TOWN OF FAIRFAX
STAFF REPORT
November 3, 2021

TO: Town Council

FROM: Ben Berto, Director of Planning and Building Services
Richard James, Project Lead, EMC Planning Group
Lauren Hoerr, Project Assistant, EMC Planning Group

SUBJECT: Discussion of Safety Element progress including potential changes to the text, policies, programs, and graphics; the development of new wildfire safety programs, recognition of the efforts of FireSafe Marin, Neighborhood Response Groups, and the Marin Wildfire Prevention Authority; and compliance with SB 379 (2015) to address climate adaptation and resiliency.

RECOMMENDATION

Receive the presentation on the Safety Element and status update on the Housing Element; provide comments to consultants and staff on:

1. Additional factors that should be considered for inclusion in Safety Element update.
2. Additional community resources that should be reflected/included in the Safety Element update, including additional information on Marin Wildfire Prevention Authority, FireSafe/FireWise Marin, or Neighborhood Response Group efforts.
3. Comments on other revisions or new programs that should be incorporated into the Safety Element update.
4. Observations on how information in the Safety Element should inform the Housing Element update.
5. Questions

BACKGROUND

The State of California has mandated since 1969 that local jurisdictions plan for their future housing needs by updating their General Plan's Housing Element in a process called the Regional Housing Needs Allocation (RHNA)) planning process. The Town is currently nearing the end of its 5th RHNA cycle, and has been working since April on the 6th Regional Housing Needs Allocation (RHNA), which will take effect in 2023 and run to 2031.

The Safety Element is one of the General Plan elements required by State Planning Law, and is included in the Town's 2010 - 2030 General Plan. Legislation passed since the Town adopted the General Plan requires the Town's Safety Element to be revised concurrently with the Housing Element Update.

The Safety Element update will be the specific focus of the Planning Commission subcommittee meeting on October 28 – too late for their comments to be included in this staff report, but which will be referenced in a subsequent supplemental staff report to be provided to your Council for this meeting.

Staff/the consultants have met with the following Town groups or affiliated agencies in regard to the Safety Element:

- Climate Action Committee
- Open Space Committee
- Tree Committee
- Marin Wildfire Prevention Authority chief
- Town Arborist (certified Fire Ecologist)

These early meetings and discussions introduced the Safety Element update to members of those committees and pointed out areas for committee involvement and feedback, and communicated with subject matter experts on various safety-related topics. Staff and the consultants met with the Planning Commission on August 12th to discuss how hazards, evacuation routes, and zoning are addressed in the Safety Element, and how the Safety Element will inform decisions made for the Housing Element update.

DISCUSSION

This meeting focuses on revisions that have been made in the initial public draft of the updated Safety Element, included as Attachment A:

- Text revisions.
- Revisions to Safety Element policies and programs for Geologic Hazards, Flood Hazards, Fire Hazards, and Community Preparedness.
- New and updated graphics.

The attached Safety Element is a working draft. In addition to the formatting issues that will be addressed in the future, the Safety Element update will continue to be refined as it continues to undergo review by the Planning Commission and your Council, and addresses comments and questions raised by the public.

Requirements of State Legislation

Senate Bill 379 was adopted in 2015, and requires that the Safety Element be updated to include a discussion of vulnerability to climate change, and present information and programs to address the Town's adaptation and resilience to the effects of climate change. Prior years' legislation had required additional information on flood zones, riparian habitat, and fire safety.

Additions to the Safety Element Text

The draft Safety Element update has incorporated information from the Marin Multi-jurisdictional Local Hazard Mitigation Plan regarding vulnerability to earthquakes, flooding, and wildfire. The Safety Element now includes an assessment of how climate change could affect the Town's vulnerability for each of these hazards. Additional information has also been added in regard to Fire Safe Marin, Neighborhood Response Groups, and the Marin County Wildfire Prevention Authority, as well as more detail on issues around wildfire protective measures.

Revisions and Additions to Safety Element Graphics

Several of the existing figures in the Safety Element have been updated, or are in the process of being updated. The following new maps have been added to the Safety Element: Fire Hazard Severity (CalFire mapping), Single Egress Streets and Structures, and Neighborhood Evacuation Zones.

Re-organization of Policies and Programs

The Safety Element is divided into sections on Geologic Hazards, Flood Hazards, Fire Hazards, and Community Preparedness. The Community Preparedness section in the current Safety Element includes objectives specifically addressing the three hazards discussed earlier. These objectives, and their related policies have been eliminated, and the related programs re-organized within other sections of the Safety Element; this re-organization addresses redundancy that exists in the current Safety Element.

Attachment B presents a summary of changes that were made to Safety Element policies and programs, including identification of new program numbering that resulted from the re-organization. If a policy or program is not included in Attachment B, there was no significant change made to that policy or program. This staff report refers to the new policy and program numbers included in the draft Safety Element update.

New and Revised Geologic Hazards Policies and Programs

The Geologic Hazards policies and programs underwent generally minor revisions. The existing program requiring a geologic study is revised to allow a soils report if a lesser level of soils investigation is warranted. No new Geologic Hazards policies or programs were added.

New and Revised Flood Hazards Policies and Programs

A new requirement for hydrological studies in flood zones was added to Program S-2.1.2.1, and requirements under this program were extended to lot splits. Other changes to Flooding Hazards programs were primarily for clarification. Two new programs were added: Program S-2.1.2.4 requires appropriate Flood Certificates for development within the flood zones, and Program S-2.1.6.4 calls for establishment of design criteria for flood improvements, bridges, and other structures.

New and Revised Fire Hazards Policies and Programs

Many of the Fire Hazards programs were revised to add specificity, including references to street dimensions, shaded fuel breaks, and carbon monoxide detectors. The programs also focus more on prioritization of fire protection efforts and ensuring safety for disadvantaged persons during an emergency. Program S-3.1.3.5 was re-focused on emergency access at addresses where access is currently restricted or hindered. Policy S-1.6 was added to address home hardening against wildfire, and several existing programs and one new program are included under that policy. Two new programs were added: Program S-3.1.6.2 encourages home fire-hardening retrofits. Program S-3.1.5.8 directs the Town to consider adding pyrophytic trees to Undesirable Tree Species list in the Town Code.

New and Revised Community Preparedness Policies and Programs

This section underwent the greatest amount of revision. As mentioned, three sets of objectives and policies were eliminated due to redundancy with those contained in three prior sections of the Safety Element. Some programs were eliminated as redundant, but most programs were moved under other policies. A new Policy 4.1.2 directs the Town to facilitate citizen response to disasters, in recognition that appropriate response of individuals during an emergency is an essential adjunct to official response. This also recognizes the role groups like FireSafe and Neighborhood Response Groups (NRG's) play in preparing for and orchestrating individual response to emergencies. The Community Preparedness policies now focus on four areas:

dissemination of information, facilitation of citizen response, evacuation planning, and response to a disruption of services.

The following new programs were added to the Community Preparedness section: Programs S-4.1.1.9, S-4.1.1.15, S-4.1.1.16 address increasing home resilience to seismic and fire hazards. Program S-4.1.2.7 raises awareness of the new Zonehaven on-line evacuation coordination mapping, Program S-4.1.2.11 calls for assistance for mobility challenged and special needs persons during emergency. Programs S-4.1.3.7 and S-4.1.3.8 aim at elevating personal safety during evacuations.

CONCLUSION

The efforts for the Safety Element update that are described in this report serve to garner feedback for developing a refined draft Safety Element update that will be brought to the Town Council for adoption next year.

FISCAL IMPACT

None at this time.

ATTACHMENTS

A. Draft Safety Element Update - October 22, 2021
B. Summary of Changes to Fairfax Safety Element Policies and Programs

Attachment A - Summary of Changes to Fairfax Safety Element Policies and Programs

2010 GP #	New #	Changes
Geologic		
S-1.1.1.1		Added soils report option
S-1.1.2.1		Added reference to GIS system
S-1.1.3.4		Dropped last sentence
S-1.1.4.1	S-4.1.1.7	Re-organized
S-1.1.4.3	S-1.1.4.1	Re-organized
S-1.1.6.1		Added "life safety"
S-1.1.6.2		Minor re-wording
S-1.1.6.3		Minor re-wording
Flood		
S-2.1.1.2		This program is missing in the 2010 General Plan
S-2.1.1.3	S-2.1.1.2	Re-organized
S-2.1.2.1		Added requirements for lot splits and hydrological studies
NEW	S-2.1.2.4	Added program on flood certificates
Policy S-2.1.3		Consolidated Policies S-2.1.3 and S-2.1.4
S-2.1.3.1		Added "local"
S-2.1.3.2		Added reference to Marin's Stormwater Pollution Prevention Program
S-2.1.3.3		Changed to "Maintain"
S-2.1.4.1	S-2.1.3.4	Added lot splits; re-organized
Policy S-2.1.5		Re-numbered to S-2.1.4
S-2.1.5.1	S-2.1.4.1	Added "upgrade"
S-2.1.5.2	S-2.1.4.2	Added reference to GIS system
S-2.1.5.5	S-2.1.4.3	Re-organized
S-2.1.5.5	S-2.1.4.5	Re-organized
S-2.1.5.5	S-2.1.4.5	Added reference to Capital Improvement Program
Policy S-2.1.6	----------	Eliminated
S-2.1.6.1	S-2.1.5.6	Added reference to on-site rainwater storage; Re-organized
S-2.1.6.2	S-4.1.1.11	Added "or building entrances"; Re-organized
NEW	S-2.1.6.4	Develop criteria for flood improvements, bridges, and other structures
Policy S-2.1.7		Re-numbered to S-2.1.5
S-2.1.7.1	S-2.1.5.1	Re-organized
S-2.1.7.2	S-2.1.5.2	Re-organized
Policy S-2.1.8		Re-numbered to S-2.1.6
S-2.1.8.1	S-2.1.6.1	Re-organized
S-2.1.8.2	S-2.1.6.2	Re-organized
S-2.1.8.3	S-2.1.6.3	Re-organized
S-2.1.8.4	S-2.1.6.4	Re-organized

Fire		
S-3.1.1.1		Added "or smaller"
S-3.1.2.1		Added reference to California Vegetation Treatment Program
S-3.1.2.2		Generalized reference to Fire Safe Marin; removed DVD reference
S-3.1.2.3		Target areas to be updated by Town Forester
S-3.1.2.4	S-4.1.1.18	Re-organized
S-3.1.2.5	S-3.1.2.4	Updated to reflect Marin Wildfire Prevention Authority
S-3.1.2.6	S-3.1.2.5	Re-organized
S-3.1.2.7	S-3.1.2.6	Added "shaded fuel breaks"
S-3.1.2.8	S-3.1.2.7	Re-organized
S-3.1.3.1		Added reference to RVFD geometric standards
S-3.1.3.2		Added priority for evacuation routes and the longest/ narrowest streets
S-3.1.3.5		Re-focused on addresses where emergency access is restricted
S-3.1.3.8		Added identification for special needs persons
S-3.1.3.9		Added 18-foot width; added emphasis on red-flag days
S-3.1.3.10		Simplified to WUI
S-3.1.3.11	S-3.1.1.2	Re-organized
S-3.1.4.4		Added priority for failing infrastructure, locations within the Wildlands Urban Interface, and areas of dense development
S-3.1.5.1		Added carbon monoxide detectors
S-3.1.5.2		Changed "optimal" to "best possible"
S-3.1.5.3		Broadened to all new construction
S-3.1.5.6	S-3.1.6.1	Re-organized
S-3.1.5.7	S-3.1.5.5	Broadened to all new construction; re-organized
S-3.1.5.8	S-3.1.6.4	Re-organized
S-3.1.5.9	S-3.1.6.3	Re-organized
NEW	S-3.1.5.8	Consider adding pyrophytic trees to Undesirable Tree Species
Policy S-3.6		New policy to encourage/require fire hardening
NEW	S-3.1.6.2	Program to encourage home fire-hardening retrofits
Preparedness		
S-4.1.1.2	S-4.1.2.1	Re-organized
S-4.1.1.3		Simplified wording
S-4.1.1.6	S-4.1.2.3	Removed "SERT"; re-organized
S-4.1.1.7	S-4.1.2.4	Added NRG and Fire Safe; removed Citizen Corps; re-organized
S-4.1.1.8	S-4.1.2.2	Broadened to include business owners; re-organized
S-4.1.1.9	S-4.1.1.2	Re-organized
S-4.1.1.10	S-2.1.5.7	Re-organized
S-4.1.1.11	S-4.1.1.19	Re-organized
S-4.1.1.12	S-4.1.3.1	Added RVFD; re-organized
S-4.1.1.13	S-4.1.3.2	Re-organized
S-4.1.1.14	S-4.1.1.10	Re-organized
NEW	S-4.1.1.9	Community seismic retrofit demonstrations
NEW	S-4.1.1.15	Information on home fire-hardening

NEW	S-4.1.1.16	Demonstrations of home fire-hardening
Policy S-4.1.2		New Policy for Town to facilitate citizen response to disasters
NEW	S-4.1.2.7	Zonehaven evacuation map
NEW	S-4.1.2.11	Assistance for mobility challenged and special needs during emergency
Policy S-4.2.1	----------	Eliminated
S-4.2.1.1	S-4.1.1.6	Re-organized
S-4.2.1.2	S-4.1.1.8	Removed references to East Bay and South Bay; re-organized
S-4.2.1.3	S-4.1.3.5	Re-organized
NEW	S-4.1.3.7	Identify locations for emergency pull outs along narrow roads
NEW	S-4.1.3.8	Identify a series of last resort sheltering locations
Policy S-4.3.1	S-4.3.1.2	This policy was converted to a program.
S-4.3.1.1	S-2.1.5.8	Added "to reduce debris"
Policy S-4.3.2	----------	Eliminated
S-4.3.2.1	S-4.1.1.12	Simplified wording; added County Flood Cont and Water Cons District
Policy S-4.3.3	----------	Eliminated
S-4.3.3.1	S-4.1.3.4	Periodically changed to regularly
S-4.3.3.2	S-4.1.3.3	Updated emergency system references
S-4.3.3.3	S-4.1.2.5	
S-4.3.3.4	S-4.1.2.8	
S-4.3.3.5	----------	Eliminated - similar to S-4.3.3.4
S-4.3.3.6	----------	Eliminated - similar to S-2.1.6.1
S-4.3.3.7	S-4.3.1.6	
Policy S-4.4.1	----------	Eliminated
S-4.4.1.1	S-4.1.2.6	
S-4.4.1.2	S-4.1.3.5	Added reference to coordination with NRG
S-4.4.1.3	S-4.1.3.6	
S-4.4.1.4	----------	Eliminated - similar to other siren programs
S-4.4.1.5	S-4.1.3.9	
Policy S-4.4.2	----------	Eliminated
S-4.4.2.1	S-4.1.1.13	Re-organized
S-4.4.2.2	S-4.1.1.14	Re-organized
S-4.4.2.3	S-4.1.2.9	Added reference to coordination with NRG
S-4.4.2.4	S-3.1.2.8	Removed reference to oaks; simplified; re-organized
S-4.4.2.5	S-4.1.1.17	Simplified to WUI
S-4.4.2.6	S-4.1.2.10	Simplified to WUI; Added reference to coordination with NRG Fire Safe
S-4.4.2.7	S-3.1.2.9	Simplified to WUI;
Policy S-4.5.1		Re-numbered as Policy S-4.2.1
S-4.5.1.1	S-4.2.1.1	Added examples; re-organized
S-4.5.1.2	S-4.2.1.2	Re-organized
S-4.5.1.3	S-4.2.1.3	Re-organized
S-4.5.1.4	S-4.2.1.4	Re-organized
S-4.5.1.5	S-4.2.1.5	Re-organized

TOWN OF FAIRFAX SAFETY ELEMENT
Draft Update October 22, 2021

ATTACHMENT B

INTRODUCTION

The Town of Fairfax, like many Northern California communities, is subject to a variety of natural hazards as a result of its physical setting, geologic features, climatic conditions, and development patterns. The creeks, steep canyons, woodlands, and relative remoteness from highly urbanized centers are some of the features that make Fairfax a desirable place to live. These same features make the community susceptible to the impacts of floods, fires, landslides and earthquakes. These hazards are likely to intensify as a result of climate change.

