Wyandotte Creek Subbasin Board Meeting WY 2022 Annual Report Update

Eddy Teasdale, PG, CHG (LSCE)

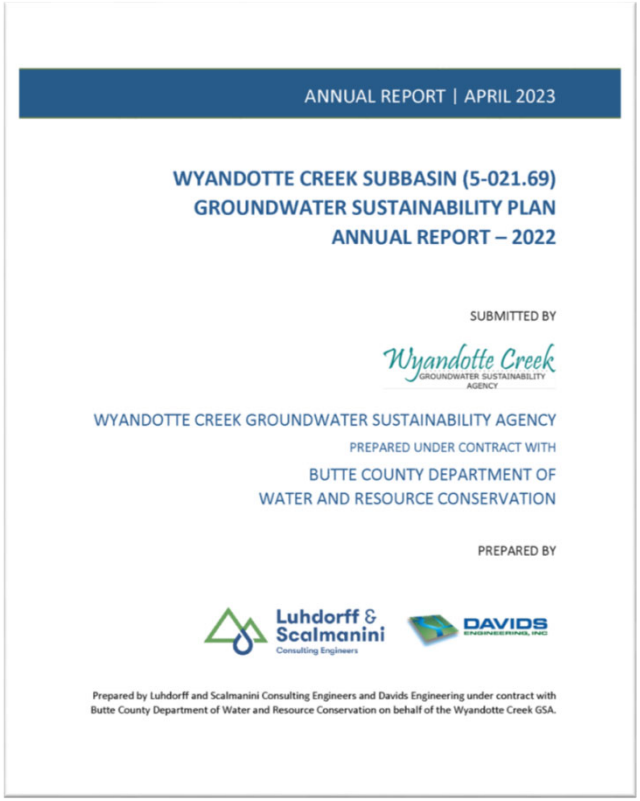
May 25th, 2023

Luhdorff & Scalmanini Consulting Engineers

DAVIDS ENGINEERING, INC

Where are We Headed Today?

- **Overview / Hydrological and Water Supply Conditions**
- **Groundwater Conditions**
- **Water Supply and Water Use (Water Budget)**
- **Progress Towards GSP Implementation**


ANNUAL REPORT | APRIL 2023

WYANDOTTE CREEK SUBBASIN (5-021.69)
GROUNDWATER SUSTAINABILITY PLAN
ANNUAL REPORT – 2022

SUBMITTED BY

Wyandotte Creek GROUNDWATER SUSTAINABILITY AGENCY

WYANDOTTE CREEK GROUNDWATER SUSTAINABILITY AGENCY

PREPARED UNDER CONTRACT WITH

BUTTE COUNTY DEPARTMENT OF
WATER AND RESOURCE CONSERVATION

PREPARED BY

Luhdorff & Scalmanini Consulting Engineers

DAVIDS ENGINEERING, INC

Prepared by Luhdorff and Scalmanini Consulting Engineers and Davids Engineering under contract with Butte County Department of Water and Resource Conservation on behalf of the Wyandotte Creek GSA.

LSCE

DAVIDS ENGINEERING, INC

Annual Report Requirements

- **Updates on Groundwater Conditions**
  - **Groundwater Elevation (Hydrographs, Contour Maps)**
  - **Change in Groundwater Storage**
- **Water Supply and Water Use**
  - **Groundwater Extraction**
  - **Surface Water Supplies**
  - **Total Water Use**
- **Progress Toward Plan Implementation (e.g., implementation of planned projects and management actions)**

