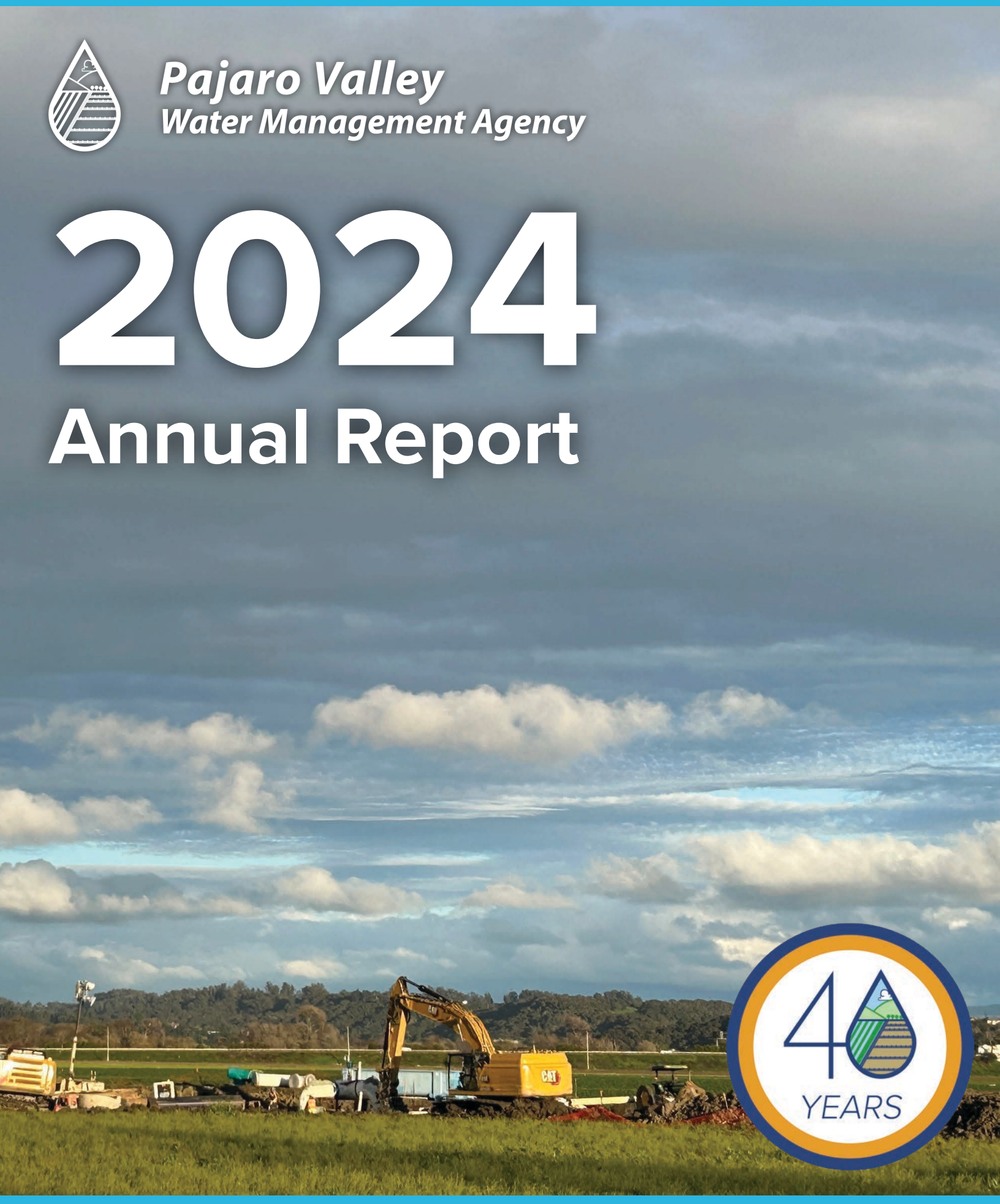
Pajaro Valley
Water Management Agency

2024
Annual Report



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An acre-foot is 325,851 gallons.

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(10-1-2023 to 9-30-2024)

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A WORD FROM OUR GENERAL MANAGER

The Pajaro Valley Water Management Agency was established in 1984 to "efficiently and economically manage existing and supplemental water supplies in order to prevent further increase in, and to accomplish continuing reduction of, long-term overdraft." Forty years later, "PV Water" is a recognized leader in groundwater resources management in California. PV Water has been conducting managed aquifer recharge and recovery with the Harkins Slough Project since 2002, treating wastewater to recycled water standards and distributing it to customers since 2009, and will soon treat surface water from College Lake for distribution to customers through approximately 30 miles of underground pipelines ranging in diameter from 10 to 48 inches.

