



Annex R Squaw Valley Public Services District

R.1 Introduction

This Annex details the hazard mitigation planning elements specific to the Squaw Valley Public Services District (Squaw Valley PSD), a participating jurisdiction to the Placer County Local Hazard Mitigation Plan (LHMP) Update. This Annex is not intended to be a standalone document, but appends to and supplements the information contained in the base plan document. As such, all sections of the base plan, including the planning process and other procedural requirements apply to and were met by the District. This Annex provides additional information specific to the Squaw Valley PSD, with a focus on providing additional details on the risk assessment and mitigation strategy for this special district.

R.2 Planning Process

As described above, the District followed the planning process detailed in Section 3 of the base plan. In addition to providing representation on the Placer County Hazard Mitigation Planning Committee (HMPC), the District formulated their own internal planning team to support the broader planning process requirements. Internal planning participants, their positions, and how they participated in the planning process are shown in Table R-1. Additional details on plan participation and City representatives are included in Appendix A.

Table R-1 District Planning Team

Name	Position/Title	How Participated
Jessie McGraw	Operations Manager	Attended meetings. Provided hazard identification table. Provided mitigation action update. Provided new mitigation actions. Provided new risk and vulnerability data.
Brandon Burks	Operations Specialist III	Attended meetings in a training capacity and provided input

Coordination with other community planning efforts is paramount to the successful implementation of this plan. This Section provides information on how the District integrated the previously-approved 2010 Plan into existing planning mechanisms and programs. Specifically, the District incorporated into or implemented the 2010 LHMP through other plans and programs shown in Table R-2.

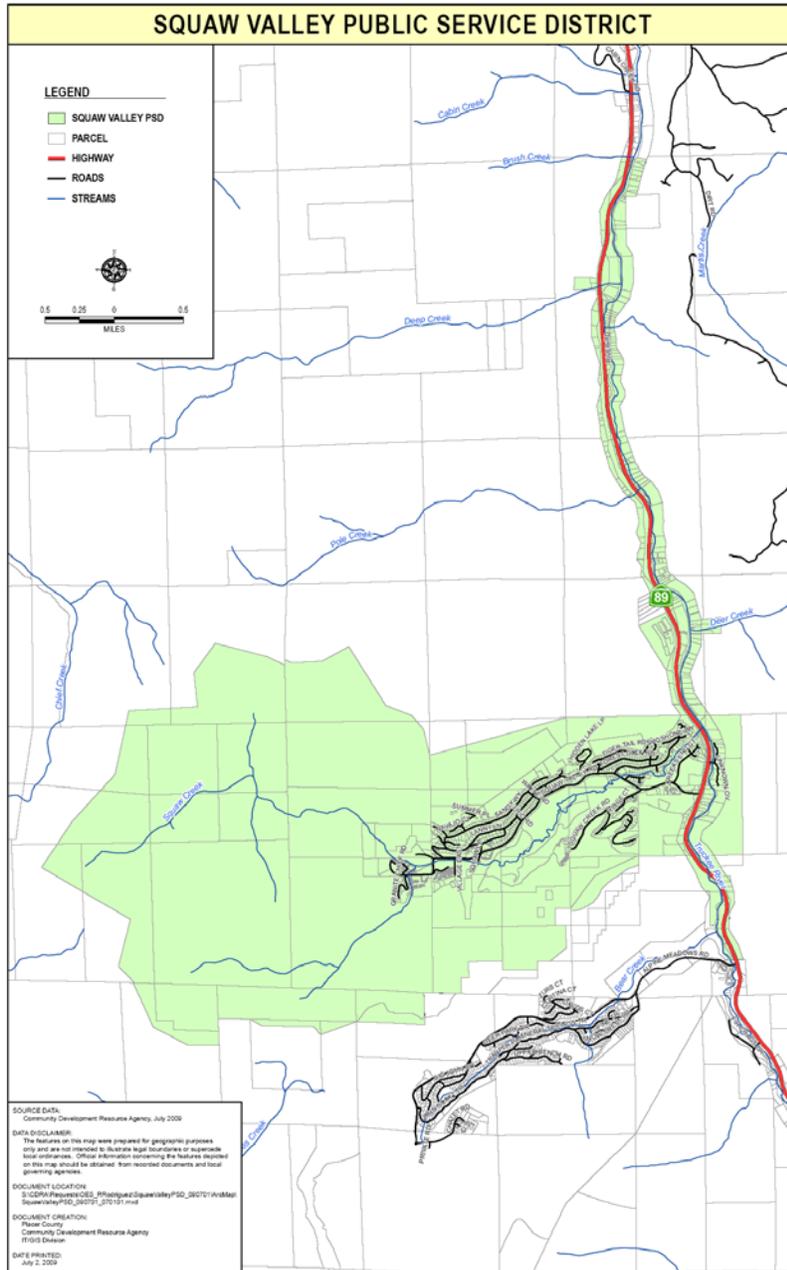
Table R-2 2010 LHMP Incorporation

Jurisdiction	Planning Mechanism 2010 LHMP Was Incorporated/Implemented In. Details?
PCWA	Reference to the LHMP is included in the District’s Emergency Response Plan. Projects identified in the LHMP will be included in the District’s Water and Sewer System Master Plans to be completed in 2016

R.3 District Profile

The District service area is illustrated in Figure R-1.

Figure R-1 Squaw Valley PSD Service Area



Source: Squaw Valley PSD

R.3.1. District Information and Background

The Squaw Valley Public Services District (SVPSD) serves the community of Squaw Valley in providing water, maintaining sewer Lines, contracting garbage service, and providing fire protection services to the

community. The SVPSD encompasses approximately 5,350 acres within the Olympic Valley. Elevations within the District boundaries range from 6,100 to 9,000 feet above mean sea level.

The SVPSD serves a population of approximately 924 year-round residents, with a maximum overnight population of approximately 6,573. Both resident and visiting populations are housed in approximately 663 residential unit, 1,180 condominiums, and approximately 20 commercial entities consisting of private residences, ski resorts, hotels and supporting businesses.

The Olympic Valley is characterized by mild summers and cool, wet winters, with an average high temperature in July of 82 and 42 in January. Annual precipitation in the watershed varies from an average of 65 inches in the west to approximately 40 inches per year in the east. The majority of precipitation occurs as snowfall during the winter months. A relatively small amount of precipitation occurs as rain during the spring and summer months.

R.4 Hazard Identification and Summary

The District's planning team identified the hazards that affect the District and summarized their frequency of occurrence, spatial extent, potential magnitude, and significance specific to the District (see Table R-3).

