Napa County
Groundwater Monitoring Plan 2012

presentation for

Napa County
Groundwater Resources
Advisory Committee

by

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Agenda Item 5B

Review of Napa County Water Resources Goals

- **Goal CON-12:** Collect info about status of SW and GW resources to provide for improved forecasting of future supplies and effective management of the resources in each of the County's watersheds.

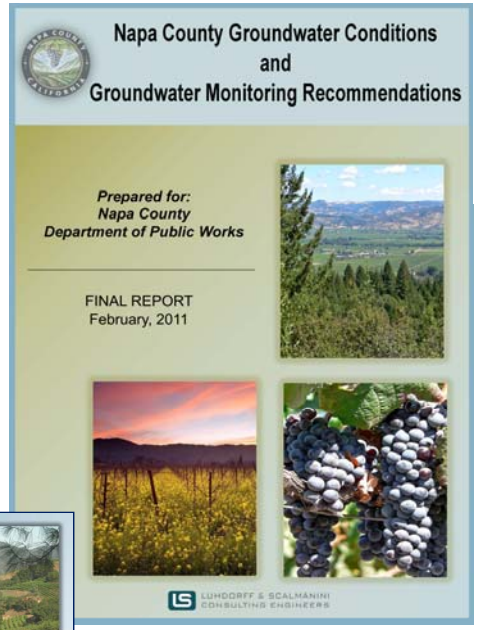
- **Action Item CON WR-4:** Implement a countywide watershed monitoring program to assess the health of the County's watersheds…

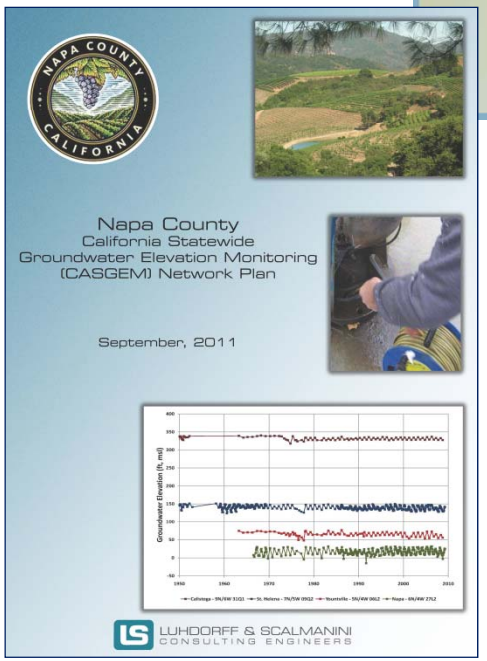
- **Action Item CON WR-8:** County shall monitor GW/SW interrelationships, using County-owned MWs and stream and precipitation gauges, data obtained from private property owners on a voluntary basis, data obtained via conditions of approval associated with discretionary projects, data from DWR and other agencies and organizations…

Key Recent Studies

- **Napa County Comprehensive GW Monitoring Program (2009-2011)** [5 TMs, Report, Exec. Summary]

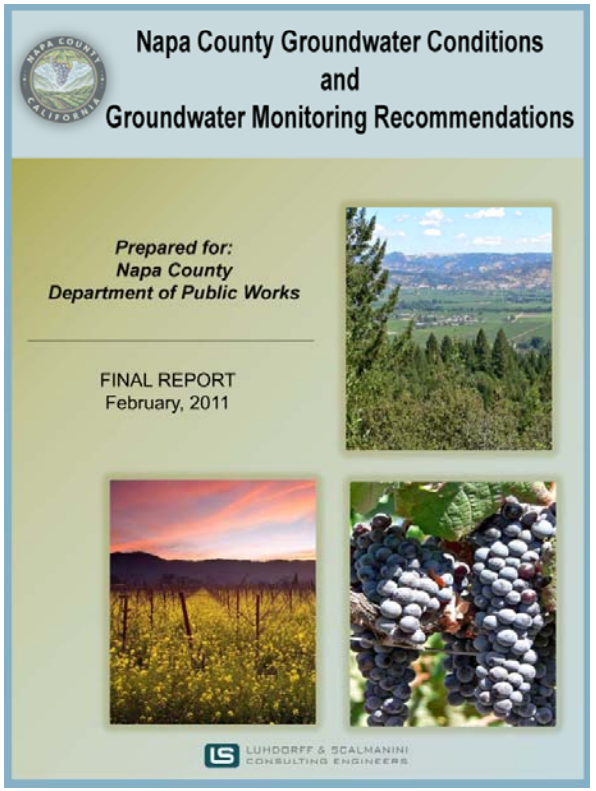
- **CASGEM Network Plan (2011)**





Napa Co. Comprehensive GW Monitoring Program

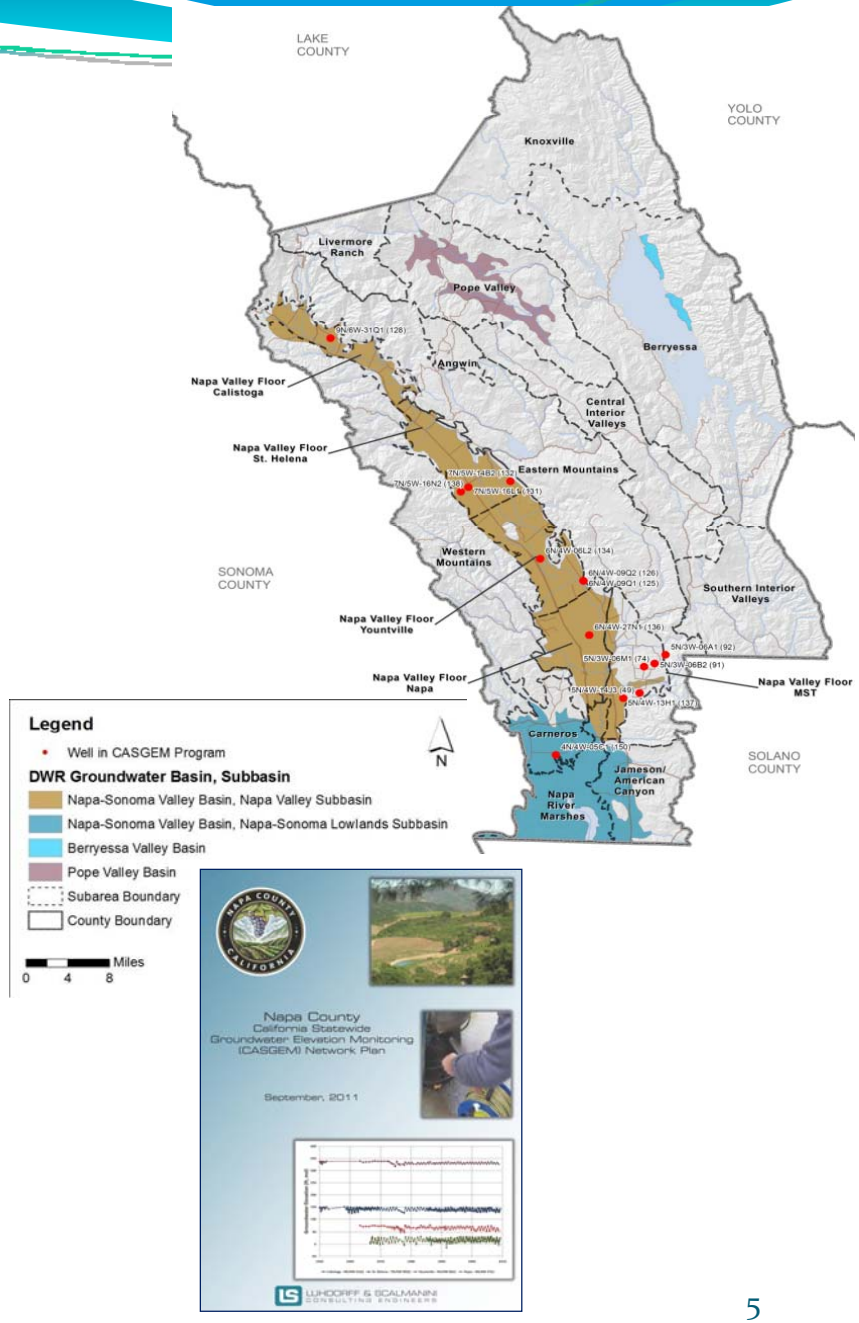
- **Data Management System (DMS)**
  [Task 1 TM]
- **Evaluation of Data**
  [Task 2 TM]
- **Evaluation of County GW Model**
  [Task 3.2 TM]
- **Guidance on Precipitation & Streamflow Monitoring**
  [Task 3.3 TM]
- **Napa County GW Conditions**
  [Task 4, Report]
- **GW Planning Considerations & Ordinance & Permit Process**
  [Task 5 TM]
- **Executive Summary**



