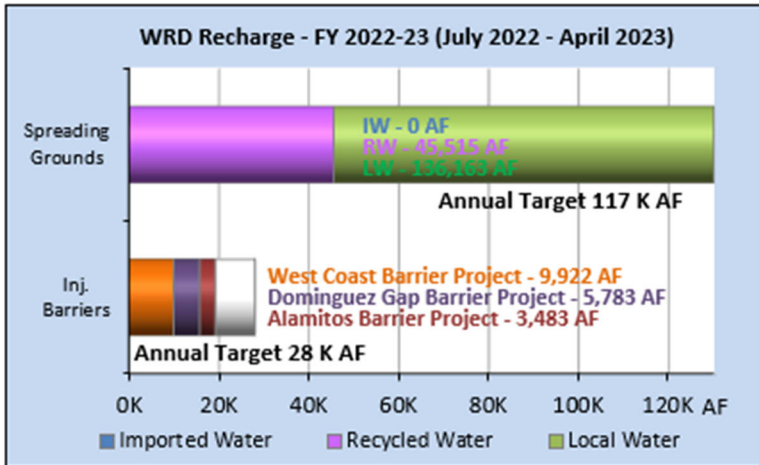
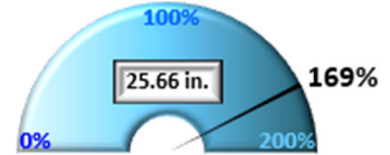


# GROUNDWATER BASIN UPDATE FOR JUNE 2023

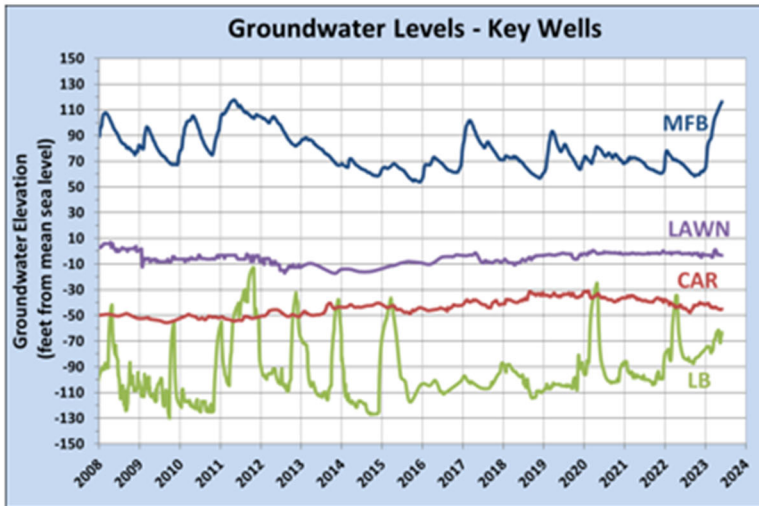
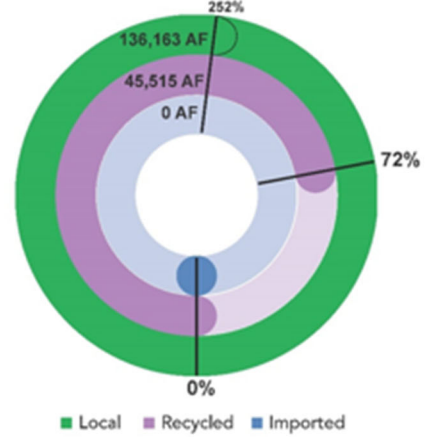
## GROUNDWATER BASINS AT A GLANCE\*



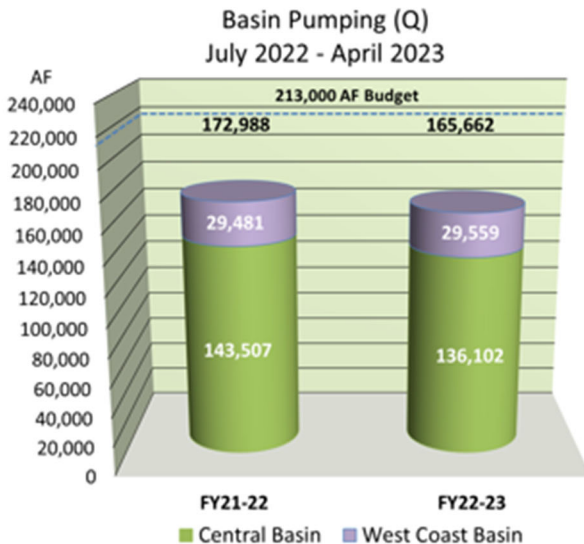
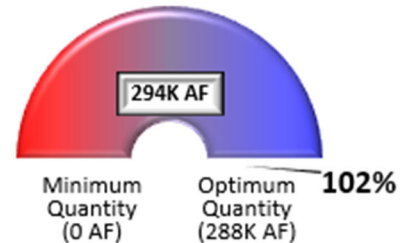
Precipitation % of Normal to Date  
Oct 1, 2022 - Jun 6, 2023



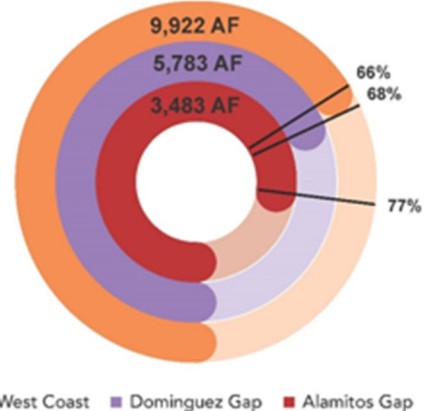
Spreading Grounds Recharge  
Jul 2022 - Apr 2023



GW Basin Operating Range  
June 2, 2023



Seawater Barrier Recharge  
Jul 2022- Apr 2023



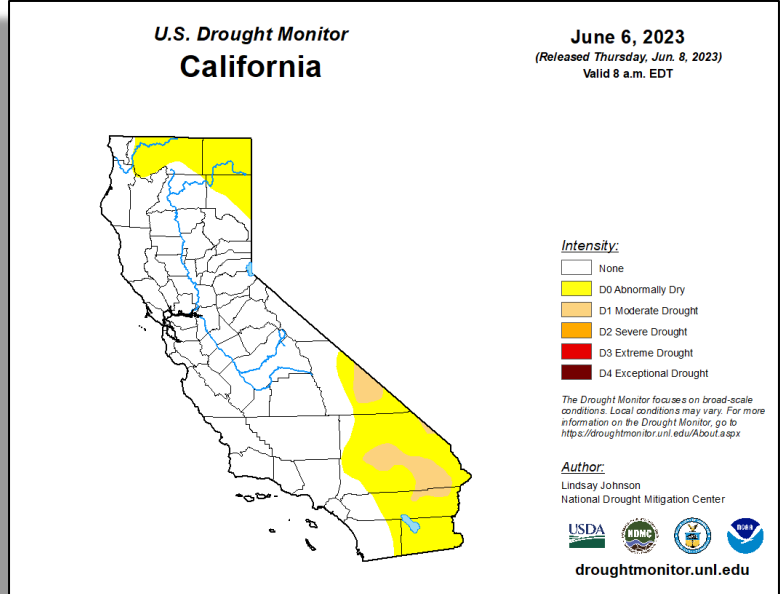
\* - Preliminary numbers, subject to change.

**SUMMARY**

Staff monitors groundwater conditions in the District’s service area throughout the year. A summary of the latest information is presented below.