In 2024, current and former Directors, along with staff and community members, commemorated the 40th anniversary of PV Water. The speakers reminisced and celebrated the efforts of those who preceded us and reminded everyone in the room that the path has not been straight or smooth, as the community often did not agree on how to achieve sustainable groundwater resources. However, PV Water continued to make progress and by 2019, in the post-Sustainable Groundwater Management Act (SGMA) era, the California Department of Water Resources had approved the Pajaro Valley's Groundwater Sustainability Plan. In 2024, the Department of Water Resources (DWR) approved the first "periodic update" to the plan, known as the Basin Management Plan - Groundwater Sustainability Update 2022 (GSU22). PV Water continues to engage the community in selecting strategies to reach groundwater sustainability that support the efforts to preserve our way of life in the Pajaro Valley. There are many challenges ahead, but with each challenge comes an opportunity. PV Water, and the Pajaro Valley Community it serves, has demonstrated that working together is better to have a higher chance of achieving our collective goals.

In the pages that follow you will find the progress PV Water made in 2024 toward groundwater sustainability. In a final note, in future years PV Water will be consolidating this annual report into the more detailed annual report that is now required per SGMA to be submitted to DWR by April 1 of each year.

Brian Lockwood,
General Manager

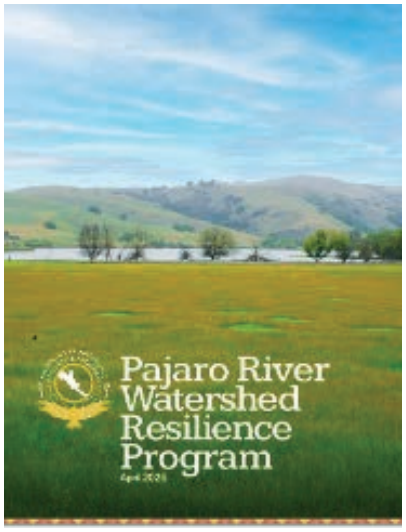
40 Years of Service to the Community

PV Water Board of Directors (past and present) elected officials, neighboring water managers, and members of the public reflected on 40 years of local groundwater management leadership in the Pajaro Valley. Directors shared stories about the challenges of the past as well as the goals of achieving sustainable groundwater resources by 2040 as required by the Sustainable Groundwater Management Act (SGMA). Senator Laird, Speaker Rivas, and Supervisor Hernandez honored PV Water with resolutions on achieving 40 years. Supervisor Church acknowledged PV Water's successes and appreciated Pajaro Valley residents for thinking ahead and forming the agency 30 years before SGMA required the establishment of Groundwater Sustainability Agencies. The event provided time to reflect on the past and future of the Pajaro Valley, connect with colleagues and community members, and celebrate our shared purpose.

PV Water Staff at the 40 Year Celebration

Pajaro River Watershed Resilience Planning Program

The California Department of Water Resources (DWR) selected PV Water to lead the Pajaro River Watershed Resilience Plan Pilot Program. This initiative, which is supported by a $2 million grant provided in full or in part from the Budget Acts of 2022 and through an agreement with DWR, aims to help agencies to better prepare and plan for future climate extremes. The California Water Plan Update 2023 underscores the importance of building watershed-based solutions, climate resilience, and equity across the state by collaborating with local partners. The Watershed Resilience Program will advance the vision and framework described in the California Water Plan 2023 by providing financial and technical support for a watershed-wide network and climate adaptation planning. The Program aims to: (1) holistically study, plan, and manage water from headwaters to groundwater to outflow at a watershed scale; (2) integrate and prioritize equity and inclusiveness; (3) analyze climate vulnerabilities and risks and develop adaptation strategies at the defined watershed scale; (4) plan and collaborate across water supply, flood management, groundwater, water quality, forest/fire, ecosystem, and recreation sectors; and (5) develop and apply performance indicators and metrics to measure, track, and report on outcomes at the regional and statewide levels. The watershed resilience approach supports the Newsom Administration's policies and priorities, including California's Water Supply Strategy (2022) and the California Water Resilience Portfolio (2020), focusing on climate urgency, building regional resilience through multibenefit projects, integrated resource management, and nature-based solutions — all with a strong focus on climate change and equity.



Groundwater Sustainability Plan Implementation

In 2024, PV Water's Board of Directors and staff remained focused on achieving sustainable groundwater resources for the Pajaro Valley as efficiently and economically as possible by 2040, the deadline imposed by SGMA. The implementation of the GSU22 projects and programs continue to reduce groundwater overdraft and seawater intrusion, as well as improve groundwater quality over the long term. Sustainability will be achieved by optimizing existing water supply facilities, developing new water supplies, and reducing water demand through actions like PV Water's conservation program. The continued progression toward sustainable groundwater resources will help to keep local control of water resources, and to ensure water supply availability for domestic, commercial and agricultural use. A summary of significant Groundwater Sustainability Plan Implementation activities that occurred in 2024 follows.

