

SECTION 8

MITIGATION ACTION PLAN

This section includes the listing of the mitigation actions proposed by the City of Myrtle Beach in the Plan. It consists of the following two subsections:

- ◆ 8.1 Overview
- ◆ 8.2 Mitigation Action Plan

44 CFR Requirement

44 CFR Part 201.6(c)(3)(iii): The mitigation strategy shall include an action plan describing how the actions identified in paragraph (c)(2)(ii) of this section will be prioritized, implemented, and administered by the local jurisdiction.

8.1 OVERVIEW

This section includes the listing of the mitigation actions proposed by the City of Myrtle Beach. It is designed to achieve the mitigation goals established in Section 7: *Mitigation Strategy* and will be maintained on a regular basis according to the plan maintenance procedures established in Section 9: *Plan Maintenance Procedures*.

Each proposed mitigation action has been identified as an effective measure (policy or project) to reduce hazard risk for the City of Myrtle Beach. Each action is listed in the MAP in conjunction with background information such as hazard(s) addressed, plan goal(s), and relative priority. Other information provided in the MAP includes potential funding sources to implement the action should funding be required (not all proposed actions are contingent upon funding). Most importantly, implementation mechanisms are provided for each action, including the designation of a lead agency or department responsible for carrying the action out as well as a timeframe for its completion. These implementation mechanisms ensure that the City of Myrtle Beach Flood Mitigation and Hazard Mitigation Plan remains a functional document that can be monitored for progress over time. The proposed actions are not listed in priority order, though each has been assigned a priority level of “high,” “moderate,” or “low” as described below and in Section 7 (page 7.2).

The Mitigation Action Plan is organized by mitigation strategy category (Prevention, Property Protection, Natural Resource Protection, Structural Projects, Emergency Services, or Public Education and Awareness). The following are the key elements described in the Mitigation Action Plan:

- ◆ Hazard(s) Addressed—Hazard which the action addresses.
- ◆ Goal(s) Addressed—Plan goal which the action addresses.

- ◆ Relative Priority—High, moderate, or low priority as assigned by the jurisdiction.
- ◆ Lead Agency/Department—Department responsible for undertaking the action.
- ◆ Potential Funding Sources—Local, State, or Federal sources of funds are noted here, where applicable.
- ◆ Implementation Schedule—Date by which the action the action should be completed. More information is provided when possible.
- ◆ Implementation Status (2015)—Indication of completion, progress, deferment, or no change since the previous plan. If the action is new, that will be noted here.

8.2 Mitigation Action Plan

The mitigation actions proposed by the City are listed in each mitigation technique on the following pages. **Table 8.1** shows the location of each technique within the MAP as well as the number of mitigation actions proposed for each technique.

Table 8.1: MAP

Mitigation Category	Page	Number of Mitigation Actions
Prevention	8:4	14
Property Protection	8:9	2
Natural Resource Protection	8:10	4
Structural Projects	8:12	2
Emergency Services	8:13	9
Public Education and Awareness	8:16	9

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City of Myrtle Beach Mitigation Actions

Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
Prevention								
P-1	Submit a request to FEMA for mapping of the former Air Force Base under their Limited Map Maintenance Program, to map the storm surge potential.	Flood, Storm Surge	1, 6	Moderate	Floodplain Coordinator, Public Works Department	FEMA, Local funds	2015	Deferred-This area is now known as the Market Common District - There has been no notable progress in the effort to have the former Air Force base mapped. FEMA has started its Map Modernization program for Horry County, and at the kickoff meeting the former Air Force Base was identified as a priority for study. The preliminary maps are estimated to be issued in 2015.
P-2	Revise the zoning ordinance to ensure no net loss of fill within the SFHA.	Flood	1	Low	City Council, Planning Commission, Zoning Administrator, Chief Building Official	Operating budget	2016	Deferred-The Construction Services Department is working to revise the zoning ordinance for the SFHA.

