



## STORMWATER MANAGEMENT

### WHAT IS STORMWATER?

Stormwater, or urban runoff, is the rain and tidal water that flows over driveways, lawns, sidewalks and streets. As this water flows over these surfaces, it picks up debris, chemicals, fertilizers, auto fluids and other pollutants before entering into the stormwater system.

### HOW IS STORMWATER MANAGED?

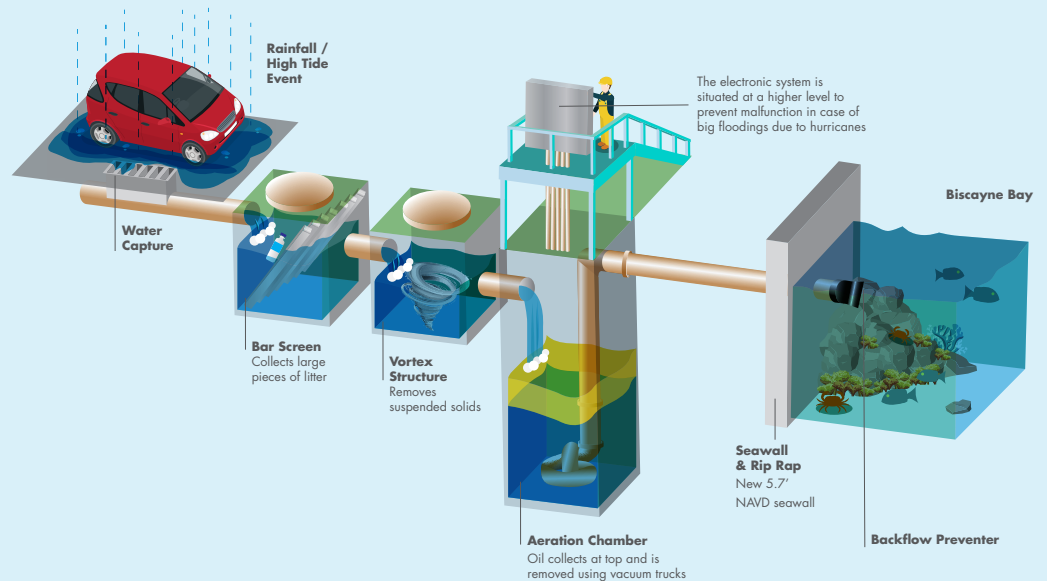
The City has a Municipal Separate Storm Sewer System or MS4, meaning the City's stormwater system is completely separate from the sanitary sewer system to avoid cross-contamination. The stormwater system is designed to drain the city of water during rainfall and high tide events to minimize flooding. The stormwater system carries the runoff through a system of interconnected pipes and structures before depositing the runoff into Biscayne Bay and the surrounding waterways.

## HOW DOES OUR STORMWATER SYSTEM KEEP OUR BAY CLEAN?

The City's stormwater management program was developed to keep our streets dry while protecting and improving the health of our waterways. Our multifaceted program focuses primarily on reducing pollutants through public education, Daily Street sweeping, and other good housekeeping practices. For example, the City has transitioned from septic systems to a public sanitary sewer system and has an ongoing Sanitary Sewer Evaluation Survey program to identify and repair sanitary system breaks. The City is also upgrading our stormwater system with pollution control devices to trap and remove pollutants from stormwater before it is discharged.

The Environmental Protection Agency's National Pollution Discharge Elimination System (NPDES) program establishes water quality standards and regulates discharge from point sources of pollution such as municipal stormwater systems. The NPDES program also requires operators to develop best management practices that improve the quality of stormwater discharges. The City's stormwater system is allowed to operate through an NPDES permit that covers Miami-Dade County and over 30 local municipalities.

## PUMP STATION UPGRADES



## WHAT IS THE OVERALL PLAN?

In order to adapt to changes in sea level, the City is upgrading our gravity-based stormwater infrastructure with tidal control valves, pump stations and other innovative structures to improve drainage. Tidal control valves are an effective solution to the City's flooding concerns because they prevent seawater from coming up through the pipes and onto the streets during high tides. Pump stations are equally vital because they quickly expel rainwater from urban areas, even when tides are high. These on-going drainage projects provide short-term flooding relief citywide.

The City is in its second year of its five year stormwater infrastructure upgrade plan. The total the plan is estimated to be \$400 million or more, the first \$100 million of which were funded through stormwater utility fees. As of summer 2016, the City has installed approximately 25 pumps and is anticipating a total of 80 pumps to be active by 2018.

### Objectives:

1. Protect the Biscayne Bay watershed and keep the waters clean for the wellbeing of the local ecosystem, residents, and economy.
2. Modernize the stormwater system to address climate change and sea level rise while reducing pollution from urban runoff.
3. Maintain a robust water quality monitoring program that collects and analyzes monthly samples throughout the city.