NAPA COUNTY GRAND JURY
2022-2023

JUNE 21, 2023

NAPA COUNTY GROUNDWATER MANAGEMENT

"WHEN THE WELL IS DRY,
WE KNOW THE VALUE OF WATER"
-BENJAMIN FRANKLIN

SUMMARY

Over the past several years, Napa County and the rest of California have been confronted by one of the most significant and prolonged droughts in recent history. This has resulted in diminished stores of surface water in reservoirs, and has increased the dependence on groundwater to provide for agricultural, industrial, and residential needs.

Despite increases in rain and snow in 2022-2023, experts agree that Napa County will need to continue to confront the issue of drought. In coming years, Napa County residents and the agricultural industry will increasingly rely on groundwater for access to water. It is critical that we protect groundwater reserves for the future health of Napa County's farms, cities, residences and environment.

Groundwater is the water located in the pores and spaces between rock and soil particles. It is a vital resource for human consumption, irrigation (domestic and agricultural), and industrial use. Groundwater accounts for about 40% of the water used in normal years and up to 60% of water used during droughts.[1] Groundwater comes from rain, snow, and other forms of precipitation that percolates through soil and rock layers. Groundwater is stored in aquifers which are located in underground layers of rock and sediment which hold and transmit water.

The amount of water that can be responsibly withdrawn from an aquifer depends on its recharge rate which is the rate that groundwater is replenished by precipitation and surface water sources. Groundwater sustainability refers to the ability of an aquifer to maintain its quantity and quality over a long period of time. It involves managing and using groundwater resources in a way that ensures they are available for current and future generations. Sustainability is increasingly important due to growing population, and increased demand for water resources.

Overuse of groundwater can lead to depletion of aquifers which can cause land subsidence, saltwater intrusion, and decreased water quality, each of which reduces water availability. Land subsidence can result in significant damage to buildings, roads, and utilities infrastructure. Over pumping of groundwater can also result in decreased potable water quality due to the concentration of contaminants, such as boron and other elements. Depletion of aquifers can also allow salt water intrusion into groundwater for areas adjacent to sea water.

To achieve groundwater sustainability, it is necessary to balance the demand for groundwater with the natural recharge rates of the aquifer. This can be done through various management strategies, such as implementing water conservation measures, increasing the efficiency of water use, promoting the use of alternative water sources, education and training of the agricultural workforce, and implementing regulations to limit groundwater extraction. There is a need for a coordinated and unified approach to achieve effective and efficient sustainable groundwater management. A countywide water management agency will support a collaborative approach involving

[1] CA State Water Board (www.waterboards.ca.gov)

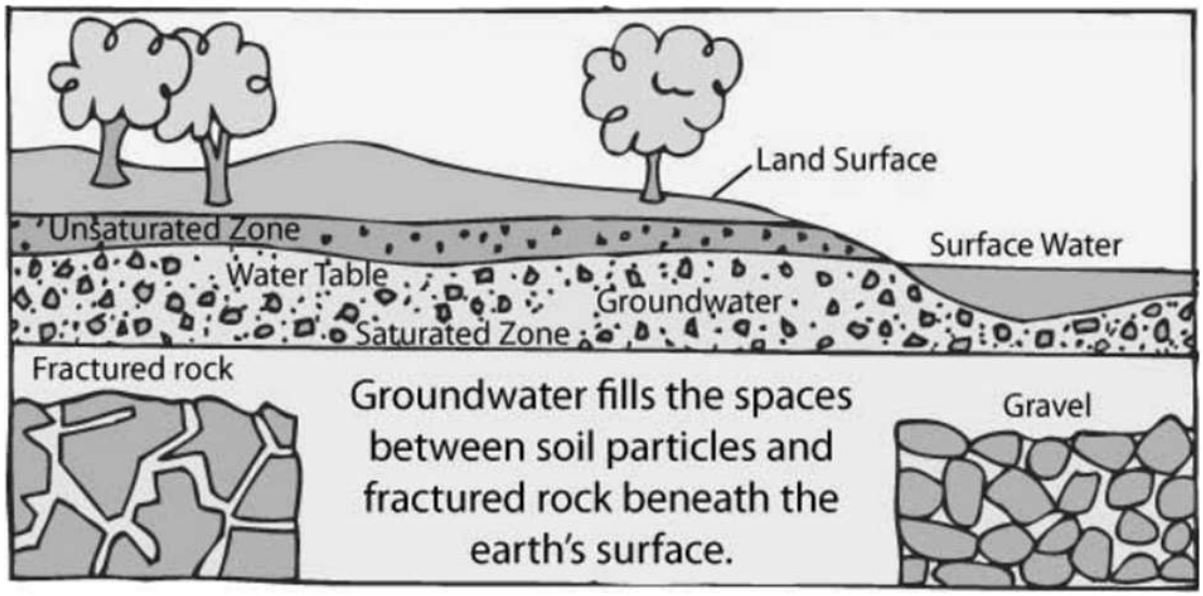
government agencies, water users, and other stakeholders. By working together to manage and protect groundwater resources, we can assure its availability for future generations.

