

MEMO



Construction Services Department

To: Lois J. Frankel, Mayor
Molly Douglas, City Commissioner District #1
Isaac Robinson Jr., City Commissioner District #2
Kimberly Mitchell, City Commissioner District #3
Jeri Muoio, City Commissioner District #4
William Moss, City Commissioner District #5

From: Ed Mitchell, City Administrator

Date: September 29, 2010

RE: Annual Update on the Floodplain Management Plan
Implementation

As a result of our participation in FEMA's Community Rating System program, the City is required to create an annual progress report on the City's Floodplain Management Planning activities. For credit under the Community Rating System (CRS), this memo must be distributed to the media and be made available to the public. It is being sent to the local papers that cover the City of West Palm Beach. Copies of the City's Floodplain Management Plan (FMP) are available for review at City Hall in the Construction Services Department, 401 Clematis Street, 1st Floor. A notice of its availability is being posted on the Construction Services Department website.

1. Background

The original FMP was drafted by the Floodplain Management Committee during a series of meetings held between April 2005 and July 2006. The FMP was adopted on September 11th and 25th. This plan includes activities from various departments, including Public Utilities, Emergency Management, Finance, and Construction Services. These activities include improvements to flood prevention and emergency response.

2. Review of Floodplain Management Plan Action Items

Public Utilities Engineering

Items 1.0 A and 5.0 A

Significant floodplain improvements have been achieved in 2010 through upgrades to the City's storm water management system, and mechanisms are in place to achieve further improvements in the upcoming year. The City's designed and completed projects will improve the management of storm water runoff during and after intense rain events, and will enhance the quality of storm water discharge into the Lake Worth Lagoon (Intracoastal Waterway).

The construction of the Lakewood Road Pollution Control Device, (PCD), has been completed. This pollution control structure, operating on simple fluid dynamics with no mechanized moving parts, provides for the treatment of runoff as it flows through drainage pipe at volumetric flow rates exceeding 55 cubic feet per second. The pollution control structure filters out debris and hydrocarbon pollutants that would otherwise be discharged directly into the Lake Worth Lagoon. The structure provides access for City personnel, who remove collected debris and pollutants on a regular basis. At the design flow rates the PCD removal rates are greater than 90%.

The design, permitting and bid opening phases of the Edmor Road Project is complete and construction will be completed in September 2010. The project will provide for an approximate 100% increase in the level of flood protection during intense rain events along a corridor encompassing about 125 acres of area on the City's south end. This area has been historically problematic with regard to drainage. The storm water management infrastructure improvements has included the installation of large diameter, high capacity reinforced concrete pipe for conveyance and smaller diameter slotted reinforced concrete pipe with exfiltration trench that allows captured storm runoff to percolate and purify through pervious sandy soils before reaching the underlying groundwater. Such water quality treatment reduces the volume of fresh water runoff discharged into the brackish Lake Worth Lagoon, and provides for improved flood control within the drainage basin. This project also includes the installation of a Pollution Control Device (PCD) for the treatment of runoff as it flows through drainage pipe network at the volumetric treatment flow rate of 45 cubic feet per second. At this flow rate the PCD removal rate is great than 90%

A project in the south-central portion of the City known as the Broadmoor Area Improvements has been designed, permitted and is currently under construction (85% ± complete). The project area is primarily residential and includes 13 streets (3.65 miles) and 86 acres of land. The improvements include refurbishing the gravity sewer collection system, a new water distribution system, a new drainage system with larger pipes for conveyance and approximately 2,420 lineal feet of exfiltration trench for water quality, reconstruction of the roadway, street lighting and landscaping. The right-of-ways in this neighborhood vary from 50' wide to 70' wide and the existing street cross section was 100% impervious (roadway and concrete sidewalk). As a part of improvements, landscaped parkways have been added to each street. The landscaped parkways enhance the appearance of the neighborhood and also reduce the impervious area in the right-of-ways to approximately 75% which also enhances the water quality of the stormwater runoff. As a result of these improvements, the level of flood protection in this area of the City will be significantly improved.

