

**Agricultural Water Demands Practitioner Work Group**  
**Summary Report/Update to Sonoma County GSA Advisory Committees**

*January 4, 2021*

**Work Group Overview**

The Agricultural Water Demand Projections Practitioner Work Group was assembled to help develop estimates of future changes in crop acreage to inform water demand projections in three Sonoma County groundwater basins/subbasins (Sonoma Valley, Petaluma Valley, and Santa Rosa Plain) over the 50-year planning horizon for Groundwater Sustainability Plans (GSPs). Specifically, work group members were asked to consider whether acreage for the following major crop types are likely to contract, stay the same, or expand over the 50-year planning horizon:

- Vineyards
- Irrigated pasture
- Dairies
- Grain and hay crops
- Truck, nursery, or berry crops (including row vegetables and field crops such as hops)
- Orchards/deciduous fruits and nuts
- Cannabis/hemp

The work group met on June 23<sup>rd</sup>, August 6<sup>th</sup>, and October 15<sup>th</sup>; members include:

- Keith Abeles, Sonoma County Resources Conservation District
- Andy Casarez, Sonoma County Agricultural Commissioner
- Nick Frey, representing vineyard interests
- Brittany Heck, representing non-vineyard agriculture
- Rhonda Smith, UC Cooperative Extension
- Tawny Tesconi, Sonoma County Farm Bureau

At the June 23<sup>rd</sup> meeting, work group members estimated that for all crops during the GSP planning horizon, the three subbasins can expect a general reduction of farmed acreage crop types with the exception of vineyards and cannabis/hemp. Many work group members further indicated that in the near term (5-10 years) vineyard production could contract, primarily due to market forces and an oversupply of grapes. Water supply availability, population growth/land conversion for residential use, and land prices in general were cited as the primary causes for contraction of other agricultural uses.

To further vet these assumptions, staff developed a survey for work group consideration in advance of the August 6<sup>th</sup> work group meeting. In responding to the survey, a majority of work group participants said that a significant contraction of farmed acreage (defined as at least 5% of total acreage per year) should be expected for the following crop types:

- Dairies
- Grain and hay crops
- Orchards/deciduous fruits and nuts

- Irrigated pasture

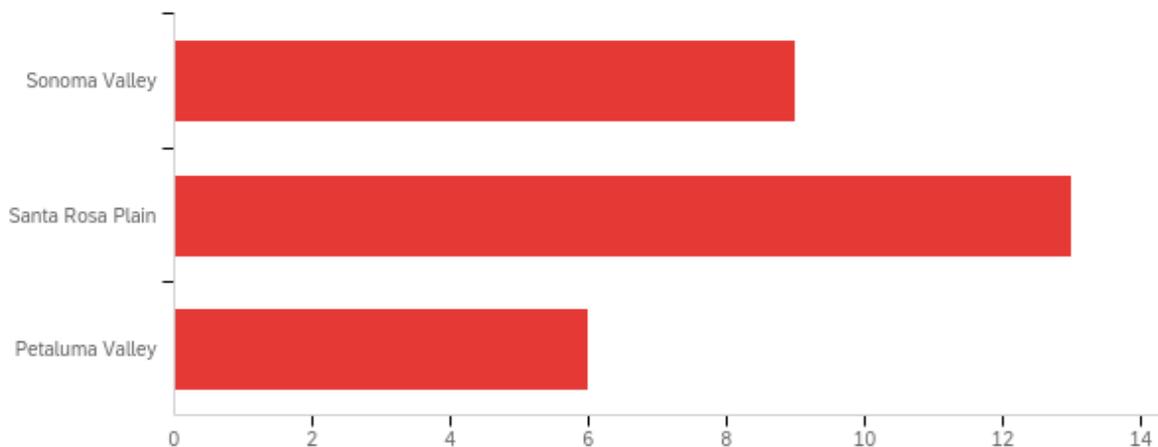
Likewise, a majority of work group participants felt that the following crops types would experience either a continuation of existing farmed acreage or expansion:

- Vineyards
- Truck, nursery, or berry crops (including row vegetables and field crops such as hops)
- Cannabis/hemp

During the August 6<sup>th</sup> meeting, work group members generally confirmed these results, but noted that projections are highly uncertain due to a number of unforeseeable factors. That said, they agreed that common assumptions such as rising land value and cost of production will be determinative factors in overall agricultural production (and the corresponding water usage by crop type). They requested a similar survey be distributed to a larger group of growers in the subbasins to confirm these assumptions. Sonoma Farm Bureau offered to distribute the survey to its members, the Community Alliance with Family Farmers (CAFF), and the California Winegrape Commission on August 18<sup>th</sup>.

### Public Survey Results

As noted, a survey was developed to poll agricultural practitioners in the three subbasins. 43 practitioners provided response; geographic distribution of respondents is provided in figure 1 below. Additionally, 19 of 43 respondents owned or operated vineyards, 7 indicated non-vineyard, unspecified agricultural operations, and the remaining 17 declined to state their business or organization.



**Figure 1: Geographic distribution of survey respondents**

Public survey responses were generally in line with feedback received from work group members, and included the following key takeaways:

- General continuation or reduction of farmed acreage for all crop types except truck, nursery, or berry crops and cannabis/hemp.
- Water supply availability, population growth, land conversion and prices and market forces were cited as the primary reasons for the agricultural contractions.
- Responses on vineyard acreage ranged from substantial contraction to moderate expansion.

### Extrapolated Historical Crop Data

In order to place the survey results within the frame of reference of historical changes in cropping patterns, land-use data from 1960 to 2018 (every 5 years until 1990, then every 2 years thereafter) for vineyards; irrigated pasture; grain and hay; truck crops; and orchards/deciduous fruits and nuts were compiled using Sonoma County crop reports (<https://sonomacounty.ca.gov/Agriculture-Weights-and-Measures/Crop-Reports/>).

