness (lenders, insurance, agents, realtors); improve household disaster preparedness and conduct outreach during National Preparedness Month (September), Storm Ready® Program, and by providing Home Hazard Checklists
Responsible Office/ Agency	City Manager Office
Partners	San Joaquin County, American Red Cross
Priority (High, Medium, Low)	High
Cost Estimate	\$50,000 - \$100,000
Benefits (Avoided Losses)	Protecting life and property in flood zones, dam inundation zones, and other natural hazard areas in the City. Safe evacuation of people impacted by natural hazard event emergencies and subsequent shelters is essential to minimize the loss of life and prevent injury. Family education planning by households can protect lives and minimize economic losses to the City.
Potential Funding	City, County, state, and federal funds
Schedule	Ongoing, 2019-2023

MH-2 Hazard Awareness GIS Mapping Application

Mitigation Project Title	Hazard Awareness GIS Mapping Application
Hazard(s) Mitigated	Multi-Hazard, Dam Failure, Levee Failure, Earthquake, 100/500-Year Floods, Fire: Urban and Wildland, Hazardous Materials
Project Description, Issue/Background	The City of Tracy would develop a Hazard Awareness GIS Viewer and Mapping Application interface within the existing GIS Viewer available on the City's Webpage. This mapping tool would allow the public to easily view and understand natural hazards in their neighborhood. This education awareness program addresses all hazards and creates specific hazard maps as visual references to be used by residents and for other outreach efforts outlined in this plan. The GIS Viewer and Mapping Application would also be updated and enhanced to ensure it incorporates the latest federal, state, and regional datasets.
Related planning mechanisms	Existing GIS Mapping Platform
Other Alternatives	Implementation of an education and awareness program for all natural and human-caused hazards, with a focus on detailed map production. Opportunity to display maps in repositories (e.g. libraries) and City offices
Responsible Office/ Agency	Information Technology/GIS Department
Partners	San Joaquin County
Priority (High, Medium, Low)	Low
Cost Estimate	\$250,000
Benefits (Avoided Losses)	Protecting life and property in all hazard areas in the City of Tracy.
Potential Funding	City, County, state, and federal funds
Schedule	Within two years, 2020-2022

MH-3 Update Comprehensive Emergency Management Plan

Mitigation Project Title	Update Comprehensive Emergency Management Plan
Hazard(s) Mitigated	Multi-Hazard, Dam Failure, Levee Failure, Earthquake, 100/500-Year Floods, Fire: Urban and Wildland, Hazardous Materials
Project Description, Issue/Background	<p>The City's Comprehensive Emergency Management Plan was drafted in 2008. It includes a basic plan that addresses the City of Tracy's responsibilities in emergencies associated with natural disaster, human-caused emergencies, and technological incidents. It provides a framework for coordination of response and recovery efforts within the City and in coordination with local, state, and federal agencies. The plan establishes emergency organization staff to direct and control operations during a period of emergency by assigning responsibilities to specific personnel. The plan defines the primary and support roles for City agencies and departments in after-incident assessment and reporting. It addresses earthquakes, hazardous materials emergencies, flooding, and wildfires and includes procedures for emergencies that may or may not require the full or partial activation of an EOC.</p> <p>This action ensures the Comprehensive Emergency Management Plan is updated and cross references the LHMP. The LHMP can be used as the basis for the hazards analysis and considerations for emergency planning.</p>
Related planning mechanisms	Amend the City's General Plan Safety Element to adopt the updated Comprehensive Emergency Management Plan.
Other Alternatives	<p>Identify ways to assist at-risk and/or most-vulnerable groups during hazards.</p> <p>Establish protocol for providing public resources and outreach using community partners.</p>
Responsible Office/ Agency	Fire Department, Police Department
Partners	San Joaquin County
Priority (High, Medium, Low)	High
Cost Estimate	\$75,000 - \$1000,000
Benefits (Avoided Losses)	Protecting life and property in all hazard areas in the City of Tracy.
Potential Funding	City, County, state, and federal funds
Schedule	Ongoing, 2020-2023

MH-4 Establish routine inspection and maintenance of City infrastructure

Mitigation Project Title	Establish routine inspection and maintenance of City infrastructure
Hazard(s) Mitigated	Multi-Hazard, Dam Failure, Levee Failure, Earthquake, 100/500-Year Floods, Fire: Urban and Wildland
Project Description, Issue/Background	This action protects City infrastructure from unexpected dangers associated with natural hazards that could result in failures to provide adequate services to the public.
Related planning mechanisms	Citywide Public Facilities Master Plan, Citywide Public Safety Master Plan, Tracy Wastewater Master Plan, Citywide Roadway and Transportation Master Plan, Storm Drainage Master Plan
Other Alternatives	Establish routine inspection and maintenance of City infrastructure.
Responsible Office/ Agency	Public Works Department
Partners	San Joaquin County
Priority (High, Medium, Low)	High
Cost Estimate	\$250,000
Benefits (Avoided Losses)	Protecting life and property in all hazard areas in the City of Tracy, specifically those associated with public infrastructure.
Potential Funding	City, County, state, and federal funds
Schedule	Within two years, 2020-2022



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6 Plan Adoption

44 U.S. CFR Requirement §201.6 Local Mitigation Plans (c)(5): The local hazard mitigation plan shall include] documentation that the plan has been formally approved by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, county commissioner, Tribal Council).

The purpose of formally adopting this plan is to confirm support from the City of Tracy, raise awareness of the plan, and formalize the plan's implementation. The adoption of this plan completes Planning Step 9 of the 10-step planning process: Adopt the Plan, in accordance with the requirements of DMA 2000. This adoption also establishes compliance with Assembly Bill 2140 requiring adoption by reference or incorporation into the safety element of the general plan. The Tracy City Council has adopted this local hazard mitigation plan by passing a resolution. A copy of the generic resolution and the executed copies are included in Appendix D: Adoption Resolution.



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7 Plan Implementation and Maintenance

44 U.S. CFR Requirement §201.6 Local Mitigation Plans (c)(4): The plan maintenance process shall include a section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

Implementation and maintenance of the plan is critical to the overall success of hazard mitigation planning. This is Planning Step 10 of the 10-step planning process. This chapter provides an overview of the overall strategy for plan implementation and maintenance, and outlines the method and schedule for monitoring, updating, and evaluating the plan. The chapter also discusses incorporating the plan into existing planning mechanisms and how to address continued public involvement.

7.1 Implementation

Once adopted, the plan faces the test of its worth: implementation. While this plan contains many worthwhile actions, the City of Tracy will need to decide which action(s) to undertake first. Two factors will help with making that decision: the priority assigned to each action and funding availability. Low or no-cost actions more readily demonstrate progress toward successful plan implementation. Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development.

Implementation will be accomplished by adhering to the schedules identified for each action (see Chapter 5 Mitigation Actions) and through constant and energetic efforts to update and highlight the multi-objective, win-win benefits of each project to the City of Tracy community and its stakeholders. These efforts include the routine actions of monitoring agendas, attending meetings, and promoting a safe, sustainable community. The three main components of implementation are:

- **Implement** the action plan recommendations of this plan;
- **Utilize** and enforce existing rules, regulations, policies and procedures;
- **Communicate** the hazard information collected and analyzed through this planning process so that the community better understands what and where hazards can occur, and what they can do themselves to be better prepared; and
- **Publicize** the “success stories” that are achieved through the HMPC’s ongoing efforts.

Additional mitigation strategies could include vigilant review of programs for coordination of multi-objective opportunities.

For example, an important implementation mechanism that is highly effective and low-cost is incorporation of the hazard mitigation plan recommendations and their underlying principles into other plans, such as the City of Tracy General Plan. The City of Tracy already implements policies and programs to reduce losses to life and property from hazards. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms.

Simultaneously to these efforts, it is important to maintain a constant monitoring of funding opportunities that can be leveraged to implement some of the more expensive recommended actions. This will include creating and maintaining a bank of ideas on how to meet local match or participation requirements. When funding does become available, the City of Tracy will be in a position to capitalize on the opportunity. Funding opportunities to be monitored include special pre- and post-disaster funds, special district budgeted funds, state and federal earmarked funds, and other grant programs, including those that can serve or support multi-objective applications.

7.1.1 Role of Hazard Mitigation Planning Committee in Implementation and Maintenance

With adoption of this plan, the City of Tracy will be tasked with plan implementation and maintenance. The City of Tracy agrees to:

- Provide a forum for hazard mitigation issues;
- Disseminate hazard mitigation ideas and activities to all participants;
- Pursue the implementation of high-priority, low/no-cost recommended actions;
- Keep the concept of mitigation in the forefront of community decision making by identifying plan recommendations when other community goals, plans, and activities overlap, influence, or directly affect increased community vulnerability to disasters;
- Maintain a vigilant monitoring of multi-objective cost-share opportunities to help the community implement the plan's recommended actions for which no current funding exists;
- Monitor and assist in implementation and update of this plan;
- Report on plan progress and recommended changes to Tracy City Council; and
- Inform and solicit input from the public.

The primary duty of the City of Tracy is to see the plan successfully carried out and to report to the City Council and the public on the status of plan implementation and mitigation opportunities. Other duties include reviewing and promoting mitigation proposals, considering stakeholder concerns about hazard mitigation, passing concerns on to appropriate entities, and posting relevant information on the City of Tracy LHMP webpage (and others as appropriate). These activities can be achieved on an annual basis through reconvening the HMPC either annually or bi-annually.

7.2 Maintenance

Plan maintenance is defined as the ongoing effort to monitor and evaluate plan implementation, and to update the plan as progress, roadblocks, or changing circumstances are recognized.

7.2.1 Maintenance Schedule

The City of Tracy City Manager will designate a City staff representative who will coordinate, with the City's Risk Assessment Division and plan reviews in consultation with the appropriate City staff and other participating jurisdictions. In order to monitor progress and update the mitigation strategies identified in the action plan, the City of Tracy will revisit this plan annually and within 45 days after a hazard event. The annual review will be conducted by re-convening the HMPC in September (or as otherwise deemed reasonable and appropriate) of each year.

This plan will be updated, approved and adopted within a five-year cycle as per Requirement §201.6(c)(4)(i) of the Disaster Mitigation Act of 2000 unless disaster or other circumstances (e.g., changing regulations) require a change to this schedule. With the initial approval of this plan occurring in mid-2019, the plan will need to be updated and reviewed by Cal OES and approved by FEMA Region IX, and re-adopted by the City of Tracy by no later than June of 2024 (or within 5 years of the initial approval, whichever date occurs first). The City will monitor planning grant opportunities from Cal OES and FEMA for funds to assist with the update. These grants should be pursued by the City Manager (or an appropriate designee) within three years of the approval date of this plan, as some grants have a three-year performance period to expend the funds. There is no guarantee that a grant will be awarded when initially submitted therefore, resubmission of the grant in the following year may be necessary.

7.2.2 Maintenance Evaluation Process

The planning team will continually monitor the incorporation process, evaluation and update methodology, continued public participation, and completion of the actions/projects to assure that the plan is being implemented. By monitoring these processes, the planning team will then be able to regularly evaluate the effectiveness of the plan and facilitate necessary changes as needed.

Evaluation of progress can be achieved by monitoring changes in vulnerabilities identified in the plan. Changes in vulnerability may include:

- Decreased vulnerability as a result of implementing recommended actions,
- Increased vulnerability as a result of failed or ineffective mitigation actions, and/or
- Increased vulnerability as a result of new development (and/or annexation).

The HMPC will use the following process to evaluate progress of any changes in vulnerability as a result of plan implementation.

- A representative from the responsible entity identified in each mitigation action will be responsible for tracking project status and reporting to the HMPC on an annual basis to provide feedback on whether the mitigation action as implemented meets the defined objectives and is likely to be successful in reducing vulnerabilities.
 - If the project does not meet identified objectives, or if the mitigation action is new, the HMPC will determine what alternate mitigation actions (or projects) may be implemented, and an assigned individual will be responsible for facilitating and overseeing the scope of action definition, making any required modification recommendations of the plan to the HMPC, implementing the action, monitoring the results of the action, and reporting the findings to the HMPC.
- Projects that were not ranked high priority but were identified as potential mitigation strategies will be reviewed for feasibility and continued appropriateness during the annual monitoring period and the 5-year updating of this plan.
- Changes will be made to the plan to accommodate for mitigation action projects that have failed or are not considered feasible after a review for their consistency with established criteria, the time frame, priorities, and/or funding resources.

Updating of the plan will be by written changes and submissions, as the City of Tracy deems appropriate and necessary, and as approved by the Tracy City Council. Updates to this plan will:

- Consider changes in vulnerability due to action implementation;
- Document success stories where mitigation efforts have proven effective;
- Document areas where mitigation actions were not effective;
- Document any new hazards that may arise or were previously overlooked;
- Document hazard events and impacts that occurred within the five-year period;
- Incorporate new data or studies on hazards and risks;
- Incorporate new capabilities or changes in capabilities;
- Incorporate documentation of continued public involvement;
- Incorporate documentation to update the planning process that may include new or additional stakeholder involvement;
- Incorporate growth and development-related changes to building inventories;
- Incorporate new project recommendations or changes in project prioritization;
- Include a public involvement process to receive public comment on the updated plan prior to submitting the updated plan to Cal OES/FEMA; and
- Include re-adoption by all participating entities following Cal OES/FEMA approval.

7.2.3 Incorporation into Existing Planning Mechanisms

Another important implementation mechanism that is highly effective and low-cost is incorporation of the hazard mitigation plan recommendations and their underlying principles into other City plans and mechanisms. Where possible, plan participants will use existing plans and/or programs to implement hazard mitigation actions. As previously stated in Section 7.1 of this plan, mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. This point is re-emphasized here. As described in this plan's capability assessment, the City of Tracy already implements policies and programs to reduce losses to life and property from hazards. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms.

These existing mechanisms include (but are not limited to) the following:

- City General Plan (Safety Element)
- Infrastructure Master Plans
- City Emergency Operations Plans and the City's Comprehensive Emergency Management Plan
- City Ordinances
- National Flood Insurance Program participation
- Flood/storm water Management/Master Plans
- Urban Water Management Plan
- Drought Management and Response Plans
- Capital Improvement Plans and Budgets
- Other plans and policies outlined in the capability assessment
- Other plans, regulations, and practices with a mitigation focus

HMPC members (or their Department heads, where a member is not a Department head) involved in the updates to the planning mechanisms will be responsible for integrating the findings and recommendations of this plan with these other plans, programs, as appropriate. As an action step to ensure integration with other planning mechanisms, the City of Tracy Finance Director (or Lead Hazard Mitigation Manager as determined by the City Manager) will discuss this topic at the annual meeting (refer to Section 7.2.1, Maintenance Schedule) with the HMPC. The HMPC will discuss if there are opportunities to incorporate the plan into other planning mechanisms and who will be responsible for leveraging those opportunities. HMPC members representing local jurisdictions will work with their jurisdictional planning teams to integrate their identified mitigation actions into their own local plans and programs. Efforts to integrate the hazard mitigation plan into local plans, programs, and policies will be reported during the annual HMPC plan review meeting. Successful integration efforts will be recorded during the meeting.

Examples of a process for incorporation of the LHMP into existing planning mechanisms include:

- City adoption (by reference or incorporation) of this LHMP into the Safety Element of the City General Plan per the State of California AB 2140.
- Integration of wildfire actions identified in this mitigation strategy with the actions and implementation priorities established in the current Cal Fire Santa Clara Unit Strategic Fire Plan. This can occur as the current 2018 Santa Clara Unit Strategic Fire Plan was recently updated and implemented. Key people responsible for development of 2018 Santa Clara Unit Strategic Fire Plan participated as a member of the HMPC. This HMPC participant or future participants from Cal FIRE can identify key projects in the state's plan and integrated them into the Mitigation Strategy of this LHMP. Likewise, actual implementation of these wildfire projects will likely occur through the Cal Fire units implementation process through the efforts of these same individuals.
- Using the risk assessment information in this plan to update the hazard analysis in the current Comprehensive Emergency Management Plan.

Efforts should continuously be made to monitor the progress of mitigation actions implemented through these other planning mechanisms and, where appropriate, their priority actions should be incorporated into updates of this hazard mitigation plan.

7.2.4 Continued Public Involvement

Continued public involvement is imperative to the overall success of the plan's implementation and objective(s). Efforts will be made to involve the public in the plan maintenance, evaluation, and review process. This includes maintaining a digital version of the plan on the City of Tracy LHMP webpage for public review. In addition, information on whom to contact within the City will be posted with the plan. The Lead Hazard Mitigation Manager at the City of Tracy will maintain a file of comments received for reference during the next five-year update. Any revisions to the plan that may occur as a result of a disaster will also be made public and posted on the City's LHMP webpage.

The five-year update process provides an opportunity to solicit participation from new and existing stakeholders, to publicize success stories from the plan implementation, and seek additional public comment. A public hearing(s) or survey to receive public comment on the plan will be held during plan

update periods. When the HMPC reconvenes for the update that occurs every 5 years, the planning process will involve coordination with all stakeholders participating in the planning process, including those who joined the HMPC after the initial effort, to update and revise the plan. Public participation will be encouraged and invited through, at a minimum available website postings and press releases to the local media outlets, in addition to email and social media announcements.

Continued public outreach and education is an aspect of the mitigation strategy in Chapter 5 of this plan, emphasizing a multi-hazard public education and awareness program to be conducted on an annual basis.

Activities related to public involvement during the 2018-2019 update are documented in Chapter 3 and Appendix A and C.



Appendix A: PLANNING PROCESS

Appendix A: Planning Process contains the following documents in this order:

- 2018-2019 Hazard Mitigation Plan Committee (HMPC) Invitee and Participant List
- 2018-2019 Press Releases (English and Spanish versions)
- Social Media Posts on Facebook and Nextdoor
- Newspaper Advertisement on Notification of Public Workshop
- Transit Stop Poster on Public Workshop
- City of Tracy Local Hazard Mitigation Plan Website
- HMPC Meeting #1 – September 25, 2018
- Local Hazard Mitigation Plan Data Collection Guide
- Stakeholder Workshop – November 15, 2018
- HMPC Meeting #2 – December 20, 2019
- City of Tracy Hazard Identification Summary
- HMPC Meeting #3 – February 12, 2019
- Public Workshop – February 12, 2019
- City of Tracy Online Public Survey and Results

The process and handouts provided in HMPC Meeting #3 (Mitigation Strategy) are compiled in Appendix C: Mitigation Strategy.





Appendix A: PLANNING PROCESS

Table A.1. Hazard Mitigation Planning Committee Invitee and Participant List

Name	Agency/Department	Title	Phone	Email
City of Tracy				
Leticia Ramirez	City Attorney's Office	Assistant City Attorney	(209) 831-6132	leticia.ramirez@cityoftracy.org
Ripon Bhatia	Utilities Department	Senior Civil Engineer	(209) 831-6338	ripn.bhatia@cityoftracy.org
Kevin Jorgensen	Development Services	Building Official/Floodplain Manager	(209) 831-6415	kevin.jorgensen@cityoftracy.org
Dan Summa	City Manager Office	Media Services Supervisor	(209) 831-6102	pio@cityoftracy.org
Grace Strmiska	City Manager Office	Project Specialist	(209) 831-6127	Pio@cityoftracy.org
Maricela Saldivar	Public Works Department	GIS Specialist	(209) 640-8383	Maricela.saldivar@cityoftracy.org
David Bramell	South County Fire	Fire Division Chief	(209) 831-6705	David.bramell@cityoftracy.org
Tony Sheneman	Police Department	Lieutenant	(209) 831-6522	Tony.sheneman@tracypd.com
Karin Schnaider	Finance Department	Finance Director/LHMP Coordinator	(209) 831-6841	Karin.schnaider@cityoftracy.org
Anne Bell	Finance Department	Management Analyst	(209) 831-6859	Anne.bell@cityoftracy.org
Carissa Higginbotham	City Manager Office	Public Information Officer	(209) 831-6125	Carissa.higginbotham@cityoftracy.org
Jayne Pramod	Park Department	Transit Coordinator	(209) 831-6214	Jayne.parmod@cityoftracy.org
Jeff Davis	Information Technology	GIS Technician	(209) 831-6811	Jeff.davis@cityoftracy.org
Kim Dunniway	Human Resources Department	HR Analyst II	(209) 831-6169	Kim.dunniway@cityoftracy.org
Kimberly Murdaugh	Human Resources Department	HR Director	(209) 831-6161	Kimberly.murdaugh@cityoftracy.org
Pat Vargas	South County Fire	Fire Division Chief	(209) 831-6724	Pat.vargas@cityoftracy.org
Stephanie Reyna-Hiestand	Utilities Department	Water Resources Coordinator	(209) 831-6333	Stephanie.hiestand@cityoftracy.org
Thomas Watson	City Attorney Office	City Attorney	(209) 831-6134	Thomas.watson@cityoftracy.org
Stakeholders				
Shellie Lima	San Joaquin County	Office of Emergency Services	(209) 953-6200	slima@sigov.org
Christopher R. Miller	San Joaquin County	Office of Emergency Services	(209) 953-6200	crmiller@sjgov.org





Appendix A: PLANNING PROCESS

Jeremy Edwards	California Conservation Corps	Conservationist Supervisor	(209) 235-1700	Jeremy.edwards@ccc.ca.gov
David Wharry	California Highway Patrol	Lieutenant	(209) 835-8920	dwharry@chp.ca.gov
Sarah Obevdas	Sutter Tracy Hospital	Hospital Representative	(209) 833-2488	obevdas@sutterhealth.org
Jeff Millar	Pacific Gas & Electric	Public Safety Specialist	(209) 830-4231	Jn19@pge.com
Jose Aleman	San Joaquin County Sherriff's Office	Sargent Deputy	(209) 482-3339	Jalema@sjgov.org
Mike Marcucci	CALFIRE	Deputy Chief	(408) 472-1603	Mike.marcucci@fire.ca.gov
Michael Langley	Tracy Press	Staff Editor	(209) 830-4231	mlangley@tracypress.com
Casey Goodall	Tracy Unified School District	Superintendent	(209) 830-3230	cgoodall@tusd.net





Appendix A: PLANNING PROCESS





Appendix A: PLANNING PROCESS

Figure A.1. English Press Release Posted about Public Workshop



Think Inside the Triangle™ 



Appendix A: PLANNING PROCESS

Figure A.2. Spanish Press Releases Posted about Public Workshop





Appendix A: PLANNING PROCESS

Figure A.3. City of Tracy Facebook Social Media Announcement

City of Tracy - Local Government
@cityoftracy.municipality

Home
Reviews
Photos
Videos
Posts
Events
About
Community
Info and Ads
Create a Page

Like Follow Share ...

January 28 at 5:10 PM · 🌐

Your voice matters!
Please take 5-10 minutes to complete this survey regarding our developing Hazard Mitigation Plan; we care about your thoughts and concerns on how to best mitigate, or reduce, the impacts of hazards before they occur. Please complete by February 20th, 2019:
English: <https://www.surveymonkey.com/r/TracyHMP>
Español : https://es.surveymonkey.com/r/Plan_Tracy ... See More

CITY OF TRACY

HAZARD MITIGATION PLANNING PUBLIC MEETING

Tuesday, February 12, 2019
7 p.m. – 9 p.m.
City Council Chambers
333 Civic Center Plaza
Tracy, CA 95376

QUESTIONS?
Please contact Karin Schnaider at:
karin.schnaider@cityoftracy.org
(209) 831-6841
www.cityoftracy.org

The purpose of the Community Engagement Strategy is to provide for a meaningful process through which the City of Tracy and its citizens, public officials, and stakeholder groups may effectively participate in the preparation of the City of Tracy Hazard Mitigation Plan (HMP).

Call Now **Send Message**

2.6 **2.6 out of 5** · Based on the opinion of 8 people

Community See All
Invite your friends to like this Page
6,426 people like this
2,568 check-ins

About See All
(209) 831-6000
Typically replies within a day
Send Message
www.cityoftracy.org
Government Organization · Business Service · Sports & Recreation
Impressum
Suggest Edits

Pages Liked by This Page >

West Valley Mall (Trac... Like
Dibs Like
Eberhardt School of B... Like


English (US) · Español · Português (Brasil) · Français (France) · Deutsch +

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Appendix A: PLANNING PROCESS

Figure A.4. City of Tracy Nextdoor Social Media Announcement


 **Nextdoor**


Sign in

City of Tracy is on Nextdoor, the private social network for neighborhoods.

Sign up for Nextdoor

California / Tracy / Tracy Public Agencies / City of Tracy






City of Tracy

City of Tracy is using Nextdoor to promote stronger and safer neighborhoods. This page is not monitored 24/7. For emergencies call 9-1-1.

cityoftracy.org

More info...

Activity




Local Hazard Mitigation Plan Public Meeting 2/12/19

Intern Cheyenne Bearfoot from City of Tracy - 5 Feb

The City of Tracy will be holding a Local Hazard Mitigation Plan Public Workshop on Tuesday, February 12th, 2019 from 7:00pm-9:00pm at City Hall in the Council Chambers (333 Civic Center Plaza).

Please click the link to read the full press release and complete the survey; both are also available in Spanish.

<https://bit.ly/2TyilEj5>





Appendix A: PLANNING PROCESS

Figure A.5. Newspaper Notice

2 | DATEBOOK.

Tracy Press

FRIDAY, FEB. 8, 2019

datebook

MOUNTAIN HOUSE

SUNDAY, FEB. 10

Farmers market
WHEN: 9 a.m.-1 p.m.
WHERE: Wicklund Park, 551 Historic St.
INFO: 831-2300

FRIDAY, FEB. 15

Seniors' Night Out
WHEN: 6-10 p.m.
WHERE: Bankhead Theater, 2400 First St., in Livermore
DETAILS: The Mountain House Seniors are planning a night out at The Second City's comic show "It's Not You, It's Me." Some will also gather for dinner before the show.
COST: \$45
INFO: momac_59@att.net

SATURDAY, FEB. 16

Valley Link workshop
WHEN: 10:30 a.m.-noon
WHERE: Mountain House Community Services District, 230 S. Sterling Drive
DETAILS: The Tri-Valley-San Joaquin Valley Regional Rail Authority will provide information and take feedback at a community planning workshop for the proposed Valley Link light rail station for Mountain House.
COST: Free
INFO: 831-2300

Boosters crab feed
WHEN: 7-10:30 p.m.
WHERE: Tracy Elks Lodge, 6400 W. 11th St.
DETAILS: The fourth annual MHHS Athletic Booster Club Crab Feed will raise money for all sports at Mountain House High School. The meal includes fresh crab, salad, pasta, bread and dessert (alternative available). Doors open at 6 p.m., and a raffle and an auction are planned.
COST: \$55
INFO: Victoria Vaughn, 346-3570; Lani Oplana, 221-1558; http://mhhsboosters.wixsite.com/website

MONDAY, MARCH 4

'Plastic Paradise'
WHEN: 6-8 p.m.
WHERE: Mountain House Branch Library, 250 E. Main St.
DETAILS: The Delta Chapter of the Sierra Club will show the movie "Plastic Paradise: The Great Pacific Garbage Patch" (2013), a documentary by Angela Sun.
COST: Free
INFO: Patricia Brandes, 836-1778, dalepat83@comcast.net

TODAY, FEB. 8

Makerspace
WHEN: 3-5 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Kids and teens ages 10-18 can create science, tech, engineering, art and math projects using the library's 3D printer, circuit kits, art supplies and other fun technology.
COST: Free
INFO: www.ssjcpl.org

English Conversation Club
WHEN: 4-5 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Adults can practice conversational English in a relaxed setting.
COST: Free
INFO: www.ssjcpl.org

Zepparella
WHEN: 8 p.m.
WHERE: Grand Theatre Center for the Arts, 715 Central Ave.
DETAILS: Zepparella, an all-female tribute to Led Zeppelin, approaches the band's catalog with a blend of reverence and innovation.
COST: \$20
INFO: Box office, 831-6858, www.atthegrand.org

SATURDAY, FEB. 9

Community blood drive
WHEN: 10:30 a.m.-2:30 p.m.
WHERE: American Legion Hall, 1960 N. Tracy Blvd.
DETAILS: People can drop in or make an appointment to give blood on most Saturdays.
COST: Free
INFO: www.redcrossblood.org, 800-733-2767

Farmers market
WHEN: 9 a.m.-2 p.m.
WHERE: Northwest corner of Sixth Street and Central Avenue
INFO: www.tracycitycenter.com

Widowed Persons Social Group
WHEN: 11:30 a.m.
WHERE: Four Corners Restaurant, 7509 W. Linne Road
DETAILS: Anyone who has been widowed is invited to attend this local group's monthly meetings.
COST: \$13 for lunch
INFO: Frank Campbell, 484-7210; Ingrid Rancatore, 914-9900

Intro to needlepoint
WHEN: 1-3 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Teens and adults of all ages can learn the basics of needlepoint. Materials will be supplied, but space is limited. Priority will be given to those who call or sign up at the front desk.
COST: Free
INFO: 866-805-7323

SUNDAY, FEB. 10

Magic: The Gathering
WHEN: Noon-3 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: New and experienced players age 12 and older are invited to play "Magic: The Gathering," a trading card game where wizards duel with magic, creatures and more.
COST: Free
INFO: www.ssjcpl.org

Moose bingo
WHEN: 2-5 p.m.
WHERE: Tracy Moose Lodge, 35 E. Sixth St.
DETAILS: Adults, 18 and older, are encouraged to arrive early for the best seats. A total of 14 games will be played, including four games with higher payouts.
COST: \$10 for a 10-pack, plus \$1 each for special games
INFO: Moose Lodge, 835-4366

MONDAY, FEB. 11

Free produce market
WHEN: 10-11 a.m.
WHERE: Guadalupe Center, 126 W. First St.
DETAILS: Anyone can take a reusable bag and pick up free produce at a mobile farmers market coordinated by the South Side Community Organization.
COST: Free
INFO: www.facebook.com/SouthSideCommunityOrg

Kiwanis Club of Tracy
WHEN: Noon
WHERE: IHOP, 3120 Naglee Road
DETAILS: Kiwanis is a service club that meets weekly and serves the needs of the local community.
COST: Price of meal
INFO: Tony and Dianne Montalbo, montalboja@aol.com, 830-8806

Griefshare
WHEN: 6:30-8:30 p.m.
WHERE: Call for location
DETAILS: This 13-week class is designed to help people who have lost a loved one. Call St. Paul's Lutheran Church, 835-7438, to learn more.
COST: Free

TUESDAY, FEB. 12

Golden Ages
WHEN: 9:30-11:30 a.m.
WHERE: Tracy Transit Station, 50 E. Sixth St.
DETAILS: Men and women 55 and older are invited to monthly meetings to plan trips, tours, bowling, luncheons and fundraising. Annual dues are \$36 and meetings are free.
INFO: Mary McGill, 769-1338

Story time
WHEN: 10:30 a.m. for babies (0-2 years) and 11:15 a.m. for preschoolers (ages 3-5)
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Parents and caregivers can take little ones for a half-hour of stories, rhymes, songs and fun. Older siblings are welcome.
COST: Free

Lunch & A Movie
WHEN: 11 a.m.-2 p.m.
WHERE: Grand Theatre Center for the Arts, 715 Central Ave.
DETAILS: Men and women age 50 and older can have lunch in the lobby of the Grand Theatre and watch a Valentine's Day movie on the big screen.
COST: \$5 for lunch, movie and popcorn
INFO: Amanda Jensen, 831-6240, amanda.jensen@cityoftracy.org

Teen Valentine's craft
WHEN: 4-5 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Teens in eighth through 12th grades can learn to make a handmade, multilayered "exploding box" as a Valentine's Day gift. Materials will be supplied, and teens can take pictures to include in their boxes.
COST: Free
INFO: www.ssjcpl.org

NAMI Family Support Group
WHEN: 6-7:30 p.m.
WHERE: Tracy Family Resource Center, 35 E. 10th St., Ste. B
DETAILS: Anyone who has a family member living with mental health challenges can attend the monthly meetings organized by the local chapter of the National Alliance on Mental Illness.
COST: Free
INFO: NAMI San Joaquin, 468-3755, www.namisanjoaquin.org

Tracy Clutch Burners
WHEN: 7 p.m.
WHERE: Perko's Café, 1321 W. 11th St.
DETAILS: The Tracy Clutch Burners car club welcomes owners of pre-1972 cars and anyone else who is interested.
COST: Free
INFO: Mike Conners, 836-0592

Hazard planning meeting
WHEN: 7-9 p.m.
WHERE: City Council chambers, City Hall, 333 Civic Center Plaza
DETAILS: Tracy residents are invited to learn about the hazard mitigation plan the city is developing, which is designed to lessen the impact of future natural disasters.
COST: Free
INFO: Karin Schneider, 831-6841, karin.schneider@cityoftracy.org

WEDNESDAY, FEB. 13

Crafter's Corner
WHEN: 3-6 p.m.
WHERE: Wadsworth Room, Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: People are invited to take their projects and meet other crafters each week.
COST: Free
INFO: whitewolfprod57@gmail.com, 346-9026

Homework help
WHEN: 3:30-5 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Volunteers and online tutors provide drop-in homework help for elementary, middle and

high school students. Computers with Microsoft Office and internet are available for use. Teens and adults who want to volunteer can ask for an application at the checkout desk.
COST: Free
INFO: www.ssjcpl.org

Railtown Off-Road 4x4 Club
WHEN: 6-8 p.m.
WHERE: Perko's Café, 1321 W. 11th St.
DETAILS: Railtown Off-Road welcomes off-road enthusiasts of all ages. Newcomers are welcome to join club members for dinner at 6 and the monthly meeting at 7.
COST: Price of meal
INFO: www.railtownoffroad.org

THURSDAY, FEB. 14

Kids' Valentine craft
WHEN: 4-5 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Kids can make a stained "glass" heart as a gift.
COST: Free
INFO: www.ssjcpl.org

Open mic night
WHEN: 5:30-8 p.m.
WHERE: Tracy Branch Library, Wadsworth Room, 20 E. Eaton Ave.
DETAILS: Monthly open mic nights at the library are open to all ages. Drop-ins are welcome. Featured performers are Gabriel De Los Santos, guitarist and songwriter; Frank Spikes, drummer; and Pablo Pineda.
COST: Free

SATURDAY, FEB. 16

Magic: The Gathering tournament
WHEN: 10 a.m.-5 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Adults and kids age 12 and up can play for prizes (60-card decks and commander). Both new and experienced players are welcome.
COST: Free
INFO: www.ssjcpl.org

Library book club
WHEN: 11 a.m.-noon
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: All adults in the community are invited to read and discuss this month's book: "Everyone Brave is Forgiven" by Chris Cleave. Any available copies are kept at the checkout desk.
COST: Free
INFO: www.ssjcpl.org

Crab feed
WHEN: 5-11 p.m.
WHERE: Portuguese Hall-Tracy Ballroom, 400 W. Ninth St.
DETAILS: The Polynesian dance school Hula Ikaika Ohana 'O Ka'awai-E Honu Ili E will have a

crab feed fundraiser beginning with no-host cocktails at 5 p.m. Dinner will be served at 6 p.m., with a Polynesian show at 7 and raffles, music and dancing at 9.
COST: \$50
INFO: renee.kaawai@gmail.com, 321-5723

MONDAY, FEB. 18

Mobile farmers market
WHEN: 10:30-11:30 a.m.
WHERE: Tracy Family Resource Center-Healthy Connections, 35 E. 10th St., Ste. A
DETAILS: Stockton Emergency Food Bank provides food for up to 70 people, first come, first served; take your own bag.
COST: Free
INFO: David Eveler, 229-4922, develer@cpfsj.org

TUESDAY, FEB. 19

Tracy Seniors Association
WHEN: 12:30-2 p.m.
WHERE: Tracy Family Resource Center, 35 E. 10th St.
DETAILS: Tracy Seniors Association promotes health, wellness and safety to improve the experience of people 65 and older in Tracy. All are welcome to attend the group's meetings, which include lunch.
COST: Free
INFO: Cindy Gustafson, 815-1101, cindygustafson5@gmail.com; http://tracyseniorsassn.com

Teen STEM: Computer Hardware 101
WHEN: 4-5 p.m.
WHERE: Tracy Branch Library, 20 E. Eaton Ave.
DETAILS: Eighth- through 12th-graders can learn about the components of every computer, tablet and phone by dismantling a computer. Space is limited; sign up in person or by calling 866-805-7323.
COST: Free
INFO: www.ssjcpl.org

NAMI Connection
WHEN: 6-7:30 p.m.
WHERE: Healthy Connections, 35 E. 10th St., Ste. B2
DETAILS: This free, confidential support group for people coping with mental health challenges meets twice a month.
COST: Free
INFO: info@namisanjoaquin.org, 468-3755

His Scoop Study
WHEN: 6:45-8:30 p.m.
WHERE: Calvary Chapel, 125 Gandy Dancer Drive, Unit 140
DETAILS: Scoop Ministries has organized a nondenominational Bible study for women on the book of Numbers, using a

DATEBOOK, CONTINUED ON PAGE 163

Celebration of Life for
Barbara Fitzpatrick
Sunday, February 24, 2019
Celebration at 1:30 p.m.
First United Methodist Church
1610 East Street, Tracy
Reception at 3:00 p.m.
at Elks Lodge, 6400 11th Street, Tracy
All Welcome!

Job Fair MHCWC
SATURDAY, February 9, 2019
10:00 am-2:00pm
213 W. 11th Street
Tracy, CA 95376
Hiring Companies:
MHCWC SOCIAL SERVICE OUTREACH,
D.A.P.P., STEP ABOVE TRANSPORTATION
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Administrative Assistants & More!!!!

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*Certified Specialist in Estate Planning, Trust & Probate Law
by the State Bar of California Board of Legal Specialization



Appendix A: PLANNING PROCESS

Figure A.6. Public Meeting Advertisement Installed at a City of Tracy Transit Stop





Appendix A: PLANNING PROCESS

Figure A.7. City of Tracy Local Hazard Mitigation Plan Webpage



CITY OF

TRACY

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City of Tracy > OpenGov > Local Hazard Mitigation Planning

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Local Hazard Mitigation Planning

Cal OES Hazard Mitigation Home Page

City of Tracy Stakeholder Workshop Presentation

Hazard Mitigation Assistance Guidance

FEMA Comprehensive Preparedness Guide 101

City of Tracy Hazard Mitigation Committee Meeting 9.25.18

City of Tracy Hazard Mitigation Committee Presentation #2

City of Tracy HMPC #2 Draft Meeting Minutes 12-20-2018

Photo Gallery

PR 2.4.19 LHMP Public Workshop (English Version)

PR 2.4.19 LHMP Public Workshop (Spanish Version)

Cannabis Regulations - Prop 64

City of Tracy Road Construction & Repair Updates

Connect With Us

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Government

Public Records

Local Hazard Mitigation Planning



The Hazard Mitigation Plan Committee Conduct a Goal Development Meeting.

The City of Tracy is currently taking steps to update its Hazard Mitigation Plan according to federal and state guidelines. We will continue to update this webpage as part of our ongoing effort and encourage the public to participate throughout the process by attending meetings and offering constructive input.

What is Hazard Mitigation

The Federal Emergency Management Agency (FEMA) defines hazard mitigation as, "any sustained action taken to reduce or eliminate long-term risk to life and property from natural hazards." Another way to understand hazard mitigation is as the prevention component of the emergency management process.

- Preparedness activities are the emergency plans, training, drills, and exercises that individuals, communities and first responders participate in on almost daily basis. These are things done to get ready for an emergency or disaster before it happens.
- Response is the short-term, emergency actions taken to



Emergency Management Cycle

Available Resources

- [Public Workshop Video 2-12-2019](#)
- [FEMA Comprehensive Preparedness Guide \(CPG\) 101](#)
- [FEMA Hazard Mitigation Assistance Guidance](#)
- [Cal OES Hazard Mitigation Home Page](#)
- [City of Tracy Stakeholder Workshop Presentation 11-14-2018](#)
- [City of Tracy Hazard Mitigation Meeting Presentation 9-25-18](#)
- [City of Tracy Hazard Mitigation](#)



HMPC Meeting #1 Agenda

Date: 25 September 2018
9:00 PM PST

Meeting at: Fire Administration – Upstairs
Conference Room
835 Central Avenue
Tracy, CA 95376

Project: City of Tracy Hazard Mitigation Plan

Subject/Purpose

The purpose of the meeting is to introduce the Disaster Mitigation Act of 2000 and summarize the nine-step hazard mitigation planning process. The Hazard Mitigation Plan (HMP) is intended to identify hazards, assets at risk, and ways to reduce impacts through long-term sustainable mitigation projects.

1. Introductions
2. Mitigation Planning and the Disaster Mitigation Act Requirements
3. Role of the Hazard Mitigation Planning Committee (HMPC)
4. Objectives of the Hazard Mitigation Plan
5. Review of Identified Hazards
6. Coordinating with Collaboration
7. Community Outreach Strategy
8. GIS Data Needs List/Other Information Needs
9. Schedule
10. Questions and Answers



HMPC #1 Meeting Minutes

Date/Time: Tuesday September 25, 2018 9:00 AM - 11:30 PM

Location: Teleconference Call

Project No.: SA18170410

Written By: Juliana Prosperi (Wood, Project Manager)

Present: Jeff Brislawn (Wood, Hazard Mitigation Lead)
Karin Schnaider (City of Tracy, Finance Department, Finance Director/Project Manager)
Stephanie Hiestand (City of Tracy, Utilities, Water Resources Analyst)
Tom Watson (City of Tracy, Chief Administrative Officer)
Anne Bell (City of Tracy, Finance Department, Management Analyst)
Tony Sheneman (City of Tracy, Police Department, Lieutenant)
Maricela Saldivar (City of Tracy, Public Works)
Ripon Bhata (City of Tracy, Utilities)
Laura Borjon (City of Tracy, Parks Department, Executive Assistant)
Dan Summa (City of Tracy, Media Services Coordinator/Public Information Officer)
Pat Vargas (City of Tracy, Fire Department)
Jeff Davis (City of Tracy, IT Department, GIS Technician)
Kimberly Murdaugh (City of Tracy, Interim Director of Human Resources)
Kevin Jorgensen (City of Tracy, Development Services, Building Department Official)

Subject: City of Tracy Hazard Mitigation Planning Committee Meeting #1

AGENDA TOPICS

This document is a record of attendance and a summary of the topics discussed at the above meeting including the following:

1. Introductions
2. Mitigation Planning and the Disaster Mitigation Act
3. Role of the Hazard Mitigation Planning Committee (HMPC)
4. Hazard Mitigation Plan
5. Review of Identified Hazards
6. Team Coordination and Collaboration
7. Community Outreach Strategy
8. Data Collection Guide/Other Information Needs
9. Schedule
10. Questions and Answers

1. Introductions

Ms. Schnaider initiated the meeting and asked the group to start introductions. Ms. Prosperi started and asked the group to also indicate whether they have participated in the preparation of a HMP. Ms. Schnaider, Mr. Watson, Ms. Hiestand, and Ms. Murdaugh all noted they have worked



on a Hazard Mitigation Plan (HMP) in the past. The HMPC participants listed in the beginning of this meeting summary were present for the first meeting. They are also listed on the sign-in sheet (See Attachment A).

2. Mitigation Planning and Disaster Mitigation Act

Ms. Prosperi explained that the purpose of the meeting is to discuss the HMP update process; identify planning committee members, partners, and stakeholders; discuss the public engagement strategy and GIS data needs; and review the scope of work and schedule. She began a PowerPoint presentation that described the goals for the HMP, discussed the trends resulting in increased costs for disaster response and recovery, and introduced the concept of hazard mitigation planning. She also introduced the Disaster Mitigation Act of 2000, the legislation that requires all local governments to have a HMP in order to be eligible for hazard mitigation grant funding from FEMA.

3. Role of the Hazard Mitigation Planning Committee

As part of the PowerPoint, Ms. Prosperi outlined the benefits of participating in the HMPC. She explained that participation in the planning process will include:

- Attending and participating in three HMPC meetings,
- Providing available data requested by the HMPC Coordinator or Ms. Schnaider,
- Providing hazard profiles and vulnerability details specific to the City,
- Developing the local mitigation strategies,
- Advertising and assisting with the public input process, including a public workshop,
- Reviewing and commenting on plan drafts, and
- Coordinating formal re-adoption of the updated plan.

4. Hazard Mitigation Plan

Ms. Prosperi provided a general overview of a HMP, what is summarized in the plan, and the planning process. During the discussion, there were inquiries from the HMPC regarding the level of detail that goes into the HMP, as well as how it relates to the San Joaquin County HMP.

Mr. Vargas, who represents the Tracy Rural Fire Protection District explained to the group that their service area extends beyond the city limits and includes various areas within unincorporated San Joaquin County. Ms. Prosperi showed the HMPC a map of the City of Tracy based on publicly available data. Mr. Vargas pointed out the areas outside the City where they provide fire protection services. Ms. Schnaider asked the group if the HMP should only cover the Tracy city limits. Ms. Prosperi noted that her team has prepared plans that use a service or response area as the planning area, so we can modify it to meet the City's needs if they choose to expand the planning area.

5. Review of Identified Hazards

Ms. Prosperi continued discussing the City of Tracy planning area, but in relation to a list of hazards of concern that were raised during an internal kick-call between Wood and the City of Tracy (Ms. Schnaider). She noted the list included in the PowerPoint represented most of the hazards listed in the 2018 California Multi-Hazard Mitigation Plan, and that some of the hazards listed may not apply to the City. Ms. Prosperi explained the City may also choose to prioritize the hazards differently based on the results of the Hazard Identification and Risk Assessment.

