Pajaro Valley
Water Resources Management

Salinas Valley Basin GSA
Castroville Workshop

April 12, 2024

Brian Lockwood, PG, CHg
General Manager

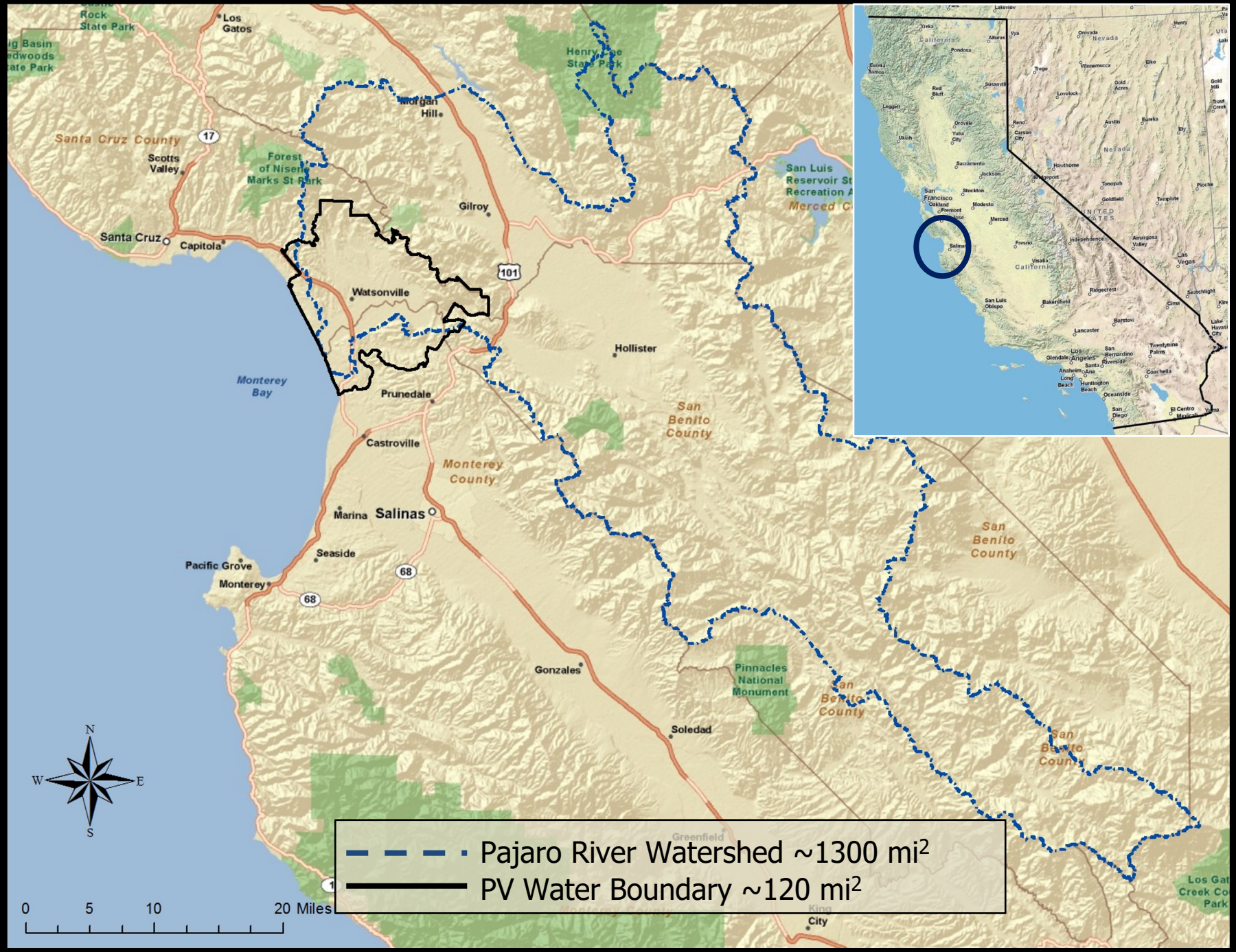
Pajaro Valley
Water Management Agency

Presentation Overview

- Acknowledgements
- Background
- State of the Basin
- Water Resources Management Activities

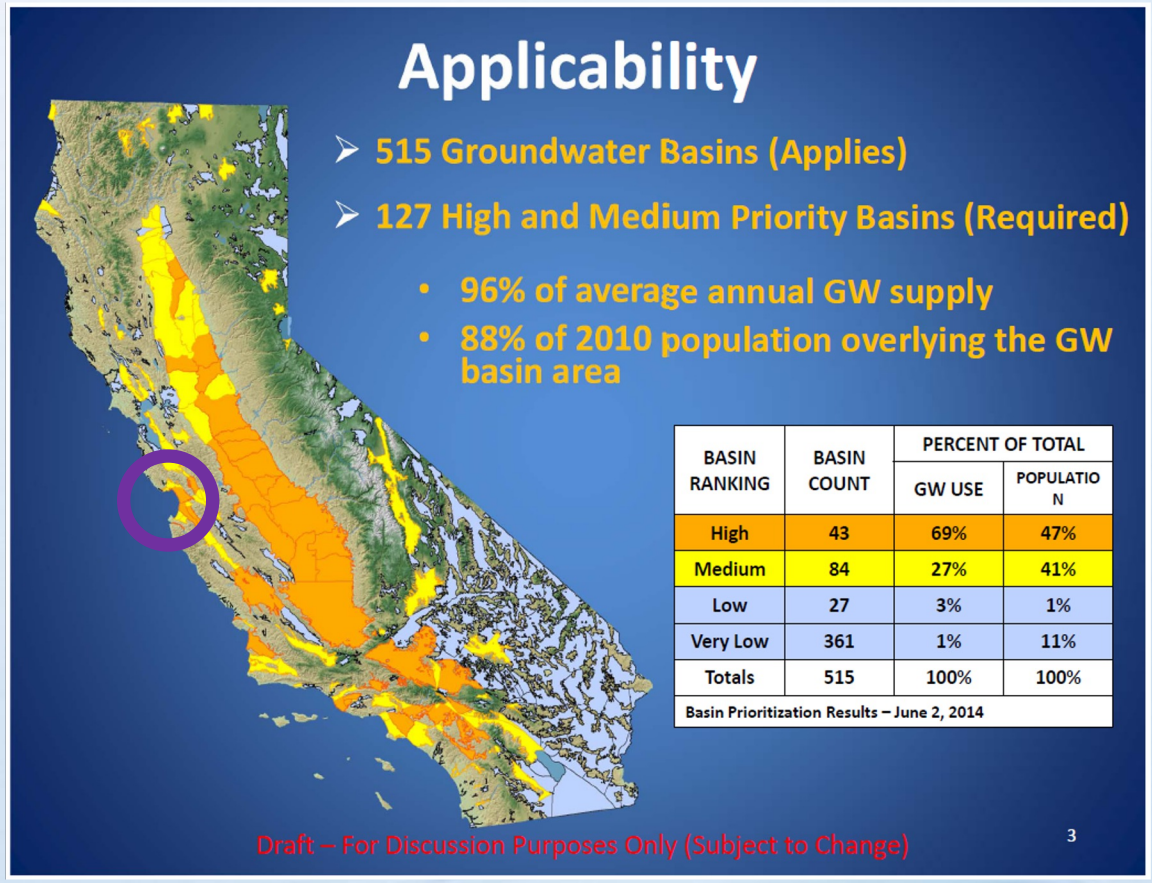
Pajaro Valley Water Management Agency

- Special District formed by the CA State Legislature in 1984
- Goals: Achieve Sustainable Groundwater Resources, Maintain Agriculture
- Multi-jurisdictional: City of Watsonville, parts of Santa Cruz, Monterey and San Benito Counties
- Basin Management Planning, Well Metering, Hydrologic Modeling, Supplemental Water, Conservation


Pajaro River Watershed ~1300 mi²
PV Water Boundary ~120 mi²
Santa Cruz County
Monterey Bay
Monterey County
San Benito County
Los Gatos
Morgan Hill
Scotts Valley
Gilroy
Santa Cruz
Capitola
Watsonville
Hollister
Prunedale
Castroville
Marina
Salinas
Seaside
Pacific Grove
Monterey
Gonzales
Soledad
Pinnacles National Monument
17
101
68
N
S
E
W
0
5
10
20 Miles

Sustainable Groundwater Management Act

- The Sustainable Groundwater Management Act (SGMA - September 2014) requires that high priority, critically overdrafted groundwater basins such as the Pajaro Valley Basin achieve sustainable groundwater resources by 2040.
- *If not, the State Water Resources Control Board has the authority to impose pumping restrictions to achieve sustainability*.

