



City of Larkspur, 400 Magnolia Avenue, Larkspur, California 94939 • tel: (415) 927-5110 • fax: (415) 927-5022



ALL-HAZARD MITIGATION PLAN

Version 2.0

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

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Section 1 – Introduction

Summary

To summarize, this document contains:

- The City of Larkspur Hazard Vulnerability Analysis;
- Prioritization of City of Larkspur Hazards for mitigation activities;
- Hazard Mitigation Strategy Goals and Objectives;
- City-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 Larkspur Multi-Hazard Mitigation Steering Committee, 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 Larkspur Multi-Hazard Mitigation Steering Committee 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 Larkspur 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.

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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 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 Larkspur.

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

The strategies presented are deemed appropriate and effective by recommendation of the City of Larkspur Multi-Hazard Mitigation Steering Committee and the City's agencies, departments and private groups.

Upon acceptance by the California Governor's Office of Emergency Services (OES) and the Federal Emergency Management Agency (FEMA), selected strategies will be further developed for funding and implementation by the lead City 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 Larkspur Hazard Vulnerability Analysis (HVA) that considers natural, technological, and human-caused risks to which the City 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 and City Council and funded in order to be implemented as official Hazard Mitigation Strategies.

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Mission Statement

The City of Larkspur is committed to providing the best possible service to the community, Preserving the City's unique historic character, and maintaining its total environmental balance.

Organizational Values

TAKE PRIDE IN OUR WORK Promote and encourage a sense of pride in a job well done.

PROMOTE INNOVATIVE & CREATIVE SOLUTIONS Promote creative solutions while retaining proven methods. Encourage reasonable risk taking.

OFFER COURTESY & FRIENDLINESS Approach all public contacts in a courteous and friendly manner.

RESPECT INDIVIDUAL WORTH Recognize employees as our most valued resource. Encourage their ideas and participation.

PROVIDE EFFECTIVE SERVICE Provide community services in a cost effective, timely, and efficient manner. Service shall be handled on an individual basis with consideration given to the particular circumstances.

SERVE WITH INTEGRITY Serve the public in a professional manner, displaying uncompromising fairness and honesty at all times.

PRESERVE LARKSPUR'S UNIQUE HISTORICAL CHARACTER & ENVIRONMENT Consider the impact of all decisions on Larkspur's historical character and environment.

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Plan Adoption

Process

The City of Larkspur Hazard Mitigation Steering Committee recommended that the Larkspur City Council adopt the City of Larkspur All Hazard Mitigation Plan during a regularly scheduled Larkspur City Council Meeting and that a Resolution be prepared to document its adoption.

On _____, the Council of the City of Larkspur voted unanimously to adopt the resolution. The Resolution Document is below:

Resolution

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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 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)

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City Ordinance and Codes

Current through Ordinance 945, passed December 15, 2004

Chapter 6.08 REFUSE COLLECTION AND RECYCLING¹

Sections:

6.08.010 Purpose and Definitions.

6.08.020 Storage and Disposal.

6.08.030 License or Contract.

6.08.040 Responsibilities of Authorized Refuse and Recycling Agent.

6.08.050 Rates.

6.08.060 Penalties, Severability

Chapter 6.10 REGULATORY FEES FOR HOUSEHOLD HAZARDOUS WASTE ACTIVITIES

Sections:

6.10.010 Title.

6.10.020 Purpose and Intent.

6.10.030 Establishment of Regulatory Fees for Household Hazardous Waste Activities.

6.10.040 Collection of Regulatory Fees; Interest and Penalties.

6.10.050 Acceptance of Household Hazardous Waste Limited to City of Larkspur Residents or Residents of Jurisdictions Having Contracts with City.

6.10.060 Violation; Penalty.

6.10.070 Delinquent Fees as Debt to City.

6.10.100 Civil Remedies.

Chapter 6.12 SEWAGE DISPOSAL

Sections:

6.12.010 Definitions.

6.12.020 Prohibitions.

6.12.030 Sewer Connection Permits.

6.12.040 Sewer Connection Fees.

6.12.050 Street Pavement Cut Permits and Repair Fees.

6.12.060 Sewer Connection Required.

6.12.070 Connection by City.

6.12.080 Illegal Connections and/or Delinquent Fees.

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- 6.12.090 Connection Without Permit.
- 6.12.100 Delinquent Fees.
- 6.12.110 Notice to Owner.
- 6.12.120 Inspections.
- 6.12.130 General Requirements for Septic Tanks.
- 6.12.140 Regulations for Existing Septic Tanks.
- 6.12.150 Occupancy Permits.
- 6.12.160 Application for Occupancy Permits for Vessels.
- 6.12.170 Issuance of Permit by Building Inspector.
- 6.12.180 Permit Renewal.
- 6.12.190 Minimum Annual Sewer Service Charges.
- 6.12.200 Sewer Service Charge as Minimum.
- 6.12.210 Assignment of Sewer User Units.
- 6.12.220 Annual Service Charge.
- 6.12.230 Person Responsible for Payment.
- 6.12.240 Effective Date of Sewer Service.
- 6.12.250 Termination of Service.
- 6.12.260 Special Assessment.

Chapter 9 Public Peace, Morals, and Safety

- 9.04 Curfew
- 9.08 Disorderly Conduct and Obstruction of Public Way
- 9.12 Watercourses
- 9.16 Bulletins and Notices
- 9.24 Code Enforcement
- 9.26 Weed Abatement
- 9.28 Firearms Control
- 9.32 Park Rules and Regulations
- 9.36 Watercraft Regulations
- 9.40 Charitable and Religious Solicitations
- 9.44 Parades

Title 10 Vehicles and Traffic

Chapters:

- 10.04 Definitions
- 10.08 Administration

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10.12 Enforcement and Obedience

10.16 Accidents

10.20 Bicycle License Regulations

10.24 Traffic Control Devices

10.28 Turning Movements

10.32 One-Way Streets and Alleys

10.36 Special Stops

10.40 Driving and Safety Rules

10.44 Pedestrians

10.48 Stopping, Standing and Parking – Generally

10.52 Stopping, Standing and Parking – Loading and Unloading

10.56 Stopping, Standing and Parking – Restricted or Prohibited

10.60 Abatement and Removal of Abandoned Vehicles

10.64 Truck Routes and Commercial Vehicle Regulations

Title 14 Fire Prevention

Chapters:

14.04 Fire Prevention Code

14.08 Vehicles on Fire Trails and Hiking Trails

14.10 Master Fire Safety

14.12 Fire Safety Regulations

Title 15 Building Regulations

Chapters:

15.04 General Provisions

15.06 Uniform Administrative Code

15.07 Earthquake Hazard Reduction in Unreinforced Masonry Buildings

15.08 Building Code

15.09 Historic Building Code

15.10 Housing Code

15.12 Plumbing Code

15.14 Swimming Pool Code

15.15 Uniform Mechanical Code

15.16 Electrical Code

15.17 Dangerous Buildings Code

15.18 Floodplain Management

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- 15.20 Grading, Excavations and Fills
- 15.24 Hauling Excavated Material
- 15.28 House Numbering
- 15.32 Encroachment of City Rights-of-way
- 15.36 Underground Utility Districts
- 15.38 Underground Utilities
- 15.40 Reports of Residential Building Records
- 15.42 Archaeological Resources
- 15.44 Minimum Building Security Regulations
- 15.46 Supplemental Domestic Water Supply
- 15.48 Urban Runoff Pollution Prevention
- 15.50 Regulatory Fee for Clean Stormwater Activities

Title 18 Zoning

Chapters:

- 18.04 General Provisions
- 18.06 Zoning Administrator
- 18.08 Definitions
- 18.12 Designation and Establishment of Districts
- 18.13 Trip Reduction
- 18.14 Circulation Assessment Permit
- 18.15 Traffic Impact Fee
- 18.16 Regulations for All Districts
- 18.17 *Repealed*
- 18.18 S Study District Regulations
- 18.19 Combining Heritage Preservation District
- 18.20 R-1 First District Residential District Regulations
- 18.21 Residential Second Units
- 18.22 T-R Tidelands Residential District
- 18.24 Reserved
- 18.26 Reserved
- 18.28 R-2 Second Residential District Regulations
- 18.30 MHP – Mobilehome Park District Regulations
- 18.31 Affordable Housing Fund and Inclusionary/In-Lieu Fee Requirements
- 18.32 R-3 Third Residential District Regulations
- 18.34 Slope and Hillside Development Regulations

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18.35 Residential Floor Area Ratios

18.36 RMP Residential Master Plan

18.37 E/ER Educational/Environmental Resource District Regulations

**18.38 Residential Condominiums and Conversions to Residential Condominiums:
Standards and Regulations**

18.40 A-P Administrative and Professional District Regulations

18.41 SD Storefront Downtown Regulations

18.42 Reserved

18.43 GD Garden Downtown Regulations

18.44 C-1 Restricted Commercial District Regulations

18.45 TD Transitional Downtown Regulations

18.46 Reserved

18.48 C-2 Commercial District Regulations

18.49 OS Open Space District Regulations

18.50 Reserved

18.51 Communication Facilities

18.52 L-1 Light Industrial District Regulations

18.54 Planned Unit Development

18.55 Planned Development District

18.56 Off-Street Parking and Loading

18.60 Signs

18.64 Design Review

18.68 Nonconforming Uses and Structures

18.72 Variances

18.76 Use Permits

18.80 Amendments and Reclassifications

Section 2 –Planning Process

HAZARD MITIGATION STEERING PARTICIPATION

Steering Committee Members

NAME	DEPARTMENT	PHONE	E-MAIL
Jean Bonander	City Manager	(415)927-5018	jbonanader@larkspurcityhall.org
Hamid Shamsapour	Director of Public Works	927-5017	hshamsapur@larkspurcityhall.org
Bob Sinnott	Fire Chief/DCM	927-5014	rsinnott@larkspurfire.net
Phil Green	Police Chief, Twin Cities Police Authority	927-5156	PHILLIP.GREEN@TCPD-AUTHORITY.ORG
Mike McDuffee	Captain; Twin Cities Police Authority	927-5150	MMDUFFEE@TCPK-AUTHORITY.ORG
Mike Myers	Superintendent of Public Works	927-5028	mmyers@larkspurhall.org
Nancy Kaufman	Planning Director	927-5025	nkaufman@larkspurcityhall.org
Cynthia Huisman	Assistant City Clerk	927-5002	chuisman@larkspurcityhall.org
Ernie Hutchings	Director of Finance	927-5019	ehutchings@larkspurcityhall.org
Andre Horn	Captain; Twin Cities Police Authority	927-5150	AHORN@TCPD-AUTHORITY.ORG
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Hazard Mitigation Steering Committee By-laws

Steering Committee Hazard Mitigation By Laws

1. The CITY OF LARKSPUR ALL-HAZARD MITIGATION Steering Committee is represented by members from City departments of the City of LARKSPUR and other members as identified by the Steering Committee.
2. The CITY OF LARKSPUR ALL-HAZARD MITIGATION Steering Committee agrees to make and pass policy recommendations by a vote of a simple majority of those members present at the scheduled meeting. Any member of the Steering Committee may request reconsideration of a vote at the next regularly scheduled meeting.
3. Members of the CITY OF LARKSPUR All-Hazard Mitigation Steering Committee agree to meet monthly to identify hazard priorities and review, identify and implement CITY OF LARKSPUR'S hazard mitigation strategy recommendations.

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4. Any single Hazard Mitigation Steering Committee member may request, at a scheduled meeting of the CITY OF LARKSPUR All-Hazard Mitigation Steering Committee, an adoption of, or amendment to any part of the plan or process.
5. The CITY OF LARKSPUR All-Hazard Mitigation Steering Committee was organized in October 2005, as reflected by the minutes of that meeting, and agreed to meet monthly to identify hazard vulnerabilities and feasible hazard mitigation strategy recommendations.
6. The CITY OF LARKSPUR All-Hazard Mitigation Steering Committee may form subcommittees to review and develop those feasible hazard mitigation strategy recommendations identified that will be reviewed by the Hazard Mitigation Steering Committee as a whole.
7. The sub-committees or members will identify and bring forward hazard mitigation strategies from existing recommendations contained in plans and documents, and from the input of inter-city jurisdictions, private citizens, and organizations.
8. The CITY OF LARKSPUR Steering Committee will identify constraints to mitigation strategies that affect represented jurisdiction's ability, authority, and responsibility to implement those strategies.
9. Public input will be implemented using a specially prepared Hazard Mitigation and Preparedness Questionnaire as well as at community forums, City Council Meetings and solicitation via other community disaster preparedness-related organizations.

Hazard Mitigation Tasks

1. Coordinate multi-hazard mitigation planning tasks and activities with the City's staff and departments to develop an all-hazard disaster mitigation plan and support the CITY OF LARKSPUR All-Hazard Mitigation Steering Committee's chair and co-chairs oversight of the planning process.
2. Assist in carrying out the goals and objectives of the CITY OF LARKSPUR All-Hazard Mitigation Plan in compliance with FEMA DMA 2000 Hazard Mitigation Act.
3. Identify hazards and prioritized the risks associated with those hazards for consideration of hazard mitigation strategies.
4. Select designated facilities both owned by and non-owned facilities critical to the health and safety of the citizens of the CITY OF LARKSPUR, and develop a risk exposure analysis for those deemed critical facilities.
5. Select highest priority and most-desired mitigation recommendations and develop those recommendations for further action by each members of the CITY OF LARKSPUR All-Hazard Mitigation Steering Committee.
6. Review mitigation planning drafts, recommendations, and updates for adoption.
7. Develop and implement long- and short-term goals.
8. Coordinate the plan's development with all phases of the City's Comprehensive Emergency Management Plan and General Plan Safety Element.

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9. Provide for the implementation of Steering Committee decisions.
10. Encourage development of, coordinate, and implement a methodology for the implementation of public input.
11. Establish Hazard Mitigation steering Committee responsibilities to include but not be limited to the following:
 - Determine implementation ability and constraints for proposed Hazard Mitigation planning steps and development of strategies
 - Bring forward community concerns through private and public input
 - Identify implementation resources
 - Identify lead departments for implementation of strategies
 - Provide for the update of the Disaster Mitigation Plan on a regularly scheduled basis
 - Evaluate and carry out mitigation activities, as feasible
 - Assist in implementation of funding identification and procurement

Hazard Mitigation Planning Goals and Objectives

Goals

1. Support the priorities of the City, their mandates, employees, citizens, and the business community.
2. Promote economic development strategies consistent with seismic, floodplain and risk management guidance as developed by the City and its agencies and/or organizations.
3. Provide for an effective public awareness program for natural and technological hazards present in the City.
4. Encourage scientific study and the development of data to support mitigation strategies for those hazards that are a threat to the City.
5. Promote the recognition of the real value of hazard mitigation to public facilities, public safety, and welfare of all citizens in the City.
6. Support the mitigation efforts of local governments, private citizens, non-profit organizations, and private businesses throughout the City.

Objectives

1. Identify mitigation actions to reduce loss of lives and property.
2. Implement mitigation actions that are feasible, to reduce loss of lives and property.
3. Identify mitigation strategies that will allow the City to perform its primary mission and goals.

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4. Identify mitigation opportunities for short- and long-range planning considerations.
5. Maintain safe building and zoning codes that support scientific findings of a known risk.
6. Identify lead City Departments, Organizations and Agencies that have an interest in mitigation of specific hazards.
7. Develop a standard mitigation program utilizing authorities, policies and programs of the City.
8. Organize, train, and maintain an effective and ongoing CITY OF LARKSPUR All-Hazard Mitigation Steering Committee that will facilitate implementation of the CITY OF LARKSPUR All-Hazard Mitigation Plan and its future updates.
9. Review and update other jurisdictional programs to identify current and future mitigation goals and objectives in compliance with city, county, state and Federal requirements.
10. Gain support of the administration for the CITY OF LARKSPUR All-Hazard Mitigation Plan implementation.
11. Achieve the overall goal of developing a comprehensive mitigation program with Federal, state, and other appropriate adjacent jurisdictions where feasible.
12. Encourage identified hazard mitigation strategies as set forth in the City's Safety Element of its General Plan or Master Plan and all other plans that contain Hazard Mitigation Strategies.

Hazard Mitigation Steering Public Participation

The City of Larkspur Hazard Mitigation Steering Committee aggressively sought input from adjacent jurisdictions and the community. Questionnaires were distributed at several public gatherings including:

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

Using the results of the questionnaires and incorporating input received at meetings and public gatherings, the Steering Committee developed a list of hazards and the priority designating the risk each hazard poses to the City of Larkspur (See Section 4).

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Public Participation Questionnaire

City of Larkspur Hazards Mitigation and Preparedness Questionnaire

This questionnaire is designed to help the Local Hazard Mitigation Planning Project by identifying the community's concerns about natural and human-caused hazards and to better understand community needs in reducing risk and loss from such hazards. The questionnaire should be completed by an adult, preferably the homeowner or the head of the household. Please, take a few moments to complete this questionnaire. All individual responses are strictly confidential, and are for research purposes only. Thank you.

1. Zip code: _____ Community Name or location: _____ Internet Access? Y/N _____ Own/Rent _____

2. 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*

Natural:

Earthquake _____ Flood _____ Drought _____
Sinkholes _____ Urban/Interface Fire _____ Severe Weather (extreme rains, high winds) _____

Human-Caused Technological: Utility Loss _____ Water/Wastewater Disruption _____
Terrorism _____ Economic Loss _____
Biological/Health _____ Data/Telecommunication Loss _____ Explosions _____
Transportation: Incident _____ Transportation Loss _____
Hazardous Material Incident _____ Dam Failure _____

3. 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.*)

- | | |
|---|---|
| <p>Media:</p> <p><input type="checkbox"/> Newspaper</p> <p><input type="checkbox"/> Newspaper ads</p> <p><input type="checkbox"/> Television news</p> <p><input type="checkbox"/> Television ads</p> <p><input type="checkbox"/> Radio news</p> <p><input type="checkbox"/> Radio ads</p> <p>Other methods:</p> <p><input type="checkbox"/> Schools</p> <p><input type="checkbox"/> Outdoor advertising (billboards, etc)</p> | <p>Books</p> <p>Mail</p> <p>Fire Department</p> <p>Internet</p> <p>Fact sheet/brochure</p> <p>Church/religious organization</p> <p>Employer</p> <p>Public meetings</p> <p>University or research institution</p> <p>Utility Bills</p> |
|---|---|

4 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*)

Question	Have done	Plan to do	Not done	Unable to do
Have you or someone in your household:				
Attended meetings or received written information on natural disasters or emergency preparedness?				
Talked with family members about what to do in case of a disaster or emergency?				

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Question	Have done	Plan to do	Not done	Unable to do
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)?				

5. 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? (*Check only one*)

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

6. Did you consider the possible occurrence of a natural hazard when you bought/moved into your current home?

- Yes No

7. Would you be willing to spend more money on a home that has features that make it more disaster resistant?

- Yes No Don't know

8. Do you carry flood insurance? If so what is the annual cost?

- Yes No _____

9. Would you be willing to make your home more resistant to natural disasters? (See examples below)

- Yes No

10. What nonstructural or structural modifications for earthquakes and floods have you made to your home?

(Please check all that apply)

10a. Nonstructural 10b. Structural

- | | |
|---|--|
| <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/cabinets | <input type="checkbox"/> Brace unreinforced chimney |
| <input type="checkbox"/> Fit gas appliances with flexible connections | <input type="checkbox"/> Brace unreinforced masonry and concrete walls |
| <input type="checkbox"/> Others (please explain) | and foundations |
| Others (please explain) | |
| <input type="checkbox"/> None | |

11. 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.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

Statement	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important
Protecting private property					
Protecting critical facilities (hospitals, transportation networks, fire stations)					
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)					

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

Communitywide Strategies	Agree	Neutral	Disagree	Not Sure
I support a regulatory approach to reducing risk.				
I support a non-regulatory approach to reducing risk.				
I support the use of 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.				

Mail to: City Of Larkspur
Attention: Mr. Hamid Shamsapour
400 Magnolia Ave
Larkspur, California 94939

The City received eight responses over a 60 day period. The results are:

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

Public Participation Survey Results

Survey Summary

SurveyMonkey.com because knowledge is everything

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Thursday, June 29, 2006

Results Summary

Show All Pages and Questions Export... View Detail >>

Filter Results

To analyze a subset of your data, you can create one or more filters.

Add Filter... **Total:** 8
Visible: 8

Share Results

Your results can be shared with others, without giving access to your account.

Configure... **Status:** Enabled
Reports: Summary and Detail

1. City of Larkspur, California

1. State the name of your community or location, including zip code.

View	Total Respondents	7
	(skipped this question)	1

2. Do you have Internet access?

	Response Percent	Response Total
Yes	100%	8
No	0%	0
Total Respondents		8
(skipped this question)		0

3. How concerned are you about the following disasters affecting your community?

	Select				Response Total
	Not concerned	Somewhat concerned	Moderately concerned	Very concerned	
Earthquake	0% (0)	0% (0)	14% (1)	86% (6)	7
Flood	14% (1)	43% (3)	14% (1)	29% (2)	7
Drought	0% (0)	43% (3)	43% (3)	14% (1)	7
Sinkholes	20% (1)	40% (2)	20% (1)	20% (1)	5
Urban/Interface Fire	17% (1)	0% (0)	17% (1)	67% (4)	6
Severe Weather (extreme rains, high winds)	20% (1)	40% (2)	20% (1)	20% (1)	5

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**CITY OF LARKSPUR, CALIFORNIA
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Survey Summary

Economic Loss	40% (2)	40% (2)	0% (0)	20% (1)	5
Biological/ Pandemic Flu	17% (1)	17% (1)	17% (1)	50% (3)	6
Data/Telecommunication Loss	20% (1)	40% (2)	20% (1)	20% (1)	5
Dam Failure	60% (3)	20% (1)	20% (1)	0% (0)	5
Explosions	60% (3)	20% (1)	0% (0)	20% (1)	5
Hazardous Materials Incident	0% (0)	33% (2)	50% (3)	17% (1)	6
Terrorism/ Weapons of Mass Destruction	20% (1)	40% (2)	20% (1)	20% (1)	5
Transportation Incident and/or Accident	40% (2)	20% (1)	0% (0)	40% (2)	5
Transportation Loss	0% (0)	20% (1)	40% (2)	40% (2)	5
Utility Loss	0% (0)	33% (2)	33% (2)	33% (2)	6
Water/Wastewater Disruption	17% (1)	0% (0)	33% (2)	50% (3)	6
Total Respondents					8
(skipped this question)					0

4. 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.)

	Response Percent	Response Total
Newspaper stories	28.6%	2
Newspaper ads	42.9%	3
Television ads	14.3%	1
Television news	28.6%	2
Radio news	14.3%	1
Radio ads	28.6%	2
Schools	14.3%	1
Outdoor advertising (billboards, etc)	42.9%	3
Books	14.3%	1
Mail	71.4%	5
Fire Department	57.1%	4
Internet	71.4%	5
Fact sheet/brochure	28.6%	2
Church/religious organization	28.6%	2
Employer	14.3%	1
Public meetings	28.6%	2
University or research institution	14.3%	1
Utility Bills	57.1%	4

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**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

Survey Summary

Total Respondents	7
(skipped this question)	1

2. Untitled Page

5. In the following , please indicate those activities that you have done, plan to do, have not done, or are unable to do.

	Select				Response Total
	Have done	Plan to do	Not done	Unable to do	
Attended meeting or received written information on natural disasters or emergency preparedness.	83% (5)	17% (1)	0% (0)	0% (0)	6
Talked with family members about what to do in case of emergency or disaster.	67% (4)	17% (1)	0% (0)	17% (1)	6
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster.	67% (4)	0% (0)	17% (1)	17% (1)	6
Prepared a "Disaster Supply Kit" (extra food, water, medications, batteries, first aid items and other emergency supplies.	67% (4)	33% (2)	0% (0)	0% (0)	6
In the last year, has anyone in your household been trained in First Aid or Cardio Pulmonary Resuscitation (CPR)?	50% (3)	17% (1)	33% (2)	0% (0)	6
Total Respondents					6
(skipped this question)					2

6. 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?

	Response Percent	Response Total	
0-1 hour	0%	0	
2-3 hours	14.3%	1	
4-7 hours	42.9%	3	
8-15 hours	0%	0	
16+ hours	28.6%	2	
Other, please specify	14.3%	1	
Total Respondents			7
(skipped this question)			1

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**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

Survey Summary

7. Did you consider the possible occurrence of a natural hazard when you bought/moved into your current home?		
	Response Percent	Response Total
Yes 	83.3%	5
No 	16.7%	1
Total Respondents		6
(skipped this question)		2

8. Would you be willing to spend more money on a home that has features that make it more disaster resistant?		
	Response Percent	Response Total
Yes 	66.7%	4
No 	33.3%	2
Don't Know	0%	0
Total Respondents		6
(skipped this question)		2

9. Do you carry flood insurance?		
	Response Percent	Response Total
Yes	0%	0
No 	100%	6
Total Respondents		6
(skipped this question)		2

10. If you carry flood insurance, what is the annual cost?		
	Response Percent	Response Total
Total Respondents		0
(skipped this question)		8

11. Would you be willing to make your home more resistant to natural disasters?		
	Response Percent	Response Total
Yes 	66.7%	4
No 	33.3%	2
Total Respondents		6
(skipped this question)		2

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**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

Survey Summary

12. What nonstructural modifications for earthquakes or flood have you made to your home? (Check all that apply)

	Response Percent	Response Total
Anchor bookcases, cabinets to walls.	33.3%	2
Secure water heater to wall	50%	3
Install latches on drawers/cabinets	16.7%	1
Fit gas appliances with flexible connections	66.7%	4
Others	16.7%	1
None	33.3%	2
Total Respondents		6
(skipped this question)		2

13. What structural modifications for earthquakes or floods have you made to your home? (Check all that apply)

	Response Percent	Response Total
Secure home to foundation	80%	4
Brace inside of cripple walls with sheathing	40%	2
Brace unreinforced chimney	20%	1
Braced unreinforced masonry, concrete walls and foundation	0%	0
None	20%	1
Total Respondents		5
(skipped this question)		3

3. Untitled Page

14. Natural and human cause disasters can have a significant impact on a community but planning for these events can help lessen the impact. The following statements will help us determine community priorities for planning for these hazards. Please indicate how important each one is to you.

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**CITY OF LARKSPUR, CALIFORNIA
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Survey Summary

	Select					Response Total
	Very important	Somewhat important	Neutral	Not very important	Not important	
Protecting private property	50% (3)	0% (0)	17% (1)	33% (2)	0% (0)	6
Protecting critical facilities (hospitals, transportation networks, fire stations)	100% (6)	0% (0)	0% (0)	0% (0)	0% (0)	6
Protecting natural environment	33% (2)	50% (3)	17% (1)	0% (0)	0% (0)	6
Protecting historical and cultural landmarks	33% (2)	33% (2)	17% (1)	17% (1)	0% (0)	6
Promoting cooperation among public agencies, citizens, non-profit organizations and businesses	83% (5)	17% (1)	0% (0)	0% (0)	0% (0)	6
Protecting and reducing damage to utilities	83% (5)	0% (0)	17% (1)	0% (0)	0% (0)	6
Strengthening emergency services (police, fire, ambulance)	50% (3)	50% (3)	0% (0)	0% (0)	0% (0)	6
Total Respondents						6
(skipped this question)						2

15. Please select the answer that best represents your opinion of the following strategies to reduce the risk and loss associated with natural disasters.

	Select				Response Total
	Agree	Neutral	Disagree	Not sure	
I support a regulatory approach to reducing risk.	83% (5)	0% (0)	17% (1)	0% (0)	6
I support a non-regulatory approach to reducing risk.	17% (1)	50% (3)	33% (2)	0% (0)	6
I support the use of local tax dollars to reduce risks and losses from natural disasters.	67% (4)	33% (2)	0% (0)	0% (0)	6
I support protecting historical and cultural structures.	83% (5)	17% (1)	0% (0)	0% (0)	6
I would be willing to make my home more disaster resistant.	83% (5)	17% (1)	0% (0)	0% (0)	6
I support steps to safeguard the local economy following a disaster event.	67% (4)	17% (1)	17% (1)	0% (0)	6
I support improving disaster preparedness of schools.	83% (5)	17% (1)	0% (0)	0% (0)	6
Total Respondents					6
(skipped this question)					2

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**CITY OF LARKSPUR, CALIFORNIA
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Stakeholder Participation

The City of Larkspur invited stakeholders to a special committee meeting on May 2, 2006 to discuss the hazards and its effects on the city. The committee asked the stakeholders to make hazard mitigation strategies recommendations to reduce or eliminate mutual hazard damage.

A letter was sent to the identified stakeholders listed below:

SBC- Pac Bell		7 King Street	Larkspur	CA	94939
Golden State Lumber		1100 Anderson Drive	San Rafael	CA	94901
Shamrock Building Materials		181 Lynch Creek Way	Petaluma	CA	94954
Marin Municipal Water District	Paul Helliker	220 Nellen Drive	Corte Madera	CA	94925
Courtyard by Marriott	Michael Vicaro	2500 Larkspur Landing Circle	Larkspur	CA	94939
Redwood High School	Bob Ferguson	395 Doherty Drive	Larkspur	CA	94939
Larkspur School District	Valerie Pitts	200 Doherty Drive	Larkspur	CA	94939
St. Patricks School	Ann Kalayjian	120 King Street	Larkspur	CA	94939
Marin Primary	Murray Lopdell Lawrence	20 Magnolia Avenue	Larkspur	CA	94939
Ross Valley Sanitary District	Barry Hogue	2000 Larkspur Landing Circle	Larkspur	CA	94939

Stakeholder Attendees

David Hughes	Disaster/Health Chair Marin Primary & Middle School	(415)924-2608	dhughes@mpms.org
Mike Rudolph	Emerg. Prep Coordinator St. Patricks School	924-0501	M_rudolph@stpatricksmarin.com
Jeff Ohmart	Manager – Design & Construction Marin Municipal Water District	945-1574	johmart@marinwater.org

The above stakeholders attended the May 22 Stakeholder Invitational Meeting where they discussed mutual hazard threats and mitigation opportunities. The representatives will partner with the City to develop future mitigation strategies on communication, disaster preparedness and emergency operations exercises.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

Administration 415/927-5110
Fire 415-927-5007/5041
Public Works 415-927-5017
Recreation 415-927-6746
Customer Service 415-927-5110
Library 415/927-5005



Planning 415/927-5038
Community Development
Building Permits/Inspection

Twin Cities Police 415/927-5150
Fax 415/927-5022
Web www.ci.larkspur.ca.us

CITY OF LARKSPUR

March 30, 2006

Dear Stakeholder,

The City of Larkspur is currently involved in writing a Disaster Hazard Mitigation Plan under the 2002 amendment to the Robert Stafford Act (PL 93-288) for reduction of damage from both natural and man caused risks that can affect our city. The City of Larkspur share common borders and/or interests with your jurisdiction/company and our city may share some mutual corresponding risks, such as earthquake, flood, severe weather, wildland/urban interface fire, and other human-caused technology hazards.

We are inviting your comments and input into the City of Larkspur All-Hazard DMA 2000 Mitigation Plan. The All-Hazard Mitigation Steering Committee will consider projects or mitigation recommendation that you may want the City to participate in for the reduction of risks between our two jurisdictions. Attached for you consideration is the list of Disaster Risk priorities in the order they were ranked by the Steering Committee and are being considered for mitigation strategies by the City.

Mr. Hamid Shamsapour is the Chairperson for the City of Larkspur All-Hazard Mitigation Steering Committee. The committee meets the 3rd Tuesday of each month in the City of Larkspur City Council Chambers at 9:45a.m. You are welcome to be our guest at a Special Stakeholders meeting on May 2, 2006 at 10:00 A.M in the City Council Chambers located at 400 Magnolia Avenue or you may contact Mr. Hamid Shamsapour, Director of Public Works, at (415) 927-5017 for more information.

Your concerns and Hazard Mitigation Strategy input would be both helpful and welcome. Thank you for your consideration.

Sincerely,

Jean Bonander
City Manager

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

Hazard Mitigation Steering Committee Meeting Minutes

October 25, 2005 Meeting called to order

First meeting of the City of Larkspur All-Hazards Mitigation Steering Committee was called to order at 9:15am.

Name	Title	Phone	Email
Jean Bonander	City Manager	(415)927-5018	jbouander@larkspurcityhall.org
Hamid Shamsapour	Director of Public Works	927-5017	hshamsapour@larkspurcityhall.org
Bob Sinnott	Larkspur Fire Chief	927-5014	rsinnott@larkspurfire.net
Phil Green	Police Chief, Twin City Police Authority	927-5156	PHILLIP.GREEN@TCPD-AUTHORITY.ORG
Mike McDuffee	Captain; Twin City Police Authority	927-5150	MMCDUFFEE@TCPD-AUTHORITY.ORG
Mike Myers	Superintendent of Public Works	927-5028	mmyers@larkspurcityhall.org
Nancy Kaufman	Planning Director	927-5025	nkaufman@larkspurcityhall.org
Cynthia Huisman	Assistant City Clerk	927-5002	chuisman@larkspurcityhall.org
Ernie Hutchings	Director of Finance	927-5019	ehutchings@larkspurcityhall.org
Andre Horn	Captain; Twin City Police Authority	927-5150	AHORN@TCPD-AUTHORITY.ORG
Frances Gordon	Library	927-5135	fgordon@larkspurcityhall.org
David Wilkinson	Recreation Director	927-5004	dwilkinson@larkspurcityhall.org
Scott Shurtz	Deputy Fire Chief	927-5016	sshurtz@larkspurfire.net
Janice Rogala	President/Dimensions Unlimited	(707)374-6529	janrogala@aol.com
Theresa Hayes	Director of Operations/Dimensions Unlimited	(707)374-6529	Theresa@dimensionsui.com

Introductions

Jean Bonander, City Manager, greeted the committee and introduced Hamid Shamsapour, Director of Public Works. Hamid briefed the committee on DMA 2000 and turned the meeting over to Janice Rogala, consultant.

The Committee members introduced themselves.

Disaster Mitigation Act of 2000 Presentation (DMA 2000)

Jan gave a brief PowerPoint presentation to the committee on the DMA 2000. The presentation covered:

- DMA 2000 Act
- Process
 - Planning
 - Risk Assessment
 - Mitigation Strategies
 - Plan Maintenance

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

- Plan Adoption

Presentation Continued

- Planning Process
- Data/Documents of the City of Larkspur
 - General or Master Plan
 - Emergency Operations Plans
 - Community Development
 - Land Use
 - Property Assessment/Facility Replacement Value
- Plans, studies, and reports which maybe used to develop Plan
- City Constraints
- Hazard Mitigation Plans vs. Emergency Operations Plans
- Single or Multi-Jurisdictional Plans
- Natural Hazards and/or Human Caused Technological Hazards
- Secondary Hazards caused by primary disasters; Transportation Loss, Utility Loss, Economic Loss
- Historical disasters
- Risk Assessment to Critical Facilities and Services
 - Hospitals and/or medical services
 - Private non-profit agencies
 - Critical services or systems (Mutual Aid)
 - Emergency services (Red Cross, Salvation Army)
- Public Involvement
 - Questionnaires
 - Surveys
 - Public meetings
 - Stakeholders
 - Historical Society
 - Federal, state, county, and local agencies
- Hazard Risk Vulnerability Assessment
 - Forecast impact to facilities and critical facilities
 - Land Use
 - Cost benefit analysis
 - ABAG, USGS, GIS mapping
 - Water and sanitation systems
 - Infrastructure and transportation routes (bridges, roads, evacuation routes)
- Prioritization of Hazards; High, moderate and low definitions
- Mitigation Strategies
- Plan Maintenance
- Plan Adoption

New Business

A motion was made seconded and unanimously passed to adopt the following

The committee will be named “City of Larkspur Hazard Mitigation Steering Committee.”

A motion was made seconded and unanimously passed to elect the following:

Committee Chairman is Hamid Shamsapour and Co-Chair is Bob Sinnott

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

The Steering Committee discussed and agreed to meet on the following schedule for November and December. Meetings will be held the third Tuesday at 9:45 A.M. in the City Hall Council Chambers.

A motion was made, seconded and passed unanimously to adopt the following operation;

Hazard Mitigation Steering Committee Bylaws, Tasks, Goals and Objectives:

Steering Committee Hazard Mitigation By Laws:

1. The CITY OF LARKSPUR ALL-HAZARD MITIGATION STEERING Committee is represented by members from City Departments of the City of LARKSPUR and other members as identified by the Steering Committee.
2. The CITY OF LARKSPUR ALL-HAZARD MITIGATION STEERING Committee agrees to make and pass policy recommendations by a vote of a simple majority of those members present at a regularly scheduled meeting. Any member of the Steering Committee may request reconsideration of a vote at the next regularly scheduled meeting.
3. Members of the CITY OF LARKSPUR All-Hazard Mitigation Steering Committee agree to meet monthly to identify hazard priorities and review, identify and implement CITY OF LARKSPUR'S hazard mitigation strategy recommendations.
4. Any single Hazard Mitigation Steering Committee member may request, at a scheduled meeting of the CITY OF LARKSPUR All-Hazard Mitigation Steering Committee, an adoption of, or amendment to any part of the plan or process.
5. The CITY OF LARKSPUR All-Hazard Mitigation Steering Committee was organized in October 2005, as reflected by the minutes of that meeting, and the Steering Committee agreed to meet monthly to identify hazard vulnerabilities and feasible hazard mitigation strategy recommendations.
6. The CITY OF LARKSPUR All-Hazard Mitigation Steering Committee may form subcommittees to review and develop those feasible hazard mitigation strategy recommendations identified that will be reviewed by the Hazard Mitigation Steering Committee as a whole.
7. The sub-committees or members will identify and bring forward hazard mitigation strategies from existing recommendations contained in plans and documents, and from the input of inter-city jurisdictions, private citizens and organizations.
8. The CITY OF LARKSPUR Steering Committee will identify constraints to mitigation strategies that affect the City's ability, authority and responsibility to implement those strategies.
9. Public input will be implemented in the following manner: *To be decided*

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

Hazard Mitigation Tasks

1. Coordinate multi-hazard mitigation planning tasks and activities with the City's staff and departments to develop an all-hazard disaster mitigation plan and support the CITY OF LARKSPUR All-Hazard Mitigation Steering Committee's chair and co-chairs oversight of the planning process.
2. Assist in carrying out the goals and objectives of the CITY OF LARKSPUR All-Hazard Mitigation Plan in compliance with FEMA DMA 2000 Hazard Mitigation Act.
3. Identify hazards and prioritize the risks associated with those hazards for consideration of hazard mitigation strategies.
4. Select designated facilities both owned by and non-owned facilities critical to the health and safety of the citizens of the CITY OF LARKSPUR, and develop a risk exposure analysis for those deemed critical facilities.
5. Select highest priority and most-desired mitigation recommendations and develop those recommendations for further action by the members of the CITY OF LARKSPUR All-Hazard Mitigation Steering Committee.
6. Review mitigation planning drafts, recommendations and updates for adoption.
7. Develop and implement long- and short-term goals.
8. Coordinate the plan's development with all phases of the City's Comprehensive Emergency Management Plan and General Plan Safety Element.
9. Provide for the implementation of Steering Committee decisions.
10. Encourage development of, coordinate and implement a methodology for the implementation of public input.
11. Establish Hazard Mitigation Steering Committee 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, as feasible.
18. Assist in implementation of funding identification and procurement

Hazard Mitigation Planning Goals and Objectives

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

Goals

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

Objectives

- Identify mitigation actions to reduce loss of lives and property.
- Implement mitigation actions that are feasible, to reduce loss of lives and property.
- Identify mitigation strategies that will allow the City to perform its primary mission and goals.
- Identify mitigation opportunities for short- and long-range planning considerations.
- Maintain safe building and zoning codes that support scientific findings of a known risk.
- Identify lead City Departments, Organizations and Agencies that have an interest in mitigation of specific hazards.
- Develop a standard mitigation program utilizing authorities, policies and programs of the City.
- Organize, train and maintain an effective and ongoing CITY OF LARKSPUR All-Hazard Mitigation Steering Committee that will facilitate implementation of the CITY OF LARKSPUR All-Hazard Mitigation Plan and its future updates.
- Review and update other jurisdictional programs as feasible to identify current and future mitigation goals and objectives in compliance with City, county, state and Federal requirements.
- Gain support of the administration for the CITY OF LARKSPUR All-Hazard Mitigation Plan implementation.
- Achieve the overall goal of developing a comprehensive mitigation program with Federal, state and other appropriate adjacent jurisdictions where feasible.
- Encourage identified hazard mitigation strategies as set forth in the City's Safety Element of its General Plan or Master Plan and all other plans that contain Hazard Mitigation Strategies.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

The committee members will complete the Hazard Risk Analysis Matrices and return to Dimensions Unlimited. An electronic copy will be emailed to members.

Next meeting: November 15, 2005 at 9:45am.

Meeting adjourned at 10:15am.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

November 15, 2005 Meeting called to order

Second meeting of the City of Larkspur All-Hazards Mitigation Steering Committee was called to order at 9:45a.m.

Name	Title	Phone	Email
Jean Bonander	City Manager	(415)927-5018	jbouander@larkspurcityhall.org
Hamid Shamsapour	Director of Public Works	927-5017	hshamsapour@larkspurcityhall.org
Bob Sinnott	Larkspur Fire Chief	927-5014	rsinnott@larkspurfire.net
Mike McDuffee	Captain; Twin City Police Authority	927-5150	MMCDUFFEE@TCPD-AUTHORITY.ORG
Mike Myers	Superintendent of Public Works	927-5028	mmyers@larkspurcityhall.org
Nancy Kaufman	Planning Director	927-5025	nkaufman@larkspurcityhall.org
Cynthia Huisman	Assistant City Clerk	927-5002	chuisman@larkspurcityhall.org
Ernie Hutchings	Director of Finance	927-5019	ehutchings@larkspurcityhall.org
Andre Horn	Captain; Twin City Police Authority	927-5150	AHORN@TCPD-AUTHORITY.ORG
Frances Gordon	Library	927-5135	fgordon@larkspurcityhall.org
David Wilkinson	Recreation Director	927-5004	dwilkinson@larkspurcityhall.org
Scott Shurtz	Deputy Fire Chief	927-5016	sshurtz@larkspurfire.net
Janice Rogala	President/Dimensions Unlimited	(707)374-6529	janrogala@aol.com
Theresa Hayes	Director of Operations/Dimensions Unlimited	(707)374-6529	Theresa@dimensionsui.com

The committee voted to adopt the October 25, 2005 meeting minutes with no changes.

Old Business

The committee reviewed the median hazard risk ratings. A discussion included:

- Natural disaster effects on the city
- Human-caused hazards; secondary effects from natural disasters
- Historical disasters in Larkspur
- Hazard vulnerability and the impact to the City
- Multi-jurisdictional natural disaster impacts; Flooding and Drought
- Federal and State security risks and targets; How do they impact the City? (Ferry system)

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The committee unanimously voted to rate the hazards as high, moderate and low risks to the City of Larkspur. The risk categories are listed on page 2. The Steering committee will develop mitigation strategies for the high and moderate risks.

Drought was rated as a low risk. A drought occurred in the 1970's. The City's water supply for the citizens and fire fighting were not affected or impacted.

The City had a FEMA claim for flooding in December 1996 January 1997. The Corte Madera Creek flooded the area. More information will be gathered for the HMP.

HAZARD RISK VULNERABILITY ASSESSMENT

HIGH	MODERATE	LOW
Earthquake	Biological Health Pandemic Flu	Aviation Disaster
Flood	Data/Telecommunication Loss	Civil Unrest/Disorder
Severe Weather (Excessive rains & winds)	Economic Loss	Dam Failure
Transportation: Incident/Accident Loss (Bridges, Highways routes)	Hazardous Materials Pipelines Incident (Natural Gas)	Drought
Urban Interface Wildland Fire	Water/Waste Water Disruption/Loss	Explosions
Utility Loss (Electrical)	WMD/Terrorism	Sinkholes

The committee discussed the impact of Utility Loss, Water/Wastewater Disruption, Data Telecommunication Loss, and Terrorism as hazards which affect the City. It was agreed the City does not directly provide these services and can only develop mitigation strategies to reduce the impact of the risks.

The committee agreed to monitor the hazard vulnerability factors and make appropriate changes as needed to protect their citizens and critical infrastructure.

New Business

FEMA 2005 Pre-Disaster Grant Program

Jan Rogala, Dimensions Unlimited Consultant, briefed the committee on the changes to the FEMA Pre-Disaster Mitigation Grant (PDM) Program. FEMA has withdrawn 100 million dollars from the PDM 05' program to go towards the Hurricane Katrina recovery. Currently the request for funds is far greater than the funds available in California.

Seismic Retrofit Committee Meeting Report

Hamid Shamsapour reported on the Larkspur Seismic Retrofit Sub-Committee meeting held November 10, 2005. The committee reviewed the City Hall and Fire Station retrofit projects. He explained the City had identified and prioritized the projects several years ago but due to lack of funds was unable to implement the projects. Updates needed for the projects were identified.

Due to time constraints and the withdrawal of PDM grant monies, the Steering Committee recommended the projects for the retrofit of City Hall and the Fire Station be included in the Hazard Mitigation Plan and update the project's data as needed. These projects will be part of the Plan under

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earthquake mitigation strategies. The Steering Committee will consider the possibility of applying for a PDM 07 Grant funds in the future for the specific projects.

Public Participation

Larkspur Citizens

The Steering Committee discussed methods to obtain public and stakeholder participation during the planning process. Possible methodologies are:

Questionnaires in hard copy available at designated sites

- Questionnaires posted on the City's website or a web based survey site
- Public meeting or community meeting opportunities
- Press Releases

Dimensions Unlimited, Inc. provided a questionnaire and cover letter sample for the committee to review. The committee members agreed on various changes. Theresa will amend the questionnaire and email back to the members for further comments. Members agreed to submit additional comments by November 23, 2005.

Stakeholders

The committee will identify and develop a stakeholder contact list to include neighboring jurisdictions, appropriate state and federal agencies, utility companies, medical providers, private non-profit agencies, and other critical vendors for the City of Larkspur.

Capital Asset List & Critical Facilities

Jan Rogala asked the committee to identify facilities which are deemed critical to the City for day-to-day operations and emergency preparedness and response; Larkspur's infrastructure assets and non-owned facilities such as school sites, utility substations, medical centers, businesses, and supply vendors.

Ernie Hutchings, Director of Finances, will provide the City's Self Insured asset report. The report will include building identification, current replacement cost, and inventory. Other reports will identify the type of structure and square footage.

Twin City Police Department will provide their facilities report and inventory list.

Hazard Maps

Nancy Kaufman, Planning Director, and Theresa Hayes, Consultant, will gather the Larkspur City General Plan maps. Additional hazard maps will be obtained from FEMA, Marin County, and ABAG. FEMA has produced current flood maps for the Larkspur and Mill Valley area. These new maps have some errors on them and Hamid expects them to be updated and provided in the next couple of months.

Hamid discussed a multi-jurisdictional repetitive flood problem on Lucky Drive. The flooding on Lucky Drive has closed U.S. 101 freeway several times in the past. During these closures Larkspur can experience critical loss of transportation within and out of the City, emergency response restrictions and potential economic loss.

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Motion to adjourned and seconded, passed unanimously at 10:35 p.m.

Next meeting is November 20, 2005 at 9:45a.m.

**CITY OF LARKSPUR, CALIFORNIA
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November 20, 2005 Meeting called to order

Third meeting of the City of Larkspur All-Hazards Mitigation Steering Committee was called to order at 9:45a.m.

Name	Title	Phone	Email
Jean Bonander	City Manager	(415)927-5018	jbbonander@larkspurcityhall.org
Hamid Shamsapour	Director of Public Works	927-5017	hshamsapour@larkspurcityhall.org
Bob Sinnott	Larkspur Fire Chief	927-5014	rsinnott@larkspurfire.net
Mike McDuffee	Captain; Twin Cities Police Authority	927-5150	MMCDUFFEE@TCPD-AUTHORITY.ORG
Mike Myers	Superintendent of Public Works	927-5028	mmyers@larkspurcityhall.org
Nancy Kaufman	Planning Director	927-5025	nkaufman@larkspurcityhall.org
Cynthia Huisman	Assistant City Clerk	927-5002	chuisman@larkspurcityhall.org
Ernie Hutchings	Director of Finance	927-5019	ehutchings@larkspurcityhall.org
Frances Gordon	Library	927-5135	fgordon@larkspurcityhall.org
David Wilkinson	Recreation Director	927-5004	dwilkinson@larkspurcityhall.org
Scott Shurtz	Deputy Fire Chief	927-5016	sshurtz@larkspurfire.net
Janice Rogala	President/Dimensions Unlimited	(707)374-6529	janrogala@aol.com
Theresa Hayes	Director of Operations/Dimensions Unlimited	(707)374-6529	Theresa@dimensionsui.com

The committee voted to adopt the November 15, 2005 meeting minutes with one change; Page 3 last sentence; November changed to December

Old Business

Public Participation

The committee reviewed the revised City of Larkspur Hazards Mitigation and Preparedness Questionnaire Survey. Three edits will be made to:

1. # 2 Sinkholes will be tabbed over to align with the last column,
2. # 2 A line space will be added between Natural disasters and Human Caused Technological header,
3. # 9 See Examples below to follow # 9 question.

The questionnaire survey will be listed on SurveyMonkey.com. A link to the survey will be placed on the City's website, which will notify the community of the City's Hazard Mitigation Planning Process seeking public participation.

The committee reviewed the sample Stakeholder Invitation and Citizen Solicitation Letters for revisions. The committee agreed to make one change to the Stakeholder Letter; Jean Bonander, City Manager, will replace Hamid Shamsapour as the sender. Also, the committee changed the wording in the last paragraph, first sentence to read;

"In accordance with that law, it is our intent to solicit input regarding hazards to our *community and our* neighboring communities and other stakeholders in the mitigation process."

The deadline date for citizen solicitation from the "City of Larkspur Hazards Mitigation and Preparedness Questionnaire" will be March 30, 2006.

Critical Facilities – City and Non-City Owned

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Scott provided a list of City owned facilities to the committee. The committee asked Hamid to review the list for critical facilities valued over \$5,000. Scott will email the electronic version to Hamid.

The committee started a non-city owned critical facilities list to include but not be limited to the following:

- Bed, Bath & Beyond
- PG & E Center
- SBC substation (to be referred to, but exact location to be excluded for security precautions)
- Ferry Terminal
- San Quentin Prison (State Owned)
- Medical Center/Hospital (located outside the City's boundaries)
- 3000 gallon Diesel Tank

Other Business

Hazard Maps

The committee discussed the maps in the City's General Plan pertaining to hazards, boundaries, circulation, and community development. Theresa will meet and work with the City's GIS department to identify and select maps appropriate for the Plan. Several maps have been already obtained from expert and local sources, such as ABAG, OES, CDF, and USGS.

New Business

Mitigation Strategies

Jan Rogala briefed the committee on the components to complete the Mitigation Strategies Form for past, present and current hazard mitigation projects/program which eliminate and/or reduce the hazards or effects of hazards on people, essential facilities and infrastructure.

The components needed to complete the form are:

- Project/Program Title
- Cost
- Timeline (completion or projected start date)
- Responsible Agency or department designated to the project/program
- Financial resource
- Project description and how the goal addresses elimination or reduction to the hazard
- Identify hazard(s) in which the project addresses

The electronic copy will be emailed to the committee members.

Mike McDuffee, Police Captain, will obtain a copy of the City of Corte Madera's Hazard Mitigation Draft for the committee members to review their hazard mitigation strategies. The City of Corte Madera and Larkspur share common hazards.

Dimensions gave a draft copy of the City's All-Hazard Mitigation Plan which includes; Section 1 Introduction, Section 2 Planning Process and Section 3 Demographics. Hamid will review the draft and report back to the committee.

Motion to adjourned and seconded, passed unanimously at 10:45 a.m.

Next meeting is January 17, 2006 at 9:45a.m.

**CITY OF LARKSPUR, CALIFORNIA
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January 17, 2006 Meeting called to order

The fourth meeting of the City of Larkspur All-Hazards Mitigation Steering Committee was called to order at 10:00a.m.

Name	Title	Phone	Email
Jean Bonander	City Manager	(415)927-5018	jbonander@larkspurcityhall.org
Hamid Shamsapour	Director of Public Works	927-5017	hshamsapour@larkspurcityhall.org
Bob Sinnott	Larkspur Fire Chief	927-5014	rsinnott@larkspurfire.net
Mike McDuffee	Captain; Twin Cities Police Authority	927-5150	MMCDUFFEE@TCPD-AUTHORITY.ORG
Mike Myers	Superintendent of Public Works	927-5028	mmyers@larkspurcityhall.org
Nancy Kaufman	Planning Director	927-5025	nkaufman@larkspurcityhall.org
Cynthia Huisman	Assistant City Clerk	927-5002	chuisman@larkspurcityhall.org
Ernie Hutchings	Director of Finance	927-5019	ehutchings@larkspurcityhall.org
Frances Gordon	Library	927-5135	fgordon@larkspurcityhall.org
David Wilkinson	Recreation Director	927-5004	dwilkinson@larkspurcityhall.org
Andre Horn	Captain: Twin Cities Police Authority	927-5016	ahorn@tcpd-authority.org
Janice Rogala	President/Dimensions Unlimited	(707)374-6529	janrogala@aol.com
Theresa Hayes	Director of Operations/Dimensions Unlimited	(707)374-6529	Theresa@dimensionsui.com

The committee voted to adopt the November 15, 2005 meeting minutes as written.

Old Business

Public Participation

The committee discussed how long the questionnaire will be made available to the public. The City has a policy not to have links to or from their website. Cynthia will talk with the webmaster concerning establishing a link if approved.

The questionnaire cover letter needs to provide information for the public to go to the City's website and fill out the questionnaire on surveymonkey.com. Dimensions will provide the press release announcing the questionnaire. (Pending approval)

The Stakeholders will be invited to the March 21, 2006 planning meeting. The cover letter will be revised to reflect the change.

Critical Facilities: City and Non-City owned

All City Facilities are critical to Larkspur's day-to-day operations and emergency response. The Cities' bridges are critical for evacuation. (Bon Air, Doherty Drive and Alexander) and Twin Cities Daycare (the city owns the building on leased land)

The committee discussed how the City and neighboring jurisdictions were impacted by the loss of bridges and roadways in the December 2005-January 2006 storm. It hampered evacuation and response efforts.

The San Anselmo Creek was unable to handle the storms increased water flow. This caused flooding in the northern portion of Larkspur.

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Non-owned city critical facilities are:

- SBC switching station
- Golden State Lumber company
- Reservoirs
- Shamrock Building Company
- Municipal Water District
- Marriott Hotel
- Water tanks; Wilson Way 1.5 million gallons, Skylark 1.0 million gallons, Eliseo Drive 1.5 million gallons (The water tanks were changed out and seismically upgraded in the last 5 years)
- Schools; Redwood High, Hall Middle, and St. Patrick (private school)
- Ross Valley Sanitary District (located in San Rafael)
- Marin Municipal Water District (MMWD)

Businesses will be listed separate for Economic Loss.

Mitigation Strategies

New Strategies

- Flooding signs
- Update employee IDs
- Committee Response Preparation (Pre-planning)
- Alternate EOC – Police Station location
 - Functional exercises – on going
 - Emergency Kits – on going
- 5 year mitigation strategy to update the City's General Plan

The committee members will review FEMA's natural hazard mitigation suggested strategy handout.

Hazard Mitigation Draft

Hamid had reviewed the Plan Draft which consists of Section 1 Introduction, Section 2 Planning Process and Section 3 City Demographics and made recommendations in the on the appropriate pages. He gave the Draft to Nancy to review and comment.

Dimensions will review the data taken from the General Plan in the Hazard Mitigation Plan for FEMA requirements for FEMA's approval and review crosswalk.

GIS Mapping

Theresa met with Scott Metcho, GIS Planner, in the Public Works Dept. Theresa and Scott identified several maps required for the Plan. Another meeting with Theresa, Scott and Seth is set for today at 1:00p.m. to complete the map list.

New Business

Severe Weather & Flood damage assessment

Each committee member from different departments discussed the impact to the City from the December 2005 storm. The storm caused flooding within the City.

Hamid will provide the preliminary damage assessment.

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Capability Assessment Form

The committee meeting ended. The Capability Assessment will be placed on next month's agenda.

Motion to adjourn and seconded, passed unanimously at 11:00 a.m.

Next meeting is February 28, 2006 at 9:45a.m.

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February 28, 2006 Meeting called to order

Fifth meeting of the City of Larkspur All-Hazards Mitigation Steering Committee was called to order at 10:00a.m.

Name	Title	Phone	Email
Jean Bonander	City Manager	(415)927-5018	jbonander@larkspurcityhall.org
Hamid Shamsapour	Director of Public Works	927-5017	hshamsapour@larkspurcityhall.org
Bob Sinnott	Larkspur Fire Chief	927-5014	rsinnott@larkspurfire.net
Scott Schurtz	Deputy Fire Chief	927-5016	sshurtz@larkspurfire.net
Mike Myers	Superintendent of Public Works	927-5028	mmyers@larkspurcityhall.org
Nancy Kaufman	Planning Director	927-5025	nkaufman@larkspurcityhall.org
Cynthia Huisman	Assistant City Clerk	927-5002	chuisman@larkspurcityhall.org
Ernie Hutchings	Director of Finance	927-5019	ehutchings@larkspurcityhall.org
Frances Gordon	Library	927-5135	fgordon@larkspurcityhall.org
David Wilkinson	Recreation Director	927-5004	dwilkinson@larkspurcityhall.org
Andre Horn	Captain: Twin Cities Police Authority	927-5016	ahorn@tcpd-authority.org
Janice Rogala	President/Dimensions Unlimited	(707)374-6529	janrogala@aol.com
Theresa Hayes	Director of Operations/Dimensions Unlimited	(707)374-6529	Theresa@dimensionsui.com

The committee voted to adopt the January 17, 2006 meeting minutes with one amendment. Include Nancy Kaufman's remarks concerning the usage of the Larkspur General Plan in the Hazard Mitigation Plan draft.

Old Business

Public Participation

The committee approved providing a city website link to the questionnaire with surveymonkey.com. The City by policy prohibits website links. Jean commented this link will be short term to gain information for the City. The questionnaire link will be available from April 1st through the 30th of 2006.

Copies of the questionnaire will be provided at the library, City Hall front desk, Park and Recreation and Twin Cities Police Authority office.

The cover letter will be amended to add the web-based link. Theresa will send the information to Cynthia.

The special Stakeholders meeting have been changed to May 2, 2006. Cynthia will send out the stakeholder invitation. The cover letter will be revised to reflect the changes.

Mitigation Strategies

New Strategies

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- Option 1 & 4 Seismic Retrofit
- Capital Infrastructure projects
- Develop flood strategies- identify gaps from recent storm damage
- Public Outreach –
- Appendix current mitigation programs
- Alert warning systems for citizens

Dimensions were asked to provide samples of other Hazard Mitigation Plans. The committee members will review other jurisdictions Hazard Mitigation Plan for additional mitigation strategies. Dimensions will provide a CD with approved HMP from jurisdictions similar to Larkspur.

Theresa will work with Hamid and Public Works to compile mitigation strategies and report back to the committee.

