DIABLO FIRESAFE COUNCIL

Diablo Fire Safe Council's

Fire Action Plan

for the Urban-Wildand Interface

of Alameda and Contra Costa Counties

Draft March 2005

Signature Page

Stephen P. Abbors
Chair 2005
Diablo Fire Safe Council

_____

Ed Stewart
Co-Chair 2005
Diablo Fire Safe Council

_____

TABLE OF CONTENTS

Chapter **Page**

EXECUTIVE SUMMARY

The Fire Action Plan for Alameda and Contra Costa Counties has been a year long effort by Diablo Fire Safe Council (DFSC) and their partners to identify the needs and risks associated with wildfire, document existing resources and programs, and promote an identity and voice for the wide-ranging urban-wildland interface communities in the East Bay. From the 45-mile long urban wildland interface of the East Bay hills to the open-range grasslands in the eastern part of the counties, the wildland fire problem in our region presents a diverse challenge to our residents, fire departments and policy-makers.

Urban-Wildland interface along Skyline Blvd in Alameda County.

New development near Mt. Diablo State Park in Contra Costa County.

The Fire Action Plan (FAP) for Alameda and Contra Costa Counties is community-based planning and prioritization summary between local, state, and federal agencies, special districts, community organizations, and individuals. It is used to identify wildland fire risks, develop priorities for funding, and develop programs to reduce the risk of wildfires to citizens and communities of Alameda and Contra Costa Counties.

1.1 Problem Overview

The East Bay Counties of Alameda and Contra Costa are home to some of California's richest assets. They have robust and expanding economy, internationally-known institutions of higher learning, a richly-diverse population, and natural resources whose beauty is unmatched anywhere in the world.

The counties encompass a large geographic area, over 1,745 square miles or over 1,116,800 acres[1], with a population of over 2.5 million people[2]. In fact almost 10% of Californian's call Alameda and Contra Costa home[3]. Alameda and Contra Costa Counties continue to be one of the fastest growing regions in the Bay Area, in population and employment[4]. Some estimates report that both Contra Costa and Alameda County populations will increase by over 150% between 2000 and 2050[5]

The counties also harbor an abundance of vegetative, water, air, biotic, and agricultural resources. The natural environment of the counties also includes mineral, oil, gas and wind energy. The value of the natural environment is that it provides biological diversity, scenic views, open space, wildlife habitat, recreation, forage and water. There are over 95,000 acres of protected parklands, with 65 regional parks, recreation areas, wilderness, shorelines, preserve and land bank areas.

The East Bay also has a rich wildland fire history. During the 75 year period between 1923 and 1998, eleven Diablo wind fires alone burned 9,840 acres, destroyed 3,542 homes, and took 26 lives, with over 2 billion dollars in financial loss. During the same period, three large west wind fires burned 1,230 acres of grass, brush, trees, and 4 homes. Without the memory of the 1991 Oakland/Berkeley Hills fire, the high risk of wildland fire in the East Bay is often overlooked. New residents increasingly desire to live in the steep, wooded hillsides in the Oakland and Berkeley Hills and are willing to pay the high prices associated with it. The price in one instance for a homeowner in the Norfolk/Buckingham area was to rebuild three times following the 1946, 1970 and 1991 wildland fires.

What does this mean for the wildand fire safety in the East Bay? It means that the risk from wildfire to life, property, natural resources, and firefighter safety will continue to increase as the population grows and more people live and use wildland areas. According to some estimates, 240,000 acres, or 25% for both counties, of urban and non-urban land is at risk to wildland fire[6] in Alameda and Contra Costa Counties.

Recent fires in Alameda and Contra Costa Counties have increased public awareness over the potential losses to life, property, natural and cultural resources that fire can pose. The 1991 Oakland/Berkeley Tunnel Fire and other incidents made evident that the East Bay ecosystems

[1] See http://www.co.alameda.ca.us/ and http://www.co.contra-costa.ca.us/
[2] See above
[3] Based on U.S Census data. CA population 33,871,648 and total both counties at 2,392,557. Available at http://factfinder.census.gov

[4] Alameda County Summary Financial Information Sheet 2004 http://www.co.alameda.ca.us/admin/FinalDisclosure04.pdf
[5] http://www.openspacecouncil.org/Documents/Diversity/ParksPeopleChange_2004.09.25.pdf
[6] CDF FRAP website analyses. www.frap.cdf.ca.gov

continue to be fire-dependent. This fire caused 25 deaths, 150 injuries, the destruction of more than 3,000 homes, and approximately $1.5 billion in property damage. Even after the recent Southern California Firestorm, the Tunnel Fire still remains as California's largest wildland fire by structures destroyed[7]. (See Table 1- CDF's 20 Largest California Wildland Fires)

By some estimates if a wildland fire occurred today in the same location as the 1991 Tunnel Fire, the loss to structures may exceed $1 billion[8]. The Alameda and Contra Costa Fire Action Plan was developed to assist in community based planning and prioritizing to reduce losses when the next wildland fire occurs.

1.2 Overall Goals

The overall goal of the document is to identify regional priorities for programs and projects to reduce urban wildland interface fire hazards. This will allow our region and the DFSC to continue to seek outside funding to leverage local funds. The intent of this planning process is to encourage collaboration among jurisdictions, concerned citizens and the fire safe council to identify fire hazards. This approach recognizes that while each city, county and agency is responsible for their own jurisdiction, wildland fire does not respect those boundaries. By compiling the various local cities', counties', and agencies' plans and mitigation strategies we can better understand how to protect our communities from devastating UWI fires.

Objectives

- Protect potential losses to life, property and natural resources from wildfire
- Identify and prioritize actions for fire protection;
- Access and utilize federal and other grant dollars;
- Promote visible projects and program successes;
- Monitor the changing conditions of wildfire risk and citizen action over time; and
- Institutionalize fire-related programs and sustain community efforts for fire protection.
- Formalize the Diablo Fire Safe Council as the two county resources for fire safety organizations to disseminate information, provide valuable resources and inspire collaborations among jurisdictions and neighborhoods to make our communities fire safe.

1.3 Process and Methodology

[7] CDF website? www.ca.fire.gov

Recognizing the urgent need for a comprehensive two-county assessment of our wildland fire risks, the Diablo Fire Safe Council (DFSC) applied in 2002 for a Bureau of Land Management Community-Based Wildfire Prevention planning grant, funded by the National Fire Plan, to fund its development. The 18 month grant was approved in June 2003. Amphion Environmental, as part of their ongoing contract with the Diablo Fire Safe Council for Executive Coordinator Services, prepared the Fire Action Plan with bi-monthly oversight reviews conducted by the DFSC Board of Directors.

The four step process that DFSC used to develop the FAP is based on the CWPP guidelines[9]. The role of the CWPP is to provide communities with a tremendous opportunity to influence where and how federal agencies implement fuel reduction projects on federal lands. One of the distinguishing features of our counties is that federal lands account for less than .05% of the total acres of the two counties[10]. Our method was tailored to the region's 33 cities and 26 fire jurisdictions.

First, the DFSC Board convened with decision makers to outline the plan's planning process. Using CWPP guidelines and similar fire action plans from Fire Safe Council's, DFSC developed the outline and format for the plan. Next, DFSC involved federal agencies and engaged interested parties through a series of mailings, presentations and phone interviews. DFSC asked for input from these individuals on local high fire hazard designations, mitigation plans or Wildland fire policies in their adopted city, county, municipal, special district and other plans. Step three was for DFSC to establish a community base map. DFSC released a RFP for GIS mapping services to develop maps to provide visual information baseline from which community members can assess and make recommendations regarding protection and risk-reduction priorities. Finally, DFSC will coordinate a series of meetings with interested parties to provide additional feedback based on available information and map products to finalize the plan.

1.4 Findings

The Fire Action Plan is a work in progress. The March 2005 version is the first step in organizing the variety of wildland fire policies, programs, directives and achievements in Alameda and Contra Costa County. The plan should be updated as needed to refine the goals and objectives

[8] City of Oakland. Draft Safety Element. August 2004.
[9] Please see http://www.naco.org/Content/ContentGroups/Caucuses/WIR2/CWPPHandbook.pdf

[10] Based on acreage estimates provided by http://www.nps.gov/parks.html

of DFSC and to incorporate additional information on stakeholder participation and locally identified high fire risk areas.

At the time of print, DFSC is undergoing a hibernation period in which federal grant driven projects are on hold until a sustainable source of income is achieved. This is the first major finding of the Fire Action Plan; DFSC will continue to struggle with achieving the goals of the Plan if the reliance on federal grant dollars remains high. DFSC must strive to find additional sources of funding, through its diverse stakeholders for instance, in order to reach its goals of becoming an organizational hub for wildland fire safety efforts in the East Bay of Alameda and Contra Costa counties. Without an active and effective fire safe council, this Plan will succeed or fail based on the stakeholders involvement.

The Fire Action Plan reached several conclusions about the state of community based wildfire prevention planning in the East Bay. Below is a summary of the major points:

1. Federal agencies do not play a significant role in the East Bay wildland fire activities. Unless there is a shift in federal policy regarding adjacency requirements, dependency on federal grant dollars to drive DFSC's projects will likely become increasingly difficult. Encouraging federal agency involvement and awareness as well partnering on projects is recommended. DFSC needs to be diverse and creative with their outreach efforts.
2. Over 26 fire jurisdictions and numerous agencies in the East Bay manage fuel reduction projects, weed abatement inspection programs, public education programs, websites and presentations. If DFSC is to create a niche for itself, it must find a way to not repeat this information, but expand the outreach to offer incentives for partnering with their stakeholders. DFSC's strength is facilitating regional cooperation among these agencies to allow each of them to do a better job without reinventing the wheel.
3. The wildfire problem in the East Bay is driven by our patterns of urban development. The most common flammable fuel in the area is introduced species such as eucalyptus and structures, in which the density of housing and flammable construction materials increases the potential for ignition. In addition the limited access for fire equipment, evacuation and communication issues, and inadequate water supply and distribution systems in many areas of the two counties creates a difficult problem to deal with.
4. The current California Department of Fire and Forestry FRAP maps for level of fire threat, communities at risk and many others have limited applicability to the East Bay. These maps were developed on a statewide basis with fuel types and hazards that are predominantly throughout the wildland portions of the state. They are less detailed at the urban edges and with introduced vegetation species. Until there is a more current

version, DFSC will continue to use these models for their planning efforts. A detailed analysis of the regions fire risks and communities at risk is recommended.

5. There is no commonly accepted definition of Locally Identified High Fire Hazards. Each of the 26 fire jurisdictions rates their areas based on internal directives, or in some cases uses the FRAP models. Until there is a method for defining these areas, it will be difficult to report which jurisdiction have identified local fire hazards in this plan, and what the best solutions are to reduce these hazards.
6. The plan was the first attempt to this type of information at the regional level and found that identification of hazards and subsequent projects to reduce these hazards is not well developed. One of the ways DFSC may want to use this plan is to work with the jurisdictions to identify specific hazard locations and to develop and prioritize mitigation projects. A critical component of this next step would be to identify potential funding sources, hurdles relating to project implementation and active partners at the agency and community level.
7. The plan to date has been a compilation of existing data with limited input from various stakeholders. The intent of the plan is to use it to generate discussion about wildland fire hazards and potential solutions. The plan was modeled after the information provided in the Community Wildfire Protection Plan's, its adoption process is different because of the nature of our two county area with 33 cities and 26 fire jurisdictions and limited federal lands. The CWPP required that the plan be adopted by the local government (i.e., counties or cities), local fire departments and CDF. An option for use of this plan is to have the document used as a template by each local jurisdiction and signed off by these stakeholders.
8. The two current funding federal funding sources for projects outlined in this plan are the Healthy Forest Initiative and Homeland Security Pre-Disaster Mitigation (PDM) Funds. The PDM funding requires local jurisdictions to adopt a multi-hazard plan that is certified by the State OES and FEMA. This plan could serve as a template for a local jurisdiction's fire hazards portions of that plan. DFSC could facilitate local jurisdictions that are interested in utilizing this information.
9. The plan looks at all the possible mitigation actions in the two counties. It has identified three categories for high priority actions: Information, Education and Collaboration; Reducing Vegetative Fuel Load; Organizational Sustainability. These high priority actions build upon the vision statement and three year goals from the strategic planning session of June 2003. For each of the three high priority action areas, we have identified current and proposed activities, partners, relative rime frame and cost for implementation, resources required, any barriers to action and a monitoring timeline.

1.5 Next Steps

The Fire Action Plan is a living document meant for review and revision as the needs of the community change over time. This plan incorporates many existing documents relating to wildfire in Alameda and Contra Costa counties in an attempt to create a single resource for citizens, policy makers, and public employees. The text and organization of this plan are meant to guide all citizens, especially those who live in the highest risk areas. This work is also designed to inform city staff, the city council and our entire watershed partners both public and private.

1.6 Plan Monitoring and review

To be completed

1.7 Acknowledgements

We are particularly thankful for the help and support of the following organizations in preparing this Fire Action Plan:

- Diablo Fire Safe Council
- California Department of Forestry & Fire Protection, Santa Clara Ranger Unit
- California Department of Forestry & Fire Protection, FRAP
- Alameda County Fire Department, Alameda Fire Department, Albany Fire Department, Berkeley Fire Department, Dublin Fire Department, Emeryville Fire Department, Hayward Fire Department, Livermore-Pleasanton Fire Department, Newark Fire Department, Oakland Fire Department, Piedmont Fire Department, and Union City Fire Department
- Contra Costa Fire Protection District, Crockett-Carquinez Fire Protection District, Rodeo-Hercules Fire Protection District, Pinole Fire Department, Richmond Fire Department, El Cerrito Fire Department, Kensington Fire Protection District, Moraga- Orinda Fire Department, San Ramon Valley Fire Protection District, and East Contra Costa Fire Protection District.
- Alameda and Contra Costa County Planning Departments
- Bureau of Land Management
- East Bay Municipal Utility District
- East Bay Regional Park District
- Pacific Gas and Electric
- California Fire Chiefs Association

- Contra Costa Water District
- Municipalities of Alameda and Contra Costa county
- Association of Bay Area Governments
- The Contra Costa Watershed Forum
- Northern California Fire Prevention Officers Association
- California Fire Safe Council
- California State Parks
- National Park Service
- U.S Fish and Wildlife Service
- UC Berkeley
- Lawrence Livermore National Laboratory
- Lawrence Berkeley National Laboratory
- North Hills Phoenix Association, Claremont Canyon Conservancy, Hills Emergency Forum, Montclair Safety and Improvement Council, Shepherd Canyon Homeowner's Association, Canyon Fire Council, Panoramic Hill Association, and North Hills Landscape Committee.
- Contra Costa Resource Conservation District
- Green Info Network

20 Largest California Wildland Fires (By Structures Destroyed)

	FIRE NAME/*CAUSE*	DATE	COUNTY	ACRES	*STRUCTURES*	DEATHS
1	TUNNEL *(REKINDLE)*	October 1991	ALAMEDA	1,600	2,900	25
*2	CEDAR *(HUMAN)*	October 2003	SAN DIEGO	273,246	2,820	15
*3	OLD *(HUMAN)*	October 2003	SAN BERNARDINO	91,281	1,003	6
4	JONES *(UNDETERMINED)*	October 1999	SHASTA	26,200	954	1
5	PAINT *(ARSON)*	June 1990	SANTA BARBARA	4,900	641	1
6	FOUNTAIN *(ARSON)*	August 1992	SHASTA	63,960	636	0
7	CITY OF BERKELEY *(POWERLINES)*	September 1923	ALAMEDA	130	584	0
8	BEL AIR *(UNDETERMINED)*	November 1961	LOS ANGELES	6,090	484	0
9	LAGUNA FIRE *(ARSON)*	October 1993	ORANGE	14,437	441	0
*10	PARADISE *(HUMAN)*	October 2003	SAN DIEGO	56,700	415	2
11	LAGUNA *(POWERLINES)*	September 1970	SAN DIEGO	175,425	382	5
12	PANORAMA *(ARSON)*	November 1980	SAN BERNARDINO	23,600	325	4
13	TOPANGA *(ARSON)*	November 1993	LOS ANGELES	18,000	323	3
14	49ER (*BURNING DEBRIS)*	September 1988	NEVADA	33,700	312	0
*15	SIMI *(UNDER INVESTIGATION)*	October 2003	VENTURA	108,204	300	0
16	SYCAMORE *(MISC. - KITE)*	July 1977	SANTA BARBARA	805	234	0
17	CANYON *(VEHICLE)*	September 1999	SHASTA	2,580	230	0
18	KANNAN *(ARSON)*	October 1978	LOS ANGELES	25,385	224	0
19	KINNELOA *(CAMPFIRE)*	October 1993	LOS ANGELES	5,485	196	1
*19	GRAND PRIX *(HUMAN)*	October 2003	SAN BERNARDINO	69,894	136	0
20	OLD GULCH *(EQUIP. USE)*	August 1992	CALAVERAS	17,386	170	0

Note that this list does not include fire jurisdiction. These are the Top 20 within California, regardless of whether they were state, federal, or local responsibility. Also note that "structures" is meant to include all loss - homes and outbuildings, etc.

4/22/2004

**(2003 fire statistics subject to change as final figures are tabulated.)*

2: INTRODUCTION

2.1 Background of Diablo Fire Safe Council

The DFSC began meeting in 1998 as a small group of homeowners and agency personnel who were concerned about fire hazard reduction and safety in the East Bay counties of Alameda and Contra Costa Counties. In 1999, the DFSC was incorporated as a California Nonprofit Public Benefit Corporation whose specific purpose was to provide education, exchange information and foster fire prevention and fire safety within Alameda and Contra Costa Counties. With the help of a Bureau of Land Management Community-Based Wildfire Prevention Grant, the DFSC received its nonprofit status from the IRS in 2001. This grant also enabled DFSC to prepare a request for proposals for Executive Coordinator Services and ultimately hire a part-time coordinator through a local consulting firm. In June of 2003 a Strategic Planning session among members of interested stakeholders defined the mission statement of DFSC. It reads "The Diablo Fire Safe Council preserves and enhances the natural and manmade resources of Alameda and Contra Costa Counties by mobilizing all East Bay residents to make their homes, neighborhoods and communities fire safe". The DFSC's vision by 2008 is to be locally and nationally recognized as a resource and catalyst for bringing together people, agencies and the means to reduce substantially the impact of fire on our communities.

DFSC recognizes that 10 years after the 1991 Tunnel Fire there is still a need for increased engagement and improved coordination among the various fire jurisdictions to secure funding for projects and share resources region wide. DFSC's role is to serve as the hub for neighborhood and community groups in coordination with all levels of government to connect community problem solving with government resources throughout the two county areas in a way that is more accessible and more accountable. DFSC hopes to create a more seamless interface between the government/fire jurisdictions and the community to mitigate, prevent and prepare for the next wildland fire.

This mission is to be accomplished through strong public and private partnerships and cooperation focusing on public education, wildland fuel reduction, and community fire hazard reduction projects and programs. DFSC has had great success with influencing improvements in infrastructure and prevention actions within the community.

Initial accomplishments by the DFSC focused on increasing public awareness of the fire risks and risk reduction methods using printed materials, public meetings and demonstration projects.

In order to proceed more fully with this mission, DFSC decided to develop a Fire Action Plan to help clarify and refine the regional priorities for the protection of life, property, and critical infrastructure in the wildland-urban interface of Alameda and Contra Costa counties. In June 2003, the DFSC was awarded a grant from the Bureau of Land Management titled "Hazardous Fuels Reduction and Planning Assessment" to prepare a Fire Action Plan.

2.2 Purpose and Need for a Plan

Why is a fire action plan needed?

The Alameda and Contra Costa UWI Fire Action Plan was developed to enable Diablo Fire Safe Council to:

- Better understand the urban wildland interface fire issues in our two county area
- Locate potential partners in public and private sector
- Identify potential mitigation projects and other actions

In addition, the UWI fire action plan is intended to support local multi-hazard planning efforts in accordance with the Disaster Mitigation Act of 2000 (DMA 2000). Included in the plan will be relevant components that can be folded into the wildland fire portions of local DMA 2000 planning. This will include an outline of the planning process, an assessment of UWI fire risks, mitigation strategies and a plan maintenance and updating process.

2.3 Current Funding Trends

Federal funding

The two current funding federal funding sources for projects outlined in this plan are the National Fire Plan (Healthy Forest Initiative/Restoration Act) and Homeland Security Pre-Disaster Mitigation (PDM) Funds.

The Pre-Disaster Mitigation (PDM) program was authorized by §203 of the Robert T. Stafford Disaster Assistance and Emergency Relief Act (Stafford Act), 42 USC. Funding for the program is provided through the National Pre-Disaster Mitigation Fund to assist States and local governments (to include Indian Tribal governments) in implementing cost-effective hazard mitigation activities that complement a

comprehensive mitigation program. The PDM funding requires local jurisdictions to adopt a multi-hazard plan that is certified by the State OES and FEMA. Approximately $255 million is available for competitive grants, technical assistance, and program support for the Fiscal Year 2005 PDM program. As PDM funds are available until expended, this amount is comprised of approximately $13 million FY 2003 funds, approximately $144.6 million FY 2004 funds, and approximately $97 million FY 2005 funds. PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds.

The National Fire Plan, under the President's Healthy Forests Initiative, is a cooperative, long-term effort of the USDA Forest Service, DOI, the National Association of State Foresters and the Western Governors' Association for the federal government and state partners to manage impacts of wildland fire to our nation's communities. The Healthy Forests Initiative (HFI) was launched in August, 2002 by President Bush with the intent to reduce the risks severe wildfires pose to people, communities, and the environment. By protecting forests, woodlands, shrublands, and grasslands from unnaturally intensive and destructive fires, HFI aims to improve the condition of our public lands, increases firefighter safety, and conserves landscape attributes valued by society.

The Healthy Forest Restoration Act of 2003 (HFRA) contains a variety of provisions to expedite hazardous fuel reduction and forest restoration projects on specific types of Federal land that are at risk of wildland fire or insect and disease epidemic. The critical component of the HFRA is its emphasis of the need for *federal agencies* to work collaboratively with *communities* in developing hazardous fuel reduction projects, and it places *priority* on treatment areas identified by communities themselves in a CWPP.

As of 2004 the Fire Safe California Grant Clearinghouse administers the National Fire Plan/Healthy Forests Restoration Act programs. The California Fire Safe Council is a collation of public and private sector organizations that share a common, vested interest in reducing losses from wildfire. The Council's mission is to preserve and enhance California's manmade and natural resources by providing leadership and support that mobilizes all Californians to protect their homes, communities and environment from wildfires. The Grants Clearinghouse is an online grants application process that makes it easier to find and get National Fire Plan grants and technical assistance. The current grant programs that are available thorough the Clearinghouse are: USFS- Economic Action and Community Protection programs, BLM Community Assistance programs, NPS WUI/Community Protection Program, and USFWS Community Assistance/WUI program.

State funding

The California Department of Fire and Forestry administers the WUI program. *More information forthcoming.*

Local funding

More information forthcoming

2.4 Current Relevant Polices

Federal Wildland Fire Management Policy & Program Review

The 1995 Federal Wildland Fire Management Policy and Program Review, signed by the secretaries of the department of Agriculture and Interior, revises wildland fire suppression and fire use policy and procedures. The 1995 policy also directs federal wildland fire agencies to achieve a balance between fire suppression and fuels management to sustain healthy forests, especially in fire-adapted ecosystems. The 1995 review began a process that redirected some of the allocated dollars from wildland fire suppression to a more proactive fuels management program. Modest increases in budget allocations and the accompanying target of acres to be treated, dictated that the primary treatment method for hazardous fuels reduction would be prescribed fire.

Western National Forest – A Cohesive Strategy

In April 1999, the US General Accounting Office (GAO) issued a report to the subcommittee on Forests and Forest Health, the Committee on Resources, and the House of Representative entitled, "Western National Forest - A Cohesive Strategy is Needed to Address Catastrophic Wildfire Threats". This report recognized that while the Forest Service in the previous decade had attempted to reduce the threat of catastrophic wildland fire, primarily through the use of timber sales and understory tree removal prescriptions, the agency had failed to make significant progress in reducing the number and severity of large wildfires. The GAO report recognized that the accumulation of vegetation that had little to no commercial value was a critical component fueling destructive wildfires. *National Fire Plan* During the 2000 fire season, wildfires burned millions of acres throughout the United States. These fires dramatically illustrated the threat to human lives and development. In response to these catastrophic fires, President Clinton requested the Secretaries of Agriculture and Interior to submit a September 8, 2000 report, *Managing the Impact of Wildfires on Communities and the Environment, A Report In Response to the Wildfires of 2000*. This report, its accompanying budget request, along with Congressional direction for substantial new appropriations for wildland fire management, and resulting action plans and agency

strategy have collectively become known as the National Fire Plan (NFP). The NFP was created as a cooperative, long term effort of the USFS, BLM and the National Association of State Foresters, to protect communities and restore ecological health on Federal lands. A major component of the National Fire Plan was funding for projects designed to reduce fire risks to communities. The NFP provided the foundation and momentum for the Healthy Forest Initiative of 2002 and the Healthy Forest Restoration Act of 2003. The NFP contains five key areas to which funding will be channeled:

1. Firefighting Resources. Increases the level of funding for suppression resources to the Most Efficient Levels (MEL) based on the values at risk and the cost of staffing a fire suppression force to protect them;
2. Rehabilitation and Restoration. Burned Area Emergency Rehabilitation teams (BAER) are formed to respond to large and damaging wildfires to identify emergency projects to protect life, property and key ecosystem components damaged by wildfire;
3. Hazardous Fuel Reduction. Working with area cooperators, projects are identified and implemented to reduce potential wildfire damage;
4. Community Assistance. The NFP directs federal wildland fire managers to work with communities to reduce hazardous fuels, increase local employment with jobs in restoration and fuel reduction projects, provide defensible space information, volunteer and rural firefighting assistance and economic action programs; and
5. Accountability. Establishes a tracking system to monitor progress of acres treated and monies spent.