College Lake Integrated Resources Management Project

The College Lake Integrated Resources Management Project (College Lake Project) will help achieve sustainable groundwater resources by producing an average of 2,000 acre-feet of water per year that will be used to reduce groundwater pumping. It will also improve passage for steelhead (Oncorhynchus mykiss), a federally listed threatened species known to utilize College Lake, and preserve important waterfowl habitat. PV Water went out to bid for this project in December of 2022. Construction of this important water supply project began in 2023 and is expected to be completed in 2025.

Pipeline going into trench East of Walker St

The Weir and pump station foundation was finished in 2023. Preparations for the treatment plant along with clearing the orchard and letting the soil consolidate occurred in 2023. Construction of the foundations for the chemical storage tanks, the flocculation and sedimentations banks, and the treatment support building were completed in 2024. For the pipeline portion, all 6 miles of pipeline were completed including Holohan, College and Lakeview roads, and in all farm fields in 2023. In 2024, the pipeline portion through the City of Watsonville was completed including six trenchless crossings.

College Lake Project Tour with Sen. John Laird

Watsonville Slough System Managed Aquifer Recharge and Recovery Projects

The Watsonville Slough System Managed Aquifer Recharge & Recovery Project (WSS-MARR) will enhance PV Water's ability to further reduce groundwater pumping using locally available surface water. The WSS-MARR project includes a new diversion from Struve Slough with an adjacent pump station, a pipeline to convey water to an existing pump station, a 12.7-acre infiltration basin with a capacity of nearly 130 acre-feet, and wells to monitor and recover diverted water that has percolated into the shallow aquifer. Another aspect of the project includes replacing aged electrical equipment at the Harkins Slough Recharge Basin and installing fish screens on existing diversion pumps. Water produced from the project will be sold to growers for irrigation purposes.

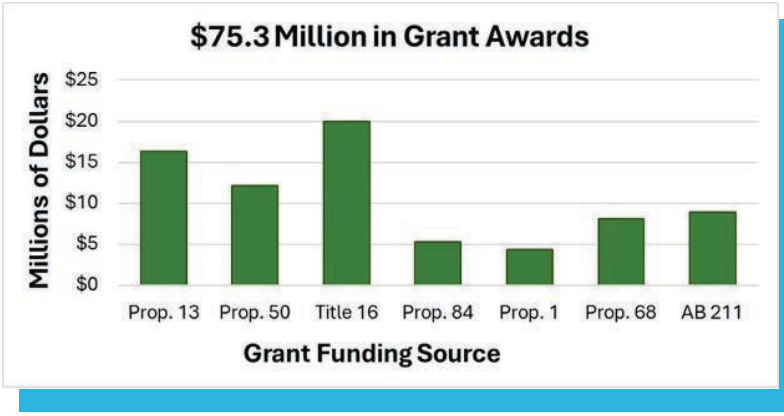
In February 2024, PV Water secured partial funding for the WSS-MARR project when the Board approved a $31.1 million loan at an interest rate of 4.4% through the Environmental Protection Agency's Water Infrastructure Finance and Innovation Act (WIFIA) program. PV Water intends to issue a bond to fund the remaining costs. The project is anticipated to be constructed in 2027.

Grants Awarded

PV Water has a strong record of winning state and federal grants as is evident by the $73.5 million it has brought into the Pajaro Valley. Securing additional grants, when they become available, remains a top priority. Out of basin funding, in the form of grants, helps to support program implementation by reducing costs for customers. Staff is looking ahead to Proposition 4 to secure more grants.

In the meantime, PV Water continued work on an $8.9 million grant received from the California Department of Conservation's (DoC) Multibenefit Land Repurposing Grant Program (MLRP) in 2023. The grant, which included $2.375 million for the College Lake Project, also includes funding for the development of a Multibenefit Land Repurposing Plan, and for PV Water's partners in the grant program: the Land Trust of Santa Cruz County, the Pajaro Regional Flood Management Agency, the Resource Conservation District of Santa Cruz County, the University of California at Santa Cruz, and Watsonville Wetlands Watch.

In addition, PV Water received a $2 million grant from DWR in 2024 to lead the Watershed Resilience Plan Pilot Program. The grant was one of just five grants issued statewide. The goal is to develop a resilience plan for future climate extremes (See page 4 for more information).



Water Conservation Program

The Water Conservation Program evaluates existing farm practices, provides recommendations and support, and offers rebates that are based on robust data, extensive trials, and solid research. PV Water has increased incentives for farmers to modify their irrigation practices to become more resource-efficient. Demonstrations of innovative technology, and practices that can save substantial amounts of water, while not reducing crop yield are a vital component of the program.

PV Water's Board recommitted to the conservation program this year by awarding a second, 3-year, $1.2 million contract to the Resource Conservation District of Santa Cruz County (RCD). PV Water is partnered with the RCD and the University of California Cooperative Extension (UCCE) to provide technical expertise and training to help Pajaro Valley farmers use water more efficiently. Two years ago, the PV Water Board increased residential rebates to support household conservation, increasing the Rainwater Catchment and Laundry to Landscape Rebates.

