City of Coral Gables City Commission Meeting
Agenda Item G-3
January 12, 2021
City Commission Chambers
405 Biltmore Way, Coral Gables, FL

City Commission
Mayor Raul Valdes-Fauli
Vice Mayor Vince Lago
Commissioner Pat Keon
Commissioner Michael Mena
Commissioner Jorge Fors

City Staff
City Manager, Peter Iglesias
Assistant City Manager, Ed Santamaria
City Attorney, Miriam Ramos
Planning and Zoning Director, Ramon Trias
City Clerk, Billy Urquia

Public Speaker(s)
Robert Backman

Agenda Item G-3 [11:00 a.m.]

An update on the stormwater purification pilot program located at the Riviera outfall and a presentation to address stormwater pollution due to Coral Gables outfalls into Biscayne Bay.
(Sponsored by Vice Mayor Lago)

Mayor Valdes-Fauli: And now we have a time certain at 11 am, G-3, update on the stormwater purification pilot program located at the Riviera outfall and presentation to address stormwater pollution. G-3.

Vice Mayor Lago: Thank you, Mayor. You know, we've been going through -- it makes me happy to see that we've been going through the agenda very quickly so we can spend a little bit of time talking about this. We had the -- we were fortunate enough to have the Mayor of Miami-Dade County, who's here and she's advocated -- obviously, she's been a staunch advocate on the environment, and I think this Commission has done a wonderful job really advocating on behalf of storm -- you know, clean water, clean air. A testament of that is, you know, having discussions like Mr. Tico Aran's discussion about the oysters and different things that we're doing. This is a two-prong conversation. First off, I wanted to acknowledge certain individuals that are here that'll come up and talk now. They were the individuals that I was able to reach out to and they donated the system that we're using at the Riviera outfall, which has been very successful, and I'm grateful for that. I've mentioned it to you before, and I wanted to just mention it again. The system is working very well. It's working too well, as a matter of fact, to pick up garbage and clean the water. You know, we have a big issue here in regards to the level of nutrients, and we all understand that something needs to be done to ensure the viability and the future of the bay. This is not a partisan issue. This is an issue about South Florida. This is an issue where we need to be leaders on this and not be afraid to have a real discussion, even if it's out of our hands. Like for example, we're limited, the City of Coral Gables, in what we can do, but we need to have this discussion, so hopefully all the newspapers and other entities pick it up. We've invited several people to come here and continue this discussion, Irela Bague, Waterkeepers. I invited the Mayor of Miami, the Mayor of Miami-Dade County, his team, to listen in on this conversation because this is technology that I want you to explain to my colleagues and talk about and put it on the record. And I want this to be -- it's going to be discussed in the future because we're dealing with issues like stormwater pollution. We're dealing with issues of septic to sewer conversion. We're dealing with Big Sugar, and these are big, big hot-button discussions that are going to cost this community billions and billions and billions of dollars. How are we going to resolve and bring back the bay? How are we going to find the money in these uncertain times when, for example, our City and many other cities -- if not every other city in the County -- has lost significant monies as a result of COVID. Where are we going to find the money to really invest in our bay, which is

something that again is an economic driver, like I've mentioned, to the tune of billions and billions and billions of dollars. Not to mention, like I said before, that 25 percent of our taxes comes from properties located on the water. So we need to protect those property owners. We need to protect their investment and their investment is crucial to the future of the City. So, I wanted to invite Ms. Ranjel (phonetic) and her team to kind of talk a little bit about -- you know, briefly about what we did at Riviera, some of the testing that they did. I wanted to thank our ACM, our City Manager, Matt, our team, because they've worked hand-in-hand -- and if I forgot somebody, Ed, please, you know, correct me. Chelsea, Patricia, Dexter, everybody who's played a role in helping; Hermes, our Public Works team. I don't want to forget anybody, but I will, so Ed will remind me. Because this has been a process of not only -- like we mentioned before the pilot program -- but I want you to talk about what your company has done in other parts of this great country and how it's cleaned up those bays because this is -- we need to be -- the elected officials on this dais and the elected officials in Miami-Dade County, we need to be strong and advocate on behalf of the future of the bay, and it starts with the little communities holding the entire county accountable. So, please. Come forward, anybody who wants to speak. The floor is yours.

Robert Backman: Thank you. Is it okay if I remove the mask?

Mayor Valdes-Fauli: Yes.

Vice Mayor Lago: I have no issues, yes.

Mr. Backman: You do?

