
NUISANCE FLOODING PLAN

WORCESTER COUNTY, MARYLAND



PREPARED BY:

**Worcester County
Governmental Center
1 West Market Street
Snow Hill, MD 21863**

This plan represents Worcester County's initial effort to achieve the County's nuisance flood plan objectives. The ability to implement best practice installation and maintenance will be dependent upon County/municipal staffing levels and the ability to secure funding from funding source(s) to complete projects implementing such practices. These practices and their specific locations will be revised as necessary to reflect changes in status of funding, staffing, and the ongoing data collection associated with the nuisance flooding reports.

I. Background

Maryland House Bill (HB) 1427 states that “on or before October 1, 2020, 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, published on the local jurisdiction’s website, and updated at least every five years.

This Nuisance Flooding Plan (NFP) presents a format to go forward and record these events for our noted areas and work towards solutions to mitigate these issues and risks in the future for our County and the Towns of Berlin, Snow Hill, and Pocomoke. The coastal Town of Ocean City has prepared their own NFP.

I. Introduction

Flooding is one of the most common natural hazards experienced in Worcester 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 could originate from rapid ice/snow melts or from the failure of berms 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 HB 1427 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.

High tide flooding is generally very localized, occurring at a scale of city blocks. By definition, a high tide flooding event occurs when local sea level temporarily rises above an identified threshold height for flooding, in the absence of storm surge or riverine flooding. The heights of locally identified flooding thresholds are related to impacts such as standing water on low-lying roads or seawater entering stormwater systems,

In Worcester County, nuisance flooding occurs most predominately in locations near or adjacent to major bodies of water either our Coastal Bays or our rivers and streams. Along the Pocumoke River, nuisance flooding is becoming more common on recreational, residential, and commercial properties. Elsewhere in the County, nuisance flooding is experienced as debris from farm fields washes into ditches 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. These culverts also have failures adjacent to tidal waters where storm runoff does not have an outlet in the bays and the backup due to tidal levels.

II. 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 Worcester 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 Worcester County, county staff created a thorough inventory of known flood hazard areas, which can be found as Appendix I to this document. Departments involved in the nuisance flood planning and inventory process can be found in Appendix II.

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 at Wakefield. Critical tide information is received from the NOAA tide gauge stationed in the Isle of Wight Bay , as well as additional gauges elsewhere in adjacent coastal areas. These gauges allow Worcester County to be aware of and prepare for possible nuisance flooding impacts.

The Worcester County Office of Emergency Services (DES) maintains a close relationship with NWS Wakefield, receiving notifications of special hazards and watches or warnings of severe weather before the community is impacted. The timeliness of these severe weather alerts is critical when the potential for public safety impacts exists, such as in flood situations. Additionally, it is the responsibility of the Worcester County DES to disseminate public safety information via the County's mass notification system, and social media outlets in conjunction with County Administration and local elected officials. When nuisance flooding is anticipated, it may be necessary for Worcester County DES to initiate a message to flood hazard areas via CodeRED and social media outlets with details about flood severity, duration, or impacts such as road closures.

III. Responding to Nuisance Flooding

A. Emergency Response

Thresholds are maintained for Worcester 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 Worcester County Emergency Operations Plan.

- 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 Worcester County. This information will be documented and updated on a regular basis for emergency planning purposes. A review of flood documentation should provide Worcester County a comprehensive view of trends in flooding over time. The following factors will be recorded by Worcester County ES 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 Worcester County nuisance flooding documentation tool

IV. Mitigating Nuisance Flooding Impacts

Both the Comprehensive Plan(CP) and the Hazard Mitigation Plan (HMP) for Worcester County 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 augment and support the information and recommended actions found in other planning documents. According to the County's 2006 CP (p. 48):

Worcester County Floodplain Management Law, the Worcester County Forest Conservation Law, the Critical Area Law and conservation zoning provide protection of floodplains. In addition, the county has adopted code changes to reduce impervious surface requirements for roads in some kinds of new developments. Flooding from hurricanes is a serious threat to life and property with the potential for extensive damage and disruptions. To reduce potential damage, the county is developing a hazard mitigation plan. This first step will provide guidance for pre-disaster activities. The second phase of addressing disasters is to develop a post disaster plan. Confusion and rapid decision-making follow a disaster. Advance planning can position the county to reduce its exposure to future disasters and reduce the need for ad hoc decision-making. Hurricane Katrina has taught us that effective post-disaster planning is necessary for an effective recovery process.

The principles of floodplain management are fundamental to the proper mitigation of nuisance flooding in Worcester 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.

Worcester County's HMP identifies four areas in which focus is directed regarding mitigation activity. These four areas include:

- ✓ Build and support municipal capacity and commitment to become continuously less vulnerable to hazards,
- ✓ Promote sustainable development to improve quality of life,
- ✓ Protect public infrastructure, and
- ✓ Protect existing and future properties.

