

BISCAYNE BAY WATERSHED MANAGEMENT ADVISORY BOARD

June 10th, 2022



Biscayne Bay Watershed Management Advisory Board

Board Package

Table of Contents

Agenda	Pg 3
Meeting Minutes	
February 18 th , 2022	Pg 4
April 20 th , 2022	Pg 12
Innovation Presentations:	
• a. Scavenger Vessel 2000	Pg 19
• b. Clean Waterways - Foam Fractionation for Environmental Restoration	Pg 33
8.4 Acres for Conservation and Resilience Projects in Cutler Bay (Requested by Mayor Tim Meerbott)	Pg 45
BBTF Recommendation 5A - Marine Debris Program – (Requested by Brett Bibeau) <i>Pamela Sweeney, Senior Water Scientist, RER-DERM</i>	Pg 50
Items Requested by Board Members:	
Stormwater Management	Pg 53
Stormwater Pilot Project Locations	Pg 72
Phosphorus Data	Pg 76



AGENDA

BISCAYNE BAY WATERSHED MANAGEMENT
ADVISORY BOARD (BBWMAB) MEETING

June 10th, 2022 - 9:00am – 12:00pm

LOCATION – Stephen P. Clark Government Center, Commission Chambers, 2nd Floor
111 NW First Street, Miami, FL 33128

1. **Roll Call**
2. **Reasonable Opportunity to be Heard**
3. **Approval of Agenda – Actionable Item**
4. **Approval of Minutes for February 18th, 2022, and April 20th, 2022 – Actionable Item**
5. **Update on Reasonable Assurance Plan**
BBWMAB Chair, Commissioner Danielle Cohen Higgins
6. **Innovation Presentations – deferred from April 20th Agenda**
 - a. Scavenger Vessel 2000 (**Requested by Brett Bibeau**)
 - b. Clean Waterways - Foam Fractionation for Environmental Restoration (**Requested by Commissioner Rachel Streitfeld**)
7. **Cutler Bay 8.4 Acres for Conservation and Resilience Projects (Discussion item requested by Mayor Tim Meerbott)**
8. **Biscayne Bay Task Force Recommendation 5A - Marine Debris Program – (Requested by Brett Bibeau)**
RER-DERM
9. **Biscayne Bay Task Force Recommendation 5C - Marine Patrol Enforcement – (Requested by Brett Bibeau)**
MDPD, Marine Patrol Unit
10. **Discussion of County Budget Process for Stormwater Pilot Funding – (Requested by Dave Doebler)**
11. **Future Agenda Items**
BBWMAB Chair, Commissioner Danielle Cohen Higgins
12. **Adjournment**
BBWMAB Chair, Commissioner Danielle Cohen Higgins

Biscayne Bay Watershed Management Advisory Board

Stephen P. Clark Government Center
Commission Chambers, 2nd Floor
111 NW First Street
Miami, FL 33128

MINUTES February 18th, 2022 9:00 am

MEETING CALLED BY	9:00 am - The roll was taken – Quorum was met. There were 13 members present with 7 members absent. Absent Members: Commissioner Jean Monestime, Councilmember Crystal Wagar, Dr. Todd Alan Crawl, Dr. Joan Browder, Dr. Erik Stabenau, Julissa Kepner, Jannek Cederberg. PE	
MEMBER ATTENDEES	Chair - Commissioner Danielle Cohen Higgins Vice Chair - Mayor Vince Lago Commissioner Rebeca Sosa Mayor Tim Meerbott Commissioner Rachel Streitfeld Brett Bibeau Dr. Diego Lirman	T. Spencer Crowley, III, Esq. Gerald C. McGinley, Jr John L. Alger Roberto Torres Dave Doebler Gene Duncan
	Staff support for Biscayne Bay Watershed Management Advisory Board in attendance: Irela Bagué, Pamela Sweeney, Ana Fiotte, Marie Bell, Larissa Aploks, and Sandra St. Hilaire.	

AGENDA TOPICS

REASONABLE OPPORTUNITY TO BE HEARD

Commissioner Danielle Cohen Higgins - Chair

DISCUSSION	No speakers
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OVERVIEW OF THE BISCAYNE BAY WATERSHED MANAGEMENT ADVISORY BOARD

Dennis Kerbel
Miami-Dade County Attorney's Office

DISCUSSION	<p>Dennis Kerbel from the Office of the County Attorney (CAO) provides an overview of the responsibilities and roles of the Biscayne Bay Watershed Management Advisory Board (BBWMAB). He states that the Board may adopt its own procedural rules, but they are subject to the Miami-Dade Board of County Commissioner's rules. For example, the reasonable opportunity to be heard; electing of Chair and Vice-Chair, setting of the agenda; a quorum for the BBWMAB is 11 with 20 members appointed. The powers and duties of the BBWMAB are to develop recommendations to the Miami-Dade Board of County Commissioners on a detailed watershed restoration plan, propose improvements to infrastructure and operations, and propose revisions to County regulations. The Board does not have independent authority to lobby but rather make recommendations to the Miami-Dade Board of County Commissioners.</p> <p>Commissioner Sosa suggested that the BBWMAB follow the same rules as the BCC and have every presentation sponsored by a board member.</p> <p>Dennis Kerbel reiterated the Board could not meet without a quorum.</p> <p>Chair Cohen Higgins concurred that all presentations should have a sponsor from the BBWMAB. If someone wishes to give a presentation, they should seek out sponsorship from a board member and will be heard during the "Reasonable Opportunity to be Heard."</p> <p>Spencer Crowley asked that staff alert the Board when the County establishes its legislative priorities in October and November so that the BBWMAB could make recommendations to the BCC for their federal and state priorities.</p> <p>Mayor Meerbott asked for clarification on how this Board can bring ideas/suggestions or request funding from this Board to the state legislators?</p>
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	<p>Chair Cohen Higgins stated one could act independently. Still, the procedure is to recommend to the BCC, and the BCC will send the legislative priorities to the County's lobbyist in Tallahassee.</p> <p>Mayor Meerbott stated he would like to bring these recommendations to the League of Cities.</p> <p>Dennis Kerbel confirmed what Chair Cohen Higgins stated as being correct. As a Mayor or member of the League of Cities, one can lobby independently within one's capacity but not on behalf of the BBWMAB.</p> <p>Chair Cohen Higgins introduced a new board member. Mr. Gene Duncan representing the Miccosukee Tribe of Indians and asked him to say a few words.</p> <p>Gene Duncan introduced himself and stated his experience was in the restoration of the Everglades. Continued, he is very interested in helping to save Biscayne Bay.</p> <p>Chair Cohen Higgins then recognized Black History Month and acknowledged the Joneses of Porgy Key, who originally purchased Porgy Key in 1897 for \$300. The last surviving family member, Sir Lancelot, spent his whole life on the island and is known as an environmental pioneer. Their home was added to the National Register of Historic Places in 2013. Chair Cohen Higgins thanked the Board for allowing her to recognize the Jones family.</p>
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UPDATE ON FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION (FDEP) GRANTS AND PROJECTS

Pamela Sweeney, Senior Water Scientist, RER-DERM

DISCUSSION	<p>Pamela Sweeney, Sr. Scientist for RER-DERM (Regulatory and Economic Resources - Division of Environmental Resources Management), provided the Board with a presentation on Biscayne Bay Grant Program, Resilient Florida Grant Federal Funding, and Resilient Florida Funding (recommended). She gave a historical perspective from the Biscayne Bay Summit to the Biscayne Bay Task Force recommendations and how the work of the academic board members, DERM's action plan, directives, and initiatives of the Mayor and the BCC came together to seek funding. The most significant grant has come from the State of Florida through the Department of Environmental Protection (DEP). The three major grants are the Coral Reef Protection Grant \$10M matched by Miami-Dade County with \$10M; Phase II of the Coral Reef Protection Program: Biscayne Bay Grant Program for \$12.9M; and lastly the Resilient Florida Grant program with \$10M coming from State funding and \$40M coming from Federal funding. Major projects covered under the grant are septic to sewer conversions, innovative technology related to wastewater and smart covers, piloting a biological restoration project using sponges, education and outreach efforts, and federal funding of Schenley Park septic to sewer totaling \$27.5M.</p> <p>Chair Cohen Higgins thanked Pamela Sweeney and asked if there was anything the BBWMAB could do to help with the recommendations to the legislature?</p> <p>Pamela Sweeney continued that Miami-Dade County had applied for 16 projects related to water quality and the others for land acquisition and stormwater.</p> <p>Ms. Irela Bagué, Miami-Dade County Chief Bay Officer (CBO), added that the County's Legislative Affairs office was working on these items.</p> <p>Chair Cohen Higgins continued that the Board could decide which recommendations to make to the BCC depending on the outcome.</p> <p>Commissioner Streitfeld asked for the status of the County's decision in terms of the Bipartisan Infrastructure Bill? Asked if the Board could help guide ideas for projects? Has the County been tracking the bill? Has it been divided into pots? It would be helpful to guide priority projects.</p> <p>Ms. Bagué responded that Mayor Levine Cava had created an Infrastructure Team reviewing opportunities for projects. Specifically, the County could carve out the ones that bring the best water quality benefits and bring them back to the BBWMAB.</p> <p>Commissioner Sosa requested that the attorneys draft a resolution to be sent to the BCC for Schenley Park on septic to sewer for the \$27M. Commissioner Sosa wants to ensure that we have timelines and use the funding for infrastructure. She would like to see more specific funding details. Also, asked to</p>
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make sure the money goes towards infrastructure and fixing the bridges so the water can flow. Would not like the County not to make past mistakes. She would like to see more details for the next presentation and projects one by one. Do they need a match? Is it federal or State? What are the steps? It will give the BBWMAB the ability to send recommendations to the BCC. Commissioner Sosa made the motion on the resolution for Schenley Park septic to sewer, seconded by Vice Chair Lago. Motion passes unanimously.

Chair Cohen Higgins continued that the presentations are a great way to understand where we are and what we have going on but would like the Board to focus on what we need moving forward. To echo the sentiments of Commissioner Sosa, it appears to the public as though we have a lot of money. For the next agenda, Chair Cohen Higgins would like the BBWAMB to look at where the money has been spent and how much additional funds may be necessary to see what type of recommendations to submit moving forward.

Spencer Crowley commented there is currently \$2M in the Coral Reef protection grant program for the Miami River, Little River, and Biscayne canal. He would like to know what the deliverables are. Is it a study or an action plan? What's it going to cover? Is it the installation of baffle boxes, or is it a pilot program? He continued by asking if there was a grant cycle and a predictable timeline so that community partners and local governments could submit.

Pamela Sweeney explained that FDEP has a user-friendly portal with state grants and timelines listed online.

Ms. Bagué added that the Governor had included an additional \$20M to the legislature's grant program. She continued; Miami-Dade County received \$12.9M out of the \$20M. They are all for water quality improvements in Biscayne Bay.

Spencer Crowley stated that the State legislature and the Governor have been extremely generous and committed to Biscayne Bay. It is the job of this Board to make sure that these dollars are spent quickly and efficiently.

Pamela Sweeney explained the County would be setting up a monitoring program to measure pre-and post-implementation of different solutions so we can measure which technologies are working the best.

Spencer Crowley asked that the projects be distinguished between water quality: sewage, septic, stormwater, and capacity and stormwater quality.

Chair Cohen Higgins asked for the next meeting for staff to please provide detailed information on the upcoming agenda on FDEP funding.

David Doebler expressed his frustration as an outside clean water advocate that the process appears to be slow. He stated that the County and many municipalities are cleaning their stormwater systems every five years. He would like to know how we are collaborating with our cities on stormwater maintenance and improvements and how we can prioritize funds. For example, municipalities are smaller and may not have money allocated toward stormwater maintenance?

Pamela Sweeney concurred on the need to continue and enhance County/Municipality dialogue. Pamela Sweeney continued; the County is currently working with the City of Miami, specifically the Miami River, on enhanced technology within their stormwater master plan update. Lastly, the State will present to the BBWMAB the concept of entering a reasonable assurance plan with the State, allowing the County to sit with its partners and gauge what projects can be incorporated into a restoration plan.

Dr. Lirman requested additional details so that the board members could make recommendations and suggest improvements or future steps. Currently, the information given doesn't give enough information to gauge the value of the projects.

Pamela Sweeney responded she would provide an addendum on phase I and Phase II projects to the Board.

Commissioner Sosa asked if she could introduce her draft ordinance of Onsite Treatment and Disposal Systems (OSTDS) to the BBWMAB. Commissioner Sosa plans to take it to the BCC but wants feedback and recommendations from BBWMAB. The ordinance stated that after 2023 it would be unlawful for any person to install or replace an onsite treatment and disposal system without written approval from the director. She asked Rashid Istambouli, P.E., Senior Division Chief, RER-DERM, to begin his presentation.

DRAFT ORDINANCE FOR ONSITE TREATMENT AND DISPOSAL SYSTEMS (OSTDS)

Rashid Istambouli, P.E.
Senior Division Chief, RER- DERM

DISCUSSION

Rashid Istambouli, Interim Assistant Director RER-DERM, thanked the Board and Commissioner Sosa for spearheading and allowing DERM to showcase the department's efforts to reduce the pollutants within the watershed and improve water quality within Biscayne Bay and explained the County currently has 120,000 septic tanks. He stated that septic systems might have been installed in compliance with the regulations at the time, but most have been in the ground for over 20 years. Therefore they are past their original design lifespan. DERM has evaluated the impact of septic tanks on the environment. One recommendation from the Biscayne Bay Task Force was for the County to develop and enforce a septic system design criteria that included proximity to the canal, the Bay, elevation relative to groundwater levels, and sea level rise. All these criteria are currently lacking. For clarification, what is referred to as a septic tank is an onsite sewage treatment and disposal system. With the increased density and population, most of these systems contribute to the nutrient overload in Biscayne Bay.

The problem was identified is with the conventional system. It does not provide real treatment. The current design standards for septic systems are in the Florida Administrative Code and Florida statutes, which are insufficient to protect our groundwater and surface waters. These standards also unintentionally discourage connection to the public water sewer system by creating an economic incentive to not connect to public infrastructure. By establishing higher design standards for septic systems, it will do four things: reduce the discharge of pollutants into the environment, reduce the reliance on the separation concept from the bottom of the drain field to the groundwater table, reduce max flux into the Bay through surface water and groundwater, and reduce the economic incentive to not connect to public sewers. The proposed ordinance includes key recommendations comprising updating septic tank standards in Chapter 24 of the County Code, establishing a requirement for the County to review and approve all new and complete replacements of septic tank systems. The proposed enhancements are: establishing requirements for DERM review and approval of new and complete replacement Septic Tanks; requiring that new and replacement OSTDS be performance-based treatment systems that achieve specific pollutant reductions before reaching the drain field; That the type of system is based on land use and criteria to protect groundwater and surfaces waters; Four types of OSTDS are contemplated: conventional. The proposed legislation should go to the BCC in April of this year.

Commissioner Rachel Streitfeld inquired will this extend applicant waiting periods and the cost of these enhanced septic tanks? She also asked what resources are available to connect them to help them?

Commissioner Sosa commented that the assessment would be approximately \$100; it will be inclusive.

Mr. Istambouli added that the review would have a 24-hour turnaround. Therefore, it would improve the current septic tank application turnaround time.

Commissioner Streitfeld asked if there would be a variance required?

Dennis Kerbel responded that the ordinance is designed to have administrative approval. However, in some circumstances, one could apply for a variance from the Environmental Quality Control Board (EQCB).

Commissioner Streitfeld also inquired, other than a code violation, what would allow the County to inspect a septic tank?

Dennis Kerbel stated that the County retains its sanitary nuisance authority.

