Napa County Groundwater Sustainability Agency

Annual Report Water Year 2024

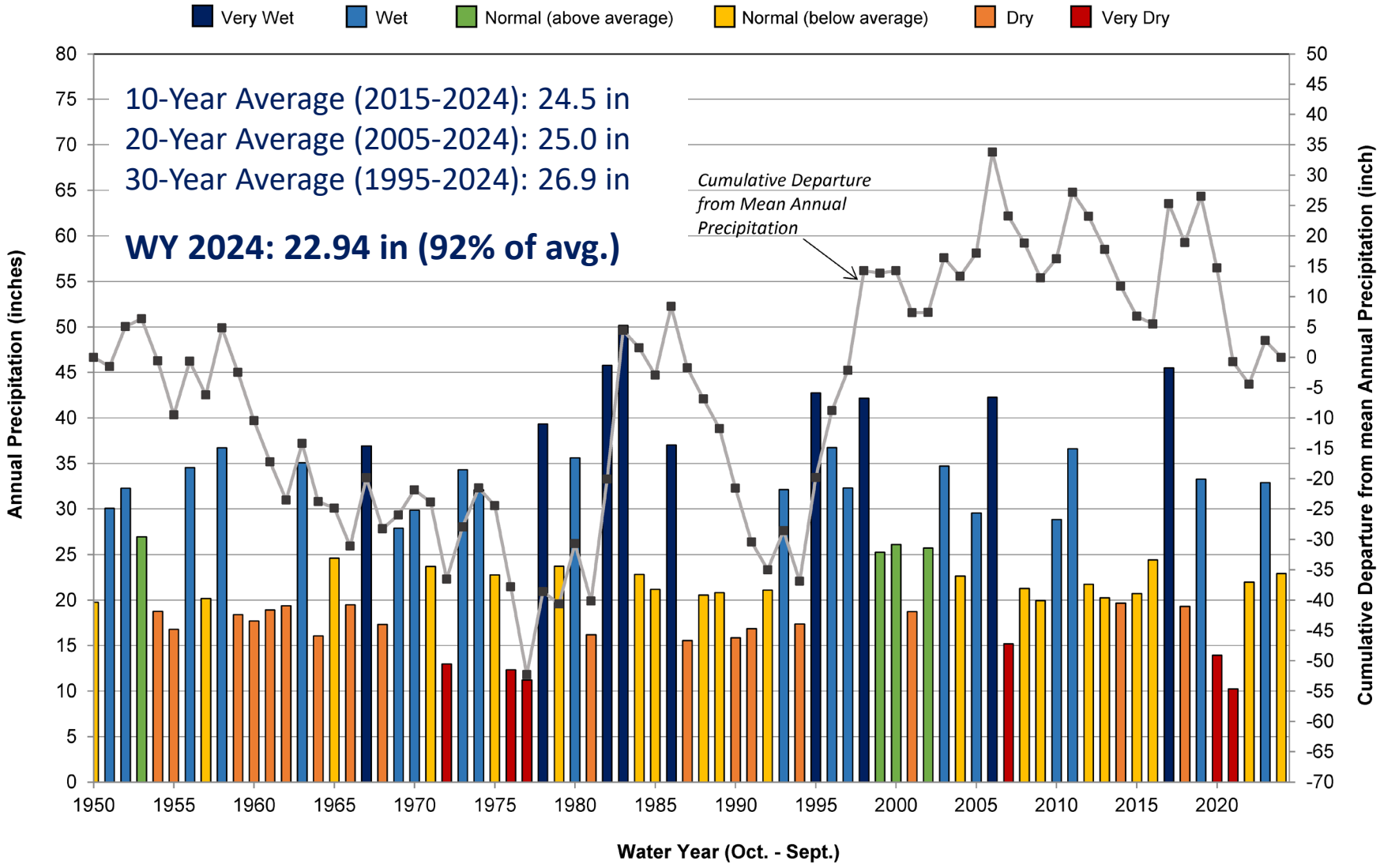
May 6, 2025

Luhdorff & Scalmanini
Consulting Engineers

Outline

- WY 2024 Conditions
- Napa Valley Subbasin Water Budget
- Sustainability Indicators
- GSP Implementation