Available on Napa County web site at:
http://www.countyofnapa.org/bos/grac

CASGEM Network Plan (2011)

- Provide representative GW conditions in Napa County GW basins, subbasins, and/or subareas
- Provide systematic GW elevations to demonstrate seasonal & long-term trends
- Subset of overall countywide monitoring program
- 14 wells in initial program; increased to 19 (as of 6/12)



Study Recommendations & Data Gaps

Broad Criteria Identifying Countywide Monitoring Needs

- Some Subareas sparse Level and/or Quality data (and/or lack of info related to measured well)
- Subareas where population/ag or other GW demands are relatively greater
- Improved overall spatial (horizontal and vertical) distribution
- Improve understanding of SW/GW interrelationships

Groundwater Monitoring Plan 2012 Draft Plan Outline:

1: Introduction

- **2: Hydrogeology of Napa County**
- **3: GW Resources Goals and Monitoring Objectives**

4: GW Monitoring Network Design and Development

5: GW Data Management

6: Reporting and Assessment

Focus on Draft Sections:

Section 2: Hydrogeology of Napa County (focus on GW Monitoring)

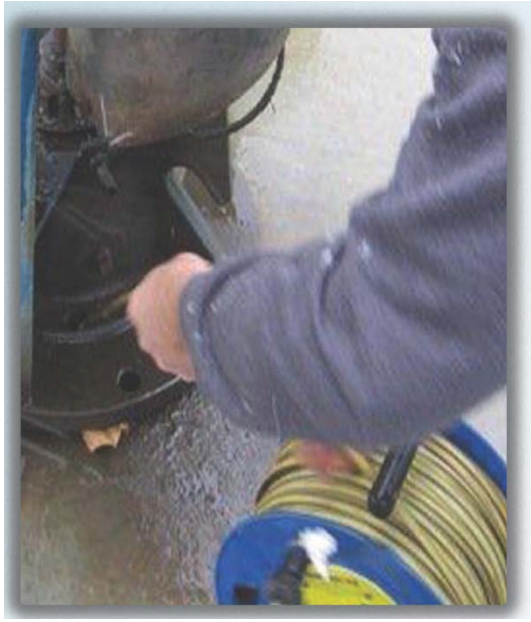
- Recent Studies: Criteria for Filling Data Gaps
- Recent Studies: GW Monitoring Priorities

Section 3: Groundwater Resources Goals and Monitoring Objectives

- Napa County Water Resources Goals
- GW Level Monitoring Objectives
- GW Quality Monitoring Objectives
- Funding and Collaboration for GW Monitoring

GW Level Monitoring Objectives

- Improve understanding of occurrence & movement of GW, ID vertical hydraulic head differences (includes area between the NVF-MST & NE NVF-Napa Subarea)
- Detect factors (natural or induced factors) that affect GW levels & trends
- ID data gaps: provide infill, replacement, and/or project-specific monitoring as needed



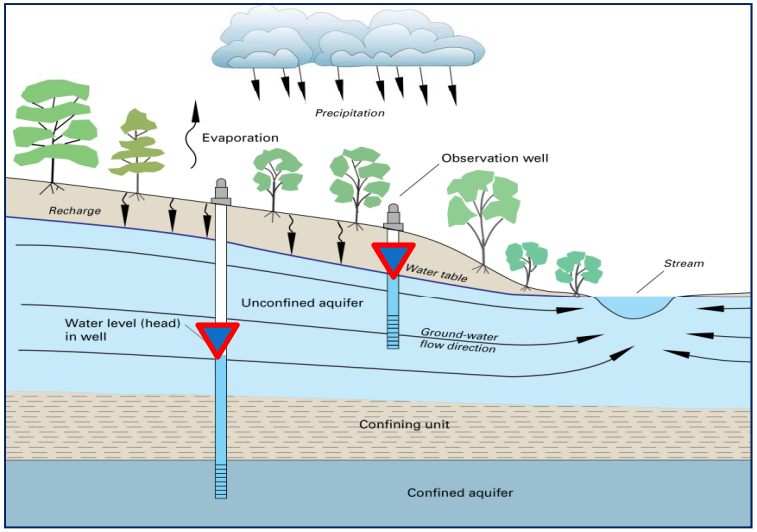
GW Level Monitoring Objectives (cont.)

- Refine estimates of GW inflows (basin inflows, recharge, rainfall, streamflow, irrigation, …), GW outflows (pumping, ET, basin outflow, ...) & change in GW storage
- Further evaluate SW-GW interaction
- GW conditions, including local and regional water supply availability & reliability
- Coordinate with other entities on the collection and incorporation of level data in DMS

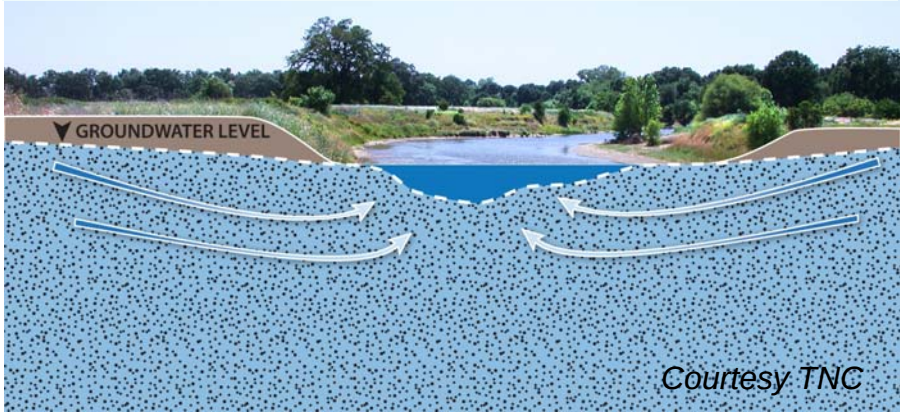
GW Monitoring in High Priority Subareas

Key GW Level Objective

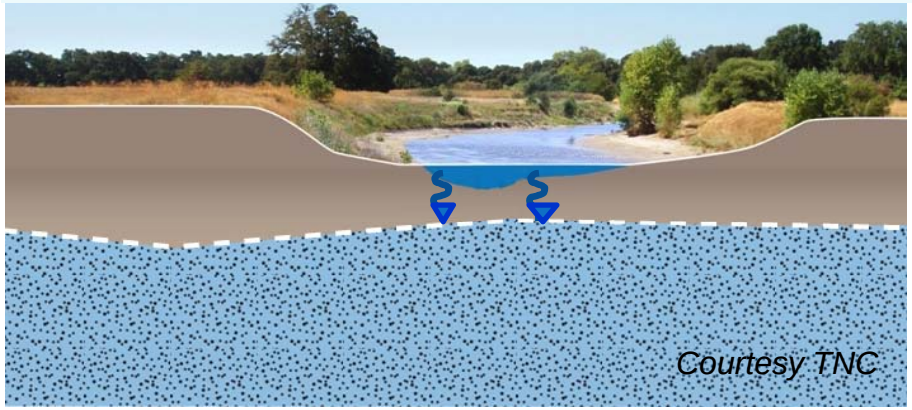
Further evaluate SW-GW interaction



Direct Connection
Maintains/Recharges Stream



Indirect Connection
Stream Seepage Independent of GW Levels



GW Quality Monitoring Objectives

- Evaluate GW quality conditions in Subareas; differences in WQ spatially between areas & vertically within a Subarea
- Identify data gaps: provide infill, replacement, and/or project-specific monitoring as needed
- Detect the occurrence of & factors attributable to natural (e.g., general minerals and trace metals) or other constituents

GW Quality Monitoring Objectives (cont.)