The City has approved the necessary funding and resources to proceed with drainage and utility improvements for the following projects throughout the City:

	PROJECT	Length (miles)
1	Lakewood Road – Phase 3	0.41
2	Lakewood Road – Phase 4	0.26
3	North Flagler Drive – 23 rd Street to 42 nd Street – Phase 1, 2, and 3	1.13
4	Spencer Drive	0.39
5	Edmor Road – Phase 2	0.38
6	Monroe Road – Phase 2 and 3	1.65
7	Monceaux Road – Phase 1	0.75
8	Rutland Boulevard	0.28
	TOTAL	5.25

These streets include approximately 5.25 miles of roadway and drainage piping. Final design and permitting on these projects is complete and we anticipate going to bid for all of these projects by the end of 2010. It is anticipated that each of these projects will begin construction by the first quarter of 2011 and be completed by the first quarter of 2012, except for Project No.3 above which is anticipated to require three years each to construct and therefore will not be completed until the first quarter of 2014. Each project was selected in accordance with the City’s Master Drainage Plan to alleviate chronic drainage problems and to provide water quality treatment to the runoff discharging to the Lake Worth Lagoon. The water quality treatment for the projects is being provided through the use of grass swales (reduction in impervious area), exfiltration trench, larger pipe sizes or the installation of additional PCD’s or a combination of these methods. The level of flood protection is expected to increase to 2.5+ inches per hour during a storm event.

The City has obtained permit approvals from the Florida Department of Environmental Regulation and from the Army Corps of Engineers for maintenance dredging at six (6) existing outfalls to the Lake Worth Lagoon. The outfalls vary in size from 30” diameter to 60” diameter. Periodic maintenance dredging is necessary to remove sediment from the ends of the outfall pipes so that the drainage systems contributing discharge to the outfalls can function as designed to prevent drainage problems. This work will move forward when in the near future.

The design of the Howard Park Improvements Project has been completed and the project is currently under construction. This project includes an expansion of the Turning Basin Lake and the addition of a discharge control structure which will increase the storm water storage capacity for this drainage basin. The area known as Pineapple Park is included in this drainage basin and experiences historical drainage problems. The additional storage volume will help to relieve the drainage issues in Pineapple Park.

The project known as the Market Street / Flamingo Drive Drainage Improvements has recently been completed. The improvements include upsizing the outfall pipes along these streets to the Stub Canal. These two streets are located in Pineapple Park and their increased conveyance has also benefitted this drainage basin.

The City has hired a contractor to refurbish two (2) stormwater control structures (Old Okeechobee CS and 45th Street CS). The improvements include, but are not limited to, replacing the gates (some electronically operated and some manually operated), installing solar powered telemetry for remote monitoring, replacing/extending walkway grating and installing security gates.

Another project recently completed was the Arlington Road Utility and Drainage Improvements. The stormwater runoff from Arlington Road previously sheet flowed from S. Dixie Highway to S. Olive Avenue (0.3 miles) where it was collected by two (2) inlets and piped a short distance to the SFWMD Canal C-51. The improvements include construction of five (5) sets of inlets to collect the runoff and

direct it to exfiltration trenches where water quality treatment is now provided before discharging to the SFWMD Canal C-51.

Many of the drainage improvement projects described herein were recommended in a Stormwater Master Plan (SMP) that was prepared for the City in 2000. The City has retained an engineering firm to update the 2000 SMP. The update will include a discussion of the 2000 SMP projects that have been completed, that are currently under construction and that still remain to be initiated. The update will also include analysis and recommendations for any new problem drainage areas that have appeared since the 2000 SMP was prepared.

The 2000 SMP also noted that the water management system for the Ironhorse development, located in the western portion of the City, is being impacted by seepage from the adjacent City Water Catchment Area (WCA). The SMP recommended that seepage pumps be placed where the development's preserve area abuts the developed area to intercept the seepage and pump it back to the WCA. The project has been designed and permitted and is currently advertised for bids. Construction is expected to begin in the fourth quarter of 2010.

Emergency Management

Item 3.0A - The City of West Palm Beach proposes to identify hazardous material users within the City and create a contingency plan for the City to protect those materials from impacting the environment during a natural disaster.