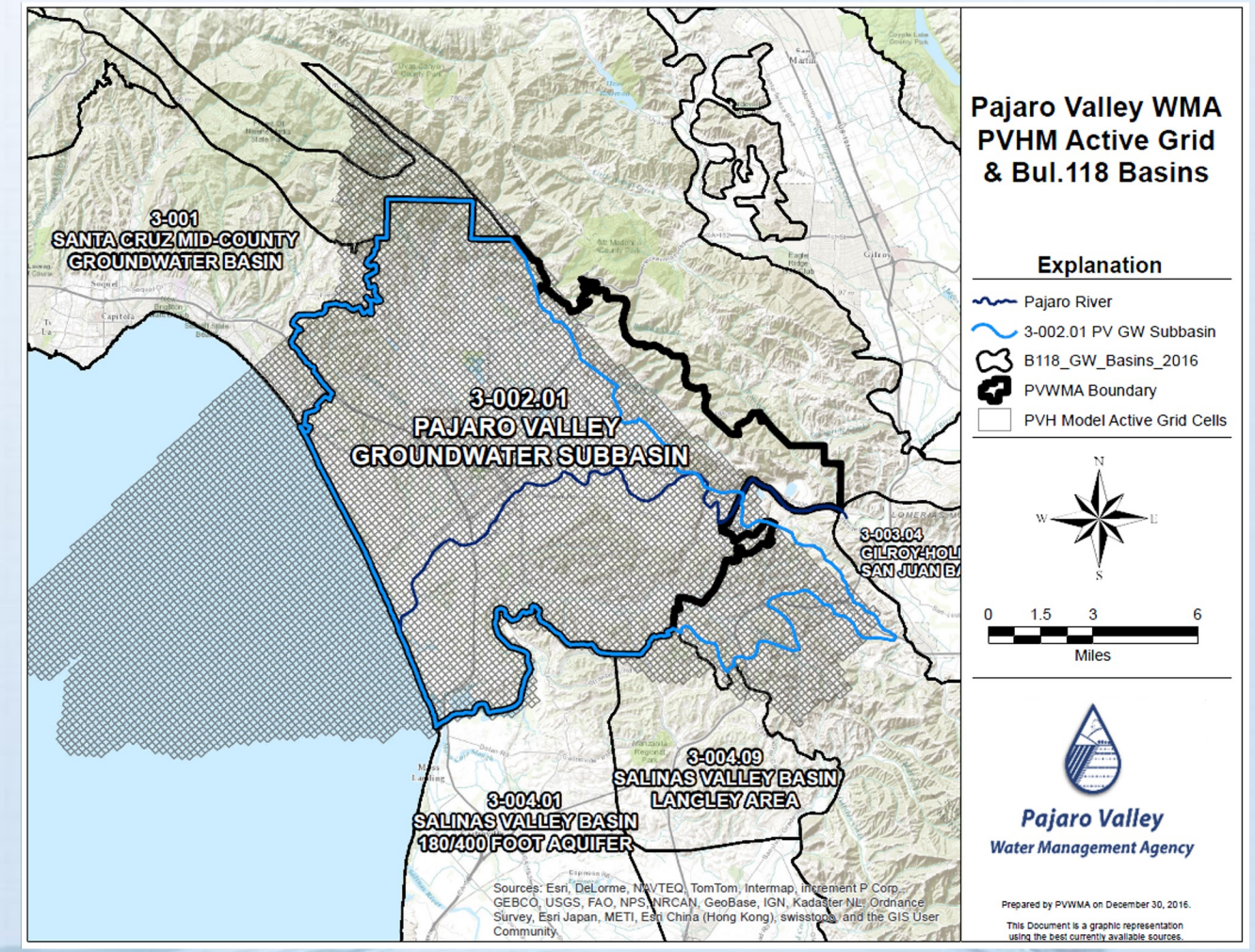


BASIN RANKING	BASIN COUNT	PERCENT OF TOTAL	
		GW USE	POPULATION
High	43	69%	47%
Medium	84	27%	41%
Low	27	3%	1%
Very Low	361	1%	11%
Totals	515	100%	100%

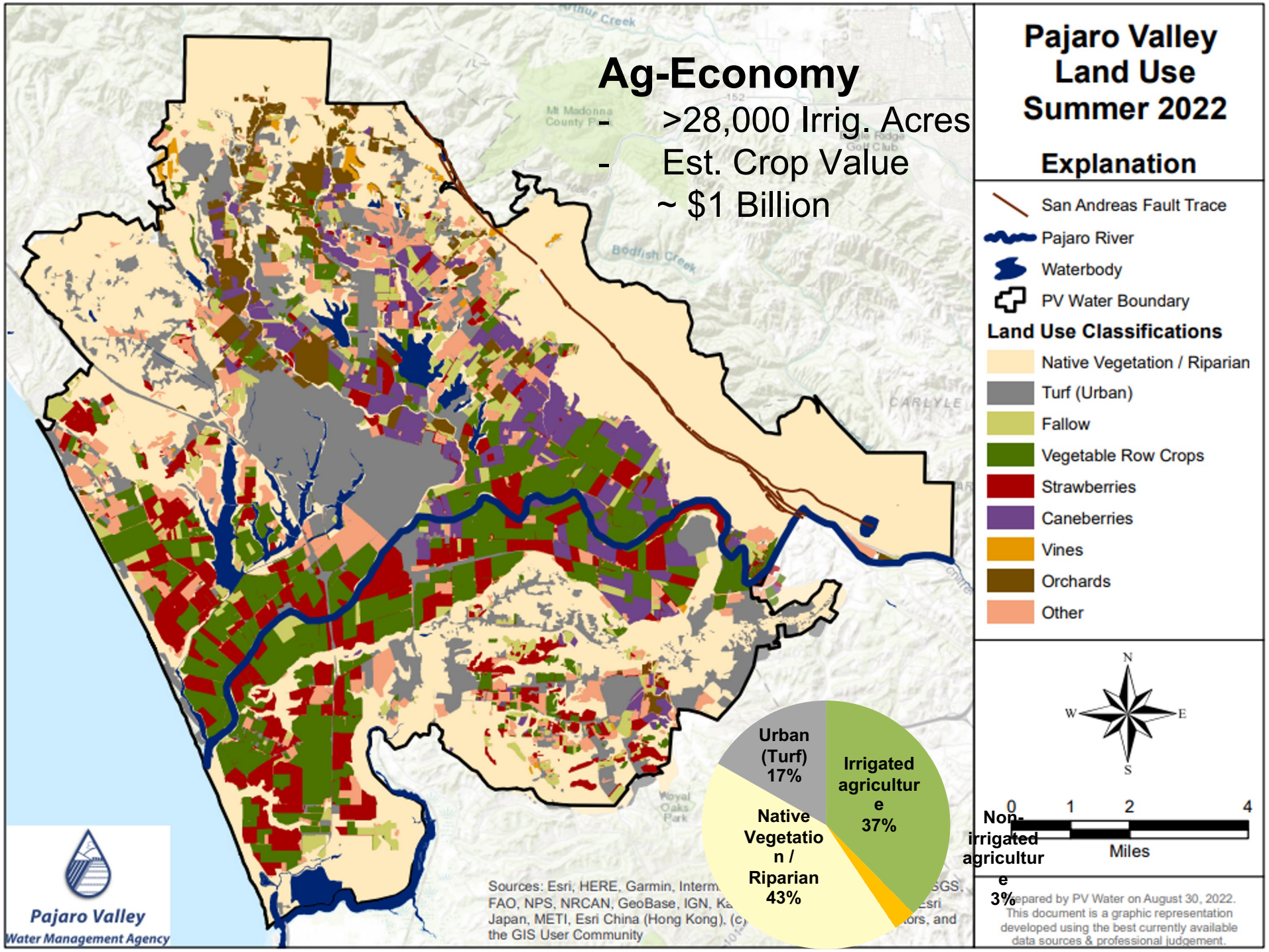
Basin Prioritization Results – June 2, 2014

Pajaro Valley Water & SGMA

- PV Water est. 30 years before SGMA
- Basin Management Plans (aka Plan to achieve Groundwater Sustainability) in 1993, 1999, 2002, 2014
- SGMA Adopted, Fall 2014
- Groundwater Sustainability Agency, Fall 2015
- Basin Boundary Modification, Spring 2016
- Groundwater Sustainability Plan - Alternative Submittal, Winter 2016, Annual Reports
- Alternative to GSP Approved, July 2019
- First 5-Year Plan Update, Dec. 2021