The historical trends for each crop group were then extrapolated from 2020 to 2070 based on statistical regressions of the 2000 - 2018 county-wide crop report data. The regressions include high, median, and low growth trends correlating with the 75%, 50% and 25% percentiles. **Attachment 1** includes a memorandum with all survey results and analysis of trends in historical crop acreage, which was provided to work group members, Advisory Committee and Boards at their October meetings.

During the October 15<sup>th</sup> meeting, work group members noted that the relatively high historical growth trends for vineyards from 2000 – 2018 are likely not indicative of future trends. One work group member suggested further evaluating potential changes to vineyards by researching available market information from industry information sources, such as the Wine Market Council; Wine Institute; Turrentine, Gomberg & Frederickson; and Ciatti Global Wine and Grape Market reports. Research into available information from these sources, which are primarily focused on near-term markets for bulk wine and grapes, generally indicated that the underlying driver for wine demand--alcohol consumption generally and wine specifically--has been flat, and wineries & wine marketing organizations are working to grow that demand (with many sources noting the substantial uncertainty surrounding the future). However, no quantified future projections were identified through this additional research.

In order to help account for this information and work group member input, the historical cropping trends for vineyard projections were scaled downward by utilizing only the more recent (2008-2018) historical crop trends. Evaluation of the historical growth pattern for vineyards indicates this time period exhibits a more moderate increase in acreage in comparison with the longer-range 2000-2018 time period used for other crops and better reflects more recent trends for this crop (fig. 4 of Attachment 1).

### **Proposed Approach**

At the October 15<sup>th</sup> work group meeting, staff provided a suggested approach for 50-year crop projections, consisting of:

- Calculating a range of projections for each crop type based on survey results and historical land use with data extrapolated through 2070;
- Utilizing the calculated mid-range of these high/low projections for the 50-year projected water budget.

Staff then used a combination of the survey results and historical extrapolated data to develop the proposed cumulative projection ranges for each crop type across all three basins. The higher (more positive/less negative) of the growth rates from the opinion polls and the historical extrapolated data is used for the high growth projections and the lower (less positive/more negative) is used for the low growth projections. In order to balance and help reconcile the practitioners input on projected cropping changes with the historical extrapolated data, the following procedure was followed:

- Where the most frequent survey responses indicated expansion (positive growth), the high historical extrapolated trend was used for the ranges;
- Where the most frequent survey responses indicated no or negligible growth, the median historical extrapolated trend was used for the ranges;
- Where the most frequent survey responses indicated contraction (negative growth), the low historical extrapolated trend was used for the ranges.

. The calculated proposed high, mid-range, and low growth trends, are as follows:<sup>1</sup>

### **Vineyards**

- High growth: 36% increase over 50 years or 199 acres per year (based on the median historical extrapolated trend)
- Low growth: 0% over 50 years or 0 acres per year (most frequent survey response)

Proposed 50-year GSP projections (mid-range): increase of 100 acres per year or a 18% increase over 50 years (total 4,978 acre increase over 50-years across the three basins/subbasins)

### **Irrigated pasture**

- High growth: 10% decrease over 50 years or -9 acres per year (based on most frequent survey response)
- Low growth: 138% decrease over 50 years or -122 acres per year (based on the low historical extrapolated trend)

Proposed 50-year GSP projections (mid-range): decrease of 57 acres per year or a 65% decrease over 50 years (total 2,872 acre decrease over 50-years across the three basins/subbasins)

### **Grain and hay crops**

- High growth: 62% increase over 50 years or 31 acres per year (based on the low historical extrapolated trend)
- Low growth: 10% decrease over 50 years or -5 acres per year (most frequent survey response)

Proposed 50-year GSP projections (mid-range): increase of 13 acres per year or a 26% increase over 50 years (total 654 acre increase over 50-years across the three basins/subbasins)

### **Truck, nursery, or berry crops (including row vegetables and field crops such as hops)**

- High growth: 70% increase over 50 years or 23 acres per year (based on the high historical extrapolated trend)
- Low growth: 5% over 50 years or 2 acres per year (most frequent survey response)

Proposed 50-year GSP projections (mid-range): increase of 12 acres per year or a 38% increase over 50 years (total 611 acre increase over 50-years across the three basins/subbasins)

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<sup>1</sup> Cannabis and hemp projections were not included at this time, as total farmed acreage is currently negligible and limited historical data is available to extrapolate projections. Staff will re-evaluate inclusion of cannabis/hemp projections in the 5-year update to the GSP.

### **Orchards, deciduous fruits and nuts**

- High growth: 10% decrease over 50 years or -2 acres per year (based on most frequent survey response)
- Low growth: 178% decrease over 50 years or -34 acres per year (based on the median historical extrapolated trend)

Proposed 50-year GSP projections (mid-range): decrease of 18 acres per year or a 94% decrease over 50 years (total 893 acre decrease over 50-years across the three basins/subbasins)

### **Application of Projections into 50-Year Water Budgets**

Based on the proposed projections above and subsequent input from the Advisory Committees in all three subbasins and work group members, staff will develop the projected 50-year water budgets using the mid-range growth trends for each crop. The procedures for geographically distributing the changes in cropping patterns for the 50-year model simulations are described in **Attachment 2** and take into account physical characteristics (e.g. slope, elevation, aspect, soil type, etc.), as well as possible constraints, such as conservation easements, and parcel zoning. The projected land use changes detailed in Attachment 2 will then be used as input datasets for each groundwater flow model which calculate the associated groundwater demands for each crop after taking into account available information on irrigation practices and availability of recycled water or surface water sources.