

Public Review DRAFT

2026 - 2031

LOCAL HAZARD MITIGATION PLAN

Union Public Utility District

339 Main Street, Murphys, Calaveras County California

PWSID 0510001



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SECTION 1. INTRODUCTION

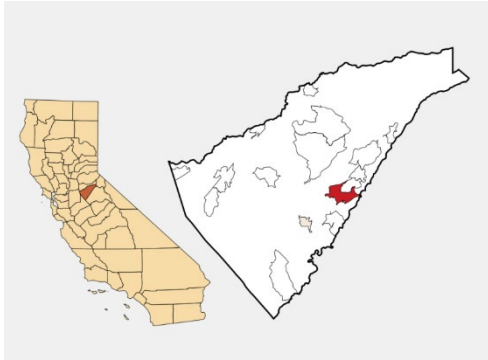


Figure 1. Regional Map highlighting the unincorporated town of Murphys, where UPUD headquarters is located.

Situated in Calaveras County, California (Figure 1), the Union Public Utility District (UPUD or “the District”) provides potable and raw water services to the unincorporated communities of Murphys, Douglas Flat, Vallecito, Six Mile, Carson Hill, and Frog Town. Within its 19.1-square-mile service area, the District owns and operates approximately 41 miles of potable water distribution lines and 18 miles of raw water conveyance lines. The District is also responsible for maintaining four reservoirs, four water storage tanks, and a water treatment plant that collectively supports reliable water delivery to its customers.

Hazard mitigation is the process of identifying hazards that may threaten a community, assessing their potential impacts, establishing mitigation goals, and developing, prioritizing, and implementing strategies to reduce risk. The development of a Local Hazard Mitigation Plan (LHMP) is a proactive approach to minimizing the long-term effects of natural and human-caused hazards on people, property, infrastructure, and the environment. For UPUD, hazard mitigation is critical to protecting public health, maintaining reliable water service, safeguarding essential water infrastructure, and supporting efficient response and recovery efforts following disasters.

On [DATE], the UPUD Board of Directors adopted this LHMP with the vision of systematically reducing the District’s vulnerability to hazards and enhancing the resilience and reliability of its water systems and services. The plan was subsequently approved by the Federal Emergency Management Agency (FEMA) on [DATE]. FEMA approval of an LHMP is a prerequisite for eligibility to receive certain pre-disaster mitigation grants and other forms of federal disaster assistance following declared emergencies.



Figure 2. Snow covered Murphys, CA.

1.1 PURPOSE OF THE PLAN

The purpose of the UPUD LHMP is to identify and assess hazards that may affect the District's service area, critical facilities, infrastructure, and operations; evaluate the District's vulnerability to those hazards; and establish a long-term strategy for reducing risk and strengthening resilience.

This plan is guided by three core objectives:

- **Regulatory Compliance:** Meet the requirements of the Disaster Mitigation Act of 2000 and Title 44 Code of Federal Regulations (CFR) § 201.6, maintaining eligibility for FEMA Hazard Mitigation Assistance programs and other federal funding opportunities.
- **Risk Reduction:** Identify and prioritize actions that reduce the potential impacts of natural hazards on life, property, public health, water infrastructure, and essential District operations.
- **Community Resilience:** Enhance the reliability of water services, strengthen the District's ability to prepare for, respond to, and recover from hazard events, and support the long-term resilience of the communities served by UPUD.

This LHMP provides a framework for informed decision-making and investment in mitigation measures that protect critical infrastructure, reduce disaster-related losses, and improve operational continuity before, during, and after hazard events.

The plan fulfills the requirements of the Disaster Mitigation Act of 2000 and Title 44 CFR § 201.6, ensuring the District remains eligible for FEMA Hazard Mitigation Assistance programs, including the Hazard Mitigation Grant Program (HMGP), HMGP Post-Fire, Building Resilient Infrastructure and Communities (BRIC), Flood Mitigation Assistance (FMA), and the Safeguarding Tomorrow Revolving Loan Fund.

Mitigation actions identified in Section 6 are designed for direct incorporation into the District's Capital Improvement Program and other planning efforts. Progress on implementation is reviewed annually in conjunction with the District's budgeting process to ensure mitigation investments remain aligned with evolving risks, operational priorities, and community resilience goals.

1.2 PLAN RATIONALE FOR STANDALONE LHMP

This Local Hazard Mitigation Plan (LHMP) is the Union Public Utility District's first standalone hazard mitigation plan. Previously, the District participated in regional hazard mitigation planning efforts through the Utica Water and Power Authority (UWPA) and the Calaveras County Multi-

Jurisdictional Hazard Mitigation Plan (MJHMP). While those plans provided valuable regional context, UPUD determined that a district-specific LHMP would more effectively address the unique risks, assets, and operational needs associated with its water system.

The District elected to prepare a standalone plan for several reasons:

- **Infrastructure-Focused Risk Profile** – UPUD's vulnerability is driven primarily by the exposure of critical water infrastructure, including a limited number of diversion, conveyance, treatment, and storage facilities. Disruption of any one of these assets could significantly affect water service delivery, making infrastructure-specific risk assessment and mitigation planning essential.
- **Direct Integration with Capital Planning** – A standalone LHMP allows mitigation actions to be directly linked to the District's Capital Improvement Program, asset management initiatives, budget priorities, and rate-setting process, improving the District's ability to implement projects and track progress.
- **Enhanced Grant Competitiveness** – District-specific documentation of hazards, vulnerabilities, potential losses, and mitigation benefits provides a stronger foundation for pursuing state and federal funding opportunities and demonstrates the direct benefits of proposed projects at the asset level.
- **Improved Operational Resilience** – A dedicated plan enables the District to identify and prioritize actions that strengthen system reliability, reduce service disruptions, and improve the District's ability to prepare for, respond to, and recover from hazard events.

UPUD recognizes that many hazards and mitigation challenges extend beyond its service area and jurisdictional authority. Accordingly, the District will continue to participate in regional and countywide mitigation planning efforts and coordinate with Calaveras County, neighboring agencies, and other stakeholders. This plan is intended to complement, not replace, the Calaveras County Multi-Jurisdictional Hazard Mitigation Plan, and no policies, goals, or mitigation actions contained herein conflict with those established in the County's adopted plan.

NFIP Coordination and Compliance. UPUD does not have authority to administer the National Flood Insurance Program (NFIP), regulate development within flood hazard areas, or enforce floodplain management ordinances. These responsibilities reside with Calaveras County. The District supports continued participation in and compliance with the NFIP by coordinating with Calaveras County on flood-related issues that may affect District facilities, infrastructure, access routes, or operations. Through its continued participation in countywide hazard mitigation planning

and interagency coordination efforts, UPUD will consider floodplain information, flood hazard mapping, and other NFIP-related data when planning, designing, rehabilitating, and maintaining District facilities.

1.3 NEW RISK ASSESSMENT

Because this is the first standalone plan for the District, the entire risk assessment in Section 4 is new. Data and analysis developed for this plan include:

- A facility-by-facility hazard identification workshop with District management and operations staff, held January 27, 2026.
- Incorporation of the natural hazard findings of the District's 2026 Risk and Resilience Assessment prepared under America's Water Infrastructure Act.
- Review of federal disaster declaration history for Calaveras County.
- CAL FIRE Fire Hazard Severity Zone data, FEMA Flood Insurance Rate Map data, and California Geological Survey data for the service area.
- Climate projections for the service area from Cal-Adapt.

1.4 SUCCESSFUL MITIGATION IMPLEMENTATION

Although this is the District's first standalone LHMP, hazard mitigation has long been incorporated into UPUD's planning, operations, and capital improvement activities. The District has successfully implemented numerous projects that reduce risk to critical water infrastructure, improve system reliability, and strengthen resilience to future hazard events. Table 1 highlights representative mitigation actions completed in recent years and demonstrates UPUD's proven capacity to identify, prioritize, fund, and implement effective mitigation measures.

Table 1. Recent Completed Mitigation Actions

Action	Year	Result
Completed AWIA Risk and Resilience Assessment and Emergency Response Plan	2026	Identified natural hazard exposure by asset category; certified to EPA
Installed mixing and aeration equipment at storage facilities	2020	Reduced disinfection byproduct formation at the two highest-DBP sites
Executed mutual aid agreements with Calaveras County water agencies	2023 - 2025	Access to labor and equipment from partner agencies during emergencies
Installed satellite communications at the treatment plant	2025	Reduced dependence on a single telephone circuit
Installed backup water line to bypass Cademartori Reservoir	2025	Can bypass the reservoir during algal blooms, dam repairs, improving water reliability.

Action	Year	Result
Completed Lead Service Line Inventory	2024	No lead or galvanized service lines requiring replacement identified
Adopted emergency response rate provisions through the 2024 Rate Study	2024	Board may enact emergency charges to maintain revenue during a disaster or mandated shortage
Complete Treatment Filter Rehab: Installed new filter media and relined filters	2026	Improve water quality, enhance treatment processes, and minimize backflow requirements
Upgraded electric panel at the Water Treatment Plant	2026	Greatly enhanced treatment demand capabilities. Reduced fire risk.
Replaced and upgraded backup generator at the Treatment Plant	2026	Greatly enhanced energy resources during power outage events.
Participation in County pre-winter utility coordination	Annual	Established County commitment to clear access to District facilities on request
Participation in Calaveras County Utilities Coordination Meetings	Quarterly	Enhance communication and project efficiency across utilities in Calaveras County.
Participation in California Special Districts Association Calaveras County Chapter	Quarterly	Enhance communication, collaboration and emergency response across special districts in Calaveras County.

1.5 UPUD SYSTEM PROFILE

OVERVIEW & HISTORY

The Union Public Utility District provides water service to the rural communities of Murphys, Douglas Flat, Vallecito, and Carson Hill, and Frog Town located along the State Highway 4 corridor and State Highway 49 in Calaveras County on the western slope of the Sierra Nevada (Figure 5). Since its formation in 1946, the District has supplied reliable water service to residents, businesses, agricultural users, and public facilities throughout its service area and currently operates as Public Water System CA0510001.

UPUD provides two essential services: treated potable water for domestic, commercial, and public use, and a raw water delivery system that supports landscape irrigation, agricultural activities, and fire suppression. These services are critical to the health, safety, economic vitality, and quality of life of the communities served by the District. In addition, the availability of raw water for fire protection contributes to the region's overall resilience to wildfire, one of the primary hazards facing Calaveras County.

The District's service area encompasses approximately 19.1 square miles and is characterized by a predominantly rural development pattern concentrated along the Highway 4 transportation corridor. Unlike many municipal water systems that serve compact urban areas, UPUD's infrastructure is distributed linearly across multiple communities. As a result, disasters affecting the corridor, including wildfire, landslides, flooding, severe weather, earthquake-related



Figure 3. McKay's Point Reservoir

disruptions, or transportation closures, have the potential to impact large portions of the District's service area simultaneously. Damage to a single segment of critical infrastructure or loss of access along Highway 4 can disrupt operations, impede emergency response, and affect water service to entire communities.

UPUD operates a surface-water-based supply system with no groundwater production facilities. The District's water supply originates as rainfall and snowmelt in the upper North Fork Stanislaus River watershed. Water is conveyed through a complex regional system that includes the Lake Alpine, Union Reservoir, Utica Reservoir, New Spicer Meadow Reservoir, the North Fork Diversion Tunnel, North Fork Stanislaus River, McKay's Point Reservoir (Figure 3), the Collierville Tunnel, and the Utica Water & Power Authority conveyance system before ultimately reaching District facilities. Water is delivered from the Collierville Tunnel to Hunters Reservoir through the Tunnel Tap connection and then conveyed via the Utica canal, an

open-channel system (Figure 4) owned and operated by the Utica Water and Power Authority (UWPA). UPUD diverts water from the Utica Canal to Cademartori Reservoir and the District's North Ditch and South Ditch raw water systems.

Potable water is produced at the Cademartori Water Treatment Plant, where source water undergoes coagulation, filtration, disinfection, and pH adjustment before entering the District's distribution network. The District's water infrastructure includes reservoirs, water storage tanks, treatment facilities, raw water conveyance systems, and approximately 59 miles of distribution and conveyance pipelines that collectively support water delivery throughout the service area.



Figure 4. Three-quarter Mile Flume of the Utica Canal & Ditch System.

Several characteristics distinguish UPUD's hazard risk profile from that of many other local agencies. First, the District relies on a single surface water source delivered through a largely singular conveyance pathway. UPUD has no groundwater wells, no alternative surface water supply, and no permanent emergency interconnection capable of replacing its primary source. Furthermore, critical components of the supply system, including the Tunnel Tap, Hunters Reservoir, and portions of the Utica ditch system, are located outside the District's boundaries and are owned or operated by partner agencies and the District's JPA. Consequently, hazards affecting these facilities can directly impact UPUD's ability to provide water service despite being outside the District's direct control.

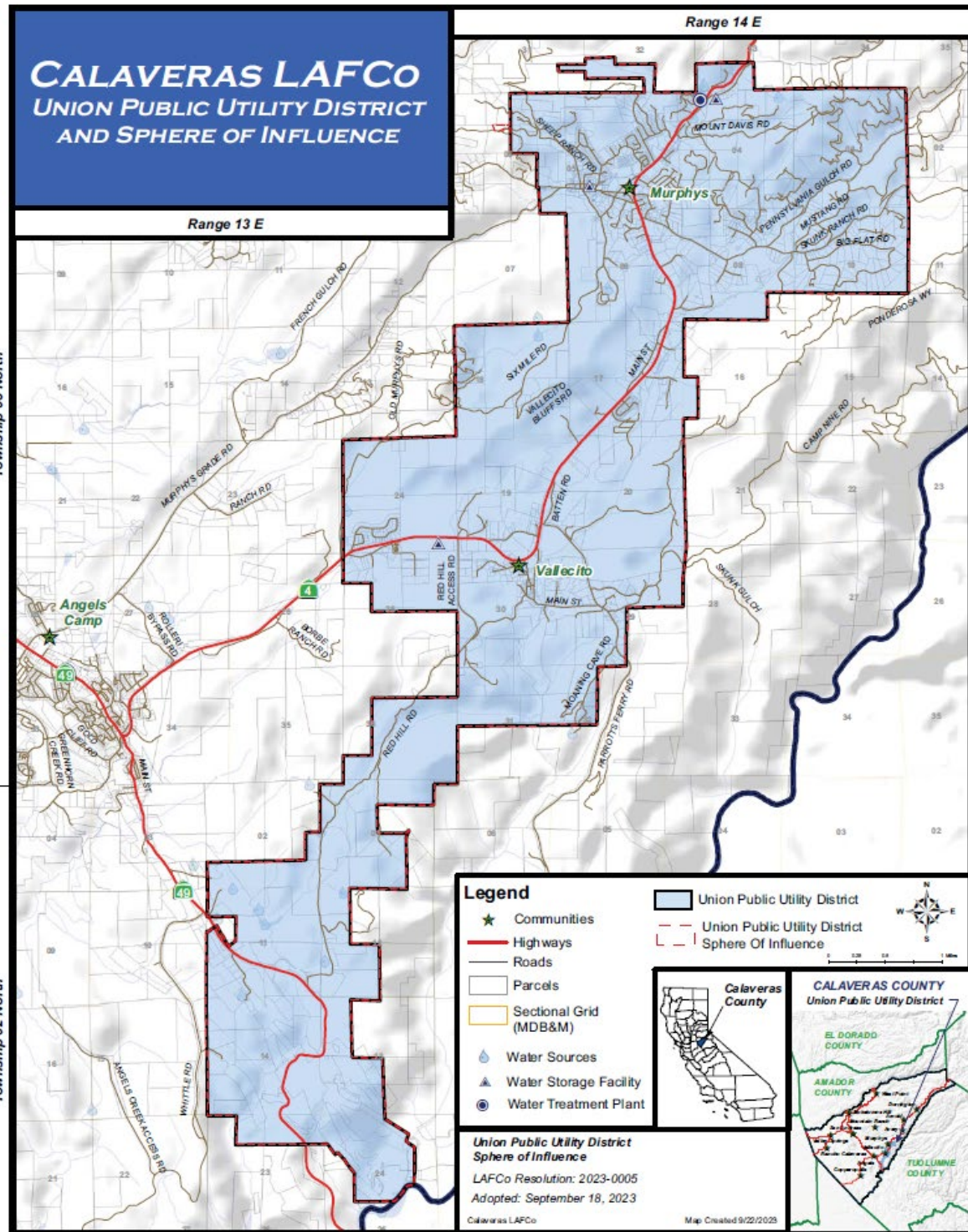
Second, portions of the District's raw water delivery infrastructure date to the early-twentieth century and, despite ongoing maintenance and rehabilitation efforts, continue to require replacement and modernization. Aging infrastructure can be more susceptible to damage from hazards such as wildfire, flooding, severe weather, landslides, and falling trees, increasing the likelihood of service interruptions and repair costs following disaster events.

Together, these conditions create a risk profile in which the reliability of a relatively small number of critical facilities has a disproportionate influence on the District's ability to provide essential services. As a result, protecting supply, conveyance, treatment, storage, and distribution infrastructure is a central focus of this Local Hazard Mitigation Plan and the mitigation actions identified herein.

Table 2. UPUD System Profile

Item	Value
Public water system ID	CA0510001
Year established	1946
Communities served	Murphys, Douglas Flat, Vallecito, Carson Hill
Population served	5000
Potable service connections	1620
Raw water service connections	105
Service area	19.1 square miles along the State Highway 4 corridor and State Highway 49
Source of supply	North Fork Stanislaus River via Lake Alpine, Union Reservoir, Utica Reservoir, New Spicer Meadow Reservoir, the North Fork Diversion Tunnel, McKays Reservoir, the Collierville Tunnel, Tunnel Tap, Hunters Reservoir, feeding the UWPA ditch system.
Water rights	Held by UWPA (UPUD's JPA): 60 cfs of the 88 cfs North Fork Stanislaus right; FERC Projects 2019 and 2699, licenses expire September 2033
Storage reservoir	Cademartori Reservoir, constructed 1983, 140 acre-feet (elevation 2,904 feet)
Dam	Andrew Cademartori Dam — DSOD No. 2031.000, NID No. CA01274, DSOD Central Region
Dam hazard classification	HIGH (DSOD)

Item	Value
Dam data	Earthen, 80 feet high, 520 feet long; open spillway 30 feet long at elevation 2,900; 4 feet freeboard; no gates or flashboards; no DSOD-identified critical appurtenant structures
Dam outlet works	Two submerged sluice gate valves. Low-level valve at the toe drain inlet box at approximate elevation 2,855, and the raw water inlet at elevation 2,875 feeding the treatment plant approximately 500 feet downstream
Dam location	777 Mt. Davis Road, approximately 1 mile northeast of Murphys; 38.31479° N, 120.4313° W
Treatment	Cademartori water treatment plant: coagulation, filtration, chlorine disinfection, pH adjustment
Treatment capacity	Maximum Daily Capacity: 2.1 MGD with 2 filters; 3.11 MGD with 3 filters
Peak demand of record	1.48 MGD
Finished water storage	4 storage tanks, totaling 3.35 MG
Domestic Distribution main	41 miles, predominantly steel
Raw Distribution Main	18 miles, predominantly 1940s spiral-welded steel with PVC and AC sections
Pressure zones	Domestic System: 12; Raw Water System: 4
Booster and pump stations	0
Hydrants	Domestic System: 223; Raw Water System: 31
Employees	9
Facilities	Main Office, 339 Main Street; Maintenance Building, 988 Sheep Ranch Road; Water Treatment Plant, 777 Mount Davis Rd.



1.6 CLIMATE, TOPOGRAPHY & GEOGRAPHY

CLIMATE

The UPUD service area experiences a Mediterranean climate characterized by hot, dry summers and cool, wet winters. Summer temperatures commonly reach the mid-80s to 90s °F, while winter temperatures generally range from the upper 30s to low 50s °F. Most annual precipitation occurs between November and May, contributing to seasonal flooding, erosion, and landslide hazards. Because portions of the District's facilities are located near the seasonal snow line, winter precipitation may occur as either rain or snow, affecting water supply, access, and operational conditions.

Climate change projections for the Sierra Nevada foothills indicate trends that may increase hazard risk within the District, including reduced snowpack, earlier spring runoff, more frequent and severe drought conditions, increased frequency of extreme heat events, more intense precipitation during storm events, and a longer and more severe wildfire season. These changing conditions have the potential to affect water supply reliability, infrastructure performance, and emergency response capabilities throughout the District.

TOPOGRAPHY

The District's service area ranges in elevation from approximately 1,410 to 2,950 feet above mean sea level and is characterized by rolling foothills, steep slopes, ridgelines, perennial streams, and seasonal drainage channels. Angels Creek is the principal watercourse within the District and a critical component of the regional water system. The creek traverses much of the service area before continuing southwest toward the City of Angels Camp and ultimately into New Melones Reservoir. The North Fork Stanislaus River lies northeast of the District and serves as the originating source of the District's water supply.

The area's varied terrain has influenced both land development patterns and the design of the District's infrastructure. UPUD's water system operates solely through gravity-fed conveyance and distribution, utilizing natural elevation differences throughout the service area. While this configuration improves operational efficiency, steep slopes and rugged terrain can increase vulnerability to erosion, landslides, wildfire impacts, falling trees, and access limitations during emergency events.

GEOGRAPHY

The Union Public Utility District is located in the Sierra Nevada foothills of Calaveras County in California's Central Valley and Sierra Nevada transition region. The District's service area extends along the State Highway 4 corridor and includes the communities of Murphys, Douglas Flat, Vallecito, Carson Hill and Frog Town. UPUD's administrative office is located in Murphys, approximately 83 miles southeast of Sacramento and 57 miles northeast of Stockton.

State Highway 4 serves as the primary transportation corridor through the District and provides critical access for residents, emergency responders, utility personnel, and maintenance crews. Because much of the District's infrastructure and customer base are concentrated along this corridor, disruptions caused by wildfire, severe weather, flooding, landslides, or roadway closures have the potential to affect emergency access, operational response, and service continuity across multiple communities.

1.7 DEMOGRAPHICS & COMMUNITY CHARACTERISTICS

The UPUD service area serves the rural communities of Murphys, Douglas Flat, Vallecito, and Carson Hill. The District serves approximately 3,300 residents and is characterized by an aging population, with approximately 49 percent of residents aged 65 years or older and a median age of 64.6 years. In addition, Murphys, Douglas Flat, and Vallecito are designated as Disadvantaged Communities (DACs), reflecting socioeconomic conditions that can increase vulnerability to natural hazards.

The combination of an aging population, rural setting, and DAC status creates heightened vulnerability during emergencies. Older adults may face mobility limitations, medical needs, and increased dependence on reliable utility services, while rural residents often have limited access to healthcare, transportation, emergency services, and recovery resources. Disruptions to water service during wildfires, droughts, severe storms, power outages, or infrastructure failures can therefore have disproportionate impacts on public health, safety, and community resilience (Figure 6).

Additionally, rural DAC communities frequently face affordability challenges associated with maintaining and replacing aging water infrastructure. Ratepayers often have limited capacity to absorb the costs of major capital improvements necessary to reduce hazard risk and improve system reliability. As a result, grant funding and other external assistance are critical to implementing mitigation projects that strengthen water system resilience, protect vulnerable populations, and support equitable disaster preparedness, response, and recovery.

Several critical customers and community-serving facilities within the District rely on continuous water service to support life safety, emergency operations, education, and community resilience. These include:

- Albert Michelson Elementary School
- Murphys Fire Protection District
- CAL FIRE Murphys Station
- Vallecito Fire Protection District
- Vallecito Conservation Camp
- Calaveras County Fairgrounds

- Murphys Senior Housing/Home Facility

Disruption of water service to these facilities could have significant consequences for emergency response, fire suppression, public safety, and the well-being of vulnerable populations. As a result, protecting the infrastructure that serves these critical customers is a key consideration throughout this LHMP.

