

2013 Update of the Howard County Flood Mitigation Plan (FMP)

Goals and Mitigations

Goal: 1

The most recent Flood Insurance Study (and associated Flood Insurance Rate Maps) was completed for Howard County in 1986. DFIRMs will be made available for comment in early 2011.

Action 1a: Incorporate the results of any new flood studies into the new Digital Flood Insurance Rate Maps (DFIRMs).

Action 1b: Reconcile the new DFIRM data with the flood data in this Flood Mitigation Plan.

Action 1c: Prepare new hydrology and hydraulic studies for the Patuxent and Patapsco areas.

Responsible Agencies: Public Works-Bureau of Environmental Services: Storm Water Management Division

Timeline: 1a and 1b: 1-2 years; 1c: 5-10 years

Status: Action 1a: This action item has been completed. DFIRMS have been adopted. Action 1b: This action item was completed as part of the DFIRM adoption process. Action 1c: New studies for the main stem Patuxent and Patapsco Rivers were not included in the DFIRM update, performed by FEMA, and will be considered at a future date.

Goal: 2

The Comprehensive Plan touches on the 100-year floodplain and other environmentally sensitive areas.

Action 2: Consider integration of the comprehensive plan with flood and other all-hazard mitigation plans. During the next update of the comprehensive plan, encourage emergency planners and comprehensive planning staff from DPZ to work together to cross reference goals and objectives and actions between the Comprehensive Plan and the Flood Mitigation Plan to ensure that flood issues are addressed in the Comprehensive Plan.

Responsible Agencies: Planning and Zoning, Public Works-Bureau of Environmental Services: Storm Water Management Division

Timeline: 1-2 years

Status: The recently adopted comprehensive plan, PlanHoward2030 (Plan), was developed with input from the community and other county agencies. The Plan includes policies and implementing actions that support the goals and objectives of other agency plans. The Department of Planning and Zoning continues to work directly with the Office of Emergency Management on emergency planning and response issues, including the mitigation of hazards.

Goal: 3

There is a need to preserve areas that are environmentally sensitive or hazardous for development such as: wetlands and floodplains. For example, cluster development allows for areas of concentrated development where the remaining area could be left as undeveloped open space to preserve environmentally sensitive areas.

Action 3: Continue to encourage various land planning techniques (cluster development and transfer of development rights) to provide flexibility in design and conserve common open space.

Responsible Agencies: Planning and Zoning

Timeline: 1-2 years

Status: The recently adopted comprehensive plan, PlanHoward2030 (Plan) includes a policy to secure better protection of environmental resources within new developments. This policy includes associated implementing actions to: evaluate the effectiveness of current regulations to protect streams, wetlands and floodplains; encourage more environmentally sensitive design in residential zoning districts other than the Residential-Environmental Development District; promote the use of the neighborhood preservation parcel option, as well as the use of smaller, tightly clustered lots to limit site disturbance and maximize open space for natural resource protection; and institute development requirements and/or incentives for better resource protection in higher density residential developments and commercial, office and manufacturing areas. Additionally, the Plan calls for the County to develop a wetlands program to inventory, map, protect, and enhance wetland resources.

Goal: 4

There are areas within the County where large lots have been subdivided and trees have been cut down to accommodate additional homes. Mature trees have been cut down and have not been replaced with new trees.

Action 4: Work with DPZ to examine 'inbuilding' within any area upstream that would contribute to additional flooding in a flood-prone neighborhood and clear cutting of trees on these properties in areas such as Columbia Hills at the Intersection of Routes 29 and 108 and the intersection of Sybert and Meadowbrook.

Responsible Agencies: Planning and Zoning, Recreation and Parks

Timeline: 1-2 years

Status: The recently adopted comprehensive plan (Plan) established growth tiers in accordance with the Sustainable Growth and Agricultural Preservation Act of 2012. Areas designated as Tier IV in the Rural West will no longer be allowed to subdivide more than four lots. Policies and regulations affecting infill development within the Priority Funding Area (PFA) in the east will be examined to ensure new development is compatible with the existing community. Additionally, the Stormwater Management Act of 2007, which took effect in 2010, includes strict stormwater management requirements for new development and redevelopment projects.

Goal: 5

The intensity of development in the County and the fact that it is landlocked makes it more prone to flashfloods since water does not have a place to flow to.

