

APPENDIX J

LAND AND DEVELOPMENT MANAGEMENT

Land and Development Management

I. Context of Land Management Considerations in the Stabilization Effort

The Reformulation Study was undertaken to identify a long-term (50-year) plan to reduce the risk of storm damages, while maintaining, enhancing or restoring the existing environment. USACE coordinated with project stakeholders to establish the approach to formulating, evaluating, and recommending storm risk reduction projects for the study area under the reformulation effort. The team sought to identify opportunities to reduce storm damages through less intrusive measures, and in a manner which allows for restoration and enhancement of the natural coastal processes.

Land use and development management alternatives include regulations and policies that could reduce the risk of storm damages to existing development in high risk areas and reduce development pressure in those areas. At-risk areas generally include areas vulnerable to flooding, erosion or both. The Reformulation Study process developed land management recommendations for the study area which are applicable to the Fire Island study area addressed by this Stabilization project.

An examination of the with-out project conditions in the study area noted that the existing collection of land use regulations is ineffective in addressing development and redevelopment in these at-risk areas, particularly in areas vulnerable to erosion. Conceivably, some alternatives implemented under this Project could exacerbate this problem. The following sections present a summary of the land-use regulations, the additional challenges and opportunities inherent with the different alternatives, and recommendations to more effectively address the development and redevelopment concerns in the hazard areas, and a summary of how the Stabilization project advances efforts to remove development from high risk areas through acquisition and adaptive management.

II. Existing Land Management Authorities

Within the study area, federal, state and county governments each have regulatory authority, the local governments have regulatory jurisdiction with respect to land management, principally through zoning and through management of environmental features such as freshwater and tidal wetlands. In addition, FIIS is administered by the NPS under the DOI, a federal agency with land use and environmental management authority.

In New York State, the primary responsibility for zoning land use regulations rests with local municipalities, including towns and incorporated cities or villages, under the system known as “home rule”. However, in the case of shorefront areas potentially subject to flooding or coastal erosion, and for Fire Island in particular, a number of other federal and state zoning and other land use regulations pertain, as described below.

Fire Island National Seashore

When Congress enacted FIIS-enabling legislation, the law mandated the Secretary of the Interior to establish federal zoning regulations. These regulations provide standards for local zoning to

protect and preserve Fire Island, and they exist solely as an overarching law to which local ordinances must conform.

Federal zoning regulations provide a set of standards for the use, maintenance, renovation, repair, and development of property within FIIS. NPS has established three districts within its boundary, which are: 1) the Community Development District; 2) the Seashore District; and 3) the Dune District. The Community Development District comprises 17 communities and encompasses the existing communities and villages. In the Community Development District, existing uses and development of single-family houses are allowed. The Seashore District includes all land in FIIS that is not in the Community District. No new development is allowed in the Seashore District, but existing structures may remain.

The Dune District extends from Mean High Water (MHW) to 40 feet landward of the primary natural high dune crest which has been mapped by NPS. This district overlaps the other two districts. Only pedestrians, and necessary vehicles such as ambulances, are allowed in the Dune District. Like the Seashore District, existing legal structures may remain and may be repaired and maintained. The existing dune district was established based upon the dune condition in 1976 and adopted by Congress. The dune district has not been re-mapped, and presently is not an accurate representation of the existing dune. NPS developed federal zoning standards that became effective September 30, 1991 under 36 CFR Part 28. These set standards that local zoning must meet to be exempt from the condemnation authority of the Secretary of the Interior.

These standards include controlling population density and protecting natural resources, limiting development to single-family homes, and prohibiting any new commercial or industrial uses. NPS is not responsible for enforcing the federal zoning standards in the communities and villages, despite the presence of federal regulations. It is the responsibility of the local governments to maintain regulatory jurisdiction. The federal government ensures local compliance with the federal law by maintaining the power of condemnation; in cases where the law is not met, FIIS has statutory authority to purchase and condemn the non-compliant building. While local zoning ordinances conform to standards issued by the Secretary of the Interior, the federal power of condemnation is suspended. In practice, this authority has been seldom exercised, and Congress has not given funding to FIIS for this purpose in recent years.