**Precipitation (October 1, 2022 – June 6, 2023)**

The WRD precipitation index reports that for the 2022-23 Water Year, there has been above average rainfall (25.66 inches) through June 6, 2023. The normal rainfall for this time period is 15.2 inches, so the District is 169% of normal. As of June 6, 2023, the U.S. Drought Monitor is reporting 29% of the State is abnormally dry (-3%), 5% under moderate (-3%), 0% under severe (same), 0% under extreme (same), and 0% exceptional (same) drought conditions.



**Snowpack (Snow Water Content [SWE] as of June 7, 2023)**

In 1929, the State established the California Cooperative Snow Surveys Program with the California Department of Water Resources as the coordinator. Today, over 50 state, national, and private agencies collaborate in collecting snow data from over 300 snow courses with more than 60 of the courses being the original courses established in the early 1900’s. The average snow course is 1,000 feet long and consist of about 10 sample points. Anywhere from two to six courses are measured per day depending on weather and access method.

The snow survey is completed using a snow sampling tube equipped with a cutter on the end that is driven through the snow measuring the depth and obtaining a snow core. The snow core is then weighed and the snow water content (or snow water equivalent) calculated. The surveys are completed throughout the winter by returning to the same sample points throughout the season to observe the changing conditions. From February through May the data is used by the State to forecast snow melt runoff. Many snow courses are only measured on or around April 1st, and since it is presumed that the snow accumulates up to April 1st and melts thereafter, April 1st is the benchmark for historic data comparisons.

NORTH	
Data For: 07-Jun-2023	
Number of Stations Reporting	24
Average snow water equivalent	11.9"
Percent of April 1 Average	40%
Percent of normal for this date	237%

CENTRAL	
Data For: 07-Jun-2023	
Number of Stations Reporting	39
Average snow water equivalent	17.2"
Percent of April 1 Average	71%
Percent of normal for this date	323%

SOUTH	
Data For: 07-Jun-2023	
Number of Stations Reporting	23
Average snow water equivalent	15.4"
Percent of April 1 Average	79%
Percent of normal for this date	425%

STATEWIDE SUMMARY	
Data For: 07-Jun-2023	
Number of Stations Reporting	86
Average snow water equivalent	15.2"
Percent of April 1 Average	62%
Percent of normal for this date	300%

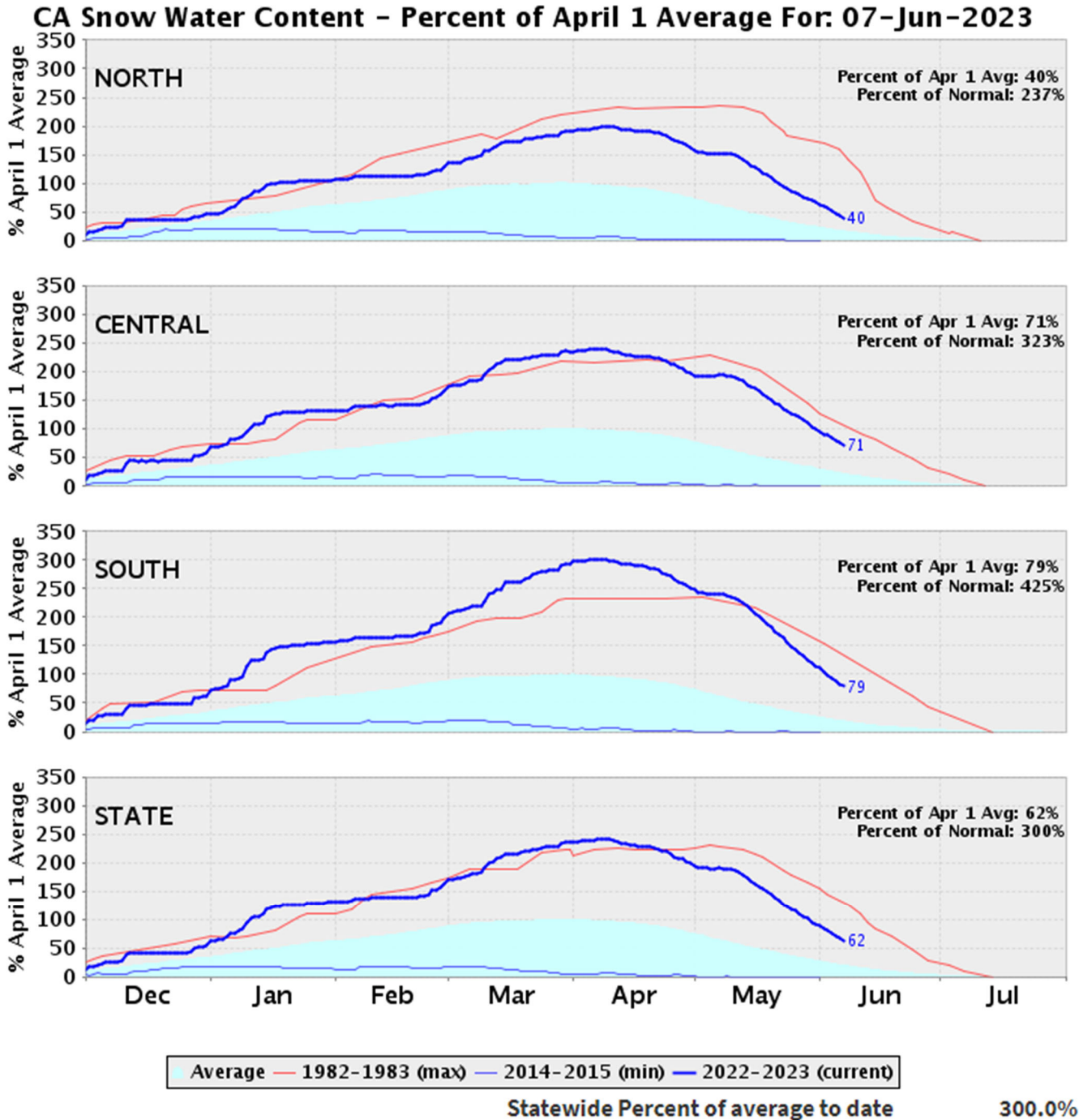
Snow Water Equivalent (SWE):