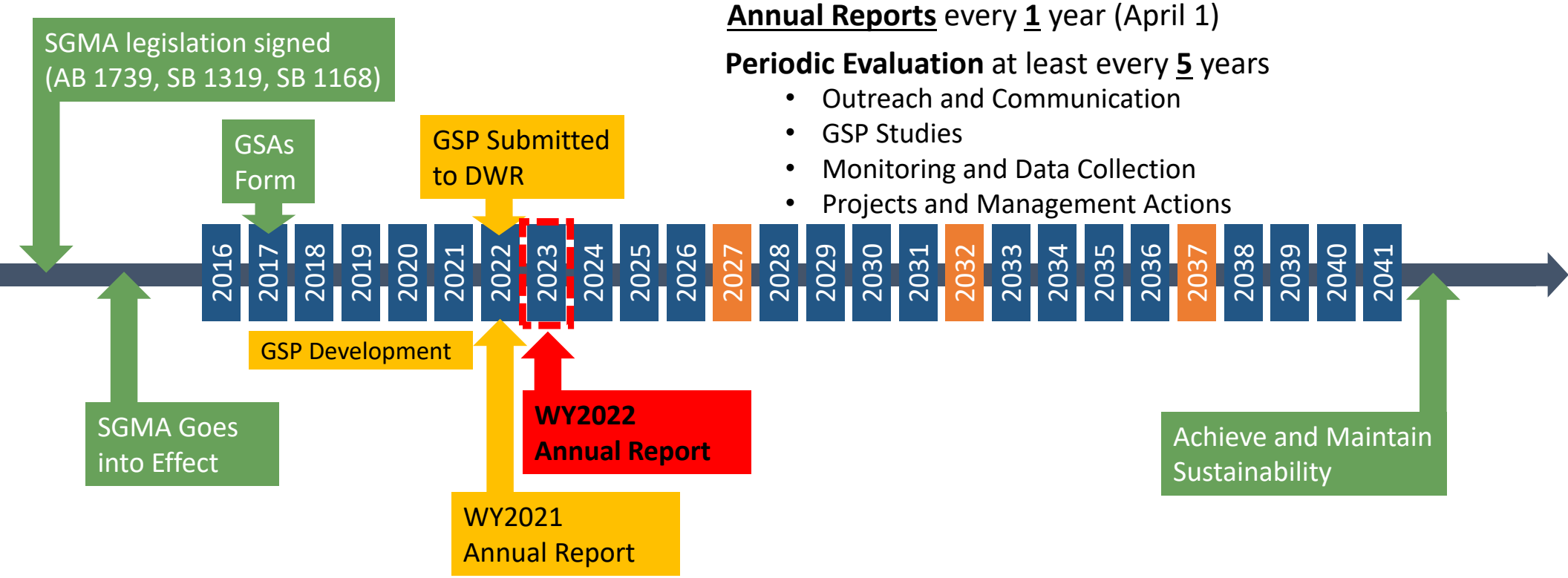
LSCE DAVIDS ENGINEERING, INC

Overview – SGMA Implementation Timeline

<u>Annual Reports</u> every **<u>1</u>** year (April 1)

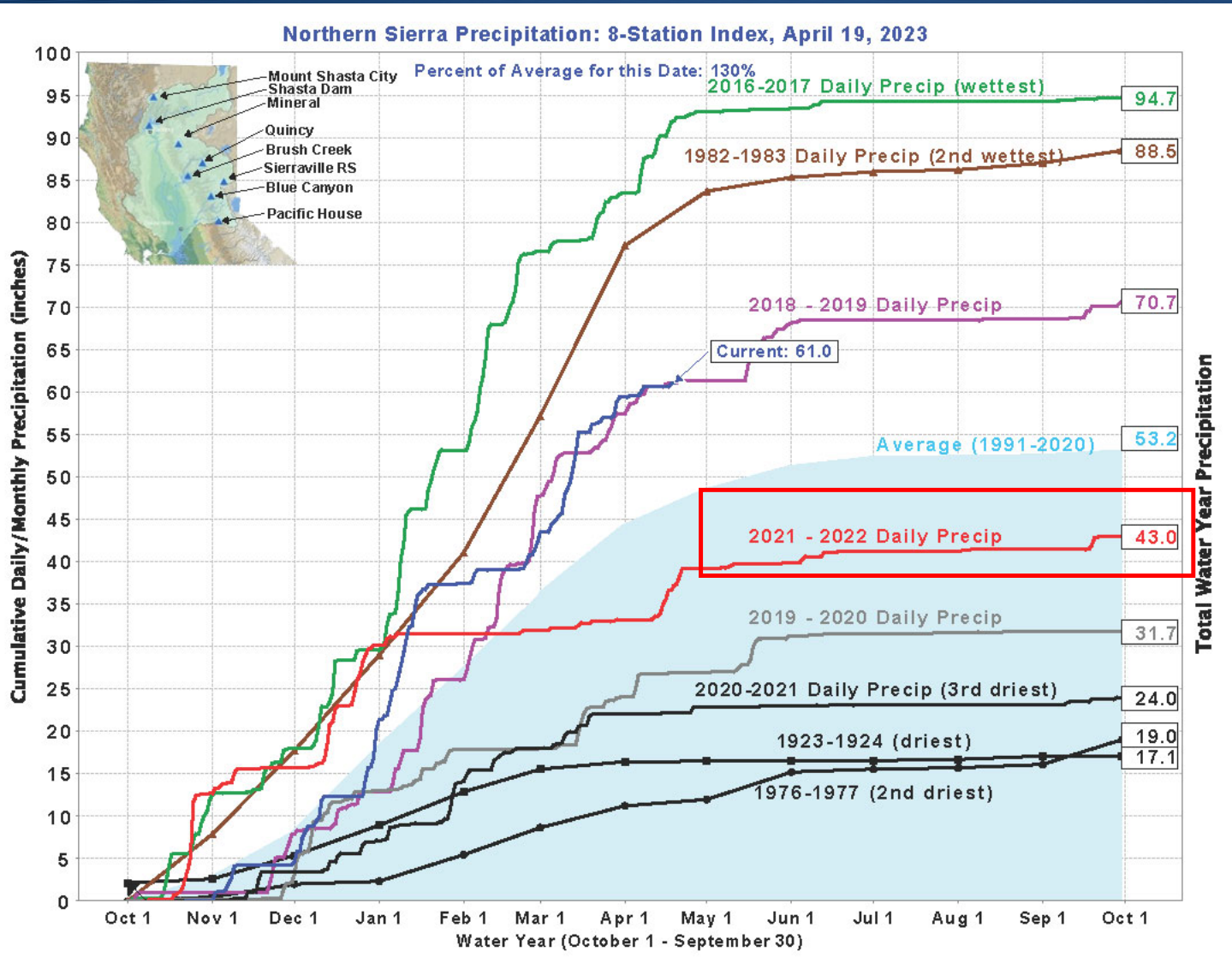
Periodic Evaluation at least every **<u>5</u>** years

