

2050 Napa Valley Water Resources Study



**Presentation to
Napa County Flood Board
November 15, 2005**



Presentation Outline

- Purpose of 2050 Study
- Study Findings and Conclusions
- Key Study Recommendations
- Requested Action

Purpose of the 2050 Study

Strategic Planning Study to:

- Evaluate the ability of local and imported water supplies within Napa Valley to adequately meet existing/future water demands of Napa Valley's municipal, rural and agricultural customers.
- If available supplies are not adequate to meet demands, identify regional and local water supply options/projects to address the projected water supply shortfalls.

Study Findings

- When there is sufficient rainfall, there is ample water for all users. Some agencies don't have enough carry-over storage capacity.
- Increased diversions from the Napa River, or enlarging local reservoirs is no longer feasible due to increased regulatory and environmental concerns, and high costs.

Study Findings

- Cities and Towns don't face supply shortfalls now during normal years, but could face shortages in future years, particularly if there is limited rainfall.
- Expansion of the NBA may not be necessary.

Study Findings

- Unincorporated water users may face supply shortages in normal or dry years, if demands continue to increase.
- Use of recycled water is a potential non-potable supply option that should receive additional evaluation.

Study Findings

- Unincorporated area and agricultural water users are the primary users of groundwater in the Napa Valley, using approximately 99% of the volume pumped.
- The Main Napa Valley GW Basin does not appear to be in an “overdraft” condition.

Study Conclusions

- Acquisition of “dry year” supplies by municipalities would improve supply reliability during drought periods.
- If unincorporated and agricultural demands continue to increase, this could lead to increased use of the GW basin. Cities and Towns are also considering small increases in GW use, to provide drought/emergency supply reliability. Therefore the GW Basin is being considered as a source of future supply and to provide supply reliability.

Key Study Recommendations

- Municipalities should pursue a number of diversified projects to reliably meet existing and future demands. Acquisition of “dry year” supplies should be included in this mix.
- As municipalities consider potential increases in GW use, they should exercise caution, so that they do not adversely impact existing GW users.

Key Study Recommendations

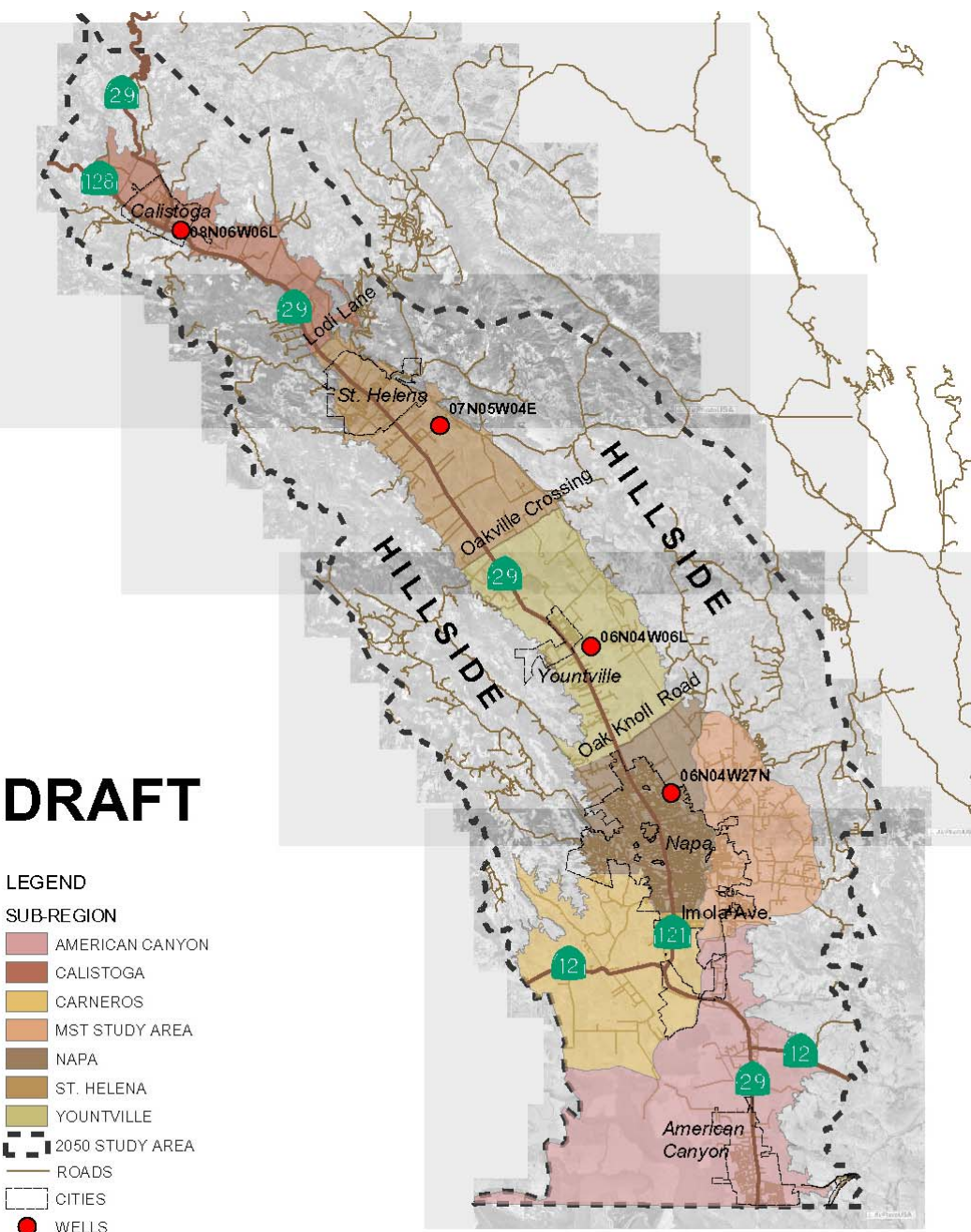
- As use of the GW basin increases, it should be managed appropriately. Additional groundwater level data throughout the Napa Valley should be collected and monitored to ensure that this valuable resource is preserved for generations to come.
- Use of recycled water to meet non-potable water demands should be aggressively pursued.

