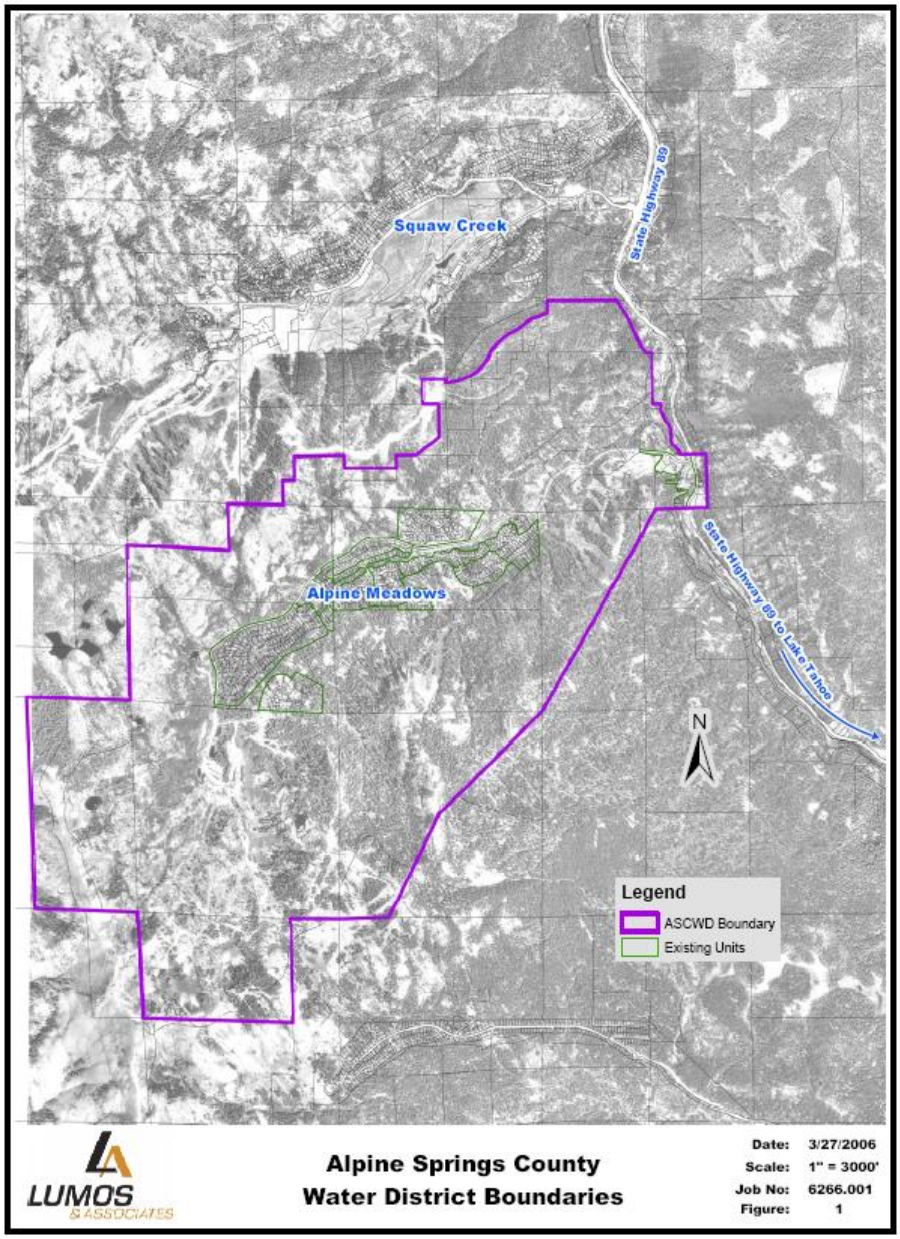
ANNEX F: ALPINE SPRINGS COUNTY WATER DISTRICT

F.1 Community Profile

The Alpine Springs Water District service area is illustrated in Figure F.1.

Figure F.1. Alpine Springs Water District's Service Area



Source: Alpine Springs County Water District

Alpine Springs County Water District is located in Alpine Meadows just northwest of Lake Tahoe, along California State Highway 89, just outside of the Lake Tahoe Basin. The Alpine Meadows area encompasses approximately one square mile within Placer County and contains about 770 private parcels, interspersed among a few open space parcels. Bear Creek runs through the community, creating a riparian area near many of the homes. Most homes are situated along the creek or other riparian areas. The elevation of Alpine Meadows ranges from 6185 feet at the mouth of the canyon to 6,835 feet at the ski area lodge and the top of the inhabited area. Mountain peaks above the community are at 8,637 feet. The private lands are surrounded by United States Forest Service (USFS) owned lands. The Alpine Meadows Ski Area is on USFS lands and is operated under a seasonal use agreement.

