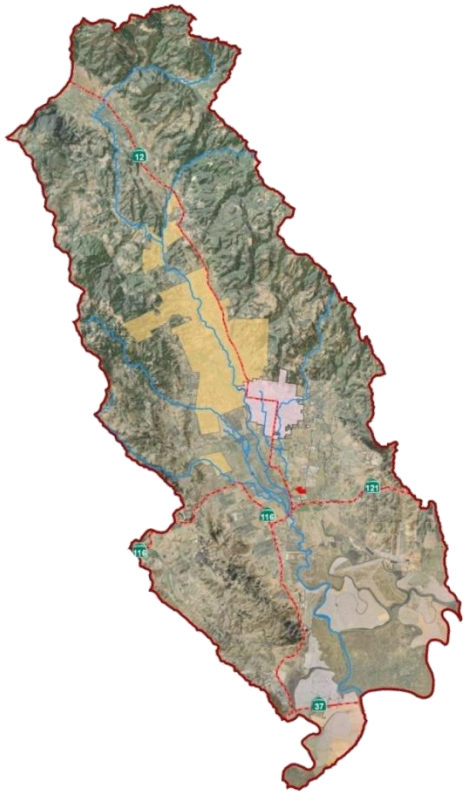
Connecting the Dots: Recycled Water, Habitat & Groundwater

