TOWN OF FAIRFAX COMMUNITY PROFILE

MARIN COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN 2023

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ACKNOWLEDGEMENTS

The Town of Fairfax and Preparative Consulting would like to thank those collaborators and partners who participated in the planning and development of this document.

The official Marin County Operational Area (OA) Multi-Jurisdictional Hazard Mitigation Plan (MJHMP) Steering Committee provided the oversight and dedication to this project that was required, and without their commitment, this project would not be possible.

As with any working plan, this document represents planning strategies and guidance as understood as of the date of this plan's release. This plan identifies natural hazards and risks and identifies the hazard mitigation strategy to reduce vulnerability and make the communities of the Town of Fairfax more disaster resistant and sustainable.

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1.0 INTRODUCTION

1.1 INTRODUCTION

The Town of Fairfax, Community Profile has been prepared in conjunction with the Marin County Operational Area (OA) Multi-Jurisdictional Hazard Mitigation Plan (MJHMP), establishing an inter-jurisdictional process for the development and implementation of effective hazard mitigation strategies in association with identified hazards that pose real or potential threats to the Town of Fairfax.

1.2 PLANNING PROCESS

The majority of Marin County OA is unincorporated sparsely populated rural and protected lands. Most of the 262,000 county population is consolidated into the Eastern portion of the county. The Marin County OA MJHMP Steering Committee and broader Planning Team approached the development of the Marin County OA MJHMP and the associated jurisdictional and district profiles from a coordinated and collaborative planning and public engagement unity of effort.

The Steering Committee felt a unified effort, led by the Marin County Office of Emergency Management (OEM), would be the most effective approach for this planning process. This approach allowed the small jurisdictions and districts with limited staffing and resources to take advantage of the combined efforts of the County and other jurisdictions to reach a broader segment of each of their own populations and do so in a way to ensure greater equity and inclusion of the public in this planning process. Extensive and coordinated public outreach was done involving all participating jurisdictions and districts with an eye towards equity, inclusion, openness, accessibility, and ensuring they meet the population where they live, work, or recreate to provide the public convenience of access and ease of participation in this planning process.

The Marin County OA is very different from most California counties in that the populated portion of the OA where the jurisdictions and district's planning areas are located has the same climate, similar topography, and are exposed to many of the same hazards. Only three jurisdictions San Anselmo, Ross, and Fairfax are not coastal jurisdictions and are not impacted by Tsunami or Sea Level Rise.

This unity of effort approach allowed the Steering Committee to establish a more robust Planning Team representing local, countywide, regional, state, and federal stakeholders servicing the Marin County OA planning area. These stakeholders were in a unique position to provide informed and specific information and recommendations on hazard mitigation goals and actions, as well as population needs and social vulnerability for each of the jurisdictional and district planning areas. This united effort allowed the planning team to attend fewer meetings than they would have been required to attend if they were required to attend separate meetings for each participating jurisdiction and district. The reduced number of meetings allowed the planning team the opportunity and time to provide more detailed and thoughtful contributions to the planning effort.

In addition to providing representation on the coordinated Marin County OA MJHMP Steering Committee, the Town of Fairfax involved additional internal planning team members to support the broader planning process. The Town of Fairfax jurisdictional representatives for the

coordinated Marin County OA MJHMPs Steering Committee and the Planning Team Members are represented below.

1.2.1 Steering Committee Members (Jurisdictional Representatives)

Primary Point of Contact
Loren Umbertis, Director of Public Works
Telephone: (415) 458-2370
E-mail address: lumbertis@townoffairfax.org

Alternate Point of Contact
Mark Lockaby, Building Official
Telephone: (415) 458-2370
E-mail address: mlockaby@townoffairfax.org

This annex was developed by the primary point of contact with assistance from the members of the local mitigation planning team listed in Table 1.

Table 1: Local Hazard Mitigation Planning Team Members				
Jurisdiction	**Name**	**Title/ Department**	**Phone**	**Email**
Fairfax	Loren Umbertis	Public Works Director	415-453-0291	lumbertis@townoffairfax.org
Fairfax	Mark Lockaby	Building Official	415-458-2370	mlockaby@townoffairfax.org
Fairfax	Heather Abrams	Town Manager	415-453-1584	habrams@townoffairfax.org

Table 1: Local Hazard Mitigation Planning Team Members

This 2023 Marin County OA MJHMP is a comprehensive update of the 2018 Marin County OA MJHMP. The planning area and participating jurisdictions and organizations were defined to consist of unincorporated County of Marin, five special districts, and the eleven incorporated jurisdictions to include the Town of Fairfax. All participating jurisdictions are within the geographical boundary of the Marin County OA and have jurisdictional authority within this planning area.

The Steering Committee led the planning process based on the contribution and input from the whole community stakeholders who identified the community's concerns, values, and priorities. The Steering Committee met and reviewed the mitigation recommendations and strategies identified within this plan. Each participating local jurisdiction established a mechanism for the development and implementation of jurisdictional mitigation projects, as identified within this plan and associated locally specific supporting documents. As deemed necessary and appropriate, participating jurisdictions will organize local mitigation groups to facilitate and administer internal activities.

The Steering Committee assisted with the planning process in the following ways:

- Attending and participating in the Steering Committee meetings.
- Identification of potential mitigation actions.
- Updating the status of mitigation actions from the 2018 Marin County OA MJHMP.
- Collecting and providing other requested data (as available).
- Making decisions on plan process and content.
- Reviewing and providing comments on plan drafts; including annexes.

- Informing the public, local officials, and other interested stakeholders about the planning process and providing opportunity for them to be involved and provide comment.
- Coordinating, and participating in the public input process.
- Coordinating the formal adoption of the plan by the governing boards.

1.2.2 Steering Committee Planning Process

The Steering Committee met monthly to develop the plan. Email notifications were sent out to each Steering Committee member to solicit their participation in the Steering Committee meetings. The meetings were conducted using a Zoom platform videoconferencing. Meeting attendees signed in using the chat feature to record their attendance.

The Steering Committee agreed to make and pass plan-based general policy recommendations by a vote of a simple majority of those members present. The Steering Committee will also seek input on future hazard mitigation programs and strategies from the mitigation planning team by focusing on the following:

- Identify new hazard mitigation strategies to be pursued on a state and regional basis, and review the progress and implementation of those programs already identified.
- Review the progress of the Hazard Mitigation program and bring forth community input on new strategies.
- Coordinate with and support the efforts of the Marin County OEM to promote and identify resources and grant money for implementation of recommended hazard mitigation Strategies within local jurisdictions and participating public agencies.

During the planning process, the Steering Committee communicated through videoconferencing, face-to-face meetings, email, telephone conversations, and through the County website. The County website included information for all stakeholders on the MJHMP update process. Hannah Tarling of the Marin County OEM and Preparative Consulting established a Microsoft 365 SharePoint folder which allowed the Steering Committee members and Marin OEM and Preparative Consulting to share planning documents and provide a format for the planning partners to submit completed documents and access other planning related documents and forms. Draft documents were also posted on this platform and the Marin County OEM website so that the Steering Committee members and the public could easily access and review them.

1.2.3 Coordination with Stakeholders and Agencies

Opportunities for involvement in the planning process must be provided to neighboring communities, local and regional agencies involved in hazard mitigation, agencies with authority to regulate development, businesses, academia, and other private and nonprofit interests (44 CFR, Section 201.6(b)(2)).

Early in the planning process, the Marin County and Town of Fairfax Steering Committee reached out to the following Local and Regional Agencies involved in hazard mitigation activities to invite them to participate in this planning process as a member of the Planning Team. These individuals work with Marin County and the Town of Fairfax communities and could provide subject matter expertise and relevant information to the planning process regarding the community history, hazard risk, vulnerability, and impact, mitigations efforts, community needs, demographics, and social vulnerability, economic concerns, ecology,

and other community services and needs.

As detailed in 1.2 PLANNING PROCESS, the planning process enjoyed a robust unity of effort. Early in the process the Steering Committee determined that data collection, risk assessment analyses, mitigation strategy development, and plan approval would be greatly enhanced by inviting other local, state and federal agencies and organizations to participate in the process. Based on their involvement in hazard mitigation planning, and/or their interest as a neighboring jurisdiction, representatives from the following groups were invited to participate on the Planning Team:

Eighty-five planning partners participated in this update, as listed in Table 2.

Table 2: 2023 MJHMP Planning Team Members

No.	Agency	Point of Contact	Title
1	Belvedere	Laurie Nilsen	Emergency Svs, Coord.
2	Belvedere	Rebecca Markwick	Planning Director
3	Belvedere	Samie Malakiman	Associate Planner
4	Bolinas Com. PUD	Jennifer Blackman	General Manager
5	Bolinas Fire Protection Dist.	Stephen Marcotte	Assistant Fire Chief
6	Central Marin Fire District	Matt Cobb	Battalion Chief/Fire
7	Central Marin Fire District	Ezra Colman	Battalion Chief/Fire
8	Central Marin Fire District	Rubin Martin	Fire Chief
9	Corte Madera	RJ Suokko	Director of Public Works
10	Corte Madera	Chris Good	Senior Civil Engineer
11	Sanitary District No. 2	RJ Suokko	District Manager
12	Fairfax	Loren Umbertis	Public Works Director
13	Fairfax	Mark Lockaby	Building Official
14	Larkspur	Dan Schwarz	City Manager
15	Larkspur	Julian Skinner	Public Works Director/ City Engineer
16	Larkspur	Robert Quinn	Public Works Superintendent
17	Las Gallinas Valley Sanitary District	Dale McDonald	Administrative Services Mgr.
18	Las Gallinas Valley Sanitary District	Greg Pease	Safety Manager
19	County of Marin	Steven Torrence	OEM Director
20	County of Marin	Hannah Tarling	Emergency Management Coordinator
21	County of Marin	Chris Reilly	OEM Project Manager
22	County of Marin	Woody Baker-Cohn	Senior Emergency Management Coordinator
23	County of Marin	Leslie Lacko	Community Development Agency
24	County of Marin	Hannah Lee	Senior Civil Engineer
25	County of Marin	Felix Meneau	Project Mgr./ FCWCD
26	County of Marin	Julia Elkin	Department of Public Works
27	County of Marin	Beb Skye	Department of Public Works
28	County of Marin	Scott Alber	Battalion Chief, Marin County Fire Dept.
29	County of Marin	Lisa Santora	Deputy Public Health Officer, Marin Health & Human Services
30	County of Marin	Koblick, Kathleen	Marin Health & Human Services
31	County of Marin	Amber Davis	Public Health Preparedness
32	Mill Valley	Patrick Kelly	Department of Public Works

Table 2: 2023 MJHMP Planning Team Members			
No.	**Agency**	**Point of Contact**	**Title**
33	Mill Valley	Ahmed A Aly	Project Manager
34	Mill Valley	Jared Barrilleaux	Deputy Director of Engineering
35	Mill Valley	Daisy Allen	Senior Planner
36	Southern Marin Fire District	Tom Welch	Deputy Chief/South Marin Fire Dist.
37	Southern Marin Fire District	Marshall Nau	Fire Marshall/South Marin Fire Dist.
38	North Marin Water District	Eric Miller	Asst. General Manager
39	North Marin Water District	Tim Fuette	Senior Engineer
40	Novato	David Dammuller	Engineering Services Mgr.
41	Novato	Dave Jeffries	Consultant/JPSC
42	Ross	Richard Simonitch	Public Works Director
43	San Anselmo	Sean Condry	Public Works & Building Director
44	San Anselmo	Erica Freeman	Building Official
45	San Anselmo	Scott Schneider	Asst. PW Director
46	San Rafael	Quinn Gardner	Deputy Emergency Services Coord.
47	San Rafael	Cory Bytof	Sustainability
48	San Rafael	Joanna Kwok	Senior Civil Engineer
49	San Rafael	Kate Hagemann	Climate Adaptation & Resilience Planner
50	Sausalito	Andrew Davidson	Senior Engineer/ DPW
51	Sausalito	Kevin McGowan	Director of Public Works
52	Sausalito	Brandon Phipps	Planning Director
53	Tiburon	Sam Bonifacio	Assistant Planner
54	Tiburon	Dina Tasini	Director of Community Development
55	Tiburon	Laurie Nilsen	Emergency Svs, Coord.
Special Districts & Partner Agencies			
56	County of Marin Disability Access Program	Laney Davidson	Disability Access Manager/ ADA Coordinator
57	County of Marin Disability Access Program	Peter Mendoza	Disability Access Manager/ ADA Coordinator
58	Emergency Medical Services	Chris Le Baudour	EMS Authority
59	Fire Departments	Jason Weber	Fire Chief
60	Golden Gate Bridge, Highway & Transportation District	Daniel Rodriguez	Security, Emergency Management Specialist
61	Golden Gate Bridge, Highway & Transportation District	Dennis Mulligan	General Manager & CEO,
62	Marin City Climate Resilience and Health Justice	Terrie Green	Executive Director
63	Marin Center for Independent Living	Peter Mendoza	Director of Advocacy and Special Projects
64	Marin City Community Services District	Juanita Edwards	Interim General Manager
65	Marin County Community Development Agency	Leslie Lacko	Community Development Agency

Table 2: 2023 MJHMP Planning Team Members			
No.	**Agency**	**Point of Contact**	**Title**
66	Marin County Flood Control & Water Conservation District	Garry Lion	Advisory Board Member
67	Marin County Office of Education	Michael Grant	Director, Marin County Office of Education
68	Marin County Parks	Max Korten	General Manager and Director
69	PG&E	Mark Van Gorder	Government Affairs, North Bay
70	PG&E	Ron Karlen	PG&E Public Safety Specialist
71	Sonoma Marin Area Rail Transit (SMART)	Jennifer McGill	Chief of Police
72	Transportation Authority of Marin (TAM)	Anne Richmond	Executive Director
73	Willow Creek School	Itoco Garcia	Superintendent
State Partners			
74	Cal OES - ESC	Sarah Finnigan	Cal OES, Sr. Emergency Services Coordinator
75	Cal OES, Division of Safety of Dams	Danielle Jessup	Coordinator/ Dam Safety Planning Division
76	California Department of Public Health	Svetlana Smorodinsky	Disaster Epidemiologist/ Environmental & Occupational Emergency Preparedness Team
77	California Department of Public Health	Patrice Chamberlain	Health Program Specialist II/ Environmental & Occupational Emergency Preparedness Team
78	California Department of Water Resources	Julia Ekstrom, PhD	Supervisor, Urban Unit Water Use Efficiency Branch
79	Caltrans	Trang Hoang	Senior Transportation Engr/ Office of Advance Planning
80	Caltrans	Markus Lansdowne	Caltrans D4 Emergency Coordinator
Federal Partners			
81	Army Corps of Engineers	Jessica Ludy	Flood Risk Management, Equity, and Environmental Justice
82	National Park Service	Stephen Kasierski	OneTam
83	US Coast Guard	LT Tony Solares	Sector SF Waterways Safety Branch
84	US Coast Guard	MST1 Brandon M. Ward	Emergency Management Specialist
85	US Coast Guard	LT William K. Harris	USCG SEC San Francisco

Table 2: 2023 MJHMP Planning Team Members

Several opportunities were provided for the groups listed above to participate in the Town of Fairfax's planning process. At the beginning of the planning process, invitations were extended to these groups to actively participate on the Planning Team. Participants from these groups assisted in the process by attending several videoconferencing meetings where hazard vulnerability and risk were discussed along with hazard mitigation strategies and actions. Planning Team members provided data and other applicable information directly as requested in meetings, emails, telephone calls, videoconferencing, worksheets, or through data contained on their websites or as maintained by their offices. This information was used to develop hazard vulnerability and risk profiles along with mitigation actions.

These key agencies, organizations, and advisory groups received meeting announcements, agendas, and minutes by e-mail throughout the plan update process. They supported the effort by attending meetings or providing feedback on issues. All the agencies were provided with an opportunity to comment on this plan update and were provided with a copy of the plan to review and offer edits and revisions. They were also provided access to the Marin County OEM hazard mitigation plan website to review all planning documents and hazard mapping tools.

Each was sent an e-mail message informing them that draft portions of the plan were available for review. In addition, the complete draft plan was sent to the California Governor's Office of Emergency Services (Cal OES) and FEMA Region IX for a pre-adoption review to ensure program compliance.

In addition, through the public meetings conducted at the beginning of the planning process, members of the planning team, the public, and other key stakeholders were invited to participate in the planning process through public outreach activities.

Further as part of the public outreach process, all planning areas engaged in public outreach and education by providing information on their Town of Fairfax website or though press releases directing the public to the main Marin County OEM website that provided coordinated and detailed public information of the planning process and how the public could participate. All planning areas were invited to attend the public meetings and to review and comment on the plan prior to submittal to Cal OES and FEMA. Additional public outreach action is detailed in the 1.2.4 PUBLIC ENGAGEMENT section of this annex.

The following planning meetings were held with the planning team:

Table 3: Town of Fairfax & Marin County OA MJHMP Planning Meetings

No.	Date	Attendees	Meeting	Planning Meeting Objectives
1	10/26/22	Steering Committee	Project Overview Meeting	• Plan Overview – Steps and Timeline • Planning Process • Steering Committee Role
2	11/9/22	Steering Committee	Steering Committee Kickoff Meeting	• Hazard Mitigation and Emergency Management Overview • Plan Overview – Steps and Timeline • Community Overview • Planning Process • Hazard Identification and Risk Assessment • Stakeholders and Planning Team Identification
3	12/6/22	Steering Committee, Planning Team	Planning Team Kickoff Meeting	• Hazard Mitigation and Emergency Management Overview • Plan Overview – Steps and Timeline • Community Overview • Planning Process

Table 3: Town of Fairfax & Marin County OA MJHMP Planning Meetings				
No.	**Date**	**Attendees**	**Meeting**	**Planning Meeting Objectives**
				• Hazard Identification and Risk Assessment
4	02/07/23	Steering Committee	Steering Committee Hazard Profile Meeting	• Jurisdictional Letter of Commitment • Identify Planning Team Members • Hazard Risk Ranking Worksheets • Jurisdictional Profiles • Jurisdictional/ District Capability Assessment • 2018 Hazard Mitigation Project Status Update
5	03/07/23	Steering Committee/ Planning Team	Planning Team Public Outreach Strategy Meeting	• Planning Goals and Objectives • Hazard Risk Ranking Worksheets • Jurisdictional Profiles • Jurisdictional/ District Capability Assessment • 2018 Hazard Mitigation Project Status Update • Public Outreach Strategy
6	04/04/23	Steering Committee	Steering Committee Meeting	• HMGP (DR-4683) Funding Timeline • Public Outreach • Planning Goals and Objectives • Jurisdictional Hazard Vulnerability Maps • Jurisdictional Profiles • Jurisdictional/ District Capability Assessment • 2018 Hazard Mitigation Project Status Update
7	04/13/23	General Public, Steering Committee, Planning Team	Public Outreach Town Hall Meeting #1 (In-person and virtual on Zoom) Thursday, 6:00 pm to 7:30 pm Marin County BOS Chambers	• Meeting translated live in Spanish with 29 language subtitle capability for virtual participants. • Meeting also interpreted in American Sign Language • Meeting recorded and posted on Hazard Mitigation website. • Hazard Mitigation and Emergency Management Overview • Planning Process • Hazard Identification and Risk Assessment • Planning Goals and Objectives • Hazard Mitigation Projects • Community Input

Table 3: Town of Fairfax & Marin County OA MJHMP Planning Meetings				
No.	**Date**	**Attendees**	**Meeting**	**Planning Meeting Objectives**
8	04/29/23	General Public, Steering Committee, Planning Team	Public Outreach Town Hall Meeting #2 (In-person and virtual on Zoom) Saturday, 10:00 am to 11:30 am Marin County Health and Wellness Center	• Meeting translated live in Spanish with 29 language subtitle capability for virtual participants. • Meeting also interpreted in American Sign Language • Meeting recorded and posted on Hazard Mitigation website. • Hazard Mitigation and Emergency Management Overview • Planning Process • Hazard Identification and Risk Assessment • Planning Goals and Objectives • Hazard Mitigation Projects • Community Input
9	05/31/23	Steering Committee	Steering Committee Hazard Ranking Meeting	• HMGP (DR-4683) Funding Timeline • Public Outreach Status • Jurisdictional Hazard Vulnerability Maps • OEM Overview of Hazard Maps and Marin Maps • Marin Co. MJHMP Risk Assessment Tool Overview • 2018 Hazard Mitigation Project Status Update • Hazard Working Groups
10	06/27/23	Steering Committee, Planning Team	Planning Team Meeting	• HMGP (DR-4683) & BRIC Grant Funding Timeline • Public Outreach Status • Jurisdictional Hazard Risk Assessment Tool • OEM Overview of Hazard Maps and Marin Maps • Marin County OA Hazards over the Last 5-Years • 2018 Hazard Mitigation Project Status Update • 2023 Hazard Mitigation Projects/Capital Improvement Projects • Hazard Working Groups
11	07/01/23-09/01/23	Steering Committee Members	Steering Committee Members Plan	• Individual phone or conference calls with planning jurisdictions and districts to answer specific

Table 3: Town of Fairfax & Marin County OA MJHMP Planning Meetings				
No.	**Date**	**Attendees**	**Meeting**	**Planning Meeting Objectives**
			Development Sessions	questions and assist them in developing their profile annex.
12	11/27/23	Steering Committee, Planning Team	Planning Team Meeting	• Presentation and review of the Draft Marin County OA MJHMP and Jurisdictional/District Annexes
13	11/28/23	General Public	Public Outreach Presentation on Marin County Office of Emergency Management Website	• Presentation and review of the Draft Marin County OA MJHMP and Jurisdictional/District Annexes. • Opportunity for public comment and questions and answers.

Table 3: Town of Fairfax & Marin County OA MJHMP Planning Meetings

1.2.4 Public Engagement

Early discussions with the Marin County OEM established the initial plan for public engagement to ensure a meaningful and inclusive public process with a focus on equity and access to the whole community. The Public Outreach efforts mirrored the Planning Team approach with a unified effort, led by the County OEM, involving all participating jurisdictions and districts. Public outreach for this plan update began at the beginning of the plan development process with a detailed press release informing the community of the purpose of the hazard mitigation planning process for the Marin County OA planning area and to invite the public to participate in the process.

Public involvement activities for this plan update were conducted by the County and all participating jurisdictions and districts and included press releases; website postings; a community survey; stakeholder and public meetings; and the collection of public and stakeholder comments on the draft plan which was posted on the County website. Information provided to the public included an overview of the mitigation status and successes resulting from implementation of the 2018 plan as well as information on the processes, new risk assessment data, and proposed mitigation strategies for the plan update.

Equity and Whole Community Approach

The Marin County OEM and the Steering Committee prioritized equity and engagement of the whole community in the development of the Marin County OA MJHMP by establishing a framework with key actions for each step of the planning process. Elements of the equity approach included:

Engaging hard-to-reach populations

This effort was to ensure the greatest equity and access to the public to enable participation in the process. The Marin County OEM outreach strategy is to “meet people where they are.” The Town hall meetings were conducted at different familiar locations within the county where people could easily access them and were conducted on both a weekday and weekend, and in the evening and during the daytime. The meetings were offered in-person with a virtual broadcast using Zoom videoconferencing and streamed live on Marin County OEM Facebook

account. After the meeting, Marin County OEM uploaded the recorded meeting to their website to allow the public on demand access to the meeting.

Translation and Interpretation Services

The survey and outreach materials were provided in both English and Spanish to improve accessibility among populations with limited English proficiency. The website uses Google Translate for accessibility in multiple languages. Interpretation services were offered for both town hall meetings. Each town hall meeting included live Spanish translation and subtitles, Live American Sign Language (ASL/CDI) interpretation, the ability for the Zoom videoconferencing attendee to activate subtitles in 29 different languages, and vision accessible PowerPoint slide.

Three stakeholder and public meetings were held, two at the beginning of the plan development process and one prior to finalizing the updated plan. Where appropriate, stakeholder and public comments and recommendations were incorporated into the final plan, including the sections that address mitigation goals and strategies. Specifically, public comments were obtained during the plan development process and prior to plan finalization.

All press releases and website postings are on file with the Marin County OEM. Public meetings were advertised in a variety of ways to maximize outreach efforts to both targeted groups and to the public at large. Advertisement mechanisms for these meetings and for involvement in the overall MJHMP development process include:

- Development and publishing of an MJHMP public outreach article
- Providing press releases to local newspapers and radio stations
- Posting meeting announcements on the local County MJHMP website
- Email to established email lists
- Personal phone calls

The public outreach activities were conducted with participation from and on behalf of all jurisdictions participating in this plan.

The Steering Committee has made the commitment to periodically bring this plan before the public through public meetings and community posting so that citizens may make input as strategies and implementation actions change. Public meetings will continue to be held twice a year after the first and third MJHMP meetings. Public meetings will continue to be stand-alone meetings but may also follow a council meeting or other official government meeting. The public will continue to be invited to public meetings via social media messaging, newspaper invitations, and through the website for each jurisdiction participating in the plan. Each jurisdiction is responsible for assuring that their citizenry is informed when deemed appropriate by the Steering Committee.

WEBSITE

At the beginning of the plan update process, Marin County OEM established a hazard mitigation website https://emergency.marincounty.org/pages/lhmp on behalf of all the planning areas to ensure consistent messaging and information, to keep the public posted on plan development milestones, and to solicit relevant input. The website also provided information on signing up for Alert Marin, provided detailed information about the hazard mitigation process and plan development, provided a URL and QR code link to the survey in both English and Spanish, and provided information about upcoming town hall meetings. (See Figure 1)

The site's address was publicized in all press releases, surveys and public town hall meetings. Each planning partner also established a link on their own agency website. Information on the plan development process, the Steering Committee, a link to the Hazard Mitigation survey, and drafts of the plan were made available to the public on the site. The County of Marin intends to keep a website active after the plan's completion to keep the public informed about successful mitigation projects and future plan updates.

Figure 1: Marin County OEM MJHMP Website

PUBLIC MEETINGS

Two separate Marin County OA MJHMP Public Town Hall Meeting were conducted at different locations within the County, on different days of the week and during different times of the day. This effort was to ensure the greatest equity and access by the public to enable participation in the process. The Marin County OEM outreach strategy is to "meet people where they are." Each Town Hall Meeting included, live Spanish translation and subtitles, Live American Sign Language (ASL/CDI) interpretation, the ability for the Zoom videoconferencing attendee to activate subtitles in 29 different languages, and vision accessible PowerPoint slide.

The first Town Hall Meeting was conducted on Thursday, April 13, 2023, from 6:00 pm to 7:30 pm, at the Marin County Board of Supervisors Chambers, Marin County Civic Center, 3501 Civic Center Drive, Room #330 San Rafael, CA 94903. The in-person meeting was also broadcast virtually using Zoom videoconferencing and streamed live on Marin County OEM Facebook account. Each of the jurisdictions participating in the MJHMP released a Press Release on their respective websites announcing the Public Town Hall Meeting and providing the date, time, and URL link to the Zoom Meeting for the public to log in and attend the Zoom Meeting. Marin County OEM also posted a notice for the Public Town Hall Meeting on their Facebook account. At the conclusion of the presentation, a question and answer session was held to answer questions from the attendees.

The second Town Hall Meeting was conducted on Saturday, April 29, 2023, from 10:00 am to 11:30 am, at the Marin County Health and Wellness Center, 3240 Kerner Ave. Rooms #109 and #110 San Rafael, CA. 94903. The meeting followed the same format as the first and hosted the same access level of equity and accessibility.

The Marin County OA MJHMP Public Town Hall Meeting was recorded and downloaded from Zoom and made available to all of the jurisdictions and districts to place on their websites and local Access TV for the public to view.

Meeting participants were also invited to complete the Hazard Mitigation Survey and were provided the URL link to the Survey Monkey website to complete the survey.

Figure 2: Marin County OA MJHMP Public Town Hall Meeting

SOCIAL MEDIA

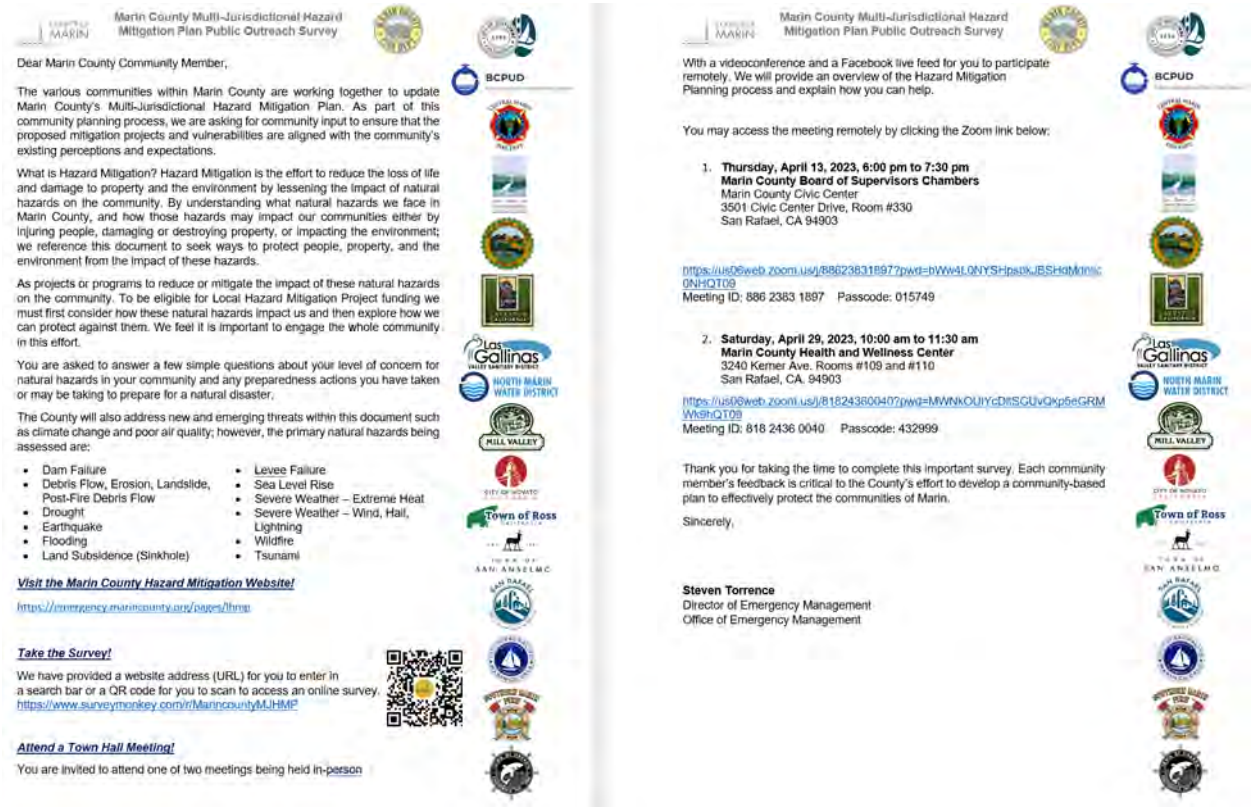
The Marin County OA utilized several forms of social media to reach residents and customers. Information about the Hazard Mitigation Planning process was communicated to the public via Facebook, Twitter, and local access TV. Residents and customers were invited to complete the Hazard Mitigation Plan survey which was accessible via an attached URL or QR Code and provide feedback on potential hazard mitigation projects or programs.

The results of the survey were provided to each of the planning partners and used to support the jurisdictional annex process. Each planning partner was able to use the survey results to help identify actions as follows:

- Gauge the public's perception of risk and identify what citizens are concerned about.
- Identify the best ways to communicate with the public.
- Determine the level of public support for different mitigation strategies.
- Understand the public's willingness to invest in hazard mitigation.

PRESS RELEASES

Press releases were distributed over the course of the plan's development as key milestones were achieved and prior to each Marin County OA MJHMP Public Town Hall Meeting. All press releases were made available to the community in both English and Spanish.



Marin County Multi-Jurisdictional Hazard Mitigation Plan Public Outreach Survey

Dear Marin County Community Member,

The various communities within Marin County are working together to update Marin County's Multi-Jurisdictional Hazard Mitigation Plan. As part of this community planning process, we are asking for community input to ensure that the proposed mitigation projects and vulnerabilities are aligned with the community's existing perceptions and expectations.

What is Hazard Mitigation? Hazard Mitigation is the effort to reduce the loss of life and damage to property and the environment by lessening the impact of natural hazards on the community. By understanding what natural hazards we face in Marin County, and how those hazards may impact our communities either by injuring people, damaging or destroying property, or impacting the environment; we reference this document to seek ways to protect people, property, and the environment from the impact of these hazards.

As projects or programs to reduce or mitigate the impact of these natural hazards on the community. To be eligible for Local Hazard Mitigation Project funding we must first consider how these natural hazards impact us and then explore how we can protect against them. We feel it is important to engage the whole community in this effort.

You are asked to answer a few simple questions about your level of concern for natural hazards in your community and any preparedness actions you have taken or may be taking to prepare for a natural disaster.

The County will also address new and emerging threats within this document such as climate change and poor air quality; however, the primary natural hazards being assessed are:

- Dam Failure
- Debris Flow, Erosion, Landslide, Post-Fire Debris Flow
- Drought
- Earthquake
- Flooding
- Land Subsidence (Sinkhole)
- Levee Failure
- Sea Level Rise
- Severe Weather – Extreme Heat
- Severe Weather – Wind, Hail, Lightning
- Wildfire
- Tsunami

Visit the Marin County Hazard Mitigation Website!

https://emergency.marincounty.org/pages/lhmp

Take the Survey!

We have provided a website address (URL) for you to enter in a search bar or a QR code for you to scan to access an online survey. https://www.surveymonkey.com/r/MarincountyMJHMP

Attend a Town Hall Meeting!

You are invited to attend one of two meetings being held in-person

Marin County Multi-Jurisdictional Hazard Mitigation Plan Public Outreach Survey

With a videoconference and a Facebook live feed for you to participate remotely. We will provide an overview of the Hazard Mitigation Planning process and explain how you can help.

You may access the meeting remotely by clicking the Zoom link below:

1. **Thursday, April 13, 2023, 6:00 pm to 7:30 pm**
   Marin County Board of Supervisors Chambers
   Marin County Civic Center
   3501 Civic Center Drive, Room #330
   San Rafael, CA 94903

https://us06web.zoom.us/j/88623831897?pwd=bWw4L0NYSHpstkJBSHdMnlic0NHQT09
Meeting ID: 886 2383 1897 Passcode: 015749

2. **Saturday, April 29, 2023, 10:00 am to 11:30 am**
   Marin County Health and Wellness Center
   3240 Kerner Ave. Rooms #109 and #110
   San Rafael, CA. 94903

https://us06web.zoom.us/j/81824360040?pwd=MWNkOUIYcDltSGUvQkp6eGRMWk9hQT09
Meeting ID: 818 2436 0040 Passcode: 432999

Thank you for taking the time to complete this important survey. Each community member's feedback is critical to the County's effort to develop a community-based plan to effectively protect the communities of Marin.