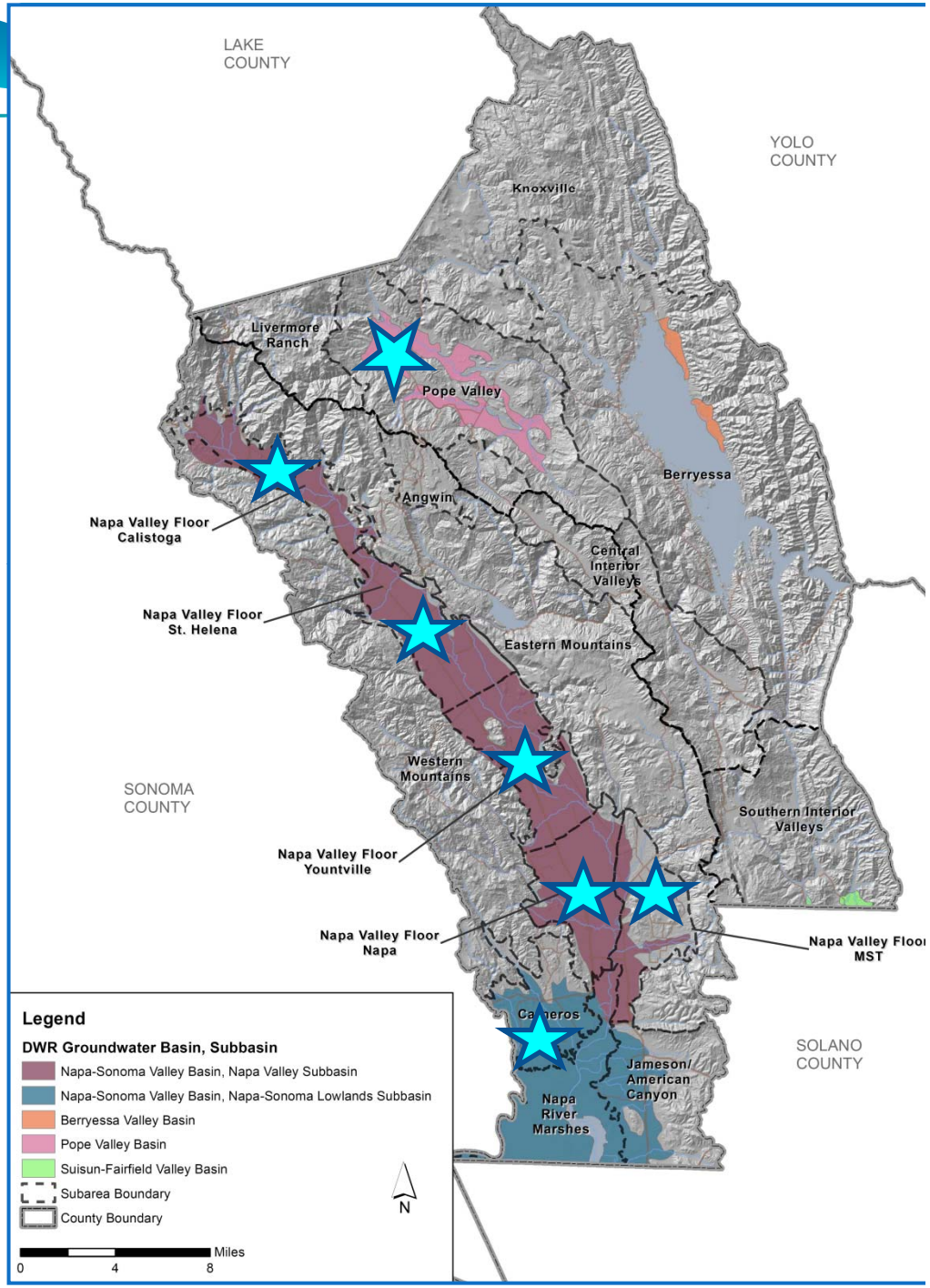
- Establish baseline conditions in areas of potential salt water intrusion (e.g., Carneros, Jameson/American Canyon and Napa River Marshes Subareas)
- Assess changes & trends in GW quality
- Identify factors that affect changes in WQ
- Coordinate with other entities on collection and incorporation of GW quality data in the DMS

GW Level Monitoring Priorities

Subarea	No. Wells with Current Groundwater Level Data	Future Groundwater Level Monitoring		Monitoring Needs
		Relative Priority	Action (Expand/ Refine)	
Napa Valley Floor-Calistoga	**6**	**H**	E	**SP, SW**
Napa Valley Floor-MST	**28**	**H**	R	**SP, SW**
Napa Valley Floor-Napa	**18**	**H**	R	**SP, SW**
Napa Valley Floor-St. Helena	**7**	**H**	E	**SP, SW**
Napa Valley Floor-Yountville	**7**	**H**	E	**SP, SW**
Carneros	**2**	**H**	E	**B**
Jameson/American Canyon	1	M	E	B
Napa River Marshes	1	M	E	SP, SW
Angwin	0	M	E	B
Berryessa	3	M	E	B
Central Interior Valleys	1	M	E	B
Eastern Mountains	0	M	E	B
Knoxville	1	M	E	B
Livermore Ranch	0	L	E	B
Pope Valley	1	H	E	B
Southern Interior Valleys	0	L	E	B
Western Mountains	0	L	E	B
Total	**76**			

GW Levels: Priority Subareas

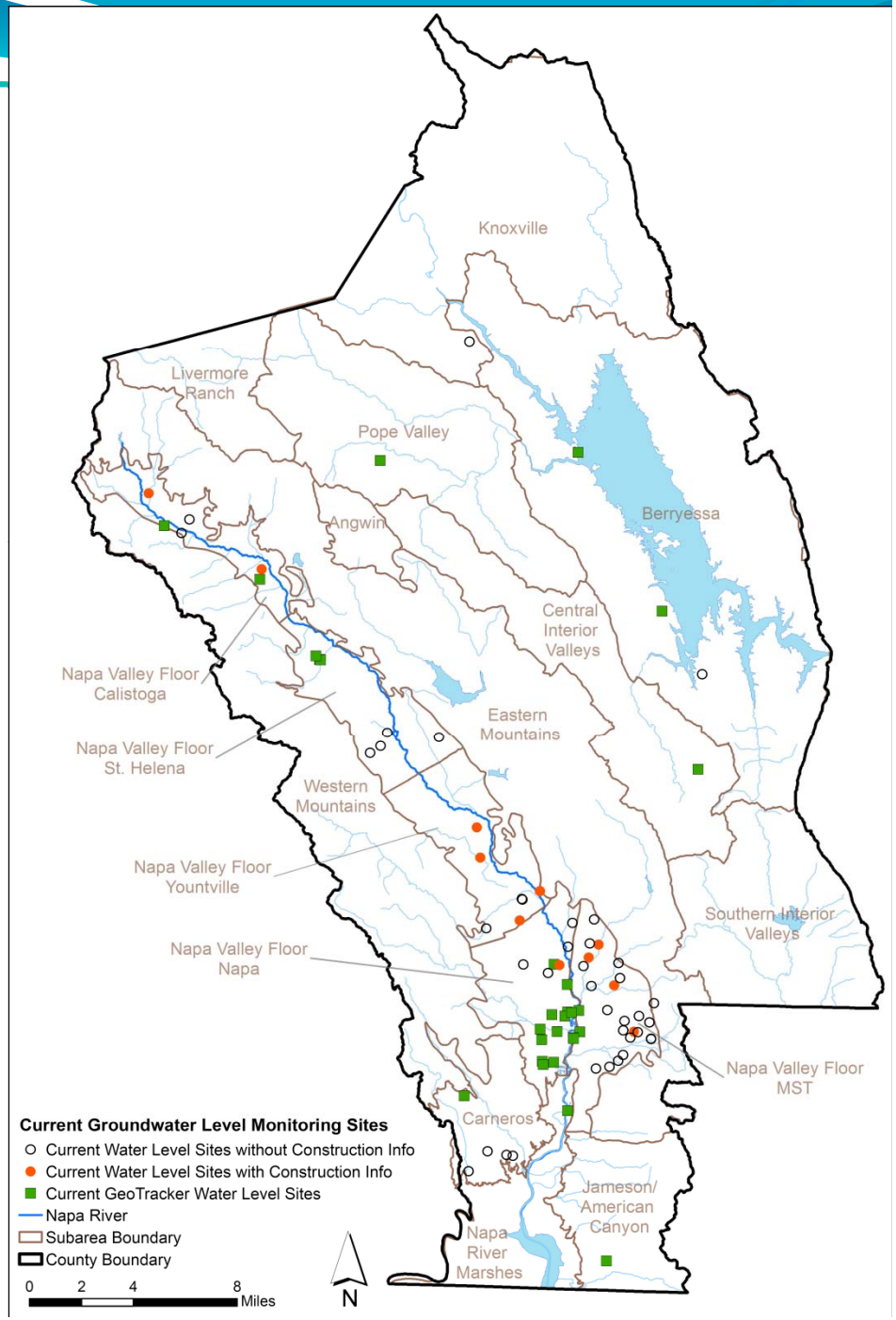
- NVF-Calistoga
- NVF- St. Helena
- NVF- Yountville
- NVF-Napa
- NVF-MST
- Carneros
- Pope Valley