Action 5: Consider developing an Impervious Surface Ordinance for the County that encourages the reduction of newly installed impervious surfaces or offsets the impacts of these surfaces in the County.

Responsible Agencies: Planning and Zoning

Timeline: 3-5 years

Status: The new stormwater management regulations, which became effective in 2010, require environmental site design to the maximum extent practicable, which encourages minimizing site disturbance and the creation of impervious surfaces. The new regulations require offsetting the stormwater quality and quantity impacts from new development and redevelopment through techniques such as bioretention facilities, vegetated swales, and rain gardens. In 2013, the County created a new Watershed Restoration and Protection Fund, which will be used in part to install new stormwater management practices to treat runoff from impervious surfaces that do not currently have management. The County will give these new measures time to be effective before evaluating the need for an impervious surface ordinance.

Goal: 6

There is a need for improved coordination between various County departments and population centers within the county as well as at a regional level.

Action 6a: Encourage the Flood Mitigation Steering Committee (comprised of staff from DPW, DPZ, OEM, Transportation, etc.) to meet on a quarterly basis to discuss growing concerns, upcoming plans, and issues as identified by the constituent groups.

Action 6b: Encourage participation of representatives from the population centers at the quarterly meetings, particularly homeowners associations and Columbia Association so they deal with citizens' flood-related concerns and develop remedies and solutions.

Action 6c: Participate in regular regional meetings with Carroll and Baltimore Counties to address regional flood mitigation issues.

Responsible Agencies: Public Works-Bureau of Environmental Services: Storm Water Management Division, Office of Emergency Management, Carroll County Public Works, Baltimore County Public Works

Timeline: 1-2 years

Status: Action 6a, 6b, and 6c have not been implemented yet.

Property Protection

Goal: 7

A number of properties within the county flood during small-scale, high recurrence interval events. The location of other properties that incur repeated losses will provide a good indication of the areas and structures that will be threatened during a larger scale event.

Action 7a: Identify the “at-risk” properties that are prone to damage during flooding and conduct a survey of these properties. Collect the following data for each “at-risk” property using the National Flood Mitigation Data Collection Tool, FEMA 497 (also referred to as the National Tool or NT): structure type and condition, foundation type, number of stories, building size, depth of flooding, occurrence of flash flooding, flood velocity, location of the structure in the floodway, and method of notification during a flood event.

Action 7b: Develop a database of properties that have been relocated, acquired, elevated, or flood-proofed. Ensure that the database has up-to-date information on address, ownership, mitigation technique, date, and status.

Responsible Agencies: Public Works-Bureau of Environmental Services: Storm Water Management Division

Timeline: 7a: 3-5 years; 7b: 1-2 years

Status: Action items 7a has not been implemented yet. Action 7b: A file is being maintained in the Stormwater Management Division that contains information on the mitigated and non-mitigated repetitive loss properties that includes information on the owner addresses, ownership, date, and status of the property.

Emergency Services

Goal: 8

The risk assessment identifies two critical facilities in Howard County that are at risk from flooding.

Action 8a: Develop appropriate mitigation solutions for High Road Academy School

Action 8b: Consider relocating the fire station in Woodbine to higher ground.

Responsible Agencies: Public Works-Bureau of Environmental Services: Storm Water Management Division, Office of Emergency Management

Timeline: 3-5 years

Status: Action 8a: The Storm Water Management Division and the Office of Emergency Management have determined that High Road Academy School is not a critical facility.

Action 8b: A new Woodbine Fire Station is in the process of being constructed on a site that is out of the floodplain.

Goal: 9

Senior centers in the county are used as emergency shelters.

Action 9: Consider structural hardening of the facilities - senior centers – Bain, Ellicott City, and Glenwood and the Department of Corrections Work Release Unit so they can serve as shelters during flood and wind events.

Responsible Agencies: Office of Emergency Management

Timeline: 5-10 years

Status: Action 9: The Office of Emergency Management has evaluated this action item and determined that hardening of these facilities is not needed as part of the County's overall sheltering needs. The County does not experience tidal water issues or wind issues and only uses these structures when a threat exists. If the facility is standing, then it is used as a shelter. If one of these facilities is not standing, then the facility is not used for shelter purposes. The Corrections facility is already a hardened facility. This action item will be removed from the FMP.

