

BAY COUNTY CRS PROGRESS REPORT 2021

Bay County is highly prone to flood hazards associated with hurricanes, tropical storms, and rainfall with high intensity or duration. Bay County averages about 80 thunderstorm days each year. Since most Bay County flood basins are contained within the County, the threat of flooding is generally based on local rainfall conditions, and is not affected by rainfall from other states, or from upstream areas which are not in the County.

Storm hazards have the potential to seriously impact the general population. All residences near water are subject to flooding during severe rainfall events. Bayous may overflow, wetlands reach their capacity, and lake levels rise up and can inundate surrounding property. Areas such as North Bay, East Bay, and West Bay, are subject to flooding, as are properties surrounding smaller water bodies including Beatty Bayou, Laird Bayou, Bayou George, Callaway Bayou, Cook Bayou and Pretty Bayou. Econfina Creek, Bear Creek, Crooked Creek, Burnt Mill Creek and Cypress Creek flow through Bay County and are possible sources of flooding during heavy or prolonged rainfall. Because the County is relatively flat, water flows over land and tends to gather in depressed areas. Property that is only slightly lower than the surrounding areas can become a holding pond for storm water. The county's continual growth has resulted in increased impervious areas such as parking lots, buildings, and driveways, which has increased the potential for flooding.

Many of the property owners in Bay County have been long term residents, and prior to the explosion of growth, were accustomed to a more rural setting where undeveloped land was abundant and solutions to localized flooding were simple. Many residents lived near vacant, wooded areas and did not experience flooding problems since the open spaces and woods absorbed run off from the neighborhood. As more properties become developed, the drainage of these areas changes. Newly constructed residences may be built at a higher elevation than neighboring, older homes; therefore, causing runoff onto the older properties.

While stormwater conveyances transport water from the streets and neighborhoods, there are limitations to their capacity. If ditches are clogged or running full, flooding may occur. This has become more of a problem as residential density increases.

Throughout the history of Bay County, hurricanes and tropical storms have threatened the coastal areas. These events are the most dangerous flood threats to Bay County residents. Not only do hurricanes increase the threat of storm surge flooding, but they can also generate high winds and wave action that further damages properties, and can result in the loss of life. In the past the County has experienced a tropical hurricane, on average, once every 3.5 years. In the past 30 years Bay County has been hit by several major storms:

Hurricane History

Hurricane Eloise

In 1975 damage from Hurricane Eloise in Bay County totaled US \$50 million (1975 dollars), and is attributed with 4 deaths, all indirectly associated to the storm.

Hurricane Kate

In November 1985 Hurricane Kate crossed through the County with over 100 mile an hour winds, though damage to structures and beaches was not considered severe.

Hurricane Opal

Hurricane Opal in October of 1995 caused 125 mile an hour wind gusts, along with estimated seven foot storm surges in the County. Bay County sustained the most overall damage in the Panhandle, with damage to 341 coastal structures, due to the high density of development and large number of structures which were not designed and constructed adequately to withstand the impacts of a major (e.g., 100-year frequency) hurricane. The CCCL for Bay County had not been reestablished prior to Opal, as it had been for the other Panhandle counties; therefore, habitable structures in Bay County were not required to meet the more stringent siting and design standards of the State's CCCL program intended to prevent structural damage caused by a major storm event such as hurricane Opal.

Tropical Storm Barry

During Tropical Storm Barry in August 2001, Panama City reported as much as 11 inches of rain, and heavy damage caused by waves, and storm surge was extreme. Storm surges and tides associated with Tropical Storm Barry were 2-3 feet along Bay County beaches.