Table R-3 Squaw Valley PSD Hazard Identification Table

Hazard	Geographic Extent	Probability of Future Occurrences	Magnitude/Severity	Significance
Agricultural Hazards	Limited	Unlikely	Negligible	Low
Avalanche	Significant	Likely	Limited	Medium
Dam Failure	Limited	Unlikely	Limited	Medium
Drought and Water Shortage	Significant	Occasional	Negligible	Low
Earthquake	Limited	Occasional	Critical	Medium
Flood: 100/500 year	Limited	Occasional	Limited	High
Flood: Localized Stormwater Flooding	Limited	Likely	Limited	Medium
Landslides and Debris Flows	Limited	Occasional	Limited	Medium
Levee Failure	Limited	Unlikely	Negligible	Low
Seiche (Lake Tsunami)	Limited	Unlikely	Negligible	Low
Severe Weather: Extreme Heat	Limited	Occasional	Negligible	Low
Severe Weather: Freeze and Snow	Significant	Highly Likely	Limited	Medium
Severe Weather: Fog and Freezing Fog	Significant	Highly Likely	Limited	Medium
Severe Weather: Heavy Rains and Storms (Thunderstorms/Hail, Lightning/Wind/Tornadoes)	Significant	Highly Likely	Limited	Medium
Soil Bank Erosion	Limited	Occasional	Limited	Low
Subsidence	Limited	Occasional	Limited	Low
Wildfire	Extensive	Highly Likely	Critical	High
Hazardous Materials Transport	Limited	Likely	Limited	Low
Geographic Extent Limited: Less than 10% of planning area Significant: 10-50% of planning area Extensive: 50-100% of planning area		Magnitude/Severity Catastrophic—More than 50 percent of property severely damaged; shutdown of facilities for more than 30 days; and/or multiple deaths Critical—25-50 percent of property severely damaged; shutdown of facilities for at least two weeks; and/or injuries and/or illnesses result in permanent disability Limited—10-25 percent of property severely damaged; shutdown of facilities for more than a week; and/or injuries/illnesses treatable do not result in permanent disability Negligible—Less than 10 percent of property severely damaged, shutdown of facilities and services for less than 24 hours; and/or injuries/illnesses treatable with first aid		
Probability of Future Occurrences Highly Likely: Near 100% chance of occurrence in next year, or happens every year. Likely: Between 10 and 100% chance of occurrence in next year, or has a recurrence interval of 10 years or less. Occasional: Between 1 and 10% chance of occurrence in the next year, or has a recurrence interval of 11 to 100 years. Unlikely: Less than 1% chance of occurrence in next 100 years, or has a recurrence interval of greater than every 100 years.		Significance Low: minimal potential impact Medium: moderate potential impact High: widespread potential impact		

R.5 Vulnerability Assessment

The intent of this section is to assess the District’s vulnerability separate from that of the planning area as a whole, which has already been assessed in Section 4.3 Vulnerability Assessment in the main plan. This

vulnerability assessment analyzes the population, property, and other assets at risk to hazards ranked of medium or high significance that may vary from other parts of the planning area. For more information about how hazards affect the County as a whole, see Chapter 4 Risk Assessment in the main plan.

R.5.1. Assets at Risk

This section considers the District’s assets at risk, specifically critical facilities and infrastructure, natural resources, and growth and development trends. Table R-4 lists particular critical facilities and other community assets identified by the District’s planning team as important to protect in the event of a disaster.

Table R-4 Squaw Valley PSD’s Critical Facilities, Infrastructure, and Other District Assets

Name of Asset	Facility Type	Replacement Value	Hazard Info
Squaw Ridge Booster and Vault	Essential	\$25,000	Earthquake, wildfire
Fire Station & Administrative Center	Essential	\$5 million	Earthquake, Landslide, Wildfire
Headquarters & Utility/Fire Station	Essential	\$1.6 million	Flood, Earthquake, Landslide
Pumphouse and Generator	Essential	\$1.6 million	Earthquake, flood
Utility Garage and Generator	Essential	\$575,000	Earthquake, landslide, Wildfire
SCADA System	Essential	\$210,000	Extreme Weather
Water Tank #1	Lifeline	\$660,000	Earthquake, Landslide
Water Tank #2	Lifeline	\$500,000	Earthquake, Landslide
Water Tank #3	Lifeline	\$175,000	Earthquake, Landslide
Convault Tank	Lifeline	\$25,000	Wildfire
Main Well #2	Lifeline	\$1.5 million	Earthquake, Flood
Well #5	Lifeline	\$100,000	Earthquake, Flood
Well #3	Lifeline	\$30,000	Earthquake, Flood
Well #1	Lifeline	\$37,000	Earthquake, Flood
Squaw Valley USA Resort	High Potential Loss	\$200 million	Wildfire, Avalanche, Earthquake, Landslide
Resort at Squaw Creek	High Potential Loss	\$80 million	Wildfire, Landslide, Earthquake
State Route 89	Transportation	Unknown	Avalanche, Landslide, Flood
Midway Bridge	Transportation	Unknown	Earthquake, Flood
SVPSD Water Distribution System	Lifeline	\$25 million	Earthquake, Flood, Landslide
SVPSD Sewer Collection System	Lifeline	\$25 million	Earthquake, Flood, Landslide

Name of Asset	Facility Type	Replacement Value	Hazard Info
Squaw Valley Mutual Water Company	Lifeline	\$10 million	Earthquake, Flood, Landslide

Source: Squaw Valley PSD

Natural Resources

Several state or federally listed species may be found within the District boundary. These are identified, along with other species of concern found in the District, in Table R-5.