10 Year Comprehensive Strategy

In August 2001, the *10-Year Comprehensive Strategy* was released. The Western Governors Association, the National Association of State Foresters, National Association of Counties, the Intertribal Timber Council and the Secretaries of the Interior and Agriculture joined to endorse *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment: A 10-Year Comprehensive Strategy.* The 10-Year Comprehensive Strategy refined the framework of the NFP and established implementation outcome expectations, performance measures, and implementation tasks for the four goals of the 10-year Comprehensive Strategy. The four goals are:

1. Improve Fire Prevention and Suppression
2. Reduce Hazardous Fuels
3. Restore Fire-Adapted Ecosystems
4. Promote Community Assistance

Healthy Forest Initiative

In August 2002, President Bush, while visiting the Squires Peak Fire in Oregon, announced the Healthy Forest Initiative (HFI). The HFI is in response to federal agencies concerned with administrative procedures that are delaying the preparation and implementation of hazardous fuel reduction project in critical areas and impeding the implementation of the NFP. The HFI expedites the administrative procedures for certain hazardous fuel reduction projects by issuing new categorical exclusion categories that reduces lengthy environmental and sociological documentation. The new categorical exclusions require both USFS, Department of the Interior (DOI), and the Bureau of Land Management (BLM) to participate in a public collaboration process with State and local governments, Tribes, landowners and other interested persons and community-based groups in order to identify new project areas and treatments.

Healthy Forest Restoration Act

The Healthy Forest Restoration Act of 2003 (HFRA) contains a variety of provisions to expedite hazardous fuel reduction and forest restoration projects on specific types of Federal land that are at risk of wildland fire or insect and disease epidemic. The Federal Register of 8-17-01 (www.fireplan.gov/content/reports) provides the latest listing of communities at-risk of wildfire in the vicinity of Federal lands. Additional communities may have been added since this listing based on later evaluations. The HFRA encourages Federal agencies to involve State and local governments and citizens when developing plans and projects for vegetation treatment on Federal and adjacent non-Federal lands. The HFRA includes provisions to:

• Establish WUI's of _ mile around at-risk communities or within 1_ miles when mitigating circumstances exist, such as sustained steep slope or geographic features aiding in creating a firebreak. Hazard reduction treatments are given priority within these WUI's;
• Establish WUI's adjacent to evacuation routes for at-risk communities;
• Expedite NEPA review of hazardous fuel reduction projects in WUI's on Federal lands;
• Encourage biomass removal from public and private lands; and
    • Require using at least 50% of the dollars allocated to HFRA projects to protect communities at risk of wildfire.

The enactment of the HFRA gives new and unprecedented impetus for communities to engage in forest planning. The legislation includes the first meaningful statutory incentives for the USFS and the BLM to give consideration to the priorities of local at-risk communities as the agencies develop and implement

forest management and hazardous fuel reduction projects. In order for an at-risk community to take full advantage of this new opportunity, it must first prepare a Community Wildfire Protection Plan.

Community Wildfire Protection Plans

Community Wildfire Protection Plans (CWPP) are the citizens' opportunity to replace regional and national plans with local plans that meet the concerns and needs of the community. In the CWPP, the at-risk community defines the boundaries of the wildland urban interface (WUI) which supersede the default distance limitations of 1 _ mile from the community specified in the Healthy Forest Restoration Act of 2003 and the _ mile defense zone limitation of the Sierra Nevada Forest Plan Amendment. The CWPP need not be constrained by standards and guidelines such as canopy closure, tree size limitations and basal area retention standards applicable to the Sierra Nevada Framework and neither is the plan subject to the legal challenges that frequently tie-up federal land management plans. Communities with wildfire protection plans will receive priority for funding and its recommendations will be included in the project NEPA documents. Some of the specifics of a CWPP are:

• Identifies one or more at-risk communities within or adjacent to wildlands conducive to large-scale wildland fire resulting in a significant threat to human life or property. A community is:

1) A development of three structures or more per acre with shared municipal services which directly abuts wildland fuels, or

2) A group of homes and other structures with basic infrastructure and services (such as utilities and collectively maintained transportation routes) within or adjacent to federal land, and

3) Essential infrastructure such as major transportation corridors, bridges, water supplies and community-significant recreational facilities;

• Identifies federal and non-federal areas for hazardous fuel reduction treatments that will protect identified communities;

• Prioritizes fuel reduction treatments;

• Recommends the types and methods of fuel reduction treatments on both federal and non-federal land;

• Recommends measures to reduce structural ignitability throughout the identified communities.

• Is developed within the context of collaborative agreements and in consultation with interested parties and the federal land management agencies managing land within the vicinity of the identified communities;

• Is agreed to by the applicable local government, local fire department, and California Department of Forestry and Fire Protection; and

• It need not be formal, detailed or analysis extensive but must contain these basic elements (stated above).

2.5 Planning Area boundaries

Alameda and Contra Costa Counties cover over 1,750 square miles and have a combined population of over 2.4 million people. The project will benefit the entire two county areas. Diablo Fire Safe Council has the capacity to address much needed fire safety issues through a Fire Action Plan in addition to targeting high-risk communities that may be overlooked in other jurisdiction specific Fire Safety Plans.

Alameda and Contra Costa Counties have multiple jurisdictions including local cities, special districts, state and federal properties.

Cities: 33 cities; 14 in Alameda County; 19 in Contra Costa County

Alameda County: Alameda, Albany, Berkeley, Dublin, Emeryville, Fremont, Hayward, Livermore, Newark, Oakland, Piedmont, Pleasanton, San Leandro, and Union City.

Contra Costa County: Antioch, Brentwood, Clayton, Concord, Danville, El Cerrito, Hercules, Lafayette, Martinez, Moraga, Oakley, Orinda, Pinole, Pittsburg, Pleasant Hill, Richmond, San Pablo, San Ramon and Walnut Creek.

Special Districts: Many of which manage lands in watersheds, open space, parklands, including: Alameda County Water District, Contra Costa Water District, East Bay Regional Parks District, East Bay Municipal Utility District, Dublin San Ramon Services District; Hayward Area Recreation District, Livermore Area Recreation District, Pleasant Hill Recreation and Park District San Francisco Water District.

Others are resource based conservation districts including: Alameda County Resource Conservation District, Alameda County Waste Management Authority; Bay Area Air Quality Management District; Central Contra Costa Solid Waste Authority; Contra Costa County Resource Conservation District , Regional Water Quality Control Board; San Francisco Bay Conservation and Development Commission; San Francisco Estuary Institute.

State lands: There are 3 areas of state lands including: Mount Diablo State Park, Carnegie Vehicular Recreation Area and Eastshore State Park.

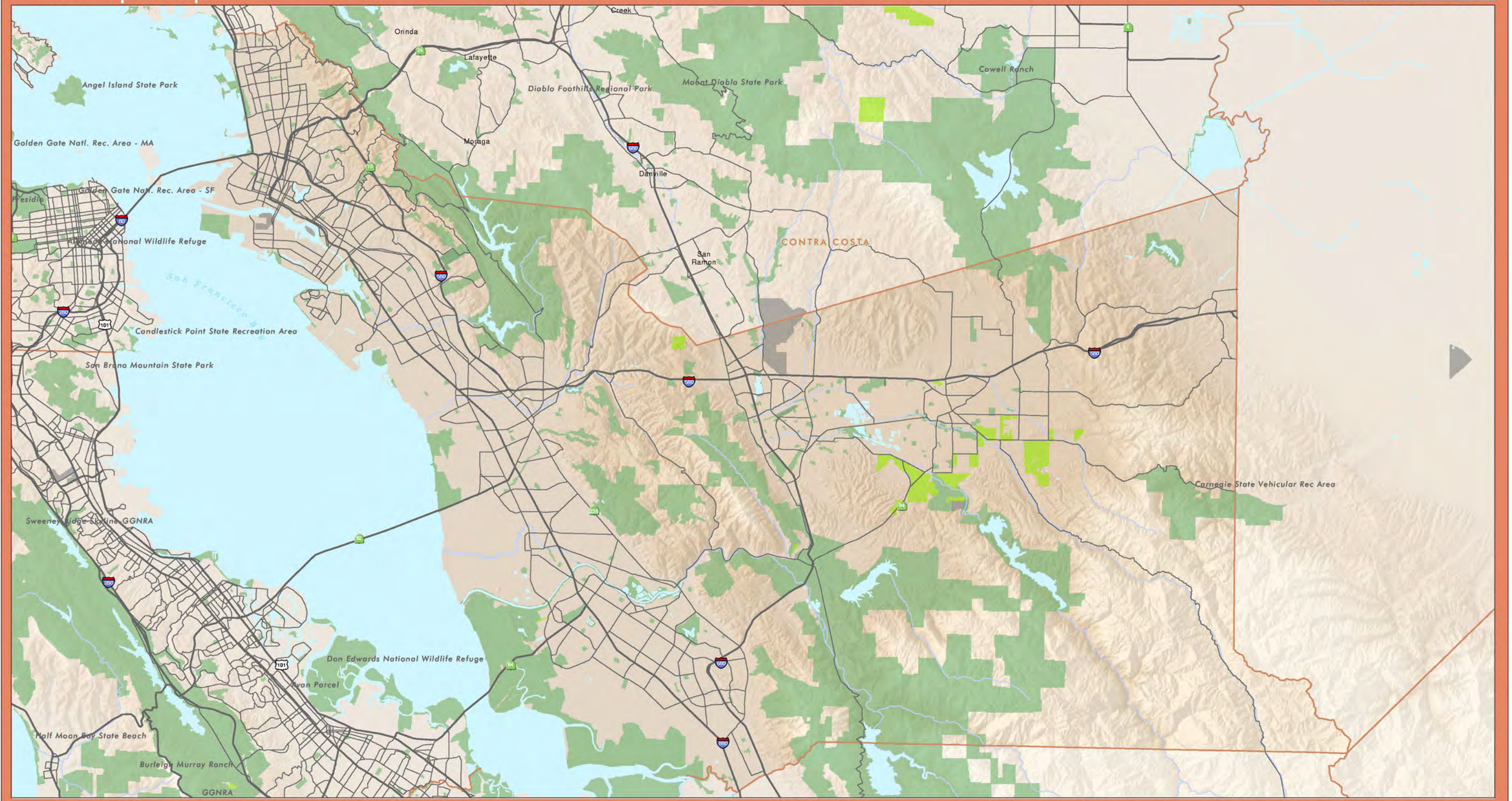
Federal lands: There are ten areas of Federal lands within the Alameda and Contra Costa boundaries. They include: Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory, US Naval Weapons Station Port Chicago Concord, Point Molate US Naval Station, US Coast Guard

Government Island, US Army Camp Parks Reserve Forces Training Area Dublin, John Muir National Historic Site Martinez, Alameda Naval Air Station, Eugene O'Neill National Historic Site Alamo and Don Edwards San Francisco Bay National Wildlife Refuge.

Document Name: Alameda County

Base/ Open Space

DIABLO FIRESAFE COUNCIL



D R A F T

Open Space

- Easement
- Fee
- Department of Defense

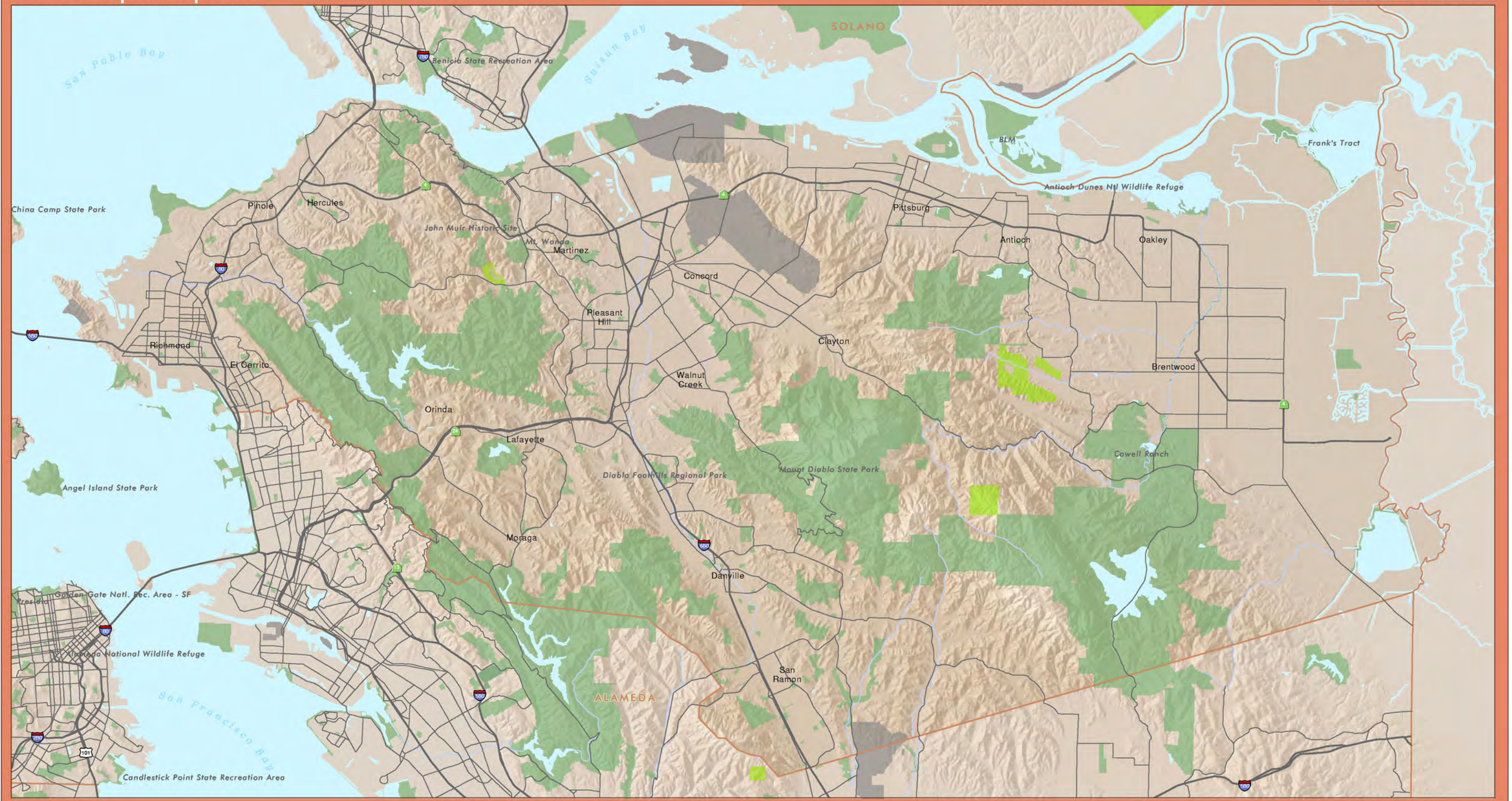
Greeninfo Network
www.greeninfo.org

0 1.25 2.5 5 7.5 Miles

Document Name: Contra Costa County

Base/ Open Space

DIABLO FIRESAFE COUNCIL



DRAFT

Open Space

- Easement
- Fee
- Department of Defense

Greeninfo Network
www.greeninfo.org

0 1 2 4 6 Miles

3. PLAN AREA DESCRIPTION AND COUNTY ASSESSMENT

3.1 General Environmental Conditions

A. Elevation, topography and soils

Alameda and Contra Costa Counties are located on the east shore of the San Francisco Bay in Northern California and are in the northern portion of the southern Coast Range. The two counties occupy approximately 1,745 square miles or 1,116,800 acres. The seven other counties that make up the San Francisco bay area are San Mateo, San Francisco, Santa Clara, Marin, Sonoma, Solano and Napa.

The geology of the East Bay is varied. The topography of the region ranges from broad valleys and low rounded hills to steep, narrow drainages and ridge tops. Several faults have been mapped through the area. Some of these are geologically young thrust faults, but most are likely part of the regional fault system. Some may be active. A large portion of the East Bay lie within the Millsholm-Los Gatos- Los Osos soils association. This association is characterized by steeply sloping and eroding soils.

Alameda County

Alameda County is located on the east side of the southern San Francisco Bay and extends from Berkeley and Oakland in the north to Fremont in the south and from Alameda in the west to Livermore in the East. The word Alameda is derived from “Alamo” the Spanish name for cottonwood or poplar tree, and means a "grove of poplar trees." Within its boundaries are 735 miles of land and 77 square miles of bay.

Elevations in Alameda County range from sea level along the 36 miles of bay shoreline to 3,187 feet in the Diablo Range south of Livermore. The County is approximately 32 miles in length in a north-south direction and 45 miles in width in an east-west direction.[1] The County is a diverse combination of land types and forms ranging from salt water marshes along the bay plain to moderately high uplands and intermontaine valleys. Thus, the climate varies from a marine type along the bay fringes with fog-shrouded Redwood forest in the East Bay Hills, to arid range sites of open grassland savannah in the eastern portion of the County adjacent to the San Joaquin Valley. The East Bay hills form a spine of open space and regional parklands creating an approximately 45-mile long urban wildland interface. It is

[1] See http://www.co.alameda.ca.us

bounded on the North by Contra Costa County, to the east by San Joaquin County to the west by the San Francisco Bay and to the south by Santa Clara County.

Approximately 56% of Alameda County contains hills with a slope of 25% or greater. The distribution of the area of 25% or greater slope is 34% in the western portion of the county and 72% in the eastern portion. The County enjoys a diversified geography ranging from urban marinas to rolling open space and hillside lakes and streams. The western portion of Alameda County consists of an urban corridor running between Berkeley and Fremont with a narrow fringe of marshlands along the Bay and considerable open space in the East bay Hills.

Alameda County has 14 incorporated cities: Alameda, Albany, Berkeley, Dublin, Emeryville, Fremont, Hayward, Livermore, Newark, Oakland, Piedmont, Pleasanton, San Leandro and Union City.

Contra Costa County

The County of Contra Costa, California was incorporated in 1850 as one of the original 27 counties of the State of California, with the City of Martinez as the County Seat. The name Contra Costa signifies "opposite coast," because of its situation opposite San Francisco, in an easterly direction, on San Francisco Bay. The County covers approximately 805 square miles, of which 732 square miles (468,500 acres) are land, with the remainder consisting of water acres.[2] The County extends from the northeastern shore of San Francisco Bay easterly about 50 miles to San Joaquin County.[3] The County is bordered on the south and west by Alameda County and on the north by Suisun and San Pablo Bays. The County stretches approximately 40 miles from west to east and approximately 20 miles from north to south. The western and northern shorelines are highly industrialized, while the interior sections are suburban/residential, commercial and light industrial.

Contra Costa contains a diverse physical environment, although it is often perceived to consist of a series of affluent suburbs. While portions of western and central Contra Costa resemble many urban and suburban environments, the far eastern corner of the County more closely resembles the agricultural communities of the San Joaquin Valley.

Two major complexes of mountains, ridges, and hills define the physical and hydrological landscape of Contra Costa County and shape where residents live and work. The first of these ridgeline complexes centers on Mount Diablo, which rises to 3,849 feet above sea level near the center of the County, and extends south to the Altamont Pass area and the remainder of the Diablo Range in Alameda County. The second major complex of hills and ridges lies between the eastern shore of San Francisco Bay and the major valleys in the center of the County. Las

[2] Contra Costa General Plan, 1995-2010. July 1996
[3] Contra Costa County website: http://www.co.contra-costa.ca.us/

Trampas Ridge, the Oakland Berkeley Hills, and the Briones Hills are some of the well-known features in this second complex of hills.[4]

The County contains 19 incorporated cities: Antioch, Brentwood, Clayton, Concord, Danville, El Cerrito, Hercules, Lafayette, Martinez, Orinda, Moraga, Pinole, Oakley, Pittsburg, Pleasant Hill, Richmond, San Pablo, San Ramon, and Walnut Creek.

B. Meteorology, Climate, Precipitation

Climate influences fire hazard through varying levels of moisture and humidity. Central Contra Costa County enjoys a mild Mediterranean climate most of the year, with hot dry summers and wet winters. During a small number of summer days, temperatures can reach in the 100's with low humidity and hot, dry, north or east winds.

On the coastal, or western, side of the Coast Range, the climate is heavily influenced by the presence of comparatively cold water offshore. As a result, heavy fog often cloaks the coastal slopes. This influence of the maritime climate has resulted in diverse assemblages of plants (such as coastal sage scrub, northern coastal scrub and maritime chaparral), which are watered with the fog drip characteristic of this region.

Cool north-facing slopes tend to be occupied by woodlands and the interior valleys of the Coast Ranges are dominated by annual grasslands. This distinctive patterning of vegetation is also influenced by soil, slope and fire and is accentuated by the long, dry summers of the area's Mediterranean climate.[5]

The climate of Alameda County is of "two main types" oceanic and sub humid mesothermal. The oceanic type is characterized by cool, moist winters and cool summers with frequent sea breezes and early morning fog. The sub humid mesothermal type is characterized by cool, moist winters and hot dry summers. The boundary between the two types runs roughly in a southeast-northwest direction from Calaveras Dam to Dublin. Annual rainfall in the northeastern corner of the County ranges from 8 inches to 25 inches at a point in the uplands 15 miles farther south.

C. Hydrology

Contra Costa County has 31 major watersheds and sub-watersheds containing more than 1300 miles of creeks and drainages.[6] All but eight of these watersheds are entirely within Contra Costa County. While

[4] Contra Costa County Watershed Atlas, November 2003, Contra Costa Community Development Department in cooperation with the Contra Costa County Public Works Department.

the Walnut Creek Watershed is large (93,556 acres) and spans many cities, many of the other watersheds are conveniently "community-sized". The Contra Costa County Community Development Department has developed a Contra Costa County Watershed Atlas and is available at http://www.cocowaterweb.org/watershed_atlas_on_sale.htm. The Atlas is a large format, full color, 150-page book of maps, statistics and text about the 28 major watersheds in the County. Though focused on the state of natural ecosystems on the watershed scale, the Atlas also provides information about the human community and the county as and eco-region.

There is currently no Alameda County equivalent of the Watershed atlas detailing the county's creeks and drainages.

Major ridgelines and peaks (East Bay Ridge, Mount Diablo, Mount Hamilton, and Arroyo del Valle) separate the County into three significant hydrologic units and two areas of minor hydrologic significance.

D. Ecosystem Types

The vegetation and wildlife habitat of the Alameda and Contra Costa Counties include numerous broadly defined types: native and non-native forests and woodlands, shrublands, grasslands, riparian woodland and scrub, and wetlands. The distribution and frequency of these types throughout the counties is expressed in Figure 3 and 4.

Native Forest and Woodland

Native forest and woodlands in Alameda and Contra Costa Counties include redwood, knobcone pine, mixed hardwood, often composed of coast live oak, mixed oak, and black oak woodlands, and oak savanna, often composed of mixed oak and valley oak. There are small populations of redwood and knobcone pine forest on East Bay Municipal Utility District lands in the Upper San Leandro Reservoir watershed and scattered throughout the East Bay Hills of Alameda County. The redwood forest is considered a locally uncommon plant community because of its limited extent range in the East Bay area. Much of the original forests were logged from the east bay hills in the 19t century. The knobcone pine forest is unique in that there are only two stands located in the East Bay area. Knobcone pine communities require periodic fire for regeneration. The dominant mixed Hardwood forest is commonly composed of coast live oak, California bay, and ma-drone. Oak savanna consists of patches of widely spaced oak trees growing on rolling, grassy hillsides or clustered into drainages on moister north slopes.. It is often dominated by coast live oak and valley oak.

Non-Native Forest

[5] U.S.Fish and Wildlife Service. 2002. Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California. Region 1, Portland, OR. xvi +306 pp.
[6] Contra Costa County Watershed Atlas, November 2003, Contra Costa Community Development Department in cooperation with the Contra Costa County Public Works Department.

Non-native forest in Alameda and Contra Costa County consists mostly of Monterey pine and eucalyptus plantations. Eucalyptus plantations are found scattered throughout the counties, with the largest acreages being on East Bay Regional Park District and East Bay Municipal Utility District lands. Planted at the turn of the 20th century, these stands are now naturalized communities that maintain their populations through natural regeneration.

Shrublands

A wide variety of natural shrub types occur in the East Bay. The three major types of shrubland are coastal scrub, chamise-black sage chaparral, and manzanita chaparral.

Grasslands

Three types of grassland are found in Alameda and Contra Costa Counties: non-native grassland, coastal prairie, and perennial bunchgrass.

Riparian and wetland vegetation

Riparian and wetland vegetation are also distributed throughout the East Bay. This vegetation community is composed of mixed deciduous riparian woodland, coast live oak, California
bay, and willow riparian woodland, willow riparian scrub, herbaceous and bare cover, freshwater marsh, and seep and spring wetlands.

D. Threatened and Endangered Species

Alameda and Contra Costa Counties contain numerous plants and animals that are designated as rare, threatened, or endangered (RTE) or are candidates for such a designation. Many of these species are indigenous to the Bay Area, while others occur more widely. These species are vulnerable to changing conditions brought about by natural processes or by human activities that introduce nonnative plants and animals, destroy critical habitat, or eliminate individual species or populations. See Figure 5 for Distribution of State and Federal Threatened and Endangered Species.

3.2 Demographics and Population Projections[7]

Alameda County

[7] Adapted from Final Municipal Service Review, Volume I- Public Safety Services; Report to the Alameda Local Agency Formation Commission; Prepared by Burr Consulting in association with Braitman & Associates and GIS/Trans, September 16,2004.

Most of Alameda County's 1.496 million people are concentrated in a narrow plain between San Francisco Bay and the East Bay Hills.The total population in the Alameda county in 2003 was 1,496,218, with the cities of Oakland and Fremont the highest population.