- Outreach and Communication
- GSP Studies
- Monitoring and Data Collection
- Projects and Management Actions



2022 WY Conditions

- **Classified as a "Critical Dry Year"**
  - **Below average precipitation (CDEC, 2023 graph)**
- **Statewide conditions at end of WY**
  - **Total Annual Precipitation: 17.9" or 76% of historical average.**
  - **Total Reservoir Storage: 14.7 MAF or 69% of historical average.**
  - **Snowpack at 64% historical average annual max.**
- **Sacramento River Region unimpaired runoff, 64% of average (6.7 million acre-feet; DWR, 2022)**



Overview of 2022 Regional Water Supplies

- **Drought conditions have resulted in reduced surface water supplies and curtailment of water rights by the State Water Resource Control Board throughout the region.**
- **Reports of Dry / Reduced Capacity Wells***
  - 4 to DWR Dry Well Reporting System (voluntary) within the Subbasin
  - 2 to Butte County EH (only from applications for new wells or deepening / repair)
  - 20 to the Butte County Drought Assistance Program (water tanks / water deliveries)

  * These do not sum up for a total, there is likely overlap, residents reporting to multiple programs

LSCE DAVIDS ENGINEERING, INC

Groundwater Conditions

- **Groundwater Elevations**
  - **9 Representative Monitoring Site (RMS) Wells.**
  - **Domestic, irrigation, and observation wells.**
- **Groundwater Storage**
  - **Calculated utilizing RMS wells**

