

Carbonxt Hydrestor® Technology - Pilot Testing

PLANT CHALLENGE

Gain Access to Reclaimed Water for Irrigation by Meeting Advanced Water Treatment Levels (AWTs)

A Florida water utility approached Carbonxt in an attempt to treat reclaimed wastewater in order for it to be used as irrigation water for a developing township.

Their incoming reclaimed water was above the regulatory 1.0 mg/L total phosphorus allowed by the local regulations to be used for irrigation, and various other biochar/ sorbents they had tested were not economically viable or effective in the sustained reduction of total phosphorus for their water stream.

CARBONXT SOLUTION

Enhanced Activated Carbon Pellets

Activated carbon is not typically able to adsorb phosphorus from water. Through specialized manufacturing, Carbonxt is able to deploy activated carbon pellets capable of removing phosphorus.

A series of adsorption vessels were installed on-site in order to test necessary contact times for efficient removal of phosphorus. The data generated was used to understand kinetics and capacity of the Hydrestor® media.



RESULT

The Hydrestor® media was successful in meeting the required effluent limit at this utility. Across varying influent concentrations, the media performed consistently and effectively. Only towards the end of the test where influent concentration began to rise did the effluent near the target but was quickly rectified through an adjustment of flow operation.

Along with gathering this data, Carbonxt also supported the implementation of a full-scale system in which it was awarded a contract to provide media and treat up to 1 MGD of Florida reclaimed wastewater for irrigation reuse.

Increased bedlife and removal efficiency can be achieved through modular additions of treatment tanks at a low capital expense.

Removal Efficiency and Comparative Phosphorus Concentrations of Pilot Test

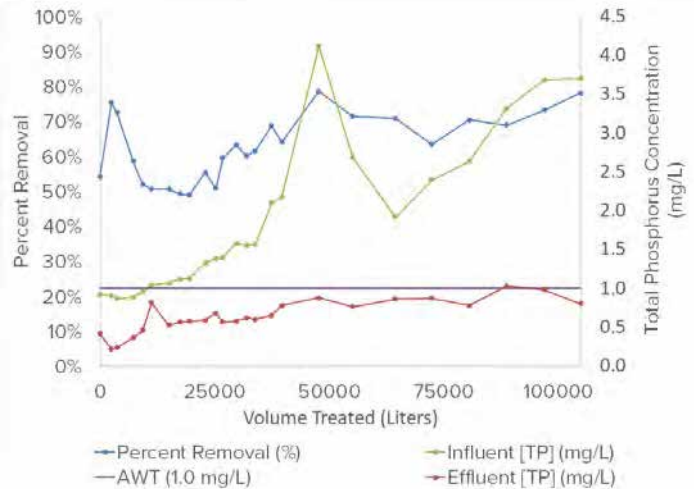


Figure 1 shows the effectiveness of Hydrestor® media to remove on average 63% Total Phosphorus, up to 78%. This data represents pilot testing with a 20 minute empty bed contact time (EBCT).

Varying influent concentrations were handled well with significant nutrient reduction and consistent compliance (96% of time during pilot test) below the required 1.0 mg/L effluent concentration.