- The Association of Bay Area Governments projects that the Alameda countywide population will increase from approximately 1.52 million in 2004 to 1.58 million in 2009 and to 1.71 million in 2019.
- The cities of Dublin, Emeryville, Livermore and Pleasanton residential populations are expected to grow most quickly over the next 5-15 years.
- Within the County, projected future growth areas include:
    - Eastern Dublin
    - Oakland
    - Emeryville
    - South Livermore
    - Pleasanton
    - Union City
    - Alameda Point, Bay Farm Island and Marina Village
- Alameda County's senior population aged 65 and older is projected to increase by nearly 75 percent by 2019 as the baby boom generation ages.

See Table 3 for the projected population for Alameda County[8]. According to the table, ABAG projects that the countywide population will increase from approximately 1.52 million in 2004 to 1.58 million by 2009 and to 1.71 by 2019.

Contra Costa County

The County is the ninth most populous county in California, with its population reaching approximately 981,600 as of January 1, 2002. This represents an increase of approximately 22% compared to the County's population in 1990. The availability of rapid transit, close proximity to major employment hubs in San Francisco and Oakland, and relatively affordable existing and new housing have combined to attract more residents to the County over the past decade.

[8] Adapted from Final Municipal Service Review, Volume I- Public Safety Services; Report to the Alameda Local Agency Formation Commission; Prepared by Burr Consulting in association with Braitman & Associates and GIS/Trans, September 16,2004.

Table 2. Federal and State Threatened and Endangerd Species for Alameda and Contra Costa Counties

COMMONNAME	CLASS	STATUS	COUNTY
Foothill Yellow-legged Frog	Amphibians	CSC/FSC	Alameda
Red-legged Frog, California	Amphibians	FT/CSC	Both
Tiger Salamander, California	Amphibians	FT/CSC	Both
Bald Eagle	Birds	FT/SE/SFP	Both
Black-crowned Night Heron	Birds	CSC	Both
Black Skimmer	Birds	CSC	Alameda
Brown Pelican	Birds	FE/SE/SFP	Both
Burrowing Owl	Birds	CSC	Both
California Black Rail	Birds	ST	Both
California Clapper Rail	Birds	FE/SE/SFP	Both
Caspian Tern	Birds	CSC	Both
Cooper's Hawk	Birds	CSC	Both
Ferruginous Hawk	Birds	CSC/FSC	Both
Golden Eagle	Birds	SFP/FSC	Both
Great Blue Heron	Birds	CSC	Both
Great Egret	Birds	CSC	Both
Horned Lark	Birds	CSC	Both
Snowy Egret	Birds	CSC	Both
Least Tern	Birds	FE/SE/SFP	Both
Loggerhead Shrike	Birds	CSC/FSC	Both
Northern Harrier	Birds	CSC	Both
Peregrine Falcon	Birds	SE/SFP	Both
Prairie Falcon	Birds	CSC	Both
Sharp-shinned Hawk	Birds	CSC	Both
Saltmarsh Common Yellowthroat	Birds	CSC	Alameda
Short-eared Owl	Birds	CSC	Both
Tricolored Blackbird	Birds	CSC/FSC	Both
Western Snowy Plover	Birds	FT	Alameda
White-tailed Kite	Birds	SFP	Both
Yellow Warbler	Birds	CSC	Both
Forster's tern	Birds	CSC	Alameda
Swainson's Hawk	Birds	ST	Contra Costa
Western Yellow-billed Cuckoo	Birds	SE	Alameda
Black Oystercatcher	Birds	FSC	Both
Black Skimmer	Birds	FSC	Alameda
Chinook salmon- Winter-run	Fish	FE/SE	Both
Chinook Sslamon-CA coastal ESU	Fish	FT	Both
Chinook salmon-Spring-run	Fish	FT/ST	Both
Steelhead-Central CA Coast ESU	Fish	FT	Both
Delta Smelt	Fish	FT/ST	Contra Costa
Sacramento Splittail	Fish	CSC	Contra Costa
Pacific Lamprey	Fish	FSC	Alameda
Callippe Silverspot Butterfly	Insects	FE	Alameda
California Linderiella	Invertebrates	FSC	Both
Longhorned Fairy Shrimp	Invertebrates	FE	Both
Vernal Pool Fairy Shrimp	Invertebrates	FT	Both
Monarch Butterfly	Invertebrates	CSC	Both
Badger	Mammals	CSC	Both
Kit Fox, San Joaquin	Mammals	FE/ST	Both
Pallid Bat	Mammals	CSC	Both

Table 2. Federal and State Threatened and Endangerd Species for Alameda and Contra Costa Counties

COMMONNAME	CLASS	STATUS	COUNTY
Townsend's western big-eared bat	Mammals	FSC/CSC	Both
Berkeley Kangaroo Rat	Mammals	FSC	Both
San Joaquin Pocket Mouse	Mammals	FSC	Contra Costa
Salt Marsh Harvest Mouse	Mammals	FE/SE/SFP	Both
Saltmarsh Wandering Shrew	Mammals	CSC	Both
San Pablo Vole	Mammals	CSC	Contra Costa
Giant Garter Snake	Reptiles	FT/ST	Contra Costa
Silvery Legless Lizard	Reptiles	FSC/CSC	Contra Costa
Western Pond Turtle	Reptiles	CSC/FSC	Both
Whipsnake, Alameda	Reptiles	FT/ST	Both

FE - FEDERAL ENDANGERED
SE - STATE ENDANGERED
FT - FEDERAL THREATENED
ST- STATE THREATENED
CSC - STATE SPECIES OF CONCERN
SFP - STATE FULLY PROTECTED
FSC - FED. SPECIES OF CONCERN

THIS LIST REPRESENTS RELEVANT LOCATIONAL INFORMATION AND IS NOT EXHAUSTIVE
LIST UPDATED 9/20/04 BY JOE DIDONATO, WILDLIFE PROGRAM MANGER, EBRPD
QUESTIONS REGARDING THIS LIST SHOULD BE SENT TO THE WILDLIFE DEPT. WITHIN PLANNING AND STEWARDSHIP

Table 2. Federal and State Threatened and Endangerd Species for Alameda and Contra Costa Counties

COMMENTS
IN CREEKS AND DRAINAGES
IN CREEKS AND PONDS
IN PONDS
NESTS AT DEL VALLE; WINTERS ON RESERVOIRS
PROTECTED NESTING COLONIES
PROTECTED NESTING COLONIES
PROTECTED ROOSTING COLONIES
NESTS IN SQUIRREL HOLES AND CULVERTS
TIDAL SALT MARSH ONLY
TIDAL SALT MARSH ONLY
PROTECTED NESTING COLONIES
NESTS IN FORESTS AND GROVES
PROTECTED ON WINTERING GROUNDS ONLY
NESTS AND ROOSTS DISTRIBUTED IN EAST BAY
PROTECTED NESTING COLONIES
PROTECTED NESTING COLONIES
NESTS ON GROUND, OFTEN NEAR ROADCUTS
PROTECTED NESTING COLONIES
NESTS AT ANAS & OAKLAND AIRPORT
NESTS IN BRUSH AND ALONG FENCELINES
NESTS ON GROUND
NESTS ON CLIFFS; FORAGES IN WETLANDS TOO
NESTS ON CLIFFS
NESTS IN FORESTS AND GROVES
NESTS IN WETLANDS
NESTS IN WETLANDS AND OPEN FIELDS
NESTS IN WETLANDS IN DELTA
NESTS/FEEDS: SHORLEINES, BEACHES, LEVEES
NESTS IN VARIOUS TREE TYPES
NESTS IN RIPARIAN WOODLANDS
NESTS AT HAYWARD SHORELINE
AGRICULTURAL AREAS-EASTERN CONTRA COSTA
RARE MIGRANT ALONG ALAMEDA CREEK
NESTS AT BROOK'S ISLAND, POSSIBLY HAYWARD
NESTS AT HAYWARD SHORELINE
PASS THROUGH DELTA ON MIGRATION
PASS THROUGH DELTA ON MIGRATION
PASS THROUGH DELTA ON MIGRATION
ALAMEDA CREEK, WILDCAT CREEK
OCCUR IN THE DELTA ALONG COASTAL MARSHES
DELTA STREAMS
ALAMEDA CREEK
FEEDS ON JOHNNY JUMP UPS IN GRASSLANDS
OCCURS AT VASCO CAVES AND BRUSHY PEAKS
ONLY IN POOLS IN ROCK OUTCROPS
ONLY IN POOLS IN ROCK OUTCROPS
WINTERS IN EUCALYPTUS GROVES
GROUND BURROWING & NOCTURNAL
GROUND BURROWING & NOCTURNAL
COLONY IN SUNOL BARN

Table 2. Federal and State Threatened and Endangerd Species for Alameda and Contra Costa Counties

USES BARNS AND OTHER STRUCTURES
POSSIBLE IN HISTORIC RANGE
OCCURS IN EASTERN GRASSLANDS
ONLY IN MARSHES
ONLY IN MARSHES
ONLY IN MARSHES
MARSHES ALONG DELTA
SANDY SOILS AND DUNES IN ANTIOCH/DELTA
IN CREEKS AND PONDS
GENERALLY IN BRUSH & CHAPARRAL HABITAT

THIS LIST REPRESENTS RELEVANT LOCATIONAL INFORMATION AND IS NOT EXHAUSTIVE
LIST UPDATED 9/20/04 BY JOE DIDONATO, WILDLIFE PROGRAM MANGER
QUESTIONS REGARDING THIS LIST SHOULD BE SENT TO THE WILDLIFE DEPT. WITHIN PLANNING A

Table 3. Alameda County Projected Population, 2004-2019

	2004	2009	2014	2019	2024
COUNTYWIDE	**1,516,268**	**1,582,800**	**1,641,140**	**1,705,340**	**1,780,340**
Alameda	75,252	77,360	80,020	82,600	86,300
Albany	16,889	17,240	17,460	17,900	18,560
Berkeley	105,429	106,980	109,440	112,480	115,500
Dublin	37,515	45,880	51,820	57,860	64,540
Emeryville	7,616	8,360	8,900	9,400	9,900
Fremont	212,363	220,200	227,280	235,100	243,740
Hayward	145,526	149,860	153,160	157,560	162,420
Livermore	77,789	84,580	88,480	93,100	99,380
Newark	44,734	46,660	48,200	49,700	51,360
Oakland	412,457	424,580	441,280	459,940	484,020
Piedmont	11,150	11,280	11,300	11,300	11,300
Pleasanton	69,451	75,940	79,520	82,500	85,340
San Leandro	82,210	84,420	87,120	90,660	94,280
Union City	72,254	76,480	80,640	85,100	90,080
Unincorporated	145,634	152,980	156,520	160,140	163,620
Alameda HCD	75,252	77,360	80,020	82,600	86,300
Eden HCD	361,127	371,574	380,180	391,011	402,301
Washington HCD	338,678	353,708	366,884	380,832	396,253
ACFD	132,359	139,052	142,361	145,806	149,085
ACFD Service	255,084	272,352	284,301	297,326	310,905
AMR Service	1,307,549	1,369,940	1,422,920	1,481,060	1,548,680
EBRPD	2,516,591	2,642,800	2,758,920	2,879,360	2,990,500
EMS CSA	1,516,268	1,582,800	1,641,140	1,705,340	1,780,340
Fairview FPD	13,275	13,928	14,159	14,334	14,535
CSA	145,634	152,980	156,520	160,140	163,620
Sheriff Service	183,149	198,860	208,340	218,000	228,160

Adapted from Final Municipal Service Review, Volume I- Public Safety Services; Report to the Alameda Local Agency Formation Commission; Prepared by Burr Consulting in association with Braitman Associates and GIS/Trans, September 16,2004.

While population grew in every city in the County during the last decade, population growth has been strongest in unincorporated areas as well as in the eastern portion of the County, particularly in Antioch, Brentwood and Clayton. Eastern Contra Costa County is one of the fastest growing regions in the state--with a population that is predicted to grow by 127,000 people by 2025--providing important new housing for the Bay Area's growing workforce. By 2025, the populations of Brentwood, Oakley, Pittsburg, and Antioch are expected to grow by 123%, 57%, 52%, and 30%, respectively.[9]

The following is a summary of the County's population levels in 2004. No population projections were found similar to the ABAG report for Alameda County.

Table 4. Contra Costa County Projected Population, 2004[10]

	---POPULATION---	
	TOTAL	HOUSEHOLD
ANTIOCH	100,590	100,174
BRENTWOOD	37,060	37,023
CLAYTON	10,990	10,964
CONCORD	124,856	123,434
DANVILLE	43,243	42,779
EL CERRITO	23,398	23,222
HERCULES	21,704	21,665
LAFAYETTE	24,298	24,162
MARTINEZ	36,805	35,469
MORAGA	16,442	14,811
OAKLEY	27,530	27,463
ORINDA	17,757	17,690
PINOLE	19,540	19,322
PITTSBURG	61,481	60,975
PLEASANT HILL	33,618	33,158
RICHMOND	101,655	100,027
SAN PABLO	31,033	30,568
SAN RAMON	48,609	48,524
WALNUT CREEK	65,950	64,986
UNINCORPORATED	157,350	156,192
INCORPORATED	846,559	836,416
COUNTY TOTAL	1,003,909	992,608

3.3 Land Use/Development Trends

[9] ABAG, Projections 2002.

[10] Contra Costa County Community Development website at: http://www.co.contra-costa.ca.us/depart/cd/recycle/population2004.htm

With the exception of residential development in the Oakland and Berkeley hills, small developed portions in the Hayward hills, and minor development in the Pleasanton area, the major portion of the East Bay Ridge and Diablo Range in Alameda County remain undeveloped.

More information forthcoming

3.5 Stakeholders and Land Ownership Distribution

Stakeholders in this Fire Action Plan are defined as those individuals, agencies or business entities that could be directly impacted by catastrophic wildfire. The process of identifying stakeholders and their interests is an ongoing process and will be evaluated continuously throughout the evolution of the Fire Action Plan. It is the goal of Diablo Fire Safe Council to participate with as many stakeholders as possible to continually update planning efforts involving stakeholder input.

For the purposes of the Fire Action Plan, we have divided the stakeholders for Diablo Fire Safe Council into three primary groups: Landowners, Community Groups/Other Agencies, and Fire Service Personnel.

The following is a summary of the Landowners participating in the development of the Fire Action Plan.

East Bay Municipal Utility District (EBMUD)

The District owns and manages approximately 28,000 acres of land and water surface in Alameda and Contra Costa Counties. The District is responsible for watershed management surrounding four reservoirs (Briones, San Pablo, Upper San Leandro, and Lafayette), one non-reservoir watershed basin (Pinole Valley), and a portion of the Chabot Reservoir watershed basin. Within these District-managed lands are two developed recreation areas (San Pablo Recreation Area and Lafayette Recreation Area), the California Shakespeare Amphitheater, and an extensive recreational trail system. The District's reservoirs store high-quality drinking water and emergency water supplies for approximately 1.2 million water users in Alameda and Contra Costa Counties. Protecting water quality is primary in importance to the District. Additionally, the District is committed to preserving and protecting the natural resources that exist on its lands and its reservoirs.[11]

The watershed lands are partially surrounding by encroaching urban interface of the East Bay communities of Hercules, Pinole, Richmond, Oakland, Moraga, Orinda, Lafayette, and Castro Valley. The western perimeter of the watershed lands is shared with East Bay Regional Park District (EBRPD), as are portions of the eastern boundary (Briones Regional Park and Los Trampas Regional Wilderness). The remainder of the District watershed land perimeter is adjacent to undeveloped private lands with highly flammable vegetation.

East Bay Regional Park District (EBRPD)

[11] East Bay Municipal Utility District. 2000. East Bay Watershed Fire Management Plan. January 2000. With technical assistance from Firewise 2000; Merrit Smith Consulting; Melissa Blanton. Oakland, CA.

The East Bay Regional Park District provides and manages the regional parks for Alameda and Contra Costa Counties, a 1,700 square mile area which is home to 2.1 million people. The jurisdiction of the East Bay Regional Park District includes all of Alameda and Contra Costa Counties. The District is the primary provider of regional park facilities and activities for this two-county area. The regional park system consists of 65 regional parks, recreation areas, wilderness, shorelines, preserves and land bank areas and over 1,000 miles of trails on approximately 95,000 acres of land.[12] There are 29 regional inter-park trails, 11 freshwater swimming areas, boating and/or stocked fishing lakes and lagoons and a disabled-accessible swimming pool. 90 percent of the District's lands are protected and operated as natural parklands. The District is governed by a publicly elected Board of Directors. The EBRPD core mission is to acquire, develop, manage, and maintain a high quality, diverse system of interconnected parklands which balances public usage and education programs with protection and preservation of natural and cultural resources.

Throughout the EBRPD, fire safety is of utmost concern in the parks in the East Bay Hills. Topography, climate, vegetation, and patterns of land use and ownership all contribute to a situation where the risk of fire often exists. Areas that a few years ago would have caused little concern if threatened by fire now contain neighborhoods and isolated homes.

Contra Costa Water District (CCWD): Los Vaqueros Watershed

The mission of the CCWD is to strategically provide a reliable supply of high quality water at the lowest cost possible, in an environmentally responsible manner. The Contra Costa Water District serves a population of about 500,000 people in north, central and east Contra Costa County.[13]

About 245,000 people receive treated water directly from CCWD, and the other 255,000 receive water the Water District delivers to six local agencies. CCWD draws its water from the Sacramento-San Joaquin Delta under a contract with the federal Central Valley Project (CVP), and as such is particularly concerned about Delta water quality and the Delta environment.

The CCWD owns and manages the Los Vaqueros Reservoir which can store up to 100,000 acre-feet of water and sits on nearly 20,000 acres of protected watershed with more than 55 miles of trails. Wildland fire risk is associated within or adjacent to the various land uses of the watershed: wind farms, dryland farms, Morgan Territory, Round Valley and Vasco Road.[14]

California State Parks

Mount Diablo State Park (MDSP)

[12] East Bay Regional Park District. 1997. Master Plan 1997. December 17, 1996. Resolution No: 1996-12-349

[13] Contra Costa Water District web site www.ccwater.com

[14] Contra Costa Water District. 1996. Los Vaqueros Resource Management Plan Fire Management Technical Report. October 1996. Submitted by Brady and Associates, Inc and REM and Associates.

Mount Diablo State Park encompasses approximately 20,000 acres thirty miles east-northeast of San Francisco and 4 miles east of Walnut Creek. The main peak rises to a height of 3849 feet. Except on the southeast, MDSP is surrounded by low valleys with residential and business development in the towns of Walnut Creek, Clayton, Danville, and Alamo.[15] The most hazardous fuel loads in Mount Diablo State Park, in almost all cases, are upslope from adjacent private property or residential development.

Carnegie State Vehicular Recreation Area (CSVRA)

Located in the hills of southern Alameda and San Joaquin counties, Carnegie is one of six SVRAs administered by the California Department of Parks and Recreation. With a diversity of terrain ranging from rolling hills to steep canyons, Carnegie has become a popular destination for off-road enthusiasts of all skill levels. With over 1,500 acres of open riding area, Carnegie offers a variety of terrain upon which to ride. Characterized by dry rocky washes, rolling hills and steep, rugged canyons, the park provides a setting for off-highway vehicle users of all skill levels.[16]

Eastshore State Park

The park includes approximately 2,262 acres of tidelands and upland property along 8.5 miles of shoreline of the San Francisco Bay. The park extends from the City of Richmond in the north to Emeryville and Oakland in the south, ending near the east anchorage of the San Francisco Bay Bridge.

National Park Service (NPS)

The NPS owns and manages four (4) national sites in the East Bay. Two are designated as National Historic Sites: John Muir and Eugene O'Neill; one is a National Historic Park: Rosie the Riveter/WWII Home Front and one is a National Memorial: Port Chicago Naval Magazine. Portions of the Juan Bautista de Anza National Historic trail runs through Alameda and Contra Costa Counties with a notable historic point of reference in Oakland, CA.

Rosie the Riveter/WWII Home Front National Historical Park

The purpose the Rosie the Riveter park is to preserve for the benefit and inspiration of the people of the United States the stories from across the county and the sites, structures, and areas located in Richmond, Ca, that are associated with the citizen, industrial, and governmental effort that contributed to victory in World War II and to lasting changes in America. The Park encompasses the Rosie the Riveter Memorial, Shipyard #3 (the single remaining shipyard in Richmond), a Home Front Visitor's and Education Center in the nearby Ford Assembly Building, and other structures remaining from the period, including daycare centers, war workers' housing and the Kaiser Field Hospital.

Port Chicago Naval Magazine National Memorial

[15] California Department of Parks and Recreation. 2003. Mount Diablo State Park Wildfire Management Plan. April 2003
[16] California Department of Parks and Recreation homepage available at http://ohv.parks.ca.gov/?page_id=1172

Port Chicago Naval Magazine was dedicated as a National Memorial to honor the courage and commitment of the Sailors, Marines, Coast Guardsmen, Merchant Mariners, and working civilians killed and injured in the largest homeland disaster during World War II. The Memorial is located on an active military base. The National Park Service has permission to escort visitors to the Memorial at certain times.

John Muir National Historic Site

John Muir National Historic Site is located in Martinez, CA. It consists of three separate land units: the House Site (8.8 acre), the Mt. Wanda tract (325 acres), and the Gravesite (1.3 acre) tract. The Site preserves the 14 room mansion where the naturalist John Muir lived from 1890 to his death in 1914. In 1992, Mt. Wanda was added to the Site. The 325 acre tract of oak woodland and grassland was historically owned by the Muir family.[17] The current fire management policies of the NPS at this site are to suppress all wildland fires in the park from any source in a manner that minimizes adverse environmental and cultural impacts resulting from suppression activities. NPS also dictates that long term hazardous fuel reduction would be implemented along park boundaries bordering major roadways: Alhambra Avenue and Alhambra Valley Road.

Eugene O'Neill National Historic Site

Eugene O'Neill National Historic Site or "Tao House" is located within Las Trampas Hills on a relatively flat area, approximately 700 feet above sea level in Contra Costa County on the western edge of Danville. The hillsides around the Tao House are relatively undeveloped and fall within the 3,458 acre Las Trampas Regional Wilderness, a unit of the East Bay Regional Park District. Complete suppression of wildland fire is the only fire management action that would be undertaken at the Eugene O'Neill NHS.[18]

U.S. Fish and Wildlife Service (USFWS)

The USFWS owns and manages the Don Edwards San Francisco Bay National Wildlife Refuge, the first urban National Wildlife Refuge established in the United States. The Don Edwards San Francisco Bay National Wildlife Refuge is part of a complex made up of six other wildlife refuges in the San Francisco Bay Area. As of 2004, the Refuge spans 30,000 acres of open bay, salt pond, salt marsh, mudflat, upland and vernal pool habitats located throughout south San Francisco Bay. Founded in 1974 and administered by the U.S. Fish and Wildlife Service, It was renamed Don Edwards San Francisco Bay National Wildlife Refuge in 1995 in recognition of Congressman Don Edwards' efforts to protect sensitive wetlands in south San Francisco Bay.[19]

---

[17] National Park Service. 2004. John Muir National Historic Site Environmental Assessment Fire Management Plan. November 2004. Prepared by Mangi Environmental Group.
[18] Ibid, A-4
[19] USFWS website available at http://library.fws.gov/refuges/DEsanfran.pdf
[19] East Bay Regional Park District website www.ebparks.org
[19] East Bay Municipal Utility District. 2000. East Bay Watershed Fire Management Plan. January 2000. With technical assistance from Firewise 2000; Merrit Smith Consulting; Melissa Blanton. Oakland, CA.
[19] National Park Service website www.nps.gov
[19] Contra Costa Water District. 1996. Los Vaqueros Resource Management Plan Fire Management Technical Report. October 1996. Submitted by Brady and Associates, Inc and REM and Associates.

The refuge is dedicated to preserving and enhancing wildlife habitat, protecting migratory birds, protecting threatened and endangered species, and providing opportunities for wildlife-oriented recreation and nature study for the surrounding communities. The urban areas surrounding the Don Edwards San Francisco Bay National Wildlife Refuge continue to expand. As a "wildlife island in an urban sea," the Refuge faces unique challenges. Nearby developments affect the Refuge in many ways. Power lines and levees criss-cross Refuge grounds. The high cost of land in the Bay area makes acquiring additional property difficult. Most importantly, Refuge managers are entrusted to protect habitat and wildlife while providing for other land uses, such as public recreation and commercial salt production, which benefit both the community and the Refuge.

Alameda and Contra Costa Counties also contain critical habitat for six species of plants and animals that USFWS have listed in their "Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California" . Two of the species are federally listed as threatened, the Alameda whipsnake (*Masticophis lateralis euryxanthus*) and *Arctostaphylos pallida* (pallid manzanita).The other species are not federally listed but have been previous candidates for Federal listing, are currently State listed and/or recognized by the California Native Plant Society as rare, or are presumed extinct. These species are *Arctostaphylos manzanita* spp. *Laevigata* (Contra Costa manzanita), *Cordylanthus nidularis* (Mt.Diablo bird's beak), *Eriogonum truncatum* (Mt. Diablo buckwheat), and the Berkeley kangaroo rat (*Dipodomys heermanni berkeleyensis*). The latter two species are now presumed extinct. Both the Alameda whipsnake and *Arctostaphylos pallida occur* within the Contra Costa Hills section of the Diablo Range. *Arctostaphylos pallida* is restricted to the Oakland/Berkeley Hills, primarily on north and east facing slopes.

