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County Executive



# Prince George's County Nuisance Flood Plan

Phase 2: Urban and Tidal-driven Nuisance Flooding

August 30, 2023

## County Departments and Offices

The following Prince George's County departments and offices are involved in the management of nuisance flooding.

**Department of the Environment (DoE):** Responds to and evaluates requests from residential property owners (private property) experiencing adverse flooding, drainage and erosion conditions originating from non-public sources; conducts technical watershed studies; co-leads the development of the regional hazard mitigation plan with OEM and the City of Laurel.

**Department of Public Works and Transportation (DPW&T):** Manages storm drain systems in the public right-of-way (ROW) and performs corrective and preventative maintenance; performs channel maintenance on the County's 80 permitted channels once every 3 years; operates/maintains the County levees and pump stations; inspects PGC311 customer service requests in the ROW.

**Department of the Environment (DoE), and the Department of Permitting, Inspections and Enforcement (DPIE):** Oversees the building permit process; oversees drainage issues within Public ROW still under development.

**Office of Homeland Security (OHS):** Co-leads the development of the regional hazard mitigation plan with DoE and the City of Laurel. Through its **Office of Emergency Management (OEM)**, develops plans and exercises, and coordinates emergency management training for Prince George's County; serves as the liaison to local, state, and federal officials in all aspects of emergency management. Through its **Public Safety Communications**, acts as the first point of contact during an emergency.

**Prince George's Planning Department, Maryland-National Capital Park and Planning Commission (M-NCPPC):** Oversees long-range planning and development; through its Environmental Planning Section, responsible for programs related to protecting the natural environment by reviewing applications in the land development process.

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# Executive Summary

Prince George’s County released its first Nuisance Flood Plan in 2020 in response to Natural Resource Article §3-1001 of the Maryland Annotated Code. Article §3-1001 requires any local jurisdiction experiencing nuisance flooding to develop a plan to address it.

As written, Maryland code defines nuisance flooding as tidal-driven flooding, or “high tide flooding that causes a public inconvenience.” High-tide flooding is a risk to low-lying areas along the tidal reaches of the Potomac River and the Patuxent River in Prince George’s County. These areas are increasingly vulnerable to higher high tides due to sea level rise, dredging, shoreline hardening, and the loss of natural barriers. Prince George’s County’s 2020 Nuisance Flood Plan was the first attempt for the county government to address the issue of high-tide flooding.

*In this updated plan, the County’s definition of nuisance flooding is expanded to include high-tide and urban flooding.*

Prince George’s County, however, is also impacted by another type of nuisance flooding—urban flooding. In the county’s more urbanized areas—where natural landscapes have been replaced by buildings, roads, housing, and parking lots—water cannot easily soak into the ground. When this rain overwhelms the existing storm drain system, it is left with nowhere to go but low-lying areas. Urban flooding can be linked to historic flood events, like when Tropical Storm Isaias passed through Prince George’s County in August 2020, or the flash flood experienced in September 2020. More often, however, it happens during typical, short-duration rain events, resulting in overwhelmed storm drains, water pooling on streets and yards, and wet basements. Importantly, this type of flooding is not directly associated with the 100-year floodplain mapped by FEMA.

In this updated plan, the County’s definition of nuisance flooding is expanded to include high-tide *and* urban flooding. Nuisance flooding—in the absence of a major weather event—may not result in major damage to public and private properties, but it can interrupt the daily routines of residents in the County’s coastal areas. This plan was prepared to identify areas within the County prone to nuisance flooding, assess the impacts, refine options for tracking the effects over time, and identify recommended actions to address it. It builds upon and expands the analysis prepared for Phase 1 to identify, track, and improve our understanding of both high-tide and urban flooding to create a more actionable nuisance flood plan.



# Introduction

Flooding is a year-round, widespread threat that affects communities throughout Maryland, and Prince George's County is no exception. While floods from raging rivers (fluvial floods) and hurricanes get more attention, other events—such as heavy rains (pluvial) or water levels above the normal high tide mark—also cause varying degrees of flooding that can result in temporary road closures, compromised public infrastructure, and inundated yards or basements.

**Nuisance floods can disrupt daily routines, interrupt traffic, overwhelm sewers, and cause minor property damage.**

Flooding is one of several natural hazards Prince George's County's analyzes through its hazard mitigation planning efforts. In fact, in the 2023 Prince George's County and the City of Laurel Hazard Mitigation Plan Update (2023 Hazard Mitigation Plan Update), riverine (fluvial) flooding, severe storms (flood- and high wind-related), and high windstorms were identified as posing the greatest risk to Prince George's County. However, while the mitigation management issues that nuisance flooding pose are similar to those posed by major disasters, nuisance flooding is not necessarily addressed in hazard mitigation planning. This is for several reasons.

First, nuisance floods result in low levels of inundation that do not typically pose significant immediate threats to public safety. Because their depth and velocity are not as intense, their impacts are more subtle. They serve to disrupt routine day-to-day activities, interrupt traffic or transportation patterns, overwhelm sewers and storm drains, and cause minor property damage (Moftakhari et al., 2018). However, scientists are forecasting rising temperatures, more frequent extreme rainfall events, and more high tide flood events in our region. And, as more people move into the area, additional development will further strain aging infrastructure, further limiting the ability of the storm drain system to hold up to future flooding.

Second, they can be difficult to monitor or track. Whereas high tide flooding occurs along the coastline, urban flooding can happen in multiple locations. In large part, knowing when or where nuisance flooding has occurred has relied on people reporting occurrences. However, as science advances, so does the ability to predict nuisance flooding. The County has a long-term goal of using these advances in science to help predict locations and duration of high-tide and urban flooding.

Along the coast, scientists from the [National Oceanic and Atmospheric Administration](#) (NOAA) and other federal agencies and universities are leading the way to help communities figure out how to grapple with high tide flooding and sea level rise (Sweet et al., 2022). Forecasting urban flooding from rain events is more challenging. However, these low levels of flooding are becoming more common and deserve greater attention.

*Research suggests that, over time, the cumulative costs associated with smaller, more frequent flood events are greater than that of more extreme but infrequent flood events.*

The impacts from one nuisance flood may be minor. However, just one event can still close roads, damage public and private property, result in loss of income, and heighten public health risks. Research suggests that, over time, the cumulative costs associated with smaller, more frequent floods are greater than that of more extreme but infrequent flood events. While more emphasis is focused on the cost of high tide nuisance flooding (Moftakhari et al., 2017; Hino et al., 2019), the National Academies of Sciences, Engineering, and Medicine and others have noted that the cumulative costs of frequent, small floods in urban areas can be similar to those of infrequent extreme floods (National Academies, 2019). Because smaller urban floods typically impact fewer people and smaller areas, affected residents, businesses owners, and local governments must cope with the fiscal impact and daily disruptions on their own (FEMA, 2005).



An intense rain event leads to flooding in the roadway.

# Understanding Vulnerabilities to Flood Hazards

Prince George’s County recognizes and manages riverine flood hazard areas designated by the Federal Emergency Management Agency (FEMA) as vulnerable to flooding from the 100-year flood—which is a flood event that has on average a 1 in 100 chance (1% probability) of being equaled or exceeded in any given year. The County also recognizes and manages riverine flood hazards based on studies prepared by the County to evaluate the impact of future development. These maps often include areas not studied by the National Flood Insurance Program (Figure 1).

Small, regular floods that inundate areas adjacent to rivers, streams, and shorelines (i.e., floodplains) are natural and provide a wide variety of benefits to people, fish, and wildlife (ASFPM, 2017). In the context of flood safety, protecting and restoring floodplains is the first step to slowing down and spreading out potentially dangerous flood waters and preventing it from harming people and properties.

During big floods, highly functional natural floodplains benefit communities by slowing and spreading dangerous flood waters that would otherwise flood communities living near streams, rivers, lakes, and the shoreline. Both historically and currently, people have considered locations adjacent to bodies of water as attractive places to live, grow crops and livestock, work, and recreate. However, development in the floodplain has served to alter the floodplain and flooding dynamics while also leaving buildings and infrastructure in the floodplain susceptible to flooding (FEMA, 2005).

Development in the 100-year floodplain is regulated by Prince George’s County Department of Permitting, Inspections, and Enforcement (DPIE) in compliance with FEMA rules and regulations to limit property damage and protect lives (Prince George’s County DPIE, n.d.). Additionally, site or road projects impacting a cumulative drainage area of 50 acres or more are required to submit floodplain studies and delineations.

It is County policy to preserve the 100-year floodplain in a natural state to help prevent and mitigate floods (Prince George’s County DoE, n.d.). This does not mean that the regulated 100-year floodplain is free from development. An analysis of the county’s building, property, and floodplain features shows that approximately 2.7% of the properties with structures are partially or fully within FEMA’s 100-year floodplain. When taking into consideration additional 100-year floodplain areas delineated for projects impacting a cumulative drainage area of 50 acres or more as part of the DPIE floodplain approval process, the percent of properties with structures increases to 5.15% of all county properties. Additional statistics are provided in Table 1.

**Table 1. Overview of Properties and Land Area within the 100-Year Floodplain**

	FEMA 100-Year Floodplain Only	Combined FEMA/ County 100-Year Floodplain
Total number of properties fully or partially within the 100-year floodplain <sup>1</sup>	12,570	20,790
Percent of properties fully or partially within the 100-year floodplain <sup>2</sup>	4.1%	6.8%
Total number of developed properties fully or partially within the 100-year floodplain <sup>2</sup>	7,060	13,260
Percent of developed properties fully or partially within the 100-year floodplain <sup>2</sup>	2.74%	5.2%
Percent of total County area within the 100-year floodplain, in square miles	10.5%	22.9%

Notes: 1. Rounded to nearest ten. 2. Rounded to nearest tenth.

## PRINCE GEORGE'S COUNTY 100-YEAR FLOODPLAIN

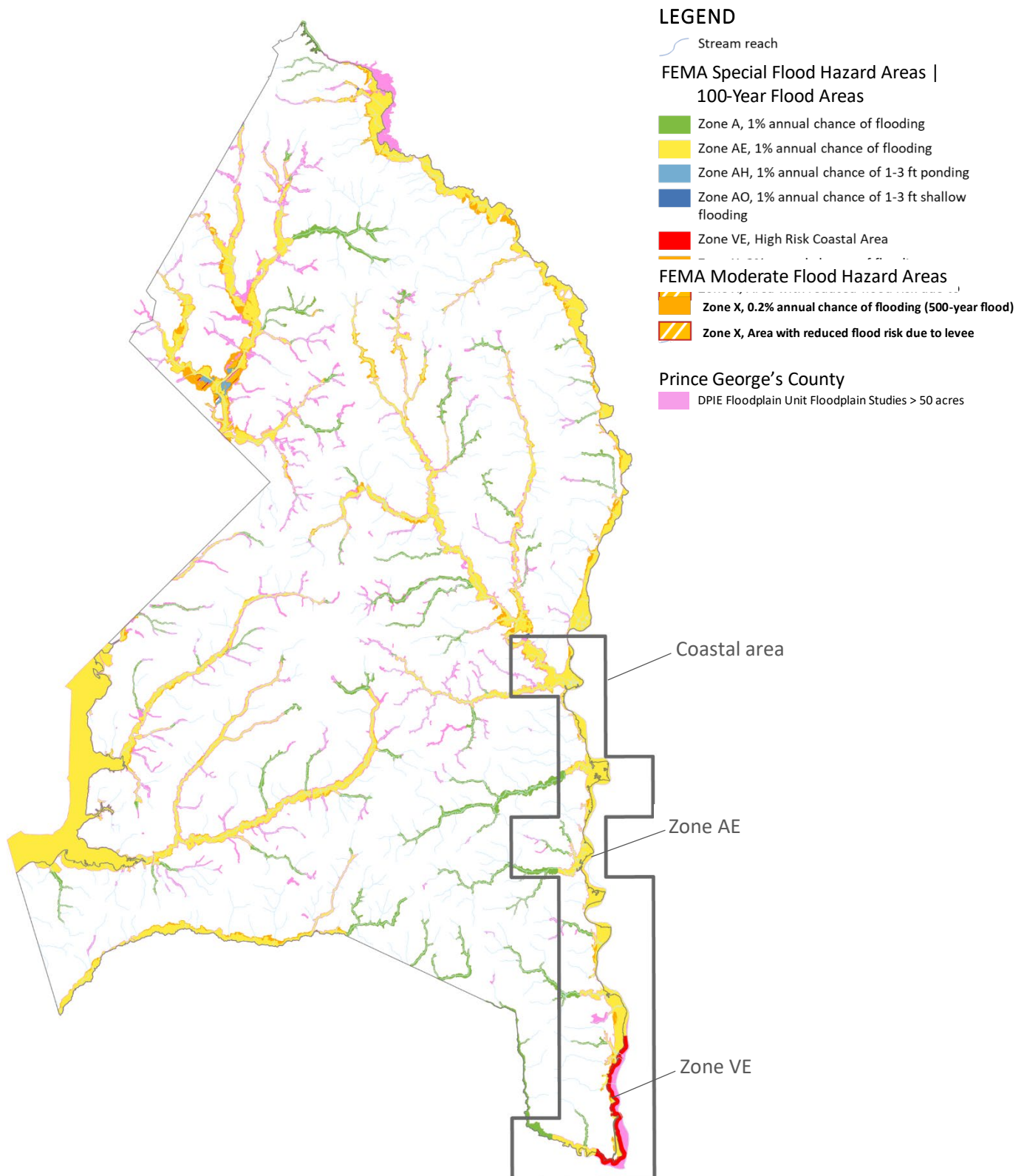


Figure 1. Map of Prince George's County's One-Hundred-Year Floodplain

**Since 1978, roughly \$4.52 million in flood claims has gone to cover damage to structures outside the 100-year floodplain in Prince George's County.**

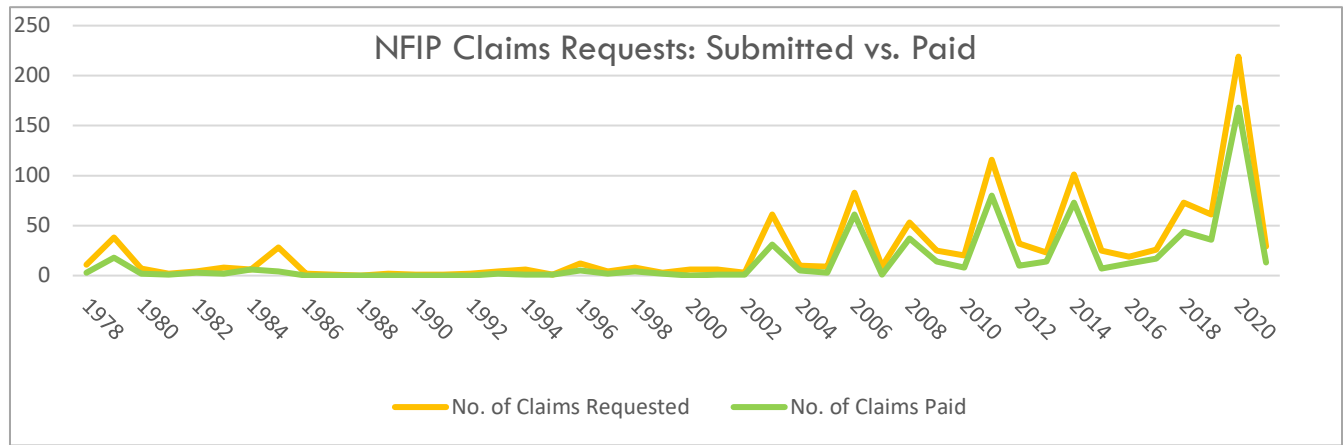
## Where is flooding occurring?

FEMA's flood risk maps and supplemental county mapping efforts overseen by DPIE are the primary tools used to understand flood risks in Prince George's County. The associated maps help locate the boundaries of the 100-year floodplain along the river and coastline. However, neither FEMA's nor the County's maps are intended to provide a complete picture of flood risk (FEMA, 2020). The purpose is to identify and protect areas that could flood because water overtops a stream bank or because the coastline is hit by high waves. It does not identify areas where rainfall runoff can't be contained by storm drain pipes, inlets, and gutters along the streets.

According to the Maryland Department of the Environment, 20-25% of all Federal Insurance and Mitigation Administration (FIMA) National Flood Insurance Program's (NFIP) flood claims come from outside high-risk flood areas (MDE, n.d.). A 2021 NFIP brochure puts this number at 40% (FEMA NFIP, 2021). Redacted claims data for Prince George's County was retrieved from the Federal Insurance and Mitigation Administration (FIMA) National Flood Insurance Program (NFIP) OpenFEMA dataset and reviewed for comparison. It showed that, in Prince George's County, approximately 67-77% of all flood claim requests came from outside high-risk areas, depending on the date range used to evaluate claims requests. Of the total claims issued, approximately 64-76% were for areas outside of the 100-year floodplain, with the number of claims requests outside of the 100-year floodplain showing an upward trend over time. In fact, since 1978, over \$8.44 million dollars in flood insurance claims have been paid out through the NFIP program, with most of those claims issued after the year 2002. A little over half of this amount (\$4.52 million) has been issued for claim requests on properties outside of the 100-year floodplain. Claims were also evaluated to determine whether any were from repetitive loss structures—i.e., where two or more NFIP claim payments of more than \$1,000 are made within any rolling 10-year period. It was found that \$2.84 million in claims were paid for repetitive loss structures, with 72% for claims made on structures within the 100-year floodplain. This amount likely significantly underestimates the amount of money the public has spent to address flooding issues. Fewer than 1% of all properties (0.54%) within Prince George's County are currently covered by active flood insurance contracts. Nationwide, only about 4% of homeowners have flood insurance (Moore, 2022).



**Figure 2. NFIP Flooding Insurance Claims in Prince George's County**



Data source: OpenFEMA Dataset: FIMA NFIP Redacted Claims

**Table 2. NFIP Flood Claims**

	Full Claims History (1978 to present)	Claims During/ After 2002	Claims During/ After 2010	Claims During/ After 2015
<b>PERCENT OF CLAIMS REQUESTED</b>				
Within the 100-Year Flood Zone (All A Zones)	32%	28%	23%	20%
Outside the 100-Year Flood Zone (B, C, and X Zones)	67%	71%	75%	77%
Areas with Undetermined Flood Hazard (Zone D)	1%	1%	2%	3%
<b>PERCENT OF CLAIMS PAID</b>				
Within the 100-Year Flood Zone (All A Zones)	35%	31%	27%	22%
Outside the 100-Year Flood Zone (B, C, and X Zones)	64%	68%	72%	76%
Areas with Undetermined Flood Hazard (Zone D)	1%	1%	1%	2%

Data source: OpenFEMA Dataset: FIMA NFIP Redacted Claims

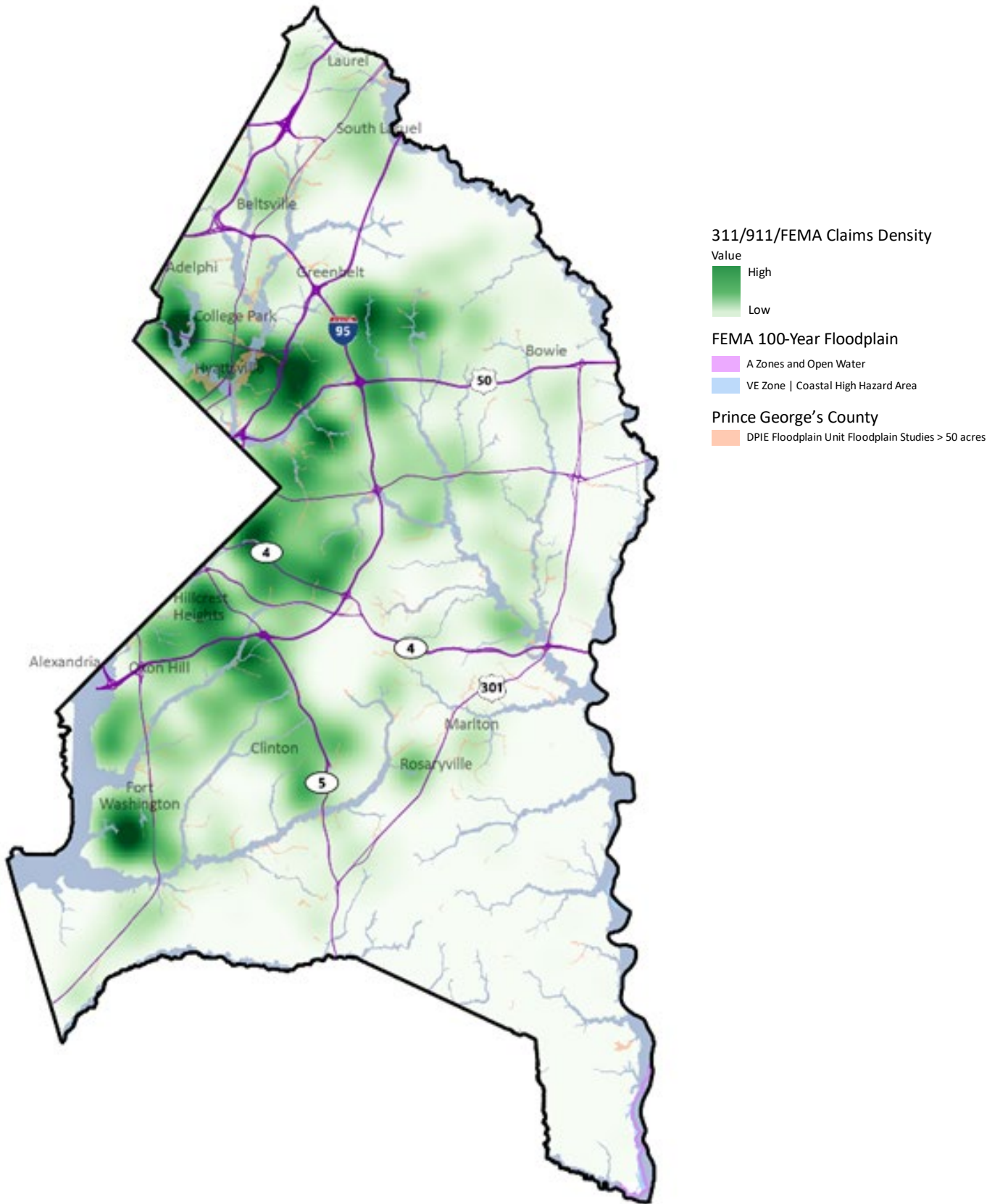
## Nuisance Flooding Defined

Urban and high tide nuisance flooding is experienced when low levels of inundation cause short-term public inconveniences such as flooded streets and closed roads. While nuisance flooding does not necessarily pose significant, immediate threats to public safety or cause major property damage, it can overwhelm low-lying areas, disrupt routine day-to-day activities, put added strain on infrastructure systems such as roadways and sewers, and cause minor property damage.

Long-term studies of flood impacts within the county have focused on the 100-year flood and the occurrence of extreme events. These are critical for maintaining the integrity of the 100-year floodplain and to understand how to prepare for and respond to acute disasters. Urban flood risks are more complex and not as well understood. Whereas experts have years of experience mapping riverine and coastal hazards, the analysis and mapping of rainfall (pluvial) hazards associated with nuisance flooding is an emerging science.

Nuisance flood events typically impact fewer people and smaller areas. This means that fewer State or Federal funds and assistance are available to address problems. Affected communities, residents, or businesses are often left to address these problems on their own. While the financial burden from one event may not be large, over time, these expenses can add up (FEMA, 2005). In addition, whenever flood water is present, there is the potential for harm. Flood water can be full of chemicals, dangerous debris, or electrically charged. As little as six inches of water can knock you down or cause you to lose control of your vehicle (DHS, 2021).

## PRINCE GEORGE'S COUNTY FLOODING HOT SPOTS



In Phase 1, data collected on PGC311 and 911 calls related to drainage or flooding concerns were mapped using a cluster analysis to identify flooding hot spots within the county. This process has similarly been used in other urban areas around the country (e.g., see Rainey et al., 2021). This process was repeated for Phase 2. In this round, updated information from PGC311 and 911 was collected and combined with unredacted NFIP claims information provided by FEMA to better determine where hot spots are occurring countywide. The data was also analyzed to ensure that no one particular year or point in time influenced the location of hot spots or clusters of flood exposure. Figure 3 shows the resulting hot spots map.



Water pools on a road in Colmar Manor, MD.

## Urban Flooding

Urban flooding occurs when rain falls on hard, impervious surfaces such as buildings, sidewalks, and roads and overwhelms the existing storm drain infrastructure, leaving it with nowhere to go. Urban flooding can be linked to historic flood events, like when Tropical Storm Isaias passed through Prince George's County in August 2020, or the flash flood experienced in September 2020. More often, however, it happens during mundane rain events, resulting in overwhelmed storm drains, water pooling on streets and yards, and wet basements. Aging and inadequate storm drain infrastructure, coupled with population growth, more intense rain events and a lack of spongy areas to absorb heavy rainfall—have all contributed to increased occurrences of urban flooding in Prince George's County. Flood impacts can vary and be highly localized due to minor differences in topography, storm characteristics, storm water management infrastructure, and building and lot design (National Academies, 2019).

# Common Contributors to Urban Flooding

Data on the causes of urban flooding are incomplete (National Academies, 2019). However, multiple factors have been identified that can contribute to flooding outside the 100-year floodplain which—when coupled together—can lead to more intense localized events.