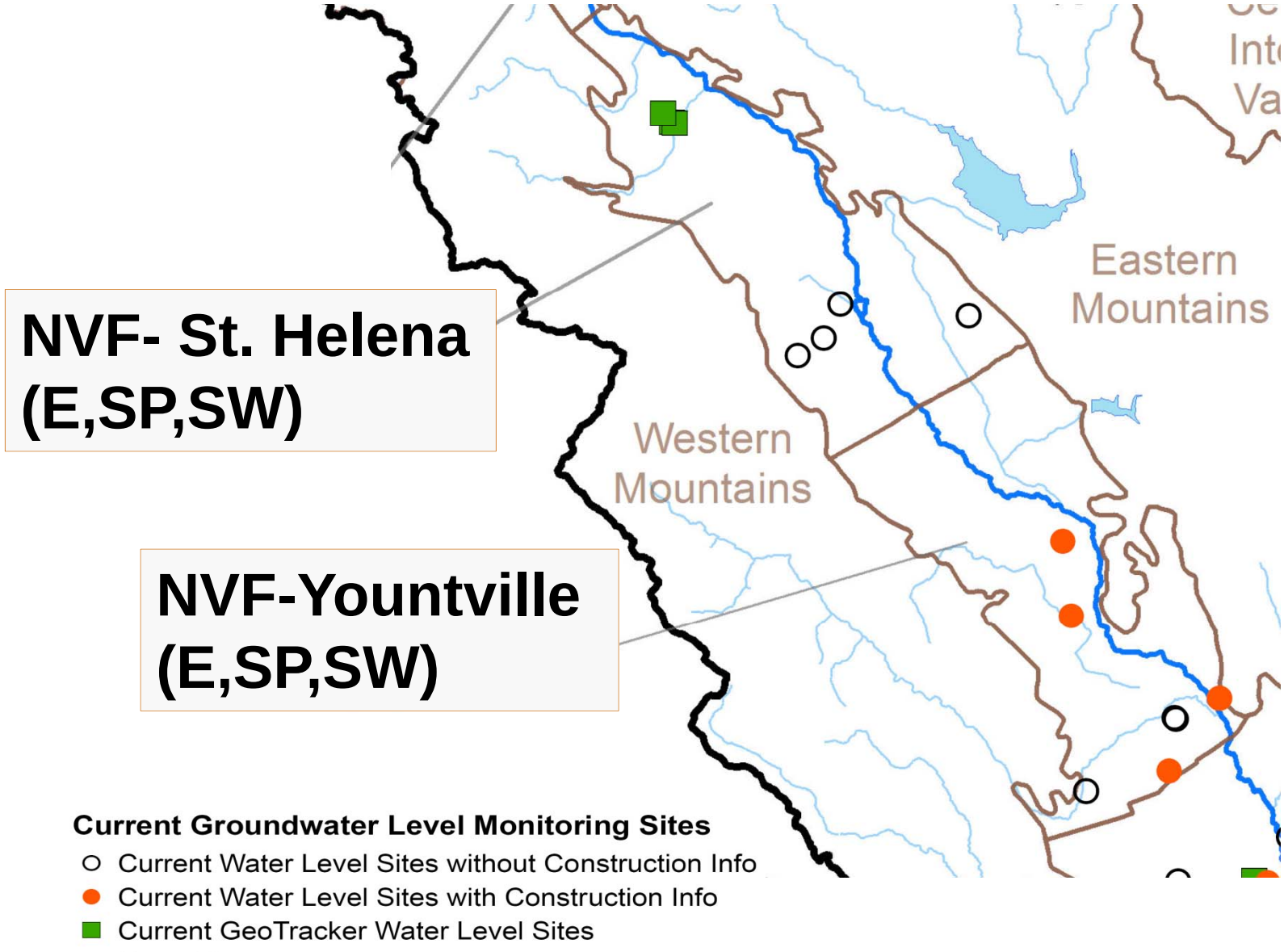


GW Levels: Priority Subareas

- **NVF-Calistoga (E,SP,SW)**
- **NVF- St. Helena (E,SP,SW)**
- **NVF- Yountville (E,SP,SW)**
- **NVF-Napa (R,SP,SW)**
- **NVF-MST (R,SP,SW)**
- **Carneros (E,B)**
- **Pope Valley (E,B)**

E= Expand; R= Refine
SP= Spatial Coverage; SW= SW/GW Interaction





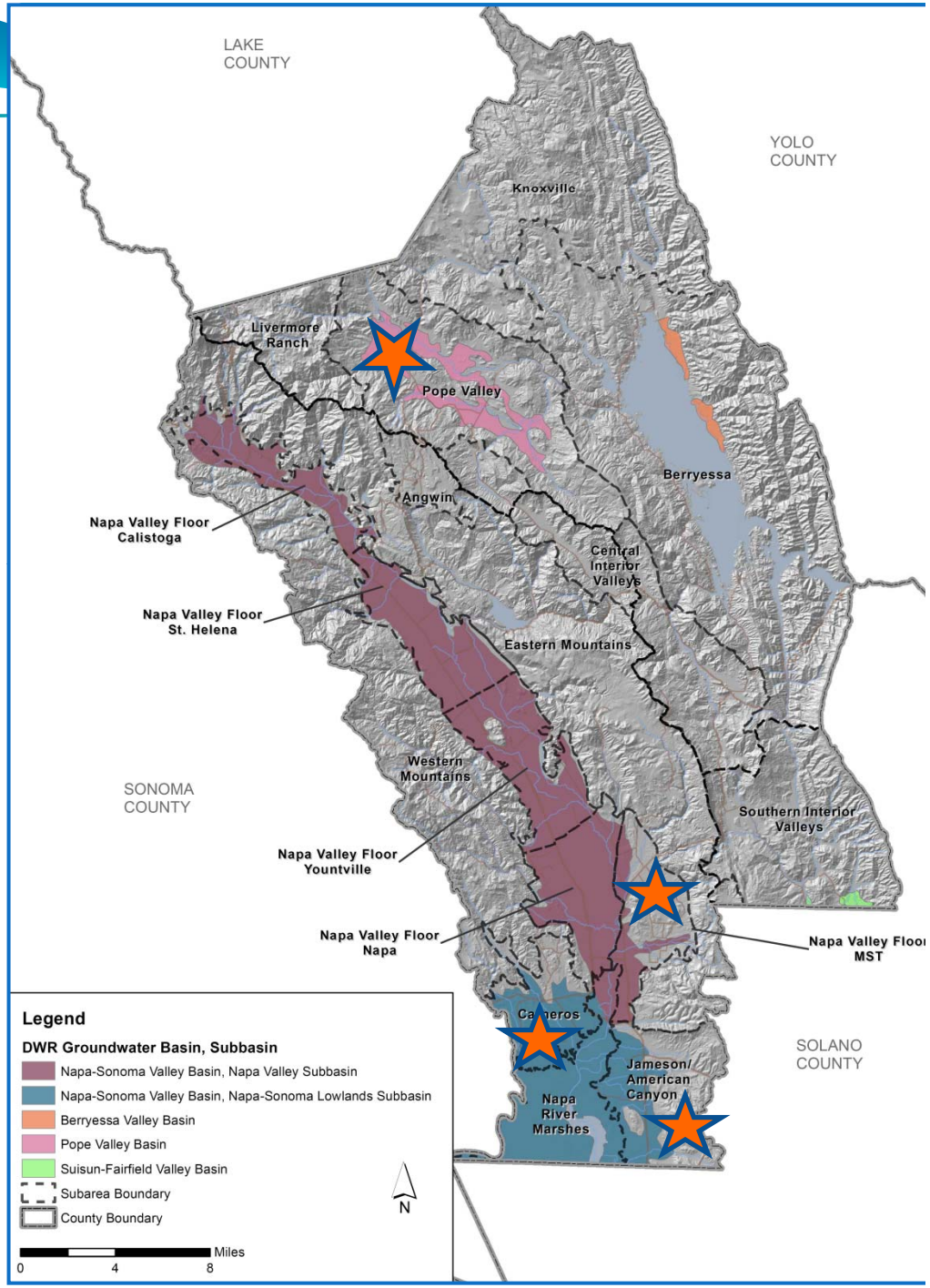
Example Subareas: GW Levels & Data Gaps

GW Quality Monitoring Priorities

Subarea	No. Sites with Current Groundwater Quality Data	Future Groundwater Quality Monitoring		Monitoring Needs
		Relative Priority	Action (Expand/ Refine)	
Napa Valley Floor-Calistoga	21	M	R	SP,C
Napa Valley Floor-MST	**18**	**H**	R	**SP,C**
Napa Valley Floor-Napa	22	M	R	SP,C
Napa Valley Floor-St. Helena	31	M	R	SP,C
Napa Valley Floor-Yountville	14	M	R	SP,C
Carneros	**9**	**H**	R	**SP,C**
Jameson/American Canyon	**3**	**H**	E	**B,SP,C**
Napa River Marshes	6	M	E	B,SP,C
Angwin	4	M	E	B,C
Berryessa	8	M	E	B,C
Central Interior Valleys	6	M	R	B,SP,C
Eastern Mountains	23	M	E	B,C
Knoxville	5	M	E	B,C
Livermore Ranch	0	L	E	B,C
Pope Valley	**5**	**H**	E	**B,C**
Southern Interior Valleys	1	L	E	B,C
Western Mountains	9	L	R	B,C
Total:	**185**			

