

MINUTES OF THE SPECIAL TOWN COUNCIL MEETING HELD ON MAY 16, 1995

I. CALL TO ORDER AND ROLL CALL - The May 16, 1995, Town Council meeting was called to order by President Lesly S. Smith at 10:00 a.m. in the Town Council Chambers. On roll call, the following elected officials were found to be in attendance: President Smith, President Pro-Tem Jack McDonald, Councilmen Leslie Shaw, Samuel McLendon and Allen Wyett. Also attending for all or portions of the meeting were Town Manager Robert Doney, Town Attorney John Randolph, Planning, Zoning and Building Director Robert Moore, Public Works Director Al Dusey, Assistant Town Manager Peter Elwell, Planner/Projects Coordinator Timothy Frank, and Town Clerk Mary Pollitt.

II. INVOCATION AND PLEDGE OF ALLEGIANCE - The invocation was given by Mrs. Pollitt. The Pledge of Allegiance was led by President Smith.

III. APPROVAL OF AGENDA - A motion was made by Mr. Wyett to approve the agenda. The motion was seconded by Mr. McLendon. On roll call, the motion carried unanimously.

IV. CONSIDERATION OF PROPOSAL REGARDING LANDMARK DESIGNATION OF 1095 NORTH OCEAN BOULEVARD, ESTATE OF MRS. ROSE KENNEDY RESOLUTION NUMBER 9-95.

James Brindell addressed the Council and presented summary copies to the Council members of the revisions that addressed the issues raised at the last Town Council meeting on May 9, 1995. Mr. Brindell reviewed the changes in the agreement that included removing the reference to judicial action in one of the "whereas clauses"; an amicable resolution of landmark issues was added; a provision for video taping the property was added in addition to photographs; a one day requirement for completion of the video taping was eliminated and the date was extended to June 15 for completion unless a later date is approved by the Kennedys or the Castles; a time certain for land marking the property was provided--5 years from the effective date of the agreement unless the Castles agree to an earlier date; a provision for review of any changes to the property by the Landmarks Commission only; a provision for a means for the owners to obtain a statement from the Town as to whether a proposed renovation activity would trigger, in the Town's opinion, a non designation exception; a provision that any designation effort, pursuant to the non designation exception, during the five year period would include any out structures then remaining on the property; and signature lines were provided for Mr. and Mrs. Castle. Mr. Brindell concluded that these changes addressed the concerns the Council members raised at the last meeting.

Mr. Randolph stated he had reviewed the agreement from the standpoint of protecting the Town in the event the Council would choose to go forward with the approval and execution of the agreement. He continued that Mr. Brindell discussed the many points that were raised by the Mayor, Town Council and Staff, and the two most substantive points are found in the paragraph 5A on page 2 which indicated that the owners will voluntarily designate the property within a period of five years. Paragraph 6 provided that the Architectural Commission would not have jurisdiction over the any changes to the structure and the Landmarks Commission would review any proposed changes although the property is not technically a landmark. He advised that in the event the Council would approve the compromise agreement, the Council should direct the execution of the agreement by the Landmarks Commission and the Council should authorize the Landmarks Commission to review the property pursuant to the terms of this agreement.

Mrs. Smith told Mr. Brindell she was on record that she would like to see the property landmarked in this century, and she asked him what the chances of that were?

Mr. Brindell responded that he could only give his personal opinion, and he could not speak for the Castles.

Mr. Shaw noted that what was said and accomplished in the last few days and hours concerning this agreement proved that the Council and the buyers could reach a comfortable compromise.

Mr. Shaw questioned the relevance of a paragraph on page 1 to which Mr. Brindell replied he was attempting to buy some context for the agreement and that was a statement of fact.

Mr. Shaw stated his concerns, running through the documents, which were that the property would be landmarked by the turn of the century. He did not see, in the document, an acknowledgement or an acceptance of the designation report of December 21, 1994, and he hoped that could be incorporated so the paragraph would read: "Whereas the Town and the Commission have read and approved for designation the property as a landmark as was presented in the designation report of December 21, 1994."

Mr. Brindell responded that created a problem because the Landmarks Commission has never considered the full designation report and the res judicata issue precedes that. Testimony was given, based in part upon the report, that related to the question of whether there had been a substantial change in circumstances to warrant a different result that was previously reached. Mr. Brindell stated that was the status of the situation and a provision under 7(b) where there is a reservation of rights for both sides should the non designation exception be considered and the designation proceedings are started. He stated that his client did not want to agree with the designation report at this time, and it was not fair to ask his client to do that based on the res judicata issue. He concluded that this language was an effort to avoid that situation.

Mr. Shaw asked Mr. Brindell what his client intended to do in five years?

Mr. Brindell responded that his client is agreeing to voluntarily designate the property within five years as a landmark.

Mr. Shaw asked about paragraph three on page two that stated, "...the Town seal in the center, or such wording as acceptable to the owners." He offered the words, ".with such wording as acceptable to the owners, Town, and Councils for a standard plaque as is established throughout the Town."

Mr. Brindell replied that verbiage was added because originally it was described as a standard plaque, and it was suggested by someone from the landmark side of the issue that additional wording should be added to the plaque. He added the issue was that the only acceptable wording is not just the standard plaque but that additional wording may be added.

Mr. Wyett asked Mr. Brindell if he would accept a change in the wording to, "...acceptable to the Town of Palm Beach". Mr. Brindell agreed to that change.

Mr. Shaw questioned paragraph 5(a) that stated the property would be submitted voluntarily for designation. He noted that Councils and Commissions may change over the years, and asked Mr. Randolph to comment on a future designation by a possibly different Council and Commission.

Mr. Brindell asked Mr. Shaw if his concern was with his client's possible change of mind concerning the designation in future years?

Mr. Shaw responded his intent was to provide protection for the agreement that this Council may have no part of in the future.

Mr. Randolph replied that the clarification that Mr. Brindell offered would be helpful; however the major issue was could this document designate the property effective five years in the future? He noted that the property had not been through a designation hearing, and the intent of the presented agreement was to have the owner of the property, at that time, to voluntarily designate it. He added a process would have to occur, and if the Landmarks Commission and the Council, at the time the property was presented for designation, decided the property should not be designated, then the property would not be designated. He stated the issue should be clear that this agreement does not guarantee designation as of the mentioned date. He added he had a measure of discomfort entering into an agreement relating to a possible designation five years in the future without having the Landmarks Commission and the Town Council review the procedure at the time of designation.

Mr. Shaw suggested the designation report could be presented at the Landmarks Commission meeting scheduled for May 17, 1995.

Mrs. Smith said the Council had not determined if the issue should be presented to the Landmarks Commission and the Council needs to proceed before that could happen.

Mr. Brindell commented that his clients, Mr. and Mrs. Castle, have to put faith in the Town's actions during the next five years, and he would expect the Town to also show faith in the Castles' intentions for the next five years.

Mr. Wyett said it would be difficult to landmark a property now, effective in five years, when this Council would not know what the property would look like then.

Mr. Shaw responded that the report could be heard and accepted.

Mr. Randolph, responding to Mrs. Smith's request, said the designation report has been submitted to the Landmarks Commission but the agreement, presented to the Town Council, does not rely upon the designation report. He said he understood Mr. Shaw's reluctance, based on the res judicata issue, to accept the report. He noted that Mr. Brindell indicated his clients would not accept the designation report as part of the agreement. Mr. Randolph identified the major issue before the Town Council was the question, "Should the Council guarantee the designation of this property five years from now and bind the Landmarks Commission at that time and the Town Council at that time?" He said changes may occur to the property during the next five years that perhaps the Landmarks Commission and the Town Council may want to look at.

Mr. Brindell suggested a provision be added to the agreement that the Landmarks Commission would consider the designation report at least at the end of the five year period or before if the owners decide to pursue the landmarking before the five years are up.

Mr. Randolph asked if Mr. Brindell intended there be a direct obligation on the part of the Town once the property is voluntarily designated for the Landmarks Commission to give consideration at that time?

Mr. Brindell replied that words could be added to the effect that when the five year period is run, the Landmarks Commission has an obligation to consider the designation. He noted that his clients will have already agreed to voluntarily have the property designated and would not object to the proceedings. He said when the two interested parties signed this agreement, that is as binding an agreement as anyone could expect.

Mr. Randolph responded he would have no objection to that being added to the agreement.

Mr. Shaw said he believed that the Landmarks Commission should be the prevailing review body for any additional buildings that would be added to the property, but asked if this agreement would prohibit the Architectural Commission from being involved with the property.

Mr. Randolph said this agreement provided that the Landmarks Commission would have exclusive control over the property as defined in this agreement.

Mr. Shaw asked if that were appropriate for the structures on the property that are not a part of the landmark intent?

Mr. Randolph clarified that the intent of landmarking is to landmark the entire property, and normally the Landmarks Commission considers all structures on the site.

Mr. Shaw stated the agreement was a great step forward and appreciated that Mr. Brindell and his clients had revised the agreement.

Mr. McLendon commented that he assumed that future Councils could not be obligated to do what this Council thought ought to be done. He said he liked the agreement that was presented.

Mr. McDonald asked Mr. Brindell why the five year period was a necessity?

Mr. Brindell replied that the property needed a great deal of work and this work will require a great sensitivity to achieve the objectives for a landmarked property. He continued that the plans will take a good amount of time to prepare. Additionally, Mr. and Mrs. Castle will probably live in the home for a while before deciding on all the renovations. He said that, if per chance the sale could not be completed on this property, a new buyer would have to be found. The five years would allow time to find another buyer who would be bound by this agreement.

Mr. Wyett stated that he did not want this unusual agreement to establish a precedent that would affect the duties and responsibilities of the Landmark Commission or the Town Council. He added that he welcomed this agreement as presented.

Mr. Randolph said the this Town Council faced a very unique situation regarding this particular property, and that was a challenge based upon a concept of administrative res judicata. The res judicata is based upon the fact that this property has been considered for landmarking by the Town on at least one other occasion, arguably two occasions, and now perhaps a third occasion. He did not think that there was another property like this one in the Town of Palm Beach. He said the only precedent that would be set would be in the event that a like circumstance would be presented to the Town Council at a later time when a property would be considered for landmarking for a second or third time. Anyone presenting that case could point this out as a precedent, but he noted that would be a fairly unusual circumstance. Mr. Randolph stated he did not think this was a precedent setting issue as related to the normal properties that come before the Landmark Commission for designation.

Mrs. Smith asked Mr. Randolph to explain the next step if the Council voted to approve this agreement?

Mr. Randolph replied that the Council would want to make sure in any motion that the motion reflected any amendments that were made to the agreement at this meeting. He cited paragraph 5(a) which stated that not only will the property owner volunteer the property for designation within five years, but they will raise no objections to the designation and when the property is volunteered for designation that the Landmarks Commission and the Town will immediately consider it for designation. In addition a change was made in paragraph 3 to say the wording on the plaque will be acceptable to the owners and the Town of Palm Beach. He added that the date would have to be added to the agreement reflecting when both the Landmarks Commission and the Council approved the agreement.

Mr. Randolph suggested that if the Council approved the agreement, it would be approved with the amendments that were made, and the execution of the agreement by the Landmarks Commission would be authorized by the Town Council. He said the Landmarks Commission should be further authorized to review the certificates of appropriateness pursuant to the terms of this agreement.

Mrs. Smith asked if those conditions were acceptable to Mr. Brindell?

Mr. Brindell responded that those conditions were acceptable to him. He added that one editorial change needed to be made on page 3, "The Town and Commissions right under this agreement to undertake a landmark designation effort pursuant to the non designation exception shall apply only to the main house and any out structures that remain." He noted that language was consistent with the language added on page 4 under 7(a) and was changed to assure that out structures were included as they remained at that time.

Mrs. Smith asked for any comments from the public. There were none.

Motion made by Mr. Shaw to approve Resolution Number 9-95 with the three noted amendments with the understanding that the Landmarks Commission will review any changes in accordance with this agreement for a certificate of appropriateness. The motion was seconded by Mr. McLendon.

Mr. McDonald said he would like to change the designation date to 12/1/99.

Mr. Brindell stated he had no authority to agree to change that date.

Mr. Shaw said he was trying to back up from that date allow for the designation consideration. He noted that the designation would have to be heard in a prior landmarking period.