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Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
P-3	Create a plan to increase Community Rating System (CRS) points.	Flood	1, 7	Moderate	Floodplain Coordinator, FMHMPC	Local funds	Completed	Completed-The Floodplain Manager implemented a plan to increase the City's potential CRS points. The strategies were to obtain credit for dune protection, to upgrade the web site, amend the public notice brochure, reduce the number of repetitive loss properties, implement a non-conversion agreement for VE properties, provide additional mapping information, implement a repetitive loss notification program, and train inspection staff on flood zone issues. The City's CRS program was reviewed in 2009 and the points increased to 2758. The City's CRS program was reviewed in 2012 and the points increased to 2,849.
P-4	Perform routine maintenance on the City's drainage structures.	Flood	3	High	Public Works Department	Local funds	Completed	Completed-The City's ditches and canal systems are on a constant cutting and cleaning schedule. There is also a schedule for pipe cleaning and catch basin repair. A stormwater management plan was adopted in Fiscal 14-15 for the city.
P-5	Implement a non-conversion agreement as a condition of granting permits in Flood Zones.	Flood	1, 5	High	Construction Services, Floodplain Coordinator	Local funds	Completed	Completed-The Construction Services Department has implemented a policy that requires property owners to sign and agree not to convert areas below the base flood elevation in violation of the floodplain regulations.

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Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
P-6	Work to increase overall staff expertise in floodplain management through training and certification of additional staff.	Flood	1, 5	High	City Manager	Local funds	Completed	Completed-The City has six certified floodplain managers among its employees. The majority of them attended the SC Association for Hazard Mitigation conference in North Myrtle Beach this past year, securing continuing education credits necessary to maintain certification. The City added 2 additional staff members as certified floodplain managers in 2013.
P-7	Create and maintain a map of all repetitive loss properties.	Hurricane and Tropical Storm, Flood, Storm Surge	1, 5	High	Floodplain Coordinator	Local funds	Completed	Completed-This action was added during the 2004 annual evaluation process. Since that time, a map was created showing all repetitive loss properties in the City limits. It was submitted under the CRS program for additional credit towards the repetitive loss program. The map was redone when new data came out.
P-8	Create a training program on how to fill out an elevation certificate.	Flood	5	Moderate	Floodplain Coordinator	Local funds	Completed	Completed-This action was added during the 2004 annual evaluation process. Since that time, the Floodplain Coordinator worked with the SC Department of Natural Resources to hold an Elevation Certificate workshop. The City held a training program with SCDNR in 2013.

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Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
P-9	Review the Floodplain Ordinance and other elements of the City's Floodplain Management program to ensure continued compliance with the NFIP.	Flood	1, 5	High	City Council, Zoning Administrator	Local funds	2016	Deferred-The Planning Department and Zoning Administrator have begun work [in 2006] on reviewing Section 909 of the Zoning Ordinance. Changes to the Floodplain Ordinance were approved by the City Council in January 2008. The changes are scheduled to be incorporated into the Zoning Ordinance Rewrite, which is scheduled to be completed by 2011. Additionally, the City is in the process of amending the Floodplain Ordinance to comply with a FEMA ruling regarding swimming pool enclosures (see Mitigation Action 32). The ordinance for pool enclosures have been revised based on FEMA guidance.
P-10	Coordinate with Planning and Public Works to draft a stormwater plan.	Flood	3	Moderate	Planning Department, Public Works Department	Local Funds	Completed	Completed-This project was not achieved in 2008; the committee moved it to the 2009 action list, and will re-evaluate the resources needed to begin the process. A stormwater management plan was adopted in Fiscal 14-15 for the city.
P-11	Create a new filing system for elevation certificates in the Floodplain Coordinator's office.	Flood	5	Low	Floodplain Coordinator	Local funds	Completed	Completed-Elevation certificates are now scanned into an electronic folder.

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Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
P-12	Post-construction inspections of private stormwater systems.	Flood	3, 5	Moderate	Public Works Department	Local funds	2017	Deferred-In accordance with NPDES regulations, Public Works staff inspect private stormwater systems for any conditions that may create or exacerbate localized flooding. Through the existing contract, contingent upon annual renewal by the City of Myrtle Beach, with the Coastal Waccamaw Stormwater Education Consortium (CWSEC) Storm Drain Marking Program will assist the City in achieving this goal.
P-13	Encourage more developers to bury their utility lines to prevent damage from wind and flooding.	High Wind, Ice Storm, Northeaster, Flood, Tornado	1	Moderate	Planning Department, Public Works Department, Construction Services	Local funds	Completed	Completed-All new development over the past 3 years has installed underground utilities.
P-14	Become a Firewise Community.	Wildfire	5, 7	Moderate	Fire Marshal	Local funds	2017	The City is currently working on its package to become a Firewise community.

Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
Property Protection								
PP-1	Acquire easements or property to correct localized drainage problems.	Flood	3	Moderate	Public Works Department, City Council	Local funds	Completed	The Public Works Department has acquired all easements necessary for ongoing drainage relief projects for the boardwalk/downtown area. Easements have also been acquired for the Pine Lakes drainage projects. Two large road projects brought drainage easements along Oak Forest Lane (2008) and 38 th Ave N. The Public Works Department is continually working to acquire easements to correct flooding.
PP-2	Removal of temporary pool enclosures from hotels in the floodplain.	Flood, Storm Surge, Tidal Waves / Tsunami	1, 5	High	Floodplain Coordinator, Zoning Administrator	Local funds	Completed	Completed-FEMA overturned this ruling and now allows pool enclosures. Property owners must apply annually for a permit.

Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
Natural Resource Protection								
NRP-1	Continue beach renourishment on a 10-year cycle for the next 50 years, based on the availability of funding for the federal government's share of the cost.	Coastal Erosion, Sea Level Rise, Storm Surge	2	High	City Council, City Manager, Public Works Director	Local funds, Grants	2019	Deferred-Every ten years, the City participates in beach renourishment efforts. The renourishment activity was most recently completed in April 2008. The amount of sand used ranged from 15 cubic yards/foot (in residential areas, where the beach remained healthy) to 40 cubic yards/foot in the area of the 14 th Ave N pier (and other areas where beach traffic is heaviest). The City contracts with Coastal Science & Engineering to report on the result of renourishment; this is due each year in the fall. This report will indicate the updated beach profile. The City continues to notify the Army Corps of Engineers after any significant storm event that causes abnormal erosion along the beachfront. Planning has begun with the USACOE to implement another renourishment in 2019.
NRP-2	Conduct study to investigate the cost of constructing a second line of dunes using sand fencing.	Beach Erosion, Coastal Flooding, Storm Surge	1, 2	Moderate	Public Works Director	Beach protection grants	2019	Deferred-Secondary dunes were created along many areas of the beach during the past renourishment. More secondary dunes will be studied as part of the proposed 2019 project.

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Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
NRP-3	Acquire additional swash and wetland areas.	Flood	2	Moderate	Public Works Department, City Council	Local funds, grants	2017	Deferred-No additional swash or jurisdictional wetland areas were gained in the last year. The City has gained almost 100 acres of wetlands on the former Air Force base via conveyance from the developer; these acres are planned for passive recreation trails and open space. An estuary plan is being created for the Withers Swash area that will lead to acquisition of more open space, an extension of Withers Swash park (across 3 rd Ave S), and a new neighborhood plan that helps the neighborhood relate to the Swash as a preservation concern.
NRP-4	Coordinate with the Planning Department to include a representative for floodplain issues that may arise during the rewriting of the comprehensive plan.	Flood	1, 5	High	Planning Department, Floodplain Coordinator	Local funds	Completed	The Floodplain Coordinator and other CFM-certified staff have participated in the Comprehensive Plan revision process, which should be complete by the end of 2011.

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Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
Structural Projects								
SP-1	Find funding for three currently developed stormwater projects: the 4 th Avenue North Plan; the 24 th Avenue North Plan; and the Downtown Redevelopment Corporation (DRC) Plan.	Flood	3	Moderate	Public Works Department	TBD	2015	Deferred-The City has expended \$2.6 million – including SRF funding – to create a new oceanfront collector system between 1 st Ave and 8 th Ave N. Twin 84” pipes are being constructed going offshore at 4 th Ave. North with a completion date of fall, 2015 at a cost of \$13 Million. A total of six pipes will be removed when the ocean outfall is completed. The stormwater project is being done in conjunction with the new boardwalk recreation project. Additionally, a new drainage system was completed in 2008 to end localized flooding on Haskell Circle. (sentence deleted) Funds from the Pre-Disaster Mitigation (PDM) program were used to accomplish this project.