Ms. Murdaugh clarified by asking whether the City of Tracy needed to consider hurricanes as a hazard, or whether the HMP will only discuss hazards specific to the City. Ms. Prosperi stated we are required to consider all potential hazards, but if it is a hazard that does not occur within the planning area, we can note that in the plan, and dismiss it from further analysis. Below is a list of all the potential hazards that the HMPC agrees we should profile in the risk assessment:

- Agricultural Hazards
- Dam Failure
- Drought and Water Storage: Groundwater Quality, Proximity to Linear Water Supply
- Earthquake: Ground Shaking, Seismicity, Liquefaction, Settlement, Faulting, Soil instability
- Flood: 100/500 year
- Flood: Localized Stormwater Flooding (Flooding associated with High Groundwater Table)
- Landslides and Debris Flows
- Levee Failure
- Severe Weather: Extreme Heat
- Severe Weather: Heavy Rains and Storms (Lightning and Hail)
- Severe Weather: Wind (Tornadoes)
- Fire (Urban and Wildland)
- Hazardous Materials (Fixed Hazardous Facilities, Gas Pipeline Leaks, Chemical Facilities)
- Transportation-Caused Hazards/Highway Accidents (Closure of I-580, I-205, I-5)

We agreed to acknowledge the following hazards in the HMP, but expect we will not provide a detailed profile on each due to the lack of coastal areas or past occurrences in the City:

- Coastal Erosion/Tropical Storms
- Hurricanes
- Tsunami
- Sea Level Rise
- Volcanos

Based on the hazards listed above that will be evaluated further in the HMP, the HMPC agreed to add groundwater quality (e.g. high groundwater table in the northwest portion of the City, potential liquefaction) and information regarding the City's proximity to sensitive linear water

supply networks (e.g. San Francisco Public Utilities Commission Hetch Hetchy Aqueduct, State Water Project/California Aqueduct) under Drought and Water Shortage.

Mr. Bhata noted the importance of adding hazardous materials, specifically gas pipelines and chemical facilities, such as the Phillips 66, Chevron, and Kinder Morgan gas pipelines; and Olin SO₂/Chlorine Plant and the City's Wastewater Treatment Plant. The HMPC briefly discussed whether they should consider adding the Lawrence Livermore Laboratory's Site 300, an experimental non-nuclear explosive test facility to the list of hazard facilities. Ms. Schnaider and Mr. Jorgensen both indicated that detailed information on noise and human-health related hazards are summarized in the Environmental Impact Reports (EIRs) prepared for communities near these facilities (i.e. Tracy Hills Specific Plan EIR, Ellis Specific Plan EIR, Cordes Ranch Specific Plan EIR).

After reviewing the PowerPoint slides on the Risk Assessment and Mitigation Strategy, Ms. Schnaider and the HMPC discussed how to prioritize 1) response and recovery associated with efficiently moving people and goods through the City of Tracy, and 2) safe movement of water supply through construction of resilient infrastructure. Ms. Prosperi and Mr. Brislawn noted that we can work with the City to develop mitigation actions that support these two priorities. Actions may be associated with maintaining adequate police, fire, and emergency responders along major transportation corridors; and increasing preparation or response capabilities along major highway/transportation corridors with federal and state transportation agencies.

6. Team Coordination and Collaboration

There was a discussion among the HMPC on additional federal, state, regional, and local agencies to invite to participate in the development of the HMP. Recommendations to add the following agencies were noted (previously listed agencies are noted in the PowerPoint):

- Army Corps of Engineers
- San Joaquin Valley Air Pollution Control District
- SFPUC
- Pipeline Operators (PG&E, Phillips 66, Chevron, Kinder Morgan)
- Jefferson School District
- Lammersville and Banta Elementary School Districts
- Defense Distribution Depot/Defense Logistics Agency
- Irrigation Districts
- Tracy Rural Fire Protection District/Joint-Powers Authority
- California Department of Transportation (Caltrans)
- California Highway Patrol



The HMPC agreed to also invite the San Joaquin County Office of Emergency Services (OES) representatives: Shellie Lima and Jessica Clarke. The San Joaquin County MHMP was drafted in 2017, and the Delta Flood Readiness Project is under review through October 24th.

7. Community Outreach Strategy

Ms. Prosperi reviewed the public involvement requirements during the PowerPoint presentation. She stated that a public workshop should be timed based on what would work best for the City and the community. She added that a meeting is typically held either before the Draft HMP is prepared or after the Draft HMP is made available, so the public can comment on the plan.

Mr. Summa, the Public Information Officer, stated he can review and support the tasks associated with the Community Outreach Strategy. He also noted they can create a main webpage to highlight links to the development of the HMP, including meeting flyers and the online survey.

8. Data Collection Guide/Other Information Needs

Ms. Prosperi reviewed the GIS Data Needs List. Ms. Saldivar showed the group the list. Ms. Prosperi suggested working directly with Wood's GIS Specialist, Marta Blanco Castano. There were several questions from the HMPC regarding the level of GIS data needed to complete the Hazard Identification. Ms. Prosperi stated the priority should be providing a comprehensive and accurate GIS database of all the City's planning and critical infrastructure information. She said once this is complete, Wood can elaborate on hazard event and historical data in the text portion of the plan. She added she can also review the level of detail with Ms. Schnaider and determine where they want to provide more detail, based on the prioritized hazards of concerns. Mr. Vargas stated they have detailed information on fire incidents they can provide, if needed.

Ms. Prosperi also discussed the Data Collection Guide provided to the HMPC. She reviewed the introductory contents of the guide and focused on what goes into the individual worksheets included in the packet. She emphasized trying to provide Worksheet #1 – Hazard Identification and Worksheet #2 – Historic Hazard Events by October 15th, so her team can incorporate that information in to the Hazard Identification and Risk Assessment by mid-November.

9. Schedule

Ms. Schnaider and Ms. Prosperi discussed the need to pick a date to have the next HMPC meeting. The group consensus was to hold the Public Workshop either Wednesday November 14th or Thursday November 15th, and preferably in the evening from 7:00 – 9:00 PM. The HMPC preferred to schedule HMPC Meeting #2 either Tuesday December 18th or Wednesday December 19th in the morning from 9:00 AM – 12:00 PM.

10. Questions and Answers

At the end of the meeting, there were no additional questions from the team. The meeting adjourned at 11:30 a.m.



ACTION ITEMS

No.	Item	Action	Completion Date
1.	Submit HMPC Meeting #1 Minutes	(Wood)	28 September 2018
2.	Provide GIS Data	(HMPC)	5 October 2018
3.	Complete Worksheets #1 and #2	(HMPC)	15 October 2018
4.	Community Engagement Strategy	(Wood)	19 October 2018

Hazard Mitigation Plan Sign-In Sheet

City of Tracy Hazard Mitigation Plan Hazard Mitigation Planning Committee (HMPC) Meeting #1

Tuesday, September 25, 2018

9:00 a.m. - 12:00 p.m.

City of Tracy Fire Administration - Upstairs Conference Room
835 Central Avenue
Tracy, California 95376

This sign-in sheet documents the attendees at the City of Tracy Hazard Mitigation Planning Committee (HMPC) Meeting #1. This meeting summarizes the planning process to prepare a Hazard Mitigation Plan (HMP). It enables the City of Tracy to evaluate their risks and vulnerabilities to natural hazards and to identify mitigation strategies to reduce hazard-related losses and to make their jurisdiction more disaster resistant.

Name	Representing Agency or Department and Title	Phone	Email
Stephanie Hiestand	Utilities - MAIT	209 831 6353	Stephanie.Hiestand@cityoftracy.org
Tom Watson	CMA	209 831-6430	Tom.Watson@cityoftracy.org
Alice Bell	Fire	209 831-6859	Alice.Bell@cityoftracy.org
Tommy S. Sandoval	PD	209-831-6522	Tommy.Sandoval@cityoftracy.org
Marcela Sandoval	PW	209-831-6383	Marcela.Sandoval@cityoftracy.org
Ripon Bhakta	UT	209-831-6338	Ripon.Bhakta@cityoftracy.org
Laura Borjan	Parks	209-831-6209	Laura.Borjan@cityoftracy.org
Don Sumner	CMA - Pro	209-831-6322	Don.Sumner@cityoftracy.org
Pat Vargas	Fire	209 831 6724	Patricia.Vargas@cityoftracy.org

Karin Schneider Finance / Proj Mgr 209 831 6861

wood.



City of Tracy Hazard Mitigation Plan

Hazard Mitigation Planning Committee Meeting #1

Fire Administration – Upstairs Conference Room
835 Central Avenue, Tracy CA 95376

September 25, 2018

woodplc.com

Agenda

1. Introductions
2. Mitigation Planning and the Disaster Mitigation Act
3. Role of the Hazard Mitigation Planning Committee (HMPC)
4. Hazard Mitigation Plan
5. Review of Identified Hazards
6. Team Coordination & Collaboration
7. Community Outreach Strategy
8. Data Collection Guide/Other Information Needs
9. Schedule
10. Questions and Answers



Introductions

- City of Tracy
 - Karin Schnaider (Finance Director/HMPC Coordinator)
- Wood Environment & Infrastructure Solutions, Inc.
 - Jeff Brislawn, CFM (Hazard Mitigation Lead)
 - Juliana Prosperi, AICP (Project Manager)

3 City of Tracy HMPC Meeting #1



Trends Resulting in Increased Costs for Disaster Response & Recovery

- Population and community growth
 - More people living in hazardous areas
 - Greater exposure to risk
 - People, infrastructure, buildings
- More hazards
 - Technological, civil, terrorist hazards
- Continual increase in expenses
- More disaster declarations



4 City of Tracy HMPC Meeting #1



Mitigation Planning

Why addressing these trends is a priority?

- The spiraling costs of response and recovery
 - The cost of “doing nothing” is too much
- Many events are predictable and repetitive
- Loss reduction activities can be undertaken
 - They work
 - They’re cost-effective and environmentally sound
 - There are funds available to help
- There are legal and moral responsibilities

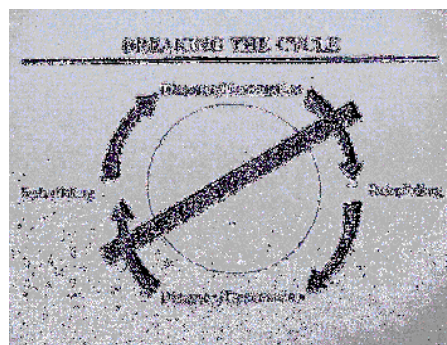
5 City of Tracy HMPC Meeting #1



Mitigation Planning

How can we reverse these trends?

- Mitigation defined: Any SUSTAINED action taken to reduce or eliminate long-term risk to human life and property from hazards



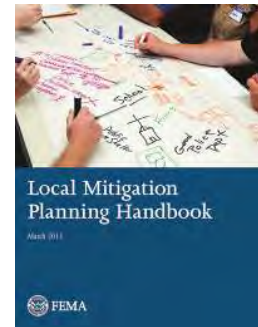
6 City of Tracy HMPC Meeting #1



Mitigation Planning –Why It's Important

Disaster Mitigation Act of 2000

- Requires local governments to have hazard mitigation plans for continued eligibility for mitigation funds, pre- and post- disaster
- Guide mitigation activities in a coordinated & economic manner
- Incorporate into other existing planning mechanisms
- Future Development: plan and build wisely
- Reduce losses
- Make community more disaster resistant (Resilience!)



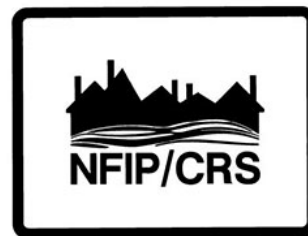
7 City of Tracy HMPC Meeting #1



Mitigation Planning

National Flood Insurance Program Community Rating System

- Created in 1990 as a voluntary incentive program
- Recognizes communities that manage their floodplains beyond the minimum standards by providing discounted flood insurance rates
- Floodplain Management Planning earns credits in CRS
- San Joaquin County is a CRS participant



8 City of Tracy HMPC Meeting #1



Mitigation Planning

FEMA's 4-Phase DMA Planning Guidance

Phase 1: Organize Resources

Phase 2: Risk Assessment

Phase 3: Develop a Mitigation Plan

Phase 4: Adoption and Implementation



9 City of Tracy HMPC Meeting #1



Mitigation Planning

CRS 10-Step Process within the 4-Phase Guidance

Phase I: Organize Resources

1. Get organized
2. Plan for public involvement
3. Coordinate with other departments and agencies

Phase III: Develop a mitigation plan

6. Set planning goals
7. Review mitigation alternatives
8. Draft and action plan

Phase II: Risk Assessment

4. Identify the hazard(s)
5. Assess the risks

Phase IV: Adoption and Implementation

9. Adopt the plan
10. Implement the plan, evaluate its worth, and revise as needed

10 City of Tracy HMPC Meeting #1



Mitigation Planning

FEMA's 2013 Nine-Step Process

- Step 1** Determine the Planning Area and Resources
- Step 2** Build the Planning Team
- Step 3** Create an Outreach Strategy
- Step 4** Review Community Capabilities
- Step 5** Conduct a Risk Assessment
- Step 6** Develop a Mitigation Strategy
- Step 7** Keep the Plan Current
- Step 8** Review and Adopt the Plan
- Step 9** Create a Safe and Resilient Community

11 City of Tracy HMPC Meeting #1



Phase I: Organize Resources

- 1) Get organized
- 2) Plan for public involvement
- 3) Coordinate with other department and agencies



12 City of Tracy HMPC Meeting #1



1) Get Organized – To Prepare the Plan

- Obtain community commitment to mitigation
- Determine and assign staff
- Establish your mitigation planning team

13 City of Tracy HMPC Meeting #1



1) Get Organized – Establishing Your Hazard Mitigation Planning Committee (HMPC)

- **City Departments**
 - Public Works
 - Utilities
 - Human Resources
 - Finance Department
 - Fire Department
 - Development Services
 - Building Safety and Fire Prevention
 - Code Enforcement
 - Engineering
 - Economic Development
 - Planning Division
 - Parks and Recreation
 - Police Department
 - City Manager's Office, City Clerk's Office, City Attorney's Office
 - Information Technology/GIS

14 City of Tracy HMPC Meeting #1



2) Plan for Public Involvement

- **Requirement:** Provide Two Opportunities
 - During Drafting Stage
 - Prior to approval
- Advantages:
 - Solutions fit local needs better
 - Strengthens local support for plan
 - Special interests are considered; avoids being “Blind-Sided”
 - It is a fair process
 - Generates new ideas

15 City of Tracy HMPC Meeting #1



2) Plan for Public Involvement - *Options*

- Include on planning team
- Host public input meetings/workshops/open houses
- Piggy back on other public forums or related meetings (develop a Community Outreach Strategy)
- Use questionnaires/surveys
- Post draft plan online for comment prior to finalization
- Document process for 2018/2019 in plan

16 City of Tracy HMPC Meeting #1



3) Coordinate with Other Stakeholder Departments & Agencies

- San Joaquin County and San Joaquin Council of Governments
- County Regional Transit District and Bay Area Rapid Transit
- Pacific Gas & Electric
- Federal, Regional, Businesses, Academia
- Cal Fire
- CNRA
- Cal OES
- Neighboring Communities and Counties
- FEMA Region IX
- US Bureau of Reclamation
- US Forest Service
- NOAA/NWS
- Tracy Unified School District
- Hospitals (Sutter Tracy Community Hospital, Tracy Convalescent Hospital)

17 City of Tracy HMPC Meeting #1



Phase II: Risk Assessment

Three Components

- 4) Hazard identification (what can happen here?)
- 5) Vulnerability Assessment (what will be affected?)
 - Includes a Mitigation Capability Assessment



18 City of Tracy HMPC Meeting #



4) Hazard Identification – *Has It Happened Here Before?*

- Identify all possible hazards affecting the planning area
- Profile the hazards
- Information sources:
 - Past disaster declarations
 - Planning team / community members
 - Existing plans and reports
 - GIS-based maps and data
 - Internet websites and databases
 - Newspaper / historical records
 - Local, state, and federal experts
 - Insurance data

19 City of Tracy HMPC Meeting #1



4) Hazard Identification – *Profile the Hazards*

- Hazard / Problem description
- Hazard extent (magnitude/severity)
- Past occurrences
- Seasonal patterns
- Speed of onset / duration
- Magnitude / secondary effects
- Significance
- Frequency / likelihood of future occurrences



20 City of Tracy HMPC Meeting #1



5) Vulnerability Assessment – *What Will Be Affected?*

- Inventory residential and commercial structures
- Inventory critical facilities and infrastructure
- Determine value of structures
- Determine the number of people in hazard areas
- Identify vulnerable infrastructure
- Identify development trends / constraints
- Identify historic, cultural, and natural resource areas
- Estimate losses

21 City of Tracy HMPC Meeting #1



Mitigation Capability Assessment

- Inventory of the community's existing and proposed policies, programs, and ordinances that may affect its vulnerability to hazards
- Evaluate the effectiveness of each for mitigation purposes. Note gaps, shortfalls or conflicts associated with their design, enforcement of implementation. Identify any special opportunities
- Determine the City's technical and fiscal abilities to implement mitigation initiatives. Include ability to attract and leverage funding

22 City of Tracy HMPC Meeting #1



Phase III: Develop a Mitigation Plan

- 6) Set planning goals
- 7) Review mitigation alternatives
- 8) Draft an action plan



23 City of Tracy HMPC Meeting #1



6) Set Planning Goals – *Using the Risk Assessment*

- Broad statements of what the plan is to achieve
- Based on risk
- Estimated losses
 - At-risk facilities and infrastructure (e.g. transportation utility lines?)
 - At-risk critical facilities
 - At-risk cultural and natural resources
- Goals from other existing plans
- Other opportunities
 - At-risk areas and facilities for future development
 - Repetitive losses
 - Public education
 - Increased insurance coverage

24 City of Tracy HMPC Meeting #1



7) Review Mitigation Alternatives

- Prevention
- Property protection
- Natural resource protection
- Emergency services
- Structural projects
- Public information
- Multi-hazard measures and considerations
- No action



25 City of Tracy HMPC Meeting #1



Review of Mitigation Alternatives – *Criteria for Selecting Mitigation Measures*

- Will it work?
- Is it cost-beneficial?
- Is it affordable?
- Is it legal?
- Is it fair?
- Do people want it?
- Are there administrative burdens?
- Is it politically acceptable to community leaders?
- Is it environmentally sound?
- Is funding available?

Example Hazard Mitigation Projects Eligible for FEMA funding:

Wildfire

- Defensible space
- Hazardous fuels reduction activities (e.g. vegetation removal)
- Implement ignition-resistant construction techniques

Flood

- Dry and wet flood proofing
- Flood reduction projects (e.g. detention ponds, channel stabilization)

Other-General

- Utility protection/infrastructure retrofit
- Adding generators

26 City of Tracy HMPC Meeting #1



Phase IV: Adopt & Implement the Plan

9) Adopt the Plan

- Official Adoption by Council
- Public input before adoption

10) Implement the Plan

- Assign an overall project manager
- Integrate actions into staff work plans
- Monitor changes in vulnerability
- Report on progress, publicize successes
- Revise the plan as necessary (every 5 years for DMA)

27 City of Tracy HMPC Meeting #1



Role of the Hazard Mitigation Planning Committee And The Benefits

- Coordination and collaboration on mitigation strategies
- Creating eligibility for funding for mitigation projects
- Attend meetings and participate in the planning process
- Provide requested information
- Review drafts and provide comments
- Identify mitigation projects specific to department; provide status
- Assist with and participate in the public input process
- Coordinate formal adoption

28 City of Tracy HMPC Meeting #1



Hazard Mitigation Plan

What goes into the plan?

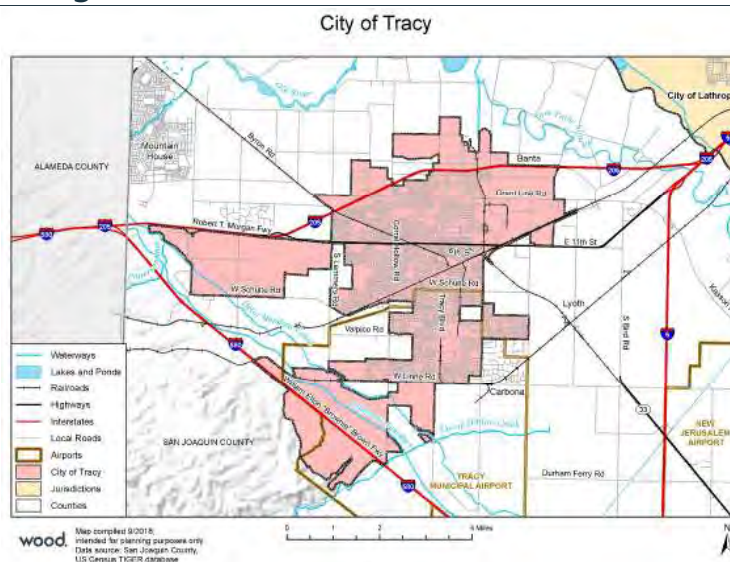
- Section 1 – Introduction
- Section 2 – Community Profile
- Section 3 – Planning Process
- Section 4 – Risk Assessment, plus Capability Assessment
- Section 5 – Mitigation Strategy
- Section 6 – Plan Adoption
- Section 7 – Plan Implementation and Maintenance
- Appendices and Annexes

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Review of Identified Hazards

Planning Area



30 City of Tracy HMPC Meeting #1



Review of Identified Hazards

Hazards of Concern

- Flooding – Riverine and Stormwater
- Dam and Levee Failure
- Seismic Hazards, Geologic Hazards (e.g. earthquake, ground failure/land subsidence, slope instability)
- Wildland Fire
- Drought and Water Shortage
- Meteorological Hazards (e.g. lightning, hail, tornado, severe weather)
- Health Hazards
- Human-Caused Hazards
- Climate Change
- Transportation-Related Hazards
- Others?

31 City of Tracy HMPC Meeting #1



Team Coordination

Example Goals from Past Plans

- Increase community awareness of vulnerability to natural hazards
- Provide protection of life and public health and safety
- Reduce risk and vulnerability of people, property, infrastructure, and the environment to natural and man-made hazards
- Maintain current service levels and prevent loss or services
- Improve overall education, coordination, and communication with staff, first responders, planners, emergency managers, the public, and other stakeholders



32 City of Tracy HMPC Meeting #1



Team Coordination

Example Mitigation Projects from Other Plans

- Become a "StormReady" community
- Improve grading and drainage of wastewater effluent storage ponds
- City CWPP implementation
- Increase web-based public information outreach
- Acquire property in High Hazard Zones
- Implement facility-specific flood mitigation projects
- Retrofit manhole covers
- Enhance on-site coordination with Cal FIRE during fire events
- Construct fire resistant electrical control panels
- Develop mutual aid agreements with water providers and local and regional agencies for support during emergencies

33 City of Tracy HMPC Meeting #1



Team Coordination

Related Planning Efforts

- Other plans, regulations, and practices
- Integration and consistency with General Plan(s), City Codes, etc.
- Flood Mitigation Master Plans/Stormwater Plans/Greenways plans/watershed plans
- San Joaquin County Regional Transportation Plan & Sustainable Communities Strategy
- City Sustainability Plan
- Community Wildfire Protection Plan?
- City Drought Plan?
- Capital Improvement Plan?
- Climate Preparedness Plan?

34 City of Tracy HMPC Meeting #1



Community Outreach Strategy

Planning for Public Involvement

- Any opportunities for outreach at scheduled public meetings or events?
- Developing a Community Outreach Strategy
 - Education, information, and coordination on the HMP process
 - Hazard Mitigation Plan Website
 - Regular Website Postings
 - Newsletters
 - Online Public Survey
 - Public Workshops
 - Training Sessions?
- Other ideas/recommendations?



35 City of Tracy HMPC Meeting #1



Data Collection Guide/Other Information Needs

What's New in Mitigation Planning

- FEMA Local Hazard Mitigation Planning Guidance 2013
- Cal OES requires Capability Assessment in LHMPs
- Cal OES suggests incorporating climate change considerations
- Cal OES MyPlan and MyHazards Internet tools
- FEMA Plan Review Tool
 - Replaces old Plan Review Crosswalk
- New CRS guidance
- As a result of disasters, more FEMA \$ has been available for communities with HMPs to leverage for projects!

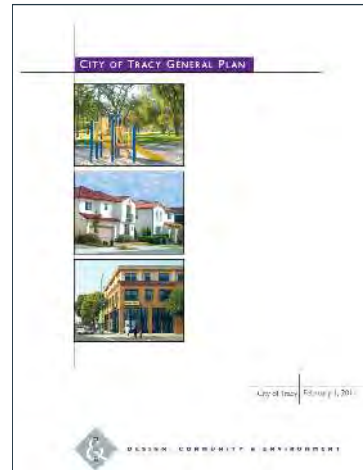
36 City of Tracy HMPC Meeting #1



Data Collection Guide/Other Information Needs

Hazard Information Resources

- What existing or recent plans, reports or studies exist?
 - Master plans
 - Floodplain map revisions
 - Safety Element updates to General Plans
 - Subsidence studies
 - Tree mortality inventories
 - Wildfire hazards



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Data Collection Guide/Other Information Needs

Initial Data Needs

- GIS Data Needs List
- Data Collection Guide
 - Worksheets #1 Hazard Identification
 - Worksheet #2 Historic Hazard Event
 - Worksheet #3 Vulnerability Assessment
 - Worksheet #4 Capability Assessment
- Recent hazard events
- Growth and development trends
- Recent updated plans and policies
- Follow-up with key staff where needed

38 City of Tracy HMPC Meeting #1



Data Collection Guide/Other Information Needs

Maximizing the Effectiveness of your Work Strategies

- Follow a Prescribed Planning Process
- Coordinate with ALL other Community Goals and Plans
- Seek Diversified Participation and Input
- Ask for Technical Assistance
- Establish Partnerships for Implementation

39 City of Tracy HMPC Meeting #1



Schedule

When will we meet next?

Task or Key Milestone	Anticipated Date
Notice to Proceed	June 8, 2018
Project Kick-Off Meeting	August 9, 2018
Submit HMPC Invite List	September 11, 2018
HMPC Meeting #1	September 25, 2018
Submit Draft Community Engagement Study	October 5, 2018
City Review of Draft Community Engagement Study	October 12, 2018
Submit Final Community Engagement Study	October 19, 2018
Public Workshop	TBD
Prepare Hazard Identification and Risk Assessment	November 1, 2018
Develop GIS Geodatabase	November 1, 2018
HMPC Meeting #2	TBD
HMPC Meeting #3	TBD
Finalize Goals and Objectives	February 15, 2019
Compile Mitigation Actions Worksheets	March 1, 2019
Submit 1 st Administrative Draft HMP	March 15, 2019
City provides Consolidated Staff Comments on 1 st Administrative Draft HMP	March 29, 2019
Submit 2 nd Administrative Draft LHMP	April 12, 2019
Circulate Public Review Draft LHMP	April 19, 2019
Public Review Ends	May 18, 2019
Complete FEMA Region IX Review Tool	May 31, 2019
Submit LHMP to FEMA for Review	June 4, 2019
Submit to Cal OES for Review	July 18, 2019
City Council Hearing	August 6, 2019*

*City Council Meetings are held on the first and third Tuesdays of each month

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Questions?

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wood.

Environment & Infrastructure Solutions
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Hazard Mitigation Plan Data Collection Guide

City of Tracy

Hazard Mitigation Planning Committee (HMPC)

Prepared by

Wood Environment & Infrastructure Solutions, Inc.

September 2018

Overview

The contents of this workbook have been designed to assist the City of Tracy (City) in the 2018 Hazard Mitigation Plan (HMP), in accordance with the Federal Disaster Mitigation Act (DMA) of 2000 requirements.

This guide includes a description of the necessary background information needed to support the hazard mitigation plan process. This includes the preparation of the hazard identification and vulnerability assessment, evaluating the City's current hazard mitigation capabilities, and a review of possible hazard mitigation projects or activities intended to prevent or reduce future losses. The plan's key components will be prepared through a formal planning process, which will ultimately culminate in adoption of the plan.

The essential information needed to support the planning process includes current background data about the City (based on the City's 2011 General Plan and 2008 Comprehensive Emergency Management Plan), as well as other plans, technical studies, and data related to hazards and risks; current governing codes, ordinances, regulations, and procedures whose intent is to minimize future losses. Additional information for the HMP will include the City's technical and organizational capabilities to perform hazard mitigation/loss prevention functions. It is important that the plan shows what the City is doing now to limit future disaster losses and capture any mitigation success stories based on actions documented in other plans (e.g. 2011 General Plan Safety Element).

The planning process is heavily dependent on existing data to be supplied by each of the participants represented on the Hazard Mitigation Planning Committee (HMPC). The DMA plan development process does not require the development of new data but requires **existing data only**. The goal of this process is to produce a hazard mitigation plan that meets the City's needs, as well as the requirements of the DMA of 2000 and contains a list of projects that may be eligible for streamlined federal pre- or post-disaster mitigation funding.

What is Mitigation?

Hazard mitigation is defined by FEMA as "any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event." The results of a three-year, congressionally mandated independent study to assess future savings from mitigation activities provides evidence that mitigation activities are highly cost-effective. On average, each dollar spent on mitigation saves society an average of \$4 in avoided future losses in addition to saving lives and preventing injuries (National Institute of Building Science Multi-Hazard Mitigation Council 2005). An update to this report in 2017 (Natural Hazard Mitigation Saves: 2017 Interim Report) indicates that mitigation grants funded through select federal government agencies, on average, can save the nation \$6 in future disaster costs for every \$1 spent on hazard mitigation.

Mitigation generally means reducing long-term risk from hazards to acceptable levels through pre-determined measures accompanying physical development, for example: strengthening structures to withstand high winds or snow loads; elevating, removing or limiting development in flood-prone areas; clearing defensible space around residences in Wildfire Urban Interface

(WUI) areas; or designing development away from areas with geological instability. Mitigation can also protect existing development through seismic retrofitting, critical infrastructure protection, and floodproofing.

Mitigation is different from emergency preparedness or response. Preparedness concentrates on activities which make a person, place, or organization ready to respond to a disaster with emergency equipment, food, emergency shelter, and medicine. Response activities may reduce damages, such as sandbagging during a flood, but this is a short-term solution and requires advance warning and resources to be in place during the event. Mitigation of flood hazards through wise floodplain management and hazard avoidance is an example of a long-term solution.

Participation

The DMA planning regulations and guidance stress that each entity seeking the required FEMA approval of their mitigation plan must:

- Participate in the process;
- Detail areas within the planning area where the risk differs from that facing the entire area;
- Identify specific projects to be eligible for funding; and
- Have the City Council formally adopt the plan.

For HMPC members, ‘participation’ means the planning committee representatives will:

- Attend and participate in HMPC meetings;
- Provide available data that is requested of the HMPC coordinator;
- Provide input on specific sections of the Draft HMP;
- Provide input on mitigation actions relevant to the jurisdiction’s department;
- Review and provide/coordinate comments on the Draft Plan;
- Advertise, coordinate and participate in the public input process; and
- Coordinate the formal adoption of the plan by the City Council.

Hazard Mitigation Plan Data Collection Guide

This guide contains an explanation of the types of hazard mitigation/loss prevention data that is needed for the hazard mitigation planning process. This guide identifies specific requirements for the Risk Assessment Process, which includes the Hazard Identification, Vulnerability, and Capability Assessments as well as defines requirements for the Mitigation Strategy.

The worksheets have been developed to assist with the development of the Draft HMP. The City should utilize members of their planning subcommittee to review the Draft HMP and complete the worksheet forms. A step by step process is included in this guide.

Data collection worksheets are due by October 15th to Juliana Prosperi contact information below).

Project Contacts

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Karin Schnaider
City of Tracy
Finance Director/HMPC Coordinator
Phone: Insert
Email: karin.schnaider@cityoftracy.org

Steps to prepare the City of Tracy HMP

1. Attend planning meetings for the City of Tracy HMP.
2. Download a Word (editable) version of the Data Collection Guide from the project Google drive (link to be provided in email). Fill out the Worksheets. A PDF copy of the plan can also be downloaded.
3. Convene a HMPC.
 - a. Include departments such as planning, engineering, public works, GIS, police, fire, etc as applicable
 - b. Document any meetings with sign-in sheets (use blank template attached)
4. Review Worksheets #1 and #2
 - a. Identify hazard impacts (Use historic hazard event worksheet to provide details, or collect related reports, articles or memos with damage amounts, damage assessment reports, etc.)
 - b. Identify any hazard studies or plans – send electronic versions (preferred if available), web link, or hardcopies to City of Tracy HMPC Coordinator.
 - i. Example: San Joaquin County Delta Flood Readiness Project – allows local emergency responders from incorporated cities and county governments to work with Levee Maintaining Agencies (LMAs) to improve local flood emergency preparedness and response. More information available here: <https://www.sjgov.org/departments/oes/dwr/>
5. Review Worksheet #3 Vulnerability Assessment

- a. Review discussion on potential losses and note where you may have more specific information on past losses or potential for future losses specific to the City, department, special district, or utility.

Note: Wood will be evaluating the flood, earthquake and wildfire analyses based on current City of Tracy GIS datasets and recent Digital Flood Insurance Rate Maps and current wildfire hazard data.

6. Review Worksheet #4 Capability Assessment in HMP (once available)

- a. Review the Jurisdiction-Specific Existing Capabilities, Development Trends
- b. Using the 'Track Changes' feature in Word, mark up the document with changes, **OR** use the attached worksheets to provide information.
- c. Note any changes in hazard significance or reduction in vulnerability through the implementation of mitigation projects such as defensible space, stormwater improvements, public education efforts etc.
- d. Note any changes in development trends. Provide an estimate of future trends (building types and counts).
 - i. City's HMPC Coordinator (Ms. Karin Schnaider) indicated the following growth projections during our kick-off meeting: 5-year horizon forecasts 3,000 new homes, 10-year horizon forecasts 8,000 new homes and a total population increase of 20,000 residents.
 - ii. Residential Growth Management Ordinance and Guidelines
 - iii. San Joaquin County Municipal Services Review
- e. Upload either 'Track Changed' Word version of chapter **or** Worksheets to the Google Drive. Provide this and notify the City of Tracy HMPC coordinator by **November 19th**

7. Develop a Mitigation Action Plan

- a. Provide input to the details of the mitigation actions/projects, where applicable
- b. Prioritize actions/projects
- c. A worksheet and template will be provided to facilitate this, with due date TBD (after HMPC #3).
- d. Consider ideas for other projects in the City. These can be projects that may be in the works already but not captured in the plan or that may have become a priority following recent disaster declarations. These will be discussed at a future HMPC meeting. A worksheet and template will be provided for both current and new project, with due date TBD (after HMPC #3).

8. Review Chapter 7.2 Maintenance (when available)

- a. Review this section for future compliance strategies;
- b. Note any potential to incorporate the plan into existing planning mechanisms or opportunities to do so in the future (**Important**) (e.g. *amend General Plan Safety*

Element, integrate into 2008 Comprehensive Emergency Management Plan, ect.)

- c. Note opportunities and strategies for continued public involvement (Wood will document meetings specific to the development of the proposed HMP).
9. Help advertise and coordinate public meetings where applicable
10. Provide documentation of all meetings to City of Tracy HMPC coordinator
11. Review and comment on the draft plan
12. When plan receives conditional approval from FEMA, adopt the plan
13. Continue to implement the plan!

Information Sources

The following are possible sources of information to assist with the preparation of the plan:

- City of Tracy 2008 Comprehensive Emergency Management Plan
- 2011 General Plans, specifically Safety Element
- 2015 – 2013 Housing Element
- 2011 Sustainability Action Plan
- South County Fire Authority Annual Response Reports
- Stormwater Management Plan
- Emergency Operations Plans
- Emergency Action Plans for dams
- Incident logs/After Action reports
- Damage Assessment reports
- Drought Plans
- Evacuation Plans
- Recovery Plans
- Emergency Exercise Scenarios
- GIS databases
- Draft 2018 California State Hazard Mitigation Plan (Available here: http://www.caloes.ca.gov/HazardMitigationSite/Documents/016-2018%20SHMP_Public%20Review%20Draft_April%202018_ENTIRE%20PLAN.pdf)
- Hazard specific plans:
 - Community Wildfire Protection Plans
 - Flood Hazard Mitigation Plans

- Fire Safe plans
- Capital Improvement Plans
- Capital Facilities Plans
- Strategic plans
- Land Use Plans/Codes
- Local Building codes/regulations
- Climate Adaptation Plans

The Risk Assessment Process

The risk assessment process includes three components: hazard identification, vulnerability assessment, and capability assessment. Data needs and worksheets for each of the risk assessment components are included in this guide. Use these worksheets to evaluate the City's current vulnerability to the hazards that will be assessed in the plan. The intent is to identify the significance or risks to these hazards.

City of Tracy Hazard Mitigation Plan

Worksheet #1: Hazard Identification

Name of Department: _____

Use this worksheet to identify possible hazards that may impact the City of Tracy. Hazards currently identified in the 2018 California State Multi-Hazard Mitigation plan are listed. Please rank according to the guidelines that follow the table. Use copies of Worksheet #2: Historic Hazard Event to provide evidence to justify your conclusions.

Hazard	Frequency of Occurrence	Hazard Extent	Potential Magnitude	Significance	Hazard Map? (Paper/GIS/Source)
Dam & Levee Failure					
Drought					
Earthquakes					
Floods (including stormwater drainage)					
Agricultural Pests/Disease					
Landslides					
Epidemic/Pandemic/Vector-Borne Disease					
Severe Weather*					
Soil Hazards					
Volcanoes					
Wildfires					
Climate Change					
Human-Caused Hazards (intentional, technological)					
*Severe Weather Includes Dust Storms, Extreme Temperatures, Fog, Hail, Heavy rains, lightning, tornadoes, windstorms, and winter storms					

Frequency of Occurrence:

Highly Likely: Near 100% probability in next year.
Likely: Between 10 and 100% probability in next year or at least one chance in ten years.
Occasional: Between 1 and 10% probability in next year or at least one chance in next 100 years.
Unlikely: Less than 1% probability in next 100 years.

Hazard Extent:

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

Potential Magnitude:

Catastrophic: Multiple deaths, complete shutdown of facilities for 30 days or more, more than 50% of property is severely damaged
Critical: Multiple severe injuries, complete shutdown of facilities for at least 2 weeks, more than 25% of property is severely damaged
Limited: Some injuries, complete shutdown of critical facilities for more than one week, more than 10 percent of property is severely damaged
Negligible: Minor injuries, minimal quality-of-life impact, shutdown of critical facilities and services for 24 hours or less, less than 10 percent of property is severely damaged.

Significance (your subjective opinion): Low, Medium, High

Prepared by: _____

Phone: _____

Email: _____

City of Tracy Hazard Mitigation Plan Worksheet #2: Historic Hazard Event

Name of Department: _____

Please fill out one sheet for each significant hazard event with as much detail as possible.
Attach supporting documentation, photocopies of newspaper articles, or other original sources.

Type of event	
Nature and magnitude of event	
Location	
Date of event	
Injuries	
Deaths	
Property damage	
Infrastructure damage	
Crop damage	
Business/economic impacts	
Road/school/other closures	
Other damage	
Insured losses	
Federal/state disaster relief funding	
Opinion on likelihood of occurring again	
Source of information	
Comments	

Prepared by: _____

Phone: _____

Email: _____

City of Tracy Hazard Mitigation Plan

Worksheet #3: Vulnerability Assessment

Name of Department: _____

The purpose of this worksheet is to assess the vulnerable buildings, populations, critical facilities, infrastructure, and other important assets in your community by using the best available data to complete the table and questions that follow. Use the table on the next page to compile a detailed inventory of specific assets at risk including critical facilities and infrastructure; natural, cultural, and historical assets; and economic assets as defined below. Alternately you can edit your jurisdiction's information in Section 4.3 of the plan. Attach supporting documentation, such as photographs, reports, or plans if possible. In the hazard column of the asset inventory table, indicate if there is a specific hazard to which the asset is at risk.

Critical Facilities

Critical Facilities must remain operational during any major disaster and be designed, located, and constructed accordingly. FEMA's HAZUS-MH loss estimation software uses the following three categories of critical assets. 'Essential facilities' are those that if damaged would have devastating impacts on disaster response and/or recovery. 'High potential loss facilities' are those that would have a high loss or impact on the community. Transportation and lifeline facilities are third category of critical assets; examples are provided below.

Essential Facilities	High Potential Loss Facilities	Transportation and Lifeline
<ul style="list-style-type: none"> ▪ Hospitals and other medical facilities ▪ Police stations ▪ Fire station ▪ Emergency Operations Centers 	<ul style="list-style-type: none"> ▪ Power plants ▪ Dams/levees ▪ Military installations ▪ Hazardous material sites ▪ Schools ▪ Shelters ▪ Day care centers ▪ Nursing homes ▪ Main government buildings 	<ul style="list-style-type: none"> ▪ Highways, bridges, and tunnels ▪ Railroads and facilities ▪ Bus facilities ▪ Airports ▪ Water treatment facilities ▪ Natural gas facilities and pipelines ▪ Oil facilities and pipelines ▪ Communications facilities

Natural, Cultural, and Historical Assets

Natural resource assets may include wetlands, threatened and endangered species, or other environmentally sensitive areas. Historical assets include state and federally listed historic sites.

Economic Assets

Economic assets at risk may include major employers or primary economic sectors, such as agriculture, whose losses or inoperability would have severe impacts on the community and its ability to recover from disaster.

Asset Inventory

[illegible]

*EI: Essential Infrastructure; VF: Vulnerable Facilities; HM: Hazardous Materials Facilities; NA: natural assets

Additional Vulnerability Questions

Describe growth and development trends and future growth areas and how they relate to hazard areas and vulnerability concerns/issues.

Prepared by: _____

Phone: _____

Email: _____

City of Tracy Hazard Mitigation Plan Worksheet #4: Capability Assessment

Name of Department: _____

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. Please complete this worksheet from your department's perspective and provide supporting documentation if possible.

Regulatory

The following planning and land management tools are typically used by local jurisdictions to implement hazard mitigation activities. Please indicate which your jurisdiction has in place. If your jurisdiction does not have this capability or authority, please indicate if a higher level of government has the authority. Also use the comments column to indicate how we can obtain a copy of the plan or document (i.e. available on the web (include address), will put on ftp, will e-mail or mail, will fax).

Regulatory Tool (ordinances, codes, plans)	Yes/No	Comments
General or Comprehensive plan		
Zoning ordinance		
Subdivision ordinance		
Growth management ordinance		
Floodplain ordinance		
Other special purpose ordinance (stormwater, steep slope, wildfire)		
Building code		
Fire department ISO rating		
Erosion or sediment control program		
Stormwater management program		
Site plan review requirements		
Capital improvements plan		
Economic development plan		
Local emergency operations plan		
Other special plans		
Flood insurance study or other engineering study for streams		
Elevation certificates (for floodplain development)		
Other		

Administrative/Technical

Identify the technical and personnel resources responsible for activities related to hazard mitigation/loss prevention within your jurisdiction. If there are public resources at the next higher level government that can provide technical assistance, please indicate so in the comments column.

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices			
Engineer/professional trained in construction practices related to buildings and/or infrastructure			
Planner/engineer/scientist with an understanding of natural hazards			
Personnel skilled in GIS			
Full time building official			
Floodplain manager			
Emergency manager			
Grant writer			
Other personnel			
GIS Data Resources (Hazard areas, critical facilities, land use, building footprints, etc.)			
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)			
Other			

Additional Capabilities Questions

<p>Does your community have any hazard-related certifications, such as Storm Ready certification or Firewise Communities certification?</p>	
<p>Describe any past or ongoing public education or information programs, such as for responsible water use, earthquake or fire safety, household preparedness, or environmental education.</p>	
<p>Describe any other past or ongoing projects or programs designed to reduce disaster losses. These may include projects to protect critical facilities.</p>	

Prepared by: _____

Phone: _____

Email: _____

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Sign-In Sheet - City of Tracy Hazard Mitigation Plan

Jurisdiction:

Date:

Time:

Location:

Meeting Purpose:

[illegible]



Stakeholder Workshop Agenda

Date: 14 November 2018
7:00 PM – 9:00 PM

Meeting at: Tracy Transit Center
50 East 6th Street
Tracy, CA 95376

Project: City of Tracy Local Hazard Mitigation Plan

Subject/Purpose

The purpose of the meeting is to introduce the Disaster Mitigation Act of 2000 and the hazard mitigation planning process for the City of Tracy's Local Hazard Mitigation Plan (LHMP) to federal, state, and local agency representatives and stakeholders in the region that would like to participate on the City's Hazard Mitigation Planning Committee. The LHMP is intended to identify hazards, assets at risk, and ways to reduce impacts through long-term sustainable mitigation projects.

1. Introductions
2. Mitigation Planning and the Disaster Mitigation Act Requirements
3. Role of the Hazard Mitigation Planning Committee (HMPC)
4. Objectives of the Local Hazard Mitigation Plan
5. Review of Identified Hazards
6. Initial Hazards Identification and Risk Assessment Results
7. Community Outreach Strategy
8. Data Collection Guide
9. Schedule and Next Steps
10. Questions and Answers



Stakeholder Workshop Meeting Minutes

Date/Time: Wednesday, November 14, 2018 7:00 PM - 9:00 PM

Location: Tracy Transit Center

Project No.: SA18170410

Written By: Juliana Prosperi (Wood, Project Manager)

Present: Karin Schnaider (City of Tracy, Finance Department, Finance Director/Project Manager)
Dan Summa (City of Tracy, Public Information Officer)
Tony Sheneman (City of Tracy, Police Department, Lieutenant)
Maricela Saldivar (City of Tracy, Public Works)
Ripon Bhata (City of Tracy, Utilities)
Pat Vargas (City of Tracy, Fire Department)
Kevin Jorgensen (City of Tracy, Development Services, Building Department Official)
Shellie Lima (San Joaquin County Office of Emergency Services)
Christopher R. Miller (San Joaquin County Public Health Services)
David Wharry (California Highway Patrol)
(California Department of Transportation)
Mike Marcucci (CalFIRE)
Jeremy Edwards (California Conservation Corps)
Sara Obevdas (Sutter Tracy Community Hospital)
Jeff Millar (Pacific Gas and Electric)

Subject: City of Tracy Local Hazard Mitigation Plan – Stakeholder Workshop

AGENDA TOPICS

This document is a record of attendance and a summary of the topics discussed at the above meeting including the following:

1. Introductions
2. Mitigation Planning and the Disaster Mitigation Act Requirements
3. Role of the Hazard Mitigation Planning Committee (HMPC)
4. Local Hazard Mitigation Plan
5. Review of Identified Hazards
6. Initial Results of Hazards Identification and Risk Assessment
7. Community Outreach Strategy
8. Data Collection Guide
9. Schedule and Next Steps
10. Questions and Answers

1. Introductions

Ms. Prosperi initiated and welcomed everyone to the workshop. Ms. Prosperi started by explaining the purpose of the evening workshop and introducing her consultant's team role. She

asked the group to introduce themselves, their role at their agency, and whether they have participated in the preparation of a LHMP.

