

Sonoma County General Plan 2020

PUBLIC SAFETY ELEMENT

Sonoma County Permit and Resource Management Department
2550 Ventura Avenue
Santa Rosa, CA 95403

Adopted by Resolution No. 08-0808
of the Sonoma County Board of Supervisors
September 23, 2008

PUBLIC SAFETY ELEMENT TABLE OF CONTENTS

1. INTRODUCTION	PS-1
1.1 PURPOSE	PS-1
1.2 RELATIONSHIP TO OTHER ELEMENTS	PS-1
1.3 SCOPE AND ORGANIZATION	PS-1
1.4 DETERMINATION OF ACCEPTABLE RISKS	PS-2
2. PROTECTION FROM GEOLOGIC HAZARDS	PS-2
2.1 GEOLOGIC HAZARDS IN SONOMA COUNTY	PS-2
2.2 PLANNING ISSUES	PS-4
2.3 REDUCTION OF POTENTIAL DAMAGE FROM GEOLOGIC HAZARDS	PS-4
3. PROTECTION FROM FLOOD HAZARDS	PS-6
3.1 FLOOD HAZARDS IN SONOMA COUNTY	PS-6
3.2 PLANNING ISSUES	PS-7
3.3 REDUCTION OF POTENTIAL DAMAGE FROM FLOODING	PS-8
4. PROTECTION FROM FIRE HAZARDS	PS-11
4.1 WILDLAND FIRE HAZARDS IN SONOMA COUNTY	PS-11
4.2 PLANNING ISSUES	PS-12
4.3 REDUCTION OF POTENTIAL DAMAGE FROM WILDLAND FIRE HAZARDS ..	PS-13
5. PROTECTION FROM HAZARDOUS MATERIALS	PS-15
5.1 HAZARDOUS MATERIALS IN SONOMA COUNTY	PS-15
5.2 PLANNING ISSUES	PS-16
5.3 REDUCTION OF POTENTIAL DAMAGE FROM HAZARDOUS MATERIALS ..	PS-16
6. PUBLIC SAFETY IMPLEMENTATION PROGRAM	PS-18

LIST OF FIGURES

Figure PS-1a: Areas Subject to Safety Policies: Sonoma Coast / Gualala Basin	After Text
Figure PS-1b: Areas Subject to Safety Policies: Cloverdale / N.E. County	After Text
Figure PS-1c: Areas Subject to Safety Policies: Healdsburg and Environs	After Text
Figure PS-1d: Areas Subject to Safety Policies: Russian River Area	After Text
Figure PS-1e: Areas Subject to Safety Policies: Santa Rosa and Environs	After Text
Figure PS-1f: Areas Subject to Safety Policies: Sebastopol and Environs	After Text
Figure PS-1g: Areas Subject to Safety Policies: Rohnert Park - Cotati and Environs .	After Text
Figure PS-1h: Areas Subject to Safety Policies: Petaluma and Environs	After Text
Figure PS-1i: Areas Subject to Safety Policies: Sonoma Valley	After Text

PUBLIC SAFETY ELEMENT

1. INTRODUCTION

1.1 PURPOSE

The Public Safety Element is intended to protect the community from unreasonable risks from seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche and dam failure, slope instability leading to mudslides, landslides, subsidence and other known geologic hazards, flooding and fire. It includes maps of known hazards and assesses evacuation routes, water supply needs, road widths, clearances around structures and other items related to potential catastrophic events.

The Public Safety Element establishes policies to minimize potential property damage and human injury by reducing the exposure of persons and property to the above hazards and to hazardous materials. Acceptable levels of risk are based upon the nature of each hazard, the frequency of exposure, the number of persons exposed, and the potential damage.

The policies in this element are intended to avoid development that would adversely affect future residents and visitors as well as adjacent property and residents. It is also intended that an undue financial burden not be placed on the taxpayer by allowing development which may have unusually high costs for public services and disaster relief.

In addition, the Federal Emergency Management Agency (FEMA) now requires local agencies to adopt a Local Hazard Mitigation Plan (LHMP) in order to be eligible for pre disaster mitigation funds. The Sonoma County Hazard Mitigation Plan (SCHMP) addresses the four significant natural disasters that may affect Sonoma County; earthquake, landslides, flood, and wildfire hazards. The SCHMP identifies community policies, actions, and tools for implementation to reduce the public's exposure to these hazards, to minimize property damage and community disruption, and to reduce or avoid the costs of disaster relief. It has been adopted and is integrated into this Element to assure consistency.

1.2 RELATIONSHIP TO OTHER ELEMENTS

The natural hazards contained in this Element have been considered in the preparation of the Land Use Element. The Land Use Element limits the range of land uses allowed in hazardous areas in order to reduce the number of people and buildings exposed to risk. Public Safety Element policies are also coordinated with the policies of the Open Space and Resource Conservation, Housing, Public Facilities and Services, and Circulation and Transit Elements.