Vice Mayor Lago: We're socially distanced.

Mr. Backman: It's because I'm going to fog up and I won't be able to see. Appreciate it. So I'm Bob Backman with -- CEO of AbTech Industries. Pardon me for a second.

Mayor Valdes-Fauli: Concentrate on that first and then -- yeah.

Vice Mayor Lago: By the way, thank you, Bob, for being here. I know you flew in (INAUDIBLE).

Mr. Backman: Vice Mayor, I appreciate you inviting me here to take a few minutes of your time to explain a little bit about our technology and how we implement it to deal with stormwater challenges, not only on the coastal communities, but worldwide. We're involved with stormwater challenges in North America as well as in Australia, the UK and other areas. We're not the solution of all the problems, but just -- it's a part of the overall solution. So, in dialogue with our team here, Vice Mayor Lago invited us to talk a little bit more with the Public Works Director, Sustainability manager here for your community, and present our technology and identify where it may be a fit incrementally to deal with your challenges. Down here in Florida, for example, for the past many years -- I live in Massachusetts myself. The company is based out of Arizona, so I have a chance to fly all over the country and deal with challenges in different communities, and down here, we've always looked at it from a -- and Texas and certain parts of California, conveyance is an issue of stormwater. It's always how do you get it removed. It was never the pollution part of it. Having spent the past 35 years as an environmental engineer dealing with wastewater and water, stormwater was always a third tier. It was always an issue around conveyance and never talked about pollution. Well, today it's more and more about the pollution in stormwater and the impact. So what I want to do today is kind of talk about the little pilot that we did and the benefit of that pilot and what we were able to demonstrate and just take a few minutes of your time. Is this queued up to --?

City Clerk Urquia: Yes, sir.

Mr. Backman: So basically, introduction of the team; myself, (INAUDIBLE), we go SCRM Mechanical locally and our partner Juan Centello (phonetic) of CLIMA (phonetic) USA, who lives over in the Village of Key Biscayne, brought me down and introduced me to and said let's look in this area, how can we help with our technology. And they identified several communities, Village

of Key Biscayne, as well as Coral Gables and said, well, how can we introduce what we may be able to be a solution for. So, I want to talk a little bit about the problem statement, and then explain the pilot itself, and then what the impact is of Coral Gables stormwater on the bay and open it up to discussions. And we can go further into things that were done in other areas around the country. You're all familiar with the challenges of the bay area. They got national -- recently back in August or September when you had the fish kills in the bay, national press. I saw it in Massachusetts. I saw it when I was traveling out to Arizona and California on news at night, so it was -- it got tremendous international exposure. And it's caused by a variety of contaminants that get into the bay. It's being studied extensively, but everyone's contributed to it, not just here, but other communities around this area all contribute to that pollution. So, we all have a moral responsibility to bring back that bay. And as Vice Mayor Lago said, it's the life blood of your community. That's why people love to come down here. So, if you lose that, you lose your driver for people to live here and people wanting to come down here. What I thought to do is take one minute, and this maybe redundant to you. Can you click on the little -- are you able -- or is someone able to click on the -- much if I can do it. That's a little video in the…

City Clerk Urquia: Where is it?

Mr. Backman: Picture in the bottom. I don't have a pointer. Oh, I do. Okay, great. This may be redundant, but this is very similar to what I saw as I live up in Massachusetts and vision of down here now. This is what as a resident of Massachusetts I saw as the issue down here. It was awe inspiring and you know, I said, do I really want to come down to this community area. And these were taken down here -- when were these --? (INAUDIBLE) in different areas of the bay area. So, this is realistic, you know, cause of loss of the bay area and the impact on that ecosystem, a variety of things from eutrophication caused by -- you know, for algae growth to trash and debris that continues to go into the bay area and the impact on your community. And if you don't address it today, this is going to be a common occurrence. There are areas in the country that we're working in Chester, Pennsylvania, the Delaware River basin, it is similar type conditions, and we're doing work up there in other parts -- in California, in San Diego, and a variety of different small lakes