Lowering Groundwater Level

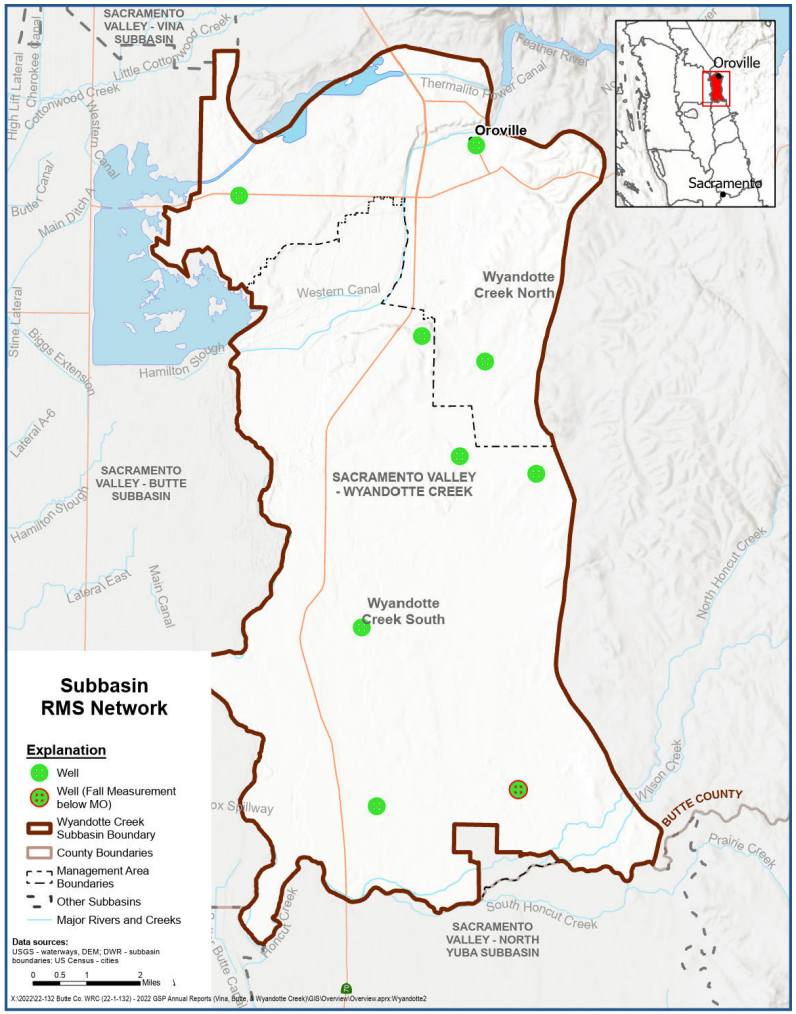
Reduction of Storage

LSCE DAVIDS ENGINEERING, INC

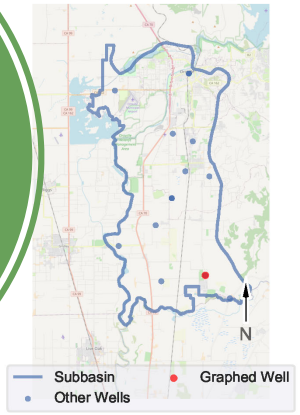
Groundwater Conditions – Groundwater Elevations

Groundwater Elevations

- **9 Representative Monitoring Sites (RMS) Wells**
  - **3 - North Management Area**
  - **6 - South Management Area**
- **1 well had measurements below the MO in Fall of 2022.**