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Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
SP-2	A study for a regional storm water system for the former U.S. Air Force Base has been completed and work on the regional stormwater ponds is progressing.	Flood	3	Moderate	Base Redevelopment Authority, Public Works Department	Local funds, Staff time	Completed	A contract for a sixth lake in the Market Common district was awarded; and the lake was completed in 2007. Bent Oak phases II, III & IV neighborhood project was completed in 2007 to relieve localized flooding in the area. A large regional ditch (the "Mama Ditch") was annexed in 2008 and has been added to the City's stormwater ditch maintenance schedule.
Emergency Services								
ES-1	Improvement of Emergency Warning System.	All Hazards	1	Moderate	Emergency Management	TBD	Completed	Completed-We have an agreement with HCEMD to provide emergency warnings for visitors and residents using their code red system.

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Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
ES-2	Evacuation Route Improvement.	Hurricane and Tropical Storm	1	Moderate	Emergency Management, SCDOT	Local funds; Federal grants	2016-2020	The SC DOT has installed three overhead message signs on US 17, which can be used to provide information to the public during evacuations and other emergencies. The electronic signs are located on US 17 at SC 544, at Mr. Joe White Avenue North (formerly 10th Avenue North) and at SC 22. The City of Myrtle Beach can request that messages be displayed on these signs as needed during hurricane evacuations or other emergency circumstances. In addition, the SC DOT has installed 16 traffic-monitoring cameras throughout the Grand Strand, on US 17 and US 501. Improvements are made on an annual basis.
ES-3	Maintain the City's Emergency Management Plan. (Each hazard identified in this plan is included in the Emergency Management Plan.)	All Hazards	1, 5	High	Emergency Management	Local funds	2016	The City's Emergency Management Plan has been incorporated into the Floodplain Management and Hazard Mitigation Plan by reference. The Emergency plan is updated each year and was updated in 2015. A copy of the plan is available for viewing on the City's web site.
ES-4	Maintain "Storm-Ready Community" Status.	Hailstorm, Lightning, High Wind, Hurricane, Tornado	1, 5	High	Emergency Management	Local funds	2018	Deferred-The City received its storm-ready approval letter for 2015 but will be able to renew their status in 2018 with all of their eligibility requirements.

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Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
ES-5	<p>Apply lessons learned from recent disasters:</p> <ul style="list-style-type: none"> • Apply for Tsunami-Ready Status • Use the lessons learned from New Orleans' experiences to form evacuation plans • Plan for a Flood Awareness Week 	All	1, 5, 7	Moderate	Emergency Management, Floodplain Coordinator	Local funds	2017	Deferred-The City of Myrtle Beach became a Tsunami-Ready Community in 2006. Prior to the 2006 plan evaluation, the Assistant City Manager and Risk Manager collaborated on a plan to assist nursing homes and other critical facilities in evacuating prior to a hurricane. However, the Floodplain Coordinator is still evaluating the options for a Flood Awareness Week for Myrtle Beach.
ES-6	Devise a flood drill to test the flood warning system.	Flood	1	High	Risk Manager, Emergency Manager, Floodplain Coordinator	Local funds	2016	Deferred-We are working with HCEMD to test the flood warning system using the Code Red System.
ES-7	Train Urban Search and Rescue Team on building collapse rescue.	All	1, 5	Moderate	City Fire Department	Homeland Security Grants	2017	New-Currently, there are 40 trained rescue team members with \$300,000 of equipment.
ES-8	Train Water Rescue Team for the floodplain area and other water rescues.	Flood	1, 5	Moderate	City Fire Department	Local funds; Homeland Security Grants	2016	New-Currently, there are 22 trained personnel with strategically placed equipment for a water rescue.
ES-9	Utilize installed cameras throughout the City to monitor emergency situations to include flooding and surge on the beach access points.	All	1, 5	Moderate	Emergency Management/Public Safety	Local Funds	2017	New-Currently new cameras have been installed around the City and they will be utilized for multiple issues.

