

The information below is draft and is intended to stimulate discussion at the March 2, 2017 Modeling Sub-Committee meeting for the South Lee County Watershed Initiative

Modeling Requirements for Study Area. Ability to simulate:

- Multiple ground water layers (surficial, Lower Tamiami, Sandstone, and potentially the Mid-Hawthorn)
- Variable spatial distribution, thickness, and conductivity of aquifers and confining layers
- Distributed overland flow in large wetland areas
- Irrigation and public supply water use from multiple sources (lakes, aquifers, and user-specified)
- Hydraulics in sloughs, rivers, and canals
- Hydraulic control structures, including gates, pumps, culverts, and weirs in surface waters
- Flows to and from wetlands and canals/rivers

Existing Resources for Modeling Study Area (being developed for the Village of Estero model):

1. South Lee County Watershed Plan Update MIKE SHE/MIKE 11 Model, 2009
2. Southern CREW MIKE SHE/MIKE 11 model (update of 2009 SLCWP model)
3. Updated Collier County MIKE SHE/MIKE 11 wellhead protection model (2016)
4. The Collier County MIKE SHE/MIKE 11 model will be used for boundary conditions along the border between the Imperial River and Cocohatchee Canal watersheds
5. Updated LiDAR topography from Lee and Collier counties in MIKE SHE format
6. GIS data of land use for study area representing 2008 conditions (2000 file modified as part of the 2009 SLCWP study)
7. Grid rainfall data from Lee County that is calibrated from Lee County rainfall gages
8. Recently updated hydrostratigraphic surfaces from SFWMD
9. Groundwater pumping well file with data for study area through 2014
10. Irrigation database for study area reflecting 2014 conditions
11. Detailed information on irrigation for Planned Unit Developments within model area
12. Measured water levels for 17 surface water stage locations and 6 flow stations
13. Measured groundwater level data for 101 stations plus approximately 37 additional wells that are being maintained by Lee County (**new Lee County data not yet received, a detailed map and table of stations will be provided once the Village of Estero contract is executed**)
14. Groundwater monitoring data from two BSU monitoring wells (will request after Village of Estero contract is executed)

Improvements Suggested for Regional Modeling Effort:

- Refine grid from 750 ft to 500 ft
- Update land use and scrub irrigation data base and input parameters
- Obtain additional measured data from a number of private landowners
- Extend calibration period for 2008 through 2015 or mid-2016
- Improve accuracy of simulated weirs, culverts, or other control mechanisms at major flowway connections

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- Conduct wetland habitat evaluations and compare ecologic findings to model results of hydroperiod and range of water depths. If necessary, adjust calibration to improve model performance.