Sincerely,

Steven Torrence
Director of Emergency Management
Office of Emergency Management

Figure 3: Hazard Mitigation Plan Public Outreach Press Release

SURVEY

A hazard mitigation plan survey (see Figure 4) was developed by the Steering Committee and made available to the public in both English and Spanish. The survey was used to gauge household preparedness for natural hazards and the level of knowledge of tools and techniques that assist in reducing risk and loss from natural hazards. This survey was designed to help identify areas vulnerable to one or more natural hazards. The answers to its ten questions helped guide the Steering Committee in defining our hazards, and selecting goals, objectives, and mitigation strategies. The survey was available on the hazard mitigation plan website, advertised in press releases, and at town hall meetings. Finally, the survey and the process of public input was advertised throughout the course of the planning process. The survey was available to the public on March 13, 2023, and closed on June 12, 2023. At the conclusion of the planning process over 293 surveys were completed by the public.

Public Comments Considered by the Planning Team

The Planning Team used the following information gathered from the Public Outreach Survey to inform decisions regarding hazard mitigation strategies, actions, and priorities.

- Climate Change, Wildfire, and Drought were the top hazards of concern for the public.
- Text messages, mail, and the County website were the preferred methods for receiving hazard mitigation information.
- 48% of respondents expressed that they were “Very Much” concerned and 31% were “Moderately” concerned that a natural disaster could impact their home or place of residence.
- 85% of respondents own their own home.
- 99% of respondents have access to the internet.

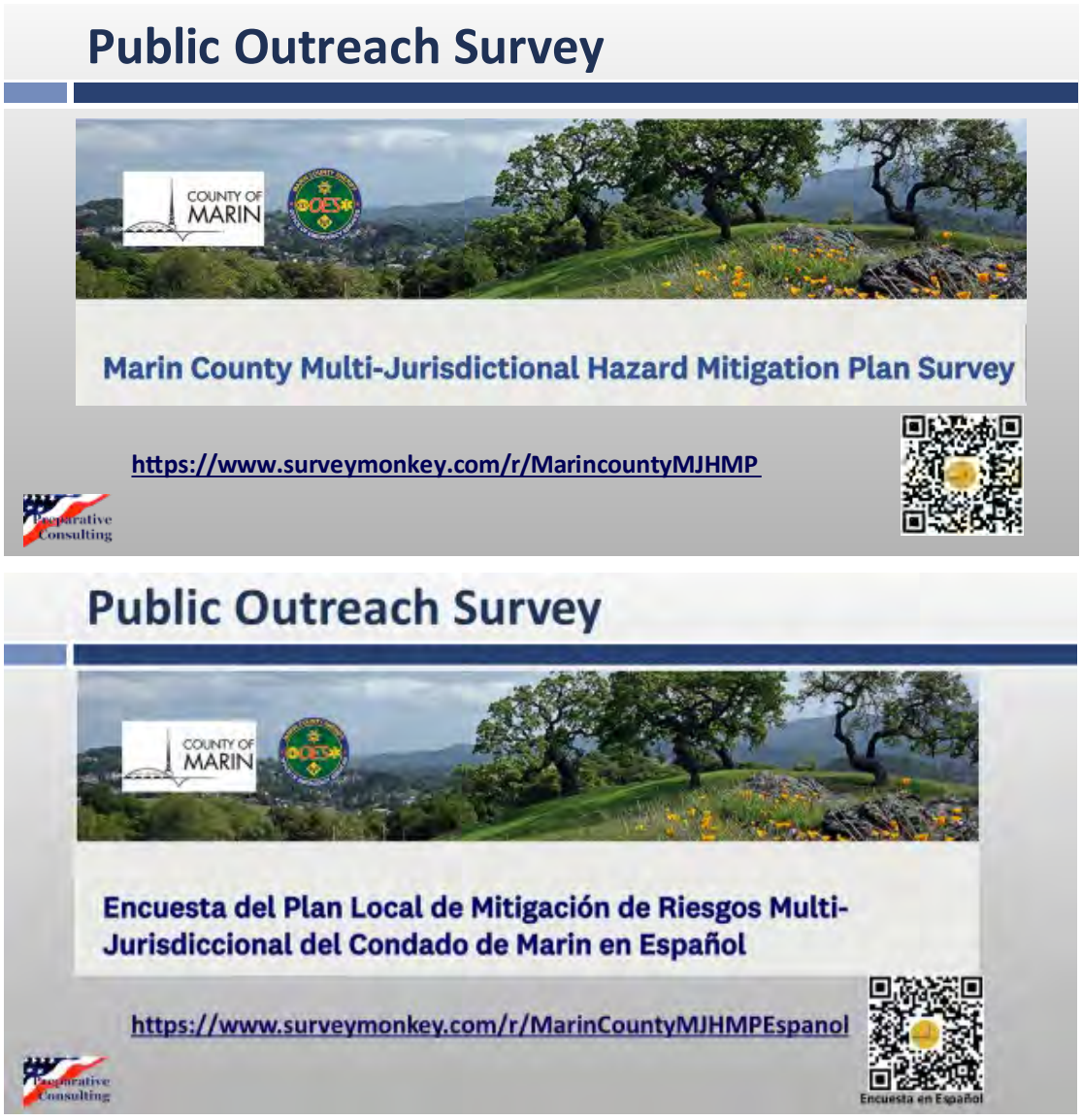


Figure 4: Hazard Mitigation Plan Survey

PUBLIC COMMENT ON THE PLAN

To solicit public feedback on the draft plan, Marin OEM engaged in a multi-faceted approach intended to reach as many Marin residents as possible, including members of the community

who are under-served and under-represented. All members of the community had the opportunity to provide initial comments on the plan during a two-week period from Wednesday, December 4, 2023, to Wednesday, December 18, 2023. Although the initial comment period was listed as two weeks, the public could submit comments indefinitely via the County's website to support the County's continuous improvement efforts. The base plan, as well as city, town and special district annexes, were available for download on emergency.marincounty.org (include photos). The website additionally asked for feedback in a survey in English and Spanish (include photos), the survey was designed to establish where that person lives or works, their top hazards of concern, elicit feedback on the plan and offer a place for them to share projects to reduce risk in their community. The survey collected responses from the community in English and in Spanish.

The website and survey were shared through traditional and social media (photos) The Marin Independent Journal (Marin IJ) used the press release to write an article (hopefully; include photos). Social media accounts were updated four times with an initial ask, two reminders, and a closing announcement. The Marin OEM Public Information Officer coordinated with the Marin County Public Information Officers (MAPIO) working group to distribute information to partner jurisdictions (city, town, and special districts) to share this information on their social media sites and with the communities in the area.

To reach those who may not be engaged digitally, the planning team worked with Marin County Community Response Teams, (CRTs are a collaboration of non-profit organizations supporting underrepresented communities in four zones) to conduct outreach with half-sheet flyers in English and Spanish to share in the 4 CRT zones (southern Marin, north Marin, west Marin, San Rafael). These half sheets were also shared county-wide at libraries, including in areas not covered by CRTs, like at the Fairfax library. CRTs are designed to reach Marin's traditionally underserved and underrepresented communities, so by conducting outreach through this method, we were able to inform residents who may not have been engaged otherwise, including residents in Marin City, West Marin, and the Canal District of San Rafael.

After December 18, 2023, the various participating jurisdiction and district profiles remained on the Marin County OEM website for public comments. The Town of Fairfax had an additional 14-day comment period for the Town of Fairfax Community Profile where their profile was posted on the Town website for final public comment from January 29 – February 5, 2024.

The 14-day public comment period gave the public an opportunity to comment on the draft plan update prior to the plan's submittal to Cal OES. Comments received on the draft plan are available upon request. All comments were reviewed by the planning team and incorporated into the draft plan as appropriate.

Public Comments Considered by the Planning Team

The Marin County OEM posted the draft Hazard Mitigation Plan and hazard mitigation actions on their website and solicited public comments on the content. The Town of Corte Madera distributed press releases directing the community to the Marin County OEM website to review the draft plans. The Planning Team gathered public comments and information on the Marin County OEM website regarding proposed and current Hazard Mitigation Actions. The Planning Team used the comments and suggestions to inform

decisions regarding hazard mitigation strategies, actions, and priorities. Most comments included ideas for hazard mitigation projects and comments on the effectiveness of current mitigation projects. These comments were used to revise the proposed hazard mitigation actions which resulted in the final list of hazard mitigation actions listed in 3.5 Hazard Mitigation Actions.

1.3 Overview and History

The Coast Miwok Native Americans occupied stretches along local creeks, spring and seep areas; moreover, prehistoric habitations were usually chosen near permanent and seasonal drainages, typically along flat ridges and terraces.

Fairfax is a unique and very diverse community located in a spectacular setting in Upper Ross Valley. The Town was once part of the 6,558-acre Canada de Herrera land grant given to Domingo Sais on August 10, 1839, by the Mexican government as a reward for his military service. This grant covered all of Fairfax and part of San Anselmo. Sais occupied the land, with his wife and eleven children. Shortly before he died in 1853, Sais gifted the area that is now the site of the Fair-Anselm Shopping Center and the former Marin Town and Country Club to Dr. Alfred W. Taliaferro, formerly of Virginia, one of the first Europeans to settle in what is now the Marin County OA, becoming its first physician. In 1855, Dr. Taliaferro, in turn, transferred a 32 acre site to a fellow Virginian and boyhood friend, Charles Snowden Fairfax, as a wedding gift. Fairfax, the tenth Baron of Cameron, Scotland, had come to California in 1849 as part of the Gold Rush at the age of 20. Fairfax and his wife, Ada, named their home, the “Bird’s Nest Glen.”

In 1876, the Fairfax District was granted its own school district for the lands contained in the former Sais Rancho. The first school was built in Sleepy Hollow.

Charles and Adele Pastori leased the “Bird’s Nest Glen” in 1890 from Emma Woodward, opening a restaurant in 1893, and purchasing the property outright in 1905. The couple operated a high quality restaurant in the original Fairfax residence until 1911 when the building was destroyed in a fire. Charles also died in 1911.

The first post office was opened in Blagg’s Store in 1910 (now 1780-1788 Sir Francis Drake) and John Blagg became the Town’s first postmaster. The community began to grow rapidly when the Fairfax Tract at Pastori’s Station, Ridgeway and Deer Park was developed in 1907 and 1908. Additional development occurred as the Fairfax Improvement Company marketed the Pacheco Tract in 1910. Next, the Fairfax Development Company subdivided the Fairfax Manor Tract, and Henry Frustuck subdivided the Fairfax Park Tract, both of which occurred in 1911. By 1911, there were 100 homes in Fairfax, while in 1905 only five homes existed. The expansion of the community continued, as the Rocca Brothers developed Fairfax Heights in 1912, and the Bush Annex, Bothin Park, and the Manor Tracts became available for residential use in 1913.

The Cascades subdivision was developed in 1914, and later expanded in 1921 and 1926. St. Rita’s Church was built in 1916, the original building is still in place and now used as the Church Hall, the new church being built alongside in 1953. The area around the Town was used as the setting for western movie productions during the early years of the motion picture industry between 1910 and 1923. Essanay Film Manufacturing Company with Bronco Billy filmed several movies in Fairfax in 1911.

The demographics of the growing community changed significantly with the construction of Alpine Dam in 1917, which precipitated an influx of Italian laborers and caused the Willow Avenue portion of the Town to be known as “Little Italy” for many years after the dam was completed. The dam was dedicated in 1919.

In 1920 the Fairfax Volunteer Firemen purchased nine acres of the Fairfax Park Tract from Henry Frustuck for a park for the Town. The current Pavilion was constructed on the park site in 1921. A year later, part of the area reserved as a park was sold to the School District as the site for Central School, today’s School Street Plaza.

The Town was officially incorporated in February 1931, governed by a five-member council. Today, Fairfax is a small town located at the western edge of the Marin County OA’s city centered corridor that parallels U.S. Highway 101, with the agriculturally rich rural portion of the county just beyond to the west. The town’s natural setting encompasses a series of valleys, canyons, and forested hills with largely undeveloped ridgelines. Scenic and natural resources are key aspects of the community’s sense of place and contribute to the overall quality of life in Fairfax. In addition to the form of the land, mature trees and the extensive areas of protected open space in and around the Town help define the Town's identity as a community that values nature and environmental preservation. The architectural diversity of the neighborhoods and the compact, small scale Town Center area also make Fairfax a very special place for residents and visitors.

The residential development that occurred between 1907 and 1914, with winding streets and a wide range of lots sizes, set the stage for the future development of the community’s built environment. Much of the subsequent residential and commercial development of Fairfax prior to World War II was related to the town’s status as a summer resort for residents of San Francisco attracted by the warm, sunny weather of the Ross Valley. In recent years, rapidly rising housing prices have resulted in numerous proposals to significantly renovate existing residential structures. Any change to the existing fabric of the Town will not occur primarily as a result of subdivisions of land, but rather as infilling scattered undeveloped or underdeveloped sites, or through the replacement of one residential structure with another.

The Town of Fairfax was incorporated as a town in 1931. The Town of Fairfax had an estimated population of 7,605 in 2020, with 5,518 housing units in the Town. The Town has a total area of 2.677 square miles. The median income for a household in the Town is $111,290 and the per capita income for the Town is $87,951. Approximately 0 percent of families and 3.9 percent of the population is below the poverty line (2021 data, U.S. Census Bureau).

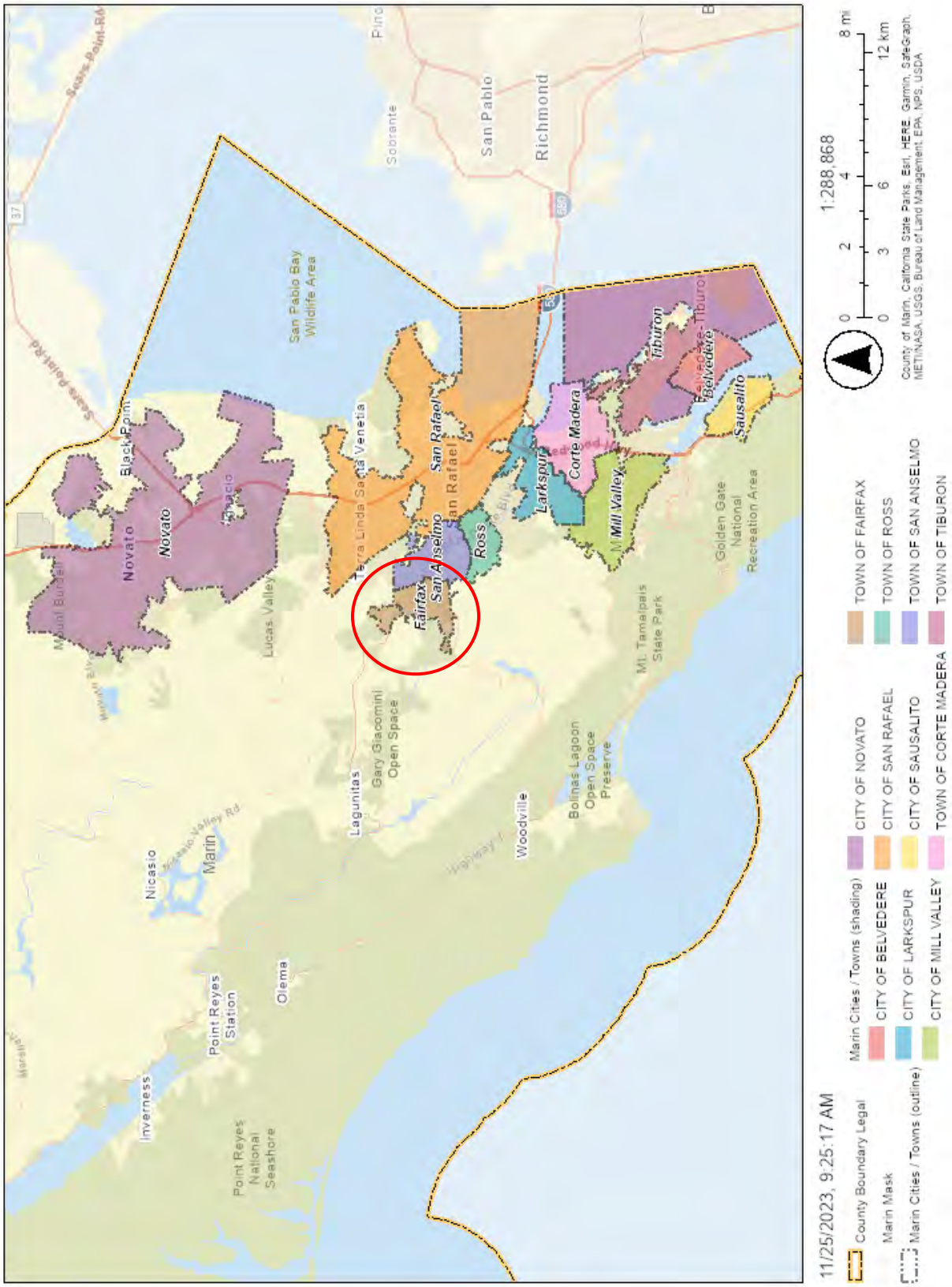


Figure 5: Location of the Town of Fairfax within the Marin County OA
Source: Marin County OEM

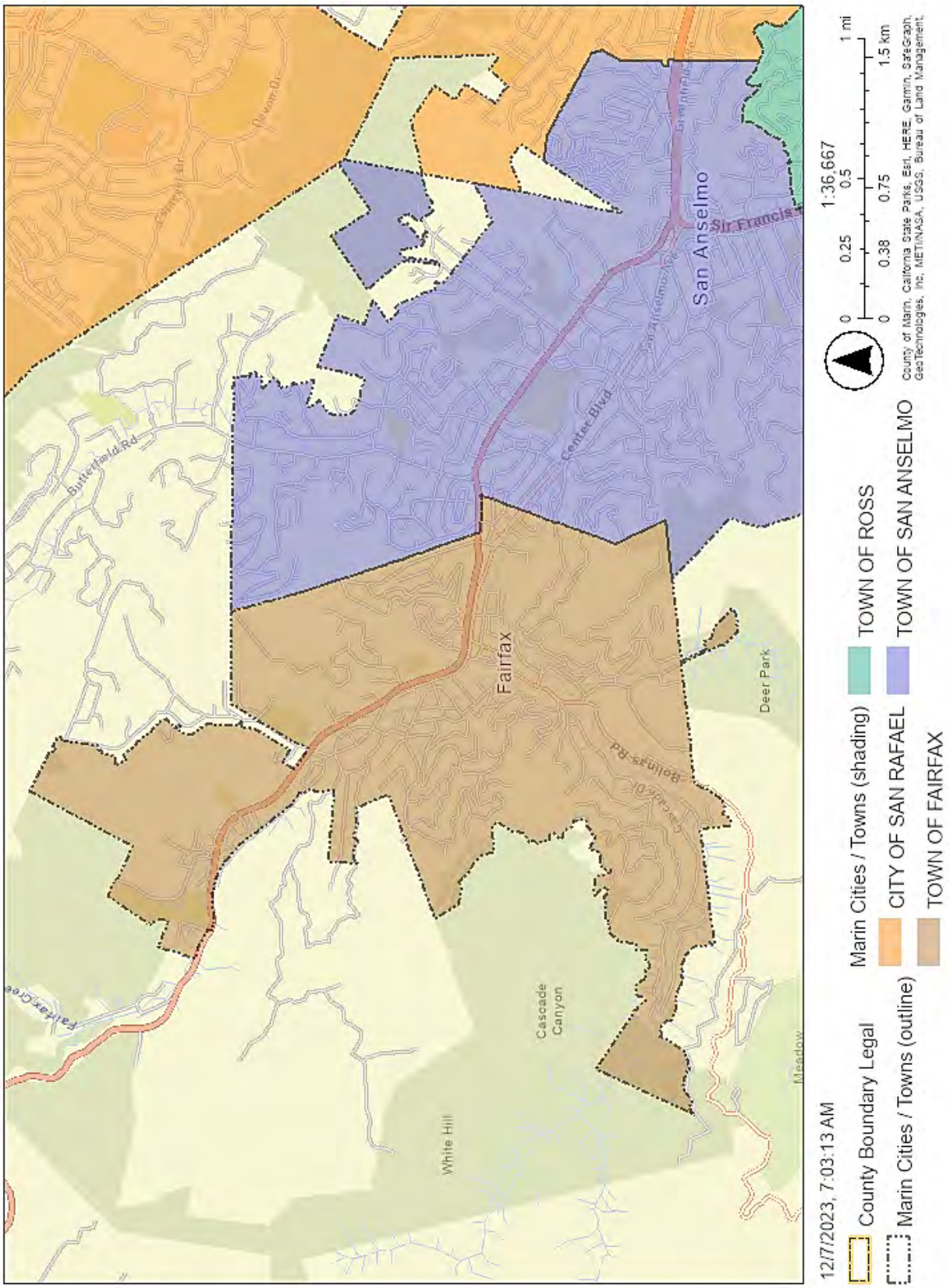


Figure 6: Map of the Town of Fairfax
Source: Marin County OEM

1.4 GOVERNMENT

The Town of Fairfax was incorporated as a town in 1931 and is governed by a five-person Town Council. Each year the Town Council elects one of its members to serve as Mayor, the executive head of the Town; and appoints a Town Manager, the administrative head of the Town. The Town consists of 9 departments: the Administration, Climate and Environment, Finance, Fire Department, Human Resources, Planning and Building, Police, Public Works, and Recreation and Community Services.

The Town Council assumes responsibility for the adoption of this plan; and the Town Manager will oversee its implementation.

The Ross Valley Fire Department provides Fire services to the Towns of Fairfax, San Anselmo, Ross and the Sleepy Hollow Fire Protection District In 2012, Ross Valley Fire Department's Board of Directors voted to consolidate fire services with the Town of Ross, incorporating the Town of Ross fire Station 18, and the 6 firefighters employed there, into the Ross Valley Fire Department.

The Fairfax Police Department is a full service Police department. Although the town did not incorporate until the early 1930s, in 1925 the state legislature allowed counties to appoint police chiefs for unincorporated areas and Fairfax appointed its first police officer. The Police Department is currently staffed at 12 officers.

1.5 WEATHER AND CLIMATE

The Town of Fairfax lies 115 ft (35 m) above sea level. In Fairfax, the summers are long, comfortable, arid, and mostly clear and the winters are short, cold, wet, and partly cloudy. Over the course of the year, the temperature typically varies from 48°F to 62°F and is rarely below 42°F or above 72°F. The difference in precipitation between the driest month and the wettest month is 8 inches. The annual rainfall is 43 inches. The month of highest relative humidity is February (80%). The month with the lowest relative humidity is June (70%). The month which sees the most rainfall is January. The driest month of the year is July.

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature °C (°F)	9.3 °C (48.7) °F	9.8 °C (49.7) °F	10.9 °C (51.6) °F	11.8 °C (53.2) °F	13.6 °C (56.5) °F	15.6 °C (60.2) °F	16 °C (60.8) °F	16.4 °C (61.4) °F	16.4 °C (61.5) °F	15 °C (58.9) °F	11.9 °C (53.5) °F	9.5 °C (49) °F
Min. Temperature °C (°F)	6.3 °C (43.4) °F	6.9 °C (44.4) °F	7.8 °C (46.1) °F	8.5 °C (47.4) °F	10.1 °C (50.2) °F	11.7 °C (53) °F	12.3 °C (54.2) °F	12.9 °C (55.2) °F	12.6 °C (54.7) °F	11.5 °C (52.7) °F	8.9 °C (48) °F	6.8 °C (44.2) °F
Max. Temperature °C (°F)	13.3 °C (56) °F	13.9 °C (57) °F	15.1 °C (59.2) °F	16.2 °C (61.2) °F	18.3 °C (64.9) °F	20.9 °C (69.6) °F	21.2 °C (70.2) °F	21.5 °C (70.8) °F	21.9 °C (71.4) °F	20 °C (68.1) °F	16.2 °C (61.2) °F	13.1 °C (55.7) °F
Precipitation / Rainfall mm (in)	118 (4)	124 (4)	88 (3)	41 (1)	22 (0)	5 (0)	1 (0)	2 (0)	2 (0)	25 (0)	58 (2)	114 (4)
Humidity(%)	78%	80%	78%	72%	71%	70%	75%	76%	73%	72%	75%	77%
Rainy days (d)	8	7	6	4	3	1	0	0	0	2	5	7
avg. Sun hours (hours)	5.7	6.4	7.8	9.4	10.0	10.6	9.3	8.5	8.7	7.8	6.7	5.6

Figure 7: The Town of Fairfax Precipitation and Monthly Temperatures
Source: En.Climate-Data.org

1.6 DEMOGRAPHICS

The California Department of Finance shows an overall estimated decrease in the population of the Marin County OA and the Town of Fairfax since the last plan update in 2018. Of the total estimated 257,135 residents of the Marin County OA in 2022 based on the 2020 U.S. Census Survey, 190,148 residents live in the incorporated county and 66,987 residents live in the unincorporated county.

The Town of Fairfax had an estimated population of 7,625 in the 2018 plan. 2020 U.S. Census Survey estimated the Town's population at 7,605. However, revised estimates for 2022 estimate the population to decrease to 7,418 population.

Table 4: Town of Fairfax Estimated Jurisdictional Population

Jurisdiction	Population 2022 (Estimate)	Population 2020	Population 2018 (Estimate)	Percent Change 2018-2022
Marin County OA	257,135	262,321	262,179	-1.92%
Town of Fairfax	7,418	7,605	7,625	-2.71%

Table 4: Town of Fairfax Estimated Jurisdictional Population
Source: California Department of Finance

According to the U.S. Census, the population of The Town of Fairfax is 7,605 as of 2020. Between 2018-2022, the City's growth rate decreased at an average annual rate of -2.71%, lower than the historic twenty-year average growth rate of 3.2%. Table 5 shows the population growth comparison of the State of California, The Marin County OA and the Town of Fairfax between 2010 - 2020.

Table 5: Population Change of The Town of Fairfax				
Jurisdiction	Total Population		Change, 2010-2020	
	April 1, 2010	April 1, 2020	Number	Percent
California	37,253,956	39,538,223	2,284,267	6.1%
Marin County OA	252,409	262,321	9,912	3.9%
Fairfax, town	7,441	7,605	164	2.2%

Table 5: Population Change of The Town of Fairfax
Source: Town of Fairfax Housing Element, US Census Bureau, California Department of Finance

Table 6 lists the various languages spoken in the Town of Fairfax.

Table 6: Languages Spoken in Fairfax	
Primary Language Spoken	% of Population
English only	87.5%
Spanish	7.3%
Other Indo-European languages	2.8%
Asian and Pacific Islander languages	1.4%
Other languages	1.0%

Table 6: Languages Spoken in Fairfax
Source: US Census Bureau (2020)

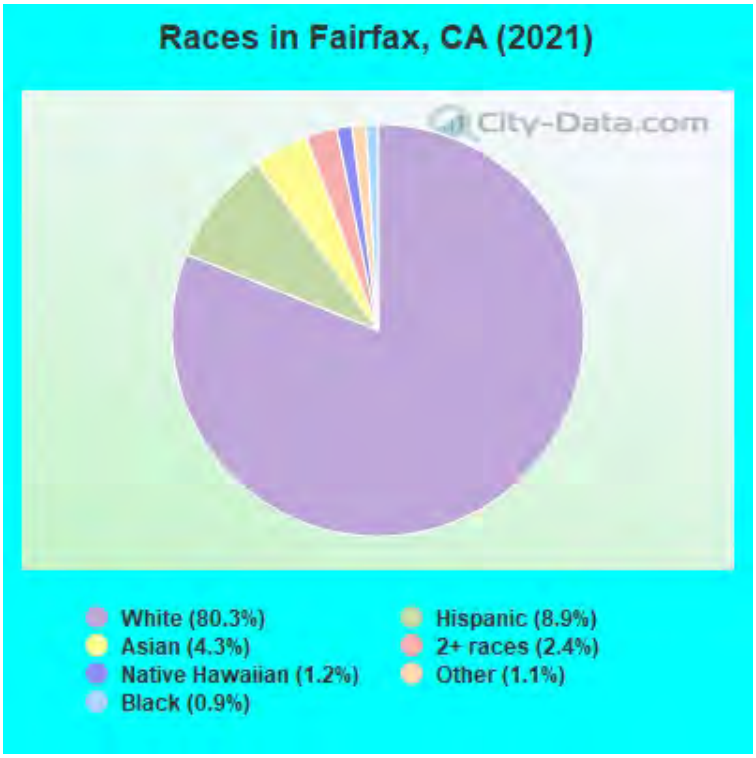


Figure 8: Races in Fairfax
Source: City-Data.com

Table 7: Marin County OA Jurisdictional Housing Stock							
2022 and 2018							
Year		Total Units	Single Family		Multi-Family		Mobile Homes
			Detached	Attached	2 to 4	5 plus	
California							
2022	Number	14,583,998	8,341,577	1,010,851	1,168,669	3,500,674	562,223
	Percent	100.0%	57.2%	6.9%	8.0%	24.0%	3.9%
2018	Number	14,157,502	8,160,864	985,926	1,129,761	3,318,946	562,005
	Percent	100.0%	57.6%	7.0%	8.0%	23.4%	4.0%
Marin County OA							
2022	Number	111,879	68,004	11,314	8,524	22,013	1,984
	Percent	100.0%	60.8%	10.1%	7.6%	19.7%	1.8%
2018	Number	112,294	68,697	11,318	8,307	21,986	1,986
	Percent	100.0%	61.2%	10.1%	7.4%	19.6%	1.8%
Town of Fairfax							
2022	Number	3,486	2,185	338	499	451	13
	Percent	100.00%	62.68%	15.47%	147.63%	90.38%	2.88%
2018	Number	3,594	2,281	345	486	469	13
	Percent	100.00%	63.47%	15.12%	140.87%	96.50%	2.77%

Table 7: Marin County OA Jurisdictional Housing Stock
Source: California Department of Finance

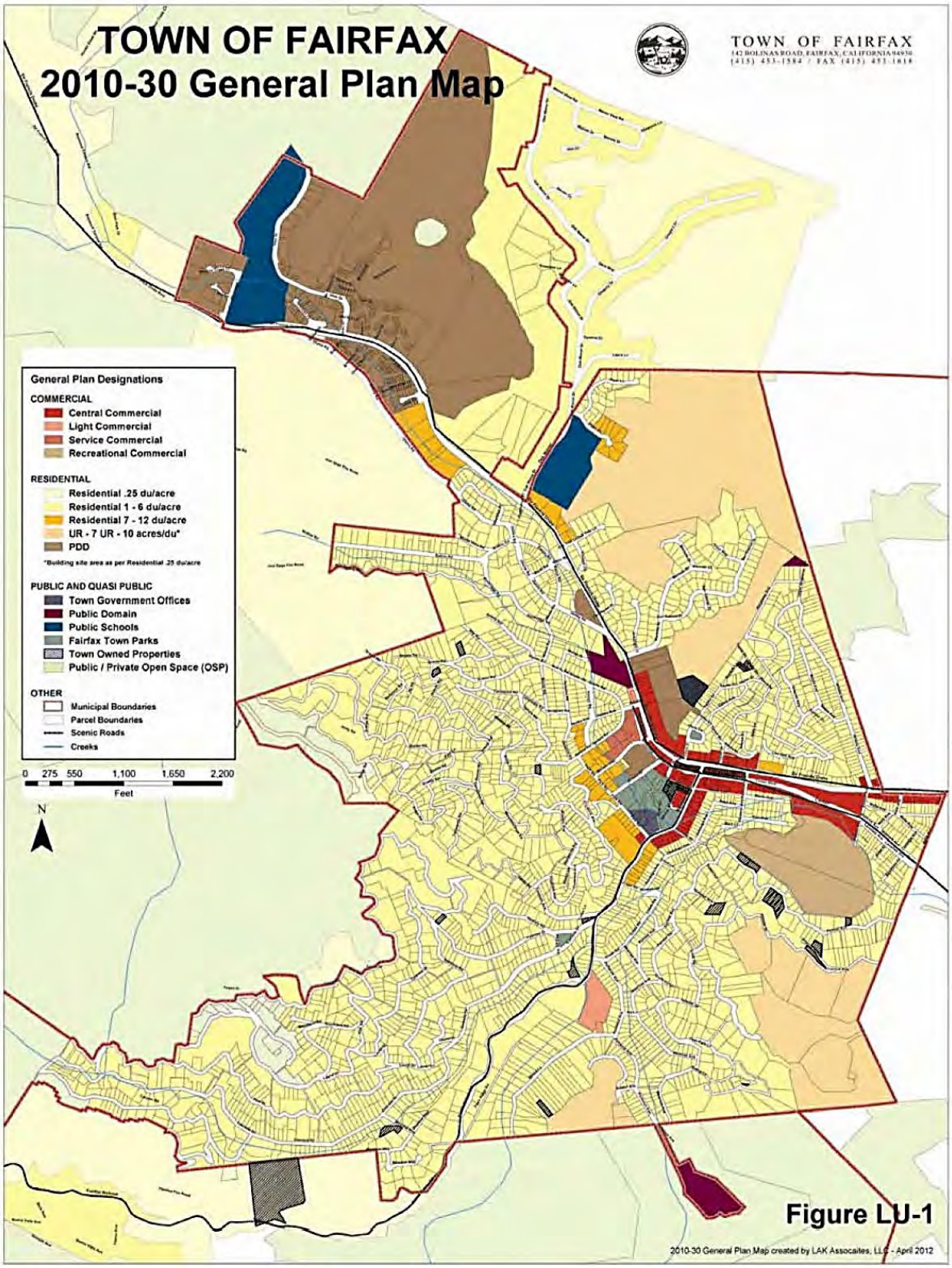


Figure 9: Town of Fairfax Land Use Map
Source: Town of Fairfax 2012 General Plan

1.7 Social Vulnerability and Risk

The California Governor's Office of Emergency Services (Cal OES) has initiated the "Prepare California" grant program focused on building community resilience amongst vulnerable individuals living in the areas of the state most susceptible to natural disasters. The Prepare California Initiative is aimed at reducing long-term risks from natural disasters by investing in local capacity building and mitigation projects designed to protect communities.

Prepare California leverages funds approved in Governor Gavin Newsom's 2021-22 State Budget and is designed to unlock federal matching funds for community mitigation projects that vulnerable communities would otherwise be unable to access. This program is intended for communities that are the most socially vulnerable and at the highest risk for future natural hazard events. The state identified communities by prioritizing California census tracts according to their estimated hazard exposures and social vulnerability.