that have eutrophication problems. They're a challenge. So, there are things you can do today that will help incrementally improve their performance. So, a little bit about AbTech. We are a company that's real quickly based in Phoenix, Arizona. We've been involved in stormwater for 20-some odd years, before it was a catchword, and deal with technology, technology to treat the water, purify the water, not just convey it. But we also don't want to hinder conveyance. So, if you look at stormwater, there are two parts of stormwater. The main issue is conveyance. Everyone wants to move it somewhere. The second part of it is the contaminants are in the water. And the visual ones are the easy ones to see, the trash, debris and sediment. It's the hidden ones that typically cause the most harm. It's the nutrients that come from, you know, fertilizer, come from degradation of plant material and variety of other activity. It's the heavy metals that come from every time someone put their brakes on and you're driving your tires. That's releasing heavy metals. It's runoff from pervious surfaces. What we've developed -- and I don't want to spend a lot of your time talking about the technology, but I just want -- so you have an understanding of it -- we call it Smart Sponge, and it's a blend of polymers that we also implement other technologies into to remove certain soluble contaminants, predominantly hydrocarbons, but we also address bacteria, heavy metals, nutrients, phosphorus, and the typical other organics that you may see in stormwater, anywhere from soluble hydrocarbons to other organics that may get in the water and remove those hidden contaminants. But because we call it Smart Sponge, it has a high hydraulic connectivity, which means it doesn't hinder significantly the flow of water, so it's complementing the ability to convey water at the same time. Typical stormwater pollution, anywhere from trash and debris and sediment, oils and greases, bacteria, nutrients, as well as heavy metals, we're able to remove, but those are typical contaminants you find today in stormwater. And from my experience, you typically -- those that you can see are best handled at the source of where they are developed. So, for example, trash and debris, deal with that at your catch basin locations; sediment, deal with that where it's coming from, which is on your impervious surfaces. Downstream, deal with the hidden -- what I call hidden contaminants, the dissolved contaminants point. Deal with the bigger stuff that you can more effectively at the surface more easily and not wait until it gets to the very end into your discharge point or where you're conveying the ultimate discharge of your stormwater. Our technology can be fit into a variety of different applications.

It can be an infrastructure sleeve, in fitted catch basins. It can be at end of pipe solutions. And I'm not here to talk specifically about it, but it fits into existing infrastructure because every community has already invested infrastructure cost in stormwater conveyances, and it's a huge capital expense and it's huge for every community to dig up their infrastructure and alter their infrastructure. Ours is kind of a complement, very similar to a Brita filter. It fits into your process, your existing infrastructure and does an incremental benefit of removing contaminants at the source or at the end of pipe. You're all familiar with your storm drainage system. My understanding is you have about 2,700 catch basins, 108 outfalls, a few of those that are predominant outfalls, and some are very small outfalls, but a very pristine coastal community with a variety of different discharge points. And you are contributing as every other community is to that issue of the bay and the loss of the bay and its viable environment. You are from a regulatory standpoint (INAUDIBLE) of MS4 for the whole county, so you all have a collective responsibility. We in talking initially with Vice Mayor Lago, then talked to Sustainability Manager and Public Works Director, identified where we could just kind of demonstrate our technology and could it do something for your stormwater and initially also quantify what's going on within your stormwater. So, we identified the Riviera outfall as one of the major outfall areas. We took our Smart Sponge and implemented it in what's called a passive and absorptive skimmer. It wasn't -- just to see what type of soluble contaminants were coming out of this outfall. For a short period of time, starting in September, we installed initially as a boom, not realizing how much trash was coming out of this at the same time. There wasn't originally a turbidity type boom that was catching trash and other things. And not realizing how much trash was there, we thought our passive skimmer boom could handle the outfall. During the period we ran for just over a month. We -- down here, you had about 9.5 inches of rain during that period. But real quickly we found within a matter of a day or two, there was trash everywhere, so we had to put back in a turbidity boom to capture that trash. It was a tremendous amount of trash and debris around there. The boom that we put there was purely just to see what absorbed or capability we could do. So during that period, after one month, we took a portion of our boom, removed it and analyzed it. And what came out of there is that we found a tremendous amount of hydrocarbons. Now, we didn't look at other contaminants with some of our other technology. We're purely looking at hydrocarbons and

being able -- and analyzing that over an annual rainstorm event. Out of that one outfall, there's about 96 gallons of hydrocarbons, short chain gasoline diesel to regular motor oil et cetera being discharged out of that one outfall on an annual basis. For a visual, that's equivalent to two 55-gallon drums of hydrocarbons being discharged out of that one outfall based on that one-month study that we did there. So with that, I want to open it up to Q and A, but I'll -- before I do that, just, you know, tell you a little bit about how you can do something today as you plan for overall in the future. We currently, for example, up in Chester, Pennsylvania, are part of a team addressing our technology where it fits easily as an infrastructure into their catch basins to capture trash sediment debris. So there, we're also doing the same thing, getting involved out in California, the City of Salinas and other areas. We were involved in Norwalk, Connecticut. As a complement of your overall stormwater system -- I'm not necessarily here pushing what I have to offer, but to state that there are things that you can do today that will contribute to the benefit of the bay area, but also potentially will have a snowball effect and bring in other communities to say we can do something today as we look at the overall holistic solution. With that, I'll open up to any questions.