Project Study Area:

Includes Deer Park, but not Angwin and Berryessa Areas

DRAFT

- LEGEND**
- SUB-REGION**
- AMERICAN CANYON
 - CALISTOGA
 - CARNEROS
 - MST STUDY AREA
 - NAPA
 - ST. HELENA
 - YOUNTVILLE
- 2050 STUDY AREA**
- ROADS**
- CITIES**
- WELLS**



Unincorporated Area Water Supply Outlook

Summary of Increased Demands

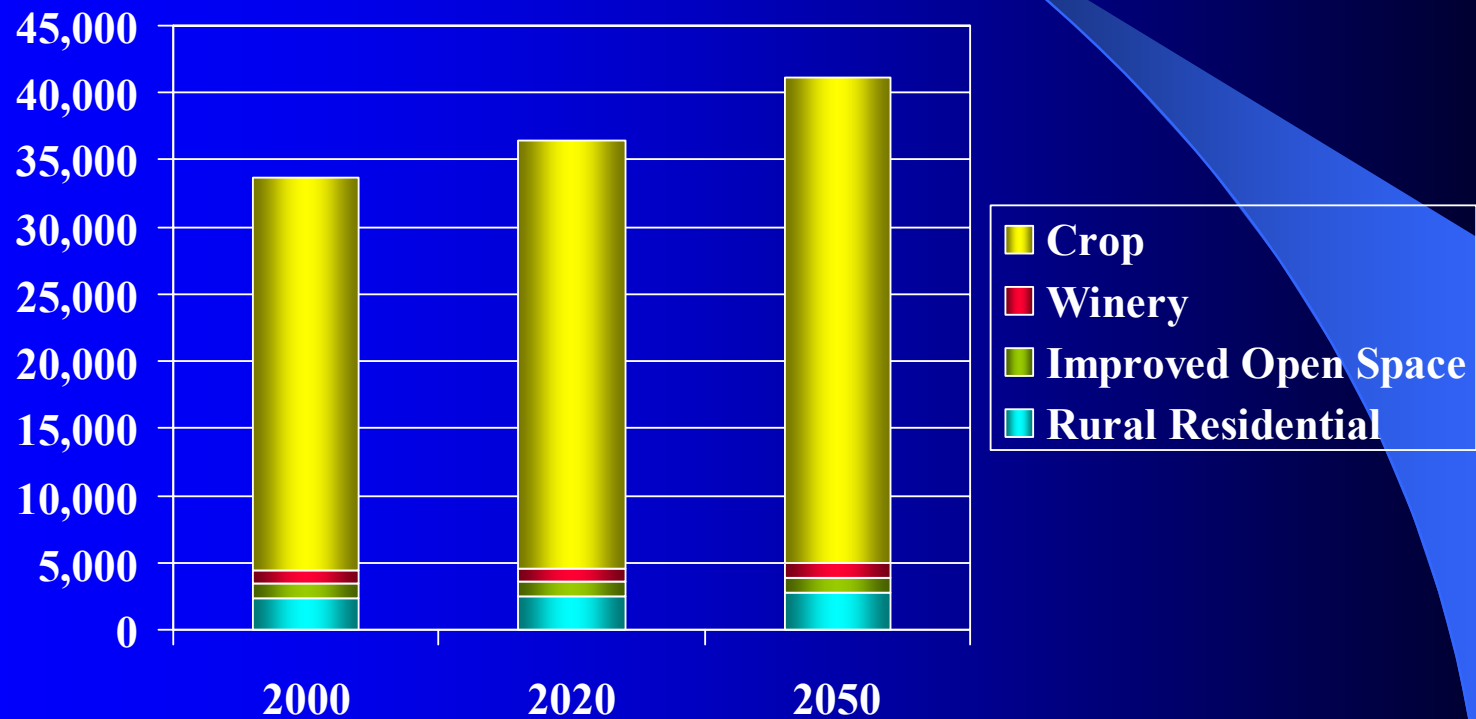
- An increase in Unincorporated Demands is possible, primarily due to an increase in Vineyard Demand:
 - Densification of existing vineyards (726 to 1815 vines per acre)
 - New vineyard plantings on native vegetation areas (5500 acre expansion)

Present and Projected Unincorporated Water Demands

Study Area	Present, afa	2020, afa	2050, afa
Main Basin	33,656	36,416	41,148
MST	3,313	3,710	4,601
Carneros	2,547	3,467	5,719
Total	39,516	41,593	51,468

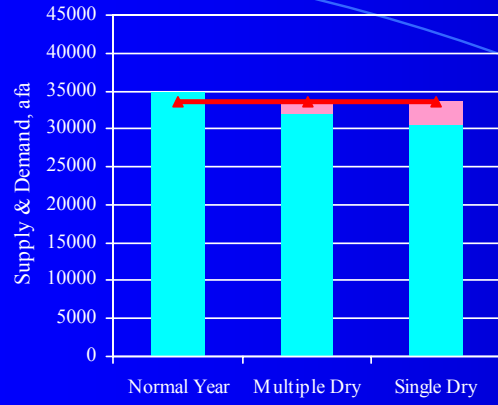
- Increase in unincorporated demand due to:
 - Vineyard densification
 - Significant new vineyard plantings in Carneros