The National Risk Index is a dataset and online tool to help illustrate the United States communities most at risk for 18 natural hazards: Avalanche, Coastal Flooding, Cold Wave, Drought, Earthquake, Hail, Heat Wave, Hurricane, Ice Storm, Landslide, Lightning, Riverine Flooding, Strong Wind, Tornado, Tsunami, Volcanic Activity, Wildfire, and Winter Weather.

For purposes of this plan the following National Risk Index (NRI) hazards are profiled in support of eight of the twelve Marin County OA MJHMP Hazards. NRI data was not available for Dam Failure, Land Subsidence, Levee Failure, or Sea Level Rise.

Table 8: NRI Hazards and Marin County OA MJHMP Hazards	
NRI Hazards	Marin County OA MJHMP Hazards
Earthquake	Earthquake
Riverine Flooding	Flooding
Coastal Flooding	Flooding
Wildfire	Wildfire
Landslide	Debris Flow
Drought	Drought
Heat Wave	Severe Weather -Extreme Heat
Tsunami	Tsunami
Strong Wind	Severe Weather – Wind, Tornado

Table 8: NRI Hazards and Marin County OA MJHMP Hazards
Source: FEMA National Risk Index 2023

The National Risk Index leverages available source data for Expected Annual Loss due to these 18 hazard types, Social Vulnerability, and Community Resilience to develop a baseline relative risk measurement for each United States county and Census tract. These measurements are calculated using average past conditions, but they cannot be used to predict future outcomes for a community. The National Risk Index is intended to fill gaps in available data and analyses to better inform federal, state, local, tribal, and territorial decision makers as they develop risk reduction strategies.

Calculating the Risk Index

Risk Index scores are calculated using an equation that combines scores for Expected Annual Loss due to natural hazards, Social Vulnerability and Community Resilience:

Risk Index = Expected Annual Loss × Social Vulnerability ÷ Community Resilience

Hazard Type Risk Index

Hazard type Risk Index scores are calculated using data for only a single hazard type, and reflect a community's Expected Annual Loss value, community risk factors, and the adjustment factor used to calculate the risk value. Table 9 illustrates the NRI Hazard Type Risk Index for Fairfax Census Tract 1141.00.

Table 9: NRI Hazard Type Risk Index for Fairfax Census Tract 1141.00

Hazard Type	EAL Value	Social Vulnerability	Community Resilience	CRF	Risk Value	Score
Earthquake	$882,375	Relatively Low	Very High	1.01	$894,568	90.4
Riverine Flooding	$400,764	Relatively Low	Very High	1.01	$406,302	95.6
Wildfire	$39,159	Relatively Low	Very High	1.01	$39,700	90.2
Landslide	$24,490	Relatively Low	Very High	1.01	$24,828	98.6
Heat Wave	$8,195	Relatively Low	Very High	1.01	$8,308	48.2
Tornado	$3,711	Relatively Low	Very High	1.01	$3,762	8.8
Strong Wind	$263	Relatively Low	Very High	1.01	$266	9.3
Coastal Flooding	$0	Relatively Low	Very High	1.01	$0	0
Drought	$0	Relatively Low	Very High	1.01	$0	0

Table 9: NRI Hazard Type Risk Index for Fairfax Census Tract 1141.00
Source: FEMA National Risk Index 2023

Social groups in Census tract 0604114100 have a Very Low susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.

Figure 10 illustrates the Social Vulnerability Map for Fairfax Census Tract 1141.00. Social groups in Census tract 0604114100 have a Relatively Low susceptibility to the adverse impacts of natural hazards when compared to the rest of the U.S.

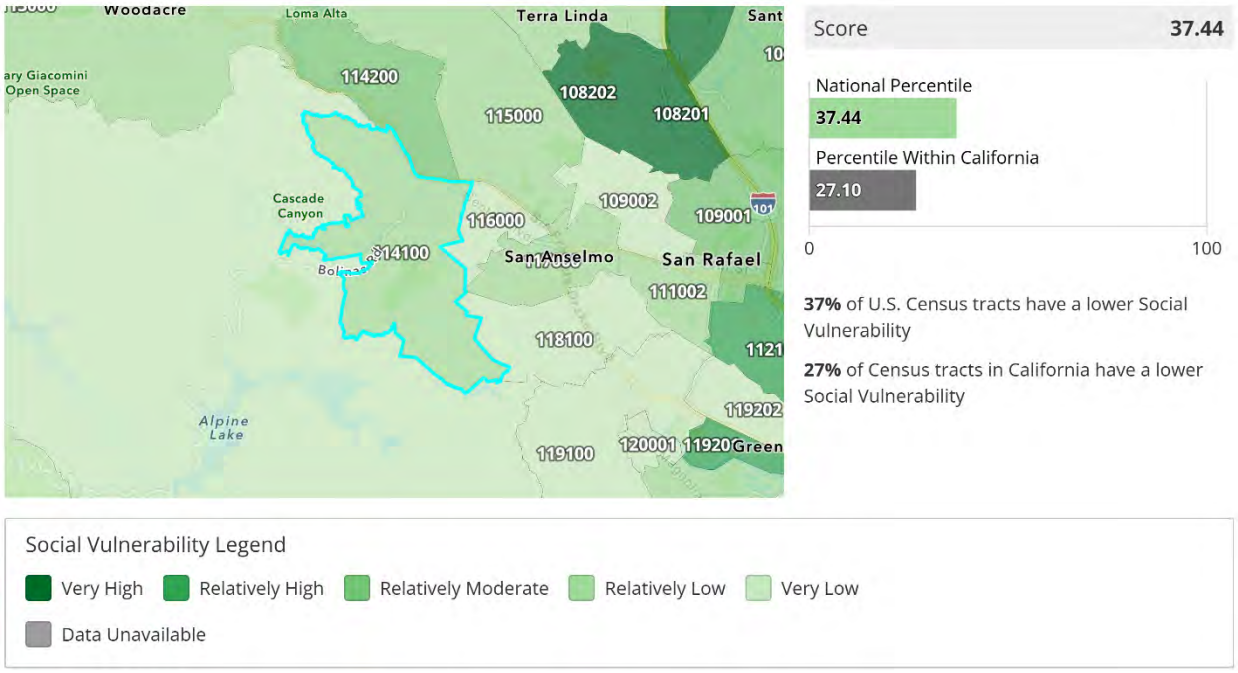


Figure 10: Town of Fairfax Social Vulnerability Map Census Tract 1141.00
Source: FEMA National Risk Index 2023

Most socially vulnerable residents in the Marin County OA reside in parts of Novato, parts of San Rafael, including in and around the Canal District, the Greenbrae neighborhood of Larkspur, and the unincorporated areas of Marin City and Santa Venetia. This aligns with what the County knows about Marin residents. However, discrepancy lies in the western, more rural area of the county. West Marin is comprised of seven villages, and other populated areas, that are distanced from the centralized resources in the eastern part of the county. At three local elementary school in West Marin (2022-2023 school year), students eligible for free and reduced lunch program are, 62%, 41%, and 52%, a reflection of the financial capacity of local families. West Marin is home to many farms that may employ and house underrecognized workers that may not have taken part in a census survey, what the SVI is calculated from. In the fourth quarter of FY 2021/22 the bus routes traveling to West Marin (Rural Routes) were the only service category to have increased in ridership since pre-COVID (increase 0.1%; Marin Transit, 2022) showing the reliance of West Marin residents on public transportation; however, this data continues to adjust based upon the increase in alternate methods of mass transportation. Considering this, the County of Marin acknowledges that unique social factors in West Marin require different approaches than other parts of the County.

The Town of Fairfax has a “Relatively Low” Social Vulnerability rating. The Town of Fairfax had an estimated population of 7,441 in 2020, with 3,479 housing units in the Town. The Town has a total area of 2.204 square miles. The median income for a household in the Town is $111,290 and the per capita income for the Town is $59,011. Approximately 0.3 percent of families and 10.1 percent of the population is below the poverty line (2020 data, U.S. Census Bureau).

1.8 Economy and Tax Base

Table 10 shows income by household in The Town of Fairfax as of 2021.

Table 10: Household Income for the Town of Fairfax as of 2021		
Household Income	Number	Percent
Total Households	3410	-
Less than $10,000	222	6.5
$10,000 to $14,999	48	1.4
$15,000 to $24,999	211	6.2
$25,000 to $34,999	194	5.7
$35,000 to $49,999	303	8.9
$50,000 to $74,999	361	10.6
$75,000 to $99,999	239	7.0
$100,000 to $149,999	743	21.8
$150,000 to $199,999	426	12.5
$200,000 or more	668	19.6
Median household income (dollars)	$111,290	
Mean household income (dollars)	$131,887	

Table 10: Household Income for The Town of Fairfax as of 2021
Source: US Census Bureau American Community Survey 2021 Estimates

Table 11 shows the percentage of people in The Town of Fairfax over the age of 16 employed by industry.

Table 11: Town of Fairfax Civilian Employed Population 16 years+ by Industry		
Industry	Estimated Employed	Percent
Civilian employed population 16 years and over	4,096	-
Agriculture, forestry, fishing and hunting, and mining	47	1.15%
Construction	250	6.10%
Manufacturing	138	3.37%
Wholesale trade	131	3.20%
Retail trade	359	8.76%
Transportation and warehousing, and utilities	59	1.44%
Information	123	3.00%
Finance and insurance, and real estate and rental and leasing	274	6.69%
Professional, scientific, and management, and administrative and waste management services	893	21.80%
Educational services, and health care and social assistance	948	23.14%

Arts, entertainment, and recreation, and accommodation and food services	435	10.62%
Other services, except public administration	323	7.89%
Public administration	116	2.83%

Table 11: Town of Fairfax Civilian Employed Population 16 years+ by Industry
Source: US Census Bureau American Community Survey 2021 Estimates

1.9 CRITICAL FACILITIES

The following list of facilities has been determined to be critical to the ability of the Town of Fairfax to fulfill the requirements of its mission during an emergency:

Table 12: Town of Fairfax Critical Facilities

	Category	Name	Address	Fire Severity Zone	Flood Zone
1.	Fire Station	Ross Valley Fire Station 21	10 Park Road, Fairfax 94930	High	AE
2.	Police Station	Fairfax Police Department	142 Bolinas Rd Fairfax	High	AE
3.	Town Hall/EOC	Fairfax Town Hall	142 Bolinas Rd, Fairfax	High	AE
4.	Corp Yard	Fairfax DPW Corp Yard	142 Bolinas Rd, Fairfax	High	AE
5.	Community Center/ Finance Dept	Finance Department for Town of Fairfax	16 Park Road, Fairfax	High	AE
6.	Community Center, Council Chambers	Woman's Club	46 Park Road, Fairfax, CA 94930	High	AE
7.	Community Center. Gymnasium, event center	The Pavilion	142 Bolinas Rd, Fairfax, CA 94930	High	AE But is well above the BFE

Table 12: Town of Fairfax Critical Facilities
Source: Town of Fairfax

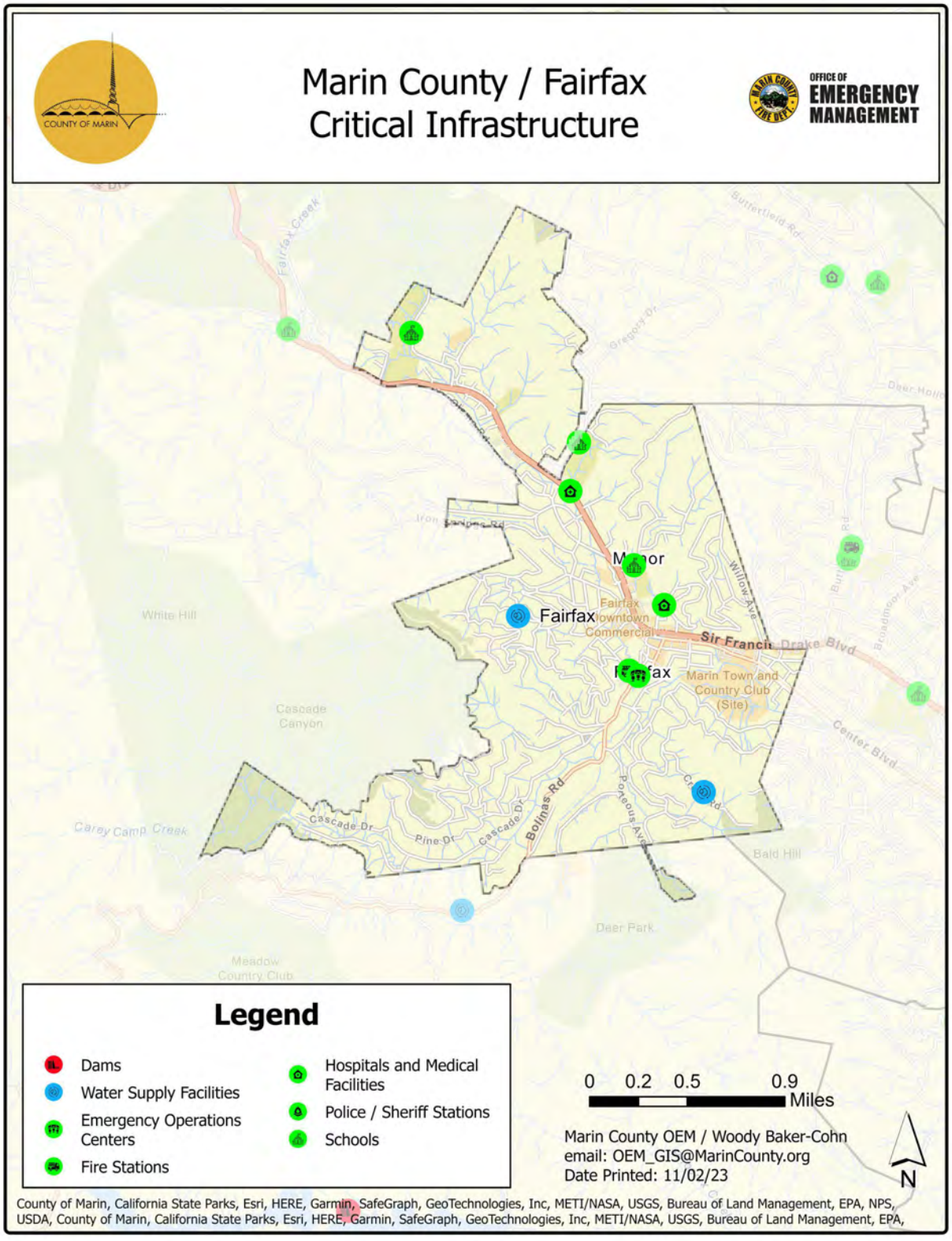


Figure 11: Town of Fairfax Critical Facilities and Infrastructure
Source: Marin County OEM

1.10 HISTORICAL PROPERTIES

The Town of Fairfax has one registered historically significant homes, public buildings, or landmarks. To inventory these resources, the HMPC collected information from a number of sources:

- California Department of Parks and Recreation Office of Historic Preservation (OHP) OHP is responsible for the administration of federally and state mandated historic preservation programs to further the identification, evaluation, registration, and protection of California's irreplaceable archaeological and historical resources. OHP administers the National Register of Historic Places, the California Register of Historical Resources, California Historical Landmarks, and the California Points of Historical Interest programs.
- Town of Fairfax Chamber of Commerce.
- Town of Fairfax website.

As defined by the National Environmental Policy Act (NEPA), any property over 50 years of age is considered a potential historic resource and is potentially eligible for the National or California Register. Thus, in the event that the property is to be altered, or has been altered, as the result of a major federal action, the property must be evaluated under the guidelines set forth by NEPA. Structural mitigation projects are considered alterations for the purpose of this regulation. Similar regulations exist for buildings under the California Environmental Quality Act (CEQA).

Table 13: Historic Sites in Fairfax

Name/Landmark State Plaque Number	National Register (NR)	State Landmark	California Register	Date Listed (NR)	Jurisdiction
Lord Charles Snowden Fairfax Home (679)		X	X		Fairfax

Table 13: Historic Sites in The Town of Fairfax
Source: California Office of Historic Preservation and the National Register of Historic Places

2.0 HAZARD IDENTIFICATION AND RISK ASSESSMENT

The Town of Fairfax identified hazards that affect the city and developed natural hazard profiles based upon the countywide risk assessment, past events and their impacts. Figure 12 shows the top hazards that the Jurisdiction is at risk from according to the hazard mitigation Steering Committee.

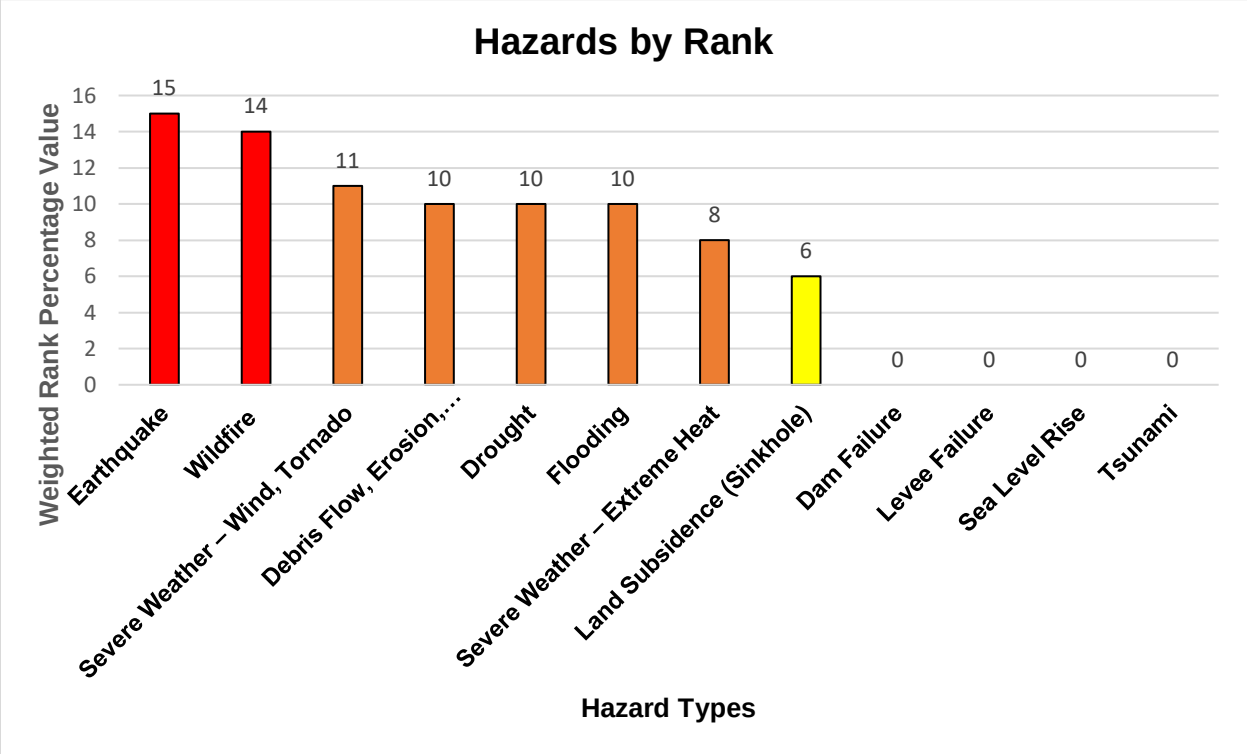


Figure 12: Town of Fairfax Risk Assessment – Planning Team Top Hazards

Figure 13: Risk Rank Categorization	
Risk Level	**Risk Numerical Score**
High Risk	**12 - 16**
Serious Risk	**8 - 11**
Moderate Risk	**4 - 7**
Low Risk	**1 - 3**

Figure 13: Hazard Risk Categorization

Each Marin County OA MJHMP participating jurisdiction and organization reviewed and approved the Top Hazards identified by the Planning Team. Each participating jurisdiction and organization then completed a more complex assessment tool to further develop their hazard assessment and prioritization.

The planning process used the available FEMA tools to evaluate all the possible threats faced. The primary tool selected was the Hazard Assessment and Prioritization Tool. This matrix allowed the participating jurisdiction or organization to assess their own level of vulnerability and mitigation capability. Each participating Jurisdiction and organization assessed the top hazards for:

- Probability/ Likelihood of Future Events
- Geographic Extent
- Magnitude/ Severity
- Climate Change Influence
- Significance

Probability/ Likelihood of Future Events

- **Unlikely:** Occurs in intervals greater than 100 years - Less than 1% probability of occurrence in the next year or a recurrence interval greater than 100 years.
- **Occasional:** Occurring every 11 to 100 years - 1-10% probability of occurrence in the next year or a recurrence interval of 11 to 100 years.
- **Likely:** Occurring every 1 to 10 years - 10-90% probability of occurrence in the next year or recurrence interval of 1 to 10 years.
- **Highly Likely:** Occurring almost every year - 90-100% probability of occurrence in the next year or a recurrence interval of less than 1 year.

Geographic Extent

- **Negligible:** Less than 10% of the planning area
- **Limited:** 10-25% of the planning area
- **Significant:** 25-75% of planning area
- **Extensive:** 75-100% of planning area

Magnitude/ Severity

- **Weak:** Limited classification on scientific scale, slow speed of onset or short duration of event, resulting in little to no damage.
- **Moderate:** Moderate classification on scientific scale, moderate speed of onset or moderate duration of event, resulting in some damage and loss of services for days.
- **Severe:** Severe classification on scientific scale, fast speed of onset or long duration of event, resulting in devastating damage and loss of services for weeks or months.
- **Extreme:** Extreme classification on scientific scale, immediate onset or extended duration of event, resulting in catastrophic damage and uninhabitable conditions.

Table 14: Select Hazards Magnitude and Severity Scale					
Hazard	**Scale/Index**	**Weak**	**Moderate**	**Severe**	**Extreme**
Drought	Palmer Drought Severity Index	+1.99 to -1.99	-2.00 to -2.99	-3.00 to -3.99	-4.00 and below
Earthquake	Modified Mercalli	I to IV	V to VII	VIII	IX to XII
	Richter Magnitude	2,3	4,5	6	7,8
Tornado	Fujita Tornado Damage Scale	FO	F1, F2	F3	F4, F5

Table 14: Select Hazards Magnitude/ Severity Scale or Index

Climate Change Influence

- **Low:** Minimal potential impact
- **Medium:** Moderate potential impact
- **High:** Widespread potential impact

Significance

- **Low:** Minimal potential impact - Two or more criteria fall in lower classifications, or the event has a minimal impact on the planning area. This rating is sometimes used for hazards with a minimal or unknown record of occurrences or for hazards with minimal mitigation potential.
- **Medium:** Moderate potential impact - The criteria fall mostly in the middle ranges of classifications and the event's impacts on the planning area are noticeable but not devastating. This rating is sometimes used for hazards with a high extent rating but very low probability rating.
- **High:** Widespread potential impact - The criteria consistently fall in the high classifications and the event is likely/highly likely to occur with.

2.1 CLIMATE CHANGE

The County of Marin and associated jurisdictions profiled jointly recognize that the earth's climate is forcibly being augmented due to humans' reliance on fossil fuels and non-natural resources which pose negative impacts on the earth's climate. Reliance on fossil fuels and non-natural products results in the climate shifting to include unseasonable temperatures, more frequent and intense storms, prolonged heat and cold events, and a greater reliance on technological advancements to maintain the wellbeing of community members and balance of the environment. The forced adaptation to climatic shifts is necessary for the County and jurisdictions to understand and include with these assessments.

Locally to Marin, drought and rain events have already had devastating impacts to critical infrastructure, agriculture, and water resources; and globally, unseasonable temperatures have been identified as the cause for enhanced wildfires, severe droughts, ice sheets and glaciers disappearing, and persons emigrating from their countries due to a lack of sustainable, local resources. Melting land ice contributes additional water to the oceans and as ocean temperatures rise the water expands, both of which contribute to increase rates of sea level rise. Marin is bordered on the west by the Pacific Ocean and on the east by San Francisco Bay, making it particularly vulnerable to flooding and erosion caused by sea level rise.

The cause of current climate change is largely human activity, burning fossil fuels, natural gas, oil, and coal. Burning these materials releases greenhouse gases into Earth's atmosphere. Greenhouse gases trap heat from the sun's rays inside the atmosphere causing Earth's average temperature to rise. This rise in the planet's temperature was formerly called, "global warming", but climate change has shown to include both intense heat and cold shifts. The warming of the planet impacts local and regional climates. Throughout Earth's history, climate has continually changed; however, when occurring naturally, this is a slower process that has taken place over

hundreds and thousands of years. The human influenced climate change that is happening now is occurring at an abnormally faster rate with devastating results.

GLOBAL OBSERVED AND PROJECTED IMPACTS AND RISKS
Source: Intergovernmental Panel on Climate Change, Headline Statements from the Summary for Policymakers, 2022

- Human-induced climate change, including more frequent and intense extreme events, has caused widespread adverse impacts and related losses and damages to nature and people, beyond natural climate variability.
- Global warming, reaching 1.5°C in the near-term, would cause unavoidable increases in multiple climate hazards and present multiple risks to ecosystems and humans.
- Beyond 2040 and depending on the level of global warming, climate change will lead to numerous risks to natural and human systems.
- The magnitude and rate of climate change and associated risks depend strongly on near-term mitigation and adaptation actions, and projected adverse impacts and related losses and damages escalate with every increment of global warming.
- Multiple climate hazards will occur simultaneously, and multiple climatic and non-climatic risks will interact, resulting in compounding overall risk and risks cascading across sectors and regions.

FUTURE TRENDS/ IMPACTS
Source: Study Confirms Climate Models are Getting Future Warming Projections Right – Climate Change: Vital Signs of the Planet (nasa.gov)

Global Warming

- If global warming transiently exceeds 1.5°C in the coming decades or later, then many human and natural systems will face additional severe risks.
- An estimated 60% of today's methane emissions are the result of human activities. The largest sources of methane are agriculture, fossil fuels, and decomposition of landfill waste.
- The concentration of methane in the atmosphere has more than doubled over the past 200 years. Scientists estimate that this increase is responsible for 20 to 30% of climate warming since the Industrial Revolution (which began in 1750).
- According to the most recent National Climate Assessment, droughts in the Southwest and heat waves (periods of abnormally hot weather lasting days to weeks) are projected to become more intense, and cold waves less intense and less frequent.
- The last eight years have been the hottest years on record for the globe.

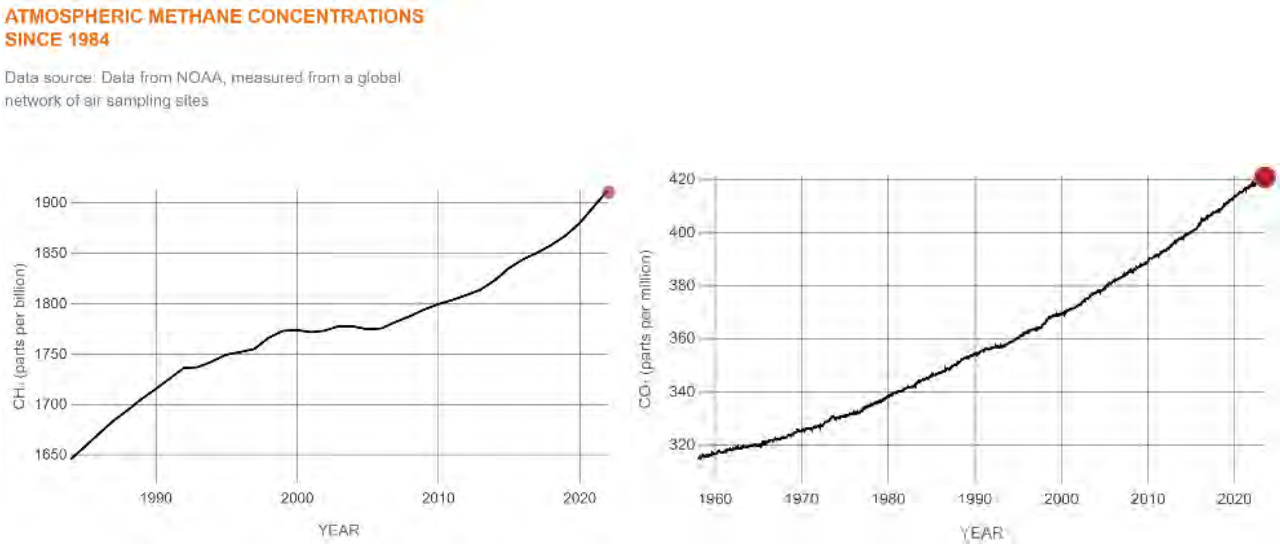


Figure 14: NASA Global Temperature Change CO2 Gas
Source: NASA Global Climate Change, 2022

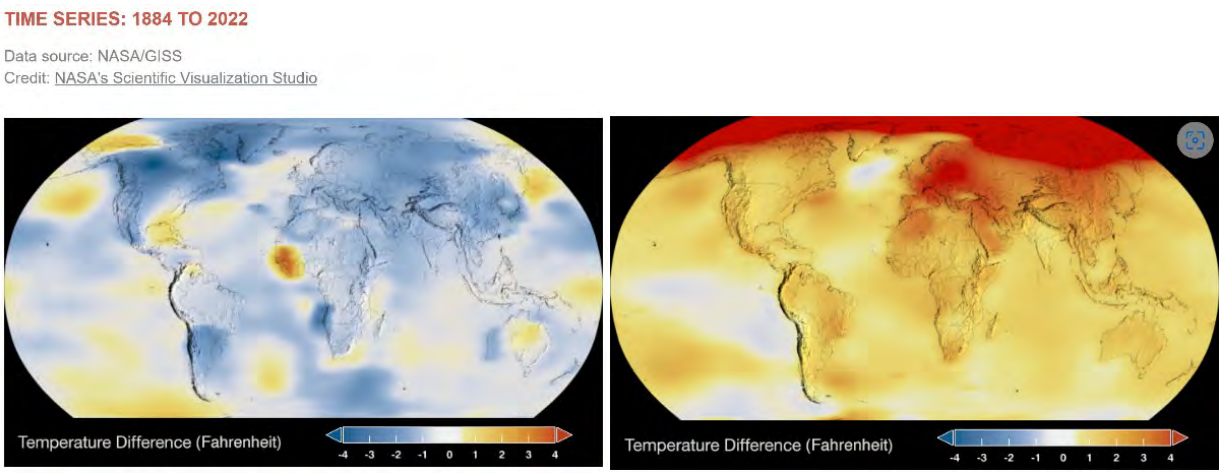


Figure 15: NASA Global Temperature Change 1884 to 2022
Source: NASA Global Climate Change, 2022

Drought

- A NASA-led study in 2022 concluded that the 22-year-long megadrought in southwestern US was the driest the territory had experienced in at least 1,200 years and was expected to persist through at least 2022.

Sea Level Rise

- Global sea levels are rising as a result of human-caused global warming, with recent rates being unprecedented over the past 2,500-plus years.
- U.S. Sea Level Likely to Rise 1 to 6.6 Feet by 2100.
- Global sea level has risen about 8 inches (0.2 meters) since reliable record-keeping began in 1880. By 2100, scientists project that it will rise at least another foot (0.3 meters), but possibly as high as 6.6 feet (2 meters) in a high-emissions scenario.

- Sea ice cover in the Arctic Ocean is expected to continue decreasing, and the Arctic Ocean will very likely become essentially ice-free in late summer if current projections hold. This change is expected to occur before mid-century.
- An indicator of changes in the Arctic sea ice minimum over time. Arctic sea ice extent both affects and is affected by global climate change.

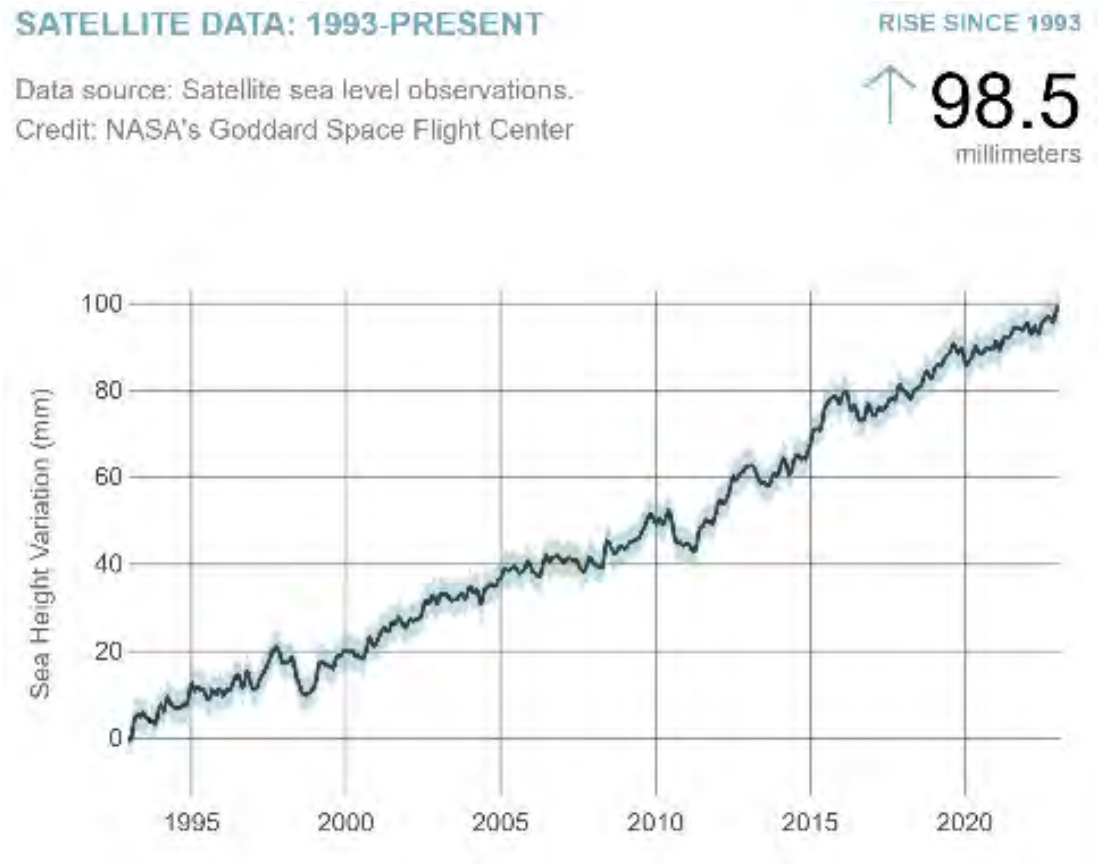


Figure 16: NASA Global Temperature Change Sea Level
Source: NASA Global Climate Change, 2022

Wildfire

- Warming temperatures have extended and intensified wildfire season in the West, where long-term drought in the region has heightened the risk of fires.
- Scientists estimate that human-caused climate change has already doubled the area of forest burned in recent decades. By around 2050, the amount of land consumed by wildfires in Western states is projected to further increase by two to six times.
- Even in traditionally rainy regions like the Southeast, wildfires are projected to increase by about 30%.