Commissioner Streitfeld continued; can a public information flyer be sent to residents who are on septic informing them of the ordinance? Mr. Istambouli replied in the affirmative.

Commissioner Sosa added that she is working on legislation asking the State to allow programs like PACE and YGREENE to connect to sewers and sewer improvements. Commissioner Streitfeld asked if staff could send information about the bill to expand YGREENE and PACE for septic to sewer and septic improvements so she could lobby on its behalf. Mayor Meerbott joined in his support. Chair Cohen Higgins also joined in the support and suggested that funds be spent to inform the residents on septic about the ordinance and resident options.

Dave Doebler inquired whether a resident could swap out of a sewer connection. Mr. Istambouli explained absent this ordinance, and it would still not be an option. The new OSTDs ordinance is if there is no sewer infrastructure near the property.

Mr. Doebler asked about nutrient loads. Carlos Hernandez, PE., Water and Wastewater Chief RER-DERM, commented that type two doesn't directly address nutrients but has very limited criteria included. For example, one must be at least a thousand feet away from any surface body of water. The new standard would not rely solely on the drain field but would increase the separation from 24 inches to 36 inches, reducing the sewage by 50%. The code tries to balance environmental protection and cost by layering.

Mr. Doebler inquired about how this would impact the 5,000 parcels outside the Urban Development Boundary (UDB) near the Everglades? Commissioner Sosa responded that the BCC didn't want to repeat the past mistakes. If there is new construction in the expansion area, they must be connected to the sewer. Mr. Doebler continued there should be stiff penalties for violations. Commissioner Sosa responded she is working with the attorneys so that the person that violates the rule is the responsible party, not necessarily the homeowner. Mr. Doebler suggested \$10,000. Commissioner Sosa responded she would work on it.

Vice Chair Lago congratulated Commissioner Sosa on her years of service on behalf of the environment. Vice Chair Lago continued that it was very important to look at the issue of preemption. He had proffered legislation in Coral Gables requiring homes sold in Coral Gables to have a septic review only to find out the State does not allow you to provide that requirement. So we are trying to address the two points: 1) Are you on septic or sewer, and 2) What is the status of your septic? Vice Chair Lago added there are probably thousands of septic tanks that have been leaking for 5, 10, or 15 years and the issue has not been addressed. Mr. Istambouli concurred. Vice Chair Lago suggested the County create an escrow account with a 50/50 cost split to fix, remove or install a new septic tank. Vice Chair Lago added with the individuals on this Board, we need to advocate for the state to allow buyers to know what they are getting into.

Commissioner Sosa requested staff provide a map at the next BBWMAB meeting of septic tanks throughout the County.

Chair Cohen Higgins makes a motion seconded by Mayor Meerbott to send an urging to the BCC to pass the OSTD ordinance with the recommendations made today.

County Attorney (Dennis Kerbel) provided a recap of the proposed amendments to the OSTDs ordinance: set lower permitting fees for homeowners, higher penalty for installers, and education for homeowners.

Motion made passed unanimously.

Roberto Torres expressed his concern that a resident could invest in the OSTD and then find themselves able to connect to the sewer after. Commissioner Sosa stated it happened to her. Carlos Hernandez clarified that when the sewer comes to a community, they are advised a year in advance. The current code allows you to do minor repairs in anticipation of connecting to the sewer, or you could request an extension or a variance.

Vice Chair Lago asked about communication with residents.

Mr. Hernandez stated DERM is one of the agencies that issues an actual construction permit for every single sewer line. He continued that when new sewer lines are approved for a community, it triggers an automatic registration that advises all the homeowners that the sewer line is planned to give them time

	<p>to plan, save and prepare. In addition, with every sewer line, a lateral gets put in by the utility, facilitating and reducing the cost significantly of the connection.</p> <p>Chair Cohen Higgins stated after speaking to the attorneys, lobbyist, and Ms. Bagué that the BBWMAB needed to make a recommendation to the BCC regarding developing a Reasonable Assurance Plan (RAP) and Basin Management Action Plan (BMAP). There is a tight timeframe for November to have the RAP completed. Chair Cohen Higgins made a motion for the BBWMAB to urge the BCC to enter a resolution to kick start the process, seconded by Mayor Meerbott. Motion passes unanimously. The motion was amended only to include the development of a RAP.</p> <p>Ms. Bagué stated that the FDEP would explain the difference between a RAP and a BMAP. She continued that a Reasonable Assurance plan is recommended because it is a stakeholder-driven process. A water quality target will be set, and the RAP process will get us there.</p> <p>Mayor Meerbott asked why not add water quality monitoring for the Bay rather than just the waterways that discharge into the Bay? He would like to amend to include water monitoring in the Bay and not just the feeders. Ms. Bagué explained that the recommendation would be to start where we have the biggest issues and are already working: the Biscayne canal, Little River, and the Miami River.</p> <p>Commissioner Streitfeld stated she voted for the RAP and BMAP because the BMAP is broader, and the RAPs are location specific. Chair Cohen Higgins explained that it was a timing issue according to staff. Creating a BMAP takes longer than a RAP. The goal is to have something ready by November to ask Tallahassee for funding.</p>
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UPDATE ON BISCAYNE BAY WATER QUALITY IMPAIRMENT | OVERVIEW OF REASONABLE ASSURANCE PLANS (RAP) & BASIN MANAGEMENT ACTION PLANS (BMAP)

Kevin O'Donnell
FDEP - Watershed Assessment
Section Environmental Administrator

DISCUSSION	<p>Mr. O'Donnell (FDEP) stated he wanted to highlight the differences between the Total Maximum Daily Load (TMDL) and Basin Management Action Plan (BMAP). BMAPs already planned to look at historical factors that lead to the impairment, such as water management practices, canals, control structures, upland development or wetland or lakes that have been modified, hydrologic changes, and aging infrastructure. The process of establishing the TMDLs is a public process and onerous. There are requirements that must be met for the noticing as per Florida's Administrative Code. He continued that Miami-Dade has an excellent water monitoring program and Biscayne Bay Aquatic Preserve. It is a complex use of data to establish the TMDL, including computer modeling to evaluate the salinity and freshwater exchanges. Once the TMDL is established, the next step is developing a Basin Management Action Plan (BMAP) under the Florida Watershed Restoration Act.</p> <p>The State produces an annual start report that includes updates of BMAPs across the State and is used to measure or report restoration progress. The alternative pathway is the Reasonable Assurance Plan (RAP). These are stakeholder-driven and do not need FDEP to come down. As Pamela Sweeney said, these are proactive measures and grants available to address specific projects. This will lead to cleaner water faster on the restoration path and minimize the regulatory process. Stakeholders can control their pathway to restoration. To date, five reasonable assurance plans have been adopted by the Secretary of DEP and approved by the EPA. They include Florida Keys, Tampa Bay Estuary, Shell-Joshua-Prairie Creek in Sarasota, Lake Seminole in Pinellas County, and Mosquito Lagoon in Indian River Lagoon. Although Kevin O'Donnell added that Commissioner Sosa had mentioned bridges, recently the Department of Transportation had completed a causeway in Tampa intended to improve flushing, water quality, and salinity within the Bay.</p> <p>Mayor Meerbott inquired as to why Biscayne Bay water quality was not included instead of just the three feeding rivers in the RAP. Mr. O'Donnell replied, using the Tampa Bay Estuary as an example. The RAP is more than the waters discharging into Tampa Bay in that region. They are also looking at the nutrients coming from upstream. Mayor Meerbott asked for additional clarification. Mr. O'Donnell continued that there is extensive monitoring throughout the different canals to decide on the water quality. Mayor Meerbott added he wanted to make sure the water monitoring is taking place in the Bay.</p>
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	<p>Pamela Sweeney asked Mr. O'Connell to explain the boundaries of the RAP. He replied the monitoring sites are established at the discretion of the stakeholders to decide where the projects are going to see the changes and results in water quality. The discussion continued on how they were established.</p> <p>Pamela Sweeney suggested they sit with the technical experts while trying to meet the timeline. The RAP will only be as good as the projects that are identified.</p> <p>Mayor Meerbott reiterated he was concerned about the entirety of the Bay.</p>
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BOARD MEMBER UPDATE - SCAVENGER 2000 DECONTAMINATION VESSEL

Brett Bibeau
Executive Director, Miami River Commission

DISCUSSION	<p>The recognized Brett Bibeau. He acknowledged the vessel's owners, Sophie and Marc Mastriano of Water Management Technologies, Inc., that could answer any specific questions.</p> <p>Chair Cohen Higgins asked for clarification on the BMAP vs. RAP from Ms. Bagué. Ms. Bagué reiterated that the RAP was the most expedient way to continue working on reducing nutrients in the Bay. The BMAP was more cumbersome. Chair Cohen Higgins agreed to take Ms. Bagué's recommendation and asked to amend the motion only to include the development of a RAP. Vice Chair Lago seconded the motion to amend the previous motion. Motion passes unanimously.</p> <p>Dave Doebler commented that as a representative of a coalition of clean water advocates in the discussion of RAP vs. BMAP we are looking at speed, oversight, and enforcement. Based on a report from RER-DERM, the TMDLs have not been met since 2015. The RAP was an immediate response, but there is a lack of oversight, enforcement, and accountability. A stakeholder process would help address these issues.</p> <p>Spencer Crowley mentioned it is important for the Board and the public to know that the Impaired Water Body designation was done almost five years ago in 2017. As a member of the Biscayne Bay Commission, it was brought to light that no action had been taken. It is important that these delays don't happen again.</p> <p>Gene Duncan added the state designation to the 303 (d) list of impaired waters that requires the development of TMDLs and BMAPs. The RAP is a temporary fix and not an option under the Clean Water Act.</p> <p>Chair Cohen Higgins reiterated we are not ignoring the BMAP but making a recommendation for the RAP for the November timeframe. The Board seems to be echoing concerns and wants assurances that the BMAP is being worked on concurrently. Pamela Sweeney added the RAP effectively takes Miami-Dade County out of the 303 (d) pipeline but will develop the same type of projects faster by not waiting for the TMDLs, which can take up to 10 years. Pamela Sweeney continued that if the County fails, it can be put back in the TMDL pipeline for 303 (d) pipeline, recognizing the impaired water rule.</p> <p>Pamela Sweeney continued the RAP provides an alternative for the County to act now. Mr. O'Donnell added that DEP's oversight and enforcement for compliance are required every two years within a basin assessment for reasonable progress.</p> <p>Dave Doebler stated it is important to define clear targets. Mr. O'Donnell reiterated as a water quality person, sometimes it may take years to see the difference in the water quality concentration of the projects.</p> <p>Brett Bibeau began his presentation at the Chair's request on the Scavenger 2000 Decontamination Vessel. This contract is a sole source provider that decontaminates 600,000 gallons of water per hour while injecting 150,000 liters of oxygen each hour into the water, incorporated into the OxyPlus Decontamination System. The vessel destroys fecal coliform, bacteria, and algae, reduces turbidity, eliminates odors, increases dissolved oxygen, and removes some pesticides and others. The vessel also removes sargassum seaweed, decomposing seagrass, Styrofoam, and plastics that increase the water's nutrient load and decrease oxygen. Data provided to the Board indicates that the vessel removed approximately 199 tons of debris in one year. The scavenger vessel is an effective tool to restore the Biscayne Bay Aquatic Preserve. The Board was provided five independent analyses of the scavenger water vessel. Highlighting the work of the Oxyplus treatment system significantly reduced algae, fecal and total bacteria in contaminated surface waters. Mr. Bibeau recommended the increased use of the</p>
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	<p>proven, effective scavenger decontamination vessel to remove pollution from the Biscayne Bay Aquatic Preserve.</p> <p>Chair Cohen Higgins mentioned that due to time constraints of the meeting, she requested the item be added to the next agenda to understand better how the vessel operates due to time constraints.</p> <p>Commissioner Streitfeld requested an agenda item to include another innovative technology available for the Bay.</p> <p>Brett Bibeau extended an open invitation to the Board for a site visit of the decontamination vessel.</p>
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APPROVAL OF MEETING MINUTES

Commissioner Danielle Cohen Higgins - Chair

DEC 6,2021 BBWMAB MEETING - ACTIONABLE ITEM

DISCUSSION	Motion made by Chair Cohen Higgins seconded by Roberto Torres. Motion passes unanimously.
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DISCUSSION OF FUTURE MEETING DATES AND AGENDA ITEMS

Commissioner Danielle Cohen Higgins - Chair

DISCUSSION	<p>Chair Cohen Higgins provided the board an update of the Miami International Boat Show. At the previous BBWMAB meeting Chair had raised a concern about the manatees. DERM director Lee Hefty proposed an idea recommended by the BBWMAB which was adopted by the BCC for a manatee protection program for the Miami International Boat Show. Chair advised the board that if anyone saw a manatee in danger, they should email baywatch@miamidade.gov or call 311.</p> <p>Irela Bagué made announcements for Baynanza’s 40th Anniversary in April which is the largest cleanup effort in Miami-Dade County and the launching of Plastic Free 305, which is a program that will incentivize businesses to voluntarily reduce their single plastic use. Additional information could be found at miami-dade.gov/biscaynebay.</p> <p>Chair Cohen Higgins informed the board that Madam Mayor had tested positive for Covid and sent her the boards well wishes for a swift recovery.</p> <p>David Doebler mentioned the MS4 stormwater permit is up for renewal in December of 2022. It is a great opportunity to evaluate stormwater maintenance and how it can be strengthened.</p> <p>Chair Cohen Higgins requested that the Board has a standing item on the updates of the RAP and BMAP. Additional future items included:</p> <ul style="list-style-type: none"> • DEP grant updates requested • Map of County of sewer and septic locations requested by Commissioner Sosa • Innovative technologies for Bay requested by Commissioner Streitfeld, including the scavenger vessel • MS4 Water permit and RAP update will be on our next agenda
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ADJOURN

Commissioner Danielle Cohen Higgins - Chair

DISCUSSION	Mayor Tim Meerbott made a motion to adjourn, seconded by BBWMAB Chair Commissioner Danielle Cohen Higgins meeting adjourned at 11:57 am.
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Biscayne Bay Watershed Management Advisory Board

Stephen P. Clark Government Center
Commission Chambers, 2nd Floor
111 NW First Street
Miami, FL 33128

MINUTES April 20, 2022 9:00 am

MEETING CALLED BY	<p>The roll call was taken – Quorum was met. 14 members present and 5 members absent.</p> <p>Absent Members: Commissioner Rebeca Sosa, Vice – Chair Mayor Vince Lago, Commissioner Rachel Streitfeld, Dr. Diego Lirman, and Roberto Torres.</p> <p>Mayor Meerbott attended virtually County Attorney stated a Board Member may only be considered present if physically in chambers.</p>														
MEMBER ATTENDEES	<table border="0"> <tr> <td>Chair - Commissioner Danielle Cohen Higgins</td> <td>Julissa Kepner</td> </tr> <tr> <td>Commissioner Jean Monestime</td> <td>T. Spencer Crowley, III, Esq.</td> </tr> <tr> <td>Councilmember Crystal Wagar</td> <td>Jannek Cederberg</td> </tr> <tr> <td>Brett Bibeau</td> <td>Gerald McGinley</td> </tr> <tr> <td>Dr. Todd Crowl</td> <td>John Alger</td> </tr> <tr> <td>Dr. Joan Browder</td> <td>Dave Doeblner</td> </tr> <tr> <td>Erik Stabenau</td> <td>Gene Duncan</td> </tr> </table>	Chair - Commissioner Danielle Cohen Higgins	Julissa Kepner	Commissioner Jean Monestime	T. Spencer Crowley, III, Esq.	Councilmember Crystal Wagar	Jannek Cederberg	Brett Bibeau	Gerald McGinley	Dr. Todd Crowl	John Alger	Dr. Joan Browder	Dave Doeblner	Erik Stabenau	Gene Duncan
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Dr. Todd Crowl	John Alger														
Dr. Joan Browder	Dave Doeblner														
Erik Stabenau	Gene Duncan														
	<p>Staff support for Biscayne Bay Watershed Management Advisory Board in attendance: Irela Bagué, Pamela Sweeney, Ana Fiotte, Marie Bell, and Larissa Aploks.</p>														

