

Eastside Water District
Diffused Surface Water Project
PROGRESS REPORT ON EXPENDITURES
July 20, 2017

Background.

The Board of Directors of the Eastside Water District (EWD) approved the Diffused Surface Water Project (DSWP) in 2016-17 to be funded by the revenues raised from the Proposition 218 election process completed in 2015, to assure the long-term sustainability of the groundwater pumped by the landowners within its boundaries. The purpose of this report is to:

1. Explain EWD efforts and expenses to date for the Diffused Surface Water Project (DSWP), and justify why these expenses are appropriate under the Proposition 218 authorization.
2. Describe the cost to build and operate groundwater recharge facilities and justify the alternatives selected given options available to EWD today.

Diffused Surface Water Project (DSWP).

EWD's November 2014 engineering study provided the basis for the 2015 Proposition 218 Election that implemented the capital and operational per-acre charges, beginning in 2016. The DSWP proposed both direct and indirect methods to replenish the groundwater basin existing below EWD. The November 2014 study suggested locations for constructing groundwater recharge projects to replenish the basin with diffused surface water identified in the study. These projects would use direct recharge methods. The study also suggested that indirect groundwater recharge methods were possible depending on available surface water supplies in addition to diffused surface water.

Assuming the five to six-year drought period would continue, EWD's focus in 2016 was on direct methods to take any diffused surface water and put it into constructed recharge facilities adjacent to both Mustang and Sand Creeks. The EWD Board applied for temporary water right permits on both creeks, and were successful in securing a temporary water right permit on Mustang Creek. The State was very rigorous in preventing a temporary water right permit on Sand Creek. Because this permit required new construction, the State resource agencies put enough red-tape requirement to make securing this permit uneconomical for now. EWD focus is now on the runoff of Mustang Creek.

The proposed direct method of recharging a flood retention basin with surface water included using the existing facilities owned by Merced County adjacent to the City of Turlock Airport. The plan was to modify the flood retention basin to enhance its ability to recharge Mustang Creek water. Due to many circumstances including a very wet rainy season, the geological investigation of this site did not start until June 2017. The plan is to have the design completed and detention basin enhancement completed before the 2017-18 rainy season. When complete, this project is expected to be capable of recharging over 2,000 acre-feet of diffused

surface water every winter. Greater amounts of surface water can recharge the groundwater during the growing season, with water purchased from either Merced or Turlock IDs.

In 2017 both Merced and Turlock ID have surface water surplus to their need to sell to EWD and its landowners. So, the focus in 2017 shifted to use as much of this available surface water as possible for the benefit of the groundwater basin. Over 15 EWD landowners have agreed to take surface water from either MID or TID during this growing season. It will not be known how much surface water will be used in-lieu of pumping ground water, but a report will follow this first year of experience. TID refers to this water as replenishment water, and EWD agrees with this terminology; this is water needed to replenish the groundwater basin. To encourage these landowners to take this step, the EWD Board of Directors has agree to pay for the water charges from both MID and TID for this surface water. The rationale for this expense is that every drop of water diverted to these willing landowners equates to that drop not having to be pumped from the groundwater basin. This is the most efficient groundwater recharge method available today; and is referred to as 'indirect or in-lieu' groundwater recharge.

Every year has different hydrology, requiring the EWD to be adaptive in its annual planning for implementing the DSWP. Over time, the water district will have an adequate amount of constructed and operating groundwater recharge facilities to accommodate varied hydrology. In dry years, these facilities would rely only on diffused surface water identified in the 2014 study. In years when the neighboring irrigation district have surface water surplus to their needs, EWD will be prepared to secure this water for direct and in-direct recharge facilities. In years like this year, EWD will plan to use all available methods of groundwater recharge and coordinate with neighboring irrigation districts to assure maximum benefit to the groundwater basin is accomplished.

EWD has also approved DSWP projects as described below:

1. Engineering, technical assistance, and construction of diversion facilities from TID's main canal to provide surface water conveyance to landowners contracted to use surface water when it is available.
2. Grant application costs for a \$4.9 million study and demonstration project in the Rouse Lake area, just east of Turlock Lake. The pre-application has been approved by NRCS, and by fall, EWD expects to be entering negotiations for a full partnership agreement with NRCS to complete this work.
3. Formation of the East Turlock Groundwater Sustainability Agency Joint Powers Authority (ETS GSA JPA), and 'road map' process to assemble a Groundwater Sustainability Plan (GSP) by January 2022.

How EWD efforts and expenses meet the intentions of the DSWP.

The 2014 study identified 13 sites within EWD boundaries where favorable conditions would warrant further investigation for potential direct recharge facilities. Three of these sites were developed to a 30% design level for cost estimating purposes. These estimates were a large portion of the basis for the October 22, 2015 Water Charge Analysis Report for Eastside Water District – Intended to Comply with Proposition 218 Procedures for Establishing Water Charges. This 2015 report provides the detail on how the DSWP benefits every acre of land within the

EWD. It also states that the DSWP facilities will be utilized to recharge surface water purchased from neighboring irrigation districts. In addition, the operational charges were intended to fund compliance with the Sustainable Groundwater Management Act (SGMA). This act required the formation of a groundwater sustainability agency or GSA, and by 2022 adopting a groundwater sustainability plan or GSP.