State of the Basin


Ag-Economy
- >28,000 Irrig. Acres
- Est. Crop Value
~ $1 Billion
Pajaro Valley
Land Use
Summer 2022
Explanation
San Andreas Fault Trace
Pajaro River
Waterbody
PV Water Boundary
Land Use Classifications
Native Vegetation / Riparian
Turf (Urban)
Fallow
Vegetable Row Crops
Strawberries
Caneberries
Vines
Orchards
Other
N
W
E
S
0 1 2 4
Miles
Urban (Turf) 17%
Irrigated agriculture 37%
Native Vegetation / Riparian 43%
Non-irrigated agriculture 3%
Pajaro Valley
Water Management Agency
Sources: Esri, HERE, Garmin, Interm
FAO, NPS, NRCAN, GeoBase, IGN, Ka
Japan, METI, Esri China (Hong Kong), (c
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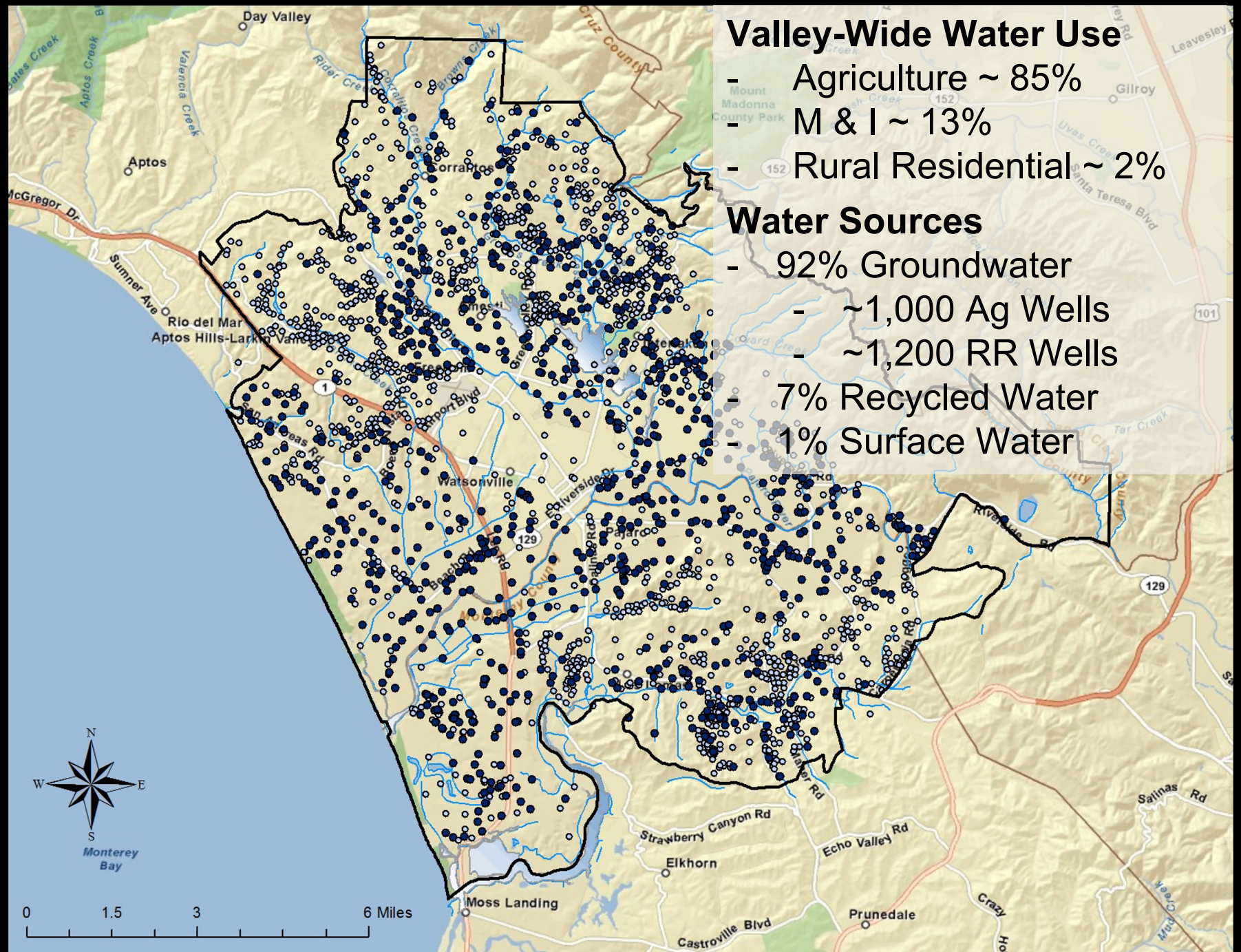
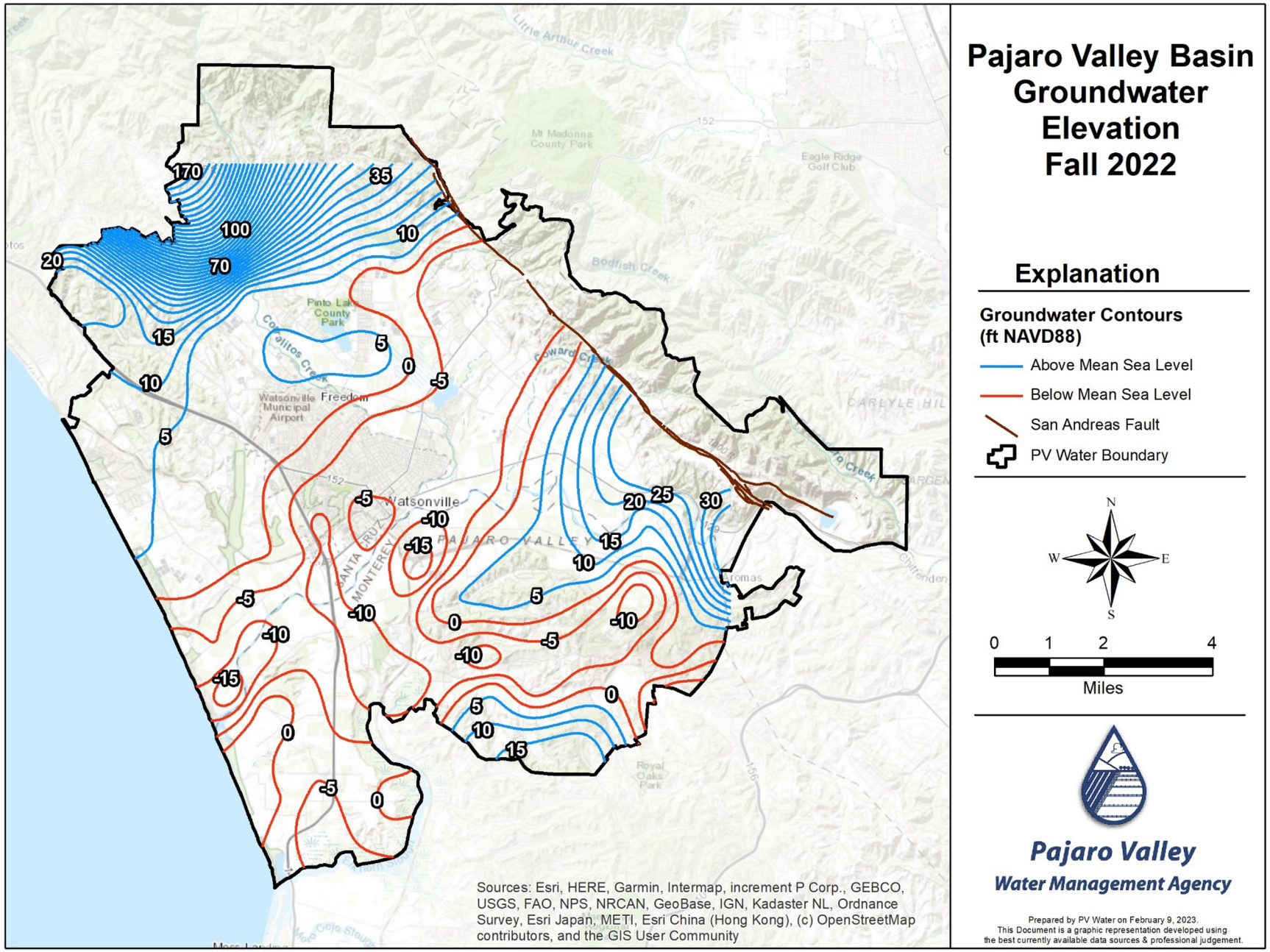

Valley-Wide Water Use
- Agriculture ~ 85%
- M & I ~ 13%
- Rural Residential ~ 2%
Water Sources
- 92% Groundwater
  - ~1,000 Ag Wells
  - ~1,200 RR Wells
- 7% Recycled Water
- 1% Surface Water
Day Valley
Aptos
Corralitos
Rio del Mar
Aptos Hills-Larkin Valley
Watsonville
Elkhorn
Moss Landing
Prunedale
Gilroy
Mount Madonna County Park
Monterey Bay
N
S
E
W
0
1.5
3
6 Miles


Pajaro Valley Basin Groundwater Elevation Fall 2022
Explanation
Groundwater Contours (ft NAVD88)
Above Mean Sea Level
Below Mean Sea Level
San Andreas Fault
PV Water Boundary
N
W
E
S
0 1 2 4
Miles
Pajaro Valley
Water Management Agency
Prepared by PV Water on February 9, 2023.
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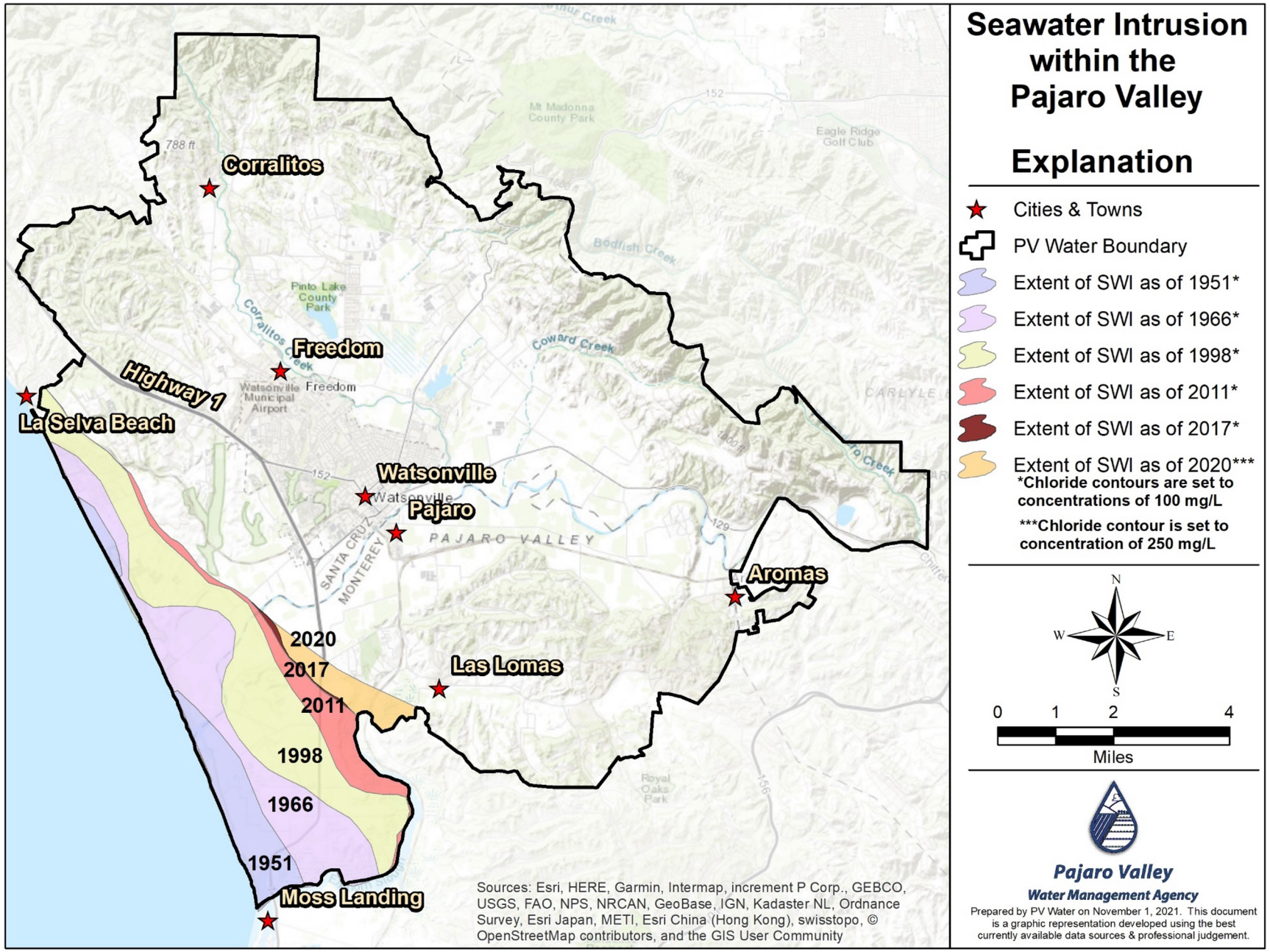
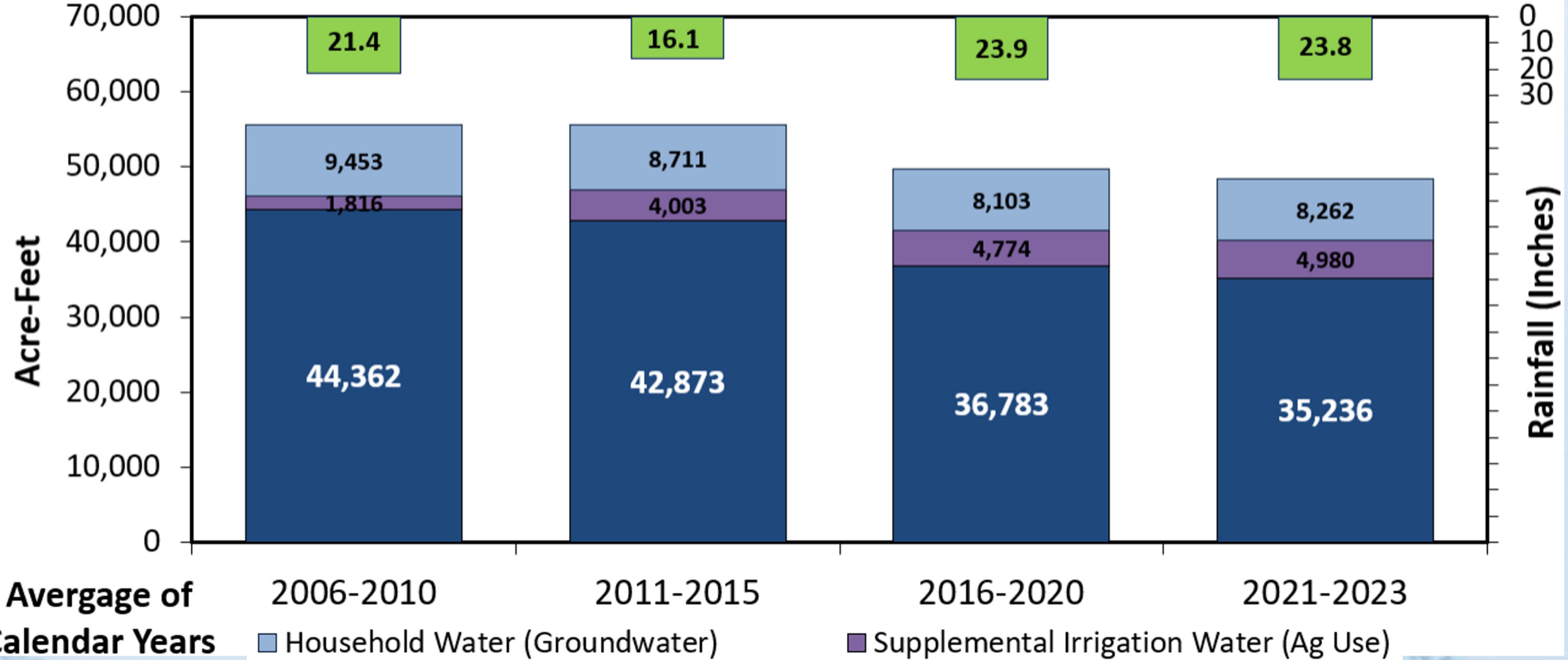
Watsonville
Freedom
Watsonville Municipal Airport
Pinto Lake County Park
Mt Madonna County Park
Eagle Ridge Golf Club
Bodfish Creek
Coward Creek
Corralitos Creek
Little Arthur Creek
Tomas
Royal Oaks Park
PAJARO VALLEY
SANTA CRUZ
MONTEREY
170
100
70
35
20
15
10
5
0
-5
-10
-15
20
25
30