Ms. Schnaider introduced herself as the City's project manager and HMPC coordinator. She summarized the scope, schedule, and meeting commitments for the Hazard Mitigation Planning Committee (HMPC). The HMPC and stakeholder participants listed in the beginning of this meeting summary were present for workshop. They are also listed on the sign-in sheet (See Attachment A).

2. Mitigation Planning and Disaster Mitigation Act Requirements

Ms. Prosperi explained that the purpose of the meeting is to discuss the LHMP update process; identify planning committee members, partners, and stakeholders; review the identified hazards and the initial results of the hazard identification and risk assessment, review the community engagement strategy; and discuss the schedule and next steps.

She began a PowerPoint presentation that described the goals for the LHMP, discussed the trends resulting in increased costs for disaster response and recovery, and introduced the concept of hazard mitigation planning. She reviewed the Disaster Mitigation Act of 2000, the National Flood Insurance Program Community Rating System (CRS) and program benefits, and the legislation that requires local governments to have a LHMP to be eligible for hazard mitigation grant funding from FEMA. She also briefly summarized the mitigation planning process and where the HMPC is in developing the LHMP.

3. Role of the Hazard Mitigation Planning Committee

As part of the PowerPoint, Ms. Prosperi outlined the benefits of the stakeholders participating in the HMPC. She explained that participation in the planning process will include:

- Coordination and collaboration on mitigation strategies;
- Attendance at meetings and participation in the planning process;
- Providing requested information, data, and supporting plans on related hazards; and
- Reviewing drafts of the LHMP and providing comments.

4. Local Hazard Mitigation Plan

Ms. Prosperi provided an overview of a LHMP, what goes into the plan, and the planning process.

5. Review of Identified Hazards

Planning Area

Ms. Prosperi showed the City of Tracy planning area – the City's Sphere of Influence (SOI) boundary. She explained the responsibilities of the San Joaquin County Local Agency Formation Commission (LAFCo). Ms. Schnaider stated during the first HMPC meeting, the HMPC agreed to look at the SOI as the planning area versus the city limits or fire response and service areas, which include a much larger portion of the unincorporated areas surrounding the City. There has

been ongoing growth and development in the City limits and using the SOI as the planning area will ensure the City looks at potential and future development area in the LHMP.

Some stakeholders had questions on the definition of the SOI. Ms. Prosperi explained that the SOI is the probable physical boundary and service area of a local governmental agency, such as the City of Tracy. She stated the SOI is determined by maximum service area an agency can support, range of services the agency can provide, projected future population growth, type of development occurring in planned area, and probable future service needs of the area.

Identified Hazards

Ms. Prosperi listed the 12 hazards that the HMPC agreed to profile in the risk assessment:

- Dam and Levee Failure
- Drought and Water Storage
- Earthquake: Ground Shaking, Seismicity, Liquefaction, Settlement, Faulting, Soil instability
- Flooding: 100/500 year and Localized Stormwater Flooding
- Landslides and Debris Flows
- Severe Weather: Extreme Heat
- Severe Weather: Extreme Cold
- Severe Weather: Heavy Rains and Storms (Lightning and Hail)
- Severe Weather: Wind (Tornadoes)
- Fire (Urban and Wildland)
- Human-Caused Hazards: Hazardous Materials (Hazardous Facilities, Gas Pipeline Leaks)
- Transportation-Caused Hazards/Highway Accidents: Closure of I-580, I-205, I-5; Auto-Related Accidents

Ms. Prosperi also listed climate change and noted that her team will be incorporating a discussion of climate change effects within each natural hazard profile. She stated the HMPC agreed to acknowledge the following hazards in the LHMP, but expect they will not provide a detailed profile on each due to the lack of coastal areas or past occurrences in the City's SOI:

- Avalanches
- Agricultural Hazards
- Coastal Erosion/Tropical Storms
- Human-Health Hazards (pandemics, vector-borne diseases, air pollution)
- Hurricanes
- Tsunami
- Sea Level Rise
- Volcanos

Based on the hazards listed, some stakeholders noted prioritizing wildland fire, earthquake, and severe heat and cold hazards. Ms. Schnaider added there was an interest by the HMPC and the City Manager to look closely on how to incorporate data on transportation-related hazards, discuss groundwater quality in the flooding discussion, and evaluating the linear water supply network that traverses the southern portion of the SOI under drought and water storage (e.g. San Francisco Public Utilities Commission Hetch Hetchy Aqueduct, Delta Mendota Canal).

A stakeholder representative from Sutter Tracy Community Hospital inquired whether the Lawrence Livermore Laboratory's Site 300 fell within the City's SOI. Ms. Schnaider explained it is located near Livermore in Alameda County and the HMPC realizes this question will be raised by the public. She stated that because the facility is within Alameda County it should be discussed in that County LHMP. The stakeholder from Sutter Tracy Community Hospital also noted the need to consider discussing human-health hazards, such as vector-borne disease and biological outbreaks. Ms. Prosperi added that under the Disaster Mitigation Act an assessment of human-caused hazards is not required. As a result, FEMA does not focus their review on human-caused hazards, and the HMPC agreed to focus on natural hazards. She added that they are assessing hazardous material hazards and transportation-related hazards (as it relates to response and recovery associated with efficiently moving people and goods through the City of Tracy).

She said the HMPC can revisit the interest to assess human-health hazards during the next meeting. She stated that if there is evidence that human-health hazards are significant compared to the other natural hazards, it may be worth consideration in the LHMP.

6. Initial Results of Hazards Identification and Risk Assessment

Ms. Prosperi began reviewing preliminary information on the hazard identification and risk assessment. She defined the following terms used in the hazard identification: geographic extent/spatial extent, past occurrences, magnitude/severity, significance, and frequency and likelihood of future occurrences. Ms. Prosperi also showed a slide that listed declared disasters in San Joaquin County since 1964. Stakeholders from San Joaquin County said the declarations are often filed by multiple counties, and that San Joaquin County provided shelters and support during the Hurricane Katrina Evacuation. Ms. Prosperi explained to the stakeholders that her team recently began profiling hazards, so analysis was in progress. She also asked the group to provide feedback on alternative data sources, if available.

During the initial review of the hazards, several comments were made by stakeholders. Ms. Lima noted the LHMP should consider how many properties are within the floodplain and the benefits of participation in the CRS. Mr. Jorgenson stated the City adopted a floodplain management ordinance as part of its Municipal Code that exceeds the minimum requirements set by FEMA. He also stated the LHMP needs to revise the seismic zone reference to reflect the latest California Building Code standards. Ms. Prosperi explained the initial results reference seismic zones noted City's 2011 General Plan Safety Element and added they will update the discussion in the plan.

Ms. Prosperi stated that landslides will likely be acknowledged in the LHMP but dismissed from further analysis if HMPC and stakeholders agree hazard significance is low. She also added there is options to model earthquake hazards and damage scenarios in more detail. Mr. Vargas asked whether both wildland and urban wildfire hazards were being considered given the severity of the Tubbs Fire in Santa Rosa. Ms. Prosperi stated that they typically look at wildland fire hazards only, but started incorporating the consideration of urban fires. A stakeholder from Sutter Tracy Community Hospital stated that severe weather hazards should include extreme cold. She stated the hospital sees many severe cold cases from the homeless population each year. Ms. Prosperi explained the discussion on severe weather will cover heavy rain, thunderstorms, hail, lightning, snow, freezing rain, and severe cold.

While reviewing and discussing the hazardous material slides, Mr. Vargas and Mr. Bhata stated the large number of toxic chemicals referenced in the Risk Management Plans (RMPs) are used at the City's Wastewater Treatment Plant. Ms. Prosperi added that many of the hazardous materials hazards are commonly addressed in RMPs and Hazardous Materials Business Plans.

Ms. Schnaider reviewed the transportation-related hazard information and explained the City's perspective on how to assess the hazards associated with the major transportation infrastructure surrounding the City. She explained the City's movement of goods and services puts commuters and motorists at risk of being stuck on the highways if there is a highway closure due to a wildfire or earthquake. Ms. Schnaider and Mr. Vargas explained the recent wildfire on Altamont Pass, the closure of I-580, and the impacts on the police and fire department and local residents. Ms. Schnaider explained that the traffic-related incidents may not accurately reflect all of the hazards along the major interstate highways that surround the City. Ms. Prosperi stated her team could incorporate references to regional traffic studies that consider vehicle miles travelled, or average daily trips along the highways, as well as commuter transportation studies, if available.

Ms. Prosperi added that given the lack of data on transportation-hazards, she noted it may be appropriate to elaborate on transportation-related hazards in the vulnerability assessment.

7. Community Outreach Strategy

Ms. Prosperi reviewed the public involvement requirements. She the Public Workshop for the LHMP will be held in mid-February in the evening. She noted the workshop will occur before the Draft LHMP is made available; the public can comment on the Draft LHMP during public review.

Ms. Prosperi told the stakeholders that the Online Public Survey is now available and the link to the survey should be available on the City's website within the next week. She encouraged the stakeholders to participate, and to pass along the link to others.

8. Data Collection Guide

Ms. Prosperi briefly discussed the Data Collection Guide. She stated they were still waiting for worksheets from several key departments. Ms. Schnaider stressed the importance of getting this information as soon as possible, as the deadline was November 1st.

9. Schedule and Next Steps

HMPC Meeting #2 is scheduled December 20th from 9:00 AM – 12:00 PM. Ms. Prosperi said that at this meeting her team will be providing a detailed summary of the hazard identification and risk assessment. She stated the HMPC will also be developing goals for the LHMP.

10. Questions and Answers

At the end of the meeting, there were no additional questions from the team. The meeting adjourned at 9:20 PM

ACTION ITEMS

No.	Item	Action	Completion Date
1.	Provide City Parcel Data	(City)	15 November 2018
2.	Submit Stakeholder Workshop Minutes	(Wood)	19 November 2018
3.	Send Link to Public Survey to Stakeholders	(City)	20 November 2018

City of Tracy
Hazard Mitigation Plan Update
Stake Holder Meeting
November 14, 2018, Tracy Transit Station

NAME	REPRESENTING AGENCY OR DEPARTMENT AND TITLE	PHONE	EMAIL
Shellie Lima	San Joaquin Co. OES	209-953-6200	slima@sigov.org
Jeremy Edwards	Calif Conservation Corps	209-235-1700	jeremy.edwards@ccc.ca.gov
David Wharry	Calif Highway Patrol	209-835-8920	dwharry@chp.ca.gov
Sara Obevdas	Sutter Tracy Hospital	209-833-2488	obevdas@sutterhealth.org
Jeff Millar	Pacific Gas & Electric	209-662-2015	jn19@pge.com
Jose Aleman	San Joaquin Sheriff's Ofc	209-482-3339	jaleman@sigov.org
Mike Marcucci	Cal Fire	408-472-1603	mike.marcucci@fire.ca.gov
Leticia Ramirez	City Attorneys Ofc - Assistant City Attorney	209-831-6132	leticia.ramirez@cityoftracy.org
Ripon Bhatia	Utilities - Senior Civil Engineer	209-831-6338	ripon.bhatia@cityoftracy.org
Kevin Jorgensen	Development Svcs - Building Official	209-831-6415	kevin.jorgensen@cityoftracy.org
Don Scholl	Public Works - Director	209-831-6360	don.scholl@cityoftracy.org
Dan Summa	City Mgr Ofc - Interim PIO	209-831-6102	pio@cityoftracy.org
Grace Strmiska	City Mgr Ofc - PIO Project Specialist	209-831-6127	pio@cityoftracy.org
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David Bramell	South County Fire - Interim Fire Chief	209-831-6705	david.bramell@cityoftracy.org
Tony Sheneman	Tracy Police - Lieutenant	209-831-6522	tony.sheneman@tracypd.com
Karin Schnaider	Finance - Finance Director	209-831-6841	karin.schnaider@cityoftracy.org



City of Tracy Local Hazard Mitigation Plan

Stakeholder Workshop

Tracy Transit Center
50 East 6th Street, Tracy CA 95376

Wednesday, November 14, 2018

woodplc.com

Agenda

1. Introductions
2. Mitigation Planning and the Disaster Mitigation Act
3. Role of the Hazard Mitigation Planning Committee (HMPC)
4. Hazard Mitigation Plan
5. Review of Identified Hazards
6. Initial Results of Hazard Identification and Risk Assessment
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Introductions

- City of Tracy
 - Karin Schnaider (Finance Director/HMPC Coordinator)
- Wood Environment & Infrastructure Solutions, Inc.
 - Juliana Prosperi, AICP (Project Manager)

3 Stakeholder Workshop



Trends Resulting in Increased Costs for Disaster Response & Recovery

- Population and community growth
 - More people living in hazardous areas
 - Greater exposure to risk
 - People, infrastructure, buildings
- More hazards
 - Technological, civil, terrorist hazards
- More disaster declarations
- Increase in disaster response and recovery costs



4 Stakeholder Workshop



Mitigation Planning

Why addressing these trends is a priority?

- Increasing costs of response and recovery
 - The cost of “doing nothing” is too much
- Many events are predictable and repetitive
- Loss reduction activities can be undertaken
 - They work well
 - Cost-effective and environmentally sound
 - Funds are available to help
- Legal and moral responsibilities

5 Stakeholder Workshop



Mitigation Planning

How can we reverse these trends?

- **Mitigation:** Any *sustained* action taken to reduce or eliminate long-term risk to human life and property from hazards



6 Stakeholder Workshop



Mitigation Planning –Why It's Important

Disaster Mitigation Act of 2000

- Requires local governments to have hazard mitigation plans for continued eligibility for mitigation funds, pre- and post- disaster (No Plan, No \$)
- Guide mitigation activities in a coordinated & economic manner
- Incorporate into other existing planning mechanisms
- Future Development: plan and build wisely
- Reduce losses
- Make community more disaster resistant (Resilience!)



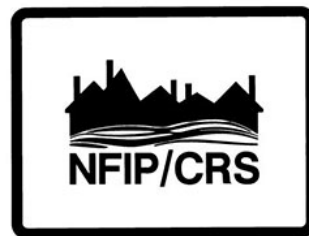
7 Stakeholder Workshop



Mitigation Planning

National Flood Insurance Program Community Rating System

- Created in 1990 as a voluntary incentive program
- Recognizes communities that manage their floodplains beyond the minimum standards by providing discounted flood insurance rates
- Floodplain Management Planning earns credits in CRS
- San Joaquin County is a CRS participant



8 Stakeholder Workshop



Mitigation Planning

CRS 10-Step Process within the 4-Phase Guidance

Phase I: Organize Resources

1. Get organized
2. Plan for public involvement
3. Coordinate with other departments and agencies

Phase III: Develop a mitigation plan

6. Set planning goals
7. Review mitigation alternatives
8. Draft and action plan

Phase II: Risk Assessment

4. Identify the hazard(s)
5. Assess the risks

Phase IV: Adoption and Implementation

9. Adopt the plan
10. Implement the plan, evaluate its worth, and revise as needed

9 Stakeholder Workshop



Mitigation Planning

FEMA's 2013 Nine-Step Process

- | | |
|---------------|---|
| Step 1 | Determine the Planning Area and Resources |
| Step 2 | Build the Planning Team |
| Step 3 | Create an Outreach Strategy |
| Step 4 | Review Community Capabilities |
| Step 5 | Conduct a Risk Assessment |
| Step 6 | Develop a Mitigation Strategy |
| Step 7 | Keep the Plan Current |
| Step 8 | Review and Adopt the Plan |
| Step 9 | Create a Safe and Resilient Community |

10 Stakeholder Workshop



Phase I: Organize Resources

- 1) Get organized
- 2) Plan for public involvement
- 3) Coordinate with other department and agencies



11 Stakeholder Workshop



1) Get Organized – To Prepare the Plan

- Obtain community commitment to mitigation
- Determine and assign staff
- Establish your mitigation planning team

12 Stakeholder Workshop



1) Get Organized – Establishing Your Hazard Mitigation Planning Committee (HMPC)

- **City Departments**
 - Public Works
 - Utilities
 - Human Resources
 - Finance Department
 - Fire Department
 - Development Services
 - Building Safety and Fire Prevention
 - Code Enforcement
 - Engineering
 - Economic Development
 - Planning Division
 - Parks and Recreation
 - Police Department
 - City Manager's Office, City Clerk's Office, City Attorney's Office
 - Information Technology/GIS

13 Stakeholder Workshop



2) Plan for Public Involvement

- **Requirement:** Provide Two Opportunities
 - During Drafting Stage
 - Prior to approval
- **Advantages:**
 - Solutions fit local needs better
 - Strengthens local support for plan
 - Special interests are considered; avoids being "Blind-Sided"
 - It is a fair process
 - Generates new ideas

14 Stakeholder Workshop



3) Coordinate with Other Stakeholder Departments & Agencies

- San Joaquin County and San Joaquin Council of Governments
- County Regional Transit District and Bay Area Rapid Transit
- Pacific Gas & Electric
- Federal, Regional, Businesses, Academia
- Cal Fire
- CNRA
- Cal OES
- Neighboring Communities and Counties
- FEMA Region IX
- US Bureau of Reclamation
- US Forest Service
- NOAA/NWS
- Tracy Unified School District
- Hospitals (Sutter Tracy Community Hospital, Tracy Convalescent Hospital)

15 Stakeholder Workshop



Phase II: Risk Assessment

Three Components

- 4) Hazard identification (what can happen here?)
- 5) Vulnerability Assessment (what will be affected?)
 - Includes a Mitigation Capability Assessment



16 Stakeholder Workshop



4) Hazard Identification – *Has It Happened Here Before?*

- Identify all possible hazards affecting the planning area
- Profile the hazards
- Information sources:
 - Past disaster declarations
 - Planning team / community members
 - Existing plans and reports
 - GIS-based maps and data
 - Internet websites and databases
 - Newspaper / historical records
 - Local, state, and federal experts
 - Insurance data

17 Stakeholder Workshop



4) Hazard Identification – *Profile the Hazards*

- Hazard / Problem description
 - Seasonal Patterns
 - Speed of Onset/Duration
- Geographic Extent
- Past occurrences
- Magnitude / Severity
- Significance
- Frequency / likelihood of future occurrences



18 Stakeholder Workshop



5) Vulnerability Assessment – *What Will Be Affected?*

- Inventory residential and commercial structures
- Inventory critical facilities and infrastructure
- Determine value of structures
- Determine the number of people in hazard areas
- Identify vulnerable infrastructure
- Identify development trends / constraints
- Identify historic, cultural, and natural resource areas
- Estimate losses

19 Stakeholder Workshop



Mitigation Capability Assessment

- Inventory of the community's existing and proposed policies, programs, and ordinances that may affect its vulnerability to hazards
- Evaluate the effectiveness of each for mitigation purposes. Note gaps, shortfalls or conflicts associated with their design, enforcement of implementation. Identify any special opportunities
- Determine the City's technical and fiscal abilities to implement mitigation initiatives.
- Assess ability to attract and leverage funding

20 Stakeholder Workshop



Phase III: Develop a Mitigation Plan

- 6) Set planning goals
- 7) Review mitigation alternatives
- 8) Draft an action plan



21 Stakeholder Workshop



6) Set Planning Goals – *Using the Risk Assessment*

- Broad statements of what the plan is to achieve
- Based on risk
- Estimated losses
 - At-risk facilities and infrastructure (e.g. transportation utility lines?)
 - At-risk critical facilities
 - At-risk cultural and natural resources
- Goals from other existing plans
- Other opportunities
 - At-risk areas and facilities for future development
 - Repetitive losses
 - Public education
 - Increased insurance coverage

22 Stakeholder Workshop



7) Review Mitigation Alternatives

- Prevention
- Property protection
- Natural resource protection
- Emergency services
- Structural projects
- Public information
- Multi-hazard measures and considerations
- No action



23 Stakeholder Workshop



Review of Mitigation Alternatives – *Criteria for Selecting Mitigation Measures*

- | | |
|---|---|
| <ul style="list-style-type: none"> • Will it work? • Is it cost-beneficial? • Is it affordable? • Is it legal? • Is it fair? • Do people want it? • Are there administrative burdens? • Is it politically acceptable to community leaders? • Is it environmentally sound? • Is funding available? | <p>Example Hazard Mitigation Projects Eligible for FEMA funding:</p> <p><u>Wildfire</u></p> <ul style="list-style-type: none"> • Defensible space • Hazardous fuels reduction activities (e.g. vegetation removal) • Implement ignition-resistant construction techniques <p><u>Flood</u></p> <ul style="list-style-type: none"> • Dry and wet flood proofing • Flood reduction projects (e.g. detention ponds, channel stabilization) <p><u>Other-General</u></p> <ul style="list-style-type: none"> • Utility protection/infrastructure retrofit • Adding generators |
|---|---|

24 Stakeholder Workshop



Phase IV: Adopt & Implement the Plan

9) Adopt the Plan

- Official Adoption by Council
- Public input before adoption

10) Implement the Plan

- Assign an overall project manager
- Integrate actions into staff work plans
- Monitor changes in vulnerability
- Report on progress, publicize successes
- Revise the plan as necessary (every 5 years for DMA)

25 Stakeholder Workshop



Role of the Hazard Mitigation Planning Committee And The Benefits

- **Coordination and collaboration on mitigation strategies**
- Creating eligibility for funding for mitigation projects
- **Attend meetings and participate in the planning process**
- **Provide requested information**
- **Review drafts and provide comments**
- Identify mitigation projects specific to department; provide status
- Assist with and participate in the public input process
- Coordinate formal adoption

26 Stakeholder Workshop



Initial Results of Hazard Assessment

Hazards of Concern

- Flooding
- Dam and Levee Failure
- Seismic Hazards (e.g. earthquake)
- Wildland/Urban Fires
- Drought
- Extreme Heat
- Severe Weather (e.g. heavy rain/storms, wind/tornado)
- Human-Caused Hazards
- Hazardous Materials
- Transportation-Related Hazards
- Climate Change
- Others?

29 Stakeholder Workshop



Initial Results of Hazard Assessment

Hazard Profiles

- **Hazard/Problem Description**
 - Area, Seasonal Patterns, Speed of Onset/Duration
- **Geographic Extent (or Spatial Extent)**
 - Limited: Less than 10% of Planning Area
 - Significant: 10-50% of Planning Area
 - Extensive: 50-100% of Planning Area
- **Past Occurrences**
 - Information on Historical Incidents, Known Impacts
- **Magnitude/Severity:**
 - Catastrophic: More than 50% of property severely damaged
 - Critical: 25-50% of property severely damaged
 - Limited: 10-25% of property severely damaged
 - Negligible: Less than 10% of property severely damaged
- **Significance**
 - Low: Minimal potential impact
 - Medium: Moderate potential impact
 - High: Widespread potential impact
- **Frequency/Likelihood of Future Occurrences**
 - Highly Likely: Near 100% chance of occurrence in next year
 - Likely: Between 10-100% chance of occurrence in next year
 - Occasional: Between 1-10% chance of occurrence in next year
 - Unlikely: Less than 1% chance of occurrence in next year

30 Stakeholder Workshop



Review of Identified Hazards

Declared Disaster Declarations in San Joaquin County

Event/ Hazard	Year	Declaration Type	Remarks/Description
Heavy Rains and Flooding	1964	Presidential—Major Disaster Declaration	
Severe Storms and Flooding	1969	Presidential—Major Disaster Declaration	
Drought	1977	Presidential—Emergency Declaration	\$4.8 million (2009 dollars) statewide
Torrential Rain, High Tide & Winds	1980	Presidential – Emergency Declaration	
Levee Break and Flooding	1980	Major Disaster Declaration	
Severe Storms, Flood, Mudslides & High Tide	1981	Major Disaster Declaration	
Levee Break	1982	Major Disaster Declaration	San Joaquin County
Coastal Storms, Floods, Mudslides, & Tornadoes	1983	Major Disaster Declaration	San Joaquin County
Severe Storms & Flooding	1986	Major Disaster Declaration	
Loma Prieta Earthquake	1989	Major Disaster Declaration	
Severe Freeze	1991	Major Disaster Declaration	
Severe Winter Storms, Flooding, Landslides, Mud flow	1995	Major Disaster Declaration	
Severe Storms, Flooding, Mud and Landslides	1996	Major Disaster Declaration	
Severe Winter Storms and Flooding	1998	Major Disaster Declaration	
Flooding as a result of levee break	2004	Major Disaster Declaration	
Hurricane Katrina Evacuation	2005	Emergency Declaration	
Severe Storms, Flooding, Mudslides, and Landslides	2005	Major Disaster Declaration	
Severe Storms, Flooding, Landslides, and Mudslides	2006	Major Disaster Declaration	
Severe Winter Storms, Flooding and Mudslides	2017	Major Disaster Declaration	

31 Stakeholder Workshop



Initial Results of Hazard Assessment

Flood: 100-, 200-, and 500-Year Events

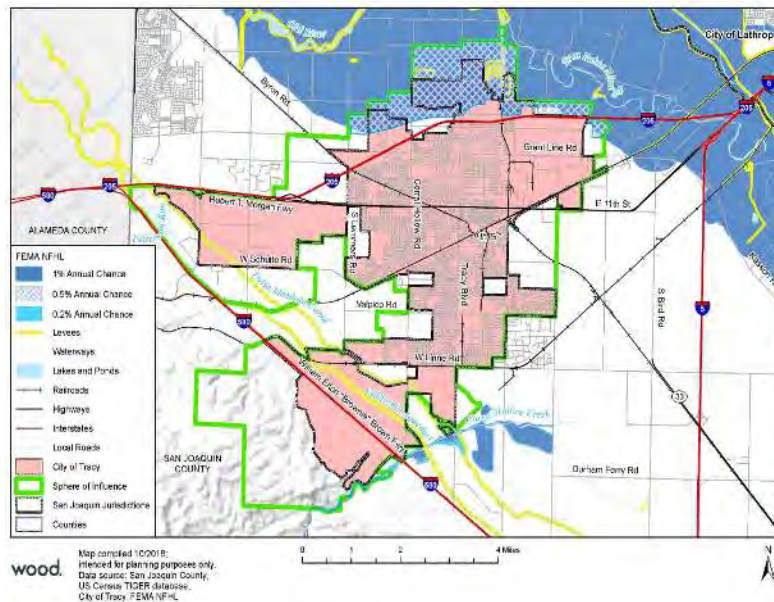
- **Hazard/Problem Description:** North of City, Southeast of City at Corral Hollow Creek area, several levees traverse SOI
- **Geographic Extent:** Limited
- **Past Occurrences:** 11 declared disasters in San Joaquin County
- **Magnitude/Severity:** Under Analysis/Need Property Data
- **Significance:** Under Analysis
- **Likelihood of Future Occurrences:** Occasional
- **Existing Capabilities:** City's General Plan, Other Planning Mechanisms under Analysis

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Initial Results of Hazard Assessment

Flood: 100-, 200-, and 500-Year Events



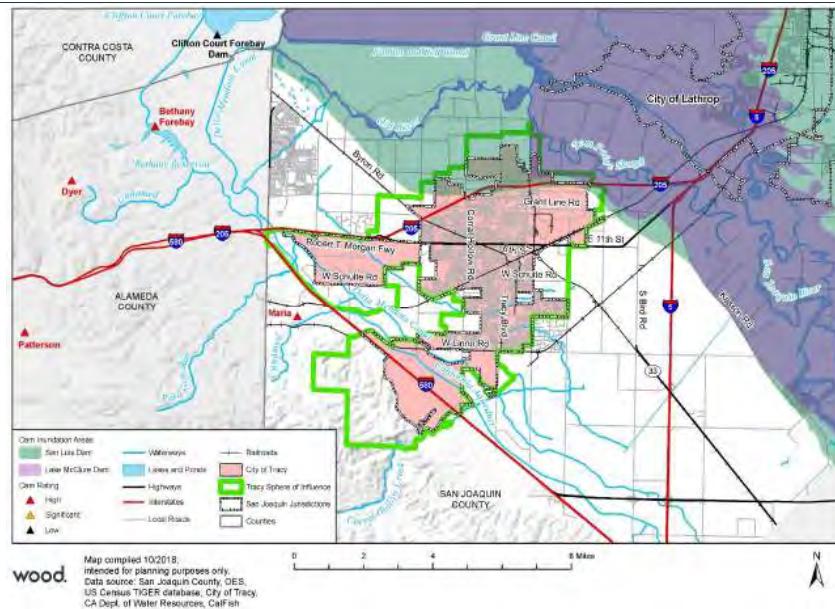
Initial Results of Hazard Assessment

Dam Failure

- **Hazard/Problem Description:**
 - 3 high hazard dams
 - 1 low significance dam
 - North of City of Tracy
- **Geographic Extent:** Limited
- **Past Occurrences:** Past Levee Breaks
- **Magnitude/Severity:** Limited
- **Significance:** Low
- **Future Likelihood of Occurrence:** Unlikely
- **Existing Capabilities:** EAP's, GIS mapping

Initial Results of Hazard Assessment

Dam Failure



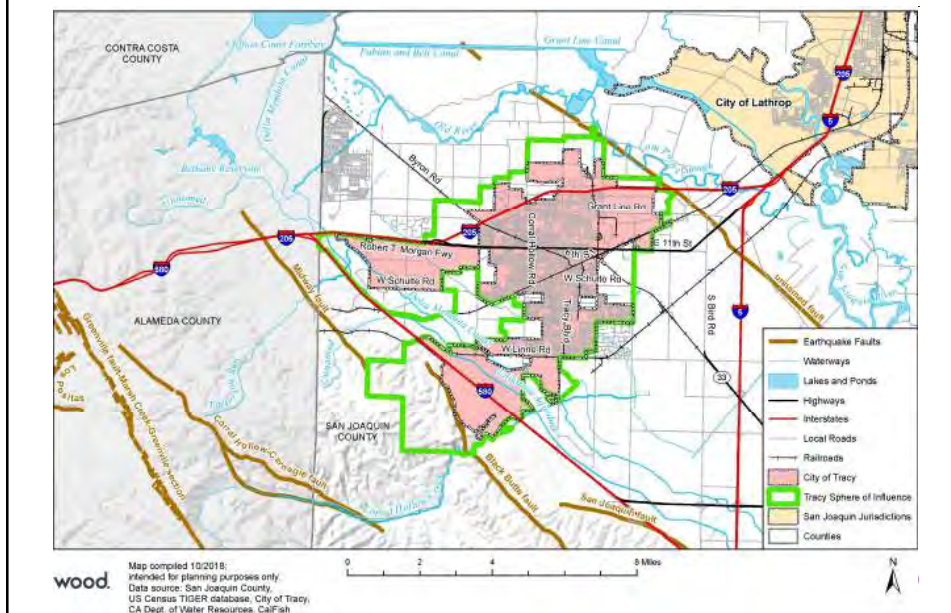
Initial Results of Hazard Assessment

Seismic Hazards

- **Hazards/Problem Description:**
 - City in Seismic Zone 3, Parts of Tracy Hills SP in Zone 4
 - Multiple Faults within/around planning area
 - Corral Hollow/Carnegie
 - Black Butte
 - Midway
 - Moderate Potential for Earthquake Hazards
 - Ground shaking
 - Liquefaction
- **Geographic Extent:** Significant
- **Past Occurrences:** Loma Prieta Earthquake
- **Magnitude/Severity:** Significant
- **Significance:** Medium/High
- **Future Likelihood of Occurrence:** Occasional
- **Existing Capabilities:** 2018 Great ShakeOut Participation, City's General Plan, Building Code

Initial Results of Hazard Assessment

Seismic Hazards



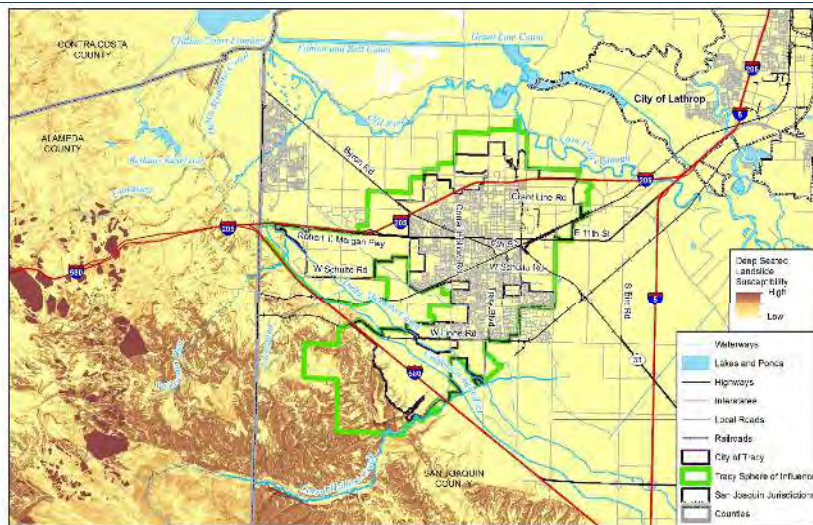
Initial Results of Hazard Assessment

Landslide

- **Hazard/Problem Description:** Limited deep-seated landslide susceptibility, southwest of the City
- **Geographic Extent:** Limited
- **Past Occurrence:** Lack of past occurrences
- **Magnitude/Severity:** Negligible
- **Significance:** Low, hazard will be acknowledged in LHMP, but not further analyzed/profiled
- **Future Likelihood of Occurrence:** Unlikely
- **Existing Capabilities:** Under Analysis

Initial Results of Hazard Assessment

Landslide



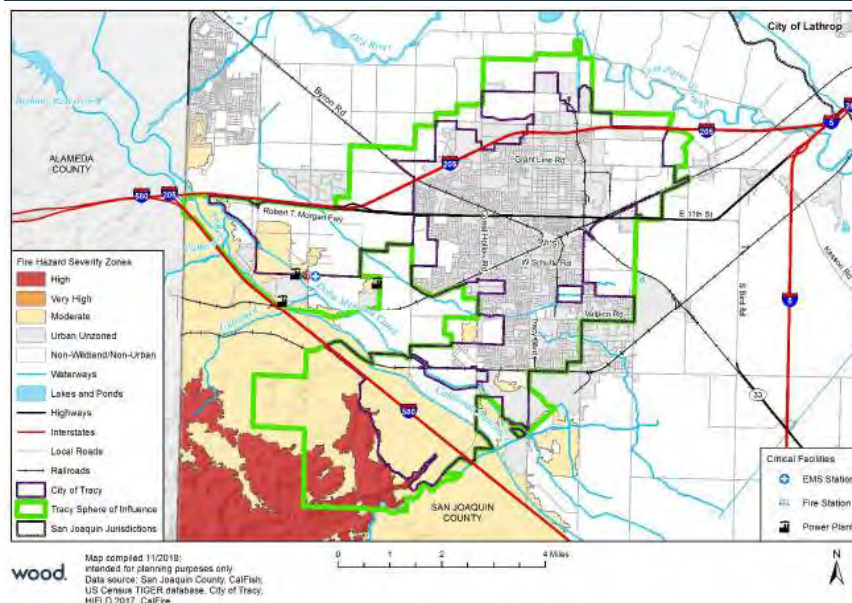
Initial Results of Hazard Assessment

Fire: Urban and Wildland

- **Hazard/Problem Description:** High severity fire zones southwest of the City
- **Geographic Extent:** Limited
- **Past Occurrences:** 6 fires in the last 8 years in or near Tracy
- **Magnitude/Severity:** Under Analysis
- **Significance:** Medium
- **Future Likelihood of Occurrence:** Likely
- **Existing Capabilities:** Under Analysis

Initial Results of Hazard Assessment

Fire: Urban and Wildland



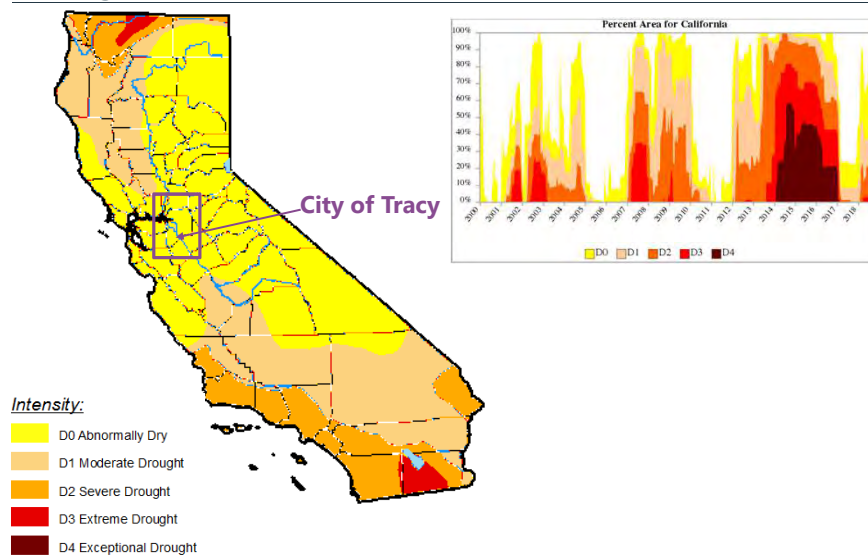
Initial Results of Hazard Assessment

Drought

- **Hazard/Problem Description:**
 - 2014 State of Emergency for Drought
 - Drought conditions worsened through 2014 to 2015
- **Geographic Extent:** Extensive
- **Past Occurrences:**
 - 6 Multi-Year Droughts since 1950
 - Three since 2000
 - Most recent is going since 2012
- **Magnitude/Severity:** Likely
- **Significance:** High
- **Future Likelihood of Occurrence:** Ongoing
- **Existing Capabilities:** Drought plans, Water Management Plans

Initial Results of Hazard Assessment

Drought



Initial Results of Hazard Assessment

Extreme Heat

- **Hazard/Problem Description:**
 - Temperatures that hover 10 degrees or more above average high temperature for the region and last several weeks
- **Geographic Extent:** Limited
- **Past Occurrences:**
 - Heat waves have claimed more lives in state than all other declared disaster event combined
 - 42 heat and excessive heat events in past 28 years in San Joaquin County
 - Highest recorded daily extreme temperature was 112°F on June 16, 1961
- **Magnitude/Severity:** Limited
- **Significance:** Medium
- **Future Likelihood of Occurrences:** Highly Likely
- **Existing Capabilities:** Designated Cooling Zones, Free TRACER Rides, Urban Heat Island Effect Strategies

Initial Results of Hazard Assessment

Severe Weather

- **Hazard/Problem Description:** Heavy Rain, Thunderstorms, Hail, Lighting
- **Geographic Extent:** Extensive
- **Past Occurrences:**
 - 47 Hail, Heavy Rain, and Lighting Events in past 67 Years in San Joaquin County
 - Majority are heavy rain events (43 Events)
 - Average annual precipitation: 9.86 inches
 - Highest recorded annual precipitation: 21.14 inches (1983)
- **Magnitude/Severity:** Limited
- **Significance:** Low
- **Future Likelihood of Occurrence:** Highly Likely
- **Existing Capabilities:** Under Analysis

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Initial Results of Hazard Assessment

Wind and Tornadoes

- **Hazard/Problem Description:** Wind and tornadoes cause potential property and critical facilities damage, loss of life
- **Geographic Extent:** Negligible
- **Past Occurrences:**
 - 2 tornado events in past 67 years (1950-2017)
 - March 29, 1998 (\$1,000 in property damage)
 - December 26, 2005 (\$20,000 in property damage)
- **Magnitude/Severity:** Limited
- **Significance:** Low
- **Future Likelihood of Occurrence:** Occasional
- **Existing Capabilities:** Under Analysis

46 Stakeholder Workshop



Initial Results of Hazard Assessment

Hazardous Materials

- **Hazard/Problem Description:**
 - Hazardous Materials, Gas Pipelines, Powerlines, Chemical Facilities
 - 13 Risk Management Plan (RMP) facilities in the City
 - Store over five million pounds of toxic chemicals
 - 4.6 million pounds of chlorine
 - 375,000 pounds of anhydrous ammonia
 - 40,000 pounds of sulfur dioxide
- **Geographic Extent:** Under Analysis
- **Past Occurrences:** 85 reported hazardous materials incidents since 1999
 - Average of 4 incidents/year
 - 34% were transportation-related
 - 22% road/highway, 11% rail, 1% vessel/marine
 - 11% were pipeline releases
- **Magnitude/Severity:** Under Analysis, Need Property Data
- **Future Likelihood of Occurrence:** Under Analysis
- **Existing Capabilities:** Facility Management Plans, County Monitoring

47 Stakeholder Workshop



Initial Results of Hazard Assessment

Transportation Accidents

- **Hazard/Problem Description:** Transportation-Related Hazards
- **Geographic Extent:** Under Analysis
- **Past Occurrences:** 381 traffic fatalities/injuries in 2015
- Up 59% since 2009
 - Alcohol-related increased 200% (from 10 to 30)
 - DUI arrests dropped 70% 2009-2015 (from 311 to 92)
- Tracy ranks 55th overall out of 103 similar CA cities
 - 63rd for alcohol-related fatalities/injuries
 - 80th for motorcycle fatalities/injuries
- **Magnitude/Severity:** Under Analysis, Need Property Data
- **Significance:** Medium
- **Future Likelihood of Occurrence:** Highly Likely

48 Stakeholder Workshop



Community Outreach Strategy

Planning for Public Involvement

- Any opportunities for outreach at scheduled public meetings or events?
- Developed a Community Outreach Strategy
 - Education, information, and coordination on the LHMP process
 - Hazard Mitigation Plan Website
 - Regular Website Postings
 - Event Flyers and Advertisements
 - Newsletters
 - Online Public Survey
 - Public Workshops
 - Hazard Mapping
 - Farmer's Market Informational Booth
- Other ideas/recommendations?



49 Stakeholder Workshop



Data Collection Guide

What's New in Mitigation Planning

- FEMA Local Hazard Mitigation Planning Guidance 2013
- Cal OES requires Capability Assessment in LHMPs
- Cal OES suggests incorporating climate change considerations
- Cal OES MyPlan and MyHazards Internet tools
- FEMA Plan Review Tool
 - Replaces old Plan Review Crosswalk
- New CRS guidance
- As a result of disasters, more FEMA \$ has been available for communities with HMPs to leverage for projects!

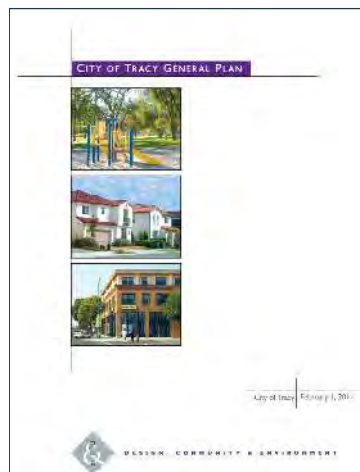
50 Stakeholder Workshop



Data Collection Guide

Hazard Information Resources

- What existing or recent plans, reports or studies exist?
 - Master plans
 - Floodplain map revisions
 - Safety Element updates to General Plans
 - Subsidence studies
 - Tree mortality inventories
 - Wildfire hazards



51 Stakeholder Workshop



Data Collection Guide

Initial Data Needs

- Data Collection Guide
 - Worksheets #1 Hazard Identification
 - Worksheet #2 Historic Hazard Event
 - Worksheet #3 Vulnerability Assessment
 - Worksheet #4 Capability Assessment
- Recent natural and human-caused hazard events
- Growth and development trends
- Recent updated plans and policies
- Follow-up with key staff and stakeholders where needed

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Schedule and Next Steps

When will we meet next?



Task or Key Milestone	Anticipated Date
Notice to Proceed	June 8, 2018
Project Kick-Off Meeting	August 9, 2018
Submit HMPC Invite List	September 11, 2018
HMPC Meeting #1	September 25, 2018
Submit Draft Community Engagement Study	October 5, 2018
City Review of Draft Community Engagement Study	October 12, 2018
Prepare Hazard Identification and Risk Assessment	TBD
Stakeholder Workshop	November 14, 2018
Develop GIS Geodatabase (pending City Assessor and Property Value Data)	November 30, 2018
HMPC Meeting #2	December 20, 2018
HMPC Meeting #3	February 12, 2019
Public Workshop	February 12, 2019
Finalize Goals and Objectives	February 15, 2019
Compile Mitigation Actions Worksheets	March 1, 2019
Submit 1 st Administrative Draft HMP	March 15, 2019
City provides Consolidated Staff Comments on 1 st Administrative Draft HMP	March 29, 2019
Submit 2 nd Administrative Draft LHMP	April 12, 2019
Circulate Public Review Draft LHMP	April 19, 2019
Public Review Ends	May 18, 2019
Complete FEMA Region IX Review Tool	May 31, 2019
Submit LHMP to FEMA for Review	June 4, 2019
Submit to Cal OES for Review	July 18, 2019
City Council Hearing	August 6, 2019*

*City Council Meetings are held on the first and third Tuesdays of each month

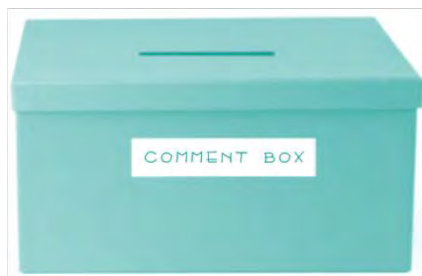


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Schedule and Next Steps

When will we meet next?

- **HMPC #2 – December 20, 2018**
- HMPC #3 – February 12, 2019 from 1:00 – 4:00 PM
- Public Workshop – February 12, 2019 @ 7:00 PM



- Fill out a Comment Card and Place it in the Comment Box!



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Questions?

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(209) 831-6841

wood.

Environment & Infrastructure Solutions
<http://www.woodplc.com>



HMPC Meeting #2 Agenda

Date: 20 December 2018
9:00 AM – 12:00 PM

Meeting at: Fire Administration – Upstairs
Conference Room
835 Central Avenue
Tracy, CA 95376

Project: City of Tracy Local Hazard Mitigation Plan

Subject/Purpose

The purpose of the meeting is to review the Hazard Identification and Risk Assessment (HIRA) and to develop broad goals for the Hazard Mitigation Plan in coordination with related goals from the 2011 City of Tracy General Plan Safety Element and other relevant plans.

