

# MOLZENCORBIN

## Rancho Viejo Effluent Reuse System Evaluation and Recommendation Summary

On February 11, 2014, Molzen Corbin submitted a scope of work and task order to Ranchland Utilities for the Effluent Reuse System Evaluation. Once approved, a project kickoff meeting was held on October 9, 2014 with Ranchland Utilities, Molzen Corbin, and the three Community Associations. It was determined that Molzen Corbin's evaluation of Rancho Viejo Effluent Reuse System was to include recommendations for improvements that can provide adequate pressures in the system, allocate water usage appropriately, and improve the overall effluent system. The Draft Letter Report was submitted on December 11, 2014. After receiving and addressing comments, the Final Letter Report was submitted on March 30, 2015.

### **Description of the Existing Reuse System**

The existing effluent reuse system originates from a treated effluent storage pond at the Ranchland Utilities Wastewater Treatment Plant (WWTP). The storage pond has a capacity of 2.88 acre-feet or approximately 935,000 gallons. Effluent is drawn from the storage pond by two 400 gallons per minute (gpm) vertical turbine pumps at the WWTP that supply the reuse water to the existing irrigation system.

Effluent is used for landscape irrigation by the three Community Associations: 1) La Entrada at Rancho Viejo (La Entrada); 2) Rancho Viejo North (North Association); and 3) Rancho Viejo South (South Association), collectively for about eight months out of the year. Effluent is discharged to the Canada Del Rancho Arroyo the remaining four months, when irrigation is not practical. Presently, the reclaimed water is allocated between each of the Associations through a select number of effluent water meters placed throughout the system.

### **Effluent Reuse Hydraulic Model**

A hydraulic model was developed for the Rancho Viejo Effluent Reuse System. This hydraulic model was constructed through information provided by base mapping conducted by Molzen Corbin in 2013 and elevation data acquired from Santa Fe County. Pressure readings from various fire hydrants and pressuring reducing valves in the system were used to confirm the components of the hydraulic model.

The hydraulic model for the existing effluent reuse system was also set up to evaluate and incorporate the propose improvements presented in the Final Letter Report.

### **Proposed Improvements**

To reduce and normalize pressures and provide proper allocation of water metering to each of the Associations while maintaining effluent quality, the following improvements were proposed:

1. Construct three (3) new 100,000-gallon ground steel water tanks and package booster pump stations. The tanks are placed with equal base elevations with effluent water dedicated entirely to each of the three Associations. Each booster pump station will be designed to supply to the individual Association's distribution network with individual metering.
2. Construct a new 500,000-gallon storage tank at the WWTP to maintain the quality of treated water from the WWTP. The new storage tank will reduce exposure to the environment and maintain the effluent quality while being stored at the WWTP.
3. The existing effluent pumps at the WWTP will become larger than required to pump to the three new tanks. Installation of a new variable-frequency drive (VFD) will allow the pumps to operate more efficiently under different pumping conditions and reduce the start-up and stopping pressures.
4. Modify the existing piping and remove the pressure reducing valves. The existing pressure reducing valves will no longer be required.

### **Long Term Improvements**

1. Ranchland Utilities Co. may consider the storage of effluent during the winter months for use in the spring. This could be considered when/if the demand for the effluent exceeds the ability to irrigate all of the landscaped areas with the effluent that can be produced during the day during irrigation season.
2. The continued expansion of the effluent system as the Rancho Viejo Development grows.

### **Preliminary Construction Costs**

The costs of the proposed improvements were separated into three lots in anticipation that the proposed improvement will be constructed in multiple phases.

Lot No. 1 includes the three new water tanks, three booster pumps stations, site work for each tank site and modifications to the existing system piping - \$1,350,000

Lot No. 2 includes the installation of the VFD at the WWTP - \$51,000.

Lot No. 3 includes the new 500,000-gallon effluent tank and yard piping at the WWTP - \$513,000.