



# Town of Orchid

Tuesday, March 12, 2024 at 9 a.m.

Orchid Island Beach Club  
1 Beachside Drive, Orchid, FL 32963

## Town Council Workshop Minutes Workshop on Coastal Erosion

### 1. Call to Order

Mayor Gibbons called the meeting to order at 9:01 a.m. He introduced the new Town Clerk, Jane Garcia, and asked her to call Roll Call.

### 2. Roll Call

**Present:**

**Town Council**

Mayor Robert Gibbons  
Vice Mayor Paul Knapp  
Councilmember Mary Jane Benedetto  
Councilmember John Heanue  
Councilmember James Raphalian

**Town Staff**

Cherry Stowe, Town Manager  
Jane Garcia, Town Clerk  
D. Johnathan Rhodeback, Town Attorney

**Guests**

Steve Boehning, Principal Engineer for Coastal Waterways Design & Engineering  
Tem Fontaine, Vice-President of Coastal Tech  
James Gray, Executive Director of Sebastian Inlet District  
Michael Sole, Former Secretary of Department of Environmental Protection  
Eric Charest, Indian River County Interim Natural Resources Director  
Quintin Bergman, Indian River County Coastal Resources Director

### 3. Workshop Order of Business

#### A. Introduction to Workshop

Mayor Gibbons gave an overview of the reasons behind the workshop held to grapple with the issue of coastal erosion. He stated that sand replenishment has been vital to protecting the community's high dune, which in turn protects the community, and that to date, the Town has not had any alternatives. He indicated that the workshop had been planned to learn what makes sense from engineering, regulatory and financial standpoints. He advised attendees that this was a very hot topic in Orchid and other coastal communities affected by coastal erosion. He said that the members of the assembled panel would next introduce themselves, which would be followed by two pertinent presentations from each of the Town's coastal engineers, and a panel discussion led by panelist James Gray. He emphasized that this workshop was arranged to offer the



opportunity for residents to ask the experts their questions directly on how best to respond to coastal erosion.

## B. Introduction of Guests

The Mayor invited the guests to introduce themselves and each of them provided their name, title, and a brief description of their experience in the area of coastal management. Together their expertise covered engineering, regulations and permitting, biology, and inlet management.

Mayor Gibbons advised that Michael Sole and James Gray serve on the Indian River County Beach & Shores Preservation Advisory Committee (BSPAC), but that their attendance on the panel was due to their expertise and professional experience in coastal management and not in representation of the committee. He also advised that local members of the BSPAC are Councilmembers John Heanue and Jim Raphalian (alternate) and Town Manager Cherry Stowe (alternate).

The Mayor also introduced audience members to representatives of the Natural Resources Department of Indian River County, who joined the workshop from the audience to assist the workshop's discussion as needed.

## C. Presentation on Coastal Engineering 101 - Coastal Tech

Coastal Engineer Tem Fontaine gave an informative presentation on "Coastal Engineering 101." He provided information on types of erosion, tools to respond, and permitting constraints.

He described the natural sand transport along the coastline and how that north-to-south littoral drift can be disrupted by natural and manmade coastal patterns. He said those disruptions affect which beaches are narrow and which are wide. He named the Sebastian Inlet as a local example of such a disruption.

He also talked about sand movement in a seasonal cycle of on and offshore movement, accreting the beach berm in summer months and lowering the berm in winter months. He described wave action, which is instrumental in that process, as constructive or destructive. He pointed out that there is more energy at the top of waves than at the base and explained the "depth of closure" – the most landward point offshore where waves do not significantly move sand on the ocean floor.

He touched on sea level rise and explained the U.S. Army Corp of Engineer's (USACE) Sea Level Analysis Tool (SLAT) and its recommendations pertinent to beach management in the face of increasing sea levels. Mr. Fontaine also explained the USACE's alternatives analysis process, which analyzes several resources, including for example the recreational beach, nesting sea turtle habitat, shorebird habitat, and in Orchid's case the nearshore hardbottom reef, an essential fish habitat made of limestone rock (not coral) under the jurisdiction of the National Marine Fisheries.