AGENDA TOPICS

APPROVAL OF AGENDA – Actionable Item

Commissioner Danielle Cohen Higgins - Chair

DISCUSSION	Agenda approved.
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APPROVAL OF MINUTES FOR FEBRUARY 18, 2022 – Actionable Item

Commissioner Danielle Cohen Higgins - Chair

DISCUSSION	Chair stated minutes from the 2/18/2022 meeting will be provided prior to the June 10 meeting. No action taken.
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REASONABLE OPPORTUNITY TO BE HEARD

Commissioner Danielle Cohen Higgins - Chair

DISCUSSION	No speakers.
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UPDATE ON REASONABLE ASSURANCE PLAN

Commissioner Danielle Cohen Higgins - Chair

DISCUSSION	<p>BBWMAB Chair Commissioner Danielle Cohen Higgins provided a brief update on the steps the County has taken to expedite the development of a Reasonable Assurance Plan (RAP) for Biscayne Bay.</p> <p>The Chair shared that the Board of County Commissioners (BCC) adopted a resolution asking the County Mayor to expedite the development of a Reasonable Assurance Plan (RAP) for Biscayne Bay. She thanked</p>
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	<p>her colleagues on the BCC for approving the resolution and the members of the BBWMAB for acting expediently.</p> <p>The Chair stated the County hired a consultant to facilitate the development of the RAP process and asked the Chief Bay Officer (CBO), Irela Bagué, to provide any additional updates on the RAP.</p> <p>The CBO thanked the BBWMAB for acting quickly. She shared the County has established regular meetings with the Florida Department of Environmental Protection (FDEP). The RAP team together with the County consultants are working quickly to designate the geographic area for the RAP and should have the map ready by the next BBWMAB meeting scheduled for June 10, 2022. The CBO confirmed the deadline to submit the RAP is September 2022.</p> <p>The CBO shared that the RAP process is a stakeholder-driven process where the County sets goals and works towards meeting them rather than being told what to do by the State.</p> <p>The Chair thanked the BCC, Mayor, and CBO for taking quick action on the effort.</p> <p>The Chair asked the BBWMAB if they had any comments or questions on Item 5.</p> <p>Board Member Spencer Crowley commented that the RAP was discussed at the Biscayne Bay Commission (BBC) and stated his understanding is the RAP will only be developed for the northern part of Biscayne Bay and not the entire Bay. He was not initially aware of that when the BBWMAB voted and wanted to make sure the members were also aware. He asked the CBO if this was the first phase and if there would be other phases.</p> <p>The CBO confirmed that in consultation with FDEP, the northern area is the first part of the RAP that will be expanding, or another RAP will be developed to address the other areas of the watershed moving south. The CBO reiterated the need to work quickly to be eligible for the significant wastewater grant opportunities by September 2022.</p> <p>The Chair stated that the northern part of the Bay had been identified as the most vulnerable area. We need to start somewhere, and creating a RAP for the entire watershed is a daunting task but could take many years to accomplish. The Chair mentioned the Tampa Bay presentation at the last Biscayne Bay Commission meeting as an example and a model for Miami Dade County.</p> <p>Dr. Crowl stated that starting in the northern Bay/Little River region is a hot spot and makes sense from a time perspective as it has been identified as the most vulnerable. In addition, we have all the data necessary from the Little River and Biscayne Canal to move forward. We know that the Miami River is an important issue, but it is a complicated system, and we don't have the appropriate models to add it now, taking a phased approach, and moving south makes sense.</p>
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**FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
GRANTS AND PROJECTS Q&A**

Pamela Sweeney, Senior Water Scientist, RER-DERM

DISCUSSION	<p>The Chair asked Pamela Sweeney to provide an update.</p> <p>The CBO clarified that board members asked for additional information related to the State grants and projects previously awarded at the last meeting. As a result, staff has provided additional information in the board packet.</p> <p>The CBO mentioned that Ms. Sweeney is available to answer questions and stated that in the consideration of the time constraints she recommends contacting staff directly for detailed questions regarding a funded project.</p> <p>The Chair confirmed the backup materials had been provided. The BBWMAB did not have additional questions.</p>
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<p>DISCUSSION</p>	<p>The Chair asked Mallika Muthiah to present. Ms. Muthiah provided an update of the County's stormwater renewal permit with FDEP (NPDES), that are set to expire in December 2022.</p> <p>The Chair asked the BBWAMB for comments or questions and asked Board Member David Doebler if he had any questions since he requested the presentation.</p> <p>Board Member Doebler stated that he has had meetings with stormwater co-permittees (cities) around the County. The co-permittees have shared that they clean their systems every five years because that is what the permit requires—he asked if it takes less than five years for a catch basin to fill with trash?</p> <p>Muthiah responded that it depends on the frequency and type of trash found on the street, on the size of the structure; some may take two to three and others five or six. She continued by providing specific dimensions of the systems.</p> <p>Board Member Doebler shared that he noticed an inlet outside the building full of leaves and debris and asked what the grass clippings and leaves and other natural debris become when it sits too long in the inlet?</p> <p>Muthiah responded by sharing that the material decomposes, gets washed out to tide, or pumped out when the systems get cleaned. For canals, the debris is picked up and disposed of in landfills.</p> <p>Board Member Doebler mentioned he composts at home, and it becomes nutrient-rich soil when he adds grass clippings and leaves. Therefore, when this material is in the storm systems and rains, the nutrient-loaded material goes out into Biscayne Bay. He stated that he would think this source could be higher in nutrient load than that of septic systems or fertilizer.</p> <p>Muthiah explained that catch basins could catch debris that contains 90% of stormwater contamination. The County is designing pilot projects in 3 different locations to find out which technology removes the most nutrients and will implement the project that works the best.</p> <p>Board Member Doebler asked how we know which co-permittees (municipalities) are doing a good job at maintaining their stormwater system or can use some help? DERM stated that they do not receive copies of the annual reports that co-permittees must submit.</p> <p>Muthiah explained that she is the lead for MDPS, and each year they hold a meeting with co-permittees. FDEP is invited to this meeting, and co-permittees can express the issues they are having at that time, and the County will try to help or point them to the FDEP to assist. However, it is the municipalities responsibility to comply with the requirements.</p> <p>Board Member Doebler stated that if FDEP is not enforcing and we are having a meeting once a year but don't provide guidance, how are we helping improve stormwater that enters Biscayne Bay. The current priority for municipal stormwater staff is to move water first, not pollution control.</p> <p>Rashid Istambouli – Interim Director RER-DERM, requested to address the board and responded that the priority usually has been removing water off the street; recently, the County has started to investigate the water quality. The five years was a baseline for flooding. The County is now actively looking into the water quality component in the catch basins. They have some FDEP grants that will help start addressing the water quality. RER-DERM is open to solutions and working collectively with the Board on this. Perhaps five years is not the baseline because the five years were for flooding, and now, we are looking at the water quality.</p> <p>Board Member Doebler stated that he appreciates that the County is looking into new technologies for stormwater. However, suppose we can implement and improve basic maintenance outside of what FDEP and RER-DERM require, i.e. catch basin vac-truck cleaning and street sweeping. In that case, we may not solve the nutrient problem entirely, but it will help improve the quality of the water entering the Bay. If we improve our street sweepings and clean our catch basins, we will see an improvement in pollution. What type of local rules and code provisions can the County create?</p>
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Ms. Muthiah responded that the County sends staff from the water management division to inspect the catch basins annually. If some are identified with issues those are addressed.

Board Member Doebler responded that if the County checks the system annually but clean them every five years, and they are only 5X5X8 feet in size, those catch basins fill up in 4 to 5 months.

Mr. Isambouli stated the County checks the systems annually but clarified that staff is not going inside the pollution boxes to inspect them rather it is a visual check outside to observe issues such as ponding and report back.

Board Member Doebler responded that the inspection is more of a surface since they are not looking into the basin to see if it is full or not. He continued on to state that when the basins fill 50% to 70% capacity, the nutrient load will go straight into Biscayne Bay. Therefore, stormwater is the number one issue for addressing the Bay pollution levels.

The Chair stated that this body is tasked with making recommendations. There are two department heads from Miami-Dade County acknowledging Board Member Doebler's line of questioning and agreed that more can be done.

The Chair asked Board Member Doebler to make a motion for him to work with County Attorney Office (CAO) to draft a recommendation on improvements to stormwater and present it to the Board for discussion and potentially make a recommendation to the BCC.

Board Member Doebler made the motion. The Chair seconded the motion. Motion adopted unanimously.

The Chair asked if the Assistant County Attorney present needed additional information to help draft the item.

Assistant County Attorney Christopher Wahl stated that he understood the Board's directive is to have designated Board Member Doebler to work with the CAO to draft an item that the BBWMAB would adopt at a future meeting, that would become a recommendation to the BCC.

Board Member Doebler mentioned he has a general outline – to create local rules and code provisions on stormwater in four areas.

The Chair recommended Mr. Doebler work with the CAO offline and agreed to sponsor the legislation at the BCC. The Chair stated the legislation also needed to include a comprehensive recommendation from the administration.

Mayor Meerbott asked if the County could share what municipalities can do as maintenance best practices beyond the State's requirements as well as what type of funding is available to be used to improve the systems. He also made a request on how phosphorus is measured. The difference between offshore and nearshore. Mayor Meerbott requested the actual Phosphorus data and not the average.

Mr. Istambouli stated that DERM has the all data on the website but would provide the data to Mayor Meerbott specific to phosphorus.

Commissioner Monestime offered to co-sponsor the future item with the Chair. The Chair accepted.

Dr. Crowl asked if the annual inspection reports or a sample can be shared with the Board. Director Rashid Istambouli stated he would provide a sample.

Board Member Crowley suggested looking at stormwater grates in the inlets and increasing street sweeping. In addition, the installation of baffle boxes that are catch basins designed to prevent nutrient and solid outflows should be part of the MS4 permit.

Dr. Stabenau suggested that rather than looking at specific periods, we could have a more analytical approach in real-time with the technological advances available.

	<p>Board Member Bibeau requested that when the item comes back to the Board, staff provide how much is being spent on street cleaning per year, how much more funding is needed, and funding sources?</p> <p>Board Member Doebler requested a presentation from Miami-Dade Public Works on their cleaning schedule, funding, and methodology and referenced a BCC pending directive.</p> <p>Vote on the motion passes unanimously with amendments previously discussed.</p> <p>Mr. Istambouli requested to comment further and stated that he viewed the OSTD (septic systems) ordinance as low-hanging fruit, and that stormwater is the next low hanging fruit and looks forward to working on the legislation as it would make a significant difference in improving water quality.</p> <p>Commissioner Monestime mentioned how encouraged Interm Director Rashid Istambouli's comments on collaborating with the BBWMAB.</p> <p>Chair Cohen Higgins welcomed our newest Board Member Crystal Wagar representing Miami Shores, who has been working on the environment throughout her career.</p>
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STORMWATER INNOVATION PILOT PROJECT

Liza Herrera, P.E.
 Manager for the Stormwater Drainage Design Section

DISCUSSION	<p>The Chair asked Liza Herrera, P.E., Manager for the Stormwater Drainage Design Section, Department of Transportation & Public Works (DTPW), to present.</p> <p>Herrera presented an update on the stormwater pilot projects focused on removing nitrogen, phosphorus, and bacteria from stormwater.</p> <p>The Chair asked the BBWAMB for comments or questions and asked Board Member David Doebler if he had any questions since he requested the presentation.</p> <p>Board Member Dr. Crowl asked if there was sufficient data to look at pre-installation water quality impacts?</p> <p>Ms. Herrera responded they have the water quality assessment for Little River Canal, which includes data taken last year with values for nitrogen, phosphorus, and bacteria. In addition, the vendors have informed the County that they can analyze pre and post for input into the Bay.</p> <p>Dr. Crowl requested that the vendors share the information with the Board.</p> <p>Board Member Doebler mentioned the County measures surface water and not outfalls.</p> <p>Board Member Duncan said the presentation stated the cost of the filter, between \$1,000 to \$50,000 per filter. It might be burdensome for the municipalities, and asked how frequently do they need to be changed?</p> <p>Ms. Herrera stated the pilot projects would identify maintenance needs and these systems would likely be used only in the targeted areas. The increase in maintenance goes hand in hand with the success of the technology.</p> <p>Chair Cohen Higgins mentioned that usually, pilot projects are at no cost to the County.</p> <p>Ms. Herrera stated the funding for the project came from grants.</p> <p>Board Member Crowley reiterated that pre and post-data are critical to evaluating nutrient loading.</p> <p>The Chief Bay Officer confirmed the FDEP grants require the County to provide pre and post-data to measure the results tied to the objective of lowering nutrient levels.</p> <p>Board Member Doebler requested information on the speed of implementation of the pilot projects. He stated the earlier in the train you catch the debris, the cheaper it is to dispose of.</p> <p>Ms. Herrera said the County expects the first report from the pilot projects next March 2023.</p> <p>Board Member Doebler suggested that the BBWMAB look at the current budget cycle for funding to implement the successful pilot projects.</p> <p>Board Member Cederberg requested periodic updates on the pilot projects.</p>
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	<p>Chair Cohen Higgins requested that Ms. Herrera give an update to the BBWMAB at the one-year mark of October 2023.</p> <p>Mayor Meerbott commented that Cutler Bay is street cleaning, cleaning storm drains, and smart technologies are being incorporated into the city's stormwater master plan within the next six months.</p> <p>Chair Cohen Higgins motioned to defer items 9 a. and 9 b. to the next meeting scheduled for June 10th. Motion carried.</p>
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INNOVATION PRESENTATIONS

(Requested by Brett Bibeau and Commissioner Rachel Streitfeld)

Commissioner Danielle Cohen Higgins - Chair

DISCUSSION	<p>Items deferred to the next BBWMAB meeting.</p> <p>CBO suggested that her office, the Director of One Water Innovations, and the Mayor's Green Tech group would be happy to workshop some of these technologies.</p> <p>Board Member Bibeau stated that the Scavenger Vessel has been under contract for several years with Miami, Miami Dade County, and the Florida Department of Environmental Protection.</p>
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DISCUSSION OF FUTURE AGENDA ITEMS

Commissioner Danielle Cohen Higgins - Chair

DISCUSSION	<p>Chair Cohen Higgins reviewed suggested items for our next agenda for the meeting on June 10:</p> <ul style="list-style-type: none"> • The item being crafted by Dave Doebler, Mayor Meerbott requested stormwater information data. • Mayor Meerbott stated that for the next board meeting, he would like to discuss the Town of Cutler Bay partnering with the County, State, SFWMD, and the Corps of Engineers regarding the recently purchased 8.4 acres of environmentally sensitive land for alignment with the Back Bay Study, to encourage the use of mangroves to provide storm protection, and for filtering the water that goes back into the Bay. Mayor Meerbott asked if the BBWMAB could recommend the BCC provide additional support to the Town of Cutler Bay. He requested a vote. The Chair suggested adding the item to the June 10th agenda. • Request for public works cleaning schedule and costs from Board Member Doebler. • Vendor data from Dr. Crowl and examples of the inspection reports. • A discussion on the budgeting for a pilot program for allocation of stormwater projects and retrofits before the Budget hearings • Items 9 a. and 9 b. Deferred to June 10th • Board member Brett Bibeau requested updates on Biscayne Bay Task Force items 5a and 5c • Board Member John Alger requested Miami-Dade Police Department to be present to discuss the illegal dumping in the ditches, enforcement, and consequences in South Dade that bring debris into the Bay. Chair Cohen Higgins agreed. <p>Chair Cohen Higgins highlighted the Protect Biscayne Bay specialty license plate that needs 3,000 presales for the State to approve manufacturing. The initiative is a partnership with the Miami Foundation to raise funds for environmental education and conservation initiatives.</p> <p>Dr. Crowl stated the Board not be complacent about phosphorus. He also asked if there will be an opportunity for the Board to meet with the consultant for the RAP?</p> <p>CBO Bagué stated there will be an opportunities for the Board to meet with the consultants during the stakeholder process. The CBO also shared a reminder that the BCC passed the strongest fertilizer ordinance in the state because of phosphorus nutrient pollution. The County's fertilizer ban begins on May 15 through October 31st.</p> <p>Chair Cohen Higgins closed the meeting by reminding everyone that the coming Saturday the County is celebrating the 40th Anniversary of the Bayanza Clean Up event and she wished everyone a Happy Earth Day!</p>
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ADJOURN

Commissioner Danielle Cohen Higgins - Chair

DISCUSSION

Motion passed. Meeting adjourned at 10:58 am.