Seawater Intrusion within the Pajaro Valley
Explanation
Cities & Towns
PV Water Boundary
Extent of SWI as of 1951*
Extent of SWI as of 1966*
Extent of SWI as of 1998*
Extent of SWI as of 2011*
Extent of SWI as of 2017*
Extent of SWI as of 2020***
*Chloride contours are set to concentrations of 100 mg/L
***Chloride contour is set to concentration of 250 mg/L
N
W
E
S
0 1 2 4
Miles
Pajaro Valley
Water Management Agency
Prepared by PV Water on November 1, 2021. This document is a graphic representation developed using the best currently available data sources & professional judgement.
Corralitos
Freedom
Highway 1
La Selva Beach
Watsonville
Pajaro
Aromas
Las Lomas
Moss Landing
2020
2017
2011
1998
1966
1951
PAJARO VALLEY
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

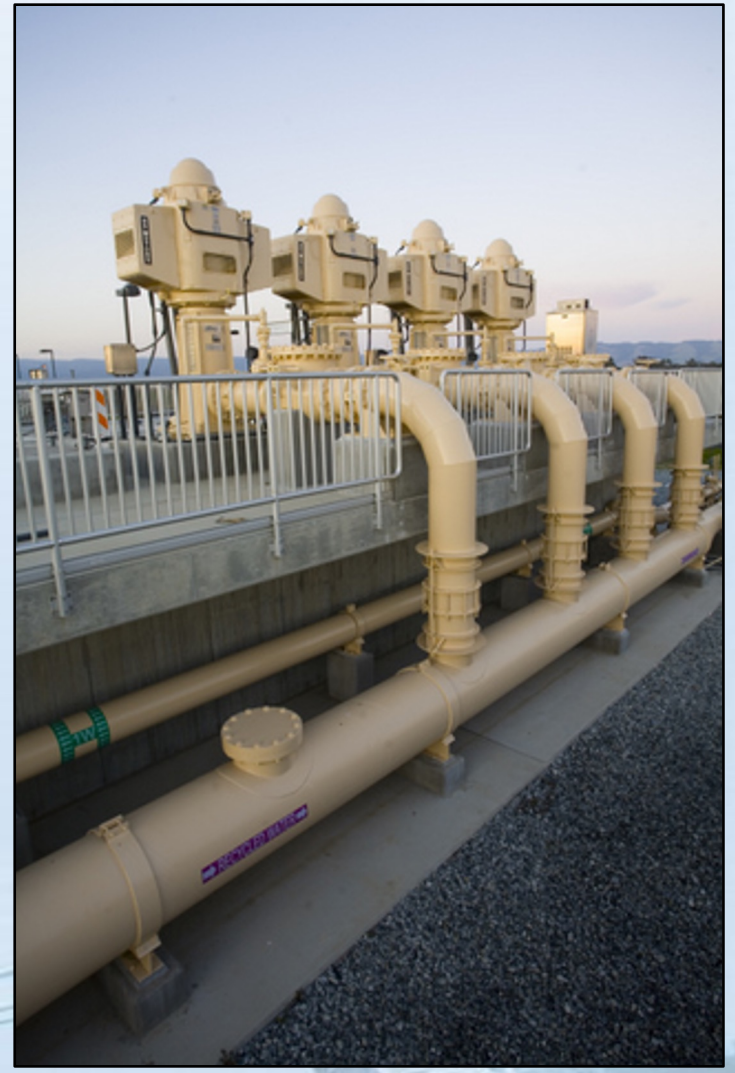
Water Use and Precipitation Trends
Pajaro Valley 2006 - 2023