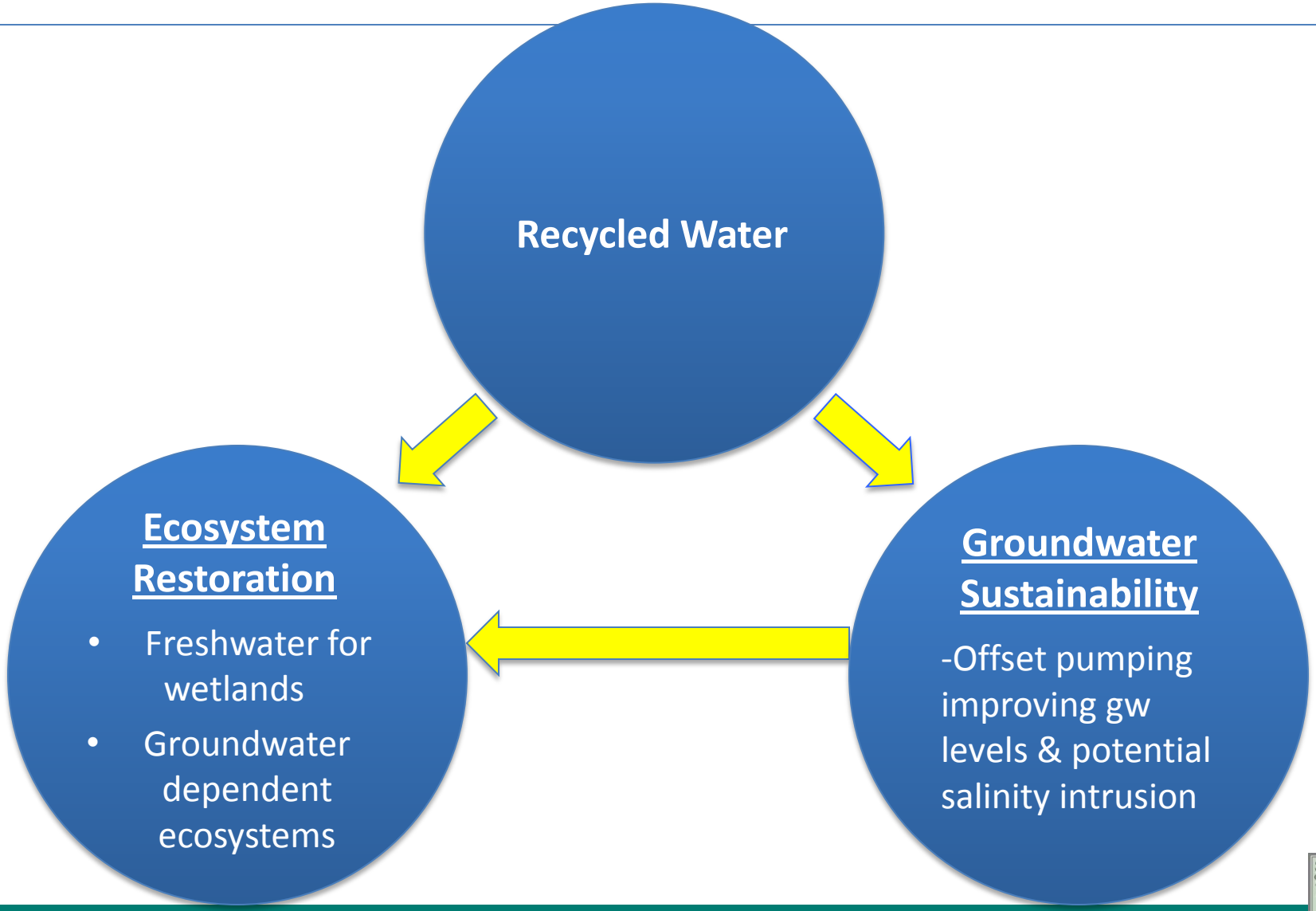


North Bay Watershed Association

Jay Jasperse, P.E.
Chief Engineer
April 11, 2014

SONOMA COUNTY WATER AGENCY

Connecting the Dots …



Sonoma Valley Groundwater is Vulnerable

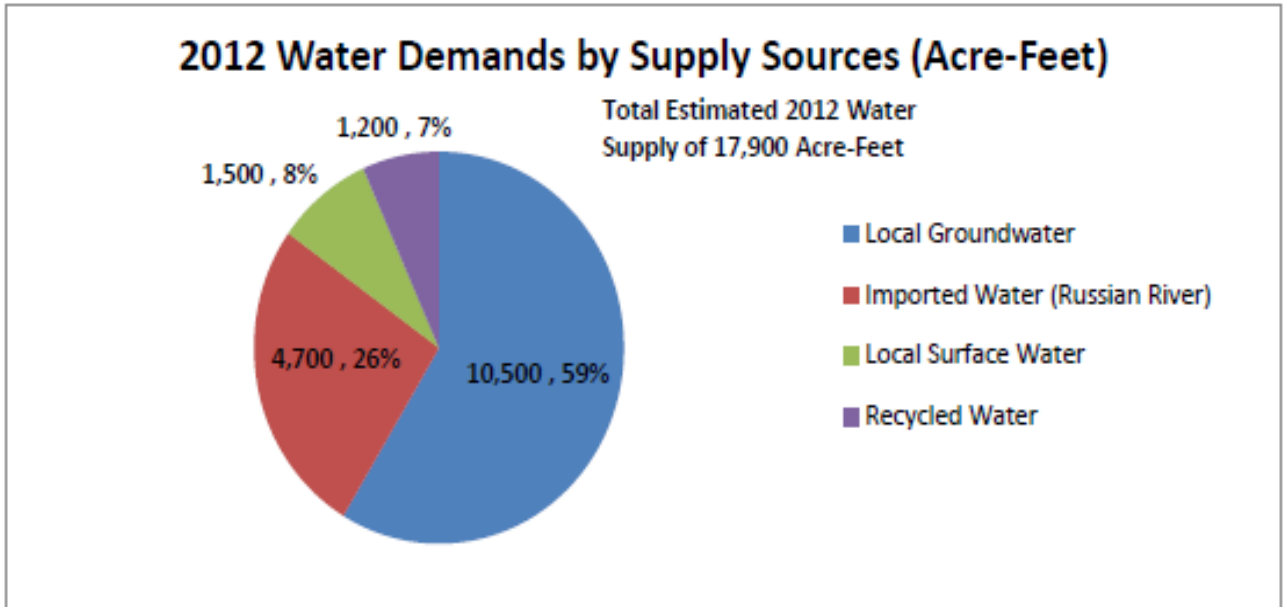
- Aquifer Has Relatively Low Productivity With Areas of Declining Water Levels
- Saline Water at Southern Boundary
- Increased Water Use Over Time

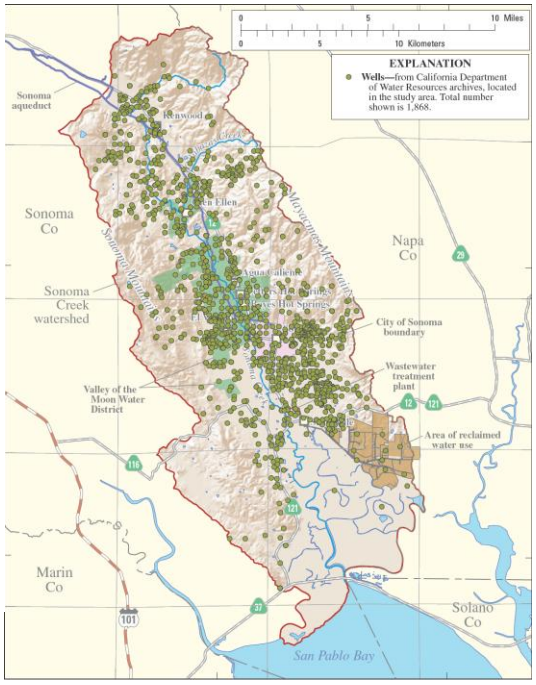
The Solution …

Integrated Water Resource Management

- Increase Water Supply Portfolio
- Maximize Recycled Water & Conservation
- Balance Russian River & Groundwater Supplies

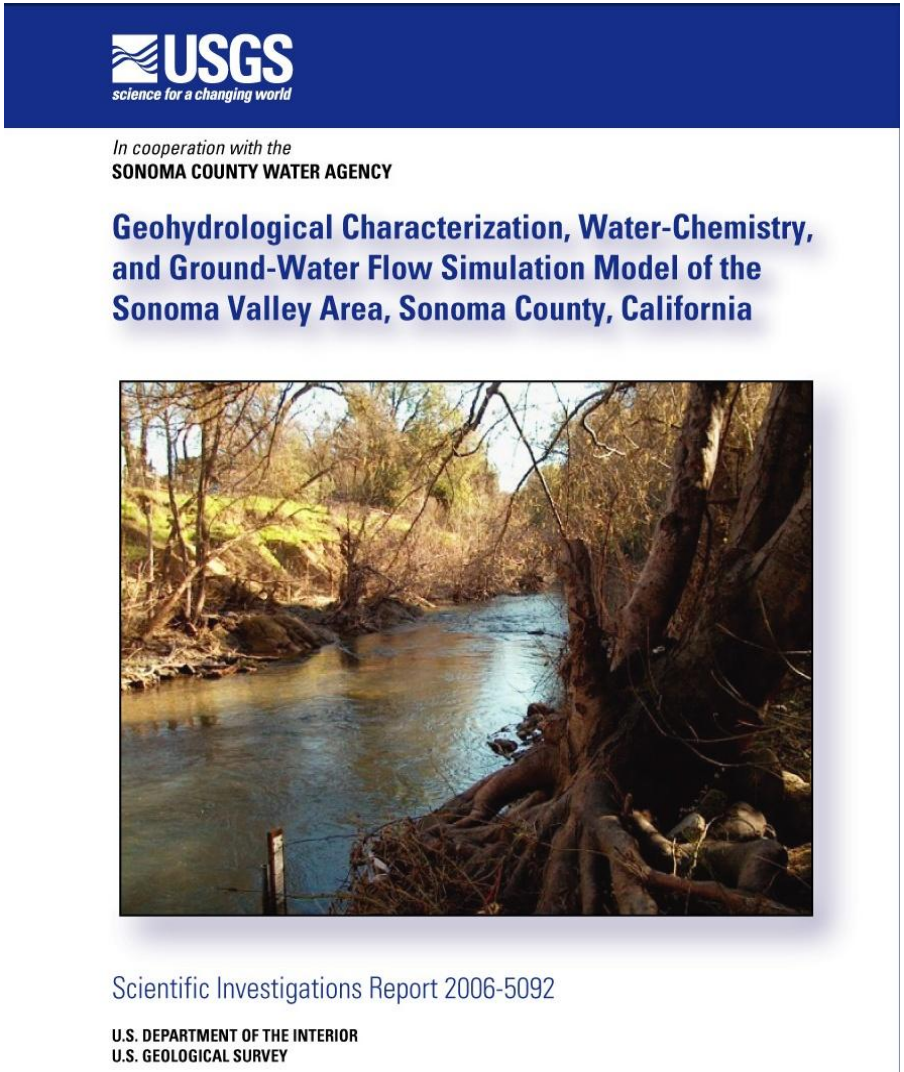
Sonoma Valley Water Use – Imported Water (26%) & Groundwater (59%) Play a Big Role