The Alpine Springs County Water District (ASCWD) provides water, sewer, fire protection, parks and garbage service to the residents of Alpine Meadows. The mission of Alpine Springs County Water District is to serve the residents of Alpine Meadows with:

- Clean, safe, and dependable drinking water;
- Safe, efficient and non-hazardous collection of waste water;
- Protection of lives and property; and
- Protection, preservation and enhancement of the urban forest setting with consideration for the property owner's continued use and enjoyment.

F.2 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 F.1).

Table F.1. Alpine Springs County Water District—Hazard Summaries

Hazard	Frequency of Occurrence	Spatial Extent	Potential Magnitude	Significance
Agricultural Hazards				
Avalanche	Likely	Limited	Limited	Medium
Dam Failure				
Drought				
Earthquake	Occasional	Extensive	Critical	Medium
Flood				
Landslide				
Severe Weather:				
Extreme Cold/Freeze				
Extreme Heat				
Fog				
Snow	Likely	Extensive	Critical	High
Tornado				
Heavy Rain/ Thunderstorm/Hail/ Lightning/Wind	Likely	Extensive	Critical to Catastrophic	Medium
Soil Hazards:				
Erosion				
Expansive Soils				
Land Subsidence				
Volcano				
Wildfire	Likely	Significant	Catastrophic	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

Spatial Extent:
Limited—Less than 10 percent of planning area
Significant—10-50 percent of planning area
Extensive—50-100 percent of planning area

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

Significance (subjective):
Low, Medium, High

Source: Alpine Springs County Water District

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).

F.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.

F.3.1 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 F.2 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. The District's physical assets consist of the flood control and local drainage structures and real property, the operations center, and equipment.

Table F.2. Alpine Springs Water District's Critical Facilities, Infrastructure, and Other District Assets

Name of Asset	Type	Replacement Value	Occupancy/ Capacity #
Horizontal Well 1	Water Supply	$100,000	60 gals per minute
Horizontal Well 2	Water Supply	$75,000	75 gals per minute
Horizontal Well 3	Water Supply	$80,000	15 gals per minute
Horizontal Well 4	Water Supply	$75,000	45 gals per minute
Vertical Well R-1	Water Supply	$150.000	350 gals per minute
Vertical Well R-2	Water Supply	$150,000	500 gals per minute
AME Well	Water Supply	$125,000	25 gals per minute
Storage Tank 1	Water Storage Tank	$100,000	100,000 gallons
Storage Tank 3	Water Storage Tank	$100,000	100,000 gallons
Storage Tank 5	Water Storage Tank	$100,000	100,000 gallons

Source: Alpine Springs County Water District

Natural Resources

In 2006, a wildlife and habitat analysis was done within the District boundaries to evaluate the potential for sensitive animal and plant species to be present. The results of the assessment indicate that areas within the District boundaries have the potential for the following:

- The mountain yellow-legged frog (*Rama muscosa*, which is federally listed as endangered);
- The willow flycatcher (*Empidonax traillii*, which is State listed as endangered);
- The northern goshawk (*Accipiter gentilis*, which is not listed);
- The Sierra Nevada mountain beaver (*Aplidontia rufa californica*, which is not listed);
- The Sierra marten (*Martes Americana sierrae*, which is not listed); and
- The western white-tailed jackrabbit (*Lepus townsendii*, which is not listed).

Growth and Development Trends

Alpine Meadows is a popular ski resort and summer recreational area that also holds over 650 private residences, another 100 private parcels, and a few open space parcels. Most existing homes are situated along Bear Creek or other riparian areas. Multiple organizations own these private lands and are responsible for future development. The private lands are surrounded by United States Forest Service (USFS) owned lands. As such, additional growth is limited to the private lands within the District boundaries

F.3.2 Estimating Potential Losses

Table F.2 above shows the ASCWD's infrastructure, critical facilities, and assets that could be exposed to hazards. Specific losses for the portion of the County of Placer within the District's boundaries are discussed in the main document of this mitigation plan.

Avalanche

The ASCWD services Alpine Meadows, a large ski resort located on both private and USFS lands. According to the 2004 Placer Operational Area, Emergency Operations Plan, areas of particular concern include the Alpine Meadows and Bear Creek area. As previously described in the main plan, in 1982, a 30 foot wall of snow plowed through the Alpine Meadows ski lodge and other ancillary buildings at 80 mph, killing seven people.

