# Santa Cruz County

## 2025 Multi-Jurisdiction Hazard Mitigation Plan Update

### Volume 2 Section 6: Pajaro Valley Water Management Agency (PVW)

### Special District Annex

# List of Figures



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# Adoption Resolution

To comply with the Federal Disaster Mitigation Act of 2000 (DMA 2000), the Pajaro Valley Water Management Agency has officially adopted this 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan, including Volume 1 in its entirety as well as this Volume 2 Special District annex. The adoption of the MJHMP recognizes the agency's commitment to reducing the impacts of natural hazards within its jurisdiction and across Santa Cruz County.

A copy of the agency's adoption record is provided on the following pages. Adoption records for all jurisdictions are summarized in Volume 1, Table ES-1.

**Resolution 2026-04**

A Resolution of the Board of Directors of the
Pajaro Valley Water Management Agency

**Adopting the Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan 2025 Update**

The Board of Directors of the Pajaro Valley Water Management Agency does resolve as follows:

**WHEREAS,** Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan 2025 Update ("the Plan") recognizes the threat that natural hazards pose to people, property infrastructure and natural resources within Santa Cruz County; and

**WHEREAS,** the implementation of hazard mitigation actions can significantly reduce the risk of injury, loss of life, property damage, and disruption caused by future natural hazard events; and

**WHEREAS,** the federal Disaster Mitigation Act of 2000 (DMA 2000) requires all cities, counties, and special districts to have adopted a Hazard Mitigation Plan to receive pre-and post-disaster mitigation funding from the Federal Emergency Management Agency (FEMA); and

**WHEREAS,** the Pajaro Valley Water Management Agency fully participated in the FEMA-prescribed mitigation planning process to prepare the Plan; and

**WHEREAS,** a coalition of Santa Cruz County local governments and special districts embarked on a planning process to prepare for and lessen the impacts of specified hazards by updating the Plan; and

**WHEREAS,** each participating jurisdiction, including the Pajaro Valley Water Management Agency, has been responsible for reviewing and approving its respective Jurisdictional Annex within the Plan, and the Plan compiles individual annexes into a unified framework to ensure a comprehensive and coordinated hazard mitigation strategy for the entire Santa Cruz County planning area, aligned with the goals, objectives, and priorities of the Plan; and

**WHEREAS,** the Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan 2025 Update is comprised of two volumes, including Volume 1: Base Plan, which contains the countywide hazard mitigation framework and risk assessment, and Volume 2: Jurisdictional Annexes, which document the hazard profiles, vulnerabilities, and mitigation actions of participating jurisdictions; and

**WHEREAS,** a public involvement process consistent with the requirements of DMA 2000 was conducted to develop the Plan; and

**WHEREAS,** the California Governor's Office of Emergency Services (Cal OES) has reviewed and approved the Plan and has forwarded the plan to FEMA Region IX for final review and approval; and

**NOW, THEREFORE, BE IT RESOLVED AND ORDERED** that the Pajaro Valley Water Management Agency hereby adopts the Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan 2025 Update as an official plan of the jurisdiction. The Pajaro Valley Water

Management Agency adopts Volume 1 of the Plan in its entirety and acknowledges that the Pajaro Valley Water Management Agency Jurisdictional Annex contained in Volume 2 represents the jurisdiction's specific hazard mitigation strategies and responsibilities.

**BE IT FURTHER RESOLVED,** the Pajaro Valley Water Management Agency Board of Directors authorizes staff to make minor technical edits or administrative corrections to the Plan, as necessary to address FEMA review comments, prior to final adoption; and

**BE IT FURTHER RESOLVED** the Pajaro Valley Water Management Agency Board of Directors further encourages the respective departments identified in the implementation strategy of the plan to carry out the recommended mitigation actions assigned to them; and

**BE IT FURTHER RESOLVED** the proposed project is categorically exempt from the provisions of the CEQA Guidelines pursuant to the Provisions of Title 14 of the California Administrative Code, Section 15061(b)(3) (common sense exemption), and Section 15262 (Feasibility and Planning Studies); and

**BE IT FURTHER RESOLVED,** this Adoption Resolution will be submitted to Cal OES on behalf of the Pajaro Valley Water Management Agency by Santa Cruz County Staff to enable the Plan's final approval by Cal OES and FEMA.

**PASSED AND ADOPTED** by the Pajaro Valley Water Management Agency, County of Santa Cruz, State of California, the **15th** day of **April, 2026** by the following vote:

**AYES:** Rider, Miller, Culbertson, Newell, Broz, Bannister, Hernandez
**NOES:** None
**ABSENT:** None
**ABSTAIN:** None

Stephen Rider (Apr 20, 2026 08:48:29 PDT)

**Stephen Rider, Chair**

**Stephen Rider**
E-signed 2026-04-20 08:48AM PDT
rider@pvwater.org

**Attest:**

Corin Hammond

**Corin Hammond, Board Secretary**

**Corin Hammond**
E-signed 2026-04-17 08:47AM PDT
chammond@pvwater.org
Pajaro Valley Water Management Agency

# Resolution 2026-04

Final Audit Report 2026-04-20

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| By: | Corin Hammond (chammond@pvwater.org) |
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## "Resolution 2026-04" History

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# Section 6. Pajaro Valley Water Management Agency

## 6.1 Scope & Purpose

This annex details the elements specific to the Pajaro Valley Water Management Agency (PV Water) in the 2025 Santa Cruz County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). This annex is not intended to be a standalone document but appends to and supplements the information contained in the umbrella plan document (Volume 1). As such, all sections of the umbrella plan, including the planning process and other procedural requirements, apply to and were met by PV Water. This annex provides additional information specific to PV Water, with a focus on providing additional details on the planning process, risk assessment, and mitigation strategy for this jurisdiction.

### Pajaro Valley Water Management Agency Points of Contact

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## 6.2 Jurisdictional Setting

PV Water is a state-chartered special district established in 1984 under the Pajaro Valley Water Management Agency Act (Act 760) to manage groundwater and supplemental water supplies within the Pajaro Valley Groundwater Subbasin. PV Water's jurisdictional boundary closely aligns with the hydrologic extent of the Pajaro Valley Subbasin (DWR Basin No. 3-002.01), which spans approximately 75,000 acres across southern Santa Cruz County, northern Monterey County, and a small portion of San Benito County. It includes the City of Watsonville, unincorporated communities such as Freedom, Pajaro, and Aromas, and large expanses of prime agricultural land. The agency was formed in response to long-term groundwater overdraft and the resulting seawater intrusion, both of which pose serious threats to the region's water quality and agricultural economy.

As the exclusive Groundwater Sustainability Agency (GSA) for the Pajaro Valley under the California Sustainable Groundwater Management Act (SGMA), PV Water has full legal authority within its statutory boundary to develop and implement groundwater management plans, adopt conservation ordinances, levy fees, and oversee local water use practices. Its primary legal mandate is to manage and preserve

groundwater supplies in a sustainable manner without causing significant and unreasonable impacts such as declining groundwater levels, degraded water quality, or land subsidence.

PV Water's service area falls within the lower portion of the Pajaro River Watershed, a hydrologically and politically complex region shared by Santa Cruz, Monterey, San Benito, and Santa Clara counties. While PV Water does not deliver potable water, it manages and distributes non-potable water for agricultural use in the coastal area through its Coastal Distribution System. Potable water service within its boundaries is provided by local agencies such as the City of Watsonville, Pajaro/Sunny Mesa Community Services District, and Aromas Water District.

PV Water's boundaries are officially defined through legislation and local agency formation documents and have been evaluated periodically by the Santa Cruz Local Agency Formation Commission (LAFCO) for consistency with service responsibilities, water supply needs, and environmental planning goals. The agency's boundary and sphere of influence maps demonstrate its alignment with both groundwater basin hydrology and community needs.

The region features a mix of coastal plains, slough systems, and gently rolling foothills. Low-lying coastal areas are subject to tidal flooding, storm surge, and riverine flooding from the Pajaro River, while inland areas face drought stress, erosion, and sedimentation issues. Proximity to the ocean increases vulnerability to sea level rise, coastal erosion, and seawater intrusion, which threaten municipal, agricultural, and environmental water resources.

PV Water is governed by a seven-member Board of Directors representing electoral districts within the service area. The Board sets policy, adopts budgets, and oversees implementation of the Agency's Basin Management Plan. Day-to-day operations are managed by the General Manager and professional staff, supported by consultants and contractors for specialized programs.

- **Year of Incorporation**: 1984
- **2023 Population Served**: Approximately 70,000 (CAS 5-Year, 2018-2023)
- **Coverage Area**: 75,000 acres across Santa Cruz, Monterey, and San Benito Counties

### 6.2.1 Geography & Climate

PV Water is located along the Central Coast of California, primarily within southern Santa Cruz County, with parts extending into northern Monterey County and a small portion of San Benito County. Figure 6-1 show this area as it lies within the lower Pajaro River watershed, draining westward into Monterey Bay, and spans approximately 117 square miles (75,000 acres).

Geographically, the region is defined by a mix of coastal plains, marine terraces, and valley floor floodplains, all surrounded by upland areas including the Santa Cruz Mountains to the north and the Gabilan Range to the southeast. Much of the Pajaro Valley consists of fertile alluvial soils, making it one of the most productive agricultural areas in the state. This geology also contributes to significant groundwater storage capacity, although its coastal setting leaves the aquifer system vulnerable to seawater intrusion, especially where groundwater levels have dropped below sea level.

The Pajaro Valley's hydrology is shaped by surface water features such as the Pajaro River, Salsipuedes Creek, Watsonville Slough, Harkins Slough, and College Lake, which provide critical habitat, stormwater conveyance, and sources for groundwater recharge.

Climatically, the PV Water region experiences a Mediterranean coastal climate, characterized by cool, wet winters and warm, dry summers. Annual precipitation ranges from approximately 18 to over 50 inches. The coastal and valley floor areas, particularly around the City of Watsonville and Highway 1, typically receive 18 to 25 inches per year. As one moves north and east toward the upland areas of the Santa Cruz Mountains and foothills, precipitation gradually increases to 25–35 inches, and in some areas beyond PV Water's northern boundary, it reaches 45 inches or more annually, shown in Figure 6-2. The region's proximity to the Pacific Ocean moderates temperatures year-round, with average highs in the low 70s °F in summer and lows in the mid-40s °F in winter. However, precipitation is highly variable, and multi-year droughts are common, particularly under climate change scenarios. The region is also subject to climate extremes, including longer dry seasons, more intense storm events, and rising sea levels, all of which pose risks to groundwater quality and supply reliability.

The combination of fertile soil, coastal proximity, and a moderate climate has made the Pajaro Valley a cornerstone of California's specialty crop agriculture. However, this geography and climate also create substantial challenges for water management, necessitating PV Water's long-term focus on groundwater sustainability, seawater intrusion prevention, and adaptive infrastructure planning in the face of a changing climate.

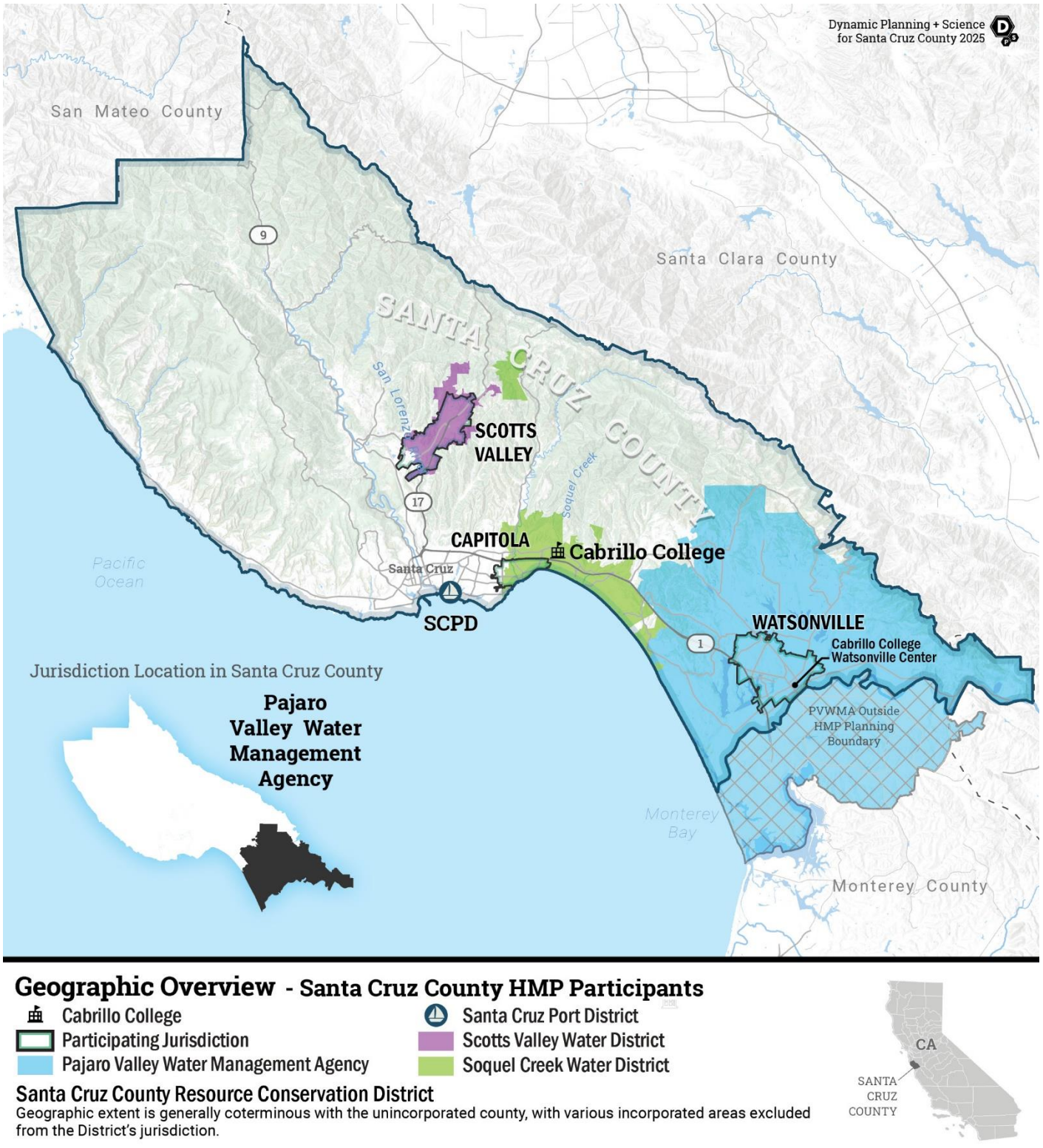


Figure 6-1: PV Water Sphere of Influence

*Note: This is PV Water agency boundary within* Santa Cruz *County only; not entire* service area that extends to Monterey and San Benito Counties

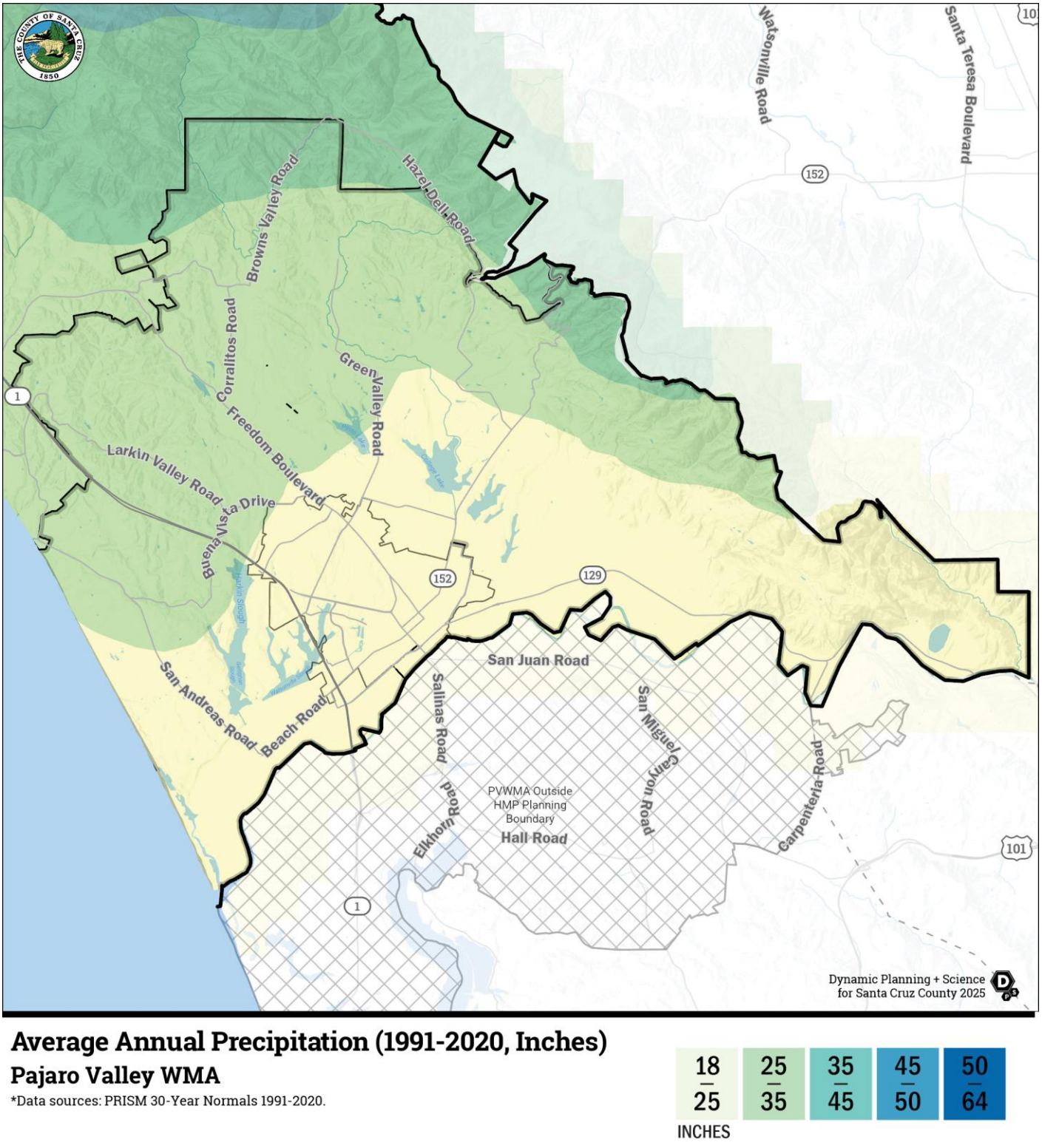


Figure 6-2: PV Water Average Annual Precipitation Map

*Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

### 6.2.2 Historic Overview

PVMWA was established in 1984 by the California Legislature through passage of the Pajaro Valley Water Management Agency Act (Act 760) in response to worsening groundwater overdraft and seawater intrusion in the Pajaro Valley. These issues were first documented as early as 1953, when researchers identified falling groundwater levels and increasing salinity in wells near the coast, threatening the region's agricultural productivity and long-term water supply reliability.

Created as a special agency with broad authority to manage groundwater resources and supplemental water supplies within its boundaries, PV Water was designed to serve as a locally controlled solution to an escalating regional water crisis. Over the next several decades, the agency implemented a series of planning initiatives and capital improvements aimed at reversing overdraft, improving water quality, and enhancing long-term basin sustainability.

In the 1990s, PV Water adopted its first Basin Management Plan (BMP), which outlined a roadmap for balancing groundwater use with supply. This plan was revised in 2002 and again in 2014, each time incorporating new data, engineering studies, and public input to refine the agency's approach. The 2014 BMP Update introduced a phased portfolio of infrastructure projects, including the Harkins Slough Recharge Facility, Watsonville Recycled Water Facility, and the Coastal Distribution System, all of which were constructed and operated to reduce pumping from overdrafted aquifers and mitigate seawater intrusion.

With the passage of the SGMA in 2015, PV Water was officially designated as the Groundwater Sustainability Agency (GSA) for the Pajaro Valley Subbasin. In 2021, PV Water adopted the Groundwater Sustainability Update 2022 to satisfy SGMA's requirements for long-term basin management. The update integrated recent modeling, monitoring, and stakeholder engagement efforts and was approved by the California Department of Water Resources (DWR) in 2024.

Major capital efforts continued into the 2020s, most notably the College Lake Integrated Resources Management Project, which broke ground in 2023. Designed to capture and store surface water for use in lieu of groundwater pumping, the project is expected to reduce overdraft and improve resilience to climate-driven hydrologic variability. PV Water has also initiated planning for the Watsonville Slough System Managed Aquifer Recharge and Recovery Project and continues to partner with local agencies to promote agricultural water conservation and recharge net metering strategies.

Today, PV Water remains the lead agency responsible for managing one of California's most intensively farmed and hydrologically challenged groundwater basins. Through a combination of infrastructure development, policy innovation, and regional collaboration, the agency continues to advance its mission to achieve sustainable groundwater resources for the Pajaro Valley while supporting the economic and environmental vitality of the region.

### 6.2.3 Demographics & Vulnerable Populations

This section describes the demographic characteristics of PV Water to guide hazard mitigation planning efforts. Natural disasters affect communities both physically and socially, with demographic composition

playing a central role in determining how impacts are distributed, particularly among vulnerable groups facing greater challenges in preparedness, response, and recovery. Understanding the area's social and economic landscape also helps assess potential social costs from infrastructure damage, including housing, industry, public facilities, essential services, and transportation.

