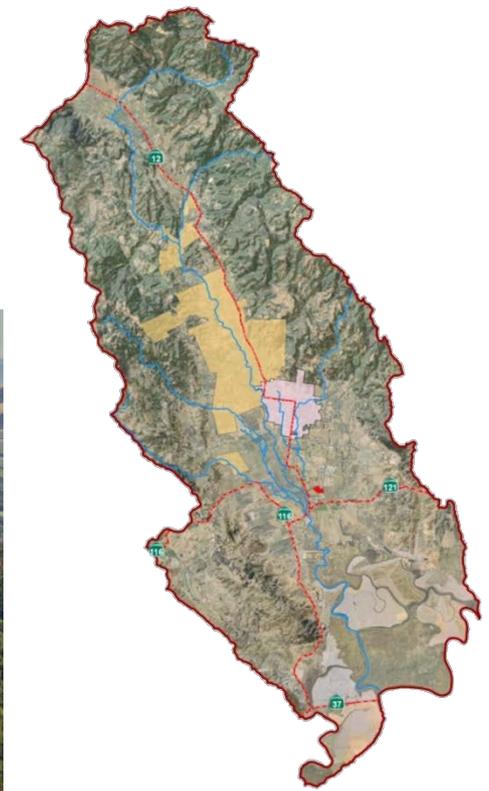


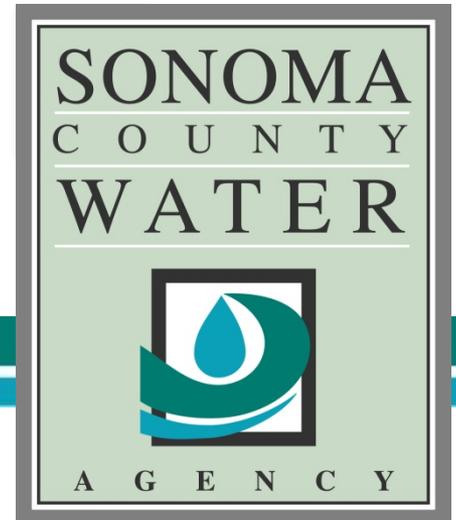
# Sonoma Valley Groundwater Management Program



## North Bay Agricultural Alliance

Marcus Trotta, PG, CHg, Sonoma County Water Agency  
Tim Parker, PG, CEG, CHg, Parker Groundwater

January 22, 2014



# State of the State Groundwater Legislative & Policy Initiatives

## California Water Today



# Latest News as Drivers

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- The Tribune - January 16, 2014
  - *County moves ahead on plan for Paso Robles groundwater offsets* - Method to balance water usage is required by emergency ordinance. David Sneed.
- The Modesto Bee - November 21, 2013
  - *Merced County is sinking*; researchers blame over-pumping of groundwater. By J.N. Sbranti
- Los Angeles Times - September 23, 2013
  - *California's Water House of Cards*. Groundwater supplies at least a third of the state's water. But it's being depleted at a rapid pace, despite efforts to recharge it. By Jay Famiglietti and Sasha Richey
- The Fresno Bee - September 21, 2013
  - *Central Valley Awash in Water Woes* - Big groundwater withdrawals from the already sinking underground water table. By Mark Grosse
- The Tribune - August 15, 2013
  - *New map shows plunge in Paso Robles groundwater levels*. By David Sneed

# Legislative & Policy Initiatives

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- Governor's Office of Planning and Research Activities - Depletion Discussions
- California Water Action Plan - Groundwater Actions
- Water Bond 2014 - Legislative Proposals
- Delta Plan & Delta Vision Foundation Storage Discussions
- Bay Delta Conservation Plan
- California Water Plan Update 2013

# Legislative & Policy Initiatives

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- State Water Resources Control Board Groundwater Workplan
- SWRQCB Proposed Budget Change Proposal for Groundwater Resources Protection and Addressing Groundwater Depletion
- Move of Department of Public Health Drinking Water Program to SWRCB
- CASGEM Groundwater Basin Prioritization in Process - What's it Mean to You?
- Hexavalent Chromium MCL

# About the Sonoma County Water Agency

## Core Business Functions Align with Integrated Management:

- Wholesale water supplier to over 600,000 people - Sonoma & Marin Counties
- Flood Control
- Sanitation
- Power Generation/Renewable Energy Development

## In Sonoma Valley:

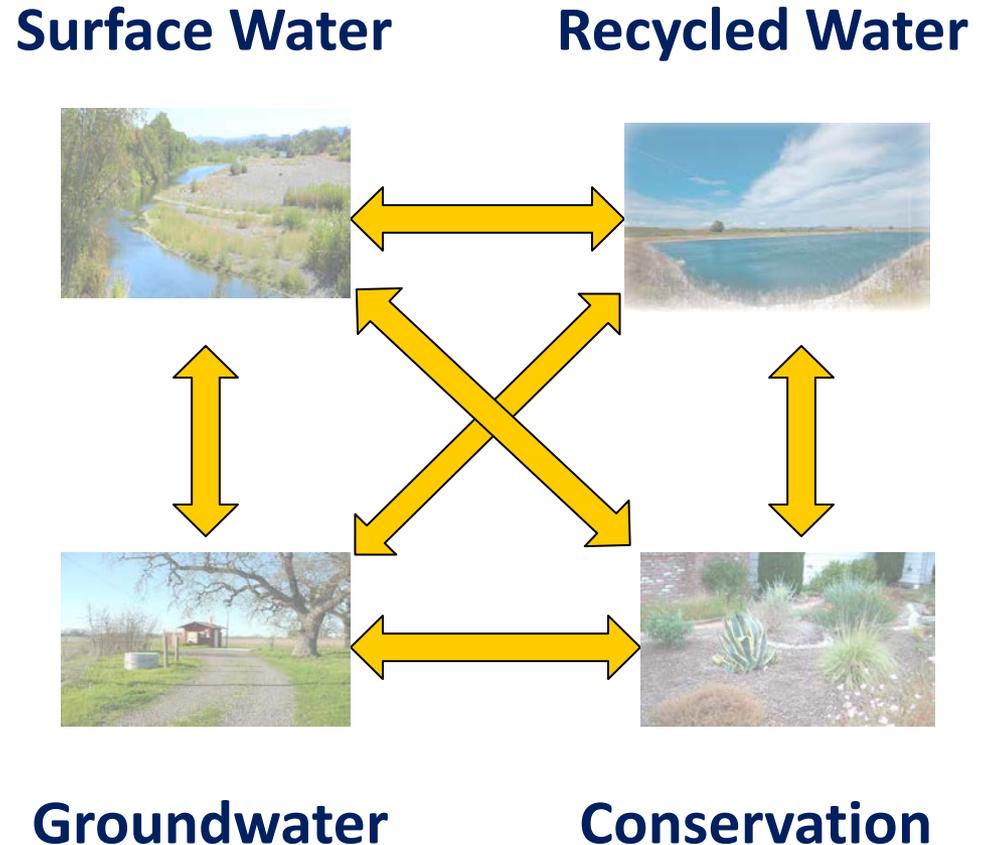
- Serve drinking water to City of Sonoma and Valley of the Moon Water District
- Operate Sonoma Valley Sanitation District - Recycled Water Program
- Flood Control

