



City of Suisun City

LOCAL HAZARD MITIGATION PLAN

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Introduction

Summary

To summarize, this document contains:

- The City of Suisun City Hazard Risk Assessment;
- Prioritization of City of Suisun City for mitigation activities;
- Hazard Mitigation Strategy Goals and Objectives;
- Jurisdiction-wide Hazard Mitigation efforts and plan input;
- Coordination with local interest groups and citizens;
- Proposed strategies and actions to reduce short and long term vulnerability to the identified hazards; as recommended by the City of Suisun Hazard Mitigation Planning Team, its sub-committees and the general public
- Methods of implementing, monitoring, evaluating, and updating this DMA 2000 Hazard Mitigation Plan;
- Constraints to implementing Hazard Mitigation strategies and recommendations;

The establishment of the City of Suisun City Hazard Mitigation Planning team is to assist in the further development, prioritization, and implementation of the recommended Hazard Mitigation strategies.

This document also provides a framework for the identification and coordination of Hazard Mitigation strategies developed in the City of Suisun City with other plans; especially those developed by City departments, agencies and organizations as well as those plans developed in order to file for Federal disaster assistance, as required by P.L. 106-390 (as amended) of the Disaster Mitigation Act of 2000;

Definition of Hazard Mitigation

Hazard Mitigation is any sustained action taken to eliminate or reduce long-term risk to human life, property and the environment posed by a hazard.

Hazard Mitigation planning is the process of developing a sustained course of action taken to reduce or eliminate long-term risk to people and property from both natural and technological hazards and their

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effects. The planning process includes establishing goals and recommendations for mitigation strategies.

Hazard Mitigation may occur during any phase of a threat, emergency, or disaster. Mitigation can and may take place during the *preparedness* (before), *response* (during), and *recovery* (after) phases.

The process of hazard mitigation involves evaluating a hazard's impact, identifying, and implementing actions to minimize or eliminate the impact.

Purpose of the Plan

The purpose of this plan is to integrate Hazard Mitigation strategies into the day-to-day activities and programs of the City of Suisun City.

This plan identifies and evaluates specific strategies to be considered by the City of Suisun City and its agencies. It offers jurisdiction wide support document as well as a steering support tool for those strategies developed by the jurisdictions' political subdivisions, agencies, departments, special districts and organizations.

The strategies presented are deemed appropriate and effective by recommendation of the City of Suisun City Hazard Mitigation Planning Team and the jurisdictions' agencies, departments and private groups.

Upon acceptance by the California Office of Emergency Services and the Federal Emergency Management Agency (FEMA), selected strategies will be further developed for funding and implementation by the lead jurisdictions' agencies and departments. This plan describes the potential sources of Hazard Mitigation Strategy funding, and general procedures to obtain that funding.

This plan is based upon the City of Suisun City Risk Assessment that considers natural, technological, and human-caused risks to which the jurisdictions and its political subdivisions are vulnerable. The plan describes strategies that government and private sector organizations may utilize to develop their capabilities to mitigate those hazards.

It is understood that the mitigation strategies adopted in this plan are recommendations only, and they must be approved by the Mayor, City Council and governing body, as well as funded in order to be implemented as official Hazard Mitigation Strategies.

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Local Hazard Mitigation Plan

Profile of City of Suisun City

General Data

Suisun City is located at 38°14 '42"N, 122°1 '1"W (38.244863, -122.017048).] According to the Census Bureau, the city has a total area of 4.1 square miles, of which, 4.0 square miles of it is land and 0.04 square miles of it (0.99%) is water.

The city is adjacent to Suisun Marsh, at 84,000 acres, the largest contiguous estuarian-marsh remaining on the west coast of North America.

Suisun Marsh is the largest brackish marsh on the west coast. The marsh land is part of the San Francisco Bay Tidal Estuary and subject to tidal ebb and flood. The marsh is home to many species of birds and other wildlife, and is formed by the confluence of the Sacramento and San Joaquin Rivers between Martinez and Fairfield and several other smaller, local watersheds. The marsh is immediately west of the legally defined Sacramento-San Joaquin Delta as well as part of the San Francisco Bay estuary.

The City and the marsh are named after the Suissunes, a Patwin sub-tribe, who inhabited the area around 200 years ago. "Suisun is a Miwok word for 'Westerly Wind'".

History

Suisun City was established in the 1850s around the time of the California Gold Rush. During that time Suisun City's was the ideal location for commerce and transportation between the foothills and the bay area. The town was a



beehive of activity; wagons, carts, buggies, cattle, horses and men filled the streets. In the 1850s, the principle business in Suisun City was the sale of grain. It was the shipping point for the very productive Vaca, Suisun and Green valleys. Schooners were constantly in Suisun Slough headed for San Francisco and Sacramento with their cargo. The buildings in Suisun City indicated its mercantile prosperity. Located in the center of town was a flourmill that was constantly operating. There were also blacksmith shops, tin shops, saddleries, carpenter shops and many other industries in operation. Suisun City was known in some circles as the mercantile center of Solano County.

City of Suisun City	
— City —	
	
Location in Solano County and the state of California Coordinates: 38°14'42"N 122°1'1"W	
Country	United States
State	California
County	Solano
Area	
- Total	4 sq mi (10.5 km ²)
- Land	4 sq mi (10.4 km ²)
- Water	0 sq mi (0.1 km ²)
Elevation	7 ft (2 m)
Population (2000)	
- Total	26,118
- Density	6,529.5/sq mi (2,487.4/km ²)
Time zone	PST (UTC-8)
- Summer (DST)	PDT (UTC-7)
ZIP codes	94534, 94585
Area code(s)	707
FIPS code	06-75630
GNIS feature ID	1656340

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In 1869, the Transcontinental Railroad connected to Suisun City, expanding the region's reach across the nation. It was the first train stop in Solano County, California, and continues as the county's only passenger rail stop to this day.



A major milestone in the history of the entire Bay Area was the San Francisco earthquake of 1906. Suisun City suffered little damage but

didn't escape the "jolt." Though Suisun City escaped physical harm, its good fortune didn't last. A fire swept through town a few months later, destroying about half the residential section, the train depot, the creamery, several packing sheds and other buildings. This fire changed the face of Suisun City forever.

In the 1960s and 1970s Suisun City experienced rapid growth as the San Francisco Bay Area's suburban ring expanded to the formerly rural Solano County. Also, in the 1960s Highway 80 was constructed two miles (3 km) outside the city effectively moving commercial traffic away from railways and water conveyance.

In 1989, as new affordable housing tracts brought new residents, Suisun City's "heart" - the downtown waterfront - began to decline. That year the city implemented an aggressive redevelopment design plan by ROMA Design Group that centered on the Old Town Waterfront and Historic Main Street Shopping District.

Today, the spirit of commerce is enjoying a renaissance in Suisun City. Popular restaurants dot the waterfront promenade area. New business activity is brisk with several new dining establishments, an art gallery, and a 102-room hotel now open for business. The city is quickly becoming a popular destination for a day trip or even an overnight getaway. Activities abound for nature lovers and water sports enthusiasts. Kayaking, fishing, bike riding, bird watching, hiking, Suisun Wildlife Center programs, and popular events are just some of the reasons that visitors are drawn to Suisun City from throughout the Bay Area and beyond.



The Mayor of Suisun City since 2006 is Pete Sanchez and Lori Wilson serves the Vice Mayor.

(Source: <http://www.visitsuisuncity.com/suisun-history>)

Demographics

Population

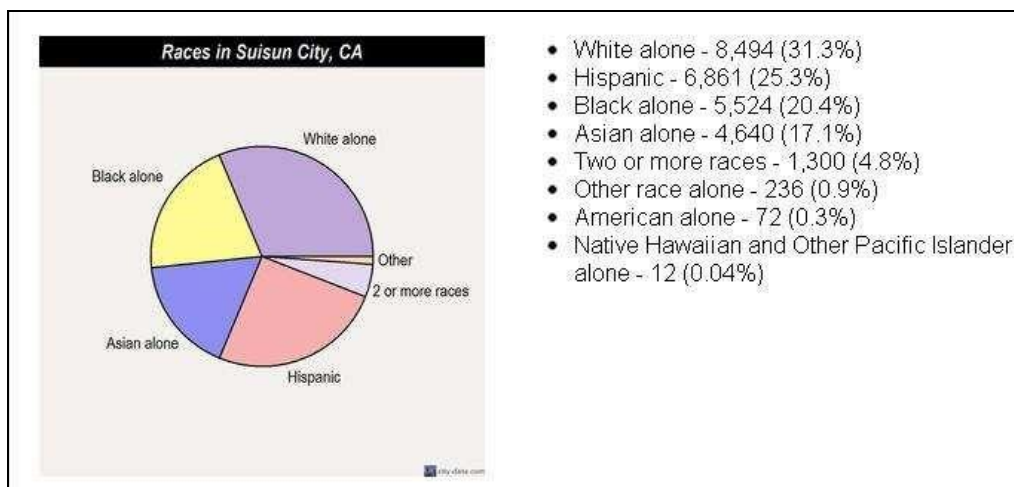
As of 2013, there were 28,819 (a 10.3% increase since the 2000 census), 7,987 households, and 6,445 families residing in the city. The population density was 6,510.9 people per square mile (2,514.8/km²). There were 8,146 housing units at an average density of 2,030.7/sq mi (784.3/km²). The racial makeup of the city was 44.44% White, 19.31% African American, 0.72% Native American, 17.69% Asian, 1.03% Pacific Islander, 8.52% from other races, and 8.29% from two or more races. Hispanic or Latino of any

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race was 17.81% of the population. By 2009, there were 27,003 people residing in Suisun City, a 3.4% increase from the 2000 census.

There were 7,987 households out of which 47.8% had children under the age of 18, 62.4% were married couples living together, 13.1% had a female householder with no husband present, and 19.3% were non-families. 14.3% of all households were made up of individuals and 3.0% had someone living alone who was 65 years of age or older. The average household size was 3.26 and the average family size was 3.59.

In the city the population was spread out with 32.5% under the age of 18, 8.9% from 18 to 24, 32.5% from 25 to 44, 20.3% from 45 to 64, and 5.7% who were 65 years of age or older. The median age was 32 years. For every 100 females there were 98.1 males. For every 100 females age 18 and over, there were 95.1 males.



(Source: , City-Data.com)

People in group quarters in Suisun City

- 61 people in nursing homes
- 11 people in homes or halfway houses for drug/alcohol abuse
- 9 people in other non-institutional group quarters
- 6 people in other group homes
- 6 people in other non-household living situations

Suisun City compared to California state average:

- Black race population percentage **above** state average.
- Hispanic race population percentage **above** state average.
- Median age **below** state average.
- Foreign-born population percentage **above** state average.

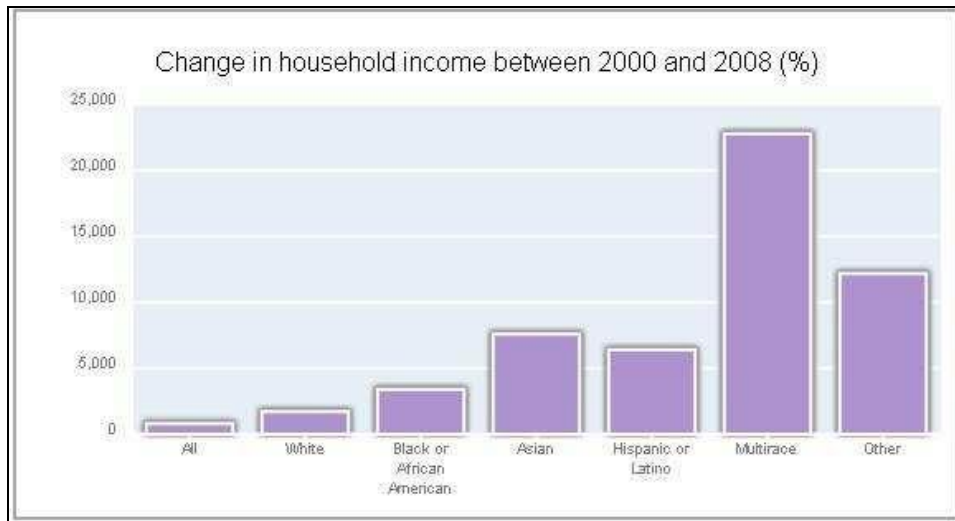
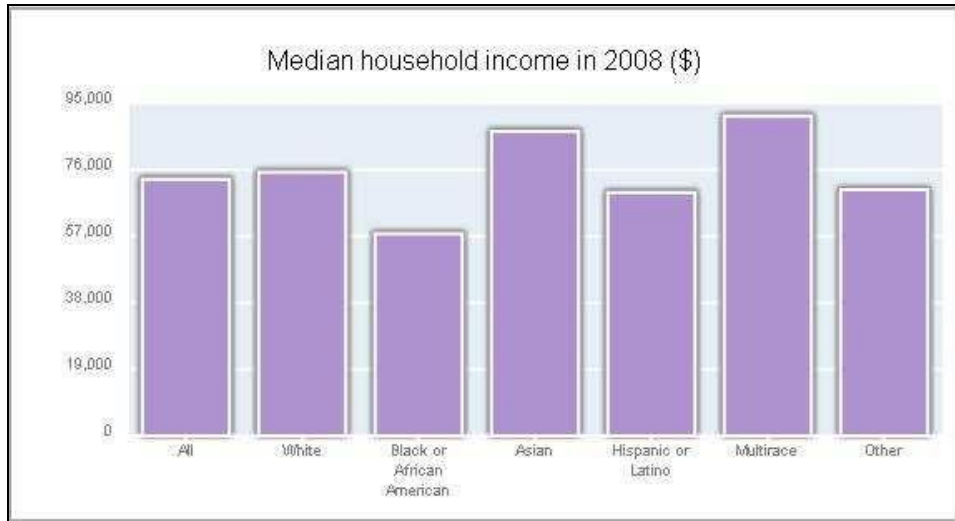
City of Suisun City Local Hazard Mitigation Plan

Income

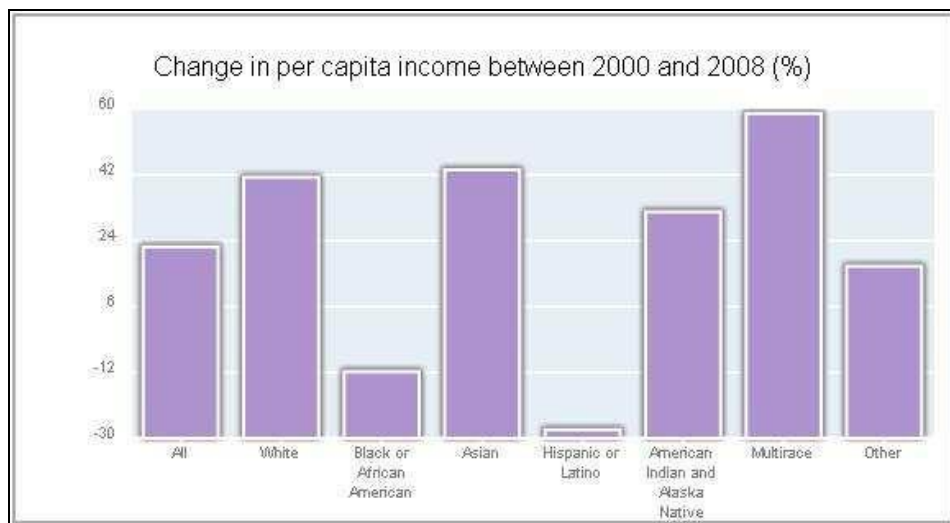
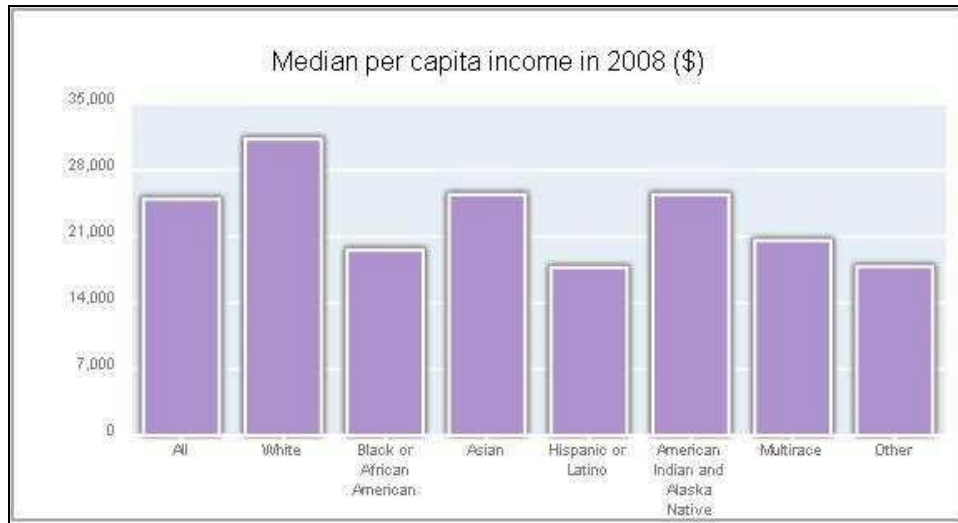
Estimated median household income in 2008: \$79,447 (it was \$60,848 in 2000)

Suisun City:  \$79,447
California:  \$61,021

Estimated per capita income in 2008: \$27,427



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Residents with income below the poverty level in 2008:

This City		6.5%
Whole State		14.2%

Residents with income below 50% of the poverty level in 2008:

This city:		3.0%
Whole state:		6.3%

For population 15 years and over in Suisun City:

- Never married: 26.5%
- Now married: 58.8% Separated: 2.0% Widowed: 4.0% Divorced: 8.8% 5,166 residents are foreign born (12.9% Asia, 5.1% Latin America).

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Average household size:

This city:	3.3 people
California:	2.9 people

Percentage of family households:

This city:	80.7%
Whole state:	68.9%

Percentage of households with unmarried partners:

This city:	5.4%
Whole state:	5.9%

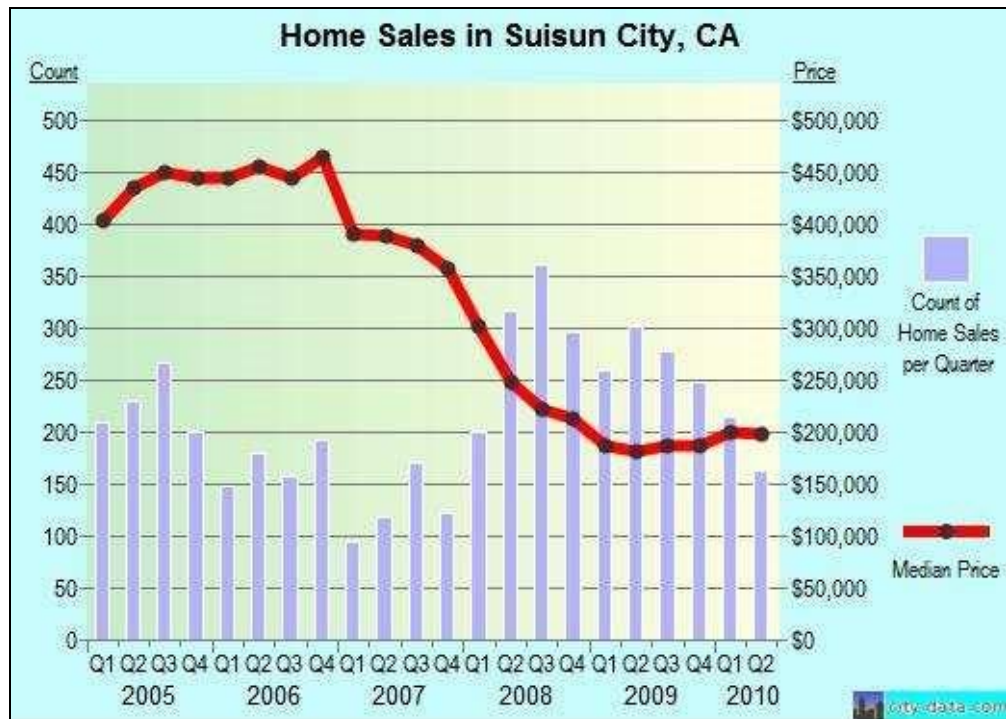
Real Estate

Median real estate property taxes paid for housing units in 2000:

Suisun City: 1.0% (\$1,569)

California: 0.8% (\$1,564)

Mean prices in 2008: All housing units: \$354,872; Detached houses: \$360,780; Townhouses or other attached units: \$296,593; In 3-to-4-unit structures: \$429,379; Mobile homes: \$15,625

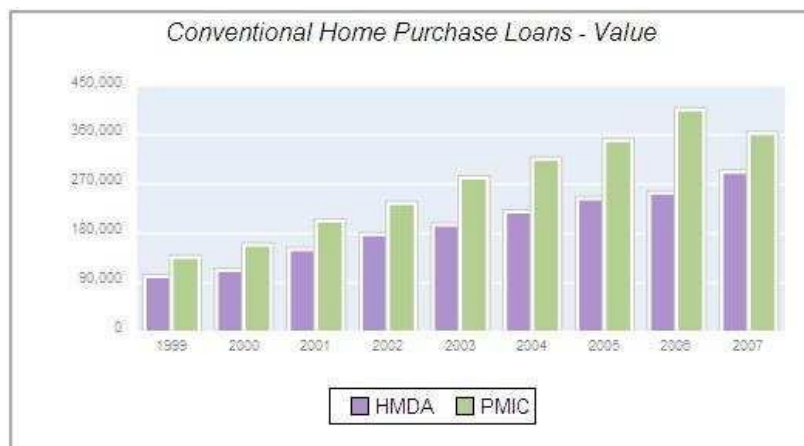


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Single-family new house construction building permits:

1997: 51 buildings, average cost: \$169,400
1998: 103 buildings, average cost: \$159,300
1999: 45 buildings, average cost: \$176,900
2000: 101 buildings, average cost: \$238,800
2001: 105 buildings, average cost: \$269,500
2002: 114 buildings, average cost: \$263,100
2003: 127 buildings, average cost: \$264,500
2004: 142 buildings, average cost: \$264,100
2005: 101 buildings, average cost: \$223,300
2006: 79 buildings, average cost: \$223,300
2007: 60 buildings, average cost: \$220,800
2008: 31 buildings, average cost: \$218,100
2009: 26 buildings, average cost: \$218,100

Detailed Private Mortgage Insurance Companies vs. Home Mortgage Disclosure Act statistics for the following Tracts: 2527.03, 2527.04, 2527.05, 2527.06, 2527.07



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Nearest cities:

Fairfield, CA (1.5 miles)
Vacaville, CA (2.8 miles)
Green Valley, CA (2.8 miles)
Elmira, CA (3.1 miles)
American Canyon, CA (3.7 miles)
Benicia, CA (3.8 miles)
Vallejo, CA (3.9 miles)

Nearest city with pop. 50,000+:

Fairfield, CA (2.2 miles, pop. 96,178).

Nearest city with pop. 200,000+:



San Francisco
Sacramento

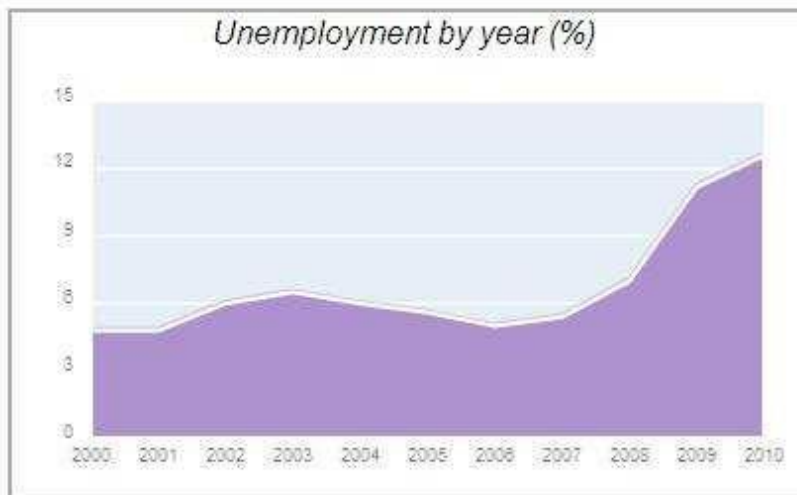
Nearest city with pop. 1,000,000+:

Los Angeles, CA (352.2 miles, pop. 3,694,820).

Employment

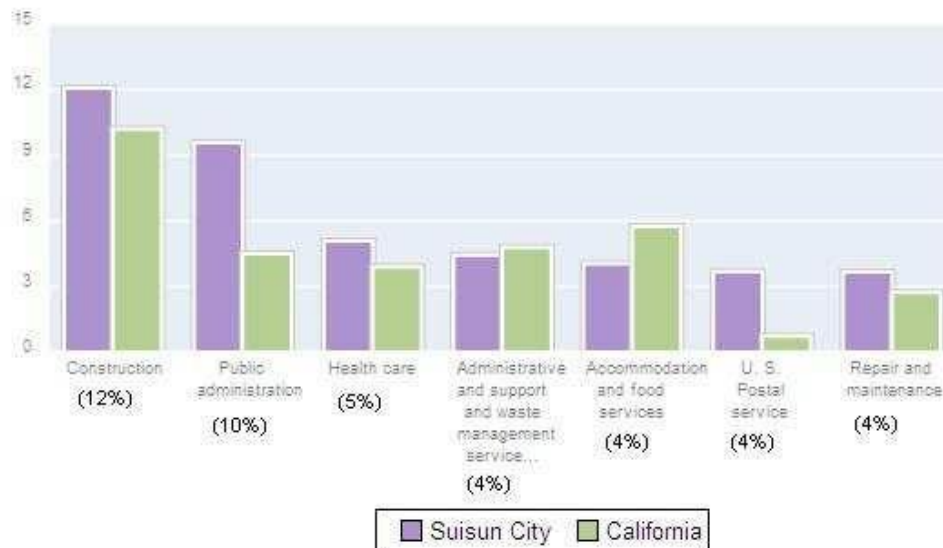
Unemployment in Apr. 2010:

Here:  12.6%
California:  12.2%

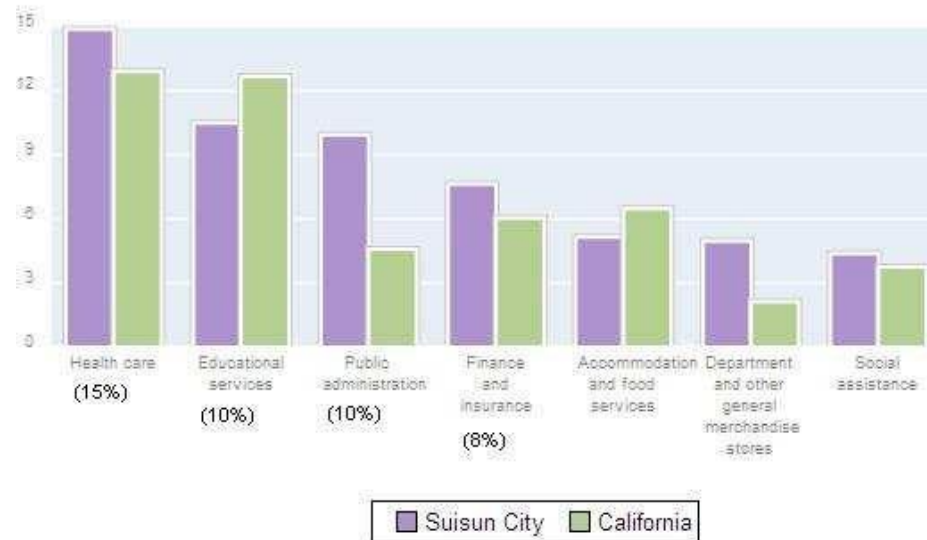


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Most common industries for males (%):



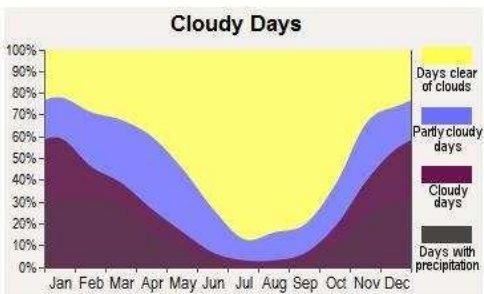
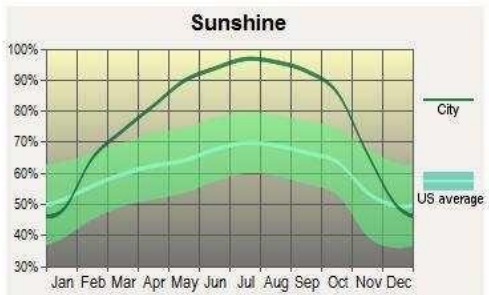
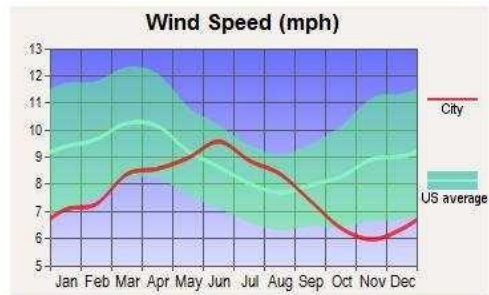
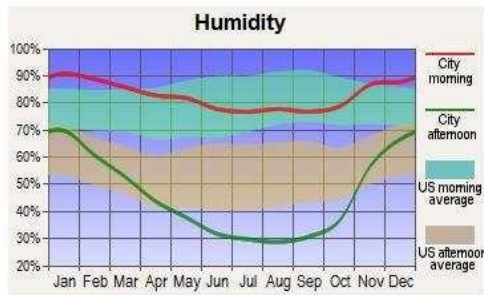
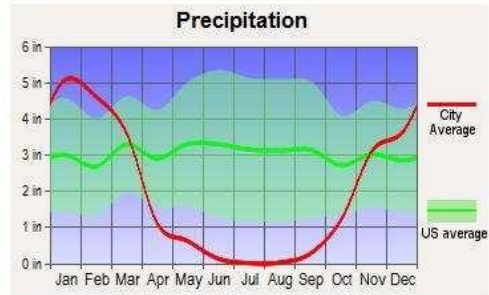
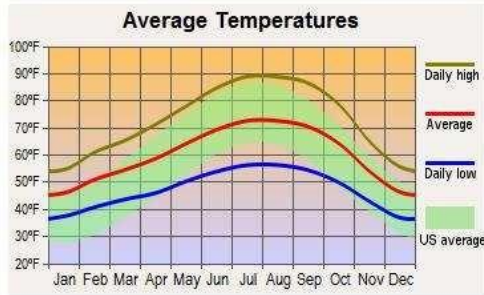
Most common industries for females (%):



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Climate

Based on data reported by over 4,000 weather stations



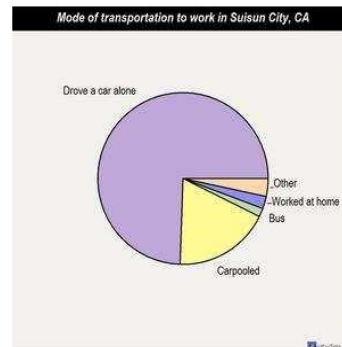
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Hospitals & Medical Centers near Suisun City:

- Northbay Medical Center (about 3 miles; Fairfield, CA)
- Telecare/Solano Park (about 3 Miles; Fairfield, CA)
- Vacaville Hospital (about 12 Miles; Vacaville, CA)
- Kaiser Medical Center Level II Trauma Center (about 13 miles, Vacaville, CA)
- David Grant Military Medical Center

Transportation

Mean travel time to work: 36.3 minutes



Amtrak stations near Suisun City:

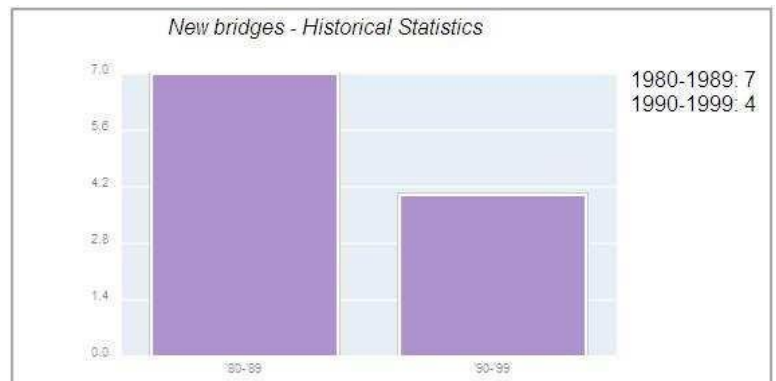
2 miles: Suisun-Fairfield (Suisun, 177 Main St. (under Hwy. 12). Services: fully wheelchair accessible, public restrooms, free short-term parking, call for taxi service, intercity bus service.

14 miles: Vallejo-Marine World (Vallejo, 1000 Fairgrounds Dr.) - bus station. Services: fully wheelchair accessible, public restrooms, public payphones, snack bar, free short-term parking, free long-term parking, call for taxi service.

16 miles: Napa (1275 McKinstry St.) - bus station. Services: fully wheelchair accessible, public payphones, free short-term parking, free long-term parking, call for taxi service.

National Bridge Inventory (NBI) Statistics

Number of bridges: 11
Total length: 59 meters (194ft)
Total average daily traffic: 135,451
Total average daily truck traffic:
7,781



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Education

For population 25 years and over in Suisun City:

High school or higher: 85.6%

Bachelor's degree or higher: 17.3%

Graduate or professional degree: 3.8%

Colleges/universities with over 2000 students nearest to Suisun City: Solano

Solano Community College (Fairfield; CA, FT enrollment: 10,800)

Los Medanos College (about 17 miles; Pittsburg, CA; FT enrollment: 4,244)

Diablo Valley College (about 21 miles; Pleasant Hill, CA; FT enrollment: 12,029)

Napa Valley College (about 25 miles; Napa, CA; FT enrollment: 3,558)

Contra Costa College (about 26 miles; San Pablo, CA; FT enrollment: 3,626)

University Of California-Davis (about 26 miles; Davis, CA; FT enrollment: 24,405) University Of California-Berkeley (about 30 miles; Berkeley, CA; FT enrollment: 29,690)

Public elementary/middle schools in Suisun City:

Crystal Middle (Students: 774; Location: 400 Whispering Bay Ln.; Grades: 6-8)

Suisun Elementary (Students: 406; Location: 725 Golden Eye Way; Grades: k-5)

Dan O. Root Elementary (Students: 610; Location: 820 Harrier Dr.; Grades: k-5)

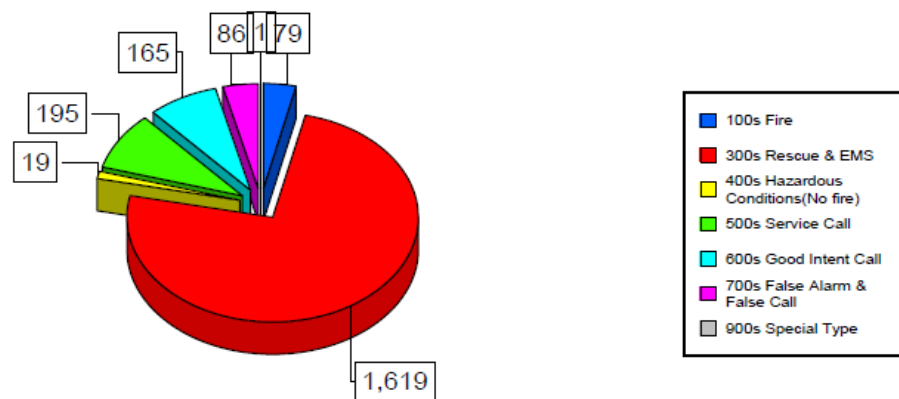
Crescent Elementary (Students: 660, 1001 Anderson Dr.: Grades 1-5)



City of Suisun City Local Hazard Mitigation Plan



Fire Department Incidents for 2015



Graphed Items are sorted by Incident Type

Type Of Incident:	Total Of Incidents:	Percentage Value:
100 Series-Fire	79	3.65%
300 Series-Rescue & EMS	1619	74.82%
400 Series-Hazardous Conditions(No fire)	19	0.88%
500 Series-Service Call	195	9.01%
600 Series-Good Intent Call	165	7.62%
700 Series-False Alarm & False Call	86	3.97%
900 Series-Special Type	1	0.05%

Grand Total: 2164

Type Of Incident Most Frequent: 300 Series-Rescue & EMS

City of Suisun City Local Hazard Mitigation Plan

Structure of Government

Suisun City operates under the Council/Manager form of governance in which the electorate chooses members of the City Council and the City Council hires the City Manager to implement City Council policy and run day-to-day affairs. The City Clerk and City Treasurer also are independently elected.

The City Council also sits as the governing board for the Housing Authority and as the Successor Agency to the Redevelopment Agency. The Oversight Board is an independent review board reviewing Successor Agency actions.

Suisun City is located within Solano County, one of California's 58 counties. Solano County provides a number of services on behalf of Suisun City, including public health services, judicial services, elections, property tax collection and assessment.

Mayor/Mayor Pro Tem

Pete Sanchez

Mayor Pete Sanchez graduated from the University of the East, Manila, Philippines, passed the CPA exam and worked with Banco Filipino and the Central Bank of the Philippines prior to immigrating to the USA in 1980.

Past local employment includes working with the USAFR at the 55th APS in TAFB, Chevron Shipping Co. and the California State Board of Equalization. He retired in 2006 as Supervising Auditor-Appraiser at the Solano County Assessor-Recorder Office.

Community involvement:

- Director – Solano First Federal Credit Union
- Fil-Am Community of Fairfield Suisun Vacaville Inc.
- Suisun American Little League (*Sponsor*)

Lori Wilson

Prior to becoming a member of the City Council, Mayor Pro Tem Lori Wilson served as Vice Chair of the Suisun City Parks & Recreation Commission, and President of the Suisun City Community Services Foundation.

Mayor Pro Tem Wilson represents Suisun City on the following Boards and Agencies:

- Suisun City Housing Authority
- Suisun City Public Financing Authority
- Suisun City Successor Agency
- Suisun-Solano Water Authority
- Numerous other agencies, board and committees to advocate for the best interest of the citizens of Suisun City

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City Council

Jane Day

Prior to becoming a member of the City Council, Councilmember Jane Day served on the Citizen's Advisory Committee which was established by the City Council to make recommendations to the City on the waterfront redevelopment plan. Councilmember Day has represented Suisun City on the following Boards and Agencies:

- Suisun City Housing Authority
- Suisun City Public Financing Authority
- Suisun City Successor Agency
- Suisun-Solano Water Authority
- Fairfield-Suisun Sewer District
- Suisun City Planning Commission
- Healthy Fairfield-Suisun Alliance

Councilmember Day has also been active in the Suisun Police & Fire Boosters Club and the Police Citizens Academy Alumni Association.

Mike Hudson

City Council Member Mike Hudson has been a Councilmember since 2006.

Community involvement includes:

- Board Chairman – Northbay YMCA
- Incoming President – Suisun City Kiwanis Club
- Vice Chairman – Fairfield Suisun Community Action Council
- Board Member – Hispanic Chamber of Commerce
- Member – Travis Regional Armed Forces Committee
- Member – Suisun Business Group
- Member – Suisun City Fire and Police Boosters
- Member – Suisun City Alcohol, Tobacco and Other Drugs (ATOD) Committee
- Member – Solano Economic Development Corporation

In addition to serving these group, Council Member Hudson donates time, resources and support to a wide variety of local community groups, including the Suisun City Historic Downtown Business Improvement District, the Fairfield-Suisun Chamber of Commerce, the Fairfield-Suisun Community

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Action Council, the Suisun City Youth Commission, the Fairfield-Suisun Bobbi Sox, and the Suisun City Little League.

Business:

Council Member Hudson owns and manages Hudson Business Networks, which specializes in web design, information technology, computer security and computer networking

Prior to starting his own company, he pursued a successful computer consulting career

Military:

Council Member Hudson served in the U.S. Navy from 1982-1992 as Electronics Technician First Class Submarine Qualified, including service in Desert Storm. He was honorably discharged

Community Service Awards:

YMCA's Volunteer of the Year

Appreciation Award – Kiwanis Club of Suisun City

Honorary Commander, 60th Air Mobility Squadron (2005)

Mike Segala

Councilmember Segala represents Suisun City on the following Boards and Agencies:

- Suisun City Housing Authority
- Suisun City Public Financing Authority
- Suisun City Successor Agency
- Suisun-Solano Water Authority
- Numerous other agencies, board and committees to advocate for the best interest of the citizens of Suisun City

Other organizations that the Councilman Segala participates actively in:

- Kiwanis Club of Suisun City, Treasurer
- Suisun City Police and Fire Boosters
- Suisun American Little League (Team sponsor)

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City Clerk

The City Clerk has an historical and state-mandated role to serve as the custodian of the City Seal and the legal records for the municipal organization.

The Suisun City Clerk is directly elected by city voters to carry out a variety of duties vital to the orderly operation of the City, including

- Attend meetings of the City Council, Successor Agency, Housing Authority and Oversight Board and prepare minutes
- Participate in administration of the Political Reform Act of 1974
- Serve as Suisun City's Elections Official and custodian of state-required election-related documents, including recall petitions

Per City Council Resolution 2012-88, all other functions of the City Clerk enumerated in State Law or City Code are to be carried out by the Secretary to the City Manager/Deputy City Clerk, including

- Maintaining all City Council actions and directives
- Maintaining the City Code
- Filing public notices
- Maintaining public records, documents and files
- Preparing and publishing various state-mandated reports, including
- the appointments list
- ticket distribution policy and
- FPPC Form 806.

City Treasurer

The City Treasurer is a post elected directly by Suisun City voters to provide administrative oversight of the City's investments, consistent with established City policies and state law.

Per City Council Resolution 2012-87, "the duties of the office of City Treasurer shall be to review and approve monthly and quarterly investment reports. The Assistant City Manager/Administrative Services Director shall continue to assume all other investment functions of the City, including any functions that the "City Treasurer" is required to perform by state statute or the Suisun City Code."

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City Attorney

The City Attorney is hired by the City Council to provide legal advice and act as counsel to elected officials and city staff in adherence to all federal, state and local laws pertaining to city operations and public policy.

This role is filled on a contract basis by Anthony R. Taylor of the law office of Aleshire & Wynder, LLP.

Departments/Administration

CITY MANAGER

Suisun City is a California general law city with a council/manager form of government. The City Council, which is elected directly by city voters, is assisted by a number of appointed and separately elected officials to provide services for City residents.

The City Manager is appointed by the City Council to guide the day-to-day operations of Suisun City. As the City's Chief Executive Officer, the City Manager appoints all department heads and oversees

- Department operations
- Budget development and fiscal management
- Policy implementation
- Personnel administration and human resources
- Labor relations
- Intergovernmental relations
- Service delivery
- Elected official support
- A variety of special projects and assignments

The City Manager also is the Executive Director of the Successor Agency to the Redevelopment Agency.

Human Resources is a function of the City Manager's Office.

ADMINISTRATIVE SERVICES DEPARTMENT

The Administrative Services Department manages the planning, organization, control, coordination and direction of the financial policies of Suisun City, as set forth by the City Council and City Manager.