Exploring local demographic data may help to identify groups and geographic areas with specific vulnerability to hazard events. In the context of all-hazards preparedness and response planning, at-risk individuals (often used interchangeably with "vulnerable populations") are defined federally as "children, pregnant women, senior citizens, and other individuals who have access or functional needs in the event of a public health emergency." (42 U.S.C. § 2802(b)(4)(B) (2019)) These populations may include, but are not limited to, individuals who are economically disadvantaged, living with disabilities, dependent on caregivers, from historically marginalized communities, have limited English proficiency or are non-English speaking, lack access to transportation, are experiencing homelessness, or have chronic medical conditions.

Certain populations face greater risk following a natural hazard event due to age, economic mobility, physical disability, geographic location, or a combination of factors. Vulnerability in the face of a hazard event is not a fixed characteristic; the same individual may be at risk for some hazards but not at risk for others. Planning for vulnerable populations in the context of hazard mitigation can help communities to prioritize limited resources where they will be the most effective. Refer to Volume 1, Section 1.4.3 for a more in-depth discussion of planning for vulnerable populations, at-risk individuals with access and functional needs, and environmental justice.

PV Water serves a socially and economically diverse region spanning southern Santa Cruz County, northern Monterey County, and a portion of San Benito County. The service area includes both urban centers, such as the City of Watsonville and the unincorporated communities of Pajaro, Freedom, and Las Lomas, as well as expansive agricultural lands that support one of California's most productive specialty crop regions.

#### 6.2.3.1 Income & Housing

Low-income households and communities face disproportionate financial burden from costs associated with disaster preparedness, response, and recovery. Disasters create unexpected expenses which may serve as "tipping points" for families and individuals living on the edge of poverty or homelessness. Low-income residents and renters are also less likely to purchase insurance, meaning that those with the most to lose during an event are also the least prepared to deal with potential losses. Renters are also more vulnerable to natural hazards because the decision to make major structural or property improvements typically lies with the property owner. Major hazard events in recent history, such as the CZU Lightning Complex Fire and the 2022 tsunami, emphasize the need for inclusive planning that addresses systemic vulnerabilities, improves access to recovery resources, and fosters community resilience to reduce future disparities during hazard events.

Within PV Water's service area, household income and housing characteristics reflect significant disparities that shape community vulnerability and resilience. Much of the Pajaro Valley, particularly the City of

Watsonville and adjacent unincorporated areas such as Pajaro and Freedom, includes neighborhoods with median household incomes below $37,800, far beneath state and regional averages, shown in Figure 6-3. These areas are distinctly visible in the light purple and gray tones on the ACS Median Household Income map, which highlight low-income census tracts concentrated in the urbanized core of the PV Water boundary. In contrast, some outlying areas along the northern edge of the service area show higher incomes, in excess $119,300, demonstrating a stark economic gradient within the region.

Figure 6-4 further reveals that many of these same lower-income areas are burdened by high poverty rates, with several tracts showing over 24 percent of the population living below the federal poverty line. The darkest maroon areas on the map correspond to Watsonville and nearby census tracts, underscoring the compounded socioeconomic stressors faced by large portions of the population. These include limited access to health care, economic precarity due to seasonal or low-wage employment, and heightened sensitivity to service disruptions or disaster recovery delays.

Housing characteristics add another layer of vulnerability. Figure 6-5 illustrates that urban and agricultural labor communities within PV Water have low rates of homeownership, with less than 41 percent of housing units owner-occupied in many census tracts. These areas are represented by the lightest shades of blue. Renters face greater risk of displacement and reduced access to resources in the aftermath of hazard events. The lower housing stability associated with low ownership rates may also affect the ability of residents to invest in preparedness measures such as seismic retrofitting, floodproofing, or backup power systems.

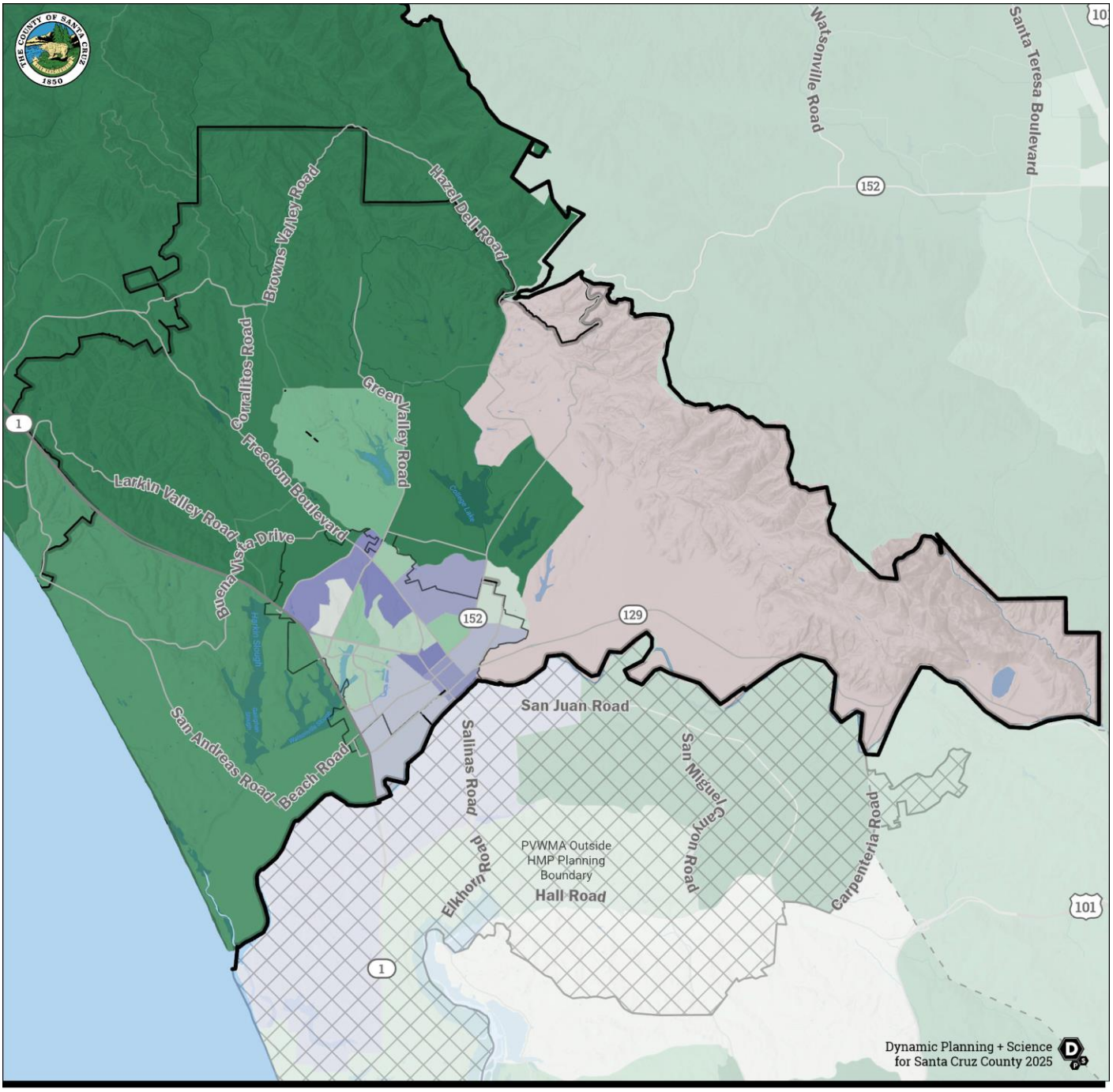


Figure 6-3: PV Water Median Household Income Map

*Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

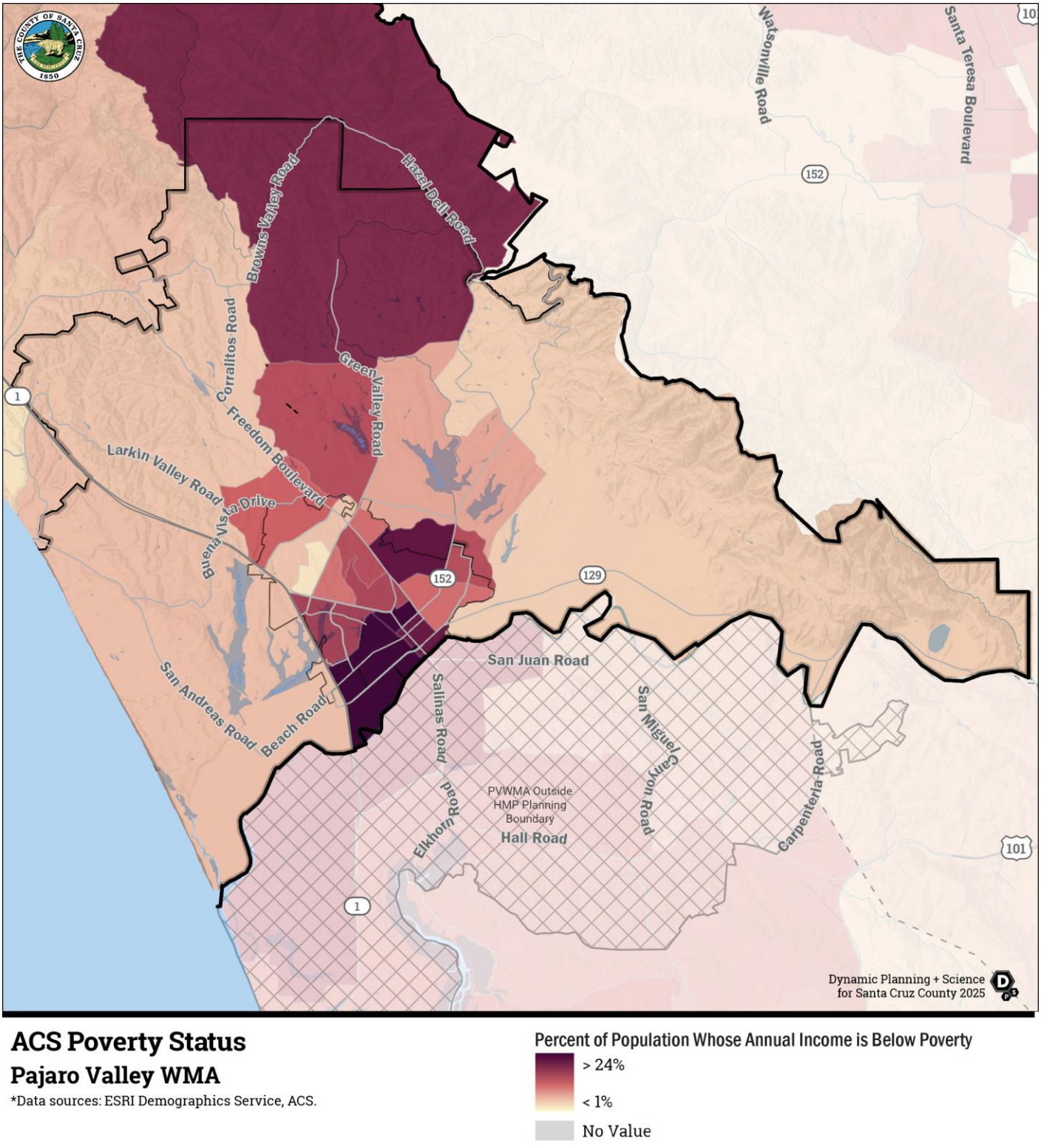


Figure 6-4: PV Water Poverty Status Map

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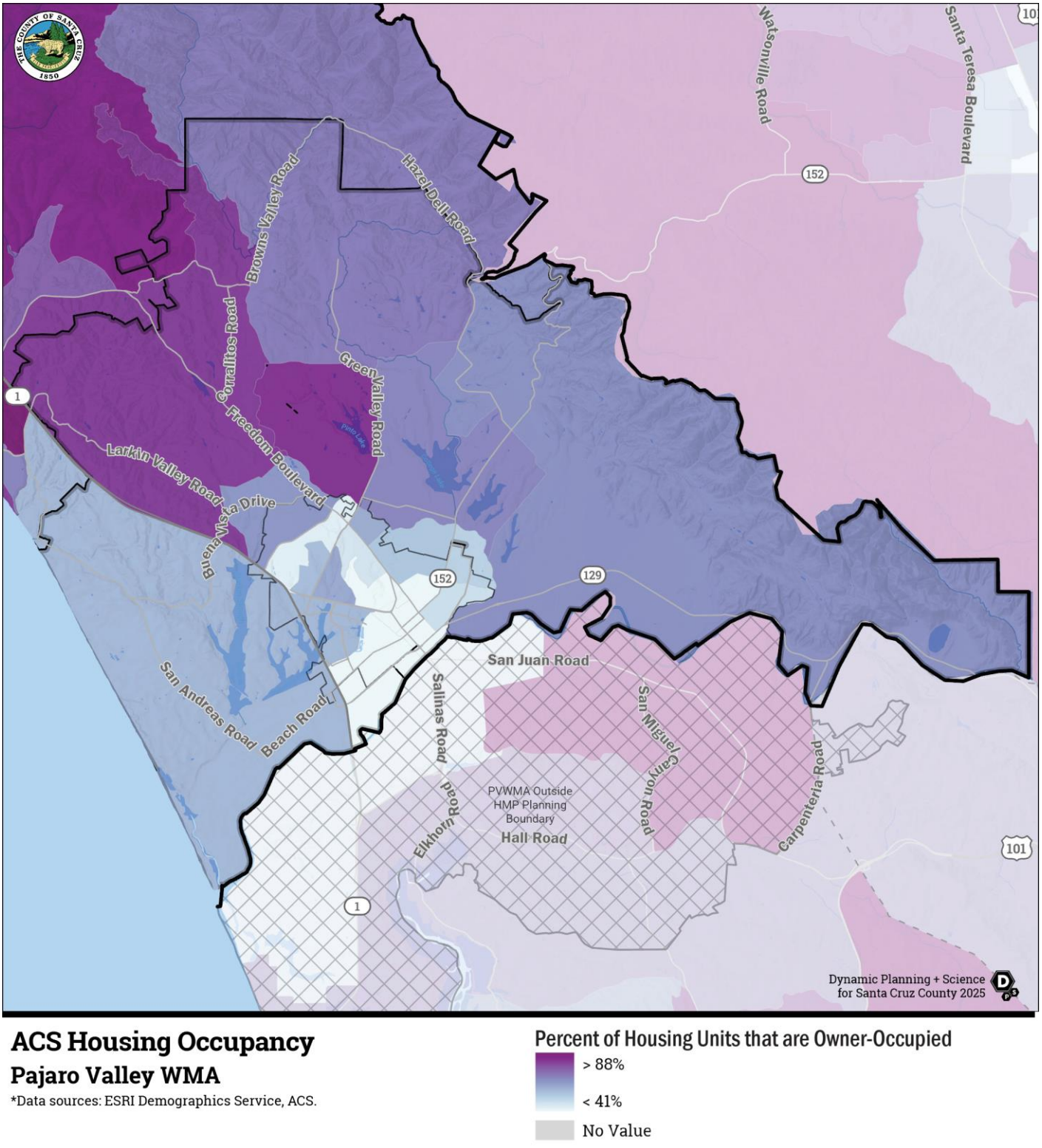


Figure 6-5: PV Water Owner-Occupied Housing Units Map

*Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

### 6.2.3.2 Dependent & Disabled Populations

Age and disability status play significant roles in vulnerability to natural hazards, as seniors, children, and many who experience disabilities are dependent populations who rely on caregiver networks for support and protection. Seniors and disabled persons may have mobility challenges and increased health concerns, necessitating additional assistance during evacuations and recovery. Similarly, children have limited ability to protect themselves and depend on caregivers to ensure their safety and well-being during emergencies. When combined with factors such as poverty, these vulnerabilities can be further compounded, highlighting the importance of targeted interventions to address the unique needs of dependent and disabled populations.

PV Water's service area includes several communities with notably high percentages of dependent and disabled populations, underscoring the importance of equity-focused hazard mitigation and emergency response strategies. Figure 6-6 shows over 48% of the population in key census tracts within Watsonville and the surrounding areas of the Pajaro Valley fall within dependent age groups, which includes children under 18 and adults over 65. These areas are marked in the darkest shades of purple on the ACS Dependent Age Groups map, indicating some of the highest concentrations of dependent individuals in Santa Cruz and northern Monterey Counties. High dependency ratios may increase the strain on households and public services during emergencies, as these groups often require additional assistance in preparedness, evacuation, and recovery.

Similarly, data on Figure 6-7 shows the elderly population with disabilities shows significant vulnerability in the PV Water service area. Specific census tracts in central and eastern Watsonville exhibit elderly disability rates exceeding 47%. These individuals may face mobility, sensory, or cognitive challenges that limit their ability to respond to hazard warnings, access emergency services, or recover from disaster impacts without support. These overlapping vulnerabilities magnify risks in both natural and human-caused hazard events, including flooding, drought, and earthquakes, which are all threats in the PV Water area.

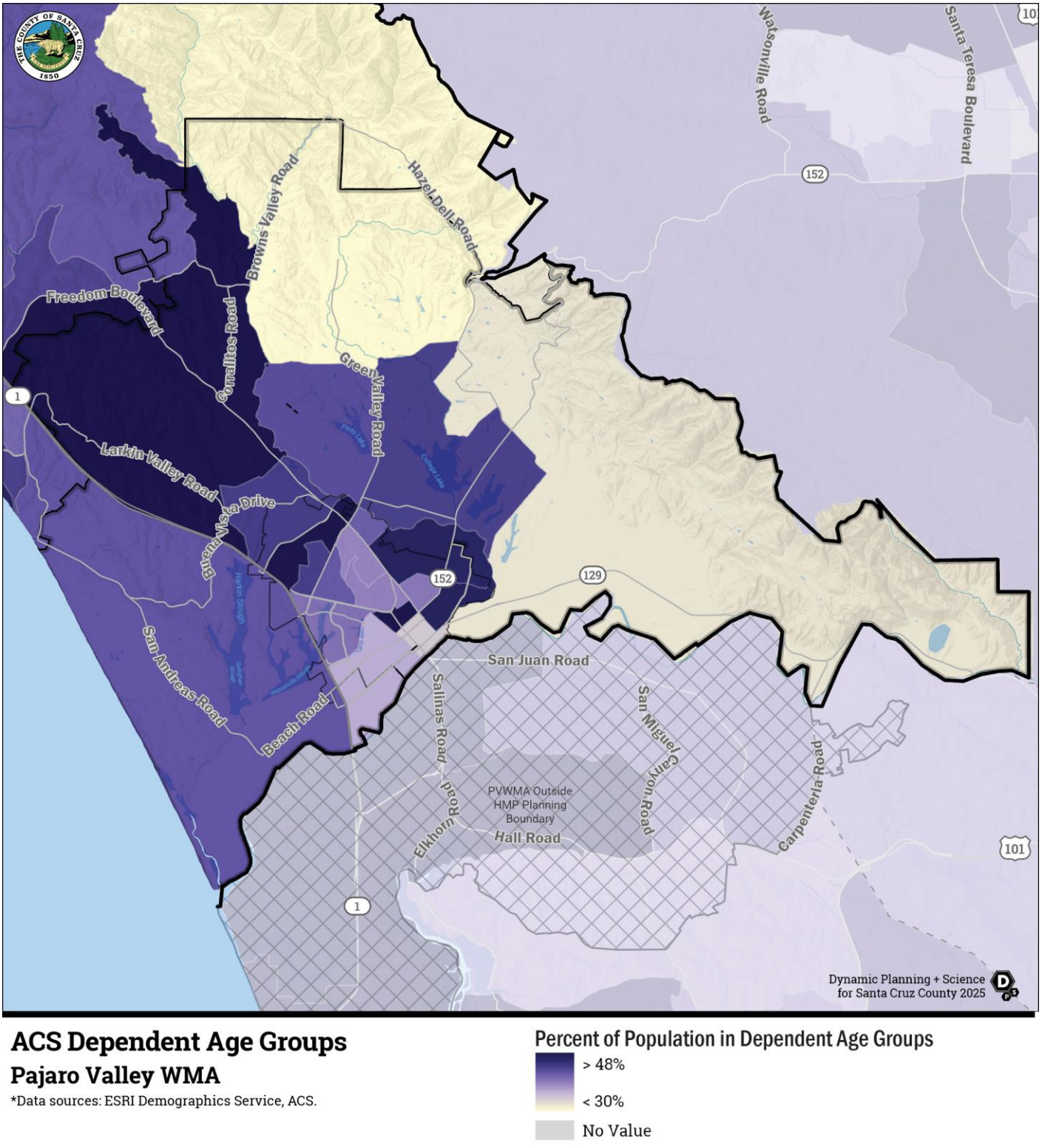


Figure 6-6: PV Water Economically Dependent Age Groups Map

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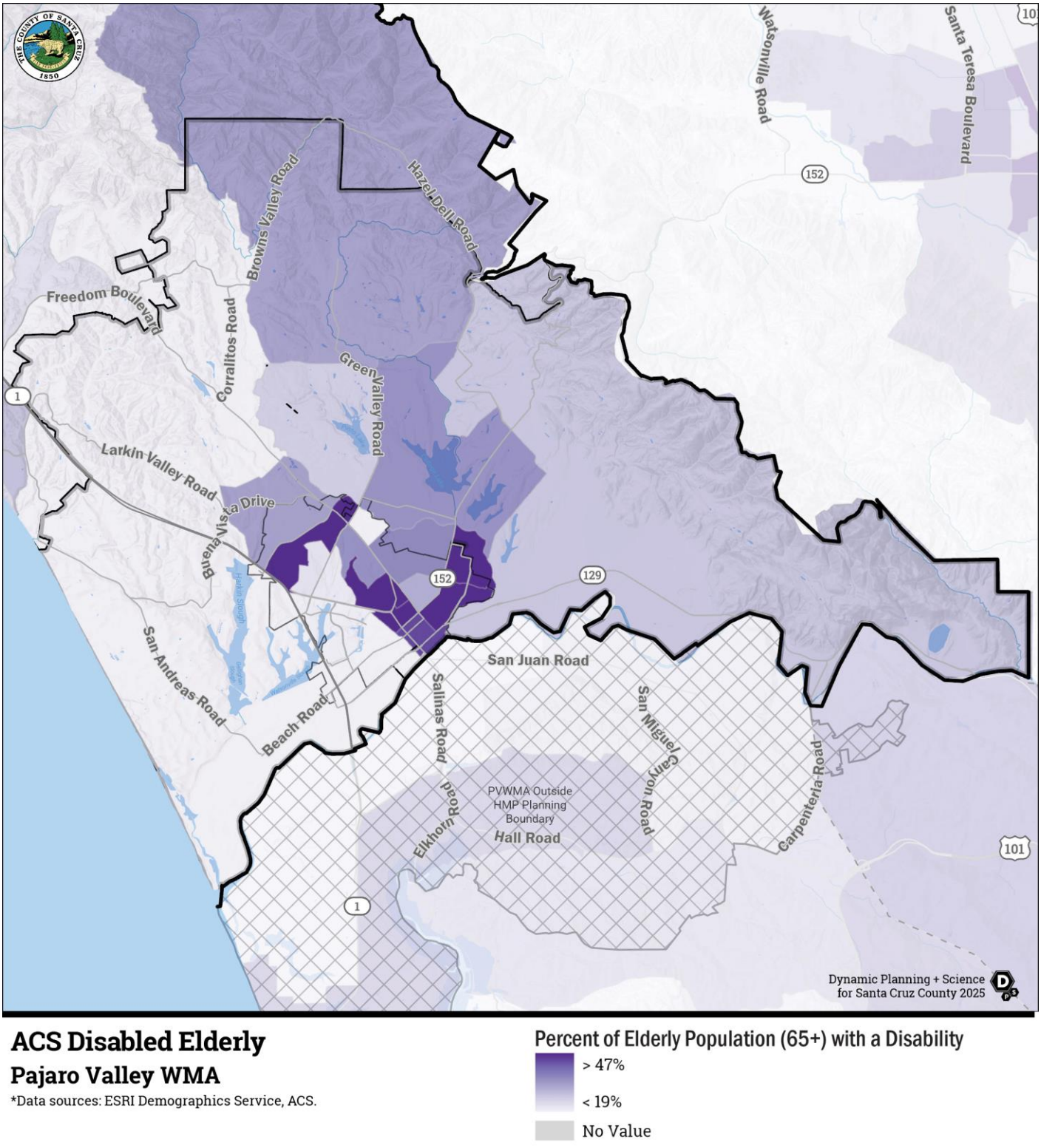


