

# MIAMI BEACH

## COMMISSION MEMORANDUM

TO: Honorable Mayor and Members of the City Commission  
FROM: Alina T. Hudak, City Manager  
DATE: March 27, 2023

SUBJECT: PRESENTATION OF THE ASSESSMENT OF WATER QUALITY AT THE MIAMI BEACH PARK VIEW CANAL TO IDENTIFY SOURCES OF THE FECAL INDICATOR BACTERIA, ENTEROCOCCI BY DR. HELENA SOLO-GABRIELE, UNIVERSITY OF MIAMI, DEPARTMENT OF CHEMICAL, ENVIRONMENTAL, AND MATERIALS ENGINEERING.

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### **RECOMMENDATION**

The Administration recommends addressing the sources of bacteria impacting the Park View canal through a holistic action plan approach with the community. As identified in the Water Quality Assessment completed by water quality expert Dr. Solo-Gabriele and her team, this includes addressing above ground, below ground, public, and private property sources throughout the broader North Beach area (Attachment A). The Administration recommends funding the infrastructure improvements through the budget process and applying for grants to address the short, medium, and long-term actions.

### **BACKGROUND/HISTORY**

Park View Canal water quality concerns and information have been discussed at the Land Use and Sustainability Committee in 2020 and 2021 and at the Public Safety and Neighborhood Quality of Life Committee on December 7, 2022.

In March 2020, there was a sanitary sewer main break in the parking lot at 72 Street and Collins Avenue. The City immediately issued a "No Contact Advisory," closed the kayak launch, and began water quality testing to identify impacts to the surrounding surface waters. Typically, following a sanitary sewer break, surrounding surface waters will continue to have high bacteria counts for a couple of days following the incident. However, the high bacteria levels found in the vicinity of 73 Street continued for many days following the sewage break repair. Further analysis of historical data collected since 2019 indicate that this waterway has chronically elevated bacteria levels.

The City has performed extensive investigations and has most recently been working with a water quality expert team from the University of Miami studying potential variable sources that are contributing to the bacteria in the waterway. The canal has public and private outfalls, with the public outfalls conveying stormwater from the broader North Beach area. The City has taken numerous actions and continues to evaluate any opportunity to address the ongoing challenge.

The Public Works and Environment and Sustainability Departments evaluated possible sources of cross-contamination in the area along with site specific conditions that could potentially negatively impact the area. Efforts to isolate potential sanitary sewer leaks have included multiple dye tests, deep cleaning of the stormwater lines, water quality testing throughout the stormwater system, sediment sampling in the canal, CCTV inspections, and smoke testing to determine potential illegal cross connections between private properties sewer lines and the City's stormwater system.

The City has also undergone advanced gene biomarker analysis to identify fecal indicators for humans, dogs, or birds at locations within the canal. The results at the time (2020 and 2021) indicated that fecal coliform from for dogs and birds were present at high concentrations in all samples. This led to a multi-tiered outreach campaign to educate the public about the importance of addressing pet waste. The City then retained ESciences, a third-party consultant specializing in environmental investigations, to conduct a thorough analysis of the data and investigations. Their results indicated more studies were necessary to draw conclusions in the data set as trends could not be identified.

In light of the continued elevated levels without a point source of pollution identified, the City procured the services of Dr. Solo-Gabriele, Associate Dean for the University of Miami College of Engineering who is a global water quality expert in evaluating microbes in water and sediments. The City Commission ratified this emergency purchase. Dr. Solo-Gabriele conducted a four-month sampling study to help determine the geographic or point-source(s) of bacteria. The community was kept advised about the study through City communication channels.

## **ANALYSIS**

The Assessment of Water Quality conducted by Dr. Solo-Gabriele outlined that rainfall is the main predictor of poor water quality within the canal. The unique characteristics of the waterway limit flushing as a shallow and narrow canal. The primary source of bacteria was identified as waste deposited on surfaces that drain toward the canal from the 81-acre catchment area to the east. The existing stormwater system in this area is gravity-based and rainwater picks-up pollutants on land, enters catch basins, and exits outfalls untreated. North Beach is densely populated, and the University of Miami team identified many sources contributing to degraded water quality including exotic and feral animal feces, the homeless population, dog waste, litter, and leaking dumpsters in commercial areas. In addition, the aging sanitary sewer system cannot be discounted as it is in need of upgrades and is located near the stormwater conveyance system. Even though testing led by the Public Works Department has not indicated significant deficiencies such as a major break, there is possibility of leakage not identified through the infrastructure testing due the age of the system and private connections.

