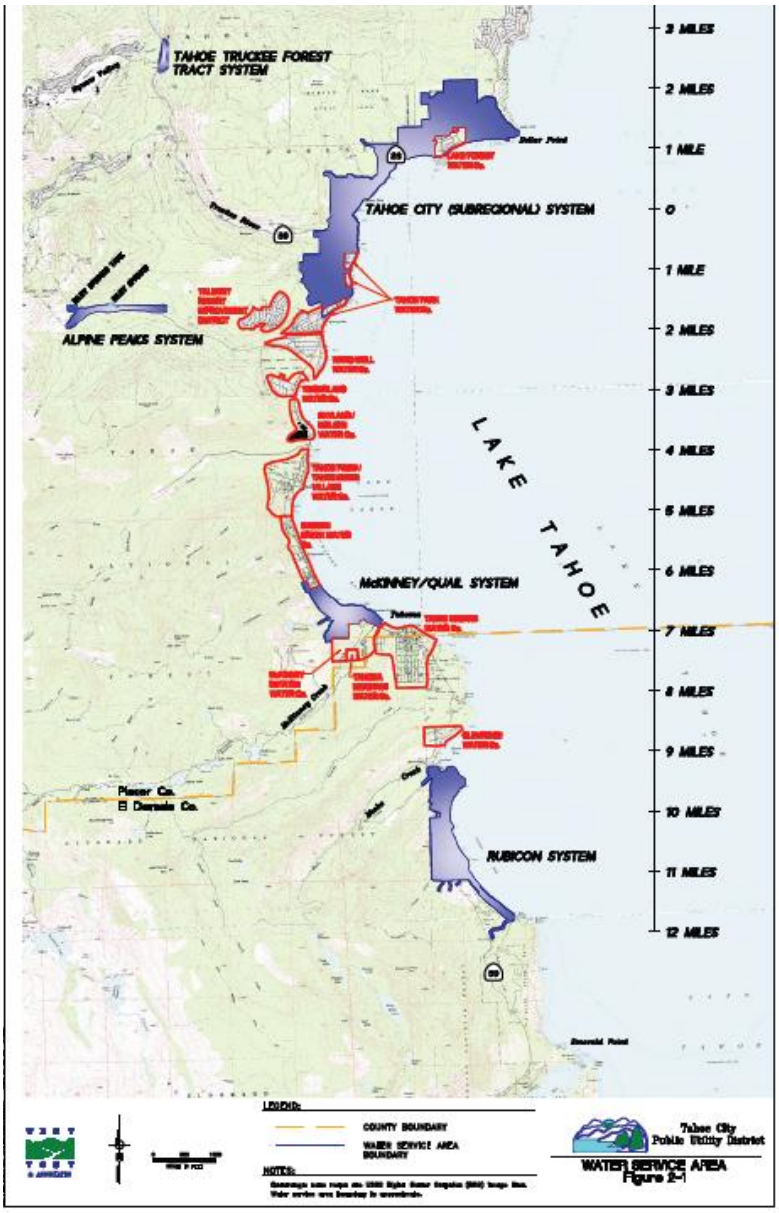
ANNEX N: TAHOE CITY PUBLIC UTILITIES DISTRICT

N.1 District Profile

Figure N.1 shows the water service area of the Tahoe City Public Utilities District (TCPUD).

Figure N.1. Tahoe City Public Utilities District



The Tahoe City Public Utility District was founded in 1938 to provide some of the governmental needs of the residents of Tahoe City. It is the oldest local government in the Tahoe Basin and was formed initially to provide public water service to the local community. Established under the State of California's Public Utility District Act, the founders of the District chose a form of government that could provide multiple types of services. The boundaries of the District extend from Emerald Bay to Dollar Hill, and along the Truckee River to the Nevada County line. The service area is very large, encompassing almost 22 square miles.

The TCPUD's provides sewer collection, parks facilities, and recreation services for the entire area of the District. Water service is provided in four separate systems and serves approximately half of the homes and businesses in the District. Water service is provided to approximately 3,800 customer; sewer services to 7,300 customers; and parks and recreation customers total over 500,000.

The Tahoe City area 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.

N.2 Hazard Identification and Summary

The TCPUD'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 N.1).

Table N.1. TCPUD—Hazard Summaries

Hazard	Probability of Occurrence	Spatial Extent	Potential Magnitude	Significance
Agricultural Hazards	Unlikely			
Avalanche	Likely	Limited	Critical	High
Dam Failure	Unlikely	Limited	Critical	Medium
Drought	Likely	Significant	Critical	High
Earthquake	Occasional	Significant	Limited	High
Flood	Occasional	Significant	Limited	Medium/High
Human Health Hazards:				
West Nile Virus	Unlikely	Limited	Negligible	Low
Landslide	Likely	Limited	Limited	Medium/High
Severe Weather:				
Extreme Temperatures	Likely	Limited	Negligible	Medium
Fog	Unlikely			
Heavy Rain/ Thunderstorm/Hail/ Lightning/Wind	Highly Likely	Extensive	Limited	Medium
Snow (was Winter Storm)	Highly Likely	Significant	Limited	Medium
Tornado	Unlikely			
Soil Hazards:				
Erosion	Unlikely			
Volcano	Unlikely			
Wildfire	Likely	Significant	Critical	High