- **At least 2,200 permitted groundwater wells**
- **<u>Recycled water</u> (7%) & local surface water (8%)**

SCWA/USGS Sonoma Valley Groundwater Study



Key Findings:

- Increased pumping between 1975-2000
- Localized decline of groundwater levels
- Estimated storage decline of between 680 – 1,420 acre-ft per year
- Salinity issues in southern part of Valley
- Numerical Model - Evaluate data gaps & simulate future conditions

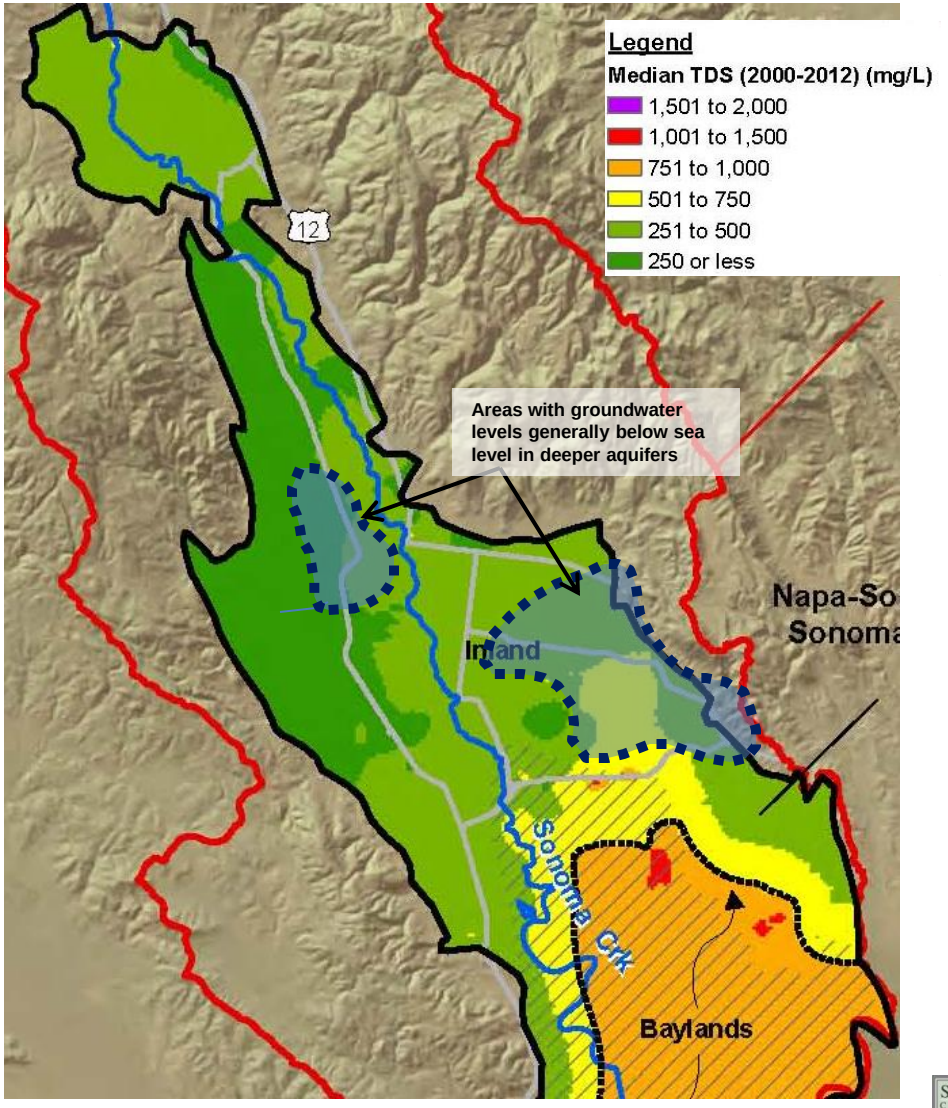
Salinity In Southern End of Sonoma Valley

Salinity Sources:

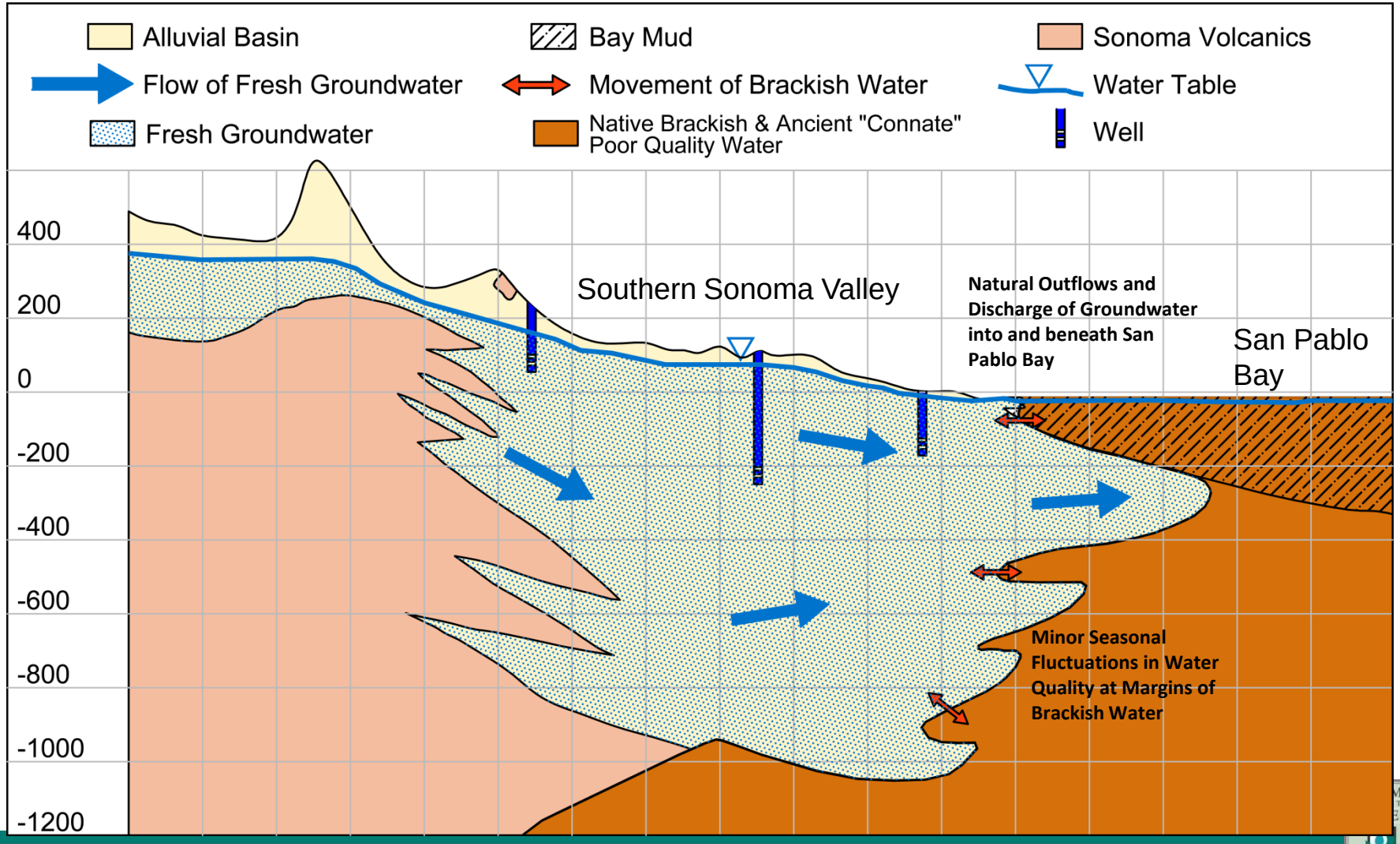
- Historical Brackish Water
- Thermal Water
- Connate Water from older formations

Groundwater Levels:

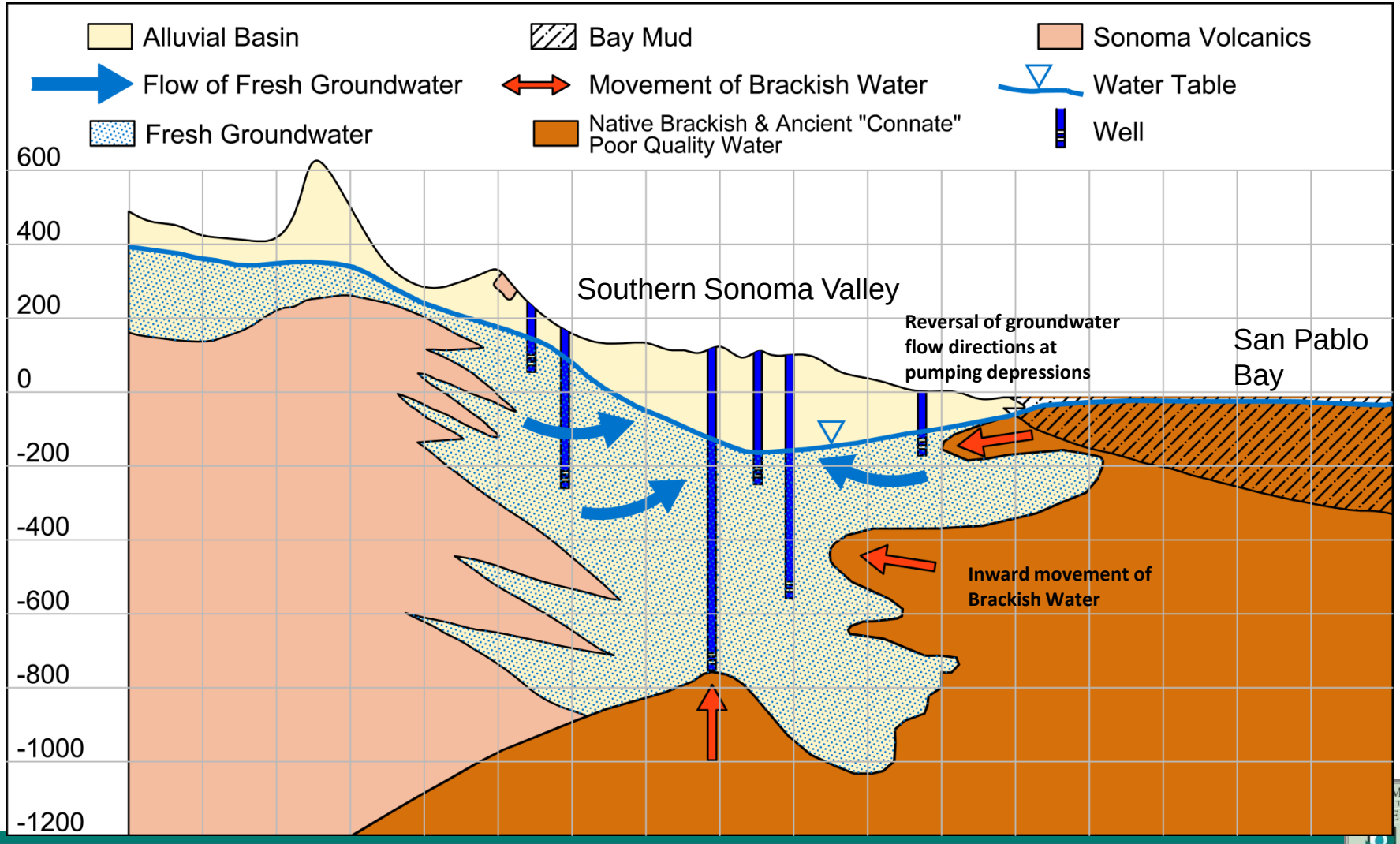
- Shallow-Zone generally stable & above sea level
- Declining trends observed in deep zone wells with groundwater elevations locally below sea level