Mr. Randolph said the date requirement of ninety days related to the non designation exception in the event there is an attempt to partially demolish or to demolish a house, then the Landmarks Commission has ninety days in which to consider designation. That provision does not deal with the voluntary landmarking that is required within the five year period of time.

Mr. Wyett said that the Town is not obligated to landmark the property in the fifth year, and it could be landmarked in the sixth or seventh year if a future Town Council thought it proper.

Mr. Randolph said the problem is that language is being added to the agreement now which says upon submission of a voluntary designation, the Town Council and the Landmarks Commission will immediately consider it for designation.

Mr. Shaw understood that Mr. McDonald's request was for a six month period.

Mr. Brindell replied that if the sale on this property were not to close, the six months would be a further restriction. He added that no language exists in the agreement prohibiting his client from voluntarily submitting the property for landmarking before 12/1/99. He suggested he would pass this information on to Mr. Castle and make it known to him that was the desire of the Council. Mr. Brindell requested the Council's indulgence and not shorten the time period, noting the progress the parties had made to this date.

Mr. Randolph said he should read the resolution before any vote was taken.

Mrs. Smith asked if the resolution would be appreciably changed by the conditions made at this meeting?

Mr. Randolph said the language of the resolution will not be changed. The substantive language of the resolution in Section 2 stated that the perimeter wall and the gate are designated. Section 3 stated that the Town Council approved and authorized the execution of the agreement attached

hereto relating to the property located at 1095 North Ocean Boulevard. Mr. Randolph said the substance of the resolution will not change, but the substance of the agreement will change, and that agreement will be attached to the resolution. He noted that the resolution and the agreement will be recorded in the public record, and it will be binding on the property.

Mr. Randolph read Resolution 9-95 - 1095 North Ocean Boulevard:

A RESOLUTION OF THE MAYOR AND TOWN COUNCIL OF THE TOWN OF PALM BEACH, PALM BEACH COUNTY, FLORIDA, RATIFYING AND CONFIRMING THE DETERMINATION OF THE LANDMARKS PRESERVATION COMMISSION THAT THE PROPERTY HEREINAFTER DESCRIBED MEETS THE CRITERIA SET FORTH IN ORDINANCE NO. 2-84, ALSO KNOWN AS CHAPTER 16, ARTICLE III, OF THE CODE OF ORDINANCES OF THE TOWN OF PALM BEACH, AND DOES HEREBY DESIGNATE SAID PROPERTY AS A TOWN OF PALM BEACH LANDMARK PURSUANT TO SAID ORDINANCE; FURTHER APPROVING OF AND AUTHORIZING THE EXECUTION OF THE AGREEMENT ATTACHED HERETO RELATING TO THE PROPERTY AT 1095 NORTH OCEAN BOULEVARD.

On roll call, the motion carried unanimously.

V. MID-TOWN PEP REEF--FURTHER CONSIDERATION OF ALTERNATIVES FOR ADDRESSING CONTINUED EROSION

Mr. Doney pointed out that Dr. Robert Dean from the University of Florida was in attendance at the meeting and, additionally, Karen Erikson from Applied Technology and Management, Coastal Consulting Engineering Firm from Gainesville that is preparing the Lake Worth Inlet Management Plan, was present. Mr. Dusey requested that Mr. Dusey review his memorandum dated May 15, 1995, for the Mayor and Town Council.

Mr. Dusey reported that the window of opportunity still exists to pursue any beach project if the Council was inclined. He said the good news came from Dr. Devereaux from the Department of Environmental Protection who indicated a groin field would be permissible this year as long as it would be one of two kinds--Longard tubes that are sand filled geo-textile tubes or P.E.P. reef modules that could be placed perpendicularly to the shore. Dr. Devereaux thought that these two types of groins could be permitted fairly quickly since both would be considered to be temporary, and if any kind of damage would be caused by either of them, adjustments could be made very quickly. He continued that the reef modules could be removed in pieces and the Longard tubes contain very strong cloth that could be cut and sand removed from them if required.

Mr. Dusey continued that the inclination is there to proceed with the beach project, and it is possible to do some stabilizing of the beach immediately upon its completion. He stated it would be difficult to build either groin field with the beach fill since there is not enough sand to place the groins on. Sand is required to provide a base for the groin field.

Mr. Dusey reported that the cost of the Longard tubes, placed approximately 300 feet apart resulting in 14 units, would be \$770,000. He said the cost of a groin field created with the P.E.P. modules could not be estimated because the cost is dependent upon a specific design configuration. He pointed out that the material costs are zero since the Town has already paid for them, and the only cost would be the placement of the groins in another location such as the artificial reef site number 4.

Mr. Dusey said he thought the fact that DEP would not object to the modules being moved totally out of the way of the fill was good news. The alternative would be to move the modules away from the site to a temporary location to provide for the sand fill and then moving them back to the site.

He reported that estimates for three other groin fields have been obtained from Applied Technology & Management to construct an adjustable groin field comprised of H-piles and precast concrete panels placed between them. He said 14 of that type, placed 14 feet apart, would cost approximately \$1,650,000. He continued that a rock groin field using Florida limerock, local stone as used in the rock revetment, would cost approximately \$2,700,000. A groin field constructed from Georgia granite would cost approximately \$3,150,000. He noted that the range of costs was wide in the construction of groin fields.

Mr. Dusey said the Longard Tubes and the P.E.P. modules used as a groin field could possibly be done this year; however the granite groins would have to wait a year. He continued that the adjustable groin was not discussed with Dr. Devereaux, but it is possible to permit that this year; however, it is more of a permanent structure and may require additional testing or modeling.

Mr. Dusey noted that concerns had been expressed to him regarding the length of the beach and the fact that an essential amount of fill would be placed on private beaches, the possibility was investigated of providing a shorter beach--running from Barton Avenue to Gulfstream. Ninety-five per cent of that beach would be public with short tapers to the existing beach. DEP indicated that would not be a permitting problem because of all the previous work that had been done. Mr. Dusey said that project may be buildable this summer, but the Corps of Engineers is also a permitting agency and their approval would have to be sought.

Mr. Dusey said the project suggested last week was one that had been through a review process both at the State and Federal levels and been essentially approved. A Corps permit was not issued because the process had not proceeded that far, and introducing a different project may prompt additional review.

Mr. Dusey noted that ATM agreed with coastal engineers that a shorter beach may erode faster; however stabilization would lessen the problem. ATM said a groin field installed at the same time would solve some of the erosion problem. He reported that ATM investigated how much sand would be needed for the shorter beach and the amount was approximately 500,000 cubic yards--reduced from 850,000 cubic yards for the original project. He continued that the berm height and width were somewhat different from originally projected.

Mr. Dusey, responding to the Council's request for information regarding the stabilization of the seawall, suggested a rock revetment program similar to what was placed in the northern part of the island. He compared the prices received in 1987 to prices from 1990 and the estimate was \$600,000 to construct a similar structure over the 1,263 feet where rock does not currently exist.

He continued that the rock revetment program was based on the fact that the existing rock revetment has provided very good storm protection. He cautioned that continued loss of sand in front of any revetment can de-stabilize it and cause problems.

Mr. Dusey reported that ATM estimated it would cost about \$410,000 to place a Longard Tube, laterally, along the beach at the toe of the wall; however, they advised against doing that unless the Town is looking at short term benefits. The Longard Tube may split and lose its effectiveness and not provide the protection the Town needs.

Mr. Dusey said he thought it would be difficult to seek reimbursement from the Corps of Engineers for the shorter beach project since the Corps requires a very specific process regarding maximizing the cost ratios, etc. He was not sure that this project would meet their criteria, and he was more optimistic regarding the original project.

Mr. Dusey suggested that if the Town Council is inclined to approve a renourishment project in the near future that no action be taken regarding the stabilization of the seawall since a lot of money would be spent on stabilization and any fill over the project would provide a very short term benefit.

In conclusion, Mr. Dusey said he wanted to discuss the numerical modeling. He said that the numerical model that was done on a draft basis for the proposed Vero Beach P.E.P. reef project which is segmented was fairly well criticized by State DEP for a number of items they considered to be deficiencies. DEP said the model was not calibrated to include the large base of knowledge that had been obtained from the Palm Beach Midtown Beach and from the University of Florida lab studies that were done. Mr. Dusey noted that the Town had a proposal from FIT to do numerical modeling to determine if a segmented configuration might provide some benefit, and a concern was expressed regarding the ability of a model to determine that type of detailed information. He mentioned that the modeling would take five months to complete and cost \$58,000. Additionally, the modeling would not allow any construction to occur this season, and the permitting process would not start until at least October. Mr. Dusey added that monitoring of any project will cost money, and the current three year monitoring program the Town has costs about \$700,000. He understood that monitoring for the Vero Beach project will cost approximately \$900,000.

Mr. Dusey said the Staff recommended that the Town should invest in sand and groins.

Beth Mitchell, Vice President of American Coastal, addressed the Town Council and said two speakers were present at the meeting, Bill Foreman, Coastal Engineer for American Coastal, and Dr. Gary Zarillo. Ms. Mitchell stated that Mr. Foreman had six years experience with the U.S. Army Corps of Engineers, and he is the consultant for American Coastal. She added that Dr. Zarillo would address some of the comments that Mr. Dusey had made regarding the criticisms of the numerical model.

Ms. Mitchell said she would like to remind the Council that at the previous meeting, a conclusion had not been reached since there was no conclusive evidence that the reef has caused accelerated erosion. She said the discussion should be focused on the reef prior to a decision to remove it. She asked that Mr. Foreman address those issues.

Mr. Foreman, Foreman Engineers, Raleigh, N.C., addressed the Council on behalf of American Coastal. He said the alternatives discussed at the last Town Council meeting concerning the reef were to protect the seawall and the rearrangement of the P.E.P. reef. Mr. Foreman stated that after reviewing the proposal that was prepared, his estimates are similar to those of Mr. Dusey's. He recommended protecting the wall with some type of toe protection such as a geo textile bag or stone revetment. He added that the stone revetment would be more permanent, and he was surprised that the wall was built without the revetment initially to protect it over the long term.

Mr. Foreman said his proposal concerning the reef was to see the experiment completed through the projected three year period and that was the key issue. He continued that because of the technology that was developed for the Vero Beach project, tools are available that were not pursued when the P.E.P. reef was installed. He recommended that the numerical model should be developed to review different arrangements of the reef to determine if the performance could be improved.

Mr. Wyett asked Mr. Foreman to elaborate on what he meant by different arrangements of the reef? Was he suggesting that it should be left as it is for three more years of monitoring or should the reef be eliminated or moved?

Mr. Foreman replied that many different arrangements have been discussed, but the segment arrangement installed at Vero Beach was tested extensively. He said that Dr. Zarillo would address the model issues, but once the model was calibrated to include what has occurred to date, then any number of arrangements can be looked at including segmentation, removing some of the segments, increasing the gaps, etc. He explained that a segmented model would have an off shore row about the same water depth as the midtown project; a gap would be off set landward in approximately six feet of water. He explained that the configuration had an off shore segment and an on shore segment, and each one of them could be from 300-400 feet long.

Responding to questions from Mr. Wyett, Mr. Foreman said the monitoring schedule would be up to DEP, and if the arrangement were changed, he suggested the current monitoring program could have portions of the plan changed to apply to the situation. Mr. Foreman said the data collected could be used to set the boundary conditions for the model.

Mr. Wyett noted that Mr. Dusey recommended that the present reef is causing excessive erosion at the beach wall, and that wall only extends down ten feet, and if something is not done quickly, a major storm could cause a potential collapse of the wall. Mr. Wyett continued that if the wall would collapse, the street would go and with it all the utilities that are buried in the street. He added that would be most disruptive to the residents of the island.

Mr. Foreman replied that regardless of what actions were taken regarding the reef or groins, the protection of the seawall should be the first order of business.

Mr. Wyett referred to American Coastal's recommendations and noted that rocks were mentioned to shore up the toe wall. Mr. Wyett asked Mr. Foreman if he recommended that be done this year?

Mr. Foreman replied affirmatively.

Mr. McLendon said he understood two problems existed. The first problem was the emergency decision regarding the wall itself. The next decision to be made was what to do on a long term basis. He asked Mr. Foreman if he was recommending the use of a numerical model before a long term decision was made regarding the reef?