This action item is complete. No further action is required.

The identification of hazardous materials users in West Palm Beach is provided for in the Code of Ordinances, Article V, Sec. 38-132, which requires the filing of a hazardous material disclosure. Any person who uses or handles a hazardous material must semiannually, during the months of January and July, submit a complete disclosure form to the City Fire Rescue Department. Any person, who, during the calendar year, for the first time becomes a user or handler of any hazardous material, must submit a completed disclosure form to the City Fire Rescue Department within 15 days of becoming a user or handler. Sec. 38-134 provides for the protection of hazardous materials and associated impact to the environment during a natural disaster by requiring hazard materials users to identify secured storage areas with identification placards. Sec. 38-136 authorizes and empowers the Fire Chief (or designee) to enforce these requirements to include the inspection of hazardous materials in use, storage, or disposal, review of hazardous materials records, the sampling and testing of hazardous materials, and other activities directly related to the enforcement of this section.

Item 3.0B - The City of West Palm Beach proposes to identify areas where sanitary sewer hazards exist and develop a contingency plan to deal with potential contamination due to a natural disaster.

This action item is completed. No further action is required.

Areas where sanitary sewer hazards may exist as a consequence of a natural disaster are identified and displayed in the West Palm Beach Integrated Geographic System. Responses to sanitary sewer hazards reported to the EOC or discovered during post-disaster damage assessment will be comprehensively coordinated by the Emergency Operations Center. The Fire Rescue Department is On Scene Commander for all incidents involving sanitary-sewer hazards and first responders shall include subject matter technicians from the Utilities and Public Works Departments, as appropriate.

Additionally, the Emergency Management Division has drafted the following protocols for dealing with sanitary sewer hazards. Once finalized and approved, the plan is to include these in the City's revised Comprehensive Emergency Management Plan (CEMP). Below is the latest draft of the guidelines.

EMERGENCY PROTOCOLS FOR SANITARY SEWER HAZARDS

The following guidelines are intended to assist the resident or owner and are not intended to be an inclusive list of recommended procedures and precautions following a sewer back-up. Depending on the individual circumstances of each loss situation and in order to ensure a healthy indoor environment for current and future occupants, it may be necessary to contact a professional water damage restoration service.

Sewage and flood waters contain bacteria and other hazardous micro-organisms. These can be transmitted by touching contaminated items or by tracking them into uncontaminated areas on shoes. Children and pets are especially vulnerable. Frequent hand washing is an important preventive measure.

Potential health and safety hazards must be identified and, if possible, eliminated prior to implementing cleaning or restoration procedures. Before entering the affected area, the potential for electrical shock hazards and gas leaks must be assessed.

It is very important to begin mitigation procedures as soon as safely possible to minimize subsequent health hazards and primary property loss and to avoid secondary damage to structural materials or microorganism development (mold and mildew). Loss mitigation begins with rapid response, and involves reasonable and prudent steps required to preserve, protect and secure property from additional secondary damage. Unlike fire or other similar type losses, water losses may not start out severe, but may end up causing damage because of delay in cleaning up the water or sewage. The prospect of successful restoration depends largely on the speed with which the building and personal property can be dried. Generally, by taking proper emergency action immediately, a sewer back-up will result in either no damage or minimum damage caused by the water. The City does not provide or arrange for any cleaning that may be needed inside a building following a sewer back-up. The resident or owner has the responsibility to minimize damage.