Given the known potential for avalanches in the area, avalanche areas have been well defined and avalanche control work is conducted as needed on a regular basis. Additional mitigation measures are in place through county ordinances and the building permit process.

Earthquake

The seismic hazard within the ASCWD service area is relatively low compared to many other parts of California. However, the area is considered to have a higher risk of an earthquake occurring due to the presence of several faults systems located in the area. 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 ASCWD service area. However, because of the limited development in the area, and lack of un-reinfoced masonry buildings, compared to a more urban setting, the ASCWD service area would be of moderate vulnerability to damage from severe ground shaking.

Severe Weather: Heavy Rain/Thunderstorm/Hail

Heavy rain, thunderstorm activity, and hail usually occur on an annual basis in the ASCWD service area. Often during these events, the local stormwater drainage system can be impacted. However, the District did not identify any past events resulting in significant damage.

Severe Weather: Snow

Winter storms in the form of freezing temperatures and snow also occur on an annual basis in the ASCWD. The potential magnitude of these storms can be significant, with snowfall exceeding 168 inches in one storm. However, because this area is home to a premier ski area, not only is an abundance of snow good for the economy, but the area has historically been developed to accommodate big snow seasons.

ASCWD reported a recent incident related to the winter snow season. In February of 2007, water service lines from the distribution main to service boxes froze, causing water service to be interrupted to five homes. The homeowners purchased bottled water for drinking and cooking and hauled water for toilet flushing. No other damages were reported. Incidents of this type will likely occur again during extreme periods of frigid temperatures during the winter season.

Wildfire

Wildfire is a significant concern for the communities within ASCWD boundaries. The Alpine Meadows area contains about 770 private parcels, interspersed among a few open space parcels and surrounded by USFS owned lands. The risk and vulnerability of this area to a catastrophic wildfire is continually increasing due to the buildup of forest fuel loads at dangerous levels. Like many Sierra alpine communities, the fir trees in Alpine Meadows have a fairly high mortality rate, primarily due to drought and disease, leaving a large number of dead and dying fir trees contributing to the wildfire fuel loads. Wildfire loadings within the Alpine Meadows communities contain a significant amount of dead material, ladder fuels, and brush. Fire behavior in these fuel types can be difficult to control. The difficult terrain in Alpine Meadows further contributes to the difficulties in controlling and suppressing fires.

Because of the lack of natural fires and proper forest management, the forests of the Lake Tahoe area have more trees, surface fuels, and overall biomass than ever before. Recent fires in the Tahoe area, such as the Angora fire, highlight the potential for these catastrophic wildfires.

According to the CWPP for the Alpine Meadows area, lightning is the most common ignition source. However, most lightning strikes are accompanied by rain so ignitions do not usually expand to wildfires. Human ignitions are the greatest concern. They often occur during the worst fire weather conditions and near populated areas creating the potential for damaging fires. Vehicle and home fires that spread to the wildland pose the greatest ignition risk in Alpine Meadows.

Once an ignition expands into a wildfire, weather and topography usually dictate how devastating the fire will be. According to the CWPP, the high elevation of Alpine Meadows allow for lower temperatures and better moisture recovery during the night. Southwest winds do blow down the canyon but are not very dry. Further, the topography of the canyon is open enough that there would not be a significant chimney effect during a fire. Therefore the CWPP concludes that the fire weather and topography risk in Alpine Meadows is low as evidenced by

the fire history data for this area. While there have been a number of ignitions, none of the ignitions have resulted in large fires in recorded time.

The CWPP concludes that the overall fire threat around the Alpine Meadow neighborhoods is low to moderate. The areas of highest threat are on the south facing slopes above the Juniper Mountain neighborhood. The overall risk of a catastrophic fire moving through the community is considered low, with the greatest risk to homes in the area from a structural fire spreading to one or more neighboring homes.

F.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 four sections: regulatory mitigation capabilities; administrative and technical mitigation capabilities; fiscal mitigation capabilities; and mitigation outreach and partnerships.

F.4.1 Regulatory Mitigation Capabilities

Table F.3 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 F.3. Alpine Springs Water District's Regulatory Mitigation Capabilities

Regulatory Tool	Yes/No	Comments
General plan	No	Under County plan
Zoning ordinance	No	Governed by County ordinances
Subdivision ordinance	No	Governed by County ordinances
Site plan review requirements	No	Utilizes County requirements
Growth management ordinance	No	Governed by County ordinances
Floodplain ordinance	No	Governed by County ordinances
Other special purpose ordinance (storm water, water conservation, wildfire)	No	Governed by County ordinances
Building code	No	Governed by County ordinances
Erosion or sediment control program	No	Under County program
Storm water management program	No	Under County program
Capital improvements plan	Yes	
Economic development plan	No	
Local emergency operations plan	Yes	Under County plan
Other special plans		
Flood Insurance Study or other engineering study for streams	No	Part of County studies

Source: Alpine Springs County Water District

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

Voluntary Water Conservation Program

The objective of the voluntary water conservation program are to:

1) increase the awareness of valley residents as to the need to conserve water;
2) educate valley residents as to how they can conserve water; and
3) decrease household and commercial use of water, including water used for irrigation, during the months of June through October.