Main Basin Existing & Projected Unincorporated Water Demand, afa

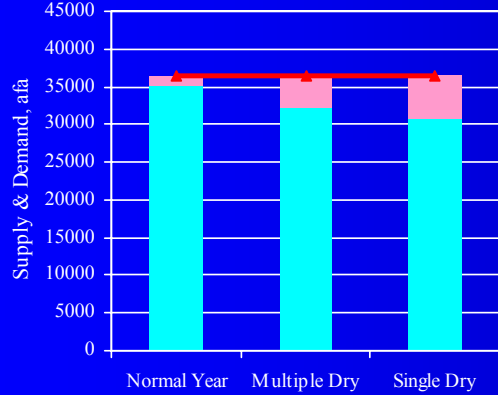


Unincorporated Areas

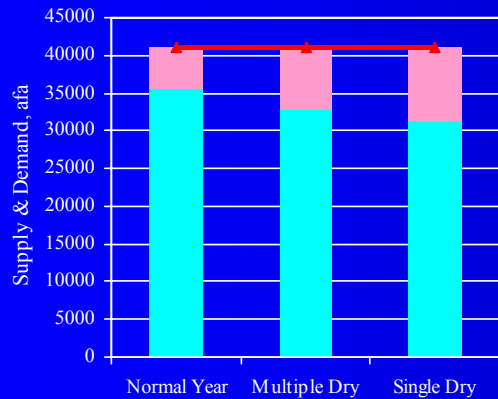
Present



2020



2050



Supply Demand Shortfall

Potential Water Supply Projects:

- Use of recycled water in the MST area, and possibly in the Carneros area

Municipal Agency Water Supply Outlook

Present and Projected M&I Water Demands

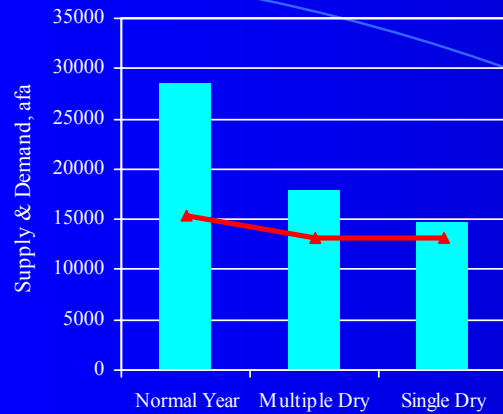
Municipality	1991 Study	2050 Study		
	2020, afa	Present, afa	2020, afa	2050, afa
Napa	18,195	15,370	18,798	21,643
American Canyon	2,316	2,187	6,459	7,500
Yountville	625	520	679	679
St. Helena	2,690	2,092	2,179	2,458
Calistoga	1,515	910	1,285	1,560
Total M&I Demand	25,341	21,079	29,400	33,840

2050 Study: Generalized, Potential M&I Supply Options

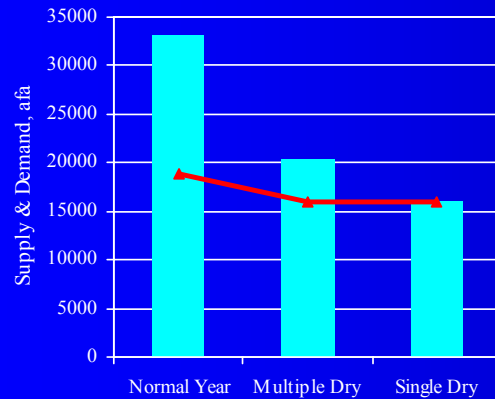
- Slight increase in groundwater use:
 - Potable water supply
 - Non-potable water supply (to offset potable water use)
- Expanding recycled water programs
- Purchasing additional entitlements
- Developing dry year supply options

City of Napa

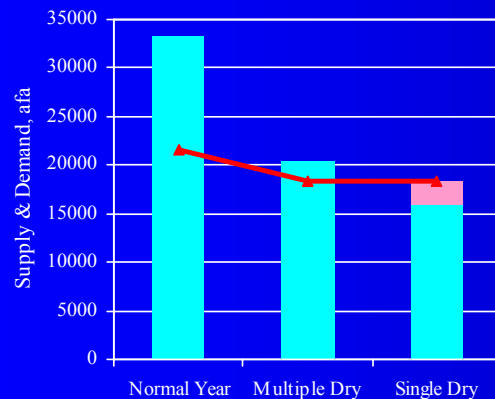
Present



2020



2050



Supply Demand Shortfall

Priority Water Supply Projects:

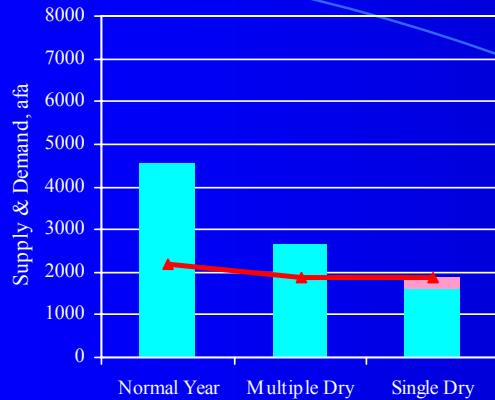
- Jamieson WTP Improvements
- Dry Year Water
- Purchase Additional SWP Entitlements
- Conjunctive Use
- Municipal Groundwater Well for Dry-Year Supply
- Recycled Water

Other Potential Water Supply Projects:

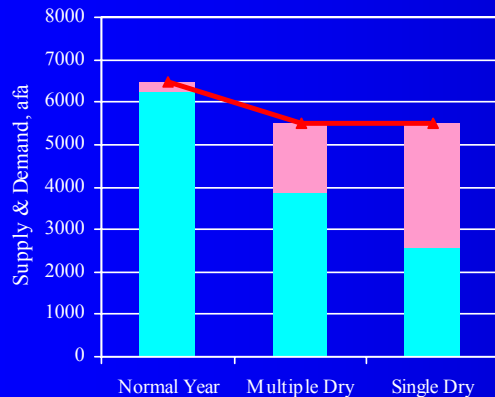
- Groundwater for Schools/Parks
- Maximize Use of Milliken Reservoir
- Napa Pipe Wells
- Unaccounted for Water