In addition to the infrastructure testing performed, staff from several Departments have worked to address many of the above ground findings. Sanitation performs weekly street sweeping and twice daily garbage can collection on Park View Island, Code Compliance performs daily sweeps of the area, and Homeless Outreach and Community Services performs dedicated outreach to homeless individuals.

## **Infrastructure Improvements**

In light of the Assessment of Water Quality report, staff has developed an action plan that

combines the study recommendations with actions that include both funded and unfunded items (Attachment B). A summary of infrastructure-based items likely to have the most significant impact are highlighted below.

### Short-Term Recommendations

- Line aging wastewater pipes to prevent exfiltration (in progress), replace air release valves in North Beach (in progress), and work with DERM to install manhole smart covers to detect rising levels before overflows occur. Lining is currently funded for Park View Island for \$338,227. Additional lining will be needed outside of the North Shore D/ Town Center project. Sampling efforts are underway to evaluate potential positive impact to the canal.
- Identify additional way to address litter and waste in the waterway and vicinity.
- Install manhole smart covers to detect rising levels before overflows occur. This effort is being funded by Miami-Dade County as part of a countywide effort.

### Mid-Term Recommendations

- Retrofit existing gravity stormwater system with water quality treatment devices within the vicinity of the canal such as bar racks to prevent litter from entering the waterway. The estimated cost for this is \$2.2 million, with \$200K in FY24 and \$2M in FY25.
- Dredge the waterway to improve flushing and remove contaminated sediment with the canal. The Environment & Sustainability Department currently has \$500K in funding to complete initial surveys required for dredging (bathymetric and geotechnical), but funding would need to be identified to complete design, permitting, and completion of a dredging project. Dredging of the canal is estimated to cost \$2M in FY24/25.

### Long-Term Recommendations

- The North Beach Town Center Improvements will include new design and replacement of the stormwater and sanitary sewer infrastructure in the catchment area; this would include outfall relocations and water quality treatment pump stations. The City was awarded \$10 million in Resilient Florida funding towards the design. The project is called North Shore D/ Town Center with This is estimated at \$137M, with \$19.5M in FY25 and \$104M in FY27.

In addition, Public Works and Environment & Sustainability staff have sought grant funding for enhanced hybrid living shorelines to complement North Beach Town Center improvements and will continue to seek funding for initiatives that align with the goals of improving water quality and the quality of life for residents.

## **SUPPORTING SURVEY DATA**

In the 2022 Community Satisfaction Survey, 35% of residents were satisfied with the cleanliness of canals and waterways. When rating the importance of city services, waterway cleanliness ranked sixth.

## **FINANCIAL INFORMATION**

FY23: Funded

- Surveys required for dredging \$500K
- Lining wastewater pipes Park View Island \$338,227

FY24: Unfunded

- Retrofit gravity stormwater treatment \$200K

FY25: Unfunded

- Retrofit gravity stormwater treatment \$2M
- Dredge Canal \$2M
- Design/Replacement of stormwater/sanitary sewer \$19.5M

FY27: Unfunded

- Design/Replacement of stormwater/sanitary sewer \$104M

**CONCLUSION**

The Administration continues to evaluate and address potential sources of bacteria impacting the canal through a holistic approach with the community. As identified in the Water Quality Assessment, this includes addressing above ground, below ground, public, and private property sources throughout the broader North Beach area.

As discussed in the FY 2023 Capital Budget process, It is important to note that the City’s five-year capital improvement plan includes \$1.6 billion in unfunded needs, which will be further discussed in the upcoming FY 2024 budget process.

**Applicable Area**

Citywide

**Is this a "Residents Right to Know" item, pursuant to City Code Section 2-14?**

Yes

**Does this item utilize G.O. Bond Funds?**

No

**Strategic Connection**

Environment & Infrastructure - Work regionally and nationally to protect Biscayne Bay water quality and to maintain a healthy dune and beach system.

