FILED
APR 11 2016
ATLANTIC COUNTY
LAW DIVISION

PREPARED BY THE COURT

STATE OF NEW JERSEY, by the DEPARTMENT OF ENVIRONMENTAL PROTECTION, Plaintiff, V. THE CITY OF MARGATE, Defendant.	SUPERIOR COURT OF NEW JERSEY LAW DIVISION ATLANTIC COUNTY DOCKET NO. ATL-L-2295-15 **ORDER** DATED: April 11, 2016

The Court having read the papers filed, having considered the arguments of PLAINTIFF, STATE OF NEW JERSEY, by the DEPARTMENT OF ENVIRONMENTAL PROTECTION represented by Stephen Eisdorfer, Esq., and Henry Chou, Esq. of Hill Wallack LLP, and DEFENDANT, THE CITY OF MARGATE represented by Thomas S. Biemer, Esq., Jordan M. Rand, Esq., and Marie-Theres DiFillippo, Esq. of Dilworth Paxson LLP, sets forth its findings of fact and conclusions of law, which are incorporated herein and upon other good cause shown;

IT IS on this **11th** day **APRIL 2016, ORDERED**:

1. The Court holds that the State's condemnation of necessary easements in order to implement the Absecon Island Project is not arbitrary and capricious nor is it a manifest abuse of the State's eminent domain power;

2. The Court SHALL enter a judgment in favor of the Plaintiff and appoint commissioners. Plaintiff to submit an order to the Court.

Julio L. Mendez, A.J.S.C.

DATED: April 11, 2016

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STATE OF NEW JERSEY, by the DEPARTMENT OF ENVIRONMENTAL PROTECTION, Plaintiff, V. THE CITY OF MARGATE, Defendant.	SUPERIOR COURT OF NEW JERSEY LAW DIVISION ATLANTIC COUNTY DOCKET NO. ATL-L-2295-15 **OPINION** DATED: April 11, 2016

Decided: March 31, 2016

Stephen Eisdorfer, Esq., and Henry Chou, Esq. of Hill Wallack LLP for Plaintiff State of New Jersey.

Thomas S. Biemer, Esq., Jordan M. Rand, Esq., and Marie-Theres DiFillippo, Esq., of Dilworth Paxson LLP for Defendant the City of Margate.

Mendez, A.J.S.C.

The State of New Jersey (hereinafter the "State") seeks to condemn permanent easements across eighty-seven oceanfront parcels, encompassing about sixty-nine acres, owned by the City of Margate (hereinafter "Margate") in order to construct a beach berm and dune in accordance with the Absecon Island Coastal Storm Risk Reduction Project (hereinafter "the Absecon Island Project"). The State also seeks to condemn temporary easements over two other municipally owned areas to be used during construction. The State seeks to acquire these easements under Project Cooperation Agreement (hereinafter "PCA") entered into on July 23, 2003 between the State and the United States to participate in a hurricane and storm damage reduction project by the U.S. Army Corps of Engineers (hereinafter the "Army Corps") for Absecon Island. On June 23, 2014, the Army Corps and the Department amended the PCA to address the closeout of earlier constructed portions of the Absecon Island Project and executed a new Project

Partnership Agreement (hereinafter "PPA") to address the remaining features of Project to be constructed, including the construction of dunes in Margate.

On October 8, 2015, Plaintiff, the New Jersey Department of Environmental Protection filed a Verified Complaint and Order to Show Cause against the City of Margate, seeking to condemn the easements needed for the Absecon Island Project. On October 15, 2015 the Court signed an Order to Show Cause and scheduled a return date of November 20, 2015. On November 4, 2015, Defendant, the City of Margate filed an answer and affirmative defenses, and a Motion to stay the condemnation action for 180 days for leave to conduct discovery. A hearing was held on November 20, 2015 where Margate argued that the State's condemnation was sufficiently arbitrary to warrant a plenary hearing on the issue. On December 8, 2015 this Court found that Margate made a sufficient showing of arbitrariness to warrant a limited hearing on the issue of whether the State's taking constitutes a manifest abuse of the eminent domain power. This Court issued a written opinion and that opinion is hereby incorporated.

A plenary hearing was held on February 4th, 5th and 8th. The Court heard arguments and expert testimony from the State and Margate. The City of Margate argues that the Army Corps arbitrarily rejected Margate's preferred bulkhead alternative in favor of dune construction, that the Army Corps' underlying analysis in the Feasibility Study was flawed, that the 2013 reevaluation of the Absecon Island Project was also flawed because it relied on outdated data and did not take into account twenty years of coastal change since the original Feasibility Study, that the Absecon Island Project does not account for Margate's storm water drainage system and history of bayside flooding, that Margate's system of bulkheads has adequately protected the City, and that the dune would cause great harm to Margate that could be eliminated or reduced by the bulkhead alternative. In support of their position Margate presented the following

witnesses: Dr. Robert Young, Charles J. Rooney, Maury Bloomberg, Edward J. Walberg, and Jim Galantino.

In response, the State maintains that the Absecon Island Project is not arbitrary and capricious nor a manifest abuse of the eminent domain power. The State rebutted each of the arguments advanced by Margate, and argued that the decision of the State to proceed with the Absecon Island Project was consistent with State's coastal protection policy and supported by the evidence. The State presented the following witnesses: Dr. Stewart C. Farrell, Keith Watson, Monica A. Chasten, Randall A. Wise, Dr. Harry C. Friebel, Dr. Thomas O. Herrington, David B. Rosenblatt, and William Dixon.

Forty-two exhibits were submitted to the Court by both parties. The Court has now carefully examined all of the exhibits. The list of exhibits include expert reports by Dr. Robert Young, Charles Rooney, Keith D. Watson, Monica A. Chasten, Randall A. Wise, Harry C. Freibel, Thomas O. Herrington, David B. Rosenblatt, and William T. Dixon. The 1996 Feasibility Study and 2013 Hurricane Sandy Limited Reevaluation Report were also submitted to the Court.

Now the Court will decide whether the State's condemnation of the permanent easements at issue is arbitrary and capricious, or a manifest abuse of the condemnation power. Having reviewed all of the exhibits and carefully listened to the testimony presented, the Court makes the following findings of fact.

FACTUAL BACKGROUND

In 1993 the Army Corps commenced a feasibility study investigating the need for action to reduce the storm damage suffered by the oceanic shore on Absecon Island and exploring various options to reduce that damage. Absecon Island is comprised of the municipalities of Atlantic City, Ventnor, Margate, and Longport. The options studied by the Army Corps included beachfill and bulkhead improvement, beach fill and dune construction, and taking no action. Based upon effectiveness, feasibility and cost, the study concluded that the best option was beachfill and the construction of a system of dunes along the oceanfront in Margate, Ventnor, Atlantic City and Longport. The Army Corps completed the final version of the study in 1996 and submitted it to Congress. Congress adopted the Army Corps' recommendation as a part of the Water Resources Development Act of 1996 (hereinafter "WRDA"), P.L. 104-303, §101(b)(13), the relevant sections of the WRDA reads as follows:

> (b) Projects Subject to Report.--The following projects for water resources development and conservation and other purposes are authorized to be carried out by the Secretary substantially in accordance with the plans, and subject to the conditions, recommended in a final report (or in the case of the Absecon Island Project described in paragraph (10), a Detailed Project Report) of the Army Corps of Engineers, if the report is completed not later than December 31, 1996:
>
> ...
>
> (13) Absecon island, new jersey.-- the Absecon Island Project for storm damage reduction and shoreline protection, Brigantine Inlet to Great Egg Harbor Inlet, Absecon Island, New Jersey, at a total cost of $ 52,000,000, with an estimated Federal cost of $ 34,000,000 and an estimated non-Federal cost of $ 18,000,000.

All Army Corps projects require a non-federal sponsor. The New Jersey Department of Environmental Protection (hereinafter "the Department") signed the PCA with the Army Corps on July 31, 2003 and thereby the State opted into the Absecon Island Project and assumed

responsibility for acquiring any necessary easements. The 2003 PCA creates a Federal/State cost sharing structure where the Federal sponsor pays 65% of costs of the Absecon Island Project and the non-Federal sponsor pays 35% of the costs of the Project. The Absecon Island Project did not move forward until more than a decade later when funding became available under the Disaster Relief Appropriations Act and a second PCA was entered into on June 23, 2014.

After Hurricane Sandy the Federal government enacted the Disaster Relief Appropriations Act of 2013, P.L. No. 113-2 (hereinafter "DRAA"). The relevant portion of the act regarding the Absecon Island Project reads as follows:

> For an additional amount for "Construction" for necessary expenses related to the consequences of Hurricane Sandy, $ 3,461,000,000, to remain available until expended to rehabilitate, repair and construct United States Army Corps of Engineers projects: Provided, That $ 2,902,000,000 of the funds provided under this heading shall be used to reduce future flood risk in ways that will support the long-term sustainability of the coastal ecosystem and communities and reduce the economic costs and risks associated with large-scale flood and storm events in areas along the Atlantic Coast within the boundaries of the North Atlantic Division of the Army Corps that were affected by Hurricane Sandy.

The DRAA appropriates $3.461 billion to the Army Corps for the construction of shore protection projects.

Unlike the traditional 65/35 Federal/State cost sharing arrangement, under the DRAA, the Federal sponsor will cover 100% of the cost of the design, construction, and engineering for projects where beach replenishment had previously been constructed or approved –including the remaining construction for the Absecon Island Project. In January of 2014, in their Hurricane Sandy Limited Re-evaluation Report, the Army Corps recommended construction of the remaining features the Project. On June 23, 2014, the Army Corps and the Department amended the PCA to address the closeout of earlier constructed portions of the Absecon Island Project and

executed a new Project Partnership Agreement (hereinafter "PPA") to address the remaining features of the Absecon Island Project to be constructed, including the construction of dunes in Margate.

As of September 2013, approximately 2,850 necessary easements for various storm damage reduction projects across the State had yet to be obtained. Presently, about 2,500 of those easements have been acquired voluntarily. The majority of New Jersey coastal communities have voluntarily participated in storm damage reduction projects. In Margate, the State must acquire easements over forty-seven municipally owned blocks and lots, forty paper streets or paper-street ends, and temporary easements for construction over two municipally owned areas. Previously, both Margate and Longport opposed the Absecon Island Project. However, Longport is now in favor of the Project, and Margate is the only municipality actively opposing the Absecon Island Project.

The Absecon Island Project had been known to Margate since its conception in 1996. Margate has actively opposed the Absecon Island Project since 2000 as demonstrated by the City's 2001 enactment of Local Ordinance 2001-14, which states in relevant part as follows:

> The Board of Commissioners shall not (i) approve any Dunes Project; appropriate any funds for a Dunes Project; (iii) enter into any Cooperative Agreement; nor (iv) authorize the acquisition of property or an interest in property, whether by purchase, eminent domain, or otherwise, for a Dunes Project, other than by means of an ordinance duly adopted by the Board of Commissioners, which ordinance shall, by its terms, not be effective until it has been submitted to and approved by the voters of the City of Margate City at an election duly scheduled for that purpose.

On November 4, 2013, Margate put to referendum the question of whether its citizens support the Project. A majority of Margate's citizen's voted against the Project; consequently, Margate

continued to decline to grant the necessary easements to the Department and opposes the implementation of the project.

On October 1, 2014 the Department filed in the Atlantic County Clerk's Office three Administrative Orders[1] purporting to take immediate, permanent easements in the City's beaches for the purpose of constructing the Project. On October 2, 2014, the Department and Margate entered into a Tolling and Standstill Agreement. On November 4, 2014 Margate's citizens participated in a second referendum and the citizens voted in favor of bringing legal action to stop the Project. On November 24, 2014, Margate sought a temporary restraining order in the United States District Court for the District of New Jersey in the case captioned *Margate City et al. v. United State Army Corps of Engineers et al., No. 1:14-cv-05341.* The Federal Court issued a restraining order and presided over evidentiary hearings on December 4, 2014 and January 15, 2015. The District Court held that the State violated Due Process provisions of the United States Constitution by failing to follow Eminent Domain Act procedures. Ten months later on October 8, 2015, New Jersey filed the condemnation action that is now before this Court.

The Department and Margate's representatives met multiple times in order to discuss the Project; Army Corps' representatives also attended several of these meetings. On January 9, 2015, representatives from the Department and the Army Corps met with Margate officials to discuss their Project design concerns. The Department and the Army Corps explained to Margate that the Absecon Island Project could not be altered from the dune and beach berm design. Counsel for Margate indicated that they would seek to discuss whether the Absecon Island Project design could be altered pursuant to language within the DRAA with the Army

[1] Administrative Orders No. 2014-13, 2014-14, and 2014-15.

Corps' Chief to persuade the Chief to change the Project's design. Neither the Department nor the Army Corps received any subsequent information or updates regarding Margate's proposition to persuade the Army Corps' chief to change the Absecon Island Project design. All efforts to seek a resolution between New Jersey and Margate have been unsuccessful.