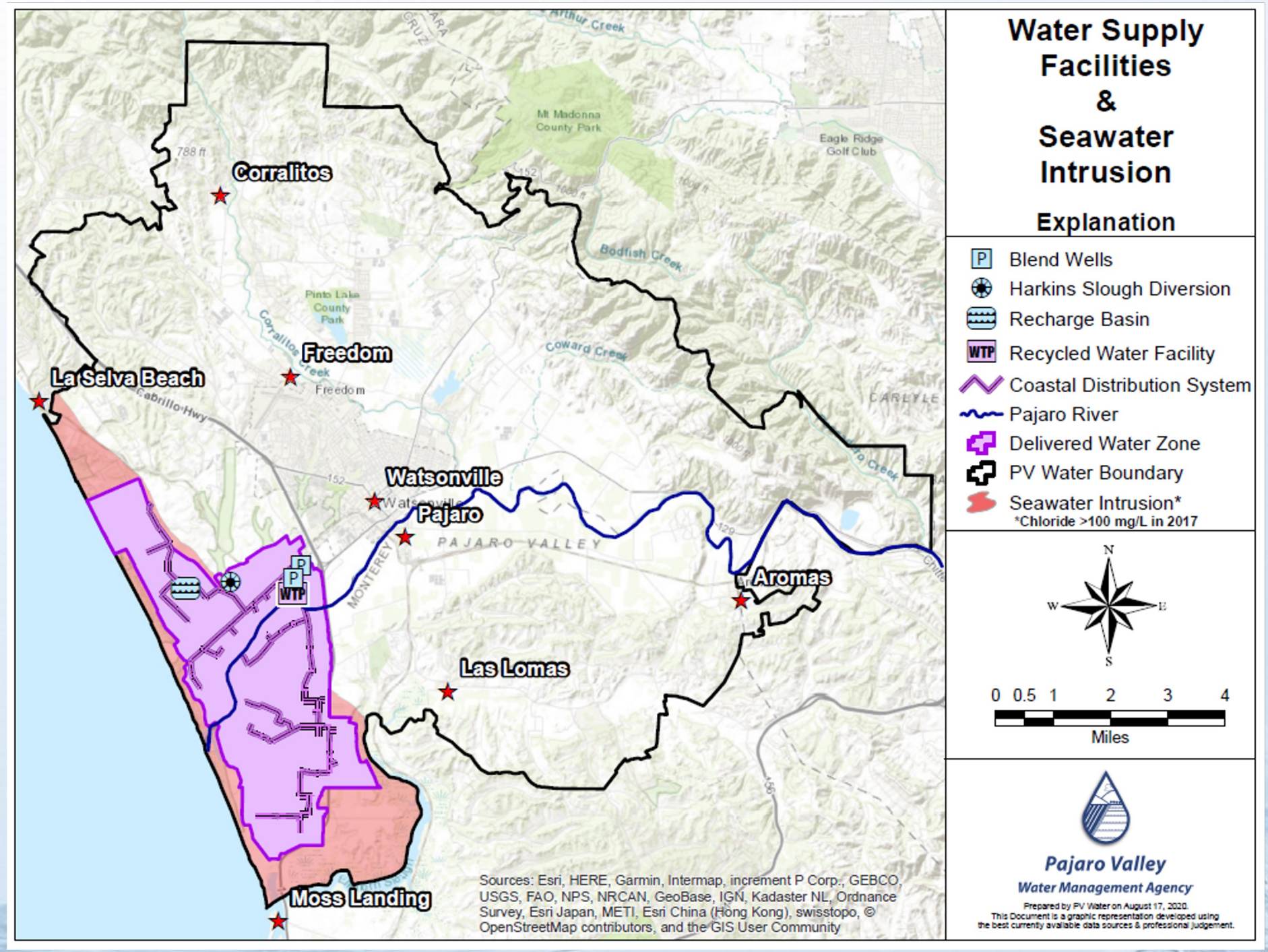


Water Resources Management Activities

Existing Water Supply Facilities to Reduce Overdraft & Seawater Intrusion

- **Harkins Slough Facility**
  - Managed Aquifer Recharge & Recovery
  - Stream flow diversion
  - 10,000 AF recharged since 2002
- **Recycled Water Facility**
  - 4,000 AFY irrigation season capacity since 2009
  - Drought tolerant supply
  - Reduces discharge of secondary effluent to marine sanctuary
- **Coastal Distribution System**
  - Over 23 miles of water conveyance pipeline
- **Blend Supplies**




Water Supply Facilities & Seawater Intrusion
Explanation
Blend Wells
Harkins Slough Diversion
Recharge Basin
Recycled Water Facility
Coastal Distribution System
Pajaro River
Delivered Water Zone
PV Water Boundary
Seawater Intrusion*
*Chloride >100 mg/L in 2017
N
W
E
S
0 0.5 1 2 3 4
Miles
Pajaro Valley
Water Management Agency
Prepared by PV Water on August 17, 2020.
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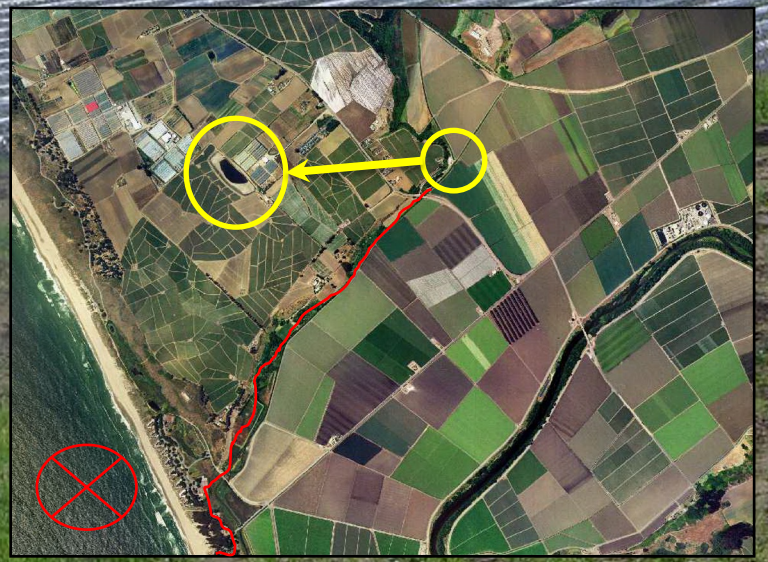
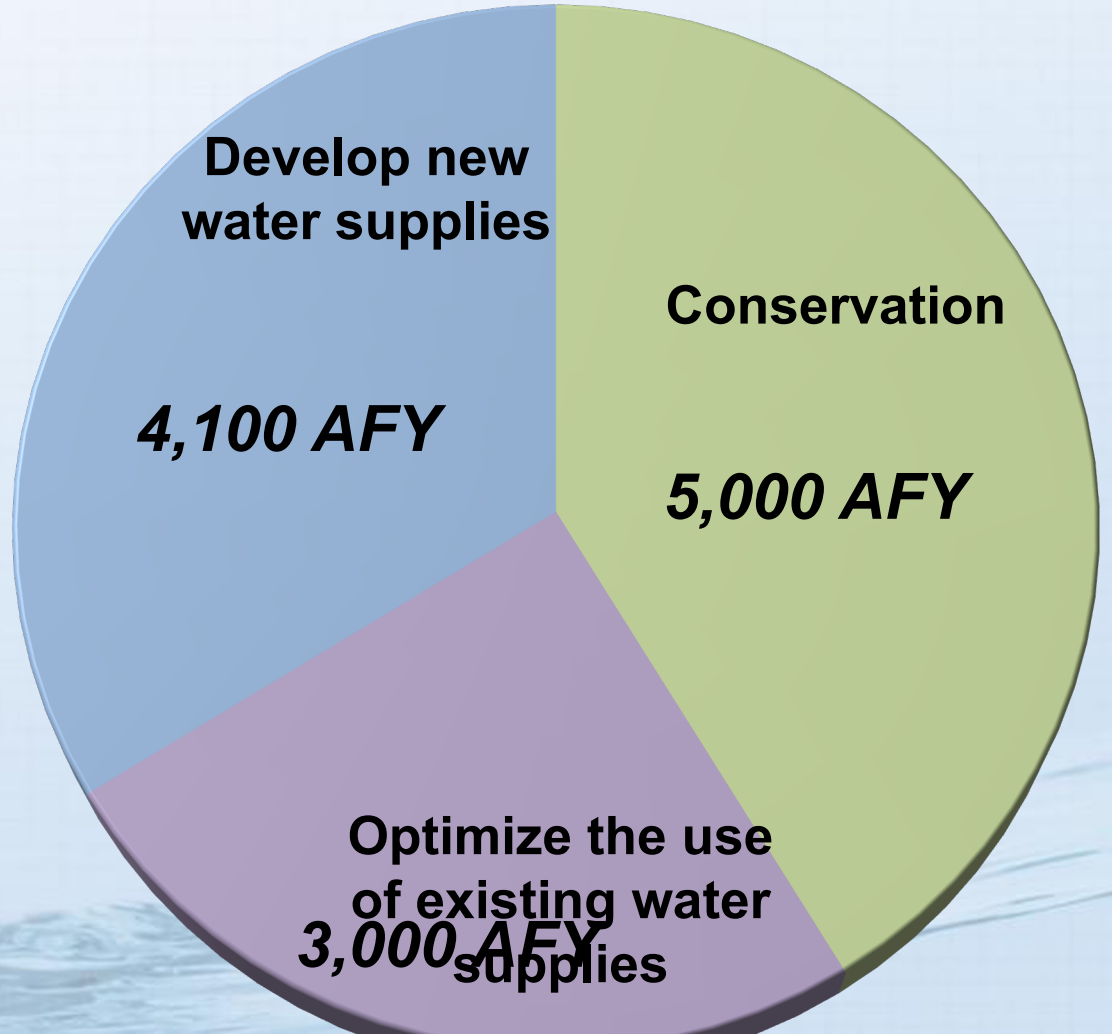
Corralitos
Freedom
La Selva Beach
Watsonville
Pajaro
Aromas
Las Lomas
Moss Landing
Mt Madonna County Park
Eagle Ridge Golf Club
Pinto Lake County Park
Bodfish Creek
Coward Creek
Corralitos Creek
Carlyle
Monterey
Pajaro Valley
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Harkins Slough Facility
Managed Aquifer Recharge
& Recovery



Recycled Water Facility

Basin Management Plan Update 2014
contains three primary components to achieve 12,100 ac-ft/yr



BMP Agricultural Water Conservation Program

- Irrigation Efficiency Technical Assistance
- Outreach & Education
- Financial Assistance
- Monitoring & Evaluation

**Participation is voluntary*

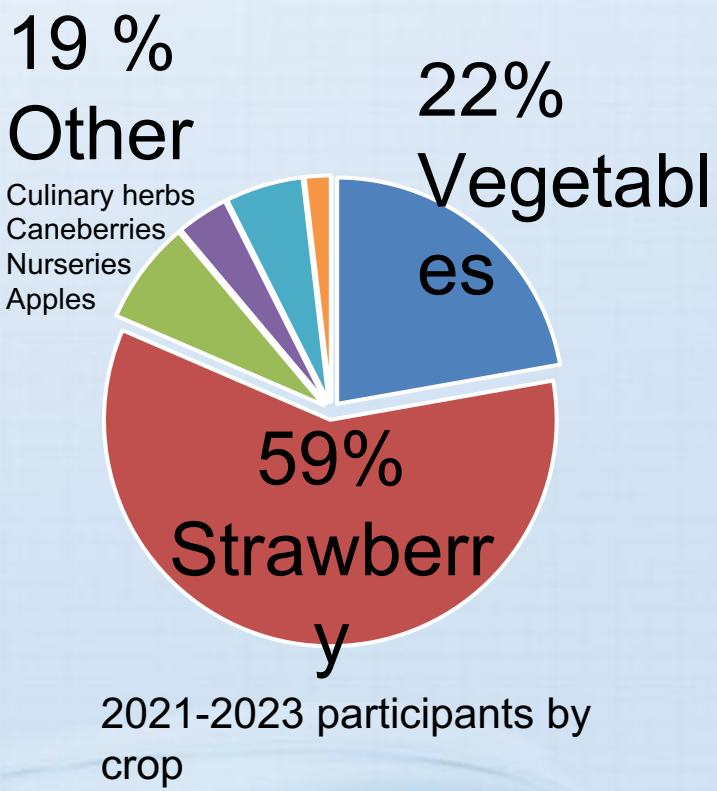
Pajaro Valley Water Management Agency

UC CE

Program Participation Is Increasing through Time

Program Participation	2019-2020	2021-2023
No. Farm Operations (growers)	19	**38**
No. Ranches (monitoring sites)	26	**52**
Total Acres	1,008	**1,494**
Percentage of ranches <40ac	58%	**76%**
No. Rebate Requests processed	4	**27**
Total $$ rebate requested	$16,875	**$108,330**
Drip irrigation participants (%)	73%	**72%**
Sprinkler irrigation participants (%)	27%	**22%**

