

Napa County Watershed Symposium

Water Conservation: A Grower's Perspective

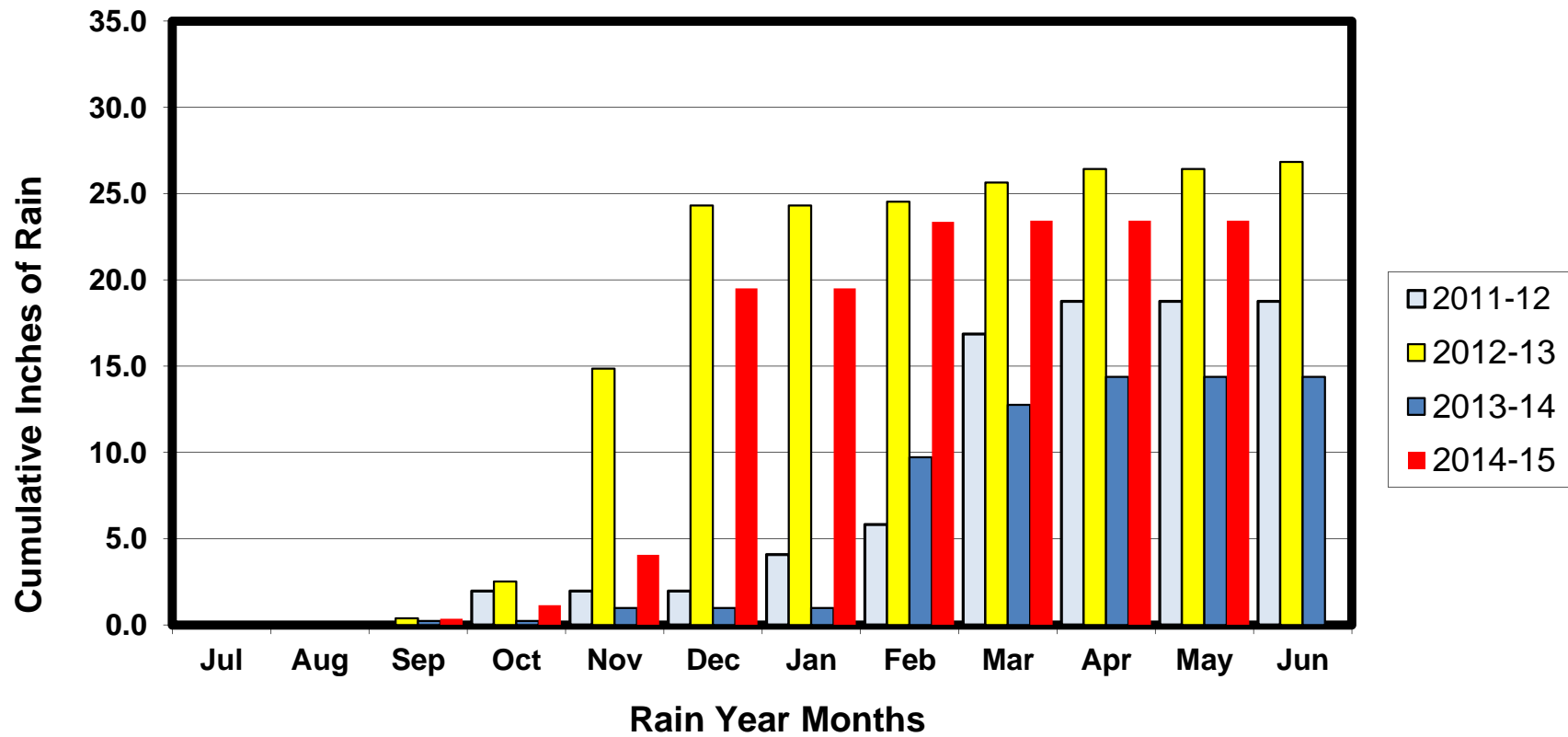
**James F. Verhey
Big Ranch Vineyards
May 15, 2015**

Napa County Water “Facts”

