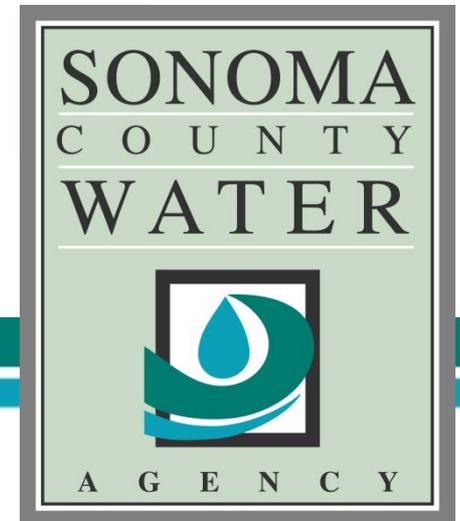
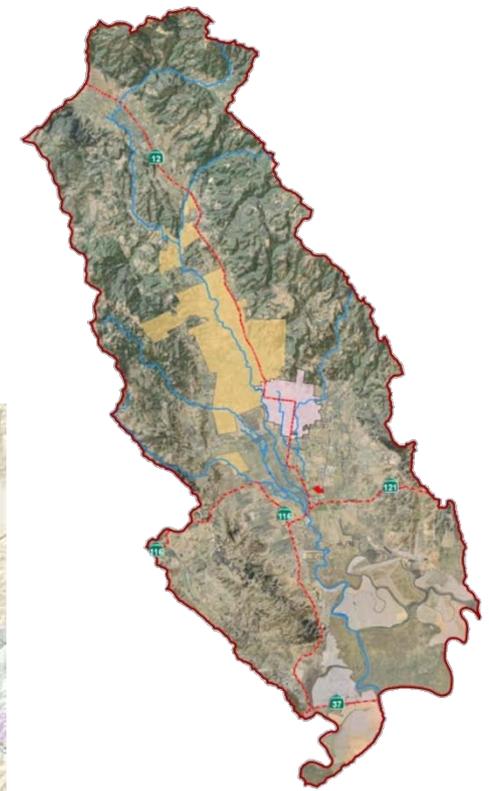
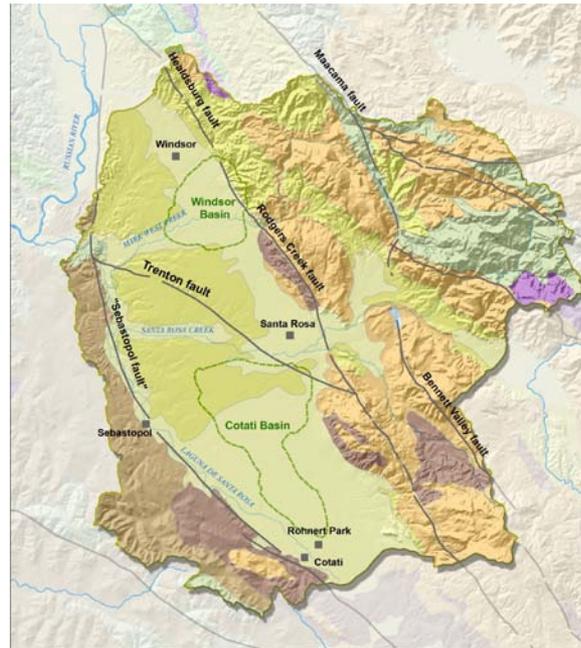
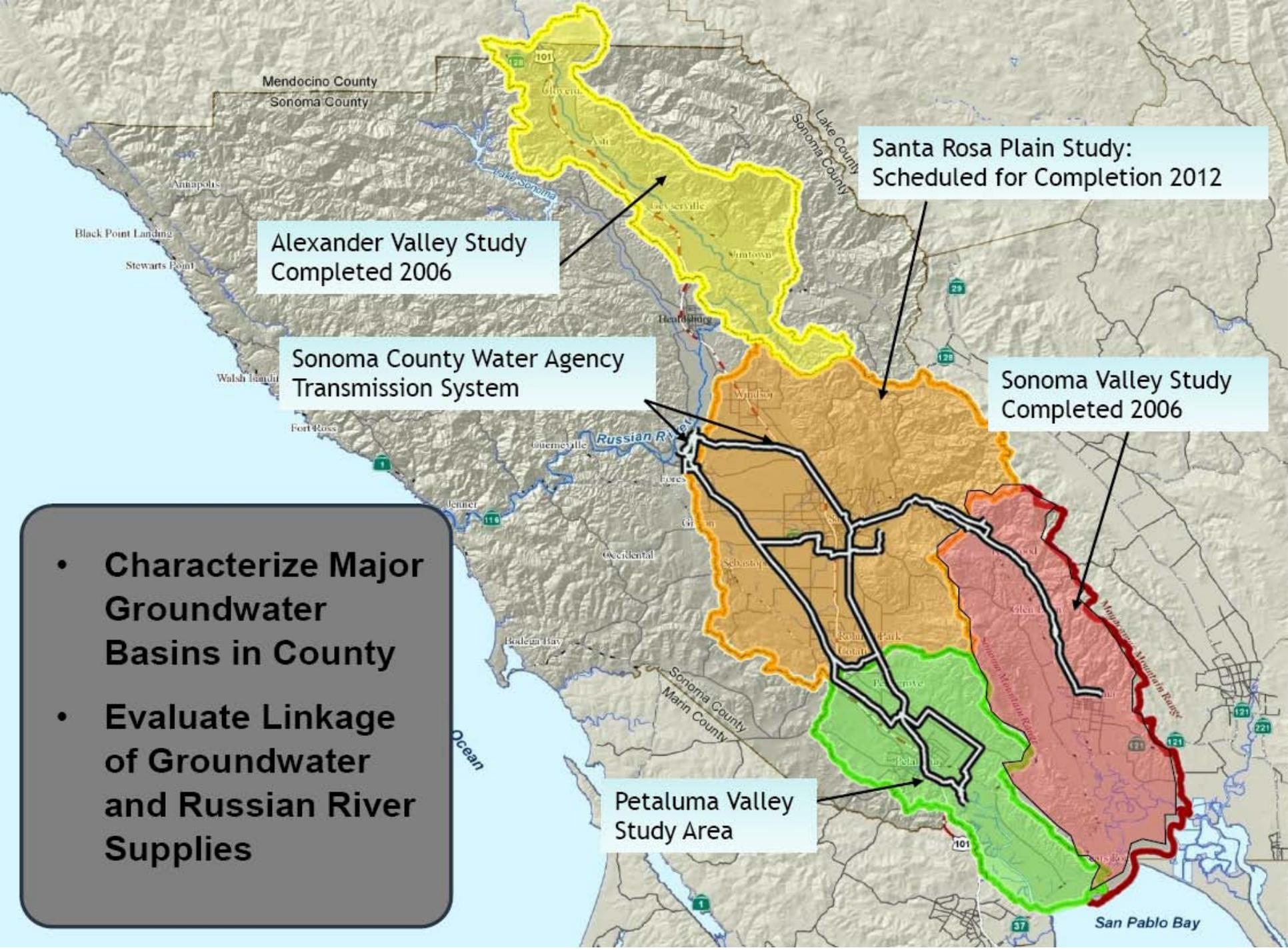


