

# Evaluate Performance of the Infiltration Basins in El Paso

Dr. Zhuping Sheng, Dr. Shalamu Abudu, Olga Rodriguez, Dr. Sora Ahn, Dr. Pengnian Yang, Dr. Qi Liu,  
Erick Reynoso, Jorge Chavez, Darlina Prieto

Dr. Gretchen Miller and Ben Smith, Department of Civil Engineering, TAMU  
Scott Reinert, Jaime Arriola, Eric Bang, Robert Hernandez, Martin Ortiz, El Paso Water

Supported by: Texas A&M AgriLife Research, Texas A&M Engineering Experiment Station, El Paso Water, USDA NIFA

## BACKGROUND

The El Paso reclaimed wastewater ASR system was constructed and put into operation to recharge the Hueco Bolson aquifer with injection wells in 1985. Its source water is reclaimed wastewater treated at the Fred Hervey Water Reclamation Plant of El Paso Water. For long-term planning, El Paso Water will continue its effort in exploring alternative water management strategies. One of the strategies is to expand its Managed Aquifer Recharge (MAR) system with more infiltration basins. The MAR system consists of different components: pretreatment, source water, storage space - aquifer, recharge facilities, recovery facilities and post-treatment.

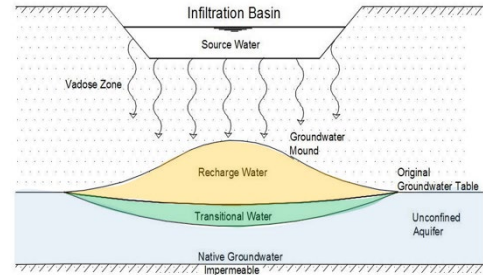


Figure 1. Sketch of an infiltration basin

This ASR system has served dual purposes: reuse of reclaimed wastewater to preserve native groundwater, and restoration of groundwater by artificial recharge of reclaimed wastewater into the Hueco Bolson aquifer. However, the performance of the infiltration basin has not been thoroughly evaluated.

## PURPOSE OF STUDY

This study aims to assess the efficiency of the MAR program, by quantifying the amount of water reaching the aquifer and provide design guidelines for the future expansion of the MAR program with infiltration basins and improvement of performance of existing infiltration basins.

## EXPERIMENT DESIGN

- **Monitor performance of infiltration basin:**  
Multiple sensors were installed to monitor and collect water levels in the basin, soil moisture, weather data and groundwater level during recharge.
- **Quantify infiltration rates and assess infiltration processes:**  
Perform statistical, analytical analysis and HYDRUS 2D/3D modeling to the observed data, and interpret the physics of infiltration process and determine the infiltration rates.

## ANTICIPATED RESULTS

Through this study, we aim to address some of the concerns raised for future expansion:

- Infiltration rates for each basin
- Effects of recharge on the groundwater
- Factors for clogging and effects of clogging on the recharge rate
- Water flow and solute transport below the infiltration basin



Figure 2. Infiltration Basin in El Paso, Texas