Historical Precipitation at Napa State Hospital

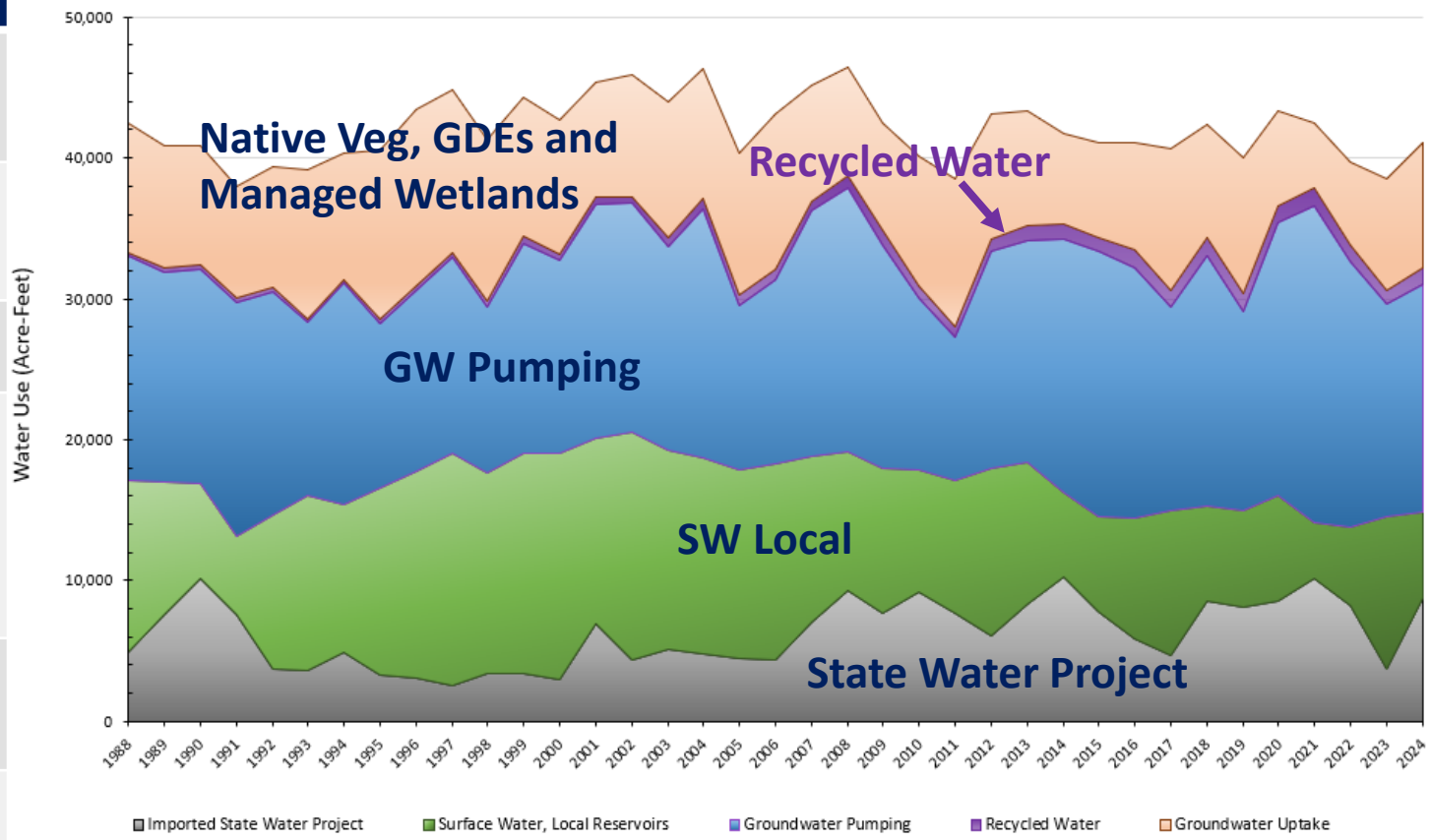


- Napa State Hospital weather station used for historical perspective.
- Napa Valley Integrated Hydrologic Model (NVIHM) uses spatially distributed precipitation for water budgets.
- Data are reviewed for completeness.

Napa Valley Subbasin Water Budget WY 2024

Water Use: WY 2024 (acre-feet)

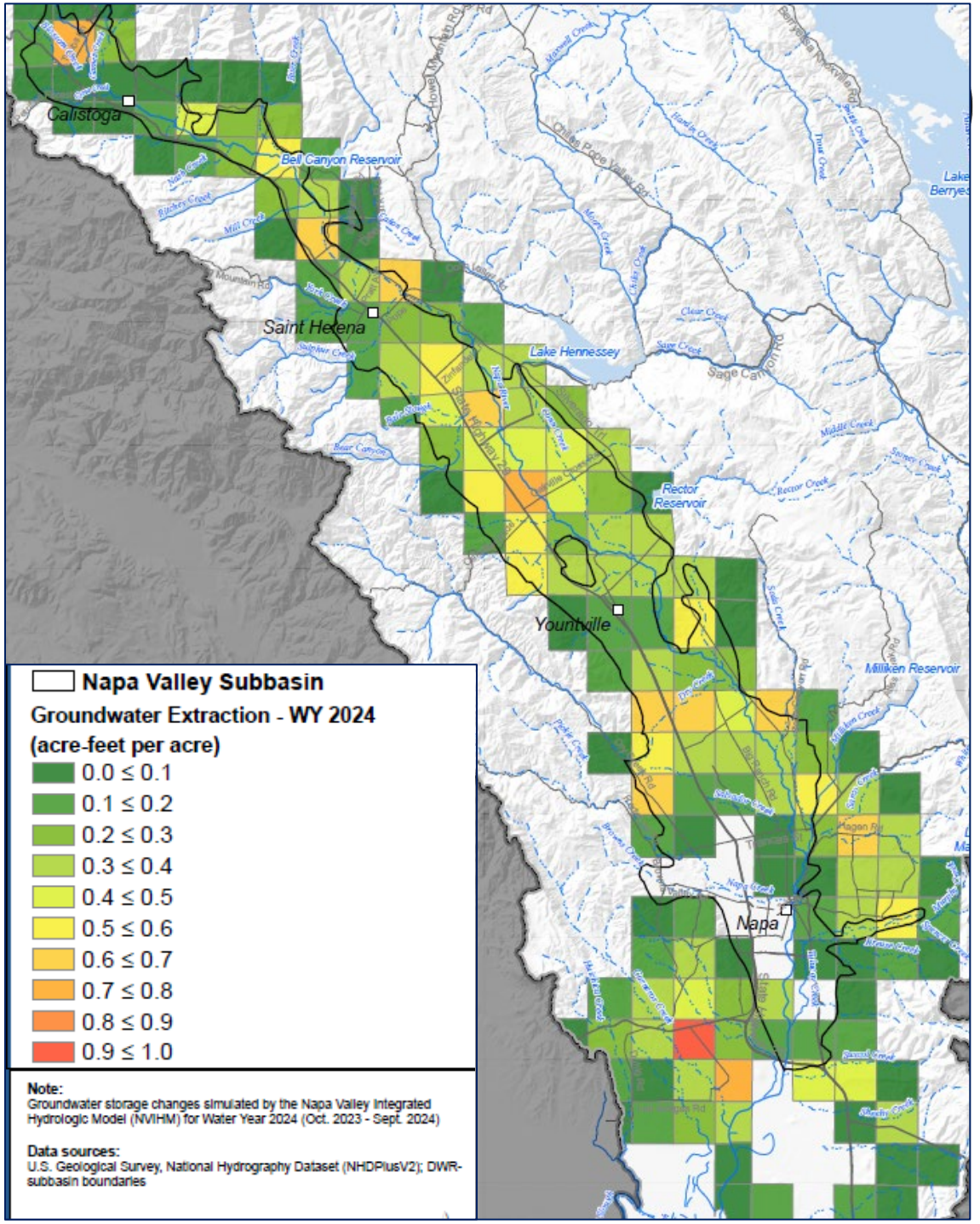
Water Use	2022 (BN)	2023 (W)	2024 (BN)
Groundwater Pumping	19,120	15,300	16,210
Native Veg, GDEs & Managed Wetlands	5,910	7,830	9,360
Recycled Water Use	1,190	1,020	1,140
Local Surface Water Use (including reservoirs, diversions, etc.)	5,560	10,780	6,090
State Water Project Use	8,230	3,750	8,760
TOTAL	**40,010**	**38,680**	**41,560**



Groundwater Pumping, 2024 (Acre-feet)