1. Introductions
2. Review of Planning Process
3. Review of Identified Hazards
4. Vulnerability Assessment Overview by Hazard
5. Capabilities Assessment
6. Developing Goals for the Mitigation Plan
7. Update on Community Outreach
8. Schedule and Next Steps
9. Questions and Answers

2011 City of Tracy General Plan – Safety Element Goals

Geologic Hazards

Goal SA-1: A reduction in risks to the community from earthquakes and other geologic hazards.



Objective SA-1.1: Minimize the impacts of geologic hazards on land development.

Policy P1. Underground utilities, particularly water and natural gas mains, shall be designed to withstand seismic forces.

Policy P2. Geotechnical reports shall be required for development in areas where potentially serious geologic risks exist. These reports should address the degree of hazard, design parameters for the project based on the hazard, and appropriate mitigation measures.

Objective SA-1.2: Implement measures related to site preparation and building construction that protect life and property from seismic hazards.

Policy P1. All construction in Tracy shall conform to the California Building Code and the Tracy Municipal Code including provisions addressing unreinforced masonry buildings.

Flooding

Goal SA-2: A reduction of hazards related to flooding or inundation.

Objective SA-2.1: Minimize flood risks to development.

Policy P.1. Development shall only be allowed on lands within the 100-year flood zone, if it will not:

- Create danger to life and property due to increased flood heights or velocities caused by excavation, fill, roads and intended use.
- Create difficult emergency vehicle access in times of flood.
- Create a safety hazard due to the unexpected heights, velocity, duration, rate of rise and sediment transport of the flood waters expected at the site.
- Create excessive costs in providing governmental services during and after flood conditions, including maintenance and repair of public facilities.
- Interfere with the existing waterflow capacity of the floodway.
- Substantially increase erosion and/or sedimentation.
- Contribute to the deterioration of any watercourse or the quality of water in any body of water.

Policy P2. Public and private development in the 100-year flood zones shall have the lowest floor elevated at least 1 foot above the base flood level, or be of flood proof construction.



Policy P3. The City shall prevent the construction of flood barriers within the 100-year flood zone that divert flood water or increase flooding in other areas.

Policy P4. Property owners within the 100-year floodplain are encouraged to purchase National Flood Insurance, which reduces the financial risk from flooding and mudflows.

Objective SA-2.2 Maintain a high level of preparedness in the event of flooding.

Policy P1. The City shall maintain operational contingency plans for essential public facilities in the event of flooding.

Policy P2. The City shall locate, when feasible, new essential public facilities outside of flood hazard zones, including hospitals and health care facilities, emergency shelters, fire stations, emergency command centers, and emergency communications facilities, or identify construction or other methods to minimize damage if these facilities are located in flood hazard zones.

Policy P3. The City shall continue to work with other public agencies responsible for flood protection, including the Central Valley Flood Protection Board, the San Joaquin Office of Emergency Services, and the US Army Corps of Engineers.

Wildland Fires

Goal SA-3: Protection of lives and property from wildland fire hazards.

Objective SA-3.1 Evaluate the potential for wildland fire hazards when considering new development.

Policy P1. All development in areas of potential wildland fire hazards shall include the following:

- Clearance around structures.
- Fire-resistant ground cover.
- Fire-resistant roofing materials.

Policy P2. Development in areas with steep terrain shall be restricted as necessary in order to ensure fire safety.



Policy P3. New developments shall satisfy fire flow and hydrant requirements, street widths and design requirements as established by the City.

Policy P4. The City shall incorporate drought-resistant and fire-resistant plants in public works projects in areas subject to wildland fires.

Policy P5. The City of Tracy Fire Department shall train regularly for urban and wildland firefighting conditions.

Hazardous Materials and Waste

Goal SA-4: Protection from the harmful effects of hazardous materials and waste.

Objective SA-4.1. Minimize exposure to harmful hazardous materials and waste by Tracy residents.

Policy P1. Adequate separation shall be provided between areas where hazardous materials are present and sensitive uses such as schools, residences and public facilities.

Policy P2. When reviewing applications for new development and redevelopment in areas historically used for commercial or industrial uses, developers shall conduct the necessary level of environmental investigation to ensure that soils, groundwater and buildings affected by hazardous material releases from prior land uses and lead or asbestos potentially present in building materials, will not have a negative impact on the natural environment or health and safety of future property owners or users.

Policy P3. The safe transport of hazardous materials through Tracy shall be promoted by implementing the following measures:

- Maintain formally-designated hazardous material carrier routes to direct hazardous materials away from populated and other sensitive areas.
- Prohibit the parking of vehicles transporting hazardous materials on City streets.
- Require that new pipelines and other channels carrying hazardous materials avoid residential areas and other immobile populations to the extent possible.

Policy P4. Emergency response plans shall be submitted as part of use applications for all large generators of hazardous waste.

Policy P5. The City shall continue to encourage the reduction of solid and hazardous wastes generated within the City, in accordance with countywide plans.



Policy P6. The City shall partner with San Joaquin County to implement the Hazardous Materials Area Plan.

Airport Safety

Goal SA-5: Protection from risks associated with aircraft operations at the Tracy Municipal Airport.

Objective SA-5.1 Ensure that land uses within the vicinity of the Tracy Municipal Airport are compatible with airport restrictions and operations.

Policy P1. Ensure that new development shall be consistent with setbacks, height and land use restrictions as determined by the Federal Aviation Administration and the San Joaquin County Airport Land Use Commission, as well as the policies of the City's Airport Master Plan.

Emergency Preparedness

Goal SA-6: Preparation for emergencies.

Objective SA-6.1: Prepare and update City emergency procedures in the event of natural or man-made disasters.

Policy P1. Emergency access routes shall be kept free of traffic impediments.



HMPC #2 Meeting Minutes

Date/Time: Thursday, December 20, 2018 9:00 AM to 12:30 PM

Location: City of Tracy Fire Administration
Building – Upstairs Conference Room
835 Central Avenue
Tracy, CA 95376

Project No.: SA18170410

Written By: Juliana Prosperi (Wood, Project Manager)
Jeff Brislawn (Wood, Senior Emergency Management Associate)

Present: Karin Schnaider (City of Tracy, Finance Director)
Maricela Saldivar (City of Tracy, Public Works)
Jayne Pramod (City of Tracy, Parks and Recreation)
Kim Dunniway (City of Tracy, Human Resources)
Tony Shengman (City of Tracy, Police Department)
Kevin Jorgensen (City of Tracy, Development Services)
Danis Isho (City of Tracy, Development Services)
Pat Vargas (City of Tracy, Fire Department)
Grace Strmiska (City of Tracy, City Manager Office, Public Information)
Anne Bell (City of Tracy, Finance Department)
Ripon Bhatia (City of Tracy, Utilities Department)
Leticia Ramirez (City of Tracy, Chief Administrative Office, Assistant City Attorney)
Ryan Hardester (City of Tracy, Information Technology)

Subject: City of Tracy Hazard Mitigation Planning Committee Meeting #2

AGENDA TOPICS

This document is a record of attendance and a summary of the topics discussed at the above meeting including the following:

1. Introductions
2. Review of the Planning Process
3. Review of Identified Hazards
4. Vulnerability Assessment Overview by Hazard
5. Capabilities Assessment
6. Developing Goals for the Mitigation Plan
7. Update on Community Outreach
8. Schedule and Next Steps
9. Questions and Answers

1. Introductions

Ms. Prosperi initiated the meeting and asked that Ms. Schnaider and Mr. Brislawn introduce themselves and describe their project role. She then asked the group to introduce themselves and the department or agency they represent. The HMPC participants listed in the beginning of this meeting summary were present for the second meeting. The conference call line was open for stakeholder participation, but no stakeholders joined the call. Participants are also listed on the sign-in sheet (See Attachment A).

2. Review of Planning Process

Ms. Prosperi provided a brief overview of the Disaster Mitigation Act of 2000, National Flood Insurance Program (NFIP), and California legislation related to climate adaptation, local hazard mitigation planning, and General Plan safety element requirements. She then reviewed the Federal Emergency Management Agency (FEMA) 9-Step planning process and noted the team recently completed the Hazard Identification and Risk Assessment (HIRA) (or Step 5). She highlighted the launch of the City's LHMP webpage and the circulation of the online public survey. Ms. Prosperi also highlighted which City departments have been participating in the LHMP, as well as the stakeholders that attended the recent Stakeholder Workshop in November.

3. Review of Identified Hazards

Ms. Prosperi reviewed the seven natural hazards that will be evaluated in the LHMP, in addition to one human-caused hazard (hazardous materials). She explained that the natural and human-caused hazards evaluated include those that have occurred historically or have the potential to cause significant human or property loss in the future. She then reviewed the hazards dismissed from a detailed analysis based on a lack of past occurrences in the region or minimal past or anticipated impacts. She noted that while human-health hazards were raised as a potential concern from a participant in the Stakeholder Workshop, feedback from County participants indicated it was addressed in state and county plans. Ms. Prosperi added that this hazard is not required to be addressed by FEMA.

Mr. Brislawn introduced the terminology used in the hazard profiles, and defined geographic extent, past occurrences, magnitude, frequency of future occurrences, and significance levels.

Mr. Bhatia asked about thresholds associated with the hazard profile measures: geographic extent, magnitude, and past occurrences. He asked whether the thresholds were based specific numerical thresholds. Mr. Brislawn explained that some of the profile information is determined based on spatial data, past occurrences, and FEMA models. He stated that frequency is typically based on existing events and determined by dividing the number of events observed by the number of years on record and multiplying by 100. This provides the percent chance of the event happening in any given year. In some cases, such as an earthquake, the frequency is based on best available science and probabilistic modeling. Significance level is a qualitative measurement and it is measured in general terms, frequency criteria, and resulting property and economic damage.

Ms. Prosperi discussed climate change and that it will be summarized within each hazard profile.

4. Vulnerability Assessment Overview by Hazard

Flooding (100-year, 200-year, 500-year)

Mr. Brislawn lead the discussion on each hazard profile. He explained that 200 properties were at risk within the floodplain, but the extent is limited and mostly in the northern portion of the City. He noted that the parcel analysis was completed to determine what # of parcels/properties were in the 100-year floodplain. The dots on the maps are where there are existing parcels developed in the 100-year. It's a mix of residential, commercial and agricultural properties.

Mr. Jorgensen asked whether the analysis considers the fact that development since 1970s was built one-foot above the base flood elevation (BFE), as outlined in the Tracy Municipal Code (Chapter 9.52, Floodplain Regulations). Mr. Brislawn explained that the analysis did not account for the structures that were constructed after the City joined the NFIP in 1980. Mr. Jorgensen added that some of the development in that area was likely elevated to or above BFE and thus some of the properties should be mitigated to the 100-year event. Mr. Brislawn said they could look at the date of construction in the parcel database to refine the analysis further and account for structures that have been mitigated.

The HMPC noted that substantial city funds went into developing a \$30 million-dollar sports facility called Legacy Fields Sports Complex. The new sports complex is located in the 100-year floodplain; permanent structures include concessionaires and bathroom facilities that should have been constructed in accordance with the local floodplain regulations. The first phase of the facility was recently constructed in 2016; it consists of approximately 72 acres within an approximate 200-acre park.

Mr. Bhatia noted that the City's Wastewater Treatment Plant (WWTP) is outside the 100-floodplain, but near it in the northern portion of the City's Sphere of Influence. Mr. Jorgensen added that all the new development is developed in conformance with the Floodplain Regulations.

Mr. Brislawn explained that the area around the floodplains are protected by numerous levees and inquired with the HMPC on the status of the levee accreditation process. He asked if the levees have been upgraded and whether they will provide accreditation. Mr. Jorgensen answered that they do not have accreditation. He added that the 100-year and 200-year floodplain are similar, and it is the City's understanding that the area to the north of the floodplain near the Delta accommodates potential sheet flow during a 100-year flood event. He added that the elevation change towards the City is substantial enough that the majority of the City is well protected from floodplain hazards.

Localized Flooding

Mr. Brislawn discussed localized flood hazards in the City. He showed a map displaying the locations of where local drainage problems have been reported. Ms. Salvidar explained that the old part of the City, near 20th street, used to flood. She said she thought it was due to debris clogs. Ms. Prosperi asked the HMPC whether they had information on how these flooding and drainage problems were addressed and whether it was due to maintenance issues (e.g. clogged storm drains) or because the system was under capacity. Ms. Salvidar can clarify what infrastructure is new by sorting by date in the GIS data set. Ms. Prosperi said they received the GIS data yesterday, but have not evaluated the proposed basins, new storm lines and whether there are any patterns.

Dam Failure

Mr. Brislawn noted that there were 402 properties within the dam inundation areas based on failure of four dams. He said given some of the larger dams are far away they may have advance notice if failure occurred, and the impacts may be less severe. He did note that dam inundation would flood the City's WWTP. The HMPC discussed ownership of a few of the dams. A private company operates the Maria Dam (Studley Corp), the closest high hazard dam to the City. Bethany Forebay is owned and operated by PG&E.

Earthquakes

Mr. Brislawn summarized seismic hazards. The HMPC discussed the extent of damage they recalled from the Loma Prieta earthquake. Several HMPC participants noted the damage mostly affected city administrative and fire facilities. The Fire Administration building was closed down for 15 years, but has since been retrofitted. The old administration building is no longer in service.

Mr. Shengman inquired whether there were retrofit requirements for Tracy Sutter Community Hospital. Ms. Prosperi explained that several laws went into effect in the late 1990s that became part of the California Health and Safety Code. She said California's Office of Statewide Health Planning and Development (OSHPD) monitors the construction, renovation, and seismic safety of hospitals and other facilities. She noted that she recalls most hospitals were being retrofitted to higher structural performance categories (SPC) from 2000 to 2010.

All general acute care hospitals and facilities are assigned a SPC. SPC ratings range from 1 to 5 with SPC-1 assigned to buildings that may be at risk of collapse during a strong earthquake and SPC 5 assigned to buildings reasonably capable of providing services to the public following a strong earthquake. According to the SPC ratings, Tracy Sutter Community Hospital is comprised of 13 buildings: 8 have a SPC-4 rating, 3 have a SPC-5 rating, and 2 have a SPC-2 rating.

Mr. Brislawn asked the HMPC if there a retrofit program for unreinforced masonry constructed buildings or if a specific inventory existed. Mr. Jorgensen explained that most of these buildings have been demolished for public safety or other reasons; he added that maybe only 15 remain within the City limits. Mr. Jorgensen noted that the City voluntarily retrofitted the Grand Theatre, originally built in 1922, for public safety reasons.

Hazus-MH Model Results

Mr. Brislawn reviewed the results of the Hazus-MH model. The HMPC explained that most of Tracy was built in past 40 years, which means the new construction has been built to later California Building Code (CBC) requirements. Mr. Jorgensen asked whether the model can it take this into consideration. Mr. Brislawn noted that the model defaults to code requirements (i.e., from low to high), and usually defaults to high in California. He said he will check if the default uses the lower code, and we see if it can be replaced with consideration of higher building construction requirement. In summary, the HMPC agreed they do not have a large inventory or old buildings, most development occurred in past 40 years.

Wildland Fire

Mr. Brislawn discussed wildfire hazards. He noted that approximately 12,242 properties within the City's planning area are at risk. He added that much of the proposed Tracy Hills Specific Plan development is within a fire hazard severity zone (FHSZ). The HMPC explained that this development has a 30-year construction plan. Mr. Jorgensen added that building permits have been pulled, but nothing has been constructed.

Mr. Vargas stated that most wildfire fire hazards are smoke related, as there are few trees and primarily grass within the FHSZs. He stated they mostly have grassland fires resulting in short-term impacts. Mr. Vargas explained that there is a Co-Generation Plant in the FHSZ. He also stated there is a Reinforced Concrete Water Tank in the same area. Mr. Jorgensen and Mr. Vargas both added that two reservoirs are proposed at the Tracy Hills Specific Plan, and they will be developed as it is built out. Mr. Vargas added that there were mitigation measures proposed for the development. Ms. Prosperi reviewed these measures and they include a 100-foot firebreak, fire department easement access, and compliance with CBC Chapter 7A Building and Construction Methods for Exterior Wildfire Exposure.

Mr. Vargas added that there are numerous wildfires along the Interstate 580 corridor every year. These wildfires impact traffic but result in mostly smoke. He added that the Camp Fire in Butte County resulted in severe air quality impacts for several weeks. He noted that there was a substantial inversion layer. Ms. Schnaider stated that the San Joaquin Valley Air Quality Management District (SJVAQMD) issued health advisories during this time. The HMPC noted that the city hall was closed for a few hours and there were also some school closures due to the smoke and air quality concerns.

Ms. Prosperi asked the group about mutual aid agreements with other agencies. Mr. Vargas explained they have MUAs with Contra Costa County, and several others.

Drought

Mr. Brislawn discussed drought hazards. He stated some droughts can result in FEMA disaster declarations, but more common are USDA agricultural damage declarations. He asked the HMPC about the City's water supplies and current capabilities to address water shortages. Mr. Bhatia explained the City relies on both groundwater and surface water supply deliveries. Mr. Vargas added that the Tracy Hills Specific Plan developers obtained their own water rights.

Ms. Schnaider noted that water usage goes down when there are water conservation efforts in effect, she said the City received awards for water conservation. Mr. Bhatia said that the drought conditions are ongoing and water conservation efforts are still in effect, and that consumption rates have not changed. Ms. Schnaider noted there is an additional 20% water use reduction by 2040, as the 2020 thresholds were achieved early.

Extreme Heat

Mr. Brislawn asked the HMPC whether there have been any extreme heat impacts to people or infrastructure. Mr. Isho asked if the cooling center has back-up generators in the event of the power outage. Ms. Schnaider said very few buildings have back-up, other than the IT building, Fire Stations, and Emergency Operation Center (EOC). She then added that the Transit Station does not have back-up generators, but maybe the Senior Center has them. Mr. Brislawn indicated that there is mitigation funding for back-up generators.

Ms. Dunninway asked the group whether extreme heat affects the street integrity and whether it can result in resurfacing needs. Mr. Isho stated it may shorten the lifespan of the streets and would look to see if they had records of damage from extreme heat events.

Severe Weather

The HMPC discussed general severe weather hazards. Ms. Salvidar explained that recently lighting hit a transformer pad and there was a power outage for several hours. 1,700 customers lost power from 3-8 PM. Mr. Brislawn asked whether there were other impacts from lighting. The HMPC agreed the police station was susceptible to damage because that is where the communication tower is located, but back up is provided by San Joaquin County.

Tornadoes and High Wind

The HMPC briefly discussed wind and tornado hazards. The group stated there have been some tornadoes that caused property damage in past, but overall the City has had minor impacts. Ms.

Salvidar added there are frequently downed trees in Downtown Tracy from high wind events and some have led to power outages. She noted that high winds with some damage occur annually.

Hazardous Materials

The HMPC discussed the various hazard material facilities, including gas pipelines, powerlines, and chemical facilities in the City's planning area. They agreed there were highly variable significance levels associated with possible hazard events with these facilities, but several capabilities in place designed to mitigate the hazards, including Hazardous Material Area Plans, Hazardous Material Business Plans, and Risk Management Plans.

The following key hazardous material facilities and infrastructure were noted by the HMPC and the group agreed these should be shown on a map, or briefly discussed in the LHMP:

- Chevron, Philips 66, Kinder Morgan, and PG&E gas lines traversing the City;
 - Chevron gas line along Grant Line Road
 - Kinder Morgan gas line on Byron Road
 - Philips 66 runs through Tracy Hills (may be shown in Tracy Hills Specific Plan EIR)
 - PG&E 36-Inch Gas Line
- Water Tank in FHSZ near Tracy Hills Specific Plan; and
- WWTP near 100-year floodplain.

In summary, the HMPC agreed to update the hazard summary table. The following adjustments were made: decrease significance of drought to medium and increase significance of severe weather to medium.

5. Capabilities Assessment

The HMPC reviewed highlights of the City's mitigation capabilities. They discussed the City's training tower and facilities with shared with the Fire Department. The Fire and Police departments are looking to expand facilities and augment staffing. They briefly reviewed water and utility infrastructure capital improvement projects outlined in the 2013 Citywide Public Facilities Master Plan, 2013 Public Safety Master Plan, and 2012 Citywide Storm Drainage Master Plan. Ms. Schnaider noted that most grant applications have match requirements, but they can get other grants to fund the rest, if not covered by development impact fees for additional infrastructure improvements.

6. Developing Goals for the Mitigation Plan

The remainder of the meeting focused on the development of broad mitigation goal statements. Ms. Prosperi stated these goals are an important element of the LHMP Mitigation Strategy. She stated like the General Plan, they serve as the long-term blueprint for reducing potential losses identified in the risk assessment. The mitigation strategy is comprised of three components: goals, actions, and an implementation plan. She reminded the group that the HIRA described the vulnerability of the planning area and the City's capabilities to counter these hazards. Ms. Prosperi noted that when formulating goals, they should provide direction on what loss reduction activities can be undertaken to make the planning area more disaster resistant. Mr. Brislawn and Ms. Prosperi reviewed the City's General Plan Safety Element goals, San Joaquin County LHMP goals, and California Enhanced State Multi-Hazard Mitigation Plan goals as a starting point.

They emphasized the goals should be non-specific, future-oriented, and timeless. The HMPC was then provided three sticky notes and asked to write a mitigation goal on each note. They were also provided a list of generic goal statements as additional guidance. Once done, the HMPC placed the draft goals on two large flip charts; Mr. Brislawn and Ms. Prosperi arranged them by general themes. The LHMP draft goals generally focused on loss of life and property prevention, emergency response coordination, public education, funding opportunities, and community health and welfare planning. Mr. Brislawn and Ms. Prosperi will refine these into goal statements for future HMPC review with the intent to finalize the goals at the next HMPC meeting. Below is a summary of the proposed goal organized by theme:

Prevention of Loss of Life and Property

- Minimize risk and vulnerability from natural hazards
- Significantly reduce loss of life and property
- Provide protection for existing buildings from hazards
- Provide protection from critical lifeline utilities from hazard impacts
- Protection of life, property, and infrastructure through the integration of shared resources
- Minimize destruction of property and loss of life due to hazards by identifying appropriate mitigation actions

Emergency Response Improvements and Coordination; Community Resilience

- Increase service levels to meet increasing demands
- Minimize interruption of essential services and activities that serve the community
- Develop better coordination with OES/FEMA for disaster planning and relief
- Ensure critical structures and infrastructure are operational during emergency situations
- Provide resilient services that allow for a better feeling of confidence in the City
- Increase our resources by allowing better use of GIS and other technologies
- Enhance service providers understanding of their role to better serve the community

Education and Awareness

- Educate residents and City staff on the use of emergency application and procedures
- Increase public outreach and exposure of mitigation plan
- Increase awareness on hazards and vulnerabilities
- Develop a community education plan to ensure readiness and adaptation for a variety of natural and man-made disasters
- Increase community awareness of mitigation measures to high-risk hazards
- Providing training and education for community-wide awareness of potential hazards and resources
- Increase communities' awareness of vulnerability to hazards
- Increase training at HM facility sites (Training/EOC) to prepare and protect community
- Bring awareness to the community for possible hazards and develop plans
- Increase public awareness of hazards and promote preparation and planning to address hazards

Grant Funding Opportunities

- Ensure City complies with FEMA requirements for hazard grant/funding for emergencies
- Maintain FEMA eligibility and position City for grant funding
- Establish FEMA eligibility and position City for grant funding

Community Planning/Health and Welfare/Other

- Put plans and processes in place regarding use of various available resources/facilities during natural hazards
- Integrate hazard mitigation planning in City policies and planning
- Reduce/minimize risk to the community by addressing health, welfare and safety issues resulting from natural and man-made hazards
- Provide clear and concise plan to reassure the vulnerable that they will be cared for in troubled times

7. Community Outreach Strategy

Mr. Summa and Ms. Strmiska, both part of the PIO team, stated they will launch the webpage this week. They added that the Mayor Team will also broadcast it. Ms. Prosperi added that the online public survey is live. Ms. Schnaider also stated they will set-up a booth at four Farmer's Market events. At each event two iPads will be available for the public to complete the online survey and also flyers with the background on the plan, and GIS maps. She said they will produce large-scale hazard maps, and possibly a sign on a transit bus with a QR code scannable link to the survey. Ms. Prosperi asked that the volunteers at each event take photographs and send her the flyers and event advertisements to include in the public planning process section of the LHMP. Flyers and notifications will be shared on Nextdoor, Facebook, and Instagram social media platforms. Lastly, Mr. Summa stated News 10 will be pitching a newflash that the City is currently preparing the LHMP.

The Community Outreach Strategy was circulated among the HMPC during the end of the meeting. Ms. Ramirez mentioned that she did not think there were any Disadvantaged Communities (DUCs) within the City's planning area. Ms. Prosperi noted they used the EPA CalEnviroScreen tool to check census tract data for DUCs and recalled one census tract in the central portion of the City. Ms. Ramirez stated she recently reviewed a Municipal Service Review (MSR) that included recent census data. She stated she will provide an excerpt of the MSR and findings to Ms. Prosperi to ensure the sources are consistent with the City's planning documents.

8. Schedule and Next Steps

HMPC Meeting #3 is scheduled for February 12th at 1:00 PM. A public workshop is scheduled for the same evening at 7:00 PM. Ms. Schnaider asked that the HMPC attend the meeting, but the public workshop is optional; she and the PIO team will attend and facilitate the public workshop.

Ms. Prosperi stated her team will aim to get the HIRA chapter to the City by January 14th. Ms. Prosperi and Ms. Schnaider agreed to schedule an internal review call by February 4th.

9. Questions and Answers

There were no additional questions from the team. The meeting adjourned at 12:30 p.m.

ACTION ITEMS

No.	Item	Action	Completion Date
1.	Submit HMPC Meeting #2 Minutes	(Wood)	4 January 2019
2.	City Attorney Office to provide DUCs data	(City)	4 January 2019
3.	Submit HIRA Chapter from LHMP	(Wood)	14 January 2019
4.	Internal Meeting to review HIRA with City	(City)	4 February 2019
5.	Provide Photos and Documentation of Outreach	(City)	8 February 2019

Hazard Mitigation Plan

Sign-In Sheet

City of Tracy Local Hazard Mitigation Plan Hazard Mitigation Planning Committee (HMPC) Meeting #2

Thursday, December 20, 2018

9:00 a.m. – 12:00 p.m.

City of Tracy Fire Administration – Upstairs Conference Room
835 Central Avenue
Tracy, California 95376

This sign-in sheet documents the attendees at the City of Tracy Hazard Mitigation Planning Committee (HMPC) Meeting #2. This meeting summarizes the results of the Hazard Identification and Risk Assessment. It enables the City of Tracy to evaluate their risks and vulnerabilities to natural hazards and to identify mitigation strategies to reduce hazard-related losses and to make their jurisdiction more disaster resistant.

<u>Name</u>	<u>Representing Agency or Department and Title</u>	<u>Phone</u>	<u>Email</u>
Maricela Saldivar	Public Works	209 640 8383	MARICELA.SALDIVAR@cityoftracy.org
Jayne Pramod	Parks & Rec	209 831 6214	Jayne.pramod@cityoftracy.org
Kim Dunnaway	HR	209 831-6169	Kim.dunnaway@cityoftracy.org
Tony Shanahan	PD	831-6522	Tony.Shanahan@tracyca.gov
Kevin Jorgensen	EDS	209 831-6415	Kevin-jorgensen@cityoftracy.org
Danish Isho	D.S.	209-831-6484	danish.isho@cityoftracy.org
Pat Vargas	Fire	209 831-6700	pat.vargas@cityoftracy.org
Grace Strmisha	CMO (PIO)	209-831-6127	grace.strmisha@cityoftracy.org
Anne Bell	FINANCE	209 831-6859	Anne.Bell@cityoftracy.org

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<u>Name</u>	<u>Representing Agency or Department and Title</u>	<u>Phone</u>	<u>Email</u>

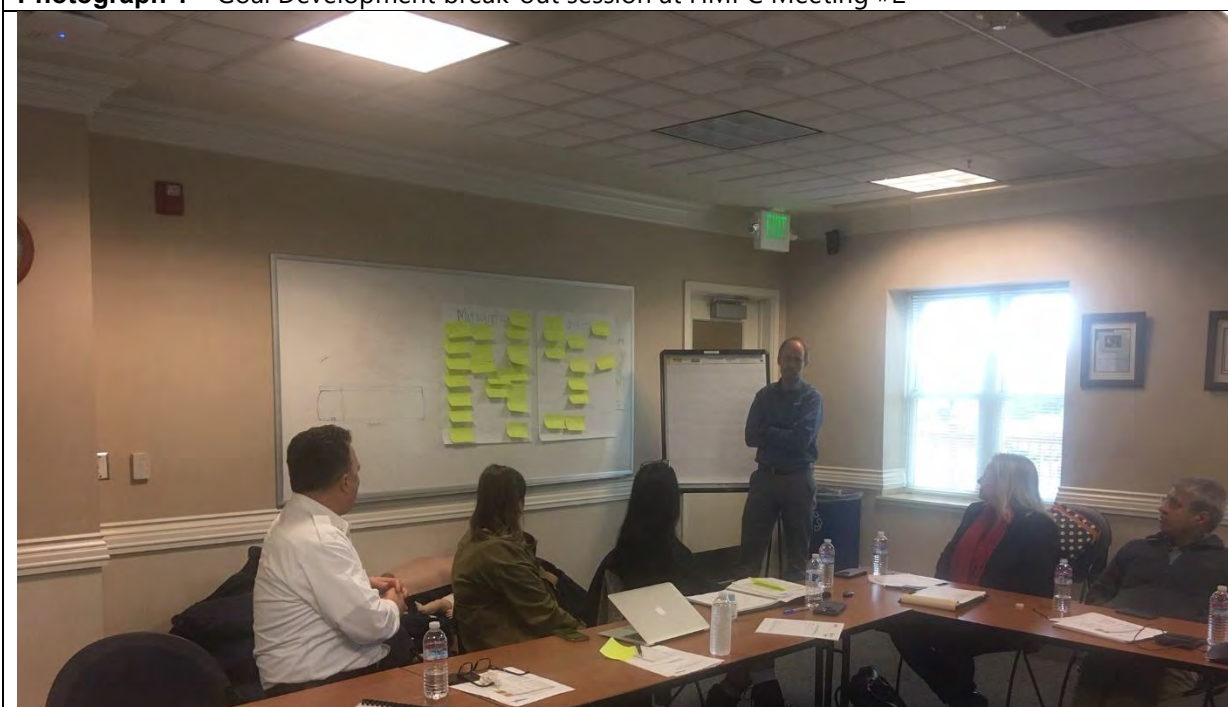
HMPC Meeting #2 Facilitated by: Juliana Prosperi, Jeff Brislawn		
Project Manager: Juliana Prosperi	Date: 12/20/18	Signature: Juliana Prosperi

CITY OF TRACY LOCAL HAZARD MITIGATION PLAN

Goal Development: Photographs



Photograph 1 Goal Development break-out session at HMPC Meeting #2



Photograph 2 Goal development review at HMPC #2

City of Tracy Hazard Identification & Risk Assessment Summary

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/Severity	Significance
Dam Failure/Levee Failure	Limited	Unlikely	Limited	Low
Drought	Extensive	Likely	Limited	Medium
Earthquake	Extensive	Occasional	Critical	Medium
Flood: 100/200/500 year, Localized Flooding	Limited	Occasional	Limited	Medium
Severe Weather: Extreme Heat	Extensive	Highly Likely	Limited	Medium
Severe Weather: Heavy Rains/Thunderstorms/Hail/Lighting/Dense Fog	Extensive	Highly Likely	Limited	Medium
Severe Weather: Wind and Tornadoes	Extensive	Likely	Negligible	Low
Fire: Urban and Wildland	Limited	Likely	Limited	Medium
Hazardous Materials	Significant	Highly Likely	Limited	Medium

Geographic Extent

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

Probability of Future Occurrences

Highly Likely: Near 100% chance of occurrence in next year, or happens every year.
Likely: Between 10 and 100% chance of occurrence in next year, or a recurrence interval of 10 years or less.
Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years.
Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.

Magnitude/Severity

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

Significance

Low: minimal potential impact
Medium: moderate potential impact
High: widespread potential impact

City of Tracy
Hazard Identification & Risk Assessment Summary

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City of Tracy
Hazard Identification & Risk Assessment Summary

Dam Failure Risk Summary

- Three high hazard dams close to the City's planning area. Only one dam (Maria) poses a risk to the City;
- No known dam failure events in recent years, but levee and flood control structural failures have occurred;
- 402 structures/properties at risk of structural damage;
- Commercial structures are most at risk of being impacted with \$575,864,679 total values at risk;
- Eight critical facilities are located within the dam inundation areas;
- Local city and county roads will be impacted by a dam failure, but major transportation infrastructure is located outside inundation areas for high hazard dams;
- Safety Element policies and flood regulations may complement risk associated with dam failure hazards and ensure future development is not directed to these hazards areas.
- Overall the significance is low.

Possible Mitigation Actions:

- Increase risk awareness of potential dam failure impacts

Drought Risk Summary

- There have been six multi-year droughts since 1950 and three major droughts since 2000; the most recent drought lasted from 2012 to 2017 and resulted in a declared state of emergency.
- 217 reports were made within San Joaquin County between, 1950 and 2018.
- Significant impacts associated with drought in are related to water intensive activities such as municipal usage and general water supply.
- Tracy's water comes from both surface and groundwater sources, with surface water making up about 50 to 60 percent of the total water supply in an average year.
- As of 2012, the City of Tracy had an estimated potable water production of 16,693 acre-feet per year, and future water demands are expected to increase potable water needs to about 36,300 acre-feet per year.
- While groundwater use has decreased since 2000 due to increasing surface water supplies from contractual entitlements, it is expected to remain a critical buffer during emergency drought conditions, when major suppliers, such as the CVWP and SCWSP reduce allocations.
- Population is expected to increase to 91,601 by 2020 and 96,542 by 2025; this projected growth would add additional strain to the surface and groundwater supplies, particularly during future severe drought events.

City of Tracy

Hazard Identification & Risk Assessment Summary

- Water suppliers, such as SCWSP and SSJID may reduce water deliveries during drought conditions, as water levels in major reservoirs decrease. As a result, it will be important for the City to continually assess the availability and reliability of multiple water sources during updates to the UWMP and other plan documents.
- Policies and planning processes, such as the City's Recycled and Non-Potable Water Ordinance and regular updates to the UWMP, as well as the formation of a GSA will help ensure the City of Tracy is more resistant to drought events in the future.
- Overall the significance is medium.

Possible Mitigation Actions:

- Require or encourage water conservation during drought conditions
- Encourage activities to prevent overgrazing
- Educate residents on water saving techniques
- Educate farmers on soil and water conservation practices
- Develop a plan to provide cooling centers
- Create a voluntary database of access and functional needs populations for first responders
- Develop a community network to contact and assist vulnerable persons (such as the elderly or homebound) during extreme heat events
- Increase risk awareness of drought and its potential impacts

Earthquake Risk Summary

- Business interruptions and economic losses are estimated to be \$1.86 billion;
- Loss of water, electricity, phone and internet, which could impact emergency responders and/or area residents;
- While impacts from a strong earthquake could have moderate to severe impacts, the overall significance of the earthquake hazard is considered medium due to the occasional probability of occurrence.
- Overall the significance is medium

Possible Mitigation Actions:

- Adopt and enforce building codes
- Conduct inspections of buildings for safety
- Protect critical facilities and infrastructure from the impacts of earthquakes
- Implement structural mitigation techniques for earthquakes
- Increase risk awareness of the potential impacts of earthquakes, including potential mitigation measures
- Conduct outreach to builders, architects, engineers, and inspectors on potential mitigation measures for an earthquake
- Provide information on structural and non-structural retrofitting

City of Tracy Hazard Identification & Risk Assessment Summary

Flood: 100/200/500 and Localized Stormwater/Wastewater Flooding Risk Summary

- Floods and their impacts will vary by location and severity and will likely only affect certain areas of the City at any one time.
- Based on the risk assessment floods will continue to have economic impacts to certain areas of the City's planning area, and the estimated losses for properties amounts to \$39,998,456 (with a total of 288 people at risk), in addition to the 18 critical facilities which fall in the floodplains.
- 200 properties valued at roughly \$82 million are located in both the 100- and 200-year floodplains. No properties were found at risk of the 500-year (0.2 percent annual chance) floodplain.
- Of the 200 properties within the floodplain, approximately 128 are within the unincorporated portion of San Joaquin County and 57 are within the Tracy city limits.
- In 2001, FEMA conducted an audit of all properties constructed within the 100-year floodplain and there are BFE certificates on files for most of these properties.
- Many of the floods in the planning area are minor, localized flood events that are more of a nuisance than a disaster.
- Impacts that are not directly quantified but could be anticipated in large future events include: 1) Injury and loss of life; 2) Disruption of and damage to public infrastructure; 3) Disruption to trade, commerce, commuting, mobility, and other activities that may rely on the road networks; 4) Health hazards associated with mold and mildew; 5) Significant direct and indirect economic impact (jobs, sales, tax revenue) upon the community; and 6) Negative impact on commercial and residential property values.
- Overall the significance is medium

Possible Mitigation Actions:

- Elevate or retrofit structures and utilities
- Remove existing structures from flood hazard areas
- Protect and restore natural flood mitigation measures
- Adopt and enforce building codes and development standards
- Improve stormwater management planning
- Improve stormwater drainage system capacity
- Adopt policies to reduce stormwater runoff
- Improve compliance with NFIP above minimum requirements
- Educate property owners about flood risk and mitigation techniques
- Increase risk awareness on floods, flood hazard areas and potential mitigation measures

City of Tracy Hazard Identification & Risk Assessment Summary

Severe Weather: Extreme Heat Risk Summary

- 42 heat events in past 28 years in San Joaquin County
- Highest recorded temperature in planning area is 112°F on June 16, 1961
- Extreme heat can have severe impacts on human health, the natural environment and the economy;
- The very young, the very old, people with poor physical health and the homeless are more susceptible to the impacts of extreme temperatures;
- Overall the significance is medium

Possible Mitigation Actions:

- Increase tree plantings around buildings to shade parking lots and along public right-of-way
- Encouraging installation of green roofs
- Organize outreach to vulnerable populations
- Require minimum temperatures in housing/landlord codes
- Increase risk awareness of extreme heat

Severe Weather: Heavy Rains/Thunderstorms/Hail/Lightning/Dense Fog Risk Summary

- San Joaquin County has experienced 57 hail, heavy rain, lighting and dense fog events in past 67 years
- Average annual precipitation is 9.86 inches
- Highest recorded annual precipitation was 21.14 inches in 1983
- Highest recorded precipitation for a 24-hour period was 2.5 inches on 8/22/1968
- Overall significance is medium

Possible Mitigation Actions:

- Protect critical facilities and equipment from lightning strikes
- Ensure that parks and other open spaces have accessible shelter close at hand in case of severe weather
- Encourage techniques to minimize hail damage to new construction and retrofitting existing buildings
- Contact Insurance Institute for Business and Home Safety to learn more about appropriate type of roof covering for your geographic region
- Increase risk awareness of lightning and hail and their potential impacts

Severe Weather: Wind and Tornadoes Risk Summary

- Injury and loss of life due to limited warning times for tornadoes;
- Commercial and residential structural damage, often catastrophic;
- Increase in post-failure or secondary hazards such as flooding, mudslides, landslides, and long-term power outages;

City of Tracy Hazard Identification & Risk Assessment Summary

- Damage to natural resource habitats and other resources;
- Loss of water, communication lines, or power; closures to roads and transportation lifelines, which could impact, strand, and/or impair mobility for emergency responders and/or area residents;
- Economic losses (jobs, sales, tax revenue) associated with loss of commercial structures and/or inability to move through transportation lifelines;
- Negative impact on commercial and residential property values;
- Loss or damages to historic and cultural resources, which could severely impact the social fabric downtown Tracy;
- Negative impacts to schools, which could severely impact the entire school system and disrupt families and teachers, as temporary facilities and relocations would likely be needed;
- Timely removal of debris, specifically downed trees must be addressed, as this can impact the severity of the severe weather events and the secondary impacts (e.g. localized flooding, loss of power); and
- Overall the significance is medium.

Possible Mitigation Actions:

- Promote the construction and use of safe rooms
- Adopt regulations governing residential construction to prevent wind damage
- Use natural environmental features as wind buffers in site design
- Establish standards for all utilities regarding tree pruning around lines
- Incorporate inspection and management of hazardous trees into the drainage system maintenance process
- Increase risk awareness of high wind and tornadoes and their potential impacts

Fire: Urban and Wildland Hazard Risk Summary

- South and western portion of City at the highest risk;
- 6 fires have affected the City in recent history;
- 2015 Tesla fire burned 2,700;
- 2018 Corral Fire burned 155 acres and resulted in closure of I-508 and commuters' inability to make it home;
- 12,242 properties valued at \$4,926,980,108 are located in high fire threat areas;
- 38,076 persons reside in high to moderate fire threat zones;
- 14 critical facilities are at risk;
- Transportation infrastructure (I-580, I-205, I-5) is most at risk of wildfire
- Transportation lifelines closing or damaged due to wildfire will impact movement of goods and population;
- Decreased water quality in area watersheds;
- Decreased air quality to the region;
- Increase in post-fire hazards such as flooding, sedimentation, and mudslides;

City of Tracy Hazard Identification & Risk Assessment Summary

- Impact on the overall mental health of the community.
- Overall the significance is medium

Possible Mitigation Actions:

- Update zoning ordinance to specify conditions for development in the Interface and Intermix
- Adopt growth management strategies to limit expansion in Interface and Intermix areas
- Encourage fire-resistant construction techniques
- Create buffers around critical facilities and infrastructure
- Retrofit critical facilities and infrastructure with ignition-resistant materials
- Design and implement a fuels management program
- Reduce risk through land use planning
- Encourage homeowners in wildfire risk areas to implement home wildfire mitigation techniques, and provide guidance on these activities
- Increase risk awareness

Hazardous Materials Hazard Risk Summary

- 13 RMP facilities are located in the City that together store over five million pounds of toxic chemicals;
- Over the last 20 years the number of hazardous materials spills or accidents in the City averages around four incidents per year;
- Of the 85 incidents that occurred since 1999, 29 (34 percent) were transportation related, consisting of mobile, rail, and vessel accidents;
- The 2008 Comprehensive Emergency Management Plan thoroughly addresses the City's responsibilities in emergencies associated with human-caused emergencies, as it specifically covers hazardous materials response;
- Incidents to regulated hazardous facilities in the City's planning area will likely be localized to the property where the incident occurs;
- People living near, downstream, or downwind of hazardous facilities could be more vulnerable to airborne or water quality related contamination associated with a hazardous material incident;
- Most hazardous material incidents on critical facilities would be localized;
- Widespread hazardous material incidents may deter residents and business from relocate to the City of Tracy;
- Hazardous material incidents may affect small areas at a regulated facility or cover a large area outside such a facility, in which they could contaminate the groundwater, migrate into a local aquifer, and contaminate a municipal water supply;

City of Tracy
Hazard Identification & Risk Assessment Summary

- If growth occurs along the major transportation corridors this will gradually increase the population's vulnerability to transportation-related hazardous materials spills;
- The City needs to ensure emergency preparedness information, including procedures related to human-caused hazards, such as hazardous material incidents to the public;
- The City should continue to coordinate with San Joaquin County's CUPA and continue emergency preparedness training for police, fire, public works, engineering, public information officer teams, and other departments to ensure response is timely in the event of a hazardous material event.
- The City should ensure all emergency response staff and local government officials understand and implement the protocols contained in the San Joaquin County's HMAP, particularly the risks outlined in the 14 RMPs for facilities that are in the City's planning area;
- The City should work and coordinate with the private sector, tech industry, distribution depots, school districts, and hospitals to ensure that emergency preparedness plans and policies are comprehensive and adequately cover human-related hazardous material incidents;
- Overall significance level is medium.

Possible Mitigation Actions:

- Update land use plan and zoning ordinance to ensure industrial uses are separated from residential uses, densely developed areas, and uses with vulnerable populations such as schools or nursing homes
- Ensure a Local Emergency Planning Committee is active and an emergency plan is prepared and up to date
- Identify brownfield sites and seek grant funding for mitigation
- Increase risk awareness of hazardous materials around the city and county



Public Workshop Agenda

Date: 12 February 2019
7:00 PM – 9:00 PM

Meeting at: City Council Chambers
333 Civic Center Plaza
Tracy, CA 95376

Project: City of Tracy Local Hazard Mitigation Plan

Subject/Purpose

The purpose of the workshop is to introduce the Disaster Mitigation Act of 2000 and the hazard mitigation planning process for the City of Tracy's Local Hazard Mitigation Plan (LHMP). The LHMP is intended to identify hazards, vulnerabilities, and assets at risk, and ways to reduce impacts through long-term sustainable mitigation projects. The intent of the workshop is also to answer questions and gather public input and feedback on the plan.

1. Introductions
2. Mitigation Planning and the Disaster Mitigation Act
3. Objectives of the Local Hazard Mitigation Plan
4. Community Outreach
5. Online Survey Results
6. Hazard Identification and Risk Assessment
7. Review Goals for the LHMP
8. Discuss Mitigation Action Strategies
9. Schedule and Next Steps
10. Questions and Answers

Local Hazard Mitigation Plan

Sign-In Sheet

City of Tracy Local Hazard Mitigation Plan Public Workshop

Tuesday February 12, 2019

7:00 p.m. – 9:00 p.m.

City Council Chambers

333 Civic Center Plaza

Tracy, California 95376

This sign-in sheet documents the attendees at the Public Workshop for the City of Tracy Local Hazard Mitigation Plan (LHMP). This workshop summarizes the planning process initiated by the City to prepare a LHMP. It provides an overview of the City's risks and vulnerabilities to natural and human-caused hazards and identifies possible mitigation strategies to reduce hazard-related losses to make the City more disaster resistant.

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wood.