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FEMA 2024 Community Resilience Challenges Index (CRCI) Census Tracts – United States

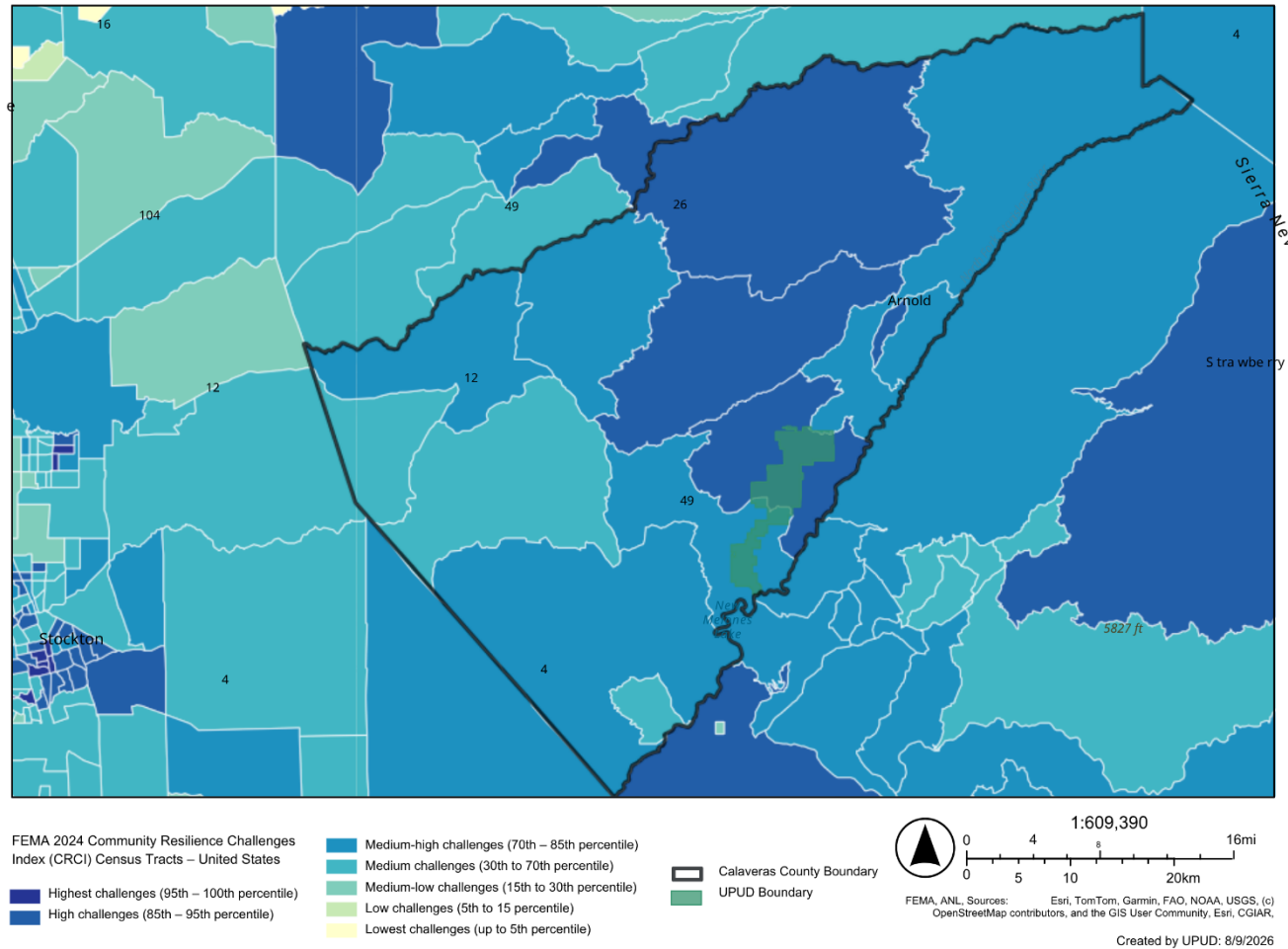


Figure 6. Community Resilience Challenges Index Census Tracks place UPUD communities in the High to Medium-High categories.

1.8 EXISTING LAND USE

Land use within the UPUD service area is characterized by a mix of residential, commercial, agricultural, recreational, and open-space uses typical of the Sierra Nevada foothill region. Development is concentrated within and around the historic community of Murphys, with smaller residential clusters located in Douglas Flat, Vallecito, Carson Hill, and Six Mile Village. Commercial uses are primarily focused along the State Highway 4 corridor, while surrounding areas consist of rural residential development, vineyards and wineries, grazing lands, forested open space, and undeveloped lands.



Figure 7. Historic downtown Murphys before the annual Irish Day event, which brings in thousands of visitors for the weekend.

Tourism and recreation are also important components of the local economy and land use pattern. The community of Murphys (Figure 7) serves as a regional destination known for its historic downtown, wineries, tasting rooms, restaurants, annual events, festivals, and proximity to outdoor recreation opportunities in the Sierra Nevada, including New Melones Lake, Calaveras Big Trees State Park, and nearby public lands. Seasonal visitors and event-related populations can significantly increase demand on local infrastructure, transportation corridors, emergency services, and water supplies during peak periods.

A significant portion of the District's service area is located within the wildland-urban interface (WUI), where homes, businesses, and public facilities are interspersed with vegetation and forested landscapes. This development pattern increases exposure to wildfire and can complicate emergency response, evacuation, and utility restoration efforts during disaster events. The combination of dispersed development, heavily vegetated terrain, seasonal visitor activity, and dependence on limited transportation corridors also contributes to vulnerability from hazards such as wildfire, severe storms, landslides, drought, and prolonged power outages.

Land use planning, zoning, development review, and building regulation within the District are the responsibility of Calaveras County. UPUD does not possess land use authority and therefore relies on coordination with County planning and emergency management efforts to ensure that future growth, tourism activity, development patterns, and hazard mitigation objectives are addressed in a manner that supports long-term community resilience.

Because the District's infrastructure serves existing residents, businesses, visitors, and future development throughout the service area, changes in land use, population distribution, tourism activity, and development within hazard-prone areas have the potential to influence water demand, emergency response requirements, infrastructure replacement priorities, and overall system resilience. These considerations are incorporated into the District's hazard mitigation and capital improvement planning processes.

1.9 DEVELOPMENT TRENDS

Population growth and development within the UPUD service area have occurred at a slower pace than projected in the District's 2004 Water Master Plan. At the time, the Master Plan documented an average annual growth rate of approximately 1.3 percent in domestic water connections between 1995 and 2002 and incorporated long-term growth forecasts from the California Department of Finance. Those forecasts anticipated a continued increase in development and water demand, projecting growth from 1,577 domestic connections in 2002 to approximately 2,237 connections by 2020 and 2,605 connections by 2032. *Currently, the District has 1,620 domestic water connections.*

Since adoption of the Master Plan, however, the rate of growth within the District has moderated considerably. Economic conditions, regional development patterns, housing trends, and infrastructure constraints have resulted in lower-than-anticipated growth in water service demand. As a result, the hazard mitigation challenges facing the District today are driven less by rapid expansion and more by the need to maintain, rehabilitate, and protect existing infrastructure from increasingly severe natural hazards, while utilizing lower than predicted customer revenue.

Development within the service area continues to be concentrated in and around established communities along the Highway 4 corridor, with limited large-scale growth occurring in recent years. Consequently, future mitigation planning is focused primarily on enhancing the resilience and reliability of existing facilities rather than expanding infrastructure to accommodate substantial new development.

The District's raw water system has experienced no growth over the same period. UPUD has maintained a long-standing moratorium on new raw water connections, and demand for raw water service has remained relatively stable. While this has limited the need for system expansion, many components of the raw water system are aging and require ongoing maintenance, rehabilitation, or replacement. Accordingly, the District's primary concern is not accommodating additional demand, but ensuring that existing infrastructure remains reliable and resilient in the face of hazards such as wildfire, severe storms, flooding, and infrastructure failures.

These development trends have important implications for hazard mitigation planning. Because growth pressures have been lower than originally anticipated, the District's mitigation priorities are focused on protecting critical assets, reducing service disruptions, improving system redundancy, and investing in infrastructure improvements that enhance long-term community resilience.

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SECTION 2. PLAN ADOPTION

2.1 ADOPTION BY LOCAL GOVERNING BODY

The UPUD Board of Directors adopted this Local Hazard Mitigation Plan by Resolution No. [XXX] on [date]. Adoption demonstrates the District's commitment to the goals and projects in this plan and authorizes District staff to implement it. A copy of the adopting resolution is listed in the appendices. (Insert final resolution in appendices)

Adoption is required by 44 CFR § 201.6(c)(5).

2.2 AUTHORITY

This Local Hazard Mitigation Plan has been prepared pursuant to Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. § 5165), as amended by the Disaster Mitigation Act of 2000, and the implementing regulations contained in Title 44 Code of Federal Regulations (CFR) Part 201. The plan is intended to satisfy federal requirements for local hazard mitigation planning and to maintain eligibility for FEMA Hazard Mitigation Assistance funding programs.

The Union Public Utility District is an independent special district organized under the laws of the State of California and governed by a five-member elected Board of Directors. Under 44 CFR § 201.2, special districts are recognized as local governments for the purposes of hazard mitigation planning and are therefore authorized to prepare, adopt, and maintain their own Local Hazard Mitigation Plans.

UPUD is responsible for providing potable and raw water services within its service area in Calaveras County. The District owns, operates, and maintains water conveyance, treatment, storage, and distribution infrastructure necessary to provide these services, including pipelines, reservoirs, dams, diversion facilities, storage tanks, and water treatment facilities. As the owner and operator of these assets, the District has the authority to plan for, implement, and maintain mitigation measures that reduce risks to its facilities, operations, and customers.

The District's authority is limited to its utility functions and infrastructure. UPUD does not possess jurisdiction over land use planning, zoning, building regulations, development review, or code enforcement. These responsibilities reside with Calaveras County and other applicable local, state, and federal agencies. Accordingly, implementation of certain mitigation measures may require coordination with partner agencies that possess broader regulatory authority.

On June 25, 2025 the UPUD Board of Directors authorized the preparation of this Local Hazard Mitigation Plan and directed staff to undertake the planning process in accordance with FEMA requirements.

UPUD is also a member agency of the Utica Water and Power Authority (UWPA), a Joint Powers Authority established with the City of Angels to own, operate, and manage water rights and conveyance facilities associated with the Utica water system. Through its participation in UWPA, the District plays an active role in the governance and management of critical regional water supply infrastructure. This partnership enhances UPUD's hazard mitigation capabilities by supporting coordinated planning, risk reduction, infrastructure investment, and continuity of water supply during and following hazard events.

Key Authorities Supporting this Plan

- Disaster Mitigation Act of 2000 (DMA 2000), Section 322
- Robert T. Stafford Disaster Relief and Emergency Assistance Act
- 44 CFR Part 201, Hazard Mitigation Planning
- California statutes governing the formation and operation of UPUD as a Special District, July 26, 1946.
- 1995 Joint Powers Agreement establishing the Utica Water and Power Authority (UWPA)

This plan applies to all District facilities, staff, and operations. The Board consists of five directors elected at large. The General Manager is responsible for implementation, monitoring, evaluation, and update of the plan.

2.3 PRIMARY POINT OF CONTACT

Table 3. Points of Contact

	Primary Contact	Alternate
Name	Jessica Self	Joe Darby
Title	General Manager	Operations Manager
Agency	Union Public Utility District	Union Public Utility District
Address	339 Main Street, Murphys, CA 95247	339 Main Street, Murphys, CA 95247
Phone	Office (209) 728-3651; cell (209) 286-9169	(209) 728-3651
Email	jself@upudwater.org	jdarby@upudwater.org

SECTION 3. PLANNING PROCESS

3.1 PREPARING FOR THE PLAN

UPUD developed this LHMP using District staff expertise, operational knowledge, and existing planning documents as the primary sources of information. Because the District's risk profile is closely tied to the condition and performance of its water infrastructure, the planning process began with a facility-by-facility review of District assets. Hazards, vulnerabilities, and mitigation opportunities were then identified and evaluated based on their potential effects on critical facilities, operations, and service delivery.

The planning process included the following key activities:

- Reviewing existing plans, studies, maps, and technical data relevant to District operations and hazard exposure.
- Conducting staff workshops and asset reviews to identify hazards, vulnerabilities, and potential consequences associated with individual facilities and infrastructure systems.
- Coordinating with partner agencies, neighboring jurisdictions, and the public to gather input and improve regional consistency.
- Documenting historical hazard events that have affected District facilities, operations, or water service.
- Identifying, screening, and prioritizing hazards based on their likelihood and potential impacts.
- Establishing mitigation goals and developing mitigation actions to address identified risks.
- Providing opportunities for public review and comment by posting meeting materials and the draft plan on the District's website.

This asset-based approach ensured that the plan reflects the District's operational realities and focuses mitigation efforts on reducing risks to the infrastructure and systems that are essential to maintaining reliable water service.

3.2 PLANNING TEAM

Given UPUD's relatively small organization of eight employees, development of this LHMP relied heavily on the knowledge, experience, and institutional expertise of District personnel responsible for managing and operating the water system. The planning team represented the District's administrative, operational, and technical functions and provided critical input throughout the planning process. Team members supplied operational and infrastructure data, identified vulnerabilities and hazard impacts, evaluated existing capabilities, and developed and prioritized mitigation actions.

While a core planning team guided plan development, UPUD intentionally involved all District staff through planning workshops and review meetings. This approach allowed the District to capture institutional knowledge from personnel responsible for day-to-day operation, maintenance, emergency response, customer service, and administration. Staff input was particularly valuable in identifying facility-specific vulnerabilities, documenting past hazard impacts, and evaluating the feasibility and effectiveness of potential mitigation measures.

The planning process benefited from the practical experience of employees who operate and maintain the District's infrastructure on a daily basis, ensuring that the plan reflects operational realities, capital improvement priorities, and long-term resilience objectives. Table 4 identifies the individuals and organizations that served as the primary planning team for development of this LHMP

Table 4. Planning Team

Title	Department	Role
General Manager	UPUD Administration	Project oversight, Board liaison, capability and funding
Operations Manager	UPUD Operations	System-wide operations, conveyance, diversions, reservoir
District Engineer	WGA Engineering	Drafting of plan and technical input

3.3 COORDINATION WITH OTHER EXTERNAL JURISDICTIONS, AGENCIES, AND ORGANIZATIONS

UPUD coordinates regularly with local and regional agencies whose responsibilities influence the District's ability to prepare for, respond to, and recover from hazard events. Coordination activities provide opportunities to share information on infrastructure conditions, emergency planning, capital projects, hazard vulnerabilities, and utility service continuity.

The District participates in the *Calaveras County Pre-Winter Utility Coordination Meeting*, which brings together utility providers, public works agencies, emergency management personnel, and other stakeholders to address seasonal preparedness, storm response planning, infrastructure access, road closures, and resource coordination during winter weather events.

UPUD also participates in the *Calaveras County Quarterly Utility Meetings*, which facilitate ongoing coordination among utility providers operating within the county. These meetings provide a forum to discuss operational challenges, infrastructure projects, emergency response procedures, mutual concerns, and potential impacts from natural hazards affecting utility systems.

In addition, the District participates in the *Calaveras County Chapter of the California Special Districts Association (CSDA) quarterly meetings*, which support information sharing and collaboration among special districts on topics including emergency management, regulatory requirements, infrastructure resilience, funding opportunities, and hazards.

The District provided the following agencies and organizations direct notification for an opportunity to review the draft plan.

Table 5. External Coordination

Organization	Type	Method and date
Calaveras County Office of Emergency Services	Hazard mitigation and emergency management agency; operator of the CALAVERAS ALERT notification system	Mailed notification letters with draft LHMP access information, invited recipients to the community workshop, and offered one-on-one coordination meetings. August 11, 2026
Calaveras County Planning Department	Development regulation authority	Mailed notification letters with draft LHMP access information, invited recipients to the community workshop, and offered one-on-one coordination meetings. August 11, 2026
Cal OES Hazard Mitigation, Local Planning Unit	State agency	Mailed notification letters with draft LHMP access information, invited recipients to the community workshop, and offered one-on-one coordination meetings. August 11, 2026
City of Angels Camp	Neighboring agency and co-member of the Utica JPA	Mailed notification letters with draft LHMP access information, invited recipients to the community workshop, and offered one-on-one coordination meetings. August 11, 2026
Utica Water and Power Authority	Joint powers authority of which UPUD is a member; owner of the upstream conveyance	Mailed notification letters with draft LHMP access information, invited recipients to the community workshop, and offered one-on-one coordination meetings. August 11, 2026
Calaveras County Water District	Neighboring water agency; owner of the North Fork Stanislaus River Hydro project. Provides wastewater service to UPUD customers in portions of Murphys, Douglas Flat and Vallecito	Mailed notification letters with draft LHMP access information, invited recipients to the community workshop, and offered one-on-one coordination meetings. August 11, 2026
Murphys Sanitary District	Provides wastewater service to UPUD customers in Murphys.	Mailed notification letters with draft LHMP access information, invited recipients to the community workshop, and offered one-on-one coordination meetings. August 11, 2026
Calaveras County Food Bank	Provides food to underserved communities within the UPUD Service Area.	Mailed notification letters with draft LHMP access information, invited recipients to the community workshop, and offered one-on-one coordination meetings. August 11, 2026
Calaveras County Humane Society	Rescues animals within the UPUD Service Area.	Mailed notification letters with draft LHMP access information, invited recipients to the community workshop, and offered one-on-one coordination meetings. August 11, 2026

3.4 PUBLIC INVOLVEMENT / OUTREACH

Public participation was an important component of the LHMP development process. UPUD sought to provide residents, customers, partner agencies, and other interested stakeholders with meaningful opportunities to learn about the planning effort, contribute local knowledge, and provide feedback on the plan's findings and proposed mitigation actions.

Public outreach activities included:

- Posting planning information, meeting notices, and draft plan materials on the district's website.
- Distributing a public survey to gather input on community concerns, perceived hazard risks, and mitigation priorities.
- Conducting a public workshop to present identified hazards, vulnerabilities, and proposed mitigation strategies and to solicit community input.
- Providing opportunities for written comments throughout the planning process.
- Distributing information to partner agencies, neighboring jurisdictions, and other stakeholders to encourage participation and coordination.
- Making the draft LHMP available for public review prior to adoption by the Board of Directors.

Public comments and stakeholder feedback were reviewed by the planning team and incorporated into the plan, where appropriate. Input received during the planning process helped validate hazard concerns, identify local vulnerabilities, and inform the development and prioritization of mitigation actions.

Because UPUD serves a relatively small, rural service area and maintains regular communication with its customers and community partners, the planning process also benefited from ongoing informal engagement with residents, business owners, emergency responders, and agency representatives who rely on the District's services. This outreach helped ensure that the LHMP reflects local priorities and supports the long-term resilience of the communities served by UPUD.

3.5 ASSESS THE HAZARD

The Planning Team identified and evaluated hazards through a structured review process that combined local knowledge with regional and state planning resources. During the January 27, 2026 planning workshop, District staff reviewed historical events, operational experience, infrastructure vulnerabilities, and potential future threats affecting District facilities and services.

To ensure consistency with broader mitigation planning efforts and verify that no significant hazards were overlooked, the Planning Team reviewed the hazard profiles and risk assessments

contained in the Calaveras County Multi-Jurisdictional Hazard Mitigation Plan and the California State Hazard Mitigation Plan. Hazards identified through these sources were compared against the District's infrastructure, operational characteristics, and service area conditions.

The resulting hazard list was then screened and ranked based on the likelihood of occurrence and the potential consequences to District facilities, operations, water supply reliability, and service continuity. This process enabled the District to focus subsequent vulnerability assessments and mitigation strategies on the hazards posing the greatest risk to UPUD and the communities it serves.

3.6 ESTABLISH MITIGATION GOALS

The Planning Team developed mitigation goals based on the findings of the risk assessment, with particular emphasis on the vulnerabilities, operational challenges, and infrastructure risks identified during the planning process. These goals provide the framework for the District's mitigation strategy and guide the selection, prioritization, and implementation of mitigation actions.

The goals are intended to reduce long-term risk to District facilities and operations, improve the reliability and resilience of water services, protect public health and safety, and support the District's ability to prepare for, respond to, and recover from hazard events.

The District's mitigation goals are presented in Section 6.2. These goals are further incorporated into the hazard-specific mitigation strategies and actions described in Sections 6.3 through 6.9, ensuring that recommended projects directly address the risks identified through the hazard assessment process.

3.7 REVIEW AND PRIORITIZE MITIGATION MEASURES

The Planning Team identified, evaluated, and prioritized mitigation actions to address the hazards and vulnerabilities identified through the risk assessment process. Consistent with FEMA guidance, a range of mitigation approaches was considered to reduce risk to District facilities, operations, and water service reliability.

Potential mitigation actions were evaluated within the following categories:

1. **Public Information and Education:** Outreach programs, customer communications, and technical assistance activities.
2. **Preventive Measures:** District policies, standards, procedures, and operational practices designed to reduce hazard impacts.
3. **Structural and Infrastructure Projects:** Improvements to reservoirs, pipelines, treatment facilities, access roads, and other critical infrastructure.

4. **Property Protection:** Retrofitting, hardening, and other measures that reduce damage to District facilities and assets.
5. **Emergency Services:** Monitoring, warning, emergency communications, emergency access, and continuity-of-operations measures.
6. **Natural Resource Protection:** Vegetation management, erosion control, watershed protection, and other practices that reduce hazard risk.

Because UPUD does not have authority over land use planning, zoning, building regulations, or stormwater ordinances, mitigation actions considered under this plan are limited to measures within the District's authority to implement and maintain.

Because UPUD does not have authority over land use planning, zoning, building regulations, or stormwater ordinances, mitigation actions considered under this plan are limited to measures within the District's authority to implement and maintain.

Each proposed mitigation action was evaluated using a combination of risk-reduction, technical, administrative, financial, and environmental criteria. The Planning Team considered whether the action would:

- Reduce or eliminate identified risks and vulnerabilities.
- Address one or more high-priority hazards.
- Support one or more mitigation goals.
- Reduce potential damage to District infrastructure and facilities.
- Reduce the likelihood or duration of service interruptions.
- Provide benefits across multiple hazards.
- Be technically feasible and achievable using available technology.
- Be implementable within the five-year planning horizon.
- Be eligible for existing local, state, or federal funding sources.
- Be consistent with environmental, regulatory, and permitting requirements.
- Be supported by the community and key stakeholders.
- Be within the District's legal, financial, and administrative capabilities to implement.

COST-EFFECTIVENESS CONSIDERATIONS

The Planning Team also evaluated the relative cost-effectiveness of each proposed action. Because a detailed benefit-cost analysis has not been completed for most projects, cost-effectiveness was evaluated qualitatively based on the expected reduction in risk compared to anticipated implementation costs.

Actions received higher priority when they:

- Protected critical facilities or infrastructure essential to maintaining water service.
- Reduced the risk of catastrophic or system-wide impacts.
- Reduced risk from multiple hazards.
- Extended the useful life of existing infrastructure.
- Reduced future maintenance, repair, emergency response, or recovery costs.
- Improved operational reliability and service continuity.
- Leveraged outside funding sources or grant opportunities.
- Benefited a large portion of the District's customers or critical service area.

Projects that addressed the District's most significant vulnerabilities, including dependence on a single water supply source, aging infrastructure, and wildfire-related risks, generally received the highest priority rankings because of their potential to provide substantial long-term benefits relative to project costs.

The Planning Team used these criteria to assess the effectiveness and feasibility of proposed actions and to establish implementation priorities. The resulting mitigation strategy focuses on actions that provide the greatest overall reduction in risk while supporting the long-term reliability, resilience, and sustainability of the District's water system. The prioritized mitigation actions are presented in Section 6.

The prioritized mitigation actions are presented in Section 6.

3.8 DRAFT THE HAZARD MITIGATION PLAN

The District retained a consultant to facilitate the planning process and prepare the draft Local Hazard Mitigation Plan (LHMP) under the direction of the Planning Team. Development of the plan was informed by input from District staff, partner agencies, stakeholders, and members of the public. Throughout the process, the Planning Team reviewed draft sections, provided technical and operational information, verified findings, and helped refine the hazard assessment, mitigation goals, and proposed mitigation actions.

To encourage transparency and public participation, draft planning materials and the draft LHMP were posted on the District's website for public review. Notice of the planning effort and the availability of draft documents was provided to District customers through billing statement inserts and other District communications, and comments were invited throughout the review period.

Following incorporation of comments received from the Planning Team, partner agencies, stakeholders, and the public, the draft LHMP was finalized and submitted to the UPUD Board of Directors for consideration and adoption.

To ensure consistency with federal requirements, the plan was developed and reviewed using the FEMA Local Mitigation Plan Review Tool contained in the Local Mitigation Planning Policy Guide (FP-206-21-0002). This review process helped verify that the plan meets the planning standards established under 44 CFR Part 201 and addresses FEMA's requirements for local hazard mitigation planning.

3.9 ADOPT THE PLAN

Following completion of the public review period, the draft LHMP will be submitted to the California Governor's Office of Emergency Services (Cal OES) for review. Cal OES will evaluate the plan for compliance with state and federal hazard mitigation planning requirements and, upon determining that the plan satisfies those requirements, will forward it to the Federal Emergency Management Agency (FEMA) for final review.

Once FEMA determines that the plan meets the requirements of 44 CFR Part 201, FEMA will issue an Approvable Pending Adoption (APA) determination. Following receipt of the APA determination, the LHMP will be presented to the UPUD Board of Directors for formal adoption by resolution.

Upon adoption by the Board, the adopted resolution will be transmitted to Cal OES and FEMA, enabling FEMA to issue final plan approval. Once approved, the LHMP will serve as the District's official hazard mitigation plan and will establish UPUD's eligibility for applicable FEMA Hazard Mitigation Assistance grant programs.

To support continued coordination with local and regional partners, a copy of the final approved plan will be provided to the Calaveras County Office of Emergency Services and made available to District staff, stakeholders, and the public through the District's website.

SECTION 4. HAZARD IDENTIFICATION AND RISK ASSESSMENT

Hazard mitigation planning begins with understanding the risks that threaten the District's infrastructure, operations, and ability to provide reliable water service. By identifying hazards and evaluating their potential impacts, UPUD can prioritize actions that reduce future losses, improve system resilience, and support continuity of operations during and after disaster events.

The purpose of this section is to identify the hazards that may affect the District, assess the vulnerability of District facilities and operations, and evaluate the potential consequences of those hazards. Consistent with FEMA guidance, the assessment includes four components:

1. **Hazard Identification** – Identifying hazards that may affect the District and its service area.
2. **Hazard Profiling** – Evaluating the location, extent, probability, and past occurrences of each hazard.
3. **Vulnerability Assessment** – Assessing how District facilities, infrastructure, operations, and customers may be affected.
4. **Risk Assessment** – Evaluating the potential impacts and consequences of hazard events.

The results of this assessment form the foundation for the mitigation goals and actions identified in Section 6.