## Changing Weather Patterns

- ▶ Increase in the number of heavy rainfall events overwhelms capacity
- ▶ More intense rain events and higher temperatures worsen existing problems and create new ones

## Increasing Populations

- ▶ More buildings, roads, parking lots, and even compacted lawns create more hard, impervious surfaces
- ▶ Fewer areas for water to soak into the ground causes it to flow downhill until it reaches a low point
- ▶ Streams that are channelized or buried during development process—both in past or at present—alter the natural stream network and potentially transfer flood risks downstream

## In the Right-of-Way

- ▶ Underinvestment in storm drain infrastructure, maintenance, inspections and repairs
- ▶ Old, outdated, and/or undersized storm drain infrastructure fails or is too small to provide sufficient capacity contribute to inlet overflows
- ▶ Storm drains clogged with litter, mud, or yard waste reduce the effective capacity of storm drain system
- ▶ Excess trash or debris collects in the gutter, blocking stormwater inlets and causing water to back up in streets
- ▶ Not enough investments in technology to improve system performance via analytics, data visualization and modeling
- ▶ Not enough green infrastructure to help manage water quantity by restoring the hydrologic function of the urban landscape

## On Individual Properties

- ▶ Buildings or structures located in low-lying areas and/or lawn graded toward house and other structures
- ▶ Sheds, play equipment, patios, or other hardscaping improperly built in existing stormwater easement
- ▶ Improperly installed fences block runoff from storm precipitation, causing water to pond in your or your neighbor's yard
- ▶ Saturated soils or seasonal variations in water table exacerbate basement flooding and water damage
- ▶ Drain gates clogged by grass cuttings, leaves, vegetation, or other debris
- ▶ Insufficient flood-proofing of buildings in areas facing localized flooding or groundwater issues
- ▶ basement areas lacking sump pumps





## High Tide Flooding

*Approximately 1% of the County is subject to high tide flooding.*

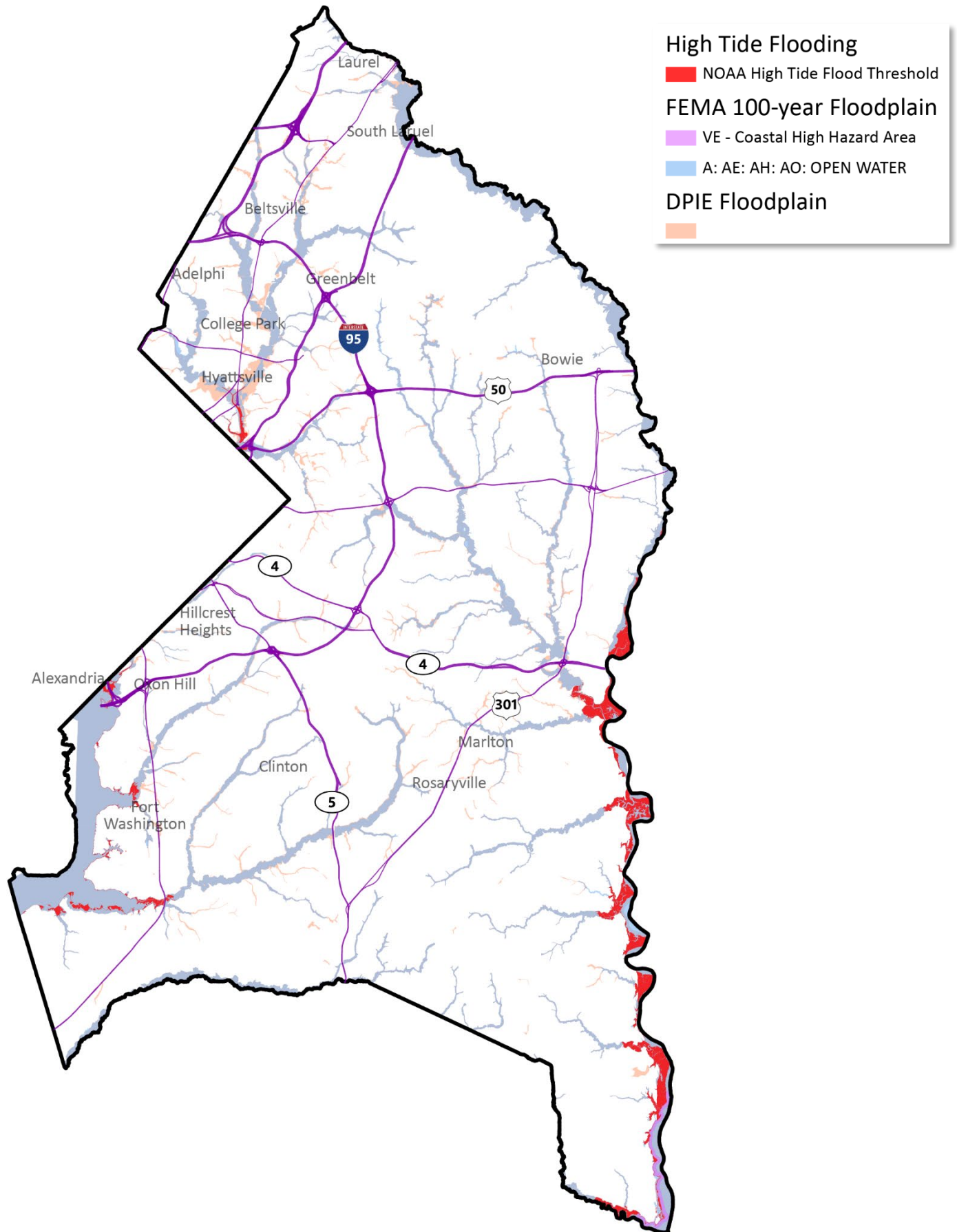
High tide flooding occurs in coastal areas when water temporarily floods low lying areas during high tide events “in the absence of storm surge or riverine flooding” (US Federal Government, 2020a).

High tide floods are becoming more common in coastal communities—especially within the Chesapeake Bay watershed—as sea level rise, combined with changing winds, shifting ocean currents, and/or strong tidal forces can result in water levels going above the normal high tide mark (NOAA, 2020). The impacts of increased frequency, duration, and extent of nuisance flooding threaten coastal infrastructure and properties, intensify shoreline erosion and can lead to adverse health effects (NOAA, 2018; NOAA, 2020b).

High tide floods that are not linked to a tropical storm or heavy rainfall event are becoming a growing concern in our region (NOAA, 2020a). Areas in Prince George’s County that are subject to high tide flooding are often contained within or intersect the regulated 100-year floodplain. However, high tide flooding may also occur outside of the 100-year floodplain (Figure 5).

About 1% of the county falls within areas identified by NOAA as currently subject to tidal flooding. This includes about 700 properties, of which roughly half (355) have structures (0.15% of all developed properties in the county).







High tide flooding in Eagle Harbor, courtesy the Town of Eagle Harbor, MD



Shoreline erosion in Eagle Harbor, MD, courtesy the Town of Eagle Harbor

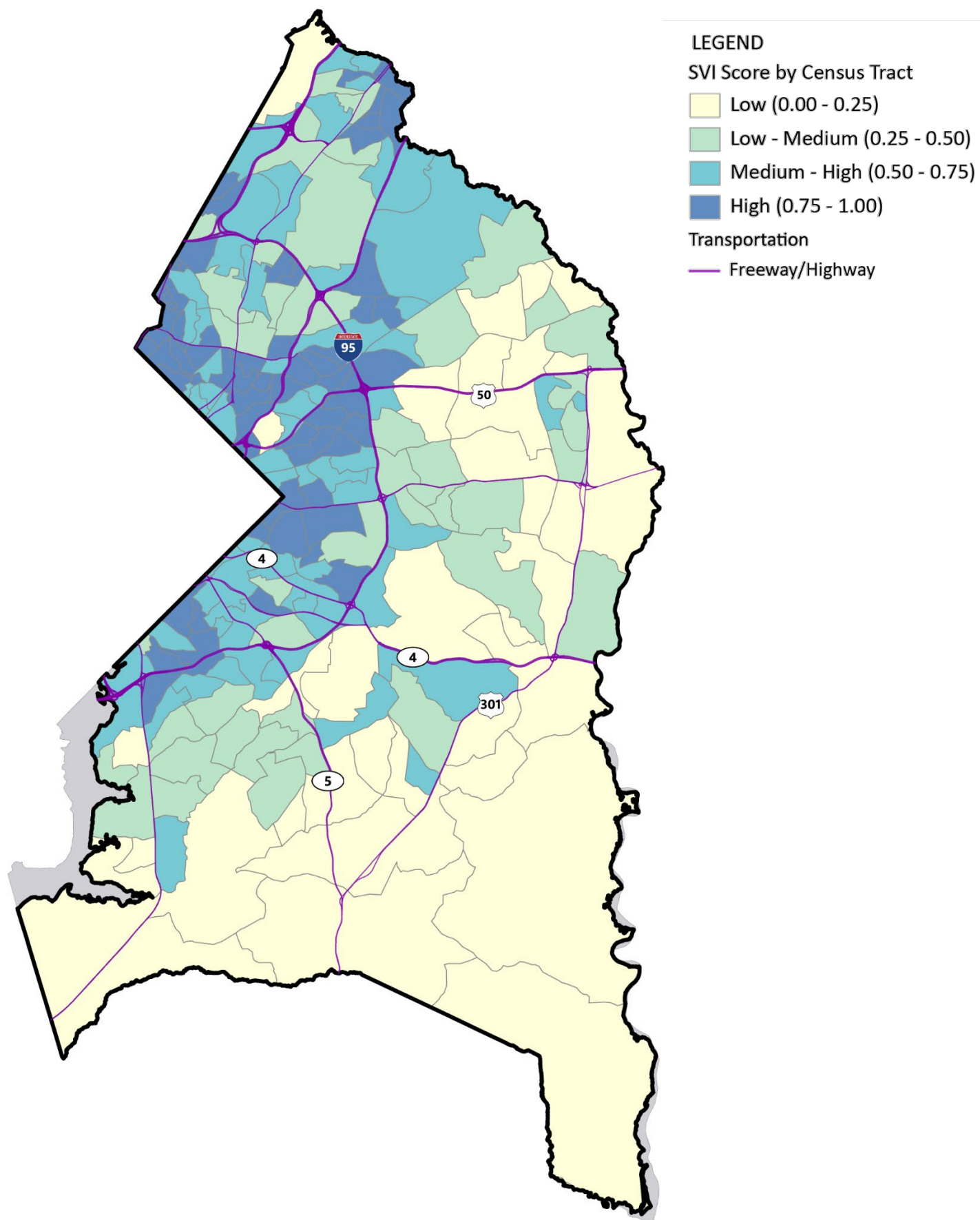
Along the Patuxent River, communities experiencing high tide flooding include Eagle Harbor and Cedar Haven at the southern tip to north of Jug Bay Natural Area and Mount Calvert Park. Communities along the Potomac and Anacostia Rivers subject to high tide flooding include Fort Washington all the way up past Bladensburg.

With the exception of the Eagle Harbor area, areas identified through the clustering of flood complaints conducted for Phase 1 (and based on available PGC311 and 911 calls) were also identified in Phase 2. However, for purposes of analyzing areas of flood concern over time (see Appendix), the Eagle Harbor cluster was added back in, due to the existing of known flooding issues and the high percent chance that it will be affected by flooding as sea levels rise.

## Vulnerable Populations

Research shows that the more vulnerable and resource-constrained members of society are at risk not only during public health emergencies but in recovering from them. This includes the unemployed or those with less economic means, the elderly, children, the disabled, those of certain racial and ethnic status, and those lacking transportation (Flanagan et al., 2011; National Academies, 2019; Wilson et al., 2021; Billings et al., 2022).

To map this, the Center for Disease Control (CDC) Social Vulnerability Index (SVI) score was used to identify communities that will most likely need the greatest support before, during, and after a flood event (CDC, 2023). The SVI uses U.S. Census American Community Survey data to determine the social vulnerability of each census tract based on sixteen factors and is updated every two years. The higher the score, the more vulnerable the community is. The following map identifies the SVI score per census track, ranked from lowest to highest vulnerability. Those in the highest category, with a score of 0.75 or greater, were overlayed on the hot spots map to help inform the identification of areas of concern for tracking nuisance flood response and recovery.





# Identifying Thresholds

Maryland's Nuisance Flood Plan Development Guidance (2019) recommends that each jurisdiction's plan identify flood thresholds, water levels, and/or conditions that lead to nuisance flooding. While the guidance was specific to high tide flooding, the County is also exploring nuisance flood thresholds for urban flooding.

## Establishing Criteria

Setting a threshold for the level at which flooding occurs is not straightforward. Nuisance floods (particularly urban) are not as well understood as riverine floods, as they are influenced by a wide variety of factors. It is also important to emphasize that nuisance floods are, as the state's definition implies, less severe. They are floods that cause public inconvenience that over time can cause greater cumulative burdens and hazards. For high tide flooding, the evaluation of conditions and systematic monitoring of high tide and urban flooding is a starting point to inform future policies and strategies (Moftakhara et al., 2018).

The following is a list of conditions whose documentation will benefit the County's understanding of and ability to better evaluate and address where nuisance flooding is occurring and inform responses.

### Transportation/Infrastructure Impacts

- ▶ Water covering the roadway, measured in depth and velocity
- ▶ Road closure of one or more hours, measured in vehicle-hours of delay
- ▶ Damage to public infrastructure, measured in cost

### Property Damage

- ▶ Property damage to areas below finished floor elevations
- ▶ Property damage to properties with doors at ground level
- ▶ Impact of property damage to vulnerable populations

### Frequency

- ▶ Number of flood events per year

The County will use these criteria to document areas of concern and changing conditions and establish thresholds of exceedance.

## High Tide Flooding Thresholds

In the case of high tides, NOAA has established three coastal flood severity thresholds for forecasting purposes and to ensure public safety: minor, moderate, and major. These thresholds are based upon water level heights calibrated to NOAA tide gauge measurements. NOAA issues a flood advisory warning for minor events or a flood warning for moderate/major events when coastal flooding is anticipated (not associated with tropical storms).

Table 3 provides the minor, moderate, and major coastal flood severity thresholds at the two NOAA tide gauges nearest Prince George’s County: Solomons Island, MD for the Patuxent River, and Washington, DC, for the Potomac and Anacostia Rivers. The thresholds listed in NPF Phase 1 were pulled from Appendix One of *NOAA Technical Report NOS CO-OPS 086* (NOAA, 2018). The thresholds below (in meters) have been updated to reflect those listed in its updated technical report, which were revised to round the number to the nearest thousandths (Sweet et al., 2022).

**Table 3. Coastal Flood Severity Thresholds (NOAA)**

Tide Gauge Location	Flood Thresholds (meters, MHHW) <sup>1</sup>			Flood Thresholds (feet, MHHW)		
	Minor	Moderate	Major	Minor	Moderate	Major
Solomons Island, MD	0.518	0.813	1.188	1.70	2.67	3.90
Washington, DC	0.539	0.829	1.209	1.77	2.72	3.97

Note: 1. As listed Appendix 1, Table A1.3 of Sweet et al., 2022. Conversion to feet added.

NOAA refers to the derived threshold for minor flooding as high tide flooding (also referred to as ‘nuisance’, ‘sunny day’ and ‘recurrent tidal’ flooding). The derived threshold for minor flooding was used to prepare the high tide flooding map shown in Figure 5 and available online through the [NOAA Sea Level Rise Viewer](#). It starts at about 0.50 meters above Mean Higher High Water (MHHW). MHHW is the average height of the highest tide recorded at a tide station each day during the current national tidal datum epoch (1983–2001 is the current NOAA epoch) (NOAA, 2020a). It should be noted that the mapped thresholds do not address the duration or frequency of the high tide flooding or the effects of other factors on the extent and elevation such as off-shore storm surge, seasonal long term weather patterns, such as El Niño Southern Oscillation (ENSO), or the influence of non-tidal flood events.

Prince George’s County has set the threshold for high tide flooding as occurring when the water level at a NOAA tidal gauge exceeds the following derived thresholds for minor flooding, as established by NOAA:

- ▶ Patuxent River: 0.518 meters (1.70 feet) above MHHW
- ▶ Potomac River/Anacostia River: 0.539 meters (1.77 feet) above MHHW

The NOAA derived thresholds were selected because of the recognition and acceptance of the accuracy, historical record, and availability of the data. They were also chosen because of the movement towards utilizing nationally recognized definitions and data sets to facilitate integration with other federal resource efforts such as FEMA floodplain mapping. As the County’s understanding of the impacts of high tide flooding improves, these numbers will be revisited.



## Tracking, Reporting and Response

Multiple County agencies departments play a role in responding to and addressing flooding in Prince George's County. These include the Office of Homeland Security (OHS) Office of Emergency Management (OEM), the Department of Public Works and Transportation (DPW&T), the Department of the Environment (DoE), and the Department of Permitting, Inspections and Enforcement (DPIE).

Nuisance flooding incidents are not typically reported or cataloged separately from other types of flooding. In lieu of a separate reporting system, issues or complaints are collected through PGC311. How that information is evaluated once in the system, however, will be adjusted to allow the County to better track incidents over time.

Shortcomings in the existing PGC311 system include not capturing information on specific dates or times of flooding events, the lack of a clear upload prompt for photos, not capturing geotagged information with photos, and the inability to easily link to storm event data. Despite these shortcomings, requesting county residents and business owners use a separate platform such as [MyCoast: Maryland](#) for logging nuisance flood complaints would be too confusing and prevent or severely delay the ability for complaints or concerns to be routed to the appropriate agency for review.

DoE's Sustainability Division is responsible for tracking nuisance flood events over time. This will require continued coordination between DoE, OEM, DPW&T, and other County agencies and departments, including M-NCPPC and the Fire and Emergency Medical Services Department. Information logged through PGC311 and 911 system and department-specific information on flood-prone location will be collected and evaluated on an annual basis. Flooding or service request data received will be reviewed based on the event's location and, for coastal locations, whether the incident occurred during a known high tide event. Information will be collected, and an internal dataset maintained of nuisance flood events. This will allow the County to analyze data to validate known high tide flood areas of concern, identify new ones, determine appropriate responses, and prioritize areas for future action. Appendix A provides an inventory to-date of public or critical infrastructure within, intersecting, or directly adjacent to the 100-year floodplain or high tide flood threshold, plus urban areas of interest. The associated map panels are provided in Appendix B.

# Emergency Response and Mitigation Strategies

## Emergency Management:

- ▶ Increase weather monitoring as it relates to nuisance flood hazards, watches, and warnings. Update the early response and public notifications regarding flood events to include nuisance flooding.
- ▶ Increase inter-agency communication to optimize and improve responses to nuisance flood events.

## Storm Drain Maintenance:

- ▶ Increase funding for the routine inspection and maintenance of the County's existing system of pipes, inlets, and outfalls through video inspection, cleaning, and repair to ensure inspections and maintenance are performed on a 3-year cycle.

## Transportation

- ▶ Encourage development of green streets in flood-prone areas and throughout the County.
- ▶ Identify, investigate, and incorporate best management practices related to transportation design, construction and maintenance for flood resilience in light of changing climates.

## Capital Improvement Projects:

- ▶ Update the priority system to fund planning and design for Capital Improvement Project flood mitigation projects to prioritize storm drain upgrades in areas with reoccurring flooding – both inside and outside the 100-year floodplain – and the presence of socially vulnerable populations.
- ▶ Provide sufficient funding to enable DoE and DPW&T drainage projects to be implemented in an expeditious manner; implement a design-build approach to expedite the resolution of existing drainage and flooding concerns.

## Stormwater

- ▶ Preserve and protect natural drainage corridors. Ensure adequate funding is in place to support stream maintenance.
- ▶ Pursue grants to alleviate flooding in flooding hot spots to remove debris that can block culverts and bridges or fallen trees that back up water in the stream or divert flows.
- ▶ Utilize green infrastructure elements such as green roofs, rain gardens, cisterns, and bioswales on residential, commercial, industrial, and County-owned properties to capture stormwater and reduce storm flows.
- ▶ Encourage permeable paving on low-use pathways.

## Planning and Permitting:

- ▶ Provide funding to update watershed models to incorporate built stormwater management ponds and watershed conditions. Currently, the County's model of each watershed to define hydrologic and hydraulic effects of various storm water management ponds from a quantity control and flooding standpoint needs to be updated to have a more accurate method of deciding where 100-year control ponds are needed.
- ▶ Ensure future watershed studies evaluate the magnitude and frequency of potential flood events based on future climatic scenarios.
- ▶ Ensure the danger reach area or inundation areas for all high, significant, and low classified dams are considered during the development review process.
- ▶ Review and enhance coastal area design guidelines to better mitigate the impacts of high tide flooding.

## Data Collection and Analysis:

- ▶ Ensure each County department and office has a process for tracking flooding events both within and outside the regulated 100-year floodplain. Ensure the database is coordinated through the DoE Sustainability Division to allow for more seamless tracking of nuisance flood events.
- ▶ Continue maintaining a list of flood prone transportation and infrastructure assets.
- ▶ Finalize criteria for establishing thresholds to identify public or critical infrastructure and other areas of concern due to urban or high tide flooding.
- ▶ Pilot a project to evaluate the innovative use of crowdsourced data from social media (APFM, 2017, Li et al, 2017) and personal weather stations (Bardossy et al., 2021; Chen et al., 2022) to collect data necessary to inform flood forecasting models and crisis mapping in urban areas.

## Code / Manual Changes:

- ▶ Require any part of the house such as doors, top of exterior stairwells to basements, basement cellar doors, basement windows to be set one foot above overflow elevation – AND- show 100-year overflow point on permit plans to ensure storm flows cannot enter basements.
- ▶ Revise street storm drain inlets located in low points to be at least 15 feet long (current requirement is 10 feet) to intercept larger storm flows in the street and reduce the potential for larger storms to overflow through yards.
- ▶ Require use of the higher range runoff coefficient factors to reduce the amount of storm flow into yards.
- ▶ Increase minimum allowable yard and swale slopes to 3% to better ensure surface storm water exits property quickly.
- ▶ Require swales with drainage area exceeding 5 acres located at least 100 feet set back from any residential lot line to reduce the chance of swales causing yard erosion.
- ▶ Require continuous backyard storm drain pipe system to allow builders and homeowners to easily connect sump pumps and foundation drains or yard inlets in low spots and get the storm water in a pipe and out of the yard.
- ▶ Require storm drain culverts and enclosed systems that intercept offsite drainage, convey the ultimate 100-year 24-hour storm flow to ensure that the enclosed storm drain can manage flows without impacting properties.

## **Development / Building Requirements:**

- ▶ Require sump pumps and foundation drains to be connected into a drainage system to move water out of basements and yards.
- ▶ Cap Springs and surface seeps and other ground waters with stone trenches and perforated pipes connecting into a piped outfall to nuisance storm water out of yards.
- ▶ Require fences to be built at least 6 inches above swales and at least 1 inch above the ground surface everywhere else to avoid storm water from being trapped and ponding in yards.

## **Public Education, Outreach, Signage and Communications:**

- ▶ Update County web and outreach communications to ensure consistent messaging about flooding concerns and to encourage participation in the National Flood Insurance Program for property owners and renters both inside and outside the 100-year floodplain, particularly in areas identified as flooding hot spots.
- ▶ Expand efforts to educate the general public on best practices for floodproofing homes, particularly in flooding hot spots.
- ▶ Educate the public on the dangers of driving through flooded roads. Expand education efforts to flood hot spots.
- ▶ Educate private system owners/operators on proper maintenance protocol, frequencies and benefits of system management to reduce property owner flooding complaints.
- ▶ Expand and reinforce existing stormwater education programs. Increase public awareness of procedures for resolving New Home Drainage Complaints to ensure developers and builders resolve issues within the first five years before permits are closed.

