

# Appendix G2 - Nonstructural Implementation Strategy

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**Please note this is a working-draft document currently undergoing review and revision. The final version will be posted in March 2012 along with the final version of the 2012 Coastal Master Plan**

## 1.1 Introduction

The 2012 Coastal Master Plan will define a vision for a sustainable coast, identify ecosystem restoration and flood risk reduction projects, and define priorities for implementation to ultimately achieve the State's goals. The Master Plan sets targets for reducing flood risk for every area of the coast and recognizes that these targets for risk reduction cannot be met through structural flood protection projects only. A variety of means, including nonstructural projects and programs that address where and how land is developed, must be employed. These nonstructural measures may be utilized as the primary line of defense or as a secondary line of defense.

The following describes the differences and synergies between nonstructural projects and programs and makes recommendations on how these nonstructural measures should be implemented to assist in achieving risk reduction goals across coastal Louisiana.

### 1.1.1 Background

Structural projects reduce flood risk by means of levees, floodwalls, locks, or other structures. Nonstructural projects reduce risk to the existing building inventory through measures such as floodproofing, elevating, acquiring, and relocating structures. Each has a role in flood risk reduction. In the Master Plan, structural and nonstructural projects are considered individually and in conjunction with each other. While nonstructural projects focus on existing buildings; nonstructural programs focus on reducing flood risk to future building inventory through a range of activities including; public education, implementing ordinances and building codes with higher risk reduction standards, and preparing land use plans that integrate floodplain management concepts. An effective, comprehensive nonstructural strategy will include all these measures and others.

Traditionally, nonstructural projects have been voluntary in nature. This is the current case in Louisiana, where the Road Home Program and Hazard Mitigation Grant Program (HMGP) funds have been made available to eligible homeowners to elevate their homes or relocate. Buildings that are substantially damaged (50% or more) must conform to the latest building codes, including meeting the most recent flood elevation standards; however, acquisition and elevation of existing undamaged or minimally damaged structures is not mandatory. According to the Office of Community Development's "Weekly Situation and Pipeline Report", dated November 01, 2011, the participation rate for elevation projects has been approximately 30% of eligible homeowners. Participation rates are influenced by a variety of factors, and the lessons learned from the Road Home Program and both the Louisiana and national HMGP should be captured and referenced for future nonstructural project implementation.

Nonstructural projects and programs are also traditionally implemented at the local level. Funding is typically provided by the Federal Emergency Management Agency (FEMA) through a state agency to fund local mitigation projects. Cities, towns, or parish governments prepare hazard mitigation plans and use federal funds to implement the local plan. This process, while effective on the local level, often lacks regional coordination. The next two sections of this

document discuss how this nonstructural implementation strategy incorporates regional concerns into the Master Plan.

### **1.1.2 Master Plan Nonstructural Strategy Development Process**

Prior to developing the 2012 Coastal Master Plan Nonstructural Strategy, local and state flood hazard mitigation plans were reviewed. Parishes have developed plans, and it is important to understand local initiatives when developing a coast-wide plan. State planning efforts including those of the Center for Planning Excellence (CPEX) were also reviewed. Additionally, to further understand how to implement a successful nonstructural strategy, planning efforts from other states (e.g. Mississippi Coastal Improvement Program (MsCIP) comprehensive plan) were reviewed.

Although learning from other areas is valuable, any planning approach must be tailored to the area being targeted to be successful. To that end, a sub-group from the Master Plan's stakeholder group, the Framework Development Team (FDT), was created to help guide the development of the nonstructural implementation strategy. This work group provided valuable input into the planning process and insight into the concerns and issues with nonstructural projects and programs in coastal Louisiana.

### **1.1.3 Stakeholders**

A variety of stakeholders are interested in the nonstructural implementation strategy. Government entities at all levels are involved in planning and implementation of nonstructural projects and planning. Universities and numerous nonprofit organizations also have an interest in nonstructural planning and implementation as do communities, neighborhoods, individual home owners, renters, and business owners. It is vital that both planning and implementation efforts consider the needs and resources of everyone who lives, works, and enjoys the coast.

## **1.2 Nonstructural Project Definition**

Nonstructural projects are integral to the coast-wide risk reduction goal and were proposed for all of the inhabited areas of the coast. A nonstructural project consisting of floodproofing, elevation, and acquisition of residential structures and floodproofing of nonresidential structures was proposed for each parish and community. The National Flood Insurance Program (NFIP) does not recognize residential floodproofing when determining flood insurance premiums and does not allow floodproofing of substantially damaged or substantially improved residential structures; otherwise floodproofing is an allowable and practical means for reducing flood damages and has been included in the nonstructural project definitions.

Two elevation alternatives were proposed: 1) elevating homes to the Base Flood Elevation (BFE) + 1 foot and 2) elevating homes to the BFE + 4 feet. This second alternative allowed the Damage Assessment Tool to evaluate the benefit of higher standards for elevating homes. Homes that required elevation beyond eighteen feet were considered to be acquired in the Damage Assessment Tool. All floodproofing was evaluated for a three foot maximum height.

