

MINUTES OF SPECIAL TOWN COUNCIL MEETING HELD ON

MAY 8, 1995

I. CALL TO ORDER AND ROLL CALL: A special meeting of the Town Council was called to order at 10:00 AM by Council President Smith. On roll call the following were found to be in attendance: Mayor Ilyinsky, President Smith, President Pro Tem McDonald, and Councilmen, Shaw, McLendon and Wyett. Also attending the meeting were: Town Manager Doney, Public Works Director Dusey, Assistant Town Manager Elwell, Town Clerk Pollitt, Town Attorney Randolph and Mr. Bowser.

II. INVOCATION AND PLEDGE OF ALLEGIANCE: The invocation was given by Mrs. Pollitt, and the pledge of allegiance was given.

An opening statement by Mrs. Smith explained that this was a meeting of the Town Council to review the recommendations of the Town's Staff with respect to the P.E.P. reef, and the reef was installed pursuant to a decision of the Town Council. She said the Council was faced with a serious threat to the Mid-Town seawall, and after extensive research of what appeared to be a complicated technological problem, the Town Council voted to try to slow the erosion process by installing the P.E.P. reef. Mrs. Smith said it now appears that the P.E.P. reef has had unintended side effects which may be causing more erosion than existed prior to its installation, although the reef has reduced the wave energy, which was one of the intended beneficial effects that led to the Council's decision to install the reef. Mrs. Smith said she believed that the people involved in the decision to install the reef were acting in good faith, and with the best interest of the Town at heart, but since the beach has continued to erode, the Council is compelled to review that decision, and perhaps even undo it. She stated that she hoped everyone would bear in mind the complexity of the issues, and the difficulty in providing a sensible solution.

Mrs. Smith stated that the process would not be helped by anyone who attributes bad motives to other people. She said she intends to discourage any accusations of bad faith or behavior that will undermine the process. She said she hoped that everyone would appreciate the difficult situation that the members of the Council are facing. Mrs. Smith asked for approval of the agenda.

III. APPROVAL OF AGENDA: Motion was made by Mr. Wyett to approve the agenda and seconded by Mr. McLendon. On roll call the motion carried unanimously.

IV. MID-TOWN PEP REEF -- CONSIDERATION OF ALTERNATIVES FOR ADDRESSING CONTINUED EROSION. Mr. Doney stated that Mr. Dusey has prepared a memo dated May 5, 1995 which identifies the erosion problems. He said this includes the Staff's assessment of the erosion alternatives, including funding, permitting and other issues. Mr. Doney said Dr. Dean of the University of Florida was present, and also Dr. Devereaux, Chief of the Bureau of Beaches and Coastal Systems for the Department of Environmental Protection.

Mr. Doney said there is an agreement between the Department of Environmental Protection of the State of Florida along with the University of Florida, and the Town of Palm Beach to monitor the effectiveness, and performance of the reef, and he asked Mr. Dusey for his presentation.

Mr. Dusey said the Council approved the installation of the reef in January of 1992, and actual construction and placement started in August of 1992. He said after the hurricane that year the project was temporarily halted and began again the following spring, and was completed in August of 1993.

Mr. Dusey stated that the monitoring program was developed in conjunction with the University of Florida, the Department of Environmental Protection, the Town of Palm Beach, and American Coastal Engineering. He said Dr. Dean was in charge of the monitoring, and has prepared periodic reports. Also, Dr. Dean has met with Town Staff since August of 1993. Mr. Dusey said that the monitoring program involves surveys taken every three months to determine settlement, sediment, scour, and environmental considerations. Mr. Dusey stated that the initial reports indicated that there were some erosional trends amounting to about 50,000 cubic yards which were not significant at that time, but he did have some concerns.

Mr. Dusey said that Dr. Dean assured him that in the short period of time in which the monitoring had occurred a lot of things have happened in the ocean, but that was not necessarily a trend which would continue, so the monitoring process continued. He said that the seventeenth (17) month report was a lot more serious in the amount of erosion which had occurred. The report covered the erosion within the 4,000 foot reef plus 2,000 feet north and south of the reef, and a width of 480 feet. Mr. Dusey stated that in the 17 month period the report showed an erosion of 104,700 cubic yards in the measured area with the bulk of the erosion occurring west of the reef.

Mr. Dusey said at that time he expressed very strong concerns as to whether or not this trend would continue, and what could be done about it. He said Dr. Dean and other participants agreed to proceed with one more quarterly survey to determine if there would be some recovery. He stated that in 1994 there were several severe storms in this area, and after such storms there is usually some recovery. Mr. Dusey said in April there was a meeting to discuss the quarterly survey which covered the period from December 1994 to March 1995, and the survey indicated serious erosion with a magnitude of approximately 44,500 cubic yards in the 8,000 foot monitoring zone with about half occurring in the lee of the reef.

Mr. Dusey stated they had expected an appreciation of approximately 40,000 cubic yards of sand which would be on the positive side, with a minimum beach build up of about 5 feet per year, but in the first 17 months of the monitoring there was an actual loss of 47,000 cubic yards in the lee of the reef. So instead of gaining an average of 40,000 cubic yards there was a loss of 47,000 cubic yards of sand. He said instead of a build up at the rate of approximately five feet per year, there was actually a loss of about .68 cubic feet of beach per year. Mr. Dusey said his greatest concern was that the erosion in front of the reef was about 2-1/2 to 3 times faster than the erosion north and south of the reef, which led him to believe there is something within the reef which is causing accelerated erosion.

Mr. Dusey said that Dr. Dean had expressed an opinion based on other studies which were well documented. He said the waves which were coming over the reef were pounding and causing a pumping effect north, and south which was carrying sand from the front of the reef. He said his biggest concern was not the cause, but the fact that this was occurring. Mr. Dusey stated that erosion is

normal. It happens all the time. Studies have shown that the erosion rate in the Mid-Town area to be approximately 3.7 cubic yards per year. A memorandum from the Corps of Engineers showed about 3.3 cubic feet per year. He said there should be a loss of about 15,300 cubic yards per year in front of the reef, not 47,000 cubic yards. He said this indicates an erosion rate which is three times what is considered normal, or background erosion which is two to three times as fast as north and south of the reef. Mr. Dusey said this indicates that something is occurring, and there are fairly large quantities of sand being lost. He said the general health of the beach is directly related to the amount of sand you have in the area. Mr. Dusey said sand is normally your first line of defense against storm damage, and places which have sand do not sustain substantial storm damage. Mr. Dusey recalled the Halloween storm a few years ago when there was a great deal of damage at Mid-Town, but damage was minimal in Boca Raton and Delray Beach. He said there was no problem because of a large quantities of sand there. He said that losing sand at a rapid rate is a serious problem. Mr. Dusey said in 1992 at the time when the reef was begun, Mid-Town was in very bad shape, and that's why the initial concentration was on problems in that area.

Mr. Dusey said that the other problem, and perhaps the more significant of the two, is the seawalls. The seawall in Mid-Town is designed with the expectation of having plus five feet of sand in front of the wall as a support mechanism. He said that one of the reasons that the rock revetment was placed in the northern end of Mid-Town was the fact that there was not that sand in the 1980's and early 1990's, so instead of sand, large boulders which sit on the sand were placed there. Mr. Dusey said that continued loss of sand can substantially damage the seawall. He said at Mid-Town they are unable to grow grass, the palm trees are damaged, and the life guard facility is flooded regularly.

Mr. Dusey explained that the survey results show no recovery occurred in the lee of the reef even in the summer months when we usually have a build up of sand. The monitoring has showed a steady increase in the erosion in the lee of the reef, in fact it shows that in the winter season it's very severe.

Mr. Dusey pointed out, in order to put the loss of sand in the lee of the reef in perspective; that in the area which was monitored from August 1993 to December of 1994 there has been an average loss of sand of 2.4 cubic feet. He said it is his belief that this accelerated erosion cannot be allow to continue, particularly through another winter season when the most sand is lost because of the northeastern storms.