FEMA

Other agencies also have responsibility to affect land use regulation in the project area. An organization that indirectly affects land use regulation is the Federal Emergency Management Agency (FEMA). Any community seeking to register with the Federal Insurance Association, which allows homeowners to obtain flood insurance, must join FEMA's National Flood Insurance Program (NFIP). Participation in the NFIP requires a municipality to adopt a local floodplain management ordinance that regulates floodplain development and redevelopment following damage. The intent of the local ordinance is to reduce damage to buildings and property through the establishment of base flood elevations, building code requirements, and restrictions on allowable development in floodplain areas. Specific provisions include the requirement that the first finished floor or new construction must be elevated above the base flood elevation. All municipalities within the study area participate in the NFIP.

USFWS

The Coastal Barrier Resources Act of 1990 established the Coastal Barrier Resources System (CBRA), which consists of specifically identified undeveloped coastal barriers on the United States coastline. The U.S. Fish and Wildlife Service (USFWS) is the responsible agency for administering CBRA. Coastal barriers include barrier islands, bay barriers, and other geological features that protect landward aquatic habitats from direct wind and waves. CBRA units are prohibited from receiving federal monies or financial assistance or insurance for new development in CBRA in areas. The CBRA, however, identifies exceptions to this restriction, including non-structural shoreline stabilization similar to natural stabilization systems; the maintenance of channel improvements, jetties, and roads; necessary oil and gas exploration and development; essential military activities; and scientific studies.

NYS CEHA

Due to the erosion-prone nature of parts of the New York coastline, the Coastal Erosion Hazard Areas Act (CEHA) (Article 34 of the Environmental Conservation Law) regulates construction in areas where buildings and structures could be damaged by erosion and flooding. NYCRR Part 505 provides procedural requirements for development, new construction, and erosion protection structures. The responsibilities for NYSDEC regarding towns, counties, and regulation of coastal erosion hazard areas are defined by these regulations. These regulations restrict development in the primary dune, which is defined as 25 ft landward of the landward toe of the dune. Since these regulations were more recently adopted, and since the locations of the dunes have changed over time, there are a number of pre-existing, non-conforming structures within the CEHA area.

NYS CMP

In 1981, the New York State Legislature enacted the Waterfront Revitalization and Coastal Resources Act (Article 42 of the Executive Law) to implement the State Coastal Management Program (CMP) at the state level. The CMP and Article 42 establish a balanced approach for managing development and providing for the protection of resources within the state's designated coastal area by encouraging local municipalities to prepare Local Waterfront Revitalization Programs (LWRPs) in accordance with state requirements.

III. Evaluation of Land Use and Development Implication of Coastal Storm Damage Features

The existing collection of land use regulations do not effectively discourage development or restrict building and rebuilding in high hazard areas along the coast.

Conceivably, some features proposed for coastal storm damage reduction could create additional land development challenges or intensify those that already exist. Alternately, some features could reduce these pressures. The following presents the alternatives, and land-use challenges and opportunities associated with them.

Breach Response. The breach response plans introduce some land use and development management challenges that would not be realized in the without project condition. Existing land management measures do not address rebuilding in breach locations, or locations that are likely to remain vulnerable to breaches in the future. Land and development management measures should

consider the need for restricting redevelopment in locations that are likely to remain as vulnerable to breaching and overwash. Not only will this address reducing development at risk, but is also important to facilitate continued breach response requirements, and can help provide a desirable habitat mosaic by maintaining an open bay to ocean connection.

Inlet Management. The inlet management plans do not introduce any specific land use and development management challenges.

Non-Structural. The non-structural plans could complement land use and development management opportunities that discourage development in high risk areas. A larger project benefit could be obtained by acquiring rather than retrofitting structures in some situations, including instances where 1) buildings are in sparsely developed areas, where habitat connectivity could be achieved, or 2) buildings located at such low ground elevations that under future sea level rise conditions would be in the intertidal zone. If there is a local desire for structure acquisition rather than retrofit alternatives, these alternatives could consider if the additional costs for acquisition would be warranted to provide restoration of habitat to the underlying area.

Beachfill. Beachfill plans introduce both challenges and opportunities for land use management.