# References

- APFM (Associated Programme on Flood Management). (2017, March). Crisis Mapping and Crowdsourcing in Flood Management. Integrated Flood Management Tool Series No. 26 version 1.0.  
[https://www.floodmanagement.info/publications/tools/APFM\\_Tool\\_26\\_e.pdf](https://www.floodmanagement.info/publications/tools/APFM_Tool_26_e.pdf)
- ASFPM (Association of State Floodplain Managers). (2017). CRS for Community Resilience Green Guide.  
<https://floodsciencecenter.org/products/crs-community-resilience/green-guide/>
- Bardossy, A., Seidel, J., El Hachem, A., 2021. The use of personal weather station observations to improve precipitation estimation and interpolation. Hydrol. Earth Syst. Sci. 25, 583–601. <https://doi.org/10.5194/hess-25-583-2021>
- Billings, S. B., Gallagher, E., and Ricketts, L. (2022). Let the Rich Be Flooded: The Unequal Impact of Hurricane Harvey on Household Debt. Journal of Financial Economics, 146(2), 797-819.  
<https://doi.org/10.1016/j.jfineco.2021.11.006>
- Boesch, D. F., Baecher, G. B., Boicourt, W. C., Cullather, R. I., Dangendorf, S., Henderson, G. R., Kilbourne, H. H., Kirwan, M. L., Kopp, R. E., Land, S., Li, M., McClure, K., Nardin, W., and W.V. Sweet. (2023). Sea-level Rise Projections for Maryland 2023. University of Maryland Center for Environmental Science, Cambridge, MD.  
<https://www.umces.edu/sea-level-rise-projections>
- CDC (Centers for Disease Control). CDC/ATSDR Social Vulnerability Index. Last Reviewed: July 12, 2023. Agency for Toxic Substances and Disease Registry. [www.atsdr.cdc.gov/placeandhealth/svi/index.html](http://www.atsdr.cdc.gov/placeandhealth/svi/index.html)
- Chen A.B., Goodall J.L., Chen T.D., and Zihao Zhang. (2022, June). Flood resilience through crowdsourced rainfall data collection: Growing engagement faces non-uniform spatial adoption. Journal of Hydrology, 609 (2022) 127724. <https://doi.org/10.1016/j.jhydrol.2022.127724>
- DHS (Department of Homeland Security). (2021, December 9). Floods. Floods | Ready.gov.  
<https://www.ready.gov/floods>
- FEMA (Federal Emergency Management Agency). (2020b, September 25). The Future of Flood Risk Data (FFRD). [www.fema.gov/fact-sheet/future-flood-risk-data-ffrd](http://www.fema.gov/fact-sheet/future-flood-risk-data-ffrd)
- FEMA (Federal Emergency Management Agency). (2019, July). “Big Cost of Flooding.” [www.floodsmart.gov/sites/default/files/flood-loss-potential\\_jul19.pdf](http://www.floodsmart.gov/sites/default/files/flood-loss-potential_jul19.pdf)
- FEMA (Federal Emergency Management Agency). (2005, June). Reducing Damage from Localized Flooding: A guide for communities. FEMA 511. [www.fema.gov/pdf/fima/FEMA511-complete.pdf](http://www.fema.gov/pdf/fima/FEMA511-complete.pdf)
- FEMA NFIP (Federal Emergency Management Agency National Flood Insurance Program). (2021). National Flood Insurance Program: Why do I need flood insurance?  
[https://agents.floodsmart.gov/sites/default/files/FEMA\\_Why-Do-I-Need-Flood-Insurance\\_Brochure\\_2021.pdf](https://agents.floodsmart.gov/sites/default/files/FEMA_Why-Do-I-Need-Flood-Insurance_Brochure_2021.pdf)
- Flanagan, B.E., Gregory, E.W., Hallisey, E.J., Heitgerd, J.L., and Lewis, B. (2011). A Social Vulnerability Index for Disaster Management. Journal of Homeland Security and Emergency Management, 8(1).  
[https://www.atsdr.cdc.gov/placeandhealth/svi/img/pdf/Flanagan\\_2011\\_SVIforDisasterManagement-508.pdf](https://www.atsdr.cdc.gov/placeandhealth/svi/img/pdf/Flanagan_2011_SVIforDisasterManagement-508.pdf)
- Hino, M., Belanger, S. T., Field, C. B., Davies, A. R., & Mach, K. J. (2019). High-tide flooding disrupts local economic activity. Science Advances, 5(2). <https://doi.org/10.1126/sciadv.aau2736>



Jacobs, J. M., Cattaneo, L. R., Sweet, W., and Mansfield, T. (2018). Recent and Future Outlooks for Nuisance Flooding Impacts on Roadways on the U.S. East Coast. *Transportation Research Record*, 2672(2), 1–10. <https://doi.org/10.1177/0361198118756366>

Li, Z., Wang, C., Emrich, C.T., & Guo, D. 2018. A novel approach to leveraging social media for rapid flood mapping: a case study of the 2015 South Carolina floods. *Cartography and Geographic Information Science*, 45(2), 97-110, DOI: 10.1080/15230406.2016.1271356

Moftakhari, H. R., AghaKouchak, A., Sanders, B. F., Allaire, M., & Matthew, R. A. (2018). What Is Nuisance Flooding? Defining and Monitoring an Emerging Challenge. *Water Resources Research*, 54(7), 4218–4227. <https://doi.org/10.1029/2018wr022828>

Moftakhari, H. R., AghaKouchak, A., Sanders, B. F., & Matthew, R. A. (2017). Cumulative hazard: The case of nuisance flooding. *Earth's Future*, 5(2), 214–223. <https://doi.org/10.1002/2016ef000494>

MDE (Maryland Department of the Environment). (n.d.). DFIRM Outreach Program: FAQs. <https://mdfloodmaps.net/faqs.html>

Moore, A. (2022, November 1). Many Americans Lack Flood Insurance Despite Rising Risks — Here's Why. <https://cnr.ncsu.edu/news/2022/11/flood-maps/>

National Academies (National Academies of Sciences, Engineering, and Medicine). (2019). *Framing the Challenge of Urban Flooding in the United States*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/25381>

NOAA (National Oceanic and Atmospheric Administration). (2020a). "2019 State of U.S. High Tide Flooding with a 2020 Outlook." [https://tidesandcurrents.noaa.gov/publications/Techrpt\\_092\\_2019\\_State\\_of\\_US\\_High\\_Tide\\_Flooding\\_with\\_a\\_2020\\_Outlook\\_30June2020.pdf](https://tidesandcurrents.noaa.gov/publications/Techrpt_092_2019_State_of_US_High_Tide_Flooding_with_a_2020_Outlook_30June2020.pdf)

NOAA (National Oceanic and Atmospheric Administration). (2020b, October 23). What is High Tide Flooding? <https://oceanservice.noaa.gov/facts/nuisance-flooding.html>

NOAA (National Oceanic and Atmospheric Administration). (2018). "NOAA Technical Report NOS CO-OPS 086: Patterns and Projections of High Tide Flooding Along the U.S. Coastline using a Common Impact Threshold." [https://tidesandcurrents.noaa.gov/publications/techrpt86\\_PaP\\_of\\_HTFlooding.pdf](https://tidesandcurrents.noaa.gov/publications/techrpt86_PaP_of_HTFlooding.pdf)

NOAA(National Oceanic and Atmospheric Administration). (n.d.). What is high tide flooding? <https://oceanservice.noaa.gov/facts/high-tide-flooding.html>

Prince George's County DoE (Department of the Environment). (n.d.). Introduction to Flood Management. [www.princegeorgescountymd.gov/373/Introduction-Flood-Management](http://www.princegeorgescountymd.gov/373/Introduction-Flood-Management)

Prince George's County DPIE (Department of Permitting, Enforcement and Inspections). (n.d.). Floodplains: Floodplain Plan Review Unit. [www.princegeorgescountymd.gov/4287/Floodplains](http://www.princegeorgescountymd.gov/4287/Floodplains)

Prince George's County OEM and DoE (Office of Emergency Management and Department of the Environment). (2023, August). "Prince George's County and the City of Laurel Hazard Mitigation Plan Update." [www.princegeorgescountymd.gov/2623/Hazard-Mitigation-Plan](http://www.princegeorgescountymd.gov/2623/Hazard-Mitigation-Plan)

Rainey, J.L, K. Pandian, L. Sterns, K. Atoba, W. Mobley, W. Highfield, R. Blessing, and S.D. Brody. (2021, July 7). Using 311-Call Data to Measure Flood Risk and Impacts: the case of Harris County TX. Institute for a Disaster Resilient Texas. [https://idrt.tamug.edu/wp-content/uploads/2021/07/311\\_Draft\\_v2\\_SB-5.pdf](https://idrt.tamug.edu/wp-content/uploads/2021/07/311_Draft_v2_SB-5.pdf)

Sene, K. (2008). Thresholds. In: Flood Warning, Forecasting and Emergency Response. Springer, Berlin, Heidelberg. [https://doi.org/10.1007/978-3-540-77853-0\\_3](https://doi.org/10.1007/978-3-540-77853-0_3)

State of Maryland. (2019, October). Nuisance Flood Plan Development Guidance. <https://dnr.maryland.gov/ccs/Documents/NuisanceFloodPlan.pdf>

Sweet, W.V., B.D. Hamlington, R.E. Kopp, C.P. Weaver, P.L. Barnard, D. Bekaert, W. Brooks, M. Craghan, G. Dusek, T. Frederikse, G. Garner, A.S. Genz, J.P. Krasting, E. Larour, D. Marcy, J.J. Marra, J. Obeysekera, M. Osler, M. Pendleton, D. Roman, L. Schmied, W. Veatch, K.D. White, and C. Zuzak, 2022: Global and Regional Sea Level Rise Scenarios for the United States: Updated Mean Projections and Extreme Water Level Probabilities Along U.S. Coastlines. NOAA Technical Report NOS 01. National Oceanic and Atmospheric Administration, National Ocean Service, Silver Spring, MD, 111 pp. <https://oceanservice.noaa.gov/hazards/sealevelrise/noaa-nos-techrpt01-global-regional-SLR-scenarios-US.pdf>

U.S. Federal Government. (2020). "High-Tide Flooding." U.S. Climate Resilience Toolkit. <https://toolkit.climate.gov/topics/coastal-flood-risk/shallow-coastal-flooding-nuisance-flooding>

Wilson B, Tate E. and Emrich C.T. (2021) Flood Recovery Outcomes and Disaster Assistance Barriers for Vulnerable Populations. *Frontiers in Water* 3:752307. doi: 10.3389/frwa.2021.752307

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## Appendix A: Facilities In/Adjacent to Nuisance Flood Areas

The table below provides an inventory of public or critical infrastructure within, intersecting, or directly adjacent to the 100-year floodplain or high tide flood threshold, plus urban areas of interest due to drainage/flood complaints and FEMA claims. This table corresponds to the map panels provided in Appendix B. Insufficient information currently exists to determine whether drainage or flooding concerns are related to high tide flooding, urban flooding, or some other concern. The County will continue to evaluate this information to better catalog the location and frequency of occurrences and severity over time. The map panels are provided in Appendix B.

**Table A-1. Flood Prone Infrastructure, Clusters of Interest Due to PGC311/911 Drainage/Flood Concern and FEMA Claims, and Fire Stations Within the 100-yr Floodplain or Within/Adjacent to the High Tide Flood (HTF) Threshold.**

No. <sup>1</sup>	Name	Location	Description	Type	MDE 8-Digit Watershed	Panel
D1	Bowie Road Box Culvert	Bowie Road	Flood prone area identified by DPW&T; no high water signs	Box Culvert	Patuxent River Upper	4 of 57
D2	North Point Court Trash Rack	North Point Court	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Patuxent River Upper	4 of 57
D3	Brock Bridge Road Low Lying Area	Brock Bridge Road	Flood prone area identified by DPW&T; 3 high water signs	Low Lying Area	Patuxent River Upper	4 of 57
F1	Company 49- Laurel Volunteer Rescue Squad	Bowie Road	Volunteer fire station	Emergency	Patuxent River Upper	4 of 57
D4	Sunnyside Avenue Box Culvert	Sunnyside Avenue	Flood prone area identified by DPW&T; 2 high water signs	Box Culvert	Anacostia River	7 of 57
D5	Springfield Road Low Lying Area	Springfield Road	Flood prone area identified by DPW&T; 2 high water signs	Low Lying Area	Anacostia River	8 of 57
D6	Cool Springs Road Low Lying Area	Cool Springs Road	Flood prone area identified by DPW&T; no high water signs	Low Lying Area	Anacostia River	12 of 57
D7	Guilford Drive Trash Rack	Guilford Drive	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Anacostia River	12 of 57
D8	Arundel Road Trash Rack	Arundel Road	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Anacostia River	12 of 57
D9	Allison Station Trash Rack	Chillum Road	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Anacostia River	12 of 57
D10	Brentwood Station Trash Rack	Allison Street	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Anacostia River	12 of 57



<b>No.<sup>1</sup></b>	<b>Name</b>	<b>Location</b>	<b>Description</b>	<b>Type</b>	<b>MDE 8-Digit Watershed</b>	<b>Panel</b>
D11	Rhode Island Avenue Trash Rack	Rhode Island Avenue	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Anacostia River	12 of 57
D12	Bladensburg Station Trash Rack	Annapolis Road	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Anacostia River	12 of 57
C1	Chillum / Hyattsville Cluster	Roads / structures	Identified as area of interest due to the number of drainage/flood complaints and FEMA claims	Public Infrastructure	Anacostia River	12 of 57
D13	Greenbelt Road Trash Rack	Greenbelt Road	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Anacostia River	13 of 57
D14	Edmonston Station Trash Rack	Taylor Road	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Anacostia River	13 of 57
D15	Upshur Street @ 48th St Earthen Channel	Upshur Street @ 48th St	Flood prone area identified by DPW&T; no high water signs	Earthen Channel	Anacostia River	13 of 57
D16	Edmonston Trash Rack	Edmonston Road	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Anacostia River	13 of 57
D17	Varnum Street @ 53rd PI Culvert	Varnum Street @ 53rd PI	Flood prone area identified by DPW&T; no high water signs	Culvert	Anacostia River	13 of 57
D18	Upshur Street @ 54th St Culvert	Upshur Street @ 54th St	Flood prone area identified by DPW&T; no high water signs	Culvert	Anacostia River	13 of 57
C2	Brentwood / North Brentwood / Hyattsville / Edmonston / Bladensburg / Riverdale Park / Landover Hills Cluster	Roads / structures	Identified as area of interest due to the number of drainage/flood complaints and FEMA claims	Public Infrastructure	Anacostia River	13 of 57
F2	Company 12- College Park Volunteer Fire Department	Baltimore Avenue / US-1	Volunteer fire station	Emergency	Anacostia River	13 of 57
D19	Corporate Drive Culvert	Corporate Drive	Flood prone area identified by DPW&T; no high water signs	Culvert	Anacostia River	14 of 57
D20	Lanham Severn Road Storm Drains	Lanham Severn Road	Flood prone area identified by DPW&T; no high water signs	Storm Drains	Western Branch	14 of 57
D21	Baltimore Lane Culvert	Baltimore Lane	Flood prone area identified by DPW&T; no high water signs	Culvert	Western Branch	14 of 57
C3	Hynesboro / Seabrook Acres / Glendale Heights Cluster	Roads / structures	Identified as area of interest due to the number of drainage/flood complaints and FEMA claims	Public Infrastructure	Western Branch	14 of 57

<b>No.<sup>1</sup></b>	<b>Name</b>	<b>Location</b>	<b>Description</b>	<b>Type</b>	<b>MDE 8-Digit Watershed</b>	<b>Panel</b>
D22	Governor Bridge Road Low Lying Area	Governor Bridge Road	Flood prone area identified by DPW&T; 2 high water signs	Low Lying Area	Patuxent River Upper	16 of 57
D23	Colmar Station Trash Rack	Monroe Street	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Anacostia River	17 of 57
D24	Monroe Street Storm Drains	Monroe Street	Flood prone area identified by DPW&T; no high water signs	Storm Drains	Anacostia River	18 of 57
D25	Warner Avenue Culvert	Warner Avenue	Flood prone area identified by DPW&T; 3 high water signs	Culvert	Anacostia River	18 of 57
D26	Hubbard Road Trash Rack	Hubbard Road	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Anacostia River	18 of 57
D27	Flagstaff Street Trash Rack	Flagstaff Street	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Anacostia River	18 of 57
C4	Columbia Park / Kentland / Palmer Park Cluster	Roads / structures	Identified as area of interest due to the number of drainage/flood complaints and FEMA claims	Public Infrastructure	Anacostia River	18 of 57
C5	Seat Pleasant Cluster	Roads / structures	Identified as area of interest due to the number of drainage/flood complaints and FEMA claims	Public Infrastructure	Anacostia River	18 of 57
D28	Yellowwood Lane Culvert	Yellowwood Lane	Flood prone area identified by DPW&T; no high water signs	Culvert	Western Branch	19 of 57
D29	Lottsford Vista Road Culvert	Lottsford Vista Road	Flood prone area identified by DPW&T; no high water signs	Culvert	Western Branch	19 of 57
D30	Chesterton Drive Low Lying Area	Chesterton Drive	Flood prone area identified by DPW&T; 1 high water signs	Low Lying Area	Western Branch	20 of 57
D31	Huron Drive Trash Rack	Huron Drive	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Oxon Creek	23 of 57
D32	Shawnee Drive Culvert	Shawnee Drive	Flood prone area identified by DPW&T; no high water signs	Culvert	Oxon Creek	24 of 57
D33	Iverson Street Trash Rack	Iverson Street	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Oxon Creek	24 of 57
D34	Owens Road Culvert	Owens Road	Flood prone area identified by DPW&T; no high water signs	Culvert	Oxon Creek	24 of 57
D35	Hillcrest Parkway Trash Rack	Hillcrest Parkway	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Oxon Creek	24 of 57









<b>No.<sup>1</sup></b>	<b>Name</b>	<b>Location</b>	<b>Description</b>	<b>Type</b>	<b>MDE 8-Digit Watershed</b>	<b>Panel</b>
D36	Shadyside Avenue Storm Drains	Shadyside Avenue	Flood prone area identified by DPW&T; no high water signs	Storm Drains	Oxon Creek	25 of 57
D37	Marlboro Pike Storm Drains	Marlboro Pike	Flood prone area identified by DPW&T; 1 high water signs	Storm Drains	Oxon Creek	25 of 57
D38	Henson Drive Culvert	Henson Drive	Flood prone area identified by DPW&T; no high water signs	Culvert	Potomac River Upper Tidal	25 of 57
D39	Sharon Road Trash Rack	Sharon Road	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Potomac River Upper Tidal	25 of 57
D40	Forestville Road Culvert	Forestville Road	Flood prone area identified by DPW&T; 2 high water signs	Culvert	Potomac River Upper Tidal	25 of 57
C6	Hillside / Dupont Heights / Suitland Cluster	Roads / structures	Identified as area of interest due to the number of drainage/flood complaints and FEMA claims	Public Infrastructure	Oxon Creek	25 of 57
C7	Berkshire / Forestville Cluster	Roads / structures	Identified as area of interest due to the number of drainage/flood complaints and FEMA claims	Public Infrastructure	Potomac River Upper Tidal	25 of 57
F3	Company 27- Morningside Volunteer Fire Department	Suitland Road	Volunteer fire station	Emergency	Potomac River Upper Tidal	25 of 57
D41	White House Road Low Lying Area	White House Road	Flood prone area identified by DPW&T; no high water signs	Low Lying Area	Western Branch	27 of 57
D42	Branchview Drive Trash Rack	Branchview Drive	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Potomac River Upper Tidal	30 of 57
D43	Livingston Road Culvert	Livingston Road	Flood prone area identified by DPW&T; 2 high water signs	Culvert	Potomac River Upper Tidal	30 of 57
F4	Company 58- National Harbor Station	Mariner Passage	Volunteer fire station	Emergency	Potomac River Upper Tidal	30 of 57
D44	Rose Valley Drive	Rose Valley Drive	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Piscataway Creek	31 of 57
C8	Hillcrest Heights / Temple Hills / Broadview Cluster	Roads / structures	Identified as area of interest due to the number of drainage/flood complaints and FEMA claims	Public Infrastructure	Potomac River Upper Tidal	31 of 57
D45	Henderson Road Low Lying Area	Henderson Road	Flood prone area identified by DPW&T; 2 high water signs	Low Lying Area	Potomac River Upper Tidal	32 of 57
D46	Brinkley Road Culvert	Brinkley Road	Flood prone area identified by DPW&T; 2 high water signs	Culvert	Potomac River Upper Tidal	32 of 57

<b>No.<sup>1</sup></b>	<b>Name</b>	<b>Location</b>	<b>Description</b>	<b>Type</b>	<b>MDE 8-Digit Watershed</b>	<b>Panel</b>
D47	Victoria Place Storm Drains	Victoria Place	Flood prone area identified by DPW&T; no high water signs	Storm Drains	Piscataway Creek	33 of 57
D48	Croom Station Road Low Lying Area	Croom Station Road	Flood prone area identified by DPW&T; 2 high water signs	Low Lying Area	Western Branch	34 of 57
D49	Fort Washington Pool Association Trash Rack	King Charles Terrace	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Piscataway Creek	37 of 57
D50	Farmington Creek Road Culvert	Farmington Creek Road	Flood prone area identified by DPW&T; 2 high water signs	Culvert	Piscataway Creek	37 of 57
D51	Asbury Drive Trash Rack	Asbury Drive	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Potomac River Upper Tidal	37 of 57
C9	Tantallon Cluster	Roads / structures	Identified as area of interest due to the number of drainage/flood complaints and FEMA claims	Public Infrastructure	Potomac River Upper Tidal	37 of 57
F5	Company 57- Volunteer Water and Dive Rescue	King Charles Terrace	Volunteer fire and marine rescue station	Emergency	Piscataway Creek	37 of 57
D52	Taylor Avenue Trash Rack	Taylor Avenue	Flood prone area identified by DPW&T; no high water signs	Trash Rack	Piscataway Creek	38 of 57
D53	Floral Park @ Yellow Poplar Storm Drain	Floral Park Road @ Yellow Poplar Lane	Flood prone area identified by DPW&T; no high water signs	Storm Drain	Piscataway Creek	38 of 57
D54	Cherry Tree Crossing Road Low Lying Area	Cherry Tree Crossing Road	Flood prone area identified by DPW&T; 2 high water signs	Low Lying Area	Patuxent River Middle	40 of 57
D55	Biddle Road Low Lying Area	Biddle Road	Flood prone area identified by DPW&T; 2 high water signs	Low Lying Area	Mattawoman Creek	45 of 57
D56	Farmington Road West Low Lying Area	Farmington Road West	Flood prone area identified by DPW&T; 2 high water signs	Low Lying Area	Piscataway Creek	45 of 57
D57	Gardner Road Low Lying Area	Gardner Road	Flood prone area identified by DPW&T; 1 high water signs	Low Lying Area	Mattawoman Creek	47 of 57
C10	Eagle Harbor Cluster	Roads / structures	Identified as area of interest in Phase I due to the number of drainage/flood complaints	Public Infrastructure	Patuxent River Lower	54 of 57

Note: 1. C = Cluster of interest; D = DPW&T owned or maintained infrastructure or facility; F = Fire/emergency

## Appendix B: Prince George's County Urban and High Tide Flood Map

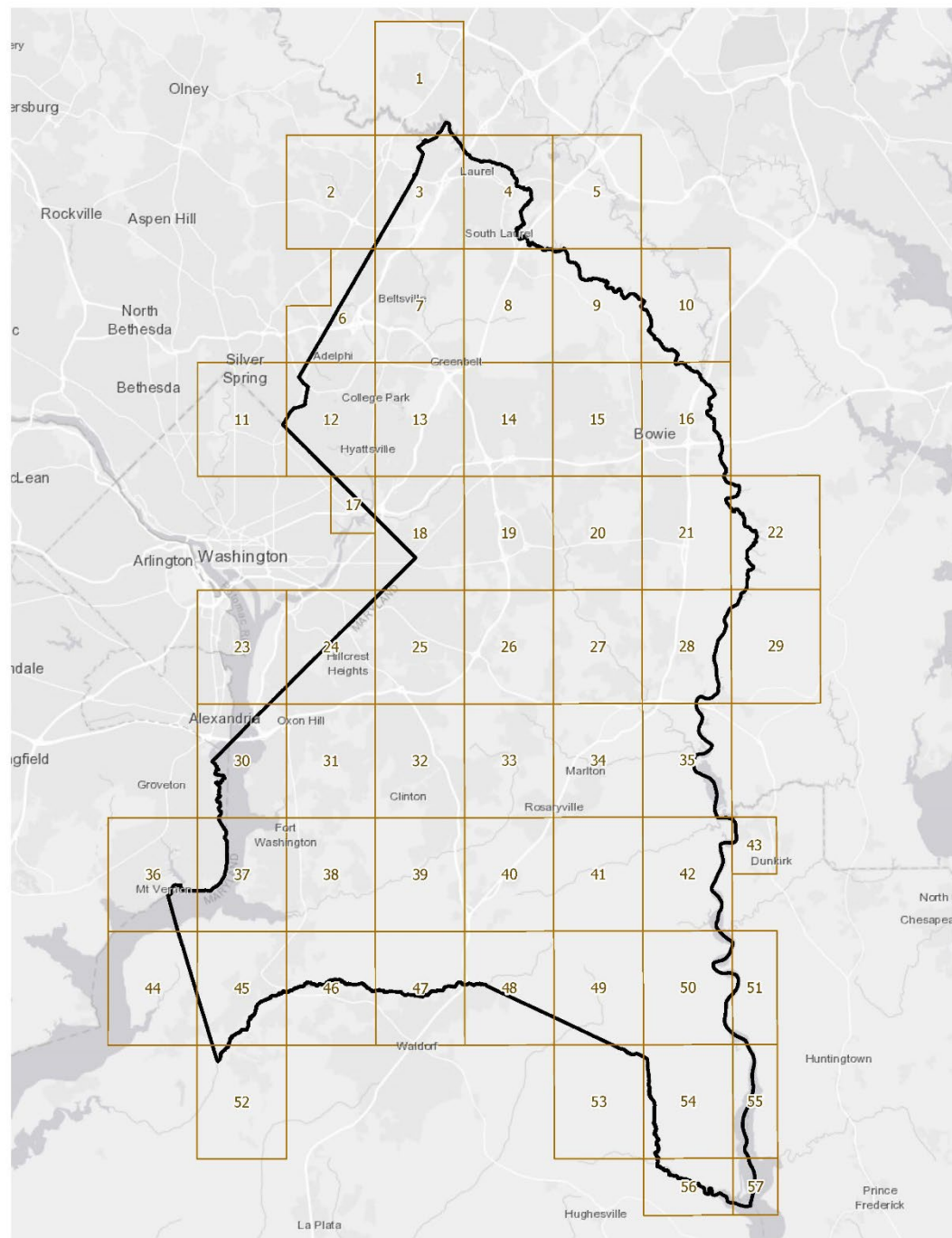
The following map has been broken into multiple panels. It shows the proximity of County facilities and infrastructure as they relate to the 100-year floodplain and the NOAA-identified high tide flood threshold. DPW&T facilities or infrastructure in flood-prone areas are shown. Data collected on PGC311 and 911 calls related to drainage or flooding concerns and NFIP claims were also mapped using a cluster analysis. Areas where DPW&T facilities in flood-prone areas or potential nuisance flood clusters intersected or were directly adjacent to the NOAA high tide flood threshold were marked as preliminary high tide flood areas of concern.