1.3 SCOPE AND ORGANIZATION

This element contains sections on geologic hazards, flood hazards, fire hazards, and hazardous materials. Each section describes the extent of the hazard, the risk of damage and means of protection. An implementation program is also included.

1.4 DETERMINATION OF ACCEPTABLE RISKS

The County is not able to guarantee that any particular development will not, at some time in the future, be adversely affected by the hazards identified in this element because such hazards, by their nature, defy precise prediction.

In those instances where there is a significant factual question about whether a particular development has mitigated risks from natural hazards to an "acceptable" level and the property owner wishes to proceed in the face of such factual question, the County may require the owner of the property to provide indemnification to the County, insurance or other security and a recorded notice which will protect the interests of the County and provide notice of the potential problem to future purchasers.

2. PROTECTION FROM GEOLOGIC HAZARDS

2.1 GEOLOGIC HAZARDS IN SONOMA COUNTY

Seismic Hazards

Fault Movement. Earthquakes are usually caused by sudden movement along geologic faults. Sonoma County faults are part of the San Andreas fault system which extends along the California coast. The known geologic faults in Sonoma County are shown on Figures PS-1a through PS-1i. All show evidence of movement during the past 2 million years and are considered to be potentially active.

Earthquakes. Since 1855, more than 140 earthquakes have been felt in the Santa Rosa area. The 1906 earthquake caused 61 deaths and major damage in Santa Rosa, Sebastopol, Healdsburg and other communities. The last major earthquake in Sonoma County was the 5.7 magnitude event on the Healdsburg fault in Santa Rosa in 1969. Analysis of seismic data indicates that 8.5 and 7.5 magnitude earthquakes can be expected for the San Andreas and the Healdsburg-Rodgers Creek faults respectively. Earthquakes of 8.0 or more on the San Andreas fault can be expected every 50 to 200 years.

Groundshaking. Groundshaking from earthquakes affects the most people and can cause the most damage of any geologic hazard. The amount of ground shaking depends on the magnitude of the earthquake, the distance from the epicenter and the type of earth materials in

between. Groundshaking hazard areas in Sonoma County are shown on Figures PS-1a through PS-1i and are based upon ABAG data. Groundshaking similar to that which took place in Santa Rosa during the 1969 earthquake can be expected somewhere in Sonoma County once every 20-30 years.

Ground Failure. Damage from groundshaking can be increased by liquefaction and landslides. Liquefaction changes water saturated soil to a semi-liquid state, removing support from foundations and causing buildings to sink. The most hazardous areas are valleys and tidal marshes with high water tables and sandy soils. Landslides can result from groundshaking and may occur in areas of gentle slopes due to liquefaction of subsurface materials.

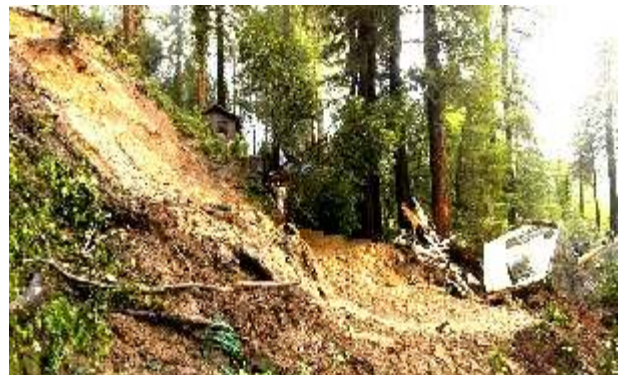
Ground Displacement Along Fault Traces. During the 1906 earthquake horizontal displacement along the San Andreas fault averaged 15 feet in Sonoma County. The Healdsburg, Rodgers Creek and Mayacama faults also show evidence of surface displacement during the past 11,000 years.

Tsunamis. Tsunamis are large ocean waves caused by undersea earthquakes or landslides. They travel up to 400 mph and can arrive at a coastline before local warnings can be given. The area covered by a tsunami is determined by water depth, underwater topography, and shape of the coastline. A tsunami expected once in 200 years would flood the coast and bay shoreline up to 20 feet above sea level.

Secondary Effects of Earthquakes. Earthquake damage to utilities and other public facilities can produce disastrous secondary effects. Much of the destruction from the 1906 earthquake was from fires that could not be put out due to broken water lines, damaged roads and lack of communications. These secondary effects can be reduced by various methods but larger facilities and population growth increase the potential damage.

Downstream flooding may result from dam failure. Warm Springs Dam is located on a medium sized fault but was designed to absorb the maximum expected displacement and groundshaking from faults in the region.

Landslides. The most common type of ground failure in Sonoma County is landslides, the downslope movements of soil and/or rock materials. Extensive land areas of the County are subject to this hazard and are shown on Figures PS-1a through PS-1i. Landslides can be triggered by heavy rainfall, earthquakes or human activities such as road cuts, grading, construction, removal of vegetation, and changes in drainage.