Table R-5 Species of Concern in Squaw Valley Public Services District

Common Name	Scientific Name	CNPS3 Listing Federal Status	State Status
Carson Range rock cress	<i>Arabis rigidissima var. demote</i>	1B	
Oregon fireweed	<i>Epilobium oregonum</i>	1B	
Starved daisy	<i>Erigeron miser</i>	1B	
Nevada daisy	<i>Erigeron nevadincola</i>	2	
Donner Pass buckwheat	<i>Eriogonum umbellatum var. torreyanum</i>	1B	
American manna grass	<i>Glyceria grandis</i>	2	
Plumas ivesia	<i>Ivesia sericoleuca</i>	1B	
Long-petaled lewisia	<i>Lewisia longipetala</i>	1B	
Slender-leaved pondweed	<i>Potamogeton filiformis</i>	2	
Tahoe yellow cress	<i>Rorippa subumbellata</i>	1B	
Marsh skullcap	<i>Scutellaria galericulata</i>	2	
Munroe's desert mallow	<i>Sphaeralcea munroana</i>	2	
Fish, Amphibians, Birds			
Lahontan cutthroat trout	<i>Oncorhynchus clarkia benshawi</i>	FT	
Mountain yellow-legged frog	<i>Rana muscosa</i>	FE	CSC
Harlequin duck	<i>Histrionicus histrionicus</i>	MNBMC	CSC
Cooper's hawk	<i>Accipiter cooperi</i>	MNBMC	CSC
Northern goshawk	<i>Accipiter gentiles</i>		CSC
Bald eagle	<i>Haliaeetus leucocephalus</i>	FT; FPD; MNBMC	SE; CFP
Osprey	<i>Pandion haliaetus</i>		CSC
Yellow warbler	<i>Dendroica petechia brewsteri</i>	MNBMC	CSC
Willow flycatcher	<i>Empidonax trailii</i>	MNBMC	SE
Sierra Nevada mountain beaver	<i>Aplodontia rufa californica</i>		CSC
California wolverine	<i>Gulo gulo</i>		ST
Sierra Nevada snowshoe hare	<i>Lepus americanus taboensis</i>		CSC
Western white-tailed jackrabbit	<i>Lepus townsendi</i>		CSC

Common Name	Scientific Name	CNPS3 Listing Federal Status	State Status
American pine marten	<i>Martes Americana</i>		
Sierra marten	<i>Martes Americana sierrae</i>		
Pacific fisher	<i>Martes pennanti (pacifica) DPS</i>	FC	CSC
Long-legged myotis	<i>Myotis Volans</i>		
Sierra Nevada red fox	<i>Vulpes vulpes necator</i>		ST

Sensitive habitats in the District include the following:

- Lodgepole pine forest
- Red fir forest
- Montane chaparral
- Montane riparian
- Wet meadows
- Ponds
- Riverine/riparian

Growth and Development Trends

Significant development is contemplated with expansion of the village at Squaw Valley; information may be obtained at Placer County under the Village at Squaw Valley Specific Plan. Additional projects on the near horizon include:

- PlumpJack Squaw Valley Inn: a plan to raze and rebuild an existing 61 unit hotel into a 60 unit hotel plus 34 condos. The project will include an underground parking garage that may be impacted by flooding on Squaw Peak Road.
- The Resort at Squaw Creek Phase II: A fully entitled project that would add a second tower and 18 Lakeside condos totaling 221 units, a parking garage and employee housing.

Projects in Planning include:

- The Palisades: Approximately 65 single family planned unit development currently in the pre-development stage having filed a Notice of Intent
- Carville Property Hotel and Residential Project- a boutique hotel and several homes

None of these projects pose a significant impact to existing hazards

Unique to this part of Placer County is not the growth of full time residents, but the influx of visitors and tourists to the area, especially during the peak summer and winter seasons. While this area is home to only about 924 full time residents, during high season, some 6,500 people, on any given day, may be enjoying the recreational and tourist opportunities. This spike in population creates a unique vulnerability to the area, especially in the event highways become impassable due to flooding, landslides, avalanches or gridlocks due to high volume and extreme weather conditions. Even during the off-season, the lack of multiple transportation routes, if closed, can leave the resident population cut off from necessary and potentially life-saving services.

It is important to note that given the high cost of housing due to the resort nature of the area, much of the work force resides outside of Squaw Valley. With limited access roads to the area, the work force may be isolated when most needed for disaster response.

Development since 2010 Plan

Development of the District area is similar to Placer County as a whole. Placer County development since the last Plan is shown in Section 4.3.1 of the base plan.

Special Populations

Squaw Valley has few residents that fit the category of special populations. The Village project identified below will seek an employee housing project; presently low income workers live mostly outside Squaw Valley.

R.5.2. Estimating Potential Losses

This section provides the vulnerability assessment, including any quantifiable loss estimates, for those hazards identified above in Table R-3 as high or medium significance hazards. Impacts of past events and vulnerability of the District to specific hazards are further discussed below (see Section 4.1 Hazard Identification for more detailed information about these hazards and their impacts on the Placer County planning area). Methodologies for calculating loss estimates are the same as those described in Section 4.3 of the base plan. In general, the most vulnerable structures are those located within the floodplain, in the wildland urban interface, other priority hazard areas, unreinforced masonry buildings, and buildings built prior to the introduction of modern building codes.

An estimate of the vulnerability of the District to each identified hazard, in addition to the estimate of risk of future occurrence, is provided in each of the hazard-specific sections that follow. Vulnerability is measured in general, qualitative terms and is a summary of the potential impact based on past occurrences, spatial extent, and damage and casualty potential. It is categorized into the following classifications:

- **Extremely Low**—The occurrence and potential cost of damage to life and property is very minimal to nonexistent.
- **Low**—Minimal potential impact. The occurrence and potential cost of damage to life and property is minimal.
- **Medium**—Moderate potential impact. This ranking carries a moderate threat level to the general population and/or built environment. Here the potential damage is more isolated and less costly than a more widespread disaster.
- **High**—Widespread potential impact. This ranking carries a high threat to the general population and/or built environment. The potential for damage is widespread. Hazards in this category may have occurred in the past.
- **Extremely High**—Very widespread with catastrophic impact.

Avalanche

Likelihood of Future Occurrence—Likely

Vulnerability—Medium

Ski resorts, due to their steep slopes, abundant snow, snowpack, and the presence of people moving throughout the area, are prone to avalanches. The 2004 Placer EOP identifies the Squaw Valley area as vulnerable to avalanche activity. In 2001 during a winter storm generating 20 inches of fresh snow, a Class II avalanche occurred resulting in two fatalities. Other avalanches occur throughout each winter ski season, with most of these confined to out-of-bounds areas where damages are limited.

Residential areas subject to avalanche are located along Sandy Way at the base of steep slopes, most significantly in the area known as “the slide” above the 1200 block. The Shirley Lake Condominiums on Squaw Peak Way have been hit by small avalanches on several occasions. The Squaw Valley Fire Department may evacuate these areas during periods of known and extreme avalanche danger.

Dam Failure

Likelihood of Future Occurrence–Unlikely

Vulnerability–Medium

There are 7 surface water impoundments in Squaw Valley of about an acre or less in surface area contained behind small earthen or concrete dams. They are Hidden Lake, Gold Coast Snow Making Pond, Olympic Lady Pond, Shirley Lake, an old water supply reservoir on the South fork of Squaw Creek above the base area of the ski resort, and 2 ponds at the Resort at Squaw Creek golf course. These impoundments are known to overflow during extreme flood events such as the 1997 flood and would contribute a moderate surge of additional water if failure were to occur.