Vice Mayor Lago: So, that -- I think you covered it. And that was the main reason why I invited you here, outside of obviously saying thank you for your donation. It was thousands of dollars that you donated, and again, just in benefit of the water quality in our City, and that's what makes our city special. We cherish our trees. We love our waterways, but it's incredible -- and I want my colleagues to understand this. There was so much trash in the boom, and I think staff at one point was getting calls from residents saying, listen, you got to do something about this. So the technology was working. And I'd love to have staff come up here and also talk a little bit about this because what I envision is we're going to have to address our issues with our stormwater. If you look in front of my house, I have a catch basin in front of my driveway, and I have one across the street, on San Amaro. And to me, the amount of stormwater that goes in there, it's incredible. The amount of organics -- I don't fertilize my yard, so at the end of day -- but it's coming from all my neighbors, from everything. But when you look at the amount of cars, that traffic that goes in my street, brake dust, gas, radiator fluid, oil, you can see it on the street, on the crown of the street. And when it rains, all that goes into the catch basin and ends up in our bay. And these young guys

that I met, that I think we've talked to them -- about them before here. It's called -- they have an Instagram account called Send it 4 the Seas. These young guys that are super passionate about water quality and really cleaning up -- they do a lot of cleanup efforts. We're actually going to coordinate one for next month here in the Gables. They take drones and they fly drones over the bay when it rains, and the amount of oil slick that you can see coming out of these outfalls is -- again, this is just one of the three or four reasons why the bay is suffering so significantly, but we have to find an answer for stormwater runoff. So, I asked staff -- and I know that the ACM is working on it. I haven't followed up with him in the last month, but I know he's working on it, to put some grates on our -- excuse me, we're talking about -- I brought it to the Commission and we voted on it to put some grates or some slats that would stop cans and garbage and some of the organic material from going into the catch basins. But we also have the problem of how are we going to stop the gas? How are we going to stop the oils? How are we going to do this? And I would love to see the City of Coral Gables put together a pilot program where we talked about it in the downtown to push the ball forward and show the county and show other cities that this is viable. You talked about that you've done this in the state of -- excuse me, in the United States before where you've cleaned up bays. Can you just talk very briefly, very briefly about, you know, the return on investment and how your equipment and your technology has brought the health back -- and I know that we can't do this, that Coral Gables cannot fix the bay itself. But we can push the ball forward. We can set an example. What has your technology done? Was it Chesapeake you said?

Mr. Backman: Well, in the Chesapeake Bay, indirectly into that, but it was more the Delaware River basin.

Vice Mayor Lago: The Delaware River basin, excuse me.

Mr. Backman: As an example, also in Norwalk, Connecticut, also Long Beach, California, where the avoidance over a yearly period was the equivalent o f-- for example, Long Beach, California was the equivalent of trash capture of 40 40-foot roll-offs of not that trash getting into the Long

Beach area. And the Delaware River basin, that process right now, we've implemented -- and I think ultimately, similar to your community, I want to say there's 2,000 catch basins were involved just as catch basin inserts, so a low investment of removing contaminants. And we currently have 500 catch basin installations. And I think exactly how many -- but I can find out how many tons of trash and debris and sediment they've avoided being discharged into the Delaware River basin. But they're actually -- have commented they're actually seeing just in a matter of a year, a year and a half, a cleaner-looking Delaware River basin in that community area of Chesapeake Bay. Now, that program is a long-term program that we're involved with other parties, more of a holistic approach, so not only implementation of it, but the management of that stormwater system and the infrastructure because anything that you put into the infrastructure needs to be maintained. Having -- not to age myself, but having been in the environmental engineer for over 38 years now, early on in stormwater, also in wastewater, everyone looked at it as a capital investment and not as a long-term management of their assets. So, they got funding, they implemented some capital investment but didn't plan for the maintaining of it, and that -- it was a hidden solution that was put into the ground and until it flooded, no one maintained it. And if you don't maintain it, it's just like your car, you buy a car and you're not going to ever change -- never change the oil until the car dies, you're going to maintain it by changing the oil on an annual basis or a frequent basis. You do the same thing for stormwater infrastructure. You need to maintain it. So, I urge you when you look at your stormwater and easy solutions, you also look at as a holistic approach of how to maintain it, monitor the performance of the system, but also use that to communicate out to your community the value of treating the stormwater so it gives you a multi-facet solution of not only, yeah, we've implemented something, we've treated it, but you can communicate it to your interested parties, which are your residents that we are doing something. Your investment of dollars is a value, and here's, you know, a metric that shows you that. And that technology is available today.