Expansive Soils. Buildings, utilities and roads can be damaged by clay rich soils which swell

each winter and shrink each summer depending upon the rainfall. This is a less obvious hazard than earthquakes or landslides, but the gradual cracking, settling and weakening of older buildings is significant in total. Soils with high clay content are found in many valley areas that are planned for development.

2.2 PLANNING ISSUES

Assessment of Hazards and Risks

State law requires a geologic report for projects along known active faults. "Special Studies" zones have been designated along four faults in Sonoma County where surface movement has taken place during the past 11,000 years.

Development Planning and Regulation

Reducing risks of damage and injury to acceptable levels requires special permit review procedures and construction standards. Construction must meet the standards of the Uniform Building Code for seismic resistance, site stability, grading and geologic studies. Dams, schools, hospitals and power plants are specially regulated by State and Federal agencies for protection against such hazards.

Land uses vary in their sensitivity to geologic hazards. Agriculture and timber management are considered appropriate in areas subject to geologic hazards because such uses require few occupied structures. Structures should not be placed on known landslides or faults and, when located close to these features, may need special design to withstand damage. Schools, utility structures, hospitals, and powerplants are especially sensitive to geologic hazards.

2.3 REDUCTION OF POTENTIAL DAMAGE FROM GEOLOGIC HAZARDS

- | | |
|-------------------|---|
| GOAL PS-1: | Prevent unnecessary exposure of people and property to risks of damage or injury from earthquakes, landslides and other geologic hazards. |
| Objective PS-1.1: | Continue to develop and utilize available data on geologic hazards and associated risks. |
| Objective PS-1.2: | Regulate new development to reduce the risks of damage and injury from known geologic hazards to acceptable levels. |
| Objective PS-1.3: | Utilize the Sonoma County Hazard Mitigation Plan to help reduce future damage from geologic hazards |

The following policies, in addition to those in the Land Use Element, shall be used to achieve these objectives:

Policy PS-1a: Continue to utilize all available data on geologic hazards and related risks from the appropriate agencies.*

Policy PS-1b: Continue to utilize studies of geologic hazards prepared during the development review process.*

Policy PS-1c: Consider amendments of this Element to incorporate new data which significantly change the hazard assessments contained herein.*

Policy PS-1d: Support and integrate research on geologic hazards, their probabilities and their effects within Sonoma County.*

Policy PS-1e: Continue to implement the "Geologic Hazard Area" combining district which establishes regulations for permissible types of uses and their intensities and appropriate development standards.*

Policy PS-1f: Require and review geologic reports prior to decisions on any project which would subject property or persons to significant risks from the geologic hazards shown on Figures PS-1a through PS-1i and related file maps and source documents. Geologic reports shall describe the hazards and include mitigation measures to reduce risks to acceptable levels. Where appropriate, require an engineer's or geologist's certification that risks have been mitigated to an acceptable level and, if indicated, obtain indemnification or insurance from the engineer, geologist, or developer to minimize County exposure to liability.*

Policy PS-1g: Prohibit structures intended for human occupancy (or defined as a "project" in the Alquist-Priolo Special Studies Zones Act and related Administrative Code provisions) within 50 feet of the surface trace of any fault.*

Policy PS-1h: Adopt, upon approval by the International Code Council (ICC) and the State of California, revisions to the Uniform Building Code which increase resistance of structures to groundshaking and other geologic hazards.*

Policy PS-1i: Require dynamic analysis of structural response to earthquake forces prior to County approval of building permits for structures whose irregularity or other factors prevent reasonable load determination and distribution by static analysis.*

Policy PS-1j: Encourage strong enforcement of State seismic safety requirements for design and construction of buildings and facilities subject to State and Federal standards, such as bridges, dams, powerplants, hospitals and schools.*

Policy PS-1k: Incorporate measures to mitigate identified geologic hazards for all County

roads, public facilities, and other County projects to an acceptable level.*

Policy PS-1l: Use the following criteria in siting and design of essential service buildings and facilities, particularly those of high public occupancy:

- (1) To the extent feasible, avoid siting such buildings and facilities in areas subject to a Modified Mercalli Index (MMI) Groundshaking Intensity Level of Very Violent, Violent, or Very Strong as shown on Figures PS-1a through PS-1i.
- (2) Where such buildings and facilities must be located in the above areas, design and construct them to the highest feasible safety standard.*

Policy PS-1m: Make readily available to property owners and the public all maps identifying geologic hazards in Sonoma County, particularly the MMI Groundshaking Intensity Level maps noted above.*

Policy PS-1n: Develop a Strategic Plan for damage assessment and recovery of essential service buildings and facilities, particularly those of high public occupancy, as part of the County's emergency response planning, focused in areas subject to an MMI Groundshaking Intensity level of Very Violent, Violent, or Very Strong.*

Policy PS-1o: Adopt an ordinance requiring strengthening and/or reinforcement of Unreinforced Masonry Buildings, except residential structures, considering the cost of the work and the value, frequency of use, and level of occupancy of the buildings.*