**City of Tracy
Local Hazard Mitigation Plan**

Public Workshop
City Council Chambers
333 Civic Center Plaza
Tracy CA 95376
Tuesday, February 12, 2019, 7:00 – 9:00 p.m.
woodplc.com

Agenda

1. Introductions
2. Mitigation Planning and the Disaster Mitigation Act
3. Objectives of the Local Hazard Mitigation Plan (LHMP)
4. Community Outreach
5. Online Survey Results
6. Hazard Identification and Risk Assessment
7. Review Goals for the LHMP
8. Discuss Action Strategies
9. Schedule and Next Steps
10. Questions and Answers

City of Tracy Local Hazard Mitigation Plan
Introductions

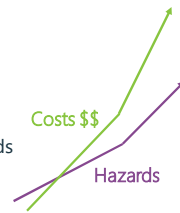
- City of Tracy
 - Karin Schnaider (Finance Director/HMPC Coordinator)
- Wood Environment & Infrastructure Solutions, Inc.
 - Jeff Brislawn, CFM (Senior Associate, Hazard Mitigation and Emergency Management Specialist)
 - Juliana Prosperi, AICP (Project Manager)

City of Tracy Local Hazard Mitigation Plan
Mitigation Planning

Trends Resulting in Increased Costs for Disaster Response and Recovery

Population and community growth

- More people living in hazardous areas
- Greater exposure to risk
 - People, infrastructure, buildings
- More hazards
 - Technological, civil, terrorist hazards
- More disaster declarations
- Increase in disaster response and recovery costs



City of Tracy Local Hazard Mitigation Plan
Mitigation Planning

Why addressing these trends is a priority!

- Increasing costs of response and recovery
 - The cost of “doing nothing” is too much
- Many events are predictable and repetitive
- Loss reduction activities can be undertaken
 - They work well
 - Cost-effective and environmentally sound
 - Funds are available to help
- Legal and moral responsibilities

City of Tracy Local Hazard Mitigation Plan
Mitigation Planning

How can we reverse these trends?

Mitigation: Any *sustained* action taken to reduce or eliminate long-term risk to human life and property from hazards



City of Tracy Local Hazard Mitigation Plan Disaster Mitigation Action of 2000

- Requires local governments to have hazard mitigation plans for continued eligibility for mitigation funds, pre- and post- disaster (No Plan, No \$)
- Guide mitigation activities in a coordinated & economic manner
- Incorporate into other existing planning mechanisms
- Future Development: plan and build wisely
- Reduce losses
- Make community more disaster resistant (Resilience!)



7 Public Workshop



City of Tracy Local Hazard Mitigation Plan National Flood Insurance Program

Community Rating System

- Created in 1990 as a voluntary incentive program
- Recognizes communities that manage their floodplains beyond the minimum standards by providing discounted flood insurance rates
- Floodplain Management Planning earns credits in CRS
- San Joaquin County is a CRS participant



8 Public Workshop



City of Tracy Local Hazard Mitigation Plan Mitigation Planning

California Legislation

- **SB 379:** Requires inclusion of climate adaptation strategies in General Plan Safety Elements and encourages inclusion of climate change discussion in LHMPs.
- **SB 1000:** Requires inclusion of Environmental Justice and Equity into General Plan Safety Elements.
- **AB 2140:** Encourages the adoption of LHMPs into General Plan Safety Element (after LHMP Approval).
- **SB 1241:** Revised safety element requirement of General Plans to address risk of State Responsibility Areas (SRA) and Very High Fire Hazard Severity Zones



9 Public Workshop



City of Tracy Local Hazard Mitigation Plan FEMA's Original 4-Phase Planning Process



10 Public Workshop



City of Tracy Local Hazard Mitigation Plan CRS 10-Step Process within the 4-Phase Guidance

Phase I: Organize Resources

1. Get organized
2. Plan for public involvement
3. Coordinate with other departments and agencies

Phase III: Develop a mitigation plan

6. Set planning goals
7. Review mitigation alternatives
8. Draft and action plan

Phase II: Risk Assessment

4. Identify the hazard(s)
5. Assess the risks

Phase IV: Adoption and Implementation

9. Adopt the plan
10. Implement the plan, evaluate its worth, and revise as needed

11 Public Workshop



City of Tracy Local Hazard Mitigation Plan FEMA 2013 9-Step Planning Process

- Step 1** Determine the Planning Area and Resources
- Step 2** Build the Planning Team
- Step 3** Create an Outreach Strategy
- Step 4** Review Community Capabilities
- Step 5** Conduct a Risk Assessment
- Step 6** **Develop a Mitigation Strategy**
- Step 7** Keep the Plan Current
- Step 8** Review and Adopt the Plan
- Step 9** Create a Safe and Resilient Community

12 Public Workshop



City of Tracy Local Hazard Mitigation Plan Planning Process

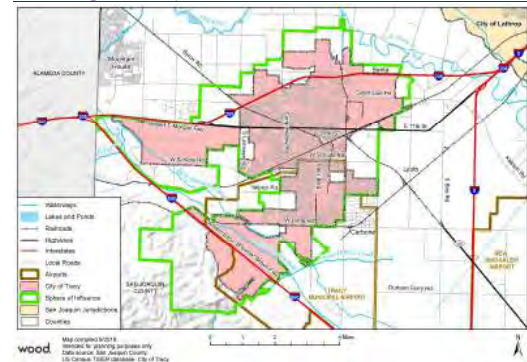
Step 1 Determine the Planning Area and Resources

- ▶ Establish the Planning Area
 - ▶ Geographic Area Covered by the Plan
- ▶ Plan Coordination
 - ▶ Single-Jurisdictional Plan
 - ▶ Coordinating with neighboring jurisdictions, quasi-governmental agencies, and transportation authorities
- ▶ Leading the Process
 - ▶ Identification of a City Leader/Project Manager
- ▶ Technical Assistance
 - ▶ Wood Environment & Infrastructure, Inc.
 - ▶ Stakeholder Support
 - ▶ Cal OES State Hazard Mitigation Officer (SHMO) Assistance

13 Public Workshop



City of Tracy Local Hazard Mitigation Plan Planning Area: Sphere of Influence



City of Tracy Local Hazard Mitigation Plan Planning Process

Step 2 Build the Planning Team - Establishing Your Hazard Mitigation Planning Committee (HMPC)

- ▶ City of Tracy Department Representatives
 - ▶ City Manager's Office
 - ▶ City Clerk's Office
 - ▶ City Attorney's Office
 - ▶ Public Works
 - ▶ Utilities
 - ▶ Human Resources
 - ▶ Finance Department
 - ▶ Fire Department
 - ▶ Development Services
 - ▶ Building Safety
 - ▶ Code Enforcement
 - ▶ Engineering
 - ▶ Economic Development
 - ▶ Planning Division
 - ▶ Parks and Recreation
 - ▶ Police Department

14 Public Workshop



City of Tracy Local Hazard Mitigation Plan Planning Process

- ▶ Stakeholder Participants
 - ▶ **San Joaquin County**
 - ▶ Office of Emergency Services
 - ▶ Environmental Health Department
 - ▶ Fire Department
 - ▶ SCOG
 - ▶ Regional Transit District and Bay Area Rapid Transit
 - ▶ US Bureau of Reclamation
 - ▶ **Pacific Gas & Electric**
 - ▶ **Sutter Tracy Community Hospital**
 - ▶ US Forest Service
 - ▶ Tracy Unified School District
 - ▶ **Cal Fire**
 - ▶ Cal OES
 - ▶ **California Conservation Corps**
 - ▶ FEMA Region IX

15 Public Workshop



City of Tracy Local Hazard Mitigation Plan Planning Process

Step 3 Create an Outreach Strategy

- ▶ Plan for Public Involvement
 - ▶ Requirement: Provide Two Opportunities for Public Input
 - ▶ During Draft Development
 - ▶ Prior to Approval (Public Review of Draft LHMP)
- ▶ Advantages
 - ▶ Incorporates public input
 - ▶ Strengthens local support for the plan
 - ▶ Special interests are considered
 - ▶ It's a fair process
 - ▶ Generates new ideas

17 Public Workshop



City of Tracy Local Hazard Mitigation Plan Planning Process

Step 4 Review City's Capabilities

- ▶ Inventory of City's Existing and Proposed Programs, and Ordinances
 - ▶ City of Tracy Planning Documents
 - ▶ Urban Water Management Plan (2015)
 - ▶ Park and Recreation Master Plan (2013)
 - ▶ General Plan (2011)
 - ▶ Design Guidelines (2008)
 - ▶ Comprehensive Emergency Preparedness Plan (2008)
 - ▶ State Planning Documents
 - ▶ Santa Clara Unit Strategic Fire Plan (2018)
- ▶ Determine City's Technical and Fiscal Capabilities



18 Public Workshop



City of Tracy Local Hazard Mitigation Plan Planning Process

Step 5 Conduct a Risk Assessment

- ▶ Hazard Identification
 - ▶ Dam/Levee Failure
 - ▶ Drought
 - ▶ Earthquakes
 - ▶ Severe Weather
 - Extreme Heat
 - ▶ Severe Weather
 - Heavy Rain/Thunderstorms/Lightning/Hail/Dense Fog
 - ▶ Severe Weather
 - Wind and Tornadoes
 - ▶ Wildfire
 - ▶ Hazardous Materials

19 Public Workshop



City of Tracy Local Hazard Mitigation Plan Planning Process

Step 5 Conduct a Risk Assessment (continued)

- ▶ Hazard Profile
 - ▶ Hazard/Problem Description
 - ▶ Geographic Location
 - ▶ Extent (Magnitude/Severity)
 - ▶ Previous Occurrences
 - ▶ Probability of Future Occurrences
 - ▶ Significance



20 Public Workshop



City of Tracy Local Hazard Mitigation Plan Planning Process

Step 5 Conduct a Risk Assessment (continued)

- ▶ Vulnerability Assessment
 - ▶ Inventory residential and commercial structures
 - ▶ Inventory critical facilities and infrastructure
 - ▶ Determine value of structures
 - ▶ Determine the number of people in hazard areas
 - ▶ Identify vulnerable infrastructure
 - ▶ Identify development trends/constraints
 - ▶ Identify historic, cultural, and natural resource areas
 - ▶ Estimate losses

21 Public Workshop



City of Tracy Local Hazard Mitigation Plan Planning Process

Step 6 Develop a Mitigation Strategy

- ▶ Set Planning Goals
- ▶ Review Mitigation Actions
 - ▶ Brainstorm Potential Mitigation Projects
 - ▶ Prevention
 - ▶ Property Protection
 - ▶ Natural Resource Protection
 - ▶ Emergency Services
 - ▶ Structural Projects
 - ▶ Public Information
- ▶ Draft an Action Plan



22 Public Workshop



City of Tracy Local Hazard Mitigation Plan Planning Process

Step 7 Keep the Plan Current

- ▶ Plan Maintenance Procedures
 - ▶ Assign an Overall Project Manager
 - ▶ Integrate Actions into Staff Work Plans
 - ▶ Monitor Changes on Vulnerability
 - ▶ Evaluate Effectiveness
 - ▶ Progress Reports
 - ▶ Continue Public Involvement; Publicize Successes
 - ▶ Update the Plan every 5 years

23 Public Workshop



City of Tracy Local Hazard Mitigation Plan Planning Process

Step 8 Review and Adopt the Plan

- ▶ Local Public Review
 - ▶ Advertise Availability of Draft LHMP for Public Review
 - ▶ Validate LHMP Meets Title 44 Code of Regulations
 - ▶ Complete Local Mitigation Plan Review Tool
- ▶ Cal OES Plan Review
 - ▶ Submit LHMP to State Hazard Mitigation Officer (SHMO)
 - ▶ Work with Cal OES SHMO to make revisions (if needed)
 - ▶ Cal OES SHMO forwards plan to FEMA Region IX
- ▶ FEMA Region IX Review
 - ▶ FEMA issues "approvable pending adoption"
 - ▶ City adopts plan and submits resolutions
 - ▶ FEMA issues approval letter and final plan review tool

24 Public Workshop



City of Tracy Local Hazard Mitigation Plan Planning Process

Progress So Far

- Established and Convened a Hazard Mitigation Planning Committee (HMPC) at 3 Meetings
- Launched City of Tracy LHMP Webpage in October 2018
- Facilitated a Stakeholder's Workshop in November 2018
- Conducted spatial analysis using Geographic Information Systems (GIS) and FEMA HAZUS-MH Software
- Completed Hazard Identification and Risk Assessment in January 2019
- Reviewed City's existing capabilities for hazard mitigation
- City outreach at two weekend Farmer's Markets in 2019
- Circulated an English and Spanish Online Survey (December 20th – February 20th)

Public Workshop



City of Tracy Local Hazard Mitigation Plan Objectives of the LHMP

- Section 1 – Introduction
- Section 2 – Community Profile/Capability Assessment
- Section 3 – Planning Process
- Section 4 – Risk Assessment
- Section 5 – Mitigation Strategy**
- Section 6 – Plan Adoption
- Section 7 – Plan Implementation and Maintenance
- Appendices

Public Workshop



City of Tracy Local Hazard Mitigation Plan Community Outreach

- Community Outreach Strategy
 - Hazard Mitigation Plan Website
 - Regular Website Postings
 - Event Flyers and Advertisements
 - Newsletters
 - Online Public Survey
 - Public Workshop
 - Hazard Mapping
 - Farmer's Market Booth
 - Social Media Blasts
- Draft Local Hazard Mitigation Plan
 - Anticipated to be available for public review in April



Public Workshop



City of Tracy Local Hazard Mitigation Plan Community Outreach Update



Public Workshop



City of Tracy Local Hazard Mitigation Plan Online Survey Results

"Snapshot" of the Online Survey Results So Far

- Survey Open from December 20th – February 20th
- Over 274 responses collected (as of February 6th)
- Participants indicated greatest hazards are:
 - Drought and Water Storage
 - Earthquakes
 - Human-Caused Hazards (Transportation Accidents/Pandemics/Terrorism/Nuclear)

Public Workshop



City of Tracy Local Hazard Mitigation Plan Online Survey Results

Highest Priority Mitigation Actions:

- Planning/Zoning
- Public Education/Awareness
- Evacuation Route Development
- Projects that Address Extreme Heat



Public Workshop



City of Tracy Local Hazard Mitigation Plan Hazard Identification and Risk Assessment

- Flooding (100-, 200-, 500-year events) and Levee Failure
- Dam Failure
- Seismic Hazards (earthquake)
- Wildland/Urban Fires
- Drought
- Extreme Heat
- Severe Weather (e.g. heavy rain/storms, wind/tornado)
- Human-Caused Hazards
 - Hazardous Materials
- Climate Change addressed as part of natural hazards

21 Public Workshop



City of Tracy Local Hazard Mitigation Plan Hazards Dismissed from Further Analysis

- Agricultural Hazards
- Landslide/Debris Flow
- Coastal Erosion/Tropical Storms
- Tsunami
- Sea Level Rise
- Volcanoes
- Hurricanes
- Human-Health Hazards

22 Public Workshop



City of Tracy Local Hazard Mitigation Plan Terminology

- **Hazard/Threat:** Act or phenomenon with potential to do harm
- **Vulnerability:** susceptibility to harm, damage, loss
- **Exposure:** People, property, systems or functions that could be lost to a hazard
- **Risk:** Combines hazard, vulnerability, exposure and probability
- **Mitigation:** Actions taken in advance of a hazard's impact that reduce its severity

23 Public Workshop



City of Tracy Local Hazard Mitigation Plan Hazard Identification and Risk Assessment

- **Hazard/Problem Description**
 - Area, Seasonal Patterns, Speed of Onset/Duration
- **Geographic Location**
 - Limited: Less than 10% of Planning Area
 - Significant: 10-50% of Planning Area
 - Extensive: 50-100% of Planning Area
- **Past Occurrences**
 - Information on Historical Incidents, Known Impacts
- **Extent (Magnitude/Severity):**
 - Catastrophic: More than 50% of property severely damaged
 - Critical: 25-50% of property severely damaged
 - Limited: 10-25% of property severely damaged
 - Negligible: Less than 10% of property severely damaged
- **Probability of Future Occurrences**
 - Highly Likely: Near 100% chance of occurrence in next year
 - Likely: Between 10-100% chance of occurrence in next year
 - Occasional: Between 1-10% chance of occurrence in next year
 - Unlikely: Less than 1% chance of occurrence in next year
- **Significance**
 - Low: Minimal potential impact
 - Medium: Moderate potential impact
 - High: Widespread potential impact

24 Public Workshop



City of Tracy Local Hazard Mitigation Plan Hazard Identification and Risk Assessment

- **Climate Change Considerations**
 - An increasingly important factor affecting disaster management
 - Addressed under each Hazard Profile as a factor intensifying impacts of many natural hazards
 - California is already experiencing impacts:
 - Prolonged drought
 - Increased coastal flooding and erosion
 - Tree mortality
 - Larger wildfires
 - Can affect the frequency and severity of hazard events
 - 1,800 more wildfires in 2015 than average (from SHMP)
 - Wildfires are now less predictable and more catastrophic
 - Occur outside of typical fire season
 - Larger conflagration sizes, more damaging

25 Public Workshop



City of Tracy Local Hazard Mitigation Plan Hazard Identification and Risk Assessment

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/Severity	Significance
Dam Failure	Limited	Unlikely	Limited	Low
Drought	Extensive	Likely	Critical	Medium
Earthquake	Extensive	Occasional	Critical	Medium
Flood: 100/500 year	Limited	Occasional	Limited	Medium
Severe Weather: Extreme Heat	Extensive	Highly Likely	Limited	Medium
Rains/Thunderstorms/Lighting/Hail/Dense Fog	Extensive	Highly Likely	Negligible	Low
Severe Weather: Wind and Tornadoes	Extensive	Likely	Negligible	Low
Fire: Urban and Wildland	Limited	Likely	Limited	Medium
Hazardous Materials	Significant	Highly Likely	Limited	Medium

26 Public Workshop



City of Tracy Local Hazard Mitigation Plan Declared Disaster Declarations in San Joaquin County

Event/Hazard	Year	Declaration Type	Remarks/Description
Heavy Rains and Flooding	1964	Presidential—Major Disaster Declaration	
Severe Storms and Flooding	1969	Presidential—Major Disaster Declaration	
Drought	1977	Presidential—Emergency Declaration	\$4.8 million (2009 dollars) statewide
Torrential Rain, High Tide & Winds	1980	Presidential—Emergency Declaration	
Levee Break and Flooding	1980	Major Disaster Declaration	
Severe Storms, Flood, Mudslides & High Tide	1981	Major Disaster Declaration	
Levee Break	1982	Major Disaster Declaration	San Joaquin County
Coastal Storms, Floods, Mudslides, & Tornadoes	1983	Major Disaster Declaration	San Joaquin County
Severe Storms & Flooding	1986	Major Disaster Declaration	
Loma Prieta Earthquake	1989	Major Disaster Declaration	
Severe Freeze	1991	Major Disaster Declaration	
Severe Winter Storms, Flooding, Landslides, Mud Row	1995	Major Disaster Declaration	
Severe Storms, Flooding, Mud and Landslides	1996	Major Disaster Declaration	
Severe Winter Storms and Flooding	1998	Major Disaster Declaration	
Flooding as a result of levee break	2004	Major Disaster Declaration	
Hurricane Katrina Evacuation	2005	Emergency Declaration	
Severe Storms, Flooding, Mudslides, and Landslides	2005	Major Disaster Declaration	
Severe Storms, Flooding, Landslides, and Mudslides	2006	Major Disaster Declaration	
Severe Winter Storms, Flooding and Mudslides	2017	Major Disaster Declaration	

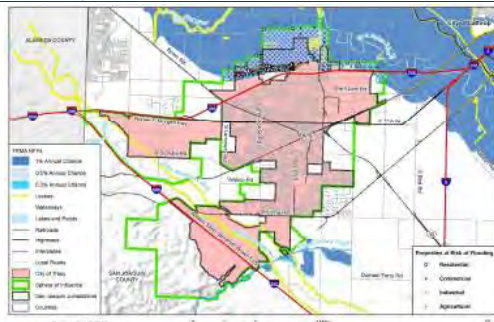
27 Public Workshop

City of Tracy Local Hazard Mitigation Plan Flood: 100-, 200-, and 500-year Events

- Hazard/Problem Description:** North of City, Southeast of City at Corral Hollow Creek area, several levees traverse SOI. 200 properties at risk.
- Geographic Extent:** Limited
- Past Occurrences:** 11 declared disasters in San Joaquin County; 2 disasters at the city level (with \$4.3 million in property losses, \$7.8 million in crop damages, failed levees, and one death back in 1998)
- Magnitude/Severity:** Limited
- Probability of Future Occurrences:** Occasional
- Significance:** Medium
- Existing Capabilities:** City's General Plan, Storm Drainage Master Plan, Flood Insurance Studies, NFIP Participation

28 Public Workshop

City of Tracy Local Hazard Mitigation Plan Flood: Properties at Risk



29

City of Tracy Local Hazard Mitigation Plan Flood: Properties at Risk

Flood Hazard	Parcel Count	Structure Value	Content Value	Total Value	Loss Estimate	Population
1% Annual Chance	196	\$ 81,939,766	\$ 78,054,058	\$ 159,993,824	\$ 39,998,456	288
0.5% Annual Chance	4	\$ 55,797	\$ 55,797	\$ 111,594	\$ 27,899	--
0.2% Annual Chance	--	--	--	--	--	--
Total	200	\$ 81,995,563	\$ 78,109,855	\$ 160,105,418	\$ 40,026,355	288

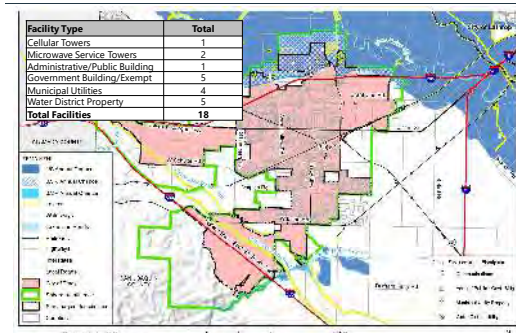
30 Public Workshop

City of Tracy Local Hazard Mitigation Plan Flood: Properties at Risk

Flood Event	Property Type	Total Structures	Structure Value	Content Value	Total Value	Loss Estimate	Population
100yr	AGRICULTURAL	25	\$ 952,379	\$ 952,379	\$ 1,902,759	\$ 475,690	--
	PASTURE	1	\$ 15,300	\$ 15,300	\$ 30,600	\$ 7,650	--
	COMMERCIAL	33	\$ 32,444,514	\$ 32,444,514	\$ 64,889,028	\$ 16,622,257	--
	COMMERCIAL VACANT LAND	6	\$ 158,531	\$ 158,531	\$ 317,062	\$ 79,265	--
	INDUSTRIAL	23	\$ 20,069,168	\$ 20,069,168	\$ 40,138,336	\$ 10,034,584	--
	RESIDENTIAL	75	\$ 11,060,863	\$ 11,060,863	\$ 22,121,726	\$ 5,530,431	257
	MULTI-FAMILY UNIT	5	\$ 15,577,199	\$ 15,577,199	\$ 31,154,398	\$ 7,788,600	17
	DUPLEX	1	\$ 267,285	\$ 267,285	\$ 534,570	\$ 133,643	3
	MOBILE HOME	3	\$ 572,879	\$ 572,879	\$ 1,145,758	\$ 286,440	10
	RESIDENTIAL VACANT LAND	24	\$ 22,648	\$ 22,648	\$ 45,296	\$ 11,324	--
TOTAL		196	\$ 81,939,766	\$ 78,054,058	\$ 159,993,824	\$ 39,998,456	288

31 Public Workshop

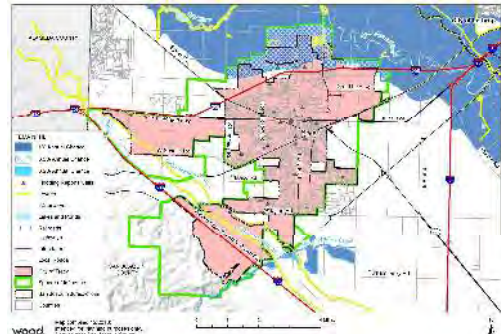
City of Tracy Local Hazard Mitigation Plan Critical Facilities at Risk of 100-/200-/500-Year Events



32 Public Workshop

City of Tracy Local Hazard Mitigation Plan

Flood: Localized Flood Hazards (Recent Flood Calls)

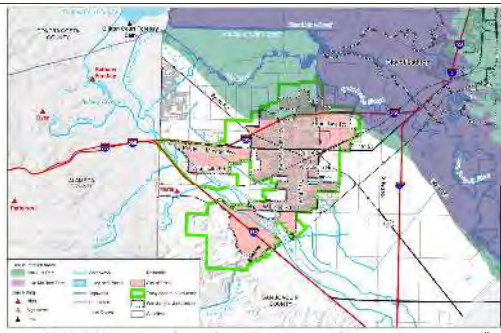


City of Tracy Local Hazard Mitigation Plan

- **Hazard/Problem Description:**
 - 1 high hazard dam in close proximity (Maria Dam)
 - Other high hazard dams in region pose potential risk
 - San Luis Dam (Merced County), Lake McClure Dam (Mariposa County), New Melones (Calaveras County)
 - 402 properties in Tracy in inundation zones
- **Geographic Extent:** Limited
- **Past Occurrences:** No history, but potential exists
- **Magnitude/Severity:** Limited
- **Probability of Future Occurrences:** Unlikely
- **Significance:** Low
- **Existing Capabilities:** EAP's, GIS mapping

City of Tracy Local Hazard Mitigation Plan

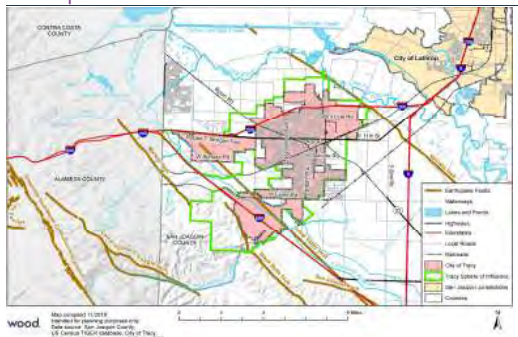
Dam Failure: Inundation Zones



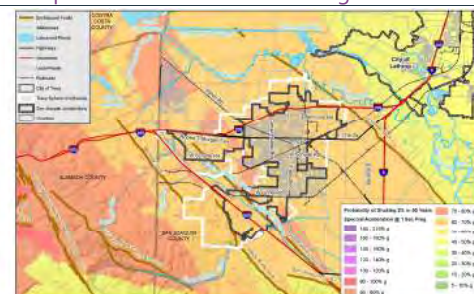
City of Tracy Local Hazard Mitigation Plan
Earthquake Hazards

- **Hazards/Problem Description:**
 - Multiple Faults within/around planning area
 - Corral Hollow/Carnegie
 - Black Butte
 - Midway
 - Green Valley Fault System
 - Moderate Potential for Ground Shaking
 - Potential for Secondary Hazards for ground shaking hazard:
 - Pipeline Failure
 - Flooding: Levee Failure
- **Geographic Extent:** Extensive
- **Past Occurrences:** Loma Prieta Earthquake
- **Magnitude/Severity:** Critical
- **Probability of Future Occurrences:** Occasional
- **Significance:** Medium
- **Existing Capabilities:** 2018 Great ShakeOut Participation, City's General Plan Safety Element, California Building Code

City of Tracy Local Hazard Mitigation Plan
Earthquake Hazards



City of Tracy Local Hazard Mitigation Plan
Earthquake Hazards: Groundshaking



City of Tracy Local Hazard Mitigation Plan

Earthquake Hazards: Hazus Loss Modelling Results

2,500-year Probabilistic Scenario

- Total economic loss \$1.9 billion (includes building and lifeline losses based on the Hazus-MH inventory)
- Building-related losses \$1.8 billion (includes direct building losses and business interruption losses)
- 10,510 buildings (34% of total in the study area) were at least moderately damaged
- 671 buildings were damaged beyond repair
- Residential structures made up 61 percent of total loss
- 14 percent of the estimated losses were related to business interruptions.
- Mid-day earthquake (2 p.m.) would cause the most injuries: 296 hospitalizations, 49 life threatening cases, 94 fatalities

40 Public Workshop



City of Tracy Local Hazard Mitigation Plan

Fire: Urban and Wildland

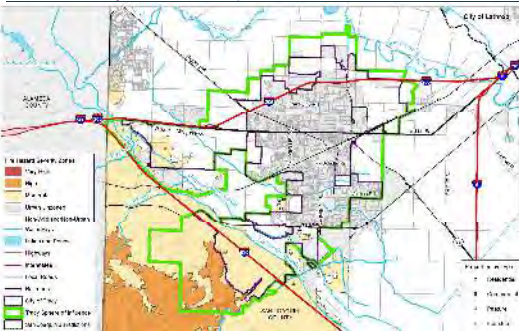
- **Hazard/Problem Description:** Fire severity fire zones southwest of the City
- 120 properties at risk (mostly moderately ranked).
- **Geographic Extent:** Limited
- **Past Occurrences:** 6 fires in the last 8 years in or near Tracy (from CalFire), and others more since 2000 (federally reported)
- **Magnitude/Severity:** Limited
- **Probability of Future Occurrences:** Likely
- **Significance:** Medium
- **Areas at risk slated for new development:** Tracy Hills
- **Existing Capabilities:** Fire Authority partnerships, Fire Department Reports, 2018 Santa Clara Strategic Fire Plan

52 Public Workshop



City of Tracy Local Hazard Mitigation Plan

Fire Severity Zones: Properties at Risk

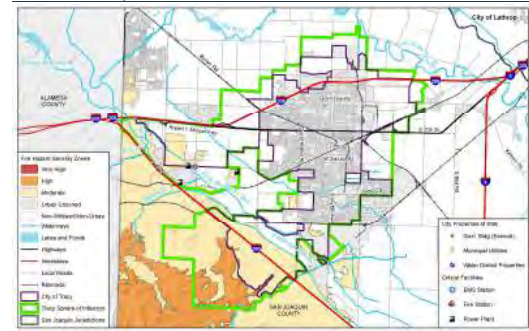


53 Public Workshop



City of Tracy Local Hazard Mitigation Plan

Fire Severity Zones: Critical Facilities at Risk



54 Public Workshop



City of Tracy Local Hazard Mitigation Plan

Drought

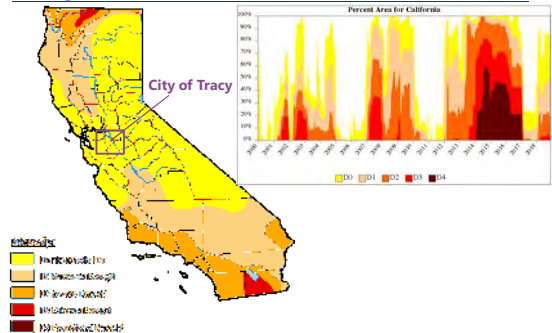
- **Hazard/Problem Description:**
 - Latest USDA declaration was in 2017
 - Ongoing problem across San Joaquin County, affecting crops, water resources, economies
- **Geographic Extent:** Extensive
- **Past Occurrences:**
 - 6 Multi-Year Droughts since 1950
 - 15 disaster declarations since 1976 in Tracy and/or San Joaquin County
- **Magnitude/Severity:** Critical
- **Probability of Future Occurrences:** Likely
- **Significance:** Medium
- **Existing Capabilities:** 2015 Urban Water Management Plan, Draft Water Shortage Contingency Plan

55 Public Workshop



City of Tracy Local Hazard Mitigation Plan

Drought Monitor: November 27, 2018



56 Public Workshop



City of Tracy Local Hazard Mitigation Plan

Extreme Heat

- **Hazard/Problem Description:**
 - Period when high temperatures are expected to have a significant impact on public safety. Extreme temperatures have an adverse impact on human health and agriculture.
- **Geographic Extent:** Extensive
- **Past Occurrences:**
 - Heat waves have claimed more lives in state than all other declared disaster event combined
 - 42 heat and excessive heat events in past 28 years in San Joaquin County
 - Highest recorded daily extreme temperature was 112°F on June 16, 1961
- **Magnitude/Severity:** Limited
- **Probability of Future Occurrences:** Highly Likely
- **Significance:** Medium
- **Existing Capabilities:** Designated Cooling Zones, Free TRACER Rides, Urban Heat Island Mitigation Policies in General Plan



City of Tracy Local Hazard Mitigation Plan
Severe Weather

- **Hazard/Problem Description:** Heavy Rain, Thunderstorms, Hail, Lighting
- **Geographic Extent:** Extensive
- **Past Occurrences:**
 - 47 Hail, Heavy Rain, and Lighting Events in past 67 Years in San Joaquin County
 - Majority are heavy rain events (43 Events)
 - Average annual precipitation: 9.86 inches
 - Highest recorded annual precipitation: 21.14 inches (1983)
- **Magnitude/Severity:** Negligible
- **Probability of Future Occurrences:** Highly Likely
- **Significance:** Low
- **Existing Capabilities:** South County Fire Authority/Tracy Fire Department (SCFA/TFD), San Joaquin Emergency Medical Services Agency (SJEMSA), 2008 Comprehensive Emergency Management Plan

56 Public Workshop

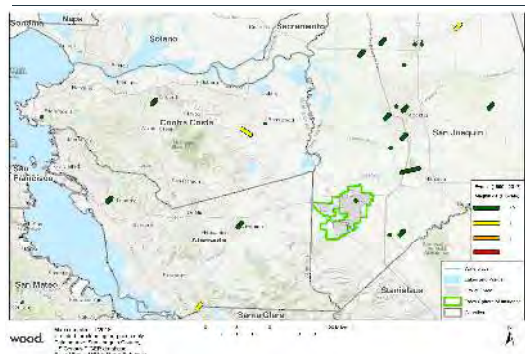


City of Tracy Local Hazard Mitigation Plan

- **Hazard/Problem Description:** Wind and tornadoes cause potential property and critical facilities damage, loss of life
- **Geographic Extent:** Extensive
- **Past Occurrences:**
 - 2 tornado events in past 67 years (1950-2017)
 - March 29, 1998 (\$1,000 in property damage)
 - December 26, 2005 (\$20,000 in property damage)
- **Magnitude/Severity:** Negligible
- **Probability of Future Occurrence:** Likely
- **Significance:** Low
- **Existing Capabilities:** South County Fire Authority/Tracy Fire Department (SCFA/TFD), San Joaquin Emergency Medical Services Agency (SJEMSA), 2008 Comprehensive Emergency Management Plan



City of Tracy Local Hazard Mitigation Plan

City of Tracy Local Hazard Mitigation Plan
Hazardous Materials

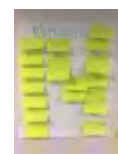
- **Hazard/Problem Description:**
 - Hazardous Materials, Gas Pipelines, Powerlines, Chemical Facilities
 - 13 Risk Management Plan (RMP) facilities in the City
 - Store over five million pounds of toxic chemicals
 - 4.6 million pounds of chlorine
 - 375,000 pounds of anhydrous ammonia
 - 40,000 pounds of sulfur dioxide
- **Geographic Extent:** Significant
- **Past Occurrences:** 85 reported hazardous materials incidents since 1999
 - Average of 4 incidents/year
 - 34% were transportation-related
 - 22% road/highway, 11% rail, 1% vessel/marine
 - 11% were pipeline releases
- **Magnitude/Severity:** Limited
- **Probability of Future Occurrence:** Highly Likely
- **Significance:** Medium
- **Existing Capabilities:** Tracy Fire Department, San Joaquin County CUPA Programs: Hazardous Materials Area Plan, HMBPs, CalARP, Routine Inspections

59 Public Workshop



City of Tracy Local Hazard Mitigation Plan
Review Goals for LHMP – Under Development

- Goal 1:** Prevent Loss of Life and Property from Hazards
- Goal 2:** Build Community Resilience through Continuity of Essential Services
- Goal 3:** Increase Education and Awareness of Vulnerability to Hazards
- Goal 4:** Improve City Coordination and Capabilities



City of Tracy Local Hazard Mitigation Plan Review Mitigation Strategies

► Alter the Hazard

- Prescribed burns or fuels management to reduce wildfire intensity and severity
- Draining lakes behind weakened dams
- "Seeding" clouds to increase rain or snow



61 Public Workshop



City of Tracy Local Hazard Mitigation Plan Review Mitigation Strategies

► Avert the Hazard

- Floodwalls
- Debris basins
- Drainage improvements
- Channels and Culverts
- Fire Breaks (Delta-Mendota Canal, California Aqueduct)



62 Public Workshop



City of Tracy Local Hazard Mitigation Plan Review Mitigation Strategies

► Adapt to the Hazard

- Building Codes
- Construction Standards
- Land Use and Development Regulations
- Design Standards
- Monitoring and Warning Systems
- Safe Rooms



63 Public Workshop



City of Tracy Local Hazard Mitigation Plan Review Mitigation Strategies

► Avoid the Hazard

- Acquisition
- Relocation
- Open Space
- Land Use Designation
- Natural System Protection



64 Public Workshop



City of Tracy Local Hazard Mitigation Plan Mitigation Action Selection and Prioritization

Based on Risk

- Estimated losses
- At-risk existing facilities
- At-risk critical facilities
- At-risk cultural and natural resources

Other Opportunities

- At-risk areas slated for future development
- At-risk facilities slated for future development
- Public Education
- Increased insurance coverage
- Include projects from other existing plans (General Plan)

65 Public Workshop



City of Tracy Local Hazard Mitigation Plan Mitigation Action Selection and Prioritization

Disaster Mitigation Act – Mitigation Action Requirements

- Plan must have at least one action for every hazard (plan as a whole)
- Plan must have at *least one* action at a minimum that addresses each identified hazard and must be true mitigation (not preparedness), preferably of different categories.
- Actions must be prioritized
- Actions must have detail on implementation and administration
- Actions must have a review of benefit vs cost
- Actions must address existing and future development

66 Public Workshop



City of Tracy Local Hazard Mitigation Plan Schedule and Next Steps

- Review Hazard Identification and Risk Assessment
- Complete Hazard Mitigation Action Worksheet**
- Encourage friends to complete the Online Survey
- Public Workshop – Tonight @ 7:00 PM**
- Public Review anticipated to begin in April



17 Public Workshop



City of Tracy Local Hazard Mitigation Plan Schedule and Next Steps

- Fill out a Comment Card and place it in the Comment Box!



18 Public Workshop



City of Tracy Local Hazard Mitigation Plan Schedule and Next Steps



Task or Key Milestone	Anticipated Date
Notice to Proceed	June 8, 2018
Project Kick-Off Meeting	August 9, 2018
Submit HMPIC Invite List	September 11, 2018
HMPIC Meeting #1	September 25, 2018
Submit Draft Community Engagement Study	October 5, 2018
City Review of Draft Community Engagement Study	October 12, 2018
Prepare Hazard Identification and Risk Assessment	TBD
Stakeholder Workshop	November 14, 2018
Develop GIS Geodatabase (pending City Assessor and Property Value Data)	November 30, 2018
HMPIC Meeting #2	December 20, 2018
HMPIC Meeting #3	February 12, 2019
Public Workshop	Tonight 7:00 – 9:00 PM
Finalize Goals and Objectives	February 15, 2019
Complete Mitigation Actions Worksheets	March 1, 2019
Submit 1 st Administrative Draft LHMP	March 15, 2019
City provides Consolidated Staff Comments on 1 st Administrative Draft LHMP	March 29, 2019
Submit 2 nd Administrative Draft LHMP	April 12, 2019
Circulate Public Review Draft LHMP	April 19, 2019
Public Review Ends	May 18, 2019
Complete FEMA Region IX Review Tool	May 31, 2019
Submit LHMP to FEMA for Review	June 4, 2019
Submit to Cal DES for Review	July 18, 2019
City Council Hearing	August 6, 2019*

*City Council Meetings are held on the first and third Tuesdays of each month

19



Questions and Answers

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wood.
Environment & Infrastructure Solutions

COMMENT CARD

City of Tracy Local Hazard Mitigation Plan: Public Workshop – February 12, 2019

Please leave a comment related to the City of Tracy's Local Hazard Mitigation Plan. Please provide your contact info if you would like to receive ongoing updates and information related to the LHMP by email, phone, or mail.

Name:

Email:

Phone Number:

Mailing Address:

Comment:

Comment cards must be delivered to the comment box by the end of the Workshop.

If you have any questions, please contact Juliana Prosperi at 303-503-7794 or

juliana.prosperi@woodplc.com



HAZARDOUS MITIGATION PLANNING PUBLIC MEETING



Tuesday, February 12, 2019
7 p.m. - 9 p.m.

City Council Chambers
333 Civic Center Plaza
Tracy, CA 95376

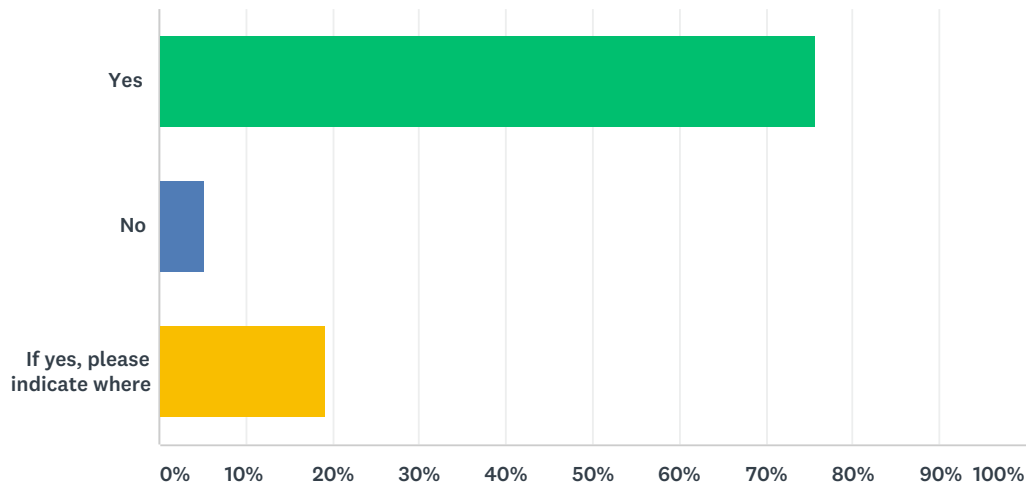
QUESTIONS?

Please contact Karin Schnaider at:
karin.schnaider@cityoftracy.org
(209) 831-6841
www.cityoftracy.org

The purpose of the Community Engagement Strategy is to provide for a meaningful process through which the City of Tracy and its citizens, public officials, and stakeholder groups may effectively participate in the preparation of the City of Tracy Hazard Mitigation Plan (HMP).

Q1 Are you a resident of the City of Tracy or an unincorporated area near the City? If unincorporated, please indicate where.