The purpose of the Safety Element is to reduce the risk of death, injuries, property damage, and economic and social disruption that can result from natural hazard events by establishing locally appropriate policies, programs, and mechanisms to protect life, the natural environment and property and guide future community growth. The Safety Element provides the policy framework to support the Town's mitigation, emergency preparedness, disaster response, and future recovery efforts.

Earthquakes and landslides, floods, and urban and wildland fire are the primary natural hazards affecting the Town of Fairfax, and therefore are the focus of this Safety Element. Additional environmentally related hazards such as air and water pollution, hazardous materials, and noise are addressed elsewhere in the General Plan, or are not considered a significant risk to the community.

Although the inherent threat posed by natural hazards cannot be eliminated, the level of damage from these hazards can be reduced through individual and community preparedness actions to reduce or eliminate long-term risks, and implementation of sound development practices. The challenge is to improve the safety of the existing physical environment through a varietyof incremental, systematic, and ongoing actions. These actions to reduce risk should be based on sound analysis of hazardous conditions and should include economically realistic interventions and incentives.

REGULATORY FRAMEWORK

The General Plan Guidelines and the Fire Hazard Planning Technical Advisory published by the Governor's Office of Planning and Research (OPR), mandate the Safety Element to examine issues related to protecting the community from any unreasonable risks associated with:

- Seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure.
- Slope instability leading to mudslides and landslides.
- Subsidence, liquefaction, and other seismic hazards identified on seismic hazard maps.
- Other known geologic hazards.
- Flooding.
- Wildland and urban fires.
- Evacuation routes and signage.
- Single egress roads.
- Minimum road widths and turnouts.
- Peak load water supply requirements.
- Clearances around structures.

The Safety Element must:

- Evaluate the Town's vulnerabilities to natural disasters.
- Identify flood hazard areas and establish policies to avoid unreasonable flood risks.
- Identify urban fringe and rural-residential areas that are prone to wildland fire hazards.
- Establish policies and programs to minimize the loss of property and life as a result of fires, floods, and earthquake.
- Address climate adaption and resiliency strategies.

In addition, the Town wants to protect the community from unreasonable risks associated with:

- Road vertical and horizontal turn radiuses, turn-arounds, and maximum slope.
- Landscape selection and maintenance.

RELATIONSHIP TO OTHER GENERAL PLAN ELEMENTS AND OTHER SUPPORTING TOWN PLANS

The Safety Element overlaps topics also mandated in the Land Use, Conservation, and Open Space elements. The key concern is to effectively integrate these common issues into the decision-making process. The Safety Element provides the foundational information and policy direction regarding hazards, vulnerability, and risk upon which proactive mitigation strategies and actions can be based. All other General Plan elements including the Housing Element must be consistent with the Safety Element, and vice versa. Likewise, all zoning, subdivisions, and capital improvements must be consistent with the Safety Element.

To maximize its effectiveness, the Safety Element is intended to complement and support not only the other General Plan elements, but other Town and regional plans and documents, such as the Emergency Operations Plan (EOP), the Marin County Multi-Jurisdiction Local Hazard Mitigation Plan (LHMP), and the Flood Mitigation Plan (FMP). The Safety Element anticipates preparation of a regional evacuation plan by the Marin Wildfire Prevention Authority. Integrating environmental safety as a consideration into all Town decisions will ensure a safer and more sustainable community.

Cities and counties may adopt a LHMP as part of the Safety Element. Communities that do so are eligible for additional state disaster assistance funding following federally declareddisasters. The Marin County Multi-Jurisdiction Local Hazard Mitigation Plan includes the Town of Fairfax, and is incorporated into this Safety Element by reference.

ORGANIZATION OF THE ELEMENT

The Safety Element addresses each hazard separately. For each hazard, a brief description of the hazard condition, potential impacts, and planning considerations is discussed, followed by the objectives, policies, and implementation programs. Additional background information for each hazard is incorporated into the element via appendices.

Also considered within the discussion of each hazard are the potential inter-relationships between hazards. That is, the propensity for an individual hazard event to trigger other related hazard events, thus increasing the cumulative risk. It must be noted that the organization by type of hazard is imperfect, because certain programs are listed under one hazard, while they are applicable to other hazards as well. As long as they all get done, we should be safer.

The current recognition of anticipated climate change due to global warming and resulting changes in environmental conditions is incorporated as appropriate to each type of hazard. Although it is unclear at this time whether regional climate change will result in greater periods of heavy rainfall leading to increased flooding, or decreased rainfall leading to extended periods of drought, it is prudent to address this changing reality in the General Plan.

GOALS, OBJECTIVES, POLICIES, AND PROGRAMS

Vision Statement: Establish a resilient community that has reduced its vulnerability to natural disasters by mitigating potential risks, preparing for and being capable of responding to and recovering from hazard events.

The four goals of the Safety Element are:

- **Goal S-1: Minimize risks due to geologic hazards.**
- **Goal S-2: Minimize risks due to flood hazards.**
- **Goal S-3: Minimize risks due to fire hazards.**
- **Goal S-4: Community preparedness.**

Geology and Soils

Geologic hazards, both seismic and non-seismic must be considered when establishing land use policy, making future development decisions, and protecting existing development to ensure long-term community sustainability.

The landscape surrounding the Town of Fairfax is dominated by ridges and valleys formed over centuries of geomorphologic processes including plate tectonics and erosion. Advances in scientific understanding of geologic processes and their potential impacts on the built environment provide a foundation for reducing community vulnerability from geologic hazards such as earthquakes and landslides.

The predominant geologic units underlying the Town of Fairfax are bedrock and alluvium. All the bedrock units are considered part of the Franciscan Complex, and comprised of metamorphosed rock, which is considered to have low to moderate slope stability relative to earthquake shaking, particularly on steep slopes, where they are typically located in Fairfax. The alluvium is primarily loose and soft sediments and debris deposited in the flatlands over the last 10,000 years. These deposits are typically those that are the most susceptible to seismic shaking, liquefaction, and differential settlement **(see Figure S-1: Geology Soil Type, and Table S-1 Geology Soils Types**).

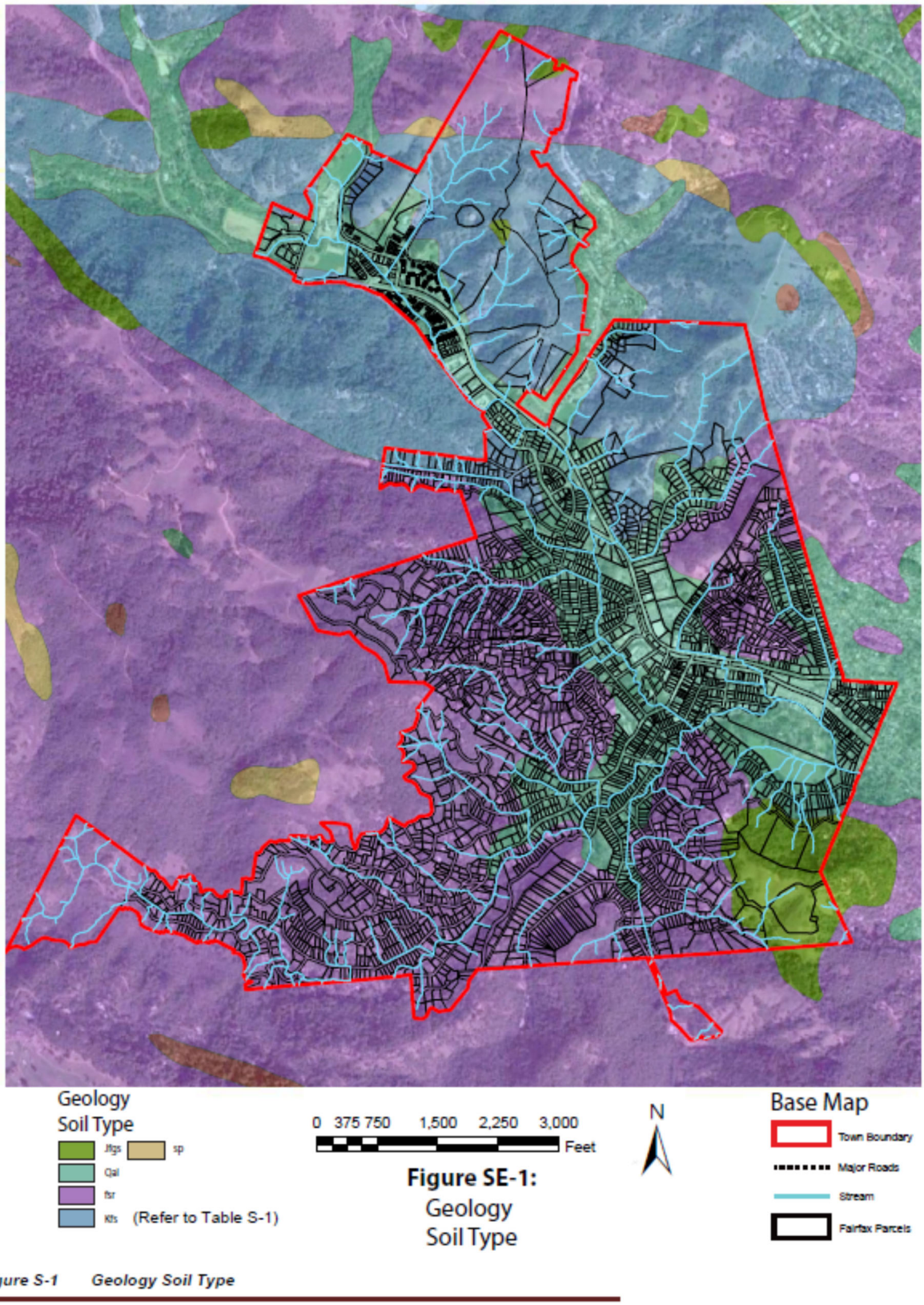

Figure S-1 Geology Soil Type

Figure S-1 Geology Soil Type

Table S-1 Geology Soils Types

Symbol	Name	Description
Jfgs	Greenstone	Pillow lavas and intrusive diabase
KJfch	Chert	Thin bedded, closely fractured, interbedded with shale
Kfs	Sandstone / shale	Alternating beds of sandstone and shale
Qal	Alluvium	Sand, gravel, silt, and clay; loose to soft and friable
fsr	Mélange	Tectonic mixture of sheared shale and sandstone
sp	Serpentinite	Ultramafic rock outcrops; largely within and along fsr

Source: Geologic map and map database of parts of Marin, San Francisco, Alameda, Contra Costa, and Sonoma Counties, California, 2000, U.S. Department of the Interior U.S. Geological Survey.

Seismic Conditions

Fairfax lies between the San Andreas Fault Zone (within 7 miles to the west) and the Hayward-Rodgers Creek Fault Zone (within 12 miles to the east). Either of these fault systems is capable of generating a large earthquake that could cause damage in the Town of Fairfax, and greater damage to extensive portions of the San Francisco Bay Area. Scientific projections indicate there is a 67 percent probability of at least one magnitude 6.7 or greater earthquake before 2043 within the San Francisco Bay Region. The Association of Bay Area Governments (ABAG) Resilience Program projects a 52 percent chance of a 6.7 or greater earthquake on one of the faults affecting Marin County between now and 2036 (21 percent on the San Andreas fault and 31 percent on the Hayward/Rodgers Creek fault). Historic earthquakes with magnitude 6.0 or greater, centered in Marin or nearby, are summarized in **Table S-2 Significant Earthquakes**.

Table S-2 Significant Earthquakes

Date	Location	Magnitude
August 24, 2014	South Napa	6.0
April 18, 1906	West Marin	7.8
October 21, 1868	Hayward Fault	7.0
March 31, 1898	Mare Island	6.4

Source: California Department of Conservation
https://www.conservation.ca.gov/cgs/earthquakes/significant

The greatest risk to life and property in an earthquake is from ground shaking, which can result in structure collapse, damage to utilities, liquefaction, and landslides. During an earthquake, the ground can shake for a few seconds or over a minute. The strongest shaking is typically close to the fault where the earthquake occurs. Weak soils, such as valley alluvium or soils along river and stream beds, also experience strong shaking in

earthquakes, even from distant quakes. The Town of Fairfax area is also subject to earthquake-induced ground movements including liquefaction and landslides. Liquefaction is especially probable on the alluvial soils on the Ross Valley floor, and landslides in the surrounding hills.

Post-earthquake fire ignitions from natural gas leaks and hazardous materials must also be considered. In particular, scenarios involving multiple-point fire ignition following an earthquake during the annual 6-month dry season must be incorporated in preparedness and firefighting plans. See **Figure S-2: Areas Susceptible to Earthquake Shaking**.

Non-Seismic Conditions

A significant portion of the Town of Fairfax is susceptible to landslide movement due to the steep hillsides and canyons that make up the vast majority of land area in the Town. Gravity acting on a very steep slope is the primary reason for a landslide. Especially when soils are weakened through saturation by heavy rains, they are less able to hold the excess weight and slope failure is enhanced. See **Figure S-3**: **Areas Susceptible to Landslides**.