Sonoma Valley and Santa Rosa Plain Groundwater Management Planning Update





Mendocino County
Sonoma County

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

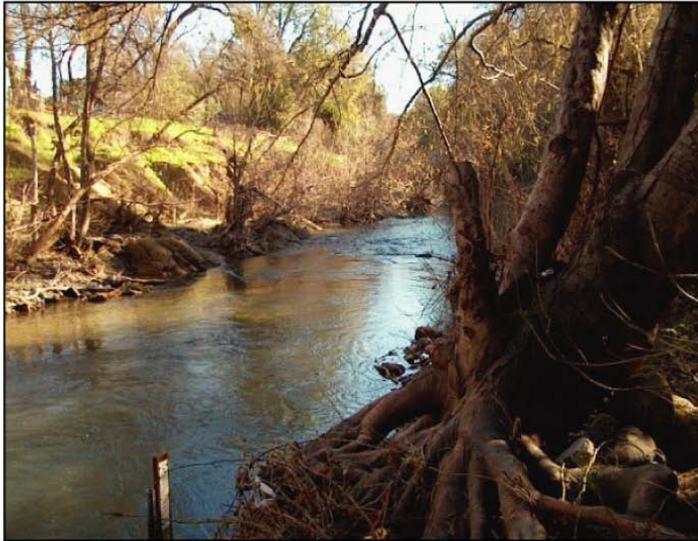
San Pablo Bay

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

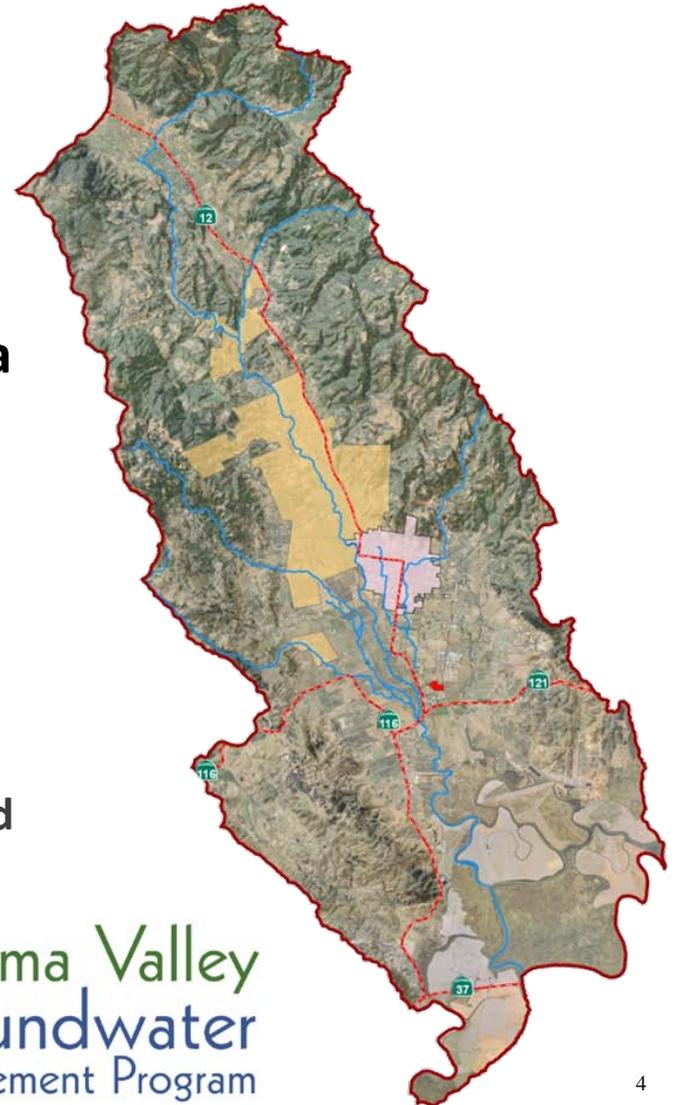
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Key Findings:

- **Increased pumping between 1975-2000 (6,000 to 8,500 acre-ft/year)**
- **Localized decline of groundwater levels**
- **17,000 acre-ft decline groundwater storage**
- **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
- **Fifth Year of Implementation**