**Northern Sierra Nevada** – 11.9 in., 40% of April 1<sup>st</sup> average and 237% of normal to date

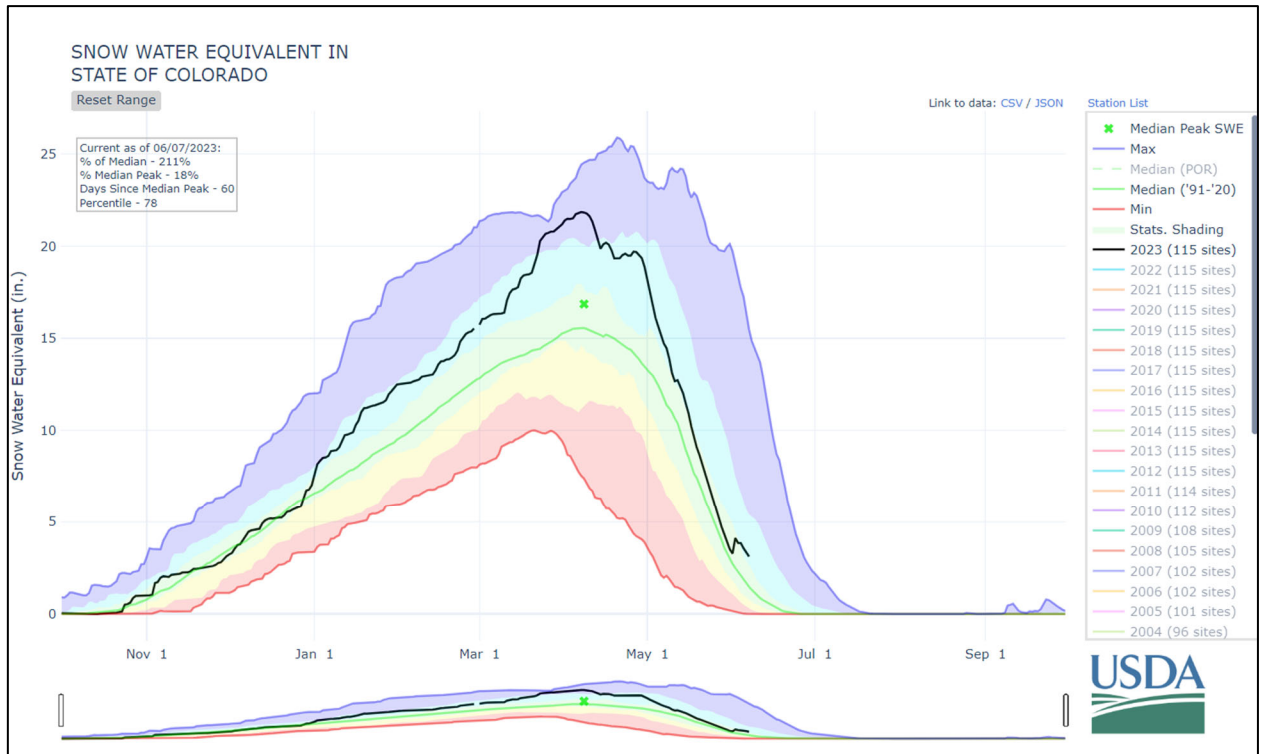
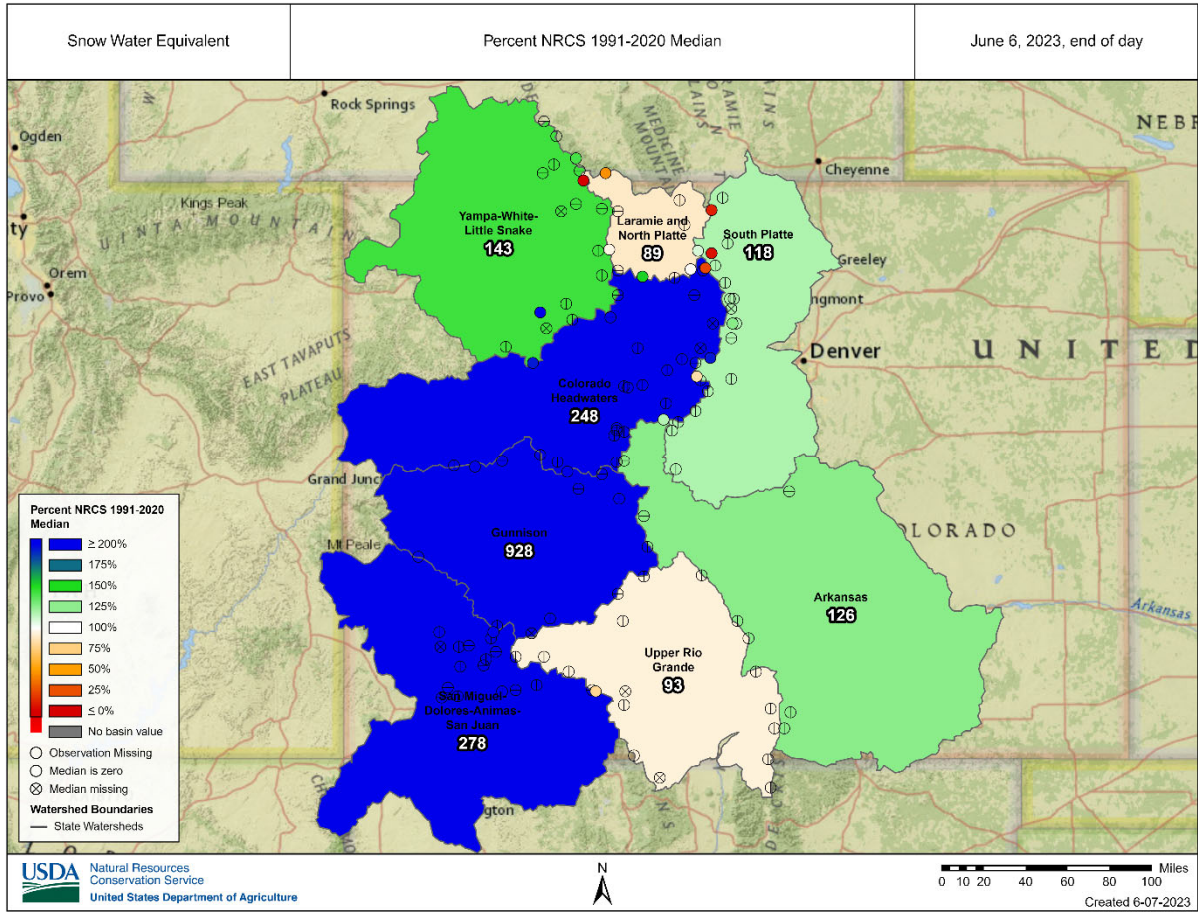
**Central Sierra Nevada** – 17.2 in., 71% of April 1<sup>st</sup> average and 323% of normal to date

**Southern Sierra Nevada** – 15.4 in., 79% of April 1<sup>st</sup> average and 425% of normal to date

**Statewide Summary** – 15.2 in., 62% of April 1<sup>st</sup> average and 300% of normal to date

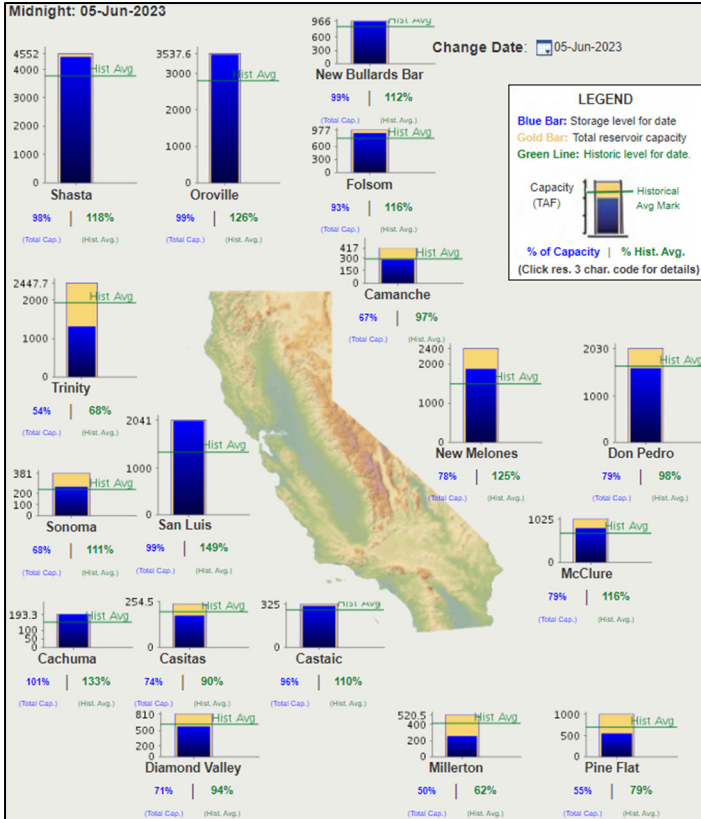


# Colorado Snowpack Data



## Reservoirs (as of June 5, 2023)

For the 21 reservoirs reported monthly to the committee, water levels have increased in 17 of 21 reservoirs. The largest increase occurred at Lake Powell (2.33 million acre feet, MAF). The smallest increase occurred at Cachuma, Castaic, and Silverwood Lakes (<0.01 MAF). The largest decrease (-0.01 MAF) occurred at Lakes Shasta and Casitas. The smallest decrease (<-0.01 MAF) occurred at Sonoma and Perris Lakes.