Guidelines for Hazard Rankings

Frequency of Occurrence:
Highly Likely—Near 100 percent probability in next year
Likely—Between 10 and 100 percent probability in next year or at least one chance in ten years
Occasional—Between 1 and 10 percent probability in next year or at least one chance in next 100 years
Unlikely—Less than 1 percent probability in next 100 years

Potential Magnitude:
Catastrophic—More than 50 percent of area affected
Critical—25 to 50 percent
Limited—10 to 25 percent
Negligible—Less than 10 percent

Spatial Extent:
Limited—Less than 10 percent of planning area
Significant—10-50 percent of planning area
Extensive—50-100 percent of planning area
Source: Tahoe City Public Utilities District

Significance (subjective):
Low, Medium, High

Impacts of past events and vulnerability to specific hazards are discussed below (see Section 4.1 Hazard Identification for more detailed information about these hazards and their impacts on Placer County).

N.3 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. For more information about how hazards affect the County as a whole, see Chapter 4 Risk Assessment in the main plan.

N.3.1 Assets at Risk

This section considers the District's assets at risk. Table L.2 lists District assets identified by representatives from the TCPUD as important to protect in the event of a disaster.

Table N.2. TCPUD—Critical Facilities and Other District Assets

Name of Asset	Type	Replacement Value	Displacement Cost	Occupancy/ Capacity#	Hazard Specific Info
Fairway Community Center	Community Center	$1,008,230	N/A	223	
Highland Community Center	Community Center	$665,130	N/A	60	
Tahoe Community Center	Community Center	$892,874	N/A	100	
Rideout Community Center	Community Center	Lease	N/A	300	
TCPUD Administration Building	Administration Building	$2,234,370	N/A	103	
Parks & Rec. Corp. Yard	Corp. Yard	$1,450,885	N/A	20	
Blackwood	Sewer Pump Station	$1,500,000	N/A	N/A	Sewage Release
Coast Guard	Sewer Pump Station	$1,500,000	N/A	N/A	Sewage Release
Harbor Master	Sewer Pump Station	$1,500,000	N/A	N/A	Sewage Release
Madden	Sewer Pump Station	$1,500,000	N/A	N/A	Sewage Release
McKinney	Sewer Pump Station	$1,100,000	N/A	N/A	Sewage Release
Meeks Bay	Sewer Pump Station	$1,100,000	N/A	N/A	Sewage Release
North Lane	Sewer Pump Station	$1,100,000	N/A	N/A	Sewage Release
Rubicon	Sewer Pump Station	$1,500,000	N/A	N/A	Sewage Release
Sunnyside	Sewer Pump Station	$2,000,000	N/A	N/A	Sewage Release
Bay Vista	Sewer Pump Station	$800,000	N/A	N/A	Sewage Release
Dollar 1	Sewer Pump Station	$800,000	N/A	N/A	Sewage Release
Dollar 2	Sewer Pump Station	$800,000	N/A	N/A	Sewage Release
Glenridge	Sewer Pump Station	$800,000	N/A	N/A	Sewage Release
Highway 89	Sewer Pump Station	$800,000	N/A	N/A	Sewage Release
Lonely Gulch	Sewer Pump Station	$800,000	N/A	N/A	Sewage Release
Marina	Sewer Pump Station	$800,000	N/A	N/A	Sewage Release
Park Terrace	Sewer Pump Station	$800,000	N/A	N/A	Sewage Release
Rubicon Bch	Sewer Pump Station	$800,000	N/A	N/A	Sewage Release

Name of Asset	Type	Replacement Value	Displacement Cost	Occupancy/ Capacity#	Hazard Specific Info
Tahoma	Sewer Pump Station	$800,000	N/A	N/A	Sewage Release
Waters Edge	Sewer Pump Station	$800,000	N/A	N/A	Sewage Release
Commons Beach	Sewer Pump Station	$800,000	N/A	N/A	Sewage Release
Sewer Gravity Line	4-inch Gravity Sewer Line	$4,449,375	N/A	N/A	Sewage Release
Sewer Gravity Line	6-inch Gravity Sewer Line	$24,310,589	N/A	N/A	Sewage Release
Sewer Gravity Line	6-inch Gravity Sewer Line	$59,310,067	N/A	N/A	Sewage Release
Sewer Gravity Line	6-inch Gravity Sewer Line	$4,864,635	N/A	N/A	Sewage Release
Sewer Gravity Line	6-inch Gravity Sewer Line	$936,457	N/A	N/A	Sewage Release
Sewer Gravity Line	6-inch Gravity Sewer Line	$401,712	N/A	N/A	Sewage Release
Sewer Gravity Line	8-inch Gravity Sewer Line	$2,884,172	N/A	N/A	Sewage Release
Sewer Gravity Line	8-inch Gravity Sewer Line	$9,933,772	N/A	N/A	Sewage Release
Sewer Gravity Line	8-inch Gravity Sewer Line	$1,160,531	N/A	N/A	Sewage Release
Sewer Gravity Line	8-inch Gravity Sewer Line	$631,840	N/A	N/A	Sewage Release
Sewer Gravity Line	10-inch Gravity Sewer Line	$1,582,395	N/A	N/A	Sewage Release
Sewer Gravity Line	10-inch Gravity Sewer Line	$2,467,070	N/A	N/A	Sewage Release
Sewer Gravity Line	10-inch Gravity Sewer Line	$1,924,683	N/A	N/A	Sewage Release
Sewer Gravity Line	10-inch Gravity Sewer Line	$350,152	N/A	N/A	Sewage Release
Sewer Gravity Line	10-inch Gravity Sewer Line	$122,559	N/A	N/A	Sewage Release
Sewer Gravity Line	12-inch Gravity Sewer Line	$676,368	N/A	N/A	Sewage Release
Sewer Gravity Line	12-inch Gravity Sewer Line	$1,068,389	N/A	N/A	Sewage Release
Sewer Gravity Line	12-inch Gravity Sewer Line	$865,517	N/A	N/A	Sewage Release
Sewer Gravity Line	15-inch Gravity Sewer Line	$1,598,464	N/A	N/A	Sewage Release
Sewer Gravity Line	15-inch Gravity Sewer Line	$1,045,749	N/A	N/A	Sewage Release
Sewer Gravity Line	15-inch Gravity Sewer Line	$694,154	N/A	N/A	Sewage Release
Sewer Gravity Line	18-inch Gravity Sewer Line	$449,963	N/A	N/A	Sewage Release
Sewer Gravity Line	18-inch Gravity Sewer Line	$2,049,435	N/A	N/A	Sewage Release
Sewer Gravity Line	18-inch Gravity Sewer Line	$236,863	N/A	N/A	Sewage Release
Sewer Gravity Line	21-inch Gravity Sewer Line	$2,361,980	N/A	N/A	Sewage Release