Figure 6-7: PV Water Disabled Elderly Map

*Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

### 6.2.3.3 Race, Ethnicity & Language

Natural disasters compound racial disparities; non-white individuals and communities receive less recovery aid from FEMA than their white counterparts, even where the amount of damage is the same. (Howell & Elliott, 2019) (National Advisory Council, 2020) The recent COVID-19 pandemic was a testament to racial disparities in disaster outcomes, with non-white persons facing morbidity rates from COVID-19 infections anywhere from 70% to 350% higher than white, non-Hispanic persons. (CDC, 2020)

These disparities are evidence of the complicated relationship between disaster recovery and overlapping social vulnerabilities including race, income, language, and health. Black and Latinx residents are more likely to be low income and renters, conditions which create barriers to navigating FEMA's Individual Assistance programs. Communities with more non-white residents may have lower tax revenue and property values, which means less investment in mitigation and rebuilding efforts before and after an emergency.

It should be noted that rural ACS estimates are often less accurate than those for urban areas because the geographic representation, broken down by smaller Census Block Groups or Tracts, becomes insignificant and the margin of error increases within these smaller sample pools. This is particularly true when referencing minority demographic groups. As such, race and ethnicity are discussed as part of a more comprehensive approach using the Center for Disease Control's (CDC) Social Vulnerability Index (SVI) in the following section. In addition, some minority households may avoid participating in Census surveys due to mistrust of government agencies or concerns about immigration status. This can lead to underreporting, further obscuring the true extent of racial, ethnic, language-related vulnerabilities.

PV Water's service area is characterized by a highly diverse population, with significant concentrations of Hispanic or Latino residents and widespread use of Spanish as a primary language. According to American Community Survey (ACS) data, most census tracts within the PV Water boundary are predominantly Hispanic or Latino, with only a few areas to the north and east showing a predominance of non-Hispanic White populations, see Figure 6-8. This aligns with long-standing demographic patterns in the Pajaro Valley, where agriculture has shaped both economic and social structures, drawing Latino farmworker families to the region over generations.

Language data on Figure 6-9 further reinforces the significance of cultural and linguistic diversity within the service area. In most areas of the PV Water, more than 33 percent of residents aged five and older speak Spanish at home. These high rates of Spanish language use are consistent throughout the densely populated urban areas in and around Watsonville, extending into rural agricultural zones to the south and east. This linguistic landscape underscores the importance of culturally and linguistically appropriate outreach, especially during hazard events, emergencies, and recovery periods. Populations with limited English proficiency are more likely to face barriers in accessing timely warnings, understanding evacuation orders, or navigating disaster assistance programs, factors that can increase vulnerability to hazard impacts and prolong recovery.

This linguistic pattern indicates a need for multilingual hazard communication, particularly in Spanish. It also reinforces the importance of tailoring emergency alerts, preparedness materials, and community

engagement to reach Limited English Proficiency (LEP) populations, many of whom may be renters or frontline service workers in high-risk areas.

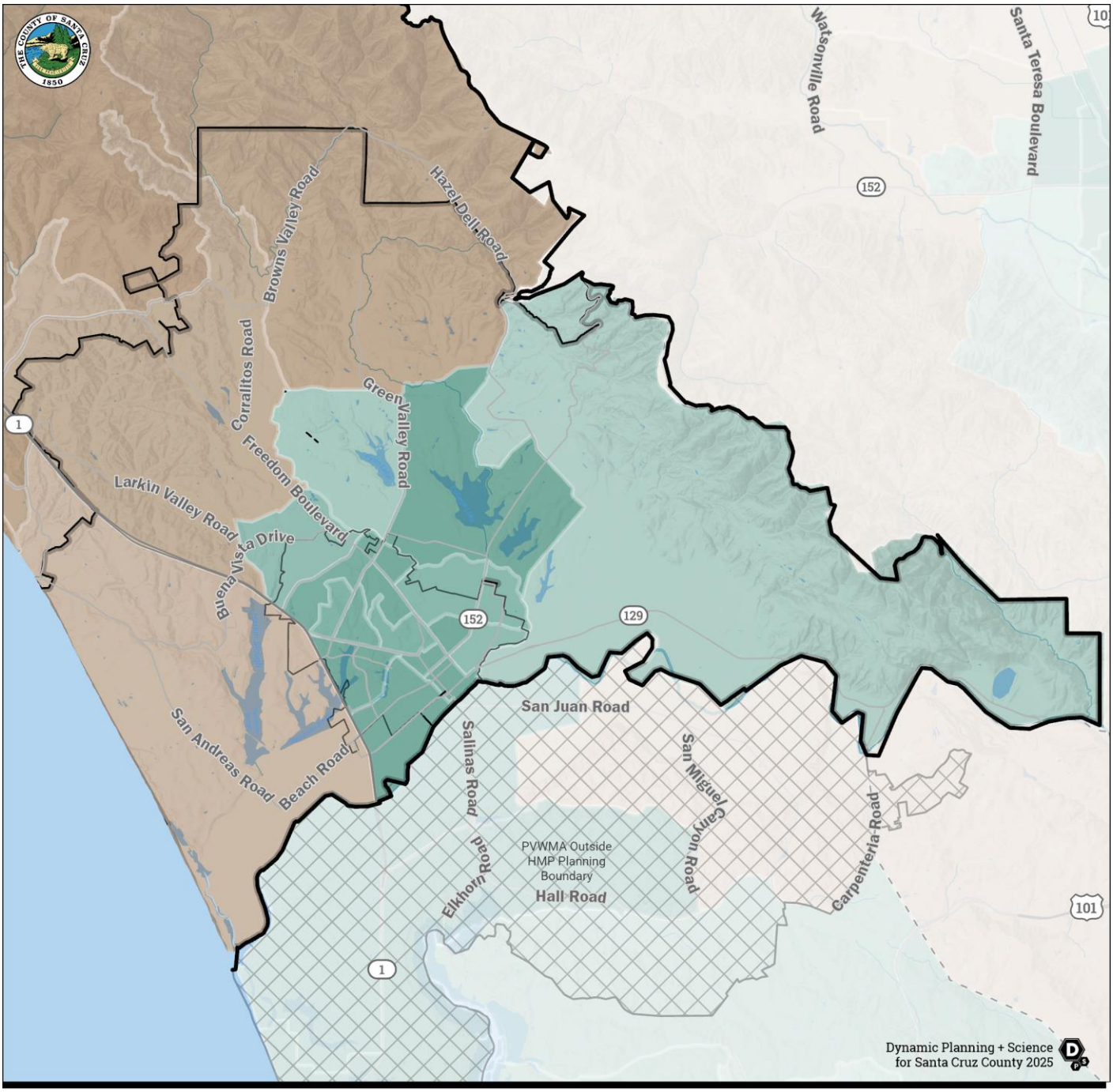


Figure 6-8: PV Water Race and Ethnicity Predominance Map

*Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

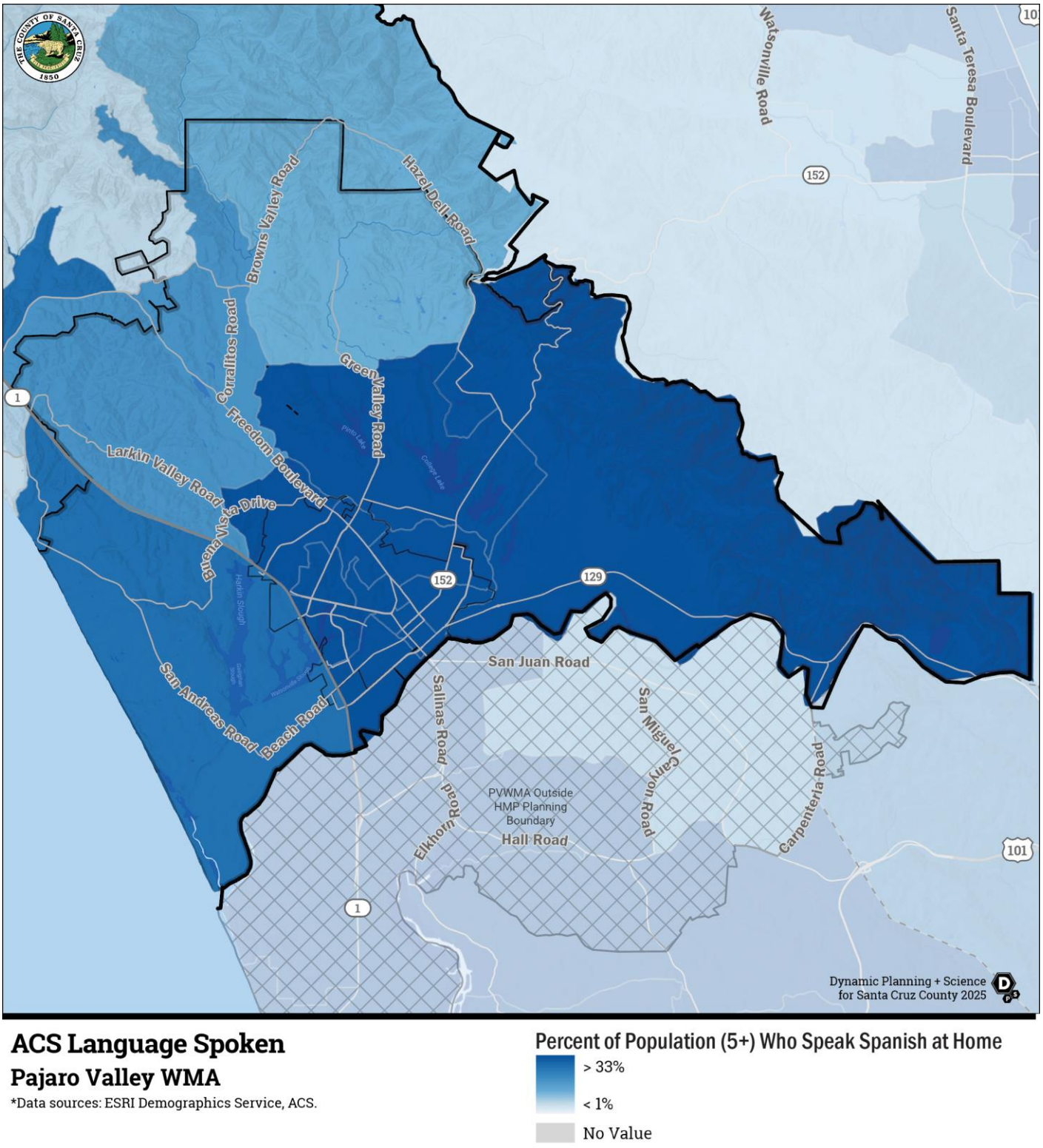


Figure 6-9: PV Water Spanish-Speaking Population Map

*Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

### 6.2.3.4 Social Vulnerability Index (SVI)

The Centers for Disease Control and Prevention (CDC) Social Vulnerability Index (SVI) for PV Water reveals important spatial and demographic patterns that have direct implications for equitable hazard mitigation planning. As discussed in detail in Volume 1, Section 1.4.3.6, the SVI is a composite measure developed by the CDC to identify communities that are more likely to require support before, during, and after a disaster. It incorporates a range of factors across four key dimensions: socioeconomic status, household composition and disability, minority status and language, and housing type and transportation access. The resulting index score ranges from 0 (lowest vulnerability) to 1 (highest vulnerability).

Within the PV Water region, the highest levels of social vulnerability, those with SVI values between 0.7501 and 1.000, are concentrated in the southern portion of the planning area, particularly in and around the City of Watsonville and unincorporated communities extending into northern Monterey County. See Figure 6-10. These communities are more likely to face overlapping challenges such as high poverty rates, limited English proficiency, lower educational attainment, and crowded living conditions. These factors contribute to reduced preparedness, limited mobility in emergencies, and slower recovery following disasters.

In contrast, central and eastern areas of the PV Water exhibit moderate vulnerability, with SVI values generally ranging between 0.5001 and 0.7500. These areas may still face social and economic challenges but at a lesser intensity than the southernmost zones. Meanwhile, the northern and northeastern parts of the PV Water region, especially those nearer to the Santa Cruz Mountains, show the lowest SVI scores—typically in the 0.0000 to 0.2500 range which indicates relatively strong social resilience. These areas are likely characterized by higher household incomes, higher levels of education, greater English fluency, and increased access to private transportation.

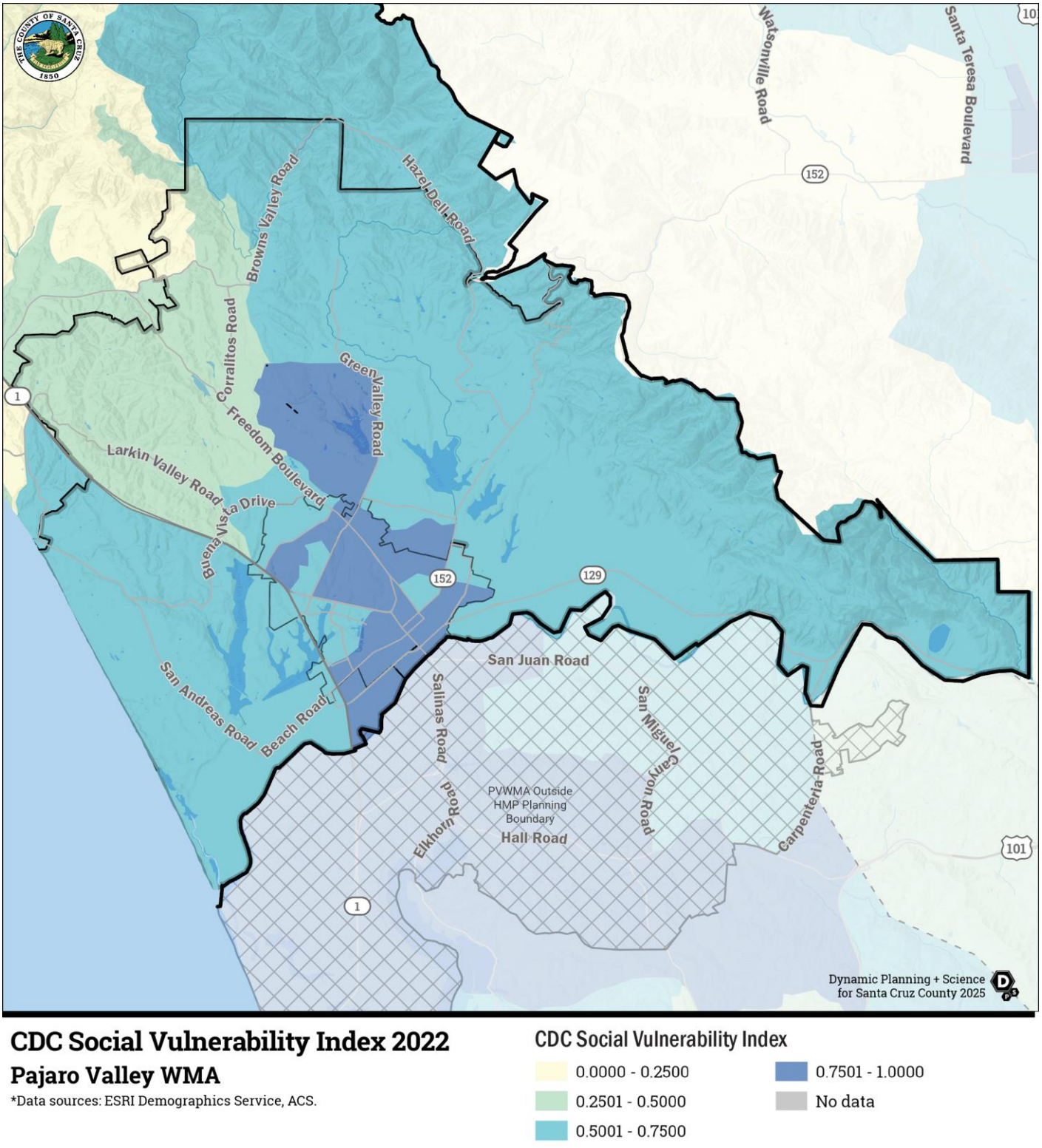


Figure 6-10: PV Water Social Vulnerability Index Map

*Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

### 6.2.4 Economy

The economy of the PV Water service area is deeply interconnected with the agricultural backbone of the Pajaro Valley, a nationally significant producer of berries and leafy greens. PV Water supplies its service area's agricultural users' water that supports the region's highly productive farmland, which includes large-scale strawberry, raspberry, blackberry, lettuce, and spinach operations. These crops are central to both the local economy and the national fresh produce supply chain, with agricultural activities supporting thousands of jobs in farming, processing, packaging, transportation, and related services. In addition to its agricultural base. Ensuring the resilience of the water supply is therefore critical not only to community well-being, but also to maintaining the economic vitality of one of the most important fresh produce growing regions in the United States.

### 6.2.5 Growth Trends & Future Development

Population forecasts and planning documents point to ongoing urban growth around Watsonville, which serves as a central hub for residential and agricultural activity within the PV Water jurisdiction. Future growth is expected to drive increased demand for water supply in and around urban areas, particularly Watsonville Despite fluctuations in population, recent county-level growth data suggests only a minor decline in unincorporated areas, with a −0.6% decrease (about 879 people) in 2023. (Cruz, 2024)

While overall population may be relatively stable, PV Water's long-term planning considers growth pressures, especially from agricultural expansion and housing demand. This underscores the urgency of developing supplemental supplies.

In response, PV Water leaders have advanced several major water infrastructure projects to address future demand while mitigating overdraft and seawater intrusion. These include College Lake Integrated Resources Management, Watsonville Slough System Managed Aquifer Recharge, and expansions of the recycled water facility, which are designed to enhance supply reliability in the face of growth Santa Cruz LAFCO.

According to PV Water planning documents and local agricultural reports, the region's long-term economic health depends on balancing groundwater sustainability with the irrigation demands of its high-value crops. Water supply availability, particularly in the context of overdraft reduction and seawater intrusion prevention, is a key factor influencing land use and agricultural production. The Agency's portfolio of projects, including recycled water deliveries through the Coastal Distribution System, managed aquifer recharge facilities, and irrigation efficiency programs, are designed to protect the groundwater resource while sustaining agricultural productivity.

## 6.3 Planning Process

PV Water followed the planning process detailed in Volume 1, Section 2, including participating in the county-wide Hazard Mitigation Planning Team (HMPT) and formulating their own internal planning group to support the broader planning process.