4.1 HAZARD IDENTIFICATION

The Planning Team identified hazards through a structured review of District facilities and operations conducted during a workshop on January 27, 2026. Management and operations staff evaluated potential threats to source water supplies, conveyance facilities, the dam and reservoir, treatment facilities, storage tanks, distribution systems, raw water infrastructure, monitoring and control systems, chemical handling operations, and maintenance activities.

The resulting hazard inventory was validated using FEMA's National Risk Index, the Calaveras County Multi-Jurisdictional Hazard Mitigation Plan, and the California State Hazard Mitigation Plan. Hazards were selected for further evaluation based on their relevance to District assets, historical occurrences, and their potential to disrupt water supply, damage infrastructure, affect public safety, or impair service continuity. This approach ensured that the hazard assessment reflects both nationally recognized risk information and the District's local operating environment.

4.2 HAZARD SCREENING CRITERIA

The intent of screening is to prioritize the hazards of greatest concern to UPUD. A list of natural hazards to consider was obtained from FEMA's State and Local Mitigation Planning How-to Guide: Understanding Your Risks (FEMA 386-1). The Planning Team ranked each hazard in the workshop. Rankings were transcribed into this document into categories of 1 to 4, with (1) Highly Likely, (2) Likely, (3) Somewhat Likely, and (4) Least Likely. The Planning Team reviewed each hazard using staff experience and historical data, the rankings are shown in Table 6.

HAZARD ASSESSMENT MATRIX

UPUD used a qualitative hazard screening process to evaluate and prioritize hazards for further analysis. Each hazard was assigned a **probability** rating and an **impact** rating based on the Planning Team's knowledge of District facilities, operational experience, historical events, and available hazard data.

Probability ratings reflect the estimated likelihood that a hazard will occur within the five-year planning horizon of this LHMP. Impact ratings reflect the potential consequences to District infrastructure, operations, water supply reliability, public safety, and service continuity.

PROBABILITY RATINGS

- HIGH (1): 75-100% probability within five years
- RELATIVELY HIGH (2): 50-75% probability within five years
- MODERATE (3): 25-50% probability within five years
- LOW (4): 0 – 25% probability within five years

Table 6. Hazard Risk Rankings

Hazard	Ranking (1-4)	Basis
Wildfire	1	Service area within the wildland-urban interface; DR-4240 in 2015
Drought and water supply interruption	1	Single source of supply delivered by a third party; recurring outages
Severe winter storm and flood	1	Three federal declarations affecting Calaveras County regularly
Landslide, debris flow, and erosion	2	Near-annual tree fall and channel undercutting on the conveyance
Earthquake	2	Regional seismic sources; non-redundant diversion, dam, and brittle pipe

Hazard	Ranking (1–4)	Basis
Dam failure	2	District operates Andrew Cademartori Dam, classified HIGH hazard by DSOD, with 100 to 1,000 people in the inundation area
Cyber security	1	Increasing reliance on automated monitoring and control
Extreme heat	3	Affects source water quality and finished water storage
Freezing events	4*	Managed through existing heating and operating practice

* Ranked 4 hazards are considered not to affect or pose a risk to UPUD and are not carried into the mitigation strategy. Extreme heat, which was ranked 3, is addressed within the drought profile due to its effects on the District's operations through source water quality and storage.

IMPACT RATINGS

- **CATASTROPHIC:** Could result in widespread service disruption, major infrastructure damage, significant financial losses, or threats to public health and safety.
- **CRITICAL:** Could result in substantial operational impacts, infrastructure damage, or extended service interruptions requiring significant response and recovery efforts.
- **LIMITED:** Could result in localized or short-term impacts that can be managed through routine operations and maintenance activities.

The Planning Team used these criteria to place each hazard within the Screening Assessment Matrix shown in Table 7. Hazards with the highest probability and greatest potential consequences were carried forward as the District's highest priorities for mitigation planning.

Table 7. Screening Assessment Matrix

Probability	Catastrophic	Critical	Limited
High (75–100%)	Wildfire; Drought and water supply interruption	Severe winter storm and flood; Cyber security	
Relatively High (50–75%)	Earthquake	Landslide, debris flow, & erosion	
Moderate (25–50%)	Dam failure		Extreme heat

4.3 HAZARD PROFILES

This section profiles the hazards identified by the Planning Team as having the potential to affect UPUD's facilities, operations, and ability to provide reliable water service. Each hazard profile

describes the probability, impact, and priority of the hazard, along with its general characteristics, location and extent, historical occurrences, and potential effects on District infrastructure and operations.

The profiles are intended to provide a clear understanding of the risks facing the District and serve as the basis for the vulnerability assessment and mitigation actions presented later in this plan.

4.3.1 WILDFIRE

PROBABILITY

(75–100%) HIGH. Wildfires occur annually in Calaveras County and represent a recurring threat to the District's facilities, operations, and service area.

IMPACT

CATASTROPHIC. A major wildfire has the potential to disrupt water supply and distribution, damage critical infrastructure, degrade source water quality, restrict facility access, and create significant demands on the District's fire suppression systems.

PRIORITY

HIGH. Based on the frequency of wildfire occurrence and its potential consequences to District operations and community safety, wildfire is a high-priority hazard for mitigation planning.

GENERAL DEFINITION

Wildfire is an unplanned fire burning in vegetation. In the Sierra Nevada foothills, wildfire behavior is influenced by fuel conditions, topography, weather, and wind. Development within the wildland-urban interface (WUI), where homes and infrastructure are intermingled with vegetation, creates elevated risks to life, property, and critical facilities.

LOCATION AND EXTENT

Wildfire can affect the entire UPUD service area. Hazard extent is typically evaluated using Fire Hazard Severity Zone classifications, historical fire perimeters, burn severity, and the potential exposure of critical infrastructure and water system assets.

PREVIOUS OCCURRENCES:

Below are examples of major events which establish the District's wildfire history.

- **TCU SEPTEMBER LIGHTNING COMPLEX (2-7 FIRE), SEPTEMBER 2025.** In September 2025, the fire ignited following a major lightning event and burned entirely within UPUD's service area. The fire threatened the communities of Murphys, Vallecito, and surrounding areas, resulting in evacuation orders and warnings and placing significant demands on local

emergency resources. Throughout the incident, UPUD's domestic and raw water systems played a critical role in supporting firefighting operations, providing water for structure protection and fire suppression efforts. The event highlighted both the importance of the District's infrastructure to community resilience and the vulnerability of its facilities and service area to large-scale wildfire events.

- **BUTTE FIRE, SEPTEMBER 2015.** The Butte Fire ignited on September 9, 2015, and ultimately burned approximately 70,868 acres in Calaveras and Amador counties, resulting in two fatalities, the destruction of hundreds of structures, and a federal major disaster declaration (DR-4240). The fire directly affected the Murphys area, prompting evacuation warnings and orders, roadway closures, and extended periods of poor air quality from heavy smoke. Although UPUD facilities were not damaged, the event demonstrated the community's exposure to large wildfires and highlighted the importance of maintaining reliable water service to support firefighting operations, emergency response, and community resilience.

- **DARBY FIRE, SEPTEMBER 2001.** The Darby Fire burned through a substantial portion of the 3/4-Mile Flume (Figure 8), the timber-lined section of the Utica Canal that conveys water to both UPUD and the City of Angels Camp. The fire severed the



Figure 8. Three-Quarter mile flume destroyed by the Darby Fire.

communities' sole water supply, resulting in the loss of water deliveries for approximately 10 months while the flume was rebuilt. To maintain essential water service, emergency above-ground pipelines were installed to bypass the damaged section of canal, and an emergency intertie was constructed between UPUD and Calaveras County Water District's Ebbetts Pass service area to provide an alternate source of supply during the outage. Most recovery costs were covered through insurance and assistance from the California Office of Emergency Services. **The Darby Fire remains the most significant water-supply disruption in District history and serves as the defining historical hazard event for this LHMP**, demonstrating the vulnerability of UPUD's single-source, single-conveyance

water supply system and the importance of redundancy, emergency interconnections, and supply resilience.

- **OLD GULCH FIRE, AUGUST 1992.** The Old Gulch Fire was one of the most significant wildfires in Calaveras County history, burning more than 15,000 acres under extreme fire weather conditions. The fire threatened the communities of Murphys, Avery, Arnold, and surrounding rural areas, prompting widespread evacuations and a large-scale emergency response. Although the fire predated this plan, it remains an important historical example of the region's long-standing wildfire risk and demonstrates the potential for large, fast-moving wildfires to disrupt community access, threaten critical infrastructure, and impact the delivery of essential services throughout the Highway 4 corridor.

VULNERABILITY AND IMPACT ON THE DISTRICT:

Wildfire represents one of the most significant hazards facing UPUD due to the District's location within the wildland-urban interface (WUI), its reliance on a single surface water supply system, and the exposure of critical infrastructure to heavily vegetated terrain. Wildfire has the potential to disrupt water supply, impede operations, damage infrastructure, and increase demands on the District's systems during emergency response. The District's primary wildfire vulnerabilities include the following:

- **Single Conveyance System.** UPUD depends on a single conveyance route to deliver raw water from its source to District facilities. Portions of the Utica water conveyance system, including the timber-lined *3/4-Mile Flume*, are highly susceptible to wildfire damage. This vulnerability was demonstrated during the *Darby Fire of 2001*, which destroyed a significant section of the flume and interrupted normal water deliveries for approximately ten months. Damage to any major component of this conveyance system could significantly affect the District's ability to provide water service.
- **Treatment Plant Access.** The Cademartori Water Treatment Plant is located in a heavily forested area and is accessed by a single, extremely narrow and winding roadway that includes a creek crossing and other potential choke points. Wildfire, snow, falling trees, or related emergency conditions could restrict operator access to the facility, limiting the District's ability to maintain treatment operations during a critical event.
- **Fire Suppression Infrastructure.** The District's raw water system supplies hydrants used for wildfire suppression and structure protection throughout the service area. Portions of this system consist of aging infrastructure, including sections of spiral-welded steel pipe dating to the 1940s. While the system remains operational, significant fire-flow demands

during a major wildfire increase the likelihood of infrastructure failures, leaks, or service interruptions at the time water is most needed.

- **Fire Flow Limitations.** Previous system evaluations have identified portions of the distribution system where undersized pipelines limit available fire flows. Areas identified in the District's Water Master Plan include portions of Murphys, Vallecito, Douglas Flat, and Carson Hill. Reduced fire flow capacity can affect firefighting effectiveness and increase exposure of homes, businesses, and critical facilities during wildfire events.
- **Post-Fire Water Quality Impacts.** Wildfire can adversely affect both source water quality and the distribution system. Loss of vegetation within the watershed may increase erosion, sedimentation, ash loading, nutrient transport, and debris flows into source waters during subsequent storm events, resulting in elevated treatment requirements and operational challenges. In addition, wildfire damage to homes, businesses, and customer plumbing systems can create water quality risks within the distribution system. Damaged service lines and premise plumbing may experience pressure loss, backflow, or siphonage conditions, potentially introducing contaminants into the water system. Following major wildfires in California and other western states, volatile organic compounds (VOCs), including benzene and other aromatic hydrocarbons, have been detected in drinking water systems affected by structure losses. Such contamination can require extensive water quality monitoring, system flushing, infrastructure replacement, and prolonged recovery efforts before normal operations can be restored. These impacts may persist long after the fire itself has been contained and can significantly increase recovery costs and operational complexity for the District.

Because wildfire can simultaneously threaten water supply, treatment operations, distribution infrastructure, emergency access, and water quality, it remains one of the highest-priority hazards addressed in this Local Hazard Mitigation Plan. Mitigation efforts are therefore focused on improving infrastructure resilience, protecting critical facilities, strengthening emergency water supply capabilities, and reducing operational vulnerabilities associated with wildfire events.

Calaveras Fire Severity Zones

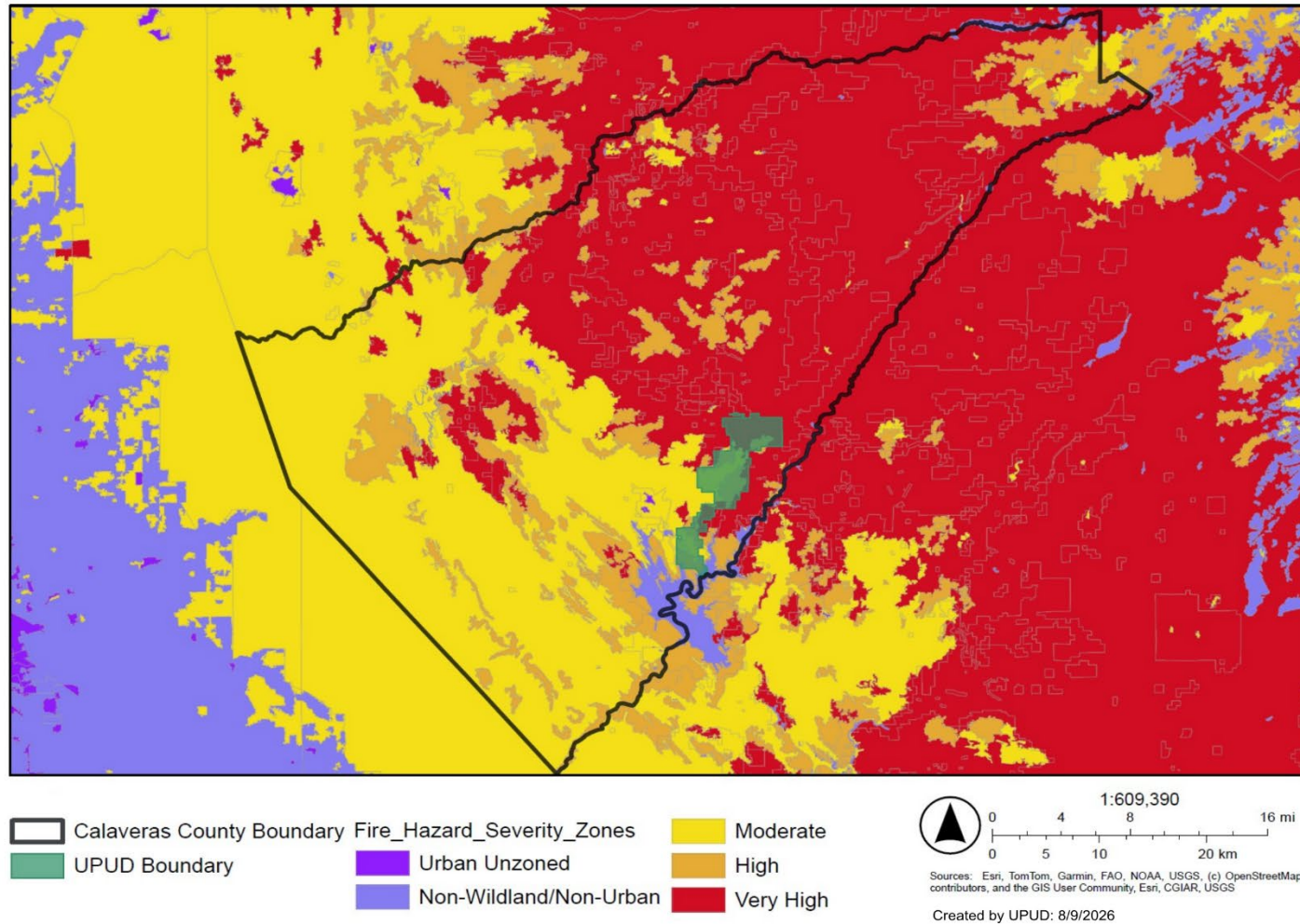


Figure 9. Wildfire severity zones within Calaveras County. There are Very high, High, and Moderate severity zones within the UPUD boundary.

Wildland Urban Interface

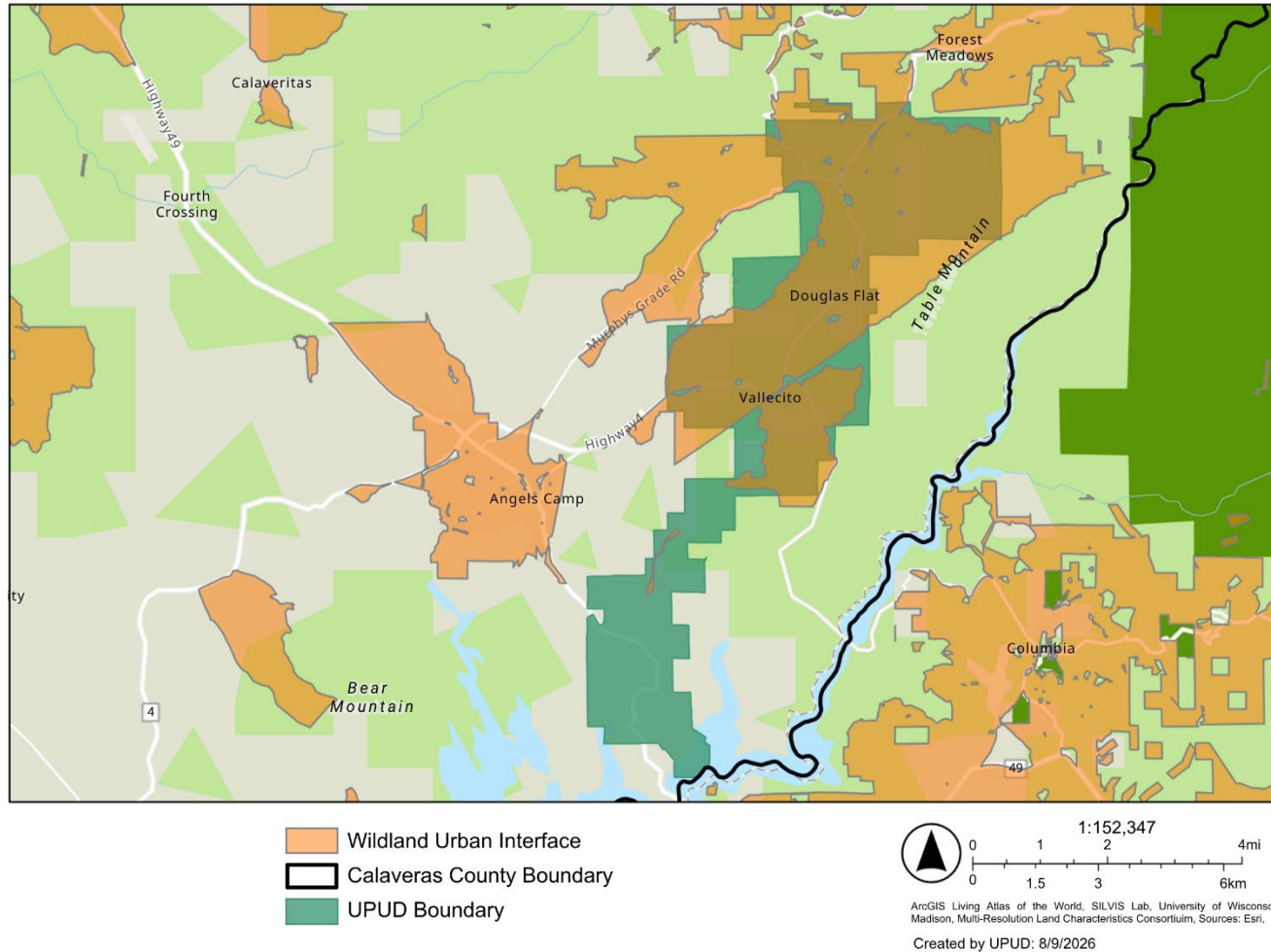


Figure 10. Wildland Urban Interface classifications within and around the UPUD boundary. Within UPUD boundaries, the communities of Murphys, Douglas Flat, Vallecito and Six Mile Village are designated WUI areas.

Calaveras County Historical Fires 1950+

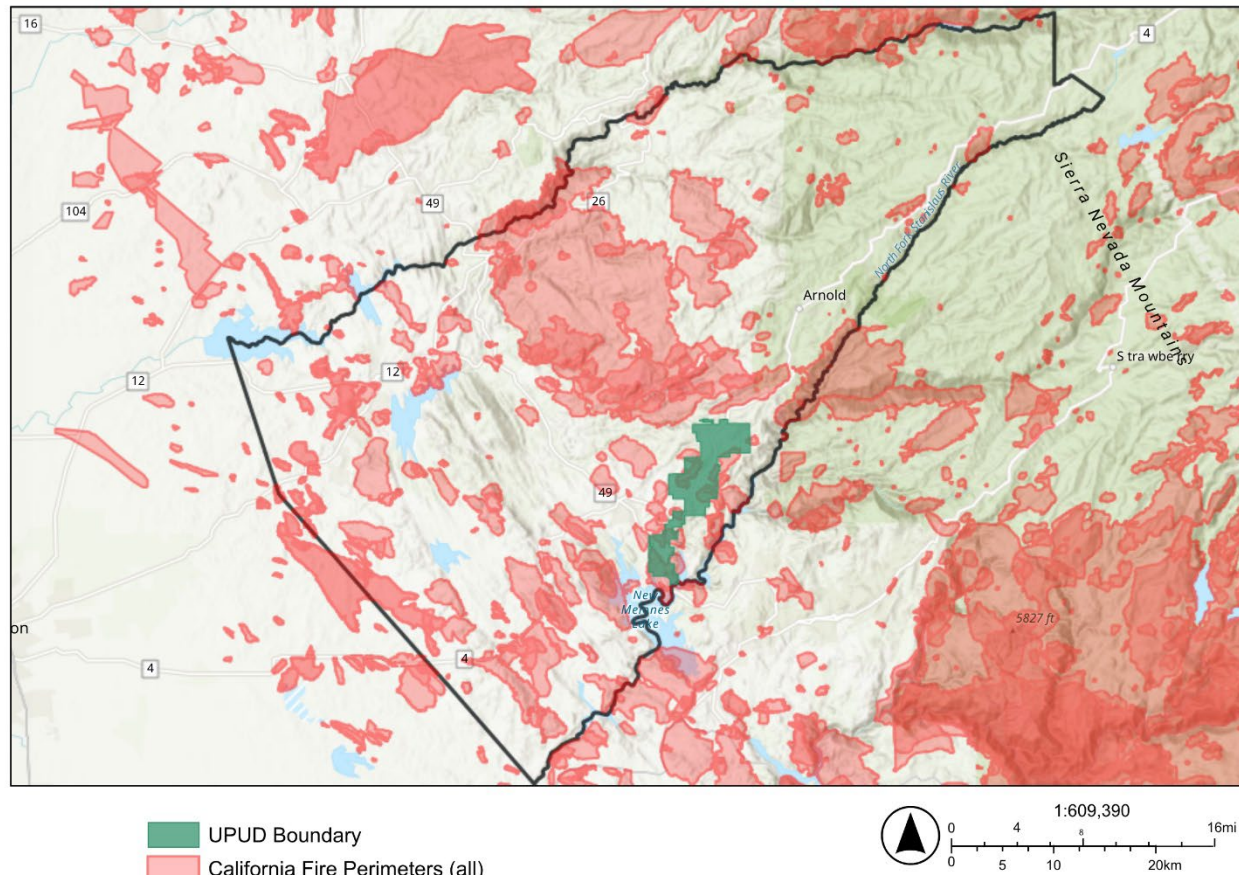


Figure 11. Historical fires within Calaveras County. Some of the most destructive fires have occurred in recent history.

4.3.2 DROUGHT AND WATER SUPPLY INTERRUPTION

PROBABILITY

(75–100%) HIGH. Drought conditions, planned conveyance outages, and unplanned interruptions to the District's water supply system occur regularly and represent an ongoing operational risk.

IMPACT

CATASTROPHIC. A prolonged reduction or loss of supply could affect potable water service, fire suppression capabilities, and overall system reliability throughout the District.

PRIORITY

HIGH. Due to the District's reliance on a single water source and conveyance system, drought and water supply interruption are among the District's highest-priority hazards.

GENERAL DEFINITION

Drought is a prolonged period of below-normal precipitation that reduces water availability. For UPUD, the hazard extends beyond meteorological drought to include any condition that limits or interrupts delivery of the District's sole source of water supply, including drought, wildfire impacts, conveyance failures, maintenance outages, and source water quality events.

LOCATION AND EXTENT

This hazard affects the entire UPUD service area as well as the upstream watershed, reservoirs, and conveyance facilities upon which the District relies for its water supply.

PREVIOUS OCCURRENCES

UPUD has experienced both drought-related supply constraints and interruptions associated with its regional water conveyance system. During California's recurring drought periods, reduced snowpack and runoff in the upper Stanislaus River watershed have increased concerns regarding long-term water supply reliability. In addition to hydrologic drought, the District regularly experiences annual planned, and at times, unplanned outages associated with maintenance of the Utica conveyance system, typically occurring in the fall. Unplanned outages have occurred on numerous occasions due to infrastructure failures, emergency repairs, and water quality concerns affecting upstream facilities. In 2025 for example, an unplanned outage extended beyond its scheduled duration during a period of elevated seasonal demand and suspected source water quality issues. The most significant historical supply disruption occurred following the **Darby Fire of 2001**, when wildfire destroyed a section of the 3/4-Mile Flume and halted all water deliveries for approximately ten months, requiring emergency pumping and alternative supply measures from neighboring water agencies to maintain service at minimum capacity.

VULNERABILITY AND IMPACT ON THE DISTRICT

UPUD's vulnerability to drought and water supply interruption is driven by its dependence on a single surface water source and a largely singular conveyance system. The District does not operate groundwater wells, lacks an alternative surface water supply, and does not have a permanent emergency interconnection capable of replacing its primary source. As a result, disruptions occurring anywhere along the upstream supply and conveyance network have the potential to directly affect the District's ability to deliver potable and raw water services.