Along the shorefront area, the existing land management regulations that limit the investment in the primary dune have not proven effective. A number of structures exist within the dune, partially because they were constructed prior to the implementation of these regulations, and partially due to long-term changes in the dune position; development continues to occur in the primary dune. In the absence of a project, it is likely that the number of pre-existing, non-conforming structures would be reduced as a result of storms that would destroy these buildings beyond repair, with the acknowledgement that additional buildings would be at risk, due to the long-term evolution of the dune position. With a beachfill project in place, it is much less likely that the structures in the CEHA would be destroyed, and would likely persist.

Additionally, incentive to develop these areas could increase once a beachfill and dune project reduces the likelihood of storm damages in the area. The stabilization of the shoreline with a beachfill and dune plan increases the need for effective land management measures which function properly to avoid an increase in the level of infrastructure that is at risk in these areas.

It must be noted that these beachfill plans also create opportunities to address existing development that is at risk, and opportunities for reducing the amount of development and infrastructure at risk, over time.

Beach nourishment is recommended to protect public infrastructure, most notably in Robert Moses State Park, and Smith Point County Park. Relocation of public infrastructure in these areas would reduce the long-term requirement for renourishment.

The alignment recommended for beachfill can influence the amount of development in high risk areas. Construction of a beachfill and dune project requires real estate. These easements preclude development in the footprint of the project. As described in the main text of this HSRR, the

Stabilization effort is proposed for a more landward alignment. This alignment requires acquisition of buildings, prior to construction, and reduces the number of structures in the high-risk area.

At full build out, the Stabilization project will reduce development significantly within the high risk project areas. Forty two properties will be acquired in fee and removed from the erosion area. Six properties will be relocated to a lower risk area. More than six hundred properties will create perpetual easements where development is severely restricted. Greater detail of the real estate actions is provided within the Real Estate Appendix.

Groin modification.

The groin modification alternatives do not directly present land management or development management challenges. However, the implementation of the groin modification alternative in the vicinity of Ocean Beach could increase the vulnerability of the existing development and would require measures to reduce the risks to existing development, and would require the relocation of public infrastructure which is at risk.

IV. Land and Development Management Opportunities in Formulation

The Reformulation effort investigated land management alternatives to reduce the exposure of people and property to erosive forces in the study area. A table that highlights all of the possible land and development management alternatives that could implemented to address the existing land use challenges, and the issues that could evolve with implementation of a coastal storm reduction plan. This table, with supporting information, was considered by local municipalities and stakeholder groups to develop recommendations for alternatives to address these challenges.

These meetings have identified that the biggest challenge is addressing building and rebuilding in erosion-prone areas. These discussions have resulted in a framework to address these concerns, which generally consider solutions that improve upon or modify the existing set of regulations that are presently in place, rather than the introduction of new land-use regulations.

An important outcome of this supplemental screening was the identification of the techniques that should be evaluated for possible inclusion for Federal implementation in the recommended plan, and which techniques would be recommended for inclusion in a non-federally implemented Flood Plain Management Plan (FPMP) as a component of the overall collaborative plan. A number of the alternatives can be included in both. The USACE does not possess authority to modify or implement local land use regulations; this power rests at the municipal and state levels, and thus certain alternatives are assigned only to the FPMP. Table J-1 below shows where (in terms of authority to implement) each alternative can be evaluated.

Table J-1. Summary of Non-Structural Technique Evaluation

NON-STRUCTURAL TECHNIQUE	RECOMMENDED FOR FURTHER EVALUATION UNDER:		
	FIMP Reformulation Plan	Non-Federal Flood Plain Management Plan	
		USACE*	State

Land Use and Regulatory Measures			
Zoning/Land Use Controls		+	+
New Infrastructure Controls		+	+
Landform and Habitat Regulations		+	+
Construction Standards and Practices		+	+
Tax Incentives		+	+
Building Retrofit Measures			
Relocation	+	+	+
Elevation	+	+	+
Free-Standing Barriers (mainland only)	+		
Dry Floodproofing (mainland only)	+	+	+
Utilities Protection	+	+	+
Land Acquisition			
Purchase of Property	+	+	+
Exchange of Property		+	+
Transfer of Development Rights		+	+
Easements and Deed Restrictions	+	+	+
Other			
Wetlands Protection & Restoration	+	+	+
Vegetative Stabilization	+	+	+
Post-Storm Response Planning	+	+	+
* It is acknowledged that there are other Federal agencies (including the NPS, within the jurisdictional boundaries of FINS; FEMA; and USFWS) that have a Federal Role in these activities			

Participants agreed that land and development management alternatives that could be implemented to reduce development pressures, and the existing development in high hazard areas, where retrofits are not applicable.