Earthquake

Likelihood of Future Occurrence–Occasional

Vulnerability–Medium

As indicated on the Earthquake Shaking Map in Section 4.2.10 of the main plan, the shaking potential is greatest in the eastern portion of the County, including the SVPSD service area. The 2008 Draft Supplemental Environmental Impact Report for Water and Sewer Service Agreement for the resort at Squaw Creek: Phase II, indicates that six north-northwest, trending north-northeast dipping faults are located in the Olympic Valley watershed, four of which cross the valley floor. Of the four faults, only one has documented evidence of recent movement. However, because of the limited development in the area, and lack of un-reinforced masonry buildings, compared to a more urban setting, the SVPSD service area would likely be of moderate vulnerability to damage from severe ground shaking.

Flood: 100/500 year

Likelihood of Future Occurrence–Occasional

Vulnerability–High

The Olympic Valley watershed is a small subalpine and alpine watershed covering an area of approximately 8.2 square miles. It is characterized by steep, mountainous slopes draining to and through the limited valley area. The watershed includes the drainages of the North Fork, the South Fork, and the main stem of Squaw Creek. Watershed elevations range from approximately 6,200 feet on the valley floor up to 9,000 feet on

the highest peaks adjacent to the valley. Squaw Creek and its tributaries are the only significant surface water bodies in Olympic Valley. The two main forks converge in an area known as the confluence at the western end of the valley. The confluence is a wide gravel-filled portion of Squaw Creek that has been altered due to gravel mining. The primary source of Squaw Creek’s annual flow is snowmelt. The snowmelt peaks in the spring and often continues through July and August, when it starts to dry up.

Areas impacted by previous flooding include the North and South forks of Squaw Creek, through the Squaw Valley Ski Area and commercial property, including PlumpJack (Squaw Valley Inn) and Squaw Valley Lodge, and running the entire length of Olympic Valley to its merger with the Truckee River.

Flooding and soil erosion due to heavy rains and snow runoff have been a historical problem. Abundant snowfall in the mountains combined with rain and steep terrain can mean rapid runoff and flooding. Water flow can be high in peak runoff periods with historical downstream flooding. The primary impacts from flooding within the District include damage to roads, utilities, bridges; and flooding of homes, businesses and critical facilities. Historically, mud slides and washouts associated with flooding caused the most damages within the District. The south fork of the Squaw Creek is generally impacted the most. Road closures create difficulties in providing emergency services to areas cut off by flooding and limit the area’s ability to evacuate.

A recent flood event impacting the District is flooding occurring in January of 2006. Heavy rains (estimated at over 10 inches in three days) were the primary cause of this flood event. This flooding of Squaw Creek (estimated as a 50-year event) caused erosion, inflow to sewer system, power failures, road closures (from mudslides), and impacts to local businesses cut off by the flooding. Unlike the 1997 flood, there was no damage to the District’s facilities or infrastructure.

Flood: Localized Stormwater Flooding

Likelihood of Future Occurrence–Likely

Vulnerability–Medium

There are 3 areas that are historically problematic in Squaw Valley. The South fork of Squaw Creek has overflowed its banks effecting 6 homes on lower Granite Chief Road and the Squaw Valley Lodge. There are 2 sections of Squaw Valley Road that overflow periodically effecting traffic; near the post office East of Christy Hill Road and near the intersection of Squaw Valley Road and Wayne Road. These are shown on Table R-6.

Table R-6 Squaw Valley Public Services District – Localized Flooding Areas

Road Name	Flooding	Pavement Deterioration	Washouts	High Water/ Creek Crossing	Landslides/ Mudslides	Debris	Downed Trees
Squaw Valley Road 2 locations	X			Tributary of Squaw Creek		X	

Road Name	Flooding	Pavement Deterioration	Washouts	High Water/ Creek Crossing	Landslides/ Mudslides	Debris	Downed Trees
Squaw Peak Road	X			South Fork Squaw Creek			

Source: Squaw Valley PSD

Landslides and Debris Flows

Likelihood of Future Occurrence–Occasional

Vulnerability–Medium

Given the geology, climate, and terrain of the District, landslides can be a significant concern. Notable landslides of record include the landslides occurring along the Truckee River, Squaw Creek and Bear Creek rivers associated with the 1997 flood event. These include the Wayne Road, Sandy Way, and Navajo Court landslides discussed in detail in Section 4.2.15 of the main plan. See Figure 4.23 for a map depicting these landslide areas.

The Sandy Way mudslide area has had several significant releases – the first in about 1983 and the second in 1997. Following the 1983 event, the portion of the drainage just above Sandy Way was widened and deepened somewhat and a larger culvert installed. Debris was removed from the areas downhill of Sandy Way, but the stream channel was not altered significantly nor were improvements constructed. Following the 1997 event (which accompanied significant and widespread flooding and mudslides/debris flows in other areas) the Sandy Way improvements were cleaned out, with little change and without installation of further improvements. The area remains questionable today – it will very likely release again, given similar rainfall intensity and duration.

Severe Weather: Freeze and Snow

Likelihood of Future Occurrence–Highly Likely

Vulnerability–Medium

Extreme winter weather events are a major concern to the District. Extreme weather events, often accompanied by extreme temperatures happen on an annual basis within the SVPSD boundaries. With altitudes ranging from 6,000 to 9,000 feet above msl, extreme cold/freezing temperatures can create significant problems. Of particular concern to the District is the vulnerability of the area to broken utilities and power failures during extreme weather events. Snow and winter weather conditions regularly result in utility outages and the closure of major transportation routes. According to the NTFPD planning team, major winter storms have routinely cut off transportation routes in the District for hours (as recent as March 2007) to over a week (back in the 1950s), stranding thousands and causing a major impact to services and supplies.

Severe Weather: Fog and Freezing Fog

Likelihood of Future Occurrence– Highly Likely

Vulnerability–Medium

Fog and freezing fog occur locally and in outlying areas on an annual basis. Impacts to Squaw Valley include traffic accidents on interstate 80 and highway 89 that disrupt emergency access to Squaw Valley.

Severe Weather: Heavy Rains and Storms (Thunderstorms/Hail, Lightning/Wind/Tornadoes)

Likelihood of Future Occurrence– Highly Likely

Vulnerability–Medium

Heavy rains and severe thunder storms have occurred frequently in Squaw Valley and are likely to occur annually. These events are known to cause localized flooding, erosion, and damage to utility infrastructure. High winds are associated with frequent power loss and although the District maintains 3 emergency generators, personnel responding are often confronted with travel delay due to road closures.

