

# Baltimore County Nuisance Flooding Plan



Baltimore County Department of Public Works

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## I. Background

Maryland Senate Bill (SB) 1006 states that “on or before July 1, 2019, a local jurisdiction that experiences nuisance flooding shall develop a plan to address nuisance flooding.” The legislation further specifies that the plan must be submitted to the Maryland Department of Planning by 10/01/2020, published on the local jurisdiction’s website, and updated at least every five years.

## II. Introduction

Flooding is one of the most common natural hazards experienced in Baltimore County. Depending on the circumstances, flooding may be widespread or isolated, developing slowly or quickly. It may take the form of coastal, overland, or flash flooding. Floods may originate from ice jams or from the failure of dams or levees. Nuisance flooding is a more specific and commonplace phenomenon which dictates a slighter response and threatens the community in less intrusive ways.

The National Oceanic and Atmospheric Administration (NOAA) defines nuisance flooding, or high tide flooding, as “flooding that leads to public inconveniences such as road closures. It is increasingly common as coastal sea levels rise.” The language of SB 1006 refers to nuisance flooding as “high-tide flooding that causes public inconvenience.” Nuisance flooding is typically unrelated to particular storm events, though it may be exacerbated by long-duration wind events or passing storm systems. As such, it is frequently referred to as “sunny day flooding.”

Nuisance flooding is capable of disrupting daily activities through a variety of mechanisms, such as the closure of roads due to high water, the inundation of yards and parks, and the impairment of engineered and natural drainage systems. Currently, these disruptions typically occur for a period of several hours and then abate. However, as a changing climate drives sea levels higher and precipitation events to greater severity, these repeated “nuisance” impacts will become significant stressors on the infrastructure, emergency response, public health, and fabric of the community.

In Baltimore County, nuisance flooding occurs most predominately in locations near or adjacent to major bodies of water. Along the tidal creeks in Eastern Baltimore County, nuisance flooding is common on residential and commercial properties. Elsewhere in the County, beyond the direct tidal flooding but driven by tidal influence, nuisance flooding is experienced as debris washes into ditches, culverts and storm drains and eventually settles on roadways as ditches overflow. Culverts in low-lying areas may have difficulty conveying water adequately, causing ponding on low-lying roadways throughout the County.

## III. Preparing for Nuisance Flooding

Because nuisance flooding is a complex problem, strong partnerships between planning, public works, emergency management, and geographic information systems (GIS) are necessary for Baltimore County to properly prepare for the impacts of nuisance flooding. In particular, it is important that departments collaborate to inventory and map chronically inundated areas.

As part of the nuisance flood planning process for Baltimore County, a team of staff created a thorough inventory of known flood hazard areas, which can be found as Appendix II to this document (and also on NOAA and MD SHA’s websites, at <https://coast.noaa.gov/slr/> and <https://www.arcgis.com/home/item.html?id=86b5933d2d3e45ee8b9d8a5f03a7030c>, respectively). Departments involved in the nuisance flood planning and inventory process can be found in Appendix IV.

In addition to mapping, accurate flood forecasting and warning is critical to the safety and preparedness of a community. Weather forecast data is received from the National Weather Service (NWS) forecasting office in Sterling, VA. Critical tide information is received from the NOAA tide gauge stationed at the Baltimore/Ft. McHenry Patapsco station, as well as additional gauges elsewhere throughout the Chesapeake Bay. These gauges allow Baltimore County to be aware of and prepare for possible nuisance flooding impacts.

The Baltimore County Office of Emergency Management (OEM) maintains a close relationship with NWS Sterling, receiving notifications of special hazards and watches or warnings of severe weather before the community is impacted. In addition, the Baltimore County DPW maintains an active paid subscription to the services of RJN networks which employ a dedicated meteorologist who issues Baltimore County customized weather forecasts at least 3 times per day and as frequent as on an hourly basis during extreme weather events. The County also employs a SCADA (supervisory control and data acquisition) system which monitors, in real time water, surface elevations at various points throughout the County, where critical infrastructure is located. Additionally, it is the responsibility of the Baltimore County OEM to disseminate public safety information via audio-visual media, the County’s mass notification system, and social media outlets.