Mr. Fontaine explained and compared the tools available to assist in reducing coastal erosion. He described breakwaters, groin fields, seawalls & revetments, and dune core systems (whereby the inside of the dune is filled with something other than sand, usually



involving at least some manmade materials). He touched on the engineering, pros and cons, costs, and regulatory constraints of all these options.

#### D. Presentation on Projects in Orchid - Coastal Waterways Design & Engineering

Coastal Engineer Steve Boehning gave an overview of Orchid's beach and dune system, including the dates and extent of sand placement projects undertaken since 2012. He showed an aerial photo of the beach in Orchid and pointed out important features, such as the seawalls existing to the north and south, the hardbottom reef located offshore nearby, and the local structures in relation to the Coastal Construction Control Line. He described the Town's beach as "squeezed" between these features as well as regulatory requirements related to them.

He showed a diagram of dune heights in Orchid compared with the elevations of the beach berm and mean high water line. He concluded that the high, or established, dune in Orchid was of a significant size and that the dune offered excellent protection to the structures in Orchid.

He mentioned the Town's ongoing vulnerability assessment, which his firm was selected to perform, and would provide meaningful data pertinent to this workshop's topics. He also indicated that the assessment would include the river and how it is affected by storm surge, sea level rise, etc., which are not simply oceanside concerns only.

#### E. Panel discussion

The panel discussion began and was moderated by James Gray.

Steve Boehning was asked to address coastal monitoring in the Town, and he spoke on year-to-year collection of coastal data by the Town and the County. He advised that the State established monuments every 1,000 feet along the east coast, which the County uses to biannually measure the beach and dune profile. He stated that the Town conducts its surveys in tandem with the County, but at intervals of a smaller distance to have the ability to monitor more closely.

Michael Sole pronounced that the beach in Orchid is an engineered beach (i.e. man-managed) and suggested that attendees think about the beach as infrastructure, akin in many ways to, for instance, a road. He explained that infrastructure requires maintenance, and just like a road, the beach needs occasional "resurfacing" for it to function well. He acknowledged that in Orchid, and the rest of Sector 3 in which Orchid is located, the performance of such projects by the County has been poorer than anticipated, because instead of an anticipated 7-year renourishment cycle, it's been necessary to do maintenance much sooner than that.

Tem Fontaine indicated that Orchid is literally stuck between a rock and a hard place, referring to the federally protected offshore hardbottom reef, which Mr. Boehning estimated at only about 200 feet seaward from the mean high-water line. Mr. Fontaine suggested what is needed is to better identify the erosion rate by the available survey data, in order to design County projects for a specific return closer to every 8-10 years. He emphasized that the nearby reef made that very challenging and added that the renourishment rate also depends on storm events, which have been frequent and impactful in recent years.



Steve Boehning expressed understanding for the public's frustration with the inconvenience, cost, and repetitiveness of sand placement projects in Orchid, but spoke to the importance of "holding the line" of the high dune, which features the greatest volume of sand as well as mature dune vegetation. He and Tem gave credit to the County's very active beach management program for keeping the primary dune healthy and emphasized the importance of local residents encouraging County officials to continue its funding.

Michael Sole agreed with the critical nature of the dune projects to keep the dune where it is. He noted that the beach in Orchid is too narrow to naturally support the dune through such forces as aeolian transport, and so the natural result is that the dune will erode. He stated that the dune is essential storm protection for the community, and it is for that reason that it is necessary to add sand "manually."

Tem Fontaine explained the various factors that make certain sand beach-compatible, for instance, it is important to confirm that the sand is the same as the sand on the beach, that grains are not too small (which can cause cloudiness of the water and a faster loss of sand), and that the sand is acceptable for nesting sea turtles as well.

Michael Sole explained that, from a regulatory standpoint, whether sand is trucked from an upland sand source or dredged from offshore, doesn't matter as long as it is beach compatible material. He said the real difference is from a cost perspective, with offshore dredging being vastly more expensive. Mr. Boehning explained that offshore sand can be processed to meet the criteria, but said offshore processing is more costly and less effective as well, allowing for a greater risk of "bad" material making it onto the beach.

Mayor Gibbons asked where the sand placed in Orchid eventually ends up and Mr. Fontaine explained that sand taken offshore, in part, is taken southward through the natural littoral drift, from where it is deposited on other beaches, most notably at South Beach. He added that sand also comes from the north to Orchid through that transport.