### MWD Reservoirs (SWP) Storage in Million Acre Feet

Reservoir	Capacity	Storage	% Full	Change
Trinity Lake (CLE)	2.45	1.32	54%	0.36
Lake Shasta (SHA)	4.55	4.44	98%	-0.01
Lake Oroville (ORO)	3.54	3.52	99%	0.16
New Bullards Bar (BUL)	0.97	0.96	99%	0.06
Folsom Lake (FOL)	0.98	0.91	93%	0.08
Camanche Lake (CMN)	0.42	0.28	67%	0.08
New Melones L. (NML)	2.40	1.88	78%	0.30
Don Pedro Res (DNP)	2.03	1.61	79%	0.12
Lake McClure (EXC)	1.02	0.81	79%	0.19
Lake Sonoma (WRS)	0.38	0.26	68%	0.00
San Luis Res (SNL)	2.04	2.03	99%	0.01
Millerton Lake (MIL)	0.52	0.26	50%	0.11
Pine Flat Res. (PNF)	1.00	0.55	55%	0.20
Cachuma Lake (CCH)	0.19	0.20	101%	0.00
Castaic Lake (CAS)	0.33	0.31	96%	0.00
Casitas Lake (CSI)	0.25	0.18	74%	-0.01
Perris Lake (PRR)	0.13	0.12	90%	0.00
L. Silverwood (SLW)	0.08	0.07	91%	0.00

### MWD Reservoirs (CRA) Storage in Million Acre Feet

Reservoir	Capacity	Storage	% Full	Change
Lake Powell	24.32	8.21	34%	2.33
Lake Mead	26.12	8.01	31%	0.29
Diamond Valley L (DVL)	0.81	0.58	71%	0.03

Black Text - Decrease or no change in storage since the last report.  
Green Text - Increase in storage since the last report.

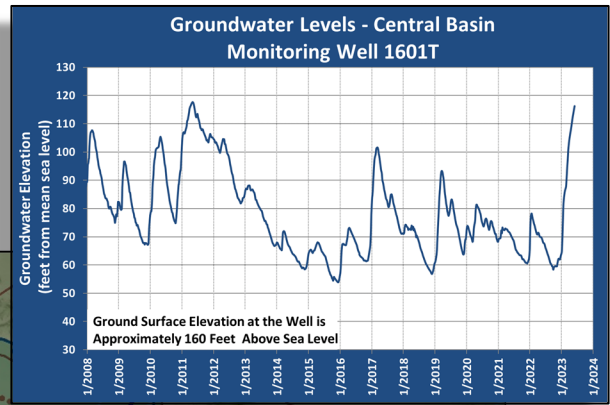
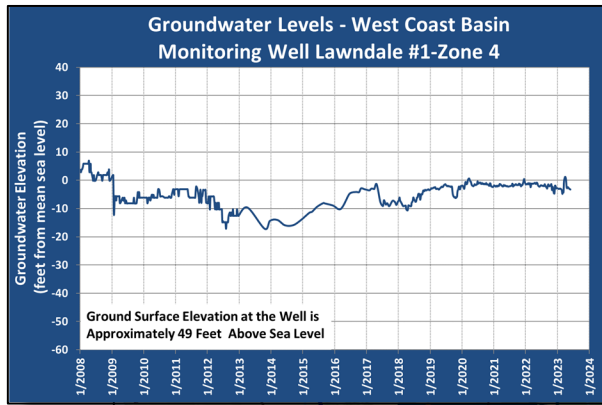
These 21 reservoirs are at 49% capacity (36.48 MAF) which is up 4.3 MAF from the prior month (1.65 MAF State Water Project [SWP] and 2.65 MAF Colorado River Aqueduct [CRA]).



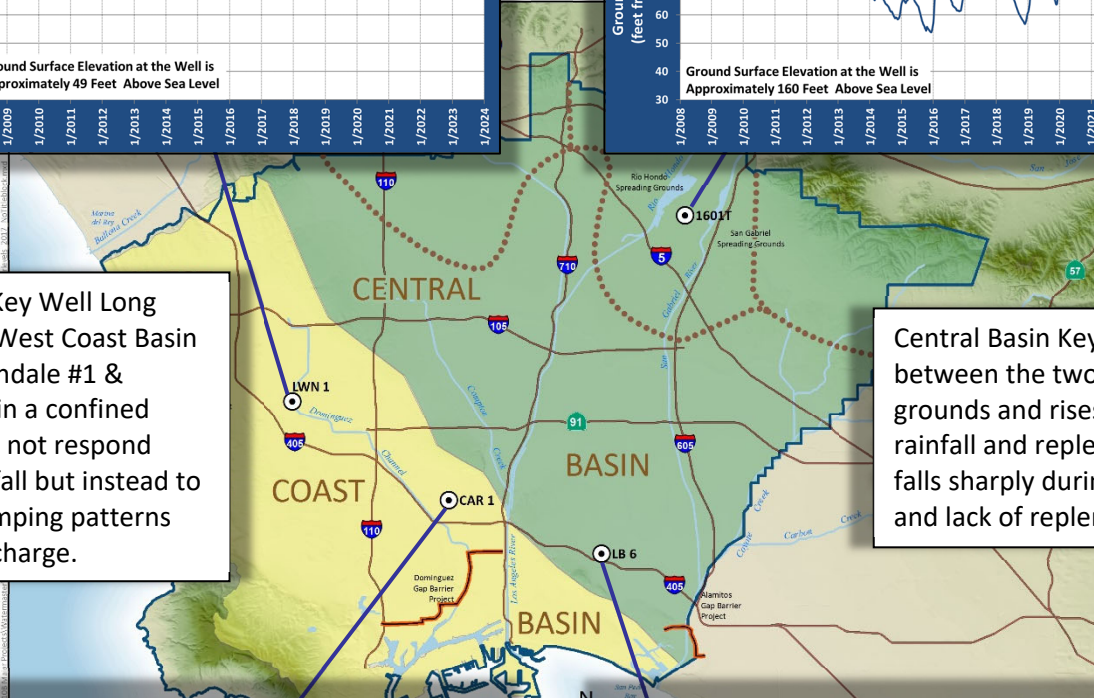
Did you know?  
There is over a thousand times more water in the ground than is in all the world's rivers and lakes.

Groundwater Levels (through June 2, 2023)

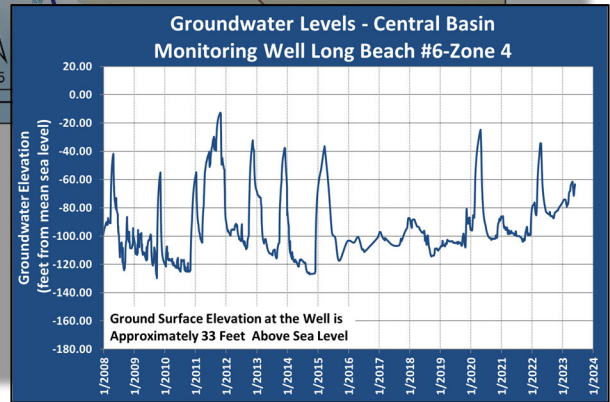
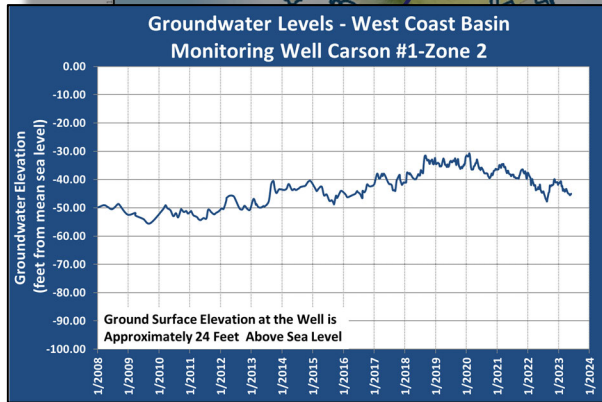
Groundwater levels in key monitoring wells are shown in the hydrographs below.