Mr. Dusey said they have looked at alternatives to determine what can be done this summer to stop the accelerated erosion, including modifying the reef, adding to, or subtracting from the reef. He said they have looked at seven alternatives but none of the seven could be implemented this summer either because of permitting or other reasons. Mr. Dusey said that none of them have any expectation of successfully halting the erosion quickly. Mr. Dusey stated it is the recommendation of the Town Staff that the Town Council authorize the removal of the P.E.P. reef as the Mid-Town area is critically eroded. He said it was eroded when the reef was installed, and is substantially more eroded now. Mr. Dusey said the reef needs to be removed in the summer when the seas are calmer. He said the Staff further recommends that the Town Council declare an emergency situation to avoid the competitive bidding process which will save three or four weeks of time.

Mr. Dusey said they have investigated where to put the reef, and he felt the least expensive location would be artificial reef site number four. He said this is permitted by the county, and verbally they have agreed to placing the modules there. Mr. Dusey said the reason they decided to place the modules in the ocean instead of on land is because the reef has always supported a decent rehatitat. He said artificial site number four is located in the area of Southern Boulevard about a quarter of a mile off shore in 25 to 40 feet of water.

Mr. Dusey said in the case of the Mid-Town situation, it is his feeling that the only thing that would be of great benefit would be to replace the sand which has been lost. He said the Town's Comprehensive Coastal Management Plan has indicated that there should be two projects at Mid-Town to serve two purposes, one would be recreation storm protection, and also to serve as a feeder beach for downstream beaches.

Mr. Dusey said they have investigated how quickly they would be able to move with this project, and after conferring with the State, and then with the Corps of Engineers, it was felt that permits could be obtained very quickly, in a matter of two or three months. Mr. Dusey said this is because the Town has already been permitted for the project at Mid-Town.

Mr. Dusey said they would like to pursue a project similar to the one which was being pursued in the late 1980's. He said the project is one and a half mile long, and has a 25 foot design berm which is based on storm protection. He said this goes out level for 25 feet, and then slopes down into the ocean providing a dry beach of approximately 100 feet.

Mr. Dusey stated that the reason it's advantageous to move quickly with the fill, is that projects which are built in the summer can cost half as much as projects constructed in the winter. Mr. Dusey said the original project had what is called "an advance fill" which is additional sand that is placed in front of the design berm, and he recommends that the Town put in as much sand as possible. Mr. Dusey said there is a problem with the sea turtles nesting, and he suggested that the sand be monitored for nesting in anticipation of a relocation program if turtles do nest in the project zone. Mr. Dusey stated that the agencies would like fill projects to be performed in the winter to avoid the sea turtle problems, but because of lack of sand Mr. Dusey felt this project would be allowed to proceed in the summer.

Mr. Dusey said the original fill project was about 650,000 cubic yards, but the probable fill quantity for the beach now would be about 850,000 cubic yards. Mr. Dusey said in order to pay for this project he suggests that the Town assemble \$6,000,000 in existing funds as follows:

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| 1. Beach Protection Reserves | \$1,000,000 |
| 2. Ocean Front Roadway Protected Seawall Reserves | \$2,500,000 |
| 3. Replacement of Mid-Town Seawalls | \$3,500,000 |

Mr. Dusey said there was an accumulation of funds for these projects, and he suggested that \$700,000 be allocated from the Capital Improvment Program - Undesignated Fund Balance. Also, he

suggests the transfer from the Self Insurance Fund Reserves of \$1,750,000. Mr. Dusey also suggested that the Town seek reimbursement from the Corps of Engineers, from Palm Beach County who may wish to participate in the project as it is a public beach, and from The Environmental Protection Agency.

Mr. Dusey suggested that once the project is completed the Town should initiate a stabilization program. He said this could include a number of things one of which is a groin field, an emergent breakwater or periodic nourishment. He said if it is the Town Council's wish they could also pursue a stabilization project at Phipps Ocean Park, but this is optional and not associated with Mid-Town.

Mr. Dusey summarized his recommendations as follows:

1. Authorize the immediate removal of the P.E.P. reef.
2. Declare an emergency because of the critically eroded condition of the Mid-Town area, and allow award of the reef removal contract without formal competitive bidding.
3. Authorize the Town Manager to execute all permit applications, and take other related actions to obtain permits, prepare plans and specifications and proceed through bidding for a Mid-Town beach renourishment project of the same general scope as previously pursued according to the design by Coastal Planning & Engineering, Inc.
4. Approve the assembling from the following sources to fund the P.E.P. reef removal, and the permitting, engineering, and construction of the Mid-Town beach renourishment project:

(a) Beach Protection Reserves	\$1,050,000
(b) Oceanfront Roadway Protective	\$2,500,000
(c) Capital Improvement Program Undesignated Fund Balance	\$ 700,000
(d) Transfer from Self Insurance Fund Reserves	<u>\$1,750,000</u>
TOTAL	\$6,000,000
5. Authorize the Town Manager to apply for funding from the Army Corps of Engineers on a reimbursement basis, the State Department of Environmental Protection, and Palm Beach County, as well as any other potential source with the understanding that none of these applications for funding assistance will be allowed to delay construction of the project.
6. Upon completion of the Mid-Town Beach Renourishment Project, pursue the stabilization of Mid-Town beach and the public beach at Phipps Ocean Park if desired.

Mr. McLendon asked Mr. Dusey if he considered the emergency more related to the missing five feet of sand on the seaward side of the seawall, or the danger to the seawall footings, do we know how deep the footings are, and does the Town have a record of the maximum amount of sand which has been moved by storms? He said he walked the approximately 2,000 feet of seawall the previous day at low tide, and he found that the top of the footing of the seawall is exposed about one foot. Mr. McLendon asked if the repairs which were done recently had been to repair normal deterioration or if there was a structural flaw?

Mr. Dusey said it was his belief that the emergency was the general condition of the Mid-Town area. He said it was very bad in 1992, and has since lost approximately 200,000 cubic yards since 1992, so the situation is worse now than it was three years ago. He said the seawalls haven't had any sand against them for some time, and there is even less now, and there is less potential for any sand to move into there now. Mr. Dusey said he and Mr. Bowser had inspected the wall the previous week, and the wall is actually exposed by four feet. He said the real concern is going through another winter season with the reef in place and the accelerated erosion which occurs in the winter time.

Mr. Shaw asked Mr. Dusey what beach engineering point evaluated the amount of sand coming off the wall? Mr. Dusey said that design was done by Coastal Planning & Engineering from Boca Raton for the Mid-Town Project in the late 1980's.

Mr. Shaw asked if the Town proceeds with the plan, and the reef is left in place, what would be the effect, and is there any reason to remove the reef? Mr. Shaw said the reef appears to be completely covered with sand. Mr. Dusey said initially the reef will be covered by both the initial fill, and eventually by the way the sand will sit. He said at some time in the future the reef may become exposed, and this could cause an acceleration in erosion.

Mr. Shaw asked if there were any lab tests which would show the results of removing the reef, and does the Town know what to expect in the future? Mr. Dusey said the erosion would be reduced substantially. He said the normal erosion in this area is approximately 15,000 cubic yards per year. Mr. Shaw asked if it is a fact that if the reef is removed that the erosion will be 15,000 cubic yards per year instead of 47,000. Mr. Dusey said that question should be asked of Dr. Dean because there are other factors which enter into erosion, and the poor condition of the beach can accelerate the erosion.

Dr. Robert Dean a professor in the Department of Coastal and Oceanographic Engineering at the University of Florida, said he has been responsible for the reef monitoring program. He said if the reef is removed, the expectation is that the erosion will return to its background rate, and would continue to erode, but at a lesser rate.

