

City of Coral Gables City Commission Meeting
Agenda Item G-1
August 29, 2017
City Commission Chambers
405 Biltmore Way, Coral Gables, FL

City Commission

Mayor Raul Valdes-Fauli
Vice Mayor Pat Keon
Commissioner Vince Lago
Commissioner Frank Quesada
Commissioner Michael Mena

City Staff

City Manager, Cathy Swanson-Rivenbark
City Attorney, Craig E. Leen
City Clerk, Walter J. Foeman
Deputy City Clerk, Billy Urquia

Public Speaker(s)

Roland Samimy, School for Marine Science and Technology, University of Massachusetts
Dr. Chris Kelble, NOAA-AOML

Agenda Item G-1[1:41:41 p.m.]

Time Certain 1:30 p.m.

A discussion regarding water quality findings for Coral Gables Waterway, including information from Dr. Roland Samimy from the School for Marine Science and Technology at the University of Massachusetts-Dartmouth and Dr. Chris Kelble from the NOAA-AOML. (Sponsored by Commissioner Quesada)

Mayor Valdes-Fauli: The first item we are going to take up is time certain G-1, Coral Gables Waterway.

City Attorney Leen: This item is sponsored by sponsored by Commissioner Quesada.

Commissioner Quesada: Real quick if you could come to the microphone, speak into the microphone for those watching at home, so that they can hear whatever you say. If you can just

introduce yourselves, we've got a pretty tight agenda today, so just jump right into it and give us the key facts, don't make it too scientific, make sure we can understand.

Mr. Samimy: Thank you Commissioner Quesada, City Attorney Leen for having us. This is an update of water quality monitoring activities that have been taking place on the Coral Gables Waterway over the past year.

Commissioner Quesada: Can you please give your background who you are?

Mr. Samimy: This is Dr. Kelble from NOAA, he's an oceanographer from AOML on Key Biscayne, myself, I'm a resident of Coral Gables, Roland Samimy, I actually work for the University of Massachusetts, School of Marine Science, but I live down here in Coral Gables. We are going to be focusing this entire discussion on nutrients, with the understanding that all of the data that we have collected so far over the past year has been collected by volunteers at NOAA, scientists at NOAA and myself, Florida Sea Grant Extension Agent, who also runs Biscayne Bay Water Watch and believe it or not, students and teachers from the AP and environmental science class from Ransom Everglades High School, because it's an interesting learning opportunity for them. The reason that we are focusing on nutrients and specifically nitrogen and phosphorous is, because generally nutrients have become a problem globally, nationally, locally, and the problem with nutrient over enrichment exist on a spectrum or impairment where you have mild impairment, where you see effects in water clarity, to more moderate impairment where you start affecting the dissolved oxygen in the waterway system and that then has associated effects on fish kills and stagnant water, and also odors, to the most extreme cases like we've seen in St. Lucie River estuary in 2016 where they had massive alba blooms. It basically shut down the resource to use and had devastating negative consequences to the local economy.

Commissioner Quesada: So just to be clear, when you say nutrients in the water, nutrients is a bad term, we do not add nutrients.

Mr. Samimy: You don't want too many nutrients. Every system has an ability to absorb nutrients and needs nutrients, but if you exceed a certain level it starts having very negative consequences to that habitat.

City Manager Swanson-Rivenbark: So, that our public isn't concerned. I don't want them to have the impression that the federal government told us that the waterways needed to be monitored.

Mr. Samimy: That's correct.

City Manager Swanson-Rivenbark: We are very interested in this, we want to learn from it, but we are not under a federal warning.

Mr. Samimy: That's correct. Perfectly understood, perfectly true and nutrients do not get in the way from being able to necessarily recreate on the resource the way, say bacteria would.

City Manager Swanson-Rivenbark: But, we are here to learn.

Mr. Samimy: What's that?

City Manager Swanson-Rivenbark: But, we are here to learn.

