

SUSTAINABILITY CONCERNS FOR FLORIDA NATURAL WATER SYSTEMS AND WATER SUPPLY MOTIVATES APPLICATION OF ADVANCED MODELING TECHNOLOGIES

Jeff Geurink¹, Ph.D., P.E., Patrick Tara², P.E., and Renee Murch², P.E.

¹Tampa Bay Water, Clearwater, FL, USA

²INTERA, Inc., Tampa, FL, USA

Evidence from the State of Florida is presented showing increasing water supply demand, environmental and water supply sustainability concerns, regulation complexity, and surface water / groundwater interactions which have resulted in growing sustainability concerns for Florida's water resources. These sustainability concerns should motivate water managers to consider application of advanced modeling technologies which better captures the interdependent relationships among climate, landuse, pumping, and hydrologic responses.

In the State of Florida, five water management districts (WMD) share the responsibility for regional water supply regulation and planning through several long-term programs. Over the next 20 years, water use for Florida is projected to increase 17% statewide and 11% to 28% by WMD. Water Resource Caution Areas (WRCA) have been assigned to more than half of Florida where water resource problems exist or are projected to exist within the next 20 years. Sustainability of natural flowing or static water systems is protected by adoption of Minimum Flows and Levels (MFLs) at over 400 water bodies as of 2019, with the number increasing annually. For an MFL that is currently not being met or is projected to not be met in the next 20 years, a recovery strategy or a prevention strategy, respectively, is developed and implemented. To secure a permit to use either a surface or ground-water source, water suppliers for all types of uses are required to demonstrate the use is reasonable and beneficial, does not interfere with other legal existing users, and does not adversely impact water or land resources. Near-surface water table conditions exist for more than half of Florida which causes complex interactions between surface and groundwater systems that are more completely represented by advanced modeling technologies.

PRESENTER BIO: Patrick Tara is a principal engineer with INTERA, a geoscience and engineering consulting firm located in Tampa, Florida. He has 30 years of water resources engineering experience requiring surface water, ground water, or integrated hydrologic and hydraulic modeling that has supported minimum flows and levels, flood protection, and resolution of water resource disputes.