Hazard Mitigation Draft

Phiroze Wadia, Public Works, will review the latest Plan revisions.

GIS Mapping

All the maps provided by Public Works have been inserted into the Plan.

Nancy stated that the GIS General Plan and Zoning maps are not correct relative to boundaries due to problems with the program and they should not be included in the Plan until they are corrected. The boundary map splits city parcels. Theresa will check with Scott Metchos of Public Works on the accuracy of the boundary map.

New Business

Severe Weather & Flood damage assessment

Additional damage from excessive rains has caused flooding and mudslides to city and private property. A meeting is scheduled today to discuss flood recovery between Public Works staff and Dimensions Unlimited.

Capability Assessment Form

The Public Works staff will complete the Capability Assessment form today with Theresa.

Adjourned at 11:00 A.M.

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June 22, 2006 Meeting called to order

Sixth meeting of the City of Larkspur All-Hazards Mitigation Steering Committee was called to order at 10:07a.m.

Regular Committee Members

Name	Title	Phone	Email
Jean Bonander	City Manager	(415)927-5018	jbonander@larkspurcityhall.org
Bob Sinnott	Larkspur Fire Chief	927-5014	rsinnott@larkspurfire.net
Scott Schurtz	Deputy Fire Chief	927-5016	sshurtz@larkspurfire.net
Nancy Kaufman	Planning Director	927-5025	nkaufman@larkspurcityhall.org
Cynthia Huisman	Assistant City Clerk	927-5002	chuisman@larkspurcityhall.org
David Wilkinson	Recreation Director	927-5004	dwilkinson@larkspurcityhall.org
Andre Horn	Captain: Twin Cities Police Authority	927-5016	ahorn@tcpd-authority.org
Steve Williams	Dimensions Unlimited	(707)374-6529	steve@dimensionsui.com
Theresa Hayes	Director of Operations/ Dimensions Unlimited	(707)374-6529	Theresa@dimensionsui.com

Stakeholder Attendees:

David Hughes	Disaster/Health Chair Marin Primary & Middle School	(415)924-2608	dhughes@mpms.org
Mike Rudolph	Emerg. Prep Coordinator St. Patricks School	924-0501	M_rudolph@stpatricksmarin.com
Jeff Ohmart	Manager – Design & Construction Marin Municipal Water District	945-1574	johmart@marinwater.org

Stakeholder Invitational Meeting

Bob Sinnott, Larkspur Fire Chief, Chaired the meeting in Hamid's absence. Ch. Sinnott welcomed the stakeholder guests and asked everyone to introduce themselves.

Theresa gave a brief DMA 2000 oral presentation for the stakeholders. City Manager Jean Bonander welcomed the guests and asked them to share their agencies thoughts pertaining to how the City's Steering Committee had rated hazards and how the hazards impact their agencies.

Jeff Ohmart, MMWD, rated Drought as a moderate hazard risk to the Water District. MMWD is developing Desalinization and Conservation Plans. Although, Marin County has not had drought conditions for several years, MMWD is vigilant in water conservation. Drought conditions would increase the threat wildland fires and hamper the ability to combat a large fire in the woodlands which surround several Marin County cities such as Larkspur. He stated if drought conditions persisted for 2 years, MMWD would ask for a 25% water usage reduction. Past history indicates lack of community support for water meter moratoriums. Jeff reported 78% of potable water is used for landscaping and 11% for toilets. The Water District has an excellent relationship with the County and City Fire Departments on water availability for fire fighting.

No mitigation strategy recommendations were made by MMWD. MMWD will continue to partner with the City of Larkspur in community to water conservation and the reduction of hazard threats.

David Hughes and Mike Rudolph said the schools are looking for outside assistance in assessing their Emergency Operations Plans. They asked Bob Sinnott about their Chain of Command and how the

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schools fit into the response scenario. The schools are not SEMS compliant at this time, but working towards SEMS/NIMS training.

Jean advised the school representatives to prepare to be self sufficient for several days after a disaster. The schools should have water and food cache for 48 hours.

Marin Primary has SAR, food, water and other emergency equipment ordered.

Larkspur Fire Dept. will assist Marin Primary in assess their buildings for structural integrity. Also, the Fire Dept is providing CERT training and invited school staff to participate.

The school reps stated a Pandemic Outbreak is a high to moderate hazard risk for them. Other hazard impact concerns are sheltering people for long periods of time, security, and medically fragile children. Any long term evacuation would over tax the schools resources.

A mutual suggestion is to keep an open dialog with the City and local hospital about special medical needs of students and staff; also, to coordinate through the Marin County Office of Education to include private schools for training and disaster preparedness. Presently the charter and private schools do not have an established relationship with the public school district system. Larkspur Fire Dept offered to contact Marin County Office of Emergency Services to involve the private schools.

St. Patrick School and Hall Middle School are designated evacuation shelters.

Transportation loss is a concern for everyone. Loss of egress and ingress in Larkspur could be devastating to the City for response and recovery. Fifty percent of Larkspur City employees live outside Marin County. Parents of students may work outside the area and would not be able to get back home to retrieve their children.

Stakeholder meeting was adjourned at 10:50A.M.

Regular Hazard Mitigation Meeting

It was moved and seconded to adopt the minutes from January and March meetings as written.

No further input from the Public Participation Questionnaires. There has been two completed surveymonkey.com questionnaires. The Committee moved to continue the surveymonkey.com survey for another month.

The Committee discussed making the complete version of the City of Larkspur General Plan as an annex on CD-ROM. When the General Plan is updated, the City Planner will send the new General Plan to OES and FEMA. Nancy Kaufman will send Theresa a digitized General Plan to included maps.

The Committee moved and adopted the motion to update the All-Hazard Mitigation Plan every three years. The completion of the Plan can be finalized by sub-committees. The meeting will be scheduled as needed.

Target date for adoption will be July. Meeting adjourned at 11:13A.M.

Section 3 – Demographics & Statistics

History

The City of Larkspur has a rich cultural heritage that has included the occupation of the area by the Coastal Miwok Indians, nineteenth-century ranching and farming, and the operations of the Niven nursery dating back to the early 1920s.

Demographics

The City of Larkspur is located in Marin County, halfway between Sausalito and San Rafael, California nestled between Mount Tamalpais and the Bay. It is approximately 15 miles north of the Golden Gate Bridge and the City of San Francisco. The City is situated in what is considered the San Francisco-Oakland Metro Area. The latitude is 37.934N and the longitude is 122.524W. The population according to the 2000 census data was 12,014 with 6,452 housing units. The population density in Larkspur is 3,833.66 persons per square mile, making it one of the more densely populated Cities in Marin County. Larkspur's 3.1 square miles is 43 feet above sea level

The City of Larkspur is totally land locked with only one US highway, the 101, interchanges touches its borders. The rest of its streets are surface downtown and residential streets. Ingress and egress out of Larkspur is dependent upon Sir Francis Drake Blvd leading to the Richmond Bridge and the US Highway 101 interchange leading south to the Golden Gate Bridge and San Francisco and to the north to more densely populated communities of Novato, Petaluma, and Santa Rosa.

General Data

Ethnicity

White Non-Hispanic (88.4%)

Hispanic (4.3%)

Two or more races (2.6%)

Chinese (1.4%)

Other race (1.1%)

Japanese (1.0%)

American Indian (0.8%)

Black (0.8%)

Filipino (0.5%)

Ancestries: English (17.6%), German (16.6%), Irish (16.4%), Italian (9.5%), Russian (5.1%), French (4.9%).

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Median Household Income

Median resident age: 45.9 years Median household income: \$99,000

Median house value: \$875,000 (2005)

Single-family new house construction building permits:

- 1996: 5 buildings, average cost: \$281,400
- 1997: 37 buildings, average cost: \$258,900
- 1998: 0 buildings, average cost: \$0
- 1999: 2 buildings, average cost: \$500,000
- 2000: 3 buildings, average cost: \$608,300
- 2001: 8 buildings, average cost: \$414,400
- 2002: 5 buildings, average cost: \$440,000
- 2003: 11 buildings, average cost: \$413,500

Larkspur compared to California state average:

Median house value **significantly above** state average.
 Unemployed percentage **below** state average.
 Black race population percentage **significantly below** state average.
 Hispanic race population percentage **below** state average.
 Median age **significantly above** state average.
 Length of stay since moving in **below** state average.
 Number of rooms per house **below** state average.
 Percentage of population with a bachelor's degree or higher **above** state average

Average weather

Based on data reported by over 4,000 weather stations

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average temp. (°F)	48.5	52.2	54.7	58.2	62.4	66.8	69.1	68.9	67.3	62.5	54.2	48.5
High temperature (°F)	56.2	61.4	65.2	70.5	75.8	81.6	84.8	84.2	82.0	75.3	63.4	56.3
Low temperature (°F)	40.7	43.0	44.2	45.9	48.9	52.1	53.5	53.7	52.6	49.7	45.0	40.6
Precipitation (in)	9.4	9.0	6.9	2.5	1.2	0.2	0.0	0.1	0.5	2.3	7.3	7.2

Medical Centers

MARIN GENERAL HOSPITAL (about 2 miles; GREENBRAE, CA)
 KENTFIELD MEDICAL HOSPITAL (about 2 miles; KENTFIELD, CA)
 KAISER FOUNDATION HOSPITAL (about 6 miles; SAN RAFAEL, CA)

(Source:City-data.com)

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Airports

Airports certified for carrier operations nearest to Larkspur:

SAN FRANCISCO INTERNATIONAL (about 25 miles; SAN FRANCISCO, CA; ID: SFO)
METROPOLITAN OAKLAND INTL (about 27 miles; OAKLAND, CA; ID: OAK)
BUCHANAN FIELD (about 34 miles; CONCORD, CA; ID: CCR)

Other public-use airports nearest to Larkspur:

GNOSS FIELD (about 14 miles; NOVATO, CA; ID: DVO)
SONOMA VALLEY (about 21 miles; SCHELLVILLE/SONOMA, CA; ID: 0Q3)
PETALUMA MUNI (about 22 miles; PETALUMA, CA; ID: O69)

Education & Schools

Colleges/universities with over 2000 students nearest to Larkspur:

COLLEGE OF MARIN (about 2 miles; KENTFIELD, CA; Full-time enrollment: 3,919)
UNIVERSITY OF SAN FRANCISCO (about 14 miles; SAN FRANCISCO, CA; FT enrollment: 7,199)
UNIVERSITY OF CALIFORNIA-SAN FRANCISCO (about 14 miles; SAN FRANCISCO, CA; FT enrollment: 3,517)
CONTRA COSTA COLLEGE (about 14 miles; SAN PABLO, CA; FT enrollment: 3,626)
ACADEMY OF ART COLLEGE (about 14 miles; SAN FRANCISCO, CA; FT enrollment: 4,548)
GOLDEN GATE UNIVERSITY-SAN FRANCISCO (about 14 miles; SAN FRANCISCO, CA; FT enrollment: 3,092)
SAN FRANCISCO STATE UNIVERSITY (about 16 miles; SAN FRANCISCO, CA; FT enrollment: 21,373)

Public high schools in Larkspur:

REDWOOD HIGH (Students: 1,402; Location: 395 DOHERTY DR.; Grades: 08 - 12)
SAN ANDREAS HIGH (ALTER.) (Students: 118; Location: 599 WILLIAM AVE.; Grades: 09 - 12)
TAMISCAL HIGH (ALTER.) (Students: 94; Location: 601 WILLIAM AVE.; Grades: 09 - 12)

Public primary/middle school in Larkspur:

HENRY C. HALL MIDDLE (Students: 308; Location: 200 DOHERTY DR.; Grades: 06 - 08)

Private primary/middle schools in Larkspur:

MARIN PRIMARY AND MIDDLE SCHOO (Students: 339; Location: 20 MAGNOLIA AVENUE; Grades: PK - 8)
ST PATRICK ELEMENTARY SCHOOL (Students: 256; Location: 120 KING STREET; Grades: KG - 8)

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

Utility Service

Service	Company	Phone	Address
Electricity/Gas	PG & E	800-743-5000	PO Box 997300, Sacramento, CA 95899
Water	Marin Municipal Water District	415-945-1455	220 Nellen Ave., Corte Madera, CA 94925
Garbage	Marin Sanitary Service	415-456-2601	PO Box 10067, San Rafael, CA 94912
TV Cable	COMCAST	800-945-2288	1111 Anderson Dr, San Rafael, CA 94901
Phone Local	AT & T	800-222-0299	PO Box 8212 Aurora, IL 60572-8212
Long Distance	AT & T	800-222-0300	PO Box 8212 Aurora, IL 60572-8212

Special Districts

Marin Municipal Water District (MMWD) provides domestic water to the City of Larkspur. The Marin Municipal Water District serves the Larkspur area. The District obtains its water from seven reservoirs and from the Russian River Intertie Pipeline System. A major 24-inch supply line passes through the central Larkspur area within the former railroad right-of-way.

Sanitary District No. 1 (Ross Valley) provides sanitary sewer service for the City of Larkspur. Sanitary District No. 1 is responsible for wastewater collection in central Larkspur. The Central Marin Sanitary Agency provides wastewater treatment for Sanitary District No. 1.

Marin Sanitary Service (MSS) provides waste collection and disposal in Larkspur. Recyclable glass, cardboard, newspaper and metal are removed from the waste stream by Marin Recycling, and the solid waste is taken to the Redwood Sanitary Disposal site in Novato

Larkspur Elementary School District and Tamalpais Union High School District provide public education for the students of Larkspur. The Larkspur Elementary School District provides public K-5 and middle school services to central Larkspur. The District's Neil Cummins Elementary School is located at 58 Mohawk Avenue in Corte Madera. The Henry C. Hall Middle School is located on Doherty Drive in central Larkspur. The Tamalpais Union High School District serves grades 9 through 12 at Redwood High School across from Larkspur Creek in Larkspur.

CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN



**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

Structure of Government

The City of Larkspur was incorporated in 1908 and operates under the council/manager form of government. The Council, as the legislative body, represents the entire community and is empowered by the general laws of the State of California to formulate City-wide policy.



LARRY CHU Mayor
Elected: 2003 (first term)



RON ARLAS Vice Mayor
Reappointed in 2005
Fourth term - 1989 to present
Term expires in 2009



DANIEL HILLMER Councilmember
Reappointed in 2005
Third term- 1993 to present
Term expires in 2009

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**



KATHY HARTZELL
Councilmember
Elected: 2003 (first term)



JOAN LUNDSTROM Councilmember
Reappointed in 2005
Seventh term 1989 to present
Term expires in 2009



JEAN BONANDER
City Manager

The City Manager is the Chief Executive Officer of the City. She is responsible for the administration of the City in accordance with City Council policy. The City Manager prepares the City budget, submits it to the City Council each fiscal year and advises Council of future financial needs of the City.

Her responsibilities include:

- Administration of the City Council's three-year Strategic Plan
 - Monitoring the progress of the City's major capital projects and development plans
 - Involvement in emergency management including fire mitigation and prevention
 - Updating of the 5 year pro-forma of the City's financial condition for strategic planning
 - Identification of new/alternative local revenues for the funding of City services
- Ms. Bonander is also Larkspur's City Clerk and Personnel Director.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

PLANNING & BUILDING

NANCY KAUFMAN



Planning Director

Prior to coming to Larkspur, Nancy was Planning and Community Development Director for the City of Rohnert Park. Prior to Rohnert Park, Nancy was Acting Planning Manager for the City of Richmond where she worked for twenty years. Nancy has a Masters Degree in Public Administration from the University of San Francisco and a Bachelors Degree in Environmental and Planning Management from the University of California at Davis.

The Planning Department processes applications for discretionary planning permits for development projects proposed by private individuals and undertakes the preparation of advanced planning projects such as revisions to the General Plan, preparation of specific plans and master plans and zoning ordinance amendments. It also provides staff services to Larkspur's Planning Commission, and on an as-needed basis, to the Heritage Preservation Board, and City Council on planning and environmental matters. Additionally, the Planning Department enforces the City's zoning ordinances.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

PUBLIC WORKS & ENGINEERING



HAMID R. SHAMSAPOUR

Director of Public Works

City Engineer

B.S. degree in civil engineering

Professional engineer's license, State of California

Advanced Project Management Mastery Certificate, Stanford University

Practice Civil Engineering since 1981

Working for the City of Larkspur since 1995

Resident of Marin County since 1982

Public works and engineering responsibilities cover three divisions:

Engineering: develops the citywide traffic and capital improvement projects; construction administration of all public works projects, including street resurfacing, storm drainage, sidewalk improvement and accessibility, and traffic signal operations; issues encroachment permits; currently establishing a GIS mapping system for Larkspur.

Street maintenance: maintains the city's rights-of-way and public thoroughfares, including roadway construction/rehabilitation, street sweeping, street lighting, storm drainage systems, flood control, and signal systems; maintains all city-owned equipment and vehicles.

Parks Maintenance: maintains the city's parks in coordination with the Recreation Department; maintains median island landscaping. We are your Public Works Department and proud to be of service to you!

Did you know that each week we are responsible for:

- 15 miles of Storm drain pipes
- 5 Storm drain pump stations
- 70 miles of Curb and gutter for street sweeping and maintenance
- 550+ Catch basins inlets
- 125 Trash can canisters
- 2,200+ street signs
- 13 Parks (1 of which is a regional park of 18 acres)
- 10 Public buildings
- 1 Dog park
- 24 Acres of grass (10 acres of which is athletic turf)
- Many trees (in our streets and parks)
- 1 Community garden
- 2 Lakes/ponds (total 3 acres)
- 1,000+ irrigation heads
- Many staircases
- 7 miles of Bike and multi-use paths
- 2 miles of creek maintenance
- 10 miles of street striping
- 771 street lights
- 7 signalized intersections

...the list goes on, but you get the picture. We try very hard here in the Public Works Department to provide the best possible maintenance services for our residents. If we have missed something that needs to be fixed, trimmed or otherwise attended to, please give us a call. Your Call will give us the opportunity to respond in a timely manner

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

RECREATION DEPARTMENT

DAVE WILKINSON Recreation Director



My career in Recreation began in 1978 working part time with the San Anselmo Parks and Recreation Department. I was employed by the Town of Corte Madera as its Recreation Supervisor in 1981. I developed and supervised youth and adult programs until February of 1997, when I was hired as Recreation Director for the City of Larkspur. It is my commitment, and the commitment of this Department, to provide quality leisure activities for all age groups within the community. It is also our intent to provide park facilities that are safe and attractive for all of Larkspur's citizens. Larkspur Recreation is committed to providing the best possible service to our community. Through quality programs and events, we seek to foster

personal wellness, promote self esteem and entertain our youth and adult participants. Through our parks and open space, we seek to provide a connection with the natural environment.

The Recreation Department organizes and administers passive, active and communal recreation programs throughout the year. We also coordinate and supervise the use of City facilities and parks by groups and individuals.

PARKS and RECREATION...Benefit Personal Health & Wellness!

Recreation programs foster personal wellness, and parks provide connection with the natural environment.

Recreation programs foster personal wellness, and parks provide connection with the natural environment.

Urban park users find that their state of mind is positively changed as a result of their park visits, especially for older adults.

A water aerobics program twice a week for 18 weeks can significantly reduce blood pressure, body fat and body weight in elderly community residents.

Regular physical activity during youth may help prevent or impede the development of many diseases.

PARKS and RECREATION...Benefit Personal Development & Success!

Participating in recreation programs builds self-esteem, personal fitness and generates a sense of well-being.

- Participating in recreation programs builds self-esteem, personal fitness and generates a sense of well-being.
- 95% of Fortune 500 executives in 1987 participated in athletics as children: only 47% were in honor societies.
- Many studies show that participation in recreation activities benefits individuals socially and psychologically by motivating them to public service.
- Children participating in 5 hours of physical activity per week have significantly higher marks in academic programs than children who do not.

Parks and Recreation...Benefits Community Preservation

Parks and recreation programs contribute significantly to community preservation and quality of life.

The City of Long Beach, California uses art and employs at-risk youth to remove unwanted graffiti and preserved the neighborhood's cultural heritage.

A 1997 survey found that Californians spend about 2.2 billion days in outdoor activities, reporting that outdoor recreation and facilities are very important to their quality of life.

The city-wide plan for Seattle, Washington, calls for urban villages: denser, pedestrian-oriented neighborhoods with open space, including community gardens, as an armature.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

PARKS and RECREATION...Benefits Ecological Diversity

Parks and open spaces protect biodiversity and ecological integrity, which are essential to sustainability.

In California, groundwater constitutes about 18.5% of state water supplies.

Wetland loss near the port of Redwood City, California, is believed to have caused damage to shipping channels in the early 1990s.

Large open spaces absorb rain water slowly and allow percolation into underground aquifers, reducing flash flooding or erosion danger due to rapid runoff.

A survey of residents in Columbia, Maryland, showed residents prefer urban runoff ponds, wetlands and wildlife to the dry ponds many cities use.

FIRE DEPARTMENT & MEDICAL SERVICES



ROBERT B. SINNOTT Fire Chief/Deputy City Manager

Joined Larkspur Fire Department as a cadet in 1976

Hired full time in 1980 and appointed Chief in 1993

A.S. Degree in Fire Science (1984)

B.S. Degree in Fire Administration (1992)

Masters Degree in Public Administration (1997)

Married - three children

Larkspur Resident since 1968



SCOTT SHURTZ Deputy Fire Chief

Joined the department in 1991

Bachelor's Degree in Psychology, UCLA

Certified Fire Officer

Born and raised in Larkspur

Married with two children

"Committed to helping people"

FIRE STATION 15 (Downtown Larkspur)

420 Magnolia Avenue

Larkspur, California 94939

Tel: (415) 927 5007

Fax: (415) 927 5009

FIRE STATION 16 (Greenbrae)

15 Barry Way

Greenbrae, California 94904

Tel: (415) 927 5041

Fax: (415) 927 5010

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

ASSOCIATION OF VOLUNTEER FIREMEN

The Larkspur Association of Volunteer Firemen has a long and proud history since being formed in 1906. In the beginning, the only equipment the volunteers had consisted of a hose cart and a bucket brigade, but no firehouse.

By 1910, the Volunteers had grown to 24 strong and had a double chemical wagon, and 500 feet of hose for the original cart, but still no firehouse.

Larkspurs early Booster Days were designed to promote Larkspur and raise money for fighting fires. They had carnivals and contests for fund raisers. In 1910, a dance was staged across from the Blue Rock Hotel, on a 40' x 60' platform with a band perched on a platform in a tree. This platform had wild roses climbing up walls of chicken wire.

That dance, and subsequent dances were so financially and social successful, that in 1913, firefighters not only had the money to build their first firehouse behind City Hall, but also had enough money to purchase a half acre redwood grove on Cane Street for a permanent dance site to be named the "Rose Bowl".

These dances brought in about \$75,000 a year and eventually would pay for hydrants, a fire alarm system and their first fire engine, bought in 1922.

The Larkspur Volunteer Fire Department came into its own during the 1920's and 1930's when it was the most prestigious organization in town and the social and political arbitrator of civic affairs. Membership as one of the 22 regulars was a tightly guarded privilege.

By 1947, they completely financed the \$500,000 Fire Department.

In 1957, the Volunteers turned over the one-half million dollars in equipment to the city.

The "Rose Bowl" continued to fund the Volunteer Association until 1963 when the dances were discontinued and the property was eventually sold off.

However, the volunteers still flourish today and offer both support and suppression activities to a paid professional staff of 18 members and are an integral part of the Larkspur Fire Department.

WILDLAND INTERFACE

INTRODUCTION:

The City of Larkspur is located between the waters of the San Francisco Bay and the hills and open space of the Mt. Tamalpais watershed. The scenic beauty of the city lies in its close proximity to the hills, canyons, and vegetation that make up the Mt. Tamalpais watershed. The term Wildland Interface refers to properties that are located within these hills, canyons, and vegetation. The City of Larkspur and the Larkspur Fire Department have developed a comprehensive vegetation management program to minimize the risk and potential damage from a wildland fire. In general, the wildland fire season begins in June and ends with the first few inches of rain in October. Depending on the weather conditions, the fire season may begin as early as May and continue into November.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

MASTER FIRE ORDINANCE:

The Master Fire Ordinance was created specifically to address the dangers of a wildland fire and is a comprehensive fire safety ordinance intended to reduce the threat associated with wildland interface fire activity. The ordinance designates high hazard fire zone areas, details specific vegetation problems, provides an abatement policy for the enforcement of fire hazards, addresses the need for chimney spark arrestors, and provides guidelines for vegetation management on properties within the city owned by public agencies and utilities.

VEGETATION MANAGEMENT PROGRAM

The Larkspur Fire Department has developed the following vegetation management program to help its citizens protect their properties from the potential damage of a wildland fire.

HILLSIDE FIRE PREVENTION PROGRAM - Engine company personnel target high hazard areas and inspect hillside properties. After the inspection, a door hanger is left at the residence detailing any vegetation problems that may exist on the property. For example, a box may be checked requiring the clearance of all flammable vegetation a minimum of thirty feet from your home or a recommendation of a chimney spark arrestor.

WILDLAND FIRE PREVENTION - Deputy Fire Chief Scott Shurtz manages a program that inspects undeveloped parcels of land, answers and reviews questions and complaints, coordinates inspections by utility companies, and provides property inspections upon request.

HILLSIDE RESTRICTIVE PARKING - The City of Larkspur has developed an ordinance restricting parking on narrow roadways allowing fire equipment access to all areas of the city.

VEGETATION REMOVAL - A semi-annual curbside pick-up program allows residents to place cut vegetation at the curbside, which is removed on specific dates.

FIRE HYDRANTS - New water mains and additional fire hydrants have been added to high hazard fire zone areas.

EQUIPMENT - The city purchased a new Water Tender in 1997. The tender carries two thousand gallons of water and supplements those areas of the city where water supply is less than desirable. The tender is also designed with a locking differential and special tracking system that allows it to operate very efficiently on the various fire roads that border the city. In 1998, a new type III urban interface fire engine will join the fleet. This apparatus is a state of the art, four wheel drive pumper that can access even the most difficult locations.

The Larkspur Fire Department encourages residents to call with any questions or concerns they may have regarding their property or any property within the city. Fire Department personnel are available to answer questions, provide inspections, and make recommendations to keep your property fire safe. Please contact Deputy Chief Shurtz at 927 - 5016 and he will make the necessary arrangements. Thank you for taking the time to learn about your community.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

N.E.R.T. (Neighborhood Emergency Response Committee)



The goal of this program is to help the citizens of Larkspur become self-sufficient in the event of a major disaster. By developing multi-functional Committees trained in basic emergency skills, individuals will acquire hands-on disaster training enabling them to carry out necessary tasks to ensure a safer neighborhood.

N.E.R.T. TRAINING CLASS

CLASS 1. INTRODUCTION

Course Overview
Disaster Preparedness

CLASS 2. DISASTER MEDICINE

CPR and Choke Saving
Basic First Aid
S.T.A.R.T. (Simple Triage and Rapid Treatment)

CLASS 3. COMMITTEE TACTICS

Utility Control
Hazardous Materials
Firefighting Equipment and Techniques

CLASS 4. SEARCH AND RESCUE

Construction Types
Building Marking Systems
Interior Search Patterns
Lifting and Moving Heavy Objects
Victim Carries

CLASS 5. COMMITTEE PREPAREDNESS AND REVIEW

Disaster Psychology
City Disaster Plan and Shelters
Special Considerations
Course Review and Question & Answers

CLASS 6. PRACTICAL APPLICATIONS

Proper Extinguisher Use
Interior Search and Victim Removal
Scene Safety
Building Damage Assessment
Neighborhood Walk and Overview
For More Information Call Larkspur Fire Department Fire Fighter Gary Claeys (415) 927-5021

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

TWIN CITIES POLICE AUTHORITY



MOTTO

"Service to OUR Communities"

MISSION

To provide the communities of Corte Madera and Larkspur with the highest quality of police services - services that meet present and future community expectations

Organizational Values

We, the members of the Twin Cities Police Authority, are committed to creating and maintaining a partnership with OUR communities, which is built on a foundation of honesty, fairness, compassion, trust, and loyalty.

In doing so, we will strive to adhere to the following principles:

Service

We are committed to providing quality service and being responsive to the needs of our citizens.

Quality of Life

We strive to ensure that the quality of life enjoyed today by our communities is preserved for future generations.

Pride

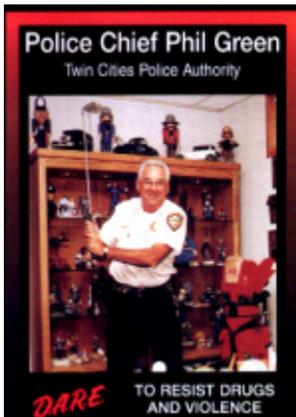
We take pride in ourselves and our work, our fellow employees and our dedication to the Authority and the communities we serve.

Respect

We respect the rights of all.

Integrity

We dedicate ourselves to maintaining the highest level of integrity.



PHILLIP D. GREEN

Police Chief

Appointed Corte Madera Police Chief - 8/22/77

Appointed Larkspur Police Chief - 1/2/79

Appointed Police Chief of the Twin Cities Police Authority (Corte Madera and Larkspur) - 1/1/80

Master of Public Administration, Golden Gate University

Bachelor of Arts, Golden Gate University

FBI National Academy, 124th Session, 1981

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

The Twin Cities Police Authority is a full service police agency for the communities of Corte Madera and Larkspur in Marin County, California. The communities consolidated police services in 1980 after a year of planning. Working under a Joint Powers agreement forming the Twin Cities Police Authority, the Town of Corte Madera and City of Larkspur, through two selected members from each Council, form the Twin Cities Police Council to develop policy for the Police Authority. Overall management of the Police Authority is the function of the Management Committee comprised of the City and Town Managers. Operation function of the Authority is assigned to the Chief of Police. The Twin Cities Police Authority has an annual budget of \$3.8 million with 44 employees (33 sworn). The Authority provides police services and public safety dispatching to the communities of Corte Madera and Larkspur with approximately 21,000 residents in an 8 square mile suburban area located 11 mile north of the Golden Gate Bridge.

The Authority is divided into the following two Divisions, each of which is commanded by a Captain.

Field Operations Division

Larkspur Facility - Station One:

250 Doherty Drive, Larkspur, CA 94939

Tel: (415)927-5150 • Fax: (415)927-5167 • Emergency: 9-1-1

This facility houses the Chief of Police, Field Operations Commander, Patrol Services, and Dispatch. It is maintained 24 hours with limited counter service between 5 p.m. and 8:30 a.m.

Corte Madera Facility - Station Two:

342 Tamalpais Drive, Corte Madera, CA 94925

Tel: (415)927-5150 • Fax: (415)927-5167 • Emergency: 9-1-1

This facility houses an office for citizens to meet with officers, records, and storage. An officer may be called by using the blue phone box near the front door of the facility.

Support Services Division:

Larkspur Facility - Station One Annex:

250 Doherty Drive, Larkspur, CA 94939

Tel: (415)927-5150 • Fax: (415)927-5796 • Emergency: 9-1-1

This facility houses Investigations, Juvenile and the Support Services Sergeant. Business hours are from 8 a.m. to 5 p.m.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN**

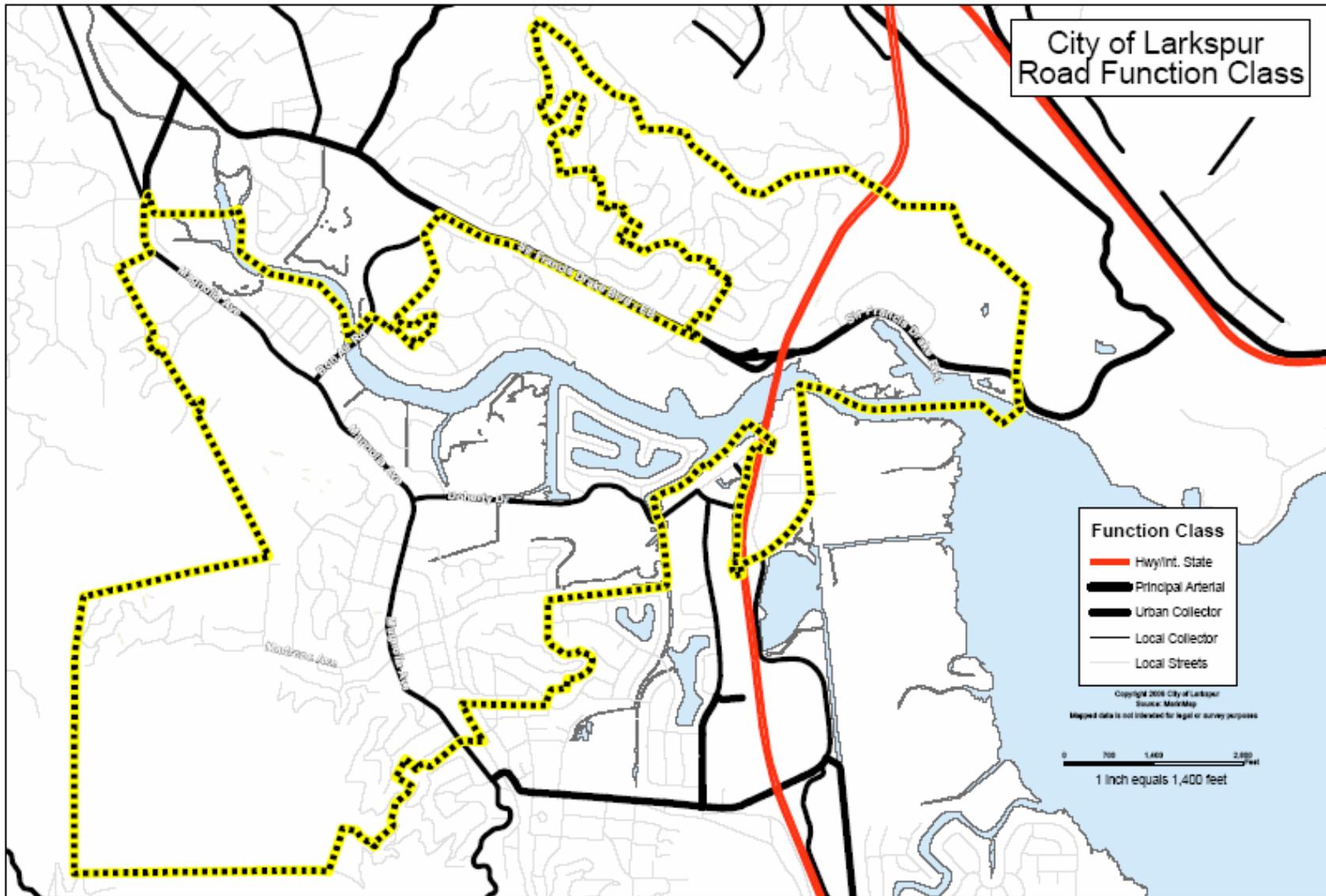
City of Larkspur General Plan

The City of Larkspur General Plan is provided on a CD as Appendix A. The Steering Committee agreed that the General Plan should be included in its entirety. A new CD with an updated General Plan will be forwarded to California Office of Emergency Services and FEMA to keep the All-Hazard Mitigation Plan current.

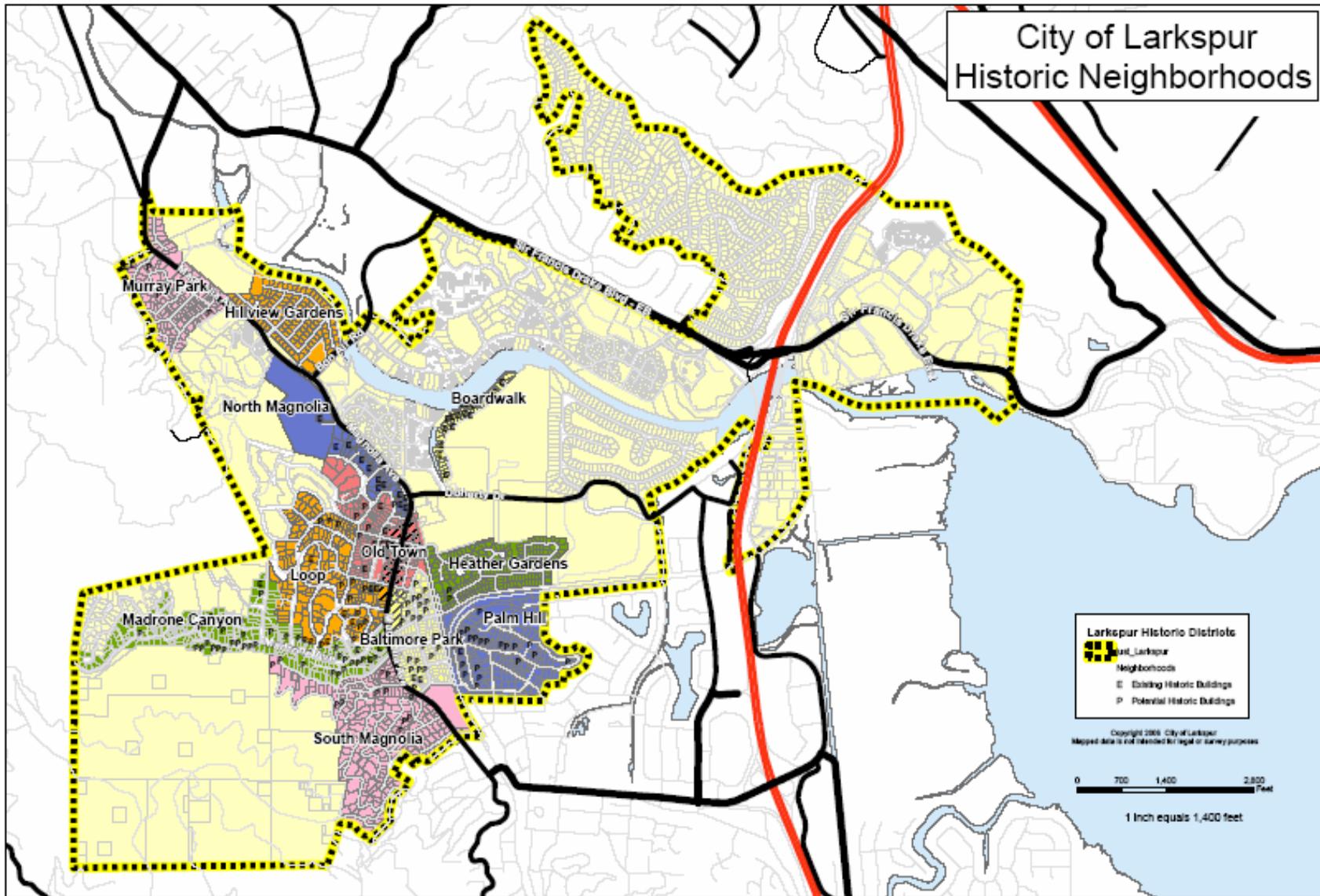
The City's demographics, Community Development, Land Use, Historical Sites, Endangered Species and Traffic Circulation are described in depth. A Table of Contents is listed on the next page as a reference guide. The Crosswalk will list the City's General Plan page numbers, not the AHMP pages.

GIS maps have been provided by the City's Public Works dept. They will be placed in Section 4 with their corresponding hazard or will follow the General Plan's Table of Contents. The maps in the General Plan were developed and adopted with the General Plan.

CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN



CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARD MITIGATION PLAN



**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Facilities & Assets

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City of Larkspur
FIXED ASSET SUMMARY - BY CATEGORY

Type: 1=Land; 2=Land Impv 3=Blds 4=Equip; 5=Bld Impv 6=Veh 7:11=Sts
--

	Final G/L 6/30/2004	Sub-Ledger	Adjusting JE 6/30/2005	Final G/L 6/30/2005	Final G/L 6/30/2005
999.0000.099.001 Land	830,756.00	830,756.00	-	830,756.00	830,756.00
999.0000.099.002 Land Improvements	889,974.69	956,529.69	66,555.00	956,529.69	- 956,529.69
999.0000.099.003 Streets; Curbs, Guttrs	156,456.49	221,220.49	64,764.00	221,220.49	- 221,220.49
999.0000.099.004 Equipment	1,520,630.25	1,535,634.25	15,004.00	1,535,634.25	- 1,535,634.25
999.0000.099.005 Buildings	2,968,294.34	3,042,196.34	73,902.00	3,042,196.34	- 3,042,196.34
999.0000.099.006 Vehicles	1,460,521.13	1,480,887.13	20,366.00	1,480,887.13	- 1,480,887.13
999.0000.100.003 Const-In-Prog	189,889.00		(189,889.00)	-	
	<u>8,016,521.90</u>	<u>8,067,223.90</u>	<u>50,702.00</u>	<u>8,067,223.90</u>	<u>8,067,223.90</u>
999.0000.099.007 Depreciation, Equipment	(182,877.00)	(100,341.03)	-	(283,218.03)	(283,218.03)
999.0000.099.008 Depreciation, Vehicles	(484,875.00)	(87,757.00)	-	(572,632.00)	(572,632.00)
999.0000.099.009 Depreciation, Bldgs	-	(69,268.43)	-	(69,268.43)	(69,268.43)
999.0000.099.010 Depreciation, Streets		(3,911.40)	-	(3,911.40)	(3,911.40)
Depreciation, land Impv		(22,324.37)	-	-	-
	<u>(667,752.00)</u>	<u>(283,602.22)</u>	<u>-</u>	<u>(929,029.86)</u>	<u>(929,029.86)</u>
Net, ties to G/L Inv in GFA	<u>7,348,769.90</u>	<u>7,783,621.68</u>	<u>50,702.00</u>	<u>7,138,194.04</u>	<u>7,138,194.04</u>

Note: 1. Adjustment due to \$180,000 deducted (Via Casitas retaining wall s/b \$19,400 not \$199,400).

2. \$200K for the new Recreation offices were not included in JE-436 Jun04, but is to be in final AJE. The \$200K listed as an addition for the **New Rec offices** in JE-436 is in fact an adj "to actual" and is not the new offices.

Accum. Depreciation analyzed:

	EQUIP	VEHICLES	BLDGS	STREETS	LAND IMPV	TOTAL
Current year	100,341.03	87,757.00	69,268.43	3,911.40	22,324.37	283,602.22
Prior year	946,104.30	1,075,964.13	920,600.88	-	229,846.60	3,172,515.91
Total	<u>1,046,445.33</u>	<u>1,163,721.13</u>	<u>989,869.30</u>	<u>3,911.40</u>	<u>252,170.97</u>	<u>3,456,118.13</u>

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

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City of Larkspur
FIXED ASSET SUMMARY - BY FUNCTION

	ORIG COST	ACCUM JUN 30 05	CY Depr Jun 30 05	PY Depr Jun 30 04	
EQUIPMENT					
ADM	125,329	67,615	6,853	60,762	
PLANNING	4,610	4,337	273	4,063	
FIRE	260,487	238,152	7,880	230,272	
PW	407,037	272,633	34,233	238,400	
REC	94,431	36,264	9,443	26,821	
LIB	44,557	21,536	3,320	18,216	
TCCC (DyCare)	253,545	116,572	24,672	91,900	
Tidalwaves	4,567	3,684	457	3,227	
Gen Govt	341,072	285,653	13,210	272,444	
TOTAL EQ	1,535,634	1,046,445	100,341	946,104	
From Total	1,535,634	100,341		<<<EQUALS	1,046,445
DIFF	0	946,104			
VEHICLES					
ADM	0	0	0	0	
PLANNING	0	0	0	0	
FIRE	879,525	720,825	48,700	672,125	
PW	541,292	393,626	35,500	358,126	
REC	34,000	23,200	1,200	22,000	
LIB	0	0	0	0	
TCCC (DyCare)	26,070	26,070	2,357	23,713	
Tidalwaves	0	0	0	0	
Gen Govt	0	0	0	0	
TOTAL VEH	1,480,887	1,163,721	87,757	1,075,964	
From Total	1,480,887	1,163,721		<<<EQUALS	1,163,721
DIFF	0	0			
BUILDINGS					
ADM	0	0	0	0	
PLANNING	0	0	0	0	
FIRE	1,485,348	591,446	35,550	555,896	
PW	100,597	82,494	2,515	79,979	
REC	200,000	5,000	5,000	0	
LIB	1,730	346	43	303	
TCCC (DyCare)	640,607	77,650	16,015	61,635	
Tidalwaves	0	0	0	0	
Gen Govt	613,914	232,933	10,145	222,788	
TOTAL BLD	3,042,196	989,869	69,268	920,601	
From Total	3,042,196	989,869	69,268	920,601	
DIFF	0	0	0	0	

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

cityfixedassets-6-30-05

Funct-Dept

	ORIG COST	ACCUM JUN 30 05	CY Depr Jun 30 05	PY Depr Jun 30 04	
LAND IMPROVM'TS					
ADM	0	0	0	0	
PLANNING	0	0	0	0	
FIRE	25,818	8,281	645	7,636	
PW	19,277	12,530	482	12,048	
REC	70,270	650	93	557	
LIB	0	0	0	0	
TCCC (DyCare)	0	0	0	0	
Tidalwaves	0	0	0	0	
Gen Govt	841,165	230,709	21,104	209,605	
TOTAL LND IMP	956,530	252,171	22,324	229,847	
From Total	956,530	252,171	22,324	229,847	252,171
DIFF	0	0	0	0	
STS-CURBS-ETC.					
ADM	0	0	0	0	
PLANNING	0	0	0	0	
FIRE	0	0	0	0	
PW	0	0	0	0	
REC	0	0	0	0	
LIB	0	0	0	0	
TCCC (DyCare)	0	0	0	0	
Tidalwaves	0	0	0	0	
Gen Govt	221,220	3,911	3,911	0	
TOTAL LND IMP	221,220	3,911	3,911	0	
From Total	221,220	3,911	3,911	0	3,911
DIFF	0	0	0	0	
LAND					
ADM	0	0	0	0	
PLANNING	0	0	0	0	
FIRE	0	0	0	0	
PW	0	0	0	0	
REC	0	0	0	0	
LIB	0	0	0	0	
TCCC (DyCare)	0	0	0	0	
Tidalwaves	0	0	0	0	
Gen Govt	830,756	0	0	0	
TOTAL LND IMP	830,756	0	0	0	
From Total	830,756	0	0	0	0
DIFF	0	0	0	0	

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

cityfixedassets-6-30-05

Funct-Dept

17-Nov-05
11:04 AM

	ORIG COST	ACCUM JUN 30 04	CY Depr Jun 30 04	PY Depr Jun 30 03
GRAND TOTAL				
ADM	125,329	67,615	6,853	60,762
PLANNING	4,610	4,337	273	4,063
FIRE	2,651,178	1,558,704	92,776	1,465,929
PW	1,068,203	761,284	72,730	688,554
REC	398,701	65,114	15,736	49,378
LIB	46,287	21,882	3,363	18,519
TCCC (DyCare)	920,222	220,292	43,044	177,248
Tidalwaves	4,567	3,684	457	3,227
Gen Govt	2,848,127	753,207	48,370	704,836
GRAND TOTAL	8,067,224	3,456,118	283,602	3,172,516
Variance>	0	0	0	0

GRAND TOTAL BY FUNCTION				
GENERAL GOVERNMENT	2,973,456	820,822	55,223	765,598
PLANNING & COMM DEV	4,610	4,337	273	4,063
FIRE SERVICES	2,651,178	1,558,704	92,776	1,465,929
POLICE SERVICES	77,159	62,284	1,929	60,355
PW - STREETS	594,626	419,400	42,481	376,919
PW - PARKS	396,418	279,600	28,320	251,280
RECREATION	398,701	65,114	15,736	49,378
LIBRARY	46,287	21,882	3,363	18,519
SPECIAL PROJECTS	924,789	223,976	43,501	180,475
GRAND TOTAL	8,067,224	3,456,118	283,602	3,172,516

Land

Item	Year Acquired	Cost
Bon Air Park Land		45,000
Land Original inventory		150,000
Property/William Ave	1991	56,165
Property/Arch Street	1995	161,066
Property easement/Porter Cooley	1995	10,000
Railroad land acquisitions	1997	408,525

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

City fixed Assets 6-30-05

Fixed Assets by Location

Type 1=Land 2=Land Improv. 3=Buildings 4=Equipment 5=Bid Improv. 6=Veh. 7:11=Sts

Department/Site	Item/Location	Quantity	Type	Yr Acquisition	Cost	Accum \$	CY Depr	PY Depr
Administration	City Hall 400 Magnolia Ave		3	1913	134,216	134,216	0	134,216
Recreation	Recreation Office			03-04	200,000	5,000	5,000	0
Fire	420 Magnolia Fire Station building 2 story 10338 sq ft class d	1	3	1938	63,341	63,341	0	63,341
Fire	420 Magnolia Fire Station Roof Replacement	1	3	1990	47,130	18,852	1,178	17,674
Fire	# 2 Fire Station	1	3	1991	1,331,799	499,425	33,295	466,130
Fire	Exhaust System	1	3	1995	15,590	4,287	390	3,898
Public Works	250 Doherty Ave Police Station 1 story 2929 sq ft.	1	3	1972	69,391	58,982	1,735	57,248
Public Works Yard	250 Doherty Ave Motorcycle Garage Shop 1 story 180 sq ft.	1	3	1989	7,768	3,301	194	3,107
Public Works Yard	250 Doherty Ave Shop 1 story 1280 sq ft.	1	3	1966	5,866	5,866	147	5,719
Public Works Yard	250 Doherty Ave Equipment Storage 1 story 800 sq ft. Class d	1	3	1972	5,808	4,937	145	4,792
Public Works Yard	250 Doherty Ave Vehicle Storage 1 story 2000 sq ft. Class d	1	3	1970	8,618	7,756	215	7,541
Daycare	Portable Unit	1	3	1990	61,849	24,740	1,546	23,193
Daycare	Bathroom	1	3	1993	10,000	3,250	250	3,000
Daycare	Building	1	3	2002-2003	557,238	41,793	13,931	27,862
Other	Heather Gardens Lift Station		3	1996	67,107	16,777	1,678	15,099
Other	Boardwalk/Redwood Hwy Pump		3	1996	24,567	6,142	614	5,528
Piper Park			3	1996	27,095	6,774	677	6,096

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Department/Site	Item/Location	Quantity	Type	Yr Acquisition	Cost	Accum \$	CY Depr	PY Depr
Doliver Park			3	1996	7,272	1,818	182	1,636
Neighborhood Park			3	1996	48,368	12,092	1,209	10,883
Police	Building Remodel		3	1996	36,000	9,000	900	8,100
City Hall	Roof Replacement		3	1997	109,297	24,592	2,732	21,859
Fire	City Hall Remodel		3	2004-05	73,902			
	Via Casitas Retaining Wall		7:11	2003-04	19,400	485	485	0
	E/W Path		7:11	2003-04	137,056	3,426.40	3,426	
	Alexander Bridge			2004-05	45,712			
	King Mountain Improvement			2004-05	19,052			
Equipment								
Administration	Customer Service Furniture	1	4	1992	9,578	9,578		9,578
Administration	Council Chamber Microphones	1	4	1990	6,456	6,456		6,456
Administration	Printer system 36 Records Management System	1	4	2002	15,000	4,500	1,500	3,000
Administration	Printer System 36 Computer Systems	1	4	2002	45,600	13,680	4,560	9,120
Library	Shelving Library 6x15	1	4	1975	7,876	7,876		7,876
Library	Telephone System Library Automation	1	4	2002	30,997	9,299	3,100	6,199
Recreation	Hockey Rink Lake Share	1	4	1997	9,775	7,820	978	6,843
Recreation	Sewer Holding Tank-Neil Cummins	1	4	2001	44,914	17,966	4,491	13,474
Recreation	Doliver Park Playground eq	1	4	2004	24,213	2,421	2,421	
Fire	Apple Computer/1cpu \$1664, 1cpu	1	4	1994	5,318	5,318	0	5,318
Fire	Generator- Onan 17.5 kw	1	4	1975	7,638	7,638	0	7,638
Fire	Breathing Apparatus	1	4	1991	11,382	11,382	0	11,382
Fire	Breathing Apparatus	1	4	1992	13,596	13,596	0	13,596
Fire	Breathing Apparatus	1	4	1993	14,916	14,916	0	14,916
Fire	Defibrillator	1	4	1992	13,044	13,044	0	13,044
Fire	Turnout coats and pants	1	4	1992	6,360	6,360	0	6,360
Fire	Group misc. dept equip, beds, medical	1	4	1984	7,876	7,876	0	7,876
Equipment								
Fire	Group Misc. truck equip c/o first aid equipment	1	4	1984	9,758	9,758	0	9,758

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Department/Site	Item/Location	Quantity	Type	Yr Acquisition	Cost	Accum \$	CY Depr	PY Depr
Fire	Misc. fire truck equip. first aid equipment	1	4	1978	5,316	5,316	0	5,316
Fire	Tool new engine	1	4	1996	25,867	23,280	2,587	20,694
Fire	Nozzles, adapter, hose	1	4		11,066	11,066	0	11,066
Fire	misc fire truck equip	1	4	1983	6,309	6,309	0	6,309
Public Works	Contractor pump nutiqup	1	4	1986	6,080	6,080	0	6,080
Public Works	Trailer Class d 500 sq ft.	1	4	1983	14,165	14,165	0	14,165
Public Works	Wacker 98-99 pumps	1	4		22,875	13,725	2,288	11,438
Public Works	Street Lights & Poles	1	4	1945-2003	299,750	179,850	29,975	149,875
Daycare	Van	1	4	1995	23,570	23,570	2,357	21,213
Daycare	Cfredenza; JE1778-063001-465	1	4	2001	69,939	27,976	6,994	20,982
Daycare	Computer printer monitor JE 164-063002-	1	4	2002	107,731	32,319	10,773	21,546
Other	Heather Gardens Lift Station		4		322,884	32,844	0	32,844
Other	Boardwalk/Redwood Hwy Pump		4		90,676	90,676	0	90,676
Other	Industrial Way Pump Station		4		26,239	26,239	0	26,239
Other	Greenbrae Park Equipment		4	1996	17,748	15,973	1,775	14,198
Other	Equipment/cabinets		4	1996	9,165	8,249	917	7,332
Fire	Downstairs remodel		4	1998	9,572	6,700	957	5,743
Public Works	GIS		4	1998	18,291	12,804	1,829	10,975
Public Works	GIS		4	1999	39,014	23,408	3,901	19,507
Vehicles								
Recreation	Ford Truck (from PW)			91-92	22,000	22,000	0	22,000
Fire	Deputy Chief Vehicle		6	2002	26,000	7,800	2,600	5,200
Fire	1999 Ford Crown Victoria			2000	26,000	13,000	2,600	10,400
Fire	1997 Dodge			1997-98	20,000	14,000	2,000	12,000
Fire	1998 Fire Truck			1997-98	175,000	122,500	17,500	105,000
Fire	1985 Fire Truck			1985-86	155,000	155,000	0	155,000
Fire	1989 Fire Truck			1989-90	180,000	180,000	0	180,000
Fire	1996 Fire Truck			1996-97	180,000	180,000	0	180,000
Vehicles								
Fire	Van Volunteers			2000	30,000	15,000	3,000	12,000
Fire	Pickup truck			2000-01	30,000	12,000	3,000	9,000
Fire	Other vehicle			1985	57,525	75,525	0	57,525
Public Works	1990 Ford pickup s-2			1989-90	20,504	20,504	0	20,504

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Department/Site	Item/Location	Quantity	Type	Yr Acquisition	Cost	Accum \$	CY Depr	PY Depr
Public Works	1991 Ford pickup s-3			1990-91	27,340	27,340	0	27,340
Public Works	97 Small Dump truck s-13			1997-98	29,000	17,400	2,900	14,500
Public Works	97 Small Dump truck s-17			1997-98	32,000	22,400	3,200	19,200
Public Works	1991 Ford Dump truck s-5			1991-92	45,000	45,000	0	45,000
Public Works	1991 Flatbed truck s-6			1996-97	27,000	27,000	0	27,000
Public Works	1996 Dodge Longbed/Dakota s-9			1996-97	22,000	17,600	2,200	15,400
Public Works	1996 Dodge club cab/mike			1996-97	26,000	20,800	2,600	18,200
Public Works	1984 Backhoe			1999-2000	65,000	32,500	6,500	26,000
Public Works	1996 Chipper			1991-92	12,000	12,000	0	12,000
Public Works	1995 ATV			1995-96	13,000	11,700	1,300	10,400
Public Works	Turf Tractor			1999-00	35,000	17,500	3,500	14,000
Public Works	Tanker Trailer			1994-95	35,000	35,000	3,500	31,500
Public Works	PW Director Ford Escort Escape			2000-01	22,000	8,800	2,200	6,600
Public Works	2000 Truck			1999-2000	28,000	14,000	2,800	11,200
Public Works	2000 Truck			1999-2000	28,000	14,000	2,800	11,200
Public Works	Dodge car (from Planning)			1996-97	20,000	16,000	2,000	14,000
Public Works	Generators			1991-92	34,082	34,082	0	34,082
Public Works	Dodge truck S3			2004-05	20,366	0	0	0
Daycare	Van	1	4	1995	23,570	23,570	2,357	21,213
Land Improvements								
Public Works	Paving Asphalt 12150 sq ft	1	2	1980	13,450	8,801	339	8,463
Other	Boardwalk/Redwood Hwy pump		2		18,807	5,642	407	5,172
Other	Piper Park		2	1991	152,910	57,341	3,823	53,519
Other	Piper Park/dog park & fence		2	1990	6,841	6,841	428	6,413
Other	Piper Park/Handicap Retrofit		2	1993	20,559	6,682	514	6,168
Other	Heatherwood Park/ada		2	1993	17,526	5,696	438	5,258
Other	Bike Path & Fence		2	1990	76,316	30,526	1,908	28,619
Other	Piper Park Equipment		2	1997	33,068	7,440	827	6,614
Other	Piper Park Bathroom		2	1998	201,932	40,386	5,048	35,338
Other	Mini Park Master Plan		2	1999	35,114	6,145	878	5,267

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

City of Larkspur

Infrastructure Valuation - 2004

Item	Description	Approx. Age	Estimated Current Value	Estimated Historic Cost	Estimated Replacement Cost
1	Street Pavement	21			\$ 70,186,200
2	Drainage Improvements*	31			\$ 21,672,000
3	Bridges*	48			\$ 13,650,000
4	Traffic Signals	20			\$ 1,400,000
5	Street Lights	40			\$ 1,590,000
6	Curb, Gutter & Sidewalk	30			\$ 22,500,000
7	Bus Stop Improvements	15			\$ 300,000
8	Parks*	29			\$ 37,000,000
9	Bike and Pedestrian Improvements*	6			\$ 4,500,000
10	Building Infrastructure*	64			\$ 14,000,000
11	Parking Lots*	25			\$ 4,900,000
	Total =				\$ 191,698,200
Note: * designates age calculated by using weighted average based on value of items					

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Drainage Improvements

SECTION	ITEM No.	ITEM DESCRIPTION	UNIT CODE	QUANTITY	UNIT PRICE	AMOUNT	AGE (YEARS)
A		Drainage Pipe					
	1	Storm Drain Pipe	LF	105,600	\$ 120	\$ 12,672,000	35
B		Pump Stations					
	1	Redwood High School Marsh Pump Station - not owned by City	LS	1	\$ -	\$ -	
	2	Larkspur Plaza Pump Station	LS	1	\$ 2,500,000	\$ 2,500,000	16
	3	Heather Garden Pump Station	LS	1	\$ 2,500,000	\$ 2,500,000	39
	4	Industrial Pump Station	LS	1	\$ 2,500,000	\$ 2,500,000	18
		Section B - Subtotal				\$ 7,500,000	
C		Drainage Inlets					
	1	Catch Basins	EA	600	\$ 2,500	\$ 1,500,000	35
		Section C - Subtotal				\$ 1,500,000	
		TOTAL PROJECT COST				\$ 21,672,000	31