The conveyance and storage infrastructure upon which UPUD depends, including portions of the Utica conveyance system and CCWD's North Fork Stanislaus Project infrastructure, are located outside the District's boundaries and jurisdiction, limiting the District's ability to directly control maintenance schedules, repairs, emergency response activities, and hazard mitigation projects. Planned outages, infrastructure failures, wildfire impacts, extreme weather, landslides, debris flows, or source water quality incidents affecting these upstream facilities can all reduce or interrupt deliveries to the District.

The District's primary operational buffer against supply interruptions is storage within Cademartori Reservoir for drinking water. However, reservoir storage is finite and can be rapidly depleted during periods of high customer demand, wildfire suppression activities, prolonged outages, or degraded source water quality conditions. The District must also balance competing operational objectives, including maintaining adequate storage for emergency fire suppression while preserving sufficient capacity to manage seasonal storm inflows.

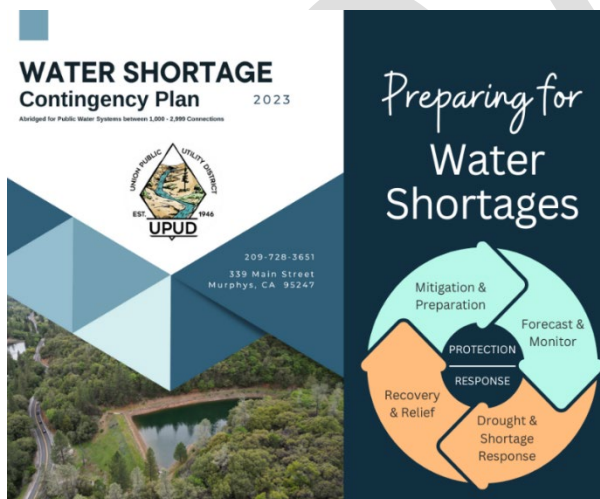


Figure 12 UPUD WSCP and Outreach.

To enhance preparedness for drought and water supply emergencies, UPUD adopted a Water Shortage Contingency Plan (WSCP) in 2023 (Figure 12). The WSCP establishes six drought response stages, ranging from a Watch condition to Catastrophic Water Loss, based on precipitation, streamflow, reservoir storage, regulatory restrictions, and supply interruption triggers. The plan provides a framework for public notification, conservation measures, mandatory water use restrictions, and emergency response actions intended to preserve water supplies, maintain critical services, protect public health and safety, and support fire protection during water shortage events. While the WSCP strengthens the District's ability to manage

supply shortages and emergency conditions, it does not eliminate the underlying risks associated with UPUD's dependence on a single surface water source and limited supply redundancy.

A prolonged reduction or loss of supply could result in mandatory water conservation measures, restrictions on raw water deliveries, reduced fire protection capability, increased operational costs, and potential interruptions to potable water service. Such impacts would affect residents, businesses, schools, fire protection agencies, and other critical customers throughout the service

area. Because water supply reliability is fundamental to public health, emergency response, and community resilience, drought and water supply interruption represent one of the District's most significant operational risks and a major focus of this LHMP.

DRAFT

Calaveras County Historical Drought 1995-2014

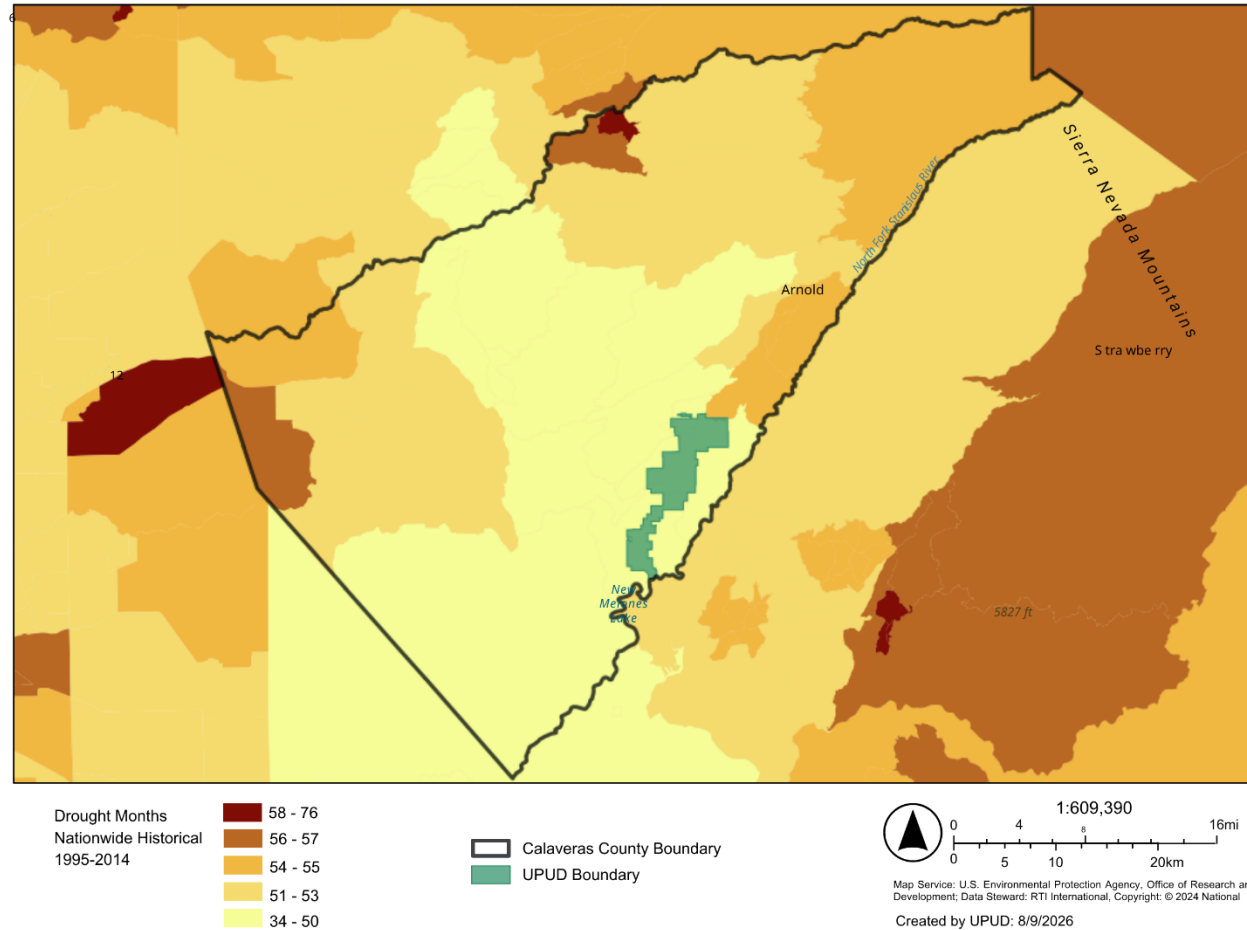


Figure 13. Calaveras County historical drought occurrences from 1995-2014.

USA Drought Intensity - Current Drought Conditions

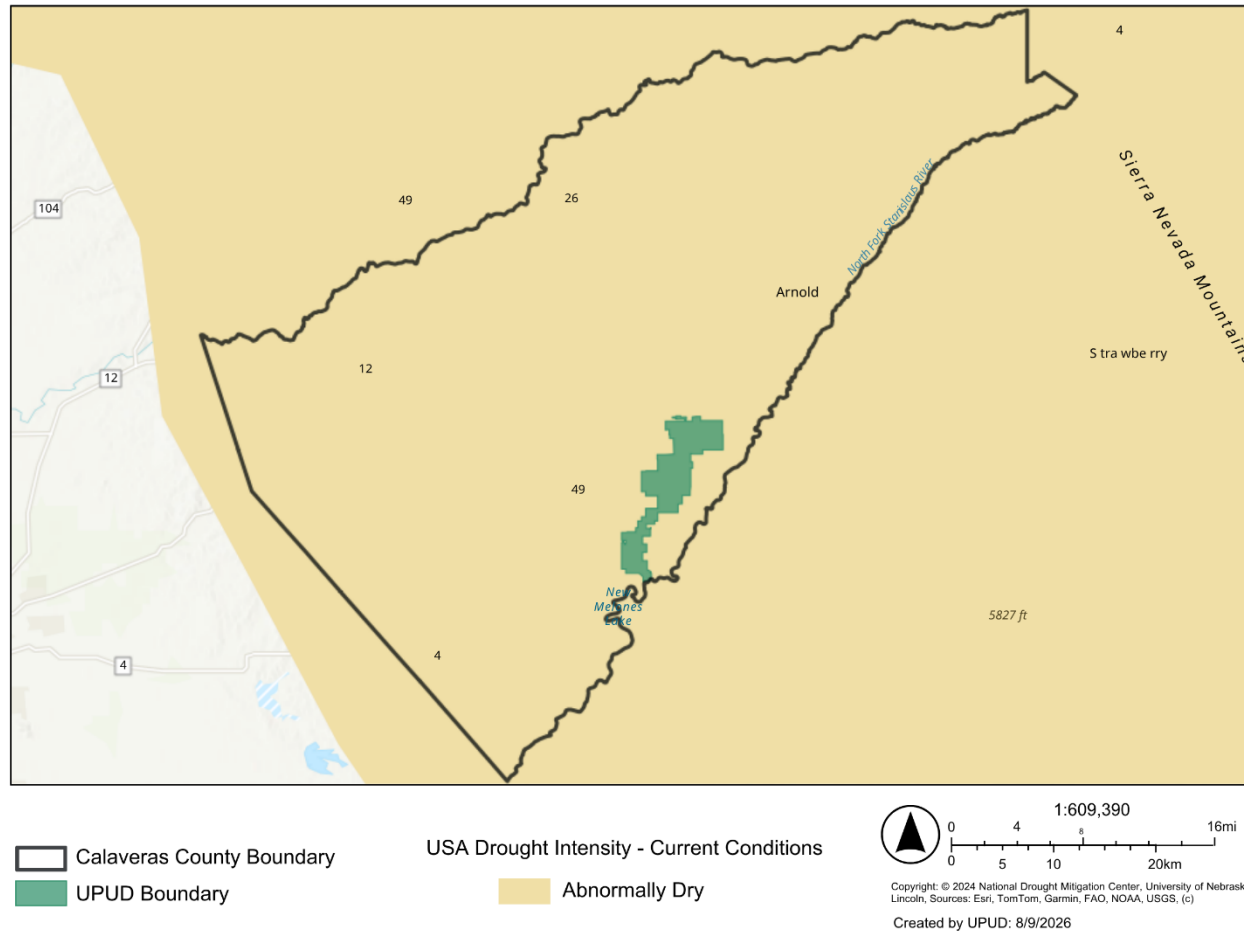


Figure 14. USA Drought Intensity map (August, 2026). Currently, all of Calaveras County falls within the "Abnormally Dry" category

4.3.3 SEVERE WINTER STORM AND FLOOD

PROBABILITY

(75–100%) HIGH. Severe winter storms occur annually and routinely affect District operations through debris loading, localized flooding, snowfall, roadway impacts, and access constraints.

IMPACT

CRITICAL. Severe winter storms can disrupt water conveyance, damage facilities, impair access to critical infrastructure, and increase operational and maintenance demands.

PRIORITY

HIGH. Due to their frequent occurrence and potential to affect water supply reliability and emergency response capabilities, severe winter storms and flooding are a high-priority hazard for the District.

GENERAL DEFINITION

Severe winter storms in the Sierra Nevada foothills can produce heavy rainfall, snowfall at higher elevations, strong winds, and rapid runoff. These events often generate high flows, erosion, sediment transport, and debris accumulation within waterways and water conveyance systems. Flooding in the service area is typically short-duration but high-energy, capable of transporting large woody debris, sediment, and other materials that can damage infrastructure and obstruct water delivery systems.

LOCATION AND EXTENT

Winter storm impacts can occur throughout the District and upstream watershed. The greatest flood-related vulnerabilities are associated with diversion facilities, intake structures, conveyance facilities, reservoirs, and the water treatment plant. Severe runoff events can increase debris loading throughout the conveyance system, while localized flooding may affect critical facilities and access routes. The treatment plant is located near the seasonal snow line and may experience both heavy rainfall and snowfall, with winter storm severity measured by precipitation intensity, snowfall accumulation, roadway conditions, and duration of access restrictions.

PREVIOUS OCCURRENCES

Severe winter storms have affected Calaveras County repeatedly and have resulted in numerous emergency declarations for flooding, landslides, debris flows, and storm-related damages. In addition to localized operational impacts experienced by the District during major storm events, Calaveras County has been included in multiple federal disaster declarations, including DR-4431

(2019) and DR-4683 and DR-4699 (2023). Storm events annually generate debris accumulation at upstream conveyance facilities and District diversions, requiring emergency maintenance and operational adjustments to maintain water deliveries. These recurring events demonstrate the District's ongoing exposure to winter weather hazards and their effects on critical infrastructure and operations.

UPUD is not a participating community in the National Flood Insurance Program (NFIP) and does not maintain floodplain management authority or records regarding repetitive loss properties. Floodplain management, NFIP participation, and tracking of repetitive loss structures are the responsibility of Calaveras County. No repetitive loss or severe repetitive loss properties were identified by the District during development of this plan. Because UPUD's hazard mitigation focus is protection of water infrastructure rather than structures subject to flood insurance claims, the District's flood risk assessment is centered on the vulnerability of its conveyance facilities, diversion structures, reservoir, treatment plant, and access routes.

VULNERABILITY AND IMPACT ON THE DISTRICT

UPUD's vulnerability to severe winter storms and flooding is driven primarily by its dependence on surface water conveyance facilities, remote infrastructure locations, and limited access to critical facilities during adverse weather conditions.

High runoff events can transport significant volumes of woody debris, sediment, and vegetation into upstream conveyance facilities and District diversion structures. Debris accumulation can obstruct screens, reduce conveyance capacity, and require immediate manual removal to maintain water deliveries. In severe events, large debris entering the conveyance system may cause overtopping, erosion, or damage to canals and flumes, potentially interrupting the District's water supply.

Access to critical facilities represents one of the District's most significant winter weather vulnerabilities. Operations staff identified treatment plant access as a primary operational concern. The water treatment plant relies on a single access route that may be affected by snow, fallen trees, flooding, roadway damage, or other storm-related conditions. Because the District does not maintain dedicated snow removal equipment, restoration of access depends on Calaveras County and other agencies. Loss of access can delay operator response, routine inspections, emergency repairs, chemical deliveries, and maintenance activities.

Winter storms can also indirectly affect treatment operations through power outages, communications disruptions, and increased source water turbidity resulting from erosion and sediment transport. Elevated turbidity may increase treatment demands and require operational changes to maintain water quality standards.

Although critical electrical and control equipment at the treatment plant is elevated above floor level to reduce flood exposure, interior flooding caused by equipment failures, drainage issues, or storm-related incidents remains a potential concern. Because severe winter storms can impair both water supply infrastructure and the District's ability to respond to operational issues, they have the potential to compound the impacts of other hazards affecting the District and remain a significant risk to service continuity.

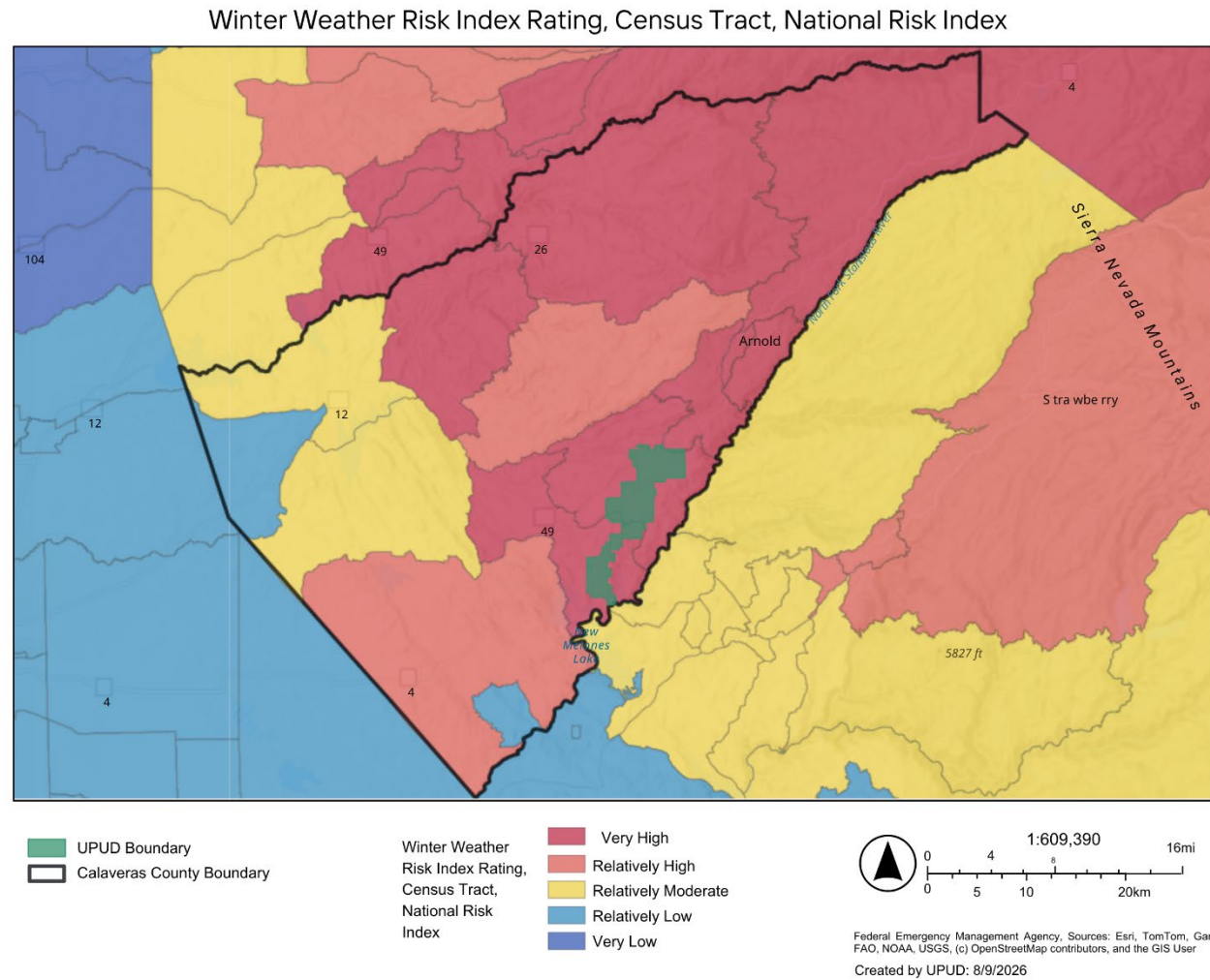


Figure 15. Winter weather risk index rating. The entire UPUD service area falls within the "Very High" category.

4.3.4 LANDSLIDE, DEBRIS FLOW, AND EROSION

PROBABILITY

(50–75%) HIGH. Localized erosion, channel damage, and tree fall affecting District facilities occur regularly. Large slope failures are less frequent but remain a credible threat in steep terrain, particularly following wildfire or prolonged storm events.

IMPACT

CRITICAL. Landslides, debris flows, and erosion can damage water supply infrastructure, reduce water quality, restrict facility access, and interrupt water deliveries.

PRIORITY

HIGH.

GENERAL DEFINITION

Landslides are the downslope movement of soil, rock, or other earth materials. Debris flows are fast-moving mixtures of water, soil, rock, vegetation, and debris that are commonly triggered by intense rainfall, especially on steep or recently burned slopes. Erosion can occur gradually over time or rapidly during storm events, undermining infrastructure and destabilizing slopes.

LOCATION AND EXTENT

Areas of steep terrain are present throughout the District and upstream watershed, including slopes adjacent to the Lower Utica Canal, Cademartori Reservoir, treatment plant access routes, and other critical facilities. Recently burned watersheds are particularly susceptible to debris flows and accelerated erosion. Hazard severity is influenced by slope steepness, soil conditions, vegetation cover, storm intensity, and wildfire impacts.

PREVIOUS OCCURRENCES

The District has experienced repeated, annual instances of tree fall and localized erosion affecting the open-channel conveyance system. Operations staff report that fallen trees and storm-related erosion have damaged conveyance facilities on numerous occasions, requiring maintenance and repairs to prevent more significant failures. In addition, Calaveras County has experienced multiple federally declared storm events involving flooding, landslides, mudslides, and slope failures, demonstrating the region's ongoing susceptibility to these hazards.

VULNERABILITY AND IMPACT ON THE DISTRICT

UPUD's raw water conveyance system traverses steep terrain and operates largely as an open-channel system with limited redundancy. Landslides, debris flows, erosion, or falling trees could damage or sever critical conveyance facilities, interrupting delivery of the District's sole water

supply. A major slope failure above the reservoir or conveyance system could damage infrastructure, introduce large volumes of sediment and debris into the reservoir, and reduce both water quality and storage capacity.

The District's vulnerability increases following wildfire, when the loss of vegetation can significantly increase runoff, erosion, and debris flow potential during subsequent storms. This creates a compound hazard in which wildfire damage is followed by slope instability and sediment transport during the next wet season.

Landslides and erosion also pose risks to facility access. Damage to roads, creek crossings, or slopes adjacent to access routes could delay operator response, restrict maintenance activities, and impede emergency repairs. Significant sediment and debris entering the water supply system could increase treatment requirements, degrade source water quality, and reduce operational flexibility during emergency conditions. Because the District relies on a limited number of critical facilities and conveyance routes, even localized slope failures can have disproportionate impacts on water system reliability and service continuity.

4.3.5 EARTHQUAKE

PROBABILITY

(50–75%) RELATIVELY HIGH. The District is subject to regional seismic hazards, and damaging earthquake ground shaking has the potential to occur during the planning horizon.

IMPACT

CATASTROPHIC. A major earthquake has the potential to disrupt water supply, damage critical facilities, cause multiple infrastructure failures, and impair emergency response and fire suppression capabilities.

PRIORITY

MODERATE

GENERAL DEFINITION

An earthquake is the sudden shaking of the ground caused by the rupture of faults within the earth's crust. Earthquakes can damage infrastructure through ground shaking, ground deformation, surface fault rupture, liquefaction, and secondary hazards such as landslides, rockfalls, and dam safety concerns.

LOCATION AND EXTENT

The entire UPUD service area is exposed to earthquake hazards. The severity of impacts depends on earthquake magnitude, proximity to the event, local soil and geologic conditions, and the vulnerability of individual facilities and infrastructure components. Ground shaking may affect both District-owned assets and critical upstream supply facilities upon which the District depends.

PREVIOUS OCCURRENCES

Calaveras County regularly experiences minor earthquakes, and the Sierra Nevada foothills are subject to regional seismic activity associated with numerous active faults throughout California. Although the District has not experienced a recent earthquake resulting in major damage to its facilities, past seismic events throughout California have demonstrated the vulnerability of water supply systems to pipe breaks, damaged treatment facilities, loss of storage, power outages, and disruptions to critical conveyance infrastructure.

VULNERABILITY AND IMPACT ON THE DISTRICT

UPUD's earthquake vulnerability is driven by its reliance on a limited number of critical facilities and infrastructure components, many of which have little or no redundancy.

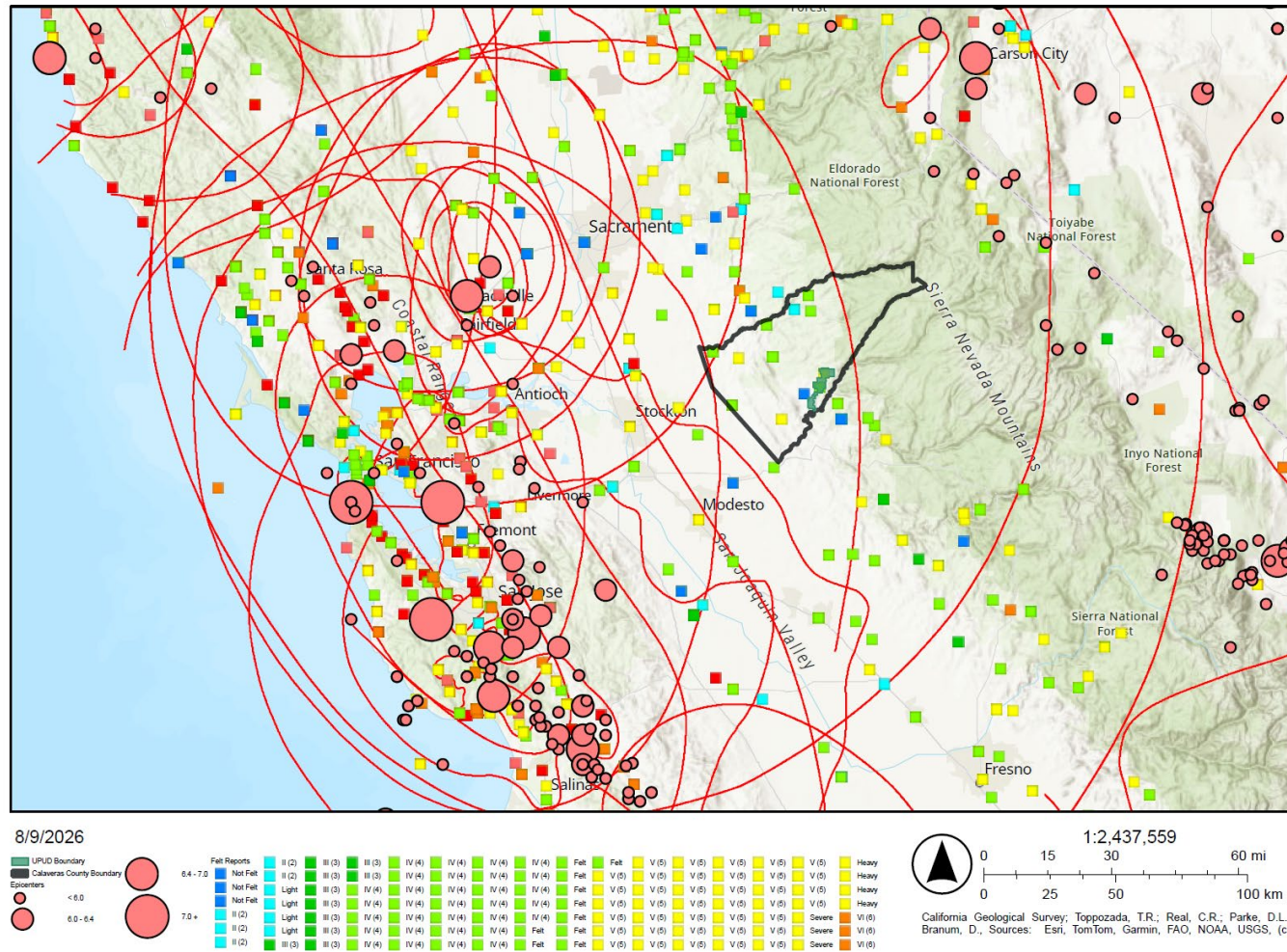
- *Single Water Supply Conveyance.* The District depends on the McKay's Reservoir and intake structure, Collierville Tunnel and Tunnel Tap, as well as the Utica conveyance system for

delivery of its sole water supply. Damage to these facilities could significantly reduce or completely interrupt water deliveries to the District.