1950: Shallow Groundwater Levels Prior to Extensive Pumping

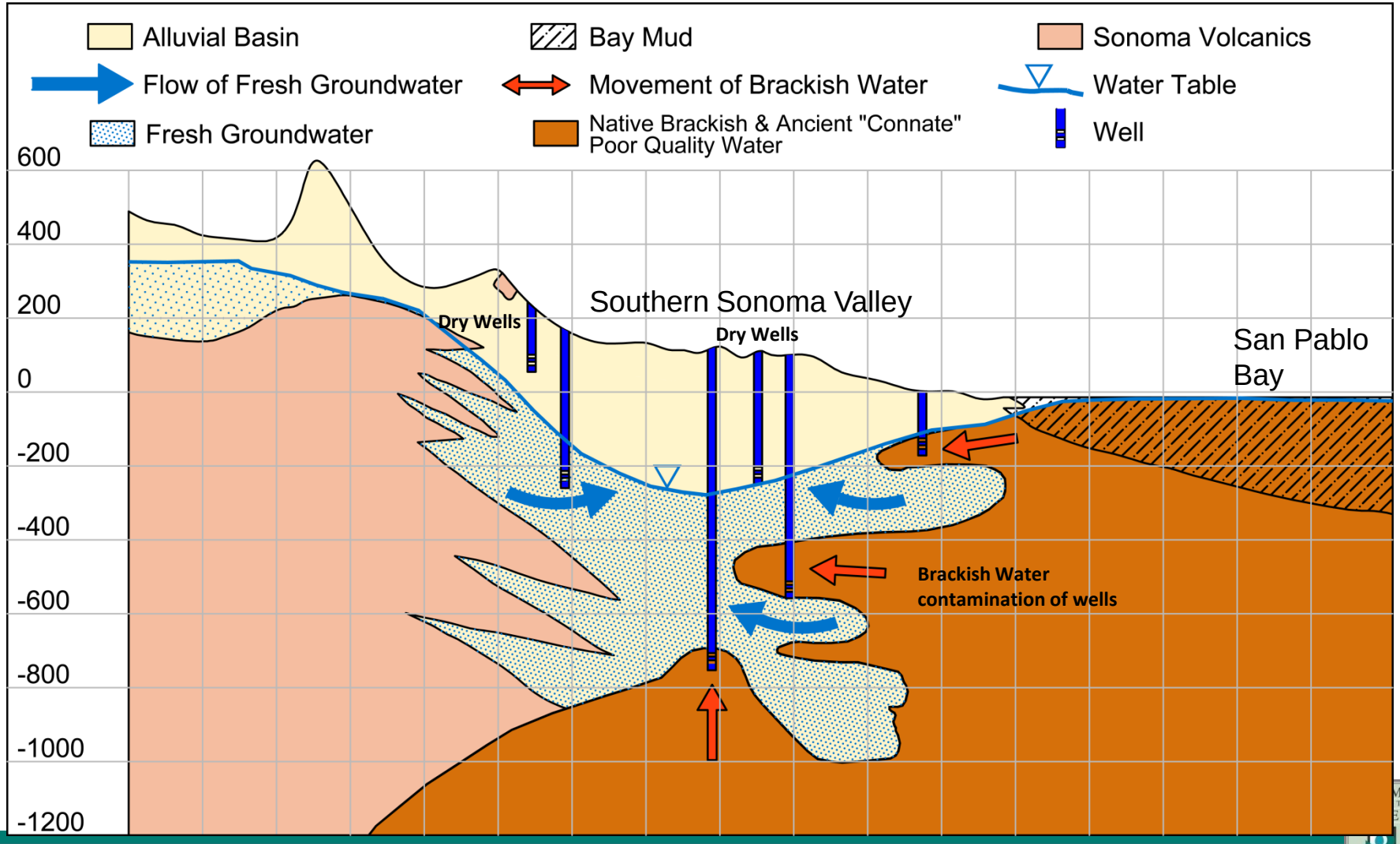


Today: Groundwater Levels Lowered over 100 Feet in Southern Sonoma



Future Continued Depletion of Groundwater?