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Bridges

SECTION	ITEM No.	ITEM DESCRIPTION	UNIT CODE	QUANTITY	UNIT PRICE	AMOUNT	AGE (years)
A		Bridge Repair					
	1	Bon Air Bridge	LS	1	\$ 6,000,000	\$ 6,000,000	46
	2	Alexander Bridge	LS	1	\$ 1,500,000	\$ 1,500,000	77
	3	Doherty Drive Bridge	LS	1	\$ 1,500,000	\$ 1,500,000	39
	4	Meadowood Bridge	LS	1	\$ 900,000	\$ 900,000	30
	5	Magnolia Avenue Bridge (at Madrone Ave.)	LS	1	\$ 750,000	\$ 750,000	79
	6	SFD Pedestian Overhead Crossing (POC)	LS	1	\$ 1,500,000	\$ 1,500,000	25
	7	Cane Street over Lark Creek	LS	1	\$ 500,000	\$ 500,000	54
	8	King Street over Lark Creek	LS	1	\$ 500,000	\$ 500,000	64
	9	Bridge Street over Lark Creek	LS	1	\$ 150,000	\$ 150,000	64
	10	Bike/Ped Bridge under Greenbrae Interchange	LS	1	\$ 300,000	\$ 300,000	29
	11	Bon Air Center - Via Casitas POC	LS	1	\$ 50,000	\$ 50,000	25
		TOTAL PROJECT COST				\$ 13,650,000	48

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Parks

SECTION	ITEM No.	ITEM DESCRIPTION	UNIT CODE	QUANTITY	UNIT PRICE	AMOUNT	AGE (years)
A		Piper Park					
	1	Piper Park Improvements	LS	1	\$ 22,000,000	\$ 22,000,000	30
B		Mini Parks					
	1	Bon Air Landing		1	\$1,000,000	\$1,000,000	30
	2	Doherty Park		1	\$1,000,000	\$ 1,000,000	35
	3	Dolliver Park		1	\$1,000,000	\$ 1,000,000	40
	4	Hamilton Park		1	\$1,000,000	\$ 1,000,000	30
	5	Heatherwood Park		1	\$1,000,000	\$ 1,000,000	25
	6	Hillview Park		1	\$1,000,000	\$ 1,000,000	25
	7	Magnolia Park		1	\$1,000,000	\$ 1,000,000	35
	8	Miwok Park		1	\$5,000,000	\$ 5,000,000	30
	9	Niven Park		1	\$1,000,000	\$ 1,000,000	15
	10	Remillard Park		1	\$1,000,000	\$ 1,000,000	12
	11	Greenbrae School Park		1	\$1,000,000	\$ 1,000,000	25
		Section B - Subtotal				\$ 15,000,000	
		TOTAL PROJECT COST				\$ 37,000,000	29

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Building Infrastructure

SECTION	ITEM No.	ITEM DESCRIPTION	UNIT CODE	QUANTITY	UNIT PRICE	AMOUNT	AGE (years)
A		Building Infrastructure					
	1	Larkspur City Hall	LS	1	\$ 5,000,000	\$ 5,000,000	90
	2	Larkspur Fire Station #1	LS	1	\$ 3,000,000	\$ 3,000,000	80
	3	Larkspur Fire Station #2	LS	1	\$ 3,000,000	\$ 3,000,000	15
	4	Twin Cities Police Facility	LS	1	\$ 3,000,000	\$ 3,000,000	28
	5	Larkspur Corporation Yard & Twin Cities Police Facility	LS	1	\$ 2,000,000	\$ 2,000,000	35
	6	Maintenance Equipment at Corporation Yard	LS	1	\$ 2,000,000	\$ 2,000,000	5
		TOTAL PROJECT COST				\$ 14,000,000	64

Traffic Signals

SECTION	ITEM No.	ITEM DESCRIPTION	UNIT CODE	QUANTITY	UNIT PRICE	AMOUNT	AGE (years)
A		Traffic Safety Improvements					
	1	Traffic Signals	EA	7	\$ 200,000	\$ 1,400,000	20
		TOTAL PROJECT COST				\$ 1,400,000	

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Street Lights

SECTION	ITEM No.	ITEM DESCRIPTION	UNIT CODE	QUANTITY	UNIT PRICE	AMOUNT	AGE (years)
		Street Lights					
A		Street Lights					
	1	Street Lights	EA	795	\$ 2,000	\$ 1,590,000	40
		TOTAL PROJECT COST				\$ 1,590,000	

Curb, Gutter Sidewalk

SECTION	ITEM No.	ITEM DESCRIPTION	UNIT CODE	QUANTITY	UNIT PRICE	AMOUNT	AGE (years)
		Local Roads - New Improvements					
A		Local Roads - New Improvements					
	1	Curb, gutter and sidewalk	LF	300,000	\$ 75	\$ 22,500,000	30
		TOTAL PROJECT COST				\$ 22,500,000	

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Bus Stop Improvements

SECTION	ITEM No.	ITEM DESCRIPTION	UNIT CODE	QUANTITY	UNIT PRICE	AMOUNT	AGE (years)
A		Bus Stop Improvements					
	1	Concrete Bus Stops - Includes concrete bus pad, turnout, shelter, r-o-w	EA	12	\$ 25,000	\$ 300,000	15
		TOTAL PROJECT COST				\$ 300,000	

Bike and Pedestrian Improvements

SECTION	ITEM No.	ITEM DESCRIPTION	UNIT CODE	QUANTITY	UNIT PRICE	AMOUNT	AGE (years)
A		Class 1 Bike Paths					
	1	Larkspur/Corte Madera Bike Path	EA	1	\$ 500,000	\$ 500,000	10
	2	Multit-Use Path (East-West)	EA	1	\$ 1,000,000	\$ 1,000,000	1
	3	South Eliseo/Greenbrae Interchange	EA	1	\$ 1,000,000	\$ 1,000,000	10
	4	East SFD Path	EA	1	\$ 1,000,000	\$ 1,000,000	2
	5	Creekside Path	EA	1	\$ 1,000,000	\$ 1,000,000	8
		Section A - Subtotal				\$ 4,500,000	6

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Parking Lots

SECTION	ITEM No.	ITEM DESCRIPTION	UNIT CODE	QUANTITY	UNIT PRICE	AMOUNT	AGE (years)
A		Parking Lots					
	1	Downtown	LS	1	\$ 2,000,000	\$ 2,000,000	25
	2	Post Street	LS	1	\$ 500,000	\$ 500,000	25
	3	Piper Park Parking Lot	LS	1	\$ 2,400,000	\$ 2,400,000	25
		TOTAL PROJECT COST				\$ 4,900,000	25

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Street Pavement

AGE (years)	OCI	Street Name	Street Limits	Length ft.	Width ft.	Paving area (s.y.)	Paving Cost/s.y.	Total Cost
50	2	El Portal	SFD to Via Casitas	650	60	4333	\$ 170.00	\$ 736,667
50	13	North Almenar Drive	City Limits to end	900	24	2400	\$ 170.00	\$ 408,000
50	15	Palm Ct.	Elm to end	300	14	467	\$ 170.00	\$ 79,333
50	15	Sycamore Ave.	Hawthorne to Holly	800	24	2133	\$ 170.00	\$ 362,667
50	16	Arbor	Murray to Frances	250	16	444	\$ 170.00	\$ 75,556
50	17	Corte Amado	City limit to end	550	22	1344	\$ 170.00	\$ 228,556
50	18	Industrial Way	Rwd. Hwy. To Rich	550	36	2200	\$ 170.00	\$ 374,000
50	19	South Eliseo		1900	40	8444	\$ 170.00	\$ 1,435,556
50	22	La Rosa Way	Holcomb to Monte Vista	300	24	800	\$ 170.00	\$ 136,000
50	24	Rich Street	Rwd. Hwy. To Industrial	850	22	2078	\$ 170.00	\$ 353,222
30	26	Corte Barista		350	24	933	\$ 170.00	\$ 158,667
30	26	Ranch Ln.	William to end	250	22	611	\$ 170.00	\$ 103,889
30	27	Ardmore Avenue	Wiltshire to end	2280	14	3547	\$ 170.00	\$ 602,933
30	32	Taylor		120	32	427	\$ 170.00	\$ 72,533
30	32	Via Chaparro	City Limits to end	550	24	1467	\$ 170.00	\$ 249,333
30	32	Via La Brisa		1150	24	3067	\$ 170.00	\$ 521,333
30	34	Upper Ardmore		850	32	3022	\$ 170.00	\$ 513,778
30	34	Via Navarro	Via Lerida to #51	600	22	1467	\$ 170.00	\$ 249,333
30	35	Hawkins		200	24	533	\$ 170.00	\$ 90,667
30	35	South Green		250	24	667	\$ 170.00	\$ 113,333
30	35	Via Casitas	u/l Via Casitas to end	2100	32	7467	\$ 170.00	\$ 1,269,333
30	35	Via Holon	Via Casitas to S. Eliseo	550	32	1956	\$ 170.00	\$ 332,444
30	38	East S.F.D.	City Limits to Drakes Landir	5600	60	37333	\$ 170.00	\$ 6,346,667
30	38	Wilson Way	#125 to end	1400	20	3111	\$ 170.00	\$ 528,889
30	39	Cedar		1000	24	2667	\$ 170.00	\$ 453,333
30	39	Doherty Drive	Street Reconstruction	3500	30	11667	\$ 170.00	\$ 1,983,333
30	39	Jones Way		300	24	800	\$ 170.00	\$ 136,000
30	39	Skylark Dr.	Escalle to end	1200	24	3200	\$ 170.00	\$ 544,000
30	42	Briar		400	24	1067	\$ 170.00	\$ 181,333
30	42	Corte Oriental	Via Casitas to end	300	32	1067	\$ 170.00	\$ 181,333
30	44	Via La Paz	End to end	1900	22	4644	\$ 170.00	\$ 789,556
30	45	Holly		450	24	1200	\$ 170.00	\$ 204,000
30	46	Meadowood		1300	32	4622	\$ 170.00	\$ 785,778
30	46	Monte Vista Avenue	King to Alexander	1450	36	5800	\$ 170.00	\$ 986,000
30	47	Lark		600	24	1600	\$ 170.00	\$ 272,000
30	47	Niven Way	Meadowood to end	300	30	1000	\$ 170.00	\$ 170,000
30	49	Acacia Ave.	Alexander to end	1300	30	4333	\$ 170.00	\$ 736,667
30	49	Cane Street	Street Reconstruction	500	24	1333	\$ 170.00	\$ 226,667
30	49	Holcomb	Cane to William	750	20	1667	\$ 170.00	\$ 283,333
30	49	La Cuesta		1300	24	3467	\$ 170.00	\$ 589,333
30	49	Redwood Highway		1600	24	4267	\$ 170.00	\$ 725,333
30	49	Shady Lane		250	24	667	\$ 170.00	\$ 113,333
20	50	Corte Real		700	24	1867	\$ 170.00	\$ 317,333
20	50	Madrone Avenue	Olive Ave. to Echo Pl.	1000	20	2222	\$ 170.00	\$ 377,778
20	50	Madrone Avenue	Echo Pl. to Glen Way	950	16	1689	\$ 170.00	\$ 287,111
20	50	Palm Ave.	Hazel to Walnut	800	16	1422	\$ 170.00	\$ 241,778
20	50	Park Way	Magnolia to Ardmore	300	20	667	\$ 170.00	\$ 113,333
20	50	Pepper		600	24	1600	\$ 170.00	\$ 272,000
20	51	Magnolia Avenue	William to s'lyCity Limit	2000	43	9556	\$ 170.00	\$ 1,624,444
20	51	Magnolia Avenue	Ward to N. Magnolia	4500	43	21500	\$ 170.00	\$ 3,655,000

**CITY OF LARKSPUR, CALIFORNIA
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Street Pavement

AGE (years)	OCI	Street Name	Street Limits	Length ft.	Width ft.	Paving area (s.y.)	Paving Cost/s.y.	Total Cost
20	51	Magnolia Avenue	King St. to William Ave.	800	43	3822	\$ 170.00	\$ 649,778
20	51	Via Hermosa		800	24	2133	\$ 170.00	\$ 362,667
20	52	Branch		245	24	653	\$ 170.00	\$ 111,067
20	52	Marina Vista	Ardmore to Sunrise	3000	16	5333	\$ 170.00	\$ 906,667
20	52	Murray		1250	32	4444	\$ 170.00	\$ 755,556
20	53	Corte Lenosa		400	24	1067	\$ 170.00	\$ 181,333
20	53	Liberty		350	24	933	\$ 170.00	\$ 158,667
20	53	Via Belardo		500	32	1778	\$ 170.00	\$ 302,222
20	53	Willow	Hawthorne to Holly	800	20	1778	\$ 170.00	\$ 302,222
20	54	Cielo		850	24	2267	\$ 170.00	\$ 385,333
20	54	Midway Red.	Heather Way to Diane	400	24	1067	\$ 170.00	\$ 181,333
20	54	William Ave.	Street Reconstruction	800	28	2489	\$ 170.00	\$ 423,111
20	54	William Ave.	Holcomb to end	1000	28	3111	\$ 170.00	\$ 528,889
20	57	Locust		1600	24	4267	\$ 170.00	\$ 725,333
20	57	Owsgood		495	24	1320	\$ 170.00	\$ 224,400
20	57	Upper Via Casitas	S. Eliseo to Via Casitas	500	32	1778	\$ 170.00	\$ 302,222
20	58	Paseo Way	Altura to La Cuesta	1800	22	4400	\$ 170.00	\$ 748,000
20	59	Larkspur Landing Cir.	ESFD to ESFD	1000	40	4444	\$ 170.00	\$ 755,556
20	60	Oak		530	24	1413	\$ 170.00	\$ 240,267
20	62	College		800	32	2844	\$ 170.00	\$ 483,556
20	63	Riviera		5100	24	13600	\$ 170.00	\$ 2,312,000
20	66	Altura		1200	24	3200	\$ 170.00	\$ 544,000
20	66	Larkspur Plaza Dr.	Doherty to end	2000	36	8000	\$ 170.00	\$ 1,360,000
20	67	Corte Encanto		450	24	1200	\$ 170.00	\$ 204,000
20	67	Elm Ave.	#109 to Palm Ct.	2400	18	4800	\$ 170.00	\$ 816,000
20	67	Frances		1050	40	4667	\$ 170.00	\$ 793,333
20	67	Garden Way		200	24	533	\$ 170.00	\$ 90,667
20	67	Loma Vista		700	24	1867	\$ 170.00	\$ 317,333
20	67	Lower Via Casitas	S. Eliseo to Via Casitas	800	20	1778	\$ 170.00	\$ 302,222
20	67	Old Quarry Rd., S.		600	24	1600	\$ 170.00	\$ 272,000
20	67	Polhemus		660	24	1760	\$ 170.00	\$ 299,200
20	67	Redwood		550	24	1467	\$ 170.00	\$ 249,333
20	69	Hillcrest		350	24	933	\$ 170.00	\$ 158,667
20	70	Bon Air Road	Magnolia to Bayview Rd.	1000	60	6667	\$ 170.00	\$ 1,133,333
20	72	Alexander Avenue	Street Reconstruction	600	37	2467	\$ 170.00	\$ 419,333
20	72	Corte Del Cornado		300	24	800	\$ 170.00	\$ 136,000
20	72	Corte Solano		350	24	933	\$ 170.00	\$ 158,667
20	72	Stanford		100	32	356	\$ 170.00	\$ 60,444
20	73	Dartmouth		900	32	3200	\$ 170.00	\$ 544,000
20	73	Parkside		1195	20	2656	\$ 170.00	\$ 451,444
20	74	Corte Del Norte		210	24	560	\$ 170.00	\$ 95,200
20	74	Diane Lane	Heather Way to Midway	950	22	2322	\$ 170.00	\$ 394,778
20	74	Echo Ct.		165	24	440	\$ 170.00	\$ 74,800
20	74	Hawthorne		1850	24	4933	\$ 170.00	\$ 838,667
5	75	Ajax		400	24	1067	\$ 170.00	\$ 181,333
5	75	Barry Way		290	24	773	\$ 170.00	\$ 131,467
5	75	Bretano Way		1050	24	2800	\$ 170.00	\$ 476,000
5	75	Drakes Landing Rd.		775	24	2067	\$ 170.00	\$ 351,333
5	75	Harvard	End to cul-de-sac	1600	32	5689	\$ 170.00	\$ 967,111
5	75	Hatzic Ct.	Wilson Way to end	400	16	711	\$ 170.00	\$ 120,889

**CITY OF LARKSPUR, CALIFORNIA
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Street Pavement

AGE (years)	OCI	Street Name	Street Limits	Length ft.	Width ft.	Paving area (s.y.)	Paving Cost/s.y.	Total Cost
5	75	Lincoln Village Cir.		1500	24	4000	\$ 170.00	\$ 680,000
5	75	Millard		1000	24	2667	\$ 170.00	\$ 453,333
5	75	Old Quarry Rd., N.		600	24	1600	\$ 170.00	\$ 272,000
5	75	Olive		600	24	1600	\$ 170.00	\$ 272,000
5	75	Piedmont Ct.	Piedmont Rd. to end	800	10	889	\$ 170.00	\$ 151,111
5	75	Ridge Ln.		100	24	267	\$ 170.00	\$ 45,333
5	75	Via Barranca		1550	32	5511	\$ 170.00	\$ 936,889
5	75	Via La Cumbre		4300	32	15289	\$ 170.00	\$ 2,599,111
5	75	Victoria		250	24	667	\$ 170.00	\$ 113,333
5	76	Tulane		2050	32	7289	\$ 170.00	\$ 1,239,111
5	76	Walnut Ave.	Palm to Hawthorne	950	16	1689	\$ 170.00	\$ 287,111
5	76	West Baltimore		900	16	1600	\$ 170.00	\$ 272,000
5	76	Wiltshire	Magnolia to Ardmore	1150	20	2556	\$ 170.00	\$ 434,444
5	77	Onyx St.	Madrone to Palm	350	26	1011	\$ 170.00	\$ 171,889
5	80	Eliseo	Corte Teluca to end	900	24	2400	\$ 170.00	\$ 408,000
5	80	Yale	Tulane to Harvard	500	32	1778	\$ 170.00	\$ 302,222
5	82	Chanticleer		900	24	2400	\$ 170.00	\$ 408,000
5	82	Orange		1300	24	3467	\$ 170.00	\$ 589,333
5	83	Highland Ct.		500	24	1333	\$ 170.00	\$ 226,667
5	84	Via Hidalgo		1900	24	5067	\$ 170.00	\$ 861,333
5	86	Bayo Vista		700	24	1867	\$ 170.00	\$ 317,333
5	87	Cornell		700	24	1867	\$ 170.00	\$ 317,333
5	87	Magnolia Avenue	North Magnolia	2400	43	11467	\$ 170.00	\$ 1,949,333
5	87	Via Lerida	Eliseo to Via Navarro	1250	24	3333	\$ 170.00	\$ 566,667
5	89	Ward		700	40	3111	\$ 170.00	\$ 528,889
5	90	Bayview		950	24	2533	\$ 170.00	\$ 430,667
5	90	Corte Del Bayo		700	24	1867	\$ 170.00	\$ 317,333
5	92	Corte Ortega		350	32	1244	\$ 170.00	\$ 211,556
5	92	Via Gracitas		300	24	800	\$ 170.00	\$ 136,000
5	95	Escalle Ln.		250	24	667	\$ 170.00	\$ 113,333
21	Average Age						Total	\$ 70,186,200

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Critical Facilities

All the City of Larkspur's facilities and infrastructure are critical to the city in day-to-day operations and disaster preparedness/response & recovery.

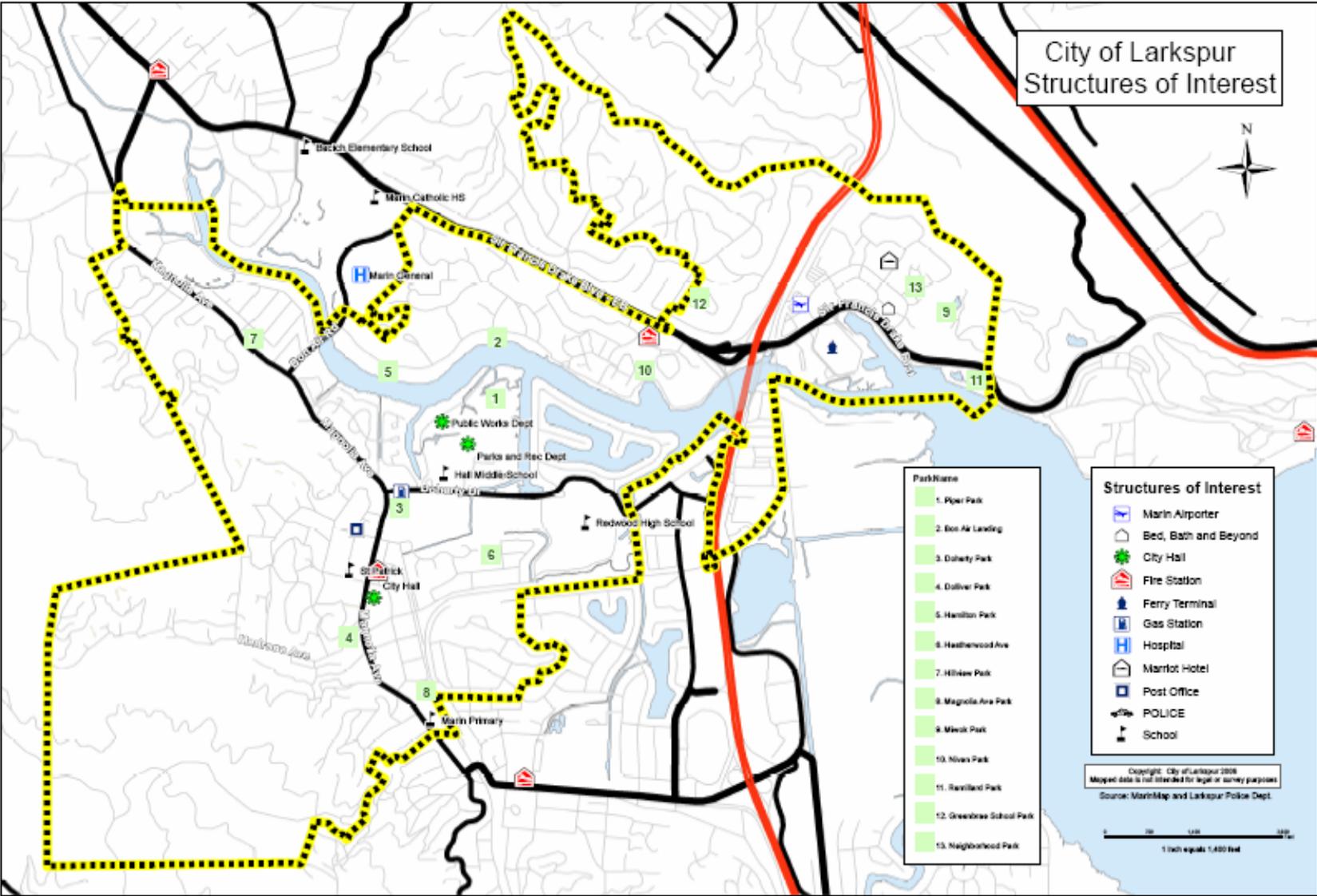
Non-owned critical facilities include:

- Marin General Hospital
- Post Office
- Gas Station corner of Magnolia and Doherty Drive
- 3000 gallon diesel tank
- Ferry Terminal
- Airporter
- Highway 101 highway and bridges

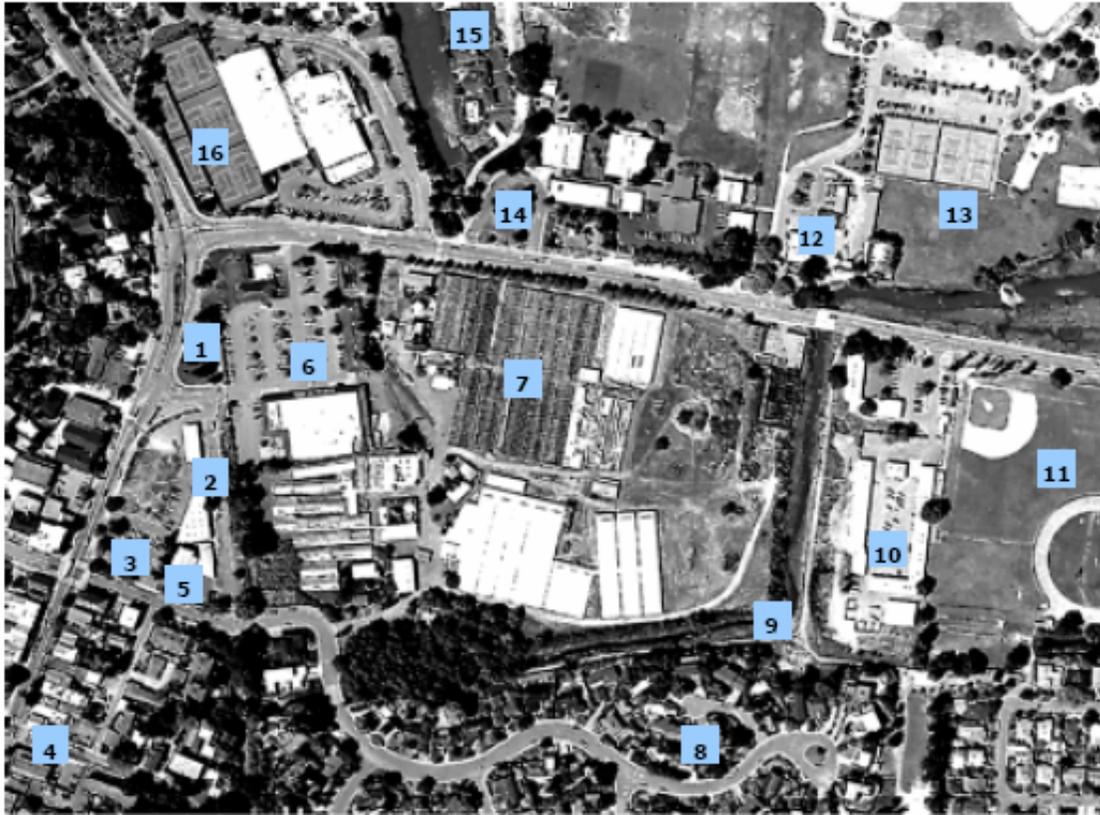
Economic non-owned critical facilities:

- Bed, Bath & Beyond

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**



3.1 LAND USES, GENERAL PLAN AND ZONING

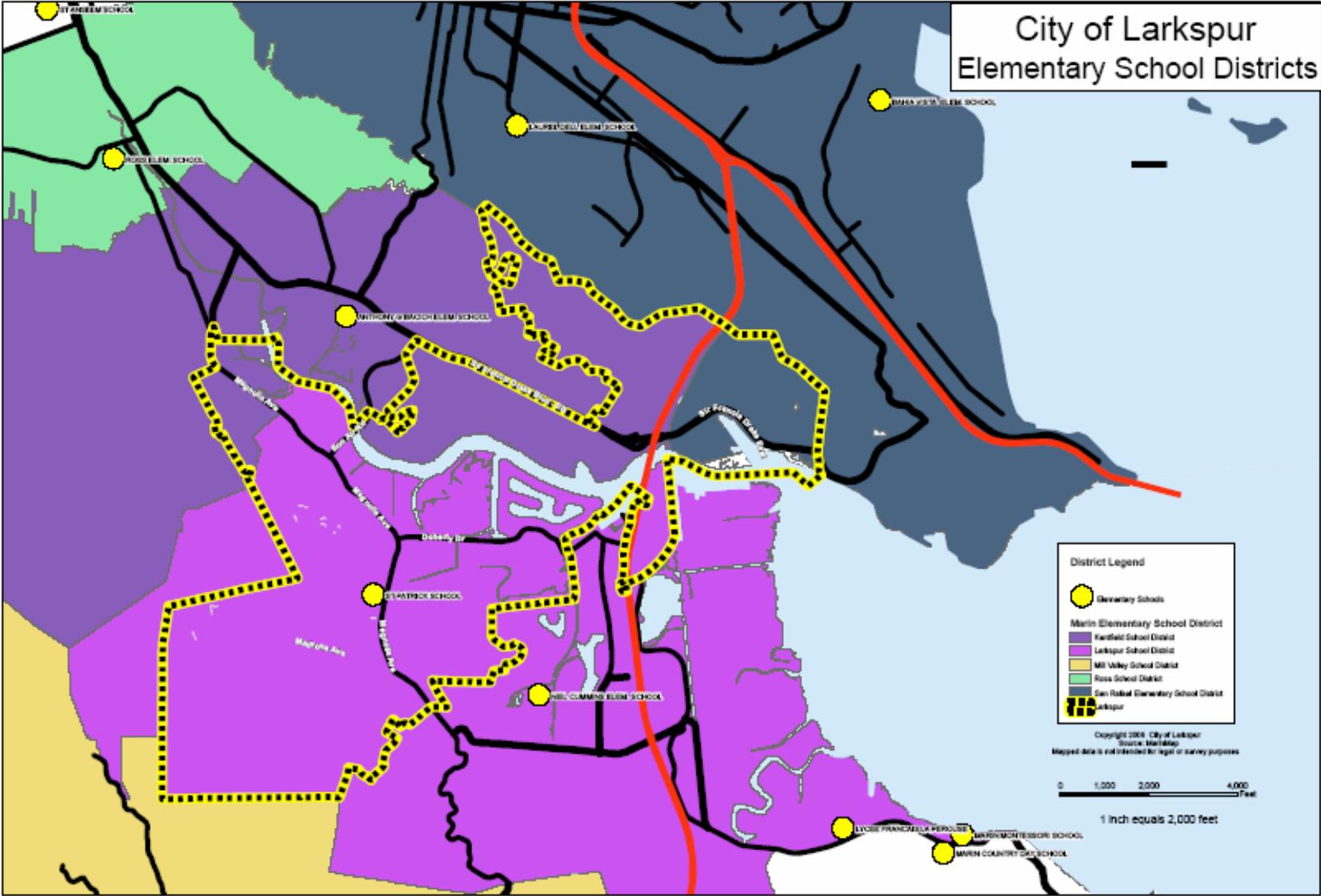


The aerial photo to the left provides a view of land uses surrounding the Plan area. Adjacent land uses north of the Specific Plan area, across Doherty Drive, are the Mt. Tamalpais Racquet Club (#16 in Figure 3-1), Hall Middle School (#14), a sewer

Photo Key	
1.	Doherty Park
2.	Railroad buildings
3.	City parking lot
4.	Downtown
5.	American Legion
6.	Larkspur Plaza
7.	Abandoned greenhouses
8.	Meadowood neighborhood
9.	Larkspur Creek
10.	Tamalpais High School District facilities
11.	Redwood High School
12.	Twin Cities Police
13.	Piper Park
14.	Hall Middle School
15.	Larkspur Boardwalk
16.	Mt. Tamalpais Racquet Club

Figure 3-1 Aerial Photo, Specific Plan Area

CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN



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Marin County Profile

Hazard Analysis - General

Marin County is located on the central coast of California, north of the Golden Gate Bridge. It is part of the Governor's Office of Emergency Services Coastal Region.

Marin is approximately 521 square miles with a population of almost 235,000 in 11 incorporated cities & towns & the county unincorporated area. Most of the population is located in the urban corridor located along the east-central part of the county, adjacent to Highway 101.

Marin County is surrounded on water on three sides: the Pacific Ocean on the west; the San Pablo Bay on the East & the San Francisco Bay on the south. It is adjacent to Sonoma County on the north. Marin County plays a large part in the economy of the San Francisco Bay Area.

Marin County is connected to its surrounding neighbors by bridges. The Golden Gate Bridge is to the south; the Richmond/San Rafael Bridge is to the east; State Highway 37 is to the north east (along the north part of San Pablo Bay across filled bay land); & Highway 101 is to the north (which narrows to a 4-lane uncontrolled road that transverses the San Antonio Creek).

One of the major problems Marin faces during any emergency is the possibility of being isolated from the surrounding communities & any subsequent resources or help.

Major industries: Major local industries are made up of light manufacturing, offices, movie/music production studios, agriculture & tourism. Computer technology is gaining in importance, with many major & start-up software companies located within the county. San Quentin State Prison is located in Marin County.

Highways, Roads, Rail Lines, Airports: The main transportation arteries through Marin County are U.S. 101, State Highways 1 & 37, & Interstate 580. U.S. 101 is the most heavily used. A network of county roads connects the various communities to this major artery. There are state, county, city & private road networks that exceed 650 miles. The Northwest Pacific rail line runs through the north & northeast part of the county. It does not carry passengers, but does carry a variety of cargo, mostly lumber.

There are two airports that could accommodate small aircraft. Gross Field is owned & operated by the County of Marin, classified as a "reliever airport" & has a 3300 foot runway. San Rafael Airport, (formally Smith Ranch Airport, is privately owned with a fixed based operator & a 2000 foot long runway.

Hazardous materials: Marin County is a combined suburban & rural area, with none of the large industrial complexes normally associated with a high incidence of hazardous material emergencies. Fixed facilities are limited to small industrial parks within or near the incorporated cities.

The County contains one major land transportation artery, U.S. 101, & is located near major sea & air shipping routes, all of which transport hundreds of tons of hazardous

**CITY OF LARKSPUR, CALIFORNIA
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materials each year. Due to the shipping routes & to the County's close proximity to the major industrial centers of the East & South Bay Areas, the County is highly exposed to the effects of a major catastrophic hazardous material emergency.

In addition, Marin has a large rural/agriculture area which utilizes various quantities of pesticides which are stored at numerous sites throughout the County.

Hazard Impacts:

Marin County, with its varying topography & mix of urban & rural areas, single major transportation route, & possibility of isolation during a major emergency, is subject to a wide variety of negative impacts from various hazards & threats. There are three broad categories of hazards that create risks: natural, technological & domestic security threats. These are as follows:

Natural Hazards:

- earthquakes;
- floods;
- wildland fires;
- extreme Weather/Storm;
- landslides; &
- tsunami

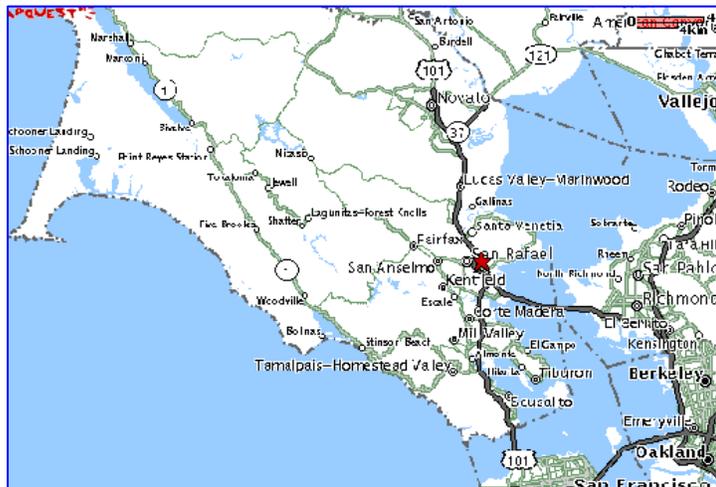
Technological Hazards

- dam failure;
- hazardous material;
- transportation emergencies

Domestic Security Threats

- civil unrest; &
- terrorism

Marin County Operational Area Hazard Mitigation Plan Risk Assessment lists earthquake, wildfire, flooding as major disaster threats based on past disasters and projected future impacts. Other hazards are Agriculture, Terrorism, Tsunami and Landslides.



Marin County Natural Hazard Profile

Earthquakes

General Situation: The San Andreas Fault traverses Marin County running north & south in the western quarter of the county. It enters Marin on the Pacific Coast near Bolinas, follows the path of Highway 1, & Tomales Bay, exiting Marin at sea just west of Dillon Beach.

In addition, the eastern, more heavily populated part of Marin is less than ten miles from the northern section of the Hayward fault, & the northern part of Marin is less than ten miles from the Rodgers Creek fault.

A moderate earthquake occurring in or near these faults could result in deaths, casualties, property & environmental damage, & disruption of normal government & community services & activities. The effects could be aggravated by collateral emergencies such as fires, flooding, hazardous material spills, utility disruptions, landslides, transportation emergencies & possible dam failures.

Community needs would most likely exceed the response capability of the County's emergency management organization, requiring mutual assistance from volunteer & private agencies, the Governor's Office of Emergency Services & the Federal Government.

In any earthquake, the primary consideration is saving lives. Time & effort must also be given to providing for people's mental health by reuniting families, providing shelter to the displaced persons & restoring basic needs & services. A major effort will be needed to remove debris & clear roadways, demolish unsafe structures, assist in reestablishing public services & utilities & provide continuing care & temporary housing for affected citizens.

After any earthquake there will be a loss of income. Individuals can lose wages due to businesses inability to function because of damaged goods or facilities. Due to business losses, the County of Marin & the cities in the Marin Operational Area will lose revenue. Economic recovery from even a minor earthquake is critical to these communities.

Expected Damage: Medical Facilities There are three hospitals located within Marin County. Marin General is in an unincorporated area of the county. Kaiser Permanent is within the City of San Rafael & Novato Community is within the City of Novato. They have a combined total bed capacity of approximately 400 beds. In addition, there are 30 licensed health facilities, & almost 300 licenses issued for community care of various types.

Communications Telephone systems will be affected by system failure, overloads & loss of electrical power. Immediately following an event, numerous failures will occur, compounded by system use overloads. This would include the use of cellular phones & pagers.

Electrical Power Marin County is particularly vulnerable to the loss of electrical power throughout the entire county because of the potential loss of the PG&E substation at Ignacio, which provides power directly to Marin. In addition, transmission lines are vulnerable to many hazards.

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Repairs to electrical equipment may require physically clearing roadways, & movement of special equipment. Restoration of local electrical power will be coordinated with regional & local utility representatives. Up to 60% of the system load may be interrupted immediately following the initial earthquake shock wave.

Natural Gas These leaks pose a fire threat in the susceptible areas of intense ground shaking & /or poor ground near the shoreline. Breaks in the system will affect large portions of the County. Restoration of natural gas service could be significantly delayed.

Potable Water availability & distribution for supporting life & treating the sick & injured is of major concern to the County of Marin. It is expected that the primary water sources could be compromised due to damage to their treatment plants, pump stations & /or the pipelines that distribute potable water. The water district/supplies in the Marin County Operational Area are: North Marin Water District serving the Novato & Point Reyes Station areas; Marin Municipal Water District serving central & southern Marin; the Stinson Beach Public Utilities District; Bolinas Public Utilities District; Inverness Public Utilities District; serving smaller districts in West Marin.

Marin Municipal Water District has 80 square miles of watershed, & operates seven reservoirs, 139 storage tanks, 95 pump stations, three water treatment plants (San Geronimo, Bon Tempe & Ignacio) & a water reclamation plant in San Rafael.

North Marin Water District has treatment plants at Stafford Lake, Point Reyes & Tomales. They recently initiated a seismic upgrade plan for their 18 water tanks with a five-year completion date. In addition, volunteers in Point Reyes Station have been trained to evaluate storage risks & shut tank supply valves if loss of storage is threatened. They will coordinate shut offs with the local fire department.

Emergency inter-ties between NMWD & MMWD in central Marin & between NMWD & Inverness PUD in west Marin are available as emergency backups. All major water supplies in Marin are members of the Water Agency Response Network that provides mutual aid in times of emergencies.

Transportation System Significant damage is expected on the road system. It is expected that the Golden Gate Bridge & the Richmond/San Rafael Bridge may be unusable for 24 hours because of damage to the approaches. Highways 1 & 37 may be impassable for at least 72 hours due to liquefaction, rock slides & debris in the road way. Highway 101 may be impassable in spots for at least 12-24 hours due to collapsed bridges, settling of the roadbed in filled areas, rock slides, & debris (including abandoned cars) in the roadways. Two of the major east-west routes, Sir Francis Drake & Lucas Valley Road, may be impassable because of road failure, debris & rock slides, fallen trees & power lines.

Dam Failure Dam failure can result from a number of manmade or natural causes. There are six major dams in Marin County: Phoenix, Stafford, Alpine, Peters, Nicasio & Soulajule. The cities & unincorporated areas likely to be affected by a dam failure are: Corte Madera, Kentfield, Lagunitas, Larkspur, Novato, Point Reyes Station, Ross & San Anselmo. The critical areas from the standpoint of time from dam failure to inundation are: Town of Ross, the San Marin residential area of Novato, Lagunitas & Samuel P. Taylor State Park. Soulajule Reservoir was designed as a reserve supply source for times of drought. The capacity is 10,300 acre feet.

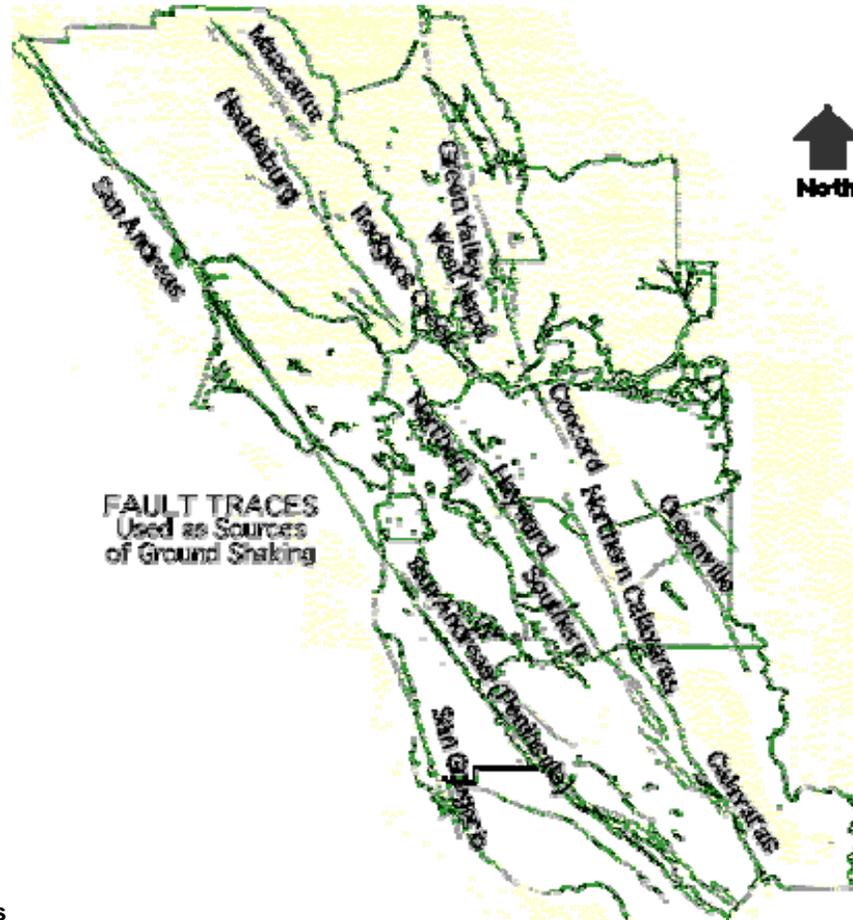
Sanitation Systems There are several wastewater treatment plans in Marin County: Sausalito/Marin City; Sewerage Agency of Southern Marin (2); Sanitary District No 5 in

**CITY OF LARKSPUR, CALIFORNIA
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Tiburon; Central Marin Sanitation Agency in San Rafael; Las Gallinas Valley Sanitary District in San Rafael; & Novato Sanitary District (2). There are small package facilities distributed around the county.

Sewage collection systems throughout the County can be expected to sustain widespread damage if ground movement damages mains or pipelines. Most of the facilities have emergency power, but a prolonged period without electricity could result in spills that would cause sewage to flow along roads & storm drains & eventually into the Bay.

(Source Marin County General Plan)

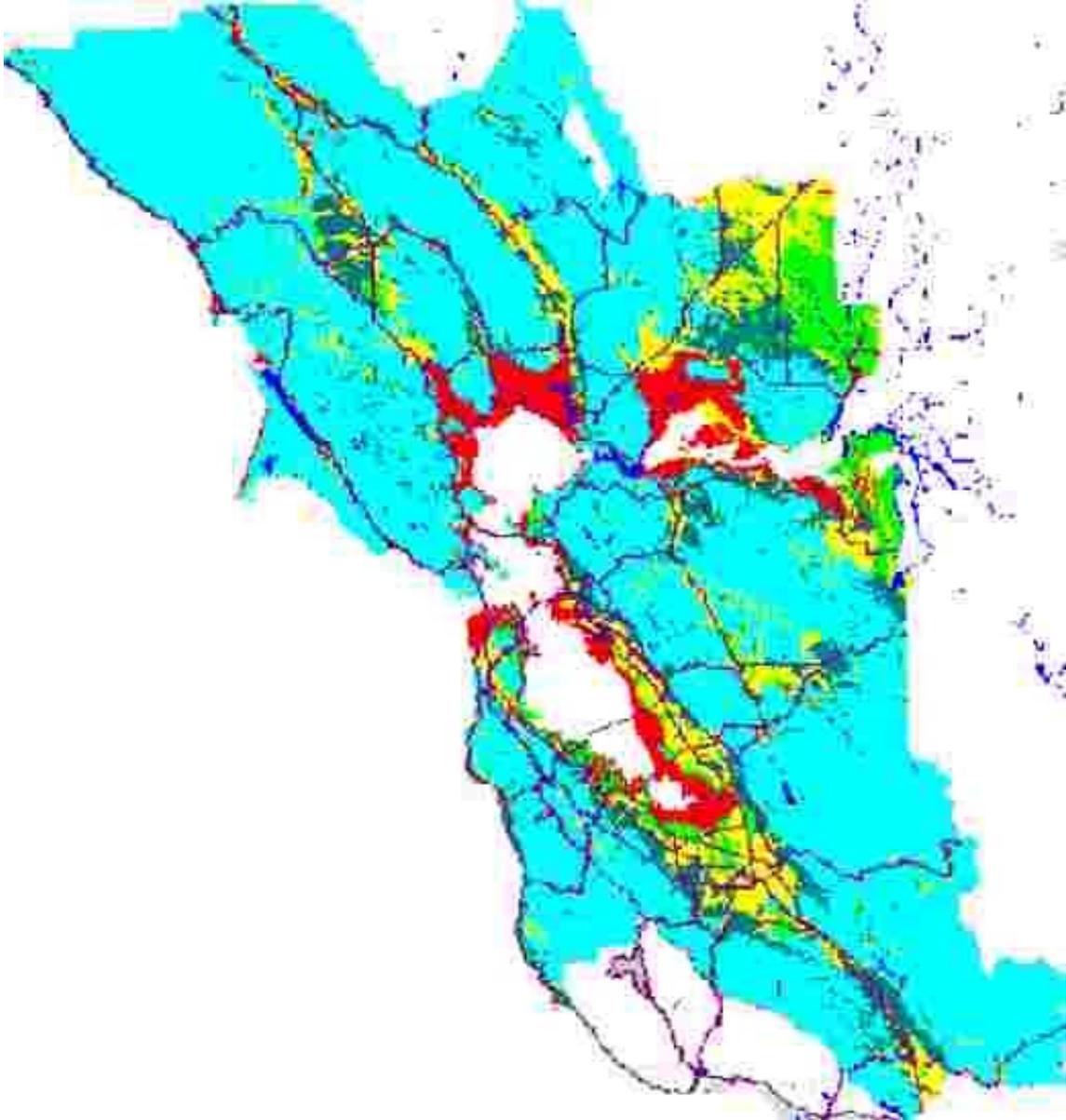


Bay Area Fault Traces
<http://www.abag.ca.gov/bayarea/eqmaps/pickfault.htm>

Earthquake Shaking Intensity Maps (Association of Bay Area Governments)

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Earthquake Liquefaction Maps (Association of Bay Area Governments)



<http://www.abag.ca.gov/bayarea/eqmaps/liquefac/bayaliqs.gif>

**CITY OF LARKSPUR, CALIFORNIA
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Floods

General Situation Marin County has a long & varied coastline with the Pacific Ocean. Tomales, Drakes & Bolinas Bays to the West & San Francisco, Richardson, San Rafael & San Pablo Bays to the East. The County is laced with numerous streams, creeks & drainages. These creeks & waterways are usually subject to some form of flooding during the annual wet, winter rain season. The degree of flooding is dependent upon topography, vegetation, the duration & intensity of rain & consequent storm water runoff. Many developed areas are located in flood plains.

Portions of Mill Valley, Tiburon, San Rafael, Novato & the Ross Valley usually suffer some flood damage annually. Additionally, many hill & mountain areas are subject to flash flood conditions. Major flooding would also occur in the event of dam failure within the County.

Winter storms can generate heavy wave action along the coastal areas of Marin which, either by itself or when combined with high tides & /or high winds, can initiate flooding along the ocean & bay coastlines of the County.

Natural Hazards - Wildland Fires General Situation Wildland fire hazards exist in varying degrees over approximately 90% of Marin County (open space, parklands & agricultural areas). The fire season extends approximately 5 to 6 months, from late spring through fall. Hazards arise from a combination of reasons: the undeveloped & rugged terrain, highly flammable brush-covered land, & long, dry summers. There are heavy fuel loads, especially in watershed areas unaffected by fire for many years. Many homes are built on slopes with vegetation in close proximity. These slopes are often steep, with narrow twisting streets & many dead ends which present difficulties for emergency equipment access & evacuation procedures. In ridge top areas, water supplies can be rapidly depleted, hampering fire control efforts. Structures with wood shake roofs ignite easily & produce embers that can contribute to fire spread. The aftermath of wildland fire produces a new area of potential landslide as burned & defoliated areas are exposed to winter rains.

Natural Hazards - Landslides General Situation Landslides include all movements of soil, rock or debris as a result of falling, sliding or flowing. The triggering cause may be heavy rainfall or seismic activity. An untimely occurrence of a large earthquake during or soon after a sustained period of moderate to heavy rainfall could produce a landslide problem of monumental proportions.

Debris avalanches, debris flows & associated storm-triggered landslides' have caused most of the deaths & much of the structural damage attributed to land sliding in California. Such incidents have occurred frequently in the past, & as growth & development place more people, more structures & more roadways in areas susceptible to landslides, the potential destruction & cost of storm related landslides becomes greater & greater.

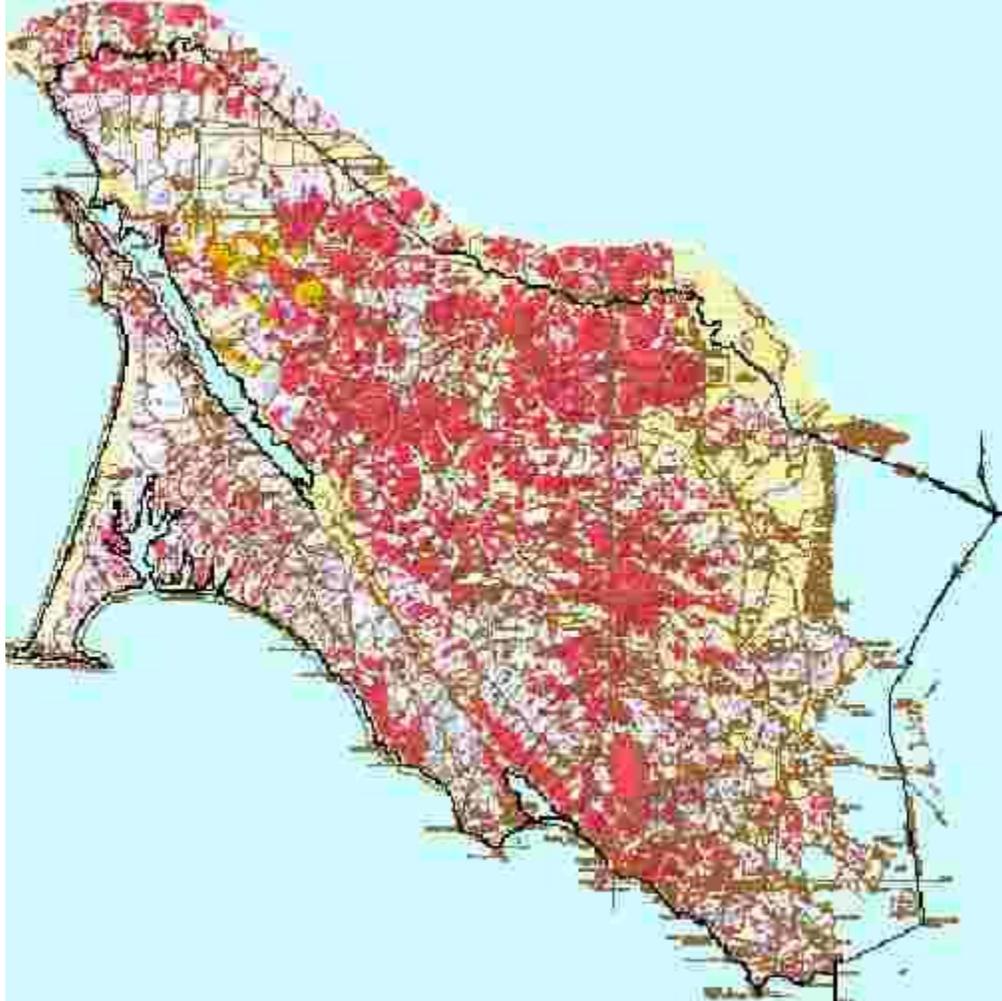
During a severe storm such as the one which occurred in January 1982, thousands of debris avalanches & debris flows may be triggered in both rural & urban areas, smashing homes, blocking roads, severing utilities & water supply, & injuring or killing people. Damage control & disaster relief may be required from local agencies, private organizations, & state & federal governments. Emergency operations may be seriously hampered by closure of major highways & main roads & loss of communications. Evacuation of dangerous areas may be necessary. Extensive efforts may be required to rescue trapped persons, recover bodies, remove debris, assist in reestablishing vital public services & utilities, & offer continuing care & shelter to affected persons.

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Marin County lies in the California Coast Ranges & has two contrasting topographic settings: steep hills & ridges; & flat marshlands, bay plains & mud flats. The hills & ridges of central & southeastern Marin are characterized by very steep slopes & by sharp differences in the strength & stability of the geological materials underlying the surface soils. These differences are generally expressed by the lack or presence of landslide deposits, which are widely but unevenly distributed on the slopes. Most landslide damage has taken place within pre-existing landslide deposits.

Landslides constitute one of the principal hazards to structures, roads, & utilities on these hillsides. A typical soil debris avalanche in Marin involves a few hundred cubic yards of soil & colluvium & is the result of total saturation of a part of the regolith on a hillside. During the last 20 years, they have occurred abundantly when about 4 inches or more of rain has fallen in 10 hours or less. In other places they have occurred during normal rainfall as a result of excessive water introduced into the hillside through domestic use.

Summary Distribution of Slides & Earth Flows In Marin County, California



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Extreme Weather & Storms

General Situation: Marin County is susceptible to extreme weather/storm conditions. Extreme weather/storm conditions is a generalized term used to describe thunderstorms, tornadoes, heavy precipitation, high winds, extreme heat or cold, & drought. Extreme weather may cause a variety of damage, depending upon the type of weather situation. Damage may range from temporary power & utility outages due to thunderstorm & high wind activity to the sometimes, although rare, destruction from a tornado. Extreme weather such as a drought can have long-term economic repercussions.

Tsunami

General Situation: A tsunami is a series of traveling ocean waves of extremely long length & period, generated by disturbances associated with earthquakes occurring below or near the ocean floor. As the tsunami crosses the deep ocean, its length from crest to crest may be a hundred miles or more, its height from trough to crest only a few feet. It cannot be felt aboard ships in deep water & cannot be seen from the air, but in deep water, tsunami waves may reach speeds exceeding 600 miles per hour.

As the tsunami enters the shoaling water of coastlines in its path, the velocity of its waves diminishes & wave height increases. It is in these shallow waters that tsunamis become a threat to life & property, for they can strike with devastating force, crest to heights of more than 100 feet, & travel over one mile inland. This danger is not over until the entire wave-series has passed. All tsunamis, like hurricanes, are potentially dangerous, even though they may not damage every coastline they strike. At present there is no way to determine in advance the amplitude or size of tsunamis in specific locations. A small tsunami at one beach can be a giant a few miles away.

It is essential to evacuate persons in low-lying coastal areas & around the rims of bays & harbors, for these areas consistently sustain the greatest damage by tsunamis. Potential danger exists for all areas within one mile of the coast & less than 50 feet above sea level for tsunamis of distant origin, & for all areas within one mile of the coast & less than 100 feet above sea level for tsunamis of local origin.

Tsunami Warning System: An international Tsunami Warning System is maintained by the National Oceanic & Atmospheric Administration (NOAA) of the U.S. Department of Commerce. NOAA's Honolulu Observatory (HO) is the center of the system. A 24-hour standby is maintained at HO, waiting for the first reactions of instruments throughout the Pacific. The occurrence of a major earthquake anywhere in the Pacific Ocean area brings an immediate response from the system.

HO provides information to California coastal jurisdictions via the National Warning System (NAWAS) & OES, which sends all TSUNAMI WATCH & WARNING messages out on state NAWAS & CLETS Teletype. Marin County will receive these messages at the County Communications Center which will relay the messages to appropriate agencies.

Special Situation: The greatest potential damage from a tsunami will occur on the western side, affecting such communities as Dillon Beach, Bolinas & Stinson Beach. Areas within the Golden Gate or Tomales Bay are not expected to receive large wave impact, but may sustain damage. The number of hours available for emergency response will depend upon the location of the earthquake epicenter that has generated the tsunami. There will usually be sufficient warning time for evacuation procedures. The importance of evacuating potential danger areas by all persons, including sightseers & emergency

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personnel cannot be overemphasized. Boats should be moved to deep water & vehicles & essential equipment to safe areas. On the west coast of Marin, Highway 1 is the main transportation artery. Post incident response may be hampered & communities may be isolated for a period of time if sections of Highway 1 are rendered impassable as a result of inundation damage, debris, or rock slides. The eastern coast of Marin County probably will have little inundation damage, but the currents generated may cause damage to marinas & yacht harbors, & structures along the shoreline.

Technological Hazards - Dam Failure

General Situation: Dam failures can result from a number of natural or manmade causes such as earthquakes, erosion of the face or foundation, improper siting, rapidly rising flood waters, & structural/design flaws. Seismic activity may also cause inundation by the action of a seismically induced wave that overtops the dam without causing failure of the dam, but significant flooding downstream. The major dams in Marin County with known populations in their respective inundation areas are: Novato Creek, Phoenix, Alpine, Peters, Nicasio, & Soulajoule. Soulajoule Reservoir was designed as a reserve supply source for times of drought. The capacity is 10,300 acre feet.

Stafford Lake Dam

Dam Name: Novato Creek Dam
Lake Name: Stafford Lake
Owner: North Marin County Water District
Phone (415) 897-4133
Capacity 4230 Acre Feet
Height of Dam: 71 Feet (Rock & Earth Fill)

The dam failure evacuation area extends approximately 4 1/2 miles, passing Through the City of Novato & ending in the agricultural area between the City & San Pablo Bay.