Finance administration includes

- Utility billing for water and sewer services
- Business license administration

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- Budgeting & audits
- Accounting
- Payroll
- Information Technology
- The department is responsible for preparing
- The City's annual budget
- The City's annual audited financial statements and
- Other financial reports required by the State and other government agencies
- Maintaining the City's information technology infrastructure and services

SUISUN-SOLANO WATER AUTHORITY

The Suisun City Administrative Services Department also serves as the Finance Department for the Suisun-Solano Water Agency (SSWA), a joint powers agency governed by the City of Suisun City and

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the Solano Irrigation District (SID) to provide water service to the City and adjacent unincorporated communities.

SSWA is the water utility for Suisun City residents. All water billing and service requests are handled by the City. Field service, capital maintenance, water delivery and water treatment services are provided by SID

BUILDING & PUBLIC WORKS DEPARTMENT

The Building & Public Works Department was created in 2010 by the consolidation of two previously separate departments under a single director, who also serves as the Fire Marshal and Chief Building Official. The Department consists of six divisions

- Administration
- Building
- Engineering
- Public Works Maintenance
- Public Facilities Maintenance
- Information Technology

Building and Public Works Administration Division, which consists of the Director and two Administrative Assistants, oversees the general operations of the department, coordination of all the divisions and relations with a number of local and regional agencies and partners, including

- California Department of Transportation (Caltrans)
- Fairfield-Suisun Sewer District
- Fairfield-Suisun Transit System
- Solano County Resource Management
- Solano Transportation Authority
- Solano Garbage Company
- Solano Irrigation District & Suisun-Solano Water Authority
- Numerous county, state and federal agencies.

Building

The Building Division, which consists of a Senior Building Inspector, a Building Inspector I and contract plan check services, safeguards the health, safety and welfare of Suisun City residents, workers and visitors by effective administration and enforcement of city building codes, fire codes and ordinances. This is accomplished by technical review of plans and specifications for proposed projects, permit

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processing, field inspections, fire safety inspections and public information services related to new construction.

The Building Division works in concert with the Development Services Department and Public Works Engineering Division to carry out many of its duties.

Public Works Engineering

The Public Works Engineering Division, which consists of a contract City Engineer, two Associate Engineers and a Public Works Inspector, provides

- Engineering, design, construction and inspection of all public improvements, and provides engineering oversight of all new residential, commercial and industrial development within Suisun City
- Oversees numerous mandated programs and coordinates transportation policy for the City in coordination with other entities
- Supports neighborhood Municipal Assessment Districts
- Provides technical information and consultation to every City department
- Recycling and solid waste programs

The Public Works Maintenance Division, which consists of a Superintendent, two Crew Supervisors, nine Maintenance Workers and a Fleet Mechanic, provides the maintenance and repair of the public infrastructure of Suisun City, including

- Streets Traffic and Street Lights
- Sewers, 10-inches in diameter and smaller
- Landscape maintenance for parks, streets, Harbor Plaza and Marina
- Flood channel maintenance
- Vehicle and equipment care program for non-emergency vehicles
- Graffiti removal
- Cleaning up litter and illegal dumping
- Street sweeping
- Maintaining street surfaces and repairing potholes
- Events clean-up

The Public Facilities Maintenance Division, which consists of 1.5 Building Maintenance Workers, is responsible for providing the following services for all City facilities:

- Custodial services

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- Building maintenance
- Building repair

The Information Technology Division, which consists of one IT Systems Administrator, provides the following services for every City department

- Computer network administration
- Computer support
- Equipment procurement, installation and training
- Telecommunications support

DEVELOPMENT SERVICES DEPARTMENT

The Development Services Department (overseen by a director supported by administrative assistant) is organized into three divisions

- **Economic Development:** coordinates City efforts to support and expand the local economy, including urging new businesses to located in Suisun City, working with existing businesses to be even more successful and working with regional partners.
- **Housing Authority:** Housing Choice Vouchers, Section 8 Incoming, Housing Trust, Almond Gardens, staff for Bay Homes, prepares and administers grants, and provides assistance to

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manage housing assets of the former Redevelopment Agency **(1 housing manager, 2 housing specialists)**

- **Planning:** current and advanced planning, grant preparation and management, environmental review, mitigation monitoring, and participation in regional planning activities **(1 associate planner)**

The Department receives policy direction from the City Council, the Planning Commission, the Housing Authority Board, the Successor Agency and the Oversight Board

FIRE DEPARTMENT

For more than 150 years, Suisun City has been protected by a dedicated volunteer Fire Department. The Department, staffed by a paid Fire Chief, two Fire Captain-Station Officers and 42 volunteers, is organized into two divisions

Fire Operations: Fire suppression, emergency medical response, fire prevention, public-assist calls, public education programs and management of public nuisance weed abatement program

Emergency Preparedness: Preparation for and response to natural and human-caused disasters, Emergency Operation Center (EOC) Operations, SEMS/NIMS training, and Community Emergency Response Team (CERT) Training

Though the Department is staffed mostly by volunteers, they staff a minimum of one engine 24 hours a day, 7 days per week. About 70% of the time, two engines or an engine and a truck are staffed. In addition, volunteers are on-call to respond to incidents requiring additional equipment and personnel.

POLICE DEPARTMENT

It is the mission of the Suisun City Police Department to safeguard the lives and property of the people we serve, reduce crime and disorder and enhance public safety. Our employees deliver the highest quality of service and pledge to do so with honor and integrity, while maintaining the highest ethical standards. We are committed to working in partnership with our diverse community to improve their quality of life.

The vision of the Suisun City Police Department is to rid the community of crime and disorder, to deliver the best level of service to the community, to be a County-wide leader in policing, and to continuously strive to be the finest law enforcement agency in Solano County. We will do this by living up to our core values of integrity in all we say and do, a strong commitment to public service, always demonstrating

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respect to our community members and each other, providing strong leadership in the face of chaos, and through constant innovation of our service levels

The Police Department is composed of the following:

- Operations Division
- Support Services Division
- Specialty Unity

RECREATION & COMMUNITY SERVICES DEPARTMENT

The Recreation and Community Services Department provides recreational programs, events and services to the entire Suisun City community. Operating from offices in the Joseph A. Nelson Community Center in Heritage Park, this department manages special events, all recreation programs and a number of excellent community facilities, including:

- Joseph A. Nelson Community Center
- Suisun City Senior Center
- Suisun City Marina
- Nine municipal parks
- Irving H. Lambrecht Sports Complex
- Boat launch

The Recreation and Community Services Department is continually pursuing partnerships and resources to create more leisure time and life-enriching opportunities for the community. The department is responsible for managing some of the premier facilities in Suisun City, ensuring quality programs are available for every resident and visitor

Existing Plans and Information

Section 201.6.b(3) of 44 CFR states that a hazard mitigation plan shall include a review and incorporation, if appropriate, of existing plans, studies, reports, and technical information as part of the planning process.

Suisun City General Plan was prepared during the same time period this document is prepared, and it is an integral part of this plan. The Safety Chapter is intended to address hazards that could impact Suisun City. The general plan and this hazard plan both address the goal of hazard risk reduction. Many of the

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action items identified in this plan are policies and programs recommended in the general plan. Future plans to update this document will coincide with the updates of the Suisun City General Plan.

Profile of Solano County

(Source: Solano County General Plan, Solano County)

Solano County extends from the shores of San Pablo Bay in the west to the heart of the Central Valley in the east and is centrally located between the San Francisco and Sacramento metropolitan regions. The county encompasses approximately 910 square miles consisting of 830 square miles of land and 80 square miles of water. Approximately 128 square miles of the county, or 14 percent of the total land area, lies within seven incorporated cities: Benicia, Dixon, Fairfield, Rio Vista, Suisun City, Vacaville, and Vallejo.

The county seat is Fairfield and the largest city is Vallejo. Unincorporated communities within Solano County are as follows:

- Bahia
- Birds Landing
- Bucktown
- Collinsville
- Elmira
- Green Valley
- Main Prairie
- Scandia

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Major industries:

Major local industries are made up of manufacturing, wholesale businesses (food, nurseries, etc.), professional services, constructions, health and social services. (Source: Solano county Economic Development Corporation, Solano Index 2010: Clusters of Opportunity)

Transportation and Infrastructure

Major Highways:

Interstate Highways – 80, 505, 680 and 780

State Routes – 12, 29, 37, 84 and 113

Public Transportation:

- Solano County is served by several transit agencies:
- Vallejo Transit, which also operates the Baylink Ferry to San Francisco
- Fairfield Suisun Transit
- Benicia Breeze
- Vacaville City Coach
- Rio Vista Delta Breeze

Each agency interconnects with each other, enabling transit trips throughout the county. Service also connects with BART stations in Contra Costa County. Transit links are provided to Napa, Yolo and Sacramento counties as well.

Greyhound and Amtrak provide long-distance intercity service.

The Nut Tree Airport and Rio Vista Municipal Airport are the two public general aviation airports in

Solano County. (Source: Wikipedia.org)



Prerequisites

Plan Adoption

On_____, the Council of the City of Suisun City voted unanimously to adopt the resolution. The Resolution Document is below:

Resolution

Legal Authority

Federal Laws

Federal legislation has historically provided funding for disaster relief, recovery, and some hazard mitigation planning. The Disaster Mitigation Act of 2000 (DMA 2000) is the latest legislation to improve this steering process (Public Law 106-390). The new legislation reinforces the importance of mitigation planning and emphasizes planning for disasters before they occur. As such, DMA 2000 establishes a pre-disaster hazard mitigation program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP).

Section 322 of DMA 2000 specifically addresses mitigation planning at the state and local levels. It identifies new requirements that allow HMGP funds to be used for planning activities, and increases the amount of HMGP funds available to states that have developed a comprehensive, enhanced mitigation

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plan prior to a disaster. States and communities must have an approved mitigation plan in place prior to receiving post-disaster HMGP funds. Local and

tribal mitigation plans must demonstrate that their proposed mitigation measures are based on a sound planning process that accounts for the risk to and the capabilities of the individual communities.

FEMA prepared an Interim Final Rule, published in the Federal Register on February 26, 2002 (44 CFR Parts 201 and 206), which establishes planning and funding criteria for states and local communities.

The Plan has been prepared to meet FEMA and California OES requirements thus making the City eligible for funding and technical assistance from state and federal hazard mitigation programs.

State Laws

California has many laws and programs relating to hazard mitigation, the most effective of which include:

- California Earthquake Hazards Reduction Act of 1986
- Caltrans Seismic Retrofit Program
- California Fire Alliance
- California Earthquake Authority's Seismic Retrofit Program
- NFIP, administered by the DWR
- State Planning law and OPR general plan guidance documents
- CDI Residential Retrofit Program
- The following are state laws and executive orders related to hazard mitigation:
- Executive Order W-18-19 Executive Order W-9-91 Health & Safety Code §19211 Health & Safety Code §19181.
- Public Resources Code §2621, et seq. (the Alquist-Priolo Earthquake Fault Zoning Act)
- California Government Code §§ 38600 – 38601; 38611 (Fire Prevention)
- California Government Code § 38660 (Building Ordinance)
- California Government Code §§ 65800 – 65912 (Zoning Ordinance)

City Ordinance & Codes

Current through Ordinance 945, passed December 15, 2004

- **Title 8: HEALTH AND SAFETY**
- **Title 9: PUBLIC PEACE, MORALS AND WELFARE**
- **Title 10: VEHICLE AND TRAFFIC**
- **Title 15: BUILDING AND CONSTRUCTIONS**
- **Title 18 – ZONING**

Planning Process

Documentation of the Planning Process

The development of this plan was directed by a planning team consisting of Suisun City supported by a consultant. The team met monthly for twelve months.

The City's Emergency Operations Plan (EOP), General Plan, Solano County General Plan, and Solano County EOP were reviewed and included in this planning process as appropriate.

Planning Team Members

NAME	DEPARTMENT	PHONE	E-MAIL
Mike O'Brien	Fire Chief, Suisun City Fire Dept	(707) 421 7205	mobrien@suisun.com
Pam Greenwood	CSO Suisun City Police Dept	(707) 435 2748	pgreenwood@suisun.com
Mark Joseph	Fin. Svs, Mgr Suisun City Hall	(707) 421 7326	mjoseph@suisun.com
Dan Kasperson	Bldg & Pub. Works Dir. Suisun City Hall	(707) 421 7316	dan@suisun.com
Ron Anderson	Asst. City Manager Suisun City Hall	(707) 421 7396	randerson@suisun.com
April Wooden	Comm. Dev. Director Suisun City Hall	(707) 421 7396	awooden@suisun.com
Ed Dadisho	Police Chief Suisun City PD		edadisho@suisun.com
Tim Mattos	Suisun City PD		tmattos@suisun.com
Scott Corey	Marketing Manager	(707)421-7333	scorey@suisun.com
Jason Garben	Economic Development	(707)421-7347	jgarben@suisun.com
Mick Jessop	Recreation & Community Service	(707) 421-7200	mjessop@suisun.com

Adjunct Contributors

Jan Rogala	Dimensions/Consultant	707.374-6529	janrogala@aol.com
Azlina Harun	Dimensions/Consultant	707.374.6529	azlinah483@gmail.com

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Planning Team By Laws

Proposed and adopted Planning Team by Laws:

1. Members shall select a chair and a co-chair.
2. The SUISUN CITY Hazard Mitigation Planning Team agrees to make and pass policy recommendations by a vote of a simple majority of those members present at the scheduled meeting while attempting to reach consensus
3. Members of the SUISUN CITY Hazard Mitigation Planning Team agree to meet monthly to identify hazard priorities and review, identify and implement SUISUN CITY hazard mitigation strategy recommendations.
4. Any single Hazard Mitigation Planning Team member may request that an item regarding the plan or planning process be added to the agenda for discussion and/or action at the next

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regularly scheduled Planning Team meeting by contacting the Chair at least 7 days prior to the next meeting.

5. The SUISUN CITY Hazard Mitigation Planning Team was organized in July 2010, as reflected by the minutes of that meeting, and agrees to meet monthly to identify hazard vulnerabilities and feasible hazard mitigation strategy recommendations.
6. The Planning Team may form subcommittees to review and develop those feasible hazard mitigation strategy recommendations identified that will be reviewed by the Hazard Mitigation Planning Team as a whole.
7. The sub-committees will identify and bring forward hazard mitigation strategies from existing recommendations contained in plans and documents, and from the input of regional jurisdictions and the input of private citizens and organizations.
8. The SUISUN CITY Planning Team will identify constraints to mitigation strategies that affect SUISUN CITY's ability, authority and responsibility to implement those strategies.
9. Public Input will be implemented in the following manner: *To be decided*

Planning Team Tasks

1. Coordinate hazard mitigation planning tasks and activities with the SUISUN CITY staff and departments to develop a all-hazards disaster mitigation plan and support the SUISUN CITY oversight of the planning process.
2. Assist in carrying out the goals and objectives of the SUISUN CITY Hazard Mitigation Plan in compliance with FEMA DMA 2000 Hazard Mitigation Act.
3. Prioritize risks for implementing mitigation strategies.
4. Select designated Critical Facilities owned by SUISUN CITY and in proximity to SUISUN CITY facilities, and develop a risk exposure analysis for those facilities.
5. Select highest priority and most-desired mitigation recommendations and develop those recommendations for further action by the SUISUN CITY.
6. Review mitigation planning drafts, recommendations and updates.
7. Develop and implement long- and short-term goals.
8. Integrate the plan with all phases of the City's Comprehensive Emergency Management and Plan and General Plan Safety Element.
9. Provide for the implementation of Planning Team decisions.
10. Encourage development of, coordinate and implement a methodology for the implementation of public input.

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11. Establish Hazard Mitigation Planning Team responsibilities to include but not be limited to the following:
12. Determine implementation ability and constraints for proposed Hazard Mitigation planning steps and development of strategies
13. Bring forward community concerns through private and public input
14. Identify implementation resources
15. Identify lead departments for implementation of strategies
16. Provide for the update of the Disaster Mitigation Plan on a regularly scheduled basis
17. Evaluate and carry out mitigation activities
18. Assist in implementation of funding identification and procurement

Planning Team Goals & Objectives

Proposed and adopted Hazard Mitigation Goals:

- Support the priorities of the SUISUN CITY; its mandate, employees, citizens and the business community.
- Promote economic development consistent with seismic, floodplain and risk management guidance as developed by the SUISUN CITY and its agencies and organizations.
- Provide for an effective public awareness program for natural and technological hazards present in the SUISUN CITY.
- Encourage scientific study and the development of data to support mitigation strategies for those hazards that are a threat to the SUISUN CITY.
- Promote the recognition of the real value of hazard mitigation to public facilities, public safety and welfare of all citizens of the SUISUN CITY.
- Support the mitigation efforts of local governments, private citizens, non-profit organizations and private businesses throughout.
- Develop a comprehensive mitigation program with Federal, State, SUISUN CITY and appropriate local jurisdictions.

Objectives

- Proposed and adopted Hazard Mitigation Objectives:
- Identify mitigation actions to reduce loss of lives and property.

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- Implement mitigation actions to reduce loss of lives and property.
- Identify mitigation strategies that will allow the SUISUN CITY and participating cities to perform its primary mission and goals.
- Identify mitigation opportunities for short- and long-range planning considerations.
- Recommend the adoption of relevant safe building and zoning codes that support mitigation of a known risk.
- Identify lead SUISUN CITY Departments that have an interest in mitigation of specific hazards.
- Develop a standard mitigation program utilizing authorities, policies and programs of each SUISUN CITY Department
- Organize, train and maintain an ongoing and effective SUISUN CITY/ Hazard Mitigation Planning Team that will facilitate implementation of the SUISUN CITY Mitigation Plan.
- Review and update other SUISUN CITY programs to identify current and future mitigation goals and objectives in compliance with all county, state and Federal requirements.
- Gain support of the SUISUN CITY and for the SUISUN CITY All-Hazard Mitigation Program implementation.
- Support and expand identified hazard mitigation strategies as set forth in SUISUN CITY Safety Element of the SUISUN CITY General Plan and all other SUISUN CITY/ plans that contain Hazard Mitigation Strategies.

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Public Participation

The SUISUN CITY Hazard Mitigation Planning Team aggressively sought input from adjacent jurisdictions and the community.

Community Input

Questionnaires were distributed at several public places including:

- City Hall
- Library
- Public Works Department
- Community Development Department
- City Website
- Surveymonkey.com

Hazard Mitigation Planning Public Questionnaire

The following notice accompanied the Hazard Mitigation Planning Public Questionnaire:

Suisun City is preparing a Hazard Mitigation Plan in an effort to reduce damage from both natural and man-made risks that could affect our town. We would like to get input from you, citizens of the City, regarding the risks we face, such as earthquake, flood, severe weather, fire, and technology-induced hazards.

City staff and a consulting team from Dimensions Unlimited have been working together on the draft of this plan. This planning team will consider projects and mitigation measures you may want the Town to undertake to reduce risks. Your comments and input will be incorporated into the City's Hazard Mitigation Plan.

You are invited to provide your input by completing the survey attached. Your input will help the City put together a plan that best serves the community.

Thank you for your involvement in this important process. There will also be future Suisun City Council hearings and opportunities for additional public review and input on the plan prior to its adoption.

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Questionnaire

Hazards Mitigation and Preparedness Questionnaire
Suisun City
Disaster Mitigation Planning Project 2010

By completing this questionnaire, you will help local officials prepare for disasters and manage hazards. Answer the following questions to help us better understand your concerns about natural and human-caused hazards, and the community's needs in reducing risk and loss from such hazards. Please have the homeowner or head of household complete this questionnaire, which will only take a few moments. All individual responses are strictly confidential, and are for planning purposes only. Thank you for your attention to this planning effort.

1. Zip code of your residence: _____ 2. Internet Access? Yes / No 3. Own/Rent _____

4. How concerned are you about the following disasters affecting your community? Please give each hazard a priority rating as follows:

0 = Not concerned; 1 = Somewhat concerned; 2 = Moderately concerned; 3 = Very concerned

_____ Floods	_____ Fire	_____ Landslide
_____ Earthquake	_____ Telecommunications Failure	_____ Train Derailment
_____ Severe Weather	_____ Biological/Plant/Animal	_____ Explosions
_____ Utility Disruption	_____ Terrorism	_____ Radiological
_____ Dams/Levees Failure	_____ Economic Disruption	_____ Special Events
_____ Plane Crash (Travis)	_____ Health Alert/Epidemic	_____ Transportation Services
_____ Water/Waste Water Loss	_____ Other _____	

5. What is the most effective way for you to receive information about how to make your household and home safer from natural disasters? (**Please check all that apply.**)

- ☐ Newspaper
- ☐ Television news
- ☐ Television ads
- ☐ Radio news
- ☐ Radio ads
- ☐ Twitter
- ☐ Facebook
- ☐ Nixle
- ☐ Schools
- ☐ Council Meetings

Other Methods:

- ☐ Mail
- ☐ Fire/Police Department
- ☐ Internet
- ☐ Fact sheet/brochure
- ☐ Church/religious organization
- ☐ Employer
- ☐ Public meetings
- ☐ Utility Bills
- ☐ Email
- ☐ Post Office

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6. In the following list, please check those activities that you **have done**, **plan to do** in the near future, **have not done**, or are **unable to do**. (**Please check one answer for each preparedness activity.**)

Have you or someone in your household:	Have done	Plan to do	Not done	Unable to do
Attended meetings or received written information on natural/man made disasters or emergency preparedness?				
Talked with family members about what to do in case of a disaster or emergency?				
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?				
Prepared a "Disaster Supply Kit" (extra food, water, medications, batteries, first aid items and other emergency supplies)?				
In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)?				

7. Building a disaster supply kit, receiving First Aid training and developing a household/family emergency plan are all inexpensive activities that require a personal time commitment. How much time (per year) are you willing to spend on disaster/emergency preparedness? (**Please check only one.**)

☐ 0-1 hour ☐ 2-3 hours ☐ 4-7 hours ☐ 8-15 hours ☐ 16+ hours ☐ Other, please specify _____

8. Do you know how to shut off your (circle all that apply):

Electricity: Y/N Water: Y/N Gas: Y/N

9. Is your home at risk of: Flooding damage? : Y/N Earthquake damage?
: Y/N

10. Do you carry Flood Insurance? 11. Do you carry Earthquake Insurance?

☐ Yes ☐ No ☐ Yes ☐ No

11. Would you be willing to make your home more resistant to natural disasters?

☐ Yes ☐ No

12. What modifications for earthquakes and floods have you made to your home?

(**Please check all that apply.**)

- | | |
|---|--|
| <input type="checkbox"/> Anchor bookcases, cabinets to wall | <input type="checkbox"/> Secure home to foundation |
| <input type="checkbox"/> Secure water heater to wall | <input type="checkbox"/> Brace inside of cripple wall with sheathing |
| <input type="checkbox"/> Install latches on drawers and cabinets | <input type="checkbox"/> Brace unreinforced chimney |
| <input type="checkbox"/> Fit gas appliances with flexible connections | <input type="checkbox"/> None |
| <input type="checkbox"/> Brace unreinforced masonry, concrete walls and foundations | <input type="checkbox"/> Other (Please specify) |

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13. Natural and human-caused disasters can have a significant impact on a community but planning for these events can help lessen the impact. The following statement will help us determine community priorities for planning for those hazards. Please tell us how important each one is to you.

Statement	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important
Protecting private property					
Protecting critical facilities (hospitals, transportation networks, fire stations)					
Regulating development in hazard areas					
Protecting natural environment					
Protecting historical and cultural landmarks					
Promoting cooperation among public agencies, citizens, non-profit organizations and businesses					
Protecting and reducing damage to utilities					
Strengthening emergency services (police, fire, ambulance)					

14. Please check the box that best represents your opinion of the following strategies to reduce the risk and loss associated with natural disasters.

Community Wide Strategies	Agree	Neutral	Disagree	Not Sure
I support a regulatory approach to reducing risk.				
I support policies to regulate development in areas subject to natural hazards.				
I support using local tax dollars to reduce risks and losses from natural disasters.				
I support protecting historical and cultural structures.				
I would be willing to make my home more disaster-resistant.				
I support steps to safeguard the local economy following a disaster event				
I support improving the disaster preparedness of schools.				

Please return this questionnaire to:
 Suisun City Hall
 701 Civic Center Blvd.
 Suisun City, CA 94585

Questions? Please call Scott Corey (707) 421-7333

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Questionnaire Results

The data collected from the questionnaire was compiled and submitted to the planning team in a report. The report appears on the pages following:

1. Community Zip Codes

94534	6%
94533	6%
94585	88%

2. Internet Access

Yes	41%
No	6%
No Reply	53%

3. Own or Rent

Own	41%
Rent	53%
No Reply	6%

4. Disaster Hazards Ratings

(0=not concerned, 1=somewhat concerned, 2=moderately concerned, 3=very concerned)

Event	0	1	2	3	No Reply
Flood	12%	22%	41%	18%	7%
Fire	6%	18%	29%	41%	6%
Landslides	41%	29%	18%	12%	0
Earthquake	0	6%	18%	76%	0
Telecommunications	22%	12%	22%	29%	15%
Train Derailment	12%	22%	22%	29%	15%
Severe Weather	6%	18%	41%	29%	6%
Biological	0	0	35%	59%	6%
Explosion	65%	12%	12%	6%	5%
Utility Disruption	6%	22%	12%	47%	13%
Terrorism	29%	0	18%	41%	12%
Radiological	0	22%	12%	53%	13%
Dam/Levees Failure	29%	22%	18%	12%	19%
Economic Disruption	0	0	35%	53%	12%
Special Events	0	29%	35%	22%	14%
Plane Crash (Travis)	12%	22%	24%	27%	15%
Health/Pandemic	0	22%	12%	53%	13%
Transportation Svcs	6%	18%	41%	22%	13%
Water/Wastewater	6%	22%	12%	44%	16%

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5. Receiving Information

Media

Newspaper Stories	65%
Newspaper Ads	59%
Television News	88%
Television Ads	53%
Radio News	71%
Radio Ads	35%
Fact Sheet/Brochure	53%

Other Methods

Books	29%
Mail	82%
Fire Dept	71%
Internet/Email	59%
Church Orgs	71%
Employer	59%
Public Meetings	76%
Scholastic Research	29%
Utility Bills	47%
Schools	59%
Outdoor Advertising	59%

6. Planning for the Household

Item	Have Done	Plan to Do	Haven't Done	Unable to Do	No Reply
Attend meetings or received written information on natural disasters or emergency preparedness	71%	0	12%	0	17%
Talked with family members about what to do in case of a disaster or emergency	47%	12%	29%	0	12%
Developed a household/family emergency plan in order to decide what everyone would do in the event of a disaster	22%	41%	22%	0	15%
Prepared a disaster supply kit	53%	29%	6%	0	10%
In the last year, has everyone in your household been trained in first aid or CPR	65%	0	22%	0	13%

7. Time willing to spend time preparing for disasters

0-1 hr	6%
2-3 hrs	41%
4-7 hrs	29%
8-15 hrs	18%
16+ hrs	6%

8. Shut off utilities

Yes	12%
No	82%
No Reply	6%

City of Suisun City
Local Hazard Mitigation Plan

9. Home at risk of

Flood	22%
Earthquake	66%
No Reply	12%

10. Carry Flood Insurance

Yes	41%
No	53%
No Reply	6%

11. Willing to make home more disaster resistant

Yes	66%
No	28%
No Reply	6%

12. Structural & Non Structural Modifications

Nonstructural

Anchor Items	22%
Secure Water Heater	76%
Install latches	22%
Flexible Gas Connections	41%
Brace Foundation	12%
None	6%

Structural

Secure foundation	18%
Brace inside cripple walls	0
Brace Chimney	22%
Brace Unreinforced Walls	6%
Others	6%

13. Planning for Hazards

Statement	Very Important	Somewhat Important	Somewhat Unimportant	Not Important	No Opinion
Protect private property	76%	12%	0	0	12%
Protect critical facilities	88%	12%	0	0	0
Prevent development in hazard areas	76%	18%	6%	0	0
Protect natural environment	59%	35%	6%	0	0
Protect historical & cultural landmarks	35%	47%	6%	12%	0
Promote cooperation	71%	22%	7%	0	0
Protect Utilities	82%	12%	6%	0	0
Strengthen Emergency Services	88%	12%	0	0	0

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Local Hazard Mitigation Plan**

14. Opinion on Strategies

Community Strategies	Support	Somewhat Support	Do Not Support	No Opinion
Regulatory Approach	59%	29%	6%	6%
Non-regulatory Approach	29%	41%	18%	12%
Development Prohibition Policies	59%	22%	12%	7%
Reduce Risk with Tax Dollars	53%	29%	6%	12%
Protect Historical/Cultural	29%	59%	6%	6%
Disaster Resistant Homes	71%	22%	7%	0
Safeguard the Economy	65%	22%	7%	6%
Improve School Preparedness	77%	23%	0	0

Stakeholder Participation

During this period the Hazard Mitigation Planning Team identified a list of Stakeholders in the Planning Process. The list includes the following:

City of Fairfield Planning Department
Erin Beavers
1000 Webster Street
Fairfield, CA 94533

Solano Irrigation District
Jim Daniels
508 Elmira Road
Vacaville, CA 95687

Fairfield-Suisun School District
Kim Van Gundy
2490 Hilborn Road, Fairfield, CA 94534

Fairfield-Suisun Sewer District
Meg Herston
1010 Chadbourne Road
Fairfield, CA 94534-9700

Department of the Air Force
Sara Underwood
60th CES/CECP
191 W Street

Travis AFB, CA 94535

Solano County
Mike Yankovich
675 Texas Street, Suite 5500
Fairfield, CA 94533

Solano Transportation Authority
Robert Macaulay
One Harbor Center, Suite 130
Suisun City, CA 94585

Bay Conservation and Development Commission
Joseph LaClair
50 California Street, Suite 2600
San Francisco, California 94111

Travis Airport Land Use Commission
Jim Leland
675 Texas Street, Suite 5500
Fairfield, CA 94533

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San Francisco Regional Water Quality Control
Board
Executive Director
1515 Clay Street, Ste. 1400
Oakland, CA 94612

California Department of Fish and Game
Charles Armor
7329 Silverado Trail
Napa, CA 94558

Solano Community College
Dr. Jowel C. Laguerre
4000 Suisun Valley Road
Fairfield, CA 94534-3197

United States Fish and Wildlife Service
Ken Sanchez
2800 Cottage Way, Rm. W-2605
Sacramento, CA 95814

Solano County Water Agency
Chris Lee
P.O. Box 349, Elmira, CA 95625

California Department of Transportation
Timothy Sable
P.O. Box 23660
Oakland, CA 94623-0660

Suisun Resource Conservation District
Steve Chapell
2544 Grizzly Island Road
Suisun, CA 94585-9539

Bay Area Air Quality Management District
939 Ellis St.
San Francisco, CA 94109

U.S. Army Corps of Engineers
333 Market Street, 8th Floor
San Francisco, CA 94105-2197

Solano County LAFCo
Shaun Pritchard
744 Empire St., Suite 216
Fairfield, CA 94533

Ken Kirkey
101 Eighth St
Association of Bay Area Governments
Oakland, CA 94604-2050

Planning Director
Metropolitan Transportation Commission
Joseph P. BART Metro Center
101 8th Street
Oakland, CA 94607-4756

Union Pacific Railroad
Pat Kerr
10031 Foothills Blvd.
Roseville, CA 95747

City of Suisun City
Local Hazard Mitigation Plan

A stakeholders meeting was held on May 18, 2011 in Suisun City. Invitations were sent to all on the above list of stakeholders.

Suisun City/Suisun FPD Hazard Mitigation Plan

AGENDA

Community Meeting

Wednesday, May 18, 2011
3 p.m. – 5:30 p.m.
Joe Nelson Community Center, Room A

Outcomes: Provide information to meeting participants on the hazard mitigation planning process

Receive public input on the hazard analysis and potential mitigation strategies

- 3:00 p.m. **I. Welcome and Introduction**
Sign In
Welcome and Introduction of Project Consultant by Fire Chief Mike O'Brien
Review of the Meeting Purpose
Introduction of Stakeholders
Introduction of other Meeting Participants
- 3:15 p.m. **II. Discussion of the Hazard Mitigation Plan**
Presentation on the Hazard Mitigation Plan's Purpose and Requirements
- 3:20 p.m. **III. Discussion of the Hazard Analysis**
Introduction of Hazard Analysis Results
Hazard Mitigation Planning Team's Hazards Ratings
Stakeholders Comments
Attendees Comments
- 4:00 p.m. **IV. Discussion of the Hazard Mitigation Strategies**
Introduction of the Preliminary Hazard Mitigation Strategies
Meeting Participants Comments
- 5:25 p.m. **V. Summary of Next Steps**
- 5:30 p.m. **Close**

Handouts

Draft Suisun City/Suisun FPD Hazard Vulnerability Analysis
Draft Suisun City/Suisun FPD Hazard Mitigation Strategies

**City of Suisun City
Local Hazard Mitigation Plan**

Suisun City/Suisun FPD Hazard Mitigation Plan

MINUTES

Community Meeting

Wednesday, May 18, 2011
3 p.m. – 5:30 p.m.
Joe Nelson Community Center, Room A

Welcome and Introduction

Uriel Romero	Solano Irrigation District
Robert MacCaulay	Solano Trans. Authority
Mike O'Brien	Suisun City Fire Department
Ron Glantz	Suisun Fire Protection District
Dan Kasperson	Suisun City
Scott Corey	Suisun City Economic Development
April Wooden	Suisun Community Development Department
Ed Dadisho	Suisun Police Department

Discussion of the Hazard Mitigation Plan/Disaster Mitigation Act of 2000

Jan Rogala covers the federal laws regarding Hazard Mitigation Planning – the Disaster Mitigation Act of 2000 and what/whom the law covers. The language of the law is clear that all jurisdictions, public and private, are covered by the law. While there is no criminal penalty for non-compliance, there is a clause that allows citizen of a jurisdiction to bring a lawsuit at the failure to plan on the part of the jurisdiction.

The law requires a rigorous public and stakeholder participation as well as a comprehensive review of all current plans in the jurisdiction. This meeting is one of the meetings scheduled for this purpose.

Discussion of the Hazard Analysis

The planning team's hazard prioritization result was presented to the attendees. The law requires mitigation strategies spelled out in detail for natural hazards rated high and moderate risk for the community. The hazard priority for Suisun City and Suisun FPD is as follows:

High Risk Priority Hazards

- Earthquake (Natural)
- Flooding (Natural)
- Hazardous Materials (Human caused)
- Transportation (Human caused)
- Wildland/Urban interface fires (Natural and human caused)
- Radiological Incidence – high level (Human caused)

Moderate Risk Priority Hazards

- Severe weather (Natural)

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Radiological Incidence – low level (Human caused)
Utility Loss (Human caused and Natural)
Water/Wastewater Disruption (Human caused)
WMD Terrorism (Human caused)
Railroad Accidents (Human caused)

Low Risk Priority Hazards

Aviation Disaster (Human caused)
Explosions (Human caused)
Electrical Substations (Human caused)
Land Slides (Natural)
Biological/Health (Natural and human caused)
Dam Failure (Natural and human caused)
Data/telecommunications losses (Human caused)
Economic Disruption (Natural and human caused)
Tsunami (Natural)
Special Events (Human caused)

The completed Hazard Mitigation Plan will include mitigation strategies for the natural hazards rated high and moderate priority, as outlined above.

Discussion of the Hazard Mitigation Strategies

The hazard mitigation strategies discussed by the team to date includes:

Earthquake:

- 1) Conduct an Unreinforced Masonry Study
- 2) Implement the findings of the study
- 3) Implement a public/private Masonry Building Retrofit Program
- 4) Conduct a Historic District Study
- 5) Implement the recommendations of the study

Flooding:

- 1) Continue dredging of the canals to prevent flooding
- 2) Redoing Pierce Island – the man-made island was built from dredge spoils. Pierce Island offer limited space for future dredging waste
- 3) Design a dredging waste removal plan for future dredging project

Radiological Incidence:

- 1) Design and implement a training program for responders
- 2) Design a public education program for the public

Hazardous Waste:

- 1) Neither jurisdiction has permitting authority over transportation of hazardous materials. A public education and awareness campaign will be design to mitigate this risk.
- 2) Design and implement a Hazardous Materials Training Program for responders.
- 3) Update the EOP (Emergency Operations Plan)
- 4) Designate an EOC (Emergency Operations Coordinator)
- 5) Continue and improve coordination planning with PG&E, and Travis AFP
- 6) Install filters at all storm drains outlets and catch basins to ensue protection of Suisun Marsh

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Transportation:

- 1) Coordinate with Solano Transportation Authority in designing a safe crossing at Cordelia Road to mitigate transportation accident hazards.

There was a question about the maps to be included in the completed plan. A copy of the maps that detailed the geographical area of Suisun City and Suisun FPD that will be included in the plan was shared at the meeting. In Suisun City, the absence of hospitals and malls significantly reduce the impacts of certain hazards.

Chief O'Brien shared a "confidential map" that is available to emergency responders with detailed PG&E natural gas lines. The map will not be included in the plan due to the sensitivity of the information on the map.

A brief discussion ensues about the recent unofficial pipe analysis conducted by a Suisun City citizen. Chief O'Brien then presented the locations of masonry buildings in Suisun City. No masonry buildings exist within Suisun FPD jurisdiction.

A portion of Suisun City sit upon soil that is highly susceptible to liquefaction in an earthquake. Short discussion regarding the designation of "critical facilities" was lead by Chief O'Brien. Suisun City included the City's buildings, community center (the designated shelter in an emergency) and the schools. PG&E substations was not originally included in the critical facilities list, and after shot discussion, will be added to the list as well as the STA office within the city limit be included in the list.

The sewer plant and the water supply for Suisun City do not lie within the city's limit, even though both facilities are critical to the City's ability to function. A mitigation strategy may be to consider alternative water supply and waste removal option in the case of an emergency event.

Mitigation strategies can be enforcement of existing ordinances. Strategies included in the plan can be developed into a future project with the potential funding available through FEMA and other federal sources.

Summary of Next Steps

The planning team will continue to evaluate the list of mitigation strategies, collaborate with neighboring jurisdictions, and refine the plan. The public's input will continue to be accepted throughout the planning process.

Meeting adjourned at 4:45 pm.

Resultant

Using the results of the questionnaires and incorporating input received at the stakeholder and other public gatherings, the Planning Team developed a list of hazards and the priority designating the risk each hazard poses to the Suisun City (See RISK ASSESSMENT).

Suisun City/Suisun FPD Hazard Mitigation Plan

Mitigation Strategies Currently Considered for Inclusion

Stakeholders Meeting
Wednesday, May 18, 2011

Earthquake:

- 1) Conduct an Unreinforced Masonry Study
- 2) Implement the findings of the study
- 3) Implement a public/private Masonry Building Retrofit Program
- 4) Conduct a Historic District Study
- 5) Implement the recommendations of the study

Flooding:

- 1) Continue dredging of the canals to prevent flooding
- 2) Redoing Pierce Island – the man-made island was built from dredge spoils. Pierce Island offer limited space for future dredging waste
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- 1) Neither jurisdiction has permitting authority over transportation of hazardous materials. A public education and awareness campaign will be design to mitigate this risk.
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- 6) Install filters at all storm drains outlets and catch basins to ensue protection of Suisun Marsh

Transportation:

- 1) Coordinate with Solano Transportation Authority in designing a safe crossing at Cordelia Road to mitigate transportation accident hazards.

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Hazard Mitigation Planning Team Meetings

Throughout the planning process a series of Planning Team meetings were held. Following are the pre-published agendas and the minutes to each meeting. Sign-in sheets were distributed and collected during each of the meetings and those attending were recorded at the beginning of each meeting minutes' report. Original sign-in sheets are on file.

Suisun City/Suisun FPD
Hazard Mitigation Planning Team
Organizational Meeting
July 28, 2010
Agenda

1. Introductions and Sign In
 2. Overview of the Process – Power Point
 1. Elect a Planning Team Chairman/ Co-Chair
 2. Review and Adopt Planning Team (By Laws)
 3. Select a date for ongoing meetings
 4. Review and Adopt Planning Team Tasks
 5. Develop a Multi-Hazard Planning Team Mission Statement
 6. Review and Adopt Planning Goals and Objective
 7. Introduction to Hazard Rating Matrix
 8. Review Hazard Mitigation Planning Process
 9. Review Mitigation Strategy format (for future strategy development)
 10. Other Business
-

**City of Suisun City
Local Hazard Mitigation Plan**

**Suisun City/Suisun FPD
Hazard Mitigation Planning Team
Organizational Meeting
July 28, 2010, 10 am, Suisun Administration Building
Minutes**

Meeting called to order 10 am.

Introductions and Sign In

Ronald Glantz	Suisun Fire Protection District	Fire Chief
ronaldglantz@sbcglobal.net	(707) 425 3605	
Mike O'Brien	Suisun City Fire Dept	Fire Chief
mobrien@suisun.com	(707) 421 7205	
Pam Greenwood	Suisun City Police Dept.	CSO
pgreenwood@suisun.com	(707) 435 2748	
Mark Joseph	Suisun City Hall	Financial Svs Mgr.
mjoseph@suisun.com	(707) 421 7326	
Dan Kasperson	Suisun City Hall	Bldg. & P. Works Dir.
dan@suisun.com	(707) 421-7316	
Ron Anderson	Suisun City Hall	Asst. City Manager
randerson@suisun.com	(707) 421 7396	
April Wooden	Suisun City Hall	Comm. Dev. Director
awooden@suisun.com	(707) 421 7396	
Azlina Harun	Dimensions UI	(916) 410 1277
Jan Rogala	Dimensions UI	(707) 374 6529

1. Overview of the Process – Power Point

Jan Rogala presented the process overview. Mark Joseph shared that the Water JPA has funds available to contribute to soft costs, rather than general fund. However, typically the time that City staff put into the planning process more than cover the local share.

Question was brought up whether members of the public should be invited as members of the Planning Committee; CERT members may be a good fit. Jan Rogala said it is an option, but not too many. Having members of the public part of the planning committee does not replace the need for a thorough public input process.

Garden Valley Citizens Group is a stakeholder. It was also shared that Suisun has a GIS consultant who can provide maps necessary for the plan. Suisun City/Fairfield is part of the Images of America Series

a jet fuel line goes through Suisun City that is owned by Kinder Morgan supplying Travis. Dept. of Fish and Game owns a plot of land in Suisun. Both are stakeholders in this process.

CEQA document is also available for use in the planning process.

2. Elect a Planning Team Chairman/ Co-Chair
Chairman – Mike O'Brien
Co-Chairman - Ronald Glantz
3. Review and Adopt Planning Team (By Laws)

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Local Hazard Mitigation Plan

April Wooden asks the team, in regards to item number two, for an agreement that the team commit to working toward consensus. Jan Rogala pointed out that by law; the draft plan is to be reached by consensus. By-law item number four will be re written by April Wooden. The City is also currently in the process of writing its general plan. Adoption of the By-laws will be on August agenda.

4. Select a date for ongoing meetings

The Planning Team Meeting will take place on the fourth Wednesday of the month, on a monthly basis. Next meeting August 25, 2010 at 10:30 am.

5. Review and Adopt Planning Team Tasks
Minor changes were made. Adoption of the Planning Team Tasks will be on August agenda.

6. Develop a Multi-Hazard Planning Team Mission Statement

7. Review and Adopt Planning Goals and Objective
Minor changes were made. Adoption of the Planning Team Tasks will be on August agenda.

