

MIAMI BEACH

COMMISSION MEMORANDUM

TO: Honorable Mayor and Members of the City Commission
FROM: Commissioner Mark Samuelian
DATE: June 5, 2019

SUBJECT: REFERRAL TO THE SUSTAINABILITY AND RESILIENCY COMMITTEE TO DISCUSS THE CITY'S PLAN TO ADDRESS FLOODING AS A RESULT OF EXTREME RAIN EVENTS AS WELL AS ANY LESSONS LEARNED.

ANALYSIS

On May 16, 2019 the City of Miami Beach experienced an extreme rain event that resulted in disruptive flooding in Sunset Harbour and other neighborhoods and was reported by various media outlets (attached). In order to plan ahead and best prepare for these events, this referral item should:

1. Understand the anticipated frequency of these extreme rain events
2. Review how the City's systems performed during this specific extreme rain event (i.e. amount of flooding, time in the streets, etc) and how the City measures performance (eg. City stormwater management dashboard - example attached)
3. Identify any lessons learned for the City and community

Legislative Tracking

Commissioner Mark Samuelian

ATTACHMENTS:

Description

- ▢ Extreme Rain Event - 5/21 LTC
- ▢ Resident Email on Flooding
- ▢ Stormwater Dashboard Example
- ▢ re: Miami Beach Flooding Article

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297-2019

LETTER TO COMMISSION

NO. LTC #

TO: Mayor Dan Gelber and Members of the City Commission

FROM: Jimmy L. Morales, City Manager

DATE: May 21, 2019

SUBJECT: **CITY EXPERIENCES EXTREME RAIN EVENT**

The purpose of this Letter to Commission is to address the facts associated with the sudden and extreme rain event experienced on Thursday, May 16, 2019, which resulted in acute rain conditions in Sunset Harbour and other Miami Beach neighborhoods.

I would like to dissuade the speculation that pumps either "failed" or "turned on too late." The moment the storm began, the City deployed specialized teams to verify that the stormwater pump system was indeed operating properly. Pumps are not turned on manually; instead, they engage automatically when water in the systems reaches a certain level. The system functioned as expected during this event; however, the amount of rainfall received in a very short time exceeded the stormwater system's capacity.

Key facts associated with this rain event and the stormwater system capacity:

- According to the data captured at our City Hall weather station, 1.73 inches of rain fell in just 30 minutes. This is far greater than 0.30 inches of rain per hour, which is considered "heavy rainfall."
- To provide perspective, the 2.23 inches of rain that fell in just one hour is nearly half of what Miami-Dade has averaged during an entire month of May in the past 30 years. Please visit the [South Florida Water Management District](#) for more details. During the peak 30-minute period, we pumped more than 730,000 gallons of water out of the Sunset Harbour Neighborhood, which is more than an Olympic-sized swimming pool and translates to 1.5 million gallons of water per hour.
- The system is designed to deal with two challenges: preventing sunny day flooding caused by king tides and addressing flooding caused by stormwater. The improved system has worked very well with regards to sunny day flooding. In fact, the 12 king tides that we experienced in 2017 did not flood Sunset Harbour, even though they were higher than the most impactful event in 2013, which did cause substantial flooding in Sunset Harbour.
- With regards to stormwater management, the system is designed to drain a certain amount of water during a specific time-period. The critical factors are: the duration of rainfall and the intensity of the rain during that time. High intensity rain during a short period of time can overwhelm the stormwater system by introducing more water than it can process.

- The stormwater system will not prevent all flooding and private properties are encouraged to make improvements to reduce flood risks. Properties located below the base flood elevation (BFE) were particularly vulnerable to flooding. Low-lying private properties can reduce the immediate impact of flood water caused by intense rain storms by retrofitting interiors to handle flood waters and installing flood panels during the raining season in anticipation of rain events. Recall that the ULI team suggested that learning to live with water must be part of the resiliency program. There is no guarantee that the area will be dry, regardless of the intensity of a rain storm.
- Many of the photos submitted to the City were of ponding water in the grassy areas of public property or front yards. This is what these areas were intended to do during extreme rainfall events in order to protect the habitable areas of buildings. Consistent with the recommendations of the ULI panel these areas should continue to function in this way and the City will not be doing anything to eliminate short term standing water in green areas.
- We also received many reports of street flooding however the areas that reported street flooding either have not received stormwater improvements or those improvements have not been completed.