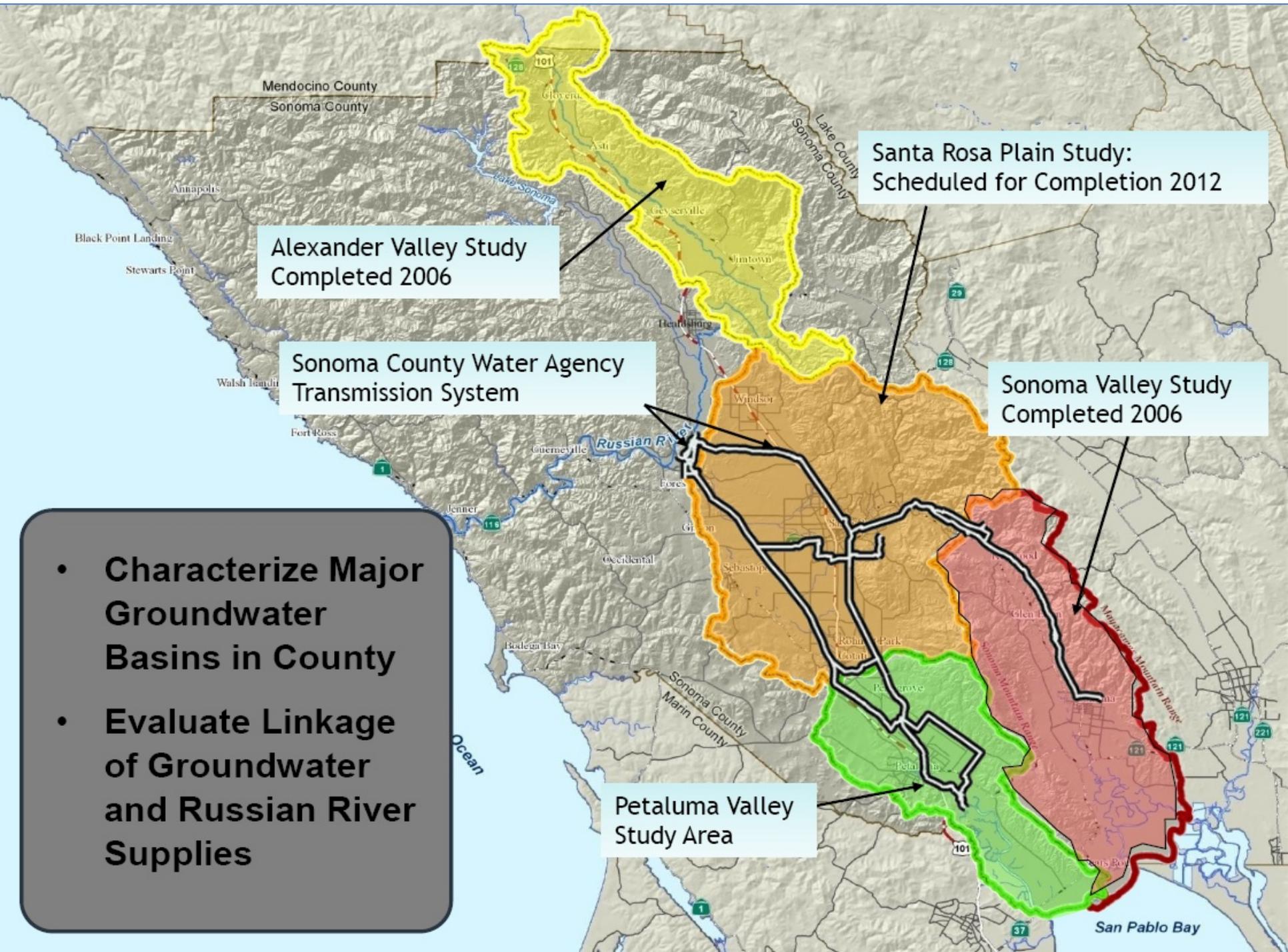


# How Is Integrated Management Implemented In Sonoma Valley?

**Goal: Increase Resiliency of Water Resources & Augment Russian River Supplies**

- Groundwater Management
- Conservation
- Recycled Water
- Conjunctive Management of Surface & Groundwater





Santa Rosa Plain Study:  
Scheduled for Completion 2012

Alexander Valley Study  
Completed 2006

Sonoma County Water Agency  
Transmission System

Sonoma Valley Study  
Completed 2006

- Characterize Major Groundwater Basins in County
- Evaluate Linkage of Groundwater and Russian River Supplies

Petaluma Valley  
Study Area

# Water Agency/USGS Sonoma Valley Groundwater Study



In cooperation with the  
SONOMA COUNTY WATER AGENCY

**Geohydrological Characterization, Water-Chemistry,  
and Ground-Water Flow Simulation Model of the  
Sonoma Valley Area, Sonoma County, California**



Scientific Investigations Report 2006-5092

U.S. DEPARTMENT OF THE INTERIOR  
U.S. GEOLOGICAL SURVEY

## 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**

# Overview of Sonoma Valley Groundwater Management Program

## ➤ Convened Stakeholder Group in June 2006

- Agricultural alliances, environmental organizations, water purveyors, and residential groundwater users

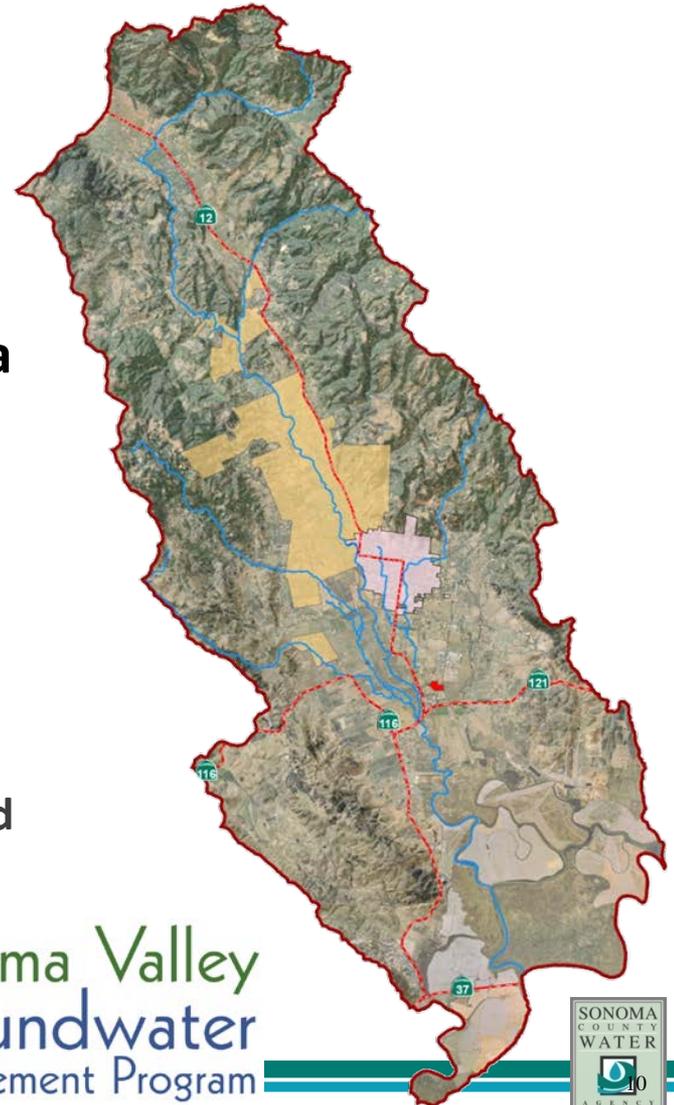
## ➤ Groundwater Management Plan Adopted by Sonoma County Water Agency, City of Sonoma & Valley of the Moon Water District in Late 2007

- 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



# Accomplishments to Date

- Stakeholder Involvement

- Outreach and briefings
- Communications
- Media

- Monitoring Program

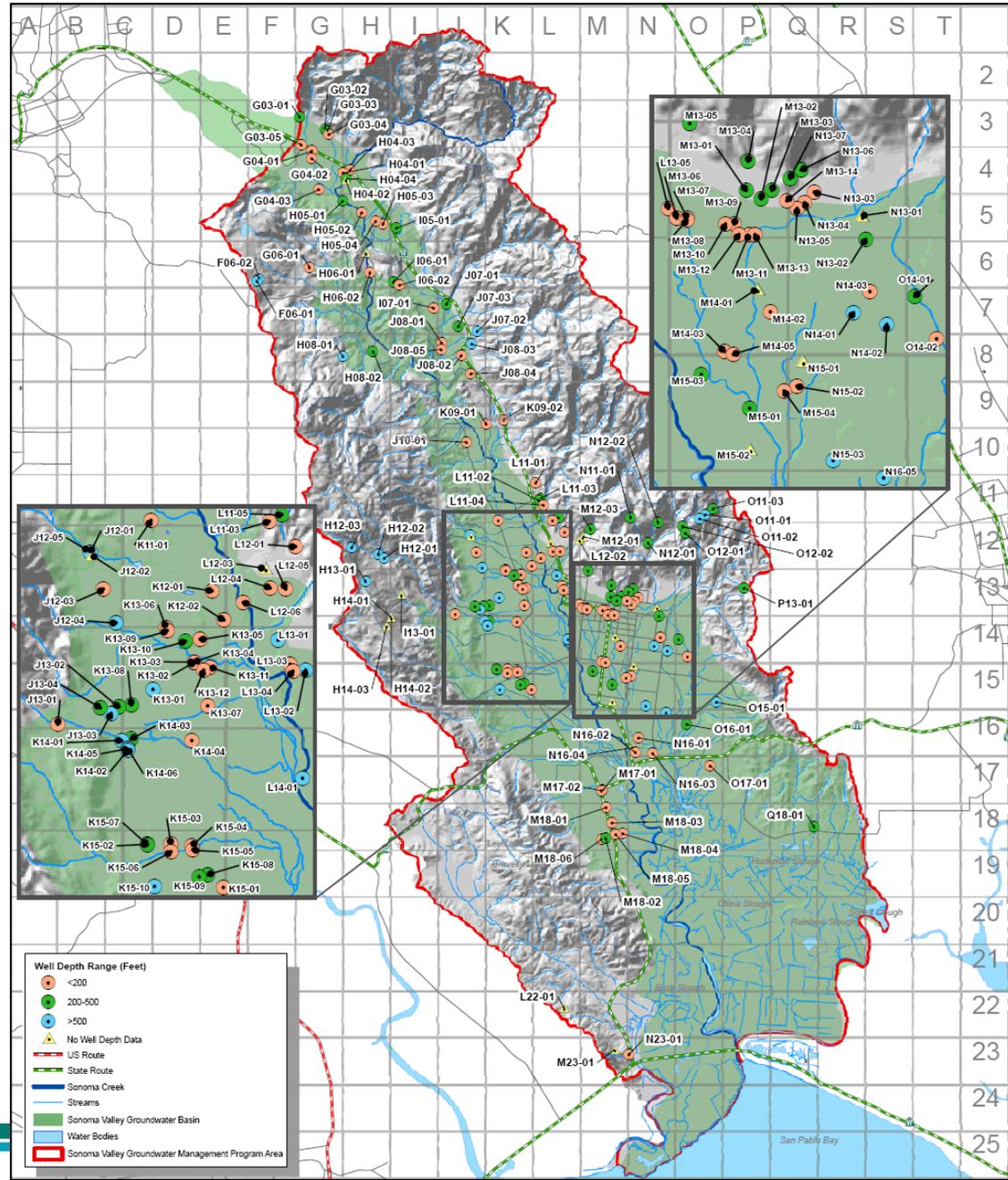
- Coordinated data collection
- Groundwater Levels
- Focused Studies
- High-Frequency Level Monitoring
- Stream-gaging
- Streamflow/Groundwater Interaction Monitoring
- Rainfall Monitoring