Pacific Gas and Electric

The company provides natural gas and electric service to approximately 14 million people throughout a 70,000-square-mile service area in northern and central California. Service area stretches from Eureka in the north to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada in the east. Pacific Gas and Electric Company's Vegetation Management Department is responsible for the trimming or removal of trees near primary distribution lines (those carrying between 4,000 volts to 21,000 volts) and transmission lines (those carrying between 60,000 volts to 500,000 volts). The utility trims and removes trees, brush and branches to comply with local, regional and state laws for the safety of the public to eliminate potential fire hazards, and to increase electric service reliability.

The department also provides pole clearing. It clears vegetation that causes strain or abrasion to secondary lines (those carrying less than 750 volts). And it clears "fire breaks" around the bases of certain utility poles and transmission towers to prevent fires, protect public safety and preserve electric system reliability.

[19] State of California website www.parks.ca.gov

UC Berkeley

UC Berkeley owns and manages approximately 850 acres of mainly vegetated wildlands in the Oakland hills near the intersections of Grizzly Peak, Claremont Ave, and Fish Ranch Road. Limited development nestled within this area includes several Campus facilities, trails, roadways, infrastructure, and an approximately 202 acre area leased to the Lawrence Berkeley National Laboratory (LBNL).

Table 5. Land Ownership In Alameda and Contra Costa Counties

Stakeholders	Acreage Owned/ Managed	Primary Interest	Estimated Acres at Risk	% of Two County Area
East Bay Regional Park District[20]	95,000	Recreation and Public Safety		9%
East Bay Municipal Utility District[21]	28,000	Natural Resources/Water Quality and Recreation		3%
UC Berkeley	850			0%
National Park Service:[22] John Muir National Historic Site, Eugene O'Neill National Historic Site, Rosie and Riveter National Historic Park, and Port Chicago Naval Magazine National Memorial	335.1	Historic Preservation		0%
Contra Costa Water District :Los Vaqueros[23]	17,000	Water Quality and Recreation		2%
California Department of Parks and Recreation: Mount Diablo SP, Eastshore SP, and Carnegie State Vehicle Recreation Area[24]	21500	Recreation and Natural Resources		2%
U.S. Fish and Wildlife Service: Don Edwards San Francisco Bay NWR[25]	30000	Natural Resources and Recreation		3%

[25] USFWS website http://desfbay.fws.gov/

Department of Defense				
Lawrence Berkeley National Laboratory	202			

See Table 6 for a summary of Open and conservation lands in Alameda and Contra Costa Counties as of 2000.[26]

Community groups in Alameda and Contra Costa County also have a strong voice in the fire safety efforts in the region. After the 1991 Tunnel Hill Fire, numerous groups were organized to address the wildland fire risks in the region and are still active today. Each group has bee working diligently to create solutions in their neighborhood or community. Diablo Fire Safe Council's role with these community groups is to serve as the "hub" for information sharing and organizational development to help unify the fire safety efforts among the community groups.

The following is a summary of the various community groups/other agencies in the region:

North Hills Phoenix Association (NHPA)

The North Hills Phoenix Association is a nonprofit organization formed by the homeowners in the area north of Highway 24 and east of Highway 13 in Oakland, CA. This area includes about 1500 homes, some of which are also represented by smaller neighborhood groups. The association was created after the 1991 Oakland Hills fire in order to help residents rebuild and to ensure that fire safety would serve as a guiding principle in rebuilding. More information can be found at: http://www.nhphoenix.org/.

Claremont Canyon Conservancy (CCC)

The Claremont Canyon Conservancy is dedicated to reducing wildfire hazards in the canyon, improving public access, and understanding the ecosystem health of the entire watershed - then preserving or restoring it consistent with public safety. CCC is a citizen-based, nonprofit organization dedicated to providing a unified perspective of the Canyon as an entire watershed. More information can be found at: http://www.claremontcanyonconservancy.org/.

[26] U.S.Fish and Wildlife Service, 2002. Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California. November 2002

Hills Emergency Forum (HEF)

Established after the 1991 Oakland Hills firestorm, the Hills Emergency Forum consists of eight local agencies with responsibility for vegetation management, fire suppression and public safety education in the Oakland-Berkeley Hills. The forum members (cities of Berkeley, El Cerrito and Oakland, the California Department of Forestry and Fire Protection, the East Bay Municipal Utility District, the East Bay Regional Park District, the Lawrence Berkeley National Laboratory, and the University of California at Berkeley) have continued to meet on a monthly basis to enhance interagency cooperation on fire response and coordinate annual fire safety work plans.

The Hills Emergency Forum exists to coordinate the collection, assessment and sharing of information on the East Bay Hills fire hazards and, further, to provide a forum for building interagency consensus on the development of fire safety standards and codes, incident response and management protocols, public education programs, multi-jurisdictional training, and fuel reduction strategies. More information can be found at: http://www.lbl.gov/ehs/hef/.

Montclair Safety and Improvement Council (MSIC)

The MSIC was formed in 2003 by a group of concerned citizens in the greater Montclair area, in conjunction with the Oakland Police Department to improve the quality of life in our area by promoting a variety of safety and lifestyle enhancements to our community. Emergency preparedness and fire safety in Montclair are one of the main focus points for this group. More information can be found at: http://www.montclairsic.org/index.htm.

Shepherd Canyon Homeowner's Association (SCHA)

SCHA is a homeowner's group in Montclair, CA with an active voice in local fire safety concerns. Shepherd Canyon views fire safety to be vitally important. Their last two annual surveys show this to be the number #1 concern overall of the over 1800 households in their area. More information can be found at: http://www.shepherdcanyon.org/.

Canyon Fire Council (CFC)

Canyon is an unincorporated *W/U Intermix* area located two miles or so to the south and east from the edge of the 1991 Oakland hills fire. The 218 residents of Canyon reside in an area surrounded by lands owned by the water company and the regional parks. Fire hazards are extreme owing to steep terrain, scant water supply, limited access and limited evacuation possibilities as well as an over-abundance of fuel (largely bay/oak & chaparral). The CFC was formed in 2004 to address the fire safety issues.

Panoramic Hill Association (PHA)

Panoramic Hill has been called "Berkeley's Most Romantic Neighborhood" by the Berkeley Architectural Heritage Association, and few would disagree. The hill contains many one-of-a-kind houses which were designed to complement their hilly, irregular lots. Despite the adjacent UC Berkeley campus and City of

Berkeley, the hill maintains a remote, unspoiled quality which enhances the presence of its numerous historic dwellings - many by well-known California architects. Although only one principal road, Panoramic Way, serves the hill, several old paths and public steps provide access for the hardy to its higher elevations (about 1000 ft above sea level). Surrounded on three sides by hiking trails, canyons, ridges and open land, the Hill offers a rare combination of natural beauty, context sensitive development, spectacular vistas and convenience to the University and downtown Berkeley. More information can be found at: http://www.neighborhoodlink.com/.

North Hills Landscape Committee (NHLC)

The North Hill Landscape Committee is a community-based landscape committee in Oakland, California, which works on developing and helping to maintain public gardens and school gardens. The group also focuses on vegetation management and education regarding emergency preparedness. Development of The Gateway Exhibit Center & Garden was spearheaded in 1993 by the North Hills Landscape Committee, a group of local residents who lost their homes in the 1991 Oakland Hills Firestorm and work to prevent future disasters by creating and maintaining landscaped parks in the area and at local schools. Working closely with the City of Oakland, who owns and maintains the park site, and numerous local agencies, businesses and individuals, the Gateway Emergency Preparedness Exhibit Center & Garden was dedicated in May, 2003. More information can be found at: http://www.ergateway.org/site/ergateway/.

Contra Costa Resource Conservation District (CC-RCD)

Contra Costa Resource Conservation District (RCD) was formed in 1941. Their mission is to provide an organized means for local people to carry out voluntary, cooperative soil and water conservation programs that make the best use of our natural resources. They are a non-regulatory agency – all of their goals are accomplished through voluntary, cooperative efforts. To accomplish their goals, they work with individuals, growers, ranchers, corporations, park and water districts, and other public agencies. Their federal partner, the USDA Natural Resource Conservation Service (NRCS), provides technical support for our programs. More information can be found at http://www.ccrcd.org/.

Other neighborhood groups in Alameda and Contra Costa Counties that include wildland fire safety as part of their group's mission include:

Friends of Temescal Creek, Friends of Sausal Creek, Vicente Canyon Homeowners Association, and many others.

Fire Service Jurisdictional Boundaries

The following is a summary of the Fire Service Personnel and Emergency Services in Alameda and Contra Costa Counties. Figures 8-9 show the fire service jurisdictional boundaries and State Responsibility Areas (SRA's) in the two counties. SRA lands are as those areas of the state for which the State has the financial responsibility of preventing and suppressing fires. Under PRC Sections 4125 and

4126, these areas roughly correspond to vegetated lands that have watershed value. Areas that are not federal or state responsibility are commonly referred to as "Local Responsibility Area" or "LRA."

Contra Costa County

Contra Costa Fire Protection District (CCFPD)

The Contra Costa County Fire Protection District is governed by the Contra Costa County Board of Supervisors, and provides fire protection services to Antioch, Briones Hills, Clayton, Concord, Lafayette, the Mt. Diablo Area, Martinez, Oakley, Pleasant Hill, San Pablo, Walnut Creek, and nearby unincorporated areas. This District has over 30 stations; each station averages 2 to 4 engines and three firefighters, one of which is a paramedic. Stations 12, 13 and 14 are located in the City of Martinez and Station 70 is located in the City of San Pablo.

Crockett-Carquinez Fire Protection District

The Crockett-Carquinez Fire Protection District is governed by the Contra Costa County Board of Supervisors, and provides fire protection services and emergency medical response in the Crockett area, including the Port Costa area. Its station is located at 746 Loring Avenue, Crockett.

Rodeo-Hercules Fire Protection District (RHFPD)

The Rodeo-Hercules Fire Protection District is an independent district that provides fire protection services and emergency medical response for the City of Hercules and the Rodeo area. Its station is located at 1680 Refugio Valley Road, Hercules.

Pinole Fire Department (PFD)

The Pinole Fire Department provides fire protection services and emergency medical response to the City of Pinole and the Tara Hills area. It also provides back up for the adjacent cities of Hercules, Crockett, Rodeo, San Pablo and Richmond. Its station is located at 880 Tennent Avenue, Pinole.

Richmond Fire Department (RFD)

The Richmond Fire Department provides fire protection services and emergency medical response to the City of Richmond, and automatic mutual aid to the cities of El Cerrito, San Pablo, Pinole and El Sobrante. The Department is staffed by 97 firefighters and 6 non-sworn personnel, and equipped with seven engines, two trucks, two rescue vehicles, and a hazardous materials unit. The Department's headquarters are located at 330 – 25th Street, Richmond.

El Cerrito Fire Department (ECFD)

The El Cerrito Fire Department provides fire protection services and emergency medical response to the City of El Cerrito, and automatic mutual aid to the cities of Richmond, Kensington, and the County of Contra Costa. The Fire Department provides a full range of fire prevention, fire suppression and

emergency services. To reduce the impact of fire related losses in our community and to render timely and appropriate medical aid to the sick and injured, departmental resources are concentrated in three program areas: prevention, training and operations. The Department headquarters are located at 10890 San Pablo Avenue, El Cerrito.

Kensington Fire Protection District (KFD)

The unincorporated town of Kensington began a volunteer fire department in 1928. Twenty-four years later, the Kensington Fire Protection District (formed in 1937) hired a staff of professional firefighters under the supervision of a fire chief. In 1995, the District entered into a contract with the City of El Cerrito whereby El Cerrito would provide all fire prevention, fire suppression and emergency services within Kensington for an annual fee (www.el-cerrito.org/fire). The District owns one Type I fire engine and a Type III reserve engine. The most recent acquisition was the Type III engine specially engineered for the District paramedic program and the wildland interface with Wildcat Canyon. The Department headquarters are located at 217 Arlington Avenue, Kensington.

Moraga-Orinda Fire District (MOFD)

The Moraga-Orinda Fire District was formed on July 1, 1997, when over 80% of the voters of Moraga and Orinda established a single, comprehensive Fire District. The District is governed by a five member board of directors, elected by the residents and serves the Town of Moraga, City of Orinda, Canyon and unincorporated areas of Contra Costa County. The District is approximately 63 square miles and has a population of approximately 42,000. There are five fire stations strategically located throughout the District, providing services for all emergencies including residential, wildland and commercial fires; medical emergencies; automobile and confined space rescue; and other hazardous conditions. The department headquarters are located at 33 Orinda Way Orinda.

San Ramon Valley Fire Protection District (SRVFPD)

The San Ramon Valley Fire Protection District is an autonomous Special District as defined under the Fire Protection District Law of 1987, Health and Safety Code, Section 13800, of the State of California. The District's service area encompasses approximately 155 square miles, covering the communities of Alamo, Blackhawk, the Town of Danville, Diablo, the City of San Ramon, the southern boundary of Morgan Territory and the Tassajara Valley all located in Contra Costa County. Within the boundaries of the District are wildland areas, single and multi-family residential units, hotels, a hospital, numerous convalescent/assisted living facilities, equestrian areas, hiking trails, rock climbing areas and a facility housing a low-level nuclear reactor. With such diversity, it is mandatory the District be equipped with proper apparatus and appropriately staffed to handle all emergencies. The SRVFPD provides first response fire and paramedic service to a small area in northern Dublin under an automatic aid agreement with Alameda County Fire Department. The District's headquarters are located at 1500 Bollinger Canyon Road San Ramon.

East Contra Costa Fire Protection District (ECCFPD)

On September 12, 2002, the East Contra Costa Fire Protection District was created by the Unification of the Bethel Island, East Diablo, and Oakley Fire Protection District's. The new organization, governed by the Contra Costa County Board of Supervisors, was created in order to allow more cost-effective application of existing resources to provide a higher level of fire protection and emergency medical response services to the area. It now serves as the second largest fire district in Contra Costa County. The District protects the communities of Brentwood, Discovery Bay, Byron, Bethel Island, Knightsen, Oakley, and the Marsh Creek-Morgan Territory. The department headquarters are located at 134 Oak Street, Brentwood.

Alameda County

The Alameda County Fire Department (ACFD) provides direct fire and paramedic service to most unincorporated areas of Alameda County (i.e. Ashland, Cherryland, Castro Valley, San Lorenzo), and also provides service under contract to the cities of Dublin and San Leandro, the Lawrence Berkeley National Laboratory, and the U.S. Veteran's Hospital. The Alameda County Local Agency Formation Commission (LAFCo) formed the ACFD as a dependent special district in 1993 as the consolidated successor to three fire districts. The department headquarters are located at 835 East 14th Street, Suite 200, San Leandro

East Bay Regional Park District (EBRPD)

The East Bay Regional Parks District provides fire service in the regional parks and first-response paramedic service in regional parks not covered by the cities in which the parks are located. The boundary of the EBRPD is coterminous with Alameda and Contra Costa counties. This independent special district was formed in 1933, and provides fire prevention and suppression, response and management of hazardous materials incidents, search and rescue, and resource management services. The Public Safety headquarters are located at 17930 Lake Chabot Road
Castro Valley.

Livermore-Pleasanton Fire Department (LPFD)

The cities of Livermore and Pleasanton merged fire services in December of 1996. As a Joint Powers Authority (JPA), the Livermore-Pleasanton Fire Department (LPFD) is administered by both cities. The JPA Board, consisting of elected officials from both cities, has limited independent power delegated by the two city councils and acts as an important sub-committee of both city councils. All major decisions by the Board require ratification by both city councils. Each city retains the right to set the number of fire stations and firefighters needed within its boundary. The department headquarters are located at 3560 Nevada Street Pleasanton, CA.

The California Department of Forestry (CDF)

CDF provides fire and paramedic service in the Sunol and Kilkare unincorporated areas (under contract with ACFD) in addition to brush fire suppression on any open range land and wild lands outside incorporated areas in the eastern part of the County.

Lawrence Livermore National Laboratory (LLNL)

Lawrence Livermore National Laboratory (LLNL) is a premier research and development institution for science and technology applied to national security. They are responsible for ensuring that the nation's nuclear weapons remain safe, secure, and reliable. LLNL also applies its expertise to prevent the spread and use of weapons of mass destruction and strengthen homeland security. Lawrence Livermore National Laboratory (LLNL) is managed and operated by the University of California for the Department of Energy. The Lab is one square mile in size, with a workforce of more than 8,000 people. Lawrence Livermore National Laboratory is located off Vasco Road, near Interstate-580, in Livermore, California, about 48 miles east of San Francisco

The LLNL operates two fire stations, and serves as the dispatch provider to the regional fire and medical dispatch consortium.

Albany Fire Department (AFD)

The Albany Department provides fire protection services and emergency medical response to the City of Albany. The Albany Fire Department is a full service department providing the community with fire protection, emergency and disaster response, paramedic services and community education including CPR, First Aid, Home Safety, Earthquake Preparedness and Search and Rescue classes. The department headquarters are located at 1000 San Pablo Avenue Albany.

Alameda Fire Department (AFD)

The Alameda Fire Department is an organization of 116 dedicated, community service oriented people that serve more than 75,000 Alameda residents and its visitors. Their services include: fire suppression, both land and water-based; advanced life support, including ambulance transport services; a full range of fire prevention, consulting, and investigative services; community disaster preparedness, including Community Emergency Response Teams (CERT); hazardous materials response and mitigation; confined space rescue services; and water rescue. The department headquarters are located at 1300 Park Street Alameda.

Berkeley Fire Department (BFD)

The Berkeley Fire Department serves a densely populated eleven square miles that encompass the City of Berkeley. The 137.5 members (125 sworn) of the department staff 7 fire stations, 7 engines, 2 fire trucks, 3 ambulances, an assortment of specialized equipment (including a hazardous materials vehicle), and administrative positions. The department headquarters are located at 2100 Martin Luther King Jr. Way, Berkeley.

Emeryville Fire Department (EFD)

The Emeryville Fire Department is a member of the Alameda County, providing paramedic-level emergency medical services. All firefighters are certified as Emergency Medical Technicians (EMT), and 9 firefighters are certified as Paramedics (EMT-P). This allows the department to offer Advanced and Basic Life Support as a first response from all engine companies. EFD provides fire protection services and emergency medical response to the City of Emeryville. The department headquarters are located at 1333 Park Avenue Emeryville.

Oakland Fire Department (OFD)

The Fire Department provides comprehensive emergency services to the Oakland community including: Fire Suppression, Emergency Medical and Hazardous Materials Services, Heavy Rescue, Public Education and Training, Emergency Preparedness, and Fire Prevention.The department headquarters are located at 1605 Martin Luther King, Jr. Way, Oakland.

Fremont Fire Department (FFD)

The Fremont Fire Department provides emergency fire protection, prevention, rescue and emergency medical services for the City of Fremont. Fremont has ten Fire Stations located strategically throughout the city to ensure the best response times to an emergency.

Hayward Fire Department (HFD)

The mission of the Hayward Fire Department is to prevent or minimize the loss of life and property due to natural and man-made emergencies and disasters, and to provide essential non-emergency services. The department headquarters are located at 777 B Street 94541 4th Floor Hayward.

Newark Fire Department (NFD)

The Newark Fire Department provides services to 43,043 residents in a 13 square mile area and responds to an average of 3,100 calls each year. The Department operates out of three stations with three engine companies; one squad/hazmat unit; and 51 full-time personnel, including both suppression and administrative employees. The Department has one combination 75-foot pumper aerial ladder truck, two engines, and one squad vehicle. The Department delivers fire suppression and rescue response,

hazard prevention and education, and disaster preparedness with a minimum on-duty staffing of 12 personnel. The department headquarters are located at 6170 Thornton Ave., Unit D Newark.

Piedmont Fire Department (PFD)

The Piedmont Fire Department (PFD) is responsible for the protection of lives, property, and the environment. Seven firefighters are on duty 24 hours a day and are assigned duties that range from fire suppression and emergency medical response to public education and fire prevention. The department headquarters are located at 120 Vista Ave, Piedmont.

Union City Fire Department

The Union City Fire Department is the all risk emergency services provider in the city of Union City. Located within Union City's 18 square miles and serving a population of 70,300 people, are four fire stations. The fire department has three (3) engines, one (1) quint, and one (1) Battalion Chief on duty and staffed at all times. All of the fire apparatus are staffed with at least one paramedic. The department headquarters are located at 34009 Alvarado-Niles Road Union City.

Camp Parks

The Parks Reserve Forces Training Area (Camp Parks) operates a fire station at the U.S. Army facility near the City of Dublin.

Table 7. Contra Costa County Fire Station Service Area and Population, 2005

Provider	Stations	Station Numbers	Square Miles per Station	24-Hour Population per Station	Residential Population per Station	ISO Rating
Countywide	**59**					
Median						
San Ramon Valley Fire Protection District	10	30, 31, 32, 33, 34, 35, 36, 37, 38, 39	Data not available	163,794	140,794	2
Crockett-Carquinez Fire District	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
Rodeo-Hercules Fire District	2	75, 76	25	Data not available	30,821	4
Pinole Fire Department	2	73, 74	Data not available	Data not available	19,450	Data not available
Richmond Fire Department	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available
El Cerrito Fire Department	1	Data not available	Data not available	Data not available	Data not available	Data not available
Kensington Fire District	1	Data not available	Data not available	Data not available	Data not available	Data not available
Moraga-Orinda Fire District	5	41, 42, 43, 44, 45	Data not available	Data not available	Data not available	3/9. The "9" rating is provided in the rural areas of Canyon, Bollinger Canyon and un-incorporated Contra Costa County within the MOFD boundaries
East Contra Costa Fire District	8	52, 54, 57, 58, 59, 93, 94, 95	Data not available	Data not available	Data not available	Data not available
Contra Costa Fire Protection District	30	Data not available	Data not available	Data not available	Data not available	Data not available
CDF	Data not available	Data not available	Data not available	Data not available	Data not available	Data not available

Table 8. Alameda County Fire Station Service Area and Population, 2004

Provider	Stations	Station Numbers	Square Miles per Station	24-Hour Population per Station	Residential Population per Station	ISO Rating
Countywide	**104**		**7.1**	**14,580**	**14,580**	Data not available
Median			**3.7**	**14,561**	**15,050**	Data not available
Alameda Fire Department	5		2.2	13,872	15,050	Data not available
Albany Fire Department	1		1.7	14,561	16,889	Data not available
Berkeley Fire Department	7		1.5	17,319	15,061	Data not available
Emeryville Fire Department	2		0.6	8,820	3,808	Data not available
Fremont Fire Department	10		7.7	21,535	21,236	Data not available
Hayward Fire Department	7		6.3	19,362	18,191	Data not available
Livermore-Pleasanton Fire Department	10		4.6	15,855	14,724	Data not available
Newark Fire Department	3		4.7	14,099	14,911	Data not available
Oakland Fire Department	25		2.2	16,177	16,498	Data not available
Piedmont Fire Department	1		1.7	8,516	11,150	Data not available
Union City Fire Department	4		4.8	15,417	18,063	Data not available
East Bay Regional Park District	10		14.8	NA	NA	Data not available
Fairview FPD	1		2.8	9,675	13,275	Data not available
Alameda County Fire Department	18		27.9	13,395	14,171	Data not available
Dublin	3		4.8	13,232	12,505	Data not available
San Leandro	5		2.6	18,126	16,442	Data not available
Unincorporated	8		59.2	13,473	16,545	Data not available
LBNL	1		NA	3,000	NA	Data not available
Sunol (CDF)	1		NA	NA	NA	Data not available

4. Fire Environment

4.1 Wildfire Problem Definition

Fire is neither good nor bad, but an important ecological process that produces variable effects.[1] Many land management agencies actively use "prescribed fire" to manage their natural resources, setting fire to thousands of acres a year. Wildland fire becomes a "problem" when people and property become at risk from fire due to new development expanding into the wildlands increasing the density of homes and plants that fuel wildland fires. The East Bay counties of Alameda and Contra Costa have a rich fire history; between 1923 and 1995 14 major wildfires occurred in the East Bay Hills.[2] These fires burned over 11,000 acres, destroyed over 3,500 structures and caused 26 fatalities.

There are three broad classifications that describe development in the urban-wildland areas of Alameda and Contra Costa Counties: Urban-Wildland Intermix, Urban-Wildland Interface, and Occluded Wildlands.[3] All four classifications are found throughout the counties and each type has an associated risk.

The Urban-Wildland Intermix is an area where built development and wildland fuels mix with no clearly defined boundary. Communities such as Canyon, Montclair, Shepherd Canyon and parts of Alamo, Orinda and Moraga are classic examples of this type. Fuel build-up is usually throughout the area, but often concentrated in places with steep terrain or limited access.

The Urban-Wildland Interface is an area where built development and wildland fuels meet at a well-defined boundary. Communities such as El Cerrito, Berkeley, Clayton, Walnut Creek and San Ramon sit adjacent to large areas of East Bay Regional Park lands or Mount Diablo State Park and are classic examples of this type. At the edge of the urban development there is often a well defined line where the wildlands form a broad front. The East Bay hills form a spine of open space and regional parklands forming an approximately 45-mile long Urban-Wildland interface in Alameda County.

Occluded Wildlands are isolated areas of wildlands larger than 5 acres that occur within an urban setting and are both public and privately owned. Communities such as Piedmont and Castle Drive in Oakland are

[1] Keane, Robert E., Ryan, Kevin C., Veblen, Tom T., Allen, Craig D., Logan, Jessie., Hawkes, Brad. 2002 Cascading effects of fire esclusion in the Rocky Mountain ecosystems: a literature review. Gen tech Rep RMRS-GTR-91. Fort Collins, CO. USDA Forest Service, Rocky Mountain Research Station. 24 p.
[2] East Bay Regional Park District. 2003. Final Environmental Assessment.
[3] Amphion Environmental Inc. East Bay Hills Fire Hazard Mitigation and Fuel Management Plan, Unpublished Report, 1995.

classic examples of this type. These occluded wildland areas often are located in canyons or areas with difficult access and often have no developed water supply.