The City takes note of every rain event and is diligently exploring educational opportunities and policies to mitigate flood risks, including disincentivizing new construction from building at low elevations. Elevation is the best way to secure properties from flood risk. At your request, a City team member can offer potential solutions for your property's unique conditions. You may contact the Floodplain Manager, Mohsen Jarahpour at MohsenJarahpour@miamibeachfl.gov.

On May 22, 2019, at 9:55 AM, [pruce backman <<mailto: >>](#) wrote:

Hi Mark:

Were you aware of flooding last Thursday in Sunset Harbour? Azul Liquor got about 5 inches of rain. The Pubblely restaurants, and Market clothing store flooded too, as well as Office Depot. I spoke with Eric Carpenter, who had been on site. He said the pumps worked as intended, but were simply overwhelmed by the sheer volume of water in such a short time. This does not leave the businesses in an enviable position.

Are they supposed to install their own supplemental pumping systems? Would the city allow them to connect, or would they just have to dump the water onto the street, where it would doubtless just flow back into their stores?

Summer time is the season for dramatic cloudbursts, (not to mention hurricanes). and perhaps pumps with greater capacity should be considered.

BB

Example: Resiliency

Stormwater Management Dashboard

Date: 1/1/2019 - 12/31/2019

Flood and Drainage Related Requests Resolved Within 5 Days	Number of Flood and Drainage Related Requests	Elevated Streets (Linear Feet)	Avoided High Tide Flooding Incidents
78.5%	118	22K	4



heavy rain overwhelms miami beach

resiliency

May 18, 2019



susan askew



heavy rain overwhelms miami beach:

city says pumps worked and cleared flooded areas quickly

Once again, a heavy rainfall overwhelmed Miami Beach on Thursday making it difficult for the City's infrastructure, both old and new, to keep up. But City officials say once the rain began to lessen in intensity, the new stormwater pumps worked and cleared flooded areas quickly.

Businesses in the Sunset Harbour area, the first to see its roads raised to combat flooding from sea level rise, have continued to be impacted by heavy rains that even the new pumps can't keep up with sometimes.

Tonya Daniels, Miami Beach Director of Marketing and Communications, wrote in an email, "At 1:00 pm, 1.73 inches of rain fell in 30 minutes, and another 0.5 inches of rain fell in the following 30 minutes" for a total of 2.23 inches in the one-hour period between 1 and 2:00.

"Our team considers 'heavy rainfall' as 0.30 inches of rain per hour," Daniels wrote. "The rainfall intensity of yesterday's event far exceeded this rate."

For comparison, she said, for the last 30 years, Miami-Dade County has average 5.15 inches of rain during the month of May. "In one hour, we experienced approximately half the amount of rain as averaged in an entire month of May." She pointed out what many experts have said, "Recent data suggests that extreme rain events are occurring more often."

In response to Thursday's rain, Daniels said, "The City immediately deployed specialized teams and verified that pumps throughout the island operated properly. As soon as the rain began to slow down, standing water began to recede quickly. During the peak 30-minute period, we pumped more than 730,000 gallons of water out of the Sunset Harbour Neighborhood, which is more than an

Olympic sized swimming pool (660,000 gallons).”

“Prior to the installation of the pumps, a rainfall event of this magnitude would have caused catastrophic flooding throughout the city – flooding that would not have receded within an hour as we saw yesterday,” Daniels wrote.

The City’s statement came in too late Friday for us to talk with business owners in Sunset Harbour about the latest flooding.

Photo at top: 31st Street and Indian Creek, Thursday, May 16



Maurice Gibb Park in Sunset Harbour after Thursday’s rain.