Mr. Shaw said the sand transfer plant is not due to go into operation until the late fall, and it takes awhile for the sand to move from the north end of the Town to the center. He asked if the reef and the sand transfer plant have been working together since the reef has been installed, and would that have had any effect on the reef?

Mrs. Smith said she didn't feel that Mr. Dusey could answer a question which would be a guess.

Mr. Shaw said there was \$3,500,000 in the Ocean Front Seawall Protection reserves, and if \$2,500,000 is spent on the wall now, what would happen if work needs to be done on the wall. Mr. Dusey said there is a little over \$2,500,000, and the replacement at Mid-Town will cost approximately \$3,500,000. Mr. Shaw stated that the Town has the funds now, but there still would be a problem, and those funds would need to be replenished. Mr. Dusey said that over time the fund would be replenished. He said the Town Council has authorized funds from the Capital Improvement Fund to be contributed to the seawall fund.

Mr. Shaw stated the Town wished to declare an emergency to change the bidding process, and he asked how the bidding process is changed by declaring an emergency? Mr. Dusey said their intention is to go to competent marine contractors, hopefully three of them, who are able to do the type of work required. He said they would ask for a sealed quotation based on expected results, and this would save three to four weeks over the usual bidding process. Mr. Shaw asked if this was an alternative to advertising and accepting bids from anyone who wishes to submit a bid? Mr. Dusey answered affirmatively.

Mrs. Smith asked Mr. Randolph if he could speak to the condition of an emergency.

Mr. Randolph said any determination as to whether an emergency exists rests with the Town Council. He said there is a provision in the Town code which provides that all contracts for construction of public work amounting to \$10,000 or more shall only be made to, and with the lowest responsible bidder. Mr. Randolph said it also describes the process by which bids are received, and one requirement is advertising in the newspaper. He said he had discussed this with Mr. Dusey and Mr. Doney and it is his understanding that if the Town declares an emergency the only provision of the Town Code which is sought to be waived would be the advertising. Mr. Randolph said the bid process would still be undertaken where contractors would be contacted and offered a chance to bid. He said it is his understanding that it would then come back to the Council, and the Council would make the determination of who is the lowest, and the most responsible bidder. Mr. Randolph said this would not be avoiding the bid process, only shortening it by way of omitting the advertising. He said the determination which needs to be made by the Council is whether the two or three weeks which would be lost by technically following the code is sufficient to declare an emergency. Mr. Randolph said that Mr. Dusey has advised the Council that, in his opinion the two or three weeks are very important to the renourishment project, and particularly with regard to the bidding process. Mr. Randolph said that Mr. Dusey has indicated that the cost could be as much as doubled if the Council decides not to go forward with the project in August. Mr. Randolph said the cost is one consideration in determining if there is an emergency. He said in 1987 the Town declared an emergency in regard to seawall repairs at Mid-Town beach because of the condition of the wall at that time.

Mr. Randolph said that bid procedures cannot be lightly waived. He said it was a serious consideration because bidding procedures are set up for the benefit of the public. He said they are there to avoid collusiveness, and to assure the public that they are getting the lowest and best bid. Mr. Randolph said the decision to declare an emergency will have to be made by the Town Council on a basis of facts which are presented to them. He said the Attorney General's opinion is that an emergency arises which demands immediate action, and time spent in obtaining competitive bids would seriously injure the public interest. Mr. Randolph said this is what the Council would need to consider in determining whether or not the bid process should be waived.

Mrs. Smith asked Mr. Dusey to respond to Mr. Randolph's statement, and state what the circumstances were in 1987 which created an emergency situation.

Mr. Dusey said that Coastal Planning and Engineering inspected the seawall system, and the erosion was so severe at Mid-Town that the engineer was afraid that the northern section of the seawall was in danger of dynamic failure.

Mrs. Smith asked what is the difference in the condition of the seawall today as opposed to 1987. Mr. Dusey said the seawall in that location is somewhat stabilized by the rocks, but some of the rocks have rolled into the ocean. He said he is concerned about the overall health of the Mid-Town area and how much sand has been lost there.

Mr. Shaw asked if American Coastal Engineering has countered any of the claims which have been made as to the effects of the reef. He referred to Appendix 2 of the agreement as to what the product would do. He said he has not seen any reports from American Coastal saying that their product is doing what it is supposed to do.

Mr. Dusey said that American Coastal has participated with Staff, DEP, and the University of Florida in all the sessions in which the monitoring was discussed. Mr. Shaw asked if American Coastal concurs with the effects of the reef. Mr. Dusey replied that Mr. Shaw would need to ask American Coastal about that.

Mrs. Smith said American Coastal would be available for questioning later in the meeting. She said in effect the P.E.P. reef is on trial today, and American Coastal would be speaking in defense of the reef.

Mr. Wyett said he would like to know where the Town beach starts and where it ends. Mr. Dusey said there is approximately 650 feet at Clarke Avenue, so where the Town beach starts is outside of the taper back from Barton Avenue south about 650 feet. He said it's picked up again north of Royal Palm Way and goes down to 70 feet south of Gulfstream.

Mr. Wyett asked if it's recommended that the Town do beach restoration somewhat north of the Town beach and substantially south of the Town beach. Mr. Dusey said that was correct. Mr. Wyett asked why the Town is recommending restoring private beaches? Mr. Dusey said that from a coastal engineering standpoint the project length has to be a sufficient length to be stable, or to be relatively stable. He said generally the longer the fill the more stable the beach. Mr. Dusey said that Coastal Planning and Engineering considered this to be the smallest beach which could be constructed and have some stability to it.

Mr. McDonald stated that part of Mr. Dusey's recommendation is to stabilize the beach, and he asked how this would be accomplished. Mr. Dusey said the recommendation is to do a feasibility study to determine, from a Coastal Engineering standpoint, the best way to stabilize the beach. He

said groin fields work very well. Mr. Dusey said in the original beach fill project, the engineer had proposed that the project be monitored for a period of time in an attempt to determine where the erosion was occurring. He said they had considered building a emergent breakwater to throttle erosion, and replace the sand on some periodic basis which may be less expensive than some other alternatives. Mr. Dusey said there is a number of things that can be done, but he would not be able to guess which is the best one.

Mr. McDonald asked Mr. Dusey if he could give him a brief summary of the State's position on the installation of groin fields?

Mr. Dusey said it was his understanding that the State is willing to permit a groin field which can be shown to be effective and not impact downstream beaches, and has sand in its system. He said the Permitting Chief is in the audience and possibly he can answer some of those questions.

Mr. McDonald asked if the cost to remove the reef is about \$200,000. Mr. Dusey said they have received an estimate from a Miami contractor of about \$200,000. He said they also have received an estimate from a local contractor who has knowledge of the reef which states that it could possibly cost as much as \$500,000. Mr. McDonald said in view of the fact that the beach renourishment will cover the reef, and assuming that the beach is stabilized after it has been renourished, it was his feeling that the reef should be left in place thus saving the removal cost. He said if it becomes necessary to remove the reef then the only difference in cost would be the cost of the removal. Mr. Dusey said that was another question which should be put to Dr. Devereaux. Mr. McDonald said he felt this was certainly an emergency situation, and should be treated as such.

Mrs. Smith asked Dr. Dean if the monitoring of the reef was done by committee? Dr. Dean said they established a peer review group to overview the monitoring results, but unfortunately there was no budgeting of funds for monitoring the results. Dr. Dean said there were five people on the committee. He said they were Miss Peggy Von Arman from Palm Beach Coast Atlantic College, Dr. John Fleetemeyer Chief Lifeguard for the Town of Palm Beach, Dr. Max Shepherd from the University of Florida, Dr. Schoenwald from the University of Florida, and Dr. Dean. Dr. Dean said he has met twice with the two members from the Palm Beach area, and he has provided the reports to the members of the peer review group, the members at the University of Florida, and also through seminars.