To identify nonstructural projects in the Damage Assessment Tool, certain attributes were assigned to each project to facilitate comparison of projects. These attributes included the project location (e.g., Vermilion Parish, City of Houma), the risk reduction target (e.g., 50 year, 100 year, or 500 year), and the elevation alternative (e.g., BFE + 1' or BFE + 4').

The combination of nonstructural measures to be employed was determined by calculating the FEMA flood depth (DFIRM BFE – ground elevation). Table 1 illustrates the measure to be employed within each census block of the community based on the FEMA flood depth. Therefore, each project may have a combination of any of the three nonstructural mitigation measures used within the community.

| FEMA Flood Depth | Nonstructural Measure |
|------------------|-----------------------|
| 0 feet – 3 feet  | Floodproof            |
| 3 feet – 18 feet | Elevate               |
| >18 feet         | Acquire               |

To calculate damage, the Damage Assessment Tool utilizes a ground elevation and a surge plus wave height elevation for each defined census block to calculate a modeled flood depth. The Tool then compares this modeled flood depth with the height to which structures have been protected. Cost information was developed for each nonstructural project to aid in the evaluation. The following items were considered in developing project costs:

- Structure classification:
  - Single family residential;
  - Small multi-family residential;
  - Large multi-family residential;
  - Manufactured homes;
  - Commercial;
  - Industrial;
  - Public; and
  - Agricultural.
- Mitigation measure being applied:
  - Floodproofing to three (3) feet;
  - Elevation between 3 and 18 feet (height); and
  - Acquisition when structures must be elevated higher than 18 feet.
- Participation rates (varies with type of mitigation measure being applied).
- Project durations (varies with type of mitigation measure being applied and the number of structures being impacted).

- Uncertainties (ranges of participation rates, project durations, and costs were developed to account for the uncertainties in developing each of these parameters).

A total of 112 nonstructural projects were evaluated by the Planning Tool in the 2012 Coastal Master Plan. Because two variations of each nonstructural project were proposed for each risk reduction target area, there are 56 distinct projects that could be chosen for implementation. The selected projects will be developed for implementation as part of the Master Plan.

Implementation of nonstructural projects will require a design phase, just as structural projects require a final design. Additionally, the final design of a nonstructural project may result in a different mix of mitigation measures than what is proposed in the conceptual project evaluated by the Damage Assessment Tool.

A detailed description of nonstructural projects, attributes, and costs is located in Appendix A – *Project Definitions*.

### **1.3 Nonstructural Program Definition**

As stated previously, effectively reducing risk through nonstructural measures requires implementation of both projects and programs. Projects reduce risk for the existing building inventory, while programs focus on reducing risk for the future building inventory. Nonstructural programs can range from public education activities, to implementing ordinances and building codes with higher risk reduction standards, to preparing land use plans that integrate floodplain management concepts. An effective, comprehensive nonstructural strategy will include these measures and a variety of others.

The FDT Nonstructural Work Group described earlier in this document assisted with development of the nonstructural strategy. This group met over a period of several months and determined that, at a minimum, a nonstructural implementation strategy should address the following programs:

1. Land use planning
2. Land use ordinances
3. Hazard mitigation planning
4. Higher regulatory standards
5. Building codes
6. Flood insurance requirements
7. Public education

The 2012 Coastal Master Plan's Nonstructural Implementation Strategy is intended to address these programs and recommend a course of action. While the Master Plan offers guidance and recommendations for nonstructural program implementation, it does not constitute a comprehensive implementation program. The Master Plan recognizes that many obstacles to implementation of a coast-wide nonstructural program exist, and that further coordination with

state agencies, local governments and affected communities is critical to fully developing and implementing a successful nonstructural program.

These programs are discussed further in the “Implementation” section of the Master Plan.

## **1.4 Project and Program Implementation**

A comprehensive nonstructural risk reduction strategy consists of two distinct but closely related components: 1) projects and 2) programs. Although implementation of these two components can proceed separately, a more effective strategy is to implement elements of both simultaneously. To promote implementation of nonstructural programs at the local level, it may also be appropriate to link implementation of these measures to implementation of risk reduction projects.

The following sections discuss the implementation of nonstructural projects and programs. Recommendations for implementation are located in *Italics* in each section and there is a summary of recommendations located at the end of the document.

### **1.4.1 Nonstructural Project Implementation**

Funding for nonstructural projects is generally disbursed by FEMA through the state to local jurisdictions for project implementation. In Louisiana, significant federal project funding has also been provided to the Office of Community Development for implementation for those directly impacted by Hurricanes Katrina and Rita (Road Home Program) and also for Hurricanes Gustav and Ike. Other state agencies are also involved in hazard mitigation activities, including the Department of Transportation and Development (National Flood Insurance Program), Governors Office of Homeland Security and Emergency Preparedness (disaster response and recovery), and Coastal Protection and Restoration Authority (Coastal Protection and Restoration Master Plan and recently, a Cooperating Technical Partner with FEMA). In addition, multiple universities and nonprofit organizations have on-going nonstructural mitigation outreach activities.