Mr. Foreman responded that the model could be used to evaluate the different alternatives, and if the criteria for different alternatives is economics or the potential results for the beach, those would be weighed before a selection was made.

Mr. McLendon asked Mr. Foreman if he was familiar with the amount that the reef settled and the ground conditions around it? He requested that Mr. Foreman comment on the reef and also why the erosion is not as bad upstream and downstream from the reef?

Mr. Foreman replied that the most dramatic event he observed was an aerial photograph that was taken from the south looking to the north. He described the shape of the groins and seawalls along the shoreline. Mr. Foreman said it was obvious to him that the entire area was sand starved. He recommended that the monitoring program be allowed to reach its conclusion since a sizeable amount of sand was installed at the north end, and that was a feeder base for the entire island. He continued that the ponding effect was a theory, and he had not seen it proven to his satisfaction even with numbers. He said that he had seen the ponding that was associated with huge projects that were located in 40 meters of water with structures the size of Town Hall. He said the difference in scale makes comparison to a project of this size difficult. Mr. Foreman stated, in his opinion, the appearance of the beach indicated that the winter was very bad and that would mean recovery may be possible.

Mr. McLendon said he understood that much of the monitoring data had been accumulated after storms and that information may be skewed. He said he did not understand why a storm would affect the reef areas more than the adjoining areas.

Mr. Foreman replied he would like to know the answer to that to, and he hoped the monitoring would prove that conclusively.

Mr. Shaw mentioned that a position taken in Appendix 2 of the agreement, expressed a hope or an assumption that this reef would help rebuild the beaches. Mr. Shaw continued that regardless of the possibly skewed information or the correctness of the aerial photograph, the bottom line is that there is no sand on the beach, and the reef has not been working for two years. He said the toe wall is exposed, and it is not fair to return to the Council and question the design of the wall because a product that American Coastal sold to the Town of Palm Beach with the intent it would build a beach in addition to removing the wave energy did not work. He asked Mr. Foreman why the studies that have been done for the last two years were not presented to the Council, and why, if the company knew something was wrong, was the Town not notified?

Ms. Mitchell replied that American Coastal has been in the development of this technology since 1986. When the DuPont reef was installed, the Council was aware of what was going on. Between 1990 and 1993 when the company was working on the Midtown reef, the Council was notified almost on a monthly basis to report on the development. Ms. Mitchell said the installation was completed in 1993 and the test plan went into effect. She continued that Dr. Dean as the principal investigator basically took over in terms of monitoring the reef and issuing the reports, etc. She said American Coastal has been involved in all the meetings on a step by step basis, and she has had interaction with Dr. Dean and his staff. Ms. Mitchell recalled that the Town Staff intended that the principal investigator would be responsible for the reporting. In terms of the development of the technology, it is on-going, and this is a project that is built, put in the water and hope it works. This is a process that began a long time ago.

Ms. Mitchell said that when American Coastal went through the Vero Beach project and filed the permit applications, the DEP returned and required that physical modeling be done. Dr. Dean from the University of Florida was contracted to do that, and that stage was completed. She continued that the current phase is specifically designed to determine the very best alignment that is most appropriate for the present conditions. She noted that other conditions existed in the Vero Beach area that pushed forward the change in the alignment, and Palm Beach has a sandy bottom--Vero Beach does not. Ms. Mitchell said the design parameters had to be looked at with each new project, and the technology is developing. From the physical model, it became clear that all of the factors in terms of sediment transport once an alignment was made could not be determined, and the next phase was to go to a numerical model. Unfortunately, the numerical models that existed at the time could not predict all of the factors that needed to be predicted. She said that Indian River County contracted with Florida Institute of Technology, and they have been developing this numerical model over the last 6 - 8 months.

Ms. Mitchell said she would have been delighted to address the Town Council at any time and explain the development stages during the process. Until the present time, she said she had no requests to do that and did not want to presume to appear without a request.

Mr. McLendon noticed that the sand back fill in the rubble toe protection was not included in the price. He asked how much sand would be required and if a price were available? Mr. McLendon questioned the inclusion of the 7 foot diameter geo tubes but not the inclusion of the 3 foot diameter geo tubes.

Mr. Foreman replied the 3 foot tube was the anchor tube and was included in the previous item. He said the sand back fill was not included; however, the number from the geo tube would be a good estimate.

Mrs. Smith stated that the Council was at the point where it could not deal with items that are forgotten, and the question before the Council is a very serious question. She said this Council could not look back on previous Councils and their actions, and those Councils acted in the best interests of the Town and this Council will too. Mrs. Smith added omissions could not be afforded in the presentations.

Mr. McLendon noted that item 7 showed \$500/square foot and it should be \$5/square foot.

Mr. Foreman replied it should be \$500/1,000 square feet, and an amount for pavement repairs should be included in the total.

Mr. Shaw asked why landscape repair was different between the two different projects--one was \$50,000 and other one was \$6,000.

Ms. Mitchell replied that the two proposals contained two different concerns regarding landscaping requirements.

Mr. Foreman added that the plan placing the rubble on the beach would affect much of the landscaping to the east of the wall.

Mr. McLendon asked if the sand for the tubes would come from the beach using an injection system?

Mr. Foreman replied the sand for the tubes would be hauled in from an off-beach location and would not be beach sand, because beach sand has too many shells.

Mr. McLendon asked if the fabric for the tubes was fragile--was it reasonably durable or would a sharp knife puncture it? Mr. Foreman replied that it was not as permanent as rubble, but it was reasonably durable.

Mr. Wyett reminded the Council that Mr. Dusey in his report did not recommend Longard tubes as it is inconsistent in this application.

Mr. McLendon noted that Mr. Dusey did not recommend the tubes for protecting the wall.

Ms. Mitchell said that Dr. Zarillo would like to have the opportunity to address the Town Council and discuss his proposal--what he thinks he can do and can't do in terms of looking at the present configuration and coming up with some alternative suggestions. She suggested that if the Council's intention was to maintain the reef and perhaps shore up the wall, to go through the next summer with the experiment, and if during this modeling effort, a better configured alignment could be suggested, a \$700,000 monitoring period may not be required. She suggested that the information gathered over the last three years could be utilized for a shortened monitoring period, and perhaps the State would be willing to provide some of the funds for the monitoring since the State did contribute \$500,000 for the initial three year monitoring period.

Mrs. Smith asked Ms. Mitchell to clarify that if the reef were realigned, the Town would be faced with the additional expense of monitoring for the new alignment, perhaps in the hundreds of thousands of dollars.

Ms. Mitchell replied she did not mention the amount; however, there would probably be additional monitoring costs since these are imposed by the State because of the experimental nature of the project.

Mrs. Smith asked if Ms. Mitchell thought that the seawall from Peruvian Avenue south was in need of additional work when the rubble toe was put in in 1987? Why is this coming up now and why was it not done in 1987 or in conjunction with the reef?

Ms. Mitchell said she could not answer that. Mr. Dusey replied there was no connection between the reef installation and the section that does not have it. He added there was more sand in the system then--several hundred thousand more yards.

Mrs. Smith asked why American Coastal was dealing with the question of the protection of the seawalls at this time if it was not looked at before?

Ms. Mitchell responded that at the last meeting, it was suggested that American Coastal return with proposals for the seawall. She continued that American Coastal looked at the reports that had been issued to find a solution particularly in terms of the wall. She said there is still a question as to whether the reef is causing the problem at the wall, and this has not been discussed up to this point in the meeting. Ms. Mitchell explained that it was only American Coastal's intention to provide some additional information to help correct the problem.

Mrs. Smith said that she believed the structural integrity of the seawall and the P.E.P. reef were two separate problems.

Mr. Wyett requested Ms. Mitchell to draw a diagram on the blackboard of the position of the existing reef at Midtown. Ms. Mitchell asked if Mr. Wyett would also like to see the diagram of the Vero Beach alignment? Mr. Wyett agreed that might be helpful.

Dr. Gary A. Zarillo, Florida Institute of Technology, Melbourne, Florida addressed the Town Council. Dr. Zarillo said he would like to address the issues concerning the numerical modeling effort. He said the criticisms by the DEP for the Vero Beach project were based on a draft report put together mid way through the study, and since that draft report was filed, the model application has been improved dramatically, in part based on discussions with Professor Dean. He continued that he had been able to document in the model the so-called ponding or pumping effect, (water level set-up), cited by the University of Florida laboratory study. He said some water level set-up was spotted with the Vero Beach project and they were able to document that in the model.

Dr. Zarillo said the if the scope of the Palm Beach model were reduced and the cost were reduced, meaningful results could be produced by mid summer, and these would be useful in re-configuring the reef. Particularly, Dr. Zarillo noted that configurations with no reef, a continuous reef and a segmented reef had been addressed. He added that the model could be used to assess the utility of the various groin field designs that were discussed at this meeting, and although the model is a very valuable tool, it is not perfect; however, it does provide definitive results at least in terms of the Vero Beach application. He noted that it should be consistent with some of the physical findings in the University of Florida's laboratory.

Mrs. Smith asked what were the results of modeling for the Vero Beach project?

Dr. Zarillo responded that the segmented reef configuration was looked at, and some typical wave conditions that would be impinging on the reef field were studied. These wave conditions were defined based on a directional wave gauge located nearby. He reported that the findings, in all cases, the segmented reef configuration did, overall and in general, reduce some scour landward or between the reef and the shoreline. He added that some scour off shore was increased. A net

transfer of some sand occurred from the reef to on shore, and local erosion was exasperated around the reef segments themselves--scour around the reef which was expected. He continued that overall, according to the model results, the results were positive.

Mrs. Smith asked Dr. Zarillo to confirm that Vero Beach has a different ocean floor than does Palm Beach, and how could the Vero Beach results be translated for Palm Beach's sandy bottom?

Dr. Zarillo replied that in the case of Palm Beach, the limiting of the scour would not be provided for, because when the scour gets down to bedrock like coquina, the model is instructed to stop the scour; however, that would not be the case for Palm Beach.

Mrs. Smith suggested that Dr. Zarillo answer Mr. McLendon's earlier question concerning why there is such an erosion of sand underneath the reef.

Dr. Zarillo responded he could not answer that question, because he was not totally familiar with the monitoring data, and he has only recently started to read the monitoring reports from Palm Beach County.

Mr. McLendon asked what velocity had been observed at the ocean floor, and was that sufficient to disturb the sand and move it?

Dr. Zarillo said the velocity depends on the location in combination with the wave conditions. He continued that generally the near shore area between the shoreline and about 1,000 feet off the shore, in the case of Vero Beach, is the area that is most subject to scouring and deposition. He added that beyond that area, the currents are low enough, in most cases, except the most energetic cases, that the sand is not moved around very much.

Mr. McLendon asked if the reef were segmented, would a 300 foot section be removed and used in an off setting pattern or would the 300 foot section be used for something else?

Dr. Zarillo mentioned that something else could be done with the segment. For instance, it could be used for an on-off shore segmentation or a submerged groin which could be placed in the model, and the positioning of the reef segments is according to specification and the model is not limited in that sense. The model could look at a number of different configurations including shore-perpendicular, groin type features, shore parallel, segmented reefs, etc.

Mr. Wyett recalled that Dr. Zarillo had mentioned that further study would give additional understanding of a potential groin field that could be considered. Mr. Wyett asked Dr. Zarillo to elaborate on that point.

Dr. Zarillo replied that groins of various lengths and elevations could be placed within the model domain to see how they would interact with the wave field and wave generated currents and also the sediment transport regime. He said sediment trapping capabilities of the groins and any negative impacts would be looked for, and the spacing of the groins could be adjusted in an attempt to optimize sand trapping. He added that a number of ideas could be tested in the numerical model.

Mr. McLendon asked Dr. Zarillo if he had any experience with the attempt to take a groin or a sand retention unit and angle it into the direction of the most severe storm in an attempt to minimize the scouring effect on the downstream side, or in this case the southerly side of a groin?

Dr. Zarillo responded that he had seen some work related to that in the European literature. He said the Dutch and the Danes have done some work in that area, but not much of that sort of thing has been done in the United States. It is a possibility to look at that, and, in the Vero Beach case, the alignment of the reef segments with respect to the most energetic conditions which are from the northeast, were aligned to intercept that wave energy and reduce wave heights.

Mr. McLendon asked what criteria Dr. Zarillo recommended for the spacing of the groins?