Mrs. Smith said she recalled that one of the recommendations for inclusion on that committee was made by the Town Council, and it was her understanding at that time that they would be meeting as a committee to review the entire project. She said she was finding it difficult to understand how a commission can be established or required and then not meet because of funding. Mrs. Smith said she is also questioning the statement that Dr. Dean has been unable to field verify the problem at the reef. She said she was referring to the ponding and Dr. Dean's belief that this occurs during high wave events. Mrs. Smith said Dr. Dean has documented this problem during a wave tank testing of the reef, and she asked why would there be a tank wave testing of a reef which is in the water when the test could be done on site?

Dr. Dean stated that testing was not done for the Palm Beach P.E.P. reef, but was done for the Town of Vero Beach. He said the difficulty is that they are dealing with very small ponding elevations which are less than one inch, and are very hard to measure. Dr. Dean said they have done some computations from the wave tank tests which shows promise, but at the present time these computations can only be applied to a reef which is continuous.

Mrs. Smith asked Dr. Dean if he had seen the breakwater which is quoted in Japan? Dr. Dean said he has seen a number of breakwaters in Japan. Mrs. Smith asked if he has personally seen the one which he is specifically using which is "Field Study of Nikita of West Coast Drifting Characteristics of Literal Sand Around Submerged Breakwater?"

Dr. Dean said he has not seen that study. He said he was in Japan when that paper was presented, and had an opportunity to discuss its contents with the author. Mrs. Smith asked if they had come to any conclusion? Dr. Dean said the conclusion was supportive of the ponding mechanism. He said that's when there are high wave events and there is water flow from both ends of the breakwater system.

Mrs. Smith said if it was evident that there was a problem, why didn't they put ends on the reef so the sand wouldn't drift either north or south? Dr. Dean said the paper recommending that process only became available October. He said they are becoming better informed on the mechanics and problems involved with the reef, but the papers to which Mrs. Smith refers, do not address the specific Palm Beach problem. Dr. Dean said if the Town did decide to put solid ends on the reef there might be a problem with permitting.

Mr. McLendon said the reef certainly has not performed as expected by those recommending or approving it. He said he doesn't understand the amount of settling, considering that the weight loading upon sand is approximately 1/17th of what would normally be designed to support that weight on a given area. Mr. McLendon said that the only thing that makes any sense is the huge forces of the wave energy pushing down on the reef, but it could also be a combination of things. He said that during the storm Gordon he observed the sand being put into suspension by the northeaster storm. Mr. McLendon said the storm created a very heavy southerly flow and a river of sand was visible moving south between the reef and the shore.

Mr. McLendon said it has been recommended that the reef be removed, and if, in fact it is removed he would like to see it incorporated in the sand renourishment project to serve as a sand retention structure for the future. He said the reef should be placed at an angle heading into major storms. Mr. McLendon said he was opposed to putting in only sand.

Mrs. Nancy Douthit, 248 Southland referred to pumping, and said in the Town of Jupiter 1/3 of their taxes is pumped out to sea. She said this would be a very large budget item, and she wondered what would be the guess as to the range of the pumping budget on an annual basis for the Town of Palm Beach?

Mr. Dusey said it was expected that there would be little or no renourishment required, and if it did become necessary, it would be done over a long period of time. Mr. Dusey said the Corps of Engineers provides that sand which is dredged from the inlets may be placed at other locations, if the local sponsors are willing to pay for getting the sand to that location. He said this may allow some sand to be placed at Mid-Town at a minimal cost, possibly \$100,000.

Beth Mitchell, Vice President of American Coastal Engineering said she wished to address the issue of the expectations of the reef. Also, she said she would like to provide some perspective on the monitoring reports, and make some positive suggestions.

Ms. Mitchell said in January 1992 American Coastal was asked what the Town could expect from the P.E.P. reef. The questions were; how much beach would the Town be getting, when they would be getting it, and what, and when would the storm protection be.

Ms. Mitchell said there were two speakers who addressed the expectations issue; Attorney John Dotterrer and Mr. Kirby Green the Director of Beaches and Shores at DNR. She said she would like to quote verbatim how those two speakers responded to the issue. Mr. Dotterrer replied "he believed all speakers agree that if the reef was installed it would cause a substantial reduction in wave energy which would provide storm protection. He advised the operation of the reef acting alone, without any sand renourishment is expected to cause an accretion in order to create a beach which does not exist, but it is difficult to predict what the width may be. He noted there were similar locations with structures in the first location, the DuPont on South Ocean Boulevard, and there had been a accretion of the beach there, and it was wider than the adjacent located beaches, but it is hard to predict exactly what width would be at Mid-Town," those were his words to the Council.

Ms. Mitchell said that Mr. Green also addressed the issue, and he stated "there will be storm protection benefits as it will reduce wave energy." She said Mr. Green felt in conjunction with that reduction in wave energy, if there is enough sand in the system the wave reduction may let some of the sediment drop out. She stated that Mr. Green believed the expectations, with the reduction in wave energy, and that it was projected to be between 16% and 40%. He stated they estimated that under a certain class of wave conditions, that they may accrete from one foot to one and a half feet of sand a year, which means over a long period of time it is possible that there could be a beach, however, this was a very long term expectation.

Ms. Mitchell said after the permit for the reef had been issued and the Town Council decided to go forward with the project, the test plan for the experiment had not been drafted. She said it was not until after the units were built, and the Town was seeking permission from DNR to actually place the units in the water that intense negotiations took place to define the P.E.P. reef expectations. Ms. Mitchell stated that American Coastal was very concerned about protecting the Town's investment, and seeking a fair and objective test. She said while American Coastal was drafting their version of the test plan, Dr. Dean was simultaneously working with the DNR to draft his version of the test plan. Ms. Mitchell said in an attempt to negotiate with the DNR, they revised Dr. Dean's plan in order to provide a broader scope for the expectations of the reef.

Ms. Mitchell said American Coastal was concerned about the Town's approach which was; tell us what you think it will do, and if we don't agree with you we will tell you what it will do, and if it doesn't, then we will make you take it out. She said they were not expecting that approach to a scientific experiment. When American Coastal submitted a revised version of Dr. Dean's plan to the DNR it was rejected as being vague. Ms. Mitchell said time was slipping away and the units were ready to be installed. She said after several attempts to work with DNR, telephone calls took place between Mr. Heeke, the Town Council President, the DNR, and herself in an attempt to get the order to proceed with the installation of the reef. She said Mr. Heeke instructed her to accept the DNR version of the test plan, and instructed her to document their concerns in the event that the issue of expectations should come up again.

Ms. Mitchell said in a letter written on June 30, 1992 they accepted DNR's versions of the test plan in order to go forward with the project, but they expressed their concerns at that time. She said after hurricane Andrew, and after the decision was made for the project to go forward the test plan was revised again. Ms. Mitchell said the sediment accumulation was revised to take into consideration the accumulation at the south end of the project which had dramatically built up over a four month period of time.

Ms. Mitchell referred to the monitoring reports which have been issued. She said all the reports have relied on the surveys conducted during the monitoring plan. She said the installation of the reef was completed in August 1993, and the test plan began. She said a survey of the entire area now serves as a starting point for the analysis. Ms. Mitchell stated that Sea Systems received the notice to proceed for the first quarterly survey on November 1, 1993, however, their reports indicate that due to unsuitable weather conditions, they were unable to survey until December 10, 1993. She said by that time they were experiencing the first significant, but typical northeaster of the season during that Thanksgiving Holiday. Ms. Mitchell said that when the weather calmed down they went out and took a survey, and the data showed erosion which is to be expected after a storm.