4.2 Communities at Risk

A major component of the National Fire Plan was funding for projects designed to reduce fire risks to people and their property. A fundamental step in realizing this goal was the identification of areas that are at high risk of damage from wildfire. Federal fire managers authorized State Foresters to determine which communities were under significant risk from wildland fire *on Federal lands.*

The California Department of Forestry and Fire Protection undertook the task of generating the state's list of communities at risk. With California's extensive urban Wildland-Urban Interface situation the list of communities extends *beyond just those on Federal lands.*

Three main factors were used to determine wildland fire threat to Wildland-Urban Interface areas of California[4].

- **Ranking Fuel Hazards** = ranking vegetation types by their potential fire behavior during a wildfire.
- **Assessing the Probability of Fire** = the annual likelihood that a large damaging wildfire would occur in a particular vegetation type.
- **Defining Areas of Suitable Housing Density that Would Create Wildland-Urban Interface Fire Protection Strategy Situations** = areas of intermingled wildland fuels and urban environments that are in the vicinity of fire threats.

There are five Federally Listed Communities at Risk in Alameda and Contra Costa counties: Clayton, Concord, Dublin, Martinez, Oakland, Pittsburg and Walnut Creek. There are 18 State Listed Communities at Risk: Antioch, Brentwood, Berkeley, El Cerrito, Hayward, Hercules, Fremont, Lafayette, Livermore, Moraga, Orinda, Pinole, Pleasant Hill, Pleasanton, Richmond, San Leandro, San Ramon and Union City. Figures 6-7 shows these communities as well as the Locally Identified Communities at Risk. Locally Identified Communities are defined as those in which an agency, community group or fire district/fire department has established its own criteria for identifying wildland fire hazards and cited it either in a plan or verbally to Diablo Fire Safe Council. Local fire jurisdictions may have identified additional fire hazard areas, especially in communities adjacent to wildland. They commonly depict the general risk within neighborhoods and the relative risk from community to community.

4.3 Fire History

[4] California Fire Alliance website http://www.cafirealliance.org/communities_at_risk.php

Recent History

Alameda and Contra Costa have a rich fire history. Historically the East Bay has proven prone to wildland fire. The East Bay Hills comprise a cluster of ecosystems that are historically fire-driven. A major component of the fire regime is the arrival of the seasonal easterly winds, the Diablo winds. Common wind patterns in the East Bay are cool westerly winds; however the Diablo winds bring hot air currents speeding across low points in the East Bay hills. During the late summer season, these easterly winds can further dry already-desiccated fuels and rapidly drive accidental ignitions[5].

Historically the early 1900s large dense plantations of pine and eucalyptus were introduced to many wildland areas increasing fire hazard levels. Formerly grazed grasslands have been replaced by more flammable vegetation. In addition to wildland hazards, homeowners have landscaped their property introducing more potential fuel next to homes. Urban development has continued to expand into wildland areas as the population has increased.

The 1991 Tunnel fire in Oakland Berkeley Hills caused the largest residential loss from wildfire in both the state and the nation. Almost half of the residences destroyed in California by major wildfires have been located within our two county boundaries.

Vegetation types and structures on Bay Area landscapes have changed dramatically in the last 200 years. The introduction of livestock in association with Mediterranean annual grasses—first by the Spanish and subsequently by Anglo-Americans—resulted in the almost complete replacement of native perennial bunch grasses by exotic annual grasses in the Bay hills grasslands, oak woodlands and savannas. By 1900 land speculator and real estate developers has planted thousands of eucalyptus, Monterey pine and cypress —none of which are native to the Bay Area—on former hills grasslands.

This region is particularly vulnerable to destructive wildfire due to the following factors[6]:

a) Fire risks associated with the “urban-wildland interface”- the area of transitional use where open space fire fuels are commingled with the ignition risks, relatively abundant fire fuels, and the high concentration of “values at risk” associated with developed areas. In other words, such areas have high fuel loads, high ignition risks, and a large number of homes or other values that could be destroyed in a fire. The urban-wildland interface is not a discrete boundary in this area because of high housing density wit intermittent open space;

[5] UC Berkeley . 2003. Hill Area Fire Fuel Management Program. October 2003. Prepared by Safe Solutions Group.

b) Occurrence of “Diablo winds”- very dry, strong winds that blow out of the east a few days per year (approx. 0 to 7), often in early fall, the effects of which are exacerbated in this area by steep canyon topography along Highway 24;

c) Steep slopes that aggravate the spread of fire;

d) An increase in dense flammable vegetation due to
   - The removal of grazing from some small parcels (cattle, and before that elk),
   - Increased fire suppression leading to a build-up of vegetation fuels,
   - Fewer prescribed fires like those historically set by native Americans
   - The introduction and spread of highly flammable and invasive exotic plant species such as eucalyptus, French broom, and Monterey pine (Monterey pine is not ordinarily invasive, except after a fire),
   - Neighborhood preferences for increased cover of trees and other vegetation
   - Subdivisions with large, steep residential lots that can be difficult to manage or to landscape.

e) Live Fuel Moisture measurements annually decline from 120% in April to 60% in November. They fall below 90% by August 1st annually[7].

The “East Bay Hills” have lost more than 3,542 homes to major wildfires. The 1991 Oakland/Berkeley Fire ranks first as the state’s largest home loss from wildfire (2900) and the 1923 Berkeley fire ranks seventh (584), even after the 2003 southern California firestorm. Twenty-five percent (25%) of the residences destroyed this past century by California’s 20 major wildfires, taking more then 50 structures, have been lost in the East Bay Hills. In terms of direct threat to residences, it is now clear that the East Bay Hills are one of the most severe fire risk areas in the state and nation.

During the 75 year period between 1923 and 1998, eleven Diablo wind fires alone burned 9,840 acres, destroyed 3,542 homes, and took 26 lives, with over 2 billion dollars in financial loss. During the same period, three large west wind fires burned 1,230 acres of grass, brush, trees, and 4 homes.

Eucalyptus planting in the East Bay hills began in the 1880's when the Judson Dynamite and Powder Company planted trees to muffle the sound of dynamite and to hide an ugly landscape created by the blasts. Large scale planting of eucalyptus occurred during the first decade this century. It was for timber and real estate investment.

See Table 9 and Figures 10-11 for the Fire History of Alameda and Contra Costa Counties, 1950-2003.

---

[6] Adapted from the Caldecott Corridor Committee. 2001. Resource Management Plan for the Caldecott Wildlife Corridor. Prepared by the Caldecott Wildlife Corridor. Pp 74.

Table 9. Fire History for Alameda and Contra Costa Counties 1950- 2003

NAME	NAME	ACRES	YEAR	MONTH	DAY	CAUSE
TROUT CREEK	Alameda	321	1950	8	30	Unknown/Unidentified
DRY CREEK FIRE	Alameda	1078	1951	6	1	Unknown/Unidentified
FULQUEENY GRASS	Alameda	494	1952	7	27	Unknown/Unidentified
CULL CANYON	Alameda	312	1954	7	22	Unknown/Unidentified
	Contra Costa	312	1954	7	22	Unknown/Unidentified
LUND (ASSIST)	Alameda	252	1955	8	4	Unknown/Unidentified
CORALL HOLLOW #5	Alameda	679	1958	9	11	Unknown/Unidentified
OVERACKER	Alameda	288	1958	7	6	Unknown/Unidentified
ALVES	Contra Costa	291	1958	8	14	Unknown/Unidentified
MARSH CREEK	Contra Costa	976	1958	7	28	Unknown/Unidentified
	San Joaquin	679	1958	9	11	Unknown/Unidentified
MARCIEL	Alameda	1295	1959	6	21	Unknown/Unidentified
WAND	Contra Costa	384	1960	7	3	Unknown/Unidentified
BAILEY	Alameda	244	1961	6	29	Unknown/Unidentified
S.P.R.R. #3	Alameda	346	1961	8	12	Unknown/Unidentified
PARKER	Contra Costa	224	1961	7	18	Unknown/Unidentified
ROADSIDE #1	Contra Costa	856	1961	7	11	Unknown/Unidentified
STATE PARK #2	Contra Costa	1241	1961	7	13	Unknown/Unidentified
W.P.R.R. CO. #1	Alameda	165	1962	5	25	Unknown/Unidentified
S.P.R.R. #2	Alameda	358	1964	7	11	Unknown/Unidentified
WESTERN PACIFIC RR#3	Alameda	124	1964	7	12	Unknown/Unidentified
WINDY POINT	Contra Costa	520	1965	9	16	Unknown/Unidentified
FUSEE	Alameda	590	1966	6	15	Unknown/Unidentified
LA COSTA	Alameda	1278	1966	8	18	Unknown/Unidentified
BLACK DIAMOND #2	Contra Costa	488	1966	8	29	Unknown/Unidentified
ELWORTHY	Contra Costa	261	1966	6	28	Unknown/Unidentified
THOMAS	Contra Costa	230	1967	7	8	Unknown/Unidentified
VASCO	Contra Costa	1399	1967	7	22	Unknown/Unidentified
LA COSTA	Alameda	571	1968	6	29	Unknown/Unidentified
MULQUEENEY	Alameda	774	1968	6	16	Unknown/Unidentified
VASCO	Alameda	444	1968	8	24	Unknown/Unidentified
CARNEGIE #3	Alameda	4389	1970	7	5	Unknown/Unidentified
JACKSON	Alameda	282	1970	8	13	Unknown/Unidentified
WPRR #9	Alameda	1532	1970	7	5	Unknown/Unidentified
BANNISTER	Contra Costa	454	1970	7	4	Unknown/Unidentified
JACKSON	Contra Costa	282	1970	8	13	Unknown/Unidentified
STWARTVILLE	Contra Costa	407	1970	9	13	Unknown/Unidentified
STWEWARTVILLE #2	Contra Costa	335	1970	9	21	Unknown/Unidentified
TASSAJARA	Contra Costa	448	1970	7	2	Unknown/Unidentified
VAQUERO	Contra Costa	550	1970	6	26	Unknown/Unidentified
MOLLER	Alameda	93	1973	9	26	Unknown/Unidentified
MOLLER	Contra Costa	93	1973	9	26	Unknown/Unidentified
MAXON	Alameda	313	1974	7	27	Unknown/Unidentified
SITE 300 #2	Alameda	515	1974	8	9	Unknown/Unidentified
BRENTWOOD	Contra Costa	375	1974	6	20	Unknown/Unidentified
MITCHELL CANYON	Contra Costa	4859	1977	8	0	Unknown/Unidentified
DRY CREEK	Alameda	675	1979	6	15	Unknown/Unidentified
BLACK DIAMOND PEAK	Contra Costa	681	1979	8	27	Unknown/Unidentified
P.G.&E. MARSH CREEK	Contra Costa	321	1979	6	7	Unknown/Unidentified
RUSH	Alameda	520	1980	7	28	Unknown/Unidentified
W.P.R.R. #12	Alameda	253	1980	9	13	Unknown/Unidentified
ALHAMBRA SERIES #6	Contra Costa	656	1980	8	8	Unknown/Unidentified
ALHAMBRA SERIES #7	Contra Costa	145	1980	8	8	Unknown/Unidentified
BLACKHAWK	Contra Costa	2361	1981	7	14	Arson
ALTAMONT	Alameda	50	1982	8	25	Equipment Use
DEL VALLE P.G.&E.	Alameda	4713	1983	7	12	Equipment Use
PORT COSTA	Contra Costa	319	1983	8	7	Unknown/Unidentified

Table 9. Fire History for Alameda and Contra Costa Counties 1950- 2003

NAME	NAME	ACRES	YEAR	MONTH	DAY	CAUSE
FRANKLIN SERIES	Contra Costa	538	1985	7	4	Equipment Use
CAMINO DIABLO	Contra Costa	322	1986	7	2	Equipment Use
ALTAMONT #1 - 6	Alameda	383	1988	7	11	Equipment Use
TUNNEL	Alameda	1622	1991	10	22	Unknown/Unidentified
TUNNEL	Contra Costa	1622	1991	10	22	Unknown/Unidentified
FLOWIND	Alameda	811	1992	6	25	Equipment Use
FLOWIND	Contra Costa	811	1992	6	25	Equipment Use
COSTA #2	Contra Costa	532	1995	7	16	Unknown/Unidentified
KENETECH #7	Contra Costa	436	1995	8	28	Equipment Use
DEL VALLE	Alameda	1088	1996	6	8	Equipment Use
PATTERSON	Alameda	475	1996	8	3	Equipment Use
BENNY	Alameda	113	1997	18	25	Vehicle
GRANTLINE #2	Alameda	90	1997	14	38	Debris
BLACK DIAMOND ES	Contra Costa	175	1997	17	10	Miscellaneous
BLACK DIAMOND MI	Contra Costa	475	1997	20	0	Unknown/Unidentified
580 #6	Alameda	1000	1998	13	40	Unknown/Unidentified
VALLECITOS	Alameda	70	1998	16	30	Arson
BRUNS	Alameda	100	1998	18	20	Powerline
MT. HOUSE	Alameda	68	1998	16	20	Powerline
SIBLEY #2	Contra Costa	200	1998	13	30	Arson
GREENRIDGE #6	Contra Costa	1388	1998	5	45	Powerline
VAQUEROS	Contra Costa	60	1998	20	5	Powerline
BYRON	Contra Costa	55	1998	13	57	Powerline
FORUS	Alameda	129	1999	20	21	Equipment Use
CAR	Alameda	450	1999	15	0	Vehicle
DYER	Alameda	116	1999	14	30	Powerline
GREENRIDGE	Contra Costa	100	1999	5	45	Powerline
HAYWARD ASSIST	Alameda	75	2000	0	0	Unknown/Unidentified
SEREDA	Contra Costa	79	2000	0	0	Unknown/Unidentified
DEL VALLE	Alameda	117	2001	8	8	Equipment Use
PATTERSON	Alameda	233	2002	6	15	Unknown/Unidentified
VIEUX	Alameda	1028	2002	6	18	Powerline
BETHANY	Alameda	99	2002	6	1	Powerline
PG&E#4	Contra Costa	200	2002	8	25	Powerline
PINES	Alameda	175	2003	8	27	Lightning
BUCKEYE	Alameda	4	2003	7	30	Lightning
HAMILTON	Alameda	631	2003	8	26	Lightning
DEVIL	Alameda	5444	2003	8	27	Lightning
PITTSBURG	Contra Costa	298	2003	8	26	Lightning
MCEWEN	Contra Costa	100	2003	8	12	Equipment Use

4.4 Local Fire Ecology- Environmental Concerns

Local fire hazards present a considerable problem to vegetation and wildlife habitat in Contra Costa County. Grassland fires are easily ignited, particularly in dry seasons. Brush fires, particularly near the end of the dry season, tend to burn fast and very hot. Because the natural vegetation and dry-farmed grain areas of Contra Costa County are extremely flammable during the late summer and fall, wildfire is a serious hazard in undeveloped areas and on large lot home sites with extensive areas of unirrigated vegetation.[8]

The East Bay's eucalyptus and pine plantations were established in the early 1900's. Eucalyptus were planted for hardwood production, and Monterey pines were planted to forest the barren hills in preparation for coming real estate developments. Many of the older pines are now showing the effects of time. Eighty-year old pine trees are beginning to fail as they become senescent, with beetle damage and pine pitch canker taking increasing numbers of trees. The Tazmania blue gum eucalyptus has produced unusually dense and flammable woodlands with up to 400 trees per acre 12 inches or larger in diameter far exceeding the 30 to 50 tree per acre found in maintained fire-safe groves in a few locations in the hills. Large unmaintained groves of blue gum eucalyptus are recognized worldwide as high fire risk trees wit their habit of producing large quantities of flammable bark, branches and oily leaves that can provide fuel ladders to the crown, potentially carrying burning embers miles ahead of fire front. Litter under dense Eucalyptus groves often exceeds 50 tons of combustible material per acre, far above a fire safe standard of 5 tons per acre. Excessive fuel loads on the forest floor and fuel ladders to their high crown mean that these groves would be extremely flammable under any summer or fall high wind condition with control of a moving flame front in the groves almost impossible and with serious ember spotting into adjacent neighborhoods.

Disturbance regimes

East Bay canyons were originally covered with grass and oak trees. In the mid-1850s ornamental exotics were introduced - among them the beautiful French broom and the oily Australian eucalyptus trees that grow as high as 120 feet. In 1972 a freeze hit the Bay Area and the eucalyptus trees seemed to die. Crews cut the dead wood, but they didn't tackle the dormant stumps. From these stumps, hydra-like, tall, skinny shoots sprung up. Many of these shoots, now denser than ever, escaped the 1991 fire, which cut a swath down Claremont Canyon as far as Alvarado Road just above the Claremont Hotel.

Winter freezes compound the fire problem by killing back trees that then drop the dead wood and foliage to the grove floor. Blue gum is by far the most common California eucalyptus and is intolerant of below freezing weather. The fires in the East Bay hills of 1923, 1973, and 1991 were preceded by a freeze. Very few eucalyptus actually die from frost because their root systems are unaffected. They merely shed the frost-burned foliage and wood, and resprout. But the amount of litter dropped to the ground is enormous

---

[7] Personal communication wit Ed Stewart, Manager Los Vaqueros Watershed Contra Costa Water District.

It was estimated that two million trees had been killed in the 1972 freeze which amounted to about 50 tons of debris per acre and covered 3,000 acres. The debris lying on the ground was one to two feet deep. Again the prophetic voice of the Subcommittee on Forests: "A small fire could easily become a major holocaust before the necessary equipment could get into the area, as there is no real access road into the Berkeley-Oakland Hills.

Northern California awaited the beetle invasion. In 1989, it was estimated that one-third of the eucalyptus trees in the Bay Area would succumb to the beetle.385 The San Francisco Recreation and Park Department felt that 100,000 eucalyptus trees would be killed, but it depended upon how the beetle did in the colder weather of northern California.386 In 1991, the beetle had reached the Bay Area. Four hundred trees had been infested on the Stanford University campus. (In 1984, the introduction of a natural enemy occurred. Phoracanta semipunctata, or longhorned beetle, either came from Chile buried in an eucalyptus pallet, or was transported to the Lake Forest lumberyard in timbers from Australia.370 Regardless of how or where the beetle was introduced, the first infestation was discovered near El Toro, California in October 1984 much to the consternation of eucalyptus growers and lovers of the tree.

4.5 Fire Weather

Fire is a natural part of the California ecosystem. The climate of the “East Bay Hills” is similar to that throughout the Mediterranean with cool, winter rainfall and warm, dry summers. The close proximity of the Pacific Ocean provides a strong maritime influence that includes prevailing moisture laden west winds and fog.

Periodically the predominant weather patterns are reversed due to changes in the Pacific high pressure system. During these periods Foehn winds come across the continental United States and predominate for relatively short periods of time (1 to several days). These hot, dry winds create the worst of our “fire weather” and are locally called “Diablo winds”, taking their name from Mount Diablo located in Contra Costa County. The strong, hot, dry offshore winds increase the chance of ignition and rapid spread of fire by drying out vegetation and other fuels. The gusting winds result in erratic fire behavior and increase suppression difficulties. This change in the normal weather pattern is also referred to as “red flag weather” after the State program to identify periods of high fire potential.

These types of extreme weather events played an important role in the Oakland/Berkeley Hills tunnel incident in 1991.This 1600 acre fire which claimed 25 lives, 150 injuries and caused damages in excess of

[8] Contra Costa County General Plan, 1995-2010. Safety Element. July 1996

one billion dollars exhibited all of the fire weather conditions that are commonly present in the Fall. The moisture laden air that normally sweeps eastward from the Pacific Ocean was replaced the week before the fire by winds flowing westward from the Central Valley of California as a large, stationary high-pressure area settled over the Great Basin east of the Sierra Nevada Mountains.

At the same time, a center of low pressure area stalled offshore. The result was a foehn wind that, at speeds in excess of sixty-five miles per hour, raced down from the crest of the Oakland-Berkeley Hills. Coupled with record high temperatures well into the nineties, the hot, dry winds gusted and swirled through five-years of drought-dry brush and groves of freeze damaged Monterey pine and Eucalyptus groves. Fire season in the East Bay runs from mid-May through mid-October.

The East Bay Regional Park District maintains a comprehensive Fire Weather page with links to all the RAWS (Remote Automated Weather Stations) Weather Station. Current fire weather information can be found at: http://www.ebparks.org/fire/firewx.htm

Table 10. Remote Automated Weather Stations (RAWS) in Alameda and Contra Costa counties

RAWS locations in Alameda and Contra Costa counties			
(RAWS station map)			
Black Diamond (BKD)	**Briones (BNE)**	**Calaveras Road (CRD)**	**Las Trampas (LTR)**
Tabular	Tabular	Tabular	Tabular
Graphical	Graphical		Graphical
Livermore (LIV)	**Oakland South (OSO)**	**Oakland North (ONO)**	**Rose Peak (RSP)**
Tabular	Tabular	Tabular	Tabular
Graphical	Graphical	Graphical	Graphical
Mallory Ridge (MLR)	**Mt. Diablo**		
Tabular	Tabular		
Graphical	Graphical		

4.6 Fire Prevention and Education Programs

Diablo Fire Safe Council

The Diablo Fire Safe Council maintains an office in Oakland with a local consulting firm Amphion Environmental, Inc. DFSC has contracted services for one part-time Executive Coordinator. The DFSC operates in close coordination with all fire fighting and fire protection organizations, local ad municipal governmental agencies, natural resource groups, businesses and private landowners acting as a hub that brings various fuel reduction and fire protections programs together for development and implementation. Significant efforts to date include numerous public education presentations, a FIREWISE workshop, Media Safety Day, bi-monthly Speakers Bureau and quarterly newsletters, fiscal sponsorship and grant development with local groups, grant acquisitions for fuel reduction work and the development of the Fire Action Plan.

Fire Prevention Professionals

Nearly every fire department and district in the two counties sponsors fire prevention and education activities. Some common programs include the CERT and CORE (Citizens of Oakland Respond to Emergencies) programs of Berkeley and Oakland. The mission of the CERT program or Community Emergency Response Training is to provide training in Basic Personal Preparedness, Disaster First Aid, Disaster Mental Health, Fire Suppression, Light Search and Rescue, Responding to Terrorism, and Shelter Operations to residents of Berkeley. Similar programs are common throughout the counties, where the fire department sponsors training in emergency preparedness and first aid.

Most fire departments and districts also maintain annual fire inspections or “weed abatement” programs to comply with either PRC 4291 or locally adopted ordinances. These programs require homeowners to maintain a certain level of fuel clearance around homes and building and fines are established for non-compliance.

Additional programs include school presentations, fair and booth educational events, free smoke alarms and fire extinguishers and city chipping services. The City of Oakland recently passed an Assessment District that will provide chipping services to its Hill Area residents and cities such as Orinda, Berkeley, and Albany offer curbside pickup of green waste. Many other cities may offer similar programs.

California Department of Fire and Forestry

The CDF provides invaluable fire prevention and fire education expertise and materials in Alameda and Contra Costa County communities through interaction with individual citizens, public forums, publications and project work. The CDF’s Delta Camp Crews have been an invaluable resource in accomplishing fuel mitigation projects in the counties.

The California Fire Plan was prepared by the State Board of Forestry and the CDF and provides a framework to assist communities in the funding, development and implementation of Fire Safe plans and Defensible Fuel Profile Zones (DFPZ). The overall goal of the California Fire Plan is to reduce total costs and losses from wildland fire in California by protecting assets through pre-fire management activities and increasing initial attack success. The California Fire Plan has five strategic objectives:

- To create wildfire protection zones that reduce the risks to citizens and fire fighters;
- To assess all wildlands throughout the State, including all SRA. Assessments will include an analysis of all wildland fire service providers – federal, state, local government, and private. The analysis will identify high risk/ high value areas, and determine who is responsible, who is responding, and who is paying for wildland fire emergencies;
- To identify and analyze key policy issues and develop recommendations for changes in public policy. Analysis will include alternatives to reduce total costs and losses by increasing fire protection system effectiveness;
- To have a strong fiscal policy focus, and to monitor the wildland fire protection system in fiscal terms. This will include all public and private expenditures and economic losses; and
- To translate the analyses into public policies.

Federal Programs

The Federal Government does not have a significant presence in Alameda and Contra Costa Counties. The National Park Service owns and manages 4 National Historic Sites and Memorials and the U.S. Fish and Wildlife Service has responsibility for the Don Edwards San Francisco Bay Wildlife Refuge. The U.S. Forest Service or Bureau of Land Management does not own or manage in lands in the East Bay.

4.7 Recently Completed and Ongoing Fire Hazard Reduction Projects

The major landowners in the East Bay have an active record of fire hazard reduction projects. The East Bay Regional Park District, East Bay Municipal Utility District, Contra Costa Water District and many others have developed fire management plans to guide their fuel projects. The following tools for treating vegetation to reduce wildland fire hazard are presently being used by various agencies and individuals in the East Bay:

1. Managed herbivores: Goats, cattle, llamas, horses and sheep
2. Unmanaged herbivores: Deer, grasshoppers and rodents
3. Mechanical fuel modification: logging, mowing, disking and mastication.
4. Prescribed Fire

5. Chemical

In future versions of the Fire Action Plan, a record of these various fuel reduction projects, their acreage and type of fuel removal method should be included in the plan. Currently, no comprehensive list exists for fire hazard reduction projects of all major landowners in the East Bay.