Wildfire

Likelihood of Future Occurrence– Highly Likely

Vulnerability–High

The community of Olympic Valley (commonly known as Squaw Valley) is served by Squaw Valley Public Services District and is listed on the National Fire Plan’s “Communities at Risk” list as set forth in Section 4.3.2 of the main plan.

Over one hundred years of aggressive fire suppression under the national fire suppression policy has rendered wildland severely overgrown. All of the private land in the District’s service area is in the wildland urban interface with residential development throughout.

As more people live in the area on a full-time basis and recreational uses and accompanying impacts increase, there will be more human-caused wildfire starts each year. Of greater concern is the increased number and value of homes developed within the WUI areas of the District. This adds greatly to the complexity and cost of fighting these fires – the ‘values at risk’ continue to escalate.

Squaw Valley has only one means of ingress and egress as a result of the configuration of the Valley, this will never change. Furthermore, a single road connects Squaw Valley to adjoining communities - California State Route 89 - this can never change because of the configuration of the Truckee River canyon. Evacuating the community or getting a large number of fire suppression resources to the Valley over a single road clogged with panicked residents trying to flee a wildland fire of significant size would be a daunting challenge indeed. Because of the steep terrain and dense forest immediately adjacent to the roadway, it is likely that these routes would have to be closed during a major event, stranding many people - including many visitors - away from their families and homes. To date there has been no loss of life attributed to the limited evacuation routes, but it is likely only a matter of time before people are cut off and

trapped by a major fire event. The Valley has been isolated for days at a time by simultaneous avalanche and mudslide events on State Route 89.

Forest overgrowth due to the efficiency of modern firefighting techniques and to society’s current election to limit forest thinning and harvesting is a serious problem. If wildfire does not impact the forest first, native insects will eventually kill millions of trees. Explosions in insect populations usually start during a drought, when the lack of water combined with too many trees per acre render the trees too weak to fight off the insect attacks. Without a change in management practices on public lands, there is little hope of avoiding significant tree mortality similar to that experienced in other mountain environments in Southern California and Colorado.

The most recent major wildfires to impact the District were the Angora and Washoe Fires in 2007, in which over 260 homes were lost, and the 2014 King Fire. The king Fire grew to over 97,000 acres and burned within about 6 miles of the District boundary. It was particularly concerning because of the extreme fire behavior exhibited - including a ten mile run over the course of a few hours in the middle of the night – and it actually caused fire managers and scientists studying fire behavior to reconsider whether accepted norms of fire behavior needed to be reexamined. These are only a few examples of recent, larger wildfire events in the Lake Tahoe Basin and eastern Placer County.”

R.6 Capability Assessment

Capabilities are the programs and policies currently in use to reduce hazard impacts or that could be used to implement hazard mitigation activities. This capabilities assessment is divided into four sections: regulatory mitigation capabilities; administrative and technical mitigation capabilities; fiscal mitigation capabilities; and mitigation education, outreach, and partnerships.

R.6.1. Regulatory Mitigation Capabilities

Table R-7 lists regulatory mitigation capabilities, including planning and land management tools, typically used by local jurisdictions to implement hazard mitigation activities and indicates those that are in place in the District.

Table R-7 Squaw Valley PSD’s Regulatory Mitigation Capabilities

Plans	Y/N Year	Does the plan/program address hazards? Does the plan identify projects to include in the mitigation strategy? Can the plan be used to implement mitigation actions?
Comprehensive/Master Plan	1992 1994	Water& Sewer System Master Plans are being updated now and will be complete in 2016
Capital Improvements Plan	2007	Update as part of above master plan work
Economic Development Plan	N	Placer Co
Local Emergency Operations Plan	2014	
Continuity of Operations Plan	N	Water System Operations Plan is 80% complete Sewer System Management Plan 2010

Transportation Plan	NA	Placer Co
Stormwater Management Plan/Program	NA	Placer Co
Engineering Studies for Streams	2007	Placer County funded study by PWA
Community Wildfire Protection Plan	N	Defensible Space Program see 2010 plan description
Other special plans (e.g., brownfields redevelopment, disaster recovery, coastal zone management, climate change adaptation)	N	Placer Co
Building Code, Permitting, and Inspections	Y/N	Are codes adequately enforced?
Building Code	NA	Version/Year: Placer Co
Building Code Effectiveness Grading Schedule (BCEGS) Score	NA	Score: Placer Co
Fire department ISO rating:	Y	Rating: 2 in Valley hydrant areas, 5 in river corridor
Site plan review requirements	Y	
Land Use Planning and Ordinances	Y/N	Is the ordinance an effective measure for reducing hazard impacts? Is the ordinance adequately administered and enforced?
Zoning ordinance	Y	Placer Co
Subdivision ordinance	N	Placer Co
Floodplain ordinance	NA	Placer Co
Natural hazard specific ordinance (stormwater, steep slope, wildfire)	N	Placer Co
Flood insurance rate maps	N	Placer Co
Elevation Certificates	NA	Placer Co
Acquisition of land for open space and public recreation uses	N	Placer Co
Erosion or sediment control program	N	Placer Co
Other		District Ordinances including Water Code, Sewer Code, and Fire Prevention Code
How can these capabilities be expanded and improved to reduce risk?		

As indicated above, the District, in conjunction with the County, has several programs, plans, policies, and codes and ordinances that guide hazard mitigation. Some of these are described in more detail below.

Olympic Valley Groundwater Management Plan, 2007

The Olympic Valley Groundwater Management Plan summarizes the plan process, existing groundwater and surface water conditions, and explores options for providing a sustainable water supply for current and

future beneficial uses. An update of the Olympic Valley Groundwater Management Plan will be completed in 2016.

Codes and Ordinances

Avalanche

Placer County's avalanche management program defines Potential Avalanche Hazard Areas (PAHAs) where the minimum probability of avalanche occurrence is 1 in 100 per year or where avalanche damage has already occurred. According to the Placer County Avalanche Ordinance the following information must be disclosed in PAHAs:

- Identification that a structure is within a PAHA;
- A warning that avalanche control work is conducted in the area and avalanche warnings will be provided as feasible; and
- Identification of sources that provide weather information and general information on avalanches.

In addition, the County limits construction as necessary in PAHAs and will not issue a building permit for construction in a PAHA without certifying that the structure will be safe under the anticipated snow loads and conditions of an avalanche.

