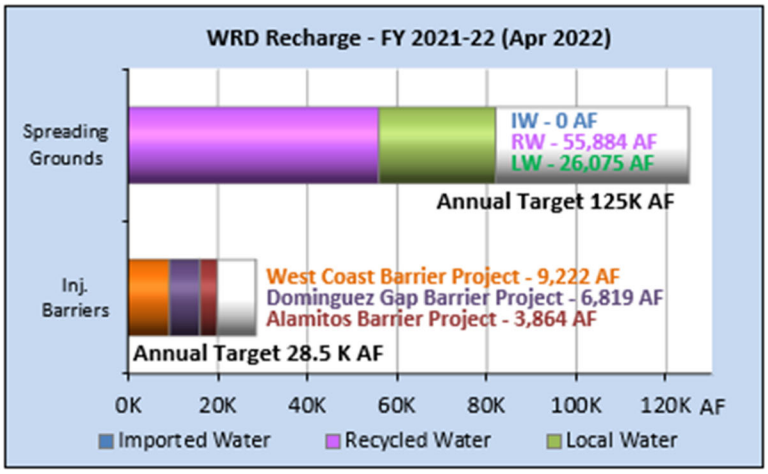
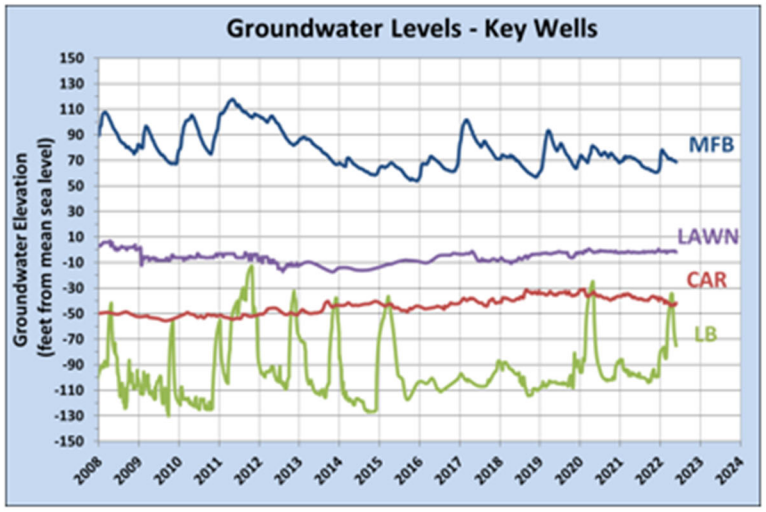
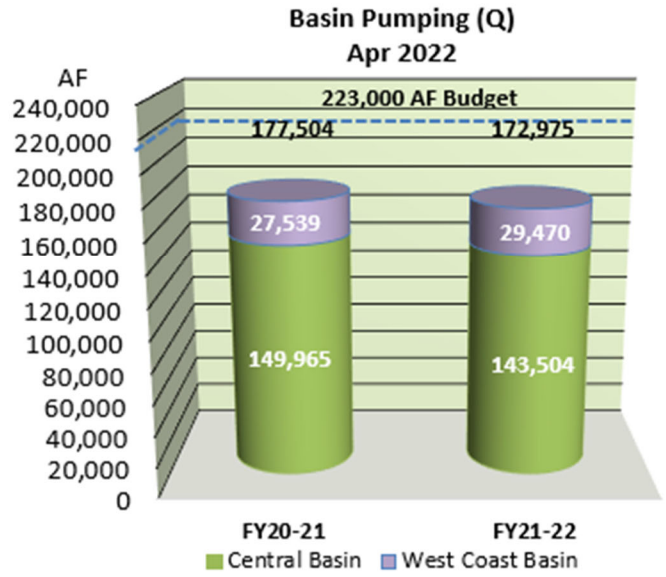
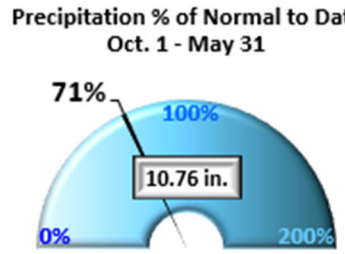
GROUNDWATER BASIN UPDATE
FOR JUNE 2022