Water Management Technologies, Inc. Presents:
THE SCAVENGER VESSELS



Your Solution to
CLEAN WATER

A Revolutionary Approach to Water Regeneration

www.scavengervessel.com

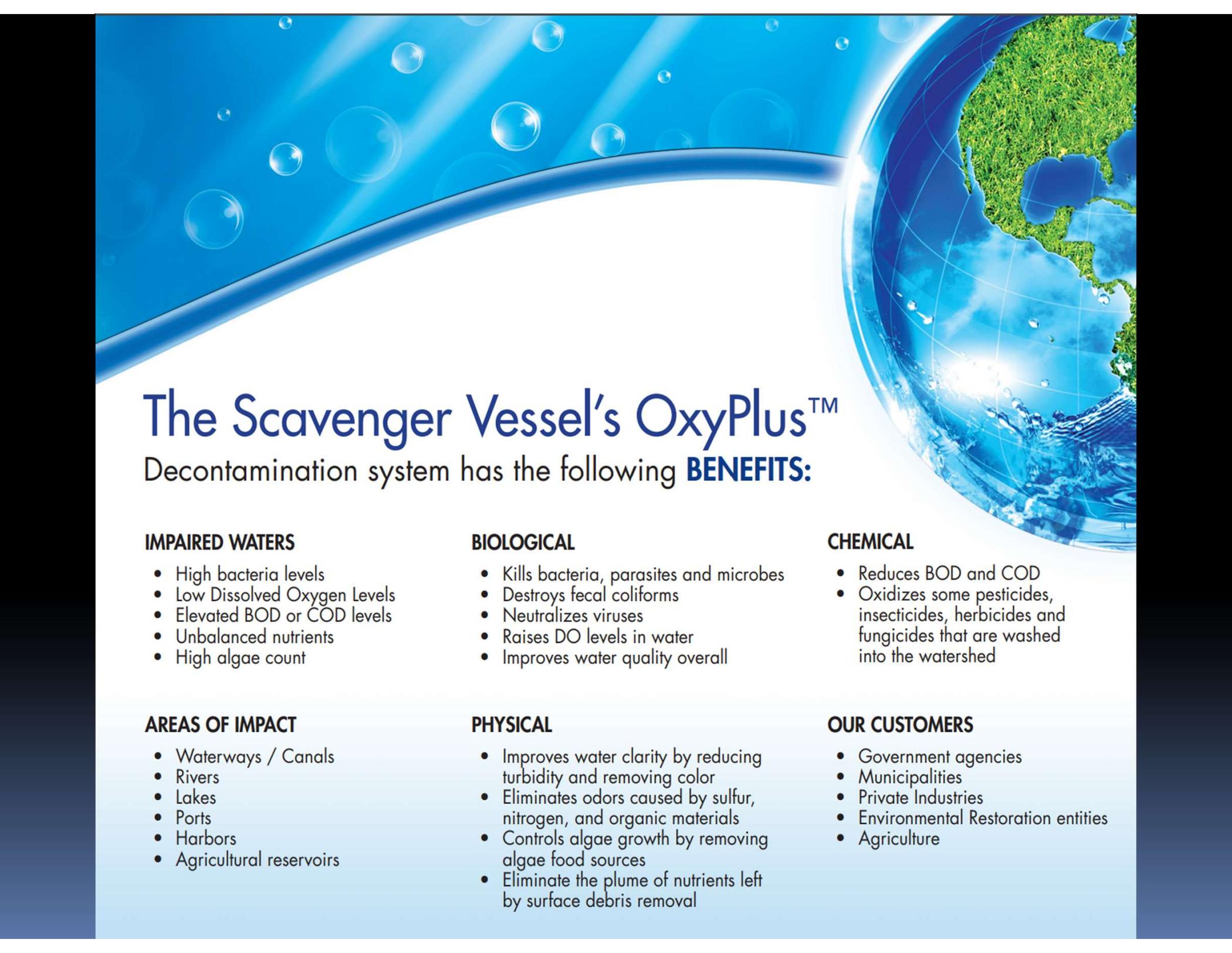


Restoring Health and Clarity to Waterways

The contamination of our waterways by biological and chemical waste, floating debris and runoff is a growing concern worldwide. As a result of human activity, raw sewage, large amounts of nutrients like nitrogen, phosphorus and hydrocarbons are introduced into the water. These, in turn, allow harmful bacteria like E.coli, viruses, algae and insects to breed.

The Scavenger Vessel™ is the **most effective** pollution control and water maintenance vessel available in the world today. It was designed by U.S. based Water Management Technologies™ to clean and rejuvenate waterways "In Situ" such as lakes, rivers, harbors, and industrial waste water in order to promote healthy and safe environments.

The Scavenger Vessel™ with its Patented OxyPlus™ decontamination system improves water quality by reducing and eliminating bacteria and viruses, raising D.O. (Dissolved Oxygen) levels, controlling algae growth, improving water clarity and eliminating odors. A multi-purpose vessel, the Scavenger Vessel™ not only decontaminates and re-oxygenates water; its unique design also allows it to collect floating debris simultaneously, creating safe, healthy and more attractive public waterways.



The Scavenger Vessel's OxyPlus™

Decontamination system has the following **BENEFITS:**

IMPAIRED WATERS

- High bacteria levels
- Low Dissolved Oxygen Levels
- Elevated BOD or COD levels
- Unbalanced nutrients
- High algae count

AREAS OF IMPACT

- Waterways / Canals
- Rivers
- Lakes
- Ports
- Harbors
- Agricultural reservoirs

BIOLOGICAL

- Kills bacteria, parasites and microbes
- Destroys fecal coliforms
- Neutralizes viruses
- Raises DO levels in water
- Improves water quality overall

PHYSICAL

- Improves water clarity by reducing turbidity and removing color
- Eliminates odors caused by sulfur, nitrogen, and organic materials
- Controls algae growth by removing algae food sources
- Eliminate the plume of nutrients left by surface debris removal

CHEMICAL

- Reduces BOD and COD
- Oxidizes some pesticides, insecticides, herbicides and fungicides that are washed into the watershed

OUR CUSTOMERS

- Government agencies
- Municipalities
- Private Industries
- Environmental Restoration entities
- Agriculture



How It Works

The key to the Scavenger Vessel is the advanced Patented OxyPlus™ water decontamination system that treats and revitalizes waterways by aerating the water with a combination of ozone and oxygen. In full operation mode, the vessel scoops up floating debris, destroys bacteria, and injects life-supporting oxygen in the water. This process restores the overall health in the water. The Scavenger Vessel in operation mode can decontaminate at a rate of up to 20,000 gallons of water per minute and inject up to 600,000 liters of oxygen per hour.



CLEANING THE WATER

How the Scavenger Vessel's onboard OxyPlus™ water treatment system works:

DEFLECTOR

Aids in maneuvering the boat. It can also deflect oxygen/water deep into the water bodies

WATER CANNON

Can be used for dispensing agents/seawall cleanup

CREW CABIN

TRASH BIN

7 cubic yards

TRASH BASKET

OPEN BOW/BALLAST

Ballast is added to lower bow to scoop up trash

DOOR to the decontamination chamber

OXYGENATED and clean water

① Water enters through the bow at about 20,000 gallons per minute

⑥ Decontaminated water exits through the back of the boat and is oxygenated

⑤ Water then enters the decontamination chamber where it is treated

④ Optional Additional equipment.

③ A basket collects trash and dumps it into a trash bin, while allowing water to flow through

② Trash is vacuumed into the bow along with the water

View of water flow



Proven Technology

OxyPlus™ Water Decontamination System

At the heart of the Scavenger Vessel is the OxyPlus™ advanced water decontamination system. When oxygen is injected into polluted water, the enrichment contributes directly to reducing contaminants suspended in the water. With the addition of ozone to the aeration process a very powerful yet environmentally safe disinfection occurs in the body of water being treated by the Scavenger Vessel™.

Ozone has been applied with great success in municipal sewer treatment processes worldwide because of its ability to disinfect water without leaving the harmful by-products left by chlorine. In fact, ozone has been found to be more than 100 times more powerful than chlorine in destroying E.coli bacteria.



As water enters through the bow of the vessel, the OxyPlus™ generates ozone and oxygen and injects it into the water. The ozone's life expectancy varies between a few seconds and a few minutes. The ozone then converts into oxygen. This process supports Chemical Oxygen Demand (COD), breaks down substances so that they become digestible to bacteria, and supports the aerobic oxidation of toxic nitrogen compounds.

By altering the surface charge, ozone enables suspended particles to coagulate and be easily removed. In addition to algae and improving water clarity, ozone effectively oxidizes some pesticides and some algae therefore improving water clarity. Lastly, it increases the dissolved oxygen content in the water, which has a rejuvenating effect. The Scavenger Vessel's decontamination rate is 1.2 million gallons of water per hour with an hourly oxygen injection rate of up to 600,000 liters. This increases the dissolved oxygen levels in the water, and reduces the number of toxins in the water.

Nova Southeastern University's Oceanographic Center says: "The Scavenger vessel's OxyPlus™ technology can significantly improve water quality. A single pass through the vessel's systems can **reduce up to 98% of bacteria** and coliform in the water, and reduce algae counts by half".

RIVER WATER



Before and after water samples treated with our OxyPlus™ System.



Debris Collector

The Scavenger Vessel features a retractable stainless steel trash basket, which is mounted on the front of the vessel. It picks up debris floating on the surface of the water, up to a depth of 2.5 ft. The basket's design, which resembles a comb or grate, is engineered to virtually eliminate any water turbulence during the suction operation. The weight capacity of this basket is approximately 2,500 lbs. The basket is emptied into a containment bin by means of a hydraulic system, which is operated from the main cabin. Continuous debris collection is ensured by a secondary grill that is automatically activated to keep debris from entering the channel while the basket is being emptied into the bin.

The containment bin has a capacity of 7 cubic yards and can effectively be emptied due to its bottom double folding doors activated by a lever.





PICKING UP THE TRASH

As trash and water are funneled into the bow, a basket catches the debris and empties it into a large on-board containment bin.

WATER IS FUNNELED INTO THE BOW

Vacuum water flow up to 20,000 gpm. Vacuum effect. The vessel does not have to run after debris.

Effective Maneuverability

The Scavenger Vessel can make a 360-degree turn, in place, with the bow open and in recuperation mode. This maneuver can be done without interrupting the decontamination process, using the special rear deflector that is attached to the stern of the vessel. The Scavenger Vessel never has to interrupt its recovery systems.



Transport

The Scavenger Vessel can be easily transported anywhere in the world.



WHO WE ARE



- An Innovative Water Management Company
- Family owned Florida Corporation for over 20 years
- Patented Oxy-Plus decontamination system
- Manufactures Environmental Tools
- Proudly built in the USA
- Proven track record
- Sole source product in the world
- Under contract with DEP to remediate Cyanobacteria



Your solution to
Clean Water

Your Logo

City of Miami and Miami-Dade County Accomplishments From 06/05/2020 To 05/28/2021

1 AMOUNT OF DEBRIS REMOVED FROM 06/05/2020 TO 05/28/2021 = 8642 CUBIC FEET
320 Cubic Yards = an approximate of 199 US Tons of trash

2 AMOUNT OF WATER DECONTAMINATED AT A RATE OF 10,000 GALLONS PER MINUTE
1.060 Billion Gallons of water treated

3 AMOUNT OF OXYGEN INJECTED AT A RATE OF 150,000 LITERS PER HOUR.
284 Million liters of oxygen

4 2372.5 NAUTICAL MILES TRAVELED

5 366 DONATED HOURS TOTALLING \$73,200 FROM Water Management Technologies

6 WE PICKED UP MANY NAVIGATIONAL HAZARDS SUCH AS DOCK PLANKS,
55 GALLON OIL DRUMS, DOCK BOARDS, LARGE TIRES

Oxy-Plus™ BENEFITS



Biological

- Destroys fecal coliform
- Destroys Cyanobacteria
- Kills Bacteria
- Neutralizes viruses Including but not limited to Covid-19 (SARS Corona virus)
- Balances Phosphates and Nitrates

Physical

- Remove surface debris
- Reduces Turbidity
- Improves water quality
- Eliminates odors
- Destroys and Controls algae growth
- Remove Hazardous algae cakes

Chemical

- Increases DO
- Removes some pesticides, herbicides, and fungicides that are washed into the watershed

Your solution to
Clean Water





Clean Waterways

Foam Fractionation for
Environmental Restoration

Continued Water Pollution in South Florida

Excess Nitrogen, phosphorus, coliform bacteria and other pollutants in our inland and near shore water bodies are causing ecosystem disasters, decrease land values, and are dangerous for public health

Currently manatee deaths associated with seagrass depletion as well as the loss of coral and all economic and ecologic benefits associated with coral reefs **are directly correlated with cascading effects of excess nitrogen and phosphorus in the environment**



Coliform bacteria correlates with pollution

Highly recommended to not expose humans to higher than 70 mpn

Federal Dept. of Health

- High **greater than 70 MPN**
- Low 0-35 MPN
- Medium 36-70 MPN

Site (South Florida)	Total	E.coli	Enterococcus
Rick Case Canal	>2419.6	66.3	107.1
Pop traveres park	501.2	554.6	39.3
Volunteer park	>2419.6	59.8	15.5
Plantation preserve	>2419.6	290.9	190.4
royal Palm Office Park	436	13.5	6.1
Fig tree park	>2419.6	816	
Jacaranda park	157	26	
Himmarshee Canal SE 8th Avenue	>4839	154	1297
15th street canal	>4839	1841	1226
Nurmi Drive	78	355	615
Himmarshee Canal SE (near New River)	3457	>4839	2827
Hollywood Northlake	8704	20	40
Hollywood Southlake	2024	20	270
Lake Ida	>2419.6	>2419.6	>2419.6