Groundwater Conditions – Groundwater Elevations

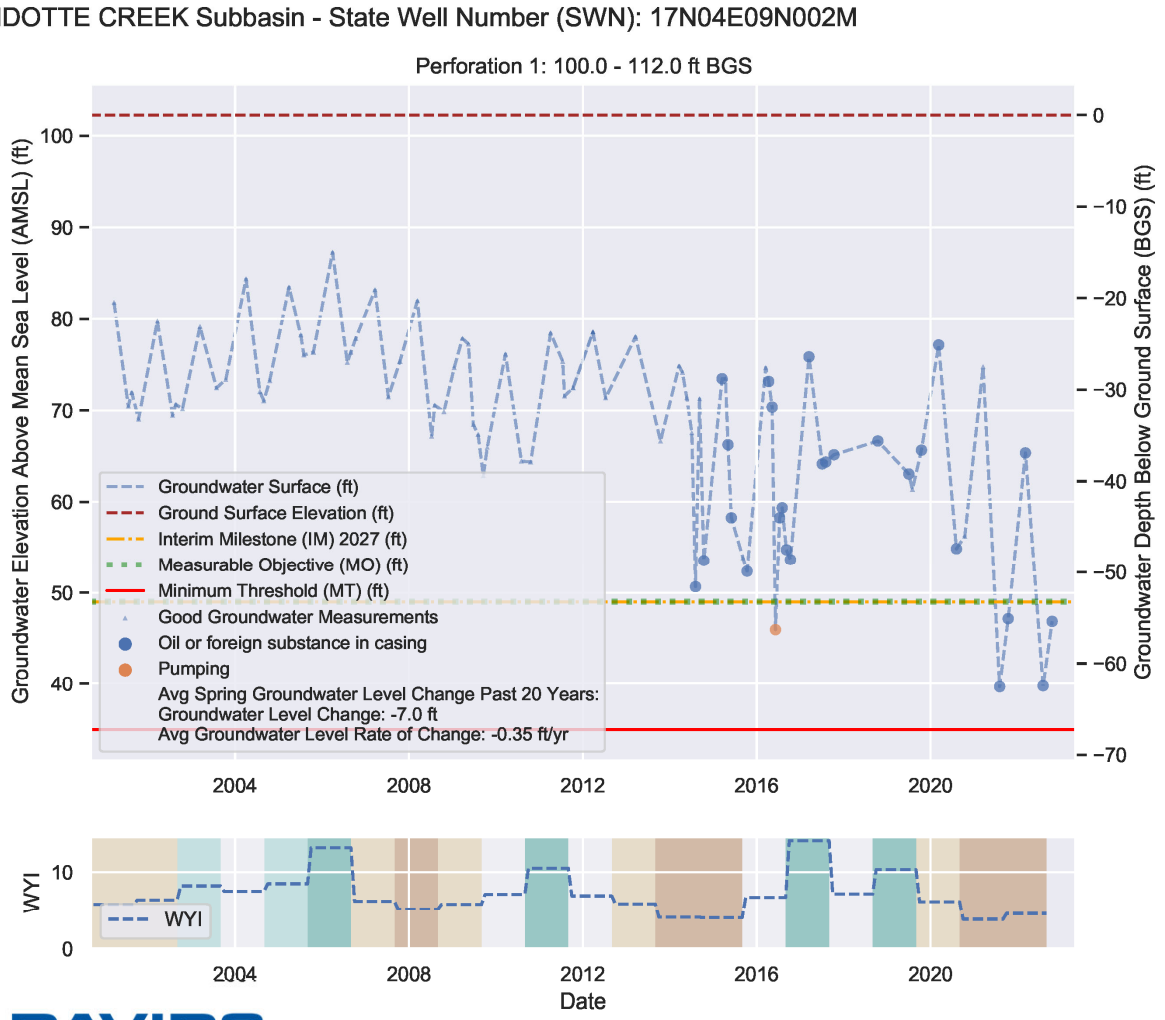


Sustainable Management Criteria:

IM (2027) = 49.0 ft AMSL
MO = 49.0 ft AMSL
MT = 35.0 ft AMSL

Sacramento Valley Water Year Index (WYI) shown on lower right. Meaning of colors defined below.

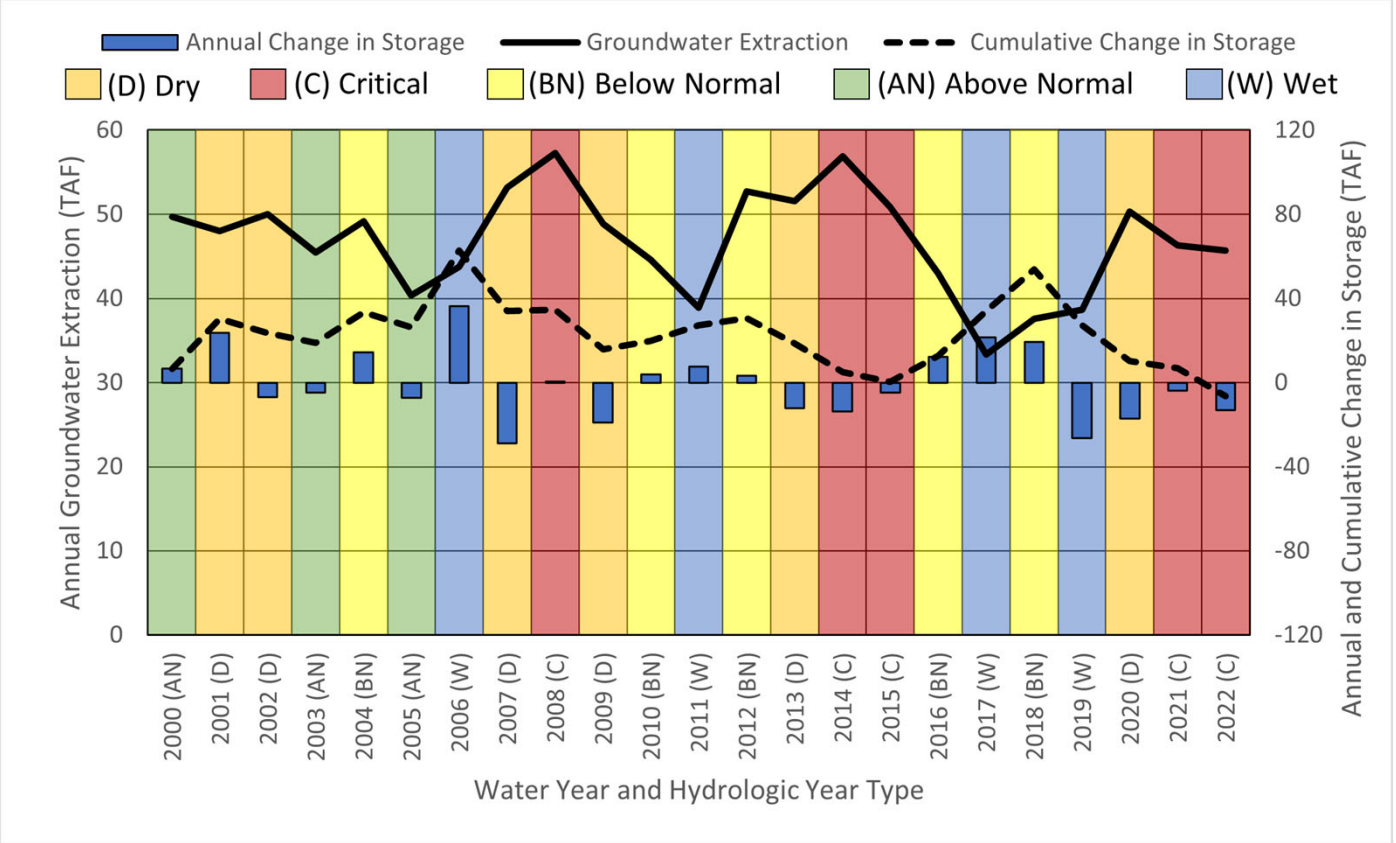
- Wet (W)
- Above Normal (AN)
- Below Normal (BN)
- Dry (D)
- Critical (C)