8. Introduction to Hazard Rating Matrix

A brief initial review of the hazards by the team and risk levels are as follows:

High Risks:

Earthquake
Floods
Hazardous Materials
Transportation
Wildland/Urban interface fires
Radiological Incidence – high level

Moderate/High Risks:

Severe Weather
Radiological Incidence – low level
Utility Loss
Water/Wastewater Disruption
WMD Terrorism
Railroad Accidents

Moderate/Low Risks:

Aviation Disaster
Explosions
Electrical Substations
Land Slides
Biological/Health
Dam Failure
Data/telecommunications losses
Economic Disruption
Tsunami
Special Events

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9. Review Hazard Mitigation Planning Process

Jan Rogala covered the process as part of the Power Point Presentation earlier in the meeting.

10. Review Mitigation Strategy format (for future strategy development)

11. Other Business

Pam requests that Police Chief Ed Dadisho and Commander Mattos be added to the mailing list as members of the Planning Team.

Meeting Adjourned at Noon. Next meeting, August 25, 2010 at 10:30 am.

City of Suisun City
Local Hazard Mitigation Plan

Suisun City/Suisun FPD
Hazard Mitigation Planning Team
Organizational Meeting
August 25, 2010, 10:30 am, Suisun Administration Building
Conference Room
Agenda

1. Introductions
 2. Adoption of July Minutes
 3. Adoption of by-laws with suggested changes
 4. Review and Adoption of Hazard Rating for Risk analysis
 5. Review status of general Plan for HMGP use
 6. Review of Hazard Mitigation Planning items existing data
 7. Request list of flood insured properties
 8. Identify Planning Documents
 9. Other Business
-

**City of Suisun City
Local Hazard Mitigation Plan**

**Suisun City/Suisun FPD
Hazard Mitigation Planning Team Meeting
August 25, 2010, 10:30 am, Suisun Administration Building
Minutes**

Introductions

Mike O'Brien	Suisun City Fire Dept	Fire Chief
mobrien@suisun.com		(707) 421 7205
Dan Kasperson	Suisun City Hall	Bldg. & P. Works Dir.
dan@suisun.com		(707) 421-7316
April Wooden	Suisun City Hall	Comm. Dev. Director
awooden@suisun.com		(707) 421 7396
Ed Dadisho	Suisun PD	Police Chief
edadisho@suisun.com		(707) 421-7350
Scott Corey	SC Marketing Mgr	
scorey@suisun.com		(707) 421-7333
Jason Garben	Economic Development Director	
jgarben@suisun.com		(707) 421-7347
Mick Jessup	Rec & Community Services	
mjessop@suisun.com		(707) 421 7200
Azlina Harun	Dimensions UI	(916) 410 1277
Jan Rogala	Dimensions UI	(707) 374 6529

July Minutes adopted with minor wording adjustment.

Adoption of by-laws with suggested changes. The team agreed to adopt the by-law as rewritten.

Review status of general Plan for HMGP. Suisun City is in the process of rewriting its General Plan, scheduled to be completed in 12 months. The Hazard Mitigation Plan and the General Plan will be prepared in conjunction with each other.

A number of the goals from 1991 will no longer be supported in the new General Plan. Azlina Harun and Jan Rogala will attend the September 30, 2010, Technical Advisory meeting for the General Plan. The General Plan stakeholders are also in all likelihood be the stakeholders for the Mitigation Planning effort.

A collection of documents and photos were submitted by Chief O'Brien and Scott Corey. Airport Land use plan is part of the document submitted by Chief O'Brien.

Dredging of the canals to prevent flooding – funding comes from sewer district and other sources. Last dredging was done in 2008, was \$500,000 short. Project shortfall was covered by general fund as well as funds redirected from other projects.

The next dredging project is in 2013. Redoing Pierce Island, the manmade island built from dredge spoils, will need to become a part of the 2013 project. Pierce Island currently offers limited space for the dredging waste. The waste may need to be transported out of the area and will increase the project costs significantly. Cost estimate for the 2013 dredging project ranged between \$1.2M to \$1.5M.

The Suisun City had won Solano Transportation Authority Project of the Year Award for 2009. The City also won "Most improved streets in the Bay Area" from MTC in 2009.

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Local Hazard Mitigation Plan

Hazard Mitigation Planning items existing data – Chief O'Brien submitted a number of planning relevant documents for review and possible inclusion in the plan.

Lead Agency for Hazardous Materials – Solano County. Suisun City does not have any permitting authority over the hazardous materials transported through Suisun City, even though the risk is high. A mitigation strategy to explored – education and public awareness campaign as well coordination with other impacted jurisdictions and local businesses.

Strategy – Cordelia Road crossing to mitigate the risk associated. The constraint to the strategy is that Suisun City has no authority over it. STA is planning an off ramp from highway 12 at Webster, that can assist in mitigation of hazardous material spills.

Highway 12 also bears a high number of loads headed to the dump, which may add to the risk of hazardous materials spill. Traffic accidents on Highway 12 as well as trains derailment pose serious challenge to the City as well as the County. The following mitigation strategies are to be explored:

- Training for responders
- Update the EOP
- Designate an EOC

List of flood insured properties is not currently available. Flood maps will indicate area impacted by flood. The flood manager will request a list of the insured properties with Jan's assistance. CRS may potentially be improved by this planning effort.

Next meeting is rescheduled from Wednesday, September 29, 2010 to Thursday, September 30, 2010 to coincide with the TAC meeting.

Meeting adjourned at 11:45am. Next meeting September 30, 2010 at 10:30 am.

City of Suisun City
Local Hazard Mitigation Plan

**Suisun City/Suisun FPD
Hazard Mitigation Planning Team
Organizational Meeting
September 30, 2010, 10:30 am, Suisun Administration Building
Conference Room
Agenda**

1. Introductions and Sign In
 2. Adoption of August Minutes
 3. Unreinforced Masonry Buildings
 4. Mitigation Strategies
PG&E hazardous pipeline
 5. Future Development Projects
 6. Public Input Survey Review
 7. Stakeholders Meeting
 8. Other Business
-

**City of Suisun City
Local Hazard Mitigation Plan**

**Suisun City/Suisun FPD
Hazard Mitigation Planning Team
Organizational Meeting
September 30, 2010, 10:30 am, Suisun Administration Building
Conference Room
Minutes**

Introductions and Sign In

Mike O'Brien	Suisun City Fire Dept	Fire Chief
mobrien@suisun.com		(707) 421 7205
Dan Kasperson	Suisun City Hall	Bldg. & P. Works Dir.
dan@suisun.com		(707) 421-7316
April Wooden	Suisun City Hall	Comm. Dev. Director
awooden@suisun.com		(707) 421 7396
Tim Mattos	Suisun City PD	
tmattos@suisun.com		(707) 421-7333
Jason Garben	Economic Development	Director
jgarben@suisun.com		(707) 421-7347
Mick Jessup	Rec & Comm Services	
mjessop@suisun.com		(707) 421 7200
Azlina Harun	Dimensions UI	(916) 410 1277

Adoption of August Minutes

August minutes was adopted with the addition of "at-grade" term added to the Cordelia Road paragraph for clarification

Cordelia Road at grade railroad crossing posed a potential hazard to the City. A safety upgrade cost estimate will be provided by Dan Kasperson. Solano County had produced a report of all at-grade crossing in Solano County. The upgrade will consist of a safe crossing where drivers and pedestrians cannot get around the gate. The fact that there are two crossing posed complications to designing the gate. The cost benefit analysis most likely will not support a complete overpass or underpass construction because of light traffic use.

Unreinforced Masonry Buildings

There are a line of unreinforced masonry buildings on Main Street – somewhere between 12 and 20, a couple of which may have been upgraded. The City's Public Works is scheduled to update an inventory and post the results by the end of the year as required by local ordinance. One of the masonry buildings housed a glass business. The City may face liability for not posting on the building warning the public of the potential danger of being inside an unreinforced masonry building during an earthquake.

The Masonic Building, a two story building with glass windows on both floors at one side of the building can potentially be very hazardous in the event of an earthquake, and poses threats to lives is the building was occupied at the time. Its primary use is as an assembly/social lodge that is also rented out for parties. The owners are proud of the building and would like to upgrade, however the project is costly and funding is not readily available. It was also discussed that registration on the National Historic Register may have some benefit. Further research into this option is necessary.

Mitigation strategies to consider:

1. Unreinforced masonry study
2. Retrofit program of masonry buildings – funding for public and privately owned buildings

City of Suisun City
Local Hazard Mitigation Plan

3. Historic District study
4. State law allows for local ordinance to require retrofit of unreinforced masonry building. Suisun City is reluctant to require the retrofit unless funding options for owners' assistance is identified. A potential mitigation strategy – design, implement and fund a retrofit program.

A stretch of PG&E fuel pipeline may pose a potential hazard to Suisun City. A meeting is scheduled with PG&E next week and a map of the fuel lines could be potentially available for the City's planning purposes. The line was not designated the most hazardous in the State by PG&E. Suisun City faces a similar risk to the pipeline hazards as other communities containing major pipelines in the California. Multiple fuel lines running through the City – jet fuel and natural gas, crossing the railroad tracks within a quarter of a mile of each other.

A mitigation strategy for the hazardous materials associated with the pipelines –

- 1) continue the cooperation with other responding jurisdiction
- 2) training for the emergency response workers
- 3) train responders to be ready for the hazard leaks and spills
- 4) public education program informing the public of the hazard and the necessity of not disposing foreign materials into the City's storm drain

A major obstacle facing the City is the lack of jurisdiction over the pipeline. And everything in the City slopes downhill towards Suisun Marsh, a protected area. Any hazardous materials spill in the City eventually drains to the marsh. A mitigation strategy to consider is placing filters at all catch basins and storm drain outlets leading to the Marsh.

Public Input Survey – A copy of the public survey was made available to the team for review. The team will provide input to the survey at the next team meeting. Scott Corey, the Public Information Officer is designated as the contact person for the survey. A link to the survey will be placed on the City's website. A potential distribution is to be included on the City's website and the counter at City Hall, the library, senior centers, and water bill. The team elected Scott Corey to make the recommendations on the public input portion.

Stakeholders Meeting – A potential combination of stakeholders for both the GP and LHMP is discussed. A list of stakeholders was provided to Jan Rogala. A meeting will be scheduled sometime in January.

Meeting adjourned at noon. Next meeting Wednesday October 27, 2010 at 10:30 am

City of Suisun City
Local Hazard Mitigation Plan

Suisun City/Suisun FPD
Hazard Mitigation Planning Team
October 27, 2010
10:30 A.M.
Suisun Administration Building
Conference Room
Agenda

1. Introductions and Sign In
 2. Adoption of September Minutes
 3. Chief's Report – PG&E Pipeline
 4. Suisun FPD comments and update
 5. Public Input Survey Review – comments from team
 6. Results from Joint Meeting with GP
 7. Stakeholders Meeting
 8. Schedule Stakeholders
 9. Unreinforced Masonry further discussion
 10. Other Business
-

**City of Suisun City
Local Hazard Mitigation Plan**

**Suisun City/Suisun FPD
Hazard Mitigation Planning Team
October 27, 2010
10:30 A.M.
Suisun Administration Building
Conference Room
Minutes**

Introductions and Sign I

Mike O'Brien	Suisun City Fire Dept	Fire Chief
mobrien@suisun.com		(707) 421 7205
Dan Kasperson	Suisun City Hall	Bldg. & P. Works Dir.
dan@suisun.com		(707) 421-7316
April Wooden	Suisun City Hall	Comm. Dev. Director
awooden@suisun.com		(707) 421 7396
Tim Mattos	Suisun City PD	
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Jason Garben	Economic Development Director	
jgarben@suisun.com		(707) 421-7347
Earl Kilmer	Suisun FPD	
sfpd33@sbcglobal.net		(707) 425-3605
Azlina Harun	Dimensions UI	(916) 410-1277
Jan Rogala	Dimensions UI	(707) 374-4048

Adoption of September Minutes

There was discussions regarding the PG&E pipeline hazards risks language in the minutes. Motion to approve the minutes with the following amendment language:

The risks faced by Suisun City due to the PG&E pipelines is comparable to other cities with similar exposure to PG&E high pressure pipeline.

Chief's Report – PG&E Pipeline (See Attachment 1)

Chief O'Brien, Dan Kasperson and Nick Lozano of Public Works Department met with Augustine Ledesma, Construction Superintendent and Alia Okelo-Odongo, Public Affairs representative from Area 6 Sacramento PG&E on October 5, 2010. An outline of PG&E's pipeline monitoring and risk management was presented to Suisun City's representative.

Two main transmission lines run through the City along Highway 12, a 32" and a 16" that are fed from both directions. PG&E does not utilize automatic valves in their system since the cost of malfunction is exorbitant. Currently the valves on both sides of a main pipeline can be shut down in approximately an hour, by specially trained technicians. A copy of Chief O'Brien's report is attached.

Suisun FPD comments and update:

No comments or update – Earl Kilmer.

Public Input Survey Review:

Scott was designated as the point person for distribution of the survey. A copy of the survey needs to be emailed to Earl Kilmer. Suisun FPD did not receive a copy from last month. Suisun FPD – 1700 residents in its service area. Suisun FPD has an email distribution list. Earl will discuss with Chief Glantz the distribution strategy Suisun FPD will utilize.

City of Suisun City
Local Hazard Mitigation Plan

Chief O'Brien is developing a map of the unreinforced masonry buildings in Suisun City. There are a total of 14 buildings in this category. About half of them are vacant. The GIS map locating the building are close to completion.

Dan Kasperson – special attention to question #4. An "Other" option is added to Question 4. A category of "Plane Crash (Travis)" is added to question 4. "Levee failures" is added to the dam option of question 4. April Wooden: Question # 9, split the earthquake and flood question. Question 14 and 15 – "preventing development in hazards area", reworded to "regulate development".

Results from Joint Meeting with GP

Technical background report. Notes from the September meeting will be forwarded by April Wooden.

Unreinforced masonry building mitigation strategies will be revisited at the next meeting when the map is available for review.

Next meeting Wednesday December 8, 2010 at 11 am.

Meeting adjourned at noon.

Attachment (1) – Chief O'Brien's PG&E Pipeline Report

Status of PG&E Pipe Lines in Suisun City

October 7, 2010

On October 5, 2010, Dan Kasperson and Nick Lozano from Public Works and Mike O'Brien from Fire met with Augustine Ledesma, Construction Superintendant and Alisa Okelo-Odongo, Public Affairs Representative from Area 6 Sacramento PG&E.

The discussion was an informal question and answer session. PG&E brought in a map that showed Solano County with all the pipelines in the county. At this point PG&E does not provide extremely detailed maps because of security reasons.

PG&E monitors system status in real time on a 24-hour basis, and regularly conducts leak inspections, surveys, and patrols of all of the natural gas pipelines. Any issues identified as a threat to public safety are immediately addressed.

PG&E also uses the data it collects to help plan and prioritize future work. One of the tools PG&E uses is a risk management program that inventories each of the 20,000 segments within PG&E's natural gas transmission pipeline system and evaluates them against criteria such as:

- the potential for third party damage like dig-ins from construction,
- the potential for corrosion,
- the potential for ground movement, and
- the physical design and characteristics of the pipe segment.

PG&E also considers the proximity to high density populations, potential reliability impacts and environmentally sensitive areas. Based on all of these factors, PG&E determines which segments

City of Suisun City Local Hazard Mitigation Plan

warrant further evaluation, monitoring or other future action. PG&E also creates a list of the “Top 100” segments to help inform the public of future work plans. As conditions change from year to year, PG&E reevaluates the segments included on the list.

There are a range of actions PG&E may take for the segments identified on the list. For example, if a segment is on the list due to a high level of construction activity in the area, PG&E might enhance the physical markings of the lines and conduct outreach to help avoid accidental dig-ins. In other cases, PG&E may increase its monitoring or propose to rebuild the line sometime in the future.

In general, we have two main transmission lines that run through the city along highway 12, a 32” and a 16” pipe. These sections of the pipeline **are not listed** in the PG&E report that identified the “Top 100” sections of pipelines. These pipes are fed from both ends. There are several stations, valves, and distribution points located throughout the city supplying every parcel. The size of the pipe in the distribution system is based on the demand for various sized developments and buildings.

PG&E does not use automatic valves in their system. The cost of a malfunction would be incredible. They would need to shut down all gas services in the affected area and then turn on and relight appliances in each house.

On average they can shut down valves on both sides of a main pipeline in about an hour. Specially trained technicians are used for this procedure.

PG&E has a continuous maintenance, inspection and replacement program. The project along Highway 12 this year is an example. The project changed valves and straightened the pipe to allow a “Smart Pig” inspection device to be used on our section of the pipe. The “Smart Pig” is a sixteen-foot-long robot that inspects the inside of the pipe visually and with sensors. Our section of the pipe has not been inspected by the pig yet, there are a few final details to be completed before the Highway 12 project is completed.

The incident in San Bruno is under investigation by NTSB. PG&E has cooperated with every request from the NTSB. At this time there are no answers to what caused the problem. And a final report is not expected to be released any time soon.

Natural gas is a “lighter than air gas” (methane) that floats up when released. In any form, a minute amount of odorant such as t-butyl mercaptan, with a rotting-cabbage-like smell, is added to the otherwise colorless and almost odorless gas, so that leaks can be detected before a fire or explosion occurs. Sometimes a related compound, thiophane is used, with a rotten-egg smell. Adding odorant to natural gas began in the United States after the 1937 New London School explosion. The buildup of gas in the school went unnoticed, killing three hundred students and faculty when it ignited. Odorants are considered non-toxic in the extremely low concentrations occurring in natural gas delivered to the end user.

The fire department does train for natural gas emergencies. The primary actions the emergency responders will conduct are to:

Identify the hazard and determine the scale of the incident

- Call PG&E through dispatch
- Isolate the area
- Determine if evacuations are needed
- Determine if firefighting or rescue operations are needed

We have a few small incidents every year. Our experience is the same as PG&E. Most incidents are caused by a pipe puncture during digging projects.

City of Suisun City
Local Hazard Mitigation Plan

Everybody is reminded to call USA North 811/800-227-2600 before you dig.

Update 11/15/2010;

The fire department has received a map we can use only for emergency response. The map is marked "Confidential" and cannot be distributed.

This map does show fairly specific locations for the pipelines in Suisun City.

City of Suisun City
Local Hazard Mitigation Plan

**Suisun City/Suisun FPD
Hazard Mitigation Planning Team
December 15, 2010
10:30 A.M.
Suisun Administration Building
Conference Room
Agenda**

1. Introductions and Sign In
2. Adoption of October Minutes
3. Public Input Survey

Contact person for Suisun City
Contact person for Suisun FPD
Survey Monkey
Timeline
Venues

4. Suisun FPD comments and update
 5. Hazard Mitigation Plan Draft
 6. Other Business
-

Mike O'Brien	Suisun City Fire Dept	Fire Chief
mobrien@suisun.com		(707) 421 7205
Ronald Glantz	Suisun FPD	Fire Chief
ronaldglantz@sbcglobal.net		(707) 425 3605
Mark Joseph	Suisun City Hall	Fin. Svs.
mjoseph@suisun.com		(707) 421-7326
April Wooden	Suisun City Hall	Comm. Dev. Director
awooden@suisun.com		(707) 421 7396
Jason Garben	Economic Development	Director
jgarben@suisun.com		(707) 421-7347
Azlina Harun	Dimensions UI	(916) 410-1277
Jan Rogala	Dimensions UI	(707) 374-4048

Public Input Surveys were approved. Train Derailment is added back onto Suisun FPD's survey. Discussions ensued about a train derailment of 2 tank cars of White Phosphorous currently in Fairfield's jurisdiction. The cars are submerged in water at the border of Suisun FPD's jurisdiction. The material is contained in the marsh with water covering the 2 derailed cars. Any event will necessitate response by Suisun FPD. The Committee approved the consultant following up on the risk analysis for the railroad cars with the appropriate agencies.

A link to the surveys will be placed on each jurisdiction's website as well as emailed to the subscribers, homeowner's associations. Hard copies will be made available at City Hall and Suisun FPD's office. The links to the surveys will be placed on the website for 60 days to invite public comments. It will be announced in the City's Newsletters.

David Ryan, the editor of Patch.com agreed to assist in the public input process by placing the link to Suisun City's survey on SuisunCity.patch.com.

Chief Glantz informed the team that Suisun FPD is in the process of updating its website. A map of Suisun FPD and description of the jurisdiction are needed for the plan. Chief Glantz agreed to make the information available to Azlina Harun for inclusion in the plan.

City of Suisun City
Local Hazard Mitigation Plan

Suisun FPD comments and update

Suisun FPD, within its 168square miles, faced threats that are uniquely different from Suisun City proper. Agricultural disasters, for instance is a threat to Suisun FPD jurisdiction, but not in Suisun City due to the lack of agricultural land within City limit. Pesticide is widely used in Suisun FPD jurisdictions by the farmers. Suisun Valley Fruit Growers Association supplied the majority of the pesticides used in the area.

The following jurisdiction/groups are identified as stakeholders in this planning process:

Suisun Valley Fruit Growers Association

Napa County

Blue Ridge Oaks

Twin Sisters

Grizzly Island

Additional information about the history of Suisun FPD can be obtained from a local historian, Fred Hofstetter and Bob Pell of Solano County Emergency Management office.

Hazard Mitigation Plan Draft

Three draft copies of Section 1 through 3 of the plan were distributed to the team for review and input.

Other Business

Next meeting is scheduled for January 20, 2010 at 11 am.

City of Suisun City
Local Hazard Mitigation Plan

**Suisun City/Suisun FPD
Hazard Mitigation Planning Team
March 16, 2011
11 A.M.
Suisun Administration Building
Conference Room
Agenda**

1. Introductions and Sign In
 2. Adoption of December Minutes
 3. Draft Plan Comments
 4. Stakeholders Meeting
 - Date and time
 - Agenda
 - Invitees List
 - Invitation Letter
 5. Survey Monkey Update
 6. White phosphorus – news article, contact with CA Dept of Substance Control
 7. Other Business
-

**City of Suisun City
Local Hazard Mitigation Plan**

**Suisun City/Suisun FPD
Hazard Mitigation Planning Team
March 16, 2011
10:30 A.M.
Suisun Administration Building
Conference Room
Minutes**

Meeting called to order at 10:35 am.

Introductions and Sign In

Mike O'Brien	Suisun City Fire Dept	Fire Chief	(707) 421 7205
Dan Kasperson	Building and Public Works Director		(707) 421 7316
Azlina Harun	Dimensions UI		(916) 410-1277
Jan Rogala	Dimensions UI		(707) 374-4048

Adoption of December Minutes

The December Minutes was adopted.

Draft Plan Comments

Attendees have no comment on the draft plan distributed at the last meeting. The most current draft will be forwarded to all team members by Azlina Harun for comments.

Chief O'Brien submitted a draft map of unreinforced masonry in Old Town Suisun City. Dan Kasperson needs to review the map prior to inclusion in the plan.

Chief O'Brien submitted documentations regarding the train derailment in Suisun Marsh via email. There is no data regarding tsunami in Suisun City. Worst case scenario in Suisun City in a tsunami event is a spill over into the marsh. Suisun City is not susceptible to tsunami; there is susceptibility to damages due to unusually high tides.

Stakeholders Meeting

The team agreed that the stakeholders meeting is tentatively scheduled to take place on Wednesday, May 18, 2011, 3 pm to 4:30 pm.

The most recent draft will be sent to all team members by Azlina Harun in the next week. A one-on-one phone appointment will be scheduled with team members to solicit comments on the draft.

Unreinforced masonry buildings mitigation strategy – a mitigation strategy of demolition or upgrade will be included in the completed plan. A number of the buildings are currently owned by Suisun City. A smaller number of the currently unreinforced masonry buildings are privately owned. A potential mitigation strategy would be for the City to sponsor a demolition/upgrade program. The City would be the grantee and will need to manage the grant. The private owners will need to come up with 25% of the project cost.

Dan will allocate grant writing resources once the mitigation plan is approved, to apply for the mitigation project grant. A couple of City buildings are currently on the demolition lists.

Survey Monkey Update

To date, 26 online surveys is completed for Suisun City, and none for Suisun FPD. Another invitation to complete survey from Scot Corey will be necessary.

Other business:

Next meeting – to be decided

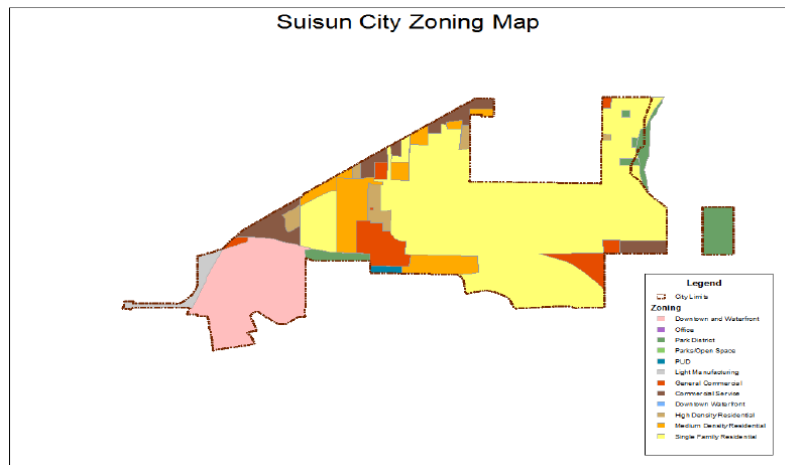
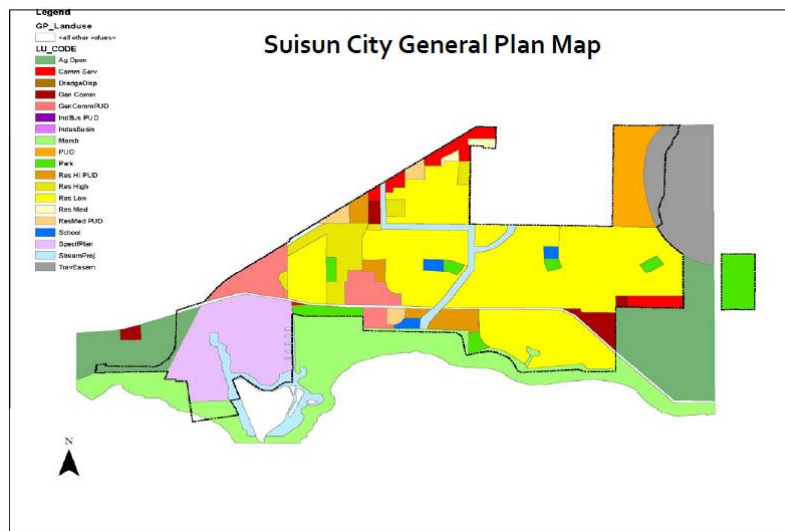
**City of Suisun City
Local Hazard Mitigation Plan**

Assets & Critical Facilities

Land

Suisun City's capital assets include Land & Improvements, which, as of June 30, 2015 are valued at \$46,511,159.

Land Use Map



City of Suisun City
Local Hazard Mitigation Plan

Buildings & Infrastructure

This list shows the Buildings and Infrastructure Capital assets and their values for Suisun City as of June 2015.

	Balance June 30, 2014	Additions	Transfers and Adjustments	Balance June 30, 2015
Governmental Activities:				
Capital assets not being depreciated:				
Land and improvements	\$ 52,151,305	\$ -	\$ (5,640,146)	\$ 46,511,159
Construction in Progress	75,691	580,804	-	656,495
Total non-depreciable assets	<u>52,226,996</u>	<u>580,804</u>	<u>(5,640,146)</u>	<u>47,167,654</u>
Capital assets being depreciated:				
Buildings	29,966,360	-	-	29,966,360
Buildings and improvements	13,176,655	32,450	-	13,209,105
Equipment	4,640,566	41,117	(5)	4,681,678
Infrastructure	45,496,705	-	-	45,496,705
Streets-Pavement System	107,203,388	-	-	107,203,388
Total capital assets being depreciated	<u>200,483,674</u>	<u>73,567</u>	<u>(5)</u>	<u>200,557,236</u>
Less accumulated depreciation for:				
Buildings	9,330,879	598,307	-	9,929,186
Buildings and improvements	8,985,687	630,419	-	9,616,106
Equipment	3,392,795	167,086	(5)	3,559,876
Infrastructure	21,811,691	968,926	-	22,780,617
Streets-Pavement System	56,465,157	2,013,282	-	58,478,439
Total accumulated depreciation	<u>99,986,209</u>	<u>4,378,020</u>	<u>(5)</u>	<u>104,364,224</u>
Net capital assets being depreciated	<u>100,497,465</u>	<u>(4,304,453)</u>	<u>-</u>	<u>96,193,012</u>
Net general capital assets	<u>152,724,461</u>	<u>(3,723,649)</u>	<u>(5,640,146)</u>	<u>143,360,666</u>
Internal Service Funds				
Vehicle, Machine & Equipment	2,741,369	84,581	(51,354)	2,774,596
Accumulated depreciation -Vehicle, Machine & Equipment	2,272,295	126,215	(51,354)	2,347,156
Net internal service funds	<u>469,074</u>	<u>(41,634)</u>	<u>-</u>	<u>427,440</u>
Total capital assets, net	<u>\$ 153,193,535</u>	<u>\$ (3,765,283)</u>	<u>\$ (5,640,146)</u>	<u>\$ 143,788,106</u>

City of Suisun City
Local Hazard Mitigation Plan

Critical Facilities

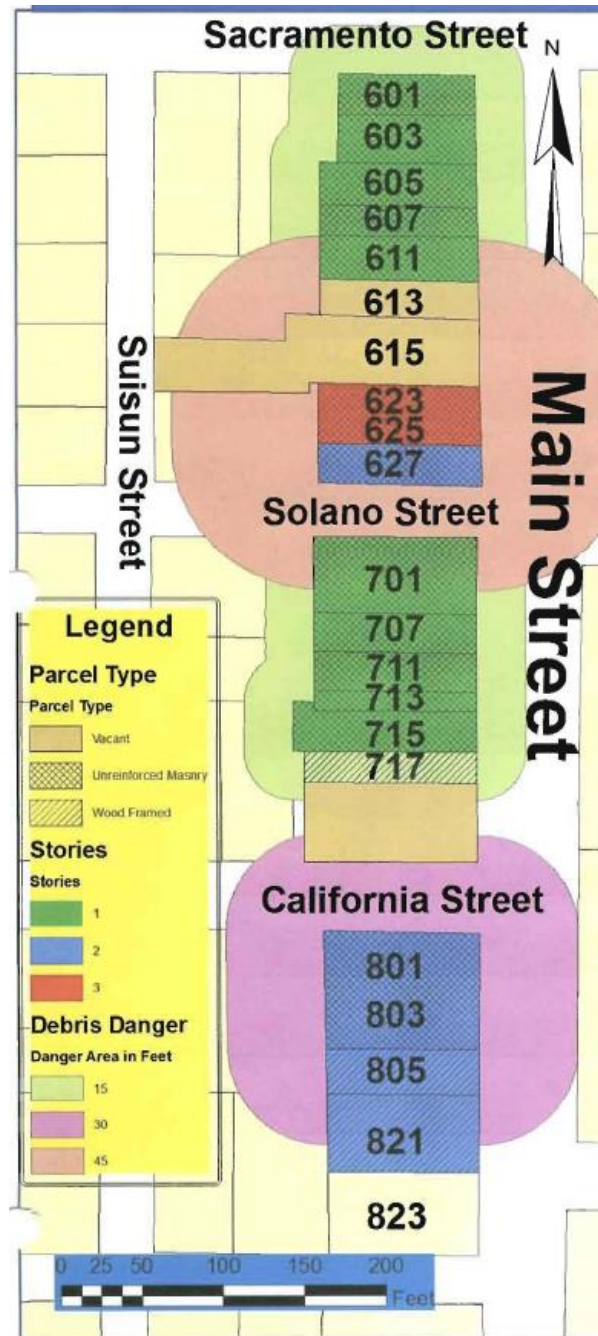
The Hazard Mitigation Planning Team identified the following facilities as CRITICAL to the City of Suisun City in the event of a disaster:

Name	Address	City	State	Zip	Type
Fire Station 47	621 Pintail Drive	Suisun City	CA	94585	FS
Joe Nelson Community Center	611 Village Drive	Suisun City	CA	94585	CC
City Hall	701 Civic Center Blvd	Suisun City	CA	94585	CH
Police Department	701 Civic Center Blvd	Suisun City	CA	94585	PS
Senior Center	318 Merganser Drive	Suisun City	CA	94585	SC
Harbor Master	800 Kellogg Street	Suisun City	CA	94585	HW
Maintenance Yard	4555 Petersen Road	Suisun City	CA	94585	PW
Crescent Elementary School	1001 Anderson Drive	Suisun City	CA	94585	SCL
Root Elementary School	820 Harrier Drive	Suisun City	CA	94585	SCL
Suisun Elementary	725 Golden Eye Way	Suisun City	CA	94585	SCL
Cristal Middle School	400 Whispering Bay Ln	Suisun City	CA	94585	SC:

**City of Suisun City
Local Hazard Mitigation Plan**

Structures of interests (Unreinforced Masonry Buildings)

This is a map showing the unreinforced masonry buildings in Old Town Suisun City. All of the Downtown is built on soils that are prone to liquefy when the ground shakes. These buildings have no steel reinforcing to hold the masonry units together. (See 'Earthquake' in the Risk Assessment Section)



Risk Assessment

Overview

A hazard can be defined as a condition that has the potential to result in equipment or system failure that can result in human injury or death or damage to the environment. Hazards are divided into two categories: natural or technological. Natural hazards include earthquakes, wild fires, and floods; while technological hazards include transportation accidents, illegal disposal, and equipment failures during manufacturing, storage, transportation, and use of hazardous materials.

A risk assessment is the process of evaluating the degree of harm a hazard presents. Risk assessments are utilized in developing emergency response plans and procedures, designing and modifying safety systems, identifying needed resources, conducting training and exercises, and minimizing damage and liability.

In Hazard Mitigation Planning, Risk Assessments identify the characteristics and potential consequences of hazards. This helps to understand how much of the community can be affected by specific hazards and what the impacts would be for important community assets.

Risk Assessment provides the foundation for the rest of the mitigation planning process. The risk assessment process focusses attention on areas most in need by evaluating with population and facilities are most vulnerable to hazards and to what extent injuries and damages may occur. It outlines:

- Hazards to which the community is susceptible;
- What these hazards can do to physical, social, and economic assets;
- Which areas are most vulnerable to damage from these hazards; and
- The resulting estimated cost of damages or costs avoided through future mitigation projects related to Natural Hazards.

In addition to benefiting mitigation planning, risk assessment information also allows emergency management personnel to establish early response priorities by identifying potential hazards and vulnerable assets.

City of Suisun City
Local Hazard Mitigation Plan

Event History

Federally Declared Disasters (Solano County)

Disaster Number	Declaration Date	Disaster Type	Incident Type	Explanation
Federal Declarations				
Major Disaster Declarations				
47	12/23/1955	DR	Flood	Statewide Flooding
82	4/4/1958	DR	Flood	Heavy rains & Flooding
183	12/24/1964	DR	Flood	Heavy rains & Flooding
253	1/26/1969	DR	Flood	Severe Storms & Flooding
364	2/8/1973	DR	Flood	Severe Storms, High Tides, & Flooding
651	1/7/1982	DR	Flood	Severe Storms, Flood, Mudslides, & High Tide
677	2/9/1983	DR	Coastal Storm	Coastal Storms, Floods, Slides, & Tornadoes
758	2/21/1986	DR	Flood	Severe Storms & Flooding
815	9/29/1988	DR	Wildfire	Miller Canyon Wildfires
845	10/18/1989	DR	Earthquake	Loma Prieta Earthquake
894	2/11/1991	DR	Snow	Severe Freeze
1044	1/10/1995	DR	Severe Storm(s)	Severe Winter Storms, Flooding, Landslides, & Mud Flows
1046	3/12/1995	DR	Severe Storm(s)	Severe Winter Storms, Flooding, Landslides, & Mud Flows
1155	1/4/1997	DR	Severe Storm(s)	Severe Winter Storms, Flooding, Landslides, & Mud Flows
1203	2/9/1998	DR	Severe Storm(s)	Severe Winter Storms & Flooding
1628	2/3/2006	DR	Severe Storm(s)	Severe Winter Storms, Flooding, Landslides, & Mud Flows
Fire Management Assistance Declarations				
2776	6/22/2008	FM	Wildfire	Wildfire

Natural disasters:

The number of natural disasters in Solano County (17) is greater than the US average (12).

- Major Disasters (Presidential) Declared: 17
- Emergencies Declared: 12

**City of Suisun City
Local Hazard Mitigation Plan**

Emergency Declarations

Emergency Declarations				
3023	1/20/1977	EM	Drought	Drought
3248	9/13/2005	EM	Hurricane	Hurricane Katrina Evacuation
CAL EMA Emergency and Disaster Proclamations/Executive Orders				
	5/10/2006		Severe Storms	Roadway Damage
	2/27/2009		Drought	3-year State-wide Drought
Other Disasters				
	11/21/1950		Flood	Statewide Floods
	5/20/1957		Heavy Rains	State of Emergency for producing areas of Northern California
	2/26/1958		Flood	Heavy rains & Flooding
	9/18/1965		Wildfire	Major and Widespread Fires
	2/9/1976		Drought	1976/1977 were two of the driest years in CA history. Most severe in northern 2/3 of CA.
	3/5/1980		Severe Storms	Rain, Winds, Mudslides, & Flooding
	10/26/1982		Severe Storms	Rains causing agricultural losses

Source: FEMA: California State Disaster History; CAL EMA: Emergency & Disaster Proclamations and Executive Orders by Date (November 2003-Current); 2010 ABAG Multi-Jurisdictional Local Hazard Mitigation Plan Update

Hazard Prioritization

Based on the review of hazards identified in similar and relevant documents and previous incidents, as well as historical knowledge of localized events, recent worldwide events that raised awareness, and developing trends, the Planning Team identified a list of twelve hazards, 4 of which are natural hazards with significant potential to occur and affect the City of Suisun City. The natural hazards the Planning Team focused on in this Plan include: earthquake, flood, severe weather and wild land fires. With an eye on limited resources to implement mitigation actions, these identified hazards were further prioritized to ensure that appropriate levels of effort were allocated to the hazards determined to have the largest

City of Suisun City
Local Hazard Mitigation Plan

potential impacts on the City. Using a prioritization tool and considering the input from the public questionnaire and the stakeholders, the Planning Team further prioritized the hazards.

Hazard Rating Prioritization Tool

Instructions for Hazard Prioritization:

Give each hazard priority risk category listed as a rating from 0 to 3; (0 = no risk, 3 meaning a high risk.)

- 0 = No hazard risk in accordance with the definitions for hazard prioritization.
- 1 = Low Risk in accordance with the definitions for hazard prioritization.
- 2 = Moderate Risk in accordance with the definitions for hazard prioritization.
- 3 = High Risk in accordance with the definitions for hazard risk prioritization.

Total the numbers horizontally for each hazard category. Using the categorical scoring method, the highest possible score for a hazard is 24 the lowest potential score is 0.

Examples:

A score of	15 - 24	could be considered HIGH priority risk
	9 - 14	could be considered MODERATE priority risk
	0 - 8	could be considered LOW priority risk

Categorical Scoring

Magnitude

Physical and Economic Greatness of the event

Factors to consider:

- Size of Event
- Threat to life
- Threat to Property
- Individual
- Public Sector
- Business and Manufacturing
- Tourism

Duration

The length of time the disaster and the effects of the disaster last

Factors to consider:

- Length physical duration during emergency phase
- Length of threat to life and property

City of Suisun City
Local Hazard Mitigation Plan

- Length of physical duration during recovery phase
- Length of effects on individual citizen and community recovery
- Length of effects on economic recovery, tax base, business and manufacturing recovery, tourism, threat to tax base and threat to employment

Distribution

The depth of the effects among all sectors of the community and State

Factors to consider:

- How wide spread across the state is the effects of the disaster.
- Are all sectors of the community affected equally or disproportionately
- Area Affected
- How large an area is physically threatened and potentially impaired or by a disaster risk
- Geographic Area affected by primary event
- Geographic, physical, economic areas affected by primary risk and the potential secondary effects.

Frequency

The historic and predicted rate of recurrence of a risk-caused event (generally expressed in years such as the 100-year flood) Factors to consider:

Factors to Consider:

- Historic events and recurrences of events in a measured time frame
- Scientifically based predictions of an occurrence of an event in a given period of time.

Degree of Vulnerability

How susceptible is the population, community infrastructure and state resources to the effects of the risk?

Factors to Consider:

- History of the impact of similar events
- Mitigation steps taken to lessen impact
- Community and State preparedness to respond to and recover from the event
- Community Priorities
- The importance placed on a particular risk by the citizens and their elected officials
- Willingness to prepare for and respond to a particular risk More widespread concerns over a particular risk than other risks Cultural significance of the threat associated a risk.

Prioritization Results

City of Suisun City
Local Hazard Mitigation Plan

The following list contain hazards identified and prioritized based on team meeting and input from various sources, public and government. The prioritization was conducted in a team setting at the team meeting on July 28, 2010. It was further discussed and modified as necessary throughout the planning process.

High Risk Hazards

Earthquake	(Natural)
Flooding	(Natural)
Hazardous Materials	(Human caused)
Transportation	(Human caused)
Wildland/Urban interface fires	(Natural)

Moderate Risk Hazards

Severe weather	(Natural)
Utility Loss	(Human caused)
Water/Wastewater Disruption	(Human caused)
WMD/Terrorism	(Human caused)

Low to No Risk Natural Hazards

Land Slides	(Natural)
Dam Failure	(Natural and human caused)
Tsunami	(Natural)
Volcanic Eruption	(Natural)

City of Suisun City
Local Hazard Mitigation Plan

Discussion

Low to No Risk

The team discussed the risks of Utility Loss, Water/Wastewater Disruption, Data/Telecommunication Loss, and WMD/Terrorism as moderate risk hazards.

Suisun City is located more than 50 miles inland of San Francisco Bay. A tsunami is not considered a risk

The team rated Aviation Disaster, Civil Unrest/Disorder, Dam Failure, Drought, Explosions, Sinkholes, Tsunami, and Volcanic Activity as a low risk.

The team will reevaluate each risk and its vulnerability to the jurisdiction as needed.

The planning team developed mitigation strategies for the high and moderate hazards only.

Loss Estimates

The Solano County Multi-Hazard Mitigation Plan references in-depth studies, the results of which were used to calculate losses for different events. Suisun City used the studies' results as a basis for calculating losses within the city.

Loss Estimates are based on calculated percentages of values based on the Solano County MHP. Base figures are the values less accumulated depreciation from the June 2015 Suisun City Buildings & Infrastructure Capital Assets listings. The categories calculated are City-owned and/or operated Buildings, City-owned equipment, Infrastructure and Streets & Pavement Systems.

The 'Population Effectuated' figures are based on the percentage of population effectuated as referenced in the Solano County MHP as related to the 2013 population for the City of Suisun City.

Profiling Hazards & Assessing Vulnerability

Natural Hazards

Earthquake

Earthquake was rated as a HIGH PRIORITY HAZARD in the City of Suisun City.