Other Programs

Other programs within the ASCWD include the following:

- Wildfire Prevention Program
  - Community Chipper program
  - Defensible space reviews for homeowners
  - Building material reviews for homeowners

Water Conservation Plan

The ASCWD has a limited supply of water, and sometimes the demand for water exceeds the supply. To maintain reserve water supply capacity for the health and safety responsibilities of the District, the District has implemented a Water Conservation Plan.

Emergency Response Plan

The District has developed a policy to establish parameters by which the District shall plan for and respond to District-related emergency situations that include:

- Acts of God
  - Earthquake
  - Flood
  - Earth Slide
  - Avalanche
- Extended power outage
- Computer system failure, including SCADA
- Communication system failure
- Catastrophic infrastructure failure
- Loss of vehicle access to the valley
- Fire
- Pervasive water supply contamination

Community Wildfire Protection Plan. 2005

A CWPP was developed for the Alpine Meadows area to protect the community from the threat of wildfire. The Alpine Meadows CWPP summarizes wildfire dangers and issues within the community, catalogs community wildfire protection needs, and identifies corrective action and community projects that will mitigate some of the problems.

Water Resource Policy

The District has developed a water resource policy to establish parameters by which the District will manage its water resources. This policy includes parameters for the protection of water sources, water quality, water quantity, and environmental considerations.

Watershed Management Policy

Water in the Bear Creek Valley is a precious and limited resource. It is therefore necessary for the protection of all life in the Valley – human and native flora and fauna – to establish parameters under which the District will protect and preserve the natural resources of the Bear Creek watershed.

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.

Wildfire

The District and Placer County have a number of standards and ordinances, based on California Public Resources Code 4290, in place to address community design issues regarding wildfire hazard preparedness. Ordinances specify details such as:

- Road, driveway and turnaround dimensions to provide safe ingress and egress for the public and fire suppression resources during a fire event;
- Emergency water supply for sustained firefighting operations; and
- Use of flame-resistant building materials in home construction, specifically in roofing and siding materials.

In addition to the codes and ordinances for community design, the ASCWD has adopted Planned Community Development Guidelines and Conditions for subdivisions based on the codes and ordinances. The document provides developers guidelines on mitigation measures and community design guidelines for subdivision construction in the ASCWD, streamlining the approval process by illustrating approved community design elements in the ASCWD.

F.4.2 Administrative/Technical Mitigation Capabilities

The District operates under the supervision of an elected five member Board of Directors. Board members are elected by the residents of Alpine Meadows for a term of four years.

Table F.4 identifies the personnel responsible for activities related to mitigation and loss prevention in the District.

Table F.4. Alpine Springs Water District's Administrative and Technical Mitigation Capabilities

Personnel Resources	Yes/No	Department/Position	Comments
Planner/engineer with knowledge of land development/land management practices	No		
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	No		
Grant writer	No		
Other personnel	No		
GIS Data—Land use	No		
GIS Data—Links to Assessor's data	No		
Warning systems/services (Reverse 9-11, outdoor warning signals)	Yes	The district has an Interlocal with the North Tahoe Fire Protection District with the WARN	

Source: Alpine Springs County Water District

F.4.3 Fiscal Mitigation Capabilities

Table F.5 identifies financial tools or resources that the District could potentially use to help fund mitigation activities.

Table F.5. Alpine Springs Water District's Fiscal Mitigation Capabilities

Financial Resources	Accessible/Eligible to Use (Yes/No)	Comments
Community Development Block Grants	No	
Capital improvements project funding	Yes	The district has adopted a 20 year CIP and rates to support the plan.
Authority to levy taxes for specific purposes	No	
Fees for water, sewer, gas, or electric services	Yes	
Impact fees for new development	Yes	District has Capital Facility Charges for new development.
Incur debt through general obligation bonds	No	
Incur debt through special tax bonds	No	
Incur debt through private activities	Yes	
Withhold spending in hazard prone areas		
Other		

Source: Alpine Springs County Water District

F.4.4 Mitigation Outreach and Partnerships

The District has contracted with the North Tahoe Fire Protection District (NTFPD) to provide fire suppression and emergency medical services within the Alpine Meadows community. The Squaw Valley Fire Department (part of the Squaw Valley Public Service District) also provides automatic aid services to Alpine Meadows through agreement with the NTFPD.