**Legislative Tracking**

Environment and Sustainability

**Sponsor**

Commissioner Alex Fernandez

**ATTACHMENTS:**

**Description**

- ▢ Park View Canal Report
- ▢ Park View Canal Action Plan

## PARK VIEW CANAL ACTION PLAN

ABOVE GROUND VISIBLE SOURCES						
Source	Community Feedback	Action	Status	Timeline	Budget Enhancement	Department
<b>Animal waste</b>						
Dog waste		<ul style="list-style-type: none"> <li>Extending the installation of signage and doggie bag/bin stations east through Collins Avenue &amp; Ocean Terrace. (UM)</li> </ul>	Ongoing	Short-term	Funding needed	PWD
		<ul style="list-style-type: none"> <li>Expand public outreach and education to include Spanish (i.e. signs). (CMB)</li> </ul>	Pending	Short-term	Existing funds	E&S/Comm
	Mixed feedback from the community regarding the support of the dog park.	<ul style="list-style-type: none"> <li>Complete Dog Park construction (pre-planned Capital Improvement Project). Vegetation buffer to be installed at the park to prevent dog waste from entering the canal.</li> </ul>	Pending	Short-term	Existing funds	Parks
Waste from birds, iguanas, & other wildlife		<ul style="list-style-type: none"> <li>Continue to remove animal feeding areas</li> </ul>	Ongoing	Short-term	Existing funds	Parks
		<ul style="list-style-type: none"> <li>Add signage advising the public not to feed wildlife</li> </ul>	Pending	Short-term	Existing funds	Parks
		<ul style="list-style-type: none"> <li>Have staff monitoring the park</li> </ul>	Pending	Short-term	Existing funds	Parks
		<ul style="list-style-type: none"> <li>Enforce park hours of operation</li> </ul>	Pending	Short-term	Existing funds	Parks
<b>Homeless</b>						
Human waste near the waterway		<ul style="list-style-type: none"> <li>Increase homeless outreach monitoring in Park View Park</li> </ul>	Ongoing	Short-term	Existing funds	Homeless Outreach/PD
		<ul style="list-style-type: none"> <li>Continue to relocate and provide assistance to homeless personnel</li> </ul>	Ongoing		Existing funds	Homeless Outreach/PD
<b>Trash &amp; Litter</b>						
Litter		<ul style="list-style-type: none"> <li>North Beach campaign/outreach</li> </ul>	Pending	Short-term	Existing funds	E&S
		<ul style="list-style-type: none"> <li>Addition of rain domes to public trash bins to minimize leakage*</li> </ul>	Ongoing	Short-term	Existing funds	PWD
		<ul style="list-style-type: none"> <li>Increase frequency of cleaning public trash bins*</li> </ul>	Ongoing	Short-term	Funded	PWD
		<ul style="list-style-type: none"> <li>Increase code enforcement personnel monitoring the island*</li> </ul>	Ongoing	Short-term	Existing funds	PWD

## PARK VIEW CANAL ACTION PLAN

<b>Sediments &amp; Debris</b>		<ul style="list-style-type: none"> <li>• Increase mechanical street sweeping and hand crew cleaning*</li> </ul>	Ongoing	Short-term	Existing funds	PWD
		<ul style="list-style-type: none"> <li>• Conduct more frequent construction site inspections in North Beach</li> </ul>	Ongoing	Short-term	Existing funds	E&S

\*The City has already taken the following steps:

- Added rain domes to the public trash bins to minimize leakage
- Increased the frequency of hand crew cleanings from once a week to twice a week. These crews clean debris from sidewalks, gutters, and the right-of-way.
- Increased the frequency of mechanical street sweeping on Park View Island to twice per week.
- Increased the cleaning of public litter cans to twice day from once a day (7 days a week).

Nutrients and Pollutants						
<b>Fertilizer</b>		<ul style="list-style-type: none"> <li>• Increase public education on fertilizer use and proper disposal of yard debris</li> </ul>	Pending	Short-term	Existing funds	E&S
		<ul style="list-style-type: none"> <li>• Installation of signs along Park View Park</li> </ul>	Pending	Short-term	Existing funds	E&S
<b>Grease Traps</b>	Community member feedback that pollution related to grease traps was an issue in South Beach	<ul style="list-style-type: none"> <li>• Increase grease trap inspections in North Beach and coordination with DERM.*</li> </ul>	Ongoing	Short-term	Existing funds	Building/DERM

\*The City's Building Department conducted grease trap inspections in the whole 81 acre area that flows into the Park View canal. There are a total of 51 grease traps documented in this area that have Grease Discharge Operating permits. During the inspections they found that the majority of the food service establishments in this area are complying with permit and maintenance requirements. The transporters are DERM certified and must discharge the solids from the grease traps at Black Point waste water treatment plant. Permittees and transporters report electronically every time the grease trap is cleaned. In addition, DERM regularly sends out their FOG inspectors for complaint reports such as backups or overflows, etc.

