

CASE STUDY

Hi-Desert Water District, CA

Integrity Municipal Systems' Modular Carbon Adsorber Systems Successfully Eliminate Odors at Multiple Pump Stations

Hi-Desert Water District was established in 1962 to provide drinking water for a growing population in the Mojave Desert community, just north of what is now Joshua Tree National Park. In an area of 57 square miles, the District operates 16 storage tanks and 13 wells and maintains about 300 miles of pipeline to provide water and sewer service for nearly 24,000 people in the Town of Yucca Valley and an adjacent unincorporated area of San Bernardino County, California.

Until recently, most homes in Yucca Valley utilized their own septic tanks rather than having a centralized sewer system. The septic tanks have been leaking into the water table which is about 10 feet below the surface.

To address this issue, the District has been working on connecting homes to a centralized sewer system. Construction of the first phase of a centralized sewer system and Wastewater Reclamation Facility began in 2017. The plant, which began operations in late 2019, can treat 1.2 million gallons of wastewater a day.

The "Wastewater Reclamation Project Phase 1 Collection System" called for three pump stations: Barron Pump Station, Paxton Pump Station, and Kickapoo Pump Station, with an odor control system for each pump station. Two of the three Pump Stations are up and running.

"IMS provided great customer service. They responded to my questions, emails, phone calls, and kept open lines of communication. As a Project Manager, communication with subcontractors and suppliers is one of the keys to success for a project. IMS was always available to answer any questions I had about their system and its components."

*- Justin Whetsell, Project Manager
Pyramid Building and Engineering, Inc,*



IMS Modular Carbon Odor Control System (MCS-0200) installed at the Barron Pump Station at the Intersection of Barron Ave & Yucca Mesa Rd

To eliminate hydrogen sulfide odors and prevent foul odor complaints, the District searched for a low maintenance and simple-to-install odor control system. The packaged and skid-mounted Modular Carbon Systems offered by Integrity Municipal Systems LLC (IMS) were selected for all three pump stations.

For the Barron Pump Station, the MCS-0200 Modular Carbon Odor Control System was selected; for the Paxton Pump Station, the MCS-0300 Modular Carbon Odor Control System was selected. Both systems have been installed and started up, eliminating odor problems in the expanding community. For the Kickapoo Pump Station, the MCS-0200 was selected and is currently under fabrication.

The IMS Modular Carbon Odor Control Systems are designed to treat hydrogen sulfide and other odorous compounds found in municipal wastewater collection systems and treatment processes. The carbon adsorber odor control system consists of an exhaust fan, a damper, interconnecting ductwork, a vessel with high H₂S capacity activated carbon (3 ft. bed), and a control panel. The entire system is skid-mounted for easy installation and portability.

The exhaust fan operates continuously and pulls foul air from the process area through the collection ductwork into the carbon adsorber odor control system for treatment prior to release to the atmosphere. A volume control damper is placed at the system inlet to allow regulation of airflow through the carbon adsorber.



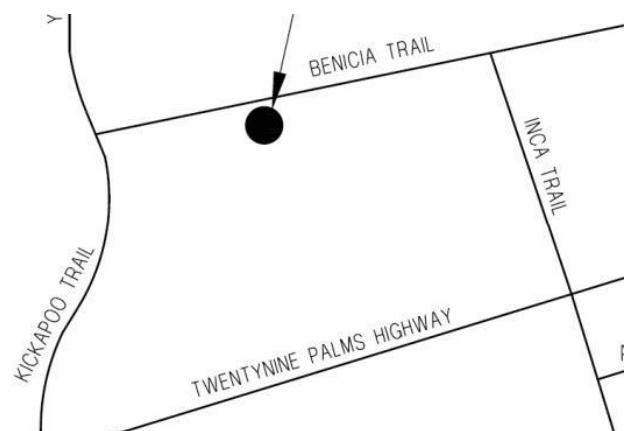
IMS Modular Carbon Odor Control System (MCS-0300) installed at the Paxton Pump Station at the Intersection of Paxton & Balsa Ave

After entering the vessel, the foul air flows through a densely packed bed of activated carbon. The bed consists of 3 feet of high H₂S capacity activated carbon media. The odorous compounds are removed from the airstream through an adsorption process where they adhere to the activated carbon media pores. A subsequent chemisorption process transforms H₂S into sulfur. The adsorption process continues until the activated carbon pores are depleted. The cleaned air continues through the vessel and is discharged through the vessel outlet stack. A pre-wired control panel ensures proper control and operation of the system.

The carbon adsorber odor control system is equipped with a grounding rod that removes any static charge that might build up in the carbon media. A differential pressure gauge indicates changes in pressure through the carbon media.

Carbon sample valves allow the removal of representative carbon samples from the carbon bed. Inlet and outlet air sample valves enable extraction of air samples. The MCS-0200 system for the District's Barron Pump Station was installed with the support of the general contractor, Sukut Construction, engineer Atkins, and the District.

The MCS-0300 system for the District's Paxton Pump Station was installed with the support of the general contractor, Pyramid Building and Engineering, Inc., engineer Atkins, and the District. The systems for both Pump Stations were commissioned in January of 2020. As for the Kickapoo Pump Station, the MCS-0200 system will be installed with the support of the general contractor, Pyramid Building and Engineering, Inc., engineer Atkins, and the District.



Future site of IMS Modular Carbon Odor Control System (MCS-0200) to be installed at the Kickapoo Pump Station in Yucca Valley, CA

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