Potential Impacts

The Town of Fairfax does not contain any active faults as designated by the Alquist-Priolo Earthquake Fault Zoning Act; however, it is subject to moderate to high levels of ground shaking, which could cause significant damage and disruption to critical Town facilities, residences, businesses, and infrastructure. Aging infrastructure, such as bridges and pipelines, may suffer damage and result in local transportation, water, and sanitation disruptions. Bridges may collapse partially or fully, roads may slip out or be buried under landslides from above, and pipes in shifting land may rupture. The Town has completed one bridge retrofit and plans additional retrofits. Buildings are subject to collapse, displacement from their foundations, and failure of components, such as chimneys. Buildings on slopes may become dislodged or undermined by landslides. Essentially all buildings and facilities are potentially vulnerable to direct earthquake damage (See **Table S3, Earthquake Vulnerability)**.

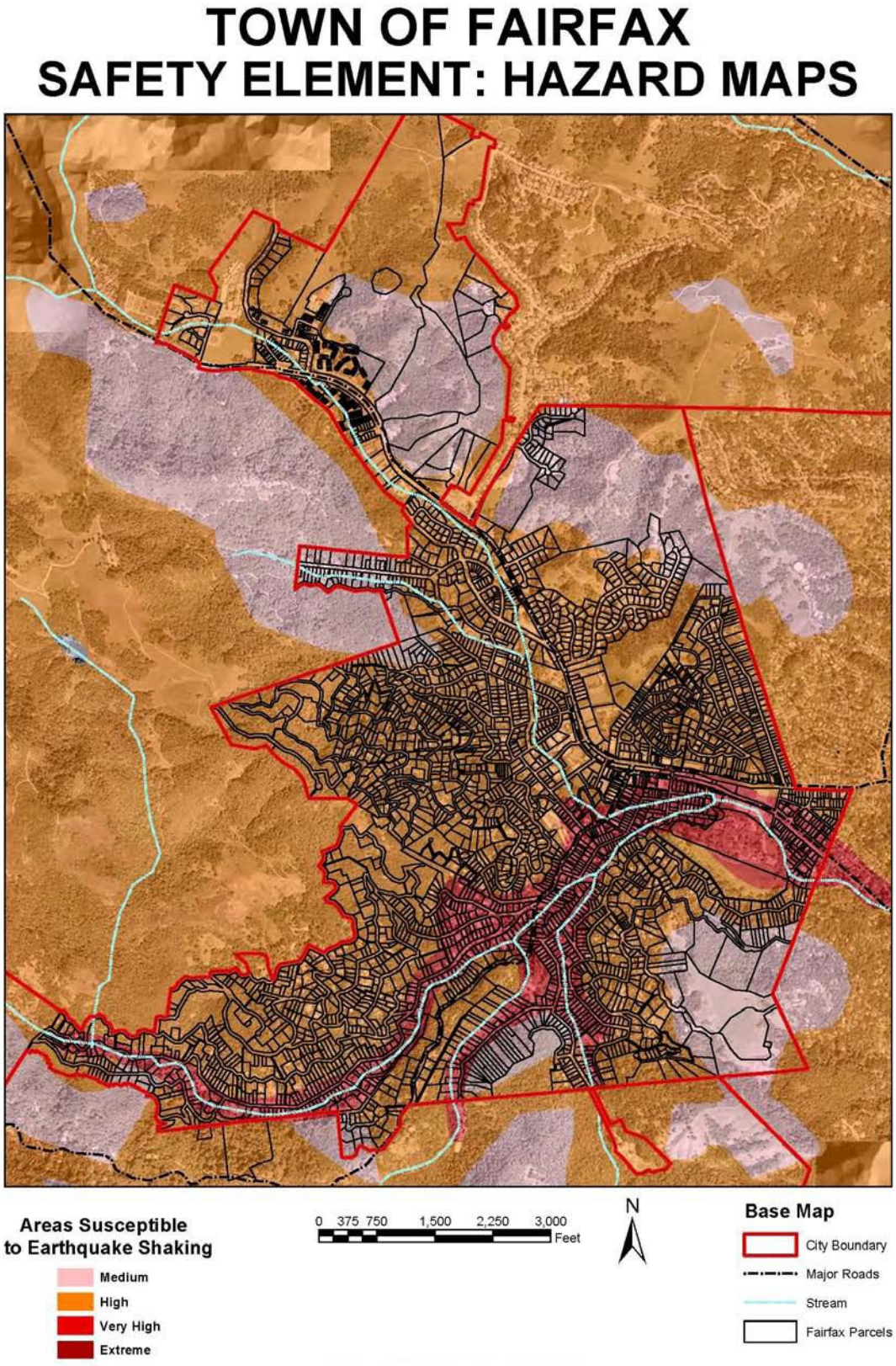

Figure S-2 Areas Susceptible to Earthquake Shaking

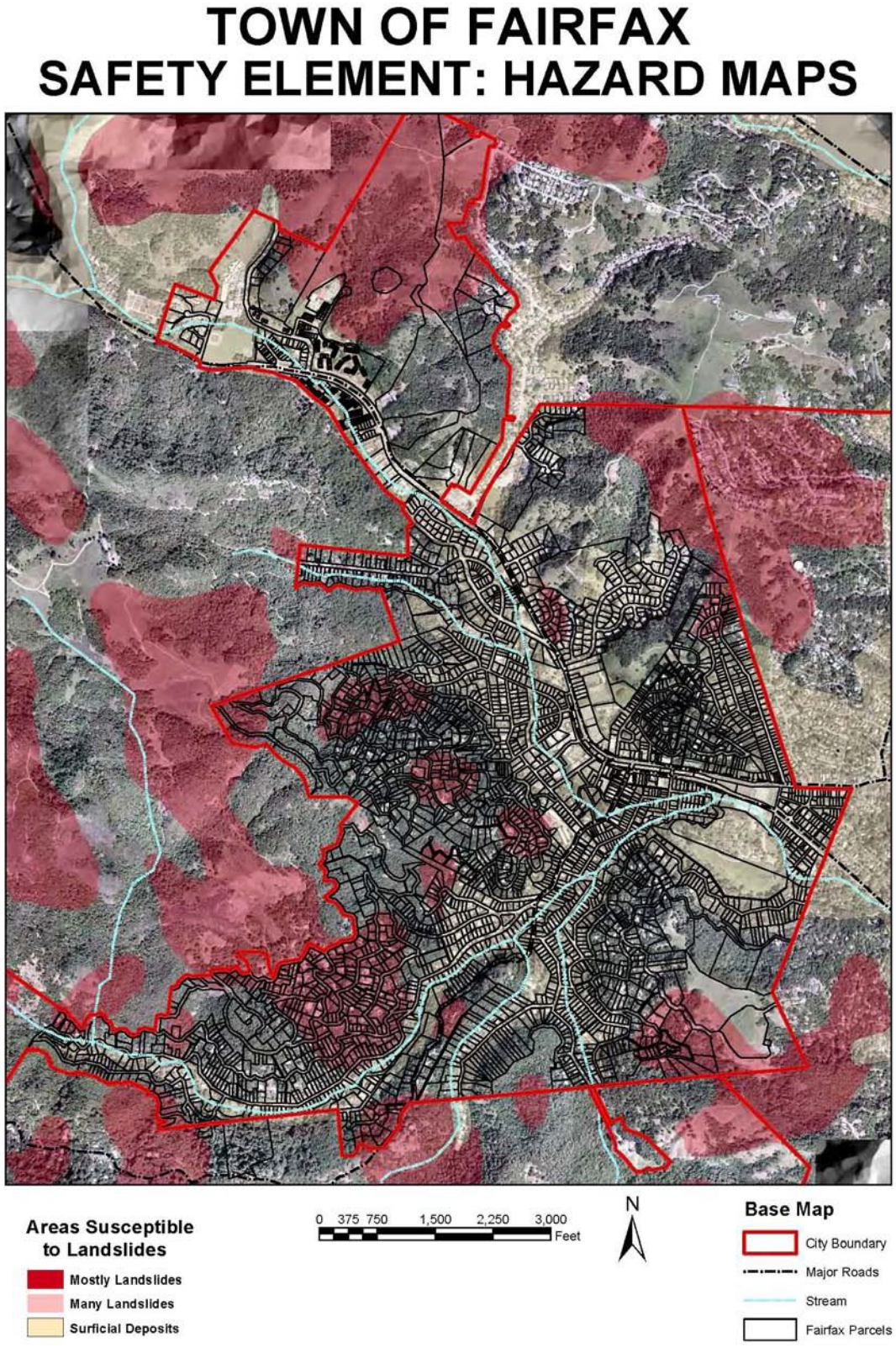

Figure S-3 Areas Susceptible to Landslides

Table S3 Earthquake Vulnerability

Asset	Number Vulnerable	Percent Vulnerable
Single-family Homes	2,104 housing units	100
Multi-family Homes	532 housing units	100
Commercial	87 buildings	100
Schools	4 schools	100
Law and Fire Facilities	2 buildings	100
Historic Buildings	1 building	100
Roads	33 miles	100

Source: Marin Multi-Jurisdictional Local Hazard Mitigation Plan, Appendix J, 2018.

Creek-proximate and hillside areas, which comprise the majority of the built environment in theTown of Fairfax, are most vulnerable to damage caused by ground failure. Creekside development built on alluvial deposits can experience differential settlement caused by liquefaction. Hillside construction is vulnerable to earthquake-induced landslides. This vulnerability is increased during periods of intense or prolonged rainfall when soils become saturated.

Fairfax will also be impacted by regional damage occurring at locations outside the Town. Earthquake scenarios developed for the San Andreas Fault and Hayward Fault systems project significant disruption of the Bay Area transportation, communication, power, water, and sanitation systems. The greatest risk may be from isolation due to transportation disruptions, which could impact the delivery of essential supplies and disrupt commute patterns for a period of years, causing additional economic hardship and in many cases permanent displacement of residents and businesses.

In addition to the risks posed by earthquake-induced landslides, the Town of Fairfax is highly susceptible to landslides during periods of extended heavy rainfall during the wet season. Landslides occurring in the Town of Fairfax can cause damage to structures and infrastructure,including power lines and utility pipelines, and block access and egress on roadways. Existing development in steep hill neighborhoods such as the Cascades, Forrest/Hillside, OakManor Hills, and Willow/Upper Ridgeway are at risk from landslides. Potential vulnerability to landslide damage is summarized in **Table S4, Landslide Vulnerability**.

Table S4 Landslide Vulnerability

Asset	Number Vulnerable	Percent Vulnerable to Landslide Damage
Single-family Homes	412 housing units	20
Multi-family Homes	41 housing units	8
Commercial	1 building	1
Schools	none	0
Law and Fire Facilities	none	0
Historic Buildings	none	0
Roads	11 miles	33

Source: Marin Multi-Jurisdictional Local Hazard Mitigation Plan, Appendix J, 2018.

Planning Considerations

Fairfax has adopted current building codes to guide new development and substantial improvements to existing development. Fairfax is also in compliance with State legislation designed to reduce hazards posed by unreinforced masonry buildings. Four unreinforced masonry buildings have been identified and retrofitted for life safety. There are an unknown number of other types of potentially hazardous buildings located in the Town of Fairfax, such as "soft-story" apartment buildings that have been shown to be vulnerable in previous earthquakes in California. The Town has received grant funding for seismic safety retrofit of the Fairfax Pavilion; this structure will serve as a shelter for persons displaced by certain disasters.

The majority of Fairfax structures were built prior to current building codes, and do not have seismic-resistant foundations. The Uniform Building Code began incorporating seismic requirements in 1961, and these were significantly strengthened in 1973 and 1976, with ongoing seismic building code upgrades since then. Approximately 75 percent of homes in Fairfax were built before the 1970s code amendments went into effect. In addition, due to their age and location, manyof these homes may have wood rot problems or inadequate wall shear strength, which will further weaken their performance in a strong earthquake. Structural retrofit methods are available to address these weaknesses, provided that the necessary investment is made.

Many existing homes, and most unbuilt lots in the Town of Fairfax are located on steep slopes that are susceptible to landslides. Geological risk to new development can be minimized by conducting thorough geotechnical investigations, incorporating findings into buildings' design and construction, and maintaining strict compliance with current building codes. Geotechnical studies for all new development and substantial improvements are required due to:

- lack of localized geotechnical maps defining areas susceptible to earthquake;
- induced landslide and liquefaction zones; and
- location of historic and recent landslides.

There is the potential for many roads in Fairfax to be blocked by landslides or slip outs during following an earthquake, potentially delaying emergency response or evacuation. Local and regional earthquake events resulting in significant damage underscore the need for the Town of Fairfax to work closely with external agencies to ensure vital systems and services are available to the community in a post-disaster environment.

Geology and Soils Goals, Objectives, Policies, and Programs

Goal S-1: Minimize risks due to geologic hazards.

Objective S-1.1: Protect life and property from risks associated with seismic activity and geologic conditions.

Policy S-1.1.1: Development and land use decisions will be made using the best available geotechnical information.

Program S-1.1.1.1: Require soil or geotechnical analyses for all new development and substantial improvement proposals.
Responsibility: Planning and Building Services, Town Engineer
Schedule: Ongoing

Program S-1.1.1.2: Collect and provide geotechnical data to guide development decisions.
Responsibility: Planning and Building Services
Schedule: Ongoing

Policy S-1.1.2: Geotechnical data will be easily available to the public and interested parties.

Program S-1.1.2.1: Catalogue and archive geotechnical studies performed for development permits, and enter the data into Marin Maps Geographic Information System (GIS)
Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-1.1.2.2 Document past landslide occurrences, produce maps showing locations, and enter the data into Marin Maps Geographic Information System (GIS).

Responsibility: Planning and Building Services, Marin Maps
Schedule: Ongoing

Program S-1.1.2.3 Maintain copies of all known documents and maps identifying geologic hazards at Planning and Building Services, the Public Library, and the Town website.

Responsibility: Planning and Building Services, Marin Maps
Schedule: Ongoing

Policy S-1.1.3 The Town shall identify, evaluate, and encourage the seismic retrofit of public and private buildings that pose a significant risk of death or injury in a geohazard event.

Program S-1.1.3.1 Evaluate Town-owned critical facilities and infrastructure to identify those elements that are seismically deficient due to being constructed prior to current seismic design codes and standards, or which are weakened due to age or lack of maintenance, and which could result in significant disruption of service in a major earthquake.

Responsibility: Public Works Department, Planning and Building Services
Schedule: Ongoing

Program S-1.1.3.2 Conduct an inventory of known or suspected soft-story residential structures that could result in life loss or injury, property damage and a loss of housing in the event of a major earthquake.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-1.1.3.3 Evaluate structural integrity of publicly and privately owned buildings that may be used for post-disaster sheltering or public congregation.

Responsibility: Public Works Department, Planning and Building Services
Schedule: Ongoing

Program S-1.1.3.4 Based on the inventories and evaluations conducted in S-1.1.3.1 through 1.3.3.3, design and implement a seismic retrofit program to address the highest priority structures.