The Court has carefully examined the 1996 Feasibility Study that began in 1993 and was submitted to congress in 1996. Congress adopted the findings of the Feasibility Study under the WRDA in 1996. The Army Corps conducts a feasibility study in three cycles. Cycle One is the "brainstorming" stage where the Corps explores every plausible solution to the problem the project is meant to address. In Cycle Two the Corps narrows their options by conducting a first level analysis of the cost versus the benefit of those options. The Army Corps looks at the benefit of a given option as the dollar amount of damage that option would prevent annually over a fifty year span. In Cycle Three the Corps does a detailed cost versus benefit analysis in order to determine the most optimal project. After examining the Feasibility Study process, this Court concludes that the study was a deliberate and open-minded process where almost every possible option is carefully analyzed by a multitude of experts within the Army Corps of Engineers.

At the conclusion of the Cycle Two analysis the Corps estimated that annual benefit of the Bulkhead Alternative for all of Absecon Island was $16,025,000 and the annual costs were $2,269,000. The Corps estimated that the annual benefit of Dune Design was identical, $16,025,000, and the annual cost was $2,118,000 ($151,000 less than the Bulkhead Alternative). The Corps originally intended to investigate the Bulkhead Alternative in Cycle Three. However, the Corps eliminated the Bulkhead Alternative before Cycle Three stating in the Feasibility Study as follows:

> The existing bulkhead line in Ventnor and Margate is a conglomeration of privately installed bulkheads of varying designs and heights, interspersed with municipal structures, principally at the road ends. The present bulkhead system does not provide a continuous level of protection. Ventnor, Margate and Longport have begun raising street end bulkheads as funding allows. Those areas which have not been rehabilitated are considered infrastructure with O&M being the responsibility of the locals. Additionally, since many of the bulkheads are on private lands, rehabilitation would incur real estate costs which would be prohibitive.

After Super Storm Sandy, the Absecon Island Project was reevaluated. In the 2013 Hurricane Sandy Limited Reevaluation Report ("2013 Reevaluation"), the Army Corps again rejected the Bulkhead alternative stating:

> A simple matter of economics, the bulkhead offers little more protection than a more natural dune but costs much more. Even if constructed beachfill would also be necessary to limit erosion in front of the bulkhead which would drive the costs even further above the beachfill options.

The 2013 Reevaluation also concluded that dune design was still the most optimal coastal protection alternative.

Margate opposes dune construction because they believe that their bulkheads offer a sufficient level of protection and that a dune would cause serious economic harm to their community. Margate also argues that the Army Corps' Feasibility Study did not properly evaluate and arbitrarily dismissed their preferred bulkhead alternative. In support of their position Margate submitted the reports of two experts, Charles Rooney, P.E., P.P., C.M.E., a former Army Corps engineer with forty years of shore protection experience; and Dr. Robert Young, a Professor at Western Carolina University and scholar in the field of coastal engineering. At the hearing Margate presented five witnesses. Dr. Robert Young provided expert testimony criticizing the Army Corps' 1996 Feasibility Study. Charles Rooney provided expert testimony also criticizing the Army Corps' 1996 Feasibility Study, stating that the Army Corps did not incorporate current science in the 2013 Reevaluation, and stating that the Absecon

Island Project does not account for its storm water drainage consequences for Margate. Maury Bloomberg, Margate's Commissioner of Finance; Edward Walberg, Margate's municipal engineer; and James Galantino, a Construction Official for Margate, also testified for Margate.

Margate's first witness, Dr. Robert Young, criticized the Army Corps' feasibility study and subsequent Hurricane Sandy Limited Reevaluation Report. Dr. Young has impressive credentials. Dr. Young holds a Ph.D. in geology from Duke University, is a professor of Geology, and a licensed professional geologist in North Carolina, South Carolina, and Florida. Dr. Young directs the Program for the Study of Developed Shorelines whose primary mission is to conduct scientific research into coastal processes, storm impacts, and sea level rise and to translate science into management and policy recommendations. Dr. Young has evaluated the design, cost, and efficacy of over fifty beach projects similar to the one proposed for Margate. Dr. Young has also published numerous journal articles in peer-reviewed publications directly commenting on the SBEACH computer model used by the Army Corps in the Feasibility Study. SBEACH stands for "Storm-induced Beach Change" and is a numerical simulation model developed by the US Army Corps of Engineers. SBEACH was used in the 1996 Feasibility Study in order to simulate beach and dune erosion under storm wave action.

Dr. Young opined that the Army Corps provided no rational basis for not evaluating the bulkhead and berm alternative in Cycle Three of the 1996 Feasibility Study. Dr. Young specifically criticized the use of the SBEACH model in 1996 and the Corps' reliance on the SBEACH results in 2013. SBEACH was run with two profiles to represent Margate's bulkheads. Dr. Young opined that in order for the model to accurately represent Margate's system of bulkheads with varying locations and heights, the Corps should have created a profile to represent each unique structure.

Dr. Young also opined that the SBEACH modeling was a failure due to improper calibration. In the 1996 study, SBEACH was calibrated with data from Ocean City, a shoreline without bulkheads, because sufficient data from Absecon Island was not available for calibration. Dr. Young also pointed out that Appendix "A" of Volume 2 of the Feasibility Study indicates that initial calibration was unsuccessful and the model needed to be revised. In Dr. Young's opinion the final calibration of the SBEACH model was a failure.

Dr. Young is also of the opinion that the Army Corps failed to incorporate current science and engineering standards into their 2013 reevaluation of the Absecon Island Project because they relied on the 1996 SBEACH modeling and failed to account for twenty years of coastal change in their reevaluation. In support of his conclusion Dr. Young pointed out that Margate's bulkhead system has performed well in the twenty years since the feasibility study.

The Court was impressed with the credentials of Dr. Young, but equally impressive witnesses on behalf of the state responded to each of Dr. Young's criticisms. Also the Court notes that in cross examination it was revealed that Dr. Young has an overall bias against federally funded shore protection projects. An article published on January 7, 2013 by Dr. Young entitled "Hurricane Sandy Relief Bill Fails to Face Coastal Realities," shows Dr. Young's bias against federally funded shore protection projects. According to the article, Dr. Young believes that we should not "try to hold the precarious shoreline in place and protect property and infrastructure with a major investment of taxpayer dollars in coastal engineering," but instead "we should be spending money on long-term solutions, such as relocating roads and buying out owners of high-risk properties."

The second expert presented by Margate was Charles J. Rooney. Mr. Rooney also provided expert testimony on the Army Corps' Feasibility Study and the Corps' 2013

Reevaluation of the Absecon Island Project. Mr. Rooney is a licensed professional engineer in New Jersey and New York, a licensed professional planner in New Jersey and a certified municipal engineer in New Jersey. Mr. Rooney was employed by the Army Corps in New York City from 1974 to 1987. During his tenure with the Army Corps, Mr. Rooney obtained the position of Chief of the Civil Projects Management Branch at the New York District Office.

Even though he has never personally used the SBEACH modeling software, Mr. Rooney shared in Dr. Young's criticisms of the Army Corps' SBEACH modeling in 1996 and subsequent reliance on the results in the 2013 reevaluation of the Project. Mr. Rooney also opined that it was irrational for the Corps' to treat the municipalities of Margate, Ventnor and Longport as one project despite the fact that Margate, unlike the other two municipalities, had a continuous system of bulkheads in good condition. Mr. Rooney also testified that the Corps' did not take into account Margate's current storm water drainage system. In Margate, storm water drains east towards the bulkheads, through bulkhead openings (scuppers), onto the beach and ultimately into the ocean. According to Mr. Rooney, the Absecon Island Project does not account for drainage problems that will be caused by the blockage of the scuppers by the dune.

Like Dr. Young, the various experts presented by the State rebutted all of the shortcomings Mr. Rooney pointed out in the Army Corps' SBEACH analysis. Also, the Court discounts Mr. Rooney's criticisms of the SBEACH model in that he has never personally used the SBEACH modeling software. The Court also notes that while Mr. Rooney and Dr. Young were very critical of the SBEACH analysis conducted by the Army Corps, they never conducted their own analysis to show that those results were inaccurate. On the other hand, the Court acknowledges the concerns raised by Mr. Rooney about Margate's storm water drainage system.

Maury Bloomberg, Margate's Commissioner of Finance, provided testimony for the City of Margate. Mr. Bloomberg indicated that Margate's residents have opposed the Absecon Island Project twice via referendum, once in November 2013 and again in November 2014. According to Mr. Bloomberg, the City's opposition to the Absecon Island Project is rooted in economic, social, and recreational concerns. Mr. Bloomberg stated that Margate was concerned that the cost of dune maintenance, dune replenishment, and addressing the drainage problems caused by the Absecon Island Project would cause financial hardship. Mr. Bloomberg was also concerned that the dune would cause beach block home owners to file property tax appeals and that a reduction of Margate's beach area would reduce tourism in Margate. Overall, the Court found Mr. Bloomberg credible and is impressed by Mr. Bloomberg's passion for his hometown.

Margate's next witness was Edward J. Walberg, the Municipal Engineer for the City of Margate since December 1992. Mr. Walberg is a certified municipal engineer in New Jersey and Pennsylvania, a certified Professional Planner, Flood Plain Manager and Municipal Engineer in New Jersey. Mr. Walberg observed Margate's beachfront after Hurricane Sandy and found only two instances where the bulkheads failed and were destroyed. Mr. Walberg also expressed concerns regarding Margate's drainage system in the event the dunes are constructed. Mr. Walberg testified that the dune would create a physical blockage of the storm water flow causing storm water to backup and pond. Regarding the drainage concerns raised by several of Margate's witnesses, the State presented several witnesses indicating that the Army Corps of Engineers is committed to work with Margate to fix any drainage problems caused by the Project.

The Final witness presented by Margate was Jim Galantino. Mr. Galantino has been a Construction Official for the City of Margate since 1990. Mr. Galantino personally observed

storm related damage caused by Hurricane Sandy in Margate. Like Mr. Walberg, Mr. Galantino observed only two locations where Margate's bulkheads failed. In general, Mr. Galantino observed more damage along the bay than along the beach block properties. Mr. Galantino also indicated that the majority of building permits for substantial work after Sandy were for non-beach block properties.

The State presented eight witnesses to rebut Margate's contentions. Keith Watson, Randall Wise, Harry Friebel and Monica Chasten from the Army Corps of engineers provided testimony regarding the Army Corps' 1996 Feasibility Study, and the 2013 reevaluation Study. David Rosenblatt and William Dixon of the New Jersey Department of Environmental protection provided testimony concerning the NJDEP's involvement in the Absecon Island Project, and they provided testimony regarding the State of New Jersey's policy for coastal protection. Dr. Stewart C. Farrell provided testimony on his observations of Absecon Island after Hurricane Sandy. Dr. Thomas O. Herrington provided testimony regarding the Army Corps' feasibility study and the relative merits of dune construction versus bulkheads for coastal protection purposes.

The State's first witness was Dr. Stewart C. Farrell. Dr. Farrell is a professor of marine science and geology at Stockton College and the director of the Richard Stockton Coastal Research Center. Dr. Farrell, with the Richard Stockton College of New Jersey Coastal Research Center, prepared a report surveying the New Jersey shoreline to examine severe beach erosion resulting from the impact of Hurricane Sandy. The survey examined ten sites on the Atlantic County barrier islands including a site located at Benson Avenue in Margate, New Jersey. Dr. Farrell's report states as follows with respect to Benson Avenue in Margate:

> Margate City had significant amounts of water wash over the timber bulkhead at the development limit and inundate the streets and properties immediately landward. At the Benson Avenue site a lack of dunes, but a very wide beach permitted wave energy to deposit sand to the very top of the bulkhead, over it and into the street. Workers were busy shoveling it into wheelbarrows and rolling it out of the restaurant kitchen that bucks up to the bulkhead at the street end. The berm supplied most of the material transported landward. Some spots did have "island" dunes that acted to protect from the overwash process, but in many cases the water came into the City.

Dr. Farrell testified that as his crew proceeded north of Benson Avenue the amount of material in the streets declined and eventually disappeared altogether as they entered Ventnor, where a dune had been constructed. Dr. Farrell's report states as follows with respect to Ventnor:

> Ventnor chose to participate in the 2003-2004 Federal beach restoration projects. The Dorset Avenue site saw no serious impact from Sandy other than beach elevation loss and a narrower berm width. Further south toward Margate, the end-effect losses to the Federal project allowed waves to reach the timber bulkhead protecting the upland development and water came over the bulkhead at a variety of locations.

The Court was impressed with the testimony of Dr. Farrell. Dr. Farrell is an independent witness with a commitment to coastal protection. He does not work for the Army Corps or the NJDEP. Dr. Farrell detailed his first-hand observations of the impact of Hurricane Sandy in Absecon Island. His observation as to the difference between the damage resulting from Sandy in Ventnor, a town protected by dunes, and Margate was particularly significant in this Court's view.