GW Quality: Priority Subareas

- NVF-MST
- Carneros
- Pope Valley
- Jameson/American Canyon

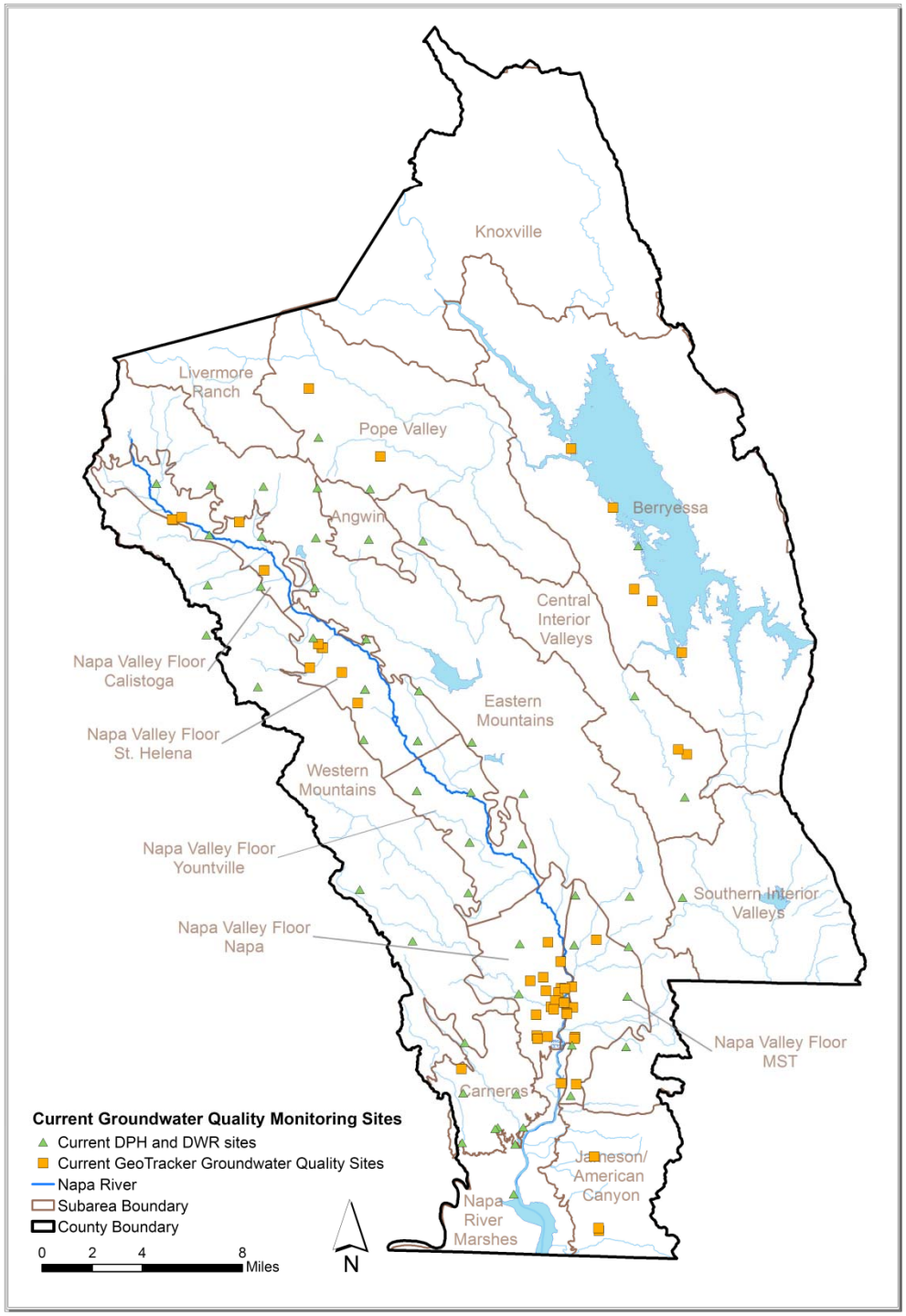


GW Quality: Priority Subareas

- **NVF-MST (R,SP)**
- **Carneros (R, SP)**
- **Pope Valley (E,B)**
- **Jameson/American Canyon (E,B,SP)**

➢ **Coordinate w/GW Level Monitoring**

E= Expand; R= Refine
SP= Spatial Coverage; B= Baseline

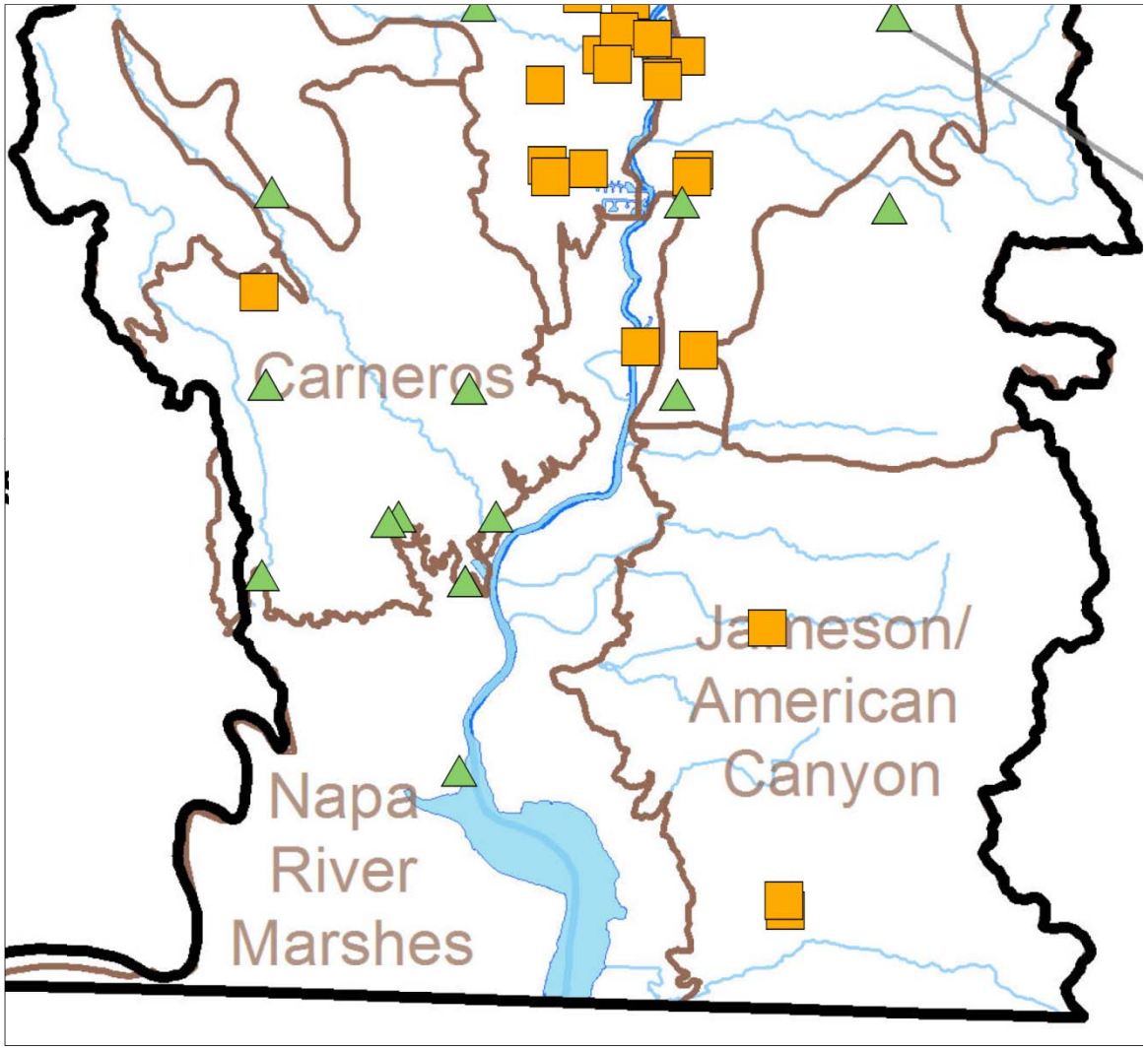


“New” Countywide GW Quality Sites

- GeoTracker-DPH Access Expanded
- Additional GW Quality Sites
  - Community systems
  - Vineyards
  - Schools
- Location +/- 1 mile
- Linking construction info to measured well