Profile for Earthquake

The Suisun City area is situated in the Great Valley Geomorphic Province of California. This province is characterized as a relatively un-deformed sedimentary basin bounded by highly deformed rock units of the Coastal Ranges to the west and by the gently sloping western foothills of the Sierra Nevada Mountain Range to the east. The Sacramento Valley, which forms the northern portion of the Great Valley Province, is composed of unconsolidated and recent-age alluvial sediments. The underlying bedrock is thought to be composed of early tertiary marine deposits.

Description

The local topography in the vicinity of Suisun City consists of low flat marshes, and sloughs within this broad valley. The hills and ridges that rise above the adjacent flatlands are large outcrops of the Tehama formation and the Neroly sandstone.

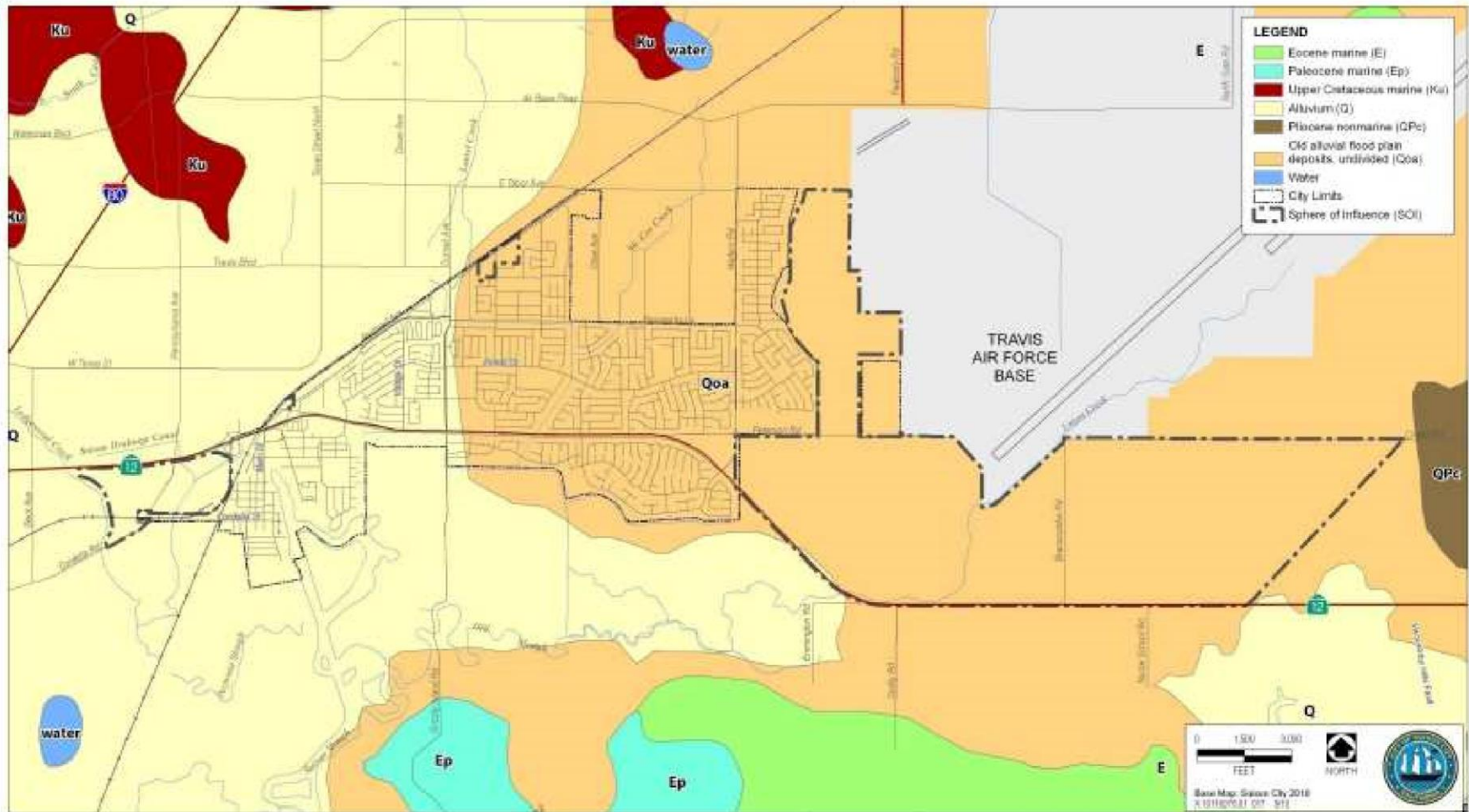
Geologic subunits in the City's Sphere of Influence are Holocene and Pleistocene Alluvium and the Tehama Formation. Geologic complexes within the City's Sphere of Influence are shown in Exhibit GEO-9. Geologic complexes in the vicinity of the City include:

Holocene Alluvium (Holocene: 10,000 years old–Recent). These Late Holocene alluvial deposits overlie older Pleistocene alluvium and/or the upper Tertiary bedrock formations. This alluvium consists of sand, silt, and gravel deposited in fan, valley fill, terrace, or basin environments. This unit is typically in smooth, flat valley bottoms, in medium-sized drainages and other areas where terrain allows a thin veneer of this alluvium to deposit, generally in shallowly sloping or flat environments (Graymer et al. 2002).

Pleistocene Alluvium (Pleistocene: 1.8 million years old –10,000 years old). The majority of alluvium in the central and eastern portion of the county consists of sedimentary deposits that are Plio-Pleistocene in age. These less permeable sediments are basin, landslide intertidal, terrace, or riverbank deposit.

The Tehama Formation (Pliocene: 5.3–1.8 million years old). The Tehama Formation lies directly below the Montezuma Formation, and is exposed between the Montezuma and the Kirby Hills, as well as north of Vacaville. This formation is composed of sandstone, siltstone, conglomerate, and volcanoclastic (ash fragments) rocks (Wagner et al. 1987, Graymer et al. 2002). This formation is associated with, and can be identified by the Putah Tuff member which yielded a radiometric age of 3.3 ma (Miller 1996).

City of Suisun City Local Hazard Mitigation Plan



Source: NRCS
Exhibit GEO-9

Geologic Subunits

Geologic Subunits for Suisun City

City of Suisun City
Local Hazard Mitigation Plan

Extent

Faults

Geologic evidence indicates that the City is located within an area of northern California known to be seismically active. Seismic activity may result in geologic and seismic hazards including seismically induced fault displacement and rupture, ground shaking, liquefaction, lateral spreading, landslides and avalanches, and structural hazards. Solano County is laced with a number of faults and faults both within and outside the County could potentially affect Suisun City. However, only one fault, the Vaca-Kirby Hills fault, runs though the City's Sphere of Influence, trending north-south in the extreme eastern portion of the Sphere of Influence.

Where fractures or fracture zones in the earth's crust have caused displacement of the two sides relative to one another the displacement may be a few inches to several feet. Cumulative displacement through geologic time may reach miles. When surface displacement in excess of an inch or two along a fault occurs beneath a building, transportation facility, main utility line, or aqueduct, the effects could potentially be catastrophic. Therefore, it is important to understand the relative likelihood of future movement along faults and to plan accordingly.

Fault rupture is a seismic hazard that affects structures sited above an active fault. The hazard from fault rupture is the movement of the ground surface along a fault during an earthquake. Typically, this movement takes place during the short time of an earthquake, but it can also occur slowly over many years in a process known as creep. Most structures and underground utilities cannot accommodate the surface displacements of several inches to several feet commonly associated with fault rupture or creep.

Fault Activity

An active fault is one along which historic movement has been documented. Active faults are recognized by the following criteria:

- Historic fault movement;
- Displacement of Holocene deposits (soil or rock less than 10,000 years old);
- Evidence of fault creep (slow ground displacement without accompanying seismic events);
- Seismic activity along fault plane;
- Displaced survey lines; and
- Geomorphic evidence (including offset stream courses, sag ponds, scarps, fault troughs, and fault saddles).

Segments of just two of Solano County's faults – the Green Valley fault and the Cordelia fault – are known to be active. Both faults have been zoned under the Alquist-Priolo Act, meaning that development in the immediate vicinity of the fault trace must be preceded by detailed fault investigations. The Green Valley fault and the Cordelia fault are in western Solano County, and do not present any risk of surface fault

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Local Hazard Mitigation Plan

rupture in the in the City's Sphere of Influence. The Vaca-Kirby Hills fault is crosses the extreme eastern portion of the City's Sphere of Influence. However, this fault is not identified as an active fault.

USGS data for historic earthquakes indicates that several earthquakes have occurred between 1889 and the present within the surrounding area of Solano County. However, none had epicenters within the City's Sphere of Influence, as shown on following map.

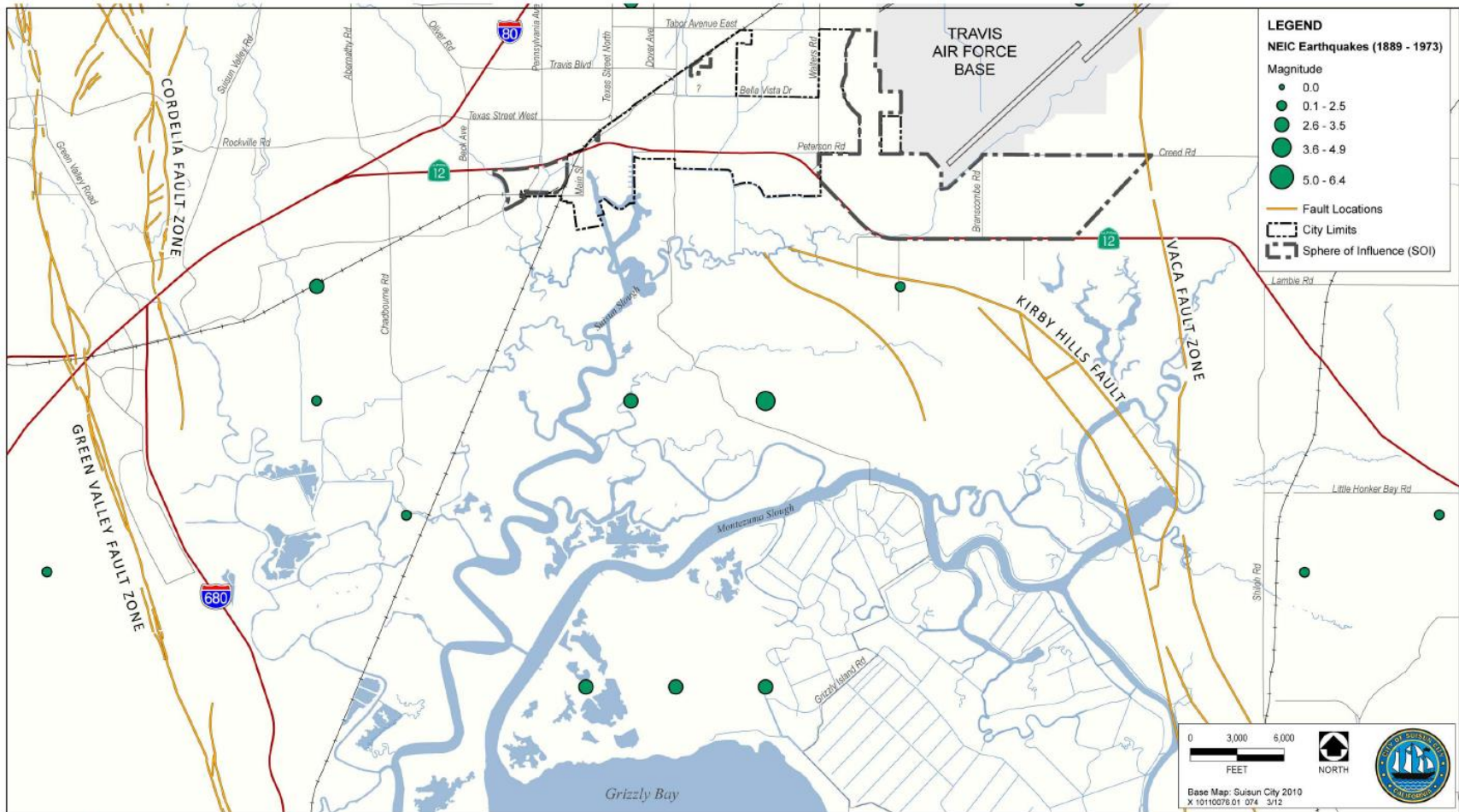
Earthquakes with epicenters in the surrounding area have ranged in magnitude from less than 1.0 to 6.4 on the Richter scale. Rupture along faults in the surrounding area has the potential to generate an earthquake of a similar or higher magnitude than those that have historically occurred and could potentially affect the City's Sphere of Influence.

While identified faulting is limited in the City's Sphere of Influence, seismic hazards mapping reveals the western portion of the City's Sphere of Influence has high potential for seismic activity, due to its proximity to surrounding faults and being located within the highly active fault zones of coastal California. The map shows the location of earthquake epicenters, known faults, and areas most likely to experience significant damage from earthquake related ground shaking.

Potential Seismic Hazards

Seismic hazards pose a substantial danger to property and human health and safety and are present because of the risk of naturally occurring geologic events and processes impacting human development. Therefore, the hazard is as influenced by the conditions of human development as by the frequency and distribution of major geologic events. Seismic hazards present in California include ground rupture along faults, strong seismic shaking, liquefaction, ground failure, land sliding, and slope failure. Erosion hazard and shrink-swell potential are discussed above.

City of Suisun City Local Hazard Mitigation Plan



Regional Seismicity for Suisun City

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Probability

Suisun City, like most of California is in a highly seismic area. The probability of a major earthquake occurring in the near future is a factor with which to contend. Given the seismic conditions as presented, the major seismic hazards in Suisun City are damages from ground shaking and liquefaction. The existence of unreinforced masonry structures within the City limit will most likely cause a catastrophic loss of property, and lives as well.

A major earthquake is likely to trigger other geological hazards including landslides, flooding (resulting in soil erosion and disposition), fire and hazardous materials incidents.

It is likely that catastrophic interruptions and/or failure in communications electrical power, water supply, wastewater treatment, natural gas and petroleum fuels will occur as a result of a major earthquake. All of these hazards contribute to a high risk to the health and well-being of populations in the jurisdictions and the potential for very high dollar value damage to occur to property.

Earthquake History

Suisun City-area historical earthquake activity is near California state average. It is 747% greater than the overall U.S. average.

On 4/18/1906 at 13:12:21, a magnitude 7.9 (7.9 UK, Class: Major, Intensity: VIII - XII) earthquake occurred 56.1 miles away from the city center, causing \$524,000,000 total damage

On 10/18/1989 at 00:04:15, a magnitude 7.1 (6.5 MB, 7.1 MS, 6.9 MW, 7.0 ML) earthquake occurred 79.7 miles away from Suisun City center, causing 62 deaths (62 shaking deaths) and 3757 injuries, causing \$1,305,032,704 total damage

On 1/31/1922 at 13:17:28, a magnitude 7.6 (7.6 UK) earthquake occurred 253.9 miles away from the city center

On 7/21/1952 at 11:52:14, a magnitude 7.7 (7.7 UK) earthquake occurred 280.0 miles away from the city center, causing \$50,000,000 total damage

On 11/4/1927 at 13:51:53, a magnitude 7.5 (7.5 UK) earthquake occurred 236.7 miles away from Suisun City center

On 4/25/1992 at 18:06:04, a magnitude 7.2 (6.3 MB, 7.1 MS, 7.2 MW, 7.1 MW, Depth: 9.4 mi) earthquake occurred 182.3 miles away from the city center, causing \$75,000,000 total damage

Magnitude types: body-wave magnitude (MB), local magnitude (ML), surface-wave magnitude (MS), moment magnitude (MW)

Vulnerability for Earthquake

Overview

Ground Shaking

The severity of ground shaking depends on several variables, such as earthquake magnitude, epicenter distance, local geology, thickness, and seismic wave-propagation properties of unconsolidated materials, groundwater conditions, and topographic setting. Ground shaking hazards are most pronounced in areas near faults or with unconsolidated alluvium. The most common type of damage from ground shaking is structural damage to buildings, which can range from cosmetic stucco cracks to total collapse. The overall level of structural damage from a nearby large earthquake would likely be moderate to heavy, depending on the characteristics of the earthquake, the type of ground, and the condition of the building. Besides damage to buildings, strong ground shaking can cause severe damage from falling objects or broken utility lines. Fire and explosions are also hazards associated with strong ground shaking.

Earthquakes are measured either based on energy released (Richter Magnitude scale) or the intensity of ground shaking at a particular location (Modified Mercalli scale). The Richter Magnitude scale measures the magnitude of an earthquake based on the logarithm of the amplitude of waves recorded by seismographs, with adjustments made for the variation in the distance between the various seismographs and the epicenter of the earthquake. The Richter scale starts with 1.0 and has no maximum limit. The scale is logarithmic—an earthquake with a magnitude of 2.0 is 10 times the magnitude (30 times the energy) of an earthquake with a magnitude of 1.0.

The Modified Mercalli scale is an arbitrary measure of earthquake intensity. It does not have a mathematical basis. This scale is composed of 12 increasing levels of intensity that range from imperceptible shaking (Scale I) to catastrophic destruction (Scale XII). While Richter magnitude provides a useful measure of comparison between earthquakes, the moment magnitude is more widely used for scientific comparison, since it accounts for the actual slip that generated the earthquake. Actual damage is due to the propagation of seismic or ground waves as a result of initial failure and the intensity of shaking is as much related to earthquake magnitude as to the condition of underlying materials. Loose materials tend to amplify ground waves, while hard rock can quickly attenuate them, causing little damage to overlying structures. For this reason, the Modified Mercalli Intensity (MMI) Scale provides a useful qualitative assessment of ground shaking. The MMI Scale is a 12-point scale of earthquake intensity based on local effects experienced by people, structures, and earth materials. Each succeeding step on the scale describes a progressively greater amount of damage at a given point of observation. The MMI

Earthquake-generated ground shaking is by far the greatest single cause of earthquake damage. A record of historical earthquake shaking goes back more than 150 years.

Much of the City's Sphere of Influence is an area of relatively high seismicity, and will likely be subject to earthquake shaking in the future. Ground failure in the form of liquefaction, lurching, and settlement could result from earth shaking. Flood damage from earthquake-induced dam failure, canal and levee damage could occur. Depending upon the magnitude, proximity to epicenter, and subsurface conditions (bedrock stability and the type and thickness of underlying soils), ground shaking damage could vary from slight to intensive. For example, the wet unconsolidated soils of the Suisun Marsh would have a high ground

City of Suisun City
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response, while surrounding areas of hard rock generally would experience lower intensities of shaking, but would be subject to other earthquake-induced hazards such as landslides.

Different types of structures are subject to different levels of ground shaking damage. Conventional one- and two-story wood-frame residential structures generally have performed very well during strong earthquake ground shaking. Collapse or total destruction of wood-frame homes is rare, even during strong earthquakes, except in cases where these structures are affected by ground rupturing or land sliding, or are affected by extremely high ground acceleration. For example, photographs taken after the great 1906 San Francisco earthquake show wood-frame homes standing intact and apparently undisturbed just a few feet away from the main scar of ground rupturing along the San Andreas Fault line (Sedway/Cooke 1977).

Studies of more recent earthquakes show that the following types of structural damage from earthquake shaking can be expected to occur to some modern wood-frame homes of the type found in the City's Sphere of Influence: Possible shifting of homes on foundations. This problem has been minimized in recent years by requirements that adequate structural connection between house frames and foundations be provided.

Thus, a rough estimate of the levels of housing damage that could be expected in the City's Sphere of Influence in a great earthquake, with intensity values of VIII-IX, would be on the order of 10 percent of the value of all housing.

Commercial and industrial buildings are more difficult to classify than housing, due to the relatively greater variety of building types. In older areas, one- and two-story wood frame and stucco structures could be expected to show fair performance in earthquakes. Older unreinforced masonry (URM) buildings, however, particularly those constructed prior to 1933 (when improved building codes were adopted in California), are not resistant to earthquake shaking and may be severely damaged during strong shaking.

Pre-1933 masonry buildings in the City's Sphere of Influence could present public safety hazards during seismic shaking, since they were constructed prior to seismic-related revisions to the building code. An intensity value of VIII-IX on the Modified Mercalli Scale could cause partial or total collapse of these structures. Two-story masonry buildings are particularly susceptible to major damage and collapse during an earthquake. Such two-story buildings are present in downtown Suisun City on the west side of Main Street.

Newer single-story wood-frame or tilt-up construction has generally sustained only moderate damage during earthquake shaking, although past experience in San Fernando suggests that minimum code requirements with respect to roof-to-wall connections in tilt-up buildings may not be adequate to assure

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public safety, especially in high-occupancy commercial buildings. Hence, roof or wall collapse must be considered a possibility in at least a minority of tilt-up buildings during VIII-IX intensity shaking.

During a strong earthquake, the damage and safety of tilt-up buildings in industrial areas would depend to some degree on the special structural design precautions and care in supervision of construction which had been provided to these buildings (Sedway/Cooke 1977).

Lurch cracking is another phenomenon that occurs during earthquake ground shaking and involves the horizontal movement of soil masses toward the open face of creek banks. Creekside homes are especially vulnerable to damage from lurch cracking.

City of Suisun City
Local Hazard Mitigation Plan

Table GEO-2
Historic Earthquakes within 50 mi of the City's Sphere of
Influence with Magnitude Greater than VI

Date	Epicentral Area (Earthquake Fault)	Maximum Intensity
June 9, 1836	East San Francisco Bay (Hayward Fault)	IX-X
June 10, 1838	San Francisco/San Mateo Co. (San Andreas Fault)	IX-X
October 8, 1865	Santa Cruz Mountains (San Andreas Fault)	IX
October 21, 1868	East San Francisco Bay (Hayward Fault)	X
April 19, 1892	Vacaville (unknown Fault)	IX
April 21, 1892	Winters (unknown Fault)	IX
October 11, 1891	Napa/Sonoma	VII-VIII
May 19, 1902	Elmira/Vacaville	VI-VII
April 18, 1906	San Francisco (San Andreas Fault)	XI
October 23, 1955	Concord	VII
October 1, 1969	Santa Rosa	VII-VIII
October 17, 1989	Loma Prieta	IX

Source: Benille and Buchanan, 1970; USGS 21006

- Damage to masonry chimneys or facades. Damage or toppling of unreinforced brick walls or chimneys commonly occurs in strong ground shaking. Code-required reinforcement and chimney ties can help minimize damage, but will not prevent it completely.
- Falling of unbraced water heaters, with possible fire hazard.
- Cosmetic damage, especially cracking of plaster, and some glass breakage.

Not surprisingly, the damage ratio, expressed as a percentage of loss of value to the "average" residential area due to an earthquake, becomes higher with increasing intensity of ground shaking. Studies with estimates applicable to typical Bay Area conditions suggest that the damage ratio associated with various intensities of shaking would be approximately as shown in Table GEO-3.

Table GEO-3
Mercalli Scale Shaking Intensity

Intensity	Damage Ratio
V	0.1%
VI	0.5%
VII	2.5%
VIII	8.3%
IX	12.1%

Source: California Division of Mines and Geology, 1965.

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Liquefaction

Ground failure includes liquefaction and the liquefaction-induced phenomena of lateral spreading and lurching. Liquefaction is a process by which sediments below the water table temporarily lose strength during an earthquake and behave as a viscous liquid rather than a solid. Liquefaction is restricted to certain geologic and hydrologic environments, primarily recently deposited clean, uniformly graded, loose, saturated, fine grained sand and silt in areas with high groundwater levels.

The process of liquefaction involves seismic waves passing through saturated granular layers, distorting the granular structure, and causing the particles to collapse. This causes the granular layer to behave temporarily as a viscous liquid rather than a solid, resulting in liquefaction. Liquefaction can cause the soil beneath a structure to lose strength, which may result in the loss of foundation-bearing capacity. This loss of strength commonly causes the structure to settle or tip. Loss of bearing strength can also cause light buildings with basements, buried tanks, and foundation piles to rise buoyantly through the liquefied soil.

Lateral spreading is lateral ground movement, with some vertical component, as a result of liquefaction. In effect, the soil rides on top of the liquefied layer outward from under buildings, roads, pipelines, transmission towers, railroad tracks, and other structures such as bridges. Damage is usually greatest to large or heavy structures on shallow foundations, and takes the form of cracking, tilting, and differential settlement.

Where gentle slopes exist such as on stream or slough banks, liquefaction may cause lateral spreading landslides. Whole buildings can be moved downslope by this type of ground failure. Where the condition is known to exist, structural and foundation design can usually minimize or eliminate liquefaction hazard to new construction. Lateral spreading can occur on relatively flat sites with slopes less than 2 percent, under certain circumstances, and can cause ground cracking and settlement. Lurching is the movement of the ground surface toward an open face when the soil liquefies. An open face could be a graded slope, stream bank, canal face, gully, or other similar feature.

Soil layers with high and very high liquefaction potential are present in the existing and former marsh areas in the western part of the City's Sphere of Influence. These areas are underlain by saturated bay mud.

(Source: City of Suisun City General Plan, Background Documents, 2011)

Soil Hazards & Ground Failure

Shrink-swell potential is the relative change in volume to be expected with changes in moisture content. This is the extent to which the soil shrinks as it dries out or swells when it gets wet. Shrinking and swelling is influenced by the amount and kind of clay in the soil. Shrinking and swelling of soils causes damage to building foundations, roads, and other structures. These clays tend to swell despite the heavy loads imposed by large structures. Damage, such as cracking of foundations, results from differential movement and from the repetition of the shrink-swell cycle. In some cases, this problem may be avoided by removing the top soil layer before placing a foundation.

A high shrink-swell potential indicates a hazard to maintenance of structures built in, on, or with material having this rating. As shown on map, most of the City is located in areas with high shrink-swell potential.

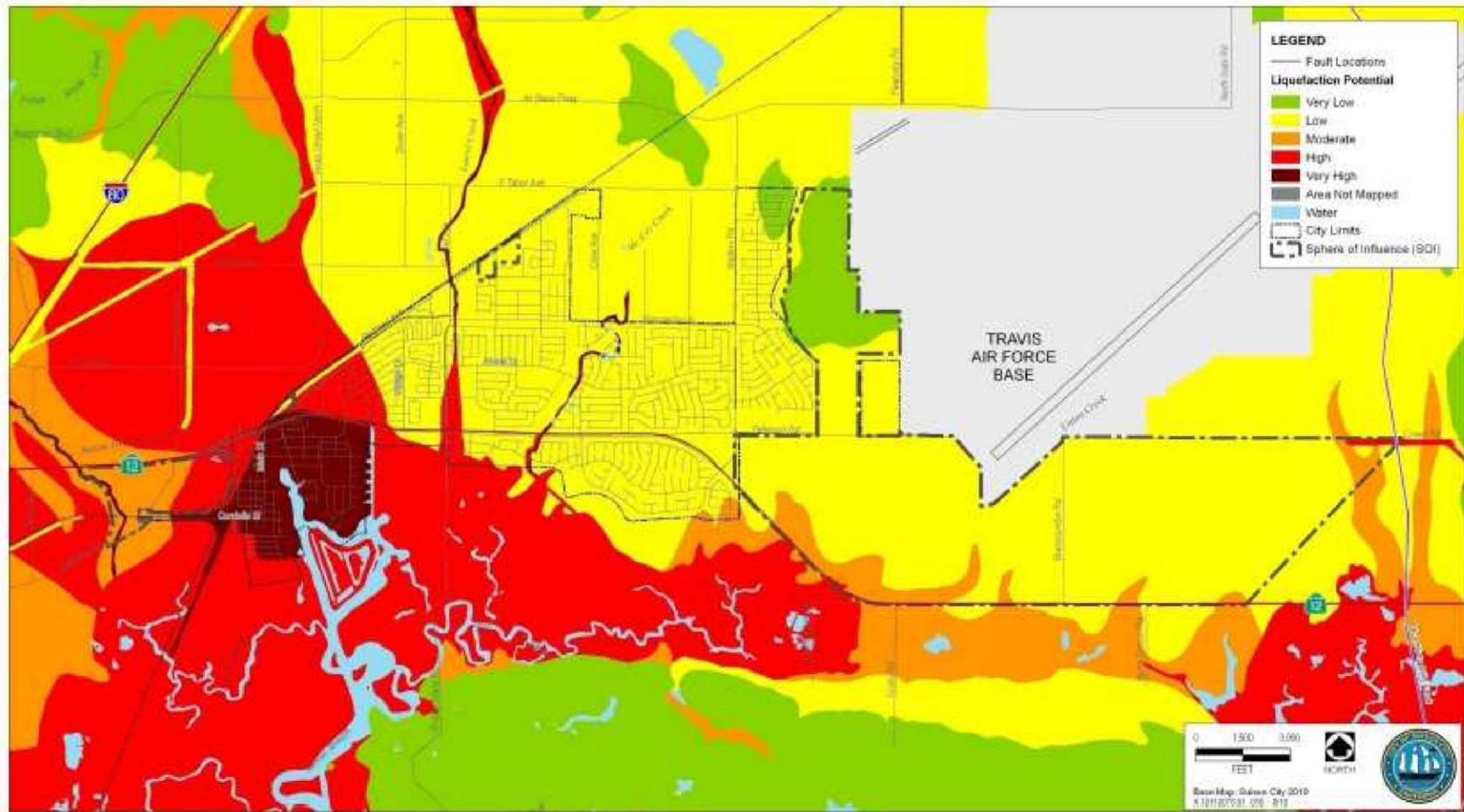
Ground failure includes liquefaction and the liquefaction-induced phenomena of lateral spreading and lurching. Liquefaction is a process by which sediments below the water table temporarily lose strength during an earthquake and behave as a viscous liquid rather than a solid. Liquefaction can cause the soil beneath a structure to lose strength, which may result in the loss of foundation-bearing capacity. This

City of Suisun City
Local Hazard Mitigation Plan

loss of strength commonly causes the structure to settle or tip. Loss of bearing strength can also cause light buildings with basements, buried tanks, and foundation piles to rise buoyantly through the liquefied soil. Areas in Suisun City and the surrounding area with a high liquefaction potential are mapped.

Lateral spreading is lateral ground movement, with some vertical component, as a result of liquefaction. In effect, the soil rides on top of the liquefied layer outward from under buildings, roads, pipelines, transmission towers, railroad tracks, and other structures such as bridges. Damage is usually greatest to large or heavy structures on shallow foundations, and takes the form of cracking, tilting, and differential settlement.

**City of Suisun City
Local Hazard Mitigation Plan**

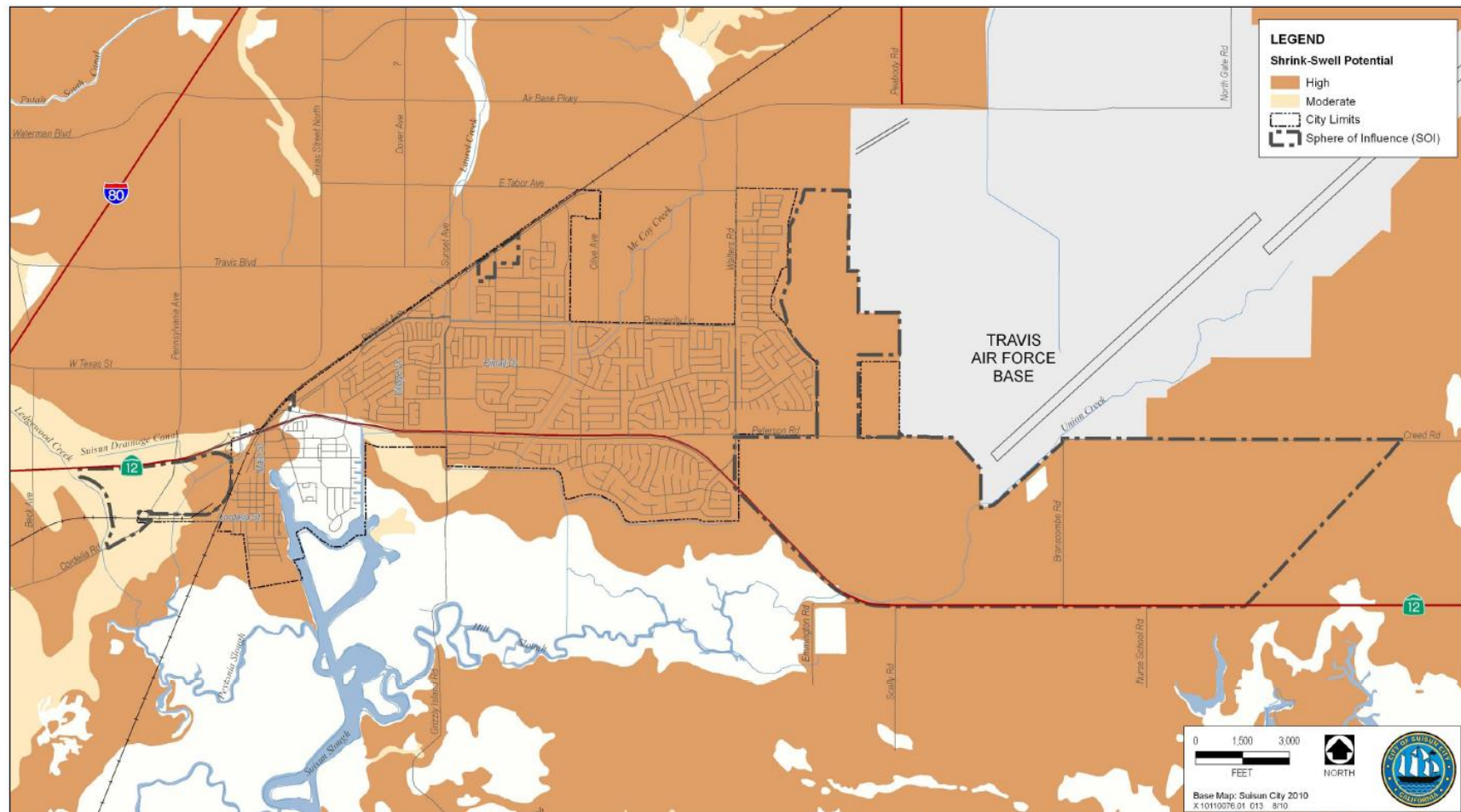


Source: NRCIS
Exhibit GEO-11

Liquefaction Potential

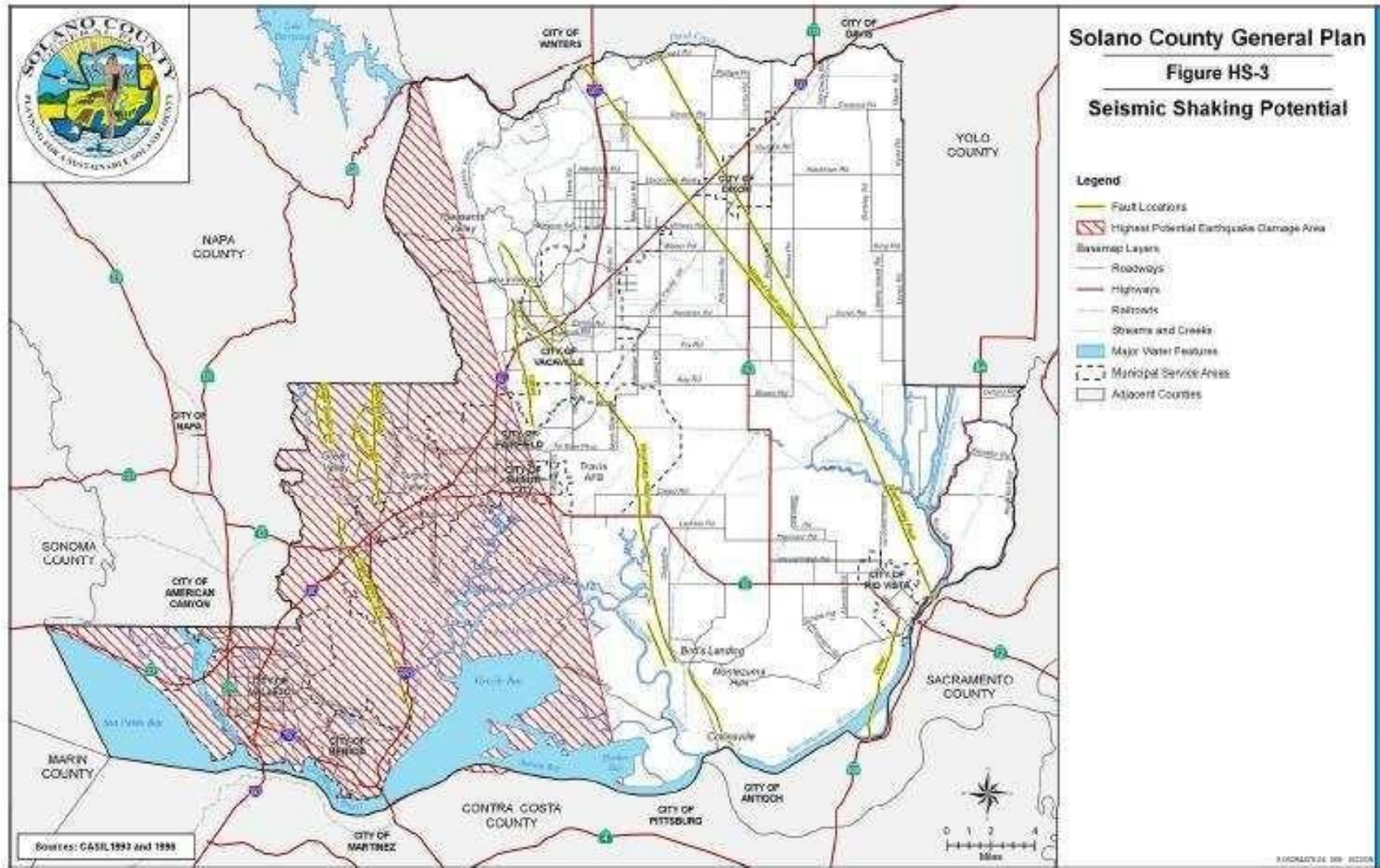
Liquifaction Potential for Suisun City

**City of Suisun City
Local Hazard Mitigation Plan**



Shrink-swell Potential for Suisun City

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Seismic Shaking Potential

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Structures

Structural Hazards Abatement Policy History

Prior to the great earthquake of 1906, building design for seismic forces was under no limitation beyond the designer and builder's knowledge of basic good construction.

The reports of leading engineers following the 1906 earthquake indicate that at least some of the inherent weaknesses and deficiencies of buildings constructed in the three decades following the San Francisco earthquake was not generally recognized until the earthquakes of Santa Barbara (1925) and Long Beach (1933). As a result, the Field Act of 1933 provided for review of design and construction of public school buildings by a State agency. At about the same time some building codes, including the UCB, initiated the first requirements for earthquake resistant design. Present efforts are directed towards strengthening the code to correct some deficiencies which have been revealed by recent earthquakes and to take into account more fully the relationship between the structure and the soil condition of its site. Particular attention needs to be paid to the unreinforced masonry buildings within the Suisun City limit. In the event of an earthquake, the potential loss to life and property is devastating specially in these vulnerable buildings and their immediate surrounding areas.

Repetitive Loss

There is no data available to determine repetitive loss due to earthquake.

Potential Loss Estimates

In Suisun City, the greatest risk of life stems from existing structures which were inadequately constructed or have been improperly maintained. In the unreinforced masonry structures cases, the greatest hazard is from the building's collapse, but from falling objects, ornaments, brick veneers, chimneys or glass.

Loss estimates are dependent on the magnitude of the earthquake. The higher the shake intensity and the longer the shake duration, the more damage will be sustained. In a major seismic event, loss estimates would be categorized as follows Solano County:

For the purposes of loss estimates, Suisun City has calculated the losses based on a 7.1 magnitude earthquake on the Hayward North/Rodgers Fault system.

Population Effected	502
Loss to Buildings	\$541,414
Loss to Equipment	\$81,461
Loss to Infrastructure	\$791,642
Loss to Streets & Pavements	\$1,017,524

Based on estimates calculated for nearby communities the following loss estimates are satisfactory approximations for Solano County:

City of Suisun City
Local Hazard Mitigation Plan

Development Trends

Suisun City has updated its General Plan. The policies, goals and procedures to be adopted will be aligned with Solano County General Plan. Delineated below are the current policies surrounding Seismic Safety from the Solano County General Plan.

Policies

HS.P-12: Require new development proposals in moderate or high seismic hazard areas to consider risks caused by seismic activity and to include project features that minimize these risks.

HS.P-13: Review and limit the location and intensity of development and placement of infrastructure in identified earthquake fault zones.

HS.P-14: Identify and minimize potential hazards to life and property caused by fault displacement and its impact on facilities that attract large numbers of people, are open to the general public, or provide essential community services and that are located within identified earthquake fault zones.

HS.P-15: Reduce risk of failure and reduce potential effects of failure during seismic events through standards for the construction and placement of utilities, pipelines, or other public facilities located on or crossing active fault zones.

HS.P-16: Require minimum setbacks for construction along creeks between the creek bank and structure, except for farm structures that are not dwellings or places of work, based on the susceptibility of the bank to lurching caused by seismic shaking.

HS.P-17: Restrict the crossing of ground failure areas by new public and private transmission facilities, including power and water distribution lines, sewer lines, and gas and oil transmission lines.

HS.P-18: Make information about soils with a high shrink-swell potential readily available. Require proper foundation designs in these areas.

HS.P-19: Minimize development in areas with high landslide susceptibility.

(Source – Solano County General Plan, Health and Safety Element, 2030)

**City of Suisun City
Local Hazard Mitigation Plan**

Flooding

Flooding was rated a HIGH PRIORITY HAZARD by the City of Suisun City.

Profile for Flooding

Description

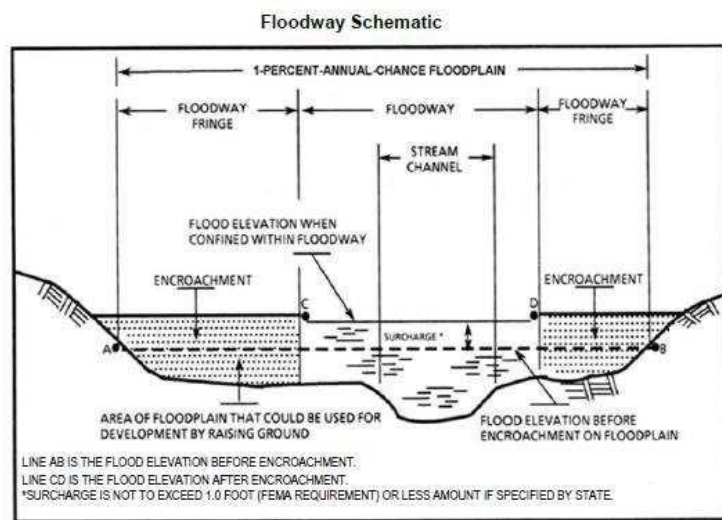
In Solano County, the flood season generally lasts from November through April. Over 90% of the annual precipitation falls during these months. Statistically, January has been the wettest month of the year.

More than just the quantity of rain affects flood levels. Natural obstructions to flood flows include trees, brush and other vegetation growing along stream banks in flood-prone areas. Particular hazards are man-made encroachments on or above the streams. Bridges, culverts, and building pads are obvious examples and can create more extensive flooding than would otherwise occur.