Goal: 10

Residents in the southeastern portion of the county in the Elkridge and Patapsco State Park areas are outside the reach of the county sirens. There is a need to improve the County's flood warning system.

Action 10a: Introduce a Community Notification System (phone, email, and self-registration) that encompasses the southeastern part of the county near the viaduct as well as residents in flood-prone areas.

Action 10b: Consider replacing the Dialogic System with a better emergency notification system.

Action 10c: Improve flood modeling system and capabilities to better predict crest height and timing.

Responsible Agencies: Office of Emergency Management, Department of Public Works – Bureau of Environmental Services: Storm Water Management Division

Timeline: 10a and 10b: 1-2 years; 10c: 5-10 years

Status: Action 10a and 10b: The County has implemented a Community Notification System called "NotifyMeHoward" that informs all residents, who enroll, of any impending hazards. NotifyMeHoward is a computer-based notification system that send e-mails and make phone calls to residents. Action 10c: Work on this goal will be based on the new flood models developed for our current DFIRM updates.

Goal: 11

Flashfloods tend to occur when streams overflow. Treat streams as flash flood prone areas.

Action 11a: Create a rating system for areas that flood quickly, to rate the degree of flashflood threat and enhance the current warning system based on the flashflood threat.

Action 11b: Develop signage on roads that frequently flood to warn residents and commuters of the potential flood hazard.

Responsible Agencies: Public Works-Bureau of Environmental Services: Storm Water Management Division, Office of Emergency Management

Timeline: 1-2 years

Status:

Action 11a: This action item has not been implemented yet.

Action 11b: The County is currently reviewing the various types of permanent signage which can be installed on frequently flooded roads. The signage will have a message that the road is subject to high water. During a flooding event, the Bureau of Highways will also install another sign that would say road closed due to high water. The timeframe for this project will need to be adjusted from 1 to 2 years, to 3-5 years.

Structural Projects

Goal: 12

The wastewater treatment plant in Savage lies within the 100-year floodplain.

Action 12: Monitor an ongoing engineering study to identify mitigation alternatives such as elevation, barrier wall, elevating equipment, etc., for the wastewater treatment plant and pumping stations.

Responsible Agencies: Public Works- Bureau of Environmental Services: Utility Design Division

Timeline: 1-2 years

Status: The wastewater treatment plant made an improvement to reduce the impact of flooding on the facility. The new check valve on the storm water outlet was installed and the line was cleared of silt.

Goal: 13

The County has a good dam inspection program.

Action 13a: Continue to implement the dam inspection program for the regular maintenance of all dams in the county.

Action 13b: Coordinate with the Bureau of Engineering to assist with inspections of bridges and dams to ensure integrity is maintained in the event of a flood.

Responsible Agencies: Department of Public Works-Bureau of Engineering and Bureau of Environmental Services: Storm Water Management Division

Timeline: Continuous

Status: Action 13a: Howard County inspects all lower hazard stormwater management pond dams at least once every three years and more frequently, if necessary, as a result of storms or other damage. Repairs needed to maintain the integrity of the dam are conveyed to the pond owner for follow up. Repairs needed for ponds maintained by Howard County are managed within the Department of Public Works.

There are also seven high or significant hazard dams in Howard County. Four are owned or operated by Howard County – Centennial Park, Columbia Gateway, North Laurel Park, and Wyndemere Dams. The Centennial Park and Columbia Gateway Dams are inspected annually by the Maryland Department of the Environment Dam Safety Division. The North Laurel and Wyndemere dams are inspected by the County annually and, also, inspected by Dam Safety every three years. The other high or significant hazard dams – Wilde Lake, Hobbits Glen, and Lake Elkhorn – are owned and operated by the Columbia Association and are inspected annually by Dam Safety.

Action 13b: Howard County inspects the bridges in compliance with the federal regulations and inspections are reviewed by the State Highway Administration. The County is up to date on inspections and is in compliance. The County performs additional inspections in the event of any earthquake and storm activity.

Goal: 14

The dams in the County were originally built for power generation and recreation but some are not being maintained and therefore are not performing the functions for which they were intended.

Action 14: Continue to support the study of non-functioning dams on Patapsco River and remove those that are non-functioning and restore the environment.