Chemical pollutants In South Florida

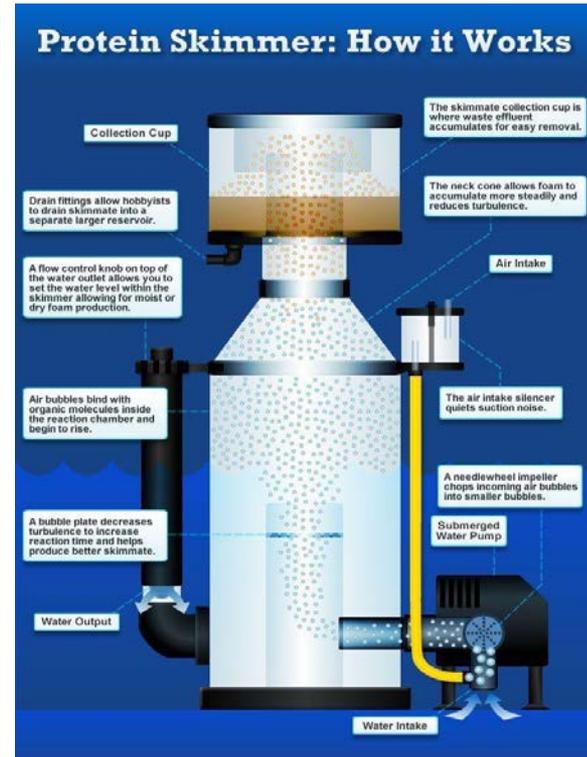
- Pesticides
- Medicines
- Petroleum products

parameter	result	units
Acetaminophen	0.008	ug/l
Carbamazepine (seizure med)	0.0011	ug/l
Enterococci (mammal fecal)	64	#/100ml
Fluoride (tap water)	0.26	mg/L
Primidone(seizure med)	0.004	ug/l
Triclopyr (herbicide)	0.004	ug/l
2,4-D (pesticide)	0.047	µg/L

**2020 Sample from Himmarshee Canal provided by DEP*

Bubbles Attract Pollution

- **Protein skimming** is a form of filtration which mechanically separates most organic molecules from water using billions of tiny bubbles.
- Oils, proteins, and simple molecules such as the basic ammonia (the simplest form of protein waste) accumulate on these bubbles as they rise in a water tower chamber and eventually pile up, overflow, and are separated from water.
- Bacterial and some microalgae are also removed



Skimming Removes Excess Nutrient and Pollution from the environment

Fertilizer runoff, sewage spills, general human pollution:

Skimmate (concentrated skimmer waste removed from waterways):

Nitrogen concentrated > 55x from ambient water

Phosphorus concentrated > 120x from ambient water

Coliform bacteria concentrated > 1000x from ambient water

Additionally removes and concentrates decomposing algae, heavy metals, and a variety of chemicals

Result:

- Cleaner water
- Clearer water
- Highly oxygenated water





Skimmers separate significant pollution through millions of bubbles overflowing into the top hoppers and consolidating as concentrated sludge separated from cleaned oxygenated water which is returned to the environment.

Pilot Canal Results

With our machines running full time, the canal is now regularly passing the environmental coliform contamination tests that are conducted by the third party water testing non-profit, Miami Waterkeepers

January-June

- Green 3 times in 6 months
- Avg. 760 mpn *Enterococcus sp.*

July-August during barge operations

- Green 4 times in 2 months
 - 4 times higher rate
- Avg. 538 mpn *Enterococcus sp.*

*sampled weekly at random tide



List



Are you going to this beach this summer?



Current Status



This site is sponsored by the City of Fort Lauderdale - [Click here to learn more!](#)

Himmarshee Canal

Fort Lauderdale, Florida

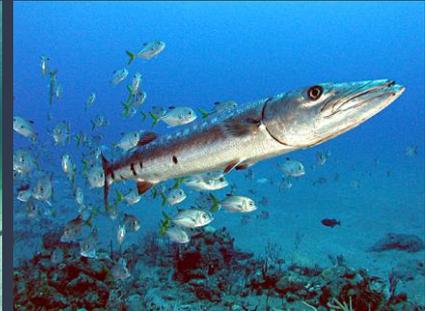
Updated by [Miami Waterkeeper](#)

Clear Water

Foam fractionation removes suspended unnatural bacteria and algae, excess nutrients, chemicals, and organic particulates.

This decreases turbidity and increases water clarity allowing base levels of marine biology to undergo photosynthesis and subsequent levels of the food chain to find food visually.

Lowered turbidity and oxygenation from foam fractionation encourages ecosystem recovery.



Additional Benefits

Increase in Biodiversity

- Decreasing turbidity and increasing clarity

Solid waste removal

- garbage manually removed from environment by on site operators

Oxygenation and flow

- Surface films eliminated
- cyanobacteria substrate layer eradicated around barge
- aggregations of fish around operations and downstream with flow
- settlement of invertebrates and plants on nearby



Applications: “Fire Trucks vs. Garbage Trucks”

- Interception of pollutants at bottlenecks before entering waterways (pump stations, canal locks, drainage outfalls)
- Removal of pollutants during acute environmental disasters (sewage spills, oil spills, sinking boats)
- Mitigation of construction turbidity and environmental impacts of dredging/coastal development
- Oxygenation and mitigation of stagnation in closed/semi-closed waterways
- Ongoing remediation to increase water quality and chemistry for environmental restoration

Big Picture

- Clean Waterways works to address the challenges of implementing and optimizing foam fractionation to open aquatic environments.
- Technology that has only been used in closed systems as in public aquariums or aquaculture operations is now being adapted, applied, and scaled to the natural waterways and the ocean.
- Stopping ocean pollution is intercepting the problem at it's bottleneck then addressing the source. Protecting the Beaches, intracoastal waterways, seagrass beds, kelp forests, reefs, open oceans, etc. means realistically mitigating pollution.

Currently no technology can filter dissolved pollutants more safely or effectively.



Search

Cutler Bay Council Votes to Purchase 8.43 Acres for Conservation and Resiliency Purposes



May 5, 2020

During the Town of Cutler Bay’s Virtual Council Meeting on Wednesday, April 22, 2020, the Town Council unanimously voted to approve the purchase of an 8.43 acre property located at 18551 Old Cutler Road from Cutler Properties, LC, for \$8.45 million—with the vision to preserve the vacant land for its environmental value, to further the Town’s resiliency efforts, and to prevent any development from occurring on it.

The property is adjacent to the Biscayne Bay Coastal Wetlands (BBCW) project, an area that has been identified by the US Army Corps of Engineers as a natural buffer to deal with sea level rise. The BBCW project is also a part of the Comprehensive Everglades Restoration Project (CERP). The CERP is the largest environmental restoration program in US history whose objective is to improve freshwater flow in Florida and to correct the balance among the water flow types to ensure a healthy and sustainable natural and human environment.

“This moment marks an important environmental and resiliency milestone for our community,” stated Cutler Bay Mayor, Tim Meerbott. “In acquiring this piece of land and preserving it as an open space, not only will this prevent any development from materializing on it, but it will also prevent the traffic that would have come along with it. This acquisition greatly complements the Town’s resilience objectives, allowing this property to continue

protecting our Town—as this property is adjacent to the Biscayne Bay Coastal Wetlands that act as a buffer for our community during storms and with the threat of sea-level rise.

“This moment has been fought for by many residents, and past and current Council Members for many years. I am honored to stand with my fellow Council Members, past and present, along with all Town residents to take a stand on such an important environmental issue and see this idea to fulfillment.”

District 8 Miami-Dade County Commissioner, Daniella Levine Cava, congratulated the Town on making this important decision, “Mayor Meerbott and the entire Town Council have taken a bold and important stand by seeking to preserve this property for ecosystem protection. I applaud this decision and will do everything I can to engage the County and other restoration partners to work together to make this a great deal for the Town and our environment.”

Commissioner Levine Cava has been pressing the County administration to review an application to include the property as part of the County's Environmentally Endangered Lands (EEL) program and expects hearings on the matter to be scheduled soon. The EEL Program's focus is the protection and conservation of endangered lands.

“It's important to note that this decision is not one the Council and I have taken lightly. We are committed to carrying out this transaction with great financial prudence and we are considering all financial possibilities and resources available,” added Mayor Meerbott.

“We also realize the timing of this transaction is tricky, as we are navigating through uncharted waters during the COVID-19 pandemic. Yet, this is an opportunity that may not present itself again. Our commitment to the environment cannot be delayed, our Town's resiliency depends on actions like these to be taken.”

The Town's negotiating team, comprised of the Town Manager and Town Attorney, have been aggressively negotiating with the property owners to reach an amicable purchase price since November of 2019.

“The property owner had several legal options to pursue after the Town Council denied their site plan to develop the property during the November 2019 Council Meeting,” stated Town Manager Rafael Casals. “Yet, through our negotiating efforts, we were able to agree on a purchase price—subject to the appraisal and environmental assessment report. I want to thank Cutler Properties and their legal team for working with the Town to reach this agreement.”

Reaching this point has not been without struggle or controversy—as [this property carries a long history of plans for development](#) that were never fulfilled. It also highlights the focus and dedication that this community has to resiliency efforts and the environment.

To be notified of any new development on this story, [sign up to receive the Town of Cutler Bay's E-notifications](#). For more information, contact Town Hall at (305) 234-4262 or visit our website www.cutlerbay-fl.gov.

###

Supporting Documents

 [History of 8.43 Property at 18551 Old Cutler Road \(458 KB\)](#)

Community

UPCOMING EVENTS

CANCELED: Splash in the Bay
06/04/2022 - 10:00am

Active Adults Lunch and Learn: Stroke Awareness
06/09/2022 - 11:00am

POSTPONED: Summer Kick-Off Food Truck Night
06/10/2022 - 6:00pm

[View the Calendar](#)

Contact Us

Town of Cutler Bay
10720 Caribbean Boulevard, Suite 105
Cutler Bay, FL 33189
info@cutlerbay-fl.gov
(305) 234-4262



[Staff Directory](#) [Nondiscrimination & Accessibility](#) [Staff Login](#)



Our commitment to keeping you informed

News from the Town of Cutler Bay
For Immediate Release

Contact: Rafael G. Casals
Town of Cutler Bay
(305) 234-4262

History of the Property Located at 18551 Old Cutler Road

In 2003, Cutler Properties purchased a 138-acre property to the southeast of Eureka Drive and Old Cutler Road, of which the said 8.45 acres was a part of. The 138-acre property was made up of various land use designations under Miami-Dade County Land Use Plan that included Low Density Residential, Estate Density, and Environmentally Protected Areas. Cutler Properties planned to turn 40 acres of that land into a 341-residential unit development, while the remaining 90+ acres bordering Biscayne Bay would be kept as a preserve.

These plans, however, never came to fruition as the South Florida Water Management District (SFWMD)—along with the support and demand by many local residents—would not provide the Environmental Resource Permit required to develop the project. Instead, the District made plans to acquire the property for the Biscayne Bay Coastal Wetlands project. Around this time is when the Town of Cutler Bay residents voted to incorporate in 2005. Some may even argue that this particular project provided motivation for many residents to vote for incorporation, as a way to gain more control of the area to prevent the project from being developed.

In 2010, most of the 138-acre property was purchased by SFWMD. In an effort to reduce the purchase price and at the request of SFWMD, however, 8.45 acres of upland property was carved out of the transaction and remained under the ownership of Cutler Properties.

In 2014, Cutler Properties pursued plans to change the zoning of the 8.45 acres it still possessed from Single Family Residential to Mixed-Use. This plan did not receive the support of the Town's planning consultants and was eventually abandoned. In 2016, new plans were made to develop the parcel of land to an "as-of-right" development of 30-unit single-family homes. During the review process, however, Cutler Properties' application proposed for 77th Avenue to be an access point to the site, which is not a road on the Town's comprehensive plan. With the discrepancy of the access point on their side and with the support and urging of many Town residents, the Council denied the site application.

This denial led Cutler Properties to Request for a Relief in 2018, which triggered the Florida Land Use and Environmental Dispute Resolution Act (FLUEDRA)—which mandates that state and local governments first mediate disputes with any landowner who believes that a development

order, or an enforcement action of a governmental entity, is unreasonable or unfairly burdens the use of the owner's real property.

During the FLUEDRA process, multiple mediation sessions and a Special Magistrate hearing took place that resulted with the recommendation for the Town Council to approve Cutler Properties' alternate site plan (option D) that was identified during the process. When this alternate site plan was presented at the November 2019 Council Meeting, it was once again denied by the Council—who had the support of many Town residents. Soon after the meeting, the Town considered the possibility of purchasing this parcel of land, in order to prevent it from being developed and to preserve the property's environmental value.

After holding a workshop with the Town's financial planner on February 26, 2020, to discuss the Town's financial status, possibilities and resources this purchase would require, the Council decided to move forward with a Letter of Intent to purchase the property that, for so many years, had the makings of a big development. Instead, the Town Council is committed to acquiring the property for the sake of the Town's improvement and resiliency objectives.

###

Biscayne Bay Task Force Item Marine Debris Program – 5A

5A. Create a comprehensive marine debris prevention, reduction, and removal program within DERM and adequately fund and staff the program. The primary goal of the program would be to prevent, reduce, and remove the amount of marine debris entering Biscayne Bay and its tidal tributaries, thereby reducing the impact of marine debris on the Bay's flora and fauna while enhancing the quality of life for the County's residents and visitors. To accomplish this goal, program activities should include, at a minimum, marine debris related project planning, implementation and obtaining funding; public outreach and education; and enforcement action when necessary and appropriate. The program should establish annual targets for the prevention, reduction, and removal of marine debris entering the Bay.

5A. Create a comprehensive marine debris prevention, reduction, and removal program within DERM and adequately fund and staff the program.

RER-DERM is working on developing of marine debris program:

1. The first step in this initiative as taken by former DERM Director Lee Hefty, having identified the need to elevate the County's marine debris efforts. In support of this, following the Biscayne Bay Task Force's efforts and report, John Ricisak who has long spearheaded these efforts was moved laterally into the Water Resources Coordination Division where bay restoration efforts are now focused.
2. Focusing internally on creating more senior role for Mr. Ricisak to lead a more fully developed program. Through his and the efforts described below, a comprehensive plan.

5B. Development of marine debris planning team and comprehensive marine debris plan

Received approval from DERM Director's Office to create a scope of work to bid out the development of a comprehensive marine debris plan, to be informed by the goals and objectives identified by the marine debris planning team and to include, at a minimum, the following:

5D. Conduct an analysis of marine debris in Biscayne Bay

5E. Adopt a target maximum input level policy for trash

5F. Evaluate the various existing stormwater outfall systems throughout the County to determine their effectiveness at preventing debris from entering Biscayne Bay

5G. Identify and establish dedicated and recurring funding sources to pay for marine debris prevention and removal activities and to use as matching funds for supplemental grant opportunities.

Miami-Dade RER-DERM has identified a core group of agency and stakeholders who will directly provide expertise in marine debris issues.

The first meeting set for Tuesday, June 28, 2022.

Miami-Dade County Marine Debris Stats

81 - Derelict Vessels Removed

506 - Crab and Lobster Traps Removed

75 Cubic Yards - Miscellaneous bulky materials

172.58 Tons - Litter and marine debris removed from 12 Spoil Islands

**Stats are from August 2020 thru May 2022*



Our marine debris removal work since August 2020 has focused largely on larger classes of debris in Biscayne Bay proper, including derelict vessels, lost and abandoned fishing gear, illegal structures, and other bulky items.

Since August of 2020, DERM has removed 81 derelict vessels (DV) measuring approximately 2,317 feet in total length. This work is primarily conducted by DERM contractors (i.e., local marine construction and salvage companies) although smaller vessels are removed and disposed of by DERM staff on occasion when feasible. DERM works closely with marine law enforcement, particularly FWC and the City of Miami Police Department's Marine Patrol Unit, to document derelict vessels and vessels at-risk of becoming derelict and to seek their removal by responsible parties when possible and appropriate. As State laws make derelict vessels the purview of law enforcement, not code enforcement, DERM is heavily reliant on FWC and other marine law enforcement to implement these laws and to provide the requisite due process to vessel owners before DERM can remove and dispose of problematic vessels. The primary sources of funding for this work is the BBEETF, FWC, and FIND.