James Gray, as the moderator, asked the panel to address dune plantings. Mr. Boehning advised that, by planting vegetation, first and foremost a habitat is created, but admitted that vegetation may or may not survive storm events. He explained that he witnessed, during the aftermath of Hurricane Nicole, a mature dune plant that curtailed erosion and another seemingly exact dune plant where it had made little difference. Tem Fontaine warned that it's not possible to plant something on a dune to stop erosion but added that dune plants play an important role in dune growth by capturing and bringing down airborne sand.

Mr. Sole stated the County's projects have been designed to have zero impact on the reef and that has been an impediment to the success of those projects. He stated there is a regulatory hurdle regarding covering the protected hardbottom reef, which requires a costly mitigation plan, and significant monitoring. He said the Town would have to weigh the cost and effort to get permission to cover the reef, which he predicted would be difficult, expensive, uncertain, and may include too significant mitigation requirements.

Vice-Mayor Knapp summarized that Orchid's problem is the narrowness of the dry beach, which makes natural rebuilding of the dunes unlikely to happen. Michael Sole indicated that is the heart of the issue. Steve Boehning believed this will always be an



issue in Orchid, due to the morphology of the beach in this area. Tem Fontaine restated the sea level is rising and that the community would continue to have problems for that reason also.

Councilmember Benedetto asked if sand supply is running out and stated it is definitely getting more expensive. Michael Sole stated that upland sand is not running out, but that the cost will continue to rise regardless because it will be an effort to locate it.

*James Gray suggested a five-minute break. Mayor Gibbons agreed. Break commenced at 10:37 am. The workshop reconvened at 10:44 am.*

James Gray began the subject of Coastal Armoring.

Michael Sole stated that in his view the bad news is in order to get armoring on the beach approved by the State of Florida, structures have to be eligible and vulnerable. He indicated that structures landward of the Coastal Construction Control Line (CCCL), such as all of those in Orchid, are not eligible for armoring. Additionally, he stated that the structures in Orchid are not vulnerable by the State's definition. He suggested the community could build a seawall landward of the CCCL without approval from the Florida Department of Environmental Protection (DEP) but was certain the structures would not qualify for such a measure seaward of the line under current regulatory conditions.

Mayor Gibbons stated that not only are most of the oceanfront buildings in Orchid up against the CCCL, leaving no room for armoring between them and the CCCL, they do not have the deep steel pilings that other coastal structures north of Orchid have.

Michael Sole stated the reasons why armoring is heavily regulated is because it increases erosion of the beach berm in front of the structure, affects sea turtles, impacts downdrift neighbors, and is often a detriment to beach aesthetics. He explained armoring is viewed as an adverse impact to the beach environment overall. Tem Fontaine added that structures protected by seawalls permitted through DEP are considered more vulnerable than those sited behind the CCCL, because seawalls are required to be engineered to withstand up to a 50-year storm event, while the CCCL was established in relation to protection from a 100-year storm event.

James Gray explained that to obtain any permit for armoring, the first step is to demonstrate a project need. He advised that would be a stumbling block, because under the current regulations, the State would not recognize a project need in Orchid. Tem Fontaine again pointed to the very appropriate siting of Orchid's coastal structures. Michael Sole shared that he has seen every mile of Florida's beaches and stated Orchid is in one of the best conditions in Coastal Florida, because of how the community was designed. He described the dunes as gorgeous and healthy, noting specifically the very significant volume of sand in the dune and the mature vegetation thereon. Only if the Town experienced a direct hit from a 100-year storm would he expect erosional damage – in response to questioning by Councilmember Benedetto, he indicated recent storm impacts were of a lesser magnitude. He added that damage from water overtopping the dunes due to storm surge was a different concern than erosional damage, but that the coastal structures would have been elevated to the 100-year flood event at the time of construction to address that. He stated he didn't see any value in armoring here and he



couldn't see getting armoring seaward of the CCCL approved unless there are changes in the law.