Answered: 271 Skipped: 3



ANSWER CHOICES	RESPONSES
Yes	75.65% 205
No	5.17% 14
If yes, please indicate where	19.19% 52
TOTAL	271

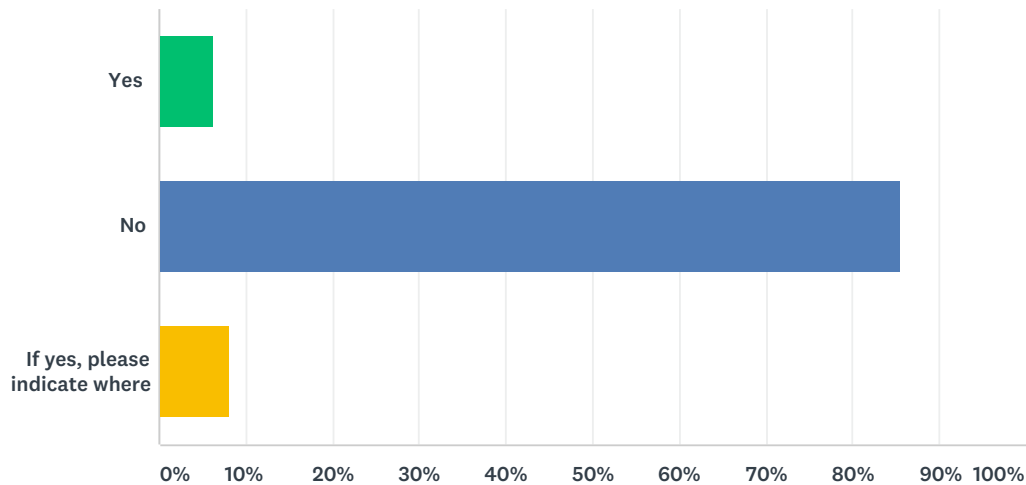
#	IF YES, PLEASE INDICATE WHERE	DATE
1	City	2/5/2019 9:27 PM
2	Bryce way	2/5/2019 12:32 PM
3	Central Tracy	2/5/2019 10:01 AM
4	south county	2/5/2019 9:48 AM
5	Madison Park	2/5/2019 9:20 AM
6	Pheasant run	1/31/2019 12:13 AM
7	Willow Creek N.W	1/30/2019 6:19 PM
8	City	1/30/2019 4:09 PM
9	Christy Court	1/29/2019 9:29 PM
10	Tracy city limits	1/29/2019 9:00 PM
11	Northwest tracy	1/29/2019 8:26 PM
12	Banta	1/29/2019 10:47 AM
13	850 Mirror Ct. 95304	1/29/2019 10:45 AM
14	McKinley	1/29/2019 10:06 AM
15	Candlewood Estates	1/29/2019 9:53 AM
16	City of Tracy	1/28/2019 10:41 PM
17	City l'd Tracy	1/28/2019 9:47 PM

City of Tracy Hazard Mitigation Plan Public Input Survey

18	City	1/28/2019 9:07 PM
19	95377	1/28/2019 8:49 PM
20	South Tracy	1/28/2019 7:55 PM
21	Edgewood	1/28/2019 7:31 PM
22	New Jerusalem area	1/28/2019 7:16 PM
23	Central Tracy	1/28/2019 6:40 PM
24	Harvest Glenn	1/28/2019 6:38 PM
25	Tracy	1/28/2019 6:22 PM
26	Tenaya ct	1/26/2019 1:54 PM
27	Tracy	1/26/2019 1:14 PM
28	Corral Hollow & Schulte	1/26/2019 12:58 PM
29	E mount Diablo ave	1/26/2019 12:34 PM
30	County	1/26/2019 12:05 PM
31	Edgewood	1/26/2019 12:02 PM
32	Lynch Drive	1/26/2019 11:52 AM
33	Near lammersville school	1/26/2019 11:46 AM
34	1577 Aldacourrou St	1/26/2019 11:29 AM
35	Edgewood	1/26/2019 11:23 AM
36	4241 glenhaven dr	1/26/2019 11:17 AM
37	City	1/26/2019 11:17 AM
38	2832 Hereford lane, Tracy,ca.95377	1/26/2019 10:24 AM
39	Tracy	1/26/2019 10:11 AM
40	Linda link subdivision	1/26/2019 9:53 AM
41	Camelot dr.	1/19/2019 1:49 PM
42	Tracy	1/19/2019 1:10 PM
43	1625 franklin	1/19/2019 1:08 PM
44	Downtown	1/19/2019 12:48 PM
45	95304	1/19/2019 12:41 PM
46	Hollywood	1/19/2019 12:12 PM
47	Olympic Ave	1/19/2019 11:56 AM
48	551 Havenwood Ct	1/19/2019 11:52 AM
49	Tracy	1/19/2019 11:31 AM
50	Modesto	1/19/2019 11:12 AM
51	Tracy	1/19/2019 10:50 AM
52	Emerson Ave	1/19/2019 10:12 AM

Q2 Are you representing a business or community group? (e.g. resident, business, community organization, non-profit, agency)

Answered: 271 Skipped: 3



ANSWER CHOICES	RESPONSES	
Yes	6.27%	17
No	85.61%	232
If yes, please indicate where	8.12%	22
TOTAL		271

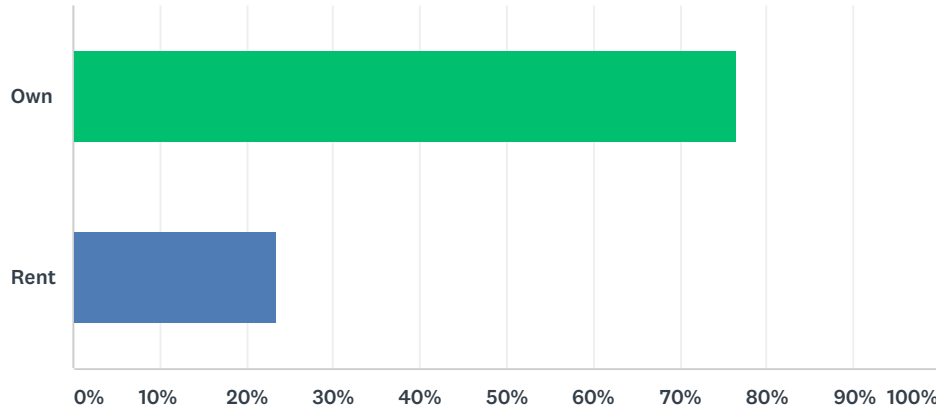
#	IF YES, PLEASE INDICATE WHERE	DATE
1	Resident	2/6/2019 12:54 PM
2	San Joaquin	2/5/2019 11:50 PM
3	resident	2/5/2019 9:27 PM
4	Concerned citizen	2/5/2019 10:01 AM
5	City of Tracy Engineering & Development Services	2/5/2019 9:31 AM
6	airport	2/5/2019 9:20 AM
7	Resident	1/31/2019 4:24 PM
8	resident	1/30/2019 6:19 PM
9	Resident	1/29/2019 10:31 PM
10	Mountain View	1/29/2019 3:47 PM
11	Tracy	1/28/2019 10:51 PM
12	Resident	1/28/2019 10:41 PM
13	Resident	1/28/2019 9:47 PM
14	South Tracy	1/28/2019 7:49 PM
15	Resident	1/28/2019 6:57 PM
16	Resident	1/26/2019 1:31 PM
17	Res	1/26/2019 11:17 AM

City of Tracy Hazard Mitigation Plan Public Input Survey

18	Little Free Pantry-Tracy,ca	1/26/2019 10:31 AM
19	No	1/19/2019 1:10 PM
20	Way2powertracy.com	1/19/2019 11:40 AM
21	Tracy	1/19/2019 10:50 AM
22	City of tracy	1/19/2019 8:55 AM

Q3 Do you own or rent your home?

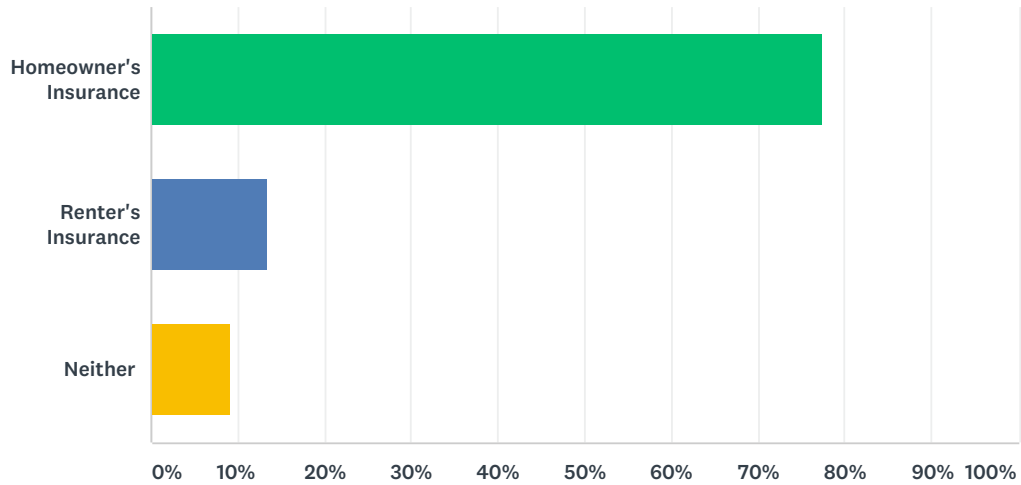
Answered: 268 Skipped: 6



ANSWER CHOICES		RESPONSES	
Own		76.49%	205
Rent		23.51%	63
TOTAL			268

Q4 Do you have homeowner's insurance or renter's insurance for your home?

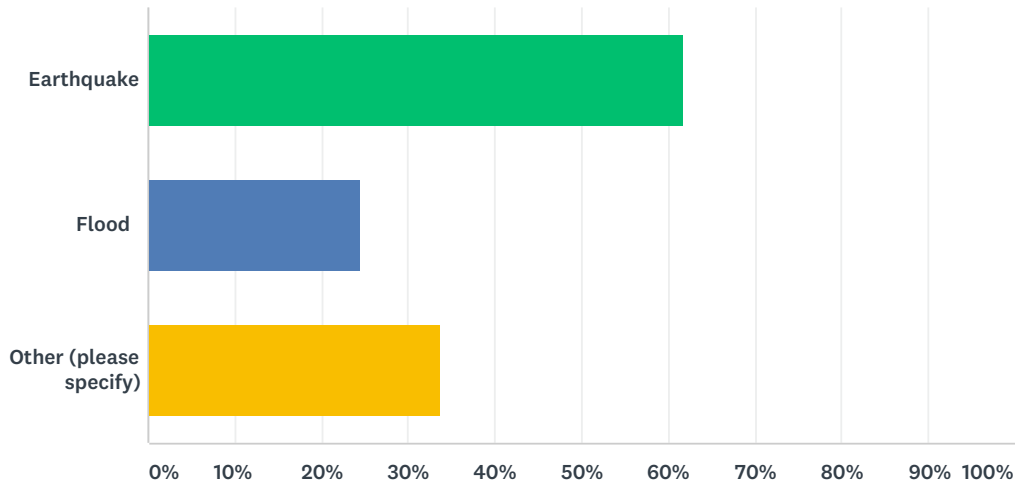
Answered: 270 Skipped: 4



ANSWER CHOICES	RESPONSES	
Homeowner's Insurance	77.41%	209
Renter's Insurance	13.33%	36
Neither	9.26%	25
TOTAL		270

Q5 Do you have specialty insurance for your property?

Answered: 110 Skipped: 164



ANSWER CHOICES	RESPONSES
Earthquake	61.82% 68
Flood	24.55% 27
Other (please specify)	33.64% 37
Total Respondents: 110	

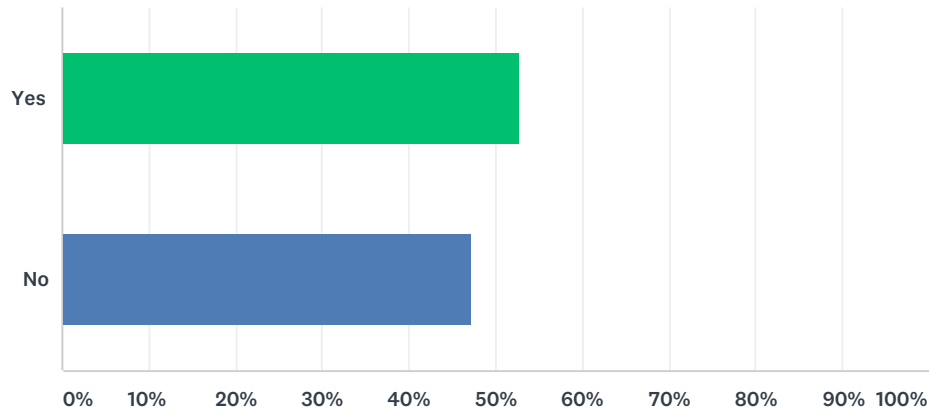
#	OTHER (PLEASE SPECIFY)	DATE
1	no	2/5/2019 9:27 PM
2	none	2/5/2019 9:20 AM
3	None	1/31/2019 6:49 PM
4	N/a	1/30/2019 10:31 PM
5	Umbrella	1/30/2019 11:25 AM
6	None	1/29/2019 9:00 PM
7	No	1/29/2019 8:26 PM
8	Fire and general insurance coversge	1/29/2019 6:50 PM
9	Not sure	1/29/2019 10:50 AM
10	NA	1/29/2019 10:45 AM
11	None, standard insurance	1/29/2019 10:33 AM
12	None	1/28/2019 10:51 PM
13	No	1/28/2019 9:47 PM
14	No	1/28/2019 8:53 PM
15	none	1/28/2019 8:12 PM
16	N/a	1/28/2019 7:57 PM
17	No	1/28/2019 7:48 PM
18	Umbrella	1/28/2019 7:24 PM

City of Tracy Hazard Mitigation Plan Public Input Survey

19	No	1/28/2019 6:42 PM
20	None	1/26/2019 12:40 PM
21	N/a	1/26/2019 12:18 PM
22	Umbrella liability	1/26/2019 11:46 AM
23	No	1/26/2019 11:23 AM
24	No	1/26/2019 11:02 AM
25	Fire	1/26/2019 10:44 AM
26	N/A	1/26/2019 10:36 AM
27	Natural disaster	1/26/2019 10:11 AM
28	No	1/19/2019 1:49 PM
29	Don know	1/19/2019 1:08 PM
30	No	1/19/2019 12:41 PM
31	None	1/19/2019 12:21 PM
32	None	1/19/2019 12:16 PM
33	No	1/19/2019 12:05 PM
34	No	1/19/2019 11:22 AM
35	No	1/19/2019 11:12 AM
36	Neither	1/19/2019 11:06 AM
37	None	1/12/2019 11:46 AM

Q6 Do you commute outside the city for work?

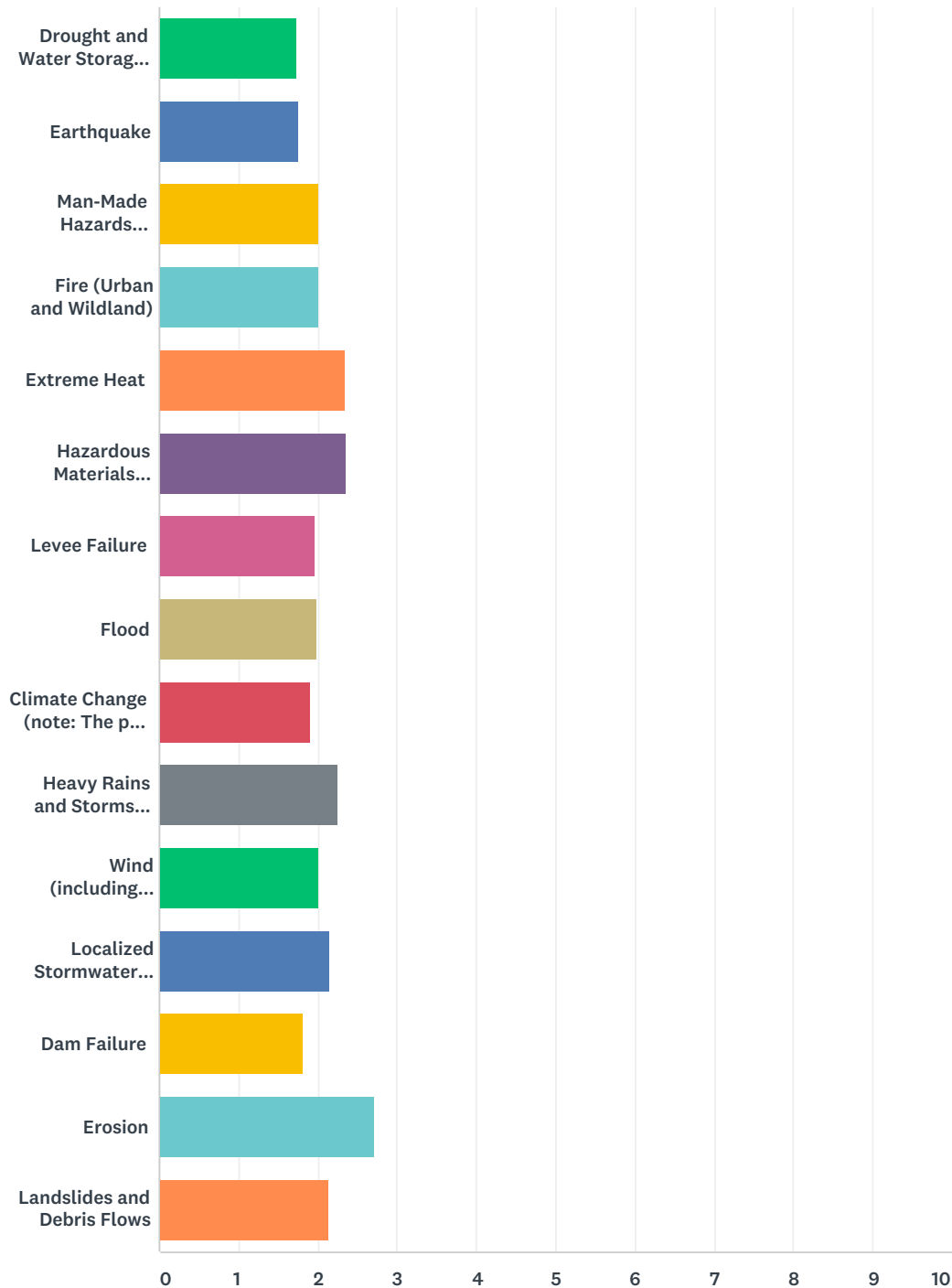
Answered: 271 Skipped: 3



ANSWER CHOICES		RESPONSES	
Yes		52.77%	143
No		47.23%	128
TOTAL			271

Q7 The hazards addressed in the Hazard Mitigation Plan are listed below. Please choose the top 3 hazards of most concern to you. Number 1 represents highest concern.

Answered: 258 Skipped: 16



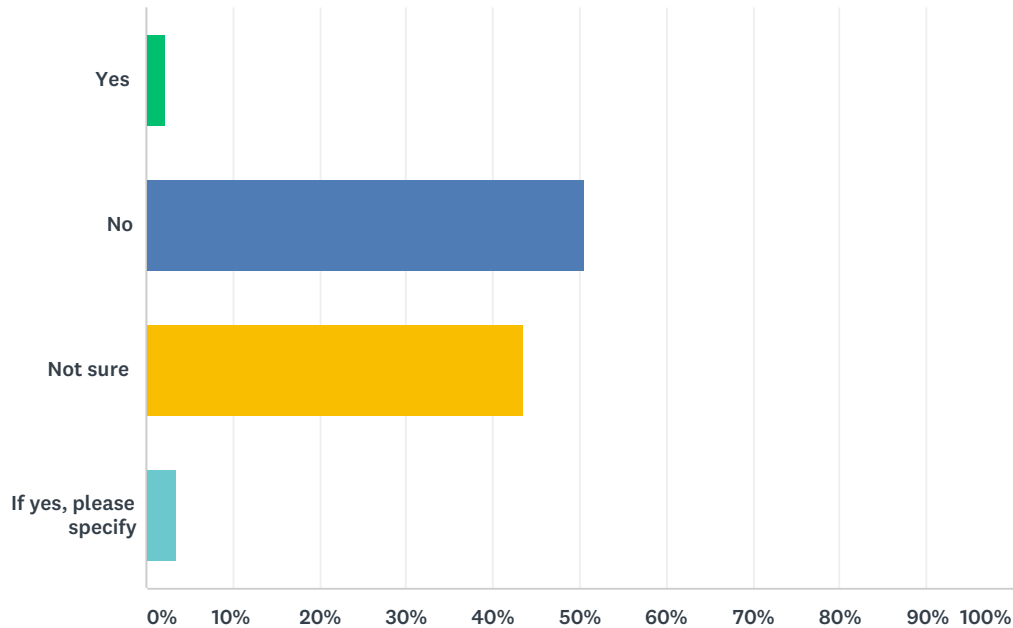
	1	2	3	TOTAL	WEIGHTED AVERAGE
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City of Tracy Hazard Mitigation Plan Public Input Survey

Drought and Water Storage (including Groundwater Quality)	49.19% 61	27.42% 34	23.39% 29	124	1.74
Earthquake	47.06% 48	30.39% 31	22.55% 23	102	1.75
Man-Made Hazards (Transportation Accidents/Pandemic/Terrorism/Nuclear)	36.90% 31	25.00% 21	38.10% 32	84	2.01
Fire (Urban and Wildland)	30.77% 24	37.18% 29	32.05% 25	78	2.01
Extreme Heat	11.29% 7	41.94% 26	46.77% 29	62	2.35
Hazardous Materials Releases (Pipeline/Oil/Gas Tank Failures/Hazards)	13.33% 8	36.67% 22	50.00% 30	60	2.37
Levee Failure	31.37% 16	41.18% 21	27.45% 14	51	1.96
Flood	32.65% 16	36.73% 18	30.61% 15	49	1.98
Climate Change (note: The plan will discuss climate change within each hazard not separately)	47.50% 19	15.00% 6	37.50% 15	40	1.90
Heavy Rains and Storms (Lightning and Hail)	12.50% 4	50.00% 16	37.50% 12	32	2.25
Wind (including Tornadoes)	25.81% 8	48.39% 15	25.81% 8	31	2.00
Localized Stormwater Flooding	23.08% 6	38.46% 10	38.46% 10	26	2.15
Dam Failure	52.94% 9	11.76% 2	35.29% 6	17	1.82
Erosion	0.00% 0	27.27% 3	72.73% 8	11	2.73
Landslides and Debris Flows	14.29% 1	57.14% 4	28.57% 2	7	2.14

Q8 Is your home in a hazard area?

Answered: 251 Skipped: 23

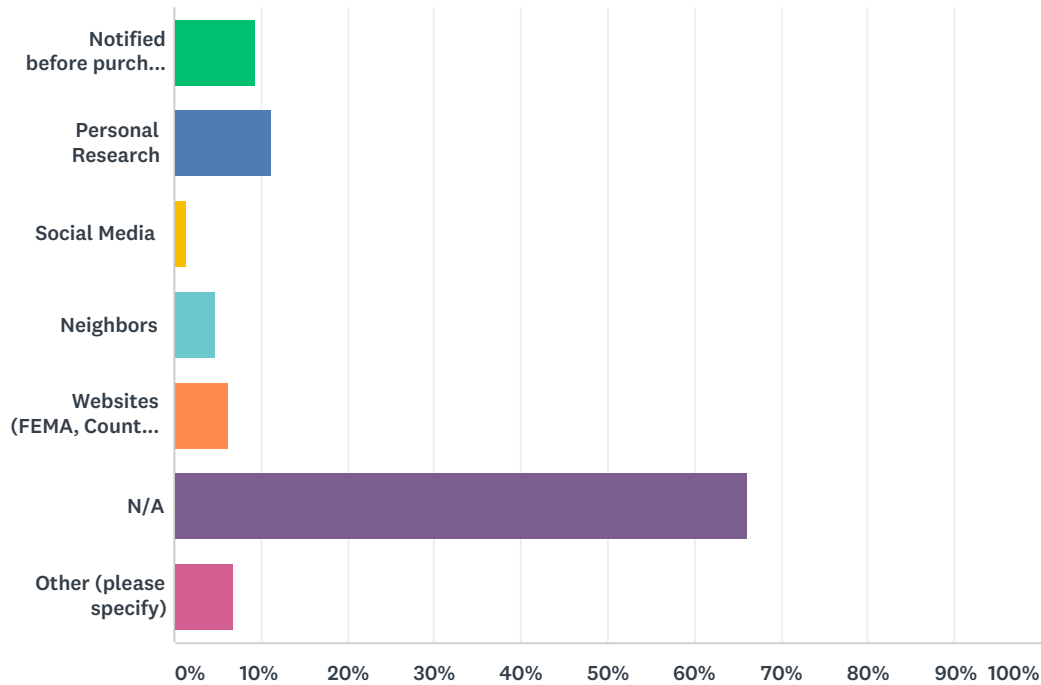


ANSWER CHOICES	RESPONSES
Yes	2.39% 6
No	50.60% 127
Not sure	43.43% 109
If yes, please specify	3.59% 9
TOTAL	251

#	IF YES, PLEASE SPECIFY	DATE
1	The city has over 80,000 pounds of gaseous chlorine at its water plants. An accident waiting to hapen.	2/6/2019 1:44 PM
2	Tracy is a hazardous area	2/6/2019 1:38 PM
3	Near the wastewater plant	2/5/2019 9:43 AM
4	Sites nearby testing with chemicals, explosives, etc.	2/5/2019 6:51 AM
5	Flood	1/29/2019 10:48 AM
6	Valley fever from fungus in soil.	1/28/2019 8:49 PM
7	Large dry grass area / fire hazard	1/28/2019 6:40 PM
8	Levee	1/26/2019 10:27 AM
9	Corral hollow creek	1/19/2019 12:44 PM

Q9 How do you know your home is located in a hazard area?

Answered: 204 Skipped: 70



ANSWER CHOICES	RESPONSES	
Notified before purchase of home/before signing rental agreement	9.31%	19
Personal Research	11.27%	23
Social Media	1.47%	3
Neighbors	4.90%	10
Websites (FEMA, County, City)	6.37%	13
N/A	66.18%	135
Other (please specify)	6.86%	14
Total Respondents: 204		

#	OTHER (PLEASE SPECIFY)	DATE
1	Didn't say I knew	1/30/2019 7:21 AM
2	Soil contamination during the railroad operation in Tracy	1/29/2019 6:54 PM
3	NA	1/29/2019 10:46 AM
4	Not sure	1/28/2019 9:50 PM
5	Infectious disease increase during construction activity.	1/28/2019 8:49 PM
6	Site 300	1/28/2019 8:12 PM
7	An inspired guess	1/28/2019 7:11 PM
8	Previous fire there	1/28/2019 6:40 PM
9	Mail	1/26/2019 12:50 PM

City of Tracy Hazard Mitigation Plan Public Input Survey

10	We are in a valley.	1/26/2019 10:13 AM
11	Husband researched	1/26/2019 10:12 AM
12	County	1/19/2019 12:44 PM
13	Feelings	1/19/2019 10:54 AM
14	Escrow documents	1/19/2019 8:56 AM

Q10 Do you have information on specific hazard issues/problem areas that you would like the planning committee to consider? Note where in the city it applies:

Answered: 57 Skipped: 217

#	RESPONSES	DATE
1	The chlorine gas at the cities water plants	2/6/2019 1:44 PM
2	City Hall ,Central Plaza	2/5/2019 3:37 PM
3	Extremes of heat or cold and shelter options	2/5/2019 10:45 AM
4	I don't know	2/5/2019 10:03 AM
5	Levee damage	2/5/2019 9:48 AM
6	Chlorine gas	2/5/2019 9:43 AM
7	need generators for back up power at airport for lights/nav aids to keep airport open during critical times.	2/5/2019 9:22 AM
8	no	2/5/2019 3:10 AM
9	Flooding area north of MacArthur and 205 highway.	1/30/2019 8:50 PM
10	Bay Area earthquake evacuee sheltering	1/30/2019 11:12 AM
11	Many people driving recklessly. I've never seen so much disregard for traffic laws or safety of others as I've seen in Tracy. Speeders, wrong way drivers, people spinning donuts in neighborhoods on a regular basis. I'm very surprised more people are not killed by these idiots.	1/30/2019 7:21 AM
12	It's happening in the Fairhaven community where the enormous trees that were meant to be the landscape of our neighborhood has overgrown roots and they are wreaking havoc on our sewage system as well as the community sidewalks. Having the City of Tracy workers sanding down the sidewalks so that the cement edges aren't sticking up us NOT the correct way to fix the overgrown root problem. It is a hazard that can be and should be addressed immediately. Please dig out these large trees, kill the roots, fix the sewage pipes, and sidewalk damage.	1/29/2019 8:25 PM
13	Contamination from over the Altamont	1/29/2019 7:28 PM
14	Soil contamination	1/29/2019 6:54 PM
15	Our house on Street to a field with tracks and many weeds. During the summer here a lot of firecrackers and the train that travels the tracks travel slowly and uses its brakes often. There is at times homeless people camping in this area. I worry that one of these things could create a spark that would therefore create a fire endangering our neighborhood and others.	1/29/2019 5:59 PM
16	No, not aware of any.	1/29/2019 12:00 PM
17	No	1/29/2019 10:48 AM
18	Groundwater quality	1/29/2019 10:46 AM
19	Concerns over living near the DLA on Chrisman	1/29/2019 10:37 AM
20	Bring jobs to Tracy as it is now a hazard to commute.	1/29/2019 10:37 AM
21	Site 300 and SRI in Livermore/Tracy	1/29/2019 9:56 AM
22	Homeless population	1/29/2019 3:52 AM
23	Weed around Union Pacific railroad tracks. In summer of 2018, UP let the weeds grow over 6ft. After two months of complaints, they cut them and left them. This is a hazard for Ranch B neighborhood	1/28/2019 10:44 PM
24	Not sure	1/28/2019 9:50 PM
25	Site 39 - Livermore, testing blowing (to Tracy	1/28/2019 9:21 PM

City of Tracy Hazard Mitigation Plan Public Input Survey

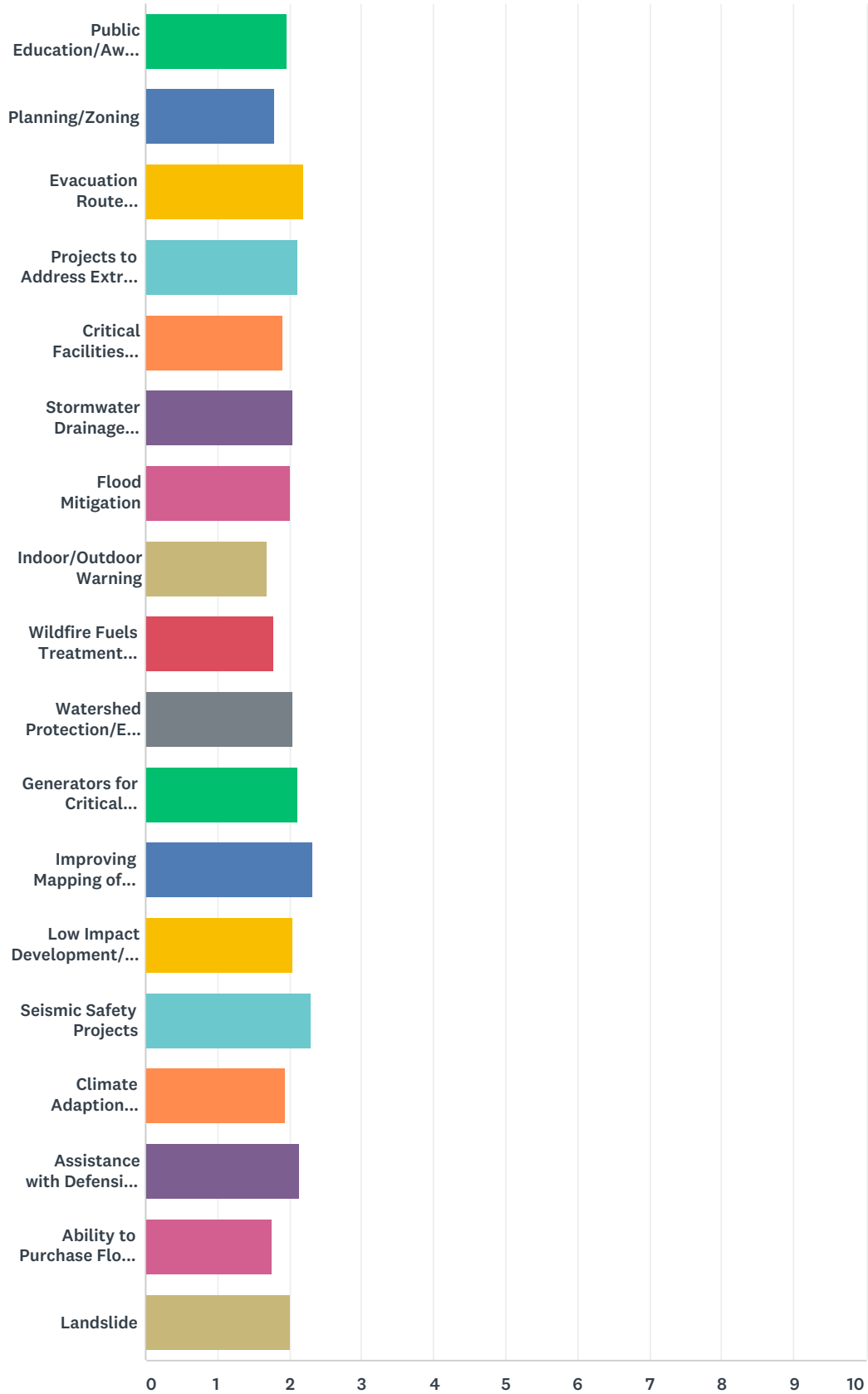
26	Street puddling long after rain Potsgrove Place	1/28/2019 9:08 PM
27	No	1/28/2019 9:06 PM
28	lawrence Livermore Labs exploding underground bombs and other work they might be engaged in.	1/28/2019 9:02 PM
29	Site 300	1/28/2019 8:51 PM
30	All of San joaquin valley. Construction dust needs to be minimized during excavation and farming that disturbs the soil.	1/28/2019 8:49 PM
31	Overall ground water contamination and whether it's a risk for internal and external digestion.	1/28/2019 7:26 PM
32	Live near a levee	1/28/2019 7:17 PM
33	Would like all fireworks banned. Very high fire hazard especially in July.	1/28/2019 6:40 PM
34	No	1/26/2019 1:13 PM
35	Hazardous waste	1/26/2019 12:50 PM
36	Site 300	1/26/2019 11:48 AM
37	No	1/26/2019 11:24 AM
38	Valley fever	1/26/2019 11:20 AM
39	Dirty smell during some afternoons	1/26/2019 11:04 AM
40	No	1/26/2019 10:54 AM
41	Terrorism at defense depot	1/26/2019 10:39 AM
42	N/A	1/26/2019 10:38 AM
43	Not at this moment,i'll Think of one	1/26/2019 10:27 AM
44	Altamont pass. Road erosion.	1/26/2019 10:13 AM
45	No	1/26/2019 10:12 AM
46	Bowtie	1/19/2019 1:53 PM
47	No	1/19/2019 1:09 PM
48	Corral hollow creek flooding	1/19/2019 12:44 PM
49	Pothole on McArthur	1/19/2019 12:36 PM
50	No	1/19/2019 12:23 PM
51	Water quality	1/19/2019 12:07 PM
52	No	1/19/2019 11:25 AM
53	No	1/19/2019 11:12 AM
54	Homeless camps on railroad land	1/19/2019 10:54 AM
55	EMF radiation from smart meters citywide	1/19/2019 10:01 AM
56	No	1/19/2019 9:46 AM
57	Fire	1/12/2019 9:26 AM

Q11 The following types of mitigation actions may be considered for the City. Please indicate the top 3 mitigation actions that you think should have the highest priority in the City of Tracy Hazard Mitigation Plan.

Number 1 represents highest priority.

Answered: 237 Skipped: 37

City of Tracy Hazard Mitigation Plan Public Input Survey



	1	2	3	TOTAL	WEIGHTED AVERAGE
Public Education/Awareness	30.99%	40.85%	28.17%	71	1.97
	22	29	20		

City of Tracy Hazard Mitigation Plan Public Input Survey

Planning/Zoning	40.58% 28	39.13% 27	20.29% 14	69	1.80
Evacuation Route Development	26.09% 18	27.54% 19	46.38% 32	69	2.20
Projects to Address Extreme Heat	28.07% 16	33.33% 19	38.60% 22	57	2.11
Critical Facilities Protection	37.04% 20	35.19% 19	27.78% 15	54	1.91
Stormwater Drainage Improvements	33.33% 16	29.17% 14	37.50% 18	48	2.04
Flood Mitigation	34.04% 16	31.91% 15	34.04% 16	47	2.00
Indoor/Outdoor Warning	54.35% 25	21.74% 10	23.91% 11	46	1.70
Wildfire Fuels Treatment Projects	48.89% 22	24.44% 11	26.67% 12	45	1.78
Watershed Protection/Environmental Restoration	25.58% 11	44.19% 19	30.23% 13	43	2.05
Generators for Critical Facilities	28.57% 10	31.43% 11	40.00% 14	35	2.11
Improving Mapping of Hazards	16.67% 5	33.33% 10	50.00% 15	30	2.33
Low Impact Development/Green Infrastructure Projects	32.00% 8	32.00% 8	36.00% 9	25	2.04
Seismic Safety Projects	17.39% 4	34.78% 8	47.83% 11	23	2.30
Climate Adaption Projects	36.36% 8	31.82% 7	31.82% 7	22	1.95
Assistance with Defensible Space	18.75% 3	50.00% 8	31.25% 5	16	2.13
Ability to Purchase Flood Insurance	50.00% 4	25.00% 2	25.00% 2	8	1.75
Landslide	33.33% 1	33.33% 1	33.33% 1	3	2.00

Q12 Please comment on any other pre-disaster strategies that the planning committee should consider for reducing future losses caused by disasters:

Answered: 40 Skipped: 234

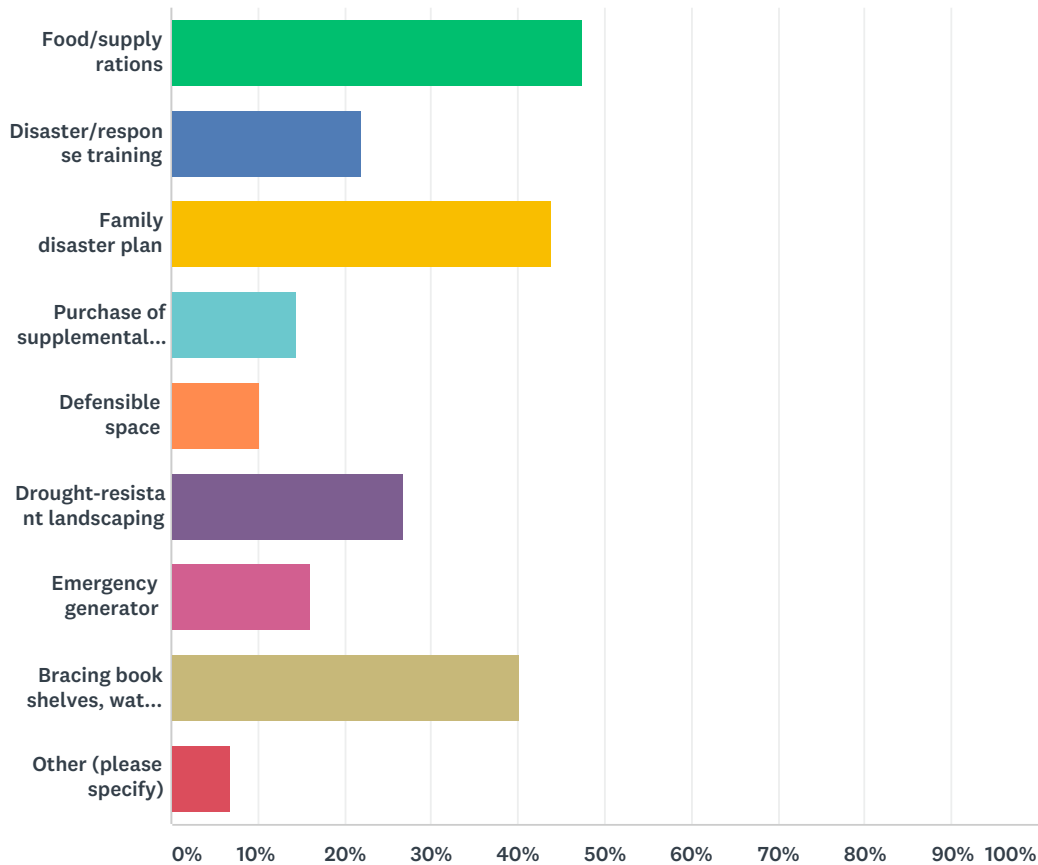
#	RESPONSES	DATE
1	Who is in charge of city upon disaster; Police Chief, Fire Chief, City Manager, Mayor?	2/5/2019 7:23 PM
2	Unexpected homicides ,robberies taking place in and around Tracy	2/5/2019 3:41 PM
3	Preperation of shelter sites for residents to go to in case of a natural disaster. Support in disaster training for our local hospital and small emergency room.	2/5/2019 2:21 PM
4	Oversite of utilities maintenance programs.	2/5/2019 10:53 AM
5	Extreme winter storm damages	2/5/2019 10:06 AM
6	none	2/5/2019 9:53 AM
7	Three things...quick mobile communications, quick mobile medical facilities, known assembly areas.	1/31/2019 6:55 PM
8	Coordinate incident response with county oes. Train city staff. They are disaster service workers and need NIMS/SEMS/ICS training. Support Tracy CERT.	1/30/2019 11:17 AM
9	Na	1/30/2019 7:22 AM
10	Reverse 911	1/29/2019 9:33 PM
11	Traffic/freeway access improvements	1/29/2019 8:35 PM
12	Cleaning of all soil contiminated area in Tracy ca	1/29/2019 6:56 PM
13	Distributed renewable generation	1/29/2019 2:11 PM
14	Plan in case of problems with Site 300	1/29/2019 1:08 PM
15	Can't think of anything.	1/29/2019 12:10 PM
16	NA	1/29/2019 10:47 AM
17	Stop building homes before we expand our roads and sidewalks.	1/29/2019 10:44 AM
18	assuming control of defense depot and warehouse inventories under marshal law	1/29/2019 5:55 AM
19	Water reservoir	1/28/2019 11:20 PM
20	evacuation routes	1/28/2019 10:37 PM
21	Designated safety zones	1/28/2019 9:27 PM
22	Site 300, chemical trails, water tables	1/28/2019 8:55 PM
23	We need more exit routes... I'm not sure how to make that happen though.	1/28/2019 7:57 PM
24	Centers where displaced people can go.	1/28/2019 7:19 PM
25	don't know	1/28/2019 6:34 PM
26	Educate residents about potential disasters that may affect Tracy.	1/28/2019 6:30 PM
27	Evacuation procedures	1/26/2019 11:49 AM
28	Warnings telling people faster	1/26/2019 11:26 AM
29	None	1/26/2019 11:21 AM
30	N/a	1/26/2019 11:05 AM
31	NA	1/26/2019 10:46 AM

City of Tracy Hazard Mitigation Plan Public Input Survey

32	Severe flooding in residential, during the fall	1/26/2019 10:31 AM
33	NA	1/26/2019 10:16 AM
34	Erosion	1/26/2019 10:15 AM
35	Transportation	1/19/2019 1:40 PM
36	Fire evacuation	1/19/2019 1:06 PM
37	Water,housing med	1/19/2019 11:45 AM
38	Don't allow homeless camps	1/19/2019 10:56 AM
39	Education program	1/19/2019 10:46 AM
40	Reinforcement of flooding strategies	1/12/2019 1:15 PM

Q13 Have you taken any actions to make your home or business more disaster-resistant? If so, which of the following measures have you or your household members taken to prepare for a disaster.

Answered: 187 Skipped: 87



ANSWER CHOICES	RESPONSES	
Food/supply rations	47.59%	89
Disaster/response training	21.93%	41
Family disaster plan	43.85%	82
Purchase of supplemental insurance	14.44%	27
Defensible space	10.16%	19
Drought-resistant landscaping	26.74%	50
Emergency generator	16.04%	30
Bracing bookshelves, water heater etc.	40.11%	75
Other (please specify)	6.95%	13
Total Respondents: 187		

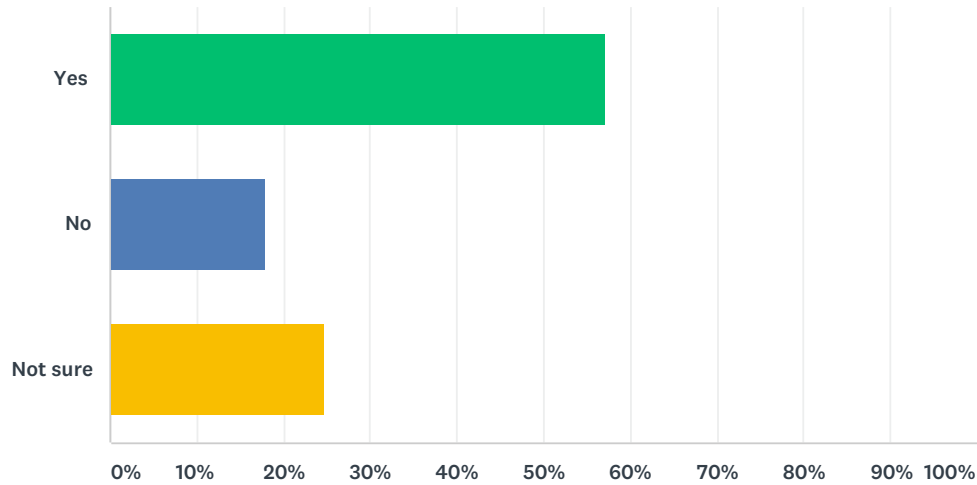
#	OTHER (PLEASE SPECIFY)	DATE
---	------------------------	------

City of Tracy Hazard Mitigation Plan Public Input Survey

1	Regular care and maintenance of property	2/6/2019 3:36 AM
2	Binder in safe with important documents, always keep vehicles with at least 1/2 tank of gas, flashlights, extra batteries	2/5/2019 7:23 PM
3	HAM radio, battery operated	1/31/2019 6:55 PM
4	Na	1/30/2019 7:22 AM
5	"Go box" of important documents & mementoes	1/29/2019 8:45 AM
6	creating a "go bag" in case of emergency	1/28/2019 9:05 PM
7	Earthquake kit	1/28/2019 7:57 PM
8	Stay outside and monitor safety of my home and area on the 4th of July.	1/28/2019 6:44 PM
9	No	1/26/2019 11:05 AM
10	Window tint treatment	1/19/2019 12:38 PM
11	Emergency backpacks for each person	1/19/2019 12:30 PM
12	None	1/19/2019 11:03 AM
13	N/a	1/12/2019 9:28 AM

Q14 Are you interested in making your home, business or neighborhood more resistant to hazards?

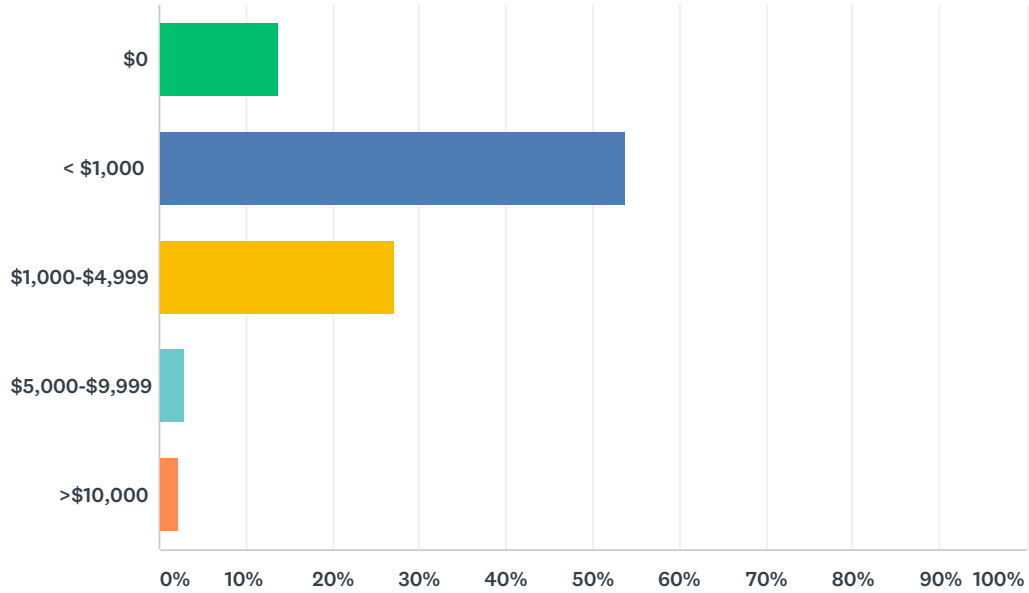
Answered: 222 Skipped: 52



ANSWER CHOICES	RESPONSES	
Yes	57.21%	127
No	18.02%	40
Not sure	24.77%	55
TOTAL		222

Q15 How much are you willing to spend to make safety improvements on your property?