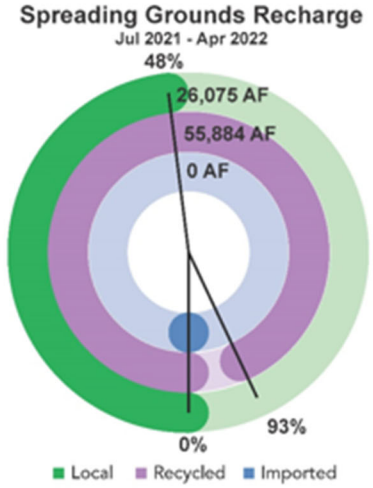
GROUNDWATER BASINS *AT A GLANCE**

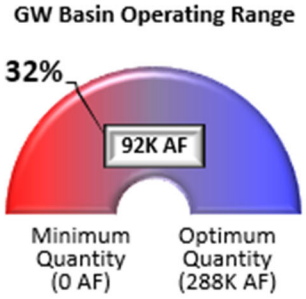


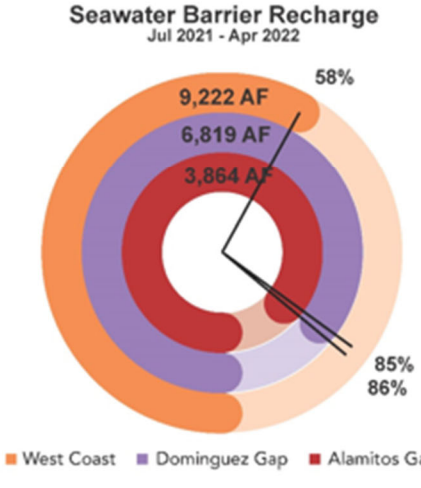










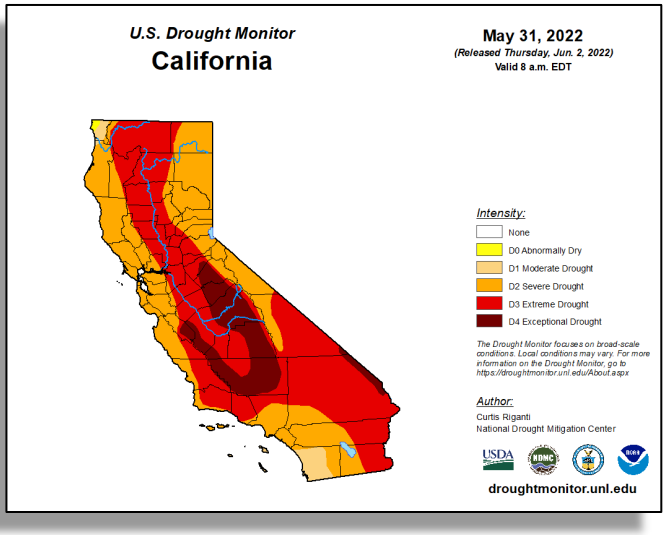


* - Preliminary numbers, subject to change.

SUMMARY

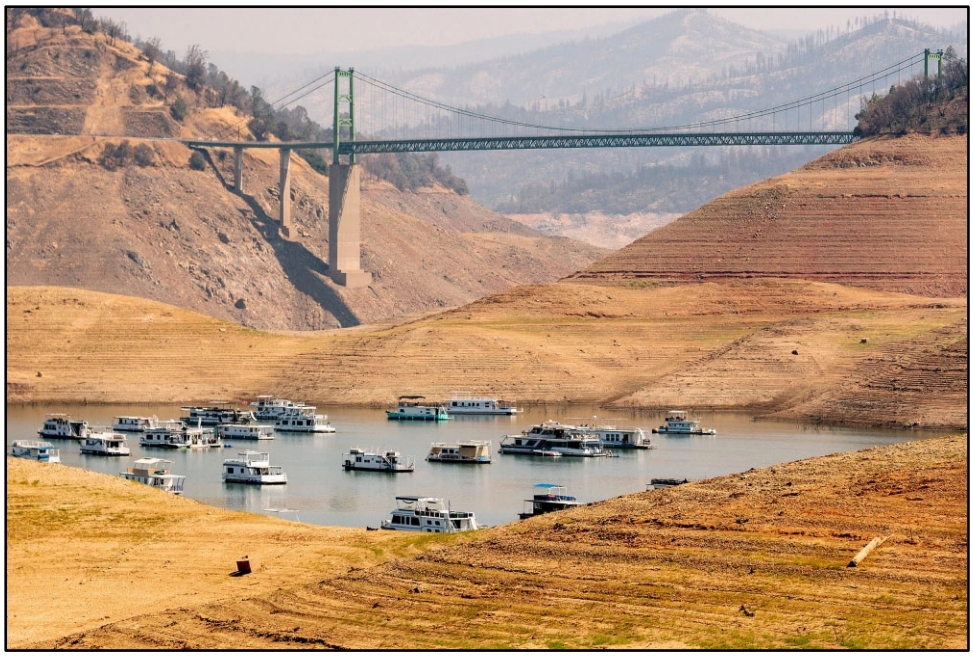
Staff monitors groundwater conditions in the District's service area throughout the year. A summary of the latest information is presented below.

Precipitation (Oct. 1, 2021 – May 31, 2022)



The WRD precipitation index reports that for the 2021-22 Water Year, there has been below average rainfall (10.76 inches) through May 31, 2022. The normal rainfall for this time period is 15.15 inches, so the District is 71% of normal. As of May 3, 2022, the U.S. Drought Monitor is reporting 100% of the State is abnormally dry, 100% under moderate, 98% under severe (+3%), 60% under extreme (+19%), and 12% exceptional (+12%) drought conditions. California is still in a state of drought exacerbated by the drier than normal January through April (record low on record dating back to 1895). From 2001 through 2022, the extended drought has resulted in the driest 22-year period in the past 1,200 years (since 800 A.D.).

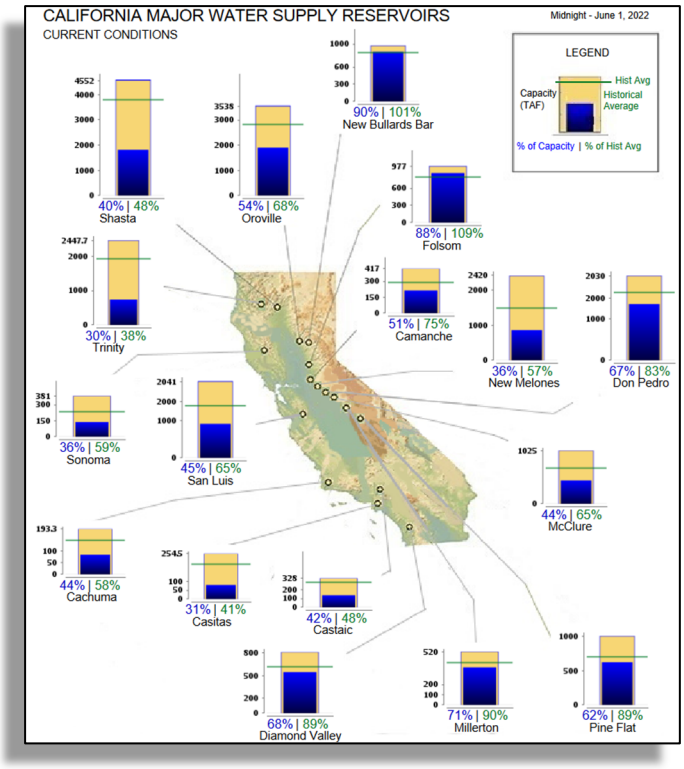
Snowpack data for May indicated the snow water equivalent across the State is less than half an inch (0.4"). Snow surveys for 2022 are now complete and the next survey is scheduled to commence January 2023.