It is recommended that a single entity be responsible for coordinating all hazard mitigation activities including: hazard risk assessment, hazard mitigation planning, and project implementation.

The Master Plan does not address risk to personal safety; hurricane evacuation planning is prepared and implemented by the Louisiana State Police and DOTD.

It is recommended that nonstructural projects be implemented in coordination with other community resilience, development, and economic plans along with emergency response and evacuation plans to ensure that projects are considered and evaluated as a whole to maximize limited resources and the synergies of each plan.

### **1.4.2 Nonstructural Program Implementation**

Nonstructural risk reduction projects address the existing building inventory. The intent of nonstructural programs is to minimize the building of new at risk inventory. Programs may include measures such as flood damage prevention ordinances, land use ordinances, building

standards and codes, land use and hazard mitigation planning, flood insurance, and public education.

Although nonstructural programs were not evaluated in the Planning Tool, the Master Plan recognizes the importance of nonstructural programs to the success of reducing risk in the coastal area of Louisiana. The following sections discuss several nonstructural programs and issues and recommendations regarding the implementation. Section E – Summary of Recommendations, contains an abbreviated compilation of the recommendations.

#### **1.4.2.1 Program Recommendations**

**Land Use Planning:** Land use planning determines where and how people may develop and redevelop land. Effective land use plans can direct development away from high hazard areas and help preserve the natural functions of floodplains and other critical areas. Land use planning is an essential ingredient in reducing flood risk to future building inventory.

In Louisiana, comprehensive land use plans are required of parishes and cities that have a planning commission; however, not every coastal parish and community has developed a land use plan or has an up to date plan. Land use planning requires an investment of resources, personnel and funding. The community must engage someone to develop the initial plan, approve and adopt the plan, enforce the requirements of the plan, and revise the plan over the course of time. Effective land use plans also require support from citizens. A number of grant programs have been made available for those parishes desiring to create or up date land use plans.

*Because many parishes do not have the resources to develop, implement, and maintain land use plans, it is recommended that the State continue to identify ways to support increased capacity for land use planning at the local level, understanding that some parishes have fewer resources to sustain these efforts and may require additional incentives.*

*For the sake of consistency among planning efforts and with the Master Plan, some oversight may be required by the State.*

As more parishes and communities engage in planning activities, it is important that risk reduction be considered.

*It is therefore recommended that future planning grants require that all land use plans contain a section specifically addressing flood risk reduction measures that are in keeping with the Master Plan.*

Many gulf states are now considering not only traditional land use planning as a nonstructural measure, but also redevelopment planning. Redevelopment plans set a course of action for how to rebuild after a disaster. This process should also be considered in coastal Louisiana planning efforts.

**Hazard Mitigation Planning:** A number of existing federal, state and local hazard mitigation plans are currently in place throughout the coastal area such as the “State Hazard Mitigation

Plan” and the “Louisiana Citizen Awareness and Disaster Evacuation Guide” developed by the Governor’s Office of Homeland Security and Emergency Preparedness (GOHSEP). Local Flood Mitigation Assistance (FMA) plans have been prepared for communities including, but not limited to, Jefferson Parish, Vermilion Parish, and Terrebonne Parish. These plans contain nonstructural flood mitigation measures and require annual updating and are typically rewritten every five (5) years. Well formulated hazard mitigation plans provide an orderly roadmap for implementing both structural and nonstructural projects and programs. It is important for these plans to be regularly updated.

*It is recommended that communities have up-to-date, FEMA compliant hazard mitigation plans in place prior to receiving funding for structural and/or nonstructural projects.*

**Higher Regulatory Standards:** The National Flood Insurance Program (NFIP) requires participating communities to develop a flood damage prevention ordinance that meets the minimum requirements of the NFIP. Participating communities are, however, encouraged to adopt ordinances that contain higher regulatory standards. Communities that participate in the Community Rating System (CRS) may also receive additional points towards premium reductions for adopting higher standards. Both Jefferson Parish and Terrebonne Parish have recently received CRS ratings of 6 for their unincorporated areas resulting in a discount of 20% on flood insurance policies.

*It is recommended that the State encourage communities to adopt higher regulatory standards such as increased freeboard, additional levels of protection for structures behind levees, or cumulative substantial damage tracking requirements.*

**Building Codes:** In 2005 the State of Louisiana enacted Act 12 of the First Extraordinary Session to provide for a state uniform construction code. The code establishes minimum construction standards for new construction and reconstruction. The Louisiana State Uniform Construction Code Council was created to determine if amendments to the state uniform code are justified, to review and adopt changes to the code as appropriate, and to provide training, education and certification to local code enforcement officers, inspectors, third party providers and building officials.