Squaw Valley Public Services District Codes and Permits

SVPSD has enacted several codes:

- Water Code
- Sanitary Sewer Code
- Fire Prevention Code

In addition, the District has permit requirements specific to:

- Residential Construction
- Commercial Construction
- Multiple Dwelling Units
- Temporary Discharge into Sewer
- Temporary Fire Hydrant Connection

R.6.2. Administrative/Technical Mitigation Capabilities

The District is governed by a five-member Board of Directors elected to four-year terms. Registered voters within District boundaries are eligible to run for office. The Board of Directors approves District codes and policies. Placer County provides the District with the resources of a planner/engineer with knowledge of land development and management practices. The District also utilizes the services of a building official and GIS staff from Placer County. The District also participates in the County's teleminder system for people residing with District boundaries. Table R-8 identifies the personnel responsible for activities related to mitigation and loss prevention in the District.

Table R-8 Squaw Valley PSD’s Administrative and Technical Mitigation Capabilities

Administration	Y/N	Describe capability Is coordination effective?
Planning Commission	N	Placer Co
Mitigation Planning Committee	N	Placer Co
Maintenance programs to reduce risk (e.g., tree trimming, clearing drainage systems)	Y	Defensible Space program
Mutual aid agreements	Y	Tahoe Truckee Area Emergency Contingency Plan Fire Dept. Mutual Aid Agreement
Other		
Staff	Y/N FT/PT	Is staffing adequate to enforce regulations? Is staff trained on hazards and mitigation? Is coordination between agencies and staff effective?
Chief Building Official	N	Placer Co
Floodplain Administrator	N	Placer Co
Emergency Manager	N	
Community Planner	N	Placer Co
Civil Engineer	Y	General Manager Mike Geary
GIS Coordinator	Y	District Engineer Dave Hunt Farr West Engineering
Other		
Technical	Y/N	Describe capability Has capability been used to assess/mitigate risk in the past?
Warning systems/services (Reverse 911, outdoor warning signals)	Y	Everbridge
Hazard data and information	N	Placer Co
Grant writing	Y	Staff
Hazus analysis	N	
Other		
How can these capabilities be expanded and improved to reduce risk?		

R.6.3. Fiscal Mitigation Capabilities

Table R-9 identifies financial tools or resources that the District could potentially use to help fund mitigation activities.

Table R-9 Squaw Valley PSD’s Fiscal Mitigation Capabilities

Funding Resource	Access/ Eligibility (Y/N)	Has the funding resource been used in past and for what type of activities? Could the resource be used to fund future mitigation actions?
Capital improvements project funding	Y	Squaw Creek Embankment Reinforcement Project
Authority to levy taxes for specific purposes	N	Restricted by Prop 218
Fees for water, sewer, gas, or electric services	Y	Water and Sewer Asset Replacement Plan
Impact fees for new development	Y	Fire Department Apparatus Asset Replacement Plan
Storm water utility fee	N	
Incur debt through general obligation bonds and/or special tax bonds	Y	
Incur debt through private activities	N	
Community Development Block Grant	N	
Other federal funding programs	Y	
State funding programs	Y	Member of Tahoe Sierra Integrated Water Management Plan
Other		
How can these capabilities be expanded and improved to reduce risk?		

R.6.4. Mitigation Outreach and Partnerships

Table R-10 identifies education and outreach programs and methods already in place that could be/or are used to implement mitigation activities and communicate hazard-related information. More information can be found below the table.

Table R-10 Squaw Valley PSD’s Mitigation Education, Outreach, and Partnerships

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Local citizen groups or non-profit organizations focused on environmental protection, emergency preparedness, access and functional needs populations, etc.	N	
Ongoing public education or information program (e.g., responsible water use, fire safety, household preparedness, environmental education)	Y	Bi annual newsletter

Program/Organization	Yes/No	Describe program/organization and how relates to disaster resilience and mitigation. Could the program/organization help implement future mitigation activities?
Natural disaster or safety related school programs	N	Not known
StormReady certification	N	
Firewise Communities certification	N	
Public-private partnership initiatives addressing disaster-related issues	N	
Other		
How can these capabilities be expanded and improved to reduce risk?		

The District attempts to work with the local community and solicit public comment and involvement in District programs, system improvements and upgrades. Considerable public outreach and participation was extended during the development and adoption of the Olympic Valley Groundwater Management Plan, preparation and certification of a Supplemental EIR for the Resort at Squaw Creek's Phase II Expansion, as well as numerous system upgrade projects.

R.6.5. Other Mitigation Efforts

The District is involved in a variety of mitigation activities including:

- In 2014 the District as part of a project to produce an Operations Plan updated the Emergency Response Plan
- In 2010 the District completed and adopted a Sewer System Management Plan
- In 2015 the District as part of the Village Master Plan completed a Water Supply Assessment funded by the developer. The WSA looked at projected growth over the next 25 years and modeled impacts to the Squaw Valley Aquifer during multiple drought years. The study shows the Squaw Valley Aquifer is not presently in overdraft and should sustain the growth proposed.
- The District is presently working on a study funded by DWR titled Redundant Water Supply Preferred Alternative Analysis. This study lays the groundwork for a system intertie with the Truckee Donner PUD & Northstar Community Services Districts

Squaw Creek Embankment Reinforcement Project: As a result of bank erosion from a 1986 flood event, the Squaw Valley sewer export line that runs adjacent to Squaw Creek was being threatened. In 1989, the bank was reinforced using boulder rip rap. In 2000, the District completed a \$400,000 plus project to armor a 400 foot reach of Squaw Creek where the 1997 flood threatened the Squaw Valley Interceptor sewer main, a pipeline that carries 100 percent of the valley's effluent.





Defensible Space Program: The Squaw Valley Fire District has had a defensible space program for the past 20 years. This program entails a physical inspection of every property in the District's jurisdiction for compliance with California's defensible space laws. Properties that are not in compliance at the time of the first inspection receive follow-up visits and notices until they are brought into compliance. Every property complies with the defensible space regulations every year. The inspection checklist includes:

- Making sure the street address is visible from the street and contrasts with background—suggested 5" or 6" numbers.
- Cut grasses and mule ears 6" or shorter to 100' from house or to property line.
- Rake and remove pine needles to 100' from house or to property line—okay to leave 1-2" for mulch.
- Remove accumulated pine needles from the roof.
- Cut grasses, thin brush and other flammable vegetation to 100' from house or to the property line.
- Clear debris (slash, pine needle piles, construction debris and flammable storage) from around the structure.
- Clear vegetation to mineral soil around firewood storage piles.
- Remove brush, limbs, grass, needles and debris 10' in all directions from around propane tanks.
- Limb adult trees up to a minimum of 6' from the ground.
- Remove dead tree limbs touching or overhanging roofs and decks.
- Remove all tree limbs a minimum of 10' from chimneys and stovepipes.
- Remove all dead and dying trees from the property.
- Install a ½ inch mesh screen spark arrester on chimneys and stovepipes

R.7 Mitigation Strategy

R.7.1. Mitigation Goals and Objectives

The District adopts the hazard mitigation goals and objectives developed by the HMPC and described in Chapter 5 Mitigation Strategy.