## IV. Responding to Nuisance Flooding

### A. Emergency Response

Thresholds are maintained for Baltimore County which direct a set of actions based on a particular inundation level or frequency of flooding. These thresholds are meant to supplement actions directed by the Baltimore County Emergency Operations Plan.

Threshold	Response Level	Required Action
Forecast data from the NWS or NOAA tide gauge indicates likely nuisance flooding impacts	Level I – Public Warning	Make the public aware of nuisance flooding threat via mass notification emails, social media, etc.
Flood waters are present below nuisance levels and are rising	Level II – Monitor Inundation	Deploy DPW and SHA personnel to monitor flood levels as needed and place high water signs at impacted locations.
Flood waters are high enough to warrant temporary road closures	Level III – Flood Response	Place additional DPW and SHA personnel on standby; close roads and reroute traffic as flooding reaches hazardous levels

When flooding reaches such a severity that life safety, critical infrastructure, and key resources are threatened, “nuisance” flooding levels have been exceeded. Below are response concepts consistent with the Baltimore County Emergency Operations Plan which may become necessary as flood waters rise beyond nuisance levels.

- Response
  - Lifesaving activities
  - Incident containment
  - Public health concerns
  - Maintenance of transportation routes
  - Maintenance of critical facilities
  - Public warning mechanisms
  - Responder health & safety
  - Media & VIP management
  - Control & Coordination of operations
  - Provision of transport, shelter and documentation of displaced persons
  - Restoration of normality
- Recovery
  - Handover from life saving
  - Facilitate the restoration of systems to normality
  - Assess damage and return vital life support systems to minimum operating standards
  - Collate financial cost of the event
  - Legal implications, claim investigation
  - Debrief & compilation of final report
  - Community & restoration of services

## B. Documentation

Documenting the extent and impacts of nuisance flooding is critical to public safety and the long-term resilience of Baltimore County. This information is documented and updated on a regular basis for emergency planning purposes. A review of flood documentation should provide Baltimore County a comprehensive view of trends in flooding over time. The following factors will be recorded by Baltimore County OEM and DPW for tracking, and archived by County GIS staff. This includes instances of nuisance flooding addressed by SHA and communicated over the radio.

- Date, time, and location of nuisance flooding
- Impacts (e.g. “x amount of water on the roadway,” “ditch overflow,” “docks underwater,” etc.)
- Agency notified and action taken

See Appendix 3 for a copy of the Baltimore County nuisance flooding documentation tool.

## V. Mitigating Nuisance Flooding Impacts

Both the Emergency Operations and the Hazard Mitigation Plan (HMP) for Baltimore County will address measures by which the impacts of flooding can be mitigated, or lessened, by structural and nonstructural means. The purpose of the Nuisance Flooding Plan is to serve as a placeholder until the information and recommended actions found in the other planning documents are being updated.

The principles of floodplain management are fundamental to the proper mitigation of nuisance flooding in Baltimore County. Higher standards – such as freeboard, development restrictions in the floodplain,

etc. – can be effective in mitigating the effects of both nuisance flooding and other major flooding events.

Baltimore County’s HMP will still identify three areas in which focus is directed regarding mitigation activity. These three areas include:

- Promote hazard mitigation as the cornerstone of emergency management
- Eliminate or reduce human, environmental, social and economic loss, and
- Provide outreach to agencies and organizations within the County

In addition to actions specified in the HMP, Baltimore County will implement or consider implementing to mitigate the impacts of nuisance flooding. These activities support the three areas of focus found in the Hazard Mitigation Plan.