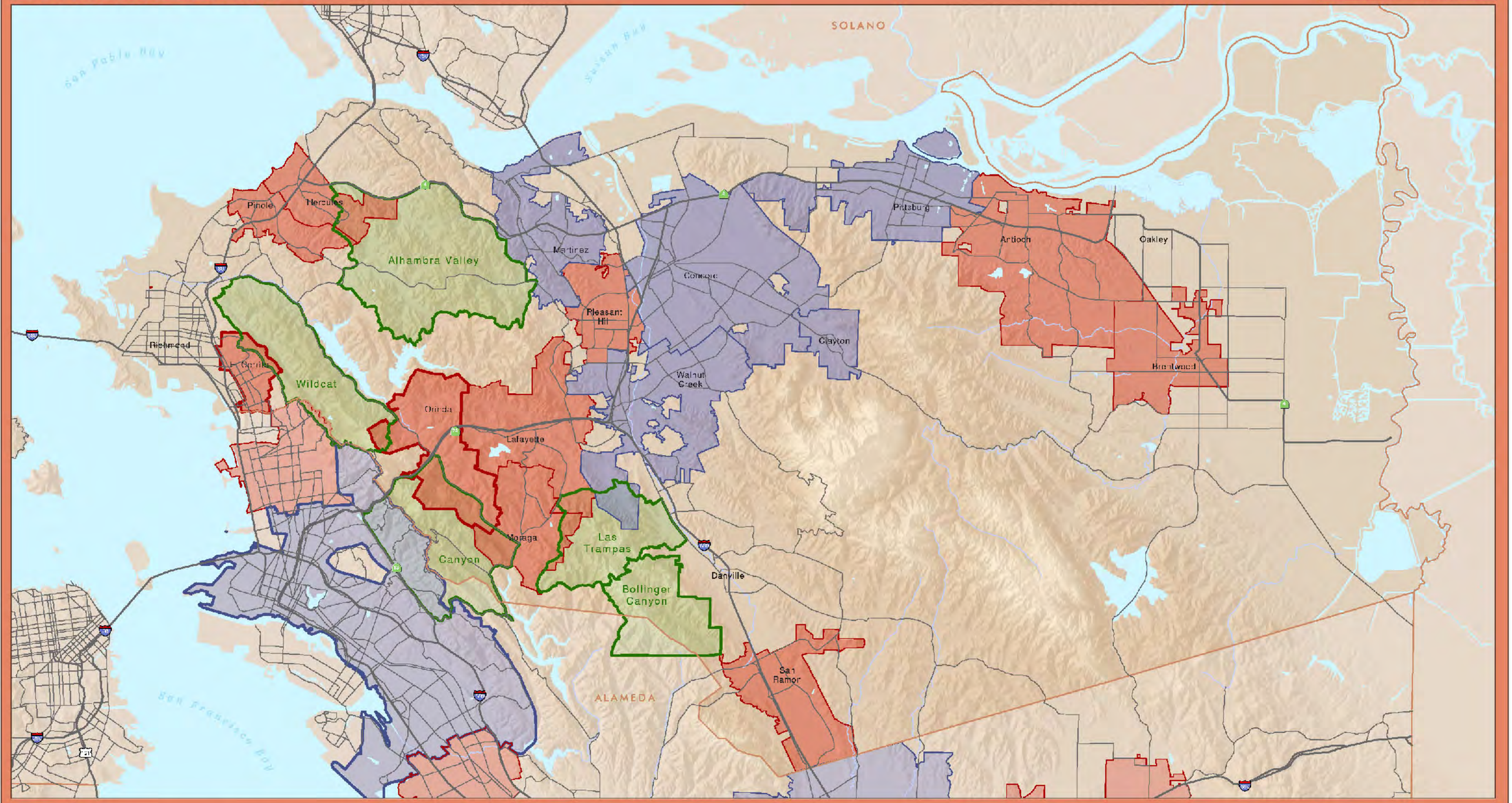
Diablo Fire Safe Council- National Fire Plan projects

DFSC has completed three (3) fire hazard reduction projects with National Fire Plan grants. With the BLM 2003 grant DFSC was able to assist three homeowners groups to complete fuel removal in and around their homes. In the Hiller Highlands area of Oakland, DFSC assisted with two projects, removing a total of eight 30 cubic yard dumpsters through hand removal and felling of vegetation. The projects were a great success because the homeowners were able to leverage the work that DFSC completed to raise additional funds and expand the project. Additional fuel was removed the homeowners initiated great community support for fire safety. In Canyon, a small community of 218 residents, DFSC assisted the group with chipping services of down and dead material and roadside clearance.

Document Name: Contra Costa County

Communities at Risk

DIABLO FIRESAFE COUNCIL



High Fire Hazard Areas

State Ranking 2
- Federal
- State

State Ranking Greater Than 2
- Federal
- State

- Local High Fire Hazard Areas

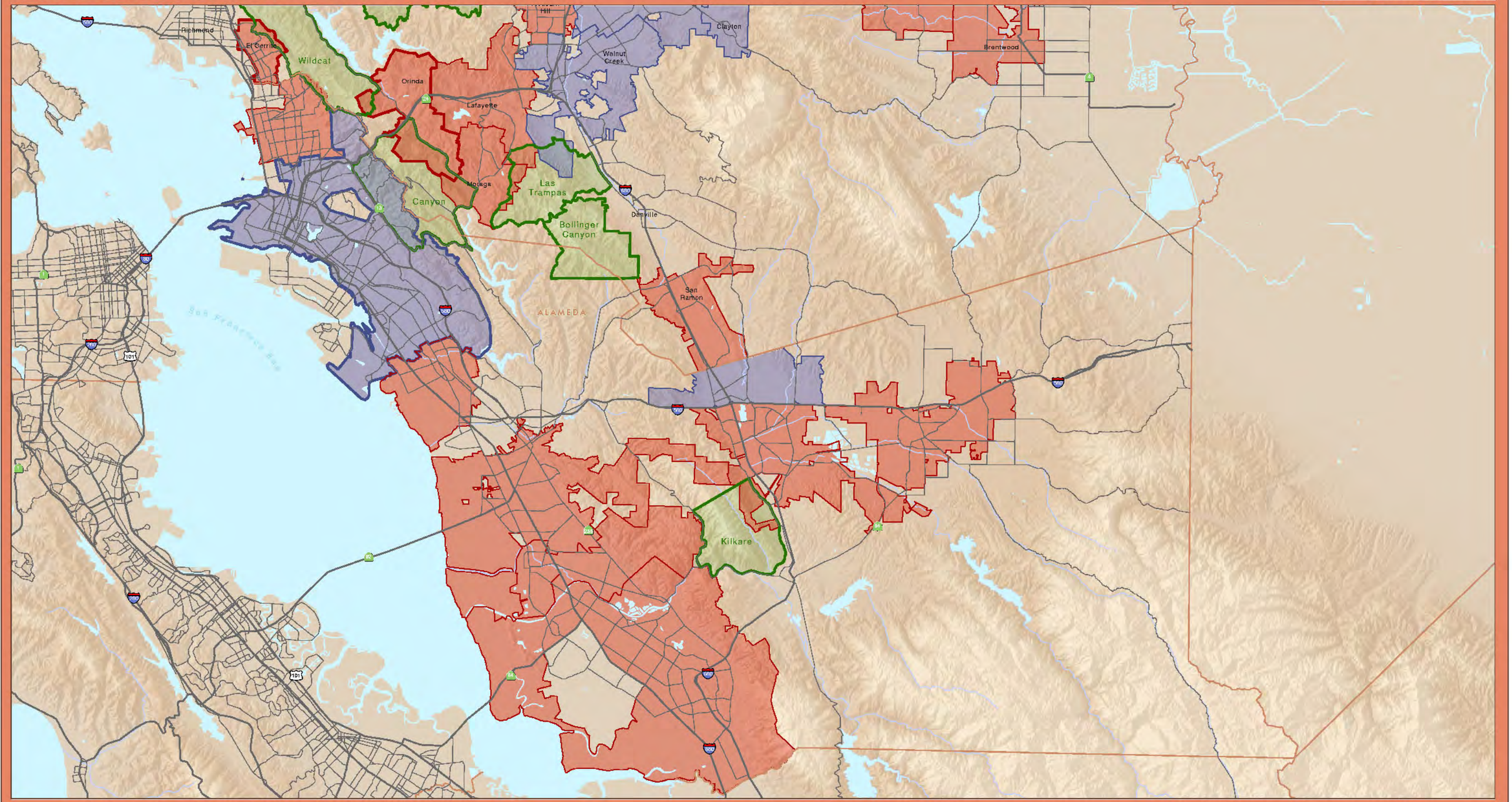
DRAFT

Miles
0 1 2 4 6

Document Name: Alameda County

Communities at Risk

DIABLO FIRESAFE COUNCIL



High Fire Hazard Areas

State Ranking 2
- Federal
- State

State Ranking Greater Than 2
- Federal
- State

- Local High Fire Hazard Areas

D R A F T

0 1.25 2.5 5 7.5 Miles

5. Risk Assessment: Identifying Assets at risk

Fire poses significant risk to the people, structures and resources in Alameda and Contra Costa Counties. The risk is predominantly associated with Wildland-Urban Interface (WUI) areas and associated "Fire threat." Fire threat is comprised of two measures: the chance of a wildfire occurring or "expected fire frequency," and the potential fire behavior. At the time of development of this plan there had been no comprehensive regional assessment of the assets at risk in the two county area. The following risk assessment is based on the best data sources currently available.

The diversity of jurisdictions, geographic settings, agency missions and variety of definitions and mapping techniques for the WUI areas and risk have resulted in many alternative assessments suited for the local, regional statewide, national level identification of the assets of risk. These measures have been used by several recent National and State studies including the National Fire Plan, California Fire Plan and The Changing California Forest and Range 2003 Assessment. These plans provided a starting point for our region. In additional to these studies, local pre-fire planning and other planning documents completed by cities or fire districts for their own jurisdictions have provided the background for the following risk assessment.

National Fire Plan[1]

During the 2000 fire season wildfires burned millions of acres throughout the United States. These fires dramatically illustrated the threat to human lives and development. Under Executive Order, the National Fire Plan was created as a cooperative, long-term effort of the USDA Forest Service, Department of the Interior, and the National Association of State Foresters, to protect communities and restore ecological health on Federal lands.

A major component of the National Fire Plan was funding for projects designed to reduce fire risks to people and their property. A fundamental step in realizing this goal was the identification of areas that are at high risk of damage from wildfire. Federal fire managers authorized State Foresters to determine which communities were under significant risk from wildland fire on Federal lands. From this program also came funding for planning efforts such the DFSC Fire Action Plan.

[1] Excerpt from California Fire Alliance web page

State WUI Fire Risk

The State WUI Fire Risk assessment provided a comprehensive overview of fire risk in the Alameda and Contra Costa County area. In their 2003 Assessment, CDF[2] developed an estimate of fire risk in the WUI that is "consistent with the National Fire Plan methods, but is more refined both in terms of mapping extent and in terms of quantification of risk. A map of Fire Threat was created that distinguished fire-related characteristics from assets, and used spatial rules were applied for determining relative risk of loss (see the FRAP[3] Assessment document Assessment Information Systems). Levels of threats were indicated by terms such as High, Very High, or Extreme, with Extreme being the highest threat. A similar spatial representation of housing unit density based on the 2000 census data was superimposed onto the Fire Threat data.

The basic concept is that housing unit density is a good proxy measure for asset value, people density, and level of community infrastructure at risk to fire damage. All other things being equal, an area labeled as urban is likely to represent more asset/social value than an area of equal size that is labeled rural. Housing unit density was classified into the following categories, where all classes other than wildlands were considered as potential WUI.

Housing Unit Density Classes	
Class	***Description***
Wildland	Less than one housing unit per 20 acres
Rural	One housing unit per five acres to one housing unit per 20 acres
Interface	One housing unit per acre to one housing unit per five acres
Urban	Greater than one housing unit per acre

[2] *The Changing California* Forest and Range 2003 Assessment

[3] The California Department of Forestry and Fire Protection's Fire and Resource Assessment Program (FRAP) assesses the amount and extent of California's forests and rangelands, analyzes their conditions and identifies alternative management and policy guidelines.

5.1 People and Property at risk

Alameda and Contra Costa Counties include a combined population of _____ primarily centered in the 33 cities. Adjacent to these population centers are WUI areas where the risk is greatest. The best current available data of the assessment of the people and property at risk can be found in the 2003 FRAP assessment. However it is important to note that some of the available maps may underestimate the potential number of people and property at risk as there is no nationally recognized fuel modeling method for use on a large scale assessment that incorporates the contribution of structures as ignition or fuel sources. Some local jurisdictions such as Berkeley and Oakland have performed more detailed analysis of the potential hazard levels of residential areas[4], but these have not been performed for the entire two county area.

According the state analysis, the two county area includes structures at risk located in all four class categories: wildland, rural, interface and urban areas. The greatest concentration of population and assets at risk are located at the edge of cities and unincorporated development.

[4] The residential fuel evaluation system (East Bay Hills Fire Hazard Mitigation Plan and Fuel Management Plan, 1995) identified eight critical factors that include structural materials and vegetation characteristics based on identified "neighborhoods" of similar physical attributes. Two structural hazard factors were identified: 1) the presence of combustible roofing, and 2) the percentage of combustible siding/decking/fencing. The urban vegetation characteristics that were selected as final hazard factors include: aerial density, surface density, continuity, flammability, tree height and overall defensible space. Infrastructure issues included roads and water availability. The rating system included a weighted ranking to provide appropriate emphasis on the most critical factors based on fire behavior and structural survival.

People and Property at Risk in Alameda and Contra Costa Counties			
	Level of Threat		
	High	*Very High*	*Extreme*
Alameda County			
Population at Risk			
Urban			
Wildland			
Interface			
Rural			
Structures at Risk			
Urban			
Wildland			
Interface			
Rural			
Contra Costa County			
Population at Risk			
Urban			
Wildland			
Interface			
Rural			
Structures at Risk			
Urban			
Wildland			
Interface			
Rural			

5.2 Businesses / commercial areas at risk

The proximity of the wildland-urban interface to major population centers increases the number of businesses and commercial areas at risk. The two county areas include significant employment centers in most of the 33 cities, as well as smaller commercial areas located throughout the WUI interface.

There is also major regional infrastructure located within the high hazard areas. Should this regional infrastructure be affected by a potential WUI fire the potential impacts would be felt far beyond the county boundaries including the urban centers of San Francisco and San Jose. This infrastructure includes:

- Regional Transportation
  - Major Vehicle Transportation Routes that pass through the WUI Fire Threatened Communities (Interstate Freeways, State Highways and Local Arterial).
  - Bay Area Regional Transit (BART) and other heavy rail transportation used for commuting such as the ACE train from the Central Valley of California.
  - Airports
  - Port of Oakland
- Regional communication centers and transmission towers
- Regional electrical transmission and distribution

5.3 Infrastructure at risk

The intense heat associated with a conflagration can damage the utility systems of the two County area including power, gas, telephone and water. A major fire could cause deterioration of concrete and asphalt pavements, curbs, sidewalks, and drainage structures as well as destruction of above ground wiring for electricity, telephone and cable, poles for lights, and street signals. Older developments with narrow, substandard roads and zones of poor water pressure are likely to experinece greater damage. The 1991 firestorm caused $3 million damage to infrastructure.[5] Ten key water tanks were drained at the peak of the fire as a result of unprecedented demand from fire fighting units, fire prevention measures by homeowners, and broken water service connections in burned homes. Loss of power early in the fire caused by burning power lines and melting underground services, affected water system pumping plants. A total of eight pumping plants, which refilled the water tanks being used by fire fighters, lost power by the first afternoon of the conflagration. Although these were restored by evening, the capacity of the water system pumps was far less than the amount of water used by firefighters and spilled by broken connections.

[5] City of Berkeley Disaster Mitigation Plan Draft 4/28/04

Water storage and distribution for major urban populations

Municipal water supplies are a particular asset at risk in the two county area. The three major water companies (Contra Costa Water District, East Bay Municipal Utilities District, San Francisco Public Utilities Commission) manage over 81,000 acres of watershed lands and serve a population over ____. Issues include not only potential damage to storage, pumping, conveyance and ground recharge facilities, but also post fire soil erosion, increased sediment levels and degradation of water quality. All three of these major water companies have proactive fire management and other resource plans that recognize these valuable assets at risk.

5.3 Natural resources:

Ecosystem Health and Biodiversity

The two county area is rich in natural resources. UWI Interface includes ecologically sensitive areas that support rare, threatened and endangered plants and wildlife. Some of these species are part of a fire dependent ecosystem and are impacted by the altered fire regime in the urban and more developed areas. Others have been impacted by the changes in habitat from exotic, invasive species, habitat fragmentation from development, urban wildland fires with a resulting loss of diversity.

The FRAP assessment provides a snapshot of the two counties fire related risks to basic ecological health using a coarse scale statewide assessment measuring “Condition Class.” This assessment system looks at the departure from natural fire regime; the difference from natural vegetation composition, structure and fuels (using California Wildlife Habitat Relationship); the characteristics of fire behavior, severity and pattern; the range of variation of disturbance agents, native species and hydrologic functions; and the level of smoke production. Three Condition Classes were established with Class 1 being low variation from natural occurring conditions and Class 3 being significant changes of the condition and relative risk to ecosystem health. In Alameda and Contra Costa Counties much of the area is considered Class 2 with isolated areas of Class 3.

Local fire assessments evaluate the region natural resources at risk on a finer scale, but do not use a consistent approach. These local assessments indicate the presence and extent of exotics such as large stands of Eucalyptus or Broom, and the changes in land use and management such as reduction of herbivory that have lead to an increase in more flammable

brushlands converted from former grasslands. Some land manager have found that the fuel load of their grazed grass lands (typically 1/2 ton/ acre) can accumulate up to 4 tons/ acre if left untreated for a single year.[6]

Watersheds, Water and Soils

Alameda and Contra Costa counties watersheds are interconnected with the San Francisco Bay system. Impacts of fire on these watersheds affects not only the land where the fire occurs, but also can have downstream impacts due to potential soil erosion, and reduced water quality (increased sedimentation, turbidity, temperature and nutrient loading). The magnitude of the effect of a fire is dependent on the intensity of the fire, its duration, soil heating and removal of the protective cover of vegetation, litter and duff. The areas of heavy fuels often result in fires of higher intensity, duration and high soil temperatures in contrast to the comparatively lighter fuel load of grasslands.

Air Quality

The Bay Area Air Quality Management District[7] (BAAQMD) manages the air basin that includes all of the two Alameda and Contra Costa. Air quality and smoke control are critical issues. Open burning is generally prohibited in the area with the exception fires such as agricultural burning, disposal of hazardous materials, fire training, and range, forest, and wildlife management. Most allowable fires are limited to Burn Days, as declared by the Air District to help maintain regional air quality.

5.4 Cultural resources:

Historic resources at risk in the two counties include three national historic sites located at the wildland urban interface: the John Muir National Historic Site in Martinez, Eugene O'Neill National Historic Site in Danville, and Rosie the Riveter/ WWII Home Front National Historical Park, Richmond (Port Chicago National Memorial?). The National Register of Historic Places includes 133 entries located alameda County and 35 in Contra Costa County, There are also a many resources listed on the state register of historic places and on local registers. These include structures, places and archaeological sites. There has been no comprehensive survey of potential risk of WUI fire on these many cultural resource

[6] Contra Costa Water, communications with Ed Stewart, Watershed Manager, September 2004.

Recreation assets are at risk in both the short and long term. In the short term burnt areas reduce the recreational and open space values but can also destroy recreational facilities with long term impact. Recovery can take decades especially for mature forests or lakes that are heavily impacted by sedimentation. Recreation areas at risk include two state facilities: Mount Diablo State Park and _____. East Bay Regional Park District (EBRPD) manages over ____ acres of parklands and open space. Other recreation districts include Pleasanton Recreation District, Hayward Recreation District that manage ___ acres of parklands. The 33 cities in the two counties also manage parklands and open space within their jurisdictions. Many such as the EBRPD and State Parks for Mount Diablo have pro-active fire management integrated with other resource and recreation plans.

5.5 Other Economic Resources

The two counties also include areas of economic value that are at risk from WUI fire. Rangeland is located throughout the counties. The FRAP assessment has identified the potential annual value of loss expected due to wildland fire disrupting grazing activities (assuming lands under forage utilization in dollars per acre). Fire in these grasslands represent not only a short term lost of grazing for a 3 year recovery period, but also lost economic value as replacement feed is required.

Two other economic resources in the county have not been comprehensive evaluated for fire threat. The two counties include agricultural areas such as the more than 5000 acres of vineyards in the 24 wineries of the Livermore Valley Wine Country, and orchard lands in the eastern sides of the two counties. The eastern ridgeline in the Altamont Pass area is also one of the major wind production areas in the state. This equipment represents not only an valuable asset at risk, but also is a potential ignition source.

[7] www.baaqmd.govk

6. Risk Evaluation: Identifying Areas of Greatest Threat

6.1 Contributing and Reducing factors

Contributing Factors

Contributing factors include those factors that increase the change of ignition, increase erratic fire behavior and make suppression more difficult.

Fuel, topography and weather increase erratic fire behavior:

- Type of vegetation, age and density:
- Health of vegetation - freeze damage; drought damage; and pest or disease (infestations in the region have included the long horn borer beetle, pitch pine canker and sudden oak death among others).
- Number of homes adjoining open space
- Combustibility of building materials;
- Slope and terrain such as saddles, chimneys or other factors that will intensify fire behavior.
- Weather conditions, “Diablo winds” are the regional continental foehn winds that increase temperature, lower relative humidity and increases wind speed. This shifts from the normal maritime weather pattern of fog and moisture off the Pacific Ocean. Typically this shift in weather condition happens rapidly with little warning and lasts for two to three days. The “Diablo winds” have played a critical role in many of the fires in the region’s history.

A variety of factors increase the change of ignitions:

- Fire History/ Ignitions? Get from OSFM?
  - 1991 Tunnel Fire was just the largest in a series of fires near the Caldecott Tunnel that had occurred since the turn of the century. The costliest fire in the US causing 25 deaths, 150 injuries with destruction of more than 3,000 homes and approximately $1.5 billion in property damage.
- Human access to high fire hazard areas due to adjacent development, roads, trails and increased potential for ignitions.
- Above ground utility lines

- Earthquakes (ignition from downed electric lines or rupture gas mains, plus more difficult suppression due to failure of water mains, damage to roads and overpasses)
- Equipment such as that in wind farms of the Altamont Pass area, and used by workers in construction, maintenance an industry.

Factors that make suppression more difficult:

- Water supply and distribution system
- Distance from fire stations/ suppression forces
- Limited access for fire equipment due to lack of roads or fire trails, or inadequate access due to narrow roads or alignment.
- Presence of hazardous materials including major oil refineries and other industrial and manufacturering uses.
- Other life safety issues such as number of residents to evacuate, vulnerability of communication networks and transportation infrastructure.

In summary the major fire spread issues in the two County area relate directly to:

- House to house fire spread. The density of housing and flammable construction materials increase the potential for structure ignition and decrease the chance of structure survivability.
- Total Fuel Loads Resulting in Dramatic Fire Behavior. Heavy fuel loads of both native brush and exotic species, steep topography and weather result in fire behavior that is difficult to suppress.
- Multiple fire fronts. House to house conflagration and fuel loads are further exacerbated by eucalyptus trees and shake roofs that can result in flaming brands contributing to spot fires and multiple fire fronts that can exceed suppression capabilities.

Reducing factors relate to the ability to prevent, prepare and suppress fires and manage fuel loads.

These include:

- Adequate access for fire suppression services
- Appropriate water supply, distribution and water pressure
- New development regulations or design guidelines for building materials, vegetation fuel loads, access, water and utilities to reduce risk.
- Vegetation management and weed abatement programs
- Re-roofing requirements of Class B or Class A assemblies
- New building codes and development requirements
- Mutual Aid agreements and State Emergency Management System (SEMS)

6.2 Areas of Greatest Threat

Communities at Risk within Alameda and Contra Costa Counties

In 2002 The California Fire Alliance[8] requested that CDFs FRAP generate a list of communities at risk. With California's extensive urban Wildland-Urban Interface situation the list of communities extends beyond just those on Federal lands.

Three main factors were used to determine wildland fire threat to Wildland-Urban Interface areas of California:

- Ranking Fuel Hazards = ranking vegetation types by their potential fire behavior during a wildfire.
- Assessing the Probability of Fire = the annual likelihood that a large damaging wildfire would occur in a particular vegetation type.
- Defining Areas of Suitable Housing Density that Would Create Wildland-Urban Interface Fire Protection Strategy Situations = areas of intermingled wildland fuels and urban environments that are in the vicinity of fire threats.

[8] The Alliance is a cooperative membership dedicated to the support of pre-fire principles and activities ensuring that pre-fire management provides for public and community safety, minimizes costs and loses, and maintains and improves the quality of the environment. The Alliance constitutes an interagency forum for coordinating member agencies' efforts in an integrated fashion.http://www.cafirealliance.org/communities_at_risk.php

The Fire-Threatened Communities in California list includes a total of 1,283 communities. Of those, 843 are adjacent to federal lands (USDA Forest Service, Bureau of Land Management, Department of Defense, etc.) and are indicated as such with an "yes" in the Fed. Threat column. The Hazard Level Code included on the list designates a community's fire threat level with 3 indicating the highest threat.

In Alameda and Contra Costa Counties seven communities were identified at the federal level and 25 at the State level.

Locally Identified Areas of Greatest Risk

Many communities in the two county area have identified local areas of high fire hazards. Some of these were developed in response to the Bates bill as Very High Fire Hazard Severity Zone (VHFHSZ) and others have been designated in their general plans or safety elements. Many of the special districts that manage large areas of land have also completed fire hazard assessments and the identified potential of urban wildland fire impacting both their lands and adjacent populated areas and structures. They have developed and continue to implement fire management plans.