Next the Court heard testimony from several witnesses employed by the Army Corps of Engineers who worked on the 1996 Feasibility Study. First, the Court heard testimony from Keith Watson. Mr. Watson is the project manager of the Philadelphia District of the US Army Corps of Engineers and is project manager in charge of the Absecon Island Project. Mr. Watson

has a Degree in Civil Engineering from the University of Delaware, a Master's Degree in Hydraulic and Coastal Engineering from the University of Delaware, and has twenty-nine years of experience as a coastal engineer and project manager with the US Army Corps of Engineers. Mr. Watson explained how the Army Corps formulated the Absecon Island Project. First, the Corps conducted a Limited Reconnaissance Study to identify and prioritize coastal reaches throughout New Jersey which have potential Federal interest based on shore protection problems that can be addressed by the Army Corps of Engineers. The Limited Reconnaissance Study was completed in 1990 and recommended that a full reconnaissance study be completed for the Brigantine Inlet to Great Egg Harbor Inlet reach. Next, the Army Corps conducted a Reconnaissance Study which was completed in 1992 and indicated that there was Federal interest in providing shore protection to Absecon Island. Accordingly, the Corps recommended that the necessary planning and engineering studies proceed to the feasibility study phase. In other words, the process that led to the completion of the Feasibility Study in 1996 began before 1990. Again, the Court is impressed with the deliberate and detailed approach that led to the completion of the feasibility study in 1996 which provided the foundation for Absecon Island Project.

Mr. Watson went on to explain that a feasibility study requires a non-federal sponsor to make a commitment to share in the cost of the study. The State of New Jersey, represented by the New Jersey Department of Environmental Protection, became the non-Federal sponsor for the Absecon Island Feasibility Study. The Feasibility Study recommends the plan that maximizes the National Economic Development ("NED") benefits. NED benefits are measured by subtracting the average annual costs of a project from the average annual benefits. The Feasibility Study was completed in 1996 and recommended construction of beachfill along the

Atlantic Ocean shoreline of Absecon Island and construction of a bulkhead and stone revetment along the Absecon Inlet frontage of Atlantic City.

The option of rehabilitating and raising bulkheads in Ventnor, Margate and Longport was considered during the Cycle One and Two analyses of the Feasibility Study. Prior to Cycle Three this option was eliminated for a number of reasons. According Mr. Watson's report those reasons are as follows:

> ...based on [Army Corps] field inspection, the existing bulkheads are a patchwork of varying designs and heights that are in varying conditions, some of which are in fair to poor condition at best. The existing configuration of bulkheads in Margate does not provide a continuous level of protection. In addition, it is a simple matter of economics; the cost of construction of a continuous bulkhead to [Army Corps] standards versus the Absecon Island Project dune would be significantly greater and make the ultimate costs of a bulkhead plan prohibitively expensive and most likely end up with negative NED benefits. Also, even a bulkhead system of equivalent elevation offers little more protection than a more natural Dune.

Mr. Watson also indicated that when the Army Corps analyzed the option of fortifying Margate's existing bulkheads, they assumed that construction costs and the cost of obtaining necessary easements were both $0.00, and even under those circumstances the dune alternative was more cost effective. In other words, even when the Army Corps gave the bulkhead option the benefit of the doubt in their analysis, that option was still less optimal than the dune option.

The Report of the Chief of Engineers was submitted to congress in December 1996 recommending the Feasibility plan to congress as the most cost-effective means of providing storm damage protection to study area. The Absecon Island Project was authorized by congress in the WRDA in 1996. The authorized project consists of a 100 foot wide berm at an elevation of +7.25 feet North American Vertical Datum 1988 ("NAVD88") with a dune elevation of 12.75 feet NAVD88 in Ventnor, Margate and Longport. The beachfill component of the Absecon

Island Project also consists of dune grass planting, sand fencing, and construction of various types of access ramps over the dunes. The Absecon Island Project also includes periodic replenishment of the beachfill at three year intervals over the fifty year life of the Project, and is eligible for the Corps' Flood Control and Coastal Emergency program to repair project features that are damaged by severe coastal storms. This part of Mr. Watson's testimony squarely rebuts Margate's contention that the future costs of replenishing the dune will cause economic hardship. Periodic replenishment of the beachfill over the fifty year lifespan of the Project is included in the Project.

Initial construction of the Absecon Island Project was completed in Atlantic City and Ventnor; however the Project remains to be constructed in Margate and Longport. Mr. Watson opined that the non-construction of the dune in Margate caused the dune in Ventnor to erode faster than normal at its end. Eventually, Ventnor's dune eroded to the point where there were steep drops from the dune crest. The end of Ventnor's dune was bulldozed due to the safety hazard the steep drops created and approximately one third of Ventnor's dune was lost. Mr. Watson opined that the dune would have survived if it extended through Margate. While it is important to take into account municipal preferences in the evaluation of coastal protection projects, the Court is persuaded that municipal boundary limits should not be a driving force behind this project but instead the Absecon Island Project should take all of Absecon Island into account. Nature has no municipal boundaries.

Mr. Watson also provided testimony in response to Margate's concerns of the potential harms as a result of dune construction. The Army Corps received no formal drainage plan from Margate, however Mr. Watson stated that the Corps modeled a solution where storm water would discharge into a retention area behind the dune and would not cause ponding. Margate

also indicated that the Absecon Island Project would reduce the number of ADA compliant access ramps to the beach. According to Mr. Watson, the municipality is generally responsible for ADA access, but the Army Corps would still place at least one ADA compliant ramp at every ½ mile. Margate was also concerned that the maintenance costs associated with the dunes would cause the municipality financial hardship. Mr. Watson indicated that the Corps has heard of no instance where a municipality experienced financial hardship due to the maintenance costs of dunes.

A significant concern of Margate is the loss of one of their most precious resources – their beach. Mr. Watson pointed out that the Absecon Island Project also adds a 100 foot berm to Margate's beach; as a result Margate will have a larger beach area after construction of the Project. Overall, the Court was impressed with the detailed knowledge of the Project and Feasibility Study by Mr. Watson. Mr. Watson provided detailed testimony about the Feasibility Study process, and his testimony responded to several of the concerns raised by Margate including future replenishment of the dune, ADA compliance, and the storm water drainage problem. In the Court's view, the most potent part of Mr. Watson's testimony was the negative impact of Margate's non-participation in Project upon neighboring communities.

The second expert presented by the State was Monica A. Chasten of the Army Corps of Engineers. Ms. Chasten was a Project Manager with the U.S. Army Corps of Engineers Philadelphia District, and was the coastal engineer supporting the Absecon Island Project Study Team for the majority of the Feasibility Study beginning in 1993. Ms. Chasten earned a degree in civil engineering from Drexel University and a Masters in Hydraulic and Coastal Engineering from Lehigh University. Ms. Chasten provided an expert report and expert testimony on behalf of the State. Ms. Chasten explained the painstaking and detailed process the Army Corps

undertook to develop the data input into the SBEACH model. According to Ms. Chasten, the coastal engineering technical analysis for the Absecon Island Project began with a comprehensive investigation of historic and present day physical processes along the Absecon Island coastline. Next, Absecon Island was delineated into 27 representative "cells" with Margate consisting of 6 representative cells. Each cell represents the characteristics a specific coastal area within Absecon Island. A more detailed analysis was conducted for each cell and a representative profile was developed for each of the 27 cells. The profile for each cell was field verified by a site investigation to ensure that it adequately represented the shoreline condition. Ms. Chasten explained that the profile for each cell is not developed based on present conditions but instead is developed based on an average condition over time.

The next step in the process was to calibrate the SBEACH model. The calibration process involves iteratively adjusting parameters in the model until the results of a simulated storm matches the results of a measured storm. Once the model is calibrated it is evaluated against another real world dataset to verify that the model can accurately reproduce a pre- and post-storm profile change. SBEACH was calibrated using data from the December 1992 storm that hit Ocean City, New Jersey. Ms. Chasten explained that this was the "storm of record," meaning it was the storm that had the best data set and that it was very rare to have such quality data. This testimony responds to Margate's criticisms of the Army Corps for using data from Ocean City for Margate. After hearing from Ms. Chasten and other witnesses regarding this issue, the Court was persuaded that using the 1992 Ocean City storm data was appropriate to calibrate the SBEACH model.

Initially, the SBEACH calibration results were not as good as anticipated because the model underestimated the amount of erosion that was occurring. The Army Corps Philadelphia

District contacted the Army Corps model developers at the Coastal Engineering Research Center ("CERC") for assistance. The District's data set of beach profiles and information from the 1992 storm was used by CERC to refine the SBEACH model calibration parameters; these changes led to permanent improvements in the SBEACH model and are still used today. Ms. Chasten opined that the storms used in the model in the Feasibility Study would accurately represent conditions today, even though they do not account for the twenty years between the Feasibility Study and the present. The careful process of calibration of the SBEACH model testified to by Ms. Chasten is another indication of the Army Corps' detailed and careful methodology in the Feasibility Study. The fact that the Army Corps acknowledged the initial problems with the SBEACH calibration process enhances their credibility.

Next, profiles for the 27 cells were loaded into SBEACH. The SBEACH model was run for the "without project" condition for all 27 cells. After an extensive analysis it was determined that the cells could be reduced from 27 representative cells to 6. Ms. Chasten acknowledged that she was initially skeptical that 6 cells were enough to adequately represent all of Absecon Island; however after her own analysis she concluded that 6 cells were sufficient. New profiles were created based on the previous profile data analysis and the new information gained from running the SBEACH model on the 27 original cells. The "without project" condition was also re-run using only 6 cells and a new version of SBEACH (SBEACH 3.0).

According to Ms. Chasten, Margate's existing system of Bulkheads were accounted for and analyzed in every simulation that was run in SBEACH. At the time, Margate's bulkheads ranged from 11.5 to 13.4 feet NGVD. Within the model Margate's bulkheads were given an average height of 12.5 feet NGVD (11.25 feet NAVD88). Since Margate's bulkheads were not in a straight line, they were also given an average depth within the model. The model also

assumed that the bulkheads were standard in terms of how deep the toe of the bulkhead was in the ground. Ms. Chasten explained that there were three mechanisms by which a bulkhead could fail: inundation, erosion and wave attack. Ms. Chasten's analysis, both within the model and outside of the model, found that a bulkhead with a height of 12.5 feet NGVD failed due to inundation, where the water level rose over the height of the bulkhead, somewhere between a 50 year storm event and a 100 year storm event. Again, Margate's preferred bulkhead alterative was given the benefit of the doubt in the Feasibility Study. The bulkheads were modeled with an average height of 12.5 feet NGVD, were assumed to be in good condition, and were assumed to be standard in terms of depth of the toe of the bulkhead.

Ms. Chasten also pointed out that Margate's preferred alternative was analyzed in the condition with Margate's existing bulkheads (modeled with the average height of 12.5 feet NGVD) with a 150 foot berm and no dune. According to the Feasibility Study, the NED benefits were approximately negative $2,000,000 per year. According to Ms. Chasten, the Bulkhead and Berm alternative fails only one storm later than bulkheads alone and has negative NED benefits. Ms. Chasten opined that the modeling in the Feasibility Study was accurate and provided a valid projection of the effects of various magnitudes of storms on the options modeled.

A sensitivity analysis was conducted for dunes, where various dune heights versus various berm widths were examined in order to find the optimal alternative. No such analysis was performed for varying heights of bulkheads. Ms. Chasten stated that a sensitivity analysis for bulkheads above 13.4 feet NGVD was conducted outside of the model and is implicit throughout the analysis and results of the Feasibility Study. Ms. Chasten explained the model is only one tool that the Army Cops uses; in addition to using models like SBEACH, the Army

Corps also examines the results outside of the model and uses their expertise to analyze and interpret those results.

The Court found the testimony of Ms. Chasten credible. She explained in detail the steps she took in her analysis during the Feasibility Study. Her analysis had no predisposed view as to the outcome. She explained step-by-step the very detailed and meticulous process. When she found issues with the calibration process she took steps to fix it and to ensure that the SBEACH model was accurate. Despite the fact that this is complex technical testimony, Ms. Chasten explained in a way that the Court was able to understand.

Next the Court heard the testimony of Randall A. Wise, P.E., a senior coastal engineer in the US Army Corps of Engineers. Mr. Wise has a Bachelor's degree and a Master's Degree in Civil Engineering from the University of Delaware. Mr. Wise's expert report and testimony focused on the SBEACH model and its application in the 1996 Feasibility Study. Mr. Wise is responsible for the analysis and design of coastal and navigation projects and is a co-developer of the SBEACH computer model that was used in the 1996 Feasibility Study. Mr. Wise is a recognized expert on the SBEACH computer model.

Mr. Wise explained what the SBEACH model is and how it works. According Mr. Wise, SBEACH is primarily a beach profile change model and not a model that takes into account structures such as bulkheads. Bulkheads are represented in the SBEACH model as an impenetrable boundary up until the bulkhead fails either by (1) the water level overtopping the bulkhead, (2) erosion, or (3) wave impact. Once a bulkhead fails in the model, storm impact progresses past the boundary landwards. SBEACH includes two simplifying assumptions with respect to bulkheads: (1) impacts overtopping landward of bulkheads are not considered until the bulkhead fails, (2) wave reflection from the bulkhead is not considered. Both of these

assumptions are clearly identified in SBEACH documentation. According to Mr. Wise, both of these assumptions serve to overestimate the protection provided by a bulkhead. The assumed absence of any wave overtopping prior to bulkhead failure does not account for property damages that would occur prior to bulkhead failure. Second, the absence of wave reflection underestimates scour at the toe of the bulkhead. Mr. Wise stated that in reality, toe scour caused by wave reflection might cause a bulkhead to fail when it would not have failed in the model. Mr. Wise opined that the assumptions used in the SBEACH model with respect to Margate's bulkheads were in accordance with standard modeling procedures. Mr. Wise further corroborated the testimony of Ms. Chasten indicating that the bulkhead alternative was given every benefit of the doubt.