Symbol	Legend Name	Description
	Preliminary Area of Concern	Public facility or infrastructure within/adjacent to the high tide flood threshold and identified by the County as a potential area of concern due to either: 1) its identification by DPW&T as a County facility/infrastructure located in a low-lying area or 2) a clustering of 911 and 311 calls related to drainage or flood complaints.
	DPW&T-Identified Roads and Structures	County roads and structures maintained by DPW&T that are located in low-lying flood prone areas, as identified by DPW&T.
	311 / 911 / FEMA Hotspot	Areas of interest identified via a density-based clustering analysis of NFIP claims and 911/ 311 flood- or drainage-related calls. The specific nature and date of calls are unknown.
(varies)	Critical Facilities	Includes airports, police stations, fire stations, hospitals, schools, and recreation centers provided for public use. The information shown is available from PG Planning Open Data.
	M-NCPPC Parks	Parks owned and operated by the M-NCPPC Prince George's County Parks Department. For display purposes, only parks equal or greater than 2 acres are shown.
	Zone A; AE; AH; AO; OPEN WATER	Areas identified as FEMA flood zones A, AE, AH, AO or Open Water. Flood zones A, AE, AH, and AO represent the extent of the 1-percent annual chance flood (or 100-year flood).
	Zone VE	FEMA flood zone VE represents the extent of the coastal high hazard areas. The VE zone incorporates areas subject to high velocity water including waves. They are defined by the 1% annual chance flood limits (also known as the 100-year flood) and wave effects 3 feet or greater.
	NOAA High Tide Flood Threshold	NOAA-identified areas currently subject to high tide floods, based on derived thresholds. Note that thresholds may deviate from NOAA's National Weather Service (NWS) impact thresholds which are used to issue NWS coastal flood watches, warnings, and advisories.
	Census Tract with SVI score > 75%	Center for Disease Control Social Vulnerability Index (SVI) score measures the ability to prepare for and respond to hazardous events. The higher the count, the more vulnerable the population.



# Prince George's County Urban and High Tide Flood Map

## Panel Key



# Overview:

## Panel 1 of 57

### Key Features

- DPW&T-Identified Roads and Structures
- 311/911/FEMA Hotspot Areas
- Stream Centers and Drainage
- M-NCPPC Parks

### Critical Facilities

- Airports
- Police Stations
- Fire Stations
- Hospitals
- Schools
- Recreation Centers
- Senior Activity Centers
- Libraries
- Day Care Centers
- Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

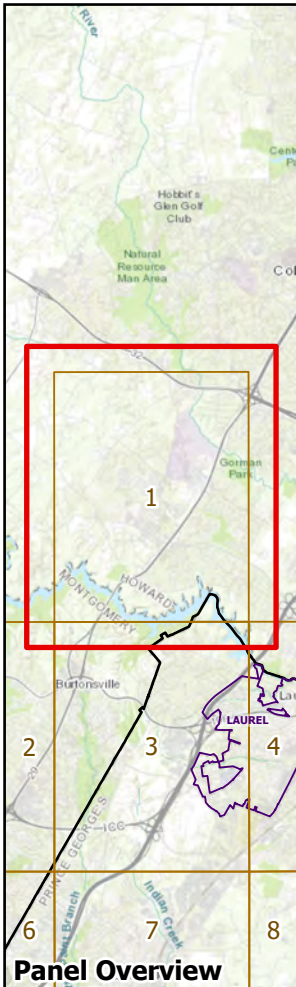
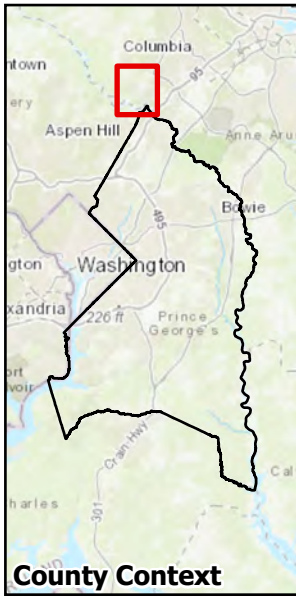
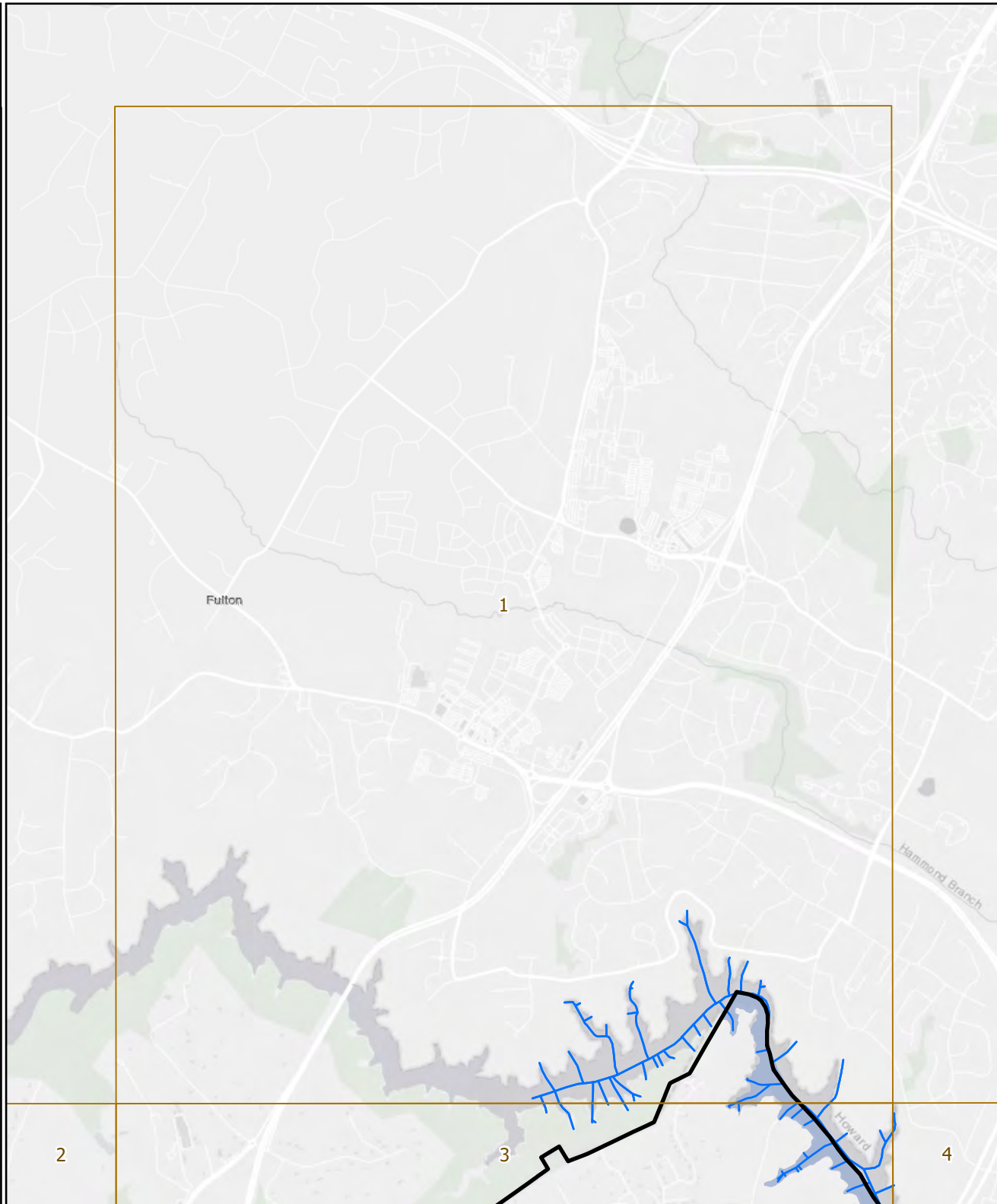
- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain

- 





# Overview:

## Panel 2 of 57

### Key Features

- DPW&T-Identified Roads and Structures
- 311/911/FEMA Hotspot Areas
- Stream Centers and Drainage
- M-NCPPC Parks

### Critical Facilities

- Airports
- Police Stations
- Fire Stations
- Hospitals
- Schools
- Recreation Centers
- Senior Activity Centers
- Libraries
- Day Care Centers
- Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

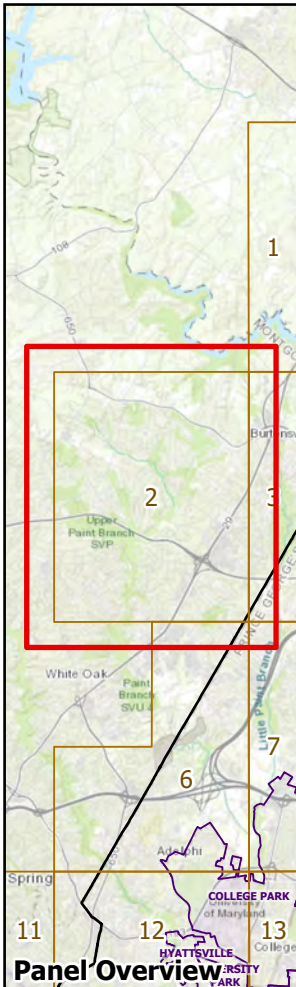
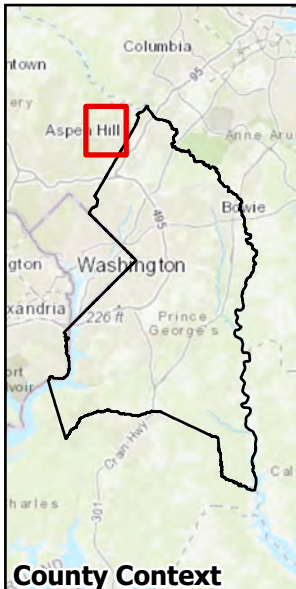
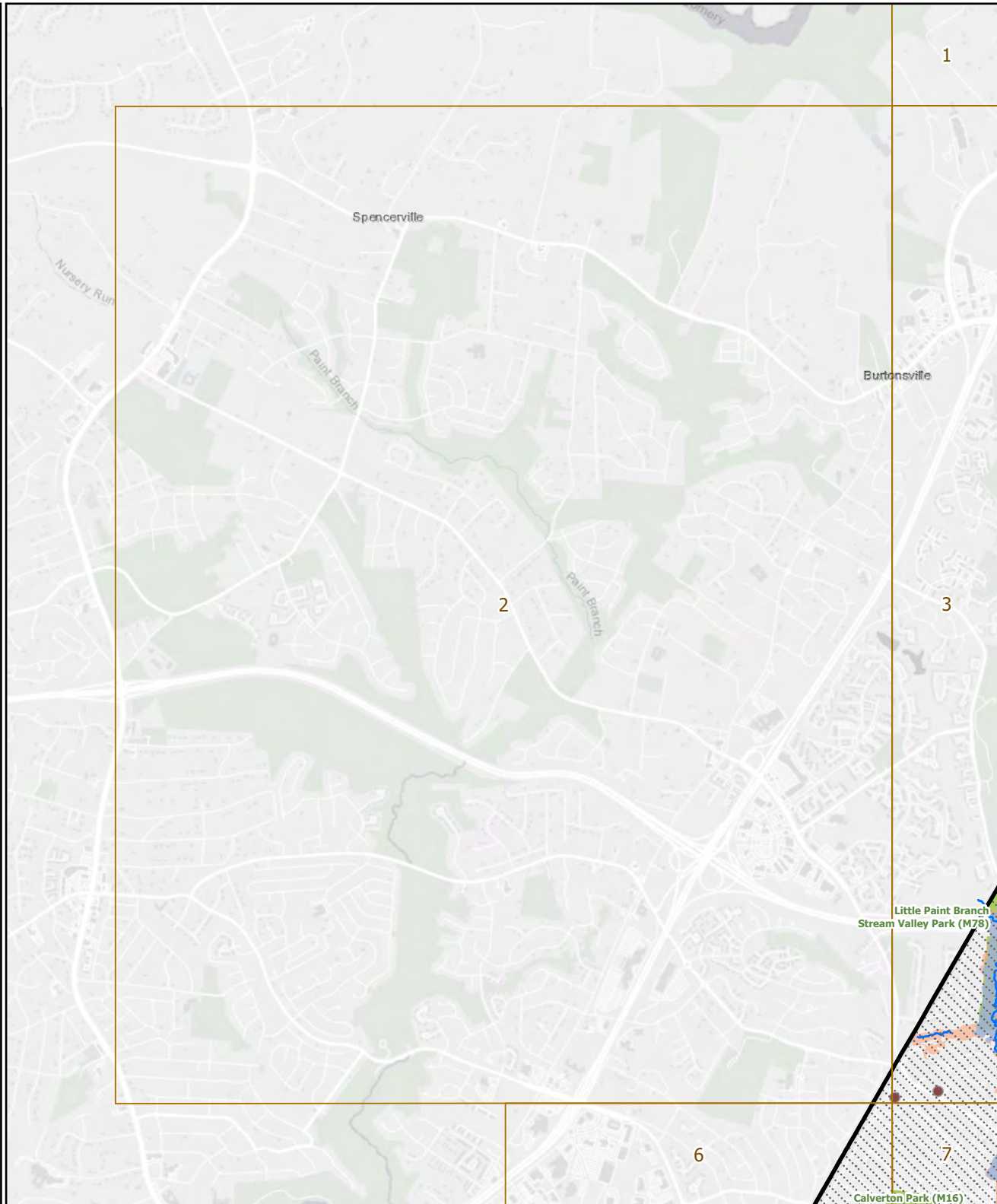
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain

-





Features may not be to scale





**Overview:**  
**Panel 3 of 57**

## Key Features

-  DPW&T-Identified Roads and Structures
-  311/911/FEMA Hotspot Areas
-  Stream Centers and Drainage
-  M-NCPPC Parks




## Critical Facilities

- Airports
- Police Stations
- Fire Stations
- Hospitals
- Schools
- Recreation Centers
- Senior Activity Centers
- Libraries
- Day Care Centers
- Senior Housing

## Social Vulnerability Index (SVI)

- 
- Census Tracts with SVI Score > 75%

## Boundaries

-  Panel  
 Municipal Boundary  
 County Boundary

## High Tide Flooding

- 
- NOAA High Tide Flood Threshold

# FEMA 100-year Floodplain

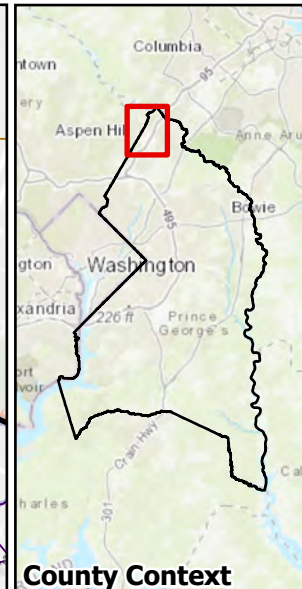
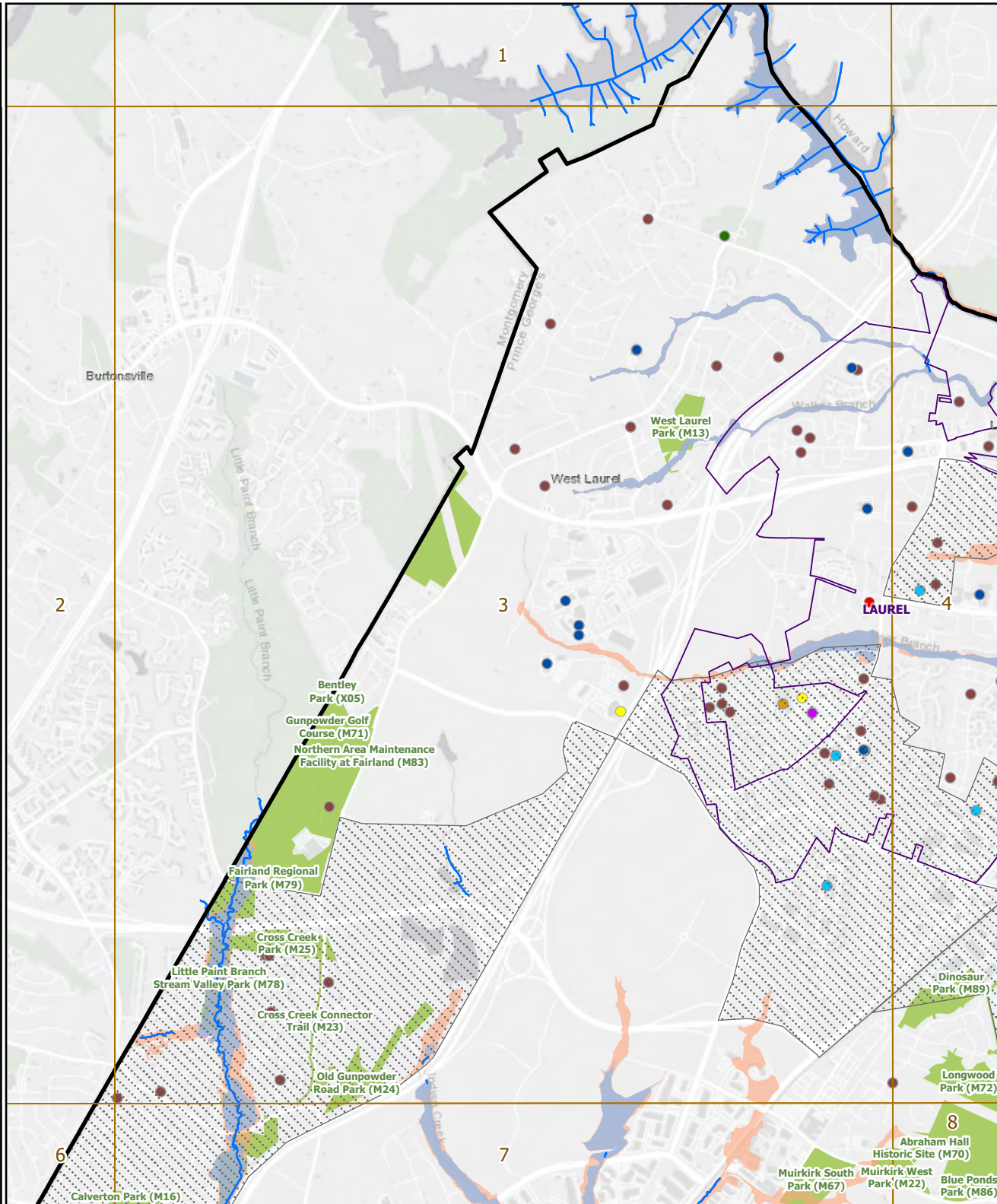
- VE - Coastal High Hazard Area  
A: AE: AH: AO: OPEN WATER

## DPIE Floodplain

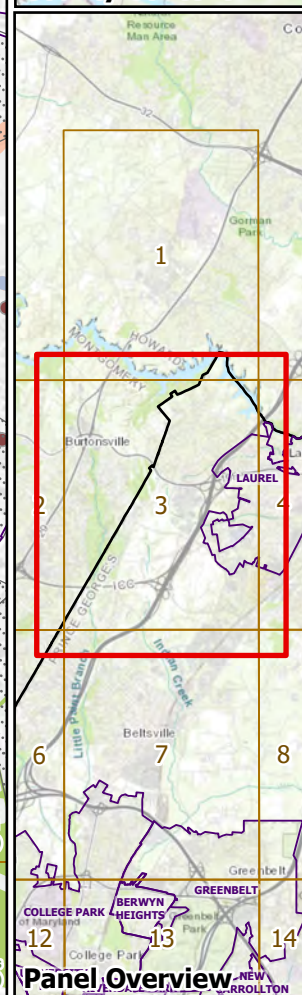
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Features may not be to scale



## County Context



## Panel Overview



# Overview:

## Panel 4 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

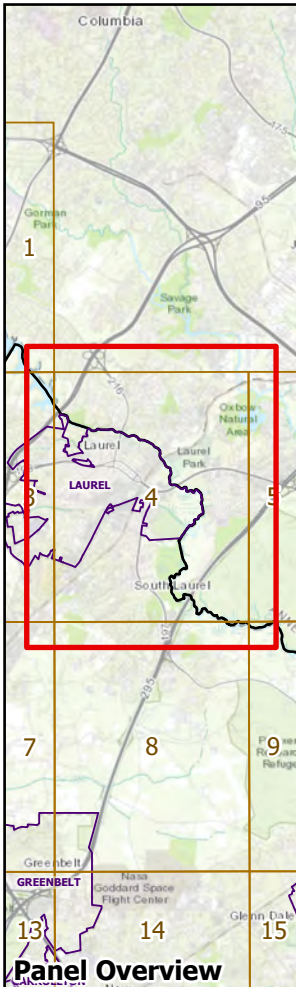
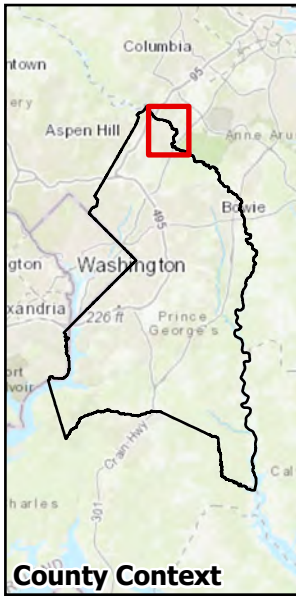
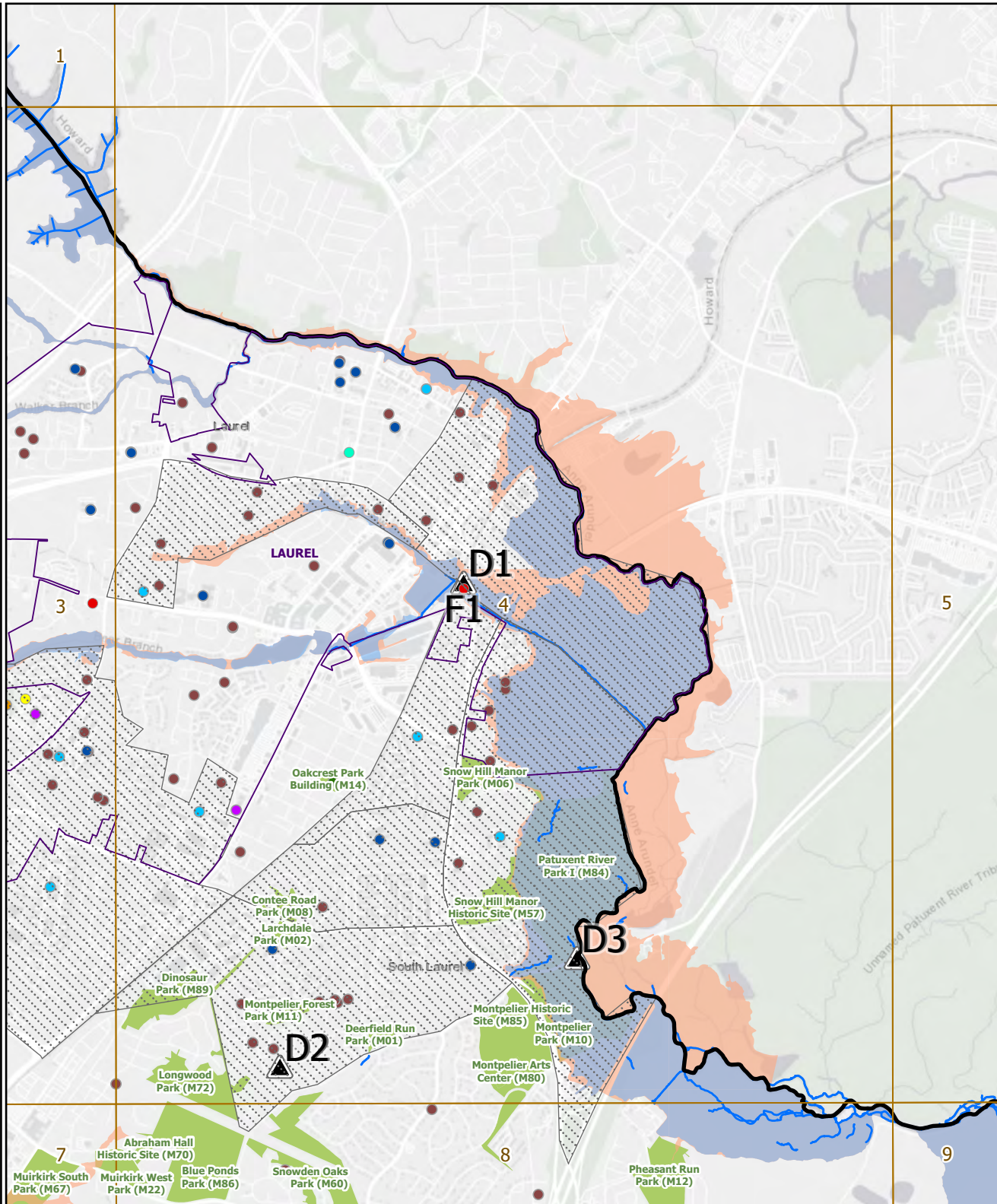
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain





# Overview:

## Panel 5 of 57

### Key Features

- DPW&T-Identified Roads and Structures
- 311/911/FEMA Hotspot Areas
- Stream Centers and Drainage
- M-NCPPC Parks

### Critical Facilities

- Airports
- Police Stations
- Fire Stations
- Hospitals
- Schools
- Recreation Centers
- Senior Activity Centers
- Libraries
- Day Care Centers
- Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

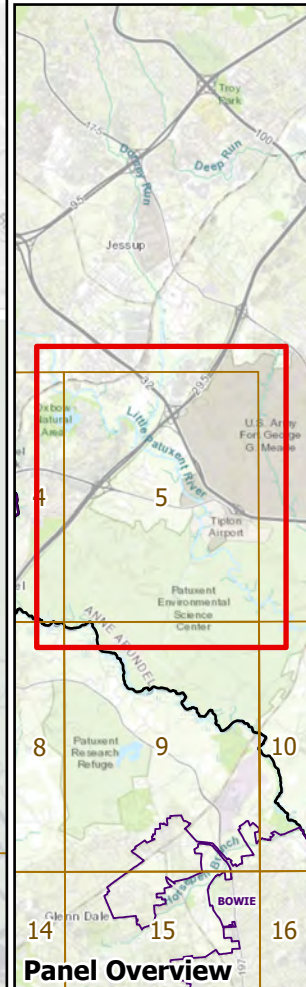
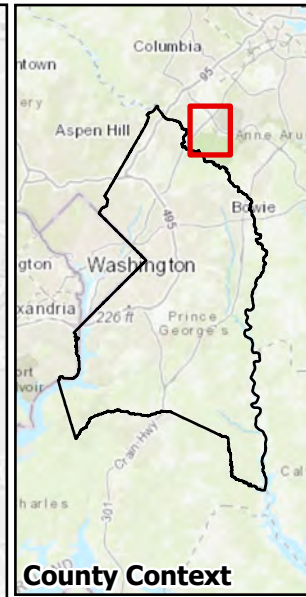
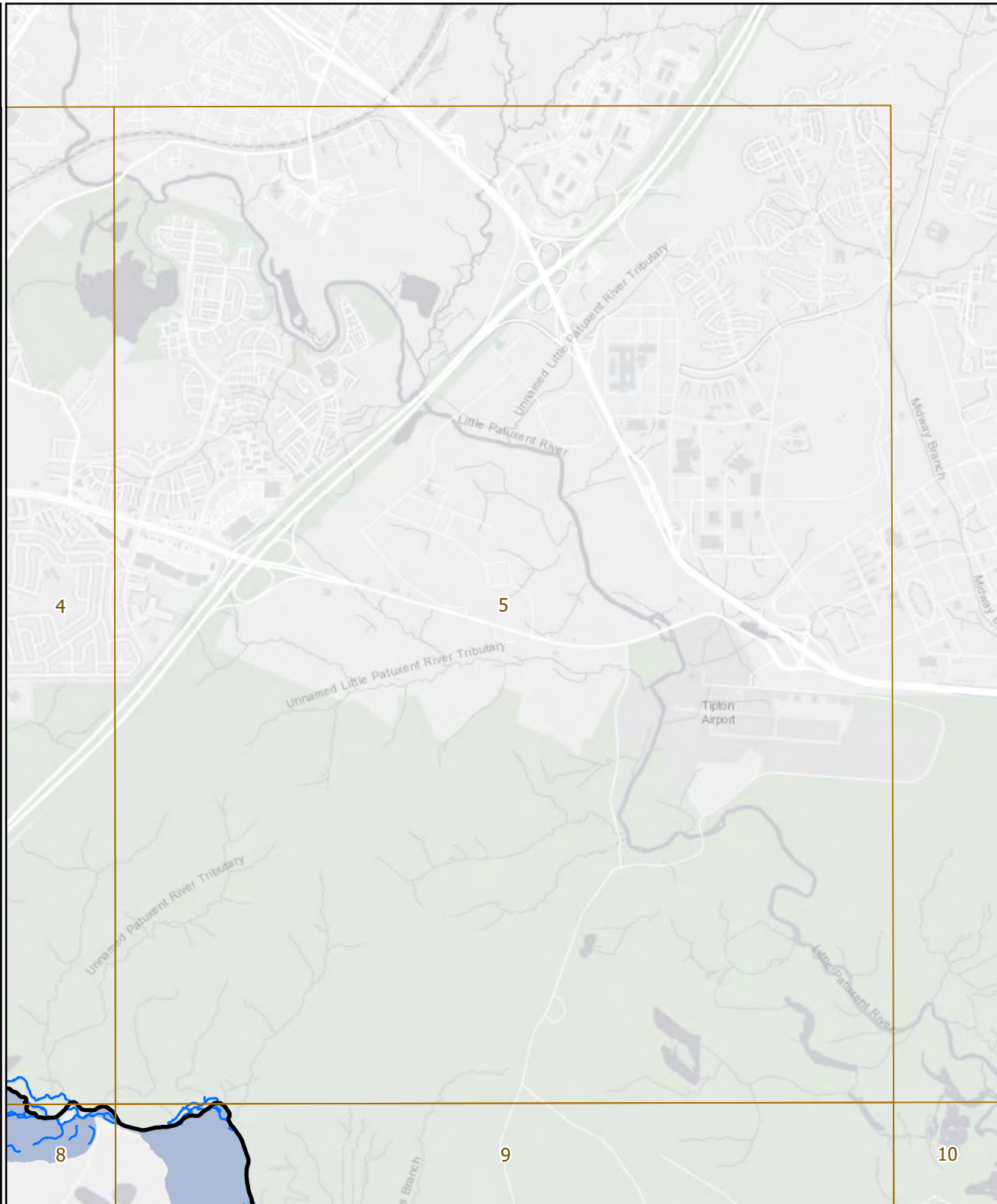
- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain

- 





# Overview:

## Panel 6 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

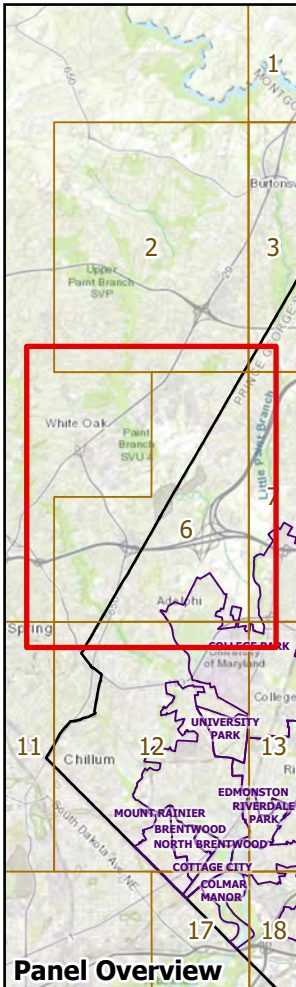
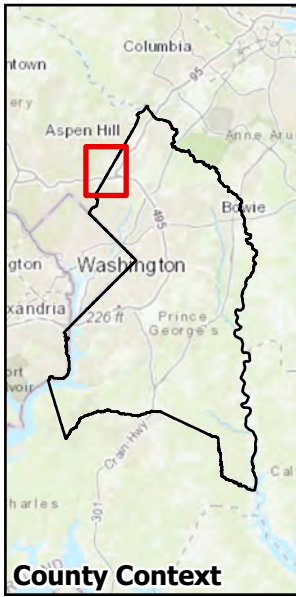
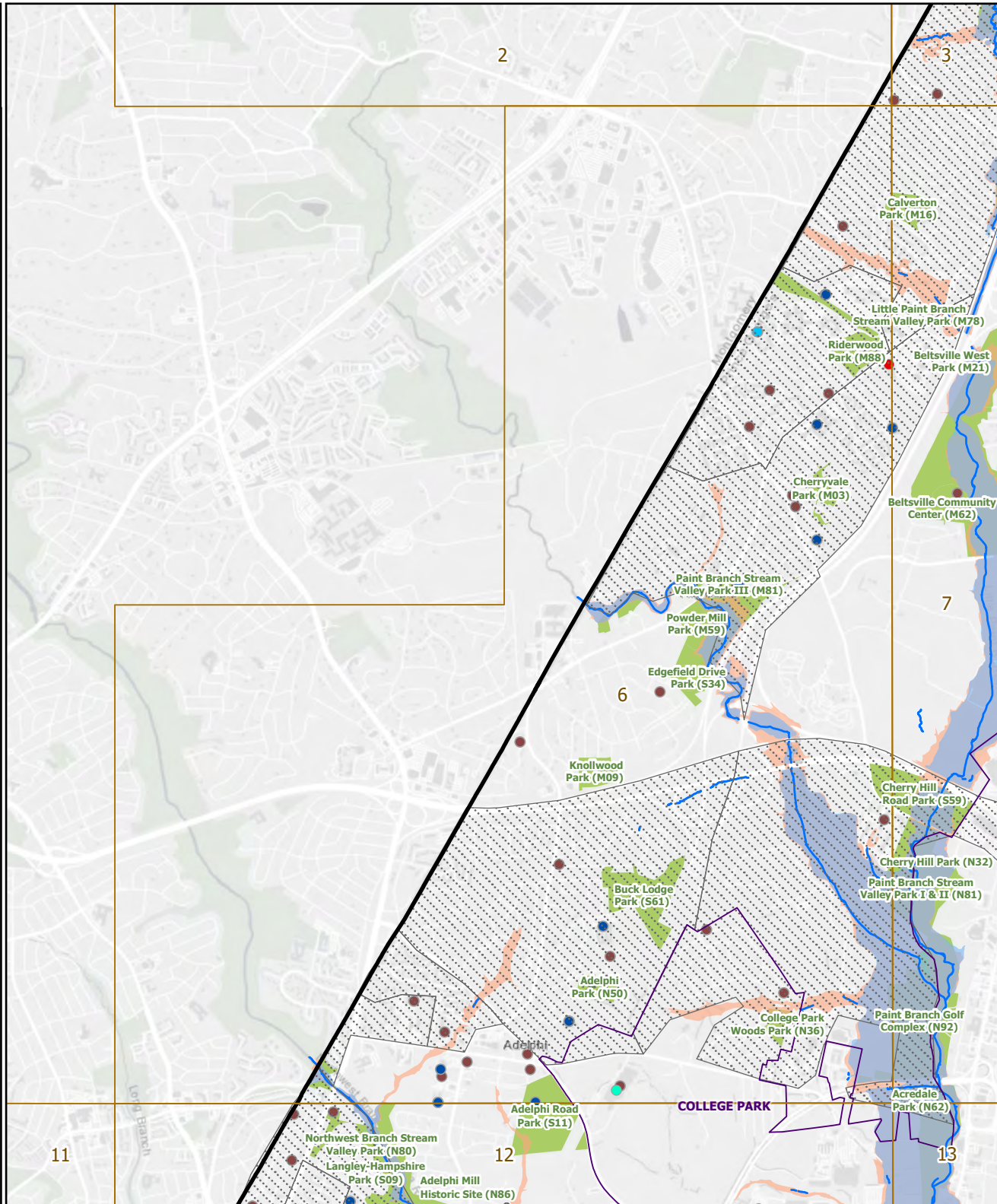
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain





# Overview:

## Panel 7 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

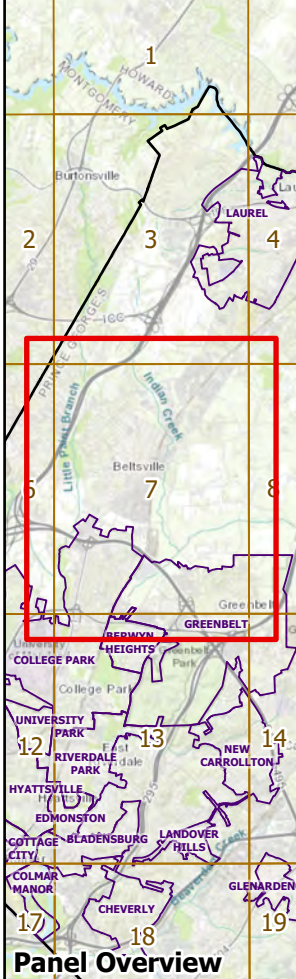
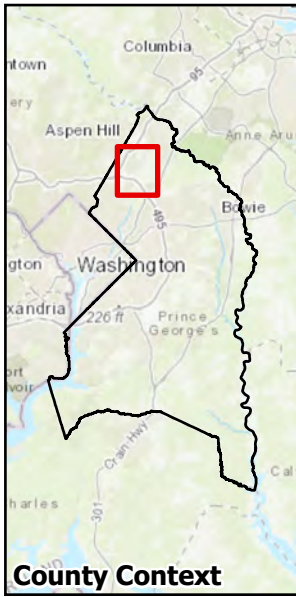
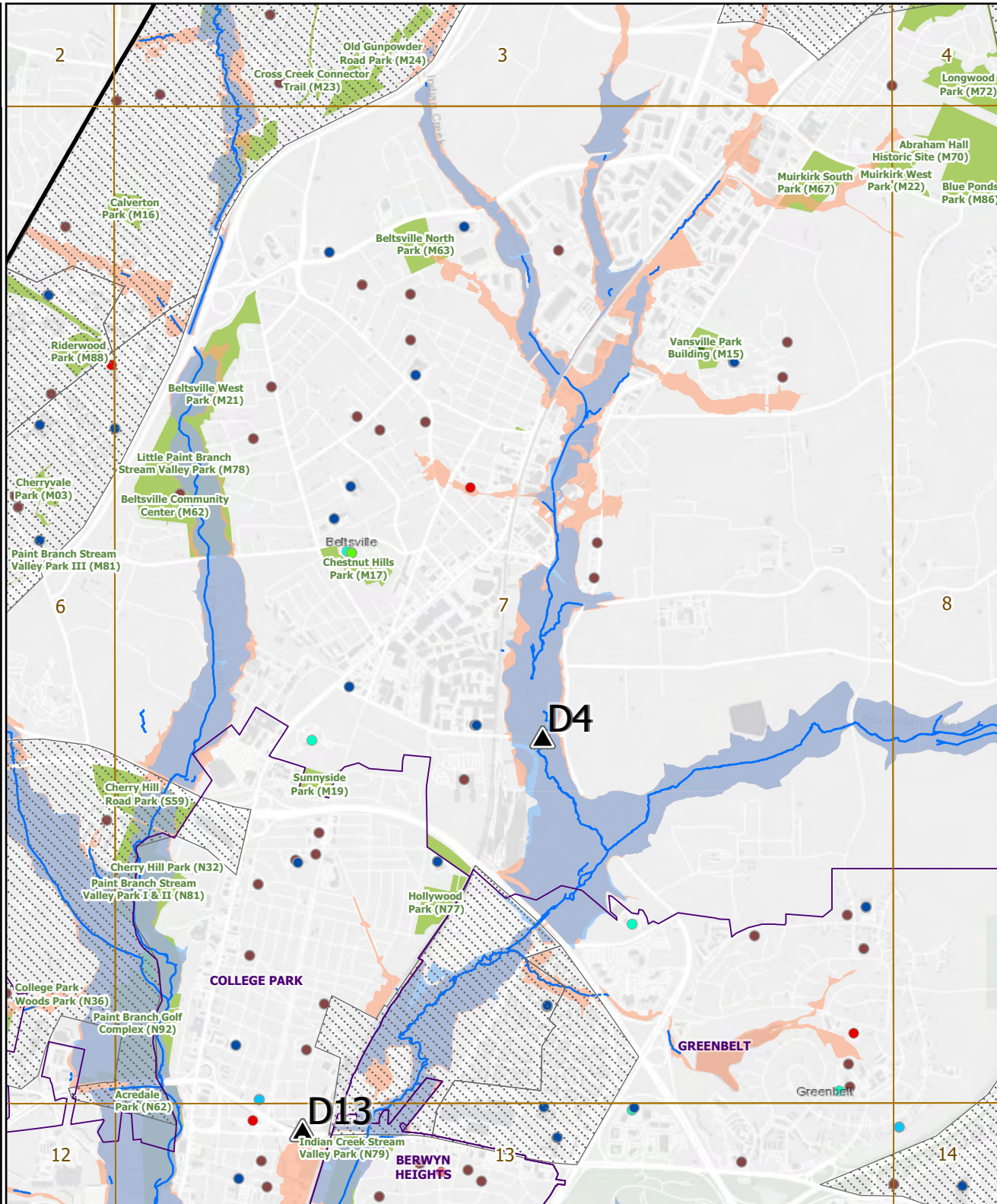
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



Features may not be to scale





# Overview:

## Panel 8 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

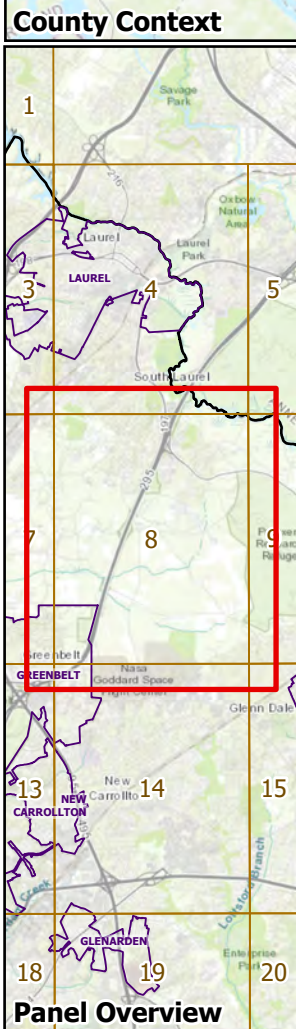
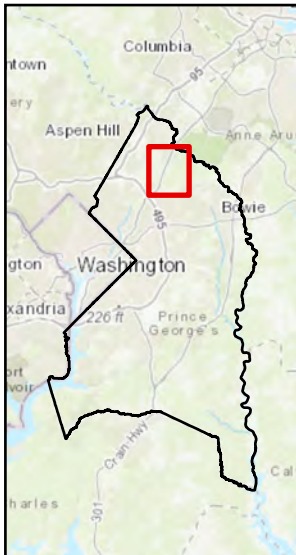
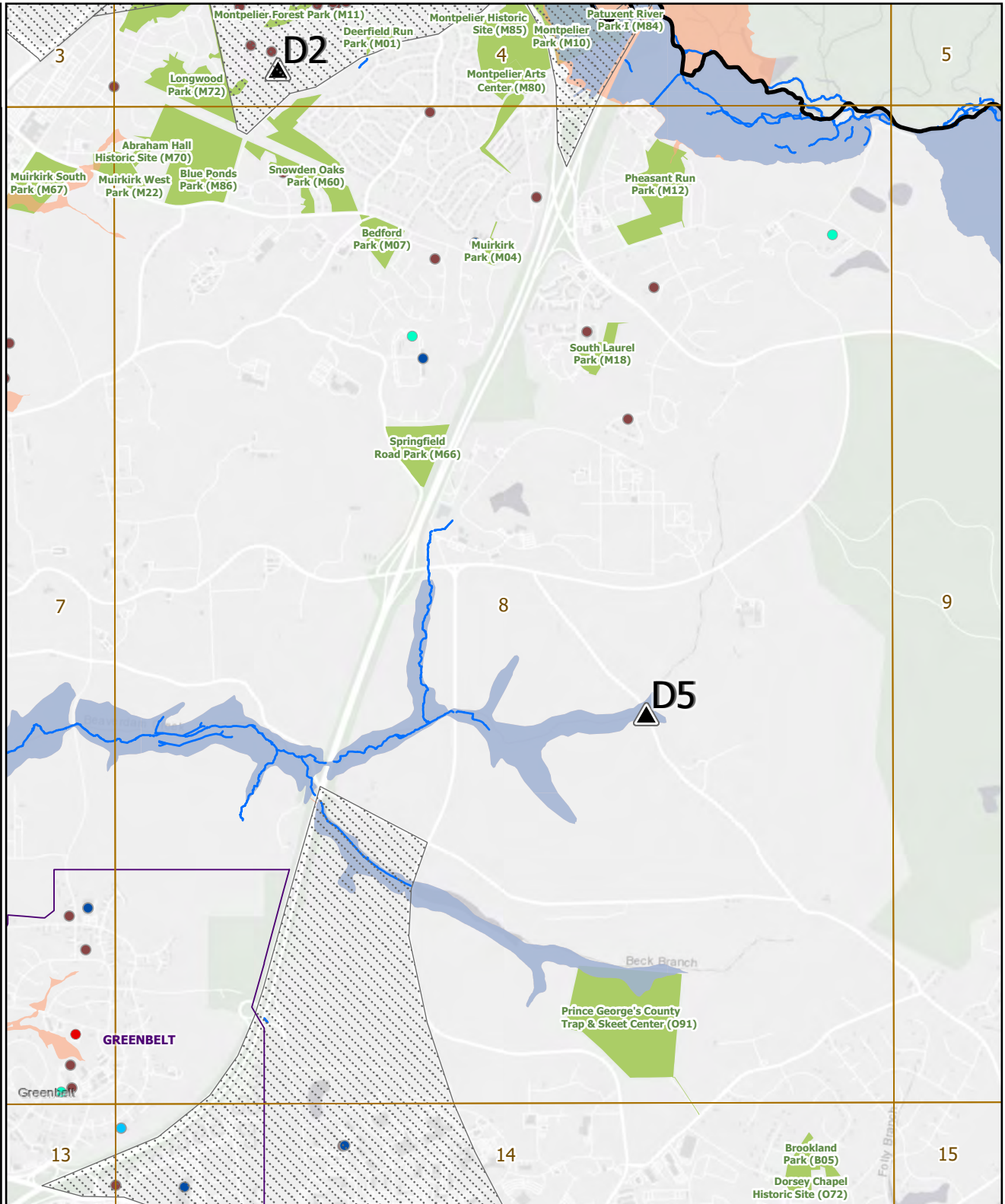
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



# Overview:

## Panel 9 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

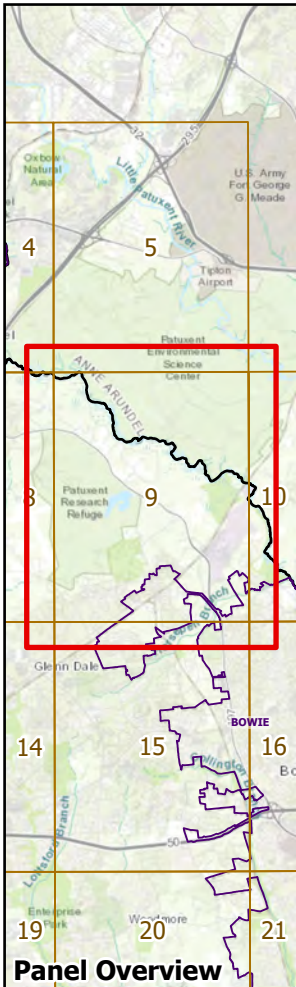
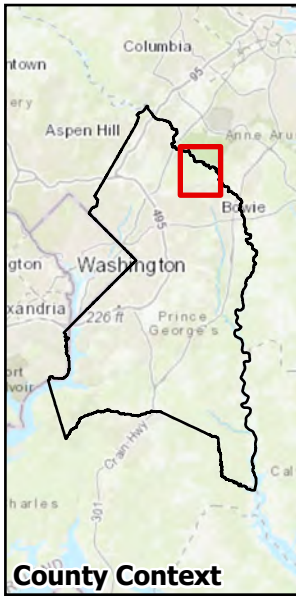
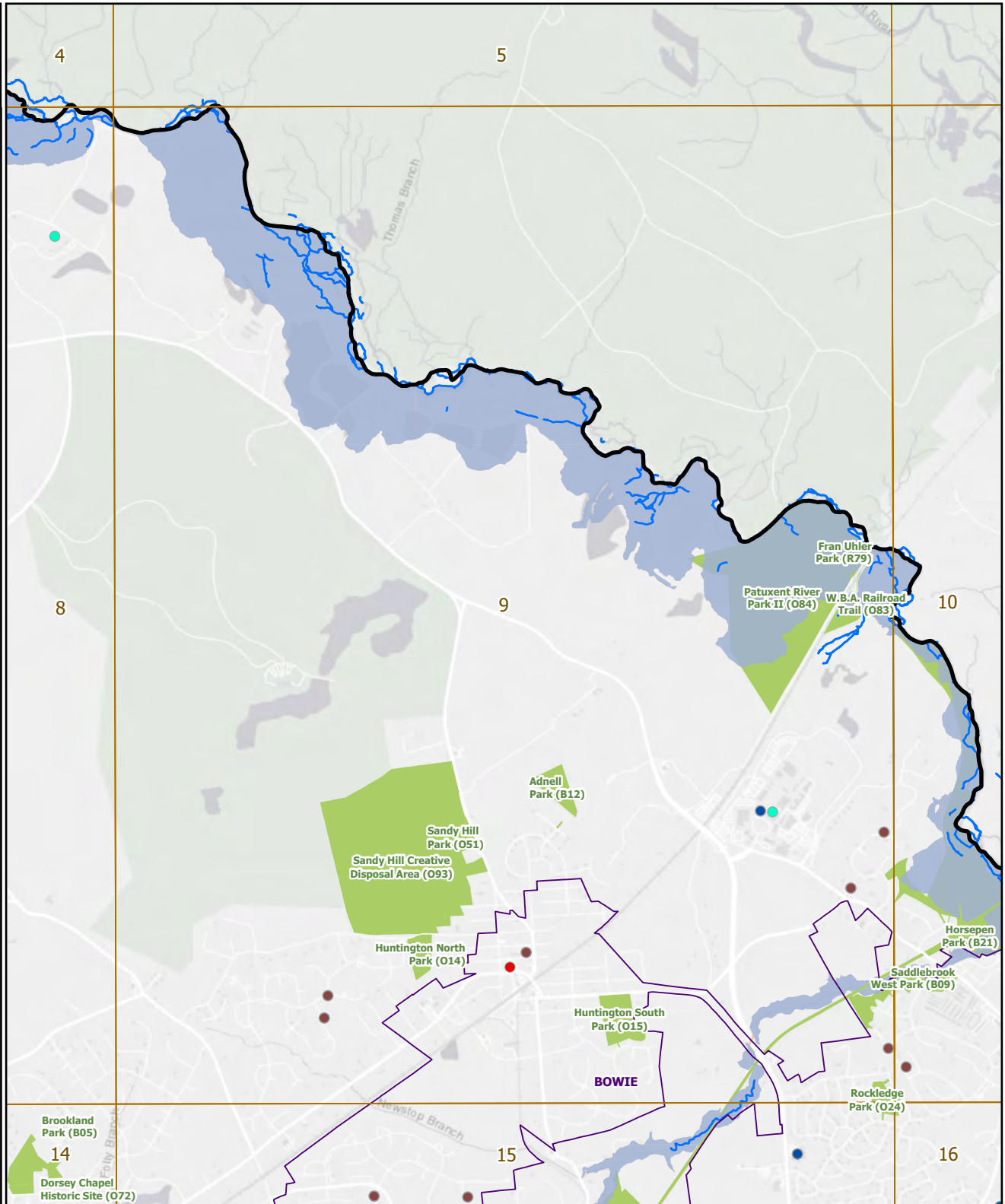
- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain

- 



N  
Features may not be to scale





# Overview:

## Panel 10 of 57

### Key Features

- DPW&T-Identified Roads and Structures
- 311/911/FEMA Hotspot Areas
- Stream Centers and Drainage
- M-NCPPC Parks

### Critical Facilities

- Airports
- Police Stations
- Fire Stations
- Hospitals
- Schools
- Recreation Centers
- Senior Activity Centers
- Libraries
- Day Care Centers
- Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

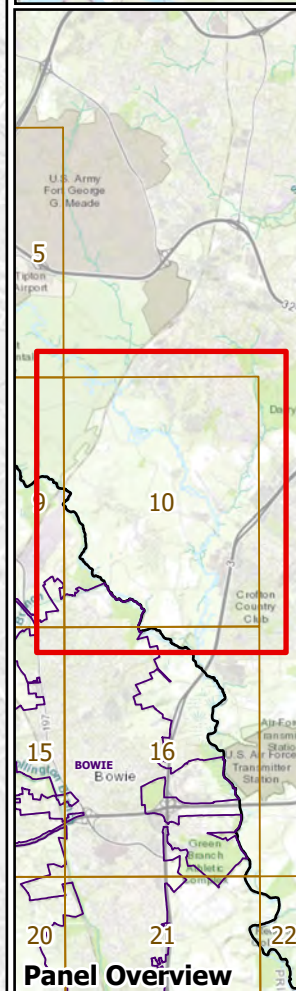
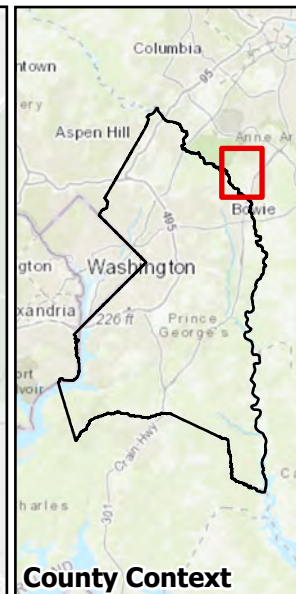
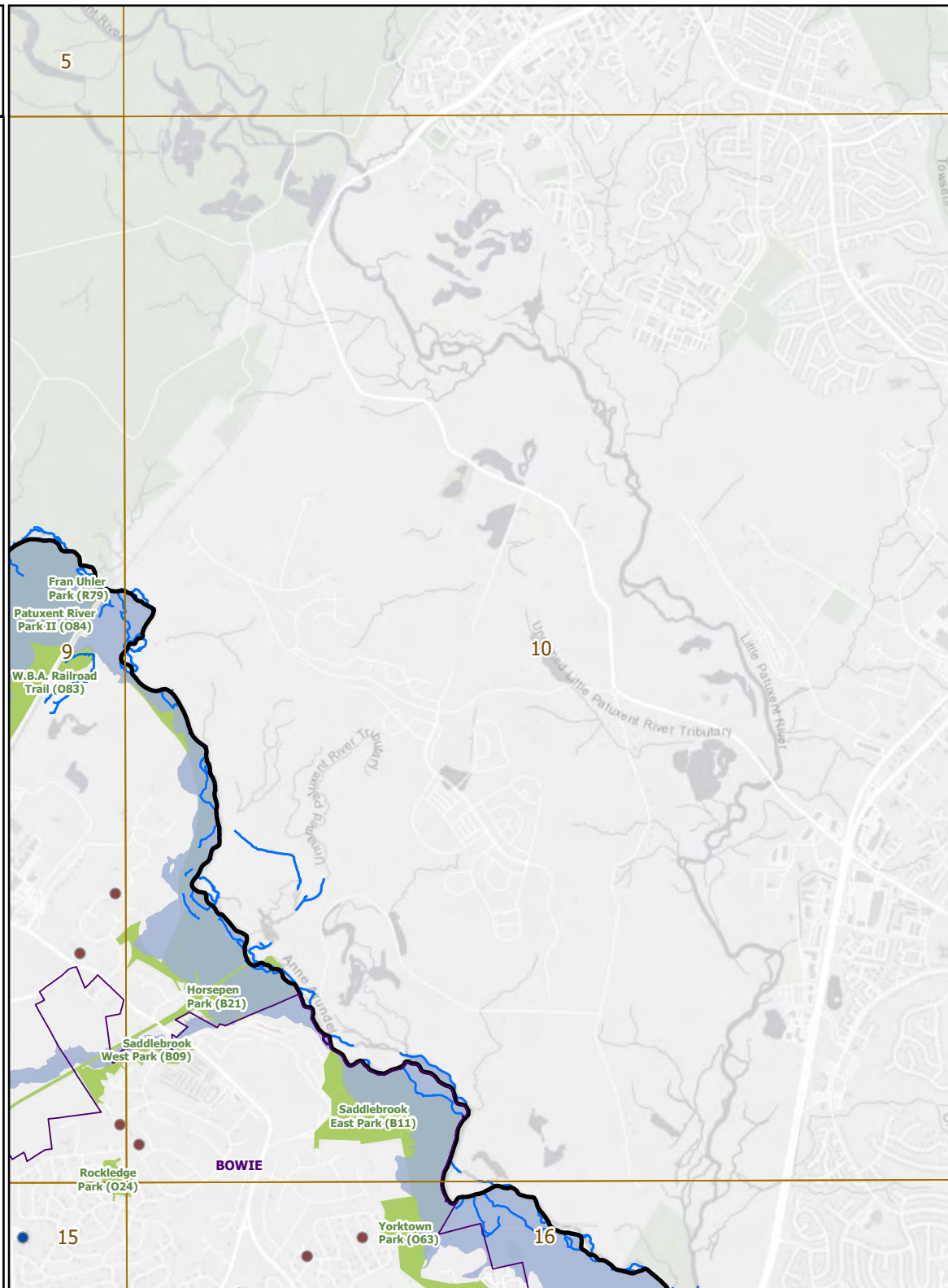
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain









# Overview:

## Panel 11 of 57


### Key Features

-  DPW&T-Identified Roads and Structures
-  311/911/FEMA Hotspot Areas
-  Stream Centers and Drainage
-  M-NCPPC Parks




### Critical Facilities

-  Airports
-  Police Stations
-  Fire Stations
-  Hospitals
-  Schools
-  Recreation Centers
-  Senior Activity Centers
-  Libraries
-  Day Care Centers
-  Senior Housing


### Social Vulnerability Index (SVI)

-  Census Tracts with SVI Score > 75%



### Boundaries

-  Panel
-  Municipal Boundary
-  County Boundary

### High Tide Flooding

-  NOAA High Tide Flood Threshold

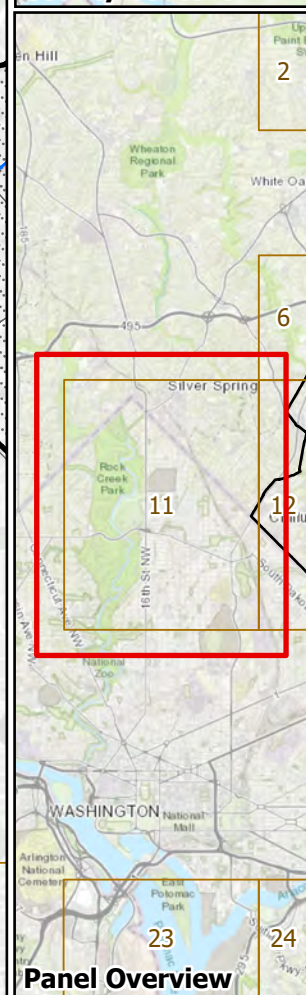
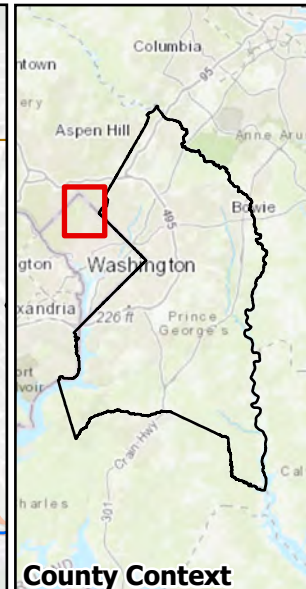
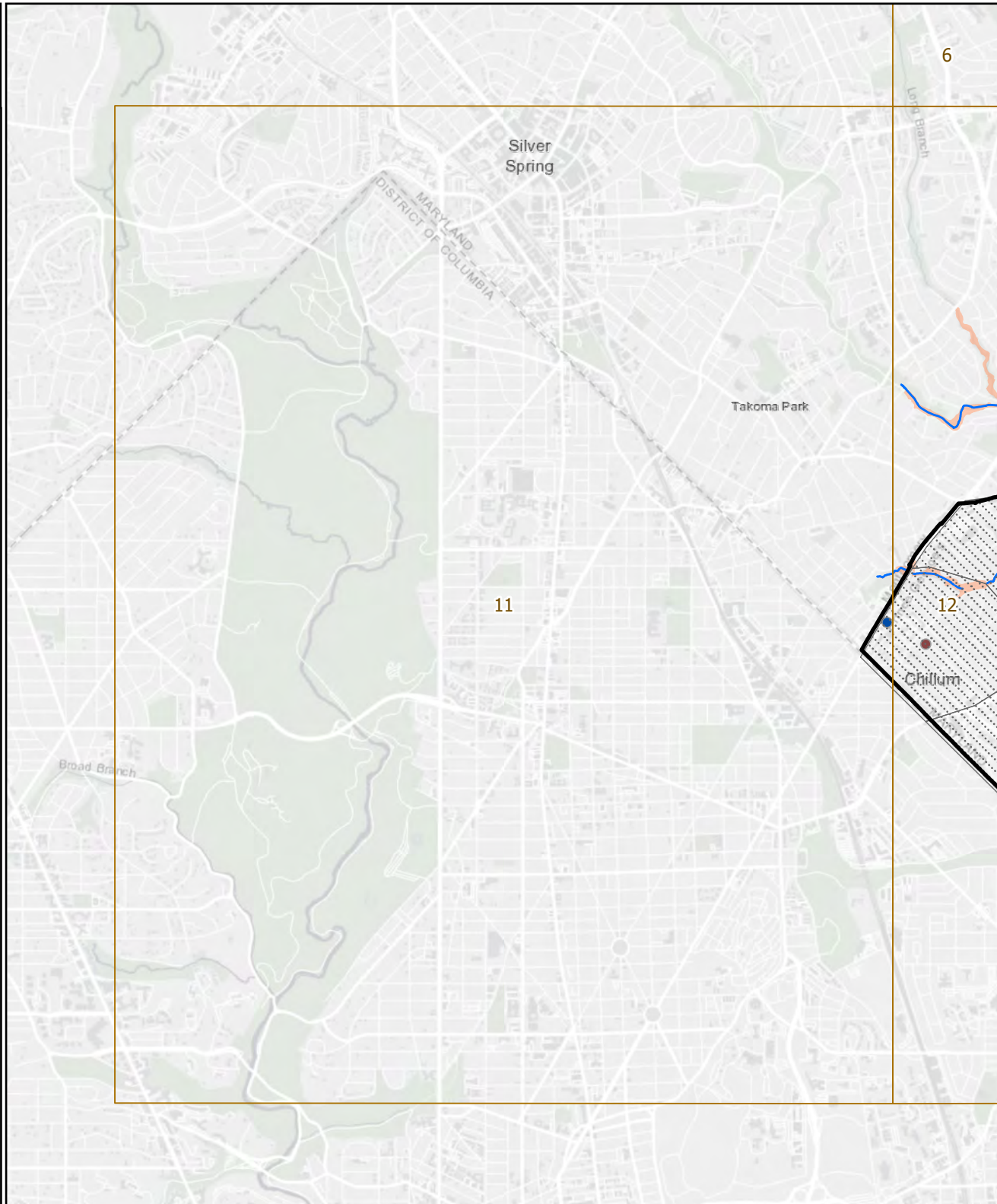
### FEMA 100-year Floodplain

-  VE - Coastal High Hazard Area
-  A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



Features may  
not be to scale





# Overview:

## Panel 12 of 57

### Key Features

- DPW&T-Identified Roads and Structures
- 311/911/FEMA Hotspot Areas
- Stream Centers and Drainage
- M-NCPPC Parks

### Critical Facilities

- Airports
- Police Stations
- Fire Stations
- Hospitals
- Schools
- Recreation Centers
- Senior Activity Centers
- Libraries
- Day Care Centers
- Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

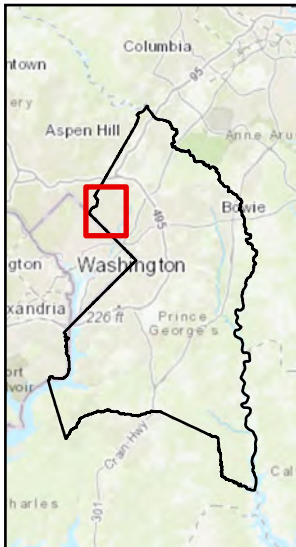
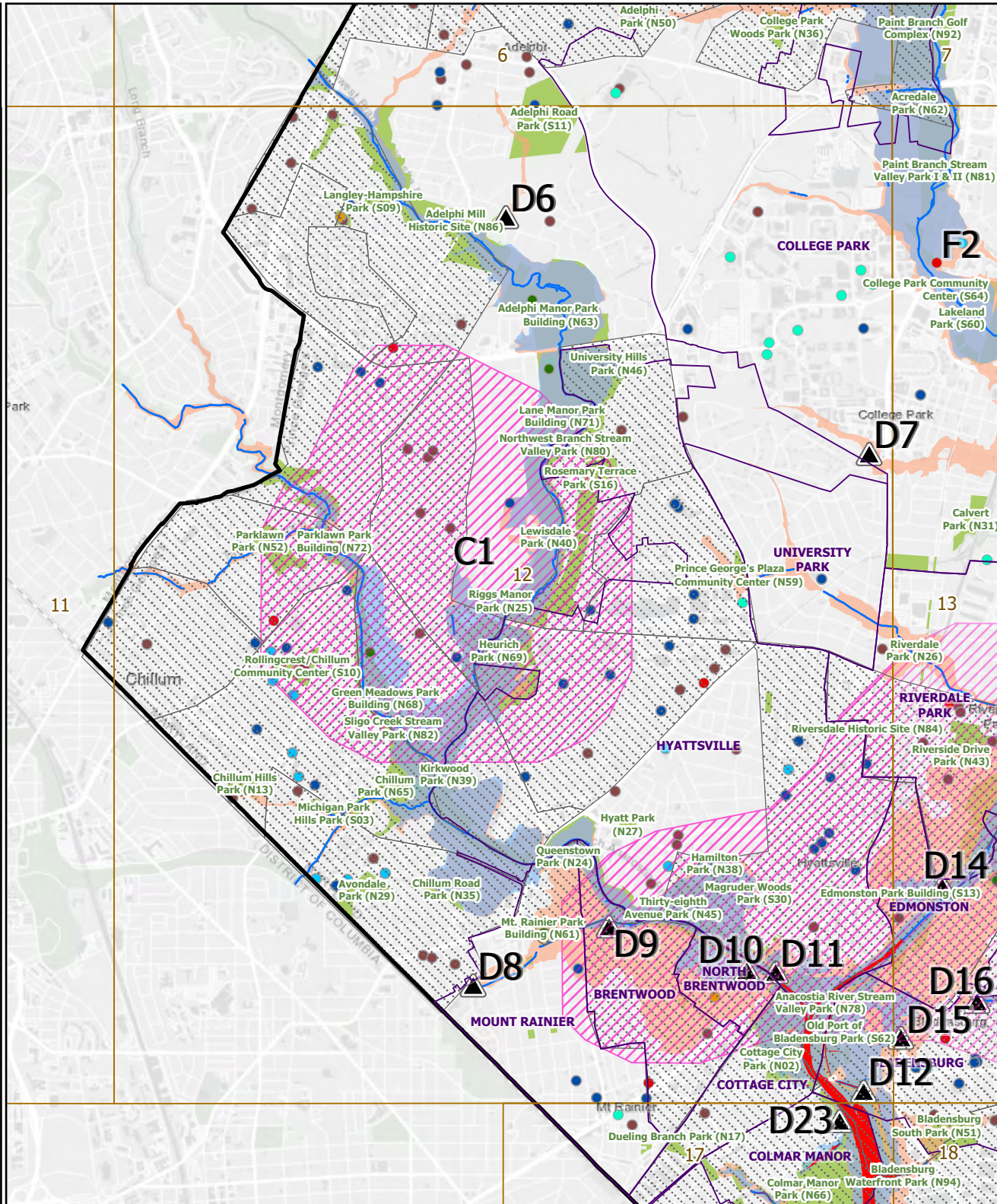
### High Tide Flooding

- NOAA High Tide Flood Threshold

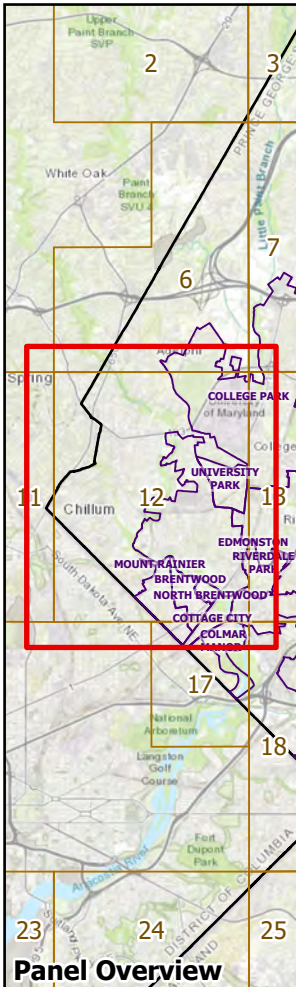
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



### County Context



### Panel Overview



# Overview:

## Panel 13 of 57

- ### Key Features
- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

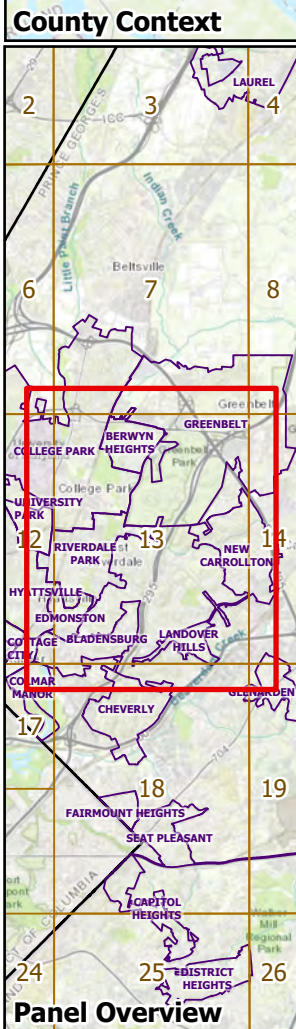
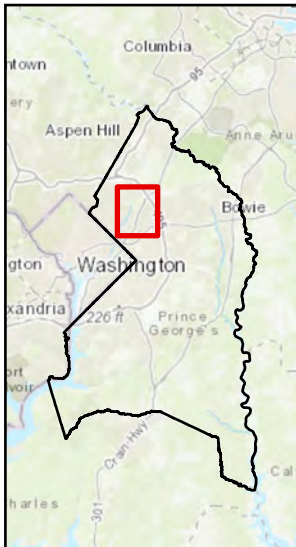
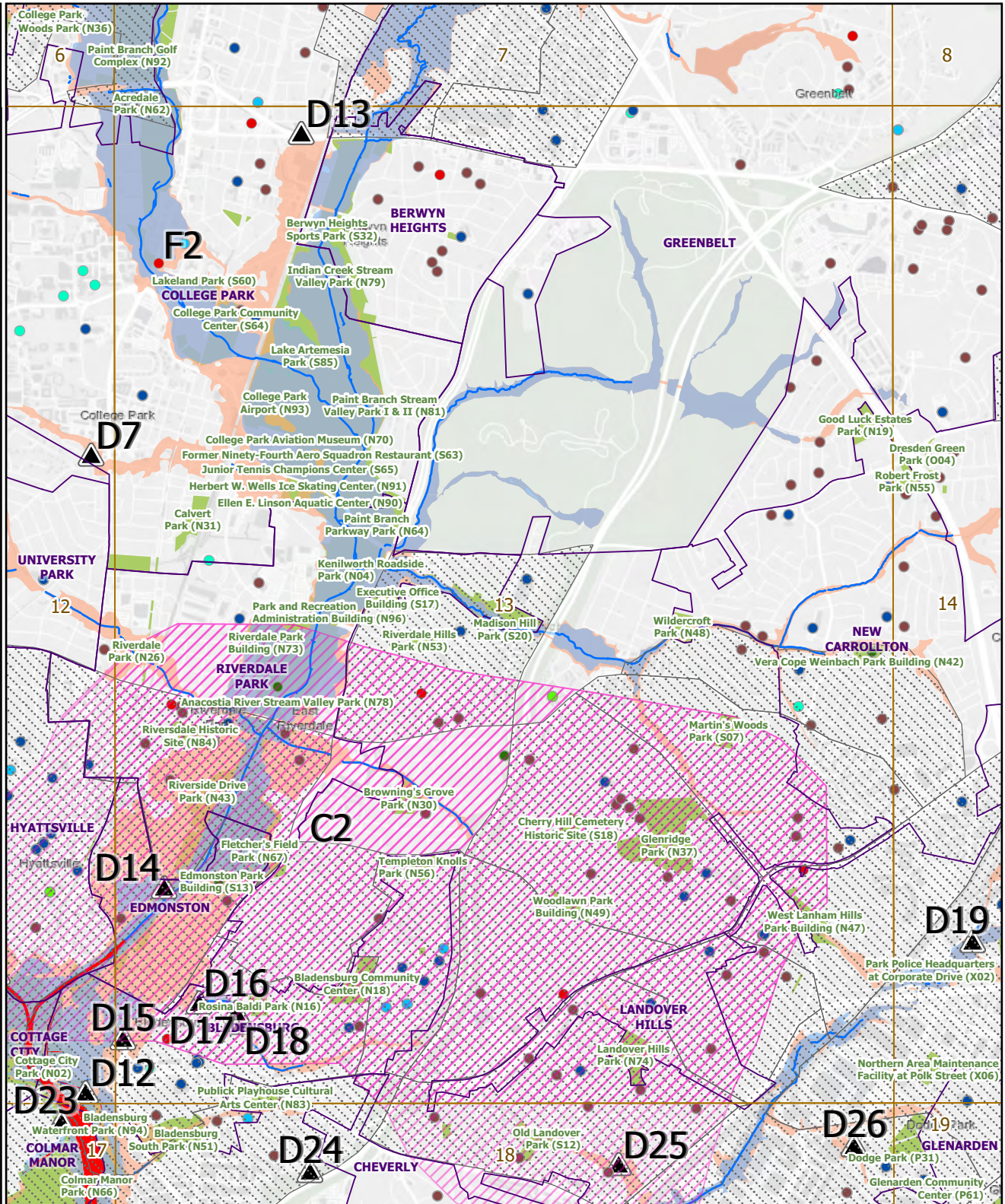
- Census Tracts with SVI Score > 75%

- ### Boundaries
- Panel
  - Municipal Boundary
  - County Boundary

- ### High Tide Flooding
- NOAA High Tide Flood Threshold
- ### FEMA 100-year Floodplain
- VE - Coastal High Hazard Area
  - A: AE: AH: AO: OPEN WATER
- ### DPIE Floodplain