Responsible Agencies: Public Works-Bureau of Engineering

Timeline: Continuous

Status: This goal refers to dams on the Patapsco River main stem. Removal of these dams is managed by the Maryland Department of Natural Resources. The Simpkins Dam has been removed to date. American Rivers has received 3.57 million dollar grant from the NOAA Restoration Center for the removal of Bloede Dam as part of the Patapsco River Restoration Project. The County continues to support the study of removal of non-functioning dams.

Goal: 15

There are approximately 41 roads in the county that are frequently flooded, as identified by the Department of Highways.

Action 15: Continue to identify those roads that frequently flood and prioritize them to apply for federal funding to elevate these roads.

Responsible Agencies: Public Works-Bureau of Engineering, State Highway Administration

Timeline: 1-2 years

Status: Howard County replaces bridges or culverts, which do not meet design criteria caused by flooding and these structures are evaluated to see if it is reasonable to raise the road. Each year Howard County Highways provides a list of projects that they would like programmed for evaluation. The County currently has two such projects budgeted. Also, the County maintains a listing of frequently flooded roads which they publicize and update after a major storm, as appropriate.

Howard County Highways is currently reviewing the various types of permanent signage which could be installed on frequently flooded roads. The signage will have a routine message that the road is subject to high water and another sign that would say road closed due to high water. The time frame for the installation of the signs is 3-5 years.

Goal: 16

The area on Route 1 at the junction between Howard and Prince George's County on the Main Patuxent River floods periodically.

Action 16: Coordinate with the Public Works Department in Prince George's County to develop a mitigation solution.

Responsible Agencies: Public Works-Bureau of Engineering, State Highway Administration

Timeline: 1-2 years

Status: This goal has been corrected to say "Main Patuxent River" instead of the "Middle Patuxent River" as was previously written. Howard County met with State Highway Administration (SHA) officials on September 24, 2013. SHA is not aware of any plans to fix up the bridges and doesn't think that the bridges and the adjacent approach roads would be raised up out of the floodplain, because it would be too expensive.

Natural Resource Protection

Goal: 17

Undeveloped land comprises over 20 percent of the total land area and is mostly concentrated in the western part of the County. There is a need to protect natural resources and open-space, including parks and wetlands, within the floodplain and watersheds and consider raising the

level of importance of preserving environmentally sensitive areas through the use of improved land use and storm water management principles.

Action 17a: Continue to implement low impact development techniques, environmental site design and best management practices to manage storm water to increase the amount of pervious surfaces by incorporating innovative methods including bio-retention areas, dry wells, infiltration trenches, filter/buffer strips, vegetated swales, where appropriate.

Action 17b: Develop incentives to promote green infrastructure concepts for storm water retention on private properties and promote the use of landscaping, rain gardens, rain barrels, etc. to retain water longer on properties.

Responsible Agencies: Public Works-Bureau of Environmental Services: Storm Water Management Division, Recreation and Parks, Planning and Zoning

Timeline: 17a: Continuous; 17b: 1-2 years

Status: Action 17a: The new storm water management regulations adopted by Howard County, require environmental site design to the maximum extent practicable, which encourages minimizing site disturbance and requires offsetting the water quality and quantity impacts from new impervious surfaces through techniques such as bioretention facilities, vegetated swales and rain gardens. Action 17b: The County has a residential rain barrel program that offers free, predrilled rain barrels to resident who are interested in reducing runoff. Rain garden and conservation landscaping workshops are also offered free to residents through the County's Master Gardeners program. This goal has been accomplished in 2013.

Goal: 18

There are areas within the County that experience storm water runoff issues. For example, Old Columbia Road – Route 29 between Shaker Drive and Gorman Road experiences issues with storm water and the stream tributary of the Middle Patuxent, and Glen Court in Jessup that is built on a swamp.

Action 18: Develop incentives to resolve storm water run-off issues in problem areas throughout the County and work with individual property owners to develop mitigation solutions.

Responsible Agencies: Public Works-Bureau of Environmental Services: Storm Water Management Division

Timeline: 1-2 years

Status: Action 18: The County is currently working with residents to resolve site specific storm water run-off issues. Some issues can be resolved with a site visit and an explanation of mitigation measures. In some cases, resolution of certain run-off issues requires the County, or the property owner, to construct drainage structures to mitigate the drainage concerns.