3. PROTECTION FROM FLOOD HAZARDS

3.1 FLOOD HAZARDS IN SONOMA COUNTY

Streams overflow banks when runoff from the watershed exceeds the capacity of the stream channel to carry it. Floods on small streams usually peak and recede quickly, while floods on the lower Russian River may not peak for two days or more after the start of a storm and may exceed floodstage for four days or more. Flood hazards are estimated by the area flooded by the maximum storm event expected over a 100 year period, a 10 year period or some other frequency. Figures PS-1a through PS-1i show the general extent of peak flooding expected during a 100 year flood for those streams which have been studied. Flooding can move or destroy buildings and



wash away soil, crops, and loose objects. Floating debris is a very dangerous hazard. Flood damage may weaken building materials and increase mildew, dust, bacteria and other disease vectors. Public facilities, roads and services may also be affected. A particular concern is the disruption of sewage treatment facilities and resulting water quality impacts.

3.2 PLANNING ISSUES

Assessment of Hazards and Risks

The Federal Emergency Management Agency (FEMA) and Federal Insurance Administration have assessed flood hazards for most major streams in the County. These assessments are periodically updated to reflect new data from flood studies and actual events. The FEMA maps show the areas with at least a one percent (1%) chance of being flooded in any year and are commonly used as the primary source of flooding information for planning and development review and floodplain management. The current boundaries of these areas are shown on Figures PS-1a through PS-1i.

Flood Prevention and Control

Construction of dams and other improvements to detain stormwater is one way to reduce flood hazards. Flood levels in the Russian River basin have been reduced by Coyote Dam and Warm Springs Dam constructed by the Army Corps of Engineers. Flooding in Santa Rosa Creek and its branches has been reduced by five small dams. Flooding in the Payran Area of Petaluma Creek has been reduced by the Corps' construction of channel improvements. However, dams and structural improvements are costly, take a long time to complete, increase sediment buildup, may have impacts on the stream channel environment, and may give a false sense of security to floodplain residents. Future flood control activities may include improvements to drainage channels and management of sediments to reduce deposition in stream beds, particularly in light of new water quality regulations.

Floodplain Management

Flooding may also be reduced by proper siting of development and watershed management, retention basins, and similar measures to decrease runoff. These methods reduce the needs for costly construction projects and disaster relief. Land uses that can sustain periodic flooding and that decrease flood hazards downstream are encouraged in floodplains. Unincorporated communities with some development in designated floodplains include Guerneville, Monte Rio, Penngrove, Geyserville, Glen Ellen, Cazadero, and Schellville.

Floodplain management is required by Federal and State law. Various incentives such as flood insurance, loans and state funding of control projects are offered if flood management practices are followed. Floodplain management can take many forms. It may include specified land uses and development standards in floodplains, flood hazard mapping and zoning, acquisition of flood hazard areas, public education and outreach, and increased stormwater retention in the

watershed.

In Sonoma County, implementation of floodplain management has reduced flood damage, primarily by limiting the kind and extent of new construction in FEMA identified flood hazard areas and by elevating existing structures above flood elevations. However, flood damage is still a major and persistent problem in the Russian River, the Petaluma River, and, to a lesser degree, Sonoma Creek. Sonoma County is one of the highest repetitive loss communities in the nation, indicating that a more proactive approach is needed.

In the Russian River basin, the development of a long term plan for reducing these repetitive losses would focus efforts on existing structures most vulnerable to damage. In the Petaluma watershed, the City of Petaluma has been studying various measures to manage flooding. These studies have revealed the sensitive nature of the Petaluma River system to changes in the timing of storm runoff. In response, the City has developed a watershed based model to account for the complex hydrology and to determine the best approach for flood management. Detention of stormwater runoff in the upper watershed is considered an important component of flood management in this system. The City has identified the need to preserve and enhance the natural flood detention capacity, particularly along the headwaters of the Petaluma River outside the City limits, as a key element of reducing flood hazards in the City.

3.3 REDUCTION OF POTENTIAL DAMAGE FROM FLOODING

GOAL PS-2: Reduce existing flood hazards and prevent unnecessary exposure of people and property to risks of damage or injury from flood hazards.

Objective PS-2.1: Maintain complete data on flood hazards.

Objective PS-2.2: Regulate new development to reduce the risks of damage and injury from known flooding hazards to acceptable levels.

Objective PS-2.3: Utilize the Sonoma County Hazard Mitigation Plan to help reduce future damage from flood hazards.