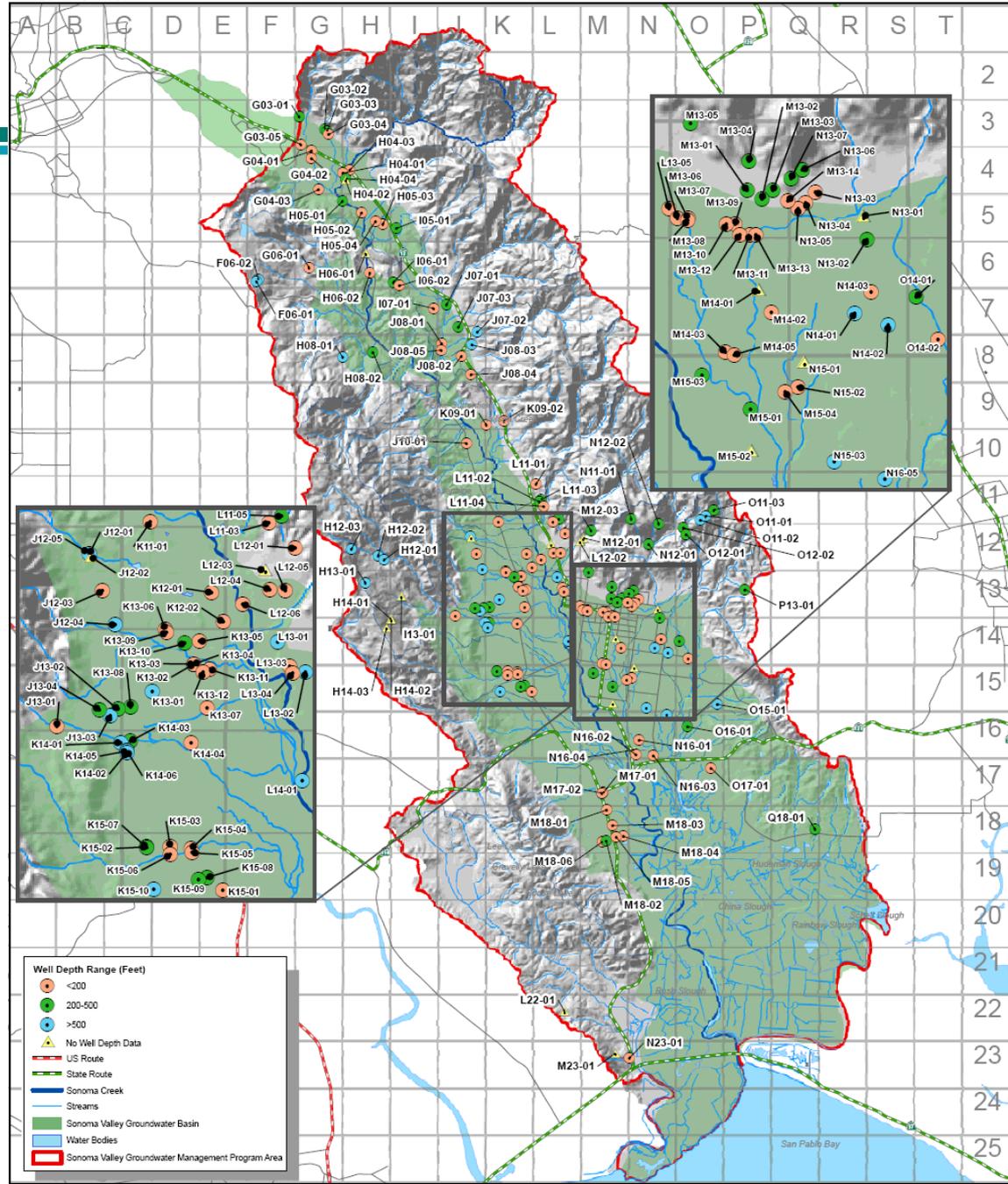


Management Strategies

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

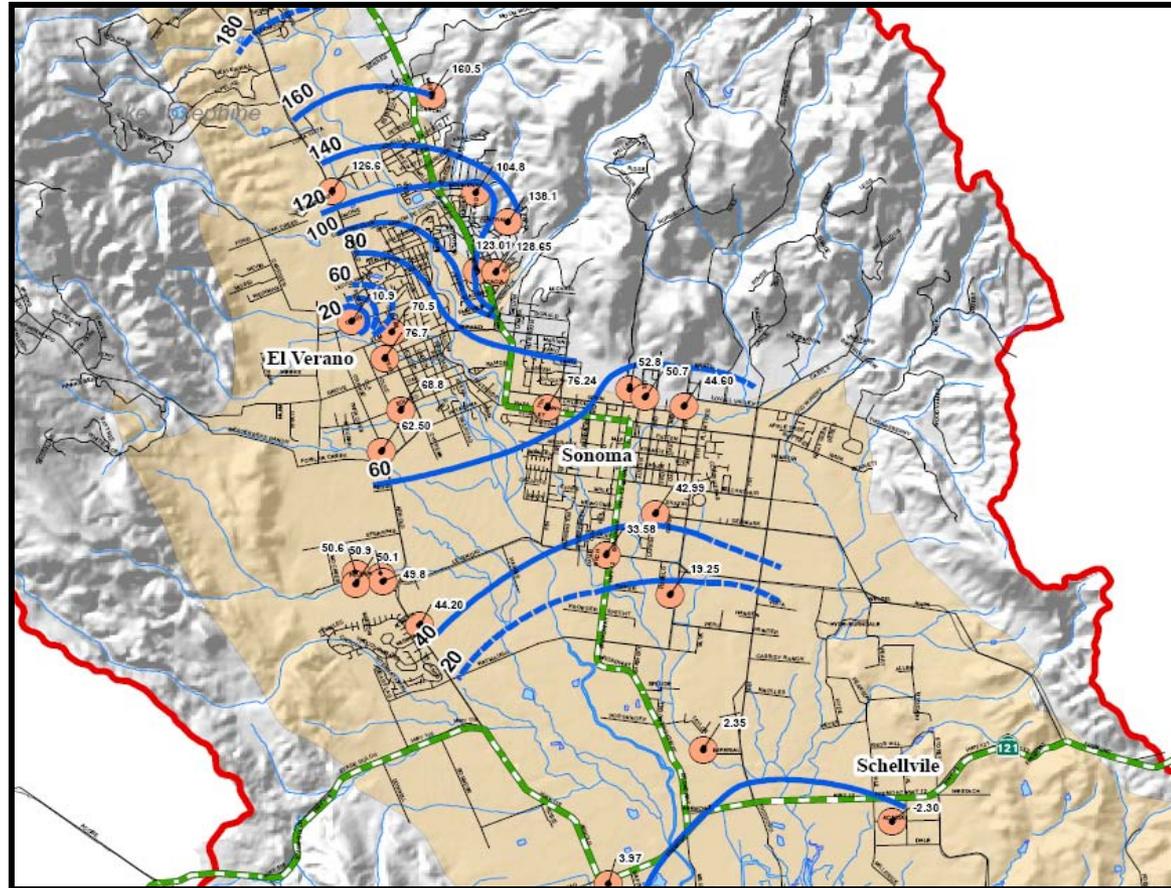
Voluntary Groundwater-Level Monitoring

- **80 - New Wells since 2007**
- **140 - Wells with Synchronized Monitoring**
- **Groundwater Levels Only**
- **Track and Assess Seasonal and Long-term Trends**
- **Incorporated subset of wells into CASGEM Program**



Groundwater Conditions

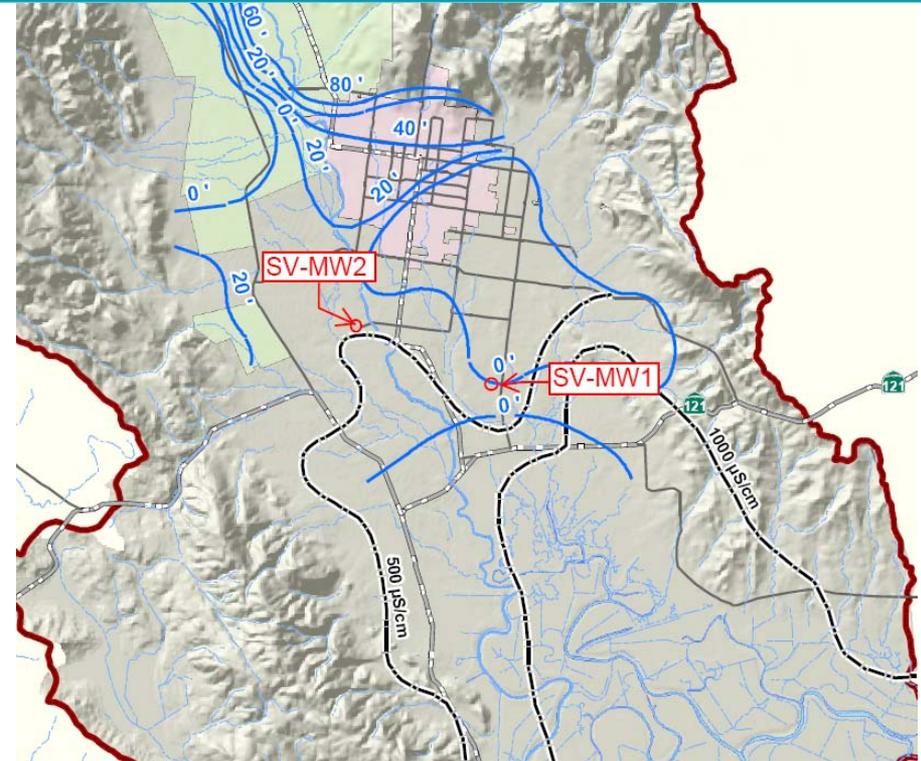
- Shallow-Zone wells generally stable and above sea level
- Localized areas of declining groundwater levels mainly observed in Deeper-Zone wells
 - El Verano Area
 - Southeast of City of Sonoma
- Groundwater-levels are locally below sea level