Vice Mayor Lago: Mr. ACM.

Assistant City Manager Santamaria: So good morning, Mr. Mayor, members of the Commission. Ed Santamaria, Assistant City Manager, Operations and Infrastructure. We have been working with SCR Mechanical on this pilot program. They were generous enough to install this boom and kind of allow us to demo the performance. There is a study or analysis of their investigations in terms of what this particular Smart Sponge and boom achieved. We reviewed it and we think that further review is necessary. There is a competition here between water quantity and water quality. We need to make sure that given our systems that we don't get into a point where we are sacrificing one for the other. There is a need for stormwater systems to convey water away from areas because if that doesn't happen, you could potentially have flood. And so, a long story short, this is a very complicated problem, and to that end, I think this Commission has been visionary in directing staff to pursue studies to determine what the nature of the problems are on our waterway and also what the contributions may be further upstream. And so we have an ongoing study right now working with FIU, as you all know, and we will have some results on that study, I believe this year, and that will guide our decisions moving forward, I think. I think they will be indispensable information in connection to that. That said, we are happy to work with SCR to determine if their technology and the way that they integrated into existing drain systems will pay dividends for the City of Coral Gables. You mentioned before, Mr. Vice Mayor, that this is a multi-billion-dollar issue. Now, who can put a measure on what the bay means to us economically? I don't believe -- actually, I'm pretty sure that the tourism board can tell you. But that having been said, this has to be done on a regional basis, and I really strongly believe that this endeavor right here, which brings exposure to this issue is something that is worthy and it's worth the Commission's time to look at and analyze.

Vice Mayor Lago: Mr. ACM, I think you covered it perfectly because we're not going to solve the problem today. We may not solve the problem within the next five years. But like we had the Mayor -- the new Mayor of Miami-Dade County here and she's putting together a task force on the bay. She has placed one person who's very close, who's a Coral Gables resident, a friend of ours, of this Commission, who is going to be working hand-in-hand. Multiple cities are going to have seats at the table, but what purpose is to engage in companies like this that have a proven

track record. No, no -- not asking to do anything except for obviously we did vote in this Commission to put those slats in certain areas in our downtown, and I'd like to get an update on that to see where we are with that. I know it requires more maintenance, but this Commission did vote in favor of doing something like that. But when you start looking at issues of the organic material, you're seeing -- and I'm not a scientist, but you're seeing that there's obviously a major, major, major issue. And the Mayor always -- I think he uses this metric, which is over 700,000 people drive through the City of Coral Gables every day. And it's only getting worse, the amount of people that are moving into the city. And as we're a community -- like I was born in Louisiana, that's a swamp. You know, this area used to be a swamp. There is -- when it rains here, water flows, path of least resistance, goes into the catch basins and it goes into the bay. We don't have the proper system to treat that water. I've read, I've learned, I've sat with them. We've had I don't even know how many meetings we've had so that I can become versed on this because I think that this is the future. When the money is in place and we're talking about either it's another half penny or it's a penny to find a solution for this, something that's going to have to -- something's going to have to be dealt with in a regional manner, like you stated and multiple things are going to have to fall into place. Big Sugar, septic to sewer conversion and dealing with stormwater. So, I just saw that you wanted to say something.

Unidentified Speaker: Yes.

Vice Mayor Lago: Thank you.

Unidentified Speaker: As a resident of the City of Coral Gables, I want to thank you for the opportunity you have given us to prove that it's no time for continuing to study and study and study.

Vice Mayor Lago: Yes.

Unidentified Speaker: At the end of the day, we're going to know what the results are of those studies, so I think the time now is the time for action and time for implementation, and that's the reason why we urge you guys to think about the option that we're giving you. At this point, when we met -- last night we met with Irela Bague…

Vice Mayor Lago: Yes.