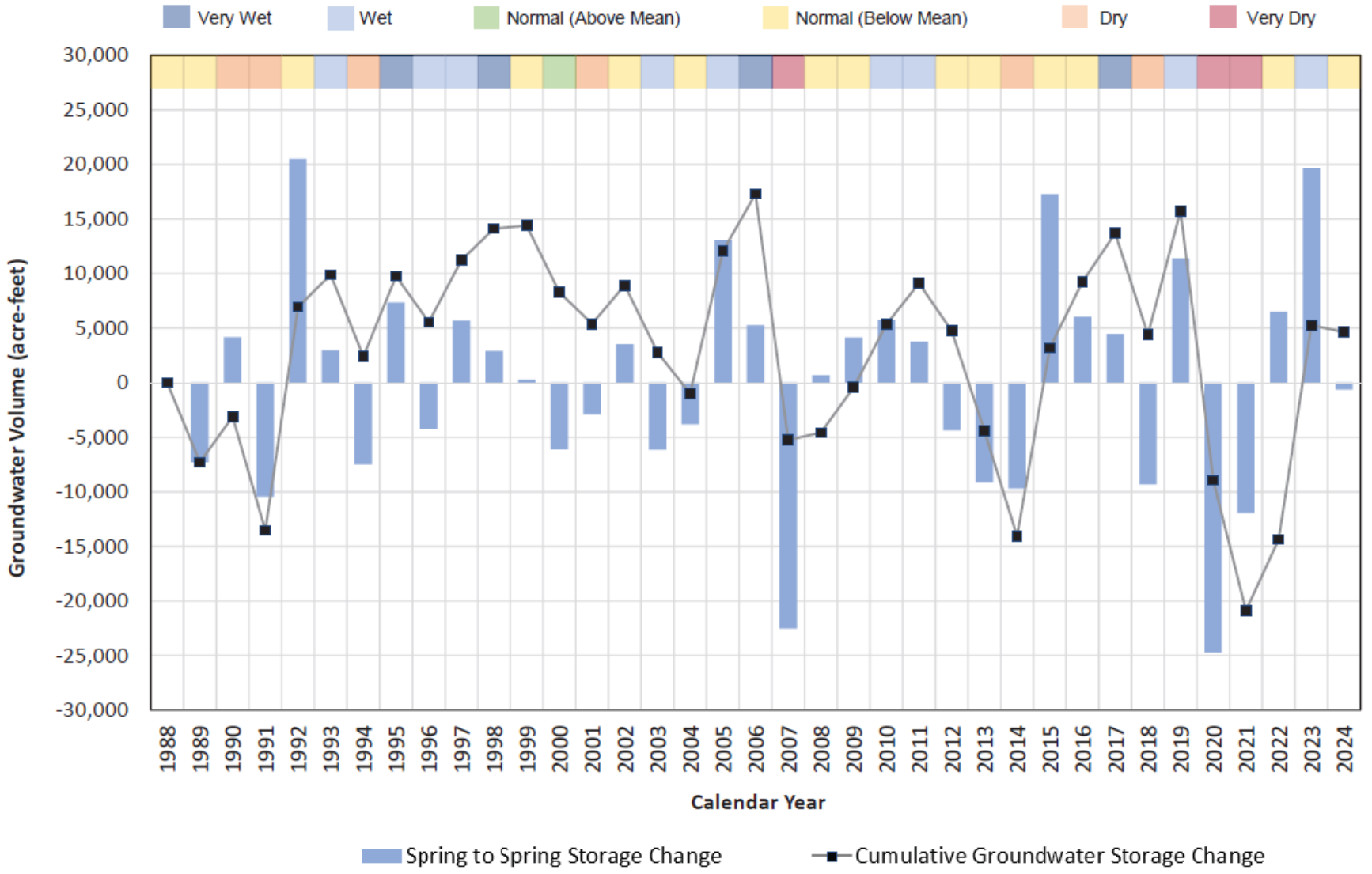
Groundwater Pumping	Acre-feet	Percent Use
Ag (vines and other)	11,790	73%
Municipal	480	3%
Self-Supplied Users Domestic (2,619 AF for outdoor use)	2,870	18%
Small Public Water Systems	1,070	7%

TOTAL = 16,210 Acre-feet



Change in Groundwater Storage: Spring 2023 to Spring 2024

- Change in groundwater storage influenced by water year, pumping, and recharge.
- Slight decline in storage in WY 2024.
- Cumulative storage shows significant recovery since historical 2021 low.