Goal: 19

Clearing of trees for development has caused an increase of impervious surfaces and subsequent increase in run-off.

Action 19a: Continue to implement the County tree planting program and examine the stream network to identify areas for more opportunities to plant trees and explore the tree canopy goal.

Action 19b: Continue to enforce the Road Tree Law (to do no harm to existing trees on the boulevard).

Responsible Agencies: Public Works-Bureau of Environmental Services: Storm Water Management Division, Bureau of Highways, Tree Maintenance, Planning and Zoning, Recreation and Parks

Timeline: Continuous

Status:

Action 19a: This action item is an ongoing program for the County, which continues to look for every opportunity to plant trees through its "Plant It Green" program. This program is designed to provide free trees to residents for tree canopy efforts, stream buffering, and forest conservation plantings. The county is utilizing the Urban Tree Canopy study that was completed in cooperation with the University of Vermont, to identify tree canopy and stream buffer opportunities. In addition, the County continues to look for additional sources of funding, which can be used to fund trees for County residents. In FY13 the county was awarded the Governors Stream Challenge Grant in the amount of \$371,204 for these programs. In addition, the county has implemented its Emerald Ash Borer (EAB) mitigation program. Through this program natural resources inventories are conducted to identify significant ash forest stands. This information is used to implement preemptive measures to offset the effects of the EAB.

19b: The County has had a program in place for many years that ensures that dead or dying street trees are replaced and protected. This program is conducted by Howard County's Bureau of Highways and is continuous and ongoing.

Goal: 20

In the Patapsco River in Old Ellicott City, there is an island upstream that blocks the flow of water.

Action 20a: Work with the Department of Natural Resources on watershed management issues and for periodic removal of debris from the stream at the Patapsco River and Historic Ellicott City.

Action 20b: Coordinate with DNR, MDE, and the Department of Planning, on stream bank maintenance, debris removal, and excess sedimentation so as not to exacerbate the flood issue in Historic Ellicott City and explore funding opportunities.

Responsible Agencies: Public Works-Bureau of Environmental Services: Storm Water Management Division

Timeline: 3-5 years

Status: Action 20a and 20b: Howard County Highways periodically removes trees from the island.

Goal: 21

There is a need to continue coordination between the county and residents in the floodplain and to make residents aware of flood issues and literature that is readily available.

Action 21a: Continue to ensure that the libraries in the County are stocked with flood protection publications.

Action 21b: Introduce natural hazards awareness programs in schools.

Action 21c: Coordinate with OEM; continue to make flood information available (annual informational mailings/pamphlets to residents in the floodplain) to the citizens via the Public Information Officer to be utilized during flood events.

Action 21d: Continue to distribute pamphlets in advance to inform citizens about how to prepare for potential flood events and for business owners regarding protecting inventory from flooding.

Responsible Agency: Office of Public Information, Public Works-Bureau of Environmental Services: Storm Water Management Division, Office of Emergency Management, Public Libraries

Timeline: Continuous

Status: Action 21a: The County libraries continue to stock various FEMA flood related brochures and information pamphlets in their facilities and make them available to the general public through the library system and at County offices. Action 21b: Natural hazards are discussed within the school system on an as needed basis, but to date there is no official program. Action 21c: Informational pamphlets are provided to residents in the floodplain as part of the updated Hazard Mitigation Plan. Regarding future activities, OEM and PIO plan to provide flood related information via the County and OEM website, as well as pamphlets and brochures during public outreach activities. Action 21d: Pamphlets and other flood preparation related information is sent out annually to residents in the floodplain. Emphasis will need to be placed on business owners regarding protecting inventory from flooding.

Goal: 22

The County's website could be further enhanced to contain more location-specific disaster-related information.

Action 22a: Include the following information: flood and hazard data, safety precautions and emergency procedures, flood mitigation options, and sources of funding. Also include flood-related articles and success stories on the County's website.

Action 22b: See <http://www.fema.gov/plan/prevent/floodplain/publications.shtm> for a detailed listing of flood-related publications and include this link on the County's webpage.

Action 22c: Once they are completed, make DFIRMS available on the County's website that allows users to determine their flood zone and other property information as well as aerial photographs.