Hurricane Ivan

Hurricane Ivan struck in September 2004 causing over 2.5 million cubic yards of sand loss to the beach areas. The erosion impact and structural damage to the County's coastal development was significant, though not severe. The protective buffer of the Panama City Beaches Beach Erosion Control and Storm Damage Reduction Project can be credited with reducing losses to beachfront development. The project, which was completed in April 1999, consisted of the placement of 9 million cubic yards of sand over an approximate 17.5 mile shoreline length. Prior to Ivan, the project area still retained roughly 91% of its original volume. Although a significant volume of sand was lost from the beach area into offshore areas as a result of Ivan, the beach project did the job it was intended to do in providing storm protection to upland development in the Panama City beaches area

Hurricane Dennis

Hurricane Dennis of July, 2005 caused flooding to a significant number of homes and businesses along the coast in Bay County in Panama City, Panama City Beach and Lynn Haven.

Both Ivan and Dennis caused considerable erosion to the project area, and the erosion losses appear to have been comparable to the losses sustained during Opal of 1995;

however, in comparison to the very severe coastal construction damage that was caused by Opal, Ivan and Dennis inflicted only a minor erosion, even though the storm tide conditions were essentially the same. The beach restoration project proved to provide adequate protection.

Hurricane Katrina

Hurricane Katrina of August, 2005 exacerbated the coastal erosion situation. No damage to any structures was reported.

Tropical Storm Lee

Tropical Storm Lee in September, 2011 brought a significant amount of rain to the area. However, no damage to any structures was reported.

Hurricane Isaac

Hurricane Isaac in September, 2012 resulted in very little rain throughout the area. There was some minor flooding in a few coastal areas as a result of storm surge. However, at the time of this report, no damages to any structures have been reported.

Hurricane Michael

Hurricane Michael, in October 2018, made landfall directly on Bay County as a Category 5 hurricane. The storm caused catastrophic wind and debris damage throughout the county. Many homes, businesses, and other structures were either completely destroyed or damaged beyond repair. With the exception of the Mexico Beach area, where much of the city was inundated with storm surge, the remaining areas of the county received only isolated flood damage as the storm was not a significant rain event. Although flood damage was limited, many structures within the regulated floodplain were substantially damaged and were required to be elevated to the current federal and local elevation requirements. The massive wind event also uprooted and destroyed thousands of trees. Trees are vital to floodplain management as they help to mitigate stormwater runoff.

Hurricane Sally

Hurricane Sally made landfall in Gulf Shores, Alabama as a category 2 hurricane on September 16, 2020. Bay County, as well as, the rest of the Florida Panhandle were in the direct path of the storm's outer rain bands. Because of the asymmetrical structure of Sally, combined with abnormally slow movement of the storm, Bay County received several days of heavy rainfall. The NWS indicates that between 7-15 inches of rain fell though the affected area. This caused structural flooding of drainage problematic areas, as well as flooding of streets. There were some areas where the moving water eroded and washed out road segments.

Tropical Storm Fred

Tropical Storm Fred made landfall in Bay County on August 16, 2021 and brought the most concentrated and intense rainfall the County has seen since the July 2013 rainfall events. Fred brought 7-9 inches of rain to Bay County within a 24 hour time frame. There was structural flooding of homes and businesses that were consistent with other major rainfall events. However, the County did see many areas, such as roadways as private yard areas, retain standing water that were not commonly seen these is these area

before due to the volume of rain overwhelming the local drainage systems. Some roadway segments were washed out and small neighborhood bridges under water. There was also one flood related fatal traffic accident. It is also reported that over 36,000 residents lost electricity for an extended amount of time.

Major Rain Events

Flood events are not always associated with tropical storm systems. In some cases, a band of thunderstorms moving over the area can bring just as much, if not more, precipitation as a tropical depression, storm, or hurricane.

July 2013

A large system of thunderstorms blew across Bay County on July 4 weekend, causing isolated flooding and dangerous conditions. There was another system later in the month that exacerbated the already wet conditions and caused more flooding and road damage. The two rain events together have been commonly referred to as the July 4th Storm of 2013.