Step 1: Improving the effectiveness of the existing regulatory program, by establishing a common funding source, establishing common and clearly communicated boundaries for regulated hazard areas, increasing training of local officials, and coordination to ensure consistent implementation across regulatory boundaries.

Step 2: Modification of statutes to allow for more effective implementation of the existing laws.

Step 3: Establishing a funding mechanism to acquire vacant parcels, or buildings that are at risk

Step 4: The establishment of a regional entity that would be responsible for various aspects related to land management and acquisition, and to fulfill the requirements of the local sponsor.

Step 5: Establishment of post-storm response plans to guide recovery following major, catastrophic events.

Step 1. Improving the effectiveness of the existing land-use regulations through establishment of common funding, and improved implementation of the law, generally includes the following:

Update the Existing Dune District in FIIS

The FIIS enabling legislation set the established dune location in 1978; this line does not reflect the current dune location. Effective implementation of the regulation would benefit from a common definition of the dune, and a common regulatory jurisdiction with the CEHA Program. The federal law should be revised to create the same definition of a dune and the same requirement as contained in CEHA for a 10-year remapping process. This common mapping would require the

identification of and agreement on a common defining feature. Presently, the CEHA program is based upon the landward toe of the primary dune, plus 25 feet. The federal dune district is based upon the dune crest plus forty feet. Furthermore, the NYS process provides for a public hearing as input into the process, which is not a provision of the Federal dune district. Since the CEHA serves as the primary regulatory mechanism, has been applied throughout the state, and is more current than the dune district, it is recommended that the provisions within the FIIS enabling legislation be changed to identify that the dune district be coterminous with the CEHA line, and allowed to change with changes in the CEHA designation.

CEHA Improvements.

CEHA improvements include map updates, funding to adequately implement the program, and provisions for improved DEC monitoring of local implementation of CEHA. These improvements are described below:

Updating CEHA Maps Across the FIMP Area. CEHA requires review and remapping of dune locations every 10 years. Fire Island was completed 10 years ago and no remapping is scheduled. Other areas of the study were mapped even earlier. Dune positions change in response to storm activity. The routine remapping of CEHA is necessary to effectively implement the program, and should be scheduled on a routine 10-year basis.

Improve DEC monitoring and support of local implementation of CEHA and establish adequate funding for effective implementation of CEHA. DEC has delegated the implementation of CEHA to local communities in many instances. By regulation, DEC must conduct regular annual monitoring reviews for compliance by all delegated programs so that missteps are addressed, monitoring, management and communication can improve, consistent implementation can be acknowledged, and, where necessary, delegation can be withdrawn. At its current funding level, DEC cannot provide oversight and conduct adequate training for local implementation by municipalities that have assumed direct management, nor oversee and properly implement the law elsewhere. Effective funding of the program at the state level would allow for technical and legal support for municipalities who administer their program, and improve their effectiveness. Effective funding of this program is necessary regardless of any alternative implemented under FIMP, and is presumed to be a responsibility of the local sponsor.

Step 2. Modification of statutes to allow for more effective implementation of the existing laws.

CEHA Statutory changes. Make statutory and rule changes to enhance enforcement authority and provide indemnification by New York State for properly-administered local CEHA programs against takings claims (e.g.; Pine Barrens § 57-0123.6) to reduce the influence of potential litigation costs, including potential takings claims, on local program decision making. Presently, local municipalities are responsible for providing the legal defense in the instance where CEHA variance requests are taken to court. Often the cost of defending these lawsuits is comparable to the costs associated with acquiring properties, and beyond the means of the municipalities. State indemnification for properly administered CEHA programs would mitigate this issue.

Step 3: Establishing a funding mechanism to acquire vacant parcels, or buildings that are at risk

Improved implementation of the land use regulations can help address inappropriate building and rebuilding in the primary dune. It is acknowledged however, that even with such improvements, these programs would benefit from a funding mechanism made available to purchase vacant developable property, or for acquisition of vulnerable shorefront structures. This could serve as a means to acquire properties when enforcement of the regulations establishes a “takings”, or in a broader application could be applied to reduce the number of structures within the CEHA area that would be vulnerable to storm damages.