The Jury believes there is a need to better understand the County's groundwater sustainability and recommend actions to address the topic. For these reasons, the Jury chose to investigate the use, monitoring, and management of groundwater in Napa County.

BACKGROUND

Intermittent drought has plagued California for over 40 years. Although the 2022-2023 series of storms has helped, periods of drought are expected to continue. Drought conditions to stress all water sources including groundwater, reservoirs, rivers, and streams. Groundwater, stored in aquifers,[2] is the major source of water for Napa's agricultural industry. Years of drought coupled with over pumping depletes aquifers.

The diagram below shows the relationship between groundwater (aquifers) and surface water (rivers and streams).(Graphic from The Groundwater Foundation):



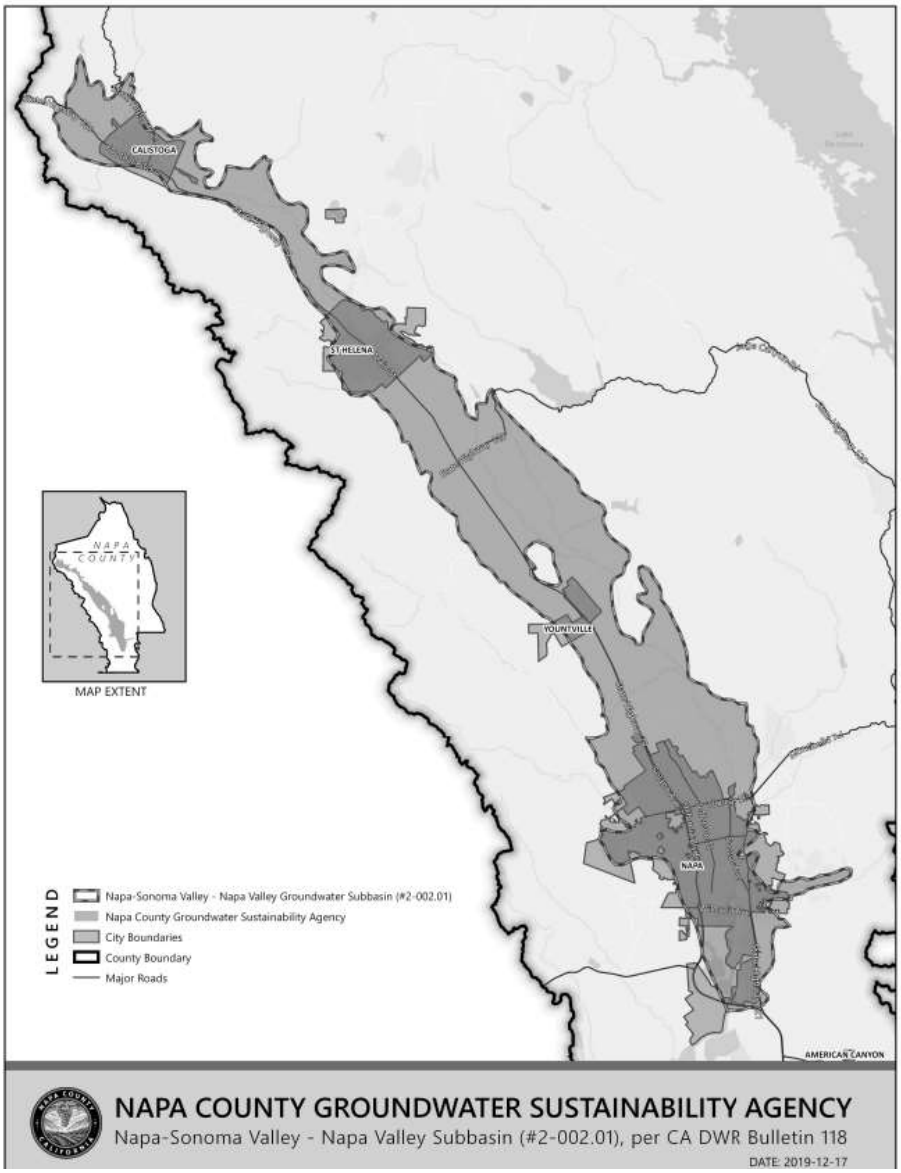
The California Legislature passed the Sustainable Groundwater Management Act in 2014 (SGMA).[3] The SGMA is designed to avoid undesirable results and mitigate overdraft within 20 years. Napa County's largest subbasin, encompassing most of the Valley floor (Calistoga to Soscol Crossing), was identified by the SGMA as a medium priority aquifer.