Over the most recent five years for which data is available (2020-24), agricultural water uses in the Valley, outside the delivered water service area, declined by nearly 5,568 acre-feet (AF) compared to the 2006-2010 baseline. Total Valley-wide water uses for 2020-24 also lowered by 5,875 acre-feet compared to the baseline period. As alternatives to groundwater are developed, we see that groundwater pumping for the Valley is reduced further than total water use for the most recent 5 years, 9,575 acre-feet less per year was pumped compared to the baseline period for all metered wells. While the above numbers surpass the conservation goal set forth in the 2014 Basin Management Plan Update, the Valley has had two infrequent events that lowered pumped groundwater: the COVID pandemic in 2020; and the levee failure and subsequent flooding of the community of Pajaro and more than 2,100 acres of cropland.

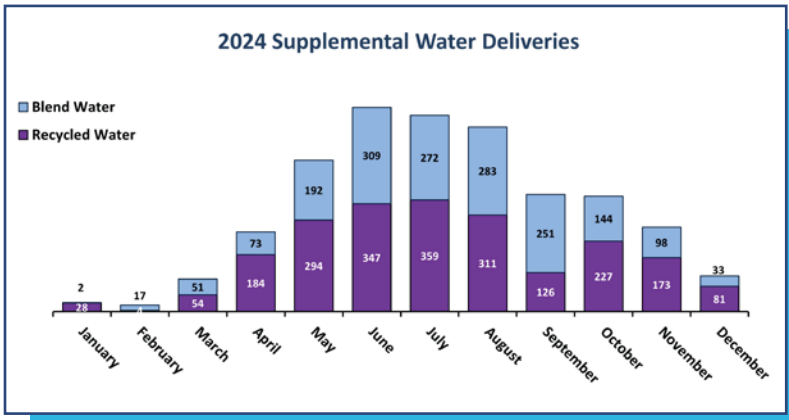
Conservation is a key part of the solution for the Pajaro Valley to achieve groundwater sustainability, and the PV Water Board displayed their commitment through a new contract with the RCD. Conservation is the most affordable project per acre-foot in the GSU22 and provides benefits to the entire Pajaro Valley Groundwater Basin.

Hydrology

Summary of Basin Conditions

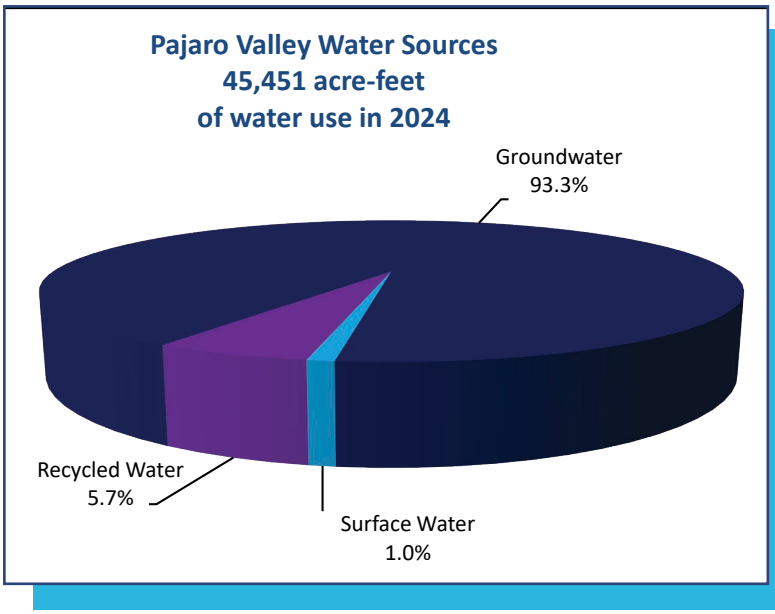
During Water Year (WY) 2024 (WY2024), the average elevation of groundwater in the principal aquifer, the Aromas Red Sands formation, declined by 1.3 feet. Groundwater in storage decreased by approximately 4,759 acre-feet (AF). In fall 2024, approximately 26,950 acres of the Basin had groundwater levels at or below mean sea level, nearly 8,000 acres more than the prior year. It should be noted that WY2023 was an exceptionally wet year; during which time groundwater levels had increased on average approximately 6.3 feet compared to the prior year. The Watsonville Waterworks weather station reported 22.77 inches of rain during WY2024; approximately 104% of the long-term annual average.

The slightly above average precipitation in WY2024 corresponded with slightly above average observed streamflow conditions at gauged locations. Groundwater levels observed in the spring of 2024 were comparable to levels observed in the spring of 2023. The decline in groundwater conditions became apparent later in the year when the differing conditions between WY2024 and the exceptionally wet WY2023 were more impactful. Major differences included annual streamflow totals of roughly only 30% of WY2023 volume; an increase of total water use in the Basin of 10% compared to WY2023; and diminished direct recharge.