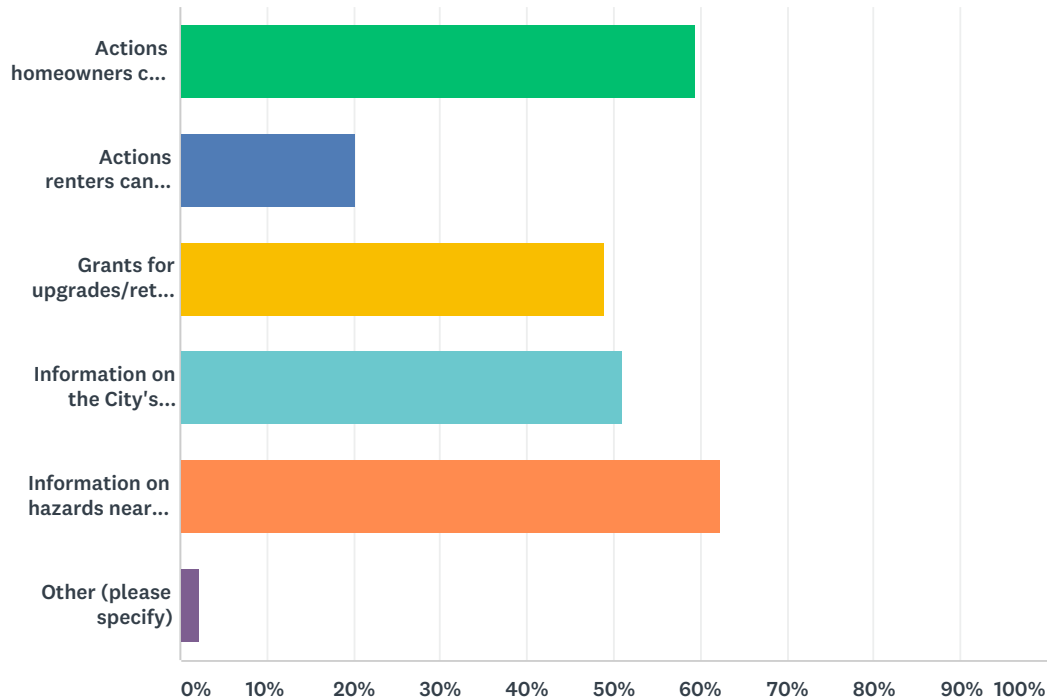
Answered: 210 Skipped: 64



ANSWER CHOICES	RESPONSES	
\$0	13.81%	29
< \$1,000	53.81%	113
\$1,000-\$4,999	27.14%	57
\$5,000-\$9,999	2.86%	6
>\$10,000	2.38%	5
TOTAL		210

Q16 What other types of information would be valuable/helpful to reduce your disaster risk?

Answered: 212 Skipped: 62

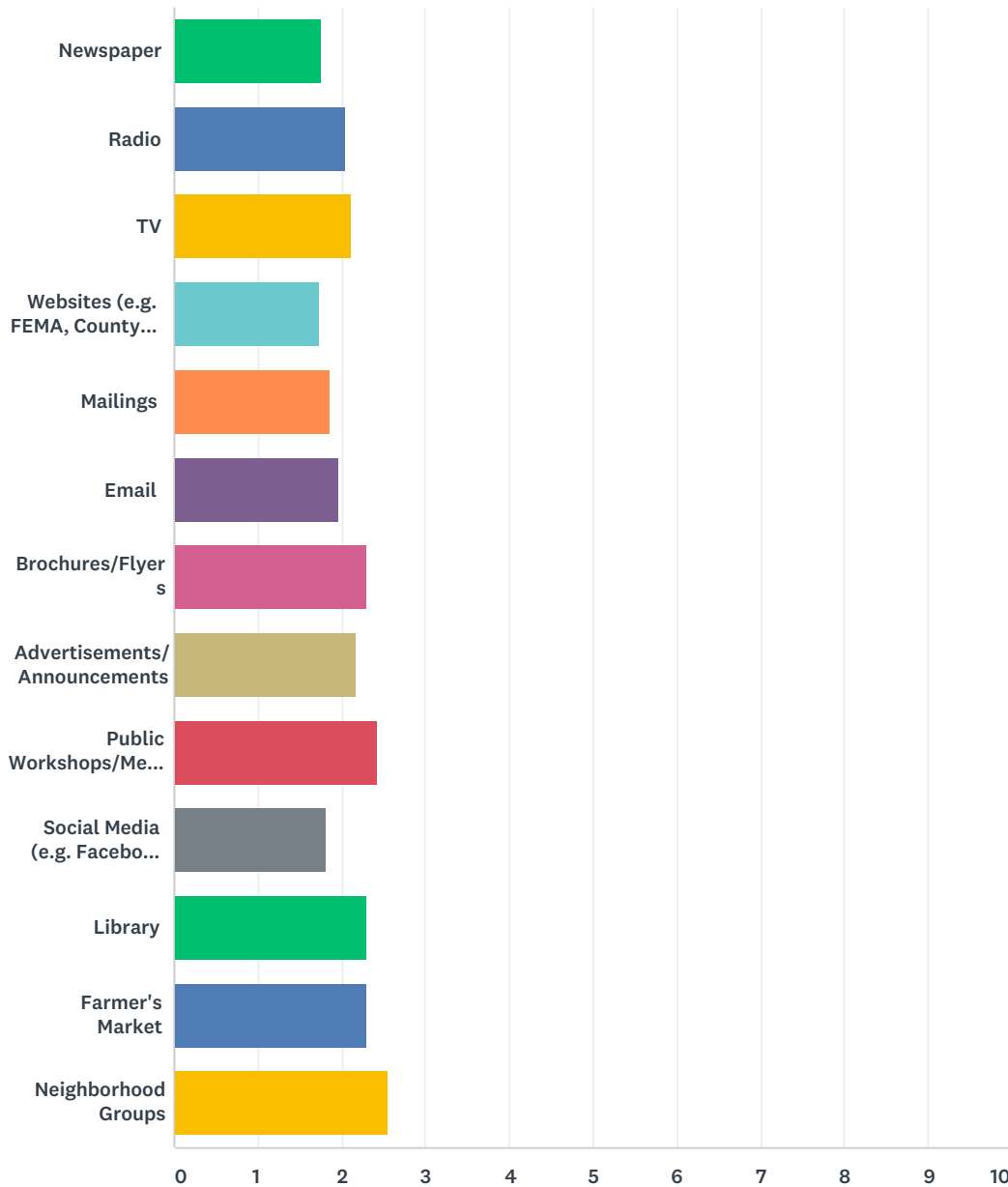


ANSWER CHOICES	RESPONSES	
Actions homeowners can take to protect property	59.43%	126
Actions renters can take to protect property	20.28%	43
Grants for upgrades/retrofits, and Rebate Programs	49.06%	104
Information on the City's capabilities	50.94%	108
Information on hazards near property	62.26%	132
Other (please specify)	2.36%	5
Total Respondents: 212		

#	OTHER (PLEASE SPECIFY)	DATE
1	City evacuation routes, especially during commute hour, maybe warning horn for nuclear leak at LLL	2/5/2019 7:23 PM
2	Prepare our roads and pathways! In the event of a disaster our roads would be severely congested nor do we have proper bike paths to get out. We would be trapped with the likelihood of severe danger!	1/29/2019 10:44 AM
3	publish risk maps of flood and earthquake for area	1/29/2019 5:55 AM
4	Carry fire arms.	1/28/2019 8:53 PM
5	Evacuation route	1/28/2019 7:56 PM

Q17 What are the best ways to provide information about the City's Hazard Mitigation Plan and disaster preparedness? Please indicate the top 3 ways for the city to share information.

Answered: 228 Skipped: 46



	1	2	3	TOTAL	WEIGHTED AVERAGE
Newspaper	50.62% 41	23.46% 19	25.93% 21	81	1.75
Radio	26.47% 9	41.18% 14	32.35% 11	34	2.06
TV	26.92% 14	34.62% 18	38.46% 20	52	2.12

City of Tracy Hazard Mitigation Plan Public Input Survey

Websites (e.g. FEMA, County, City)	48.48% 32	28.79% 19	22.73% 15	66	1.74
Mailings	39.78% 37	33.33% 31	26.88% 25	93	1.87
Email	29.89% 26	43.68% 38	26.44% 23	87	1.97
Brochures/Flyers	6.90% 2	55.17% 16	37.93% 11	29	2.31
Advertisements/Announcements	22.22% 4	38.89% 7	38.89% 7	18	2.17
Public Workshops/Meetings	9.68% 3	38.71% 12	51.61% 16	31	2.42
Social Media (e.g. Facebook, Twitter, NextDoor)	42.59% 46	31.48% 34	25.93% 28	108	1.83
Library	20.00% 2	30.00% 3	50.00% 5	10	2.30
Farmer's Market	25.00% 8	18.75% 6	56.25% 18	32	2.31
Neighborhood Groups	9.30% 4	25.58% 11	65.12% 28	43	2.56

Q18 Optional: Provide your name and email address if you would like to be added to a distribution list for upcoming activities related to the City of Tracy Hazard Mitigation Plan

Answered: 72 Skipped: 202

#	RESPONSES	DATE
1	Stephanie sbooth9902@sbcglobal.net	2/6/2019 11:46 AM
2	conradlevoit@gmail.com	2/6/2019 12:00 AM
3	jim.haskell@cityoftracy.org	2/5/2019 9:32 PM
4	maxcontreras72@yahoo.com	2/5/2019 1:02 PM
5	desousafam4126@comcast.net	2/5/2019 12:43 PM
6	g-riddle@sbcglobal.net	2/5/2019 10:55 AM
7	feeleyjames@yahoo.com	2/5/2019 3:15 AM
8	awahid@miskita.com	1/31/2019 6:56 PM
9	Flor. Reyes.flor.16@gmail.com	1/30/2019 8:57 PM
10	Chris Miller zx7miller@hotmail.com	1/30/2019 11:18 AM
11	Jenah Cabana - cabanajenahc@gmail.com	1/29/2019 10:35 PM
12	Christine Fitzpatrick. Fitzfour4@comcast.net	1/29/2019 9:34 PM
13	franco8790@sncglobal.net	1/29/2019 6:57 PM
14	Barbulliam@prodigy.net	1/29/2019 6:47 PM
15	Amber Freitas 2117 De Bord Drive 95376	1/29/2019 6:02 PM
16	Jan McDonnal janmcdonnal@yahoo.com	1/29/2019 1:09 PM
17	Alina Cardoza mrs.c850@gmail.com	1/29/2019 10:48 AM
18	Nancy Hopple nancyhopple@att.net	1/29/2019 10:44 AM
19	maryrocha@comcast.net	1/29/2019 10:12 AM
20	saenos17@hotmail.com	1/29/2019 8:36 AM
21	kineen@sbcglobal.net	1/29/2019 6:23 AM
22	Mike Sinwald msinwald@yahoo.com	1/29/2019 5:56 AM
23	James Feeley feeleyjames @yahoo.com	1/29/2019 12:38 AM
24	rivases@pacbell.net	1/28/2019 11:26 PM
25	Cathyk824@comcast.net	1/28/2019 10:45 PM
26	Cherielev@sbcglobal.net	1/28/2019 9:31 PM
27	Lcj2992@gmail.com	1/28/2019 9:21 PM
28	Susan Bryant. Victorian2007@gmail.com	1/28/2019 9:19 PM
29	Lisa Halliday lhalliday@aol.com	1/28/2019 9:15 PM
30	G, Hayes sugaralt@aol.com	1/28/2019 9:07 PM
31	Bianca ghiadreams@sbcglobal.net	1/28/2019 8:27 PM
32	garry percival garryper@yahoo.com	1/28/2019 8:17 PM
33	Barbarasimpson2008@yahoo.com	1/28/2019 8:17 PM

City of Tracy Hazard Mitigation Plan Public Input Survey

34	jbettger@sbcglobal.net , Jenni	1/28/2019 7:58 PM
35	Lynnesingfook@yahoo.com	1/28/2019 7:47 PM
36	T_rex@hotmail.com	1/28/2019 7:43 PM
37	Da.mama.cwcm@gmail.com	1/28/2019 7:37 PM
38	john colendich colendic@pacbell.net	1/28/2019 7:37 PM
39	Roxanne Johnson, roxanne.johnson06@yahoo.com	1/28/2019 7:29 PM
40	susanj95304@yahoo.com	1/28/2019 7:20 PM
41	larrywayne_832@yahoo.com	1/28/2019 7:14 PM
42	Joe Decker cultex@yahoo.com	1/28/2019 7:10 PM
43	bastereo@gmail.com	1/28/2019 7:01 PM
44	Michelle Walker-Wade mywalk25@yahoo.com	1/28/2019 6:40 PM
45	Benjamin costello benhcostello@hotmail.com	1/28/2019 6:23 PM
46	Julie Selner, mnwild@inreach.com	1/28/2019 6:18 PM
47	Mandofari@gmail.com	1/26/2019 12:39 PM
48	Lori wl0ri42@yahoo.com	1/26/2019 12:01 PM
49	Tina Fan fanmtina@yahoo.com	1/26/2019 11:32 AM
50	Manuelorona1993@gmail.com	1/26/2019 11:26 AM
51	No thank you	1/26/2019 11:06 AM
52	Andreotti_home@att.net	1/26/2019 10:51 AM
53	Roland Nimis, Jr. roland.nimis@fhwa.dot.gov	1/26/2019 10:36 AM
54	Mary Foshee mryfoshee2sons@gmail.com	1/26/2019 10:35 AM
55	Janhaws@yahoo.com	1/26/2019 9:57 AM
56	Teamparis22@gmail.com	1/19/2019 1:41 PM
57	eiro@sbcglobal.net	1/19/2019 1:41 PM
58	Tdazama@gmail.com	1/19/2019 12:51 PM
59	M.mutowall@gmail.com	1/19/2019 12:31 PM
60	Marcellasandoval@comcast.net	1/19/2019 12:19 PM
61	Mcauich@sbcglobal.net	1/19/2019 12:10 PM
62	Gmeier3@att.net	1/19/2019 11:57 AM
63	winterswrites@yahoo.com	1/19/2019 11:39 AM
64	pedro.cuentas89@gmail.com	1/19/2019 11:30 AM
65	Jerry.clark62@gmail.com	1/19/2019 11:27 AM
66	Eeniahoasis@yahoo.com	1/19/2019 11:19 AM
67	crisandkelly@sbcglobal.net	1/19/2019 11:10 AM
68	Davenmari@comcast.net	1/19/2019 11:04 AM
69	Valerieroutt@yahoo.com	1/19/2019 10:49 AM
70	Veronicavargas@me.com	1/19/2019 10:47 AM
71	Elizabethescamil@hotmail.com	1/19/2019 10:38 AM
72	Andy Flores andy56785@msn.com	1/19/2019 10:07 AM



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Appendix C: MITIGATION STRATEGY

Appendix C: Mitigation Strategy contains the following documents in this order:

- Mitigation Strategy Guidance Criteria
- Mitigation Strategy Meeting documentation
 - Meeting Agenda
 - Meeting Minutes
 - Sign-In Sheet
 - Meeting Presentation
- 2018 Mitigation Action Worksheet
- Mitigation Action Selection and Prioritization Criteria
- Typical Mitigation Actions by FEMA/Community Rating System Categories
- Mitigation Strategy Photographs

Categories of Mitigation Measures Considered

The following categories are based on the Community Rating System.

- Prevention
- Emergency Services
- Property Protection
- Natural Resource Protection
- Structural Projects
- Public Information

Alternative Mitigation Measures per Category

Prevention

Preventive measures are designed to keep the problem from occurring or getting worse. Their objective is to ensure that future development is not exposed to damage and does not increase damage to other properties.

- Planning
- Zoning
- Open space preservation



- Land development regulations
- Subdivision regulations
- Floodplain development regulations
- Stormwater management
- Fuels management, fire breaks
- Building codes
 - Firewise construction
- (also see Property Protection)

Emergency Services

Emergency services protect people during and after a disaster. A good emergency services program addresses all hazards. Measures include:

- Warning (floods, tornadoes, ice storms, hail storms, dam failures)
 - NOAA weather radio all hazards
 - Sirens
 - Reverse 911
- Evacuation and sheltering
- Communications
- Emergency planning
 - Activating the emergency operations room (emergency management)
 - Closing streets or bridges (police or public works)
 - Shutting off power to threatened areas (utility company)
 - Holding children at school/releasing children from school (school district)
 - Passing out sand and sandbags (public works)
 - Ordering an evacuation (mayor)
 - Opening evacuation shelters (red cross)
 - Monitoring water levels (engineering)
 - Security and other protection measures (police)
- Monitoring of conditions (dams)
- Critical facilities protection (buildings or locations vital to the response and recovery effort, such as police/fire stations, hospitals, sewage treatment plants/lift stations, power substations)
 - Buildings or locations that, if damaged, would create secondary disasters, such as hazardous materials facilities and nursing homes
 - Lifeline utilities protection
 - Health and safety maintenance

Property Protection

Property protection measures are used to modify buildings subject to damage rather than to keep the hazard away. A community may find these to be inexpensive measures because often they are implemented



by or cost-shared with property owners. Many of the measures do not affect the appearance or use of a building, which makes them particularly appropriate for historical sites and landmarks.

- Retrofitting/disaster proofing
 - Floods
 - Wet/dry floodproofing (barriers, shields, backflow valves)
 - Relocation
 - Acquisition
 - Tornadoes
 - Safe rooms
 - Securing roofs and foundations with fasteners and tie-downs
 - Strengthening garage doors and other large openings
 - Drought
 - Improve water supply (transport/storage/conservation)
 - Remove moisture competitive plants (tamarisk/salt cedar)
 - Water restrictions/water saver sprinklers/appliances
 - Grazing on CRP lands (no overgrazing-see noxious weeds)
 - Create incentives to consolidate/connect water services
 - Recycled wastewater on golf courses
 - Earthquakes
 - Removing masonry overhangs, bracing, and other parts
 - Tying down appliances, water heaters, bookcases, and fragile furniture so they will not fall over during a quake.
 - Installing flexible utility connections that will not break during shaking (pipelines, too)
 - Wildland fire
 - Replacing building components with fireproof materials (roofing, screening)
 - Creating "defensible space"
 - Installing spark arrestors
 - Fuels modification
 - Noxious weeds/insects
 - Mowing
 - Spraying
 - Replacement planting
 - Stop overgrazing
 - Introduce natural predators
- Insurance

Natural Resource Protection

Natural resource protection activities are generally aimed at preserving (or in some cases restoring) natural areas. In so doing, these activities enable the naturally beneficial functions of floodplains and watersheds to be better realized. These natural and beneficial floodplain functions include the following:

- Storage of floodwaters



- Absorption of flood energy
- Reduction in flood scour
- Infiltration that absorbs overland flood flow
- Groundwater recharge
- Removal/filtering of excess nutrients, pollutants, and sediments from floodwaters
- Habitat for flora and fauna
- Recreational and aesthetic opportunities

Methods of protecting natural resources include:

- Erosion and sediment control
- Wetlands protection
- Riparian area/habitat protection
- Threatened and endangered species protection
- Fuels management
- Set-back regulations/buffers
- Best management practices-Best management practices ("BMPs") are measures that reduce nonpoint source pollutants that enter the waterways. Nonpoint source pollutants come from non-specific locations. Examples of nonpoint source pollutants are lawn fertilizers, pesticides, and other farm chemicals, animal wastes, oils from street surfaces and industrial areas and sediment from agriculture, construction, mining and forestry. These pollutants are washed off the ground's surface by stormwater and flushed into receiving storm sewers, ditches and streams. BMPs can be implemented during construction and as part of a project's design to permanently address nonpoint source pollutants. There are three general categories of BMPs:
 - Avoidance-Setting construction projects back from the stream.
 - Reduction-Preventing runoff that conveys sediment and other water-borne pollutants, such as planting proper vegetation and conservation tillage.
 - Cleanse-Stopping pollutants after they are en route to a stream, such as using grass drainageways that filter the water and retention and detention basins that let pollutants settle to the bottom before they are drained
- Dumping regulations
- Water use restrictions
- Weather modification
- Landscape management

Structural Projects

Structural projects have traditionally been used by communities to control flows and water surface elevations. Structural projects keep flood waters away from an area. They are usually designed by engineers and managed or maintained by public works staff. These measures are popular with many because they "stop" flooding problems. However, structural projects have several important shortcomings that need to be kept in mind when considering them for flood hazard mitigation:



They are expensive, sometimes requiring capital bond issues and/or cost sharing with Federal agencies, such as the U.S. Army Corps of Engineers or the Natural Resources Conservation Service.

- They disturb the land and disrupt natural water flows, often destroying habitats.
- They are built to a certain flood protection level that can be exceeded by a larger flood, causing extensive damage.
- They can create a false sense of security when people protected by a structure believe that no flood can ever reach them.
- They require regular maintenance to ensure that they continue to provide their design protection level.

Structural measures include:

- Detention/retention structures
- Erosion and sediment control
- Basins/low-head weirs
- Channel modifications
- Culvert resizing/replacement/maintenance
- Levees and floodwalls
- Fencing (for snow, sand, wind)
- Drainage system maintenance
- Reservoirs (for flood control, water storage, recreation, agriculture)
- Diversions
- Storm sewers

Public Information

A successful hazard mitigation program involves both the public and private sectors. Public information activities advise property owners, renters, businesses, and local officials about hazards and ways to protect people and property from these hazards. These activities can motivate people to take protection

- Hazard maps and data
- Outreach projects (mailings, media, web, speaker's bureau)
- Library resources
- Real estate disclosure
- Environmental education
- Technical assistance





HMPC Meeting #3 Agenda

Date: 12 February 2019
1:00 PM – 4:00 PM

Meeting at: Fire Administration – Upstairs
Conference Room
835 Central Avenue
Tracy, CA 95376

Project: City of Tracy Local Hazard Mitigation Plan

Subject/Purpose

The purpose of the meeting is to review the goals prepared during the HMPC #2 and to develop specific mitigation actions for the Local Hazard Mitigation Plan.

1. Introductions
 2. Review of Planning Process
 3. Review of Key Issues from Risk Assessment
 4. Online Survey Results
 5. Review and Refine Goals
 6. Review Possible Mitigation Actions
 7. Discuss Criteria for Mitigation Action Selection
 8. Brainstorm Session: Develop New Mitigation Actions
 9. Discuss Plan Implementation and Maintenance
 10. Schedule and Next Steps
 11. Questions and Answers
-



Draft 2019 Goals and Objectives

Goal 1: Prevent Loss of Life and Property from Hazards

Goal 2: Build Community Resilience through Continuity of Essential Services

Goal 3: Increase Education and Awareness of Vulnerability to Hazards

Goal 4: Improve City Coordination and Capabilities



HMPC #3 Meeting Minutes

Date/Time: Tuesday, February 12, 2019 1:00 PM to 4:00 PM

Location: City of Tracy Council Chambers
333 Civic Center Plaza
Tracy, CA 95376

Written By: Juliana Prosperi (Wood, Project Manager)
Jeff Brislawn (Wood, Senior Emergency
Management Associate)

Present: Karin Schnaider (City of Tracy, Finance Director)
Maricela Saldivar (City of Tracy, Public Works)
Jayne Pramod (City of Tracy, Parks and Recreation)
Kim Dunniway (City of Tracy, Human Resources/Risk Management)
Tony Shengman (City of Tracy, Police Department)
Kevin Jorgensen (City of Tracy, Development Services)
Danis Isho (City of Tracy, Development Services)
Pat Vargas (City of Tracy, Fire Department)
Grace Strmiska (City of Tracy, City Manager Office, Public Information)
Anne Bell (City of Tracy, Finance Department)
Ripon Bhatia (City of Tracy, Utilities Department)
Leticia Ramirez (City of Tracy, Chief Administrative Office, Assistant City Attorney)
Ryan Hardester (City of Tracy, Information Technology)
Jeff Davis (City of Tracy, IT/GIS Department)
Carissa Higginbotham (City of Tracy, Public Information Office)
Dan Summa (City of Tracy, Public Information Office)
Casey Goodall (Tracy Unified School District)
Mike Marcucci (Cal FIRE)

Subject: City of Tracy Hazard Mitigation Planning Committee Meeting #3

AGENDA TOPICS

This document is a record of attendance and a summary of the topics discussed at the above meeting including the following:

1. Introductions
2. Review of the Planning Process
3. Review of Key Issues from Risk Assessment
4. Online Survey Results
5. Review and Refine Goals
6. Review Possible Mitigation Actions
7. Discuss Criteria for Mitigation Action Selection and Prioritization

8. Brainstorm Session: Develop New Mitigation Actions
9. Discuss Plan Implementation and Maintenance
10. Schedule and Next Steps
11. Questions and Answers

1. Introductions

Ms. Prosperi and Ms. Schnaider initiated the meeting and introduced themselves and described their project role. Mr. Brislawn provided an introduction and summarized the purpose of the committee workshop. Ms. Prosperi noted there were a few new committee participants in the room, and asked that each new participant provide an introduction and the agency they represent. The HMPC participants listed in the beginning of this meeting summary were present for the third meeting. Participants are also listed on the sign-in sheet (See Attachment A).

2. Review of Planning Process

Ms. Prosperi provided a brief overview of the Federal Emergency Management Agency (FEMA) 9-Step planning process and noted the team is ready to develop the Mitigation Strategy (or Step 6). She highlighted recent planning process progress, including the launch of the City's LHMP webpage, the facilitation of the Stakeholder's Workshop, the circulation of the online public survey, and outreach at several Farmer Market events.

3. Review of Key Issues from Risk Assessment

Ms. Prosperi reviewed the seven natural hazards that will be evaluated in the LHMP, in addition to one human-caused hazard (hazardous materials). She explained that the natural and human-caused hazards evaluated include those that have occurred historically or have the potential to cause significant human or property loss in the future. She then introduced the terminology used in the hazard profiles, and defined geographic extent, past occurrences, magnitude, frequency of future occurrences, and significance levels.

Mr. Brislawn briefly summarized the key issues in the Risk Assessment, specifically the significance level determinations from the HMPC. He noted that since HMPC Meeting #2 drought hazards were reduced from High to Medium.

4. Online Survey Results

Ms. Prosperi provided a "snapshot" of the online survey results. She said the online survey has been open for almost two months and the team has collected approximately 288 responses. She noted that most participants indicated the greatest hazards were drought and water storage, earthquakes, and human-caused hazards.

5. Review and Refine Goals

Mr. Brislawn and Ms. Prosperi revisited the goal statements prepared and categorized during the HMPC Meeting #2. They explained that since the meeting, they also revisited each goal, re-arranged them by general themes, removed duplicate goals, and re-worded them. They stated

the draft goals focused on loss of life and property prevention, emergency response coordination, public education, and community resilience. Mr. Brislawn and Ms. Prosperi asked the group to read through each goal statement and provide any edits or comments. The HMPC provided minor edits to the four goal statements. Below is a list of the final goal statements.

- **Goal 1:** Minimize loss of life and property from hazards
- **Goal 2:** Support community resilience through continuity of essential services during a hazard event
- **Goal 3:** Increase education and awareness of vulnerability to and mitigation of hazards
- **Goal 4:** Improve City coordination and capabilities to mitigate hazards

Mr. Brislawn also noted the option of including specific objectives to support each goal statement. He explained that while goals are long-term statements the City wants to achieve to reduce hazards, objectives are developed as specific steps that are more concrete than goals and can be measured. The HMPC did not develop specific objectives during the meeting, but the consensus was to revisit the need for objectives during review of the Draft LHMP.

6. Review Possible Mitigation Actions

Mr. Brislawn provided an overview of criteria and tools to follow while developing hazard mitigation actions. He noted that the results of the planning process (online survey results) risk assessment, and goal setting helps inform the identification of mitigation actions. He reviewed the four A's: Alter, Avert, Adapt, and Avoid and provided examples of each action type. The HMPC was then provided with a list of FEMA and Community Rating System (CRS) mitigation actions by category. For FEMA categories these included: plans and regulations, structure and infrastructure projects, education and awareness, and natural systems protection. For CRS actions they included prevention, property protection, structural projects, natural resource protection, emergency services, and public information. Mr. Brislawn also provided examples of potential mitigation actions for each of the categories and instructed the group to think about both existing and future projects, buildings, and other infrastructure for mitigation actions. Next, Ms. Prosperi and Mr. Brislawn facilitated a discussion on the mitigation categories to assist in review and identification of activities or projects by the group. Mr. Brislawn also noted that there were additional hazard strategies eligible for FEMA funding related to climate resilient infrastructure.

Ms. Bell asked a question regarding the benefit-cost review process used for planning purposes. Mr. Brislawn explained the analysis methodology for planning as a cursory review of the project benefits (losses avoided) versus the project cost. Should a FEMA grant be sought a more detailed analysis using FEMA software is used and the end result is a ratio that is calculated based on a project's total benefits divided by its total costs. She then asked whether the process takes into account compliance with the National Environmental Policy Act (NEPA). He indicated that mitigation actions that move forward into a federal grant application will need this, and Ms. Prosperi noted that general costs for NEPA compliance and compliance with the California

Environmental Quality Act (CEQA) for California projects should also be accounted for in the analysis process. However for the purposes of the plan and mitigation actions within only initial potential environmental impacts should be noted, where known.

Mr. Brislawn and Ms. Prosperi also distributed several other FEMA and State of California Department of Natural Resources (FEMA's Mitigation Ideas, Cal OES's Identifying Adaptation Strategies) documentation to the group for further consideration.

7. Discuss Criteria for Mitigation Action Selection and Prioritization

Mr. Brislawn continued the presentation and stated after the brainstorm session the group will be asked to prioritize the mitigation actions. He reviewed several decision-making tools, including FEMA's recommended prioritization criteria, STAPLEE disaster recovery criteria (Social, Technical, Administrative, Political, Legal, Economic, and Environmental), and other strategies to assist in deciding why one recommended action may be more important than another. STAPLEE criteria was explained further, as follows:

- **Social:** Does the measure treat people fairly?
- **Technical:** Is the action technically feasible?
- **Administrative:** Is there adequate staffing and funding in place to implement the action?
- **Political:** Who are the stakeholders and decision-makers? Is there public support?
- **Legal:** Does the jurisdiction have legal authority to implement the action?
- **Economic:** Does the action have cost benefits? Is there funding?
- **Environmental:** Does the action comply with environmental regulations?

During the review of the tools, Mr. Brislawn emphasized the importance of Ms. Bell's question and the benefit-cost analysis considerations in prioritizing actions. The group also reviewed a Hazard Summary handout and a list of recommended mitigation actions outlined in the risk assessment. Mr. Jorgensen asked the group how amending the City's Building Code to ensure existing buildings meet seismic codes would be perceived by the public. He said that while some of the recommendations are good mitigation ideas, he is not sure enforcement will be funded, and whether the public would want to spend money on retrofits. He also noted most of the City-owned structures have been removed or retrofitted. Ms. Prosperi noted this was a good point and emphasized that not all the recommended actions may be appropriate for the City of Tracy and some may need to be tailored or dismissed based on feasibility and public need.

8. Brainstorm Session: Develop New Mitigation Actions

The Brainstorm Session exercise involved determining what mitigation actions should be included in the plan. The team reviewed the guidance handouts and were each provided three

3x5 sticky notes and asked to write a mitigation idea on each note and note the responsible department. Mr. Brislawn added that the City will want at least two mitigation actions per hazard. The HMPC were then asked to place their sticky note ideas on the large flip charts in the room.

For the second Brainstorm Session exercise, the HMPC members were each given a set of four colored dots. Once everyone finished writing mitigation ideas on the flip charts, Ms. Prosperi asked the group to come back up and review the measures and use the dots to prioritize actions with the STAPLEE criteria in mind. She asked the HMPC to place a colored dot on the highest priority mitigation actions. Once the group completed the exercise, Mr. Brislawn reviewed each mitigation action with the HMPC and totaled the point score for each action on the flip charts.

The process of identifying and prioritizing mitigation actions allowed the HMPC to come to consensus on the actions. The exercise ensured that actions were ranked in order of importance and that additional actions were developed for more important objectives.

9. Discuss Plan Implementation and Maintenance

Ms. Prosperi highlighted some of the plan implementation and maintenance recommendations. She emphasized the importance of assigning a mitigation manager and individual action leads. She noted the importance of convening the HMPC annually to review progress on actions and to monitor changes in vulnerability. She also explained the need to continue to look at ways to integrate the LHMP into other planning mechanisms and vice versa. She noted a future step should include ensuring the LHMP is adopted into the City's General Plan Safety Element consistent with AB 2140. She also stated the plan will need to be updated every five years.

10. Schedule and Next Steps

Ms. Prosperi highlighted some key outreach events that have occurred or are ongoing as part of the preparation of the LHMP. She stated a Public Workshop is scheduled for this evening at 7:00 PM. Ms. Schnaider added that it will be broadcast live on a local television station. Ms. Prosperi asked the group to complete the Hazard Mitigation Action Worksheet by March 1st. She also stated the Draft LHMP should be ready for public review by April.

11. Questions and Answers

There were no additional questions from the team. The meeting adjourned at 4:20 p.m.

ACTION ITEMS

No.	Item	Action	Completion Date
1.	Submit HMPC Meeting #3 Minutes	(Wood)	18 February 2019
2.	Fill Out Mitigation Action Worksheet	(City)	1 March 2019
3.	Submit Comments on HIRA	(City)	1 March 2019

HANDOUTS: Hazard Summary, Online Survey Results, Mitigation Actions by FEMA Category, Prioritization Criteria, Example Mitigation Actions, Mitigation Action Worksheet

Local Hazard Mitigation Plan

Sign-In Sheet

City of Tracy Local Hazard Mitigation Plan Hazard Mitigation Planning Committee (HMPC) Meeting #3

Tuesday, February 12, 2019

1:00 – 4:00 p.m.

City of Tracy Fire Administration – Upstairs Conference Room

835 Central Avenue

Tracy, California 95376

This sign-in sheet documents the attendees at the City of Tracy Hazard Mitigation Planning Committee (HMPC) Meeting #3. This meeting enables the City of Tracy to evaluate their risks and vulnerabilities to natural hazards. It also provides time for participants to refine goals and develop mitigation strategies to reduce hazard-related losses and to make their jurisdiction more disaster resistant.

Name	Representing Agency/Department	Title	Phone	Email
Anne Bell	COT, FIN	Mgt. Analyst II	209 831-6559	Anne.Bell@cityoftracy.org
Kevin Jorgensen	COT/DS	Chief Bldg. Official	609 831-6415	Kevin.jorgensen@cityoftracy.org
Maricela Sandoval	COT Public Works	Water Reader	209 831-6300	maricela.sandoval@cityoftracy.org
Grace Strmiska	COT Parks + Recreation	Admin Assistant	209 831-8112	grace.strmiska@cityoftracy.org
Jeff Davis	COT IT/GIS	GIS Technician	209 831-6667	jeff.davis@cityoftracy.org
Cesay Goodell	Tracy Unified School District	Associate Superintendent for Business Services	(209) 830-3230	cgoodell@tracyunified.org
RIPON BHATIA	COT/Utilities	Senior Engineer	209-831-6338	ripn.bhatia@cityoftracy.org
Pat Vargas	FIRE	Division Chief	209 831 6700	Pat.Vargas@cityoftracy.org
Leticia Ramirez	COT/CFO	Asst. City Attorney	209-831-4332	leticia.ramirez@cityoftracy.org

wood.

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City of Tracy Local Hazard Mitigation Plan

Hazard Mitigation Planning Committee Meeting #3

Fire Administration – Upstairs Conference Room
835 Central Avenue
Tracy CA 95376

Tuesday, February 12, 2019

woodplc.com

Agenda

1. Introductions
2. Review of Planning Process
3. Review of Key Issues from Risk Assessment
4. Online Survey Results
5. Review and Refine Goals
6. Review Possible Mitigation Actions
7. Discuss Criteria for Mitigation Action Selection and Prioritization
8. Brainstorm Session: Develop New Mitigation Actions
9. Discuss Plan Implementation and Maintenance
10. Schedule and Next Steps
11. Questions and Answers



City of Tracy Local Hazard Mitigation Plan

Introductions

- City of Tracy
 - Karin Schnaider (Finance Director/HMPC Coordinator)
- Wood Environment & Infrastructure Solutions, Inc.
 - Jeff Brislawn, CFM (Senior Associate, Hazard Mitigation and Emergency Management Specialist)
 - Juliana Prosperi, AICP (Project Manager)

3 HMPC #3



City of Tracy Local Hazard Mitigation Plan

FEMA's Original 4-Phase Planning Process



4 HMPC #3



City of Tracy Local Hazard Mitigation Plan

FEMA 2013 9-Step Planning Process

- Step 1** Determine the Planning Area and Resources
- Step 2** Build the Planning Team
- Step 3** Create an Outreach Strategy
- Step 4** Review Community Capabilities
- Step 5** Conduct a Risk Assessment
- Step 6** **Develop a Mitigation Strategy**
- Step 7** Keep the Plan Current
- Step 8** Review and Adopt the Plan
- Step 9** Create a Safe and Resilient Community

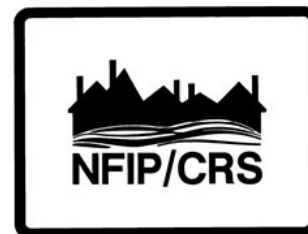
5 HMPC #3



City of Tracy Local Hazard Mitigation Plan

NFIP Community Rating System

- National Flood Insurance Program (NFIP) was created in 1990 as a voluntary incentive program
- Recognizes communities that manage their floodplains beyond the minimum standards by providing discounted flood insurance rates
- Floodplain Management Planning earns credits in CRS
- San Joaquin County is a CRS participant



6 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Review of Planning Process

California Legislation

- **SB 379:** Requires inclusion of climate adaptation strategies in General Plan Safety Elements and encourages inclusion of climate change discussion in LHMPs.
- **SB 1000:** Requires inclusion of Environmental Justice and Equity into General Plan Safety Elements.
- **AB 2140:** Encourages the adoption of LHMPs into General Plan Safety Element (after LHMP Approval).
- **SB 1241:** Revised safety element requirement of General Plans to address risk of State Responsibility Areas (SRA) and Very High Fire Hazard Severity Zones



7 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Review of Planning Process

Progress So Far

- Established and Convened a Hazard Mitigation Planning Committee (HMPC) in September and December 2018
- Launched City of Tracy LHMP Webpage in October 2018
- Facilitated a Stakeholder's Workshop in November 2018
- Conducted spatial analysis using Geographic Information Systems (GIS) and FEMA HAZUS-MH Software
- Completed Hazard Identification and Risk Assessment in January 2019
- Reviewed City's existing capabilities for hazard mitigation
- City outreach at two weekend Farmer's Markets in 2019
- Circulated an English and Spanish Online Survey (December 20th – February 20th)

HMPC #3



City of Tracy Local Hazard Mitigation Plan

Review of Key Issues from Risk Assessment

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/Severity	Significance
Dam Failure	Limited	Unlikely	Limited	Low
Drought	Extensive	Likely	Critical	Medium
Earthquake	Extensive	Occasional	Critical	Medium
Flood: 100/500 year	Limited	Occasional	Limited	Medium
Severe Weather: Extreme Heat	Extensive	Highly Likely	Limited	Medium
Severe Weather: Heavy Rains/Thunderstorms/Lighting/Hail/Dense Fog	Extensive	Highly Likely	Negligible	Low
Severe Weather: Wind and Tornadoes	Extensive	Likely	Negligible	Low
Fire: Urban and Wildland	Limited	Likely	Limited	Medium
Hazardous Materials	Significant	Highly Likely	Limited	Medium

9 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Online Survey Results

"Snapshot" of the Online Survey Results So Far

- Survey Open from December 20th – February 20th
- Over 288 responses collected (as of February 14th)
- Participants indicated greatest hazards are:
 - Drought and Water Storage
 - Earthquakes
 - Human-Caused Hazards (Transportation Accidents/Pandemics/Terrorism/Nuclear)

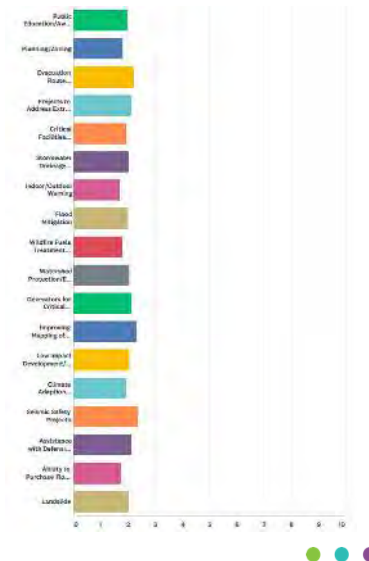
10 HMPC #3



City of Tracy Local Hazard Mitigation Plan Online Survey Results

Highest Priority Mitigation Actions:

- Planning/Zoning
- Public Education/Awareness
- Evacuation Route Development
- Projects that Address Extreme Heat



11 HMPC #3

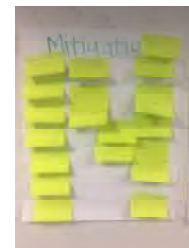
City of Tracy Local Hazard Mitigation Plan Review and Refine Goals

Goal 1: Prevent Loss of Life and Property from Hazards

Goal 2: Build Community Resilience through Continuity of Essential Services

Goal 3: Increase Education and Awareness of Vulnerability to Hazards

Goal 4: Improve City Coordination and Capabilities



12 HMPC #3

City of Tracy Local Hazard Mitigation Plan

Review and Refine Goals

Goal 1: Prevent Loss of Life and Property from Hazards

- Minimize risk and vulnerability from natural hazards
- Significantly reduce loss of life and property due to hazards by identifying appropriate mitigation actions
- Provide protection for existing buildings and critical lifeline utilities from hazards impacts
- Protection of life, property, and infrastructure through the integration of shared resources

13 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Review and Refine Goals

Goal 2: Build Community Resilience through Continuity of Essential Services

- Increase service levels to meet increasing demands
- Ensure critical facilities and essential services are operational during emergency situations
- Provide resilient services that allow for a better feeling of confidence in the City
- Enhance service providers understanding of their role to better serve the community
- Establish procedures for public access to critical facilities during natural hazard events

14 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Review and Refine Goals

Goal 3: Increase Education and Awareness of Vulnerability to Hazards

- Train residents and City staff on the use of emergency procedures
- Increase public awareness on the hazards, vulnerabilities, and mitigation actions summarized in the City's Hazard Mitigation Plan
- Develop a community education plan to ensure readiness and adaptation for natural and man-made disasters
- Increase training at HM facility sites (Training/EOC) to prepare and protect community

15 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Review and Refine Goals

Goal 4: Improve City Coordination and Capabilities

- Establish FEMA eligibility and position City for grant funding
- Enhance coordination with Cal OES/FEMA during disaster planning and relief
- Integrate hazard mitigation planning in City policies and plans
- Minimize risk to the community by addressing health, welfare, and safety issues resulting from natural and man-made hazards
- Provide plan to reassure that vulnerable populations will be identified and accounted and cared during hazard events
- Improve resource capabilities through better use of GIS and other technologies

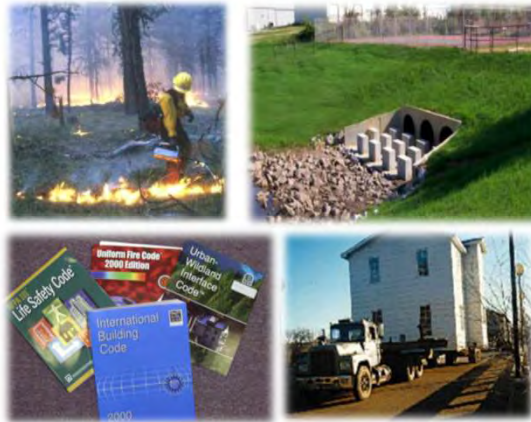
16 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Review Mitigation Actions

- ▶ Alter
- ▶ Avert
- ▶ Adapt
- ▶ Avoid



17 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Review Mitigation Actions

- ▶ **Alter the Hazard**
 - Prescribed burns or fuels management to reduce wildfire intensity and severity
 - Draining lakes behind weakened dams
 - "Seeding" clouds to increase rain or snow



18 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Review Mitigation Actions

► **Avert** the Hazard

- Floodwalls
- Debris basins
- Drainage improvements
- Channels and Culverts
- Fire Breaks (Delta-Mendota Canal, California Aqueduct)



19 HMPC #3

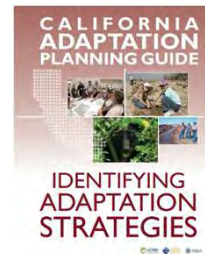


City of Tracy Local Hazard Mitigation Plan

Review Mitigation Actions

► **Adapt** to the Hazard

- Building Codes
- Construction Standards
- Land Use and Development Regulations
- Design Standards
- Monitoring and Warning Systems
- Safe Rooms



20 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Review Mitigation Actions

► **Avoid** the Hazard

- Acquisition
- Relocation
- Open Space
- Land Use Designation
- Natural System Protection



21 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Review Mitigation Actions

FEMA Mitigation Ideas Guidance

- Plans and Regulations
- Structure and Infrastructure Projects
- Education and Awareness
- Natural systems protection

NFIP – Community Rating System Guidance

- Prevention
- Property protection
- Natural resource protection
- Structural projects
- Public information
- Emergency services

—See handout—

22 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Review Mitigation Actions

Hazard Strategies Eligible for FEMA Funding - Wildfire

- ▶ Defensible Space
- ▶ Hazardous Fuels Reduction Activities
 - Community level vegetation management;
 - Vegetation removal;
 - Vegetation clearing and/or thinning;
 - Slash removal; and
 - Vertical clearance of tree branches
- ▶ Structural Protection Through Ignition-Resistant Construction Activities

23 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Review Mitigation Actions

Hazard Strategies Eligible for FEMA Funding - Flood

- ▶ Acquisition
- ▶ Dry and Wet Flood-proofing
- ▶ Elevation
- ▶ Minor Localized Flood Reduction Projects
 - Detention ponds
 - Channel stabilization
- ▶ Infrastructure Retrofit
 - Culverts, bridges, etc.