Example Subarea: GW Quality

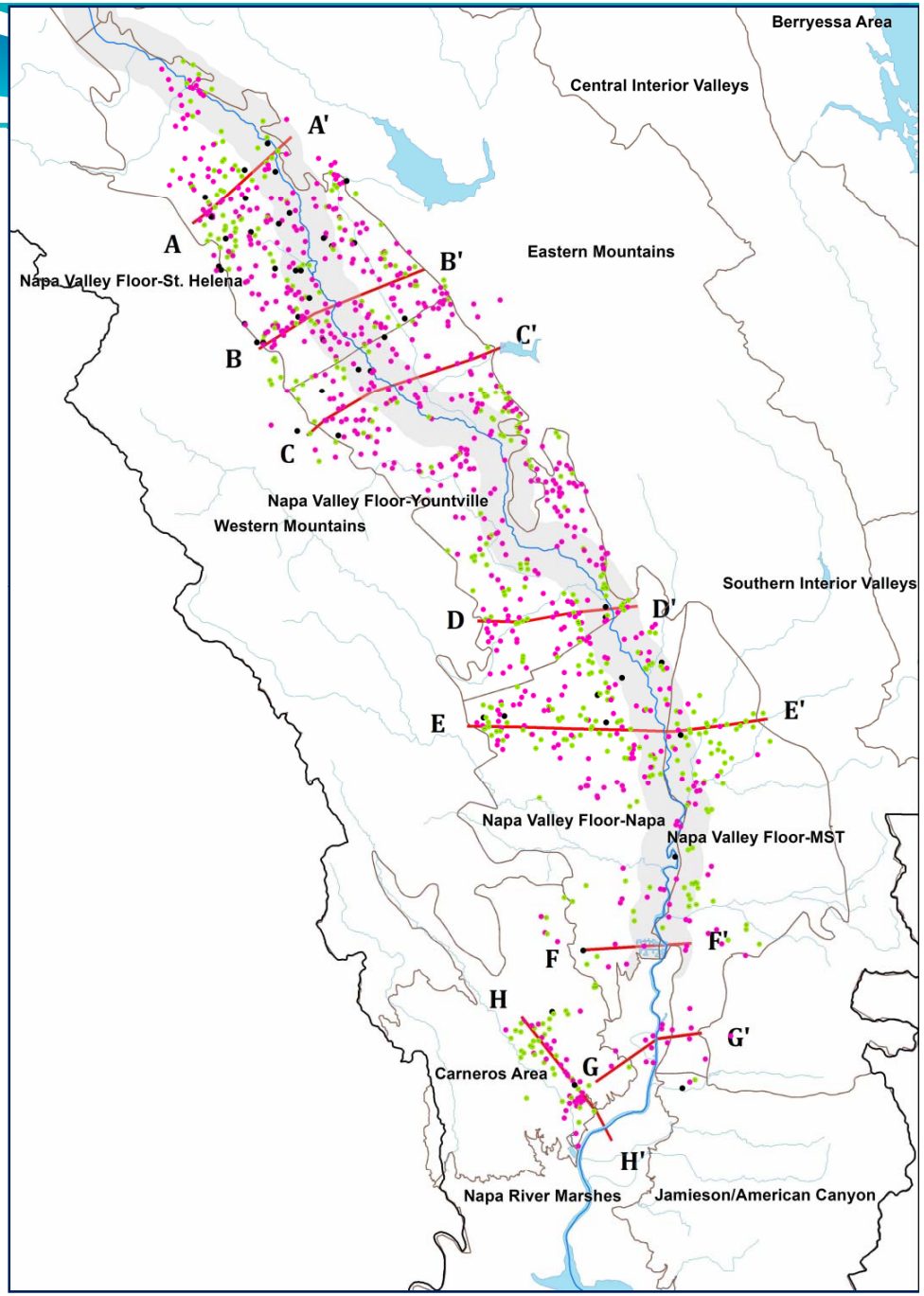
- **Carneros (R, SP)**
- **Jameson/ American Canyon (E,B,SP)**



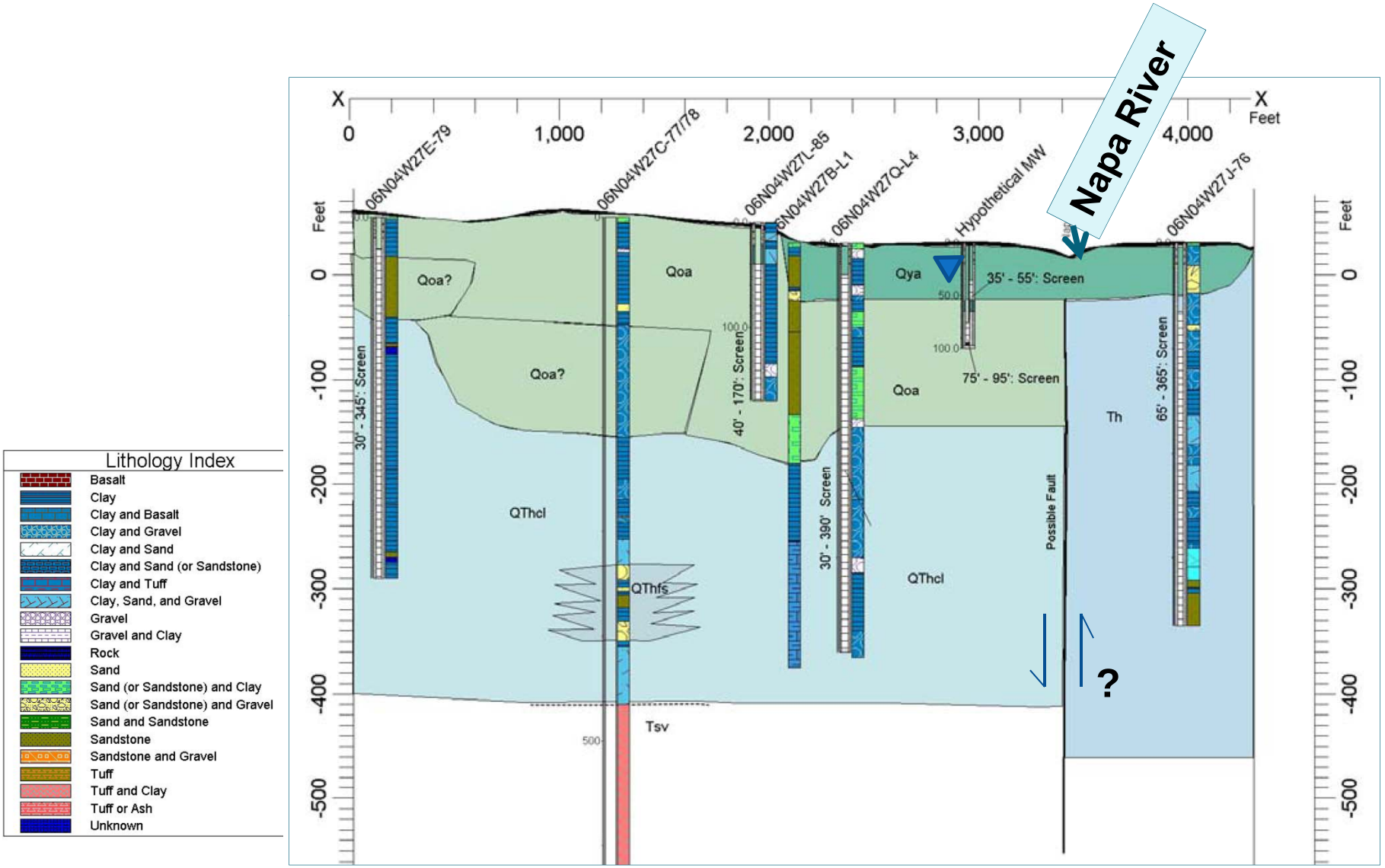
Discussion

Hydrogeologic Conceptualization:
Geologic Data and Cross Sections

- **1087 drillers' reports reviewed**
  - 632 Domestic
  - 409 Irrigation wells
  - Other (undesignated well type and/or testholes)