Mr. Wise also opined that the calibration of the SBEACH model was a success. In his report Mr. Wise explains that a significant characteristic of the SBEACH model is that it is an equilibrium model. For a given initial beach profile, sand will erode from the upper profile (the dune and berm) and will be deposited to the lower profile (the offshore bar). To accurately represent storm erosion, the model must adjust the beach profile towards equilibrium at the proper rate, and this is where calibration becomes important. The primary calibration coefficient in SBEACH is the transport rate coefficient "K", which determines how rapidly the beach erodes towards the equilibrium state in a storm. Adjusting the K value is the main task of model calibration.

In order to calibrate SBEACH for the Feasibility Study, they used data from the December 1992 nor'easter in Ocean City, New Jersey which is located approximately five miles south of Margate. In his report Mr. Wise explained why profile data from Ocean City was chosen for Margate:

> Ocean City and Margate are close not only in proximity but also in beach geomorphology and coastal hydrodynamics. Both locations are low-lying barrier island beaches having similar sand properties, nearshore bathymetry, sediment transport patterns, tide range and current patterns, wave climate, and exposure to coastal storms. **The calibration data set at Ocean City, NJ is directly applicable to Margate with a high degree of reliability based on similarity of the physics that control coastal erosion processes.**

(Emphasis original). This opinion rebuts, and in the Court's view, weakens the criticisms of Margate's experts about the use of Ocean City data for Margate. According to Mr. Wise, the initial release of SBEACH included too narrow of a range of available K coefficient values. Both the Philadelphia District of the Army Corps and model developers came to the conclusion that the upper limit of the K value was too low. Accordingly, the model developers expanded the range of the K value to the limits that presently exist in the model and calibration was successful. This also corroborates Ms. Chasten's testimony that the calibration was a success, and also is another indication of the Army Corps' attention to detail during the Feasibility Study.

Mr. Wise also opined that reproducing the 1996 Feasibility Study with the latest version of SBEACH would yield the same results in terms of the selected plan. While SBEACH has undergone upgrades since 1996, the foundational theories and fundamental algorithms that were in place in 1993 remain central to the model. Upgrades since 1993 include an improved overwash algorithm, a hard-bottom boundary condition, a refined random wave model, variable grid computation, and an updated graphical user interface. These upgrades improve the model accuracy, reduce computation time, enable broader application, and promote ease of use; however none of these changes would substantially alter the end results of the Absecon Island Project formulation for the Feasibility Study. According to Mr. Wise, while the computed values in each model may vary somewhat using an updated model, each model would vary by the same amount because any change would apply equally to each model. Therefore, the relative rank of

each alternative in terms of NED benefits would remain the same and the 1996 SBEACH results are still applicable today. The Court finds this opinion convincing and credible coming from a developer and expert on the SBEACH model. The Court gives more weight to this opinion as compared to the criticism from Margate's experts, one of whom never even used the SBEACH model, and neither one of the two experts conducted their own SBEACH analysis. The Court finds that Mr. Wise's testimony completely rebuts Margate's arguments that the 1996 Feasibility Study was flawed due to improper computer modeling and calibration.

Mr. Wise also indicated that the SBEACH results have since been validated by major storm events including Hurricane Sandy. Margate's bulkheads were included in the "without project" simulation (as well as all other simulations). The model of the "without project" condition found that Margate's bulkheads would not fail until somewhere between a 50 year and 100 year event. The most significant storm since the 1996 Feasibility Study was Hurricane Sandy which was only a 30 year storm in Margate. The lack of substantial widespread ocean-side damage in Margate over the last twenty-two years is consistent with the 1996 SBEACH analysis. According to Mr. Wise this validates the results of the SBEACH analysis. This fact is significant because one of Margate's key arguments is that their bulkheads successfully protected the City during Hurricane Sandy. The weakness with this argument is that Sandy was only a 30 storm in Margate, as opposed to 50 or 100 year storm in the areas that were directly hit by Sandy. According to the SBEACH analysis, the issue is not whether Margate's bulkheads can survive a 30 year storm, the concern is what will happen to Margate if a 50 or 100 year storm hits it directly.

Overall, the Court was extremely impressed with the testimony of Mr. Wise. Without question, Mr. Wise knew more about the SBEACH computer model than any other witness. Mr.

Rooney testified that he never used SBEACH, and Dr. Young's conclusory statements that the SBEACH model was inaccurate were completely rebutted by Mr. Wise. The Court also discounts Margate's witnesses' opinions in this area because they did not run their own SBEACH analysis and obtain their own results to refute the findings of the Army Corps.

The next witness for the State was Dr. Harry C. Friebel, P.E., D.C.E. Dr. Friebel is a coastal/hydraulic engineer with the Army Corps. Dr. Friebel holds a B.S. and M.S. in Ocean Engineering from the Florida Institute of Technology, and a Ph. D. in Ocean engineering from the Stevens Institute of Technology. Dr. Friebel provided testimony and prepared an expert report which focuses on the benefits of the authorized Project versus Margate's existing system of bulkheads.

In his report, Dr. Friebel opines that it was rational for the Corps' to treat the municipalities of Margate, Ventnor and Longport as one project. Dr. Friebel's report states as follows:

> Storms do not recognize municipal boundaries. From a storm damage reduction standpoint, Absecon Island is considered a system and the plan was studied/designed accordingly. The existing Margate bulkhead system was included during all plan formulation stages of the 1996 feasibility study. The feasibility study process demonstrated that the "no dune" alternative yielded negative net benefits (-$2,196,501.00).

The Court agrees with Dr. Friebel's opinion that storms do not recognize municipal boundaries. Dr. Friebel also examined Margate's current system of bulkheads and described them as follows:

> Margate's street-end bulkhead elevations, obtained from the NJDEP, Bureau of Coastal Engineering, range from +9.7 to +12.2-ft NAVD88 with an average of +10.95-ft NAVD 88. Not a single elevation meets or exceeds the Federal dune template elevation of +12.75-ft NAVD 88. They would need to be raised between 5-31% to match the authorized Federal dune elevation (table 1.) Margate bulkheads lack uniform elevation and are at varying levels of structural integrity.

> Additionally, the presence of low elevation suppers and pipes (some of which are at elevations below mean high water) allow storm surge to reverse-flow landward into Margate, flooding the oceanfront streets. It is evident that the authorized plan increases the level of protection above existing conditions as the higher dune elevations protect against wave overtopping and surge. In addition, the authorized plan – that will improve the existing "reverse-flow" street-end scupper issues and the dune – limit the amount of water that reaches the bulkheads.

Margate's bulkheads were accounted for in every scenario of Cycle Three of the Feasibility Study. Margate's preferred alternative was analyzed in Cycle Three under the "No Dune and 150' Berm" scenario and yielded negative $2,196,501 in NED benefits. Dr. Friebel testified that the bulkheads modeled in the 1996 Feasibility Study were higher than Margate's average bulkhead height as of 2013 (10.95 feet NAVD 88). In the Feasibility Study the bulkheads were modeled at a height of 12.5 feet NGVD which converts to a height of 11.25 feet NAVD 88. This is a compelling fact in this case which enhances the credibility of the Feasibility Study and discounts the arguments of Margate. This is another example of how the 1996 Feasibility Study gave Margate's preferred bulkhead alterative the benefit of the doubt by modeling them at a height greater than the average height of the bulkheads in 2013. Also, the Feasibility Study did not take into consideration the cost of improving bulkheads to Corps standards or the cost of any necessary easements. According to Dr. Friebel, once the analysis of the "No Dune and 150' Berm" option produced negative NED benefits, the Army Corps knew that any incremental change to Margate's bulkheads would only increase the cost and reduce NED benefits.

Dr. Friebel explained how the Army Corps would fortify Margate's existing bulkheads if the Corps' chose that option. According to Dr. Friebel, the Army Corps would have to inspect every single bulkhead in Margate to determine if it met the Corps' standards or would need to be replaced. If a bulkhead was completely replaced the Corps would likely require an easement on residential property to construct its bulkhead and tie-back. Dr. Friebel opined that based on his

observations of Margate's bulkheads, every bulkhead would have to be improved to meet Army Corps standards. This testimony points out the additional cost and practical concerns that had not been fully accounted for by Margate.

Dr. Friebel also provided testimony on the current condition of Margate's beaches. The Army Corps collects annual monitoring data across Absecon Island and has been monitoring the southern end of the island since construction of the Absecon Island Project in 2003, the most recent monitoring data was collected in 2014. According to Dr. Friebel, the Beach in Margate has grown substantially as sand from the Ventnor dune has migrated to Margate. Margate's beaches have grown approximately 120 feet on average, and the northern most area of Margate's beach next to Ventnor is over 200 feet wider. The entire width of the proposed dune is 80 feet. Even with the proposed dune, Margate will have more useable beach area than they did prior to the Project's construction in Ventnor in 2003. The Court finds this testimony compelling because one of Margate's main arguments against the Absecon Island Project is that it would eliminate usable beach area. The fact is that Margate's beaches have grown since 2003 and benefited from the Absecon Island Project in Ventnor. In cross examination, some of Margate's witnesses failed to even acknowledge the growth of Margate's beaches since the Ventnor dune was constructed. This, in the Court's view, undermines their credibility.

Dr. Friebel opined that without the dune Margate is at a substantial risk of damage from large coastal storms. The absence of the dune in Margate has also impacted the Ventnor dune. According to Dr. Friebel, the Army Corps cannot construct a dune at the end of Ventnor because the absence of a dune in Margate causes Ventnor's dune end to erode at an accelerated rate. As a result, the Corps is unable to put last twelve blocks of the dune in Ventnor. This opinion supports the finding earlier stated by the Court that while local preferences should be taken into

account in the development of coastal protection projects, municipal boundaries should not be the driving force in the analysis. Storms do not recognize municipal boundaries. The Court is persuaded that Margate's non-participation in the Project negatively impacts its neighboring communities, both Longport and Ventnor.

Dr. Friebel also opined that the 1996 SBEACH modeling was validated. Hurricane Sandy, a 30 year storm in Margate, validated the model. As predicted by SBEACH in 1996, Margate's bulkhead system did not fail. According to Dr. Friebel, these facts were taken into account in the Corps' 2013 Reevaluation. The Court found the testimony of Dr. Friebel to be credible. The Court specifically acknowledges his testimony regarding how Margate's bulkheads were modeled in every simulation at a greater than average height, how Margate's beach has grown due to the Absecon Island Project, and his explanation of why the Army Corps does not limit coastal protection projects to municipal boundaries alone.

The Court next heard testimony from Dr. Thomas O. Herrington. Dr. Herrington is an expert in the field of coastal engineering. Dr. Herrington has a Ph.D. in engineering with a concentration in coastal engineering and is a research professor of coastal engineering at the Stevens Institute of Technology. Dr. Herrington is an independent academic, he does not work for the Army Corps of Engineers or the NJDEP.

Dr. Herrington explained how dunes protect coastal communities. Dunes form naturally by the wind moving sediment from the berm upland until the sediment settles. According to Dr. Herrington, dunes grow seaward until they reach equilibrium with the wave energy and naturally stabilize in size. Dunes are effected by seasonal changes, in winter if the beach erodes, the dune erodes and shrinks; in the summer the when the beach grows, the dune naturally restores itself and grows. Storms also have an effect on dunes. Major storms elevate water levels and allow

wave energy to reach farther up the beach. The dune provides a barrier to the waves but also erodes and provides sand to the surf zone to help allow the beach reach equilibrium with the wave energy from the storm. Sand from the dune that erodes creates a wider sandbar. The sandbar will grow and grow until it reaches equilibrium and dissipates the wave energy to the point where it no longer erodes the beach and reaches equilibrium. In other words, Dr. Herrington is of the opinion that dunes as a coastal protection mechanism are ecologically sound and consistent with nature. Dunes are the only coastal protection method that can address the dynamic nature of an always eroding beach.

Dr. Herrington also gave specific examples of the storm damage benefits of a dune. In Northern Ocean County, which was the area hit hardest by Hurricane Sandy, areas that had dunes with a sufficient height and volume fared better than communities without a dune or with too small of a dune. At Ortley beach in Toms River, the dune was not large enough to withstand the surge in wave energy; as a result, landward structures were damaged. On the other hand, Seaside Heights had a dune with a sufficient height and volume to withstand the storm surge, and as a result water did not overwash the dune. This is compelling testimony in support of the dunes alternative for the Absecon Island Project and cannot be ignored by the Court in its analysis. That is, in towns that had properly installed dunes, even though they were hit directly by Hurricane Sandy, those towns fared much better. Also significant, this testimony comes from an independent witness from academia who has had hands on experience.