The agency's representatives in the Steering Group led stakeholder and public engagement efforts alongside the Consultant Team, with assistance from the HMPT and their internal planning team. This engagement process is described in Volume 1. Specifically, for Pajaro Valley Water Management Agency, this included postings to the agency website and social media as well as outreach events, as documented in Appendix B. Examples of Key Stakeholders engaged by Santa Cruz County on behalf of the agency with relevance to the development of PV Water's mitigation strategy include the USDA and other federal agencies; DWR and other state agencies; City of Watsonville and other neighboring jurisdictions; community-based organizations such as Watsonville Wetlands Watch; utility providers like AT&T; UC Santa Cruz and other academia; and local businesses.

All Key Stakeholders that were invited to participate in the planning process are listed in Volume 1, Section 2, and the input received from stakeholders was integrated into the agency's annex, as described in Volume 1 Table 2-9. The agency's internal planning participants, their positions, and how they participated in the planning process are shown in Table 6-1.

Table 6-1: PV Water Participants

| Planning Group Members | Title | Description of Involvement |
|---|---|---|
| **Brian Lockwood** | General Manager / Hydrogeologist | Lead Point of Contact; attended Kickoff Meeting, HMPT Meetings #1, #2, and #3 and Breakouts #1 and #2 |
| **Casey Meusel** | Associate Hydrologist | Alternate Point of Contact, HMPT Meetings #2 and Breakouts #1 and #2 |
| ***Isabel Magana*** | Water Resources Technician | Participating Stakeholder |
| **Marcus Mendiola** | Water Conservation & Outreach Specialist | Participating Stakeholder, HMPT Meetings #1 and #3 and Breakouts #1 |
| **Shinehah Bigham** | Operations and Maintenance Manager | Participating Stakeholder; Breakouts #1 |

PV Water participated in a comprehensive hazard mitigation planning process as part of the 2025 Santa Cruz County MJHMP update. This included a series of breakout meetings, listed in Table 6-2 that engaged the agency's planning team, which included key city personnel and stakeholders in evaluating hazards, identifying local vulnerabilities, and prioritizing mitigation strategies

The kickoff meeting held on January 27, 2025, launched the planning process by introducing the project scope and clarifying the roles of the Steering Group and participating jurisdictional teams. In the months that followed, a series of structured meetings addressed foundational elements of the plan, including a review of key changes since the 2021 Local Hazard Mitigation Plan, an overview of hazard mitigation principles, and exercises to prioritize local hazards. On July 30, 2025, participants engaged in a hexagon mapping activity designed to visually identify mitigation actions that could benefit from or require inter-jurisdictional coordination. These collaborative efforts helped shape a refined set of mitigation alternatives,

establish shared planning goals, and align local strategies with FEMA's Hazard Mitigation Assistance (HMA) funding framework.

Throughout the series of breakout meetings, PV Water engaged in a structured and collaborative planning process focused on assessing hazard risks, identifying vulnerabilities, and developing targeted mitigation strategies. The meetings began with recaps of the county-wide HMPT meetings to ensure alignment of goals and progress.

During the April 25, 2025, breakout out meeting, discussions concentrated on community engagement outcomes, initial risk assessments, and the integration of demographic data to better understand vulnerable populations. Jurisdictional teams reviewed their specific hazard exposures using the Risk Assessment Mapping Platform (RAMP) and participated in prioritization exercises to identify their top hazards.

The July 18, 2025, breakout meeting shifted toward reviewing local capabilities and defining specific areas of concern, which informed the drafting of problem statements. Teams worked collaboratively to refine mitigation alternatives, align actions with FEMA guidelines, and develop a shortlist of priority mitigation actions and inter-jurisdictional collaboration opportunities.

The meetings also included consensus-building activities around hazard rankings, capabilities, and planned actions, while providing regular updates on the overall project schedule.

Table 6-2: Jurisdictional Breakout Meeting Records

| Meeting & Date | Agenda / Topics | Goals / Key Inputs |
|---|---|---|
| **County-Wide Steering Group and HMPT Meetings #1 & #2<br>January – March 2025** | | |
| **PV Water Planning Team Breakout Meeting #1**<br>April 25, 2025 | ▪ County-wide HMPT meetings #1 and #2 recaps<br>▪ Community engagement progress and results<br>▪ Risk assessment and community vulnerability<br>▪ Demographics and vulnerable populations<br>▪ Overview of jurisdiction-specific hazard risks and exposure<br>▪ Introduction to Risk Assessment Mapping Platform (RAMP)<br>▪ Jurisdiction-specific hazard risk ranking exercise<br>▪ Project schedule updates and next steps | ▪ Consensus on jurisdiction-specific priority hazards<br>▪ Identify capabilities and potential mitigation actions<br>▪ Community engagement volunteers |
| **County-Wide HMPT Meeting #3<br>June 2025** | | |
| **PV Water Planning Team Breakout Meeting #2**<br>July 18, 2025 | ▪ Breakout Meeting #1 and HMPT #3 recaps<br>▪ Review capabilities assessment<br>▪ Review areas of concern and define problem statements<br>▪ Principles of effective mitigation strategies and actions, and mitigation alternatives<br>▪ Refine and align jurisdiction-specific mitigation actions exercise<br>▪ Project schedule updates and next steps | ▪ Consensus on jurisdiction-specific capabilities<br>▪ Consensus on jurisdiction-specific areas of concern<br>▪ Consensus on priority mitigation actions and collaboration opportunities<br>▪ Community engagement volunteers |

| Meeting & Date | Agenda / Topics | Goals / Key Inputs |
|---|---|---|
| **County-Wide HMPT Meeting #4<br>August 2025** | | |

### 6.3.1 Public Input & Draft Review

As detailed in Volume 1, Section 2, the draft plan was available for public review and comment from September 29 to October 20, 2025. Public comments received during that time were similar to those gathered throughout the public engagement process, including the need for more equity in the distribution of mitigation activities and funding and the need for enhanced cooperation among jurisdictions, utility providers, and state agencies. These comments were incorporated into the city's mitigation strategy, as appropriate; although, most were already addressed by the Mitigation Action Plan which was based on previous public input.

Public and stakeholder input was gathered and incorporated throughout the plan development process, before the public review period, such as from the online public survey (see Volume 1, Section 2.1.2 and Appendix B, for details). During the review period, jurisdictional staff and stakeholders that participated in the plan development also reviewed the public draft and provided comments on minor corrections and revisions, which were addressed in the final plan.

## 6.4 What's New

This section offers an overview of the hazard mitigation planning efforts for the planning area and highlights the updates made in this 2025 MJHMP. This is the first time PV Water has participated in the MJHMP process. While not included in the 2021 plan, the agency has since strengthened its focus on resilience through key efforts. Through this MJHMP process, PV Water has identified its highest-priority hazards, developed hazard-specific problem statements, and proposed actionable mitigation strategies.

### 6.4.1 Mitigation Activities

Although PV Water has not previously participated in a formal hazard mitigation plan, it has proactively implemented a range of projects that align with FEMA's mitigation goals and reduce vulnerability to natural hazards. One of the most significant efforts is the Coastal Distribution System (CDS). The CDS is a pressurized recycled water pipeline network designed to deliver a blend of recycled water, blend water, and limited well water to coastal agricultural users in areas most at risk of seawater intrusion. This infrastructure diverts irrigation demand away from the aquifer, particularly along the vulnerable coastal fringe of the basin, where over-pumping historically caused saltwater to infiltrate the freshwater aquifer. By providing a reliable, alternative source of irrigation supply, the CDS directly supports PV Water's mission to stop seawater intrusion and achieve groundwater balance.

PV Water's 2024 Strategic Plan specifically includes the objective to update its Disaster Response and Recovery Plan to ensure operational feasibility under emergency conditions. This commitment reflects a proactive approach to safeguarding water delivery and infrastructure reliability in the face of hazards such as earthquakes, floods, and droughts.

In addition to internal planning, PV Water leads the Pajaro River Watershed Resilience Program (PRWRP), a multi-sector initiative funded by the California Department of Water Resources. The PRWRP engages local governments, community organizations, tribes, and regional agencies in developing a Watershed Resilience Plan that addresses a range of hazards, including flooding, drought, and wildfire. The program's first public workshop in March 2025 brought together stakeholders to identify priorities and coordinate actions that will strengthen the watershed's capacity to prepare for, respond to, and recover from disaster events.

Emergency considerations are also integrated into PV Water's capital projects. For example, the College Lake Integrated Resources Project includes specific emergency drainage protocols to mitigate public health risks, such as mosquito-borne disease outbreaks, following flooding. This type of planning ensures that infrastructure investments not only meet long-term water supply goals but also include contingency measures for protecting public health and safety during hazard events.

As a first-time participant in a hazard mitigation plan, SVWD had no formally adopted mitigation actions from a previous plan. However, the district continues to advance a range of ongoing and planned efforts that support hazard mitigation, climate resilience, and long-term water security. These are highlighted in this section, reflecting SVWD's continued dedication to long-term risk reduction. These actions, ranging from mitigation to community outreach initiatives, represent the district's proactive approach to addressing hazards as resources become available.

## 6.4.2 Mitigation Successes

Although PV Water is participating in a formal hazard mitigation plan for the first time, multiple important mitigation actions and other efforts to increase the agency's resilience to hazards have been completed. Some of these endeavors in which the agency collaborated with Santa Cruz County are described in Volume 1. This section describes additional agency-specific success stories, which highlight PV Water's commitment to reducing risks and building a more resilient community in the face of natural hazards.

### Pajaro Valley Multi-Benefit Land Repurposing Program (MLRP)

PV Water is implementing four pilot projects under the California DOC's MLRP, using an $8.89 million block grant to support the transition of marginal farmland. Initiatives including Beach Ranch restoration, College Lake Project, conservation easements, and recharge net metering are innovative strategies that reduce groundwater demand, improve habitat, and support community resilience.

## Grants & Funding

PV Water has secured significant state funding to support its long-term groundwater sustainability and coastal seawater intrusion prevention projects. The California Department of Water Resources awarded PV Water a $7.6 million SGM Grant to advance key elements of the Basin Management Plan. This funding supports construction of critical supply and delivery infrastructure, including components of the College Lake Integrated Resources Management Project and the Watsonville Slough System Managed Aquifer Recharge & Recovery Project. The grant also funds monitoring, modeling, and stakeholder engagement activities that enhance the agency's capacity to manage groundwater resources adaptively.

## Coastal Distribution System (CDS)

PV Water's flagship coastal water program reduces groundwater pumping near the coast to slow and reverse seawater intrusion. Highly treated recycled water produced at the Watsonville Area Water Recycling Facility is conveyed through the Coastal Distribution System (CDS): a pipeline network serving approximately 5,500 acres of coastal farmland to supply growers with a non-potable irrigation source, blended as needed with other supplemental supplies. The recycled water program is designed for around 4,000 AFY of tertiary-treated water, blended to an approximate 6,000 AFY delivered supply, and is a core Basin Management Plan project for overdraft reduction and intrusion control.

Figure 6-11: The Coastal Distribution System (CDS)

## College Lake Integrated Resources Management Project

The College Lake project develops a new surface-water supply to substitute for coastal groundwater pumping. Project elements include a weir and intake on Salsipuedes Creek / College Lake, a water treatment plant, and a nearly 6-mile pipeline to connect to PV Water's existing CDS network (which totals around 22 miles). When in operation, College Lake is expected to provide approximately 1,800–2,300 AFY on average for agricultural use, improving basin balance and helping prevent further seawater intrusion.

Figure 6-12: College Lake, with Kelly Lake in background

## Watsonville Slough System Managed Aquifer Recharge & Recovery

The Watsonville Slough System Managed Aquifer Recharge and Recovery Projects (WSS-MARR) are a major initiative by PV Water to enhance groundwater sustainability by capturing high winter flows from the Watsonville Slough system, approximately 800 acres of coastal wetlands, and diverting them for recharge into the San Andreas Terrace aquifer. Similar to the existing Harkins Slough Facility, which has recharged over 8,700 acre-feet since 2002, the WSS-MARR project includes filtration, recharge basins, and recovery wells to store and later extract water for agricultural use via the Coastal Distribution System (CDS). The project reduces groundwater overdraft and seawater intrusion. After an extensive environmental review, the project was approved in 2021 and is now progressing through design and construction phases, including upgrades to Harkins Slough facilities and new recovery wells.

Figure 6-13: Watsonville Slough system

## Public Outreach & Education Programs

These programs include multilingual conservation campaigns, school partnerships, and emergency alerts, which have increased community awareness of water-related hazards and built support for long-term mitigation efforts.


Figure 6-14: Pajaro River Watershed Resilience Program Bilingual Public Meeting Folder

# 6.5 Risk Assessment

This section focuses on profiling coastal and other hazards specific to PV Water and assessing their vulnerability independent of the broader county-wide planning area, which has been evaluated in Section 3 of Volume 1. The hazard profiles in Volume 1 discuss overall impacts to the planning area and describe relevant plans, policies, and regulations; past events; location; frequency and probability of future occurrences; severity and extent; warning time; secondary hazards; and climate change impacts. For more information on risk assessment methodologies, see Volume 1, Appendix A.

This section includes a tailored vulnerability assessment, analyzing PV Water assets at risk such as critical water supply facilities, the recycled water system and CDS, recharge basins, diversion structures, pipelines and operational sites as well as the agricultural lands, populations, and partner agencies dependent on PV Water's water deliveries. In addition, this section presents growth, land use, and agricultural production trends in the communities served, offering insights into vulnerabilities and risks that represent the broader context of assets at risk.

## 6.5.1 Hazard Screening & Prioritization

Members of the planning team from each participating jurisdiction came together to collaboratively decide which county-wide hazards would be included in the MJHMP and which would be excluded. The hazard screening and prioritization took place early in the process and integrated historic data, local knowledge, and consensus opinions to create a risk assessment matrix for the county as well as for each participating jurisdiction. These matrices indicate the priority of hazards prior to further refinement. Details about this process, the results of the discussion, and in-depth profiles for county-wide hazards can be found in Volume 1, Sections 2 and 3.

The final results of the hazard screening and prioritization exercises are summarized in Table 6-4, including which specific subhazards were selected by PV Water's planning team.

PV Water internal planning group used the same hazard identification and prioritization process as the county-wide Planning Team. They reviewed previously prepared relevant documents and past events to determine the realm of natural hazards that have the potential to affect the agency. Table 6-3 provides a crosswalk of hazards identified in select planning documents, including PV Water's 2022 Groundwater Sustainability Plan, the 2021 Santa Cruz County LHMP, and the 2023 State of California HMP. The crosswalk was used to develop a preliminary hazards list, providing a framework for the group to evaluate which hazards were truly relevant to the agency and which ones were not.

The internal planning group then ranked hazards based on their probability of affecting PV Water and potential impacts on the communities it serves. Figure 6-15 displays the results of the hazard risk ranking exercise that was performed before further refinement. All hazards have been profiled in Volume 1 of this document. The purpose of this annex is to specifically address PV Water's vulnerability to specifically identified hazards.

Table 6-3: PV Water Document Review Crosswalk

| Hazard | PV Water 2022 Groundwater Sustainability Plan | Santa Cruz County LHMP 2021 | 2023 California SHMP |
|---|---|---|---|
| Agricultural Pests | | | ■ |
| Avalanche | | | ■ |
| Climate Change | ■ | ■ | ■ |
| Coastal | | ■ | ■ |
| Dam Failure | | ■ | ■ |
| Drought | ■ | ■ | ■ |
| Earthquake / Liquefaction | | ■ | ■ |
| Extreme Cold | | ■ | ■ |
| Extreme Heat | | ■ | ■ |
| Extreme Weather / Storms | | ■ | ■ |
| Flood | ■ | ■ | ■ |
| Geologic / Mass Movement | | ■ | ■ |
| Human-Caused | | | ■ |
| Insects | | | ■ |
| Levee Failure | | | ■ |
| Pandemic Disease | | | ■ |
| Sea Level Rise | ■ | | ■ |
| Soil | | | ■ |
| Subsidence | | | ■ |
| Tornado | | | ■ |
| Tsunami / Seiche Wave | | | ■ |
| Volcano | | | ■ |
| Wildfire | ■ | ■ | ■ |

# Risk Assessment Matrix Definitions

## PROBABILITY RATING

The likelihood of a hazard event occurring within a time period?

PROBABILITY

| | |
|---|---|
| Highly Likely | **Highly likely** - 100% annual probability. Or Likely to occur every year in your lifetime. |
| Likely | **Likely** - between 10 & 100% annual probability. Or will occur several times in your lifetime. |
| Possible | **Possible** - between 1 & 10% annual probability. Or Likely to occur some time in your lifetime. |
| Unlikely | **Unlikely** - less than 1% annual probability. Or unlikely but possible to occur in your lifetime. |

## IMPACT RATING

In terms of injuries, damage, or death, would you anticipate impacts to be minor, limited, critical, or catastrophic when a significant hazard event occurs? The impact could be in terms of one hazard event (flooding from a culvert failure) or a large-scale event (multiple rivers flooding) in the same jurisdictional boundary.

IMPACT

| Minor | Limited | Critical | Catastrophic |
|---|---|---|---|

**Minor** - very few injuries, if any. Only minor property damage & minimal disruption on quality of life. Temporary shutdown of critical facilities.

**Limited** - minor injuries only. Approx. 10% or less of property in disaster footprint damaged or destroyed. Complete shutdown of critical facilities for more than one day.

**Critical** - multiple deaths/injuries possible. Between 25% and 50% of property in disaster footprint is damaged or destroyed. Complete shutdown of critical facilities for more than one week.

**Catastrophic** - high number of deaths/injuries possible. More than 50% of property in affected area damaged or destroyed. Complete shutdown of critical facilities for 30 days or more.

To concentrate resources, the jurisdictional planning team will focus on "High" and "Extreme" risk hazards. These hazards have the higher probability and greater impact as it relates to the jurisdictions planning area.

Hazard definitions are included in **Vol. 1** of this plan. Some hazards are discussed as subset hazards— e.g., "Dam Failure" within the "Flood" hazard profile. If a hazard is not present on the risk matrix or are grey in color, the jurisdictional planning team felt the hazard had a minimal footprint within their planning area and was not ranked.

## Hazard Information / Legend:

CLIMATE CHANGE

Climate Change impacts will be addressed at the end of each hazard section and as a stand alone section for each jurisdiction.
For County and Municipal governments you will be required to address climate change impacts in the Safety Element of your General Plan. Climate change may change the frequency, duration and intensity of hazards listed above.

### Pajaro Valley Water Management Agency Risk Matrix

IMPACT

PROBABILITY

| | Minor | Limited | Critical | Catastrophic |
|---|---|---|---|---|
| Highly Likely | WILDFIRE | High | SEA LEVEL RISE, DROUGHT | FLOOD |
| Likely | Medium | High | High | LEVEE FAILURE |
| Possible | Low | EARTHQUAKE | High | High |
| Unlikely | TSUNAMI | Low | Medium | Medium |

SANTA CRUZ COUNTY
HAZARD MITIGATION PLAN

Figure 6-15: PV Water Risk Assessment Matrix

Table 6-4: PV Water Hazards Prioritization Summary

| Hazard | Priority | Explanation |
|---|---|---|
| **Wildfire** | **Medium** | Profiled in Volume 1, Section 3.2.1, and Section 6.5.2.1 in this annex |
| **Flood** | **Extreme** | Profiled in Volume 1, Section 3.2.2, and Section 6.5.2.2 in this annex, including Levee Failure |
| **Earthquake** | **Medium** | Profiled in Volume 1, Section 3.2.3, and Section 6.5.2.3 in this annex, including Liquefaction |
| **Severe Weather** | - | Not a priority due to being outside jurisdictional mission and authority, but discussed in the context of Flood in Section 6.5.2.2 |
| **Coastal Hazards** | - | Not a priority due to low probability and limited impact potential |
| **Slope Failure** | - | Not a priority due to low probability and limited impact potential |
| **Dam Failure** | - | Not a priority due to low probability and limited impact potential |
| **Drought** | **Extreme** | Profiled in Volume 1, Section 3.2.8, and Section 6.5.2.4 in this annex |
| **Extreme Heat** | - | Not a priority due to being outside jurisdictional mission and authority |
| **Climate Change** | **Extreme** | Profiled in Volume 1, Section 3.2.10, and Section 6.5.2.5 in this annex, including Sea-Level Rise |

## 6.5.2 Vulnerability to Specific Hazards

Assessing vulnerabilities exposes the unique characteristics of individual hazards and begins the process of narrowing down which areas within PV Water are vulnerable to specific hazard events. The vulnerability assessment considered unique local knowledge of hazards and impacts and a GIS overlaying method for examining such vulnerabilities in more depth. Using these methods, the agency's planning group estimated vulnerable populations, properties, and assets, and potential losses, primarily to coastal hazards. In addition, the exposure of agency assets to drought, geological, earthquake, wildfire and flood hazards was also considered.

Many of the hazard profiles include a snapshot map and damage estimation tables that illustrate the agency's vulnerabilities to those specific hazards. These maps assisted the planning group in understanding the hazard exposure of populations, parcels, and critical facilities and infrastructure. Each snapshot map contains an exposure summary that displays the percentage of the population, the improvement and content value of parcels, and the amount of critical infrastructure that is exposed. For hazards without geospatial extents, such as drought and extreme weather, narratives are provided instead of exposure maps and tables.

Based on the hazard prioritization exercise, this vulnerability assessment focuses on five hazards for PV Water, some of which encompass subhazards such as Levee Failure, Liquefaction, and Sea Level Rise.