Mr. Samimy: OK – very good. So anyway, what I was saying is that there is this spectrum of impairment where you have, not too bad to absolutely horrific, in that last picture to the right is what was seen in St. Lucie River estuary last summer. So, over the last couple of decades the residents that live on the waterway have been remarking in anecdotal and qualitative ways that they've been noticing that the water quality has changed, has gone down in the waterway system, and presently its known that nutrient loading from the watershed, the land area contributing to the waterway has been going up as development has been increasing, and projections of that is it's only going to get worse, because the sea level rises that then exacerbates the nutrient effects on the waterway from septic systems and storm water discharges and what not; and more generally it's also being recognized by NOAA and Chris and his work that the waterways discharging to the bay are starting to potentially have effects on those near shore waters and Chris can just sort of run you through that.

Dr. Chris Kelble: Yes. I appreciate that comment about we are not here as the federal government...What has gone on within NOAA is we have labeled Biscayne Bay, the whole of Biscayne Bay a habitat focus area, which there are ten of those habitat focus areas in the U.S. waters and the goal of habitat focus areas are to work with local partners to achieve habitat goals that we want to see in those areas. So, they range from anything from dam removal out west to improve salmon runs to what we are trying to do in Biscayne Bay which is essentially, I think we have to recognize we have a very kind of, I don't want to say pristine, but it's a pretty low nutrient clear water system that we have in the bay now, but we are seeing within NOAA, we maintain water quality data monitored within the bay and we are starting to see these increases in chlorophyll, which is kind of the plants in the water in the very near shore areas, indicating that there are more nutrients coming from the watershed than there used to be and this is not just along the Coral Gables waterway, we see it all up and down the Biscayne Bay.

Commissioner Quesada: I feel like I need to refocus this a little bit.

Dr. Kelble: OK.

Commissioner Quesada: Because, this is almost overly scientific and I know you guys may not think so, but as a non-scientist, tell us – if we have a problem what could potentially causing it?- what can we do? I want you to stay focused on those three questions for us, because that's what we are looking at.

Dr. Kelble: So, to answer that larger question. What we are seeing is a pending problem in Biscayne Bay in the sense that Biscayne Bay what it relies on is clear water, healthy seagrass beds for the fishes and everything. If we put too much nutrients into there you start to have too much plant growth in the water itself, the seagrass die and the fish don't do as well recruiting. What NOAA wants to do is get ahead of this problem before it turns bad, we want to work with local partners to reduce this nutrient loading before we are trying to do a restoration project like you all can see in the Chesapeake Bay cost lots of money and often aren't very effective. So, the good thing is what we've seen in our data is that it seems to be centered on the near shore, near where there are runoff points happening..., so its suggested that we can control this problem that there is a way to mitigate it before it gets too bad. I'm just showing you a little bit more; you can probably skip over this. This is just showing you some of the problem where you are looking at the numeric nutrient assessment, which is EPA standards that shows that Biscayne Bay as a whole is exceeding for chlorophyll and not so much for phosphorous and a little bit for nitrogen. The reason this happens is that in systems such as our nutrients go with the plants right away. There are such little nutrients that the plants suck up all the nutrients right away and if you think about nutrients usually they are in fertilizers, so they do the same thing in the ocean that they do on land, which is fertilize the plants and the plants respond first. That's the context.

Mr. Samimy: That's the context of the problem, alright. So, what we decided to do was put together conceptualizing assessment of the Coral Gables waterway treatment...waterway system in Snapper Creek may actually be contributing to the problems that they are seeing in the bay. So we put together, essentially a volunteer water quality monitoring program that was teamed by myself, Chris, other scientists from NOAA, Florida Sea Grant Biscayne Bay Water and Ransom Everglades and we started collecting data along a network of stations from the mouth all the way up to the water control structure on Red Road, to sort of get a handle on what concentrations were of these egregious nutrients that we are talking about that seems so scary, because that data never existed and no one really had any sense. All people could say was, well kind of looks like the water quality is going down, but that's pretty much it. So, we are taking the patient's temperature, OK, like if you wake up in the morning and you are feeling rotten, sweaty, blurry, sick, nauseous, and what you do is you put your thermometer in your mouth and you say, Oh my God, I have a 105 fever, that's all we've done here. By collecting water quality samples from