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Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
Public Education and Awareness								
PEA-1	Create a business task group to establish guidelines for the mitigation of hazard related economic losses to the community.	All	4, 7	Moderate	Planning Director, Planning Commission, City Manager, City Council	Local funds; private sector	2016	Deferred-The City's Tourism Committee with sponsorships from the Chamber of Commerce, Santee Cooper, and Horry County Emergency Mgmt. have sponsored an annual Area Business Disaster Recovery Symposium for the past two years. Approximately 150 businesses have participated in the symposium each year. The third annual symposium will be held in January 2016. The symposium has focused on business continuity planning thus far.
PEA-2	Create a presence on the City's Web site for flood information.	Flood	1, 4	High	Floodplain Coordinator, Public Information Officer	Local funds	2016	This action was added during the 2004 annual evaluation process. Since that time, the Floodplain Coordinator and Public Information Officer collaborated in publishing the City's floodplain pamphlet on the Internet via a link on the front page of the City's web page, www.cityofmyrtlebeach.com/flood.html . This was expanded to include flood insurance information as well. Additional information for floods including mapping information is expected to be added.

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Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
PEA-3	Provide training for elected and appointed officials and board members about the benefits of low-impact stormwater design.	Flood	1, 7	Moderate	Planning Department, Public Works Department	Local funds	2017	Deferred-This was a new action identified for the 2010 plan update. The City has plans to provide additional training to officials in the coming year. The Coastal Waccamaw Stormwater Education Consortium (CWSEC) will provide support with the workshops, seminars and good housekeeping training videos.
PEA-4	Develop a public information / safety campaign regarding lightning strikes.	Lightning	1, 4	Moderate	Fire Marshal, Risk Manager, Public Information Officer	Local funds	Completed	Completed – Developed a PSA to better inform our citizens and visitors about lighting safety for our local TV channel.
PEA-5	Place floodplain brochures at City Hall and recreation centers to educate the public on floodplain regulations and preparing for emergencies.	Flood	1, 4, 5	High	Construction Services/Floodplain Manager	Local funds	New	
PEA-6	Attend community watch meetings and educate the citizens on stormwater and floodplain issues.	Flood	1, 3, 4	High	Construction Services/Floodplain Manager	Local Funds	2017	New-The City would like to maintain these efforts on an annual basis.
PEA-7	Create public service announcements for hurricane or emergency preparedness.	All	1, 4	High	PIO	Local Funds	2017	New- The City would like to maintain these efforts on an annual basis.
PEA-8	Initiate a social media campaign for the City of Myrtle Beach.	All	1, 4	High	PIO	Local Funds	2016	New-The City began a new campaign to communicate information through other formats including Facebook. Currently, the City has an Instagram account but plans to utilize it more frequently. The Police Department has a twitter account and uses it regularly.

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Action #	Description	Hazard(s) Addressed	Goal Addressed	Relative Priority	Lead Agency/ Department	Potential Funding Sources	Implementation Schedule	Implementation Status (2015)
PEA-9	Plan and hold a disaster awareness day for the City's citizens.	All	1, 4	High	PIO	Local Funds	2017	New-The City feels that there is an interest in citizens learning more. It may be combined with other efforts.
Previously Completed Mitigation Actions								
	Include the Departmental Disaster Response Plan in the Floodplain Management and Hazard Mitigation Plan by reference.	All Hazards		Moderate	City Council, FMHMPC	N/A		Completed-The City's Departmental Disaster Response Plan (DDRP) was included by reference in the Floodplain Management and Hazard Mitigation Plan last year. The DDRP is a comprehensive collection of the specific responsibilities for each department during a disaster. The City is taking the prescribed steps to update the plan annually.
	Investigate potential coordination with SC DHEC to create a rainfall alert system.	Flood		Moderate	Public Works Department	Local funds		Completed. The Public Works Department has coordinated with SC DHEC and currently receives rain gauge information online. This data is then used to help design stormwater systems that mitigate problems in particular areas.