The Louisiana State Uniform Construction Code Council updated the various construction codes in the State in 2010 by adopting the most recent (2009) editions with certain deletions and amendments of the International Building Code (IBC), International Existing Building Code (IEBC), International Residential Code (IRC), International Mechanical Code (IMC) and International Fuel Gas Code (IFGS). These updated codes were effective January 2011. The State previously adopted the most recent (2008) edition of the National Electric Code. The 2009 “I” codes, now in effect in Louisiana, through the State Uniform Construction Code, have many cases of higher standards or more specific standards than the NFIP requirements.

*It is recommended that the Louisiana State Uniform Construction Code Council continue to maintain existing standards and consider new higher standards related to hurricane and flood protection in the State's Uniform Construction Code.*

**Education:** Educating the general public, businesses, organizations, and local decision makers regarding nonstructural programs can help with effective implementation. Outreach aimed at explaining the benefits of nonstructural programs and the implementation process are needed. Local decision makers should also be educated on the benefits of nonstructural programs and opportunities to obtain funding for nonstructural projects.

**Flood Insurance:** The Flood Insurance Agency (FIA), a branch of FEMA, requires participation in the NFIP before making federal flood insurance available to residents, businesses, churches, and others in that community. A common misconception is that flood insurance is only available to those in the floodplain. When a community enrolls in the NFIP, however, flood insurance becomes available to almost all, whether owner or renter, regardless of the location of their structure with respect to the floodplain.

All federally backed mortgages for structures built in a floodplain must have a flood insurance policy in place on the mortgaged structure. If a structure is located in the floodplain and the mortgagee fails to purchase flood insurance, it is incumbent on the bank to “force place” a policy. These requirements are not applicable to homes without a mortgage, homes without a federally backed mortgage, or homes built outside of the floodplain.

Flood insurance limits the personal financial losses of those impacted by a flood. Additionally, flood insurance allows individuals to accept some responsibility for protecting themselves from the flood hazard. For residents living in an NFIP participating community, failing to purchase flood insurance may be a financial decision (i.e., cannot afford the annual premium), a lack of adequate auditing of mortgages by the bank, or lack of understanding of the importance of flood insurance by the structure owner or renter.

*It is recommended that the public education program on the importance of flood insurance be continued.*

It is recognized that FEMA currently runs an ad campaign regarding flood insurance, but a program focused on the specific issues of coastal Louisiana may be more effective.

#### **1.4.2.2 Obstacles to Implementation**

The FDT Nonstructural Work Group noted that the Master Plan should highlight potential issues such as; “the disparity of resources between parishes”, “coordination among various levels of government and non-governmental agencies”, and “useful linking of projects and programs (e.g., withholding project money if certain local nonstructural risk reduction programs are not in place). These potential obstacles to plan implementation are discussed below.

**Lack of Resources and Tools:** In addition to requiring assistance with funding and technical resources, communities need other resources to implement a successful nonstructural program.

Planning guides, model ordinances, accurate electronic mapping, and access to computerized data sources are necessary tools for effective floodplain management that may not be adequately available in all coastal jurisdictions.

The Center for Planning Excellence (CPEX) and the Coastal Protection and Restoration Authority (CPRA) through a cooperative endeavor agreement developed a “Best Practices Manual for Development in Coastal Louisiana” aimed at providing guidance to parishes and communities wishing to incorporate the concepts of resilience and sustainability into their land use planning. The manual provides planning concepts and tools, recommendations for land development practices, and implementation strategies. Through this same project; model ordinances for use by coastal parishes and communities have been developed as part of a Coastal Land Use Toolkit. Continued support of these, and similar efforts, is important to successful implementation of a comprehensive nonstructural program.

The Louisiana State University (LSU) Civil & Environmental Engineering Department has established a “Research Group for Water Environment Sustainability” that focuses, in part, on low impact development (LID) practices. Additionally, Light Imprint (LI) practices show promise, particularly in smaller communities and communities encouraging “smart growth”. Both of these practices reduce stormwater runoff and can have an impact on future flooding levels as well as community resilience and quality of life. These efforts and similar efforts can supplement on-going state efforts.

*The State should continue to support non-governmental organizations and educational institutions in developing a variety of tools and documents related to proper floodplain management and flood risk reduction.*

Flood damage prevention ordinances that meet or exceed the minimum standards of the NFIP are currently in place in all coastal parishes; however, parishes may not have updated Digital Flood Insurance Rate Maps (DFIRMs) with final effective Base Flood Elevations (BFEs). As parishes adopt the latest DFIRMs and BFEs, new work will be required periodically to assure the latest land elevations and benchmarks, along with storm surge modeling and other relevant information of Louisiana’s dynamic coast are incorporated.

The CPRA has recently been identified as a Cooperating Technical Partner (CTP) with FEMA. As a CTP, the State will enter into agreements regarding the development of Flood Insurance Rate Maps and risk reduction actions. These agreements will define the role of both the CPRA and FEMA and should allow the State more input on data utilized to develop Flood Insurance Rate Maps in coastal Louisiana. Accurate Flood Insurance Rate Maps are critical to proper floodplain management.