City of American Canyon

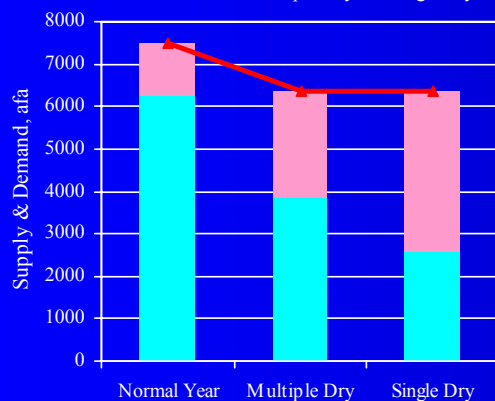
Present



2020



2050



Supply Demand Shortfall

Potential Water Supply Projects:

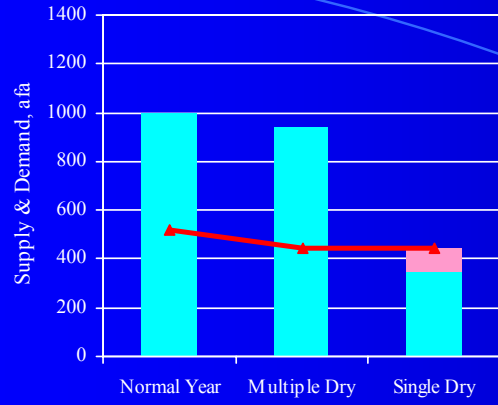
- Exercising Vallejo potable water options
- Negotiating with Vallejo for raw water
- Purchasing entitlements from other cities
- Maximizing recycled water use/distribution
- Financial reserves to purchase dry year water
- Supporting NBA reliability improvements
- Demand management standards for new development
- Condition assessment of distribution system
- Continued implementation of BMPs
- Recycled water for agricultural demands
- New raw water reservoir in Jameson Canyon

Town of Yountville

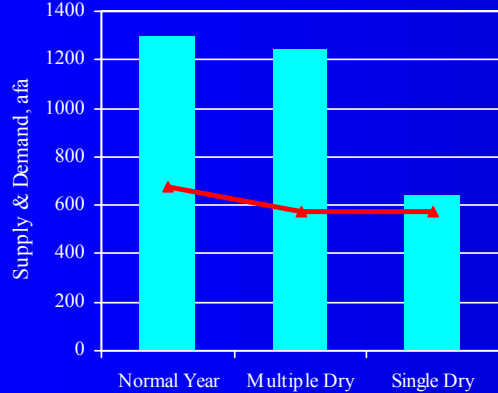
Potential Water Supply Projects:

- Constructing a municipal production well and wellhead treatment facilities
- Possibly expanding recycled water program

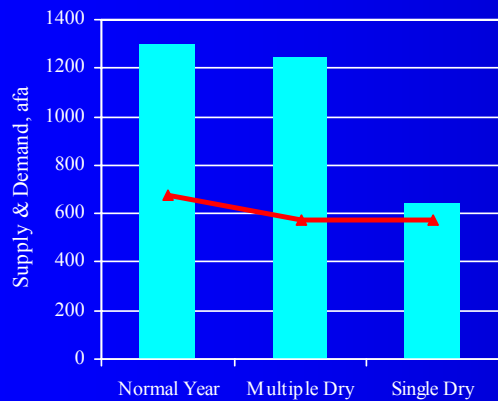
Present



2020



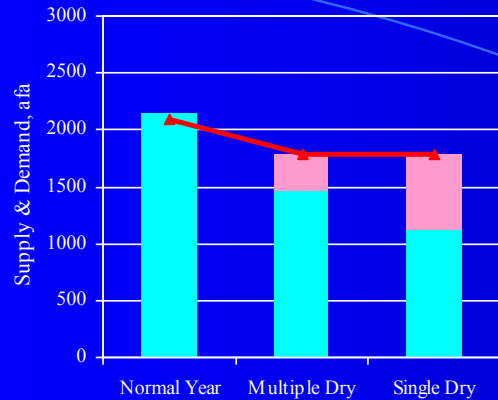
2050



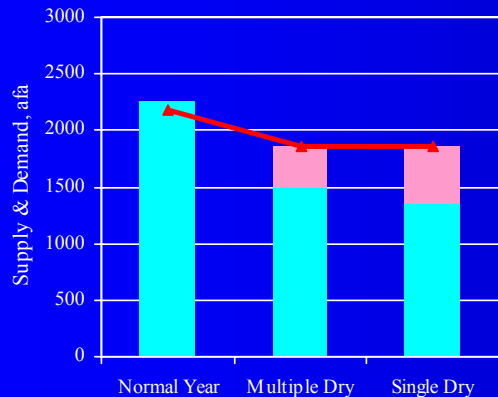
Supply Demand Shortfall

City of St. Helena

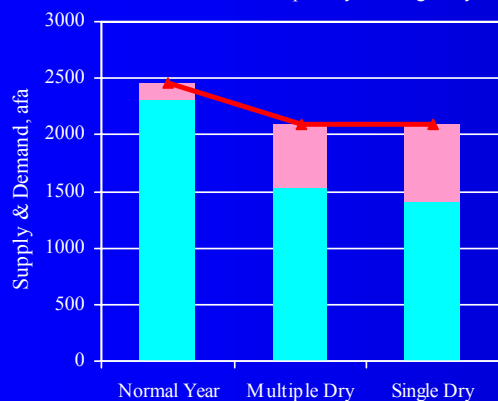
Present



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Supply Demand Shortfall

Potential Water Supply Projects:

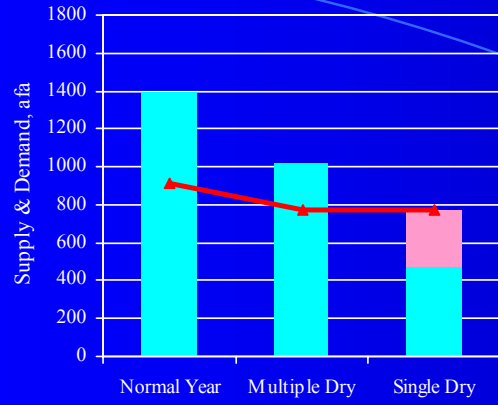
- Continuing negotiations for long-term transfer of KCWA entitlements in exchange for water supply/wheeling capacity and/or money
- Possibly changing institutional constraints which limit existing groundwater withdrawals for M&I uses
- Possibly installing additional groundwater wells for potable use and/or non-potable use
- Developing Title 22 recycled water supplies for non-potable use

