WEST STANISLAUS IRRIGATION DISTRICT

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Subject: Summary of Water Conservation Efforts by West Stanislaus Irrigation District.

West Stanislaus Irrigation District (WSID) has completed a variety of water conservation projects over the years. The majority of the effort focused on Main Canal SCADA and automation and best management practices on the farm level. The following is a list of conservation efforts WSID continues to either directly implement or promote to its customers:

WSID provides growers with information on opportunities for irrigation system evaluations performed by the Irrigation and Training Research Center; however, there were no opportunities during this reporting period. There may be an opportunity during the 2022-2023 reporting period to have evaluation performed.

Throughout the year, there were numerous outreach activities to growers by the Westside San Joaquin River Watershed Coalition to educate growers on potential best management practices growers could implement to eliminate pesticide and sediment discharge from the farm.

Since 2009, WSID has been investigating and implementing water and energy conservation projects. These projects were phased starting in 2010 with the majority of the projects complete and ready for operation in 2013 and 2014. A significant portion of conservation projects included automation of the Main Canal. Efforts were expended integrating SCADA/automation into four District pumping plants. This effort greatly improved accurate and reliable water supply service to District customers by automatically maintaining a constant water surface elevation over a wide range of demand. In 2012, the headworks of two laterals were automated which proved to provide increased reliable water service to growers and reduce operational spill from the end of laterals. Since it was a success at these two sites, headworks at the remaining laterals were automated in 2013. As part of the lateral headworks automation, flow measurement improvements were made at all sites. All automation sensors were original sensors until 2021. During 2021, the district began replacing all pressure transducers as the original sensors exceeded their useful life. During this reporting period, all water level sensors including ultra-sonic sensors and pressure transducers were replaced. During the next reporting period, all radial gate position sensors will be replaced as they have also exceeded their useful life.

In 2018, WSID began upgrading its electrical system in two of its pumps stations to replace old motor controller, and rebuilding pump motors and that effort continued into this reporting period and will extend into 2024. This project minimizes unexpected outages and improves water efficiency by maintaining deliveries without the loss of water in its distribution facilities due to power failure and the need to pump more water to fill facilities. The overall benefit of this project was improvement of operational efficiency calculated using total water delivered compared to total water diverted. Operational efficiency was improved from 79.9% in 2009 compared to 82% in this reporting period. 2009 was used as the baseline because implementation of this project was phased starting in 2010. Implementation of these projects resulted in documented water conservation in the amount of 1,754 AF during this reporting period. Normally water conservation is higher as delivery efficiency is higher at around 87%. Severe drought during this report resulted in higher water loss. Less water was available for delivery so water had to be spread out over the distribution facilities in periods. This resulted in water up facilities for delivery then loss of water in those facilities when water was moved to other distribution areas. WSID has found that drought condition actually results in higher water loss than in normal hydrology years.

Other components of water conservation improvements were made and remained in operation during this reporting period, including Phase I and Phase II of the Main Canal Modernization Project. This project replaced four pumping plants with two new pumping and replaced roughly 9,400 ft. of open concrete lined canal with a 96 inch reinforced concrete pipeline. This increased water service reliability to growers while greatly improving river diversions to more accurately meet demand. This project also eliminated seepage and evaporation loss in the portion of Main Canal converted to pipeline and is calculated to have conserved roughly 124 AF and 43 AF, respectively, during this reporting period.

Other water and energy conservation projects where implemented on the District's distribution system. One of the projects included collection of operational spill from the end of two distribution laterals and conveyed using gravity to another distribution lateral for beneficial use. Water collected and put to beneficial use is metered and totaled 1,200 AF during the reporting period.

Beginning in 2019, the District began construction of a new Operations and Maintenance Facility. That project was completed in 2020. That new facility will provide a safe, reliable, efficient and functional workplace. Although the benefits from a water conservation perspective will be difficult to quantify, it will greatly assist District staff in maintaining and repairing District facility to assure reliable and efficient operations.

The table below summarizes water conservation as a result of District implemented projects.

2021-2022 WSID Water Conservation Summary

Projects	Conservation, AF
Main Canal Automation	1,754
Phase I & II Main Canal Modernization	167
Lateral Spill Collection	1,200
Total:	***3,121***

Note. Data is compared with baseline data of 2009.