Runoff						
<b>Eroded shoreline</b>		<ul style="list-style-type: none"> <li>• Improve living shoreline to provide additional treatment of direct runoff to the waterway.</li> <li>• The living shoreline project will remove invasive vegetation, repair and rehabilitate damaged seawalls, and mitigate coastline erosion.</li> </ul>	Pending	Long-term	Applied for \$11.5M NOAA Transformational Habitat Restoration and Coastal Resilience Fund. (Pending)	E&S/ PWD

## PARK VIEW CANAL ACTION PLAN

BELOW GROUND NON-VISIBLE SOURCES						
Source	Community Feedback	Action	Status	Timeline	Budget Enhancement	Department
<b>Stormwater Conveyance System</b>						
Sediment & Debris		<ul style="list-style-type: none"> <li>More frequently clean out excessive sediment and debris accumulated in system.</li> </ul>	Pending	Short-term		Public Works
	The community has expressed that stormwater upgrades must be addressed immediately to include treatment of pollutants	<ul style="list-style-type: none"> <li>Upgrading the storm water system to treat for contaminants.</li> <li>Implementing blue-green infrastructure in storm water improvement projects.</li> <li>Neighborhood Improvement Project (North Shore D &amp; Town center) from 69<sup>th</sup> street – 73<sup>rd</sup> street.*</li> </ul>	Pending	Long-term	\$10M Florida Resilient Grant	Public Works
<p>*\$10M grant agreement executed for the design of the North Shore D improvements. This will include new storm water conveyance, new water quality treatment, and new pump stations and outfalls. Furthermore, the City has applied to multiple grants to continue making improvements, including one for improvements to the living shoreline at the Park View Island park area.</p>						
Trash		<ul style="list-style-type: none"> <li>Installation of trash racks at pump stations.</li> <li>Installation of trash filters at curb and gutter inlets.</li> <li>Installation of bar racks upstream of outfalls.</li> </ul>	Pending	Short-term		Public Works
Private Outfalls		<ul style="list-style-type: none"> <li>Make sure private outfalls are being regulated and addressed by DERM upon recertification.</li> </ul>	Ongoing	Long-term		Public Works/DERM
Cross-Connections		<ul style="list-style-type: none"> <li>Repair and line sewer pipes to avoid cross contamination with the stormwater system.*</li> </ul>	Ongoing	Long-term		Public Works
<p>*The City has been conducting work towards reducing infiltration and inflow into the sanitary sewer system. The focus has been on rehabilitating manholes, gravity mains, and laterals. Techniques utilized include night flow isolation, camera inspections, manhole inspections, and smoke testing. A study specific to Park View Island found multiple gravity sewer pipes in need of cleaning and repair. These pipes have been repaired by lining the sewers to reduce leaks.</p>						

## PARK VIEW CANAL ACTION PLAN

Sanitary Sewer System						
<b>Sewer Overflows</b>		<ul style="list-style-type: none"> <li>Frequently inspect manholes for potential backups.</li> </ul>	Ongoing	Long-term		Public Works
	Members of the community strongly believe that the water quality issues in the Park View Canal are due to leaks in the sanitary sewer system.	<ul style="list-style-type: none"> <li>Continue the search for any sanitary sewer leaks in the system and test the pressurized sewer system.</li> </ul>	Ongoing	Long-term		Public Works
		<ul style="list-style-type: none"> <li>Rehabilitate areas with excessive infiltration and inflow and lining sanitary sewer pipes known to have excessive infiltration.</li> </ul>	Pending	Long-term		Public Works
		<ul style="list-style-type: none"> <li>The City is going to coordinate with DERM to install “smart” manholes that issue alerts when backups occur.</li> </ul>	Pending	Short-term		Public Works
		<ul style="list-style-type: none"> <li>Upgrade the sanitary sewer system to minimize leaks and breaks.*</li> </ul>	Pending	Long-term		Public Works
<p>*The City has done the following tests and repairs:</p> <ul style="list-style-type: none"> <li>Gravity sewer trenchless rehabilitation at Park View Island (lining about 90% of pipes and 30% of manholes)</li> <li>Sanitary sewer PS 23 Maintenance</li> <li>18 ARV replacements along Sewer PS 23 and PS 24</li> </ul> <p>Sanitary sewer PS 19 discharge force main replacement</p>						
Lack of flushing						
<b>Shallow water depths</b>		<ul style="list-style-type: none"> <li>Improve circulation through dredging of the Park View Canal. (E&amp;S)</li> <li>Focus efforts on better understanding the hydrology of the canal.</li> </ul>	Pending	Mid-term	\$500,000 allocated for required surveys (E&S)	E&S
<b>Contaminated sediments</b>		<ul style="list-style-type: none"> <li>Dredging will also aid in removing contaminated sediment in the canal. (E&amp;S)</li> </ul>	Pending	Mid-term		E&S
<b>High Bacteria Levels</b>	Conduct weekly water quality	<ul style="list-style-type: none"> <li>Aggressive water quality testing</li> </ul>				E&S



## PARK VIEW CANAL ACTION PLAN

	testing whenever an improvement has been made to determine whether efforts are working or not.					
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