Summary of Communities at Risk in Alameda and Contra Costa Counties

Community at Risk	*Federal Threat*	*State Rating*	*Local Fire Hazard Area Designated*	*Local Wildland Fire Management Plan*
Federal Communities at Risk				
Clayton	Yes	2	No	
Concord	Yes	2	No	
Dublin	Yes	2	Yes	
Martinez	Yes	2	No	
Oakland	Yes	3	Yes	Yes
Pittsburg	Yes	2	No	
Walnut Creek	Yes	2	Yes	
State Communities at Risk				
Antioch	No	2		

Brentwood	No	2		
Berkeley	No	2	Yes	
El Cerrito	No	2/3	Yes	
Hayward	No	2	Yes	
Hercules	No	2		
Fremont	No	2		
Lafayette	No	2		
Livermore	No	2		
Moraga	No	3		
Orinda	No	2/3	Yes	
Pinole	No	2		
Pleasant Hill	No	2		
Pleasanton	No	2		
Richmond	No	2		
San Leandro	No	2	Yes	
San Ramon	No	2	Yes	
Union City	No	2	Yes	
Local Jurisdictions and Special Districts				
Clayton				
Oakley				
Danville	No	No	Yes	Yes
San Pablo				
Alameda County				
Contra Costa County				
Contra Costa Water District	No	No	Yes	Yes
East Bay Municipal Utility District	No	No	Yes	Yes
East Bay Regional Park District	No	No	Yes	Yes
Livermore Area Recreation and Park District				
Hayward Area Recreation District				
Pleasanton Area Recreation District				
San Francisco Public Utiilties Commission				Yes

In addition to formally recognized communities at risk there are several areas that recognize their risks and are actively working to make their communities more fire safe. These include unincorporated communities and neighborhoods such as:

- Canyon
- Ward Creek

5.3 Risk and Loss Estimates

The science of estimating potential losses from wildfires is not well defined. Sophisticated computer programs, such as FARSITE, can be used to model potential fire spread. However, the models are expensive to develop and have only been used in discrete portions of the two Counties. We can also look to the losses that occurred in our last major fire, the Tunnel Fire of 1991 and project potential impacts to gain an appreciation of the type of loss that could occur..

Losses from the 1991 Oakland/Berkeley Hills "Tunnel" Fire[9]

"A substantial fire occurred in the North Oakland hills in 1970 that consumed 200 acres and destroyed 37 homes. Regarding this fire, the City of Oakland's original safety element prophetically stated that "fortunately [a] disaster has not occurred but the potential for such a disaster is still real." In the morning of Sunday, October 20, 1991, flames broke out in a residential canyon west of Grizzly Peak Boulevard and the Caldecott Tunnel. The flames—fueled by record-high temperatures, five years of drought conditions, freeze-damaged groves of trees, and strong, hot, winds—leapt quickly and easily across parcels. In little more than 15 minutes, the fire had gone out of control. It is said that during its first three hours, the fire consumed one house every 11 seconds. It took more than 1,800 fire personnel using over 400 pieces of equipment, including 20 helicopters and airplanes, to subdue the fire. The conflagration—which became known as the Oakland/Berkeley Hills firestorm, or the Tunnel fire—was not officially declared under control until 8 am on Wednesday, October 23; by then, it had become the costliest wildfire in U.S. history, causing 25 deaths, 150 injuries, the destruction of more than 3,000 homes, and approximately $1.5 billion in property damage."

Potential Loss Estimate

The City of Berkeley in their Disaster Mitigation Plan estimate potential losses by calculated the impact if the 1923 Berkeley fire were to recur today. A repeat of this fire would cause

[9] City of Oakland. Draft Safety Element. August 2004.

significantly more damage in Berkeley than the 1991 Tunnel fire. By superimposing a historical map onto the current day structures of Berkeley using the City's Geographic Information System, they found that "3,272 structures are located in the footprint of the 1923 fire. These structures include single-family homes, multi-family residences (many of which house UC Berkeley students), and stores, restaurants, and offices central to downtown Berkeley. If a fire occurred today that burned the same area, the loss to structures would exceed $1.0 billion, nearly one-eighth of the total value of structures in Berkeley. Destruction of contents in all of the homes and businesses burned could increase the losses by another $500 million to $1.0 billion. The costs of fighting this fire could easily run into hundreds of millions of dollars for the City, and huge tracts of infrastructure would be destroyed. The losses of electricity poles and lines to PG&E, for example, would be enormous. Efforts to stabilize hillsides after the fire to prevent massive landslides would also add costs.

"While the financial losses from either of these loss estimates are staggering, the social impacts can not be evaluated with a dollar figure. As the City of Berkeley summarized: "Thousands of families would be homeless following such an event, losing all of their possessions. Many more would need short term shelter while the fire was burning. Residents and firefighters could be killed, especially in difficult to access areas. Local, independent businesses would disappear forever. A large portion of the city would need to be entirely rebuilt. In short, the entire face of north-east Berkeley would be completely changed."

<u>Other ideas related to evaluating risk – can we find information related to these:</u>

- *Cost of damage versus cost of mitigation*
  - *Damage vs. suppression costs*
  - *Analysis of clean up – water supply clean up EBMUD?*

7. MITIGATION PLAN: POSSIBLE ACTIONS TO TAKE

7.1 Overview:

In Alameda and Contra Costa Counties there are a wide variety of existing plans and programs that identify actions that could be used to mitigate the risk related to urban wildland fire. These *possible actions to take* are included in fire management plans, general plans, safety elements, fire department public education programs. They represent the range of actions that will be further prioritized in Chapter 9 for priority actions.

7.2 Goals

The goals of these *possible actions to take* are to reduce potential damage and improve effectiveness in one of more of the following four areas:

- Public and fire fighter safety – reduce injury and loss of life; protect pubic from hazard associated with urban-wildland interface fire
- Reduced structure ignitability - reduce damage to and loss of homes and other man made structures and facilities
- Natural resource protection – reduce damage to natural resource from fire and from mitigation measures.
- Effective and efficient use of public and private resources – effective suppression forces, mitigation funds, volunteer efforts etc., e.g. mitigation actions that work.

7.3 Action Plan Framework:

The action plan includes eight areas of Possible Actions to Take excerpted from various city and county sources including General Plans, Safety Elements, and existing fire safety and mitigation programs. These actions address the four traditional areas of emergency planning of: assessment, prevention/ mitigation, preparedness, and response. They also cover the traditional three “Es” of prevention: education, enforcement and engineering.

The Potential Actions have been organized into eight areas including:

1. Information, Education and Collaboration
2. Planning for New Development
3. Enforcement in Existing Development

4. Ignition Prevention
5. Structure Survivability and Reduction of Ignitability
6. Reduce Vegetative Fuel Load (Balance with Natural Resources Needs)
7. Enhance Suppression Capability and Public Safety
8. Legislative and Policy Related Support

The actions are not organized by priority order, and vary greatly in their scope, cost, specificity and sustainability. Agencies names have been included after some action items to identify a source for further information and program specifics. The actions are presented to offer ideas of potential action that can be used throughout the two county area. Some actions can be part of a multi-jurisdiction response. While others can only be undertaken by landowners or agencies having jurisdiction. Together the possible actions offer a wide range of responses. The plan recognizes that unique responses may be developed in the future to respond to unique opportunities or unforeseen issues. Diablo Fire Safe Council recommends the Plan remain open to new ideas, community partners and implementation opportunities that can advance their mission and vision.

Education, Information and Collaboration

Action E-1 *Awareness of Fire Hazard*	• Education programs – awareness and agency mitigation actions (EBMUD[1],EBRPD[2]) • Fire Department shall continue to expand public education, outreach and inspection programs (Berkeley[3]) • Volunteers to assist with trail patrol, public information, park closures (EBRPD) • Develop a set of materials to provide relevant information. (Berkeley)

Action E-2 *Fire Modeling*	• Completion of fire modeling for new development adjacent to high fire risk areas in order to determining which mitigation measures are appropriate to minimize fire hazard (San Ramon[4])

Action E-3
Collaboration
	• Work collaboratively with other jurisdictions and agencies to reduce wildfire hazards in San Leandro with an emphasis on effective vegetation management and mutual aid agreements. Continue to participate in multi-jurisdictional task forces and programs that address wildfire hazards in the East Bay Hills. (San Leandro)
	• Continue to participate in multi-jurisdictional programs and task forces, such as the Hills Emergency Forum and Diablo FireSafe Council, that work to reduce the threat of wildfires. (Oakland, EBRPD, EBMUD, CCWD)
	• Develop an emergency preparedness plan in coordination with other public agencies. (Dublin)
	• Foster and participate in:
	  • Emergency Planning & EOC Training exercises both interagency and for agency staff.
	  • Cooperative training opportunities
	  • Cooperative Interagency Associations such as the: Alameda County Fire Chiefs Association, Contra Costa County Fire Chiefs Association, County Fire Prevention Officer Associations, Training Office Associations.
	  • Environmental Roundtable (EBRPD, EBMUD, LBNL)
	  • Collaboration between neighborhood associations and agencies (Claremont Canyon, CDF/CDC crews and various neighborhood fuel reduction projects, etc.)

Action E-4 *Hazard Information Assessment*	• Compile and disseminate information about fire threat • Encourage owners of private schools and other privately owned high-occupancy structures to assess the safety of their buildings. (Berkeley) • Update of vegetation mapping and fire hazard assessment (EBRPD)

Action E-5 *Public Presentations*	• Continue to offer fire-prevention and fire-safety presentations and training to the public. (Oakland[5])

[1] Eaat Bay Municipal Utility District. Fire Management Plan, Oct 2000
[2] East Bay Regional Park District. Personal Communication 9/16/04 EBRPD Fire Department.
[3] City of Berkley, The Berkeley Disaster Mitigation Plan, June 2004.
[4] City of San Ramon. General Plan, Safety Chapter 9-12 through 9-14. July 2001. Voter Approved 3/5/02
[5] City of Oakland, Safety Element. November 2004.

Action E-6 *Citizen Training*	• Continue to sponsor the formation and training of CORE/ CERT teams. (Oakland, Berkeley)

Action E-7 *Hazard Disclosures/ Emergency Preparedness*	• Expand existing programs to enable, encourage, or require property owners, managers, and realtors to provide information to tenants and home buyers about emergency preparedness, evacuation routes, and home safety. (Berkeley) • Promote the installation of early warning fire alarm systems. (Berkeley)

Planning For New Development

Action P-1
Restrict New Development
	• Restrict development in areas of high UWI fire hazard. (Livermore[6])
	  • Plan new development with wildland fire hazards in mind In areas in which the elimination of fire hazard would require the following measures shall not be developed:
	  (a) major modification of existing land forms.
	  b) significant removal of or potential damage to established trees and other vegetation
	  c) exposure of slopes which cannot be suitably re-vegetated.
	  • In order to ensure fire safety, development shall be restricted in areas with steep terrain.
	• Require special precautions against fire as a condition of development approval in the western hills outside the primary planning area. (Dublin)

Action P-2 *Conform to Wildland Urban Interface Code*	• Review all proposed development in wildland-urban interface areas for conformity with the Wildland Urban Interface Code (WUICC) as periodically amended, utilizing specialists in WUIC review and implementation. (Livermore)

Action P-3 *Use best development & site design*	• All development wildland-interface areas shall utilize the best development and site design practices identified by the Fire Department as required in the WIUCC as periodically amended. (Livermore)

Action P-4 *Time development with new fire facilities*	• Time new development with city to coincide with establishment of adequate fire control facilities and equipment[7] • For development in the vicinity of Schaefer Ranch Road, fire sprinklers and other measures shall be provided in proposed structures as conditions of approval, in lieu of fire station improvements. However, it is the City's intent that a full fire station shall be provided in the Western Extended Planning Area before any substantial development proceeds beyond the general vicinity of Schaefer Ranch Road. A fire station site shall be reserved in the general vicinity of • Ranch Road near Interstate 580. (Dublin) • Impact of development on adjacent land-owners and fire districts that manage adjacent lands or may be first responders for adjacent SRA lands (EBRPD, EBMUD, CCCWD)

• Action P-5 • *Vegetation Management Program for each new development*	• New development in urban/wildland interface to prepare a brush clearance and vegetation management program • Development projects adjacent to open space shall incorporate firebreaks to minimize damage.(Concord)

Action P-6 *Access for emergency equipment & Evacuation*	• Require subdivision and zoning regulations to include street widths and clearance areas sufficient to accommodate fire protection equipment and emergency vehicles

[6] City of Livermore General Plan Public Safety Element, 2003. www.ci.livermore.ca.us

[7] City of Union City. Health and Safety Element, City of Union City . 2002 HS-14- 15.

	• Consider fire safety, evacuation, and emergency vehicle access when reviewing secondary unit or other proposals to add residential units in these areas. (Berkeley) • Maintain City standards for minimum width and vertical clearance, and ensure that new driveways and roadways meet minimum standards of the Uniform Fire Code or subsequent standards adopted by the City. (Berkeley)

Action P-7 *Fire resistant landscape, building materials and green belts*	• Require fire-resistant landscaping, building materials and greenbelt zones for developments on the periphery of fire hazard areas. • A fire protection buffer zone shall be provided around the perimeter of residential development situated adjacent to undeveloped open space land. (Dublin) • Maintenance of firebreaks established in connection with development shall be the responsibility of the adjacent private property owners.(Concord)

Action P-8 *New Fire Training facility*	• Work with the Fire Protection District on planning for a new training facility at an appropriate location where neighborhood impacts would be mitigated (San Ramon)

Action P-9 *Firefighting*	• Ensure that the planing and design of development in high fire hazard areas minimizes the risks of wildfire ands includes adequate provisions for vegetation management and emergency access and firefighting. (development review, fire safe roofing ordinance, engineering development standards) (San Leandro)

Action P-10 *Access and Egress*	• Continue to review development proposals to ensure that they incorporate required and appropriate fire-mitigation measures, including adequate provisions for occupant evacuation and access by fire-fighting personnel and equipment.

Action P-11 *Long-term open space fuel mitigation and management*	• Provide mechanisms to ensure long term open space fuel mitigation and management. This may include endowment, assessment district, homeowner association dues. • Educate homeowners about community open space fuel management practices.

Enforcement Actions in Existing Development

Action Ex-1 *Weed Abatement* *"Defensible Space"*	• Weed abatement, brush clearance and vegetation mgmt for all properties (see standards.) • Continue and expand existing vegetation management programs by several thousand properties annually. (Berkeley) • Alameda County Fire Department works with property owners to maintain "defensible space" around homes and to require the removal of flammable vegetation and combustible litter. The Uniform Fire Code specifies additional requirements that are enforced by the City's Building Department (San Leandro[8]

Action Ex-2 *Adopt and Enforce Fire Code*	• Work with Co Co Consolidated on a regular basis to evaluate development proposals and enforce the fire code in existing buildings. (Walnut Creek) • Adopt and enforce building and fire prevention codes that require property owners to reduce wildfire hazards on their properties. (San Leandro)

Action Ex-3 *Fire Resistant Construction, Smoke Detectors, Fire extinguishers*	• Continue to enforce provisions under the local housing code requiring the use of fire-resistant construction and the provision of smoke detectors and fire-extinguishing systems. (Oakland) • Create mechanism to enforce provisions of the building code that require the installation of smoke detectors as a condition of granting a permit for any work on existing residential and commercial buildings over $1000, and as a condition for the transfer of property. (Berkeley)
Action Ex-4 *Street Address Numbers*	• Enforce the chapter of the municipal code regulating the location and design of street-address numbers on buildings. (Oakland)
Action Ex-5 *Assessment District Programs*	• Implement and administer the 2004 wildfire-prevention assessment district for the Oakland Hills, and carry out the programs funded by the district, including fire-safety inspections of private properties, vegetation management practices, roving firefighter patrols on high fire-hazard days, and public education efforts. (Oakland) • Consider reestablishing a Fire Hazard Abatement District to fund reduction in fire risk in existing properties. (Berkeley)

[8] City of San Leandro General Plan adopted May 2002. Chapter 6 Envirionmental Hazards page 6-4. And 6-31

Structure Survivabilty and Ignitability Actions

Action St-1 *Roofing*	• Require safe roofing and other fire prevention standards for development in high fire hazard areas by maintaining a fire safe roofing ordinance in coordination with the local Fire Protection District. (San Ramon) • The City also requires fire-resistant roofing materials in new construction and major remodeling projects. (San Leandro) • Continue to enforce the City's Fire Safe Roof and Spark Arrestor ordinances. (Dublin)

•

Action St-2 *Fire Sprinklers*	• Require sprinkler systems and or smoke detectors according to UFC stds. (Union City) • Reduce fire risk in existing developed areas by requiring all existing buildings over 75 feet tall to install a sprinkler system and promote fire extinguishing systems in all buildings. (Berkeley) • Develop a comprehensive sprinkler control ordinance. (Walnut Creek) • Require sprinkler in new homes located more than 1.5 miles from a fire station. (San Ramon) • Require sprinklers in all mixed-use development to protected residential uses from non-residential uses that typically pose a higher fire risk. (San Ramon) • Enact a high hazard ordinance specifying sprinklers for all habitable structures beyond five minutes response time from a station. (Dublin)

•

Action St-3 *Fire Retardant Building Materials*	• Harden structures to increase survivability from wildland fire. • Site design features and fire retardant building materials to reduce the risk of fire (San Ramon) • Incorporate all applicable requirements for fire safety into all new structures (Concord)

Action St-4 *Updated Fire Codes*	• Adopt and amend as needed updated versions of the California building and fire codes so that optimal fire-protection standards are used in construction and renovation projects. (Oakland)

Action St-5 *Reduce structure ignition following earthquake*	• Create a mechanism to require the bracing of water heaters, flexible couplings in gas appliances and the anchoring of houses to foundations to reduce fire ignitions following earthquakes.

Action St-6 *Retrofit standards and incentives*	• Recommend adoption of a retrofit standard for single-family homes, small multi-unit apartment buildings and soft-story buildings, commercial concrete tilt-up, non-ductile frame, and wood frame buildings. • Investigate and adopt financial, procedural, and land use incentives for owners of soft-story buildings to facilitate retrofit.

Ignition Prevention Actions/ Preparedness

Action I-1 *General Prevention*	• Reduce the potential for fires in potential high-risk areas. (concord)
Action I-1 *Monitor Fire Weather*	• RAWS stations and Red Flag Warnings (EBMUD, EBRPD Local FPD
Action I-2 *Fire Weather Patrols*	• Continue local patrolling during periods of high fire weather (EBMUD, Berkeley, Oakland, EBRPD)

Action I-3
Fire Weather Restrictions
	• Closure and restrictions (EBMUD, EBRPD, CCWD, LARPD, Mt Diablo)
	  • establish a fire danger rating activity matrix with precautions that are taken
	  • Coordinate closure information distribution with other agencies
	• Restrict use of equipment and actions

Action I-4 *Warning Systems*	• Continue to conduct monthly tests of the alerting and warning system's outdoor sirens, coordinating them to the extent possible with those of neighboring jurisdictions. (Oakland)
Action I-5 *Evacuation routes*	• Consistent with the city's pedestrian master plan, develop unused pedestrian rights-of-way in the Oakland Hills as walkways to serve as additional evacuation routes, and provide and maintain lighting facilities for new and existing walkways. (Oakland) • Identify strategic roadways for roadside clearance (HEF)
Action I-6 *Gas Shut off*	• Establish criteria for the installation of gas shutoff valves in new and existing construction, to reduce the risk of post-earthquake fires. (Berkeley)
Action I-7 *New Fire Trails*	• Assist the Panoramic Area Association to obtain funding to study the feasibility of building a fire trail on the south side of the Hill including evaluation of alternate routes. (Berkeley)
Action I-8 *Assessments and Available/ New Technology*	• Utilize GIS and other new technology, such as remote sensing, to assess hazards and communicate effectiveness of strategic mitigation proposals.

Suppression & Response Actions

Action SR- 1 *Fire Protection and Emergency Services*	• Minimize threats to life and property from potential fire hazards by ensuring the provision of high quality and comprehensive fire protection and emergency services. (Concord)

Action SR-2 *Pre-suppression coordination*	❑ Pre-Annexation Agreement with adjacent cities (EBMUD) Annual maintenance of fire roads • Equip and train for suppression of wildland fires • Mutual aid support for suppressing fires on contiguous properties • Water storage tanks and defensible spaces available for assistance in fighting fires • Access to water for fire fighting • Maintain district fire breaks adjacent to existing or future subdivisions. • Fire Response Maps to facilitate assessment and deployment of resources and minimize impacts associated with suppression activities. (EBMUD, EBRPD) • Post suppression management (EBMUD) • Coordinate plans and activities with the Contra Costa County Fire Protection District (CCCFPD) (Concord) • Identify multi-agency fire management units and strategic fire mitigation projects (EBRPD).

Action SR-3 *Access/ Roads/ Fire Trails*	• Maintain fire roads and keep them passable at all times (Union City) • Assure provision of adequate fire equipment access to all developed and open space areas (EBMUD) • Walnut Creek Park and Open Space maintains hillside fire trail network (Co Co Fire does work on cooperative basis – annual grading). (Walnut creek) • Ensure that sufficient access for fire protection services is available. (Concord)

Action SR-4 *Fire Stations/ Staffing & Capital Equipment Evaluation*	• Periodically conduct capital equipment evaluation to determine acquisition and replacement priorities (San Ramon) • Periodically assess the need for new or relocated fire stations and other facilities, changes in staffing levels, and additional or updated supplies, equipment, technologies and in-service training classes. (Oakland) • Prepare and implement a plan for facilities and personnel at one or more fire stations east of Tassajara Road, as a condition of development approval in the Eastern Extended Planning Area. (Dublin) • Cooperate with the CCFPD regarding the siting of fire stations. (concord)

Action SR-5 *Response Time*	• Strive to meet a goal of responding to fires and other emergencies within seven minutes of notification 90 percent of the time. (Oakland) • Maintain a response time….where this standard cannot be met, and/ or where severe wildland fire hazards exist, require special mitigation measures for fire prevention • Prior to project approval require written verification from

	SRVFPD on adequate response time to project and distance from existing stations.

Action SR-6 *Mutual Aid & Coordinated Responses*	• Continue to participate not only in general mutual-aid agreements but also in agreements with adjoining jurisdictions for cooperative response to fires. (Oakland) • Initial attack fire suppression with mutual aid agreements, SRA CDF primary responsibility for wildland prevention and suppression (EBMUD) • Participate in RIMS (resource incident management system) • EOC (city and county SEMS) • Continue to train staff and provide personnel for interagency (Federal and Statewide) Incident Management Teams

Action SR-7 *Water*	• Monitor water fire flow capability through the city and improve water ability if any locations have flows considered inadequate for fire protection. Along with the East Bay Municipal Utility District, review the extent to which recommendations from the district's 1994 infrastructure policy study on needed improvements to the water distribution system were implemented. (Oakland) • Along with EBMUD, review the extent to which recommendations from the utility's district's 1993 study on its preparation and response to the 1991 firestorm were implemented. (Oakland) • Provide adequate water for fire suppression for new development in accordance with City standards for minimum volume and duration of flow. • New development shall have water systems which meet CCFPD fire flow requirements or shall provide adequate on-site water storage. (Concord) • Rural water supply (10,000 gal tanks for rural structure development) and identification of water draft points

Action SR-8 *Wildland Fire Training & Equipment*	• Continue to sponsor and participate in regional Wildland training such as at Camp Parks (EBRPD, CCFPD,) • Equipment and new technology for wildland fire fighting. Water tenders can be a limiting factor. • Storage for equipment and training for urban fire fighters in equipment operation and techniques. • Enhance ability to respond to wildland fires with locally available helicopters (EBRPD)

Action SR-9 *Communications*	• Inter-operability of narrow band radios and available channels for emergency communications used throughout two county area. • Compatibility of the various communications systems (800 mH, UHF, VHF, low band)

Reduce Fuel Loads

Action F-1
Vegetation management
	• Reduce risk of loss form brushfires in undeveloped hillside areas of city through (Union City)
	  • Landscaping with fire resistant plants between residential and open space areas.
	  • Weed control
	  • Controlled burns
	  • Placement of trails and roads to serve as firebreaks.
	  • New development within the hillside area will only be permitted where studies in support of the specific plan for that area demonstrate that fire safety can be assured.
	  • City Fire Department to work with landowners top ensure adequate land management practices are employed to minimize wildland fire hazard.
	• Open space lands shall be managed to minimize the intensity of fire and the extent of the wildland fires. (Concord)
	• Provide firebreaks, discing around residential areas, selective herbicide spraying. (Walnut Creek

Action F-1.1 Prescribed Fire	• Cooperate with SRVFPD to reduce risks through controlled burning and fuel removal (San Ramon?) • Use prescribe fire where appropriate for fuel hazard abatement (EBRPD, EBMUD) • Continue to provide prescribe fire support between local fire agencies (specific agency projects receive multi agency personnel participation). • Management strategy for water shed management. • Work with local agencies, state and federal regulators to use prescribe fire where appropriate. • Work toward solutions of existing barriers – potential for fire damage, environmental concerns, funding, multi-year monitoring, etc.

Action F-1.2 Grazing	• Use select herbivory (goats, sheep, cattle horse) as appropriate to manage fuel levels. • Maintain a fire control system that minimizes the damaging effects of grazing on open space lands. (Walnut Creek)

Action F-1.2 Hand Removal	• Use select hand removal techniques (Contract crews, CDF/ CDC crews, EBCCC crews, fire fighters, volunteers etc.) as appropriate to manage fuel levels.