Water Use and Supplemental Water Deliveries

During the 2024 calendar year, total water use within PV Water's jurisdictional area was 45,451 AF. Groundwater production constituted the vast majority of water, providing 42,418 AF or 93.3% of the total water use. The remaining supply consisted of recycled water (5.7%) and surface water diversions (1.0%). The total water use in 2024 was 2,845 AF greater than 2023.



In 2024, PV Water delivered 4,306 AF of supplemental water for irrigation supply to agricultural customers of the Coastal Distribution System (see graph), and of that, roughly 60% was tertiary treated recycled water. Since the start of recycled water production in 2009, roughly 41,425 AF of reclaimed water has been treated and delivered for use in lieu of groundwater.

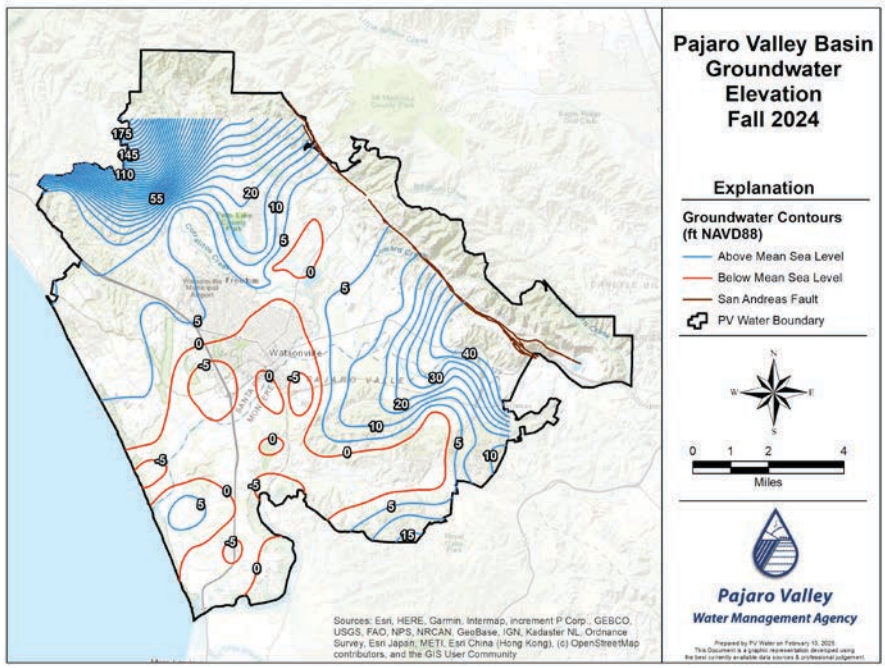
The recovery wells associated with the Harkins Slough Managed Aquifer Recharge and Recovery Facility produced approximately 205 AF in 2024. Since the facility began operation in 2002, approximately 11,700 AF of water has been diverted for recharge from Harkins Slough which otherwise would have flowed into Monterey Bay.

Groundwater Levels

PV Water routinely monitors groundwater levels through an extensive network of more than 175 publicly and privately owned wells across the Basin. During a typical year, groundwater levels are the highest in the spring due to a combination of recharge from rainfall, streamflow infiltration, as well as reduced pumping for agricultural irrigation and residential uses. Increases in groundwater pumping throughout the summer and into the fall, as well as diminished recharge, cause water levels to be the lowest in late summer and early fall.

Groundwater levels below sea level, created by overdraft conditions, create a landward flow gradient causing seawater to intrude into freshwater aquifers. Even when inland water levels are equal to sea level, it is insufficient to prevent intrusion because the density of seawater is greater than fresh groundwater and a greater head pressure is needed to keep seawater at bay.

In Fall 2024, measured groundwater levels decreased approximately 1.3 feet on average across the Basin relative to fall 2023. Of the 137 wells measured in the fall of 2023 and 2024, 98 wells exhibited decreases in water level. The average 1.3 foot decrease in groundwater levels corresponded to an estimated annual decrease of 4,759 AF of groundwater in storage during WY2024.