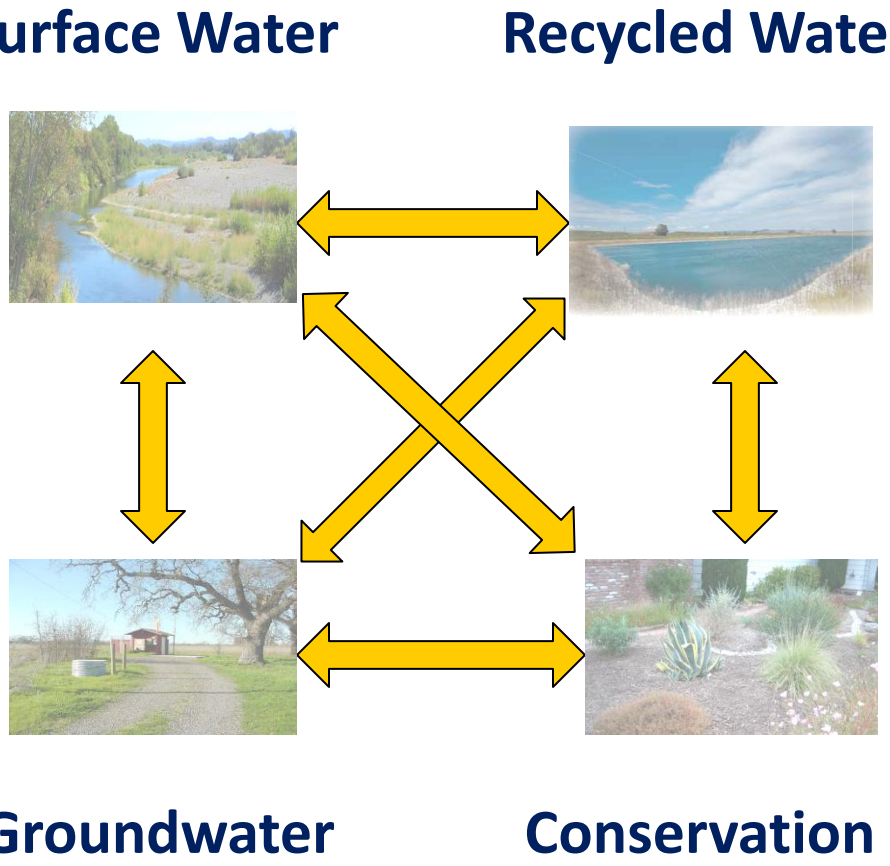
* Dry Wells
* Brackish Water Contamination of Wells



What's Being Done to Improve Water Supply Conditions in the Sonoma Valley?

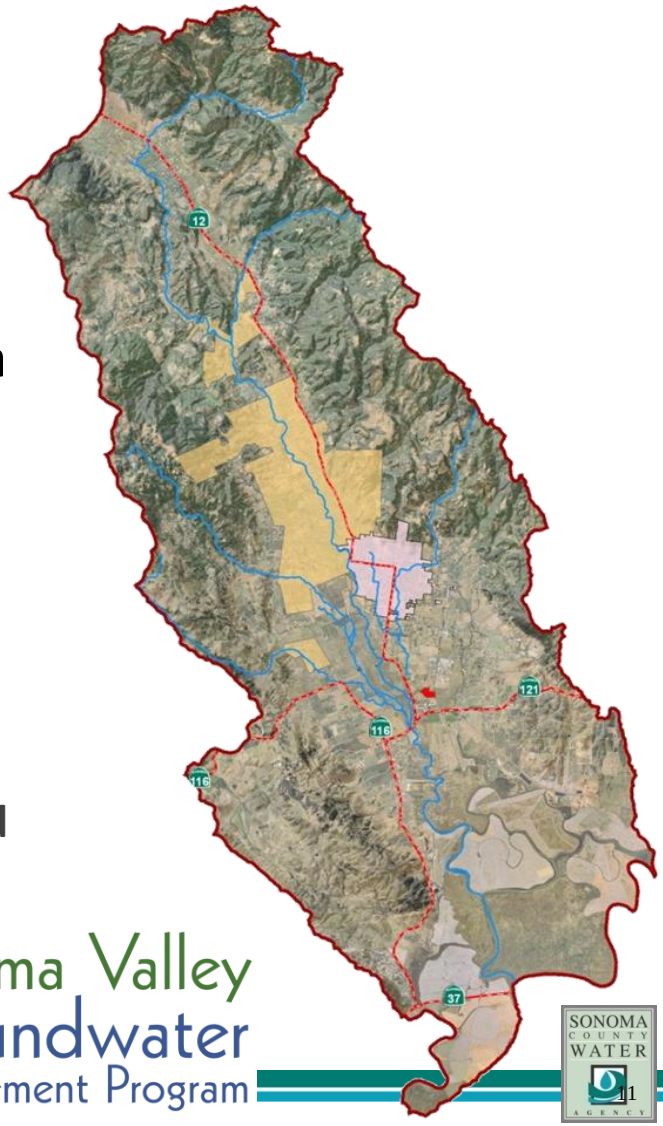
Goal: Increase Resiliency of Water Resources to Enhance Supply & Ecosystems

- Groundwater Management – Climate Adaptation Strategies
- Conservation
- Recycled Water
- Coordinated Management of Surface & Groundwater