Central Basin Key Well Long Beach #6 and West Coast Basin Key Wells Lawndale #1 & Carson #1 are in a confined aquifer and do not respond readily to rainfall but instead to changes in pumping patterns and barrier recharge.



Central Basin Key Well 1601T is between the two spreading grounds and rises rapidly with rainfall and replenishment but falls sharply during dry spells and lack of replenishment.



**Groundwater Level Changes in Key Wells**

Well Name	Since Last Report	Since Same Time the Previous Year
Central Basin Key Well 1601T	Increased 5.4 feet	Increased 47.6 feet
Central Basin Key Well Long Beach #6 4	<b>Decreased 1.8 feet</b>	<b>Increased 11.8 feet</b>
West Coast Basin Key Well Lawndale #1 4	Decreased 0.8 feet	Decreased 1.4 feet
West Coast Basin Key Well Carson #1 2	Decreased 0.04 foot	Decreased 3.3 feet

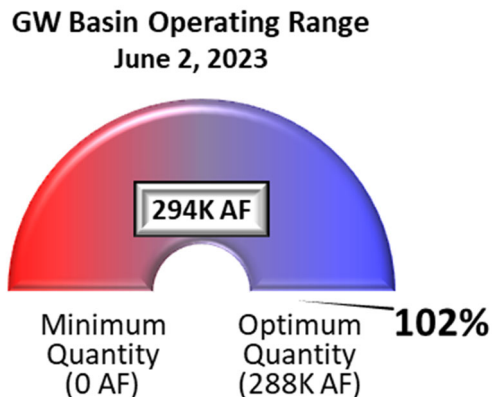
**Bold** indicates a change in direction (decreasing or increasing) since the last report.

Optimum and Minimum Groundwater Quantity (June 2, 2023)

In response to a 2002 State audit of the District’s activities, the Board of Directors adopted an Optimum and Minimum Quantity for groundwater in the District to define an appropriate operating range that would sustain adjudicated pumping rights, leave room for future storage projects, and identify a lower limit. The amounts are based on the accumulated overdraft concept, which the District tracks year by year based on changes in groundwater storage.

After an extensive review of over 70 years of water level fluctuations and discussions with the Board and pumping community, Water Year 1999/2000 was recognized as a representative year for the Optimum Quantity, which equated to an accumulated overdraft of approximately 612,000 acre feet. The Minimum Quantity was defined as an accumulated overdraft of 900,000 acre feet, which allowed an operating range from 0 acre feet (minimum) to 288,000 acre feet (optimum). The Board also adopted a policy to make-up the groundwater deficit should the accumulated overdraft fall too far below the Optimum Quantity.

The Accumulated Overdraft as of June 2, 2023, has been estimated at 605,666 acre feet (subject to change), which is 294,334 acre feet above the Minimum Quantity and 6,334 acre feet above Optimum Quantity. The Basin is at 102% of Optimum Quantity which is 7% higher than what was reported last month (~21,000 AF higher).



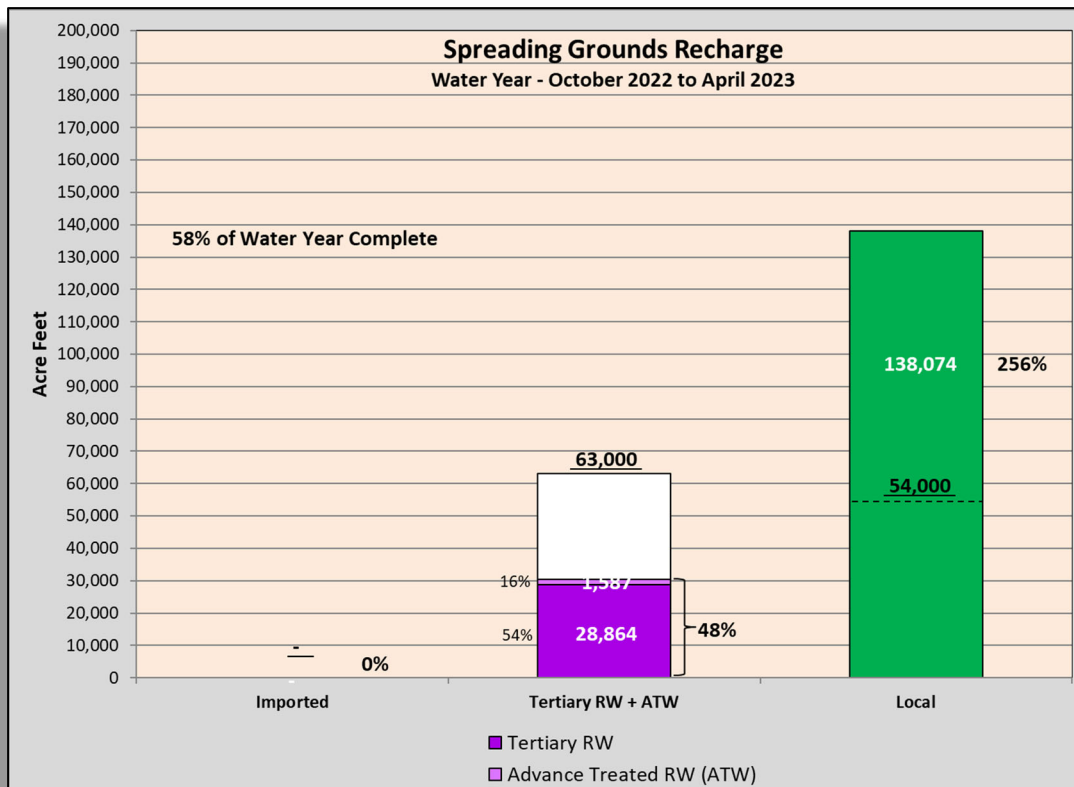
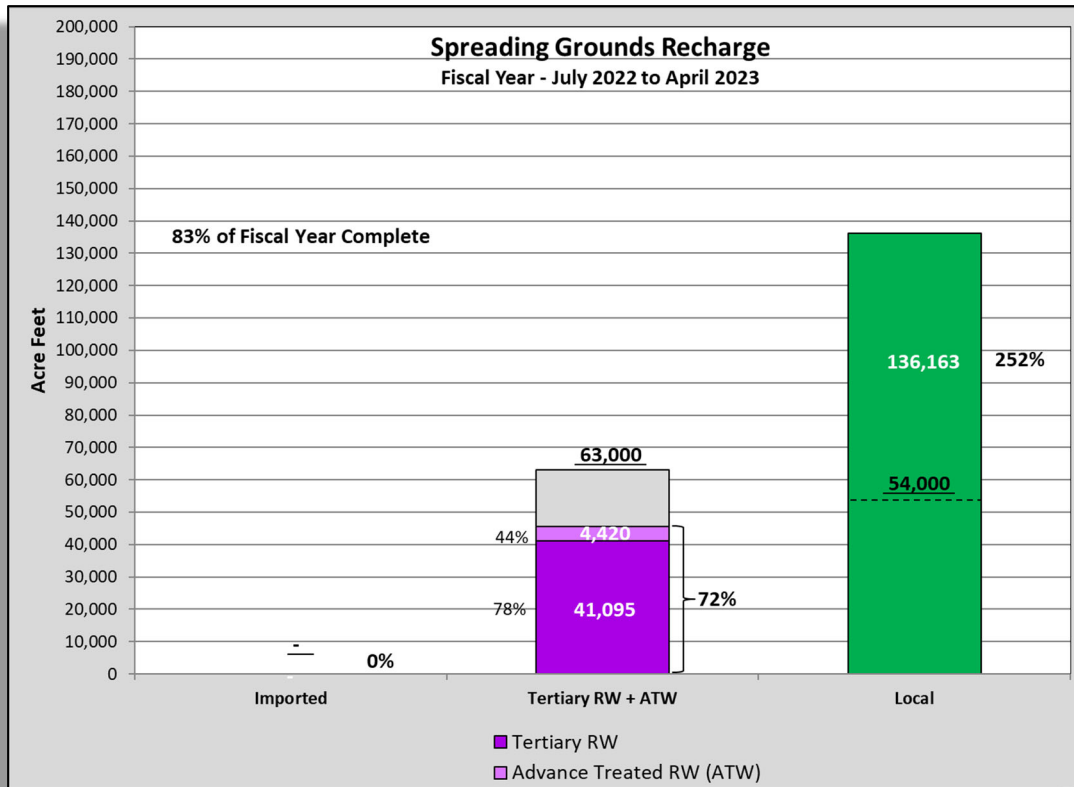
**FACT:**