- 1 Based on the currently available information, groundwater conditions on the Valley floor are generally good, with ample water availability. There are documented groundwater concerns in the MST and Carneros regions. There is insufficient information in other areas (on the hillsides and the outlying areas) to evaluate groundwater availability in those areas.
- 2 Other than in the Calistoga (boron) and Carneros (salinity) regions and portions of the MST (natural arsenic), there is no documented current issue with groundwater quality in Napa County.
- 3 **For agriculture, once the ground is saturated (10”-15” of rain depending on soil type and location), additional rain sheet flows into the Napa River and into the SF Bay. However, for cities dependent on the State Water Project, every inch of rain/snow in the Sierra Nevada range and south most Cascade Range is critical.**
- 4 **When rain occurs is as important as how much rain occurs (for agriculture, 1” in March may be more important than 3” in December). As an example, all of the rain that occurred in Oct-Dec 2012 (more than 12”) was extremely important to the cities (because it filled the reservoirs and because of the snowpack it created in the Sierras), but it did Napa grape growers little good because the vines were dormant and the soils dried out by the time the vines woke up in March 2013. On the other hand, the 2014 rains (more than 8’ in Feb 2014) were great for Napa grape growers but not good for cities and agriculture elsewhere who rely on State and Federal Water Project deliveries because of the lack of rain in 2013 and the current low snowpack in the Sierras.**
- 5 **Water conservation is critical for everyone who works and/or lives in Napa County because the protection of our water resources will help preserve the character of Napa forever.**
- 6 Even though there may be a relationship between surface water and groundwater in selected areas, no such broad, general relationship has ever been scientifically proven across all of Napa County. However, Napa County must continue to analyze the relationship between surface water and groundwater on a scientific basis, especially along the Napa River and its tributaries.
- 7 With the exception of shallow wells (less than 100’ deep), the recharging of the Napa aquifers from surface water generally may takes years. So a current drought year will not affect the aquifers in Napa County for many years into the future. And even though groundwater levels may decline in drought years, they do tend to recover during rainy years to their historic levels.
- 8 Recycled water is a critical future source of agricultural water for the MST and Carneros regions. We (all of us) must support the expanded use of recycled water for agriculture and landscaping.
- 9 **Water conservation education and monitoring are more critical than new regulations in protecting and preserving the water resources of Napa County.**
- 10 Groundwater wells in Napa County are already regulated to some degree. The County requires groundwater permits for new wells (not replacement wells) under and in specific situations.