Total cost for the 81 DVs removed since August 2020 inclusive is \$537,000.96 of which \$208,118.08 was from grants - FIND (\$62,331.69) and FWC (\$145,786.39). The remainder was from the Biscayne Bay Environmental Enhancement Trust Fund. The total amount does not include DERM staff time spent on the issue, only the cost of vessel removal and disposal, most of which was contracted.

During this same period, a total of 506 crab and lobster traps and associated line, weighing an estimated 10 tons, were removed from Bay waters by DERM staff pursuant to FWC authorization. The majority of this work took place in the waters of Biscayne National Park. This work was funded by DERM.

DERM also utilized the services of contractors, as well as DERM staff, to remove and dispose of at least 75 cubic yards of miscellaneous other bulky materials that were either submerged in the Bay or located within its mangrove foreshore. This work was funded by DERM and the BBEETF.

DERM managed and funded the removal and disposal of 172.58 tons of litter and marine debris located on 12 Biscayne Bay spoil islands during this same period (August 2020 through May 2022). This work is conducted on a regular basis by a DERM contractor, as it has been over the past 20+ years. This work is funded by the BBEETF.

Miami-Dade County has also provided \$140,000 a year for the past three years to the Miami River Commission, which in turn has paid the Scavenger 2000 vessel to remove floating debris from the Miami River Canal between NW 27 Avenue and the train trestle at approximately NW 38 Street. This work is paid for via the County's general fund.

Aside from the annual Bayanza events, DERM staff also organized a small number of shoreline clean ups utilizing the services of volunteers. (I don't think these were significant enough to mention.)



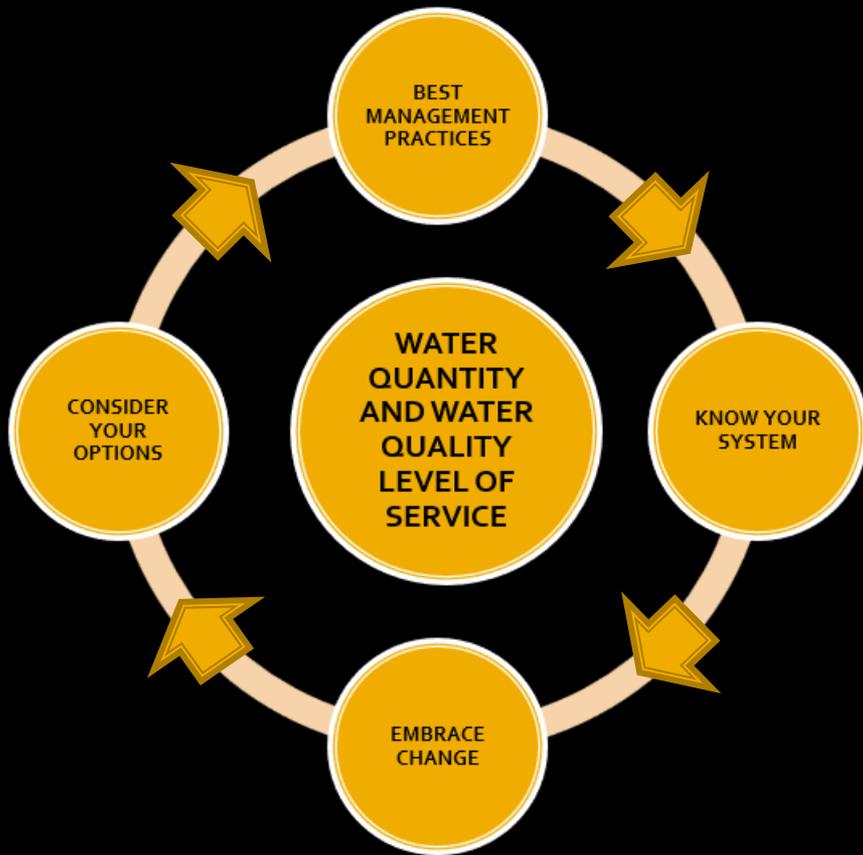
HOW DO WE RAISE THE BAR?



*A Discussion About
Managing
Stormwater
in
Miami-Dade
County*

June 10, 2022

Miami-Dade County Department of Regulatory & Economic Resources – DERM –
Water Management Division



Planning, engineering, construction:

- ✓ Updates to master plan & infrastructure mapping, engineering and implementation of improvements, system inspections & testing, reporting to Federal & State agencies

Operations:

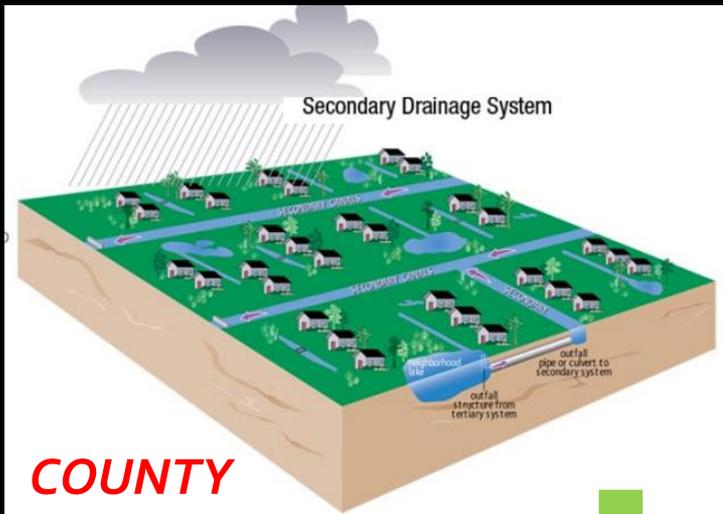
- ✓ Active operations of control structures in the secondary canals, coordination with the USACE & the SFWMD related to the operations of the primary canal system

Maintenance:

- ✓ Active system maintenance including aquatic weed control, debris removal, chemical treatment, dredging, bank restoration, culvert/outfall cleaning, drain & piping cleaning

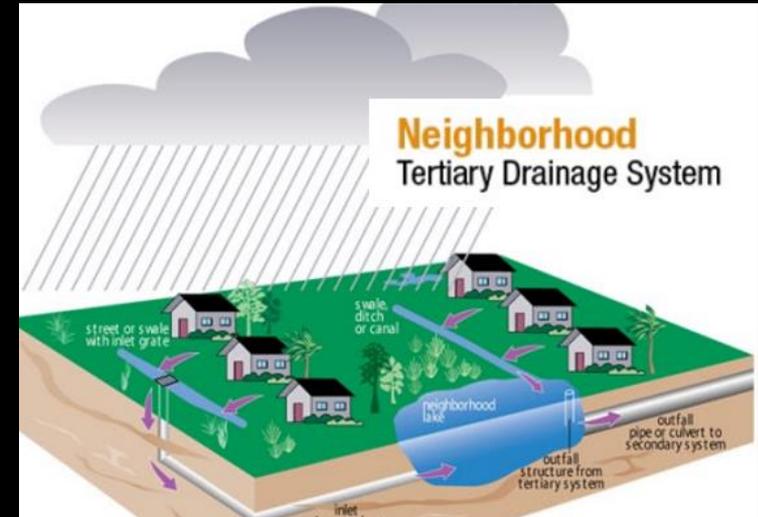
HOW DOES THE COUNTY MANAGE STORMWATER

Regional

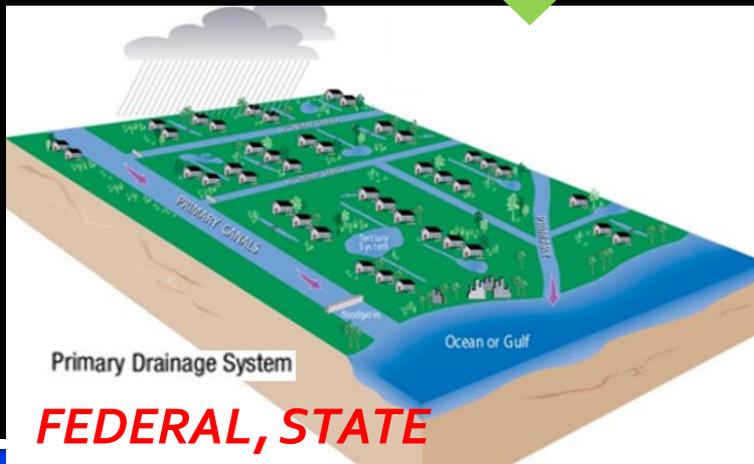


COUNTY

Local



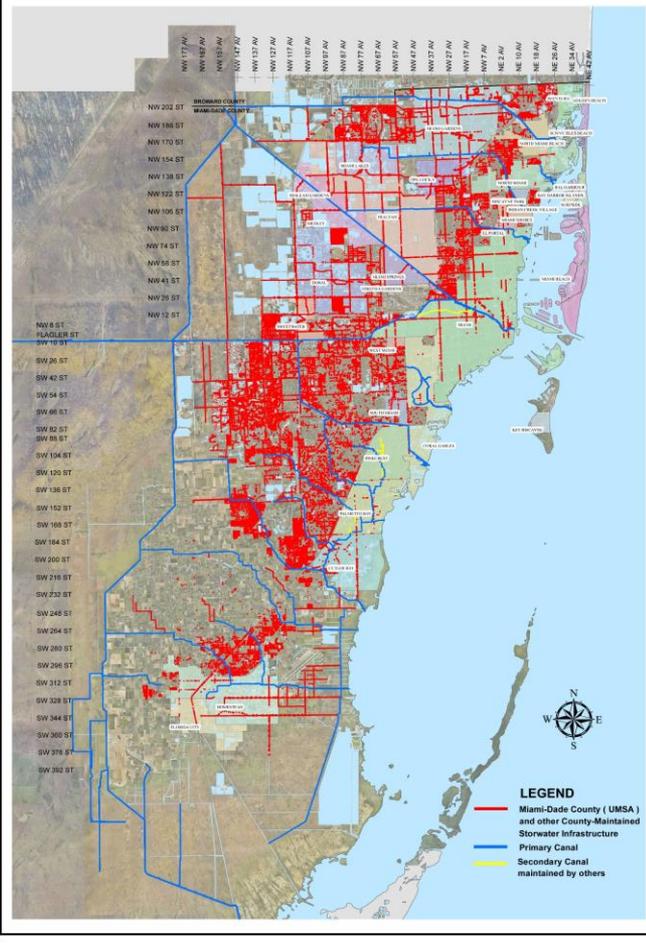
COUNTY, MUNICIPALITY, PRIVATE



FEDERAL, STATE

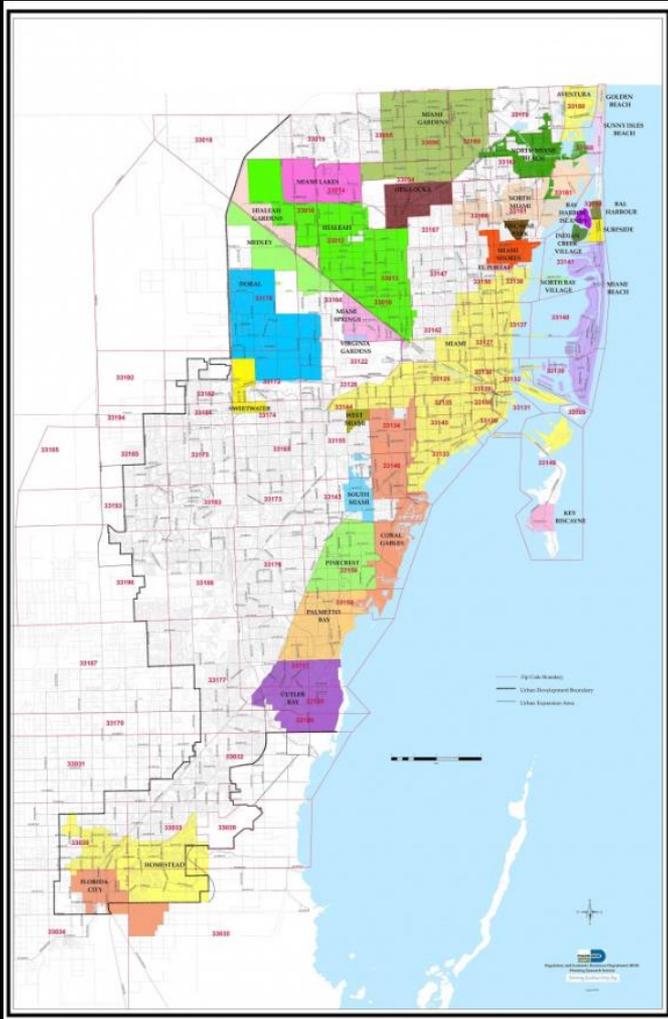
- ✓ *In 1999, the Board enacted Ordinance No. 91-66 to set up a countywide Stormwater Utility in the County Code*
- ✓ *However, the County Code provides a mechanism for municipalities to exempt themselves and commit to establishing their own stormwater utility*

PRIMARY, SECONDARY AND TERTIARY SYSTEMS ARE USED TO MANAGE STORMWATER COUNTYWIDE



- ✓ *Conveyance (approximately 200 miles of canals, 5 canal control structures, over 2,900 or 30% of all outfalls)*
- ✓ *Local Drainage (18 pump stations, over 300 miles of drainage piping, over 400 pollution control structures, over 50,000 catch basins)*
- ✓ *Detention (90 lakes, 3,100 miles of swales)*

WHAT STORMWATER INFRASTRUCTURE IS MANAGED BY THE COUNTY



- ✓ *Primary Conveyance (primary canals and tidal structures – USACE + SFWMD)*
- ✓ *Additional Secondary Conveyance (ditches & over 6500 or 70% of all outfalls– Highway System + Municipalities + Private)*
- ✓ *Other Local Drainage (pump stations, drainage piping, pollution control structures, catch basins – Highway System + Municipalities + Private)*
- ✓ *Detention (lakes, dry ponds, swales – Highway System + Municipalities + Private)*

WHAT STORMWATER INFRASTRUCTURE IS MANAGED BY OTHERS

From the stormwater management perspective:

- ✓ Control & mitigation strategies needed to improve water quantity & quality LOS
- ✓ "Outflow" into the Bay during storm events is critical

**Common
Goals**

From the Biscayne Bay health perspective:

- ✓ Long-term management is highly dependent on improvements to freshwater "inflow" (timing and quantity) and water quality

**ULTIMATELY, STORMWATER CONTRIBUTES TO
GROUNDWATER AND SURFACE WATER DISCHARGES
THAT IMPACT BISCAYNE BAY**

On-Going County Capital and Maintenance Improvements:

Regional Conveyance

- ✓ *Increased use of mechanical harvesting to reduce in-water chemical treatment in secondary canals*
- ✓ *Increased debris collection and removal in secondary canals*
- ✓ *Improvements to storage and conveyance rating in secondary canals*
- ✓ *Improvements to install backflow prevention for outfalls in secondary canals*