1. Treat all water-impacted surfaces and furnishings as unhealthy, until properly cleaned.
2. Keep children and pets out of the affected area until the area is properly cleaned.
3. If there is no risk of electrical shock, turn off circuit breakers supplying electricity to wet areas; unplug and remove any small electrical devices currently located on wet floor coverings or other wet areas.
4. Do not use any electrical equipment while standing in water. Operate wet vacuums only when plugged into a ground fault interrupter or ground fault equipped outlet.
5. Remove all water and sewage from the basement or other affected area as rapidly and safely as possible.
6. Extracted waste water must be disposed of in a sanitary sewer system.
7. Ventilate the affected area with the use of floor fans, and a dehumidifier if available, to properly dry the area. You may rent floor fans and dehumidifiers. If it has not been directly contacted by water, activate the building's HVAC (heating, ventilation and air-conditioning) system, turn on exhaust or ceiling fans and open windows and doors when conditions are favorable. Careful consideration must be given to whether use of existing drying resources might serve as a means of spreading contamination or pose a safety hazard.
8. Do not use heat to dry closed building interiors; mildew and expanded water damage may result.
9. Decontaminate sewage-damaged materials by spraying them with, or immersing within, a cleaning solution. This treatment will not provide full disinfection, nor is it intended to do so.

The objective of initial decontamination is to commence the reduction and mitigation of microorganisms as quickly as possible. It is important to recognize that exposure to materials treated during initial decontamination poses a health risk and may result in an adverse reaction. A second disinfection should take place following the initial cleaning.

10. All tools and machines used, especially pumps, vacuum recovery tanks and hoses must also be cleaned and decontaminated.
11. Remove and secure small furniture items as possible to minimize rust or stains and expedite restoration.
12. Place aluminum foil under legs of wood furniture, especially antiques that may permanently stain carpet.
13. Thoroughly clean and dry all wood furniture and other wooden items, then wipe them with an oil-base wood polish.
14. Hang draperies and pin up furniture skirts as possible to prevent contact with wet floor coverings, minimizing damage such as water marks, dye transfer and migration.
15. Remove, clean and dry all wet rugs, clothing, shoes, books, paper goods, fabrics, potted plants, items stored in boxes or other items that may stain the carpet (check especially under beds and in closets). Valuable books and documents may be frozen to retard mildew growth until cleaning and drying can be performed.
16. Remove and secure breakables, moisture sensitive or high-value items.
17. It is recommended that a determination be made as to whether floor covering materials (e.g., carpet, cushion, vinyl, wood, laminates) are salvable. Considerations may include, but are not necessarily limited to, owner preference, construction integrity, porosity, and potential health effects from contaminants.
18. Take up saturated rugs and carpets when hardwood floors are at risk.
19. If the water was high enough to involve a motor on a furnace, or electrical appliance, call a reputable repair business to remove the motor and dry it. In most cases a motor can be dried without incurring any damage to the motor.
20. Take all items that have finely machined parts, such as sewing machines and typewriters, to a repair facility immediately for cleaning and oiling.
21. Transport computers to a dry environment, remove cases and blow dry with low pressure air and contact a repair facility.
22. Wash all concrete or tile floors with fresh water, then wash them with a strong germ-killing and odor-killing solution.
23. Other than paper products, there are very few items that are permanently damaged by water unless allowed to sit in that wet condition. Water will not hurt metal or wood if thoroughly dried and wiped down with some form of oil. Clothing and carpet not cleaned and dried will mildew and stain. Motors and machine metal parts can be saved if thoroughly dried by a professional. Floor tile and carpeting will remain secure if the water is removed immediately, otherwise, the water will dissolve the adhesives used in securing the floor tile or carpet to the floor. Wood furniture, wood paneling, and other wooden objects will check, separate, stain or warp if left wet.

Item 4.0B - The City of West Palm Beach proposes to evaluate emergency shelter plan(s) and determine if the maximum allotted time to keep shelters open is adequate. Additionally, the City proposes to assess current plans and make recommendations on how to handle "event" homelessness (people displaced due to a natural hazard).

This action item is completed. No further action is required.

In accordance with Florida Statutes, Palm Beach County is responsible for the planning and execution of evacuation and sheltering plans in coordination with affected municipalities. In preparation for the 2006 hurricane season, City and County emergency managers conducted a careful examination of all aspects of mass care, with significant consideration being paid to evacuation, sheltering and post

disaster housing. To better address these concerns, the Palm Beach County Division of Emergency Management established six Emergency Operation Areas (EOA's) to coordinate evacuation, sheltering and mass-care activities. The City of West Palm Beach is one of seven municipalities assigned to EOA #3.