Councilmember Benedetto asked what the Town could do to change the rules and Michael Sole responded that the issue would have to go to Tallahassee. He recommended the Town get its local representative engaged on the issue but remarked that the likelihood of success would still be low for all the aforementioned reasons and that there could be implications with federal law too.

#### F. Public participation

The first audience participant was Orchid resident Tom Fink, who asked when the beach changed from a natural beach to an engineered beach. Steve Boehning stated it was 1929. Mr. Fink's follow-up regarded the reason for changing over, which Michael Sole explained was in part related to the inlet which disrupted the natural drift of sand. Mr. Gray explained that the morphology of the shoreline has changed quite a bit over the decades with various factors at play. He said that by law the Inlet District must have bypass strategies to mitigate the effect on the flow of sand and for that reason is responsible for sand placement on the beach in Sectors 1 and 2, north of the Sector in which Orchid is located. Mr. Fontaine stated in regard to the transfer from natural to engineered dunes/beaches, humans had done a terrible job, but that coastal engineering strategies had much improved since then, especially in recent decades.

The next audience participant was Orchid resident David McLean, who advised that the Army Corps of Engineers made a beach in New Jersey wide enough to "land a plane" and asked if the Town may be able to do the same. Steve Boehning replied that he had experience with such projects in New Jersey but emphasized that the regulatory landscape there is very different. He pointed to the protected reef as a main complicating factor in Orchid, as well as the environmental importance of the sea turtle nesting habitat which is very specific to this region. Michael Sole said the Town could fight for permission to cover the reef in order to significantly widen the beach but stressed that reef impacts would for the time being result in a denial.

The next audience participant was Christina Aruffo from the Marbrisa community. She asked what would foster the health of the dunes in regard to wildlife and vegetation. Michael Sole stated seaweed is very healthy for the dune system, because it helps accrete sand and, as it breaks down, provides coastal vegetation with nutrients. He recommended seaweed should be left on the beach for those reasons. He also advised that keeping people off of the dune is vital.

Next Orchid resident Peter Cournoyer wanted to hear more about the core systems available. Steve Boehning stated the challenge is maintenance of any such system, as State law requires them to be covered by at least three feet of sand at all times. Mr. Fontaine agreed that that was a major burden on those that had tried such systems and stated that DEP rules require a bond to be in place for the dune core's removal, as so many property owners end up with buyer's remorse after buying and installing a core system. He stated that dune cores will act just like soft armoring with many of the same negative impacts of hard armoring. Mr. Boehning also said that the power of the ocean could prove too much for a dune core system, stating he was aware of wave activity elsewhere that had lifted and moved huge granite boulders. Responding to



Mr. McLean's question about anchoring, he explained that anchoring on a sandy beach is a difficult engineering challenge.

The final audience participant was Orchid resident Mr. Jerry Storch, who asked whether sand placement projects will remain sustainable. Tem Fontaine stated the main issue is cost and that the answer comes down to funding. He encouraged residents to be politically active in encouraging continued funding to the County from the State and Federal governments for beach renourishment projects. Steve Boehning highlighted that in Florida the beaches are very important protectively, but also economically. He added that the State and its coastal counties are incentivized to keep the beaches healthy, pristine, and inviting.

Eric Charest, Interim Natural Resources Director for Indian River County, gave a brief overview of the County's activities on the beach in Orchid in recent years and summed up the goals of the beach management program. James Gray spoke enthusiastically about the County's program, from which Orchid had greatly benefitted in recent years. He also saluted Orchid's Town Council for maintaining a very strong program and being cognizant of the importance of the beach and dunes. He stated that local efforts were emblematic of responsible stewardship of the shoreline and the coastal community that depends on it. He congratulated the Town and recommended it "Keep up the good efforts." He thanked the Council for the opportunity to moderate the workshop, once it was clear there were no further questions from the public.

#### **4. Adjournment**

Mayor Gibbons thanked the participants, on the panel and in the audience, and advised the next meeting would be held April 3, 2024, at 9:00 am.

***Mayor Gibbons moved to adjourn the workshop.  
Vice-Mayor Knapp seconded the motion.  
All Councilmembers were in favor.***

The meeting was adjourned at 11:53 am.

These minutes were approved at the regular meeting of April 3, 2024.

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*Jane Garcia, CMC  
Town Clerk*