Lake Oroville – September 2021

Reservoirs (as of June 1, 2022)

For the 21 reservoirs reported monthly to the committee, water levels have increased in 9 of 21 reservoirs. The largest increase occurred at Lake Powell (0.52 million acre feet, MAF) and the smallest increase occurred at Lakes Millerton and Silverwood (<0.01 MAF). The largest decrease (-0.36 MAF) occurred at Lake Mead. The smallest decrease (<0.0 MAF) occurred at Camanche, Sonoma, Cachuma, and Casitas Lakes.



MWD Reservoirs (SWP)
Storage in Million Acre Feet

Reservoir	Capacity	Storage	% Full	Change
Trinity Lake (CLE)	2.45	0.74	30%	-0.02
Lake Shasta (SHA)	4.55	1.82	40%	-0.01
Lake Oroville (ORO)	3.54	1.90	54%	-0.04
New Bullards Bar (BUL)	0.97	0.87	90%	0.02
Folsom Lake (FOL)	0.98	0.86	88%	0.04
Camanche Lake (CMN)	0.42	0.21	51%	0.00
New Melones L. (NML)	2.40	0.86	36%	-0.05
Don Pedro Res (DNP)	2.03	1.35	67%	0.06
Lake McClure (EXC)	1.02	0.45	44%	0.02
Lake Sonoma (WRS)	0.38	0.14	36%	0.00
San Luis Res (SNL)	2.04	0.91	45%	-0.03
Millerton Lake (MIL)	0.52	0.37	71%	0.00
Pine Flat Res. (PNF)	1.00	0.62	62%	0.09
Cachuma Lake (CCH)	0.19	0.08	44%	0.00
Castaic Lake (CAS)	0.33	0.14	42%	-0.03
Casitas Lake (CSI)	0.25	0.08	31%	0.00
Perris Lake (PRR)	0.13	0.11	84%	0.01
L. Silverwood (SLW)	0.08	0.07	87%	0.00

MWD Reservoirs (CRA)
Storage in Million Acre Feet

Reservoir	Capacity	Storage	% Full	Change
Lake Powell	24.32	6.32	26%	0.52
Lake Mead	26.12	7.54	29%	-0.36
Diamond Valley L (DVL)	0.81	0.55	68%	-0.01

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

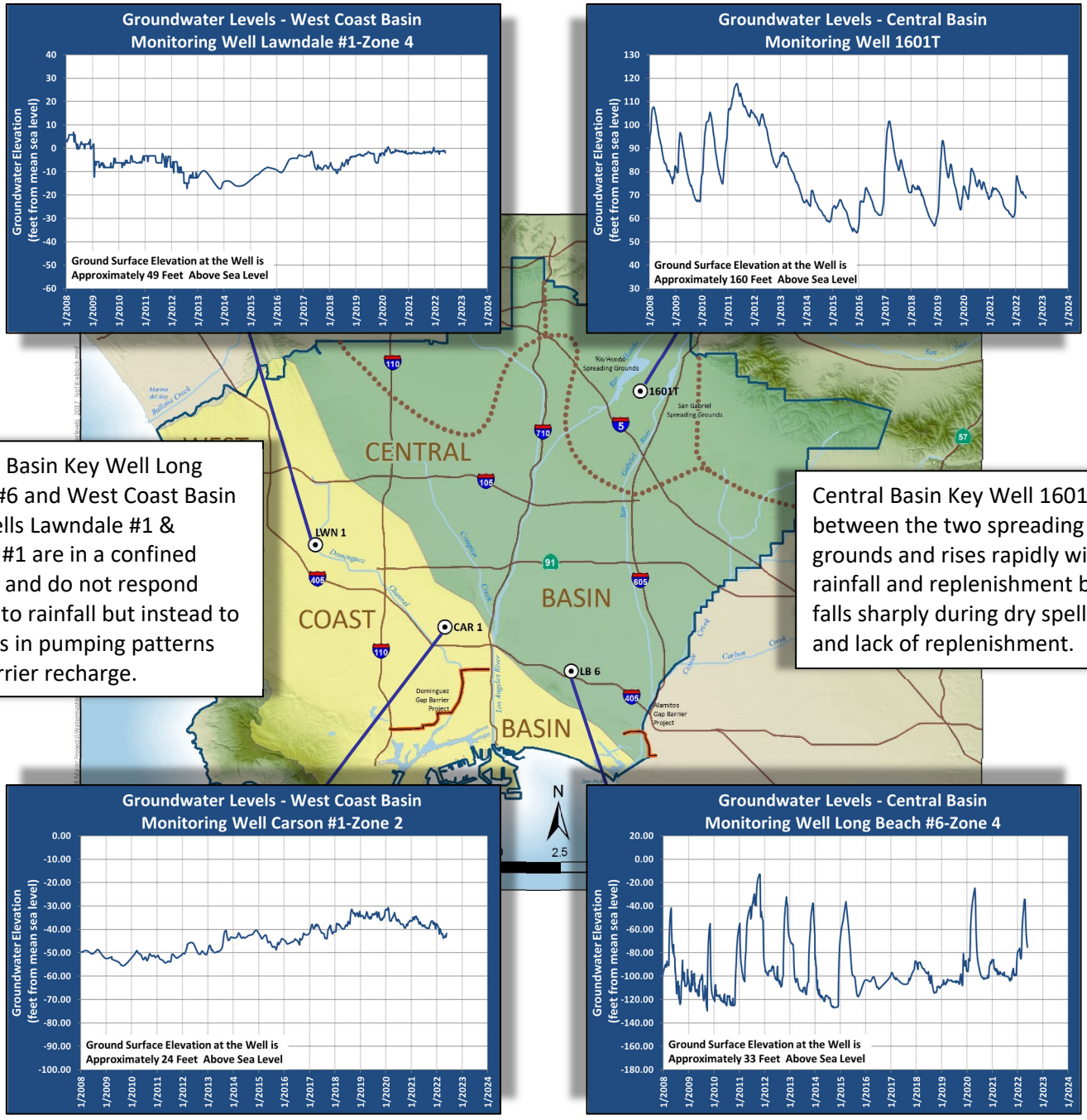
These 21 reservoirs are at 35% capacity (26.00 MAF) which is up 0.21 MAF from the prior month (0.06 MAF State Water Project [SWP] and -0.15 MAF Colorado River Aqueduct [CRA]).