Dr. Zarillo said he would leave those answers to the coastal engineering community such as Professor Dean. He continued he would look toward the coastal engineering community to establish the design of the groin field, and a lot of work needs to be done in that area which is not very well understood.

Mrs. Smith asked Dr. Zarillo if he were an engineer. Dr. Zarillo responded he was a physical oceanographer and a geologist.

Mrs. Smith asked Ms. Mitchell to show the drawing of the P.E.P. reef and the Vero Beach project.

Ms. Mitchell explained that the top section of the drawing showed the Breakers Hotel and the Estee Lauder estate which has a groin at the end of the estate, and that is the boundary for the Park Avenue Beach. She noted that this was the only sandy beach area that initially existed. She continued that there was a 210 foot gap there. The reef installation consists of 330 units and extends to the lifeguard station by Charley's Crab.

Ms. Mitchell continued that the bottom drawing showing the Vero Beach project, and Ocean Grille marked the center of the installation which will be installed in the summer. The hard bottom was designated on the drawing by a squiggly line. She continued that the off shore segments are 168 feet in length and the near shore segments are 216 feet long. She said a gap of 24 feet between the segments from north to south, and 45 feet exist between the near shore and the off shore segments. Ms. Mitchell stated the alignment was the result of the physical modeling study that Dr. Dean did. She reported that Dr. Dean had several options to address the ponding effect, and this configuration may be added to. Ms. Mitchell noted that this configuration was not the exact one that resulted from the recommendation due to the fact that this design was the closest one considering the environment and utilizing the results from the physical modeling test.

Mrs. Smith asked Dr. Dean if he would speak to the physical modeling issue?

Dr. Robert Dean, University of Florida, addressed the Town Council and stated the model study mentioned by Ms. Mitchell was done last summer. He said the reason for segmentation, and the only reason, was to attempt to reduce the ponding--to allow some relief for the build up of water which occurs landward of these units to flow off shore. He said several graduate students and he worked

in the laboratory last summer in an attempt to find an ideal solution. He noted that they found a compromise solution, and no solution was found to produce the two desired effects--the reduction in ponding and wave attenuation. Dr. Dean continued that segmentation has two effects: the ponding is reduced; however, if the units are separated too much, the waves impact on the shore line. He noted that wave defraction produces a higher wave.

Mr. McLendon asked Dr. Dean if he would recommend leaving out a segment and using that segment for another purpose?

Dr. Dean replied that should be a design consideration. He noted that a small experimentation exists in Palm Beach with the AT&T gap which is about 200 feet. He added that no major differences have been observed, and sometimes more sand is apparent and at other times extreme erosion is observed. He said he is not capable at the present time of interpreting that information.

Mr. McLendon asked, if at any time during the two year monitoring period, an increase in sand had been noted?

Dr. Dean replied that in March, 1994, a small increase, less than a thousand cubic yards or less than one per cent of the erosion, was noted. He said that the surveys are conducted by Sea Systems, a company located in Palm Beach County, and these surveys are distributed to anyone who expresses an interest in them. Dr. Dean estimated the accuracy of the surveys is under a 1,000 cubic yards, and the analyzing of the data requires a few judgement calls.

Mr. Dusey asked Dr. Dean if he would recommend segmentation of the reef?

Dr. Dean replied that if the reef were segmented, it is important to recognize that would be another experiment, and it is only that. He continued that if segmentation of the reef occurred, a numerical model could be used or the dimensions could be extracted from the Vero Beach model study. He added that the units have to be separated fairly far to order to get relief from the ponding, and the ponding is a real mechanism.

Mr. McLendon understood that a very limited amount of work could be undertaken regarding the P.E.P. reef without starting an entirely new monitoring period.

Dr. Dean responded that he thought that Department of Environmental Protection would require some monitoring to protect the Town, but the current monitoring program is a very definitive program, and the results are very solid. He said, in his opinion, DEP would require perhaps a lesser modeling program.

Mr. McLendon asked how much sand could be added in board of the reef without affecting the monitoring results?

Dr. Dean responded that the monitoring results would not be affected if a survey were done before the sand was added and immediately after the sand was added. He noted the change could then be recorded. He said the currents that are caused by the ponding would remove the sand that is behind the reef.

Mr. McLendon inquired as to the amount of money that is left in the budget to cover the monitoring process?

Mr. Dusey replied the amount is between \$200,000 and \$250,000 which includes state and local monies.

Mr. Shaw asked if sand were added at the same time groins were added, would the results of the monitoring be affected?

Dr. Dean responded that the experiment would no longer be the same, and the State may ask the Town to monitor the effects of the groins, but he could not speak for the State.

Mr. Shaw asked Dr. Dean if he thought a beach nourishment project in conjunction with a groin field would be compatible with the reef or incompatible?

Dr. Dean said that the beach nourishment project and stabilization structures, probably groins, are compatible, and they are necessary. He continued that if a beach nourishment project were initiated with the P.E.P. reef as presently located, the reef would initially be buried with sand and would not have any effect. He added that as time progressed and the P.E.P. reef became uncovered, then the ponding and the associated currents would commence. Dr. Dean said that for the first couple of years the reef would be buried if the densities of sand were put on the beach that he heard discussed at this meeting.

Mr. Shaw asked if there would be any advantage to leave the P.E.P. reef in place or to move it eastward of its present location if groins and a beach nourishment plan were instituted? Mr. Shaw continued that the Town was dealing with two separate issues: a reef that is supposed to do something and a problem that exists at the beaches. He said if the problem is remedied for which proposals have been made, the result of that remedy is the dumping of hundreds of cubic yards of sand, and if groins are installed, he questioned the need or use for the reef.

Dr. Dean replied that in 1991 he examined "perch beaches" where a reef exists off shore and the beach is landward of that. He continued that the reef could act to allow sand to be carried seaward of it, and the two laboratory studies he had did not show that those beaches recovered. Dr. Dean said that situation should be looked at carefully from an engineering design mode, and one downside of leaving the reef in place is that once the sand in front of it has been removed, additional sand would come from the beach and go over the reef. He said this was supported by the monitoring data and the modeling studies.

Mr. Wyatt asked Dr. Dean if he would have recommended a staggered reef rather than a straight line reef if time could be turned back? Mr. Wyatt continued that if Dr. Dean recommended a staggered reef like the Vero Beach project, is that one of the solutions for the reef itself?

Dr. Dean responded that he believed in beach stabilization, and it has a proven record in the Town of Palm Beach going back to 1944, based on the State's data base, all of the beaches on the northern six miles of the island were back to the seawalls. He continued that between 1944 and 1990,

7.6 million cubic yards of sand were placed in the beach system on the northerly 7 miles of the island. Dr. Dean said the data, in 1990, stated that the beach on the northerly 7 miles of the island was 58 feet wider than it was in 1944. He noted that data is very valuable--with no experimenting. He stated that groins are the best bet, and they do have a proven track record in the Town of Palm Beach.

Mr. Wyett noted the Council faced a decision concerning an emergency report that the P.E.P. reef be removed, and asked Mr. Dusey if the State supports that recommendation. Mr. Dusey replied the State has not gone in either direction, although the State said something has to be done. Mr. Wyett continued that Mr. Dusey has recommended the P.E.P. reef be removed to a temporary storage area or use the reef to form groins. He asked Dr. Dean to comment on the perpendicular segmented position of the reef.

Dr. Dean said he participated in a beach nourishment project in Sea Island, Georgia, in 1988, and a different type of module, called a Campbell module, similar to the reef sections, was used. He drew the design of the modules at Sea Island on the blackboard. Dr. Dean said upon inspection last November, the beach was holding quite well. He noted that rock was used for filling in. Dr. Dean added a design effort would have to be studied for the reef.

Mr. Wyett asked if the design that Dr. Dean drew on the board would start on the beach or would it be submerged away from the beach?

Dr. Dean replied that if the reef were to be used as groins, they would have to start at the seawall, at an elevation of approximately plus 9.0 ft. He said that groins work best when used as a template to the beach profile, and for the groins to work best, the crest should be about a foot above the beach level and underwater, about one and one-half feet above the sand level.

Mr. Wyett asked if the existing reef were used as a groin mechanism, would it be equal, inferior or superior to utilizing a recommended method of textile seabag groins?

Dr. Dean responded that the concern with the textile seabag groins, like a Longard Tube, was the limited life. He noted that some of the tubes already in place are vandalized on a frequent basis. He added that using the reef as groins would have to be scrutinized by the engineers and worked out since a precedent has not been set for it. The only project close to that would be the one at Sea Island, Georgia.

After discussing Dr. Dean's drawings of the proposed groin configuration, Dr. Dean noted that the sand level should be kept up to nearly the top of the reef.

Mr. Wyett asked if the groin configuration would keep people from walking the full length of the beach or would they be limited to the hundred foot segments?

Dr. Dean answered that has been handled in various ways--sometimes with ramps or steps built over the segments.

Mr. McLendon said he liked to think in terms of using a groin to accumulate sand, not just to keep it, and he had a problem with buying all the required sand to build up to the top of a six foot high groin.

Mr. Wyett noted that the question is how much sand has to be put in to satisfy State requirements and protect the seawall.

Mrs. Smith asked Dr. Dean if he were part of the process when the Town elected to remove the groins?

Dr. Dean replied negatively and said that when those structures were in place, based on historical photographs, it was clear that they were doing their job. Responding to a question from Mrs. Smith, Dr. Dean replied the State's standards for the groins were written in 1970.

Mrs. Smith asked that since the State has apparently changed its position on groins, how long it would take to have a groin field permitted by the State with the accompanying sand nourishment that would be necessary?

Dr. Dean said that if the groins were installed in modules or Longard Tubes, the State would probably not look upon them differently.

Mrs. Smith asked if the segments of the P.E.P. reef that weighed 28 tons were considered "movable"?

Dr. Dean replied affirmatively.

Mr. Wyett asked Dr. Dean what would prevent the 28 ton segments of the reef from sinking in the sand if they were used as groins since the reef is presently sinking in the ocean?

Dr. Dean replied it would have to be set on a bed, and this phenomenon is well known in the coastal engineering field, and the design would have filter fabric, pea size gravel, and sand for a foundation.

Mr. Wyett asked if that would be a better foundation than it is now sitting on?

Dr. Dean said success this time would be better with a good foundation.

Mr. Wyett asked Mr. Dusey to explain the costs of the P.E.P. module usage and to compare it.

Mr. Dusey said it would be in the range of the Longard Tubes, perhaps slightly more expensive depending on the design specifics. He added the Town has the major material and that is a plus.

Mr. Wyett asked if the cost would be less than adjustable groins that would have to be constructed and more than the Longard Tubes?

Mr. Dusey agreed with that statement.

Mr. Shaw noted that the reef contained 330 modules and that would not equal 14 groins that were 300 feet long. He added that many more modules would be needed.

Hans Rauch, American Coastal Engineering, addressed the Council and stated he would like to see the reef stay in place. He said that it can benefit many people regarding shoreline stabilization--economically and environmentally. He heard that the reef is sinking; however, the last three or four surveys indicated that the reef is not sinking anymore and has settled to approximately 2'6" at the average and is solid, sound, and stable. He said when the reef was promoted by American Coastal to the Town, the Town was promised energy reduction which the data indicated is between 15-40%, and this was high wave energy reduction. Mr. Rauch noted that if it turned out that the reef would have accumulated sand in the shadow of the reef to a degree where it would have interrupted the normal littoral drift, this would have been one of the biggest criteria, and it would have been a reason to do something with the reef since littoral drift would have been a deterrent. Starving beaches to the south would not have received sand. Mr. Rauch continued that it is obvious that sand is being lost from the back of the reef because the sand is 1/2 to 1 mile further south. He cited the Callahan residence at 800 South Ocean that has a beach now and did not have one for fifteen years. Mr. Rauch said the groins were removed because they were the structures that interfered with littoral drift. He added that leaving the reef in place but reducing the littoral drift, the movement of sand, was the most logical answer to the problem. Mr. Rauch quoted Dr. Devereaux from the last meeting who said a groin or protection was needed on the south side and on the north side and perhaps some in between. That in turn, would reduce the sediment transport in the shadow of the reef. Mr. Rauch maintained that would fix a large portion of the problem.

