# EXECUTIVE SUMMARY

# PEMBERTON CREEK-BAKER CANAL AREA EXISTING CONDITIONS MODEL

## Introduction

Watersheds are defined by natural hydrology, and they represent the most logical basis for managing water resources. The resource becomes the focal point, and managers are able to gain a more complete understanding of the overall condition in an area, which affect those conditions.

Traditionally, alleviating flooding problems have focused on efficient routing of stormwater with little consideration to environmental impact. While this approach may be successful in addressing site-specific problems, it often fails to address the more subtle and chronic problems that contribute to the long-term deterioration of a watershed. For example, pollution from a sewage treatment plant might be reduced significantly after a new technology is installed, and yet the local river may still suffer if other factors in the watershed such as habitat destruction or polluted runoff, are addressed. Besides the environmental pay-off, watershed approaches often have the added benefit of saving time and money. Whether the task is monitoring, modeling, issuing permits, or reporting, a watershed framework offers many opportunities to simplify and streamline the tasks, and facilitates coordination among different local, state, and federal agencies. By coordinating these efforts, the agencies can complement and reinforce each other's activities, avoid duplication, and leverage resources to achieve greater results.

Watershed protection also leads to greater awareness and support from the public. Active involvement and participation by the public build a sense of community, help reduce conflicts, increase commitment to the actions necessary to meet environmental goals, and ultimately, improve the likelihood of success for environmental programs.

The Pemberton Creek-Baker Canal Area (PBA) watershed drains approximately 65 square miles of land located in northeast area of Hillsborough County, Florida. The project area is generally bordered on the east by the City of Plant City (model only took the city's inflow to make the watershed more complete), on the west by Kingsway Road, on the north by U.S. Highway 301 and on the south by the CSX Railroad line near S.R. 60 in Brandon. The PBA watershed contains six (6) major stormwater conveyance systems, which are Pemberton Creek, Baker Canal, Baker Creek, Campbell Branch, Antioch Branch and Flint Creek. The outfall of the PBA drainage system is the Hillsborough River located north of Lake Thonotosassa through multi-span bridges of U.S. 301. The project area contains a mix of undeveloped and urban land use. Significant residential areas located in the PBA watershed include: Pemberton Creek Estates, Lake Shangri-La, Lake Valrico area, Dover area, Cork area, Lake Shore Ranch subdivision, and the Antioch Area.

The purpose of the study was to develop a computer simulation model of Pemberton Creek-Baker Canal Area (PBA) watershed. The FEMA approved Hillsborough County modified version of Environmental Protection Agency (EPA) Storm Water Management Model (SWMM)

was used to develop this study for the PBA watershed. The objective of the SMMP is to determine levels-of-service for existing stormwater infrastructure and to develop alternatives and recommendations for improving the level-of-service. In July of 2002 the existing conditions portions of the SMMP was updated to include calibration of the model using the recent gages data at Muck Pond Road, McIntosh Road, Kelso Road and the adaptation of the model to Hillsborough Counties latest SWMM model. The update also included adding in any significant development that occurred from 1995 – 2000 within the basin.

The model study included field reconnaissance and collection of available survey and other relative data (e.g. SWFWMD aerials etc.). The model developed for the PBA basin includes the simulation of 488 sub-basins with numerous storage elements and conduit reaches. Available rainfall data from a USGS rain gage and stage data from a USGS stream gage located within the basin were used for calibration of the model.

PBA study is an update of the Storm Water Master Plan report completed by the County Staff in September 1998. Several locations along the PBA system were identified as flooding concern areas in 1998 report. The majority of the 1998 report recommendations was implemented or is under the permitting process. Projects such as: Pemberton Creek Phase 1, Pemberton Creek Basin “Long Pond Upgrade”, McIntosh Road Drainage Improvements, Lem Simmons Road, Lake Valrico channel Improvements are already constructed.

The SWMM model created for the Pemberton Creek-Baker Canal Area produces reasonable results for the simulation of hydrology and hydraulics of the basin. It is necessary to maintain the Stormwater Master Plan study update in a dynamic motion in order to have the appropriate tool to determine the existing conditions of that area of Hillsborough County.