Overview of Sonoma Valley Groundwater Management Program

- **Convened Stakeholder Group in June 2006**
  - Agricultural alliances, environmental organizations, water purveyors, and residential groundwater users
- **Groundwater Management Plan Adopted by Sonoma County Water Agency, City of Sonoma & Valley of the Moon Water District in Late 2007**
  - Non-Regulatory and Collaborative Process
  - Letters of Support and Endorsement received from Mission Highlands Mutual Water Company, Sonoma County Water Coalition, Sonoma Ecology Center, and the Sonoma Valley Vintners & Growers Alliance
- **Sixth Year of Implementation**



Sonoma Valley Groundwater Management Program

SONOMA COUNTY WATER AGENCY

Basin Advisory Panel Recommended Management Strategies

Sonoma Valley Groundwater Management Program

- **CONSERVATION** of Urban, Non-Urban, & Agriculture
- **RECYCLED WATER** use to offset groundwater pumping
- **BANKING** Russian River water to recharge groundwater basin
- **STORMWATER** to recharge of groundwater

Building Water Supply Resilience: Recycled Water

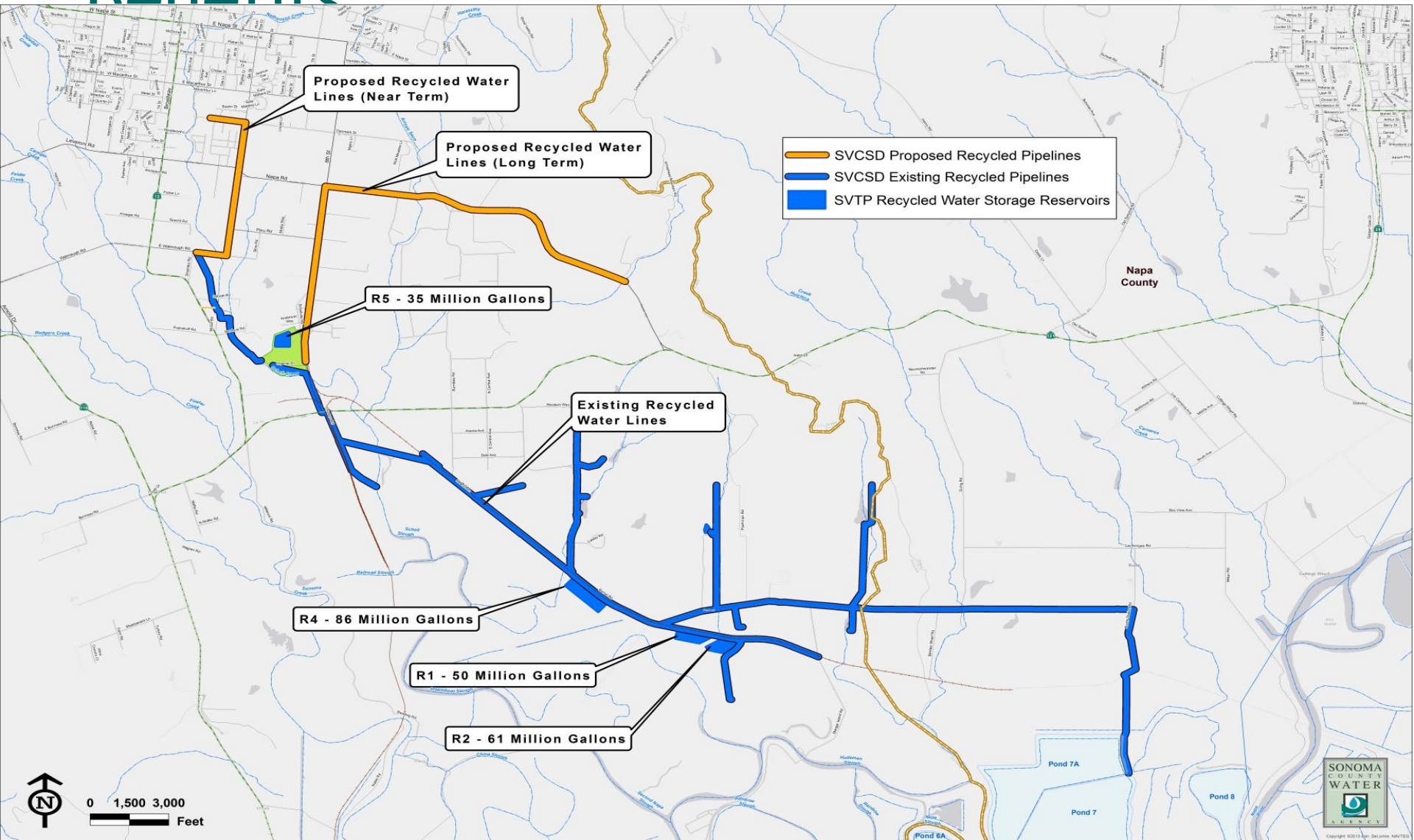
Offset Groundwater Pumping Since 1990's in Sonoma Valley

