Sonoma Water and City of Petaluma

NORTH BAY WATER REUSE AUTHORITY PHASE II PROJECT

CITY OF PETALUMA – TERTIARY RECYCLED WATER EXPANSION – MARCH 24, 2025

JOSH MINSHALL, SENIOR CIVIL ENGINEER

North Bay Water Reuse Program (NBWRP) History

- Includes 11 municipal, water and wastewater agencies
- Created in 2002 with the purpose of developing and distributing recycled water
- Multiple feasibility Studies completed (Phase 1 and Phase 2) to identify recycled water projects
- Grant funding through Bureau and Reclamation and IRWM (Prop 84 & Prop 1)

RW Program Overview

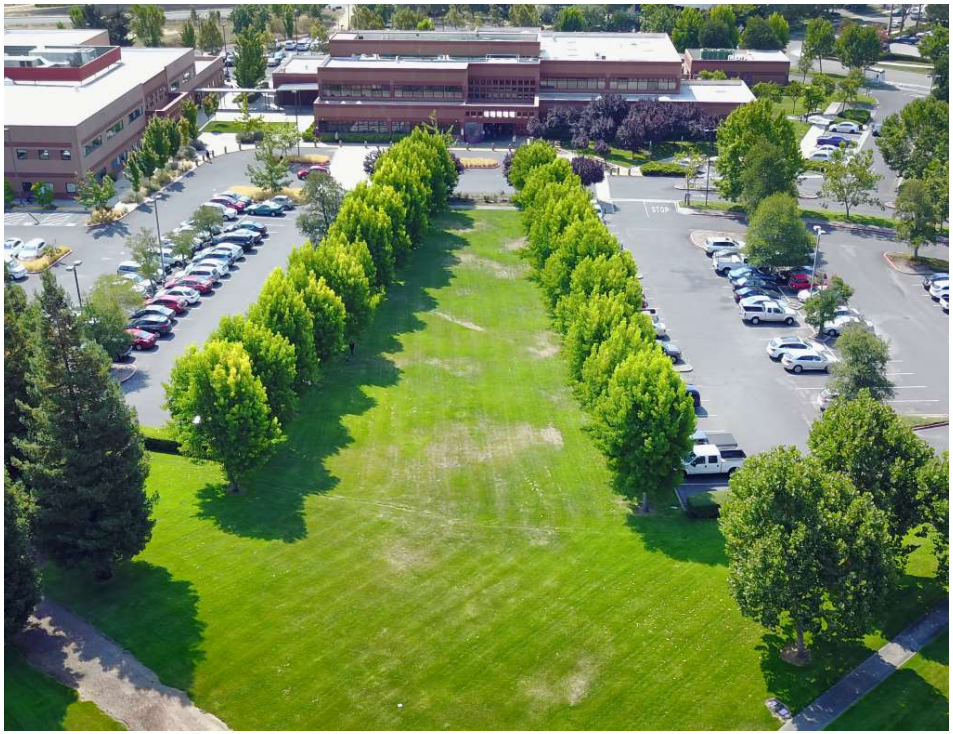
Ellis Creek Water Recycling Facility (Ellis Creek WRF) opened in July 2009

Provides tertiary treatment via filtration and UV disinfection

Allows for landscape irrigation of golf courses, schools, parks, businesses, agriculture, and for in-plant uses at WWTP

2021 (drought) Annual recycled water production - 780 MG

2023 Annual recycled water production - 503 MG



RW Program Goals

Expand recycled water service to urban and agricultural customers to:

- Reduce demands on potable water supplies
- Reduce effluent discharges to the Petaluma River
- Improve regional water supply reliability by reducing reliance on groundwater and surface water
- Provide local supply to meet water demand
- Generate revenue to support recycled water system operations

Program History

First recycled water customer - agricultural (ag) irrigation in 1976

Expansion beginning 1984 to meet May 1-October 20 discharge prohibition

- Ag, vineyard, golf course, and landscape irrigation

North Bay Water Reuse Authority (NBWRA) – Phase 2 Program Feasibility Study (2017)

- Tertiary Treatment Expansion (4.68 mgd – 6.8 mgd)
- Urban Expansion – parks, schools, business, and public landscape irrigation
- Ag Expansion – vineyards, agricultural irrigation

