WEST STANISLAUS IRRIGATION DISTRICT

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Subject: 2021 - 2022 Summary of San Joaquin River diversion report for West Stanislaus Irrigation District

During the 2021 – 2022 reporting period from October 1, 2021 through September 30, 2022, West Stanislaus Irrigation District (WSID) diverted under its license #003957 a total of 35,937 acre-feet of water at a maximum rate of 287 cubic feet per second from the San Juaquin and Tuolumne rivers. WSID is unable to divert all of the water to which it is entitled from the San Joaquin and Tuolumne rivers pursuant to its license for several reasons. First, water levels during the summer period have been reduced by operation of the Central Valley Project Friant Division, and low water levels prevent the District from pumping the full diversion amount to which it is entitled. Additionally, pumping and mechanical failures during the irrigation season sometimes limit the District's ability to utilize its licensed right. Also, water quality problems restrict the use of the District's appropriative rights for some purposes. These conditions significantly limited the district's ability to divert from the river during most months of year and the district was issued a curtailment notice to cease diversions due to significantly low unimpaired flows in the San Joaquin watershed. The district was curtailed for a portion of October 2021 and again in June through September 2022. Table 1 below summarizes the district diversions during the reporting period. To help make up for these shortages, water was diverted from CVP facilities and groundwater in the amount of 14,529 AF and 14,073 AF, respectively. Also provided below are diversions that would have been made during the months of curtailment and should also be applied to total appropriations by the district.

Table 1. 2021-2022 Diversions for West Stanislaus Irrigation District.

Month	WSID SJR Diverted, AF	CVP Diverted, AF	Ground Water Diversions, AF	Foregone Diversions During Curtailment, AF
October	867	0	1,399	1,290
November	600	0	1,425	0
December	882	0	632	0
January	958	3	892	0
February	3,274	0	1,646	0
March	8,376	0	1,155	0
April	11,051	0	1,207	0
May	8,240	258	1,450	0
June	1,690	4,297	1,079	2,147
July	0	6,000	996	1,821
August	0	2,922	1,113	2,619
September	0	1,049	1,079	3,100
Total	***35,937***	***14,529***	***14,073***	***10,977***

Also not included in the above table is groundwater recharged from canals through seepage, and water lost to evaporation that would have served land that was left fallow, water saved through conservation projects, and groundwater from private wells conveyed through District facilities. Also not provided in the above table is water accounted for as beneficially used due to conservation efforts as discussed on attachment with subject heading "Summary of Water Conservation Efforts by West Stanislaus Irrigation District", groundwater recharged from canals through seepage, water lost to evaporation, water that would have otherwise been used on fallow land, conserved water, and private groundwater conveyed by the District, which are all included in Table 2 below because that water is beneficially used pursuant to California law. Data provided in the table below is the total water appropriated by the District and should count toward the maximum beneficial use of the District under its license during the reporting period of October 1, 2021 through September 30, 2022.

Table 2. WSID 2020 Summary of San Joaquin River Appropriations.

Appropriation Type	***Total SJR Appropriations, AF**
**WSID SJR Diversion	35,937
Curtailment Foregone Diversions	10,977
CVP Diversion	14,529
District Groundwater Diversions	14,073
Private Groundwater Use	5,224
Fallow Land	746
Conservation Projects	3,121
***Canal Seepage	370
***Canal Evaporation	115
Total:	***85,092***

* 2021-2022 Total SJR appropriations should include all types listed in this table.

**Measured at the pump station at the end of the 2-mile-long Intake Canal.

***Loss between SJR Point of Diversion and measuring point at end of the 2-mile Intake Canal.

Details of canal seepage and evaporation are provided in Table 3 below for the months of October 1, 2021 through September 30, 2022. Seepage and evaporation rates are found from references provided in the table. These sources are commonly accepted by U.S. Bureau of Reclamation and California Department of Water Resources. Seepage and evaporation losses shown below occur between the point of diversion off the San Joaquin River and measuring point located at the head of the distribution laterals supplied by the Main Canal. This additional quantity of water should be included in San Joaquin River appropriations by the district during the reporting period.

Table 3. Seepage and Evaporation Loss in WSID Distribution Facilities.

Seepage Quantities in WSID Distribution Facilities

Source: Kishel, J. (1989), Seepage and Contraction Joints In Concrete Canal Lining. Journal of Irrigation and Drainage Engineering, Vol. 115, No. 3

Sonnichsen, R.P., (1993), Seepage Rates From Irrigation Canals. Water Resources Program, Open-File Technical Report

Days of Irrigation: 295 Octobert 1, 2021-September 30, 2022

Sites	Length, mi.	Wetted Width, ft.	Top Water Surface Area, Ft.^{2}	Wetted Perimeter, Ft.	Wetted Perimeter Area, Ft.^{2}	Seepage, Ft.^{3}/day	Annual Seepage, AF
Intake Canal	2	80	844,800	74	781440	54,701	370

Evaporation Quantities in WSID Distribution Facilities

Source: Mean Monthly, Seasonal, and Annual Pan Evaporation for the United States, NOAA Technical Report NWS 34, Washington, D.C., December 1982, 22 p, Station Index 9565

Month	Evap. Rate in./mo.	Intake Canal Evap., AF
October	5.16	8
November	2.44	4
December	1.54	2
January	1.38	2
February	2.32	4
March	4.61	7
April	6.65	11
May	8.98	15
June	10.55	17
July	10.91	18
August	9.06	15
September	7.4	12
	Total:	***115***

In addition, in 1928 WSID entered into an agreement with Burkhard Investment Company[1] as amended June 7, 1939, wherein the parties acknowledged that the Burkhard lands had installed diversion and irrigation works to divert 45 cfs of riparian water for irrigation of riparian land. In that agreement, WSID agreed to "pump the said water to which the [Burkhard land] is entitled. . ." for irrigation. That agreement is still binding between the parties, and imposes upon WSID the continuing obligation to dedicate 45 cfs of pumping capacity to the Burkhard riparian lands. Water diversion and use for the White Lakes Mutual Water Company is represented by a Statement of Water Diversion and Use filed by that entity.

[1] The White Lake Mutual Water Company was formed on September 11, 1941, and represents the Burkhard properties by virtue of its Articles of Incorporation and Bylaws.