LSCE

DAVIDS ENGINEERING, INC

Groundwater Conditions – Groundwater Storage

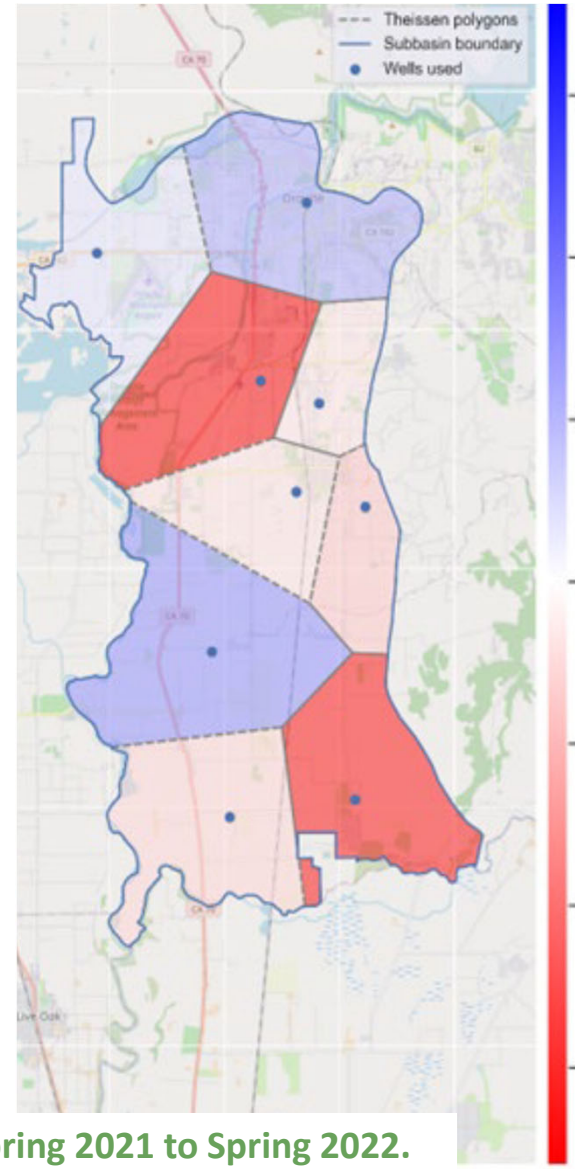


LSCE

DAVIDS ENGINEERING, INC

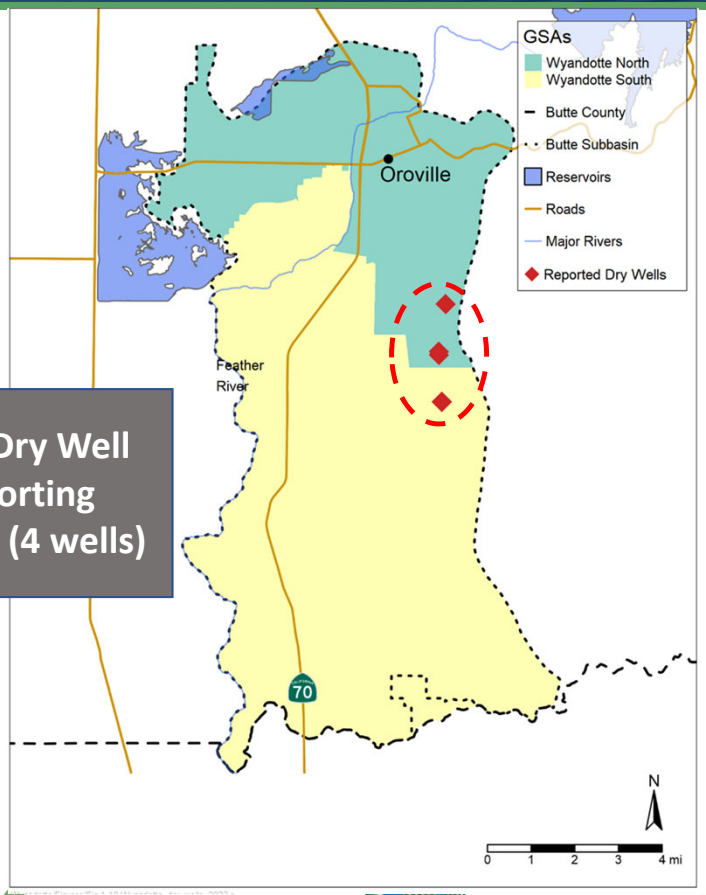
Groundwater Conditions & Change in Storage Summary