Mr. Rauch stated the first problem is the protection of the wall. Although the reef has provided wave energy reduction, ten foot waves are reaching the seawall. He said that instead of moving or removing the reef, leave the reef in as a protective measure, add groins to it and, if necessary, add sand in the pockets between the groins.

Mr. Wyett asked Mr. Rauch what the distance was from the wall to the reef?

Mr. Rauch replied that it was approximately 300 feet, and it varies with the curvature of the shoreline.

Mr. Wyett asked that if 120 feet of sand were added as suggested in one of the plans and groins were installed, how far out would the groin extend, and how much space would there be between the tip of the groin and the reef itself?

Mr. Rauch responded that 500,000 cubic yards of sand would cost approximately \$5 million, and the other option would cost \$8 million. He said if he installed anything of this magnitude, he would employ an architect, Dr. Zarillo or Dr. Dean to make a \$50,000-\$60,000 evaluation to determine how long the \$8 million investment would last. He compared this project to the Spanish River project where \$1 million of sand is placed on the beach every year.

Mr. Wyett said he estimated the groins would extend seaward from the wall 160 feet and asked Mr. Dusey what the length would be? Mr. Dusey replied the length would be 150 feet. Mr. Wyett asked what effect the groins would have on the natural movement of water and should the artificial reef be moved further seaward?

Mr. Rauch replied he did not think the reef should be moved but suggested the use of a model to determine the size of the groins and to determine the correct reduction of the littoral drift.

Mr. Wyett questioned the 150 foot gap between the groins and the reef and particularly the wave action that would occur in that area.

Mr. Rauch responded that if that section were approximately 8 feet deep, the sand movement would only be a portion according to the sand movement that is occurring close to shore. He noted that no toe scour existed on either side of the reef so subsequently even if the shoreline has lost the sand, the sand at the bottom of the reef has been fairly stable--1 1/2-2 feet above.

Mr. Wyett asked if Mr. Rauch could agree with the statement that a groin field with sand added to the beach and the existing reef are compatible?

Mr. Rauch replied he agreed with the statement and when the reef was chosen, it was not the intent of the Town Council to establish a wide beach for the purpose of a beach but to protect the shoreline. He recommended leaving the reef in its position, adding groins and a considerably smaller amount of sand than had been mentioned earlier in the meeting.

Mrs. Smith recalled that it may not have been the intent of the Town Council to provide a wide beach, but it was the perception of many of the residents in the Town that the reef would create a beach. She continued that for the first eight months after the installation of the beach, a build up of sand in the midtown area occurred. She asked Mr. Rauch how the length of the groins would be affected by the existence of the reef?

Mr. Rauch replied that the groins would have to be adjusted (in length) in order to protect a certain amount of sand or to accomplish a certain width of beach. He said a groin field, reduced in size, could be installed if the purpose was to capture sand; however, if sand were added to the beach, the groin field would have to protect that sand.

Mr. McLendon noted that Mr. Rauch indicated the reef was stable, based on the latest information. Mr. McLendon stated he believed that the storms that have occurred have influenced the settling of the reef more than anything else, and he was not really sure why the segments have settled the way they have.

Mr. Rauch stated the measurement has been stable since after the third survey or 9 months after the reef was installed.

Ms. Mitchell added that the first 57 units of the reef were installed prior to Hurricane Andrew and they settled approximately 2.6 feet on an average; however, some units settled more than that. After the rest of the units were installed, the same, dramatic settlement after Hurricane Andrew did not happen. Ms. Mitchell surmised that the theory that the settling was storm related may be true. She noted some continuing settlement of the units that were installed later has been recorded, but

they have not settled to the 2.6 feet that the first 57 units did. She said she thought the data would show an increase in the settlement rate but not to the extent of the Hurricane Andrew time period.

Mr. McLendon asked Ms. Mitchell to verify the fact that there is no sand above the foot of the reef unit. Mr. Rauch replied that there is sand laying on the foot and on the back, on both sides of the segments, and this type of sand formation has taken place since the installation of the reef.

Mr. McLendon asked for clarification if the reef lies 300 or 230-250 feet off the seawall.

Mr. Rauch replied that the south side of the reef is over 300 feet from the seawall; however, the center of the reef is approximately 260 feet from the seawall and the north side fluctuates because of the shape of the seawalls. He said the average distance is 280-300 feet.

Mr. McLendon noted that the vertical projection on the unit is not centered in the 15 foot direction, and he asked the distance from the heel or the toe?

Mr. Rauch replied that it was approximately 1.5 feet out of center, the top center from the bottom center. He continued that this was done to achieve a more gradual slope on the ocean side.

Mr. Shaw asked if the reef remained where it is and given the amount of dry beach and the installation of the groins, if there would be an increase in velocity of the water flowing over the reef, falling into the groin area, and through the area where the groins stop. He asked if the velocity of sand would also be increased?

Mr. Rauch replied that the loss of sand occurred on the foot on the beach itself and, as far as can be determined, no loss of sand was on the reef structure itself.

Mr. Shaw questioned that if the groins are installed and protect the beach area, would the loss of sand be directed to the reef area, and could that create an unstable issue at the foot of the reef or would that create another problem, and would the moving or staggered segmentation of the reef be a better solution? He added he thought Dr. Devereaux wanted a box effect created around the beach, not an opening.

Mr. Dusey interjected that he did not think Dr. Devereaux recommended that.

Mrs. Smith recalled that was discussed at the last meeting, but it was not recommended.

Mr. Shaw said the term, "giant sandbox" was used, and the Mr. Rauch's suggestion to leave the reef where it is and add groins would create a giant tunnel effect which would siphon off the sand from the beach.

Mr. Rauch responded said that these situations could be subjected to modeling or a tank test prior to installation, and, economically, this made sense.

Mr. Shaw noted that his concern was attempting to solve the problem with the beach and at the same time, give consideration to the reef which is a factor in the results of the beach. He did not want to see the Town authorizing an expenditure to renourish a beach and go forward with a groin field, then find out that if the reef is not removed or moved immediately, everything that was installed would be lost. Mr. Shaw said the compromise was to find a way for the reef to work with the beach system if it is feasible. He asked how much time does the Town have to deal with the reef versus how quickly does the beach renourishment program have to begin? Mr. Shaw questioned if the Town started something immediately which would be the renourishment of the beach, how long does the Town have to determine the reef position?

Mr. Rauch replied those questions were difficult to answer; however, if the reef is removed, the cost of the sand in order to maintain the beach will probably not be in relation to the proposal of putting a lesser amount of sand and a groin section. He suggested temporary "H" piling or other temporary measures may be used.

Mrs. Smith reminded Mr. Rauch that he had proposed the Council go along with the five month modeling plan of putting the blocks in the water to see what happens with the reef. She noted that if that would be done and no further action were taken, this season will be over, and no other beach programs such as removal or retainment of the reef, a groin field or beach renourishment could begin until 1996.

Mr. Rauch responded that item number 1 should be concentrated on first, and that was the concern with the seawall.

Mrs. Smith replied that the seawall will be dealt with, and the integrity of that wall, in case of a storm, and the utilities under ALA are the chief concerns of the residents of that area. She added the reef was the second concern.

Ms. Mitchell reported she checked with Dr. Zarillo, and they can revise the proposal submitted to the Town. Ms. Mitchell said she had assumed that the Town wanted to continue with the reef until next year, but Dr. Zarillo indicated he can do some modeling with the groin system and some fill, and the results would be available by the end of July.

Mr. Wyatt said that schedule would eliminate the window for work this year.

Mrs. Smith added that the end of July would not give the Town time to apply for and receive permits before the season of bad weather would begin.

Mr. Wyatt asked if a 100 foot dry beach which would envelope the existing reef was established, would American Coastal recommend the removal of the reef seaward on a staggered plan similar to the Vero Beach plan?

Mr. Rauch responded that the 100 foot beach required a tremendous amount of sand and would definitely cover the reef. He continued that if the reef were exposed and acted detrimentally, the reef could be removed at that time. He maintained that there should be no hurry to remove the reef.

Mr. Wyett asked Mr. Dusey, if Mr. Rauch's recommendation were acted upon, how many feet past the existing reef would sand be filled as part of the wet beach program?

Mr. Dusey replied that his original report indicated the sand would be filled approximately 100 feet past the reef.

Mr. Wyett stated his concern would be that 100 feet of wet beach or 100 feet of sand would have been lost. He asked if the Town would receive a benefit if the reef were moved seaward after the beach were restored with 100 feet of dry sand?

Mr. Rauch responded that the movement of the reef would not a large expense, but a study should be done to determine if the cost of moving the reef and the protection of the sand and the lee of the reef would balance out.

Mr. Wyett noted that one of the suggestions was to move the reef to a designated storage area.

Mr. Dusey responded the storage area would be in deeper water; however, DEP was very specific and stated these segments could not be aligned. The segments would have to be randomly placed, so they do not have any impact.

Mr. McLendon noted that was not storage but permanent relocation.

Mr. Wyett noted that two positions were presented to the Council. American Coastal took the position that leaving the reef in place and even if sand were added, it would not be detrimental. The other position is to remove or move the reef, not in a straight line but in a staggered position.

Mrs. Smith said that it would cost hundreds of thousands of dollars to move the reef.

Mr. Wyett continued that if the beach were to be filled, the modules would have to be moved. An estimate of \$200,000-\$500,000 was given to move the reef to a designated area, and if the reef were moved seaward, in some plan, that would not be too expensive.

Mrs. Smith thought that American Coastal had taken a very firm position, stating that the reef is not detrimental at all, but it is a benefit.

Mr. Rauch replied he hoped that had not been the implication. He said the reef did not interrupt littoral drift, and that was good. Evidently, it allowed additional littoral drift to pass by and according to whatever surveys, that amounted to a deficit in sand, and a groin field could be implemented to reduce the littoral drift. The reef would still provide protection for wave energy reduction.

Mrs. Smith asked if it were not still expensive to move the reef. She did not think the State will allow the reef to be moved to just any location.

Mr. Dusey said the State would allow the reef to be moved out of the way of the fill on a short term basis in a very random pattern that would not have any impact. He said short term would be approximately six months.

Mrs. Smith asked why move the reef out and questioned that it should be moved in as protection for the seawall? She said she was aware that the heavy segments could cause problems for the seawall as they were turned.

Mr. Dusey responded that no foundation existed for the segments if they were moved in. Responding to questions from Mr. McLendon, he added that if the reef were left in its present location, the reef would be nearly covered if sand were added to the beach.

Bill Foreman added that each time the reef is moved, the costs would be the same, and the basis of American Coastal's proposal was to determine the location of the reef before it was moved, before the money was spent to move it. He said the best engineering solution is the best backup before the reef is moved.

Dr. Sanford Kuvin, 149 E. Inlet Drive, addressed the Town Council and said he understood Mrs. Smith's comment that she did not want to go back in history, but he agreed that the intentions of every Town Council, every member of the Staff, and everyone associated with the Town have only the best interests of the Town at heart. Dr. Kuvin quoted, "Those that forget history are doomed to repeat it." He continued that the issue today is not science but almost an art form, and if he practiced medicine the way that American Coastal Engineering has practiced in the reef instance, he would have legal problems with negligence.

Dr. Kuvin said he read the three monographs that Dr. Dean had published from 1991-1995 covering the experimental reef. He stated that the costs of the Town's experiment, according to what has been spent on the experimental reef--over \$2 million, and what will be spent on sand to shore up the Midtown beach--an additional \$6 million plus up to an additional \$2 million for a groin field affect everyone of the 10,000 tax paying property owners of the island. He continued that the \$8 million minimum cost, without the groin fields, totals about \$8,000 for each resident.

Dr. Kuvin said the Town Council, like the Town's residents, has to look to professional accountability and a continuing continuity not only to protect the shoreline but the infrastructure and the property values. He said the Town could not afford another expensive lesson in coastal engineering, and time is running out. He asked Dr. Dean if he advised against the experimental reef in 1991 when it had a \$9 million budget, including sand renourishment? He continued that Dr. Dean had stated in his monograph that the reef was not cost effective with the P.E.P. reef plan included. He asked if the professional advice was disregarded by the Town Council at that time which went ahead with the experimental reef without any renourishment as recommended by Dr. Dean?