During floods, debris may be washed and carried downstream to collect on bridges and other obstructions. Bridges may be damaged or destroyed. Culverts may be plugged or debris may pile up, causing increased flood height due to backwater. As the flood increases, masses of debris may break loose and the accumulation of water and debris can surge downstream until another obstruction is encountered.

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard.

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway



and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water-surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships

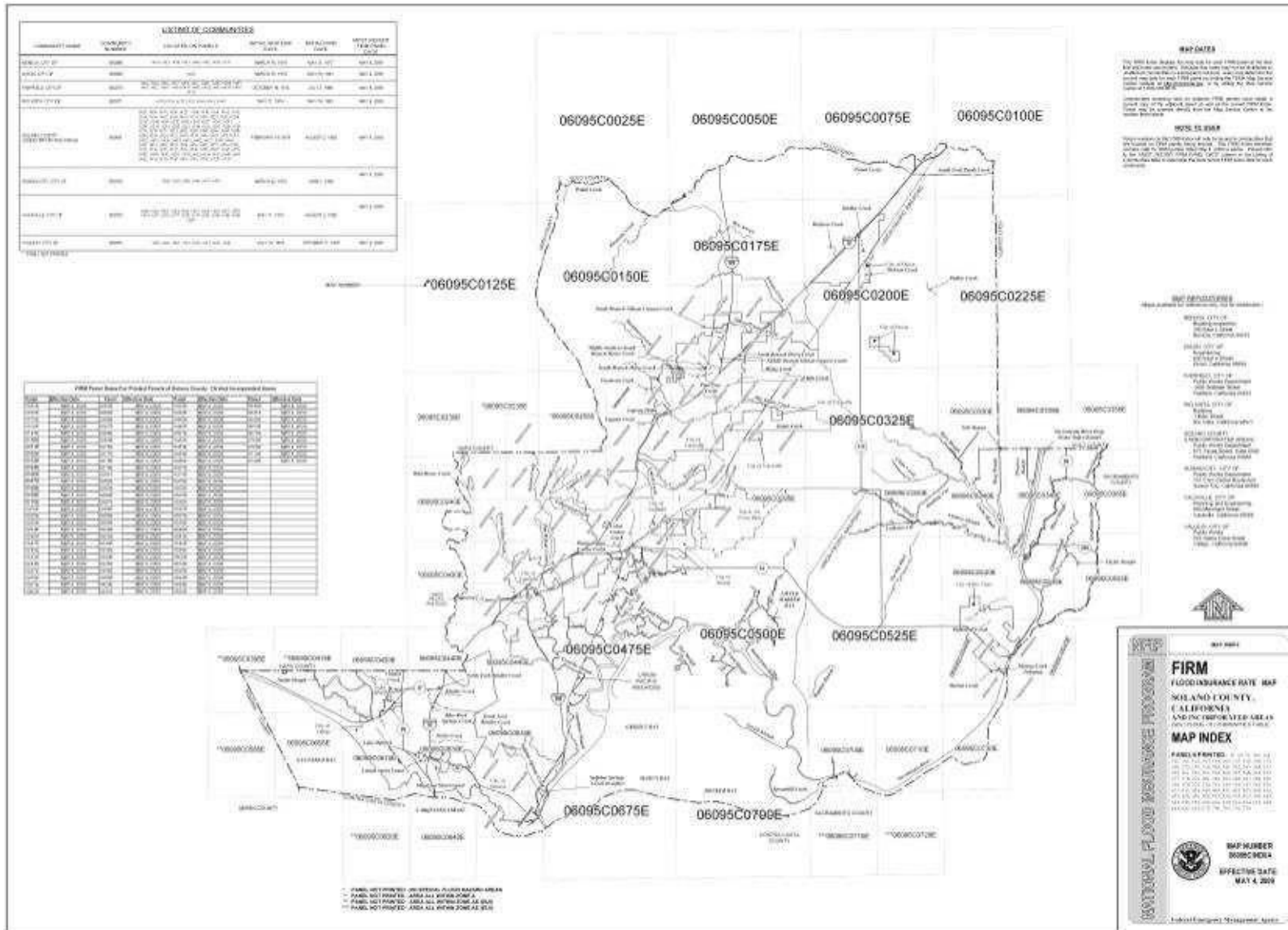
City of Suisun City
Local Hazard Mitigation Plan

between the floodway and the floodway fringe and their significance to floodplain development are shown in figure shown.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Both portions of the City's SOI are within the Federal Emergency Management Agency (FEMA) designated 100-year flood zone. Flooding in the vicinity of the City generally occurs along waterways, with infrequent localized flooding also occurring due to constrictions of storm drain systems and/or surface water ponding. The western portion of the City's SOI is bisected by the Suisun Drainage Canal, bounded by Ledgewood Creek, and within the 100-year flood zone (FIRM Map No. 0606310431C). Eastern portions of the SOI are also in the 100-year flood zone (FIRM Map No. 0606310455B and FIRM Map No. 0606310475C).

**City of Suisun City
Local Hazard Mitigation Plan**



Flood Inundation Rate Map

City of Suisun City
Local Hazard Mitigation Plan

Location

Suisun City is adjacent to the City of Fairfield to the east, Travis Airport base to the north and west, and Suisun Marsh to the south. Suisun Slough is a major tidal waterway, connects Suisun City to Suisun Bay.

The City of Suisun City downtown area was designed with Suisun Channel as the central feature. The Waterfront is a highly attractive urban waterfront and unusual incorporation of in-town wetlands.

(Source Suisun Downtown Specific Plan)

The flood-prone areas are based on National Flood Insurance Program Maps delineating flood hazard boundaries. These flood-prone areas have a one-in-100 chance of being inundated during any year, more commonly referred to as the 100-year flood.

The flood-way is a channel of a stream that must be kept free from encroachment in order that a 100-year flood might be accommodated without substantial increase in flood height. The floodways in Suisun City are restricted to the southern part of the city limit.

It is important that the City keep these designated flood areas free from encroachment in order to minimize future loss of life and property and enhance ground water recharge. Prevention of encroachment into the flood plain can be accommodated with proper mitigation, so long as the shift of flood waters does not increase adjacent floodways or flood plain areas.

Elevations in Suisun City range from approximately 5 to 15 feet. Suisun City is drained by Laurel Creek, McCoy Creek, Pennsylvania Avenue Creek, and Union Avenue Creek that discharge into tidal channel tributaries to Suisun Slough. Information of drainage areas and stream gradient for selected streams studied by detailed methods are shown in Table 5, "Drainage Areas and Stream Gradients."

Climate in Suisun City is characterized by the two well-defined seasons of winter and summer. Winters are mild with frequent rain. Summers are warm to hot with little precipitation. Normal annual precipitation is approximately 17 inches. Most of the seasonal precipitation occurs as rain during October through April. Mean temperature varies from 45 degrees Fahrenheit in January to 70 degrees Fahrenheit in July, but extremes of 23 degrees Fahrenheit in winter and 112 degrees Fahrenheit in summer have been recorded. Temperatures are moderated by cool, moist winds from the ocean. The native vegetation has been essentially obliterated by agricultural operations,

urbanization, and reclamation.

Levee Conditions

The old levee system present in some Solano County marshlands was constructed initially by hand labor, and later by dredging to hold back river floods and daily tides, in order to create additional land for grazing and growing crops. Today, these levees remain as embankments of five to six feet in height, with foundation widths of roughly 20 to 30 feet. Roads have been constructed atop a number of these levees, which were generally constructed using weak materials excavated from adjacent water courses, including sands, silts, and peat (U.S. Army Corps of Engineers 1972).

Constant maintenance is necessary to hold these levees against the high tides and river floods that threaten reclaimed marsh lands. New material must be added to these levees continually to compensate for peat oxidation. Sand, silt, and peat are weak in shear and erode easily. Each year, as farm lands adjacent to levees subside, hydrostatic pressure against the levees increases, adding to the potential for

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failure. In addition, most of these levees are not maintained to any specific standard, which can increase the likelihood of failure and inundation, leading to flooding.

Potential failure of levees due to liquefaction constitutes a potential hazard in much of the southern half of Solano County, including areas around Suisun City. Failure of levees south of Suisun City could flood parts of the city. No comprehensive studies have been performed on levee failure due to the difficulty in correctly assessing levee safety. Even inspected levees are prone to failure under certain conditions, such as the Jones Tract that failed in 2004 after having been inspected (County of Solano Water Agency 2006).

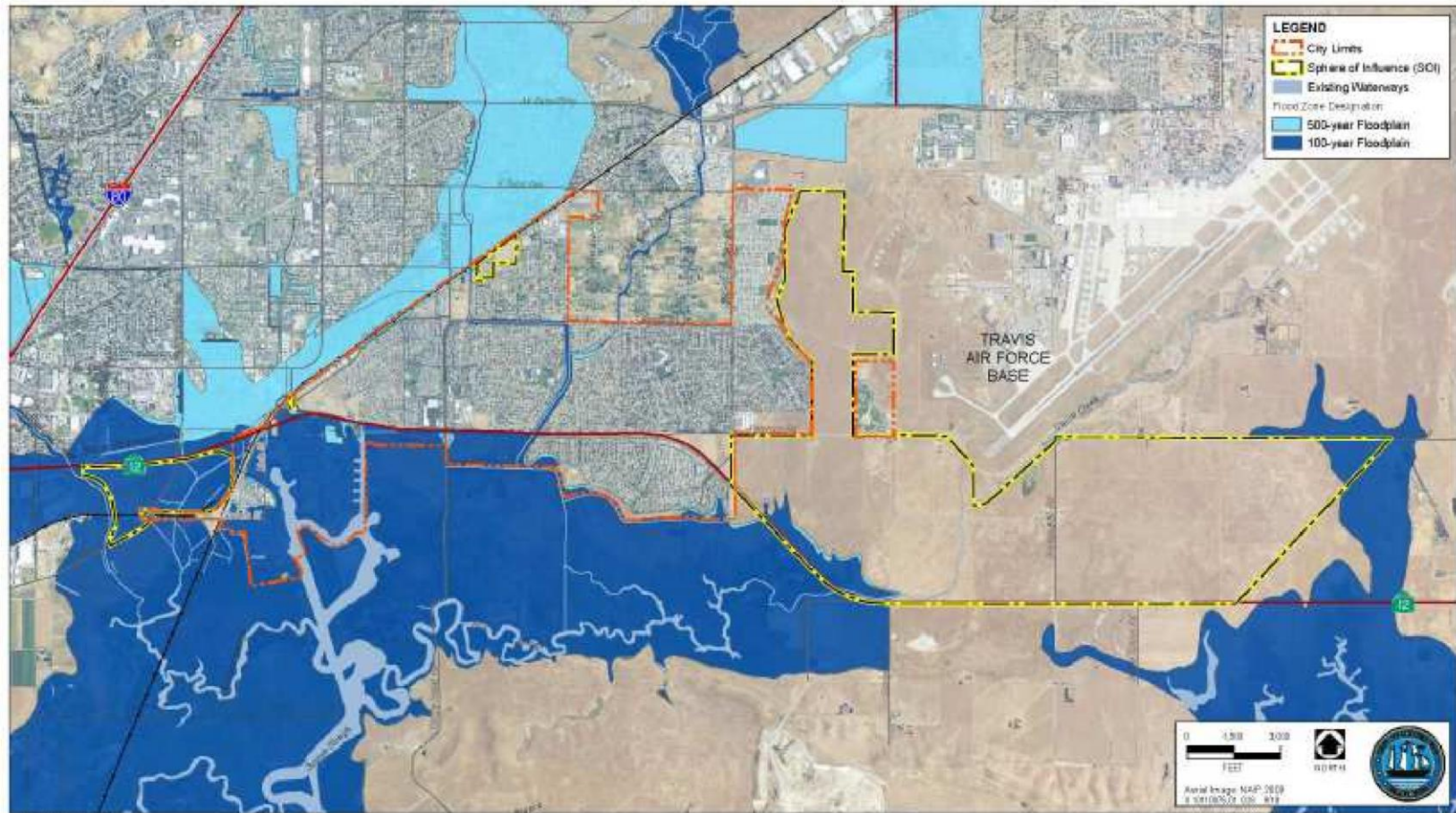
The Delta-Suisun Marsh Office, part of the California Department of Water Resources, is responsible for improving flood protection within the Sacramento-San Joaquin Delta and portions of the Suisun Marsh. The office is deeply involved in implementation of the CALFED Levee System Integrity Program in addition to a portion of the Water Quality Program. It is imperative that Suisun City be and remain informed of the Office's initiatives and actions. The success (or failure) of the Office's program may impact Suisun City.

The Bay-Delta Levees Branch, also part of the California Department of Water Resources, administers the Delta Levees Flood Protection Program as authorized by the Water Code Sections 12300 thru 12318 and 12980 thru 12995. This is a grants program that works with more than 60 reclamation districts in the Delta and Suisun Marsh to maintain and improve the flood control system and provide protection to public and private investments in the Delta including water supply, habitat, and wildlife.

The program, through its two major components; Delta Levees Maintenance Subventions Program and Delta Levees Special Flood Control Projects, works with the local agencies to maintain, plan and complete levee rehabilitation projects. Suisun City may be able to participate in the current and future grant programs sponsored by various departments of California Department of Water Resources.

(Source: Solano County General Plan)

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Local Hazard Mitigation Plan**

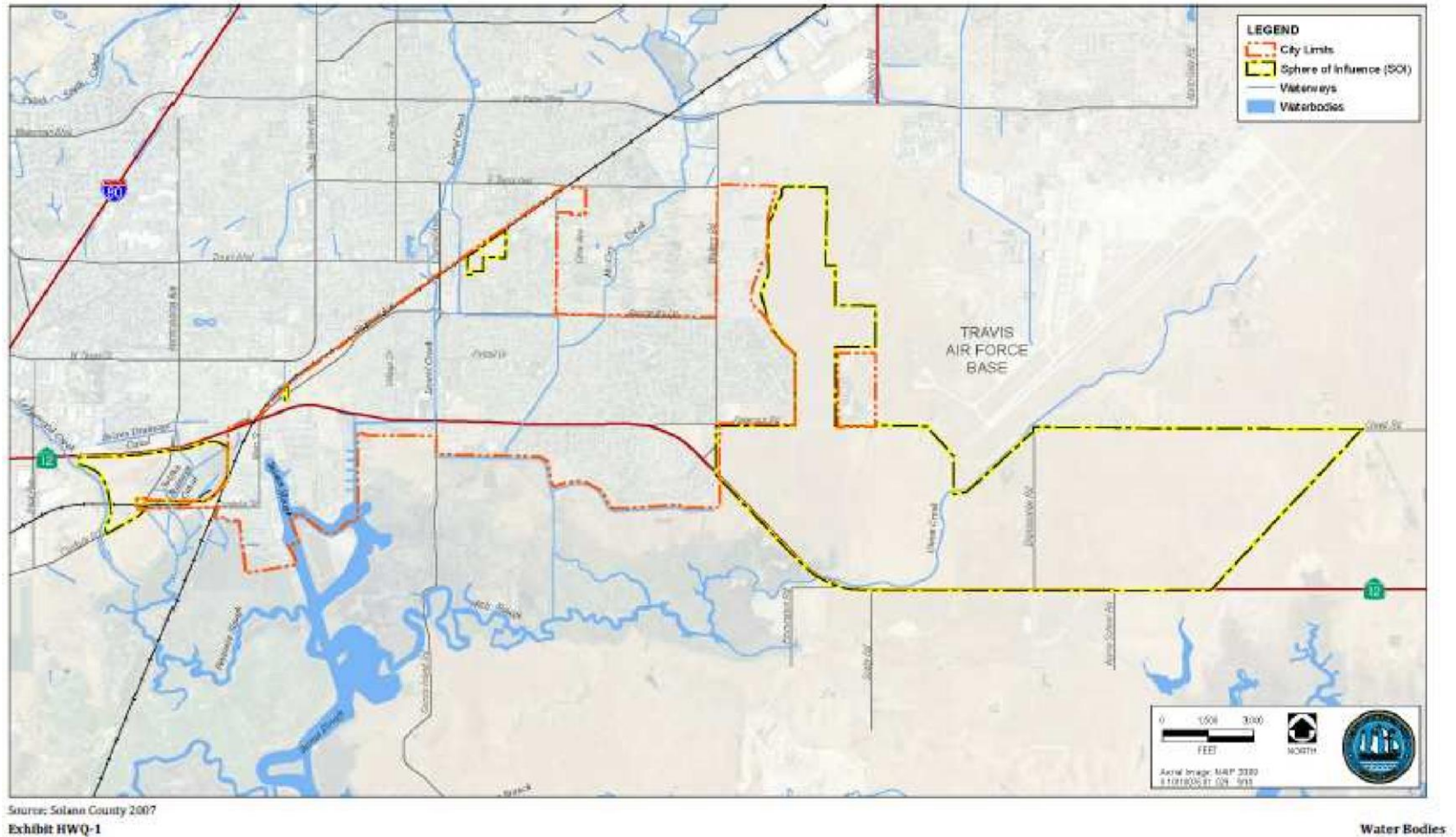


Source: FEMA 2010

Exhibit HWQ-2

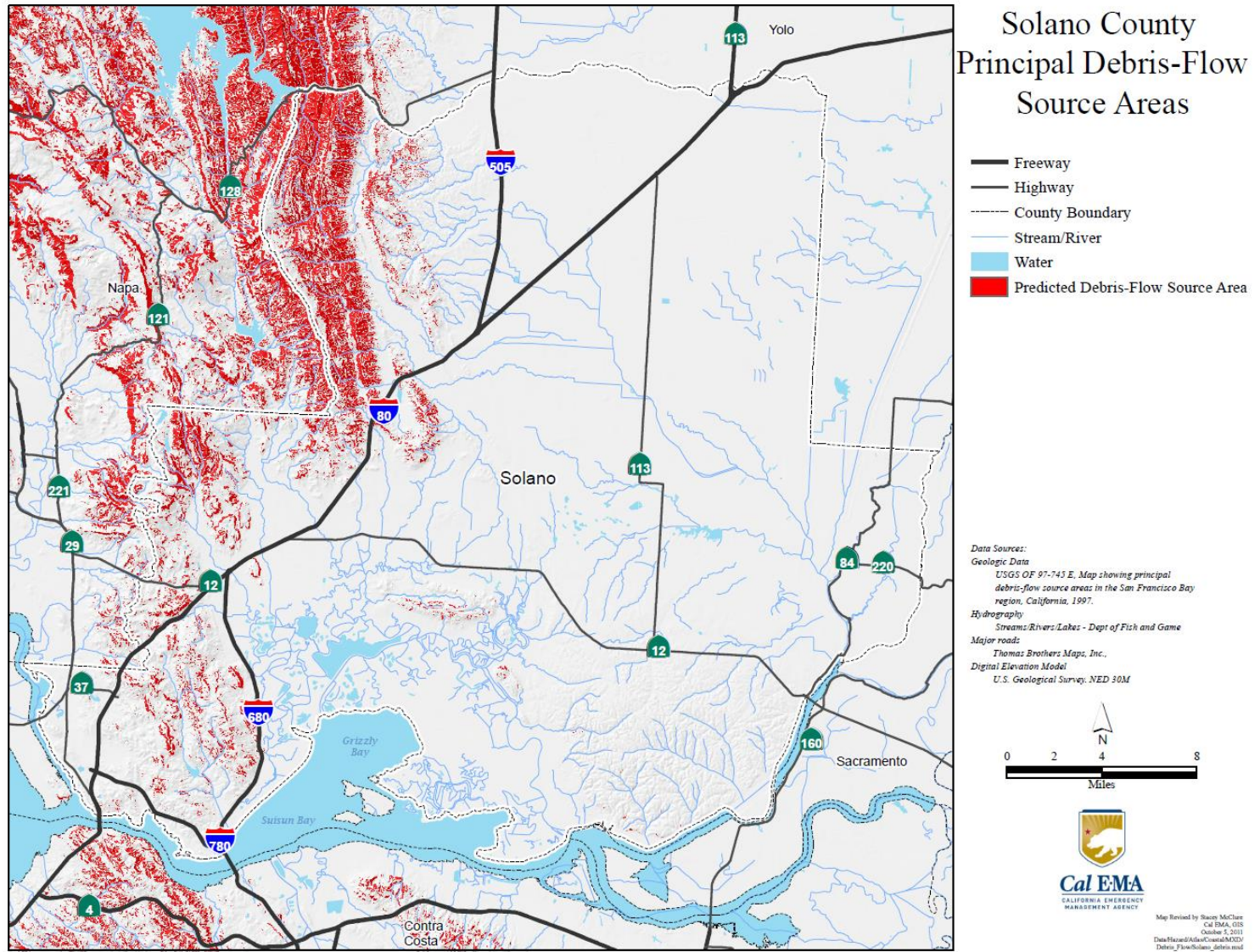
100 & 500 Year Flood Plain for Suisun City

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Water Bodies in Suisun City Vicinity

**City of Suisun City
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Extent

Flooding in Suisun City generally occurs along waterways with some localized flooding occurring due to constrictions of storm drains and surface water ponding. National Insurance Flood Program zone A, AE, AO and X exist within Suisun City.

Solano County has a long history of flooding, but little definitive data are available for specific floods. Stream flow records are essentially nonexistent for the streams under study, and the rural nature of most past flooding precluded detailed news coverage. Information on past floods is based primarily on historical accounts, brief newspaper descriptions, and various published and unpublished reports in January 1967, floodwater covered one-third of the streets of Suisun City and was approximately 2 feet deep in the southern part of town. Flooding from Pennsylvania Avenue Creek and Union Avenue Creek had a recurrence interval of 15 years for the 1967 flood. A high tide and overflow from Laurel Creek and Union Avenue Creek caused flooding in January 1970.

Suisun Slough is under the influence of tides. The most severe flooding along this waterway would result when very high tides and a large volume of stream outflow occur coincidently. In Fairfield, restrictive outlets into slough areas cause flood flows to pond in low-lying areas, and high tides may delay drainage for several days. Flooding in Fairfield occurred in 1940, 1950, 1955, 1958, 1963, 1966, 1967, 1969, 1970, and 1973.

Probability

Flooding occurred in Suisun City in 1940, 1950, 1955, 1963, 1966, 1967, 1969, 1970, and 1973. Extensive flooding along State Highway 12 occurred in December 1955. Floodwater rose to waist depth in a residential development when high tides slowed drainage.

Suisun Slough, the lower reaches of streams tributary to Suisun Bay, and the lower reaches of Sacramento River are under the influence of tides. The most severe flooding along these waterways would result when very high tides and a large volume of stream outflow occur coincidentally and strong onshore winds generated wave actions. In the Fairfield-Suisun City area, restrictive outlets into slough areas cause flood flows to pond in low-lying areas, and high tides may delay drainage for several days.

In urbanized areas, flood problems are intensified because new homes and other structures, new streets, driveways, parking lots, and other paved areas all decrease the amount of open land available to absorb rainfall and runoff, and thus increase the volume of water that must be carried away by waterways.

Flood conditions in the Delta are influenced by Pacific Ocean tides, high flood outflow from tributary streams, and strong onshore winds. A single island or a group of islands may flood when the levees protecting them are overtopped or fail as a result of the separate or coincidental occurrence of higher high tides and high stream outflow through the Delta. A fundamental flood problem in the Delta results from the fact that for every square mile of land reclaimed, there is one square mile less of floodplain to contain the volume of the rising tide and outflow from the rivers of the Central valley.

The eastern portion of Solano County contiguous to the Delta area has a long history of flooding. The major cause of the latest floods was levee instability. The most recent major flood events were those that occurred in 1950, 1955, 1964-1965, 1969, 1972, 1981, 1982, and 1983.

In mid-January 1980, severe rainstorms over central California precipitated high river outflow through the Delta, which, coinciding with gale force winds over the Delta and high tides, resulted in the levee failure and flooding of two tracts (placing approximately 9,600 acres under water). Continued high inflow to the Delta

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and wind-generated waves increased erosion on all Delta levees, necessitating intensive flood fighting and the temporary curtailment of boat traffic. Then, in late February 1980, three islands at the lower end of the Yolo Bypass and one additional tract were inundated.

(Source: Draft Flood Insurance Study Number 06095CV001B, 4/20/2011)

Vulnerability for Flooding

Overview

Flooding can be a significant problem for Suisun City. Historically, areas are at risk to flooding during the winter months when river systems swell with heavy rainfall and snowmelt runoff. Normally, storm floodwaters are kept within defined limits by a variety of storm drainage and flood control measures. Occasionally, extended heavy rains result in floodwaters that exceed normal high-water boundaries and cause damage.

Areas of shallow flooding occur along Sunset Avenue and State Highway 12 due to sheet-flow and ponding from Laurel Creek, between State Highway 12 and the Union Pacific Railroad from Laurel Creek, and at Cordelia road due to ponding from Pennsylvania Avenue Creek flooding. Flooding along Pennsylvania Avenue Creek, within Suisun City, is caused by backwater from Suisun Slough,

Structures

During the January 2006 Floods, Suisun City submitted damage claims of almost \$2M, more than

\$1.7M of which falls under FEMA Category C (Road and bridge system, non-federal) and Category D (Water control facilities – levees, dams and channels) damages. Damage to private properties were relatively limited.

Repetitive Losses

The Federal Emergency Management Agency (FEMA) insures properties against flooding losses in the Bay Area through the National Flood Insurance Program. Those properties that have had more than one insured flood loss are called repetitive loss properties and are summarized in this table.

	Total	100-yr Flood Plain (Q3 Zone A or V)	500-yr Flood Plain or Other Concern (Q3 Zone X500)	Outside Flood Plain (Q3 Zone D or X)
Number of properties	3	3	0	0
Number of claims	11	11	0	0
Total claims	\$114,110	\$114,110	\$0	\$0

Source: Association of Bay Area Governments, 2004.

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Listed below are the projects completed grouped into FEMA categories.

City of Suisun City, California
AMENDED LIST OF PROJECTS
 March 28, 2006
CATEGORY A: Debris Removal

ITEM #	LOCATION	WORK PERFORMED	WORK NEEDED
1.	Laurel Creek	Clearance of trees & woody debris & other disaster related material	Additional debris removal
3.	Whispering Bay Canal	Clearance of trees & woody debris & other disaster related material	Additional debris removal
6.	Kellogg Street	Clearance of disaster related material clogging pump intake	Additional debris removal
8.	Worley Dr./Flood Control Channel	Clearance of trees & woody debris & other disaster related material	Additional debris removal
12.	Sunset Ave/Railroad Ave	Clearance of trees & woody debris; other disaster related material & drainage bypass intake	Additional debris removal
15.	Citywide	Fence & tree damage repair	Additional fence & tree repair
17.	Humphrey Ditch	Repair headwall	Add wing wall

CATEGORY B: Emergency Protective Measures

ITEM #	LOCATION	WORK PERFORMED	WORK NEEDED
1.	Laurel Creek	Riprap stabilization of slope	Additional Stabilization
16.	McCoy Creek @ Humphrey Ditch	Riprap stabilization of slope	Additional Stabilization

CATEGORY B: Roads and Bridges

2.	Whispering Bay Drainage	Repaired & replaced collapsed drainage	Complete?
4.	Marina Blvd.	Street failure due to flooding	Repair Street
5.	West Street	Street failure due to flooding	Repair Street
9.	Bella Vista	Culvert damage & ditch erosion and road grading	All repairs listed
10.	Chipman Lane	Street failure	Repair Street
11.	Petersen Road	Ditch erosion fence destruction, sediment removal & St. damage	All repairs listed
13.	Main Street	Road collapsing due to flooding	Repair collapse

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CATEGORY D: Water Control Facilities			
ITEM #	LOCATION	WORK PERFORMED	WORK NEEDED
1.	Laurel Creek	Slope stabilization	Additional Stabilization
3.	Whispering Bay Canal	None	Additional tree & sediment removal and slope stabilization
4.	Marina Circle Levee	None	Slope stabilization & street repair
5.	West Street Levee	None	Slope stabilization
7.	Lawler Ranch Outlet	None	Collapse of outlet pipe
8.	Worley Dr./Flood Control Channel	None	Additional tree removal and stabilization
12.	Sunset Ave/Railroad Ave	None	Gate valve repair, stabilization & sediment removal
16.	McCoy Creek @ Humphrey Ditch	Slope Stabilization	Additional Stabilization\
18.	McCoy Creek	None	Remove debris & trees
CATEGORY G: Parks, Relational Facilities, and other Items			
14.	Boat Ramp	None	Improve Drainage

Potential Losses

Potential Losses were calculated for both 100-year and 500-year floods for Suisun City.

100 Year Flood Estimated Losses

Population Effected	519
Loss to Buildings	\$539,394
Loss to Equipment	\$84,270
Loss to Infrastructure	\$818,270
Loss to Streets & Pavements	\$1,052,611

500 Year Flood Estimated Losses

Population Effected	605
Loss to Buildings	\$629,293
Loss to Equipment	\$98,315
Loss to Infrastructure	\$955,430
Loss to Streets & Pavements	\$1,228,047

Development Trends

Flood Hazard Goals, Policies, and Programs

Suisun City updated its General Plan. The policies, goals and procedures to be adopted will be aligned with Solano County General Plan. Delineated below are the current policies surrounding Seismic Safety from the Solano County General Plan.

HS.P-1: Prevent or correct upstream land use practices that contribute to increased rates of surface water runoff.

HS.P-2: Restore and maintain the natural functions of riparian corridors and water channels throughout the county to reduce flooding, convey storm water flows, and improve water quality .

HS.P-3: Require new developments to incorporate devices capable of detaining the storm water runoff caused by a 100-year storm event or to contribute to regional solutions to improve flood control, drainage, and water recharge.

HS.P-4: Encourage the use of storm water detention that may also be used for groundwater recharge.

HS.P-5: Appropriately elevate and flood proof developments for human occupancy within the 100-year floodplain for the profile of a 100-year flood event.

HS.P-6: Work with federal, state, and local agencies to improve flood control and drainage throughout the county.

HS.P-7: Require new development proposals in dam, canal, or levee inundation areas to consider risk from failure of these facilities and to include mitigations to bring this risk to a reasonable level.

HS.P-8: Work with responsible parties to ensure dams, levees, and canals throughout the county are properly maintained and/or improved.

HS.P-9: Preserve open space and agricultural areas that are subject to natural flooding and are not designated for future urban growth; prohibit permanent structures in a designated floodway where such structures could increase risks to human life or restrict the carrying capacity of the floodway.

HS.P-10: Ensure that flood management policies that minimize loss of life and property also balance with environmental health considerations of the floodplain and therefore do not cause further erosion, sedimentation, or water quality problems in the floodplain area.

HS.P-11: Raise public awareness about flooding and flood risks.

(Source: Solano County General Plan)

Wild land/Urban Interface Fire

Wildland/urban interface fire was rated a HIGH PRIORITY HAZARD by the City of Suisun City.

Profile for Wild-land/Urban Interface Fire

Description

Two categories of fire hazard exist in Suisun City: structural fires, which can damage the home or workplace, and wildland fires, which can quickly explode out of control and encroach to the developed areas and cause structural fires.

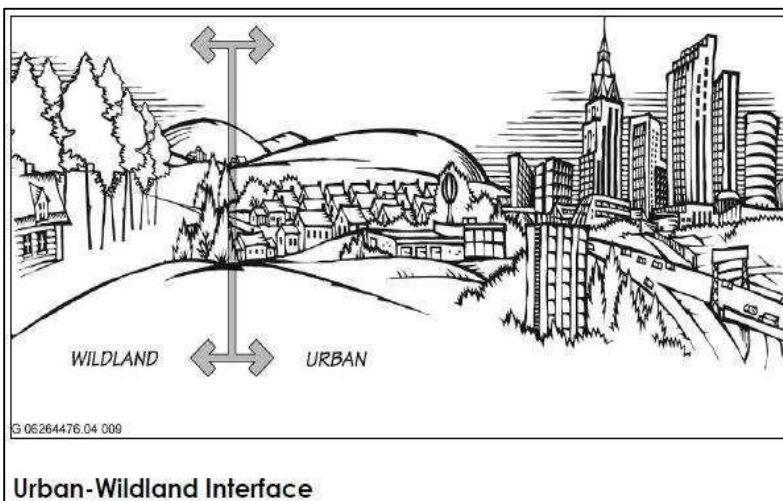
Suisun City Fire Department:

The Suisun City Fire Department is an all-volunteer Department, consisting of approximately 43 members. The Department provides 24/7 fire protection and emergency services, including fire suppression, medical response, and natural and human-caused disasters.

Suisun City Fire also responds to public assistance calls, provides public education programs for schools within the City, and manages the nuisance weed abatement program. The Department has a paid Fire Chief and two paid Captains. The remainder of the Department's members are volunteer, including one Deputy Chief, three Battalion Chiefs, nine Captains, four Engineers, three Driver/Operators, 15 Firefighters and six Recruits.

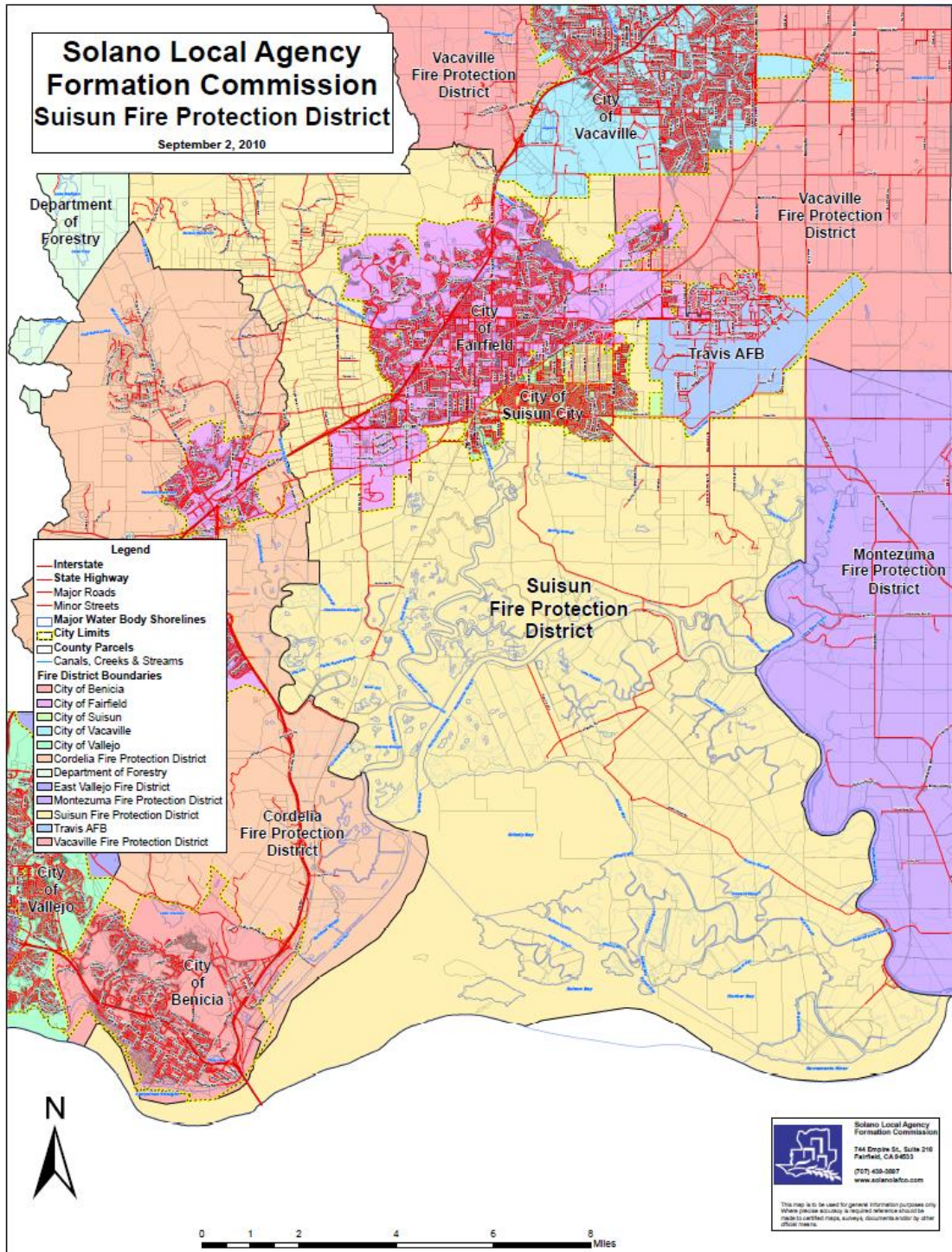
Location

Solano County is threatened by both urban and rural fires with the potential to cause property damage, injury, and loss of life. Wildfires pose the greatest danger in the unincorporated county area. Topography, weather, and native vegetation provide the ingredients for destructive fires that can spread rapidly. In California, development activities within hazard areas have worsened the problem by placing people into hazard areas, disrupting natural fire processes and allowing buildup of flammable brush and vegetation. Such development has also moved the urban wildland interface (the area where human development meets undeveloped wildlands) closer to higher-risk wildfire hazard areas, increasing the number of people and buildings at risk. The rugged, rural terrain found in the western hills of the



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county makes firefighting all the more difficult.



Extent

Water Pressure and Supply

Insufficient water pressure and supply also contribute to wildfire danger. Most of the higher-risk wildfire areas in the county are not served by public water. Fire districts serving these areas are typically equipped with tank trucks. Properties designated for residential use in areas without public water service are required to maintain sufficient on-site water storage and new development must show that it has sufficient water pressure for firefighting purposes.

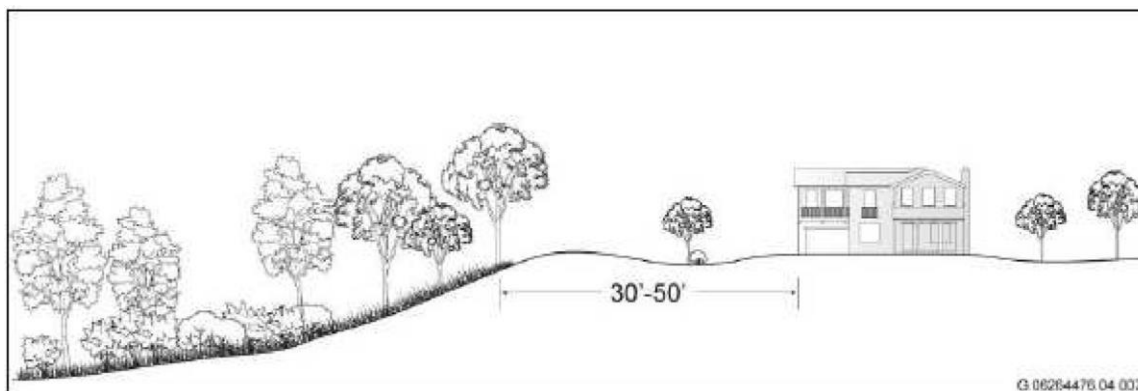
Climate Change

Research conducted at the U.S. Department of Energy's Lawrence Berkeley National Laboratory indicates that climate change will increase the frequency and size of wildfires in California. Hotter, drier climates will promote increased accumulation of fire-prone vegetation, aided by prolonged drought, and stronger winds will continue to fan the flames spreading fires faster and farther than previously experienced. This will expand the size of the urban-wildland interface because more residential communities will be within reach of wildfire activity. An expanded urban wildland interface will require increased resources, planning, and funding to maintain and defend.

Fire-Safe Planning

Several site design and planning methods can be employed to minimize dangers to life and property within wildfire hazard areas. Methods advocated by County policies and programs include buffering, creating fuel breaks, clustering, and fire-safe construction. Buffering for fire safety refers to the removal of combustible vegetation around a building within a given distance, usually 30–50 feet. This creates a fire defensible space, which can limit fire from spreading to nearby buildings and provides better access to the property for firefighters.

Removing vegetation within the 30–50' buffer provides fire defensible space for homeowners. The same technique can be applied along roadways as fuel breaks to provide accessibility during wildfire events.



Similarly, fuel breaks are large-scale buffers used to prevent fire from approaching communities or blocking roadway access for firefighting equipment. To create fuel breaks, small trees and light fuels within a 50-

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foot strip of land are removed. These fuels would otherwise allow fire to climb up to the treetops where firefighting is more difficult.

Clustered development, figure to the right, for fire safety describes buildings that are placed closer to one another and closer to roads to decrease the amount of space fire districts must protect in the event of a wildfire and to increase access to that space (see below graphic). When homes are placed closer to one another, firefighters are able to maximize their resources, which is especially important in rural environments that lack public water sources.

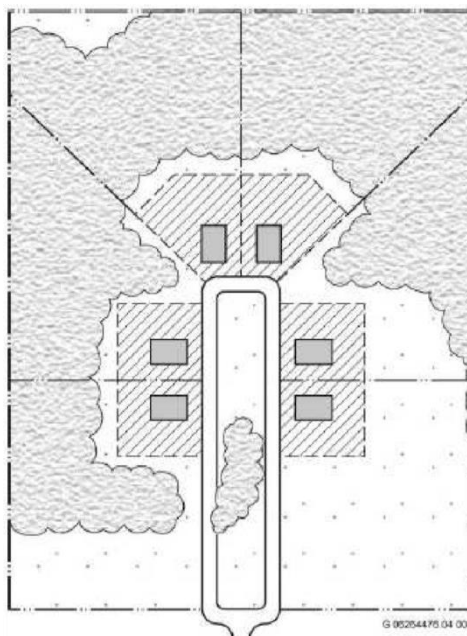
Fire-safe construction incorporates fire-resistant materials into various parts of a house including the roof, siding, vents, windows, and patios to minimize the risk of burning. Particular attention is given to locating propane and oil tanks in protected locations.

Probability

Areas at risk for extreme wildfires are designated by the California Department of Forestry and Fire Protection (CAL FIRE) as those lands where dense vegetation with severe burning potential prevails. The highest current areas at risk for fires are found in western Solano County, in the foothills and mountainous watershed areas, and also in grasslands located throughout the county. The Benicia Hills, Potrero Hills, Cement Hills, and western English Hills are all designated as high risk fire areas. Before nearby lowlands were urbanized, vegetation in these west foothill and mountainous communities was naturally maintained by periodic fire. As nearby lands were developed, natural wildfires were suppressed, resulting in the further buildup of fire-prone brush and woodlands. These efforts to suppress natural processes have resulted in larger, more damaging fires.

Past Occurrences

Most recently, two fires occurred in 2008 and 2011. In 2008, a Fire Management (FM) Assistance Declaration² was instituted in the Napa-Solano County area. The "Wild" wildfire event burned 4,102 acres due to arson. The wildfire event ignited near Wild Horse Valley Road in Napa County, spreading through dry grass, oak trees, and brush toward the area of Lake Madigan in Solano County (CAL FIRE 2011). One of the last major wildfire occurrences in unincorporated Solano County was the Beacon Fire. The Beacon Wildfire burned more than 700 acres and threatened 40 homes at the northeastern edge of the City of Fairfield. Firefighters from the local Solano County Fire Departments prevented any homes or other



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Local Hazard Mitigation Plan

structures from being burned. Local and state agencies deployed 250 firefighters, 25 fire engines, one helicopter and three bulldozers to tackle the fire.