Name of Asset	Type	Replacement Value	Displacement Cost	Occupancy/ Capacity#	Hazard Specific Info
Sewer Gravity Line	24-inch Gravity Sewer Line	$1,643,125	N/A	N/A	Sewage Release
Sewer Gravity Line	24-inch Gravity Sewer Line	$108,082	N/A	N/A	Sewage Release
Sewer Gravity Line	24-inch Gravity Sewer Line	$191,108	N/A	N/A	Sewage Release
Sewer Gravity Line	27-inch Gravity Sewer Line	$42,600	N/A	N/A	Sewage Release
Sewer Gravity Line	27-inch Gravity Sewer Line	$825,612	N/A	N/A	Sewage Release
Sewer Gravity Line	27-inch Gravity Sewer Line	$335,188	N/A	N/A	Sewage Release
Sewer Gravity Line	30-inch Gravity Sewer Line	$179,035	N/A	N/A	Sewage Release
Sewer Gravity Line	30-inch Gravity Sewer Line	$3,355,172	N/A	N/A	Sewage Release
Sewer Gravity Line	30-inch Gravity Sewer Line	$115,465	N/A	N/A	Sewage Release
Sewer Gravity Line	33-inch Gravity Sewer Line	$577,395	N/A	N/A	Sewage Release
Sewer Gravity Line	33-inch Gravity Sewer Line	$83,614	N/A	N/A	Sewage Release
Sewer Gravity Line	33-inch Gravity Sewer Line	$1,963,259	N/A	N/A	Sewage Release
Sewer Gravity Line	36-inch Gravity Sewer Line	$107,060	N/A	N/A	Sewage Release
Sewer Gravity Line	36-inch Gravity Sewer Line	$1,747,666	N/A	N/A	Sewage Release
Sewer Gravity Line	36-inch Gravity Sewer Line	$2,851,775	N/A	N/A	Sewage Release
Sewer Gravity Line	36-inch Gravity Sewer Line	$332,640	N/A	N/A	Sewage Release
Sewer Gravity Line	36-inch Gravity Sewer Line	$130,438	N/A	N/A	Sewage Release
Sewer Gravity Line	48-inch Gravity Sewer Line	$78,466	N/A	N/A	Sewage Release
Sewer Force Main	4-inch Force Mains	$749,400	N/A	N/A	Sewage Release
Sewer Force Main	6-inch Force Mains	$857,925	N/A	N/A	Sewage Release
Sewer Force Main	8-inch Force Mains	$1,484,297	N/A	N/A	Sewage Release
Sewer Force Main	10-inch Force Mains	$479,236	N/A	N/A	Sewage Release
Sewer Force Main	12-inch Force Mains	$3,970,050	N/A	N/A	Sewage Release
Sewer Force Main	18-inch Force Mains	$531,244	N/A	N/A	Sewage Release
Sewer Force Main	20-inch Force Mains	$72,281	N/A	N/A	Sewage Release
Sewer Laterals	4-inch Service Laterals	$15,159,900	N/A	N/A	Sewage Release

Name of Asset	Type	Replacement Value	Displacement Cost	Occupancy/ Capacity#	Hazard Specific Info
Sewer Manholes	Sewer Manhole 5-Feet	$4,230,000	N/A	N/A	Sewage Release
Sewer Manholes	Sewer Manhole 10-Feet	$13,143,000	N/A	N/A	Sewage Release
Sewer Manholes	Sewer Manhole 15-Feet	$3,757,500	N/A	N/A	Sewage Release
Sewer Manholes	Sewer Manhole 20-Feet	$1,335,000	N/A	N/A	Sewage Release
Sewer Manholes	Sewer Manhole 25-Feet	$259,000	N/A	N/A	Sewage Release
Dollar Point	Lake Intake	$750,000	N/A	N/A	Drinking Water Outage, Sodium Hypochlorite Release
Grove Street	Lake Intake	$1,000,000	N/A	N/A	Drinking Water Outage, Sodium Hypochlorite Release
Cedar Point	Lake Intake	$750,000	N/A	N/A	Drinking Water Outage, Sodium Hypochlorite Release
McKinney	Lake Intake	$750,000	N/A	N/A	Drinking Water Outage, Sodium Hypochlorite Release
Chambers Ldg	Lake Intake	$750,000	N/A	N/A	Drinking Water Outage, Sodium Hypochlorite Release
Highlands I-III	Booster Pump Station	$625,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Rocky Ridge I-II	Booster Pump Station	$625,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Rubicon I-II	Booster Pump Station	$625,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tavern I-II	Booster Pump Station	$625,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Granlibakken	Booster Pump Station	$625,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Upper Highlands	Booster Pump Station	$625,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Alpine Peaks	Water Tank	$700,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Bunker	Water Tank	$700,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss

Name of Asset	Type	Replacement Value	Displacement Cost	Occupancy/ Capacity#	Hazard Specific Info
Four Seasons	Water Tank	$700,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Highlands	Water Tank	$700,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Upper Highlands	Water Tank	$1,000,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Rocky Ridge	Water Tank	$700,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Rubicon II	Water Tank	$700,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Rubicon III	Water Tank	$700,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe Tavern	Water Tank	$700,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe Hills	Water Tank	$700,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Quail	Water Tank	$700,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Bunker	Water Well	$412,550	N/A	N/A	Drinking Water Outage, Fire Flow Loss, Chlorine Rele
Tahoe City I	Water Well	$666,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss, Chlorine Rele
Tahoe City II	Water Well	$777,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss, Chlorine Rele
Tahoe City III	Water Well	$777,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss, Chlorine Rele
Highlands A	Water Well	$1,295,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss, Chlorine Rele
Highlands B	Water Well	$1,295,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss, Chlorine Rele
Crystal Way	Water Well	$1,110,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss, Chlorine Rele
Rubicon 1	Water Well	$610,500	N/A	N/A	Drinking Water

Name of Asset	Type	Replacement Value	Displacement Cost	Occupancy/ Capacity#	Hazard Specific Info
					Outage, Fire Flow Loss, Chlorine Rele
Rubicon 2	Water Well	$592,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss, Chlorine Rele
Rubicon 3	Water Well	$555,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss, Chlorine Rele
Tahoe Tavern	Water Well	$832,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss, Chlorine Rele
Alpine Peaks	4-Inch Water Dist Line	$425,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Alpine Peaks	6-Inch Water Dist Line	$1,725,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Alpine Peaks	8-Inch Water Dist Line	$1,382,813	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Alpine Peaks	10-Inch Water Dist Line	$1,068,281	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Alpine Peaks	12-Inch Water Dist Line	$472,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Comstock	4-Inch Water Dist Line	$900,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Comstock	6-Inch Water Dist Line	$2,125,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Dollar Point	2.5-Inch Water Dist Line	$80,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Dollar Point	4-Inch Water Dist Line	$997,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Dollar Point	6-Inch Water Dist Line	$5,900,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Dollar Point	8-Inch Water Dist Line	$996,094	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Highlands	4-Inch Water Dist Line	$205,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Highlands	6-Inch Water Dist Line	$3,905,000	N/A	N/A	Drinking Water Outage, Fire Flow

Name of Asset	Type	Replacement Value	Displacement Cost	Occupancy/ Capacity#	Hazard Specific Info
					Loss
Highlands	8-Inch Water Dist Line	$31,875	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Highlands	12-Inch Water Dist Line	$2,346,750	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Chambers-McK	2.5-Inch Water Dist Line	$880,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Chambers-McK	4-Inch Water Dist Line	$4,057,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Chambers-McK	6-Inch Water Dist Line	$4,930,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Chambers-McK	10-Inch Water Dist Line	$201,234	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Chambers-McK	12-Inch Water Dist Line	$551,250	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Dollar Condos 1&2	2.5-inch Water Dist Line	$87,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Dollar Condos 1&2	4-inch Water Dist Line	$62,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Dollar Condos 1&2	6-inch Water Dist Line	$87,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Dollar Condos 1&2	12-inch Water Dist Line	$223,125	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Granlibakken	4-inch Water Dist Line	$25,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Granlibakken	6-Inch Water Dist Line	$125,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Granlibakken	8-Inch Water Dist Line	$766,406	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Granlibakken	10-Inch Water Dist Line	$549,047	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Granlibakken	12-Inch Water Dist Line	$454,125	N/A	N/A	Drinking Water Outage, Fire Flow Loss

Name of Asset	Type	Replacement Value	Displacement Cost	Occupancy/ Capacity#	Hazard Specific Info
Highway 28	12-Inch Water Dist Line	$3,252,375	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Highway 89	6-Inch Water Dist Line	$337,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Highway 89	10-Inch Water Dist Line	$491,906	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Highway 89	12-Inch Water Dist Line	$1,123,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Meeks Bay Vista	2.5-inch Water Dist Line	$31,250	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Meeks Bay Vista	6-Inch Water Dist Line	$1,606,250	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Panorama	4-inch Water Dist Line	$260,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Panorama	6-inch Water Dist Line	$1,947,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Panorama	8-inch Water Dist Line	$4,688	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Panorama	12-Inch Water Dist Line	$826,875	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Rubicon	2.5-inch Water Dist Line	$785,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Rubicon	4-inch Water Dist Line	$362,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Rubicon	6-inch Water Dist Line	$9,353,750	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Rubicon	8-inch Water Dist Line	$278,906	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Star Harbor & Pomi	2.5-inch Water Dist Line	$287,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Star Harbor & Pomi	6-Inch Water Dist Line	$100,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Star Harbor & Pomi	8-Inch Water Dist Line	$51,563	N/A	N/A	Drinking Water