The threat to the City of Novato is severe. The most critical zone is the San Marin residential area in the vicinity of Miwok Park & will be flooded very shortly after dam failure. The flood waters will reach the first built up area at San Marin Drive/Sutro Avenue 11 minutes after dam failure. 32 minutes after dam failure, the flood waters will begin to inundate the business district & city government buildings, & will reach U.S. Highway 101 approximately 50 minutes after dam failure.

Phoenix Lake Dam

Dam Name: Phoenix Dam
Lake Name: Phoenix Lake
Owner: Marin Municipal Water District
Phone (415) 924-4600
Capacity 411 Acre Feet
Height of Dam: 95 Feet (Rock & Earth Fill)

Ross Creek carries the discharge from Phoenix Lake for approximately 1½ miles to Cote Madeira Creek. From that point, Cote Madeira Creek passes through residential & commercial areas for approximately 3 miles & empties into tidelands adjoining San Rafael Bay.

The most serious threat is to the Town of Ross where much of the populated area & almost all of the business area could be flooded very shortly (5-15 minutes) after dam failure. From there, inundations will occur in Kent field, Larkspur & Corte Madera.

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Alpine

Dam Name: Alpine Dam
Lake Name: Alpine Lake
Owner MMWD
Capacity 8,900 Acre Ft
Height of Dam 143 Feet

Peters

Dam Name: Peters Dam
Lake Name: Kent Lake
Owner MMWD
Capacity 32,900 Acre Ft
Height of Dam 1233 Feet

Nicasio

Dam Name: Nicasio Dam
Lake Name: Nicasio Reservoir
Owner: MMWD
Capacity 22,400 Acre Ft
Height of Dam 115 Feet
Type of Dam Concrete Rock Earth Fill Rock Earth Fill

All three dams are located on the west slope of the Coast Range on streams that drain into Tomales Bay & the Pacific Ocean.

Alpine & Kent Lakes are situated on Lagunitas Creek. Nicasio Dam is located on the Arroyo Nicasio, which flows into Lagunitas Creek approximately 3 miles from Point Reyes Station.

Flood waters from Alpine Lake (near the headwaters of Lagunitas Creek) would flow for 2 1/2 miles emptying into Kent Lake, held by Peters Dam. Failure of Alpine Dam would not pose a threat to human life in the area between the dam & Kent Lake; however, it would cause massive overflow & possible breaching at Peters Dam.

The first major threat resulting from failure of Peters Dam would be caused by back-up water flooding houses for almost one mile along San Geronimo Creek up to the community of Lagunitas within 3-5 minute after dam failure.

The next threat is to the Samuel P. Taylor State Park, where flood waters will reach the park headquarters & adjacent campgrounds 10 minutes after dam failure.

The next areas to be flooded will be the settlements of Jewel & Tocaloma at 13 minutes & 17 minutes after dam failure.

The flood water will inundate the Town of Point Reyes Station (which is located on the San Andreas Fault) 40 minutes after dam failure.

Flood water from a Nicasio dam break would initially flow down Arroyo Nicasio, a narrow canyon, & reach Lagunitas Creek in 7 minutes. There are no settlements along this

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stream & dam failure does not pose a threat to human life during this initial course. Flood water will inundate the Town of Point Reyes Station 35 minutes after dam failure.

The failure of any one of these three dams will flood the Town of Point Reyes Station 35 to 40 minutes after dam failure.

Inundation Maps for the Marin Operational Area are available on the internet at <http://www.oes.ca.gov> or by calling the Marin OES office at 499-6584.

Technological Hazards - Hazardous Materials

General Situation: The production & use of hazardous materials has become a normal part of society. A hazardous material is any substance that may be explosive, flammable, poisonous, corrosive, reactive, radioactive, or any combination thereof, because of its quantity, concentration or characteristics. Hazardous materials require special care in handling because of the hazards they pose to public health, safety & the environment.

A hazardous materials incident involves the uncontrolled release of a hazardous substance(s) during storage or use from a fixed facility or mobile transport. Releases of hazardous materials can be especially damaging when they occur in highly populated areas or along transportation routes used simultaneously by commuters & hazardous materials transports.

Because of the multitude of hazardous substances being transported, incidents are more likely to occur along highways & railways. Fixed facilities do have occurrences of hazardous materials incidents, too. However, stringent facility safety requirements help to limit these occurrences at fixed facilities. Fixed facilities include small chemical manufacturing or processing facilities, manufacturing & light industrial facilities.

The agricultural businesses in Marin County may also be a source of hazardous materials incidents. Accidental releases of pesticides, fertilizers & other agricultural chemicals may be harmful to the public health, safety & the environment.

Another source of hazardous materials incidents is the illegal manufacturing of drugs in clandestine laboratories. In many instances, the residue & hazardous waste from these laboratories are illegally dumped, posing a public health & safety hazard & a threat to the environment.

Specific Situation: CUPA The State of California designates a CUPA (Certified Unified Program Agency) for each county & certain cities. The CUPA is responsible for writing & updating a Hazardous Materials Area Plan (for the public safety response in the jurisdiction) & providing guidelines for the Business Plan (for local businesses designated as handlers of hazardous materials.) In Marin County, the designated CUPA's are the Waste Management Division of the Department of Public Works, & the San Rafael Fire Department.

Specific Situation: Transportation Routes Hazardous materials incidents in Marin County would most likely occur on the accesses to & roadways along Highway 101. Additionally, other major roadways, such as Highways 1, 580, 37, & Sir Francis Drake Blvd, traverse the County, facilitating a smaller volume of traffic but over more hazardous routes. Surface streets are used for the local transportation of hazardous materials.

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The three hospitals located in Marin County have a variety of hazardous materials, radioactive materials & solvents. They maintain current lists of the hazardous materials in their facilities.

The Marin Community College campuses have hazardous materials on-site. They are primarily flammable materials, corrosives, & poisonous materials.

Specific Situation: Oil Spill Extensive use of the coast & bay waters put Marin County at continuous risk for an oil spill. Minor spills that could create a hazard could be caused by such events as the release of dirty bilge water or the sinking of a pleasure craft or fishing boat. Larger spills could result from releases at a marina or industrial site. A potentially massive spill could take place following release from a freighter, tanker or transfer facility.

In the event of an oil spill, the Marin County Operational Area Oil Spill Contingency Plan places the first response priority with the protection of human health & safety. This is followed by the protection of environmental resources & , then, the protection of economic resources.

The coastal & bay areas of Marin County contain 42 environmental & 71 economical sites that are considered sensitive to oil spills. The system for responding to spills has been developed by the CUPA's Coast Guard. The procedures & role of participating agencies in Marin County are covered in the Oil Spill Contingency Plan.

Technical Hazards – Transportation Emergencies

General Situation: A major transportation disaster involving truck, bus, small plane, helicopter, a number of automobiles or any combination of vehicles can cause casualties & a major road blockage. The time of day will compound the problems of traffic control & the ability of emergency response teams to minimize suffering, disability & death by treatment & transportation of victims to hospitals.

Special Situation: The main transportation arteries through Marin County are U.S. 101, State Highways 1, 37, Interstate 580 & Sir Francis Drake Blvd. U.S. 101 is heavily used most hours of the day & the control of vehicular traffic in & around will be the primary problem at any time. During commuter hours, the problem will be severely compounded. It will be essential to expedite the flow of essential emergency response vehicles through the area & divert nonessential traffic. In those cases where emergency traffic movement requirements exceed available road space, traffic must be rerouted with alternate routes & closure points.

Domestic Security Threat - Civil Disturbance

General Situation: Civil disturbances include incidents that are intended to disrupt a community to the degree that law enforcement intervention is required to maintain public safety. Civil disturbances are generally associated with controversial political, judicial, or economic issues & /or events.

The effects of civil disturbances are varied & are usually based upon the type, severity, scope & duration of the disturbance. The effects of civil disturbances include traffic congestion or grid lock, illegal assemblies, disruption of utility service, property damage, injuries & potentially loss of life.

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Specific Situation: During a civil disturbance that affects the County of Marin, there are certain facilities within the County that may be more at risk than other facilities, including:

- Marin County Civic Center (San Rafael)
- Marin Veteran's Auditorium (San Rafael)
- College of Marin (Kentfield campus)
- College of Marin (IVC campus)
- Golden Gate Bridge (Sausalito)
- **San Quentin Prison (Larkspur)**

Domestic Security Threats - Terrorism

General Situation: Terrorism involves a struggle between competing principles & ideologies below the level of conventional war. According to the Federal Emergency Management Agency (FEMA) publication Principle Threats Facing Communities & Local Emergency Management Coordinators, most terrorist activities are bombing attacks. Principal targets include military personnel & facilities, commercial establishments, & federal government buildings & property.

The effects of terrorist activities can vary significantly, depending on the type, severity, scope, & duration of the activity. Terrorist activities may result in disruption of utility services, property damage, injuries & the loss of lives.

To date, terrorism has been targeted primarily against United States of America interests abroad. However, the World Trade Center bombing in New York & the Oklahoma City bombing are reminders that terrorist attacks may occur anywhere in the United States. Although no known terrorist attacks have occurred in Marin County, we are still vulnerable to the threat of terrorism as part of the Bay Area.

(Source: Marin County General Plan)

Section 4 – Hazard Vulnerability Analysis

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.

Definitions for Hazard Prioritization

Magnitude

Physical and Economic Greatness of the event

Factors to consider

- Size of Event
- Threat to life
- Threat to Property
 1. Individual
 2. Public Sector
 3. Business and Manufacturing
 4. 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
- 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

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Area Affected

How large an area is physically threatened and potentially impaired or by a disaster risk

Factors to Consider:

- 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:

- 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.

Hazard Ratings

Hazard Rating Definitions

Instructions Used for Hazard Rating

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.

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Total the numbers horizontally for each hazard category. 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

Prioritization of Hazard Matrix Results

Stakeholder Prioritization

The following list is hazards identified and prioritized based on stake-holder input, both public and government:

High Risk Priority Hazards

Earthquake	(Natural)
Flooding	(Natural)
Severe Weather /Destructive Winds	(Natural)
Transportation; Accident/Incident/Loss	(Human-caused)
Utility Loss/Disruption/Substations	(Human-caused)
Wild land/Urban Fire	(Natural)

Moderate Risk Priority Hazards

Biological/Health/Pandemic Flu	(Natural & Human-caused)
Data/Telecommunications Loss	Human caused)
Economic Loss	(Human-caused)
Hazardous Materials Incidents	(Human-caused)
Terrorism /Weapons of Mass Destruction	(Human-caused)
Water/Wastewater Disruption	(Human-caused)

Low Risk Priority Hazards

Aviation Disaster	(Human-caused)
Civil Unrest/Disorder	(Human-caused)
Dam Failure	(Human-caused)
Drought	(Natural)
Explosions	(Human-caused)
Sinkholes	(Human-caused)
Tsunami	(Natural)
Volcanic Activity	(Natural)

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The committee discussed the impact of Utility Loss, Water/Wastewater Disruption, Data Telecommunication Loss, and WMD/Terrorism as hazards which affect the City. It was agreed that the City does not directly provide these services and can only develop mitigation strategies to reduce the impact of the risks.

The committee rated drought as a low risk. A drought occurred in the 1970's. The City's water supply for the citizens and fire fighting were not affected or impacted.

The committee rated Volcanic Activity as a low risk. The City is not located within a 200 mile radius of an active or non-active volcano.

Larkspur is located inland of San Francisco Bay. A tsunami is not a direct hazard to the City of Larkspur.

The committee rated Aviation Disaster, Civil Unrest/Disorder, Dam Failure, Drought, Explosions, Sinkholes, Tsunami, and Volcanic Activity as a low priority hazards in the City of Larkspur. The committee will reevaluate each hazard and its vulnerability to the City of Larkspur as needed.

The committee will develop mitigation strategies for their high and moderate hazards.

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Historical Disaster

Larkspur had a FEMA claim for flooding in December 1996-January 1997. Corte Madera Creek flooded the area.

The recent Severe Weather storms of December 2005-January 2006 resulted in a federally declared disaster DR-1628.

The State of California Office of Emergency Services is provided on the next page.

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State of California
Office of Emergency Services

List of Projects

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APPLICANT: CITY OF LARKSPUR

DATE COMPLETED:

Feb. 23, 2006

CONTACT NAME AND PHONE NUMBER: Hamid Shamsapour, (415)927-5017

AN AMENDED LIST OF PROJECTS?

LINE	LOCATION	DESCRIPTION OF DAMAGE AND SCOPE OF WORK	COST ESTIMATE	CATEGORY	WAS WORK COMPLETED BY FORCE ACCT (FBI CONTRACT #) OR OTHER?	ENTER "Y" IF THERE ARE ENVIRONMENTAL ISSUES OR "N" FOR HISTORIC ISSUES OR BOTH	WAS THERE INSURANCE COVERAGE? IF YES, ENTER DEDUCTIBLE AMOUNT	WAS THE FACILITY DAMAGED IN A PREVIOUS DISASTER? IF YES, ENTER DISASTER NAME(S) OR ALIENS	ARE THERE COST EFFECTIVE MITIGATION MEASURES THAT MAY PREVENT FUTURE DAMAGE?
1	700 BLK. MAGNOLIA	MAJOR MUD SLIDE ONTO ROADWAY	\$30,000	B	F/C		\$0.00	NO	YES
2	350 VIA LA PAZ	MAJOR MUD SLIDE ONTO ROADWAY	\$400,000	U	I/C		\$0.00	NO	YES
3	VIA BARRANCA	MUD SLIDE FROM BACK YARD ONTO THE ROADWAY	\$150,000	U	I/C		\$0.00	NO	YES
4	151 VIA CASITAS (SPYGLASS CONDOS)	MAJOR MUD SLIDE, SEVERAL BUILDINGS EVACUATED	\$1,000,000	H	F/C		\$0.00	NO	YES
5	339 WEST BALTIMORE	FLOODED AREA	\$50,000	H	F/C		\$0.00	NO	YES
6	PIEDMONT ROAD (END OF PIEDMONT RD / BACK OF PIEDMONT COURT)	DEBRIS FLOW AND FLOODING; TRASH RACK DESTROYED	\$100,000	U	I/C		\$0.00	NO	YES
7	234 W. BALTIMORE	CREEK BANK RETAINING WALL COLLAPSED	\$500,000	D	F/C		\$0.00	NO	YES
8	655 MAGNOLIA	FLOODING, DEBRIS FLOW ONTO STREET SEVERAL HOMES FLOODED DUE TO A COMBINATION OF TIDAL ACTION, INFLOWS FROM CORTE MADERA CREEK, WINDS AND RAIN.	\$100,000	U	F/C		\$0.00	NO	YES
9	RIVIERA CIRCLE	STUCCO FINISH, SIDING, AND WINDOWS AT CITY HALL STARTED FAKING	\$500,000	B	F/C		\$0.00	NO	YES
10	CITY HALL WATER DAMAGE		\$150,000	B	F/C		\$0.00	NO	YES
11	PUBLIC STREETS AND ROADS	OVER 300 CUBIC YARDS OF MUD AND DEBRIS REMOVED FROM STREETS; TREES; POTHOLES; SUBBASE FAILURES AND RETAINING WALL FAILURES. (1) CLEANUP OF STORM DRAINS, AND DRAINAGE STRUCTURES.	\$500,000	B	F/C		\$0.00	NO	YES
12	WARD STREET BIKE PATH/BRIDGE		\$300,000	B	F/C		\$0.00	NO	YES
13	ADDITIONAL UNKNOWN DAMAGE		\$400,000	B	F/C		\$0.00	NO	YES

High Risk Priority Hazards

EARTHQUAKES SEISMIC AND GEOLOGIC HAZARDS (Natural Hazard)

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

The geology of Larkspur plays a major role in assessing the city's exposure to seismic and geologic risks.

Three major groups of geologic materials underlie Larkspur. Sedimentary rock of the Franciscan Formation is the bedrock beneath the ridges and slopes forming Larkspur's northern and southern boundaries and Bon Air Hill.

Earthquakes in Marin County (Source Marin County Operational Area Hazard Mitigation Plan)

The San Andreas Fault traverses Marin County running north and south in the western quarter of the county. It enters Marin on the Pacific Coast near Bolinas, follows the path of Highway 1, and Tomales Bay, exiting Marin at sea just west of Dillon Beach. IN addition, the eastern, more heavily populated part of Marin is less than ten miles from the northern section of the Hayward fault. The northern part of Marin is less than ten miles from the Rodgers Creek fault.

IN a 2003 study of earthquake probabilities by the Working Group on California Earthquake Probabilities and published by the U.S. Geological Survey, the chances are 62% of a major (6.7 or greater magnitude) earthquake occurring in the Bay Area during the period of 2003 to 2032. For the San Andreas Fault, the probability is 11 percent.

The report further states that other faults in the area pose a major threat with potential magnitudes of 7.0 for the Rodgers Creek Fault and between 6.7 and 6.9 for the Hayward Fault.

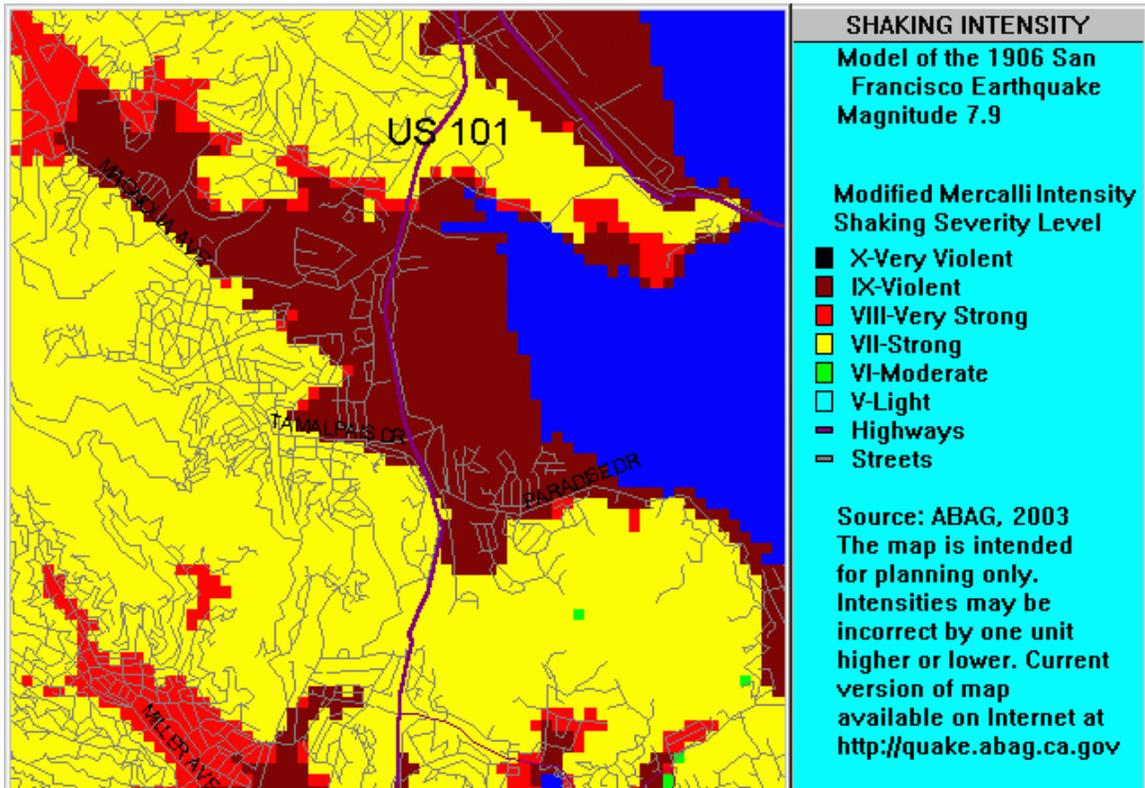
The impact of the Loma Prieta Earthquake of October 17, 1989 was most apparent in the northeast area of Santa Cruz. Depending on fault rupture location, a strong shaking such as this would cause severe damage within Marin County, including life-line damages. The Loma Prieta earthquake was not "the big one", which is a common reference to an event of magnitude around 8 or larger (such as the 1906 San Francisco quake). Earthquake aftershocks often occur with additional and unforeseen damage to our infrastructure.

An earthquake occurring in or near these faults could result in significant deaths, casualties, damage to property and environment, and disruption of normal government and community services and activities. Ground failures (fissuring, settlement, and permanent horizontal and vertical shifting of the ground such as surface breaks caused by faulting) that often accompany earthquakes could cause significant damage to network infrastructure such as water, power, communication, and transportation lines in Marin County. These effects could be aggravated by secondary emergencies such as fires, flooding, tsunami, hazardous material spills, utility disruptions, landslides, automobile accidents, transportation emergencies and dam failures.

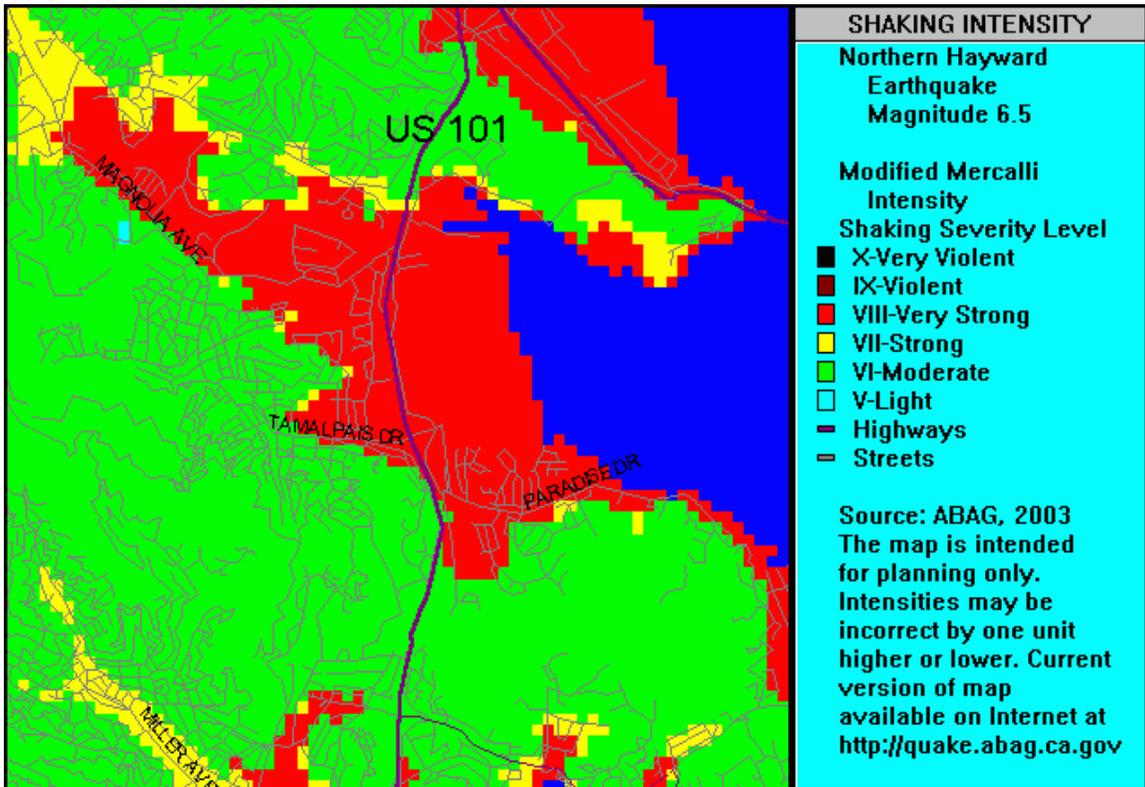
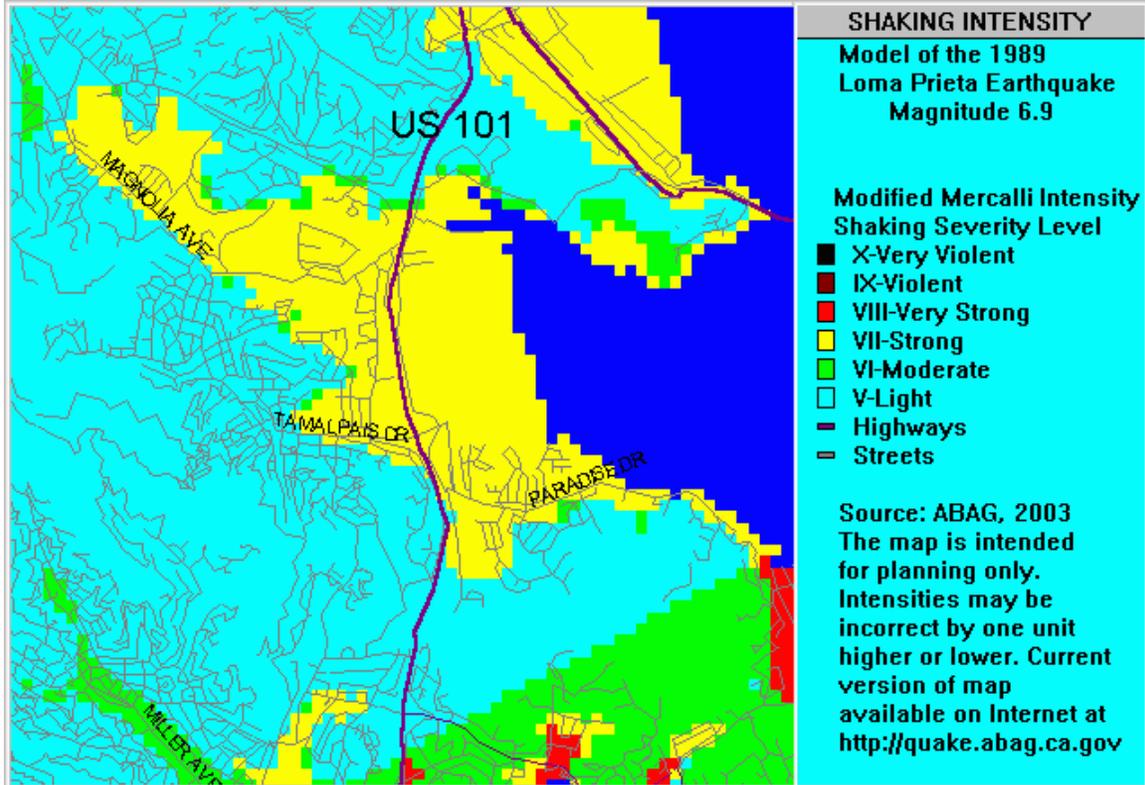
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Marin County Earthquake History (Source Marin County Operational Area Hazard Mitigation Plan)

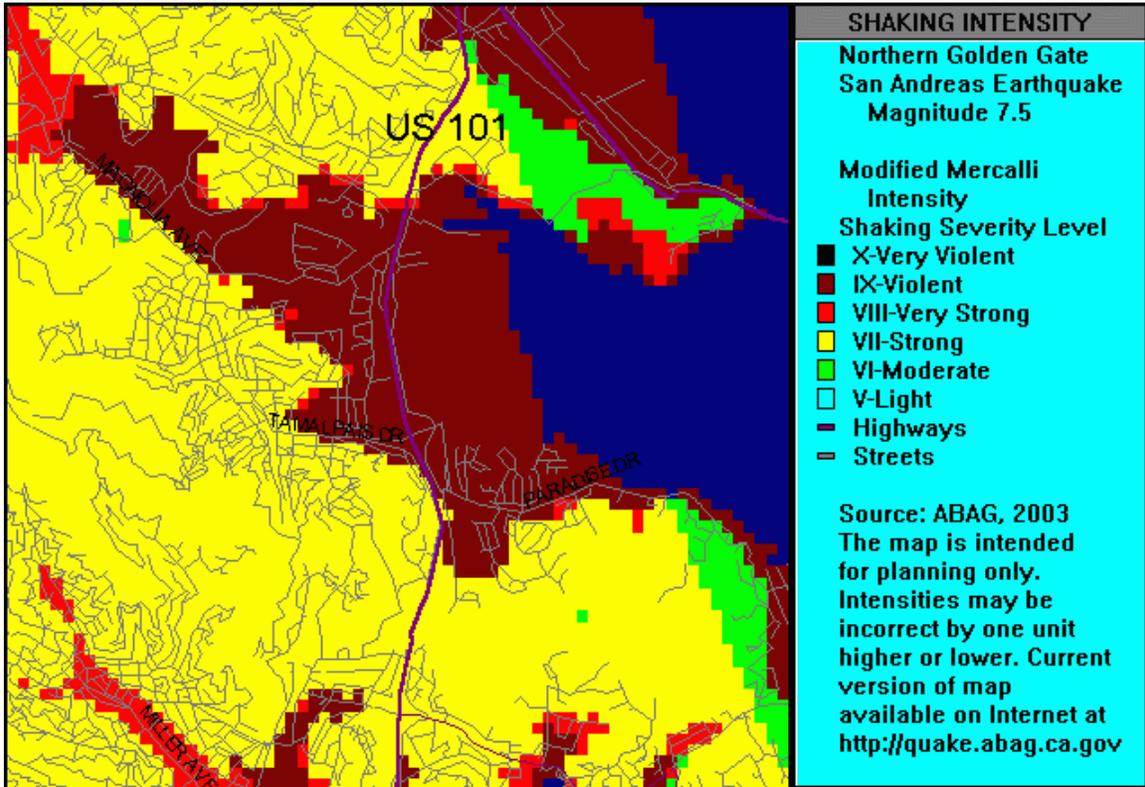
The San Andreas Fault was the source of the 1906 earthquake with a magnitude of 7.8. Marin was sparsely inhabited at that time and experienced relatively moderate property loss and only two deaths. Although the epicenter was south of San Francisco, West Marin experienced some pronounced natural earthquake phenomena. This included a horizontal earth displacement of 21 feet near the head of Tomales Bay. On October 17, 1989, a magnitude 7.1 earthquake occurred on the San Andreas Fault, the largest earthquake to occur in the San Francisco Bay Area since 1906.



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Geology

A large part of the Franciscan Formation underlying Larkspur is *Franciscan melange*, a mix of rock types embedded in crushed rock materials. Melange has highly erratic slope stability characteristics.

Fingers of alluvial stream deposits (clay, sand, silt, and gravel) extend down the hillsides in swales and creek beds to gently sloping alluvial fans and floodplains. These soils were eroded from the steep slopes and transported by flooding streams. The older area of Larkspur (Downtown and the nearby residential neighborhoods) lies in a wide flat alluvial valley. Occasional erosion-resistant hills or knolls such as Palm Hill and some of its small neighbors protrude above the otherwise flat plain.

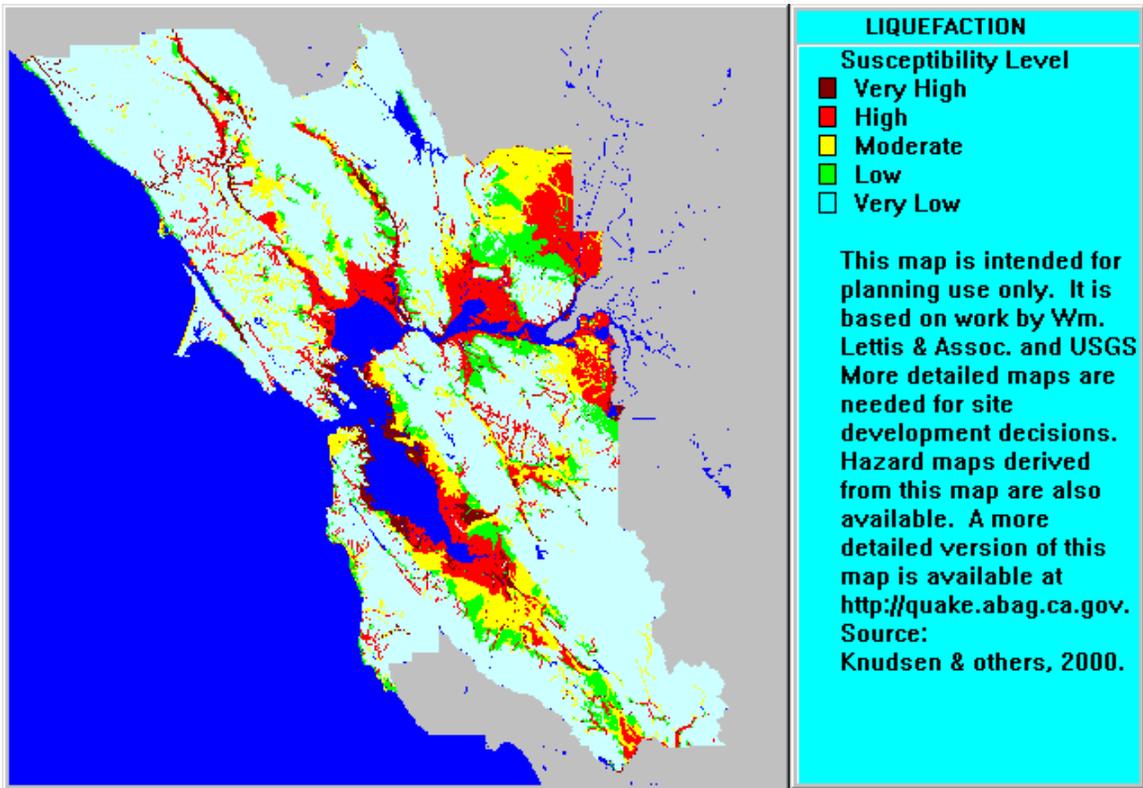
The third type of geological material is Bay mud, which lies in a broad band between Magnolia Avenue on the south and Sir Francis Drake Boulevard on the north (excluding Bon Air Hill). The older Bay mud reaches a thickness of 40 feet at the mouth of Corte Madera Creek. Bay mud is an unconsolidated jelly-like material that is both highly compressible, and subject to lateral flow when loads are placed on it (Information on geology was obtained from *Geologic Report and Selected Geologic Aspects of Larkspur*, James C. Bangert, 1974; *Preliminary Geologic Map of Marin (and other) Counties*, United States Geological Survey, 1974; and *Marin County General plan, Environmental Hazards Element, Draft Technical Report #3, Seismic and Geologic Hazards in Marin County*, August 1988).

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ALL-HAZARDS MITIGATION PLAN**

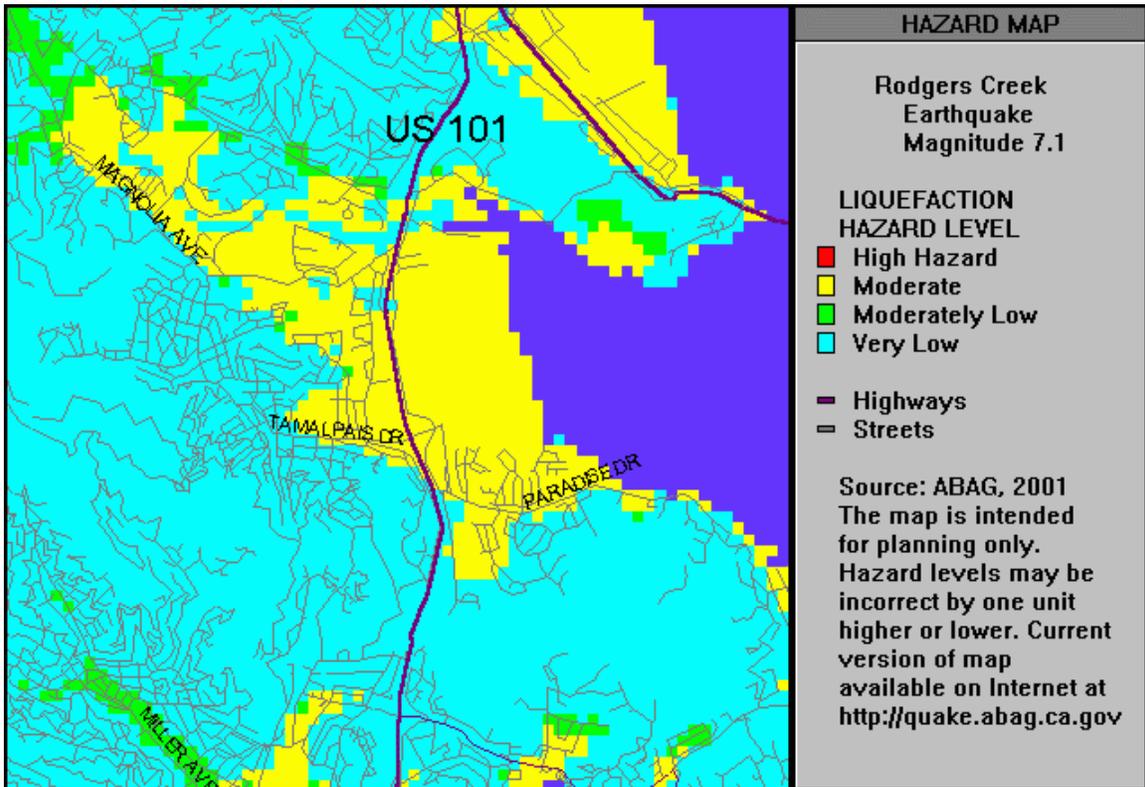
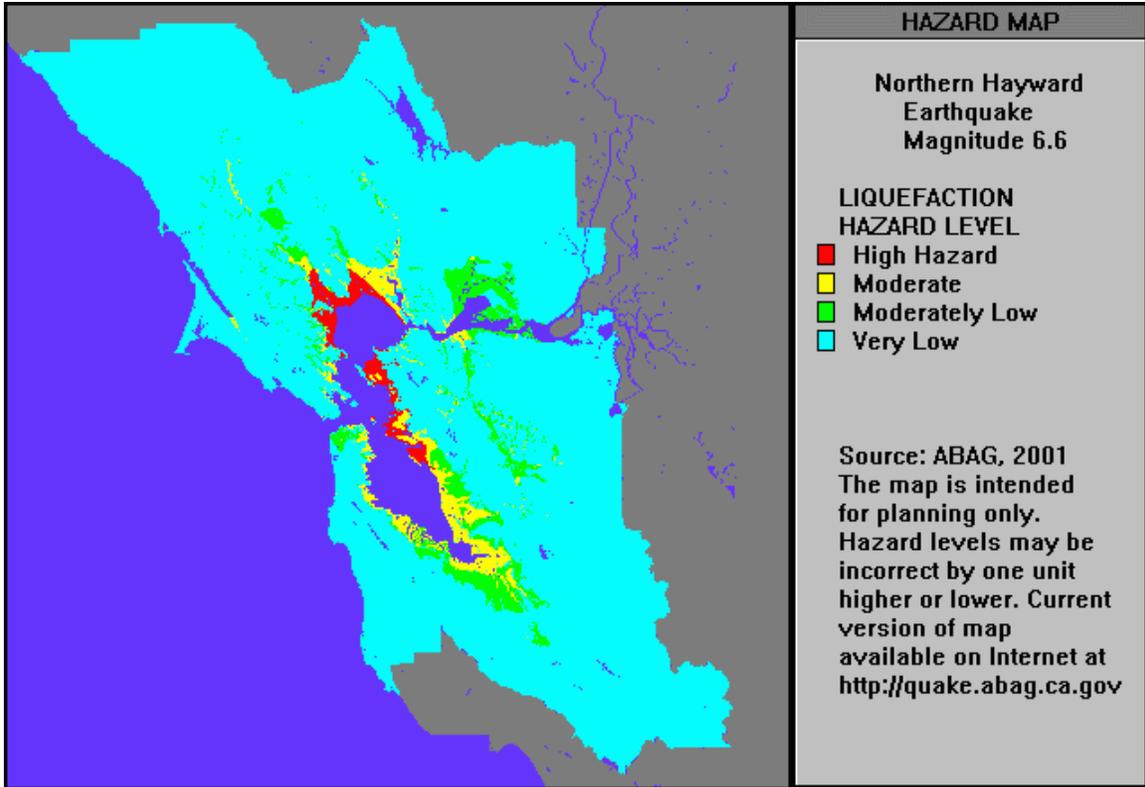
Seismic Hazards A seismic *hazard* is the effect of an earthquake such as surface faulting, ground shaking, ground failure, or tsunami or seiche (tidal waves). All of these must be addressed in the general plan.

Larkspur is not at risk from *surface rupture*. The San Andreas Fault, which is the only active fault in Marin County, lies eight miles to the west of the city. The Hayward fault, also active, lies 13 miles to the east.

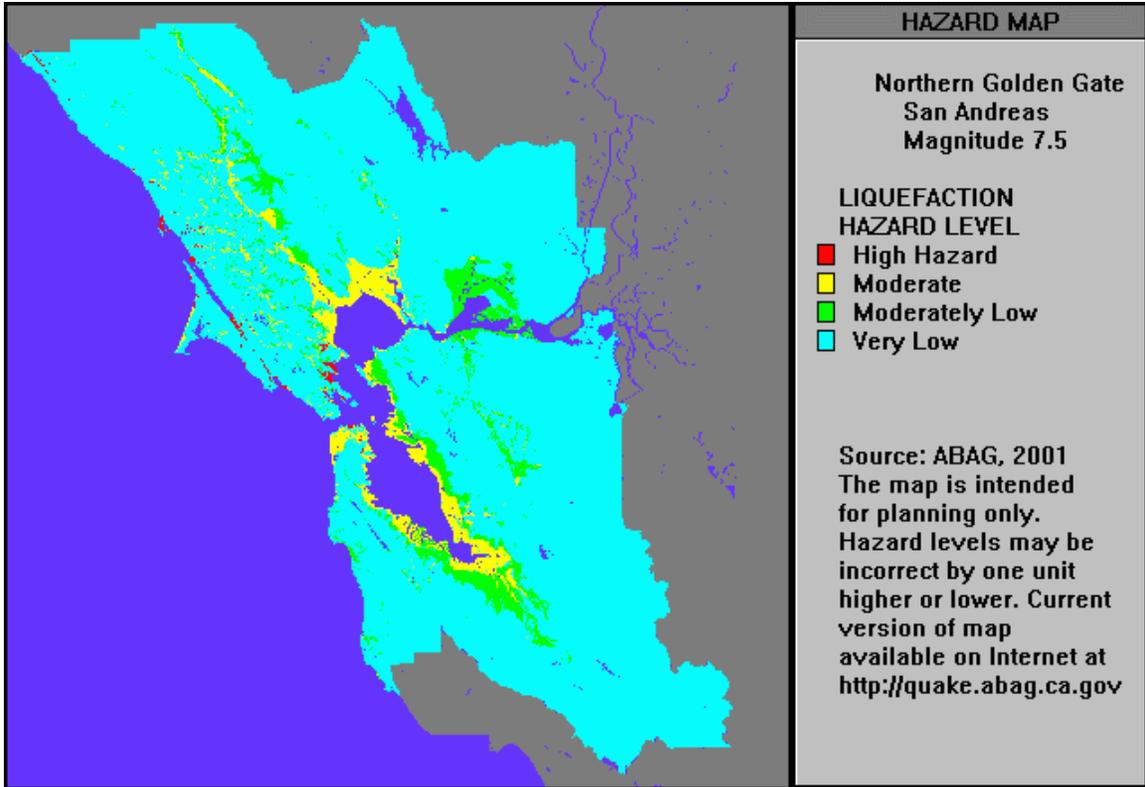
Larkspur *is* at risk from *ground shaking* - underground vibrations or waves generated by the breaking and snapping of rocks along a fault line during an earthquake. Most damage associated with past - and future - earthquakes is from ground shaking. Ground shaking causes direct damage to buildings, roads, and utilities. The greatest losses solely from ground shaking may occur where tall structures are built on thick, relatively soft, saturated sediments, and the least where they are built on firm bedrock (Marin County Technological Report #3). Ground shaking can also trigger liquefaction, landslides, and tsunamis, indirectly affecting these same facilities.



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Larkspur is also at risk from *ground failure*, in the form of liquefaction, settlement, and landslides. Liquefaction is a process by which water saturated clay-free sands or silts are transformed from a solid to a liquid state. Areas susceptible to liquefaction in Larkspur are those underlain by saturated, loosely compacted granular materials such as old stream beds (alluvium) [Geologic Report].

Settlement is the drop in elevation of a ground surface caused by settling or compacting of the underlying material. The most severe and damaging settlement is most likely to result from liquefaction and landsliding. Settlement may occur without seismic activity, as discussed under Geologic Hazards.

Landslides, the jarring loose of basically unstable hillside materials, are another type of ground failure. Landslides induced by earthquakes will occur generally in the same marginally stable areas as landslides induced by other forces, such as rainfall.

A *tsunami* is a large ocean wave generated by an earthquake in or near the ocean. A tsunami would be expected to reach approximately 10 feet in the Bay near Larkspur. The wave run-up would generally be confined to the area east of the railroad crossing on Corte Madera Creek. Tideland areas and filled ground near or below sea level could be inundated. A *seiche* is an earthquake-generated wave in an enclosed body of water, such as a lake, reservoir, or bay. Similar run-up and inundation would be expected from a seiche (Larkspur Seismic Safety Element, 1973). divides Larkspur into three seismic hazard categories based on the underlying geology. Areas with the least earthquake stability are composed of artificial fill, Bay mud, and landslide and stream deposits. The thick, loose soils of Bay mud tend to amplify and prolong the shaking. Areas of moderate stability are composed of sandstone, shale, and melange. The most stable areas are underlain by hard sandstone.

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Effects of Earthquakes

Earthquakes are measured in terms of magnitude and intensity. The measure of magnitude, the Richter scale, is more commonly recognized. It assigns a number to the calculated energy release of an earthquake which is independent of the earthquake's observed effects. The Modified Mercalli Intensity (MMI) scale assigns a Roman number (I to XII) based on a description of the physical effects of earthquakes. The intensity can vary with the magnitude of the earthquake, the distance from the site to the faults, and with geologic materials.

The intensity of the maximum possible earthquake in Larkspur would vary depending on geologic conditions in each location. Bay muds would experience the greatest intensity of shaking, and corresponding severe damage to nearly all structures (MMI XI). The alluvium areas would experience a lesser intensity of shaking with destruction of most masonry and frame structures (MMI X) [ibid.]. The Franciscan rock areas would experience the least shaking, resulting in general damage to foundations and frame buildings (MMI IX).

The ability of buildings to withstand earthquakes depends on when they were built and their structure type. Buildings built before 1933 did not have to meet building code regulations relating to earthquake resistance. Since then, codes have been updated several times, and newer buildings are increasingly more resistant to damage. Generally, older wood frame structures may perform relatively well, while unreinforced masonry buildings (usually brick, stone, or concrete block with no reinforcement) probably do not meet current seismic safety standards, and may not withstand a major earthquake. In conformance with state legislation passed in 1985, Larkspur has identified 15 unreinforced masonry buildings scattered through the area south of Corte Madera Creek. Although several are located downtown, most downtown buildings, including City Hall, are wood frame. State law requires that cities must adopt a mitigation program for buildings of unreinforced masonry.

A major earthquake (8.3 magnitude on either the San Andreas or Hayward Fault), in addition to damaging buildings, can be expected to topple the Highway 101 freeway overpass at Sir Francis Drake Boulevard and buckle pavement on Highway 101 and Magnolia Avenue through Larkspur. The earthquake could set off landslides along Sir Francis Drake Boulevard leaving Greenbrae separated from the rest of Larkspur for up to 24 hours (Scenario developed under the Earthquake Preparedness Program of the California Division of Mines and Geology). Bon Air Road and Doherty Drive could also collapse from liquefaction and settlement. Utility lines carrying water, gas, and sewage could be ruptured by landslides and sudden settlement. If fires break out, emergency response Committees could encounter serious difficulties in fighting them if water lines are broken and landslides block access roads.

Seismic Hazard Goals, Policies, and Programs

Goal 5: Reduce risks of personal injury and property damage associated with seismic activity.

Policy j: Establish acceptable levels of risk and life safety standards, and see that buildings are built to, or brought up to, those standards.

Action Program [13]: Require that all unreinforced masonry buildings are seismically upgraded to protect against loss of life.

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Action Program [14]: Alert owners of homes built prior to a specified date (related to early codes) that building frames should be bolted to foundations.

Action Program [15]: Establish a basic seismic safety notification process through resale inspections.

Action Program [16]: As soon as legally permissible, adopt new versions of the Uniform Building Code which contain updated seismic requirements.

The Uniform Building Code (UBC) is periodically updated, but there may be a lag between the time the Code language is re-written and the time when it is adopted by the local jurisdiction. Immediate local adoption will help ensure that the most current standards are applied to new buildings.

Action Program [17]: Require geotechnical engineering investigations for (a) buildings proposed to be constructed in "high" seismic hazard areas potentially subject to severe ground shaking and ground failure (Bay mud, stream and landslide deposits) as shown on Figure 7-3, and (b) critical structures or structures made of materials other than wood frame.

The required geotechnical investigations should include a site-specific characterization of anticipated strong ground motion, which would include the estimated peak horizontal ground acceleration, the duration of strong shaking, and the site period. A structural engineer should then review the seismic data to determine whether the minimum UBC criteria will be adequate.

Policy k: Seek to preserve existing historic buildings under any new standards that are adopted.

Geologic Hazards

Geologic hazards exist in Larkspur in the form of landslides, debris flows, subsidence, and differential settlement. Landslides, the principal geologic hazard in Larkspur, occur on the hillsides forming the city's boundaries. Subsidence and differential settlement have occurred along Corte Madera Creek in areas underlain with Bay mud.

Natural conditions which affect slope stability are steepness of the slope, characteristics of the soil, degree of water saturation, and seismic activity. Human activities that can contribute to landslides include steep cuts in the slope, improper placement of fill on slopes, concentrating surface runoff, and over watering.

During the winter storms of 1982, landslides (debris avalanches) in Larkspur produced over 10,000 cubic yards of soil, rock, and debris (Hillslope Processes and Urban Planning, Paul J. Seidelman and Jeffrey D. Borum, 1983). Slope movements resulted in several million dollars in damage to homes, roads, and other improvements (see Flooding, page 125). After that, the City undertook a study of the nature, extent, and magnitude of slope stability hazards in a 300-acre area of undeveloped land on the city's southwestern slopes. The results of the study ("Hillslope Processes in Urban Planning") can be generalized to the other hillside areas in the city.

The report found that land surfaces in the study area had been shaped predominantly by erosion processes which could be expected to continue to actively change the landscape. Areas underlain by melange (described earlier) tended to produce more landslides. Physical disturbances of the ground resulting from land use activities have exacerbated

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slope stability problems in some areas. These activities include siting structures and road improvements on - or in the path of - landslides, and the improper design, use, or installation of retaining wall structures, drainage facilities, and cut slopes.

The report includes detailed maps showing landslide and slope movement locations in the study area.

Because debris avalanches result from a sudden failure of natural or human-modified slopes and travel at high speeds, it is difficult to provide advance warning to those in the path of the flow. However, local residents could be warned when heavy rainfall and total storm precipitation indicate increased landslide potential.

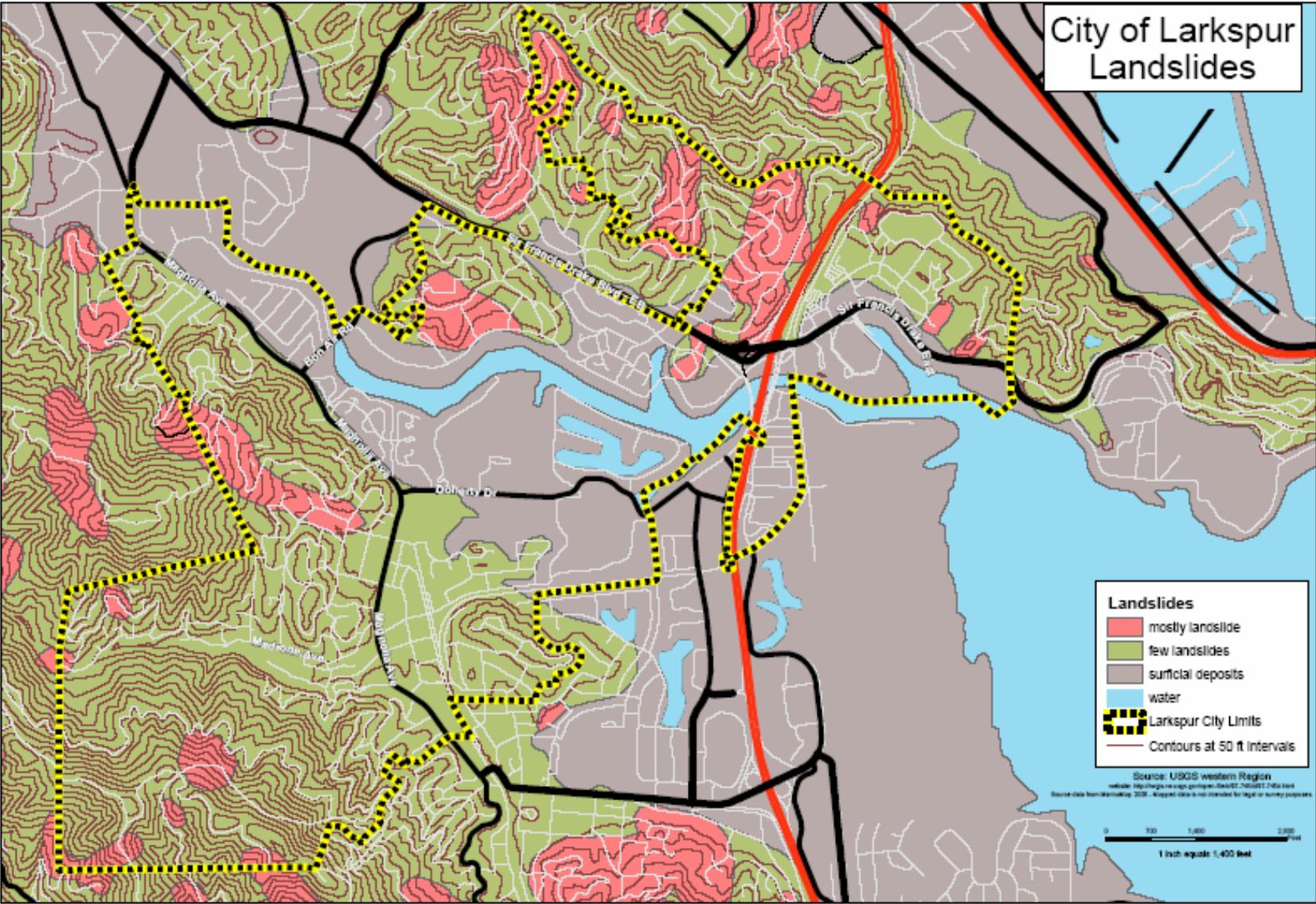
Subsidence and differential settlement have occurred in Larkspur near Corte Madera Creek. Differential (or uneven) settlement may occur in poorly consolidated soils during earthquake shaking or over time. Settlement may be the result of poorly engineered fill, or of building on soils which are too weak to assume the load. In 1974, construction of several condominium developments on Corte Madera Creek had to be halted when cracks up to one inch wide were discovered in outside walls (Geologic Report).

When settlement occurs over a large area it is called subsidence. Subsidence may result in flooding as ground levels are lowered (see section on flooding) shows four slope stability zones for Larkspur. Zone 1 includes areas of artificial fill over Bay mud or stream deposits. Although generally stable, they are prone to settlement. Zone 2 (flat or gentle slopes in valleys and along ridges) is the most stable. Zone 3 is similar to Zone 2 except that slopes are steeper and they are underlain by rock and slope deposits. Zone 4 (landslides, and quarry walls and highway cuts prone to rock falls) is the least stable. It should be emphasized that the zones are generalized.

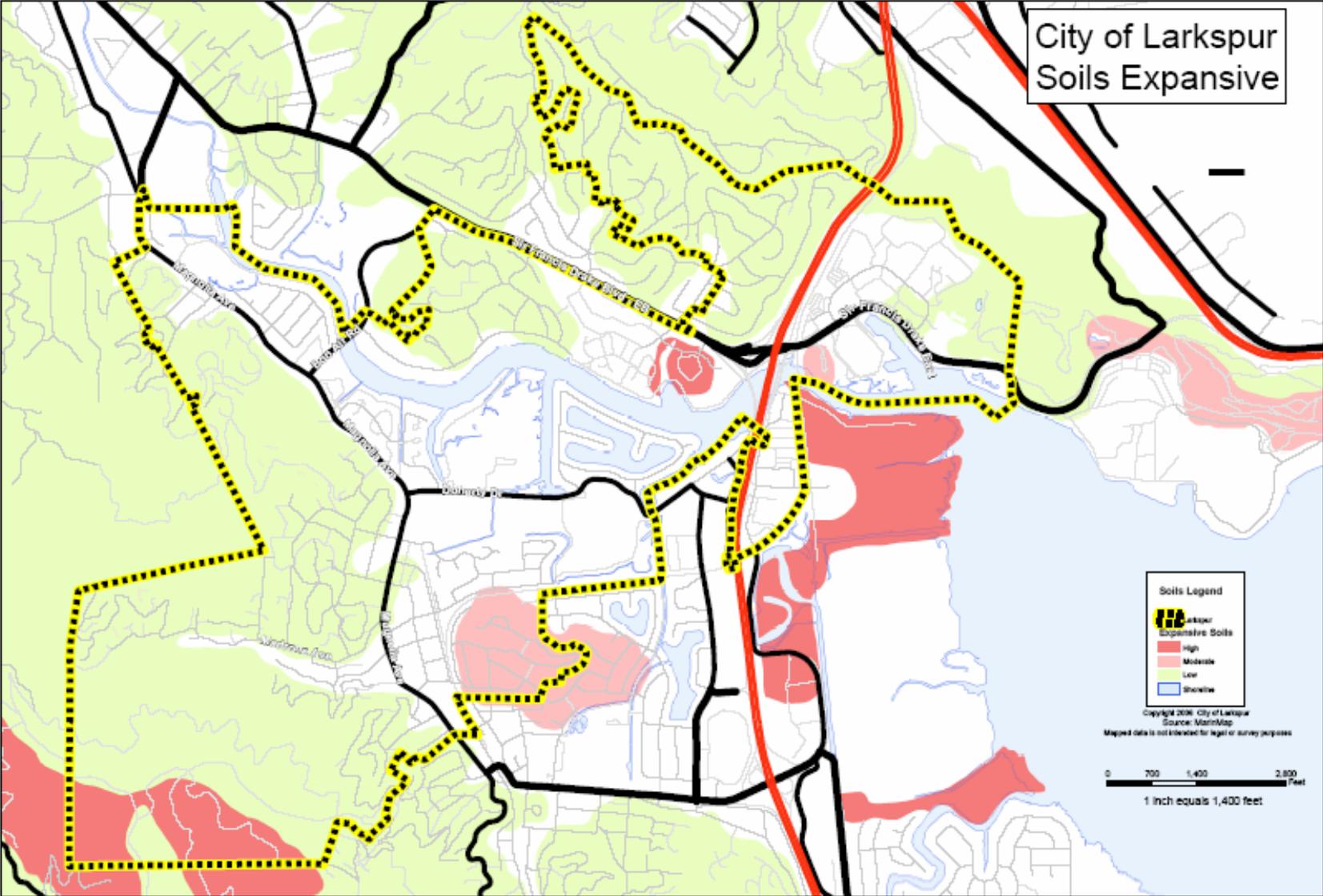
Slope Stability]

In 1982-83, more detailed geologic studies were made of two areas west of Magnolia Avenue. These two areas - called out on Figure 7-4 by solid boundary lines - are evaluated and extensively discussed in "Hillslope Processes and Urban Planning, Larkspur, CA," by Seidelman Associates, Lafayette, California, 1983, available in the City of Larkspur Planning Department. The report can be viewed in its entirety at City of Larkspur Planning Department.