Responsibility: Public Works Department, Planning and Building Services

Schedule: Ongoing

Program S-4.1.3.5 Identify and put in place financial incentives for owners of single-family homes to retrofit for prevention of earthquake damage.

Responsibility: Planning and Building Services
Schedule: Year Four

Policy S-1.1.4 The Town shall endeavor to preserve the Fairfax building stock by incentivizing building owners to seismically retrofit their property.

Program S-1.1.4.1 Research, identify and acquire Federal and State funds and/or grants to subsidize seismic retrofits.

Responsibility: Town Council, Finance, Planning and Building Services
Schedule: Ongoing

Program S-1.1.4.2 Provide financial incentives to residential and commercial property owners; including, but not limited to: revolving low-interest loans, transfer tax rebates, tool lending library; to undertake seismic retrofit of vulnerable structures.

Responsibility: Town Council, Finance, Planning and Building Services
Schedule: Year Two

Policy S-1.1.5 The Town shall collaborate with external agencies to ensure critical infrastructure and utilities remain functional following geohazard events.

Program S-1.1.5.1 Seek funding through Caltrans Local Highway Bridge Program and explore other funding sources to retrofit bridges identified by Caltrans or other technical evaluations as seismically deficient. Determine the seismic stability of Meadow Way, Marin (adjacent to Manor Circle) and Creek Road bridges.

Responsibility: Public Works Department, FinanceSchedule:
Years One through Five

Program S-1.1.5.2 Contact Marin Municipal Water District, Pacific Gas & Electric, and other utility providers that service the Town of Fairfax to determine the potential vulnerability of service delivery systems, and to work closely with those external agencies to establish priorities for system improvements prior to a geohazard event and to develop plans to re-establish services following a geohazard event.

Responsibility: Public Works Department, Disaster Council
Schedule: Ongoing

Policy S-1.1.6 Town life and safety codes and ordinances shall be enforced and updated as needed to reflect current geohazards scientific data and technical standards.

Program S-1.1.6.1 Rigorously enforce life safety codes and construction standards.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-1.1.6.2 Develop and adopt a post-disaster repair ordinance that specifies to what code and standards repairs must be made at what level of damage. Include special provisions to preserve historic structures.

Responsibility: Town Council, Planning and Building ServicesSchedule: Year Two

Program S-1.1.6.3 Enforce requirements that storm drainage systems for hillside development or substantial improvements be designed to minimize stormwater runoff and soil erosion in order to decrease the landslide potential.

Responsibility: Planning and Building Services, Public Works Department
Schedule: Ongoing

Program S-1.1.6.4 Require hillside development or substantial improvements to include calculations based on saturated soils.

Responsibility: Planning and Building Services
Schedule: Ongoing

Flood Hazards

The Town of Fairfax is subject to flooding from overbanking of creeks during and following major rainstorms. The nearest potential effects from sea level rise in San Pablo Bay would be along Corte Madera Creek in Kentfield and thus would not directly affect this Town.

The Ross Valley Watershed reaches from the foothills of Mount Tamalpais in the Coast Range to San Pablo Bay. The watershed drains approximately thirty square miles into nearly as many named creeks. San Anselmo and Fairfax creeks rise along the southern and western ridges and drain steep upland areas onto relatively narrow valley flats. These creeks combine as San Anselmo Creek in the Town of Fairfax, and then drain into Corte Madera Creek in Kentfield.

It is important to note at the outset that Ross Valley is naturally prone to flooding by its location and geologic and fluvial geomorphic setting. Rainfall can be extremely intense, soils are shallow with limited absorbing capacity, slopes are steep, and the stream channels are incised and narrow offering little in-channel storage. Development in the

Ross Valley has created expansive impermeable areas while encroaching onto the banks of the channel supplanting the natural flood-attenuating capacity of pre-development floodplains. The effects of narrow bridge and culvert openings and poorly designed residential stream bank stabilization structures have been superimposed on this naturally flood-prone system, exacerbating flooding problems.

Downtown Fairfax begins to flood when the capacity of the downstream end of the long culvert (i.e., running from Town Hall under Bolinas Road, Sherman Avenue, Dominga Avenue, and one private residential property) at is exceeded, or when debris blocks its entrance. Water leaving the creek upstream of the culvert runs through downtown Fairfax and returns to the main channel downstream of Pacheco Avenue, where the channel is deeply incised and contains enough volume to convey greater flows. The Ross Valley Fire Department monitors streams, including one station at Fairfax Town Hall.

The area that has experienced historic flooding and is subject to future flooding lies in the floodplain adjacent to the confluence of Fairfax and San Anselmo creeks. The Federal Emergency Management Agency (FEMA) produces maps of flood prone areas to guide community floodplain management programs. Bothin Creek, Deer Park Creek, and Wood Lane drainage have also been identified as potential sources of flooding.

A map showing the Special Flood Hazard Areas subject to a one percent per annum flood is included as **Figure S-4: Floodplains.** Additional information regarding flood history, hydrologic studies and current floodplain management programs is outlinedin the Town of Fairfax Flood Management Plan. In addition, there is a substantial risk of localized flooding from extensive impervious surfaces, small, undersized culverts and inadequate storm drain infrastructure, as well as limited maintenance of these facilities.

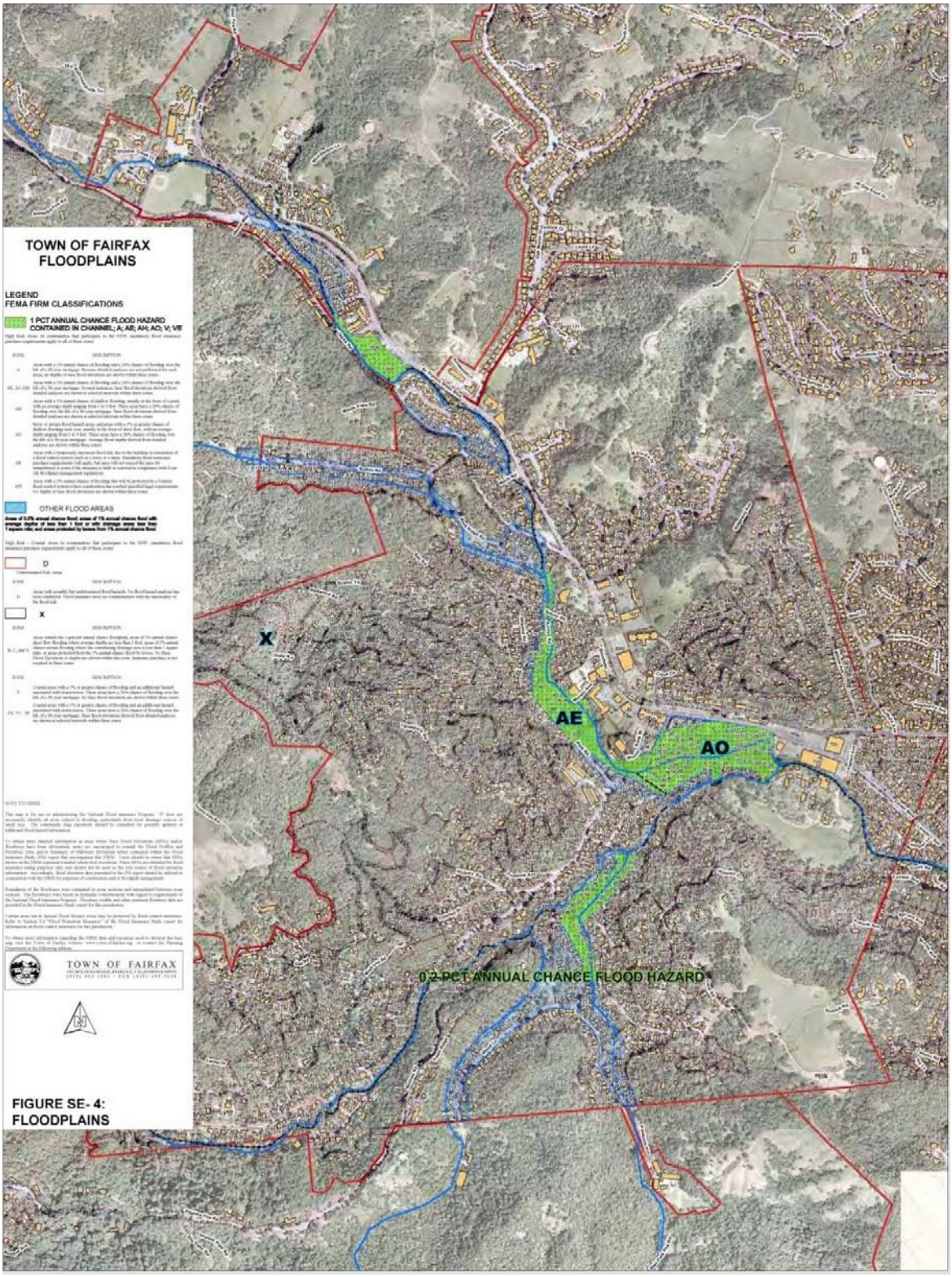

Figure S-4 Floodplains

Potential Impacts

The Fairfax Town Hall, Police Station and Fire Station are located directly adjacent to and/or above, Fairfax Creek, and are in the Special Flood Hazard Areas, as mapped by FEMA. These critical Town facilities have sustained serious damage during past flood events, the most recent occurring on December 31, 2005. A significant portion of the existing commercial district is also located in the Special Flood Hazard Areas and has experienced prior damage and economic losses due to flooding. Approximately 500 residential parcels are also located in the Special Flood Hazard Areas. Potential vulnerability to flooding is summarized in **Table S5, Flooding Vulnerability**.

Table S5 Flooding Vulnerability

Asset	Number Vulnerable	Percent Vulnerable to Flood Damage
Single-family Homes	212 housing units	10
Multi-family Homes	78 housing units	15
Commercial	32 buildings	27
Schools	none	0
Law and Fire Facilities	1 building	50
Historic Buildings	none	0
Roads	4 miles	12

Source: Marin Multi-Jurisdictional Local Hazard Mitigation Plan, Appendix J, 2018.

Planning Considerations

Historic records of flood events and their impacts on the community are not well documented. FEMA maps represent a projected probability of future events based on limited hydrologic studies. However, based on the general accounts of flooding over the past one hundred years, increased incidence of severe rainfall events, and greater impervious surfaces exacerbating the peak flood hydrograph, the maps appear to under-represent the severity and extent of potential flooding for the Town of Fairfax. Further hydrologic studies of the complex upstream and downstream effects of development in the Ross Valley Watershed should be conducted to provide base data for land use planning. Climate change may intensity flooding potential; although climate change can lead to periods of drought conditions, it can also intensify storms, and severe storms can result in high rainfall that can overwhelm the capacity of creeks, and result in overbanking and flooding. Although Fairfax is far enough inland that sea level rise within San Pablo Bay will not directly affect the Town, the Town's residents could be indirectly affected by road closures outside Fairfax due to rising sea water levels, especially in San Rafael and Larkspur. Additionally, sea level rise could reduce outfall capacity on Corte Madera Creek, resulting in flood waters receding more slowly.

There is an opportunity for new development and redevelopment of residential and commercial zoned vacant properties along Fairfax and San Anselmo Creeks. The potential for flooding and the desire to protect the scenic and biologic qualities of the creeks should be of paramount concern in reviewing all development and redevelopment proposals on these parcels. Creek ownership and stewardship requires a public/private approach to risk reduction while ensuring habitat protection. Modifications to existing structures can be made to reduce potential future damage, including elevating structures, installing flood gates, wet and dry proofing, and erosion control.

The primary control for development/redevelopment in properties in the mapped flood-plain is the Fairfax Floodplain Management Ordinance; however, multiple regulatory agencies have approval authority for creek-related activities, including the Department of Fish and Wildlife and the Regional Water Quality Control Board.

Following the December 31, 2005 flood, Fairfax rejoined Marin County Flood Control and Water Conservation District Flood Zone 9. Jointly with the Ross Valley Watershed Program, the Town of Fairfax is coordinating with other communities to identify and resolve long-term flooding issues. Funds from a property tax assessment are used for:

- cleaning and maintenance of creeks.
- development of a capital improvement plan guiding flood mitigation activities.
- construction, operation and maintenance of levees, pumping stations, culverts, and drainage ways.
- applying for and matching grant funding for replacement of bridges and buildings that may contribute to flooding.

The bridges on Marin Road, Spruce Road, Canyon Road, Creek Road, Meadow Way, and Azalea Avenue, spanning San Anselmo and Fairfax creeks, are in need of rehabilitation. The Town of Fairfax has identified the bridges on Meadow Way and Azalea Avenue as needing replacement and the replacement bridges will be designed to reduce flooding hazards. Interim improvements were made to the Meadow Way bridge, and the Town is about to initiate complete replacement. There is the potential for many roads in Fairfax to be blocked by landslides or slip outs during times of heavy rainfall.

Flood Hazards Goals, Objectives, Policies, and Programs

Goal S-2: Minimize risks due to flood hazards.

Objective S-2.1: Protect life and property from risks associated with flooding.

Policy S-2.1.1 Development and land use decisions will be made using the best available hydrological and flood hazard information.

Program S-2.1.1.1 Review updated Flood Insurance Rate Maps, make map information available to the public online and at Town Hall and ensure the most up-to-date information is used for permit and plan review.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-2.1.1.3 Document and maintain creek depth monitoring data during significant storm or flood events to contribute to the understanding of the flood hazard.

Responsibility: Ross Valley Fire Department
Schedule: Ongoing

Program S-4.3.1.6 Improve monitoring of creek and watercourse flows to predict potential for flooding downstream by working cooperatively with land owners and the cities and counties in the watershed.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-2.1.1.4 Document past flood history and damages to quantify flood impacts and support cost/benefit analysis of flood mitigation measures.

Responsibility: Public Works Department
Schedule: Year Two

Program S-2.1.1.5 Complete identification and mapping of high-water marks from the December 31, 2005 flood and enter into GIS maintained by Marin Maps.

Responsibility: Public Works Department, Marin Maps

Schedule: Year One

Policy S-2.1.2 Town life and safety codes and ordinances shall be enforced and updated as needed to reflect current floodplain related scientific data and technical standards.

Program S-2.1.2.1 Update and enforce the Flood Ordinance (Town Code 17.068) for all lot splits, subdivisions, development, redevelopment, or substantial improvement projects in the floodplain, including a requirement for hydrological reports.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-2.1.2.2 Continue to comply with all requirements of the National Flood Insurance Program.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-2.1.2.3 Maintain the Urban Runoff Pollution Prevention Ordinance in compliance with State regulations.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-2.1.1.2 Appropriate flood-related certificates shall be obtained for new construction, substantial improvement, or repair of substantially damaged buildings located in the Special Flood Hazard Area (SFHA).

Responsibility: Planning and Building Services
Schedule: Ongoing

Policy S-2.1.3 Ensure that storm drainage systems are adequate to accommodate new development and substantial improvements, and that new developments or substantial improvements are designed to reduce or eliminate future flood damage.