Name of Asset	Type	Replacement Value	Displacement Cost	Occupancy/ Capacity#	Hazard Specific Info
					Outage, Fire Flow Loss
Star Harbor & Pomi	10-Inch Water Dist Line	$21I,172	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Lake Forest Glen	2.5-inch Water Dist Line	$500,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Lake Forest Glen	4-inch Water Dist Line	$112,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Lake Forest Glen	6-inch Water Dist Line	$575,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Lake Forest Glen	8-inch Water Dist Line	$539,063	N/A	N/A	Drinking Water Outage, Fire Flow Loss
N. Shore Condos	8-Inch Water Dist Line	$445,313	N/A	N/A	Drinking Water Outage, Fire Flow Loss
N. Shore Condos	10-Inch Water Dist Line	$397,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
N. Shore Condos	12-Inch Water Dist Line	$157,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Rocky Ridge Condos	2.5-inch Water Dist Line	$470,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Rocky Ridge Condos	6-inch Water Dist Line	$147,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Rocky Ridge Condos	8-inch Water Dist Line	$4I4,844	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Rocky Ridge Condos	10-Inch Water Dist Line	$1,055,859	N/A	N/A	Drinking Water Outage, Fire Flow Loss
St. Francis Condos	2.5-inch Water Dist Line	$167,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
St. Francis Condos	4-inch Water Dist Line	$112,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
St. Francis Condos	8-inch Water Dist Line	$539,063	N/A	N/A	Drinking Water Outage, Fire Flow Loss
St. Francis Condos	12-Inch Water Dist Line	$341,250	N/A	N/A	Drinking Water Outage, Fire Flow

Name of Asset	Type	Replacement Value	Displacement Cost	Occupancy/ Capacity#	Hazard Specific Info
					Loss
Tahoe City	2.5-inch Water Dist Line	$395,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe City	4-inch Water Dist Line	$350,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe City	6-inch Water Dist Line	$3,372,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe City	8-inch Water Dist Line	$977,344	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe City	10-Inch Water Dist Line	$186,328	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe City	12-Inch Water Dist Line	$1,034,250	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe Hills	2.5-inch Water Dist Line	$275,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe Hills	4-inch Water Dist Line	$674,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe Hills	6-inch Water Dist Line	$5,430,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe Heights Tavern	2.5-inch Water Dist Line	$900,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe Heights Tavern	4-inch Water Dist Line	$545,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe Heights Tavern	6-inch Water Dist Line	$2,887,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe Heights Tavern	8-inch Water Dist Line	$1,858,594	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tavern Condo Shores	2.5-inch Water Dist Line	$200,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tavern Condo Shores	4-inch Water Dist Line	$30,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tavern Condo Shores	6-inch Water Dist Line	$412,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss

Name of Asset	Type	Replacement Value	Displacement Cost	Occupancy/ Capacity#	Hazard Specific Info
Villa's Condos	2.5-inch Water Dist Line	$75,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Villa's Condos	6-inch Water Dist Line	$95,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Villa's Condos	8-inch Water Dist Line	$747,656	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe Tavern Condos	2.5-inch Water Dist Line	$375,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe Tavern Condos	4-inch Water Dist Line	$50,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe Tavern Condos	6-inch Water Dist Line	$650,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe Tavern Condos	8-inch Water Dist Line	$421,875	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tahoe Tavern Condos	10-Inch Water Dist Line	$37,266	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tamarack MW	6-inch Water Dist Line	$147,500	N/A	N/A	Drinking Water Outage, Fire Flow Loss
Tamarack MW	8-inch Water Dist Line	$1,155,469	N/A	N/A	Drinking Water Outage, Fire Flow Loss
T-T Forest Track	2.5-inch Water Dist Line	$200,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
T T Forest Track	6-inch Water Dist Line	$225,000	N/A	N/A	Drinking Water Outage, Fire Flow Loss
T T Forest Track	8-inch Water Dist Line	$585,938	N/A	N/A	Drinking Water Outage, Fire Flow Loss

Source: Tahoe City Public Utilities District

Natural Resources

Population growth and development trends within District boundaries are covered in Section 4.3.2 of the main plan.

Growth and Development Trends

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. 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. This tourist industry continues to grow. 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.

Other specific population growth and development trends within TCPUD boundaries are covered in Section 4.3.2 of the main plan.

N.3.2 Estimating Potential Losses

Avalanche

Historically, avalanches occur within the eastern portion of the county, between the months of December and March following snowstorms. According to the 2004 Placer County EOP, areas where the potential for avalanches to occur are zoned as moderate or high avalanche hazard zones and have been identified using maps available at the Placer County Planning Department. Areas of particular concern within the District include: West shore of Lake Tahoe (Homewood & Ward Creek Tract) and the Truckee River Corridor/Highway 89 Corridor.