*The State should utilize its CTP status with FEMA to be actively engaged in the development of accurate Flood Insurance Rate Maps.*

**Varying Levels of Needs and Resources among Jurisdictions:** Each parish and/or community has unique needs and limited resources and capabilities. Each local government is also responsible for applying those resources to the highest priority areas. To require that certain nonstructural programs be in place prior to receiving funding for structural and nonstructural projects presents a number of challenges for those parishes/communities.

1. Projects that span multiple jurisdictions – Structural projects may cross multiple jurisdictions in order to be effective. One jurisdiction that is unwilling or unable to comply with the program requirement may impact the project for other jurisdictions.
2. Jurisdictions that cannot afford program implementation – Some jurisdictions may simply not have the financial resources to implement a required program.
3. Lack of properly trained resources – Communities with nonstructural programs that contain a plan review and/or inspection component may not have staff that are properly trained or certified to perform those functions.
4. Appropriateness of programs – Requiring that structures be elevated to the BFE+4' may be entirely appropriate in some jurisdictions and may provide additional damage reduction over time. In some jurisdictions, however, this may not be the case. Requiring that a single standard or program be applied coast-wide may not be appropriate, rather a regionally based set of standards, taking into account Louisiana's unique landscape, may be more appropriate.

*The State should consider requiring implementation of certain nonstructural programs to coincide with implementation of structural and nonstructural projects. Decisions must be made carefully; however, to match the capabilities and needs of the parish or community to the required programs and the flexibility of those programs. The State should also consider providing assistance (funding, technical assistance, training, etc.) particularly to those jurisdictions that do not otherwise have the resources to comply. Finally, as the State moves forward with developing required nonstructural programs, the State must carefully weigh the benefit and cost of those programs to each jurisdiction.*

**Lack of Understanding Regarding Different Funding Sources:** Multiple traditional funding streams are available for nonstructural projects such as FEMA's HMGP. Other sources of funding may also become available for use during nonstructural program implementation. Each funding source has its own unique funding cycle, application process, eligibility, and implementation requirements.

It is difficult, at best, for local officials to track each of these sources and for them to recognize when they have a project that meets the grant criteria, and allocate limited staff resources to prepare the application package. Consequently, when an appropriate funding source is matched with a program or project, the funding is seldom leveraged with other projects and programs taking place within the region. Most funding sources also require a local match. This requirement can be a "deal breaker" if the jurisdiction does not have adequate resources in reserve.

Additionally, some funding sources do not have sufficient monies available on an annual basis to make significant progress in a timely fashion.

*It is recommended that the State educate local officials on mitigation activity funding sources and cycles. In order to fully leverage mitigation grant programs, local jurisdictions should consider a budget item for hazard mitigation project planning and implementation and identify specific projects and potential funding sources in their local hazard mitigation plans.*

*The State should consider creating a clearinghouse to direct jurisdictions to appropriate funding sources and to identify opportunities to leverage funding by one jurisdiction in collaboration with another jurisdiction.*

**Lack of Adequate Enforcement of Programs and Policies:** Any program can experience problems delivering consistent and adequate enforcement. When programs span multiple jurisdictions it is also important to have equal enforcement across jurisdictional lines.

Even with vigorous enforcement policies, it is critical to have well trained and experienced inspectors, contractors, and service providers. Especially during times of disaster, “fly by night” companies abound and take advantage of a vulnerable public. Training, certifying, and listing “approved” contractors can reduce the number of unscrupulous companies.

On August 19th, 2011, Governor Jindal issued an executive order outlining new consumer protection standards for the HMGP. These new standards are being implemented through the state licensing board for contractors and are targeting those contractors that use unsafe construction practices and that provide “shoddy” work.

To facilitate consistent and adequate enforcement of building codes, flood damage prevention ordinance requirements, land use planning policies and other programmatic regulations, *the State should consider providing additional assistance to parishes and communities related to training and certification of reviewers, inspectors, and permitting authorities. The State should also consider providing additional training and certification opportunities to building contractors regarding proper floodproofing and elevation techniques and methods.* In some instances, it may be necessary and appropriate to require certification by the State prior to being allowed to conduct business within the State (e.g. home elevation companies).

**Need for Regulatory Changes:** Typically, nonstructural measures are implemented at the local level and on a voluntary basis. Parishes and communities identify certain nonstructural projects through a hazard mitigation planning process, seek funding from FEMA for the project, then provide that funding to qualified home and business owners for implementation. Home and business owners are generally not required to participate in the project. The exception to voluntary participation occurs when a home has been substantially damaged (i.e., damage exceeds fifty percent (50%) of the fair market value of the structure). In such instances, the repair of the structure must include bringing the structure into compliance with elevation requirements of the local ordinance.

The State also provides assistance in the construction of structural risk reduction projects such as levees. These projects have not, in the past, required that communities have nonstructural risk reduction projects in place as a requisite for funding.

As discussed previously, force placement of flood insurance is typically required only for mortgages backed by the federal government. Properties that use HMGP funding to elevate are also required to maintain flood insurance for the life of the structure following the completion of the mitigation activity. This may still leave a large segment of the population living and doing business in a high risk area uninsured and with accompanying excessive financial risk.