- Groundwater Sustainability

- Stormwater Management Guide
- Groundwater recharge mapping
- Visits to possible recharge sites
- Rural area water conservation assessments
- Water conservation awards program
- Recycled water enhancements
- Stormwater management/groundwater recharge study
- Groundwater Banking Feasibility Study
- Groundwater Model Update

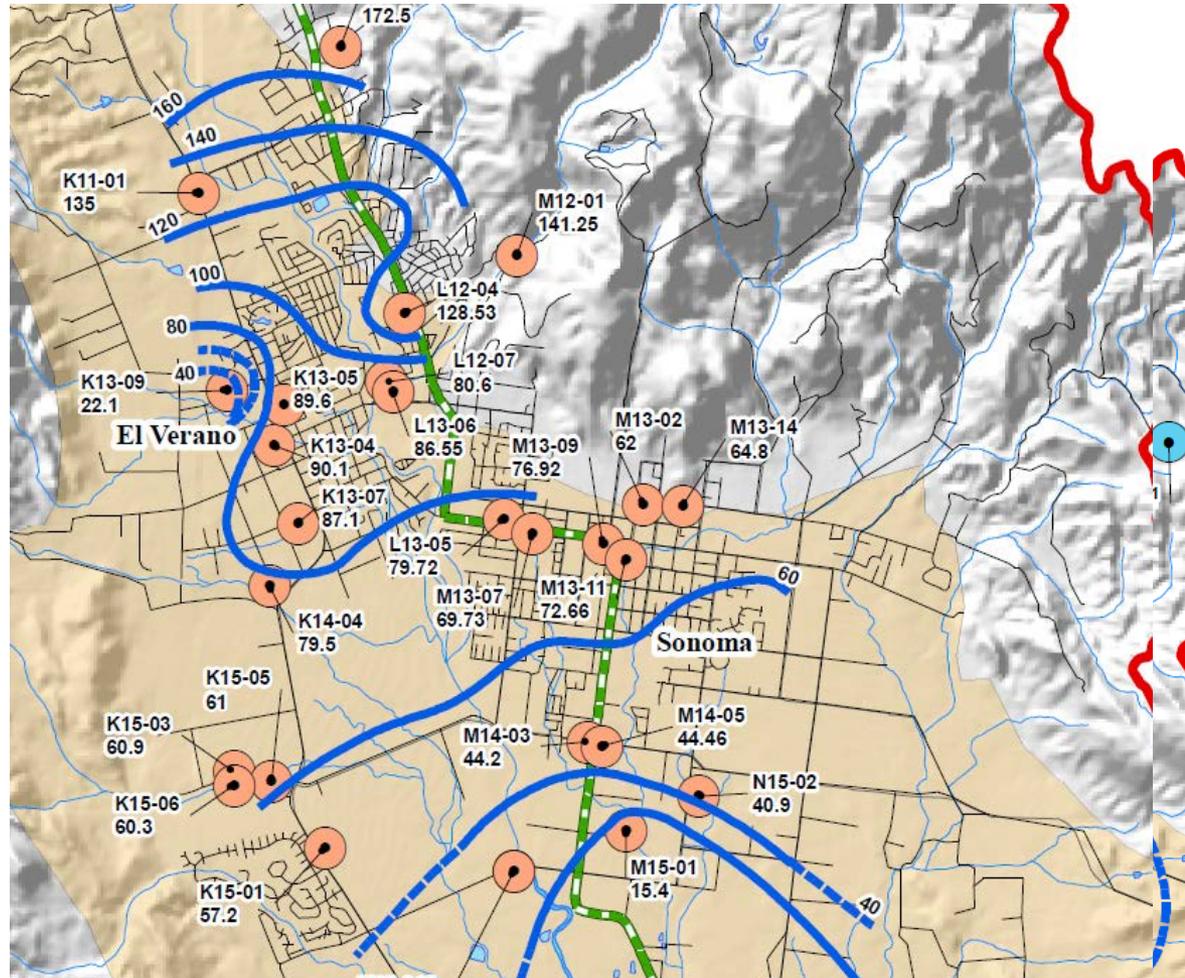
# Voluntary Groundwater-Level Monitoring

- **80** - New Wells since 2007
- **140** - Wells with Synchronized Monitoring
- **Groundwater Levels Only**
- **Track and Assess Seasonal and Long-term Trends**



# Groundwater Conditions

- Shallow-Zone wells generally stable and above sea level
- Localized areas of declining groundwater levels mainly observed in Deeper-Zone wells
  - El Verano Area
  - Southeast of City of Sonoma
- Groundwater-levels are locally below sea level



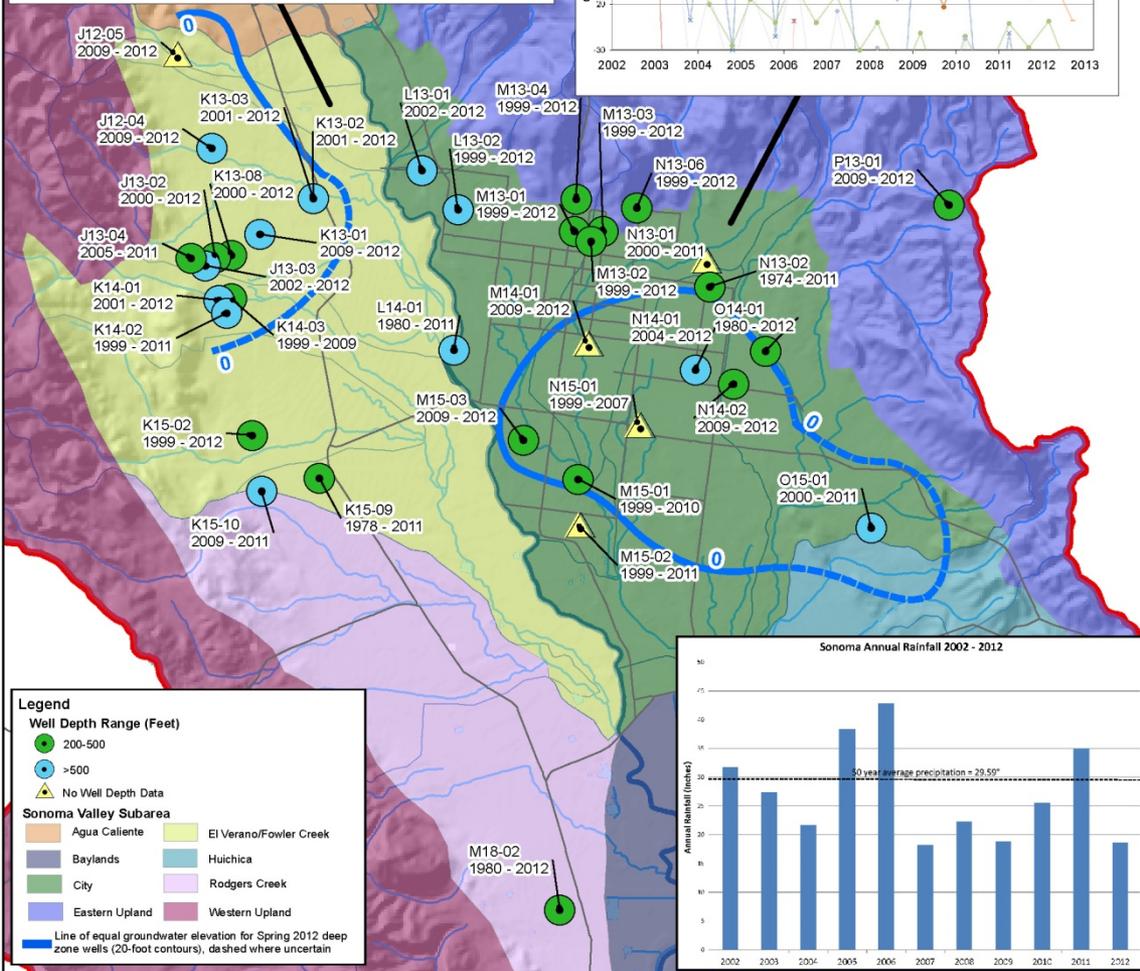
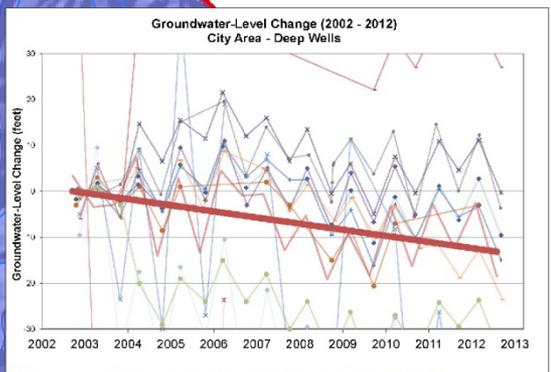
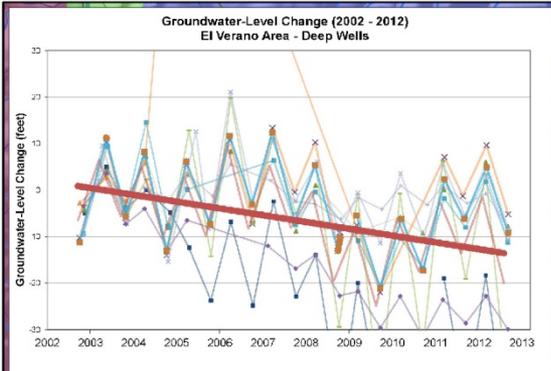
Note: Rainfall totals derived from daily precipitation measurements recored at National Climatic Data Center station #8351. Some years do not contain a complete record . The color of each bar represents the percent of completeness for each year of record.