Dr. Herrington also compared the degree of protection provided by dunes versus bulkheads. Even if a bulkhead is as high as a dune, the bulkhead is exposed to direct wave attack and may be subject to overtopping when the waves break against it. Unlike a bulkhead, a dune is always eroding and helping the beach reach equilibrium. A bulkhead on the other hand cannot

erode and allow the beach to reach equilibrium. Even in the most optimal case, a bulkhead is exposed to a significant amount of wave energy. Dr. Herrington explained that scour occurs at almost all coastal structures placed parallel to the shoreline. Scour occurs when wave energy reflects off a solid structure which causes twice amount of wave energy to impact the toe of the structure. If the structure is not deep enough, the scour can undermine the toe of the structure causing it to fail.

Dr. Herrington also analyzed the comparative benefits of the Absecon Island Project and Margate's proposed bulkhead and berm alternative. Dr. Herrington did not run a computer model but instead examined the alternatives analytically. In the 100 year event, the dune would erode but never allow water beyond it. The bulkheads as proposed by Margate, using a hypothetical height of 14.3 feet NVGD, would be overtopped during a 100 year event. Dr. Herrington characterized this as an optimum analysis because it was assumed the berm suffered no erosion prior to the storm and assumed that the bulkheads were of sufficient quality and would not fail. Dr. Herrington stated that even in situations where bulkheads were not overtopped by the water level, he has observed significant damage caused by wave overtopping alone.

Dr. Herrington also gave his opinion on the Army Corps' use of the SBEACH model. Dr. Herrington is familiar with SBEACH, has used SBEACH himself, and has taught his students how to use SBEACH. Dr. Herrington opined that the Crops' 1996 SBEACH model was correctly calibrated and provided valid results. The Corps calibrated their model using pre-storm and post-storm profiles from the 1992 nor'easter in Ocean City, New Jersey. According to Dr. Herrington, the beach profiles in Ocean City and Margate are sufficiently similar to make the calibration valid because the area is all the same geological framework. Dr. Herrington stated

that Margate's bulkheads would not impact the validity of the calibration. Dr. Herrington is familiar with the changes to SBEACH since 1996. The most significant change in SBEACH is the inclusion of an overwash algorithm which measures the amount of water and sediment that would be carried over a dune landward. According to Dr. Herrington, the overwash algorithm would not have changed the analysis because the goal of the Absecon Island Project is to *prevent* overwash in the first place. This is another expert witness that undermines Margate's criticism of the SBEACH analysis as well as Margate's criticism of using data from the 1992 Ocean City storm to calibrate the model.

Dr. Herrington opined that the Absecon Island Project would offer more protection than Margate's berm and bulkhead fortification alternative for the following reasons: (1) the proposed Project with the dune would limit erosion to 30 feet seaward of the bulkhead (2) the Absecon Island Project would prevent water from propagating over the dune into the community and protect landward structures (3) the Absecon Island Project adds sand into the natural system, that sand will stay in the system and provide benefits over time, and (4) beaches are dynamic and always changing, a natural dune and berm can adapt to those changes in a way a structure cannot.

According to Dr. Herrington, Margate's proposed alternative does not provide a berm elevation high enough to prevent overtopping of the bulkhead. It also creates a beach profile that is significantly out of equilibrium with the natural beach berm elevation which would lead to accelerated berm erosion. The proposed berm cap would cause the beach to erode by "cliffing" instead of naturally sloping downward because the berm would be higher than the natural berm elevation. Dr. Herrington also indicated that Margate's alternative would cause accelerated erosion due to wave reflection and scour.

Dr. Herrington disagreed with Dr. Young's criticisms of the Army Crops' analysis and did not believe any of them to be valid. Dr. Herrington also disagree with Mr. Rooney's criticisms of the Army Corps' analysis. Dr. Herrington agreed with Mr. Rooney that any potential drainage issues would need to be addressed, however he found none of Mr. Rooney's other criticisms valid. The Court finds the testimony of Dr. Herrington to be credible. Dr. Herrington comes from academia and is not connected with the Army Corps or the State. The Court was impressed with the clarity of his testimony. He explained his opinions in manner that was easy to understand. Dr. Herrington's testimony was objective, easy to understand, detailed, and at times for this Court illuminating. Particularly, when Dr. Herrington explained that a dune is able to adapt to the dynamic and always changing conditions of a beach and is a more natural system of coastal protection.

The Court also heard testimony from two representatives of the New Jersey Department of Environmental Protection. First, the Court heard the testimony of David B. Rosenblatt of the NJDEP. Mr. Rosenblatt was qualified as an expert in the field of coastal management and policy, and provided testimony for the State. Mr. Rosenblatt is the Administrator of the Office of Engineering and Construction in the New Jersey Department of Environmental Protection and the Director of the Office of Flood Hazard Risk Reduction Measures within the Department.

Mr. Rosenblatt explained that the Department enters into partnerships with the Army Corps of engineers for coastal protection projects. The State reviews proposed projects to ensure that they are in accordance with State policy. When the State entered into the first PCA in 2003, the State's position was that municipalities that wished to participate in Federal Projects could do so, but the State would not force such projects upon municipalities that did not wish to participate.

Mr. Rosenblatt also explained that New Jersey policy prefers soft structures, such as dunes, opposed to hard structures like bulkheads. This policy is codified in New Jersey's Administrative Code. According to Mr. Rosenblatt, the reason dunes and berms are favored is because they recreate the natural environment prior to erosion. Soft structures protect against the energies of the ocean and also serve as a secondary sand source for future beaches. Soft structures also allow for periodic re-nourishment which enhances the long-term viability of projects. Mr. Rosenblatt stated the Department reviewed the Absecon Island Project in accordance with those policy considerations.

According to Mr. Rosenblatt Absecon Island has experienced a net loss of sand and the viability of the island is at risk overtime. The Absecon Island Project serves to protect areas behind the beach and to enlarge the beach area of the island. Originally, Atlantic City and Ventnor agreed to the Absecon Island Project, Margate and Longport did not. Mr. Rosenblatt indicated that Margate's rejection of the Absecon Island Project had an effect on the project design in Ventnor. Originally Margate was going to allow Ventnor's dune to taper into Margate, but once construction had begun Margate did not allow Ventnor's dune to taper onto their beaches. Instead, the dune was tapered at the last few blocks of Ventnor in an attempt to stabilize the Project. As a result, a 2004 a nor'easter completely eroded the last ten blocks of Ventnor's dune. Ventnor removed that portion of the dune because steep drops from the dune created a safety hazard.

Mr. Rosenblatt described the effect Superstorm Sandy had on New Jersey's policy regarding coastal protection projects. Sandy revealed that there was far less damage in areas where the Army Corps had built storm damage protection projects. The adoption of the DRAA altered the cost sharing arrangement so that the Federal government covered 100% of the cost of

approved projects. After Sandy, Governor Chris Christie declared that the continued absence of shore protection projects in coastal communities creates an imminent threat to life, property, and the health, safety, and welfare of those communities. Mr. Rosenblatt stated that it was urgent for the Corps to proceed with the Absecon Island Project because Margate and Longport are not being provided the level of protection that they should have and is available to them. The Absecon Island Project is also urgent for Ventnor in order to stabilize its dune and berm. The Court was impressed by Mr. Rosenblatt's detailed explanation of the State of New Jersey's efforts to complete shore protection projects.

Next, the Court heard testimony from William Dixon of the NJDEP. Mr. Dixon was qualified as an expert in the area of coastal management and policy, and provided testimony for the State. Mr. Dixon is the manager of the Bureau of Coastal Engineering within the Office of Engineering and Construction of the New Jersey Department of Environmental Protection.

Mr. Dixon explained that the Department conducts an overall review of Army Corps projects to confirm that the project meets the needs of the State and the area the project is designed to protect. At several stages during the process of the Absecon Island Project's planning the Department made suggestions and recommendations to the Army Corps. The Department has rejected Army Corps projects when the project was found to be unsuitable for the needs of the State. The Department rejected a proposed plan to develop dikes for Maurice River and the Department rejected a proposed project to build an offshore breakwater for Mordecai Island. The Mordecai Island project was specifically rejected because the amount of erosion protection that project would have achieved was not proportionate to the costs, and because equivalent protection could be achieved with a less costly approach. The state does not automatically enter into projects with the Army Corps, instead the State evaluates each project

on case-by-case basis to ensure that it is consistent with State policy and meets the needs of the project area.

According to Mr. Dixon, the Department has always been satisfied with the Absecon Island Project which is consistent with the Department's general policy of constructing beaches and dunes to protect vulnerable shore communities. The Absecon Island Project also aligns with the Department and Mr. Dixon's personal experience where he has seen the damage done to coastal communities after storms. According to Mr. Dixon, communities with dunes and beaches constructed to Army Corps specifications have suffered far less damage. Mr. Dixon is yet another witness who confirms that communities with dunes designed to Army Corps specifications have fared much better and suffered far less damage. As the Court has stated earlier, this is a compelling fact that was testified to by several of the State's witnesses, a fact that has never been rebutted by Margate.

Mr. Dixon testified the Department attempted to work closely with Margate on many of the issues they raised. The Department met with Margate representatives to discuss the Absecon Island Project on at least seven occasions between March 2013 and April 2014. One of Margate's concerns was the maintenance cost of the dunes. According to Mr. Dixon, the maintenance cost has not been an issue for other areas with similar projects. Mr. Dixon urged Margate officials to talk to other towns that participated in the Absecon Island Project to get information on whether those towns experienced increased maintenance costs. The Department also attempted to address Margate's drainage concerns. The Department provided Margate with conceptual solutions for the drainage problem. The Department asked Margate to consider those options, provide feedback, and invited Margate to provide other proposed solutions. According

to Mr. Dixon, Margate did not provide specific responses to the Department's proposed solutions.

Margate also raised concerns regarding the ocean view from the street, additional obligations Margate would incur if piping plovers, an endangered species, migrate to the dune area, and handicapped access to the beach. The Department offered to change the beach crossover structures in order to minimize view loss and added a seating area in the access points at the top of the dune to allow people to sit and enjoy the ocean view. Mr. Dixon stated that densely vegetated dunes, like the one proposed for Margate, is not a habitat for plovers. Mr. Dixon also stated that the Absecon Island Project would include four ADA-compliant access ways to the beach. Mr. Dixon was the last witness presented.

DISCUSSION AND ANALYSIS

I. Standard of Review

The State argues that the Court must permit the eminent domain proceedings to go forward unless the Court finds that Margate has proven by clear and convincing evidence that the proposed exercise of the eminent domain power constitutes "fraud, bad faith or manifest abuse." Township of West Orange v. 769 Assocs., LLC, 172 N.J. 564, 578 (2002) ("Notwithstanding that the "heightened scrutiny" language in Cynwyd, supra, is dicta, 148 N.J. at 73, 689 A.2d 712, we have never held that the standard is other than the manifest abuse of discretion test."); Mount Laurel Tp. v. Mipro Homes, L.L.C., 379 N.J. Super. 358, 375 (App.Div. 2005) ("A reviewing court will not upset a municipality's decision to use its eminent domain power "in the absence of an affirmative showing of fraud, bad faith or manifest abuse.""); see also Township of

Readington v. Solberg Aviation Co., 409 N.J. Super. 282, 288 (App.Div. 2009) (reversing the grant of summary judgment for the Township-condemnor because the condemnation would not achieve the Township's stated purpose and the true purpose of the condemnation was to secure greater authority over an airport's operations).

The City of Margate argues that a condemnee can demonstrate "manifest abuse" by proving that a condemnor's "refusal to consider or accept an adequate and serviceable alternative which would either greatly reduce or largely eliminate the apprehended damage" is "arbitrary and capricious." Texas Eastern Transmission Corp. v. Wildlife Preserves, Inc., 225 A.2d 130, 135-36, 138-39 (N.J. 1966); see also Township of Bridgewater v. Yarnell, 314 A.2d 367, 368-69 (N.J. 1974) (holding that the defendant made out a sufficient case of arbitrariness to require the plaintiff to present proofs on the issue feasibility of an alternative route and remanding the case to the law division for a further hearing.). Margate takes the position that the State's exercise of eminent domain in this case is a manifest abuse of discretion because the Army Corps arbitrarily rejected Margate's preferred bulkhead alternative in favor of dune construction, the Army Corps' underlying analysis in the Feasibility Study was flawed, the 2013 reevaluation of the Absecon Island Project was flawed because it relied on outdated data and did not take into account twenty years of coastal change since the original Feasibility Study, the Absecon Island Project does not account for Margate's storm water drainage system and history of bayside flooding, Margate's system of bulkheads has adequately protected the City, and the dune would cause great harm to Margate that could be eliminated or reduced by the bulkhead alternative. Under the arbitrary and capricious standard, a Court must decide whether a party's action was "willful and unreasonable, without consideration and in disregard of circumstances." Atlantic City Elec. Co. v. N.J. Dept. of Envtl. Protection, 2011 WL 2935055, *6 (N.J. Super. A.D. July 22, 2011).