Ms. Mitchell said March 1, 1994 was the next survey, and that data showed a minor accretion in the lee of the reef. She said June 1994 was the next survey, but there was a very unusual spring storm with seas in excess of four to six feet, therefore, it was not surprising that there was some erosion noted in the data. Ms. Mitchell stated the next survey was in November of 1994, and due to storms the data showed erosion. She said at the end of November we experienced tropical storm Gordon with a week of seas averaging four to eight feet, and a post storm survey was conducted, and once again the data showed erosion. Ms. Mitchell stated that the last survey which was conducted on March 29th was preceded by three weeks of weather conditions which were not suitable for surveying, and again the data showed erosion. Ms. Mitchell said the point she is making is that the problem is threefold. She said there has been erosion at the site, which can be explained by the unusually stormy season of 1994, and the condition at Phipps Park is an example of increased erosion in this area. She stated that although there is an argument that anomalies such as storm related events can be filtered out of the data over time, but American Coastal does not believe that there has been enough time for that to happen. Ms. Mitchell said the data is skewed with all the post storm surveys. She said they also believe that the project location has not had a opportunity to rebuild during the last year due to the unusual storm activity. Ms. Mitchell said with the concerns being expressed by the Public Works Department for the conditions of the Mid-Town wall, they did not question the report of 1987 in which Mr. Campbell states the need for a plus five foot berm at the wall. However, she said it is clear, and it has been mentioned that the Mid-Town section has not had the luxury of a five foot berm to provide stability except the one and a half year when there was an accretion of over 60,000 cubic yards of sand at the south end. She said American Coastal is opposed to removal of the reef, and halting an experiment which has not been completed. Ms. Mitchell said in terms of the Staff's recommendation to remove the reef and move forward with a renourishment project, American Coastal would like to remind the Town Council that the objective for the experimental project was to find a less costly, and permanent solution. She said that although

most of the reports do not discuss this aspect of the reef's function, previous reports indicate that the reef was doing what it was intended to do, and that was to reduce the wave energy.

Ms. Mitchell said that financial analysis provided to the Council by Staff omits two important details. She said the entire cost of the reef project must be added to the cost of the decision today to remove the reef and pump sand. The analysis has not considered the annual cost to maintain a pumped beach which Mrs. Douthit has spoken about. Ms. Mitchell said those costs previously were estimated at approximately \$1,000,000 per year. In an attempt to provide suggestions for modification or, tweaking of the project, and in order to alleviate some of Mr. Dusey's concerns regarding the stability of the wall, American Coastal is of the opinion there may be some positive action which may be taken to improve the project location. She stated that American Coastal still believes there are other avenues which should be pursued other than removal.

Ms. Mitchell said that American Coastal suggests that there should be a numerical model study which could be achieved in two or three months. She said this would simulate the Mid-Town project on computer, and make any required adjustments to the alignment. She said the adjustments would then be based on an engineering solution which was not available prior to the Mid-Town installation. Ms. Mitchell said that Dr. Gary Zarillo from the Florida Institute of Technology who is an independent investigator and is not connected to American Coastal, DEP or the Town of Palm Beach, was contracted by Indian River County to investigate their project. She said Dr. Zarillo has designed a state of the art 3 dimensional model which was created to fill a void in the design of the reef project. Ms. Mitchell said that American Coastal believes this approach to the perceived problem is the most reasonable because, not only could the monitoring results delivered to date be confirmed, it could also answer the question as to what would happen if the reef was removed. She said the cost of this proposal is estimated to be between \$20,000 and \$40,000. She stated that a June survey could be ordered, and that would provide some indication as to whether the beach and the reef would be recovering. She said if the results of the survey, and the modeling are in by August, then a decision to do a minor modification to the alignment could still be made and accomplished before the fall.

Ms. Mitchell said that in the alternative, American Coastal suggests a minor modification south of the AT&T gap area where the reef is closest to the shore line and the wall. She said a minor realignment of the reef could be accomplished by creating gaps with offsetting segments similar to the newly designed alignment for the Vero Beach project. She said that units which are moved offshore could have a one foot cap installed to reduce the freeboard and provide wave height reduction while the units are placed in deeper water. She said Dr. Dean has advised American Coastal that the monitoring plan could be adjusted to accommodate modification, and she asked the Council to weigh all options with an eye towards maintaining the commitment, and support for the ongoing experimental project.

Mrs. Smith asked Ms. Mitchell if removing parts of the reef, would be at the expense of American Coastal? Ms. Mitchell said it would be at the expense of the Town.

Mr. McLendon asked about the timing of the surveys in relation to the storms. He asked if American Coastal has made an assessment of how the surveys showed erosion now, and compared it with past erosion? Ms. Mitchell said they did review some of the background erosion information in terms of the TDM which was written for the Town in 1987, but she felt that Dr. Dean could answer that question better than she could.

Mr. McLendon asked if it was correct that if the reefs were half their height, then they would have no more than half their effectiveness as far the wave energy continuation is concerned. He asked what determined that the units should be placed 200 feet offshore, and what would be the results if the units were moved into more shallow water so that the top of the unit would be near the surface? Ms. Mitchell said that American Coastal has the numerical model which has been conducted by Florida Institute of Technology for the Vero Beach project. She said they have not put the Mid-Town parameters into the model, and she suggests that the Town should do this now. She said the conditions at Mid-Town are different than Vero Beach so she is unable to answer that question until they do some modeling. Ms. Mitchell suggested that American Coastal use the model, and duplicate the conditions at Mid-Town, and perhaps run the model without the reef in place, then run the model with the reef in place, and do any modifications which may be required.

Mr. Shaw said that American Coastal continues to develop new ideas, and as the Town of Palm Beach is a client of theirs, he suggested that American Coastal should come to the Town, and inform them if there are some changes which should be made. He said when a product is sold to a customer, and that product doesn't live up to expectations, then the supplier should accept the fact that some of the cost should be paid by the supplier to get that product back on line. Mr. Shaw said he felt that for American Coastal to come to the Town after the Town has paid them almost \$2,000,000 and state that they aren't going to expend the \$30,000 or \$40,000 to do a survey, is basically saying that your product isn't worth the time and effort to say we are going to make it right for you.

Ms. Mitchell said that the numerical model was just recently developed, and in fact they do not have the actual final version of the model in hand yet. She said if Vero Beach goes ahead with their project, American Coastal will be utilizing the forms, and they have an agreement with Vero Beach that if they use those forms they will pay between \$32,000 and \$35,000 for their use. She said it was her belief that ownership then converts to American Coastal at that time, and that is the only way that they could come up with some financing.

Mr. Shaw asked if the Town decides that the reef is not in the best interest of the Town, would American Coastal want to buy it back, and would you say to the Town that it didn't work for you, but it may work somewhere else? Ms. Mitchell said that the agreement between the Town and American Coastal was that this was a partnership, and every one knew that the reef was experimental.

Mr. McLendon asked if it would be possible to increase the height of the reef without adding a lot of weight? Ms. Mitchell said that American Coastal has designed a one foot cap which is basically a concrete piling which would be attached to the units through the windows.

Mrs. Monroe Green, President of the Winthrop House Condominium, at Worth Avenue and the Ocean said they had not noticed any diminution in the wave energy, and they could feel vibrations in their building when the waves hit the seawall. Mrs. Green said at times the waves are so bad it is impossible for them to sleep. She said she wondered what would happen if there is a hurricane.

Mr. Hans Rauch President of American Coastal Engineers said there was a question regarding ponding and wave increase in the lee of the reef. Mr. Rauch said that according to Dr. Dean the ponding which is created by the reef amounts to almost two millimeters which is about the width of a tooth pick. Mr. Rauch said the ponding is the result of erosion because after the ponding the water current increases and carries the sand along. Mr. Rauch stated that in calm seas there is no erosion, but with four foot waves the ponding effect will come into place. He said he did not feel this was reason enough to remove the reef since it is in the experimental stage, and has the potential to benefit not only the Town of Palm Beach but the whole shoreline. Mr. Rauch said it may be necessary to increase the height of the reef, and it is possible to increase it by 12 inches.