In addition to actions specified in the HMP, the NFP includes activities which Worcester County will implement or consider implementing to mitigate the impacts of nuisance flooding. These activities support the four areas of focus found in the Hazard Mitigation Plan. They also support recommendations and actions from Worcester

County's 2008 Climate Change and Sea Level Rise Adaptation Report and goals and strategies of the Worcester County Comprehensive Plan.

Structural

- Enact floodplain ordinance or codes which mandate the use of freeboard beyond current requirements.
- Improve stormwater management infrastructure to more effectively convey water from flood-prone areas.
- 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 Worcester County's existing public information plan and materials.

Planning

- Ensure Worcester County's NFP is kept up to date and referenced in the Hazard Mitigation Plan and other pertinent locations.
- Schedule meetings of the 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 the 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.

V. 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.

Worcester 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 for the Towns of Berlin, Pocomoke, and Snow Hill and County staff will utilize venues such as County Commissioners' meetings and County and Town 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 – Nuisance Flooding Location Inventory

A. Locations Identified by County Staff and NFP Workgroup Member Agencies

These locations were identified that have historically flooded during a Nor’easter or hurricane event. Municipalities identified flood prone roads (denoted with an asterisk*) that frequently flood during a thunderstorm or heavy rain. Additionally, the 2008 Sea Level Rise Response Strategy Plan listed roads that are potentially prone to flooding due to sea level rise. These roads are also included (denoted with a double asterisk **). Specific flooding issues identified include: Sea Level Rise, Stormwater Management, Drainage, Low Road Elevation, Tidal and Undersized Culvert and Wetlands.

Flood Prone Roads

Roads	Issue
Airport Road**	SLR
Ann Drive	SWM
Back Creek road	Tidal
Basketwitch Road	Drainage Away Blocked/Low Road Elevation
Bay view Road	Drainage Away Blocked
Beaverdam Creek Road	Drainage Away Blocked
Berlin Bypass (US 113)*	SWM
Bethands Road	Drainage
Betheden Church Road	Drainage Blocked
Brighton Road	Tidal
Brentwood Circle*	Drainage
Byrd Road	Drainage
Cathell Road	Drainage
Cedar Hall Wharf Road	Tidal
Cedartown Road	Drainage
Colona Road	Drainage
Creek Road*	Drainage/Tidal
Cypress Road*	SWM
Dixie Drive**	SLR
Dukes Road	Drainage
Eagle's Nest Road**	Tidal/SLR
Exeter Road	Tidal
Flower Road*	Undersized Culvert
Franklin Street*	SWM
Front Street*	Drainage
Golf Course Road	SWM not sufficient/Tidal
Greenbackville Road	Drainage
Grice Street	SWM
Gum Point Road	Tidal
Harmon Landing Road	Tidal