Installation of Nested Groundwater Monitoring Wells



**Project completed
under \$250,000
California
Department of
Water Resources
Local Groundwater
Assistance Grant**



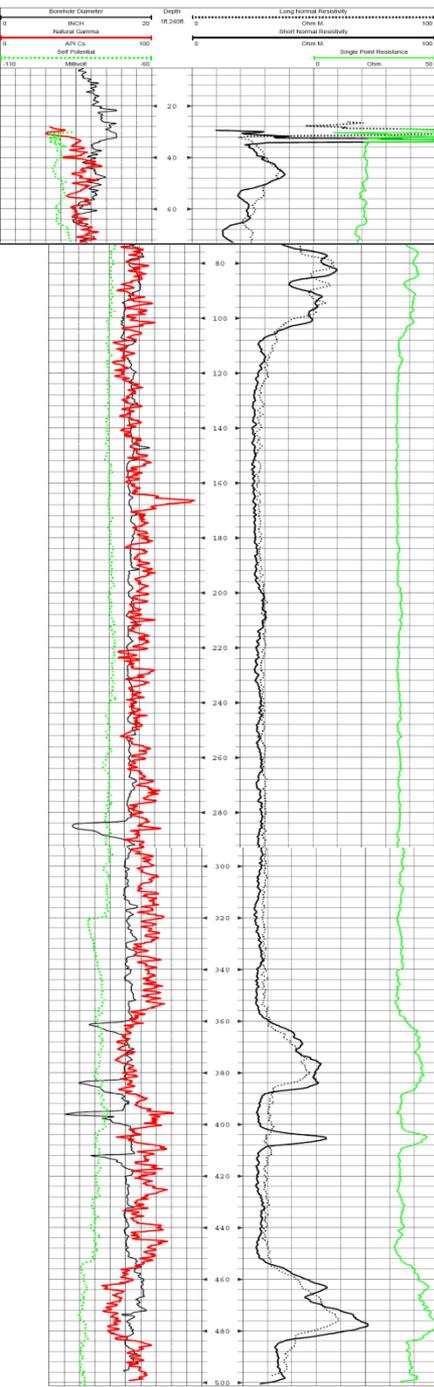
- At margins of groundwater-level pumping depression and region of elevated salinity concentrations
- SV-MW1 located along 8th St East just north of wastewater treatment plant
- SV-MW2 located along Watmaugh Rd within 400 feet of Sonoma Creek



Geologic Findings

- Permeable Sand and Gravel dominates shallow aquifer (less than 100 feet deep).
- Lots of Clay and relatively thin Sand/Gravel zones beneath 100 feet.
- Sand and Gravel aquifer zones and Clay aquitard zones correlate reasonably well between two locations and may be continuous.





SV-MW2 (Watmaugh)

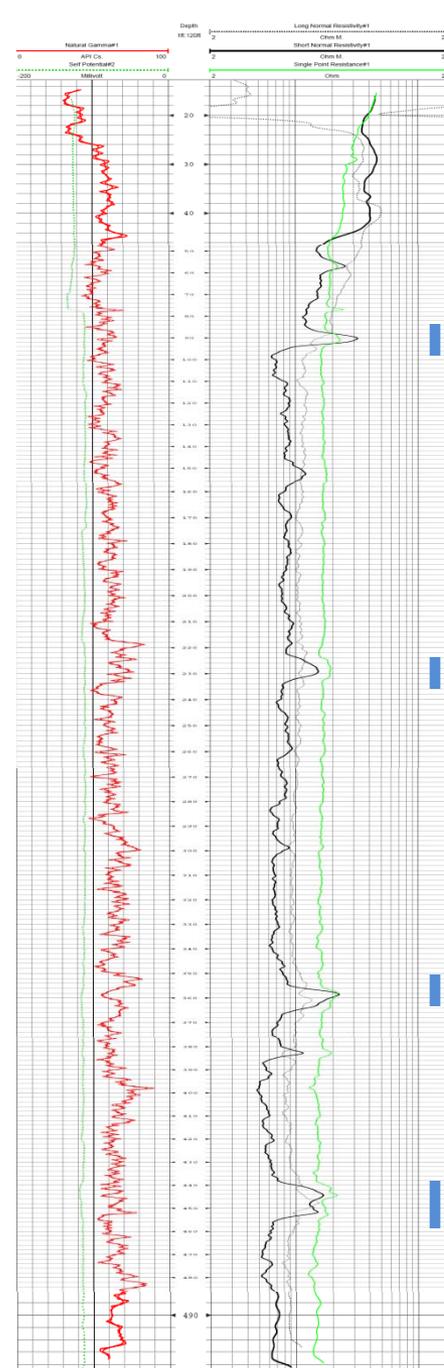
0 to 100 feet: Sand and Gravel

100 to 360 feet: Lots of Clay!

360 to 410 feet: Sand/Gravel zones with Clay interbed

410 to 450 feet: Clay

450 to 485 feet: Sand/Gravel



SV-MW1 (8th St. E)