City of Calistoga

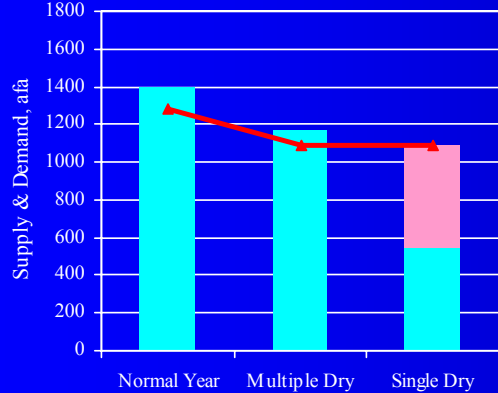
Potential Water Supply Projects:

- Constructing additional wells with wellhead treatment
- Possibly expanding recycled water program
- Purchasing City of St. Helena's KCWA entitlements

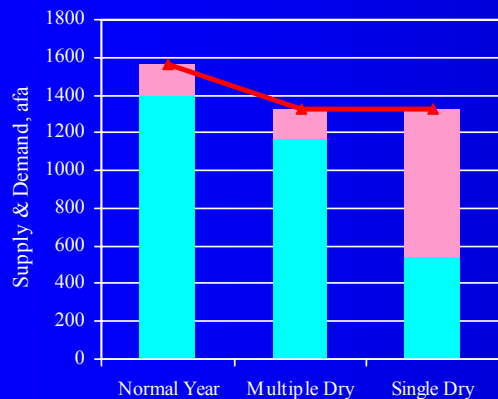
Present



2020



2050



Supply Demand Shortfall

Recommendations from Previous 1991-92 Water Resources/Supply Studies

Status of 1991/1992 Recommended Projects

- Napa River Diversions/Raising Conn Dam and New Off-Stream Storage
 - No longer considered viable due to:
 - Federal Endangered Species Act of 1997 which listed steelhead as a threatened species
 - Increased regulatory concerns with maintaining habitat areas and flushing flows, and required higher minimum flow releases
 - Land use changes and high costs
- Conjunctive use of the groundwater basin
 - Cooperative study between County and USGS has been conducted in the MST basin
 - No such study conducted in the Main Napa Valley basin (most recent USGS Study was conducted in 1973)

Status of the Napa Valley

Groundwater Basin

Summary of Estimated Groundwater Use

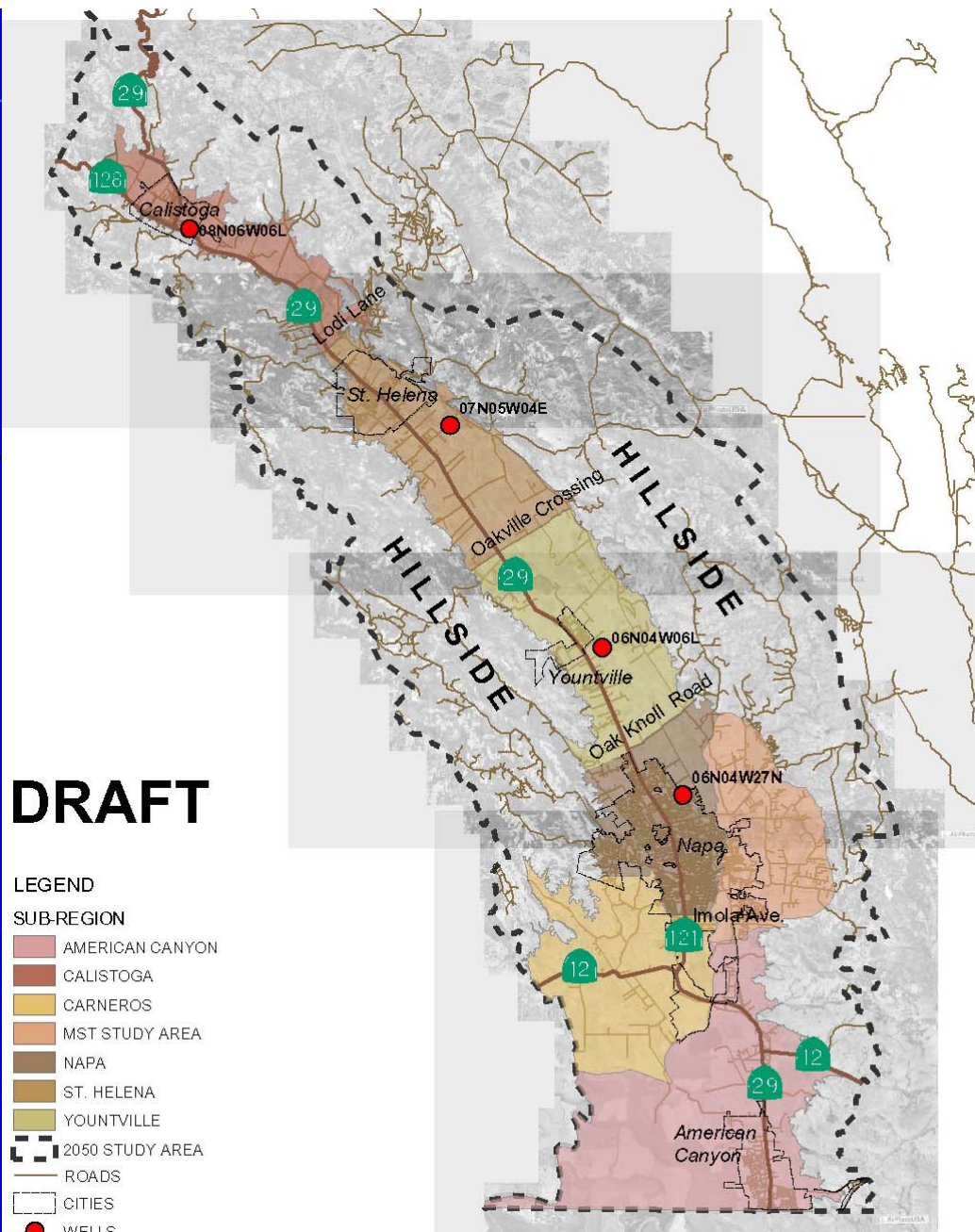
Year	Agriculture Groundwater Use, afa	M&I Groundwater Use, afa				
		Napa	St. Helena	Yountville	Calistoga	Total M&I
Present	25,000		340			340
% of Total	98.7%	1.3%				