Unidentified Speaker: And she mentioned the trash capturing option that you guys are installing in downtown Coral Gables. We want to make sure that you understand that we are a complement to that. We're not just capturing debris and trash, which is the visual component of the pollution. We are purificating -- there's a purification -- stormwater purification added benefit that we're providing.

Vice Mayor Lago: And that -- and if I may interrupt. First off, again, thank you because you have been a champion.

Unidentified Speaker: I love this city.

Vice Mayor Lago: No, no, no. I mean, you're here not only in the -- you're involved in engineering, you're involved in the restaurant industry. Not many people know your involvement in this community for a long time, but I'm proud to call you a friend. When I called you, you said, Vince, not only are we going to help you, we're going to do things for free. We're going to donate our time, donate our equipment, and donate our technology. And I commend you for that a lot. Thank you. But she made a very good point, and that is that it's not just about the trash. It's about I want to show people in this community that we can clean the water, that it can be done, and that it has to be done.

Unidentified Speaker: Right.

Vice Mayor Lago: We may not resolve the problem -- I don't think we will -- but I think that we can put our good foot forward and say this is the right thing to do. We demand that it gets done. Stop studying, and this is what happens at the TPO. And I'd say it before, we do a study to a study to a study to a study to a study, and before you know it, ten years have gone by. The train was supposed to cost 300 million, now it's a billion dollars to do, and it's only getting worse. So, staff has done a wonderful job getting all this done. I just want to see in the next six months, for us to show that we are leading the way, that we're leading the way. Let's -- not only with the installation of the slats, but maybe we can incorporate some of the Smart Sponge technology and show that it's working because if we can show it works here in the City of Coral Gables, it's going to have to be done, like the ACM said, at a regional level. This is going to be a federal -- we're going to need the help of the federal government. We need the help of the state. The County can't do this alone.

Unidentified Speaker: At this point, it's a personal challenge with my partner because I want the City of Coral Gables to be the pioneer and not the City of Key Biscayne -- the Village of Key Biscayne. So I'll try -- number one, I would like to also thank Hermes Diaz and Jorge Gomez. George Acevedo also helped us a lot and Matt. Matt was the one that when boom and analyze it in the lab and come up with the results. So thank you for your help. And I'll turn the (INAUDIBLE).

Vice Mayor Lago: Thank you. So, Mr. ACM, you think that we could maybe circle back in maybe a month and kind of get an update on the slats and if we can incorporate -- if my colleagues are interested in doing it, if we can incorporate some of the Smart Sponge technology to see how it really works. You think we could do something like that? You think there's a possibility?

Assistant City Manager Santamaria: Absolutely. We can definitely look into -- definitely we'll give you a report on the performance of the screens at the inlets. In terms of integrating the Smart Sponge technology, that would require a little bit more of an analysis I can tell you right off hand one location where it makes complete and total sense, which is at that outfall where they ran the

demonstration because it is a 60, 66-inch outfall. All of our other outfalls are minuscule relative to that…

Vice Mayor Lago: Yeah.

Assistant City Manager Santamaria: In terms of flow. And so that would be definitely a location that we should consider for the Smart Sponge technology.

Vice Mayor Lago: Can I tell you why? Can I tell you why? Because I know when the FIU study comes back, it's going to say that we're in trouble. It's going to say that we need to take action. Everybody knows we need to take action. And I would love to be able to show at that outfall the water's coming in with these contaminants and it's being dumped back into your waterway clean and show a pre and post, and that is the type of analysis and example that we need to show the County and show our colleagues on the League of Cities, which I'm honored to serve on, at the Ygrene Corridor, at Miami-Dade County, our friends, Irela Bague, Waterkeepers. That is the kind of, you know, example that we need to show that says, listen, it can be done and let's do it. It's going to cost a lot of money, but let's do it. We need to have that political courage to move forward on this. And if my colleagues are interested in doing it, I am interested in doing it. I think it's something important. I think the ACM brings a good point. That'll be a good opportunity to show a pre and post of how the water's coming out cleaner than when it came down. And by the way, a lot -- I'm going to say -- and I'm not a scientist -- but a great majority of all the water that's coming out of there that has significant hydrocarbons is obviously -- we all know we're coming from. It's coming upstream and it's not coming from the City of Coral Gables. But at the end of the day, it's ending up in our waterways, which is painful.