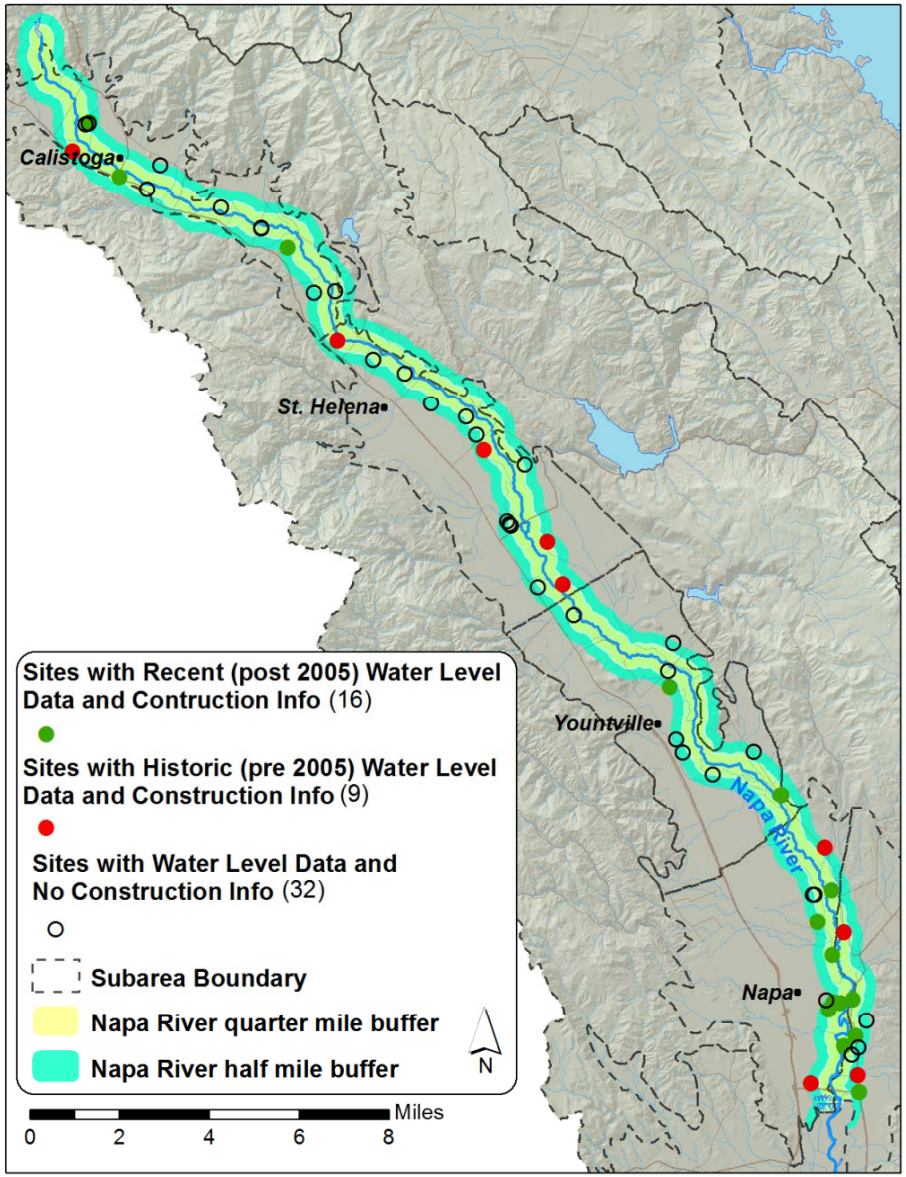


Geologic Cross Section E-E’ (excerpt)



Task 2 - Connecting wells with WL Data to Well Construction Data

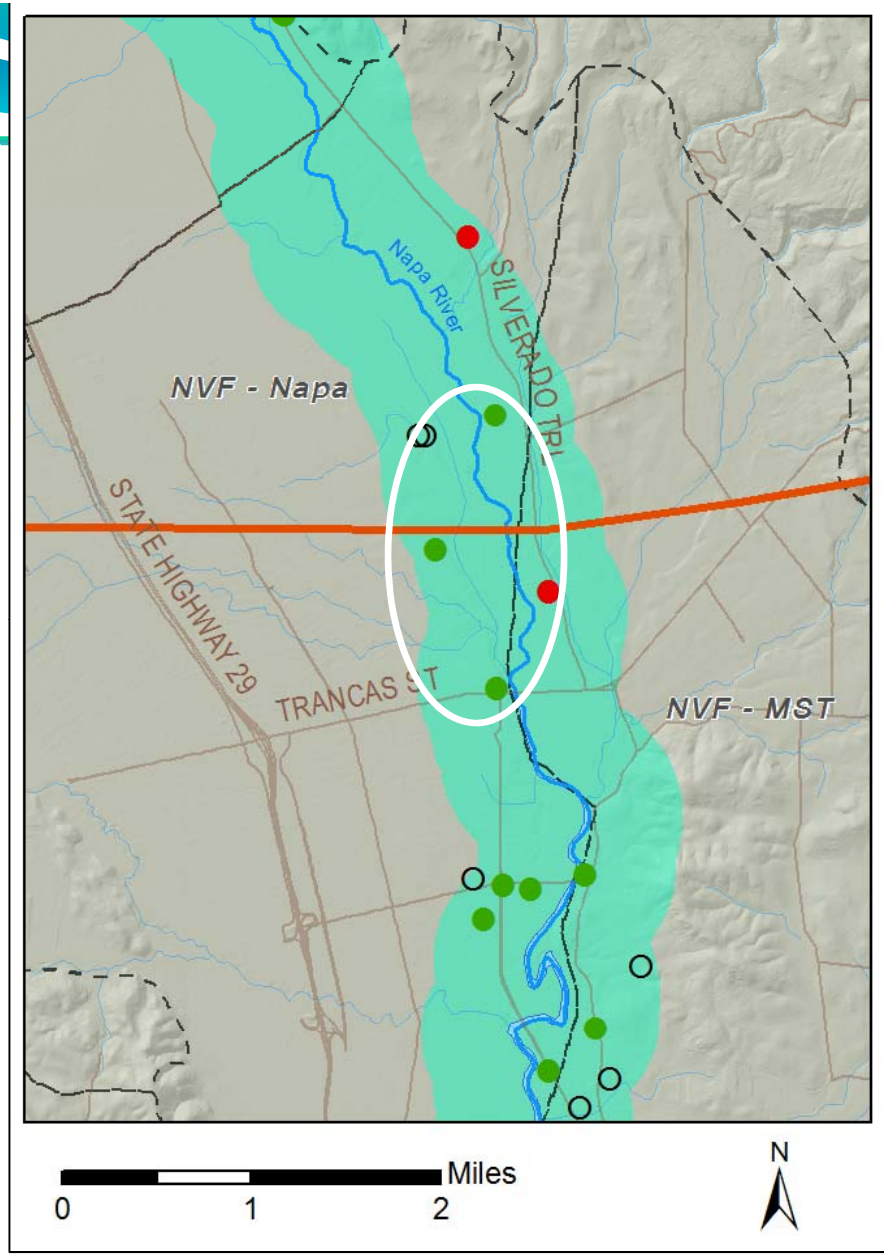
	¼ mile buffer	½ mile buffer
Non-Geotracker sites with WL data and Driller's Log	**6**	**16**
Geotracker sites with WL data and Driller's Log	**6**	**9**



Critical to Understand GW Levels and Quality Relative to Well Construction and the Aquifer System.

Task 2 – NVF Napa: Comparing WL Data and Well Construction

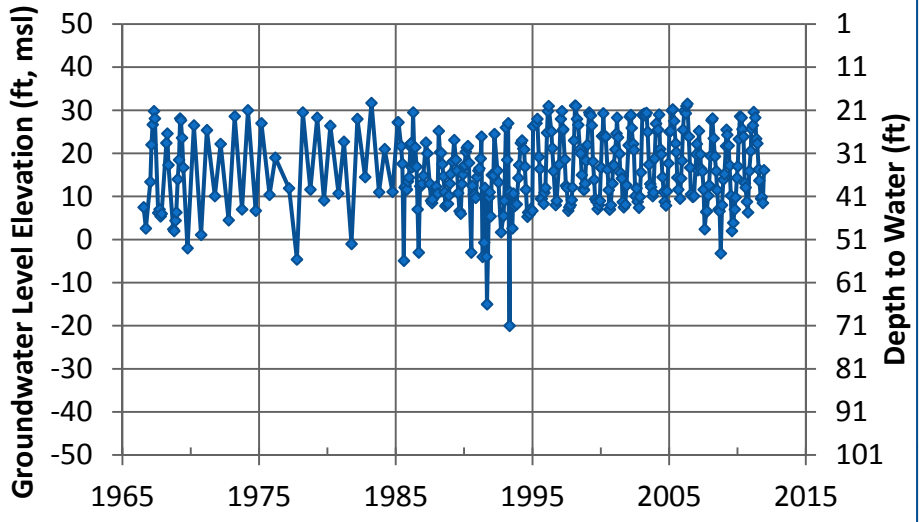
- Sites with Recent (post 2005) water level data and construction info
- Sites with Historical (pre 2005) water level data and construction info
- Sites with water level data and no construction info