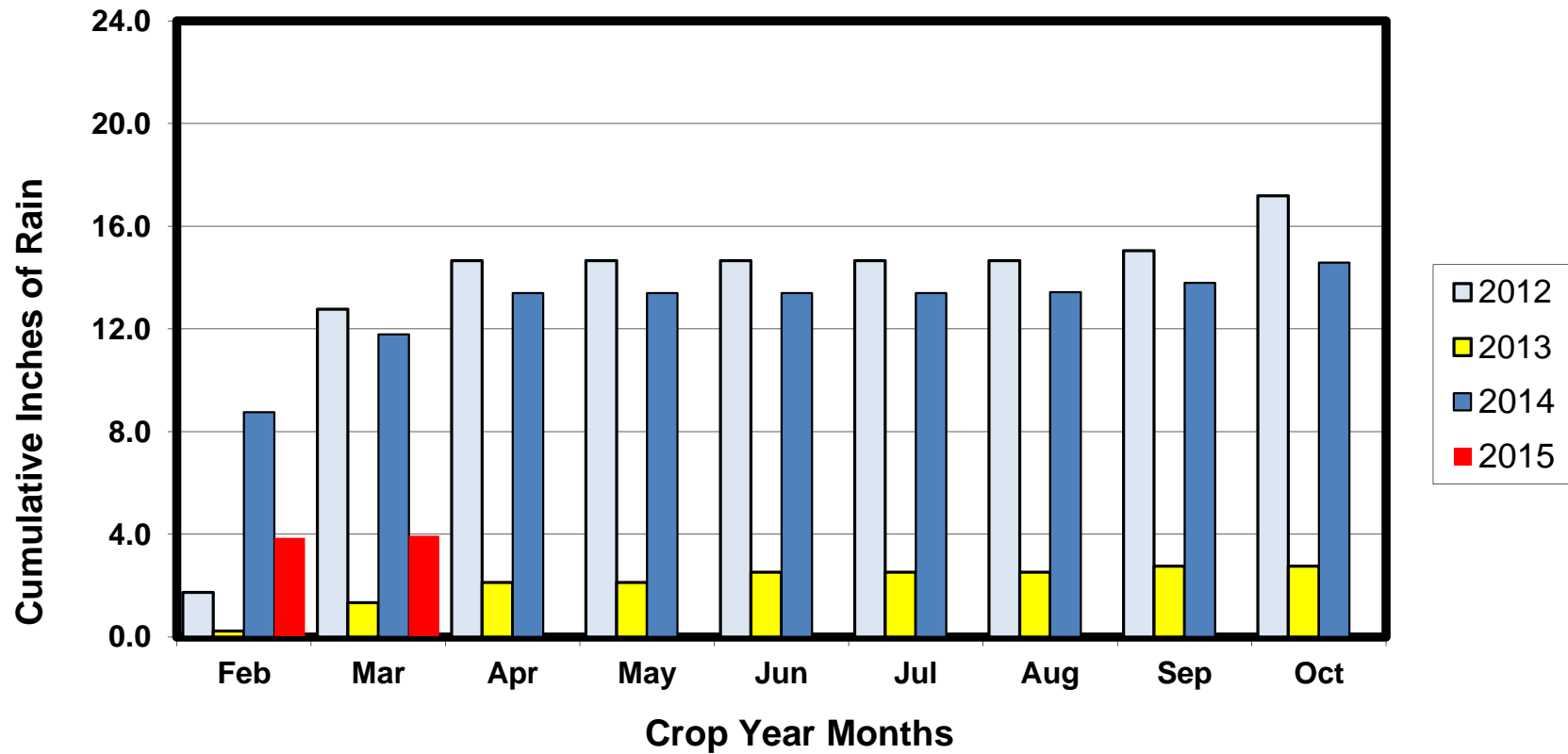
Napa Valley Rainfall

Cumulative Rain Year Inches



Napa Valley Rainfall

Cumulative Crop Year Inches



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Groundwater Conservation Strategy

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Napa County is lucky, especially relative to other water challenged areas of California:

<u>Crop</u>	<u>Water Use (per acre)</u>	<u>Revenues (per acre)</u>	<u>Revenues/AF</u>
Napa Wine Grapes	1.0 AF	\$15,000	\$15,000
Almonds	4.4 AF	\$6,000	\$1,400
Tomatoes	2.0 AF	\$4,050	\$2,025
Alfalfa	4.5 AF	\$1,200	\$270
Wheat	1.3 AF	\$780	\$600
Rice	8.0+ AF	\$2,000	\$250

Higher “Water” Value Crops

Lower “Water” Value Crops

Source: Blaine Hanson, UC Davis

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It should be all about SUSTAINABILITY over the long-term: Economic, Social, and Environmental:

<u>Group</u>	<u>Conservation/Sustainability Goals</u>
Growers	Focus on water efficiency in order to increase revenues or reduce costs. For example, either reduce water use per ton of grapes produced or increase production while holding water use steady....or both.
Wineries	Focus on water efficiency in order to reduce costs. For example, increase the number of times you use the same gallon of water.
Residents	Conserve or reduce water use in order to reduce expenses. For example, shorter showers, low flow toilets, drought resistant landscaping, etc.

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Groundwater Conservation Strategy: A Grower's Approach

May 2015

Verhey Conservation Strategy:

1. Think of irrigation in 3 dimensions, not 2 dimensions (like Spock's 3 dimensional chess) and move emitters between vines, to expand vine root system
2. Deep irrigate only when necessary, again to expand root system ("we irrigate because we can, not because we should")
3. Convert trellis system from VSP to split-canopy quad cane, to improve quality and increase quantity
4. Maintain full cover crop by mowing/chopping only (has created "thermal pool cover" effect)
5. Rely on wind machines, not water sprinklers for frost protection (climate change actually makes wind machines more effective due to night time warming)
6. Monitor and track irrigation, landscape and house water use on monthly basis....and participate in Napa County well monitoring program

Verhey Results:

1. With new trellis system, both quality and quantity have improved significantly
2. Expanded root system plus deep soil moisture helps vines cope with fall heat spikes
3. Pricing has followed quality (premium to NVA prices) and all grapes are under LT contracts
4. Irrigation water use has declined to an average of less than 0.3 AF per acre even in dry years
5. No material damage from frost, even in cold years



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A few last thoughts:

“We irrigate because we can, not because we should.”

“We should do things when we can, not when we have to.”