R.7.2. Mitigation Actions

The planning team for the District identified and prioritized the following mitigation action based on the risk assessment. Background information and information on how each action will be implemented and administered, such as ideas for implementation, responsible office, partners, potential funding, estimated cost, and schedule are included.

Action 1. Emergency Water Supply Interconnection to Martis Valley

Hazards Addressed: Contamination of sole source aquifer, loss of source wells due to disaster, earthquake, and drought. Wildland fire mitigation through increased fire protection services

Issue/Background: The community of Squaw Valley draws its drinking water from a single source aquifer that is very small, unprotected and is very sensitive. Source water travels rapidly through the aquifer making contamination of the supply of deep concern. Prolonged or extended drought consistent with changing global weather patterns could lead to overdraft of the limited supply.

Squaw Valley is geographically separate from outlying communities that may provide an emergency interconnection. A feasibility study conducted in 2009 determined that a connection to the Truckee Donner PUD or the Northstar CSD to be feasible with no fatal flaws in securing water rights, environmental constraints, or rights of way.

The purpose of the project is to provide a redundant source of supply that is geographically diverse with a reliable means of delivery. The delivery system will provide water service and fire protection to outlying areas while providing a utility corridor for natural gas and high speed communication.

Other Alternatives: The Redundant Water Supply Preferred Alternative Analysis, Farr West Engineering 2015 looked at alternatives in depth and determined that the connection to the Martis Valley Aquifer to be the best most reliable and feasible alternative

Existing Planning Mechanism(s) through which Action Will Be Implemented: The feasibility study and the alternatives analysis were funded by the California Department of Water Resources through Prop. 89. The District will seek additional funding through Prop. 1. The next phase of the project will be the environmental analysis under CEQA and securing permits.

Responsible Office/Partners: The Squaw Valley Public Services District is presently the lead agency for the project and has or is developing partnerships with the Placer County, Placer County Water Agency,

Truckee Donner PUD, Northstar CSD, Tahoe City PUD, Alpine Springs CWD, Sudden Link Cable, Southwest Gas, and other state and local agencies

Cost Estimate: Planning level cost estimates range from \$23,520,000 to \$25,200,000 depending on the final alignment

Benefits (Losses Avoided): The project would provide an alternative water supply to multiple communities while bringing high speed fiber optics communication and natural gas to the area. The benefits of the project are increased fire protection along the Truckee River corridor between Truckee and Alpine Meadows where there currently is none. A partnership with Southwest Gas bringing natural gas to the area would lower fire danger by eliminating thousands of propane tanks and reducing on road transport by tanker trucks supplying propane. The project seeks to avoid loss of essential services during an emergency or natural disaster.

Potential Funding: Grants, partnerships, bonds, customer service fees

Timeline: The project is presently being pursued with completion of the alternatives analysis to be finished by December 2015. CEQA and project permitting is the next phase. The timeline for permits ranges from 12 to 24 months with construction following final funding.

Project Priority: This project is the District's highest priority

Action 2. Truckee River Siphon

Hazards Addressed: Pollution of the Environment due to Flood or Erosion

Issue/Background: During the 1997 flood the wastewater conveyance system in Squaw Valley was overcome and inundated.

The Truckee River Siphon is a 10" diameter pipe conveying 100% of the valley's wastewater under the Truckee River connecting to the TTSA Interceptor that conveys sewage from the communities of Lake Tahoe, Alpine Springs, and Squaw Valley to the regional treatment facility in Truckee. The Truckee River Siphon serves as a "bottleneck" in the system; sewer flow surcharged upstream of the siphon during the 1997 flood spilling over 1,000,000 gallons of diluted wastewater into the Truckee River. Erosion of the river bottom could result in the siphon being damaged or washed away causing an environmental disaster. Squaw Creek and the Truckee River are environmental treasures that supply drinking water to the citizens along it to include the city of Reno Nevada before reaching its terminus at Pyramid Lake.

The Truckee River Siphon Project seeks to replace the existing siphon with a redundant and larger siphon adjacent to and deeper than the existing siphon.

Other Alternatives: There are no feasible alternatives

Existing Planning Mechanism(s) through which Action Will Be Implemented: The SVPSD Sewer System Master Plan

Responsible Office/Partners: Squaw Valley Public Services District is the lead agency for the project and is a member of the regional waste water treatment facility Board of Directors

Project Priority: High

Cost Estimate: \$500,000

Benefits (Losses Avoided): Avoids loss of critical facility and pollution of the environment

Potential Funding: Grants, loans, developer fees, service fees

Timeline: 1 to 4 years

Action 3. Squaw Creek Siphon

Hazards Addressed: Pollution of the Environment due to Flood or Erosion

Issue/Background: During the 1997 flood the wastewater conveyance system in Squaw Valley was compromised due to erosion in multiple locations.

The Squaw Creek Siphon conveys wastewater from around 200 home across and under Squaw Creek where it ties into the Squaw Valley Interceptor. High velocity flood waters cut downward and eroded the creek bottom in the 1997 flood completely exposing the Squaw Creek Siphon. After the flood waters receded the District installed rock gabions upstream, downstream and over the Squaw Creek Siphon to protect the pipeline. The 1997 flood has been characterized by Placer County as a 50 year event, a similar or larger event would potentially damage or wash away the Squaw Creek Siphon causing wastewater to pollute Squaw Creek and the Truckee River.

The Squaw Creek Siphon Project seeks to replace the existing siphon with a redundant and larger siphon adjacent to and deeper than the existing siphon.

Other Alternatives: There are no feasible alternatives

Existing Planning Mechanism(s) through which Action Will Be Implemented: The SVPSD Sewer System Master Plan

Responsible Office/Partners: Squaw Valley Public Services District is the lead agency for the project

Project Priority: Medium

Cost Estimate: \$250,000 to \$300,000

Benefits (Losses Avoided): Avoids loss of critical facility and pollution of the environment

Potential Funding: Grants, loans, developer fees, service fees

Timeline: 5 to 10 years

Action 4. Easement Abatement/Maintenance of Emergency Access

Issue/Background: Approximately 30 percent of the Public Services District's water distribution and sewer collection systems are located in easements. A survey of residential lots in Squaw Valley found that 240 homes had one or more utility easements for water or sewer pipelines. In many cases homeowners have placed obstacles on the easement that prevent access to critical infrastructure. Examples of these encroachments include fences, sheds, propane tanks, trees, brush, and landscaping. Additionally many easements are simply overgrown with Manzanita, trees, and brush. Almost all easements are located on side and rear property lines. Maintaining access to easements is necessary to maintain lifeline facilities or respond to system failures during a disaster. Removal of trees and brush from residential property lines will reduce fuels and increase defensible space. Reduction in fuels and increased defensible space will help to prevent wildland fires and prevent fire from spreading from one structure to the next. During the 1997 flood, significant losses of infrastructure occurred in easement areas leaving residents without lifeline services for extended periods.