06N/04W-27L2

Perforated Interval = **60' - 120'**

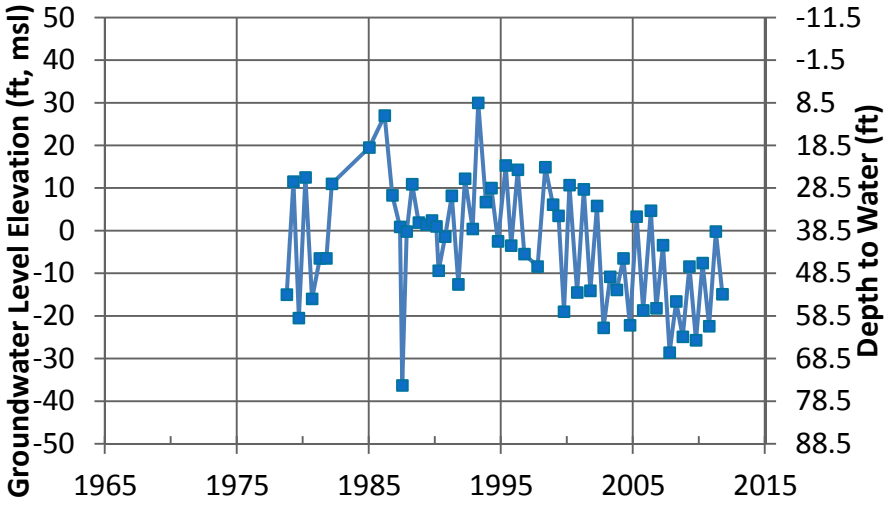
Source: **DWR**
RPE: **51', msl**



NapaCounty-75

Perforated Interval = **45'-205'**

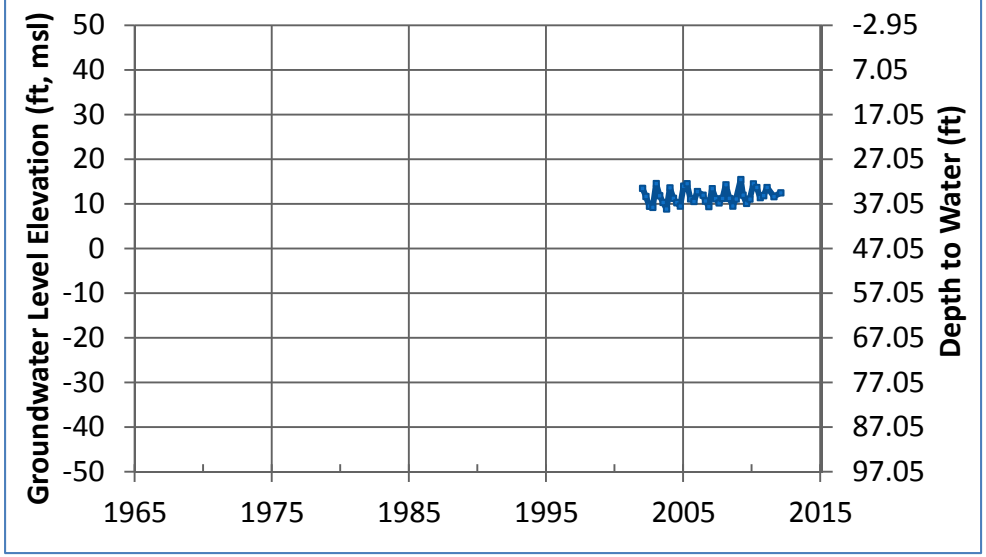
Source: **Napa County**
RPE: **38.5', msl**

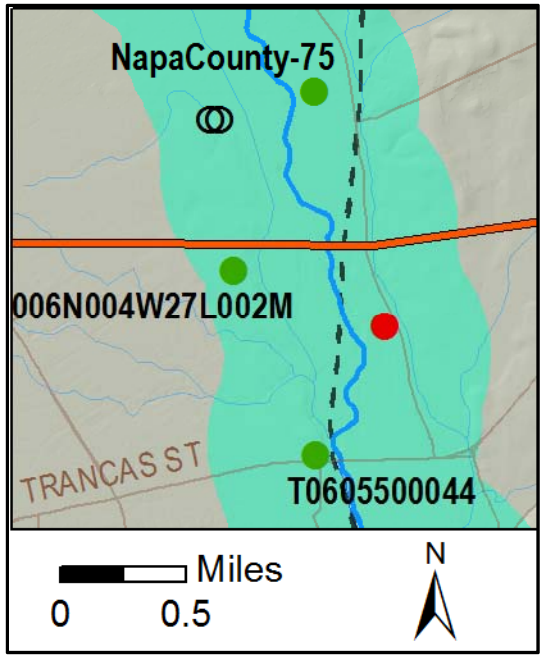


T0605500044 MW-16

Perforated Interval = **42' - 47'**

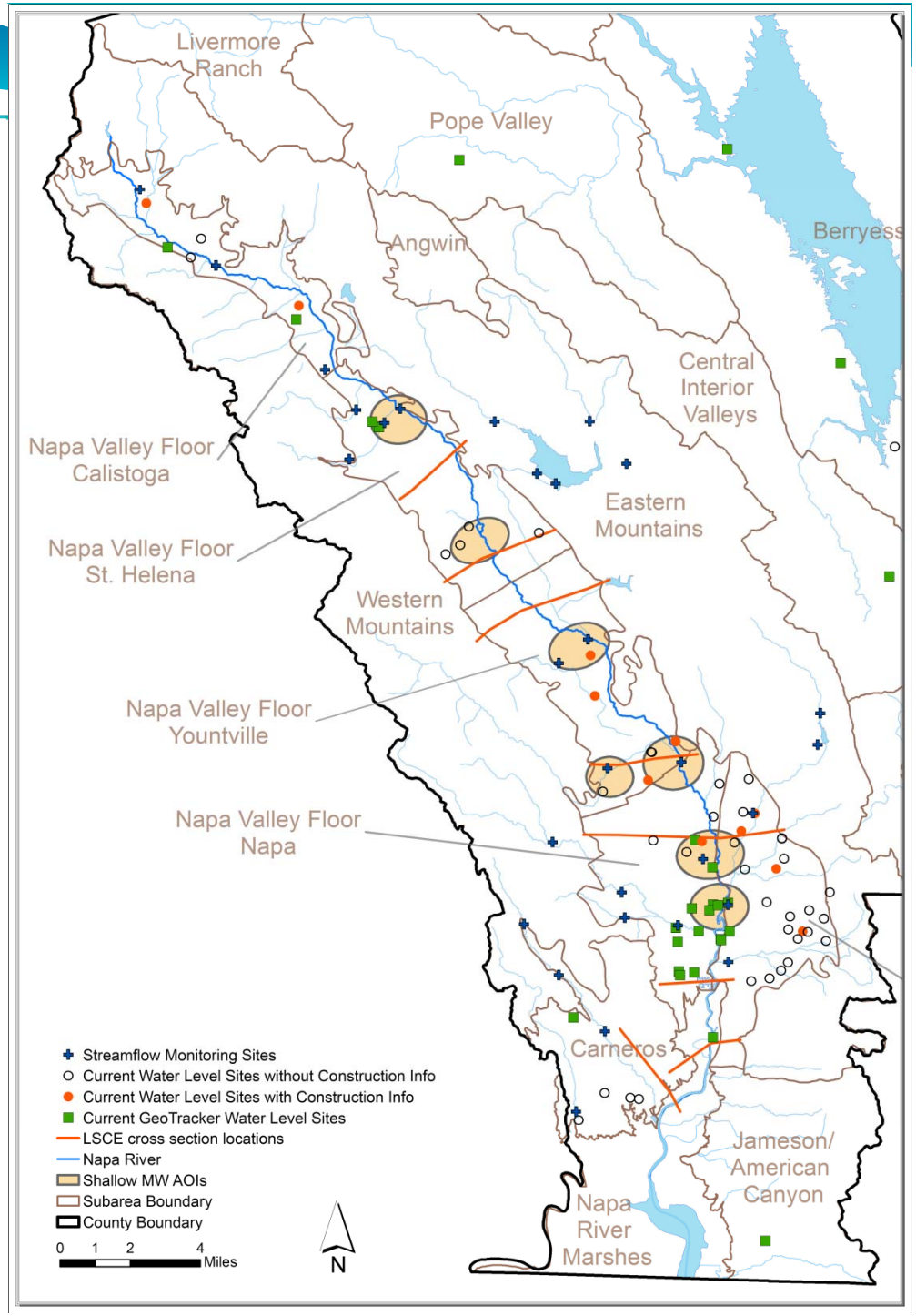
Source: **GeoTracker**
RPE: **47.05', msl**





Funding and Collaboration

- Build on 2012 hydrogeologic conceptualization
- Examine SW-GW interrelationships
- Near streamflow monitoring sites
- Preferably near MWs with some prior WL record (and w/ well info)



Napa County Groundwater Monitoring Plan 2012

Next Sections

4: GW Monitoring Network Design and Development

5: GW Data Management

6: Reporting and Assessment

Thank You

Discussion
&
Questions