Acquisition of structures as a stand-alone alternative was evaluated as a possible alternative along the shorefront. Analyses were undertaken to identify buildings falling within different hazard areas, and also at risk from storm damages. It should be noted that since CEHA maps the dune, regardless of the size and height that there may be structures within the CEHA (on the back crest of a high, wide dune) that are less vulnerable to damages than a similar structure on a low, narrow dune. In conjunction with this analysis, an extensive Real Estate analysis was undertaken to identify an approximate acquisition cost for structures which fall within the CEHA. In evaluating the acquisition alternatives, it became clear that acquisition could not be supported on NED analysis alone. The NED analysis evaluates the potential damages to a building, whereas the costs to acquire a building must consider the value of the structure and the property.

Within the study area, the Real Estate cost to acquire a structure was on average 4 to 5 times the value of the structure, which means that 25% of the real estate value is derived from the building. This cost differential makes it impossible to support acquisition on purely NED criteria, since it is impossible for the building to be damaged enough to offset the Real Estate costs. It is acknowledged that if there are additional benefits that could be realized, it could be possible to justify these efforts. It is possible that acquisition would also:

1. Provide additional habitat values by restoring the beach and dune to more natural condition,
2. Provide cost savings if the volume of material required for renourishment could be lowered,
3. Provide benefits associated with having a sustainable solution that would effectively reduce the need for long-term maintenance beyond the project life.

Recognizing this, and recognizing that environmental benefits could accrue from acquisition of buildings and restoration of the land, selective acquisition is considered further in the context of restoration alternatives. Recognizing the benefits of providing a more sustainable, long-term plan for the area, this is also something that could be considered further as a measure to be implemented as part of the overall collaborative plan.

It is acknowledged that the scope of the acquisition plan could range from a plan to acquire properties when there is a determination of a taking, to a broader scope that would allow for the acquisition of structures from willing-sellers in high-risk areas, and could also include an acquisition plan for breach vulnerable areas. With this larger concept, there are a number of acquisition scenarios that could be developed as an incentive for increased participation. These are presented below.

Voluntary sales with retained occupancy or lease-back programs. In the past, FIIS has purchased noncommercial residence at fair market value, reduced by up to 25% allowing for the right to no more than 25 years of retained occupancy, unless the house is destroyed. Federal leaseback programs are generally very restrictive but state, county or local programs may have provisions for retained occupancies or less restrictive lease-back arrangements. This type of program could encourage voluntary participation by landowners. Landowners who recognize the hazards presented by their location may find such programs attractive as it provides them a fixed sum upfront based upon a pre-storm appraisal and the opportunity to continue to use the structure for the term, or until it is destroyed. It allows homeowners to spread their risks, as a post-storm value for a destroyed and eroded parcel would be far less. The advantage for the public is that while structures will remain on the dunes and continue to inhibit natural dune growth, this voluntary approach could substantially reduce the controversies around immediate condemnation, reduces acquisition costs by at least 25%, and particularly for the secondary line of houses, will facilitate dune advancement over time, ultimately achieving a more sustainable dune.

Step 4. The establishment of a regional entity that would be responsible for various aspects related to land management and acquisition, and to fulfill the requirements of the local sponsor.

With the proposed alternatives identified in Steps 1-3, there would be a benefit to having a single regional entity who would be capable of addressing these needs, as well as fulfilling the requirements of a non-State, local sponsor. The formation of a Suffolk County Coastal Commission with authority to implement land management and authority (and sufficient funding) to acquire property, could ensure the following:

1. The local, non-State sponsor will be responsible for acquisition of lands necessary for construction of the project, and providing funds necessary, in excess of the Real Estate costs to meet the local share. A County-wide entity with the ability to undertake this would facilitate project sponsorship, and could address concerns expressed previously from Suffolk County regarding liability for the Project.
2. As described in the CEHA provisions, this entity could serve as a group who would be responsible for CEHA variances, and in defending legal challenges arising from CEHA.
3. This entity could be responsible for the acquisition of properties in the instance of regulatory takings,
4. This entity could also be responsible for implementing a willing-seller program to address structures that are at-risk in the erosion prone areas.