**Wildfire**
**SECTION 0**

**Flood**
**SECTION 6.5.2.2**

**Earthquake**
**SECTION 6.5.2.3**

**Drought**
**SECTION 6.5.2.4**

**Climate Change**
**SECTION 6.5.2.5**

### 6.5.2.1 Wildfire Hazard

Based on the wildfire risk maps (Figure 6-16), several key characteristics emerge regarding fire hazard exposure, population and infrastructure vulnerability, and historical fire recurrence.

Wildfire hazard within the PV Water region is primarily concentrated in the northern and southeastern parts of the service area. These zones are predominantly classified as Moderate Fire Hazard Severity Zones, with isolated bands of High and Very High hazard areas located in rugged, vegetated terrain. Very High hazard zones are most prevalent in dense hillside areas, particularly along the northern edge of the agency near the Santa Cruz Mountains and in portions of the southeast. In contrast, the urban core and central agricultural valley, where most of PV Water's groundwater recharge and distribution infrastructure is located, fall outside of these high-risk zones.

According to the wildfire exposure summary (Figure 6-16), only a small proportion of the PV Water service population and land area falls within the highest hazard designations. Approximately 433 residents live in Very High Fire Hazard Severity Zones, which accounts for about one percent of the total service area population. Similarly, about 220 parcels fall within these zones, representing one percent of all parcels in the jurisdiction. The total estimated value of improvements and contents in these parcels is nearly $300 million, also amounting to about one percent of overall parcel value in the agency's area. Importantly, no critical infrastructure are currently sited within Very High wildfire hazard zones.

The mean fire return interval map (Figure 6-17), based on USGS LANDFIRE data, reveals that much of the wildland-urban interface and surrounding hillsides in the PV Water planning area experience fire recurrence on average every 10 to 35 years. In higher-risk foothill and woodland areas, fire return intervals can be as short as six to twelve years, indicating that these landscapes are fire-adapted and prone to recurring wildfire events.

However, PV Water includes areas designated as "High" wildfire hazard within both Local Responsibility Areas (LRA) and State Responsibility Areas (SRA). Approximately 6,500 residents live within these high-risk zones, primarily concentrated along the agency's northern boundary. Within this same hazard area, roughly 2,000 parcels are exposed, representing an estimated $3 billion in combined structure and content value. In addition, critical infrastructure is at risk, including approximately 150 key assets such as water supply facilities, as well as approximately 21 miles of essential infrastructure lines located within the "High" wildfire hazard zones.

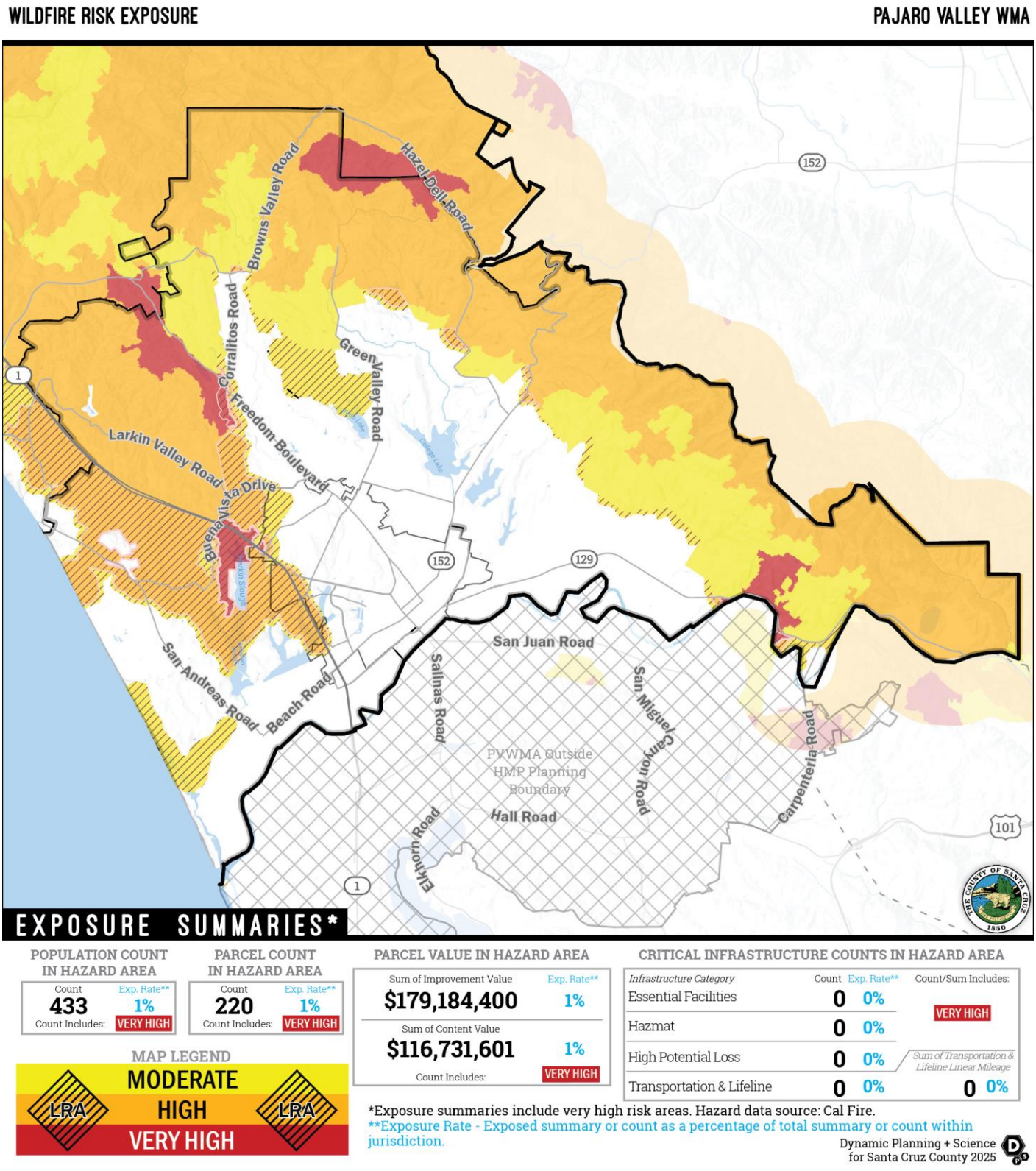


Figure 6-16: Exposure Summary - PV Water Wildfire Risk

*Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

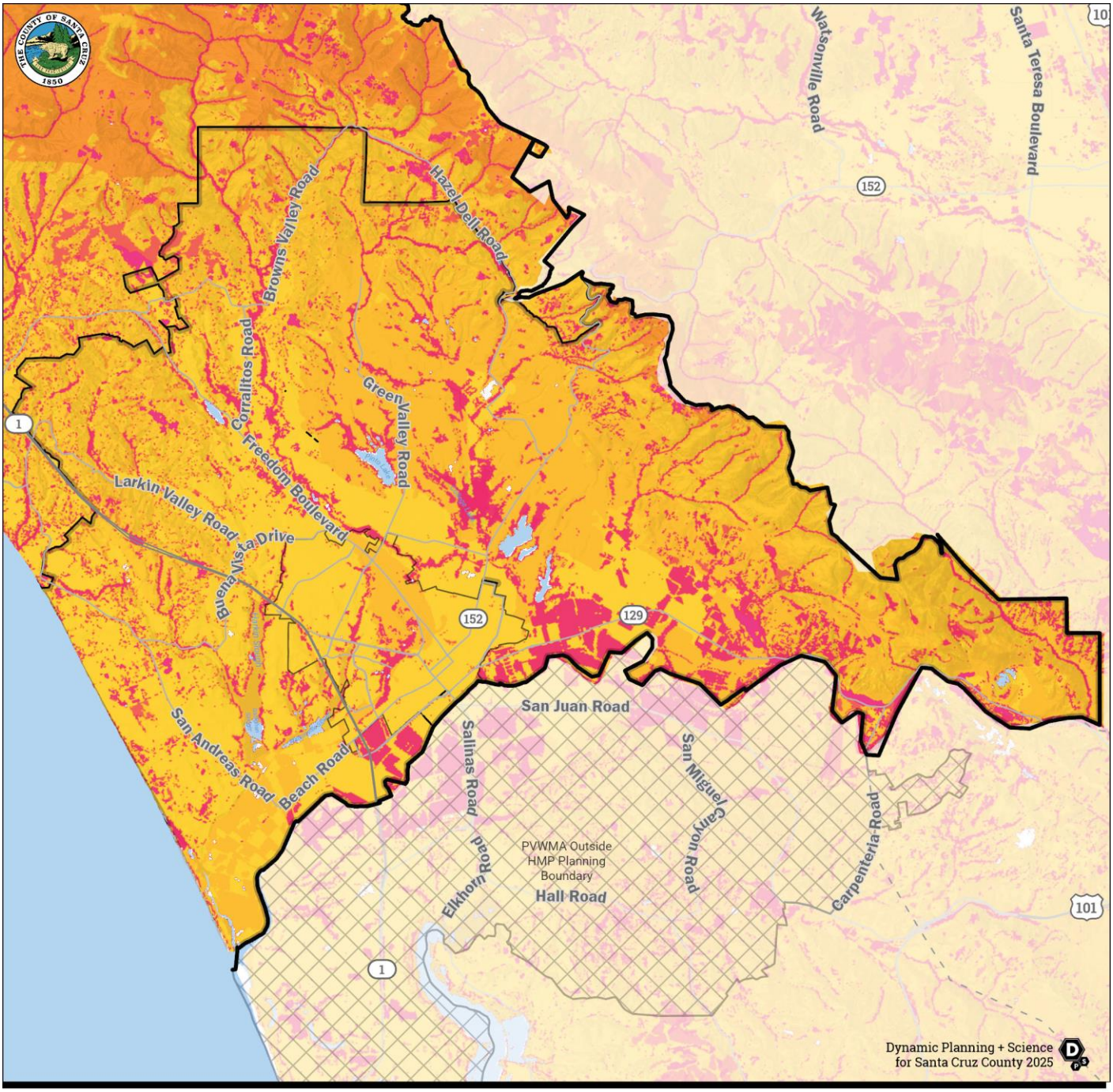


Figure 6-17: PV Water Mean Fire Return Interval Map

*Note: This is PV Water* agency *boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

### 6.5.2.2 Flood Hazard

PV Water faces substantial flood risk, primarily concentrated in the southern half of its service area along the lower Pajaro River and its tributaries (Figure 6-18). FEMA-designated Special Flood Hazard Areas (SFHAs), including 100-year floodplains, floodways, and coastal flood zones, stretch extensively across Watsonville and surrounding agricultural lands, posing repeated threats to homes, infrastructure, and farmland. Within these mapped zones shown, approximately 16,000 residents live in high-risk areas, and 3,100 developed parcels are exposed to potential flooding. The combined assessed value of improvements and contents in these areas totals over $4.6 billion, representing 19% and 23% of jurisdictional improvement and content value, respectively.

In addition to exposure of buildings and population, the flood hazard zones encompass nearly 65 lifeline and transportation assets, 13% of such assets within the PV Water area. These critical systems are especially vulnerable to closure or damage during storm-driven flood events.

The PV Water service area contains no identified DWR Flood Awareness Zones, indicating that all identified risk areas are already captured in the FEMA-mapped 100- and 500-year floodplains shown in Figure 6-18.

Collectively, this data demonstrates that PV Water's flood vulnerability is highly concentrated in the Pajaro River floodplain and adjacent slough systems, where both residential communities and critical water infrastructure overlap with high-risk zones.

As a special district and not a municipality, PV Water does not participate in the National Flood Insurance Program (NFIP); however, the agency complies with all minimum floodplain development standards and environmental review requirements established by the county and municipalities where its projects are located.

#### Levee Failure

Levee failure poses a substantial hazard to PV Water, particularly in the low-lying areas west of Highway 1, where the community relies on aging levee infrastructure along the lower Pajaro River for flood protection. This area is characterized by flat terrain, extensive agricultural lands, and residential development, making it especially vulnerable to inundation if levees are breached or overtopped during high-flow events.

The existing levee system, much of which was constructed in the mid-20th century, has been identified as structurally deficient and inadequate to handle a 100-year flood event under current FEMA standards. Past evaluations by the U.S. Army Corps of Engineers (USACE) and local flood control agencies have documented issues such as erosion, slope instability, limited freeboard, and under-seepage, all of which increase the risk of failure during sustained high flows. The lower Pajaro River, in particular, has a history of overtopping and levee breaches during major storms, including significant flood events in 1955, 1995, and 2023. These incidents resulted in widespread damage to homes, critical infrastructure, and farmlands, especially in the unincorporated communities of Pajaro and Watsonville.

The USACE-led Pajaro River Flood Risk Management Project.  This project is a major initiative currently underway that aims to address these vulnerabilities through levee setback, channel widening, and levee

reconstruction. Once completed, the project will provide 100-year flood protection to key areas within the PV Water service boundary. However, until construction is finalized, large swaths of the agency's service area remain at risk from a potential levee failure.

Recent flood history underscores these ongoing risks. In March 2023, a breach in the Pajaro River levee on the Monterey County side caused major inundation in the town of Pajaro, resulting in widespread evacuations and agricultural damages exceeding $300 million. Similarly, overtopping and near failures in earlier storm events such as in 1995, 2017, and earlier years reinforce the inadequacy of the current levee system. (United State Army Corps of Engineers, 2025)

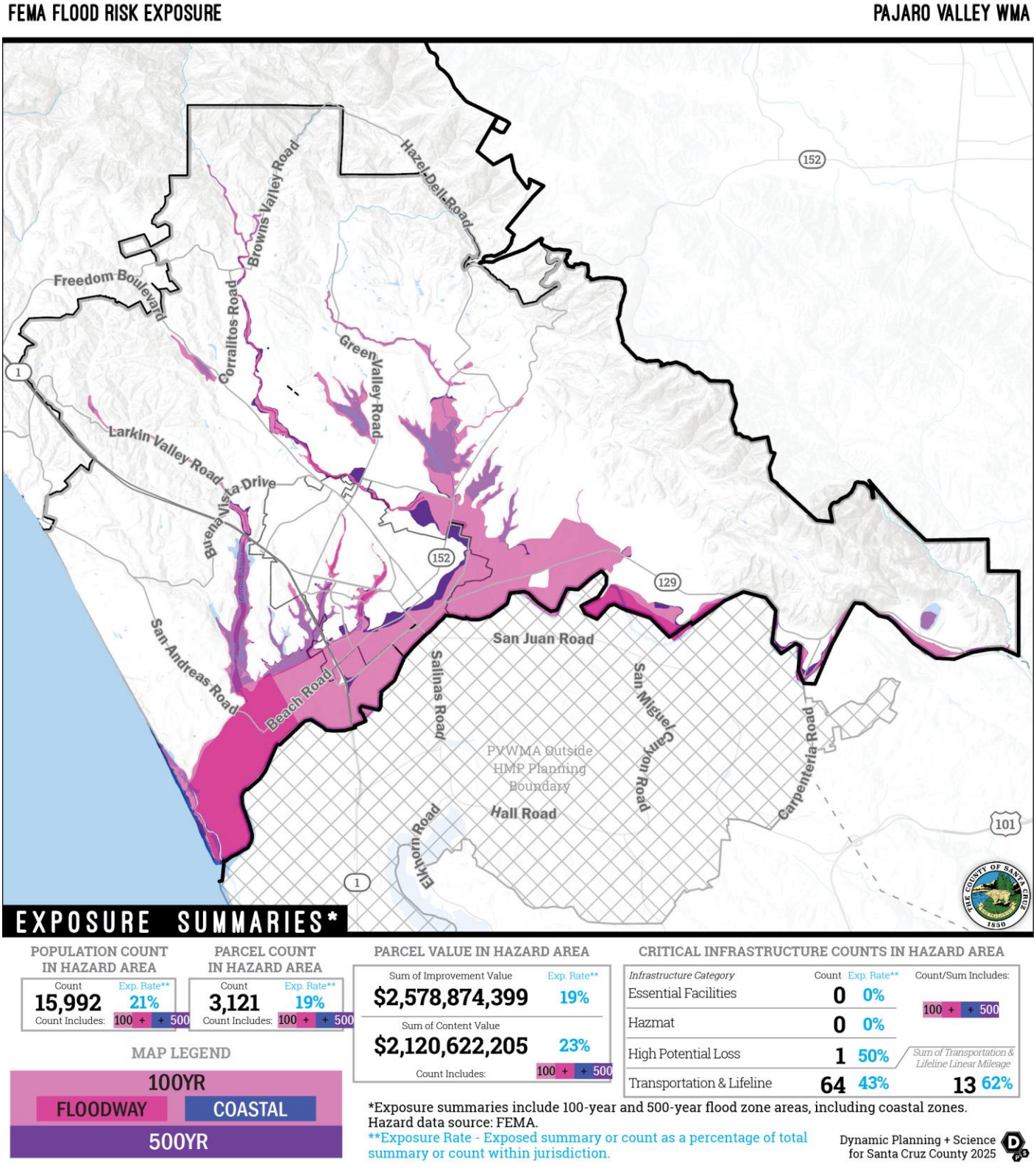


Figure 6-18: Exposure Summary - PV Water Flood Risk (FEMA Zones)

*Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

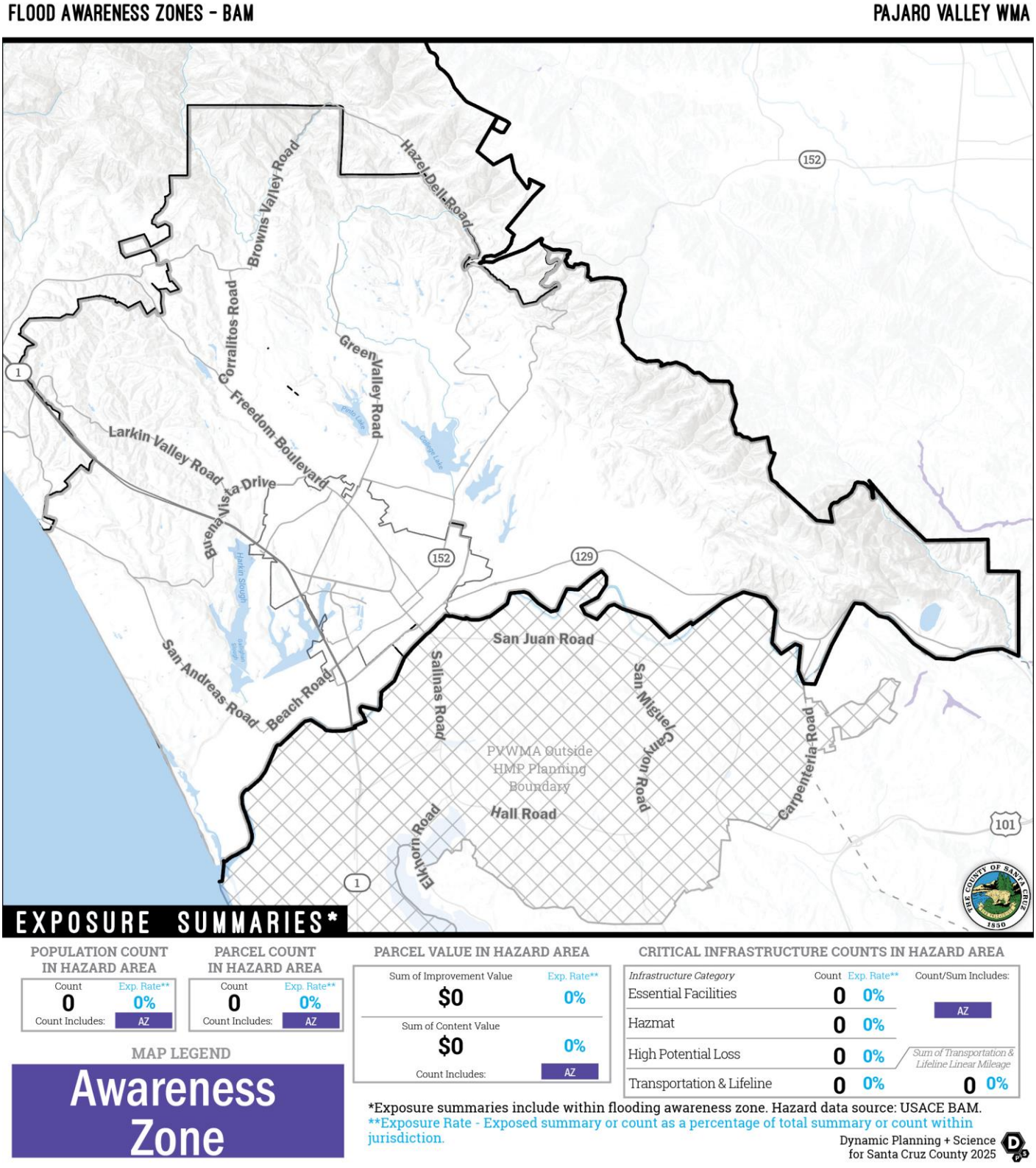


Figure 6-19: Exposure Summary - PV Water Flood Risk (DWR Awareness Zones)

*Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

### 6.5.2.3 Earthquake Hazard

PV Water faces significant earthquake hazards due to its geographic location near the San Andreas Fault system, particularly the North San Andreas–Santa Cruz Mountains segment. Scenario mapping for a magnitude 7.1 earthquake on this fault line indicates that nearly the entire PV Water service area lies within zones of "very strong" (MMI VII) to "severe" (MMI VIII) ground shaking (Figure 6-20). This includes 100% of the estimated population and around 99% of all parcels within the planning area. The scenario estimates over $13.5 billion in improvement value and $9.2 billion in land value exposed to shaking intensities of MMI VII or greater. See Figure 6-20 for exposure summaries.