Dr. Kuvin asked Dr. Dean if the Town's professional staff agreed with the Town Council's decision at that time to place the \$2 million experimental reef in place without any sand renourishment and disagreed with Dr. Dean's advice at that time? Dr. Kuvin questioned why \$9 million was necessary to shore up the Midtown section with sand in 1991 while now the Town's professional staff has advised that it will cost only an additional \$6 million in the emergency budget to put renourishment sand in to support the center of the Town and move the experimental

reef? Dr. Kuvin asked Dr. Dean's opinion regarding the focus of the issue, and was the restoration of the Sand Transfer Plant, in its original form, which has been a feeder for the entire coastline of Palm Beach for 40 plus years, the item that should be given the highest priority? He quoted Dr. Dean as saying the Sand Transfer Plant has been the only established, proven, effective method for keeping the shoreline in a steady, stable state.

Dr. Dean responded to Dr. Kuvin's remarks, and stated he did not think it was appropriate for him to comment on the issue of whether the Town staff agreed with his assessment for the reef initially. He continued that the reason for the original beach nourishment project at \$9 million versus an estimated \$6 is probably due to the price of dredging sand that is based upon the availability of dredges, and the present estimate reflects recent dredging costs. He added that the federal government intended to be involved in previous projects, and when the federal government is involved in beach nourishment projects, the costs tend to increase because of the red tape. He quoted factors of 40-50%. Dr. Dean concurred with Dr. Kuvin's third point regarding the Sand Transfer Plant, and the natural process of replenishing the sand at the Lake Worth entrance was severed by the cut with the jetties and the deeper channel. He continued that sand is being taken out at the south end by natural processes, and unless sand is added at the north end, sand will not be present along the beaches. He believed that adding sand and groins to stabilize the sand are important to the future of the beaches.

Mrs. Monroe Green, 100 Worth Avenue, addressed the Town Council. Mrs. Green stated she represented 119 owners of apartments at 100 Worth Avenue. She said the Ocean is relatively calm now, and the waves are still hitting the seawall with enough force to keep the pavement wet. Mrs. Green recalled that during one week of very high winds this season, the street was completely flooded after the waves hit the seawall and vibrations could be felt in the building. She added that on May 8, she heard that five feet of sand, behind the seawall, is necessary to make it a buffer, however, two years ago, a tidal wave broke through the seawall and washed down Worth Avenue. Mrs. Green noted that the Town is in a much more serious situation presently.

Mrs. Green said that the Preservation Foundation has planted clusters of palms and greenery that are flourishing north of Chilean, but the landscaping at 100 Worth Avenue is a disgrace. She continued that the appearance is not very important if the Winthrop House is undermined by the force of waves and water. She suggested that immediate action should be taken to prevent that from happening.

Mrs. Green concluded that the residents of the Winthrop House do not look forward to emergency measures during the hurricane season, if actions can be started now to prevent that. She asked the Council what they were going to do now to help the beach?

Mrs. Smith responded the Town Council will be taking action on the seawall at this meeting.

Mr. Jim Koontz, 232 LaPuerta Way, addressed the Town Council and stated he would like to ask Dr. Dean, as the Town's retained expert, some questions.

Mr. Koontz said that Applied Technology and Management's Plan, approved by the Town Council, called for a pipeline extension to be constructed to carry sand another 3,000 feet south of the inlet for discharge. The ostensible reason for the extension was to prevent sand loss from the south side of the inlet to the inlet and to the ebb flow delta during the summer months when the lighter breezes are predominantly from the southeast. Since any sand lost to the inlet will be recovered whenever the Army Corps of Engineers dredges the inlet and redeposits the sand on the beach at no cost to the Town. He stated his concern was the amount of sand lost to the ebb flow delta because that is the only sand that will be lost permanently.

Mr. Koontz asked Dr. Dean what the average yearly sand loss was to the ebb flow delta from the south side of the inlet?

Mrs. Smith asked Mr. Koontz if he could paraphrase his questions that were stated in his memorandum of May 13, 1995.

Mr. Koontz continued that some of the sand will have to be valved off to keep the beach supplied where the pipeline is. He asked Dr. Dean to estimate the average yearly amount of sand that would be saved by the pipeline extension from migration into the delta? He asked the cost of the 3,000 foot extension, including installation and will it be practical to bury the extension in the beach considering the fact that several valves must be scattered along its length to release sand to alleviate local areas of erosion that occur within the first 3,000 feet of beach from the inlet? He questioned if the extension will be prone to clogging up, and what will be the expected life span of the extension.

Mr. Koontz noted the entire system will have an increased work load because of the extension and asked what percentage would the life span be reduced by the extension? He asked what the cost of the additional average yearly operating would be for the extension?

Mrs. Smith asked if Mr. Koontz had any questions relating to the reef? Mr. Koontz replied that the extension would have to be approved for the Sand Transfer Plant, and he would rather review all of his issues regarding the pipeline first. He added the meeting was called for beach erosion and that covers reef and the pipeline extension. Mrs. Smith explained that the issue of the Sand Transfer Plant and the pipeline will be on the agenda for the June 13, 1995, Town Council meeting. Dr. Dean replied that he will be available for the June 13, 1995, Town Council meeting.

Mr. Koontz said the comments he wished to make concerning the P.E.P. reef were already covered by Dr. Dean.

Bill Janis, owner of Coastal Expansion Systems, addressed the Town Council. He said the erosion of the front of the seawall could be mitigated with a type of anti-scour protection that is not rocks nor a Longard tube. Mr. Janis said the costs of this protection were lower than the costs presented at this meeting. Mr. Janis added his company has the technology for restoring shorelines that is like a groin but is substantially different and does not have the negative aspects that are associated with groins. He requested permission to present his plan to the Town Council.

Mrs. Smith replied she had received a letter from his company, and this would be an agenda item at the June Town Council meeting. Mrs. Smith added that the Council will have to determine if they

want to hear that particular proposal. She said, although the Council is on a fast track, they do want to hear proposals from everyone.

Mr. McLendon asked that Mr. Janis explain the difference between the Geotube installation and his company's type of seawall protection.

Mr. Janis replied that he understood the Geotube would be laid parallel along the seawall and his unit would be similar to that but hydrodynamically shaped extensions would extend toward the ocean from the seawall.

Mr. McLendon noted that he had heard Mr. Janis's presentation previously, and he would like to be sure that this presentation is heard by the Council before a decision is made.

Mrs. Smith asked Mr. Janis if he had drawings and cost proposals that could be submitted to the Town Council for the seawall. Mr. Janis responded they were not prepared, but they would be available.

Mr. Wyett asked Mr. Janis how his alternate groin proposal was different from the Longard tube proposal that was presented to the Council?

Mr. Janis asked if the Longard tube had any perpendicular elements? Mr. Wyett responded that two types of Longard tube proposals were suggested--one is to protect the seawall and one is for groins. Mr. Janis said the design parameters from his company were different from the Longard tubes, and the tubes extend off shore in different ways.

Mr. Wyett asked Mr. Janis if he could provide information regarding his system during the projected lunch break at this meeting?

Mrs. Smith responded that Mr. Janis's presentation would include engineering drawings and studies.

Mr. Shaw suggested that, rather than have presentations come before the Council one at a time, it would be appropriate for anyone wishing to appear before the Council present a complete documentation package, and one meeting could be scheduled to hear all the presentations.

Mr. Dusey said he did not have any other "soft" proposals, other than the one for the Longard tubes.

Mrs. Smith suggested that the Council had not advertised for anyone to make presentations to the Council regarding beach proposals, and all of them should be heard at the same time. Mrs. Smith asked the Council members if they would like to hear Mr. Janis at the June 13 meeting?

Mr. McLendon responded that he would like to schedule a separate meeting to hear the presentations?

Mrs. Smith offered to schedule another Town Council meeting for the purpose of reviewing beach projects. She reminded the Council members that the State mandated budget preparation procedure for the Town's \$30 million budget would take time to prepare both from the staff's point of view and the Council's. She respectfully suggested that any special meeting be scheduled after the budget.

Mr. Wyett responded that the window of opportunity had been outlined by the nature of the summer season and that did not give the Council the luxury of waiting until after the budget has been prepared. He continued that the nature of a regular Town Council meeting would not allow the Council members to complete an investigation of the proposals unless a 24 hour session was scheduled. Mr. Wyett recommended the meeting be scheduled earlier than June 13 or appoint a temporary committee to review the proposals.

Mrs. Smith responded that many additional Town Council meetings have already been scheduled and all of the members are attempting to save the seawall and the P.E.P. reef, but State law requires that the Town's budget be prepared at this particular time, and that is a very long, a very detailed and complicated procedure. She said that Staff including each department must be allowed time to prepare that budget, and the money that is saved during the budget preparation reflects on the residents of the Town of Palm Beach who are faced with escalating property taxes. Mrs. Smith said she would be derelict if she did not point out that the Town staff needs every minute of the time during the next two weeks to prepare the budget on behalf of the residents of the Town. Mrs. Smith said that Mr. Janis brought up the entire subject by appearing at this meeting after he had received a letter from her stating his request would be considered at the June 13 meeting. She continued that the emergency facing the Town regarding the beach and the seawall is ongoing; however, the money for these projects needs to be dealt with also.

Mr. Shaw said the budget meeting is scheduled for two days and an appropriate date for a special Town Council meeting would be Wednesday, June 14. He agreed with Mrs. Smith that the Council could not be attentive for the necessary presentations at the June 13 meeting and then hear the remaining agenda items after that.

Mr. Wyett agreed with Mr. Shaw and questioned if a meeting could be scheduled before June 1, 1995.

Mrs. Smith replied there was not any time to schedule a meeting. She reminded Mr. Wyett that, as a candidate, he had been critical of the budget procedure, and due time must be given to the preparation of the budget.

Mrs. Smith, responding to a question from Mr. Wyett, noted that Mr. Shaw's suggestion was to schedule a meeting for June 14.

Motion made by Mr. Wyett to schedule a Special Town Council meeting to consider beach items for Wednesday, June 14, 1995. The motion was seconded by Mr. Shaw. The motion carried unanimously.

Mr. Doney said that many of these companies will be willing to make presentations at this meeting and the Council could spend days listening to these presentations. Mr. Doney said his observation, based on the County Wide Beaches and Shores Council, was that a new company presents

new technology and products monthly. He continued that the Town has additional concerns regarding competitive bidding and other municipal decisions it has to bring into balance.

Mrs. Smith said she understood the Council wanted to hear all of the proposals which would be limited to 20 minute presentations per proposal. She requested that Mr. Elwell notify the Beaches and Shores Council that each proposal would be heard on June 14.

Mr. Randolph asked if it would be necessary for him to attend the June 14 meeting? Mrs. Smith replied it would not be necessary. Mrs. Smith stated the meeting would begin at 10:00 a.m. on the 14th and would be a Special Town Council meeting only for the beach issue.

Dick Bresee, West Palm Beach, addressed the Council and said he brought a Corps of Engineers' manual. He quoted from the manual: "Theoretical analysis generally involved complex numerical models which include many simplified assumptions." He noted that the buyer should beware anytime the subject of models is brought up. He added simplified assumptions could mean anything.

Mr. Bresee continued that ponding could be produced from different wave heights, and big waves with little waves on the side will result in nothing happening very much; however, rip tides can form from littoral currents that carry sand out from the beach.

Mr. Bresee commented that if the flow of a fluid is restricted, the velocity will increase and if hot water is pumped through a tube with cold water on the outside of the tube, the heat transfer, as the flow of water is increased, will elevate in practically a straight line, jump dramatically, and return to a straight line. He identified the jump as a critical point that is reproducible by increasing the velocity, producing turbulence. Mr. Bresee said if a groin would increase the velocity of the water, creating turbulence, and a channel would be formed. He warned that this approach should be considered very carefully.

Mr. McLendon noted that Mr. Bresee's thesis contained a note that scuba divers reported an eight foot deep scour on the land side of the reef. He asked Mr. Bresee if that had been verified?

Mr. Bresee responded that should be handled as hearsay, although that was an unsolicited report when a diver had been out during a storm.

Mr. Bresee concluded that a groin should be a template for the beach and they should serve as vectors for the beach. He said the design of the groin would affect the energy vectors, and how they are affected would determine the manner that the sand is left on the beach. The groins have to be designed properly.

Mr. McLendon asked Mr. Dusey to comment on the proposal the Town received from American Coastal Engineering concerning the two alternatives for the seawall protection.