Mr. Backman: And the technology, as I mentioned earlier, we can look at where you have the most traffic because that's where a lot of your -- the hydrocarbons are coming from. So if you take the downtown area and the catch basins and build a -- and we can work with you and quantify an area and put it -- you know, for example, a catch basin insert which is (INAUDIBLE) and monitor

that and show that just in this area, you have this many hydrocarbons over, you know, an annual basis, whatever, coming from this location. And then you quantify that and build that out. It's easy to then demonstrate the benefit of doing something, and ultimately at the end of the day, at the outfall. Because it's going to be a combination effect. You've got existing infrastructure. It may not be for different reasons, logistics and layouts. It may not be ability to put an end of pipe overall solution.

Vice Mayor Lago: Yes.

Mr. Backman: You've got to do it incrementally as you are currently doing. Deal with the trash and debris where it usually develops, which is on the sidewalks and right on the pervious surfaces. Capture sediment and other contaminants at the easily captured -- at the catch basin and get better performing out of that existing asset that you've already invested in. Then the hidden contaminants, it makes it much easier to treat those downstream at the end of pipe because you got a filter and it's not going to hinder your number one concern, which is the conveyance of the stormwater. You want to get it off the streets and somewhere else as quick as possible.

Vice Mayor Lago: Do you need action? Do you need action by the Commission in regards to this?

Assistant City Manager Santamaria: Well…

Commissioner Keon: I have some questions before we go there.

Mayor Valdes-Fauli: What?

Commissioner Keon: I have some questions.

Mayor Valdes-Fauli: Yeah, go ahead.

Commissioner Keon: Also, when you're ready to take questions, Commissioner.

Vice Mayor Lago: Yes, please. Take advantage of the fact that they're here, it's great.

Commissioner Keon: You have talked primarily about hydrocarbons in the water that we know come, I guess, a lot from street traffic, from oil and brakes and all that sort of thing. And yes, they do cause pollution in your waterways, but the primary pollutants that are affecting the bay are phosphorus and nitrogen. So, I'm asking you, how does your technology affect…

Mr. Backman: Nutrient removal?

Commissioner Keon: Yes, the phosphorus and nitrogen. How does it do that?

Mr. Backman: Yeah, and that's -- I didn't spend a lot of time going into granular detail. We have different variants of the Smart Sponge. For example, Smart Sponge HM. We embed nano partical technology into it, which will absorb orthophosphate. If you look at nitrogen -- and typically nitrogen is in three different components; you have ammonia and then NOx versions of it.

Commissioner Keon: Right.

Mr. Backman: Ammonia is very readily transferred from ammonia to NOx version. A lot of that that's coming into the bay is nitrogen that's bound, so it's key to capture the sediment. And that's why I mentioned earlier trash, debris and sediment is typical. You're going to capture over 60 percent of your nitrogen that's outside of what's happening and run off from agricultural activity. I'm talking about that's just day-to-day activity in a more urban area like Coral Gables by capturing the sediment, and that's -- and our technology will capture sediment and also remove the dissolved component of orthophosphate. The dissolved component of nitrogen, typically the way you're going to remove that is by nitrification, denitrification. We are able to cultivate biological activity

that occurs by implementing another variant we call biochar, and that enhances the development of nitrification denitrification, so it will break down the captured nitrates to just simple nitrogen gas and oxygen and hydrogen at the end.

Commissioner Keon: okay, so we know and we have been told repeatedly by the biologists that are working in this area that -- and we do hear a little bit about hydrocarbons, yes, but the primary pollutants in the bay are hydrogen and phosphorus. So -- and if you can do that and then you can show that you can do that, and you can work with Matt Anderson and you can work with the consultants we have dealing on water quality and focus on the removal of phosphorus and nitrogen from our bay, which are the primary polluters then, you know, I would certainly want to move forward with whatever you're doing. Now, I think the issue of booms and just, you know, removing waste from the waterway is -- you know, all along the waterway is certainly a goal that we have all along. And I know we worked with the South Florida Water Management to clean the debris from their gates before they open their gates so it doesn't just continue on. So, you know, we have to have a way to -- if we're going to have the booms that -- there has to be an ability to collect all of that debris, so there needs to be a plan for how they're done and whatever else, so I could certainly see that. And I think probably the only place that maybe that boom would really be essential or most valuable is at that outfall just because of the size of the outfall and the amount of area that drains through that into that outfall, so I can see that. But with regard to your sponge and hydrocarbons, you know I'm not a chemist and I'm not a biologist, so I would like the input from the staff that we have working with us as to how -- what the products you have and how it does that and have that discussion and have their input on that also because they do know. They are very prominent scientists in the world of water quality, and we're fortunate to have them available to us here in the City. So, I would like that to be -- if those are the primary pollutants of the day, I would like to have a technology or use of some technology that effectively deals with those primary polluters of the day.