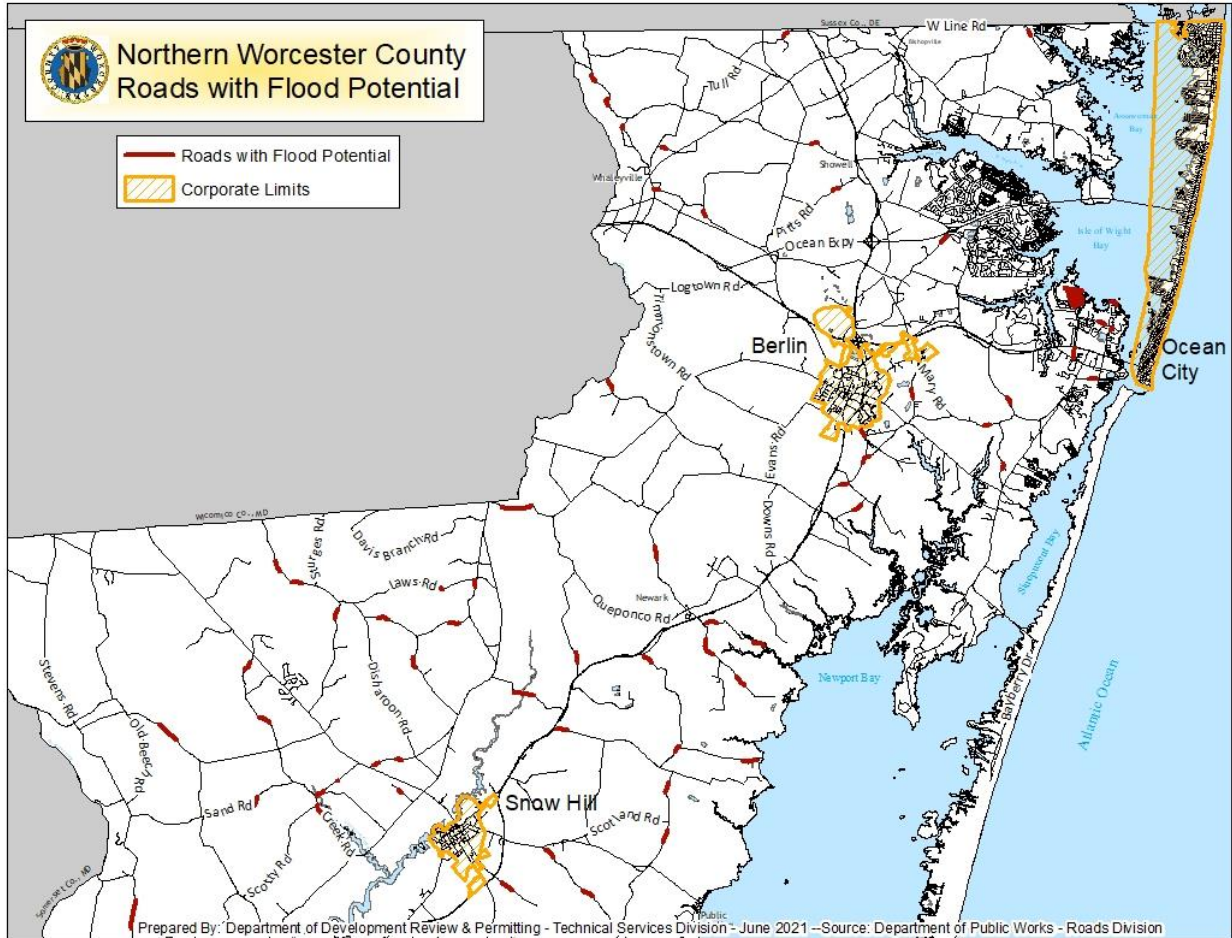
Harrison Road	Drainage Blocked
Harrison Street*	SWM
Hidden Harbor Road	Tidal
Hickory Point Road	Drainage/Tidal
Holly Grove Road	Drainage/Nontidal Wetlands
Hotel Road	Drainage Blocked
Island View road	Drainage/Tidal
Jarvis Road	Drainage
Johnson Neck Road	Drainage
Keyser Point Road	Drainage/Tidal
Klej Grande Road	Drainage - Bridge
Langmaid Road	Drainage
Laws Road	Drainage
Logtown road	Drainage
Madison Avenue	Drainage/Tidal
Main Street (RT 818)*	SWM
Marshall Creek Road	Tidal
McCabe's Corner Road	Drainage
Meadow Drive	Tidal
Mt. Olive Church Road	Drainage
Muskraattown Road	No Drainage Ditches
Narrow Diet Road	Drainage
Nassawango Road	Tidal
New Quay Road	Tidal
Norwich Road	Tidal
Old Ocean City Road (RT 346)*	SWM
Onley Road	Drainage
Orchard Road	Drainage
Oxford Street*	Drainage
Parker's Bay Road	Tidal
Patey Woods Road	Drainage
Pennewell Road	Pond Overflow
Pine Street*	SWM
Piney Island Drive**	SLR
Porter's Crossing Road	Low Bridge
Purnell Crossing Road	Drainage/Tidal - River/Wetland
Railroad Avenue *	Drainage
Red House Road	Drainage/Tidal
Rum Gate Point Road	Tidal
Salt Grass Point road	SLR
Sand Road	Drainage/Tidal

Scott's Landing Road	Tidal
Seahawk Road	Drainage
Selsey Road	Tidal
Sheephouse Road	Drainage
Sheffield Road	Tidal
Sheppard's Crossing	Drainage - Ditch
Shockley road	Drainage
Sinepuxent Road	Tidal-Drainage
Snow Hill Road (RT 12)*	Tidal - Drainage
Snug Harbor Road	Tidal
South Point Road	Drainage/Tidal/SLR
spencer Road	Drainage
Stagg Road	Drainage
St Martin Neck	SLR
Taylor Landing Road	Tidal
Taylor Road	Drainage
Truitt's Landing Road	Drainage/Tidal
Whiton Crossing Road	Drainage on Both Sides of Bridge
William Street*	SWM
Winter Quarter Street*	Drainage
8th Street*	Drainage