these eleven stations since October once a month all through the dry season and twice a month starting in the rainy season June, July, and August and continuing on, OK. And, then we started looking at the data that we collected on nitrogen, phosphorus, and chlorophyll, because these are key parameters that give you an idea as to whether or not water quality is poor, good, fair; and we started comparing these cut points that are set by EPA that sort of help you get a sense as to where you stand on the spectrum just from a water quality point of view and that's it. So, you have cut points for phosphorus, nitrogen, and chlorophyll, and we started looking at our data; and what you see here is a plot of phosphorus levels, OK. Each grouping of columns is a sampling event and each column is one of those stations, starting from the mouth all the way to the top. And what you'll see in the left set of columns, which are closest to the mouth of the Biscayne Bay system, things look below the cut-points, but as soon as you move a little bit on up in the system, like pass LeJeune Road, all of a sudden all the levels start going up above the cut point by a lot. So, you have poor water quality; say up above LeJeune Road, all the way on up some phosphorus.

Vice Mayor Keon: Back – back inland.

Mr. Samimy: Right – back toward U.S.-1...Biltmore west, exactly, so that's the phosphorus, one of the key nutrients of concern. Then similarly, we did the same for nitrogen, OK, and again, what you see is that the stations closest to Biscayne Bay, the levels are below the cut point, but that as soon as you pass LeJeune Road essentially on west, all the levels go shooting up above the cut points and then, chlorophyll; chlorophyll being a measure of final plankton which is a measure of water clarity, OK, and what you see is essentially everywhere this is for the dry season to the left and the wet rainy season on the right, which are June, July, August, what you see is chlorophyll, this is in the lower portion of the system is through the roof poor, and in the upper part of the system stratospherically through the roof poor, OK. So phosphorus over the top, nitrogen over the top, chlorophyll over the top, so from a water quality point of view nutrient related impairment things are just off the chart.

Commissioner Quesada: So, the fact that we have these high levels of nutrients, as you guys define it, is it a, I'm assuming it's not a threat to human individuals going in for a swim.

Mr. Samimy: It's not a threat to humans, but ultimately over time as the water quality in these canals degrade it's going to start having effects on people's ability to recreate or decide to recreate the property values, etc., and this is what we saw in Massachusetts and this is what we've been seeing in Massachusetts and why we've been doing the work we've been doing up there, OK, because people were complaining about why can't I use my resource, why can't I shell fish, why can't I boat, why can't I swim, why are my property values dropping, because people aren't interested in buying houses on the water, because everything stinks and there is

micro algae all over the place. That's what we want to get ahead of, that's what we want to avoid.

Dr. Kelble: In a lot of the Keys canals where it gets really smelly when it overturns and you have lots of that seaweed rack in there, that's where you look probably first, that's the first sign of...

Commissioner Quesada: OK. So, how these nutrients create – what are we doing? - what are we doing right and what are we doing wrong?

Mr. Samimy: So you know this map, this is your map, OK, these are all the residences of Coral Gables and then Coral Gables boundary, the purple lines are where there are sewer lines, all the little white boxes you can't see really that well are septic systems. So you have septic systems, you have lawns, you have road run-off, you have golf courses, all of these sources generate low, low to the waterway, which then increases the concentration. The question then becomes how you manage that low to reduce the amount getting into the waterways to lower the concentration to the waterways, to improve the water quality, it's that simple. So, what we are looking to do is a proper assessment of this system to be able to make the linkage between what's happening in the watershed to the water quality that you are seeing in the waterway and then do as best cost effective management of those various sources to then get as much bang for the buck to reduce them, to then see improvements in water quality, it's that simple. So, actually a Master's thesis was done using this data that we've collected to date, Chris, I don't know, you may want to explain it.

