

SPRINGSHED DELINEATION OF WEKIVA RIVER BASIN SPRINGS

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The Wekiva River, fed by groundwater flows from the Floridan Aquifer through 32 artesian springs, is an Outstanding Florida Water. The Floridan Aquifer is the source of 90% drinking water for most Floridians. A numerical model has been developed to delineate the springshed and capture zones based on groundwater recharge, discharge, and the hydraulic properties of the aquifers. The completed model is used for water supply planning and minimum flows and levels (MFLs) assessments.

The objective of this project was to delineate a single springshed capturing the groundwater contributing area in the Upper Floridan aquifer (UFA) for the Wekiva River Basin springs. The springshed is defined in this study as the area within the UFA contributing groundwater discharge to 32 springs in the Wekiva River Basin. A three-dimensional steady-state version of the East-Central Florida Transient Expanded (ECFTX) groundwater flow model with a numerical particle tracking program (MODPATH version 6) were used for the delineation. Backward tracking mode successfully delineated the pathways of particles in the MODPATH simulations. The process included simulating a springshed for spring groups under different wet, dry and average recharge scenarios, and combining these springshed boundaries to a composite maximum extent boundary. The final composite springshed delineated for the Wekiva River Basin springs encompassed about 646 square miles.

PRESENTER BIO: Dr. Sun is a professional engineer with more than 15 years of experience on groundwater modeling. She has extensive experience with subsurface flow and transport models, integrated surface water and ground water models, and water supply planning projects.