Program S-2.1.3.1 Require property owners or developers to pay the cost of any onsite improvements to the existing drainage system necessitated by the proposed development to meet State and local stormwater laws.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-2.1.3.2 Require new developments and substantial remodels to incorporate Low Impact Design and Best Management Practices (BMPs), consistent with the Marin Stormwater Pollution Prevention Program, to mitigate stormwater runoff by making certain improvements are designed and constructed to reduce off-site flow, through the use of techniques such as permeable paving and on-site stormwater retention.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-2.1.3.3 Require that lot splits, new lots, and new rights-of-way are laid out for the provision of approved sewer and drainage facilities, providing on-site detention facilities whenever practicable.

Responsibility: Planning and Building Services, Sanitary District
Schedule: Ongoing

Policy S-2.1.4 The Town shall reduce community risk and vulnerability to flooding by maintaining and improving creek and hillside drainage systems.

Program S-2.1.4.1 Repair, retrofit, or upgrade damaged culverts, drains, and bridges to withstand future flooding, obtain and comply with required regulatory permits, and incorporate streambank erosion and fish passage solutions.

Responsibility: Public Works Department
Schedule: Years One through Five

Program S-2.1.4.2 Locate and mark all storm drains/culverts and identify the area and parcels draining into each, and enter the data into Marin Maps Geographic Information System (GIS).

Responsibility: Public Works Department, Marin Maps
Schedule: Ongoing

Program S-2.1.4.3 Conduct an inventory and analysis of town-maintained storm drains and culverts, including location, age, size, materials, and where storm drainage is routed across private property.

Responsibility: Public Works Department
Schedule: Ongoing

Program S-2.1.4.4 Determine any inadequacies in the carrying capacity of Town-maintained storm drains and culverts to meet current capacity

needs, and to prioritize necessary improvements.

Responsibility: Public Works Department
Schedule: Year One

Program S-2.1.4.5 Prepare a Storm Drain Master Plan based on information gathered in Programs S-2.1.4.1 through S-2.1.4.4, and include in the Town's Capital Improvement Program.

Responsibility: Public Works Department
Schedule: Year Two

Program S-2.1.4.6 Identify and aggressively seek available grant funds to support residential and commercial elevation projects and projects that decrease runoff and increase stormwater detention, including on-site rainwater storage.

Responsibility: Town Council, Disaster Council, Public Works Department
Schedule: Ongoing

Program S-2.1.4.7 Develop a "Maintain-a-Drain" campaign, similar to that of the City of Oakland, encouraging private businesses and residents to keep storm drains in their neighborhood free of debris.

Responsibility: Planning and Building Services, Public Works Department
Schedule: Ongoing

Program S-2.1.4.8 Continue the annual volunteer Creek Clean-up Program to reduce debris accumulation prior to the rainy season.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-2.1.4.9 Support community volunteer efforts prior to and during the rainy season to monitor creeks and drainage culverts and remove visible obstructions.

Responsibility: Planning and Building Services
Schedule: Ongoing

Policy S-2.1.5 The Town will actively support watershed-based planning efforts.

Program S-2.1.5.1 Continue to participate in Marin County Flood Control and Water Conservation District Flood Zone 9.

Responsibility: Town Council, Public Works Department
Schedule: Ongoing

Program S-2.1.5.2 Continue to participate in the Ross Valley Watershed Program.

Responsibility: Town Council, Public Works Department
Schedule: Ongoing

Policy S-2.1.6 The Town will evaluate flood reduction proposals to determine the most technically feasible, cost-effective and environmentally sound methods of reducing community and watershed-based flooding.

Program S-2.1.6.1 Develop a project plan to enlarge the Sherman Avenue culvert. If proven feasible, and cost effective, seek funds for implementation.

Responsibility: Public Works Department, Ross Valley Watershed Program
Schedule: Year Ten

Program S-2.1.6.2 Analyze potential upstream flood detention basins that could reduce or delay flooding in Fairfax Creek.

Responsibility: Public Works Department, Ross Valley Watershed Program
Schedule: Year Two

Program S-2.1.6.3 Prepare a detailed study analyzing the potential for daylighting the Town's creeks and culverts. Also see Town Center Element, Policy TC-3.2.11.

Responsibility: Public Works Department
Schedule: Year Three

Program S-2.1.6.4 Develop criteria for flood improvements, bridges, and other structures to ensure that flood water flows will not be impeded.

Responsibility: Public Works Department
Schedule: Year One

Fire Hazards

Setting

The Town of Fairfax is at risk from two types of fire: urban fire and wildland fire. Wildfire hazard in and adjacent to the Town is in mostly in the high severity range (based on CalFire maps). Fire risk and level of severity are expected to increase as a result of climate change as droughts and high temperatures extremes will likely increase in severity.

Given the steep hillsides and canyons of Fairfax, and the proximity of structures to large expanses of vegetation, urban fire remains a risk to life and property, and can expand from a structure fire to a wildlands fire.

The Wildland-Urban Interface (WUI) includes the hillside wooded areas within and adjacent to the Town. Areas included in the WUI were evaluated for specific fuel type, slope, and aspect (compass orientation). (see **Figure S-5, Wildland Urban Interface Zones**) Fire hazards are especially pronounced in areas of high structure densities adjacent to undeveloped open space areas with dense vegetation. These areas often contain older summer homes that have been converted to permanent residences, infilled with more modern construction, and are often situated on steep terrain with narrow winding roads. Fires in the WUI often result in death, injury, economic loss and a large public expenditure for firefighting activities.

The California Department of Forestry and Fire Protection (CAL FIRE) has developed County-level wildlands fire hazard maps for both State Responsibility Areas and Local Responsibility Areas. The Town of Fairfax, because it is incorporated and maintains its own fire service through the Ross Valley Fire Department is mapped as a Local Responsibility Area, while nearby unincorporated areas are in the State Responsibility Area. The CalFire maps indicate that almost the entirety of the Town of Fairfax lies in a high fire hazard severity zone (see **Figure S-6 Fire Hazard Severity Zones**). The unincorporated land adjacent to the Town of Fairfax is mapped as high and moderate fire hazard severity zones. State and federal fire risk mapping efforts may underestimate the true fire hazard for theTown of Fairfax because they do not take into account the specific vegetation types present in Fairfax and the surrounding area in their fuel model calculations. The models are based on a 50-acre grid which does not allow for the level of detail necessary to assess the local hazard.

The Marin County Wildfire Authority has prepared wildfire risk maps at the parcel level. The mapping shows parcels within Fairfax have moderate to high fire risk. These maps are “Hazard Maps” in that they take into account vegetation, topography, weather, crown fire potential, ember production and movement, and the likelihood of an area burning. These maps do not account for housing density or ease of egress. The development of the maps did not include fire history. The State maps rating the fire danger are not maps of the WUI.

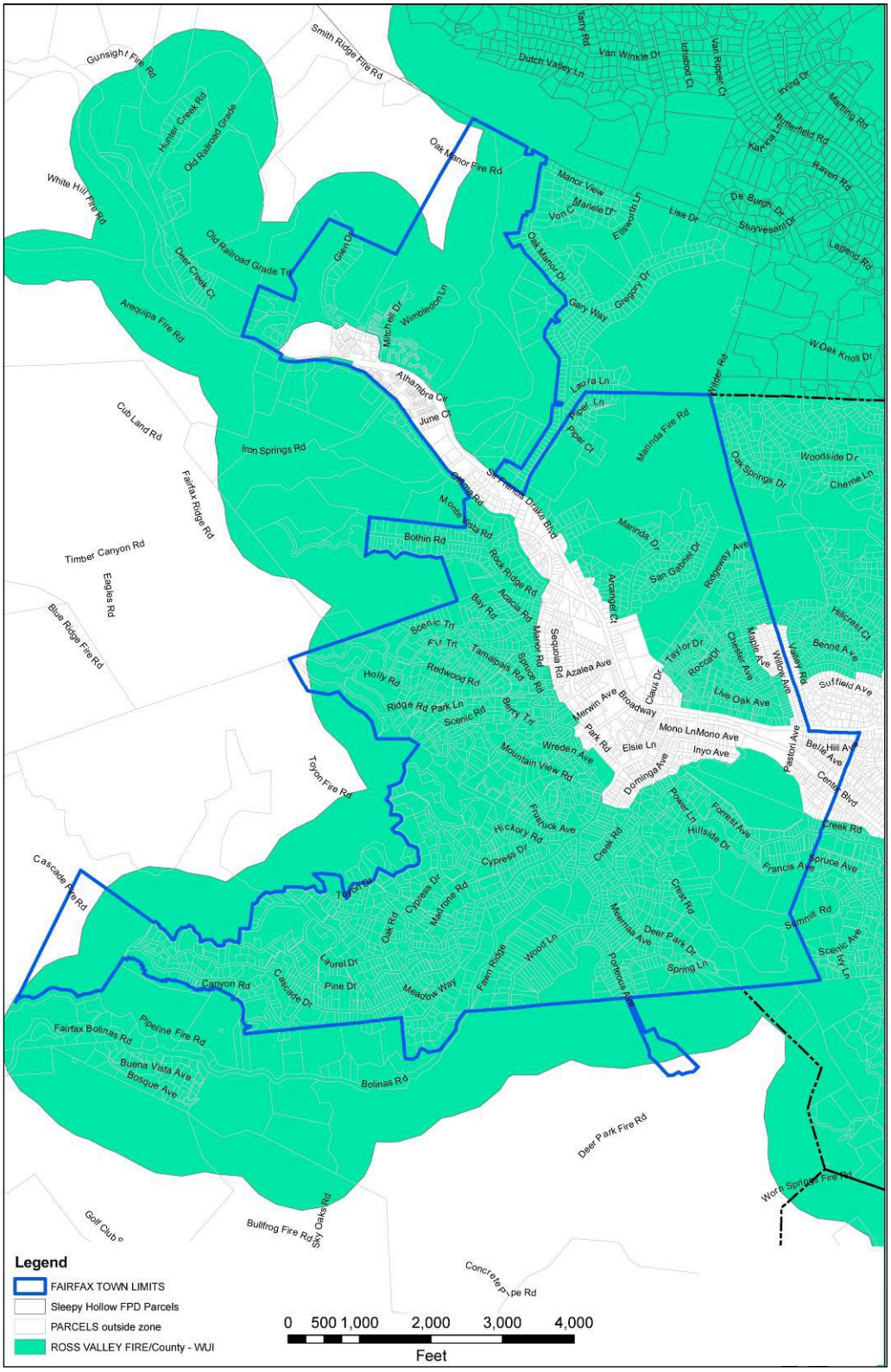

Figure S-5 Wildland Urban Interface Zones

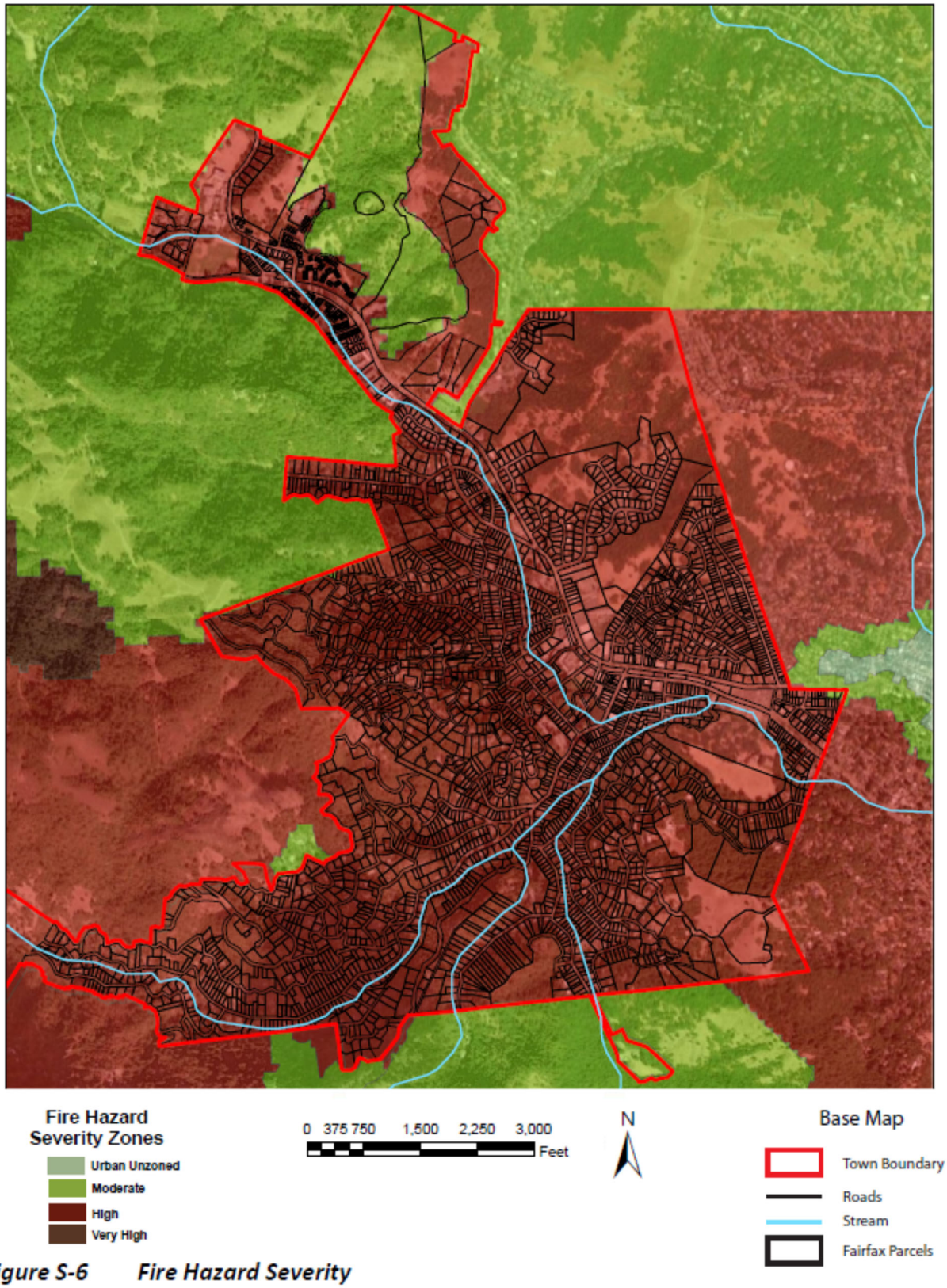

Figure S-6 Fire Hazard Severity

(Provisional Graphic to be upgraded)

The Town of Fairfax Emergency Operations Plan identifies steep hill neighborhoods, such as Cascade Canyon, Forrest/Hillside, Oak Manor, Manor/Scenic Hill, and Willow/Upper Ridgeway at the greatest risk from wildland fire due to the dense vegetation, trees dead/dying of SuddenOak Death and Pine Pitch Canker, and the narrow access roads. Many of the residential areas in Fairfax have only a single ingress/access route (see **Figure S-7, Single Egress Roads and Structures**). According to the Marin Wildfire Prevention Authority, residents evacuating on these roads should expect delays of an hour or more prior to reaching the Ross Valley floor, especially if all residents determine to evacuate at about the same time. Most roads leading out of the hills are narrow and subject to congestion under high traffic volumes. Additionally, heavy vegetation adjacent to the roads, and arching over the roads presents a vulnerability to these routes, especially under wildfire conditions. Shaded fuel breaks reduce wildfire intensity by reducing ground-level fuels (grass, low shrubs) and trimming back the lower branches of trees, to reduce the fuel ladder that can bring fire up into the tree canopy.