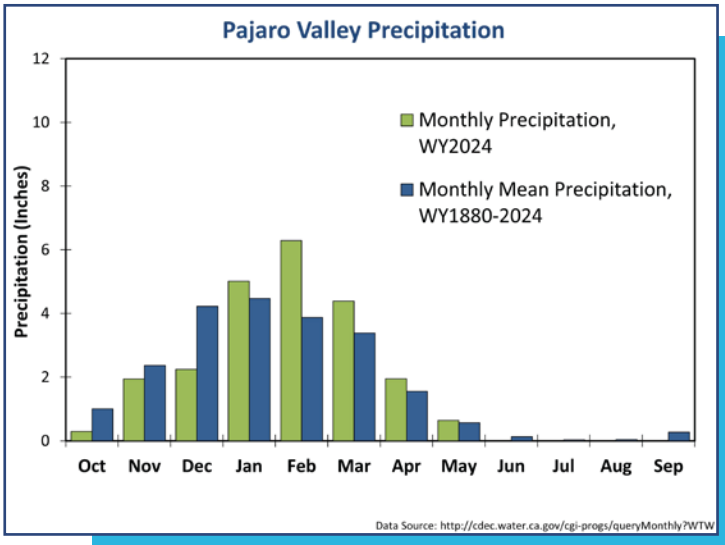
The map to the left shows groundwater levels in Fall 2024. Groundwater levels measured in monitoring wells are interpolated to generate groundwater contour elevations in feet of the North American Vertical Datum (NAVD88). The red lines represent contours of groundwater levels that are at or below sea level. The blue contours represent groundwater elevations above sea level. A decrease of groundwater levels on average of 1.3 feet across the Basin increased the total land area west of the San Andreas Fault Zone with groundwater levels at or below sea level (2.96 feet NAVD88) to 26,950 acres.

Rainfall and Streamflow

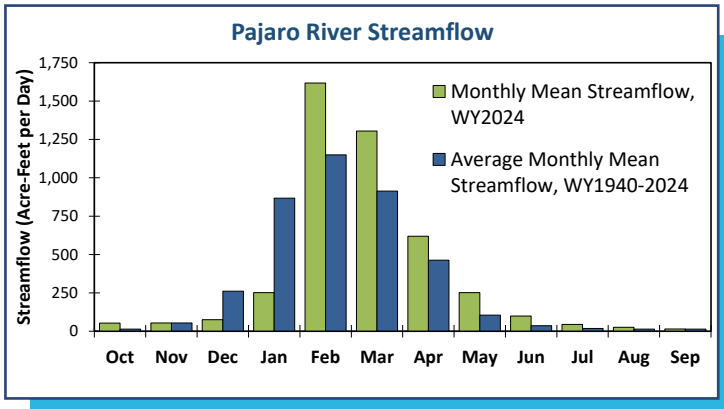
Rainfall recorded at the Watsonville Waterworks gauge for WY2024 measured 22.77 inches, or about 104% of the long-term average (1880-2024: 21.93 inches). Annual total Pajaro River streamflow for WY2024, measured at the United States Geological Survey Chittenden Gap gauging station, was 132,501 AF, or approximately 113% of the long-term average (1940 - 2024: 117,410 AF). Gauges located on Corralitos Creek at Green Valley Road and the Pajaro River at Main Street1 measured 12,098 AF and 160,248 AF respectively, equating to 101% and 143% of the historical averages (1957-2024: 11,943 AF, 1912-2024: 112,425 AF).

Rainfall across the 1,300 square miles of Pajaro River Watershed affects the Basin as significant recharge occurs in the area of the river located between Chittenden Gap and Murphy Crossing. The upper portion of the watershed, in Santa Clara and San Benito counties, contributes substantially to flow in the lower watershed as well as to sustaining baseflows during the dry season. The total annual measured streamflow at gauging stations in the Basin during WY2024 indicated roughly only 30% of the measured annual streamflow volume totals observed in WY2023. This decrease likely corresponded to a significant decrease in surface water recharge to the Basin compared to WY2023.

Precipitation also affects a series of surface water supply operations within the Pajaro Valley. The City of Watsonville has pre-1914 water-rights to operate diversion facilities on Corralitos and Browns Valley creeks and is permitted to divert up to 2,400 AF per year. In WY2024, the City of Watsonville diverted approximately 255 AF of water. PV Water holds a water-right permit to divert water from Watsonville and Harkins Sloughs through the operation of the Harkins Slough Managed Aquifer Recharge and Recovery Facility. The diverted slough water is infiltrated through a recharge basin and stored underground until it is later recovered and distributed to customers for agricultural irrigation. In WY2024, approximately 856 AF of water was diverted within the permitted diversion period. Lastly, the Recharge Net Metering Program, consisting of three privately owned and operated managed aquifer recharge systems, captured and infiltrated approximately 231 AF of stormwater runoff.



MONTHLY PRECIP PLOT:
Measured monthly precipitation during WY2024 at the Watsonville Waterworks station is compared to the historical monthly mean (WY1880-WY2024).