- *Reservoir and Dam Facilities.* Seismic ground movement could damage reservoir appurtenances, outlet works, valves, pipelines, and other critical components required for water storage and delivery. Aging infrastructure identified through dam safety inspections may be particularly susceptible to earthquake-related stresses.
- *Storage Tanks and Pipelines.* Water storage tanks, tank connections, and portions of the District's aging raw water distribution system may be vulnerable to differential ground movement, joint failures, and pipe breaks. Earthquakes frequently cause multiple simultaneous pipeline failures, making repairs more complex and resource-intensive.
- *Access and Operations.* Earthquake-related landslides, rockfalls, roadway damage, and utility outages could restrict access to critical facilities, delay repairs, and hinder emergency response activities.

A major seismic event could result in the loss of source water supply, reductions in storage capacity, widespread pipeline failures, loss of system pressure, and diminished fire suppression capability. Because many critical components of the water system are interconnected, damage to a relatively small number of key facilities could have system-wide consequences. Restoration following a major earthquake would likely require substantial outside assistance, including mutual aid, contractor support, and state or federal disaster recovery resources.

Historic Earthquakes



4.3.6 DAM FAILURE

PROBABILITY

(25–50%) MODERATE. Failure of Andrew Cademartori Dam as an isolated event is unlikely; however, dam-related impacts could occur as a consequence of other hazards, including earthquake, wildfire, severe storm, flooding, erosion, or debris flow. No major dam incidents have been recorded to date.

IMPACT

CATASTROPHIC. Dam failure could result in loss of life, damage to homes, businesses, transportation corridors, and utilities downstream, while simultaneously eliminating the District's primary source of emergency water storage.

PRIORITY

MODERATE

GENERAL DEFINITION

Dam failure is the uncontrolled release of impounded water resulting from overtopping, structural failure, foundation instability, seismic activity, operational failures, or damage to outlet works and appurtenant facilities. Dam failure may occur suddenly or develop progressively following another hazard event.

LOCATION AND EXTENT

Andrew Cademartori Dam (DSOD No. 2031.000; NID No. CA01274) is located approximately one mile northeast of Murphys and impounds the District's 140-acre-foot reservoir. The California Division of Safety of Dams (DSOD) classifies the facility as a High Hazard Potential Dam, meaning failure could result in loss of life and significant downstream impacts. The dam's inundation area follows Angels Creek through portions of Murphys and downstream toward Angels Camp before ultimately reaching New Melones Reservoir. Potential impacts include flooding of roads, utilities, residences, businesses, and public infrastructure located within the inundation zone. Detailed inundation mapping is maintained in the District's Emergency Action Plan.

The dam sits at the head of a tributary to Angels Creek. Because the reservoir is perched near the top of a ridge line, it receives no inflow from a major creek or river; its local contributing watershed is approximately 47 acres, mostly vegetated with trees and brush. Nearly all inflow is diverted water delivered from the UWPA Utica Ditch, and the ditch intake structure can be closed in an emergency to stop the reservoir from filling.

The inundation path follows Angels Creek. Extent at the first point of population or infrastructure impact, approximately 1.0 mile downstream at the intersection of Highway 4 and Dam Road, is a maximum depth of 9.1 feet at a velocity of 16.4 feet per second. From there Angels Creek passes beneath State Highway 4, Main Street, and Algiers Street in the town of Murphys, then parallels Murphys Grade Road past scattered residences and La Honda Park toward Altaville and Angels Camp, crossing Highways 4 and 49 near their intersection before continuing through a rural canyon to New Melones Reservoir. The estimated population requiring evacuation is between 100 and 1,000. Detailed inundation mapping is contained in the Emergency Action Plan and is not reproduced here.

PREVIOUS OCCURRENCES

Andrew Cademartori Dam has not experienced any major incidents, failures, or emergency releases since its construction in 1983. Routine inspections and oversight by the California Division of Safety of Dams have not identified any conditions requiring immediate corrective action. Although the facility has no history of failure, dam safety remains an important planning consideration due to the potential consequences of a catastrophic event and the facility's importance to the District's water supply system.

VULNERABILITY AND IMPACT ON THE DISTRICT

UPUD's vulnerability is driven primarily by the critical role that Cademartori Reservoir plays in maintaining water supply reliability, operational flexibility, and emergency response capability.

- ***Critical Water Storage Asset.*** The reservoir provides the District's primary storage capacity and serves as the only significant buffer between water supply interruptions and customer demand. Loss of the reservoir would significantly reduce the District's ability to maintain potable water service, support firefighting operations, and respond to upstream conveyance disruptions.
- ***Aging Outlet Works Infrastructure.*** Portions of the outlet works, piping, valves, and associated structures are aging and have been identified for ongoing maintenance, repair, or future replacement. Failure of key components could impair the District's ability to manage reservoir operations or deliver stored water to the treatment plant.
- ***Exposure to Cascading Hazards.*** Dam safety is closely linked to other hazards identified in this LHMP. Severe storms, debris flows, erosion, wildfire impacts, and seismic events could affect reservoir operations, increase sediment loading, damage appurtenant structures, or place additional stress on dam facilities.
- ***Interdependencies with Regional Infrastructure.*** The reservoir is supplied primarily through the Utica conveyance system. Disruptions affecting upstream conveyance facilities may influence reservoir operations, while a dam failure could also impact downstream infrastructure and water facilities owned by partner agencies.
- ***Watershed Conditions.*** The reservoir's surrounding watershed contains vegetated slopes that may become susceptible to increased erosion, sediment delivery, and debris

movement following wildfire. Post-fire storm events could increase operational and maintenance challenges for reservoir facilities.

Failure of Andrew Cademartori Dam would represent both a life-safety emergency and a major service disruption for UPUD. In addition to downstream flooding impacts, dam failure would eliminate the District's emergency storage reserve, significantly reducing system resilience and increasing dependence on outside assistance and alternative water supply measures during recovery.

Dam Safety Coordination: Because Andrew Cademartori Dam is classified as a High Hazard Potential Dam, UPUD coordinates with the California Division of Safety of Dams (DSOD) regarding inspections, maintenance, emergency planning, and regulatory compliance. The mitigation actions identified in Section 6 support continued dam safety improvements, emergency preparedness, and long-term resilience of this critical facility.

Existing Vulnerability Reduction Measures

UPUD has implemented several measures that reduce vulnerability associated with the Andrew Cademartori Dam and help minimize the likelihood and consequences of a dam-related incident. The District maintains compliance with California Division of Safety of Dams (DSOD) inspection, maintenance, and regulatory requirements and conducts routine monitoring of dam conditions, outlet works, appurtenant structures, and reservoir operations. The District also maintains a DSOD-required Emergency Action Plan (EAP) that includes inundation mapping, emergency notification procedures, response protocols, and coordination processes with local emergency management, law enforcement, fire protection agencies, and downstream stakeholders.

The reservoir's operational design provides an additional level of risk reduction because inflows are derived primarily from the Utica Ditch rather than a large natural watershed. In the event of changing conditions or an identified threat, the upstream diversion can be shut off to limit additional inflow to the reservoir. The relatively small contributing watershed also reduces exposure to extreme runoff events compared to many traditional flood-control or water-supply reservoirs.

The District further reduces vulnerability through regular maintenance, capital improvement planning, emergency response training, mutual aid coordination, and continued evaluation of aging outlet works and other critical components. These efforts help maintain operational reliability, improve emergency readiness, and support long-term resilience of the District's primary water storage facility.

Future Vulnerability Reduction Opportunities

UPUD will continue to reduce vulnerability associated with the Andrew Cademartori Dam through implementation of the mitigation actions identified in Chapter 6. Priority activities include rehabilitation or replacement of aging dam-related infrastructure, improved monitoring and inspection capabilities, emergency communication enhancements, continued coordination with DSOD and local response agencies, and evaluation of alternatives that improve water supply redundancy and reduce dependence on a single storage facility. These actions are intended to reduce both the probability of dam-related incidents and the potential impacts to downstream populations, critical facilities, and District operations.

Because the facility is classified as a High Hazard Potential Dam, UPUD places particular emphasis on maintaining effective emergency notification, evacuation coordination, infrastructure maintenance, and regulatory compliance to reduce life-safety risks and consequences associated with a low-probability but high-consequence event.

LIMITATIONS

The reservoir inundation mapping was developed for the District's Emergency Action Plan and will require future updates consistent with regulatory requirements. In addition, a detailed estimate of potential damages and losses within the inundation area has not been completed and remains a potential future planning effort.

CA Jurisdictional Dams

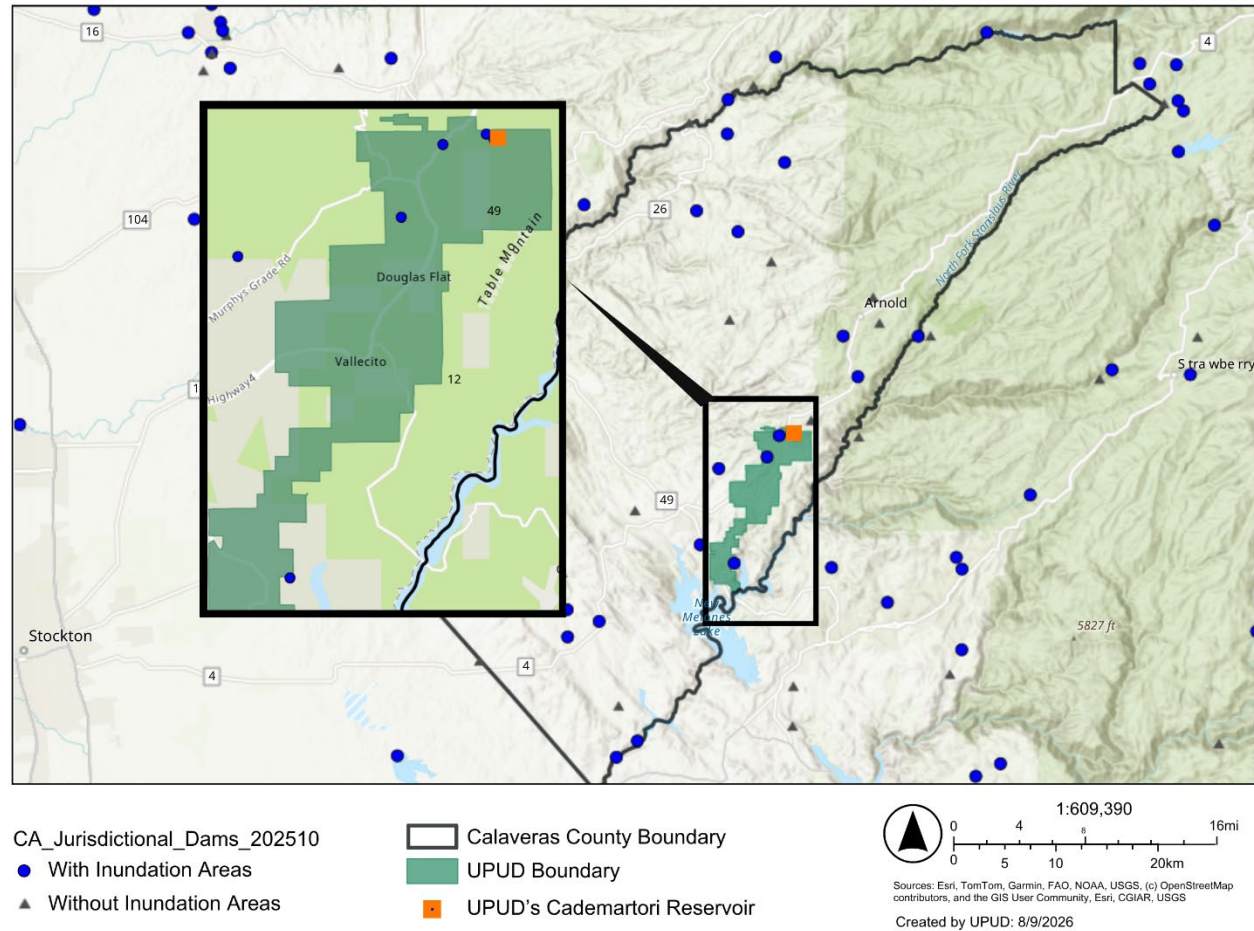
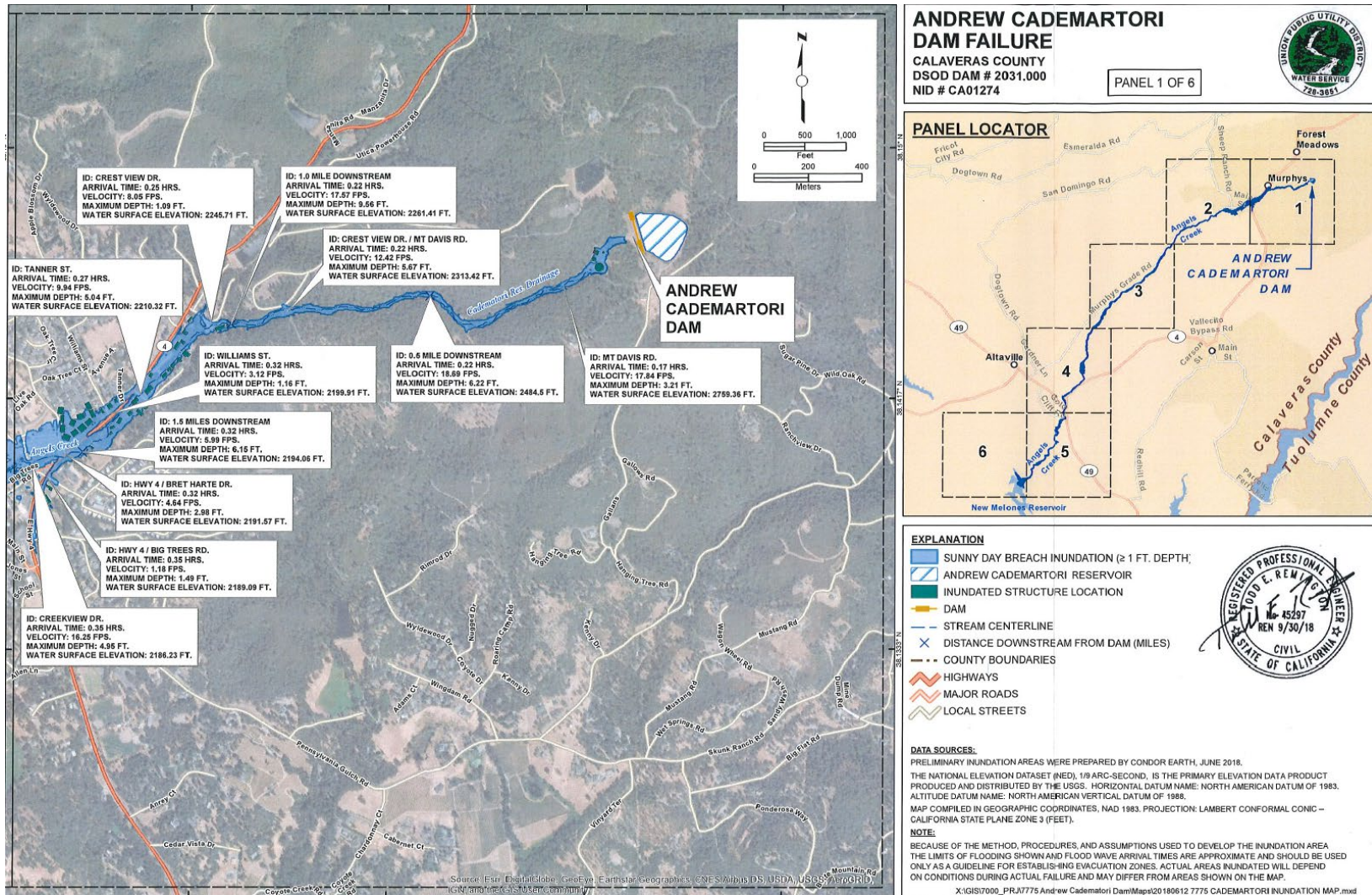


Figure 17. California Jurisdictional Dams, including UPUD's Cademartori Dam.