Vulnerability for Wild-land/Urban Interface Fire

Overview

The Solano County Wildland Fire Hazard Area map below conveys two aspects of wildfire hazard: the ignition potential of high-use roads and urbanized areas and the burning potential of various types of vegetation. For example, grassland adjacent to a heavily traveled roadway has a high ignition potential because of the high probability and ease with which grass will ignite. A dense woodland canopy, on the other hand, has low ignition potential because of heavier fuels, but would burn with a much higher intensity and ultimately have a worse effect on the ecosystem. The worst fire hazard occurs where easily ignitable grass is growing with brush, which in turn serves as an extremely effective fuel link to the dense woodland canopy.

Solano County

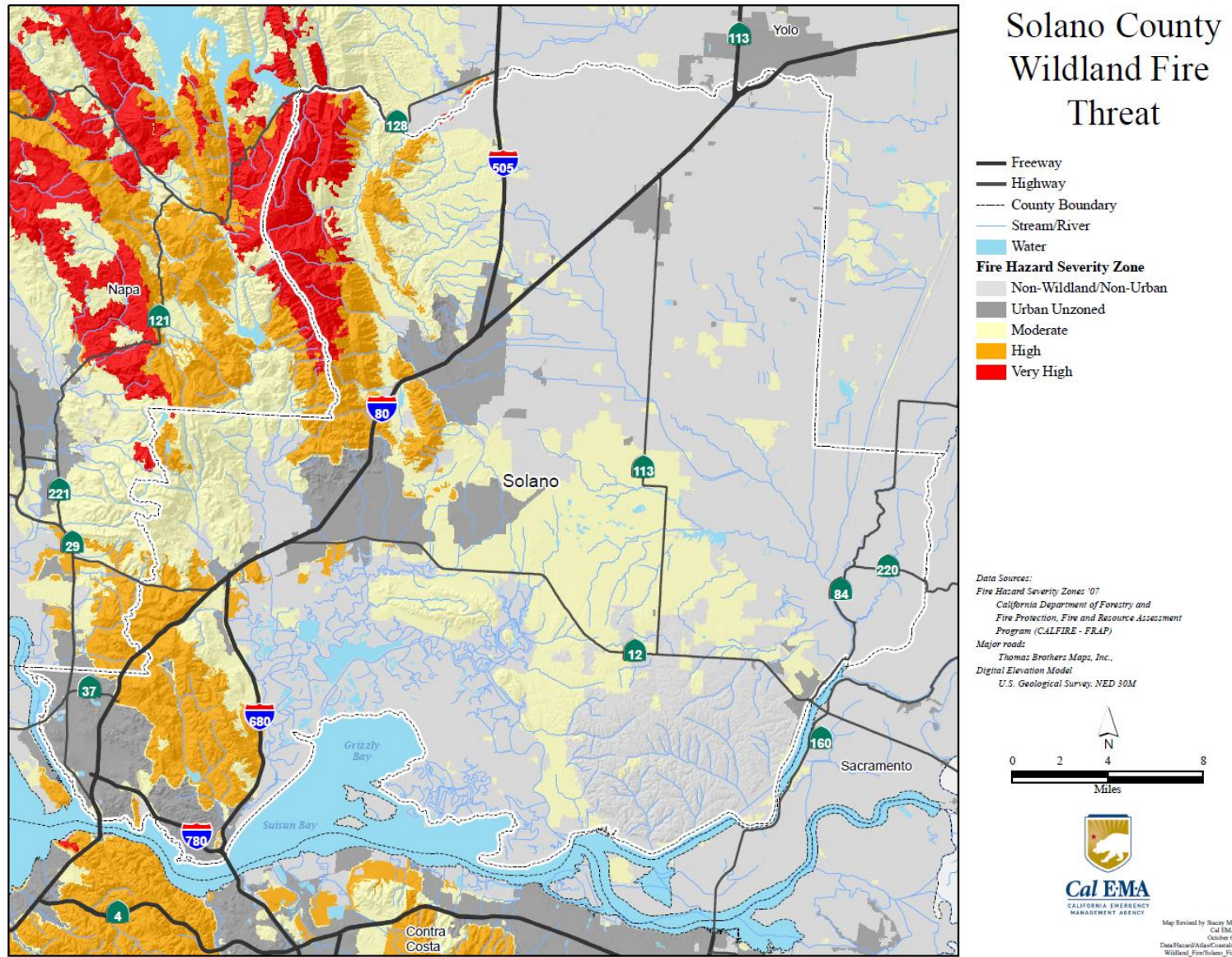
Wildland Fire Hazard Areas

Legend

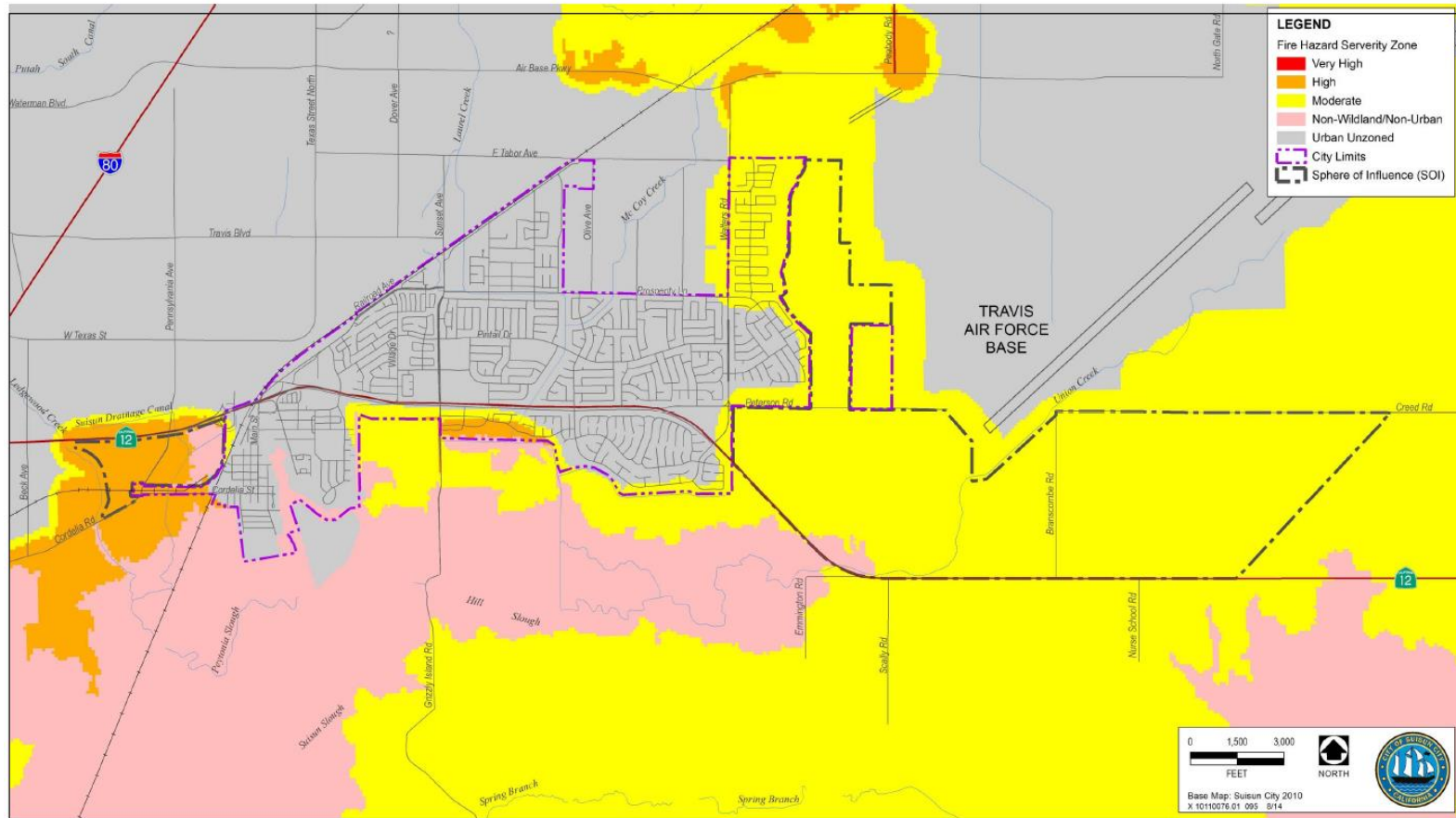
- Wildland Fire Hazard Areas
 - Low or None
 - Moderate
 - High
 - Very High
 - Extreme
- Basemap Layers
 - Roadways
 - Highways
 - Railroads
 - Streams and Creeks
 - Major Water Features
 - Municipal Service Areas
 - Adjacent Counties

Source: CA Dept. of Forestry and Fire Protection 2003, CASIL 1993 and 1996

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Local Hazard Mitigation Plan**



City of Suisun City **Local Hazard Mitigation Plan**



Wild Fire Risk for Suisun City

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Structures

Repetitive Loss

There are no records for repetitive loss due to wild fire.

Potential Loss Estimates

Open space areas and grasslands, particularly those adjacent to urban development, can pose major risks for wildland fires. Most areas within the City's Planning Area and outside the existing City limits are characterized as moderate fire risk. However, according to the California Department of Forestry and Fire Protection (CALFIRE), there are areas of high fire risk in the western part of the Planning Area and just east of Sunset Avenue and south of SR 12. Fire risks are not solely contained to wildfires. Older structures oftentimes are not constructed to meet current fire codes, so may pose an additional risk. Many of these structures may have inadequate electrical and heating systems.

Population Effected	144
Loss to Buildings	\$149,831
Loss to Equipment	\$23,408
Loss to Infrastructure	\$227,403

Development Trends

Suisun City manages land use change, building design, and site planning in a way that minimizes fire risk by:

- Implementing state building code requirements for fire safety, as modified for historic structures and the rehabilitation of existing buildings.
- Requiring that new development and redevelopment projects ensure adequate water flow for fire suppression, as required by the Building Department.
- Providing public education to encourage owners of older buildings to retrofit these structures to current safety standards, as specified in state building code requirements.
- Continuing to be signatory to the Solano County Fire and Rescue Mutual Aid Agreement and the agreement for Local Government Fire and Emergency Assistance (California Fire Assistance
- Requiring setbacks future development adjacent to Suisun Marsh to provide defensible space and reduce potential for exposure to wildfires.

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Severe Weather

Severe Weather was rated a Moderate Risk Hazard by the City of Suisun City.

Profile for Severe Weather

Description

Severe weather is any destructive weather event, which has the potential to damage property or cause loss of life. Additionally, excessive localized precipitation over a short period of time may result in related flash floods threatening life and property. Severe weather is generally any destructive weather event, but usually occurs in the Solano County as localized storms that bring heavy rain, hail, lightning, and strong winds. A few instances of extreme heat have been recorded; however, winter storms are a major part of the severe weather hazard profile documented in this section.

Past Occurrences

Since 1950, 11 federally declared major severe weather events have occurred in Solano County as shown in Table 5-9. These events include: one coastal storm, one snow event, and five severe storm events. According to Cal EMA Emergency and Disaster Proclamations Executive Orders (November 2003 to present), one severe storm event occurred in Solano County in 2006. The 2010 ABAG LHMP Update lists one heavy rain and two severe storm events occurring in Solano County between 1957 and 1982.

Past Disasters in Solano County				
Disaster Number	Declaration Date	Disaster Type	Incident Type	Explanation
Federal Declarations				
677	2/9/1983	DR	Coastal Storm	Coastal Storms, Floods, Slides, and Tornadoes
894	2/11/1991	DR	Snow	Severe Freeze
1044	1/10/1995	DR	Severe Storm	Severe Winter Storms, Flooding, Landslides, and Mud Flows
1046	3/12/1995	DR	Severe Storm	Severe Winter Storms, Flooding, Landslides, and Mud Flows
1155	1/4/1997	DR	Severe Storm	Severe Winter Storms, Flooding, Landslides, and Mud Flows
1203	2/9/1998	DR	Severe Storm	Severe Winter Storms and Flooding
1628	2/3/2006	DR	Severe Storm	Severe Winter Storms, Flooding, Landslides, and Mud Flows
Cal EMA Emergency and Disaster Proclamations / Executive Orders				
	5/10/2006		Severe Storm	Roadway Damage
2010 ABAG LHMP Update				
	5/20/1957		Heavy Rain	State of Emergency for Producing Areas of Northern California
	3/5/1980		Severe Storm	Rain, Winds, Mudslides, and Flooding
	10/26/1982		Severe Storm	Rains Causing Agricultural Losses

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Location

Severe weather affects all areas of Solano County as the particular hazard has no geographical boundaries. Throughout the unincorporated areas of the County, there are slight variations in the average amount of rainfall received due to terrain differences.

Extent

Solano County experiences what climatologists classify as a Mediterranean type of climate. This climate regime is typified by nearly 90 percent of the annual precipitation occurring a relatively narrow window of about 16 weeks. The most severe storms occur during the late fall to early spring. The climate pattern, coupled with the onshore flow of warm, moist Pacific air during the winter, can generate severe and prolonged periods of heavy rain. Solano County experiences periods of heavy rains on an annual recurring basis. Some of these severe winter storms may also contain embedded thunderstorms.

Thunderstorms are typically few in number and are more likely to appear in the spring or late fall. Though difficult to capture magnitude and severity of severe storms in a generalized region, two data sources can be used to develop a general sense of the magnitude and severity of severe storms within Solano County.

Probability

SHELDUS Data

Data from SHELDUS was used to develop the information on the table below. SHELDUS is a county-level data set for the United States that tracks 18 types of natural hazard events (or a combination of) along with associated property and crop losses, injuries, and fatalities for the period 1960-2010. Produced by the Hazards Research Lab at the University of South Carolina, this database combines information from several sources (including the NCDC). Only events that generated more than \$50,000 in damage were included in the table. For events that covered multiple counties, the dollar losses, deaths, and injuries were equally divided among the affected counties (e.g., if four counties were affected, then a quarter of the dollar losses, injuries, and deaths were attributed to each county). Events that were reported by the NCDC with a specific dollar amount are included in SHELDUS.

The NCDC and SHELDUS tables below summarize severe weather events that occurred in Solano County. Only a few of the events actually resulted in state and federal disaster declarations. It is further interesting to note that different data sources capture different events during the same time period, and often display different information specific to the same events.

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NCDC & SHELDUS Severe Weather in Solano County

Severe Weather Type	Count of Hazard Type	Fatalities	Injuries	Property Damage	Crop Damage
Flooding	7	3.64	10.63	\$58,502,707	\$984,599
Flooding - Thunder Storm	1	0	0	\$448,276	
Flooding - Thunder Storm - Wind	1	0	0	-	\$16,701,478
Flooding - Wind	1	0	0	\$118,182	\$11,818
Flooding - Wind - Winter Weather	1	0	0	\$2,138	
Flooding - Winter Weather	2	0	0	\$33,668	
Fog	2	1.17	6.87	\$537,177	
Hail	2	0	0	\$119,294	\$15,294
Hail, Thunder Storm, Wind, Winter Weather	1	0.03	0.02	\$640	
Heat	3	0	9.03		\$109,244
Lightning	3	0	0	\$9,234	
Lightning - Thunder Storm	2	0	0	\$1,411	\$2,171
Lightning - Wind - Winter Weather	1	0	0	\$109	\$109,244
Thunder Storm	13	0.98	1.3	\$5,551,954	\$123,822
Thunder Storm - Wind	12	0.9	1.56	\$1,594,919	\$10,936
Thunder Storm - Wind - Winter Weather	3	0.03	0	\$110,769	\$59,770
Thunder Storm - Winter Weather	2	0	0	\$11,088	
Wind	26	0.59	0.61	\$2,921,666	\$23,997
Winter Weather	13	0.22	1.21	\$292,817	\$15,439,395
Grand Total	96	7.56	31.23	\$70,256,050	\$33,591,768.

Vulnerability for Severe Weather

Overview

Severe weather will continue to occur annually throughout Solano County. The frequency and probability of future occurrences is highly likely. Due to past existing weather patterns and global warming, increases in the probability of future occurrences of severe weather events in unincorporated areas of the County are anticipated.

Heavy Rains

According the NCDCs database a strong storm brought gusty winds and heavy rain between 13th and 14th of October 2009. The remnants of Super Typhoon Melor from the western Pacific Ocean combined with a Canadian upper level low pressure system formed a strong storm over Northern California. Heavy rain caused minor flooding on roads and in small streams. Travis Air Force Base recorded 4.75 inches of rain on the 13th and Vacaville recorded 4.23 inches, which was a 24 hour record for that weather recording site. The heavy rain resulted in numerous storm drains becoming clogged which caused local street flooding. Wind gusts up to 48 mph were recorded at Vacaville Airport on the 13th. Numerous trees, large

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Local Hazard Mitigation Plan

tree branches, and power lines were reported down which resulted in power outages to at least 14,000 customers in Solano County.

Hail

According the NCDCs database strong winds, heavy rain, and thunderstorms impacted the Central Valley on the 19th and 20th of January 2010. An all-time record low barometric pressure was set for Sacramento on the 21st. The lowest sea level pressure at Sacramento Executive Airport was 28.94 inches at 2:46 pm PST. This broke the previous record of 28.95 inches, set on January 27th at the old U.S. Weather Bureau Office in downtown Sacramento. Thunderstorms in the area of Vacaville Nut Tree Airport in Solano County produced significant amounts of small hail on the 19th. The magnitude of the event was 0.75 inches of hail. Isolated thunderstorms in interior Northern California produced small hail that accumulated on roads in the Delta causing numerous car accidents. Penny size hail covered the ground up to two inches deep near Vacaville, causing numerous car accidents. Property damage was in excess of \$100 thousand.

Tornado

According the NCDCs database an Enhanced Fujita Scale (EF) 0, gale force tornado touched down near Rockville in Solano County. At approximately 3:52 pm, the EF0 tornado touched down less than a mile south of downtown Rockville in Solano County, near Rockville Road and Suisun Valley Road. The maximum wind speed of the tornado was estimated at 70 mph with a damage path of 200 yards. There were neither injuries nor fatalities. The tornado caused roof damage to two small businesses and damaged several trees, fences, and signs. Damage estimates were approximately 26K.

Structures

According to Solano County the vulnerability rating for communities is high with widespread potential impact. The entire population is exposed as is residential parcel value, critical facilities and lifelines. There is no tool for predicting specific structures and their potential for damage in severe weather.

Repetitive Loss

There are no records available for repetitive loss properties due to severe weather.

Potential Loss Estimate

Loss estimates are based on what occurred during the El Nino severe weather event in 1997. The figures are adjusted to today's dollar amounts.

Population Effected	58
Loss to Buildings	\$59,932
Loss to Equipment	\$9,363
Loss to Infrastructure	\$90,933
Loss to Streets & Pavements	\$175,453

Man-caused & Technological Hazards

Hazardous Materials

Hazardous Materials Risk was rated a HIGH RISK Priority by the City of Suisun City.

Hazmat Profile

Description

Hazardous materials are any substance or combination of substances which because of quantity, concentration, or characteristics may cause or significantly contribute to an increase in death or serious injury, or pose substantial hazards to humans and/or the environment. The production and use of these hazardous materials is a part of our society over which local governments have little control.

Hazardous material incidents differ from other emergency response situations because of the wide diversity of causative factors and the pervasiveness of the potential threat. Circumstances such as the prevailing wind and geographic features in the vicinity of emergency incidents are relevant factors which may greatly increase the hazardous chemical dangers. Incidents may occur at fixed facilities where, most likely, the occupants have filed site specific emergency response contingency and evacuation plans. However, incidents may also occur at any place along any land, water or air transportation routes, or as a result of vessel mishaps, aircraft accidents, misuse of agricultural chemicals and illegal dumping.

Location

Suisun City is home to a few businesses, which use, produce and store a variety of hazardous materials. Also, the railroad and highway travel network traversing the City carries a relatively high percentage of industrial traffic. In the event of an industrial or traffic accident, many people may need to be evacuated.

Sound land use and emergency preparedness planning can reduce the risk of injury and property loss if an accident occurs. Recently enacted "right – to – know" laws enable City and County officials to identify high risk industries and work toward minimizing the exposure of persons to the hazard

Some of the City's businesses produce, use and store hazardous materials. Public safety issues involve not only the use of these materials in populated areas but also the transport and disposal of the substances in the urban environment.

The transportation of chemicals and other hazardous substances through the City also presents the greatest public safety problem. State Highway 12, which is a major connector between Interstate 80 and Interstate 5, has a high volume of commercial truck traffic. Also, Interstate 80 is in close proximity to the city and a major HAZMAT incident there could pose a risk. The main rail connection from the San Francisco area to all point east runs through the heart of Suisun City. Several freight trains and passenger trains (including the Capitol Corridor commuter system) use the connection each day. The freights using this transportation route carry a variety of materials which could pose health risks to Suisun residents in the event of an accident.

The following is a listing of the business in Suisun City where Hazardous Materials are either used, stored or manufactured. This list is maintained by Solano County., Environmental Services Division, Hazardous Materials & Wastes (CUPA)

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Solano County
 Site Listing

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Program: 21M HAZARDOUS MATERIALS DISCLOSURE

Site #	Stat	Site Name	Street	City, State, Zip	Phone
40009	A	7-ELEVEN #SS #32180	801 SUNSET AVE	SUISUN CITY CA 94585	707-428-0311 707-428-0311 Emr 800-828-0711 Emr 800-828-0711 Emr 800-828-0711 Emr
400269	A	A & E AUTOMOTIVE SALES	631 RAILROAD AVE # G	SUISUN CITY CA 94585	707-422-2323 Emr 707-235-6687 Emr
40016	A	ARCO #83087	299 MARINA BLVD	SUISUN CITY CA 94585	707-429-0132 707-429-0132 Emr 925-689-1485 Emr 925-548-7910 Pager
400802	A	AT&T MOBILITY # 32736	333 SUNSET AVE	SUISUN CITY CA 94585	510-305-2553 Emr 800-638-2822 Ext 2 Emr 510-305-2553 Pager 925-468-8499 Emr 800-566-9347 Emr
40226	A	AUTOZONE CORPORATION	288 SUNSET AVE	SUISUN CITY CA 94585	707-428-3994 707-428-3994 Emr 800-313-9693 Emr 901-495-7217 Pager 800-313-9693 Emr 800-313-9693 Emr
40197	A	BODYCRAFT	50 MAIN ST # B,C,D	SUISUN CITY CA 94585	707-399-0363 707-399-0363 Emr 925-876-0727 Emr 707-399-0363 Emr 925-360-0766 Emr
40013	A	BONFARE MARKET #376	1500 WALTERS RD	SUISUN CITY CA 94585	707-425-1384 408-933-4422 Emr 408-427-1693 Emr 408-933-4422 Emr 408-319-7111 Emr
40231	A	CALIFORNIA MARINE SPORTS	1240 KELLOGG ST	SUISUN CITY CA 94585	707-864-2500 707-864-4007 Emr 707-225-1341 Emr 707-226-5711 Pager 707-864-2500 Emr 707-688-8013 Emr

Department.

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Site #	Stat	Site Name	Street	City, State, Zip	Phone
40204	A	CALIFORNIA STREET MACHINE	96 RAILROAD AVE # D	SUISUN CITY CA 94585	707-429-1888 707-429-1888 Emr 707-422-8275 Emr 707-580-4673 Pager 707-429-1888 Emr 707-580-5536 Emr
40147	A	CHADLEN INDUSTRIES	519 RAILROAD AVE	SUISUN CITY CA 94585	707-422-4557 707-422-4557 Emr 707-428-6023 Emr 707-425-6345 Emr
40244	A	CHEVRON - ASHRIA LLC	1200 ANDERSON DR	SUISUN CITY CA 94585	707-425-9858 707-425-9858 Emr 707-423-1956 Emr
40017	A	CHEVRON, SUNSET #200473	113 SUNSET AVE	SUISUN CITY CA 94585	707-421-9323 800-423-3528 Emr 800-231-0623 Emr 707-301-0519 Emr 707-688-2853 Emr
40243	A	CITY OF SUISUN CORP YARD	4555 PETERSON RD	SUISUN CITY CA 94585	707-421-7349 707-421-7349 Emr 707-580-0614 Emr 707-580-0618 Pager
40192	A	FAIRFIELD CONSTRUCTION SUPPLY	405 RAILROAD AVE # A	SUISUN CITY CA 94585	707-421-8008 707-421-8008 Emr 707-422-8639 Emr
40018	A	FAIRFIELD-SUISUN WASTEWATER PUMP-CIVIC	755 CIVIC CENTER BLVD	SUISUN CITY CA 94585	707-429-3233 707-429-8930 Emr 916-956-3621 Emr 707-428-9124 Emr 707-344-4814 Emr
40203	A	FAIRFIELD-SUISUN WASTEWATER PUMP-LAWLER	1159 LAWLER RANCH	SUISUN CITY CA 94585	707-429-3233 707-429-8930 Emr 916-956-3621 Emr 707-428-9124 Ext 106 Emr 707-344-4814 Emr
40229	A	FREON FREE	409 RAILROAD AVE # D	SUISUN CITY CA 94585	707-429-9013 707-429-9013 Emr 707-365-4084 Emr 707-429-9013 Emr 707-280-3330 Emr

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Site #	Stat	Site Name	Street	City, State, Zip	Phone
40126	A	HI TECH AUTOMOTIVE	237 BENTON CT	SUISUN CITY CA 94585	707-427-5220 707-427-5220 Emr 707-422-7420 Emr 707-427-5223 Emr
400766	A	KRAGEN #4268	193 SUNSET AVE	SUISUN CITY CA 94585	707-422-8086 707-422-8086 Emr 707-447-6457 Emr 925-209-1321 Pager 800-848-2872 Emr
40232	A	KUSTOM KREATION / CRUISER CONNECTION	96 RAILROAD AVE # A	SUISUN CITY CA 94585	707-434-1988 707-720-9843 Emr 707-720-9843 Emr
40116	A	LEVEL 3 COMMUNICATIONS, INC.	106 RAILROAD AVE	SUISUN CITY CA 94585	720-888-1158 510-893-1799 Emr 877-877-7758 Emr 916-396-5536 Emr 877-877-7758 Emr
40146	A	NORCAL CONCRETE INC	PENNSYLVANIA & CORDELIA RD	SUISUN CITY CA 94585	707-425-6144 707-425-6144 Emr 707-448-9475 Emr 707-249-0907 Pager 707-425-6144 Emr
40183	A	PARK PLACE CLEANERS, INC.	258 E SUNSET AVE	SUISUN CITY CA 94585	707-427-1478 707-427-1478 Emr 707-386-4600 Emr 707-745-6142 Emr 925-451-6571 Emr
40241	A	PIT STOP AUTO REPAIR	108 RAILROAD AVE # F	SUISUN CITY CA 94585	707-426-6400 707-426-6400 Emr 707-422-6042 Emr 707-386-0531 Emr 707-386-0372 Emr
40191	A	RAILROAD AVENUE AUTOWORKS	605 RAILROAD AVE # A	SUISUN CITY CA 94585	707-429-1379 707-429-1379 Emr 707-422-4307 Emr 707-249-8842 Pager 707-429-1379 Emr 707-447-3910 Emr
40215	A	RAMIREZ TOWING, INC.	1502 HUMPHREY DR # B	SUISUN CITY CA 94585	707-422-0974 707-422-0974 Emr 707-372-9064 Emr

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Site #	Stat	Site Name	Street	City, State, Zip	Phone
40194	A	RUDY'S AUTO BODY & FRAME	1510 HUMPHREY DR # A	SUISUN CITY CA 94585	707-422-1072 707-422-1072 Emr 707-425-7516 Emr 707-422-1072 Emr 707-448-3398 Emr
40015	A	SHELL, SUNSET	200 SUNSET AVE	SUISUN CITY CA 94585	707-421-0384 510-305-1581 Emr 925-833-8845 Emr 510-419-0920 Emr 510-489-6108 Emr
400809	A	SPRINT NEXTEL CELL SITE# CA-2713	1510 HUMPHREY DR	SUISUN CITY CA 94585	866-400-6040 Ext 2 Emr 866-400-6040 Ext 4 Emr 877-347-4457 Emr 877-347-4457 Emr
40242	A	STAR AUTO BODY SHOP	631 RAILROAD AVE # BLDG B	SUISUN CITY CA 94585	707-427-0220 707-427-0220 Emr 707-337-5884 Emr 707-310-5347 Emr
40240	A	SUISUN CITY MARINA	1240 KELLOGG ST # B	SUISUN CITY CA 94585	707-421-7313 707-421-7310 Emr 707-421-7310 Emr
40168	A	SUISUN ROOFING SUPPLY INC	260 BENTON CT	SUISUN CITY CA 94585	707-425-6211 707-425-1026 Emr 707-333-5828 Emr
40011	A	SUISUN UNION 76	115 SUNSET AVE	SUISUN CITY CA 94585	707-429-0461 925-979-0560 Emr 925-979-1140 Emr 415-710-4520 Pager 925-979-0560 Emr 925-626-2283 Emr 415-310-1209 Pager
40103	A	T.O.E. PERFORMANCE PRODUCTS	211 DRIFTWOOD DR	SUISUN CITY CA 94585	707-425-2996 707-425-2996 Emr 707-333-4708 Emr 707-425-2996 Emr 707-310-2767 Emr
40007	A	UNION PACIFIC RAILROAD	110 CORDELIA RD	SUISUN CITY CA 94585	707-425-4460 888-877-7267 Emr 800-892-1283 Emr 510-268-3004 Emr 888-877-7267 Emr

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Program: 21M HAZARDOUS MATERIALS DISCLOSURE

Site #	Stat	Site Name	Street	City, State, Zip	Phone
400744	A	VERIZON WIRELESS SUISUN CITY	ONE HARBOR (300 MAIN STREET) CTR	SUISUN CITY CA 94585	866-694-2415 682-831-3523 Emr 800-264-6620 Emr 925-416-4520 Emr 510-410-5300 Emr

Report

Total Sites Active: 36 Inactive: Temporary:

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Local Hazard Mitigation Plan

In Suisun City the vast majority of hazardous material incidents are handled prior to their becoming a major disaster. City services are proactive and evolutionary in its response to a developing incident. This plan is designed to accommodate both the large number of relatively routine minor spill incidents and the truly catastrophic hazardous material disaster.

Suisun City is a voting member and subscriber to the Solano Hazardous Materials Response Team. This is a county-wide joint powers agreement between cities. The team is a type-2 team certified by California Office of Emergency Services.

The increasing volume and variety of hazardous materials that are generated, stored, or transported within the City is a problem of great concern to public officials and the community. A major hazmat accident and/or spill could endanger the health and safety of unknown numbers of men, women and children who may be within a mile of the accident scene. A number of freight trains crisscross through the City hauling various types of hazardous and explosive materials including chlorine gas and LPG natural gas. Several fixed site industrial firms require potentially hazardous materials to operate their businesses.

Lodi Gas Pipeline

There are underground pipelines which carry flammable and hazardous materials near Suisun City. A 16" pipeline runs through the Montezuma Hills east of Suisun City. A major explosion or fire involving the natural gas pipeline may have a remote effect on the city.

Lodi Gas Storage, or LGS, is a natural gas storage utility company that has been operating in Northern California since 2002. LGS serves the PG&E Citygate marketplace with direct connections to Lines 400 and 401.

LGS's original facility, which has been in service since 2002, is located approximately 30 miles south of Sacramento, near Lodi, California. The Company completed its first expansion project, known as Kirby Hills Phase I, in the Montezuma Hills, nine miles southeast of Fairfield, California, in 2007. LGS substantially completed a second expansion project, known as Kirby Hills Phase II, in 2009. These facilities collectively have a maximum injection and withdrawal capability of approximately 700 million cubic feet per day ("MMcf/day") and 800 MMcf/day, respectively. LGS's facilities are designed to provide high deliverability natural gas storage service and have a proven track record of safe and reliable operations.

Lodi Gas is regulated by the California Public Utilities Commission. All services are contracted under the Company's California Public Utilities.

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City of Suisun City Local Hazard Mitigation Plan

Other Pipelines

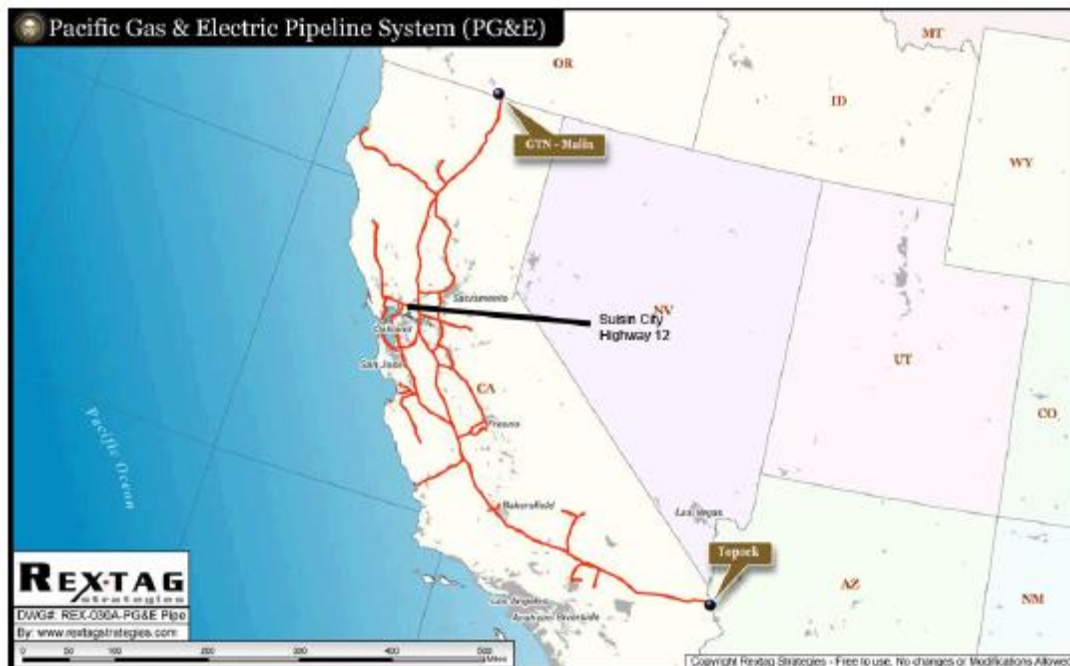
In March, 2011, a report entitled Evaluation of safety of aging hazardous liquid and natural gas transmission pipelines in the Suisun Pipeline Corridor, California was prepared by Watershed Systems to evaluate potential public safety issues with two groups of hazardous fuel pipelines that pass through the community of Suisun City, at the San Joaquin River delta in San Francisco Bay. These include jet fuel transmission pipelines delivering fuel to Travis Air Force Base and the regional trunk high pressure natural gas transmission lines operated by Pacific Gas and Electric Company (PG&E). Both pipeline systems are more than 50 years old and now pass through suburban residential and commercial neighborhoods.

Hazmat Vulnerability

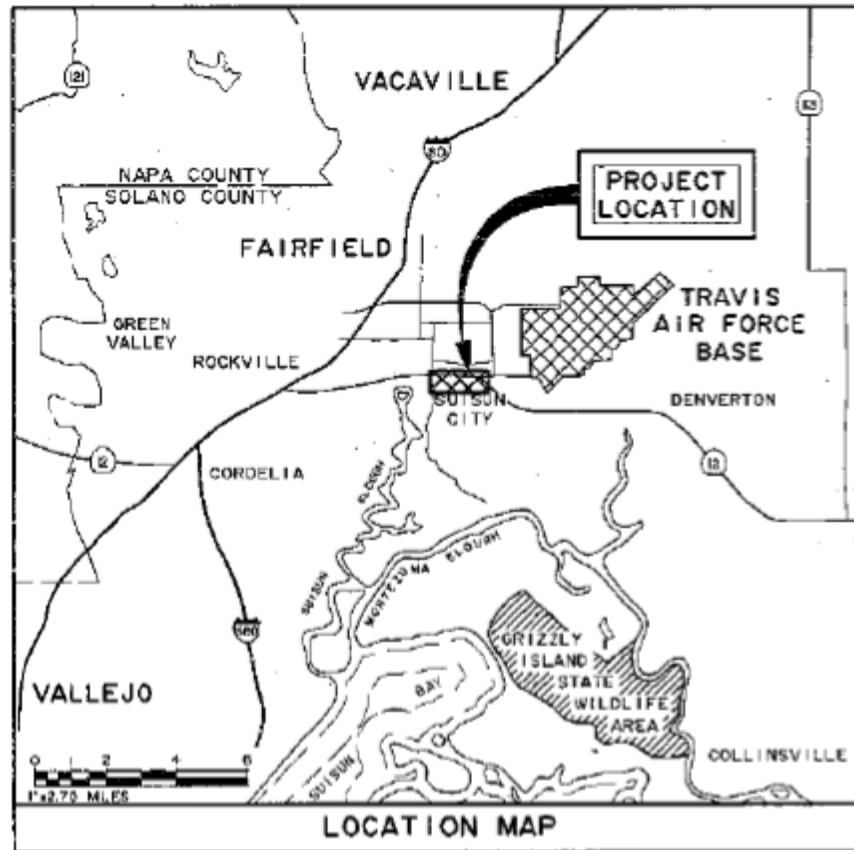
Pipelines

The above report concluded that the jet fuel lines terminating at Travis Air Force Base are in poor condition and need to be decommissioned as soon as planned substitute lines are completed. It also recommended that Congress reconsider classifications for so-called gathering lines that are, in fact, used for fuel transmission and deliveries in urban areas rather than gathering in oil fields.

The report further concluded that PG&E must continue its gas transmission system upgrades to allow more comprehensive and thorough routine inspections of pipeline integrity. Aging steel pipelines do not last forever and those over 50 years old need to be carefully and frequently monitored. It was also recommended that further consideration of questions raised during the study. These questions involved operating parameters, such as pressure surges and safety issues such as shutoff valves and emergency response planning.



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Pipeline Incident History

In the late 1950's the airbase fuel storage tanks leaked creating a clean-up issue. This created an environmental reason to limit the amount of fuel storage on the base and drove completion of fuel supply pipelines.

In 1968 the Army Corps of Engineers took on the project of running two pipelines to the base following the same route as the aviation gas pipeline. This again followed the same Highway 12 southern route to the airbase. In 1970 the project was completed.

In 1975 the City of Suisun City annexed 2 miles of Solano County land that included the pipeline corridor and began expanding eastward toward Travis AFB. Suisun City then approved building sub-divisions following Highway 12 and the pipeline corridor.

During the period 1992-96 the California Department of Transportation replaced and relocated over a mile of aviation pipeline for Highway 12 widening. During this time the 6-inch petroleum product pipeline was decommissioned and only an 8-inch line remains. The U.S. Army Corps of Engineers constructed the present aviation fuel pipelines, capping the 6-inch line in 1968.

Another long-distance commodity pipeline transporting JP-8 jet fuel passes just west of the Highway 12 study corridor carrying fuel from the Concord area refineries to Sacramento and on to Reno. It is owned and operated by a company called SFPP -- Kinder-Morgan. This 20-inch pipeline crosses Highway 12 and follows railroad tracks. It was upgraded in 2004 replacing an older 14-inch pipeline. A branch line

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was installed in 2013 that supplies Travis Air Force Base with JP-8 fuel. The line crosses Walters Rd north of Suisun City.

There are multiple pipelines that follow the Highway 12 corridor. Two historic lines have been used for the Air Force Base fuel supply. The JP-8 8-inch line is currently used for kerosene-based jet-fuel. An older 6-inch line was decommissioned after the 8-inch line was installed next to it in 1968. Pacific Gas and Electric (PG&E) operates both 32-inch and 16-inch high-pressure natural gas transmission lines as well as local distribution natural gas lines. All of these pipelines pass through an urban corridor along Highway 12 and supply Travis Air Force Base as well as distant points. The natural gas lines were first installed in 1949 (16-inch line "210-B") and 1965 (32-inch line "210A").

PG&E's lines are regional transmission lines and are connected to the California natural gas pipeline system, carrying natural gas to Sacramento and the San Francisco Bay area. The older line has had sections replaced locally, and some of the replacement sections are up to 20-inches in diameter. Several grades of pipeline have been used for replacements with differing pipe wall thickness and differing operating pressure limits and specified minimum yield strengths.

Pipeline Risks

Corrosion of pipelines may occur from many causes. Pipeline operators must monitor and avoid buildup of corrosive acid fluids or chemicals that may damage pipe materials and must protect pipes from external rusting and other soil corrosive conditions. Pipelines are constructed of "high carbon" steel primarily for strength. High carbon steel is not stainless steel and is subject to chemical alteration by both conveyed fluids and external environments. Corrosion may be both internal and external. A third class of corrosion-like pipeline damage is caused by stresses such as over-pressurization, subsidence, or tectonic forces.

No known leaks have been reported on the primary PG&E gas transmission lines within the Highway 12 study corridor. PG&E conducts surveys on both its lines annually in this suburban area. The following leaks were found in those annual surveys. A minor 2-inch upstream-tap valve leak was reported in 1999 near Laurel Creek near the western end of the Highway 12 project, and 2 minor above-ground leaks were reported near Woodlark Drive cross-street at Highway 12 in 2009. One of these was reported to be a leaking closure (valve) on an above-ground blow-down stack. The other was a pinhole leak on an above ground pipe nipple. The leaking closure valve was removed in 2010 as part of a project to retrofit the main pipelines to accommodate in-line inspections. That work has been completed. The 1999 leak was "eliminated" by lubricating the valve. In 2013,14, Pacific Gas & Electric replaced several valves in Suisun City to allow inspections and pipeline control.

The jet fuel lines have had leaks within the Highway 12 corridor also. A Utility and Site, Inc. contracted worker working for AT&T opened a utilities vault at Highway 12 and Lawler Ranch Parkway on February 24, 2009 and detected a strong odor. Upon looking down into the vault he saw a standing fluid a few feet deep. He moved away from it and made an 811 telephone call to find who owned pipelines at that location. The 811 operator told him that there were not any pipelines listed at that location. He made multiple phone calls before he contacted the Suisun City Fire Department. The Fire Department contacted Travis AFB and they responded.

It was ultimately determined that a ball-valve had leaked the jet fuel, partially filling the jet-fuel valve vault and the adjacent utility vault. The jet fuel migrated into the storm drain system that drains southward toward tidewater. Initial responses and investigations concluded that the spill was limited and that pumping from the storm drains had been able to collect all spilled fuel within about a two-month period. This line is now out of service.

The similarities between that San Bruno pipe that exploded and the Suisun City Highway 12 corridor are enough alike to merit serious considerations. Both areas have pipe segments installed in the middle of

City of Suisun City Local Hazard Mitigation Plan

the last century in areas now urbanized. Both carry high pressures. Both are characterized by many short sections of girth-welded seams and double-submerge welded primary longitudinal seams.

