This study investigated groundwater and contaminant transport to the Volusia Blue Spring (VBS), an Outstanding Florida Water Body located in Volusia County (Florida). The integration of springshed water quality and contaminant fate and transport (CFT) modeling played key roles in the evaluation of anthropogenic recharge impacts on VBS. To study anthropogenic recharge into the karst limestone aquifer, wastewater effluent, golf course ponds, septic tanks, groundwater monitoring wells, and VBS discharge were sampled for boron, nitrateâ€”nitrogen, nitrateâ€”oxygen and their isotopes spatially throughout the VBS springshed. Data related to natural water features, rainfall, land use, water use, treated wastewater discharge, and septic tank effluent flows was used as inputs to the three-dimensional CFT model developed from an integration of MODFLOWâ€”2000 and MT3DMS. The model was calibrated and validated from field observed water levels and water quality taken throughout the springshed.

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Approved for distribution by Steven J. Duranceau, Committee Chair, on May 11, 2016.

The public is welcome to attend.