Flooding (Precipitation)

- Climate change is having an uneven effect on precipitation (rain and snow) in the United States, with some locations experiencing increased precipitation and flooding, while others suffer from drought.

- On average, more winter and spring precipitation is projected for the northern United States, and less for the Southwest, over this century.
- Projections of future climate over the U.S. suggest that the recent trend toward increased heavy precipitation events will continue. This means that while it may rain less frequently in some regions (such as the Southwest), when it does rain, heavy downpours will be more common.

Extreme Cold

- The length of the frost-free season, and the corresponding growing season, has been increasing since the 1980s, with the largest increases occurring in the western United States.

According to the California Natural Resource Agency (CNRA), climate change is already affecting California and is projected to continue to do so well into the foreseeable future. Current and projected changes include increased temperatures, sea level rise, a reduced winter snowpack, altered precipitation patterns, and more frequent storm events. Over the long term, reducing greenhouse gases can help make these changes less severe, but the changes cannot be avoided entirely. Unavoidable climate impacts result in a variety of secondary consequences including detrimental impacts on human health and safety, economic continuity, ecosystem integrity and provision of basic services. Climate change is being profiled in the 2023 Marin County OA MJHMP as a standalone hazard while addressing each of the other natural hazards. The Marin County OA is considering climate change issues when identifying future mitigation actions.

California is experiencing a climate crisis that is increasingly taking a toll on the health and well-being of its people and on its unique and diverse ecosystems. Every Californian has suffered from the effects of record high temperatures, dry winters, prolonged drought, and proliferating wildfires in recent years. California's biodiversity is threatened as alterations to habitat conditions brought about by a changing climate are occurring at a pace that could overwhelm the ability of plant and animal species to adapt.

Indicators of Climate Change in California

Source: 2022 Report: Indicators of Climate Change in California | OEHHA

- Since 1895, annual average air temperatures in California have increased by about 2.5 degrees Fahrenheit (°F). Warming occurred at a faster rate beginning in the 1980s.
- Recent years have been especially warm: Eight of the ten warmest years on record occurred between 2012 and 2022; 2014 was the warmest year on record.
- Of all the Western states, California endured the hottest temperatures for the longest time, driving the average statewide temperature to the second warmest over the past 128 years.
- Extreme heat ranks among the deadliest of all climate-driven hazards in California, with physical, social, political, and economic factors effecting the capacity of individuals, workers, and communities to adapt, and with the most severe impacts often on communities who experience the greatest social and health inequities.
- Glaciers have essentially disappeared from the Trinity Alps in Northern California
- In 2020, wildfire smoke plumes were present in each county for at least 46 days.

- The 2022 fire season saw more fires than the previous fire season along with continued extreme drought and heat conditions.
- The drought, begun in 2019, was the third statewide drought declared in California since 2000.
- This drought has been marked by extreme swings; the state received record-breaking amounts of precipitation in October and December 2021 that were offset by the driest January, February, and March 2022 dating back more than 100 years. The year 2023 opened with California simultaneously managing both drought and flood emergencies.
- A series of storms in late December 2022 and early January 2023 broke rural levees, disrupted power, flooded roads, downed trees, and eroded coastal land.
- Sea level rise accelerates coastal erosion, worsens coastal flooding during large storms and peak tidal events, and impacts important infrastructure positioned along our state's 1,100-mile coast.
- The western drought which impacted all of California and the western United States was nearly lifted due to unseasonably heavy rains in late 2022 and early 2023.

The graph below shows the relative change, in millimeters, in sea levels at Crescent City (1933-2020), San Francisco (1900-2020), and La Jolla (1925-2020).

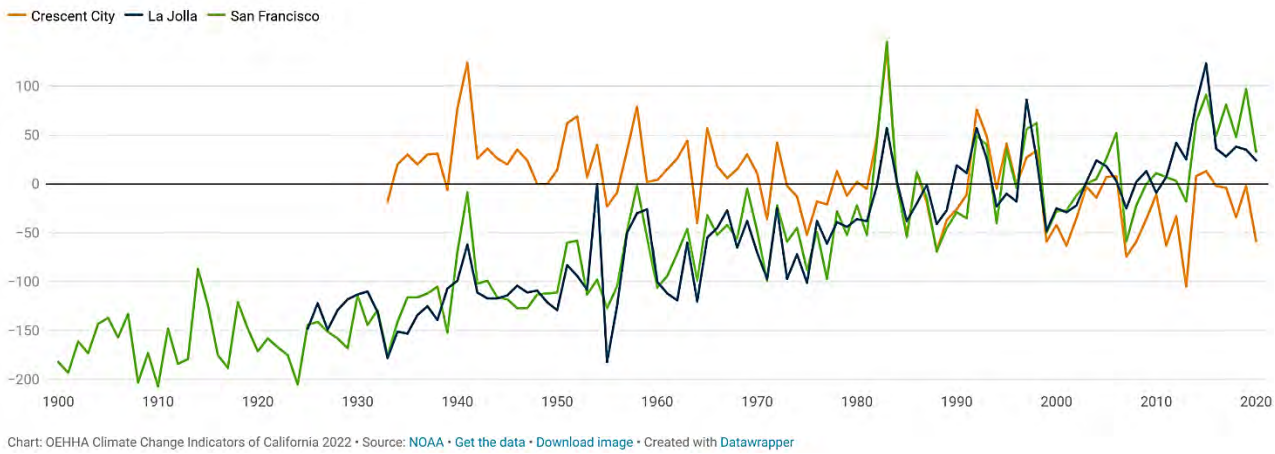


Figure 17: Annual Mean Sea Level Trends
Source: 2022 Report: Indicators of Climate Change in California | OEHHA

Climate Change in the Marin County Operational Area

Climate change is already having significant impacts across California. Temperatures are warming, heat waves are more frequent, and precipitation has become increasingly variable.

Sea level rise in the San Francisco Bay Area is projected to increase by eight inches MHW in 2050 and could reach 4.5 to eight feet by 2021 if greenhouse gas emissions aren't reduced. Marin Shoreline Sea Level Rise Vulnerability Assessment: https://www.marincounty.org/-/media/files/departments/cd/planning/slr/baywave/vulnerability-assessment-final/final_allpages_bvbconsulting_reduced.pdf?la=en

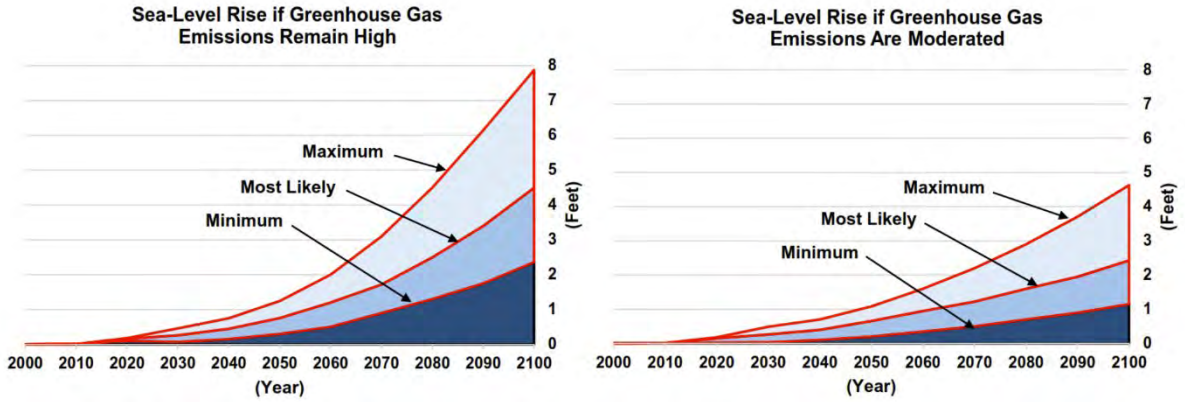


Figure 18: Projections of Sea Level Rise in the San Francisco Bay Area, 2000-2100
Source: 2019–2020 Marin County Civil Grand Jury, Climate Change: How Will Marin Adapt?

Climate Change in the Marin County Operational Area

Climate change will continue to alter Marin County OA ecosystems as a result of rising temperatures, changes in precipitation, and sea level rise, which will increase the severity and occurrence of natural hazards across the Marin County OA well into the future. Coastal cooling processes that keep temperatures down, such as fog, will continue to decrease. Rising temperatures will exacerbate drought conditions and raise the potential for significant wildfires and associated smoke as vegetation becomes drier and tree mortality increases. Forested woodlands that play a major role in carbon reduction will gradually transition into chaparral and shrublands. There will be more extreme storms and weather events, including expanded heat waves and increased rain events with changes in precipitation. Significant rain events will lead to an increase in flooding and the potential for severe landslides. Shoreline communities will become inundated with sea level rise, storm surge, and high tide events. Marshlands and wetlands that act as natural storm barriers will disappear as they transition into open water.

Notable impacts from climate change that are already evident in the Marin County OA and surrounding region as identified in a 2020 Marin County Civil Grand Jury Report include:

- From 1895-2018, the average temperature in Marin County increased by 2.3 degrees Fahrenheit.
- Over the past century, sea level rise in the San Francisco Bay Area rose by eight inches and has accelerated rapidly since 2011.
- The threat of wildfires in 2019 was so severe that Pacific Gas and Electric shut off electric power to the County for multiple days.

Climate change will continue to affect homes, businesses, infrastructure, utilities, transportation systems and agriculture across the Marin County OA. The risk to socially vulnerable populations will increase as they feel the immediate impacts of climate change more significantly and are less able to adapt to climate change and recover from its impacts.

The Marin County OA has adopted numerous planning initiatives and mitigation measures to help combat the effects of climate change across the OA. The Marin Climate Energy Partnership (MCEP), which is a partnership program of Marin County jurisdictions, the County, and Marin County regional agencies, adapted a model Climate Action Plan (CAP) that is intended to support countywide implementation efforts and is currently being used to update additional climate action plans for other jurisdictions in Marin County. The CAP supports the Climate Action Plan for the unincorporated County, which was completed in 2020. The MCEP also collects data and report on progress in meeting each County jurisdictions' individual greenhouse gas emission targets. In June 2023, the County published the Greenhouse Gas Inventory for Unincorporated Community Emissions for the Year 2021. Marin County OA jurisdictions have already met their greenhouse reduction goals for 2020 and are about halfway to meeting the statewide goal to reduce emissions 40% below 1990 levels by the year 2030. Marin County also formed a Sea Level Marin Adaptation Response Team in 2018 and had a Sea Level Rise Vulnerability Assessment and associated Adaptation Report completed for the County and each of its jurisdictions in 2017 as part of their Bay Waterfront Adaptation and Vulnerability Evaluation. Additional Marin County OA climate change mitigation initiatives include Marin Clean Energy, Electrify Marin, the Marin Solar Project, the Marin Energy Watch Partnership, Resilient Neighborhoods, and Drawdown Marin.

2.2 HAZARDS

Of the hazards profiled in the Marin County OA MJHMP, those noted in the table are specific for the Town of Fairfax as per the planning team.

Table 15: Town of Fairfax Hazard Risk Assessment

Hazard	Probability/ Likelihood of Future Events	Geographic Extent	Magnitude/ Severity	Climate Change Influence	Significance	Risk Score
Debris Flow	Likely	Limited	Moderate	Medium	Low	**10.00**
Drought	Occasional	Extensive	Weak	Medium	Low	**10.00**
Earthquake	Highly Likely	Extensive	Extreme	None	High	**15.00**
Flooding	Occasional	Limited	Moderate	Medium	Medium	**10.00**
Land Subsidence	Occasional	Negligible	Weak	Low	Low	**6.00**
Severe Weather – Extreme Heat	Unlikely	Significant	Weak	Medium	Low	**8.00**
Severe Weather – High Wind/Tornado	Likely	Limited	Moderate	Medium	Medium	**11.00**
Wildfire	Highly Likely	Significant	Severe	Medium	Medium	**14.00**

Table 15: Town of Fairfax Hazard Risk Assessment
Source: Town of Fairfax

Omitted Hazards

The Town of Fairfax does not have risk exposure to Dam Failure, Levee Failure, Sea Level Rise, or Tsunamis. The Town is not in any dam inundation zone and does not lie near a coastline.

Table 16: Marin County OA Hazard Risk Assessment						
Hazard	Probability/ Likelihood of Future Events	Geographic Extent	Magnitude/ Severity	Climate Change Influence	Significance	Risk Score
Dam Failure	Unlikely	Negligible	Extreme	Low	Medium	**9.00**
Debris Flow	Occasional	Extensive	Severe	Medium	Medium	**13.00**
Drought	Highly Likely	Extensive	Moderate	High	High	**16.00**
Earthquake	Highly Likely	Extensive	Extreme	None	High	**15.00**
Flooding	Highly Likely	Limited	Severe	High	Medium	**14.00**
Land Subsidence	Occasional	Limited	Moderate	Medium	Medium	**10.00**
Levee Failure	Unlikely	Negligible	Moderate	Medium	High	**9.00**
Sea Level Rise	Highly Likely	Limited	Extreme	High	High	**16.00**
Severe Weather – Extreme Heat	Highly Likely	Extensive	Moderate	High	Medium	**15.00**
Severe Weather – High Wind/Tornado	Highly Likely	Extensive	Moderate	High	Medium	**15.00**
Tsunami	Highly Likely	Limited	Extreme	Medium	High	**15.00**
Wildfire	Highly Likely	Significant	Severe	High	High	**16.00**

Table 16: Marin County OA Hazard Risk Assessment
Source: County of Marin

2.2.1 DEBRIS FLOWS

For the purposes of the Marin County OA MJHMP, debris flows are classified as landslides (including rockslides) and mud flows.

A landside is the breaking away and gravity-driven downward movement of hill slope materials, which can travel at speeds ranging from fractions of an inch per year to tens of miles per hour depending on the slope steepness and water content of the rock/soil mass. Landslides range from the size of an automobile to a mile or more in length and width and, due to their sheer weight and speed, can cause serious damage and loss of life. The rate of a landslide is affected by the type and extent of vegetation, slope angle, degree of water saturation, strength of the rocks, and the mass and thickness of the deposit. Some of the natural causes of this instability are earthquakes, weak materials, stream and coastal erosion, and heavy rainfall. In addition, certain human activities tend to make the earth materials less stable and increase the chance of ground failure. These activities include extensive irrigation, poor drainage or groundwater withdrawal, removal of stabilizing vegetation and over-steepening of slopes by undercutting them or overloading them with artificial fill. These activities can cause slope failure, which normally produce landslides.

Landslide material types are often broadly categorized as either rock or soil, or a combination of

the two for complex movements. Rock refers to hard or firm bedrock that was intact and in place prior to slope movement. Soil, either residual or transported material, means unconsolidated particles. The distinction between rock and soil is most often based on interpretation of geomorphic characteristics within landslide deposits, but can also be inferred from geologic characteristics of the parent material described on maps or in the field. Landslide movements are also based on the geomorphic expression of the landslide deposit and source area, and are categorized as falls, topples, spreads, slides, or flows. Falls are masses of soil or rock that dislodge from steep slopes and free fall. Topples move by the forward pivoting of a mass around an axis below the displaced mass. Lateral spreads move by horizontal extension and shear or tensile fractures. Slides displace masses of material along one or more discrete planes and can either be rotational or transitional. Flows mobilize as a deforming, viscous mass without a discrete failure plane.

Natural conditions that contribute to landslide include the following:

- Degree of slope
- Water (heavy rain, river flows, or wave action)
- Unconsolidated soil or soft rock and sediments
- Lack of vegetation (no stabilizing root structure)
- Previous wildfires and other forest disturbances
- Earthquake

In addition, many human activities tend to make the earth materials less stable and, thus, increase the chance of ground movement. Human activities contribute to soil instability through grading of steep slopes or overloading them with artificial fill, by extensive irrigation, construction of impermeable surfaces, excessive groundwater withdrawal, and removal of stabilizing vegetation.

Another hazard related to landslide and erosion is the fall of a detached mass of rock from a cliff or down a very steep slope (rockfall). Weathering and decomposition of geological materials produce conditions favorable to rockfalls. Other causes include ice wedging, root growth, or ground shaking (earthquake). Destructive landslides and rockfalls usually occur very suddenly with little or no warning time and are short in duration.

Landslide susceptibly can be characterized by looking at both slope class and rock strength. Landslide susceptibility classes express the generalization that on very low slopes, landslide susceptibility is low even in weak rock, and that landslide susceptibility increases with slope and in weaker rocks. Very high landslide susceptibility includes very steep slopes in hard rocks and moderate to very steep slopes in weak rocks. Figure 19 shows landslide susceptibility classes.

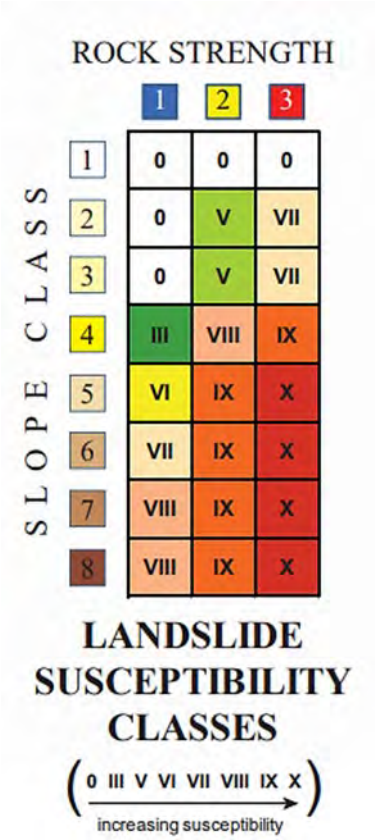


Figure 19: Landslide Susceptibility Classes
Source: USGS

A mud flow is a general term for a mass-movement landform and process characterized by a flowing mass of fine-grained earth material with a high degree of fluidity. Heavy rainfall, snowmelt, or high levels of groundwater flowing through cracked bedrock may trigger a movement of soil or sediments. Floods and debris flows may also occur when strong rains on hill or mountain slopes cause extensive erosion and/or what is known as "channel scour". Some broad mud flows are rather viscous and therefore slow; others begin very quickly and continue like an avalanche. Mud flows are composed of at least 50% silt and clay-sized materials and up to 30% water.

The point where a muddy material begins to flow depends on its grain size and the water content. Fine grainy material or soil has a smaller friction angle than a coarse sediment or a debris flow, but falling rock pieces can trigger a material flow, too. When a mud flow occurs it is given four named areas, the 'main scarp', in bigger mud flows the 'upper and lower shelves', and the 'toe'. See Figure 20 for the typical areas of a mud flow, with shelves (right) and without (left). The main scarp will be the original area of incidence, the toe is the last affected area(s). The upper and lower shelves are located wherever there is a large dip (due to mountain or natural drop) in the mud flow's path. A mud flow can have many shelves.

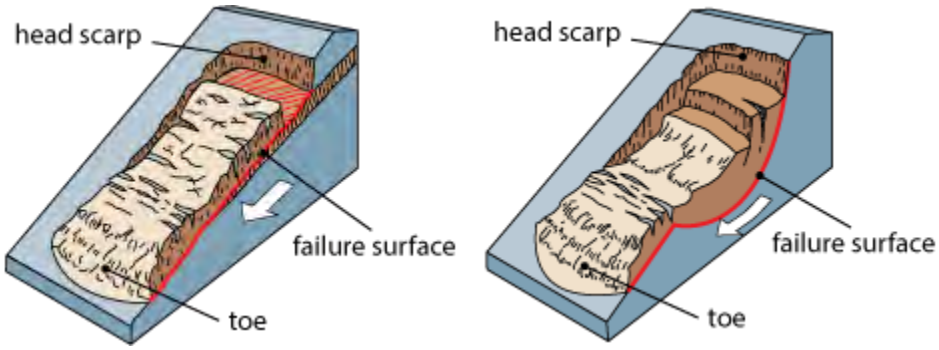


Figure 20: Mud Flow Areas
Source: Washington Department of Natural Resources

If large enough, mud flows can devastate villages and country-sides. Mud flows are common in mountain areas prone to wildfire, where they have destroyed many homes built on hillsides without sufficient support after fires destroy vegetation holding the land. The area most generally recognized as being at risk of a dangerous mud flow are:

- Areas where wildfires or human modification of the land have destroyed vegetation
- Areas where landslides have occurred before
- Steep slopes and areas at the bottom of slopes or canyons
- Slopes that have been altered for construction of buildings and roads
- Channels along streams and rivers
- Areas where surface runoff is directed

A landslide in Fairfax would occur where the terrain is steeper and is more susceptible to movement of hill slope materials. This area includes most of Fairfax with the exception of the downtown area along Sir Francis Drake Boulevard adjacent to Fairfax Creek. The areas of Fairfax that are most susceptible to a landslide are residential and consist of numerous winding streets and hillside homes that could be damaged or destroyed by a landslide. The Deer Park area of Fairfax is at the bottom of a canyon and is very landslide-prone. Road access into several residential areas of Fairfax, including along Cascade Drive and Bolinas Road and in communities north of Sir Francis Drake Boulevard, are minimal and a landslide on any of the major thoroughfares in these areas could limit ingress and egress for residents. There are hundreds of residences in these areas that could be susceptible to a landslide. All of the critical facilities in Fairfax, including the Town facilities, with the exception of two water tanks lie outside areas of high landslide susceptibility, but the Manor Elementary School and the Saint Ritas School lie in areas with some landslide susceptibility.

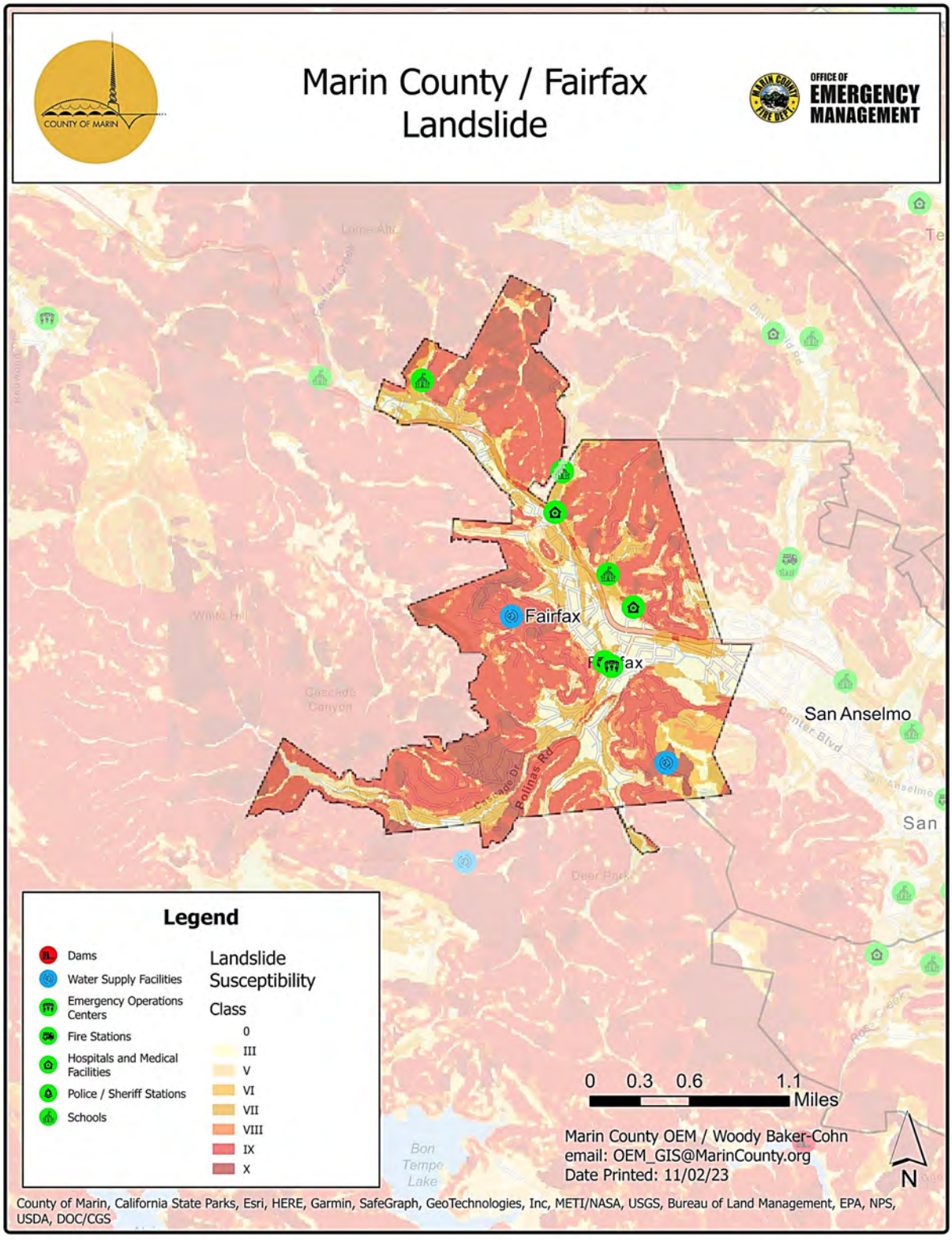


Figure 21: Town of Fairfax Debris Flow Critical Facilities and Infrastructure
Source: Marin County OEM

An earthquake has the potential to cause landslides throughout this area. A wildfire and subsequent rain event in any of the open space around Fairfax, including from Mount Tamalpais, the Cascade Canyon Preserve, the White Hill Open Space Preserve, the Hawthorne Canyon Open Space Preserve, and the Bald Hill Open Space Preserve could potentially contribute to debris flows in Fairfax. San Anselmo Creek flows from the Mount Tamalpais watershed through Fairfax and Fairfax Creek flows from near the White Hill Open Space Preserve through Fairfax. Both creeks could potentially contribute to a debris flow that could impact bridges, residences and other structures in the Town, affecting ingress and egress to residential areas.

On 1/13/2023, a storm caused a landslide in unincorporated Fairfax that damaged six apartments and displaced 19 residents at a complex on Olema Road. Mud and debris were sent through residences, breaking through walls, doors and windows. The damage was estimated at hundreds of thousands of dollars.

Figure 22: Mudslide in Fairfax – 1/13/2023
Source: The Marin Independent Journal

On 2/7/2017, a storm caused a landslide on Berry Trail in Fairfax, causing a woman and a son to have to escape through a bathroom window in their home. Olema Road was closed at Westbrae Drive because of mud, flooding and debris.

On 1/10/2017, after days of torrential rains and high winds, a hillside and trees at Sir Francis Drake Boulevard and Olema Road in Unincorperated Fairfax were sent tumbling down a hill, trapping two little girls and their grandparents in their home. A wall of mud came sliding down onto part of the home, smashing the carport and taking out the stairs.

On 12/21/2005-1/1/2006, a hillside along Wood Lane in the Deer Park area came crashing down on New Year's Eve in a storm, taking out a fence and much of a vacant house. The landslide took out the kitchen, carport, stairs and a large section of a concrete wall, and deposited a Honda parked in the carport on top of another vehicle across the street. Dozens of residences along the street had mud in their yards.

On 1/3–1/5/1982, a severe storm caused numerous landslides across the Town, isolating several areas and blocking access roads. Six houses were destroyed by mudslides and phone and electricity was out. Almost all businesses on Bolinas Road suffered damage. Total loss was estimated at $3 million.

Climate Change and Future Development Considerations

Extreme storm events and more frequent wildfires as a result of climate change have the potential to increase the amount and severity of landslides, including disastrous debris flows. Climate change is leading to more volatile precipitation patterns around the world with very dry stretches punctuated by storms that drop large amounts of rain in a short amount of time. Landslides in wetter regions of California, including the Marin County OA, move on average faster and farther downhill during rainy periods compared to drought years, according to a 2022 study by the American Geophysical Union (AGU)[1], showing the increased potential for landslides in the Marin County OA in rainy years. As development increases in the numerous canyons and around the many open spaces of the Marin County OA, the potential for significant impacts from a landslide and/or mudflow increases. Further development of the residential areas of Fairfax that have a higher landslide susceptibility, including the numerous open spaces around town will expose more people and property to landslide risk. With increased wildfire potential as a result of climate change, more residents in Fairfax could be susceptible to post-fire debris flows. This includes areas around Deer Park Creek, San Anselmo Creek and Fairfax Creek, which flow through downtown. Future development should take into account the movement of mud and debris in waterways after a major rain event. Adequate space adjacent to susceptible waterways should be maintained free of development to allow for the passage of mud and debris, and catchment basins should be built in these areas to help capture any excess mud and debris.

2.2.2 DROUGHT

A drought is a deficiency in precipitation over an extended period, usually a season or more, resulting in a water shortage causing adverse impacts on vegetation, animals, and/or people. It is a normal recurrent feature of climate that occurs in virtually all climate zones, from very wet to very dry. Drought is a temporary aberration from normal climatic conditions and can thus vary significantly from one region to another. Droughts occur slowly, over a multi-year period, and it is often not obvious or easy to quantify when a drought begins and ends. Drought is a complex issue involving many factors—it occurs when a normal amount of moisture is not available to satisfy an area's usual water-consuming activities.

There are several types of drought which can often be defined regionally based on its effects:

- Meteorological drought is usually defined by a period of below average water supply, based on the degree of dryness (in comparison to normal or average) and the duration of the dry period. Drought onset generally occurs with a meteorological drought.
- Agricultural drought occurs when there is an inadequate water supply to meet the needs of the state's crops and other agricultural operations such as livestock. Agricultural drought links various characteristics of meteorological (or hydrological) drought to agricultural impacts, focusing on precipitation shortages, soil water deficits, reduced ground water or reservoir levels needed for irrigation.

[1] Landslide Sensitivity and Response to Precipitation Changes in Wet and Dry Climates. https://agupubs.onlinelibrary.wiley.com/doi/10.1029/2022GL099499

- Hydrological drought is defined as deficiencies in surface and subsurface water supplies. It is generally measured as stream flow, snowpack, and as lake, reservoir, and groundwater levels. Hydrological drought usually occurs following periods of extended precipitation shortfalls.

Socioeconomic drought occurs when a drought impacts health, well-being, and quality of life, or when a drought starts to have an adverse economic impact on a region.

Drought can occur in all areas of Fairfax, though it's effects would be most felt in the mountainous areas around the Town where the risk of wildfire would increase. Dry trees in public spaces like the Cascade Canyon Preserve, the White Hill Open Space Preserve, the Hawthorne Canyon Open Space Preserve, and the Bald Hill Open Space Preserve can become a safety hazard to the public due to falling limbs or the toppling of the tree itself.

Climate Change and Future Development Considerations

Climate change increases the odds of worsening drought. Warmer temperatures enhance evaporation, which reduces surface water and dries out soils and vegetation. This makes periods with low precipitation in the summer drier than they would be in cooler conditions. Climate also alters the timing of water availability as warmer winter temperatures cause less precipitation to fall. During droughts, communities in the Marin County OA including Fairfax may have limited access to water for household use, including drinking, cooking, cleaning, and watering plants, as well as for agriculture, transportation, and power generation. Drought may lead to higher water costs, rationing, or even the decimation of important water sources like wells in the Marin County OA. As more people move into the Marin County OA and the Fairfax, additional strain will be placed on the OA's water supply. Drought can affect livestock and crops in the Marin County OA, impacting its economy. Drought can increase the occurrence and severity of wildfires and tree mortality in the Marin County OA including in the open spaces in and around Fairfax. Impacts to residents and infrastructure from wildfire as a result of drought will increase as more development occurs in the mountainous areas of the Marin County OA including Fairfax where wildfires are more likely to occur. Future development in this area and in the mountainous areas of Fairfax could expose people to drier summer conditions that could increase their vulnerability to wildfire. Drought also increases the amount of carbon dioxide in the atmosphere, including by decreasing land productivity, which reduces the amount of vegetation storing carbon dioxide. In addition, increases in drought-related wildfire and soil erosion can release carbon dioxide sequestered in trees and plants back into the atmosphere. This will only worsen climate change for the Marin County OA into the future. When considering future development, the Marin County OA including Fairfax can help prepare for both future droughts and climate change by practicing and promoting water conservation and enhancing water efficiency throughout landscapes, city plans, and water infrastructure. The Marin County OA can also identify alternative water supplies, create drought emergency plans, and encourage farmers to plant drought-resistant crops.

2.2.3 EARTHQUAKE

Earthquakes are sudden rolling or shaking events caused by movement under the earth's surface. Earthquakes happen along cracks in the earth's surface, called fault lines, and can be felt over large areas, although they usually last less than one minute.

The amount of energy released during an earthquake is usually expressed as a magnitude and is currently measured by seismologists on the Moment Magnitude (Mw Scale). The Mw Scale was developed to succeed the previously used Richter Scale and is measured on a scale of zero to ten with increasing values reflecting increasing intensity.

The other commonly used measure of earthquake severity is intensity, which is an expression of the amount of shaking at any given location on the ground service. Intensity is most commonly measured on the Modified Mercalli Intensity (MMI) Scale (see Figure 23).

Intensity	Shaking	Description/Damage
I	Not felt	Not felt except by a very few under especially favorable conditions.
II	Weak	Felt only by a few persons at rest,especially on upper floors of buildings.
III	Weak	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Light	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Moderate	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Strong	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Very strong	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Severe	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Violent	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Extreme	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.

Figure 23: Modified Mercalli Intensity Scale
Source: USGS

Figure 24 gives intensities (measured on the MMI scale) that are typically observed at locations near the epicenter or earthquakes of different magnitudes.

Richter Magnitude Scale	Typical Maximum Modified Mercalli Intensity Scale
1.0 – 2.9	I
3.0 – 3.9	II – III
4.0 – 4.9	IV – V
5.0 – 5.9	VI – VII
6.0 – 6.9	VII – IX
7.0 or higher	VIII or higher

Figure 24: Mercalli Scale vs. Magnitude
Source: USGS

The extent of ground shaking also depends in large part on how soft the underlying soil is. Soft soils amplify ground shaking (see Figure 25). This was observed during the 1989 Loma Prieta Earthquake when the most significant damages experienced in San Francisco were in the Marina District, which was built on fill.

Soil type A	Vs > 1500 m/sec	Includes unweathered intrusive igneous rock. Occurs infrequently in the bay area. We consider it with type B (both A and B are represented by the color blue on the map). Soil types A and B do not contribute greatly to shaking amplification.
Soil type B	1500 m/sec > Vs > 750 m/sec	Includes volcanics, most Mesozoic bedrock, and some Franciscan bedrock. (Mesozoic rocks are between 245 and 64 million years old. The Franciscan Complex is a Mesozoic unit that is common in the Bay Area.)
Soil Type C	750 m/sec > Vs > 350 m/sec	Includes some Quaternary (less than 1.8 million years old) sands, sandstones and mudstones, some Upper Tertiary (1.8 to 24 million years old) sandstones, mudstones and limestone, some Lower Tertiary (24 to 64 million years old) mudstones and sandstones, and Franciscan melange and serpentinite.
Soil Type D	350 m/sec > Vs > 200 m/sec	Includes some Quaternary muds, sands, gravels, silts and mud. Significant amplification of shaking by these soils is generally expected.
Soil Type E	200 m/sec > Vs	Includes water-saturated mud and artificial fill. The strongest amplification of shaking due is expected for this soil type.