Features may not be to scale





# Overview:

## Panel 14 of 57

- ### Key Features
- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

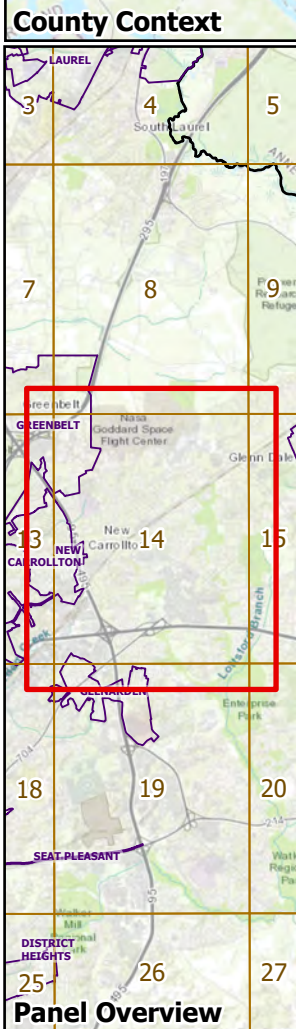
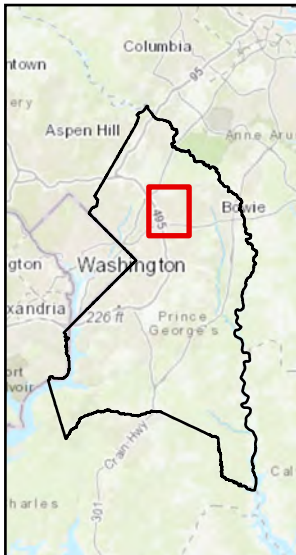
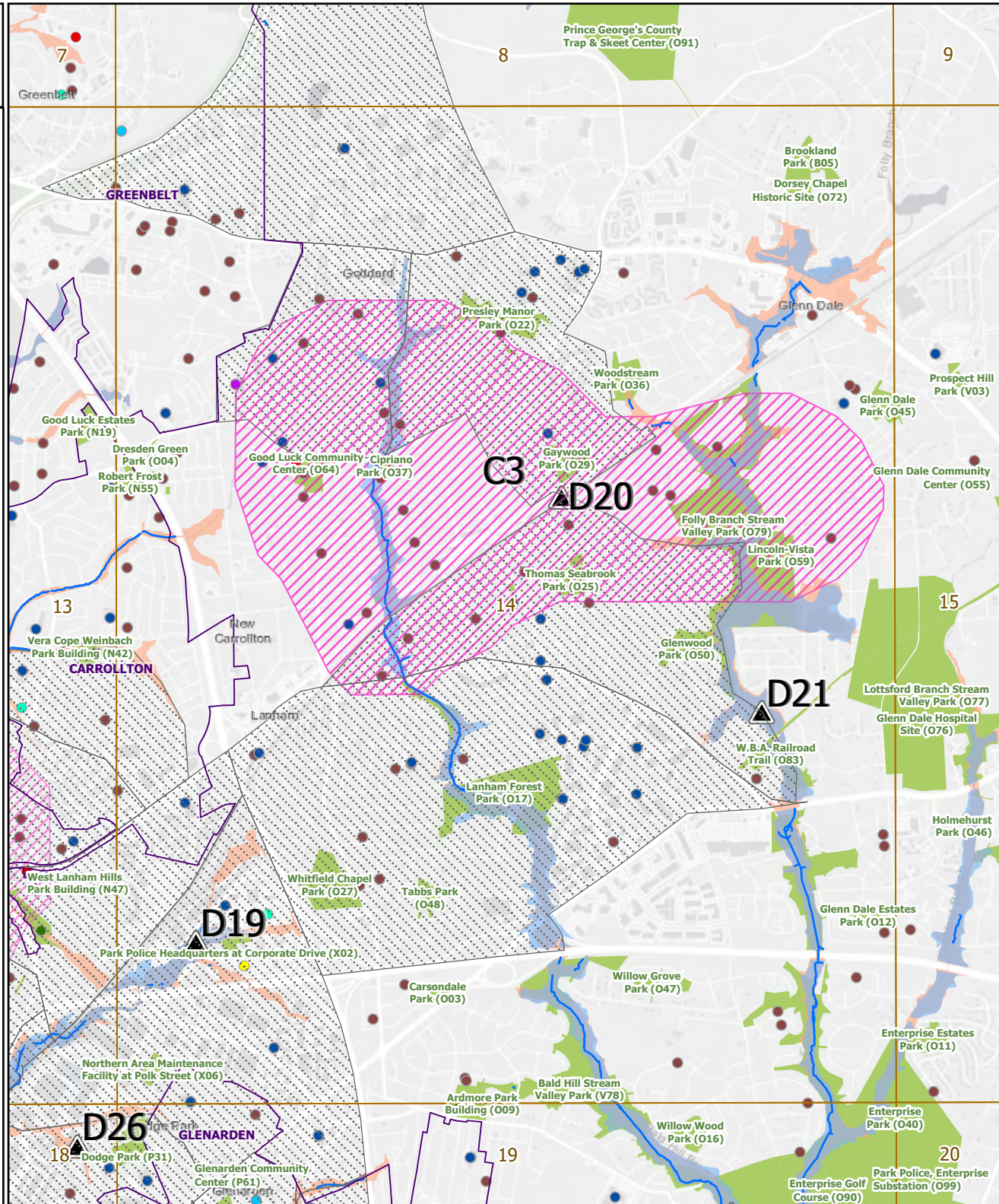
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain





# Overview:

## Panel 15 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

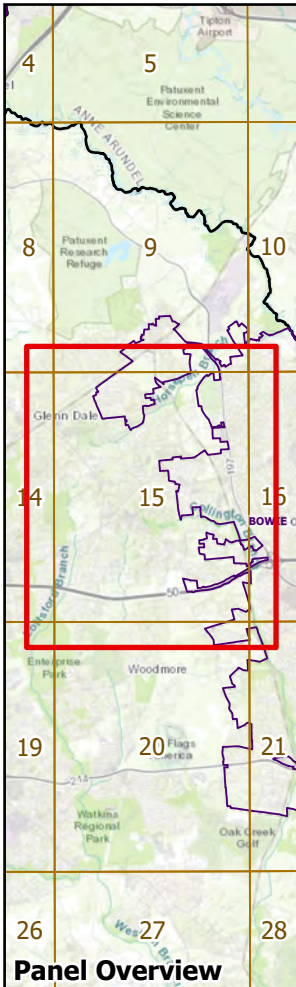
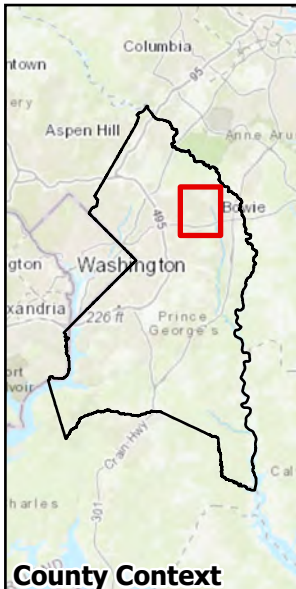
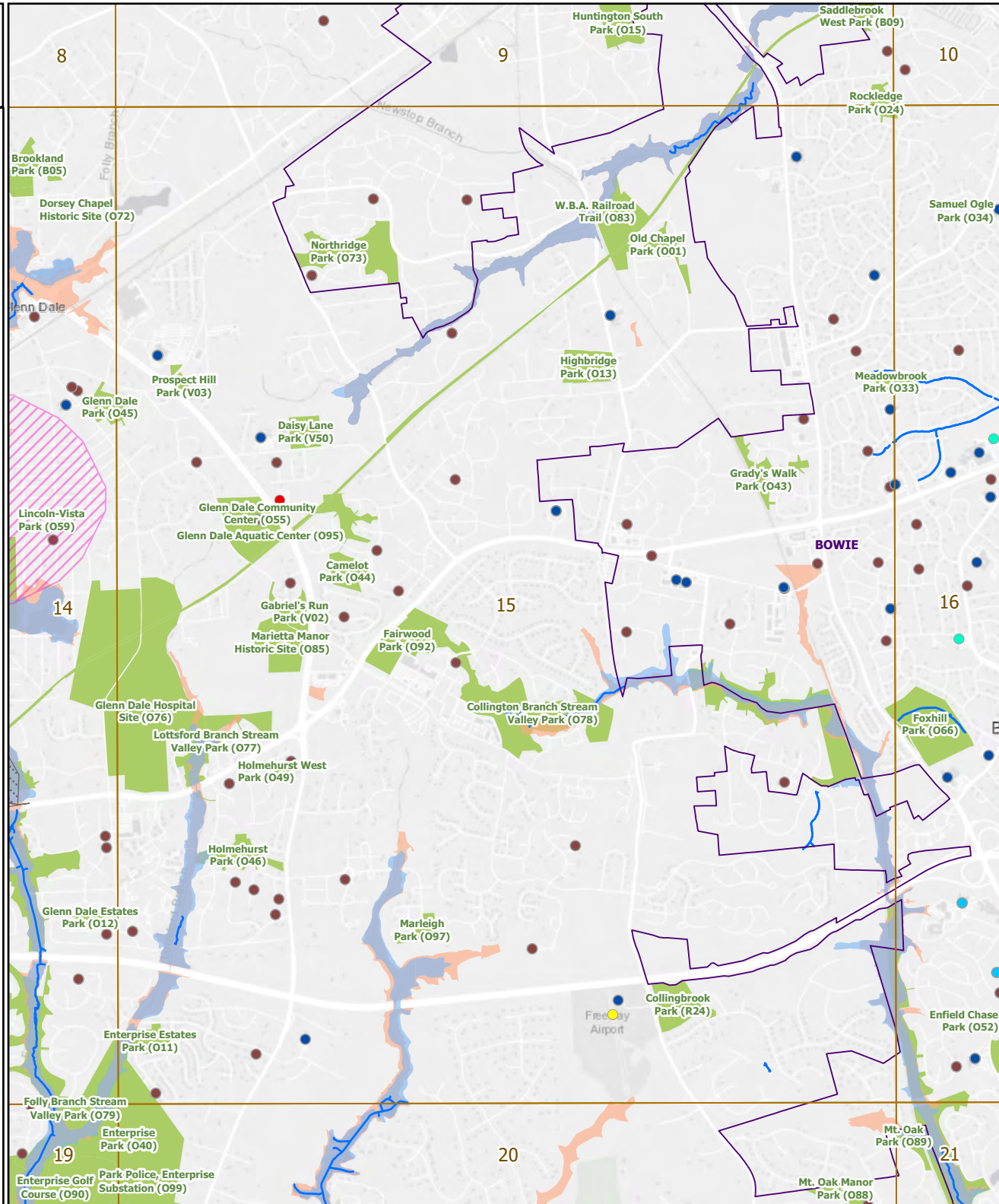
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



Features may  
not be to scale





# Overview:

## Panel 16 of 57

- ### Key Features
- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

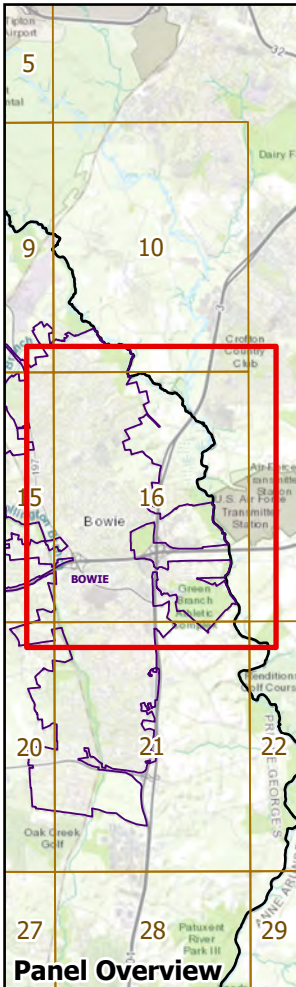
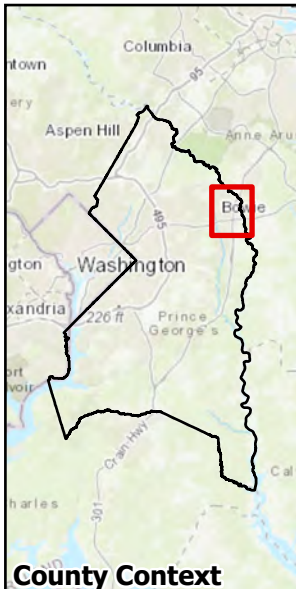
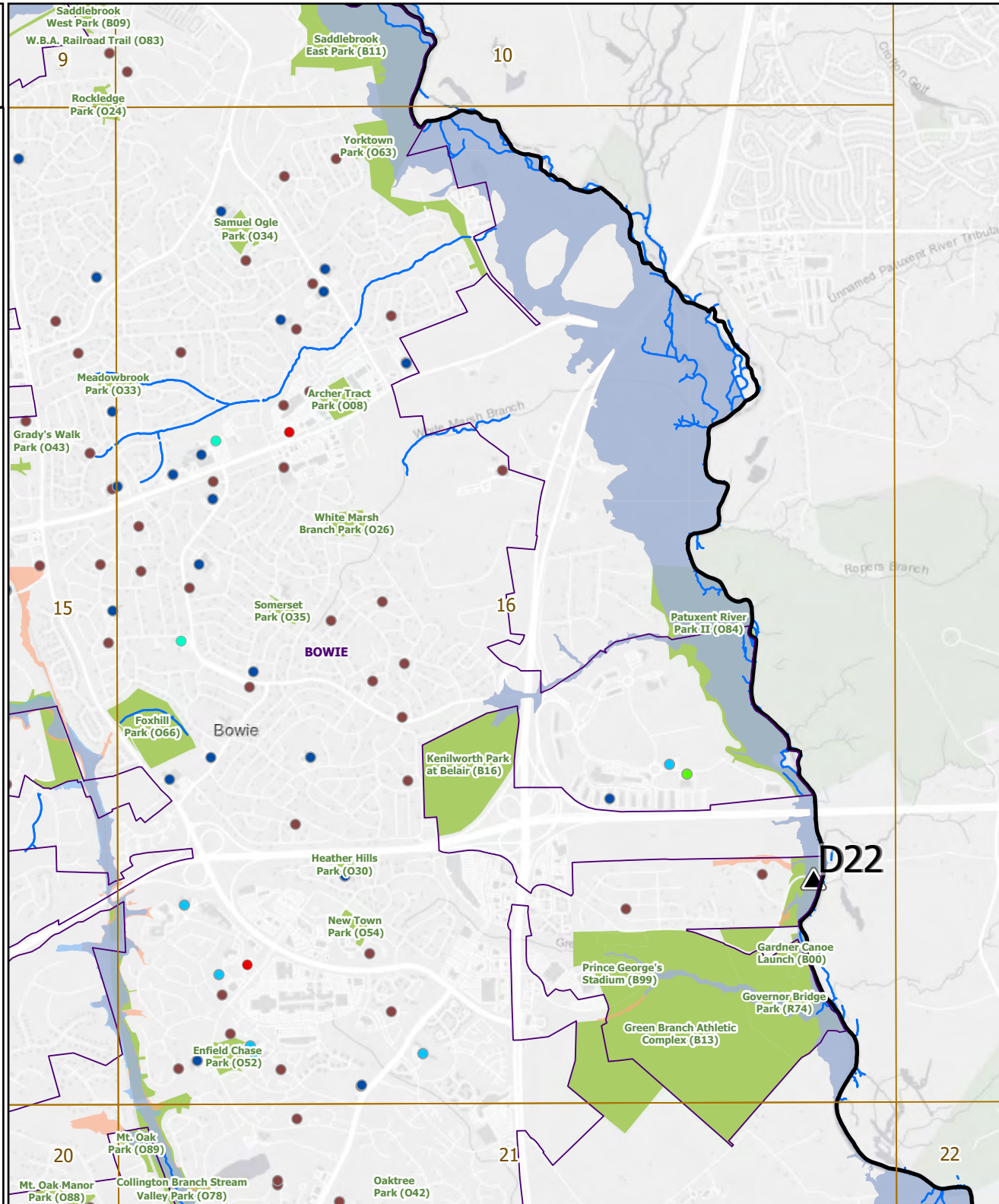
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



N  
Features may  
not be to scale




















# Overview:

## Panel 17 of 57




### Key Features

-  DPW&T-Identified Roads and Structures
  -  311/911/FEMA Hotspot Areas
  -  Stream Centers and Drainage
  -  M-NCPPC Parks
- ### Critical Facilities
-  Airports
  -  Police Stations
  -  Fire Stations
  -  Hospitals
  -  Schools
  -  Recreation Centers
  -  Senior Activity Centers
  -  Libraries
  -  Day Care Centers
  -  Senior Housing

### Social Vulnerability Index (SVI)

-  Census Tracts with SVI Score > 75%



### Boundaries

-  Panel
-  Municipal Boundary
-  County Boundary

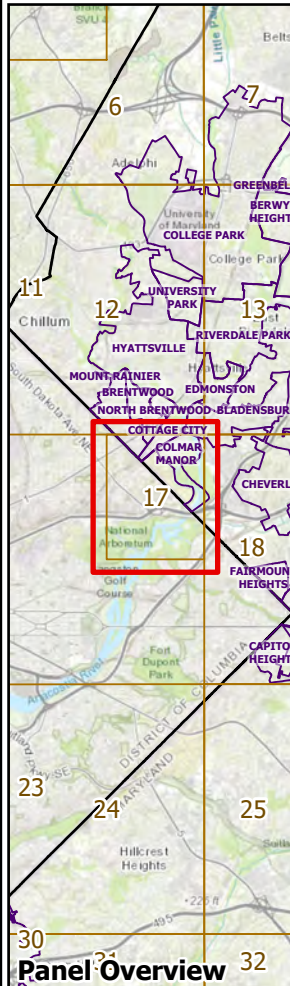
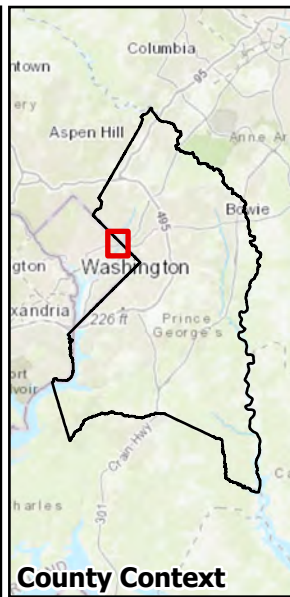
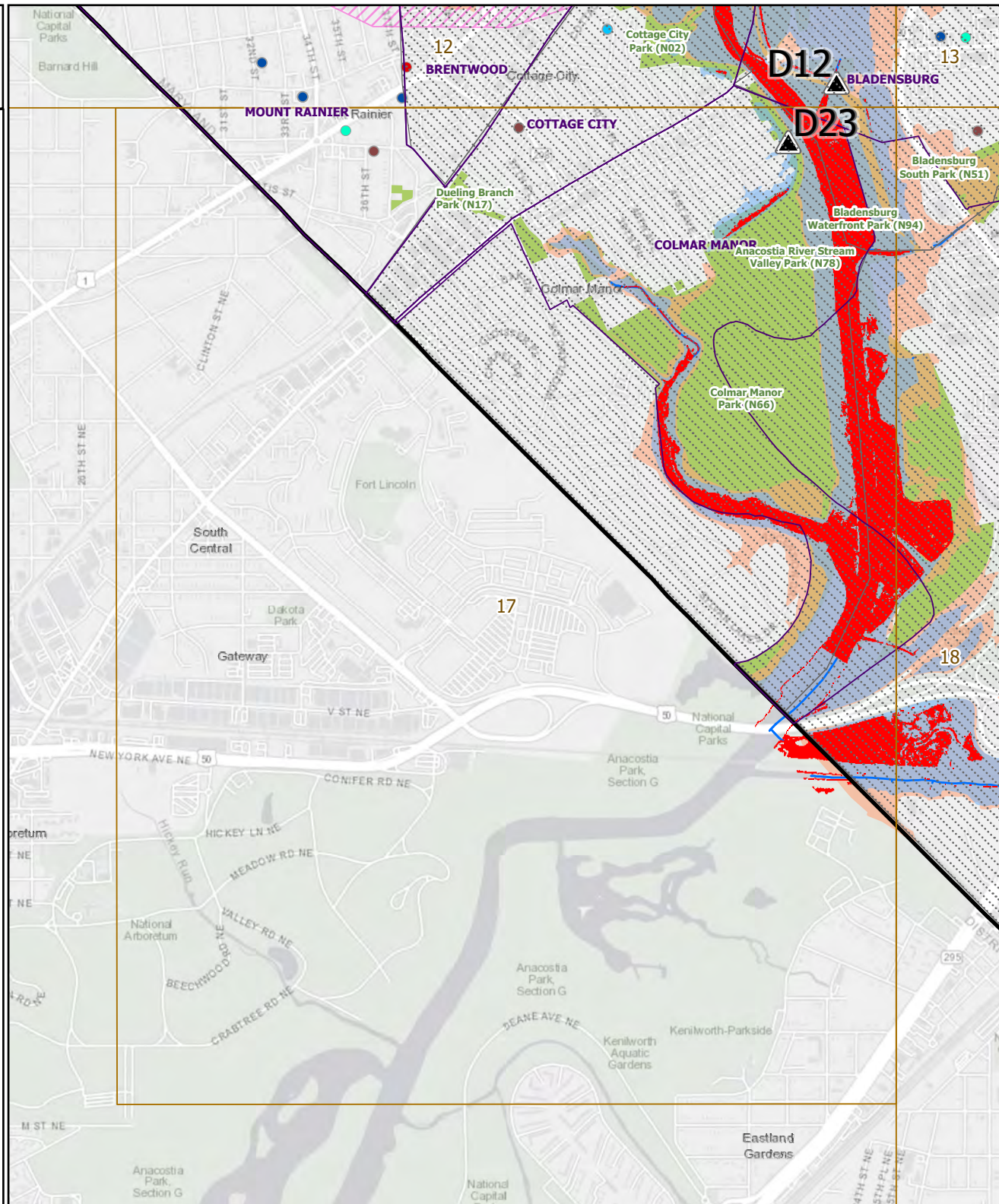
### High Tide Flooding

-  NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

-  VE - Coastal High Hazard Area
-  A: AE: AH: AO: OPEN WATER

### DPIE Floodplain





Overview:  
Panel 18 of 57

- Key Features**
- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- Critical Facilities**
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

**Social Vulnerability Index (SVI)**

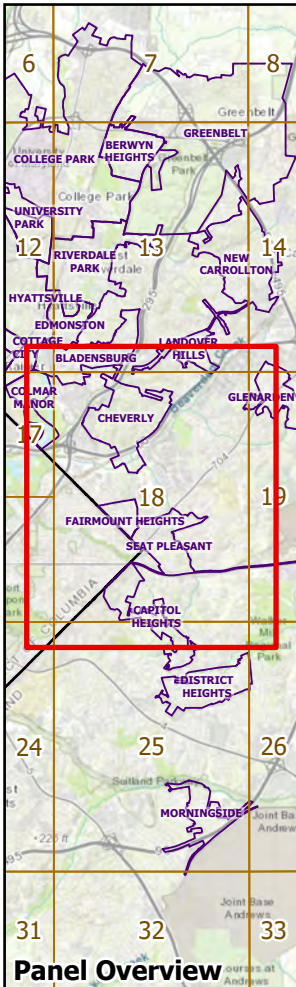
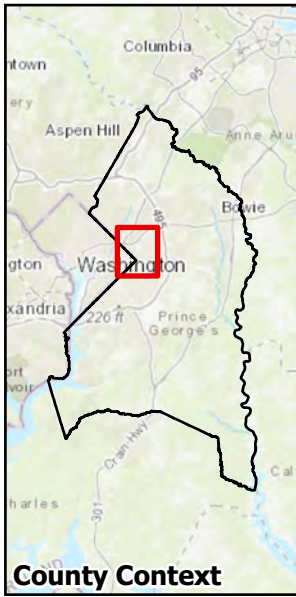
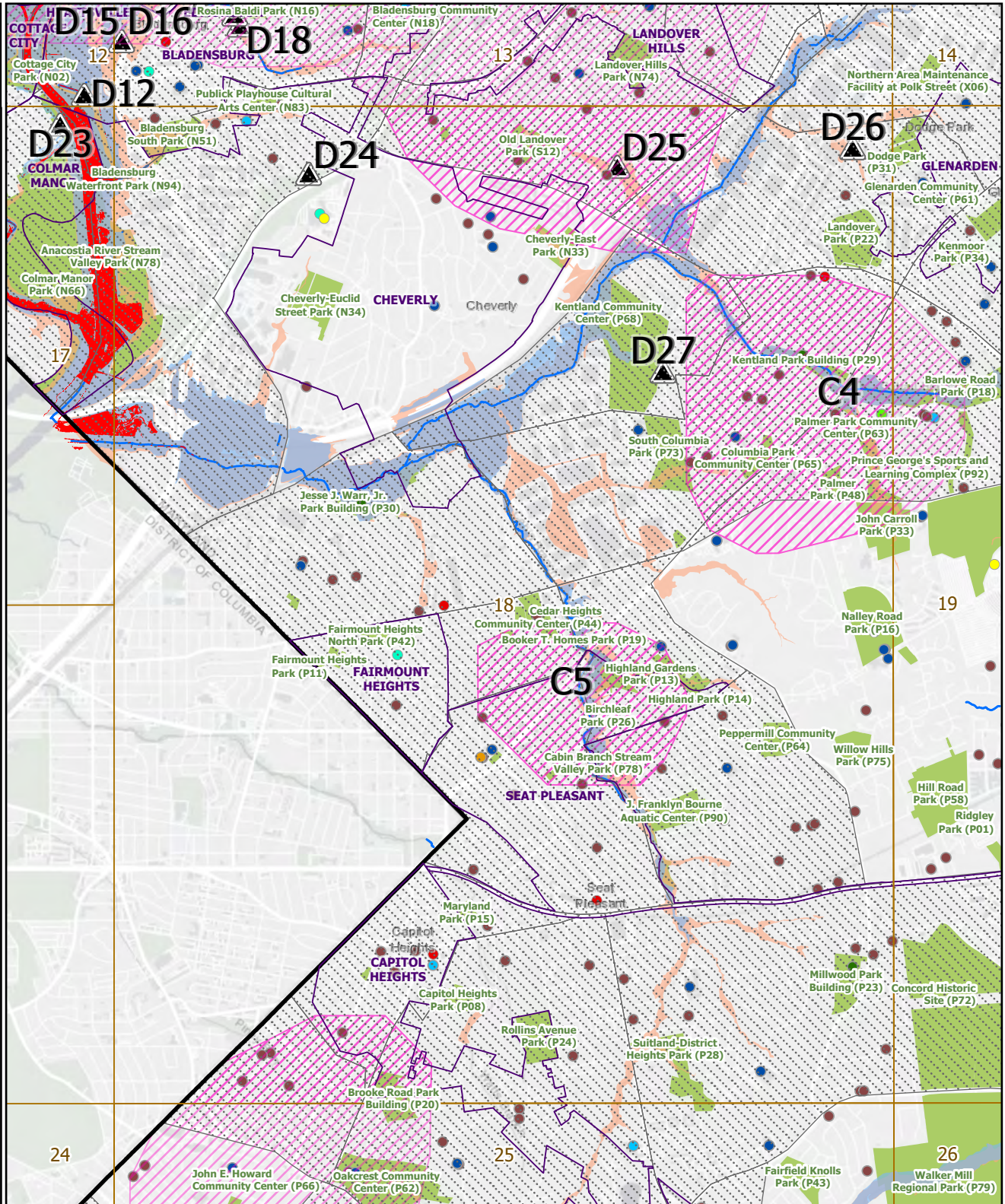
- Census Tracts with SVI Score > 75%