April 2014

History repeated itself less than a year later in April of 2014 when a band of thunderstorms made its way across Bay County dropping rainfall amounts that equaled that of the July 4th rain the year before. This resulted in isolated flooding of some areas.

August – September 2021

After Tropical Storm Fred made landfall near Bay County on August 16, 2021, the area continued to receive series of thunderstorms throughout a two month period that caused multiple and continuous hardships for the County. Fred left a very high water table that left no room for rainwater to be absorbed into the ground. A series of heavy rainstorms exacerbated the problem, not allowing for any of the flood prone areas to dry out. The outcome was a precipitation rate that was more than 200 percent higher than that of the same time the previous year. This resulted in repeated flooding and drainage issues.

Flood Safety Property Protection Measures Appropriate for the Hazard

Bay County has implemented specific measures that result in greater protection of properties. The County has a Floodplain Manager that is a Certified Floodplain Manager. The Building Department strictly enforces elevation certificate requirements, surveyor's benchmark regulations and other flood safety measures recommended by the NFIP.

To overcome the problem of drainage issues the Land Development Regulations (LDR) require that for new development stormwater run off cannot exceed predevelopment conditions. The LDR also take the local building code above NFIP development standards and require that homes *not* located in the Flood Insurance Rate Map (FIRM) designated flood zones, are elevated to at least one foot above the crown of the road. Homes built in A, AE, and VE zones require one foot of freeboard, meaning the bottom of the lowest floor must be at least one foot above base flood elevation (BFE). Furthermore, the engineering department has strengthened regulations for road construction to improve stormwater conveyance designs and maintenance. Bay County has also implemented the Stormwater Outfall Identification Plan to locate and assess all

stormwater conveyance pipes in the County. This program was developed with a \$500,000 grant awarded to Bay County and B.E.S.T., a local environmental group. The program was implemented with the intent of better understanding the flow of stormwater within the county's basins. The more conveyances the County can identify, the better prepared the stormwater engineering group will be to identify flood hazard potential. The Storm Drain Marking Program was created as a public outreach program with the goal of reaching every resident in the County to inform them of the importance of not dumping in drains, swales, and ditches, nor to allow them to remain clogged with vegetation, and how to report violations. County staff continues to disseminate informative literature.

The Bay County Office of Emergency Management warns the community of approaching hazards through the Emergency Alert System (WFSY 98.5 FM radio, WPAP 92.5 FM radio and WJHG TV News Channel 7). This service provides time for homeowners to take the necessary steps to secure valuable property and to evacuate safely. This service is widely publicized through all media outlets (radio, print and television), frequent Emergency Management, County, Red Cross, and Extension office seminars, as well as the Telephone Book Yellow Pages. In 2017, the County launched the Alert Bay early warning system. This product allows citizens to register with the Office of Emergency Management to receive voice, text, and electronic messages notifying them of any and all weather related warnings. Information concerning area flood warnings are an important function of this system.

While County regulatory measures offer some degree of protection, outreach programs stress that it is up to the homeowner or renter to take additional measures to ensure that their homes and properties are protected. Through the County CRS outreach programs, homeowners and renters are made aware of the additional safety measures they can take, insurance protection that is available to them, as well as the availability of grant funds. For example, an existing, older structure may be permanently elevated, so that the lowest floor is at least one foot above the base flood elevation. Homeowners are also counseled to locate heating, hot water systems, electrical panels, all components of the electrical system (including the wiring), and utilities above the flood level. Repetitive Loss property owners are made aware of grant programs that can assist in elevating the home, buying the property outright, or demolishing and rebuilding the structure.

As a final measure, a home that is found to be in a particularly hazardous area may be relocated to an area outside the flood zone. This is most effective method of avoiding flooding. In many cases moving the home to a more upland section of the same property has alleviated flood problems.