Figure 25: Soil Types
Source: USGS

An earthquake fault is defined as "a fracture or fracture zone in the earth's crust along which there has been displacement of the sides relative to one another." For the purpose of planning there are two types of faults, active and inactive. Active faults have experienced displacement in historic time, suggesting that future displacement may be expected. Inactive faults show no evidence of movement in recent geologic time, suggesting that these faults are dormant.

Two types of fault movement represent possible hazards to structures in the immediate vicinity of the fault: fault creep and sudden fault displacement. Fault creep, a slow movement of one side of a fault relative to the other, can cause cracking and buckling of sidewalks and foundations even without perceptible ground shaking. Sudden fault displacement occurs during an earthquake event and may result in the collapse of buildings or other structures that are found along the fault zone when fault displacement exceeds an inch or two. The only protection against damage caused directly by fault displacement is to prohibit construction in the fault zone.

An earthquake could occur anywhere in and around Fairfax due to the number of active faults within and near the Marin County OA.

Fairfax is located directly between the San Andreas and Hayward faults. A moderate to extreme earthquake originating from either of these major faults or any of the other faults in the region could have major impacts to the Town. Areas in Town, primarily the low-lying areas adjacent to San Anselmo Creek and along Sir Francis Drake Boulevard have a "moderate" earthquake shaking potential and could be more susceptible to an earthquake. All of the Town's critical facilities, with the exception of its two water tanks, including its schools, Police Station and Emergency Operations Center, Ross Valley Fire Station #21 and the Fairfax Community Center Town Hall lie in an area of moderate vulnerability to shaking from an earthquake. Hundreds of homes and dozens of businesses, including the main commercial area of town, lie in this area. Hundreds more homes lie in an area of lower earthquake shaking susceptibility.

Earthquake Shake Intensity

The colors on Figures 26 and 27 represent the level of ground shaking intensity of a potential future earthquake. The result is expressed as the level of ground shaking (**expressed as a percentage of gravity**) that on average occurs every 500 years.

This map shows the expected relative intensity of ground shaking and damage in California from anticipated future earthquakes. The shaking potential is calculated as the level of ground motion that has a 2% chance of being exceeded in 50 years, which is the same as the level of ground-shaking with about a 2500 year average repeat time. The relatively long-period (1.0 second) earthquake shaking is shown here. Long period-shaking affects tall, relatively flexible buildings, but also correlates well with overall earthquake damage.

Earthquake Shaking Potential Maps for California depict expected intermediate period (1s or 1hz) ground motions with 2% exceedance probability in 50 years.

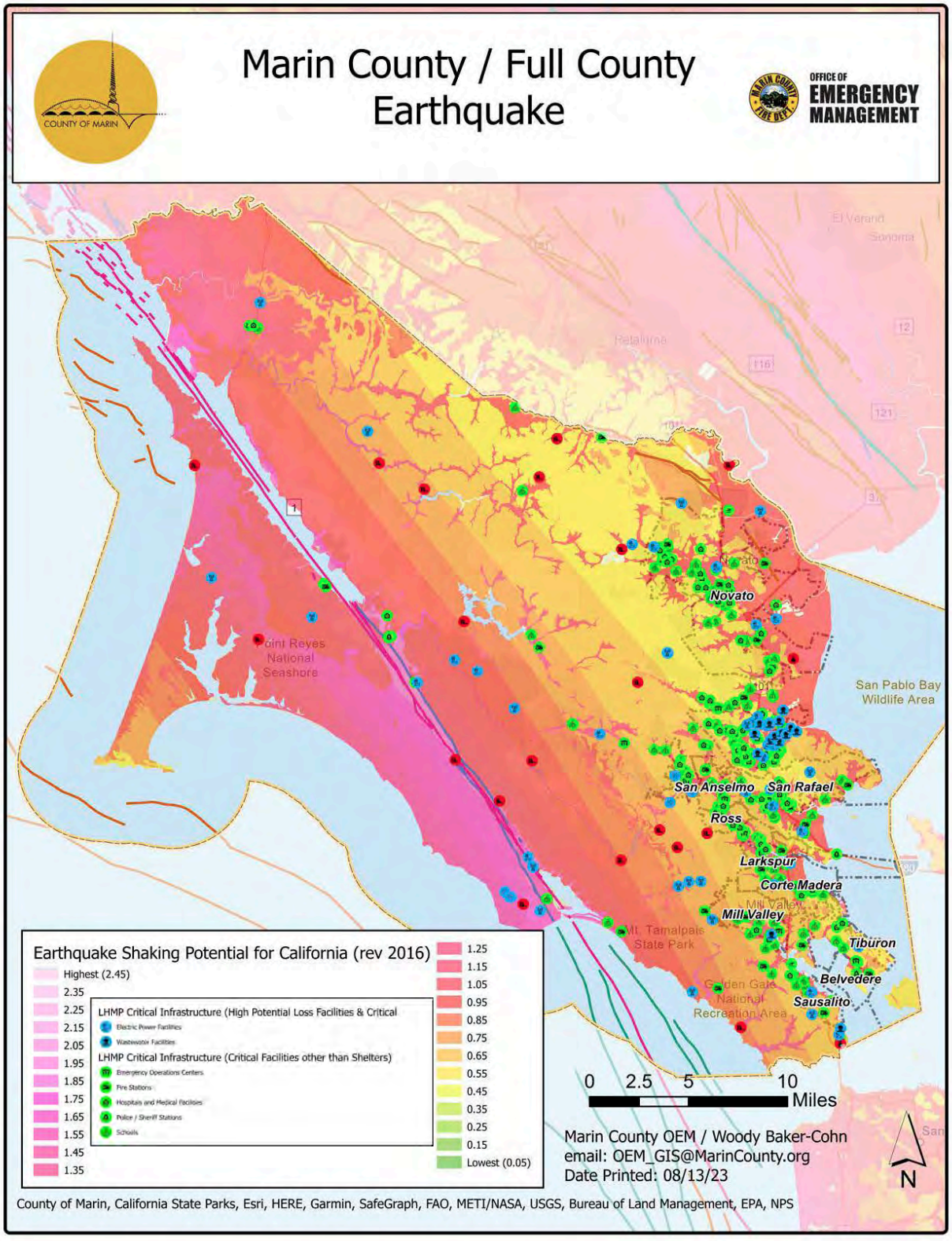


Figure 26: County of Marin Earthquake Impact and Fault Lines
Source: Marin County OEM

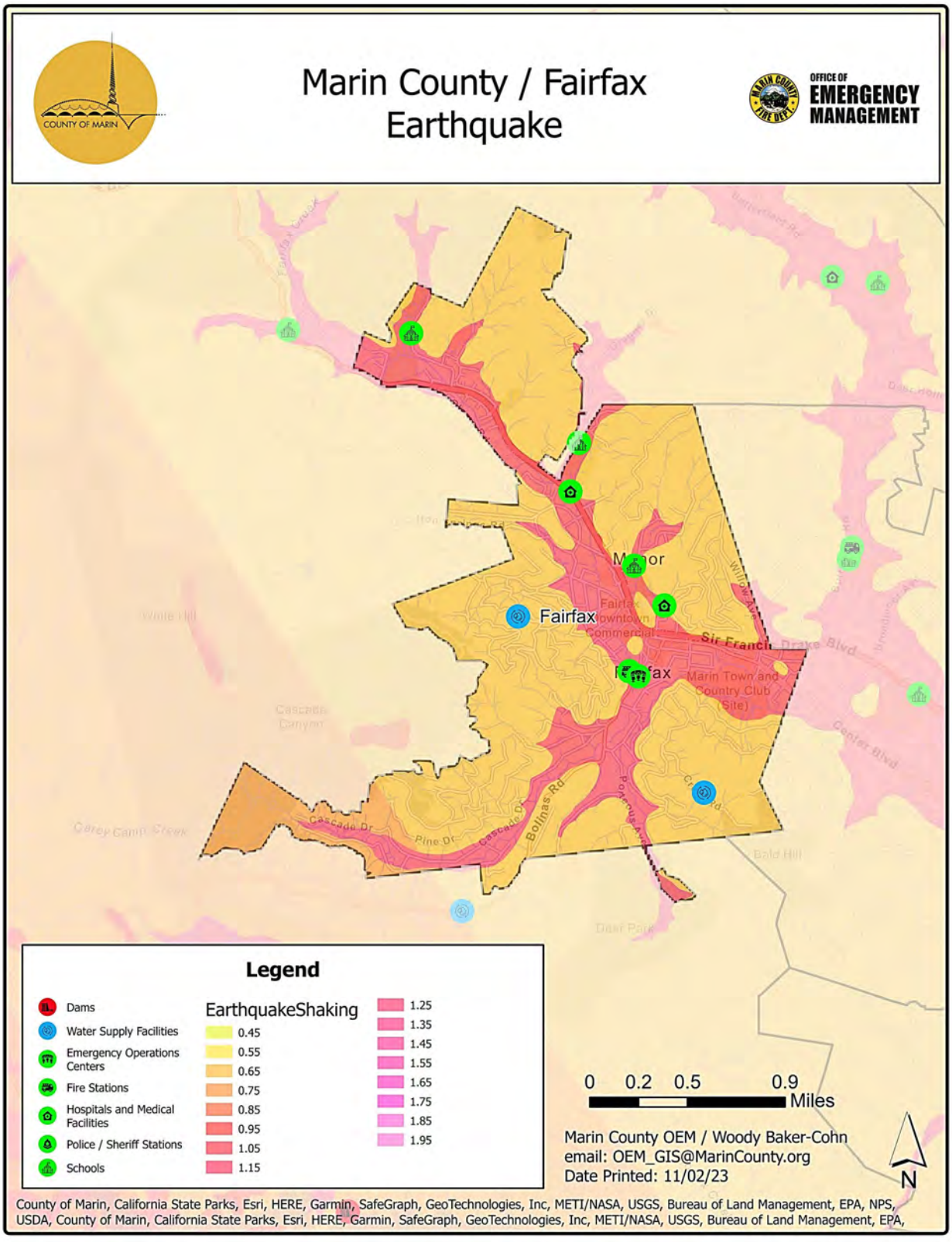


Figure 27: Town of Fairfax Earthquake Critical Facilities and Infrastructure
Source: Marin County OEM

A major earthquake event could result in deaths, injuries, property and environmental damage, and disruption of normal government and community services. Hospitals outside of the Town may be impacted by an earthquake. Telephone systems could be affected by system failure, overloads and loss of electrical power. Natural gas leaks pose a fire threat and breaks in the system could affect service to the Town. Water sources could be compromised due to damage to treatment plants, pump stations and/or the pipelines that distribute potable water. Liquefaction-related damage to water supply pipelines could impair fire suppression, leaving the Town vulnerable to a large fire. Sewage collection systems throughout the Marin County OA may sustain widespread damage if ground movement damages mains or pipelines. Electricity may be interrupted. Landslides may occur. Bridges and roads may be closed because of damage. An earthquake may also result in dam failure. Liquefaction of creeks during the winter storm season could exacerbate flood hazards. The Town may experience road closures from liquefaction, earthquake-triggered landslides, shaking damage to bridges as well as indirect causes of closures such as building damage, hazmat releases, and utility pipeline breaks and fallen trees. The Town of Fairfax will be affected by the regional impacts of regional transportation disruption, particularly closure of the Golden Gate Bridge. Earthquakes could also cause landslides in the areas around Fairfax with steeper terrain, causing damage to homes and roads as a result of shifting soils.

Fairfax hasn't yet experienced a significant earthquake. The Marin County OA was sparsely populated at the time of the 1906 San Francisco Earthquake, and the effects across Fairfax were relatively minimal. Likewise, the 1989 Loma Prieta Earthquake caused minimal impacts as the epicenter of the quake was further south in Santa Cruz County. Smaller earthquakes with minimal to no impacts are routinely felt in Fairfax.

Climate Change and Future Development Considerations

There is no direct link between climate change and seismic activity that could impact the Marin County OA including Fairfax, so climate change is not expected to cause any changes to the frequency or intensity of seismic shaking. According to a 2018 study by the Institute of Physics (IOP)[2], climate change could result in "isostatic rebounds," or a sudden upward movement of the crust because of reduced downward weight caused by glaciers. As glaciers are known to melt when overall global temperatures increase, climate change could indirectly lead to an increase in seismicity in the Marin County OA including Fairfax. Climate change could also impact earthquakes felt in the Marin County OA as droughts can further deteriorate existing fault lines and pumping groundwater can put further pressure on the earth's crust. Future development in the populated areas of Marin County OA where seismic shaking and subsidence are more prevalent could exacerbate the impacts of an earthquake. This includes the lowlands of Fairfax downtown and along its creek beds where the risk of subsidence and subsequent earthquake shaking are higher. Future development in these areas could expose more people and infrastructure to earthquake shaking as a result of climate change.

[2] An Enhanced Seismic Activity Observed Due to Climate Change: Preliminary Results from Alaska. https://iopscience.iop.org/article/10.1088/1755-1315/167/1/012018

2.2.4 FLOODING

Flooding is the rising and overflowing of a body of water onto normally dry land. Floods are among the costliest natural disasters in terms of human hardship and economic loss nationwide. The area adjacent to a channel is the floodplain. Floodplains are illustrated on inundation maps, which show areas of potential flooding and water depths. In its common usage, the floodplain most often refers to that area that is inundated by the 100-year flood, the flood that has a one percent chance in any given year of being equaled or exceeded. The 100-year flood is the national minimum standard to which communities regulate their floodplains through the National Flood Insurance Program. The 200-year flood is one that has 0.5% chance of being equaled or exceeded each year. The 500-year flood is the flood that has a 0.2 percent chance of being equaled or exceeded in any given year. The potential for flooding can change and increase through various land use changes and changes to land surface, which result in a change to the floodplain. A change in environment can create localized flooding problems inside and outside of natural floodplains by altering or confining natural drainage channels. These changes are most often created by human activity such as construction of bridges or channels. In areas where flow contains high sediment load, such as Easkoot Creek in Stinson Beach (due to an active landslide upstream), the flow carrying capacity of the channel may be reduced dramatically during a single flood event. Coastal floodplains may also change over time as waves and currents alter the coastline (especially wetlands) and sea levels rise.

Flooding can occur in several ways:

Riverine flooding – Riverine flooding, defined as when a watercourse exceeds its "bank-full" capacity, generally occurs as a result of prolonged rainfall, or rainfall that is combined with snowmelt and/or already saturated soils from previous rain events. This type of flood occurs in river systems whose tributaries may drain large geographic areas and include one or more independent river basins. The onset and duration of riverine floods may vary from a few hours to many days and is often characterized by high peak flows combined with a large volume of runoff. Factors that directly affect the amount of flood runoff include precipitation amount, intensity and distribution, the amount of soil moisture, seasonal variation in vegetation, snow depth, and water-resistance of the surface due to urbanization. In the Marin County OA, riverine flooding can occur anytime from November through April and is largely caused by heavy and continued rains, sometimes combined with snowmelt, increased outflows from upstream dams, and heavy flow from tributary streams. These intense storms can overwhelm the local waterways as well as the integrity of flood control structures. Flooding is more severe when antecedent rainfall has resulted in saturated ground conditions. The warning time associated with slow rise riverine floods assists in life and property protection.

Flash flooding – Flash flooding describes localized floods of great volume and short duration. This type of flood usually results from a heavy rainfall on a relatively small drainage area. Precipitation of this sort usually occurs in the winter and spring. Flash floods often require immediate evacuation within the hour and thus early threat identification and warning is critical for saving lives.

Localized/Stormwater flooding – Localized flooding problems are often caused by flash flooding, severe weather, or an unusual amount of rainfall. Flooding from these intense weather events usually occurs in areas experiencing an increase in runoff from impervious surfaces associated with development and urbanization as well as inadequate storm drainage systems.

The area is also at risk to flooding resulting from levee failures and dam failures. Dam failure flooding is discussed separately in the Dam Failure Section of this document; levee failure flooding is discussed separately in the Levee Failure Section of this document. Regardless of the type of flood, the cause is often the result of severe weather and excessive rainfall, either in the flood area or upstream reach.

A weather pattern called the "Atmospheric River" contributes to the flooding potential of the area. An Atmospheric River brings warm air and rain to the West. A relatively common weather pattern brings southwest winds to the Pacific Northwest or California, along with warm, moist air. The moisture sometimes produces many days of heavy rain, which can cause extensive flooding. The warm air also can melt the snowpack in the mountains, which further aggravates the flooding potential. In the colder parts of the year, the warm air can be cooled enough to produce heavy, upslope snow as it rises into the higher elevations of the Sierra Nevada or Cascades. Forecasters and others on the West Coast often used to refer to this warm, moist air as the "Pineapple Express" because it comes from around Hawaii where pineapples are grown. A diagram of an atmospheric river event is shown in Figure 28.

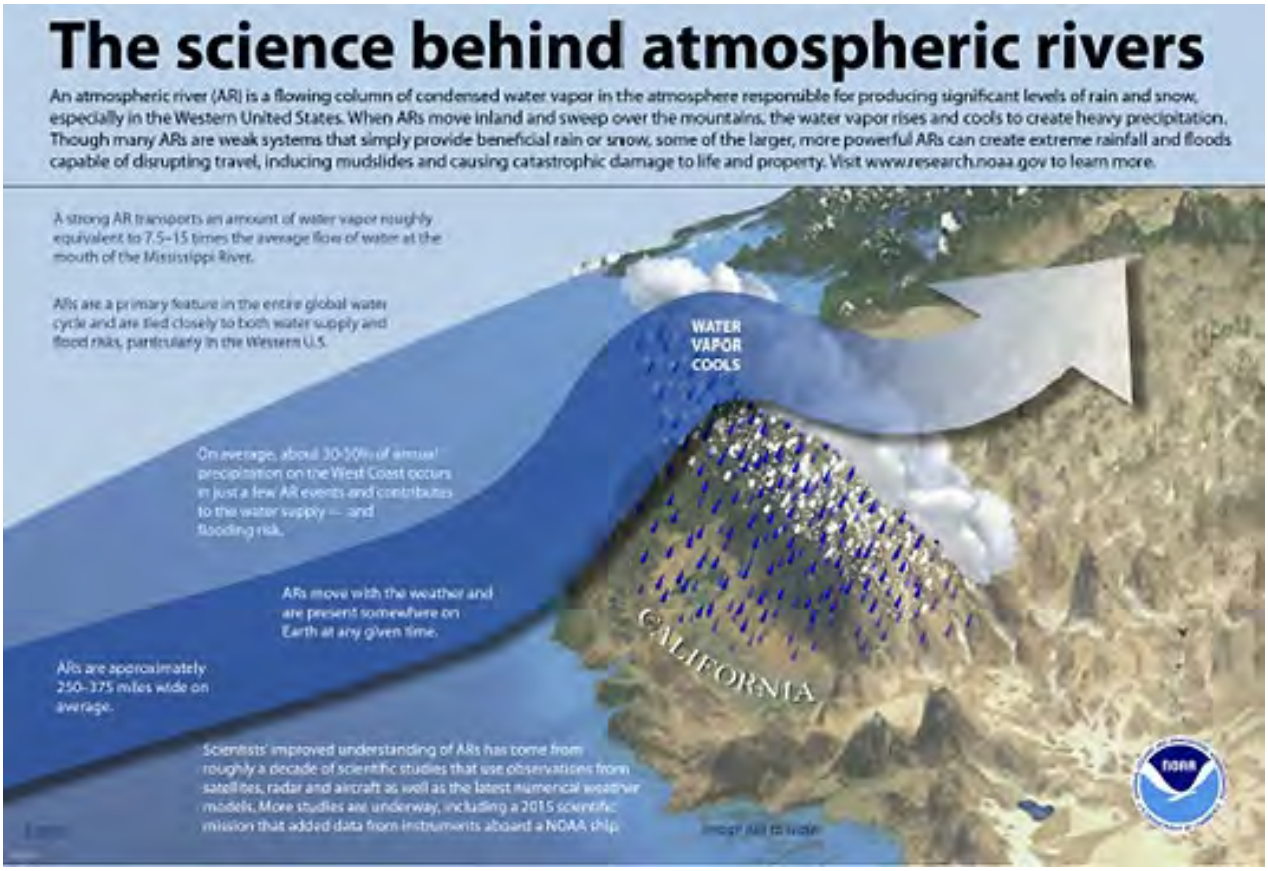


Figure 28: Diagram of an Atmospheric River Event
Source: NOAA

The Marin County OA is susceptible to various types of flood events. In coastal areas, flooding may occur when strong winds or tides result in a surge of seawater into areas that are above the normal high tide line. Other types of flooding in Marin include isolated ponding and stormwater overflow. Isolated ponding is when pools form on the ground and can occur in any

area that doesn't drain effectively – for example, in a natural depression in the landscape. Stormwater overflow is when storm drains back up. Stormwater drainage systems quickly convey rainwater through underground pipes to creeks and the Bay. When the stormdrains are obstructed or broken or when the water bodies to which they lead to are already full, water backs up onto the streets. Although stormwater overflow and isolated ponding also occur throughout the County, the effects are typically not widespread or significantly damaging.

Flooding in Fairfax generally results from creek flooding. Fairfax is not located along the coast and would not experience coastal flooding. Fairfax is subject to periodic flooding from San Anselmo and Fairfax Creeks. Ross Valley, where Fairfax is located, is naturally prone to flooding by its location, geologic and geomorphic setting: rainfall can be intense, soils are shallow with limited absorption capacity, slopes are steep, stream channels are entrenched and in many places narrow with relatively little storage capacity. The watershed has been altered from its natural condition and many sections of creeks and streams have been placed in culverts and the natural pattern of runoff has been changed. During prolonged and heavy storms the watershed can become saturated. If rainfall is sufficiently intense, heavy runoff can result in high flows exceeding the capacity of the creek in places where conveyance is constrained. Floodwaters escape the creek capacity and breach the creek bank in downtown Fairfax. 'Localized' flooding also occurs in many places in Fairfax and is exacerbated where the storm water drainage network has inadequate capacity for peak flows or is blocked from sediment, debris, or vegetation. Localized flooding is characterized by excessive ponding in the street, and overflow onto lower-lying residential properties even during 5-year storm events. Localized flooding can occur within or outside of the FEMA designated floodplain. Severe winter storms can also be accompanied by hazards and destruction resulting from high winds. High winds knock down limbs or entire trees which subsequently damage power and utility lines, buildings, block streets, and even pose a direct risk to human safety.

Local flooding in Fairfax is exacerbated where the storm water drainage network has inadequate capacity for peak flows. The most flood-prone areas of Fairfax are downtown south of Broadway Boulevard and Center Boulevard. The 100-year floodplain extends primarily along Fairfax Creek, widening up to several hundred feet on either side from Azalea Avenue east through the downtown area to the Post Office. There are numerous homes and businesses in this area along with the Town's primary critical facilities including the Fairfax Police Station and Emergency Operations Center, the Ross Valley Fire Station #21 and the Fairfax Community Center that could be susceptible to flooding. The 100-year also floodplain also extends along San Anselmo Creek west of Bolinas Road and several hundred feet of Deer Park Creek where numerous homes could be susceptible to flooding. The 500-year floodplain occurs primarily along the 100-year floodplain fringe of Fairfax and San Anselmo Creeks, extending several hundred feet up Deer Park Creek, along Wood Lane, and along Bothin Road where there are dozens of homes. No other critical facilities in Fairfax lie within either the 100 or 500-year floodplain.

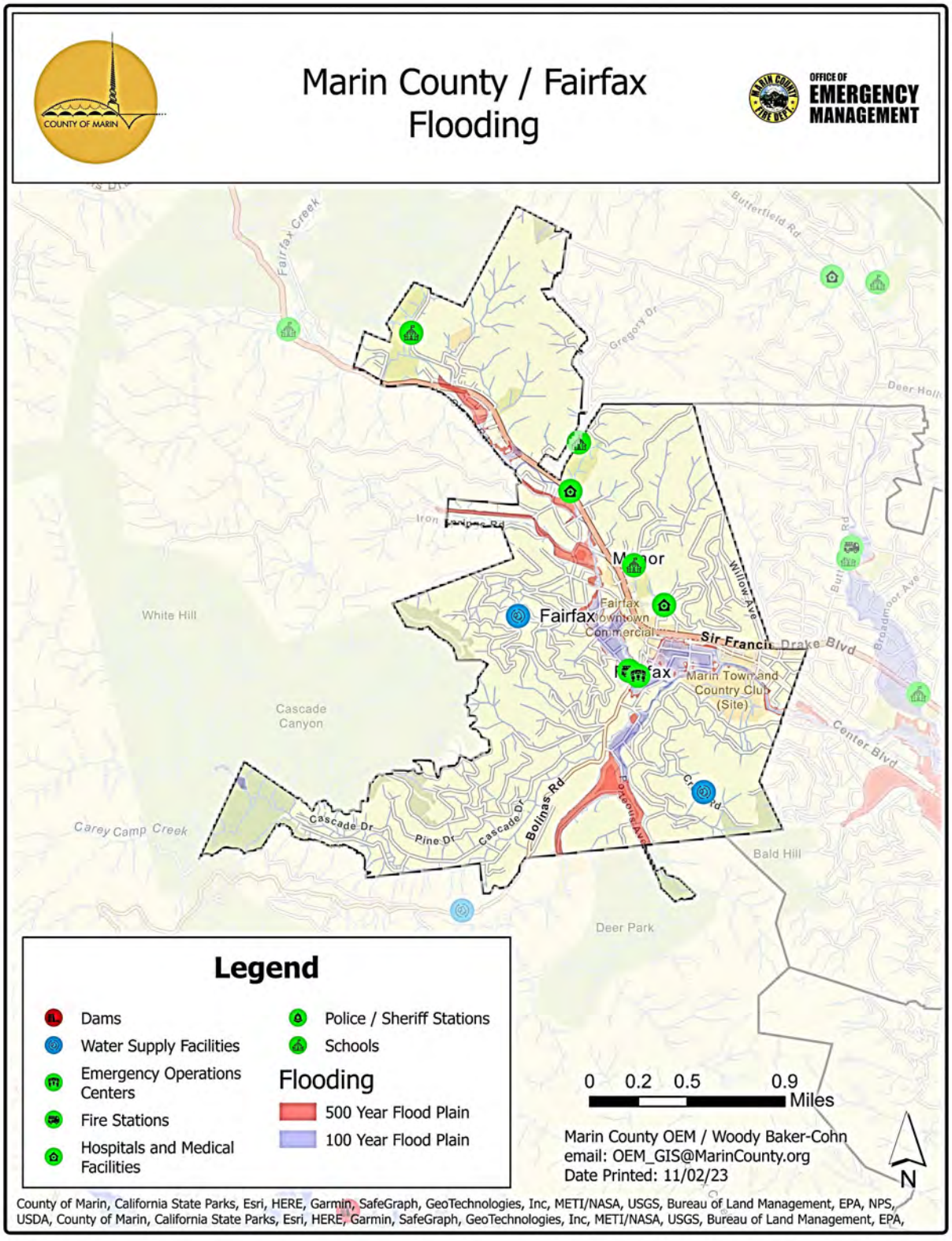


Figure 29: Town of Fairfax Flooding Critical Facilities and Infrastructure
Source: Marin County OEM

Table 17 shows the number of Fairfax critical facilities by flood zone.

Table 17: Town of Fairfax Critical Facilities by Flood Zone				
	Category	Name	Address	Flood Zone
1.	Fire Station	Ross Valley Fire Station 21	10 Park Road, Fairfax 94930	AE
2.	Police Station	Fairfax Police Department	142 Bolinas Rd Fairfax	AE
3.	Town Hall/EOC	Fairfax Town Hall	142 Bolinas Rd, Fairfax	AE
4.	Corp Yard	Fairfax DPW Corp Yard	142 Bolinas Rd, Fairfax	AE
5.	Community Center/ Finance Dept	Finance Department for Town of Fairfax	16 Park Road, Fairfax	AE
6.	Community Center, Council Chambers	Woman's Club	46 Park Road, Fairfax, CA 94930	AE
7.	Community Center. Gymnasium, event center	The Pavilion	142 Bolinas Rd, Fairfax, CA 94930	AE But is well above the BFE

Table 17: Town of Fairfax Critical Facilities in the Flood Zones
Source: County of Marin/FEMA DFIRM

Floodwaters can be deep enough to drown people and move fast enough to sweep people and vehicles away, lift buildings off foundations, and carry debris that smashes into buildings and other property. Flood waters can cause significant erosion which can lead to slope instability, severely damaging transportation and utility infrastructure by undermining foundations or washing away pavement. If water levels rise high enough to get inside buildings, flooding can cause extensive damage to personal property and the structure itself. Flood events that develop very quickly are especially dangerous because there may be little advance warning.

On 2/7/2017, police closed Park Road because of flooding. Water also flooded most of Bolinas Road through downtown. Olema Road was closed at Westbrae Drive because of mud, flooding and debris. No major damage was reported.

On 12/11/2014, creeks in Fairfax turned into rivers after a storm that dropped over two inches of rain. Flooding was reported along Wood Lane and Porteus Avenue. Traffic on Sir Francis Drake Boulevard in west Fairfax was slowed by flooding. A tree fell on a home, but no major damage from flooding were reported.

On 1/1/2006 the town experienced major flooding with major damage to Police, Fire, and Town Hall buildings along with damage to many businesses, and residences.

On 1/3–1/5/1982, a severe storm damaged almost all businesses on Bolinas Road with flooding. Total loss was estimated at $3 million.

Climate Change and Future Development Considerations

Climate change is expected to affect California's precipitation patterns, which are likely to influence future flood events. A 2017 study[3] found that the number of very intense precipitation

[3] Precipitation in a Warming World: Assessing Projected Hydro-Climate Changes in California and other Mediterranean Regaions. https://www.nature.com/articles/s41598-017-11285-y

days in California is projected to more than double by the end of the century, increasing 117 percent, making it likely that flood events will become more frequent in the Marin County OA including Fairfax. Climate change is expected to alter rainfall patterns in Northern California, including the Marin County OA. As the climate warms, rain events are predicted to become more intense. The Marin County OA including Fairfax will likely experience more rain inundation events that lead to creek flooding and increase the potential threat of tree mortality and other potential hazards. Development along Deer Park Creek, San Anselmo Creek and Fairfax Creek, including the downtown area would expose more people, structures and infrastructure including major roads to creek flooding as a result of climate change.

2.2.5 LAND SUBSIDENCE/SINKHOLES

Land subsidence is a gradual settling or sudden sinking of the Earth's surface owing to subsurface movement of earth materials. The principal causes are aquifer-system compaction, drainage of organic soils through groundwater pumping, underground mining, hydro-compaction, natural compaction, sinkholes, and thawing permafrost. More than 80 percent of the identified subsidence in the United States is a consequence of underground water exploitation. The increasing development of land and water resources threatens to exacerbate existing land-subsidence problems and initiate new ones.

Sinkholes can form in three primary ways. Dissolution sinkholes form when dissolution of the limestone or dolomite is most intensive where the water first contacts the rock surface. Aggressive dissolution also occurs where flow is focused in preexisting openings in the rock, such as along joints, fractures, and bedding planes, and in the zone of water-table fluctuation where groundwater is in contact with the atmosphere. See Figure 30 for a picture and description of how dissolution sinkholes form.

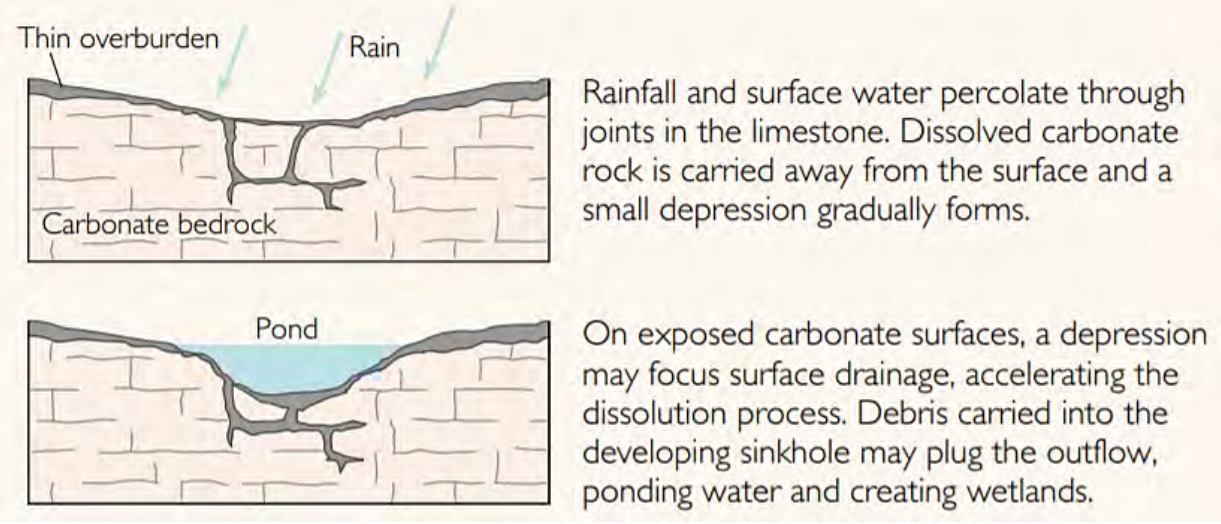


Figure 30: Dissolution Sinkhole Formation
Source: USGS

Cover-subsidence sinkholes tend to develop gradually where the covering sediments are permeable and contain sand. In areas where cover material is thicker, or sediments contain more clay, cover-subsidence sinkholes are relatively uncommon, are smaller, and may go

undetected for long periods. See Figure 31 for a picture and description of how cover-subsidence sinkholes form.

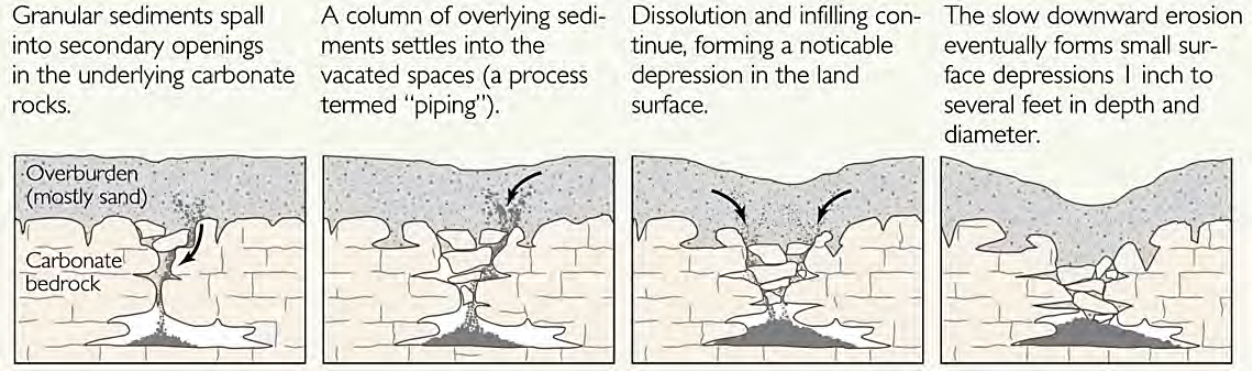


Figure 31: Cover-Subsidence Sinkhole Formation
Source: USGS

Cover-collapse sinkholes may develop abruptly over a period of hours and cause catastrophic damages. They occur where the covering sediments contain a significant amount of clay. Over time, surface drainage, erosion, and deposition of sediment transform the steep-walled sinkhole into a shallower bowl-shaped depression. See Figure 32 for a picture and description of how cover-collapse sinkholes form.