Mr. Dusey responded that one of the alternatives, the detailed estimate of the rock revetment, was done by the Town Engineer and estimated to cost \$562,000. He added the rock revetment included the remainder of the seawall--1,263 feet, and the proposal from American Coastal was for a shorter distance--1,000 feet. Mr. Dusey continued that the tube that would be used is a geotechnical textile tube.

Mr. Wyett said two options to be considered by the Council would be to encompass and bury the existing reef, and another alternative would be to leave the reef in place and exposed. Mr. Dusey responded that DEP may not want to leave the reef in place and fill it, and that may pose a permitting problem. He said DEP thought that once the reef was exposed, the accelerated erosion may return washing the new sand to the south.

Mr. Wyett asked if the Council could take a middle position that would put sand on the beach, enough to protect the seawall during the next year, during which time the Council could hear other proposals? He stated his concern was the amount of time it would take to put bids out, and would a several step program be a better approach?

Mr. Dusey replied that the window of opportunity is very small to proceed with a permitting process, go to bidding and receive summer prices which are lower. He said if the Council waits until June 14 to make a decision, the prospect of a fill is not very likely this summer.

Mr. Wyett said he understood that the Council should not only determine what to do with the P.E.P. reef but also what to do with any form of beach nourishment. He continued the wall and the road could be jeopardized by a bad winter if a project was not undertaken this summer.

Mr. Dusey mentioned a smaller fill, less than 500,000 cubic yards, could be constructed, and that would last about a year or two. He added the cost of moving a dredge in to do the work would be approximately \$1 million, and the smaller amount of sand that is being put in would cost more due to the costs of the dredge. He said that a two step project would cost the Town substantially more money.

Mr. Wyett summarized that the Council did not have the luxury of separating the two subjects--the reef and the seawall protection.

Mr. Shaw said he saw three options for the project:

1. The seawall which cannot be delayed. The only long term solution is to have the base of the sand at a certain height to protect the seawall. Any rocks or tubes that would be added would be a temporary fix and not a long term fix.
2. How will the sand be retained on the beach? The removal of the reef would not have to be done within a thirty day period. Mr. Dusey could proceed to get bids to have sand put on the beach.
3. The Council could decide at the June 14 meeting which retention system for the sand should be used. Sand has to be put in before the groins are installed.

Mrs. Smith asked Mr. Dusey if the Council were not considering the P.E.P. reef at this meeting but only considering the stability of the midtown wall, what method would he propose to stabilize the wall?

Mr. Dusey responded that sand was the best protection for the seawall and the area in general.

Mrs. Smith asked Mr. Dusey if he would consider moving the reef modules in and dumping the sand on top of the modules?

Mr. Dusey replied that was a great idea, but he was not sure of the cost, and he would focus on doing that if the Council directed him to do so.

Mr. Shaw said he understood the reality is that the P.E.P. reef will become landfill, and he questioned the possibility of dumping sand in lieu of the reef. He said he thought the issue was not to put a groin system in until a beach had been put in, and the groin system would be designed to hold the beach.

Mr. Dusey noted that the initial sand fill would extend out 300 feet and cover the reef.

Mr. Shaw said the Council has time to decide what to do with the reef because sand could be brought in and plans could be considered by the Council for protection of the beach. He said he was adamantly opposed to spending additional funds for a model.

Mr. McLendon asked Mr. Dusey if he considered using "sand sacks" as groins or protection for the seawall?

Mr. Dusey responded that was a Longard tube--5 feet in diameter and 175 feet long, and that was going to be placed in front of the seawall; however, the Town's consultant suggested that not be done. He continued that a Longard tube or bags of sand would not hurt anything, but sand would cover up \$400,000 worth of bags.

Mr. Wyett said he understood from Dr. Devereaux that the groins and the beach renourishment are almost a simultaneous action, and if the beach is installed first, it would then have to be dug up to install the groins. He further commented that the State would not allow a groin to be put in unless the Town had a plan to back it up.

Mr. Shaw said he understood a base level of sand had to be installed to get to the base level of the groins. He continued the first step is to install the sand because that is needed and by next month, additional information will be presented to the Council to evaluate which of the groin fields and designs would be appropriate.

Mr. Wyett said one problem is perceiving the length of the summer window. Mr. Dusey replied October 1 is the date the dredgers consider to be the beginning of the storm period. Mr. Wyett said he did not think the Council had the luxury of deferring any potential decision month by month, and the Council has to make a comprehensive decision at this meeting, leaving a few loose ends to be put together later. He reiterated the choices connected with the P.E.P. reef. Mr. Wyett understood the cost to move each module from the P.E.P. reef into a groin position was \$1,500, and the reef has 300 modules equaling a cost estimate of \$450,000 to remove the reef and put it into a groin position on a permanent basis plus whatever supporting structure is needed to support the modules. He calculated that approximately \$4 million worth of sand would have to be brought in to establish the beach. Mr. Dusey interjected the cost may be lower than \$4 million. Mr. Wyett noted that an extra \$1 million would have to be spent for the dredge if the project were done in two stages. He said the Council does not have the luxury of putting off the bids until the July meeting.

Mrs. Smith asked for comments from the public.

Mr. Dick Bresee addressed the Council and said when he heard that so much sand had to be put in before the groins were installed, he questioned if the Council had already decided on the type of groin they would use. He suggested that if sheet piling were used, starting from the seawall, extend seaward so far, then move the machine in. He continued that sand could be brought up from the bottom to the required level. He said if some other method were used, perhaps the sand would have to be put in first.

Mr. Eric Gilbertson, 151 Chilian, addressed the Council supporting the issue of the groins. He summarized the history of the Town's groins including their removal. He stated, in his opinion, the reef had increased the pressure or the velocity and that is why the erosion has occurred. Mr. Gilbertson noted that below Gulfstream Road, the sand has built up. He diagramed the former groins and the effect on the beaches north and south of midtown.

Mrs. Hermine Wiener, 324 Garden Road, addressed the Council and said that she was sorry that the Town had spent \$2 million on the reef when professional people had said it would not work. She recalled that despite every reasonable argument by the Town's professionals, the majority of the Council moved to go ahead. She continued that once the money was spent, she and Mr. Weinberg decided to leave it alone and hope the money had been well spent. Mrs. Wiener said that now, not only did the reef not work, but it appears that additional erosion occurred than if it had not been installed on an emergency basis in the first place. She urged the Council not to throw any good money after bad money, and the reef should be used, if possible, but not at great moving expense. She cautioned against expecting the permitting process taking a short amount of time.

Mr. Martin Murphy, Vice President of Murphy Construction Company, the original contractor for installing the P.E.P. reef for American Coastal Engineering, addressed the Council and said his company has been in business for 70 years and his involvement has covered 30 years. Mr. Murphy said that the shorelines have always presented problems to the residents from Sebastian south to Miami Beach.

Mr. Murphy said conditions were attached to the P.E.P. reef and he suggested that the Council should review those conditions and receive the best results from the investment of the reef money before it is removed. He said if the reef is left, it should not harm anything all next winter.

Mr. Murphy complimented the Town's staff and its resources and warned that political design is dangerous and suggested listening to the staff.

Mr. McLendon asked Mr. Murphy if his company had used precast concrete chunks in lieu of rock?

Mr. Murphy replied that they had used all the methods Mr. Dusey had talked about earlier in the meeting--"H" piling with concrete panels, concrete piling with steel panels, steel sheet piling, tongue and groove wooden groins, rip-rap, Florida native stone, granite stone, and all the different criteria.

Mr. McLendon said his concern was the toe of the stone revetment would be about 21 feet east of the seawall, and he thought that space could be reduced considerably by using concrete blocks. He asked if the concrete was more expensive and where Mr. Murphy had used it?

Mr. Murphy responded that borings need to be done to determine the composition of the sand. He noted that concrete is used in front of the main seawall at the Breakers. He said the Breakers have granite groins in front of the main seawall, and geotech mesh with small gravel, then heavier gravel, was put down for the first two granite groin installations. He noted that the groins still settled some and needed to be replenished. Mr. Murphy said the next groins were put in on concrete slabs with methods of holding the rocks together and that has lasted longer. He continued that on South Ocean, below Sloan's Curve, the groins were installed on concrete slabs in lieu of geotech. He said that geotech was a new method in the last 10-15 years. Mr. Murphy said design engineers can provide a plan to support whatever weight is needed.

Mr. Wyett asked Mr. Murphy to compare adjustable groins made of lime rock and Georgia granite.

Mr. Murphy said the adjustable part referred to the raising of the stones high enough to be placed at different elevations.

Mr. Dusey explained Mr. Wyett was referring to a letter where the adjustable groins were the "H" piling with concrete panels that were taken in and out as needed. He said the rock was set by design.

Mr. Murphy explained the difference between lime rock and granite was that one was soft and one was hard. Responding to questions from Mr. Wyett, Mr. Murphy said American Coastal's estimate of \$1,500 plus installation to move each reef module was pretty close and may be cheaper. He said the foundation costs for the modules would be based on the design and the weight of the unit. Mr. Murphy said the hardest part of the operation was to move the equipment to the beach area plus the restrictions and requirements for not damaging the beach.

Mr. Murphy said the 1994-95 storm season may not have been severe but it has moved the beach a lot in Palm Beach County. He remarked that the permitting for some of the emergency situations like Juno Beach has taken less than 30 days.

Mr. Shaw asked Mr. Murphy what was the feasibility of picking up the reef and storing it on a barge?

Mr. Murphy replied the reef consisted of 300 units and that would require a great number of barges, and Florida Power & Light has an area large enough for storage. He said the storage would create a situation where double handling was required, and 30 barges would be required to hold the reef modules if they were not stored any place.

Mr. Wyett asked Mr. Murphy if he thought it were practical to use the reef modules as groins? Mr. Murphy responded affirmatively. Mr. Dusey, responding to questions from Mr. Wyett, estimated the cost to move the groins to another area in the ocean would be \$200,000-\$500,000. Mr. Wyett said his estimate to take the reef and move it into a groin position would cost approximately \$1 million including the base. He noted that if the modules were moved to a temporary location and eventually moved to a groin position later, \$500,000 would be added to the cost. He noted that moving the modules to the groin position would cost substantially less than using adjustable groins at \$1,650,000; lime rock at \$2,700,000; or granite at \$3,150,000. He thought the numbers dictate the direction the Town should take.

Mr. Murphy reminded the Council that not enough modules exist to construct 14 groins, and he suggested another method be used to make up the difference.

Mr. Wyett responded that a groin at each end of the beach needs repair, and it is possible that the issue could be revisited.

Mr. Murphy said the design could be reconfigured to use the available units.

Mr. Dusey reported he had talked to one of the coastal engineers during a break, and the suggestion was to stack the modules by twos with a rock fill in between on the upper beach and use three in the water area. He said 8 groins could be constructed from the 330 modules if they were doubled up on the dry beach and tripled up on the water. He added those were design considerations that could be handled.

Mr. Murphy said the designers could come up with bases that would stay in place, and the bases could be constructed of different materials. Responding to questions from Mr. Dusey, Mr. Murphy said the construction is easier if the materials can be brought in from upland; however, if the reef modules were used, they would have to be moved off to allow for the dredging.

Mr. Dusey said he was questioning the possibility of putting in a couple of feet of sand before the reef was moved, and the work could possibly be coordinated.

Mr. Murphy said the groins would be placed four feet below the top of the wall. He said the top of the groin would follow the top of the line of the equilibrium profile, and Dr. Dean confirmed that the 175 feet would go to -1. Mr. Murphy noted the the units are six feet high, and if the beach were filled in, then a canal would have to be dug to place the units on top of the base. He said the module plus the base would equal a height of 9 feet, and he suggested the groins should be as long as they can be, but the State determines that. Mr. Murphy noted that some of the older groins are 300 to 600 feet long.

Mr. Dusey said that permitting a beach fill with the reef in place will be difficult, and he thought DEP will want to know the Town's intent.

Mr. Shaw said he thought staff should be authorized to proceed with the beach renourishment program immediately and assure DEP that the reef will either be modified or removed in accordance

with a combination of items including the fact that American Coastal will return to the Town with an alternative suggestion of what will happen to the reef if it is left in place. Mr. Shaw continued that during the next 30 days, the Council will be looking at various groin options and that decision would be made during that time period.

Mrs. Smith asked Mr. Shaw if he were suggesting that the Council would ask Staff to ask the Coastal Engineer to design a groin field?