In addition to strong ground motion risks, PV Water is exposed to areas of high liquefaction potential, primarily concentrated in low-lying zones adjacent to river channels and the coastal plain which is shown in Figure 6-21. Mapping shows approximately 32,000 residents and more than 6,600 parcels fall within moderate to very high liquefaction susceptibility zones, representing 42% and 40% of the jurisdiction's total population and parcel count, respectively. The total exposed structural value in these zones exceeds $5.4 billion.

PV Water also includes multiple fault zones subject to California's Alquist-Priolo Earthquake Fault Zoning Act, which requires special geotechnical investigations prior to new development. Figure 6-21 shows these zones concentrated along mapped Quaternary fault traces in the northern and eastern portions of the service area. Exposure in these zones is more limited, affecting about 5,700 residents and 1,750 parcels—they still represent over $2 billion in combined improvement and land value which is shown in Figure 6-22.

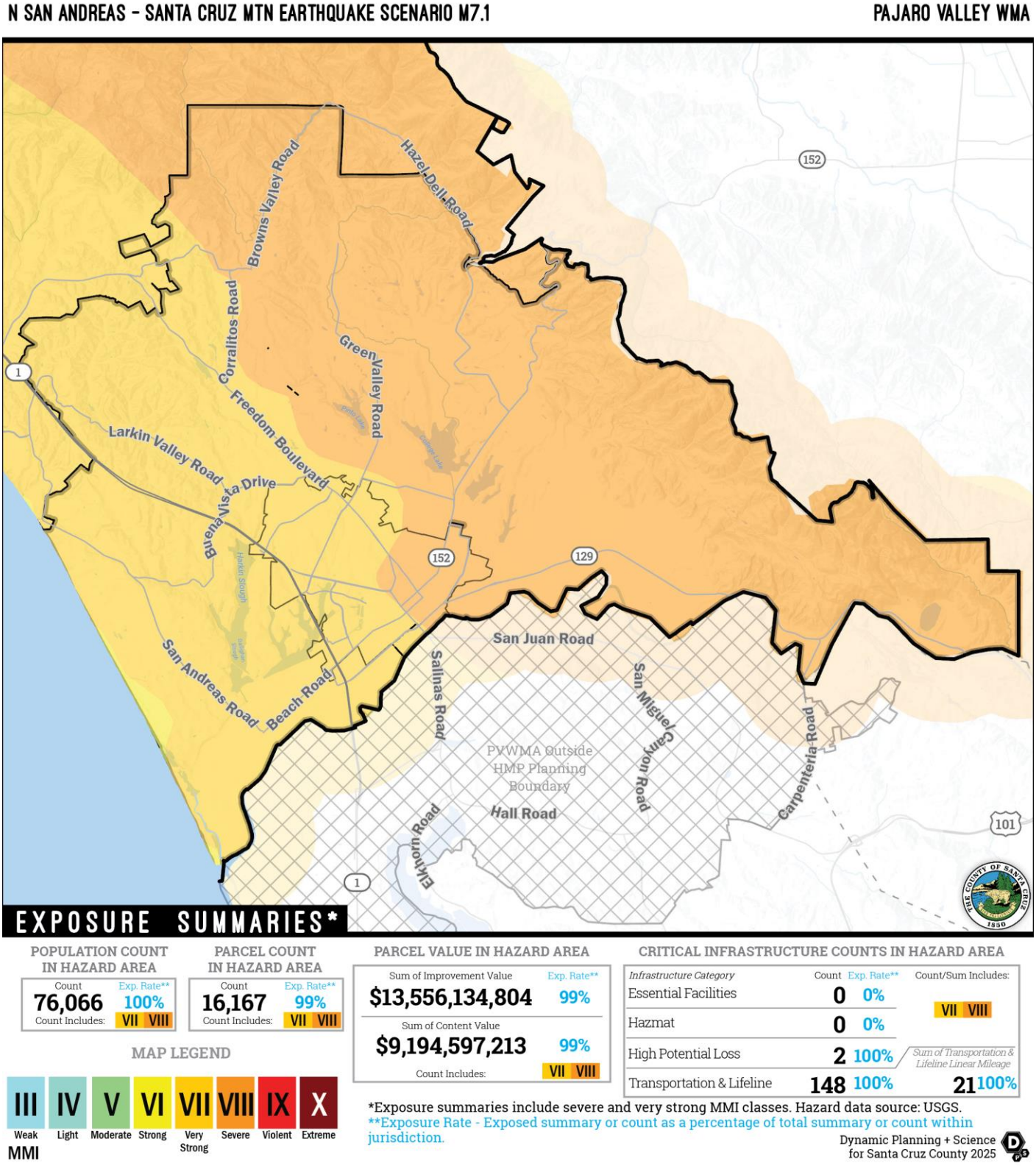


Figure 6-20: Exposure Summary - PV Water Earthquake Risk (M7.1 San Andreas Shaking)

*Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

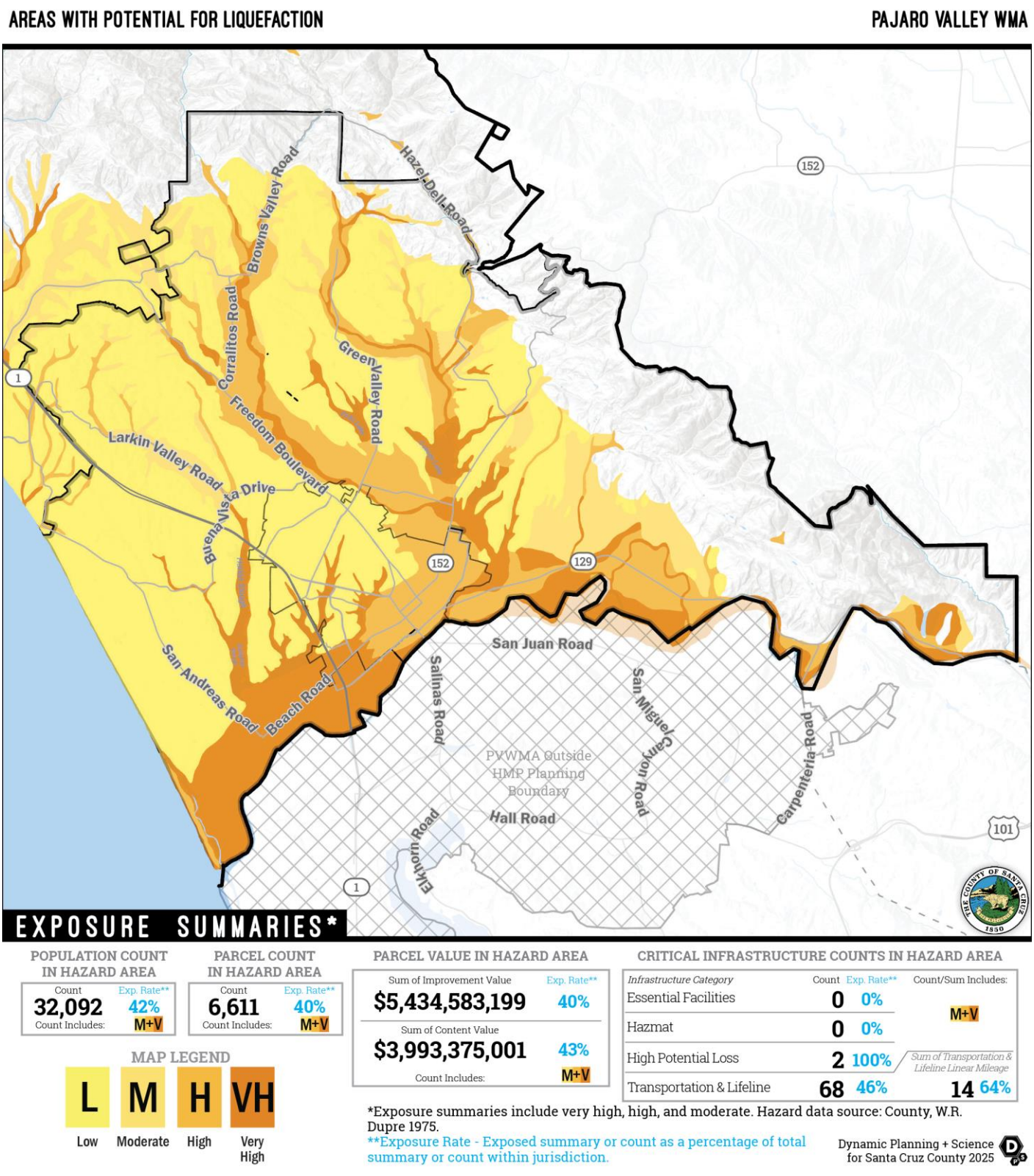


Figure 6-21: Exposure Summary - PV Water Liquefaction Risk

*Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

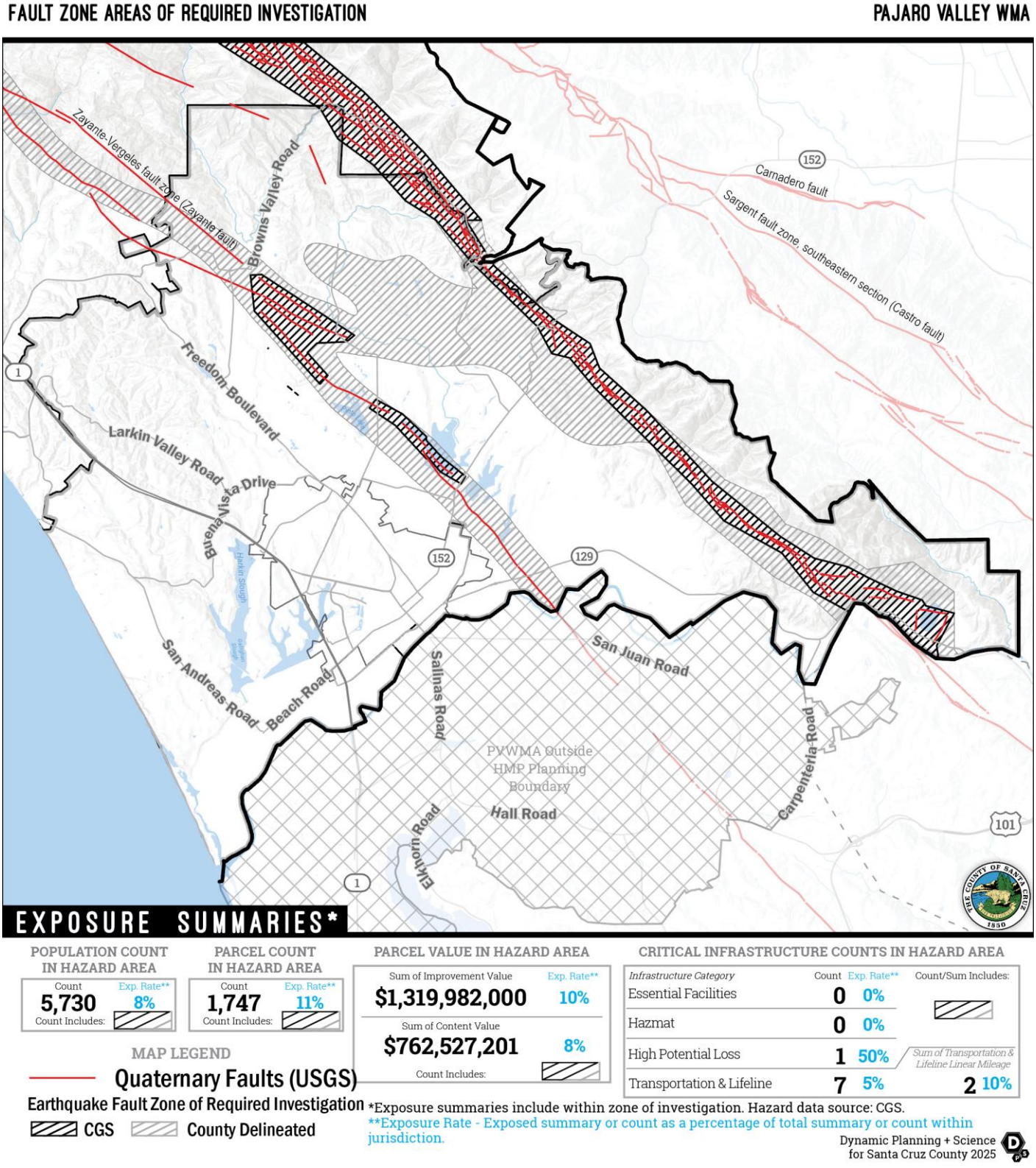


Figure 6-22: Exposure Summary - PV Water Earthquake Risk (Fault Zones)

*Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

### 6.5.2.4 Drought Hazard

The National Drought Monitor provides drought data and maps nationally and on a localized, watershed scale. The National Drought Monitor is the product of 11 agencies, including the NDMC, NOAA and USDA, and is available at http://droughtmonitor.unl.edu/. The National Drought Monitor categorizes the level of drought from D0 through D4, with D4 being the highest "exceptional drought." Table 6-5 depicts drought classifications and impacts from the level of drought occurrence in California, while Figure 6-23 shows a time series of the level of drought in Santa Cruz County from 2000 to 2024 according to the National Drought Monitor.

Drought presents one of the most severe and chronic hazards for PV Water largely because the agency relies almost exclusively on the Pajaro Valley Groundwater Basin (DWR Basin No. 3-002) for its water supply. The basin, spanning Santa Cruz, Monterey, and San Benito Counties, is designated by the California Department of Water Resources as critically overdrafted. This means that even in "normal" water years, demand exceeds natural recharge, and during drought years, conditions worsen substantially, increasing both overdraft and the risk of seawater intrusion.

Stakeholders view drought not only as a long-term challenge but also as an immediate vulnerability affecting agriculture, rural residents, and disadvantaged communities. Highlighting drought conditions in recent decades have required mandatory pumping restrictions, groundwater augmentation projects, and conservation mandates, yet aquifer levels continue to show stress. Many small-scale and rural water users, particularly those reliant on shallow wells, experience failures and water quality degradation during prolonged dry periods.

Table 6-5: Drought Classifications and Impacts

| Category | Description | Possible Impacts |
|---|---|---|
| D0 | Abnormally Dry | ▪ Soil is dry; irrigation delivery begins early<br>▪ Dryland crop germination is stunted<br>▪ Active fire season begins |
| D1 | Moderate Drought | ▪ Dryland pasture growth is stunted; producers give supplemental feed to cattle<br>▪ Landscaping and gardens need irrigation earlier; wildlife patterns begin to change<br>▪ Stock ponds and creeks are lower than usual |
| D2 | Severe Drought | ▪ Producers increase water efficiency methods and drought-resistant crops<br>▪ Grazing land inadequate<br>▪ Fire season is longer, with high burn intensity, dry fuels, and large fire spatial extent; more fire crews on staff<br>▪ Lake- and river-based tourism declines; boat ramps close<br>▪ Trees are stressed; plants increase reproductive mechanisms; wildlife diseases increase<br>▪ Water temperatures increase; programs to divert water to protect fish begin<br>▪ River flows decrease; reservoir levels are low and banks are exposed |

| Category | Description | Possible Impacts |
|---|---|---|
| D3 | Extreme Drought | ▪ Federal water not adequate to meet irrigation contracts; extracting supplemental groundwater is expensive<br>▪ Fire season lasts year-round; fires occur in typically wet parts of the state; burn bans are implemented<br>▪ Ski and rafting business is low; mountain communities suffer<br>▪ Low water levels impede fish migration and cause lower survival rates<br>▪ Wildlife encroach on developed areas; little native food and water is available for bears, which hibernate less<br>▪ Water sanitation is a concern; reservoir levels drop significantly; surface water is nearly dry, flows are very low; water theft occurs<br>▪ Livestock need supplemental feed, cattle and horses are sold; little pasture remains<br>▪ Well and aquifer levels decrease; homeowners drill new wells |
| D4 | Exceptional Drought | ▪ Fire season is very costly; number of fires and areas burned are extensive<br>▪ Many recreational activities are affected<br>▪ Fields are left fallow; orchards are removed; vegetable yields are low; honey harvest is small; agricultural unemployment is high, food aid is needed<br>▪ Fish rescue and relocation begins; pine beetle infestation occurs; forest mortality is high; wetlands dry up; wildlife death is widespread; algae blooms appear<br>▪ Poor air quality affects health; greenhouse gas emissions increase as hydropower production decreases; West Nile outbreaks rise<br>▪ Water shortages are widespread; surface water is depleted; federal irrigation water deliveries are curtailed; water prices are extremely high; wells are dry, more and deeper wells are drilled; water quality is poor |

*Source: Adapted from U.S. Drought Monitor Drought Classifications and Impacts*

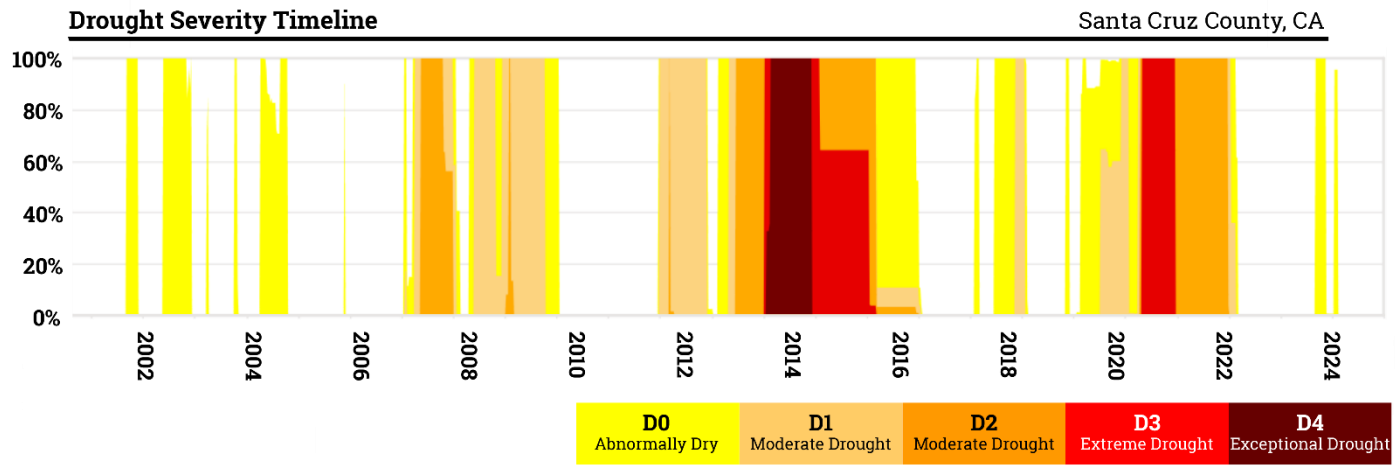


Figure 6-23: Drought Severity Timeline 2000-2024

### 6.5.2.5 Climate Change Hazard

Average annual temperatures across most of California have already increased by more than 1°F, with some areas experiencing rises of over 2°F when comparing the 1901–1960 average to that of 1986–2016. Daily maximum temperatures—a key indicator of extreme heat—are projected to increase by 4.4°F to 5.8°F by 2050 and by 5.6°F to 8.8°F by 2100. Heat waves that impact public health, known as heat-health events, are also expected to intensify across the state. By 2050, these events are projected to last up to two weeks longer in the Central Valley and occur four to ten times more often in the Northern Sierra region (California Natural Resources Agency, 2022).

California is already experiencing significant impacts from climate change, including prolonged drought, a lengthened wildfire season, increased coastal flooding and erosion, and widespread tree mortality. The state has observed rising average temperatures, more extreme heat days, fewer cold nights, a longer growing season, and shifts in the water cycle, with less winter precipitation falling as snow. In addition, summertime fog has declined by approximately 33%, and both snowmelt and rainwater runoff are occurring earlier in the year (Cal OES, 2018).

Long-term trends indicate a 12% to 20% decline in fog across California from 1900 through projections to 2070. Climate experts suggest that warming temperatures reduce the ability of air masses to cool enough to produce fog, which plays a critical role in supporting California's ecosystems (Grantham, Teodore; University of California, Berkeley, 2018).

Climate change poses a range of interrelated threats to PV Water, especially in the context of managing a critically overdrafted coastal groundwater basin. Climate change is projected to intensify existing water management challenges through reduced precipitation, prolonged droughts, sea level rise, and temperature-driven evapotranspiration increases.

One of the most pressing climate impacts for PV Water is the exacerbation of seawater intrusion. Rising sea levels, when combined with declining groundwater levels due to chronic overdraft, accelerate the inland migration of saline water from the Pacific Ocean. This contamination of the freshwater aquifer threatens the region's primary source of irrigation water, which is vital for local agriculture.

Decreased surface water availability is another anticipated impact. As precipitation becomes more variable and droughts more frequent and severe, recharge opportunities for the aquifer will decline. PV Water relies on managed aquifer recharge (MAR) through stormwater capture from slough systems like Harkins and Watsonville Sloughs. With fewer high-flow events, the agency's ability to divert and store freshwater for later use will be compromised.

Additionally, rising temperatures contribute to increased evapotranspiration and greater crop water demand, further straining an already limited groundwater supply.

As such, this MJHMP addresses climate change as a secondary impact for each identified hazard of concern. Each chapter includes a section with a qualitative discussion on the probable impacts of climate change for that specific hazard.