1998  
2000  
2002  
2004  
2006  
2008  
2010  
2012

# Groundwater-Level Changes by Subarea

## 2002 to 2012 Deep-Zone Wells

➤ Persistent long term declining trends

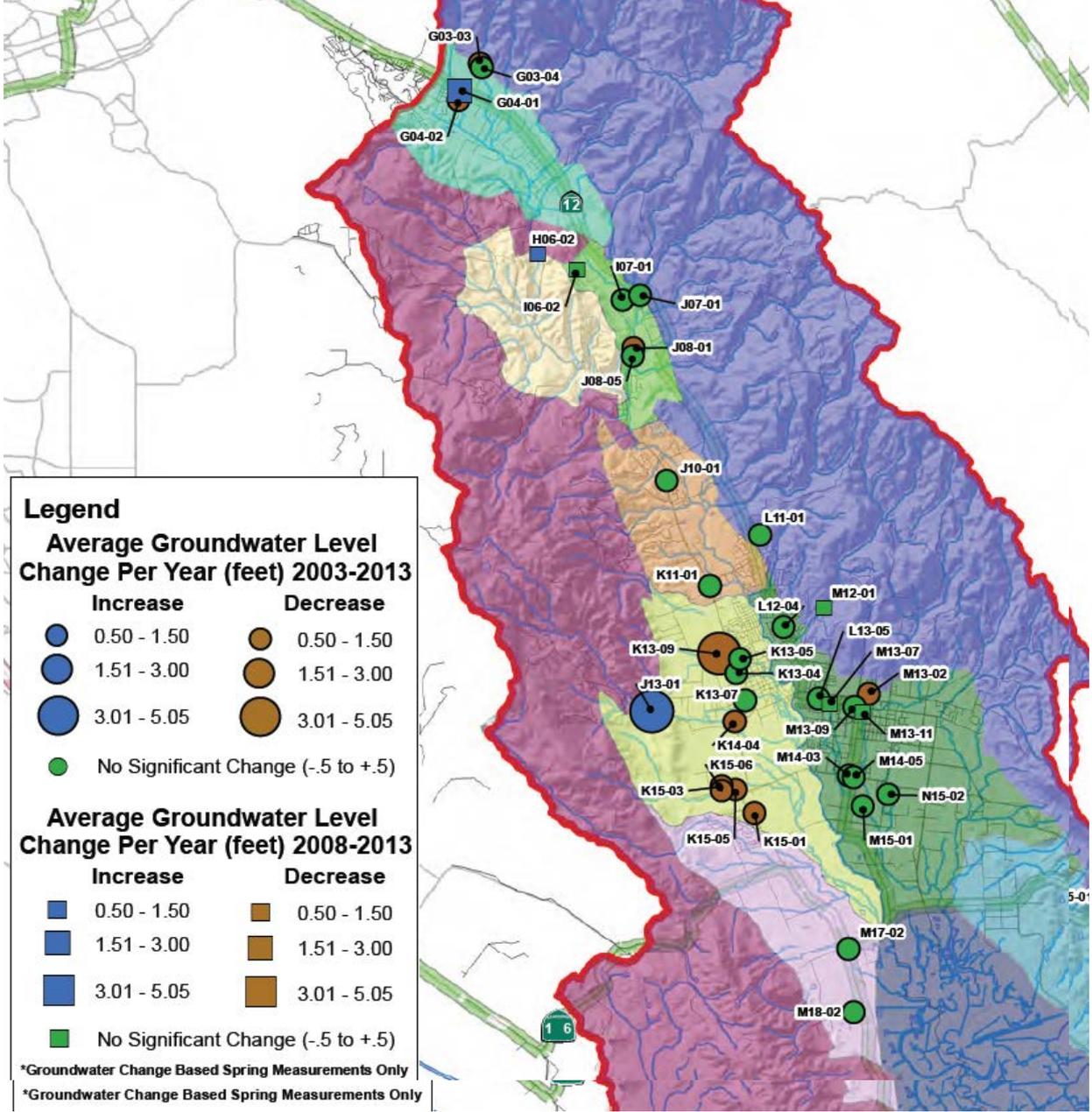


# 10-Year Trends

➤ Shallow zone generally stable with some moderate declines in El Verano Area

➤ Deeper zone more extensive declining trends

- El Verano: up to ~3 ft/yr
- Southeast of the City of Sonoma: up to ~5 ft/yr



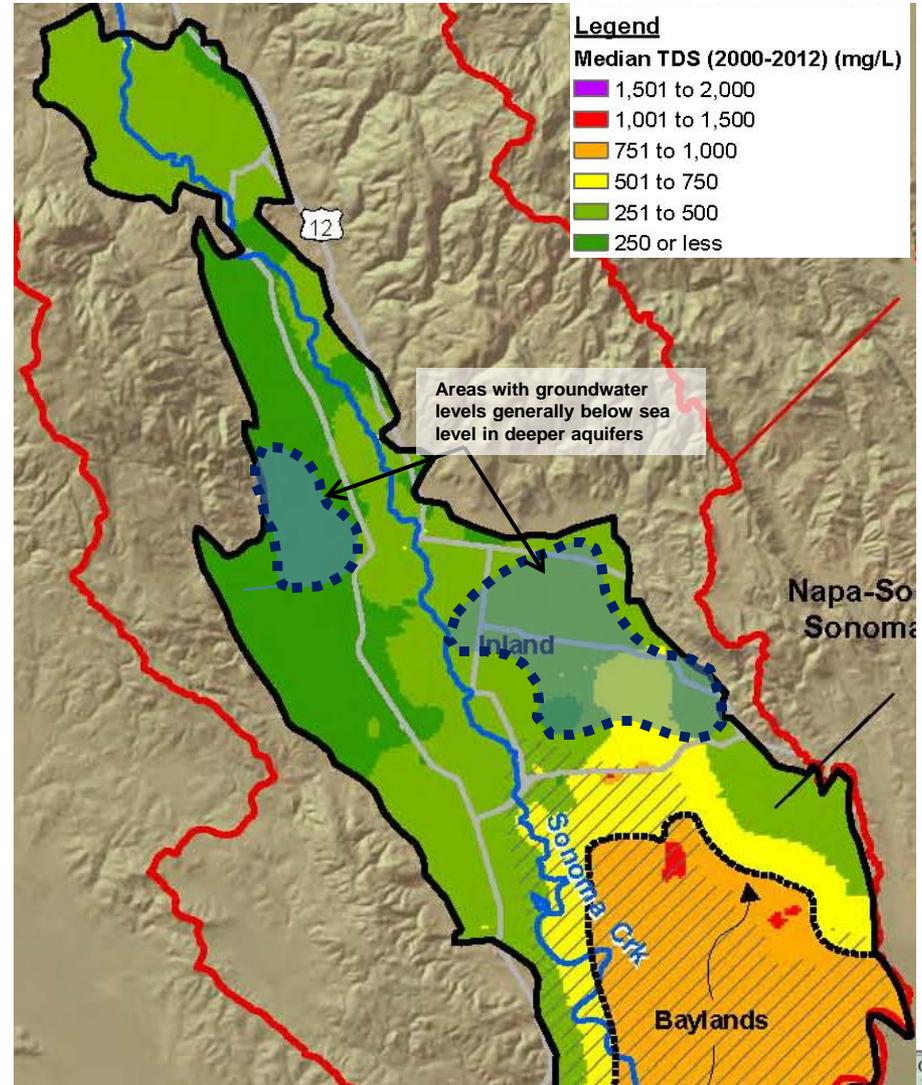
# Salinity In Southern End of Sonoma Valley