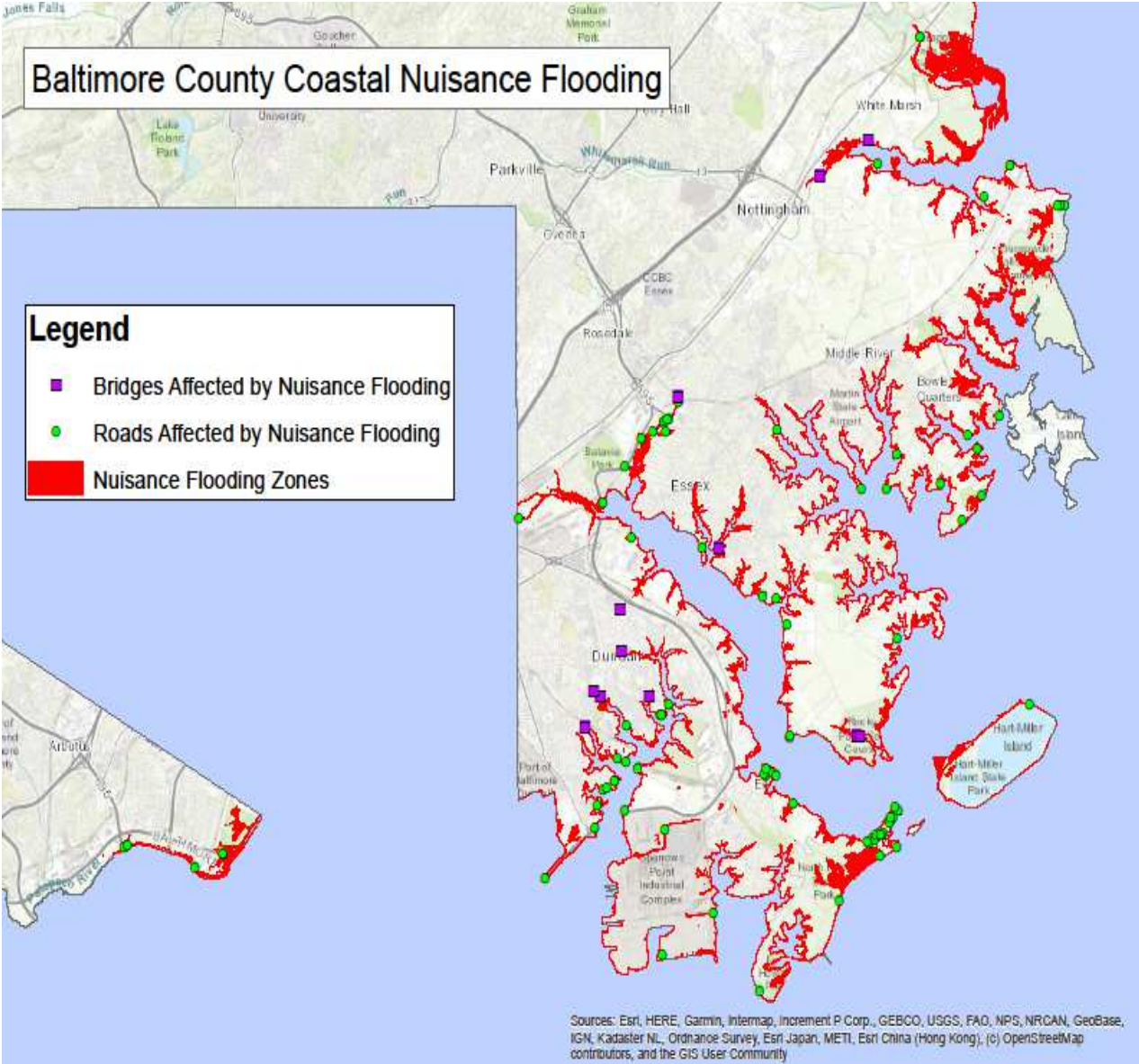
- Structural
  - Enforce floodplain regulations which mandate the use of freeboard required to qualify for flood insurance through the NFIP.
  - Enforce legislation and encourage the buildup the storm water management infrastructure to convey water from flood-prone areas while reducing runoff production.
  - Conduct regular maintenance of drainage and stormwater control systems.
  - Consider green infrastructure options rather than conventional stormwater solutions.
- Nonstructural
  - Public Information
    - Communicate the risk of nuisance flooding in non-emergency times to residents and businesses via mass mailings, social media, press releases, or automated phone calls.
    - Disseminate flood preparedness information to enable a safer and more aware public in the face of flooding.
    - Integrate nuisance flooding-related public messaging in Baltimore County’s existing public information plan and materials.
    - Advertise and encourage residents to purchase flood insurance.
  - Planning
    - Ensure Baltimore County’s flood mitigation strategy is kept up to date and referenced in the Hazard Mitigation Plan and other pertinent locations.
    - Establish and schedule meetings of a nuisance flooding planning committee on an as-needed basis to address flood-related issues and review plans.
    - Improve stormwater management planning and strengthen policies to reduce runoff.
  - Implementation
    - Educate and train County staff on responsibilities under this NFP.
    - Preserve floodplains as open spaces through the use of legal protection status.
    - Protect and restore natural coastal features (forests, marshes, dunes, underwater grasses, and oysters) that can reduce the impacts of flooding.