Did you know?

Different materials have different capabilities to store groundwater and have water move through them.

Groundwater Levels (through May 27, 2022)

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	Decreased 1.2 feet	Decreased 1.8 feet
Central Basin Key Well Long Beach #6_4	Decreased 15.4 feet	Increased 22.8 feet
West Coast Basin Key Well Lawndale #1_4	**Decreased 0.7 feet**	Increased 0.3 foot
West Coast Basin Key Well Carson #1_2	**Increased 0.9 feet**	Decreased 3.8 feet

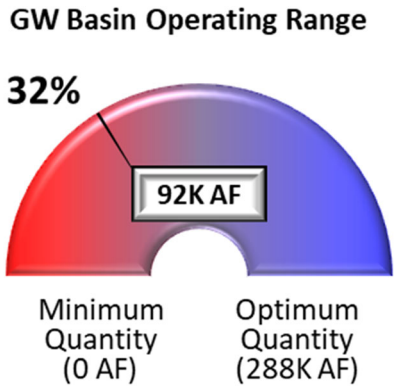
Bold indicates a change in direction (decreasing or increasing) since the last report.

Optimum and Minimum Groundwater Quantity

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 May 31, 2022, has been estimated at 808,184 acre feet (subject to change), which is 91,816 acre feet above the Minimum Quantity and 196,184 acre feet below the Optimum Quantity. The Basin is at 32% of Optimum Quantity which is 1% lower than what was reported last month (~4,000 AF lower).