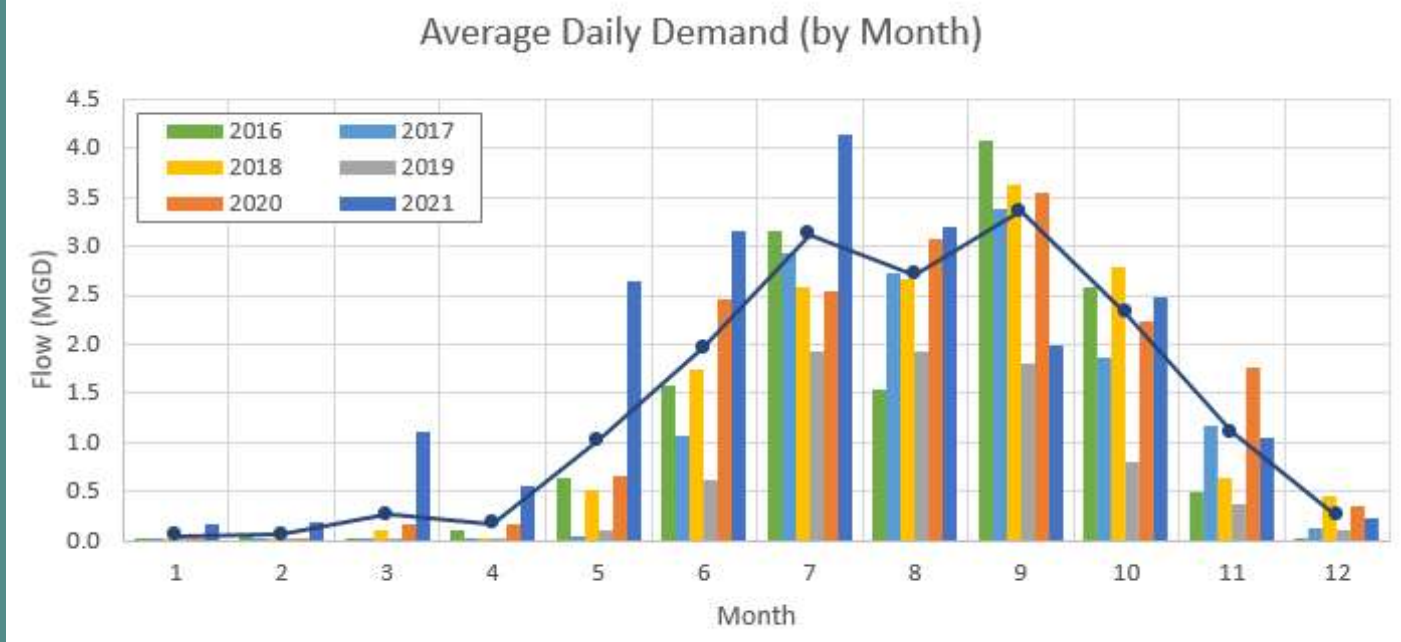
Pre-Project System

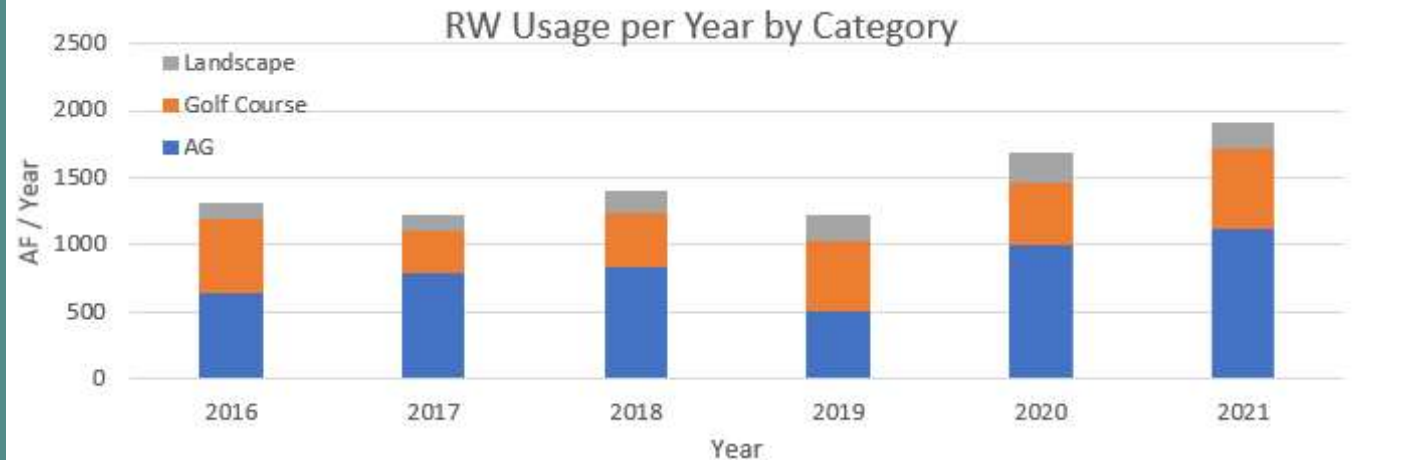
Typical peak in August

All demand is from irrigation; no non-irrigation demand currently served

Majority of demand served is outside of City boundary

Direct potable offset is currently about 65 MG/year or 9.7% of total recycled water demand (3% of total potable demand)