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Geologic Hazard Goals, Policies, and Programs

Goal 6: Limit the exposure of existing and future structures to risk from landslides, debris flow, and subsidence, and minimize the potential for damage.

Policy l: Provide property owners with information to assist them in addressing their risk from landslides and debris flows.

Action Program [18]: Make available to developers (and to owners of residences) in areas of steep slopes with seasonal and intermittent drainages, the City's geotechnical reports on and information regarding the potential hazards from debris slides and flows, and encourage them to seek professional advice from registered engineers or certified engineering geologists on how to lessen potential risks.

Action Program [19]: Develop a program to protect existing structures located in high risk areas by promoting the use of debris fences (to deflect debris flows around structures) or other mechanisms.

Action Program [20]: Provide residents with information about the geotechnical hazards of heavy rainfall in areas of landslide potential, and the need to evacuate.

Action Program [21]: Provide property owners with standard public drainage designs that may be retrofitted to existing homes.

Action Program [22]: For development in hillside areas, establish, by ordinance, standards for foundations and retaining walls that meet or exceed the current state of the art in structural and civil engineering practice. The standards shall include:

- (a) A retaining wall that provides support for the footings of a structure must have the same life expectancy as that of the supported structure.
- (b) A series of stepped or terraced retaining walls should be designed and approved by a qualified engineer even when the height of the individual walls is less than the standard that requires review.
- (c) A soils engineer or engineering geologist will be required to provide field supervision of the drilling and concrete pouring operations for pier foundations to insure the exclusion of loose debris from the pier holes, insure adequate pier depth, and confirm soil conditions.
- (d) Foundation plans for hillside structures utilizing pier foundations in soil depths of six feet or greater shall be designed to structural and soils engineering calculations based upon passive pressures and shall demonstrate to the satisfaction of the City that the pier will satisfactorily resist shearing.

Policy m: Ensure that new development in hillside areas takes place only in areas that are relatively free from the threat of landslide and other forms of ground failure.

Action Program [23]: Require approval of a use permit for building additions or new development in areas with an average percent of slope equal to or greater than 25 percent.

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Action Program [24]: Employ the following standards for assessing the acceptability of new construction in hillside areas and those adjacent areas with a potential risk from landslides and debris flows.

- (a) Areas subject to recent slope movement or within the paths of debris flows are not suitable for the development of occupied structures. Further disruption of these high risk areas will only be permitted by the City for roads, utilities, and other similar facilities after intensive geologic studies have determined that mitigation measures are practical and their costs warranted.
- (b) Generally, parcels with an average slope of 65 percent or greater (or that portion of a parcel with a slope of this magnitude) that show evidence of having been formed by landslide processes in the past are not suited for the development of occupied structures.
- (c) Sites underlain by deep-seated landslides and landslide debris deposits may only be developed with occupied structures if detailed geotechnical investigations demonstrate that any soils creep and future deep seated slide processes will, in the City's opinion, be satisfactorily mitigated.
- (d) High energy flow paths are not suitable for the development of occupied structures. These flow paths are steep seasonal drainages that have been a path for debris flows in the past.
- (e) The development of new occupied structures within debris flow dissipation areas, which are those areas in the vicinity of the mouths of high energy flow paths, will be permitted only if adequate mitigation measures are provided.

Action Program [25]: Require site-specific geologic and geotechnical reports for new construction in hillside areas and areas subject to settlement or subsidence.

Action Program [26]: adopt standards for geologic and geotechnical reports that outline the type and extent of investigation required for various stages of the development process, for various geologic and soils conditions, and for the type of land use and structure proposed.

- (a) Proposed development should include detailed plans for drainage facilities. These plans should incorporate a hydrologic and, where appropriate, a geomorphic evaluation of existing drainage courses and City drainage facilities that will be impacted by the project. The evaluation should demonstrate the adequacy of these systems. After adequacy is demonstrated, the drainage facilities should be connected to City storm drains.
- (b) In hillside areas and at the mouths of seasonal and intermittent streams, a geologic report should be required as a part of the site development review process for all structures proposed for human occupancy and situated where geologic hazards may directly or indirectly influence the design, location, and safety of the structure. A geotechnical report should be required where soil engineering and/or geologic conditions may affect the design, location, and safety of a structure proposed for human habitation.

Source: City of Larkspur General Plan

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Flooding (Natural Hazard)

Flooding was rated as a HIGH PRIORITY HAZARD in the City of Larkspur.

Flood hazards fall into three categories: natural flooding, mud and debris flows, and dam inundation. Larkspur has experienced natural flooding when Corte Madera and Larkspur Creeks have overflowed during extreme rainfall. Larkspur has also suffered major damage from mud and debris flows on steep hillsides, particularly in recent years. The inability of the topography and drainage system to handle torrential rains has exacerbated these flooding problems (Flood Insurance Study for the City of Larkspur, Federal Emergency Management Agency, 1983, page6). Larkspur is not likely to be affected by flooding from dam failure. A new spillway and other remedial work have reinforced the Phoenix Lake dam, the nearest dam upstream from Larkspur (The dam was buttressed on the downstream side in 1970, to survive a "design earthquake." In 1988, the spillway was built and lowered six feet. Any flood damage resulting from flood inundation would largely be confined to areas northwest of Larkspur-i.e., to the narrow Ross Valley down to and including the College of Marin and the College park subdivision (18 homes). From there downstream, the canyon widens into a broad alluvial flood plain where dam flood waters would rapidly dissipate. Source: Dana Raxon, Marin Municipal Water District, August 1989 and May 14, 1990).

Significant flood damage occurred in 1955, 1958, 1973, and 1982. The flood of late December 1955 caused serious damage in the Heather Gardens neighborhood where many families had to be evacuated by rowboat. Torrential rainfall in April 1958, and two back-to-back storms in January 1973, also caused severe flooding in Larkspur.

The principal causes of flooding in the City of Larkspur are the local watercourses overtopping their banks during extreme rainfall, and the inability of the topography and drainage system of the city to handle torrential rains which have occurred at various points in time. In recent years, as development has intensified in the City of Larkspur, the potential for flooding has increased.

The flood of late December 1955 caused seriously damaged areas in Heather Gardens subdivision. Many families had to be evacuated by rowboat.

In April 1958 flood conditions for marooned shoppers at Bon Air shopping center when water rose to curb height, flooding the entire parking area (San Rafael Independent Journal April 2, 1958)

(Source:Flood Insurance Study by FEMA in September 2005)

The January 1982 storm was the worst in the state since 1955. In Marin County, 12 inches of rain fell in 36 hours. Unlike the earlier floods in Larkspur, the greatest loss of property was due to mudslides - or more accurately, debris avalanches which start suddenly and move quickly. Four homes, two in Madrone Canyon and two in the Murray Park area, were destroyed, as well as eight apartments at Skylark. Public and private damage was estimated at \$3 million (Carolyn Campbell, Public Works Director, City of Larkspur, 1989).

Larkspur consistently receives greater rainfall amounts than the majority of Marin County because it is in the shadow of Mount Tamalpais. Kentfield, which is upstream from

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Larkspur, has the highest average annual rainfall in the Bay Area—52.5 inches. The lower areas of Larkspur receive about 38 inches a year. Also, the nature of the soil in Larkspur is such that very little water percolates into the ground, and runoff is high (Storm Drain Master Drain Study, City of Larkspur, May 1988).

Large areas of Larkspur south of Corte Madera Creek are within the 100-year flood zone; meaning that there is a probability of their being flooded once every 100 years (or a one percent chance of being flooded in any one year).

Most of the flood zone is so designated because of the potential for flooding during a 100-year high tide, rather than from excessive rainfall.

Most recently the City of Larkspur was flooded by extreme rainfall in December 31, 2005 through January 2, 2006.

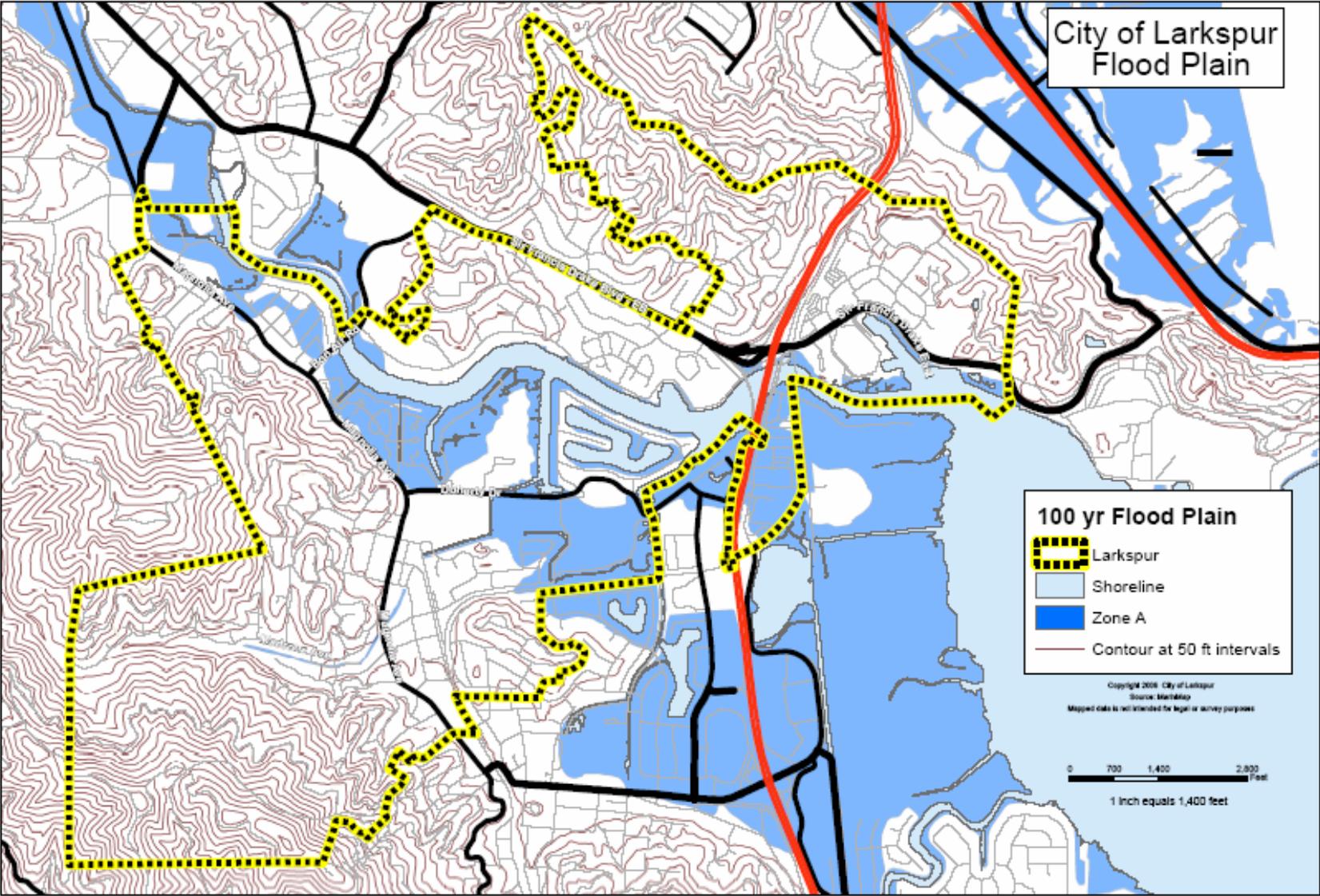
December 2005/January 2006 Severe Weather & Flooding Damage

Damage Site	Estimated Cost to Repair	Description of Damage
700 Block of Magnolia	\$30,000	Major mud slide on to roadway
350 via La Paz	\$400,000	Major mud slide on to roadway
451 via Casitas (Synglass condos)	\$1,000,000	Major mud slide several buildings evacuated
655 Magnolia	\$100,000	Flooding, Debris Flow on to street
Larkspur Plaza	%500,000	Tidal water breached levees causing flooding
Riviera Circle	\$500,000	Several homes flooded due to a combination of tidal action, in-flows from Corte Madera Creek, winds and rain.

City of Larkspur Summary of Flood Prone Properties

Area	No. of Residences	Buildings	Businesses
Madrone Canyon	140		
Larkspur Plaza	230 Condo Units	49	
Hill View Garden	118		
College Court	17		
Riviera Circle	190		
Redwood Highway	337	47	
Industrial			40
5 Bon Air Road		5	8
Heather Garden	38		
Total		101	48

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Marin County Flood History (

In recent history, the winter storms of 1970, 1973, 1982, 1983, 1986, 1998, and 2005 caused significant damage. Novato Creek in the northern part of the county historically caused damage to large numbers of homes in the 1960's until the Novato Flood Control Project was completed in the 1980's. Corte Madera Creek has had a history of flooding with the largest recorded flow in the winter of 1982, which caused severe damage to the surrounding communities. Low-lying areas such as Santa Venetia are extremely susceptible to flooding and totally rely on levees and pump stations to control flooding. IN the Santa Venetia in Flood Zone, one of its pump stations was recently re-built and another pump station is in need of retrofitting.

In January of 2005, the combination of several days of high tide conditions combined with unusual amounts of rainfall caused many low lying areas in Marin County to experience flooding of roads and structures with major damage in several areas. Saturated slopes along the coastal highway caused some sliding, and significant damage to roads.

Although the current Corte Madera Creek Flood Control project is nearly complete (Unit 4 in the town of Ross is yet to be constructed), flooding will still occur for storms greater than a 40-year recurrence flood event and can cause significant infrastructure damage in all of the surrounding areas. Potentially all nine southerly and some centrally located communities of Marin County would be impacted. The north-east part of the county, densely populated around the floodplain zone, is threatened every winter and still experiences some damage during winter storms despite the completed Novato Creek Flood Control project.

(Source Marin County Operational Area Hazard Mitigation Plan)

Flood Control and Storm Drainage Improvements

In 1968, the Army Corps of Engineers began to dredge, straighten, and line Corte Madera Creek with concrete. By 1972, the project had been completed from the mouth of the creek to the Town of Ross, a distance of about 3.5 miles (Flood insurance Study). However, Ross opposes placing the creek in a concrete channel, and work on the last phase, through the town, has been stalled. Until the last phase has been completed, Larkspur will not be adequately protected from freshwater flooding. Even then, the improvements will not provide protection from tidal flooding.

The portion of Larkspur Creek (also known as Arroyo Holon) between Monte Vista Avenue and about Meadowood Drive has been diverted to a culvert. A 1989 study also recommended an earthen berm and a concrete floodwall be constructed along a section of the creek near Meadowood Drive.

In 1988, Larkspur undertook a Storm Drain Master Plan Study of the older portion of Larkspur - the area south of Corte Madera Creek and west of Highway 101. Historically, most of Larkspur's flooding has occurred in this area. Also, certain areas adjacent to Corte Madera Creek have experienced significant settlement over the years, exposing them to increased flooding (Storm Drain Study).

Most of the storm drain system in the study area is 30 to 40 years old. The system evolved piecemeal as it was gradually extended upstream to serve new development and as problems occurred. A significant portion of the system has settled and deteriorated,

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causing maintenance and flooding problems. Also, because much of it is located on private property, the system lacks adequate capacity to convey runoff.

The study recommended a series of improvements (trash racks, catch basins, use of concrete pipe, and annual inspections of open channels on private property) to reduce flooding problems. It also concluded that more pumping stations will be needed to protect against high tides inundating low-lying developed land.

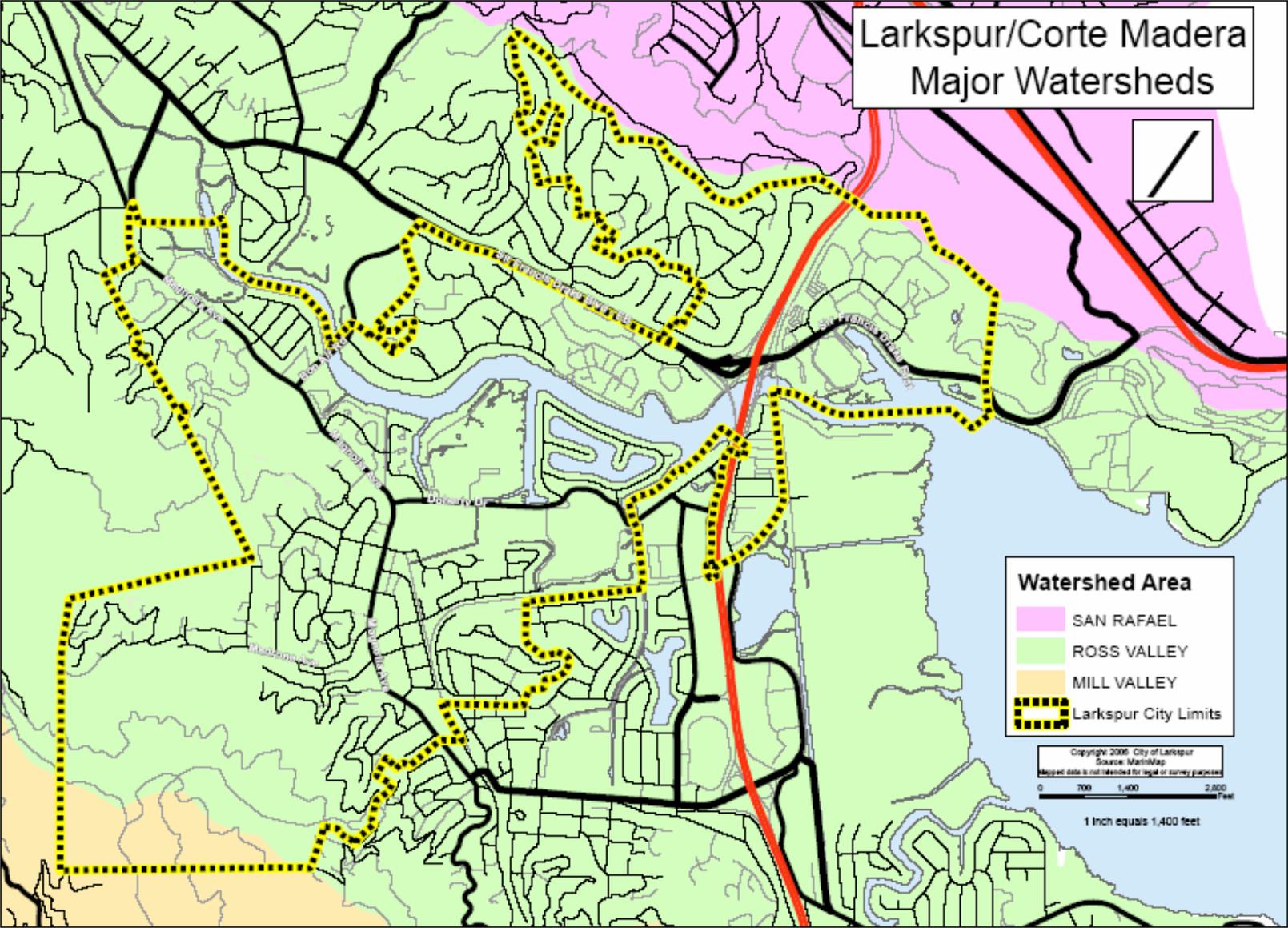
Flooding problems east of Highway 101 and south of Corte Madera Creek have been somewhat alleviated by the installation of a new storm drain system and pump station. However, it is still necessary to sandbag the low-lying area near the creek because of tidewater flooding. Flood walls and a tide gate are needed to provide permanent protection.

Rise in Sea Level

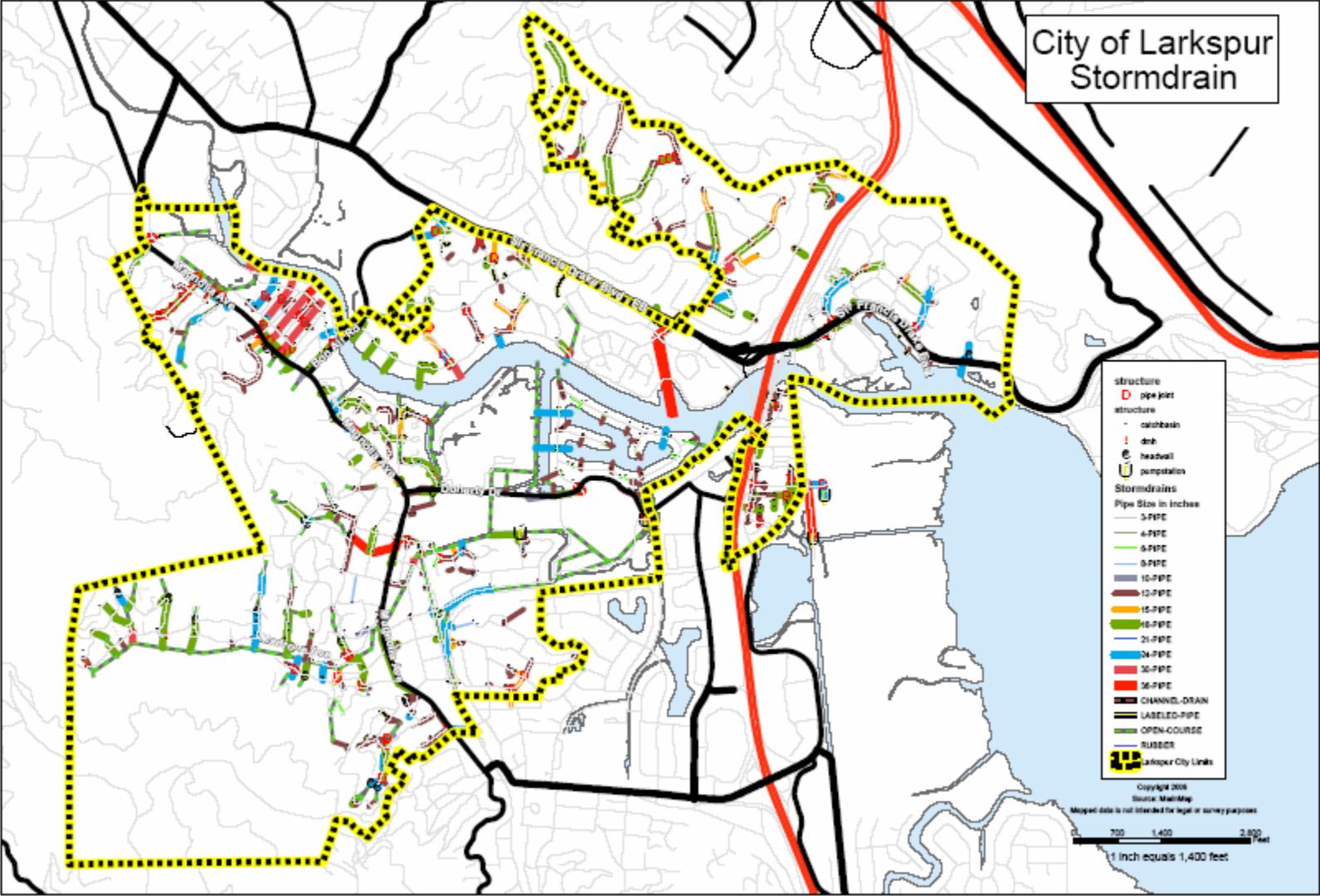
Recent scientific studies indicate that sea level is rising at an accelerated rate. A global climate change caused by the accumulation of "greenhouse" gases in the atmosphere (carbon dioxide, methane, and chlorofluorocarbons) is projected to raise the temperature of the earth's atmosphere, melting some of the earth's glaciers and polar ice caps. If recent historic trends continue, global sea level should increase between four and five inches in the Bay in the next 50 years and could increase approximately one and one-half to five feet by the year 2100.

Although the phenomenon is not fully understood, the rising sea level has implications for Larkspur and other cities along San Francisco Bay. Tidal circulation could change and wave action could increase. Drainage would be impeded, and ground water could be contaminated. The Bay Conservation and Development Commission, which regulates land use along the Bay, recommend that local governments take the predicted rise into consideration in land use planning and development review (Marin General Plan, Environmental Hazards Element, Draft Technical Report #1, Flood Hazards: Existing Conditions and Recent Studies, Feb. 1988; and Amendment 3-88 to "San Francisco Bay Plan," Bay Conservation and Development Commission).

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Flood Hazard Goals, Policies, and Programs

Goal 4: Protect Larkspur from the risk of flood damage.

Policy f: Seek to have the Corte Madera Creek flood control improvements completed upstream from Larkspur.

Action Program [7]: Work with the Marin County Flood Control District, the Army Corps of Engineers, and the Town of Ross to develop and implement an improvement plan that protects against flooding.

Policy g: Work with other cities in the Ross Valley to develop a comprehensive master plan for flood control and management of Corte Madera Creek.

The Kentfield/Greenbrae Community Plan recommends that the Corte Madera Creek master plan consider flood heights under present and future conditions and under various flood frequency intervals (10, 30, 50, and 100-year floods). The influence of future urbanization and rising sea level should be evaluated. The plan should also consider the possibility of retention structures on parking lots, roofs, etc., curtailment of development, and planting and maintenance of vegetation to enhance bank stability, aesthetic values, and recreational opportunities.

Policy h: Regulate land uses in flood-prone areas and allow development in those areas only with appropriate mitigation.

This policy, in meeting the general goal of protecting Larkspur from flood damage, has two specific objectives: one is to protect property; the other is to maintain an adequate cross-section for the discharge of flood waters.

A map of possible inundation resulting from a failure of the dam at Phoenix Lake has been prepared by the Marin Municipal Water District (MMWD). (The dam was buttressed on the downstream side in 1970, to survive a "design earthquake." In 1988, the spillway was built and lowered six feet. Any flood damage resulting from flood inundation would largely be confined to areas northwest of Larkspur-i.e., to the narrow Ross Valley down to and including the College of Marin and the College park subdivision (18 homes). From there downstream, the canyon widens into a broad alluvial flood plain where dam flood waters would rapidly dissipate. Source: Dana Raxon, Marin Municipal Water District, August 1989 and May 14, 1990).The map is available to the public at the City Planning and Public Works departments and the MMWD offices.

Action Program [8]: Establish standards for minimum grades and minimum finished floor elevations that take into consideration the rising sea level during the expected life of the project.

Based on historic trends, the 100-year maximum high tide is projected to reach an elevation of 6.4 feet NGVD (National Geodetic Vertical Datum) along Corte Madera Creek, but other factors (wave runoff, siltation, and the predicted rise in sea level) can be expected to raise it higher.

Because of these factors, Larkspur has raised its minimum standard for finished floor elevations from 8 to 9.4 feet.

Policy i: Continue to upgrade the City's drainage system.

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Action Program [9]: Implement the recommendations of the 1988 Storm Drain Master Plan study.

Action Program [10]: Construct flood walls and a tide gate in the area east of Highway 101.

Action Program [11]: Balance required protection measures with the need to protect environmental resources, and do so in such a way as to integrate design improvements with the protection of natural resources.

Action Program [12]: Require site plans to locate structures outside or above the 100-year flood zone wherever possible.

Source: City of Larkspur General Plan

Severe Weather (Natural Hazard)

Severe Weather was rated as a HIGH PRIORITY HAZARD in the City of Larkspur.

Windstorms

The potential risk of widespread damage in Marin County from wind is not as considerable as the risk from earthquakes or wildfires. Nevertheless, severe windstorms pose a significant risk to life and property by creating conditions that disrupt essential systems such as public utilities, telecommunications, and transportation routes.

High winds can and do occasionally cause damage to homes and businesses. Severe windstorms can present a very destabilizing effect on the dry brush that covers local hillsides and urban wildland interface areas and increase wildfire threat. Destructive impacts to trees, power lines, and utility services also are associated with high winds.

In windstorms, reports of dislodged roofs and fallen trees and power lines are common. The winds are not considered major widespread threats to population and property, but do involve responses from emergency service personnel. Fallen power lines may cause widespread power outages and fire. Falling trees can occasionally cause fatalities and serious structural damage. These incidents are rare as well as localized.

Hazard Extent

El Niño

On February 9, 1998, President Clinton, in response to a request from Governor Wilson, declared a major disaster for 27 counties in the State of California. The disaster was designated as FEMA-1203-DR-CA. On February 13, 1998 four additional counties were added; on February 26, four more counties were added, and on March 6, 1998, six additional counties were designated, bringing the total to 41.

El Nino '98

In the spring of 1997, Pacific Ocean temperatures along the equator from South America to Australia were rising above normal, changing wind patterns in the area. This is phenomenon known as El Nino. As part of the global impact of El Nino, heavy storms for 1997-1998 were predicted for the State of California.

The excessive rains from the December 2005-January 2006 caused flooding, land and mudslides throughout the City. The City experienced damage to roads, bridges, and property. The damage is listed in the Flooding section.

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**Transportation: A) Loss B) Accident or Incident
(Human-caused Technological Hazard)**

Transportation Loss and Accident/Incident was rated as a HIGH PRIORITY HAZARD in the City of Larkspur.

General Situation: A major transportation disaster involving truck, bus, small plane, helicopter, a number of automobiles or any combination of vehicles can cause casualties & a major road blockage. The time of day will compound the problems of traffic control & the ability of emergency response teams to minimize suffering, disability & death by treatment & transportation of victims to hospitals.

Special Situation: The main transportation arteries through Marin County are U.S. 101, State Highways 1, 37, Interstate 580 & Sir Francis Drake Blvd. U.S. 101 is heavily used most hours of the day & the control of vehicular traffic in & around will be the primary problem at any time. During commuter hours, the problem will be severely compounded. It will be essential to expedite the flow of essential emergency response vehicles through the area & divert nonessential traffic. In those cases where emergency traffic movement requirements exceed available road space, traffic must be rerouted with alternate routes & any incident accident that closes Highway 101 causes immediate gridlock for both citizens and emergency vehicles.

All of the Highway 101 interchanges in and near Larkspur are at risk from earthquake. The Larkspur Safety Element advises that "a major earthquake would be expected to cause considerable damage to transportation systems. Roads, bridges and highway overpasses are susceptible to damage or failure in the event of a major earthquake. Landslides would be intensified as a result of ground shaking, and could affect portions of the roadway system located in landslide potential area."

A serious hazardous materials spill or multiple care wreck could close the Highway 101 in both directions for hours or even days. This would in turn cause gridlock and the inability of citizens to either return from work in the area or go to work.

These incidents would prevent access to the area by Golden Gate Bridge and Transportation District which operates the Golden Gate Transit and local bus service, ferry service and the Golden Gate Bridge linking Novato to Sonoma and Marin County cities and the City of San Francisco.

Marin County maintains and plans the county road system. There is a Marin Countywide Congestion Management Agency: they develop and administer a Countywide Congestion Management Plan (CMP) as required by State law under the referendum approved in 1990. The State law requires all State highway plus the principal arterials in Marin County to be on the designated CMP system.

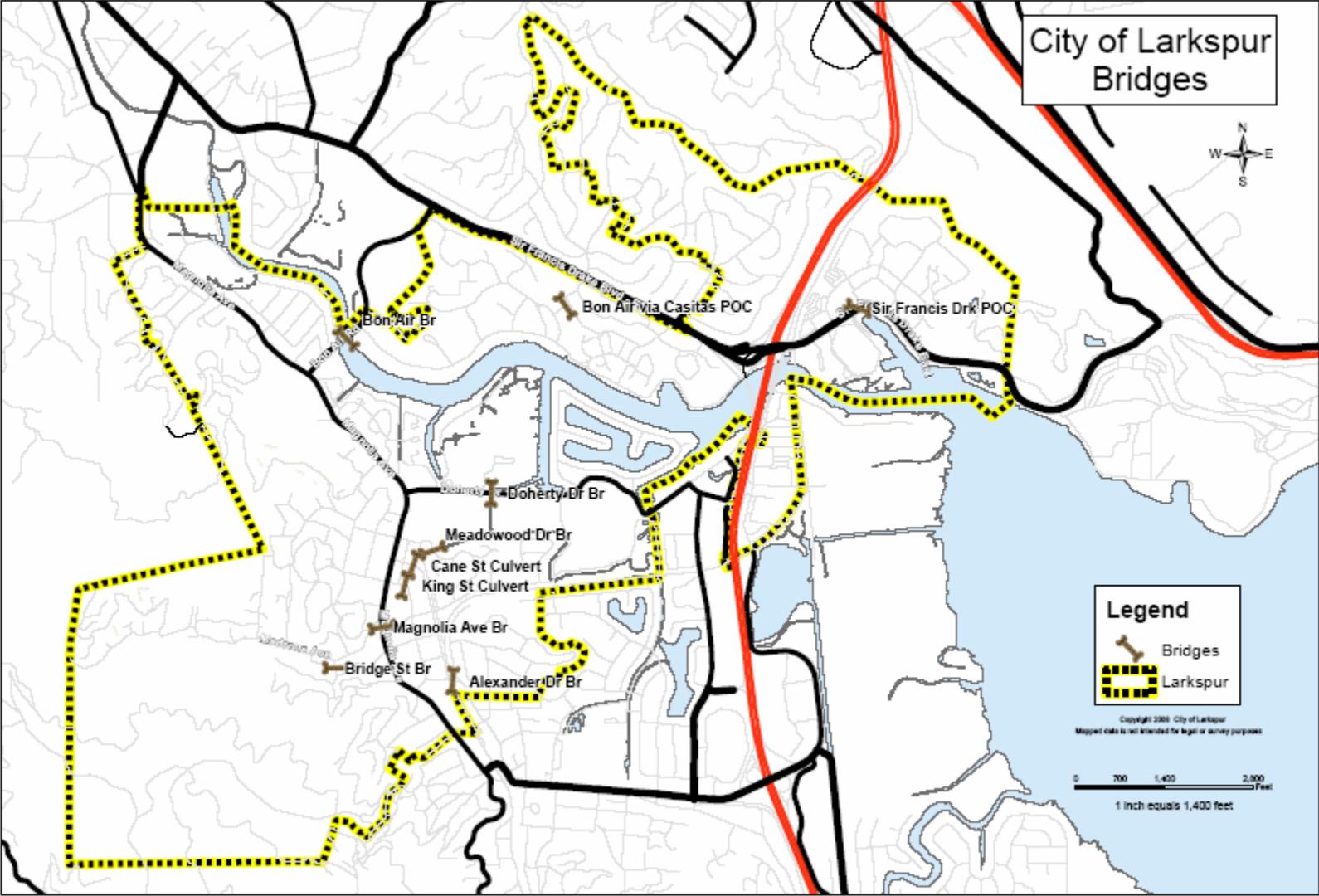
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The City of Larkspur is at risk of isolated and inaccessible due to its dependence on Highway 101, and access to the surrounding communities.

This would cause severe economic hardship on the City and put the ability for emergency responders to move from one side of the City to another in a timely manner at risk. For this reason transportation emergencies are considered a high risk.

While identifying transportation emergencies as a high risk, Larkspur must also recognize it is not within their authority or ability to mitigate this risk and can only ask the State of California Caltrans to provide immediate seismic retrofit response to the Highway 101 corridor.

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Utility Loss (Human-caused Technological Hazard)

Utility Loss was rated as a HIGH PRIORITY HAZARD in the City of Larkspur.

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

The Impact of Loss of Power on Water & Sewer Systems

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.

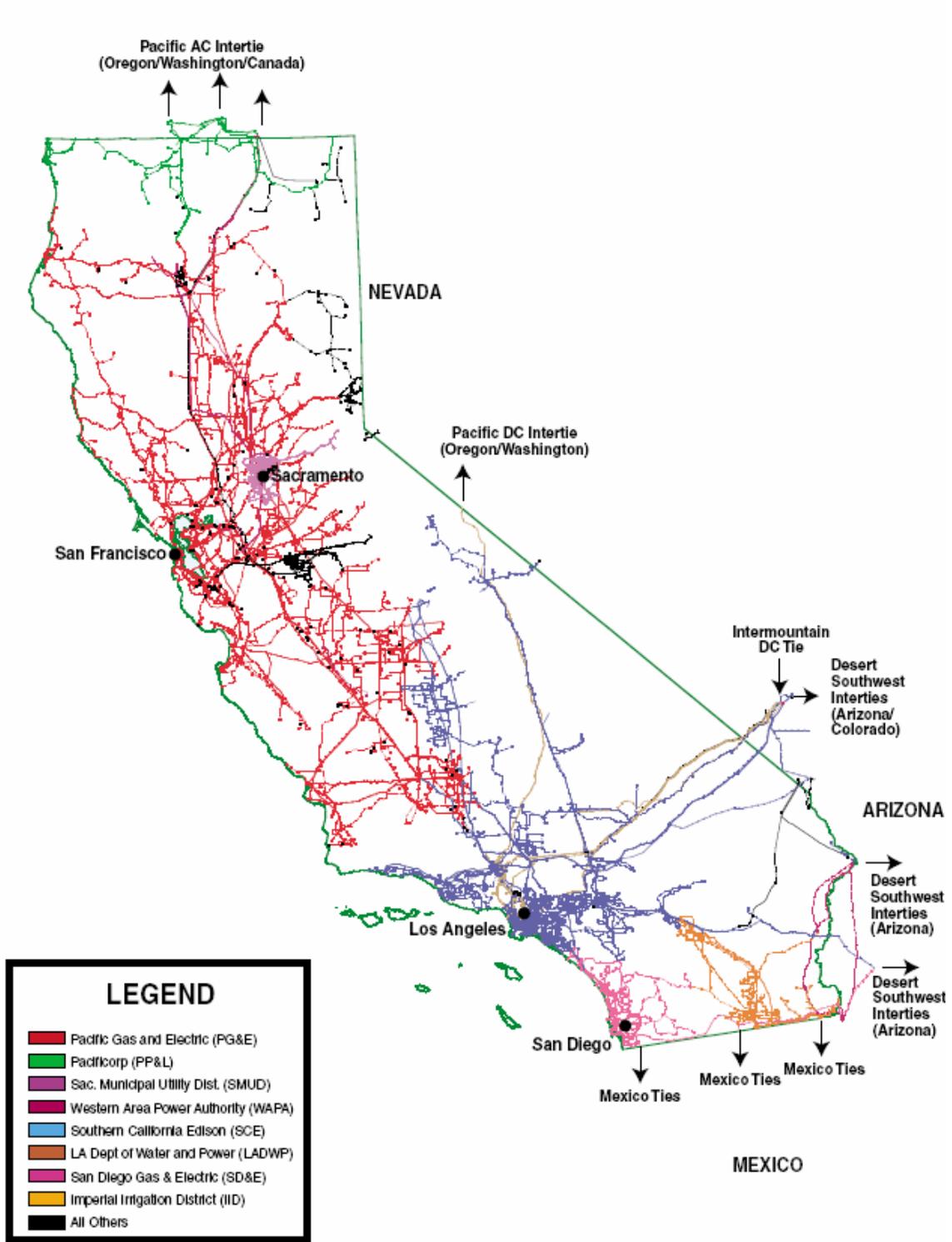
Due to the energy situation and rolling blackouts that occurred earlier in the year, the Water Division has conducted an informal inquiry into the impact of the rolling blackouts and has concluded that during the first four months of the year, California energy situation and rolling blackouts have had 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



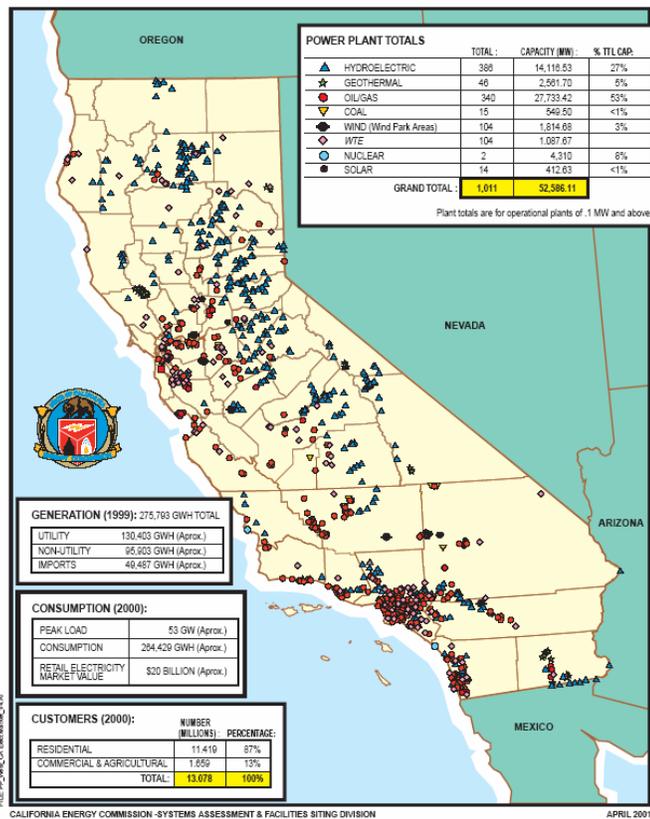
CALIFORNIA DEPARTMENT OF ENERGY

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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 fire fighting. 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.

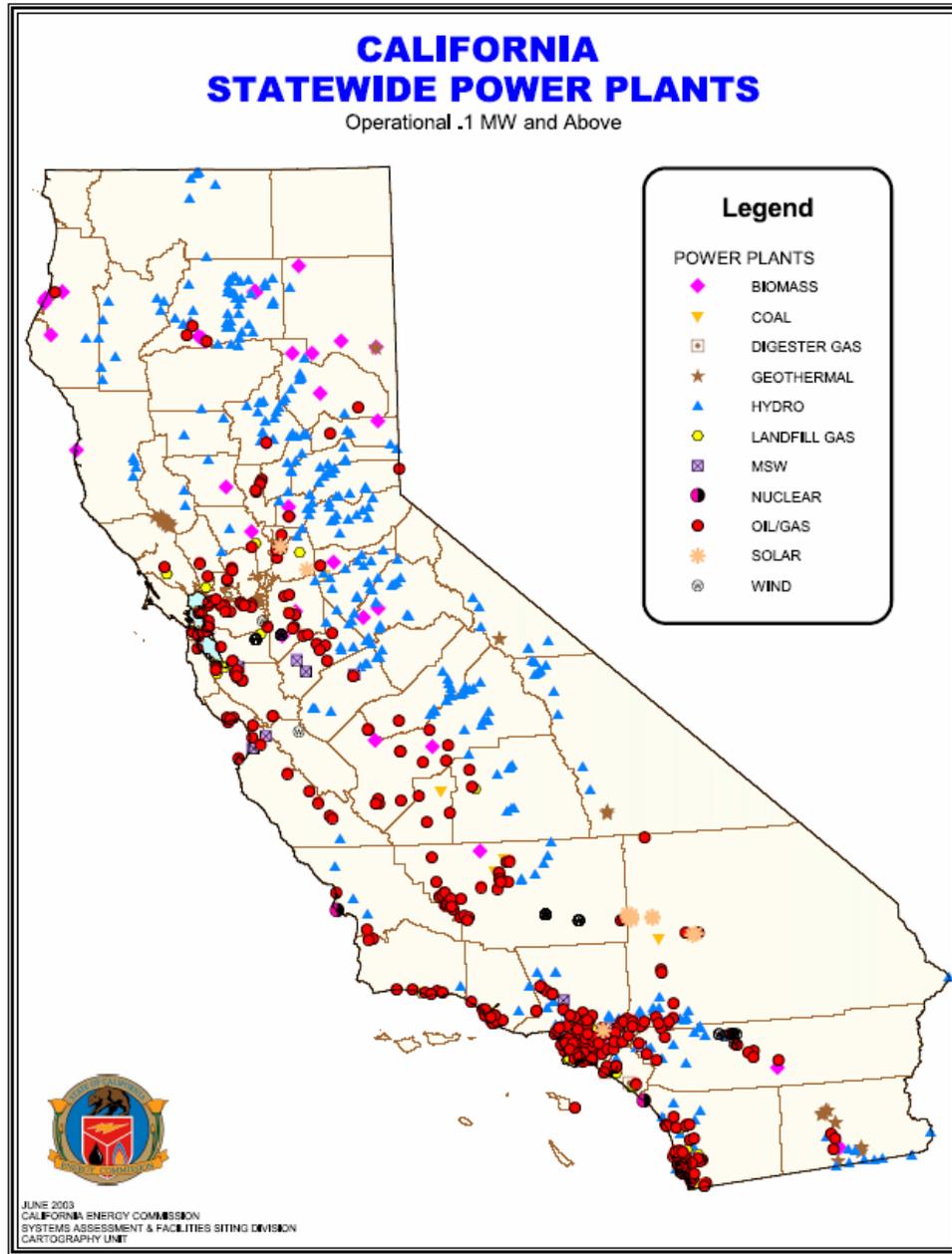
CALIFORNIA'S ELECTRICITY MARKET



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Mitigation Measures for these Systems

Backup power was a big issue due to the energy situation and rolling blackouts that occurred this summer. Many water systems have argued that backup power was not necessary since they received electrical power from more than one substation, but the power shortage has negated that argument. Many large water systems have adequate storage facilities and have installed backup generators to maintain system pressures during power failures due to "Y2K" efforts. It is the smaller systems that generally do not have backup power.



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Wildland/Urban Interface Fire (Natural Hazard)

Wildland/Urban Interface Fire was rated as a HIGH PRIORITY HAZARD in the City of Larkspur.

Two categories of fire hazard exist in Larkspur: structural fires, which can damage the home or workplace, and wildland fires, which can quickly explode out of control in the city's hillside chaparral, grassland, and forested areas.

Larkspur maintains two fire stations: the main station next to City Hall downtown and a second station just off Sir Francis Drake Boulevard. Larkspur's 16-person crew (five firefighters per shift) is supplemented by an automatic aid agreement with the Corte Madera and Kentfield fire departments, and a mutual aid agreement with San Rafael. There is also a 25-person volunteer force.

The Fire Department tries to maintain a six-minute response time, although some hillside neighborhoods are up to seven (Madrone Woodlands) and eight minutes (highest part of Sunrise Lane) away.

Larkspur's fire prevention activities include annual inspections of all businesses, public structures, and apartment buildings. Also, owners of vacant lots annually are required to clear their property of excessive vegetation. In addition, the Fire Department reviews building permit applications to ensure that new construction meets Building and Fire Code requirements relating to fire safety.

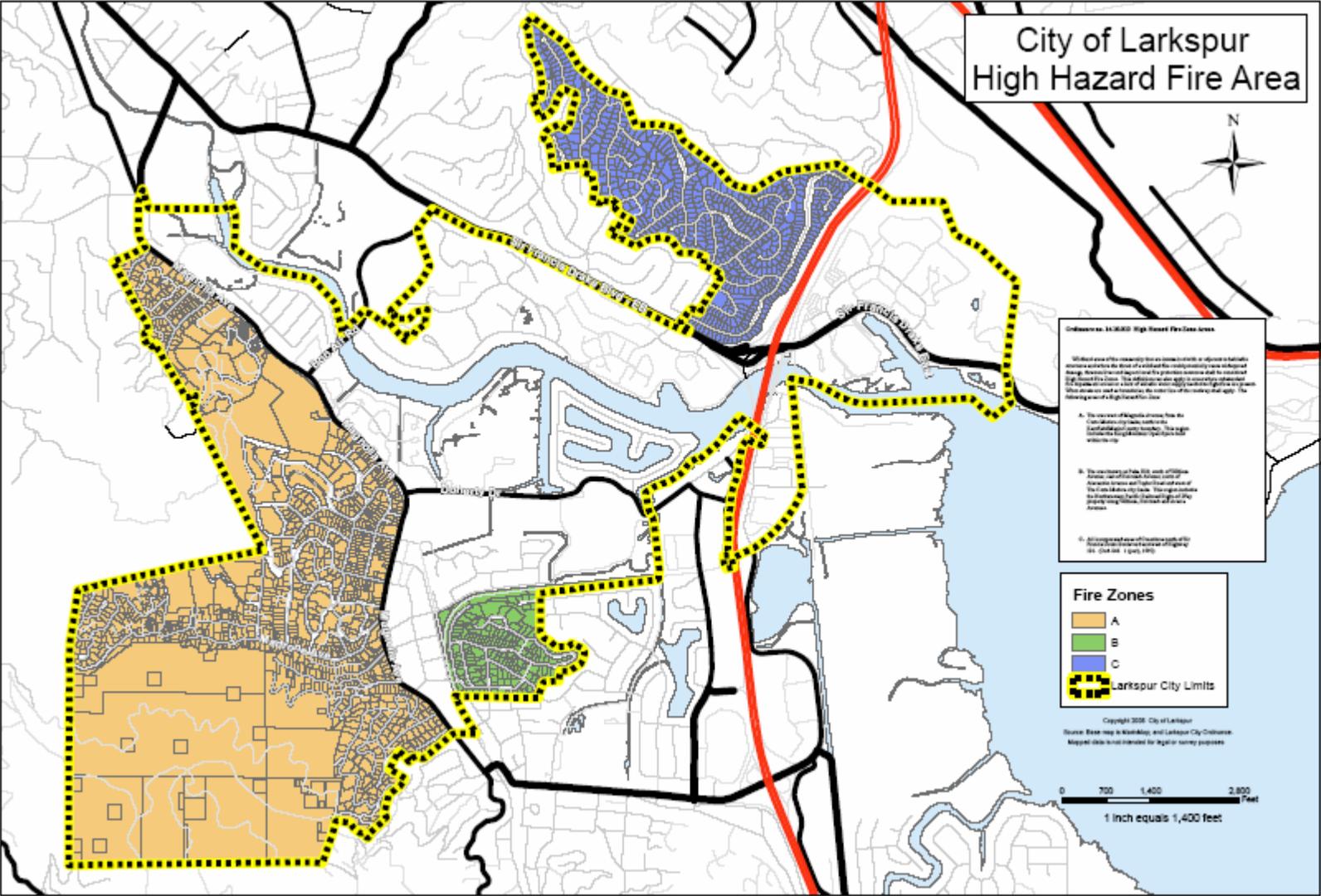
Wildland Fires

About 50 percent of the land area in Larkspur is at risk from wildland fires (Larkspur Emergency Plan, Hazard Summary for Major Wildland Fire). Some of the land is open space, but developed hillsides are also at risk. Like the rest of Marin County, Larkspur's periodically arid climate, combined with extensive areas of grass and brush-covered open space and variable topography, create an ever-present threat of wildland fire. Extreme weather conditions, such as high temperatures, low humidity, and strong winds may cause an ordinary fire to expand into one of massive proportions. A high fuel load, resulting from years of accumulation, contributes to the problem. Steep slopes allow lowland fires to preheat vegetation before climbing hillsides, increasing the rate of fire spread and impeding firefighter access.

Many homes located in high risk fire areas were built of combustible building materials or with stilt and pole construction. The latter allows suspended floor areas to trap heat, increasing opportunities to ignite the homes.

Besides the loss of property and natural vegetation from a wildland fire, firefighting efforts could scar the land through bulldozing, road cutting, and use of fire retardant chemicals. Erosion and landslides may occur on the denuded slopes during the rainy season.

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Fire Goals, Policies, and Programs

Goal 7: Protect Larkspur residents and property from fire hazards.

Goal 8: Minimize the risk of wildland and structural fires, and ensure adequate fire protection.

Policy n: Provide fast and efficient fire suppression service to Larkspur residents.

Action Program [27]: Establish performance standards such as desired response times for police, fire, and other public services.

Policy o: Maintain an aggressive fire prevention program.

Action Program [28]: Continue to inspect all businesses, public buildings and apartment buildings annually for fire and building code violations.

Action Program [29]: Continue to require that all vacant lots annually be cleared of excessive vegetation.

Action Program [30]: Continue to require smoke alarms and Class C or better fire retardant roofs for all new construction.

Policy p: Establish more stringent fire protection standards for private development in high risk fire hazard areas.

Areas considered to be significantly at risk for a high-loss fire are Madrone Canyon, Madrone Woodlands, hillside areas of Greenbrae, Northridge, King Mountain, and the eastern side of Palm Hill.

Action Program [31]: Require that automatic sprinkler systems be installed in new residences in areas with difficult access and/or poor water supply.

Action Program [32]: Require that brush be cleared for a distance of 30 feet from residences in high fire-hazard areas.

Action Program [33]: Establish landscaping guidelines that encourage the use of fire-resistant plants in high fire-hazard areas.

Source: City of Larkspur General Plan

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State of California Wildland/Urban Interface Fire

Levels of Wildland Fire Protection Services

The history of California wildfires indicates that the following trends will continue. Risk from wildfire to life, property, natural resources, and firefighter safety is increasing.

Population will grow and more people will live and use wildland areas.

Topography and climate support ecosystems where large wildfires can be expected.

Drought and fuel moisture conditions will be unpredictable but almost always dangerous in fire season.

More structures will be constructed in areas that are very susceptible to wildfire.

Historical legacy of narrow roads, difficult entrance, insufficient water supplies, flammable building construction and location that make many communities and homes wildfire-prone still exists.

Public demand for wildland fire protection and other services will increase.

Deteriorating forest health, increasing fuel loads and other factors have led to more intense, destructive wildfires; unabated this pattern will continue.

Assets at risk will increase, especially watershed assets, because of the rapid rise in the demand for water to supply more people. Based on population projections, the potential for accelerating loss of protected assets, especially life and property, will be greater from disastrous wildfires.

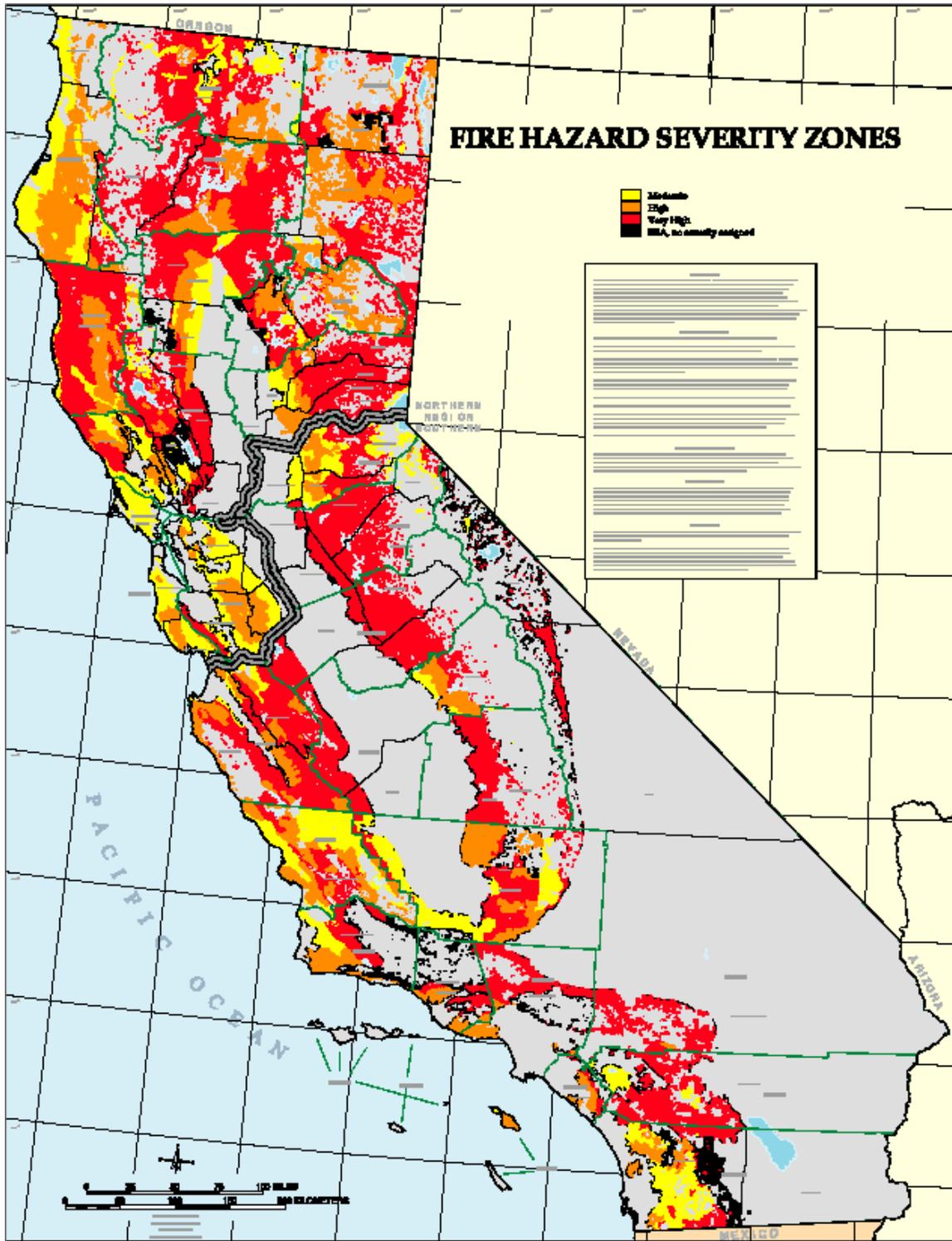
Large wildfires do not respect political or property boundaries. Historically, a strength of California's firefighting agencies is found within a concept of mutual cooperation at the federal, state, and local levels of government. Day-to-day mutual aid for initial attack, as well as a statewide mutual-aid system for fire disasters, is the basis of this cooperation and coordination. The ability to rapidly mobilize, effectively deploy and support large numbers of specialized firefighting resources is essential to cope with large multiple fires. Hence, CDF, in cooperation with other fire agencies, must maintain infrastructure, including communications and capital improvements necessary to facilitate such a response.

Fire protection forces in California must have sufficient depth to respond to large, multiple wildfires and still prevent other small fires from becoming large damaging fires. CDF plays a key role in supplying and coordinating such forces; it should maintain and enhance this ability. The 1985 Fire Plan includes a model to provide adequate depth of resources that show CDF needing 96 additional engines and 825 personnel for managing large fires using the Incident Command System. There is a greater need today as reflected in the California Fire Plan.

Source: California Fire Plan 2003

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California Department of Forestry & Fire Protections Maps



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Wildland Fire Protection Fiscal Issues

Multi-year fiscal problems are occurring at all governmental levels, constraining the availability of funding to address the increasing workload, costs and losses of the California wildland fire protection system. The increasing number of structures and people in California wild lands and the growing importance of the state's natural resources create a growing demand to fund additional wildland fire protection services for both the structures and the wildland resource assets.

The primary fiscal responsibilities for the initial attack responsibilities: (1) for federal wildland fire protection are the federal taxpayers, (2) for privately owned wildland fire protection are the state taxpayers, and (3) for structure fire protection in wildland areas are the local taxpayers. However, during the annual fire season, the state and federal taxpayers provide a minimum level of structural fire protection that is incidental to their primary missions of wildland fire protection. Similarly, in most wildland areas, local taxpayers provide year-round wildland fire protection on both state and federal responsibility areas that is incidental to the local government primary mission of structural fire protection.

Over the last decade, part of the increased costs for additional initial attack wildland resource protection and structural protection have been funded by local taxpayers through property taxes, fire district fees and volunteer firefighters. However, when a wildland fire overwhelms local resources and reaches a major fire status, both the state and the federal taxpayers pay for the costs of wildfires, structure protection, and the resulting disaster relief.

For the local taxpayers, the following continue to increase: (1) the structural values and number of people being protected on wild lands, (2) the costs of wildland and structure initial attack fire suppression funded at the local levels, and (3) the losses from the extended attack and larger fires.