Some nonstructural measures may be appropriate for implementation along with structural risk reduction projects. *The State should encourage local governments to include appropriate nonstructural programs when implementing risk reduction projects.*

**Induced Development:** Construction of structural risk reduction projects (e.g., levees) may create induced development into flood hazard areas. Risk reduction projects sometimes give a false sense of protection. If the residual risk associated with structural risk reduction projects are not considered in land use planning, development may gravitate to the risk reduction area rather than looking for a less hazardous area to build.

*The State should consider limiting induced development in potential high risk areas during the risk reduction project planning, design, and implementation process.* This recommendation may be accomplished through tools such as land use planning, creating stricter development standards for areas protected by levees, or maintaining pre-structural project flood damage prevention standards.

**Need for Greater Communication and Coordination:** Communication is a key element to any program implementation effort. Dialogue among stakeholders is essential, along with effective information flow from the State to local officials and vice versa. The general population is directly impacted by nonstructural projects and programs and should be well informed of potential changes.

Typically funding flows from the federal government to the states to local governments for specific projects. Programs may conflict and, at times, may not fund highest priority activities for the region. Lack of coordination of such funding can cause inefficiencies and lost opportunities to combine or leverage project funds to accomplish a greater goal.

As with most other states, Louisiana spreads the responsibility for floodplain management and hazard mitigation activities throughout a number of state and local agencies. Responsibility for coordinating hazard mitigation activities resides with the State Hazard Mitigation Officer (SHMO) located in GOHSEP. HMGP funding is also funneled through this office. The SHMO is responsible for statewide activities, not merely activities along the coast. The State Coordinator for the NFIP is located in DOTD. The Office of Community Development (OCD) is responsible for administration of the Road Home recovery program and other programs focused on reducing risk and developing community resilience. CPRA has recently become a Cooperating Technical

Partner with FEMA to improve the quality of data that is used for flood mapping in coastal areas and to increase risk reduction actions.

A number of state agencies, academic institutions, non-governmental organizations, and local governments are actively engaged in research and developing projects to address risk reduction. However, no single entity coordinates or links these activities together.

As stated above, hazard mitigation responsibilities are shared among the State Hazard Mitigation Officer (GOHSEP), the State Coordinator for the NFIP, and the Office of Community Development. These three offices administer programs on behalf of FEMA including reviewing mitigation grant applications and administering funding for project implementation, generally at the parish and local level. In Mississippi, funding for nonstructural risk reduction projects has been provided by Congress to the USACE through the Mississippi Coastal Improvement Plan (MsCIP) study and report. As the Corps continues work in Louisiana, it is possible that a similar funding action could be taken with the Corps as the administering agency. Other federal agencies such as the Environmental Protection Agency, the Department of Housing and Urban Development and the Federal Highway Administration offer grants that can be used to improve community resilience and reduce risk.

To assure a common vision informed by the Master Plan, *the State should support an on-going forum among a variety of stakeholders, including state and local agencies responsible for hazard mitigation and community resilience, for discussion and exchange of information related to nonstructural mitigation coast-wide. The State should also consider utilizing the existing CPRA structure for coordinating all coastal hazard mitigation research, planning, and project funding.* This forum would provide federal, state, local officials and others a single point of contact to learn about current and planned projects and potential funding sources. This person(s) would also be responsible for connecting available funding with potential nonstructural programs and projects.

Since Hurricanes Katrina and Rita, Louisiana has embarked on a number of nonstructural programs and implemented a variety of nonstructural projects. It is recommended that a review of nonstructural activities implemented by OCD, GOHSEP, CPRA, and others be conducted for ‘lessons learned’.

#### **1.4.2.3 Additional Recommendations for Implementation**

In addition to the recommendations discussed in the previous sections, the following issues were discussed during the formulation of the nonstructural implementation strategy.

1. Multiple challenges and complexities are associated with relocation and acquisition programs and such programs should involve extensive input from, and conversations with, the impacted community. Louisiana’s inheritance laws and cultural traditions can also create challenges and add complexity to federal processes that may not take into account these traditions. While a home may be individually owned, the land it is on may be family land not in the homeowner’s name. In other situations, there may be family cemeteries or property providing some income (agricultural) or access to income (waterfront) that is

shared. Input from the social sciences, as well as, additional research may be necessary to address the challenges facing community relocation and acquisition programs. It takes time to evaluate and determine what areas may need to be relocated, what the relocation plan will include, the level of funding required and the schedule for implementation. Potential relocation areas should be identified as quickly as practical and a dialogue with the impacted areas should begin early in the planning process and continue throughout the project. As mentioned previously, many Gulf States are now considering not only traditional land use planning as a nonstructural measure, but also redevelopment planning. Redevelopment plans set a course of action for how to rebuild after a disaster and include relocation planning. Having redevelopment plans in place prior to a disaster can help a community invest resources wisely, guide growth and respond quickly after a disaster.