Hurricanes bring high winds that damage inland and coastal areas. If the area immediately surrounding a structure contains trees, outbuildings, trashcans, yard debris, or other materials that can be moved by the wind, it will be likely be damaged during a hurricane. Citizens are advised to bring in outdoor possessions, such as lawn furniture, grills and trashcans, or securely tie them down. Fuel tanks should be anchored.

Permanent hurricane shutters provide a long-term means of protecting a home. Temporary methods of securing windows, such as plywood, will protect glass from wind born debris damage, but are time consuming to install with every storm threat. Although the County does not provide direct assistance with these types of measures, citizens can

become better informed through additional public education activities. The Builders Services inspectors are trained on flood proofing/prevention measures.

More specific information on property protection and safety measures utilized by the County can be found, at the Bay County Emergency Services office, Bay County Planning and Zoning (as well as the municipal zoning departments), and the Bay County Libraries reference section. The libraries also provide computers and residents can access the FEMA website as well as the County GIS websites at no charge. The County website contains elevation certificates, the 2002 and 2009 FEMA flood maps, evacuation zone maps, insurance information, properties with LOMAs, and other flood related resources.

Local Mitigation Strategy for Floodplain Protection

Bay County is dedicated to reducing new flood damages, repetitive flood losses and retrofitting homes in existing repetitive loss areas in an effort to decrease flood damages. The County has Floodplain management team that currently consists of the Floodplain Manager, who is also a member of the Planning and Zoning staff, members of the Builders' Services, Emergency Services, Engineering and Public Works, and Public Information staff who routinely discuss mitigation strategy. The committee discusses and develops a plan for preventative and retroactive activities that will work to eliminate and reduce any new and repeat flood losses. In 2015, the Local Mitigation Strategy (LMS) was updated to include a new floodplain management component. The objectives of this plan are as follows:

Provide Preventative Measures for Floodplain Protection

Bay County currently has development standards in place that eliminates the creation of new problems within a floodplain. Development in a Special Flood Hazard Area (SFHA) requires that any buildings be constructed at least one foot above the determined base flood elevation (BFE). Bulk regulations limit the amount of impervious surface new development can cover therefore allowing for preservation of open space. New development must also adhere to strict stormwater requirements to ensure that new run-off will not cause flooding concerns. In areas that are already prone to flooding, these requirements are heightened. The County's Engineering Department has standard operational procedures in place for the maintenance of the county's drainage system to ensure that the system remains stable and functioning properly. The County's Builders' Division provides strict adherence to the Florida Building Code to ensure that structures are built to withstand severe weather events and all provisions to reduce flood damage are provided for and followed. The County continues to be committed with working with state and federal agencies to ensure that the beaches and dunes systems remain nourished and thrive. Bay County has adopted a new floodplain ordinance that defines regulations for development of non-habitable structures and infrastructure as well as expands on those others that are addressed by the Florida Building Code. The new ordinance also defines and details administrative responsibilities and processes detrimental to floodplain protection. The final draft of this ordinance was adopted in July 2013.

Provide Information, Guidance, and Encouragement of Property Protection Activities

Builders' Services Division maintains a list of contractors that specialize in retrofitting and/or elevating buildings for flood protection. The County focuses on those individuals that live in repetitive loss properties or areas by sending mail-outs or otherwise providing them with information on the benefits of retrofitting and/or elevating their buildings in an effort to reduce flood damage. The Building Official, Plans Examiners, and Floodplain Manager are always available to answer questions regarding retrofitting and building elevation practices.

Enforce Regulation to Protect Natural Resources

The Bay County area has a high level of jurisdictional wetlands and the County works very closely with state and federal agencies to preserve them. The County has a requirement that development must maintain a 30-foot buffer from any jurisdictional wetlands. Developers must submit erosion and sediment control plans for review before any development is approved and the County ensures that there will be no negative impacts before development begins. The County's development regulations stipulate that best management practices be used in site clearing and preparation.