There are no known fatalities or significant damage to the built environment due to avalanches occurring within District boundaries. Damages from historic avalanches have primarily involved impacts to roads and damages to trails and other natural areas.

Dam Failure

A dam failure can range from a small uncontrolled release to a catastrophic failure, caused by prolonged rainfall and flooding. The primary danger associated with dam failure is the high velocity flooding of those properties downstream of the dam. Dam failure flooding varies by area depending on which dam fails and the nature and extent of the dam failure and associated flooding.

Vulnerability to dam failures is generally confined to the areas subject to inundation downstream of the facility. Based on analysis provided in the Placer County General Plan Background Report, only four dams within Placer County have the potential to affect more than 100 persons. Of these four, a failure of the Lake Tahoe Dam (outlet on the Truckee River) could potentially impact areas within the NTFPD. Failure of this dam would be contained within the Truckee River floodway to Nevada County and could impact in excess of 1,000 people

Drought

The impact of a drought on the District is primarily one of water supply. All water provided by the TCPUD comes from deep groundwater wells located in various locations in the Lake Tahoe Basin. A multiple year drought can severely compromise the water supply within the district. Most recently, after 2 years of below-average rainfall and very low snow-melt run off, Governor Schwarzenegger in June of 2008 declared a state of emergency for drought conditions statewide. The final California Department of Water Resources showed snowpack water content at only 67 percent of normal. With the unknowns of drought and globally changing climate conditions, the TCPUD more than ever is promoting waster conservation to its customers.

Earthquake

As indicted on the Earthquake Shaking Map in Section 4.2.11 of the main plan, the shaking potential is greatest in the eastern portion of the county, including the TCPUD service area. Extreme eastern Placer County borders the Basin and Range province that entails most of Nevada and western Utah. This area is riddled with active faults that are responsible for and form the boundary between each basin or valley and the neighboring mountain range.

In 2003/2004, volcanic magma migrating about 20 miles below the surface of the Sierra Nevada Mountains caused a swarm of about 1,600 small earthquakes. Since February of 2008, more than 600 earthquakes of magnitude greater than 1.0 have been recorded in nearby Reno, Nevada, with the most powerful one recorded at 4.7 magnitude. It is unknown to what extent these earthquakes were felt by residents in the Tahoe area, but clearly the District lies within a seismically active area.

Flood

Flooding due to heavy rains and snow runoff has been a historical problem in the Tahoe area. 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. Road closures create difficulties in providing emergency services to areas cut off by flooding and limit the area's ability to evacuate.

Recent, notable flood events impacting the District include the following:

- In late 1996 to early 1997, flooding of the Lower Truckee River occurred along Highway 89. Known damages included those to storm drainage coverts. Bike trails also were washed out along the highway. A federal disaster declaration was declared for these floods.
- Also occurring in 2006 was flooding of the Blackwood Sewer Station. Flooding caused extensive erosion of the river banks. To prevent further damage, sand bags were used and a large snow barrier was built to protect the station and the banks of the river. A federal

disaster declaration was also declared for these floods. Currently, the District is working on retrofitting the building and repairing the river banks. Repairs should be complete by October of 2008.

Landslides

Given the geology, climate, and terrain of the District, landslides can be a significant concern. During the storms and flooding in December of 2006, land sliding occurred in the Truckee River corridor along Highway 89 and associated bike trail. Damages for repairs were estimated at $355,000.

Severe Weather: Extreme Temperatures

Extreme weather events, often accompanied by extreme temperatures happen on an annual basis within the TCPUD boundaries. With altitudes ranging from 6,000 to 10,000 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. Also occurring during the storms of December 2006 was a power outage in the Tahoe Basin affecting both the West and North Shore of Lake Tahoe for 3-5 days. The District was forced to run the generators throughout the District to pump down the sewer stations to prevent spill and water stations to keep the storage tanks full of water. Area schools were closed during the outage. Other water districts were running out of water (meaning negative fire suppression in some areas).

Severe Weather: Heavy Rain/Thunderstorm/Hail

Heavy rain, thunderstorm activity, and hail usually occur on an annual basis in the TCPUD service area. Often during these events, the local stormwater drainage system can be impacted. The primary impact to the area within District boundaries is the localized flooding caused by these heavy rains.

Severe Weather: Snow

Extreme winter weather events are a major concern to the District. Snow and winter weather conditions regularly result in utility outages and the closure of major transportation routes. According to the TCPUD planning team, major winter storms have routinely cut off transportation routes in the district stranding thousands and causing a major impact to services and supplies.

Wildfire

Over one hundred years of aggressive fire suppression under the national fire suppression policy has rendered wildlands severely overgrown. Much of the private land in the District's area is in the wildland-urban interface with increasing residential development. The current buildup of fuels within the Tahoe Basin area is at a critical level

Further, many of the communities in the District are limited to one route access and egress in the event of a major wildfire. Historically, these routes are closed during major events, stranding many people, including visitors, away from their families and homes. So far 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 most notable, recent wildfire to impact the District is the Washoe fire. This fire occurred in the wildland urban interface area of Tahoe Park and Tahoe Woods Subdivision, along the West shore of Lake Tahoe. The fire was caused by a failure of some propane equipment. Although no lives were lost, the fire destroyed 5 residential structures and encompassed 19 acres. Power and gas utilities were incurred damages. There were also losses to timber assets, loss of watershed protection, and loss of the aesthetic value of a scenic corridor. This event caused major disruptions to west shore and Tahoe City traffic and business on a busy summer weekend. Highway 89, West Lake was closed for a period of time.