## Salinity Sources:

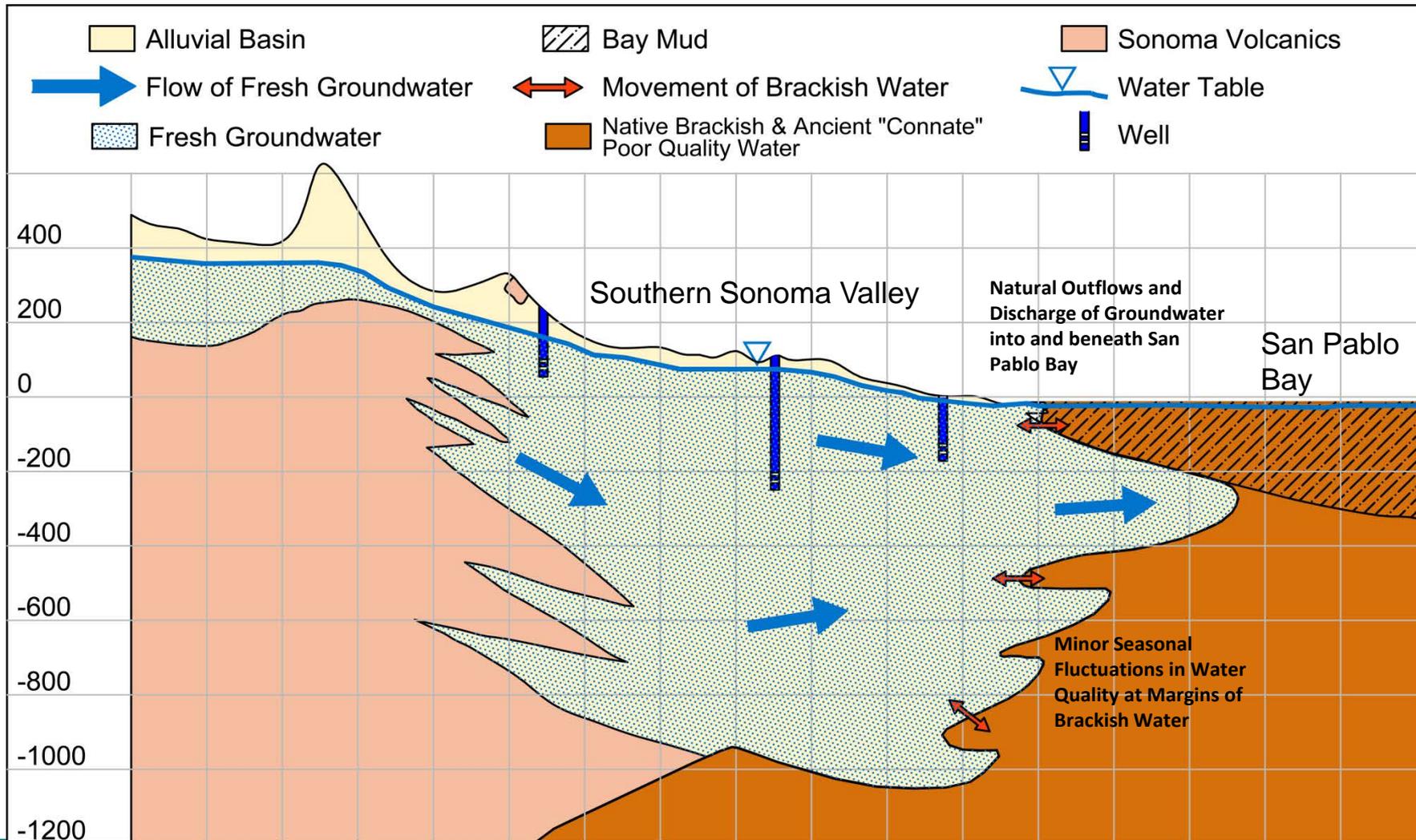
- Historical Brackish Water
- Thermal Water
- Connate Water from older formations

## Groundwater Levels:

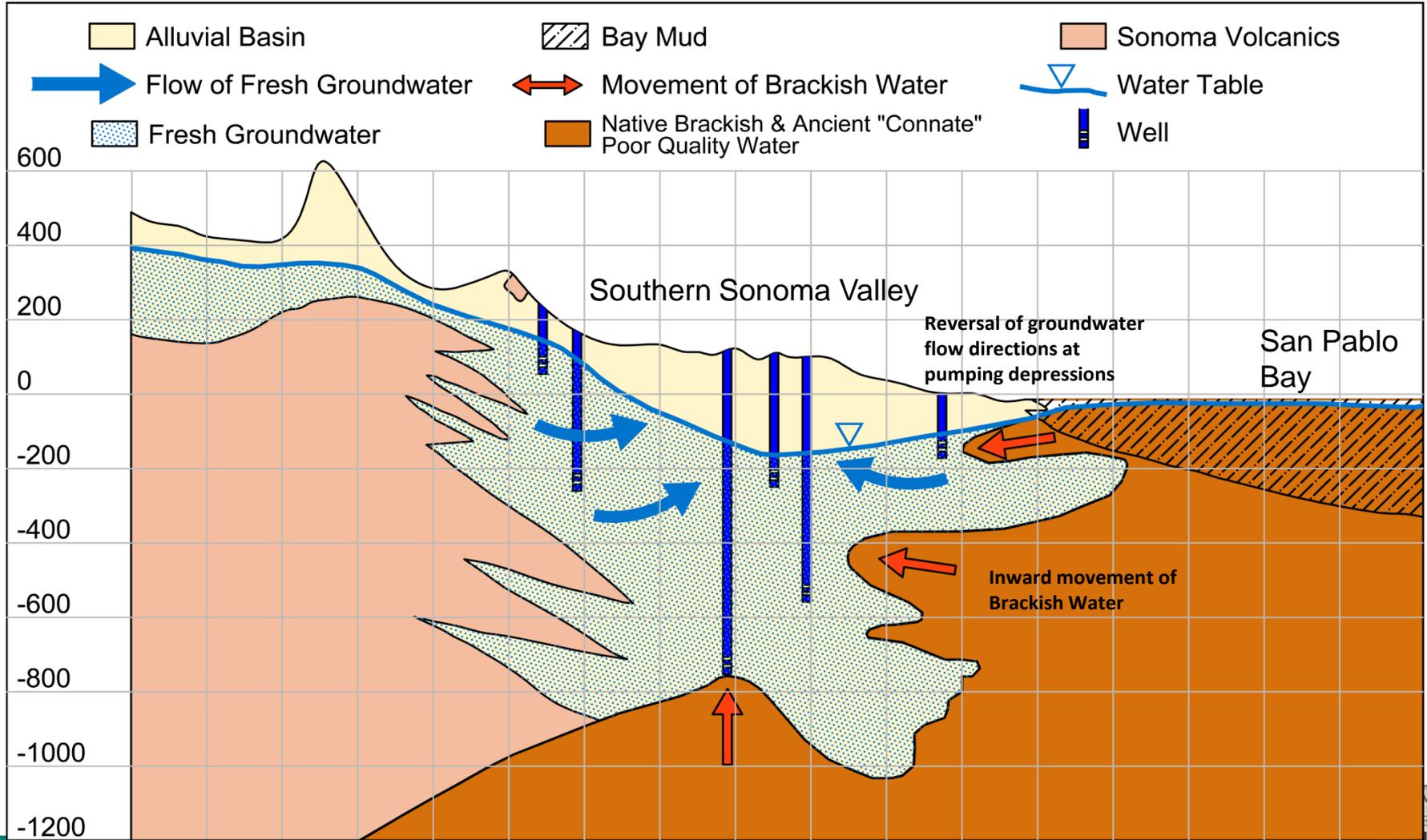
- Shallow-Zone generally stable and above sea levels
- Declining trends observed in deep zone wells with groundwater elevations locally below sea level