In this Court's view, the "manifest abuse" and "arbitrary and capricious" standards both require an extraordinary showing by the City of Margate. The Court will examine each of Margate's arguments. The Court is of the opinion that the standard set forth by the New Jersey Supreme Court in the West Orange case is the proper standard to examine whether the State can move forward with its exercise of eminent domain. Under that standard, the Court must permit the eminent domain proceedings to go forward unless Margate establishes by clear and convincing evidence that the State's exercise of the eminent domain power constitutes "fraud, bad faith or manifest abuse." In the West Orange decision the New Jersey Supreme Court unequivocally stated that "we have never held that the standard is other than the manifest abuse of discretion test." That standard was again reaffirmed by the Appellate Division in the Mipro Homes case in 2005 where the Appellate Division stated that a court should not upset the use of the power of eminent domain absent a showing of fraud, bad faith or manifest abuse.

II. Condemnation Authority of the State of New Jersey

The Constitution of the State of New Jersey imposes three limitations on the State's eminent domain power. First, the State must pay just compensation for property taken by eminent domain. N.J. Const., Art I, ¶ 20. Second, no person shall be deprived of his or her property without due process of law. Township of West Orange v. 769 Associates, LLC, 172 N.J. 564, 567 (N.J. 2002). Third, the property taken must be for a "public use." N.J. Const., Art. I, ¶ 20; see Id. The power of eminent domain, once granted, is then defined and detailed by the Eminent Domain Act of 1971, N.J.S.A. 20:3-1 to -50. United Savings Bank v. State, 360 N.J. Super. 520, 528 (App.Div. 2003). New Jersey's Eminent Domain Act imposes additional procedural requirements on the eminent domain power such as the requirement that the

condemnor must first attempt to acquire title to the subject property by bona fide negotiations with the prospective condemnee, and if the condemnee denies the condemnor's authority to condemn, the action must be stayed until that issue is finally determined. N.J.S.A. 20:3-6, 11. The Eminent Domain Act also establishes a mechanism requiring the appointment of condemnation commissioners to determine the value of the condemned property, and ultimately a jury trial if requested.

In addition to the aforementioned limitations, as stated earlier, a decision to condemn shall not be granted where there has been a showing of "improper motives, bad faith, or some other consideration amounting to a manifest abuse of the power of eminent domain." Borough of Essex Fells v. Kessler Institute for Rehabilitation, Inc., 289 N.J. Super. 329, 337 (Super. Ct. 1995). If a challenger to an eminent domain action can make a *prima facie* showing of the arbitrariness of the taking, then a Court will conduct a hearing and allow the parities to introduce additional evidence on the issue of arbitrariness. Texas Eastern Transmission Corp., 48 N.J. at 276; Tennessee Gas Transmission Co. v. Hirschfield, 38 N.J. Super. 132, 139 (App.Div. 1955); Bridgewater v. Yarnell, 64 N.J. 211, 215 (N.J. 1974). This is precisely the hearing that this Court granted in this case.

Margate does not contend that the Absecon Island Project is not for a public purpose. The issue of just compensation will be evaluated as a part of the condemnation process by appointed commissioners. All that remains is to determine whether the decision to condemn Margate's property is a manifest abuse of the power of eminent domain on the part of the State. Thus, the remaining question is whether Margate has shown by clear and convincing evidence that that the State's exercise of the eminent domain power in this instance constitutes a manifest abuse of discretion.

III. The City of Margate's Arguments

The City of Margate argues that the State's decision to condemn the subject properties and construct dunes in accordance with the recommendation of the Army Corps of Engineers is a manifest abuse of discretion. Margate argues that the Army Corps arbitrarily rejected Margate's preferred bulkhead alternative in favor of dune construction, that the Army Corps' underlying analysis in the Feasibility Study was flawed, that the 2013 reevaluation of the Absecon Island Project was also flawed because it relied on outdated data and did not take into account twenty years of coastal change since the 1996 Feasibility Study, that the Absecon Island Project does not account for Margate's storm water drainage system and history of bayside flooding, that Margate's system of bulkheads has adequately protected the City, and that the dune would cause great harm to Margate that could be eliminated or reduced by the bulkhead alternative.

As a preliminary matter, Margate argues that the Court should not consider the State's expert reports because they are post-hoc explanations of the Army Corps' decision to choose the dune alternative. In support of their position Margate cites cases where federal courts conducting Administrative Procedure Act reviews reject an agency's attempt to offer new, post-decision justifications. See Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 50 (1983). Under the Administrative Procedure Act, a court makes its determinations based on the record below. 5 U.S.C.S. § 706. However, this action was not brought under the Administrative Procedure Act, nor is this a complaint in lieu of prerogative writs which is also solely based on the record below. This is a condemnation case before the Court in accordance with the Eminent Domain Act. The Court finds little merit in Margate's argument and reliance on the Administrative Procedure Act. The Court is not reviewing an administrative action and this is not a case where the Court must make its decision based on record below. This case

comes before the Court in the context of a condemnation action. The task before the Court is to determine whether the State has the authority to condemn under the New Jersey Eminent Domain Act and the New Jersey Constitution.

Having made an initial decision that Margate was entitled to a hearing, both Margate and the State are entitled to come forward with evidence and make their case. Margate has come forward with expert testimony and witnesses; the State has been given the opportunity to rebut that evidence and present their own evidence to justify the decision of the State to move forward with the condemnation proceedings. This is consistent with the Eminent Domain Act and the New Jersey Constitution. Therefore, the Court will consider the States experts' testimony and reports.

A. The Court holds that the Army Corps rejection of the bulkhead alternative in the 1996 Feasibility Study was not arbitrary and capricious.

Margate contends that in the 1996 Feasibility Study, the Army Corps rejected Margate's preferred alternative (bulkhead fortification and beachfill) without rational explanation. This Court disagrees with that position. The Court has carefully reviewed the Feasibility Study and the detailed explanation provided by the various witnesses that testified at the hearing. In 1993 the Army Corps commenced a feasibility study investigating the need for action to reduce the storm damage suffered by the oceanic shore on Absecon Island and exploring various options to reduce that damage. Absecon Island is comprised of the municipalities of Atlantic City, Ventnor, Margate, and Longport. The options studied by the Army Corps included beachfill and bulkhead improvement, beach fill and dune construction, and taking no action. Based upon effectiveness, feasibility and cost, the study concluded that the best option was beachfill and the

construction of a system of dunes along the oceanfront in Margate, Ventnor, Atlantic City and Longport. The Army Corps completed the final version of the study in 1996 and submitted it to Congress. Congress adopted the Army Corps recommendation as a part of the Water Resources Development Act of 1996.

In Cycle Two of the Feasibility Study the Army Corps made a preliminary determination of the annualized cost and benefits of each alternative. The Corps found that the annualized costs and benefits of dune design and the bulkhead alternative were nearly identical. The Army Corps found that the annual benefit of each alternative was $16,025,000; the annual cost of dune design was $2,118,000 and the annual cost of the bulkhead alternative was $2,269,000. Initially the Army Corps intended to evaluate the bulkhead alternative in its Cycle Three analysis:

> While bulkheads will protect upland areas, beach restoration will limit erosion in front of the bulkheads and will provide additional projection to upland areas. Since bulkheads do not interact with the littoral transport, it will not reduce nourishment cycles as a groin field would. There may be institutional problems with the concept of a contiguous bulkhead line due to the potential for moving development seaward in some locations. **This alternative will be evaluated in cycle three.**

Feasibility Study at p. 156 ¶ 389 (emphasis added).

The Army Corps, however, did not analyze the bulkhead alternative in Cycle Three providing the following explanation:

> The existing bulkhead line in Ventnor and Margate is a conglomeration of privately installed bulkheads of varying designs and heights, interspersed with municipal structure, principally at the road ends. The present bulkhead system does not provide a continuous level of protection. Ventnor, Margate and Longport have begun raising street end bulkheads as funding allows. Those areas which have not been rehabilitated are considered infrastructure with O&M being the responsibility of the locals. Additionally, since many of the bulkheads are on private lands, rehabilitation would incur real estate costs which would be prohibitive.

Feasibility Study at p. 165 ¶ 425. Margate contends that the Army Corps' explanation is nonsensical and has no evidentiary support; the Court firmly disagrees. The Court agrees with Margate that the Army Corps could have done a better job of explaining the reasons why Margate's preferred bulkhead alternative was rejected. After carefully analyzing the Feasibility Study and the testimony, the Court is satisfied that there was nothing arbitrary and capricious or unreasonable in the Army Corps' rejection of Margate's preferred alternative.

After reviewing the Feasibility Study, the 2013 Reevaluation Report and listening to the expert testimony, the Court is of the opinion that the Army Corps' analysis was a thorough, multi-year process that analyzed every plausible coastal protection option. The Court is also satisfied that Margate's preferred bulkhead and berm alternative was carefully examined and given the benefit of the doubt. The bulkhead alternative was not arbitrarily rejected; it was rejected because based on the Army Corps' analysis and expertise, they determined that the bulkhead alternative would cost more than a dune while offering less protection.

The Court finds that even when the cost of Margate's preferred bulkhead alternative was underestimated by assuming that construction and easement costs were $0.00, the dune was still the more cost effective option. When the Army Corps analyzed the option of fortifying Margate's existing bulkheads, they assumed that the cost of improving the bulkheads to Army Corps standards and the cost of obtaining necessary easements were both $0.00. The State's expert, Dr. Friebel, also opined that the majority of the bulkheads in Margate would have to be improved to meet Army Corps standards.

The Court is also of the opinion that Margate's contention that the bulkhead alternative was not analyzed at all in Cycle Three is not accurate. Margate's preferred alternative was analyzed in Cycle Three under the "No Dune and 150 foot Berm" scenario. Members of the

Army Corps who worked on the Feasibility Study testified that the Army Corps modeled a contiguous system of bulkheads in every simulation that was run in SBEACH in Cycle Three. According to Dr. Friebel, the bulkheads modeled in the 1996 Feasibility Study were modeled at a height of 12.5 feet NGVD (11.25 feet NAVD 88), which is higher than Margate's average bulkhead height as of 2013 (10.95 feet NAVD 88). In other words, Margate's preferred alterative was given a benefit in the analysis. Based on the credible testimony and evidence presented, Court concludes that the "No Dune and 150 foot berm" alternative equates to Margate's preferred beachfill and bulkhead fortification alternative. In the Feasibility Study's Cycle Three analysis, the "No Dune and 150 foot berm" alternative yielded a negative $2,196,501 NED benefit. This means that even when giving Margate's bulkhead's alternative every advantage, it yielded a significantly worse result than the dune alternative. Feasibility Study at p. 175, Table 42. The Court holds that the Army Corps' decision to reject the bulkhead alternative is not arbitrary and capricious, and the State of New Jersey's reliance on the Feasibility Study is far from a manifest abuse of discretion.

The Army Corps' conclusion that a dune offers more protection than bulkheads is supported by the testimony of Dr. Herrington. Dr. Herrington analyzed the comparative benefits of the Absecon Island Project and Margate's proposed bulkhead and berm alternative. Dr. Herrington did not run a computer model but instead examined the alternatives analytically. In the 100 year storm event, the dune would erode but never allow water beyond it. The bulkheads as proposed by Margate, using a hypothetical height of 14.3 feet NVGD, would be overtopped during a 100 year event. Dr. Herrington stated that even in situations where bulkheads were not overtopped by the water level, significant damage can be caused by wave overtopping alone. Also significant are the observations of Dr. Farrell right after Hurricane Sandy. Dr. Farrell

testified that in Ventnor he observed no serious impact from Sandy but further south towards Margate water overtopped the bulkheads at a variety of locations.

The Court holds that the 1996 Feasibility Study was not arbitrary and capricious; it was a deliberate and detailed analytical process conducted over several years. The Army Corps was open-minded in this process and examined every alternative, including Margate's preferred alternative. This Court was impressed with the State's witnesses explaining the Feasibility Study and the process that the Army Corps undertakes before recommending a coastal protection project. The State of New Jersey's reliance on the 1996 Feasibility Study and recommendations by the Army Corps is supported by the evidence and is not a manifest abuse of discretion.

B. The Court holds that the Army Corps' use and reliance on the SBEACH model was not flawed, yielded valid results, and was not arbitrary and capricious.

Margate has also argued that the SBEACH model itself was unreliable. SBEACH stands for "Storm-induced Beach Change" and is a numerical simulation model developed by the US Army Corps of Engineers. This computer model was utilized by the Army Corps in the 1996 Feasibility Study. One of the State's witnesses, Mr. Wise, was a co-developer of the SBEACH model. Dr. Young stated that the SBEACH modeling in the Feasibility Study was a failure because (1) the model was calibrated with data from Ocean City, instead of data from Margate, (2) the initial calibration of SBEACH was unsuccessful, and (3) SBEACH was run with only two profiles to represent Margate's beach and bulkheads. Mr. Rooney opined that it was irrational for the Army Corps to treat Margate, Ventnor and Longport as one project in the Feasibility Study. After having the opportunity to carefully analyze the testimony of the various witnesses by the State, the Court is not persuaded by the opinions of Dr. Young and Mr. Rooney. Every

one of the issues raised by Margate's experts was rebutted by credible testimony from the various State witnesses. The Court also discounts the opinions of Dr. Young and Mr. Rooney in that they did not conduct their own SBEACH analysis in order to refute the Army Corps' SBEACH results, and in the case of Mr. Rooney he acknowledged that he has never used SBEACH.

