

## **ADAPTATION ACTIONS TO REDUCE IMPAIRMENT OF INDIAN RIVER LAGOON WATER QUALITY CAUSED BY CLIMATE CHANGE**

**Randall W. Parkinson, Ph.D., P.G.<sup>1</sup>, Valeri Seidel<sup>2</sup>, Clay Henderson<sup>3</sup> and Duane De Freese, Ph.D.<sup>4</sup>**

<sup>1</sup>RWParkinson Consulting, Inc., Melbourne, FL, USA

<sup>2</sup>The Balmoral Group, Winter Park, FL, USA

<sup>3</sup>Stetson University, DeLand, FL, USA

<sup>4</sup>Indian River Lagoon National Estuary Program, Sebastian, FL, USA

The results of an Indian River Lagoon (IRL) Climate Change Vulnerability Assessment completed in 2018 indicate Impaired Waters is the most vulnerable key indicator or vital sign with regards to both the number of IRL Comprehensive Conservation and Management Action Plans negatively affected and level of risk. The most significant climate change stressors to all 32 vital signs are changes in precipitation, storminess, and sea level. Based upon these results, nine “Climate Ready” Adaptation Actions have been identified to reduce anthropogenic pollutant loading caused by the three predominant stressors. All focus on impairment caused by On Site Treatment and Disposal Systems, Wastewater Treatment Plants, and Surface Water Storage and Conveyance Systems. A majority of the other vital signs and related Action Plans are also expected to benefit from the implementation of the nine Water Quality Adaptation Actions given all are interconnected by biological, chemical, and physical processes operating within the IRL watershed.

The output of each Water Quality Adaptation Action is a Climate Change Adaptation Strategy (CCAS) consisting of a comprehensive set of goals and objectives to mitigate each risk, as well as a means for tracking progress. Because elevated pollutant loadings caused by climate change will likely complicate the ability of existing Basin Management Action Plans to meet their respective Total Maximum Daily Load (TMDL) targets, it is logical to incorporate all nine CCASs into existing TMDL programs operating within the IRL watershed.

**PRESENTER BIO:** Dr. Parkinson is a coastal geologist specializing in the effects of climate change and urbanization on the built and natural environment. He has conducted investigations throughout the southeastern USA for 35 years and is a Research Associate Professor at Florida International University's Sea Level Solutions Center.