Support Restoration of Ecosystems

Federal, State & Local Funding for Several Sonoma Valley Projects

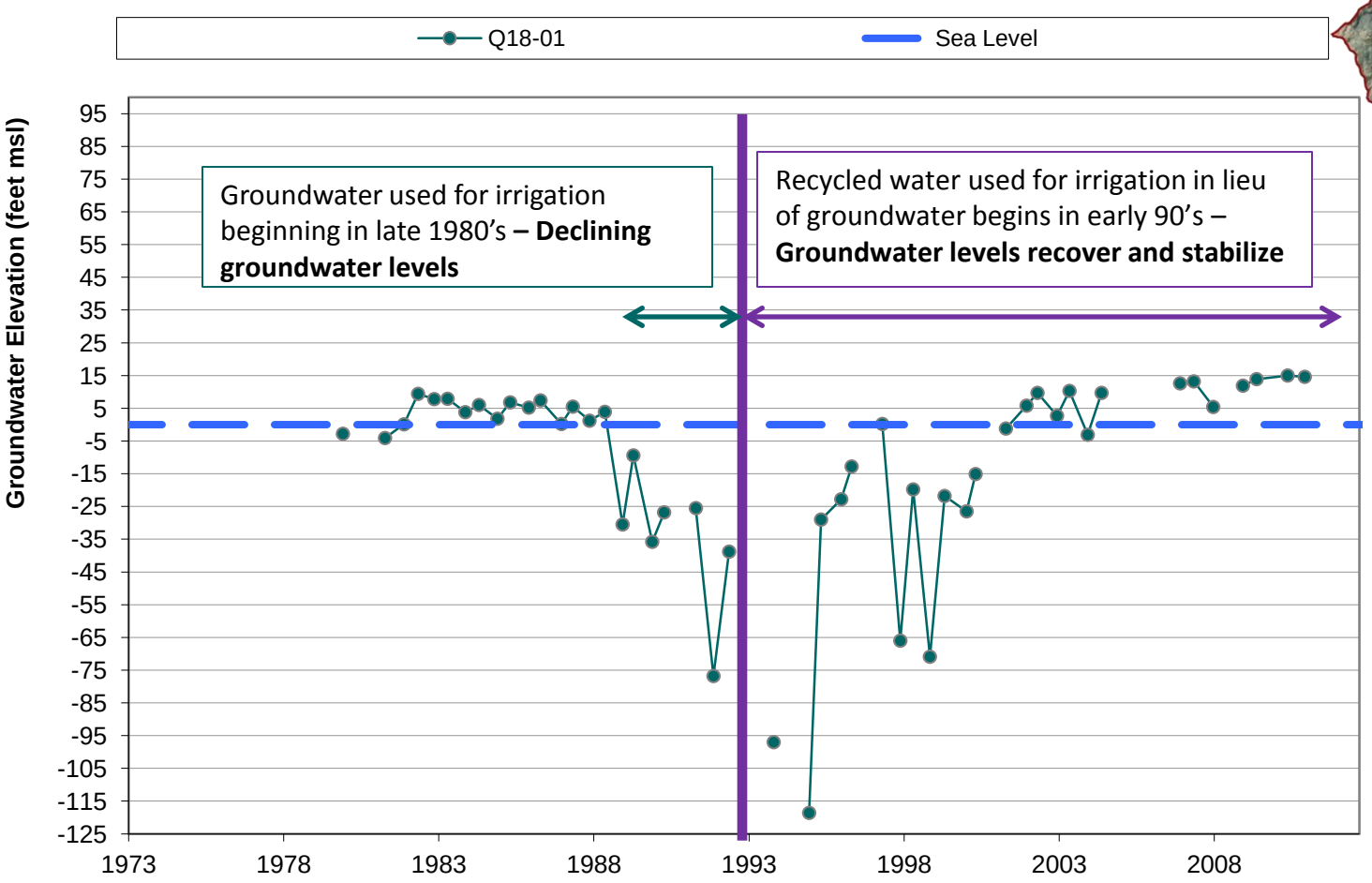
Key Climate Adaptation Strategy

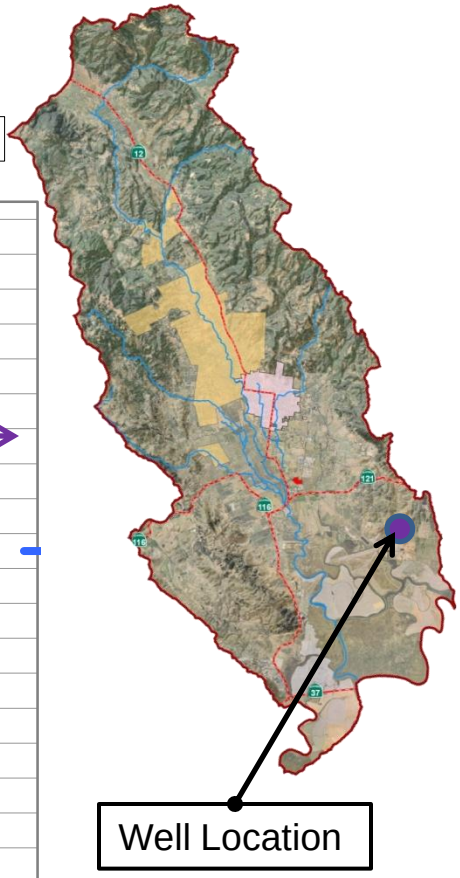
Sonoma Valley Recycled Water Projects - Ecosystem & Groundwater Benefits



Irrigation with Recycled Water to Offset Groundwater Pumping

Groundwater-Level Hydrograph
Irrigation Well
Carneros Subarea





Napa-Sonoma Salt Marsh Restoration

California Fish & Wildlife Objectives

- ❑ Create a mix of habitats to serve a range of species
  - I. Restore tidal marsh to benefit at-risk and aquatic species
  - II. Manage ponds for shorebirds and waterfowl
- ❑ Other Project Opportunities
  - I. Beneficial Use of Recycled Water
  - II. Recreational Opportunities

Project Operational Summer 2013

- Dilute 750 acre bittern ponds using low salinity recycled water to restore wetlands
- Offset groundwater pumping & riparian diversions

Final Thoughts …

Recycled water is an important component of integrated water resource management

- **Promotes water supply resiliency**
- **Climate adaptation strategy**

Sonoma Valley provides an example of multiple benefit recycled water projects:

- **Ecosystem restoration & enhancement**
- **Groundwater protection**