The testimony and reports of the State's experts have persuaded this Court that the Army Corps' SBEACH modeling was proper and yielded valid results. Ms. Chasten, Dr. Friebel, Dr. Herrington, and Mr. Wise, a co-developer of SBEACH, all opined that the SBEACH model was properly calibrated and that the results were still valid to this day. The State's experts explained that the SBEACH model was calibrated with high quality data from the December 1992 storm in Ocean City, which is approximately five miles south of Margate. Mr. Watson opined that the data from Ocean City was directly applicable to Margate:

> Ocean City and Margate are close not only in proximity but also in beach geomorphology and coastal hydrodynamics. Both locations are low-lying barrier island beaches having similar sand properties, near shore bathymetry, sediment transport patterns, tide range and current patterns, wave climate, and exposure to coastal storms. **The calibration data set at Ocean City, NJ is directly applicable to Margate with a high degree of reliability based on similarity of the physics that control coastal erosion processes.**

(Emphasis original). Dr. Herrington also opined that the data from Ocean City is directly applicable to Margate. The Court was particularly impressed with the testimony of Mr. Wise, a co-developer of SBEACH, as well as Dr. Herrington, who is not affiliated with the Army Corps or the NJDEP.

While the initial calibration of SBEACH was unsuccessful, Ms. Chasten worked directly with the developers of SBEACH until the calibration was successful. Both Ms. Chasten and Mr.

Wise explained that the calibration was not successful because the model underestimated the rate at which the beach eroded. The reason the model underestimated the rate of erosion was because the upper limit of the transfer rate coefficient, "K", was too low. Ms. Chasten worked directly with the developers of SBEACH and raised the upper limit of the transfer rate coefficient so that the beach's erosion could be modeled accurately. After this change was made, the calibration was a success. The fact that the Army Corps acknowledged and reported this problem enhances their credibility.

Ms. Chasten also explained why SBEACH was run with only two profiles to represent Margate's beach and bulkheads. Originally, Ms. Chasten divided Margate into six profiles but a preliminary analysis indicated that only two profiles were necessary and would still yield accurate results. Ms. Chasten stated that she was skeptical that only two profiles were enough to accurately represent Margate's beach, however after her own analysis she concluded that two profiles were sufficient.

Margate also argued that the Army Corps should have done a separate analysis for Margate, rather than doing an analysis for all of Absecon Island. Dr. Friebel explained in his expert report that "storms do not recognize municipal boundaries," and that from a storm damage reduction standpoint Absecon Island is considered one system; the Army Corps designed the Absecon Island Project accordingly. While municipal preferences should be taken into account, artificial municipal boundaries should not be a driving factor in analyzing the feasibility of storm protection projects especially when doing so can negatively impact storm damage protection for neighboring municipalities. The Court agrees with Dr. Friebel that storms do not recognize municipal boundaries.

Based on the credible evidence presented, the Court concludes that the Army Corps' SBEACH modeling was not flawed and it yielded valid results. The SBEACH model was calibrated with high quality data from Ocean City which is directly applicable to Margate. While the initial calibration of the model was not a success, the model was ultimately successfully calibrated. The Court is also satisfied that the profiles used by the Army Corps representing Margate's beach and bulkheads was more than sufficient. Margate has failed to establish that the State of New Jersey accepting the recommendations of the Feasibility Study and the SBEACH analysis is a manifest abuse of discretion.

C. The Court holds that the Army Corps did not ignore modern science and twenty years of coastal change when reevaluating the Absecon Island Project in 2013.

After Hurricane Sandy, on January 29, 2013, the Federal government enacted the Disaster Relief Appropriations Act of 2013, P.L. No. 113-2 ("DRAA"). The DRAA requires the Army Corps to "incorporate current science and engineering standards in constructing previously authorized Corps projects designed to reduce flood and storm damage risks." According to Margate, the Army Corps compounded its initial arbitrary rejection of the bulkhead alternative by ignoring modern science, modern law, and twenty years of coastal data in their reevaluation.

Margate's experts both opined that that the Army Corps failed to incorporate current science and engineering standards into the Hurricane Sandy Limited Reevaluation Report because the Army Corps relied on the SBEACH modeling from the 1996 Feasibility Study. Also, according to Margate's experts, the 2013 Reevaluation fails to account for twenty years of coastal change, including an increased bulkhead height and continuity, and relies on outdated software.

It is undisputed that the SBEACH computer model has been updated since 1993. The most significant upgrade to SBEACH was an improved overwash algorithm. Mr. Wise opined that none of the changes to SBEACH, including the overwash algorithm, would have changed which project was selected because any change would have been minor and would apply equally to each alternative. Dr. Herrington also opined that the improved overwash algorithm would not have changed the analysis because the goal of the Absecon Island Project is to prevent overwash in the first place. The opinions of Dr. Herrington and Mr. Wise squarely rebut Margate's experts' criticism that the Army Corps failed to incorporate current science in the reevaluation of the Absecon Island Project.

Dr. Friebel and Mr. Wise also opined that the SBEACH results have been validated since 1996. The SBEACH modeling in the 1996 Feasibility Study had shown that Margate's bulkheads would prevent inundation until somewhere between a 50 year and 100 year storm. When Hurricane Sandy hit Margate it was a 30 year storm. As predicted by SBEACH, Margate's bulkheads did not fail. According to Dr. Friebel, the Army Corps took this fact into consideration during the 2013 Study.

The Court agrees with State's several experts that the updates to SBEACH over the last twenty years would not have yielded different results. The Court was particularly impressed with the testimony of Mr. Wise, who was one of the developers of the SBEACH model. The Court was also unimpressed by the fact that one of Margate's experts has never even used SBEACH, and that Margate's experts never conducted their own SBEACH modeling in order to show that the 1996 SBEACH modeling by the Army Corps was inaccurate. The Court concludes that the Army Corps' Reevaluation report was not flawed because the SBEACH results are still applicable today and the Army Corps did not ignore twenty years of coastal

change. Based on the aforementioned findings, the Court holds that State's reliance on the 2013 reevaluation of the Absecon Island Project is not a manifest abuse of discretion.

D. The Court Holds that the Sandy Relief Act did not require the Army Corps to conduct a new Feasibility Study and the Army Corps' Hurricane Sandy Limited Reevaluation Report was more than sufficient.

The Court is of the opinion that while the DRAA did require the Army Corps to reevaluate projects, it did not specifically require the Army Corps to conduct a new analysis from scratch. The relevant sections of the DRAA state as follows:

> DEPARTMENT OF THE ARMY
> Corps of Engineers--Civil
> Investigations
> ...
> Provided further, **That an interim report** identifying any previously authorized but unconstructed Corps project and any project under study by the Corps for reducing flooding and storm damage risks in the affected area, **including updated construction cost estimates, that are, or would be, consistent with the comprehensive study** shall be submitted to the appropriate congressional committees by May 1, 2013... **That as a part of the study, the Secretary shall identify those activities warranting additional analysis by the Corps**...
>
> ...
>
> Construction
> ...
> Provided further, **That efforts using these funds shall incorporate current science and engineering standards *in constructing* previously authorized Corps projects** designed to reduce flood and storm damage risks and modifying existing Corps projects that do not meet these standards, with such modifications as the Secretary determines are necessary to incorporate these standards or to meet the goal of providing sustainable reduction to flooding and storm damage risks ...

113 P.L. 2, 127 Stat. 4, 23-25 (emphasis added). The first step of statutory construction is to "begin with a 'plain language' analysis of the statutory text." Cal. Indep. Sys. Operator Corp., 372

F.3d at 400. The Court assumes "that the legislative purpose is expressed by the ordinary meaning of the words used." Sec. Indus. Ass'n v. Bd. of Governors, 468 U.S. 137, 149, 104 S. Ct. 2979, 82 L. Ed. 2d 107 (1984). "Where [] the plain language of the statute is clear, the court generally will not inquire further into its meaning." Qi-Zhuo v. Meissner, 315 U.S. App. D.C. 35, 70 F.3d 136, 140 (D.C. Cir. 1995).

The plain language of the DRAA only explicitly requires the *construction* of the previously authorized projects to incorporate current science and engineering standards. Under the DRAA, the main goal of the interim report is to update the construction cost estimates of a previously authorized project. Whether any additional analysis is needed is left to the discretion of the Secretary. No section of the DRAA requires the Army Corps to conduct a new feasibility study for every previously authorized project.

As stated earlier, the Court finds it significant that Margate's experts did no independent analysis of their own to attempt to prove that Army Corps' analysis is outdated. Instead, they only attempted to poke holes in the Army Corps' analysis. Their criticisms consisted mainly of conclusory statements that the modeling software from 1993 is now outdated and that the data ignored twenty years of coastal change. The Court finds the explanations by Dr. Wise and Dr. Herrington credible and compelling. Mr. Wise specifically offered an understandable and in depth explanation as to why the SBEACH results are still valid and have actually been validated by Hurricane Sandy. Dr. Herrington explained why a natural dune is still a superior coastal protection method compared to bulkheads, and he preformed his own analysis to demonstrate that fact.

Margate also argues that the reevaluation of the Absecon Island Project was flawed because the Army Corps failed to take into consideration the cost of the bulkhead alternative in

light of new law. Under Borough of Harvey Cedars v. Karan, 214 N.J. 384, 416-417 (N.J. 2013) the "reasonably calculable benefits -- regardless of whether those benefits are enjoyed to some lesser or greater degree by others in the community -- that increase the value of property at the time of the taking should be discounted from the condemnation award." According to Margate, the Harvey Cedars decision would allow the Department to acquire the necessary easements for the bulkhead option for $0.00, eliminating any real estate costs. The Court finds little merit to this argument. The Feasibility Study assumed that real estate costs *and* construction costs of the bulkhead alternative were $0.00. Even if the Department could acquire the necessary easements for the bulkheads at no cost, there would still be significant costs associated with fortifying and reconstructing bulkheads to Army Corps standards. Even when it was assumed that both construction and easement costs were $0.00, the beachfill and no dune alternative analyzed in Cycle Three of the Study – which included a higher, contiguous bulkhead –still yielded a negative NED benefit.

It is this Court's opinion that the State's expert witnesses have rebutted any attempt by Margate to discredit the Army Corps' reevaluation of the Absecon Island Project. Margate failed to show that the State's decision to move forward with the Absecon Island Project is arbitrary and capricious or a manifest abuse of discretion. The Court holds that the Sandy Relief Act did not require the Army Corps to conduct a new Feasibility Study and the Army Corps' Hurricane Sandy Limited Reevaluation Report was more than sufficient.

E. The Court holds that the Absecon Island Project does not fail to account for Margate's storm water drainage system.

According to Margate, the Absecon Island Project is also arbitrary and capricious because it ignores the impact a dune will have on Margate's current storm water drainage system. Margate also points out that the project does not take into account its history of bayside flooding. Under Margate's current storm water drainage system, storm water drains east towards the bulkheads, through the scuppers, onto the beach and ultimately into the ocean. According to Margate's experts, the proposed dune would block the flow of the storm water and cause the water to pond. Margate contends that it is the State's position that it is Margate's responsibility to design and implement a drainage solution.

The Court concludes that the Army Corps and the Department did not ignore Margate's storm water drainage issues. The Department met with Margate representatives to discuss the Absecon Island Project seven times between March 2013 and April 2014. During that time, the Department provided Margate with conceptual solutions to the drainage problem. The Department asked Margate to consider those options and to provide feedback, but according to Mr. Dixon, Margate never provided specific responses to the Department's proposed solutions. Mr. Watson from the Army Corps also indicated that the Corps modeled a solution where the storm water would discharge into a retention area behind the dune and would not cause ponding. At the hearing Mr. Watson indicated that the Army Corps could not construct a project that would cause additional problems without addressing that problem. In other words, the Army Corps is committed to resolving the drainage issue and to work with the City of Margate to find an acceptable solution.

The Court acknowledges that there is a drainage issue to be resolved. The Court is satisfied that the Army Corps is committed to work with Margate in correcting the drainage problems. However, the fact that there is a drainage issue that needs to be resolved does not render this Project arbitrary and capricious or a manifest abuse of discretion. Margate also contends that the Absecon Island Project ignores Margate's history of bayside flooding. The Court acknowledges that Margate has a bayside flooding problem and that is an issue that needs to be resolved, but this Project is not for bayside flooding, it is for coastal protection. The fact that Margate has a bayside flooding problem does not render this coastal protection project arbitrary and capricious.

F. The Court holds that the proposed dune will not cause great harm that would be reduced or eliminated by the bulkhead alternative.

Margate claims that the Absecon Island Project is arbitrary and capricious because a dune will cause Margate great harm that would be eliminated or reduced by Margate's preferred bulkhead and berm alternative. First, Margate argues that the dune will immediately eliminate over thirty-five acres of usable beach area. This contention is not entirely accurate. According to the Army Crops' annual monitoring data for Absecon Island, Margate's beach has substantially grown since 2003 due to sand from the Ventnor dune migrating to Margate's beaches. Based on credible testimony, the Court finds that Margate's beaches have grown approximately 120 feet on average and 200 feet in the northern most area closest to Ventnor. Even with the proposed dune, which is eighty feet, Margate will have more usable beach area than it had prior to the Project's construction in Ventnor. The Absecon Island Project itself requires a 100 foot berm to be constructed in Margate; even if Margate's beach did not benefit

from Ventnor's dune, the beach would still have a minimum of an additional twenty feet of usable beach area over and above what it had before the Absecon Island Project. The fact is, Margate's beach has grown by anywhere between 120 to 200 feet as a result of sand from the Ventnor dune. The Court finds it somewhat disingenuous that some of Margate's witnesses would not acknowledge that their beach had grown substantially over the years as a result of the dune in Ventnor.