**Program participants remain anonymous until they elect to receive a rebate.*



2021-2023 participants by crop

2020-2023 Grower Rebate Program

Implementation of new practices

Efficient sprinkler heads

Sprinkler check valves

Pressure regulators

Flowmeters & telemetry

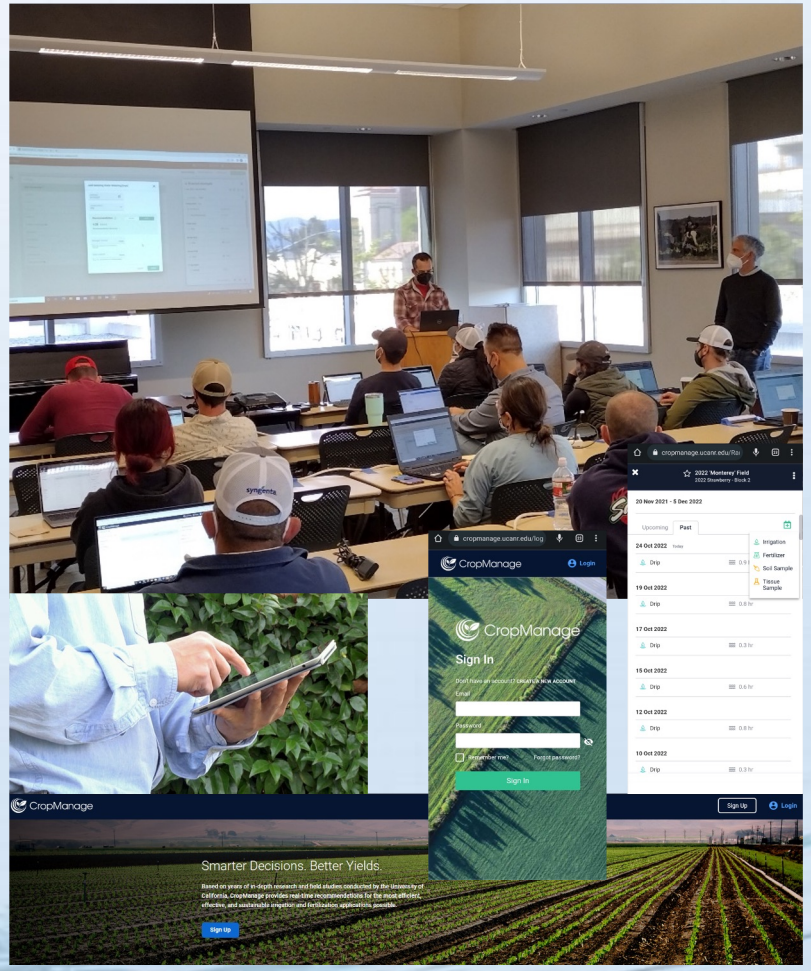
A total **$125,205** in grower rebate requests processed since 2020

Rebates have been used for: windfighter sprinklers, new sprinkler heads and raisers, aluminum pipe joints and gaskets, pressure regulators, check valves, flush valves, flowmeters and telemetry, drip irrigation trials for vegetables, nurseries and orchard operations, PC drip tape and drip irrigation supplies, VFDs, VFD booster pump for storage tanks, soil tensiometers, and glued PVC sprinkler system for use under high tunnels.

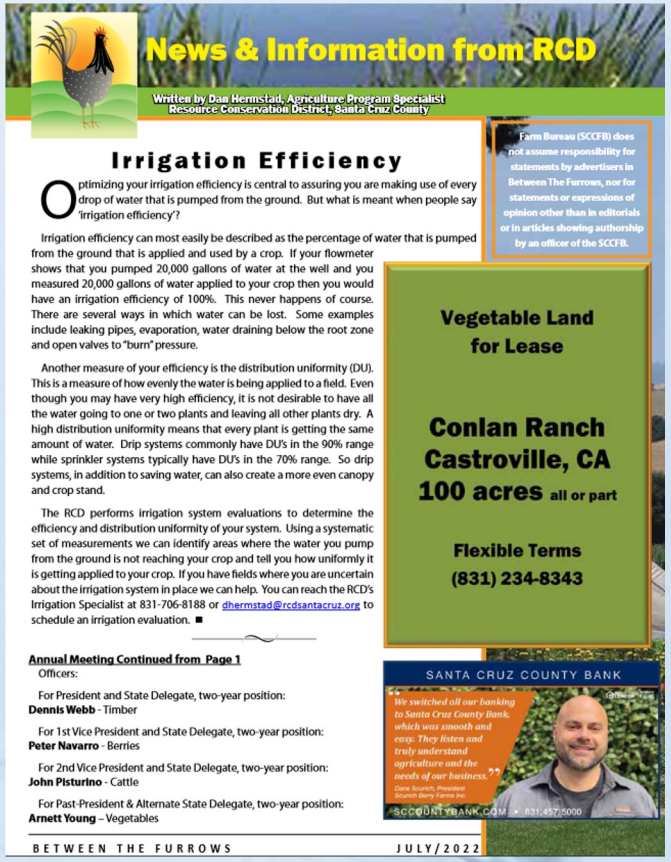
Outreach and Education

Irrigator trainings in Spanish

CropManage workshops



Newsletter articles



News & Information from RCD

Written by Dan Hernstad, Agriculture Program Specialist
Resource Conservation District, Santa Cruz County

Irrigation Efficiency

Optimizing your irrigation efficiency is central to assuring you are making use of every drop of water that is pumped from the ground. But what is meant when people say 'irrigation efficiency'?

Irrigation efficiency can most easily be described as the percentage of water that is pumped from the ground that is applied and used by a crop. If your flowmeter shows that you pumped 20,000 gallons of water at the well and you measured 20,000 gallons of water applied to your crop then you would have an irrigation efficiency of 100%. This never happens of course. There are several ways in which water can be lost. Some examples include leaking pipes, evaporation, water draining below the root zone and open valves to "burn" pressure.

Another measure of your efficiency is the distribution uniformity (DU). This is a measure of how evenly the water is being applied to a field. Even though you may have very high efficiency, it is not desirable to have all the water going to one or two plants and leaving all other plants dry. A high distribution uniformity means that every plant is getting the same amount of water. Drip systems commonly have DU's in the 90% range while sprinkler systems typically have DU's in the 70% range. So drip systems, in addition to saving water, can also create a more even canopy and crop stand.

The RCD performs irrigation system evaluations to determine the efficiency and distribution uniformity of your system. Using a systematic set of measurements we can identify areas where the water you pump from the ground is not reaching your crop and tell you how uniformly it is getting applied to your crop. If you have fields where you are uncertain about the irrigation system in place we can help. You can reach the RCD's Irrigation Specialist at 831-706-8188 or dhermstad@rcdsantacruz.org to schedule an irrigation evaluation. ■

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Castroville, CA
100 acres all or part

Flexible Terms
(831) 234-8343

SANTA CRUZ COUNTY BANK

We switched all our banking to Santa Cruz County Bank, which was smooth and easy. They listen and truly understand agriculture and the needs of our business.

Dane Scurich, President
Scurich Berry Farms Inc

SCCOUNTYBANK.COM • 831.457.5000

Annual Meeting Continued from Page 1

Officers:

For President and State Delegate, two-year position:
Dennis Webb - Timber

For 1st Vice President and State Delegate, two-year position:
Peter Navarro - Berries

For 2nd Vice President and State Delegate, two-year position:
John Pisturino - Cattle

For Past-President & Alternate State Delegate, two-year position:
Arnett Young – Vegetables

BETWEEN THE FURROWS JULY/2022

Leverage experience and technical expertise from our UCCE partners

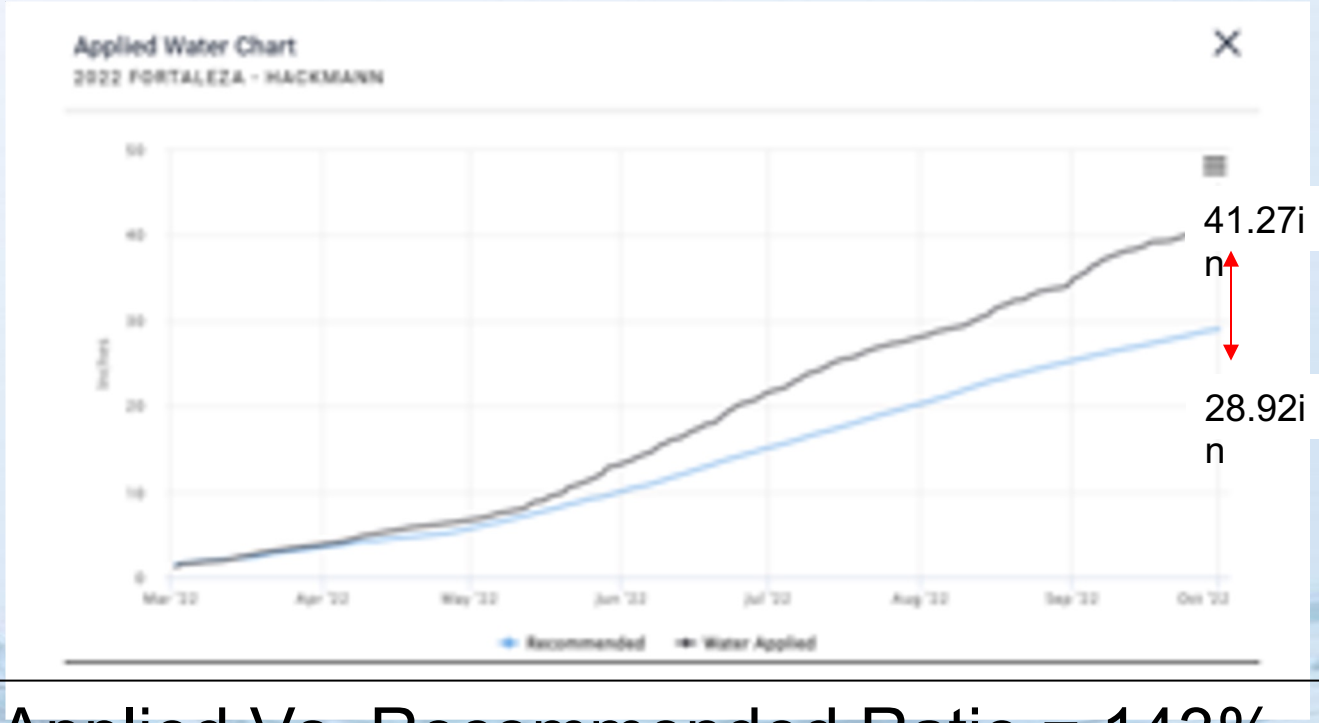
One Example: Individual participant's performance and change over 2 seasons