Step 5. Establishment of post-storm response plans to guide recovery following major, catastrophic events. It is acknowledged that no plan will reduce all risks. It is likely that over the project life that a storm will occur which will compromise the design, and result in damages. This could occur in areas that are protected, or areas that are not protected as a result of this project. New York State has suggested that they will require, as part of their Local Cooperation Agreements the development and implementation of local post-storm redevelopment plans. It is expected that these plans would be in place, and would provide direction for the rebuilding of communities in a more sustainable manner, which recognizes the storm risks. It is expected that New York State will oversee the creation of such plans, including their expected content and rationale.

While there is a limited role for the Corps' in the implementation of the land and development management measures, it is acknowledged that this is an integral component of any plan. It is important to ensure that adequate provisions are in place for the project to perform as expected, and does not result in increased development that is at risk. It is advised that the above land and development management measures be considered further in conjunction with the alternative plans, to ensure the functioning of the project, and to consider the longer-term sustainability of the project.

V. Recommended Integration of Appropriate Land Use and Development Management Measures

The Reformulation Effort includes a significant non-structural component to reduce storm damages along the mainland shoreline. These plans, however, do not include non-structural measures along the shorefront, which can reduce the potential for storm damages, and help to restore ecosystem integrity.

The land and development management alternatives relevant to the Stabilization effort generally include: 1) land management alternatives, and 2) acquisition alternatives. The implementation of these land use regulations are the responsibility of the local municipalities in conjunction with New York State, and within the FINS, the National Park Service.

The existing land use regulations were reviewed; based upon this review, it is recommended that the following alternatives be included an considered an incremental component of this overall project in order for Alternative Plans 3A and 3G to function as intended.

Acquisition.

Acquisition is the second tool that is available to address existing and proposed development. The acquisition of shorefront properties was evaluated for purposes of both storm damage reduction and habitat restoration. In both instances, the high price of the real estate results in these alternatives not being cost-effective. That being said, it is acknowledged that alternatives which acquire properties for purposes of a more landward beachfill alignment are cost-effective, but have the downside of requiring condemnation in order for the project to be constructed.

New York State and the National Park Service have indicated their interest in an acquisition program along the shorefront, which over time, with willing sellers could remove the most at-risk structures from the shoreline. While this alternative does not meet the NED or NER criteria for Corps participation, an acquisition plan along the shorefront would accomplish the Vision objectives, and would help with the implementation of the land use regulations.

Overall, these improvements in the land use regulations, and acquisition plans are critical for the Corps to make a determination that the proposed project will not induce development. The Corps will look for New York State as the sponsor to advance these floodplain management regulations, and be able to certify that sufficient land management regulations are in place, to avoid induced development as a result of the project. Construction of the project, and continued renourishment of the project would be dependent upon this certification from New York State.

VI. Consideration of the life cycle management of these plans.

The TFSP was developed with a 50-year project life, and 50 years of renourishment. This plan does not include provisions that would change the need for continued renourishment within the project life, or alter the conditions so that a different solution could be expected following the 50-year project life.

In order to change condition that would allow for a reduction in the long-term commitment for renourishment alternatives would need to be implemented that would reduce the infrastructure that is at risk, or remove infrastructure to allow for a more efficient use of resources. The integration of land and development management regulations identifies improvements in the application of land use regulations, acquisition planning, and post-storm response planning that could help to reduce the infrastructure at risk along the shorefront.

With this as a component of the overall plan, there are several approaches which could be undertaken in the life-cycle management of the project to achieve this. The options that have been identified include:

1 – A scheduled reduction in the scale of protection for the beachfill in a timeframe that coincides with the acquisition planning. Under this scenario a beachfill plan would be planned to be maintained for a shorter period of time, over which purchase of property would be offered to shorefront structures at risk. After this period of time, the scale of protection would be reduced, thus reducing the commitment of resources for continued renourishment. The benefit of this approach is that the reduction in protection is not dependent upon the acquisition occurring.