2. Often, structural flood control measures significantly alter the natural environment and may induce development into otherwise hazardous areas. Consideration should be given to these issues when planning, designing, and constructing structural flood control projects.
3. It is important that the State consider additional incentives for implementing nonstructural programs and projects. Grants, technical assistance, and other resources should be made available to those parishes and communities desiring to plan, design, implement, and maintain nonstructural programs and projects.

## 1.5 Summary of Recommendations

The following is a compilation of recommendations from the previous sections. The recommendations have been grouped into four broad categories; 1) Regulatory actions, 2) Funding and Support Initiatives, 3) Education and Training Programs, and 4) Nonstructural Program Coordination and Communication. Several of the recommendations from the document are very similar and have been combined into a single recommendation below.

Following the list of recommendations is a discussion of the phasing or timing of implementation. It is important that certain components of the strategy be in place prior or in conjunction with project and program implementation. Finally, the Summary of Recommendations includes a discussion of how to measure the success of nonstructural projects and programs. The 2012 Coastal Master Plan is an adaptive management plan, so understanding how to measure incremental success of the plan is important to achieving the desired results.

### 1. Listing of recommendations

- a. **Nonstructural Program Coordination and Communication:** As in many States, Louisiana's nonstructural program planning and implementation is shared among a variety of state agencies. No other state; however, has a nonstructural program that is as comprehensive or of the magnitude described in the 2012 Master Plan update. In order to effectively implement a nonstructural program of this nature, coordination of activities and communication among stakeholders is extremely important.

In fact, the first four recommendations in this category are very similar and point to the need for increased communication and enhanced coordination of nonstructural related activities. These recommendations call for a single entity to coordinate and act as a clearinghouse for all coastal nonstructural mitigation activities. This entity would also be responsible for effectively communicating with stakeholders and acting as a forum for discussion.

The CPRA membership includes the state agencies currently engaged in nonstructural program activities; DOTD, GOSHEP, Division of Administration (OCD). A CPRA standing committee on nonstructural programs consisting of the previously mentioned members plus others could address the concerns for improved nonstructural program coordination and communication. Such a committee could develop a forum for discussion for stakeholders, coordinate nonstructural activities of the various agencies, direct communities to the appropriate funding sources, and leverage efforts of multiple agencies and communities. The “nonstructural” committee would report results directly to the full CPRA on a regular basis. This standing committee could be assigned to specifically address recommendations i. through v. below:

- i. A single state agency should be responsible for coordinating all hazard mitigation and community resilience activities including: hazard risk assessment, planning, research, and project implementation.
- ii. The State should consider having a designated person(s) agency responsible for coordinating all coastal hazard mitigation and community resilience project funding.
- iii. The State should consider creating a clearinghouse to direct jurisdictions to appropriate funding sources and to identify opportunities to leverage funding by one jurisdiction in collaboration with another jurisdiction.
- iv. The State should support an on-going forum among a variety of stakeholders, including state and local agencies responsible for hazard mitigation and community resilience, for discussion and exchange of information related to nonstructural mitigation coast-wide.
- v. It is recommended that nonstructural projects be implemented in coordination with other community resilience, development, and economic plans along with emergency response, mitigation, and evacuation plans to ensure that projects are considered and evaluated as a whole to maximize limited resources and the synergies of each plan.
- vi. The State should utilize its CTP status with FEMA to be actively engaged in the development of accurate Flood Insurance Rate Maps impacting coastal communities.
- vii. The State should consider limiting induced development in potential high risk areas during the risk reduction project planning, design, and implementation process.

- b. **Regulatory Actions:** The nonstructural implementation strategy calls for the State to consider amending various regulatory requirements to ensure that certain nonstructural goals are met. The items below identify four areas where regulations should be reviewed and amended, as appropriate; 1) local land use planning, 2) building codes, 3) flood damage prevention ordinances, and 4) risk reduction project funding.
- i. Future planning grants should require that all land use plans contain a section specifically addressing flood risk reduction measures.
  - ii. The Louisiana State Uniform Construction Code Council should continue to maintain existing standards and consider new higher standards related to hurricane and flood protection in the State's Uniform Construction Code.
  - iii. The State should encourage communities to adopt higher regulatory standards such as increased freeboard or cumulative substantial damage tracking requirements.
  - iv. The State should consider requiring implementation of certain nonstructural programs to coincide with implementation of structural and nonstructural projects. Funding of other risk reduction projects may be tied to implementation of appropriate nonstructural measures.
- c. **Funding and Support Initiatives:** There are numerous local governments, educational institutions, and non-profit groups in Louisiana that are currently involved in developing and implementing nonstructural projects, programs, and tools and, in some cases, with financial support received from the State. It is essential that the State continue to identify the current needs and resources of coastal Louisiana residents, businesses, communities, and local government and encourage development of those tools and measures which address these identified needs and gaps. Continued support for these identified activities should be provided including financial support, as appropriate. The following set of recommendations call for state support of local land use planning, nonstructural program implementation, and nonstructural planning tools:
- i. The State should identify ways to support increased capacity for land use planning at the local level, understanding that some parishes have fewer resources to sustain these efforts and may require additional incentives.
  - ii. The State should consider providing assistance (funding, technical assistance, training, etc.) to those jurisdictions that do not otherwise have the resources to comply with requirements for nonstructural program implementation associated with other risk reduction projects (See recommendation b.iv).
  - iii. The State should consider additional incentives for implementing nonstructural programs and projects. Grants, technical assistance, and other resources should be made available to those parishes and communities desiring to plan, design, implement, and maintain nonstructural programs and projects.