Ross Valley Fire Department Fire Protection Standard 220 was last updated in January 2020. This standard provides the requirements for preparing a Vegetation Management Plan. A Vegetation Management Plan is required for all new homes and structures, subdivisions, and those buildings that are undergoing substantial remodel that are located within the WUI. Potential vulnerability to fire damage is summarized in **Table S6, Wildfire Vulnerability.**

Table S6 Wildfire Vulnerability

Asset	Number Vulnerable	Percent Vulnerable to Wildfire Damage
Single-family Homes	1,849 housing units	88
Multi-family Homes	447 housing units	84
Commercial	27 buildings	31
Schools	4 schools	100
Law and Fire Facilities	none	0
Historic Buildings	1 building	100
Roads	28 miles	85

Source: Marin Multi-Jurisdictional Local Hazard Mitigation Plan, Appendix J, 2018.

Fire Services

The Town of Fairfax is served by the Ross Valley Fire Department, which is a consolidated fire agency protecting the communities of Fairfax, San Anselmo, and Sleepy Hollow. The Ross Valley Fire Department also has a contract with the County of Marin to provide fire protection services to County areas contiguous to the Ross Valley Fire jurisdiction, and is an active participant in the County and State Mutual Aid System.

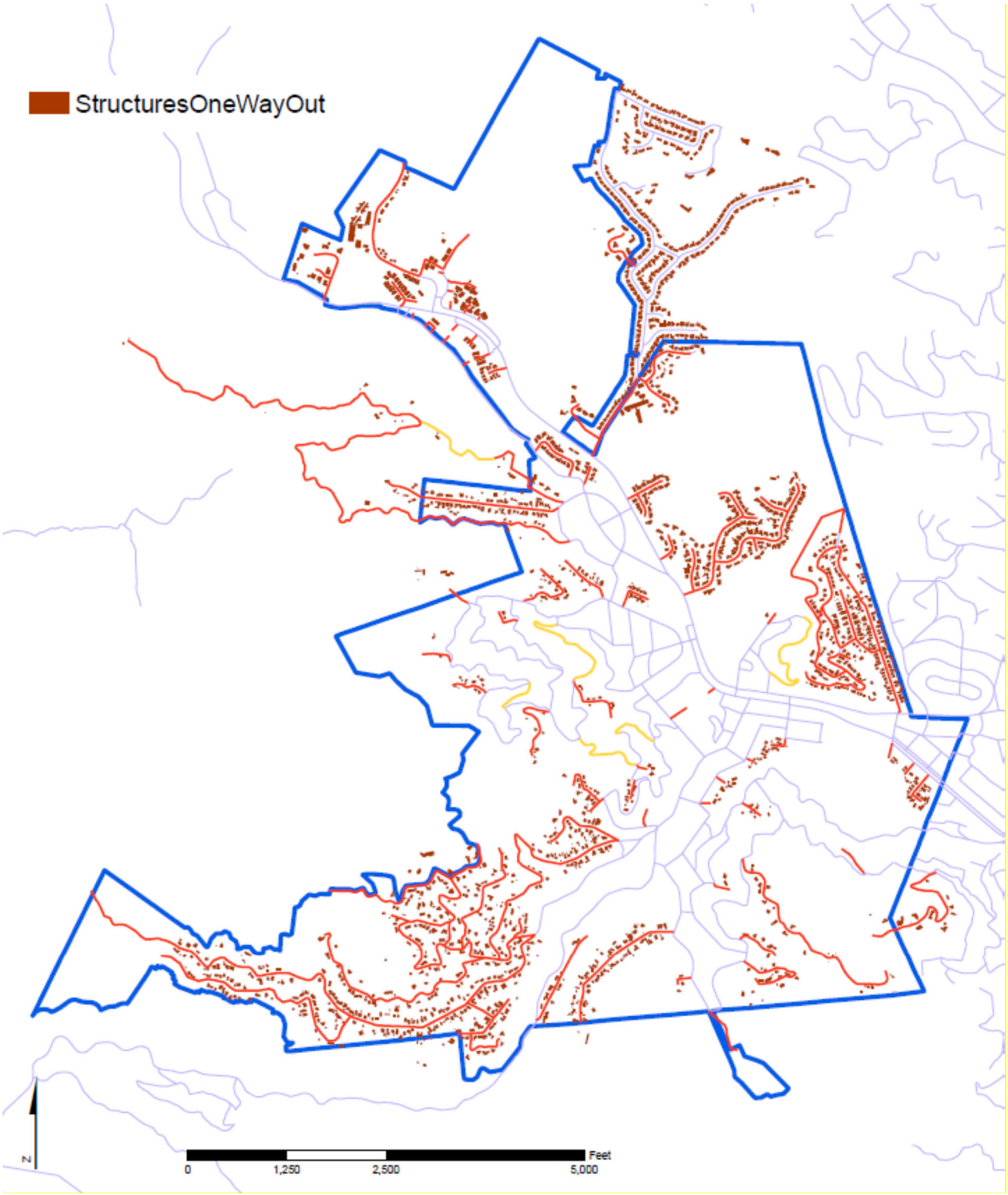

Figure S-7 Single Egress Roads and Structures *(Provisional Graphic to be upgraded)*

The Ross Valley Fire Department has had a formal defensible space inspection program since the 1980s. The elements of the inspections include: checking for defensible space around homes, 10 feet of roadside clearance, 15 feet of vertical road clearance, removal of debris from roofs and gutters, a chimney spark arrester, and adequate address numbering.

The Marin County Wildfire Prevention Authority was established by County Measure C at the March 2020 election, to fund proactive wildfire prevention and preparedness efforts. The Marin County Wildfire Authority is funded by a parcel tax for ten years, providing $19,300,000 annually. Funded activities include vegetation management (fuels reduction), wildfire detection, evacuation plans and alerts, public education, defensible space and fire-resistant structure evaluations, and local and specific wildfire prevention efforts. Fairfax is a signatory to the Joint Exercise of Powers Agreement for Marin Wildfire Prevention Authority.

The Town encourages the removal of the lighter fuels, such as grass, adjacent to homes. It also promotes, in cooperation with the Ross Valley Fire Department, the Marin County Wildfire Prevention Authority, and Fire Safe Marin, free 'chipper days' for removal and pickup of vegetation, including French and Scotch broom and tree limbs. The chipper program is available in each neighborhood two times per year by request.

The Marin Municipal Water District has adopted minimum fire flow standards of 1,000 gallons per minute (gpm) to water mains that feed the urban water supply and fire hydrants. There are approximately 400 fire hydrants in Fairfax. Approximately 130 of thosefire hydrants deliver less than the recommended 1,000 gpm. Of those, approximately 40 fire hydrants deliver less than 500 gpm. There are several areas in Town that have significant firefighting water flow issues. The Ross Valley Fire Department has developed operational preplans to deal with the lack of fire flow in these areas and is also working on long-term solutions.

Planning Considerations

Drought years, such as what the Town has been experiencing at the time of this Safety Element update, intensify fire risk from dried-out grasses and other vegetation. Diseases such as Sudden Oak Death and Pine Pitch Canker killing trees and/or creating dead vegetation contribute to the WUI fire risk. No large fires have occurred in open space areas adjacent to Fairfax for more than twentyyears, thus increasing the fuel load and fire risk. Fire following earthquake is of concern, particularly during the annual 6-month Mediterranean dry season, and individual red flag periods of high temperatures, low humidity and high winds. Climate change will intensity all fire risks as the average

and peak temperatures increase, rainfall decreases, and vegetation becomes dryer. The California Climate Change Center anticipates an 11 to 55 percent increase in the incidence of large wildland fires in California as a result of climate change and rising temperatures.

Some non-native vegetation species contribute to fire risk. Invasion by non-native species often occurs in the WUI. Some of the species common in Fairfax that may contribute to the spread of fires include French and Scotch broom, bamboo, junipers, French and Spanish thistle, exotic annual grasses, acacias, Monterey pine, and eucalyptus. There are a large number of parcels within the Town's WUI area. The Town of Fairfax has no overt responsibility for vegetation management or fuel reduction activities in open space lands adjacent to the Town jurisdictional boundary, except for Town-owned open space. Vegetation management programs conducted in partnership with Marin Open Space and Marin Municipal Water District are effective and desirable in reducing the WUI risk. The most effective mitigation measures are reducing the fuel load, creating defensible space, and hardening the structure itself.

Many areas of our community have heavy vegetation including brush, trees, and ornamental vegetation. Much of this vegetation is flammable. In order to obtain defensible space compliance in these areas, homeowners need to remove 'ladder fuels' such as the lower branches on large trees, remove small trees, thin or remove brush and ornamentals near their homes, and be diligent in removing flammable debris from roofs and decks. Older building materials, such as wood shake roofs and wood siding, increase the potential for fire spread and new fire ignitions. Cantilevered houses on hillsides and those constructed with overhangs and decks are also at additional risk because fire can advance beneath them and start them on fire from below.

Steep canyons and narrow roads increase risk and may inhibit response efforts. Narrow roads may cause difficulties for fire apparatus access during resident egress. Residential parking on one lane roads is a serious impediment to fire apparatus access and evacuationegress. Existing rights-of-way and pedestrian trails mapped by the Town and Fairfax Volunteers, and maintained by the Town, could provide valuable 'worst-case' informal evacuation routes. Every neighborhood in Fairfax has streets that dead-end, and from which there is only a single route of egress. Many of these streets with a single egress are a quarter of a mile long or longer (see **Figure S-8, Neighborhood Evacuation Zones).**

Fire prevention is critical and more cost effective than relying solely on response. In- creasing public awareness of wildland fire and developing stronger preventive measures is essential to reducing the risk. Fire Safe Councils, such as Fire Safe Marin, are important community planning efforts.

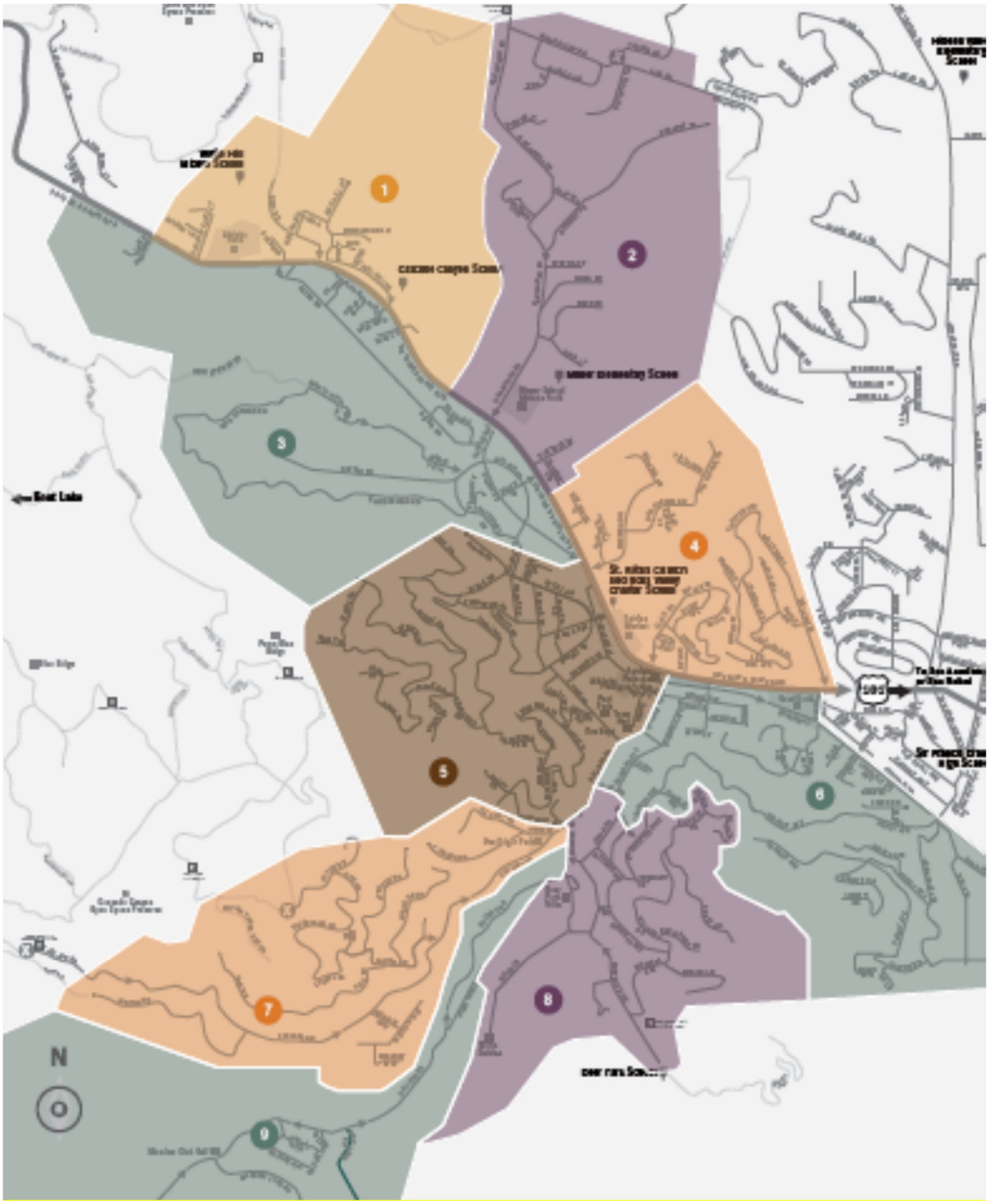

Figure S-8, Neighborhood Evacuation Zones *(Provisional Graphic to be upgraded)*

Fire Hazards Goals, Objectives, Policies, and Programs

Goal S-3: Minimize risks due to fire hazards.

Objective S-3.1: Protect life and property from risks associated with urban and wildland fire.

Policy S-3.1.1 Development and land use decisions will be made using the best available fire hazard information.