Mr. Rauch said that since the reef was installed there has been an increase in the beach. He said in the same period Boca Raton, Spanish River Beach was renourished at a cost of over \$7,000,000. He said the beach was widened by 300 feet, but if you go there today you will notice that the beach has disappeared. Mr. Rauch said there is now a plan to renourish again at a cost of \$1,000,000, and this will need to be done every year. He said it is hoped that the reef would be left in place, and at the end of two years there would be a substantial increase of sand, but if the reef is removed there will be nothing gained, either from the financial, scientific or environmental point of view.

Mr. McLendon asked if it is correct that the reef doesn't have any sand over its base? Mr. Rauch said that is incorrect. He said on the ocean side of the reef there is approximately two feet of sand, and on the rear side there is about one and one half feet of sand. Mr. McLendon asked Mr. Rauch if he has seen an undermining of the reef which would cause settlement? Mr. Rauch said most of the units do not have any undermining. Mr. McLendon asked Mr. Rauch, what in his opinion has caused the settlement? Mr. Rauch said when the reef was initially installed the impact of hurricane Andrew may have been the major cause of settling before the reef could settle. He said there was a vortex created at the toe of the reef which allowed the water to go through and under the reef, and as this happened the reef settled. Mr. McLendon said he was not sure he understood correctly, and asked if there was a hole in the unit which allowed the water to come through the reef from seaward to shore? Mr. Rauch said that was correct.

Mr. McDonald asked what the cost would be to extend the reef twelve inches? Mr. Rauch said they have had estimates, and they are relatively inexpensive. Mr. McDonald said if the Town finds that they are in an emergency situation, but American Coastal does not feel that removal of the reef is the best solution, and he asked what do they feel is the best solution? Mr. Rauch said they could add sand to the reef and monitor the sand, install underwater groins, or they could add to the top of the reef.

Mr. Shaw said it was his understanding that the DuPont reef is rather small with respect to linear feet, and as the result of the hurricane all of the modules are intertwined and erratic. He asked if it is possible that that is what makes the DuPont reef successful? Mr. Rauch said it is correct that the reef is about 542 feet long, and there are 23 units which were placed side by side. He said in order to bring the reef back in a straight line they would need to relocate three units, and put them back in alignment. He said of 23 units, five units were affected by a very strong storm. He said it is hard to say if it works or not.

Mr. Shaw asked if this was an experiment, why was there no monitoring? Mr. Rauch said they designed the first stages of the reef in 1984, 1985 and 1986, and the first units were sent to Florida Atlantic University where a seven month study was completed. He said after that the first prototype was placed in the water, and a field test was conducted for 36 months. Mr. Rauch said based on those tests the Mid-Town reef was considerably improved.

Mr. George Moffett from the Palm Beach Civic Association said he would like to read a short statement. He said the Civic Association is concerned about the condition of all the beaches, and the Mid-Town beach in particular. He said they feared that serious damage could occur to the seawall and infrastructure if correctives are not taken immediately. Mr. Moffett said it is their opinion that the entire shoreline of the Town is in crisis, and all aspects should be considered as part of any solution. He said they were also sensitive to the Town's considerable investment in the P.E.P. reef. The evaluation process is not yet complete, and in fact the three year monitoring period is about 50% done. Any action to remove or reposition the reef at this time would be based on incomplete evidence. Mr. Moffett said they recommend that the Town declare a state of emergency in the endangered area, and use whatever methods necessary such as bringing sand to the beach, or adding rock to reinforce and protect the seawall, etc. He said all of these procedures are being used by the Town's northern neighbors such as Juno Beach and Jupiter.

Mr. Moffett asked that the reef not be removed or repositioned until the evaluation period is ended. He said the effect on the beach and seawall is not known, and the precarious position of the Town's seawall is not without precedent. Mr. Moffett said if any action is required with the P.E.P. reef, it should be done only after careful examination of the tangible evidence and deliberation. He said the most pervasive problems experienced by the beaches is the reduction of the southerly lateral drift of sand, and the mid 1980 removal of the groin field at the Mid-Town beach.

Mr. Moffett said the rejuvenation of the sand transfer plant, which for many years was helpful in replenishing the beach is way behind schedule, and they recommend that a qualified individual be appointed by the Town Council to supervise the sand transfer plant project, the emergency measures to protect the seawall, and the ongoing restoration of the shore line. He said it is the opinion of the Civic Association that the Town Council should create a separate body to deal with beach related problems.

Dr. Stan Lilja said it is his understanding that the question before the Council is whether or not this is an emergency situation. He said he felt that some of the reasons used to support the emergency situation has been misstated. Dr. Lilja said the results of the monitoring have been skewed towards the season which affects the erosion, but have not addressed the summer when the beaches are renourished. Dr. Lilja said the comparison between the seawall here and Delray Beach is incorrect. He said the wave action at that time came in from the northeast, and was the aftermath of hurricane Grace, and the forecast prediction was that there would be beach erosion in this area but not further south. Dr. Lilja said he would not make any suggestions for the beach problem, but he supports some stop gap measure to gain time.

Mrs. Nancy Douthitt said that Dr. Dean of the University of Florida, Chairman of Coastal and Oceanographic Engineering Department, Mr. Woodruff, and Dr. Devereaux of the Department of Environmental Protection are using the Town's P.E.P. reef to make a strong last ditch effort to

discourage the installation of another reef of a different design in Indian River County. She said a letter dated June 23, 1994, and signed by DEP Executive Director, Mrs. Virginia Wetherall states that the Florida Statute requiring a three year monitoring period is necessary to insure an adequate time frame to conduct a valid experiment in a coastal environment.

Mrs. Douthit said that within sixteen (16) months Mr. Woodruff stated that the reef was not working, and now at 20 months it causes two and a half times the rate of erosion, but the importance of the unsubstantiated claims is that Indian River's primary interest is stabilization of their beach. She said Mrs. Fran Adams the Indian River County Commissioner and Chairman is in attendance at this meeting, and would be happy to address the meeting regarding their beach situation.

Mrs. Douthit said that Indian River County has an 18 month delay in the permitting process for their reef. She said Mrs. Adams would confirm, that on the day the Town's Public Works Department received the letter from Mr. Woodruff, copies were faxed to the Indian River Beach Erosion Committee. Mrs. Douthit said she felt this was an effort to dissuade Indian River from pursuing the permits for their experimental reef project. Mrs. Douthit said it was her feeling that the Town needs help because it has no one with coastal engineering experience on the payroll, and she suggested that the Council request an audit from the DEP of all expended, and remaining monies for the monitoring program. Also, she suggested that the DEP be required to refund all Town monies spent on what has now become a questionable monitoring program.

Mrs. Douthit said the Town could deposit remaining funds in an escrow account for future study, and she further suggests an agreement with the Florida Institute of Technology to review Dr. Dean's work, and to continue the monitoring of the reef because the Town needs to know what is happening in order to be able to protect the Town's shoreline. Mrs. Douthit said that divorce from the University of Florida would be accomplished with this action, and divorce would be heaven, but they remain a permitting agent, and the Town may require support programs in the future.

Mary Ritter said she has been a property owner in Palm Beach for 12 years at 350 South Ocean Boulevard which is at the end of Australian. She said she remained in her apartment during hurricane Andrew, and she agreed with Mrs. Green that since the reef has been installed the waves regularly break over the seawall.

Mrs. Judy Schrafft of the Coral Reef Society said they have been supportive of the reef concept from the beginning. She said there is one question which has not been addressed, and that is the fact that there has been an inlet deepening project which has pumped a lot of sand onto the north end beaches. She said she had walked the beach the previous day from north of Wells Road towards the Beach Club, and she found a lot of mangled beer cans. She said that indicates to her that there is some lateral flow drift to the south bringing the sand which carries the beer cans in the direction of the P.E.P. reef. Mrs. Schrafft said since there is a probation of 36 months to which Mr. Moffett referred, and since the flow of sand seems to be happening, and there is a proposed sand pumping project due to begin this fall, she said all the indications might be that the probation period should be allowed to stand, and see what happens with the perspective flow of sand from the north.