Recycled Water Program Expansions

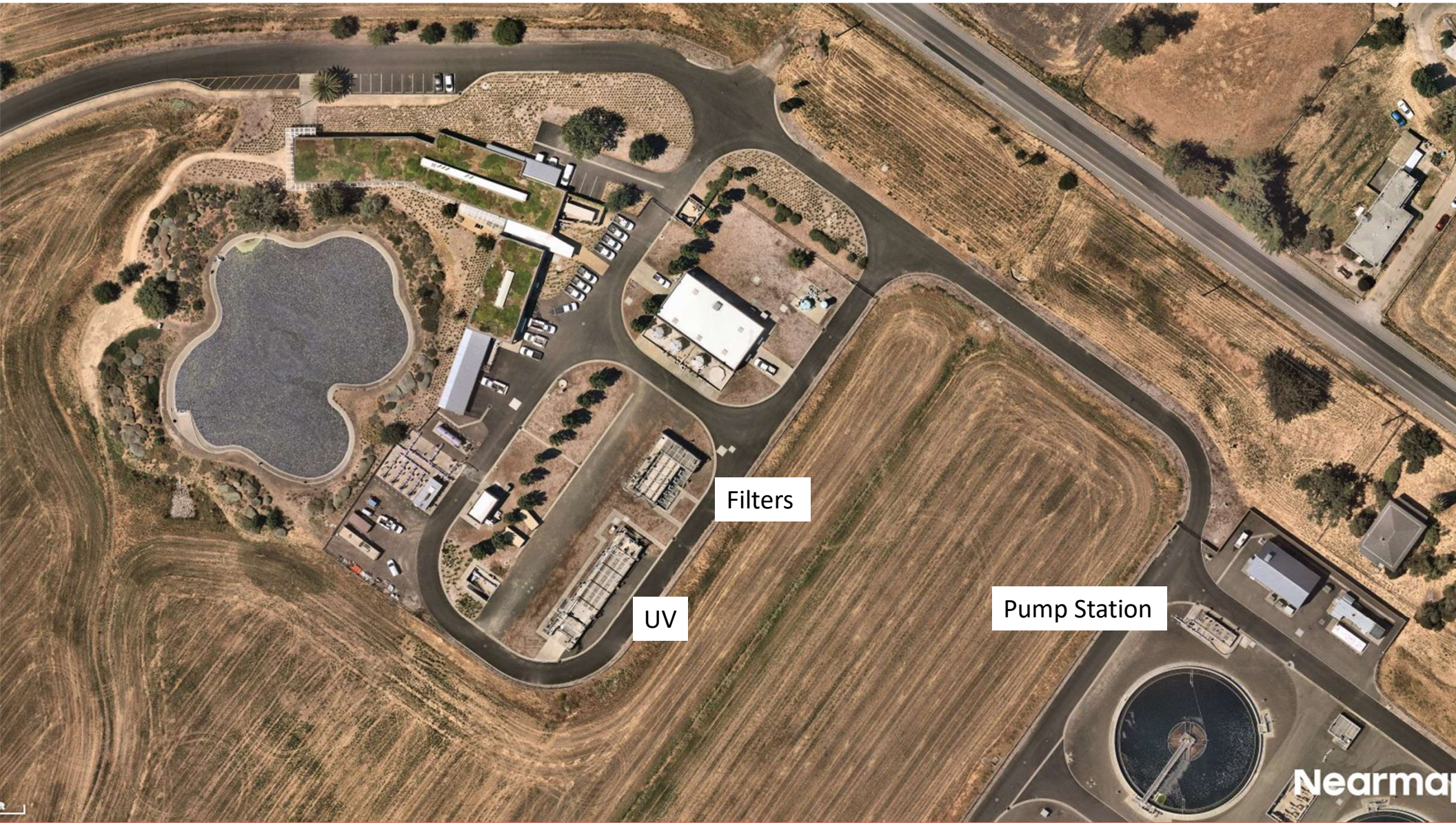
Additional system capacity 712 AFY

Additional distribution 378+ AFY

Project	Project Description	Target Completion Date	Project Yield
Urban Expansion	Add 3 sections (6,700 LF total) of pipeline to an existing pipeline to serve additional parks, schools, businesses and landscape areas.	2026	78 AFY
Ag Expansion	Extend ag pipeline (14,000 LF) for vineyard irrigation	2026	300 AFY
Tertiary Treatment Capacity Upgrade	Upgrade to existing WWTP to increase tertiary filtration and disinfection design capacity by 2.12 mgd	2025	712 AFY

Grant Funding

Project	Project Cost	Grant Funding Source	Grant Amount
Urban Expansion	$3.218 M	2021 Reclamation Title XVI (NBWRA)	$804,427
		DWR SGMA Implementation (2023)	$2.6 M
Ag Expansion	$5.608 M	2021 Reclamation Title XVI (NBWRA)	$1.4 M
		2021 DWR UMBDR	$3.2 M
Tertiary Treatment Capacity Upgrade	$18.865 M	2021 Reclamation Title XVI (NBWRA)	
		2019 DWR Prop 1 (NBWRA)	**$3.6 M**
Urban Recycled Water System Expansion (Completed)	$2.64 M	2017 SWRCB Prop 1	$870,030
Recycled Water Facilities Planning (IWMP)	$452,623	SWRCB WRFP (2022)	$226,311
TOTAL			**$16.42 M**


