City of Santa Rosa Status Update: Strategic Groundwater Master Plan and Related Groundwater Programs

May 3, 2012
Today’s Presentation

Groundwater Master Plan

USGS Study/Model Project

Exploratory/Emergency Well Siting Program

Next Steps
Groundwater Master Plan
Overview

- City retained West Yost in October 2011
  - Project team includes ECON and Pueblo Water Resources
- 12 month Project schedule, with completion in Fall 2012
- Assumed USGS Study would be released in early 2012
Key Issues the GWMP is to Address

Supply Reliability: What are the peaking and emergency needs that GW can supply? How much water can the City sustainably pump?

USGS Model: Is this model representative of, and useful for the City?

GW Recharge: Is Aquifer Storage and Recovery (ASR) viable and beneficial for Santa Rosa?

Emergency Groundwater Supply Program: How can the City optimize its investment and momentum in the Emergency Groundwater Supply Investigation?
Approach

Data from City’s Emergency GW Supply Program

Existing Understanding of GW basin (beyond current database)

Peer Review of USGS Model

ASR Feasibility Study

Enhanced Understanding of GW Basin Conditions

Identify Promising Emergency Well Sites (Martha Way)

Identify Potential GW Projects

Identify Potential ASR Projects

Policy Filter

Define GW’s Role in Water Supply Portfolio
(Annual? Seasonal and emergency? Long-term Storage? Water Quality?)

Technical Filter

Including Use of USGS Model to Evaluate Potential Projects

Incorporate Prioritized GW Projects into GW Master Plan
Total estimated City well pumpage from 2000 to 2006 was 161 af, or an average of about 27 af/yr.
2008 Supply and Demand

Total Demand = 23,595 acre-feet
Total Agency Supply = 21,905 acre-feet
Total Groundwater Supply = 1,501 acre-feet
Total Recycled Water Supply = 189 acre-feet

[Graph showing supply and demand data for each month from January to December]
Conceptual Use of Groundwater and ASR
Today’s Presentation

- Groundwater Master Plan
- USGS Study/Model
- Exploratory/Emergency Well Siting Program
- Next Steps
USGS Study Overview

- BPU approved participation in USGS Study in March 2005 (SCWA, Sonoma County, City of Santa Rosa, City of Rohnert Park, City of Sebastopol, City of Cotati, Town of Windsor, Cal-American Water Company)

- Study Objectives:
  - Develop an updated assessment of the geohydrology, geochemistry and geology of the Plain
  - Develop a groundwater flow model of the Plain
  - Evaluate the hydrogeologic impacts of alternative groundwater strategies for the Plain’s groundwater basin
USGS Study Area with City Wells

Inactive City Wells
Active City Wells
Completed Test Borings

Explanations:
- Trenton Ridge
- Rodgers Creek Fault
- Lake
- City of Santa Rosa
- USGS Study Area
- Rincon Valley
- Santa Rosa Plain

DWR Basins:
- Kenwood Valley
- Napa-Sonoma Volcanic Highlands
- Wilson Grove Formation Highlands
- Santa Rosa Valley Subbasins

Locations:
- Farmers Lane 1, 2 & 3
- Peters Springs
- Carley
- Leete
USGS Model May Be a Cost Effective Tool to Evaluate GW Interactions and Help Prioritize Projects

Quick Peer Review
- Evaluates adequacy of model to meet City’s needs

Assess Model Regarding Local Conditions
- Increases knowledge regarding groundwater within Santa Rosa area

Use the Model to Evaluate Projects
- Evaluates and prioritizes projects on benefits to City
Status of USGS Study

- Admin Draft Groundwater Modeling chapter anticipated in early summer 2012

- Final Report and Groundwater Model with Database anticipated in late 2012/early 2013
USGS Study Preliminary Findings (as reported by USGS in February 2012)

- Santa Rosa Plain GW Basin NOT in “overdraft”
  - there may be small, isolated, localized areas that may not be showing stable water levels (although not within City of Santa Rosa)

- Municipal pumping only a very small portion of total GW pumpage

- The Rodgers Creek Fault zone is a **hydraulic barrier** to GW flow (data provided by ECON)
LOCATION OF PUMPING WELLS USED IN THE MODEL

EXPLANATION

- Municipal (70)
- Private (3163)
- Agricultural (1027)

PRELIMINARY AND SUBJECT TO REVISION. NOT FOR PUBLICATION.
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<tr>
<th>Saturated Zone</th>
<th>Acre-feet/yr</th>
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## Transient Groundwater Budget

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<th>Dry year (1977) acre-feet</th>
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Today’s Presentation

Groundwater Master Plan

USGS Study/Model

Exploratory/Emergency Well Siting Program

Next Steps
Test Borings in the City
Began in 2006

A Place to Play Park

Northwest Park
Production & Emergency Wells and Test Boring Locations

[Map showing various locations and markers such as North Village, Northwest Community Park, Farmers Lane 1, Farmers Lane 2, Doyle Park, Church, Hoen, Peters Springs, Carley, Madrone, and Galvin. The map includes symbols for City Active Well, City Emergency Well, Completed Test Well, Water Level Monitoring Site, Trenton Ridge, Rodgers Creek Fault, Lake, City of Santa Rosa, USGS Study Area, and DWR Basins (Kenwood Valley, Napa-Sonoma Volcanic Highlands, Wilson Grove Formation Highlands, Santa Rosa Valley Subbasins, Rincon Valley, Santa Rosa Plain).]
Test Boring Program Findings

- Rodgers Creek fault is a hydraulic barrier between west and east (consistent with USGS Study preliminary findings)
- Several test boring sites (Martha Way, Madrone, Galvin) indicate good yields and acceptable water quality
- Initial data indicates “connectivity” of wells east of the Rodgers Creek Fault
- USGS Study data/results are not anticipated to change our findings
Test Borings within Proximity of Farmers Lane Wells
Test Borings within Proximity of Farmers Lane Wells
Water Levels Don’t Change West of Rodgers Creek Fault During Pumping at Farmers 1

Time: November 1, 2011 to January 1, 2012
Today’s Presentation

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- USGS Study/Model
- Exploratory/Emergency Well Siting Program

Next Steps
When Will City be Ready to Construct Emergency Wells?

- When the GW Master Plan is Complete
  - Prioritized list of GW Projects
  - Determine the number of required emergency wells and peaking needs
  - Need to determine where to drill
    - More information available east of Rodgers Creek Fault
    - Less information available west of Rodgers Creek Fault
Recommended Next Steps

- **Groundwater Master Plan**
  - Complete GW Master Plan based on currently available data
  - Incorporate findings from USGS Study and GW model at a later date

- **Test Boring Program**
  - Continue test boring program
Questions and Answers Discussion