

Eastside Water District
Diffused Surface Water Project
PROGRESS REPORT ON EXPENDITURES
June 20, 2019

The Board of Directors of the Eastside Water District (EWD) approved funding for its Diffused Surface Water Project (DSWP) 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 EWD boundaries, the per-acre charges to landowners began in 2016-17. The purpose of this report is to:

1. Describe EWD's efforts and expenses to date for the Diffused Surface Water Project (DSWP), and why these expenses are appropriate under the Proposition 218 authorization.
2. Describe the cost to build and operate groundwater recharge facilities and the alternatives selected alternatives available to EWD today.
3. Inform the landowners why the capital per-acre charge is being implemented this year.

The DSWP is an umbrella project that include all efforts to address groundwater overdraft and assure the long-term sustainability of water supply for EWD landowners. Diffused surface water is runoff water that never reaches a surface water body (creek, stream, or river).

EWD continues to address the overdraft of the groundwater basin under its boundaries. EWD has known that the annual average overdraft of the Subbasin is about 70,000 acre-feet. EWD was formed in 1985 for the purpose of addressing this problem; ignoring this overdraft is not a solution to long-term sustainability of water supply for EWD landowners.

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 2016-17. 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 drought period would continue, EWD's focus in 2016 was on direct methods to divert diffused surface water 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. EWD was unable to secure a temporary water right permit on Sand Creek due to State regulatory requirements. As a result, EWD focused its efforts on the runoff of Mustang Creek.

EWD proposed to directly recharge surface water using the existing facilities owned by Merced County east of Oakdale Road and adjacent to the City of Turlock Airport. The plan was to modify the reservoir and flood retention basin to enhance their ability to recharge Mustang Creek water.

Due to many circumstances including a very wet rainy season, the geological investigation of these site did not start until June 2017. EWD completed 30% design plans to use the detention basin, which included dry-well installations capable of recharging over 2,000 acre-feet of diffused surface water every winter. Permitting of these dry wells is ongoing with Merced County, and the County has transferred ownership of the Mustang Creek Flood-Control Project to EWD. This will allow EWD to recharge even greater amounts of surface water during the growing season, with water purchased from either Merced or Turlock IDs. Purchased surface water can provide both 'in-lieu' and direct recharge. Lands adjacent to Mustang Creek will be able to use surface water in lieu of groundwater, and direct recharge can occur when irrigation demand allows for purchased water to be available for this purpose.

Landowners have proposed a pipeline be constructed from the Merced ID canal system north to Mustang Creek Reservoir. The current alignment has the potential to serve thousands of acres within EWD. Every acre-foot (AF) of surface water used in-lieu of pumping allows an equivalent amount to remain in the ground for use during a drought. Providing purchased water from MID to EWD landowners will result in 3 to 4 AF annually (AFA) of groundwater recharge per acre. By serving even only 1,000 acres, this pipeline could recharge the aquifer about 3,500 AFA whenever water can be purchased from MID. The frequency of such purchases on average is expected to be in 60% of the years. Ten-thousand acres would result in about 35,000 AFA of groundwater recharge. EWD has focused on helping its landowners with lands close to surface water supplies use both surface and its groundwater supplies conjunctively. It has been estimated that 70,000 acre-feet of groundwater recharge is needed annually to balance the groundwater basin that EWD landowners rely on. Projects like the envisioned Mustang Creek pipeline will make a significant stride towards achieving EWD's goal of balancing this groundwater basin.

In 2019 both Merced and Turlock ID have surface water surplus to their need to sell to EWD landowners and is working to use as much of this available surface water as possible for the benefit of the groundwater basin. Many EWD landowners have agreed to take surface water from either MID or TID during growing seasons. E-PUR was hired to study the effect of EWD serving its landowners along Dry Creek with water purchased from MID. The results of this study showed that not only did the groundwater basin benefit from the in-lieu recharge, but water infiltrating to the groundwater basin from the bed of Dry Creek was also going directly into the groundwater basin and not returning to the Merced River. EWD continues to purchase water on behalf of its landowners from MID to achieve this benefit to the groundwater basin whenever MID has water available. To encourage landowners to use surface water, EWD will pay for the water charges from both MID and TID for 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. Such in-lieu groundwater recharge is the most efficient and cost-effective method available.