The following policies, in addition to those in the Open Space and Resource Conservation, Water Resources, and Land Use Elements, shall be used to achieve these objectives:

Policy PS-2a: Maintain available information on flooding and flood hazards in the appropriate County departments.*

Policy PS-2b: Coordinate flood hazard analysis and management activities with the U.S. Army

Corps of Engineers, Federal Emergency Management Agency (FEMA), and other responsible agencies. Using the flood data collection program, request changes in FEMA maps where appropriate to reflect new data or analyses.*

Policy PS-2c: Participate with the City of Petaluma in implementation of the regional components of the Petaluma River Watershed Master Drainage Plan (SCWA, June 2003), Petaluma River Floodplain Management Plan (City of Petaluma, October 2001), Petaluma River Access and Enhancement Plan (City of Petaluma, May 1996), and City of Petaluma General Plan 2025 (Water Resources Element).*

Policy PS-2d: Work with the County's Community Development Commission, Department of Emergency Services, responsible agencies, public, and other stakeholders to develop and implement a long term plan for reducing repetitive flood losses in the Russian River basin, to include:

- (1) Systematic collection of flood data and damage by geographic location,
- (2) Consideration of acquisition of properties in flood hazard areas,
- (3) An ongoing Flood Elevation Program,
- (4) A Sonoma County Flood Mitigation Plan, including a Repetitive Loss Plan, to allow County participation in FEMA's Flood Mitigation Assistance (FMA) Program and additional Hazard Mitigation Grant Program (HMGP) grants,
- (5) Possible participation in the NFIP Community Rating System,
- (6) Use of Redevelopment funds to supplement FEMA grant funds in reducing repetitive flood losses, and
- (7) Consideration of permit fee reductions for elevation of structures in flood hazard areas and outreach to inform property owners in flood hazard areas about various options for coverage under the National Flood Insurance Program, including Increased Cost of Compliance (ICC) coverage.*

Policy PS-2e: Expand the County's "zero net fill" requirements to address all areas of the unincorporated County that are located within the 100-year FEMA flood hazard zones.*

Policy PS-2f: Preserve floodplain storage capacity by avoiding fill in areas outside of the 100 year FEMA flood hazard zones that retain or could retain flood waters.*

Policy PS-2g: Base land use planning and development review on FEMA maps and data or parcel specific scaled interpretations of these maps and site specific elevation data.*

Policy PS-2h: Work cooperatively with each City to prepare a comprehensive analysis of the potential flood hazards and drainage impacts for the watersheds with major flood problems in the County (i.e., Russian River, Sonoma Creek, Petaluma River). Include the following in the analysis:

- (1) Identification of flood hazard areas,
- (2) Identification of historic drainage patterns and existing retention/detention characteristics serving each watershed,
- (3) Identification of impacts associated with placement of significant new impervious surfaces,
- (4) Identification of downstream impacts on existing development and land uses,
- (5) Identification of mitigation measures to reduce flood hazards,
- (6) Identification of significant water recharge areas,
- (7) Identification of sources of significant soil sedimentation and/or stream bank failures, and
- (8) Identification and adoption of regional mitigation measures to be applied to new development to address the proportionate fair share of flood hazard reduction.*

Policy PS-2i: Until such time as the analysis under Policy PS-2h is completed and the regional mitigation measures adopted, each discretionary project located in the above watersheds with major flood problems shall analyze drainage and flooding impacts and include feasible and appropriate mitigation measures to reduce flood hazards from the project. Thereafter, each project shall implement its proportionate fair share of the regional mitigation measures.*

Policy PS-2j: Work with the City of Petaluma to preserve critical floodplain detention areas, including but not limited to the confluence of Willow Brook and Lichau Creeks and Liberty, Marin, and Wiggins Creeks north of Petaluma.

Policy PS-2k: Use the 100 year flood event and corresponding elevations as the County measure of acceptable level of risk and protection in the consideration of any amendments of the Land Use Map.*

Policy PS-2l: On-site and off-site flood related hazards shall be reviewed for all projects located within areas subject to known flood hazards.*

Policy PS-2m: Regulate development, water diversion, vegetation removal, grading and fills to

minimize any increase in flooding and related damage to people and property.*

Policy PS-2n: Consider developing regulations that require the use of low impact development techniques to reduce stormwater runoff from future development.*

Policy PS-2o: Costs for drainage facilities to handle the surface runoff from new development shall be the responsibility of the new development.*

Policy PS-2p: Require that design and construction of drainage facilities be subject to the review and approval of the Permit and Resource Management Department.*

Policy PS-2q: Require that tentative and final subdivision maps and approved site plans show areas subject to flooding as shown on the FEMA maps.*

Policy PS-2r: Give priority to floodplain management over flood control structures for preventing damage from flooding except where the intensity of development requires a high level of protection and justifies the costs of structural measures. Where possible, maintain flood channel capacity.*

Policy PS-2s: Consider the potential risk of damage from flooding in the design and review of projects, including those which could facilitate floodplain development.*

Policy PS-2t: Avoid variances to building setbacks along streams and in 100-year flood plains without the review and approval of the Permit and Resource Management Department.*

Policy PS-2u: Request that the Sonoma County Water Agency prioritize and undertake flood hazard mitigation projects on a continuous basis on selected waterways subject to the policies of the Open Space and Resource Conservation Element.*