National Ground Water Association has determined that 38 percent of the U.S. population depends on groundwater for its drinking water supply — be it from either a public source or private well.



Montebello Forebay Spreading Grounds (July 2022 – April 2023)

The following Charts shows the preliminary spreading grounds replenishment water for the current Fiscal Year (2022-23; 10 months) and Water Year (2022-23; 7 months):





No imported water purchases are planned for Fiscal Year 2022-23.

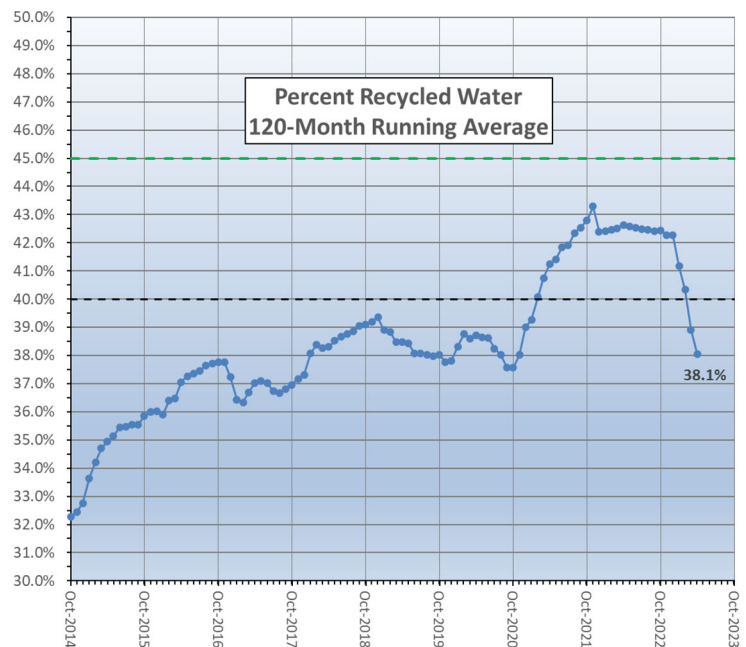
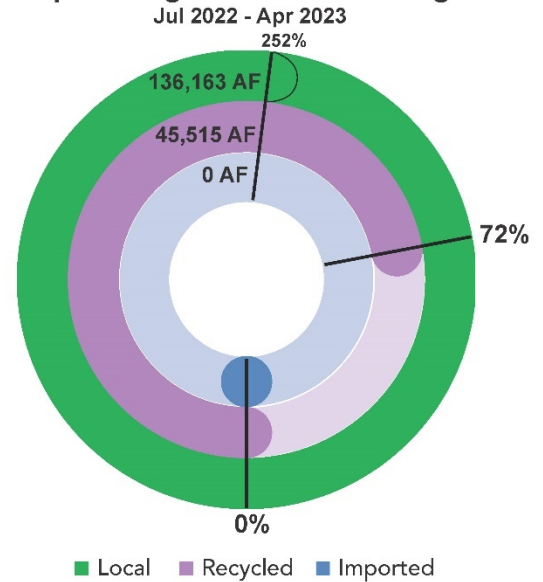
Local water (stormwater plus dry weather urban runoff) is captured by the Los Angeles County Department of Public Works (LACPW) at the spreading grounds for recharge. Local water amounts are determined as the sum of the total waters conserved at the spreading grounds less the imported and recycled water deliveries. For the 2022-23 Fiscal Year, 136,163 acre feet of local water capture has been reported by the LACPW.

Preliminary numbers for the 2022-23 Fiscal Year show that approximately 45,515 acre feet of recycled water has been recharged with 4,420 acre feet consisting of advanced treat water from the ARC AWTF and 41,095 acre feet of tertiary recycled water. Presuming the advanced treated water as “Null Water”, the 120-month running average of the recycled water contribution in the Montebello Forebay is 38.1% and the regulatory maximum is 45%, with additional monitoring being required once 40% is reached. WRD and LACSD submitted the additional monitoring plan on May 26, 2021. The plan is still awaiting acceptance by the RWQCB; however, there is no need to implement the plan at this time.

Tertiary Recycle Water Permit Update

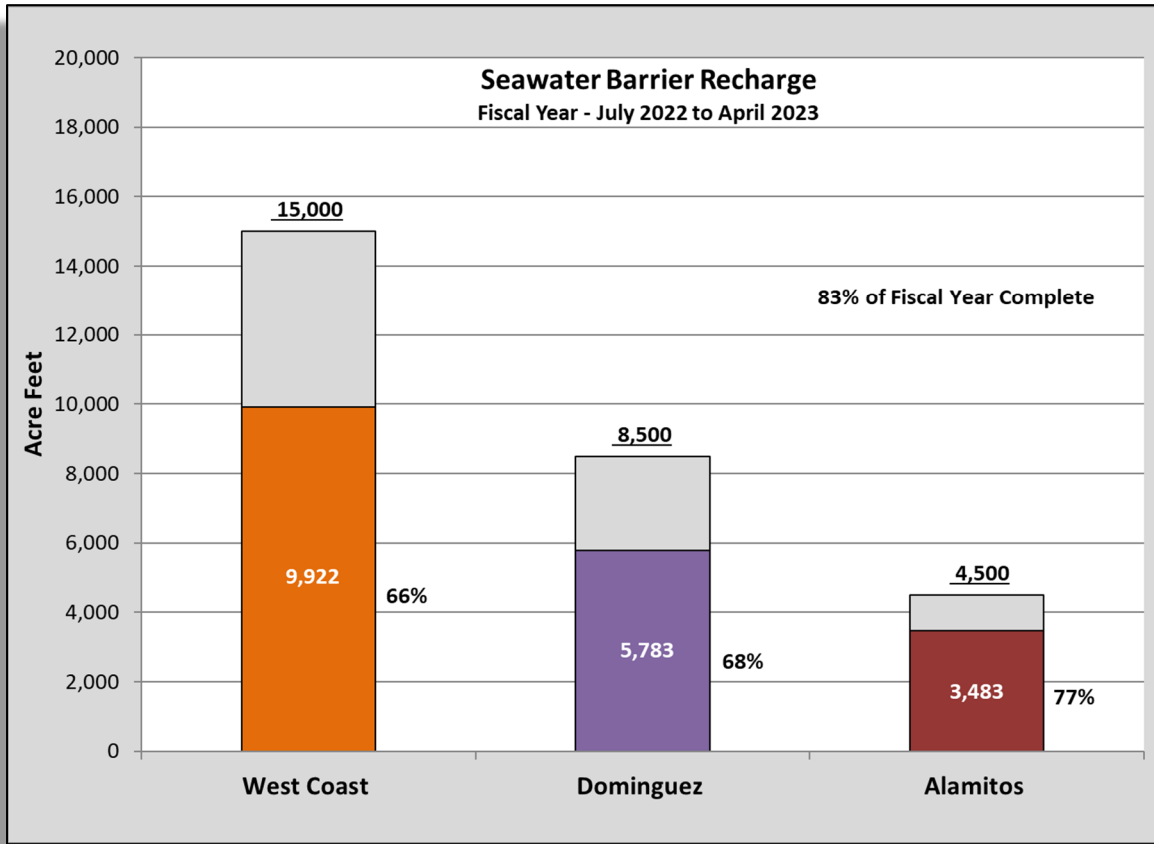
The permit is continuing to progress with LACSD and WRD staff working to update pertinent sections of the new Title 22 Engineering Report. Due to the continued mega drought and recent emergency drought proclamation by Governor Newsom, LACSD and WRD submitted a request to modify the recycled water contribution percentage to 50% and the advanced treated water classification to diluent in a letter to the LARWQCB and CA-DDW dated July 8, 2022. LACSD and WRD staff are targeting the end of 2023 to have the new Title 22 Engineering Report submitted, including the requests the increase the recycled water contribution percentage to 50% and reclassify the advanced treated water as diluent.