Example of grower response and improvement

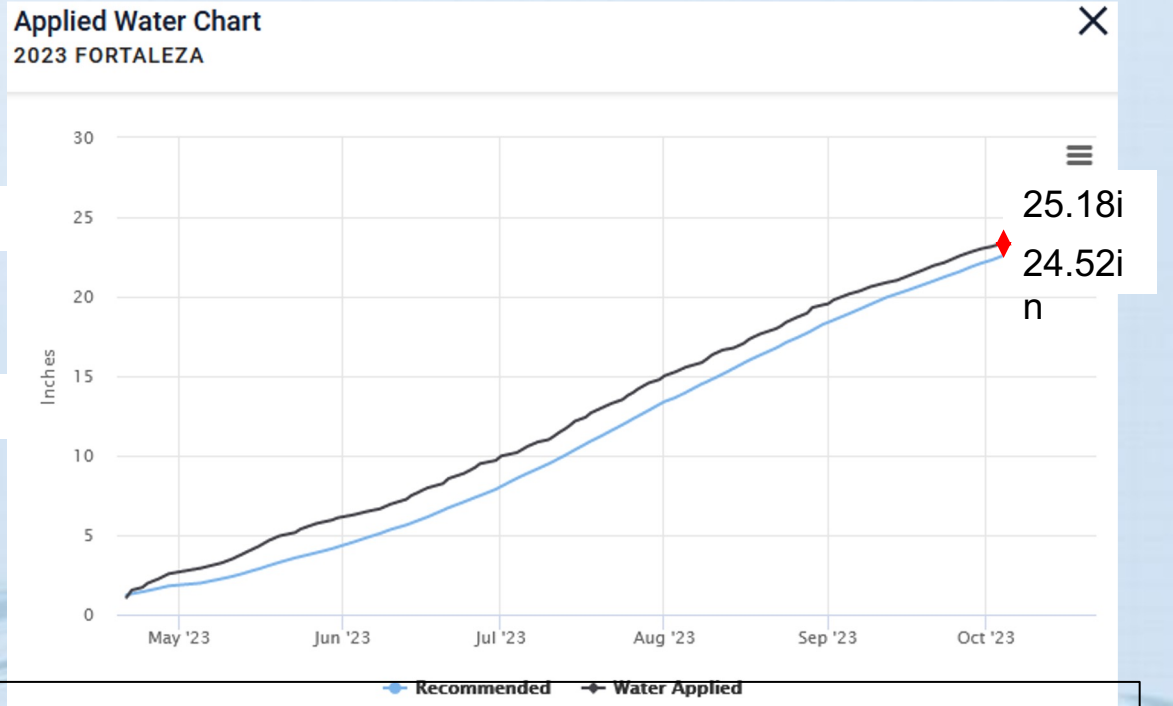
Same ranch and crop, two different years

(Strawberry, Drip)

2022



2023



Applied Vs. Recommended Ratio = 143%

Applied Vs. Recommended = 103%

Recycled Water Facility Optimization

- Grant Funded Projects
  - DWR, SWRCB, BoR
  - ~$10 million in total
- Phase 1: Storage (1.5 MG Tank) and Pump Station Improvements (~2016)
- Phase 2: Disk Filter Upgrade (~2020)

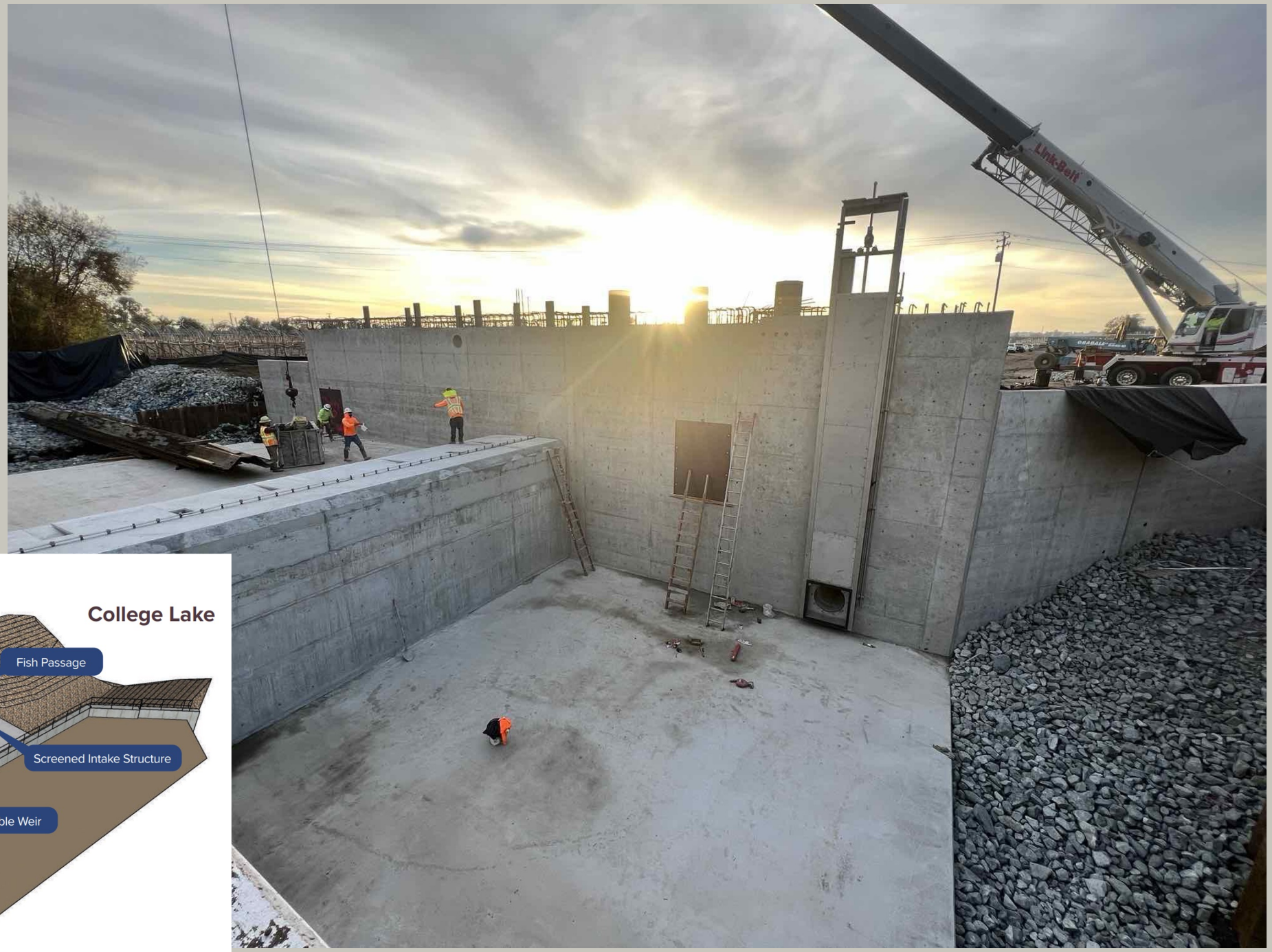
Coastal Distribution System F-Pipeline Expansion Project

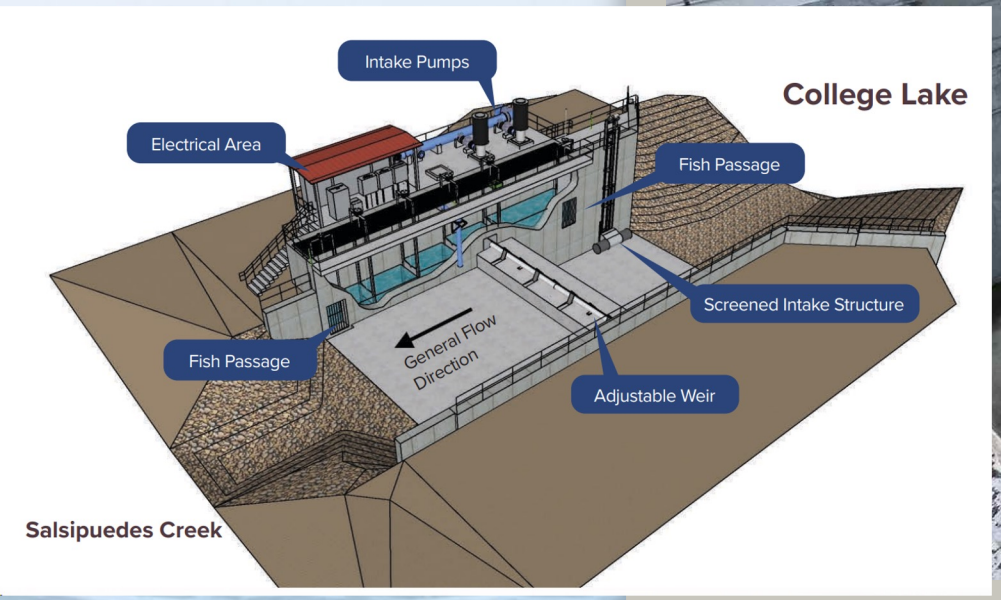
- DWR Proposition 84 Grant Funded Project: $3.73 million
- Constructed summer 2020 during COVID-19 pandemic shelter-in-place
- Pipeline: 9,900 lineal feet of pipe ranging in diameter from 10 to 30 inches
- Turnouts: 6 turnouts to reach as much as 700 irrigated acres