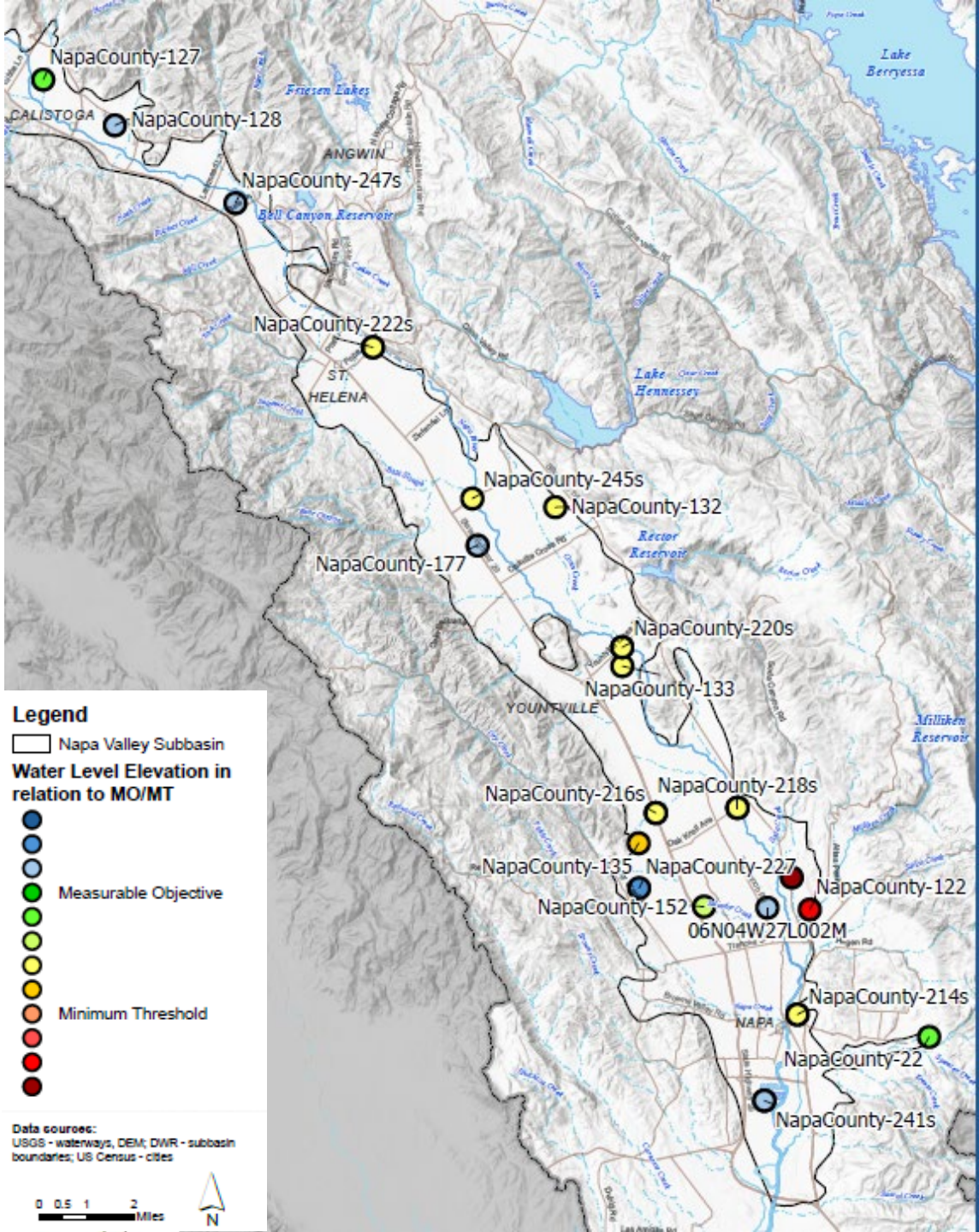
Sustainability Indicators & Metrics

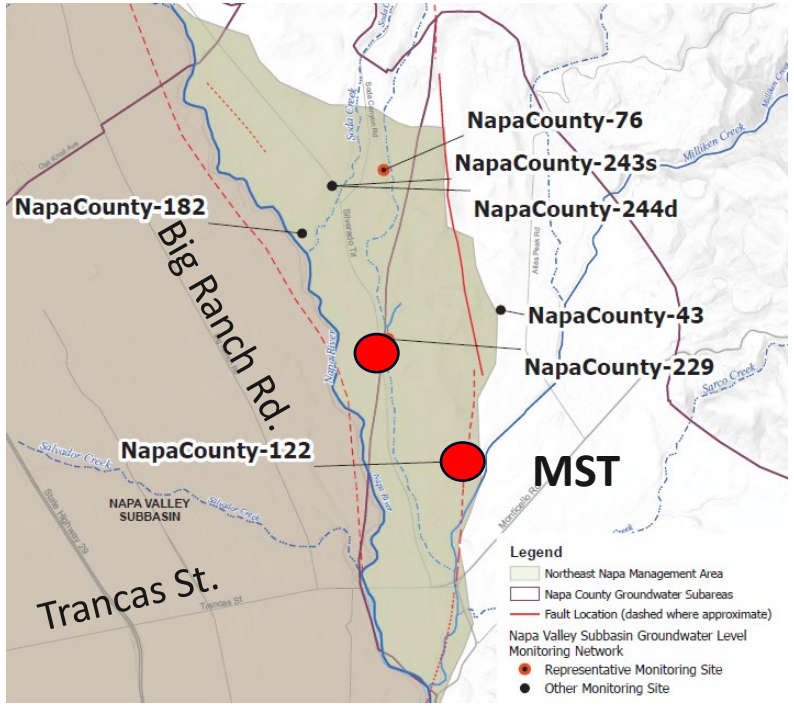
Sustainability Indicator Description and Summary

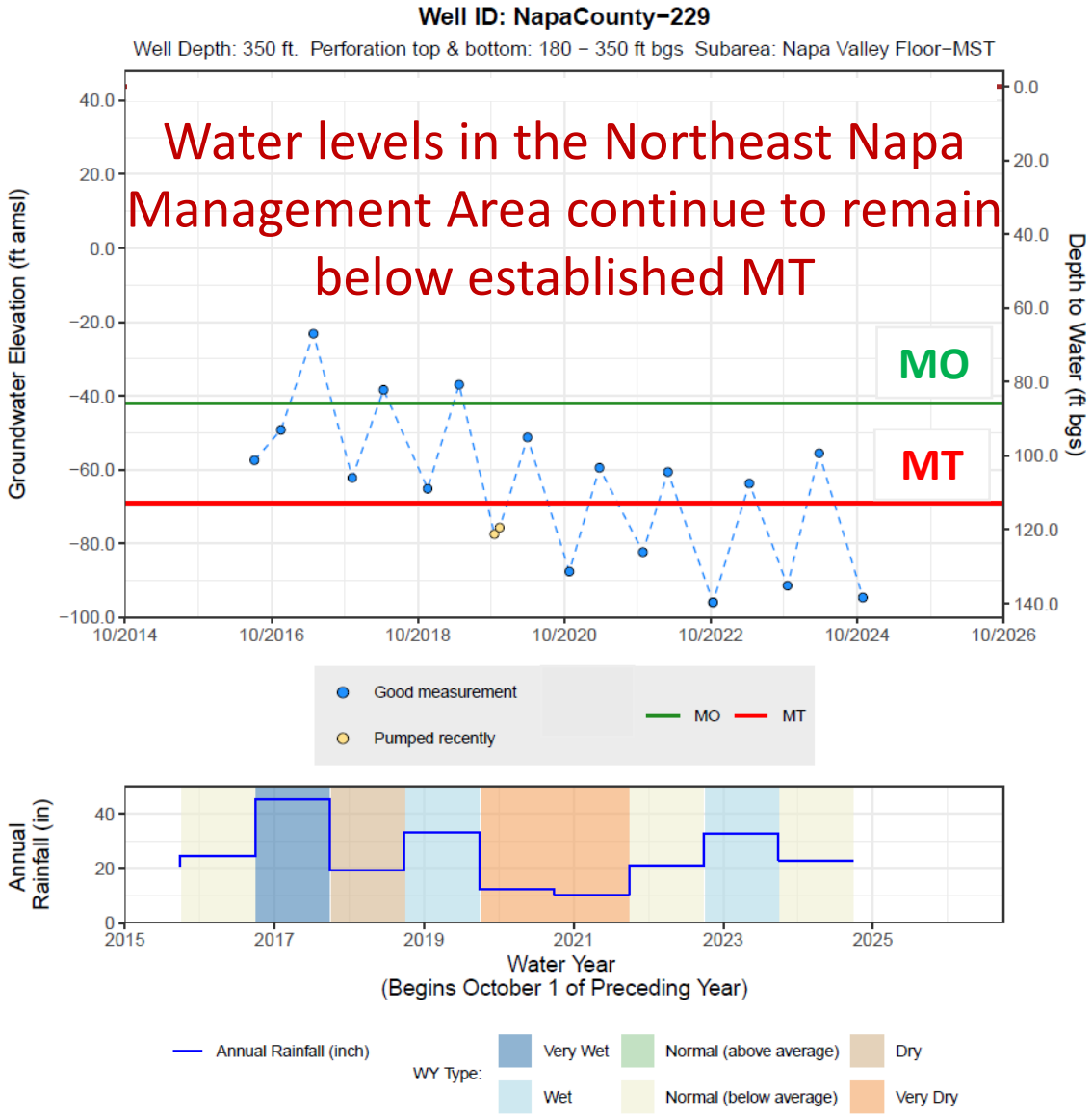
Sustainability Indicator	Description of Monitoring			Simplified Summary of Minimum Threshold and Undesirable Result
	Parameter	Observed	Modeled	
Chronic GWL Lowering (CGWL)	GW elevations in representative wells.	✓		Based on observed low GW elevation prior to 2015.
Depletion of Interconnected Surface Water (ISW)	GW elevations and model results that equate pumping to streamflow depletion.	✓	✓	Minimum GW elevation from 2005-2014 and second highest seasonal depletion that occurred from 2005-2014.
GW Quality Degradation	Measurements of total dissolved solids (TDS), arsenic, and nitrate.	✓		Based on drinking water standards as well as historical range.
Reduction of GW Storage	Modeled GW extraction.		✓	GW extraction in exceedance of the Sustainable Yield for a single year and the 7-year average.
Land Subsidence	Based on remotely sensed changes in ground surface elevation.	✓		Inelastic subsidence of 0.2 feet per year.
Seawater Intrusion	Measurements of TDS and/or chloride near tidally influenced areas.	✓		Historical maximum chloride concentrations.

Water Levels Measurable Objective and Minimum Threshold – Fall 2024

- Many Representative Monitoring Site (RMS) wells were between the Measurable Objective (MO) and Minimum Threshold (MT).
- Groundwater elevations were mostly slightly lower in Fall WY 2024 compared to Fall WY 2023.
- Exceedances of the MT were located in the Northeast Napa Management Area.







- Recovery spring-to-spring observed in WY 2024.
- NENMA characterized by very thin alluvium bounded by faults.
- Groundwater production from low-permeability volcanic materials.
- Characterized by groundwater level decline.