0 to 100 feet: Sand and Gravel

100 to 220 feet: Mostly Clay

220 to 230 feet: Thin Sand/Gravel Zone

220 to 355 feet: Mostly Clay

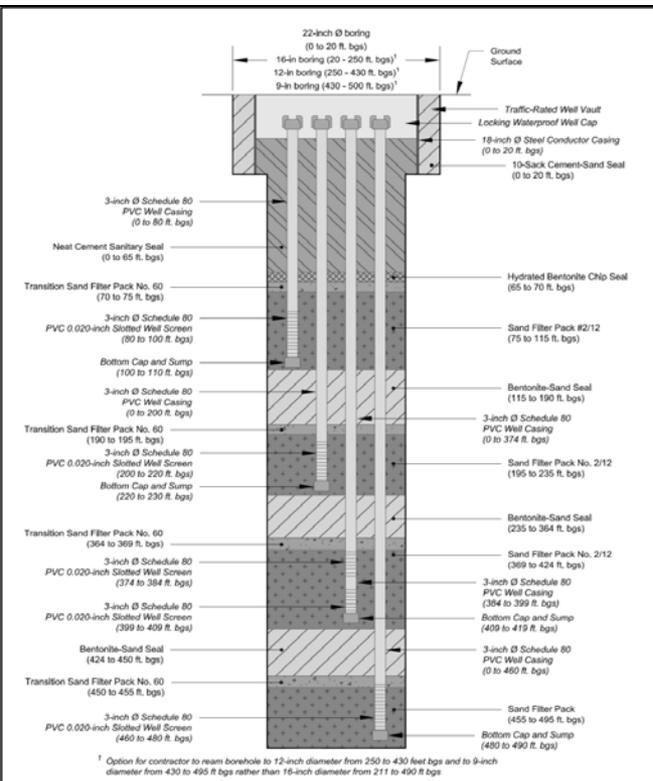
355 to 385 feet: Sand and Gravel

385 to 440 feet: Mostly Clay

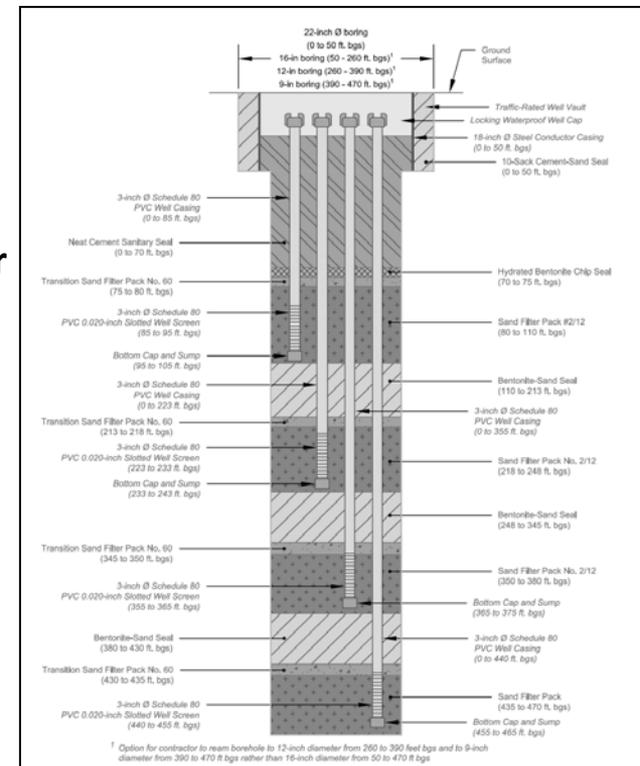
440 to 455 feet: Sand and Gravel

455 to 500 feet: Mostly Clay

Well Construction and Data Collection



- Collection of Water Quality Samples to evaluate salinity distribution.
- Instrumentation of wells with pressure transducers, temperature probes and water quality sensors.
- Instrument and collect data from surface water in Sonoma Creek to assess surface water & groundwater interaction.
- Incorporate detailed lithologic data into Hydrostratigraphic Framework update.
- Incorporate data into update of Groundwater Flow Model.



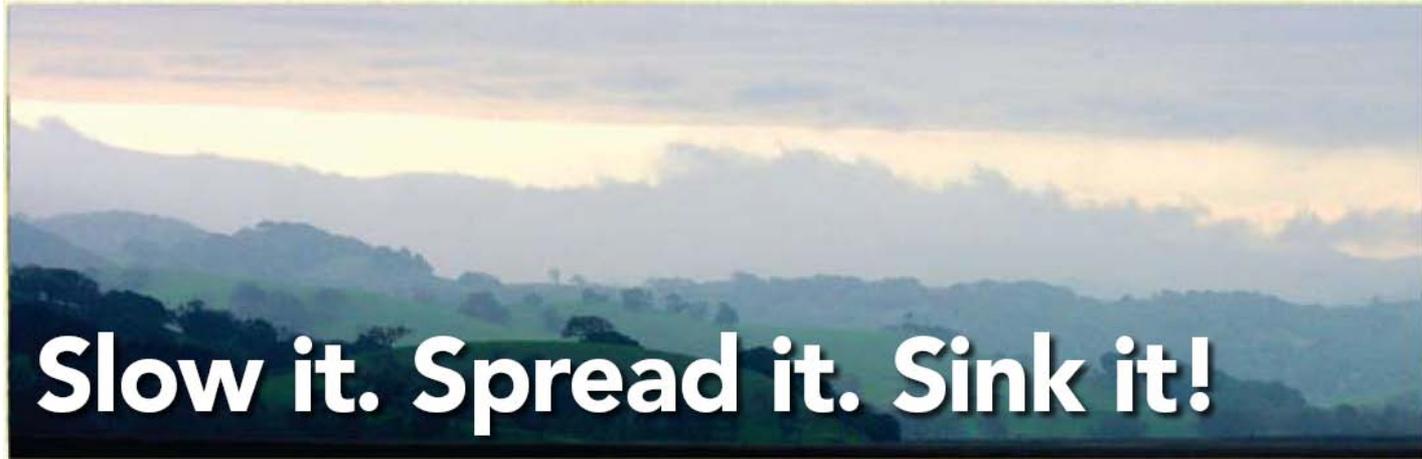
SV-MW2 (Watmaugh Rd)

SV-MW1 (8th Street E)

Groundwater Sustainability

➤ **Guide for property owners to implement stormwater management projects that Reduce Runoff and promote Groundwater Recharge**