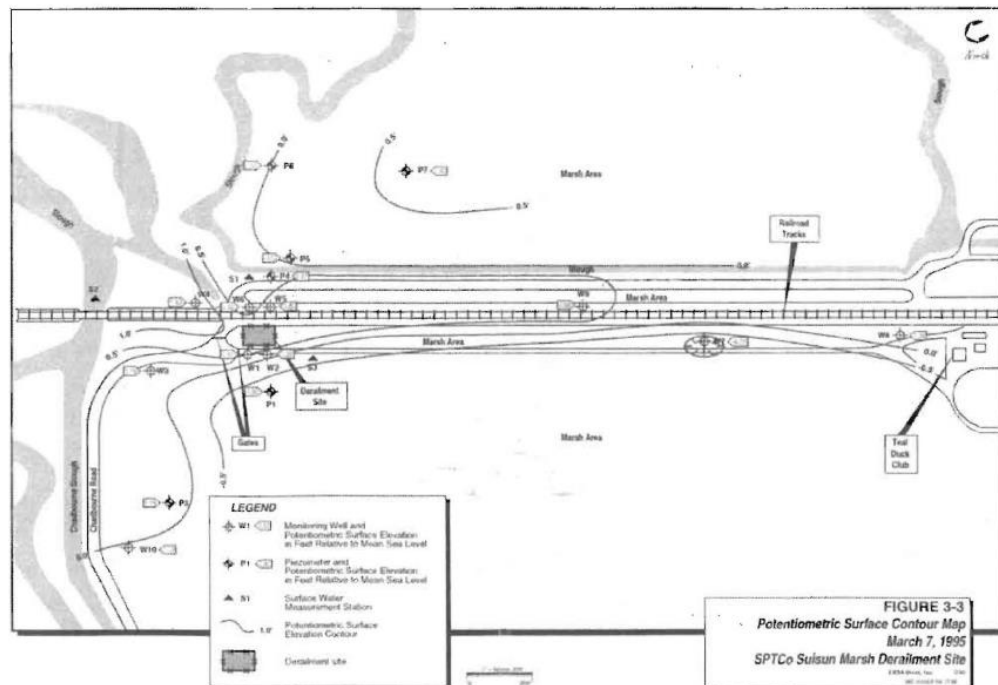
Further work is necessary to establish what, if any, automated shut-down systems exist in and near Suisun City, and what response time and procedures would be in the event of a pipeline failure along Highway 12. Emergency valves, pump stations, and safety communication systems need to be evaluated in a fashion that meets Homeland Security concerns while still providing local governments, emergency personnel, and citizens with assurances that gas and fuel transmission line systems can continue to be good neighbors for the remaining 6 or more decades of fossil fuel availability.

Train Derailment

In 1969 a train derailment occurred that included two tank cars containing approximately 90 tons each of elemental white phosphorus, a solid substance that spontaneously ignites when exposed to the atmosphere. The train was operated by Southern Pacific. The tank cars were ruptured during the derailment and a fire involving a limited amount of the phosphorus ensued. The fire was extinguished with most of the phosphorus left unburned in the tank cars. Immediately after the derailment and suppression of the resulting fire covered the two derailed tank cars containing the phosphorus and an adjacent railcar containing corn, with marsh soil, capped them with unreinforced concrete and surrounded them with a chain-link fence approximately 65 by 40 feet in dimension.

The location of the site is in Suisun Marsh, an area north of the Suisun Bay portion of the Sacramento River Delta, which is approximately 5 miles southwest of Fairfield. Suisun Marsh contains large tracts of low-lying marshlands. Chadbourne Slough and another smaller slough transect the northern and eastern portions of the site. Also, another tail track is located on the east site.

An inspection report prepared by the Department of Toxic Substances Control in 2011 concluded that the remedial action remains protective of human health and the environment. Impacted soil remains under a multimedia cap, which is in good shape and remains protective.



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Other Risks

As stated earlier in this section, the City of Suisun City is at risk for Hazardous Materials incidents due to its proximity to major highway and rail transportation routes. The city's emergency plans include protocols for response, evacuation and remediation of events of this type. Large scale events would involve a multi-jurisdictional, multi-agency response that would be activated through mutual aid agreements.

Transportation Hazards

Transportation Hazards were rated a HIGH RISK PRIORITY by the City of Suisun City.

Transportation Hazards Profile

Rail Incidents

Train accidents are generally localized and the incidents result in limited impacts at the community level. However, if there are volatile or flammable substances on the train and the train is in a highly populated or densely forested area, death, injuries, and damage to homes, infrastructure, and the environment, including forest fires can occur.

According to California Office of Emergency Services, there have been 14 train accidents affecting 12 communities since 1950. Several significant train accidents, derailments, fires and hazardous material releases have occurred in California in the past 40 years that resulted in multiple deaths, numerous injuries, and property damage and have, thus, stimulated changes in land use and rail safety regulations.

A major train derailment that occurs in a heavily populated industrial area can result in considerable loss of life and property. As a train leaves its track, there is no longer any control as to the direction it will travel.

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Potential hazards could be overturned rail cars, direct impact into an industrial building, private residence or entering into normal street traffic.

Each of these hazards encompasses many threats, such as a hazardous materials incident, fire, severe damage to either adjacent buildings or vehicles and loss of life of those in either adjacent buildings or vehicles and pedestrians.

Train derailments are so localized that the incidents themselves would not constitute a disaster. However, if there are volatile or flammable substances on the train and the train is in a populated area, death, injuries, damage to homes, or fires could occur.

Roadways & Highways

Suisun City has four different types of roadways, including:

- Expressway
- Arterials
- Collector Streets
- Local Streets

Expressways are high-capacity, high-speed facilities that serve regional travel needs. Expressways generally restrict crossover access to a minimum of ½ mile intervals, exclusively at signaled at-grade crossings or grade-separated crossings. Direct access to commercial uses is restricted.

State Route 12, the major east-west travel corridor, is the only expressway designated in Suisun City. SR12 is a 4 lane expressway from its junction with Interstate 80 to the west of Walters Road. There is narrows two-lane roadway and is classified as a rural major arterial by Solano County.



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State Route 12 near downtown Suisun City

Arterials carry cross town traffic and provide for the collection and distribution of traffic to residential, commercial and industrial areas. Direct access is restricted. Sidewalks are provided to allow safe travel by pedestrians.

Collector streets provide for traffic movement within and between neighborhoods as well as connections to major activity centers.

Local streets provide for access to abutting property and traffic movements within residential areas. Any roads or streets in Suisun City not classified as expressway, arterial or collector streets are considered local streets.

Vulnerability for Transportation Hazards

Rail

Derailment, runaway trains and their containment are of concern to Suisun City. UPSPs internal policy appears to discourage release of information to the public. Lack of cooperation hinders the ability to identify/contain damage and to notify appropriate agencies. A major train derailment that occurs in a populated area can result in considerable loss of life and property. As a train leaves its track, there is no longer any control as to the direction it will travel. Potential hazards could be overturned rail cars, direct impact into buildings or entering into street traffic.

The main rail connection from the San Francisco area to all points east runs through the heart of Suisun City. Several freight trains and passenger trains (including the Capitol Corridor commuter system) use the connection each day. The freights using this transportation route carry a variety of materials which could pose health risks to Suisun residents in the event of an accident.

The last major derailment that affected Suisun City was in 1969. (See Hazardous Materials Vulnerability section). There were no injuries or property damage as a result of that derailment because it occurred outside populated areas.

Vehicular

On any given day, hundreds of large trucks carrying all sorts of cargos (including hazardous materials) pass through Suisun City. The potential for a highway accident involving one or more trucks carrying volatile cargo is great. Generally, these accidents are handled as incidents by the appropriate jurisdiction;

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however, because of population and volume of vehicular traffic, the risk of a crash becoming a catastrophic event grows.

Truck Incidents

Large trucks account for about 4 percent of all registered vehicles and 7 percent of total vehicle miles traveled. Large trucks account for about 8 percent of all vehicles involved in fatal crashes and 4 percent of all vehicles involved in injury and property-damage-only crashes.

The average cost per crash involving a large truck is \$95,637. With about 429,000 large truck-related crashes per year, the total monetary expense is minimally \$41,028,273,000.00 using today's cost estimates.

Chain reaction accidents on major highways are also another consideration. These events can quickly grow into localized disasters that overstrain local responders. Potentially, they could expand into catastrophic incidents involving hazardous materials, mass casualties, fire, and transportation disruption. Depending on the occurrence, the response could involve mass evacuation, mutual aid and other aspects of managing a disaster. In Suisun City and surrounding areas, certain times of the year bring dense fog that can reduce visibility to zero in spots. Conditions such as this can be a major causal factor for chain-reaction accidents.

A major truck incident that occurs in a populated urban area or residential area can result in considerable loss of life and property. When a truck is involved in an accident, there is no longer control as to the direction the truck will travel. Potential hazards could be overturned tank trailers, direct impact either into a residence or industrial building, or entering the normal flow of traffic.

Each of these hazards encompass many threats, such as hazardous materials incident, fire, severe damage to either adjacent buildings or vehicles, and loss of life of pedestrians or those in either the adjacent buildings or vehicles.

Utility Loss

Utility Loss was rated a MODERATE RISK PRIORITY by the City of Suisun City.

Utility Loss Profile

California's massive electricity in-state generation system generates more than 200,000 gigawatt-hours each year and is transported over the state's 32,000 miles of transmission lines. In 2011, California produced 70% of the electricity it uses; the rest was imported from the Pacific Northwest (10%) and the U.S. Southwest (20%). Natural gas is the main source for electricity generation at 45% of the total in-state electric generation system power.

The state's main challenge is to ensure adequate electricity supplies while reducing greenhouse gas emissions as directed by AB 32 (33% reduction by 2020). Since 2003, California's energy policy has recognized an electricity "loading order" as the preferred sequence for meeting electricity demands. The loading order lists energy efficiency and demand response first, renewable resources second, and clean and efficient natural gas-fired power plants third.

In addition, under the Renewables Portfolio Standard, California's goal was to increase the amount of electricity generated from renewable energy resources to 20% by 2010 and in 2011 legislation passed that pushes that goal to 33% by 2020. Currently, California's in-state renewable generation is comprised of biomass, geothermal, small hydro, wind, and solar generation sites that make up approximately 17% of the total in-state generational output.

Description

California is served by about 75 load-serving entities (LSEs). These are broken down as:

- Investor-Owned Utilities - 6
- Publicly Owned Utilities - 48
- Rural Electricity Cooperatives - 4
- Native American Utilities - 3
- Other Electricity Service Providers - 14

The five largest utilities and total electricity consumption (in 2007) are:

- Southern California Edison Company (SCE) - 88,208 million kilowatt-hours
- Pacific Gas and Electric Company (PG&E) - 85,057 million kilowatt-hours
- Los Angeles Department of Water and Power (LADWP) - 24,317 million kilowatt-hours
- San Diego Gas & Electric (SDG&E) - 20,300 million kilowatt-hours
- Sacramento Municipal Utility District (SMUD) - 10,917 million kilowatt-hours

California's investor-owned electric utilities send power through roughly 200,000 miles of overhead transmission and distribution lines and an additional 70,000 miles of underground lines.

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Power Plants

California produces roughly 70 percent of its electricity from power plants located within our state and from plants that are outside of the state but owned by California utilities. About 30 percent is imported electricity from the Pacific Northwest and the American Southwest. In 2010, the total electricity imported was 92,130 gig watt-hours.

The installed capacity of the 1,008 in-state power plants (greater than 0.1 megawatts - MW) totals 69,709 MW. These plants produced 205,695 gig watt-hours of electricity in 2009.

Northern California Major Electrical Transmission Lines

California and the Pacific Northwest share generating resources by long-distance transmission lines. The Pacific Northwest hydropower supplies may be less available in California in the future (Markoff and Cullen 2008, Perez et al., 2009). Lu et al. (2010) have demonstrated the adverse impact of simultaneous warming across the Western Grid.

Commerce receives electrical power from the Southern California Edison Company.

Extent

The California electricity crisis, also known as the Western U.S. Energy Crisis of 2000 and 2001 was a situation in which California had a shortage of electricity caused by market manipulations and illegal shutdowns of pipelines by Texas energy consortiums. The state suffered from multiple large-scale blackouts, one of the state's largest energy companies collapsed, and the economic fall-out greatly harmed Governor Gray Davis's standing. Drought, delays in approval of new power plants, and market manipulation decreased supply. This caused 800% increase in wholesale prices from April 2000 to

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December 2000. In addition, rolling blackouts adversely affected many businesses dependent upon a reliable supply of electricity, and inconvenienced a large number of retail consumers.

Chronology ^{[1][2][3]}	
1996	California begins to modify controls on its energy market and takes measures ostensibly to increase competition.
April 1998	Spot market for energy begins operation.
May 2000	Significant rise in energy price.
June 14, 2000	Blackouts affect 97,000 customers in San Francisco Bay area during a <u>heat wave</u> .
August 2000	San Diego Gas & Electric Company files a complaint alleging manipulation of the markets.
January 17–18, 2001	Blackouts affect several hundred thousand customers.
January 17, 2001	Governor Davis declares a state of emergency.
March 19–20, 2001	Blackouts affect 1.5 million customers.
April 2001	Pacific Gas & Electric Co. files for bankruptcy.
May 7–8, 2001	Blackouts affect upwards of 167,000 customers.
September 2001	Energy prices normalize.
December 2001	Following the bankruptcy of Enron, it is alleged that energy prices were manipulated by Enron.
February 2002	Federal Energy Regulatory Commission begins investigation of Enron's involvement.
Winter 2002	The Enron Tapes scandal begins to surface.
November 13, 2003	Governor Davis ends the state of emergency.

California had an installed generating capacity of 45GW. At the time of the blackouts, demand was 28GW. A demand supply gap was created by energy companies, mainly Enron, to create an artificial shortage. Energy traders took power plants offline for maintenance in days of peak demand to increase the price. Traders were thus able to sell power at premium prices, sometimes up to a factor of 20 times its normal value. Because the state government had a cap on retail electricity charges, this market manipulation squeezed the industry's revenue margins, causing the bankruptcy of Pacific Gas and Electric Company (PG&E) and near bankruptcy of Southern California Edison in early 2001.[]

The financial crisis was possible because of partial deregulation legislation instituted in 1996 by Governor Pete Wilson. Enron took advantage of this deregulation and was involved in economic withholding and inflated price bidding in California's spot markets. The crisis cost between \$40 to \$45 billion.

September 8, 2011 Power Failure

The worst blackout in California history began with maintenance work at a transmission substation outside Yuma, Arizona that tripped off a 500-kilovolt power line at 3:27 p.m. That disruption cascaded across San Diego County and Baja California, halting 11 minutes later at a San Onofre switch yard 45 miles north of San Diego.

The western transmission grid, stretching across 14 states and into Canada and Mexico, is designed and monitored to withstand any major failure, such as the initial power-line outage on Sept. 8. The outage exposed weakness in the electricity grid that supplies San Diego County with its power.

The grid is part of a web of power lines stretching from Canada to northern Baja California, connecting electricity plants with their customers. Because of San Diego's position in a geographical cul de sac, it is connected to the grid only through two major energy lines: a northern line connected to the San Onofre

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nuclear plants and an eastern line connected to power plants in Imperial County, Arizona, and northern Mexico.

The problem began at an Arizona substation that is a major delivery point of electricity between power plants in Arizona and San Diego. Just before 3:30 p.m., a worker at the substation replaced monitoring equipment that had been causing trouble earlier in the day. That created a short-term power outage for about 56,000 customers in Yuma and western Arizona, said APS, Arizona's largest electric utility, which runs the substation.

Ten minutes later, workers at the substation unsuccessfully tried to restore power to the region, shorting the circuits. That led to a disruption in the electricity lines across Imperial County to San Diego — one of the county's two major sources of electricity.

The worst that should have happened was thought to be temporary, localized "rolling" brownouts or blackouts as the county began to draw power from its second major energy source, the northern power

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lines connected to the San Onofre nuclear plants. But there were no rolling blackouts. Officials at San Diego Gas & Electric described a “cascading effect” as the electric system shut down.

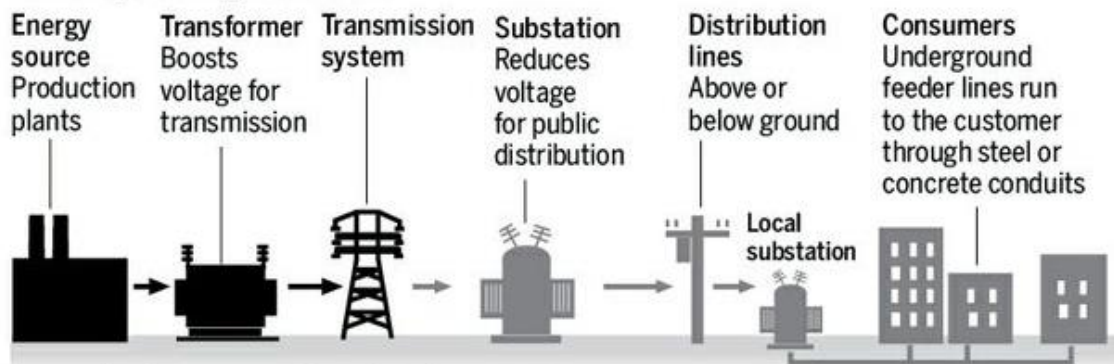
A safeguard that was a built-in as an automatic protective device activated when the San Onofre power plant shut off. The reason that the outage tended to cascade was that the system tried to protect itself from voltage fluctuations.

Amid a heat wave and surging energy demands, SDG&E engineers worked nonstop to execute a “black start” from zero power.

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How a power grid works



Cause of outage:

A high-voltage transmission line near Yuma, Ariz., tripped off line resulting in a major power outage.

Steps to restore power:

1. Re-establish ties with the rest of the Western electric grid.
2. Bring plants to a "synchronous speed" with other sources.
3. Extend transmission through substations, then local substations.
4. Gradually turn on about 1,000 distribution circuits to customers while avoiding sudden jolts.

Source: SDG&E

AARON ATENCIO & MORGAN LEE • U-T

Probability

Extreme summer heat drives up electricity demand for cooling. This can strain electrical supply, transmission, and distribution systems and thereby increase the risks of very costly and disruptive blackouts. An analysis released by Oak Ridge National Laboratory cites two examples in Arizona in 2011 that illustrate the vulnerability of the electrical system under very hot conditions. "Heat waves have

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become longer and more extreme," says the National Academy of Sciences in *Advancing the Science of Climate Change: America's Climate Choices* (2010), adding that "it is very likely" that "heat waves will become more intense, more frequent" in the future.

Cities and towns across America already are seeing changes in weather extremes and experiencing the disruptive consequences," says Keya Chatterjee of WWF. "This report describes the growing threat to our communities, and demonstrates that the threat will be much greater in the long term if we do not sharply reduce our greenhouse gas emissions. Washington's inaction on climate change is leaving our

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cities dangerously exposed. Now is time for cities to address these challenges, and for citizens of every city and town to begin building a safer, healthier and happier future."

Extreme Weather

Regarding implications of climate change for infrastructures in the United States, we find that:

- Extreme weather events associated with climate change will increase disruptions of infrastructure services in some locations.
- A series of less extreme weather events associated with climate change, occurring in rapid succession, or severe weather events associated with other disruptive events may have similar effects.
- Disruptions of services in one infrastructure will almost always result in disruptions in one or more other infrastructures, especially in urban systems, triggering serious cross-sector cascading infrastructure system failures in some locations, at least for short periods of time.

These risks are greater for infrastructures that are:

- Located in areas exposed to extreme weather events
- Located at or near particularly climate-sensitive environmental features, such as coastlines, rivers, storm tracks, and vegetation in arid areas
- Already stressed by age and/or by demand levels that exceed what they were designed to deliver.
- These risks are significantly greater if climate change is substantial rather than moderate.

Regarding implications of climate change for urban systems in the United States:

- Urban systems are vulnerable to extreme weather events that will become more intense, frequent, and/or longer-lasting with climate change.
- Urban systems are vulnerable to climate change impacts on regional infrastructures on which they depend.
- Urban systems and services will be affected by disruptions in relatively distant locations due to linkages through national infrastructure networks and the national economy.
- Cascading system failures related to infrastructure interdependencies will increase threats to health and local economies in urban areas, especially in locations vulnerable to extreme weather events.

Such effects will be especially problematic for parts of the population that are more vulnerable because of limited coping capacities.

"Heat waves have become longer and more extreme," says the National Academy of Sciences in **Advancing the Science of Climate Change: America's Climate Choices (2010)**, adding that "it is very likely" that **"heat waves will become more intense, more frequent"** in the future.

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"The likely increase in heat waves implies more peak load demands, stresses on the energy distribution systems and more frequent brownout and blackouts," says the ORNL in **Climate Change and Infrastructure, Urban Systems, and Vulnerabilities**. **"These will have negative impacts on local health and local economies."**

The ORNL findings are consistent with those of researchers who reported on Climate, Extreme Heat, and Electricity Demand in California in the June 2008 issue of the **Journal of Applied Meteorology and Climatology**. They concluded that "[over the twenty-first century, the frequency of extreme-heat events for major cities in heavily air conditioned California is projected to increase rapidly." They added that "present-day 'heat wave' conditions may dominate summer months—and patterns of electricity demand—in the future" and that **"similar increases in extreme-heat days are likely for other southwestern U.S. urban locations."**

"By the end of this century, all model/scenario combinations indicate an increase in region-wide extreme temperature conditions of a severity associated with electricity shortages under the current configuration of the electric power system and patterns of demand," said the researchers.

Economic and Social Effects

Electricity is the backbone of each industrialized society and economy. Modern countries are not used to having even short power blackouts. The increased dependency on continuous power supply related to electronics, industrial production, and daily life makes today's society much more vulnerable concerning power supply interruptions.

A brownout (reduced voltage) of some minutes or a similar blackout (complete failure of electricity supply) may cause some inconvenience at home such as having the lights turn off. But a blackout of a few hours or even several days would have a significant impact on our daily life and the entire economy.

- Critical infrastructure such as communication and transport would be hampered, the heating and water supply would stop and production processes and trading would cease.
- Emergency services like fire, police or ambulance could not be called due the breakdown of the telecommunication systems.
- Hospitals would only be able to work as long as the emergency power supply is supplied with fuel.
- Financial trading, cash machines and supermarkets would in turn have to close down, which would ultimately cause a catastrophic scenario.

Already, electricity reliability considerations are affecting business decisions. **California's electricity supply reliability problems in periods during which demand exceeds the available generating and/or transmitting capacity have already resulted in industries moving out of California to regions with a more dependable supply of electricity. In the future, this issue is likely to continue to plague California, the southwestern United States, and other heavily air conditioned regions in which electricity shortfalls occur.**

The 2000-2001 California electricity crisis brought to light many critical issues surrounding the state's power generation and distribution system, including its dependency on out-of-state resources. Although

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California has implemented effective energy conservation programs, the state continues to experience both population growth and weather cycles that contribute to a heavy demand for power.

Hydro-generation provides approximately 25 percent of California's electric power, with the balance coming from fossil fuels, nuclear, and green sources. As experienced in 2000 and 2001, blackouts can occur due to losses in transmission or generation and/or extremely severe temperatures that lead to heavy electric power consumption.

Utility Loss Vulnerability

California is a populous state that receives minimal rainfall. Approximately 70% of the population obtains its drinking water from surface sources with the remainder relying on ground water supplies. The basic types of system used by the water companies are pressurized (pressure fed) and non-pressurized (gravity fed) systems. The basic types of system used by the sewer companies are collection and treatment systems that use force pumps to move sewerage.

Drinking water is supplied to California residents through a myriad of governmental agencies, cities, districts, private utilities, mutual water companies, private businesses, and individually owned wells. There are over 10,000 public water suppliers in the state serving water to approximately 29 million consumers. Less than 10% of the public water systems in the state serve collectively more than 95% of the state's population. The remaining 90% of the systems serves less than 5% of the population. D.01-05-089 added Category M (limited other customers as necessary to protect public health and safety, to the extent exempted by the Commission) to the list of essential customers normally exempt from rotating outages.

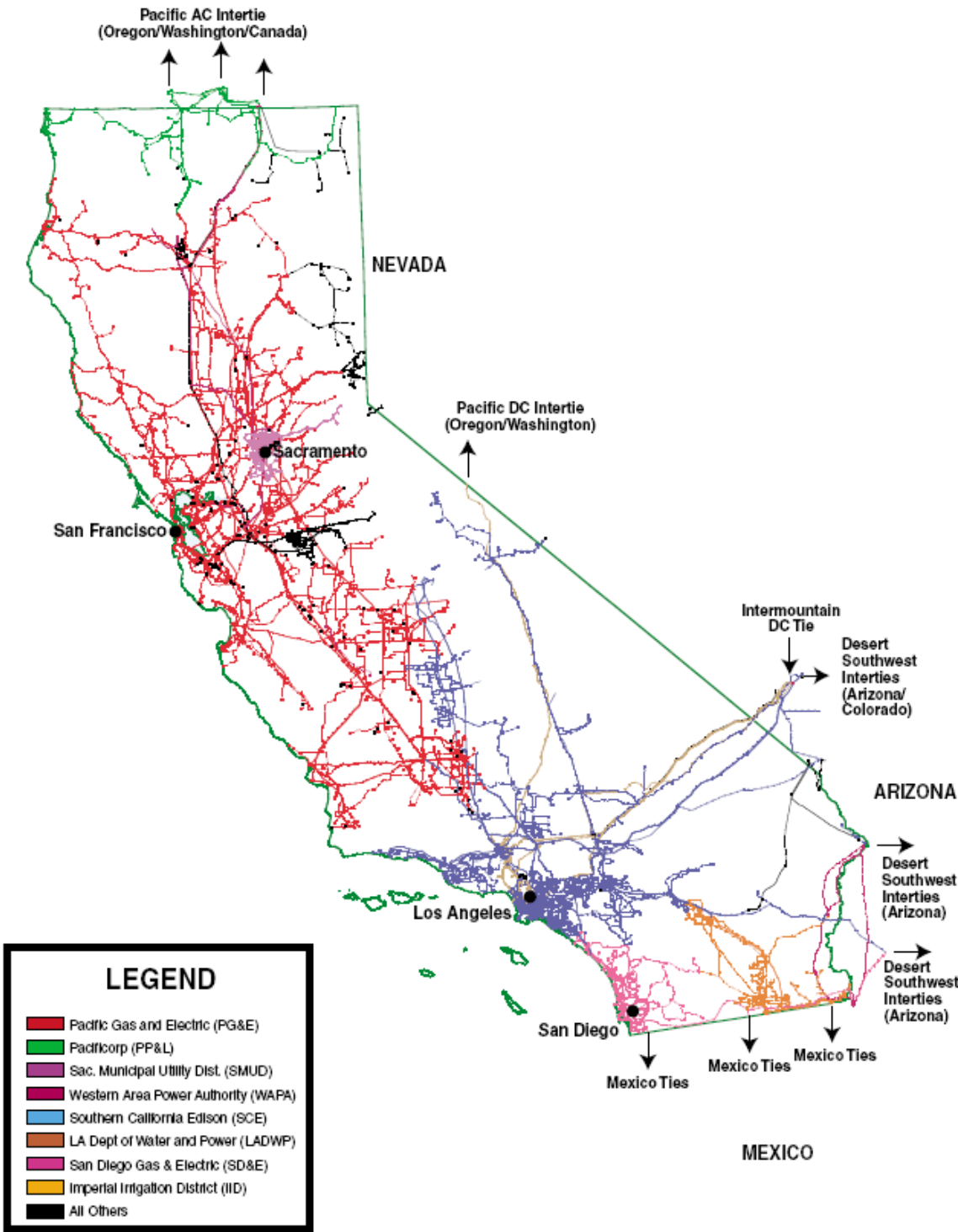
Due to the energy situation and rolling blackouts that occurred earlier in the year, the Water Division has conducted an informal inquiry into the impact of the rolling blackouts and has concluded that during the first four months of the year, California energy situation and rolling blackouts have had no significant impact upon the California Water and Sewer System Industries, in part due to the "Y2K" efforts in 1999. Water utilities and sewer system utilities appear to have the matter well under control with little to no impact on customer service at this time.

The Effects on Public Health & Safety

Public health and safety must be the primary factor used to evaluate a customer's eligibility for exemption from rotating outages. Exempting a fire department from rotating outages is of little value if the water resources needed to fight these fires are not available to it, particular during the high fire season. Fires that start during extreme fire weather conditions are a high risk to the safety of the residents and firefighters, and have a high probability of spreading rapidly and inflicting major property loss, if water pumping facilities are compromised.

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Power Transmission Lines in California



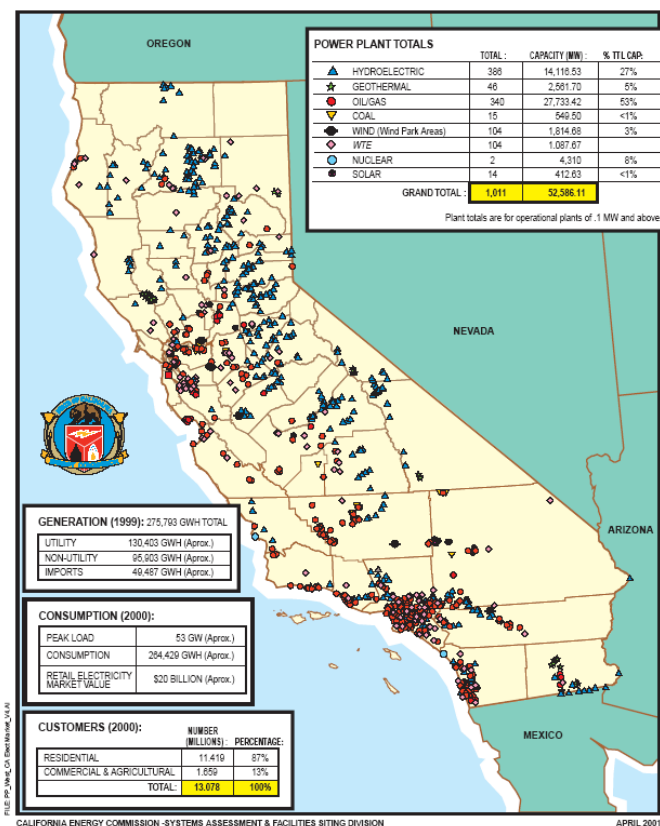
California Department of Energy

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California has experienced many power outages from natural disasters such as fires, floods, earthquakes, and rainstorms. This means that water and sewer systems must have adequate back up power for extended electric outages independent of rolling blackouts. Many large water systems have adequate storage facilities and have installed backup generators to maintain system pressures during power failure due to "Y2K" efforts. Rotating power outage duration is usually less than two hours or between two to four hours. Therefore, rolling blackouts have little impact on customer service.

In addition, water and sewer treatment utilities may request partial or complete rotating outage exemption from electric utilities in times of emergency identified as requiring their service, such as firefighting. The Water Division believes that it is reasonable to order electric companies to notify all of their water and sewer customers and test the emergency restoration procedures to minimize the effects on public health and safety. The Water Division recommends that water and sewer companies be excluded from the Category M.

CALIFORNIA'S ELECTRICITY MARKET



Water/Wastewater Disruption

Water/Waste Water Disruption were rated a MODERATE RISK PRIORITY by the City of Suisun City.

Water Disruption Profile

The City of Suisun City provides domestic water and sewer services for all properties located within its boundaries. Services are supplied through the Suisun-Solano Water Authority, but customer services are provided by the Suisun City Administrative Services Department.

Domestic water is provided through the Suisun-Solano Water Authority, a joint powers authority of between the City of Suisun City and the Solano Irrigation District (SID). The City handles local billing and requests for water and sewer service; the SID provides field service, capital maintenance, water delivery and water treatment services.

The SSWA board consists of the City Council and the SID board.

The City of Suisun City and Solano Irrigation District (SID) formed a Joint Exercise of Powers Agreement in 1976 intended to provide a long-term water supply for the City. In 1990, the City and SID strengthened their partnership by becoming a full Joint Powers Authority, the Suisun-Solano Water Authority (SSWA). This change sparked a reconstruction and modernization of the old Suisun Water System which served the older neighborhoods in Old Town Suisun, the Marina and Laurel Creek.

The City of Suisun City is currently a small Californian community of 29,800 residents. Suisun City is situated midway between San Francisco and Sacramento in Central Solano County. The Old Town section of the City is located on the Suisun Channel, which empties into Suisun and Grizzly Bays, the

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connecting point for the Sacramento River and the San Francisco Bay. A map of the City of Suisun City and surrounding municipalities.

Cement Hill Water Treatment Plant	
Plant No. 1 (constructed in 1978-79)	Conventional plant, 4.6 MGD design capacity
Plant No. 2 (constructed in 1992-93)	Conventional plant, 5.4 MGD design capacity
Gregory Hill Water Treatment Plant (constructed in 1962-63)	Diatomaceous earth plant, 0.56 MGD design capacity, removed from service
Cement Hill Tank	2,000,000 gallons, welded steel
Gregory Hill Tank	2,000,000 gallons, welded steel
Sports Complex Tank	1,500,000 gallons, welded steel
Suisun City Corp Yard Tank	1,000,000 gallons, welded steel
Benton Court Pumping Plant	1,000 gpm
Sports Complex Pumping Plant	2,000 gpm
Suisun City Corp Yard Pumping Plant	1,200 gpm
Suisun Valley Pumping Plant	400 gpm
Pipelines	96 miles
Mainline Valves	1,700
Metered Services	8,100

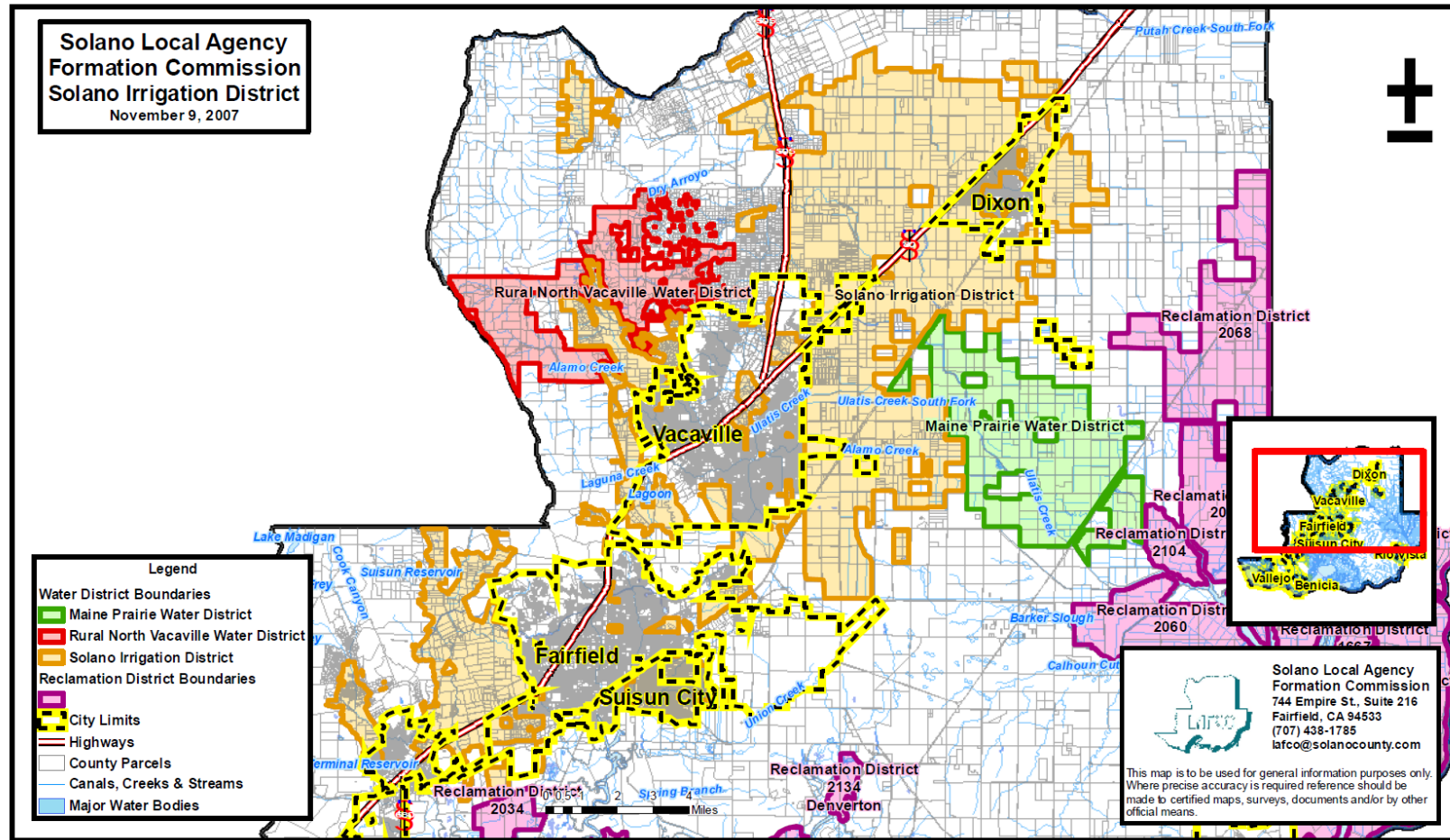
SSWA Water Supply Facilities

The main water supply to SSWA is from Lake Berryessa which is owned and operated by the United States Bureau of Reclamation (USBR). Lake Berryessa has a storage capacity of 1,602,000 acre-feet. Solano Project water stored in Lake Berryessa is released down Putah Creek from Monticello Dam and re-captured by Putah Diversion Dam approximately 13 miles downstream. The water is diverted through the Putah South Canal to the Cement Hill Water Treatment Plant (CHWTP) where the water is treated and piped to the City of Suisun City through Fairfield.

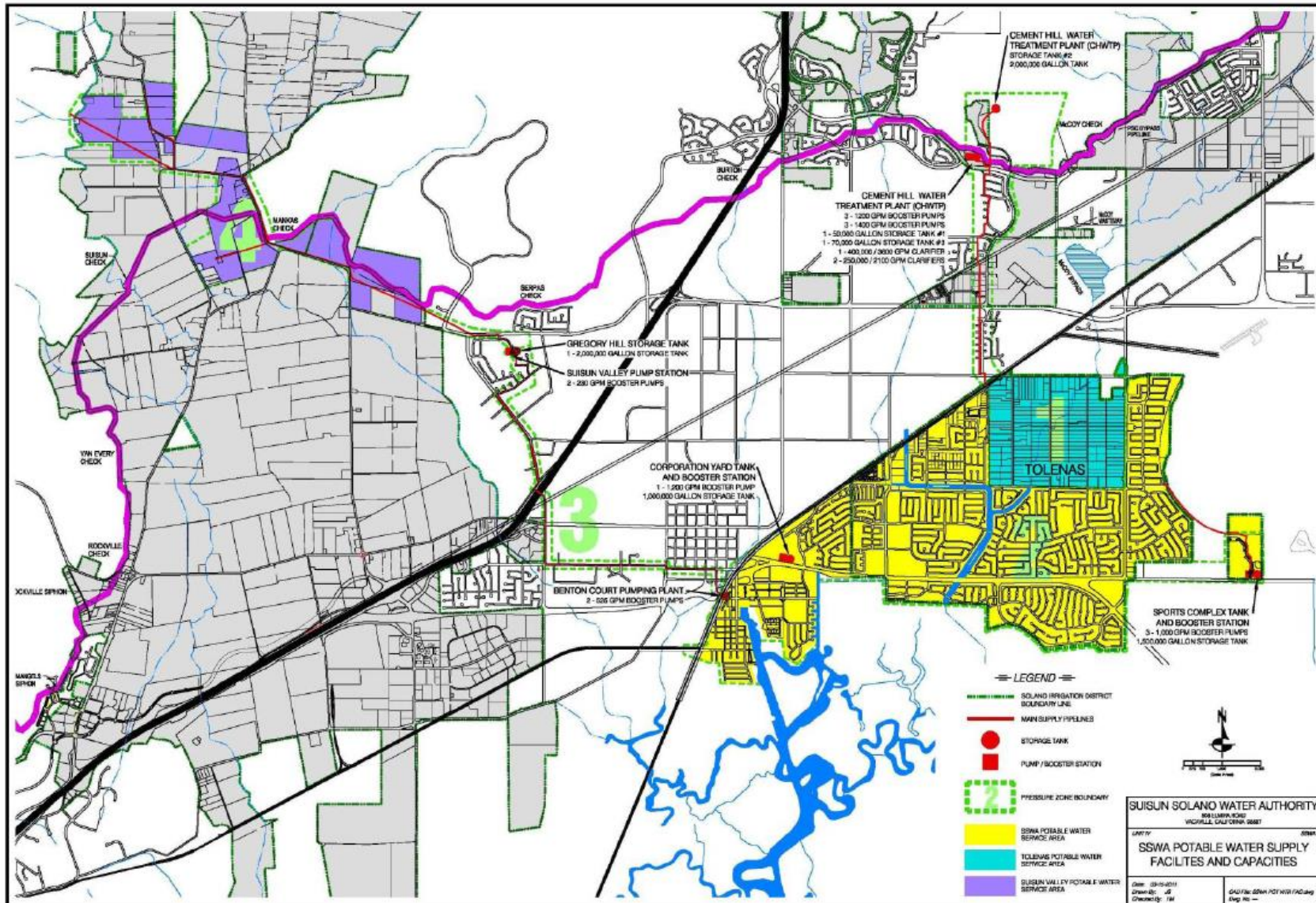
SSWA delivered groundwater produced by a well owned by City of Suisun City until 2001, and it was listed in the 2000 and 2005 Urban Water Management Plans. The well is located in Suisun Valley, near Mankas Corner Road, which is in the Suisun Fairfield Valley, Subbasin 2.3 of the San Francisco Bay Hydrologic Region per DWR Bulletin 118. It had a production capacity of 275 gpm or 443 acre-feet per year. The water was delivered to SSWA customers in the Suisun Valley through the Suisun Valley Pipeline; the well and pipeline are referred to as the Suisun Valley Water System.

The need for the well was eliminated by the installation of the Benton Court and Suisun Valley Pumping Plants in 2000-2001. The well was taken out of service due to the leaky and deteriorating pipeline

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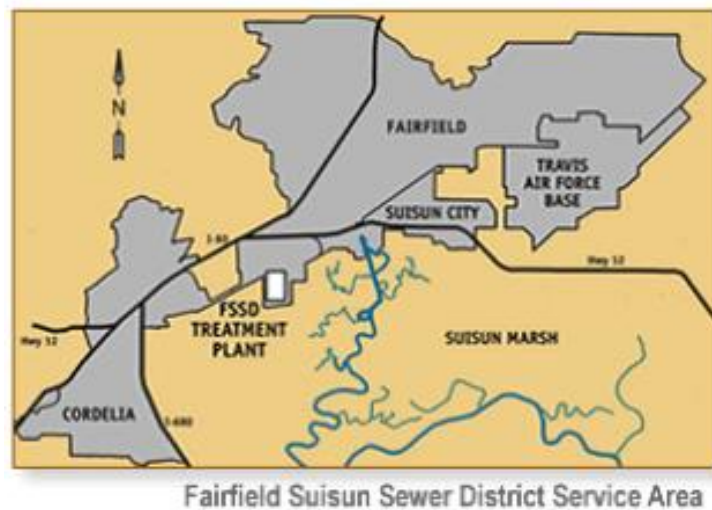


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Wastewater Disruption Profile

The Fairfield-Suisun Sewer District (FSSD) oversees wastewater collection and treatment, water recycling, and storm water management services in a 41-square-mile area of Solano County, Calif. The FSSD service area encompasses the cities of Fairfield and the City of Suisun City as well as Travis Air Force Base. Wastewater from the City of Suisun City is collected and handled by the plant located at 1010 Chadbourne Road, Fairfield, California. This section was prepared with information from and the assistance of the FSSD staff. An act of the California Legislature in 1951 created the Fairfield-Suisun Sewer District to perform wastewater collection and treatment, and water recycling services for all property within the boundaries of Fairfield, City of Suisun City and Travis Air Force Base. The District also operates a drainage maintenance utility that performs specified storm water management services in conjunction with the cities. Establishment of the District has enabled well-coordinated management of our local wastewater and storm water.