Project Study Area:

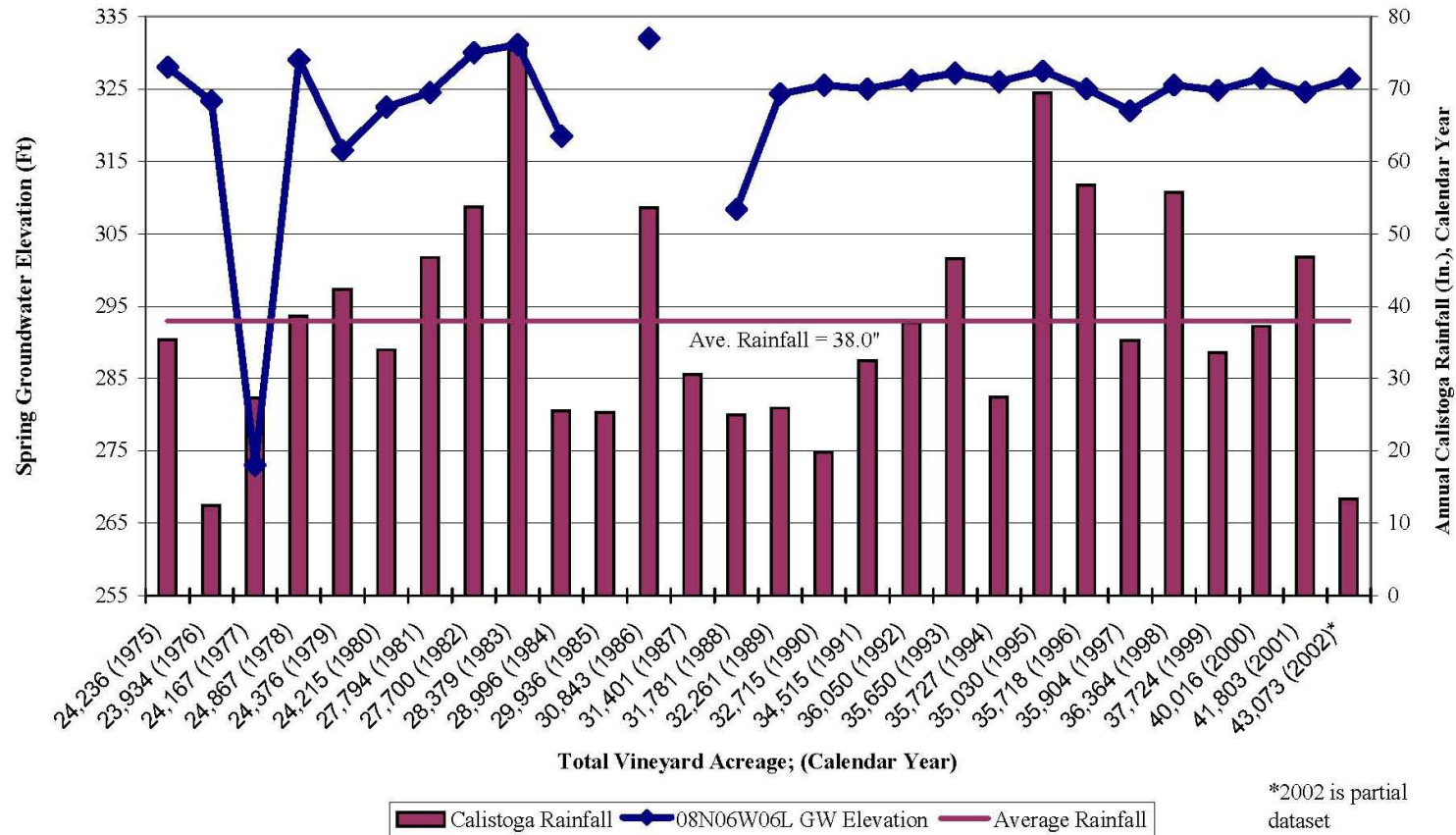
Wells with Historic, Long-Term Water Level Measurements

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**Figure 3. Spring Groundwater Elevation
Well 08N06W06L near City of Calistoga (1975-2002)
Ground Surface Elevation = 335ft MSL**