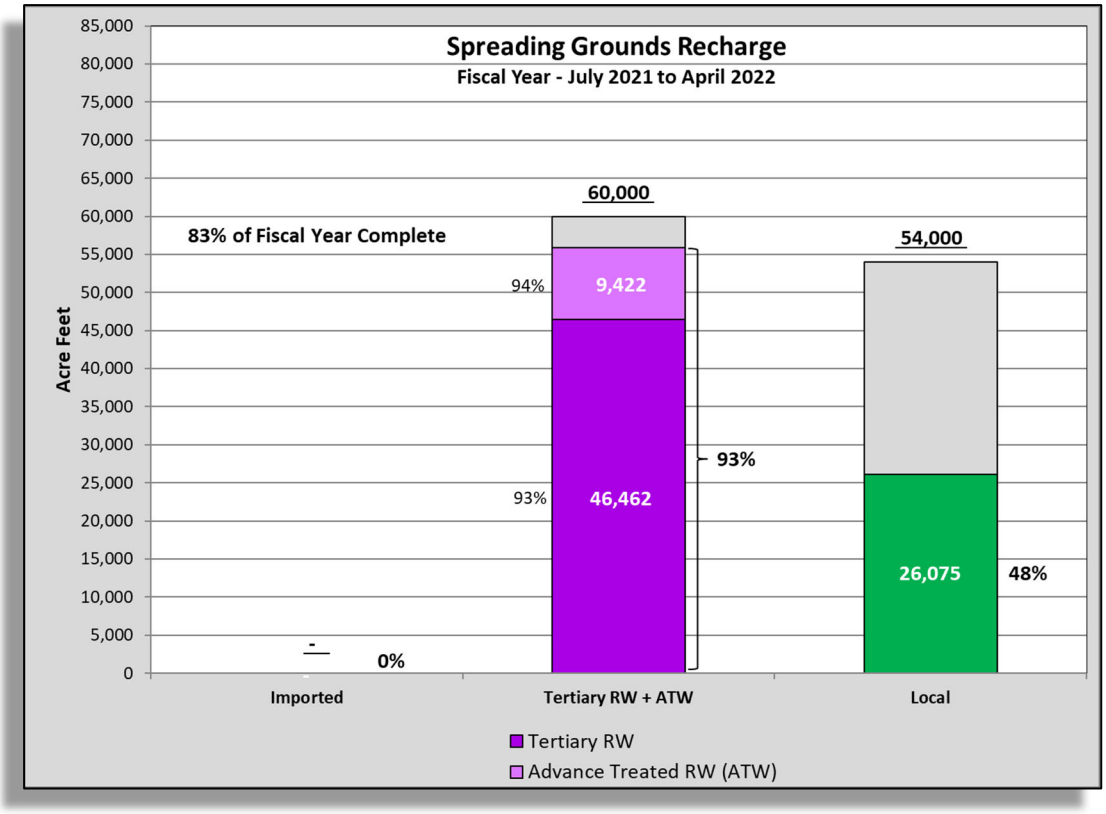


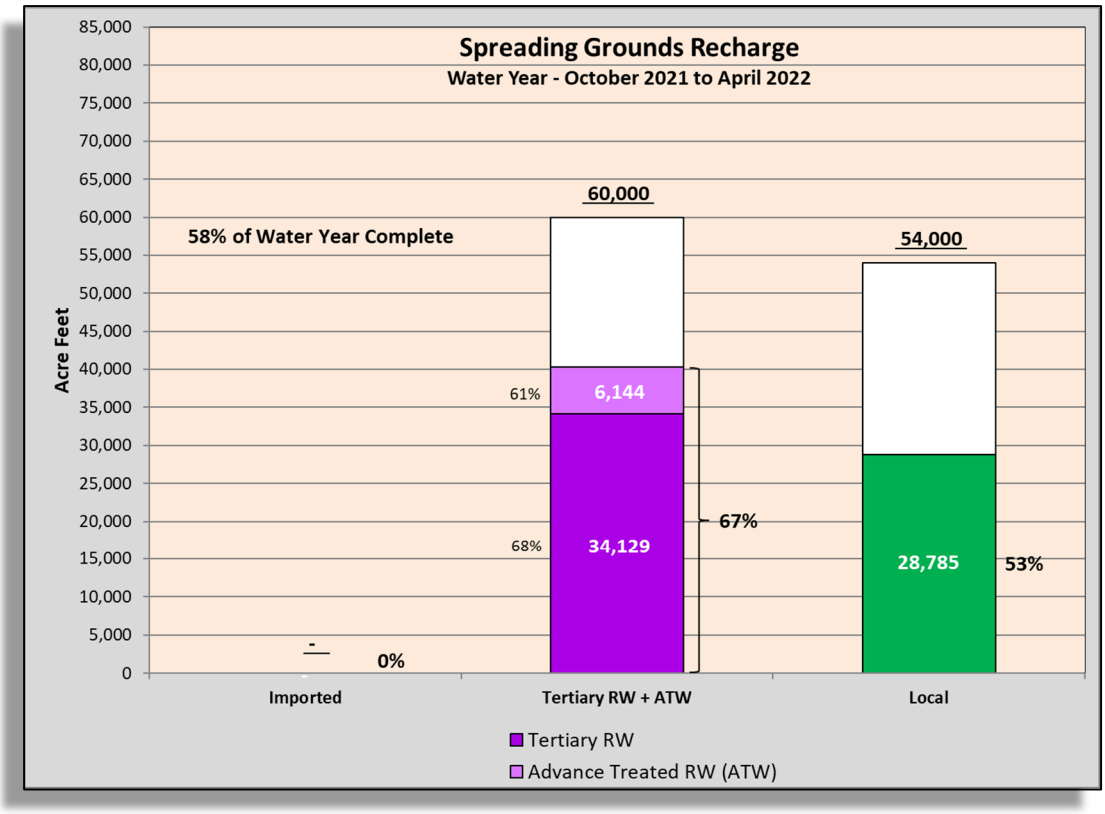
FACT:

An unconfined aquifer is made of permeable rock and is recharged with water from the land's surface. A confined aquifer is found between two layers of less permeable rock and is filled with water. WRD's service area contains both.

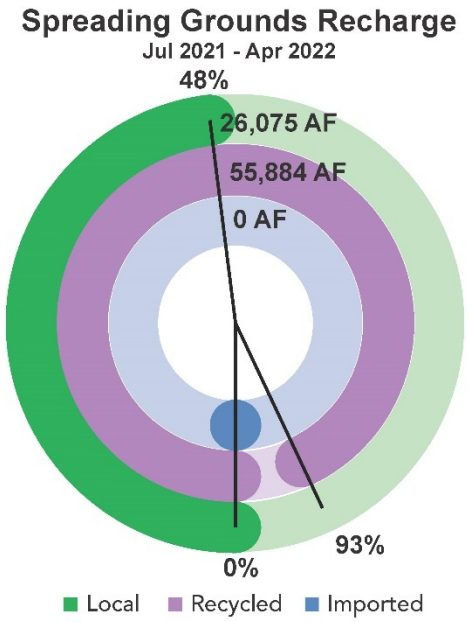
Montebello Forebay Spreading Grounds (July 2021 - April 2022)

The following Charts shows the preliminary spreading grounds replenishment water for the current Fiscal Year (2021-22; 10 months) and Water Year (2020-21; 7 months):



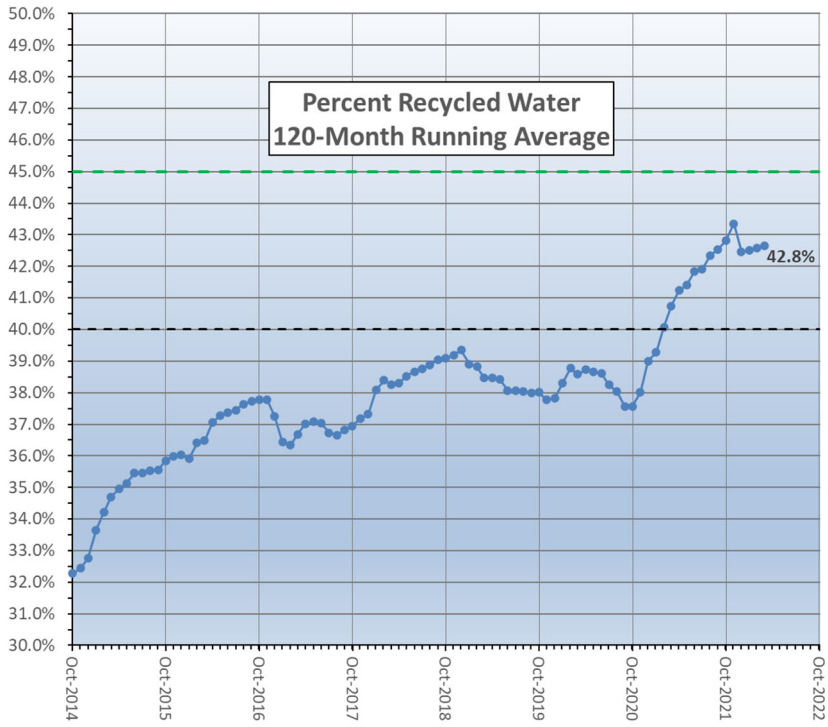


No imported water purchases are planned for Fiscal Year 2021-22.



Local water (stormwater plus dry weather urban runoff) is captured by the Los Angeles County Department of Public Works (LACDPW) 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 2021-22 Fiscal Year, approximately 26,075 acre feet of local water capture has been reported by the LACDPW.