Program S-3.1.1.1 Prepare a fire fuel map for the Town on a five-acre or smaller grid that can be digitized and incorporated into a fire hazard threat module that more accurately reflects the community risk from wildland fire.

Responsibility: Ross Valley Fire Department, Marin Wildfire Prevention Authority
Schedule: Year One

Program S-3.1.3.11 Review fire safety, evacuation, and emergency vehicle access when considering development proposals in the Wildlands Urban Interface.

Responsibility: Ross Valley Fire Department, Planning and Building Services
Schedule: Ongoing

Policy S-3.1.2 Develop and implement fuel reduction, vegetation management, and defensible space activities, consistent with Open Space and Conservation Element goals.

Program S-3.1.2.1 Identify basic vegetation types common to the Town. Document and make publicly available a prescription for each type describing how to manage that vegetation, consistent with the California Vegetation Treatment Program.

Responsibility: Marin Wildfire Prevention Authority, Ross Valley Fire Department, Fire Safe Marin, Planning and Building Services, Town Forester
Schedule: Year Two

Program S-3.1.2.2 Continue to standardize and simplify defensible space and structure wildfire hardening guidelines and disseminate information in collaboration with Fire Safe Marin and allied organizations.

Responsibility: Marin Wildfire Prevention Authority, Ross Valley Fire Department, Fire Safe Marin, Planning and Building Services, Town Forester

Schedule: Ongoing

Program S-3.1.2.3 Seek geographic and programmatic continuation and expansion of fuel management programs in Fairfax through the Marin County Vegetation Management Plan. Activities include, but are not limited to: shaded fuel breaks, roadside collection and chipping of cleared vegetation, mechanical fuel reduction equipment, selected harvesting, use of goats or other organic methods of fuel reduction, and selective use of controlled burning. Target areas include, but are not limited to: western interface with Camp Tamarancho, interface at end of Cascade Canyon, and the ridge from the Meadow Club to Deer Park Villa.

Responsibility: Marin Wildfire Prevention Authority, Ross Valley Fire Department, Fire Safe Marin, Planning and Building Services, Town Forester
Schedule: Ongoing

Program S-3.1.2.4 Work with the Marin Wildfire Prevention Authority to fund fire risk reduction activities for existing development through vegetation management that includes reducing fuel loads, increasing defensible space, constructing and maintaining fuel breaks, and public education.

Responsibility: Marin Wildfire Prevention Authority, Ross Valley Fire Department, Fire Safe Marin, Planning and Building Services, Town Forester
Schedule: Ongoing

Program S-3.1.2.5 Take measures to eradicate or limit the spread of vegetation with a high fuel ranking, such as Broom species and Eucalyptus.

Responsibility: Marin Wildfire Prevention Authority, Ross Valley Fire Department, Fire Safe Marin, Planning and Building Services, Town Forester
Schedule: Ongoing

Program S-3.1.2.6 Implement appropriate urban forestry management practices to create shaded fuel breaks and disrupt the vertical continuity of fuels, included but not limited to: crown cleaning to reduce total fuel volume; dead wooding to reduce available fuels and decrease surface to volume ratio; and, opening the fuel structure (limbing-up) to reduce the horizontal continuity of fuels.

Responsibility: Public Works Department, Planning and Building Services, Fire Safe Marin, Town Forester
Schedule: Ongoing

Program S-3.1.2.7 Review fire-preventative vegetation management techniques and

practices proposed for creek sides and high-slope areas to identify and mitigate potential for erosion or landslide hazards.

Responsibility: Marin Wildfire Prevention Authority, Ross Valley Fire Department, Fire Safe Marin, Planning and Building Services, Town Forester Public Works Department
Schedule: Ongoing

Program S-3.1.2.8 Develop a defensible space vegetation program that includes the clearing or thinning of non-fire resistive vegetation and/or non-native species (such as eucalyptus and pine) within 30 feet of access and evacuation roads and routes to critical facilities.

Responsibility: Planning and Building Services
Schedule: Year Three

Program S-3.1.2.9 Coordinate with Neighborhood Response Groups and Fire Safe Marin to assist residents and businesses in the development of defensible space through the use of, for example, "tool libraries" for weed abatement tools, roadside collection and/or chipping services (for brush, weeds, and tree branches) in the Wildlands Urban Interface.

Responsibility: Planning and Building Services
Schedule: Ongoing

Policy S-3.1.3 Maximize access and egress for emergency response vehicles under a range of scenarios. Also see Conservation Element, Goal C-4.

Program S-3.1.3.1 Require all dead-end segments of public roads in high fire hazard areas to have adequate turn-arounds meeting Ross Valley Fire Department geometry standards, and mitigate sharp turns and vertical differentials to facilitate ingress and egress of firefighting equipment.

Responsibility: Ross Valley Fire Department, Public Works Department
Schedule: Ongoing

Program S-3.1.3.2 Implement emergency vehicle ingress and egress upgrades, with a priority for identified evacuation routes and the longest and narrowest streets, as funding becomes available.

Responsibility: Ross Valley Fire Department, Public Works Department
Schedule: Year Four

Program S-3.1.3.3 Develop and enforce a parking and signage plan to ensure emergency vehicle access and egress. Elements of the parking and

signage plan could include, but are not limited to: striping parking spaces, signage, and restricting parking at driveway entries where there is no T-intersection or adequate space for emergency vehicle turnaround.

Responsibility: Ross Valley Fire Department, Public Works Department, Police Department
Schedule: Ongoing

Program S-3.1.3.4 Require that new development provide adequate emergency ingress and egress roads (with width and vertical clearance that meet the minimum ordinance and code standards), on-site fire protection systems, evacuation signage, and fire breaks.

Responsibility: Planning and Building Services, Ross Valley Fire Department
Schedule: Ongoing

Program S-3.1.3.5 Identify addresses where emergency personnel access is restricted and develop a program to improve access to those locations.

Responsibility: Planning and Building Services, Ross Valley Fire Department
Schedule: Year Two

Program S-3.1.3.6 Periodically inspect all roads in or providing egress from high fire hazard areas, and keep them passable for emergency equipment, including adequate clear width, turnaround, and clearance/thinning of flammable materials to the sides and overhead.

Responsibility: Ross Valley Fire Department, Police Department
Schedule: Ongoing

Program S-3.1.3.7 Work with neighborhood groups to identify and develop suitable emergency turnout locations, prioritizing identified evacuation routes.

Responsibility: Ross Valley Fire Department, Fire Safe Marin, Public Works Department, Planning and Building Services
Schedule: Ongoing

Program S-3.1.3.8 Enforce code requirements for privately maintained roads or driveways accessing more than three properties to ensure emergency access and egress.

Responsibility: Planning and Building Services, Ross Valley Fire Department, Police Department
Schedule: Ongoing

Program S-3.1.3.9 Develop and enforce street signage and street address signage codes to facilitate emergency response, including indications for those with mobility or medical concerns.

Responsibility: Ross Valley Fire Department, Police Department. Planning and Building Services
Schedule: Year Three

Program S-3.1.3.10 Enforce parking restrictions on roads with pavement width under 18 feet, and strictly enforce restrictions on "red flag" days.

Responsibility: Ross Valley Fire Department, Police Department
Schedule: Ongoing

Policy S-3.1.4 The Town shall collaborate with external agencies and the community to provide adequate water supply and fire flow.

Program S-3.1.4.1 Require a reliable source of water for fire suppression as dictated by municipal code for existing and new development through plan review and hydrant fire flow monitoring program.

Responsibility: Ross Valley Fire Department, Marin Municipal Water District, Public Works Department
Schedule: Ongoing

Program S-3.1.4.2 Continue a coordinated approach between the jurisdiction and water supply agencies to identify needed improvements to the water distribution system, initially focusing on areas of highest wildfire hazard.

Responsibility: Ross Valley Fire Department, Marin Municipal Water District, Public Works Department
Schedule: Ongoing

Program S-3.1.4.3 Identify alternative sources of water that may be used to supplement existing fire suppression water systems, including but not limited to: swimming pools, ponds private wells, and water tanks.

Responsibility: Ross Valley Fire Department
Schedule: Year One

Program S-3.1.4.4 Install new hydrants and implement fire flow upgrades as funding becomes available, prioritizing locations with failing infrastructure, locations within the Wildlands Urban Interface, and areas of dense development.

Responsibility: Ross Valley Fire Department, Public Works Department
Schedule: Ongoing

Policy S-3.1.5 Town life and safety codes and ordinances shall be enforced and updated as needed to reflect current fire protection scientific data and technical standards.

Program S-3.1.5.1 Require all structures meet smoke and carbon monoxide detector requirements of the California Building and Fire Codes at time of property sale or transfer.

Responsibility: Planning and Building Services, Ross Valley Fire Department
Schedule: Ongoing

Program S-3.1.5.2 Adopt updated versions of the California Building and Fire Codes, and local amendments as needed, so that the best possible fire-protection standards are used in construction and renovation projects.

Responsibility: Town Council, Planning and Building, Services,
Ross Valley Fire Department
Schedule: Ongoing

Program S-3.1.5.3 Adopt local code amendments to require that all new buildings or substantial remodels be constructed of fire-resistant building materials, and incorporate fire-resistant design features, such as one-hour fire-stop wall assemblies, and one-hour fire-stop boxed eaves with maximum available ember-proof attic venting, to increase structural survivability and reduce ignitability.

Responsibility: Town Council, Planning and Building Services
Schedule: Year Two

Program S-3.1.5.4 Require fire sprinklers in all new or substantially remodeled housing.

Responsibility: Planning and Building Services, Ross Valley Fire Department
Schedule: Ongoing

Program S-3.1.5.5 Adopt local code amendments to require fire sprinklers in all mixed-use developments to protect residential uses from fires started in non-residential areas.

Responsibility: Town Council, Planning and Building Services
Schedule: Year Two

Program S-3.1.5.5 Adopt local code amendments to require automatic gas shut-off valves for new or substantially remodeled structures to reduce the

risk of post-earthquake fire ignitions and fire spread.

Responsibility: Town Council, Planning and Building Services
Schedule: Year Two

Program S-3.1.5.7 Adopt local code amendments to require automatic gas shut-off valves for new or substantially remodeled structures to reduce the risk of post-earthquake fire ignitions and fire spread.

Responsibility: Town Council, Planning and Building Services
Schedule: Year Two

Program S-3.1.2.9 Review the Town Code Section 8.36.020 definition of Undesirable Tree Species to determine if there are pyrophytic tree species that should be added to the list.

Responsibility: Planning and Building Services, Town Forester
Schedule: Ongoing

Policy S-3.1.6 The Town will encourage fire hardening of existing private structures, and require fire-hardening on all new construction.

Program S-3.1.6.1 Compile a list of high-occupancy buildings deemed, due to their age or construction materials, to be particularly susceptible to fire hazards, and determine an expeditious timeline for the fire-safety inspection and installation of fire safety improvements in all such structures.

Responsibility: Ross Valley Fire Department, Planning and Building Services
Schedule: Year One

Program S-3.1.6.2 Establish a program to encourage home fire-hardening retrofits, for example, using the advice from Fire Safe Marin or following the model of the Boulder County Colorado Wildfire Partners program. Coordinate through existing local and County programs.

Responsibility: Ross Valley Fire Department, Fire Safe Marin, Planning and Building ServicesSchedule: Year Two

Program S-3.1.6.3 Review development proposals to ensure that they incorporate a fire department approved defensible space plan and conduct inspections to ensure it is implemented prior to construction and maintained in perpetuity.

Responsibility: Planning and Building Services, Planning Commission, Town Council, Design Review Board, Ross Valley Fire Department
Schedule: Ongoing

Program S-3.1.6.5 Conduct periodic fire-safety inspections of all commercial and institutional buildings.

Responsibility: Ross Valley Fire Department
Schedule: Ongoing

Community Preparedness

The Federal Emergency Management Agency (FEMA) defines preparedness as "a continuous cycle of planning, organizing, training, equipping, exercising, evaluating, and taking corrective action in an effort to ensure effective coordination during emergency or disaster response." This 'preparedness cycle' is one element of a broader emergency management system to prevent, respond to, recover from, and mitigate against natural disasters, acts of terrorism, and other man-made disasters.

Planning makes it possible to manage the entire life cycle of a potential crisis. Strategic and operational planning establishes priorities, identifies expected levels of performance and capability requirements, provides the standard for assessing capabilities, and helps stakeholders learn their roles. The planning elements identify what an organization's Standard Operating Procedures or Emergency Operations Plan should include for ensuring that contingencies are in place for delivering the capability during a large-scale disaster.

Organizing and equipping provide the human and technical resources necessary to build capabilities and address modernization and sustainability requirements. Organizing and equipping include identifying what competencies and skill sets people delivering a capability should possess and ensuring an organization possesses the correct personnel. Additionally, it includes identifying and acquiring standard and/or surge equipment an organization may need to use when delivering a specific capability.

Training provides emergency responders, emergency management officials, private and non-governmental partners, and other personnel with the knowledge, skills, and abilities needed to perform key tasks required by specific capabilities. Organizations should make training decisions based on information derived from the assessments, strategies, and plans developed in previous steps of the preparedness cycle.

Exercises assess and validate the speed, effectiveness and efficiency of capabilities, and test the adequacy of policies, plans, procedures, and protocols in a risk-free environment. Aside from actual events, they provide the best means of evaluating emergency response and recovery capabilities.

The evaluation and improvement of performance is the final step of the Preparedness Cycle and crucial to informing risk assessments, managing vulnerabilities, allocating resources, and informing the other elements of the Cycle. Organizations develop improvement plans and track corrective actions to address the capabilities identified in plans and tested in exercises or real events.

The preceding definition applies primarily to governmental organizations. These concepts are reflected in the Town of Fairfax EOP and procedures. Governmental preparedness, however, is only one aspect of community preparedness. It is also important for residents, neighborhoods, and business owners to participate in preparedness activities.

Being prepared can reduce fear, anxiety, and losses that accompany disasters. Disasters disrupt hundreds of thousands of lives every year. Each disaster has lasting effects, both to people and property. When a disaster occurs, local government and disaster-relief organizations will help with shorter-term response and recovery efforts, but individuals need to be ready as well. Local responders may not be able to reach everyone immediately, or they may need to focus their efforts elsewhere. Every citizen in this country is part of a national emergency management system that is all about protection– protecting people and property from all types of hazards. Think of the national emergency management system as a pyramid with the individual citizen forming the base of the structure. At this level, each person has a responsibility to protectthemselves, their family and their property by knowing what to do before, during, and after an event. A key element of building community capability is ensuring that Town of Fairfax residents are prepared to be self-sufficient for a minimum of seven days.

Critical elements of community preparedness include:

- public awareness and education;
- access to preparedness information;
- neighborhood training programs to instill an understanding of proper response actions; and
- notification, warning, and evacuation systems and procedures.