College Lake Integrated Resources Management Project

- Water Supply
  - Est. Average Yield: 1,800 to 2,300 AFY
  - Maximum Yield: 3,000 AFY
  - Maximum Flow: 6,000 GPM
- Construction
  - Two Years (2023-2025)
  - College Lake Project Facilities:
    - Weir
    - Fish Passage Structure
    - Water Treatment Plant
    - Pipeline to Coastal Distribution System

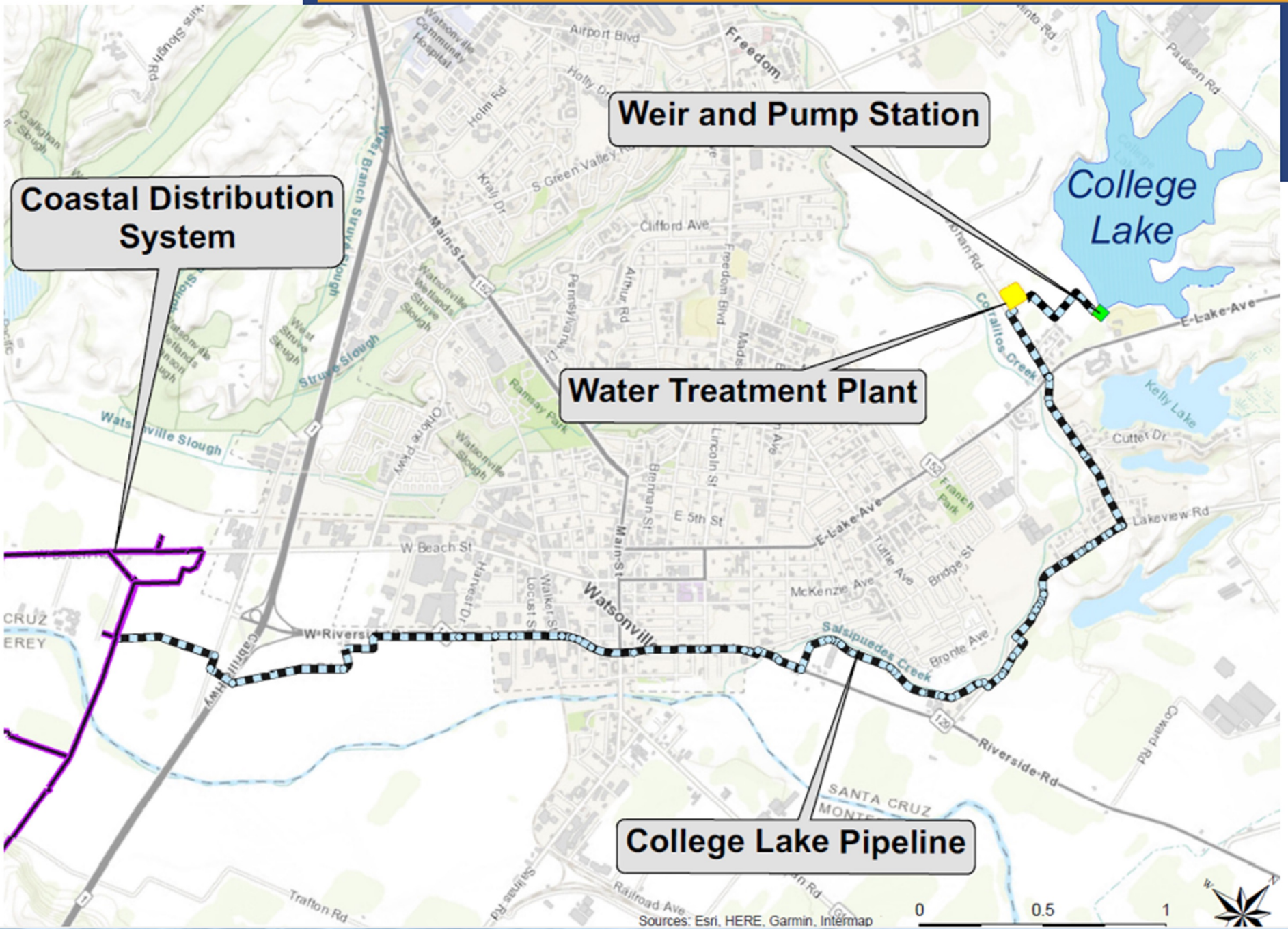
Weir & Intake Facility December 2024





Water Treatment Plant, February 20, 2024

Pipeline Route - 6 miles



Traffic management during construction on the following roads:

- Holohan Rd
- East Lake Ave
- College Rd
- Lakeview Rd
- Riverside Rd/ HWY129
- All intersections of the above roadways

Pipeline Construction

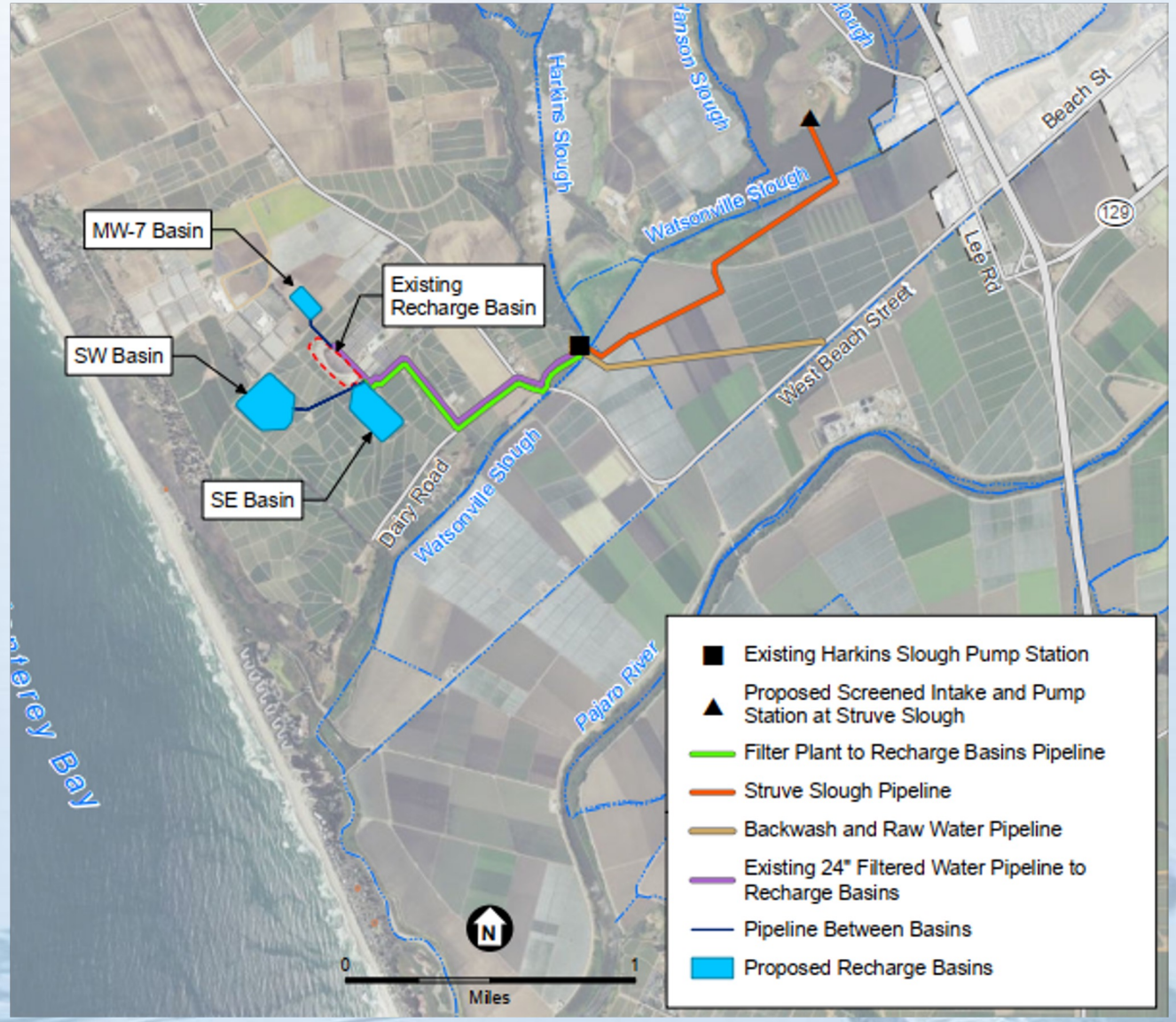
Holohan Road, June 2023

Holohan Road, July 2023

Lakeview Road, Aug. 2023

Watsonville Slough System Managed Aquifer Recharge and Recovery Projects

- Harkins Slough Facilities Upgrade Project
- Struve Slough Project
- Goals:
  - Diversion, recharge & recovery of up to 4,000 AFY



Thank you.

Comments / Questions?
Email: Lockwood@pvwater.org
Website: www.pvwater.org

Protecting the future of the Pajaro Valley
COLLEGE LAKE
WATER SUPPLY PROJECT
pvwater.org

College Lake Guide

College Lake Webage

Rates to Fund Management Actions

User Class	Cost of Service Rate Effective Dec. 1, 2023 (Per Acre-Foot)	Cost of Service Rate Effective Dec. 1, 2024 (Per Acre-Foot)
Augmentation Charges: Metered Users - Outside Delivered Water Zone	$302	$323
Metered Users - Inside Delivered Water Zone	$420	$452
Unmetered Users (Rural Residential)*	$142	$152
Delivered Water Charge	$454	$477

**Rural residents are billed for an estimated 0.5 af/year water use.*

Source: https://www.pvwater.org/rates

- Established by Ordinances 2021-01 & 2021-02, modified by 2022-01
- 2021 Cost of Service Rate Study:

  https://www.pvwater.org/images/2021-Cost-of-Service-Rate-Study-Final_Feb.2021_Final.pdf