The Orange Water and Sewer Authority’s Mason Farm Wastewater Treatment Plant (WWTP) uses conventional nitrification to remove ammonium-nitrogen. The plant complies with its permit for total nitrogen discharge of 409,448 lbs/year. Starting in 2021 the limit will be reduced to 134,375 lbs/year, necessitating total nitrogen removal. One approach would be to remove nitrogen from the sidestreams resulting from sludge processing, such as dewatering supernatant. These sidestreams are combined with the mainstream influent of the WWTP, recirculating an estimated 15-20% of the nutrient load. Separate treatment of this nutrient-rich sidestream would significantly reduce the nitrogen load to the activated sludge system, ultimately reducing the energy and costs associated with mainstream nitrogen removal. To meet the future total nitrogen limitations, a sidestream nitrogen removal technology named ANITA™Mox, which uses nitritation (oxidation of ammonium to nitrite) and anaerobic ammonium oxidation (anammox) processes, is proposed. Preliminary engineering design, costs and implementation methods are presented.