Mr. Eric Gilbertson said he did not feel that the Town should spend any more tax dollars on experiments. He said there was no reason to reinvent the wheel. Mr. Gilbertson said he wrote a letter to the Town Council in February 1984, and informed them that the seawall was in critical condition especially the Worth Avenue area, and that a toe wall was essential for the entire Town beach seawall from Royal Palm Way to Gulfstream, and the next spring the Town installed a toe wall from Gulfstream to Peruvian. Mr. Gilbertson said as far as permitting is concerned, he did not think the State could interfere when you are only protecting your property. He asked how long the Town was going to wait before installing the groins.

Mr. Dick Raffo, 173 East Inlet Drive, Vice President of Florida Diesel, stated that they are the marine and truck dealer for General Motors. He said they were awarded the bid for the sand transfer plant, and they supply the engine and the transmission. He said they were supposed to proceed with the operation of the plant, but they were called by Palm Beach County who wanted a 45 day delay. He said the Town should do something about the County, and the sand transfer plant immediately.

Mrs. Fran Adams, a member of the Indian River County Commission said she was attending the meeting today mostly to observe. She said they have tweaked their reef units to take care of the ponding effect which Dr. Dean has mentioned. Mrs. Adams stated that they have done the computer model which cost them \$39,900. She said the computer model has given them some ideas which they are working on, and they intend to use the model in their monitoring process. She said they would be happy to corporate with the Town, and perhaps working together they can help each other.

Mr. Dick Breese said there is one phenomena which has not been discussed, but may answer the question about the viability of the seawall, and also, how big of a emergency the Town may have. Mr. Breese asked Mr. Dusey if the seawall at Hammon is approximately 13 feet, and if so, is that the poured concrete or the top of the blocks? Mr. Dusey said that would be the elevation of the cap. Mr. Breese said he has taken the measurement at the door way at Hammon which goes under the road, and from the top of the footing on his first measurement he got a bottom reading of approximately 2.2 feet. He said he then took five more measurements over the next three months which were 2.2 feet. Mr. Breese said this indicated that there was bedrock there because the measurements had not changed. He said when there is a passage way which fluid moves through, and carries solids, this is called a runnel, and the process is called runneling. He said in other words whatever is behind an object will be carried out by the fluid. Mr. Breese said if there is bedrock there, and if the foundation was not cleaned, and sand was left in front of one of the runnels, or if there was an active runnel which was cleaned but the sand came out, and concrete was then poured on that foundation then there would be sand under the concrete. He said the piling was then taken out, but nothing was done about the runnel. He said if there is runneling, then the sand is being carried from the back of the seawall down through the runnel, and that sand would be lost behind the seawall. He said in his opinion, the seawall is being held in place by the sand behind it, and if one foot of the sand is removed then most likely the seawall would be lost.

Mayor Yvelyne Marix of 1570 N. Ocean Boulevard said this is a very important matter, and also, a very important financial matter. She said it was her opinion that the best suggestion which has been offered today is to bring in a completely impartial, knowledgeable person to evaluate the entire situation. She said that person should be someone who would have no axe to grind, no tie in, but who would be able to provide answers to the Town, and this should be done as soon as possible.

She said she was surprised at Mr. Dusey's comment that it would cost approximately \$1,000,000 a year for maintenance after the sand renourishment. Mayor Marix said she recalled when Tom Campbell was trying to have sand replaced on the beach. She said he had a gigantic chart which pointed out how much renourishment would cost on a constant basis of some every year, and some every three years. She stated that renourishment of the beach is extremely expensive, and they did not have one quote of \$1,000,000 per year. She said she felt it very important that the Town have someone who understands the complete picture of this matter. Mayor Marix said that after hurricane Hugo she attended seminars relating to what help would be available from the government, FEMA specifically, in the event of a major disaster, and unless the rules have changed, for a project such as the Town is proposing, it is required that your plan and finances are complete before applying for funds.

Dr. Dean said he would like to comment on three items. He said ponding has been mentioned, and this is a small rise in the water level behind the reef. He said it causes the water currents to flow both north and south and carries the sand with it. Dr. Dean stated there has been discussion that the timing of the surveys was biased. He said since he has been involved in the reef project the first survey was April 1993, and after that the surveys were done every three to four months, so they have not tried to bias the surveys. Dr. Dean said he is a professional engineer in the State of Florida. He said he has worked closely with American Coastal Engineering, and has never received consulting fees from any dredging interests, and their department at the University of Florida has never received funds for contracts.

Dr. Dean said if you had three millimeters of ponding, and if it was symmetric around the center line of the reef system it would cause velocities of approximately one half foot per second. He said that is an average wave height of three feet. Dr. Dean said these are small velocities, and they have not been able to detect them in the field. Dr. Dean said he has searched for a solution to beach erosion his entire life, and he hopes that the reef will work. He said they are trying to be extremely objective in their reporting. Dr. Dean said that the waves mobilize the sand, and then any small current will move that sand.

Mrs. Smith asked Mr. Dusey to comment on the nature of the emergency.

Mr. Dusey asked Dr. Devereaux if a groin field is permissible at the state level? Dr. Devereaux said that groins or other structures may be permitted if it can be demonstrated that they will be effective, that they will do what they are supposed to do, and will not cause an adverse impact elsewhere in the system. Mr. Dusey asked if it was possible for the reef to be left in place, and be buried by a beach fill project? Dr. Devereaux said it is possible, but he didn't know enough about this particular application to know whether or not it's in the proper location. He said there is a concern that if it's not, then after a certain point of profile adjustment the reef may continue to perform as it apparently is now. Mr. Dusey asked Dr. Devereaux if it is possible to use the reef as a groin field? Dr. Devereaux said it is possible, but he felt that should be examined more closely. Mr. Dusey said the question has been asked if it was possible to box in the P.E.P. reef to try and contain the currents and the sand, and he asked what would be required for such a project? Dr. Devereaux said there is a problem of potential adverse impacts elsewhere. He said they have an experimental project in Pinellas County which doesn't involve the concrete reefs, but it does involve a similar concept. He said basically it's a big sand box which sticks out in front of a seawall area where there is no real sand right now. Mr. Dusey asked how wide was that project? Dr. Devereaux said it was quite narrow. Mr. Dusey asked if the DEP has a position on a numerical study on the P.E.P. reef in the Town of Palm Beach? Dr. Devereaux said they consider numerical studies as an assist in making decisions. He said one of the problems with numerical modeling is calibration of the model, and in this case they probably would like to see a calibrated model. Mr. Dusey asked if this calibration is based on prior data? Dr. Devereaux said that was correct, and would require additional effort to collect that data.

Mr. McLendon asked if they have criteria for recommending or approving the length of a groin or sand retention unit. Dr. Devereaux said that is a design problem.

Mr. Wyett asked Dr. Devereaux if the Town Council elects to replenish the beaches, in his estimation, how long would the life of that replenishment be if no groins are installed? Dr. Devereaux said when a nourishment program is initially done there is an accelerated erosion rate which takes place while it calibrates to the profile of the reef. He said there is approximately two and one half to three cubic yards per year background erosion, and that can be used to determine the quantities of sand to be replaced. He said normally a project is placed with a sufficient amount of advanced nourishment which probably would last four or five years.

Mr. Dusey said the original design of the reef had a six year renourishment cycle.

Mr. Wyett asked Dr. Devereaux if the Town should consider installing groins simultaneously with beach renourishment, or should the groins go in after the renourishment. Dr. Devereaux said if the groins are going to be part of the stabilization process, they should be placed in conjunction with the process.