2 – A scheduled relocation of the proposed line of protection that coincides with the acquisition planning. Under this scenario, the beachfill plan would be linked with the proposed acquisition plan. After a period of time, the footprint of the project would be maintained in a more landward location on a scheduled timeframe. The difficulty with this initiative is that the movement of the dune on a prescribed timeframe would require guaranteed acquisition, and could not be guaranteed with a willing-seller program.

3 – Adaptive Management. Under this scenario, the beachfill plan and the acquisition plan could proceed independently. On a periodic basis, coinciding with the scheduled renourishment, the constructed project would be revisited to identify if opportunities exist for adjustment of the maintained profile based upon the relative success in implementing the acquisition plan.

Under any of these scenarios, it is important to 1) identify the time scale that would be necessary for the implementation of alternatives, and 2) identifying the effect that these changes would have on project economics.

It is recognized that the acquisition of shorefront property through a willing-seller program is not an instantaneous action, particularly with consideration for acquisition strategies that could allow for a homeowner to sell their property but be allowed to continuously use the property. The timeframes necessary for implementation of these measures suggests a timeframe measured in decades, not in years. Along the shorefront, consideration must be given for: the funding

availability for acquisition, the timing of interest in selling, and the staffing to process these acquisitions. When consideration was given for the time necessary to implement the non-structural alternatives along the mainland, accounting for staffing this effort, and funding these programs, it is expected that implementation of the mainland non-structural program would require 25 to 30 years. Discussions have also been held with agencies responsible for the relocation of public infrastructure along the shorefront. Input from these agencies indicates that major public works improvements, whether relocation or otherwise typically require 10 to 20 years, from conception to execution.

These timeframes suggest that if there is interest in reducing the long-term commitment for public investment in renourishment, a beachfill with a duration of 20 to 30 years could be considered in conjunction with an acquisition plan. As the project duration is shortened, it impacts the project economics. A sensitivity analysis was conducted which established that Alternative 3, built and maintained for 30 years, and subsequently replaced with a breach response plan, would have little effect on the project economics, and the economic viability. Achieving this objective, however, would require a larger investment in Real Estate to provide an alternative form of risk reduction for houses along the shorefront.

The challenge with developing a plan that integrates the land management, acquisition, and scheduled renourishment of the project is the uncertainty that exists. These elements introduce uncertainty to a situation that is already uncertain due to the complexities of projecting renourishment, projecting the functioning of the inlets, and the unknowns regarding future climate change. With all these uncertainties it is suggested that the implementation of the project adopt an incremental adaptive management approach. This approach would establish 1) data collection that would be implemented, 2) modeling efforts to analyze the data, and 3) an adaptive management framework that would establish the overall objectives, and the adaptations to the plan that could be accomplished with the project. This adaptation strategy is based upon the concept that with the passage of time the trends become established and more appropriate strategies can be executed. It is expected that this adaptation strategy would require a periodic review of the project execution (10-yr basis) and recommendations for the adaptation of the project, based upon the findings.

VII. Stabilization Effort consistency with Land Management Recommendations of the Reformulation Study and the Stakeholders

As described in the main text of this HSRR, the Stabilization effort is the first constructable increment of the recommended plan, or TFSP, for the Fire Island to Montauk Point Reformulation Study. In response to the highly vulnerable condition following Hurricane Sandy's erosive forces, an expedited action was taken to stabilize this portion of the study area.

Consistent with the goals of the larger Reformulation effort, the Stabilization project emphasizes land management efforts to discourage building in high risk areas. Although USACE authority in land management decisions is limited to recommendations and complementary actions such as non-structural and acquisition actions, the Stabilization effort implements several actions consistent with sound land management policy.

Acquisition

The Stabilization effort proposed for a more landward alignment. This alignment requires acquisition of buildings, prior to construction, and reduces the number of structures in the high-risk area.

Limiting Development

At full build out, the Stabilization project will reduce development significantly within the high risk project areas. Forty two properties will be acquired in fee and removed from the erosion area. Six properties will be relocated to a lower risk area. More than six hundred properties will create perpetual easements where development is severely restricted. Greater detail of the real estate actions is provided within the Real Estate Appendix in the GRR.

Adaptive Management

Adaptive management will assess the timing and volumes of renourishment as the shoreline responds to continued coastal forces. Executive Order 11988 prohibits any action which encourages development within high risk areas.