# Florida Floodplain Managers Association
# 2019 Annual Conferences
# Abstracts

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**Title:** A GIS-based prioritization and planning tool helps the City of Houston recover from Hurricane Harvey

**Length:** 45 minutes

**Subject:** General Floodplain Management

**Target Audience:** Both municipal and private sector GIS users and stormwater engineers

**Presenter Name:** Jeanette Kelson, PE
Client Services Manager
Carollo Engineers, Inc.

**Biography:** Jeanette Kelson is a professional, senior-level engineer with a well-rounded technical background, specializing in water resources and stormwater management. She currently serves as a Client Services Manager for Carollo Engineers, Inc., with a heavy focus on the Florida stormwater market. She has many years of experience in hydrologic and hydraulic modeling and GIS database management and has used those skills to help clients all around Florida develop their watershed management plans. Before becoming planted in the water resources realm, in the earlier years of her career she also gained experience in a wide range of civil and environmental engineering applications including solid waste facility design, geotechnical investigations, soil and groundwater remediation, and even roadway design.

**Co-Presenter:** Philip Bullock, TX PE
Professional Engineer
Carollo Engineers, Inc.

**Biography:** Philip Bullock has over 8 years of water resources related experience including water planning, water supply analysis, stormwater infrastructure, hydrologic and hydraulic (H&H) modeling, and water availability modeling. Mr. Bullock has water resources experience that includes regional water planning, master drainage plans, feasibility analyses, drainage reports, impact analyses, and other H&H studies with a general emphasis on master drainage plans, city water planning tools, storm sewer infrastructure, detention ponds/basins, flood control structures, and other water-related systems.

**Abstract:** The aftermath of Houston's Hurricane Harvey has been a second hurricane of debris, paperwork, and mold abatement for many residents. For planners at the City of Houston (City), however, Hurricane Harvey has been an opportunity to gather data, improve commitment to action, and develop well-conceived plans for resiliency throughout the City. As the City rebounds, the tool presented in this abstract will support prioritization of stormwater improvement projects throughout the City.

The City partnered with Carollo Engineers, Inc., to create the Stormwater Evaluation Enhancement Tool (SWEET). SWEET is a Geographic Information System (GIS)-based analysis tool developed for the Houston Public Works & Engineering Department to identify and prioritize areas within the City that have drainage and flooding issues. The SWEET evaluates drainage basins by assessing primary categories of stormwater needs

including mobility, drainage effectiveness, and identifying structural flooding. This tool provides an efficient and dynamic tool to compare stormwater requirements with consistent data across all basins at a block level across this extensive City. The SWEET results help to identify and visualize drainage hot-spot areas based on their combined and weighted impacts, using a user-assigned set of criteria. These hot-spots are then aggregated into weighted results that show needs-based areas throughout the City.

The SWEET is an adaptable, updateable, objective, and dynamic tool which enhances decision making, ultimately leading to the structuring of the Capital Improvement Plan (CIP) for drainage projects across the City. The SWEET does not replace a conventional stormwater master plan, but provides a dynamic, updateable, complementary tool that the City can continually update as new data becomes available and new stormwater improvement projects are completed. Also, SWEET provided the City with a Level of Service (LOS) designation for every drainage ditch and storm sewer across the entire City. This City-wide analysis would be unrealistic to efficiently complete with complex and costly hydraulic modeling. However, the results from SWEET help focus modeling efforts to those areas in most need of improvements.

This project was awarded the Gold Medal in the American Council of Engineering Companies, 2016 Texas Engineering Excellence Awards. The SWEET technology is customizable and adaptable, which allows this planning tool to be applied to any utility to efficiently help identify flood prone areas, even if the utility hasn't experienced the devastation brought by a hurricane like Harvey.