This project entails four components:

1. Public Education & Outreach
2. Ordinance Development & Implementation
3. Property Inspections & Enforcement Actions
4. Clearing & Grubbing coupled with Re-vegetation & Erosion Control

The District began work on item 1 in 2006 by posting articles in our semi-annual newsletter. In 2007 the District mailed informational letters to all residents with easements on their property.

Phases 3 & 4 of the project will require significant effort by the District in manpower allocation and contracted services.

Other Alternatives: No action

Existing Planning Mechanism(s) through which Action Will Be Implemented: Annual budget allocations

Responsible Office: Squaw Valley Public Services District

Priority (H, M, L): Medium

Cost Estimate: \$80,000 to \$120,000

Benefits (Losses Avoided): Avoid structural losses from fire and loss of lifeline services

Potential Funding: Funding for the project may come from grants, low interest loan, or from District reserves when available.

Schedule: 95% of property inspections have been completed and only a dozen or so remain uncleared as of fall 2015. The remaining properties should be inspected and cleared in summer of 2016.

Action 5. *Develop a Community-Wide Emergency Notification System Capable of Providing Information to Both Residents and Visitors by Utilizing Permanent, Roadside Changeable Message Boards and a Low-Power Radio Transmitter.*

Issue/Background: Squaw Valley has a number of potential hazards that can impact both residents and visitors. Natural hazards include an avalanche hazard area affecting a significant number of homes and a mudslide that affects a smaller number. Both residences and businesses have been affected by flooding. The Granite Chief Wilderness Area to the west of the Valley poses the threat of wildland fire. During periods of heavy snow, the Valley can be essentially paralyzed until side roads are plowed. Human-caused hazards include frequent periods of very heavy traffic during winter months and occasional, but equally paralyzing traffic during the summer.

The population of Squaw Valley can increase more than ten-fold over the course of several hours on a Saturday morning. Presently, there is no way of effectively alerting residents and visitors of a hazard and the actions to be taken in response.

A community-wide emergency notification system could be implemented with relative ease and cost-efficiency in a compact area like Squaw Valley. Permanent, changeable message boards located along Squaw Valley Road at the west and east ends of the Valley could be used to alert residents and visitors of a hazard and refer them to the frequency for a low-power FM transmitter that would transmit more detailed information and recommended courses of action.

Other Alternatives:

1. No action
2. Emergency siren/air horn
3. Everbridge Alert System (already in place at the County level)

Other alternatives have been considered and/or tried at one time or another. The emergency siren/air horn was in place until the mid-1980s, but was ineffective at providing information – residents might know that there was an emergency, but not what to do; visitors were simply bewildered. The Everbridge Alert System system is in place, but notifies only residents in their homes and only the population for which a valid telephone number is available.

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office: Peter A. Bansen, Fire Chief

Priority (H, M, L): High

Cost Estimate: Approximately \$70,000.

Cost Benefit: This is a highly effective way of reaching a large number of people at a very low ‘per capita’ cost. Once installed, the changeable message boards should be very low maintenance and will cost very little to program and operate. The low-power radio transmitter should be even less costly to install and operate. The two components are both necessary – without the radio transmitter the message boards can

provide only minimal information; without the message boards, no one will know to turn their radio to the low power transmitter.

Potential Funding: Potentially funded by a grant or combination of grants.

Schedule: One year or less, depending on permitting and product availability.

Action 6. *SVPSD/Mutual Water Company Inter-tie*

Issue/Background Statement: There are two water companies in Squaw Valley, the Squaw Valley Public Services District and the Squaw Valley Mutual Water Company. The two entities have a mutual interest in providing emergency service during critical periods. Pipelines of the two entities are close together in several locations but do not connect. The California Department of Public Health recommends that water utilities develop emergency connections for backup emergency supply purposes. This project would entail installing the underground pipes and pressure reducing valve to inter-tie the systems and an above ground booster station to supply water from the SVPSD to the Mutual Water Company, the higher pressure zone. The design phase of the project was completed in 2014 with grant funding from PCWA.

Other Alternatives: No action.

Existing Planning Mechanisms through which Action Will be Implemented:

Responsible Office: Squaw Valley PSD

Priority (H, M, L): Low

Cost Estimate: \$150,000 to \$200,000

Benefits (Losses Avoided): Pre-disaster planning/avoids loss of lifeline services

Potential Funding: Funding for the project may come from grants, low interest loan, or from District and Mutual Water Company reserves if or when available.

Schedule: None

Action 7. *Water Tank Earthquake Retrofit Project*

Issue/Background: The Squaw Valley Public Services District owns three water storage tanks, the East Tank, West Tank, and Zone III Tank. The Mutual Water Company owns two steel tanks.

The Public Services District's Zone III Tank is small (135,000 gallon) and does not pose an immediate threat to property due to location. The District's West Tank (1,150,000 gal) was constructed to withstand earthquake and wind shear. The District's East Tank (500,000 gal) was constructed in 1980 and is designed to withstand snow loads but not lateral stress from a substantial earthquake. The East tank is located up gradient from several multi-million dollar homes. The Mutual Water Company Steel Tank (300,000 gal) is located adjacent to a wash that sustained mud flows in the 1997 flood that caused significant erosion of the tanks earth foundation pad. The Mutual Water Company Redwood Tank was replaced in 2011. Both

Mutual Water Company Tanks are located up gradient from numerous single family homes that would be heavily impacted due to a tank failure.

The project would entail a seismic analysis by a qualified geotechnical firm of the Mutual water tank and the Districts East Tank. Seismic retro-fit would be designed and employed if deemed necessary.

Other Alternatives:

Existing Planning Mechanism(s) through which Action Will Be Implemented:

Responsible Office:

Priority (H, M, L): Medium

Cost Estimate: \$50,000 to \$500,000 depending on scope

Benefits (Losses Avoided): Property protection and loss of lifeline services due to earthquake or land subsidence which could result in catastrophic tank failure

Potential Funding: Funding for the project may come from grants, low interest loan, or from District and Mutual Water Company reserves if or when available.

Schedule: 2015 or beyond