Policy PS-2v: Continue to enforce County code requirements on construction in flood hazard areas and other adopted regulations which implement the National Flood Insurance Program.*

Policy PS-2w: Encourage the timely completion and filing of inundation maps for all dams whose failure could cause loss of life or personal injury within Sonoma County. Where inundation maps indicate dam or levee failure could cause loss of life or property or personal injury, coordinate with the corresponding responsible party to investigate levee or dam stability and management and identify rehabilitative maintenance needs as appropriate.*

4. PROTECTION FROM FIRE HAZARDS

4.1 WILDLAND FIRE HAZARDS IN SONOMA COUNTY

The combination of highly flammable fuel, long dry summers and steep slopes creates a

significant natural hazard of large wildland fires in many areas of Sonoma County. Wildland fire results in death, injury, economic losses and a large public investment in fire fighting efforts. Woodlands and other natural vegetation are destroyed resulting in the loss of timber, wildlife habitat, scenic quality and recreation. Soil erosion, sedimentation of fisheries and reservoirs, and downstream flooding can also result.

Most damage results from a few large fires in the dry weather months. There were 21 wildland fires of 100 acres or more in the County between 1989 and 2000.

Fire hazard severity has been mapped by the California Department of Forestry (CDF). Areas with a high or very high risk are shown in Figures PS-1a through PS-1i and include over half of the County. The highest hazard is found in mountainous areas with dry summers, plenty of fuel, and steep slopes.



Residences have increased the number of fires in hazardous rural areas. 97% of the wildland fires over 50 acres since 1989 were caused by human activities or facilities. Residences in rural areas cause fire suppression agencies to devote limited resources to structural protection while the wildfire spreads.

The probability of large damaging fires in urban areas is affected by weather conditions and the spread of fires in surrounding wildland areas. The type of construction, preventive measures, and the extent of fire suppression services are the chief factors which determine how far these fires spread.

4.2 PLANNING ISSUES

Assessment of Hazards and Risks

Fire hazards shown on Figures PS-1a through PS-1i are only a general picture of the actual hazard because of the size of the areas and differences in vegetation and slope. The maps show the fire hazards only in unincorporated areas which are classified as "wildlands" and are therefore within the "State Responsibility Area" served by CDF.

Land Use Planning

In order to reduce the risk of fire damage in rural areas, the types and intensities of land uses should be limited. Wildland fire hazards may be reduced by mitigation measures including the removal of vegetation and installation of dependable water systems, but cannot be eliminated entirely. Rural development should be most restricted where natural fire hazards are high, fire

protection is limited, and road access prevents timely response by firefighting personnel and rapid evacuation by residents.

Development Standards

Fire hazard regulations are intended to minimize on-site property damage and personal injury, avoid damage to adjacent properties and reduce the cost of fire suppression services. Increasing "built-in" fire protection in those areas where new construction is allowed is the most cost effective way of achieving these objectives. All development must have adequate water available for fire suppression, whether from a hydrant and community system or from an on-site storage tank.

Where development is permitted near wildlands and natural vegetation, the fire hazard must be further mitigated by other measures. The locations of subdivision lots and building envelopes can maximize access by emergency vehicles and minimize construction in steep or wooded areas. Fire retardant roof materials are now required in high hazard areas. Preventing the spread of wildland fires to and from structures also requires removal of surrounding vegetation and clearing of fuel breaks.

Fire safety standards adopted by the County include the Uniform Fire Code, National Fire Code, Uniform Building Code and companion codes, and the Subdivision and Development Code. Differences in code requirements, staffing and training among local fire districts prompted the formation of the Sonoma County Department of Fire Services in 1985. Improvements in standards for road design, water supply and sprinkler systems could increase the effectiveness of local fire protection services. In recent years, fire services have reorganized and consolidated in order to minimize administrative costs and to promote more efficient and consistent service response.

CDF enforces requirements for fire fighting and prevention, works with landowners on controlled burns, and advises rural residents on fire prevention methods. Minimum fire safety standards for wildland areas are now being prepared.

Another important component of fire safety is an improved system of street addresses throughout the County. Fire response time, particularly in rural areas, is occasionally affected by the ability of the responder to locate the affected address. Improved visibility and standardization of street addresses can result in reduced emergency response time.

Public Education

Increased public awareness of fire hazards and fire safe practices is an effective way to avoid or reduce future fire damages and loss of life. Emergency service providers typically provide educational programs that focus on prevention. In addition to continuing to promote these ongoing programs, fire prevention information can be provided directly to the general public and to prospective permit applicants for incorporation into the building design. Such a program

can be further expanded to include fire hazard information by providing fire hazard warning signs along roadways in particularly vulnerable fire hazard areas.

4.3 REDUCTION OF POTENTIAL DAMAGE FROM WILDLAND FIRE HAZARDS

- GOAL PS-3: Prevent unnecessary exposure of people and property to risks of damage or injury from wildland and structural fires.
- Objective PS-3.1: Continue to utilize complete data on wildland and urban fire hazards.
- Objective PS-3.2: Regulate new development to reduce the risks of damage and injury from known fire hazards to acceptable levels.
- Objective PS-3.3: Utilize the Sonoma County Hazard Mitigation Plan to help reduce damages from wildland fire hazards.