- **Groundwater pumping was similar to last year ~46 TAF and about same as long-term average, lower than average of past 4 critically dry years (~53 TAF)**
- **Groundwater is ~3/4 of total water used**
- **Annual Groundwater Storage Change: ~ -13 TAF**
- **Cumulative Groundwater Storage Change: ~ -7 TAF ~ 15% of avg. pumping per yr. well within margin of error of estimates**
- **Dry well reports in both management areas**
- **2021 vs. 2022 GWL ~ 3' avg. annual drop between Spring measurements; Fall measurements saw ~2' drop**

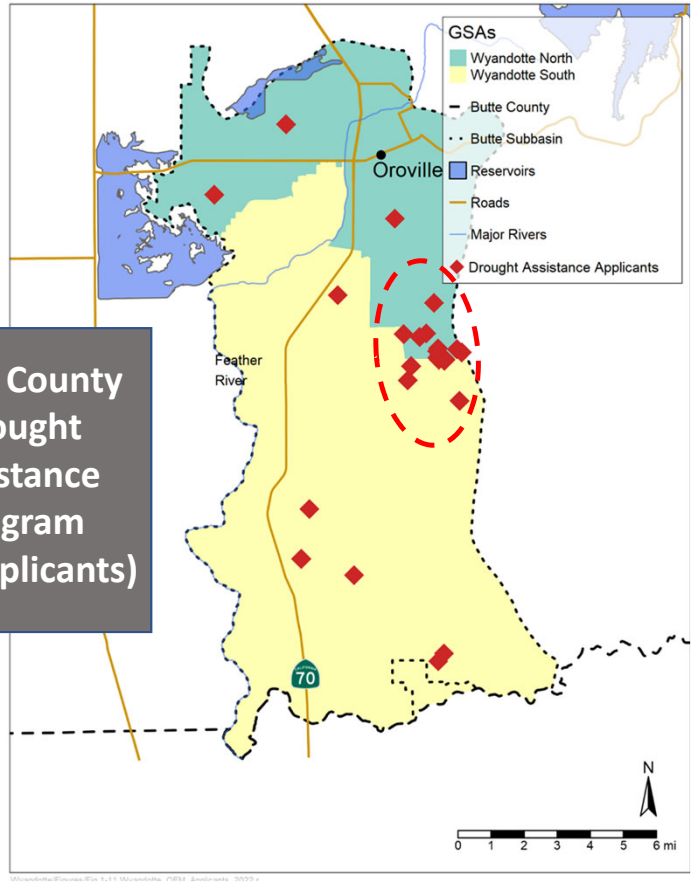


Map shows groundwater storage change from Spring 2021 to Spring 2022.

Vulnerable Areas



DWR Dry Well Reporting System (4 wells)



Butte County Drought Assistance Program (20 Applicants)

LSCE

DAVIDS ENGINEERING, INC

Groundwater Conditions – Surface Water Depletion

In 2022, vast majority of groundwater elevations were above the established MO and the next IM of 2027.

Table 2-1. Measurable Objectives, Minimum Thresholds and Seasonal Groundwater Elevations of Representative Monitoring Site Wells