## Sea Level Rise

Figure 6-24 shows that sea level rise poses an emerging threat to coastal portions of the PV Water planning area, particularly in the low-lying coastal plains near the Monterey Bay shoreline. Based on COSMOS v3.1 data, a scenario involving 50 cm of sea level rise combined with a 100-year storm event shows a narrow but significant band of inundations extending inland from the coast. The area most impacted lies near the southern boundary of PV Water, where coastal parcels lie at or near current sea level and lack protective elevation.

Within this modeled sea level rise inundation area, Figure 6-24 shows approximately 100 residents are at risk, as well as 2 parcels with an estimated $981,600 in improvement value and $682,800 in content value, though these values represent less than 1% of the jurisdictional total.

While the geographic extent of direct sea level rise exposure is limited relative to the broader inland service area, the consequences for coastal infrastructure, groundwater salinity, and emergency access could be significant. Saltwater intrusion risks may increase with rising sea levels, potentially complicating groundwater management and increasing pressure on inland recharge efforts.

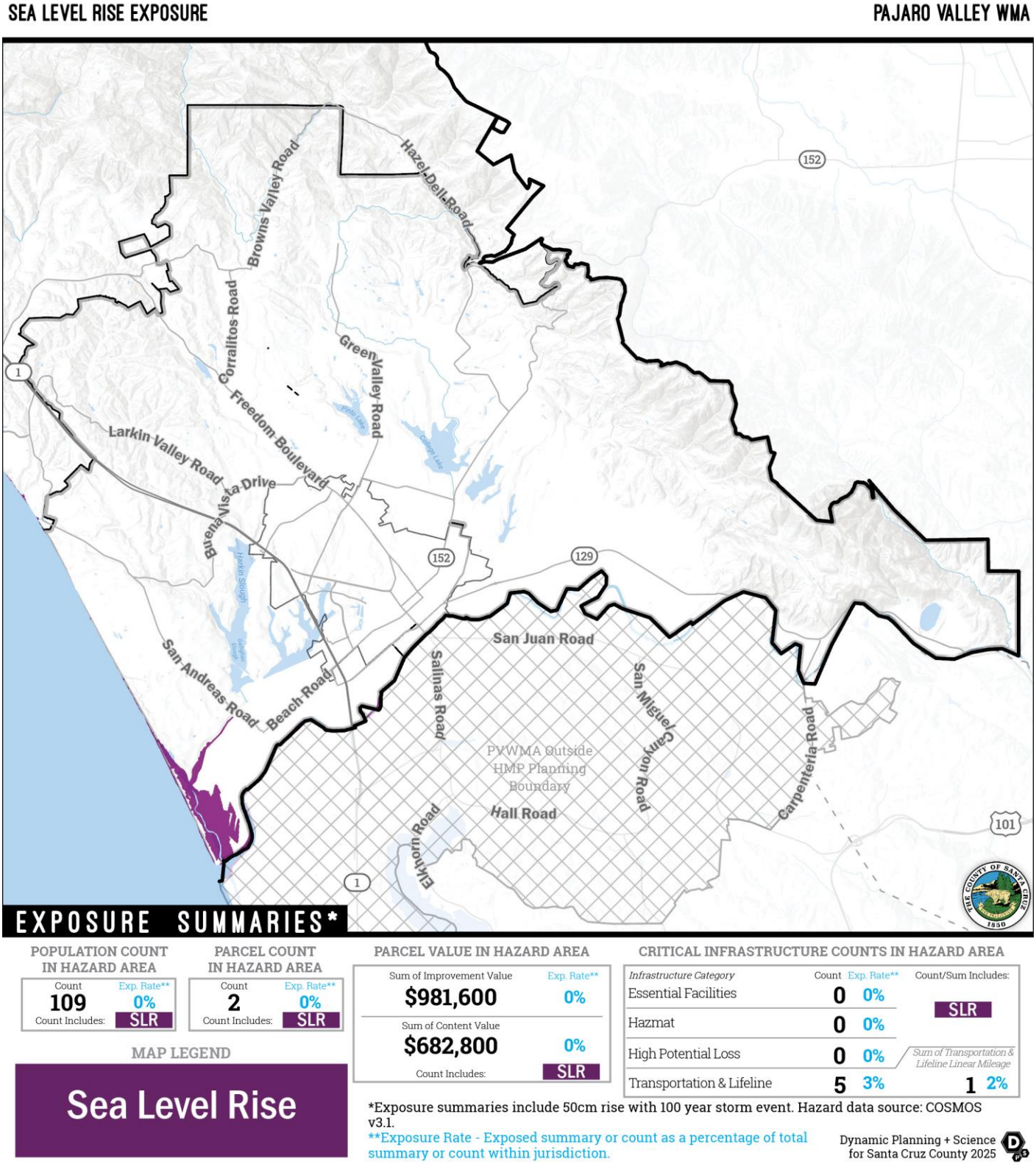


Figure 6-24: Exposure Summary - PV Water Sea Level Rise Risk

*Note: This is PV Water agency boundary within Santa Cruz County only; not entire service area that extends to Monterey and San Benito Counties*

## 6.5.3 Planning for Hazards & Growth

PV Water serves a region with diverse hazard exposures and increasing demands on water infrastructure. As the regional groundwater sustainability agency for the Pajaro Basin, PV Water plays a vital role in managing a finite resource while planning for both environmental resilience and future development. The agency must balance groundwater supply reliability with the multiple intersecting risks of flooding, drought, seawater intrusion, seismic activity, and climate change-driven hazards like sea level rise.

Growth in the Pajaro Valley, particularly near Watsonville and surrounding agricultural areas, is expected to increase water demand, strain groundwater supplies, and put additional pressure on PV Water's distribution, recharge, and monitoring systems. While PV Water does not have land use authority, it must coordinate closely with local jurisdictions such as the City of Watsonville and Santa Cruz County, to ensure land use planning is aligned with sustainable water management and hazard mitigation goals.

The agency's 2022 update to the BMP outlines a portfolio of strategies to sustain groundwater supply considering growing demands and mounting climate risks. These strategies include expanding recycled water use, developing additional recharge basins, implementing managed aquifer recharge with stormwater, and optimizing inland water sources to reduce reliance on coastal wells.

### 6.5.3.1 Development & Hazard Considerations

Development within PV Water service area has the potential to influence both existing hazard conditions and future risk exposure. As agricultural lands and open spaces are converted into residential, commercial, or industrial uses, the impervious surface area increases, which can exacerbate flooding and reduce groundwater recharge, which is an especially critical concern in an area already dealing with overdrafted aquifers and saltwater intrusion.

Urban expansion into areas previously buffered by natural vegetation can also elevate wildfire risk by increasing the wildland-urban interface, where homes and infrastructure are more vulnerable to fire. Moreover, development along the low-lying coastal zone and floodplains increases community exposure to sea level rise, levee failure, and stormwater inundation hazards. This growth may also strain existing water infrastructure, potentially reducing system redundancy and resilience during hazard events.

## 6.5.4 Hazard Problem Statements

As part of the mitigation action identification process, the internal planning group for each jurisdiction identified areas of concern (aka problem statements) for their respective facilities based on the risk assessment and vulnerability analysis. Problem statements focused on the impact, victim, and the threat that the hazard could create in the jurisdiction, as described in Table 6-6. Identifying common issues and weaknesses through these problem statements assisted the planning group in understanding the realm of resources needed for mitigation.

The goal is to have at least one mitigation action for every problem statement. Projects or actions have been developed to mitigate each problem identified. See Table 6-8 for a full list of mitigation actions and

corresponding problem statements that they address. Each problem statement is coded with a problem number for cross-referencing between Table 6-6 and Table 6-8.

Table 6-6: PV Water Problem Statements

| Hazard | Area of Concern | Problem IS | Description | Related Mitigation Actions |
|---|---|---|---|---|
| Drought | Victim | ps-DR-PVW-01 | Prolonged drought reduces groundwater recharge and increases demand for delivered water and groundwater pumping. Increased costs associated with additional water needs may especially affect disadvantaged and small-scale agricultural users. | ma-DR-SCW-01, ma-DR-PVW-01 |
| Drought | Impact | ps-DR-PVW-02 | Extended drought periods intensify groundwater pumping and leads to declines of groundwater levels, exacerbating overdraft and seawater intrusion. This can be compounded when City of Watsonville?s recycled water flows decrease due conservation measures. | ma-DR-SCW-01, ma-DR-PVW-02 |
| Drought | Threat | ps-DR-PVW-03 | Climate change is expected to increase the frequency and severity of drought events, reducing natural recharge and threatening the reliability of long-term water supply projects and basin resiliency. | ma-DR-PVW-02 |
| Earthquake | Impact | ps-EQ-PVW-01 | Ground shaking and soil displacement from a major earthquake could severely damage PV Water?s Coastal Distribution System, Recycled Water Facility, and other key infrastructure, resulting in damage, loss of access, and prolonged service outages. | ma-EQ-PVW-01 |
| Earthquake | Threat | ps-EQ-PVW-02 | PV Water facilities are near multiple active faults and may face seismic damage risks, including pipeline rupture and restricted facility access. | ma-EQ-PVW-01 |
| Flood | Impact | ps-FL-PVW-01 | Floodwaters can damage or temporarily disable PV Water?s coastal distribution system and recycled water infrastructure, reducing service delivery and increasing reliance on groundwater pumping during emergencies. | ma-FL-PVW-04 |
| Flood | Threat | ps-FL-PVW-02 | Aging, uncertified levees and outdated flood mapping, especially west of Highway 1 and near sloughs and the Pajaro River, leave PV Water and partner agencies vulnerable to facility flooding and agricultural disruptions during major storm or tidal events. | ma-FL-PVW-02, ma-FL-PVW-03, ma-FL-PVW-04, ma-FL-SCC-03, ma-FL-PVW-01 |
| Flood | Impact | ps-FL-PVW-03 | Flood inundation can contaminate groundwater wells which are also conduits for contaminated floodwaters to enter aquifers, decreasing water quality and increasing treatment costs. | ma-FL-PVW-03 |

| Hazard | Area of Concern | Problem IS | Description | Related Mitigation Actions |
|---|---|---|---|---|
| Flood | Victim | ps-FL-PVW-04 | Owners of private wells located in flood-prone areas are at risk of damage to the electrical well operating systems and contamination from a major flood event. | ma-FL-CBC-03 |
| Sea Level Rise | Victim | ps-SLR-PVW-01 | Agricultural groundwater users in the coastal zone face growing seawater intrusion risk, threatening crop viability, degrading soil quality, and increasing salinity in agricultural wells. | ma-SLR-PVW-02 |
| Sea Level Rise | Threat | ps-SLR-PVW-02 | Rising sea levels combined with storm-driven coastal flooding put PV Water?s infrastructure?including the Coastal Distribution System and monitoring wells?at risk of inundation, corrosion, and functional loss. Coastal flooding and brackish water impacts also reduce operability of managed aquifer recharge projects which worsen with sea level rise | ma-SLR-SCW-01, ma-SLR-SCW-02, ma-SLR-PVW-01, ma-SLR-PVW-02 |
| Sea Level Rise | Impact | ps-SLR-PVW-03 | Without sufficient protective infrastructure or adaptive pumping strategies, sea level rise will continue to degrade groundwater quality through inland migration of saltwater into the aquifer. This threat also exists for saltwater incursions into the lower Watsonville Sloughs and Pajaro River. | ma-SLR-SCC-02, ma-SLR-PVW-02 |
| Wildfire | Impact | ps-WF-PVW-01 | Post-fire conditions increase the risk of sediment and ash runoff into lakes, creeks, rivers, sloughs, and recharge zones, potentially degrading water quality and impairing managed aquifer recharge and surface water supply facility operations. | ma-WF-PVW-01 |
| Wildfire | Threat | ps-WF-PVW-02 | Increasing fire weather conditions, combined with dry vegetation and limited defensible space near isolated facilities, elevate PV Water?s vulnerability to wildfire-related disruptions, including extended power outages during PSPS events. | ma-WF-PVW-02 |

### 6.5.4.1 Climate Change Impacts & Vulnerable Populations

The impacts of climate change in Santa Cruz County disproportionately burdens vulnerable populations, exacerbating challenges in water access, housing resilience, and emergency preparedness. Rising temperatures and extended droughts strain water supplies, with limited recharge mechanisms and insufficient mapping compounding the risks. These issues are particularly acute for low-income households, which often lack the resources to address water well failures, waterline repairs, or contingency planning. Many of these residents face financial barriers to implementing proactive mitigation measures or recovering from water shortages.

PV Water serves a region that includes several Disproportionately Impacted Communities (DICs), areas where residents face heightened social, economic, and environmental vulnerabilities that intersect with water-related hazards such as seawater intrusion, drought, and climate change. These communities are predominantly located in and around the City of Watsonville and parts of unincorporated Santa Cruz and Monterey Counties, where socio-economic stressors increase sensitivity to environmental challenges. (PV Water, 2022)

The area exhibits high proportions of low-income households, non-English-speaking residents, and individuals with limited access to reliable transportation and digital infrastructure. For example, the region's agricultural economy supports a large population of farm workers, many of whom live in substandard or overcrowded housing, lack secure employment, and are particularly vulnerable to water shortages and degraded water quality.

Within the PV Water service area, several communities meet California's definition of Disadvantaged Communities (DACs), with median household incomes below 80% of the statewide average. Based on the 2022 PV Water Groundwater Sustainability Plan and statewide mapping tools, multiple census block groups in the Pajaro Valley qualify as DACs and some as Severely Disadvantaged Communities (SDACs), where incomes fall below 60% of the state average. These areas are particularly vulnerable to water-related hazards, including drought, seawater intrusion, and groundwater overdraft. Residents in these communities face elevated risks from service disruptions and infrastructure failures due to limited financial capacity to repair or replace wells and maintain water access during shortages.

The Pajaro Valley Water Management Agency plays a central role in ensuring long-term groundwater sustainability for the Pajaro Valley, where agriculture is the economic backbone and groundwater is the primary source of supply. Vulnerability to climate change and natural hazards is closely tied to water security, infrastructure resilience, and the unique needs of disadvantaged users who rely on affordable and reliable water access. Prolonged droughts, sea level rise, seismic hazards, and flooding all present interconnected risks that threaten groundwater quality, availability, and delivery systems.

**Drought:** Drought is the most pressing climate-driven hazard for PV Water, as extended dry periods reduce natural recharge and increase reliance on groundwater pumping and delivered water. This exacerbates existing overdraft conditions and accelerates seawater intrusion into coastal aquifers. Agricultural users—particularly small-scale and disadvantaged farmers—are disproportionately impacted by increased costs for supplemental water and the limited availability of alternative supplies. During drought, recycled water production may also decline due to municipal conservation, further stressing agricultural operations.

**Flooding and Storms:** Flood events present dual challenges for PV Water. Inundation can damage or disable critical infrastructure, including the Coastal Distribution System and recycled water facilities, reducing service capacity when it is most needed. Floodwaters also threaten groundwater quality, as private and production wells located in flood-prone areas may become conduits for contaminated water entering aquifers, increasing treatment needs and costs. Outdated levees and floodplain mapping, especially near the Pajaro River and coastal sloughs, compound these risks.

**Sea Level Rise:** Sea level rise magnifies the chronic threat of seawater intrusion into the Pajaro Valley Basin, placing agricultural water users at risk of crop loss, soil degradation, and long-term reductions in groundwater quality. Rising seas also threaten PV Water's monitoring wells, managed aquifer recharge projects, and Coastal Distribution System infrastructure with inundation, corrosion, and functional loss. Without adaptive pumping strategies and protective infrastructure, saltwater migration inland will continue to erode the resilience of the water supply.

**Earthquakes:** PV Water facilities are located near multiple active fault systems, leaving them vulnerable to pipeline rupture, soil displacement, and restricted access following major seismic events. Damage to critical infrastructure such as the Recycled Water Facility and Coastal Distribution System would result in service interruptions and greater reliance on groundwater pumping at a time when regional systems may already be compromised.

**Wildfire:** Wildfire poses indirect but significant threats to PV Water operations. Post-fire runoff containing sediment and ash can degrade surface water quality and impair recharge projects. Facilities located in more isolated areas face direct exposure to fire weather conditions, limited defensible space, and prolonged service interruptions during public safety power shutoff (PSPS) events.

The impacts of climate change on PV Water's mission to achieve groundwater sustainability are substantial, particularly for disadvantaged agricultural users who face economic constraints in adapting to rising costs and uncertain water availability. Proactive investment in infrastructure hardening, adaptive water management strategies, and regional collaboration will be necessary to ensure that Pajaro Valley's communities and agricultural economy remain resilient in the face of evolving climate-driven hazards.

## 6.6 Mitigation Strategy

This section provides the framework for how the PV Water will reduce hazard risk within its service area while supporting the broader goals of the Santa Cruz County MJHMP. It includes an overview of existing capabilities and opportunities for expanding resilience, and the district's prioritized mitigation actions. Together, these elements demonstrate how the district integrates hazard awareness into its conservation mission and contributes to a coordinated countywide approach.

Within the Santa Cruz County MJHMP, the mitigation strategy serves as the guidebook for future hazard mitigation efforts. For the PV Water, the strategy within this annex reflects the outcomes of the countywide planning process while also capturing the district's unique priorities and program areas. The strategy is designed to reduce the vulnerabilities identified in the risk assessment, including the problem statements developed for wildfire, flood, earthquake, slope failure, drought, and climate change.

Mitigation actions identified in this annex are both policy and project oriented, advancing conservation-based approaches that directly support hazard reduction. Actions are structured to align with FEMA's requirements and to integrate with existing county and regional planning mechanisms. Each action outlines responsible parties, potential funding sources, and required resources to ensure successful implementation.

For the PV Water, this strategy serves as a roadmap for delivering mitigation through technical assistance, watershed restoration, and partnerships with landowners. By combining its project-based capacity with the broader coordination of the countywide plan, the district contributes to a unified framework that reduces hazard risk across Santa Cruz County while also advancing its mission to protect natural and working lands. The subsections that follow describe these elements in detail:

- **Section 6.6.1 Aligning the Action Plan** provides a summary of the district's capacity to address natural hazards.
- **Section 6.6.3 Mitigation Action Plan** presents the PV Water's prioritized actions that will guide implementation in coordination with countywide strategies.

## 6.6.1 Aligning the Action Plan

This section connects the PV Water's mitigation actions with its existing capabilities and areas for growth. Capability assessments are a required element of hazard mitigation planning under the Disaster Mitigation Act of 2000 and FEMA's 2023 guidance, ensuring that actions are realistic, achievable, and aligned with available resources.

The section begins with a summary of the PV Water's capabilities across four areas: planning and regulatory, administrative and technical, fiscal, and education and outreach. This overview highlights the tools and strengths that the district already uses to reduce hazard risk. The section then provides a detailed analysis of each capability area, identifying both current practices and opportunities to expand resilience.

### 6.6.1.1 Capabilities & Opportunities Assessment

To develop a realistic and actionable mitigation strategy, it must account for existing jurisdictional capabilities and what future opportunities there are to enhance those capabilities for purposes of hazard mitigation. This section provides an assessment of PV Water's existing capabilities and future opportunities, including planning and regulatory, administrative and technical, fiscal, and public outreach and education capabilities. This assessment also identifies opportunities to integrate this MJHMP into future planning, policies, or programs to weave mitigation efforts into daily operations and address hazard problems wholistically. Capabilities are categorized into four groups and include various mechanisms.

- **Planning and Regulatory Capabilities:** Existing long-range plans, emergency response plans, hazard-specific plans, land use policies, and building and development standards.
- **Administrative and Technical Capabilities:** Available expertise in emergency services, engineering, grant management, and community planning.
- **Fiscal Capabilities:** Budgetary capacity, taxing authority, grants, and other funding mechanisms that can support mitigation projects.
- **Outreach and Education Capabilities:** Existing programs for providing technical assistance, community education, public warnings, and stakeholder engagement.

A full description of the process used to develop the capabilities assessment is provided in Volume 1, Section 2.3.3.

This capabilities and opportunities assessment for PV Water lists the various types of capabilities along with how they have been, currently are, or will in the future be integrated into hazard mitigation planning efforts. The three "HMP Integration" columns that identify the capability's status and usage are color-coded with green, yellow, or orange shading to communicate the following:

- **Status:** If the capability is present at all and what level of use it has generally.
- **Current Mitigation Use:** If the capability is currently being used in mitigation efforts, specifically, and at what level.
- **Future Opportunity:** If there is a future opportunity to integrate the capability into mitigation efforts and at what level.

## Planning & Regulatory Capabilities

As a special agency with limited authority and not a municipality, PV Water does not maintain traditional planning or regulatory tools, such as hazard-specific ordinances or development standards or a general plan. Its planning authority is focused on water resource management, particularly implementation of its GSP as the designated Groundwater Sustainability Agency for the Pajaro Basin. The agency is also the lead for several long-term planning tools, including a Basin Management Plan, Salt and Nutrient Management Plan, and a Water Quality Control Plan.

Although it does not operate a Capital Improvement Program in the conventional municipal sense, PV Water does maintain a capital projects list and funds infrastructure improvements such as recharge basins, pipelines, and treatment facilities through its planning frameworks. It does not manage floodplain planning, wildfire safety, or seismic safety codes, relying instead on coordination with counties and cities within its service area.

PV Water's hazard mitigation potential is most visible in its implementation of drought and groundwater protection strategies. Its plans and regulations are tied to compliance with the SGMA, providing a strong regulatory foundation for long-term water supply reliability and hazard resilience.