Provide Fast and Reliable Emergency Operations

The County's Emergency Operations Center (EOC) monitors weather situations globally and tracks those weather events that may potentially affect Bay County. During emergency situations, warnings are provided with enough time to allow citizens to safeguard their property and also evacuate for safety if needed. During times of emergencies the EOC becomes a 24 hour operational unit which allows the EOC to respond to hazards in a timely fashion and provide the citizens with the information needed to better prepare them and their property of an upcoming event.

Maintenance and Upgrade of Floodplain Protection Structures

Bay County maintains the Deerpoint Lake Reservoir which is the main water supply for all municipal potable water services within the County. During periods of high rainfall, the County will open the dam to release water back into the bay. This is done to prevent the risk of flooding to lakefront or nearby properties. The County has been dedicated to the installation of new stormwater pipes and sewer drains and has identified areas within the county where these structures will be installed or upgraded within the next year. The County has a maintenance schedule for all drainage ditches and is quick to respond to citizen complaints regarding blocked drainage structures. The County continues to seek grant money and work with state and federal agencies to continue beach re-nourishment efforts along the coast of the Gulf of Mexico.

Provide the Public with Access to Floodplain Protection Information

Bay County's GIS website will continue to maintain the 2009 and 2002 editions of the FEMA Flood Insurance Rate Maps (FIRM) so that the public can easily visit the site to see if their property is within a flood zone. This information is also available through the Floodplain Manager. Emergency Services, Builders' Services, and the Floodplain Manager will continue to address the public in the form of workshops, classes, event speeches, and different media outlets to inform the public ways to protect people and property from the risks associated from living in a floodplain. Technical assistance on retrofitting will be provided through the County's website and from the Builders'

Services Division and the Floodplain Manager. All information will also be available at the County Library. Flood and safety information will also be circulated through pamphlets and the area telephone directory.

Flood related public information activities currently being implemented within the community

The Bay County Planning and Zoning Library and the Bay County Public Libraries currently contain a number of FEMA booklets, brochures, and historic and current FIRMS in the reference section. Contact information regarding flood risk and loss prevention is also provided with monthly utility statements. The Panama City News Herald issues a “Hurricane Guide” every year that shows flood-prone areas in the County, and provides a wealth of other flood related information. At various times during the year, flood protection information is included in the newsletters sent out by individual municipalities, the Chamber of Commerce, and various local companies.

The Bay County Emergency Management/Emergency Operations Center (EOC) provides short countywide presentations to increase flood awareness at local schools, nursing homes, and a variety of other public and private organizations. The Fire Chief (head of the EOC), a popular local speaker, is frequently hosted on radio and television programs where he explains the flood safety program, and advises where to get additional assistance and information. The Emergency Management organization publishes evacuation maps which are also downloadable from the Bay County Emergency Management website. In addition, that organization publishes a booklet, “Emergency Management Handbook,” which is distributed at a variety of public forums throughout the year.

The Bay County GIS Department provides updated, digitized FIRM maps available online, as well as maps of the surge zones for the County and municipalities. The local media networks provide public service announcements about hurricane safety and the Red Cross works with the local media to boost preparedness and distribute “Emergency Kits”.

Outreach Strategy Team Goals for - Public Information and Outreach

The county has seen a category 5 hurricane in 2018, a category 2 hurricane in 2020, a tropical storm in 2021, and three major rain events in 2013, 2014, and 2021 that caused isolated flood damage. The minimal impact of these two rain events encourages the CRS Team to continue its outreach plan. Additional efforts have continued on the Storm Drain Marking Program. The Outreach Strategy also disseminated information throughout the community.