- d. **Education and Training Programs:** Education and training is a necessary ingredient to any program or initiative. Proper implementation requires training for those responsible for the program's success and education of the affected parties. The recommendations below are based on this need:
- i. Support of the public education program on the importance of flood insurance should be continued.
  - ii. The State should seek to educate local officials on mitigation activity funding sources and cycles.
  - iii. The State should continue to provide assistance to parishes and communities related to training and certification of reviewers, inspectors, and permitting authorities.
  - iv. The State should consider providing additional training and certification opportunities to building contractors regarding proper floodproofing and elevation techniques and methods.

## 2. Order of Implementation

To effectively implement the nonstructural strategy certain aspects of the strategy should be implemented before other aspects. Other recommendations can be implemented at any point in the process without negatively affecting the strategy. The following paragraphs discuss a general order of implementation of the above recommendations.

Several of the recommendations reflect activities that are currently being administered by the State. The State should continue these efforts and review and assess their success as appropriate. Recommendations related to on-going State efforts include; A.vi, B.ii, and D.iii.

Similar to on-going State efforts are the activities of local governments and non-governmental organizations (NGOs). Decisions should be made about which activities to support and to what level based on available funding and the potential for these activities to further the goals of the 2012 Coastal Master Plan. Support of activities conducted by local governments and NGOs are addressed in recommendations C.i, C.ii, and D.i.

It will be important for the State to quickly develop a framework from which to make decisions regarding nonstructural project and program implementation and to communicate efforts regarding implementation of the nonstructural strategy to the various stakeholders. Recommendations A.i, A.ii, A.iii, and A.iv address this issue.

The decision framework developed through the recommendations in the previous paragraph can be used to assess current regulatory policies and to refine and develop appropriate policy changes to address recommendations A.v, A.vii, B.i, B.iii, B.iv, and C.iii.

Education and training activities (recommendations D.ii and D.iv) should be on-going and will be necessary to inform stakeholders regarding project design and implementation,

programmatic changes and policy and regulatory revisions developed through the implementation of this strategy.

The 2012 Coastal Master Plan identifies nonstructural projects across the coast for implementation. These projects may be funded by federal, state, or local sources. Additionally, projects may, or may not be, part of a local hazard mitigation plan. Projects developed and funded by federal and local sources should move forward provided they are not in conflict with the overall goals of the 2012 Coastal Master Plan. As a decision framework is developed for the nonstructural strategy implementation, appropriate State funding can be provided to additional projects that meet the overall goals of the 2012 Coastal Master Plan. The design of these projects should include mitigation of existing structures as appropriate and should provide some level of assurance that future building inventory in that jurisdiction will be constructed in such a manner as to minimize risk of flooding to the extent practical.

### 3. Measures of Success

To determine if the nonstructural implementation strategy is achieving the desired results of reducing damages from flooding, the plan must identify measures of success. Because the real goal of reducing damages is difficult to measure (i.e., trying to measure damages that don't occur), surrogate measures must be identified. The intent of nonstructural projects and programs is to reduce the risk to existing structures by protecting them from flooding and to reduce the number of new structures that are constructed with a risk of flooding. The following measures can be used to determine the relative success of the nonstructural strategy over the course of the planning period.

1. A decrease in Severe Repetitive Loss structures (as defined by FEMA)
2. A decrease in Repetitive Loss structures (as defined by FEMA)
3. A decrease in vulnerable structures located within a high hazard area (e.g. coastal V zones and floodways)
4. A decrease in structures with finished floor elevations (as defined by the NFIP) below the Base Flood Elevation plus one foot of freeboard
5. An increase in the percentage of non-residential structures within a flood hazard area that are floodproofed

It will be important to collect baseline data early in order to measure success over the course of the planning period.

The 2012 Coastal Master Plan set an ambitious target for reducing flood risk for every area of the coast. Nonstructural projects and programs are a necessary and integral part of reaching that target. Projects must be developed as primary and secondary lines of defense to address the current building inventory at risk. Nonstructural programs addressing the future building inventory must be developed and implemented at both the local and state level. To provide for a timely and effective implementation of both nonstructural projects and programs, it is

appropriate to have a single entity such as the CPRA coordinate and act as a clearinghouse for all coastal nonstructural mitigation activities. The CPRA can help ensure that the nonstructural strategy is implemented alongside the structural and restoration activities developed to achieve the goals of the 2012 Coastal Master Plan. Additional information on the implementation of structural and restoration projects can be found in the various attachments contained in this appendix.