The following policies, in addition to those in the Land Use Element, shall be used to achieve these objectives:

Policy PS-3a: Continue to utilize available information on wildland and structural fire hazards.*

Policy PS-3b: Consider the severity of natural fire hazards, potential damage from wildland and structural fires, adequacy of fire protection and mitigation measures consistent with this element in the review of projects.*

Policy PS-3c: Continue to adopt revisions to the Uniform Fire and Building Code and other standards which address fire safety as they are approved by inspection organizations and the State of California. Review, revise, and/or adopt existing or new local codes, ordinances, and Fire Safe Standards to reflect contemporary fire safe practices.*

Policy PS-3d: Refer projects and code revisions to the Department of Emergency Services and responsible fire protection agencies for their review and comment.*

Policy PS-3e: The Department of Emergency Services shall offer assistance to local agencies in adoption and enforcement of fire safety regulations and shall work with local agencies to develop proposed improvements to County codes and standards.*

Policy PS-3f: Encourage strong enforcement of State requirements for fire safety by the California Department of Forestry.*

Policy PS-3g: Encourage continued operation of CDF programs for fuel breaks, brush management, controlled burning, revegetation and fire roads.*

Policy PS-3h: Develop a program to improve and standardize the County's street addressing system in order to reduce emergency service response times. Where applicable, coordinate the program with the cities.*

Policy PS-3i: Encourage and promote fire safe practices and the distribution of fire safe educational materials to the general public, permit applicants, and local planning agencies.*

Policy PS-3j: Provide fire hazard information signs in "Areas of very high or high potential for large wildland fires" in a manner that is consistent with Area Plans and does not degrade Scenic Corridors and scenic views.*

Policy PS-3k: Work with the California Department of Forestry and Fire Protection to identify areas of high fire fuel loads and take advantage of opportunities to reduce those fuel loads, particularly in "Areas with very high or high potential for large wildland fires" and in High Fire Hazard Severity Zones.

Policy PS-3l: Require automatic fire sprinkler systems or other on-site fire detection and suppression systems in all new residential and commercial structures, with exceptions for detached utility buildings, garages, and agricultural exempt buildings.*

Policy PS-3m: Consider additional impact or mitigation fees, or a benefit assessment, to offset the impact of new development on fire services.

5. PROTECTION FROM HAZARDOUS MATERIALS

5.1 HAZARDOUS MATERIALS IN SONOMA COUNTY

Many man made substances can be hazardous to health. The increased use of such materials has increased potential hazards and actual damage. Public concerns have led to tighter controls on the production, transport, storage, sale and use of hazardous materials and, particularly, on the handling and disposal of concentrated residues and wastes produced by power plants and other industrial operations.

Hazardous materials are found at many locations in Sonoma County. The electrical generating plants in the Geysers geothermal area use and produce hazardous materials hauled on winding mountain roads. Spills and releases of such materials have occurred.

Petroleum fuels get into ground water and surface



water, particularly from underground tanks. Prevention of hazardous materials in the County's solid waste landfills and transfer stations and industrial operations is important because these materials could affect water quality.

Pesticides are another hazardous material commonly used in Sonoma County, by agricultural operations as well as residential and commercial land uses. While State law preempts local regulation of pesticides, the County does have the authority to establish usage restrictions applicable to its own governmental operations. By doing so, the County can set an example that will encourage others to reduce reliance upon these materials.

5.2 PLANNING ISSUES

The management of hazardous materials is included in this element because it has become a major public safety issue requiring significant resources and attention by local agencies.

While different agencies have different responsibilities in the regulation of hazardous materials, the Department of Emergency Services has been designated as the lead agency for preparation of a comprehensive hazardous materials management plan, including the County Hazardous Waste Management Plan.

5.3 REDUCTION OF POTENTIAL DAMAGE FROM HAZARDOUS MATERIALS

GOAL PS-4: Prevent unnecessary exposure of people and property to risks of damage or injury from hazardous materials.

Objective PS-4.1: Maintain complete documentation and assessments of data on hazardous materials.