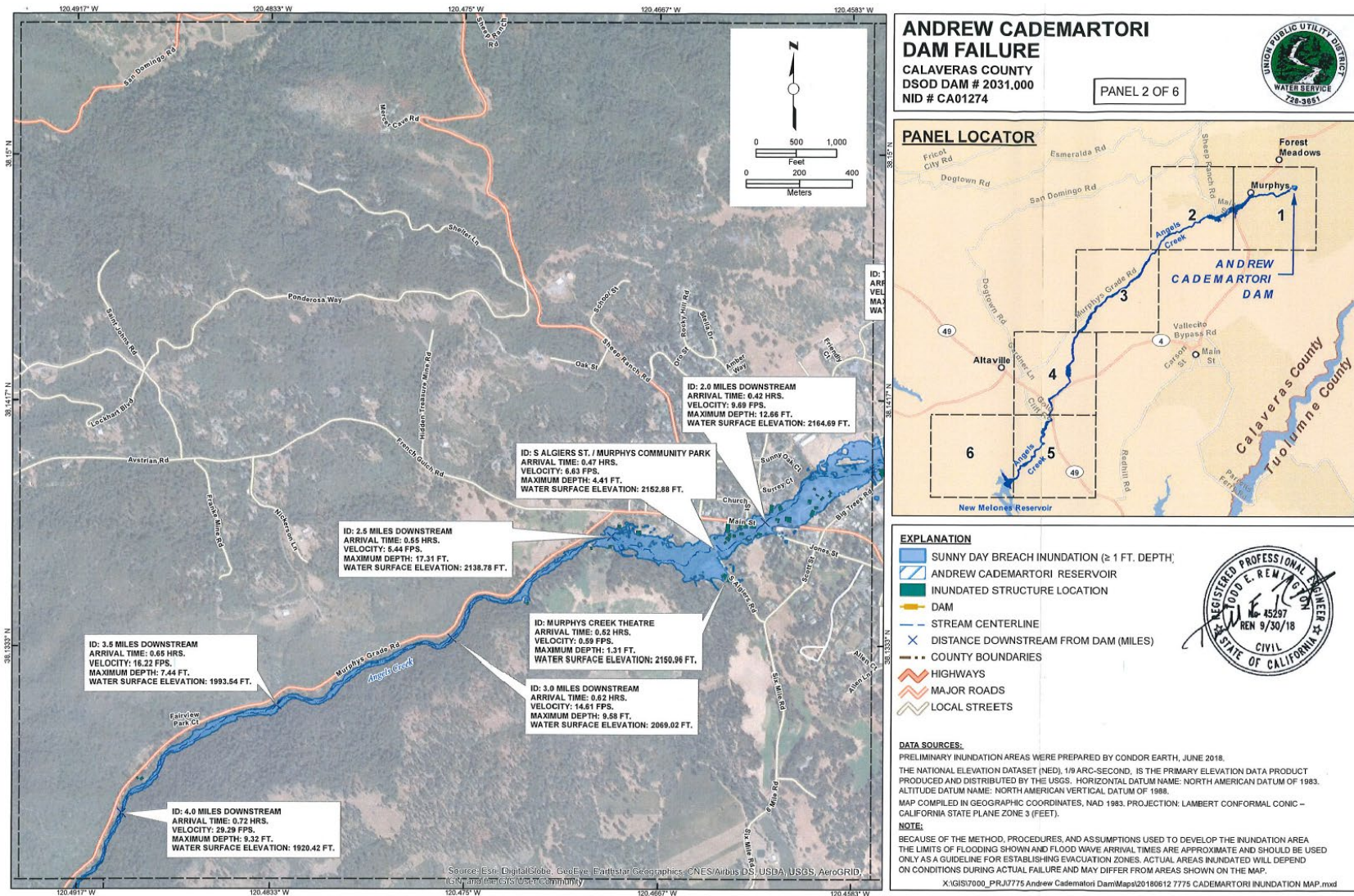


Figure 19. Andrew Cademartori Dam Failure Map #2

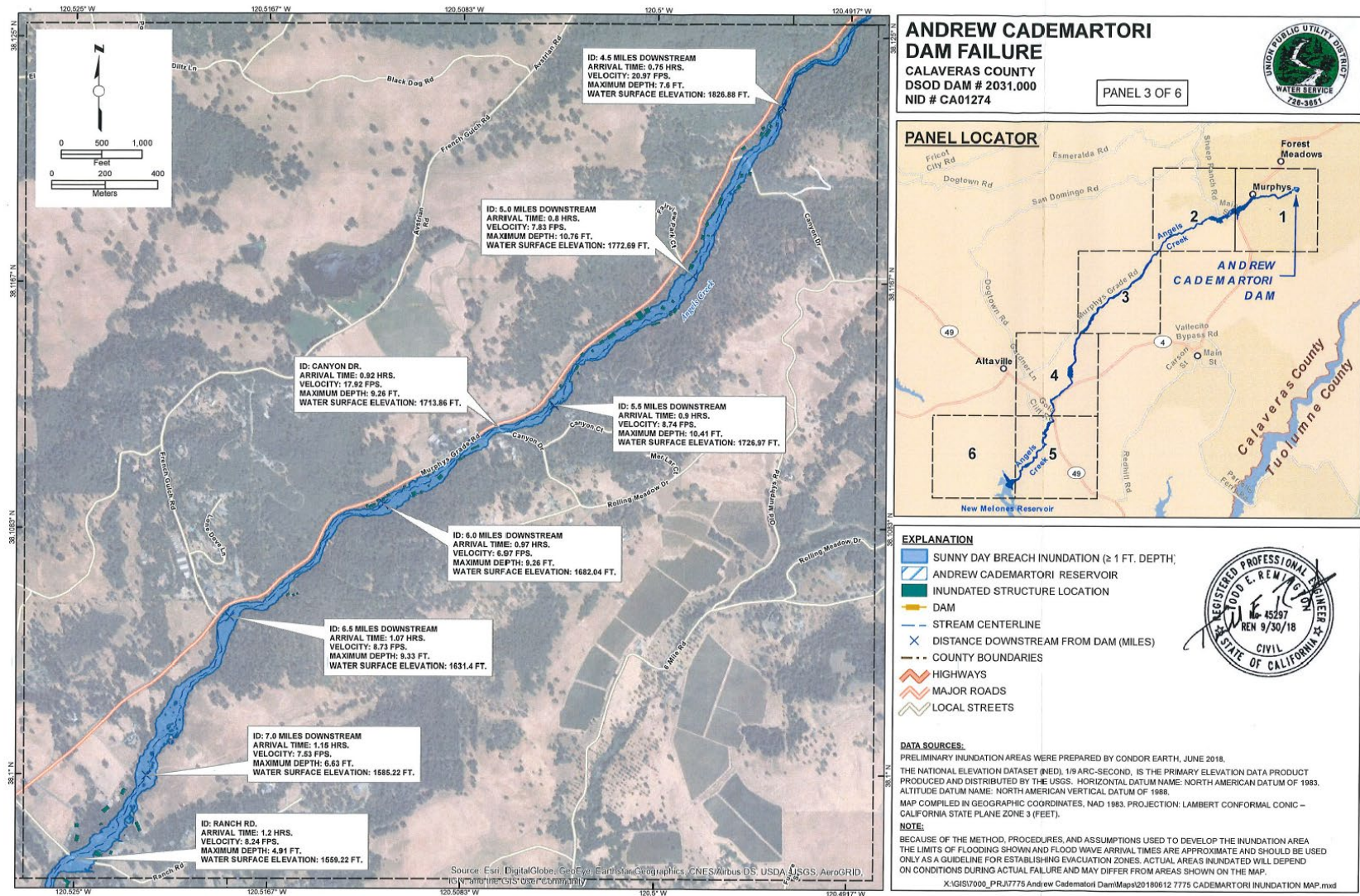


Figure 20. Andrew Cademartori Dam Failure Map #3

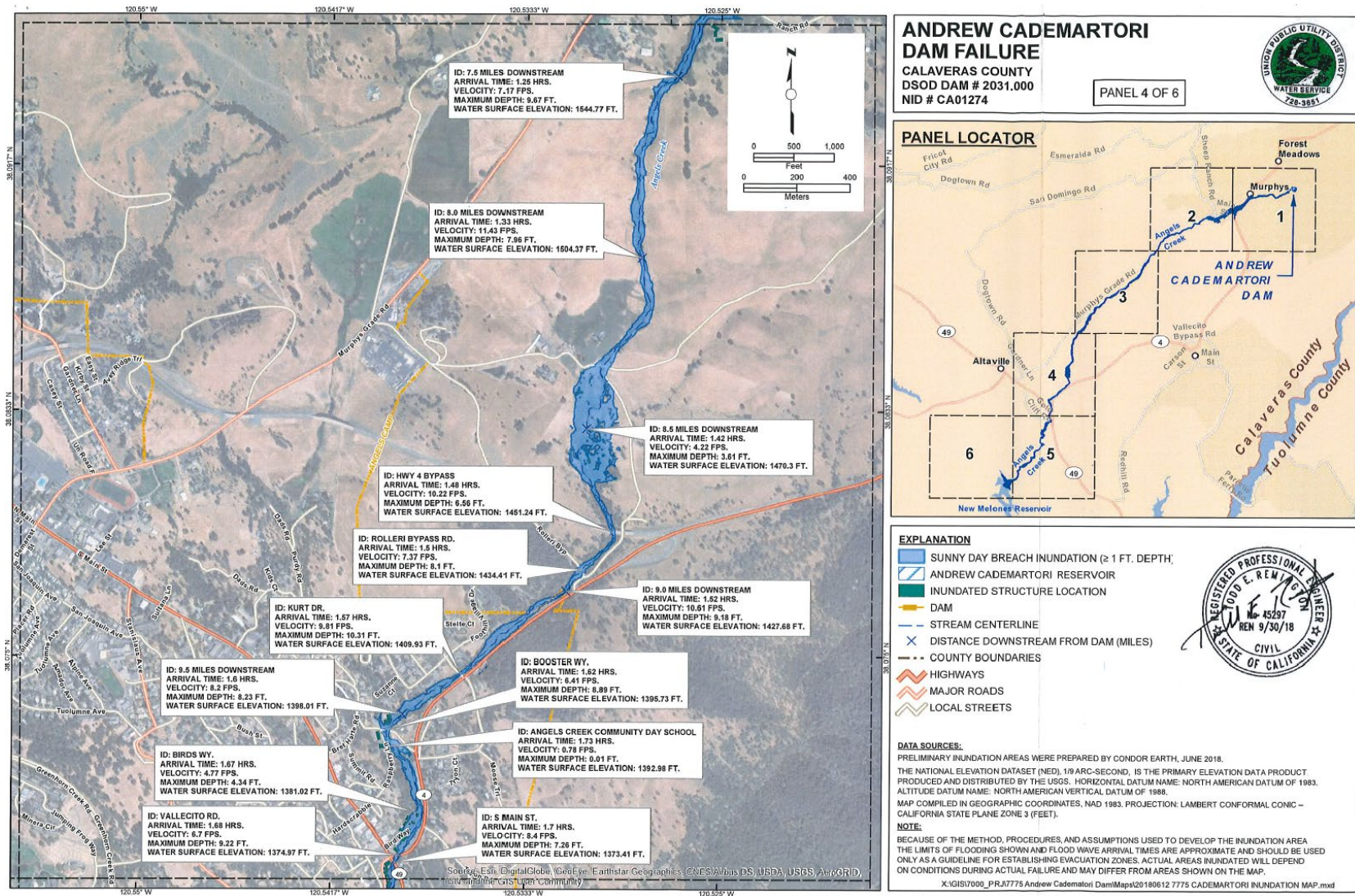
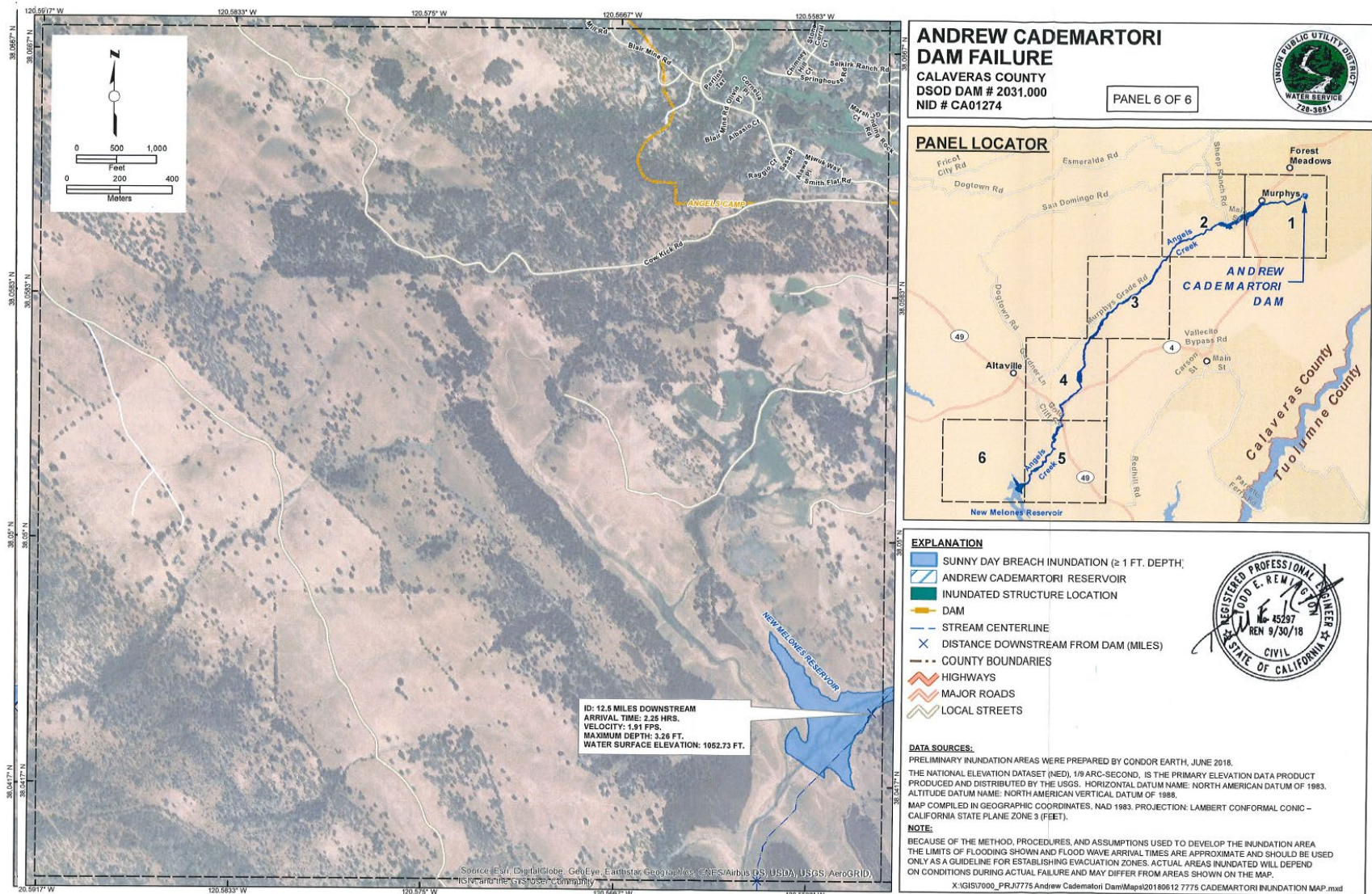


Figure 21. Andrew Cademartori Dam Failure Map #4



FigFigure 23. Andrew Cademartori Dam Failure Map #6

4.3.7 CYBER SECURITY

PROBABILITY

(50–75%) HIGH. Cyber threats targeting public utilities and critical infrastructure continue to increase in frequency and sophistication, making cybersecurity an ongoing concern for water and wastewater agencies.

IMPACT

CRITICAL. A successful cyber incident could impair the District's ability to monitor, control, and manage essential water system operations and business functions.

PRIORITY

HIGH

GENERAL DEFINITION

Cybersecurity threats include unauthorized access, ransomware, malware, phishing, denial-of-service attacks, supply chain compromises, and insider threats. Water utilities are increasingly dependent on networked operational technology (OT), information technology (IT), and Supervisory Control and Data Acquisition (SCADA) systems, making them potential targets for cyber attacks. Cyber incidents may disrupt operations, compromise sensitive information, interfere with monitoring and control systems, or affect public confidence in utility services.

LOCATION AND EXTENT

This hazard applies to all District information technology and operational technology assets, including SCADA systems, remote monitoring equipment, telemetry, alarm systems, communications infrastructure, business networks, financial and customer information systems, cloud-based services, and third-party technology providers that support District operations.

PREVIOUS OCCURRENCES

The District has not experienced any known cyber incidents that have disrupted operations or resulted in a reportable breach. However, the increasing integration of networked technologies, remote monitoring systems, and digital operational controls has expanded the potential attack surface common to water utilities nationwide. As reliance on technology continues to grow, cyber risk remains an evolving concern requiring ongoing attention.

VULNERABILITY AND IMPACT ON THE DISTRICT

UPUD relies on computerized systems to support water treatment, monitoring, communications, alarm notification, record management, billing, and other essential functions. A cyber incident

affecting these systems could reduce situational awareness, interfere with normal operations, delay operator response to abnormal conditions, and disrupt administrative functions.

Particular vulnerabilities include:

- *Operational Technology and SCADA Systems.* Unauthorized access to monitoring or control systems could affect alarms, data collection, communications, and automated processes used to operate District facilities.
- *Business Systems and Administrative Functions.* Cyber incidents may affect customer records, financial systems, work order management, communications, and other administrative functions necessary to support utility operations.
- *Third-Party Service Providers.* The District relies on software vendors, communications providers, cloud services, and other external partners that may introduce cybersecurity risks beyond the District's direct control.
- *Staff and Human Factors.* Phishing, social engineering, credential theft, and other human-targeted attacks remain among the most common pathways for cyber compromise and underscore the importance of employee awareness and training.

Although a cyber-attack could disrupt normal operations, the District maintains the ability to operate critical treatment and distribution functions manually if necessary. This capability reduces the likelihood of a complete loss of service but may require increased staffing, additional operational oversight, and modified procedures during an incident.

Consistent with federal guidance and industry best practices, the District does not disclose specific cybersecurity safeguards, system architecture, vulnerabilities, or threat response procedures within this public document. Detailed information regarding cybersecurity risks, protective measures, and response capabilities is maintained in the District's Risk and Resilience Assessment and Emergency Response Plan, which are restricted for security purposes.

SECTION 5. CAPABILITY ASSESSMENT

5.1 INTRODUCTION

The purpose of the capability assessment is to determine the ability of UPUD to implement a comprehensive mitigation strategy and to identify opportunities for establishing or enhancing mitigation policies, programs, or projects.

The capability assessment has two components: an inventory of the existing plans, ordinances, or programs already in place, and an analysis of the District's capacity to bring them to fruition.

5.2 EMERGENCY MANAGEMENT

UPUD has executed **mutual aid agreements** with the principal water agencies in Calaveras County, including Calaveras County Water District, City of Angels Camp, Tuolumne Utilities District, Murphys Sanitary District and Utica Water and Power Authority, continues to seek partnerships that would result in a mutual aid agreement. As a special district under California law, the District can access Emergency Managers Mutual Aid (EMMA) and the Emergency Management Assistance Compact (EMAC) for national mutual aid. The National WARN system is accessible through the American Water Works Association.

The District employs eight staff: a General Manager, an Operations Manager, four certified water distribution and treatment operators including two Grade III operators, a Customer Service Representative, and an Executive Administrative Coordinator. All treatment and distribution facilities are operated by certified operators.

The small size of the District staff is itself a vulnerability. A hazard event requiring simultaneous response at the treatment plant, the reservoir, and the distribution system would exceed the District's independent staffing capacity, which is why mutual aid and the redundancy projects in Section 6 carry high priority.

Emergency Response Plan. The District's Emergency Response Plan was completed in 2026 under America's Water Infrastructure Act and details how the District will respond to emergencies and disasters, including operational incidents, malevolent acts, natural disasters, and public notification. The District plans to further education for the staff in the Standard Emergency Management System (SEMS), the National Incident Management System (NIMS), and the Incident Command System (ICS).

Emergency Action Plan. The District maintains an Emergency Action Plan for Andrew Cademartori Dam, last revised in 2026, as required by the California Division of Safety of Dams. The EAP defines four emergency levels, provides a notification flowchart and scripted notification messages, and includes inundation mapping. The General Manager serves as EAP Coordinator. The

EAP is reviewed annually under Government Code section 8589.5, and the inundation maps expire and require re-approval in 2030.

Community notification during an emergency is provided through CALAVERAS ALERT, the high-speed telephone, text, and email notification system operated by the Calaveras County Office of Emergency Services. Under Board direction, District outreach on the EAP has included informational mailers to downstream property owners within the inundation area, coordination with Calaveras County and the City of Angels on posting notices, and public notice advertisement in the local newspaper.

The District maintains **pre-identified emergency contacts** including a general contractor and alternate, hazardous materials response, and direct contacts at the Calaveras County Sheriff's Office, Calaveras County OES, CAL FIRE Tuolumne-Calaveras Unit, Murphys Fire Protection District, Caltrans District 10, the California Highway Patrol, and the City of Angels Police Department.

Emergency Operations. The District has two facilities available for emergency operations: the Main Office at 339 Main Street and the Maintenance Building at 988 Sheep Ranch Road.

Equipment. District equipment staged at the Maintenance Building includes a dump truck, skip loader, backhoe, two air compressors, two welders and cutting equipment, fans and blowers, two generators, pumps, five portable radios, personal protective equipment, hand tools, and a bulk supply of sand. The District owns no snow removal equipment, which is the basis for the emergency access project in Section 6.5.

5.3 PLANNING AND REGULATORY CAPABILITY

UPUD's planning and regulatory capabilities provide the framework through which the District manages hazards, reduces risk, and improves the resilience of its water system. These capabilities include the plans, policies, programs, and authorities used to guide emergency preparedness, infrastructure investment, system operations, and long-term capital planning. Key planning tools include the District's Local Hazard Mitigation Plan, Emergency Response Plan, Water Master Plan, Capital Improvement Program, and ongoing asset management and maintenance activities.

The District has the authority to establish rates and charges, adopt and enforce design and construction standards for facilities connecting to its water systems, implement its Cross-Connection Control Program, acquire property and easements, and enter into cooperative agreements, mutual aid agreements, and joint powers authorities. Collectively, these authorities provide important mechanisms for reducing risk, protecting critical infrastructure, and improving system reliability.

A particularly important mitigation capability is UPUD's JPA membership in the UWPA. Because UWPA was created to own and operate the conveyance facilities that deliver the District's sole water supply, UPUD's representation on the UWPA governing board provides a direct role in planning, funding, prioritizing, and implementing improvements to critical regional water infrastructure. Through its participation in UWPA, the District is able to influence planning and investment decisions affecting critical upstream facilities that would otherwise be outside its direct control. This relationship enhances the District's ability to address many of the source water and conveyance vulnerabilities identified in Section 4.

The District has also completed its Lead Service Line Inventory in accordance with the Revised Lead and Copper Rule and identified no lead or galvanized service lines requiring replacement.

UPUD maintains a moratorium on new raw water service connections. Combined with the District's authority to establish connection requirements and adopt design and construction standards, this measure helps limit additional demand on vulnerable infrastructure and supports the long-term sustainability and reliability of the raw water system. While these authorities do not regulate land use or development, they allow the District to manage risks associated with its own facilities, infrastructure, and operations.

UPUD does not have authority over land use planning, zoning, building codes, subdivision regulations, or floodplain management. These functions, including administration of the National Flood Insurance Program (NFIP), are the responsibility of Calaveras County. As a result, mitigation actions involving development standards, floodplain management, land use controls, or community-wide regulatory measures require coordination with the County and other responsible agencies. The District supports continued NFIP compliance by considering flood hazard information during planning and design of District facilities and by coordinating with Calaveras County on flood-related issues that may affect District infrastructure, operations, access routes, or critical facilities. Where appropriate, this coordination is reflected in the mitigation actions identified in Section 6.

5.4 EXISTING PLANS

The District reviewed and incorporated information from existing plans, studies, and regulatory documents to support the hazard identification, vulnerability assessment, capability assessment, and mitigation strategy components of this Local Hazard Mitigation Plan (LHMP). These documents provide information on system assets, hazard exposure, emergency response capabilities, infrastructure deficiencies, future growth and demand projections, capital improvement needs, and countywide hazard conditions. Table 8 summarizes the plans and studies reviewed during plan development and describes how each document informed the mitigation planning process and the development of mitigation actions.

Table 8. Existing District Plans and Studies

Plan or study	Completed Date	Relationship to mitigation
Risk and Resilience Assessment (AWIA)	2026	Natural hazard exposure by asset category; source of vulnerability findings in Section 4
Emergency Response Plan (AWIA)	2026	Response capability, notification, mutual aid
Andrew Cademartori Dam Emergency Action Plan	2026	Dam failure notification, emergency levels, and inundation mapping; source of dam data in Section 4.3.6
Water Master Plan 2002–2032	February 2004	Connection history and growth projections, treatment plant capacity analysis, water loss history, UWPA delivery history
Water Treatment Study (Gilmore Engineering)	September 2003	Filter media performance and the basis for the contact clarification recommendation
Water System Master Plan update and hydraulic assessment	Fall 2026	Current system capacity, pressure, and fire flow deficiencies
Capital Improvement Program	Annual	Implementation mechanism for mitigation projects
Calaveras County Multi-Jurisdictional HMP	2026	Countywide hazard data and coordination

5.5 MITIGATION PROGRAMS

UPUD implements hazard mitigation through a combination of capital investments, infrastructure management, and routine operational activities. The District's primary mechanism for implementing mitigation projects is its Capital Improvement Program (CIP), which serves as the framework for planning, prioritizing, funding, and constructing facility replacement, rehabilitation, and system improvement projects. Mitigation actions identified in Section 6 are intended for integration into the CIP to ensure that risk-reduction projects are evaluated alongside other District infrastructure needs and incorporated into long-term capital planning and budgeting decisions.

In addition to capital projects, the District reduces risk through ongoing operations and maintenance activities that improve system reliability and resilience. These activities include vegetation management around critical facilities, inspection and clearing of intake structures and screens, routine valve exercising, leak detection and repair, infrastructure maintenance, emergency preparedness activities, and coordination with partner agencies regarding access to facilities during severe weather events.

UPUD also advances mitigation through coordination with regional partners, including neighboring water agencies, Calaveras County, local fire agencies, and other neighboring utilities. These partnerships support infrastructure resilience, emergency response, water supply reliability, and implementation of projects that reduce risks to critical facilities and operations.

By integrating hazard mitigation into both capital planning and day-to-day operations, the District is able to continuously reduce risk, improve system performance, and strengthen its ability to maintain essential water services during and after hazard events.

5.6 FISCAL RESOURCES

UPUD's ability to implement hazard mitigation projects depends on a combination of rate revenues, reserves, capital planning, and external funding opportunities. The District's primary revenue sources include domestic water service charges, raw water service charges, and non-rate revenues. To maintain the financial sustainability of the utility and support ongoing infrastructure needs, the Board of Directors adopted updated rates following the 2024 Rate Study, with annual adjustments scheduled through the current five-year rate period.

The District uses its budgeting process and Capital Improvement Program (CIP) to evaluate, prioritize, and fund infrastructure investments that improve system reliability, address aging assets, and reduce vulnerability to hazards. However, available financial resources must be balanced against ongoing operational expenses, regulatory requirements, and infrastructure maintenance needs.

A significant financial consideration is the District's annual assessment to the UWPA which supports the operation, maintenance, and rehabilitation of the regional conveyance facilities upon which UPUD's water supply depends. Under the Joint Powers Agreement, member agencies are responsible for funding UWPA budget shortfalls through annual assessments. These costs are ultimately recovered through customer rates and charges. While this investment is essential to maintaining the District's sole water supply conveyance system, it reduces the amount of revenue available for District-funded capital projects, infrastructure replacement, and hazard mitigation activities. As a result, increases in UWPA assessments directly affect the District's financial capacity to self-fund mitigation projects and other improvements identified in this plan.

The District also maintains an important financial resilience measure through its adopted emergency response rate provisions. These provisions allow the Board to implement temporary emergency charges during declared shortages, natural disasters, wildfires, or catastrophic infrastructure failures. This capability helps stabilize revenue during emergencies when water consumption patterns may change significantly, supporting continued operations and recovery activities.

Despite these capabilities, the District's financial resources are limited relative to the scale of several mitigation needs identified in this plan. Major projects such as raw water system rehabilitation, hydrant replacement, conveyance improvements, and development of additional water supply resiliency measures may exceed the District's ability to self-fund. As a result, implementation of certain high-priority mitigation actions will depend on securing grants, loans, or other external funding sources.

Potential funding sources include FEMA Hazard Mitigation Assistance programs, State of California grant and loan programs, USDA Rural Development funding, State Revolving Fund programs, dam safety funding opportunities, and other infrastructure resilience initiatives. The District will review funding opportunities on an ongoing basis and incorporate eligible mitigation projects into its capital planning process to maximize its ability to reduce risk and improve long-term system resilience.

5.7 CAPABILITIES ASSESSMENT

The capability assessment identified existing strengths as well as opportunities to enhance the District's ability to implement mitigation actions, reduce risk, and improve long-term resilience. The findings of this assessment, together with the hazard and vulnerability assessment presented in Section 4, form the basis for the mitigation strategy described in Section 6.

To strengthen its mitigation capabilities during the planning period, UPUD will:

1. *Enhance interagency coordination* by continuing to work with the Calaveras County Office of Emergency Services and other partner agencies on emergency access, resource coordination, and operational interoperability during disasters and declared emergencies.
2. *Improve asset and system performance data* through additional metering, infrastructure monitoring, and annual validated water audits to better quantify vulnerabilities, document losses, and support future grant applications and project prioritization.
3. *Integrate hazard mitigation into capital planning* by incorporating mitigation actions into the District's Capital Improvement Program (CIP) and ensuring capital projects are evaluated for their risk-reduction and resilience benefits.
4. *Strengthen grant funding capacity* through staff training and/or consultant support to improve the District's ability to pursue state and federal funding opportunities for high-priority mitigation projects.
5. *Expand mutual aid and emergency preparedness capabilities* by maintaining and strengthening cooperative relationships with neighboring water agencies and participating in periodic emergency planning and response exercises.

6. *Increase public outreach and education* related to water supply reliability, emergency preparedness, defensible space, and hazard awareness to improve community resilience and support mitigation objectives.
7. *Coordinate with Calaveras County and other agencies* on land use, development, watershed protection, and defensible space initiatives that may influence hazards affecting District facilities, water supplies, and service reliability.

Addressing these capability gaps will improve the District's ability to implement the mitigation actions identified in this plan and help ensure continued progress toward reducing risk and enhancing the resilience of UPUD's water system and the communities it serves.

SECTION 6. MITIGATION STRATEGIES

6.1 OVERVIEW

The mitigation strategy translates the findings of the risk assessment into a coordinated set of actions designed to reduce risk, strengthen infrastructure resilience, and improve the District's ability to maintain reliable water service during and after hazard events. It serves as the District's roadmap for implementing cost-effective measures that protect critical facilities, reduce potential losses, and support long-term community resilience.

The mitigation strategy consists of mitigation goals, hazard-specific mitigation actions, project prioritization, and implementation guidance. The strategy was developed using the results of the hazard identification, vulnerability assessment, and capability assessment to ensure that proposed actions address the District's most significant risks and are achievable within available resources and authorities.

Sections 6.3 through 6.9 establish mitigation goals for each hazard carried forward from the risk assessment and identify the actions and projects intended to achieve those goals. Each mitigation action includes an estimated cost, implementation timeframe, priority ranking, responsible department or position, and potential funding sources to guide future implementation and tracking.

6.2 MITIGATION GOALS, OBJECTIVES, AND ACTIONS

The mitigation goals established by the Planning Team provide the foundation for UPUD's mitigation strategy and guide the selection and prioritization of mitigation actions. These goals are intended to address the vulnerabilities identified in the risk assessment, build upon the District's existing capabilities, and improve the long-term resilience of the water system and the communities it serves.

UPUD's mitigation goals are to:

1. Improve water supply reliability by reducing dependence on a single source and a single conveyance path.
2. Protect critical facilities and infrastructure from natural and human-caused hazards, including Andrew Cademartori Dam, and reduce risks to downstream populations and property.
3. Reduce Vulnerability to and from Andrew Cademartori Dam
 - Maintain compliance with all DSOD inspection, maintenance, monitoring, and Emergency Action Plan requirements.

- Improve reliability and resilience of outlet works and other critical dam-related infrastructure.
 - Enhance emergency notification, evacuation coordination, and public awareness for populations within the inundation area.
 - Incorporate dam safety and inundation risks into capital planning, emergency response planning, and interagency coordination activities.
 - Pursue projects that improve water supply redundancy and reduce operational dependence on a single storage facility.
4. Maintain operational continuity by ensuring access to and control of critical facilities during and after hazard events.
 5. Support emergency response and fire protection by preserving and improving water supply and fire flow capabilities throughout the service area.
 6. Reduce infrastructure vulnerability through the rehabilitation, replacement, and modernization of aging facilities and assets.
 7. Enhance preparedness, coordination, and decision-making through improved planning, partnerships, monitoring, data collection, and public outreach.