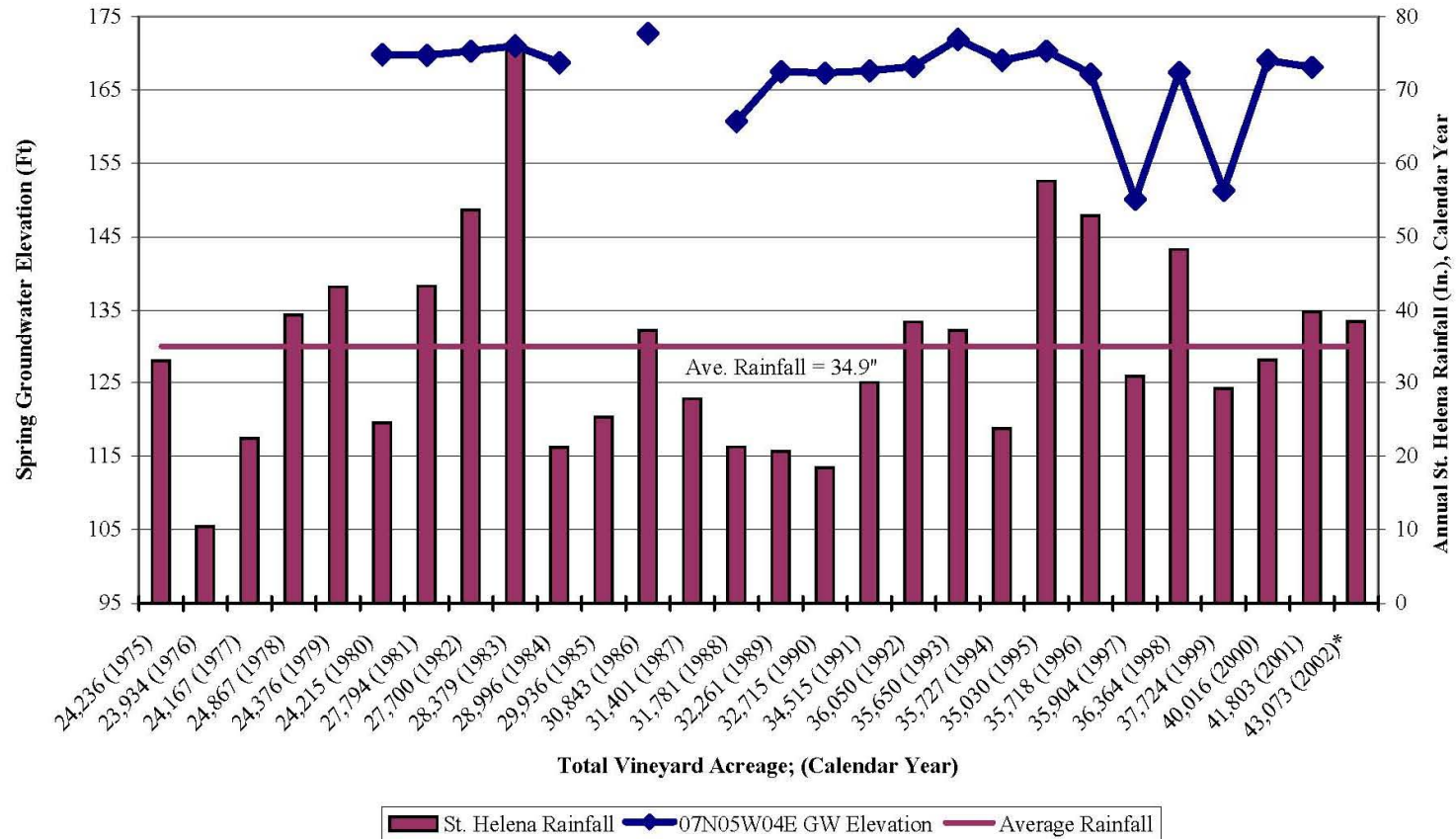
*2002 is partial dataset

J:e/423/TM5
vineyard acreages.xls, 08N06W06L chart Elevation
Last Revised 10/27/04

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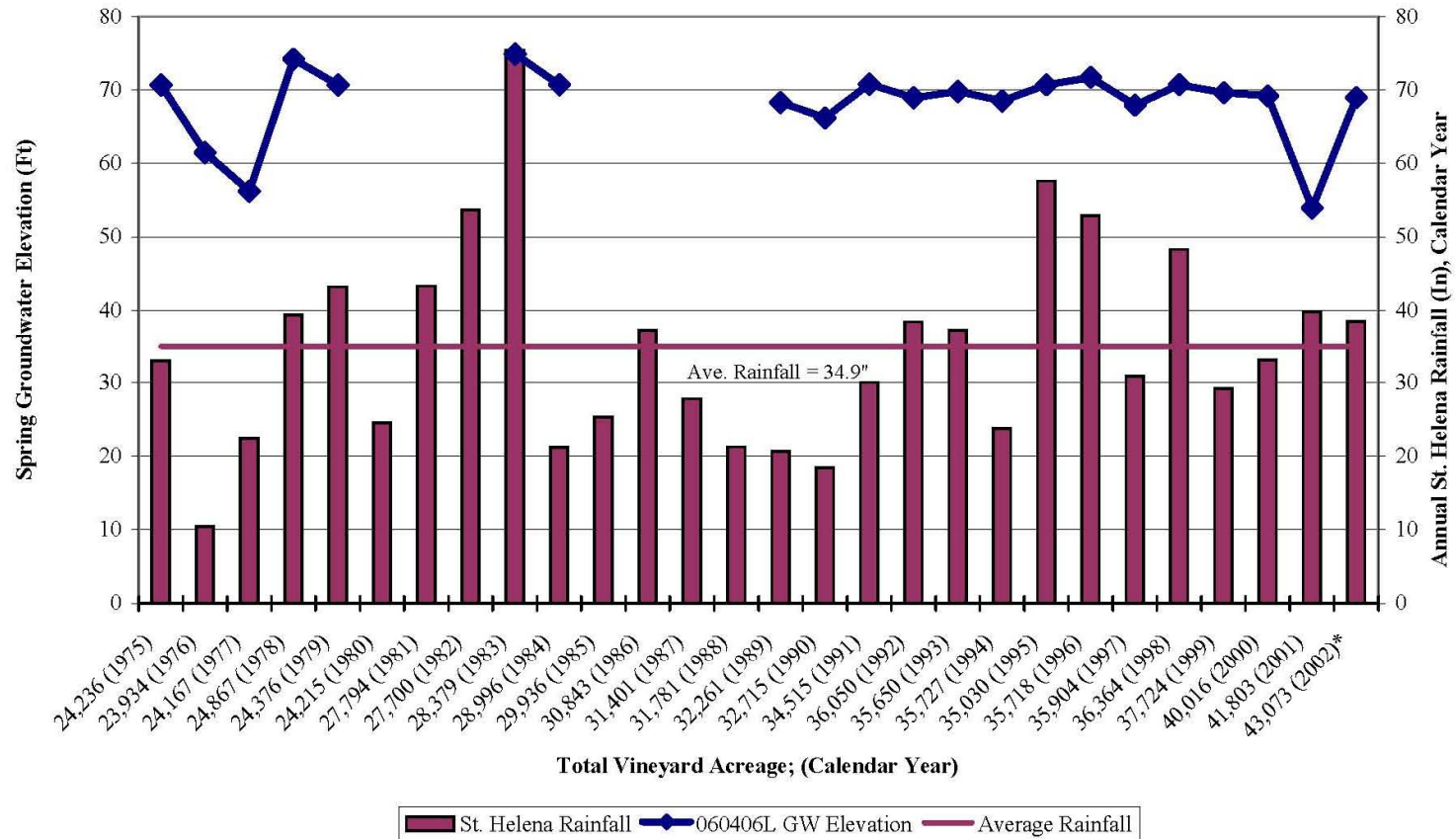
**Figure 5. Annual Spring Groundwater Elevation
Well 07N05W04E near City of St. Helena (1975-2002)
Ground Surface Elevation = 175 ft MSL**