For state and federal taxpayers, the following will continue to increase: (1) extended and large fire emergency fund expenditures for wildland fires, (2) protecting structures during initial attack and extended attack fires, and (3) state and federal agency disaster expenditures for damages to wildland resources and structures. Health and Safety Code Section 13009 allows for recovery of fire suppression costs which, when obtained, be placed back into the state's general fund rather than invested in a pre-fire management program.

There is a direct relationship between reduced expenditures for pre-fire management and suppression and increased emergency fund expenditures, disaster funding, and private taxpayers expenditures and losses. Reduction of pre-fire management or suppression resources allows more fires to become major disastrous fires. Major fires create additional suppression and disaster relief costs at all levels of government and increase citizen and business losses.

According to representatives of the insurance industry that insures structures in California wildland areas, (1) the insurer average costs and losses are about \$1.09 for each \$1.00 received in premiums, and (2) the urban dwellers are subsidizing the wildland homeowner through service-wide rating schedules.

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Cost Impacts Associated with Intense Wild Fire (California Fire Plan)

Beneficial Use	Benefit (+) or Cost (-) Per Acre Burned (\$)	Comments
Water Yield	+\$3 to +\$12	1st two years
Hydropower generation	+\$17.50	1st two years
Reservoir Storage Capacity	-\$9 to -\$90	1st two years
Reservoir Sedimentation	-\$40 to -\$100	1st two years
Debris Basin Cleanout	0 to -\$8000	Southern CA
Watershed Rehab	-\$30 to -\$200	1st year only
Water Quality	negative, unquantifiable	Increased turbidity, suspended sediment
Flooding	negative, unquantifiable	Increased peak flow, debris
Fisheries	negative, unquantifiable	Increased sediment, water temperature
Recreation	negative, unquantifiable	Degraded aesthetics

Structures (California Fire Plan)

Loss of structures is one of the more emotionally gripping and economically significant impacts of wildland fire in California. Statewide, there are an estimated one million housing units within California's wildlands or the wildland/urban interface. Approximately 500,000 of these housing units are owner-occupied, single-family homes with an average replacement cost of \$140,000. Taken as a whole, these housing units have an estimated replacement cost of approximately \$107 billion.

Based on fire records for 1985-94, an average 703 homes are lost per year to wildland fire in California. It should be noted, however, that the number of homes lost varies significantly from year to year. Housing values typically range from \$15,000 on up, with the median, owner-occupied single-family home valued at \$140,000 (excluding land value). Since the value of the homesite is little affected by wildfire, only the value of structures and contents should be considered.

Discussions with insurance and fire officials indicate that the average market value of a home's contents is 20-25 percent of the replacement value, or about \$35,000 per home. Thus, as a first approximation, the median house and contents are valued at an estimated \$175,000. When insurance claims are filed for homes lost to wildland fire, insurance companies face costs to process claims. The overall cost of operating insurance programs is estimated to be 45 cents per dollar of premium. However, this represents the average of all operating costs for an insurance company, not the marginal cost of handling a claim. As a rough approximation, it is estimated here that the transaction cost to insurance companies to settle a claim is 1 percent of the claim amount, on average.

In addition to insured property loss, homeowners also face a significant loss of intangibles in a house fire. While these losses are difficult to quantify and value, they should be considered in the evaluation of the effects of wildland fire on homeowners. As an approximation, we will assume that the average homeowner faces an uninsured loss of \$10,000 when his or her home is lost to wildfire.

Additional costs associated with the loss of homes to wildland fire include disruption of utilities, transportation, and other public services. In addition, there are lost wages, costs of

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temporary shelter, and other costs that cannot be captured easily. We will assume that these costs average \$10,500 per house lost to wildland fire.

Table 11 summarizes and totals the above-described costs. Total average annual costs statewide associated with loss of homes to wildfire is \$163,271,750, or \$232,250 per home.

Table 11. Estimated Average Annual Losses Due to Destruction of Homes by Wildland Fire

Category	Loss Amount
Dwellings and contents lost: 703/year @ \$140,000 each	\$ 98,420,000
Contents valued at 25 percent of dwelling	24,605,000
Total home and contents loss (equals insurance claim amount)	123,025,000
Insurance company transaction cost	
1 percent of claim cost or 1 percent of \$123,025,000	1,230,250
Uninsured losses	
Intangibles: 703 dwellings/year @ \$10,000 each	7,030,000
Other improvements on site: 25 percent of home loss or 25 percent x \$98,420,000	24,605,000
Total uninsured losses	31,635,000
Disruption costs: 703 dwellings/year @ \$10,500 each	7,381,500
Total loss to homeowner and others	\$163,271,750

Wildfire Smoke

Characteristics of Wildfire Smoke

The behavior of smoke depends on many factors, including the fire’s size and location, the topography of the area and the weather. Inversions are common in mountainous terrain. Smoke often fills the valleys, where people usually live. Smoke levels are unpredictable: a wind that usually clears out a valley may simply blow more smoke in, or may fan the fires, causing a worse episode the next day. Smoke concentrations change constantly. By the time public health officials can issue a warning or smoke advisory, the smoke may already have cleared. National Weather Service satellite photos, weather and wind forecasts, and knowledge of the area can all help in predicting how much smoke will come into an area, but predictions are rarely accurate for more than a few hours.

Smoke Hazards as a Result of Wildland Fires

Smoke is composed primarily of carbon dioxide, water vapor, carbon monoxide, particulate matter, hydrocarbons and other organic chemicals, nitrogen oxides, trace minerals and several thousand other compounds. The actual composition of smoke depends on the fuel type, the temperature of the fire, and the wind conditions. Different types of wood and vegetation are composed of varying amounts of cellulose, lignin, tannins and other polyphenolics, oils, fats, resins, waxes and starches, which produce different compounds when burned.

Particulate matter is the principal pollutant of concern from wildfire smoke for the relatively short-term exposures (hours to weeks) typically experienced by the public. Particulate matter is a generic term for particles suspended in the air, typically as a mixture of both solid particles and liquid droplets. Particles from smoke tend to be very small - less than one micrometer in diameter. For purposes of comparison, a human hair is about 60 micrometers in diameter. Particulate matter in wood smoke has a size range near the wavelength of visible light (0.4 – 0.7 micrometers). Thus, smoke particles efficiently scatter light and reduce visibility. Moreover, such small particles can be inhaled into the deepest

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recesses of the lung and are thought to represent a greater health concern than larger particles.

Another pollutant of concern during smoke events is carbon monoxide. Carbon monoxide is a colorless, odorless gas, produced by incomplete combustion of wood or other organic materials. Carbon monoxide levels are highest during the smoldering stages of a fire. Other air pollutants, such as acrolein, benzene, and formaldehyde, are present in smoke, but in much lower concentrations than particulate matter and carbon monoxide.

The effects of smoke range from eye and respiratory tract irritation to more serious disorders, including reduced lung function, bronchitis, exacerbation of asthma, and premature death. Studies have found that fine particles are linked (alone or with other pollutants) with increased mortality and aggravation of pre-existing respiratory and cardiovascular disease. In addition, particles are respiratory irritants, and exposures to high concentrations of particulate matter can cause persistent cough, phlegm, wheezing and difficulty breathing. Particles can also affect healthy people, causing respiratory symptoms, transient reductions in lung function, and pulmonary inflammation. Particulate matter can also affect the body's immune system and make it more difficult to remove inhaled foreign materials from the lung, such as pollen and bacteria. The principal public health threat from short-term exposures to smoke is considered to come from exposure to particulate matter.

Wildfire smoke also contains significant quantities of respiratory irritants. Formaldehyde and acrolein are two of the principal irritant chemicals that add to the cumulative irritant properties of smoke, even though the concentrations of these chemicals individually may be below levels of public health concern.

Table 5. Overall Marginal Pollution Impact Values for PM10 (1995 dollars)

Air Basin	Marginal Emission Value (\$/ton)	Grass and Woodland (\$/acre)	Timber and Brush (\$/acre)	Including Pollution Right Value	
				Grass and Woodland (\$/acre)	Timber and Brush (\$/acre)
San Francisco Bay Area	24,258	279	7,641	295	8,093
South Central Coast	6,441	74	2,029	74*	2,029*
South Coast	46,458	534	14,634	550	15,086
San Diego	24,593	283	7,747	283*	7,747*
Sacramento Valley	2,935	34	925	50	1,377
Southeast Desert	708	8	223	88*	223*
San Joaquin Valley	5,184	60	1,633	60*	1,633*
North Central Coast	6,441	74	2,029	74*	2,029*
North Coast	1,703	20	536	20*	536*
Great Basin Valley	125	1	39	1*	39*
Northeast Plateau	395	5	124	5*	124*
Lake Tahoe	924	11	291	11*	291*
Lake County	908	10	286	10*	286*

Sensitive Populations

Most healthy adults and children will recover quickly from smoke exposures and will not suffer long-term consequences. However, certain sensitive populations may experience more severe short-term and chronic symptoms from smoke exposure. Much of the information about how particulate matter affects these groups has come from studies involving airborne particles in cities, though a few studies examining the effects of exposure to smoke suggest that the health effects of wildfire smoke are likely to be similar.

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More research is needed to determine whether particles from wildfires affect susceptible subpopulations differently.

Individuals with asthma and other respiratory diseases: Levels of pollutants that may not affect healthy people may cause breathing difficulties for people with asthma or other chronic lung diseases. Asthma, derived from the Greek word for panting, is a condition characterized by chronic inflammation of the airways, with intermittent bronchial-constriction and airflow obstruction, causing shortness of breath, wheezing, chest tightness, coughing, sometimes accompanied by excess phlegm production. During an asthma attack, the muscles tighten around the airways and the lining of the airways becomes inflamed and swollen, constricting the free flow of air. Because children's airways are narrower than those of adults, irritation that would create minor problems for an adult may result in significant obstruction in the airways of a young child. However, the highest mortality rates from asthma occur among older adults. Individuals with chronic obstructive pulmonary disease (COPD), which is generally considered to encompass emphysema and chronic bronchitis, may also experience a worsening of their conditions because of exposure to wildfire smoke. Patients with COPD often have an asthmatic component to their condition, which may result in their experiencing asthma-like symptoms. However, because their pulmonary reserve has typically been seriously compromised, additional bronchial-constriction in individuals with COPD may result in symptoms requiring medical attention. Epidemiological studies have indicated that individuals with COPD run an increased risk of requiring emergency medical care after exposure to particulate matter or forest fire smoke. Exposure to smoke may also depress the lung's ability to fight infection. People with COPD may develop lower respiratory infections after exposure to wildfire smoke, which may require urgent medical care as well. In addition, because COPD is usually the result of many years of smoking, individuals with this condition may also have heart disease, and are potentially at risk from both conditions.

Individuals with airway hyper-responsiveness: A significant fraction of the population may have airway hyper-responsiveness, an exaggerated tendency of the bronchi and bronchioles to constrict in response to respiratory irritants and other stimuli. While airway hyper-responsiveness is considered a hallmark of asthma, this tendency may also be found in many non-asthmatics, as well; for example, during and following a lower respiratory tract infection. In such individuals, smoke exposure may cause bronchial-spasm and asthma-like symptoms.

Individuals with cardiovascular disease: Diseases of the circulatory system include, among others, high blood pressure, cardiovascular diseases, such as coronary artery disease and congestive heart failure, and cerebro-vascular conditions, such as atherosclerosis of the arteries bringing blood to the brain. These chronic conditions can render individuals susceptible to attacks of angina pectoris, heart attacks, sudden death due to a cardiac arrhythmia, acute congestive heart failure, or stroke. Cardiovascular diseases represent the leading cause of death in the United States, responsible for about 30 to 40 percent of all deaths each year. The vast majority of these deaths are in people over the age of 65. Studies have linked urban particulate matter to increased risks of heart attacks, cardiac arrhythmias, and other adverse effects in those with cardiovascular disease. People with chronic lung or heart disease may experience one or more of the following symptoms: shortness of breath, chest tightness, pain in the chest, neck, shoulder or arm, palpitations, or unusual fatigue or lightheadedness. Chemical messengers released into the blood because of particle-related lung inflammation may increase the risk of blood clot formation, angina episodes, heart attacks and strokes.

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The elderly. In several studies researchers have estimated that tens of thousands of elderly people die prematurely each year from exposure to particulate air pollution, probably because the elderly are more likely to have pre-existing lung and heart diseases, and therefore are more susceptible to particle-associated effects. The elderly may also be more affected than younger people because important respiratory defense mechanisms may decline with age. Particulate air pollution can compromise the function of alveolar macrophages, cells involved in immune defenses in the lungs, potentially increasing susceptibility to bacterial or viral respiratory infections.

Children. Children, even those without any pre-existing illness or chronic conditions, are considered a sensitive population because their lungs are still developing, making them more susceptible to air pollution than healthy adults. Several factors lead to increased exposure in children compared with adults: they tend to spend more time outside; they engage in more vigorous activity, and they inhale more air (and therefore more particles) per pound of body weight. Studies have shown that particulate pollution is associated with increased respiratory symptoms and decreased lung function in children, including symptoms such as episodes of coughing and difficulty breathing. These can result in school absences and limitations of normal childhood activities.

Pregnant women. While there have not been studies of the effects of exposure to wildfire smoke on pregnancy outcomes, there is substantial evidence of adverse effects of repeated exposures to cigarette smoke, including both active and passive smoking. Wildfire smoke contains many of the same compounds as cigarette smoke. In addition, recent data suggest that exposures to ambient air pollution in cities may result in low birth weight and possibly other, more serious adverse reproductive effects. Therefore, it would be prudent to consider pregnant women as a potentially susceptible population as well.

Smokers. People who smoke, especially those who have smoked for many years, have already compromised their lung function. However, due to adaptation of their lungs to ongoing irritation, smokers are less likely to report symptoms from exposure to irritant chemicals than are nonsmokers. However, they may still be injured by wildfire smoke. Therefore, some smokers may unwittingly put themselves at greater risk of potentially harmful wildfire smoke exposures, believing that they are not being affected.

Moderate Risk Priority Hazards

Biological & Health & Pandemic Flu (Natural Hazard)

Biological/Health Emergencies were rated as a MODERATE PRIORITY HAZARD in the City Larkspur

Marin County has experienced numerous disasters, varying in type and severity. Disasters often result in the need for health and human services as part of the immediate and long-term recovery period. Some disasters are localized with service needs focused in a single location; other disasters, such as earthquakes and civil unrest, result in geographically widespread health and human services needs.

It is essential following a disaster to identify locations where large numbers of people are gathered in open areas. These areas will require evaluation in order to assess health and human service needs. The recovery period may be shortened if health, mental health, and housing problems can be addressed quickly.

Health Hazards

West Nile Virus

1. West Nile virus (WNV) is a mosquito-borne disease that is common in Africa , west Asia and the Middle East .
2. West Nile virus was first detected in the United States in New York in 1999. Since then, WNV has spread to 46 states, Canada, and Mexico.
3. In 2003, three locally acquired human WNV cases were detected in residents of Los Angeles , Imperial, and Riverside counties, and WNV activity was detected in dead birds, mosquitoes, sentinel chickens, and a horse in six southern California counties. West Nile virus has also been detected in 2004 in southern California.
4. Last year there were almost 10,000 human cases of WNV detected, including 262 deaths in the United States.
5. People usually get WNV from the bite of an infected mosquito. There is also evidence that WNV can be acquired via a blood transfusion or organ transplant from an infected donor.
6. Most people who are bitten by a mosquito with WNV will not get sick. People who do become ill may experience mild to moderate flu-like symptoms like fever, headache and body ache. It is estimated that less than 1% of the people who are infected with WNV become severely ill and require hospitalization. The elderly and immune-compromised are particularly susceptible to illness caused by WNV.
7. Currently there is no specific treatment for WNV infection. Since it is a virus it does not respond to antibiotics. In severe cases hospitalization and supportive care is important.

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8. California has a long history of conducting surveillance for mosquito-borne viruses and has taken active steps to ensure early detection of WNV. Due to ongoing collaboration between over 70 local mosquito and vector control agencies and state public agencies, California is well prepared to detect, monitor, and respond to WNV. These agencies use a variety of scientific techniques and products to control mosquitoes in their earliest stages and play a key role in reducing the risk of WNV. Also California has launched a statewide public education effort about personal protection measures and reporting dead birds.
9. The public is encouraged to assist in the efforts to detect and monitor WNV by calling the WNV hotline if they find a crow, raven, magpie, jay, sparrow, finch, or hawk that has been dead for about a day. Birds play an important role in maintaining and spreading this virus. Mosquitoes acquire the virus from infected birds, and then transmit the virus to people. Evidence of the virus in dead birds is often the first indication that WNV has been introduced into a new region.

Vector Control

A surveillance program adequate to monitor WNV activity levels associated with human risk must be in place. Detection of epizootic transmission of enzootic arboviruses typically precedes detection of human cases by several days to 2 weeks or longer (e.g., as found in SLE epidemics). If adequate surveillance is in place, the lead time between detecting significant levels of epizootic transmission and occurrence of human cases can be increased, which will allow for more effective intervention practices. Early-season detection of enzootic or epizootic WNV activity appears to be correlated with increased risk of human cases later in the season. Control activity should be intensified in response to evidence of virus transmission, as deemed necessary by the local health departments.

Such programs should consist of public education emphasizing personal protection and residential source reduction; municipal larval control to prevent repopulation of the area with competent vectors; adult mosquito control to decrease the density of infected, adult mosquitoes in the area; and continued surveillance to monitor virus activity and efficacy of control measures.

Severe Acute Respiratory Syndrome (SARS)

Marin County includes major port cities, and as such diseases anywhere in the world constitute a potential threat. Severe acute respiratory syndrome (SARS), a recently recognized, contagious febrile lower respiratory infection caused by a novel corona virus called SARS-CoV, is an example of a potential threat to a port city.

The worldwide outbreak of SARS that occurred between November 2002 and July 2003 most likely originated in China and then spread through travel. During this outbreak 22 potential SARS cases were investigated in Los Angeles. Seven were considered probable SARS but none of these cases had a specimen that was positive for SARS-CoV infection. The investigation and monitoring required for 22 potential cases was considerable.

It is possible that SARS may re-emerge; therefore, it is important that Marin County be prepared to immediately identify cases and contain the disease.

The California Health and Safety Code (H&S), the California Code of Regulations (CCR) and the Marin County Code (LACC) grant the Marin County Health Officer authority to

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collect records and data with respect to communicable disease, initiate disease control measures, control property and manage persons (including isolation and quarantine).

SARS Case Count

During November 2002-July 2003, a total of 8,098 probable SARS cases were reported to the World Health Organization (WHO) from 29 countries. In the United States, only 8 cases had laboratory evidence of infection with SARS-CoV. Since July 2003, when SARS-CoV transmission was declared contained, active global surveillance for SARS-CoV disease has detected no person-to-person transmission of SARS-CoV. CDC has therefore archived the case report summaries for the 2003 outbreak.

During the 2003 epidemic, CDC and the Council of State and Territorial Epidemiologists (CSTE) developed surveillance criteria to identify persons with SARS in the United States. The surveillance case definition changed throughout the epidemic, to reflect increased understanding of SARS-CoV disease.

In California, there were a total of 29 cases, 22 of which were suspect, 5 were probably SARS and 2 were confirmed.

SARS Surveillance

The key to controlling a SARS outbreak is prompt detection of cases and their contacts, followed by rapid implementation of control measures. Identification of SARS cases is the basic step in prevention efforts, whereas contact tracing provides a means to focus case-finding and containment efforts on persons who are at greatest risk of SARS-CoV disease. Two features of SARS-CoV disease pose challenges for case surveillance. First, the early signs and symptoms are not specific enough to reliably distinguish SARS-CoV disease from other common respiratory illnesses. Second, existing laboratory diagnostic tests are not adequately sensitive early in the course of illness. Therefore, risk of exposure (i.e., to another case of SARS-CoV disease or to a setting where SARS-CoV transmission is occurring) is key to considering the likelihood of a diagnosis of SARS-CoV disease.

Potential sources of SARS-CoV for future exposures include persistent infection in previously ill persons or reintroduction to humans from an animal reservoir. In the absence of SARS-CoV transmission worldwide, the most likely sites of recurrence are the original site of introduction of SARS-CoV from animals to humans and locations where person-to-person SARS-CoV transmission previously occurred. Laboratories that contain live SARS-CoV could be a source of further transmission if compromised laboratory techniques result in laboratory-acquired infections and report from the Department of Health, Taiwan. Because persons with SARS-CoV disease tended to appear in clusters (e.g., in healthcare facilities, households, and a few special settings) during the 2003 outbreaks, early signals of the reappearance of the illness in U.S. communities could include unusual clusters of unexplained pneumonia.

Mad Cow Disease (Creutzfeldt-Jakob disease (vCJD))

The Novato Sanitary District leases land to a cattle farmer adjacent to the City of Novato.

New variant CJD (vCJD) is a rare, degenerative, fatal brain disorder in humans. Although experience with this new disease is limited, evidence to date indicates that there has never been a case of vCJD transmitted through direct contact of one person with another. However, a case of probable transmission of vCJD through transfusion of blood

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components from an asymptomatic donor who subsequently developed the disease has been reported.

As of December 1, 2003, a total of 153 cases of vCJD had been reported in the world: 143 from the United Kingdom, six from France, and one each from Canada, Ireland, Italy, and the United States (note: the Canadian, Irish, and U.S. cases were reported in persons who resided in the United Kingdom during a key exposure period of the U.K. population to the BSE agent).

Almost all the 153 vCJD patients had multiple-year exposures in the United Kingdom between 1980 and 1996 during the occurrence of a large UK outbreak of bovine spongiform encephalopathy (BSE, commonly known as mad cow disease) among cattle.

There has never been a case of vCJD that did not have a history of exposure within a country where this cattle disease, BSE, was occurring.

It is believed that the persons who have developed vCJD became infected through their consumption of cattle products contaminated with the agent of BSE. There is no known treatment of vCJD and it is invariably fatal.

Since 1996, evidence has been increasing for a causal relationship between ongoing outbreaks in Europe of a disease in cattle, called bovine spongiform encephalopathy (BSE, or "mad cow disease"), and a disease in humans, called variant Creutzfeldt-Jakob disease (vCJD). Both disorders are invariably fatal brain diseases with unusually long incubation periods measured in years, and are caused by an unconventional transmissible agent.

On December 23, 2003, the U.S. Department of Agriculture (USDA) announced a presumptive diagnosis of bovine spongiform encephalopathy (BSE, or "mad cow" disease) in an adult Holstein cow from Washington State. The diagnosis was confirmed by an international reference laboratory in Weybridge, England, on December 25. Preliminary trace-back based on an ear-tag identification number suggests that the BSE-infected cow was imported into the United States from Canada in August 2001.

Influenza (Flu)

Epidemics of influenza typically occur during the winter months and have been responsible for an average of approximately 36,000 deaths/year in the United States during 1990–1999. Influenza viruses also can cause pandemics, during which rates of illness and death from influenza-related complications can increase dramatically worldwide. Influenza viruses cause disease among all age groups. Rates of infection are highest among children, but rates of serious illness and death are highest among persons aged ≥ 65 years and persons of any age who have medical conditions that place them at increased risk for complications from influenza.

Influenza vaccination is the primary method for preventing influenza and its severe complications. In this report from the Advisory Committee on Immunization Practices (ACIP), the primary target groups recommended for annual vaccination are 1) groups that are at increased risk for influenza-related complications (e.g., persons aged ≥ 65 years and persons of any age with certain chronic medical conditions); 2) the group aged 50–64 years because this group has an elevated prevalence of certain chronic medical conditions; and 3) persons who live with or care for persons at high risk (e.g., health-care workers and household contacts who have frequent contact with persons at high risk and

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who can transmit influenza to persons at high risk). Vaccination is associated with reductions in influenza-related respiratory illness and physician visits among all age groups, hospitalization and death among persons at high risk, otitis media among children, and work absenteeism among adults. Although influenza vaccination levels increased substantially during the 1990s, further improvements in vaccine coverage levels are needed, chiefly among persons aged <65 years who are at increased risk for influenza-related complications among all racial and ethnic groups and among blacks and Hispanics aged ≥ 65 years. ACIP recommends using strategies to improve vaccination levels, including using reminder/recall systems and standing orders programs. Although influenza vaccination remains the cornerstone for the control and treatment of influenza, information is also presented regarding antiviral medications, because these agents are an adjunct to vaccine.

Influenza Epidemic

The influenza (flu) epidemics that happen nearly every year are important events. Influenza is a respiratory illness that makes hundreds of thousands of people sick each year. The illness can cause severe health problems for the elderly and younger people with diseases, such as diabetes, heart or lung disease, and illness that can weaken the immune system. Typical primary influenza illness lasts about a week and is characterized by abrupt onset of fever, muscle aches, sore throat, and nonproductive cough. In some persons, severe malaise and cough can persist for several days or weeks.

Influenza infection not only causes primary illness but also can lead to severe secondary medical complications, including influenza viral pneumonia, secondary bacterial pneumonia, worsening of underlying medical conditions, such as congestive heart failure, asthma, or diabetes, or other complications such as ear infections (i.e., otitis media) in children.

Elderly persons (i.e., those 65 years and over) and persons with certain underlying medical conditions, such as chronic heart or lung disease, are at increased risk for developing complications from influenza infection. These complications increase the risk for hospitalization or death.

One of the most important features about influenza viruses is that their structure changes slightly but frequently over time (a process known as “drift”), and that this process results in the appearance of different strains that circulate each year. The composition of the flu vaccine is changed each year to help protect people from the strains of influenza virus that are expected to be the most common ones circulating during the coming flu season.

The ability of the vaccine to protect against influenza during a particular season depends on several factors, but particularly 1) the match between influenza strains in the vaccine and strains circulating in the community, and 2) the ability of each person's immune system to mount a protective response as a result of the vaccination. Although the vaccine may not prevent everyone who takes it from getting sick, it does reduce the risk of severe illness, hospitalization, and death. That's why it is so important for anyone who wants to reduce his or her risk of getting severely ill from influenza to receive the vaccine each year.

Influenza Pandemic

By contrast to the more gradual process of drift, in some years, the influenza virus changes dramatically and unexpectedly through a process known as “shift.” Shift results in the appearance of a new influenza virus to which few (if any) people are immune. If this

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new virus spreads easily from person to person, it could quickly travel around the world and cause increased levels of serious illness and death, affecting millions of people. This is called influenza pandemic.

Fortunately, pandemics don't occur very often. There has not been an influenza pandemic since 1968. In 1997, however, a flu virus, that had previously infected only birds, caused an outbreak of illness in humans. This virus, known as the "avian flu," resulted in 18 illnesses and six deaths in Hong Kong but did not easily spread from person to person. Still, it provided a frightening reminder that the next pandemic could occur at any time. Governments around the world took notice. The U.S. government worked with State and local governments, and private-sector partners, to develop strategies and programs that would prepare our country for a pandemic.

Avian Influenza (Bird Flu)

Influenza viruses that infect birds are called "avian influenza viruses." Only influenza A viruses infect birds. All known subtypes of influenza A virus can infect birds. However, there are substantial genetic differences between the subtypes that typically infect both people and birds. Within subtypes of avian influenza viruses there also are different strains (described in "Strains").

Avian influenza H5 and H7 viruses can be distinguished as "low pathogenic" and "high pathogenic" forms on the basis of genetic features of the virus and the severity of the illness they cause in poultry; influenza H9 virus has been identified only in a "low pathogenicity" form. Each of these three avian influenza viruses (H5, H7, and H9) can theoretically be partnered with any one of nine neuraminidase surface proteins; thus, there are potentially nine different forms of each subtype (e.g., H5N1, H5N2, H5N3, H5N9).

Below is summary information about these three prominent subtypes of avian influenza virus:

Influenza A H5

- Potentially nine different subtypes
- Can be highly pathogenic or low pathogenic
- H5 infections have been documented among humans, sometimes causing severe illness and death

Influenza A H7

- Potentially nine different subtypes
- Can be highly pathogenic or low pathogenic
- H7 infection in humans is rare, but can occur among persons who have close contact with infected birds; symptoms may include conjunctivitis and/or upper respiratory symptoms

Influenza A H9

- Potentially nine different subtypes

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- Documented only in low pathogenic form
- Three H9 infections in humans have been confirmed.

Spread of Avian Influenza Viruses among Birds

Avian influenza viruses circulate among birds worldwide. Certain birds, particularly water birds, act as hosts for influenza viruses by carrying the virus in their intestines and shedding it. Infected birds shed virus in saliva, nasal secretions, and feces. Susceptible birds can become infected with avian influenza virus when they have contact with contaminated nasal, respiratory, or fecal material from infected birds. Fecal-to-oral transmission is the most common mode of spread between birds.

Most often, the wild birds that are host to the virus do not get sick, but they can spread influenza to other birds. Infection with certain avian influenza A viruses (for example, some H5 and H7 strains) can cause widespread disease and death among some species of domesticated birds.

Avian Influenza Infection in Humans

Although avian influenza A viruses do not usually infect humans, several instances of human infections and outbreaks of avian influenza have been reported since 1997. Most cases of avian influenza infection in humans are thought to have resulted from contact with infected poultry or contaminated surfaces. However, there is still a lot to learn about how different subtypes and strains of avian influenza virus might affect humans. For example, it is not known how the distinction between low pathogenic and highly pathogenic strains might impact the health risk to humans. Of the documented cases of human infection with avian influenza viruses, illnesses caused by highly pathogenic viruses appear to be more severe.

Small Pox

Smallpox virus is a high-priority “Category A” agent that poses a risk Marin County, California and national security because it can be easily disseminated and transmitted from person to person, results in high mortality rates and has the potential for major public health impact, might cause public panic and social disruption, and requires special action for public health preparedness.

Vaccination

The federal government has not yet provided definitive guidance on the extent of preparedness vaccination (smallpox vaccination of persons prior to a confirmed case of smallpox). It is anticipated that the guidance will be forthcoming in the near future. Such guidance, and release of sufficient quantities of smallpox vaccine, may be for: (1) specified first responders only, (2) a larger group of health care workers, law enforcement, and emergency responders, or (3) the entire population on a voluntary basis. Guidance may be provided in a phased manner for these, or other, groups over time.

Monkey Pox

The Centers for Disease Control and Prevention (CDC) and state and local health departments continue to investigate cases of monkeypox among persons who had close contact with wild or exotic mammalian pets or persons with monkeypox. Results of

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serologic testing, polymerase-chain-reaction analysis, viral culture and gene sequencing performed at the CDC indicate that the causative agent is monkeypox virus, a member of the orthopoxvirus group of viruses. CDC is updating previous interim guidance concerning infection control precautions and exposure management in the health-care and community settings. The guidance will be further updated as additional information about the epidemiology of disease transmission is better understood.

Limited data on transmission of monkeypox virus are available from studies conducted in Africa. Person-to-person transmission is believed to occur primarily through direct contact and also by respiratory droplet spread. Transmission of monkeypox within hospitals has been described, albeit rarely. Extrapolating from smallpox for which airborne transmission has been clearly described, airborne transmission of monkeypox virus cannot be excluded, especially in patients presenting with cough.

To date in the United States there has been no evidence of person-to-person transmission of monkeypox. However, recovery of monkeypox virus from skin lesions and tonsillar tissue demonstrates the potential for contact and droplet transmission, and at least a theoretical risk for airborne transmission.

Hoof & Mouth Disease

In the United States we usually call it "Hoof and Mouth Disease." In the U.K. they call it "Foot and Mouth Disease." But, wherever it appears, and whatever it's called, this highly contagious livestock disease means trouble. The outbreak of the disease in Great Britain quickly spread to the European continent, and British officials even considered eradicating that country's entire livestock population. The last major outbreak in the U.S. was in 1929.

Hoof and mouth disease is a viral infection that afflicts animals with cloven hooves such as cattle, pigs, and sheep. Onset of the disease is characterized by fever, which is followed by the development of blisters inside the mouth and on the feet. It is transmitted easily among animals through fluids such as blood, saliva, and milk. Fluid from broken blisters has especially high concentrations of the virus. The disease is not necessarily fatal, and symptoms can clear up after several weeks, but the disease generally leaves animals underweight and sometimes disabled. Because of the highly infectious nature of the disease, and the condition in which it leaves animals even after they have recovered, farmers almost always destroy infected animals and burn their carcasses.

Hepatitis

Hepatitis is inflammation of the liver. Several different viruses cause viral hepatitis. They are named the hepatitis A, B, C, D, and E viruses.

All of these viruses cause acute, or short-term, viral hepatitis. The hepatitis B, C, and D viruses can also cause chronic hepatitis, in which the infection is prolonged, sometimes lifelong.

Other viruses may also cause hepatitis, but they have yet to be discovered and they are obviously rare causes of the disease.

Hepatitis Incidence/Epidemiology

Hepatitis A occurs sporadically and epidemically worldwide, with a tendency to cyclic recurrences.

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Epidemics are uncommon in developing countries where adults are generally immune. Improved sanitation and hygiene conditions in different parts of the world leave large segments of the population susceptible to infection, and outbreaks may result whenever the virus is introduced.

Common-source epidemics, related to contaminated food or water, may evolve explosively, as did the largest mollusc-linked epidemic in Shanghai, in 1988, involving about 300 000 people.

Worldwide, HAV infections account for 1.4 million cases annually.

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Data Telecommunication Loss (Human-caused Technological Hazard)

Data/Telecommunication Loss was rated as a MODERATE PRIORITY HAZARD in the City of Larkspur.

The City of Larkspur depends upon information systems and communications networks to carry out nearly all aspects of day to day business. In this digital era, as we use automated information technology (IT) systems to process information for better support of our missions, risk management plays a critical role in protecting our information assets, and therefore our missions, from IT-related risk.

An effective risk management process is an important component of a successful IT security program. The principal goal of an organization's risk management process should be to protect the *organization and its ability to perform their mission*, not just its IT assets. Therefore, the risk management process should not be treated primarily as a technical function carried out by the IT experts who operate and manage the IT system, but as an essential management function of the organization.

Computer Security Breaches

Computer breach incidents have risen sharply since the 1980s. These include viruses, worms, Trojan horses, break-ins, and other damaging breaches. Whereas only six incidents were reported in 1988, the number rose gradually during the late 1980s and 1990s, they made a sharp rise beginning in 1998, and have risen exponentially since. To date, there have been over 142, 500 computer breaches.

The 2002 Computer Security Institute (CSI) Computer Crime and Security Survey revealed that each year, over half of all databases have some kind of breach and that the average breach amounts to nearly \$4 million in losses. This percentage is staggeringly high given that these are the security problems that companies are reporting. Organizations don't want to advertise the fact that their internal people have access to customer data, can steal that data, cover their tracks, give the data to anybody and stay undetected and employed while a crime is committed.

California recently enacted a law mandating the public disclosure of computer security breaches involving confidential information. The law covers not just state agencies but all private enterprises doing business in California. Starting July 1, 2003, any entity that fails to disclose that a breach has occurred could be liable for civil damages or face class action suits.

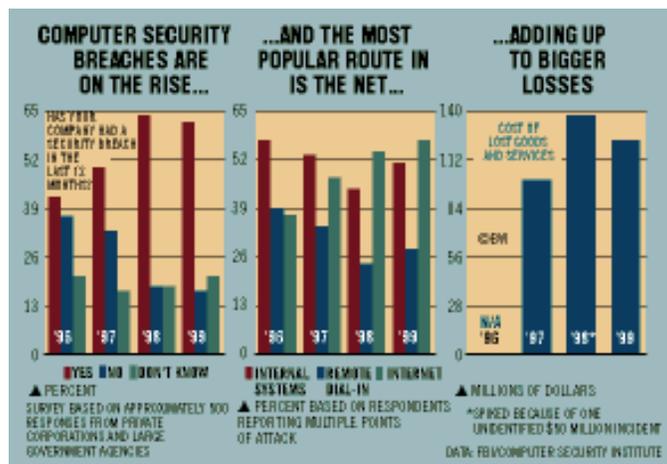
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Cyber Crime

"...Cyber crime is becoming one of the Net's growth businesses. The recent spate of attacks that gummed up Web sites for hours—known as "denial of service"—is only one type. Today, criminals are doing everything from stealing intellectual property and committing fraud to unleashing viruses and committing acts of cyber terrorism in which political groups or unfriendly governments nab crucial information. Indeed, the tactic used to create mayhem in the past few days is actually one of the more innocuous ones. Cyber thieves have at their fingertips a dozen dangerous tools, from "scans" that ferret out weaknesses in Web site software programs to "sniffers" that snatch passwords. All told, the FBI estimates computer losses at up to \$10 billion a year.

As grim as the security picture may appear today, it could actually get worse as broadband connections catch on. Then the Web will go from being the occasional dial-up service to being "always on," much as the phone is. That concept may be nirvana to e-tailers, but could pose a real danger to consumers if cyber crooks can come and go into their computer systems at will. Says Bruce Schneier, chief technical officer at Counterpane Internet Security Inc. in San Jose, Calif.: "They'll keep knocking on doors until they find computers that aren't protected." Sadly, the biggest threat is from within. Law enforcement officials estimate that up to 60% of break-ins are from employees. Take the experience of William C. Boni, a digital detective for PricewaterhouseCoopers in Los Angeles. Last year, he was called in by an entertainment company that was suspicious about an employee. The employee, it turns out, was under some financial pressure and had installed a program called Back Orifice on three of the company's servers. The program, which is widely available on the Internet, allowed him to take over those machines, gaining passwords and all the company's financial data. The employee was terminated before any damage could be done.

The dirty little secret is that computer networks offer ready points of access for disgruntled employees, spies, thieves, sociopaths, and bored teens. Once they're in a corporate network, they can lift intellectual property, destroy data, sabotage operations, even subvert a particular deal or career. "Any business on the Internet is a target as far as I'm concerned," says Paul Field, a reformed hacker who is now a security consultant.



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Economic Loss (Human-caused Technological Hazard)

Economic Loss was rated as a MODERATE PRIORITY HAZARD in the City of Larkspur.

The City of Larkspur is dedicated to maintaining their bedroom community atmosphere. Any disruption in the City or local businesses day-to-day operation would impact the City and its citizens. Although, the City is proactive in providing city service to their citizens and business community, they are limited in their ability to mitigate private industry's hazard mitigation.

Marin County residents are in a sour mood when it comes to the state of the economy in California, the county, and their local areas. Two in three county residents predict bad economic times for California during the next 12 months. This is a considerably higher percentage than we found in PPIC Statewide Surveys in 2000, 2001, and 2002. These pessimistic views are shared across geographic, racial/ethnic, demographic, and political groups.

When asked to evaluate the Marin County economy today, only 24 percent of resident's rate it as excellent or good—48 percent say it is fair, and 27 percent rate it as poor. The low ratings are consistent across geographic areas and demographic groups.

As for their parts of Marin County, half of county residents report their areas are now in a mild (12%), moderate (25%) or serious (14%) recession. The Central/Southeast area has the highest percentage of residents (58%) who say their part of the county is in a recession. Higher percentages of Latinos (58%) and blacks (57%) than whites (44%) say their areas are in a recession. Residents with lower incomes and less education and immigrants are also more likely than others to share this view.

Residents are divided about their overall outlook for the county: Forty percent say that Marin County is headed in the right direction, and 43 percent believe that it is headed in the wrong direction. Concerning quality of life, 61 percent of Marin County residents say things are going well, and 36 percent say they are not. More than one-third of residents in all four areas believe things are going badly. Although 51 percent see themselves living in the same neighborhood five years from now, 22 percent expect to be living elsewhere in the county, and 17 percent expect to be living outside the county. Younger and more educated residents are most likely to say they will move out of the county in the next five years.

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Hazardous Materials (Human-caused Technological Hazard)

Hazardous Materials was rated as a MODERATE PRIORITY HAZARD to the City of Larkspur.

Larkspur is a residential community, seemingly removed from the risk of accidental exposure to hazardous materials. However, hazardous materials are used, stored, and transported through Larkspur every day. Several manufacturing processes in the area east of Highway 101 use hazardous materials. Neighborhood gas stations and dry cleaners also use explosive products and solvents, and almost every household keeps some hazardous materials on hand (insecticides, paint, etc.).

Marin County's Hazardous Waste Management Plan shows that:

- In 1986, Marin County generated about 7,700 tons of hazardous waste.
- Of this, 85 percent of the wastes were generated by 1,400 "small quantity" generators.
- Marin households contribute about 5 percent of the total waste stream.
- Waste oil is the largest constituent of Marin's hazardous waste stream, and solvents are the second largest constituent.
- Marin County's overall waste stream may nearly double by the year 2000 if source reduction is not implemented.

In addition to hazardous materials used and stored in Marin County, significant risk is posed by trucks carrying flammable liquids and gases, corrosives, explosives, and oxidizers along Highway 101. An accidental release of any of these products could result in a serious threat to life and property, as well as secondary effects of fire, explosion, or public health risk (Larkspur Emergency Plan, Hazard Summary for Hazardous Materials Incident).

In the event of a major hazardous materials accident, Larkspur can request assistance from the San Rafael Hazardous Material Response Committee under a joint-powers agreement. For flammable or combustible liquid spills, the City may request assistance from the Chevron Oil refinery. There are also limited resources for cleaning up on-site flammable or combustible liquid spills at the Larkspur Ferry terminal.

Handling of hazardous materials is regulated by several State and federal agencies. Commercial use and storage of hazardous materials is subject to the provisions of the California Occupational Health and Safety Act (CALOSHA), the Uniform Fire Code, the Uniform Building Code, and other state and federal legislation. Transport of hazardous materials and wastes is regulated by the U.S. Department of Transportation and the California Highway Patrol Motor Carrier Division, the U.S. Environmental Protection Agency, and the State Department of Health Services (DOHS). Counties have been designated by the DOHS as the enforcement agencies for many of the hazardous materials regulations. The Marin County Environmental Health Department regulates both underground and above-ground storage facilities within Larkspur.

The Marin County Hazardous Waste Management Plan - which provides guidance at the local level - is included by reference in the Larkspur General Plan.

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The County Plan was prepared under a state directive (the Tanner bill) which required cities and counties to find ways to minimize hazardous waste through source reduction and recycling at various stages. The Plan also addresses enforcement of standards and regulations, emergency response, safe transportation, and prevention and clean-up of contaminated sites. More than 100 implementation measures are recommended.

Hazardous Material Goals, Policies, and Programs

Goal 9: Protect Larkspur from accidental exposure to hazardous materials from spills, leaks, vapor releases, and improper or illegal storage and disposal.

Policy q: Limit the use and storage of hazardous materials in Larkspur to commercial and industrial areas.

Action Program [34]: Designate zone districts where hazardous materials can be used and stored.

Action Program [35]: Closely monitor and enforce regulations concerning the use and handling of hazardous materials.

Action Program [36]: Require transporters of hazardous materials to notify the City before moving such materials along City streets.

The types and amounts of materials requiring such notification will be specified by the City. The City also should identify areas where various types of hazardous chemicals and materials can be used and stored. Small quantities of certain types of chemicals (such as dry cleaning solvents) may be used in neighborhood commercial areas, while other types of chemicals and materials should be more strictly controlled.

AIR QUALITY

Poor air quality is a persistent environmental problem. Despite great improvements in the past 20 years, the San Francisco Bay Area still experiences unacceptably high air pollution levels. The Bay Area is designated a "nonattainment" area for ozone and carbon monoxide, meaning these pollutants exceed federal standards. Auto emissions are the primary source of air pollution in the Bay Area (Unless otherwise noted, the information in this section was obtained from the Bay Area Air Quality Management District's booklet, Air Quality and Urban Development Guidelines for Assessing Impacts of Projects and Plans, Nov, 1985, and revised draft of Chapter 10, May 1988).

Although ambient air quality in Marin County is excellent, due to largely favorable meteorological conditions (Marin Countywide Plan Draft Environmental Quality Element, January 1989, page 2-10), vehicle travel by Marin residents and workers probably contributes to the worsening conditions in other parts of the Bay Area. The Larkspur General Plan can contribute to improved regional air quality through its policies and programs to reduce the number of single-occupant auto trips.

Regulatory Agencies and Standards

Air pollutants are regulated at the federal, state, and regional level. The federal Clean Air Act of 1970 set standards for various pollutants. In 1977 it was amended to require states that would not attain air quality standards by 1982 (as in the Bay Area) to adopt vehicle inspection and maintenance programs and transportation control measures.

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The State of California has adopted its own air quality standards, which, for some pollutants, are more restrictive than the federal standards. The Sher and Cortese bills place greater emphasis on transportation control measures to reduce auto emissions.

The Bay Area Air Quality Management District (BAAQMD) does regional air quality planning, regulates stationary sources, and operates a system of 17 air quality monitors throughout the Bay Area to track local and regional air quality conditions. The only Marin County monitor is located at 534 Fourth Street in San Rafael. Readings from this monitor are the primary source of information about air quality in the county.

The table below summarizes federal and state ambient air quality standards for the major pollutants.

Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	National Standard	California Standard
Carbon Monoxide (CO)	8-Hour	9.0 ppm	9.0 ppm
Ozone (O ₃)	1-Hour	0.12 ppm	0.10 ppm
Nitrogen Dioxide (NO)	Annual 1-Hour	0.05 ppm	0.25 ppm
Sulfur Dioxide (SO ₂)	Annual 24-Hour	0.03 ppm	0.14 0.05 ppm
Total Suspended Particulates An Geom. Mean 24-Hour (TSP) (P.M. < 10)			30 ug/m ³ 50 ug/m ³

PPM = PARTS PER MILLION; UG/M³ = MICROGRAMS PER CUBIC-METER; P.M. < 10 = PARTICULATE MATTER LESS THAN 10 MICRONS IN DIAMETER.

Standards for emissions from wood burning stoves may be forthcoming because wood burning stoves produce large amounts of particulate matter. However, at the time of adoption of this Plan, the California Energy Commission had not adopted such standards. Some California communities require fireplaces and wood-burning stoves to meet Oregon or Colorado certification standards.

Sources of Pollutants, and Health Risks

Emissions from motor vehicles are the primary source of carbon monoxide, ozone precursors (the chemicals that react to form ozone in the presence of sunlight), and nitrogen dioxide. Large industrial plants, primarily oil refineries, are the major source of sulfur dioxide. Combustion, factories, construction, grading, and demolition create particulate matter (smoke, dust, aerosols, and metallic oxides). Particulate matter of 10 microns or less in size is of greatest concern because it is more easily inhaled.

The regulated pollutants can cause cardiovascular disease and acute and chronic respiratory disease. In addition, ozone can irritate the eyes, reduce visibility, and damage vegetation. Certain population groups, including children, the elderly, the acutely ill, and the chronically ill - especially those with cardiovascular diseases - are particularly sensitive to high concentrations of pollutants. These groups, and the locations and facilities where they spend a substantial amount of time, are referred to as "sensitive receptors." In Larkspur, sensitive receptors include all residential neighborhoods as well as public and private schools (Redwood High School, Hall Middle School, Larkspur/Corte Madera School where Marin Primary School is located, and St. Patrick's School), city parks, and private day care centers. (See Figure 5-2 for locations.) Marin General Hospital, schools,

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parks, and convalescent hospitals in Kentfield and Greenbrae are also "sensitive receptors."

Climate and Topography

Climate and topography are major influences on air quality. Marin County benefits from constant winds, a marine layer of fog which lifts in the morning hours during the summer, and heavy winter precipitation compared to other parts of the Bay Area. Wind direction is east-west, in alignment with the ridges (Corte Madera Ridge and Southern Heights Ridge in Larkspur). The combination of wind direction and topography allows for constant scouring of the ambient air, resulting in extremely high air quality most of the time. It also means that air pollution generated in Marin County is dispersed to other parts of the Bay Area, underscoring the regional nature of the problem (Marin County Environmental Quality Element Draft Technical Report #1, *Air Quality Maintenance in Marin County*, January 1989, page 11).

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Historic and Current Air Quality

Air quality in the San Francisco Bay Area has improved since the passage of the Clean Air Act in 1970, due mainly to emission controls on autos and to controls on stationary air pollution sources. Table 7-7 below shows the number of days on which federal or State standards were exceeded at the San Rafael Monitoring Station over the past 10 years. After three incidents in 1978, there were no days in which standards were exceeded until 1988.

Number of Days on Which Federal or State Standards Were Exceeded at the San Rafael Monitoring Station

Pollutant	1978	1980	1982	1983-1987	1988	
Carbon Monoxide (CO)	1	0	0	0	0	
Ozone (O ₃)	2	0	0	0	1	(State)
Nitrogen Dioxide (NO ₂)	0	0	0	0	0	
Sulfur Dioxide(SO ₂)	0	0	0	0	0	
Total Suspended Particulates (TSP) (P.M. < 10)	0	0	0	0	2	

Although the table illustrates generally favorable air quality in Marin County, Marin produced an estimated 190 tons of air contaminants every day in 1982. When disaggregated by land use, transportation (vehicles, boats, etc.) was estimated to produce 160 tons or 84 percent of the total. Residential, industrial, construction, and agriculture each contributed between six and nine tons a day (Marin Countywide Plan Draft

Environmental Quality Element, January 1989, page 2-10). Clearly, vehicle travel is the major source of air pollution in Marin County. Although carbon dioxide is not listed above, even a clean-burning engine emits about 5.6 pounds of carbon in the form of carbon dioxide for every gallon of gas it consumes (*The End of Nature*, Bill McKibben, 1989).

Air Quality Goals, Policies, and Programs

Goal 10: Ensure that air pollution levels do not threaten public health and safety.

Policy r: Seek to comply with State and federal standards for air quality.

Policy s: Seek to reduce auto travel and, thereby, the pollutants from auto emissions.

Since most readily available pollution control "hardware" has already been applied to stationary sources and motor vehicles, a reduction in auto travel may be the only way to improve air quality in the Bay Area. This could require fundamental changes in land use and travel patterns. Larkspur is almost built out, so significant land use changes are not likely to occur. However, the Larkspur Circulation Goals, Policies, and Programs strongly advocate a reduction in the number of single-occupant auto trips. Alternative modes of transportation, such as transit and bicycles, are encouraged, and a Transportation Demand Management ordinance is proposed. The

Circulation and Land Use chapters also encourage mixed uses and neighborhood shopping centers to reduce auto trips.

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Policy t: Ensure that traffic generated by new development is not the cause of state and federal air quality standards being exceeded in Marin County.

Action Program [37]: Require new development to mitigate impacts if the project causes a change in the level of air pollutants by a specified amount.

Source: City of Larkspur General Plan

The City will work with the BAAQMD to identify other measures which Larkspur might impose.

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Terrorism/Weapons of Mass Destruction (Human-caused Technological Hazard)

Terrorism/Weapons of Mass Destruction rated as a MODERATE PRIORITY HAZARD to the City of Larkspur.

Terrorism is the use of force or violence against persons or property for the purpose of intimidation, coercion, or ransom. Terrorists often use violence and threats to create fear among the public, to try to convince people that their government is powerless to prevent acts of terrorism, and to get immediate publicity for their cause. Act of terrorism can range from threats to assassinations, kidnapping, airline hijackings, bombings, building explosions, mailing of dangerous materials, agro-terrorism, computer-based attacks, and the use of chemical, biological, and nuclear weapons, - weapons of mass destruction (WMD).

Weapons of Mass Destruction (WMD) events present different challenges than other incidents involving mass casualties. Weapons of Mass Destruction events can include attacks involving:

- Chemical Weapons
- Biological Weapons
- Nuclear Weapons
- Explosives

Chemical Weapons attacks utilize chemical agents that are poisonous vapors, aerosols, liquids, and solids that have toxic effects on people, animals, or plants. They can be released by bombs or sprayed from aircraft, boats, and vehicles. They can be used as a liquid to create a hazard to people and the environment. Some chemical agents may be odorless and tasteless. They can have an immediate or delayed effect.

Persons involved in a Biological Weapons attack, for example, may take days to develop symptoms and are therefore difficult to identify and control.

A Radiological attack would involve terrorists using radioactive materials employed in medicine, science and industry to produce a “dirty bomb” which would not cause mass destruction, but could disperse radiation over a wide area.

Nuclear Weapons, although least likely, present the most serious threat due to their profound physical impacts on people, buildings, infrastructure, and social systems. Radiation is a primary concern for those exposed and for their descendents.

High-value terrorism targets include military and civilian government facilities, international airports, large cities, and high-profile landmarks. Terrorists might also target large public gatherings, water and food supplies, utilities, economic, and corporate centers.

(Source; Marin County Operational Area Hazard Mitigation Plan; August 2005)

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Water/Wastewater Disruption (Human-caused Technological Hazard)

Water/Wastewater was rated as a MODERATE PRIORITY HAZARD to the City of Larkspur.

With a growing population and economy, increasing environmental concerns and vibrant agriculture industry at play, how we choose to collect, store, distribute, use and dispose of water has never been more critical.

Every drop of water not used by a household, farm or business can be used to create higher river flows to benefit fisheries and floodways. Likewise, recycled water stored in new reservoirs can be used to recharge over-drafted groundwater aquifers. In short, new and innovative ideas are on the table that will help California rework its waterworks so that it is not necessary to choose between the environment, the economy, and people's livelihoods and lifestyles. From the northern reaches to the San Joaquin Delta, which provides two-thirds of the state's residents with their drinking water, California is under the gun to reconstruct and rehabilitate its water and wastewater systems. The challenge is being met on many fronts. On these pages you will find a summary of the water and wastewater challenges California faces today, along with the lowdown on solutions in the works.

Problems

Our groundwater basins are over-drafted and our existing surface storage cannot meet future water demands, particularly in times of drought.

The gap between water supply and demand in California is predicted to total 2.4 million acre feet during drought years and up to 6.2 million acre feet in drought years by 2020. (An acre foot is enough to meet the annual needs of between one and two households.) Six million feet is roughly triple the amount of water the Bay Area uses in a year. At the same time, growers, manufactures and businesses are demanding more reliable and better quality water.

It can take 20 years or longer to develop and finance a supplemental water supply for new developments.

About 894 gallons of water are needed to grow the food for the daily diet of an average person. On an annual basis, an individual's water use is about 326, 310 gallons.

Some of our cities rely on water mains and sewers that are more than 100 years old.

In 2001 California officials issued more than 2,000 beach closings and health advisories because of sewer spills and overflows. Spills and overflows typically happen because wastewater systems have not been upgraded to facilitate new growth, and sewer pipes have not been replaced in time to avert a main break.

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When it rains, at times as little as one-quarter inch, the volume of combined runoff and wastewater becomes too great for sewage treatment plants to handle, and the flow is diverted to outfall points that discharge raw sewage, toxic industrial waste and floatables such as garbage and syringes.

California needs an estimated \$8.4 billion for local wastewater treatment improvements.

Solutions - Water

Through a state/federal partnership known as CALFED, for example, some \$10 billion in expanded storage, increased recycling and conservation, ecological restoration of key watersheds, and improved water distribution and conveyance has been identified that over the next few decades help meet some of these challenges. Cities are expanding wastewater treatment systems, improving water distribution infrastructure, and developing local recycling programs as well, some using funds from the CALFED program.

To offset water shortages, the state's water recycling program needs more investment. In 1998, the last year it revised its state Water Plan, the California Department of Water Resources issued a 10-year capital improvement forecast calling for more than \$1.6 billion in spending to ensure delivery of clean water. In addition, a state/federal partnership known as CALFED is overseeing a vast reworking of the state's water storage and distribution system. The CALFED program as it is known foresees \$10 billion in environmental and ecological restoration projects, new storage facilities, recycling programs, water transfer arrangements to help strike a balance the state's competing water needs.

Solutions - Wastewater

State and federal water quality regulations require cities and other municipalities to upgrade wastewater treatment and distribution systems to prevent overflows during wet weather no later than 2014. Pipe replacement projects, construction of new retention ponds, increased recycling and conservation programs, and expanded treatment facilities are all part of the mix of solutions.

California Dept. of Water Resources, Water Education Foundation, Natural Resources Defense Council

Low Risk Priority Hazards

Aviation Disasters (Human caused Technological Hazard)

Aviation Disasters were rated as a LOW PRIORITY HAZARD in the City Larkspur.

A major air crash that occurs in a heavily populated residential area can result in considerable loss of life and property. The impact of a disabled aircraft as it strikes the ground creates the likely potential for multiple explosions, and fires have the potential to cause injuries, fatalities and the destruction of property at and adjacent to the impact point. The time of day when the crash occurs may have a profound affect on the number of dead and injured. Damage assessment and disaster relief efforts associated with an air crash incident will require support form other local governments, private organizations and in certain instances from the state and federal governments.

It can be expected that few, if any, airline passengers will survive a major air crash. The intense fires, until controlled, will limit search and rescue operations. Police barricades will be needed to block off the affected area. The crowds of onlookers and media personnel will have to be controlled. Emergency medical care, food and temporary shelter will be required by injured or displaced persons. Many families may be separated, particularly if the crash occurs during working hours; and a locator system should be established at a location convenient to the public. Investigators from the National Transportation and Safety Board and the Marin County Coroners Office will have short-term jurisdiction over the crash area and investigations will be completed before the area is released for clean up. The clean-up operation may consist of the removal of large debris, clearing roadways, demolishing unsafe structures and towing of demolished vehicles.

It can be anticipated that the mental health needs of survivors and the surrounding residents will greatly increase due to the trauma associated with such a catastrophe. A coordinated response team, comprised of mental health professionals, should take a proactive approach toward identifying and addressing mental health needs stemming from any traumatic disaster.

It is impossible to totally prepare, either physically or psychologically, for the aftermath of a major air crash. However, since Southern California has become one of the nations most overcrowded airspaces, air crash incidents are no longer a probability but a reality. Therefore, air crash incidents must be included among other potential disasters.

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Drought (Natural Hazard)

Drought was rated as a LOW PRIORITY HAZARD to the City of Larkspur.

Agricultural Risk - Drought

Drought is a gradual phenomenon. One dry year does not normally constitute a drought in California, but rather serves as a reminder of the need to plan for droughts. California's extensive system of water supply infrastructure - reservoirs, groundwater basins, and interregional conveyance facilities - generally mitigates the effects of short-term dry periods for most water users.

Droughts exceeding three years are relatively rare in Northern California, the source of much of the state's water supply. The 1929-1934 drought established the criteria commonly used in designing storage capacity and yield for large Northern California reservoirs. The driest single year in California's measured hydrologic history is 1977. California's most recent multi-year drought was 1987-1992.

Source: Preparing for California's Next Drought—Changes Since 1987-92, Department of Water Resources, July 2000.

The 1995-1997 Drought

From November 1975 through November 1977, California experienced one of its most severe droughts. Although people in most areas of the state are accustomed to almost no precipitation during the growing season (April to October), they expect it in the winter. In 1976 and 1977, the winters brought only one-half and one-third of normal precipitation, respectively, leading to the state's fourth and first driest years on record. Most surface storage reservoirs were substantially drained in 1976, leading to widespread water shortages when 1977 turned out to be even drier.

Source: Preparing for California's Next Drought—Changes Since 1987-92, Department of Water Resources, July 2000.

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Explosions (Human-caused Technological Hazard)

Explosion was rated as a LOW PRIORITY HAZARD in the City of Larkspur.

An explosion is a rapid release of stored energy characterized by a bright flash and an audible blast. Part of the energy is released as thermal radiation (flash); and part is coupled into the air as air blast and into the soil (ground) as ground shock, both as radially expanding shock waves.

To be explosive, the material:

Must contain a substance or mixture of substances that remains unchanged under ordinary conditions, but undergoes a fast chemical change upon stimulation.