Because Andrew Cademartori Dam is classified as a High Hazard Potential Dam by the California Division of Safety of Dams, the District has established a specific mitigation goal focused on reducing vulnerability both to dam-related impacts and from conditions that could affect dam safety. This goal supports protection of life, property, critical infrastructure, and water system operations while promoting continued compliance with dam safety requirements and implementation of long-term resilience measures.

The mitigation actions presented in Sections 6.3 through 6.9 were developed to advance one or more of these goals and address the hazards identified in the risk assessment. Each action includes a priority level, implementation timeframe, responsible party, estimated cost, and potential funding sources.

As a small special district with limited financial resources, UPUD must carefully balance mitigation investments with ongoing operational and capital needs. While some actions can be implemented through routine operations, maintenance activities, or the Capital Improvement Program, many of the higher-priority projects will require external grant or loan funding. Consequently, implementation of this mitigation strategy will depend on continued pursuit of state and federal funding opportunities, coordination with partner agencies, and incorporation of mitigation priorities into the District's annual budgeting and capital planning processes.

6.3 WILDFIRE

GOAL

Reduce the risk that wildfire poses to UPUD's water supply, infrastructure, operations, and customers by improving the resilience of critical facilities, maintaining emergency water delivery and fire protection capabilities, and supporting rapid recovery following wildfire events.

DESCRIPTION

Wildfire is one of the most significant hazards facing UPUD due to its location within the wildland-urban interface (WUI), dependence on a single source water conveyance system, and responsibility for providing water used in fire suppression activities throughout the service area. Wildfire can damage critical infrastructure, degrade water quality, restrict access to facilities, interrupt water deliveries, and increase demands on the District's potable and raw water systems.

The mitigation actions identified below are intended to reduce wildfire-related risks, strengthen the reliability of water service during emergencies, preserve fire suppression capability, improve access to critical facilities, and protect infrastructure from both wildfire and post-fire impacts.

MITIGATION ACTIONS

Raw Water Pipeline Replacement Program

Replace deteriorated sections of the 1940s-era spiral-welded steel raw water system, prioritizing pipelines with documented failures and facilities supporting fire suppression demands.

- Priority: High
- Timeframe: 5 Years (Phased)
- Responsible Party: General Manager, District Engineer
- Potential Funding Sources: HMGP, BRIC, USDA Rural Development, District CIP
- Estimated Cost: \$5,000,000

HYDRANT REPLACEMENT AND IMPROVEMENT PROGRAM

Replace hydrants that do not meet current operational standards and prioritize areas served by undersized mains or identified fire flow deficiencies.

- Priority: High
- Timeframe: 5 Years (Phased)
- Responsible Party: Operations Manager
- Potential Funding Sources: HMGP, BRIC, District CIP
- Estimated Cost: \$4,000,000

DEFENSIBLE SPACE AND FACILITY FUEL REDUCTION

Establish and maintain defensible space around the treatment plant, storage tanks, reservoirs, and other critical facilities. Implement vegetation management on District-owned property to reduce wildfire exposure and improve facility access.

- Priority: High
- Timeframe: Ongoing
- Responsible Party: Operations Manager
- Potential Funding Sources: CAL FIRE Fire Prevention and Forest Health Programs, HMGP Post-Fire, District Operating Budget
- Estimated Cost: \$15,000 annually

TREATMENT PLANT ACCESS RESILIENCY IMPROVEMENTS

Improve the reliability of the treatment plant access route through roadway, crossing, culvert, drainage, and turnout improvements to maintain access during wildfire response and recovery operations.

- Priority: High
- Timeframe: 5 Years
- Responsible Party: District Engineer
- Potential Funding Sources: HMGP, BRIC
- Estimated Cost: \$500,000

FIRE FLOW AND SYSTEM PRESSURE IMPROVEMENTS

Implement improvements identified through hydraulic analyses to address fire flow and pressure deficiencies. Confirm and correct previously identified deficiencies in Murphys, Vallecito, Douglas Flat, Carson Hill, and other areas where available fire flow may be insufficient during emergency conditions.

- Priority: High
- Timeframe: 5 Years
- Responsible Party: District Engineer
- Potential Funding Sources: HMGP, BRIC, District CIP
- Estimated Cost: \$20,000,000

SECONDARY WATER SUPPLY AND EMERGENCY INTERCONNECTION

Design and construct a permanent interconnection with a neighboring water agency to provide an alternate source of supply during drought conditions, conveyance outages, or other emergencies. The project should include the ability to deliver water to the treatment plant and/or directly into the distribution system.

- Priority: High
- Timeframe: 5 Years
- Responsible Party: General Manager and District Engineer
- Potential Funding Sources: BRIC, HMGP, State Revolving Fund, USDA Rural Development
- Estimated Cost: \$15,000,000

DRAFT

UPUD Water System

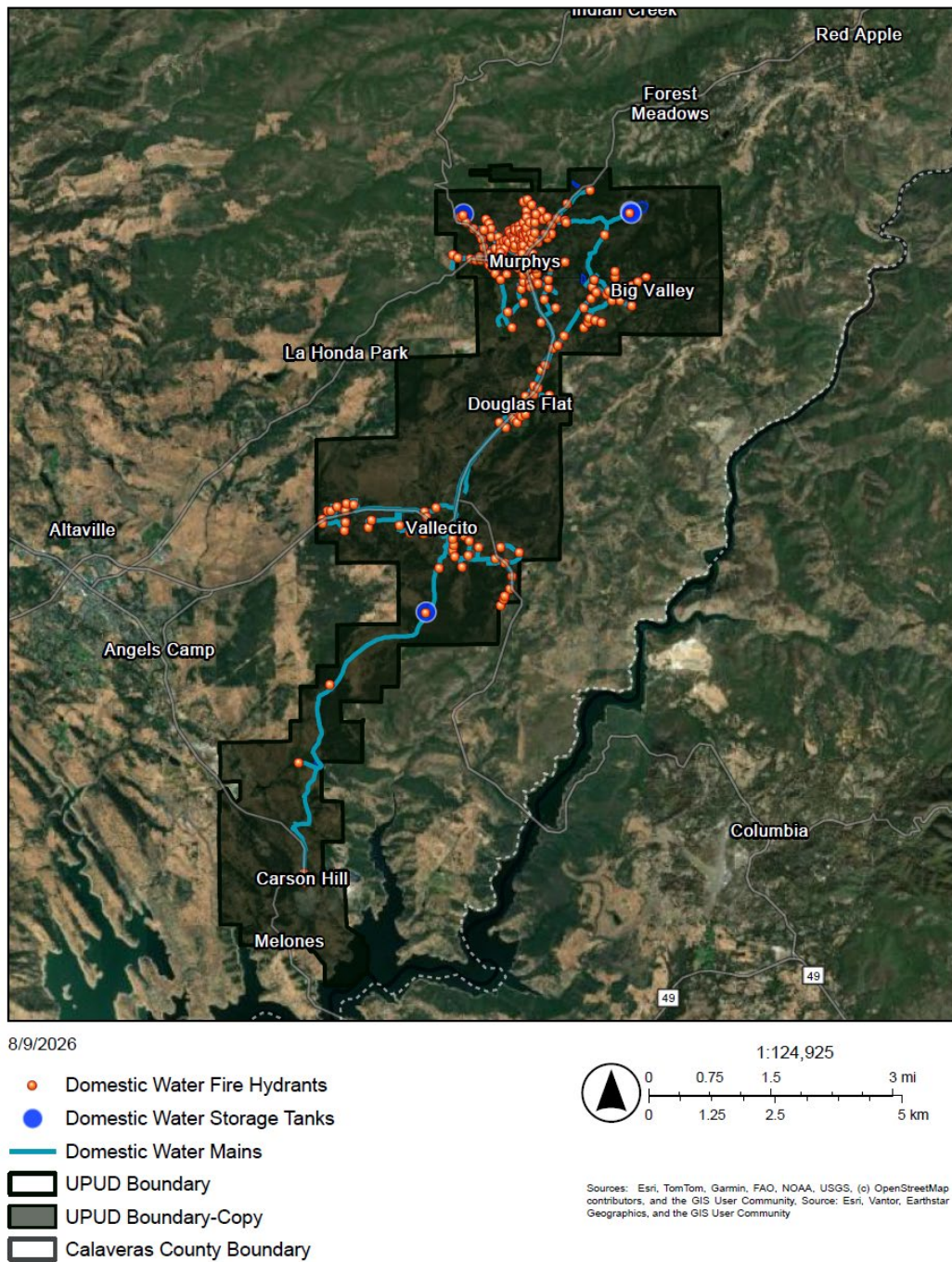


Figure 24. Domestic Water System including water main lines, water storage tanks and water fire hydrants.

UPUD Raw Water System

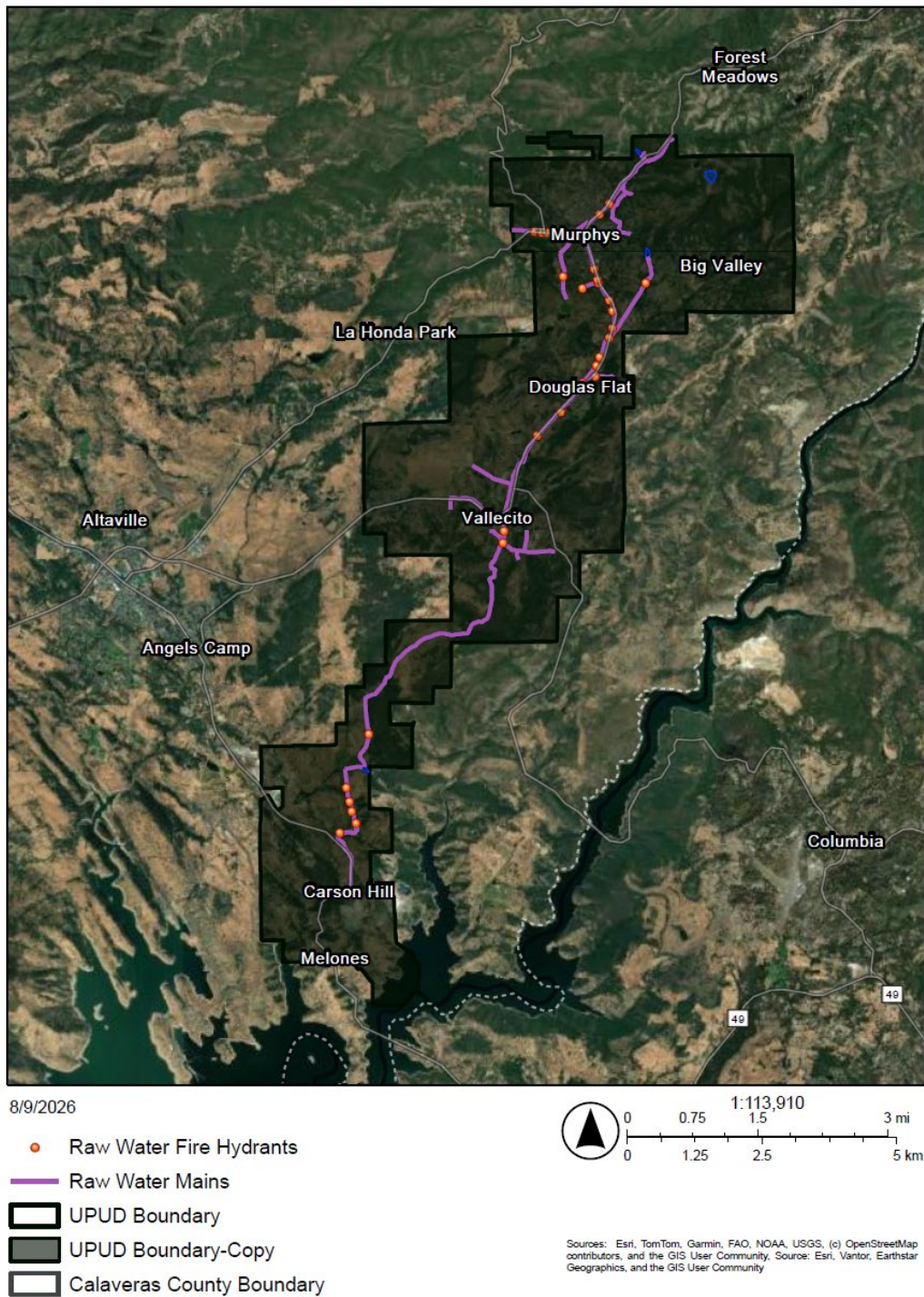


Figure 25. UPUD Raw Water System including water main lines and water fire hydrants.

6.4 DROUGHT AND WATER SUPPLY INTERRUPTION

GOAL:

Improve water supply reliability and resilience by reducing dependence on a single source and conveyance system, strengthening the District's ability to monitor and manage supply conditions, and maintaining water service during droughts, outages, and other disruptions.

DESCRIPTION:

UPUD relies on a single surface water source delivered through a largely singular conveyance system that is owned and operated by partner agencies. The District has no groundwater production facilities and limited storage capacity to buffer extended supply interruptions. As identified in the risk assessment, drought, conveyance outages, source water quality events, and other disruptions have the potential to affect water supply reliability and service continuity.

The mitigation actions identified below are intended to improve system redundancy, increase operational flexibility, enhance monitoring capabilities, reduce water losses, and strengthen the District's ability to manage and respond to water supply disruptions.

MITIGATION ACTIONS:

SECONDARY WATER SUPPLY AND EMERGENCY INTERCONNECTION

Design and construct a permanent interconnection with a neighboring water agency to provide an alternate source of supply during drought conditions, conveyance outages, or other emergencies. The project should include the ability to deliver water to the treatment plant and/or directly into the distribution system.

- Priority: High
- Timeframe: 5 Years
- Responsible Party: General Manager and District Engineer
- Potential Funding Sources: BRIC, HMGP, Safeguarding Tomorrow Revolving Loan Fund, USDA Rural Development, Drinking Water State Revolving Fund (DWSRF), District Capital Reserves
- Estimated Cost: \$15,000,000

SOURCE WATER MONITORING AND EARLY DETECTION PROGRAM

Expand source water monitoring capabilities to improve the early detection of water quality concerns, including elevated turbidity, algal blooms, algal toxins, invasive species, and other conditions that could affect treatment operations or supply reliability.

- Priority: Medium
- Timeframe: 5 Years
- Responsible Party: Operations Manager
- Potential Funding Sources: DWSRF, BRIC, District Operating Budget
- Estimated Cost: \$10,000 annually

RESERVOIR METERING AND WATER LOSS MANAGEMENT

Install metering at reservoir inlets and outlets and conduct annual validated water audits to improve system accounting, quantify losses, support operational decision-making, and provide data needed to support future funding applications.

- Priority: High
- Timeframe: 2 Years
- Responsible Party: District Engineer
- Potential Funding Sources: Department of Water Resources Water Use Efficiency Programs, District CIP
- Estimated Cost: \$100,000 for project installation, \$5,000 annually

ADVANCED METERING INFRASTRUCTURE PROGRAM

Replace aging customer meters with Advanced Metering Infrastructure (AMI) or Automated Meter Reading (AMR) technology to improve leak detection, water loss control, demand forecasting, and drought response capabilities.

- Priority: High
- Timeframe: 3 Years
- Responsible Party: General Manager and District Engineer
- Potential Funding Sources: USDA Rural Development, DWSRF, District CIP
- Estimated Cost: \$2,250,000

WATER SUPPLY CONTINGENCY PLANNING AND EMERGENCY OPERATIONS UPDATES

Periodically review and update water shortage response procedures, emergency supply protocols, and operational strategies to ensure the District can effectively manage drought conditions, prolonged outages, and source water disruptions.

- Priority: Medium
- Timeframe: Ongoing
- Responsible Party: General Manager, Operations Manager
- Potential Funding Sources: District Operating Budget
- Estimated Cost: \$2,000 annually

This mitigation strategy directly addresses the District's highest vulnerability identified in the risk assessment: reliance on a single source of water delivered through a single conveyance pathway with limited redundancy. By improving supply alternatives, monitoring capabilities, and operational flexibility, these actions will enhance the District's ability to maintain reliable service during future droughts and water supply interruptions.

6.5 SEVERE WINTER STORM AND FLOOD

GOAL:

Reduce the impacts of severe winter storms and flooding on District facilities, operations, and water service by protecting critical infrastructure, maintaining access to essential facilities, and improving the District's ability to respond to storm-related disruptions.

DESCRIPTION:

Severe winter storms are a recurring hazard that can affect UPUD through heavy rainfall, flooding, snow, debris accumulation, high winds, and access constraints. While the District does not have floodplain management authority, it is vulnerable to storm-related impacts on water supply infrastructure, diversion facilities, treatment operations, and access to critical facilities. The mitigation actions identified below are intended to improve operational resilience, maintain service continuity, and reduce the consequences of severe weather events.

NFIP COORDINATION AND COMPLIANCE: UPUD does not administer the National Flood Insurance Program (NFIP) and does not have authority over floodplain management, floodplain development permits, or floodplain regulations. These responsibilities are administered by Calaveras County. The District will continue to coordinate with the County regarding flood hazards, floodplain mapping updates, repetitive loss properties, and flood mitigation activities that may affect District facilities, infrastructure, access routes, or operations. Flood hazard information developed through NFIP implementation and related planning efforts will be considered during the design, rehabilitation, and replacement of District facilities.

MITIGATION ACTIONS

INDEPENDENT EMERGENCY ACCESS CAPABILITY

Acquire and maintain snow removal and emergency access equipment, including a plow-equipped vehicle, and establish procedures for District-led clearing of the treatment plant access route. This project will reduce reliance on outside agencies and improve the District's ability to access critical facilities during severe winter weather.

- Priority: High

- Timeframe: 2 Years
- Responsible Party: Operations Manager
- Potential Funding Sources: HMGP, BRIC, District Operating Budget
- Estimated Cost: \$100,000

INTAKE AND DIVERSION SCREENING IMPROVEMENTS

Upgrade debris interception and screening facilities at key diversion and conveyance locations to reduce plugging, improve operational reliability, and minimize manual clearing requirements during high-flow storm events.

- Priority: Medium
- Timeframe: 2 Years
- Responsible Party: Operations Manager
- Potential Funding Sources: HMGP, BRIC, District CIP
- Estimated Cost: \$300,000

TREATMENT PLANT FLOOD PROTECTION IMPROVEMENTS

Reduce the vulnerability of treatment plant facilities to flooding by relocating or elevating remaining flood-prone electrical and control equipment, improving site drainage, and implementing additional measures to protect critical operational components.

- Priority: Medium
- Timeframe: 5 Years
- Responsible Party: District Engineer
- Potential Funding Sources: HMGP, BRIC
- Estimated Cost: \$150,000

STORM RESPONSE AND CRITICAL FACILITY ACCESS PLANNING

Coordinate with Calaveras County, emergency response agencies, and utility partners to maintain emergency access routes, establish storm response procedures, and improve communication during severe weather events.

- Priority: Medium
- Timeframe: Ongoing
- Responsible Party: General Manager, Operations Manager
- Potential Funding Sources: District Operating Budget
- Estimated Cost: \$2,000 annually

These actions are intended to reduce service disruptions, protect critical facilities from storm-related damage, maintain access to essential infrastructure, and improve the District's resilience to flooding and severe winter weather. The District will continue to coordinate with Calaveras County and other partner agencies to ensure that flood hazard information, NFIP-related planning

efforts, and changing flood risks are considered during implementation of these actions and future updates of this plan.

6.6 LANDSLIDE, DEBRIS FLOW, AND EROSION

GOAL

Reduce the risk of landslides, debris flows, and erosion to the District's water supply, conveyance facilities, reservoir, and critical access routes by improving infrastructure resilience, watershed stability, and interagency coordination.

DESCRIPTION

UPUD's primary water supply depends on conveyance facilities that traverse steep terrain and are susceptible to erosion, slope instability, debris accumulation, and tree fall. These vulnerabilities may be heightened following wildfire, when loss of vegetation can increase the likelihood of erosion and debris flows during subsequent storm events. Because key portions of the conveyance system are owned and operated by the Utica Water and Power Authority (UWPA), mitigation of these risks requires close coordination between the District and its regional partners.

The mitigation actions identified below are intended to reduce the likelihood of conveyance failures, protect reservoir operations, maintain water quality, and improve the resilience of critical infrastructure exposed to slope-related hazards.

FLOODPLAIN COORDINATION

UPUD does not have authority over floodplain management, development regulation, or administration of the National Flood Insurance Program (NFIP). Those responsibilities reside with Calaveras County. The District will continue to coordinate with the County regarding flood hazards, flood-prone areas, and any repetitive loss properties that may affect District facilities, water infrastructure, access routes, or emergency response operations. Information developed through NFIP administration, flood studies, and future floodplain mapping activities will be considered during implementation of mitigation projects and future updates of this plan.

MITIGATION ACTIONS

CONVEYANCE DEBRIS AND EROSION PROTECTION

Implement debris interception measures, channel stabilization, erosion protection, and hazard tree management at locations with a history of erosion, tree fall, or infrastructure damage. Priority should be given to vulnerable reaches of the UPUD conveyance system including the inlets to the Raw Water South and North Ditches and the inlet to Cademartori Reservoir.

- Priority: High
- Timeframe: 5 Years
- Responsible Party: General Manager
- Potential Funding Sources: HMGP, BRIC
- Estimated Cost: \$90,000

UWPA EMERGENCY COORDINATION AND OPERATING AGREEMENT

Working through its representation on the UWPA Board, develop and maintain formal procedures for outage notification, emergency response coordination, conveyance failure response, and scheduling of planned outages relative to wildfire season and winter storm risks.

- Priority: High
- Timeframe: 2 Years
- Responsible Party: UPUD Board Directors
- Potential Funding Sources: District Operating Budget
- Estimated Cost: \$1000

RESERVOIR WATERSHED AND SLOPE STABILIZATION

Stabilize vulnerable District-owned slopes adjacent to the reservoir and other critical facilities through revegetation, erosion control treatments, drainage improvements, and post-fire recovery measures. Priority will be given to areas affected by wildfire or exhibiting active erosion.

- Priority: Medium
- Timeframe: 5 Years
- Responsible Party: District Engineer
- Potential Funding Sources: HMGP Post-Fire, BRIC, NRCS Emergency Watershed Protection Program
- Estimated Cost: \$650,000

CRITICAL ACCESS ROUTE EROSION MITIGATION

Evaluate and implement erosion control, drainage, and slope stabilization improvements along critical facility access routes where erosion, slope movement, or storm damage could restrict access for operations, maintenance, or emergency response.

- Priority: Medium
- Timeframe: 5 Years
- Responsible Party: District Engineer
- Potential Funding Sources: HMGP, BRIC, District CIP
- Estimated Cost: \$500,000

These actions are intended to reduce the likelihood of slope-related damage to water supply infrastructure, improve operational reliability, and strengthen the District's ability to maintain water service during and after severe weather, wildfire, and other hazard events.

6.7 EARTHQUAKE

GOAL

Reduce the risk of earthquake-related damage to critical water infrastructure and maintain the District's ability to provide reliable water service, emergency water supplies, and fire protection following a seismic event.

DESCRIPTION

Although major earthquakes occur infrequently, they have the potential to cause widespread and simultaneous damage to UPUD's water system. The District's greatest seismic vulnerabilities are associated with critical assets that have limited or no redundancy, including the Tunnel Tap water supply connection, Andrew Cademartori Dam and its outlet works, storage facilities, and portions of the aging raw water distribution system. The mitigation actions identified below are intended to improve system resilience, reduce the likelihood of catastrophic service interruptions, and support post-earthquake response and recovery.

MITIGATION ACTIONS

SECONDARY WATER SUPPLY AND EMERGENCY INTERCONNECTION

Design and construct a permanent interconnection with a neighboring water agency to provide an alternative water supply in the event that earthquake damage disrupts the District's primary source water conveyance system. This action represents the District's most significant seismic mitigation measure because it addresses the potential loss of its sole water supply source.

- Priority: High
- Timeframe: 5 Years
- Responsible Party: General Manager and District Engineer
- Potential Funding Sources: BRIC, HMGP, Safeguarding Tomorrow Revolving Loan Fund, USDA Rural Development, DWSRF, District Capital Reserves
- Estimated Cost: \$15,000,000

RAW WATER PIPELINE REPLACEMENT PROGRAM

Replace vulnerable sections of the aging spiral-welded steel raw water system to reduce the likelihood of multiple simultaneous pipeline failures resulting from ground shaking and differential ground movement.

- Priority: High
- Timeframe: 5 Years (Phased)
- Responsible Party: General Manager, District Engineer
- Potential Funding Sources: HMGP, BRIC, USDA Rural Development, District CIP
- Estimated Cost: \$5,000,000

STORAGE TANK SEISMIC IMPROVEMENTS

Evaluate and retrofit storage tank anchorage, piping connections, appurtenances, and flexible joints to improve seismic performance and reduce the risk of damage during a major earthquake.

- Priority: Medium
- Timeframe: 5 Years
- Responsible Party: District Engineer
- Potential Funding Sources: HMGP, BRIC, District CIP
- Estimated Cost: \$650,000

SEISMIC VULNERABILITY ASSESSMENT OF CRITICAL FACILITIES

Conduct a detailed seismic evaluation of key District facilities, including the treatment plant, Andrew Cademartori Dam outlet works, storage tanks, and other critical infrastructure, to identify vulnerabilities and prioritize future retrofit projects.