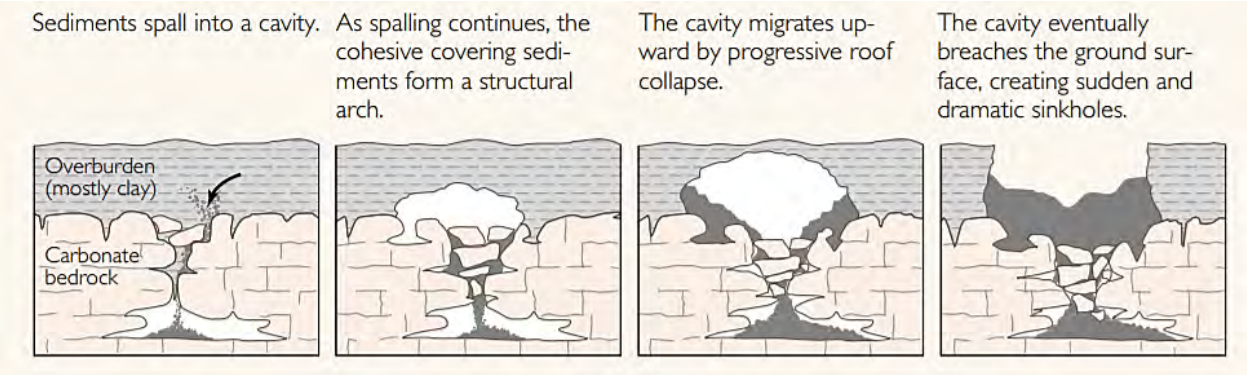


Figure 32: Cover-Collapse Sinkhole Formation
Source: USGS

New sinkholes have been correlated to land-use practices, especially from groundwater pumping and from construction and development practices that cause land subsidence. Sinkholes can also form when natural water-drainage patterns are changed and new water-diversion systems are developed. Some sinkholes form when the land surface is changed, such as when industrial and runoff-storage ponds are created. The substantial weight of the new material can trigger an underground collapse of supporting material, thus causing a sinkhole.

The overburden sediments that cover buried cavities in the aquifer systems are delicately balanced by groundwater fluid pressure. The water below ground helps to keep the surface soil in place. Groundwater pumping for urban water supply and for irrigation can produce new sinkholes in sinkhole-prone areas. If pumping results in a lowering of groundwater levels, then underground structural failure, and thus, sinkholes, can occur.

Land subsidence and sinkholes would most likely occur in the central lowland areas of Fairfax along Fairfax and San Anselmo creeks where the ground is more porous. This includes the primary commercial area of town where there are numerous residences, businesses and critical facilities the Fairfax Police Station and Emergency Operations Center, the Ross Valley Fire Station #21 and the Fairfax Community Center. Land subsidence could have numerous impacts for Fairfax, including the settling of businesses and homes as well as the shifting of roadways and utility infrastructure that run through the Town.

On December 13, 2021 a sink hole was discovered under the sidewalk and part of the eastbound lane at the 2300 block of Sir Francis Drake. The sink hole appeared to be at least 15-feet deep.

Climate Change and Future Development Considerations

Climate change could indirectly influence land subsidence as more severe and prolonged periods of drought may encourage more groundwater withdrawals. The rate of land subsidence could increase across the Marin County OA including the lowland areas of Fairfax as a result of climate change. The impacts of land subsidence on infrastructure, including roads and underground utilities, in Fairfax could increase with future development in the lowland populated areas of the city, particularly the downtown area, where land subsidence is more likely to occur.

2.2.6 Severe Weather – Extreme Heat

Extreme heat is defined as temperatures that hover 10 degrees or more above the average high temperature for the region and last for several weeks. A heat wave is an extended period of extreme heat, often with high humidity. When relative humidity is factored in, the temperature can feel much hotter as reflected in the Heat Index (see Figure 33):

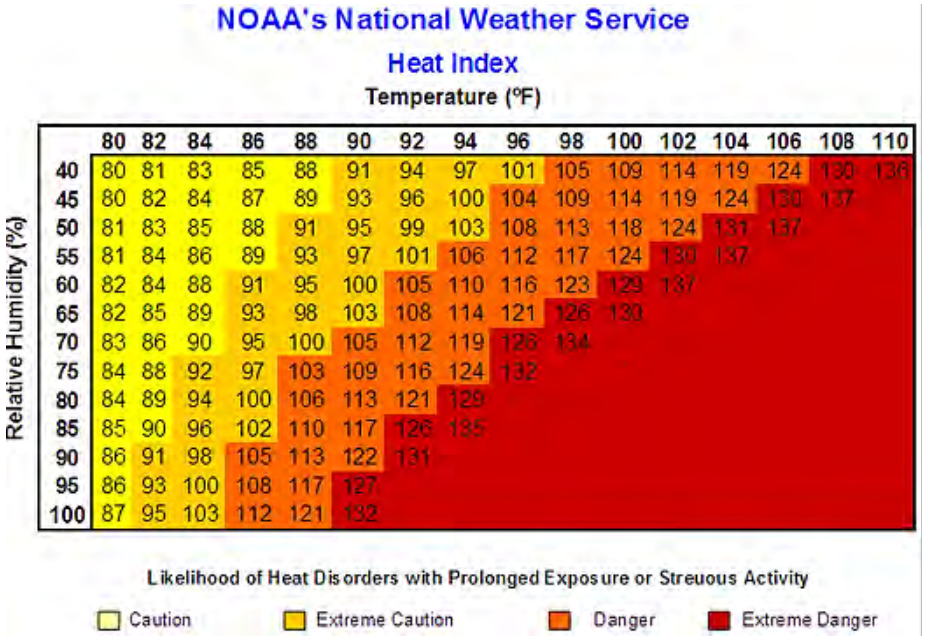


Figure 33: Heat Index
Source: NOAA

Heat kills by taxing the human body beyond its abilities. In a normal year, about 1,300 Americans succumb to the demands of summer heat.

Extreme heat has the potential to impact all areas of Fairfax and would be felt more at lower elevations in the central areas of the Town. Temperatures can feel warmer in this area due to the widespread presence of concrete and asphalt, which stores heat longer. Heat waves can cause power outages and can sicken people who are exposed to high temperatures too long, particularly infants and the elderly.

In September 2022 the Marin County OA including the Town of Fairfax experienced an Extreme Heat Event with temperatures exceeding 103 degrees.

Climate Change and Future Development Considerations

The primary effect of climate change is warmer average temperatures. The annual average daily high temperatures in California are expected to rise by 2.7°F by 2040, 5.8°F by 2070, and 8.8°F by 2100 compared to observed and modeled historical conditions. At the current rate, annual average temperatures in the Marin County OA region and Bay Area will likely increase by approximately 4.4 degrees by 2050 and 7.2 degree by the end of the century unless significant efforts are made to reduce greenhouse emotions according to California's latest climate change assessment.

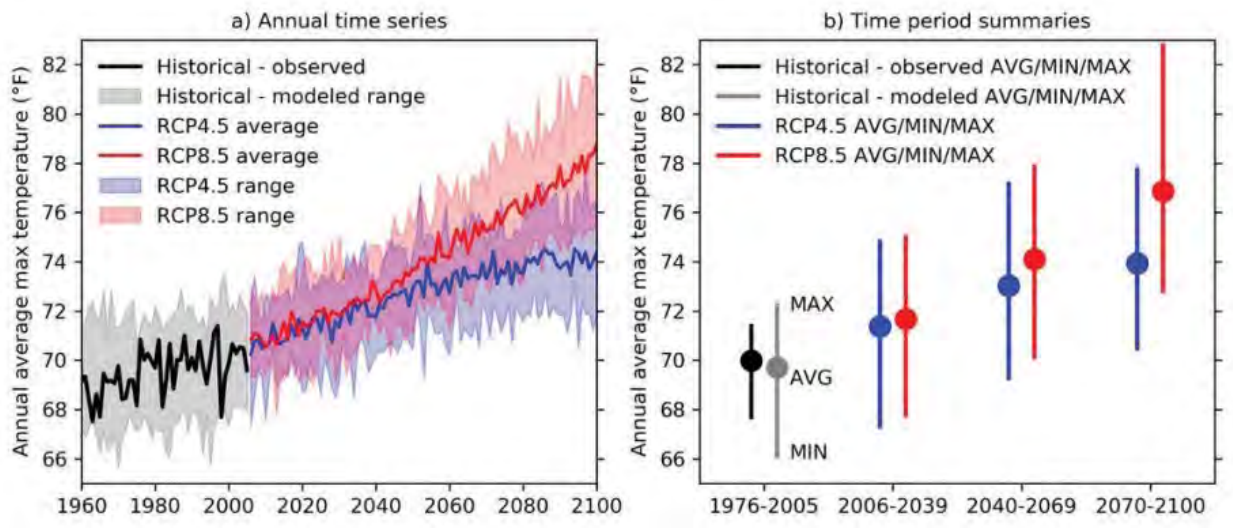


Figure 34: Annual Average Temperatures in the San Francisco Bay Area, 2000-2100
Source: California Climate Change Assessment (Fourth Edition)

As climate change accelerates in the 21st century, it is anticipated that extreme heat events will become more frequent and intense across the Marin County OA including in Fairfax. There will be increased residential and business needs for cooling and addressing heat-related issues. These effects would primarily be felt in the lowland areas of Fairfax where heat builds in developed areas. Heat waves also tax the energy grid. Future development in the Marin County OA including Fairfax could exacerbate the impacts from heat related events, particularly in electricity provision and water delivery. Increased temperatures will also lead to an increase in the occurrence and severity of wildfires across the Marin County OA including Fairfax as conditions become hotter and drier. These effects will primarily be felt in the open space areas of Fairfax where hotter and drier conditions are more apt to lead to wildfires. Future

development near the many open spaces around Fairfax could expose more people and infrastructure to the threat of a major wildfire as a result of increasing temperatures.

2.2.7 Severe Weather – High Wind & Tornado

High Wind

High wind is defined as a one-minute average of surface winds 40 miles per hour or greater lasting for one hour or longer, or winds gusting to 58 miles per hour or greater regardless of duration that are either expected or observed over land. These winds may occur as part of a seasonal climate pattern or in relation to other severe weather events such as thunderstorms. The Beaufort scale is an empirical measure that relates wind speed to observed conditions on land and is a common measure of wind intensity (see Figure 35).

Beaufort number	Description	Wind speed		Land conditions
		kts	km/h	
0	Calm	< 1	< 1	Calm. Smoke rises vertically.
1	Light air	1 – 2	1 – 5	Wind motion visible in smoke.
2	Light breeze	3 – 6	6 – 11	Wind felt on exposed skin. Leaves rustle.
3	Gentle breeze	7 – 10	12 – 19	Leaves and smaller twigs in constant motion.
4	Moderate breeze	11 – 15	20 – 28	Dust and loose paper raised. Small branches begin to move.
5	Fresh breeze	16 – 20	29 – 38	Branches of a moderate size move. Small trees begin to sway.
6	Strong breeze	21 – 26	39 – 49	Large branches in motion. Whistling heard in overhead wires. Umbrella use becomes difficult. Empty plastic garbage cans tip over.
7	High wind, Moderate gale, Near gale	27 – 33	50 – 61	Whole trees in motion. Effort needed to walk against the wind. Swaying of skyscrapers may be felt, especially by people on upper floors.
8	Gale, Fresh gale	34 – 40	62 – 74	Some twigs broken from trees. Cars veer on road. Progress on foot is seriously impeded.
9	Strong gale	41 – 47	75 – 88	Some branches break off trees, and some small trees blow over. Construction/temporary signs and barricades blow over. Damage to circus tents and canopies.
10	Storm, Whole gale	48 – 55	89 – 102	Trees are broken off or uprooted, saplings bent and deformed. Poorly attached asphalt shingles and shingles in poor condition peel off roofs.
11	Violent storm	56 – 63	103 – 117	Widespread vegetation damage. Many roofing surfaces are damaged; asphalt tiles that have curled up and/or fractured due to age may break away completely.
12	Hurricane	≥ 64	≥ 118	Very widespread damage to vegetation. Some windows may break; mobile homes and poorly constructed sheds and barns are damaged. Debris may be hurled about.

Figure 35: Beaufort Wind Scale
Source: NOAA

Windstorms in the Marin County OA are typically straight-line winds. Straight-line winds are generally any thunderstorm wind that is not associated with rotation (i.e., is not a tornado). It is these winds, which can exceed 100 mph, which represent the most common type of severe weather and are responsible for most wind damage related to thunderstorms.

Tornado

Tornadoes are rotating columns of air marked by a funnel-shaped downward extension of a cumulonimbus cloud whirling at destructive speeds of up to 300 mph, usually accompanying a thunderstorm. Tornadoes are the most powerful storms that exist, and damage paths can be in excess of one mile wide and 50 miles long. The Enhanced Fujita Scale (see Figure 36) is commonly used to rate the intensity of tornadoes in the United States based on the damages that they cause.

Enhanced Fujita Scale	
EF-0	65-85 mph winds
EF-1	86-110 mph winds
EF-2	111-135 mph winds
EF-3	136-165 mph winds
EF-4	166-200 mph winds
EF-5	>200 mph winds

Figure 36: Enhanced Fujita Scale
Source: NOAA

Tornadic waterspouts are tornadoes that form over water or move from land to water. They have the same characteristics as a land tornado. They are associated with severe thunderstorms, and are often accompanied by high winds and seas, large hail, and frequent dangerous lightning.

Figure 37: Waterspout Formation
Source: MarineInsights

All of Fairfax is susceptible to storms and damage from wind and tornadoes, as most of the Town has tree cover. Drought can increase the susceptibility of trees toppling over in a high wind event. Fallen trees could damage homes and other facilities. Power lines could be impacted by fallen trees and wind, causing power outages. Roadways could also become blocked by fallen trees, affecting the ability of residents to reach their homes.

Fairfax has experienced winter storms that have caused damage.

On 3/14/2023, a wild storm ripped through Fairfax, causing a tree to fall on a fence at Manor Elementary School on Oak Manor Drive.

Figure 38: Wind Damage at Manor Elementary School – 2023 Storm
Source: Marin Independent Journal

On 1/8/2017, a storm with high winds caused 2,000 customers in Fairfax to lose power. Tree branches ensnared power lines on Spruce Road.

Figure 39: Wind Damage on Spruce Road – 2017 Storm
Source: Marin Independent Journal

On 11/30/2012, high winds knocked trees down onto power lines which sparked a fire that burned down a small cabin, resulting in a fatality.

Climate Change and Future Development Considerations

It is anticipated that the atmospheric rivers that deliver storms to Northern California may intensify because of climate change. This increase in storm intensity may bring more intense winds and potential tornados to Northern California, including the Marin County OA and Fairfax. Significant wind events and tornados can topple trees, particularly those that may be saturated, or drought stressed as a result of climate change. An increase in fallen trees in Fairfax as a result of increased storms due to climate change can lead to an increase in power outages. Future development in any of the forested areas around Fairfax with high tree cover including in residential areas will increase the effects of severe wind events.

2.2.8 WILDFIRE

A wildfire is a fire that occurs in an area of combustible vegetation. The three conditions necessary for a wildfire to burn are fuel, heat, and oxygen. Fuel is any flammable material that can burn, including vegetation, structures, and cars. The more fuel that exists and the drier that fuel is, the more intense the fire can be. Wildfires can be started naturally through lightning or combustion, or can be set by humans. There are many sources of human-caused wildfires including arson, power lines, a burning campfire, an idling vehicle, trains, and escaped controlled burns. On average, four out of five wildfires are started by humans. Uncontrolled wildfires fueled by wind and weather can burn acres of land and everything in their path in mere minutes, and can reach speeds up to 15 miles per hour. On average, more than 100,000 wildfires burn 4 to 5 million acres of land in the United States every year. Although wildfires can

occur in any state, they are most common in the Western states including California where heat, drought, and thunderstorms create perfect wildfire conditions.

Wildfires are of primary concern when they occur in the Wildland Urban Interface (WUI), which is defined as areas where homes are built near or among lands prone to wildfire. Even relatively small acreage fires may result in disastrous damages. Most structures in the WUI are not destroyed from direct flame impingement, but from embers carried by wind. The damages can be widely varying, but are primarily reported as damage to infrastructure, built environment, and injuries to people.

The pattern of increased damages is directly related to increased urban spread into historical forested areas that have wildfire as part of the natural ecosystem. Many WUI fire areas have long histories of wildland fires that burned only vegetation in the past. However, with new development, a wildland fire following a historical pattern may now burn these newly developed areas. WUI fires can occur where there is a distinct boundary between the built and natural areas or where development or infrastructure has encroached or is intermixed in the natural area. WUI fires may include fires that occur in remote areas that have critical infrastructure easements through them, including electrical transmission towers, railroads, water reservoirs, communications relay sites or other infrastructure assets.

Consequently, wildland fires that burn in natural settings with little or no development are part of a natural ecological cycle and may actually be beneficial to the landscape. Century old policies of fire exclusion and aggressive suppression have given way to better understanding of the importance fire plays in the natural cycle of certain forest types.

Warning times are usually adequate to ensure public safety, provided that evacuation recommendations and orders are heeded in a timely manner. While in most cases wildfires are contained within a week or two of outbreak, in certain cases, they have been known to burn for months, or until they are completely extinguished by fall rains.

Wildfire poses the greatest risk to human life and property in the Marin County OA's densely populated WUI, which holds an estimated 69,000 living units. The Marin County OA is home to 23 communities listed on CAL FIRE's Communities at Risk list, with approximately 80% of the total land area in the county designated as having moderate to very high fire hazard severity ratings. The county has a long fire history with many large fires over the past decades, several of which have occurred in the WUI. To compound the issue, national fire suppression policies and practices have contributed to the continuous growth (and overgrowth) of vegetation resulting in dangerous fuel loads. The Community Wildfire Protection Plan (CWPP) provides a scientifically based assessment of wildfire threat in the WUI of the Marin County OA.

Fire protection in California is the responsibility of either the federal, state, or local government. On federally owned land, or federal responsibility areas (FRA), fire protection is provided by the federal government, and or in partnership with local agreements. In state responsibility areas (SRA), CAL FIRE typically provides fire protection. However, in some counties CAL FIRE contracts with county fire departments to provide protection of the SRA – this is the case in the Marin County OA, where CAL FIRE contracts with MCFD. Local responsibility areas (LRA) include incorporated cities and cultivated agriculture lands, and fire protection is typically provided by city fire departments, fire protection districts, counties, and by CAL FIRE under contract to local government.

CAL FIRE contracts with MCFD to provide wildland fire protection and associated fire prevention activities for lands designated by the State Board of Forestry as SRA. The County of Marin is one of six counties in the state who contract with CAL FIRE to protect SRA. The MCFD is responsible for the protection of approximately 200,000 acres of SRA within the county and is the primary agency that handles wildland fires. MCFD also provides similar protection services to approximately 100,000 acres of FRA in the Golden Gate National Recreation Area (GGNRA), the Muir Woods National Monument, and the Point Reyes National Seashore.

Figure 40 indicates the federal responsibility areas, state responsibility areas and local responsibility areas in the Marin County OA.

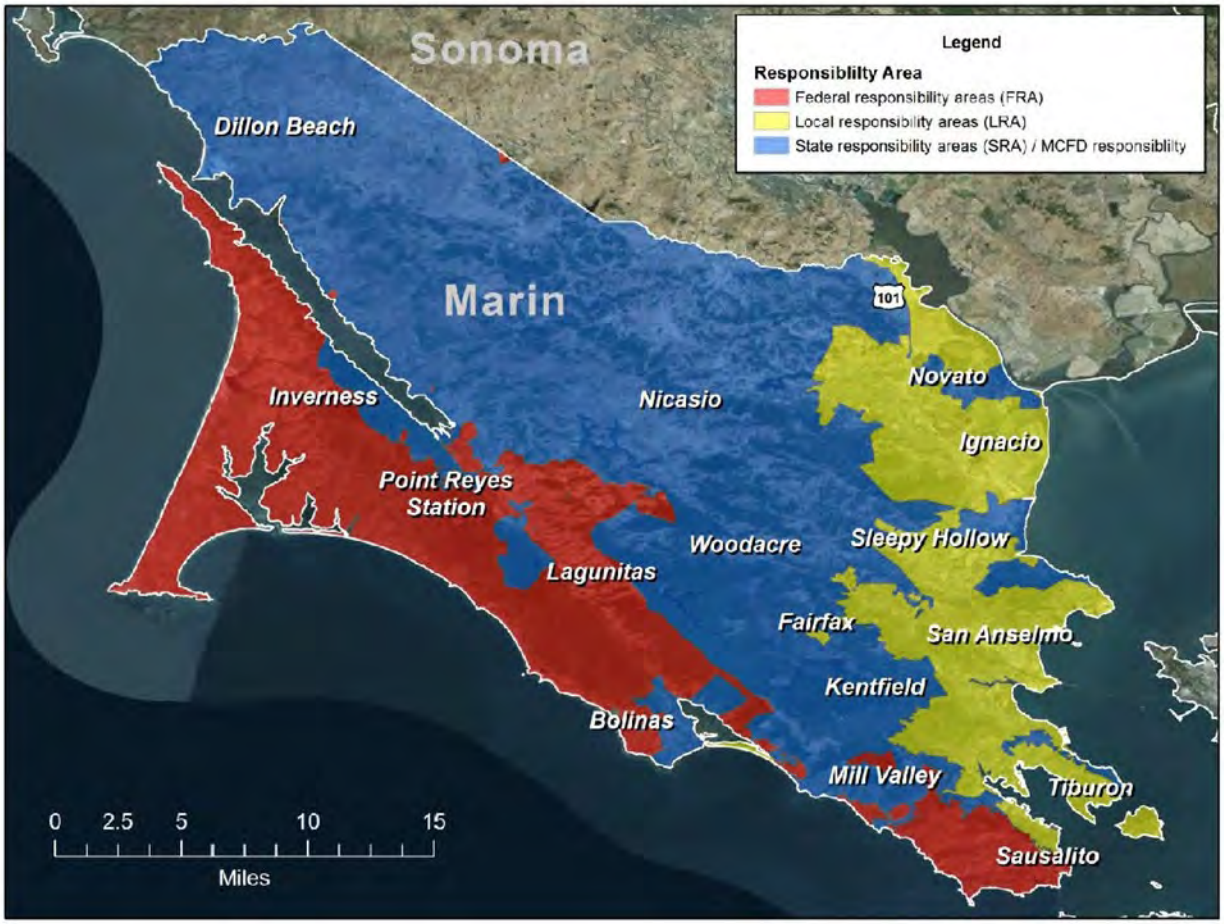


Figure 40: Federal, State and Local Responsibility Areas in the Marin County OA
Source: Marin Community Wildfire Protection Plan

The mix of weather, diverse vegetation and fuel characteristics, complex topography, and land use and development patterns in the Marin County OA are important contributors to the fire environment. The MCFD Woodacre Emergency Command Center (ECC) currently manages the data from four Remote Automated Weather Stations (RAWS) for predicting fire danger utilizing the National Fire Danger Rating System (NFDRS) during the fire season. The RAWS are located in Woodacre, Middle Peak, Barnabe, Big Rock and a new station will be coming online in Novato.

The Marin County OA is bounded by the cool waters of the Pacific Ocean to the west, the San Francisco and Richardson Bays to the southeast, the San Pablo Bay to the east, and Sonoma County agricultural lands to the north. The combination of these large bodies of water, location in the mid-latitudes, and the persistent high pressure over the eastern Pacific Ocean results in several micro-climates. Weather in the OA consists of warm, dry summers and cool, wet winters. The climate in early fall and late spring is generally similar to the summer, and late fall is similar to winter. Spring is generally cool, but not as wet as the winter. While these general weather conditions are fairly representative of the typical Marin County OA weather, complex topography, annual variability of weather patterns, and less frequent and transient weather patterns are important to fire conditions.

In the late spring through early fall, the combination of frequent and strong high-pressure systems (known as the Pacific High) over California combined with the cool waters of the ocean/bays results in persistent fog and low clouds along the coast (including over the southern Marin County OA near the San Francisco Bay). The fog often penetrates into the inland valleys of the northern and central Marin County OA, especially during overnight hours. At the coastline, mist from fog can keep the land surfaces modestly moist while inland land surfaces above the fog or inversion are often very dry.

The Pacific High that persists from late spring through early fall over the eastern Pacific, combined with a thermal low pressure over the Central Valley of California, results in an almost continuous sea breeze. These winds usher in cool and moist air and can be strong (15 to 25 mph), especially over the ridge tops and through northwest to southeast lying valleys, including San Geronimo/San Anselmo, Hicks, and Lucas Valleys. These westerly winds are usually highest in the afternoon, decrease in the evening, and are light overnight before increasing again in the late morning/early afternoon.

Occasionally in the summer and more often in the fall, the Pacific High moves inland and centers over Oregon and Idaho, while low pressure moves from the Central Valley of California to southern California and Arizona. The resulting north-to-south pressure gradient can be strong enough to retard the typical sea breeze and can even result in winds blowing from the land to the ocean (offshore winds). As the offshore winds move air from the Great Basin to the coastal areas of California, the air descends and compresses, which greatly warms and dries the air. Under these “Diablo” wind conditions, temperatures in the Marin County OA can reach 100°F in the inland areas and even 80°F at the coast, and relative humidity can be very low. In addition, wind speeds can be high (20 to 40 mph) and gusty and are often much faster over the mountains and ridge tops such as Mt. Tamalpais, Loma Alta, and Mt. Burdell compared to low-lying areas. Wind speeds can be high over the ridges and mountains at all times of day under this “offshore” wind pattern and are often much slower or even calm at night in low-lying areas because nighttime cooling decouples the aloft winds from the surface winds. It is during these Diablo wind events that there is a high potential for large, wind-driven fires should there be an ignition. Historically, the largest and most destructive fires have occurred during these offshore (also known as Foehn) wind events including the Angel Island and the Vision fires.

A few times per year in the summer and early fall, monsoonal flow from Mexico brings in moist and unstable air over central and northern California, which can result in thunderstorms with or without precipitation. With the otherwise dry summer conditions, the lightning can ignite fires. These monsoonal flow patterns are usually only one to two-day events.

Beginning in late November and lasting through the end of March, the Pacific High moves south and weakens, allowing storms that originate in the Gulf of Alaska to move over California.

These storms bring precipitation and, at times, strong winds out of the south. Each storm usually results in one fourth inch to several inches of rain over a day or so. Near Mt. Tamalpais, rainfall amounts are enhanced by orographic lifting, resulting in higher rain amounts in the Kentfield and Fairfax areas compared to the rest of the county. Typically, after the first rain in November, the cool weather and occasional storm keeps the ground wet through late Spring. However, in some years, significant rain does not occur until later in the year (e.g., early-to-late December) and there can be several weeks without any storms and rain. During storms, temperatures are usually mild.

When there are no storms over California, a land-breeze typically forms (i.e., winds blowing from the Central Valley to the Pacific Ocean). These winds can reach 30 mph, and travel through the southeast to northwest lying valleys, over low-lying ridges such as the Marin Headlands, and through the Golden Gate. These winds are usually highest in the mid-morning hours and decrease in the afternoon as the Central Valley warms during the day. The winds are associated with cold and modestly moist air.

In late February/early March through late April, the Pacific High strengthens and moves north, and storms impacting the county become less frequent. During this time of year there is often a low-pressure area over the desert in southwest California. The combination of the Pacific High to the north and low-pressure to the southwest results in strong winds blowing from the northwest to the southeast. Like the sea breeze, these winds bring in cool, moist air and are usually highest in the afternoon hours. Because of winter and spring rains, the land is wet and there is little danger of wildland fire despite the strong winds and only occasional precipitation. There is often little coastal fog this time of year.

Vegetation, which is also known as fuel, plays a major role in fire behavior and potential fire hazards. A fuel's composition, including moisture level, chemical make-up, and density, determines its degree of flammability. Of these, fuel moisture level is the most important consideration. Generally, live trees contain a great deal of moisture while dead logs contain very little. The moisture content and distribution of fuels define how quickly a fire can spread and how intense or hot it may become. High moisture content will slow the burning process since heat from the fire must first eliminate moisture.

In addition to moisture, a fuel's chemical makeup determines how readily it will burn. Some plants, shrubs, and trees such as chamise and eucalyptus (both present in the Marin County OA) contain oils or resins that promote combustion, causing them to burn more easily, quickly, and intensely.

Finally, the density of a fuel influences its flammability; when fuels are close together but not too dense, they will ignite each other, causing the fuel to spread readily. However, if fuels are so close that air cannot circulate easily, the fuel will not burn freely.

The Marin County OA has extensive topographic diversity that supports a variety of vegetation types.

Environmental factors, such as temperature, precipitation, soil type, aspect, slope, and land use history, all help determine the existing vegetation at any given location. In the central and

eastern parts of the county, north facing slopes are usually densely wooded from lower elevations to ridge peaks with a mixture of mostly hardwood tree species such as coast live oak, California bay, Pacific madrone, and other oak species. Marshlands are also present throughout the county; once ignited marsh fires can be difficult to contain and extinguish.

Grasslands with a mixture of native and nonnative annual and perennial plant species occur most often in the northern and western parts of the county due to a combination of soil type, lower rainfall, and a long history of ranching. The southern and western facing slopes tend to have a higher percentage of grasslands, which in turn have the potential to experience higher rates of fire spread. Grassland fires are dangerous even without extreme fire weather scenarios due to the rapid rate of fire spread; in some cases, fires spread so quickly that large areas can burn before response resources are able to arrive.

In the west portion of the county closer to the coast, where precipitation is higher and marine influence is greater, most areas are densely forested with conifer species (i.e., Bishop pine, Douglas-fir, and coast redwood) and associated hardwood species. Chaparral vegetation also occurs in parts of the county, especially on steeper south and west facing slopes. This mix of densely forested areas mixed with chaparral results in higher fuel loads and potentially higher fire intensity. Expansion of the residential community into areas of heavier vegetation has resulted in homes existing in close proximity to dense natural foliage; these homes are often completely surrounded by highly combustible or tall vegetation, increasing the potential that wildland fires could impact them.

As part of the development of the CWPP, an updated vegetation map layer was created using the most recent vegetation information available from a variety of state and local data sources.

Vegetation distribution in the Marin County OA is characterized by approximately 20 different types of vegetation which have been classified into 15 fire behavior fuel models.

Figure 41: Fuel Model Map for the Marin County OA
Source: Unknown

Insect infestations and plant diseases, such as California oak mortality syndrome (sudden oak death), are increasing and threaten to change the structure and overall health of native plant communities in the Marin County OA. Sudden oak death has no known cure and is the biggest concern; this syndrome is caused by the fungus-like Phytophthora ramorum, which has led to widespread mortality of several tree species in California since the mid-1990s; the tanoak (Lithocarpus densiflorus) in particular appears to have little or no resistance to the disease. Sudden oak death has resulted in stands of essentially dead trees with very low fuel moistures.

Studies examining the impacts of sudden oak death on fire behavior indicate that while predicted surface fire behavior in sudden oak death stands seems to conform to a common fuel model already in use for hardwood stands, the very low moisture content of dead tanoak leaves may lead to crown ignitions more often during fires of “normal” intensity.

Two other plant diseases prevalent in the Marin County OA are pitch canker (which affects conifers such as Bishop pine and other pine species), and madrone twig dieback (which affects Pacific madrones). Pitch canker is caused by the fungus Fusarium circinatum (F. subglutinans, F. sp. pini), which enters the tree through wounds caused by insects. While some trees do recover, most infected trees are eventually killed by the fungus. Management of this disease largely focuses on containment to reduce the fungus spreading to other trees. Pitch canker is a

particular issue in the NPS lands of Pt. Reyes National Seashore, where many acres of young Bishop Pines that were seeded on the Inverness Ridge by the Mount Vision Fire of 1995 have been infected.

These dead and dying trees have created large swaths of land with dense and dry fuel loads. Madrone twig dieback is caused by the native fungus Botryosphaeria dothidea and appears to be getting worse throughout the county due to drought effects on Pacific madrones. Three additional threats to trees common to the Marin County OA include:

- Bark and ambrosia beetles (Monarthrum dentiger and monarthrum scutellare), which target oak and tanoak trees. Sudden oak death may be exacerbating the effects of beetle infestations which prey on trees already weakened by this disease.
- Root rot, caused by oak root fungus (Armillaria mellea), is primarily associated with oaks and other hardwoods but also attacks conifers. These fungal infestations cause canopy thinning and branch dieback and can kill mature trees. As with the beetle infestations, sudden oak death may be exacerbating the effects of root rot fungus in the county forests.
- Velvet-top fungus (Phaeolus schweinitzii) is a root rot fungus affecting Douglas-fir and other conifers, with the infection typically occurring through a wound.

Topography characterizes the land surface features of an area in terms of elevation, aspect, and slope. Aspect is the compass direction that a slope faces, which can have a strong influence on surface temperature, and more importantly on fuel moistures. Both elevation and aspect play an important role in the type of vegetation present, the length of the growing season, and the amount of sunlight absorbed by vegetation. Generally, southern aspects receive more solar radiation than northern aspects; the result is that soil and vegetation on southern aspects is warmer and dryer than soil and vegetation on northern aspects. Slope is a measure of land steepness and can significantly influence fire behavior as fire tends to spread more rapidly on steeper slopes. For example, as slope increases from 20 – 40%, flame heights can double and rates of fire spread can increase fourfold; from 40 – 60%, flame heights can become three times higher and rates of spread can increase eightfold.

The Marin County OA is topographically diverse, with rolling hills, valleys and ridges that trend from northwest to southeast. Elevation throughout the county varies considerably, with Mt. Tamalpais' peak resting at 2,574 feet above sea level and many communities at or near sea level. Correspondingly, there is considerable diversity in slope percentages. The San Geronimo Valley slopes run from level (in the valley itself) to near 70%. Mt. Barnabe has slopes that run from 20 to70%, and Throckmorton ridge has slopes that range in steepness from 40 – 100%. These slope changes can make fighting fires extremely difficult.