Activation of Emergency Response

The Uniform Evacuation Protocol establishes emergency response procedures to be taken by the Fairfax Police Department (and in conjunction with the Ross Valley Fire Department, or other agencies depending on the type of emergency), to facilitate saving lives, maintaining public order, and protecting property.

Notification methods during an emergency response include use of sirens, a public address system, Alert Marin or Nixie text messaging, Ross Valley Broadcast Radio (1610 AM), and commercial radio and television (Emergency Alert System). The Town is divided into ten response zones. For each zone, the primary and secondary roads, critical buildings and infrastructure, water tanks, and fire roads are listed. The Town coordinates all response to regional emergencies with the Marin County Office of Emergency Services, and with other cities or agencies as appropriate.

Emergency warning sirens are located at Town Hall, the Corporation Yard, and at Fairfax Grade. The sirens were installed for warning of imminent flooding (Fairfax Creek at 7.2 feet), although the sirens can be used for other emergency alerts. Protocols for response actions at the neighborhood level must be developed and disseminated to maximize the effectiveness of the warning sirens.

The Fairfax Pavilion is identified as a primary staging point and community shelter during disasters, Other potential staging or sheltering locations include the Contratti Park Ballfield, Manor School, and White Hill School/Lefty Gomez Field. The Town and Fire Safe Marin have prepared a series of evacuation maps that mark preferred evacuation routes, supplemental pedestrian evacuation routes, and temporary refuge locations, and provide emergency information sources and tips for safely evacuating. The maps can be downloaded to a phone through a QR code. Marin County has an extensive network of Fire Safe councils, including a Fire Safe council active in Fairfax. Fire Wise communities are established to encourage and recognize measures to ensure that each resident's home, and thus the entire neighborhood, is prepared to survive during a wildfire. Neighborhood Response Groups are a volunteer network organized to improve the potential for citizens to protect themselves or evacuate during an emergency. The network is organized at several levels, from County, to Town, to neighborhood, and block. In the event of an emergency situation, the Neighborhood Response Groups network will alert residents and assist those who need help in protecting themselves or evacuating. The Neighborhood Response Group and Fire Safe council have significant overlap, and act both for preparation for emergencies, and response during an emergency.

Fairfax has many narrow and winding roads into the hills surrounding Ross Valley. Egress of residents evacuating and ingress of emergency response is likely to result in delays for both. In addition, burning vegetation or structures adjacent to these roads, landslides, and slip outs could all hamper egress and ingress. If evacuation beyond the Ross Valley floor is required, evacuation would be either east towards U.S. Highway 101 on Sir Francis Drake Boulevard or Red Hill Road/Fourth Street, or west via Sir Francis Drake Boulevard into the San Geronimo Valley. The best ultimate evacuation route would depend on the

location and specifics of the emergency, as determined by emergency responders, who would direct traffic accordingly.

Advanced preparation is necessary minimize damage or loss of life from disasters. Keeping storm drains and channels clear and having sandbags available prior to the onset of flooding will reduce flood damages. Retrofitting structures for earthquake resistance will reduce damage from seismic events. Proper vegetation clearance and structure hardening will reduce the potential for structural losses during a wildfire. Evacuation preparedness at each household will reduce the risk of death in the event of a wildfire or other disaster that requires evacuation.

Community Preparedness Goals, Objectives, Programs, and Policies

Goal S-4: Community preparedness.

Objective S-4.1 Facilitate citizen access to a broad array of disaster preparedness and response information.

Policy S-4.1.1 The Town shall obtain, organize, and disseminate information for disaster preparedness.

Program S-4.1.1.1 Provide information to residents, property owners, private business owners and their employees on the availability of interactive community hazard maps on the Association of Bay Area Governments' web site.

Responsibility: Planning and Building Services
Schedule: Year One

Program S-4.1.1.2 Make use of the materials on the Association of Bay Area Governments, Ross Valley Fire Department, and other relevant web sites to increase residential mitigation activities related to disasters.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-4.1.1.3 Inform residents of disaster-preparedness actions, including but not limited to home hardening and defensible space, structural retrofitting techniques for older homes, elevation of appliances above expected flood levels, and use of intelligent grading practices, through workshops, publications, media announcements and events.

Responsibility: Planning and Building Services, Ross Valley Fire Department
Schedule: Ongoing

Program S-4.1.1.4 Develop a public education campaign on the cost, risk, and benefits of earthquake, flood, and other hazard insurance as compared to mitigation.

Responsibility: Planning and Building Services, Ross Valley Fire Department
Schedule: Ongoing

Program S-4.1.1.5 Use disaster anniversaries, such as April (the 1906 earthquake)

and October (Loma Prieta earthquake and Oakland Hills fire), to remind the public about safety and security mitigation activities.

Responsibility: Town Council, Town Manager, Planning and Building Services, Ross Valley Fire Department
Schedule: Ongoing

Program S-4.1.1.6 Conduct demonstration projects on common existing housing types demonstrating structural and nonstructural mitigation techniques as community models for earthquake mitigation.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-4.1.1.7 Develop a list of educational resources, and provide seismic retrofit technical guidance (e.g., including installation of a seismically resistant foundation, bolting the sill plate to the foundation, installing shear wall strengthening to cripple walls) along with permit application forms to property owners applying for retrofit or substantial improvement permits.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-4.1.1.8 Provide earthquake retrofit classes or workshops for building owners, local government staff, engineers, and contractors, and/or promote workshops in other areas of Marin County.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-4.1.1.9 Hold community informational and educational events to demonstrate home seismic retrofit options.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-4.1.1.10 Maintain the Disaster Preparedness web site to include flood and disaster preparedness information and links to flood prevention and mitigation resources.

Responsibility: Disaster Council, Ross Valley Fire Department
Schedule: Ongoing

Program S-4.1.1.11 Provide financial incentives, technical guidance and conduct a public outreach campaign to motivate commercial business owners to install flood gates at property or building entrances.

Responsibility: Town Council, Chamber of Commerce, Public Works
Schedule: Ongoing

Program S-4.1.1.12 Partner with Sustainable Fairfax, the Ross Valley Mitigation League, the Friends of Corte Madera Creek Watershed, Marín County Flood Control and Water Conservation District, and similar groups to develop and distribute educational materials and provide training to the community on: 1) ways to reduce the impacts of flooding on their property, their neighbors' properties and the community as a whole, 2) bank stabilization, and 3) the implication of individual actions on watersheds and creeks such as upstream/downstream impacts, drainage systems, on-site retention systems, and stormwater runoff.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-4.1.1.13 Conduct an annual Fire Safe Fairfax campaign to include information on high fire hazard areas, warning and evacuation plans, defensible space, and fire prevention measures.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-4.1.1.14 Provide emergency preparedness and fire safety educational materials including information on fire prevention measures such as roof and gutter cleaning, identifying and removing ember traps, cleaning dryer vents, and planting vegetation that will raise live fuel moisture levels.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-4.1.1.15 Work with Fire Safe Marin to publicize and distribute information to homeowners regarding fire-hardening of homes and outbuildings.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-4.1.1.16 Hold community informational and educational events to demonstrate home fire-hardening retrofit options.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-4.1.1.17 Showcase “model” properties exhibiting defensible space and

structural survivability in neighborhoods that are in the Wildlands Urban Interface.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-4.1.1.18 Apply for grants through Fire Safe Marin for model xeriscapes appropriate to the Fairfax community.

Responsibility: Marin Wildfire Prevention Authority, Ross Valley Fire Department, Fire Safe Marin, Planning and Building Services, Town Forester
Schedule: Ongoing

Program S-4.1.1.19 Encourage the formation of a community- and neighborhood-based approach to wildfire education and action through local Fire Safe Councils and the Fire Wise Program.

Responsibility: Fire Safe Marin, Ross Valley Fire Department, Planning and Building Services
Schedule: Ongoing

Policy S-4.1.2 The Town shall facilitate citizen response to disasters.

Program S-4.1.2.1 Develop printed materials, utilize existing materials (such as developed by Federal Emergency Management Agency and the American Red Cross), conduct workshops, and/or provide outreach encouraging residents to have family disaster response plans including but not limited to drop-cover-hold earthquake drills, fire and storm evacuation procedures, and shelter-in-place emergency guidelines.

Responsibility: Planning and Building Services, Ross Valley Fire Department
Schedule: Ongoing

Program S-4.1.2.2 Inform homeowners and business owners how to locate and shut off gas valves if they smell or hear gas leaking and to check for gas leaks after an earthquake.

Responsibility: Public Works Department, Ross Valley Fire Department
Schedule: Ongoing

Program S-4.1.2.3 Sponsor the formation and training of Community Emergency Response Teams (CERT) or Get Ready Marin for residents in the Fairfax community, as well as encourage businesses to offer these trainings to employees, and schools to offer these trainings to students, staff, and after-school personnel.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-4.1.2.4 Institute Neighborhood Response Groups, FireWise neighborhoods, and other neighborhood watch block captain and team programs.

Responsibility: Planning and Building Services
Schedule: Year One

Program S-4.1.2.5 Conduct public education program to inform residents of appropriate measures to take when an alarm is sounded and document flood evacuation procedures in the Emergency Operations Plan.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-4.1.2.6 Conduct Ross Valley Fire Department fire response drills at various times of day and days of the week in mutual threat zones (identified in the Fairfax Evacuation Protocol) to educate residents on realistic fire response times and to identify chronic impediments to fire apparatus access.

Responsibility: Ross Valley Fire Department, Police Department
Schedule: Ongoing

Program S-4.1.2.7 Publicize use of Marin County's online Zonehaven evacuation map.

Responsibility: Planning and Building Services
Schedule: Ongoing

Program S-4.1.2.8 Make sandbags and plastic sheeting available to residents in anticipation of rainstorms. Facilitate access by publicizing distribution locations for sandbag filling.

Responsibility: Public Works Department
Schedule: Ongoing

Program S-4.1.2.9 Coordinate with Neighborhood Response Groups to develop and implement a notification phone tree for each pedestrian evacuation area to formally identify persons responsible for initiating the phone tree, persons with special needs, and protocols for activation.

Responsibility: Planning and Building Services, Ross Valley Fire Department,

Marin Wildfire Prevention Authority
Schedule: Ongoing

Program S-4.1.2.10 Coordinate with Neighborhood Response Groups to ensure adequate plans are developed for appropriate access and evacuation in the Wildlands Urban Interface.

Responsibility: Planning and Building Services, Ross Valley Fire Department, Marin Wildfire Prevention Authority
Schedule: Ongoing

Program S-4.1.2.11 Coordinate with existing County or local programs to ensure that the mobility challenged and those with special needs will receive necessary assistance during an emergency.

Responsibility: Planning and Building Services, Ross Valley Fire Department, Marin Wildfire Prevention Authority,
Schedule: Ongoing

Policy S-4.1.3 The Town shall develop and maintain evacuation plans and a comprehensive warning system to reduce life loss and injury.

Program S-4.1.3.1 Develop plans, in conjunction with the Ross Valley Fire Department and the Ross Valley School District, for evacuation or sheltering-in-place of school children, for at least the first 48 hours during a disaster, as well as system for parent notification.

Responsibility: Ross Valley Fire Department, Ross Valley School District, Planning and Building Services
Schedule: Year Two

Program S-4.1.3.2 Develop a continuity of operations and disaster recovery plan to include short-term and intermediate-term sheltering of employees during emergencies.

Responsibility: Town Manager, Planning and Building Services
Schedule: Year Two

Program S-4.1.3.3 Develop and disseminate protocols for activation of warning sirens, Alert Marin, Nixle, Wireless Emergency Alerts, and other emergency notification measures, and include them in the Emergency Operations Plan.

Responsibility: Planning and Building Services, Ross Valley Fire Department
Schedule: Ongoing

Program S-4.1.3.4 Maintain and regularly test the warning siren that informs the

public of imminent flood potential.

Responsibility: Ross Valley Fire Department
Schedule: Ongoing

Program S-4.1.3.5 Coordinate with Neighborhood Response Groups to develop a fire evacuation plan for the highest fire hazard areas, including those areas with limited access/egress, dead-end roads, one-lane roads, and steep canyons. Plan should include: potential evacuation routes and signage, including alternate routes on pedestrian walkways, bikeways and trails; design and installation of a warning system, and public education and training.

Responsibility: Planning and Building Services, Ross Valley Fire Department, Marin Wildfire Prevention Authority
Schedule: Year One

Program S-4.1.3.6 Assign a liaison from the Ross Valley Fire Department to each high-risk neighborhood to assist residents to identify alternative evacuation routes and strategies based on the specific characteristics of the neighborhood.

Responsibility: Ross Valley Fire Department
Schedule: Ongoing

Program S-4.1.3.7 Work with neighborhood groups to identify locations for emergency pull outs along narrow roads to facilitate egress and ingress during an evacuation.

Responsibility: Planning and Building Service Ross Valley Fire Department, Marin Wildfire Prevention Authority
Schedule: Year Two

Program S-4.1.3.8 Identify a series of last resort sheltering locations and prepare information on last resort sheltering for those who are not able to evacuate in a timely manner.

Responsibility: Planning and Building Service Ross Valley Fire Department, Marin Wildfire Prevention Authority
Schedule: Year Two

Program S-4.1.3.9 Conduct annual evacuation drills for mutual fire threat zones in accordance with the Fairfax Evacuation Protocol and Plan(s).

Responsibility: Ross Valley Fire Department, Police Department
Schedule: Ongoing

Objective S-4.2 Prepare the community to respond to a regional disruption of services.

Policy S-4.2.1 Develop community capacity to respond to a disruption of services due to a regional disaster event.

Program S-4.2.1.1 Provide materials to the public related to planning for power outages, including methods for extending freezer time, proper use of portable generators, and retrofitting electrical systems for permanent back-up generators.

Responsibility: Planning and Building Service, Ross Valley Fire Department, Public Works Departments
Schedule: Ongoing

Program S-4.2.1.2 Provide materials to the public related to family and personal planning for delays due to traffic or road closures or due to transit system disruption, including stranded elders, children, and pets.

Responsibility: Ross Valley Fire Department, Police Department
Schedule: Ongoing

Program S-4.2.1.3 Work with Marin Municipal Water District to provide materials to the public related to coping with reductions in water supply or contamination of the supply.

Responsibility: Ross Valley Fire Department, Police Department
Schedule: Ongoing

Program S-4.2.1.4 Work with the Sanitary District to provide materials to the public related to coping with disrupted storm drains, sewage lines, and wastewater treatment (such as that developed by the Association of Bay Area Governments' Sewer Smart Program).

Responsibility: Ross Valley Fire Department, Police Department, Public Works Department
Schedule: Ongoing

Program S-4.2.1.5 In conjunction with Marin Municipal Water District, evaluate the feasibility of providing emergency drinking water.

Responsibility: Town Council. Planning and Building Services
Schedule: Ongoing