24 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Review Mitigation Actions

Hazard Strategies Eligible for FEMA Funding – Other Types

- ▶ Landslides/ Geologic Hazards
 - Channel (soil) stabilization/ protection of critical facility
 - Property Acquisition
- ▶ Utility Protection/ Infrastructure Retrofit
 - Winter Weather
 - Wildfire
 - High Winds
- ▶ Safe Rooms, Generators
- ▶ Seismic Building/Infrastructure Retrofit
- ▶ “Climate Resilient” Actions (Aquifer Storage, Green Infrastructure)



25 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Mitigation Action Selection and Prioritization

STAPLEE

- ▶ Social
- ▶ Technical
- ▶ Administrative
- ▶ Political
- ▶ Legal
- ▶ Economic
- ▶ Environmental

Other Strategies to Consider

- ▶ Life Safety
- ▶ Addressing High Risk Hazards
- ▶ Protect Critical Facilities/Assets
- ▶ Multiple Objectives

—See handout—

26 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Mitigation Action Selection and Prioritization

Based on Risk

- ▶ Estimated losses
- ▶ At-risk existing facilities
- ▶ At-risk critical facilities
- ▶ At-risk cultural and natural resources

Other Opportunities

- ▶ At-risk areas slated for future development
- ▶ At-risk facilities slated for future development
- ▶ Public Education
- ▶ Increased insurance coverage
- ▶ Include projects from other existing plans (General Plan)

—See handout—

27 HMPC #3

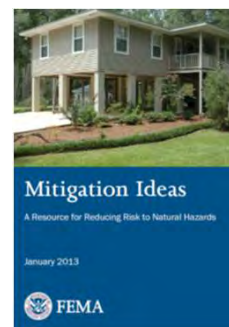


City of Tracy Local Hazard Mitigation Plan

Mitigation Action Selection and Prioritization

Sources of Ideas for Mitigation Actions and Implementation through related planning efforts

- ▶ Draft Hazard Identification and Risk Assessment
- ▶ See handouts related to action alternatives by hazard and category
- ▶
- ▶ Urban Water Management Plan
- ▶ Capital Improvement Plan
- ▶ Sustainability Plan
- ▶ Plan goals and objectives
- ▶ FEMA 'Mitigation Ideas' publication
<https://www.fema.gov/media-library/assets/documents/30627>



28 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Mitigation Action Selection and Prioritization

Disaster Mitigation Act – Mitigation Action Requirements

- ▶ Plan must have at least one action for every hazard (plan as a whole)
- ▶ Plan must have at *least one* action at a minimum that addresses each identified hazard and must be true mitigation (not preparedness), preferably of different categories.
- ▶ Actions must be prioritized
- ▶ Actions must have detail on implementation and administration
- ▶ Actions must have a review of benefit vs cost
- ▶ Actions must address existing and future development

29 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Possible Mitigation Actions

- ▶ **Dam Failure**
 - Increase risk awareness of potential dam failure impacts
- ▶ **Drought**
 - Educate residents on water saving techniques
- ▶ **Earthquake**
 - Conduct building inspections and track results electronically
- ▶ **Flood**
 - Elevate or retrofit existing structures and utilities in floodplain
- ▶ **Severe Weather: Extreme Heat**
 - Establish Network to assist vulnerable groups during extreme heat

30 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Possible Mitigation Actions

- ▶ **Severe Weather: Heavy Rain/Thunderstorms/Hail/Lightning/ Fog**
 - Protect critical facilities and equipment from lightning strikes
 - Encourage techniques to minimize hail damage to new construction
- ▶ **Severe Weather: Wind and Tornadoes**
 - Promote construction of safe rooms
 - Establish clearance standards for overhead utilities
- ▶ **Wildfire**
 - Update zoning ordinance to specific development conditions in WUI
- ▶ **Hazardous Materials**
 - Ensure Comprehensive Emergency Management Plan is updated

31 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Developing Goals for the Mitigation Plan

Brainstorm Session Exercise #1

- ▶ What Mitigation Actions should be included in the Plan?
- ▶ Review Guidance Handouts with Mitigation Actions by Categories and by Hazards
- ▶ Write idea for new action on 3 x 5 sticky note
 - ▶ Note the responsible department
 - ▶ Use additional sticky notes for each idea
- ▶ Post on large flip chart paper
- ▶ Review each other's postings



32 HMPC #3

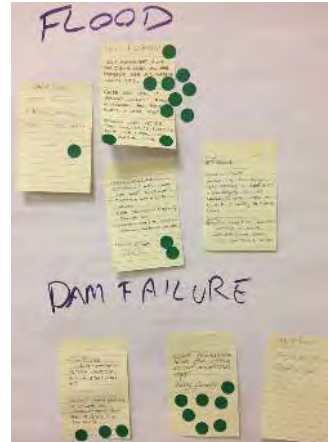


City of Tracy Local Hazard Mitigation Plan

Developing Goals for the Mitigation Plan

Brainstorm Session Exercise #2

- ▶ Connect the Dots!
- ▶ 4 Dots per Person
- ▶ Indicate your Preferred Mitigation Activities, Keeping STAPLEE Criteria in Mind, with a Dot



33 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Developing Goals for the Mitigation Plan

Take-Home Assignment

- ▶ See Handout; Word Version will be emailed
- ▶ Captures additional details of mitigation action/project
- ▶ Need input back by March 15th



34 HMPC #2



City of Tracy Local Hazard Mitigation Plan Community Outreach Update

- Community Outreach Strategy
 - Hazard Mitigation Plan Website
 - Regular Website Postings
 - Event Flyers and Advertisements
 - Newsletters
 - Online Public Survey
 - Public Workshop
 - Hazard Mapping
 - Farmer's Market Booth
- Draft Local Hazard Mitigation Plan
 - Anticipated to be available for public review in April



35 HMPC #3



City of Tracy Local Hazard Mitigation Plan Community Outreach Update

CITY OF TRACY CALIFORNIA
Think Inside the Triangle®

HOME | CALENDAR | EMPLOYMENT OPPORTUNITIES | CONTACT US

Select an Online Service

RESIDENTS | BUSINESSES | VISITORS | NEWS & EVENTS | ELECTED OFFICIALS & POLICY | DEPT & MANAGEMENT | ABOUT | OPEN GOV

City of Tracy > OpenGov > Local Hazard Mitigation Planning

OPENGOV

- Local Hazard Mitigation Planning
 - Cal OES Hazard Mitigation Home Page
 - City of Tracy Stakeholder Workshop Presentation
 - Hazard Mitigation Assistance Guidance
 - FEMA Comprehensive Preparedness Guide 101
 - City of Tracy Hazard Mitigation Committee Meeting 9.25.16
 - City of Tracy Hazard Mitigation Committee Presentation #2
 - City of Tracy HMPC #2 Draft Meeting Minutes 12-28-2018
 - Photo Gallery
 - PR 2.4.15 LHMP Public Workshop (English Version)
 - PR 2.4.15 LHMP Public Workshop (Spanish Version)

Local Hazard Mitigation Planning

The City of Tracy is currently taking steps to update its Hazard Mitigation Plan according to federal and state guidelines. We will continue to update this webpage as part of our ongoing effort and encourage the public to participate throughout the process by attending meetings and offering constructive input.

The Hazard Mitigation Plan Committee Conduct a Goal Development Meeting.

What is Hazard Mitigation

Available Resources

- [Public Survey](#)
- [FEMA Comprehensive Preparedness Guide \(CPG\) 101](#)

Emergency Management Cycle

Prevention-Mitigation, Preparedness, Response, Recovery

36 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Plan Implementation and Maintenance

- Assign a City Hazard Mitigation Manager and Individual Mitigation Action Leads
- ▶ City Hazard Mitigation Manager will convene the HMPC annually to review progress on actions
- ▶ Monitor changes in vulnerability, funding opportunities
- ▶ System for Monitoring Progress on Achieving Goals and Projects
- ▶ Process to integrate and implement through other related plans
- ▶ Continue public involvement
- ▶ Revise the plan as necessary and complete update within 5 years per DMA requirement
- ▶ State vs direct to FEMA

37 HMPC #3



City of Tracy Local Hazard Mitigation Plan

Schedule and Next Steps

- Review Hazard Identification and Risk Assessment
- **Complete Hazard Mitigation Action Worksheet**
- Encourage Friends to Complete the Online Survey
- **Public Workshop – Tonight @ 7:00 PM**
- Draft LHMP Anticipated to be ready for review in March
- Public Review Anticipated to Begin in April

CITY OF TRACY

HAZARDOUS MITIGATION PLANNING PUBLIC MEETING

Tuesday, February 12, 2019
7 p.m. - 9 p.m.

City Council Chambers
333 Civic Center Plaza
Tracy, CA 95376


QUESTIONS?
Please contact Karl Schneider at:
kschneider@tracyca.gov
(209) 831-6943
www.cityoftracy.org

The purpose of the Community Engagement Strategy is to provide for a meaningful process through which the City of Tracy and its citizens, public officials, and stakeholder groups may effectively participate in the preparation of the City of Tracy Hazard Mitigation Plan (HMP).

38 HMPC #3



City of Tracy Local Hazard Mitigation Plan Schedule and Next Steps

Task or Key Milestone	Anticipated Date
Notice to Proceed	June 8, 2018
Project Kick-Off Meeting	August 9, 2018
Submit HMPC Invite List	September 11, 2018
HMPC Meeting #1	September 25, 2018
Submit Draft Community Engagement Study	October 5, 2018
City Review of Draft Community Engagement Study	October 12, 2018
Prepare Hazard Identification and Risk Assessment	TBD
Stakeholder Workshop	November 14, 2018
Develop GIS Geodatabase (pending City Assessor and Property Value Data)	November 30, 2018
HMPC Meeting #2	December 20, 2018
HMPC Meeting #3	February 12, 2019
 Public Workshop	Tonight 7:00 – 9:00 PM
Finalize Goals and Objectives	February 15, 2019
Compile Mitigation Actions Worksheets	March 1, 2019
Submit 1 st Administrative Draft HMP	March 15, 2019
City provides Consolidated Staff Comments on 1 st Administrative Draft HMP	March 29, 2019
Submit 2 nd Administrative Draft LHMP	April 12, 2019
Circulate Public Review Draft LHMP	April 19, 2019
Public Review Ends	May 18, 2019
Complete FEMA Region IX Review Tool	May 31, 2019
Submit LHMP to FEMA for Review	June 4, 2019
Submit to Cal OES for Review	July 18, 2019
City Council Hearing	August 6, 2019*

*City Council Meetings are held on the first and third Tuesdays of each month

39

Questions?

Juliana Prosperi, AICP
10940 White Rock Rd, Suite 190
Rancho Cordova, CA 95670
Juliana.Proserpi@woodplc.com
(916) 853-3200

Jeff Brislawn, CFM
1942 Broadway
Boulder, CO 80302
Jeff.Brislawn@woodplc.com
(303) 704-5506

wood.

Environment & Infrastructure Solutions
<http://www.woodplc.com>

City of Tracy Local Hazard Mitigation Plan New Mitigation Action Worksheet

Name of Jurisdiction: _____

Use this to record potential mitigation projects (1 page per project) identified during the planning process to include in the plan. Provide as much detail as possible and use additional pages as necessary. Complete and return to Juliana Prosperi by **March 1, 2019**.

Mitigation Project Title	
Issue/Background	
Other Alternatives	
Responsible Office	
Priority (High, Medium, Low)	
Cost Estimate	
Benefits (Avoided Losses)	
Potential Funding	
Schedule	

Prepared by: _____

Phone: _____

Email: _____

Please return worksheets by mail, email, or fax
to: Juliana Prosperi
juliana.prosperi@woodplc.com
10940 White Rock Road, Suite 190
Rancho Cordova, CA, 95670
Tel 303-503-7794
Fax 916-636-3208

Mitigation Action Selection and Prioritization Criteria

Does the proposed action protect lives?

Does the proposed action address hazards or areas with the highest risk?

Does the proposed action protect critical facilities, infrastructure, or community assets?

Does the proposed action meet multiple objectives (multi-objective management)?

STAPLE/E

Developed by FEMA, this method of applying evaluation criteria enables the planning team to consider in a systematic way the social, technical, administrative, political, legal, economic, and environmental opportunities and constraints of implementing a particular mitigation action. For each action, the HMPC should ask, and consider the answers to, the following questions:

Social

Does the measure treat people fairly (different groups, different generations)?

Technical

Will it work? (Does it solve the problem? Is it feasible?)

Administrative

Is there capacity to implement and manage project?

Political

Who are the stakeholders? Did they get to participate? Is there public support? Is political leadership willing to support it?

Legal

Does your organization have the authority to implement? Is it legal? Are there liability implications?

Economic

Is it cost-beneficial? Is there funding? Does it contribute to the local economy or economic development? Does it reduce direct property losses or indirect economic losses?

Environmental

Does it comply with environmental regulations or have adverse environmental impacts?

Example Mitigation Actions by FEMA categories with Hazards Identified in the City of Tracy Local Hazard Mitigation Plan

Alternative Mitigation Actions	Dam/Levee Failure	Floods	Hazardous Materials	Drought/Severe Weather: Extreme Heat	Severe Weather: Heavy Rain/Lightning/Hail	Earthquakes	Wildfires	Severe Weather: Wind/Tornadoes
PLANS and REGULATIONS								
Building codes and enforcement		■	■	■	■	■	■	■
Comprehensive Watershed Tax		■						
Density controls	■	■	■				■	
Design review standards		■	■			■	■	
Easements		■	■				■	
Environmental review standards		■	■			■	■	
Floodplain development regulations	■	■	■					
Hazard mapping	■	■	■				■	
Floodplain zoning	■	■	■					
Forest fire fuel reduction							■	
Housing/landlord codes			■	■	■			
Slide-prone area/grading/hillside development regulations							■	
Manufactured home guidelines/regulations		■			■	■		
Minimize hazardous materials waste generation			■					
Multi-Jurisdiction Cooperation within watershed	■	■						
Open space preservation	■	■					■	
Performance standards	■	■		■	■	■	■	■
Periodically contain/remove wastes for disposal			■					
Pesticide/herbicide management regulations			■					
Special use permits	■	■	■	■			■	
Stormwater management regulations		■	■					
Subdivision and development regulations	■	■	■	■		■	■	
Surge protectors and lightning protection					■			
Tree Management					■		■	■

Alternative Mitigation Actions	Dam/Levee Failure	Floods	Hazardous Materials	Drought/Severe Weather: Extreme Heat	Severe Weather: Heavy Rain/Lightning/Hail	Earthquakes	Wildfires	Severe Weather: Wind/Tornadoes
Transfer of development rights		■		■			■	
Utility location			■	■	■			■
STRUCTURE AND INFRASTRUCTURE PROJECTS								
Acquisition of hazard prone structures	■	■		■			■	
Facility inspections/reporting	■	■	■	■		■		
Construction of barriers around structures	■	■	■					
Elevation of structures	■	■						
Relocation out of hazard areas	■	■	■	■			■	
Structural retrofits (e.g., reinforcement, floodproofing, bracing, etc.)		■	■		■	■	■	■
Channel maintenance		■						
Dams/reservoirs (including maintenance)	■	■		■				
Isolate hazardous materials waste storage sites			■					
Levees and floodwalls (including maintenance)		■						
Safe room/shelter				■	■	■		■
Secondary containment system			■					
Site reclamation/restoration/revegetation		■						
Snow fences								■
Water supply augmentation				■	■			
Debris Control		■						
Defensible Space							■	
Stream stabilization		■						
EDUCATION AND AWARENESS								
Flood Insurance	■	■						
Hazard information centers	■	■	■	■	■	■	■	■
Public education and outreach programs	■	■	■	■	■	■	■	■

Alternative Mitigation Actions	Dam/Levee Failure	Floods	Hazardous Materials	Drought/Severe Weather: Extreme Heat	Severe Weather: Heavy Rain/Lightning/Hail	Earthquakes	Wildfires	Severe Weather: Wind/Tornadoes
Real estate disclosure	■	■	■	■	■	■	■	■
Crop Insurance				■	■	■		
Lightning detectors in public areas					■			
NATURAL SYSTEMS PROTECTION								
Best Management Practices (BMPs)		■	■	■	■		■	
Forest and vegetation management	■	■		■	■		■	■
Hydrological Monitoring	■	■	■	■	■			
Sediment and erosion control regulations	■	■	■					
Stream corridor restoration		■		■				
Stream dumping regulations		■	■					
Urban forestry and landscape management		■		■	■		■	■
Wetlands development regulations		■	■	■			■	
EMERGENCY SERVICES								
Critical facilities protection	■	■	■	■	■	■	■	■
Emergency response services	■	■	■	■	■	■	■	■
Facility employee safety training programs	■	■	■	■	■	■	■	■
Hazard threat recognition	■	■	■	■	■	■	■	■
Hazard warning systems (community sirens, NOAA weather radio)	■	■	■	■	■	■	■	■
Health and safety maintenance	■	■	■	■	■	■	■	■
Post-disaster mitigation	■	■	■	■	■	■	■	■
Evacuation planning	■	■	■	■			■	

CITY OF TRACY LOCAL HAZARD MITIGATION PLAN

Mitigation Strategy: Photographs

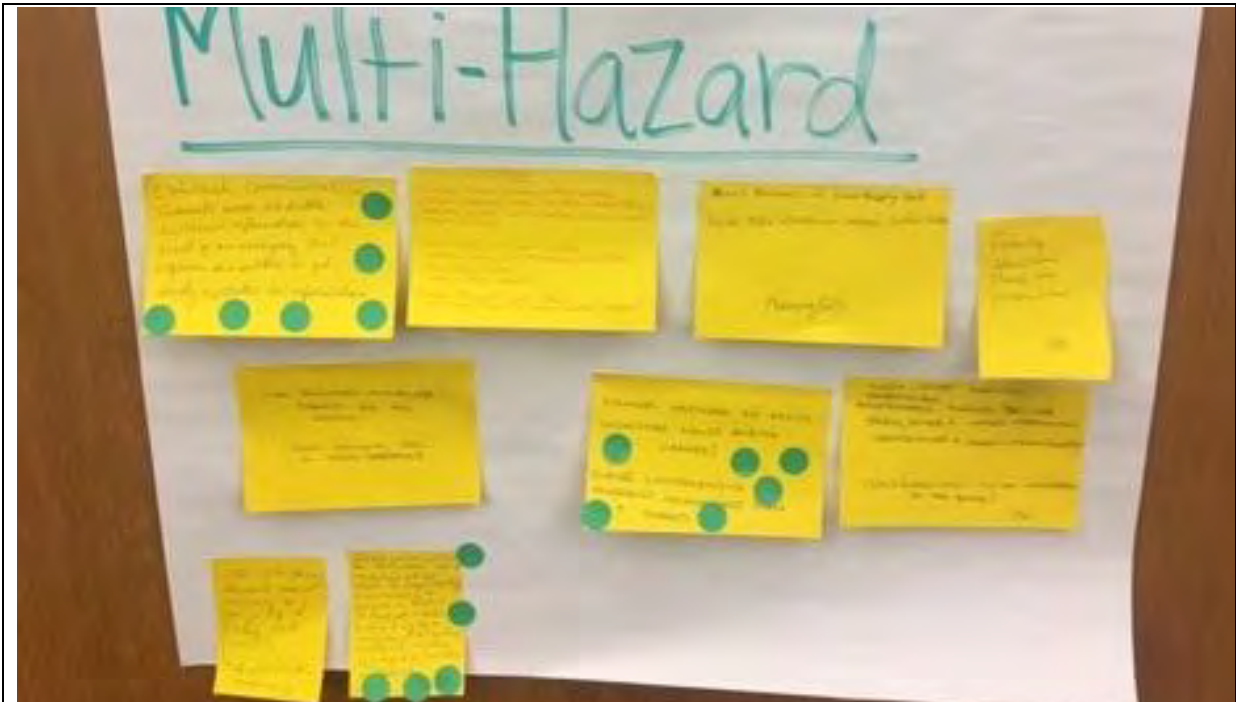


Photograph 1 Hazard Mitigation Planning Committee Mitigation Strategy Meeting #3

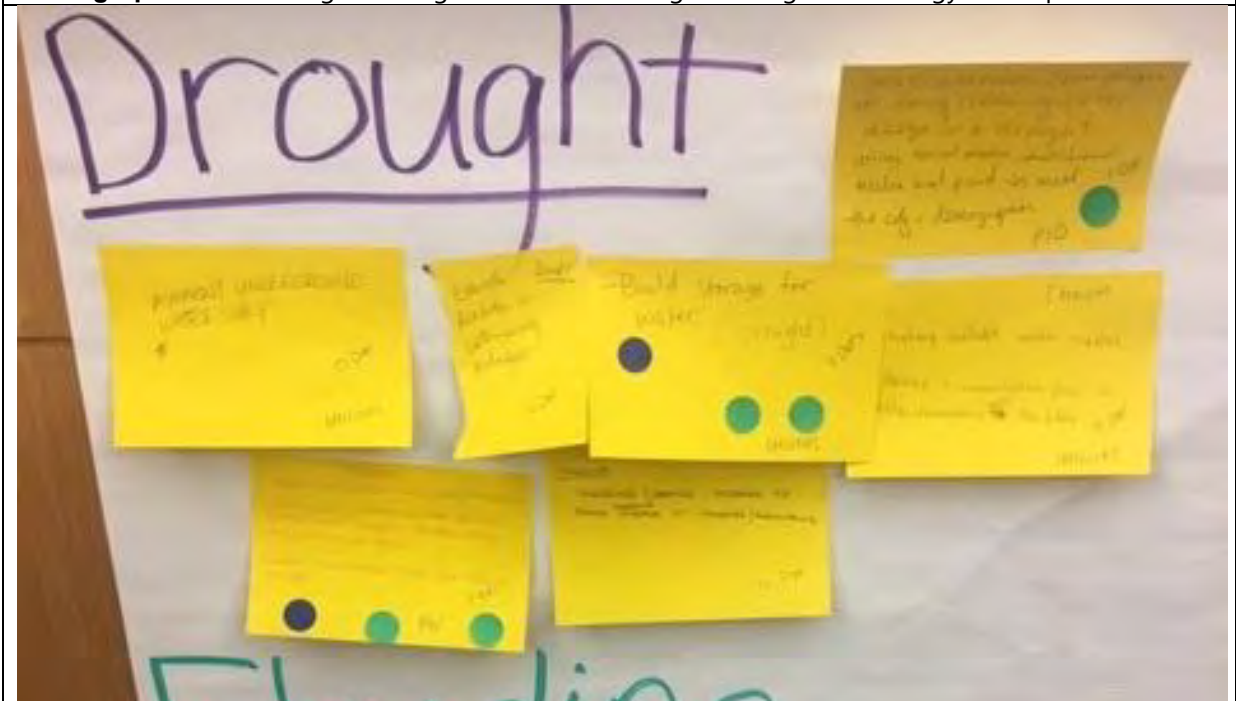


Photograph 2 Mitigation Strategy brainstorm break-out session

CITY OF TRACY LOCAL HAZARD MITIGATION PLAN
Mitigation Strategy: Photographs



Photograph 3 Prioritizing the mitigation actions during the mitigation strategy development



Photograph 4 Prioritizing the mitigation actions during the mitigation strategy development



Appendix D ADOPTION RESOLUTION

Note to Reviewers: When this plan has been reviewed and approved pending adoption by FEMA Region IX, the adoption resolutions will be signed by the Tracy City Council and added to this appendix. A model resolution is provided below:

Resolution # _____

Adopting the City of Tracy Local Hazard Mitigation Plan

Whereas, the City of Tracy recognizes the threat that natural hazards pose to people and property within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

Whereas, the U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards;

Whereas, the Disaster Mitigation Act made available hazard mitigation grants to state and local governments;

Whereas, an adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, the City of Tracy fully participated in the FEMA-prescribed mitigation planning process to prepare this local hazard mitigation plan; and

Whereas, the California Office of Emergency Services and Federal Emergency Management Agency, Region IX officials have reviewed the City of Tracy Local Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governing body;

Whereas, the City of Tracy desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the City of Tracy Local Hazard Mitigation Plan;

Whereas, adoption by the governing body for the City of Tracy, demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Local Hazard Mitigation Plan.

Whereas, adoption of this legitimacies the plan and authorizes responsible agencies to carry out their responsibilities under the plan.

Now, therefore, be it resolved, that the City of Tracy adopts the City of Tracy Local Hazard Mitigation Plan as an official plan; and

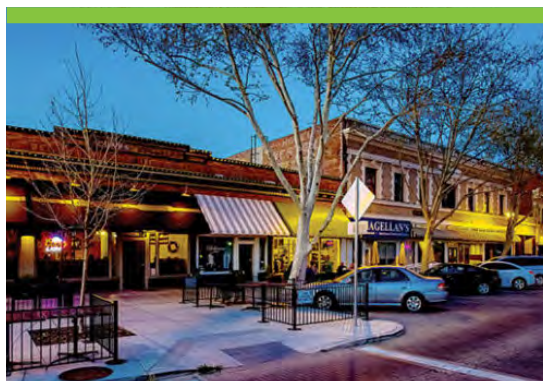


Be it further resolved, the City of Tracy will submit this adoption resolution to the California Office of Emergency Services and FEMA Region IX officials to enable the plan's final approval in accordance with the requirements of the Disaster Mitigation Act of 2000 and to establish conformance with the requirements of AB 2140.

Passed: _____
(date)

Certifying Official





wood.



FEMA

October 23, 2019

Karin Schnaider
Finance Department, City of Tracy
333 Civic Center Plaza
Tracy, CA 95376

Dear Ms. Schnaider:

We have completed our review of the *City of Tracy 2019 Local Hazard Mitigation Plan* and have determined that this plan is eligible for final approval pending its adoption by the City of Tracy.

Formal adoption documentation must be submitted to the FEMA Region IX office by the lead jurisdiction within one calendar year of the date of this letter, or the entire plan must be updated and resubmitted for review. We will approve the plan upon receipt of the documentation of formal adoption.

If you have any questions regarding the planning or review processes, please contact the FEMA Region IX Hazard Mitigation Planning Team at fema-r9-mitigation-planning@fema.dhs.gov.

Sincerely,

for

Juliette Hayes
Director
Mitigation Division
FEMA, Region IX

Enclosure

cc: Jose Lara, Chief of Mitigation and Dam Safety Branch, California Governor's Office of
Emergency Services
Jennifer Hogan, State Hazard Mitigation Officer, California Governor's Office of
Emergency Services

RESOLUTION _____

ADOPTING THE CITY OF TRACY LOCAL HAZARD MITIGATION PLAN

WHEREAS, The City of Tracy recognizes the threat that natural hazards pose to people and property within our community, and

WHEREAS, Undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences, and

WHEREAS, The U.S. Congress passed the Disaster Mitigation Act of 2000 ("Disaster Mitigation Act") emphasizing the need for pre-disaster mitigation of potential hazards, and

WHEREAS, The Disaster Mitigation Act made available hazard mitigation grants to state and local governments, and

WHEREAS, An adopted Local Hazard Mitigation Plan is required as a condition of future funding for mitigation projects under multiple Federal Emergency Management Agency (FEMA) pre- and post-disaster mitigation grant programs, and

WHEREAS, The City of Tracy fully participated in the FEMA-prescribed mitigation planning process to prepare this local hazard mitigation plan, and

WHEREAS, The California Office of Emergency Services and FEMA Region IX officials have reviewed the City of Tracy Local Hazard Mitigation Plan and approved it contingent upon this official adoption of the participating governing body, and

WHEREAS, The City of Tracy desires to comply with the requirements of the Disaster Mitigation Act and to augment its emergency planning efforts by formally adopting the City of Tracy Local Hazard Mitigation Plan, and

WHEREAS, Adoption by the governing body for the City of Tracy, demonstrates the jurisdiction's commitment to fulfilling the mitigation goals and objectives outlined in this Local Hazard Mitigation Plan, and

WHEREAS, Adoption of this Local Hazard Mitigation Plan legitimizes the plan and authorizes responsible agencies to carry out their responsibilities under the plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Tracy adopts the City of Tracy Local Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that the City of Tracy will adopt the City of Tracy Local Hazard Mitigation Plan by reference into the safety element of its general plan in accordance with the requirements of AB 2140; and

BE IT FURTHER RESOLVED, that the City of Tracy will submit this adoption resolution to the California Office of Emergency Services and FEMA Region IX officials to enable the

plan's final approval in accordance with the requirements of the Disaster Mitigation Act and to establish conformance with the requirements of AB 2140.

* * * * *

The foregoing Resolution _____ is hereby passed and adopted by the Tracy City Council this 17th day of March, 2020, by the following vote:

AYES: COUNCIL MEMBERS

NOES: COUNCIL MEMBERS

ABSENT: COUNCIL MEMBERS

ABSTAIN: COUNCIL MEMBERS

Mayor

ATTEST:

City Clerk

AGENDA ITEM 5

REQUEST

APPROVE A PROCLAMATION CONFIRMING THE EXISTENCE OF A LOCAL EMERGENCY RELATING TO THE NOVEL CORONAVIRUS (COVID-19) AND DISCUSS CITY EFFORTS TO RESPOND TO THIS EMERGENCY

EXECUTIVE SUMMARY

On March 4, 2020, Governor Newsom declared a state of emergency for California associated with the presence and continued transmission of the novel coronavirus (COVID-19). Chapter 3.24 of the Tracy Municipal Code designates the City Manager as the Director of Emergency Services (Director) and authorizes the Director to proclaim the existence of a local emergency when the City Council is not in session and requires that Council ratify the proclamation within seven days.

On March 12, 2020, the Director proclaimed the existence of a local emergency in response to the public health and safety concerns surrounding the presence and continued transmission of COVID-19. As of 6:00pm PST on March 15, 2020, there were 355 confirmed COVID-19 cases in California, nine of which are in San Joaquin County.

This item requests that Council ratify the proclamation and discuss City efforts to respond to this public health emergency.

DISCUSSION

On March 4, 2020, Governor Newsom declared a state of emergency for California associated with the outbreak of COVID-19. The Governor's declaration of a state of emergency makes additional resources available to combat the broader spread of COVID-19 and formalizes emergency actions already underway across various state agencies. On March 12, 2020, Governor Newsom issued Executive Order N-25-20 which, among other items, ordered "residents to heed any orders and guidance of state and local public health officials, including but not limited to the imposition of social distancing measures."

The State made this declaration for numerous reasons, but most importantly, to allow the State to expand their response capabilities to help control this situation and promote compliance with public health directives. Similarly, on March 12, 2020, the Director declared the existence of a local emergency to ensure Tracy residents comply with guidance and directives from the State and Federal entities and open the pathway to additional resources to respond to the potential health and safety crisis related to the COVID-19 outbreak. (Attachment A). Section 3.24.050(a)(1) of the Tracy Municipal Code requires City Council "take action to ratify the proclamation within seven (7) days thereafter or the proclamation shall have no further force or effect." The Director made this declaration to protect the public health, safety, and welfare of the City and its residents and requests that the City Council ratify the proclamation.

The City has adopted the following directives of the Governor and the California Department of Public Health (CDPH) regarding gatherings through April 6, at which time a reassessment of the health and safety concerns will be conducted. Those directives and guidance are as follows:

- Large gatherings that include 250 people or more should be postponed or canceled.
 - This includes gatherings such as concerts, conferences, and professional, college, and school sporting events.
- Smaller gatherings held in venues that do not allow social distancing of six feet per person should be postponed or canceled.
 - This includes gatherings in crowded auditoriums, rooms or other venues.
- Gatherings of individuals who are at higher risk for severe illness from COVID-19 should be limited to no more than 10 people.
 - This includes gatherings such as those at retirement facilities, assisted living facilities, developmental homes, and support groups for people with health conditions.
- A “gathering” is any event or convening that brings together people in a single room or single space at the same time, such as an auditorium, stadium, arena, large conference room, meeting hall, cafeteria, or any other indoor or outdoor space.

This applies to all non-essential professional, social, and community gatherings regardless of their sponsor. Gatherings that do not meet the aforementioned criteria should only be conducted when they are essential—that is, if the activity is essential and could not be postponed or achieved without gathering, meaning that some other means of communication could not be used to conduct the essential function.

The CDPH further advised that the public comply with social distancing, which is a practice recommended by public health officials to stop or slow down the spread of contagious diseases. The CDPH specifically advised the public to achieve a space of six feet between individuals.

On March 15, 2020, the Center for Disease Control (CDC) also released guidance advising that in-person events that consist of 50 or more people be canceled or postponed for the next eight weeks.

City Facility Closures

Because of these directives, following City facilities are closed to the public through April 6th or until further notice:

- Senior Center
- Community Center
- Boyd Service Center
- Grand Theatre Center for the Arts and Grand Gallery
- Stockton San Joaquin Public Library – Tracy Branch
- City Animal Services Center

- All indoor and outdoor facility rentals, including sports fields are canceled and full refunds will be issued.

City Hall and all public safety facilities remain open to the public with social distancing measures being taken. Services are limited and by appointment only.

Cancellations of City Meetings, Workshops and Programs

The following is an updated list of City meeting, workshop, and program cancellations/postponements in response to the State directives and guidance. This list is subject to change.

- All City Board and Commission Meetings
- March 19 Community Workshop for the Urban Forestry, Parks and Bikeways Master Plans
- All recreation classes and programs, including afterschool programs
- Indoor and outdoor events and facility rentals, including City sports fields/sports league play
- All Senior Center programming and special events, except for the meal programs
- Grand Theatre Gallery and Grand Theatre Center for the Arts programming, including but not limited to:
 - Arts Education Classes
 - March 18 Delta Charter School event
 - March 21 Taiko Drum Project
 - March 27 Queen Nation Concert
- Tracy Police Department Citizens Academy
- Tracy Police Department Tracy Senior Citizens Association Monthly Meeting
- Police and Fire station visits/tours and citizen rides a-longs

Temporary Customer Service Modifications

The City is taking steps to modify City operations in order to comply with these State directives. These steps include closing public counters for Development Services, Boyd Service Center, Human Resources, Parks and Recreation Services, City Clerk's Office and City Manager's Office. The City's Animal Services Center will also be closed.

Implementation of Virtual EOC to Oversee City's Emergency Operations and Management

The Director has activated various contingency plans to ensure the continuity of services to the public in light of Federal and State directives and guidance being released to combat the transmission of COVID-19. On March 12, 2020, the City Manager activated a Virtual Emergency Operations Center (EOC) to foster communication between the City Manager and key City Department staff to oversee City operations in manner that limits personal contact.

STRATEGIC PLAN

This agenda item supports Public Safety Strategic Priority: To enhance community safety by promoting a responsive public safety system that includes civic engagement and partnerships, community involvement, public education, and prevention, intervention, and suppression services that meet the needs of Tracy residents

FISCAL IMPACT

At this time the fiscal impacts to the City and the community are unknown. The adoption of this proclamation will allow the City to access resources to best respond to the public health and safety needs of the community. Staff will provide updates of the fiscal impacts as they develop and become known.

RECOMMENDATION

It is recommended that the City Council adopt the proclamation confirming the existence of a local emergency and discuss the City's efforts to reduce the spread of COVID-19 virus.

Prepared & Approved by: Jenny Haruyama, City Manager

ATTACHMENT

- A – Proclamation from Director
- B – City of Tracy COVID-19 Response Plan

**PROCLAMATION OF EXISTENCE OF A LOCAL EMERGENCY RELATED TO THE
NOVEL CORONAVIRUS (COVID-19) BY THE DIRECTOR OF EMERGENCY
SERVICES FOR THE CITY OF TRACY**

WHEREAS, Section 3.24.050 of the Tracy Municipal Code empowers the City Manager in her capacity as the Director of Emergency Services to proclaim the existence or threatened existence of a local emergency when said City is affected or likely to be affected by the actual or threatened existence of conditions of disaster or of extreme peril to the safety of persons and property; and

WHEREAS, The Director of Emergency Services of the City of Tracy does hereby find that conditions of extreme peril to the safety of persons and property have arisen within the City of Tracy caused by the serious threat to the public health, safety, and welfare of the City due to the presence and continued transmission of the novel coronavirus (COVID-19); and


WHEREAS, The aforesaid conditions of extreme peril warrant and necessitate the proclamation of the existence of a local emergency; and

WHEREAS, The City Council of The City of Tracy is not in session and cannot be immediately be called into session.

NOW THEREFORE, IT IS HEREBY PROCLAIMED as follows:

1. As of 5:00 p.m. on this 12th day of March, 2020, a local emergency now exists throughout the City of Tracy due to the events described above.
2. Pursuant to Tracy Municipal Code section 3.24.050(a)(1) the City Council shall ratify this proclamation within seven (7) days or the proclamation shall have no further force and effect.

Dated: 3/12/2020



Director of Emergency Services





City of Tracy
Updated March 17, 2020
COVID-19 RESPONSE PLAN

CITY OF TRACY TEMPORARY FACILITY, PROGRAM AND SERVICE CHANGES

To comply with recommendations issued by the Center for Disease Control (CDC), State Department of Public Health, and guidance and/or directives by Governor Newsom, the actions listed below are effective immediately; it is anticipated that restored services will be available by **Monday, April 6, 2020**, the same day Tracy public schools are scheduled to reopen.

However, the Center for Disease Control (CDC) recently issued interim guidance and now recommends cancelling events/gatherings/ activities of 50 people or more for an additional 8 weeks, or through **Sunday, May 10, 2020**. This interim guidance could result in an extension of City facility closures and program/event cancellations.

COVID-19 CITY ACTIONS UNDERWAY

City Facility Closures

The following is an updated list of City of Tracy facilities that are closed to the general public. Residents and businesses are encouraged to contact the City via phone, email, or by virtual appointment.

- Senior Center
- Community Center
- Boyd Service Center
- Grand Theatre Center for the Arts and Grand Gallery
- Stockton San Joaquin Public Library – Tracy Branch
- Tracy Animal Services Center

Meetings, Workshops, and Program Cancellations

The following is an updated list of City meeting, workshop, and program cancellations and postponements. This list is subject to change.

- All City Commission Meetings
- March 19 Community Workshop for the Urban Forestry, Parks and Bikeways Master Plans
- All recreation classes and programs, including afterschool programs
- Indoor and outdoor events and facility rentals, including City sports fields/sports league play
- All Senior Center programming and special events, except for the meal programs
- Grand Theatre Gallery and Grand Theatre Center for the Arts programming, including but not limited to:
 - Arts Education Classes
 - March 18 Delta Charter School event
 - March 21 Taiko Drum Project
 - March 27 Queen Nation Concert

- Tracy Police Department Citizens Academy
- Tracy Police Department Tracy Senior Citizens Association Monthly Meeting
- Police and Fire station visits/tours and citizen rides a-longs

City Council meetings are postponed until protocols are in place to ensure appropriate social distancing and virtual participation. Closed session and special meetings may be scheduled to address time-sensitive and/or urgent matters.

External Community Event Cancellation/Postponements

The following organizations have cancelled or postponed the following community events:

- Tracy Chamber of Commerce Leadership Tracy 2020 Public Safety Tour (March 20)
- Tracy Chamber of Commerce RED Tour
- Tracy City Center Association (TCCA) Taps on Tenth
- Tracy Chamber of Commerce/City of Tracy Health & Wellness Fun Run
- Winter and Summer Downtown Farmers Market
- Donut Dash Run

City Facility Rental Cancellations

All indoor and outdoor facility rentals, including sports fields will be cancelled and fully refunded. Scheduled rentals typically have planned attendance between 10-500 people. Cancelling these reservations ensures we are being consistent with local and state recommended practices.

UTILITY CUSTOMER FINANCIAL RELIEF

Effective immediately, the City of Tracy Utility Billing Division will suspend the shut-offs for non-payment of water and sewer bills. Late payment penalties for residential and commercial customers will also be waived during this time.

RESOURCE REALLOCATION (FACILITIES AND PARKS)

Resources will be deployed to focus on the cleanliness of our park and facility restrooms, which will be cleaned daily.

PLANNED CUSTOMER SERVICE MODIFICATIONS

Effective **Tuesday, March 17, 2020**, the service modifications described below will be implemented at City Hall and Boyd Service Center to facilitate social distancing and remote service delivery. It is anticipated that restored services will be available by **Monday, April 6, 2020**, the same day Tracy public schools are scheduled to reopen. However, the Center for Disease Control (CDC) recently issued interim guidance and now recommends cancelling events/gatherings/activities of 50 people or more for an additional 8 weeks, or through **Sunday, May 10, 2020**. This interim guidance could result in an extension of all or some of the temporary service modifications.

Development Services

- The Development Services public counters at City Hall will be closed. All related services will be provided by appointment only or via phone or email. For information, call [\(209\) 831-6000](tel:(209)831-6000) or email des@cityoftracy.org.
- Customers are encouraged to submit questions and service regarding building permits, zoning, city engineering, and economic development through the City's GoRequest app. Download the app or make online requests here: <https://user.govoutreach.com/tracy/support.php?cmd=shell>
- Online service for plan review will be available through CRW E-Track-It. For additional information, please go to: trakit.admin@cityoftracy.org or email des@cityoftracy.org.

Parks and Recreation Services

- All Park and Recreation service questions and inquiries will be addressed by phone or appointment only. For information, call [\(209\) 831-6200](tel:(209)831-6200), visit www.tracyartsandrec.com, or email parks@cityoftracy.org.

City Public Transit Services

- Public transit routes are still currently in operation throughout the city for those who lack transportation options.
- City buses will be disinfected daily and signs posted on the buses asking riders to allow for social distancing while on the bus and to take proper health precautions.
- The Tracy Transit Station will remain open to allow for the purchase of tickets for the various services offered. Disinfection of the lobby area will take place throughout the day. All Transit Station rentals have been cancelled.
- Current information on transit services can be obtained by calling (209) 831-4BUS (4287).

Finance and Administrative Services

- Financial Services public counters will remain open and are limited to cash payments only.
- Customers are strongly encouraged to use the City's online and telephone payment options and other resources for self-service and [24/7](tel:(209)831-6800) account access.
- Customers who wish to enroll in the online access system may do so at: <https://Tracyca.munisselfservice.com/default.aspx>.
- For additional information or assistance, please call [\(209\) 831-6800](tel:(209)831-6800) or e-mail customerservice@cityoftracy.org or financedept@cityoftracy.org.

Employment/Human Resources Services

- All Human Resource related services will be by appointment only, phone, and email. For information, please call [\(209\) 831-6150](tel:(209)831-6150) or email HR@cityoftracy.org.

City Manager/City Clerk Services

- All services will be by appointment only, phone, and email. For information, please call [\(209\) 831-6000](tel:(209)831-6000) or email cm@cityoftracy.org; cityclerk@cityoftracy.org
Parks, Trees, Streets & Sidewalks, Water/Sewer Lines, and Facility Maintenance

- The public service counter at Boyd Service Center will be closed. All services will be available by appointment, phone, and email. For information, call [\(209\) 831-6300](tel:(209)831-6300) or email publicworks@cityoftracy.org.
- After hour non-emergencies should be directed to [\(209\) 831-6552](tel:(209)831-6552).
- Customers are encouraged to download the City's GoRequest app or submit online requests here: <https://user.govoutreach.com/tracy/support.php?cmd=shell>

Police and Fire Services

Police and Fire Services have implemented COVID-19 safety response protocols when addressing calls for service and restricting public access in certain areas at safety facilities.

- Police: For non-emergency requests, please call [\(209\) 831-6550](tel:(209)831-6550) or email policedept@cityoftracy.org. Customers are encouraged to download the City's GoRequest app or submit online requests here: <https://user.govoutreach.com/tracy/support.php?cmd=shell>
- Fire: For non-emergency requests, please call [\(209\) 831-6700](tel:(209)831-6700) or email firedept@cityoftracy.org. For fire prevention requests, call: [\(209\) 831-6400](tel:(209)831-6400) or email: firedept@cityoftracy.org.

Animal Services

Due to no barriers between employees and citizens, Animal Services will be closed to the public, however, customers can call [\(209\) 831-6364](tel:(209)831-6364) or email animalservices@cityoftracy.org for information. The following is a list of modified shelter operations:

- Licensing process through the mail with a 30 day grace period for late licenses.
- Suspend volunteer program until further notice.
- Suspend fundraising/donation events until further notice.
- Return to owner animals are by appointment only.
- Surrender of animals are by appointment only.
- Community Cats/Ferrals: Those who wish to surrender stray, healthy cats are asked to release them where they trapped them and bring them in after the shelter resumes normal operations.
- Lost and Found Animals: Customers should complete and submit City electronic lost/found forms.
- Sunday Vaccine Clinic canceled until further notice.
- Adoptions: Animals will continue to be advertised through Pet Harbor and social media. Adoptions will be handled by appointment only.
- Transfer of animals to local rescues or other shelters are by appointment only.

PROCLAMATION OF THE CITY COUNCIL OF THE CITY OF TRACY CONFIRMING THE EXISTENCE OF A LOCAL EMERGENCY RELATED TO THE NOVEL CORONAVIRUS (COVID-19) IN THE CITY OF TRACY

WHEREAS, Section 3.24.050 of the Tracy Municipal Code empowers the City Manager in her capacity as the Director of Emergency Services to proclaim the existence or threatened existence of a local emergency when said City is affected or likely to be affected by the actual or threatened existence of conditions of disaster or of extreme peril to the safety of persons and property and City Council is not in session, subject to confirmation by the City Council within seven (7) days, and

WHEREAS, Conditions of extreme peril to the safety of persons and property arose within the City of Tracy caused by the serious threat to the public health, safety, and welfare of the City due to the presence and continued transmission of the novel coronavirus (COVID-19), and

WHEREAS, The Director of Emergency Services of the City of Tracy did proclaim the existence of a local emergency within the City on March 12, 2020 at which time the City Council of the City of Tracy was not in session, and

WHEREAS, The aforementioned conditions of extreme peril did warrant and necessitate the proclamation of the existence of a local emergency, and

WHEREAS, The City Council of the City of Tracy does hereby find that conditions of extreme peril to the safety of persons and property have arisen within the City of Tracy caused by the events described above.

NOW, THEREFORE, IT IS HEREBY PROCLAIMED by the City Council of the City of Tracy as follows:

1. That the foregoing recitals are true and correct.
2. That the Proclamation of the existence of a local emergency, as issued by the Director of Emergency Services, is hereby ratified.
3. The local emergency herein proclaimed shall be deemed to continue to exist until the termination is proclaimed by the City Council of the City of Tracy.

BE IT FURTHER PROCLAIMED AND ORDERED that during the existence of said local emergency the powers, functions, and duties of the emergency organization of this City shall be those prescribed by state law, ordinances and resolutions of this City and by the City of Tracy Comprehensive Emergency Management Plan.

PASSED AND ADOPTED this the 17th day of March, 2020 by the following vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

Robert Rickman
Mayor

ATTEST:

City Clerk