Automated Car Wash Water System

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High ammonia levels disrupt the biological process employed by wastewater treatment plants (WWTP). The Hopper Car Wash facility at the Brosnan Rail Yard in Macon, GA designed and implemented an automated wash water system to detect ammonia in the wash water. In order to identify the chemical levels in the wash water, an ORP probe was installed in the wash water drainage basin. Based on the ammonia levels detected, one of two gates will open or close to direct the water to either the ammonia holding tank or to the wastewater treatment plant.

The facility washes the interior of hopper cars that carry a variety of materials such as clay, animal feed, and fertilizers. The wash water generated from these cars is eventually treated at the on-site wastewater treatment plant. Hopper cars carrying fertilizers release large amounts of ammonia into the water during washing and can affect the biological process employed by the wastewater treatment plant (WWTP). To prevent an upset at the WWTP, an equalization tank and pump station store the chemical wash water and provide a controlled metered discharge to the WWTP.

The goals of this project are to reduce the volume of water traveling to the ammonia holding tank since it frequently reaches high capacity, and reducing the probability of sending ammonia directly to the WWTP. The automation of the gates will help the car wash operators, the waste water treatment plant operators, and will also ensure that the WWTP stays within its permitted parameters which will benefit Norfolk Southern in the future.