PV Water complies with all development standards and environmental review requirements for the State of California, including the California Environmental Quality Act (CEQA), and within the county and municipalities where its projects are located. These local regulatory environments are described in Volume 1 for Santa Cruz County and in the City of Watsonville's municipal annex of Volume 2.

Future integration of the MJHMP will occur through various processes and mechanisms outlined across multiple mitigation actions (Table 6-8). Key opportunities for future hazard mitigation integration with PV Water's existing planning mechanisms are to update its groundwater basin models and capital improvements planning with climate change projections that account for precipitation variability and drought intensity (ma-DR-PVW-02), as well as with updated flood hazard studies that include levee conditions (ma-FL-PVW-01).

## Administrative & Technical Capacity

PV Water maintains a small but technically proficient staff. Core functions include engineering, hydrologic modeling, water quality monitoring, and infrastructure planning. The agency also manages environmental compliance and capital project development. While it does not employ emergency management staff, it coordinates with regional and county emergency response agencies as needed.

The agency's in-house GIS capacity is limited, and much of its spatial data work is supported through external consultants or inter-agency collaboration. Grant writing, project management, and contracting are handled internally, with demonstrated success in securing state and federal funding for infrastructure and planning efforts.

PV Water also has a strong track record in implementing projects that integrate science, engineering, and landowner partnerships. These include managed aquifer recharge projects, recycled water distribution, and groundwater monitoring networks.

## Warning Systems & Services

PV Water does not manage formal warning systems for hazards such as floods, wildfires, or earthquakes. Emergency notification and public alerting remain the responsibility of county and state agencies. PV Water's role is to support these systems by providing education, preparedness resources, and technical assistance to landowners.

## Fiscal Capabilities

PV Water is primarily funded through water user fees, pumping assessments, augmentation charges, and grants. These revenues support operations, infrastructure projects, and compliance with SGMA and other state mandates. The agency does not use general obligation bonds or property taxes, but it has developed effective strategies for leveraging its revenue base as match funding for competitive grant programs.

The agency's long-term financial planning is guided by its annual budget and multi-year capital improvement plan. It maintains reserves to support project delivery and drought response, ensuring fiscal resilience even as groundwater challenges intensify.

## Education & Outreach Capabilities

PV Water engages in targeted education and outreach to support water conservation, drought response, and groundwater sustainability. Outreach activities include public meetings, newsletters, bilingual materials, school programs, and informational signage at project sites.

While its communications resources are modest compared to a city or county, the agency partners with local stakeholders, including agricultural groups, municipalities, and nonprofit organizations, to amplify its messaging. These efforts are critical to achieving compliance with conservation targets and expanding public understanding of groundwater issues in the Pajaro Valley.

**CAPABILITY ASSESSMENT LEGEND**

**HMP Integration**

| Status | Current Mitigation Use | Future Opportunity |
|---|---|---|
| Currently in use or present. | Used widely for mitigation. | Opportunity to expand and integrate. |
| (Sort of) Seldomly used or limited presence. | Limited use in mitigation planning. | Limited opportunity to expand and integrate. |
| (No) Not present or available. | Not used in mitigation planning. | No opportunity to expand or integrate. |

Table 6-7: PV Water Capabilities Assessment

| Resource | HMP Integration: Status | HMP Integration: Current Mitigation Use | HMP Integration: Future Opportunity | Notes / Additional Detail |
|---|---|---|---|---|
| **Planning and Regulatory Capabilities** | | | | |
| **Hazard Reduction Programs (Annually Conducted)** | | | | |
| Capital Improvements Program (CIP) or Plan | | | | PV Water maintains and implements a Capital Improvements Program through its long-range planning and budgeting process as well as Basin Management Plan Updates, currently implementing the 2014 BMP Update which is also part of our Groundwater Sustainability Plan Alternative under the Sustainable Groundwater Management Act in combination with other plans, reports, and documents including the Basin Management Plan 2022 (GSU22). Projects such as College Lake Project, Recycled Water Facility Improvements, the Watsonville Slough System Managed Aquifer Recharge and Recovery Project, and more are included. |
| Annual Fire Prevention Plan | | | | PV Water does not maintain its own fire prevention plan. Vegetation management occurs as part of general site operations, particularly near rural infrastructure. |
| Seismic Safety Program (Non-structural) | | | | Seismic risk is evaluated in CEQA compliance, project design, and appropriate seismic mitigation measures and practices are implemented during construction of projects and facilities. |
| Earthquake Modernization Plan (Building Safety) | | | | No formal modernization plan exists, but with almost all our infrastructure constructed after 2000, most of our facilities and equipment were constructed with modern earthquake safety in mind. |
| Stormwater Management Program (Annual Inspections) | N/A | N/A | N/A | PV Water is not responsible for stormwater management; this function is under local public works departments such as the County of Santa Cruz/Monterey or the City of Watsonville in PV Water's service area. |
| **Hazard Plans and Programs** | | | | |

| Resource | HMP Integration: Status | HMP Integration: Current Mitigation Use | HMP Integration: Future Opportunity | Notes / Additional Detail |
|---|---|---|---|---|
| Floodplain Response Plan | | | | PV Water does not have a formal flood response plan but collaborates with Pajaro Regional Flood Management Agency and designs projects (e.g., College Lake) with design to not increase flood risk. |
| Community Wildfire Protection Plan (CWPP) | | | | PV Water is not a CWPP lead, but its facilities are located in rural WUI areas. Coordination with local fire agencies and defensible space programs occurs informally. |
| Ground Water Management Planning / Plans | | | | PV Water is the GSA for the Pajaro Valley Basin and maintains and updates, an adopted Groundwater Sustainability Plan (GSP) Alternative with robust implementation and reporting per SGMA. |
| Climate Action Plan | | | | No standalone CAP, but climate adaptation is integrated through hydrologic modeling, drought planning, and seawater intrusion reduction projects. |
| Drought Mgmt/ Contingency Plan | | | | The GSP Alternative, GSU22, and 2024+ Strategic Plan address drought response / resilience with projects like College Lake, managed recharge, recycled water optimization, and more. |
| FireWise Communities within District | N/A | N/A | N/A | No FireWise Communities currently exist within PV Water's operational area. |
| Hazard-Related Public Outreach Program | | | | PV Water conducts outreach on water conservation and planning, but hazard-specific materials are limited. |
| **Administrative and Technical** | | | | |
| **Staff Capacity** | | | | |
| Emergency Manager | | | | PV Water does not have a designated Emergency Manager, but senior staff coordinate with local OES and operationalize response via infrastructure crews and mutual aid if needed. |
| Civil Engineer | | | | PV Water does not have an in-house civil engineer. Engineering services are provided by consultants on a project basis (e.g., College Lake, CDS upgrades). |
| Dedicated Public Outreach Personnel | | | | Outreach responsibilities are distributed across staff. Strategic and conservation communications are managed collaboratively with a staff person as an outreach specialist. |
| GIS Specialist and Capability | | | | PV Water does not have a full-time GIS specialist. It relies on consultants, internal staff ArcGIS capacity, and the sharing of data with others and leveraging data from other entities. |
| Grant Manager, Writer, or Specialist | | | | Senior PVWMA staff, particularly administrative and technical leads, are deeply experienced in grant writing and regularly secure funding from DWR, Coastal Conservancy, and federal programs |
| Other | | | | PVWMA employs technical staff with deep expertise in hydrology, groundwater modeling, recycled water systems, and agricultural conservation. External consultants supplement capacity as needed |
| **Warning Systems/Services** | | | | |

| Resource | HMP Integration: Status | HMP Integration: Current Mitigation Use | HMP Integration: Future Opportunity | Notes / Additional Detail |
|---|---|---|---|---|
| General | | | | SCADA is used internally for operational alerts; issuing public alerts is not within the district's authority, scope, or purpose |
| Flood | N/A | N/A | N/A | Not within district's authority, scope, or purpose |
| Wildfire | N/A | N/A | N/A | Not within district's authority, scope, or purpose |
| Geological Hazards | N/A | N/A | N/A | Not within district's authority, scope, or purpose |
| **Fiscal Capabilities** | | | | |
| **Financial Resources for Hazard Mitigation** | | | | |
| Levy for Specific Purposes with Voter Approval | | | | PV Water does not currently levy voter-approved taxes but may coordinate with regional ballot initiatives. It could explore this as a long-term resilience funding strategy. |
| Utilities Fees | | | | PV Water collects water augmentation and delivered water fees from all water users, which support operations, basin management, planning, capital projects, and match for grants. |
| System Development Fee | | | | Groundwater users pay augmentation fees on a per A/F rate basis. There is a higher rate for groundwater wells inside the zone that receives delivered water. These fees help fund infrastructure improvements and are regularly reviewed. |
| General Obligation Bonds to Incur Debt | | | | PV Water does not currently use general obligation bonds. Legal authority exists but has not been exercised due to administrative complexity and ratepayer considerations. |
| Special Tax Bonds to Incur Debt | | | | Special tax bonds have not been issued but may be explored for major long-term resilience or recharge projects. |
| Withheld Spending in Hazard-Prone Areas | N/A | N/A | N/A | PV Water does not use this practice; infrastructure investments are instead designed to be resilient in place. |
| Stormwater Service Fees | N/A | N/A | N/A | PV Water does not manage stormwater systems and therefore does not collect associated fees. |
| Capital Improvement Project Funding | | | | PV Water actively implements a capital improvement program, funded by user fees, grants, and project-specific contributions. Projects include College Lake, Watsonville Slough System Managed Aquifer Recharge and Recovery Project, CDS expansions, and more. |
| **Education / Outreach Capabilities** | | | | |
| **Education/Outreach Resources** | | | | |
| Website Dedicated to Hazard Topics | | | | PV Water's website includes sections on water conservation, GSP Alternative implementation, and project updates, but does not specifically highlight hazard topics. |
| Dedicated Social Media | | | | PV Water maintains an active social media presence. |
| Hazard Info. Avail. at Library/ Planning Desk | N/A | N/A | N/A | PV Water does not operate a public planning desk or maintain materials at libraries. Outreach is primarily digital and through partner events. |

| Resource | HMP Integration: Status | HMP Integration: Current Mitigation Use | HMP Integration: Future Opportunity | Notes / Additional Detail |
|---|---|---|---|---|
| Annual Public Safety Events | | | | PV Water does not lead or host public safety events but occasionally participates in partner-led community or ag-focused workshops. |
| Ability to Field Public Tech. Assistance Requests | | | | Staff regularly respond to grower, NGO, public agency, and landowner inquiries related to conservation, water deliveries, hydrology, recharge, and more. Technical assistance is a routine agency function. |
| Public Safety Newsletters or Printed Outreach | | | | PV Water distributes quarterly newsletters focused on water planning and project updates. Hazard-specific messaging could be integrated in future editions. |
| Fire Safe Councils | | | | PV Water does not formally engage with Fire Safe Councils but may benefit from doing so to support defensible space or fuel reduction around key sites. |
| Resource Conservation Districts | | | | PV Water regularly partners with the RCD of Santa Cruz County for grant implementation, landowner outreach, technical expertise, and conservation practices. |
| Other | | | | PVWMA employs technical staff with deep expertise in hydrology, groundwater modeling, recycled water systems, and agricultural conservation. External consultants supplement capacity as needed |

## 6.6.2 Pajaro Valley Water Management Agency Mitigation Action Plan

Mitigation actions were developed based upon the jurisdiction's priorities, risk assessment results, and mitigation alternatives. The mitigation action prioritization method used by all participating jurisdictions is described in Section 4 of Volume 1. Table 6-8 lists each priority mitigation action, responsible party, time frame, potential funding source, implementation steps, and resources need to implement based upon consensus among the PV Water's planning group members. All mitigation actions across jurisdictions are accessible through MAST (Mitigation Action Support Tool), providing comprehensive details including the mitigation goal, responsible party, timeline, potential funding sources, implementation steps, and required resources. As a dynamic document, hazard problem statements and mitigation activities will be regularly updated through MAST to reflect evolving needs and circumstances.

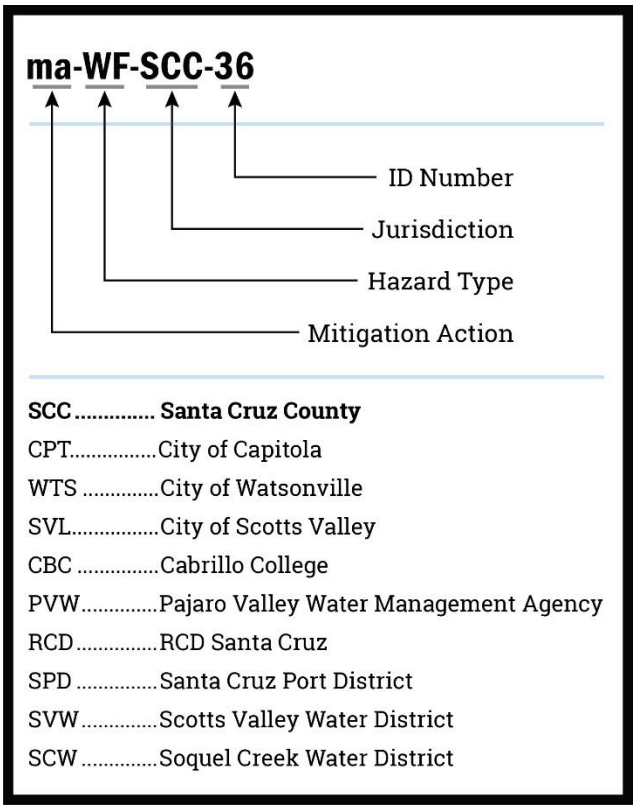

Figure 6-25: Mitigation Action Number Key

As a first-time participant in a hazard mitigation plan, PV Water did not have any existing mitigation actions from a prior plan to evaluate. Therefore, all mitigation actions identified in this planning cycle are newly developed based on the agency's updated risk assessment, local capabilities, and areas of concern identified during stakeholder engagement and interagency collaboration. These new actions were crafted to address the agency's highest priority hazards, align with FEMA's hazard mitigation guidance, and reflect local infrastructure vulnerabilities and water resource challenges. The development of these mitigation strategies marks an important step in integrating resilience into the agency's operations and long-term planning. All mitigation actions are documented in Volume 2, Table 6-8

The PVWMD developed unique mitigation actions, tailored to their own unique priorities, vulnerabilities, and capabilities. Each action contains a level of detail that meets the regulatory requirements of FEMA and DMA 2000, including identifying the responsible party, time frame, potential funding source, implementation steps, and resources needed to implement. It is important to note that PV Water is a small agency with a mostly horizontal structure. Therefore, there are no specific departments or divisions responsible for overseeing these mitigation actions; instead, responsibilities for actions will be shared across all positions in the agency.

All actions are assigned a unique identification number, as illustrated in MAST and Figure 6-25, using alphanumeric characters that denote specific attributes of the action, including the type of hazard being mitigated, facilitating easy reference and management. Table 6-8 lists each mitigation action for the agency.

Table 6-8: PV Water Mitigation Action Plan

| Hazard | Action ID | Action Title | Description | FEMA Mitigation Alternative | Timeline | Responsibility | Cost | Benefit | Internal Funding Source | External Funding Source | Priority (Based on Criteria) | Problems Addressed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Drought | **ma-DR-PVW-01** | Drought Contingency Planning | Create a drought contingency plan with thresholds and strategies prioritizing water equity and emergency support for disadvantaged growers. | PE&A, PRV | Medium 3-5 Years | PV Water + RCD, major growers, municipal purveyors, and irrigation districts | Low | Medium | Staff Time / Agency Budget | DWR<br>DOC<br>HMGP<br>BRIC<br>Prop 4<br>Measure Q | High | ps-DR-PVW-01, ps-DR-PVW-02,ps-DR-PVW-03 |
| Drought | **ma-DR-PVW-02** | Groundwater Modeling Enhancement | Update future climate projections (e.g., precipitation variability, drought intensity) into groundwater basin models, capital improvements planning, and infrastructure investment prioritization. | PRV | Short 1-3 Years | PV Water + DWR, climate scientists, and basin engineers | Medium | High | Staff Time / Agency Budget | DWR<br>DOC<br>HMGP<br>BRIC<br>Prop 4<br>Measure Q | High | ps-DR-PVW-01, ps-DR-PVW-02, ps-DR-PVW-03, ps-DR-WTS-04, ps-DR-WTS-05, ps-DR-SVL-04, ps-SLR-PVW-01, ps-SLR-PVW-02 |
| Earthquake | **ma-EQ-PVW-01** | Water System Seismic Safety Retrofits | Assess earthquake risk and design and implement seismic retrofits for the most vulnerable facilities and infrastructure, including pipelines and access roads, to improve earthquake resilience. | SP | Medium 3-5 Years | PV Water + structural engineers | High | High | Agency Budget | HMGP<br>BRIC | Low | ps-EQ-CPT-03, ps-EQ-PVW-01, ps-EQ-PVW-02, ps-EQ-WTS-04 |
| Flood | **ma-FL-PVW-01** | Update Flood Hazard Maps & Levee Data | Conduct mapping studies of flood hazards, including levee conditions, in coordination with Santa Cruz County, PRFMA, DWR, FEMA, and the U.S. Army Corps of Engineers. | PRV | Short 1-3 Years | PV Water + County, PRFMA, DWR, FEMA, and USACE | Medium | High | Staff Time / Agency Budget | Measure Q<br>DWR<br>USACE | Medium | ps-FL-PVW-02 |
| Flood | **ma-FL-PVW-02** | Levee Improvements | Stabilize, retrofit, replace, or otherwise improve high-risk levees protecting critical infrastructure or vulnerable populations. | SP | Long 5-10 Years | PV Water + PRFMA, County, DWR, FEMA, and engineering consultants | High | High | Staff Time / Agency Budget | BRIC<br>HMGP<br>Measure Q<br>DWR | Medium | ps-FL-PVW-01, ps-FL-PVW-02, ps-FL-PVW-03, ps-FL-PVW-04 |
| Flood | **ma-FL-PVW-03** | Elevate or Floodproof Key Infrastructure | Design and implement flood protection retrofits (e.g., elevation, floodproofing) for critical facilities and infrastructure vulnerable to flooding. | SP, PPRO | Medium 3-5 Years | PV Water + engineering consultants | High | High | Staff Time / Agency Budget | BRIC<br>HMGP<br>Measure Q<br>DWR | Medium | ps-FL-PVW-01, ps-FL-PVW-02, ps-FL-PVW-03, ps-FL-SCC-03, ps-FL-CPT-06, ps-FL-SVL-01, ps-FL-SVW-01 |
| Flood | **ma-FL-PVW-04** | Emergency Power & Pumping for Flood Resilience | Design and install backup generators and mobile pumping units at critical PV Water infrastructure vulnerable to flood-related outages. Prioritize facilities serving disadvantaged areas. | SP, PPRO, ES | Medium 3-5 Years | PV Water + County, engineering consultants, and CalOES | High | High | Staff Time / Agency Budget | BRIC<br>HMGP<br>Measure Q<br>DWR | High | ps-FL-PVW-01, ps-FL-PVW-02, ps-FL-PVW-03, ps-FL-PVW-04 |
| Sea Level Rise | **ma-SLR-PVW-02** | Coastal Flood Risk Modeling | In collaboration with USACE and other partners, develop enhanced coastal flood risk models that incorporate updated sea level rise projections, slough dynamics, and groundwater-seawater interaction data. | PRV | Medium 3-5 Years | PV Water + USACE, UCSC, and consultants | Medium | Medium | Staff Time / Agency Budget | Measure Q,<br>Coastal Conservancy<br>USACE<br>HMGP<br>BRIC<br>NOAA | Medium | ps-SLR-PVW-01, ps-SLR-PVW-02, ps-SLR-PVW-03, ps-SLR-SCW-04 |
| Sea Level Rise | **ma-SLR-PVW-01** | Managed Aquifer Recharge Projects | Implement more recharge projects aligned with land conservation and coastal flood resilience strategies, including programs to incentivize private recharge infiltration systems. | SP | Medium 3-5 Years | PV Water + DWR, RCD, and regional water agencies | High | High | Staff Time / Agency Budget | Measure Q<br>EPA<br>Prop 4<br>DWR<br>BOR (WaterSMART) | High | ps-SLR-PVW-01, ps-SLR-PVW-02, ps-SLR-PVW-03 |
| Wildfire | **ma-WF-PVW-01** | Post-Fire Runoff Reduction Projects | Implement erosion control and sediment filtration projects to protect lakes, creeks, rivers, sloughs, and recharge zones from post-fire runoff. | SP, NRP | Short 1-3 Years | PV Water + RCD and NRCS | High | High | Staff Time / Agency Budget | HMGP<br>BRIC<br>CAL FIRE<br>CalOES<br>Prop 4<br>Measure Q | Medium | ps-WF-PVW-01, ps-WF-PVW-02 |

| Hazard | Action ID | Action Title | Description | FEMA Mitigation Alternative | Timeline | Responsibility | Cost | Benefit | Internal Funding Source | External Funding Source | Priority (Based on Criteria) | Problems Addressed |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Wildfire | **ma-WF-PVW-02** | Defensible Space at Remote Facilities | Manage vegetation and install fire-resistant buffers around isolated PV Water facilities to reduce wildfire vulnerability. Establish ongoing maintenance schedule. | NRP | Short 1-3 Years | PV Water + CAL FIRE | Medium | High | Staff Time / Agency Budget | HMGP<br>BRIC<br>CAL FIRE<br>CalOES<br>Prop 4<br>Measure Q | Low | ps-WF-PVW-02 |