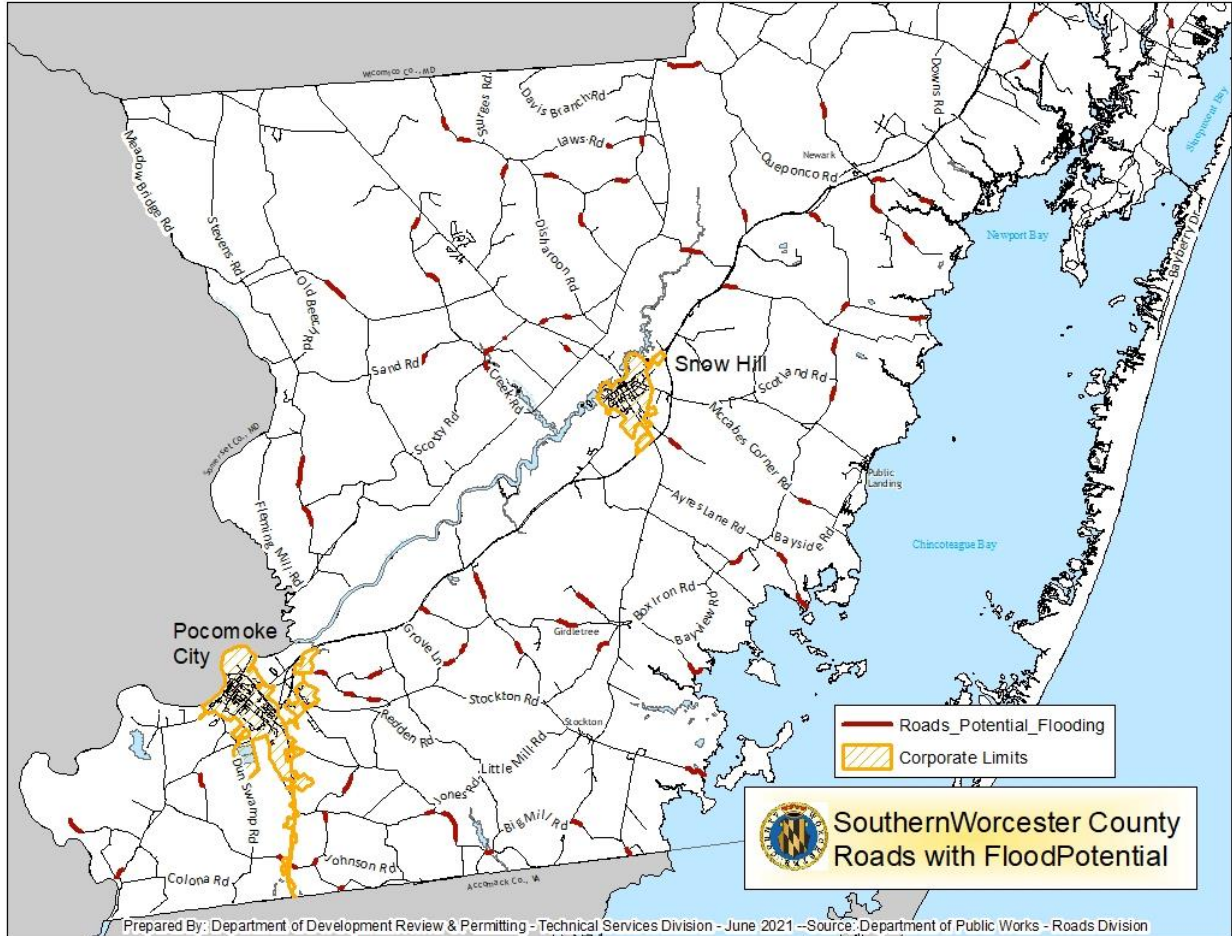
A total of 92 roads were identified as being potentially flooded during an event. Seventeen of the identified roads are located within a municipality. Seven roads were identified in the 2008 Sea Level Rise Response Strategy Plan for potentially being flooded due to potential sea level rise. In regards to tidal flooding, a total of 33 roads were identified. Flooding due to drainage issues affected a total of 51 roads. Several of the issues regarding drainage involved blockages or the lack of drainage ditches or bridge interferences. Eleven roads flood due to stormwater management issues. A majority of these issues are located within the municipalities. Flooding occurring on Pennellwell Road is caused by an undersized pond, while flooding on Flower Road is due to an undersized culvert. Of the total roads identified, 15 are affected by more than one issue, for example, Purnell Crossing Road contains drainage, wetland and tidal flooding issues. Additionally, Eagle's Nest Road and South Point Road are currently affected by tidal flooding and have the potential to be inundated due to potential sea level rise.

Maps W-1 and W-2 depicts all flood prone roads identified by the County Roads Department and the HMPC during the Mitigation Strategies Meeting.

Map W-1: Northern Worcester County Roads with Flooding Potential



Map W-2: Southern County Roads with Flooding Potential



Appendix II – Nuisance Flooding Participating Agency Contributors

A. Agencies

Agency

Worcester County Office of Emergency Services

Worcester County Roads Division

Worcester County Department of Public Works

Worcester County Environmental Programs

Worcester County DRP

Town of Berlin Planning Office

Town of Snow Hill Permitting/Code
Enforcement Office

Town of Pocomoke Planning Office

Appendix III – Nuisance Flooding Documentation Tool