Mr. Backman: Certainly.

Commissioner Keon: It doesn't mean that the other things are -- we should let anything go, but I understand that. But I -- but if we know that our charges is phosphorus and nitrogen, so that's what I really would like to see us -- before we invest as a City into this program to do this is that we do it to attack the primary pollutants that we are trying to address.

Mr. Backman: Absolutely, absolutely. And without taking a lot of your time today -- I mean, we could get very, very granular, but with an appropriate…

Commissioner Keon: You know, you can get very granular with…

Mr. Backman: I know, exactly.

Commissioner Keon: The people that understand every single thing that you're saying…

Mr. Backman: Okay.

Commissioner Keon: And know and speak that language and, you know, are available to us as consultants to make that very understandable to all of us and to the general public as to why we're engaging in that program. So, I agree with you. I don't need to study it to death and to the point that it's, you know, ten years before we do anything, but I'd like to work with...

Mr. Backman: Absolutely.

Commissioner Keon: You know, with the existing work that we're currently doing.

Mr. Backman: And the point I'm just making without going -- is that we -- me as an engineer have always looked at the analogy of wanting to make sure it's forward adaptable. And what I mean by that is today -- you know, dealing with today's challenges, there's things that -- steps that you can do today as you analyze some of the other things…

Commissioner Keon: Yeah.

Mr. Backman: That would benefit, but ultimately at the end of the day, I would agree with you. I If you look at the bay and having -- being an environmental engineer…

Commissioner Keon: Yeah.

Mr. Backman: Nitrogen and phosphorus are typically the contributors to low oxygen, which is a snow-balling effect.

Commissioner Keon: Absolutely.

Mr. Backman: That's what we want to address.

Commissioner Keon: I mean, I think the collection of debris as it comes out of that outfall is certainly, you know -- certainly you can continue…

Mr. Backman: There's a portion of phosphorus and nitrogen…

Commissioner Keon: To work with that.

Mr. Backman: Tied to that debris and tied into sediment.

Commissioner Keon: Yeah, but…

Mr. Backman: So all those are a snow-balling effect.

Commissioner Keon: But we want to look at -- yeah, how do we most…

Mr. Backman: So totally agree with you.

Commissioner Keon: Effectively reduce the pollutants that are creating the seagrass to die and affect the environment of the bay.

Vice Mayor Lago: So…

Mr. Backman: Yeah.

Vice Mayor Lago: Thank you. So, what I wanted to -- just in closing because we have to finish up the agenda. I wanted to say thank you, number one, for meeting with me yesterday and the day before, and flying into town. And I want to -- like I requested -- work with staff. I'm going to put the item on the agenda again next month because I want staff to come back and give me a report about your interactions.

Mr. Backman: Absolutely.

Vice Mayor Lago: My goal is simple. We need to fix what's going on in the bay, and we need to show with tangible evidence that there is a technology out there that if implemented works. I know that what we're going to do at that outfall is not going to be the ripple effect immediately that's going to cure the bay, but it's going to send a message once we have implemented the technology at that outfall -- as Mr. ACM stated -- that we will be able to show documents that phosphorus, nitrates, nitrites has gone down and that this technology works and that if implemented across the spectrum will result in a much healthier bay, the return of the seagrass, the return of the fish, no die-offs, a healthier environment for all of South Florida. So, that's what I'm asking and I'm going to put it on the agenda next time. I think a month from now should be -- not at the end of January but February so you can work together to find a plan for that outfall, so that we can show the County, our new County Mayor and the County Commission because I plan on taking this study

after we've had it up for maybe two or three months and we can show six months, let's say for example, how long it works. Take it to the County and say, listen, we did an interesting exercise in the City of Coral Gables and it works.

Mayor Valdes-Fauli: Thank you very much. Thank you.

Vice Mayor Lago: Thank you for coming.

Mr. Backman: Thank you for your time.

Mayor Valdes-Fauli: Great presentation.

Mr. Backman: Thank you.

Vice Mayor Lago: Thank you for your donation.

Mayor Valdes-Fauli: We're looking forward to working with you.

Vice Mayor Lago: I appreciate it. Thank you. Thank you, Mayor, for giving me enough time to really flush that out.

Mayor Valdes-Fauli: Perfect.

Vice Mayor Lago: Thank you.