State Well Number / Representative Monitoring Site (RMS) ID[1]	Management Area	Groundwater Elevation (feet above mean sea level)								
		MO[2]	MT[2]	Interim Milestone 2027	Seasonal High (Spring)			Seasonal Low (Fall)		
					2022	Difference (feet) from:		2022	Difference (feet) from:	
						2021	MO[2]		2021	MO[2]
19N03E16Q001M	Wyandotte North	133	85	134	139.3	1.0	6.3	138.2	-0.2	5.2
19N04E32P001M	Wyandotte North	107	78	108	128.2	-2.3	21.2	122.5	-2.7	15.5
CWS-03	Wyandotte North	133	102	135	137.0	3.0	4.0	134.0	1.0	1.0
17N03E13B002M	Wyandotte South	47	35	48	60.6	-1.5	13.6	51.6	-1.0	4.6
17N04E09N002M	Wyandotte South	49	35	51	65.4	-9.4	16.4	46.9	-0.3	-2.1
18N03E25N001M	Wyandotte South	52	37	53	62.2	3.1	10.2	52.8	-3.5	0.8
18N04E08M001M	Wyandotte South	86	59	87	109.6	-1.5	23.6	105.5	-0.7	19.5
18N04E16C001M	Wyandotte South	95	71	96	107.0	-4.5	12.0	95.9	-7.6	0.9
19N04E31F001M	Wyandotte South	99	76	101	121.5	-11.0	22.5	118.9	1.5	19.9

LSCE

DAVIDS ENGINEERING, INC

Water Supply and Water Use (Water Budget)

Table 3-3. Wyandotte Creek Subbasin Total Water Use by Water Use Sector			
Sector	WY 2022 (AF)		
	Groundwater	Surface Water	Total
Agricultural	43,500	10,900	**54,400**
Municipal	700	4,000	**4,700**
Rural Residential	1,500	0	**1,500**
Native Vegetation (Plant groundwater uptake)	36,300	1,300	**37,600**
Total	**82,000**	**16,200**	**98,200**
Total (excluding Environmental Groundwater[1])	**45,700**	**16,200**	**61,900**

74% Groundwater Dependent in 2022

LSCE DAVIDS ENGINEERING, INC

Water Budget Results by Water Budget Region

Water Budget Region	Area (AC)	Estimated Groundwater Extraction[1] (AF)	Estimated Groundwater Extraction[1] (AF/AC)
Wyandotte North Management Area	18,499	0	0.0
Wyandotte South Management Area	41,565	43,400	1.0
Totals	60,064	43,400	Average - 0.7

[1]Groundwater extraction in the agricultural and urban water use sectors are shown; other water use sectors are not included in these results.

LSCE DAVIDS ENGINEERING, INC

GSP Implementation

- **Updates discussed in the annual report (Section 5.2)**
- **Highlights in 2022:**
  - **Submitted SGMA Implementation Round 2 grant application in December 2022**
    - **GSP Implementation Outreach and Compliance Activities**
    - **Regional Conjunctive Use Project**
    - **Monitoring Network Enhancements**
    - **Thermalito Water Treatment Plant Capacity Upgrade**
    - **Groundwater Recharge Feasibility Analysis, Design, and Construction**

LSCE DAVIDS ENGINEERING, INC

GSP Implementation – Projects

Project	Progress in WY 2021 Annual Report
Residential Water Conservation	7.8% reduction in urban pumping compared to 2021 (TWSD)
Agricultural Irrigation Efficiency	Recommendations report released June 2022
Oroville Wildlife Area Robinson's Riffle	SBFCA was awarded grant funding and work was initiated in November 2022 and is expected to be completed in summer 2024
Thermalito Water and Sewer District Water Treatment Plant Capacity Upgrade	Ongoing work to design and implement the project
Palermo Clean Water Consolidation	Ready to Commence Phase 1

LSCE DAVIDS ENGINEERING, INC

Annual Report Summary

- **Hydrologic conditions in WY 2022 had below average precipitation, streamflow, and above average ET.**
- **Extreme drought conditions began in 2020 and went through 2022.**
  - **This is reflected in lower groundwater levels in 2022.**
- **Dry wells in Palermo are being addressed through County efforts.**
- **WY 2022 Groundwater extraction is comparable to last year and long-term average, lower than last 4 critically dry years.**
- **Cumulative groundwater storage is minimal ~ -7 TAF from 2000**

LSCE DAVIDS ENGINEERING, INC

Annual Report Summary

- **Water levels are stable and track well with wet/dry cycles (respond accordingly)**
- **Subbasin is on track to meet the 5-year Interim Milestones (2027)**
- **Groundwater levels were above MO's in spring and only 1 was below in fall**
- **Maintaining access to surface water is important to maintain stable conditions**
- **Dry wells were reported, this is being addressed in Palermo through Co. efforts**
- **GSA is proactive in GSP implementation (grants, outreach, funding)**

LSCE DAVIDS ENGINEERING, INC

Acknowledgements

- Participating Butte County Well Owners
- Butte County Department of Water and Resource Conservation
- Groundwater Sustainability Agency Managers
- Technical Advisory Committee to the Butte County Water Commission

Thank you!

LSCE DAVIDS ENGINEERING, INC

Discussions / Questions?