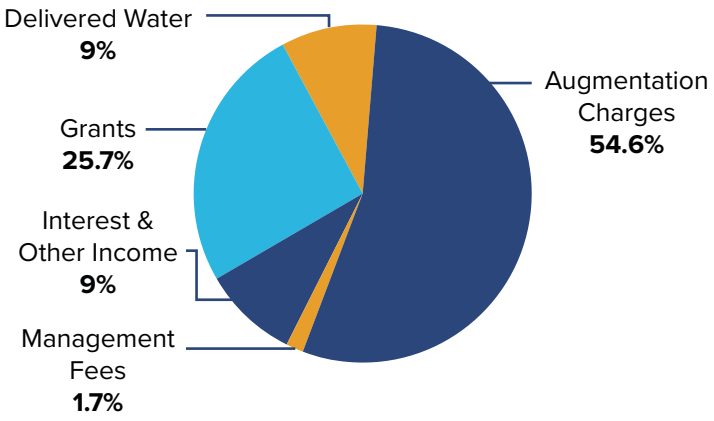
STREAMFLOW PLOT:
Total annual streamflow in the Pajaro River during WY2024 equated to 132,501 AF as measured by the USGS at Chittenden Gap; the streamflow volume was approximately 113% of the 117,410 AF recorded long-term average.

Finance

Audited Financial Information: Fiscal Year 2023-2024

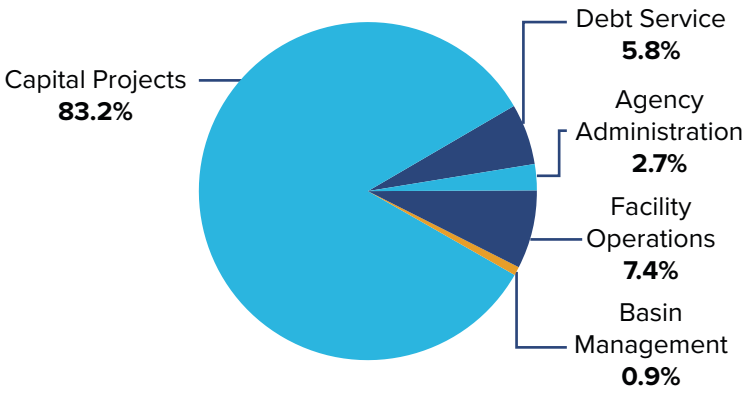
During fiscal year 2023-2024, groundwater augmentation charges accounted for $11,905,845 of PV Water's revenue; delivered water sales generated $1,961,944; revenue from grants amounted to $5,612,452; management fees $375,546, interest and other income $1,968,510. PV Water's net position increased 10.09% to $95,513,406. Total revenues from all sources increased 33.28% to $21,778,696, while total expenditures increased 29.41% to $13,023,938.

Audited Revenues



Revenue Sources	Dollars	%
Augmentation Charges	$11,905,845	54.6%
Management Fees	$375,546	1.7%
Interest & Other Income	$1,968,510	9.0%
Grants	$5,612,452	25.7%
Delivered Water	$1,961,944	9.0%
Totals	**$21,824,297**	**100.0%**

Audited Expenditures

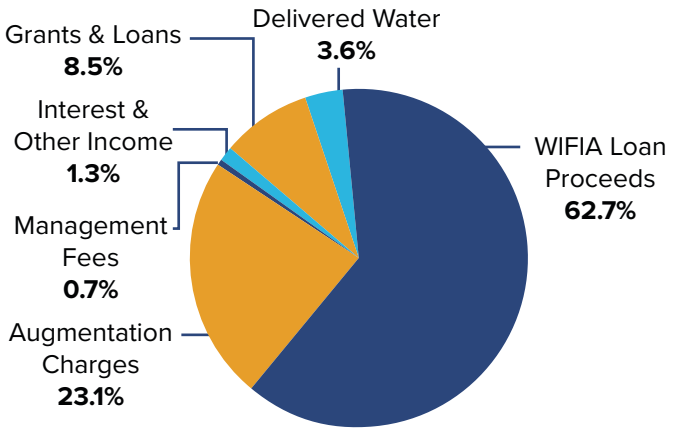


Expenditures	Dollars	%
Agency Administration	$1,828,806	2.7%
Facility Operations	$5,042,009	7.4%
Basin Management	$635,234	0.9%
Capital Projects	$56,717,576	83.2%
Debt Service	$3,931,503	5.8%
Totals	**$68,155,128**	**100.0%**

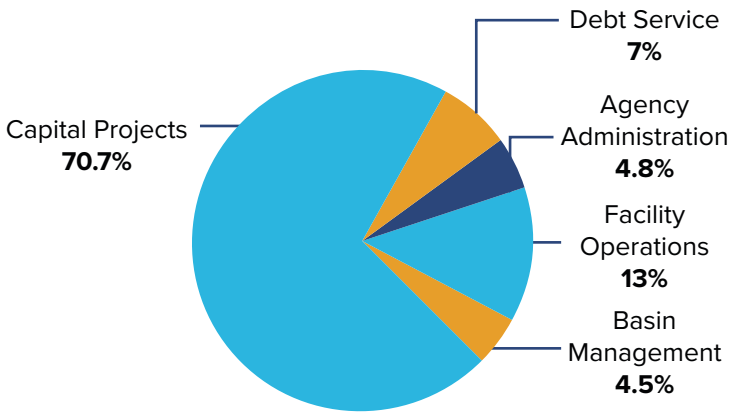
Projected Budget: Fiscal Year 2024-25

The fiscal year 2024-2025 budget projects revenues of $52,766,051 and expenses of $57,094,491. The revenues include groundwater extraction and supplemental water deliveries, management fees, grants and loans, and other forms of income such as interest earnings and rental income. The projected budget shows a deficit due to the capital construction of the College Lake Project.