Mr. Shaw replied that part of the ideas presented to the Council on June 14 would include groins, and the Town needs to have a design plan. He agreed that the groin field should be installed before it is covered with sand, and a base has to be put in before the groins are put in. He continued that if the reef is going to be used as groins, the beach nourishment program should be authorized to allow the installation of sand. Mr. Shaw said within the next 30 days, after hearing the presentations, the Town could decide what type of groin field or whatever should be used.

Mrs. Smith asked how Mr. Shaw's suggestion dealt with the question if the reef should be moved in to become part of the groin field? She said it was not her understanding that the Council would be listening to engineering studies or groin fields on the June 14, and this is a major coastal study that Mr. Dusey will be working on. She continued that on June 14, the Council will hear presentations concerning the Mata Mats, Mr. Janis' ideas on saving the beaches, and any other company that wants to present its ideas on saving the beach, and these presentations will not be engineering designs for the groin field.

Mr. Shaw responded that was correct, but that time period will have to be utilized to address groin ideas.

Mrs. Smith noted that the Council would have to authorize Coastal Management and the expense to do a groin field.

Mr. McLendon asked Mr. Dusey to comment on the alternatives for the 1 1/2 mile versus 1 mile renourishment. He asked why the design on the 1 1/2 mile plan is 25 feet wide opposed to the 45 feet on the 1 mile?

Mr. Dusey replied that the Corps of Engineers wants the berm high, and when a Corps project is done, the berm is built up high and when a Corps project is not done, the berm can be shorter and wider for more protection.

Mr. McLendon said he did not want to put in any more sand than was necessary. He wanted the groins to catch and retain additional sand.

Mr. Wyett said the Council should provide definitive action to satisfy permitting needs. He suggested the moving of the reef should be approved at this meeting, and if additional information comes in within the next 30 days, an approach to the groin, but not the concept, could be changed. Mr. Wyett asked Mr. Dusey what part of the 500,000 cubic yards would the State require or could something less be put between the groins and the balance be filled in by nature?

Mr. Dusey replied that a wide range of quantities exist that could be placed; however, the coastal engineer would make a recommendation on the amount of sand that would be placed against the seawall that would provide storm protection. Responding to questions from Mr. Wyett, Mr. Dusey said the height of the modules would be designed to correspond with whatever amount of beach fill the Council approved. Mr. Dusey recommended the Council authorize a beach fill permitting process to start and concurrently authorize the permitting process to start to place the reef in a groin field. He said that would allow the design process to begin, and the process to design the groin field would take longer than the beach fill project.

Mrs. Smith asked Mr. Dusey to estimate the costs of those two projects?

Mr. Dusey answered that if the fill could be started in August, and bidding proceeds well, \$3 - \$3.5 million is a good figure. He added that another \$1 million would be needed for a groin field. Mr. Dusey noted that additional funds would be needed for design fees, permitting costs, and monitoring, and the final estimate was approximately \$5 million.

Mr. Shaw expressed concern about the wave action on the beach nourishment if the reef were removed, and questioned the future impact of the costs if action were taken on the P.E.P. reef at this meeting.

Mr. Wyett responded that even the permitting would not be affected if the Council decided at the June meeting or within 30 days to modify the groin plan.

Mr. Randolph advised that the summer window may be lost if modifications were made, because the specifications would have to be changed for the advertising.

Mr. Wyett said he had heard at this meeting that the reef could be used as a groin field with an estimate of \$5 million for the entire project, and if the Council finds within 30 days it has made a gross error, the Council could reverse itself.

Mr. McDonald referred to Mr. Dusey's beach renourishment alternatives which listed possible permitting for the one mile beach. He asked Mr. Dusey to explain the "possible" permitting.

Mr. Dusey replied he was not sure how the Corps of Engineers will react to a different design berm during the permitting process. He said he was fairly sure the Corps would not reimburse any part of a one mile beach project. He said the other beach plan has been through the process and has a greater chance for success during the permitting process.

Mr. McLendon noted that the amount of cubic yards of sand is not really that much greater for the larger project. He said if the 25 foot wide, 9 foot mean sea level, 100 foot dry beach has already been processed, then the Council should choose that plan for permitting.

Mrs. Smith asked Mr. Dusey if the Corps had funding for the project Mr. McLendon recommended?

Mr. Dusey responded the Corps suggested the Town seek reimbursement for the original project, and they want the Town to local cooperation agreement in place before October 1, which will enable

them to get the money. The Corps indicated that 52% of the project was their responsibility at the midtown beach. He continued that a congressional appropriation was made for 52% funding. Mr. Dusey suggested as long as the plan has the same design berm, there is a better chance that the Corps will approve the plan and reimbursement.

Mr. Wyett said he had a problem with going the mile and one half, and if the Town filled in an additional half mile without groins on private beaches, he questioned where the Town should stop.

Mr. McDonald asked Mr. Dusey if the Town could use the design for the one and one-half mile beach and actually do a one mile beach which would be permitted quickly and have funding. Mr. Dusey agreed with that statement.

Motion made by Mr. McDonald to declare an emergency situation which will enable the Town to suspend formal bidding. The motion was seconded by Mr. Wyett.

Mr. Randolph asked Mr. Dusey if declaring an emergency was a necessity in the event the Town moves forward with a renourishment project accompanied by permitting for groins, and would the summer window be met by declaring an emergency?

Mr. Dusey replied that to move the reef out of the way of the fill--if that is a requirement of DEP--it is a necessity to declare an emergency.

Mrs. Smith stated she had a problem with declaring an emergency and avoiding competitive bidding.

Mr. McLendon noted the Town would not avoid competitive bidding, just formal bidding. The bids are still competitive but are received informally.

Mr. Dusey said he would still receive sealed quotations, but the bids will not be advertised on two successive weeks. He noted that this will shorten up the process by 3 or 4 weeks.

On roll call, the motion carried 4-1 with Mrs. Smith casting a negative vote.

Motion made by Mr. McDonald to immediately renourish the beach using the design of the one and one-half mile recommended proposal by Staff but actually making it a one mile beach. The motion was seconded by Mr. Shaw. On roll call, the motion carried unanimously.

Motion made by Mr. McDonald to use the P.E.P. reef as the basis for the groins, remove the P.E.P. reef and use the modules to construct the groins. The motion was seconded by Mr. McLendon.

Mr. Shaw said he would rather discuss the issue of using new groins first and agree that is what should be done. He did not know if the P.E.P. reef is the only solution, and the Council is making the commitment that if it is approved, the whole discussion will come to a screeching halt.

Mr. McLendon interjected that if the Council determines a mistake was made, it could be reversed.

Mrs. Smith said the motion was to use the P.E.P. reef rather than asking the engineer for his/her opinion. She asked Mr. Dusey that as part of the permitting process if he would have to stipulate that the P.E.P. reef were going to be used for the groins? Mr. Dusey replied affirmatively.

Mr. McLendon asked Mr. Dusey if the interval of groin placement had been established by the Town's consultant at 300 feet? Mr. Dusey responded it had and was based on double the affective length of the groin in the water. Mr. McLendon asked if the consultant had considered the pros and cons of angling the groin? Mr. Dusey said he had not at this point, but those issues will be discussed.

Mr. Wyett asked if the length of 150 feet had been determined to be the ideal length for a groin? Mr. Dusey replied it was based upon a 45' wide beach with a 7.0' mean sea level. He said this would be almost identical to the higher, smaller berm. Mr. Dusey noted that the longer the groins were constructed, the more sand that had to be filled in.

Mr. McLendon said he thought the project would be at 9.0' mean sea level.

Mr. Dusey replied it would be, and he had used the 7.0' figure as a basis only. The project should not be significantly different at 9.0' with a 25' berm.

Mr. Wyett asked Mr. McDonald if he would accept an amendment to his motion stating that the Council believes that groins are the way to go and the Council authorizes the P.E.P. reef to be used as a groin. Mr. McDonald replied he would accept that.

Mr. Shaw asked if American Coastal Engineering could recommend to the Council if the P.E.P. reef should be used as a groin or if something else is better?

Mr. Dusey responded that ATM is the coastal engineer and that company felt confident they could design a plan that would have the reef function as a groin.

Mr. Shaw asked if ATM thought the P.E.P. reef as a groin was the best solution.

Mr. Dusey said ATM had not gone through that reiteration, but it seems likely that will be a very reasonable permit solution given the fact the Town has paid for the materials.

Mr. McDonald restated the motion: He moved that the Town utilize the P.E.P. reef modules to construct a groin field to stabilize the beach renourishment program. The motion was seconded by Mr. McLendon. On roll call, the motion carried 4-1 with Mr. Shaw casting a negative vote.

Motion made by Mr. McDonald that the funding for the motions that were passed be utilized pursuant to Al Dusey's memorandum of May 5 which is basically \$1 million from Beach Protection Reserves, \$2.5 million from Ocean Front Roadway Protective Seawall Reserves, \$700,000 from Capital Improvement Program, and the balance, if needed, from the Self-Insurance Fund Reserves. The motion was seconded by Mr. Shaw.

Mrs. Smith said she had a problem with that since other ways be exist to finance this. She would like this to be looked at as part of the budget process which in no way will stop the permitting procedures since the budget will be heard, the first hearings, within the next 2 1/2 weeks.

Mr. McDonald said if it were not important the the funding not be decided at this meeting, he would withdraw his motion.

Mr. Shaw made a motion to authorize the Town Manager to proceed with any applications for State funding or reimbursement for any of the projects. The motion was seconded by Mr. McDonald. On roll call, the motion carried unanimously.

Mr. Doney requested that Mr. Dusey provide an estimate of the funds necessary for staff to proceed with the design and other permitting work through ATM and others.

Mr. Dusey responded that an amount not to exceed \$100,000 would be sufficient.

Motion made by Mr. McLendon to authorize funding of \$100,000 for staff to proceed with the plan. The motion was seconded by Mr. McDonald.

Responding to a question from Mrs. Smith, Mr. Dusey said the \$100,000 would come from the Beach Renourishment Reserves.

On roll call, the motion carried unanimously.

Mr. Randolph noted the previous motion authorizing reimbursement of funds, mentioned State funding. He asked for a clarification of State and/or Federal.

Mrs. Smith said the funds could come from the State, County, Federal or whomever.

Mr. Doney asked if the Town Council wanted to have a special meeting to award the contract?

Mrs. Smith responded Mr. Doney could advise the Council when the figures become available, and, at that time, the Council would vote on it.

Mr. Dusey said he anticipated awarding one contract. He said the reef may have to be moved to put the fill in, but he will talk to DEP to see what latitude they will give the Town.

Mr. McLendon suggested the contractors be contacted to see if sand could be added to the future sites of the groin modules so they would only have to be moved once.

Mr. Dusey said he would attempt to work that out with the contractors.

VI. ANY OTHER MATTERS

Mr. Wyett recalled at the last Town Council meeting, the Council authorized the Mayor to meet with the Mayor of West Palm Beach to discuss the Fourth of July, and the Council mentioned a \$500 amount. He would like to remove that \$500 restriction before the Mayor talked to West Palm Beach.

Mr. McLendon recalled the amount he suggested was \$2,000.

Mr. Wyett said he thought West Palm Beach would be spending about \$50,000, and one purpose for cooperating with West Palm Beach is to establish a new feeling. He suggested a figure of \$5,000 or \$10,000.

Mrs. Smith suggesting waiting until Mayor Ilyinsky talked to Mayor Graham before an amount is set.

Mr. Wyett said his main interest was to remove the \$500 restriction.

Mrs. Smith said the restriction was considered removed.

Mrs. Smith said the Palm Beach County Municipal League had an opening for the Citizens' Tax Force Committee. She asked if any member of the Council would like to become a member of the Citizens' Task Force Committee, he or she should write a letter.

Mr. Doney recalled that only if the Town Council wanted a Town Council person to be a nominee would it go to the Municipal League for a vote.

Mrs. Smith said the members may write a letter, but they may not be on the Committee.

Mr. Doney pointed out the deadline for submission was June 2.

Mr. Eric Gilbertson, 151 Chilian, congratulated the Council on their actions and suggested an under current stabilizer could be used as a reef at a cost of \$1.2 million.

VII. ADJOURNMENT

The meeting was adjourned at 4:05 p.m.

Mary A. Pollitt