The medium priority designation required the Board of Supervisors (BOS) to implement a Groundwater Sustainability Plan (GSP) and a Groundwater Sustainability Agency (GSA). The GSP has been written and accepted by the Division of Water

[2] Underground layers of rock and sediment that hold and transmit water.

[3] AB 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley)

Resources (DWR). County officials are well aware that water deficiencies are detrimental to the County's residents and the wine industry.



GLOSSARY / ACRONYMS

Glossary

- The 71.8 square-mile **Napa Valley Subbasin** sits in the larger 426 square-mile Napa River watershed and underlies Calistoga, St Helena, Yountville, and Napa. The extent of the Napa Valley Subbasin generally aligns with the floor

of the Napa Valley. The subbasin consists of sediments that have been eroded from the surrounding mountains and deposited by the Napa River over millions of years. These sediments are permeable – they can soak up and hold a lot of water. The sediments are shallow near the base of the nearby hills and in the Calistoga area. The sediments can be up to several hundred feet thick in the center of the valley. Beneath these sediments lie older bedrock.

- An **acre-foot** is 325,851 gallons, a volume that would cover a one acre area at a depth of one foot.
- **Drawdown** is the reduction of a hydraulic water level in an aquifer compared to the normal static level prior to pumping.
- **Napa County PBES categories for wells:** Domestic Irrigation, Domestic Irrigation Public, Industrial Irrigation, Irrigation Agriculture, Irrigation Domestic, Irrigation Industrial, Irrigation, Irrigation Public, and Irrigation Landscaping.

Acronyms

- BOS, Board of Supervisors
- DWR, Division of Water Resources
- GSA, Groundwater Sustainability Agency
- GSP, Groundwater Sustainability Plan
- LAFCO, Local Agency Formation Commission
- PBES, Napa County Planning, Building, and Environmental Services Department
- RCD, Resource Conservation District
- SGMA, Sustainable Groundwater Management Act
- TAG, Technical Advisory Group

METHODOLOGY

The Grand Jury interviewed personnel from the following sources:

- Napa County Planning, Building and Environmental Services
- Napa County Resource Conservation District
- Napa County Groundwater Sustainability Agency and Advisory Committee
- City of Napa Water Department
- City of St Helena Public Works Department
- Napa County Farm Bureau
- Napa County Groundwater Advisory Committee
- Napa County Groundwater Technical Advisory Group
- Napa Green LLC
- Napa Valley Grapegrowers
- Save Napa Valley Foundation
- A well driller with many years of experience drilling and maintaining wells in