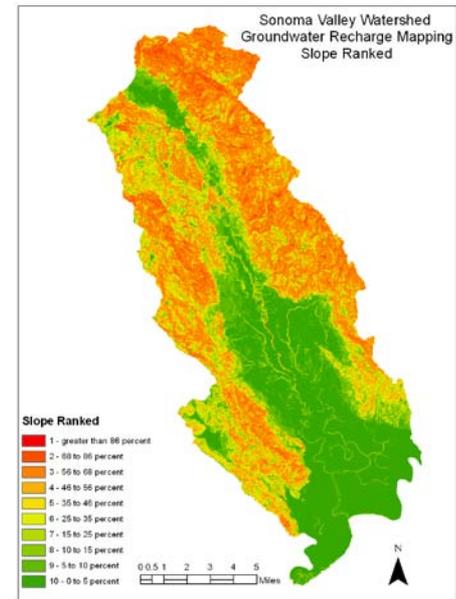
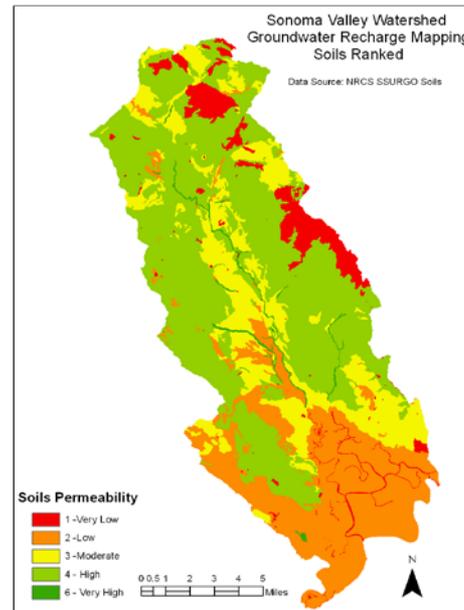
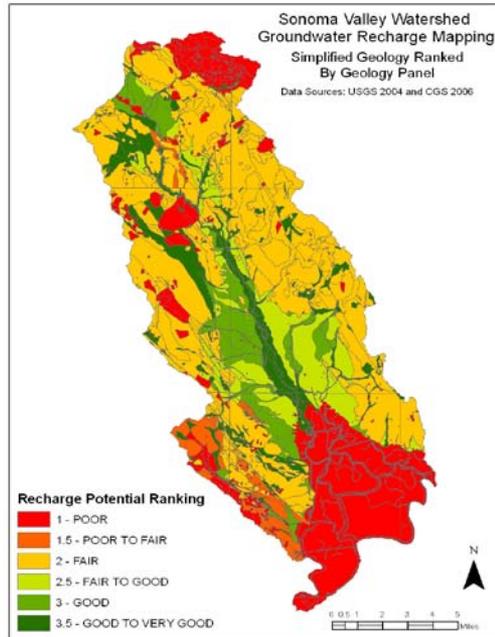
➤ **Developed by Southern Sonoma County Resource and Conservation District with input from Sonoma Valley TAC and BAP**



A Homeowner's & Landowner's Guide to Beneficial Stormwater Management



Groundwater Recharge Mapping



- Perform Groundwater Recharge Mapping in coordination with the Sonoma Ecology Center using California DWR grant funds to identify natural groundwater recharge areas and locations suitable for groundwater recharge enhancement projects
- Integrating and ranking recharge components including, Geology, Soil, Slope, and Vegetation

Sonoma Valley 2011 Water Conservation Awards

- **Opportunity to highlight water conservation techniques**
- **Recognized for water conservation efforts by Basin Advisory Panel:**
 - Cathy O'Neill, homeowner – Construction of rain-water harvesting system
 - Clarence Jenkins, vineyard manager – Promotion and implementation of water conservation and groundwater recharge techniques in the vineyard
 - Kathy Toohey and Mike Brett, City of Sonoma Water Conservation Coordinators - Significant contributions in implementing water conservation programs for Sonoma Valley residents
 - Mona Verducci, homeowner – Replacement of 4,100 square feet of water intensive turf with low water using plants
 - Sonoma Community Center – Replacement of 4,000 square feet of turf and development of Water Wise Garden



Ongoing and Planned Activities

- **Streamflow Measurements in Spring and Fall within Sonoma Creek and its Tributaries**
 - Further assess relationship between surface water and groundwater (Recharge and Discharge Areas).
- **Resume and Expand DWR's historical Water Quality Monitoring Program**
 - Further evaluate and track areas of saline groundwater in Southern Sonoma Valley
- **USGS to Upgrade Groundwater Flow Model to Fully Couple with Surface Water Model**
- **Provide input on Salt and Nutrient Management Plan Development**
- **Develop precipitation monitoring network**
- **Continue Voluntary Groundwater-Level Monitoring Program**

Ongoing and Planned Activities

- **Groundwater Banking Feasibility Study initiated in 2010 for banking excess winter water from the Russian River in the Sonoma Valley groundwater basin for storage and use in the summer or during drought periods**
 - **Coordination with the City of Sonoma and Valley of the Moon Water District and other stakeholders**
- **Initiate Watershed Planning Study to assess projects that detain excess stormwater from the Sonoma Creek Watershed to both Mitigate Flood Hazards and Enhance Groundwater Recharge**
- **Seek funding opportunities for pilot projects that can demonstrate stormwater capture and groundwater recharge at multiple scales**

Groundwater Management Program Funding

- Local Cooperative Funding Agreement

- SCWA, City of Sonoma, Sonoma County Agricultural Preservation and Open Space District, VOMWD, SVCSD and County



- DWR Memorandum of Understanding

- Facilitation Services Technical Assistance – Central District Office



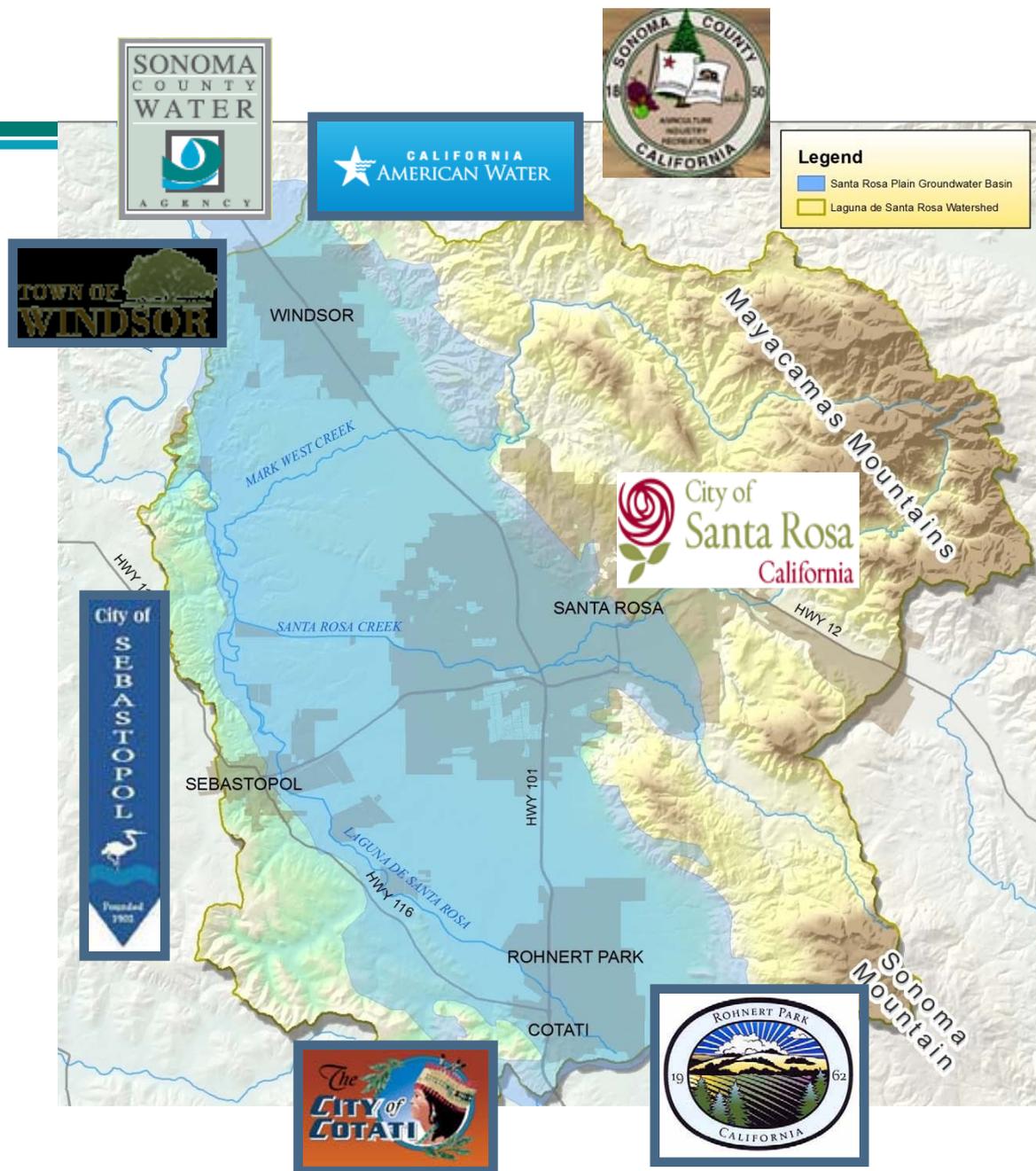
**Santa Rosa Plain
Groundwater Study
Due 2012**