In the WUI where natural fuels and structure fuels are intermixed, fire behavior is complex and difficult to predict. Research based on modeling, observations, and case studies in the WUI indicates that structure ignitability during wildland fires depends largely on the characteristics and building materials of the home and its immediate surroundings.

The dispersion of burning embers from wildfires is the most likely cause of home ignitions. When embers land near or on a structure, they can ignite near-by vegetation or accumulated debris on the roof or in the gutter. Embers can also enter the structure through openings such as an open window or vent and could ignite the interior of the structure or debris in the attic.

Wildfire can further ignite structures through direct flame contact and/or radiant heat. For this reason, it is important that structures and property in the WUI are less prone to ignition by ember dispersion, direct flame contact, and radiant heat.

Public Safety Power Shutoff (PSPS) Events

As a result of the 2017 Northern California Wildfires, the 2018 Camp Fire in Butte County and other wildfires caused by power line infrastructure, Pacific Gas & Electric (PG&E) began initiating Public Safety Power Shutoff (PSPS) events in their service areas (including the Marin County OA) to help prevent the start of future wildfires. PG&E will initiate a PSPS if conditions indicate potentially dangerous weather conditions in fire-prone areas due to strong winds, low humidity, and dry vegetation. During these events, PG&E will proactively turn off power in high fire risk areas to reduce the threat of wildfires. The most likely electric lines to be considered for a public safety power outage will be those that pass through areas that have been designated by the California Public Utilities Commission (CPUC) High Fire-Threat District at elevated (Tier 2) or extreme risk (Tier 3) for wildfire. Customers outside of these areas could have their power shut off, though, if their community relies upon a line that passes through a high fire-threat area or an area experiencing severe weather. PG&E will consider numerous factors and analyze historical data to help predict the likelihood of a wildfire occurring, and closely monitoring weather watch alerts from the National Weather Service (NWS). These factors generally include, but are not limited to:

- A Red Flag Warning declared by the National Weather Service
- Low humidity levels, generally 20 percent and below
- Forecasted sustained winds generally above 25 mph and wind gusts in excess of approximately 45 mph, depending on location and site-specific conditions such as temperature, terrain and local climate
- Condition of dry material on the ground and live vegetation (moisture content)
- On-the-ground, real-time observations from PG&E's Wildfire Safety Operations Center and field crews

Pacific Gas & Electric Company (PG&E) operates a total of 1,179 miles of overhead electricity transmission and distribution lines in the Marin County OA. Overhead electricity lines and poles can be damaged or downed under severe weather conditions, particularly severe wind conditions, which increases the potential for wildfire ignition. 52 percent of PG&E’s overhead distribution lines and 41 percent of its overhead transmission lines are located in CPUC-identified High-Fire Threat Districts subject to elevated or extreme fire risk. PG&E is currently planning and implementing safety measures to prevent wildfires and reduce the impacts of Public Safety Power Shutoff (PSPS) events on communities in the Marin County OA and throughout California.

In October 2019 the Marin County OA including the Town of Fairfax experienced two PSPS events.

These measures include installing weather stations; installing high-definition cameras; installing sectionalizing devices on its overhead lines to separate the grid into smaller sections; hardening the system by installing stronger power poles, covering lines, and undergrounding lines in targeted areas; creating temporary microgrids to provide electricity during PSPS events; and enhancing existing vegetation management activities. From 2018 to July 2021, PG&E hardened

three miles of overhead lines, installed 68 transmission and distribution sectionalizing devices, completed enhanced vegetation management on approximately 51 of overhead line miles, installed 28 weather stations, and installed 12 high-definition cameras in the Marin County OA.

The fire season generally lasts from five to six months, when there is little rain. Access to the adjacent open space areas and the hillside and canyon areas is limited by few access routes and narrow roads. Fairfax is within the Wildland-Urban Interface (WUI) and most of the town, including all of its critical facilities, is in a high FHSZ. Road access is minimal into several residential areas of Fairfax with winding narrow roads, including along Cascade Drive and Bolinas Road, and in communities north of Sir Francis Drake Boulevard. Evacuation of these areas due to wildfire could be challenging. The Town borders directly on the open space lands of Mount Tamalpais, the Cascade Canyon Preserve, the White Hill Open Space Preserve, the Hawthorne Canyon Open Space Preserve, and the Bald Hill Open Space Preserve. The hillsides and canyons carry the potential of high fire danger. The wildland fire hazard is caused by a combination of factors including hillside terrain, highly flammable vegetation and forest, long summers, and human activity. There are heavy fuel loads. Many homes have been built on steep slopes with vegetation in close proximity. The onset of Sudden Oak Death (SOD) has significantly increased the number of dead or weakened trees in the areas, which contributes to the fuel loads.

Wind is a predominant factor in the spread of fire.

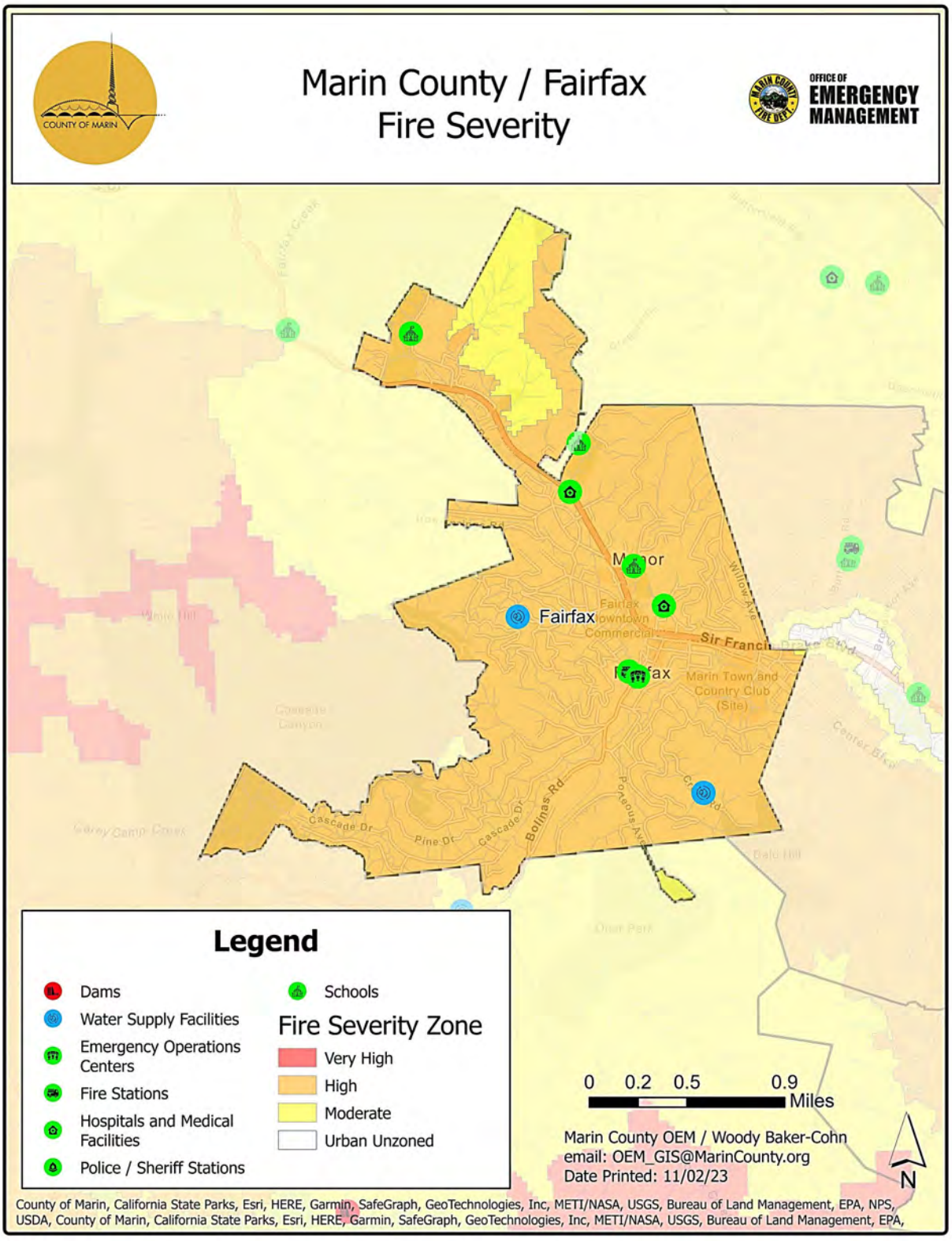


Figure 42: Town of Fairfax Wildfire Critical Facilities and Infrastructure
Source: Marin County OEM

Wildfires can cause short-term and long-term disruption to Fairfax. Fires may result in deaths and injuries and can destroy buildings and infrastructure. Additional costs associated with the loss of homes to wildland fire include disruption of utilities, transportation, and other public services. Although the physical damages and casualties arising from wildfires may be severe, it is important to recognize that they also cause significant economic impacts by resulting in a loss of function of buildings and infrastructure. In large wildfire events, the economic impact of this loss of services may be comparable to the economic impact of physical damages to the Town. Economic impacts of loss of transportation and utility services may include traffic delays/detours from road and bridge closures and loss of electric power, potable water, and wastewater services. Wildfires can also cause major damage to power lines needed to distribute electricity to operate facilities. High intensity wildfires can also have substantial effects on watersheds through loss of vegetation and soil erosion, which may impact the Town by changing runoff patterns and degrading water quality through sedimentation and contamination.

All of Fairfax could be impacted by a Power Safety Shutoff (PSP) event and/or suffer poor air quality from smoke as a result of a wildfire in the Marin County OA or the surrounding region. As wildland areas around Fairfax become drier due to climate change, the risk of a wildfire occurring and impacting the Town will continue to increase. Brush fires in the Town may increase over time as parks and other open spaces experience drier conditions.

Fairfax has never experienced a major wildfire. The Town experiences small fires annually.

On 10/6/2023, a brush fire burned three acres in Fairfax off Bolinas Fairfax Road during a three-day period of unseasonable warmth in the Town. No injuries were reported and no structures were threatened.

Figure 43: Fairfax Brush Fire - 2023
Source: Marin Independent Journal

On 7/16/2019, a house fire on a ridge on Crest Road spread into wildlands. There was no wind and the fire was extinguished with no further damage.

On 9/18/2016, a wildfire burned ten acres of parched terrain about 1.5 miles northwest of Fairfax near Camp Tamarancho. Temperatures were above 90 degrees and conditions were extremely dry. No structures were damaged by the blaze.

On 1/18/2014, a wildfire burned an acre of remote hillside along the Bolinas-Fairfax ridgeline between Kent and Alpine Lake in the unincorporated County of Marin above Fairfax. No injuries were reported and no buildings were threatened.

Climate Change and Future Development Considerations

Climate change can lead to an increase in wildfire events. Climate change has been a key factor in increasing the risk and extent of wildfires in the western United States. Changes in climate create warmer, drier conditions. Increased drought, and a longer fire season are boosting these increases in wildfire risk.

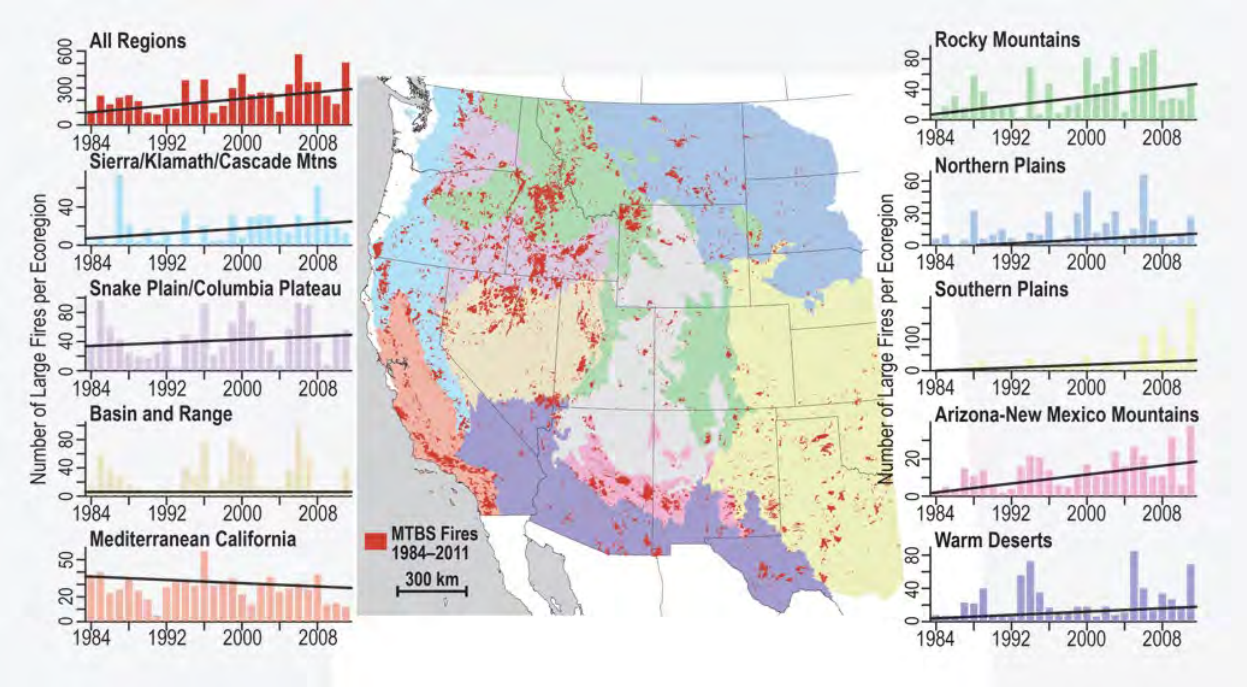


Figure 44: Trends in the Annual Number of Large Wildfires in the United States
Source: Fourth Climate Change Assessment, 01/04/23

As summer conditions in Northern California become hotter and drier due to climate change, the occurrence and severity of wildfires will only increase. The Marin County OA including Fairfax is particularly susceptible to these future impacts of climate change on wildfire, as the OA's climate has generally been wet enough historically to avoid major wildfires. Extreme heat events and high wind events could cause electrical systems to become overloaded and fail, sparking wildfires. An increase in wildfires as a result of climate change could lead to more significantly burned areas that could contribute to debris flows after a significant storm event, particularly in the open space areas around Fairfax. Post-fire debris flows could become more common in the areas of Fairfax around its creeks, including downtown. Future development in the WUI throughout Fairfax will expose more people and property to the impacts of a potentially significant wildfire. The growing number of people in the Fairfax WUI can increase risk to life, property and public health as a result of a wildfire.

3.0 MITIGATION STRATEGY

3.1 CHANGES IN DEVELOPMENT

The County of Marin is a county located in the northwestern San Francisco Bay Area. As of the 2020 census, the population was 262,231. Its county seat and largest city is San Rafael. The Marin County OA is across the Golden Gate Bridge from San Francisco and is included in the San Francisco–Oakland–Berkeley, CA Metropolitan Statistical Area.

The core of the Town of Fairfax is a classic example of “old urbanism,” where human-scale development was oriented around a transit station. Unfortunately, planning and development patterns since 1930 have often given preference to automobile travel over all other forms, minimizing or eliminating other transit options and human-scaled development. This shift is evidenced in the Marin County OA by ever expanding commercial districts and residential development, until one community abuts another and commercial areas become continuous strips, only accessible by car or sparse public transit service.

One can see this trend most strikingly in commercial areas adjacent to the historic core of Fairfax that are zoned Highway Commercial (CH). CH areas are typified by large monolithic structures surrounded by “parking lagoons”; for example, Fairfax Market to the west on Sir Francis Drake Boulevard and the Fair-Anselm and grocery store complex to the east on Center Boulevard.

Fortunately, residents of Fairfax over the past several decades have intuitively resisted these impacts and vigorously fought to save the Town from automotive-centric development patterns, seeking instead to preserve the Town's human-centric development pattern. Fairfax citizens have sought to secure open space for future generations, limit development not compatible with the original historic scale of the Town, and inhibit development that furthers grid-lock along the Sir Francis Drake Boulevard, the main arterial that runs through the entire Ross Valley corridor. For example, plans to create a freeway through the Ross Valley in the middle of the 20th century, and proposals to create massive residential development in the east end of town at the end of the 20th century, were defeated by citizen activism.

Fairfax development can be described in terms of well-defined urban planning principles. Below is an overview of relevant concepts that currently experience renewed interest throughout the country, in our efforts to address climate change, strive for social equity, and create economically viable communities with a sense of place.

Table 18: Town of Fairfax Future Growth Areas							
	Development	# of Units	# of Parcels	Project Date	Acres	Fire Severity Zone	Flood Zone
1	School Street Plaza	175	1	Est. 2029	2	High	X
2	Fairfax Market	8	1	Est. 2026	1	High	X
3	Underutilized commercial sites	159	17	unknown	varies	High	X
4	Accessory Dwelling Units (ADU's)	160	-	20 yrs.	All Residentially Zoned sites	High/ Very High	varies
	Total	**83**					

Table 18: Town of Fairfax Future Growth Areas
Source: Town of Fairfax

3.2 Capability Assessment

The overall priorities in the Town of Fairfax have not changed since the 2018 MJHMP update. However, the strategies in which to support the overall town priorities have changed and are reflected in the sections below. There were many projects that were either ongoing day-to-day business activities or were response related that were completed or deleted from the 2018 MJHMP project list and not carried over to this plan update. Several actions were completed and new projects were added to coincide with the changes in priorities, progress in local mitigation efforts and changes in development.

Capabilities are the programs and polices currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. The capability assessment identifies the local planning mechanisms where information from the 2018 MJHMP is incorporated and where updated hazard mitigation information from this 2023 MJHMP will be incorporated once approved. The 2018 capability assessments have been successfully incorporated into the Town of Fairfax General Plan to include the Public Safety Element, Land Use Element, and Housing Element and the 2023 capability assessments will also be incorporated into the General Plan and these Elements. The capability assessment is divided into four sections: regulatory, administrative and technical, fiscal, and outreach and partnerships.

3.2.1 Regulatory Capabilities

The legal and regulatory capabilities include existing ordinances and codes that affect the Town's physical or built environment. Examples of legal and/or regulatory capabilities can include: a jurisdiction's building codes, zoning ordinances, subdivision ordnances, special purpose ordinances, growth management ordinances, site plan review, general plans, capital improvement plans, economic development plans, emergency response plans, and real estate disclosure plans. The table below lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place.

Table 19: Town of Fairfax Legal and Regulatory Capabilities		
Plans	Yes/No Latest Update	Does the plan/program address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
General Plan/Master Plan	Y 2010	The General Plan outlines long-term direction for development and policy. The new Safety Element includes a discussion of fire, earthquake, flooding, and landslide hazards; and importantly includes a section on Community Preparedness. Consistent with the Plan Maintenance and Update Process section of the 2018 Local Hazard Mitigation Plan (LHMP) Annex, the General Plan Advisory Committee (GPAC) reviewed, refined, and incorporated selected mitigation strategies into the 2010 General Plan Safety Element. As this plan gets updated there is potential to improve it with updated risk information and strategies.
Strategic Plan	N	
Capital Improvements Plan	Y	The Capital Improvement Plan (CIP) directs construction activities for Town owned facilities and infrastructure for the next five years. Mitigation actions may involve construction of new or upgraded facilities and infrastructure. As this plan gets updated there is potential to improve it with updated strategies.
Economic Development Plan	N	
Local Emergency Operations Plan	Y 2006	The plan is due for an update. It was created with the technical assistance of the Marin County Sheriff's Office of Emergency Services.
Continuity of Operations Plan	n	
Flood Mitigation Plan (FMP)	Y	Information on flood mitigation included in the Fairfax 2010 Local Hazard Mitigation Plan
Engineering Studies for Streams	Y	The Ross Valley Flood Protection and Watershed Program
Open Space Management Plan	N	
Regional Transportation Plan (RTP)	N	Regional Transportation Plan completed by Transportation Authority of Marin
Stormwater Management Plan/Program	Y	Town Code Chapter 17.068, Floodplains adopted 1988
Engineering Studies for Streams	Y	The Ross Valley Flood Protection and Watershed Program
Community Wildfire Protection Plan	Y	Town coordinates with Marin Wildfire Protection Authority (MWPA) on activities and mitigation efforts including Firesafe Marin
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal	N	

zone management, climate change adaptation)		
Building Code, Permitting, and Inspections	Y/N	Are codes adequately enforced?
Building Code	Y	Yes, state and local building codes are adequately enforced.
Building Code Effectiveness Grading Schedule (BCEGS) Score	N	
Fire department ISO rating:	Y	The Ross Valley Fire Department has an ISO rating of 2. It is adequately enforced.
Site plan review requirements	Y	Site plans shall include: an outline of the lot showing the length and direction of all property lines; relevant property setbacks; all buildings, fences, retaining walls, walkways, and driveways. Clearly indicate the distances from any structure to the property lines. Show all structures presently on the site and those proposed; indicate paving material for the driveway and if the paving is new or existing; a north arrow; the edge of street pavement and name of any abutting street; if a curb and/or sidewalk exists; site drainage; contour lines for properties steeper than a one-foot drop over a seven-foot horizontal distance (15% grade).
Land Use Planning and Ordinances	Y/N	Is the ordinance an effective measure for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Municipal Code	Y	The Municipal Code includes several sections that address hazard mitigation. The Town adopts the current California Building Code which applies to all construction activity within the Town boundaries. The California Building Code is comprised of 11 parts that incorporate public health, safety, energy, green building and access standards used in the design and construction of all buildings. The new code provisions will allow the Town to utilize the latest technologies, advances in construction standards and seismic design for the use in new residential and commercial construction and in remodels.
Zoning ordinance	Y	The Zoning Ordinance implements the General Plan by establishing specific regulations for development. It includes standards for where development can be located, how buildings must be sized, shaped, and positioned, and what types of activities can occur in an area. Mitigation actions that pertain to new or substantially redeveloped buildings can be adopted into the Zoning Ordinance.
Subdivision ordinance	Y	Town Code Title 16
Floodplain ordinance	Y	Town Code Chapter 17.068

Natural hazard specific ordinance (stormwater, steep slope, wildfire)	Y	Hill Area Residential Development Ordinance, Town Code Chapter 17.072
Flood insurance rate maps	Y	Building and planning check all building and planning application using FEMA Flood Insurance Maps to determine if projects require inclusion of special conditions or building methods to comply with FEMA regulations
Elevation Certificates		
Acquisition of land for open space and public recreation uses	Y	Fairfax Open Space Committee is active in finding and acquiring Open Space parcels within the town limits
Erosion or sediment control program	Y	All planning and building applications are conditioned to comply Marin Countywide Stormwater Pollution Prevention Program.

Table 19: Town of Fairfax Legal and Regulatory Capabilities
Source: Town of Fairfax

Town of Fairfax General Plan or Master Plan

California Government Code 65300 requires that every City and County in the state have a General Plan. The Town of Fairfax General Plan, April 4, 2012 included an extensive public review process. The General Plan is the most important policy and planning document in the city and is used by virtually every department. The General Plan is the Town's statement of its vision for the future. The General Plan contains policies covering every aspect of the Town: land use (how land can be developed), circulation, noise, air quality, housing, open space and conservation, and health and safety.

Town of Fairfax specific goals and policies related to mitigation of natural hazards are as follows:

Table 20: Town of Fairfax General Plan

Goal/Policy/ Program	Explanation
Land Use Element	
Goal	Preserve scenic and natural resources, restore natural habitats, minimize wildfire hazards, preserve human-centered scale, mixed use and sense of community while managing growth
Policy	New development outside of the Town's boundary shall be limited and of a scale that preserves the significant scenic and natural resources and rural character of the areas adjacent to the Town
Program	Identify and pre-zone and lands outside the Town's boundaries that are considered subject to development for the purposes of maintain land use practices that respect the Town's natural environment.
Program	Create inventory of undeveloped or underdeveloped lands with the Fairfax Planning Area
Program	Proposed development of any parcel in the inventory shall be reviewed by the Fairfax Open Space Committee
Conservation and Open Space Element	
Goal	Integrate reduction of the use of non-renewable energy resources and greenhouse gas (GHG) emissions into the planning process, reduce consumption of non-renewable energy resources and reduce GHG emission by the residents and the Town, Promote

	education and citizen involvement
Policy	Develop a Climate Action Plan, promote zooming to facilitate live/work units and minimize motorized transit, encourage green building techniques for new and remodel construction, participate in state and county efforts towards energy conservation, renewable energy and GHG reduction
Program	Establish Climate Action Committee, obtain resource usage information for town and create a climate action plan (CAP).
Program	Adopt planning policies and zoning that promotes mixture of residential and commercial usage in the same building/site to promote live/work and promote infill development.
Program	Adopt green building ordinance provide links on website to green building information and resources.
Program	Continue membership in Marin Energy Authority, support Marin County Greenhouse Gas Reduction Plan, require GHG emission analysis as part of any traffic study.
Program	Implement energy efficiency and use of sustainable energy resources by Town Government
Program	Create infrastructure to facilitate the use of plug-in electric vehicles.
Public Safety	
Goal	Minimize risks due to geologic hazards, floods and fire and foster Community Preparedness
Policy	Land use decision will be made using best available geotechnical information and make that information available to the public, encourage seismic retrofit, encourage retrofitting of public and private buildings that pose a risk, preserve existing building stock, collaborate with other agencies to maintain critical infrastructure during emergency events
Program	Archive past geotechnical studies for past development, document past landslides, evaluate Town-owned critical facilities, encourage building owners to seismically retrofit their properties, retrofit seismically deficient bridges, enforce relevant codes and construction standards.

Table 20: Town of Fairfax General Plan
Source: **Town of Fairfax** General Plan

3.2.2 Administrative and Technical Capabilities

The administrative and technical capability identifies the Town personnel responsible for activities related to mitigation and loss prevention. Many positions are full time and/or filled by the same person.

Table 21: Town of Fairfax Administrative and Technical Capabilities

Administrative	Yes/No	Is coordination effective?
Administrative Services	Y	Administrative Services Department handles finance and purchasing, budgeting, risk management, information technology, and business licensing for the community. The department may be responsible for implementing mitigation actions related to the department's scope.
Planning Commission		The Planning Commission meetings on the third Thursday of each month. The Commission holds public hearings and takes action on subdivision, design reviews, conditional use permits, and items that may be forwarded to or called up by the commission.
Hazard Mitigation Planning Committee	Y	The Town participates in the Marin County OA MJHMP Planning Committee that meets quarterly to review and manage Hazard Mitigation projects and programs.
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	Y	Town has a Maintenance Plan for trees in public parks and routinely prunes/maintains trees and removes hazardous trees; Town contracts with Marin Sanitary Service for regular street cleaning
Mutual aid agreements	Y	Public Safety Mutual Aid agreements.
Technical	Yes/No	Has capability been used to assess/mitigate risk in the past?
Warning systems/services (Reverse 911, outdoor warning signals)	Y	Utilizes the emergency warning systems through the EAS system as their primary warning capability. Utilizes the emergency warning systems through telephone notification utilizing reverse 911. Town has a warning siren for use when imminent flooding of creeks may occur
Hazard data and information	Y	Data has been used for the determination of floodplain areas. Different building code requirements are enforced based on the location of a structure in the floodplain to mitigate risk.
Grant writing	N	
Hazus analysis	N	
Staff/Personnel Resources	Yes/No Full Time/ Part Time	Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?
Chief Building Official	Y/FT	Yes

Flood Control and Water Conservation District Staff	Y	Currently administered by Building Official
Emergency Manager	N	
Community Planner	N	
Civil Engineer	Y	Town contracts for Town Engineer Services
GIS Coordinator	N	
Community Development Staff	N	Currently contracted out. Develops and maintains the General Plan, including the Safety Element. Develops area plans based on the General Plan, to provide more specific guidance for the development of more specific areas. Reviews private development projects and proposed capital improvements projects and other physical projects involving property for consistency and conformity with the General Plan. Anticipates and acts on the need for new plans, policies, and Code changes. Applies the approved plans, policies, code provisions, and other regulations to proposed land uses.
Town Planning, Building, and Public Works Staff	Y/FT	These departments are responsible for planning and building related activities including issuing permits, conducting environmental review, preparing planning documents, and addressing housing issues. Mitigation activities related to planning and building can be implemented by this department. Public Works Department is responsible for Town-owned infrastructure, including streets, bike lanes and sidewalks, storm drains, traffic signals, and streetlights. Mitigation actions involving new or retrofitted public infrastructure, as well as those related to water conservation, fall within the purview of the Public Works Department.
Police Department Staff	Y/FT	The Fairfax Police Department conducts emergency preparedness activities for the community. Mitigation activities related to emergency preparedness can be implemented by the Police Department.
Fire Department Staff	Y/FT	The Ross Valley Fire Department protects the town from the effects of fire and other hazardous conditions and supports implementation of mitigation actions that reduce the risk of wildfire.

Table 21: Town of Fairfax Administrative and Technical Capabilities
Source: **Town of Fairfax**

3.2.3 FISCAL CAPABILITIES

The fiscal capability assessment shows specific financial and budgetary tools available to the jurisdictions such as community development block grants; capital improvements project funding; authority to levy taxes for specific purposes; fees for water, sewer, gas, or electric services; impact fees for homebuyers or developers for new development; ability to incur debt through general obligations bonds; and withholding spending in hazard-prone areas.

Table 22: Town of Fairfax Fiscal Capabilities		
Financial	Yes/No	Has the funding resource been used in the past and for what type of activities? Could the resource be used to fund future mitigation actions?
Capital improvements project funding	Y	Funding has not been used in the past for mitigation but could possibly fund future mitigation activities.
Authority to levy taxes for specific purposes	Y	Funding has not been used in the past for mitigation but could possibly fund future mitigation activities.
Fees for water, sewer, gas, or electric services	Y	Water, Gas, Electric and Sewer are administered and managed by other agencies
Impact fees for new development	Y	Funding has not been used in the past for mitigation but could possibly fund future mitigation activities.
Storm water utility fee	N	Storm Drainage is not considered a utility by Town of Fairfax
Incur debt through general obligation bonds and/or special tax bonds	Y	Funding has not been used in the past for mitigation but could possibly fund future mitigation activities.
Incur debt through private activities	N	
Community Development Block Grant	Y	Funding has not been used in the past for mitigation but could possibly fund future mitigation activities.
Other federal funding programs	Y	Funding has not been used in the past for mitigation but could possibly fund future mitigation activities.
State funding programs	Y	Funding has not been used in the past for mitigation but could possibly fund future mitigation activities.

Table 22: Town of Fairfax Fiscal Capabilities
Source: **Town of Fairfax**

3.2.4 COMMUNITY OUTREACH

The outreach and partnerships capability assessment shows outreach and public education programs available to the Town of Fairfax and the Town of Fairfax partnerships utilized to promote those programs.

Table 23: Town of Fairfax Community Outreach		
Outreach and Partnerships	Yes/No	Could the program/organization help implement future mitigation activities?
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	Y	Fairfax Volunteers supplement town staff in a variety of outreach and community activities related to hazard mitigation. This includes organizing neighborhood groups, creek and path stewardship and emergency preparedness coordination.
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Y	In cooperation with other agencies including Marin Wildfire Prevention Authority, Marin Municipal Water District, Ross Valley Fire District and Town Newsletter, information is provided to community on a range of programs
Natural disaster or safety related school programs	N/A	Ross Valley School District is not affiliated specifically with Town of Fairfax and may have its own programs
StormReady certification	N	
Firewise Communities certification	Y	Town of Fairfax does have Firewise communities but program is not directly managed by Town of Fairfax
Community Rating System	Y	Yes, refer to section 3.2.5.
Public-private partnership initiatives addressing disaster-related issues	Y	The Get Ready program, developed in Marin County, is a free 2-hour course provided to the community. The course is designed to help residents plan for an emergency with a family plan, evacuation checklist, and strategies to keep residents and their families safe. (https://readymarin.org/get-ready/)

Table 23: Town of Fairfax Community Outreach
Source: **Town of Fairfax**

3.2.5 Participation in the National Flood Insurance Program

The Town of Fairfax has participated in the Regular Phase of the NFIP since 1/5/1978. Since then, the Town of Fairfax has administered floodplain management regulations that meet the minimum requirements of the NFIP. Under that arrangement, residents and businesses paid the same flood insurance premium rates as most other communities in the country.

The Community Rating System (CRS) was created in 1990. The Town of Fairfax has been in the CRS program since 10/01/2017. The program is designed to recognize floodplain management activities that are above and beyond the NFIP's minimum requirements. CRS is designed to reward a community for implementing public information, mapping, regulatory, loss reduction and/or flood preparedness activities. On a scale of 10 to 1, The Town of Fairfax is currently ranked Class 9 community, which gives a 5 % premium discount to individuals in the Town of Fairfax Special Flood Hazard Area (SFHA), and a 5 % discount to policyholders outside the SFHA.

Presently, the Fairfax manages its floodplains in compliance with NFIP/CRS requirements and implements a floodplain management program designed to protect the people and property of the County. Floodplain regulations are a critical element in local floodplain management and are a primary component in the Town's participation in the NFIP. as well. The Town's floodplain management activities apply to existing and new development areas, implementing flood protection measures for structures and maintaining drainage systems to help reduce the potential of flooding within the Town.

The Town of Fairfax will continue to manage their floodplains in continued compliance with the NFIP. An overview of the Town's NFIP status and floodplain management program are discussed in Table 24. Additional information on the Town's CRS program follows.

The activities credited by the CRS program provide direct benefits to the Marin County OA and its residents, including:

- Enhanced public safety;
- A reduction in damage to property and public infrastructure;
- Avoidance of economic disruption and losses;
- Reduction of human suffering; and
- Protection of the environment.

The activities that the Town of Fairfax implements and receives CRS credits include:

Activity 310 - We maintain Elevation Certificates for new and substantially improved structures in SFHA.

There are occasions that homeowners submit their elevation certificates when they are not making any improvements to their property. We keep hard copies in the office in a binder.

Activity 320 - We provide basic flood information to inquirers. We also provide additional information like flood depth, Historical flood information and etc.

Activity 330 - Outreach program. We send a flyer to all the properties in the flood zone. In the flyer we have some language for the history of flooding, protection of their property, protection

and clean local creeks and stormdrains, build responsibly for flooding and City floodplain information services.

Activity 340 - This is Hazard Disclosure. We require a residential resale inspection for all properties prior to the sale. We are disclosing whether a property was or was not in the flood zone.

Activity 350 - Our Public Library maintains flood protection materials. Also, we conduct an annual review and update of the information and links on our flood protection website.

Activity 360 - We send a brochure to properties in the flood zone. We provide flood protection advice to inquirers. We provide on-site flood protection assistance to inquirers. We let them know that flooding is not covered by the standard insurance policies whether they are property owners or renters. We also let them know that if they live or work in the Marin County OA they can register and get an alert notification during an emergency situation. We also let them know that they have to have an emergency plan and also how they can protect their property from flooding by cleaning the gutters and downspouts and area drains and making sure if they have a sump pump, the sump pump is working.