## VI. Projections for Future Impacts

The areas impacted by nuisance flooding will increase gradually in the coming years as changing climate elevates water levels and drives precipitation patterns to new extremes. This shift, however, is likely to accelerate gradually over time. New areas will also become impacted, leading to an increased number of businesses, residents, and critical infrastructure at risk. Public services will also be more frequently impaired as flooding increases.

Baltimore County will maintain a level of awareness of data made available by NOAA, the State of Maryland, the University of Maryland Center for Environmental Science, and other scientific institutions as it pertains to the community and local flood risks. These risks of increased nuisance flooding will be communicated appropriately to residents and decision makers and direct them to take appropriate action in the areas of emergency response and hazard mitigation. Elected officials and County staff will utilize venues such as County Council's meetings and Planning Commission meetings to communicate information on long-term flood risks. Future projections of sea level change and nuisance flooding should also be integrated into land use planning, floodplain management, comprehensive planning, and capital investment planning.

Appendix I – A. Nuisance Flooding Location Map





## Appendix II – A. Nuisance Flooding Location – Roads

Streets Affected by Nuisance Flooding
10TH ST
12TH ST
12TH ST
3RD ST
4TH ST
8TH ST
9TH ST
ALICE AVE
ANNAPOLIS RD
BAY DR
BAYSIDE RD
BEACH DR
BEACH RD
BEECHWOOD AVE
BIRD RIVER GROVE RD
BULLNECK RD
CHERWIN AVE
CHESAPEAKE AVE
CHESAPEAKE RD
CHESTER RD
COLD SPRING RD
CRANE LN
CUCKOLD POINT RD
E GREENBANK RD
E RIVERSIDE AVE
EBENEZER RD
GALENA RD
GETTYSBURG AVE
GOLDEN RING RD
GRACE RD
HAMMONDS FERRY RD
HART MILLER ISL DIKE
HINTON AVE
I 695
I 895
INVERTON RD
ISLAND POINT RD
LONGPOINT RD
MIDDLE RIVER AVE
NEW SECTION RD
OLD EASTERN AVE
ORE PIER RD
PEACH ORCHARD RD
PENINSULA EXPY
PHILLIPS RD
PULASKI HWY
PULASKI HWY
RIVER DRIVE RD
RIVERSIDE DR
SANDY BEACH DR
SOUTH RIVER DR
SOUTHEAST BLVD
STEMMERS RUN RD
SUSQUEHANNA RD
WAREHOUSE RD
WHARF RD
WILSON POINT RD
WISE AVE



## Appendix IV – Nuisance Flooding Stakeholders Committee

### A. Stakeholders Committee

<b>Number</b>	<b>AGENCY</b>
1	Baltimore County Executive Office – Sustainability and Resiliency
2	Maryland State Highways Administration
3	Baltimore County Soil Conservation District
4	Baltimore County Department of Environmental Protection and Sustainability.
5	Baltimore County Department of Public Works
6	Baltimore County Department of Recreation and Parks
7	Baltimore County Department of Planning
8	Baltimore County Department of Permits, Inspections and Real Estate Compliance
9	Baltimore County Office of Property Management
10	Baltimore County Office of Emergency Management