# 1950: Shallow Groundwater Levels Prior to Extensive Pumping



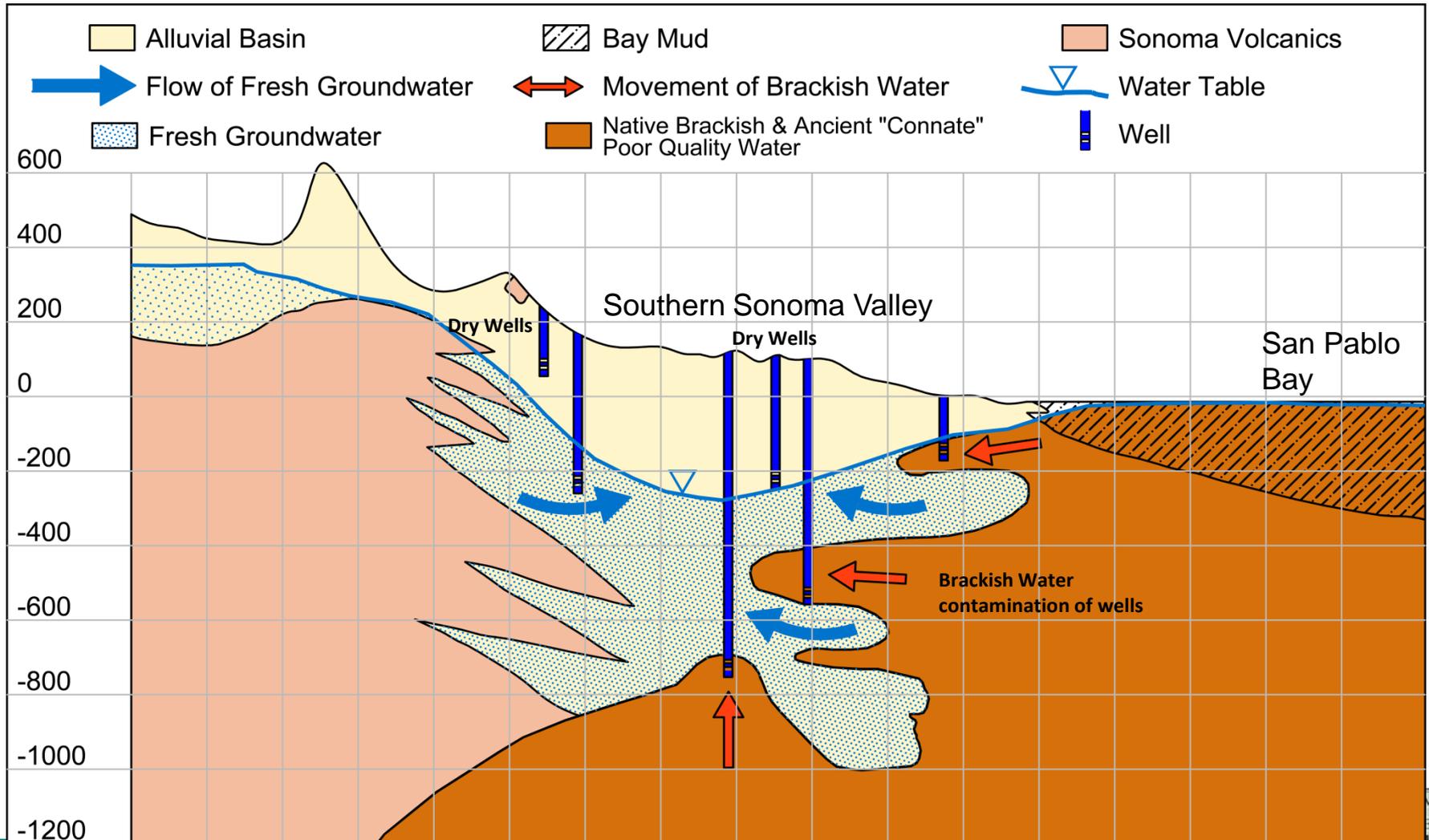
# Today: Groundwater Levels Lowered over 100 Feet in Southern Sonoma Valley



# Future Continued Depletion of Groundwater?

- \* Dry Wells

- \* Brackish Water Contamination of Wells



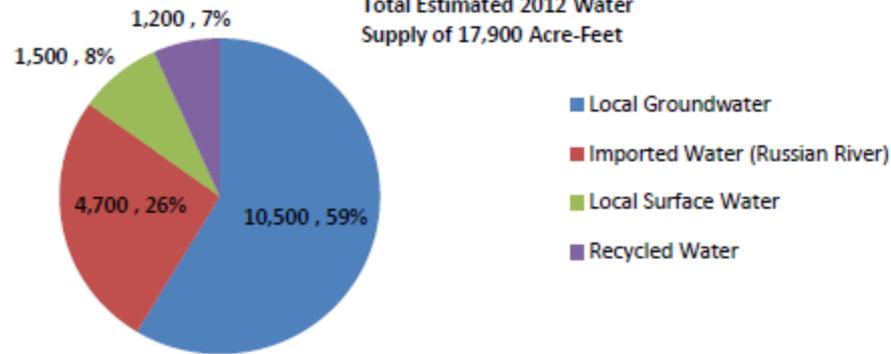
# How Much Water Is Used & Who Uses It?

- USGS compiled data & developed water use estimates from 1975 – 2000
- Water use estimates updated by Sonoma Valley Groundwater Management Plan 5-year review (SCWA)
- New estimates also evaluate geographic distribution of groundwater use to focus on groundwater depletion zones

# Total Estimated Water Supply Demands in Sonoma Valley

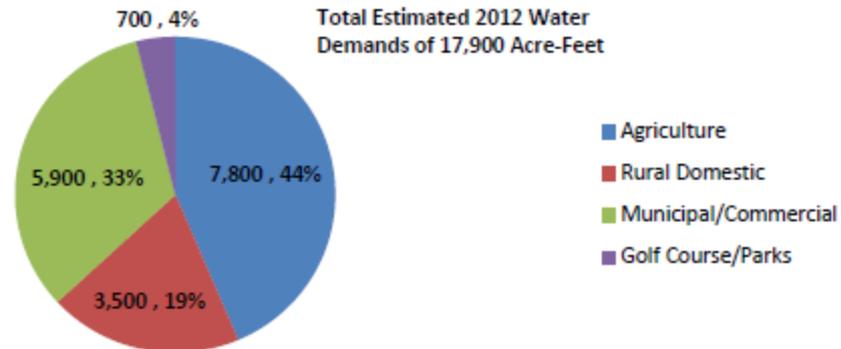
## 2012 Water Demands by Supply Sources (Acre-Feet)

Total Estimated 2012 Water Supply of 17,900 Acre-Feet



## 2012 Water Demands by Use Type (Acre-Feet)

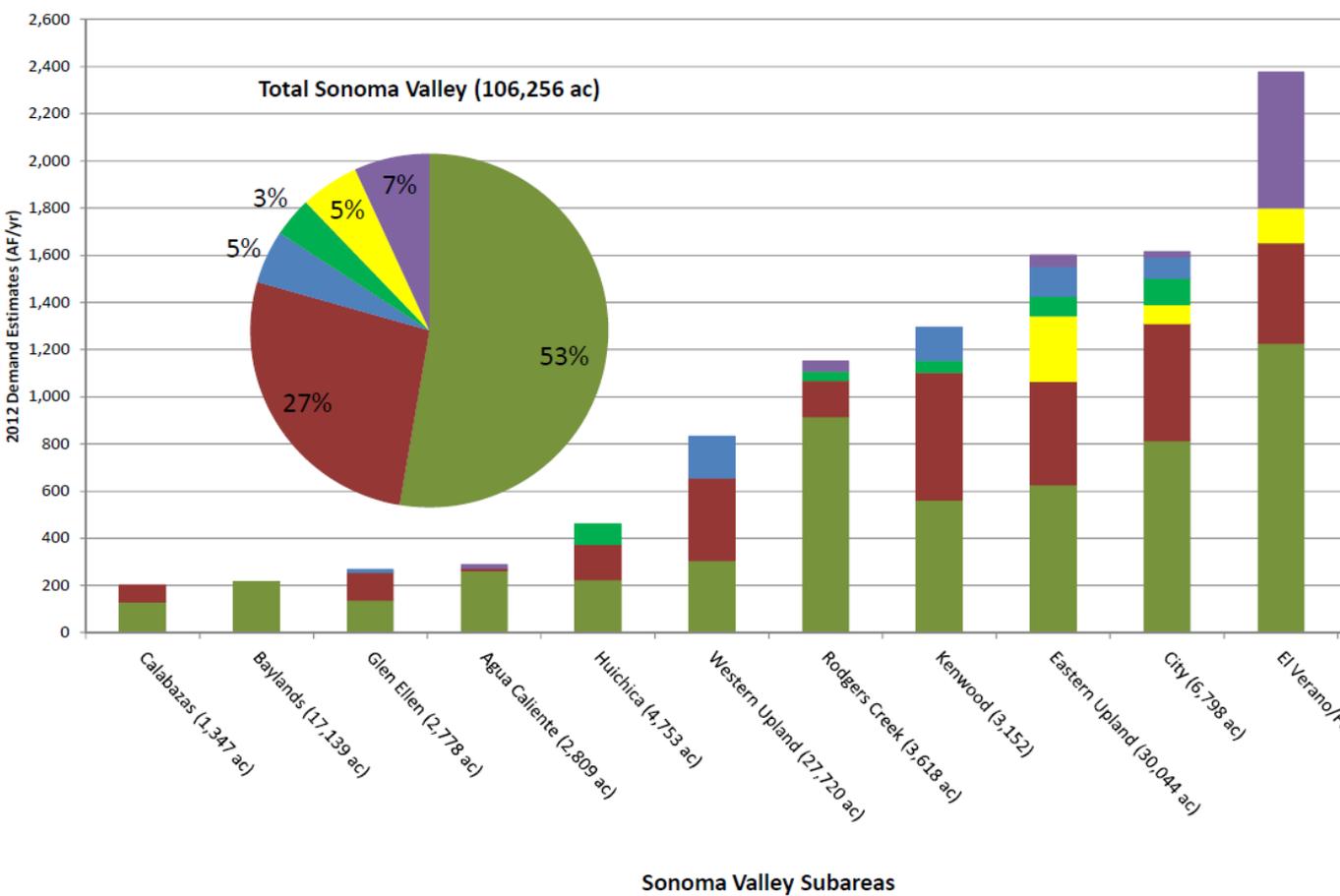
Total Estimated 2012 Water Demands of 17,900 Acre-Feet