Minimum Threshold and Measurable Objective Summary: Fall Groundwater Levels

- Groundwater SMC:
  - 2 of 22 wells exceeded the MT
    - NC-122 and NC-229, both in the Northeast Napa Management Area
  - 3 of 22 wells met their MO
- Depletion of ISW groundwater measurements:
  - 0 of 5 wells exceeded their MT
  - 0 of 5 wells met their MO

Chronic Lowering of Groundwater RMS Wells	Minimum Thresholds (ft msl)	Measurable Objective (ft msl)	Fall Groundwater Elevations (ft, msl)				
			2020	2021	2022	2023	2024
06N04W27L002M	-2	9	5.4	0.2	3.1	10.2	7.6
NapaCounty-122	-45	-37	-52.4	-54.1	-14.5	-11.6	-56.8
NapaCounty-127	351	374	370.0	380.9	373.9	373.8	373.4
NapaCounty-128	330	331	330.1	335.7	331.2	330.8	331.1
NapaCounty-132	109	115	106.3	100.8	97.3	112.9	111.1
NapaCounty-133	73	75	71.8	73.9	71.0	75.4	73.6
NapaCounty-135	33	62	52.7	17.9	20.9	33.4	37.5
NapaCounty-152	55	61	60.2	67.4	59.5	61.4	58.0
NapaCounty-171	165	173	158.3	208.4	167.3	180.2	--
NapaCounty-177	131	136	136.5	139.8	136.7	137.8	137.2
NapaCounty-214s	2	4	3.4	3.7	3.9	4.9	3.8
NapaCounty-215d	2	4	3.2	3.3	3.6	4.4	2.7
NapaCounty-216s	66	75	71.0	65.9	67.9	75.1	74.8
NapaCounty-217d	60	67	59.6	52.5	56.1	65.4	63.0
NapaCounty-218s	29	33	29.0	25.4	27.9	31.7	30.1
NapaCounty-219d	29	33	28.6	23.0	27.5	31.5	30.0
NapaCounty-22	150	170	163.6	162.4	163.3	165.5	165.3
NapaCounty-220s	75	79	74.9	70.6	74.5	77.0	76.0
NapaCounty-221d	75	79	74.2	70.0	74.0	76.8	75.6
NapaCounty-222s	185	191	185.5	182.3	187.1	187.9	186.6
NapaCounty-223d	164	171	156.1	155.8	172.4	169.3	166.9
NapaCounty-227	59	72	--	38.5	42.8	64.5	85.5
NapaCounty-229	-69	-42	-87.6	-82.3	-95.9	-91.4	-94.6

SMC for Depletion of Interconnected Surface Water: Depletion Volume

Minimum Threshold

Summer/early Fall (June to October) streamflow depletion volumes exceeding the second highest seasonal volume of streamflow depletion that occurred from 2005-2014 at 2 RMS stations on Napa River at Pope St. and Oak Knoll Ave. Based on modeled input and output.

Undesirable Result

Exceedance of MT for volume of streamflow depletion occurring 3 consecutive years at either of above stations. Based on modeled results.

Trigger

Occurs when there is an exceedance of the MT in the Fall for Streamflow Depletion Volume in a single year.

Interconnected Surface Water and Model Results

Seasonal (June to October) Streamflow Depletion Volume Estimated with Model at Stream Sites

Well ID	Representative Site		Seasonal Depletion (AF)			WY 2024 MT Exceedance	Three Consecutive WY MT Exceedances
	Minimum Threshold (AF)	Measurable Objective (AF)	WY 2022	WY 2023	WY 2024		
Napa River at Oak Knoll Avenue, Napa	**3,220**	2,370	1,140	3,680	3,240	**Yes**	**No**
Napa River at Pope Street, St. Helena	**1,390**	1,120	690	1,370	1,490	**Yes**	**No**

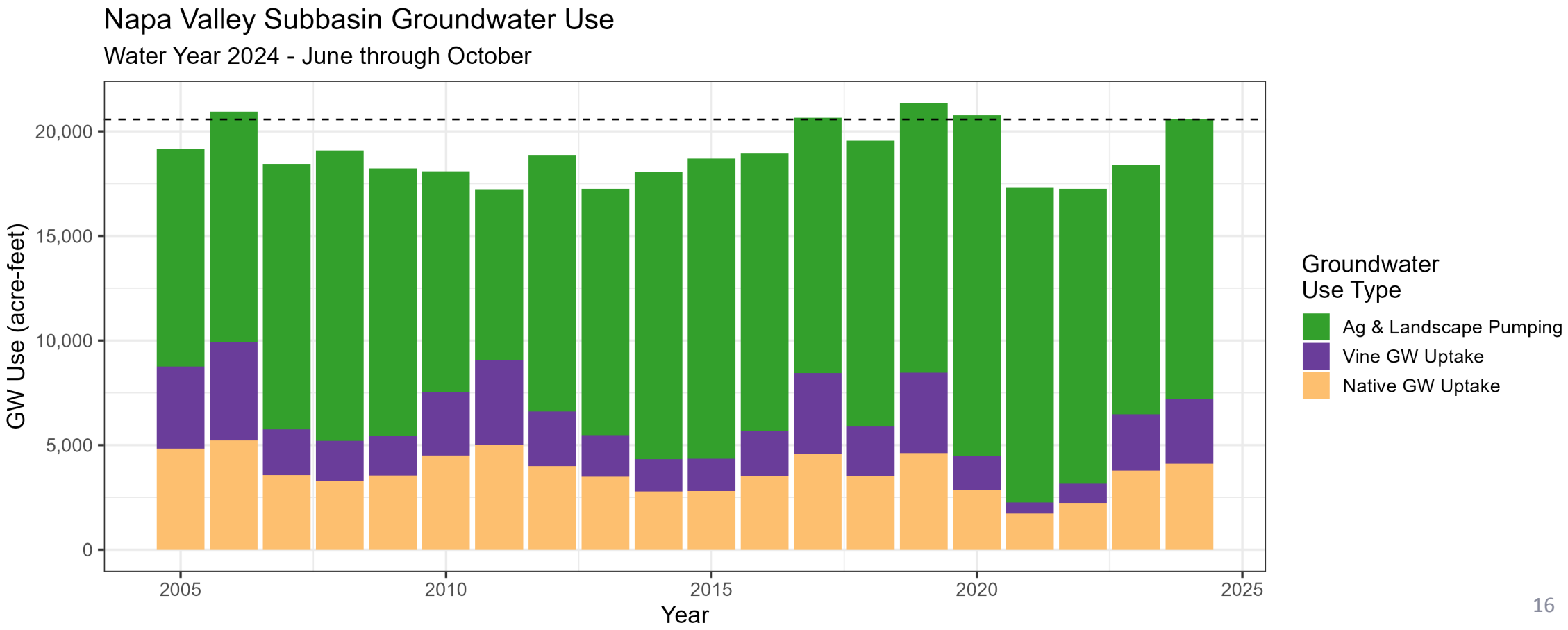
- Streamflow depletion volume conditions **did not meet** the definition for an undesirable result.
- In WY 2024, groundwater elevations **did not** meet the definition for an undesirable result.

Why did the seasonal depletion of the river system exceed the MT in 2024?