Napa County
- A vineyard manager who manages multiple vineyards in and outside of Napa County
- A geologist who has worked with Napa County on groundwater issues

Documents Reviewed
- Organization Chart for Napa County Public Works
- Documents produced by the State of California and County of Napa
- California Senate Bill 1739, SB1319, and Assembly Bill 1178 which were combined to form California's Sustainable Groundwater Management Act (SGMA)

- Napa County Groundwater Sustainability Annual Report - Water Year 2021 (published in March 2022)
- Napa County Groundwater Conservation Ordinance
- Napa County Groundwater Sustainability Plan
- Napa County Title 13
- Reports on groundwater issues from Luhdorff & Scalmanini Consulting Engineers
- Several recent Bay Area County Grand Jury Reports on Groundwater issues
- LAFCO Executive Summary October 31, 2022
- Napa County Well Permit Standards and WAA Requirements January 6, 2023
- Water Availability Analysis (WAA), Adopted 2015 by Napa County Board of Supervisors

Web Page Searches
- Napa County Public Works Department
- Napa County Planning, Building and Environmental Services
- Groundwater Resources Advisory Committee
- Groundwater Foundation
- Groundwater Sustainability Agency
- Napa County Resource Conservation District
- Map of the Napa Valley Subbasin
- California Water Board
- Articles on Groundwater from the Napa Valley Register
- Water Education Foundation.org

DISCUSSION

Drought Impact on Napa Valley Groundwater

On March 30, the US Drought Monitor[4] declared the drought over in many parts of California, including Napa County. However, the impact of drought remains a major concern as it leads to depleted aquifers from over pumping and lack of replenishment. Limited conservation adds to the problem. Efforts to mitigate negative drought outcomes have been taken by the California State Legislature and Governor including

[4] *National Drought Mitigation Center, University of Nebraska at Lincoln/NOAA/USDA*

the 2014 Sustainable Groundwater Management Act (SGMA). Seventy-two percent (72%) of Napa County's water is consumed by agriculture, 15% for industrial/landscape, and the remaining 13% for residential.[5]

Napa Subbasin and Sustainability Efforts

Napa County's largest subbasin[6] encompassing most of the valley floor (Calistoga to Soscol Crossing) has been deemed a medium priority basin by SGMA. This designation requires Napa County to form a Groundwater Sustainability Agency (GSA) and then create a Groundwater Sustainability Plan (GSP) to avoid undesirable consequences and mitigate excessive drawdown within the next 20 years. The Board of Supervisors appointed themselves as the GSA.

A committee consisting of representatives from the wine industry, environmental and agricultural groups, and interested citizens was appointed by the GSA to develop the plan. The initial GSP was rejected by the State; a revised GSP was submitted in January 2022. This second GSP was approved in February 2023 by the State Division of Water Resources (DWR) as the minimum standard for management of Napa County's groundwater[7]. A Technical Advisory Group (TAG), consisting of experts in the field has been formed to support the GSA and the GSP.

A better understanding of the effects of pumping, as well as the use of groundwater, is needed to implement the plan. Currently, there are six public and a limited number of private wells being used for groundwater monitoring. The true amount of drawdown is not fully known due to incomplete monitoring. The County is in the process of installing six additional public wells to gather more data.[8]

Vineyard irrigation has become standard practice over the past 45 years. Inefficient irrigation practices have led to overwatering of up to 25 percent in many vineyards. Organizations such as the Resource Conservation District (RCD), Napa Green, and the Vintner's and Grape Grower's Associations recommend better training for vineyard managers and field workers in efficient water usage. The Grand Jury was unable to obtain statistics for water usage on properties owned by large corporate entities. There are current technologies that can determine the amount of water a vine needs to thrive. This type of assessment can be made through satellite or handheld devices. These techniques seem to be independent approaches and not standard practice.