**Spreading Grounds Recharge**

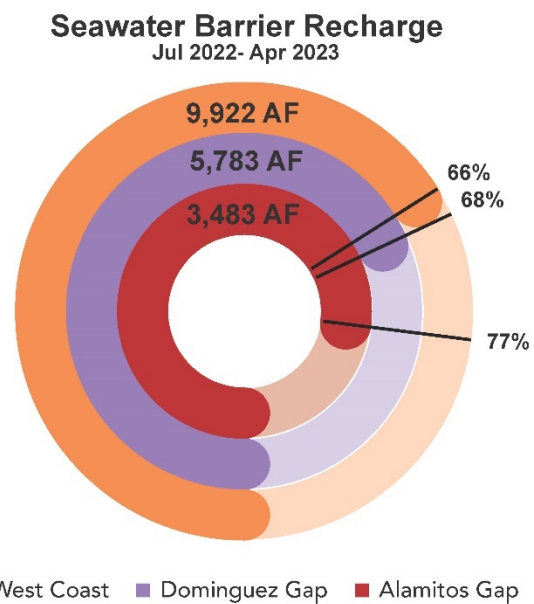


Seawater Barrier Well Injection and Replenishment (July 2022 – April 2023)

The following Chart shows the barrier water injection:

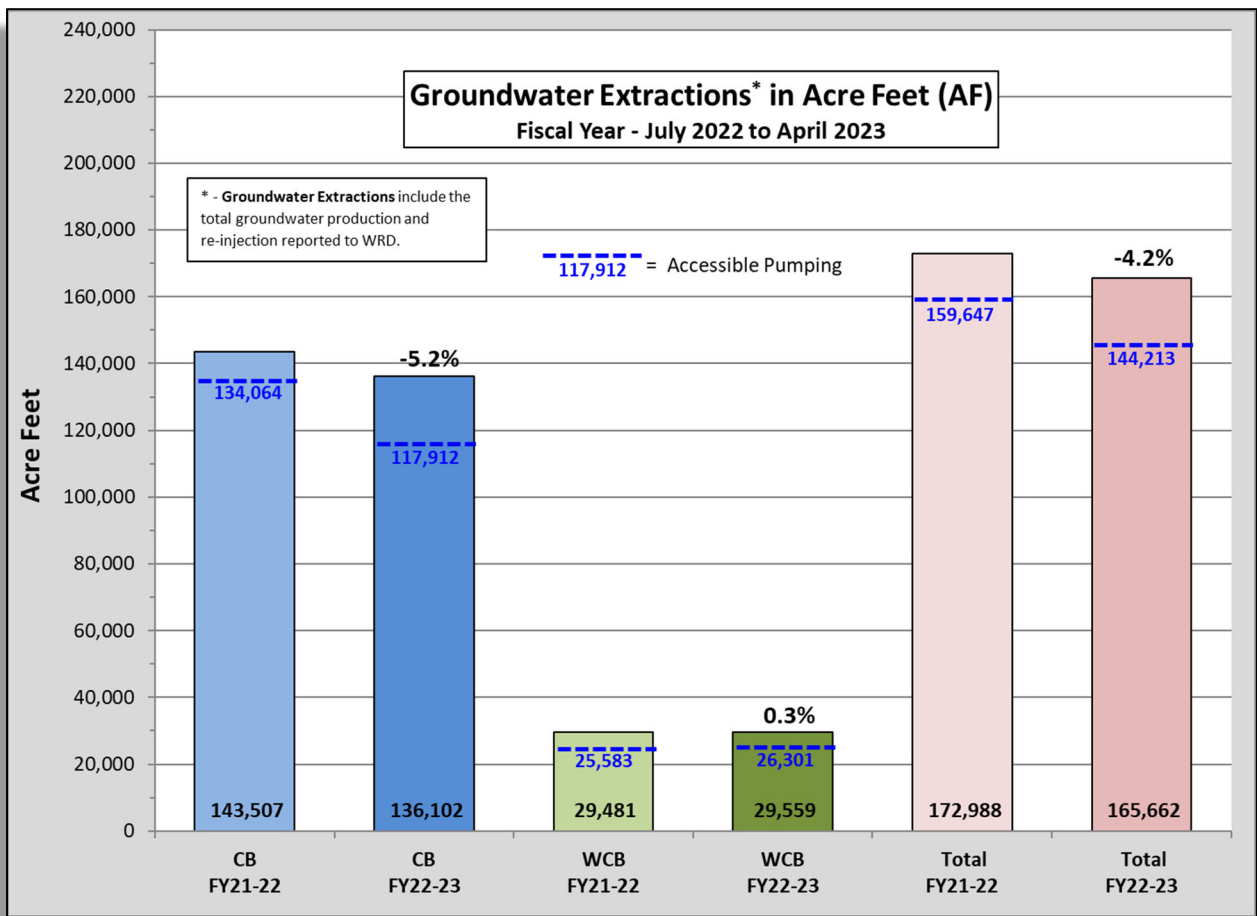


Preliminary numbers for the 2022-23 Fiscal Year show that the West Coast Barrier has used 9,922 acre feet of the total 15,000 acre feet planned for injection, 66% of total for the Fiscal Year. The Dominguez Gap Barrier used 5,783 acre feet of the total 8,500 acre feet planned for injection, 68% of the total for the Fiscal Year. The Alamitos Barrier, on the WRD side, used 3,483 acre feet of the total 4,500 acre feet planned for injection, 77% of the total for the Fiscal Year.