- Priority: Medium
- Timeframe: 2 Years
- Responsible Party: District Engineer
- Potential Funding Sources: HMGP, BRIC
- Estimated Cost: \$50,000

These actions are intended to reduce earthquake-related damage, improve operational continuity, and lessen the District's dependence on individual infrastructure components whose failure could result in widespread service disruption following a seismic event.

6.8 DAM FAILURE

GOAL

Reduce the risk of dam-related impacts to downstream populations, property, and infrastructure while maintaining the safety, reliability, and operational functionality of Andrew Cademartori Dam and Reservoir.

DESCRIPTION

Andrew Cademartori Dam is a critical component of the District's water supply system, providing essential raw water storage and operational flexibility. The dam is classified by the California Division of Safety of Dams (DSOD) as a High Hazard Potential Dam, meaning that failure could result in loss of life and significant downstream consequences. The inundation area extends along Angels Creek through portions of Murphys and toward Angels Camp, placing downstream residents, businesses, transportation corridors, and utilities at risk.

The mitigation actions identified below are intended to improve dam safety, reduce the potential for dam-related hazards, strengthen emergency preparedness, and preserve the District's critical water storage capacity. Because of the dam's hazard classification, these actions also support eligibility for funding opportunities available through the Rehabilitation of High Hazard Potential Dams (HHPD) Program.

MITIGATION ACTIONS

DAM OUTLET WORKS REHABILITATION

Replace aging outlet piping and sluice gate valves, rehabilitate the drain and diffuser structure, and complete concrete repairs identified through DSOD inspections and recommendations to improve the long-term reliability and operability of the dam.

- Priority: High
- Timeframe: 5 Years
- Responsible Party: General Manager, District Engineer
- Potential Funding Sources: Rehabilitation of High Hazard Potential Dams Program, HMGP, BRIC, District CIP
- Estimated Cost: \$1,500,000

RESERVOIR INFLOW AND DEBRIS PROTECTION

Implement measures to reduce the risk that debris, sediment, or uncontrolled flows resulting from upstream conveyance failures, erosion, or post-wildfire runoff will adversely affect reservoir operations and dam safety. This action will be coordinated with landslide, debris flow, and erosion mitigation projects identified in Section 6.6.

- Priority: Medium
- Timeframe: 5 Years
- Responsible Party: District Engineer
- Potential Funding Sources: HMGP, BRIC
- Estimated Cost: \$120,000

EMERGENCY ACTION PLAN TRAINING AND EXERCISES

Conduct periodic tabletop and functional exercises of the Dam Emergency Action Plan (EAP) with Calaveras County OES, local fire districts, law enforcement agencies, neighboring water agencies, and other stakeholders to improve emergency preparedness, notification procedures, and response coordination.

- **Priority:** Medium
- **Timeframe:** Ongoing
- **Responsible Party:** General Manager
- **Potential Funding Sources:** District Operating Budget
- **Estimated Cost:** \$2000 annually

INUNDATION MAPPING UPDATE AND CONSEQUENCE ASSESSMENT

Update dam inundation mapping prior to its expiration and develop an updated estimate of population, structures, critical facilities, and infrastructure potentially affected by a dam failure. This information will support emergency planning, project prioritization, and future benefit-cost analyses.

- **Priority:** High
- **Timeframe:** 5 Years
- **Responsible Party:** District Engineer
- **Potential Funding Sources:** HHPD Program, HMGP, District CIP
- **Estimated Cost:** \$65,000

EMERGENCY RESERVOIR ISOLATION AND INTAKE CONTROL VERIFICATION

Verify, document, and periodically exercise procedures for emergency closure of the Utica Ditch intake supplying the reservoir to ensure operators can rapidly control inflows during emergencies. Incorporate procedures into the Emergency Action Plan and operator training activities.

- **Priority:** High
- **Timeframe:** 2 Years
- **Responsible Party:** Operations Manager
- **Potential Funding Sources:** District Operating Budget
- **Estimated Cost:** \$2,000 annually

These actions are intended to reduce risk to downstream communities, maintain compliance with dam safety requirements, improve emergency preparedness, and preserve the District's critical storage capacity and operational resilience.

6.9 CYBER SECURITY

GOAL

Reduce the risk of cyber incidents affecting the District's operational technology, information technology, communications systems, and essential water utility functions, while maintaining the ability to deliver safe and reliable water service during and after a cyber event.

DESCRIPTION

UPUD relies on a combination of operational technology, monitoring systems, alarm notification systems, communications infrastructure, and business information systems to support water treatment, distribution, customer service, and emergency response activities. While the District maintains the ability to operate critical facilities manually, cyber incidents have the potential to disrupt monitoring, communications, alarm notification, administrative functions, and operational efficiency.

Consistent with cybersecurity best practices and federal guidance for critical infrastructure, this public document does not disclose specific cybersecurity vulnerabilities, protective measures, system architecture, or response procedures. Detailed cybersecurity information is maintained in the District's Risk and Resilience Assessment, Emergency Response Plan, and other non-public security documents.

MITIGATION ACTIONS

REDUNDANT ALARM AND EMERGENCY COMMUNICATIONS

Establish redundant communications pathways for alarm notification and emergency communications to reduce dependence on a single communications system and improve the reliability of incident notification to on-call personnel during communications outages or cyber incidents.

- **Priority:** High
- **Timeframe:** 2 Years
- **Responsible Party:** Operations Manager
- **Potential Funding Sources:** HMGP, BRIC, District Operating Budget
- **Estimated Cost:** \$50,000

INDEPENDENT CONTROL SYSTEM BACKUP AND RECOVERY CAPABILITY

Implement, maintain, and periodically test secure off-site backups of control system programming, operational data, and critical configurations to support rapid recovery following a cyber incident, equipment failure, or data loss event.

- Priority: High
- Timeframe: 2 Years
- Responsible Party: Operations Manager
- Potential Funding Sources: District Operating Budget
- Estimated Cost: \$50,000 implementation and \$10,000 annually

REMOTE MONITORING EXPANSION

Expand monitoring, telemetry, and alarm capabilities at facilities that currently have limited operational visibility to improve situational awareness, incident detection, and response capabilities.

- Priority: Medium
- Timeframe: 5 Years
- Responsible Party: Operations Manager
- Potential Funding Sources: HMGP, BRIC, District CIP
- Estimated Cost: \$500,000

CYBERSECURITY AWARENESS AND TRAINING PROGRAM

Provide annual cybersecurity awareness training for all District personnel to reduce the risk of phishing, credential compromise, social engineering, and other common cyber threats affecting critical infrastructure organizations.

- Priority: High
- Timeframe: Ongoing
- Responsible Party: General Manager
- Potential Funding Sources: District Operating Budget
- Estimated Cost: \$5,000 annually

CYBER INCIDENT RESPONSE AND RECOVERY PLANNING

Periodically review, update, and exercise cybersecurity incident response and recovery procedures to ensure coordination among staff, vendors, emergency partners, and regulatory agencies during a cyber event.

- Priority: Medium
- Timeframe: Ongoing
- Responsible Party: General Manager
- Potential Funding Sources: District Operating Budget
- Estimated Cost: \$2,000 annually

These actions are intended to improve the security, reliability, and resilience of the District's operational and business systems while maintaining the ability to safely operate critical water infrastructure during and following a cyber incident.

6.10 MITIGATION PRIORITIES

The Planning Team evaluated and prioritized mitigation actions based on the results of the hazard and vulnerability assessment, the District's existing capabilities, implementation feasibility, and the potential for each action to reduce long-term risk. The prioritization process was intended to ensure that limited financial and staffing resources are directed toward projects that provide the greatest overall benefit to the District and the communities it serves.

Mitigation actions were prioritized using the following criteria:

1. *Risk Reduction Effectiveness* – The action reduces risk to life, property, critical infrastructure, or the District's ability to provide reliable water service, including water needed for fire suppression and emergency response.
2. *Cost Effectiveness and Feasibility* – The anticipated benefits of the action are expected to justify implementation costs, considering avoided damages, reduced service interruptions, improved resilience, and the District's ability to implement and maintain the measure.
3. *Multi-Hazard Benefits* – The action reduces vulnerability to multiple hazards and provides benefits under a variety of emergency and operating conditions.
4. *Implementation Capability* – The action is within the District's authority to undertake and can reasonably be implemented using available staffing, funding sources, partnerships, and technology.

PRIORITY RANKING METHODOLOGY

The Planning Team applied the prioritization criteria qualitatively to each mitigation action and assigned a priority ranking. Because most projects have not yet advanced to final design, detailed engineering cost estimates and formal FEMA Benefit-Cost Analyses (BCAs) have not been completed. Instead, the Planning Team evaluated cost effectiveness based on the anticipated reduction in risk relative to implementation costs, operational benefits, and the ability of the project to protect critical infrastructure and maintain water service.

Projects generally received higher priority when they:

- Addressed one or more of the District's highest-risk vulnerabilities.
 - Protected critical facilities or infrastructure essential to water delivery, public health, or fire suppression.
-

- Reduced the potential for widespread or long-duration service interruptions.
- Provided benefits across multiple hazard categories.
- Reduced future repairs, maintenance, emergency response, or recovery costs.
- Increased system reliability, redundancy, or operational flexibility.
- Were technically feasible and could reasonably be implemented within the five-year planning horizon.
- Were likely to compete successfully for state or federal funding.

Projects received lower priority when they addressed more localized risks, provided benefits to a smaller portion of the system, required additional study before implementation, or were dependent on completion of higher-priority actions.

Based on these criteria, the [Secondary Water Supply and Emergency Interconnection Project](#) identified in Section 6.4 is the District's highest-priority mitigation action. This project directly addresses the District's greatest vulnerability, dependence on a single source of water delivered through a single conveyance path. By providing an alternate supply source during emergencies, the project reduces risk from drought, water supply interruption, wildfire, earthquake, landslide, debris flow, severe storm, and other events that could disrupt the District's primary water supply.

The [Raw Water Pipeline Replacement Program](#) identified in Section 6.3 is the District's second-highest priority. Replacement of aging raw water infrastructure will improve system reliability, support fire suppression capabilities, reduce the likelihood of service interruptions, and increase resilience to wildfire, earthquake, and other hazards that could damage vulnerable pipeline segments.

While all mitigation actions identified in this chapter contribute to reducing risk, these two projects provide the greatest overall reduction in vulnerability and the most significant long-term resilience benefits to the District. Project priorities will be reviewed during future plan maintenance efforts and may be adjusted as conditions, funding opportunities, infrastructure needs, and hazard risks evolve.

Table 9. Mitigation Projects & Priority Summary

Project	LHMP Action	Priority	Timeframe
Secondary water supply and emergency intertie	6.3, 6.4 & 6.5	High	5 years
Raw water pipeline replacement	6.3, 6.7	High	5 years
Hydrant Replacements	6.3	High	2 years
Defensible Space & Fuels Reduction	6.3	High	Ongoing
Treatment Plant Access Resiliency Improvements	6.3	High	5 years

Project	LHMP Action	Priority	Timeframe
Fire Flow & System Pressure Improvements	6.3	High	5 years
Source water monitoring & early detection program	6.4	High	Ongoing
Advanced Metering Infrastructure replacement (AMI)	6.4	High	3 years
Reservoir metering & water loss management	6.4	High	2 years
Water supply contingency planning & emergency updates	6.4	Medium	Ongoing
Independent Emergency Access Capability	6.5	High	2 years
Intake & Diversion Screening Improvements	6.5	Medium	2 years
Treatment Plant Flood Protection Improvements	6.5	Medium	5 years
Storm Response & Critical Facility Access Planning	6.5	Medium	Ongoing
Conveyance Debris & Erosion Protection	6.6	High	5 years
UWPA Emergency Coordination & Operating Agreement	6.6	High	5 years
Reservoir Watershed Slope Stabilization	6.6	Medium	2 years
Critical Access Route Erosion Mitigation	6.6	Medium	5 years
Storage Tank Seismic Improvements	6.7	Medium	5 years
Seismic Vulnerability Assessment & Critical Facilities	6.7	Medium	2 years
Dam Outlet Rehab	6.8	High	5 years
Reservoir Inflow & Debris Protection	6.8	High	5 years
EAP Training & Exercises	6.8	High	Ongoing
Emergency Reservoir Isolation & Intake Control Verification	6.8	High	2 years
Redundant Alarm & Emergency Communications	6.9	High	2 years
Independent Control System Backups & Recovery Capability	6.9	High	2 years
Remote Monitoring Expansion	6.9	Medium	5 years
Cybersecurity Awareness & Training Program	6.9	High	Ongoing

Project	LHMP Action	Priority	Timeframe
Cyber Incident Response & Recovery Planning	6.9	Medium	Ongoing

6.11 IMPLEMENTATION STRATEGY

The successful implementation of this LHMP depends on integrating hazard mitigation into the District's ongoing planning, budgeting, operations, and capital improvement activities. This implementation strategy establishes responsibility for carrying out mitigation actions, identifies funding considerations, and describes how the District will monitor progress over the life of the plan.

RESPONSIBILITY

The General Manager is responsible for overall administration of the LHMP and for coordinating implementation of the mitigation strategy. Individual mitigation actions will be managed by the departments or positions identified with each project. District staff will evaluate opportunities to incorporate approved mitigation actions into routine operations, capital projects, infrastructure replacement efforts, and other District initiatives whenever feasible.

FUNDING

UPUD currently does not maintain a dedicated hazard mitigation fund. Implementation of mitigation actions will occur through a combination of District operating funds, capital improvement funding, grants, loans, partnerships, and other available financial resources. Mitigation projects will be evaluated annually as part of the District's budget development process and Capital Improvement Program (CIP) review. Because several high-priority actions exceed the District's capacity to self-fund, UPUD will actively pursue state and federal funding opportunities and will review applicable grant programs on an ongoing basis.

IMPLEMENTATION TIMEFRAME

Mitigation actions identified in this plan are intended to be implemented over the five-year planning horizon. The District will consider hazard mitigation opportunities during the planning, design, and construction of all major capital improvement, rehabilitation, and replacement projects to maximize resilience benefits and reduce future risk. Project implementation timeframes are defined as follows:

- 2 Years: Action anticipated to be initiated or completed within two years of plan adoption.
- 5 Years: Action anticipated to be completed within the five-year planning period.

- Ongoing: Recurring activity implemented on a continuing basis throughout the planning period.

MONITORING AND INTEGRATION

The District will review progress on mitigation actions annually in conjunction with its budgeting process, Capital Improvement Program updates, and other planning activities. This review will be used to evaluate completed actions, identify implementation challenges, update priorities as needed, and ensure mitigation considerations remain integrated into District decision-making.

EXTERNAL FUNDING AND COORDINATION

UPUD will continue to coordinate with Cal OES, FEMA, Calaveras County, neighboring water agencies, and other partners to identify funding opportunities and advance projects that reduce risk to the District's facilities, operations, and water supply system. Where appropriate, the District will submit Notices of Interest, grant applications, and other documentation necessary to pursue state and federal hazard mitigation funding.

Through this implementation strategy, UPUD will incorporate hazard mitigation into its day-to-day operations and long-term planning efforts, ensuring that risk reduction and system resilience remain key considerations in future District investments and decision-making.

SECTION 7. PLAN MAINTENANCE

7.1 MONITORING, EVALUATING, AND UPDATING THE PLAN

This LHMP is intended to be a living document that guides UPUD's ongoing efforts to reduce risk and improve resilience. The District will monitor implementation progress, evaluate the effectiveness of mitigation actions, and update the plan as needed to reflect changing conditions, new information, and lessons learned from hazard events.

MONITORING

The General Manager is responsible for coordinating implementation and monitoring of this LHMP. Progress will be tracked through a mitigation action tracking system that documents:

- Status of each mitigation action;
- Accomplishments completed during the reporting period;
- Funds expended;
- Grant applications submitted or awarded;
- Obstacles to implementation;
- Changes in project scope, priority, schedule, or funding; and
- New mitigation opportunities identified by the District.

The tracking system will be reviewed and updated annually in conjunction with preparation of the District's Capital Improvement Program (CIP) and annual budget.

EVALUATION

The Planning Team, convened by the General Manager and including District staff and technical advisors as appropriate, will evaluate the plan annually and following any major hazard event that significantly impacts District facilities, operations, or water service.

The annual evaluation will assess:

- Progress toward implementation of mitigation actions;
- Effectiveness of completed mitigation projects;

- Continued relevance of mitigation goals;
- Changes in hazards, vulnerabilities, and risk;
- Availability of new funding opportunities;
- Changes in District infrastructure, operations, or service area conditions; and
- The need for new or revised mitigation actions.

Evaluation results will be presented to the Board of Directors at a public meeting and used to guide future budgeting, capital planning, and mitigation efforts.

UPDATING

UPUD will conduct a comprehensive update of this LHMP at least once every five years, consistent with FEMA and Cal OES requirements. The update process will begin no later than 24 months prior to plan expiration to allow sufficient time for stakeholder coordination, public involvement, plan preparation, state and federal review, and adoption by the Board of Directors.

The update process will include:

- Review and revision of the risk assessment;
- Evaluation of completed and ongoing mitigation actions;
- Assessment of changes in development, infrastructure, and community conditions;
- Review of the capability assessment;
- Re-evaluation of mitigation priorities; and
- Continued public and stakeholder participation.

The updated plan will be submitted to Cal OES and FEMA for review and approval before expiration of the existing plan.

7.2 IMPLEMENTATION THROUGH EXISTING PROGRAMS

Following approval by Cal OES and FEMA, UPUD will integrate the goals, findings, and mitigation actions identified in this LHMP into the District's existing planning, operational, and capital improvement programs. Incorporating mitigation into routine District activities helps ensure that risk reduction and resilience are considered whenever facilities are repaired, replaced, upgraded, or expanded.

Information developed through the hazard identification and risk assessment process, including facility vulnerabilities, critical asset information, hazard exposure data, and mitigation priorities, will be used to support infrastructure planning, project development, emergency preparedness activities, asset management, and capital investment decisions. Mitigation opportunities will be

evaluated whenever the District undertakes major capital improvements, infrastructure replacement projects, facility rehabilitation, or updates to operational plans and procedures.

The District will implement this plan primarily through its Capital Improvement Program (CIP), annual budgeting process, Water System Master Plan, Emergency Response Plan, Risk and Resilience Assessment, Dam Emergency Action Plan, and design and construction standards. Mitigation actions identified in this LHMP will be reviewed during updates to these planning mechanisms to ensure that hazard mitigation remains an integral component of District decision-making and long-term infrastructure management.

Because UPUD does not have authority over land use planning, zoning, building regulations, or floodplain management, integration with those planning mechanisms will occur through ongoing coordination with Calaveras County and other responsible agencies. Where appropriate, the District will share relevant hazard information and mitigation priorities with partner agencies to support broader community resilience efforts.

Table 10. Integration with Existing Planning Mechanisms

Mechanism	Integration
Capital Improvement Program	During annual CIP development the General Manager reviews the mitigation project list
Annual budget	Projects with operating cost components are included in the annual budget request. The annual monitoring update precedes budget development for this purpose.
Water System Master Plan	Vulnerability findings are provided to master planning; master plan recommendations affecting hazard vulnerability are carried back into the mitigation project list at the annual evaluation.
Emergency Response Plan	Vulnerabilities identified here inform ERP response procedures. ERP revisions are reviewed against the mitigation project list annually.
Risk and Resilience Assessment	The RRA and this plan are reviewed on aligned cycles so natural hazard findings remain consistent. Malevolent act findings remain within the RRA.
Dam Emergency Action Plan	Dam-related projects are coordinated with EAP review and DSOD inspection findings.
District design and construction standards	Hazard-resistant design provisions arising from this plan are incorporated into District standards for new and replacement facilities.
Rate studies and financial planning	Long-term funding requirements for mitigation projects are presented during rate study development.

7.3 CONTINUED PUBLIC INVOLVEMENT

UPUD recognizes that public participation is an important component of effective hazard mitigation planning and long-term community resilience. The District will continue to provide opportunities for customers, stakeholders, partner agencies, and interested members of the public to remain informed about mitigation activities and to provide input during implementation and future updates of this LHMP.

The District will support continued public involvement through the following activities:

1. Maintaining the adopted LHMP and future plan updates on the District website and making copies available for public review at the District office.
2. Presenting annual plan maintenance and mitigation progress updates to the Board of Directors during public meetings and providing opportunities for public comment.
3. Communicating progress on mitigation projects, grant applications, and hazard resilience initiatives through District communications, including the website, customer notices, billing inserts, newsletters, and social media, as appropriate.
4. Soliciting public input on hazard concerns, vulnerabilities, and mitigation priorities during future plan maintenance activities and updates.
5. Providing opportunities for customers and stakeholders to submit comments or recommendations regarding hazard mitigation at any time through the District office.
6. Engaging the public following significant hazard events that affect District facilities or service levels to gather lessons learned and identify potential improvements to mitigation, preparedness, response, and recovery efforts.
7. Coordinating with partner agencies, neighboring jurisdictions, and community organizations to promote awareness of hazard risks and mitigation opportunities throughout the service area.
8. Public comments and stakeholder input received during plan maintenance, implementation, and future updates will be documented and considered by the District when evaluating mitigation priorities, updating the risk assessment, and revising mitigation actions. Through these efforts, UPUD will ensure that the plan remains responsive to community needs and continues to support the long-term resilience of the District and the communities it serves.

APPENDIX A. PLANNING MEETING MATRIX

Public and stakeholder engagement was documented throughout the planning process using meeting agendas, sign-in sheets, and meeting minutes, which are included in this appendix. These materials demonstrate ongoing participation by planning partners, local officials, agency representatives, and community stakeholders in the development and review of the LHMP. The summary matrix below provides an overview of meeting dates, participants, key discussion topics, decisions made, and actions taken to support plan development and compliance with FEMA planning requirements.

Date	Meeting	Attendance	Topics
Jan 27, 2026	ERP and HMP workshop	8 participants	Facility-by-facility hazard identification; source water, conveyance, dam and reservoir, treatment, storage, distribution, raw water system, monitoring and control, chemicals, O&M
Aug 3, 2026	Planning Team meeting 4	3 participants	Draft plan review
Sep 2, 2026	Public Workshop		Solicit public input on plan.
TBD	Board presentation		Public presentation and comment

APPENDIX B. PUBLIC OUTREACH

Insert website postings, billing insert notices, survey instrument and results, meeting notices, and social media postings documenting public outreach.

DRAFT

APPENDIX C. PUBLIC COMMENTS

Insert public comments received and the District's response to each. If no comments were received, state that no comments were received during the public review period.

DRAFT

APPENDIX D. FEMA PLAN REVIEW TOOL CROSSWALK

Complete the location column with section and page numbers before submittal. Element E does not apply; this is a new plan rather than an update. Element G applies because Andrew Cademartori Dam carries a DSOD HIGH hazard potential classification, and is completed below.

Sub-element	Requirement	Location
A1-a	How the plan was prepared, schedule and activities, who was involved	§ 3.1, 3.2, App. A
A1-b	Jurisdiction seeking approval and how it participated	§ 3.2
A2-a	Stakeholders given an opportunity and how each was presented with it	§ 3.3
A3-a	Public opportunity to be involved and how feedback was included	§ 3.4, App. B, C
A4-a	Plans, studies, reports reviewed and how incorporated	§ 1.4, 5.4
B1-a	All natural hazards; rationale for any omitted	§ 4.2
B1-b	Location of each hazard	§ 4.3
B1-c	Extent of each hazard	§ 4.3
B1-d	Previous occurrences	§ 4.3
B1-e	Probability of future events, quantified	§ 4.2, 4.3
B2-a	Vulnerability summary including assets and people	§ 1.6, 4.3
B2-b	Potential impacts	§ 4.3

Sub-element	Requirement	Location
B2-c	Repetitively flooded NFIP-insured structures	§ 4.3.3, 6.5
C1-a	Existing capabilities including codes and land use ordinances	§ 5.2–5.6
C1-b	Ability to expand capabilities, or lack of authority	§ 5.3, 5.7
C2-a	NFIP participation and compliance	§ 1.2, 5.3, 6.5
C3-a	Goals to reduce risk	§ 6.2
C4-a	Comprehensive range of actions considered	§ 3.7, 6.3–6.9
C4-b	One or more actions per hazard	§ 6.3–6.9
C5-a	Prioritization criteria including cost-benefit	§ 3.7, 6.10
C5-b	Responsible position, funding, timeframe per action	§ 6.3–6.9, 6.11
D1-a	Continued public participation	§ 7.3
D2-a	Monitoring: how, when, by whom	§ 7.1
D2-b	Evaluating: how, when, by whom	§ 7.1
D2-c	Updating: how, when, by whom	§ 7.1
D3-a, D3-b	Integration into other planning mechanisms	§ 7.2
E1, E2	Plan update requirements	N/A — new plan
F1-a	Documentation of adoption	§ 2.1

Sub-element	Requirement	Location
HHPD1-a	Coordination with dam owner and/or state dam safety agency	§ 2.5, 3.3, 4.3.6
HHPD1-b	Information shared by state and/or dam owners incorporated	§ 4.3.6, 5.4
HHPD2-a	Risks and vulnerabilities to and from HHPDs, including cascading effects	§ 4.3.6
HHPD2-b	Limitations documented and approach to addressing deficiencies	§ 4.3.6, 6.8
HHPD3-a	Goal addressing reduction of vulnerability to and from HHPDs	§ 6.2, 6.8
HHPD3-b	Actions linked to goals	§ 6.8
HHPD4-a	Range of specific actions addressing HHPDs	§ 6.8
HHPD4-b	Criteria used to prioritize HHPD actions	§ 3.7, 6.10
HHPD4-c	Position responsible for implementing HHPD actions	§ 6.8
H	Additional state requirements	Per Cal OES