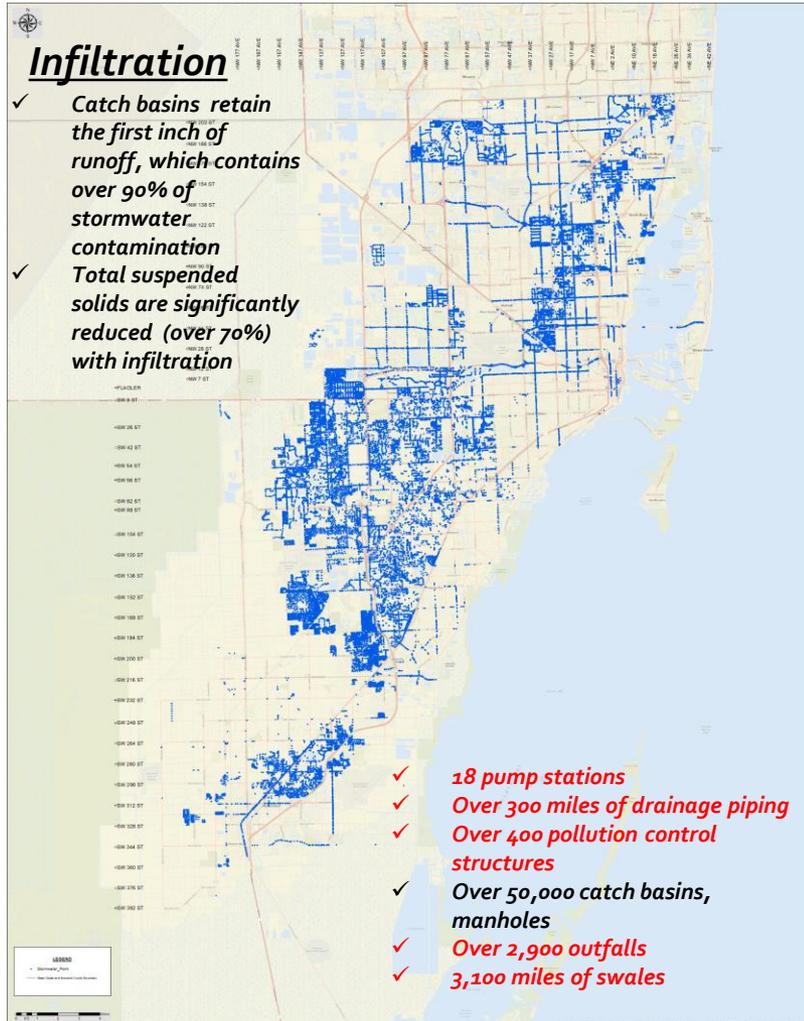
Local Drainage

- ✓ *Optimized cycles of drainage systems cleanings*
- ✓ *Enhancements in piloting of new technologies available for drainage systems*
- ✓ *Improving aging and/or under-designed systems as needed*
- ✓ *Improving detention and retention in local benefit areas*
- ✓ *Targeted water quality assessments*

**THE ADVISORY BOARD HAS EXPRESSED
INTEREST IN STORMWATER SYSTEM
IMPROVEMENTS**

Infiltration

- ✓ Catch basins retain the first inch of runoff, which contains over 90% of stormwater contamination
- ✓ Total suspended solids are significantly reduced (over 70%) with infiltration

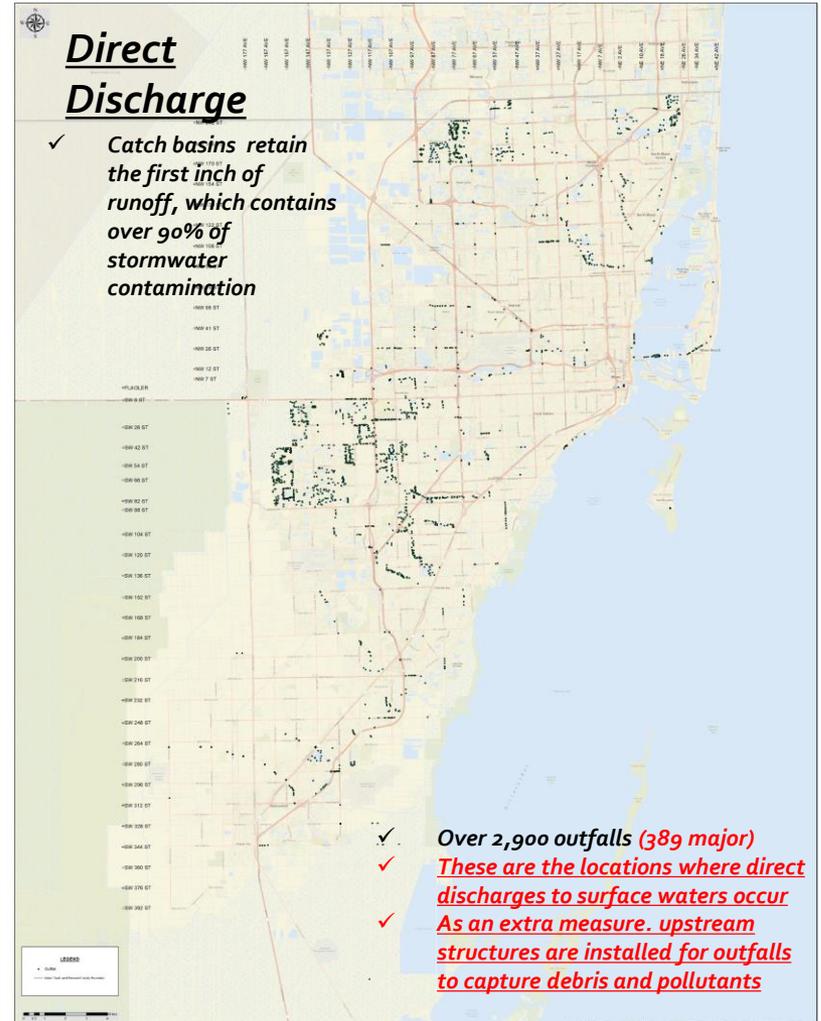


- ✓ 18 pump stations
- ✓ Over 300 miles of drainage piping
- ✓ Over 400 pollution control structures
- ✓ Over 50,000 catch basins, manholes
- ✓ Over 2,900 outfalls
- ✓ 3,100 miles of swales

MIAMI-DADE COUNTY MAINTAINED STORWATER POINTS

Direct Discharge

- ✓ Catch basins retain the first inch of runoff, which contains over 90% of stormwater contamination



- ✓ Over 2,900 outfalls (389 major)
- ✓ These are the locations where direct discharges to surface waters occur
- ✓ As an extra measure, upstream structures are installed for outfalls to capture debris and pollutants

MIAMI-DADE COUNTY MAINTAINED STORWATER OUTFALL

HOW DO LOCAL DRAINAGE SYSTEMS WORK



30 Year Historical Average Rainfall (1991-2020, inches)

MONTH	Upper Kiss		Lake O	East EAA	West EAA	WCA 1&2	WCA 3	Martin/ St. Lucie	Palm Beach	Broward	Miami-Dade	East Dade	BCP	SW Coast	District
	2.43	1.97	1.95	2.13	2.20	2.25	2.01	2.47	3.22	2.51	1.97	2.17	2.13	2.39	2.24
JAN	2.43	1.97	1.95	2.13	2.20	2.25	2.01	2.47	3.22	2.51	1.97	2.17	2.13	2.39	2.24
FEB	2.09	2.00	1.78	1.88	1.83	2.20	1.92	2.31	2.72	2.28	2.04	1.84	1.88	1.89	2.01
MAR	2.83	2.53	2.41	2.35	2.28	2.56	1.97	3.08	3.11	2.61	2.22	2.26	1.99	2.15	2.43
APR	2.72	2.48	2.31	2.50	2.66	2.85	2.98	2.99	3.24	3.25	3.03	2.65	2.73	2.43	2.71
MAY	3.88	3.91	3.70	3.70	4.83	5.05	4.94	4.34	5.07	5.27	5.42	4.27	4.61	3.92	4.37
JUN	8.46	7.92	7.40	7.40	8.51	8.07	8.93	7.46	8.39	8.30	8.98	9.50	10.10	10.12	8.65
JUL	6.98	6.95	5.82	6.68	8.18	6.75	7.13	6.47	6.18	6.23	7.14	7.99	8.07	8.97	7.20
AUG	7.77	7.59	6.88	7.34	8.15	7.58	7.47	8.13	8.40	7.99	8.17	8.78	8.44	9.43	8.03
SEP	6.31	6.13	5.89	6.58	7.16	7.03	7.04	7.20	8.24	8.17	8.82	7.55	8.10	8.94	7.31
OCT	3.13	3.27	3.18	3.79	4.02	4.96	4.58	5.18	5.82	6.48	6.55	3.27	4.06	3.74	4.15
NOV	1.90	1.67	1.64	1.98	1.84	2.53	2.39	2.99	3.30	3.61	3.10	1.78	1.91	1.83	2.18
DEC	2.40	1.83	1.60	1.62	1.66	2.10	1.64	2.38	2.76	2.38	2.29	1.71	1.57	1.77	1.94
YEAR	50.90	48.25	44.56	49.15	53.32	53.93	53.00	55.00	60.45	60.30	59.73	53.72	55.59	57.58	53.22

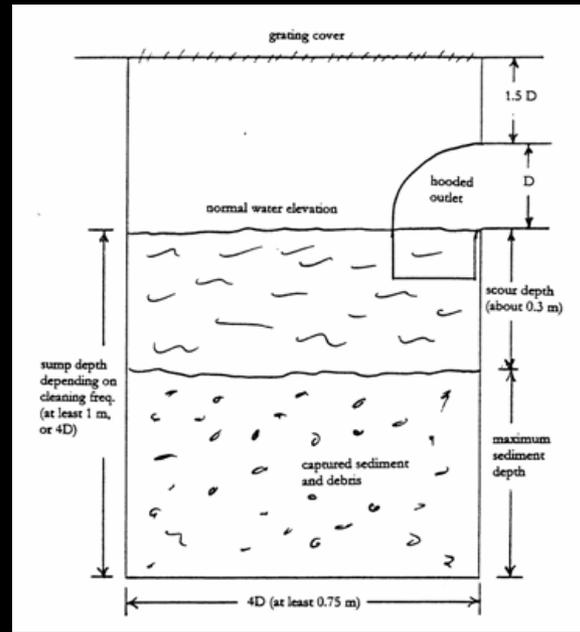
NOTE: All values in inches.

Average precipitation
61-68 inches/year
 (~0.17 inches/day)
 &
Average evapotranspiration rate
58-65 inches/year
 (~ 0.17 inches/day)

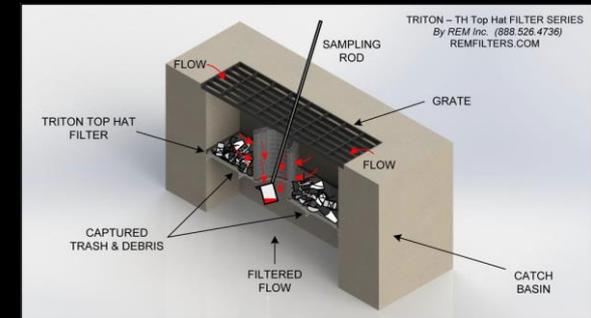
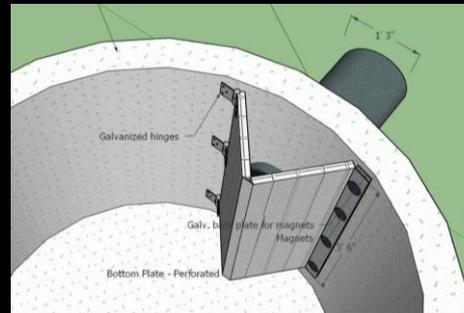
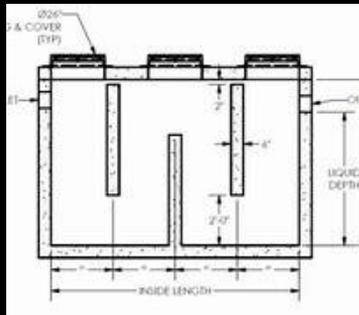
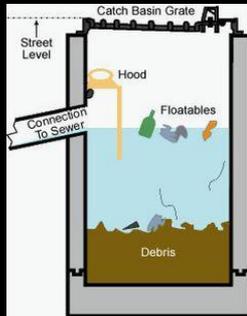
DURING A RAIN EVENT, APPROXIMATELY 2 INCHES CAN NATURALLY INFILTRATE INTO THE GROUND, THE STORMWATER INFRASTRUCTURE MUST TAKE CARE OF THE REST

- ✓ **Most storms are small with less than 1 inch of rainfall**
- ✓ **Size and number of catch basins/structures depend on:**
 - **Peak flow for the area/average rainfall**
 - **Size of sub-basin**
 - **Slopes**
 - **Impermeable area**
 - **Cleaning frequency**

- ✓ *Structure configurations (top & bottom) vary based on location, desired size, and type of debris/pollutants anticipated*
- ✓ *All catch basins are, by design, capable of retaining the first inch of runoff*
- ✓ *Structures use a variety of designs with baffles, filters, single and multiple chambers, etc.*



- ✓ *Custom sizes are designed to fit the location and use:*
 - ✓ *Common interior heights may vary between 5 to 15 feet*
 - ✓ *Common cross sections may be square (8 by 8 feet) or round (5 to 7 feet in diameter)*
 - ✓ *Larger structures are custom designed to fit locations and cleaning frequencies*



HOW DO CATCH BASINS AND POLLUTION CONTROL STRUCTURES WORK



Storm Water O&M Fact Sheet Catch Basin Cleaning

DESCRIPTION

Catch basins are chambers or sumps, usually built at the curb line, which allow surface water runoff to enter the storm water conveyance system. Many catch basins have a low area below the invert of the outlet pipe intended to retain coarse sediment. By trapping sediment, the catch basin prevents solids from clogging the storm sewer and being washed into receiving waters. Catch basins must be cleaned periodically to maintain their ability to trap sediment, and consequently their ability to prevent flooding. The removal of sediment, decaying debris, and highly polluted water from catch basins has aesthetic and water quality benefits, including reducing foul odors, reducing suspended solids, and reducing the load of oxygen-demanding substances that reach receiving waters.

APPLICABILITY

Catch basin cleaning should be performed at any facility that has an on-site storm sewer system that includes catch basins and manholes.

Although catch basin cleaning is easily implemented, it is often overlooked in an overall storm water management plan. In addition, many of the catch basin cleaning programs that have been implemented focus only on removal of debris from grate openings; full implementation of the catch basin cleaning BMP should also include removal of debris from the catch basin itself.

ADVANTAGES AND DISADVANTAGES

Catch basin cleaning is an efficient and cost-effective method for preventing the transport of

sediment and pollutants to receiving water bodies. This improves both the aesthetics and the quality of the receiving water body.

Limitations associated with cleaning catch basins include:

- Catch basin debris usually contains appreciable amounts of water and offensive organic material which must be properly disposed.
- Catch basins may be difficult to clean in areas with poor accessibility and in areas with traffic congestion and parking problems.
- Cleaning is difficult during the winter when snow and ice are present.

Sediment and debris removed from catch basins can potentially be classified as hazardous waste. As a result, the materials must be disposed in a proper manner to avoid negative environmental impacts.

PERFORMANCE

Based on current data, it is not possible to quantify the water quality benefits to receiving waters resulting from catch basin cleaning. The rate at which catch basins fill with debris, as well as the total amount of material which can be removed by different frequencies of cleaning, are highly variable and cannot be readily predicted. Past studies have estimated that typical catch basins retain up to 57 percent of coarse solids and 17 percent of equivalent biological oxygen demand (BOD).