Total Pumping (Fiscal Year 2022-23, July 2022 – April 2023)

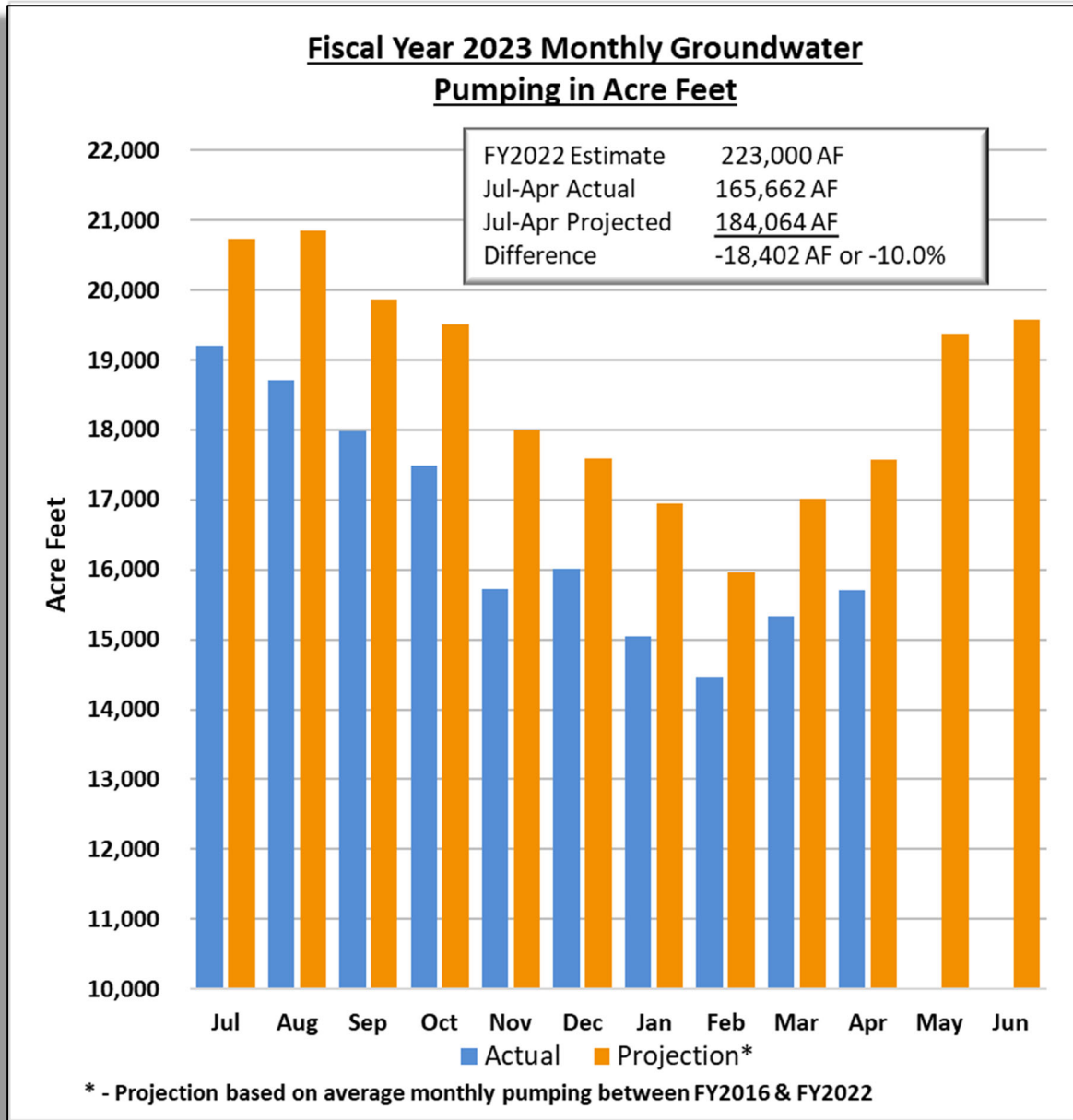
Preliminary numbers for groundwater production in the District for the Fiscal Year 2022-23 (July-April) indicate total pumping in the Central Basin was down 7,404 acre feet from the same time of the previous fiscal year (-5.2%) and the West Coast Basin total pumping was 78 acre feet higher than the previous fiscal year (0.3%). The total pumping is 165,662 acre feet compared to 172,988 acre feet during the same time the previous year for a decrease of 7,326 acre feet, or -4.2%. The current pumping data do not include two (2) Central Basin pumpers who have not yet reported for an estimated 3 additional acre feet.



Interesting...

Some 2.78 million trillion gallons of groundwater, 30.1 percent of the world's freshwater, are estimated for the entire planet of Earth.

Preliminary numbers indicate 165,662 acre feet have been pumped this fiscal year and is 10.0% below the projected fiscal year to date goal of 184,064 acre feet (or -18,402 acre feet). Monthly actual production versus the 7-year average monthly production projections (FY 2016 through 2022) are included in the chart below.



“Water is the most basic of all resources. Civilizations grew or withered depending on its availability.”

- Dr. Nathan W. Snyder



For the Fiscal Year 2022-23 (July 2022 - April 2023), staff has tracked the production trends of the top five (5) producing pumpers and the bottom five (5) producing pumpers in each basin. These pumpers are identified in the following tables and are based on the change in volume (in acre feet) compared to the same time period for the previous Fiscal Year.

<b>Production Trends - Central Basin</b>				
<b>Top 5 Producing by Volume (AF)</b>	Jul 2021-Apr 2022	Jul 2022-Apr 2023	Difference	% Change
Long Beach, City - CB	21,440.04	24,407.23	2967.19	12.16
Cal. Water Service Co. (East LA)	8,708.75	8,876.38	167.63	1.89
Golden State Water Co. - CB	15,057.73	15,126.59	68.86	0.46
Boeing, Compton Site	0.00	36.30	36.30	100.00
American Text. M.	19.54	46.69	27.15	58.15
<b>Bottom 5 Producing by Volume (AF)</b>	Jul 2021-Apr 2022	Jul 2022-Apr 2023	Difference	% Change
Downey, City	11,905.57	10,849.67	-1055.90	-9.73
Santa Fe Springs, City	1,983.36	1,061.12	-922.24	-86.91
Vernon, City	5,411.89	4,657.41	-754.48	-16.20
Whittier, City	4,918.64	4,214.19	-704.45	-16.72
Lakewood - City	5,855.86	5,221.89	-633.97	-12.14

<b>Production Trends – West Coast Basin</b>				
<b>Top 5 Producing by Volume (AF)</b>	Jul 2021-Apr 2022	Jul 2022-Apr 2023	Difference	% Change
Cal. Water Service Co. Dominguez - WB	1,683.45	3,056.20	1372.75	44.92
Tesoro Refining	7,964.11	8,866.88	902.77	10.18
Golden State Water Co. - WB	3,931.07	4,688.31	757.24	16.15
Cal. Water Service Co./Hawthorne Lease	19.85	233.11	213.26	91.48
Manhattan Beach, City	200.00	384.38	184.38	47.97
<b>Bottom 5 Producing by Volume (AF)</b>	Jul 2021-Apr 2022	Jul 2022-Apr 2023	Difference	% Change
Phillips 66 Co. - Alpha 7093	5,357.58	4,178.92	-1178.66	-28.20
Torrance, City	1,520.45	961.16	-559.29	-58.19
Cal. Water Service Co. Alpha 7050	1,122.34	711.24	-411.10	-57.80
Inglewood, City	1,710.03	1,558.92	-151.11	-9.69
Roman Catholic Archbishop - WB	232.26	124.35	-107.91	-86.78

Water Replenishment District (WRD) publishes the Groundwater Basin Update (GWBU) monthly. All information contained herein is preliminary and is meant to be a snapshot the status of the basins at the time of publication and should not constitute an official WRD report. All the information presented in the GWBU utilizes the best available data at the time of publication. Data provided herein is a compilation of WRD data and publicly available information from several of our partners including, by not limited to, the Los Angeles County Department of Public Works - Stormwater Engineering Division, Metropolitan Water District of Southern California, California Department of Water Resources, US Bureau of Reclamation, University of Nebraska - Lincoln, and the US Department of Agriculture - Natural Resources Conservation Service. The GWBU is prepared by Senior Hydrogeologist, Everett Ferguson, who can be contacted directly with questions at [eferguson@wrd.org](mailto:eferguson@wrd.org).