Dr. Kelble: What this Master's student did, who is an Erasmus student, and he looked at the linkage between the different nutrients we saw and land use patterns, so we were looking at where storm water...whether there was large patches of grass, the grass area, so potential for fertilizer on those places, because in the Coral Gables waterways those are usually golf courses or the University of Miami. What you saw was the chlorophyll and the nutrients, they generally increase the closer you are to the storm water outfalls,...so that could suggest to maybe do some potential treatment of storm water before it gets put into these outfalls some filtering or what have you. And, then the same thing with some of the nutrients, especially phosphorus and nitrogen where populations were greater there were increases in the nutrients too.

Mr. Samimy: So, in simplest terms there is significant connection between water quality and land use, but that's as much as we know. We know that the water quality is degraded for nutrients nitrogen, phosphorus, and chlorophyll, and we know that there is a statistically significant connection to land use, and that's it, and the patient's sick, OK, so it has 105 temperature, but we don't know anything else and we don't know what to do. So, then what we'd like to try and move forward with is a portion of this whole complex assessment, take it in bite-size chunks,

because one piece informs the next piece, and continue on with the water quality monitoring, do a detailed assessment of the land use loading from the watershed, link it to dissolve oxygen chlorophyll levels and then use that as then a basis to start directing next steps for management and then also do the next portion of the assessment that is really required to guide the City to solutions; and we'll use the information that we gather in the next step, we'll leverage that to then improve our abilities to get external funding, not from the City, to then go the whole nine yards and complete the full boat. So essentially, that's what we are talking about. If you have questions we are happy to follow up with you here or elsewhere.

Commissioner Quesada: Thank you – very informative. Thank you for not being so heavy on the science.

Mr. Samimy: It's hard.

Commissioner Quesada: And, being heavy on the translation for us. I know you explained it to me a few times, it takes a while. I see the problem, I see the concern. I know that we have 40 miles of waterfront here. My gut reaction to this is, I don't think staff really had the chance to sit down with you guys...

Mr. Samimy: Right.

Commissioner Quesada:...and I understand that this could be quite costly, so before we move to allocate any funds or do anything, I want like a detailed sit down with you guys and whoever else is on your team and staff to be able to flush it out and determine what funds we can allocate, if any, if obviously we all agree to this. We understand the analogy that the patient is sick...

Mr. Samimy: Right, right, right.

Commissioner Quesada:...and of course we understand the importance of that, so that's my feeling. My recommendation today would be to send it to staff and to build it up, to bring it back at a future meeting to determine if any funds need to be allocated as to what you were suggesting.

Mayor Valdes-Fauli: Very, very good.

Commissioner Lago: I agree with you wholeheartedly.

Vice Mayor Keon: Great idea.

Commissioner Lago: I think this is something that we should sit down with staff, like you mentioned and do some more analysis.

Commissioner Quesada: I know you sat down with staff once before many months ago, I guess this question is for the City Manager and is for you guys as well, are we going to achieve anything by sitting down again or not? – or...

City Manager Swanson-Rivenbark: We'd welcome the opportunity.

Commissioner Quesada: Because, I think we know more now than we did last time, correct?

Mr. Samimy: We definitely know more than we did last time, in the sense that we absolutely know that there is a problem. Last time we were guessing, you know what, I suspect that there is a problem, there probably is, but we don't know the magnitude of the problem.

Commissioner Lago: You know what I think maybe there's a good opportunity now to hopefully get it before the Commission as soon as possible, like a detailed plan and a cost, and then we'll make a decision on whether we want to move forward with staff's guidance, and I'll tell you why, because right now, Peter correct me if I'm wrong, I wish Ed was here, Oh Ed, you probably know better than anybody, I think the budget is around \$15 billion for the County, there upgrades in reference to their sewer.

Public Works Director Santamaria: You mean water and sewer?

Commissioner Lago: Yes, water and sewer.

Public Works Director Santamaria: It's around \$11-\$12 billion.