Responsible Agency: Office of Public Information, Public Works-Bureau of Environmental Services: Storm Water Management Division, Office of Emergency Management

Timeline: 1-2 years

Status: Action 22a: The County has local flooding hazard information listed on their website and includes links to FEMA's website. The County will continue to enhance the website with additional features. Action 22b: The County has added the FEMA link, <http://www.fema.gov/plan/prevent/floodplain/publications.shtm> to its Flood Information web page and also includes links to FloodSmart and the www.fema.gov website. This action item is completed. Action 22c: The DFIRMS have been completed and a link to the DFIRMS is on the County website. In addition, the County has posted a webpage with an interactive map "Do I Flood".

Goal: 23

There is need for technical assistance to flood prone property owners.

Action 23a: Provide technical support to property owners: direct property owners to resources, property protection techniques, and funding sources.

Action 23b: Educate and make County staff available for on-site consultation as needed.

Responsible Agencies: Public Works-Bureau of Environmental Services: Storm Water Management Division

Timeline: 1-2 years

Status: The County staff has always been available to residents to answer technical flood questions and posts flood related literature within the Bureau of Environmental Services and the local libraries. The literature covers topics such as how to prepare for a flood, post-flood mitigation measures, guide to flood maps, and other flood specific literature. The County has always, and continues to make staff available to visit with homeowners to discuss their flood related concerns. This goal is continuous and is part of the normal duties of County staff. The timeline has already been attained and continues to be implemented.

Goal: 24

Currently, Howard County is a Class 8 CRS community.

Action 24: Continue to implement mitigation actions from the Flood Mitigation Plan and strive to move up to a Class 7 community where residents can obtain a 15 percent reduction in flood insurance premiums.

Responsible Agencies: Department of Public Works-Bureau of Environment Services: Storm Water Management Division

Timeline: Continuous

Status: In 2013, the County acquired enough points under the CRS program to earn a Class 7 rating. This action item has been accomplished.

Goal: 25

The DFIRMs for Howard County are scheduled to be released after January 2011. Once adopted by the County Council, these digital maps will replace the paper FIRMs and become the official designation of flood zones in the county. Therefore it will be critically important for all stakeholders to understand how to use a DFIRM to make planning, building, and insurance decisions.

Action 25: When DFIRMs become available, provide training of the use of DFIRMs to stakeholder groups including planners, engineers, realtors, and community leaders.

Responsible Agencies: Department of Public Works-Bureau of Environment Services: Storm Water Management Division

Timeline: 1-2 years

Status: The DFIRMS were recently approved and information on how to use them was posted on the Howard County website that enables residents to research their property to determine if they are in the floodplain. Howard County Stormwater engineers are cognizant of how to use the DFIRM maps and look for opportunities to explain, train and communicate the meaning and purpose of the DFIRMS and their impact on properties through the County's Map Information Service. The Map Information Service is advertised throughout the County via the annual tax bill and therefore all groups in goal 25 are reached. This goal has been attained.

Plan Implementation

Goal: 26

It must be ensured that this Flood Mitigation Plan is properly implemented and updated.

Action 26a: Work with the Flood Mitigation Plan Steering Committee and members of the public who are interested in flood-related issues to implement this plan and review its progress.

Action 26b: Meet every six months to review projects that have been completed, altered, or are no longer applicable.

Action 26c: Update the Flood Mitigation Plan every five years and after a flood event.

Action 26d: Integrate this Plan into the All-Hazard Mitigation Plan as an annex.

Responsible Agencies: Public Works-Bureau of Environmental Services: Storm Water Management Division, Office of Emergency Management

Timeline: Continuous

Status: Action 26a and 26b: The Office of Emergency Management's Emergency Management Operations Group (EMOG) meets the 3rd Wednesday of every month with department head representatives to discuss departmental concerns. After a flooding event, or any other event, an After Action Review Committee (AARC) is formed. The results of the AARC are then put in an "after action report" and then subsequently into an Improvement Report. The Stormwater Management personnel will meet every 6 months with EMOG and include the FMP action items to the Improvement Report.

Action 26c: The 2011 FMP will not be ready for update again until 2016 and the Plan is updated annually to incorporate any pertinent flood information.

Action 26d: The 2004 All Hazards Mitigation Plan (HMP) has been finalized and approved and references the Flood Mitigation Plan. This action item has been achieved.