J:e/423/TM5
vineyard acreages.xls, Chart 070504E elevation
Last Revised 10/27/04



Figure 7. Annual Spring Groundwater Elevation
 Well 06N04W06L near Town of Yountville (1975-2002)
 Ground Surface Elevation = 80 ft MSL

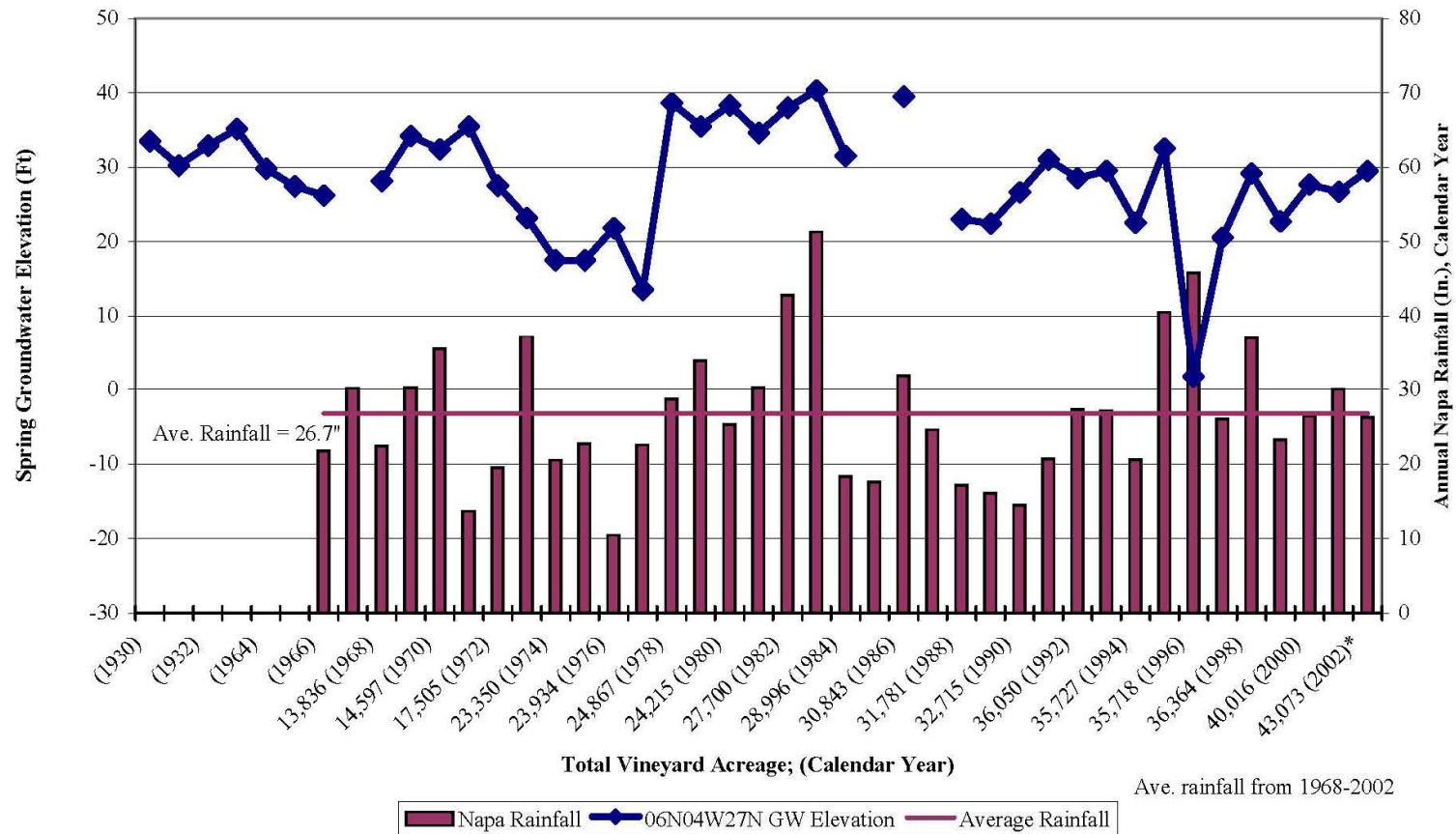


J:e/423/TM5
 vineyard acreages.xls, 060406L chart elevation
 Last Revised 10/27/04

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**Figure 9. Spring Groundwater Elevation
Well 06N04W27N near City of Napa (1930-2002)
Ground Surface Elevation = 50 ft MSL**



J:e/423/TM5
vineyard acreages.xls, 060427N chart elevation
Last Revised 10/27/04

West Yost & Associates



Requested Action

- Accept the Findings, Conclusions, and Recommendations of the 2050 Study.
- If appropriate, direct respective staffs to move forward with Evaluation/Analysis/Implementation of identified, individual agency and regional water supply reliability projects (particularly the dry year option).
- Pursue Grant Funding Opportunities related to Water Recycling Projects, and/or Integrated Water Resource Planning Projects.

Discussion and Questions & Answers