OBJECTIVES

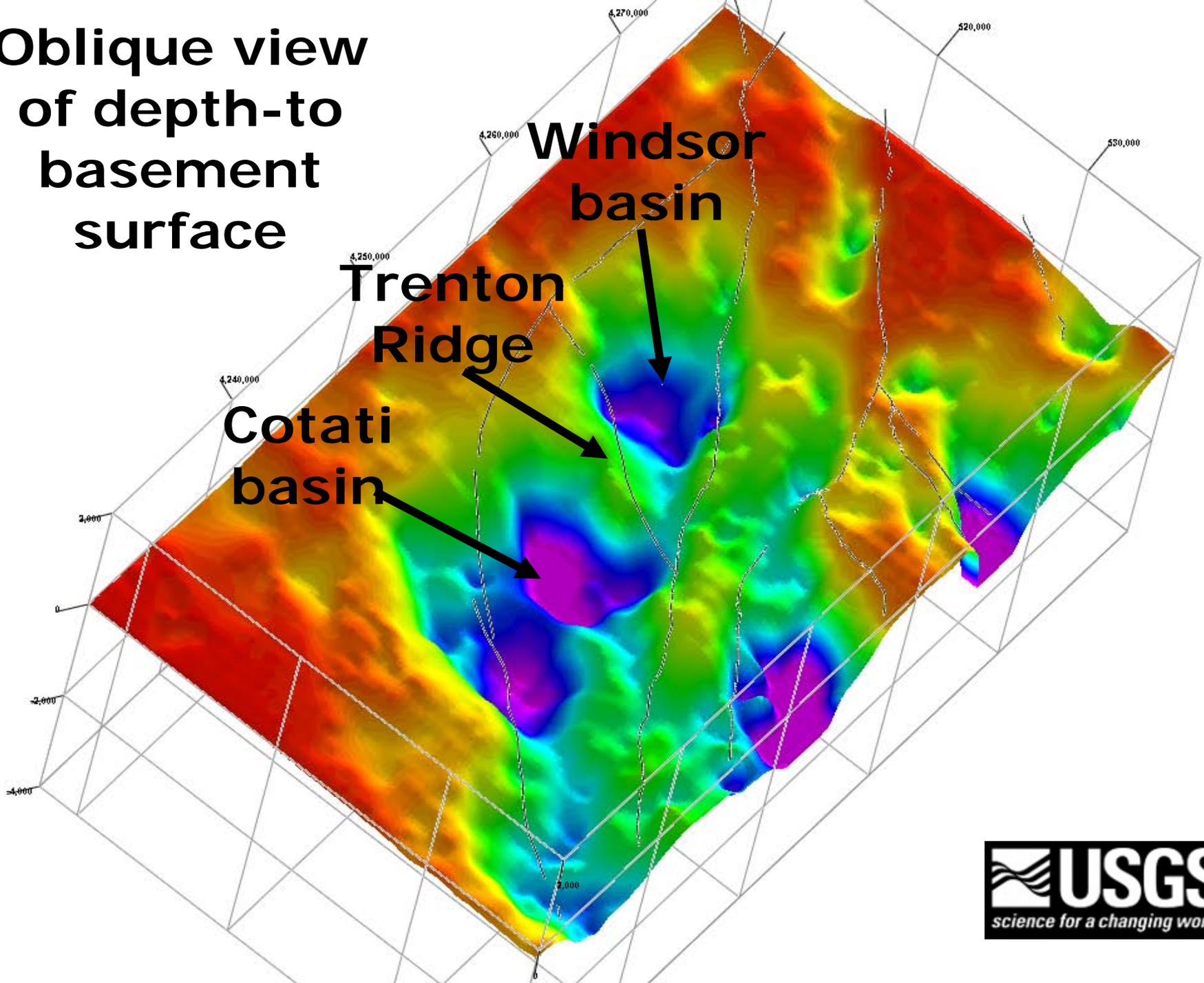
**Hydrogeology and
Groundwater Quality**