Objective PS-4.2: Regulate the handling, storage, use, and disposal of hazardous materials in order to reduce the risks of damage and injury from hazardous materials

The following policies shall be used to achieve these objectives:

Policy PS-4a: While maintaining the autonomy granted to it pursuant to State zoning laws, implement Federal, State, and County requirements for the storage, handling, disposal, and use of hazardous materials, including requirements for management plans, security precautions, and contingency plans.*

Policy PS-4b: Prepare and maintain an inventory of sites with storage or use of hazardous materials in threshold planning quantities as determined by Federal and State laws.*

Policy PS-4c: Require a use permit for any commercial or industrial use involving hazardous materials in threshold planning quantities as determined by Federal and State laws. Hazardous materials management plans shall be required as a condition of approval for such permits.*

Policy PS-4d: Work with applicable regulatory agencies to regulate the transportation of hazardous materials consistent with adopted County policies.*

Policy PS-4e: Continue to design and operate County owned solid waste disposal facilities to prevent disposal of and contamination by hazardous materials.*

Policy PS-4f: Continue as needed the hazardous materials business advisory group, and consider adding an agricultural representative.*

Policy PS-4g: Maintain the Sonoma County Operational Area Hazardous Materials Incident Response Plan, which provides for effective responses to releases of hazardous materials, the safe disposal of hazardous wastes, and a public information program.*

Policy PS-4h: Avoid siting of hazardous waste repositories, incinerators, facilities that use a substantial quantity of hazardous materials, or other similar facilities intended primarily for hazardous waste disposal in any area subject to a very strong ground shaking hazard identified on Figures PS-1a through PS-1i, or within one quarter mile of schools.*

Policy PS-4i: Avoid siting of hazardous waste repositories, incinerators, or similar facilities intended primarily for hazardous waste disposal in any area designated for urban residential or rural residential use or on agricultural lands or at County approved solid waste disposal facilities.*

Policy PS-4j: Site hazardous waste facilities which have the primary purpose of reuse, recycling, or source reduction of hazardous wastes in areas designated for industrial use in close proximity to users of hazardous materials and/or generators of hazardous wastes.*

Policy PS-4k: Continue to educate the public about and promote the Sonoma County Waste Management Authority's Household Hazardous Waste Program. Encourage free drop-off and reuse of computers and similar equipment containing hazardous materials.*

Policy PS-4l: Continue to educate the public about green business opportunities and expand and promote the County Department of Emergency Services' Sonoma Green Business Program.*

Policy PS-4m: Continue to educate the public about, encourage, and promote the reduction in use of hazardous materials and the use of safe alternatives to hazardous materials in County operations and private businesses.*

Policy PS-4n: Encourage the private sector to reduce the use of potentially hazardous

pesticides and to use alternatives such as best management practices.*

Policy PS-4o: Encourage reduction in the use of potentially hazardous pesticides and increased use of alternatives, such as best management practices, in County operations, including but not limited to maintenance of roads, parks, and facility grounds. Emphasize the use of alternatives to potentially hazardous pesticides in areas likely to drain to waterways. Coordinate with the cities in this effort.*

6. PUBLIC SAFETY IMPLEMENTATION PROGRAM

Public Safety Program 1: Safety Hazards Information System

Program Description. Log and maintain records of all mapping and reports regarding geologic and flood hazards information prepared for project applications and by other sources. Use the information in assessing constraints (Policy Reference: PS-1a, 1b, 1c, 2a, 2b).

Public Safety Program 2: Drainage, Erosion, and Fire Safety Standards for Subdivisions *

Program Description. Prepare amendments to Chapter 25 of the Sonoma County Code to clarify standards for drainage, erosion control and fire safety (Policy Reference: PS-2n, 2v, 3c).

Public Safety Program 3: Hazard Materials Incident Response Plan

Program Description. Maintain the Sonoma County Operational Area Hazardous Materials Incident Response Plan addressing prevention of and response to releases of hazardous materials and the proper disposal of hazardous wastes (Policy Reference: PS-4g).

Public Safety Program 4: Fire Sprinkler Ordinance

Program Description. Prepare and adopt an ordinance requiring automatic sprinkler or other on-site fire detection and suppression systems in new residential and commercial structures (Policy Reference: PS-3l).

Public Safety Program 5: Public Facility Recovery Plan

Program Description. Develop a strategic plan for recovery of essential public facilities following disasters, particularly earthquakes (Policy Reference: PS-1n).

Public Safety Program 6: Unreinforced Masonry Buildings

Program Description. Prepare and adopt an ordinance requiring strengthening and/or reinforcement of unreinforced masonry buildings, except residential structures, that would

consider the cost of the work and the value, frequency of use, and level of occupancy of the buildings (Policy Reference: PS-1o).

Public Safety Program 7: Reduction of Russian River Flood Damage

Program Description. Develop a comprehensive plan addressing flood losses in the Russian River (Policy Reference: PS-2d).

Public Safety Program 8: Zero Net Fill Ordinance

Program Description. Prepare and adopt an ordinance addressing zero net fill requirements in all areas of the unincorporated County subject to the 100 year FEMA flood hazard zones (Policy Reference: PS-2e).

Public Safety Program 9: Reduction of Petaluma River Flood Damage

Program Description. Cooperatively with the City of Petaluma, initiate a program to identify existing risks and implement regional flood reduction projects within the Petaluma Subbasin (Policy Reference: PS-2h).

Public Safety Program 10: Street Addressing Improvement

Program Description. Develop a program to improve countywide street addressing in order to reduce emergency response times (Policy Reference: PS-3h).