This reaction must yield gases whose volume—under normal pressure, but at the high temperature resulting from an explosion—is much greater than that of the original substance.

The change must be exothermic in order to heat the products of the reaction and thus to increase their pressure.

Common types of explosions include construction blasting to break up rock or to demolish buildings and their foundations, and accidental explosions resulting from natural gas leaks or other chemical/explosive materials.

The rapid expansion of hot gases resulting from the detonation of an explosive charge gives rise to a compression wave called a **shock wave**, which propagates through the air. The front of the shock wave can be considered infinitely steep, for all practical purposes. That is, the time required for compression of the undisturbed air just ahead of the wave to full pressure just behind the wave is essentially zero.

If the explosive source is spherical, the resulting shock wave will be spherical. Since its surface is continually increasing, the energy per unit area continually decreases. Consequently, as the shock wave travels outward from the charge, the pressure in the front of the wave, called the **peak pressure**, steadily decreases. At great distances from the charge, the peak pressure is infinitesimal, and the wave can be treated as a sound wave.

Behind the shock wave front, the pressure in the wave decreases from its initial peak value. At some distance from the charge, the pressure behind the shock front falls to a value below that of the atmosphere and then rises again to a steady value equal to that of the atmosphere. The part of the shock wave in which the pressure is greater than that of the atmosphere is called the **positive phase**, and, immediately following it, the part in which the pressure is less than that of the atmosphere is called the **negative or suction phase**.

Conventional structures, in particular those above grade, are susceptible to damage from explosions, because the magnitudes of design loads are significantly lower than those produced by most explosions. The peak pressure in the blast pulse produced by 10 lb of TNT at a range of about 50' is approximately 2.4 psi (which is 348 psf!) with a duration of

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the positive phase of 7.7 ms. Conventional structures are not normally designed to resist blast loads.

Recent terrorist attacks demonstrate the types of damage that can be produced. The 1993 terrorist attack on the World Trade Center in New York City removed several thousand square feet of concrete floor slabs in the general area of the explosion and severely damaged several buildings' communication, transportation and utility systems. Due to the inherent redundancy of the steel frames, the structures did not collapse.

The 1995 attack on the Alfred P. Murrah Federal Building in Oklahoma City revealed the vulnerability of conventional structural designs when subjected to blast loads. When a source is located at street level, the blast shock wave acts up against the underside of the floor slabs at upper stories. Floor slabs are not designed for this magnitude and direction of load—for this direction of load, the reinforcement is in the wrong place.

Explosion Hazards

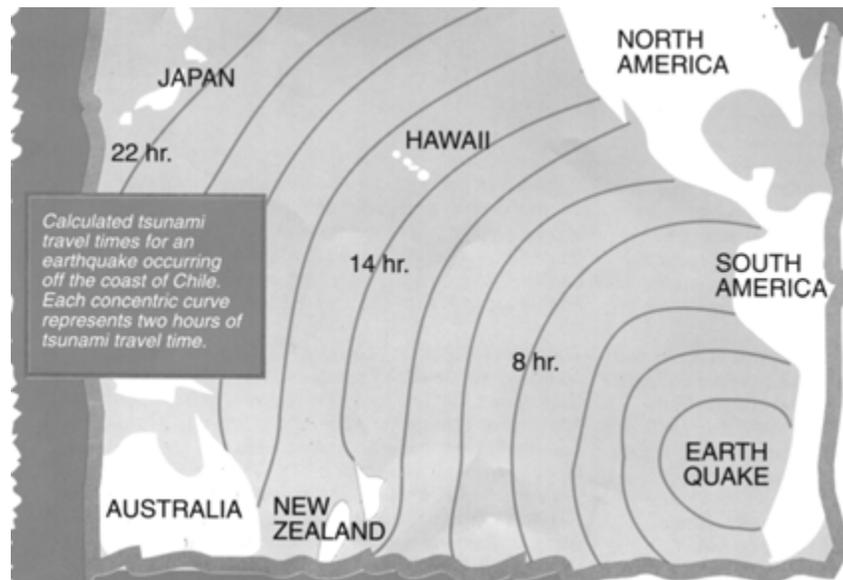
There are many potential explosion hazards in Marin County. Catastrophic explosions could be caused by:

- Exotic Chemicals and Substances
- Natural Gas and Propane
- Methane Gas
- Gasoline and other liquid fuels
- Manufactured and Military Explosives
- The origin of a catastrophic explosion may be:
 - Stationary pressure vessels and tanks
 - Rail tank cars
 - Truck tanks
 - Pipelines
 - Cargo ships carrying explosive materials
- Explosions can be triggered by:
 - Manual of Accidental Detonation of Explosives
 - Fire/Open Flame
 - Electrical Discharge
 - Chemical Interaction
 - Radiological Reaction
 - Faulty Containment
 - Equipment Malfunctions
 - Explosion Consequences
- A catastrophic explosion could challenge responders to deal with:
 - Mass casualties
 - Fires
 - Building and property destruction
 - Infrastructure failure (telecommunications, transportation, etc.)
 - Lifeline interruption
 - Chemical or radiation contamination
 - Debris removal

Tsunami (Natural Hazard)

Tsunami was rated as a LOW PRIORITY HAZARD in the City of Larkspur.

Tsunamis, also called seismic sea waves or, incorrectly, tidal waves, generally are caused by earthquakes, less commonly by submarine landslides, infrequently by submarine volcanic eruptions and very rarely by a large meteorite impact in the ocean. Submarine volcanic eruptions have the potential to produce truly awesome tsunami waves. The Great Krakatau Volcanic Eruption of 1883 generated giant waves reaching heights of 125 feet above sea-level, killing thousands of people and wiping out numerous coastal villages.



The 1992 Nicaragua tsunami may have been the result of a "slow" earthquake comprised of very long-period movement occurring beneath the sea floor. This earthquake generated a devastating tsunami with localized damage to coastal communities in Nicaragua.

Not all earthquakes generate tsunamis. To generate tsunamis, earthquakes must occur underneath or near the ocean, be large and create movements in the sea floor. All oceanic regions of the world can experience tsunamis, but in the Pacific Ocean there is a much more frequent occurrence of large, destructive tsunamis because of the many large earthquakes along the margins of the Pacific Ocean.

Wave Height and Water Depth

In the open ocean a tsunami is less than a few feet high at the surface, but its wave height increases rapidly in shallow water. Tsunamis wave energy extends from the surface to the bottom in the deepest waters. As the tsunami attacks the coastline, the wave energy is compressed into a much shorter distance creating destructive, live-threatening waves.

In the deep ocean, destructive tsunamis can be small—often only a few feet or less in height—and cannot be seen nor can they be felt by ships. But, as the tsunami reaches shallower coastal waters, wave height can increase rapidly. Sometimes, coastal waters are drawn out into the ocean just before the tsunami strikes. When this occurs, more

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shoreline may be exposed than even at the lowest tide. This major withdrawal of the sea should be taken as a warning of the tsunami waves that will follow.

Pacific-Wide and Local Tsunamis

The last large tsunami that caused widespread death and destruction throughout the Pacific was generated by an earthquake located off the coast of Chile in 1960. It caused loss of life and property damage not only along the Chile coast but in Hawaii and as far away as Japan. The Great Alaskan Earthquake of 1964 produced deadly tsunami waves in Alaska, Oregon and California.

In July 1993, a tsunami generated in the Sea of Japan killed over 120 peoples in Japan. Damage also occurred in Korea and Russia but not in other countries since the tsunami wave energy was confined within the Sea of Japan. The 1993 Sea of Japan tsunami is known as a "local event" since its impact was confined to the nearby regional area in the proximity of the earthquake that generated the tsunami. For people living along the northwestern coast of Japan, the tsunami waves followed the earthquake within a few minutes. Local tsunamis also occurred in Nicaragua (1992), Indonesia (1992, 1994) and the Philippines (1994) killing thousands of people. Scientific studies indicate that local tsunamis generated off the northern California, Oregon and Washington coast can arrive within five to 30 minutes after the earthquake is felt.

Warnings

The Pacific Tsunami Warning Center (PTWC) in Ewa Beach, Hawaii, serves as the regional Tsunami Warning Center for Hawaii and as a national/international warning center for tsunamis that pose a Pacific-wide threat. This international warning effort became a formal arrangement in 1965 when PTWC assumed the international warning responsibilities of the Pacific Tsunami Warning System (PTWS). The PTWS is comprised of 26 international Member States that are organized as the International Coordination Group for the Tsunami Warning System in the Pacific. Many Member States countries operate national tsunami warning centers, providing warning services for their local area.

The objective of the PTWS is to detect, locate and determine the magnitude of potentially tsunamigenic earthquakes occurring in the Pacific Basin or its immediate margins. Earthquake information is provided by seismic stations operated by PTWC, ATWC, the U.S. Geological Survey's National Earthquake Information Center and international sources. If the location and magnitude of an earthquake meet the known criteria for generation of a tsunami, a tsunami warning is issued to warn of an imminent tsunami hazard.

The warning includes predicted tsunami arrival times at selected coastal communities within the geographic area defined by the maximum distance the tsunami could travel in a few hours. A tsunami watch with additional predicted tsunami arrival times is issued for a geographic area defined by the distance the tsunami could travel in a subsequent time period.

Tsunami Research Activities

With the broad availability of relatively inexpensive yet powerful computers and desk-top workstations, there is growing interest and activity in tsunami research. Using the latest in computer technology, scientists are able to numerically model tsunami generation, open

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ocean propagation and coastal runup. Recent advances in the technology have led to improved propagation and runup models.

Sub-surface pressure sensors, able to measure tsunamis in the open ocean, are providing important data on the propagation of tsunamis in deep water. Unfortunately, the mechanism of tsunami generation is not well understood.

Seismologists, studying the dynamics of earthquakes, are formulating new methods to analyze earthquake motion and the amount of energy released. Where the traditional Richter (surface wave) magnitude of earthquakes is not accurate above 7.5, the seismic moment is designed to better define the amount of energy released and the potential for tsunami generation. It is hoped that this relationship between seismic moment and the potential for tsunami generation can be refined so that the near-real time analysis of earthquakes can be performed for tsunami warning purposes.

Tsunami inundation models, defining the extent of coastal flooding, are an integral aspect of tsunami hazard and preparedness planning. Using worst case inundation scenarios, these models are critical to defining evacuation zones and routes so that coastal communities can be evacuated quickly when a tsunami warning has been issued. NOAA's Pacific Marine Environmental Laboratory is taking a lead role in developing tsunami inundation maps for coastal communities in Alaska, California, Hawaii, Oregon and Washington states.

In the area of improved tsunami wave detection instrumentation, recording systems comprised of sub-surface pressure sensors have been tested over the last decade off the Alaska and Oregon coasts. These pressure sensors, located on the sea floor, have successfully measured tsunami wave amplitudes in the open ocean. The final step in developing a deep water tsunami wave detection system for warning purposes brings together the collection of the pressure data and its subsequent rapid, reliable telemetry to the shore-based warning center. Open ocean tsunami wave detection systems using satellite or radio telemetry are being tested off the California coast.

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Volcanic Activity (Natural Hazard)

Volcanic Activity was rated a LOW PRIORITY HAZARD to the City of Larkspur.

Section 5 – Hazard Mitigation Strategies

Mitigation Goals and Objectives

The information in the hazard vulnerability analysis and loss estimation information was used as a basis for developing mitigation goals and objectives. Mitigation goals are defined as general guidelines explaining what each jurisdiction 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

The Steering Committee met collectively and individually with City department Directors to identify and prioritize mitigation strategies. The Steering Committee Chairman directed the participants take into account several factors, such as

- Economic benefits for the City and Community
- Reduce and/or eliminate the hazard vulnerability
- Does not conflict with existing plans and studies
- Improves the quality of life for the City and Community
- Reduces or eliminates hazard vulnerability to critical facilities
- Is consist with the Citizens survey and public input results

The Committee members developed mitigation strategies by evaluating the cost and mitigation strategy benefit, and Capital Expenditure Plan 2050 for the City of Larkspur and its citizens. The City of Larkspur is supportive of the following hazard mitigation strategies. The City shall make every effort, given appropriate funding, to implement these strategies as conditions warrant.

Mitigation actions that address the goals and objectives developed in the previous step were identified, evaluated, and prioritized. These actions form the core of the mitigation plan. The City conducted a capabilities assessment, reviewing existing local plans, policies, and regulations for any other capabilities relevant to hazard mitigation planning. An analysis of its capability to carry out these implementation measures with an eye toward hazard and loss prevention was conducted. The capabilities assessment required an inventory of the city's legal, administrative, fiscal and technical capacities to support hazard mitigation planning.

After completion of the capabilities assessment, the city evaluated and prioritized its proposed mitigations. The City considered the social, technical, administrative, political, legal, economic, and environmental opportunities and constraints of implementing a particular mitigation action as described in the STAPLE+E form. This step resulted in a list of acceptable and realistic actions that address the hazards identified in each jurisdiction.

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A full suite of goals, objectives and action items for the City is presented in this Plan. The City then identified and 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.

State of the City from Mayor Larry Chu

The following pages contain newspaper articles from Mayor Larry Chu concerning hazards, mitigation, constraints and their impact to the City.

Time to shore up headquarters

State of the City

Larry Chu

As we approach the centennial of the San Francisco earthquake, one cannot help wondering when the next quake of a catastrophic magnitude will hit the Bay Area. A more ominous thought is whether the headquarters of the Twin Cities Police Authority will still be able to function as the Emergency Operations Center for the communities of Larkspur and Corte Madera once the ground stops shaking.



In a capital-expenditure plan released by the city of Larkspur in March 2001, the police station was identified as one of the two top priorities for implementation (City Hall being the second). The report cited the need for maintaining public health and community safety, and the need for the efficient use of city resources.

The police station is a 34-year-old wood-frame building constructed on landfill and engineered as a temporary structure. There is no seismic reinforcement, the building does not have a fire-suppression system, does not meet many of the basic building-code standards and does not comply with the Americans With Disabilities Act. Heating, ventilation, air conditioning and electrical systems are inadequate and the roof is in a chronic state of disrepair.

Inadequate space is another problem. The

department's 46 employees are expected to provide patrol services, dispatch, investigations, administration and an EOC in the overcrowded confines of a 3,150-square-foot building. By contemporary police planning standards, a 14,000-square-foot facility is recommended for a community the size of the Twin Cities.

Coordination problems can be attributed to the space issue. The only meeting room must double as a storage area and is not safe for public use. Staff must travel back and forth to use the public safety building at 342 Tamalpais for meetings with the public. This location is also used for the storage of records.

Operational improvements are also needed. The existing facility does not have gender-specific locker rooms and restrooms. With only one holding cell, the lack of secure space for confining and separating detainees poses a serious safety risk to staff and detainees alike. Technologies specific to law enforcement place additional demands on space, power and climate control.

Since the building's four walls are the only load-bearing supports, retrofitting for seismic and fire safety and remodeling or expanding the current facility are not cost-effective solutions. The only practical solution is a new building.

In the past five years, the TCPA has been involved in designing a new facility and evaluating potential sites. A comprehensive study was performed to determine existing and future service levels and needs. With both communities nearly built out, the current staffing levels should be adequate to

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Continued from page 1

small amounts of growth. However, it is unclear how the changes in demographics (e.g., an aging population and the possible rise in the number of children and teens) will affect the number of calls for service or the crime rate.

Even with several shopping malls in the service area, the crime rate in the Twin Cities is low compared to other communities in the Bay Area. The vast majority of the workload is responding to service calls from citizens.

The study also evaluated potential sites for a new facility. While there are benefits to having a visible and easily

accessible facility, the location is not critical in terms of delivering efficient services.

Several locations in Larkspur and Corte Madera were considered. Ultimately, the high cost of land was the determining factor in the decision to build on the existing property. The current location at the entrance to Piper Park is near schools and recreational facilities. This site is also a desirable deterrent to criminal activity in those locations.

Other financial issues have not been resolved. In 2000, the estimated cost of construction was \$4.5 million and this figure does not include costs associated with a temporary relocation or for new furnish-

ings. With regional shortages in labor and materials, new construction estimates will have to be prepared by a recently hired project manager.

The alternatives for funding the project and an agreement for the use of the land owned by the city of Larkspur have not been made final. The TCPA will continue having these discussions over the next couple of months and a separate analysis will be written on this topic once those details have been presented.

Next week, an analysis of City Hall will be presented.

Questions or comments can be e-mailed to Larry Chu, mayor of Larkspur, at LChu@larkspurcityhall.org.

City Hall in need of helping hand

State of the City

Larry Chu

In some cities, City Hall is just another office building where local government conducts its business. In Larkspur, City Hall contributes to the physical attractiveness of the downtown area. The historical architecture is characteristic of our small-town values and a reminder of our community heritage.



Built in 1913, the architectural integrity of City Hall remains intact, but the structure is in dire need of rehabilitation. Last year, the back side of the building had to be repaired after the collapse of a second-floor storage area. The front façade of the building is rapidly deteriorating.

In a capital expenditure plan released by the city of Larkspur in March 2001, City Hall was identified as the second of the two top priorities for implementation (the police station is the other). The underlying factors are the need to maintain public health and community safety, efficient use of city resources and the preservation of valuable historic assets.

City Hall is conveniently located at the corner of Magnolia and King. It serves as the offices for the city manager and the Planning Department. It houses the library, and various other administrative functions. The City Council conducts its meetings in this building, and the council chambers double as the only public meeting place on the premises.

The building is a wood-frame structure built to early-20th century standards. There are a number of deficiencies that need to be addressed to ensure for the safety of employees and the public. Other than the roof, there are no seismic protections, and the building does not have a fire-suppression system. In addition, the building does not comply with the Americans with Disabilities Act.

The plumbing is old and dilapidated. Machinery for running the heating, ventilation and air-conditioning system is undersized and does not have the power to adequately heat or cool the entire building at one time. It can take several hours to get the facility to a temperature conducive for a comfortable environment for staff and patrons of the library. The system is too old to be repaired

and replacement is not cost-effective due to the amount of restructuring needed to accommodate a new system.

At the beginning of the year, some lighting improvements were made. Energy-saving light fixtures and insulated ceiling tiles were installed in the council chambers as part of an energy-management demonstration project between local governments and public utilities. However, even if the pilot program is a success, the electrical system is still inadequate to meet the power requirements for technology that is necessary to run a modern office and an efficient operation.

Lack of space is another issue. The council chambers can only accommodate 67 people and meetings are moved to Hall Middle School or St. Patrick's whenever larger crowds are anticipated. The library only has about a third of the space it needs to serve more segments of the community. There is no room for file storage and employees are forced to make do in crowded conditions. Working this way does not align itself with providing effective service levels to the public.

Public Works and Park and Recreation employees are now in other facilities at Piper Park and Hall Middle School, respectively. While some of the overcrowding has been alleviated, the trade-off has been the loss of communications and coordination that would still exist if all staff members were working in proximity to each other.

The consequence of not solving these problems has been a further diminishing of service levels and an increase in the cost of maintenance, cleaning and repairs. These changes are not noticeable over a short period of time, but each year the incremental cost to support the facility continues to rise.

Moving all city services to another location is an alternative, but City Hall in its existing location is an integral part of downtown. The building is recognized by the Department of the Interior as a contributing structure to the Downtown Larkspur National Historical Registry. A Heritage Preservation ordinance requires that the appearance and integrity of the building be closely maintained for its original use. It is unlikely the facility can have any other use in its current form and design.

Next week, an analysis of streets, storm drains and bridges will be presented.

Questions or comments can be e-mailed to Larry Chu, mayor of Larkspur, at LChu@larkspurcityhall.org.

The streets and roads we travel

State of the City

Larry Chu

Larkspur residents have grown to appreciate the high quality of life and attractive environment in this community. Yet, as you drive through the city, it is all too common to be jolted by a pothole or an uneven section of pavement in the road. On some of the worst streets, pedestrians find themselves navigating around large cracks in the crosswalks.



Last fall, the Metropolitan Transportation Commission reported on a study of pavement conditions in the Bay Area. Larkspur was rated as having the worst roads of Marin's 11 cities and towns. Only the unincorporated parts of the county had a lower score.

There are approximately 45 miles of streets and roads in Larkspur. The Department of Public Works and Engineering maintains about 90 percent of the 41 miles owned by the city. Deterioration occurs over the course of several years. Depending on the weight and volume of traffic, a properly built street does not need repaving for 10 to 20 years.

Many of Larkspur's streets were paved in the early 20th century. By modern engineering standards, many of these older streets are more prone to rapid wear since they lack a properly compacted base or an adequate rock underlayer. The result is a faster rate of deterioration than our contemporary roadways.

Residents have an expectation of a good and healthy infrastructure with streets that are properly maintained. The most common question asked is, "Why can't we fix our roads?" While all substandard streets should be replaced, the simple answer is, not enough money.

Funding for the maintenance of local roads traditionally comes out of general-fund revenues from taxes and other fees. Since the passage of Proposition 13 in 1978, property-tax increases have been limited to only 2 percent per year. Other than in some recent years, the rate of inflation has been higher.

While the higher basis on the turnover of homes has produced additional property-tax revenues, it has not been enough to stay even with the disproportionate escalation of

other expenses, such as insurance, which have increased several times more than the rate of inflation. To further exacerbate the matter, the state of California has attempted to reduce its budget deficit by withholding portions of the sales tax, property tax and vehicle license fees owed to the city.

In an effort to live within our means and to maintain the same level of public services, maintenance and improvements on our roads have been deferred. Budgetary constraints simply do not allow for the proper reconstruction of older streets. The addition of a low-cost slurry sealer every five years can prolong the life of a street, but this is a process that can't be repeated once the integrity of the pavement has been compromised.

Applying another layer of asphalt is one option for patching the road surface. It costs 10 times less to repave a street than to rebuild it. However, the basic components are inadequate and the street is generally in need of more maintenance in a few short years. This stopgap solution results in streets becoming excessively high in the center and steeply sloping toward the curbs. Streets that have this "crown" begin to deteriorate faster than they can be repaired.

In the Larkspur 2050 report (released in March 2001), the cost of repaving our streets was estimated to be over \$8.2 million. Continuing to delay the rehabilitation of an aging infrastructure in need of immediate attention only compounds the existing problems. Annual maintenance costs continue to escalate and further deterioration of streets will have a negative impact on public safety.

The city is virtually built out, so opportunities for increasing the property tax or sales-tax base are limited. While federal and state grants may be available for special projects, the magnitude of dollars needed for road repairs and other infrastructure improvements cannot be met with just the city's share of gasoline taxes and any surpluses in the annual operating budget.

In the late spring or early summer, a financial adviser will be discussing financing options with the City Council. An analysis will be provided once some workable alternatives have been presented.

Next week, an analysis of storm drains and bridges will be presented.

Questions or comments can be e-mailed to Larry Chu, mayor of Larkspur, at: L.Chu@larkspurcityhall.org.

Fire station needs renovations

State of the City

Larry Chu

In 1906, the Larkspur Fire Department was an all-volunteer, one-hose cart operation. The fire house was originally located in the building currently occupied by the Silver Peso. Seven years later, the Fire Department moved into a room on the first floor of City Hall. The present downtown fire station was built by volunteers in 1939 with the proceeds from the Rose Bowl dances.



In 1957, the city of Larkspur assumed ownership and responsibility for the Fire Department. Now, there are 16 full-time fire-service employees and two chiefs who carry out the department's programs and respond to emergencies. About eight to 10 active volunteers continue to provide some general support at a minimal level.

The department responds to approximately 1,200 calls per year. Although fire suppression remains the primary focus, which includes responding to vehicle fires on Highway 101, emergency medical services make up about 75 percent of the calls. In addition, several community-service programs are available to local residents who want to receive training in disaster preparedness, fire prevention, first aid and CPR.

The city's capability for emergency response becomes especially important in times of a disaster. Much like the Twin Cities Police Department (week of April 17), there is a general concern as to whether the Fire Department can respond to emergencies after a debilitating earthquake. Half of the city's emergency-response capabilities are in the Greenbrae Fire Station. Although this facility is in need of replacing a chronically leaking roof, it's built to a more modern seismic standard. The other half of the city's emergency response is serviced out of the downtown fire station, which is in an ideal location, but has several deficiencies.

Most important in determining location is proximity to target hazard areas. Neighborhoods west of Magnolia and up on Palm Hill are in designated high fire-hazard zones. In addition, downtown Larkspur has old wooden buildings that have no property-line setbacks or sprinkler systems to help reduce the chance of a fire spreading

to adjacent structures. The downtown fire station is next to City Hall and also serves as the offices for the department's administrative and management staff, and the building is a contributing structure in Larkspur's Historic Downtown District.

The two biggest deficiencies of the downtown fire station are the lack of a sprinkler system and inadequate seismic reinforcement. After the 1989 Loma Prieta earthquake, some work was done to reinforce the structure for seismic safety by adding some sheathing to the roof. While this would allow for some transference of the lateral force from the shaking into the walls, there are still unexposed portions of the roof structure that do not provide for the full reinforcement of the roof. In addition, most of the walls and the flooring on both levels are not engineered to provide the necessary seismic protection from any significant lateral movement.

Besides the need for a fire-suppression system and seismic retrofitting, an antiquated electrical system needs replacement, and the building lacks access and accommodation in accordance with the Americans With Disabilities Act.

Functionally, any renovation plan for the downtown fire station must take into consideration the needs of a modern-day firefighting force. Garage doors would have to accommodate today's larger fire vehicles, gender-specific showers, restrooms and private sleeping quarters would need to be installed, and there should be adequate parking available when larger emergencies call for additional personnel. In addition, if the fire station is to serve as office space and also have a public meeting place for training and educational programs, access should not infringe on the living quarters of the firefighting staff.

Next week, an analysis of the library will be presented.

CORRECTION: In the analysis of storm drains two weeks ago, we incorrectly stated there is a private funding effort to put a levee system in the area by Lucky Drive. That should have been stated as the area by the Lucky Drive exit, i.e. Industrial Way. Second, College Park was listed as being prone to tidal flooding. The weather-related impacts in that neighborhood are from overland flows coming along Kent and College avenues.

Questions or comments can be e-mailed to Larry Chu, mayor of Larkspur, at LChu@larkspurcityhall.org.

Roadway bridges need work

State of the City

Larry Chu

When we think of Larkspur, the first image is not always associated with water. The flooding from storms that hit Marin over the New Year's weekend was a reminder that Larkspur is part of the downstream ecology of the Mount Tamalpais Watershed as the water takes its natural path to the bay.

The city of Larkspur has a number of roadway bridges that cross over local creeks. On Alexander Avenue, there is a bridge that spans over a bike path that used to be part of the Northwest Pacific rail line.



These bridges were built decades ago. In particular, there are five bridges on major streets. Each is in need of some level of repairs and/or seismic retrofitting. These bridges are located on Bon Air (over the Corte Madera Creek), Alexander (over the bike path), Doherty (over the Arroyo Holon Creek), Meadowood (over the Lark Creek) and Magnolia (over the Lark Creek).

While the work is necessary as an investment in public safety, the seismic retrofitting is especially important. The retrofitting not only saves lives in a major earthquake, but also the roadways, which are the lifelines for the community, are still usable after a disaster.

The seismic retrofitting of the Bon Air Bridge was the last major work done on a local bridge. This was about 15 years ago. The bridge is now in desperate need of repairs. There are several places on concrete support columns that have outward signs of deterioration. In some places, reinforcement bars are visible.

The Alexander Bridge is a well-known landmark that is also on a registry of historical structures. The architecture includes a distinctive concrete arch extending over the bridge's roadway. The level of the roadway on the bridge is several feet higher than the height of the approaches to both sides of the bridge.

There are also structural limitations as evidenced by the posted weight limit. This forces some fire vehicles to take a more circuitous route when responding to emergencies on the east side of the bike path.

In the design process, it was determined that the cost of retrofitting the bridge would exceed the cost of replacing it. There have been longstanding questions as to whether the Alexander Bridge should be replaced or retrofitted.

Is the additional cost to retrofit the bridge warranted if the outcome is to preserve a piece of Larkspur's heritage? Is risk to public safety and private property too high, given that the raised roadway is a visual impediment to drivers and pedestrians, and also an attractive nuisance for motorists, bicyclists and skateboarders who use it as a ramp to "catch air"? Does retrofitting preclude any improvements for "multimodal," i.e., for pedestrians and bicycles? These questions remain unanswered.

The bridges on Doherty, Meadowood and Magnolia are also in need of repairs and seismic retrofitting. As part of the Central Larkspur Specific Plan, safety improvements to the Doherty Bridge have been recommended. These include increasing the visibility at the entrance to Piper Park and providing a safe separation between vehicles and a new multimodal pathway.

For all five of these bridges, better accommodations for multimodal use are being developed. The environmental work has already started, and some early design work is already underway.

The work on the Alexander Bridge, the Doherty Bridge and the Bon Air Bridge is scheduled to occur in the next two to five years. These projects will also qualify for grants from state and federal transportation agencies. At this time, the city has secured about 80 to 90 percent of the funding needed to renovate these bridges. Chasing the escalating cost of materials and labor for the balance will be the biggest challenge.

Next week, an analysis of the downtown fire station will be presented.

Questions or comments can be e-mailed to Larry Chu, mayor of Larkspur, at LChu@larkspurcityhall.org.

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Controlling future storm flows

State of the City

Larry Chu

Over the New Year's weekend, Northern California experienced one of the most ferocious storms in years. A combination of heavy rains and 7-foot high tides created conditions that resulted in flooding reminiscent of the experience in 1982.

An uncharacteristically wet winter and spring was a constant reminder of the area's vulnerability to inclement weather. In Larkspur, one of the biggest risks to property and lives is caused by the overflow of water. Drainage and tidal flooding are two related, but distinctly separate, parts of the issue. Each contributes to localized flooding, erosion and landslides.

The city has a system of approximately 15 miles of public storm drains. Most of it was built in the 1950s and 1960s as a series of separate projects. The projects were a response to the problems of the day or the extension of new development areas upstream.

At the time, there was a general lack of design coordination. The result was a system with inconsistencies. Pipes were constructed with different materials, pipe diameters varied and were often undersized, and some were located on private property in inaccessible areas.

Over the years, these facilities have settled and deteriorated to the point that flooding problems can no longer be solved by routine maintenance. Rust has disintegrated portions of the 4.5 miles of metal corrugated pipes, causing upstream overflows. Two-thirds of the existing drain system is in dire need of replacement.

Additional development over the years has added to the problem. New lines and drain structures are also needed to increase the capacity of the existing system to handle the additional runoff. An insufficient number of inlets and undersized pipes have resulted in large volumes of runoff, and have led to erosion and flooding downstream.

While storm-drain deficiencies are equally

dispersed throughout the city, the most critical problems exist in the areas adjacent to creeks. As debris gets washed down the hill-sides, drain pipes get clogged. Pipes are also too small to handle the volume as the water flows downstream. The water then accumulates in the low-lying areas.

Several factors contribute to tidal flooding during periods of heavy rains that coincide with unusually high tides. Barometric pressure, wind and rain can raise normal high tide levels by as much as 3 feet. In areas adjacent to the Corte Madera Creek, once the tide level reaches the top of the creek bank, no amount of pumping is effective until the tide recedes.

The areas of the community that have been the most susceptible to tidal flooding are the low-lying areas near the intersection of Lucky Drive and Industrial Way on the east side of Highway 101; the Larkspur Marina, Redwood High School and nearby sections along Doherty Drive, the parking lot at Boardwalk No. 1 and neighborhoods along the creek such as Hillview and College Park.

Historically, the most serious property damage has come in the Lucky Drive area. Property owners in the immediate area are currently working on a proposal to privately fund a system of levees that would mitigate the tidal flooding in this area.

But solving the problems for Larkspur residents along Corte Madera Creek requires the implementation of flood-control measures farther upstream. For more than 30 years, the city has not been able to persuade the county and the other cities/towns upstream to take action.

Consequently, Larkspur has only been able to perform preventive maintenance, such as cleaning out storm drains and flap gates. But with the damage from earlier this winter, there is a resurgence of interest in the whole Ross Valley, and Larkspur's representatives (Joan Lundstrom and Kathy Hartzell) on the board of Flood Zone 9 have taken a major role in coordinating the effort to fund and implement a solution along the length of the creek.

Next week, an analysis of roadway bridges will be presented.

Questions or comments can be e-mailed to Larry Chu, mayor of Larkspur, at L.Chu@larkspurcityhall.org.



Capital Expenditure Plan Larkspur 2050

(Existing Plan used as a baseline for future mitigation strategies)

Proposed March 2001

1 Introduction

The Larkspur 2050 Committee was appointed by the City Council in July 1999 “to assess the City’s Current and long-range capital improvement and service needs, evaluate fiscal options and recommend short- and long-term courses of action.” We are a cross-section of the community with 23 voting members, plus non-voting representatives of the City Council, boards and commissions.

We chose the name “2050” to emphasize the importance of the long-range view in preserving and enhancing our community’s future. This point of view was inspired by the City Hall building, which represents so much of our history and character. City Hall was planned and built by our community’s founders more than 85 years ago, and it continues to serve us today as a community focal point and a place of where the public’s work is done. When our founders built City Hall they had a vision that continues to serve us today. We believe that having a vision for our future, and acting on it by investing in public improvements, will preserve our heritage and culture.

Like most California cities, Larkspur has seen a slow erosion of its infrastructure since the late 1970’s, due largely to changes in the way public improvement projects are funded. Property Tax revenues were reduced with the passage of Proposition 13 in 1978. As a result of the rate setting

Formula in Prop 13, property taxes could no longer keep pace with rising maintenance costs. This trend was exacerbated during inflationary times. In the 1980’s many California communities shifted their land use policies to attract retail development to raise Sales Tax revenues. To its credit, our community resisted this trend, choosing to focus on maintaining character and quality of life. In the early 1990’s Larkspur’s revenue stream was further reduced when the California legislature took a portion of the property tax to balance the state’s budget. Through most of the 1900’s the City of Larkspur’s annual capital improvement budget was less than \$400,000. In fact, for several years there was no money for infrastructure. More than 20 years of forced disinvestment have taken a toll in terms of deteriorated streets, drainage systems and bridges, and buildings that are past their useful life.

The 2050 Committee feels that this trend can be reversed. Better economic times have increased revenues, particularly state and federal grants, but there is still not enough money to meet the most urgent needs. The Committee believes that the community may be willing to support a modest property tax increase for the most urgent public safety projects. Ideally, community support will continue to develop for additional grass roots capital investment if voters see the results of the first round of projects.

This report recommends short-, mid- and long-range strategies to restore and maintain our infrastructure at levels that will preserve and enhance our physical environment and high quality of life emphasizing sustainable resource use. Chapter 2 presents a *Vision* of Larkspur in the year 2050. In Chapter 3, needs are prioritized, based on the *Vision*, and projects are recommended. Chapter 4 outlines implementation strategies, including the timing of projects and funding recommendations. Chapter 5 concludes the plan outlining next steps for the restoration of our infrastructure.

The work of the Committee developed in four phases:

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

- ✚ Start up – The Committee was formed and received its charge and work program from the City Council. We were oriented with a tour of City facilities and as series of brief issue papers. We concluded the first phase in November 1999 with a Town Meeting where we received community input, which we used in later phases.
- ✚ Analysis – From January to June 2000 we received briefings and in-depth background papers from City department heads and consultants on municipal finance and the condition of our infrastructure.
- ✚ *Vision* and Priorities – We developed our *Vision* for Larkspur in the year 2050 during the summer and early Fall of 2000, based on community input from the Town Meeting and knowledge gained in the analysis phase. We prioritized infrastructure needs and projects based on the values in our *Vision*.
- ✚ Implementation Strategy – Draft expenditure and funding strategies to implement our *Vision* were prepared from November 2000 to February 2001.

Finally, this plan is meant to be strategic with an emphasis on flexibility. It should be reviewed annually and ought to be changed regularly as new projects and funding opportunities present themselves. The important point is to keep the *Vision* in mind and focus on priorities. The people who founded Larkspur took this long view when they built City Hall in 1913, and it continues to serve us today.

2 Our Vision

As we move toward the year 2050, the City of Larkspur is faced with numerous and conflicting decisions regarding the diverse infrastructure needs of the community and its citizens. How should the types and levels of services be prioritized? What are the physical plant requirements to provide the highest priority services? How should the financial and human resources of the city and its residents be allocated to best meet these requirements?

These decisions will have a lasting impact on the environment and the quality of life in Larkspur. The following vision statement and decision-making framework are designed to help ensure that these decisions are consistent with the values of the community and will result in the place that we envision Larkspur to be in the year 2050.

Our Vision is a statement of shared community values that we hold most important. *Our Vision* is an image of what we want for our community's future, especially in terms of our infrastructure needs. The *Vision* is intended to be a catalyst for decisions, programs and initiatives to preserve and enhance our community for the next 50 years.

Our Vision

Throughout the first half of the 21st century,

- ❖ Larkspur retains its livable and attractive physical environment both natural and (hu)man-made. Our historical heritage is respected, and our small town character continues.
- ❖ Larkspur's physical environment contributes to the high quality of life, relaxed ambiance, and sense of community enjoyed by its residents, merchants, and visitors.
- ❖ The community of Larkspur makes efficient and effective use of all its resources, collaborating with our neighbors and fellow citizens where possible, providing for the sustainability of our environment and lifestyle.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Our Principles

Our Principles are actions and approaches flowing from the spirit and intent of the Vision. The Principles are rules of action that can be used to guide specific decisions regarding community services and infrastructure. Applying the Principles to the capital improvement budgeting process will move the community towards the Vision.

Physical Environment

- Preserve and enhance open space, hills, creeks, wetlands and trees,
- Preserve and enhance our small town character
- Preserve and enhance the historic character
- Maintain the integrity of neighborhoods and create links through infrastructure development.

Quality of Life

- Create and maintain a healthy and safe community
- Promote diversity in our citizenry: demographic, economic and cultural
- Encourage healthy cultural institutions and activities
- Provide recreation for all ages that is geographically dispersed
- Promote ease of mobility for all ages, and pedestrian orientation
- Provide easy access to services
- Minimize population growth
- Increase housing choices
- Promote a healthy economy
- Facilitate citizen interaction through good planning

Efficient Resource Use

- Exercise sustainable, efficient use of all resources – natural, financial and people
- Be flexible, able to respond to changes quickly
- Be cost effective
- Design facilities to be flexible and provide multiple uses, where feasible
- Provide adequate levels of service delivery
- Partner with others for service provision
- Consolidate services regionally when appropriate
- Coordinate with Corte Madera
- Merge special districts when possible.

A Framework

We have used Our Vision and Principles as a framework for decision-making. We evaluated each service and capital improvement against the framework by asking the following questions: Is the option under consideration consistent or inconsistent with Our Vision and Principles? In cases where the option is inconsistent with parts of Our Vision and Principles, is there sufficient consistency with other elements to achieve balance? We believe that using the framework will assist decision makers in reaching wise and prudent decisions.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

3 Priorities and Projects

We studied the City’s infrastructure to understand existing conditions and future needs. The estimated price tag to repair and update the City’s infrastructure is at least \$45,000,000. (see box below). The following section explains how we prioritized the categories and developed our recommendations.

Recognizing that the City’s financial resources are limited, we evaluated the community’s infrastructure needs (see the appendices for detailed evaluations). We used the framework of our *Vision* and *Principles* to prioritize the expenditure categories. We developed our priorities by asking, “How urgent is it that this category be addressed when the need is compared our *Vision* and *Principles*? Which projects would dot the most to realize our *Vision* for Larkspur in the year 2050?

Our priorities do not necessarily indicate the order in which projects should be done. A high priority ranking simply indicates that the need is urgent. Other considerations, such as grant availability, engineering factors and community support must be weighed along with need in setting a funding and timing strategy.

Our Priorities

- 1st Police Station and City Hall
- 2nd Streets, Bridges & Drainage
- 3rd Fire Stations
- 4th Library
- 5th Downtown Parking
- 6th Parks
- 7th Transportation System

We also used the *Vision* and *Principles* framework to develop project recommendations. In some categories we found that other groups had already developed solid project recommendations. For example, the Park and Recreation Commission have approved master plans for Piper Park and the mini parks. In other cases, such as City Hall, there were on approved plans. In these cases the *Vision* and *Principles* were particularly important for developing project options and recommendations.

Expenditure Categories

✓ Streets, bridges and drainage system	\$24,500,000
✓ Police headquarters & Corporation Yard	\$4, 750,000
✓ City Hall	\$4,000,000
✓ Parks	\$3,600,000
✓ Library	\$3,300,000
✓ Transportation System	\$2,900,000
✓ Fire Station	\$1,400,000
✓ Downtown parking facilities	\$1,000,000
Total	\$45,450,000

Our Vision and Principles were the key factors in prioritizing projects. Once the preferred options were identified for each of the expenditure categories, Committee members ranked projects based on the urgency of the need. The individual members then ranked the projects a second time, based on consistency with the *Vision and Principles*. Finally, the members compared their rankings and came to a consensus on the recommendations in this report. The final ranking was not based on a quantified process. The Committee members’ prioritized projects based on their analysis of the facts and their individual perceptions as residents of Larkspur. The following table indicates how the projects conform to the *Principles*.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

<u>Our Principles</u>	Projects							
	Police Station	City Hall	Streets, Drainage & Bridges	Fire Station	Library	Downtown Parking	Parks	Transportation System
Preserve and enhance open space, hills, creeks, wetlands and trees			√				√	
Preserve and enhance the small town character		√	√	√	√	√	√	√
Preserve and enhance our historic character		√		√	√			
Maintain the integrity of neighborhoods and create links through infrastructure development			√			√	√	√
Create and maintain a healthy and safe community	√	√	√	√		√	√	√
Promote diversity in our citizenry: demographic, economic and cultural								
Encourage healthy cultural institutions and activities								
Provide recreation for all ages that is geographically dispersed		√			√		√	
Promote ease of mobility for all ages, and pedestrian orientation							√	
Provide easy access to services			√			√	√	√
Minimize population growth								
Increase housing choices	√	√	√		√	√	√	√
Promote a healthy economy								
Exercise sustainable, efficient use of all resources – natural, financial and people			√	√		√		√
Be flexible, able to respond to changes quickly	√	√	√	√			√	√
Be cost effective								
Provide adequate levels of service delivery	√			√				√
Partner with others for service provision	√	√	√	√	√	√	√	√
Consolidate services regionally when appropriate	√	√	√	√	√	√	√	√
Coordinate with Corte Madera	√		√		√	√		
Merge special districts when possible	√							

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In the discussion that follows, priorities and project recommendations are explained in terms of what needs to be done and how each project would implement our *Vision* and *Principles*. All cost estimates are in year 2000 dollars. Unless noted otherwise, estimates are for construction costs only and do not include furnishings, temporary relocation, land or other costs.

First Priority: Police Station and City Hall

Two capital expenditure categories are designed as first priority: the Twin Cities Police Authority (TCPA) headquarters building and City Hall. A safe and efficient police station is essential for maintaining the high quality of life described in our *Vision* and making efficient and effective use of resources. The Principles of maintaining a healthy and safe community and providing adequate service delivery underwrite the recommendation to build a new police station. City Hall ranks as first priority because it contributes to our attractive physical environment and its preservation will promote efficient use of resources. Our principles which call for preserving our small town and historic character, maintaining a safe community, being cost effective, designing facilities for multiple uses and providing adequate services support the recommendation to remodel City Hall. We view these projects as equally urgent.

Police Headquarter Issues

Seismic Safety: The existing building has no seismic reinforcement and sits on a landfill. In an earthquake ground shaking and/or subsidence could damage headquarters. The Emergency Operations Center for both cities would be at least temporarily out of commission when it would be needed most.

Fire – Headquarters does not have a sprinkler system.

Security – Security provisions for confining detainees and protecting staff are inadequate.

Code compliance – The building does not meet basic Building Code standards. There is no cost effective way to correct basic safety problems.

Technology – The building cannot provide the infrastructure – conduits, power, and climate control – for computers, radio systems and other technology.

Storage – Storage space is completely inadequate.

Meeting Rooms – The sole meeting room doubles as a storage area and is not safe for public use.

Building systems – Heating, ventilation, air conditioning and lighting are inadequate. Chronic roof leaks cannot be repaired because the load bearing walls will not support the needed roofing system.

Staffing – Due to severe overcrowding, some police staff must work out of the Corte Madera public safety building. The resulting coordination problems have been an issue in labor negotiations.

Gender Integration – Inadequate space for the separate facility needs of male and female staff.

ADA – The building cannot comply with the Americans with Disabilities Act.

Parking – There is a shortage of parking spaces and no separate, secure parking for staff and police vehicles.

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Police Station Recommended Project

Build a new police headquarters building in the range of 13,000 square feet. Estimated cost: \$4.5 million, not including land. If the new police headquarters is built at Piper Park, it would be cost effective to upgrade the adjacent Public Works corporation yard at the same time. The estimated cost of work at the Corporation Yard is \$250,000. This would be an excellent opportunity to combine facilities and save construction and maintenance dollars.

The existing 3150 square foot Doherty Drive facility houses 39 of the department's 44 employees including administration, patrol, and communications, as well as the Emergency Operations Center for Larkspur and Corte Madera. Five employees work at the Corte Madera Public Safety building on Tamalpais Avenue due to overcrowding at the headquarters building. This fragmentation has caused coordination problems. By today's standards, TCPA staff should be in a single 14,000 square foot building.

The overcrowding is made worse by the building's deteriorating physical condition. The existing headquarters is a wood frame, temporary building, designed and built in 1972 to be a cheap, short-lived structure. The deliberately lightweight engineering is such that the headquarters cannot be cost-effectively remodeled, expanded or even repaired.

The 2050 Committee has identified 12 problem areas at TCPA's Doherty Drive headquarters that can only be resolved with a new building.

City Hall Recommended Project

Remodel City Hall to accommodate Administration, Planning, Public Works and Building Inspection. The remodeled City Hall should include public meeting space for community groups and City Council chambers large enough to truly serve Larkspur residents. The remodeling project must preserve the building's historic character while meeting the public's need for efficient and convenient service. The estimated cost for this project is \$4 million.

City Hall was built in 1913, and its exterior character has been carefully preserved ever since. The U.S. Interior Department has recognized City Hall as an important "contributing structure" to the downtown Larkspur National Register Historic District. However, the inside of the building has been "remuddled" many times to get to its present configuration accommodating five departments: Administration, Planning, Public Works, Building and the Library.

The most obvious problem is overcrowding. At approximately 9,300 square feet, the existing City Hall would have enough floor area to adequately house the existing staff, a decent City Council chambers and other needed public space if the Library were relocated to another property.

Serious structural problems threaten City Hall and reduce its utility

Second story storage – a 600 square foot storage area at the rear of the building has been declared unsafe and could collapse.

Seismic safety – City Hall built to 1913 standards, and except for the roof, has no earthquake protection.

Fire Safety – the building is wood frame construction and does not have a sprinkler system.

Heating, ventilating air conditioning – The machinery does not have sufficient size or power, and the ducting system is inadequate. The system cannot effectively heat or cool the building and is too old to

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be repaired. Replacement is not cost-effective due to the amount of restructuring that would be repaired to accommodate a new system.

Lighting and electrical – lighting is inadequate but cannot be corrected because there is not enough wiring in the building.

The Committee reviewed a comprehensive architectural feasibility study that analyzed six basic options (and nine variations) for correcting structural deficiencies and preserving City Hall’s historic character. The options ranged from minor demolition (to remove unsafe areas on the second story) to complete remodeling to correct all structural hazards and make the building completely functional by contemporary standards.

City Hall should be renovated as soon as possible to correct serious structural problems, including seismic and fire hazards, and to provide adequate workspace for staff and meeting space for the public. Remodeling City Hall to preserve it and to make the building truly functional will require moving the library to another location. It will be important to ascertain public support before this expensive but necessary project is undertaken.

Secondary Priority: Streets, Drain System and Bridges Recommended Project

This expenditure category is essential to maintaining our attractive physical environment, preserving and enhancing Larkspur’s high quality of life and the efficient and effective use of all its resources. This category ranked second only because the safety risks at police headquarters and City Hall were judged to be more threatening.

Develop and implement a long-range funding strategy to accomplish the projects in this category. All of these projects that will protect the public’s health and safety and enhance the quality of life described in the Committee’s Vision for 2050. The goal should be to implement all of these projects within 20 years. Twenty years is the recommended benchmark, because it is the typical maintenance cycle for a street. If a street can be brought up to modern standards it will last at least 20 years, and its life span can be extended further with relatively inexpensive slurry sealing rather than more costly repairs. The estimated cost for the recommended projects is \$24.5 million.

Street, Drainage and Bridge Projects

Street Repairs	\$8,200,000
Drainage and Flooding	\$5,400,000
Bridge Repairs	\$1,600,000
Street Improvements Projects	\$1,800,000
Pedestrian Safety and Accessibility	\$2,000,000
Bikeways and Pedestrian Paths	\$5,000,000
Bus Stops	\$500,000
Total	\$24,500,000

The Committee recognizes that the individual projects within this broad category do not all have the same urgency. The Committee recommends that street; drainage and bridge repair needs should be evaluated annually and ranked in five-year increments. The most urgent public safety projects should be scheduled for completion during the first five years, with less urgent projects deferred to later in the program.

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Streets

There are approximately 45 miles of streets and roads in Larkspur. In recent years, City-owned streets have been deteriorating faster than they can be repaired due to historic conditions and budget constraints. Many of Larkspur's streets were paved in the early 20th Century, and were not built to modern standards. They are more prone to deterioration than contemporary roadways. In past years, lacking the funding to reconstruct older roads from the ground up, the City simply applied another coat of asphalt to patch the surface. These streets required resurfacing within a few years, and the cycle has been repeated.

The newer streets have also been neglected due to budget constraints. As a result many of the newer roadways are beyond the point where low-priced slurry sealing could be used to maintain the pavement. Some of the City's newer streets now require repaving and or even major reconstruction to bring them back up to standards.

The most cost-effective maintenance strategy would be to bring all of the streets up to a level that could be maintained with the relatively inexpensive slurry sealing process. The estimated cost of needed street repairs in March 2000 was \$8.2 million.

Drainage and Flooding

Larkspur has 15 miles of public storm drains, most of which are 40 to 50 years old. The drainage system evolved during the '50s and '60s as a series of piecemeal projects that were gradually extended upstream as areas developed and problems occurred. The end result is a series of drainage facilities that are constructed of various materials, have frequent changes in pipe size, are often undersized, are sometimes located on inaccessible private property, and are not recorded with the City's Public Works Department. Over the years, a significant portion of these drainage facilities have settled and deteriorated to the point that maintenance and flooding problems are severe. This deterioration, together with the storm drain system's capacity problems, has overburdened the City's existing storm drain system. The estimated cost for drainage and flood control projects is \$5.4 million.

Bridges

The City of Larkspur has five bridges that require repair and /or seismic upgrading. The Bon Air Bridge over Corte Madera Creek was seismically retrofitted several years ago, however, recent concrete deterioration will require additional repair; The Alexander Street Bridge, registered as a historical structure, is currently in the design process for seismic retrofit or replacement. The Doherty Drive Bridge, Meadowood Bridge, and the Magnolia Bridge at Madrone Avenue are targeted for future repair and upgrades. These projects should qualify for matching grants from CalTrans. Estimated City costs are \$1.6 million.

Street Improvement Project

The Public Works Department has identified areas throughout the city where a total of 16,000 feet of new curb, gutter and sidewalks are needed. Also, roundabouts could be considered to improve traffic flow at two intersections. Estimated costs for these projects are \$1.8 million. Cost breakdowns are listed below.

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Bridge Repair Projects

Bon Air	\$400,000
Alexander	\$400,000
Doherty Drive	\$300,000
Meadowood	\$200,000
Magnolia at Madrone	\$300,000
Total	\$1,600,000

Street Improvement Projects

Curb, gutter, & sidewalks	\$1,200,000
Intersections	\$ 600,000
Total	\$1,800,000

Pedestrian Safety, Bus Stops, and Bikeways Pedestrian Paths information can be viewed in the Plan at Larkspur City Hall. It has been omitted from this Plan.

Third Priority: Fire Station Recommended Project

The fire service is vital to our quality of life and efficient resource use. Adequate fire stations promote a number of our Principles including maintaining a healthy and safe community, cost-effective and adequate service levels. This category ranked somewhat lower than others due to the varying conditions at the City's two fire stations. Fire Stations #1, next to City Hall, is not up to current seismic safety standards; there are other, less serious problems in the building as well. Fire Station #2 in the Greenbrae area is less than fifteen years old, and is in excellent condition.

Retrofit Fire Station #1 for seismic safety, install a sprinkler system and remodel the second floor. Estimated cost - \$1.4 million.

Fire Station #1 was built in 1939 with an apparatus room on the first floor and living quarters for the Chief on the second floor. The second level also included meeting space for the all-volunteer staff. In 1957 full time staff was hired and the second level was converted to offices and dormitory-style crew quarters. The downtown fire station supports half of the city's fire suppression and emergency response personnel and all of the department's administrative and management staff.

The building does not have a fire sprinkler system and has not been reinforced for seismic safety. These deficiencies could leave 50% of the City's emergency response capacity out of service after an earthquake when it would be needed most.

The building has enough room to accommodate existing and projected staff and equipment, but the second level floor plan wastes space and reduces operational efficiency. The second floor could be organized to solve utilization problems and continue to offer adequate meeting space.

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Second Floor Space Problems

Sleeping Areas – private sleeping quarters are more efficient than dormitory style and allow gender integration.

Kitchen facilities – small and out of date

Common living areas – small and uncomfortable. Additional space is a must.

Offices – too small and inefficient

Oversize meeting room – used once a month. A smaller room would work.

Fourth Priority: Library has been omitted.

Fifth Priority: Downtown Parking Recommended Project

Convenient downtown parking will help to preserve our attractive physical environment by reducing congestion and enhancing our small town character. Adequate parking contributes to our high quality of life by maintaining community safety and promoting ease of mobility. Well planned parking supports efficient and effective use of resources.

The 2050 Committee concurs with the Downtown Parking Plan recommendation to build a public parking lot on either the Niven or Nazari properties for a net increase of 50 to 100 parking spaces. The estimated cost for a 100 space lot is \$1 million.

Downtown parking congestion was identified as a potential problem in the 1990 General Plan and in the 1992 Downtown Specific Plan. A 1996 parking survey found the weekday noontime demand for public parking had increased 22% in five years. The same study found that 90% of all public slots were taken at 8:00 PM on a typical Saturday night. The Downtown Parking Plan was drafted to find solutions to the problem.

The 1998 Downtown Parking Plan projects that the parking demand from existing buildings may increase by as much as 170 vehicles. The Parking Plan surveyed Downtown properties and found most lots do not have space to add parking. Limiting business activity in existing buildings to available on-site parking would stifle the economic vitality that is revitalizing Downtown. The Parking Plan focused on public parking as the best way to add centrally located spaces that could be shared by Downtown businesses. The Committee agrees with the Plan's findings that this cost could (and should) be financed from private sources. Innovative approaches are encouraged, but they should not rely on local tax funds and they should result in a net increase of at least 50 spaces.

Sixth Priority: Parks has been omitted.

Seventh Priority: Transportation System Recommended Project

An effective transportation system promotes an attractive physical environment by maintaining the integrity of neighborhoods and creating links throughout the community. Good transportation contributes to a high quality of life by maintaining a healthy and safe community and promoting ease of access and pedestrian orientation. The transportation system can maximize efficient and effective resource use by facilitating sustainability and providing adequate service levels.

Implement the planned traffic improvements as Traffic Impact Fee (TIF) funds become available. Develop a capital fund reserve to deal with the traffic increases that will occur even without growth. An

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expanded approach to traffic management that focuses on traffic calming and alternative transportation should begin at the General Plan level. The total cost of circulation projects eligible for TIF funding is \$2.9 million.

The overall plan for the City's circulation system is contained in the Circulation Element of the General Plan. The Circulation Element analyzes the existing road system, projects future traffic conditions, sets measurable standards for traffic conditions and lists traffic improvements that will be needed to maintain the specified standards. The Circulation Element of the General Plan sets standards for acceptable Levels of Service that are to be maintained whenever possible. The City charges a Traffic Impact Fee on building permits to pay for circulation system improvements. This fee is based on the amount of traffic generated by the development and the pro rata cost of the improvements needed to maintain the level of service standard. The City Council is in the process of updating the TIF. The total cost of circulation projects recommended for TIF funding is \$2,902,000. Potential projects and costs are shown in the accompanying table. Although the TIF is calculated to pay for all of the traffic improvements needed to maintain the desired level of service, it is unlikely that sufficient funding will be generated from this source. Some of the projected growth that would pay the fee probably will not come to fruition. It is important that the City have reserve funds available from sources other than TIF in order to maintain desired service levels.

The 2050 Committee recommends that the focus of transportation planning should be expanded to include additional approaches to mitigating the impact of traffic on our quality of life. For example, traffic calming and alternative transportation projects could be developed to enhance community livability. This issue requires in-depth study and new policies at the General Plan level. The 2050 Committee determined that cost estimates can not be made for this broader range of transportation improvements projects until new policies have been developed.

Implementation Strategy

The 2050 Committee recommends that the City Council adopt short- (through the year 2015), medium- (through 2030) and long-range (through 2050) strategies to implement the Vision and the priority projects described in this report. The strategies should be flexible, so that decision makers can adjust to changing needs and unexpected opportunities. Having an overall strategy with a clear Vision, Principles and priorities will help the decision makers respond to shifting needs and new opportunities.

This section recommends short-, medium- and long-range strategies to implement our Vision and the priority projects. A list of recommended projects and funding sources is provided for each time frame along with a discussion of the recommended strategy.

Short-Range Strategy: 2001-2016

The recommended Short-Range Strategy is to complete all or most of the priority projects by 2015 using the smallest amount of local parcel tax bond financing possible. In most cases, the most urgent public safety needs should be funded first. The Short-Range Strategy proposes one or more local bond issues funded by parcel taxes. However, the impact on local taxpayers can be minimized by using other funding sources, such as state and federal grants, Transient Occupancy Taxes (paid by visitors, not residents) and private giving programs. The Short-Range Strategy has two components: an Expenditure Plan and a Funding Plan,

Short-Range Expenditure Plan

The recommended short-range expenditure plan is to complete as many of the priority projects as possible by the year 2015. The plan seeks to begin work on most of the highest priority projects by

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2005, but recognizes that more time may be needed to develop community support for some of the most urgent needs. The Short-Range Expenditure has three phases.

First Phase: 2001 to 2005

Urgent public safety projects that will have a high level of public support should be emphasized during the first four years:

Safety first- work on the majority of the public safety priorities would begin by 2005. The new police station and the fire station rehabilitation project would be started and up to \$6,000,000 of badly needed street, drainage and bridge projects would be funded.

Street repair-street, drainage and bridge repair is the largest expenditure category at \$24,500,000. Some of the activities in this category are more urgent than others, but this plan does not attempt to rank the individual projects. The project list should be reviewed and ranked annually by the City Council as part of the budgeting process. Two objectives are recommended for the early phases of the short-range expenditure plan:

Address the most imminent hazards first whenever possible.

Bring the City's streets and drainage up to contemporary engineering standards in order to minimize the public safety risk and to end the cycle of expensive and ineffective "quick fix" maintenance.

Downtown Parking-The citizen advisory group that is currently working on the Central Larkspur Specific Plan (CLASP) is proposing a public parking lot on the Niven property. The parking lot is shown in the first phase of the expenditure plan to coincide with the expected development of the Niven parcel.