Projected Revenues



Projected Expenditures

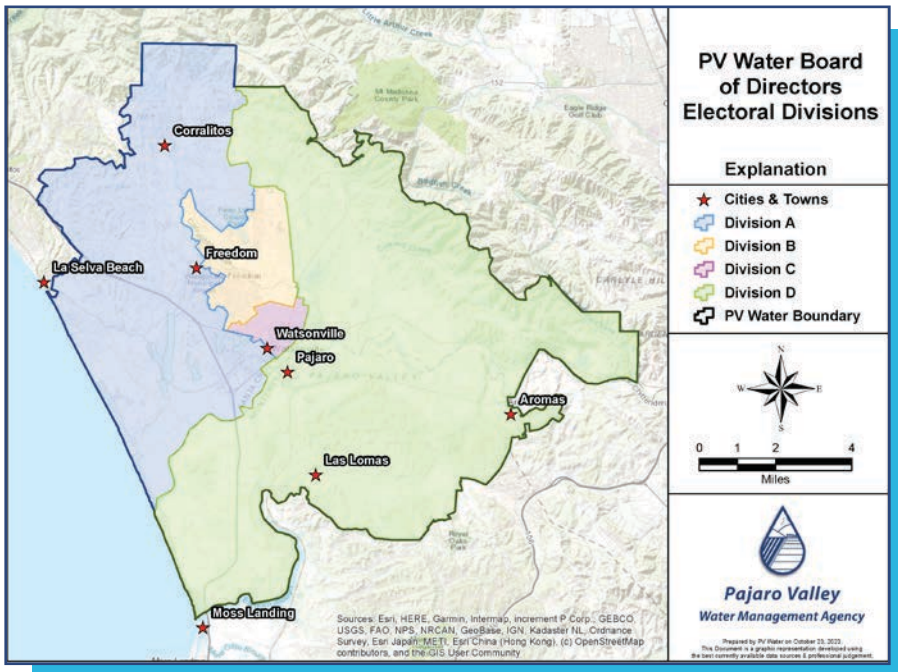


Revenue Sources	Dollars	%
Augmentation Charges	$12,200,000	23.1%
Management Fees	$370,000	0.7%
Interest & Other Income	$686,781	1.3%
Grants & Loans	$4,500,000	8.5%
Delivered Water	$1,900,000	3.6%
WIFIA Loan Proceeds	$33,109,270	62.8%
Totals	**$52,766,051**	**100.0%**

Expenditures	Dollars	%
Agency Administration	$2,735,886	4.8%
Facility Operations	$7,402,522	13.0%
Basin Management	$2,567,663	4.5%
Capital Projects	$40,370,361	70.7%
Debt Service	$4,018,059	7.0%
Totals	**$57,094,491**	**100.0%**

About PV Water

PV Water was established by state charter through a special local election in 1984. The statutory boundaries are defined by the Agency Act (760, Article 2, §201). The total area is approximately 120 square miles, or about 70,000 acres. Following the adoption of the Sustainable Groundwater Management Act, PV Water became the Groundwater Sustainability Agency for the Pajaro Valley groundwater basin in 2015. In the time since its formation, PV Water has not imposed pumping restrictions.



Board of Directors

PV Water is governed by a seven-member board of directors, who must live within the agency boundaries and be registered voters. Four directors are directly elected by voters within their division (see map) for overlapping terms of four years each. The remaining three directors are separately appointed by Monterey County, Santa Cruz County, and the City of Watsonville. Appointed directors serve two-year terms and must derive a majority of their net income from agriculture.

Elected

Division A: Mary Bannister
Division B: Stephen Rider
Division C: Amy Newell
Division D: Robert Culbertson III

Appointed

Monterey County: Javier Zamora
Santa Cruz County: Tom Broz
Watsonville: Abel Sanchez

Staff

Brian Lockwood, General Manager

Nancy Trevino, Finance & Administrative Services Manager

Priscilla Sanchez, Financial Analyst

Laura Taay, Administrative Analyst/Board Secretary

Rocio Guerrero, Customer Service Representative

Lupe Lizaola, Accounting Clerk

Jesus “Chuy” Martinez, Water System Operations Supervisor

Shinehah Bigham, Water System Operator

Leonard Villanueva, Meter Program Coordinator

David Parra, Operations & Maintenance Technician

Jaime Marquez, Field Technician

Juan Cadenas-Santos, Maintenance Technician

Casey Meusel, Associate Hydrologist

Marcus Mendiola, Water Conservation & Outreach Specialist

Isabel Magana, Water Resources Technician