Preliminary numbers for the 2021-22 Fiscal Year show that approximately 55,884 acre feet of recycled water has been recharged with 9,422 acre feet consisting of advanced treat water from the ARC AWTF and 46,462 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 42.8% 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. Implementation of the plan will commence upon acceptance by the RWQCB.

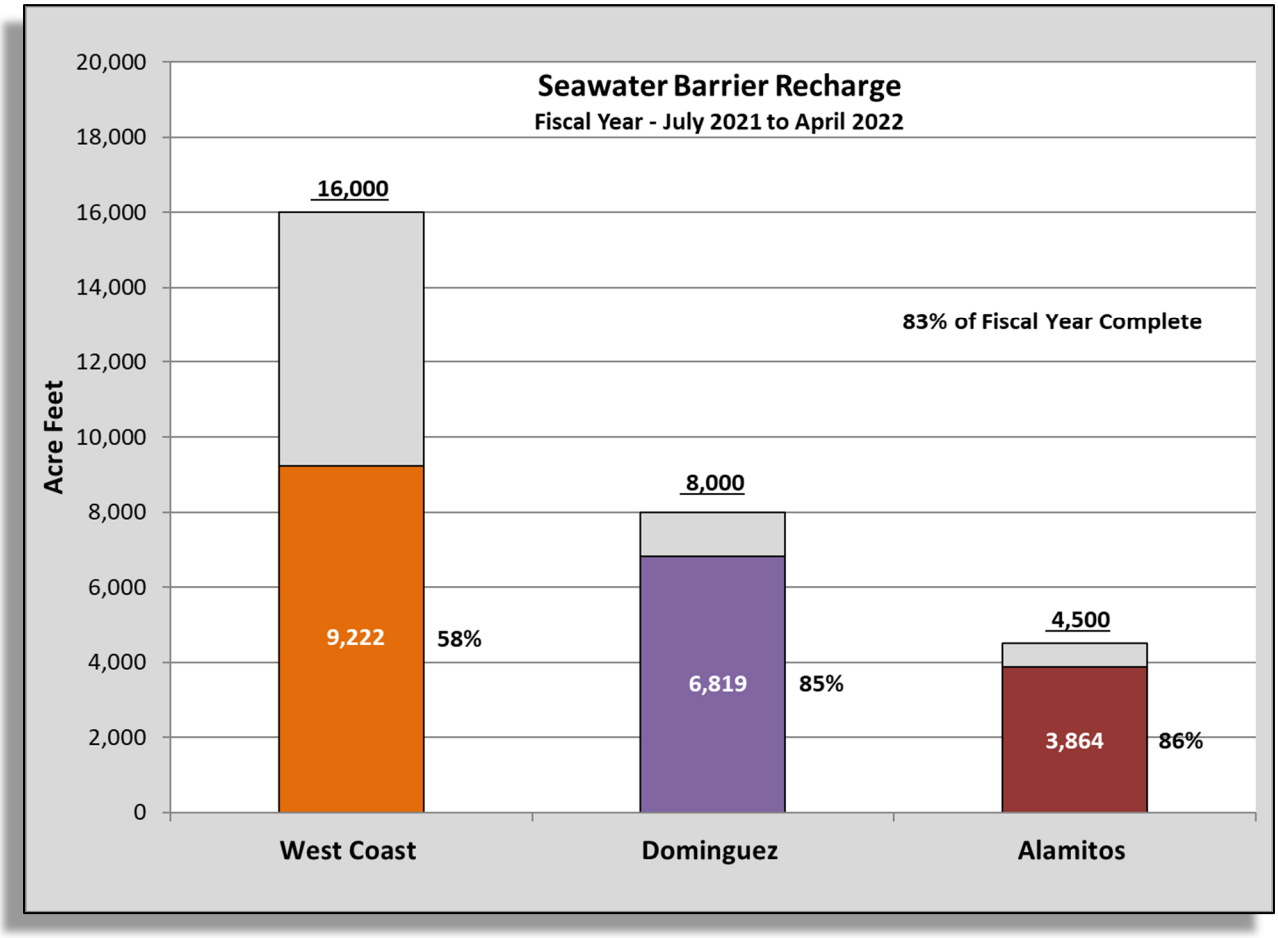


Tertiary Recycle Water Permit Update

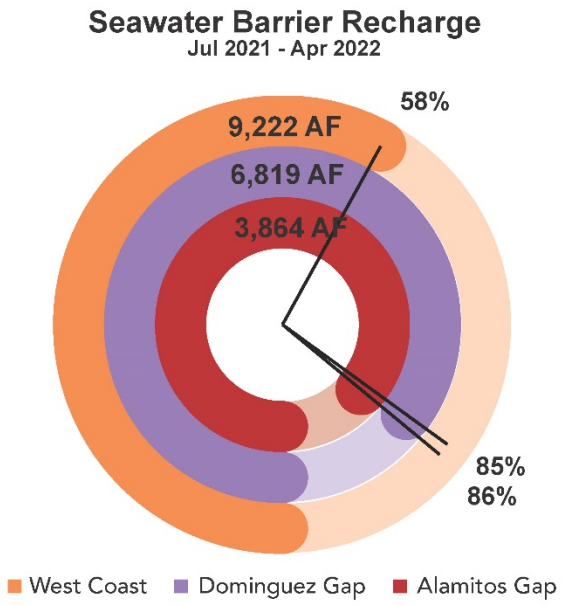
The permit is progressing with LACSD and WRD staff working with both LARWQCB and CA-DDW regulators to respond the questions and update pertinent sections of the new Title 22 Engineering Report. LACSD continues to work on two major studies needed for the new Title 22 Engineering Report – Biodegradable Dissolve Organic Carbon (BDOC) Study and Virus Logarithmic Reduction Value (LRV) Study.