Mrs. Smith asked if it is determined that this is an emergency situation, how long would it take to receive permission from the state to proceed with the groins and the fill? Dr. Devereaux said it would depend on how long it takes to complete the supporting analysis for the groin structure, but he estimated two or three months.

Mr. McLendon asked which the state would most favor, a fixed or an adjustable height groin? Dr. Devereaux answered that the state probably would be more interested in something adjustable. He said that most of the groins which the state is permitting are being installed as bags with the idea that they can be adjusted or removed if necessary.

Mrs. Smith asked if the state is permitting groins on an emergency situation basis? Dr. Devereaux said that most of the permits are in areas with very high erosion problems.

Mr. Shaw asked if the Town does approve a renourishment program, how would that impact the monitoring program for the reef, as far as determining its effectiveness? Dr. Devereaux said he felt the Town is at a point where they must make a decision, and that decision is whether or not they wish to continue with an experimental project. He said once that decision is made, then they probably will be able to answer the monitoring question. He said if the Town decides to add sand to the system, and continue the project, that would require the test plan be amended to accommodate the sand. He said obviously the state must be able to account for that sand, and how it's performing.

Mrs. Smith asked Dr. Devereaux how long it would take to amend the plan? Dr. Devereaux said he wasn't sure exactly how long it would take. He said the decision probably wouldn't take very long, but the process could take a long time.

Mr. Shaw asked if the sand is replaced at the anticipated level of the renourishment project, would the modification of the plan be necessary. Dr. Devereaux said they would need to evaluate that process. He said the law states that the DEP must make a determination of effectiveness within three years. It also states that if adverse impacts are occurring, the project should be terminated, amended or adjusted. He said the law does not say if the project is amended that another three years should be added to the evaluation cycle.

Mr. McLendon asked if they do anything east of the seawall, such as adding more rocks would that require permitting? Dr. Devereaux answered affirmatively.

Mr. Dusey said the question now is what is the nature of the emergency, and why must the Town take action quickly. He said in 1992 an emergency was declared regarding the reef construction because of the poor conditions at Mid-Town. He said Mid-Town is now 200,000 cubic yards worse than it was then. Mr. Dusey stated that the data indicates that the reef erosion is accelerating, and that is measurable. He said the amount of sand that you have in the system is a measure of how well your protection will be if a storm occurs. He said he is very concerned about the lack of sand at Mid-Town, and if there was some positive indication that the reef is doing something other than causing erosion there is a possibility that the reef could be left in place, but that's not the case. He said the erosion rate is three times more than adjacent beaches, and three times what would be considered normal erosion. Mr. Dusey said that is why he feels it is important that the reef be removed as quickly as possible.

Mr. McLendon asked Mr. Dusey what are the depths of the footing under the seawall? Mr. Dusey said the seat piles are driven to minus ten feet below mean sea level. Mr. McLendon said the shape of the footing on the ocean side of the wall is curved, and he asked how the wall was installed? Mr. Dusey said there is a toe wall which was placed there to protect the seawall structure at that location. Mr. McLendon asked what would be the cost of stone or rock per cubic yard as opposed to sand to protect the wall? Mr. Dusey said the estimate for a substantial rock revetment is \$500.00 per foot.

Mr. Wyett said he commends Mr. Dusey and his staff for alerting the Town and the Council to the urgent problem with the Mid-Town area. He said he recommends that the Council set a date certain to deal with the beach problem. Mrs. Smith asked Mr. Wyett if that was a motion. Mr. Wyett said it was. Mrs. Smith asked if he had a date in mind. Mr. Wyett suggested Tuesday, May 16th at 10:00AM for the next meeting. The motion was seconded by Mr. McLendon. On roll call the motion carried unanimously.

Mr. Doney said it would be helpful if the Mayor and Town Council could specify what is expected from the Staff.

Mr. Wyett said it is not practical to place beach renourishment in an area where there are no groins. He said the Town has a financial problem with putting groins on the public beach, and he wondered if the Town places groins and renourishment on the private beaches, who will pay for those? Also, if the Town keeps the reef for the 36 month experimental period, what would need to be done to protect the seawall temporally?

Mr. McLendon said he would like Mr. Dusey to determine if there are any temporary measures which may be taken to protect the seawall in the event that the Town Council wishes to postpone a decision on the wall?

Mr. Shaw said he felt it would be beneficial if American Coastal could provide the Town with a program as to why the reef should not be pulled out, why they need more time, and where they are going with the redesign of the reef.

Mayor Ilyinsky said in January 1992 when the Town Council voted to proceed with the P.E.P. reef he voted for the reef. He said federal funding for the Mid-Town renourishment project was very uncertain, and the federal permit for the sand project had not been issued. Mayor Ilyinsky said he believed, as other members of the Town Council believed, that installing the reef was the quickest and the most significant step they could take to protect the Mid-Town seawall and South Ocean Boulevard. Mayor Ilyinsky said he would like to thank Dr. Dean and Dr. Devereaux for attending the meeting, and he felt their input was invaluable.

Mayor Ilyinsky said it would seem to him that the bottom line on this problem is "groins". He said there is no question that when the reef was initially installed something did happen there. He said he wasn't sure exactly what it was because he isn't a coastal engineer, however, something has happened which wasn't intended to happen. He said it would seem to him that without some sort of effort to shore up the beach, either with revetment or groins, the seawall would be in jeopardy. He said he didn't think that to arbitrarily remove the reef was the advisable thing to do. Mayor Ilyinsky said he agrees with Dr. Dean's philosophies, but he also knows that there is a great deal of sand missing. He said he felt that the reef should be left in place, at least for a little while longer, and he would like the Town Council to concentrate on doing something in the interim which might possibly save the reef and the seawall. He said it is his feeling that what the Town needs to do is protect the upland properties, the seawall, and the people who live in the condominiums. Mayor Ilyinsky said that possibly Mayor Marix is right, in that someone who knows about these things should be brought in to study all the existing documents, and give the Town a third opinion on the best way to proceed with this project.

Mr. Wyett asked that American Coastal attend the meeting on May 16th to defend their reef. He said if the reef is deemed to fail, then he didn't think that American Coastal would want to recommend it to other communities. Mr. Wyett said it is his hope that American Coastal can offer the Town a solution.

Mr. Doney asked Dr. Dean and Dr. Devereaux if they would be available for a conference call during the meeting of May 16th? Dr. Dean said he was hopeful that he could attend the meeting.

Mr. Breese said one option which the staff might want to look into is having a plan in hand so that when a trench is dug along the seawall which often happens, the Town then could dump sand over the seawall.

Mrs. Douthit said if the Town is seeking a consultant she would suggest Dr. Zarillo of the Florida Institute of Technology.

Mr. Shaw said he had sent a memo to the members of the Council regarding a product which is manufactured by Meridian Applied Technologies which specializes in coastal renourishment, and if it meets with the Council's approval, that the Town Staff be instructed to investigate this product further. He said possibly Meridian could appear before the Council and offer a presentation.

Mrs. Smith said that since Mr. Shaw will not attend the next meeting on the reef subject, she would postpone this matter, and consider it an agenda item for the June Town Council meeting. She Smith said they will be dealing with the budget within the next three to four weeks, and she would not wish to take staff time away from matters which must be dealt with in the next few months.

Mr. Wyett said he realized that Mr. Dusey would be very busy between now and the next meeting, but he would like to get some idea of what the cost of groins will be. He said he realizes that the sand is estimated to cost \$6,000,000. Mr. Wyett said the cost of groins will probably come from a bond financing fund which would affect the millage rate, and he felt the Council should know how much they potentially will spend. He said each groin is expected to be \$200,000, and will be placed 100 feet apart for the 4,000 feet of public beach which constitutes a large sum of money.

V. ANY OTHER MATTERS. None.

VI. ADJOURNMENT. The meeting was adjourned at 1:30 PM

Mary A. Pollitt, Town Clerk