# Groundwater Use in Sonoma Valley

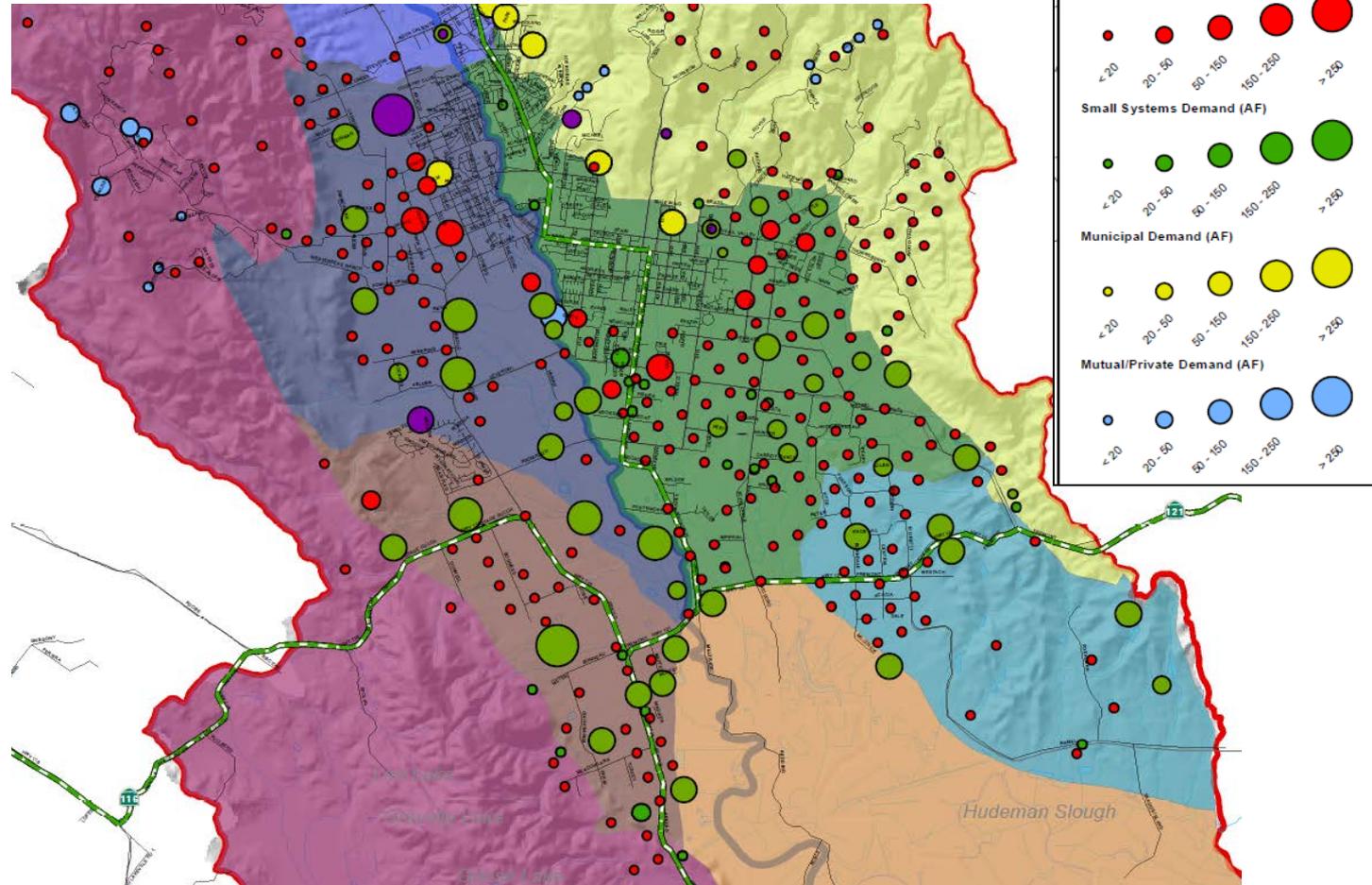
Estimated 2012 Groundwater Demands in Sonoma Valley Groundwater Basin

■ Agriculture ■ Rural ■ Municipal ■ Small Water Systems ■ Mutual/Private Water Companies ■ Irrigated Turf



# Distribution of Groundwater Use in Sonoma Valley

- Intensive groundwater demands in El Verano and City subareas
- Primary uses:
  - Agricultural irrigation
  - Rural residential
  - Golf course and park irrigation



# So What Can Be Done to Improve Water Supply Conditions in the Sonoma Valley?

# Basin Advisory Panel Recommended Management Strategies

- **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

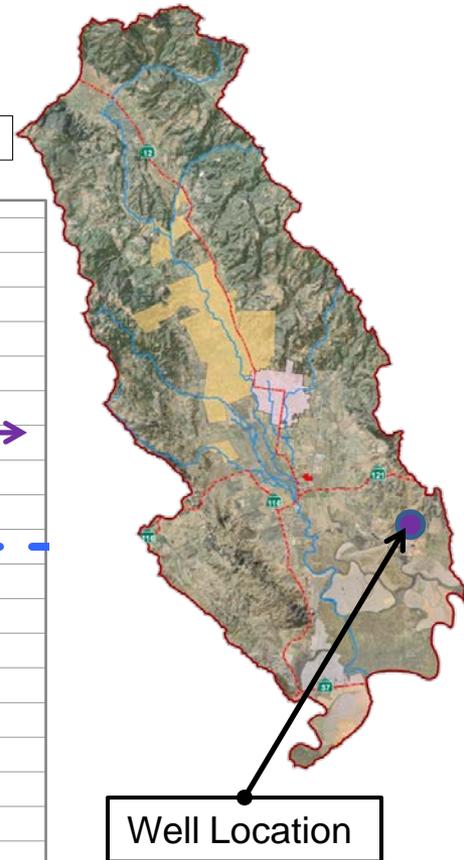
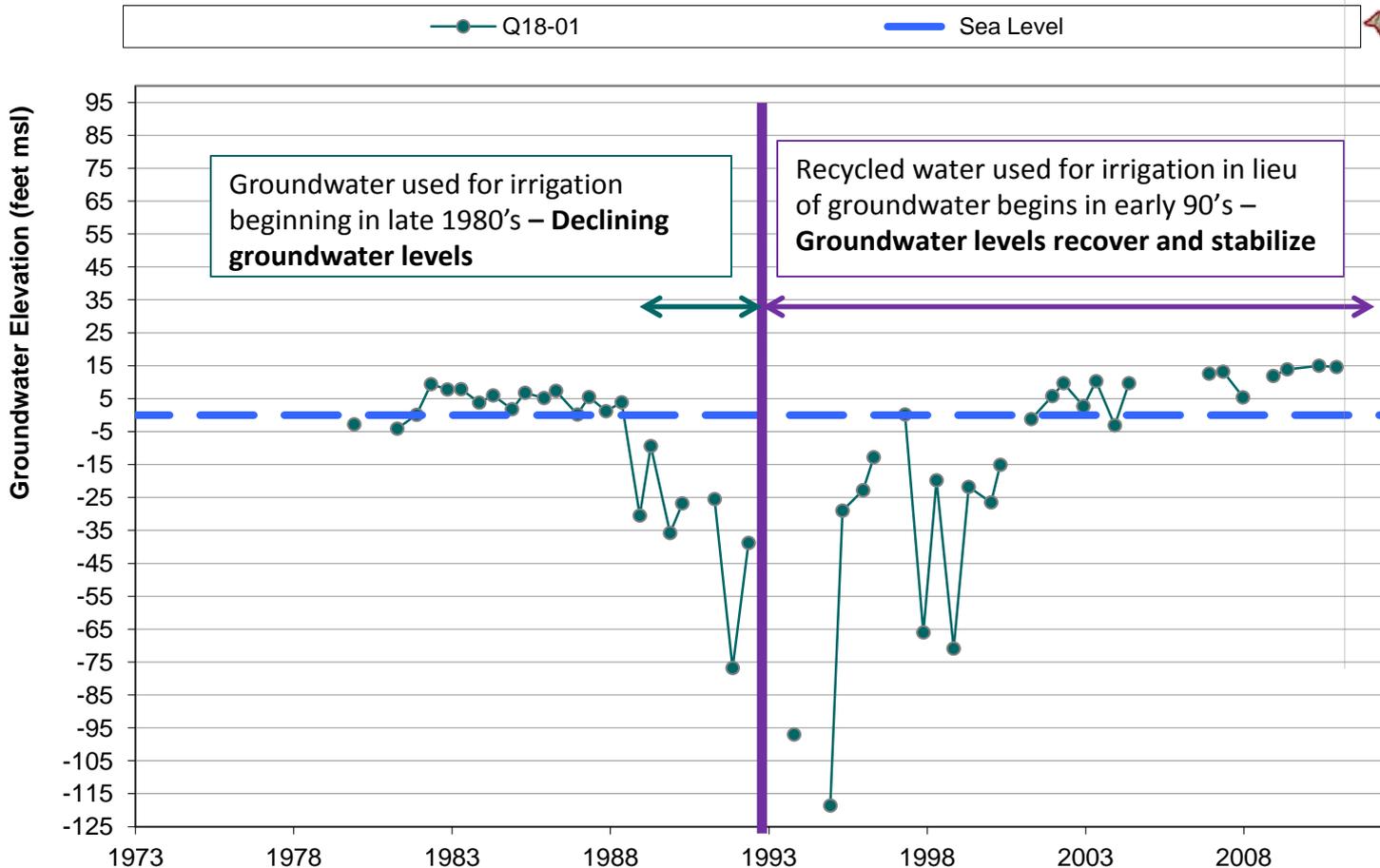
# Sonoma Valley Water Conservation Awards

- **Opportunity to highlight water conservation techniques**
- **Recognized for water conservation efforts by Basin Advisory Panel:**
  - Several residential homeowners, local businesses and schools for irrigated turf replacement, rainwater harvesting and water-smart gardening.
  - Sonoma Ecology Center and Southern Sonoma County RCD for public education efforts on water conservation workshops and demonstrations.
  - Several wineries and vineyard managers (Benziger Family Winery, Clarence Jenkins, Deerfield Ranch Winery, Mulas Family Farms and Gundlach Bundschu Winery) for water treatment and reuse, groundwater recharge, and water-use efficiency efforts.
  - Sonoma Community Center for Maloney Family Garden and rain-water harvesting.
  - City and VOMWD staff for assisting with outreach and implementing water conservation programs.