The primary goal continues to be implementation of an outreach program that includes a more far-reaching public education goal to make citizens more aware of the measures they can take to protect their property and play a positive role in flood management in their community. This has become a priority for the Bay County and municipal local

governments. As participants in the NFIP (National Flood Insurance Program) and CRS (Community Rating System), there are incentives to improve the availability of flood information by creating a strategy team that coordinates and implements efforts to educate citizens. The Bay County CRS Outreach Strategy Team was initially formed on February 23rd, 2004 with the support of the Bay County Board of Commissioners, the County Manager, and Department Directors, and continues through the present time. Representatives from the Bay County Planning Division/Floodplain Management (Wayne Porter), Builder Services Division (Dennis Stanley), Engineering Division (Natasha Lithway), Geographical Information Systems (Jennifer Morgan and Chris Mathers), Information Systems (Chris Fox), and Community Outreach (Valerie Sale), routinely discuss and perform CRS related activities. The Floodplain Manager/CRS Coordinator can be contacted through the Bay County Planning and Zoning Division for more information about the Outreach Strategy Team.

During recent discussions, the team evaluated the outreach projects that were completed in 2019 and what should be the focus of 2020. It was agreed that most of the smaller projects would be continued again as they reached a wide variety of people who are often difficult to contact. For example, the Fire Chief and his staff have an extensive list of speaking engagements to discuss local hazards and how to prepare for them. He speaks to citizens groups in nursing homes, and other venues infrequently visited by other CRS projects.

For the base projects, the team decided to continue the “Stormwater Outfall Identification” and the “Storm Drain Marking Program” since they were so successful. Success was measured in terms of in the field citizen contact which gave the opportunity to answer specific questions of homeowners on the spot, inform them of important aspects of localized flooding.

The Stormwater Outfall Identification and Subsequent Studies

This program was identified as vital to the future efforts and success at managing stormwater within the County. Camp Dresser & McKee, Inc. (CDM) was hired as consultant to B.E.S.T (local environmental group) and Bay County on this project, and performed an extensive data collection and review effort in order to provide a better understanding of the regional issues related to surface water and water quality in the study area. The data collected and reviewed included: geographical information system (GIS) data; existing drainage studies and/or stormwater master plans; identified problem areas (flooding, erosion, and water quality); topographic data; land use data; soils data; watershed and subbasin delineations; rainfall data; evaporation data; stage and flow data; public land and conservation easements; stormwater system inventory information; existing hydrologic and hydraulic stormwater models; water quality data; existing stormwater permits; septic tank information; point source data, and Federal Emergency Management Agency (FEMA) information. The data presented were used extensively in developing the subsequent portions of this project. In conjunction with the data collection effort, a user-friendly database tool was developed that stores watershed related data that includes rainfall and evaporation data, topographic data, basin and subbasin delineations, soils data, aerial photography, existing and future land use data, stream gauge data, water quality data, wastewater treatment plant data, septic tank information, stormwater facility

and inventory data, National Pollutant Discharge Elimination System (NPDES) data and FEMA Flood Insurance Rate Map (FIRM) data.

Stormwater management options were developed to address the ecological and social aspects previously mentioned. The cost-effectiveness aspect of the plan is two-fold: first, the plan addresses different avenues of funding available for the management options. Secondly, a “conceptual planning level capital cost estimate” for each management option was developed and a benefit-to-cost ratio, where applicable, was provided. CDM developed a methodology with input from BEST and the Stakeholders in order to establish long-term management strategies that are critical to the improvement and sustainability of surface water resources within the watershed. In order to determine where the greatest needs existed in the basin areas in terms of water quality and quantity, CDM developed an approach to assess the watershed based on the characteristics of each subbasin within the greater St. Andrew Bay Watershed (SABW). CDM used the subbasin boundaries as the unit of measure for assessment and prioritization. CDM developed a list of fourteen criteria important to the management of surface waters within the SABW based on Stakeholder feedback.