- The extremely hot summer increased the total consumptive use of all vegetation.
- High Spring groundwater elevations supported direct groundwater uptake of plants (both vines and native vegetation).
- Pumping was above the Sustainable Yield of 15,000 AFY.

Interconnected Surface Water and Model Results

- While Ag & Landscape Pumping were greater in WY 2024, direct uptake by crops and native vegetation also increased – largely based on hotter, drier conditions.
- During the June-October period, WY 2024 had one of the highest total groundwater uses.



Stream Depletion in WY 2024

Start of WY 2024

- Began WY with high water levels from prior Wet Water Year.
- Cool winter and spring temperatures led to low demand.
- Consistent precipitation throughout the winter maintained high groundwater levels.
- Increased streamflows produced by multiple factors going into Summer 2024.

High streamflows and low demand preceding the 2024 irrigation season.

June/July - WY 2024

- Extremely hot temperatures increased overall demand.
- High groundwater levels allowed for additional direct root uptake throughout the Subbasin (both native and vines).
- Increased pumping to meet demand.

Overall groundwater use (pumping and direct uptake) was much higher during this time compared to many other years. More streamflow was available for depletion.

August/October - WY 2024

- Groundwater levels fall below root zone for majority of native and vines.
- Increased pumping to meet demand.
- No significant storm in October to increase streamflow and begin aquifer recharge.

Cumulative effect of pumping and direct uptake led to 100% depletion.

Reduction of Groundwater Storage

Minimum Threshold

Net GW extraction by pumping exceeding the SY for the Subbasin, where net GW extraction is the volume extracted less any volume of augmented recharge achieved by implemented projects.

Undesirable Result

Seven (7) year average annual net GW extraction in the Subbasin exceeds the sustainable yield.

- UR occurred since 7-year average exceeds the sustainable yield for the Subbasin.

Sustainable Yield (Est.) = ~15,000 AFY

Year	Total Groundwater Extraction (AF)
2018	17,750
2019	14,140
2020	19,310
2021	22,550
2022	18,840
2023	15,100
2024	16,200
7 Year Avg.	**17,700**

Six of seven years exceeded the SY. Many GW levels were between the MT and MO in WY 2024. To achieve the Sustainability Goal by 2042, of protecting and enhancing, as well as preparing for more extreme climate, requires augmented recharge and less pumping.

Water Quality, Seawater Intrusion, and Subsidence

Water Quality:

- Two RMS wells exceeded the MT for Arsenic – historically detected in the Napa Valley Subbasin.

Seawater Intrusion:

- High TDS in the tidally influences area of the Napa Valley Subbasin, as expected.

Subsidence:

- No measurable impact of subsidence or concern.

All monitoring networks are being continually reviewed and updated as needed.

Sustainability Indicator Summary of Undesirable Results

- Average GW pumping over 7-year period exceeds Sustainable Yield
  - UR occurred for Reduction of GW Storage

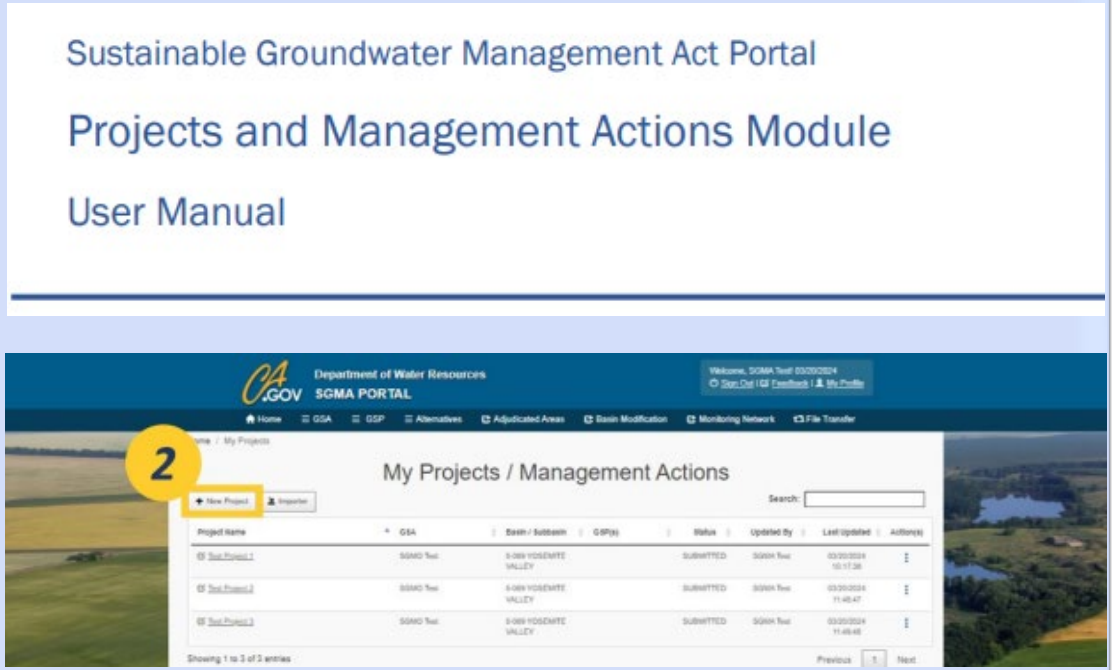
Sustainability Indicator	WY 2022	WY 2023	WY 2024
	UR: Yes or No	UR: Yes or No	UR: Yes or No
Chronic GWL Lowering (CGWL)	No	No	No
Depletion of Interconnected Surface Water (ISW)	Yes	No	No
GW Quality Degradation	No	No	No
Reduction of GW Storage	Yes	Yes	Yes
Land Subsidence	No	No	No
Seawater Intrusion	No*	No*	No

*New RMS wells are being evaluated for this SI.