New Pumping Standards

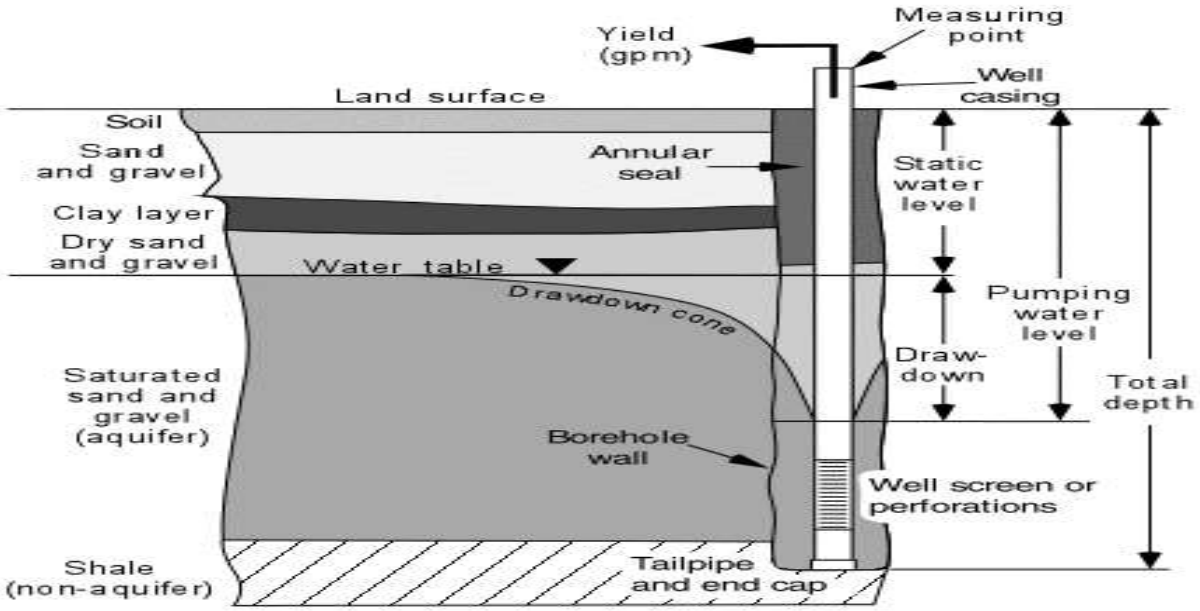
Title 13 of the Napa County Code has set standards for water use per acre for vineyard plantings, requiring a maximum of 0.3 acre feet per acre of planted vines. This standard is for water from newly permitted wells. The 0.3 allocation will also apply to all replanted acreage. There are wells permitted for domestic use that are also

[5] County staff and consultant interviews
[6] See Glossary for this subbasin.
[7] See DWR approval document
[8] County staff interview

supplying agricultural/winery needs.[9] The County does not investigate these mixed-use wells unless there is a citizen complaint.[10]

Well Issues

The graphic below shows the different parts of a well and how it interacts with the water table which is the Aquifer. It shows how draw-down is measured compared to the static level of water within the Aquifer. (Google Images)



Now that the GSP has been accepted, the County plans to add staff to manage it.[11] Representatives from conservation groups and industry associations agreed more staff is needed to monitor existing wells.

Wells in Napa County date back to the 1800's but permitting was not required until the 1950's. There is imprecise data available indicating the exact number of wells within the County. It has been documented that wells affect streams, rivers and adjacent wells if located too close to a new bore hole.[12] Well depth can affect other wells in the immediate area. Drawdown and well depth have the greatest effect on an aquifer's health.

Over the past few years, there have been reports of domestic well failure in Napa County causing homeowners to truck in potable water during summer months.[13] Hydrologists have found the pace of groundwater depletion in California accelerates dramatically during drought years. Interviews revealed overuse of surface and groundwater has caused diminished flow in streams and rivers, including the Napa River. Increased agricultural, industrial and residential pumping has drawn down aquifer levels to new lows, threatening to severely impact underground water

[9] County staff interview
[10] Ibid
[11] Ibid
[12] Industry representative interview
[13] County staff interview

reserves.[14] The Milliken, Sarco, and Tulocay Basin (MST) east of the City of Napa has been deemed a groundwater deficient area.[15]

The proliferation of storage tanks has increased aquifer depletion.[16] There are no restrictions as to how many tanks a parcel may have or how they may be used.