CDM also developed a long-term water resources management strategy to identify conceptual types of basin management activities that can be pursued by BEST and the local governments to mitigate existing problems (quality and quantity) and provide for long-term flood control and water quality benefits. CDM examined each subbasin on an individual basis to determine which types of BMPs (both structural and nonstructural) would be appropriate to achieve the long-term goal of improving water quality and addressing existing flooding issues. The recommendations are presented as options and the use of a specific BMP depends on actual site conditions and objectives such as water quality protection, flood control, erosion control, or volume control. In many cases, there are multiple goals or needs for a given project. Additionally, several studies and stormwater master plans have already been developed by several of the local governments to address stormwater management problems within their jurisdictions. This plan is meant to supplement those recommendations previously made and by no means supersedes other studies that have been conducted within the SABW.

Storm Drain Marking Program

Advantages:

A. The outreach information is neighborhood specific. Maps were prepared for each neighborhood showing the location of the storm drains. The maps include aerial views of all the homes in each particular neighborhood. In addition to placing decals on each drain with the message “*No Dumping...Only rain down the drain*”, trained county staff distribute literature to each home that explains the relationship between storm water conveyances and flooding. Additional literature is also provided that explains other hazards. In neighborhoods where there are known flooding problems, a professional from County staff and/or outside specialists is present to discuss mitigation measures with the residents (stormwater engineer, builder services representative, Floodplain Manager, Emergency Management representative, etc.), as well as other flood/hazard related issues.

B. The repetitive loss properties within each neighborhood will be specifically targeted, and a face to face discussion with the appropriate professional can address their concerns.

C. The entire community is involved. This fosters a higher level of awareness, education, and interest to the flood/hazard issue. The program is structured as follows:

1) The Floodplain Manager has enlisted the help from other County staff who have volunteered disseminate flyers informing the rest of the public of the advantages of this program.

2) Those staff members who responded, have been trained by the Floodplain Manager in flood issues, how to use the maps for their particular neighborhood, proper placement of storm drain decals, and how to handle/refer resident's questions.

The program has been very successful. This was due to the high interest level of the neighborhood residents. As well as marking the drains, staff distributed 2 different brochures to each of the homes in the neighborhood. These brochures explain the flooding issues and provide phone numbers to call in the event of problems or questions. Many problems continue to be uncovered and resolved: several drain locations had "fallen off" the routine maintenance logs, neighbors had intentionally plugged storm drains, certain residents pumped out their pools into roadways during rain events, etc.

Making CRS information more available

The CRS rating information has been made more readily available to the public. This includes maintaining copies of progress reports at the library and on the web site, as well as making them easily available in various county offices (GIS Department, Builder Services, Planning and Zoning, and the Emergency Operations Center).

The main Bay County Public Library has a wide range of publications on CRS topics, and the primary research librarians. Public information pages on the topic of flooding, hurricane safety, and other natural disasters are published each year in the Bay County Yellow Pages Phone Book and have been updated for 2016. The Panama City News Herald issues an annual hurricane guide that depicts the flood-prone areas of the County, and provides a wealth of other flood related information. At various times during the year, flood protection information is included in the newsletters sent out by individual municipalities, the Chamber of Commerce, and various local companies.

The Bay County GIS Department provides updated, digitized FIRM maps that are available online. The local television networks and the News Herald provide public service announcements about hurricane safety and the Red Cross works with the local media to boost preparedness and distribute "Emergency Kits".

Strengthening protective measures offered by the Builders Services Department

Information related to elevation certificates is easily accessible on the County website and with the Floodplain Manager's and in the Builder Services office. The County is now conforming to the "wind born debris region" as described in the Florida Building Code. This demonstrates the diligence of the Builder Services Division in addressing flood and

other hazard concerns in a manner that results in property protection and consistent enforcement. This effort has increased the confidence in flood protection measures, and should encourage property owners to further the County's efforts by taking additional measures on their own which are recommended in various outreach programs. In addition, contractors and builders have been made aware of the County's requirements so that they can proceed accordingly in building to the new standards and advise their clients appropriately. The senior Plans Reviewers from this department is a Certified Floodplain Manager (CFM), which provides them with a greater knowledge of reviewing development plans in flood prone areas.