Commissioner Lago: From the consent decree that came from the federal government. I think that right now they have significant plans that they haven't outlined or put everything into exact detail, I think they are working on that, and I think that maybe right now is an opportunity to really assess where we are. Everybody knows what's going on in the lake and south of the lake and the fight to buy the lands and everything that Senator Negron was doing, that much of the problem comes, I think from 85 percent of the septic tanks from, is it St. Lucie County, from St. Lucie County, so everybody knows that the septic tanks are a big issue. I would like to see how we can take this great idea, because I know that Commissioner Quesada when he introduced me to you about a year and-a-half ago, I'd like to see if we can put together something quickly and then go to the County and say listen, we have these issues and we are ready, we need some help, because the biggest issue here is septic tanks.

Mr. Samimy: I would also suggest that there are multiple sources of load to the waterway.

Commissioner Lago: Isn't the purpose of what we are talking about the County is going to deal with outfall; they are going to start cleaning that outfall.

Vice Mayor Keon: But, I think you are talking about it's along the way, it's like the Biltmore Golf Course, you know the waterway runs right through the Biltmore Golf Course and they use a lot of fertilizer and insecticides and different things to maintain the quality of that golf course and it all drains right into the waterway, it's coming, so I think that other than just septic tanks there are a number of things and also drainage, storm water drainage.

Dr. Kelble: The Master's students saw a high connection to storm water drainage and that's another thing when you go to the Biltmore you have that big drain pipe right there that comes out...

Vice Mayor Keon: Yes. So, I think there are things that you could probably manage.

Commissioner Lago: I agree with you. It's a multi-prong approach, but if you see the study that I saw that Jim De Fetti produced this past weekend, it was an hour long special, and it talked about what we were talking about before, exactly what is wrong with the lake and then when they open the floodgates to release the pressure where does all that water go?- you end up with the issues, the slime, the sludge, in all these canals. They said it very clearly, they showed it. The main cause of that has to do with the septic tanks that are coming from the north.

Mr. Samimy: Absolutely agree that in Massachusetts...

Commissioner Lago: But it is a multi-prong issue, but it's the septic tanks.

Mr. Samimy:...the exact problem, I've been working on it, 15 years up there, OK, and what we found when we do these nitrogen and phosphorus loading assessments of the watershed is that anywhere between 65 and 85 percent of the load may be coming from septic, OK, and most of those communities are on septic, and Coral Gables is primarily on septic.

Commissioner Lago: So let's do this, so let's do this, we can turn a blind eye, we can talk about outfall, runoff, golf courses, which they all contribute, everybody contributes, when we fertilize our trees and we use insecticides, but the main issue here in the State of Florida has to do with septic tanks and there is a reason why there is a consent agreement the federal government had to come down here and force the hand of the County and that was because we weren't taking care

of our own business in our backyard, so that's why you have what's going on in Miami-Dade County. When you talk about septic tanks, we can do everything else, but we are still going to have a problem unless we deal with the septic tanks.

Mr. Samimy: The question then becomes how to most effectively deal with them, because yes, we can eliminate the problem by sewerage all of Coral Gables that will take care of the problem, but it might not ever happen.

Commissioner Quesada: Let me just wrap this up, we have a lot going on today. This is an additional conversation that can happen with staff and come back to us on it, but I'm just happy Mr. Mayor, if its agreeable to you, please meet with staff, I think staff has heard how we feel about this, please have staff analyze the results, discuss it, at which point bring it back to us with a plan. Obviously, I will also ask staff to look into any grant opportunities both local, state, federal, who knows how successful that would be, but at least we are going to try.

Mr. Samimy: We did try. We did try.

Commissioner Lago: I just want to say thank you, because you stayed on top of this and you introduced me to them about a year and change ago, I'm so happy you brought this back.

Commissioner Quesada: Thank you for coming,

Mr. Samimy: We are grateful.

Commissioner Quesada: Thank you guys.

Mayor Valdes-Fauli: Thank you very much. Thank you. Good job. Look forward to your help.

[End: 2:03:55 p.m.]