Activity 420 - This activity is preserving our open space in the floodplain.

Activity 430 - We enforce the floodplain management provisions of our zoning, subdivision and building code ordinances. Examples of this activity are requiring the lowest finished floor elevation of residences to be 1 foot higher than the base flood elevation. If the cost of improvements or repairs are more than 50% of the building's value, the owner needs to bring the building to compliance. Also, requiring new manufactured housing in existing manufactured housing parks to meet the same level of protection as is required for other new buildings.

Activity 440- We use and update our flood data maintenance system on an annual basis as needed, because we want to make the community floodplain data more accessible, current and useful.

1. We implement digital mapping or paper mapping systems that improve access and quality.
2. We maintain our historical Flood Hazard Boundary Map, FIRMs and Flood Insurance Studies.
3. We maintain benchmarks so surveyors can request obtain them from the Town.

Activity 450 - This activity is about stormwater management.

We regulate development on a case-by-case basis to ensure we treat runoff before it leaves the site and also ensure that the peak flow of stormwater runoff from each site will not exceed the pre-development. There are instances that the post-development peak flow rates for the developed area have been slightly increased from pre-development conditions however, onsite bio-retention areas or other treatment facilities have been provided to mitigate the increase in flow rate. We enforce regulations to minimize erosion from land disturbance due to construction.

Activity 502 - This is about repetitive loss Category- Properties that have had losses and reported to FEMA for these losses. We are in Category B. Category B means we are a community with at least one, but fewer than 50 repetitive loss properties that have not been mitigated. We have a map of the areas. We send a notice every year to those properties letting them know about flood

prevention and insurance information. We have 6 repetitive loss properties however we send notices to 41 properties in several repetitive loss areas.

Activity 510- Floodplain Management Planning- The Town of Fairfax has adopted the County of Marin Multi-Jurisdictional Hazard Mitigation Plan which has flood related sections like Dam Failure, Severe Storm, Flooding, Repetitive Loss Properties and Safety Warning/Evacuation Systems.

Table 24: Town of Fairfax NFIP Status

NFIP Topic	Comments
Insurance Summary	
How many NFIP policies are in the community? What is the total premium and coverage?	137 Policies $178,108 Premiums $44,273,000 coverage
How many claims have been paid in the community? What is the total amount of paid claims? How many of the claims were for substantial damage?	118 Paid losses $1,886,056.82 Paid losses 2 Substantial damage claims
How many structures are exposed to flood risk within the community? *"flood risk" is defined as the 1% annual chance flood (100-year flood. Numbers are from overlay of FEMA SFHA and building stock data.	Per our GIS Consultant who queries GIS for building footprints against the SFHA boundary, there are 2000 buildings in SFHA.
Describe any areas of flood risk with limited NFIP policy coverage	None
Staff Resources	
Is the Community Floodplain Administrator or NFIP Coordinator certified?	No
Is floodplain management an auxiliary function?	Yes
Provide an explanation of NFIP administration services (e.g., permit review, GIS, education or outreach, inspections, engineering capability)	Review permit plans for FEMA regulation compliances. Use GIS to find out if the property is in a Flood Zone. Outreach brochure mailed to all properties in SFHA. Inspection is performed as needed.
What are the barriers to running an effective NFIP program in the community, if any?	We currently only have one staff member who manages the program. In order to run it effectively we hire consultants and obtain advice/help from County staff.
Compliance History	
Is the community in good standing with the NFIP?	Yes
Are there any outstanding compliance issues (i.e., current violations)?	No
When was the most recent Community Assistance Visit (CAV) or Community Assistance Contact (CAC)?	9-1-2021
Is a CAV or CAC scheduled or needed?	No
Regulation	
When did the community enter the NFIP?	1/5/1978
Are the FIRMs digital or paper?	Digital
Do floodplain development regulations meet or exceed FEMA or State minimum requirements? If so, in what ways?	Yes. This is through development limitations, free board requirement, foundation protection, cumulative substantial improvements. We also have adopted and enforced the International Building Code. We do maintain drainage systems all year around to prevent

	flooding in different neighborhoods.
Provide an explanation of the permitting process.	Before the applicant submits plans for design review, she/he needs to get some information about her/his property. That is when planning/engineering will have a meeting with them to go over the requirements such as building in the Special Hazard Flood Zone. All projects that will be constructed in the SFHA will be subject to the provisions of Novato Municipal Code 5-31, Flood Damage Prevention Requirements. The finished floor elevation of all the building will need to be at least 1-foot above the base flood elevation. No exception taken.
Community Rating System (CRS)	
Does the community participate in CRS?	Yes
What is the community's CRS Class Ranking?	Class 9
What categories and activities provide CRS points and how can the class be improved?	All the activities that are performed/accomplished are described above. To improve the class to a higher classification the City needs to expand and do more work towards activities.
Does the plan include CRS planning requirements	Yes

Table 24: Town of Fairfax NFIP Status
Source: FEMA, Town of Fairfax

NFIP Insurance Coverage Details

Town of Fairfax joined the NFIP on 1-5-1978. The Town of Fairfax does participate in the Community Rating System. NFIP insurance data provided by DWR indicates that as of 9-13-2023, there were 136 policies in force in the Town of Fairfax with $175,355 in premiums, resulting in $36,668,000.00 of insurance in force. There have been 118 closed paid losses totaling $1,886,056.00 2 of the claims were considered substantial damage losses. Of these losses, 35 parcels were in AE zones, 29 parcels were in AO zone. Of the 118 claims, 0 claims were associated with pre-FIRM structures and 118 with post-FIRM structures. There were 16 repetitive loss structures in the Town of Fairfax. 14 were in A zones, and 2 were in B, C, or X zones. These repetitive loss structures account for $454,927.00 of the total losses in the Town of Fairfax. There were not any severe repetitive loss properties in the Town of Fairfax.

Repetitive Loss Properties

Repetitive loss records are as follows:

- Number of FEMA-identified Repetitive-Loss Properties: 16
- Number of FEMA-identified Severe-Repetitive-Loss Properties: 0
- Number of Repetitive-Loss Properties or Severe-Repetitive-Loss Properties that have been mitigated: 0
- Repetitive Loss Residential Structures: 16
- Repetitive Loss Non-Residential Structures: 0
- Severe Repetitive Loss Residential Structures: 0
- Severe Repetitive Loss Non-Residential Structures: 0

3.3 MITIGATION GOALS

44 CFR Requirement § 201.6(c)(3)(i) [The hazard mitigation strategy shall include a] description of mitigation goals to reduce or avoid long - term vulnerabilities to the identified hazards.

The information developed from the risk assessment was used as the primary basis for developing mitigation goals and objectives. Mitigation goals are defined as general guidelines explaining what each jurisdiction wants to achieve in terms of hazard and loss prevention.

Hazard Risk Prioritization
↓
Mitigation Goals & Objectives
↓
Mitigation Project Identification
↓
Mitigation Project Implementation

Goal statements are typically long-range, policy-oriented statements representing jurisdiction-wide visions. Objectives are statements that detail how each jurisdiction's goals will be achieved, and typically define strategies or implementation steps to attain identified goals. Other important inputs to the development of jurisdiction-level goals and objectives include performing reviews of existing local plans, policy documents, and regulations for consistency and complementary goals, as well as soliciting input from the public.

The following represents overarching strategic goals associated with the identification and eventual implementation of appropriate and meaningful hazard mitigation efforts in relation to prioritized hazards and threats confronting the Marin County OA. These goals form the basis for specific supporting process objectives and are shown from the highest priority, at the top of the list, to those of lesser importance.

The establishment of hazard mitigation goals represents both individual and collective strategies that have been mutually agreed upon by the Steering Committee and have changed with the 2023 MJHMP update. Objectives were added to Goals 2 and 5. Eventually, these goals have been adopted by the Marin County OA, including each of its jurisdictions, as the guiding policy behind local hazard mitigation efforts, in conjunction with other associated principles.

Goals were defined for the purpose of this mitigation plan as broad-based public policy statements that:

- Represent basic desires of the community;
- Encompass all aspects of community, public and private;
- Are nonspecific, in that they refer to the quality (not the quantity) of the outcome;
- Are future-oriented, in that they are achievable in the future; and
- Are time-independent, in that they are not scheduled events.

Goals are stated without regard to implementation. Implementation cost, schedule, and means are not considered. Goals are defined before considering how to accomplish them so that they are not dependent on the means of achievement. Goal statements form the basis for objectives

and actions that will be used as means to achieve the goals. Objectives define strategies to attain the goals and are more specific and measurable.

Goal 1: Minimize risk and vulnerability of the community to the impacts of natural hazards and protect lives and reduce damages and losses to property, economy, and environment in the Marin County OA.

- Minimize economic and resource impacts and promote long-term viability and sustainability of resources throughout the Marin County OA.
- Minimize impact to both existing and future development.
- Provide protection for public health.
- Prevent and reduce wildfire risk and related losses.

Goal 2: Provide protection for critical facilities, infrastructure, utilities, and services from hazard impacts.

- Incorporate defensible space and reduce hazard vulnerability.
- Develop redundancies in utilities and services.
- Enhance resilience through enhanced construction.

Goal 3: Improve public awareness, education, and preparedness for hazards that threaten our communities.

- Enhance public outreach and participation in the Alert Marin Emergency Notification System.
- Enhance public outreach, education, and preparedness program to include all hazards of concern.
- Increase public knowledge about the risk and vulnerability to identified hazards and their recommended responses to disaster events, including evacuation and sheltering options.
- Provide planning and coordination for "At-Risk" populations.
- Provide planning and coordination for companion animals, livestock, and other animal populations.
- Increase community awareness and participation in hazard mitigation projects and activities.

Goal 4: Increase communities' capabilities to be prepared for, respond to, and recover from a disaster event.

- Improve interagency (local, state, federal) emergency coordination, planning, training, and communication to ensure effective community preparedness, response and recovery.
- Enhance collaboration and coordination of disaster-related plans, exercises, and training with local, state, and federal agencies, neighboring communities, private partners, and volunteers.
- Enhance the use of shared resources/Develop a strong mutual aid support system.
- Create and maintain a fully functional, interoperable radio and communication system with all regional public safety partners.

Goal 5: Maintain FEMA Eligibility/Position the communities for grant funding.

- Review hazard events and ongoing hazard mitigation projects annually.
- Assess the need to pursue or adjust hazard mitigation projects after significant hazard events.

Goal 6: Reduce exposure to High Hazard Dams that pose an unacceptable risk to the public.

- Improve alert and warning systems to provide residents downstream of a High Hazard Dam to receive timely warning to evacuation when threatened by potential or imminent dam failure.
- Enhance overall community preparedness to respond and evacuate a potential or imminent dam failure.
- Increase public awareness of the risk posed by High Hazard Dams and the potential for relocation of housing outside a possible inundation zone.
- Prioritize High Hazard Dam Mitigation projects and programs.

3.4 STATUS OF PREVIOUS MITIGATION ACTIONS

Table 25 summarizes the actions that were recommended in the previous version of the hazard mitigation plan and their implementation status at the time this update was prepared.

Table 25: Status of Previous Hazard Mitigation Actions

Action Number / Name	Completed	Ongoing	Not Started	Still Relevant	Included in Updated Action Plan
Seismically retrofit and renovate Town Pavilion		X	X	X	Yes
Seismically retrofit/Renovate Town owned Women's Club (Council Chambers)		X	X	X	Yes
Conduct Periodic Testing of emergency sirens and early warning systems including Nixle		X		X	Yes
Mitigate flooding impacts to Town Facilities such as Town Hall		X		X	Yes
Incorporate FEMA guidelines and suggested activities into local government plans and procedures for managing flood hazards		X		X	Yes
Seek Grant Funding for vegetation removal along roadways and roadside collection/chipping of hazardous vegetation within the Wildlife Urban Interface (WUI)		X		X	Yes

Table 25: Status of Previous Hazard Mitigation Actions
Source: Town of Fairfax

3.5 HAZARD MITIGATION ACTIONS

The 2023 Marin County OA MJHMP was revised to reflect progress in local mitigation efforts. Mitigation projects were selected for each hazard and for the Town of Fairfax based off the hazard risk assessment. The projects are supported by the mitigation goals and objectives, and are ranked using the following criteria; approximate cost, timeframe of completion, whether the project requires City Council regulatory action, and an assumption as to whether or not the project would be subject to CEQA or NEPA requirements. Funding sources are identified for all projects. All projects consider new, future, and existing development. Project worksheets are used by the Planning Team and Steering Committee to describe criteria for each project.

A cost benefit review process will be completed for each project that will be submitted during a given fiscal year. The general priorities of the cost benefit risk analysis will focus on projects that are lifesaving, life safety, property protection and lastly environmental protection. A ratio of at least one dollar of benefit for each dollar invested will be considered the minimum cost benefit ratio for any projects submitted within the Town of Fairfax.

The Town of Fairfax maintains project worksheets with detailed descriptions of each project. A summary of each project is found in the table below.

Table 26 lists the Current Hazard Mitigation Actions for the Town of Fairfax.

Table 26: Town of Fairfax Current Hazard Mitigation Actions							
No.	**Mitigation Actions**	**Hazards Mitigated/ Goals Met**	**Jurisdiction/ Responsible Agency**	**New, Existing, Completed, Removed**	**Estimated Cost and Potential Funding Source**	**Timeline/ Priority**	**Comments/ Progress**
F-1	Marin Emergency Radio Authority (MERA) Upgrades. MU-13 Protect Infrastructure and Critical Facilities	All Hazards/ 1, 2, 3, 4, 5	County of Marin and the Town of Fairfax	Existing (2018)	Cost TBD; State and/or Federal grants, existing budgets	Ongoing/ High	Town as a participant, is also studying replacement for the system as it reaches the end of its service life.
F-2	Implement the Goals, Policies, and Actions listed in Table 20 of the General Plan Safety Element.	All Hazards/ 1, 2, 4, 5	Town of Fairfax	New (2023)	Cost: General Funds	Ongoing High	A new General Plan Safety Element was adopted which includes significant public safety components.
F-3	Review and adopt current California Building and Fire codes. MU-8 Adopt and Enforce Building Codes	All Hazards/ 1, 2, 4, 5	Town of Fairfax	Existing (2018)	Cost: General Funds	1 – 3 years/ High	The Town continues to review and adopt current California Building and Fire codes.
F-4	Review and adopt current California Building codes for seismic, flood, fire, and other disaster. MU-8 Adopt and Enforce Building Codes	All Hazards/ 1, 2, 4, 5	Town of Fairfax	Existing (2022)	Cost: General Funds	3 - 5 years/ Medium	The Town continues to review and adopt current California Building codes.
F-5	Fairfax Creek Flood Plain/trash capture	Flooding/ 1, 2, 4, 5	Town of Fairfax	New (2023)	$1,000,000, Coastal Conservancy, Marin County Storm Water Protection	1-2 years	Expansion of flood plain and trash capture area easily accessible and maintained by staff to protect critical town facilities. ARPA Funds, stormwater master plan
F-6	Creek Retaining Walls Evaluation and Repair	Debris Flow, Land Subsidence / 1, 2, 4, 5	Town of Fairfax	Existing (2018)	1,000,000 Coastal Conservancy, FEMA, Marin County Flood District	On-going	Evaluate condition of retaining walls supporting roadways along creeks and streams;
F-7	Bolinas Road Repaving and Restabilization	Debris Flow/ 1, 2, 4, 5	Fairfax and County of Marin	New (2023)	$5,000,000 TAM, FHWA, SB1,	2-3 years	Re-pave section of Bolinas Road, evaluate and repair failing walls; SB1 and gas tax, possible TAM funding
F-8	Sir Francis Drake Repaving and Restabilization	Sinkholes, Landslide / 1, 2, 4, 5	Town of Fairfax	New (2023)	2.500,000 TAM, FHWA, SB1 gast tax	1-3 years	Re-pave section of Sir Francis Drake, evaluate

Table 26: Town of Fairfax Current Hazard Mitigation Actions

No.	Mitigation Actions	Hazards Mitigated/ Goals Met	Jurisdiction/ Responsible Agency	New, Existing, Completed, Removed	Estimated Cost and Potential Funding Source	Timeline/ Priority	Comments/ Progress
							subsurface; SB1 and Gas Tax, possible TAM funding
F-9	Resiliency Hub at Town Facilities	All Hazards/ 1, 2, 4, 5	Town of Fairfax	New (2023)	500,000 Town funding, BAAQMD, PGE	1-3 years	Add PV panels, battery storage and back-up, bi-directional power supply; BAAQMD, PGE rebates, Town funding
F-10	Seismic Retrofit of Pavilion Facility	Earthquake/ 1, 2, 4, 5	Town of Fairfax	Existing (2018)	$3,000,000 FEMA, Town Funding	2-4 years	Seismically retrofit facility, improve ADA access, roof replacement,
F-11	Conduct Periodic Testing of emergency sirens and early warning systems including Nixle	Flooding/ 1, 2, 4, 5	Fairfax, Ross Valley Fire Protection District	Existing (2018)	Neglible cost to Town of Fairfax	On-going	System is regularly tested and pre-season meetings held to discuss use and operations at least annually
F-12	Seismically retrofit/Renovate Town owned Women's Club (Council Chambers)	Earthquake/ 1, 2, 4, 5	Town of Fairfax	Existing (2018)	$350,000 FEMA, Town Funding	2-4 years	Identified as a need, no design efforts completed to date
F-13	Seek Grant Funding for vegetation removal along roadways and roadside collection/chipping of hazardous vegetation within the Wildlife Urban Interface (WUI)	Wildfire/ 1, 2, 4, 5	Fairfax, Ross Valley Fire Protection District, Marin Wildfire Prevention Authority	Existing (2018)	$100,000 Marin Wildfire Protection Authority (MWPA)	On-going	MWPA offers grants to locals and Town regularly engages with RVFD on projects on Town owned/managed parcels
F-14	Prepare GIS storm water map of the watershed to determine the water flow and design a culvert system appropriate to the volume and flow of peak runoff. Complete the identification of existing culverts and the need for new ones.	Flooding/ 1, 2, 4, 5	Town of Fairfax	New (2023)	$300,000 for design; $2.5 Million for improvements ARPA, Town funding, Marin County Storm Water Pollution Protection	1-6 years	Currently in progress on multiple projects on design and evaluation
F-15	Enhance Community facilities to support the socially vulnerable population during extreme weather events.	Severe Weather - Heat 1, 2, 4, 5	Town of Fairfax , Marin County, Fire Districts	New (2023)	Cost TBD: HMGP, BRIC, CDAA, Private Local Grants	1 - 2 years/ High	

Table 26: Town of Fairfax Current Hazard Mitigation Actions							
No.	**Mitigation Actions**	**Hazards Mitigated/ Goals Met**	**Jurisdiction/ Responsible Agency**	**New, Existing, Completed, Removed**	**Estimated Cost and Potential Funding Source**	**Timeline/ Priority**	**Comments/ Progress**
F-16	Vegetation Management around at risk PG&E power lines and electrical line undergrounding projects by PG&E.	Wildfire, Drought, Severe Weather – Heat & Wind 1, 2, 4, 5,	Town of Fairfax , Marin County, Fire Districts	New (2023)	Cost TBD: HMGP, BRIC, Fire Safe Marin, Private Local Grants	1 - 2 years/ High	

Table 26: Town of Fairfax Current Hazard Mitigation Actions

3.6 Progress in Local Mitigation Efforts

This plan has been created as a "living" document with input from the population and professionals within the Town of Fairfax. Based on the planning meetings and the progress monitored by the steering committee members several mitigation actions were accomplished since the last planning cycle. Table 25 provides a brief description of the progress made in the local mitigation efforts and the plan for those mitigation actions that were not completed or are ongoing.

The planning team for the Town of Fairfax identified and prioritized the mitigation actions as detailed in Table 26, based on the risk assessment and in accordance with the process outline in Section 3, Mitigation Strategy, of the base plan. Background information and information on how each action will be implemented and administered, such as ideas for implementation, responsible office, potential funding, estimated cost, and timeline are also included. General processes and information on plan implementation and maintenance of this MJHMP by all participating jurisdictions is included in Section 4.0: Plan Review, Evaluation, and Implementation.

3.7 Project Implementation

For hazard mitigation planning, "integration" means that hazard mitigation information is used in other relevant planning mechanisms, such as general planning, capital facilities planning, emergency management, hazard specific planning, and that relevant information from those sources is also used in hazard mitigation. This section identifies where such integration is already in place from the 2018 MJHMP, and where the 2023 MJHMP will be used for further integration.

The planning team for the Town of Fairfax will maintain this plan and will serve as a lead staff for grant project applications on Town projects selected for application under the Hazard Mitigation Assistance grant programs.

An important implementation mechanism that is highly effective and low-cost is incorporation of the hazard mitigation plan recommendations and their underlying principles into town plans and mechanisms. Where possible the Town of Fairfax will use existing plans and/or programs to implement hazard mitigation actions. Mitigation is most successful when it is incorporated into the day-to-day functions and priorities of government and development. As described in this plan's capability assessment, the Town of Fairfax already implements policies and programs to reduce losses to life and property from hazards. This plan builds upon the momentum developed through previous and related planning efforts and mitigation programs and recommends implementing actions, where possible, through these other program mechanisms. These existing mechanisms include Integration opportunities for the 2023 Marin County OA MJHMP:

Town General Plan - Integrates hazard mitigation through the consideration of hazards most likely to impact the Town. These hazards are considered in the Safety Element, Housing Element and Open Space Element.

Town Emergency Operations Plans – Integrates hazard mitigation through the consideration of the Town's planned response to hazards most likely to impact the Town.

County, City and Town Ordinances - Integrates hazard mitigation through the consideration of plans and policies outlined in the capability assessments in the jurisdictional annexes.

Flood/Storm Water Management/Master Plans - Integrates hazard mitigation through the consideration of strategies to reduce flood risk and storm water management for the protection of life and property.

Community Wildfire Protection Plan - Integrates hazard mitigation through the consideration of strategies to reduce fire hazard and the risk of catastrophic wildfires in the WUI, while promoting the protection and enhancement of the county's economic assets and ecological resources.

The successful implementation of this mitigation strategy will require review of existing plans and programs for coordination and multi-objective opportunities that promote a safe, sustainable community. A few examples of incorporation of the MJHMP into existing planning mechanisms include:

1) As recommended by Assembly Bill 2140, each community should adopt (by reference or incorporation) this MJHMP into the Safety Element of their General Plans. Evidence of adoption (by formal, certified resolution) shall be provided to CalOES and FEMA
2) Integration of flood actions identified in this mitigation strategy with the actions and implementation priorities established in existing Flood Management Programs
3) Using the risk assessment information to update the hazards section in the County, City and Town Emergency Operations Plans

Efforts should continuously be made to monitor the progress of mitigation actions implemented through these other planning mechanisms and, where appropriate, their priority actions should be incorporated into updates of this hazard mitigation plan.

3.8 Future Development Trends

In the Marin County OA, new housing construction continues to exacerbate the high proportion of detached, single-family housing. In 2020, 96 percent of construction permits issued countywide were for single-family units. In 2020, 61 percent of existing residential buildings are single-family detached units in the Marin County OA. In 2015 and 2017, 100 percent of construction permits issued were for single-family homes, making the 2020 figure of 96 percent the third highest in proportion of single-family unit construction permits issued in the last seven years, but the greatest number of permits in a year is consistently issued for the construction of this type of housing.

Historic development patterns in Fairfax created a town with a distinct center, providing a good public transit hub within walking and bicycling distance of most of the town's inhabitants. Fairfax has retained a village-like quality, with distinct neighborhoods, and large areas of surrounding visible open space.

The Town's General Plan seeks to preserve these qualities by providing policies and programs to guide future development. Interestingly, modern humanistic trends in urban development support many of the planning choices made by the Town over the last hundred years. The

current town center creates a lively mixture of businesses and residences and supports a wide variety of transportation choices.

The Land Use Element conveys a sense of the uniqueness of Fairfax; the Town's robust, villagelike land use characteristics, as seen in the small businesses, quaint neighborhoods and busy streets where many residents bicycle and walk. Framing and dominating the town is its natural setting – a perceived vast open space of oak-studded hills to the north and west, and the forested shoulders of the Coastal Range to the south. Fairfax is a special place, loved by residents as well as visitors.

One of the greatest problems facing the Marin County OA relates to population growth. Traditional solutions to that problem can be seen on the land in the form of compromise, if not complete loss, of natural areas; it can be seen in skies that are not as blue in the day and have fewer stars in the night; and it can be heard in the increase in traffic sounds and the decrease of natural sounds or the distance that sound travels. Where and how growth is accommodated in Fairfax is of paramount importance in crafting the Land Use Element.

In addition to the economic pressures of development in desirable Marin and Bay Area, the pressures to develop Fairfax for housing human growth are tremendous. Fairfax is required by the State to provide affordable housing (108 units required as of July 2010) as its share of California's population growth. The other end of the scale could be something so personal as a parent's hope of seeing their children live out their lives here, or a homeowner who wants to add a second unit to house a relative or offset rising costs. How Fairfax will address these demands is guided by the Land Use Element.

4.0 Plan Review, Evaluation, and Implementation

The strategies presented are deemed appropriate and effective by recommendation of the Town of Fairfax.

4.1 Plan Adoption

Upon submission to the California Office of Emergency Services (CalOES) for review, and subsequent approval by the Federal Emergency Management Agency (FEMA), the Marin County OA MJHMP will be presented to local government for formal adoption. As appropriate, the adopted plan and accompanying Town of Fairfax Community Profile will then be incorporated into local general plans for integration into organizational policy.

4.2 Plan Monitoring

The process of hazard mitigation does not end with the completion, approval, and adoption of the Marin County OA MJHMP and the Town of Fairfax Community Profile. Within the lifespan of these documents (five years), local government along with community-based organizations will ensure that the mitigation goals and strategies identified are monitored, that plan administration will continue under a collaborative and cooperative umbrella, and that the document itself will be properly maintained.

The Marin County OEM, as lead coordination agency for hazard mitigation planning within the Marin County OA and will assist and support the ongoing collaborative efforts of the Town of Fairfax, through the established hazard mitigation Steering Committee. Specific plan maintenance activities by the Marin County OEM and the Town of Fairfax may include:

- Distribution of the MJHMP and Community Profile to all interested parties, including both written and digital formats
- Monitoring of the Town of Fairfax mitigation project activities and dissemination of status reports
- Generation of reports relative to plan status, project management, and revision updates to executive leadership
- Preparations for plan eventual revision and updating

4.3 Plan Evaluation

Upon approval and adoption by the Town of Fairfax, the prioritized mitigation strategies will be further developed for funding and implementation by the lead agencies. The plan describes the potential sources of hazard mitigation funding, and general procedures to obtain that funding.

The mitigation strategies represented and adopted within this plan are recommendations only, and must be approved and funded in order to be implemented as official mitigation solutions. Ultimately, it is the responsibility of jurisdictional and agency officials within the Marin County OA to undertake project implementation based upon identified mitigation strategies, funding availability, and local need when it arises. The Marin County OEM will meet with the hazard mitigation Steering Committee, including the Town of Fairfax, to evaluate the plan after each update meeting.

4.4 PLAN UPDATE

During the five-year update cycle, the Marin County OEM will hold tri-annual update meetings with the hazard mitigation Steering Committee, including the Town of Fairfax, and local stakeholders to discuss revisions to the plan. The Marin County OEM and the Town of Fairfax will continue to hold public meetings after the first and third update meetings annually and will continue to invite public participation in the update process via updated public surveys.

FIGURES AND TABLES

Figures

List of Tables

ACRONYMS/ABBREVIATIONS

Acronym	Definition
ABAG	Association Bay Area of Governments
ADU	Accessory Dwelling Units
AQI	Air Quality Index
ARP	Address Resolution Protocol
ASL	American Sign Language
ATSDR	Agency for Toxic Substances and Disease Registry
BAAQMD	Bay Area Air Quality Management District
BCDC	Bay Conservation and Development Commission
BCEGS	Building Code Effectiveness Grading Schedule
BCPUD	Bolinas Community Public Utility District
BFE	Base Flood Elevation
BRIC	Building Resilient Infrastructure and Communities
CA	California
CAC	Community Assistance Contact
CAL FIRE	California Department of Forestry and Fire Protection
Cal OES	California Office of Emergency Services
CAP	Climate Action Plan
CASPER	Community Assessment for Public Health Emergency Response - California Department of Public Health
CAV	Community Assistance Visit
CDAA	California Disaster Assistance Act
CDC	Centers for Disease Control and Prevention
CDI	Certified Deaf Interpreter
CEQA	California Environmental Quality Act
CERT	Community Emergency Response Team
CGS	California Geological Survey
CIP	Capital Improvement Plan
CIR	Conservation Incentive Rate
CITR	Conservation Incentive Tier Rate
CMFD	Central Marin Fire District
CMSA	Central Marin Sanitation Agency
CNRA	California Natural Resource Agency

CO	Carbon Monoxide
COVID-19	Coronavirus Disease 2019
COYL	Coyote Creek Left Bank Levee
CPUC	California Public Utilities Commission
CRF	Community Risk Factor
CRI	Community Resilience Index
CRS	Community Rating System
CRT	Community Response Team
CSA	County Service Area
C-SMART	Sea-level Marin Adaption Response Team
CWPP	Community Wildfire Protection Plan
DDoS	Distributed Denial of Service
DMA	Disaster Mitigation Act
DNS	Domain Name System
DOF	California Department of Finance
DoS	Denial-of-Service
DPW	Department of Public Works
DR	Disaster Relief
DSOD	Division of Safety of Dams - California Department of Water Resources
DWR	California Department of Water Resources
EAL	Expected Annual Loss
EAS	Emergency Alert System
ECC	Emergency Command Center
EOC	Emergency Operation Center
EOP	Emergency Operations Plan
EPA	Environmental Protection Agency
EPC	Emergency Preparedness Commission
ESHA	Environmentally Sensitive Habitat Areas
FD	Fire Department
FEMA	Federal Emergency Management Agency
FHSV	Fire Hazard Severity Zones
FIRM	Flood Insurance Rate Maps
FMA	Flood Mitigation Assistance
FMP	Flood Mitigation Plan

FOG	Fats, Oils, & Grease
FPA	Floodplain Administrator
FRA	Federal Responsibility Areas
FY	Fiscal Year
GGBHTD	Golden Gate Bridge, Highway and Transportation District
GGNRA	Golden Gate National Recreation Area
GGNRA	Golden Gate National Recreation Area
GIS	Geographic Information System
Gov	Government
GPAC	General Plan Advisory Committee
H2S	Hydrogen Sulfide
HFHSZ	High Fire Severity Zone
HIRA	Hazard Identification and Risk Assessment
HIV/AIDS	Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome
HLR	Historic Loss Ratio
HMGP	Hazard Mitigation Grant Program
IoT	Internet of Things
IP	Intellectual Property
IPAWS	Integrated Public Alert and Warning System
IPCC	Intergovernmental Panel on Climate Change
ISEPA	Identified Site Emergency Planning Application
JPA	Joint Powers Agreement
LCP	Local Coastal Program
LGVSD	Las Gallinas Valley Sanitary District
LHMP	Local Hazard Mitigation Plan
LOMA	Letters of Map Amendment
LOMR	Letters of Map Revision
LRA	Local Responsibility Areas
LRAD	Long-Range Acoustic Device
LSAC	Levee Safety Action Classification
Marin IJ	Marin Independent Journal
MCEP	Marin Climate Energy Partnership
MCFD	Marin County Fire Department
MCOSD	Marin County Open Space District

MCPIO	Marin County Public Information Officers
MCSTOPP	Marin County Stormwater Pollution Prevention Program
MERA	Marin Emergency Radio Authority
MERS	Middle Eastern Respiratory Syndrome
MFHSZ	Moderate Fire Severity Zone
MG	Million Gallons
MGD	Million Gallons Per Day
MHOAC	Medical/Health Operational Area Coordinator
MHW	Mean High Water
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
MMI	Modified Mercalli Intensity
MMRC	Marin Medical Reserve Corps
MMWD	Marin Municipal Water District
MRZ	Mineral Resource Zones
MV2040	Mill Valley General Plan 2040
Mw Scale	Moment Magnitude Scale
MWPA	Marin Wildfire Prevention Authority
NASA	National Aeronautics and Space Administration
NCDC	National Climatic Data Center
NEPA	National Environmental Policy Act
NFDRS	National Fire Danger Rating System
NFIP	National Flood Insurance Program
NID	National Inventory of Dams
NIH	National Institute for Health
NMWD	North Marin Water District
NPDES	National Pollutant Discharge Elimination System
NPR	Northwestern Pacific Railroad
NR	National Register of Historic Places
NRI	National Risk Index
NWS	National Weather Service
O3	Ozone
OA	Operational Area
OEM	Office of Emergency Management
OHP	Office of Historic Preservation

OWTA	On-Site Wastewater Treatment Systems
PD	Police Department
PG&E	Pacific Gas & Electric
PM10	Particulate Matter Less Than 10 Microns In Aerodynamic Diameter
PSPS	Public Safety Power shutoffs
PtH	Pass the hash
PUD	Public Utility District
PW	Public Works
RACES	Radio Amateur Civil Emergency Service
RAWS	Remote Automated Weather Stations
RCD	Resource Conservation District
RHNA	Regional Housing Needs Assessment
RTP	Regional Transportation Plan
SASM	Sewerage Agency of Southern Marin
SFBRA	San Francisco Bay Restoration Authority
SFHA	Special Flood Hazard Area
SFHA	Special Flood Hazard Areas - FEMA
SFHA	Special Flood Hazard Area
SHMP	State Hazard Mitigation Plan
SHSGP	State Homeland Security Grant Program
SMART	Sonoma Marin Area Rail Transit
SMCSD	Sausalito Marin City Sanitary District
SMFD	Southern Marin Fire District
SOD	Sudden Oak Death
SOX	Sulfur Oxides
SQL	Structured Query Language
SR	State Route
SRA	State Responsibility Areas
SSMP	Sewer System Management Plan
SVI	Social Vulnerability Index
TAM	Transportation Authority of Marin
TBD	To Be Determined
TENS	Telephone Emergency Notification System
UCERF2	Uniform California Earthquake Rupture Forecast, Version 2

UCERF3	Uniform California Earthquake Rupture Forecast, Version 3
USACE	U.S. Army Corps of Engineers
USGS	United States Geological Survey
UWMP	Urban Water Management Plan
VHFHSV	Very High Fire Severity Zone
VMP	Vegetation Management Plans
WC/ATWC	West Coast/Alaska Tsunami Warning Center
WHO	World Health Organization
WSCP	Water Shortage Contingency Plan
WUI	Wildland Urban Interface
WWTP	Waste Water Treatment Plant
XSS	Cross-Site Scripting