EWD landowners have also proposed a pipeline from an existing TID Main Canal outlet to serve irrigated land around Rouse Lake as well as properties adjacent to Sand and Mustang Creeks. EWD supports this project and is offering its assistance for the benefit of all EWD landowners.

These two pipeline projects and EWD's decision to again pursue surface water from Sand and Mustang Creek requires that EWD continue to raise funds for these projects. Hence the need to continue the per-acre charge in 2019, and thereafter per the original approved schedule.

Every year has different hydrology, requiring the EWD to be adaptive in its annual planning for implementing the DSWP. Over time, EWD will have the infrastructure needed 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 secure this water for direct and in-direct recharge.

EWD has also begun 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. This includes the work for the Mustang Creek pipeline and the Rouse Lake pipelines.
2. Formation of the East Turlock Groundwater Sustainability Agency Joint Powers Authority (ETS GSA JPA) and assembling a Groundwater Sustainability Plan (GSP) by January 2022. EWD is leading the five (5) members of this JPA. A grant was secured from the State to assemble the basin wide GSP. The local cost share is significant and provides about 2/3rds of the cost of such a plan had the JPA were to have gone it alone. Many of the EWD projects will be incorporated into this GSP.
3. Owning and operating the Mustang Creek flood control project. This has saved EWD from having to build millions of dollars' worth of improvements (reservoir, basin, and canals).
4. Implementing the Dry Creek conveyance system to serve EWD landowners and recharge the groundwater basin.
5. Constructed a pilot project to use Parjana EGRP technology on a ½ acre pond site along the TID Highline canal. The goal is to show that this technology can achieve 0.25 acre-feet per day of groundwater recharge at this site that contain soil that prior to the project allowed no percolation to the groundwater basin.
6. Planned construction of a pilot project on the Mustang Creek reservoir site using Torrent Technology drywells. The goal is to confirm that these drywells are capable of recharging 6-acre-feet per day of groundwater recharge.

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. The 2015 report provided 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).

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. Variations are due to site requirements (treatment required, geology, access to surface water source, etc.)

GW Recharge Method	Cost per Acre-Foot (in 2019 \$s)
Aquifer Storage & Recovery Wells	\$900 to \$2,000
Recharge Basins	\$200 to \$2,000
Parjana Energy-Passive Groundwater Recharge System (EGRP)	\$100 to \$2,000
Torrent Technologies Dry-Well	\$75 to \$1,500
Flooded Fields	\$50 to \$100
Surface Water Irrigation In-lieu of Pumping GW	\$20 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.

Project or Effort	Expenses (\$)	Benefit (\$ per acre-foot)
WR Permit Applications	112,500.00	
Mustang Creek Project Efforts	192,000.00	
Grant Applications	73,016.00	
Conveyance Design Efforts	135,000.00	
SGMA Compliance Work	14,476.06	
ETS GSA Work	210,524.00	
Development of other DSWP projects	49,346.28	
Dry Creek recharge tests and water purchases	171,441.00	
Total to Date	958,303.34	Average = 95.83

The average benefit value figure (to date) considers a total of 10,000 acre-feet has been recharged. The purpose of showing this average benefit value is to illustrate that some projects or components of a project may not appear to be worth the effort, but they become cost effective as part of the total project cost.

Governance Update. To more fully represent landowners within the EWD, the Board of Directors were expanded from a five to a seven-member board of directors in 2017. These members and the Board’s consultants are available to address any questions or concerns raised by this report on DSWP expenditures. The Board of Directors desire is 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 revisit the EWD website for further information and the ability to provide your comments. [www.eastsidewaterdistrict.com]