The District owns and operates a system of sanitary sewer trunk lines and pumping stations that collect wastewater from city sewer lines and transfers it to an advanced secondary wastewater treatment plant for cleansing and recycling. FSSD also operates programs to help capture and control pollutants that can be carried by rainfall runoff.

At the time the District was established, the service area had fewer than 6,000 residents. Today they serve a population more than 20 times that size. The District serves more than 130,000 residential, commercial and industrial customers and government agencies in central Solano County, about 40 miles northeast of San Francisco. Households, retail businesses, major food and beverage producers, light industries, manufacturers and vital military operations get service from FSSD.

The Fairfield and Suisun City storm water drainage systems serve an area of 41 square miles. The District-operated drainage system encompasses seven pump stations to maintain flow of storm water to the natural creek system and the Suisun Marsh.

The FSSD wastewater treatment plant occupies about 150 acres. The current treatment facilities, which in 1974 replaced three older plants, underwent major renovations and expansions in 1982, 1987, 1989

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and 2010 to keep pace with population growth, economic expansion of the region and technological advancements.

The sanitary sewerage collection system consists of 12 pump stations and a 70-mile network of sewers that fan out throughout the service area. The sewer conduits range from 12 inches to 48 inches in diameter. The replacement cost for the system is estimated at \$370 million—tangible evidence of the District's significant investment in infrastructure.

The Fairfield-Suisun Sewer District treats an average of about 16 million gallons per day. Solids removed during the treatment process are thickened and treated in a closed vessel, through a process called digestion. Methane gas produced as a natural byproduct of the digestion process is used to produce electrical energy. A dewatering process dries the solids, preparatory to proper disposal.

Water & Wastewater Loss Vulnerability

Water

Local water supply systems and delivery pipelines can be damaged in any earthquake. While water supplies in reservoirs may exist, damage to delivery systems will impact upon the ready availability of water at normal outlet. Water delivery by tanker truck, water trailers, bottles or cans will be necessary. Central water points will have to be established or the accommodation of the population. Distribution to institutions (hospitals, convalescent centers, mass care shelters and mass feeding locations may be required.

Redundancy and back-up systems are an advantage to being served by large providers, though the potential of losing services after a large earthquake or other catastrophe remains constant.

Suisun City will always have a ready supply of emergency firefighting water near the downtown at the harbor. Water can be drafted from there and transported to a fire scene by water tender or tank trucks in the event water service to hydrants is disrupted.

Wastewater

In the event that wastewater transportation systems (pipelines) are broken or disrupted, or if treatment facilities become damaged to the point of not being able to function, wastewater disposal would become a problem that would need priority attention. There is little room in treatment facilities to store wastewater. Generally, what happens is, the storing ponds and tanks overflow into the environment, either waterways or bays, or onto the surrounding ground. In any event where this occurs, pollution of course is a consideration, however, sanitation becomes the main factor. Without proper sanitation, vermin and disease risk grows quickly.

Use of portable chemical toilets and hand washing facilities would need to be stationed in strategic locations where the general populace affected by the disruption can have easy access. These facilities would need to be monitored and kept serviceable and clean throughout the outage and transportation and storage of waste would be required.

WMD/Terrorism

WMD/Terrorism were rated as a MODERATE RISK PRIORITY by the City of Suisun City.

Terrorism & WMD Profile

Description

Weapons of Mass Destruction

Weapons of Mass Destruction is a general category encompassing Biological, Chemical, Explosive, and Nuclear weapons.

Terrorism

Unfortunately, today's "freedom fighter" is enlisted in an army that has no uniform. There is no set race, gender, or other specific thing to look for, which would differentiate them from anyone else. We should not dismiss the possibility of other organizations engaging in activities to further their goals, even though they may be unrelated to middle-eastern extremists. (For example, White Supremacists attempting a terrorist act to further segregate the Arab community from us.)

The motivation of a terrorist is completely different from what we're used to. We tend to operate in the standard law enforcement paradigm of, "When I show up, this guy doesn't want to have anything to do with me... He definitely doesn't want anyone to know who he is, and he doesn't want to get caught." Unfortunately, this model does not suit the goals of the terrorist. Their actions are designed to bring attention to them or their cause. When you show up on the scene of an act that is about to be committed by someone of this mindset, you'll most likely be met immediately with violence and resistance, with the "terrorist" choosing fight over flight, to complete their goal. Generally, they will be dedicated and committed to completing the act, no matter the cost. Terrorists are driven by a deeper resolve than are most criminals that we are used to. Instead of being driven by personal gain, they are driven by deep beliefs in their philosophy and/or religion.

In addition to being driven by a cause, terrorists rarely act alone. Even in the case of "suicide bombers" there have been documented "support teams" which were in place to ensure completion.

Recent Events

ISIS represents a dangerous new chapter in the global war being waged by Al Qaeda and its affiliated and inspired groups, and a clear and present threat to the U.S. homeland.

Quantity vs. Quality

Ever since the Taliban government in Afghanistan was ousted in late 2001, the core Al Qaeda group founded by Osama bin Laden has been without formal training camps and facilities. This has forced the organization to rely more and more on recruits and foot soldiers trained under less-than-optimal circumstances, sometimes just over the Internet.

Many terrorism experts believe the multiple "near-attacks" against the United States over the past five years—such as over Detroit in December 2009, in Times Square in May 2010, and on inbound cargo

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airliners in late 2010—are all signs that while the organization is not lacking in “quantity” of potential recruits, they lack the ability to effectively train “quality” foot soldiers to effectively carry out major attacks.

One of the great challenges ISIS poses is that it currently controls thousands of square miles of ungoverned territory; and it is recruiting highly motivated fighters from all over the world. This influx of fighters, along with the open space needed by ISIS commanders to formally train them, offers the group an ability to creatively think up and effectively carry out major attacks, including against the United States.

Terrorism is defined in the Code of Federal Regulations as “the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social objectives.” When terrorism strikes, communities may receive assistance from State and Federal agencies operating within the existing Integrated Emergency Management System. FEMA is the lead Federal agency for supporting State and local response to the consequences of terrorist attacks.

FEMA's role in managing terrorism includes both **antiterrorism** and **counterterrorism** activities. Antiterrorism refers to defensive measures used to reduce the vulnerability of people and property to terrorist acts, while counterterrorism includes offensive measures taken to prevent, deter, and respond to terrorism. Within the emergency management arena, antiterrorism is a hazard mitigation activity and counterterrorism falls within the scope of preparedness, response and recovery.

Terrorism is often categorized as “**domestic**” or “**international**.” This distinction refers not to where the terrorist act takes place but rather to the origin of the individuals or groups responsible for it. For example, the 1995 bombing of the Murrah Federal Building in Oklahoma City was an act of domestic terrorism, but the attacks of September 2001 were international in nature. For the purposes of consequence management, the origin of the perpetrator(s) is of less importance than the impacts of the attack on life and property; thus, the distinction between domestic and international terrorism is less relevant for the purposes of mitigation, preparedness, response, and recovery than understanding the capabilities of terrorist groups and how to respond to the impacts they can generate.

Asymmetric Advantages

Terrorism is by definition “asymmetric”—a weaker party using violence as a political tactic against a more powerful adversary. And any capable terrorist group can be thought of as having “asymmetric advantages” because it operates in the shadows and can often pick the time, place and nature of attack against its enemies.

But groups like Al Qaeda and its more sophisticated offshoots are especially problematic with regard to asymmetric advantages because they operate in effective, secret global networks. They are focused primarily on Western liberal democracies that are more open and therefore more vulnerable than other types of political systems; and they recruit actors willing to die on their missions, so they are less concerned about carrying dangerous substances, like radiological or biological material.

This relates to ISIS in two critical ways. First, if the tens-of-thousands of ISIS fighters—including many with Western passports—decide to start attacks against the West and the United States, this will obviously

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create an “asymmetry problem” of monumental proportions; leading to even more aggressive surveillance and intelligence gathering by the West.

Second, and more problematic, a group like ISIS, with its troves of hard currency from its seizure of hundreds of millions of dollars in bank deposits from towns and cities it has overrun, and from tens of millions more in black-market oil sales, is less susceptible to international electronic surveillance.

Though it is not often publicized, tracking “terror financing” is one of the best ways to fight terrorism—often even more so than tracking terrorist communications. Terrorists simply cannot operate without financing, so law enforcement and intelligence agencies constantly monitor known or suspected terror financiers or facilitators, which can break up terror finance networks, expose terror cells and even thwart major plots.

Theory of the Strong Horse

Of the four areas of concern relating to ISIS and the reinvigorated global jihad, the concept of the “strong horse” is the most misunderstood in the West. It is also the most important because it directly relates to macro “world views.”

As Osama bin Laden said on tape just two months after the attacks on Sept. 11, 2001: “When people see a strong horse and a weak horse, by nature, they will like the strong horse.”

This brief sentiment underscored the broader religious-ideological theory espoused by bin Laden and his followers: That those who dedicate themselves to the martial defense of Islam will always defeat those (particularly in the spiritually bankrupt West) who, despite their wealth and sophisticated technology, are actually weak horses or “paper tigers.”

Al Qaeda and its affiliates have always relied on “strong horse” propaganda for their success as an organization. You cannot look through Al Qaeda training manuals without constantly coming across several key dates, notably 1989—the year they claim to have defeated the Soviet Empire; and 1993—the year they claim to have defeated the United States in Somalia following the “Black Hawk Down” disaster in Mogadishu.

This directly relates to the ISIS challenge, because ISIS is the descendent of Al Qaeda in Iraq (AQI), which formed in the mid-2000s during the darkest days of America’s war in Iraq, only to be decimated by the Bush administration’s troop “surge” in 2008. AQI’s defeat was a devastating blow to the “strong horse” narrative for Al Qaeda, both locally and globally.

And now the former AQI has reconstituted as a vast terrorist army in Iraq and war-torn Syria; is viewed as the “strong horse” in the region; and serves as a model for countless other groups with similar goals.

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The complexity, scope, and potential consequences of a terrorist threat or incident require that there be a rapid and decisive capability to resolve the situation. The resolution to an act of terrorism demands an extraordinary level of coordination of crisis and consequence management functions and technical expertise across all levels of government. No single Federal, State, or local governmental agency has the

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capability or requisite authority to respond independently and mitigate the consequences of such a threat to national security.

The incident may affect a single location or multiple locations, each of which may be a disaster scene, a hazardous scene and/or a crime scene simultaneously.

Differences Between WMD Incidents and Other Incidents

As in all incidents, WMD incidents may involve mass casualties and damage to buildings or other types of property. However, there are several factors surrounding WMD incidents that are unlike any other type of incidents that must be taken into consideration when planning a response. First responders' ability to identify aspects of the incident (e.g., signs and symptoms exhibited by victims) and report them accurately will be essential to maximizing the use of critical local resources and for triggering a Federal response.

1. The situation may not be recognizable until there are multiple casualties. Most chemical and biological agents are not detectable by methods used for explosives and firearms. Most agents can be carried in containers that look like ordinary items.
2. There may be multiple events (e.g., one event in an attempt to influence another event's outcome).
3. Responders are placed at a higher risk of becoming casualties. Because agents are not readily identifiable, responders may become contaminated before recognizing the agent involved. First responders may, in addition, be targets for secondary releases or explosions.
4. The location of the incident will be treated as a crime scene. As such, preservation and collection of evidence is critical. Therefore, it is important to ensure that actions on-scene are coordinated between response organizations to minimize any conflicts between law enforcement authorities, who view the incident as a crime scene, and other responders, who view it as a hazardous materials or disaster scene.
5. Contamination of critical facilities and large geographic areas may result. Victims may carry an agent unknowingly to public transportation facilities, businesses, residences, doctors' offices, walk-in medical clinics, or emergency rooms because they don't realize that they are

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contaminated. First responders may carry the agent to fire or precinct houses, hospitals, or to the locations of subsequent calls.

6. The scope of the incident may expand geometrically and may affect mutual aid jurisdictions. Airborne agents flow with the air current and may disseminate via ventilation systems, carrying the agents far from the initial source.
7. There will be a stronger reaction from the public than with other types of incidents. The thought of exposure to a chemical or biological agent or radiation evokes terror in most people. The fear of the unknown also makes the public's response more severe.
8. Time is working against responding elements. The incident can expand geometrically and very quickly. In addition, the effects of some chemicals and biological agents worsen over time.
9. Support facilities, such as utility stations and 911 centers along with critical infrastructures, are at risk as targets.
10. Specialized State and local response capabilities may be overwhelmed.

State of California Terrorism Guidance

The catastrophic attacks on the World Trade Center Building in New York City and the Alfred P. Murrah Federal Building in Oklahoma City shocked the nation into the reality that there are no domestic safe havens from acts of terrorism. These two apparently unrelated events punctuate our nation's vulnerability, and highlight California's risk of similar attack against its public officials, private and multi-national corporations, public infrastructure, and government facilities.

Historically, California has had a long experience combating terrorist groups, both domestic and international. Domestic terrorist groups in the state have been largely issue-oriented, while the few known internationally based incidents have mostly targeted the state's émigré communities and been related to foreign disputes. Today, however, both groups are more likely to be aligned nationally and/or internationally through electronic networking. The issues and politics of these groups remain essentially unchanged but now include increasing expressions of hatred for existing forms of government. The World Trade Center Incident demonstrates that international terrorist groups have the potential to operate with deadly effectiveness in this country. Such groups may offer no allegiance to any particular country but seek political or personal objectives that transcend national/state boundaries.

There is appropriate concern that such attacks as witnessed in Tokyo, New York City, and Oklahoma City could occur in California. A terrorist acting alone or in concert with any of the known national or international groups could readily commit acts of terrorism in California. The open availability of basic shelf-type chemicals and mail order biological research materials, coupled with an access to even the crudest laboratory facilities, could enable the individual extremist or an organized terrorist faction to manufacture proven highly lethal substances or to fashion less sophisticated weapons of mass destruction. The use of such weapons could result in mass casualties, long term contamination, and wreak havoc to both the state and national economies.

The freedom of movement and virtually unrestricted access to government officials, buildings, and critical infrastructure afforded to California's citizens and foreign visitors, presents the terrorist with the opportunity and conditions of anonymity to deliver such devastation and its tragic consequences with only the crudest devices of nuclear, chemical, or biological content.

Terrorist incidents create a unique environment in which to manage emergency response. Local responders are typically the first on scene during an actual incident and local government has primary

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responsibility for protecting public health and safety. Ordinarily, the local first response will be conducted under National Incident Management System (NIMS), which forms the basis of California's concept of operations for managing any kind of emergency or disaster, including terrorist incidents. The local responders will manage all aspects of the incident until the FBI assumes command, by virtue of its legal authority, of the law enforcement aspects relating to identifying, apprehending, and neutralizing the terrorists and their weapons.

WMD/Terrorism Vulnerability

Threat Assessment

When dealing with terrorism, it is important to remember a few key things about the act. Generally, terrorist organizations will not "waste their time" on small affairs. Additionally:

Threats are common.

- Most do not act on the threat.
- There is very little relationship to violence. (Terror being the goal)
- Violence toward public officials is typically not preceded by a threat.
- Violence toward a private person cannot be predicted by a threat.

Other things to consider when making an analysis of a threat are

- Technical feasibility. (Can they do what they say?)
- Operational Practicality. (Is the threat consistent with their goals? Would it be practical for them to complete this act?)
- Behavioral Resolve. (Will they do it?)

Biological & Chemical Terrorism

The Public Health Response to Biological and Chemical Terrorism: Interim Planning Guidance for State Public Health Officials (hereafter referred to as the Planning Guidance) outlines steps for strengthening the capacity of the public health system to respond to and protect the nation against the dangers of a terrorism incident. Although the Planning Guidance focuses on the biological and chemical terrorism preparedness efforts of state-level health department personnel, it can be used as a planning tool by anyone in the response community, regardless of his or her position within that community or level of government.

The public health community at large also can use this document to improve its terrorism preparedness and develop terrorism response plans. The preparedness program outlined in this Planning Guidance, once implemented, should improve the ability of all public health agencies to respond to emergency situations arising from all sources, not just terrorism.

The Planning Guidance focuses on the capabilities that state health departments are likely to need to respond effectively to a terrorism incident. Despite the public health focus of this document, the terrorism plan ultimately should not be agency-specific. Instead, the terrorism plan should be integrated, outlining the roles and responsibilities of all agencies that participate in a response.

Because the primary mechanism for past terrorist incidents has been bombings and because of the potential for mass casualties from a WMD terrorist event, the primary focus of the state's hazard mitigation

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strategy for terrorism is on mitigation measures that reduce risk from bomb blast and nuclear, biological, and chemical attacks to critical state facilities and population. Measures include:

Hardening (construction/retrofitting)

- Relocation/retrofitting of air intakes
- Ventilation system upgrade/retrofit
- Protect tower bases of bridges
- Seismic retrofitting
- Upgrade/retrofit water main system
- Blast guard window film/glazing, frames

Egress and Ingress improvements

- Barriers and Fencing
- Fencing around air intakes
- Fencing around fuel supply
- Vehicle barriers, bollards, popup gates, hydraulic barriers
- Perimeter fencing

System improvements

- Fire protection system
- Communications systems
- Information Technology systems
- Utility systems
- Security systems/early warning systems
- Warning and alarms systems directly related to system protection/shut down
- Smart utility management systems on all critical services.

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Planning/Studies

- Telecommunications plans
- IT disaster recovery plans
- Business continuity/resumption plans
- Intelligence gathering and sharing
- Threat, vulnerability, and risk assessments
- Evacuation plans
- Site security planning
- Seismic Study

Security

- Interior lighting
- Exterior lighting
- Staging areas
- Surveillance
- Secure Access & Entry Points
- Card swipe system
- Magnetometer
- Metal detectors
- Surveillance cameras & closed circuit TVs
- Personnel detection equipment
- Vehicle detection equipment
- Radar systems
- Building access system
- Motion detectors
- Replacing door locks and keys
- Security management system
- Building access system
- Employee identification system
- Coding protocol for sensitive records

Some of the above-listed measures are already being used in Suisun and have proven effective in reducing or eliminating hazard risk. Each of these measures directly meets an objective stated in the state's Hazard Mitigation Strategy.

Low to No Risk Natural Hazards

The Hazard Mitigation Planning Team determined that the following natural hazards would be rated no LOW to NO RISK for the City of Suisun City:

Land Slides

The terrain surrounding the City of Suisun City is generally flat or gradually sloping low hills. This poses no threat from Land Slides.

Dam Failure

There are no dams in or around the City of Suisun City.

Tsunami

The City of Suisun City is located well-inland from any coastal tidal wave influence.

Volcanic Eruption

There is no active or historic volcanic activity in or near to the City of Suisun City.

There will be no further reference to these risks.

Hazard Mitigation Strategy

Goals & Objectives

The information in the hazard vulnerability analysis and loss estimation information was used as a basis for developing mitigation goals and objectives. Updated mitigation goals are defined as general guidelines explaining what the City wants to achieve in terms of hazard and loss prevention. Goal statements are typically long-range, policy-oriented statements representing city-wide visions. Objectives are statements that detail how the City's goals will be achieved, and typically define strategies or implementation steps to attain identified goals. Other important inputs to the development of city-level goals and objectives include performing reviews of existing local plans, policy documents, and regulations for consistency and complementary goals, as well as soliciting input from the public.

Identification and Prioritization of Mitigation Actions

Mitigation actions that address the goals and objectives developed were evaluated, and prioritized. These actions form the core of the mitigation plan. The City developed a capabilities assessment, which consisted of reviewing existing local plans, policies, and regulations for any other capabilities relevant to hazard mitigation planning. The ability to carry out these implementation measures with an eye toward hazard and loss prevention was evaluated. The capabilities assessment required reviewing the inventory of the city's legal, administrative, fiscal and technical capacities to support hazard mitigation planning.

After development of the capabilities assessment, the city evaluated and prioritized its proposed mitigations. The City considered social, technical, administrative, political, legal, economic, and environmental opportunities and constraints of implementing mitigation actions. This step resulted in a list of acceptable and realistic actions that address the hazards identified.

A full suite of goals, objectives and action items for the City is presented in this Plan. The City then prioritized actions with the highest short to medium term priorities. An implementation schedule, funding source and coordinating individual or agency is identified for each prioritized action item.

In the review, the City of Suisun City is supportive of the following hazard mitigation strategies. The City shall make every effort, given appropriate funding, to implement these strategies as conditions warrant.

Long Term Goals, Objectives & Actions

Listed below are the City of Suisun City's specific long term hazard mitigation goals, objectives and related potential actions. For each goal, one or more objectives have been identified that provide strategies to attain the goal. Where appropriate, the City has identified a range of specific actions to achieve the long term objective and goal.

The goals and objectives were developed by considering the risk assessment findings, localized hazard identification and loss/exposure estimates, and a review of the City's capabilities assessment. In addition, Suisun City's representatives met with the consultant staff and Departments to specifically identify these hazard-related goals, objectives and actions as they related to the overall Plan. Representatives of numerous departments were involved in hazard mitigation planning process. Those Departments are listed specifically in the minutes of the meetings.

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Long Term Goals

The City of Suisun City has developed the following Long Term Goals for their Hazard Mitigation Plan Program:

Goal 1. Promote Disaster-resistant future development.

Goal 2. Increase public understanding and support for effective hazard mitigation.

Goal 3. Build and support local support and commitment to become less vulnerable to hazards.

Goal 4. Enhance hazard mitigation coordination and communication with federal, state, local jurisdictions.

Goal 5. Reduce the possibility of damage and losses to existing assets, particularly people, critical facilities/infrastructure, and City of Suisun City-owned facilities from the following high risks:

- Earthquake
- Flooding
- Hazardous Materials
- Transportation Hazards
- Wild land/Urban Interface Fire
- Severe Weather
- Utility Loss
- Water/Wastewater Disruption
- WMD/Terrorism

Long Term Objectives & Actions

The City of Suisun City developed the following broad list of objectives and actions to assist in the implementation of each of their identified goals. For selected objectives, specific actions were developed that would assist in their implementation.

Objective 1: Facilitate the development or updating of general plans and zoning ordinances to limit development in hazard areas.

Action 1 Update General Plan every 10 years.

Action 2 Attract and retain qualified, professional and experienced staff.

Action 3 Re-evaluate identified high hazard areas.

Objective 2: Continue facilitating the adoption of building codes that protect existing assets and restrict new development in hazard areas.

Action 1 Review Codes every 3 years.

Action 2 Support existing emergency review procedures for codes.

Objective 3: Continue facilitating consistent enforcement of general plans, zoning ordinances, and building codes.

Objective 4: Limit future development in hazardous areas

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Action 1 Development should be in harmony with existing topography.

Action 2 Development patterns should respect environmental characteristics.

Action 3 Development should be limited in areas of known geologic hazards.

Objective 5: Review and re-evaluate identified data limitations regarding the lack of information about new development and build-out potential in hazard areas.

Objective 6: Continue promoting public understanding, support and demand for hazard mitigation for new developments.

Action 1 Gain public acceptance for avoidance policies in high hazard areas.

Action Plan

Prioritization & Integration of Action Items

This is the first edition of this plan and includes recommendations in the Action Plan aimed at integrating the action items into the core of the City's overall planning program. In keeping with this spirit, and using the comprehensive list of Suisun City's goals, objectives, and action items listed above, recommendations were developed. The proposed mitigation actions were developed and prioritized as necessary by the Planning Team. This step resulted in a list of acceptable and realistic long term actions and their integration strategies that address the hazards identified in the City.

The Disaster Mitigation Act of 2000 (at 44 CFR Parts 201 and 206) requires the development of an action plan that not only includes prioritized actions but one that includes information on how the prioritized actions are integrated. Integration consists of identifying who is responsible for which action, what kind of funding mechanisms and other resources are available or will be pursued, and when the action is expected to be completed.

The top 5 prioritized mitigation actions, as well as an integration strategy for each, are as follows:

Action Item #1: Develop the integral use of the Local Hazard Mitigation Plan by periodic review, maintenance and updating of the document. Incorporate appropriate updates into other City plans and

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documents such as the General Plan, Building Code, Zoning Ordinances, Site Plan Requirements and Disaster Emergency Response and Recovery Plans.

Coordinating Individual/Organization: City Staff and Departments. working together with stakeholder-members of other planning jurisdictions.

Potential Funding Source: FEMA Grants/General Funds for Planning Agencies & Jurisdictions.

Integration Timeline: Ongoing with periodic review

Action Item #2: Through review and experience, identify and publicize updated hazard mitigation actions through community education, forums and media. Include input from stakeholders and other agencies and jurisdictions, as appropriate, into the process.

Coordinating Individual/Organization: Hazard Mitigation Planning Team

Potential Funding Source: General Fund/Federal or State grants.

Integration Timeline: Ongoing with periodic review

Action Item #3: Stay informed of new standards and regulations in building requirements by working with County and State agencies tasked with their development. Use the information to update Building Codes and Land Use plans to reflect current requirements.

Coordinating Individual/Organization: Public Works and Building Department

Potential Funding Source: General Fund/Federal or State Grants.

Integration Timeline: Ongoing with periodic review

Action Item #4: Develop and compare existing standards for zoning and development with current state and county documents. Update local standards in zoning and development as necessary.

Coordinating Individual/Organization: Planning Division of Developmental Services Dept.

Potential Funding Source: General Fund/Federal or State Grants

Integration Timeline: Ongoing with periodic review

Action Item #5: Encourage the public to prepare for disasters by developing personal emergency response plans and by maintaining a 3-day preparedness kit for home and work. Do this through community forums, presentations and media.

Coordinating Individual/Organization: Fire/Police, Community Development

Potential Funding Source: General Fund/Federal or State grants

Integration Timeline: Ongoing

Specific Goals & Objectives

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Specific Goal 1: Increase **public understanding** and support for effective hazard mitigation.

Objective 1: Educate the public to increase awareness of hazards and opportunities for mitigation actions.

Action 1 - Publicize and encourage the adoption of appropriate hazard mitigation actions.

Action 2 - Provide information to the public on the Suisun City's website.

Action 3 - Gain public acceptance for avoidance policies in high hazard areas.

Specific Goal 2: Enhance **hazard mitigation coordination and communication** with federal, state, county and local-area jurisdictions.

Objective 1: Maintain close working relationships with state agencies, county departments and local-area jurisdictions and stakeholders.

Action 1 – Participate in and encourage multi-jurisdictional/multi-functional training and exercises to enhance hazard mitigation.

Objective 2: Encourage other organizations to incorporate hazard mitigation activities.

Action 1 - Leverage resources and expertise that will further hazard mitigation efforts.

Action 2 - Update the Suisun City's local hazard mitigation plan on a regular basis.

Action 3 - Maintain lasting partnerships through existing City organizations.

Action 4 - Maintain coordination, communication and cooperation with the State in administering recovery programs.

Action 5 - Exchange resources and work with local and regional partners.

Specific Goal 3: Reduce the possibility of damage and losses to existing assets, including people, critical facilities/infrastructure, and public facilities due to **Earthquakes**.

Objective 1: Review and update the comprehensive approach to reducing the possibility of damage and losses due to earthquakes.

Action 1 – Review and update Building Codes to reflect current earthquake standards.

Action 2 – Host and organize community awareness meetings.

Action 3 - Distribute printed publications to the community concerning hazard mitigation.

Objective 2: Protect existing assets with the highest relative vulnerability to the effects of earthquakes.

Action 1 - Identify and catalog hazard-prone structures.

Action 2 – Stay attuned with studies of ground motion and liquefaction and how they apply to the community.

Objective 3: Take the lead in continuing efforts to mitigate known earthquake hazards.

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Action 1 - Identify new projects for pre-disaster mitigation funding.

Action 2 – Continue the ongoing public seismic risk assessment program.

Action 3 – Continue to collaborate with Federal, State, County and local agencies' mapping efforts.

Objective 4: Continue to build data regarding and information with regard to the relative vulnerability of assets from earthquakes.

Action 1 – Evaluate the City's utility infrastructure with regard to earthquake risk, including public and private utilities.

Action 2 – Encouraging the public to prepare and maintain a 3-day preparedness kit for home and work for all hazards

Specific Goal 4: Implement programs to reduce the possibility of damage and losses to existing and future assets, including people, critical facilities/infrastructure, and public facilities due to damage and loss caused by **Flood**.

Specific Goal 5: Implement programs to reduce the possibility of damage and losses to existing and future assets, including people, critical facilities/infrastructure, and public facilities due to damage and loss caused by **Severe Weather Events**.

Objective 1: Continue the comprehensive approach to reducing the possibility of damage and losses from severe weather events.

Action 1: Continue to mitigate potential loss by trimming and maintaining trees on city-owned and operated properties.

Action 2: Improve drainage systems and storm sewer inlets and outfalls in troubled-areas indicated by previous damage from severe weather events.

Objective 2: Create and improve new efforts to mitigate damage and loss to the City from Severe Weather Events.

Action 1: Work with neighborhoods at the grass roots level in devising ways to keep storm runoff from causing damage by keeping drains and run-off channels clear.

Action 2: Respond to citizens' reports of potential utility interruptions with regard to trees and power/telephone lines proximities.

Project Prioritization Discussion

Once the comprehensive list of goals, objectives, and action items listed above were developed, proposed mitigation actions were prioritized by the Planning Team. This step resulted in a list of actions that address the identified hazards for the City of Suisun City.

This section identifies and analyzes a comprehensive range of specific mitigation actions and projects that were considered to reduce the effects of hazards identified in this plan. Particular emphasis was

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placed on new and existing buildings and infrastructure. The Hazard Mitigation Planning Team prioritized the specific mitigation projects by rating each using the criteria below:

Priority 1: (High) Mitigation measure serves the community's best interest and needs to move forward in the process as a potential project for further strategy development.

Priority 2: (Moderate) Mitigation measure serves the community's needs and should be left in the process for future consideration

Priority 3: (Low) Mitigation measure does not serve the community's best interest and should be removed from the process for consideration/or legal or logistical barriers to this measure cannot be surmounted and the measure should be removed from the process.

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Implementation of Mitigation Actions

Capabilities Assessment

The City of Suisun City identified capabilities available for implementing hazard mitigation activities. The Capabilities Assessment portion of the hazard mitigation plan identifies administrative, technical, legal and fiscal capabilities. This includes a summary of departments and their responsibilities associated to hazard mitigation planning as well as codes, ordinances, and plans already in. The second part of the assessment provides fiscal capabilities that may be applicable to providing financial resources to implement identified mitigation action items.

Existing Institutions, Plans, Policies and Ordinances

The following is (1) a summary of existing positions and their responsibilities related to hazard mitigation planning and implementation; and (2) a list of existing planning documents and regulations related to mitigation efforts within the City. The administrative and technical capabilities of the City, as shown in the table below, provide an identification of the staff, personnel, and department resources available to implement the actions identified in the mitigation section of the Plan. Specific resources reviewed include those involving technical personnel such as planners/engineers with knowledge of land development and land management practices, engineers trained in construction practices related to building and infrastructure, planners and engineers with an understanding of natural or human-caused hazards, floodplain managers, surveyors, personnel with GIS skills and scientists familiar with hazards in the community.

Administrative & Technical Capacity

Position	Y/N	Department/Agency
Planner(s) or engineer(s) with knowledge of land development and land management practices	Y	Development Services
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	Building & Public Works
Planners or Engineer(s) with an understanding of natural and/or human-caused hazards	Y	Development Services
Floodplain manager	Y	Solano County Public Works
Surveyors	Y	Solano County Public Works
Staff with education or expertise to assess the community's vulnerability to hazards	Y	Development Services, Building & Public Works, Fire Department
Personnel skilled in GIS and/or HAZUS	Y	Development Services
Scientists familiar with the hazards of the community	N	
Emergency manager	Y	Fire Department
Grant writers	Y	Administrative Services, Development Services

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Regulatory Tools (documents & regulations related to mitigation efforts)

The following is a list of existing planning documents and regulations related to mitigation efforts within the City. The 'Y/N' column shows whether the document or regulation was reviewed and/or incorporated into the planning process. Examples include: The City's building codes, zoning ordinances, subdivision ordinances, special purpose ordinances, growth management ordinances, site plan review, general plan, capital improvement plans, economic development plans, emergency response plans, and real estate disclosure plans.

Regulatory Tools (ordinances, codes, plans)	Y/N	Comments
Building code	Y	
Zoning ordinance	Y	
Subdivision ordinance or regulations	Y	
Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	Y	
Growth management ordinances (also called "smart growth" or anti-sprawl programs)	N	
Site plan review requirements	Y	
General Plan	Y	
A capital improvements plan	Y	
An economic development plan	Y	
An emergency response plan	Y	
A post-disaster recovery plan	Y	
A post-disaster recovery ordinance	Y	
Real estate disclosure requirements	N	State
Habitat Management Plan	Y	
Master Drainage, Sewer, Water, & Reclaimed Water	Y	
Redevelopment Master Plan	Y	

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Fiscal Resources

The table below shows specific financial and budgetary tools available to Suisun City such as community development block grants; capital improvements project funding; authority to levy taxes for specific purposes; fees for water, sewer, gas, or electric services; impact fees for homebuyers or developers for new development; ability to incur debt through general obligations bonds; and withholding spending in hazard-prone areas.

Financial Resources	Y/N	Comments
Community Development Block Grants	Y	County
Capital improvements project funding	Y	
Authority to levy taxes for specific purposes	Y	Voters' Approval
Fees for water, sewer, gas, or electric service	N	
Impact fees for homebuyers or developers for new developments/homes	N	
Incur debt through general obligation bonds	Y	
Incur debt through special tax and revenue bonds	Y	
Incur debt through private activity bonds	Y	
Withhold spending in hazard-prone areas	Y	

Capital Improvement Plan

Annually, City staff proposes a capital improvement plan covering the next five fiscal years. The plan recommends specific funding of projects for the next three years, and identifies projects for further consideration in years four and five.

- The Capital Improvement Plan includes a listing of projects for future consideration by the City Council. Such projects are those which are determined to merit further study, but lack funding sources.
- Capital improvements include all equipment over \$5,000 with a useful life over five years. Facilities that have a useful life of longer than 20 years or that can be considered a "betterment" are considered for inclusion in the Capital Improvement Plan. A "betterment" is defined as an improvement that extends the life of the original improvement by at least one-third of the original service life.
- Capital improvement projects are reviewed to determine the best method of financing the project. City Council determines whether the project will be funded on a "pay-as-you-go" basis or with a debt instrument.
- The City continues imposing development impact fees that ensure that a new development pays its fair share of the increase service capacity.

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The table below summarizes the entire net budget for the organization including all City, Agency, and Authority funds. It includes a comparison between the FY 2014-15 **Amended** budget and the FY 2015-16 Recommend budget.

NET ORGANIZATION-WIDE BUDGET SUMMARY

FY 14/15 **Amended** versus FY 15/16 Recommend

<u>Budget Activity</u>	<u>FY 12/13 Actual</u>	<u>FY 13/14 Actual</u>	<u>FY 14/15 Amended</u>	<u>FY 15/16 Recommend</u>	<u>% Chg Amd</u>
Total Operating Budgets	\$ 18,144,960	\$ 17,230,220	\$ 21,997,600	\$ 22,126,300	0.6%
Total Capital Improvement Program	\$ 2,798,213	\$ 602,542	\$ 5,155,400	\$ 4,614,000	-10.5%
Debt Service	\$ 4,356,536	\$ 3,867,086	\$ 6,159,700	\$ 5,920,500	-3.9%
TOTAL ORGANIZATION-WIDE BUDGET	<u>\$ 25,299,709</u>	<u>\$ 21,699,848</u>	<u>\$ 33,312,700</u>	<u>\$ 32,660,800</u>	<u>-2.0%</u>
Less: Net Internal Services Funds	\$ 1,421,625	\$ 1,116,747	\$ 1,340,100	\$ 1,218,200	-9.1%
NET ORGANIZATION-WIDE BUDGET	<u>\$ 23,878,084</u>	<u>\$ 20,583,101</u>	<u>\$ 31,972,600</u>	<u>\$ 31,442,600</u>	<u>-1.7%</u>

The Net Organization-Wide Budget (Amended comparison) indicates decrease of about \$530,000, or 1.7 percent. This decrease is a result of the following:

- Operating Budgets – Operating Budgets are relatively flat, increasing by only \$128,700, resulting in a 0.6% increase.
- Capital Improvements – Capital Improvement Program is down by \$541,400. Most of these projects are grant funded or paid for with development impact fees, thus the projects are driven by award of grants and development activity.
- Debt Service – Debt Service payment schedules would decrease slightly by about \$121,900, or 9.1%, primarily a result of the Fire Ladder Truck's being paid-off.

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Benefit-Cost Review

Benefit-cost review (BCR) is an abbreviated quantitative method of comparing the projected benefits to projected costs of a project or policy. It is used as a measure of cost effectiveness. A modified process called “STAPLEE” will be used to methodically review the benefit as opposed to the cost of each strategy and action listed where that information was attainable. The STAPLEE process considers the following:

SOCIAL	Community Acceptance	Effect on Segment of Population			
TECHNICAL	Technical Feasibility	Long-term Solution	Secondary Impacts		
ADMINISTRATIVE	Staffing	Funding Allocated	Maintenance/Operations		
POLITICAL	Political Support	Local Champion	Public Support		
LEGAL	State Authority	Existing Local Authority	Potential Legal Challenge		
ECONOMIC	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required	
ENVIRONMENTAL	Effects on Land/Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Environmental Goals	Consistent with Federal Laws

Benefit-Cost Reviews using the STAPLEE process will be conducted when funding is earmarked and scheduling is firm for mitigation projects.

The action plan must be prioritized according to a benefit/cost analysis of the proposed projects and their associated costs (44 CFR, Section 201.6(c)(3)(iii)). The benefits of proposed projects were weighed against estimated costs as part of the project prioritization process. The benefit/cost review was not of the detailed variety required by FEMA for project grant eligibility under the Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation (PDM) grant program. A less formal approach was used because some projects may not be implemented for up to 10 years, and associated costs and benefits could change dramatically in that time. Therefore, a review of the apparent benefits versus the apparent cost of each project was performed. Parameters were established for assigning subjective ratings (high, medium, and low) to the costs and benefits of these projects.

Cost ratings were defined as follows:

- **High**—Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).
- **Medium**—The project could be implemented with existing funding but would require a reapportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
- **Low**—The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.

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Benefit ratings were defined as follows:

- **High**—Project will provide an immediate reduction of risk exposure for life and property.
- **Medium**—Project will have a long-term impact on the reduction of risk exposure for life and property, or project will provide an immediate reduction in the risk exposure for property.
- **Low**—Long-term benefits of the project are difficult to quantify in the short term. Using this approach, projects with positive benefit versus cost ratios (such as high over high, high over medium, medium over low, etc.) are considered cost-beneficial and are prioritized accordingly.

Plan Implementation

The effectiveness of the hazard mitigation plan depends on its vigorous and persistent implementation and incorporation of its action items into the City of Suisun City's existing plans, policies and programs. Together, the action items in the plan provide a framework for activities that Suisun City can implement over the next 5 years. The planning team developed goals and objectives and prioritized mitigation actions that can be implemented through incorporating them into existing plans, policies, and programs.

The information on hazard, risk, vulnerability, and mitigation contained in this plan is based on the best science and technology available at the time this plan was developed. The City of Suisun City General Plan is considered to be an integral part of this plan, as is this plan an integral part of the General Plan. The City of Suisun City, through adoption of plans, policies and ordinances, considered the impact of natural hazards before adoption. The planning process provided the City with the opportunity to review and expand on policies contained within these other planning mechanisms. The planning team used the general plan and the hazard mitigation plan as complementary documents that work together to achieve the goal of reducing risk exposure to the citizens of the City of Suisun City.

All municipal planning partners are committed to creating a link between the hazard mitigation plan and their individual comprehensive plans by identifying a mitigation initiative as such and giving that initiative a high priority. Other planning processes and programs to be coordinated with the recommendations of the hazard mitigation plan include the following:

- Emergency response plans
- Capital improvement programs
- Municipal codes
- Community design guidelines
- Water-efficient landscape design guidelines
- Storm water management programs
- Water system vulnerability assessments
- Master fire protection plans.

Some action items do not need to be implemented through regulation. Instead, these items can be implemented through the creation of new educational programs, continued interagency coordination, or improved public participation. As information becomes available from other planning mechanisms that can enhance this plan, it will be incorporated during future update processes.

Plan Maintenance

Monitoring, Evaluating & Updating

This section of the Plan describes the formal process that will ensure that the Plan remains an active and relevant document. The plan maintenance process includes a schedule for monitoring and evaluating the Plan annually and producing a plan revision every five years.

This section describes how Suisun City will integrate public participation throughout the plan maintenance process. Finally, this section includes an explanation of how Suisun City intends to make considerations for the mitigation strategies outlined in this Plan into existing planning mechanisms.

Suisun City's Hazard Mitigation Planning Team Coordinator (Fire Chief) will be responsible for monitoring the plan annually for updates to jurisdictional goals, objectives, and action items. If needed, the coordinator will collaborate through the Hazard Mitigation Planning Team to integrate these updates into the Plan. The Coordinator of the Hazard Mitigation Planning Team will be responsible for monitoring the overall Plan for updates on an annual basis. The Planning Team will be reconvened as needed to make these updates.

The Plan will be evaluated by the City of Suisun City Hazard Mitigation Planning Team at least every two years to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The Plan will also be re-evaluated based upon the initial Plan criteria used to draft goals, objectives, and action items. Action items will be reviewed to determine their relevance to changing situations in Suisun City, Solano County, as well as changes in State or Federal regulations. Suisun City will conduct an assessment of each portion of the Plan to determine if this information should be updated or modified, given any new available data.

All City Departments will be responsible to provide the Planning Team Coordinator with jurisdictional-level updates to the Plan when/if necessary as described above. Every five years the updated plan will be submitted to the State of California and FEMA for review.

The City of Suisun City will have the opportunity to implement recommended action items through existing programs and procedures that are deemed appropriate.

Continued Public Involvement

The City of Suisun City is dedicated to involving the public directly in review and updates of the Plan.

The Hazard Mitigation Planning Team Coordinator will be responsible for monitoring, evaluating, and updating the Plan as described above. During all phases of plan maintenance, the public will have the opportunity to provide feedback.

A copy of the Plan is publicized and available for review on the City of Suisun City's website. In addition, copies of the plan will be catalogued and kept at all of the appropriate Departments. The existence and

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location of these copies will also be posted on the City's website. The site will contain contact information for the public to which people can direct their comments and concerns.

All public feedback is forwarded to the appropriate city department for review and incorporation (if deemed appropriate).

A press release requesting public comments will also be issued after each evaluation or when deemed necessary. The press release will direct people to the website or appropriate local location where the public can review proposed updated versions of the Plan. This will provide the public an outlet for which they can express their concerns, opinions, or ideas about any updates/changes that are proposed to the Plan. The Planning Team Coordinator will assure the resources are available to publicize the press releases and maintain public involvement through public access channels, web pages, and newspapers as deemed appropriate.

In addition to the continued public involvement program the City will educate the Public through the following methods:

- 1) Providing hazard mitigation and safety information on the City's website.
- 2) Informational Booths at City functions
- 3) Informational Displays at City Hall