Diversify and increase the number of target audiences for flood and disaster preparedness information

The CRS program continues to reach a larger and more diverse group of citizens including elderly citizens, renters, and property owners. Targets for public outreach take into consideration that reaching property owners might not necessarily be reaching a significant portion of citizen subject to flood hazards; therefore, an attempt has been made to increase penetration into a larger number of citizen groups. We have also made an effort to distribute a larger number of brochures to local colleges, senior centers, real estate agents offices, supermarkets, etc. FEMA brochures have been placed at several of the larger condominium complexes that have been subjected to flooding in the past. In addition, the Emergency Management Office has continues talks and presentations to a variety of groups throughout the year. The Bay County Extension Office conducts workshops on flood preparedness and the CRS program.

Coordination between the County and municipalities:

The County CRS Coordinator is continuing to explore a more coordinated effort between Bay County and the municipalities to improve public outreach and eliminate duplication of efforts. This should be considered a long-term goal and may be initiated by communicating with the Local Mitigation Strategy (LMS) Board. Bay County completed the LMS update in 2015. The update incorporates a new floodplain management and response strategy, natural and manmade hazards to the county, and prioritizes infrastructure improvement projects that enhance hazard mitigation and prevention.

Intensify Outreach efforts to Real Estate Agents, Bankers/Lenders, and Insurance Agents.

In 2009 the CRS strategy team repeated the process of "blanketing" the offices of Realtors, Lenders and Insurance Agents, which resulted in very favorable contacts and invitations to speak from similar projects in the past. The CRS Coordinator is always available to speak at events for these groups. The CRS Team is also in the planning stages of an annual program for real estate agents training them on how to use the County websites to find elevation certificates and determine flood zones.

Ongoing Outreach projects created to achieve goals:

The following is a list of projects generated by the Outreach Strategy Team:

- The primary goal will be to continue the “Storm Drain Marking Project”.
- Inform a more diverse group of residents who may be affected by flooding through the distribution of brochures and by holding special seminars at senior centers, colleges, business groups and other public offices. This may include the use of existing FEMA publications, as well as brochures, booklets, or information packets created by the County. In 2007 the Emergency Services Department greatly expanded their public information talks to include a wider variety of groups. In addition, Mark Bowen, the Chief has scheduled more appearances on radio and TV talk shows to explain the CRS program, preparation for a storm, emergency evacuation procedures, etc. The chief and his staff are continuing with this effort.
- Continue to improve current efforts to educate the public including local contractors, builders, and developers. The Floodplain Manager continues to seek ways to stimulate more interest and involvement from local builders and contractors in flood-proofing/retrofitting techniques.
- Provide training for damage estimators on FEMA’s “Residential Substantial Damage Estimator” software, a program that assists in assessing residential building values, and is used to evaluate a home’s market value prior to the damage and for determining the amount of damage following a disaster event. It shows how to rapidly, efficiently, and consistently assess substantial damage. It allows communities to compile a data base of inspected houses as well as help to identify areas that have received repetitive damages. An introductory seminar explaining the program was conducted in 2009, and the CRS/LMS coordinators are assessing methodology to implement the program Countywide.

Outreach Projects to Address Other Hazards

Tornadoes are recognized as another natural hazard that is common to the area, as well as thunderstorms and the accompanying threat hazards due to lightening. These topics are covered online at the FEMA web site and through the Bay County Emergency Services office website and public seminars. The Local Hazard Mitigation Strategy also addresses these topics.

Process for Monitoring and Evaluating Projects

The CRS Team is continually discussing ways to achieve our objectives. New projects are assigned as old projects are completed. Team members provide information, comments or input to other members through email, telephone, etc. At each meeting team members will bring documents for the others to review and introduce any new information or updates that the team as a whole should be aware of. A progress report is compiled and reviewed by all team members in September, prior to the end of the CRS cycle.