

## EXECUTIVE SUMMARY

**TO:** Basin Board Members  
**FROM:** Akin Owosina, Bureau Chief  
**DATE:** August 22, 2018  
**SUBJECT:** Item 6 - BCB Flood Protection Level of Service Project Final Report

### **SUMMARY:**

Staff undertook a Flood Protection Level of Service (FPLOS) assessment of four watersheds in Collier County. The focus of the study was on the determination of the level of flood protection provided by the primary canal system and associated structures. The assessment included performance under current and future conditions, including future land use development and three different sea level rise scenarios. The analysis is complete, and the current presentation summarizes the existing and future Level of Service for Cocohatchee, Henderson Creek and Faka Union Systems as well as presents an overview of the major findings for the entire Big Cypress Basin system FPLOS assessment.

### **BACKGROUND**

With a few exceptions, the canal networks in all watersheds can handle a 10-year 3-day design storm but would come out-of-bank in some areas for a 25-year 3-day design storm. Within developed areas, flooding from a 25-year 3-day storm is mostly confined to golf courses, roadway swales, and other areas intended to hold flood waters during a 25-year 3-day event, although some roads would flood as well.

#### *Current Conditions*

The level of flood protection is not uniform over the system. Flooding is a concern in much of the I-75 sub-watershed. Additionally, drainage performance was poor in several canal reaches: Corkscrew Canal, the Golden Gate Canal between GG3 and CYPRESS1/GG4; and the Henderson Creek Canal upstream of HC2. Conveyance limitations in the upper and middle reach of the Golden Gate canal system contributes to localized flooding and the canal segment between Miller#3 to the junction point of C-1 connector is undersized. In the Faka Union system, modeling showed road flooding in developed areas for the 5-year 3-day and 10-year 3-day events even though the primary canals have sufficient capacity.

#### *Future Land Use Conditions*

Overall, the model results indicate no widespread degradation of flood protection level of service as a result of projected land use changes in the Golden Gate or Faka Union watersheds. Model results show potential improvement in the level of flood protection in

the central Golden Gate Estates caused by linking the primary canal network to existing storage (mine pits).

However, flooding is projected to worsen for the 10-year and 25-year flood events adjacent to the Golden Gate Canal, upstream of GG4. Additionally, development around the Corkscrew Swamp combined with development in the CORK3 system would limit peak outflow at the COCO4 structure, raise peak stages and cause overbank flooding degradation in the area near and downstream of the COCO3 structure. Flooding will also worsen in the Henderson Creek system near the HC1 outfall at US41, where upstream development would raise peak stages and cause overbank flooding. There is also projected to be increased flooding in the Henderson Creek system downstream of HC2 where the fill would elevate topography, reduce local storage and constrict drainage upstream of the new developments.

#### *Sea Level Rise Conditions*

The Cocohatchee, Golden Gate and Faka Union systems are not significantly impacted by sea level rise though higher sea levels will raise water levels in low-lying coastal regions and these higher water tables make these areas more susceptible to rainfall-based flooding and related water quality issues. The Henderson/Belle Meade system is susceptible to sea level rise. (A sea level rise of 1.06 feet raised peak stage levels by 0.8 feet upstream of HC1. A sea level rise of 2.17 feet raised peak stage levels by 1.6 feet.) The impact is greater at Henderson Creek than at the other watersheds because of the low topography that makes the HC1 structure susceptible to backwater effects associated with storm surge and sea level rise.

In conclusion, there are recommendations for improvements to the system to address or lessen the impact of future development and/or SLR. There are also opportunities for collaboration with County to achieve improved level of service.

#### **STAFF RECOMMENDATION:**

To accept the final level of service results for the Basin's primary flood control system

#### **PRESENTER/STAFF CONTACT:**

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