GSP Implementation

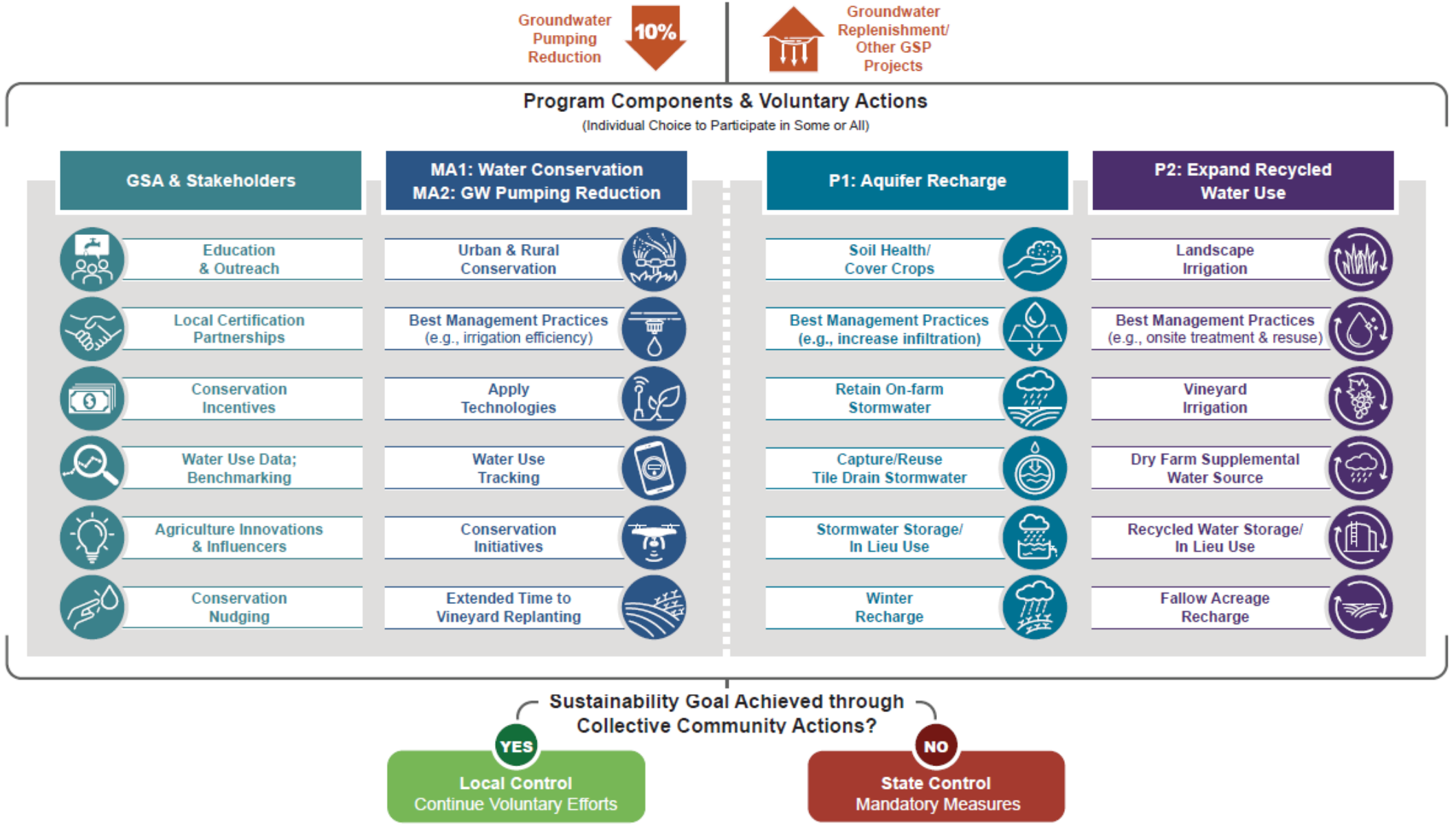
GSP Projects and Management Actions (PMAs)

- Sustainable groundwater management **required within 20 years**
  - 2040 (critically overdrafted basins) and 2042 (non-critically overdrafted basins)
- Must **achieve the sustainability goal** for the basin
- Must **annually describe progress** towards GSP implementation



New Online Portal : 2025

Workplan Implementation:
Water Conservation and Groundwater Pumping Reduction



Water Certification Partnership

- Water Certification Partnership
  - Outreach to Existing Certification Programs and Other Stakeholders
  - Completed Concept Document
  - Many Meetings with TAG, including April 10
- More Outreach with Stakeholders
  - Flyers: Partnering Organizations, Interested Stakeholders, FAQs
- Next Steps
  - RFQ and/or Pilot Sites for Interested Organizations
  - Participation Incentives

NCGSA Water Certification Partnership

FOR PARTNERING ORGANIZATIONS

The Napa County Groundwater Sustainability Agency (NCGSA) Water Certification Partnership is designed to expand the implementation of water conservation practices in vineyards and wineries, reduce groundwater pumping, and help ensure long-term groundwater availability in the Napa Valley Subbasin.

1 How does the Partnership work?

The Partnership defines water conservation standards for vineyards and wineries. One or more existing certification programs or other organizations adopt those standards. Participating vineyards and wineries implement the defined water conservation practices, and the certification program verifies that participating vineyards and wineries have implemented the practices. Partners work with participants to collect water use data each year and report anonymized, aggregated data to NCGSA to calculate the water savings achieved across the Subbasin over time.

2 What does my organization need to do to be a partner?

To become a partner and support water conservation in Napa Valley, potential partners (e.g. existing certification program partners, non-profit organizations, professional associations) will:

- Ensure water conservation practices meet minimum requirements
- Require water measurement and reporting
- Collect, anonymize, and report water use data each year to NCGSA

3 How does my organization apply to become a partner?

The steps to apply and become a partner include:

1. Apply through the NCGSA solicitation* process used to qualify partner programs.
2. Show how your program can meet the minimum requirements.
3. Describe your program's process for collecting and reporting data.
4. Meet with NCGSA to discuss program implementation and incentives.
5. Notify participants of program requirements.
6. Certify participants and measure water savings!

4 Is my organization eligible for incentives?

Yes, organizations that partner with the NCGSA are eligible for incentives to support implementation, including assistance with implementation of program standards, program administration, and technical support.

*For more information, visit https://www.countyofnapa.org/3074/Groundwater-Sustainability.

For more information:

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Other Ongoing GSP Implementation

- ISW and GDEs Workplan (Spring 2024)
  - GDEs monitoring at 6 stream sites
- Refining Water Use Data, Benchmarking, NVIHM Model Updates
  - Comparing OpenET and Local Land-Based Sensors
- Stream Gage Monitoring
  - CalSIP funding awarded for 5 new stream gages
  - Stage monitoring at additional sites
- Additional Monitoring Wells (Calistoga)
- RCD and Stream Watch Monitoring
- Evaluating Recharge Feasibility & Benefits
- Stakeholder Coordination and Outreach