There is uncertainty regarding the actual number of wells in Napa County. Per PBES data there are an estimated 11,470 wells with unclear designations.

Administrative Issues

The well permitting process can be long and arduous, prompting complaints from vintners, well drillers, ecologists, and property owners. Changes in regulations and management of permits have not been well communicated by the Planning Department Staff. Each permit request is assigned to an individual planner who compiles the information and communicates with the applicant; however, this information is not easily accessible to the applicant or the public.[17]

The County has nine different categories[18] of wells which do not clearly define how the water is used.

Napa County has 14 public and 20 private water districts serving cities, towns, and unincorporated areas.[19] Several groups, including LAFCO, have suggested the formation of a county wide water agency. A unified agency would coordinate the operations of all districts, including those providing recycled water for agricultural and landscaping irrigation. This agency would provide future planning, integrated information repository, and drought mitigation. Surrounding counties including Marin, Sonoma and Solano have countywide water agencies.

Napa County's five urban areas get their water from five separate water sources: local reservoirs, wells, and State aqueducts which draw from the Sierras and major rivers. The State systems have been struggling as well as some of our Cities such as American Canyon and St Helena during times of drought. There is no uniform approach toward sharing of resources which also supports the need for a unified agency across the County.

FINDINGS

F1. Napa County officials do not know the number, location, or capacity of groundwater wells and storage tanks in the County.

F2. Despite the 2022-2023 storms, drought is still a concern in Napa County.

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[14] Napa County Groundwater Sustainability Annual Report - Water Year 2021 (published in 2022)
[15] 2014-2015 Grand Jury Report
[16] County staff interview
[17] County staff interview
[18] See Glossary
[19] LAFCO Municipal Service Review (2020)

F3. Napa County does not have an umbrella water agency to coordinate, oversee, and set policy for its 14 public and 20 private water districts.

F4. Groundwater over pumping can lead to land subsidence, salt water intrusion, decreased water quality, and depletion of aquifers.

F5. Education of vineyard and winery owners, vineyard managers, farmworkers, wine production employees, landscapers, and residential users, is critical for improved groundwater management.

F6. Government, wine industry, and environmental groups do not consistently collaborate on groundwater management issues.

F7. The County permitting process is inconsistent, inefficient, and confusing to applicants seeking groundwater well permits.

F8. The GSA has only just begun to address groundwater issues via the GSP. However, most public and private groups and agencies feel the plan needs to be implemented as soon as possible.

RECOMMENDATIONS

The Grand Jury recommends that:

R1. By December 31, 2023, the Board of Supervisors will fill current gaps in groundwater usage data by expanding groundwater monitoring in key locations and initiate and enforce procedures to enhance data collection from agricultural and residential users.

R2. By June 30, 2024, the Board of Supervisors in conjunction with all 14 public and 20 private water districts consider creating a single County-wide agency to oversee groundwater management.

R3. By December 31, 2023, the Board of Supervisors will create and implement a plan to increase awareness of groundwater preservation strategies through the education of winery and vineyard owners and managers, farmworkers, landscapers, and residential users.

R4. By June 30, 2024, the Napa County Planning Department will enable more effective communication with applicants during the permitting process.

R5. By June 30, 2024, the Napa PBES research and communicate to the GSA the number of new or upgraded wells, their output, and the number of storage tanks.

REQUIRED RESPONSES

Pursuant to Penal Code sections 933 and 933.05, the Grand Jury requests responses as follows:

- Napa County Board of Supervisors, F1, F2, F3, F4, F5, F6, F7, F8, R1, R2, R3
- Napa County Planning, Building and Environmental Services Department, F1, F2, F3, F4, F5, F6, F7, R4

INVITED RESPONSE

- Napa County Resource Conservation District, F2, F5, F6, R2

Reports issued by the Grand Jury do not identify individuals interviewed. Penal Code section 929 requires that reports of the Grand Jury not contain the name of any person or facts leading to the identity of any person who provides information to the Grand Jury.