The 2015 report describes groundwater recharge methods including using surface water sources 'in-lieu' of pumping groundwater; known as 'in-lieu groundwater recharge;' or, direct methods like aquifer storage/recovery (ASR) wells and percolation basins can be constructed to directly recharge the groundwater basin. The recharge basins are typically the less costly of the direct methods. ASR wells typically are the most expensive due to the cost of a requirement to treat the surface water to drinking water quality standards before it can be delivered to groundwater. In-lieu or indirect methods of recharge are the most cost-effective groundwater recharge alternative.

Whichever groundwater recharge method is used, the goal of the DSWP is the same: available surface water is diverted and used to recharge the groundwater basin. This recharged water is stored in the ground with the other groundwater molecules; raising the groundwater levels near the groundwater recharge facility, and eventually over the entire groundwater basin as more recharge facilities are added to the portfolio of project's ultimate facility build-out. Recharging occurs in years when surface water is available. Stored surface water in the ground is available in years when surface water supplies are scarce and a greater reliance for groundwater is expected.

To date EWD has expensed the following efforts under the 'umbrella' of the DSWP:

1. Applied for temporary water right permits on Sand and Mustang Creeks. The State did issue a temporary water right permit on Mustang Creek for 2016-17, and EWD will be asking for the 2017-18 season as well.
2. Currently completing a geologic investigation at the County of Merced's flood control facility on the City of Turlock's land southwest of the airport. The results of this investigation will lead to a design of basin enhancements planned for this facility that will increase its ability to deliver surface water to the groundwater basin.
3. Recently received pre-approval of a federal grant through NRCS to investigate how surface water from neighboring irrigation district can be secured as supplies for the proposed DSWP.
4. Designed temporary and permanent diversion and conveyance facilities from neighboring irrigation facilities for in-lieu recharge facilities on various lands for the 2017.
5. Led the formation of the East Turlock Subbasin GSA Joint Powers Authority to comply with the Sustainable Groundwater Management Act (SGMA).
6. Worked with the newly formed West Turlock Subbasin GSA to plan for the assembly and completion a GSP for the entire Turlock Subbasin by 2022.
7. Assisted in coordination of both GSAs to apply for State funding for the GSP completion.

8. Planned well monitoring program to supplement data library enabling analysis of current groundwater quantity and quality condition and extrapolation of future conditions with and without proposed projects.
9. Utilized past planning efforts to develop new projects and strategies for managing the groundwater basin. These efforts are all supported by the objective of the Proposition 218 funding mechanism:

“To implement a set of charges to be used exclusively for the development of a groundwater recharge program that will cover the costs of construction, operations, maintenance and administration related to the DSWP from pilot to implementation and the formation and implementation of a GSA”

The below table illustrates typical cost of various groundwater recharge methods. These costs reflect the cost to get surface water into the groundwater basin. It does not include the cost of recovering this water at some later date.

GW Recharge Method	Cost per Acre-Foot (\$)
Aquifer Storage & Recovery Wells	\$800 to \$1,200
Recharge Basins	\$100 to \$200
Flooded Fields	\$50 to \$75
Surface Water Irrigation In-lieu of Pumping GW	\$10 to \$50

The below table illustrates the approximate expenses of EWD DSWP efforts to date and their expected benefit value. Expenses are based on both actual cost and outstanding contract budgets. The benefit values assume that each project or effort is capable of recharging the groundwater basin by 2,000 acre-feet. The average benefit value figure is the most confident figure in the column, assuming a total of 10,000 acre-feet is recharged. The purpose of showing all benefit values is to illustrate that some projects or components of a project do not appear to be worth the effort, but as a whole they become cost effective.

Project of Effort	Expenses (\$)	Benefit (\$ per acre-foot)
Temporary WR Permit Applications	50,000	25.00
Mustang Creek Design Effort	135,000	67.50
NRCS Grant Application	60,000	30.00
2017 Conveyance Design Efforts	150,000	75.00
SGMA Compliance Efforts	\$75,000	37.50
Stanislaus County Groundwater Model Effort	\$20,000	10.00
Development of other DSWP projects	50,000	25.00
Total to Date	540,000	Average = 54.00

The EWD Board of Directors is in the process of expanding from a five to a seven-member board of directors. The primary purpose of this expansion is to have broader representation of its members within the boundaries of the EWD. These members and their consultants are available to address any questions or concerns raised by this report on DSWP expenditures. The Board of Directors desire to be transparent and open with their decisions on implementing the DSWP. Input from all landowners is appreciated prior to the Board of Directors deciding on any of the DSWP expenses.

Please visit the EWD website for further information and the ability to provide your comments. [www.eastsidewaterdistrict.com]