

# **GEE CREEK BASIN**

## **ENGINEERING STUDY AND DRAINAGE INVENTORY**

**Prepared for**

**BOARD OF COUNTY COMMISSIONERS  
SEMINOLE COUNTY, FLORIDA**

**Prepared by**

**Singhofen & Associates, Inc.  
Stormwater Management and Civil Engineering  
6961 University Boulevard  
Winter Park, Florida 32792**

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## **Executive Summary**

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The Gee Creek Basin consists of approximately 11 square miles of west central Seminole County and encompasses portions of the City of Altamonte Springs, the City of Casselberry, the City of Longwood, and the City of Winter Springs. Gee Creek flows northeasterly from Lake Kathryn to Lake Jesup, a distance of a little over 3.75 miles. Seminole County studied the basin to update its drainage facilities inventory in order to identify structures which do not meet the Level of Service (LOS) criteria set forth in the County's Comprehensive Plan as approved by the Department of Community Affairs (DCA).

The acquisition of hydrologic and hydraulic data, obtained through research of existing and available documents and records within the county, jurisdictional municipalities, and state and federal agencies, along with field observations and surveys, were used to construct the inventory and model application. The inventory lists geography, geometry, and performance characteristics of each of the inventoried structures as modeled. The Interconnected Channel and Pond Routing (ICPR) model, Version 2, was used to simulate the single synthetic storm event.

The controlling and applicable criteria for the study is based on Seminole County's Comprehensive Plan Update and the current regulations for the St. Johns River Water Management District (SJRWMD), Chapter 40C-4. Each structure was analyzed for the 10- and 25-year frequency, 24-hour rainfall events under existing hydrologic conditions to determine deficiencies. The 100-year frequency event was analyzed for flood level delineation. Deficiency assessment is based on the LOS achieved. LOS was chosen as the threshold for drainage retrofit assessments based on the County's Comprehensive Plan requirement that primary drainage systems convey the 25-year frequency event without damage to the system or deterioration of emergency access or evacuation. The Comprehensive Plan, recognizing the impractical requirement of making a number of potentially expensive corrections over a short period of time, authorizes an interim level of service, or minimum standard, based on the 10-year frequency event.

The Gee Creek study basin is described in detail through discussion of land use, topography, soils, wetlands, existing drainage patterns, facility conditions, and existing flood conditions for each of thirteen identified major sub-basins.

Several other engineering studies have been performed on or within the study basin. Of particular note are the 1991 "Gee and Soldier[s] Creeks Flood Plain Management Study" and the 1993 "Stormwater Inventory Mapping & Database" for the City of Winter Springs. The first was performed by the Soil Conservation Service for the study basin and several comparisons are made between it and this study. The latter was performed by Conklin, Porter & Holmes, Inc. and served as a substantial support system for the data base prepared for this study.

The study identifies fourteen (14) "areas" found to be deficient. "Areas" incorporate one or more individual structure deficiencies grouped in order to assess the interrelated impacts of one facility on adjacent facilities. These are described relative to the hydrologic/hydraulic conditions of the area, the problem identified, solution objectives, alternative solutions evaluated, and recommended improvements. The 14 identified areas include ten that are not under the jurisdiction of Seminole County and are not included in final design recommendations. Deficient areas include Alton Road, Hayes Road, Moss Road, and Edgemon Avenue crossings of Gee Creek; Hacienda Village off Gee Creek; Shore Road crossing of Noname Creek; Moss Road and Flamingo Street crossings of Mosswood Creek; the intersection of Edgemon Avenue and Murphy Road; the Lake Hodge outfall; Wildmere Avenue crossing of Lake Wildmere outfall; Marvin Avenue, Overstreet Avenue, Oleander Street, Wildmere Avenue, and Tullis Avenue crossings of the Longwood Canal; Golden Days Road off U.S. Highway 17-92; Ball Park Road; and Morse Street.

The ranking of improvement recommendations is based on LOS goal achievement and the hydraulic relationship within the individual sub-basin. Priority works within each area are also identified.

Peak discharge rates to Lake Jesup under the interim and design storm events for the improvements recommended in this study are within 1 percent of peak discharge rates under existing conditions, including culvert maintenance performed throughout the basin as appropriate (removal of debris within pipe barrel) for the same storm events.

A Draft Report was finalized in May, 1995 and Seminole County forwarded copies to the local municipalities for comment. An application was submitted to the St. Johns River Water Management District for Conceptual Permit Approval in June, 1995. The permit was authorized by the SJRWMD Governing Board in November, 1995, without a request for additional information, following a public presentation to the Friends of Lake Jesup in October, 1995. Following a change in Seminole County's Stormwater Management personnel, the draft was approved for final printing in the fall of 1996.