N.4 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 five sections: regulatory mitigation capabilities, administrative and technical mitigation capabilities, fiscal mitigation capabilities, mitigation outreach and partnerships, and other mitigation efforts.

N.4.1 Regulatory Mitigation Capabilities

Table N.4 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 SVPSD.

Table N.4. TCPUD's Regulatory Mitigation Capabilities

Regulatory Tool	Yes/No	Comments
General plan	No	
Zoning ordinance	No	
Subdivision ordinance	No	
Site plan review requirements	Yes	New Sewer and Water Services
Growth management ordinance	No	
Floodplain ordinance	No	See Placer County
Other special purpose ordinance (stormwater, water conservation, wildfire)	Yes	Water Ordinance 185 Sewer Ordinance 255
Building code	Yes	Version: Placer County Building Code (2001 California Building Code)

Fire Department ISO Rating	Yes	Rating 4 (main office building)
Erosion or sediment control program	No	
Storm water management program	No	TPRA Compliance
Capital improvements plan	Yes	5-year plans
Economic development plan	No	
Local emergency operations plan	Yes	TCPUD Emergency Response Plan, Jan. 2006
Other special plans	No	
Flood Insurance Study or other engineering study for streams	No	See Placer County

Source: Tahoe City Public Utilities District

Tahoe City Public Utilities District Emergency Response Plan, 2006

The TCPUD Emergency Response Plan serves as a guide for the District's response to emergencies/disasters within District boundaries, and to coordinate and assist with disaster response in neighboring jurisdictions.

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
- 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.

Tahoe City Public Utilities District Ordinances and Permits

SVPSD has enacted several ordinances:

- Water Ordinance 185
- Sewer Ordinance 255

In addition, the District has water and sewer permit requirements specific to:

- New Construction

- Tear Down-Rebuilds and Remodels

N.4.2 Administrative/Technical Mitigation Capabilities

Tahoe City Public Utility District is governed by a five person elected Board of Directors. These Directors determine the policies and set the agenda for the District. The Board appoints a General Manager who oversees the day to day operations of the District. In addition, The Board forms special citizen advisory committees when complicated issues need more community outreach or focused study.

Under the direction of General Manager Cindy Gustafson, thirty-nine full time employees, and 30 seasonal employees provide the listed services. Employees serve in four departments: Utilities; Parks & Recreation; Engineering; and General & Administrative.

Table N.5 identifies the personnel responsible for activities related to mitigation and loss prevention in TCPUD.

Table N.5. TCPUD's Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position	Comments
Planner/Engineer with knowledge of land development/land management practices	Yes	Engineering/Public Works	
Engineer/Professional trained in construction practices related to buildings and/or infrastructure	No		
Planner/Engineer/Scientist with an understanding of natural hazards	No		
Personnel skilled in GIS	No		
Full time building official	No		
Floodplain Manager	No		
Emergency Manager	Yes	Risk Coordinator	
Grant writer	Yes	General Manager	
Other personnel	Yes	Trained Staff	
GIS Data	No		
Warning Systems/Services (Reverse 9-11, cable override, outdoor warning signals)	Yes	Fire and Security alarm. Telemetry for the sewer and water stations. Cell phone and radio communications.	

Source: Tahoe City Public Utilities District

N.4.3 Fiscal Mitigation Capabilities

TCPUD is on a calendar-year (January 1 - December 31) budget cycle. Each fall the Board of Directors adopts a budget that is used for the following year. The annual operating expense budget adopted for 2007 was nearly $7,000,000. $6,700,000 of capital budget is funded through district funds, grants, and state loans.

TCPUD uses property tax, user fees, grants, and interest income to provide its services.

Table N.6 identifies financial tools or resources that the District could potentially use to help fund mitigation activities.

Table N.6. TCPUD's Fiscal Mitigation Capabilities

Financial Resources	Accessible/Eligible to Use (Yes/No)	Comments
Community Development Block Grants	Unknown	
Authority to levy taxes for specific purposes	Yes	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	Yes	
Incur debt through general obligation bonds	Yes	
Incur debt through special tax bonds	Yes	

Financial Resources	Accessible/Eligible to Use (Yes/No)	Comments
Incur debt through private activities	Unknown	
Withhold spending in hazard prone areas	Yes	

Source: Tahoe City Public Utilities District

N.4.4 Mitigation Outreach and Partnerships

TCPUD has partnered with many other public agencies, emergency service organizations, and local districts to either prevent and/or minimize loss of life and property in the event of emergencies and natural disasters.

N.4.5. Other Mitigation Efforts

The District is involved in a variety of mitigation activities including public outreach and project activities. These mitigation activities include:

- Staff educated in the Safety Program
- Website and Quarterly Newsletters to the general public
- Upgrading generators at all pump stations
- Retro fit stations (fire proofing, flood proofing, etc.)
- Fuel Reduction around facilities
- Staff training

Water System, Fire Protection Improvements: Also in the aftermath of the Angora fire in 2007, TCPUD has completed a full analysis of its water systems and is prioritizing the capital improvements necessary to increase fire protection capabilities. Since a significant amount of the District's sub-regional water systems are more than 40 years old and were acquired at various times from developers or other companies, extensive infrastructure work is necessary to meet current standards. TCPUD is working with the local fire departments, state and federal legislators, and officials to help secure the millions of funding needed to implement recommended improvements.