Margate has also pointed out that a dune will reduce the number of ADA access ways to the beach. Mr. Watson stated that the municipality is generally responsible for ADA access; nevertheless, the Army Corps will still place four ADA compliant ramps in Margate (one every ½ mile). While the number of ADA access ways to the beach will be reduced, Margate would be free install ADA compliant ramps in addition to the ramps the Army Corps intends to install.

Last, Margate argues that the Absecon Island Project will harm Margate economically. Commissioner Blumberg believes that construction of the dune will cause beachfront homeowners to file property tax assessment appeals. In Margate, beach block properties comprise 24% of the City's ratable tax base. Margate also believes that they will lose revenue from beach tags[2] and that the value of vendor licenses will decrease[3]. Margate contends that the cost of litigation to fight the tax reassessments coupled with any loss in revenue will have severe economic consequences. The Court understands that the project may have an impact on Margate. On the other hand, the benefits associated with this project in terms of the protection of life and property far outweigh the concerns raised by Margate. None of costs associated with Absecon Island Project will fall on Margate or its residents. 100% of the costs of the project will

[2] Beach tags generated $323,290.00 in revenue in 2015.
[3] Margate's Ice Cream Vending License has a value of $111,000.00.

be paid for by the Federal Government. Also, the cost of flood and property insurance will likely see some reductions with the completion of the project.

Margate is also concerned that a dune would cause the city to incur new costs such as the cost of maintaining the fencing around the dune. Mr. Dixon stated that he has never heard of a municipality that has participated in a shore protection project indicate that dune related maintenance costs are excessive. Also, Margate is not responsible for the cost of periodic replenishment, that cost is included in the Absecon Island Project design. According to Mr. Dixon, the only added expenses would be related to maintaining dune fences and access points, the costs of which would be minimal. Furthermore, Margate was urged to contact officials in Ventnor and other towns with shore protection projects in order to get information on whether those towns experienced increased maintenance costs – there is no indication that Margate has done so.

The Court acknowledges Margate's concerns. However, the Court is of the opinion that these potential economic consequences do not render the Absecon Island Project arbitrary and capricious or a manifest abuse of discretion. The Army Corps' economic analysis shows that the Absecon Island Project will significantly reduce the amount of damages Margate would suffer if it is hit by a substantial storm. Moreover, under the DRAA, the Federal Government will finance the construction and periodic replenishment of the dune. None of these costs will fall on Margate or its residents.

The overriding purpose of coastal protection is to protect human life and property from severe storm events that could potentially wipe out entire coastal communities. The current bulkhead system in Margate provides protection for lesser storms. However, according to the Army Corps of Engineers and the State, if a dune is not constructed then Margate remains at risk

of significant damage from a 50 or 100 year storm. As explained by Dr. Herrington, those communities with properly constructed dunes sustained significantly less damage during Hurricane Sandy. In Northern Ocean County, which was the area hit hardest by Hurricane Sandy, areas that had dunes with a sufficient height and volume fared better than communities without a dune or with too small of a dune. At Ortley beach in Toms River, the dune was not large enough to withstand the surge in wave energy; as a result, landward structures were damaged. On the other hand, Seaside Heights had a dune with a sufficient height and volume to withstand the storm surge, and as a result water did not overwash the dune. This testimony was also corroborated by Mr. Rosenblatt of the NJDEP, stating that after Sandy there was far less damage in communities that had storm damage protection projects built to Army Corps standards.

The Court acknowledges that the proposed project will have an impact on Margate, and also that Margate's preference is not the project that the Army Corps is recommending and the State is implementing. While there may be tax appeals due to loss of an ocean view, and there may be an impact on the access to the beach, and it may cause some drainage problems, those concerns do not make the selection of the dunes project arbitrary and capricious or a manifest abuse of discretion. The primary purpose of the Absecon Island Project is to protect human life and property. Margate's economic concerns do not outweigh the State's interest in protecting human life and property. For those reasons, the Court finds that Margate has not proven that the Absecon Island Project is arbitrary and capricious or a manifest abuse of the State's condemnation power.

G. The Court holds that the Absecon Island Coastal Protection Project is consistent with New Jersey State policy which favors dune construction over bulkheads

Under New Jersey's Coastal Area Facilities Review Act (CAFRA), soft-structures such as dunes are explicitly favored over hard-structures such as bulkheads. The New Jersey Department of Environmental Protection is empowered to adopt rules and regulations to ensure that "all of the coastal area [is] dedicated to those kinds of land uses which promote the public health, safety and welfare, protect public and private property, and are reasonably consistent and compatible with the natural laws governing the physical, chemical and biological environment of the coastal area." N.J.S.A. 13:19-2, 17. In its exercise of this authority, the Department promulgates rules governing the construction of coastal engineering measures. Under N.J.A.C. 7:7-15.11(b), the Department has established a hierarchy of shore protection measures:

> (b) Nonstructural, hybrid, and structural shore protection and/or storm damage reduction measures shall be used according to the following hierarchy:
>
> 1. Non-structural shore protection and/or storm damage reduction measures that allow for the growth of vegetation shall be used unless it is demonstrated that use of non-structural measures is not feasible or practicable....
>
> 2. Where the use of non-structural shore protection and/or storm damage reduction measures under (b)1 above is demonstrated to be not feasible or practicable, then hybrid shore protection and/or storm damage reduction measures that allow for the growth of vegetation, such as stone, rip-rap, sloped concrete articulated blocks or similar structures, or gabion revetments, shall be used....
>
> 3. Where the use of hybrid shore protection and/or storm damage reduction measures under (b)2 above is demonstrated to be not feasible or practicable, then structural shore protection and/or storm damage reduction measures **such as bulkheads**, revetments, sea walls, or other retaining structures shall be used. Factors considered in determining whether use of a hybrid shore protection measure is feasible include the type of waterway on which the site is located, the distance to the navigation channel, the width of waterway, water depth at the toe of bank, the bank orientation, shoreline slope, fetch, erosion rate, the amount of sunlight the site receives, substrate composition, and presence of shellfish habitat.

N.J.A.C. 7:7-15.11(b) (emphasis added). Under the Department's regulations, bulkheads are the *least* favored shore protection alternative and are only considered if non-structural and hybrid measures are not feasible or practical. N.J.A.C. 7:7-15.11 explicitly states a preference for dunes:

> (e) **Dune restoration, creation, and maintenance projects** as non-structural shore protection and/or storm damage reduction measures, **are encouraged**. These projects, including sand fencing, vegetation, additions of non-toxic appropriately sized material, and measures to control pedestrian and vehicular traffic, shall comply with N.J.A.C. 7:7-10, Standards for Beach and Dune Activities.

N.J.A.C. 7:7-15.11 (emphasis added). CAFRA and the Department's regulations establish New Jersey's strong policy favoring natural, soft-structures such as dunes. The Department took this policy into account when they reviewed the Absecon Island Project.

Mr. Rosenblatt testified that the State reviews proposed projects to ensure that they are in accordance with State policy—including the State's preference of dunes over hard-structures. According to Mr. Rosenblatt, the reason dunes and berms are favored is because they recreate the natural environment prior to erosion. Soft structures protect against the energies of the ocean and also serve as a secondary source of sand for future beaches. Moreover, Soft structures allow for periodic replenishment which enhances the long-term viability of projects. Most importantly, dunes have been proven effective.

Prior to Hurricane Sandy, the State only implemented coastal protection projects in municipalities that wished to participate. This policy changed as a result of Hurricane Sandy. After Hurricane Sandy, Governor Christie declared that the continued absence of shore protection projects in coastal communities creates an imminent threat to life, property, and the health, safety, and welfare of those communities. The State of New Jersey made it a priority to construct previously authorized Army Corps coastal protection projects even in areas that did not

wish to participate in those projects. The aftermath of Sandy also revealed that towns that had a dune constructed to Army Corps standards fared much better than towns that did not.

The Court notes that the Department does not simply "rubber stamp" Army Corps projects. The Department has rejected Army Corps projects when the project was found to be unsuitable for the needs of the State. The Department rejected a plan to develop dikes for Maurice River, and the Department rejected a proposed project to build an offshore breakwater for Mordecai Island. The Mordecai island project was specifically rejected because the amount of erosion protection the project would have achieved was not proportionate to the costs, and because equivalent protection could be achieved with a less costly approach. On the other hand, the Department has always been satisfied with the Absecon Island Project which is consistent with the State's policy of constructing beaches and dunes to protect vulnerable shore communities.

In this Court's view and based on the evidence presented, the merits of dune construction go beyond New Jersey policy because dunes have been proven to work. As explained by Dr. Herrington and Mr. Rosenblatt, areas directly hit by Hurricane Sandy that had dunes constructed to Army Corps standards fared better than communities without a dune or with too small of a dune. The Court holds that the decision of the State of New Jersey to implement a dune coastal protection project consistent with State policy, and in accordance with the recommendation of the Army Corps of Engineers is not arbitrary and capricious and it is not a manifest abuse of discretion.

H. The Court holds that Margate's non-participation in the Absecon Island Project impacts neighboring communities

The Court recognizes the importance of local preferences in the implementation of coastal protection projects. While it is important to take into account municipal preferences in the evaluation of coastal protection projects, the Court is of the opinion that municipal boundary limits should not be a determinative factor. The Absecon Island Project should take all of Absecon Island into account. Nature has no municipal boundaries.

Initial construction of the Absecon Island Project was completed in Atlantic City and Ventnor; however the Project remains to be constructed in Margate and Longport. Mr. Watson opined that the non-construction of the dune in Margate caused the dune in Ventnor to erode faster than normal at its end. Eventually, Ventnor's dune eroded to the point where there were steep drops from the dune crest. The end of Ventnor's dune was bulldozed due to the safety hazard the steep drops created and approximately one third of Ventnor's dune was lost. Mr. Watson opined that the dune would have survived if it extended through Margate. Likewise, no coastal protection project has been completed in Longport. As a result, both municipalities are impacted by the decision of Margate to oppose the Project.

In his report, Dr. Friebel opines that it was rational for the Corps' to treat the municipalities of Margate, Ventnor and Longport as one project. Dr. Friebel's report states that "storms do not recognize municipal boundaries. From a storm damage reduction standpoint, Absecon Island is considered a system and the plan was studied/designed accordingly." This Court agrees with Dr. Friebel. The lack of uniformity and the potential harm on neighboring communities is another important reason in support of the overall policy adopted by the State of New Jersey where coastal protection projects are not constrained by municipal boundaries. This

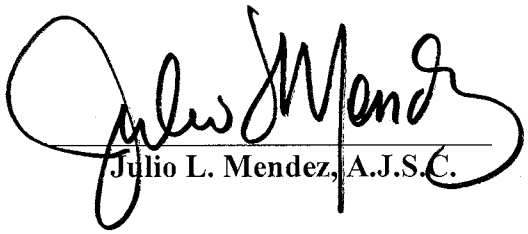
is an important factor that weighs in favor the State and supports a finding that the State's action to condemn Margate's property is not a manifest abuse of the State's condemnation power.

CONCLUSION

For the above-mentioned reasons, this Court holds that the State's decision to implement the Absecon Island Project as formulated by the Army Corps of Engineers is not a manifest abuse of the eminent domain power. The Court also holds that the State's decision to implement the Absecon Island Project is not arbitrary and capricious. The Absecon Island Project is the result of a comprehensive Feasibility Study which was done over the course of approximately six years and adopted by congress in 1996. The Feasibility Study represents thousands of hours of work by numerous experts in the field of coastal engineering. The Absecon Island Project was reevaluated and found viable in 2013 in the Army Corps' Hurricane Sandy Limited Reevaluation Report. The Absecon Island Project is also consistent with New Jersey coastal protection policy as enunciated by the Governor Christie, the New Jersey Department of Environmental Protection and codified under CAFRA. The State of New Jersey has taken the lessons learned from Hurricane Sandy to heart, and has concluded that an adequate storm damage reduction measure in New Jersey's coastal communities is necessary to protect life, property and the welfare of New Jersey's coastal communities.

The Court has carefully reviewed every one of Margate's arguments and has concluded that Margate has been unable to establish that the State of New Jersey's decision to exercise eminent domain is a manifest abuse of discretion. Every one of Margate's alleged deficiencies

with the Army Corps' analysis were rebutted by the State's experts. Compelling evidence was presented indicating that dunes constructed to Army Corps of Engineers specifications in other communities have been shown to protect vulnerable coastal communities from significant storms and prevent the loss of human life and property. For the aforementioned reasons, the Court holds that the State's condemnation of the necessary easements is not arbitrary and capricious, nor is it a manifest abuse of the condemnation power.



Julio L. Mendez, A.J.S.C.

DATED: April 11, 2016