# Irrigation with Recycled Water to Offset Groundwater Pumping

Groundwater-Level Hydrograph  
Irrigation Well  
Carneros Subarea

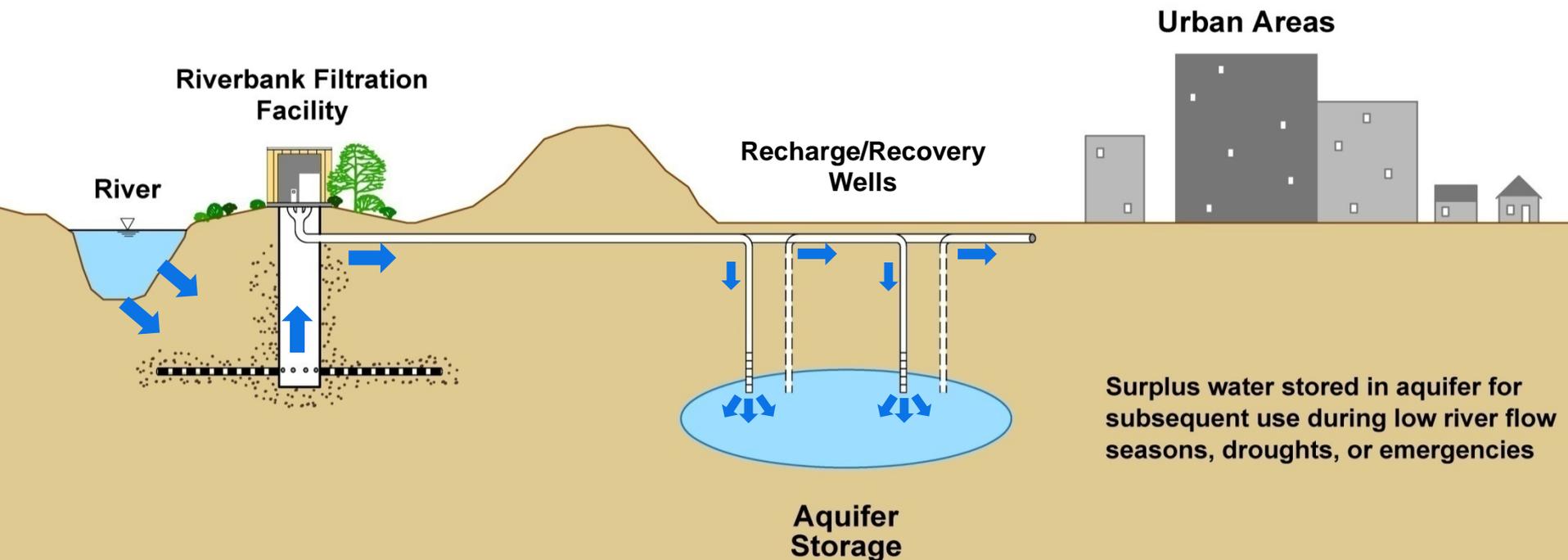




# Conceptual Groundwater Banking Schematic

## Aquifer Storage and Recovery

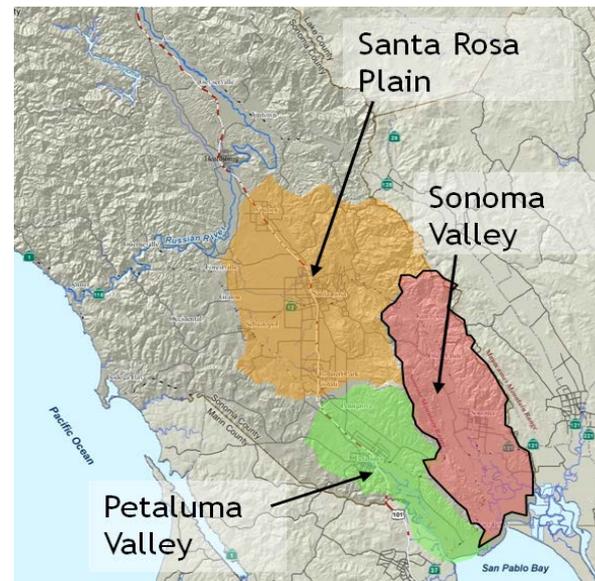
- Proceeding with Aquifer Storage and Recovery Concepts
- Geochemical compatibility assessment
  - Groundwater quality sampling and geochemical modeling
- Developing Work Plans for Pilot-Scale Demonstration Project(s)
- Explore funding options



# Combining Stormwater Management & Groundwater Recharge - Watershed Studies

## Goals and Objectives of Scoping Studies:

- 3 Watersheds - Simultaneous Studies
- Strategically managing surface & groundwater improving flood protection & groundwater recharge
- Develop design strategies
- Grant funding opportunities
- Stakeholder Input



# Community Meeting: 1.29.2014



## **City Watersheds of Sonoma Valley: Reducing Flood Risks Along Fryer Creek**

Wednesday, January 29, 2014

6:30 pm - 8:30 pm

Community Meeting Room (City Council Chamber)  
177 First Street West, Sonoma, CA 95476

# Partnerships: Recent State & Federal Funding

## Recent Grants and Direct Funding for Sonoma Valley

- **Recycled Water** >\$5M
- **Conservation** >\$0.2M
- **Groundwater** >\$1.3M
- **Stormwater** ~\$2M

## Funding of Groundwater Studies & Management

- **SCWA & SVCSD** \$1.215M
- **Federal** \$0.5M
- **State** \$0.425M
- **City & VOMWD** \$0.26M
- **County & Open Space** \$0.15M

# Groundwater Management Plan 5 Year Review

- **Sets course of management plan for next 5 years.**
- **Does current plan adequately address groundwater issues (e.g., depletion zones & salinity)?**
- **Data & analysis presented in 5 year review indicates plan needs to be modified to address issues**
- **Public education & stakeholder effort (Alternatives Analysis) to review existing objectives & management programs to determine changes to plan**

# Summary - Groundwater Depletion & Salinity

- **Groundwater depletion areas exhibit declining water levels over several years/decades – Many years in the making**
- **2012-2014 drought exacerbates but did not cause depletion areas**
- **Groundwater depletion areas require additional measures to address declining water levels & salinity issues**
- **Primary water users (e.g., Rural Residential & Agriculture) in depletion areas must participate in developing & funding solutions to address this problem**
- **Sonoma Valley Groundwater Management Program will conduct “Alternative Analysis” to ID additional measures**

# Alternatives Analysis - SV Groundwater Management Program

- Identify potential technical, regulatory, land use & institutional response actions to mitigate declining groundwater levels.
- Prioritize response actions (or groups of actions) & evaluate effectiveness in addressing groundwater depletion areas using groundwater model.
- Scenario-based planning by stakeholder group to develop scenarios & consider results. BAP to approve & make recommendations regarding solutions.
- Community participation is essential throughout this process

# Schedule and Next Steps

- **December 2013 - February 2014**
  - Draft Report undergoes TAC and Panel review
- **February 20, 2014**
  - Panel considers approving 5-Year Review Report
- **March/April 2014**
  - Water Agency Board considers approving 5-Year Review Report and recommendation for Alternatives Analysis
- **April or May 2014**
  - Public Forum on Sonoma Valley Groundwater Issues
- **April - December 2014**
  - TAC and Panel identify and analyze alternative actions through scenario-based planning

**Participation by all stakeholders will be critical during this process.**

To participate contact Marcus Trotta - 707.547.1978

[Marcus.Trotta@scwa.ca.gov](mailto:Marcus.Trotta@scwa.ca.gov)

# Final Points

- **Regional & local water issues are inter-related**
- **Sonoma Valley has a vulnerable water supply that requires proactive management**
- **Solutions involve increasing water supply “Portfolio” via integrated water management to increase reliability**
- **SCWA can help Sonoma Valley stakeholders by providing:**
  - ✧ **Technical Resources**
  - ✧ **Funding**
  - ✧ **Coordination with Federal & State Agencies**