Item 4.0C - The City of West Palm Beach proposes to assess the current Emergency Operation Center's (EOC's) effectiveness during the 2004 and 2005 hurricane seasons. Particular attention shall be given to the review of management procedures utilized during the 2004 and 2005 hurricane seasons and the procedure for communication with emergency services (fire, ambulatory, and police).

This action item is completed. No further action is required.

A review of the Emergency Operation Center's effectiveness during the 2004 and 2005 hurricane seasons was conducted by the Emergency Management Coordinator in June 2006. As a result, the Emergency Management Coordinator implemented the Incident Command System (ICS) for EOC organization. ICS is the model tool for command, control, and coordination of the response to a disaster situation. It provides a means to coordinate the efforts of multiple responders working toward the common goals protecting life, property, and the environment.

Item 4.0D - The City of West Palm Beach proposes to evaluate how the EOC and other governmental agencies shared information during the 2004 and 2005 hurricane seasons.

This action item is complete.

The County has provided the City's EOC with a working platform for WebEOC and, although not entirely complete, contains the necessary software to operate the Emergency Operations Center during its activation. Because of the City's participation in both the Regional Domestic Security Task Force (RDSTF) and the Palm Beach County's Emergency Management Team we are assured a complete operating system upon completion by the region. All designated call takers and emergency section staff have been trained in WebEOC and its future use will allow the reporting and tracking of the City's response in an emergency.

The City participates in Palm Beach County's Emergency Operating Areas (EOA) for both natural and man-made disasters that affect the entire county. West Palm Beach is in operating area #3 which is physically housed in the County Library on Okeechobee Blvd. City staff has been designated as representatives to the EOA should it require activation.

The City's current Comprehensive Emergency Management Plan (CEMP) will remain in effect until the County's CEMP has been approved by the State at which time the City's CEMP will be revised to correspond with the County's.

Palm Beach County Emergency Operations Areas (EOA).

The PBC EOC will deploy six (6) emergency operation areas that can be activated during an emergency event, either encompassing the entire county or specifically occurring in one geographical area. The City of West Palm Beach is one of seven cities in area three, along with Riviera Beach, Royal Palm Beach, Haverhill, Palm Beach Shores, Palm Beach, and Lake Park along with unincorporated areas such as The Acreage, Gramercy Park, etc.

The geographical borders of area three are Southern Blvd to the south, L8 Canal on the west, Beeline Hwy (SR710) and Northlake Blvd. on the north and the Atlantic Ocean on the east.

Contained within this area are distribution sites at Wells Recreation, Gaines Park, Lake Lytal Park, Seminole Palms Park, and Callery Judge Groves. In addition, Lake Lytal Park (west side) will also serve as a logistic support area (where supplies will be dispersed to distribution sites). John Prince Park will remain as the "base camp".

As discussed at this meeting, the City of West Palm Beach will participate in this program by assigning a representative to the EOA, instead of assigning someone to the municipal desk at the main EOC. The Area 3 group will be headquartered at the Okeechobee branch of the county library system (located outside of Century Village).

The West Palm Beach Police Department will provide two liaisons to the EOA. Both these representatives shall receive training in the operation of EOA #3 through the Palm Beach County Special Projects Coordinator for county Parks and Recreation.

It is through the EOA that the City of West Palm Beach will request and receive supplies and support during an emergency. Although the city limits extend beyond the southern border, the entire city will be included in this EOA. This is a more effective way to procure assistance than assigning someone to the municipal desk where he/she is responsible for over 37 municipalities. This plan conforms to NIMS/ ICS requirements and has proven effective in other areas of the country.

Item 4.0E - The City of West Palm Beach will review or set up a system by which communication between local water district managers is held.

This action item is completed. No further action is required.

For the 2006 Hurricane season, the City of West Palm Beach Public Works Department and Emergency Management Division reviewed its communications procedures with the South Florida Water Management District (SFWMD). It has been determined that existing protocols and lines of communications between the City of West Palm Beach and the SFWMD are excellent during normal day to day operations and during emergency events. The City of West Palm Beach participates at the SFWMD Governing Board every month to discuss strategy, policy and standard operating procedures for both normal and crisis situations.