Action F-1.2 Mechanical	• Use select mechanical treatments as appropriate to manage fuel levels. Match equipment to environmental conditions. • Encourage multi-agency coordinated projects to maximize use of specialized equipment when it is available in the region (brontosaurus, high guide tree removal systems)

Action F-1.2 Herbicide	• Use select herbicide treatment as appropriate to manage fuel levels. (e.g. stump treatment to prevent resprout)

Action F-2 Manage Creekside Vegetation	• Manage vegetation along San Leandro Creek to reduce wildfire hazards (San Leandro)

Action F- 3 Strategic Fuel Management Zones (FMZ)	• Collaboratively identify strategic fuel management zones (ridgetop fuel breaks, strategic roadside clearance, fuel management zones etc.) in association with local fire protection jurisdictions as a part of pre-suppression coordination. (HEF) • Encourage coordinated multi-owner projects to manage strategic FMZs regardless of ownership. (HEF)

Action F- 4 Habitat Enhancement	• Use fuel mitigation treatments for habitat enhancement where appropriate. • Work with local agencies, state and federal regulators to reintroduce fire into ecosystems where appropriate. • Work toward solutions of existing barriers – potential for fire damage, environmental concerns, funding, multi-year monitoring, etc. • Manage fuel loads to return/ modify local habitats to survivable fire regime (moderate frequency with low to moderate intensity fires).

Legislation and Policy

Action LP-1 *Legislative and Policy Support*	• Support local, state and federal legislation and policy consistent with Firewise and Sustainable Community Principles

Action LP-2 *Environmental Regulations*	• Collaborate with regulators on options to balance environmental concerns and urban wildland interface fire safety issues. • Work toward solutions of existing barriers – potential for fire damage, environmental concerns, funding, multi-year monitoring, etc.

Action LP-3 *Project Funding*	• Long term funding for fuel management projects (including monitoring) • Communicate need for multi-year funding to State and Federal granting agencies.

Action LP-4 *Community Incentives*	• Work with private industry to create incentives for public/private partnerships to increase community fire safety (plant materials, building materials, insurance, real estate etc.)

8. REGULATORY ISSUES

There are a variety of local, state and federal regulations that relate to possible mitigation actions. Many of these regulations are focused on protection of the environment. They primarily come into play when mitigation actions make physical changes, such as vegetation management to reduce fuel loads and construction of roads or structures. Regulations modify how, when, and the extent of mitigation actions can occur. The following laws apply to many of the “possible actions to take” and need to be addressed as a part of the implementation projects.

California Endangered Species Act (CESA)

The California Endangered Species Act (CESA) (Fish & Game Code §§ 2050, et seq.) generally parallels the main provisions of the Federal Endangered Species Act and is administered by the California Department of Fish and Game (DFG). The State maintains its own list of endangered. CESA prohibits the "taking" of listed or “candidate” species except as otherwise provided in §86 of the Fish and Game Code defines "take" as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) has been called the State’s most important environmental law. CEQA requires state and local agencies to assess the environmental effects of projects they intend to construct or permit and to consider these affects in their decision-making. CEQA is implemented by the preparation of environmental documents including EIRs, mitigated negative declarations, and negative declarations. Some types of projects, including emergency projects, are exempt from CEQA. Emergency projects are defined in Section 15269 of the CEQA guidelines.

Clean Air Act

Basic elements of this act include setting national ambient air quality standards for major air pollutants and hazardous air pollutants. The act also establishes state attainment plans, motor vehicle emissions standards, stationary source emissions standards and permits, acid rain control measures, stratospheric ozone protection, and enforcement provisions.

Clean Water Act Section 401 (Water Quality Certification)

• Under Section 401 of the Clean Water Act, the discharge of dredged or fill material into waters of the U.S. must not violate state water quality standards. Requires permitting by the Regional Water Quality Control Board.

Clean Water Act Section 404

• Section 404 of the Clean Water Act establishes a program to regulate the discharge of dredged and fills material into waters of the United States, including wetlands. Activities regulated under this program include fill for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and conversion of wetlands to uplands for farming and forestry. The USACE is responsible for permitting these activities.

Endangered Species Act (ESA)

• Requires Federal agencies are required to undertake programs for the conservation of endangered and threatened species, and were prohibited from authorizing, funding, or carrying out any action that would jeopardize a listed species or destroy or modify its "critical habitat" (section 7).

Executive Order 11988 - Floodplain Management

Requires evaluation of the potential effects of any actions taken in a floodplain to ensure that the planning programs and budget requests reflect consideration of flood hazards and floodplain management. The E.O. also prescribes procedures to implement its policies and requirements.

Executive Order 11990 - Protection of Wetlands

Seeks to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values they provide. Requires federal agencies to assess impact of projects on wetlands and minimize potential damage.

Executive Order 12898 – Environmental Justice

Requires federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low income populations.

Fish and Wildlife Coordination Act

Ensures that wildlife conservation receives equal consideration and is coordinated with other features of water resource development programs. Requires the coordination of actions and projects with the U.S. Fish and Wildlife Service (FWS) and the affected state fish and game agency. This consultation and coordination addresses ways to conserve wildlife resources by preventing loss of and damage to such resources, as well as to further develop and improve these resources.

National Environmental Policy Act (NEPA)

Requires federal agencies to consider the effects of their proposed action on the “human environment” before deciding to fund and implement the action. The NEPA review process provides for several levels of environmental review and documentation.

National Historic Preservation Act

The intent of the NHPA is to ensure that federal agencies consider historic properties in their project planning. The primary components of the Act are the expansion and maintenance of the National Register for Historic Places as the nation’s official list of historic properties worthy of preservation, and creation of the Advisory Council of Historic Preservation and state historic preservation offices. The act also requires each federal agency to establish a historic preservation program, designate a Federal Preservation Officer, and consider the effects of their undertakings on historic properties.

Archaeological Resources Protection Act

Protects archaeological resources and sites, which are on public lands and Native American lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources and data, which were obtained before October 31, 1979.

Resource Conservation and Recovery Act

RCRA (pronounced "rick-rah") gives EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also sets forth a framework for the management of non-hazardous wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. RCRA focuses only on active and future facilities and does not address abandoned or historical sites.

Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act of 1899 prohibits the unauthorized obstruction or alteration of navigable waters of the United States. Examples of activities requiring an USACE permit (33 CFR 322) include building a structure in or over any waters of the United States, excavation or deposit of material in such waters, and various types of work performed in such waters, including fill and stream channelization.

Native American Graves Protection and Repatriation Act (NAGPRA)

This law specifies the requirements for the identification and appropriate disposition of human remains, funerary objects and sacred objects of cultural patrimony and protection of Native American graves and other cultural items located on federal and tribal land.

Farmland Protection Act

Requires identification of proposed actions that would affect any lands classified as prime and unique farmlands. The U.S. Natural Resources Conservation Service (formerly Soil Conservation Service) administers this act to preserve farmland.

Key Environmental Permit and Approval Issues that May Apply to Vegetation Management for Fuel Reduction

It is often challenging to understand if a proposed fire mitigation project requires environmental review, approvals or permits. While it may not seem like a small fuel removal project should require an Environmental Impact Report or special permit the project may include actions that could fall under the jurisdiction of a regulatory agency. It is important to consider before you begin work if the project could cause an undesirable impact or break a law. The following matrix provides a quick review of potential issues related to specific types of fuel reduction techniques often used in fuel reduction projects.

Diablo Fire Safe Council is in the process of developing a guideline that will identify:

- Key issues that often apply fuel reduction projects
- Who regulates these issues and the types of permits that may be needed
- Potential environmental Impacts
- List of key contacts for permit approval and agency review of projects in the two county area.

The guideline will parallel CEQA areas of concerns and addresses: aesthetics, air quality, biological resources, cultural resources, geology and soils, hazardous materials, hydrology and water quality, land use planning, noise, transportation and traffic, utilities and services and mandatory findings of significance.

Existing Environmental Documents and Local Findings

Several of the members of the DFSC have certified environmental documentation that offers additional information. Many of these can be found in the DFSC resource library and offer ideas for potential projects that avoid environmental impacts, or mitigation measures that have been accepted by state and federal regulators.

Environmental Issues that May Prevent Projects from Proceeding

There are several key issues in the region that may prevent fire hazard mitigation projects from proceeding. In the two county areas these typically are related to the several federally listed endangered species. In several cases, such as the Alameda Whipsnake that are associated with brushlands, project protocols and best management practices are still being evaluated by the US Fish and Wildlife Service to

understand the potential impacts of such treatments as prescribed fire. Several of the DFSC member agencies are participating in these trial studies.

Funding for multi-year monitoring commitments required by mitigation measures to enable project to proceed are another issue that make it more challenging to undertake a fuel reduction project.

Fuel Mitigation Projects and Potential for Environmental Impact

		POTENTIAL FOR ENVIRONMENTAL IMPACT							
		Aesthetics	*Air Quality*	*Biological Resources*	*Cultural Resources*	*Geology/ Soils*	*Hazards & Hazardous Materials*	*Hydrology/ Water Quality*	*Noise*
Hand removal									
Cutting grasses (hand held weed whipper)				3					3
Cutting shrub (retains roots)				3					
Shrub removal (removes roots e.g weed wench)				3	3	3		3	
Pruning trees "limbing up" (chain saws by hand)		3							3
Felling trees (chain saws by hand/ horselogging)		3		3					3
Machinery									
Mowing grasses (rotary or flail mower)			3	3					3
Roadside mowing (grass and small shrubs - tiger mower)			3	3					3
Discing fuel breaks (15- 25' wide exposed earth)		3		3	3	3		3	3
Blading existing fire roads (bulldozer)		3	3		3	3		3	3
Chipping cut materials			3						3
Crushing shrubs (Tractor w/ blade or brush hog)									
Cutting shrub (retains roots)			3	3					3
Shrub removal (removes roots/ disturbs soil - bulldozer)		3	3	3	3	3		3	3
Tree removal (includes removal of slash)		3	3	3	3	3		3	3
Prescribed fire									
Pile burning		3	3						
Broadcast burning (includes control lines)		3	3	3	3		3		
Biological Treatments									
Grazing grasslands (cattle, horse, sheep, goat)				3		3		3	
Grazing shrublands (goat)				3		3		3	
Chemical Treatment									
Pre emergent treatment				3			3	3	
Post emergent treatment				3			3	3	
Limited Application for Prevention of resprout							3	3	
Other Project Considerations									
Project within 100' of Creek, drainage or wetland				3	3	3		3	
Project needs new access route				3	3	3		3	
Disposal by hand piles		3							
Disposal by lop & scatter		3							

9. PRIORITY PROCESS AND IMPLEMENTATION TIMELINE

In June 2003 Diablo FireSafe Council sponsored their first Strategic Planning Retreat to develop a vision statement and three year goals. This day-long, facilitated working session was attended by the board of directors, members and interested stakeholders. Our five year vision is to strengthen our ability to serve as a resource and catalyst for bringing together people, agencies and the means to reduce substantially the impact of fire on our communities. The group identified five goals and established strategic objectives for their three year goals (not in priority order):

- Foster an integrated approach to fire management
- Promote community education and awareness in our diverse communities
- Support efforts to manage hazardous vegetation
- Achieve stable funding
- Increase organizational effectiveness and efficiency

These five goals are supported by the priority actions identified by this plan.

Summary of Focus of DFSC Actions

The priority actions of this plan have been divided into three levels of priorities: High Priority, Moderate Level Priority and Low Priority Actions. To develop this list DFSC reviewed all of the possible actions identified in Chapter 7 and selected those actions that best match the organizational mission and capabilities.

<u>High Priority Actions</u>

Highest priority is given to those actions that have been traditionally funded as a part of DFSC programs. The DFSC has made a commitment to these programs and will continue to seek funds for continuing programs in the areas of:

- <u>Information, Education and Collaboration</u>
- <u>Reducing Vegetative Fuel Load</u>

There are five specific actions that have been selected by DFSC for high priority implementation and are further detailed in this Chapter:

Action E-1: *Awareness of Fire Hazard.*

Action E-3: *Collaboration*

Action E-5: *Public Presentations*

Action F-1: *Vegetation management*

Action LP-3: *Project Funding*

In addition to these two program areas are actions relating to Organization Sustainability required to maintain DFSC as a viable organization so they can continue to support their mission and vision of a more firesafe Alameda and Contra Costa Counties.

Action O-1*:* *Organizational Funding*

Action O-2*:* *Organizational effectiveness and efficiency*

Moderate Level of Priority Actions

DFSC has identified a number of actions with a moderate level of priority. These actions will be undertaken when funding/ resources or partners are available. They are programs in the areas of

- Planning for New Development
- Structure Survivability and Reduction of Ignitability
- Legislation and Policy

Nine different types of actions fall into this category:

Action E-4 *Hazard Information Assessment*

Action E-7: *Hazard Disclosures/ Emergency Preparedness*

Action P-3: *Use best development & site design*

Action P-5: *Vegetation Management Program for each new development*

Action St-6: *Retrofit standards and incentives*

Action I-1: *General Prevention*

Action LP-1: *Legislative and Policy Support*

Action LP-2: *Environmental Regulations*

Action LP-4: *Community Incentives*

Low Priority Actions

Most low priority actions for DFSC are those actions that fall within the purview of local fire agencies, planning and building departments. DFSC supports these actions and will support development of programs with appropriate partners. These programs generally fall in the areas of:

- Enforcement in Existing Development
- Ignition Prevention
- Enhance Suppression Capability and Public Safety

Low Priority Actions include the remaining 34 actions identified in Chapter 7 Possible Actions to take.

Action E-2: *Fire Modeling*

Action E-6: *Citizen Training*

Action P-1: *Restrict New Development*

Action P-2: *Conform to Wildland Urban Interface Code*

Action P-4: *Time development with fire facilities*

Action P-6: *Access for emergency equipment & Evacuation*

Action P-7: *Fire resistant landscape, building materials and green belts*

Action P-8: *New Fire Training facility*

Action P-9: *Firefighting*

Action P-10: *Access and Egress*

Action Ex-1: *Weed Abatement: "Defensible Space"*

Action Ex-2: *Adopt and Enforce Fire Code*

Action Ex-3: *Fire Resistant Construction, Smoke Detectors, Fire extinguishers*

Action Ex-4: *Street Address Numbers*

Action Ex-5: *Assessment District Programs*

Action St-1: *Roofing*

Action St-2: *Fire Sprinklers*

Action St-3: *Fire Retardant Building Materials*

Action St-4: *Updated Fire Codes*

Action St-5: *Reduce structure ignition following earthquake*

Action I-1: *Monitor Fire Weather*

Action I-2: *Fire Weather Patrols*

Action I-3: *Fire Weather Restrictions*

Action I-4: *Warning Systems*

Action I-5: *Evacuation routes*

Action I-6: *Gas Shut off*

Action I-7: *New Fire Trails*

Action Su- 1: *Fire Protection and Emergency Services*

Action Su-2: *Pre-suppression coordination*

Action Su-3: *Access/ Roads/ Fire Trails*

Action Su-4: *Fire Stations/ Staffing & Capital Equipment Evaluation*

Action Su-5: *Response Time*

Action Su-6: *Mutual Aid*

Action Su-7: *Water*

Implementing High Action Priorities and Monitoring Progress

To facilitate implementation of the high priority action items each of the five action areas and two program areas has been further developed. The traditional, current or proposed DFSC activities that support the action item are described. The most effective lead organization, whether it is DFSC or another agency or

organization, as well as potential partners are listed. The relative timeframe, cost and resources required, as well as any special concerns, are also described. Finally a recommended monitoring measurement and timeframe are suggested.

This framework will allow DFSC and other partners to focus their collaborative efforts on specific projects and programs. It will help us all to find effective partnerships and implement actions that collectively build more fire resilient communities throughout our two counties.

Action E-1: *Awareness of Fire Hazard.*

Current and Proposed Activities: Education programs targeted at homeowners, businesses and agencies to expand awareness of fire hazard and potential mitigation measures. These can include DFSC customized educational materials, FIREWISE workshops, doorstep visits, reference library, website and newsletters.

Lead Organization/ partners: DFSC will take the lead and expand existing partnership that includes fire agencies, special districts (parks, water, sanitary), local government, media, creeks groups etc.

Relative Time Frame for Implementation: Short term - ongoing

Relative Cost/ Effort to Implement: Medium cost/ effort required to expand outreach and education materials.

Resources Required: Funding and local agencies support.

Special Concerns (barriers to action): Develop education materials for targeted audience.

Monitoring (measurement & timeline): Number of groups / individuals that receive information per fire season.

Action E-3: *Collaboration*

Current and Proposed Activities: Participation in multi-jurisdictional programs, special projects and task forces. (Media Safety Day, Vegetation removal projects etc.)

Lead Organization/ partners: DFSC will take the lead and expand existing partnership that includes fire agencies, special districts (parks, water, sanitary), local government, media, creeks groups etc.

Relative Time Frame for Implementation: Short term – ongoing.

Relative Cost/ Effort to Implement: Low cost/ effort required to participate and lead collaborations.

Resources Required: Funding and local agencies support.

Special Concerns (barriers to action): Maintain organization mission and focus on wildland fire.

Monitoring (measurement & timeline): Number of collaborations, special projects and task forces and audience numbers per fire season.

Action E-5: *Public Presentations*

Current and Proposed Activities: Presentations targeted at homeowner groups, special interest groups and agencies (City Council/ Board of Supervisors) to expand awareness of fire hazard and potential mitigation measures. These can include DFSC speaker's bureau; presentations to local organizations and homeowner's groups; participation in events, fairs, tours and other community functions.

Lead Organization/ partners: Local fire agencies and community members to identify potential presentation opportunities. DFSC to provide speakers and materials.

Relative Time Frame for Implementation: Moderate term – ongoing.

Relative Cost/ Effort to Implement: Medium cost/ effort required to expand outreach and education materials

Resources Required: Funding for customized presentation materials, staffing and local agencies support.

Special Concerns (barriers to action): Develop presentation materials and identify appropriate speakers for subject materials.

Monitoring (measurement & timeline): Number of groups / individuals that receive information per fire season.

Action F-1: *Vegetation management*

Current and Proposed Activities: Identify projects for vegetation management and effective techniques These can include fuel mitigation grants to neighborhood organizations, Special Needs Assistance Program (SNAPS), project development/implementations with neighborhood organizations (identify mitigation, assist with funding/ workforce, oversee implementation and monitoring).

Lead Organization/ partners: DFSC will take the lead and expand existing partnership that includes fire agencies, special districts (parks, water, sanitary), local government, media, creeks groups etc.

Relative Time Frame for Implementation: Medium to long term (from project identification through fuel treatment and monitoring).

Relative Cost/ Effort to Implement: Medium to high cost/ effort required to identify projects, secure project and long term maintenance funding, obtain required permits, procure and manage contractors or work force, monitor project.

Resources Required: Funding (for project treatment and staffing) and local land owner support.

Special Concerns (barriers to action): Environmental concerns, long term management of initial fuel treatments, implementation issues (traffic control, smoke management, biomass disposal etc.).

Monitoring (measurement & timeline): Number of projects, acres treated and homes protected per life of specific project based on treatment effectiveness (Typically varies from one-year to five to seven years).

Action LP-3 *Project Funding*

Current and Proposed Activities: Seek grant funds; expand in-kind support, fiscal sponsorship and other fiscal support for projects.

Lead Organization/ partners: DFSC will take the lead and expand existing partnerships with DFSC members, project partner organizations, granting agencies, community businesses and organizations.

Relative Time Frame for Implementation: Moderate term – On-going. (Funding cycles typically 12 to 18 months out).

Relative Cost/ Effort to Implement: Low cost / medium effort to identify funding opportunities and follow up with necessary materials or funding requests.

Resources Required: Staff/ member ability to develop funding sources, prepare grants and follow up on funding requests and monitor spending.

Special Concerns (barriers to action): Competitive and variable nature of funding; cost of administering project funds.

Monitoring (measurement & timeline): Amount and type of funding, time frame and restrictions on use of funding per budget year or life of project whichever is greater.

Action O-1*: Organizational Funding,*

Current and Proposed Activities: Seek grant funds; expand membership, sponsorship and other fiscal support. Recognition of partners' fiscal support and in-kind service.

Lead Organization/ partners: DFSC members, partner organizations, granting agencies, community businesses and organizations.

Relative Time Frame for Implementation: Moderate term – On-going. (Funding cycles typically 12 to 18 months out).

Relative Cost/ Effort to Implement: Low cost / medium effort to identify funding opportunities and follow up with necessary materials or funding requests.

Resources Required: Staff/ member ability to develop funding sources, prepare grants and follow up on funding requests and monitor spending.

Special Concerns (barriers to action): Competitive and variable nature of funding; restrictions on funding for administrative/ organizational expenses.

Monitoring (measurement & timeline): Amount and type of funding, time frame and restrictions on use of funding per budget year.

Action O-2: Organizational effectiveness and efficiency

Current and Proposed Activities: Board, membership, partners, volunteers interaction such as meetings, strategic planning, organization activities. "Business" practices (including insurance, preparation of tax forms, accounting, etc. to meet requirements of by-laws.). Organization management.

Lead Organization/ partners: DFSC members, partner organizations, granting agencies, community businesses and organizations.

Relative Time Frame for Implementation: Short term – On-going.

Relative Cost/ Effort to Implement: Low cost / medium effort to identify issues and develop effective efficient solutions to those issues.

Resources Required: Staff/ Member ability to manage organization.

Special Concerns (barriers to action): Funding for organizational and administrative duties

Monitoring (measurement & timeline): Amount and type of funding, time frame and restrictions on use of funding per budget year.

LIST OF FIGURES

LIST OF TABLES

REFERENCES CITED

2003 census www.factfinder.census.gov

ABAG, Projections 2002. www.abag.org

Adapted from the Caldecott Corridor Committee. 2001. Resource Management Plan for the Caldecott Wildlife Corridor. Prepared by the Caldecott Wildlife Corridor. Pp 74.

Alameda County Summary Financial Information Sheet 2004
http://www.co.alameda.ca.us/admin/FinalDisclosure04.pdf

Amphion Environmental Inc. East Bay Hills Fire Hazard Mitigation and Fuel Management Plan, Unpublished Report, 1995.

Based on acreage estimates provided by http://www.nps.gov/parks.html

Based on U.S Census data. CA population 33,871,648 and total both counties at 2,392,557. Available at http://factfinder.census.gov

Bay Area Air Quality Management District www.baaqmd.gov

Burr Consulting in association with Braitman & Associates and GIS/Trans. Final Municipal Service Review, Volume I- Public Safety Services; Report to the Alameda Local Agency Formation Commission;

California Department of Forestry and Fire Protection www.fire.ca.gov/php/

California Department of Parks and Recreation homepage available at www.parks/ca/gov

California Department of Parks and Recreation. 2003. Mount Diablo State Park Wildfire Management Plan. April 2003

California Fire Alliance web page www.californiafirealliance.org

CDF FRAP website analyses. www.frap.cdf.ca.gov

City of Berkeley Disaster Mitigation Plan Draft 4/28/04

City of Berkley, The Berkeley Disaster Mitigation Plan, June 2004.

City of Livermore General Plan Public Safety Element, 2003. www.ci.livermore.ca.us

City of Oakland, Safety Element. November 2004.

City of Oakland. Draft Safety Element. August 2004.

City of San Leandro General Plan adopted May 2002. Chapter 6 Environmental Hazards page 6-4. And 6-31

City of San Ramon. General Plan, Safety Chapter 9-12 through 9-14. July 2001. Voter Approved 3/5/02

City of Union City. Health and Safety Element, City of Union City . 2002 HS-14- 15.

Contra Costa County Community Development website at: http://www.co.contra-costa.ca.us/depart/cd/recycle/population2004.htm

Contra Costa County Watershed Atlas, November 2003, Contra Costa Community Development Department in cooperation with the Contra Costa County Public Works Department.

Contra Costa County website: http://www.co.contra-costa.ca.us/

Contra Costa General Plan, 1995-2010. July 1996

Contra Costa Water District web site www.ccwater.com

Contra Costa Water District. 1996. Los Vaqueros Resource Management Plan Fire Management Technical

Contra Costa Water, communications with Ed Stewart, Watershed Manager, September 2004.

Eaat Bay Municipal Utility District. Fire Management Plan, Oct 2000

East Bay Municipal Utility District. 2000. East Bay Watershed Fire Management Plan. January 2000.

East Bay Regional Park District. Personal Communication 9/16/04 EBRPD Fire Department.

East Bay Regional Park District. 1997. Master Plan 1997. December 17, 1996. Resolution No: 1996-12-349

East Bay Regional Park District. 2003. Final Environmental Assessment.

http://www.co.alameda.ca.us/ and http://www.co.contra-costa.ca.us/

http://www.naco.org/Content/ContentGroups/Caucuses/WIR2/CWPPHandbook.pdf

http://www.openspacecouncil.org/Documents/Diversity/ParksPeopleChange_2004.09.25.pdf

Keane, Robert E., Ryan, Kevin C., Veblen, Tom T., Allen, Craig D., Logan, Jessie., Hawkes, Brad. 2002 Cascading effects of fire esclusion in the Rocky Mountain ecosystems: a literature review. Gen tech Rep RMRS-GTR-91. Fort Collins, CO. USDA Forest Service, Rocky Mountain Research Station. 24 p

National Park Service website www.nps.gov

National Park Service. 2004. John Muir National Historic Site Environmental Assessment Fire Management Plan. November 2004. Prepared by Mangi Environmental Group.

Report. October 1996. Submitted by Brady and Associates, Inc and REM and Associates. State of California website www.parks.ca.gov

The California Department of Forestry and Fire Protection's Fire and Resource Assessment Program (FRAP) frap.cdf.ca.gov/

The Changing California Forest and Range 2003 Assessment.

U.S.Fish and Wildlife Service, 2002. Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California. November 2002

U.S.Fish and Wildlife Service. 2002. Draft Recovery Plan for Chaparral and Scrub Community Species East of San Francisco Bay, California. Region 1, Portland, OR. xvi +306 pp.

UC Berkeley . 2003. Hill Area Fire Fuel Management Program. October 2003. Prepared by Safe Solutions

United States Census for years 1970-2000; State Department of Finance for 2002. www census.gov

Unpublished report, September 16, 2004.

USFWS website available at http://library.fws.gov/refuges/DEsanfran.pdf
USFWS website http://desfbay.fws.gov

With technical assistance from Firewise 2000; Merrit Smith Consulting; Melissa Blanton. Oakland, CA.