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One size of maintenance cycle does not fit every location or type of infrastructure... EPA, FDEP and County experience calls for 5 years as a cleaning target maximum

**Quality
over
Quantity**

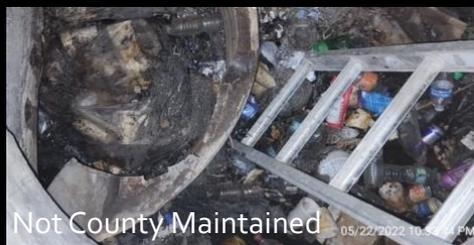
Maintenance begins above ground, inspecting all structures and documenting deficiencies and damage

Schedules are flexible to address local needs:

- ✓ Pre & post storm events in hard hit areas
- ✓ Persistent flooding and complaints
- ✓ Structures upstream from outfalls

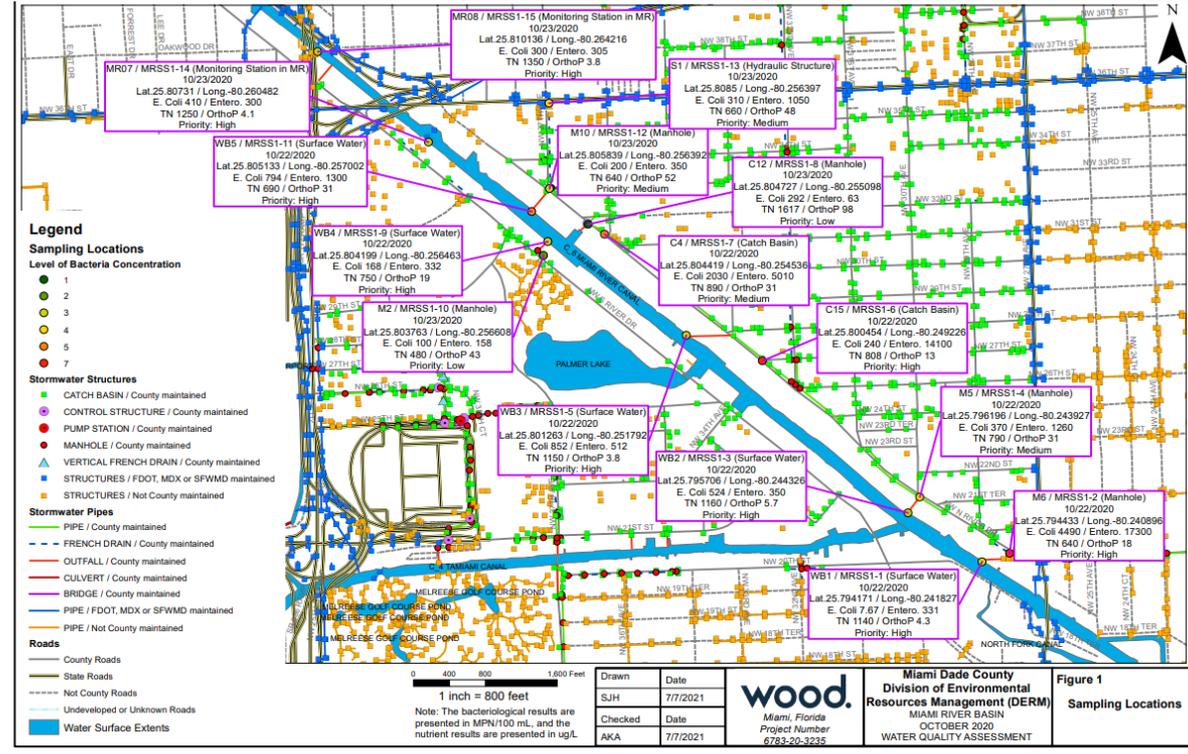
HOW DO WE OPTIMIZE SYSTEM MAINTENANCE OF LOCAL DRAINAGE SYSTEMS

- ✓ **Cleaning of structures is done along with the cleaning of associated piping**
- ✓ **In the last 5 years: 54,478 structures (105% of the system) and 374,350 linear feet of piping were cleaned, street sweeping approximately 8 times per year**
- ✓ **Pump stations are maintained weekly**
- ✓ **Cleaning has been complete using County crews and contracts**



- ✓ **Conduct proactive inspections: some annually, semi-annually, quarterly, pre & post rain events; and follow-up with maintenance requests to ensure the cleaning was complete as needed**
- ✓ **If left unattended, infrastructure will not be able to collect, store, dispose of any more stormwater**
- ✓ **Visual inspections at least once per year, including surrounding areas to identify leaks from dumpsters, minor spills, oil dumping, and debris/sediments, with immediate action taken to remove pollutant source and debris**
- ✓ **Every two to three years every structure is opened**
- ✓ **Pollution control structures and structures upstream of outfalls are opened and inspected at least annually, and cycle may be shorter based on historical results or discrete findings**
- ✓ **Likewise, if there are flood complains, or if area is included in the flood monitoring program list, inspectors open and inspect every structure and surrounding areas on every visit (on demand and pre-post storm) and follow-up with maintenance requests to ensure the cleaning was complete**

COUNTY PROCEDURES TO MAINTAIN LOCAL DRAINAGE SYSTEMS



Since 2019, conduct water quality assessments starting at sampling and monitoring stations with consistent water quality deficiencies and exceedances:

- ✓ Completed two area assessments in the C-7 basin
- ✓ Completed one area assessment in the C-6 basin, and a second one is underway
- ✓ The three pilot locations for new technology applications were selected and designed using the results of the water quality assessment in C-7 basin
- ✓ Technology selection was made based on the type of pollutant/treatment required
- ✓ Results also used to:
 - ✓ Modify inspections and cleaning cycles
 - ✓ Compliance follow-up
- ✓ Selection also based to provide information as to how these technologies can be applied to typical local drainage systems
- ✓ Design and permits completed, RER-DERM is preparing the contract and technical specifications and will bid, award, construct, sample and evaluate the pilot projects
- ✓ Construction, monitoring and final report by June 2023 (current estimate is \$900,000)

- ✓ Analysis includes:
 - ✓ Baseline sampling
 - ✓ Cleaning of infrastructure
 - ✓ Post cleaning sampling
 - ✓ Analysis of data collected
 - ✓ Signed and sealed report

HOW DO WE IDENTIFY AND CONDUCT ANALYSIS FOR PILOT PROJECTS

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 11(A)(14)
12-1-21

RESOLUTION NO. _____ R-1184-21

RESOLUTION DIRECTING THE COUNTY MAYOR OR COUNTY MAYOR'S DESIGNEE TO CONDUCT A FEASIBILITY STUDY REGARDING THE USE OF STORMWATER-DRAIN QR-CODE TECHNOLOGY, AND TO PROVIDE A REPORT

WHEREAS, Miami-Dade County is committed to protecting the health of Biscayne Bay, which is a cornerstone of our environment, culture, and economy; and

WHEREAS, stormwater systems are one of the main potential sources of pollutant discharge into Biscayne Bay; and

WHEREAS, even leaves that make their way into stormwater systems can contribute to nutrient pollution such as phosphorus and nitrogen; and

WHEREAS, when used more effectively, stormwater systems could help prevent pollutant discharges; and

WHEREAS, a technology has been developed that allows community members to participate in ensuring that stormwater systems function effectively; and

WHEREAS, with this technology, stormwater filters would be installed at street level on street stormwater drains, and the drains would be marked with QR codes; and

WHEREAS, when someone sees that a stormwater filter is clogged with leaves or other debris or litter, that person can take a photograph of the clogged filter and, using the QR code, upload the photograph and other information, such as the types and quantities of debris and litter, online so that the County could collect data on the build-up of debris in stormwater drains; and

Assess the effectiveness of the use of new technologies such as QR codes to improve response time to maintenance and cleaning requests:

- ✓ ***DTPW looking into applicability***
- ✓ ***RER-DERM to work on data collection and potential integration with existing infrastructure geodatabase used for inventory, mapping and engineering analysis***
- ✓ ***Timetable still being worked on***

COUNTY IS LOOKING INTO OTHER NEW TECHNOLOGIES TO FACILITATE RESPONSE TO MAINTENANCE NEEDS



Conducting inspections and monitoring of inlet screens installed by the City of Aventura to determine performance and potential use:

- ✓ *Inspections started in the fall 2021*
- ✓ *Frequency of inspections is every two months*
- ✓ *Total of 15 locations being monitored*
- ✓ *Only one location has been found cleaned in all inspections so far*
- ✓ *In every inspection, between 40 to 60% of the inlets have been found partially or fully clogged*
- ✓ *Inspections will continue during upcoming rainy season, including for pre and post storm events, if any*

COUNTY ALSO FOLLOWING UP ON OTHER PILOTS AND NEW TECHNOLOGIES BY MUNICIPAL PARTNERS

Category	Description	Status
Strategies	Use a comprehensive approach to improve water quantity and water quality: <ul style="list-style-type: none"> ○ Optimize system maintenance activities and assessments ○ Implement capital improvements ○ Strengthen regulations (UMSA and Countywide) 	On-Going
Engineering	Use updated engineering models for current and future scenarios with sea level rise (2040, 2060, 2080, 2100)	Last update completed in 2021
	Plan, design, and mitigate for future needs based on a Stormwater Master Plan	On-Going
	Use capital planning based on priority scores for short- and long-term capital improvements	On-Going
Financial	Leverage Federal, State and other funding to accelerate implementation of capital improvements	On-Going
	Update the County's Stormwater Utility structure – Regional and Local Utility tiers	On-Going
	Optimize use of dedicated annual revenue (County Stormwater Utility Fees)	On-Going

Category	Description	Status
Partnering	Lead local governments and special districts that own and operate stormwater management systems to complete a first ever 20-year stormwater needs assessment with future updates every 5 years - 403.9302, Florida Statutes, (see Chapter 2021-194, Laws of Florida)	On-Going
	Renew existing agreements with municipalities, FDOT and MDX And Scope a new interlocal agreement, to enhance collaboration with municipal governments and special districts, to continue the exchange of information and experiences to achieve improvements in system performance (mapping, master plan, capital plan)	On-Going
	Partner with the South Florida Water Management District to exchange engineering analyses and results	On-Going

STORMWATER MANAGEMENT ACTION PLAN FY 2021-2022 & BEYOND

Questions & Discussion

M PILOT PROJECT 1

Pilot Project 1 is located in a residential area on NW 107 St from NW 19 Ave to NW 18 Ave.

- Two (2) existing outfalls to Little River Canal (C-7)
- Will install 20 StormBasin catch basin inserts with filters prior to Outfall 1
- Will install EcoVault unit with filter prior to Outfall 2
- Estimated Project Cost \$260,000

Project Status

- Design Phase: 100% complete
- Permitting Phase: 100% complete
- Procurement: Ongoing
- Construction and Testing: Scheduled for Summer 2022



Description	Quantity
EcoVault 5' x 10' (Ecosense International Inc)	1
StormBasin Plus with Protected Bypass (Various sizes) (Ferguson)	20
EcoVault 5' x 10' Replacement Filter (Ecosense International Inc)	4
StormBasin Plus with Protected Bypass (Various sizes) Replacement Filter (Ferguson)	40

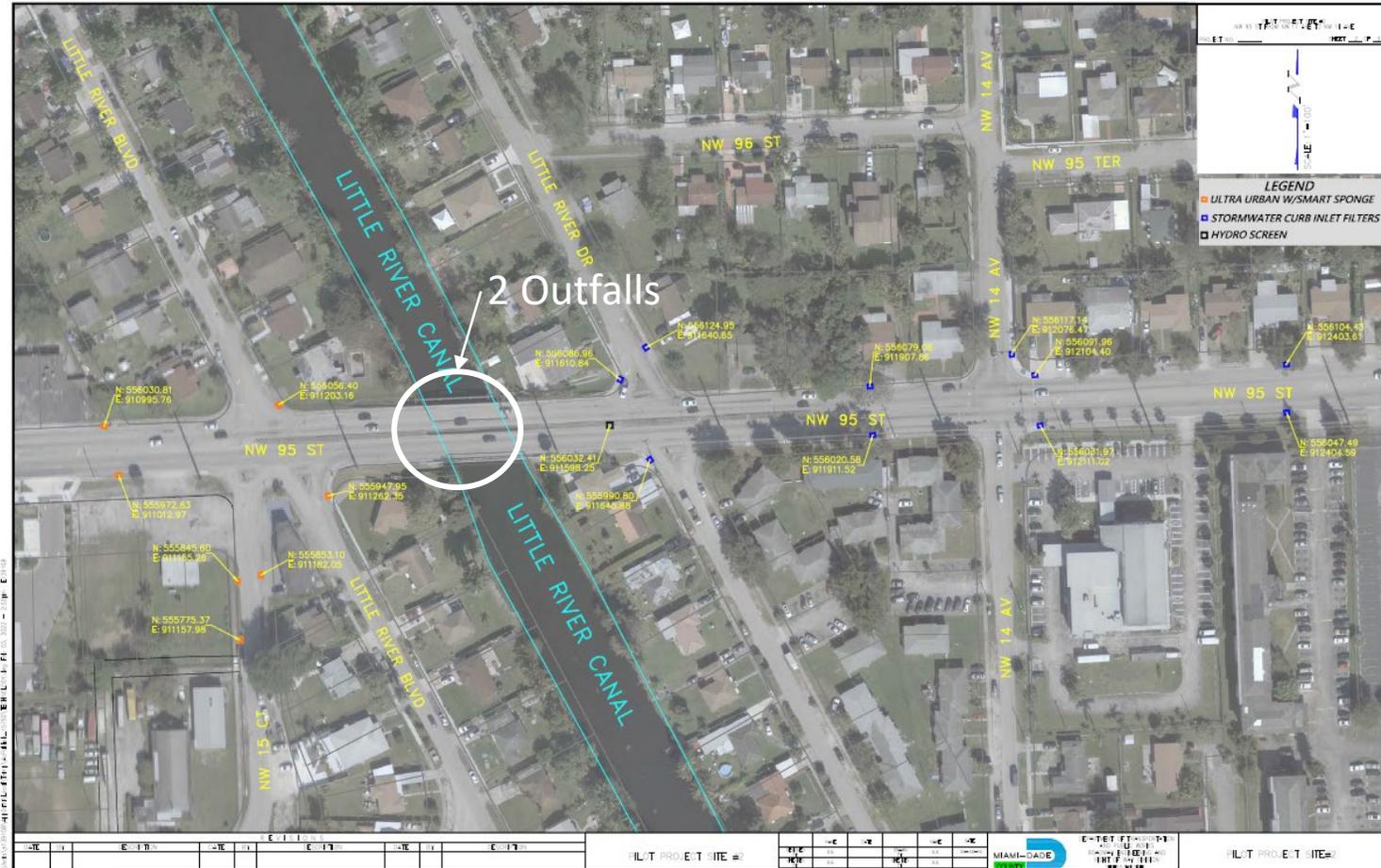
M PILOT PROJECT 2

Pilot Project 2 is located on an arterial roadway, NW 95 St from NW 13 Avenue to NW 17 Ave.

- Two (2) existing outfalls to Little River Canal (C-7)
- Will install ten (10) SOP Inlet Screens and a Hydro Dryscreen unit prior to Outfall 1
- Will install seven (7) SmartSponge Filters Insert prior to Outfall 2
- Estimated Project Cost \$254,000

Project Status

- Design Phase: 100% complete
- Permitting Phase: 100% complete
- Procurement: Ongoing
- Construction and Testing: Scheduled for Summer 2022



4X8 Hydro Dryscreen (HYDRO INTERNATIONAL)	1
Stormwater Curb Inlet Screens (SOP TECHNOLOGIES)	10
SmartSponge Filter Inserts UUF DI3216H, W/2 SPK 161603 HM	3
SmartSponge Filter Inserts UUF DI3216N, W/2 SPK 161603 HM	1
SmartSponge Filter Inserts UUF DI1414H, W/1 SPK 141403 HM	3
Smart Pak - Smart Sponge HM (Replacement) (ABTECH)	22