Parks-The City Council has entered an agreement with the Larkspur Elementary School District to build playfields and a jointly operated recreation facility at Hall Middle School. Construction is expected to start in 2001.

Transportation-Intersection improvements should be made as Transportation Impact Fees become available.

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Short-Range Expenditure Plan

Priority	Category	2001-005	2006-2010	2011-2015-	Subtotal	Total
1	Police Station Headquarters building Corporate Yard	4,500,000 250,000			4,500,000 250,000	\$4,750,000
1	City Hall; Seismic retrofit, remodel		4,000,000		4,000,000	4,000,000
2	Streets, Bridges & Drainage \$2 mil/yr for all improvements beginning 2003 Maintenance @ \$1 mil/yr	6,000,000	10,500,000	8,000,000	24,000,000	\$24,500,000
3	Fire Station Seismic retrofit, remodel	1,400,000			1,400,000	\$1,400,000
5	Downtown Parking Public parking lot	1,000,000			1,000,000	\$1,000,000
7	Transportation Transportation system improvements	190,000	970,000	970,000	2,130,000	\$2,130,000
Total		14,140,000	19,670,000	11,370,000	45,180,000	\$45,180,000

Second Phase: 2006 to 2010

The second phase of the Short-Range Strategy would see completion of the most urgent safety projects.

City Hall - Although this project is a first need, the Committee recommends funding after 2006. The need for this project may not be obvious to many voters, and time should be taken to build grass roots support, especially if a parcel tax is needed to fund the project. The timing for the City Hall restoration project also depends decisions that will be made about the library's future.

Library – This plan recommends that the library be moved to make room for public meeting spaces and offices at City Hall. This recommendation would also allow for a larger library that will better meet the community's needs. Like the City Hall restoration project, the library involves a much beloved public facility, and it will take time to develop a community consensus on its future. The Short-Range Expenditure Plan anticipates a new building at least twice as large as today's library.

Streets, Bridges & Drainage – The most urgent safety projects in this category would be completed during this phase, and the focus would begin to shift to deferred maintenance.

Parks – Park spending would focus on implementing the Piper Park master plan and rehabilitating the community's mini parks.

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Transportation – Intersection improvements should be made as Transportation Impact Fees become available.

Third Phase: 2011 – 2015

The last of the priority project would be completed in the final five years of the Short-Range Strategy.

Streets, Bridges & Drainage – At this stage the likely emphasis will be on bikeways, pedestrian paths, and pedestrian safety and accessibility improvements.

Parks – Piper Park would be completed and last of the community’s mini parks would be restored.

Funding Plan for the Short-Range Strategy

The source of funds for the short-range projects is shown in the following table.

Short-Range Funding Sources

Category	2001-2005	2006-2010	2011-2015	Subtotal	Total
Police Station					\$4,750,000
City of Larkspur Public Safety Bond	2,250,000			2,250,000	
City of Larkspur General Fund	250,000			250,000	
Town of Corte Madera	2,250,000			2,250,000	
City Hall					4,000,000
City of Larkspur Public Safety Bond		4,000,000			
Streets, Bridges & Drainage					\$24,500,000
City of Larkspur Public Safety Bond	1,350,000			1,350,000	
City of Larkspur General Fund	1,200,000	2,000,000	2,000,000	5,200,000	
City of Larkspur Gas Tax	800,000	1,000,000	1,000,000	2,800,000	
Grant funding	2,650,000	5,500,000	5,000,000	13,150,000	
City of Larkspur bond financing		2,000,000		2,000,000	
Fire Station					\$1,400,000
City of Larkspur Public Safety Bond	1,400,000			1,400,000	
Downtown Parking					\$1,000,000
Private: developments	1,000,000			1,000,000	
Transportation					\$2,130,000
Transportation Impact Fees	190,000	970,000	970,000	2,130,000	
Total	14,140,000	19,670,000	11,370,000	45,180,000	\$45,180,000

This analysis assumes that the City will continue to fund street, drainage and bridge repairs at the rate of \$300,000 to \$400,000 per year. The analysis also assumes that grant funding for road repairs will continue at the same or higher rate as has been experienced over the past several years. The short-range funding plan attempts to minimize local tax increases, but it will be necessary to get voter approval to fund projects scheduled for the first five years. It is also likely that a second round of voter-approved bonds will be needed by the year 2010. However, there are a number of other possible funding sources that could be tapped to reduce the local tax burden. The 2050 Committee recommends the following steps to fund the short-range strategy:

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Issue a Bond for Public Safety – the City Council should seek voter approval for a parcel tax to raise at least \$9,000,000 in bond financing for the police station, fire station and the most urgent street repair projects. A parcel tax could be structured at less than \$100 per year for a single-family home. The Committee believes that Larkspur voters would support a reasonable parcel tax for these important public safety projects. The bond issue’s contribution to the short-range projects would be \$9,000,000.

Share Police Costs – Larkspur has hosted the Twin Cities Police headquarters for almost 30 years on city-owned park property. It would be appropriate for the Twin Cities police to buy the police station site from Larkspur. The proceeds of the sale would in effect reduce the City’s share of the police station costs and free up the Public Safety Bond money for additional street repair work. The land sale contribution to the short-range funding plan is conservatively estimated at \$1,000,000.

Pursue Grants – Since the formation of the 2050 Committee in 1999, the City has raised over \$2.7 million in grants for streets, drainage and bridge repair. City staff expects that state and federal grants will be available for the next several years for both public works and law enforcement projects. The Committee strongly recommends that the City aggressively pursue grants for the police station and the street, drainage and bridge projects. The short-range funding strategy also recommends the City pursue state Park Bond Act funds for the joint project with the School District to build play fields at Hall Middle School. The City should also apply for California Library Bond Act funds to assist with the library relocation project. Finally, the City should retain a well qualified expert to aggressively pursue grants. The assumed amount of grant funding in the short-range funding plan is \$15,850,000

Leverage City Assets – The City should consider leveraging its assets to further the Vision, particularly in the Central Larkspur Specific Plan (CLASP). For example, the City could trade the half-acre parking lot at the corner of Ward Street and Magnolia Avenue for a like amount of land on the north end of the Nazari property (the CLASP Committee has identified this as a possible library site). This would save up to \$1,000,000 in land acquisition costs. Also, the City could build a park on the Niven property using assessment district financing in return for the developer building a new public parking lot. The City could further leverage the new parking lot by enforcing the 2-hour limit on downtown parking and selling long-term parking passes for the new lot. It may also be possible to use assessment district financing to pay the maintenance costs for these facilities. The cash value of trading the existing parking lot and implementing the park assessment district would be at least \$2,000,000.

Utilize Transient Occupancy Tax – Hopefully, the hotel project planned for the sanitary District property in Larkspur Landing will come to fruition. Conservative estimates are that the hotel will pay \$500,000 in annual Transient Occupancy Tax (TOT). The 2050 Committee recommends that this revenue be dedicated to the capital projects listed in this report. Possible contribution to the short-range funding strategy: \$5,000,000.

Foster Private Giving – The City Council should encourage a private giving program. The City already benefits from a private giving program for the library, and it should be possible to create such a program for park improvements. The Committee recommends private funds and grants should be used for lower priority projects such as the library. Local public funding should be reserved for the most urgent needs. Marin cities – notably Mill Valley, Sausalito, and Tiburon- have been very successful raising private donations for public buildings. The initial program should be kept simple. For example, the City Council could simply invite donations for park improvements, and recognize donors. If the first effort succeeds, it may be appropriate to form a “Larkspur Foundation.” Donations for recreation facilities might be encouraged if the Larkspur Foundation offered matching grants to neighborhood groups that raised funds for their local mini parks. The Foundation could be a catalyst for fund raising, building support for giving campaigns, seeking donors and providing other assistance. Projected private giving toward the short-range strategy is \$2,150,000.

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These recommendations set a capital fund raising goal of \$31,000,000 over 15 years, or approximately \$2,000,000 per year. Since, 1999, the City of Larkspur has exceeded this rate by pursuing grants for street rebuilding. While the prospects for state and federal assistance are good for the next few years, the success of the Short-Range Strategy will depend on a continuously aggressive and innovative fundraising effort. The Short-Range Strategy will provide the base for the Vision, by bringing our infrastructure up to standards where they can be maintained in a cost-effective manner.

Mid- and Long-Range Strategies: 2016-2050

The Mid- and Long-Range Strategies (see following pages) emphasize maintenance. The community's major public buildings – police, fire, City Hall, library – will be in the middle of their expected life span. Streets, bridges and the drainage system will require routine maintenance rather than wholesale rehabilitation. The City could be in the enviable position of being able to save for the orderly replacement of aging facilities. At today's prices, the projected maintenance cost through the long range is approximately \$32.5 million, or slightly less than \$1,000,000 per year. This figure is similar to the funds budgeted for routine maintenance in the year 2001. It will be possible to have a higher standard of maintenance because facilities will have been reengineered for a longer life.

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Recommended Capital Expenditure Plan

Priority	Category	Short-Range			Mid-Range	Long-Range	Subtotal	Total
		2001-2005	2006-2010	2011-2015	2016-2030	2031-2050		
1	Police Station Headquarters building Corporation Yard	4,500,000 250,000					4,500,000 250,000	\$4,750,000
1	City Hall Seismic retrofit, remodel		4,000,000				4,000,000	\$4,000,000
2	Streets, Bridges & Drainage \$2 mil/yr for all improvements, beginning 2003 Maintenance @ 1 mil/yr beginning in 2020	6,000,000	10,500,000	8,000,000	10,000,000	20,000,000	24,500,000 30,000,000	\$54,000,000
3	Fire Station Seismic retrofit, remodel	1,400,000					1,400,000	\$1,400,000
5	Downtown Parking	1,000,000					1,000,000	\$1,000,000
7	Transportation Transportation system improvements	190,000	970,000	970,000	770,000		2,900,000	\$2,900,000
	Total	\$14,140,000	\$19,670,000	\$11,370,000	\$11,520,000	\$21,000,000	\$76,700,000	\$77,200,000

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Proposed Funding Sources

Priority	Category	Short-Range			Mid-Range	Long-Range	"Subtotal	Total
		2001-2005	2006-2010	2011-2015	2016-2030	2013-2050		
1	Police Station							\$4,750,000
	City of Larkspur Public Safety Bond	2,250,000					2,250,000	
	City of Larkspur General Fund	250,000					250,000	
	Town of Corte Madera	2,250,000					2,250,000	
1	City Hall							\$4,000,000
	City of Larkspur Public Safety Bond		4,000,000				4,000,000	
2	Streets, Bridges & Drainage							\$54,000,000
	City of Larkspur Public Safety Bond	1,350,000					1,350,000	
	City of Larkspur General Fund	1,200,000	2,000,000	2,000,000	2,500,000	14,000,000	21,700,000	
	City of Larkspur Gas Tax	800,000	1,000,000	1,000,000	4,500,000	6,000,000	13,300,000	
	Grant funding	2,650,000	5,500,000	5,000,000	3,000,000		16,150,000	
	City of Larkspur bond financing		2,000,000				2,000,000	
3	Fire Station							\$1,400,000
	City of Larkspur Public Safety Bond	1,400,000					1,400,000	
5	Downtown Parking							\$1,000,000
	Private; development/merchants	1,000,000					1,000,000	
7	Transportation							\$2,900,000
	Transportation Impact Fees	190,000	970,000	970,000	770,000		2,900,000	
	Total	\$14,140,000	\$19,670,000	\$11,370,000	\$11,520,000	\$21,000,000	\$76,700,000	\$76,700,000

Future Mitigation Strategies & Recommendations

Strategy Synopsis Matrix

The matrix on the following pages shows the strategies on record for the City of Larkspur and indicates the risks they address. “P” indicates the strategy’s primary risk and “X” indicates related risks.

The table below defines the Hazard Abbreviations seen in the table:

Hazard Abbreviation	Hazard Addressed
AH	All Hazards
EQ	Earthquake
FL	Flood
SW	Severe Weather
UL	Utility Loss
TS/A/C	Transportation Loss; Accident/Incident
WF	Wildland Urban Interface Fire
BH	Biological Health/Pandemic Flu
DT	Data/Telecommunication Loss
EL	Economic Loss
HM	Hazardous Materials Incidents
TW	Terrorism & Weapons of Mass Destruction
WW	Water/Wastewater Disruption
AD	Aviation Disaster
CUD	Civil Unrest/Disorder
DF	Dam Failure
DR	Drought
EX	Explosions
SH	Sinkholes
TS	Tsunami
VC	Volcanic Activity

Rating Definitions:

The mitigation strategies are prioritized by the following formula. Using a 1 to 3 rating definition assign a number to each mitigation strategy recommendation in accordance with the following definitions.

High Priority –1. mitigation measure serves the community’s best interest and needs to move forward in the process as a potential project for further strategy development.

Medium Priority –2 mitigation measure serves the community’s needs and should be left in the process for future consideration

Low Priority –3 mitigation measure does not serve the community’s best interest and should be removed form the process for consideration/or legal or logistical barriers to this measure cannot be surmounted and the measure should be removed from the process.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

EQ-1

LARKSPUR FIRE DEPARTMENT
Operations Manual

Subject: Earthquake Action Plan	
Section: OPERATIONS	
Effective Date: 11-1-00	Page 1 of 1

The purpose of this policy is to provide on duty suppression members with guidelines to utilize during and pursuant to a seismic event. Please refer to the **Marin County Local Fire Service and Rescue Mutual Aid Plan, Appendix 16 – Response to a Major Earthquake**, for additional direction.

- During a seismic event, personnel shall immediately take cover. Personal protection is the absolute most important objective during an earthquake. Personnel shall utilize the universally accepted practices: *“If you’re in, stay in; if you’re out, stay out”* and *“duck and cover”*.
- Once shaking stops, personnel shall assess each other to determine if injuries have occurred. If so, treatment of these injuries shall immediately take place.
- After personnel assessment is complete, all engine room doors shall be opened. Apparatus shall remain in the building unless the structure is immediately threatened by collapse or fire. Crews at Station #15 shall use extreme caution when operating on the ramp due to the threat of falling ceramic tile on the mansard roof.
- Fire Captains shall stand by for radio roll call conducted by Control 6. Marin Communications shall announce that operations are shifting to the “Emergency Earthquake Mode”.
- All personnel should be prepared for additional seismic activity. Personal safety equipment, including helmets, should be utilized as soon as practical.
- If widespread damage is anticipated, engine crews shall initiate a zone “windshield survey”. The purpose of this survey is to triage the community and prioritize emergent situations. Critical facilities, as defined in Appendix #16, shall be given high priority in this survey. Once the survey is complete, emergent situations shall be handled in the following order:
 1. Suppress fires that could escalate to catastrophic proportion.
 2. Medical/rescue where life is immediately threatened.
 3. Major utility management where life is immediately threatened.
 4. Evacuation assistance from buildings that are in imminent threat of collapse.
 5. All other rescue/medical treatment that is necessary.
 6. Protection of water supply for firefighting purposes.
 7. All other events in order of priority based on medical, threat or other circumstances.
- When possible, engine company staff should gather the resources (water, food, equipment) necessary to sustain themselves for a minimum of 12 hours of emergency duty.
- Anticipate eventual activation of local/regional E.O.C. facilities for support and assistance.

OPERATIONS
Revised 11/7/00

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

LARKSPUR FIRE DEPARTMENT
Operations Manual

Subject: Local Red Flag Warning Procedures

Section: Fire Prevention

Effective Date: 6-15-93

Page 1 of 1

Critical Fire Hazard signs are created to raise public awareness during times when due to ambient weather conditions, the fire danger is particularly severe. The Larkspur Fire Department has taken a proactive stance in regard to the wildland intermix fire problem in our community. As with other local hillside fire prevention programs we intend to be high profile during the fire season. Although the State has in place a Red Flag warning system, we recognize that in Marin County many micro climates exist. Critical fire hazard conditions might occur in certain areas of Marin while others are experiencing a marine influence. Because Larkspur has no weather reporting station the use of local, objective criteria when deciding to unfold the Fire Warning signs is lacking. Therefore, the decision to unfold and display the warning message will be made in the following manner:

1. A Chief Officer will, based on local conditions make the decision to unfold the signs and display the message. The decision to close and secure the sign will also be made by a Chief Officer.
2. The Captain at Station #15, based upon the inability to contact a Chief can, at his/her discretion unfold and display the signs. The closing of the signs can again be at the discretion of the Captain.

The following guidelines should be followed when displaying the warning signs:

1. The air temperature, humidity and wind should be creating a warm, dry and blowing condition in our community. A north or north east wind typically increases the hazard level. A south or south west wind often indicates a marine influence.
2. There should be no marine layer (advection fog) in or visible from Larkspur.
3. If Red Flag warnings or an alert is broadcast for Marin, the signs should be unfolded.
4. As soon as realistically possible after conditions subside, the signs should be secured closed. Try to recognize a change in weather conditions which is usually preceded by a change in wind direction.
5. When the fire hazard is determined to be critical based on local conditions, the Engine Companies will strive to remain in their designated proper response area.

The Red Flag - Critical Fire Warning signs are only intended to increase public awareness during certain times of the fire season when weather conditions present a high risk of wild fire. The warning does not prohibit any local activities from taking place in the community. Consistency when using this message system is important to the success of the program.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Future Mitigation Strategies

AH-1

Priority 1

Program/Project	Backup Generators
Cost	2 @150K
Timeline/Schedule	6-24 months
Responsible Agency or Department	Police, Fire, Public Works
Financing	Grants
Goal Addressed	Backup generators (30KW) for the City's Emergency Operations Center, City Hall, Public Works Maintenance Yard to sustain operability.
Related Hazard	All-Hazards

AH-2

Priority 1

Program/Project	Public Works Corporation Yard Office Seismic Tie Down
Cost	150K
Timeline/Schedule	ASAP
Responsible Agency or Department	Public Works
Financing	Grants
Goal Addressed	Seismic tie-down for the Corporation Yard Modular Office building. There are three buildings which share the same address; 250 Doherty Drive. A GIS map identifying their locations is provided.
Related Hazard	All-Hazard

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

AH-3

Priority 1

Program/Project	Engineering Public Works Office
Cost	150K
Timeline/Schedule	ASAP
Responsible Agency or Department	Public Works
Financing	Grants
Goal Addressed	Seismic tie-down for the Engineering Public Works Modular Office building. There are three buildings which share the same address: 250 Doherty Drive. A GIS map identifying their locations is provided.
Related Hazard	All-Hazards

AH-4

Priority 1

Program/Project	Public Works Office
Cost	150K
Timeline/Schedule	ASAP
Responsible Agency or Department	Public Works
Financing	Grants
Goal Addressed	Seismic tie-down for the Public Works Modular Office building. There are three buildings which share the same address: 250 Doherty Drive. A GIS map identifying their locations is provided.
Related Hazard	All-Hazards

CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN



**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

AH-5 UL-1

Priority 1

Program/Project	Public Works Corporate Shop Generator
Cost	150K
Timeline/Schedule	12-18 months
Responsible Agency or Department	Public Works
Financing	Grants
Goal Addressed	30KW generator to operate Public Works Maintenance Operations Yard during a loss of utility service.
Related Hazard	All-Hazards

AH-6

Priority 1

Program/Project	50KW Mobile Generator with trailer
Cost	80K
Timeline/Schedule	12 months
Responsible Agency or Department	Public Works
Financing	Grants
Goal Addressed	A 50KW generator mounted on a trailer would provide backup electricity for pumping gas, flood control; pump stations, storm and emergency backup power for St. Patrick's School (evacuation shelter).
Related Hazard	All-Hazard

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

AH-7

Priority 1

Program/Project	80KW Backup Generator
Cost	300K /TBD
Timeline/Schedule	24-36 months
Responsible Agency or Department	Public Works, Police Department
Financing	Federal/State Grants
Goal Addressed	Backup Generator of the new Police Station; electrical backup for dispatch, EOC, data/telecommunications and communication systems.
Related Hazard	All-Hazards; Utility Loss, Data/Telecommunications

AH-8

Priority 2

Program/Project	Public Outreach Program
Cost	TBD
Timeline/Schedule	12-24 months
Responsible Agency or Department	Public Works, Police and Fire Department
Financing	Federal/State Grants
Goal Addressed	Develop and maintain public awareness education for protecting private property from all hazard's effects.
Related Hazard	All-Hazards

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

AH-9

Priority 1

Program/Project	Partnerships with local jurisdictions and mutual stakeholders to prevent collaborative disaster damage
Cost	Staff time
Timeline/Schedule	On-going
Responsible Agency or Department	All depts.
Financing	General Budget
Goal Addressed	The City of Larkspur participates on several multi-agency councils to discuss and develop mitigation strategies to reduce or eliminate disaster impacts to city-owned properties and assist citizens with disaster preparedness.
Related Hazard	All-Hazards

AH-10

Priority 1

Program/Project	Information Technology System Upgrade
Cost	300K
Timeline/Schedule	18 months
Responsible Agency or Department	Police and Fire Department
Financing	Federal/State Grants
Goal Addressed	Replace and upgrade IT System for police, fire, and city infrastructure. The existing system is out dated and does not have the capabilities needed to grow with the City's needs for data storage.
Related Hazard	All-Hazards

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

AH-11

Priority 1

Program/Project	Cache of Emergency Supplies and Container
Cost	50K
Timeline/Schedule	18 months
Responsible Agency or Department	Fire Department
Financing	Federal/State Grants
Goal Addressed	Purchase emergency supplies and equipment for the City's first responders; sustain life.
Related Hazard	All-Hazards

AH-12

Priority 1

Program/Project	Mobile Disaster Command Center
Cost	500K
Timeline/Schedule	24 months
Responsible Agency or Department	Police, Fire, and Public Works Department
Financing	Federal/State Grants
Goal Addressed	Purchase a Mobile Disaster Command Center; Alternate EOC site. School and Public disaster preparedness training site.
Related Hazard	All-Hazards

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

AH-13

Priority 2

Program/Project	Larkspur Disaster Council
Cost	30K annually
Timeline/Schedule	12 months
Responsible Agency or Department	Administration, Police, Fire Departments
Financing	Federal/State Grants
Goal Addressed	A Disaster Council made up of city employees and stakeholders. The Disaster Council would develop a program to assist the community in disaster preparedness, planning and awareness. This outreach program would be a public mechanism for gathering public involvement for the Hazard Mitigation Plan.
Related Hazard	All-Hazards

AH-14

Priority 2

Program/Project	Community Emergency Response Team (C.E.R.T) Cache and Storage Unit
Cost	60K
Timeline/Schedule	12 months
Responsible Agency or Department	Police & Fire Department
Financing	Federal/State Grants
Goal Addressed	Stock and store basic C.E.R.T equipment to be located at each of the fire stations. This would be dedicated to C.E.R.T.
Related Hazard	All-Hazards

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

AH-15

Priority 1

Program/Project	Community Training Room Expansion
Cost	1.5 million
Timeline/Schedule	As funds become available
Responsible Agency or Department	Police, Fire, Public Works
Financing	Federal/State Grants
Goal Addressed	Expand Fire Station facility located in Greenbrae at 15 Barry Way for training; emergency personnel CPR, citizen preparedness, EMT certification, and community meeting room. City owned facility.
Related Hazard	All-Hazards

AH-16 DT-1

Priority 1

Program/Project	Upgrade 9-1-1 Telephone System
Cost	350K
Timeline/Schedule	18 months
Responsible Agency or Department	Police Dept.
Financing	Grants and/or General Funds
Goal Addressed	Existing system is antiquated and built into the building. If the building is damaged it would render the 9-1-1 system useless. The 9-1-1 System provides service for the City of Larkspur and the Town of Corte Madera. A new modernized system is needed to provide real time emergency service for day-to-day operations and disaster response & recovery.
Related Hazard	All-Hazards

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

AH-17 DT-2

Priority 1

Program/Project	Telephone System Upgrade
Cost	25K
Timeline/Schedule	21-18 months
Responsible Agency or Department	Police
Financing	Federal/State grants and/or General Funds
Goal Addressed	Install T1 line (AT T) SSN7 System; 35 lines capability for the Police department phone system. The current telephone system is out-dated. The new system would have dedicated phone lines to the EOC and would be integrated with other first responder systems.
Related Hazard	All-Hazards, Data/Telecommunications

AH-18

Priority 2

Program/Project	LCD w/DLP Capability Televisions
Cost	10K
Timeline/Schedule	12-18 months
Responsible Agency or Department	Police Dept.
Financing	Federal/State grants
Goal Addressed	Purchase and install 2 LCD Television for minute-to-minute disaster assessment and recovery in the EOC. (Communication assessment media system).
Related Hazard	All-Hazards

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

AH-19

Priority 2

Program/Project	Wireless Computers (Wireless I.T. System
Cost	8 @ \$2,500
Timeline/Schedule	12-18 months
Responsible Agency or Department	Police Dept
Financing	Federal/State Grants
Goal Addressed	Purchase 8 wireless laptop computers for mobile command use. Multi-jurisdictional response equipment.
Related Hazard	All-Hazards

AH-20

Priority 1

Program/Project	Electrical upgrade for remodeled EOC
Cost	50K
Timeline/Schedule	12-18 months
Responsible Agency or Department	Police, Fire, Public Works
Financing	Grant & Bond Issue
Goal Addressed	Replace existing electrical wiring, outlets, circuit breaker box. The existing electrical system is overloaded and would not be able to accommodate new computers and equipment for the EOC.
Related Hazard	All-Hazards

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

AH-21

Priority 1

Program/Project	Emergency Operations Center Remodel
Cost	TBD
Timeline/Schedule	12-18 months
Responsible Agency or Department	Police, Fire Dept.
Financing	Federal/State Grants, Bond Issue
Goal Addressed	Remodel and expand current EOC room from 20"x 30" to 40" x 60" room and upgrade electrical, I.T, EOC equipment. The current room available for the City's EOC is 33 yrs old; all utility outlets and systems are inadequate. The remodeled room would be upgraded with electrical, telephone, computer, and security systems. The remodel would involve removing one existing wall.
Related Hazard	All-Hazards

EQ-1

Priority 1

Program/Project	City Hall Seismic Upgrade
Cost	Existed cost in 1998 was \$1,334,000. New costs are being developed at this time. Estimate 2007 cost; \$2.001 Million
Timeline/Schedule	12 months
Responsible Agency or Department	Public Works
Financing	Federal/State Grants (PDM)
Goal Addressed	A complete seismic upgrade of City Hall, to interior & exterior walls, floors & footings. Removal of second floor storage room and reconstruction of the rear wall. A preliminary structural analysis was prepared in 1994. A partial seismic upgrade based on that study was completed when the roof was replaced in 1997.
Related Hazard	Earthquake

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

EQ-2, WF-1

Priority 1

Program/Project	Fire Station Seismic Upgrade
Cost	\$998,000 in 1998. Estimated 2007 costs; \$1.497 Million
Timeline/Schedule	12 months
Responsible Agency or Department	Public Works, Fire Department
Financing	Federal/State Grants
Goal Addressed	A complete seismic upgrade of the Fire Station attached to City Hall. Including improvements to interior & exterior walls, floors, roof structure & footing. Included are improvements to bring the building up to current ADA requirements. Repair and patch interior and exterior finishes.
Related Hazard	Earthquake, Wildland/Urban Interface Fire

EQ-2, WF-2,

Priority 1

Program/Project	Fire Station Expansion
Cost	\$2,739,000. in 1998. Estimated 2007 costs; \$4.108 Million
Timeline/Schedule	12 months
Responsible Agency or Department	Public Works, Fire Department
Financing	Federal/State Grants
Goal Addressed	Construction of a new second floor, Area of construction 4000 sq.ft at the City Hall Fire Station w/parking below. The addition links Fire Station & City Hall. The second floor allows for the expansion of the City Offices, and additional room for a Incident Command EOC.
Related Hazard	Earthquake, Wildland/Urban Interface Fire, All-Hazards

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

FL-1, SW-1

Priority 1

Program/Project	Upgrade Storm Drain System
Cost	TBD
Timeline/Schedule	ASAP
Responsible Agency or Department	Public Works
Financing	Federal/State Grants; Flood Mitigation Hazard Program
Goal Addressed	<p>Upgrade current storm drainage system to accommodate increased water flow from excessive rains. Which entails:</p> <ol style="list-style-type: none"> 1. Replacing & enlarging current drain pipe (8 crossings x 40 ft) approximately 2 miles of the existing 15. 2. Replacing two (2) dozen gates/valves at critical discharge points. 3. Install two (2) new pump stations at; A) Hillview B). Larkspur Marine 4. Upgrade existing pump stations at A) Heathergarden B) Larkspur Plaza C) Industrial Way 5. Install back flow check valve at 4 ft culvert under A) Hwy 101 at Redwood B) Hwy 101 at Industrial Way 6. Install 1000 ft of new culvert under public streets 7. Replace 250 catch basins/drain inlets 8. Install 20 new catch basins/drain inlets
Related Hazard	Flood, Severe Weather

FL-2, SW-2

Priority 1

Program/Project	Buy Out Program
Cost	TBD
Timeline/Schedule	2 years
Responsible Agency or Department	Public Works
Financing	Federal/State grants
Goal Addressed	Buy out repetitive flood areas homes to reduce/eliminate flood damage to houses and building and/or assist citizens with flood mitigation program to eliminate flooding.
Related Hazard	Flooding, Severe Weather (excessive rains)

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

FL-3, SW-3, WF-1

Priority 1

Program/Project	Property Development Program
Cost	TBD
Timeline/Schedule	5 years
Responsible Agency or Department	Public Works
Financing	TBD
Goal Addressed	Develop City ordinances to address future housing developments in hazard prone areas
Related Hazard	Flood, Severe Weather, Wildland/Urban Interface Fire

FL-4

Priority 1

Program/Project	Elevate Home Program
Cost	TBD
Timeline/Schedule	2 years or as funded
Responsible Agency or Department	Public Works
Financing	Federal/State Grants
Goal Addressed	Develop a program to assist citizens in elevating their homes which are located in repetitive flood areas
Related Hazard	Flooding

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

FL-5, SW-4

Priority 1

Program/Project	Trash Pumps (two 6 inch)
Cost	50K
Timeline/Schedule	12 months
Responsible Agency or Department	Public Works
Financing	Federal/State Grants; Flood Mitigation Hazard Program
Goal Addressed	Purchase two 6 inch Trash Pumps mounted on trailer for mobility. The Trash Pumps would be used to remove excessive water and debris from flooded storm drains.
Related Hazard	Flood, Severe Weather

FL-6, SW-5

Priority 1

Program/Project	Five (5) Discharge Suction Hoses
Cost	5 @ \$1,500
Timeline/Schedule	12 months
Responsible Agency or Department	Public Works
Financing	Federal/State grants
Goal Addressed	Purchase five 400 ft discharge suction hoses to for pump stations to discharge flood water.
Related Hazard	Flooding, Severe Weather (excessive rains)

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

FL-7, SW-3,

Priority 1

Program/Project	Two 4 inch Trash Pumps w/ suction hoses
Cost	2 @ 5K Trash pumps 2 @ \$600 for suction hose
Timeline/Schedule	12 months
Responsible Agency or Department	Public Works
Financing	Grants
Goal Addressed	Purchase two 4 inch Trash Pumps with suction hose to pump excessive water from flood areas such as parking lots, streets, and back up for storm drains.
Related Hazard	Flood, Severe Weather

FL-8

Priority 1

Program/Project	Future Flood Elevation Feasibility Study for Coastal Buildings
Cost	TBD
Timeline/Schedule	2 years or as funded
Responsible Agency or Department	Public Works
Financing	Federal/State Grants
Goal Addressed	Hire professional services to assess the vulnerability of coastal buildings to flooding, tidal surges and tsunami threat. This would include assessing current storm drainage, creek bank restorations, elevations, and buy outs
Related Hazard	Flooding

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

FL-9, SW-4, TS-1

Priority 1

Program/Project	Flood Mitigation Plan
Cost	54K
Timeline/Schedule	12 months
Responsible Agency or Department	Public Works
Financing	Federal/State Grants; Flood Mitigation Hazard Program
Goal Addressed	Develop a Comprehensive Flood Mitigation Plan. The Plan will identify repetitive flood areas and develop short and long term flood mitigation strategies
Related Hazard	Flood, Tsunami, Severe Weather

WF-2

Priority 1

Program/Project	High Fire Zone Assessment Program
Cost	100k annually
Timeline/Schedule	On going
Responsible Agency or Department	Fire Department
Financing	General Budget
Goal Addressed	Fire dept staff goes door-to-door and assess fire treat potential to business and private home owners. The staffs make suggestions/enforce defensible space according to city fire codes and ordinances.
Related Hazard	Wildland/Urban Interface Fire

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

WF-3, Priority 1

Program/Project	Contract Service for Vegetation Debris Bins
Cost	100 K annually
Timeline/Schedule	12 months
Responsible Agency or Department	Fire Department
Financing	Grants
Goal Addressed	Contract services for citizen's green waste removal to encourage fuel reduction for adequate fire defensible space around homes and businesses.
Related Hazard	Wildland/Urban Interface Fire

WF-4 Priority 1

Program/Project	Chipper Program
Cost	100K annually
Timeline/Schedule	ASAP
Responsible Agency or Department	Fire Department
Financing	Federal/State Grants
Goal Addressed	Due to lack of staffing, Larkspur Fire Dept. would hire a professional contractor to provide a chipping service for the community. The program would be available four months each year; June-Sept. This program would allow for fuel modification and reduce the fire risk surrounding homes and businesses.
Related Hazard	Wildland/Urban Interface Fire

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

WF-5

Priority 1

Program/Project	Fuel Management Program
Cost	400K
Timeline/Schedule	5 years
Responsible Agency or Department	Fire Department
Financing	Federal/State Grants
Goal Addressed	Reduce fire fuel sources on hillsides, barriers around houses, open spaces and City boundaries. Partnership with Marin Municipal Water District and private property owners to eliminate and/or reduce fire hazards and enhance fire suppression.
Related Hazard	Wildland/Urban Interface Fire

Section 6 – Future Actions & Goals

Summary

The City of Larkspur is supportive of the following actions and goals. The City shall make every effort, given appropriate funding, to implement these actions and goals as conditions warrant.

Specific goals and actions have been listed through out this Plan concerning mitigation and community development. The following goals, objectives and actions were developed with future growth and mitigation to hazards.

Long-term Goals, Objectives and Actions

Listed below are the City of Larkspur 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 of Larkspur 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 an analysis of the City's current capabilities assessment. These preliminary goals, objectives and actions were developed to represent a vision of long-term hazard reduction or enhancement of capabilities.

In addition, City of Larkspur representatives met with the consultant staff and Departments to specifically discuss these hazard-related goals, objectives and actions as they related to the overall Plan. Representatives of numerous City of Larkspur departments were involved in hazard mitigation planning. Those Departments are listed specifically in the minutes of the meetings.

The City of Larkspur Hazard Mitigation Steering Committee used the City's General Plan, Emergency Operations Plan, and planning process as a baseline for preparing this Plan. They will continue to network with neighboring jurisdictions and incorporate any future legal planning mechanism into the annual update. The documents and plans will be presented to the Steering Committee for consideration and possible integration. Additionally, when the City's General Plan, Emergency Operations Plan, and Departmental Plans are being reviewed and updated, they will incorporate the DMA 2000 Plan components into the Plans when appropriate. The Chairman of the Hazard Mitigation Plan will be responsible for keeping the departments updated on the mitigation strategy development.

The City of Larkspur has developed the following Long Term Goals for their Hazard Mitigation Plan Program.

**CITY OF LARKSPUR, CALIFORNIA
ALL-HAZARDS MITIGATION PLAN**

Development of Specific Goals

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

Goal 5. Reduce the possibility of damage and losses to existing assets, particularly people, critical facilities/infrastructure, and city owned facilities from the following high risks:

Goal 6 - Reduce the possibility of damage and losses to existing and future assets, particularly people, critical facilities/infrastructure, and due to the following HIGH RISK hazards:

- Earthquake
- Flooding
- Severe Weather
- Transportation; A) Loss B) Accident and/or Incident
- Utility Loss or Disruption
- Wildland Urban Interface Fire

Prioritization and Implementation of Action Items

Once the specific list of CITY OF LARKSPUR goals listed above was developed, the proposed mitigation actions items were prioritized by the Steering Committee. This step resulted in a list of acceptable and realistic specific actions that address the hazards identified in the CITY OF LARKSPUR Service Area.

The Disaster Mitigation Action 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 will be implemented. Implementation 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 will be completed.

The top eight prioritized mitigation action items, as well as an implementation strategy for each are:

Action Item 1: Continue development and maintenance of the All-Hazard DMA 2000 Plan by coordinating all CITY OF LARKSPUR Departments as well as all other Stakeholders.

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- Potential Funding Source: FEMA Grants / General Funds.
- Implementation Timeline: 1 Year

Action Item 2: Review and update plans that would include coordination with cities, special districts and the County.

- Potential Funding Source: CITY OF LARKSPUR General Fund/ State and Federal Grants

Action Item 3: Update the CITY OF LARKSPUR Safety Plan every three years.

- Implementation Timeline: 1 - 3 years
- Potential Funding Source: State Grants

Action Item 4: Publicize and encourage the adoption of appropriate hazard mitigation actions.

- Potential Funding Source: General Fund/Federal or State grants.
- Implementation Timeline: 1 - 3 years

Action Item 5: Implement all new facility specifications and inspection guidelines to reflect current earthquake standards.

- Implementation Timeline: 2 - 5 years

Action Item 6: Review and compare existing flood control standards, zoning and building requirements with existing and planned facilities.

- Coordinating Individual departments
- Potential Funding Source: General Fund/Federal or State Grants
- Implementation Timeline: 1 - 3 years

Action Item 7: Encourage citizens to prepare and maintain a 3-day preparedness kit for the classroom and personal kits for home and work.

- Coordinating Individual/Organization: Public Relations / IT Departments.
- Potential Funding Source: General Fund/Federal or State grants
- Implementation Timeline: 1 - 3 years

Long-term Goals, Objectives Actions

The CITY OF LARKSPUR developed the following broad list of objectives and actions to assist in the implementation of each of their identified long-term goals. The City developed

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objectives to assist in achieving their hazard mitigation goals. For each of these objectives, specific actions were developed that would assist in their implementation.

Goal 1: Promote disaster-resistant future construction.

Objective 1: Facilitate the development or updating of disaster related plans, which relate to hazard mitigation.

Action 1: Update

Action 2: Attract and retain qualified, professional, and experienced staff.

Action 3: Identify high hazard areas and facilities.

Facilitate the implementation inspection standards and practices that protect existing assets and restrict placing new facilities in hazard areas.

Action 4: Review hazard mitigation strategies every 3 years or as needed.

Objective 2: Facilitate consistent implementation of plans, general city guidelines, and inspection standards.

Objective 3: Limit facility placement in hazardous areas

Action 1: Placement should be in harmony with existing topography.

Action 2: Placement patterns should respect environmental characteristics.

Action 3: Placement should be limited in areas of known geologic hazards.

Action 4: Ensure that jurisdictions in high fire hazard areas provide adequate access for emergency vehicles and the evacuation of students and staff.

Objective 4: Address identified data limitations regarding the lack of information about facility placement and build-out potential in hazard areas.

Action 1: Coordinate existing Geographic Information Systems (GIS) capabilities to identify hazards throughout the CITY OF LARKSPUR.

Action 2: Develop the data sets that are necessary to test hazard scenarios and Mitigation tools including HAZUS MH

Action 3: Utilize the Internet as a communication tool, as well as an educational tool.

Objective 5: Increase public understanding, support, and demand for hazard mitigation for placement of new facilities.

Action 1 Gain public acceptance for avoidance policies in high hazard areas.

Goal 2: 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 CITY OF LARKSPUR website.

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Action 3: Heighten public awareness of hazards by using the CITY OF LARKSPUR Public Relations Officer.

Action 4: Gain public acceptance for avoidance policies in high hazard areas.

Objective 2: Gain public interest by supporting already existing public programs.

Action 1: Identify hazard specific issues and needs.

Action 2: Help create demand for hazard resistant construction and site planning.

Objective 3: Promote partnerships between the CITY OF LARKSPUR, federal, state, county, cities, and local governments to identify, prioritize, and implement mitigation actions.

Action 1: Develop, maintain, and improve lasting partnerships.

Action 2: Support jurisdictional safety councils.

Objective 4: Monitor and publicize the effectiveness of mitigation actions Implemented city-wide.

Action 1: Use the CITY OF LARKSPUR website to publicize mitigation actions.

Action 2: Utilize existing risk data.

Action 3: Establish budgets and identify funding sources for mitigation outreach.

Action 4: Develop and distribute brochures, CDs and other publications promoting safe schools and mitigation actions.

Objective 5: Provide education on hazardous conditions.

Action 1: Support public and private sector symposiums.

Action 2: Coordinate production of brochures, informational packets and other handouts.

Goal 3: Enhance hazard mitigation coordination and communication with federal, state, and local governments.

Objective 1: Encourage other organizations to incorporate hazard mitigation activities.

Action 1: Leverage resources and expertise that will further hazard mitigation efforts.

Action 2: Update the CITY OF LARKSPUR All-hazard mitigation plan on a regular basis

Action 3: Encourage stakeholders to implement All-Hazard Mitigation Plan Strategies

Action 4: Streamline policies to eliminate conflicts and duplication of effort where feasible

Objective 2: Improve CITY OF LARKSPUR's capability and efficiency at administering pre- and post-disaster mitigation.

Action 1: Maintain coordination, communication, and cooperation with the Local Operational Area in administering recovery programs.

Action 2: Continue to exchange resources and work with local and regional partners.

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Objective 3. Coordinate with the County Operational Area to enhance recovery activities while restoring and maintaining school services.

Goal 4: Reduce the possibility of damage and losses to existing assets and future assets, including people, critical facilities/infrastructure, and public facilities due to Severe Weather.

Objective 1: Develop a comprehensive approach to reducing the possibility of damage and losses due to severe weather conditions

- Action 1: Encourage and require water conservation wherever feasible
- Action 2: Explore the development of new water resources
- Action 3: Encourage the Federal Government to complete the decontamination of all underground water resources currently identified as Superfund sites

Objective 2: Encourage city-wide participation in mitigation strategies

Goal 5: Reduce the possibility of damage and losses to existing and future assets, including people, critical facilities/infrastructure, and public facilities due to earthquakes.

Objective 1: Develop a comprehensive approach to reducing the possibility of damage and losses due to earthquakes.

- Action 1: Maintain Inspection Standards to reflect current earthquake standards.
- Action 2: Encourage and participate in community awareness meetings.
- Action 3: Distribute printed publications concerning hazards.

Objective 2: Protect existing assets with the highest relative vulnerability to the effects of earthquakes.

- Action 1: Identify hazard-prone structures through GIS modeling.
- Action 2: Design critical facilities to ensure that they function after a major earthquake.
- Action 3: Encourage and continue the study of ground motion, landslide, and liquefaction relative to existing and new facilities.

Objective 3: Coordinate with and support existing efforts to mitigate earthquake hazards

- Action 1: Identify projects for pre-disaster mitigation funding.
- Action 2: Design and implement an ongoing district-wide seismic risk assessment program.
- Action 3: Collaborate with Federal, State, universities, and local agencies' mapping efforts.

Objective 4: Address identified data limitations regarding the lack of information about the relative vulnerability of assets from earthquakes.

- Action 1: Assess utility infrastructure with regard to facilities and earthquake risk, including public and private utilities.
- Action 2 Encourage city-wide preparation and maintenance of a 3-day preparedness kit for home for all hazards

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Goal 6: Reduce the possibility of damage and losses to existing assets, including people, critical facilities/infrastructure, and public facilities due to floods.

Objective 1: Develop a comprehensive approach to reducing the possibility of damage and losses due to floods.

Action 1: Review and compare existing flood control standards, zoning and building requirements with existing and new facilities.

Action 2: Identify and update flood-prone areas by using GIS.

Objective 2: Protect existing assets with the highest relative vulnerability to the effects of floods within the 100-year floodplain.

Action 1: Assure adequate funding where feasible to restore damaged facilities to 100-year flood design.

Action 2: Update storm water system plans and improve storm water facilities that affect high-risk assets.

Action 3: Ensure adequate evacuation time in case of major hazard event.

Objective 3: Minimize repetitive losses caused by flooding.

Action 1: Identify those facilities that have recurring losses.

Action 2: Develop project proposals to reduce flood damage and improve control of facilities in flood prone areas.

Action 3: Seek pre-disaster mitigation funding.

Objective 4: Address identified data limitations regarding the lack of information about the relative vulnerability of assets from flooding.

Action 1: Encourage city-wide preparation and maintenance of a 3-day preparedness kit for home.

Action 2: Maintain, develop, and implement hazard awareness programs.

Goal 7: Reduce the possibility of damage and losses to existing and future assets, including people, critical facilities/infrastructure, and public facilities due to structural fire/wildfire.

Objective 1: Develop a comprehensive approach to reducing the possibility of damage and losses due to structural fire/wildfire.

Action 1: Meet the Fire Code.

Action 2: Utilize GIS and the Internet as information tools.

Objective 2: Protect existing assets with the highest relative vulnerability to the effects of structural fire/wildfire.

Action 1: Maintain Standardized Defensible Space Clearance distances.

Objective 3: Coordinate with and support existing efforts to mitigate structural fire/wildfire.

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Objective 4: Address identified data limitations regarding the lack of information about the relative vulnerability of assets from structural fire/wildfire.

Action 1: Continue to identify and update facilities within Urban/wildland fire interface areas.

Action 2: Use GIS to map facilities in fire risk areas.

Action 3: Implement city-wide education programs to address fire dangers and corrective measures.

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Capabilities Assessment

The City of Larkspur identified current capabilities available for implementing hazard mitigation activities. The Capability 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 place associated to hazard mitigation planning. 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 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 the City, as shown in the table below, provides 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	PLANNING & PUBLIC WORKS DEPT.
Engineer(s) or professional(s) trained in construction practices related to buildings and/or infrastructure	Y	PUBLIC WORKS
Planners or Engineer(s) with an understanding of natural and/or human-caused hazards	Y	ENGINEERING, PUBLIC WORKS
Floodplain manager	Y	BUILDNG, PUBLIC WORKS
Surveyors	Y	PUBLIC WORKS
Staff with education or expertise to assess the community's vulnerability to hazards	Y	PUBLIC WORKS
Personnel skilled in GIS and/or HAZUS	Y	PUBLIC WORKS
Scientists familiar with the hazards of the community	Y	PUBLIC WORKS
Emergency manager	Y	PUBLIC WORKS
Grant writers	Y	PUBLIC WORKS, CONSULTANTS

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Regulatory Tools

The legal and regulatory capabilities of each jurisdiction are shown in the table below, which presents the existing ordinances and codes that affect the physical or built environment of each jurisdiction. Examples of legal and/or regulatory capabilities can include: a City’s building codes, zoning ordinances, subdivision ordinances, special purpose ordinances, growth management ordinances, site plan review, general plans, 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	BUILDING
Zoning ordinance	Y	PLANNING
Subdivision ordinance or regulations	Y	PLANNING
Special purpose ordinances (floodplain management, storm water management, hillside or steep slope ordinances, wildfire ordinances, hazard setback requirements)	Y	PUBLIC WORKS, FIRE
Growth management ordinances (also called “smart growth” or anti-sprawl programs)	Y	PUBLICWORKS, ADMINISTRATION
Site plan review requirements	Y	PLANNING
General or comprehensive plan	Y	PLANNING
A capital improvements plan	Y	PUBLIC WORKS
An economic development plan	Y	PLANNING
An emergency response plan	Y	PLANNING, FIRE
A post-disaster recovery plan	N	
A post-disaster recovery plan	N	
Real estate disclosure requirements	Y	BUILDING, PLANNING
Habitat Management Plan	Y	PLANNING
Master Drainage, Sewer, Water, & Reclaimed Water	Y	PUBLIC WORKS
Redevelopment Master Plan	N	PLANNING

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Fiscal Resources

The table below shows specific financial and budgetary tools available to the 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	MARIN COUNTY
Capital improvements project funding	Y	PUBLIC WORKS, ADMINISTRATION
Authority to levy taxes for specific purposes	N	LIMITED;
Fees for water, sewer, gas, or electric service	N	
Impact fees for homebuyers or developers for new developments/homes	Y	ADMINISTRATION, FINANCE
Incur debt through general obligation bonds	Y	**
Incur debt through special tax and revenue bonds	Y	**
Incur debt through private activity bonds	Y	** ADMINISTRATION
Withhold spending in hazard-prone areas	N	

* Subject to grant from State

** Subject to voter approval

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:

S	OCIAL	Community Acceptance	Effect on Segment of Population		
T	ECHNICAL	Technical Feasibility	Long-term Solution	Secondary Impacts	
A	DMINISTRATIVE	Staffing	Funding Allocated	Maintenance/Operations	
P	OLITICAL	Political Support	Local Champion	Public Support	
L	EGAL	State Authority	Existing Local Authority	Potential Legal Challenge	
E	CONOMIC	Benefit of Action	Cost of Action	Contributes to Economic Goals	Outside Funding Required
E	NVIRONMENTAL	Effects on Land/Water	Effect on Endangered Species	Effect on HAZMAT / Waste Sites	Consistent with Community Environmental Goals Consistent with Federal Laws

Because projects are planned for 1-3+ years in the future, the City of Larkspur decided that it would not be efficient to do full-blown benefit-cost review software process at this stage. BCRs using the STAPLEE process will be conducted when funding is earmarked and scheduling is firm for mitigation projects.

Section 7 – 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 the City of Larkspur will integrate public participation throughout the plan maintenance process. Finally, this section includes an explanation of how departments intend to make considerations for the mitigation strategies outlined in this Plan into existing planning mechanisms.

The City of Larkspur will be responsible for monitoring the plan annually for updates to goals, objectives, and action items. If needed, participants will coordinate through the City of Larkspur's Hazard Mitigation Steering Committee to integrate these updates into the Plan. The Chairman of the City of Larkspur Hazard Mitigation Steering Committee will be responsible for monitoring the overall Plan for updates on an annual basis. The Chairman will reconvene the Steering Committee as needed to make these updates.

The Plan will be evaluated by The City of Larkspur Hazard Mitigation Steering Committee at least every three 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 by City of Larkspur Department Heads or their select representatives based upon the initial Plan criteria used to draft goals, objectives, and action items for this Plan. Action items will be reviewed to determine their relevance to changing situations in the City of Larkspur, Marin County and ABAG, as well as changes in State or Federal regulations and policy. The City of Larkspur 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.

The City of Larkspur's lead Committee members will be the responsible group for updates to the Plan. All City of Larkspur participants will be responsible to provide the Steering Committee Chairperson with department-level updates to the Plan when/if necessary as described above. Every three years the updated plan will be submitted to the State of California and FEMA for review.

The City of Larkspur will have the opportunity to implement recommended action items through existing programs and procedures that are deemed appropriate. Upon adoption of the Plan, the multi-jurisdictional participants can use the Plan as a baseline of information on the natural hazards that impact the region.

Continued Public Involvement

The City of Larkspur is dedicated to involving the public directly in review and updates of the Plan.

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A representative from selected departments/agencies 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 will be publicized and available for review on the City of Larkspur website. In addition, copies of the plan will be catalogued and kept at all of the appropriate participants in the City. The existence and location of these copies will also be posted on the Larkspur website. The site will contain contact information for City of Larkspur to which people can direct their comments and concerns.

All public feedback will be forwarded to the appropriate Hazard Mitigation Steering Committee for review and incorporation (if deemed appropriate).

A press release requesting public comments will also be issued after each evaluation or when deemed necessary by the City of Larkspur. The press release will direct people to the website or appropriate local agency 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 Hazard Mitigation Steering Committee members 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.

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Source Document List

Title	Source	Publisher	Date
Larkspur General Plan 1990-2010	City of Larkspur Naphtali H., Knox & Associates, Inc Urban Planning Consultants DKS Associates Traffic and Transportation Engineers	City of Larkspur	1990
City of Larkspur Emergency Operations Plan	City of Larkspur	City of Larkspur	March 1999
Hillslope Processes and Urban Planning Larkspur, CA	City of Larkspur Planning Department	Paul J. Seidelman and Jeffrey D. Borum Seidelman Associates Lafayette, CA	1983
City of Larkspur Asset Summary List by Category	City of Larkspur Finance Department	GASB34	7-20-04
City of Larkspur Capital Expenditure Plan Larkspur 2050	City of Larkspur	City of Larkspur	Proposed March 2001
City of Larkspur – City Hall Feasibility Study Option 1: City Hall Storage Removal and Reconstruction\ Option 2: City Hall Seismic Upgrade Option 3: City Hall Expansion Option 4: Fire Station Seismic Upgrade Option 5: Fire Station Site Expansion Option 6: Nazari Property and City Parking Lot Development	City of Larkspur	Glenn David Mathew, AIA Architecture/Historic Preservation San Rafael, CA	1994
Draft Larkspur City Hall Seismic Report and Restoration Study	Glenn David Mathews, AIA Architecture/Historic Preservation Construction Management And Tennebaum-Manheim Engineers Consulting Structural Engineer	Glenn David Mathews, AIA Architecture/Historic Preservation Construction Management And Tennebaum-Manheim Engineers Consulting Structural Engineer	April 1994
County of Marin Emergency Operations Plan	County of Marin website	County of Marin	11/02/2002

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Title	Source	Publisher	Date
Marin County Operational Area Hazard Mitigation Plan	County of Marin Sheriff, Office of Emergency Services San Rafael, CA	County of Marin	August 2005
Floodplain Management	City of Larkspur	City of Larkspur	May 1993
Illegal Fireplace Use	Email: Robert Sinnott Fire Chief	City of Larkspur	November 2, 2004
Citizen Letter	Larkspur Fire Dept	City of Larkspur	April 2004
A New Concern about Smoke Detectors	Robert Sinnott Fire Chief	City of Larkspur	
Could a Disaster Happen? Plan on It!	Robert Sinnott Fire Chief	City of Larkspur	
Changing the clocks- Check your Smoke Detectors	Robert Sinnott Fire Chief	City of Larkspur	
Is the "Fire Season" over? No, it's just getting going!	Robert Sinnott Fire Chief	City of Larkspur	
Hillside Evacuation Strategies Due to a Wildfire Event	Robert Sinnott Fire Chief	City of Larkspur	
Exercise Care with Decorative Candles; Candle with Care	Robert Sinnott Fire Chief	City of Larkspur	
Residential Smoke Detectors- Location and Maintenance	Robert Sinnott Fire Chief	City of Larkspur	
What happens when I call 911	Robert Sinnott Fire Chief	City of Larkspur	
Ordinance No 752; Amending Ordinance No. 750; Which Adopted the 1985 Uniform Building Code by Reference to amend Chapter 32 of the 1985 Uniform Building Code Pertaining to new Roofs and Re-Roofing of 25% or more	Building Department	City of Larkspur	
Title 14; Fire Prevention	Fire Department	City of Larkspur	December 2001
Resolution No. 05/04; A Resolution of the City Council of the City of Larkspur, California, Reaffirming the City's Fire Safety Hillside Development Standards	Fire Department	City of Larkspur	January 18, 1995
Residential Fire Sprinkler Policy	Robert Sinnott Fire Chief	City of Larkspur	
Operations Manual: Local Red Flag Warning Procedures	Fire Department	City of Larkspur	June 15, 1993
Operations Manual; Earthquake Action Plan	Fire Department	City of Larkspur	November 7, 2000
Operations Manual; Cleanup of Minor Hazardous Material Spills	Fire Department	City of Larkspur	November 6, 2000
Operations Manual; Water system and Hydrant Testing to Determine Flow	Fire Department	City of Larkspur	April 30, 2004

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Title	Source	Publisher	Date
GIS Maps;	Public Works	City of Larkspur	Feb 28-March 2, 2006
Flood Insurance Study	Marin County, CA	FEMA	Sept. 27, 2005

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Glossary of Acronyms

ARC	American Red Cross
BFE	Base Flood Elevation (100 yr.)
BIA	Bureau of Indian Affairs
BICEP	Business and Industry Council for Emergency Preparedness
BLM	Bureau of Land Management
BOR	Bureau of Reclamation
CALTRANS	California Department of Transportation
CBSC	California Building Standards Commission
CCC	California Conservation Corp
CDC	Center for Disease Control
CDEC	California Data Exchange Center
CDF	California Dept. of Forestry and Fire Protection
CDFA	California Department of Food and Agriculture
CFSA	Consolidated Farm Service Agency
CFR	Code of Federal Regulations
CIS	Chemical Inventory System
CRDL	Chemical and Radiation Detection Laboratory
CLETS	California Law Enforcement Telecommunication System
CRS	NFIP Community Rating System
DMA 2000	Disaster Mitigation Act of 2000
DFG	California Department of Fish and Game
DOC/DMG	California Department of Conservation/Division of Mines and Geology
DoD	U.S. Department of Defense
DOT	U.S. Department of Transportation
DOE	U.S. Department of Energy
DPR	California Department of Parks and Recreation
DPW	Department of Public Works
DWR	California Department of Water Resources

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EAL	Federal Emergency Action Levels
EIS	Early Implementation Strategy
EIS/EIR	Environmental Impact Statement & Environmental Impact Report
EPA	U.S. Environmental Protection Agency
ESA	Explosive Storage Area
EXPL	Explosives
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
GHAD	Geological Hazard Statement Districts
GIS	Geographic Information System
HMP	Hazard Mitigation Program
HMGP	Hazard Mitigation Grant Program
HUD	US Department of Housing and Urban Development
HVA	Hazard Vulnerability Analysis
IA	Individual Assistance Program
ICBO	International Congress of Building Officials
ICS	Incident Command System
IFGP	Individual Family Grant Program
IHMT	Interagency Hazard Mitigation Committee
JFOC	Joint Flood Operations Center
JIC	Joint Information Center
JOC	Joint Operations Center
LPG	Liquefied Petroleum Gas

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MSDS	Material Safety Data Sheet
NFIP	National Flood Insurance Program
NFPA	National Fire Protection Agency
NPDES	National Pollutant Discharge Elimination System
NOAA	National Oceanic and Atmospheric Administration
NMF	National Marine Fisheries
NPGA	National Propane Gas Association
NPS	National Park Service
NRC	U.S. Nuclear Regulatory Commission
NRCS	U.S. Natural Resource Conservation Service
NWS	National Weather Service
OEM	Office of Emergency Management
OES	Office of Emergency Services
OMB	US Office of Management and Budget
PA	FEMA Public Assistance Program
PDA	Preliminary Damage Assessment
PG&E	Pacific Gas and Electric
RCD	Resource Conservation Districts
RFC	NWS River Forecast Center
SBA	U.S. Small Business Administration
SCCAG	Southern California Council of Governments
SEMS	Standard Emergency Management System
SOP	Standard Operating Procedure
SRB	State Reclamation Board

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UBC	Uniform Building Code
USACE	US Army Corps of Engineers
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USFS	United States Forestry Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
USNRC	U.S. Nuclear Regulatory Commission
VOLAG	Volunteer Agencies

Appendix A

The City of Larkspur General Plan is provided on a CD-ROM. The Steering Committee voted to include the City's General Plan in its entirety. When the City of Larkspur General Plan is updated a new CD-ROM will be sent to the State of California Office of Emergency Services and the Regional Hazard Mitigation Division of the Department of Homeland Security (FEMA).