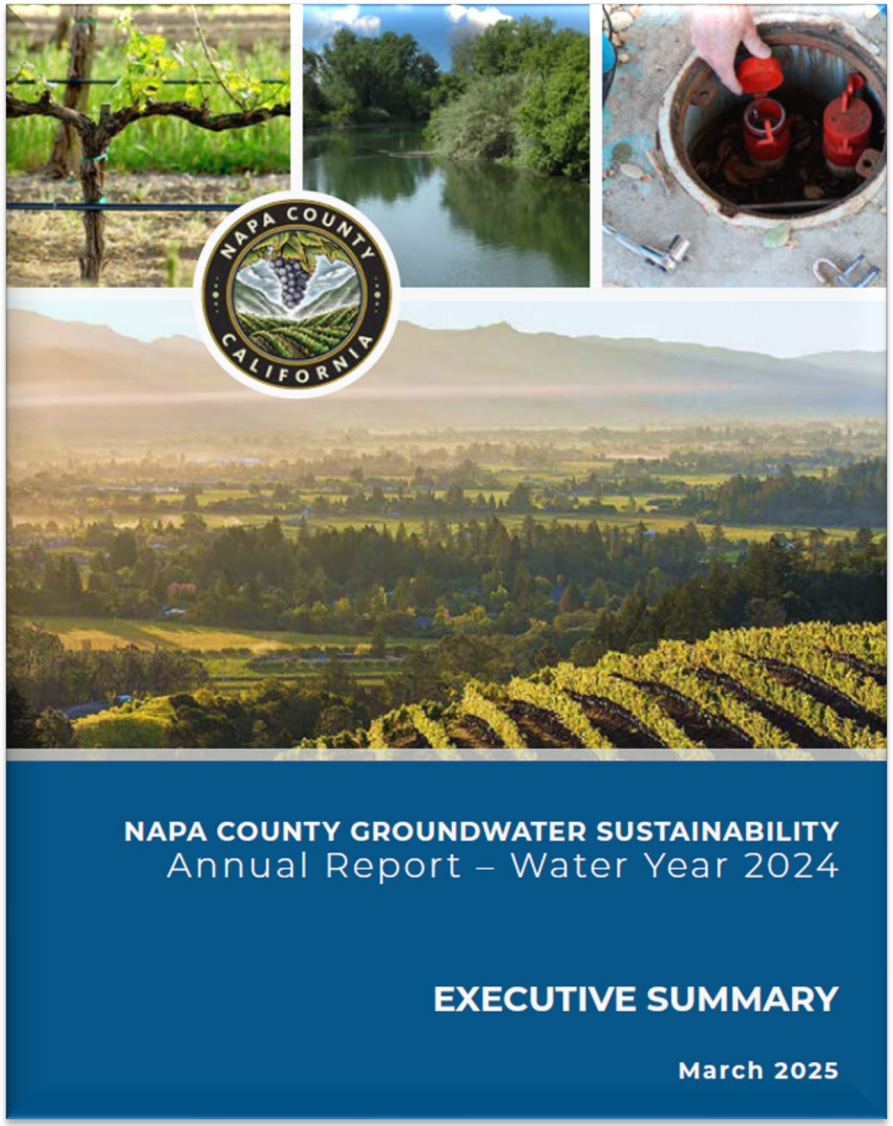
DWR Approved Napa Valley Subbasin GSP January 26, 2023

Stakeholder Outreach and Education

- Extensive Outreach Efforts in WY 2024

- Annual Report – WY 2024
  - 966 pages; 11 Appendices

- Public-Friendly Executive Summary



Thank You

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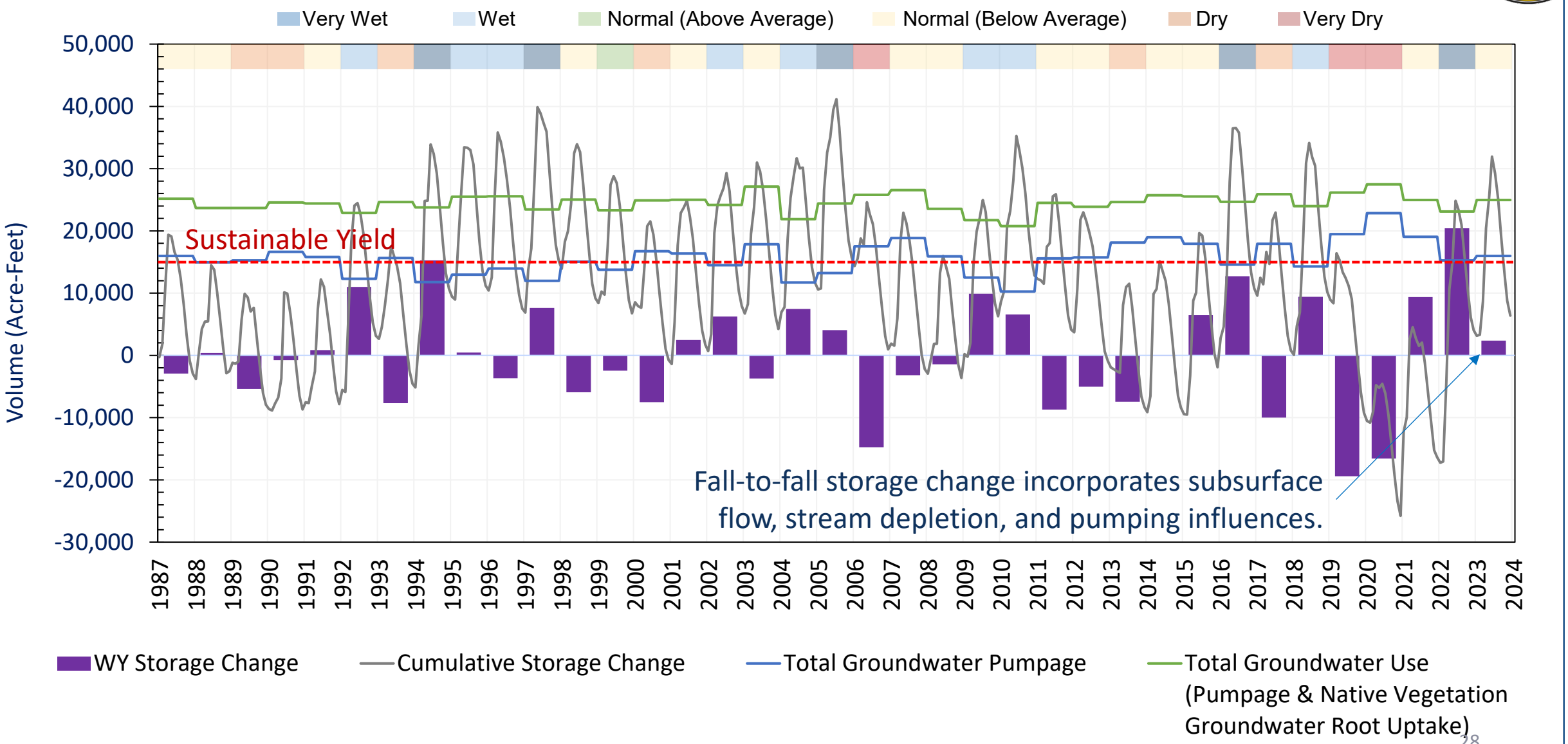
GW Pumping, Total Use, fall-to-fall GW Storage Change, and Cumulative GW Storage Change (1988-2024)



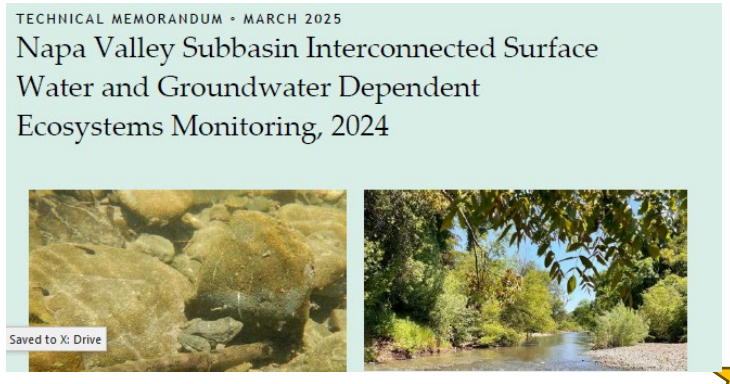
Interconnected Surface Water and GDEs Workplan Implementation; California Environmental Flows Framework (CEFF)

Modeling and Monitoring

- Biological
- Hydrology
- Model update and scenarios

CEFF Analysis (ecological goals needs)

- Ecological Goals
- Flow Requirements



Sustainable Management Criteria

- Balance with other beneficial users and SGMA regulations

2024 | 2025 | 2026

GSP Periodic Evaluation (January 2027)