

EXECUTIVE SUMMARY

DOUBLE BRANCH CREEK AREA EXISTING CONDITIONS MODEL

The Double Branch Creek Area (DBA) watershed drains approximately 22 square miles of land located in Hillsborough County, Florida. The creek has a West and an East Branch, which converge just South of Twin Branch Acres Road. The East branch has two forks that diverge north of Linebaugh Ave. The outfall is to Double Branch Bay through culverts under Hillsborough Ave. The project area contains a mix of undeveloped and urban land use. Significant residential areas located in the DBA watershed include: Countryway, Westchase, Nine Eagles, Twin Branch Acres, and Arbor Lakes.

The purpose of the study was to develop a computer simulation model of the DBA watershed. The model was used to develop this Storm Water Management Master Plan (SMMP) for the DBA 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.

The U.S. Environmental Protection Agency's Storm Water Management Model (SWMM) was used to model the Double Branch Creek watershed. The SWMM model utilizes a runoff program developed by the county for hydrologic simulation and the EXTRAN Block for detailed hydraulic simulation. The runoff program was created by Hillsborough County to use the SCS runoff method, incorporating the required SCS shape factor of 256 which is dictated by the flat terrain of Florida.

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 DBA basin includes the simulation of 164 subbasins and 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.

Race Track Rd. at Tampa Bay Downs is the only model predicted area that does not meet the County's requirements for level of service. The County's level of service requirements for road crossings state flooding of the roadways may not occur for a 5, 10 or 25-year storm event. This area also has evidence of historical flooding (see photo pg 5-7). The Tampa Bay Downs area has two conveyance systems, the northern and southern systems which begin on the west side of Race Track Rd. and converge near the southeast corner of the racetrack. During significant storm events these two systems become interconnected via the small existing roadside ditch located on the west side of Race Track Rd. The distance from the beginning of the northern and southern systems to their confluence is approximately 4,700 and 1,400 ft. respectively. The flooding of Race Track Rd and the adjacent Tampa Bay Downs parking lot is thought to be due to a combination of smaller pipes and inadequate conveyance capacity of the northern conveyance system.

Recommendations: Based on the above conclusions, the recommended alternative is to divert excess flows from the upstream side of the existing 4 x 10 ft. box culvert crossing on Race Track Rd, located just north of the Tampa Bay Downs entrance, to the existing double 48 in. pipe crossing to the south. The diversion would be via an improved or new ditch system and would require upgrades to two culvert crossings. The preferred route of the diversion will be evaluated following the completion of a detailed survey for this area. Currently, the cost for this improvement is estimated at between \$355,200 and \$376,400.

The SWMM model created for the Double Branch Area produces reasonable results for the simulation of hydrology and hydraulics of the basin. Model results suggest that the basin is neither peak nor volume sensitive and normal development criteria should apply. Additionally future development within the basin can be incorporated into the model as well as other potential alternatives.