Communications and coordination between the South Florida Water Management District and City of West Palm Beach is coordinated through Emergency Support Functions (ESF) # 14. The principle coordination involves the regulation of storm water drainage through sub-canal A, between the Boyd Street Lift and South Clear Lake. Each lift has been fitted with automatic, manual and remote controls. Solar power cell systems provide self-contained emergency power at both sites. Depth in canal is normally maintained at 7 to 8 feet with a maximum depth of 12.5 feet. To coordinate release of storm water in a flash flood situation, ESF# 3 will contact the South Florida Water Management District Emergency Operations Center at (561) 686-8800.

Finance

Item 4.0A – The City of West Palm Beach proposes to review the City’s ability to pay for “critical services” (Fire, ambulatory, and Police) and extended municipal services immediately before, during, and after a natural hazard event.

This action item is completed. No further action is required.

The City has internal financial resources to fund the critical services needed before, during, and after a natural hazard event. Internal financial resources include, but are not limited to, the

following items: The City annually includes within its Operating Budget a contingency designation equivalent to 1-3% of operating revenues (i.e. approx. \$1.8 to \$3.6 million annually). The contingency funds are to be used for unanticipated expenditures as deemed necessary by the City Commission; such as additional overtime requirements resulting from a natural disaster.

Additionally, the City maintains a fund balance reservation equivalent to 18.6% of operating revenues. Said funding is reserved for emergencies such as natural disasters, unanticipated economic downturns, etc. and totals approximately \$29 million as of September 30, 2008.

It should be noted that the City aggressively works with external governmental entities (i.e. FEMA, State of Florida, etc.) to ensure maximization of financial aid opportunities with the goal of offsetting the costs to its stakeholders of natural hazard events.

Construction Services

Item 6.0A - The City of West Palm Beach proposes to develop and implement a program to provide information to the public concerning high risk areas (areas that are located in the floodplain).

The Construction Services Department (CSD) took the lead in facilitating the development and implementation of a City-wide Floodplain Management Plan (FMP). The FMP was formally adopted into the City Ordinances on September 25, 2006. This plan was the result of an extensive team effort that involved several City departments, other government agencies, and the public.

The CSD set up a new Floodplain Information Hotline. This new service is a dedicated and published phone number for the businesses and residents to use to get answers to any questions relating to flooding issues including flood insurance, Flood Elevation Certificates, FEMA FIRM determinations, and property protection strategies.

The CSD continues to publish a wide variety of information on flooding on their departmental website. Topics covered include Flood Safety, Flood Insurance, Flood Warning System, and Property Protection Measures.

The CSD is active in the multi-jurisdictional, county-wide Community Rating System committee. This committee coordinates an annual outreach to residents and businesses of Palm Beach County, including the City of West Palm Beach, to provide information regarding flood insurance, prevention, and mitigation.

The CSD in concert with the Geographic Information Systems (GIS) section of the City's MIS Department has deployed a web based system that provides flood zone information over the Internet to the public. Using the Flood Zone map layer, anyone can determine the flood zone for their specific parcel.

In accordance with recommendations, the CSD has provided training and encouraged the CRS Coordinator to become a Certified Floodplain Manager. The CSD now has two (2) Certified Floodplain Managers.

3. Status Summary:

Of the Plan's ten (10) action items, eight (8) are completed and the remaining two (2) items are in-progress. The two remaining items are in progress as part of a multi-year, multi-million-dollar storm water master plan.

4. Recommendations

The City must perform a 5 year update of the Floodplain Management Plan and have this completed by September 30, 2011 in order to continue to qualify for NFIP discounts.

The City should continue efforts in the mitigation of the 27 currently identified repetitive loss properties.

The City should continue its participation in the CRS program and maintain its Class 6 rating.

The City should review its current ordinances and strengthen them where appropriate. Specific language should be added to the ordinances to address mitigation of repetitive loss properties.

The City should continue to work with other governmental agencies to provide outreach activities to educate the public about flooding.

The City should continue to encourage and provide assistance to staff members to obtain the Certified Floodplain Manager certification.