**Surface Water-
Groundwater Model**

**Evaluate Potential Future
Conditions and
Alternative Water
Management Strategies**



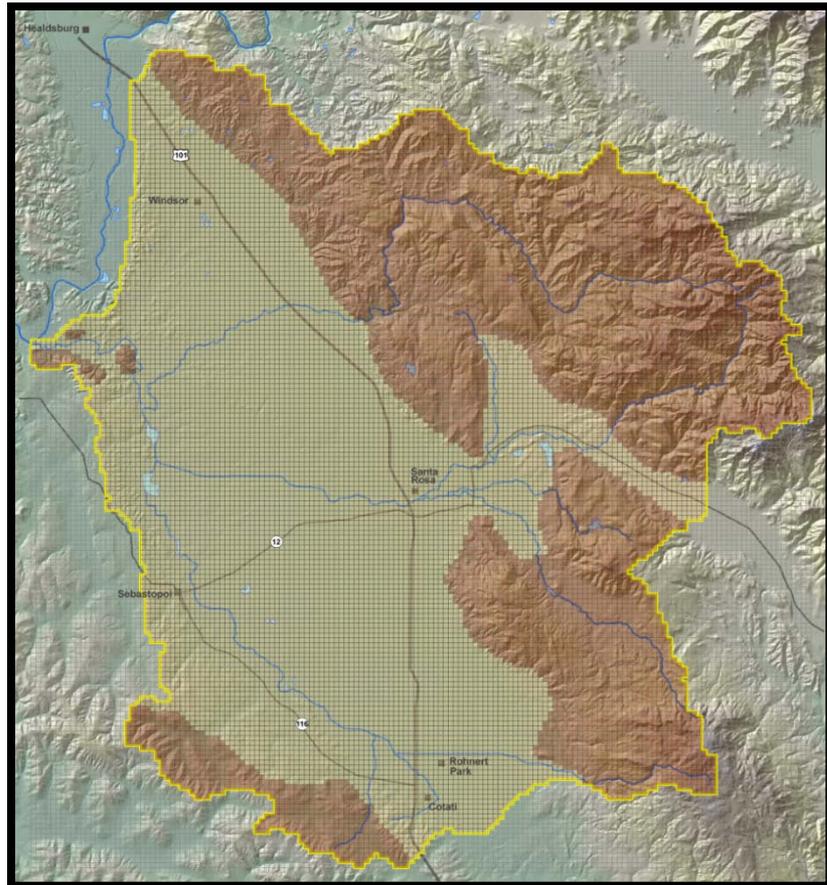
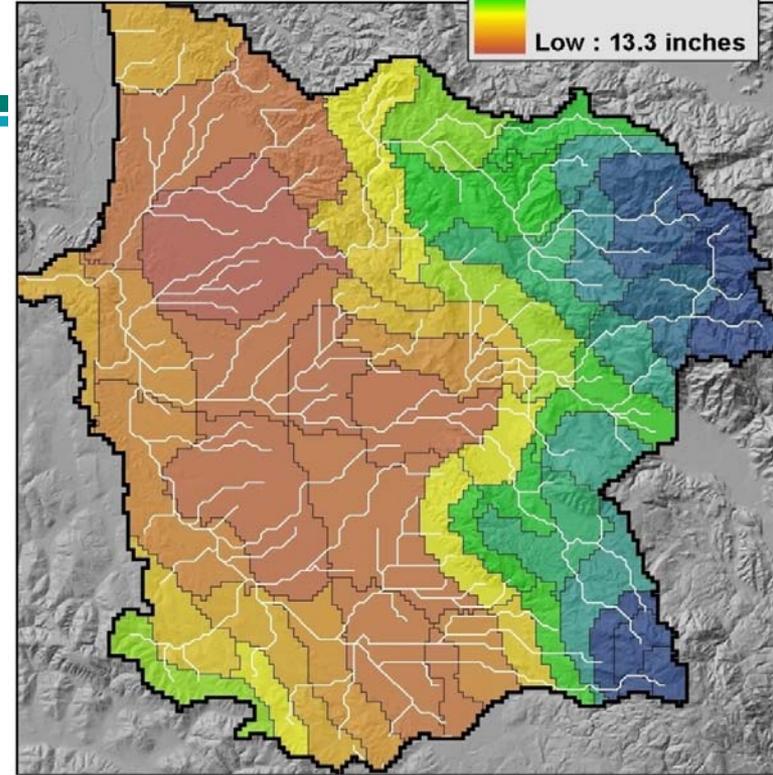
Oblique view of depth-to- basement surface



GSFLOW Model

Surface & Groundwater

December 2005
Precipitation
High : 27.8 inches
Low : 13.3 inches



- Estimate hydrologic budget
- Identify recharge areas
- Evaluate water-resource management strategies
- Evaluate climate-change impacts
- Evaluate effects of changes in land-use

- **Impartial Mediators Interviewed 55 Stakeholders Representing 37 Organizations**
 - **Agriculture**
 - **Business & Developers**
 - **Conservation & Environmental**
 - **Government (State, County & City)**
 - **Rural Residential Well Owners**
 - **Scientists**
 - **Tribal**
 - **Water Supply & Groundwater Technical People**

2010 Preliminary Planning

Steering Committee Activities

- ❖ Outreach and Stakeholder Concerns
- ❖ 20 Briefings with Organizations in Region
- ❖ Three Educational Workshops Over 200 People Attended
- ❖ Recommend Developing Groundwater Management Plan



Timeline

Spring to Fall 2011– Presented Steering Committee Recommendations to move forward with development of voluntary Groundwater Management Plan to Board of Directors, prepared Work Plan & Negotiated Funding Agreement with Partners

December 2011 – **Convened Basin Advisory Panel** to Initiate GMP Development

Develop Plan over ~2 Years

Santa Rosa Plain Basin Advisory Panel

Water Supply & Groundwater Technical Issues

Mark Calhoun, Fircrest Mutual Water Company
Jay Jasperse, Sonoma County Water Agency
Gary Mickelson and Mike Mortenson, California Groundwater Association
Andrew Soule, Cal American Water Company

Groundwater Users, including Rural Residential Well Owners

Elizabeth Cargay, Foothills of Windsor Homeowners Association
Edward Grossi, Sweet Lane Wholesale Nursery

Agriculture

Lawrence Jaffe, Community Alliance of Family Farmers
Melissa Lema, Western United Dairymen's Association
Walter Ryan, Sonoma County Farm Bureau
Robert Weinstock, EJ Gallo, Representing the Sonoma County Winegrape Commission

Business / Developers

Joe Gaffney, Sonoma County Alliance
Curt Nichols, Carlile Macy Landscape Architects and Civil Engineers, for the Construction Coalition
Ezrah Chaaban, North Bay Association of Realtors

Environmental

Rue Furch, Sebastopol Water Information Group (SWIG)
Len Holdt, Sierra Club
Jane Nielson, Sonoma County Water Coalition and O.W.L. Foundation

Governmental

Bill Keene, Sonoma County Agricultural Preservation & Open Space District
Pete Parkinson, County of Sonoma Permit and Resource Management Department
Jennifer Burke, City of Santa Rosa
Richard Burt, Public Works Director, Town of Windsor
Darrin Jenkins, City of Rohnert Park
Sue Kelly, City of Sebastopol
Damien O'Bid, City of Cotati

Tribal

Maureen Geary, Federated Indians of Graton Rancheria

Natural Resource Management

Jon Guardino, Laguna de Santa Rosa Foundation
Kara Heckert, Sotoyome Resource Conservation District

General Public

Michael Burns, Resident Santa Rosa
Dawna Gallagher, Resident Rohnert Park
Lloyd Iverson, Local Well Owner
John King, Well Owner and Rancher

Basin Advisory Panel Meetings

Discussion Topics

Five Meetings December 2011 through April 2012:

- Develop Panel Charter
- Groundwater Issues and Interests
- Presentations on Groundwater Management & Groundwater Basics
- Groundwater Legal and Institutional Issues
- USGS Groundwater Study & Modeling Scenarios
- Plan Boundary
- Planning Goals & Objectives

Upcoming Meeting: June 7, 2012:

- Framework and Lead Entity for Groundwater Management Plan
- Goals & Objectives