2007 Phase 1 – Highlands Fuel Reduction: Fuel reduction, mastication and track chipping on 25 acres of District owned open space. This property is bounded by North Tahoe High School and single family homes. The fire potential was considered high.

2008 Blackwood Pump Station Storm Damage: 1996 Blackwood Creek overflow flood damage to the Blackwood sewer pump station. F.E.M.A. repair assistance received in the amount of $46,645.00. The T.C.P.U.D. funded a complete retrofit of the pump station at an additional cost of $108,000.00. This retrofit eliminates future flooding and the potential for a large sewage spill into Lake Tahoe. The project was completed in 2008.

2009 Fuel Reduction Program – Chambers Foothills and Quail Lake: Chambers Foothills and Quail Lake Fuel Reduction program, mechanical & hand treatment on 70 acres. Project

funded by Nevada and California Fire Safe Council and T.C.P.U.D. participation funding. Grant funding not to exceed $175,000.00. District participation $56,000.00. The property is bounded by single family homes and commercial business property.

N.5 Mitigation Strategy

N.5.1 Mitigation Goals and Objectives

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

N.5.2 Mitigation Actions

The planning team for the TCPUD identified and prioritized the following mitigation actions 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.

1. Action: Forest Fuel Reduction - Highlands

Issue/Background: The purpose of the Tahoe Cross Country Center Fuel Reduction Project is to reduce forest fuels on approx 13 acres surrounding the Tahoe City Cross Country Center and adjacent neighborhood. This project will create a treated area to the north of the residences. The vegetation type is a Sierra Mixed Conifer forest with a slight understory brush component present in small canopy openings. Large openings without any large trees are occupied by tall, dense brush. Some areas have heavy concentrations of dead and downed trees. The tract has an average slope of 10%, The project will focus on thinning clumps of trees, removing suppressed trees, Improving the stand health by targeting diseased trees. Mastication will treat the slash and the ground fuels.

Other Alternatives:

Existing Planning Mechanism(s) through which project will be implemented: All required permits obtained. Vegetation Management plan completed. Public notice completed. Project is funded.

Responsible Office: T.C.P.U.D. Engineering Department/c.o. Jon LeRoy

Priority (High, Medium, Low): High

Cost Estimate: $45,000

Benefits (avoided Losses): Protection of North Tahoe High School, District water tank sites and surrounding residential properties.

Potential funding: Nevada Fire Safe Council and T.C.P.U.D. participation funding.

Schedule: June – August 2010

2. Action: Seismic Stability Study and Retrofit

Issue/Background: The District owns eleven (11) water storage tanks. The seismic stability of six (6) of these tanks was last analyzed in a report prepared by Nolte Associates dated January 2006. Of the 6 analyzed tanks:

- One (1) was built in 2005 and is seismically stable and requires no retrofits (Upper Highlands).
- One (1) is seismically unstable and requires a major foundation and shell retrofit or requires a change in its operational water level (Lower Highlands).
- One (1) is seismically unstable and due to its age and material requires a complete replacement (Bunker).
- Three (3) are seismically stable with minor improvements recommended (Four Seasons, Tahoe Tavern, and Rocky Ridge).

The remaining five (5) will be analyzed in 2010. The District's Engineering Operating Budget includes $40,000 to complete this analysis.

The District's 5-year water capital plan includes $75,000/year in years 2011-2013 to complete tanks seismic retrofits.

Other Alternatives:

Existing Planning Mechanism(s) through which project will be implemented: Phase 1 seismic study completed. Phase 2 seismic analysis 2010. Seismic retrofits 2011-2013.

Responsible Office: T.C.P.U.D. Engineering Department/c.o. Jon LeRoy

Priority (High, Medium, Low): High

Cost Estimate: $115,000

Benefits (Avoided Losses): Prevent essential water service loss to community.

Potential funding: T.C.P.U.D. funding. budget year 2010, funding $40,000. Capital funding 2011-2013 $75,000.

Schedule: 2010-2013

3. Action: Forest Fuel Reduction, Water, Sewer Pump & Lift Stations

Issue/Background: Fuel reduction at 19 critical water, sewer and maintenance facilities throughout the district (water 15 sites, sewer 2 sites, maintenance 2 sites). The protection of water tanks and pump stations is critical to Fire Department needs for water supply for firefighting purposes. Fuel reduction at sewer pump stations is important in preventing a catastrophic sewage spill in Lake Tahoe. Fuel reduction at two maintenance sites is essential to the functionality of water and sewer operations. The total assessed value of all properties within the Districts 22 square mile service area (assessed value - Placer County 2008-09) is $3,617,601,827.00 in addition to year round & seasonal residents we provide services for hundreds of thousands of tourists each year.

Other Alternatives:

Existing Planning Mechanism(s) through which project will be implemented: Required permits obtained. Management plan completed. Project is funded.

Responsible Office: T.C.P.U.D. Engineering Department/c.o. Jon LeRoy

Priority (High, Medium, Low): High

Cost Estimate: $39,000

Benefits (avoided Losses): Protection of water and sewer pump stations. Water available for fire suppression. Sewer pump stations protected thus reducing potential for massive sewer spills into Lake Tahoe.

Potential funding:

Schedule: June – August 2010