Seawater Barrier Well Injection and Replenishment (July 2021 - April 2022)

The following Chart shows the barrier water injection:

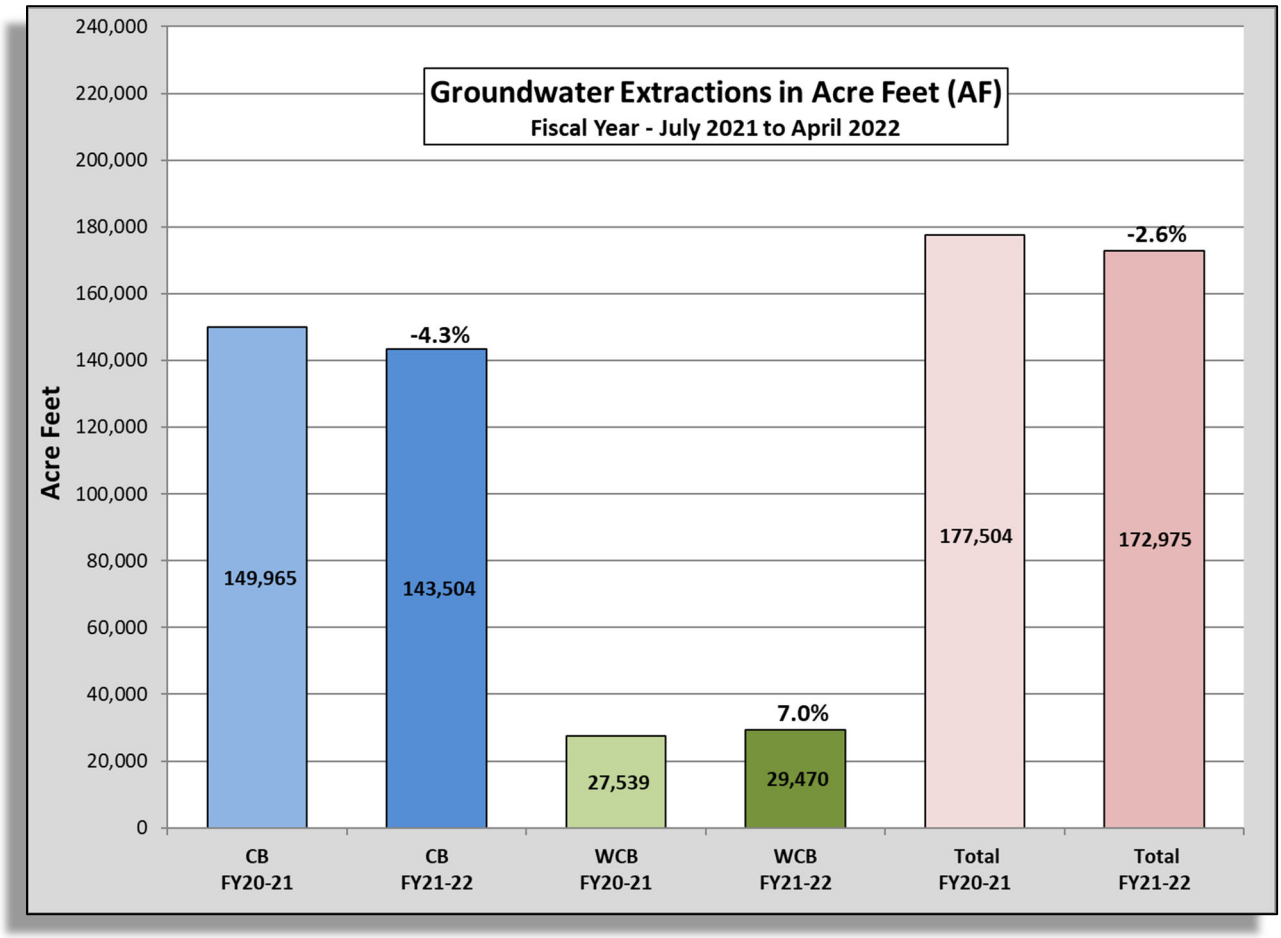


Preliminary numbers for the 2021-22 Fiscal Year show that the West Coast Barrier has used 9,222 acre feet of the total 16,000 acre feet planned for injection, 58% of total for the Fiscal Year. The Dominguez Gap Barrier used 6,819 acre feet of the total 8,000 acre feet planned for injection, 85% of the total for the Fiscal Year. The Alamitos Barrier, on the WRD side, used 3,864 acre feet of the total 4,500 acre feet planned for injection, 86% of the total for the Fiscal Year.



Total Pumping (Fiscal Year July 2021 – April 2022)