Filters
UV
Pump Station

Previous UV System

- Two Channels
- Gen 1 Equipment

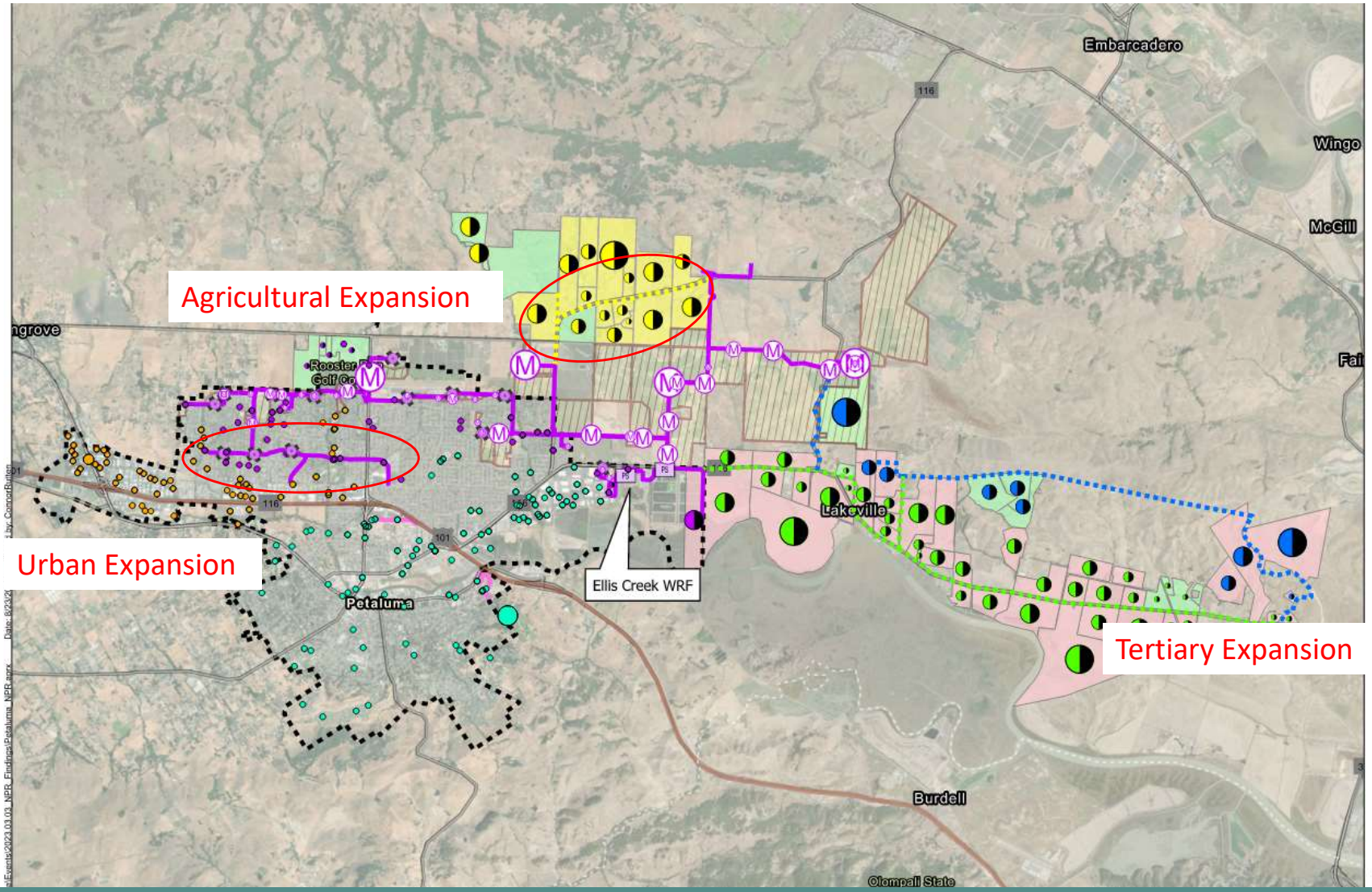
Expanded and Improved UV System

- Third Channel Activated
- All New UV Modules
- Protective Canopy


Cloth Filters
Sand Filters
n Jun 16 2024
gery © 2025 Nearmap, HERE
20 ft

New Cloth Filters

- Capacity
- Gravity Flow
- Reduced Power Consumption
- Less Backwash Waste
- Fewer Consumables
- Redundancy


Agricultural Expansion
Urban Expansion
Tertiary Expansion
Ellis Creek WRF
Petaluma
Lakeville
Burdell
Embarcadero
Wingo
McGill
Rooster Golf Co
Olompali State
Legend
Demand (AFY)
<10
10-20
20-50
50-100
>100
Potential Users by Region
Served By:
Existing (Urban)
Existing (Ag)
Urban North
Urban South
Adobe
Lakeville
Community Workshop Alignment
Existing Demand
Pump Station
Recycled Water Mains
Inactive RW Mains
City Limit
Existing RW Users
Miles
Kennedy Jenks
City of Petaluma

Program Future: Integrated Water Master Planning

In response to anticipated water supply challenges, the City is exploring:

Recycled Water:

- Additional non-potable reuse: urban and ag irrigation, dual-plumbing
- Recycled water storage for additional reuse
- Potable reuse options (IPR/DPR)

Groundwater:

- Groundwater banking (local & regional)
- Treatment of existing municipal groundwater wells

Other:

- Brackish Groundwater Desalination (regional)
- Stormwater capture, storage, and treatment

Expansion Challenges & Considerations

Challenges:

- Recycled Water Rates
  - Current rate is $2.40/HCF – all users
  - Cost effectiveness
  - Historic ag customers – highest demand with lowest cost of service, no potable offset
- Pipeline Expansion
  - Expand across Petaluma River to serve additional customers

Considerations:

- Review Recycled Water Rates
  - Urban rate
  - Ag rate
  - Seasonal ag rate to encourage off-season storage
- Integrated Water Master Planning
  - Review all water supply development opportunities and cost effectiveness, including NPR expansion

THANK YOU

Josh Minshall
jminshall@cityofpetaluma.org

Brad Elliott
Bradley.Elliott@scwa.ca.gov