The entire water district is classified by the State of California as State Responsibility Area (SRA). The means the responsibility for prevention and suppression of wildland fires is the responsibility of CAL FIRE. The USFS, Tahoe National Forest, and Truckee Ranger District provides these direct protection responsibilities on behalf of the State of California through an exchange of acres agreement.

Wildfire protection services are provided at the local level by the NTFPD. Through the NTFPD, Alpine Meadows is also covered by the Lake Tahoe Regional Chiefs Association mutual aid agreement, providing simplified access to Lake Tahoe Basin fire departments upon request. The NTFPD is also a signatory to the California Master Mutual Aid System. As a system participant, NTFPD has access to free firefighting resources throughout the State of California.

F.4.5 Other Mitigation Efforts

The District currently has other ongoing and proposed mitigation efforts as described in this section.

Alpine Meadows Consolidated Defensible Space Project

The project being proposed by ASCWD is to reduce dangerous forest fuel loading on 50 acres in the Alpine Meadows area and to offer free residential chipping services and defensible space inspections to 200 private properties. This project consists of two elements. The first element is the reduction of overgrown forest fuels on common properties owned by three homeowners associations and the water district that intertwine between private homes along the valley. The second element is funding a community chipper program to the residents of the district for many years.

F.5 Mitigation Strategy

F.5.1 Mitigation Goals and Objectives

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

F.5.2 Mitigation Actions

The planning team for the ASCWD 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.

1. Alpine Meadows Consolidated Defensible Space Project

Issue/Background Statement: This project will complete fuels reduction on 50 acres of commonly held properties within the Bear Creek watershed, or the Alpine Meadows community. This project will also provide curbside chipping services and defensible space inspections for 200 homes. This project aims to build on the community awareness and educational efforts underway in the area in order to reduce fuel loadings on common properties and to inspire and educate private property owners to complete defensible space treatments on their property. Finally, this project will serve as a model project by applying mitigation and monitoring techniques for prescribed burning of piles in a riparian area where no other means of slash disposal exists.

Other Alternatives: No action.

Existing Planning Mechanism(s) through which Action Will Be Implemented: 2005 Community Wildfire Protection Plan.

Responsible Office: Alpine Springs County Water District.

Priority (H, M, L): High

Cost Estimate: $196,375.

Benefits (Losses Avoided): Protection of property, life safety.

Potential Funding: Grant funding, Budget funding: Placer County Biomass Program, Juniper Mountain Association, Alpine Meadows Estates Association, Alpine County Water District.

Schedule: 2009-2010.

2. Mineral Springs Soil Bank Stabilization Project (Flood Hazard)

Issue/Background: A section of the 10″ main sewer that serves the Alpine Meadows community is located adjacent to and between Mineral Springs Trail and Bear Creek. Recent flooding (2006 and 1997) along with annual erosion by Bear Creek have eroded and undercut the 40 to 50 foot high bank approximately 30 feet. Continued erosion and undercutting by Bear Creek will result in the loss of this 10″ sewer main. The failure of this 10″ sewer main would result in approximately two thirds of the 650 sewer customers' sewage discharging into Bear

Creek. Bear Creek discharges into the Truckee River. Discharge of sewage would pose a potential risk to human health and the environment.

The proposed project would complete evaluation of current site conditions, develop recommended slope stabilization (most likely large boulders 2 – 3 tons along with gabions), and install the recommended slope stabilization.

Other Alternatives: Replace approximately 150 feet of 10" sewer main with a pump station and force main. The pump station would require stand-by power because of the inability to provide on-site storage. The site is constrained.

A second alternative would be to rent and have available during each major storm or flood event pump around equipment and facilities.

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

Responsible Office: Alpine Springs County Water District

Priority (High, Medium, Low): High

Cost Estimate: Complete project approximately $450,000.

Benefits (Losses Avoided): Potential fines for sewage overflows are estimated at $10 per gallon. Depending on the time it would take to get pumping equipment into place, the fines range from a low of $576,000 to $1,483,200 (412 customers with average daily flow of between 140 gallons per day to 360 gallons per day). In addition to the fines, additional resources would be needed for spill response and clean up, pump around equipment rental and set up, and the construction of replacement facilities. Project would protect natural resources by reducing the potential for spills of untreated wastewater into waterways.

Potential funding: District capital funds.

Schedule: Next 24 months