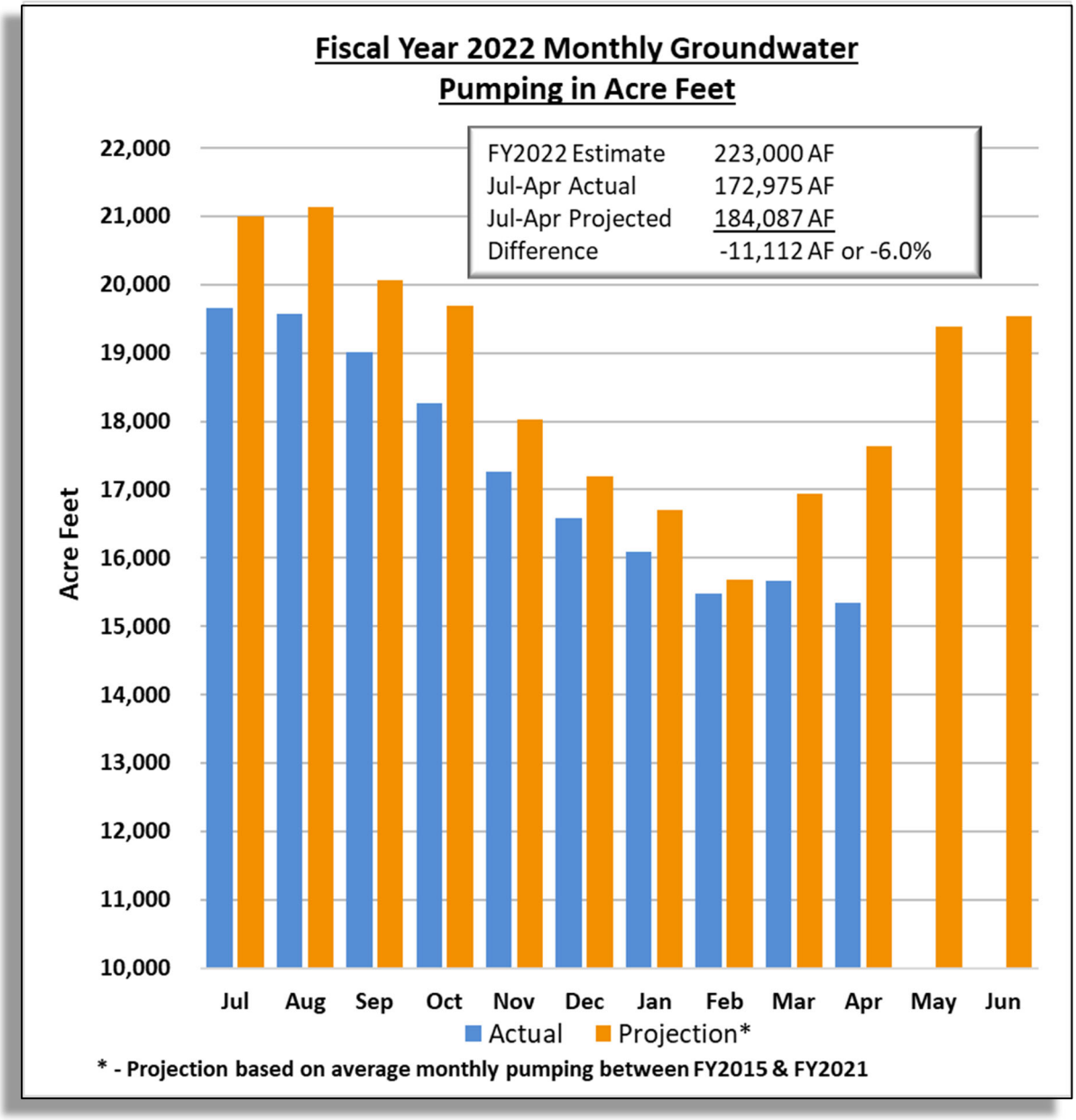
Preliminary numbers for groundwater production in the District for the Fiscal Year 2021-22 (July 2022 - April 2022) indicate total pumping in the Central Basin was down 6,460 acre feet from the same time of the previous fiscal year (-4.3%) and the West Coast Basin total pumping was 1,931 acre feet higher than the previous fiscal year (+7.0%). The total pumping is 172,975 acre feet compared to 177,504 acre feet during the same time the previous year for a decrease of 4,529 acre feet, or -2.6%. The current pumping data do not include four (4) Central Basin pumpers and two (2) West Coast Basin pumper who have not yet reported for an estimated 2 additional acre feet.



Interesting…

Groundwater road trip! The distance that groundwater flows per year varies from a few feet to hundreds of miles, depending on the aquifer's makeup and flow system of groundwater.

Preliminary numbers indicate 172,975 acre feet have been pumped this fiscal year and is 6.0% below the projected goal of 184,087 acre feet (or -11,112 acre feet). Monthly actual production versus the 7-year average monthly production projections (FY 2015 through 2021) are included in the chart below.



"Here we are 22 years into a bad drought, and because of climate change we are now surpassing the severity of megadroughts that have always been thought of as the worst-case scenarios," - *Park Williams, an associate professor of geography at UCLA- National Geographic*

For the Fiscal Year 2021-22 (July 2021 - April 2022), 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.

Production Trends - Central Basin				
Top 5 Producing by Volume (AF)	Jul 2020-Apr 2021	Jul 2021-Apr 2022	Difference	% Change
San Gabriel Valley Water Co.	40.12	2,135.21	2095.09	98.12
Los Angeles, City - CB	1,831.26	3,551.13	1719.87	48.43
Santa Fe Springs, City	1,464.32	1,983.36	519.04	26.17
Downey, City	11,638.75	11,905.57	266.82	2.24
Cal. Water Service Co. (East LA)	8,446.86	8,708.75	261.89	3.01
Bottom 5 Producing by Volume (AF)	Jul 2020-Apr 2021	Jul 2021-Apr 2022	Difference	% Change
Long Beach, City - CB	26,624.77	21,440.04	-5184.73	-24.18
Golden State Water Co. - CB	17,273.48	15,057.73	-2215.75	-14.72
Signal Hill, City	1,449.28	769.79	-679.49	-88.27
Bell Gardens, City	830.27	202.17	-628.10	-310.68
Paramount, City	2,692.12	2,254.24	-437.88	-19.42

Production Trends – West Coast Basin				
Top 5 Producing by Volume (AF)	Jul 2020-Apr 2021	Jul 2021-Apr 2022	Difference	% Change
Tesoro Refining & Marketing Co., LLC	6,400.13	7,964.11	1563.98	19.64
Phillips 66 Co. - Alpha 7093	4,194.42	5,357.58	1163.16	21.71
Cal. Water Service Co. Alpha 7050	826.68	1,122.34	295.66	26.34
Torrance Refining & Marketing Co.	699.05	850.24	151.19	17.78
Manhattan Beach, City	49.64	200.00	150.36	75.18
Bottom 5 Producing by Volume (AF)	Jul 2020-Apr 2021	Jul 2021-Apr 2022	Difference	% Change
Inglewood, City	2,397.38	1,710.03	-687.35	-40.20
Cal. Water Service Co./Hawthorne Lease	474.40	19.85	-454.55	-2,289.92
Cal. Water Service Co. Dominguez - WB	2,128.85	1,683.45	-445.40	-26.46
Rolling Hills Country Club	265.00	208.00	-57.00	-27.40
L.A. County Department of Parks & Rec - WB	312.94	270.59	-42.35	-15.65

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.