- Boundaries**
- Panel
  - Municipal Boundary
  - County Boundary

- High Tide Flooding**
- NOAA High Tide Flood Threshold
- FEMA 100-year Floodplain**
- VE - Coastal High Hazard Area
  - A: AE: AH: AO: OPEN WATER
- DPIE Floodplain**
- 



Features may not be to scale





# Overview:

## Panel 19 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

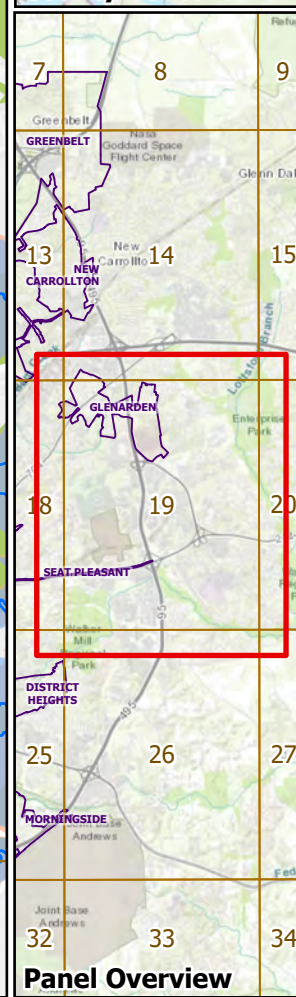
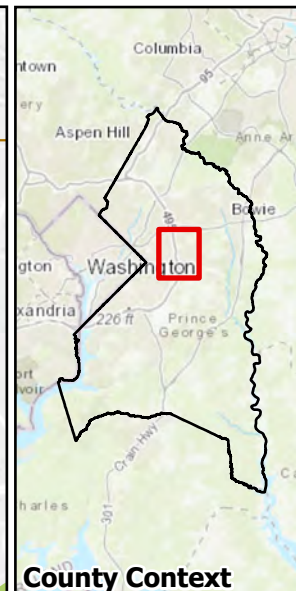
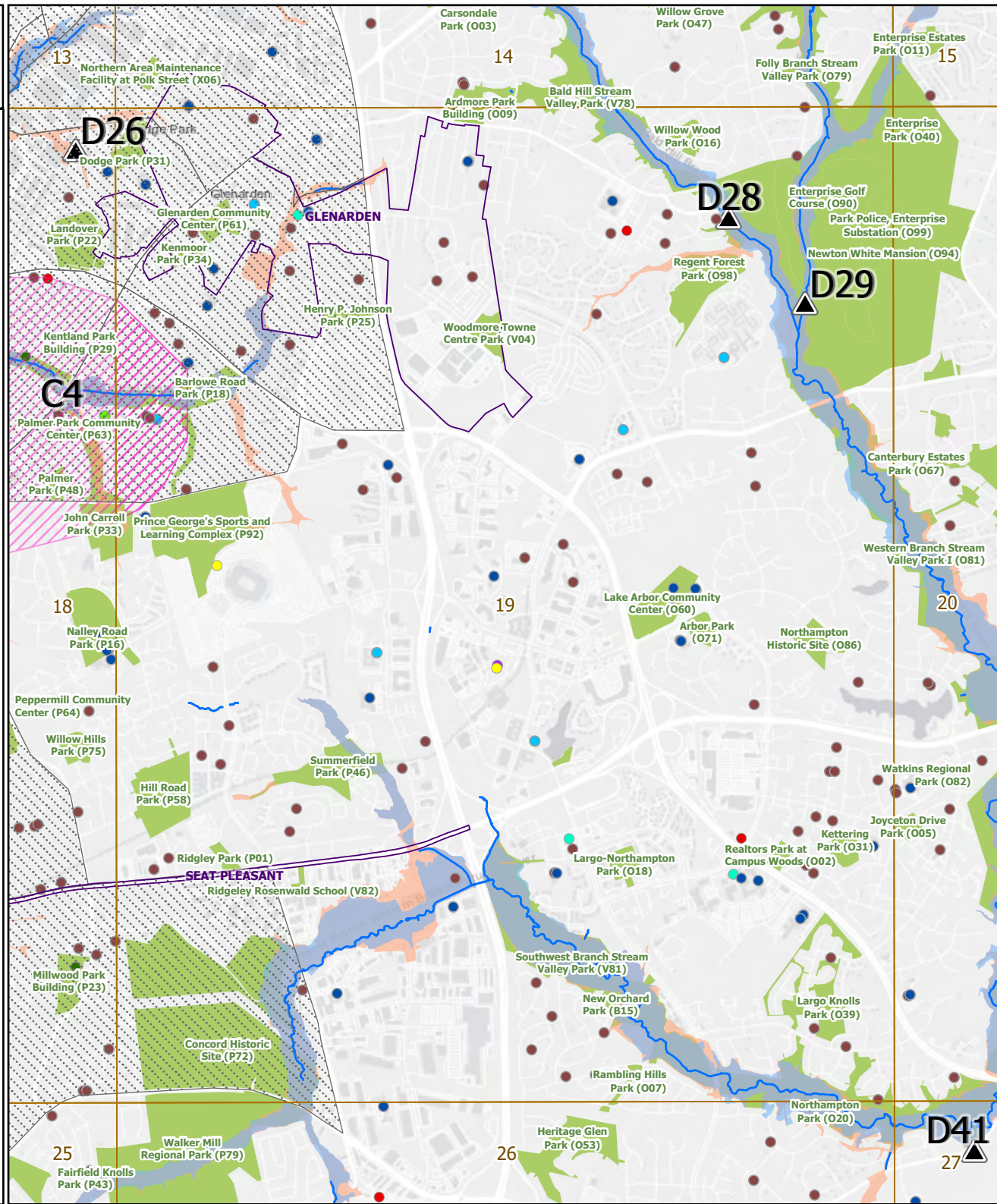
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



Features may  
not be to scale





# Overview:

## Panel 20 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

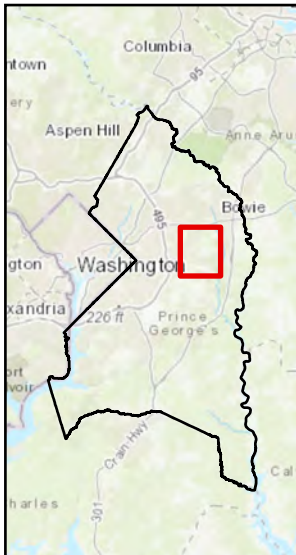
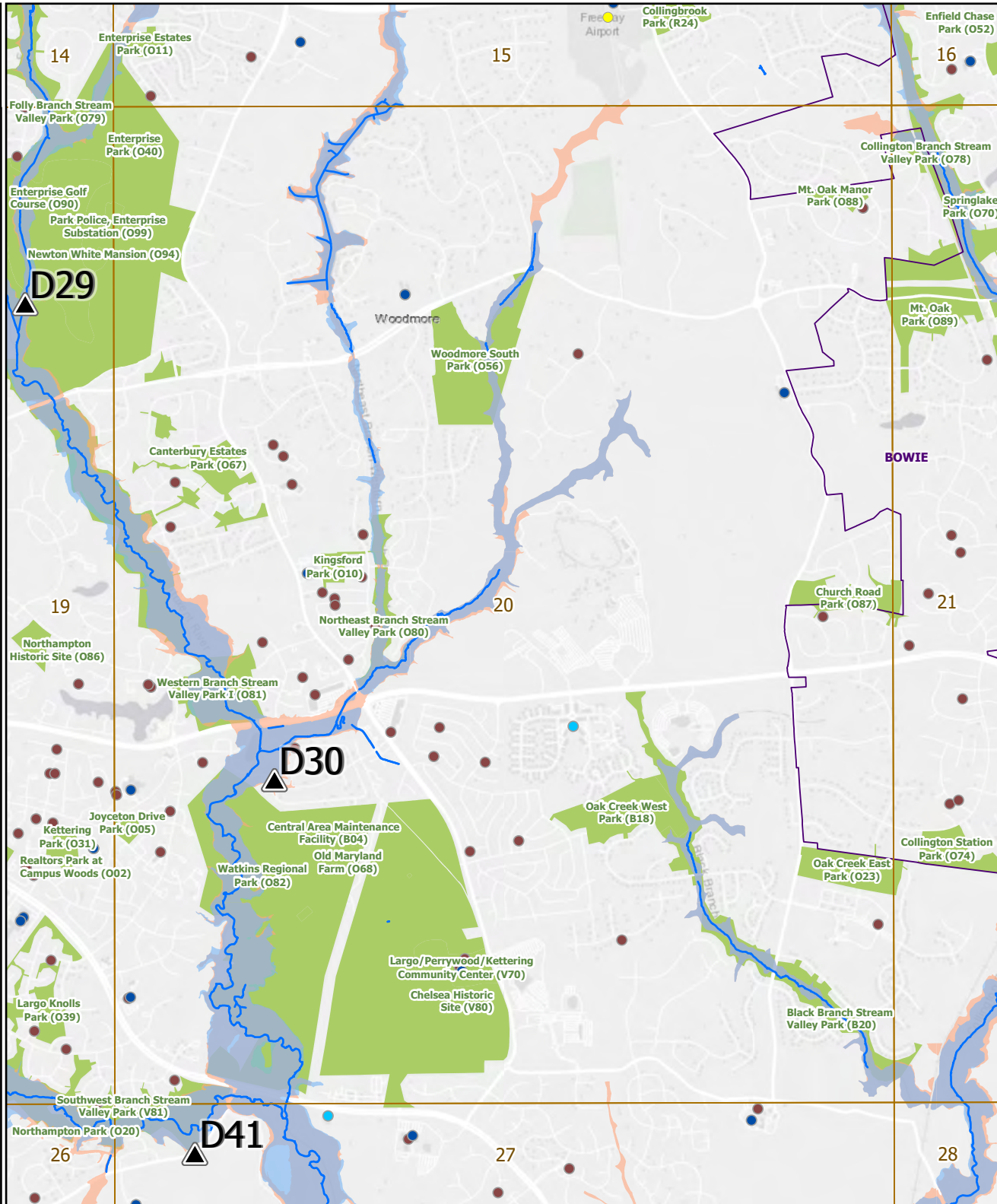
### High Tide Flooding

- NOAA High Tide Flood Threshold

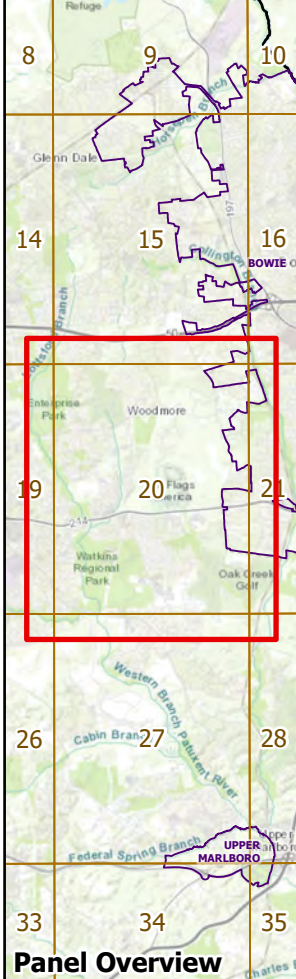
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



County Context



Panel Overview



# Overview:

## Panel 21 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

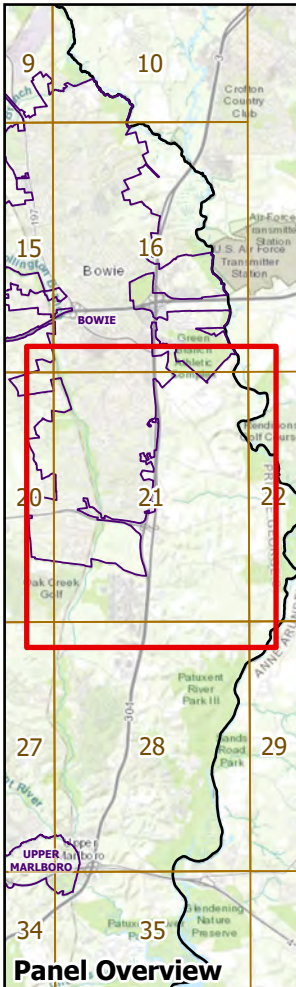
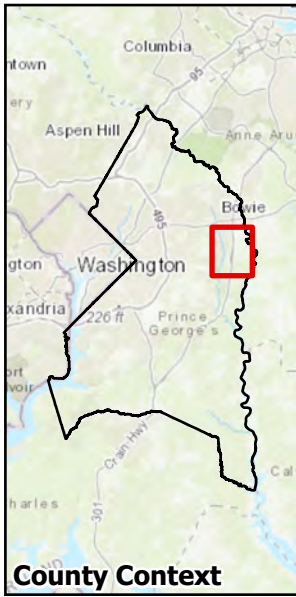
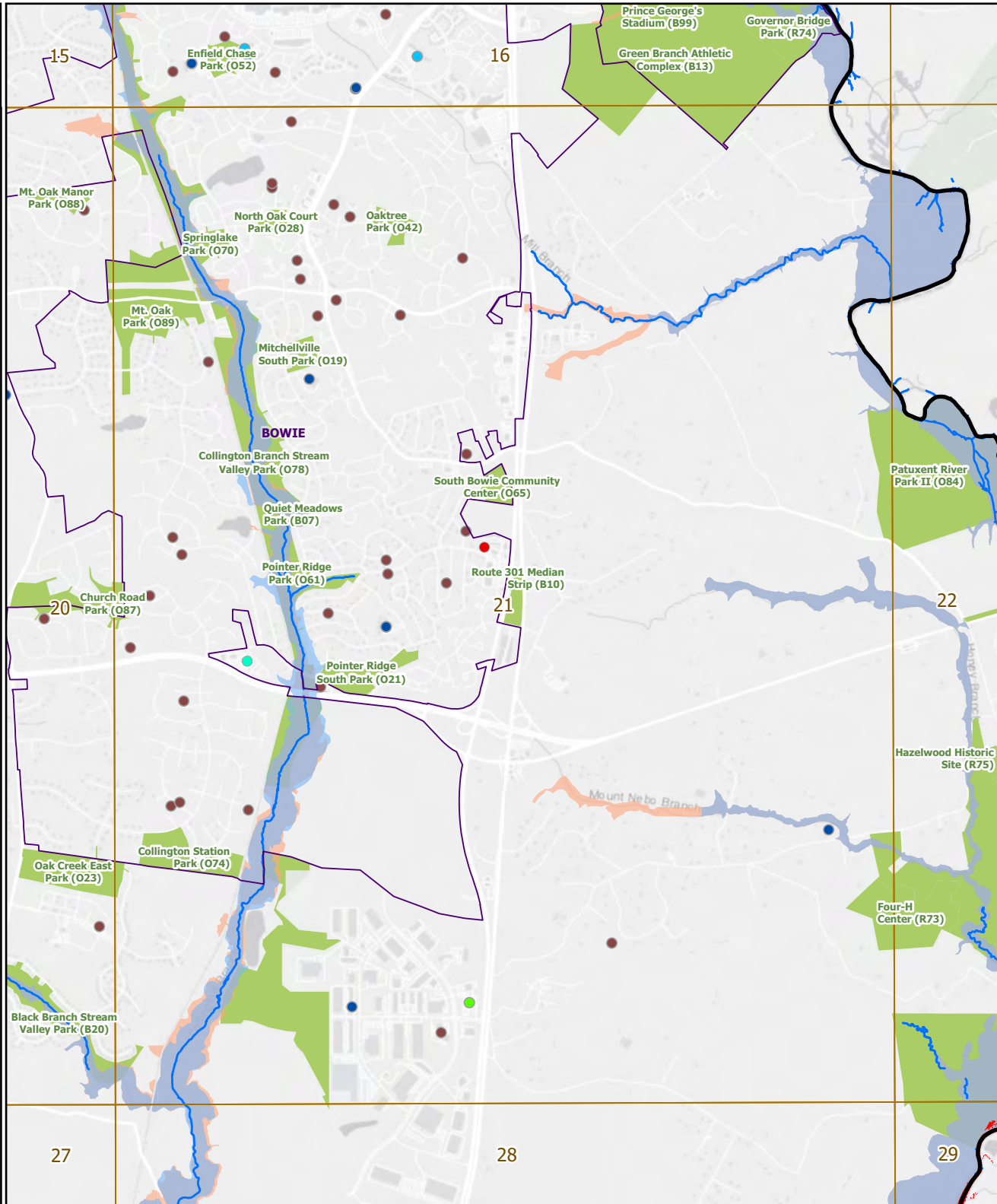
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



# Overview:

## Panel 22 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

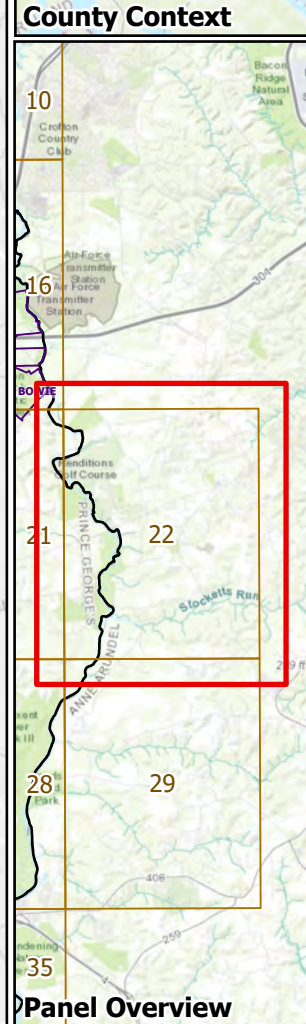
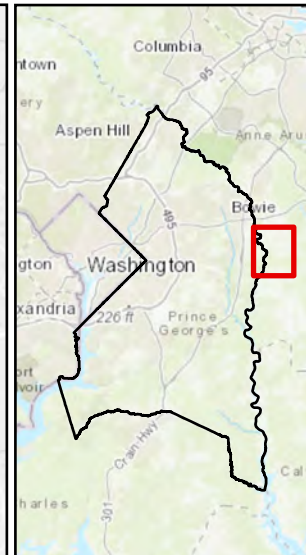
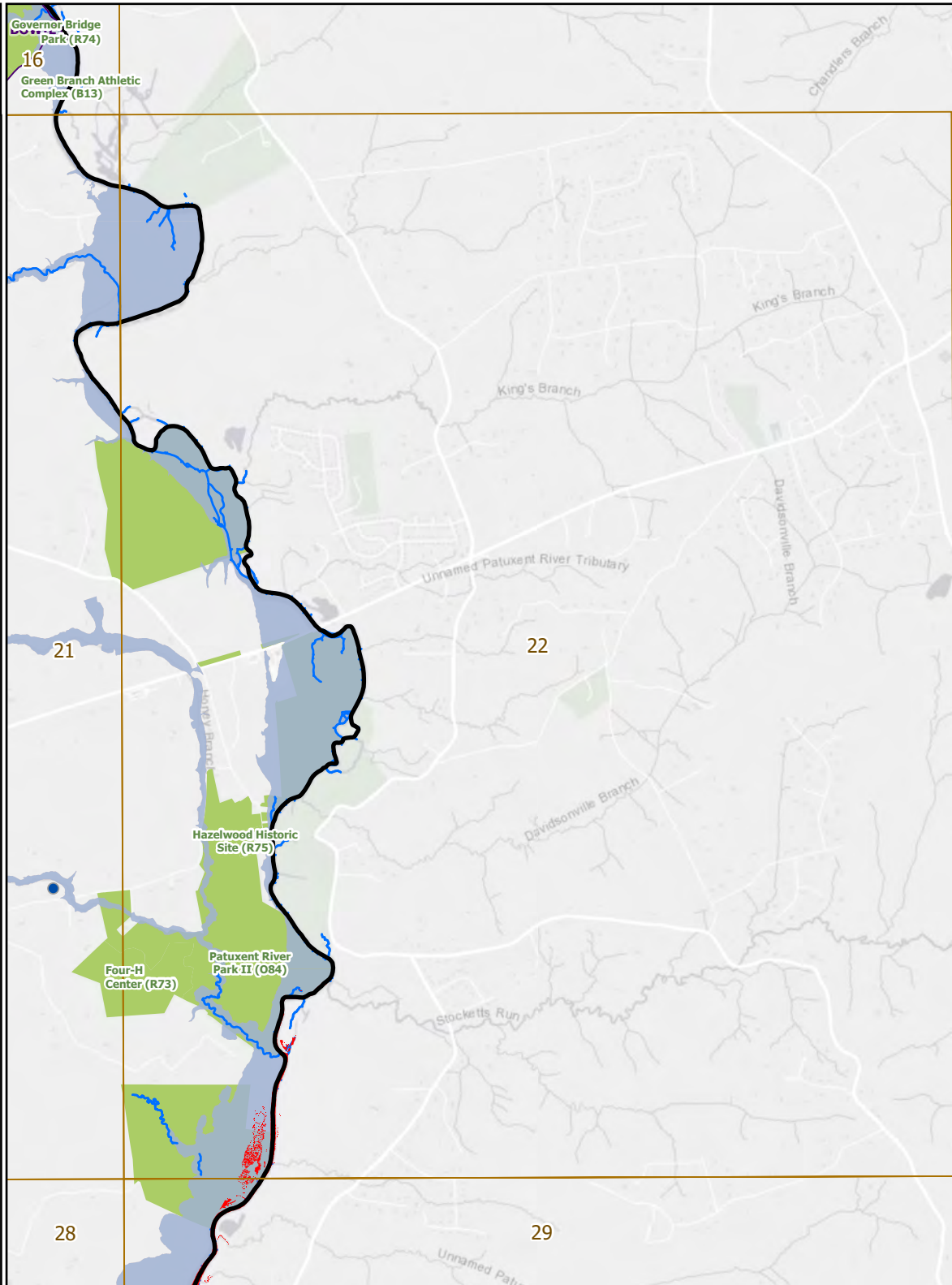
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain





# Overview:

## Panel 23 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

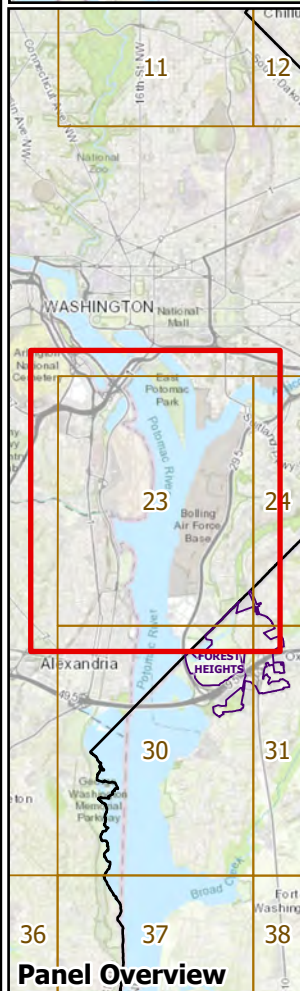
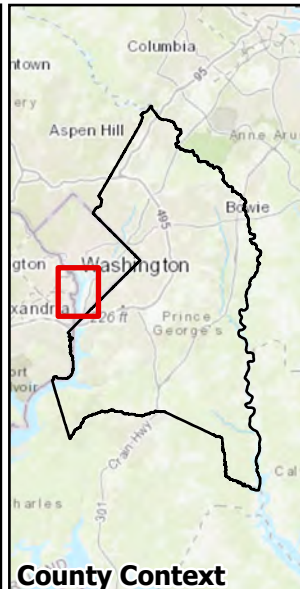
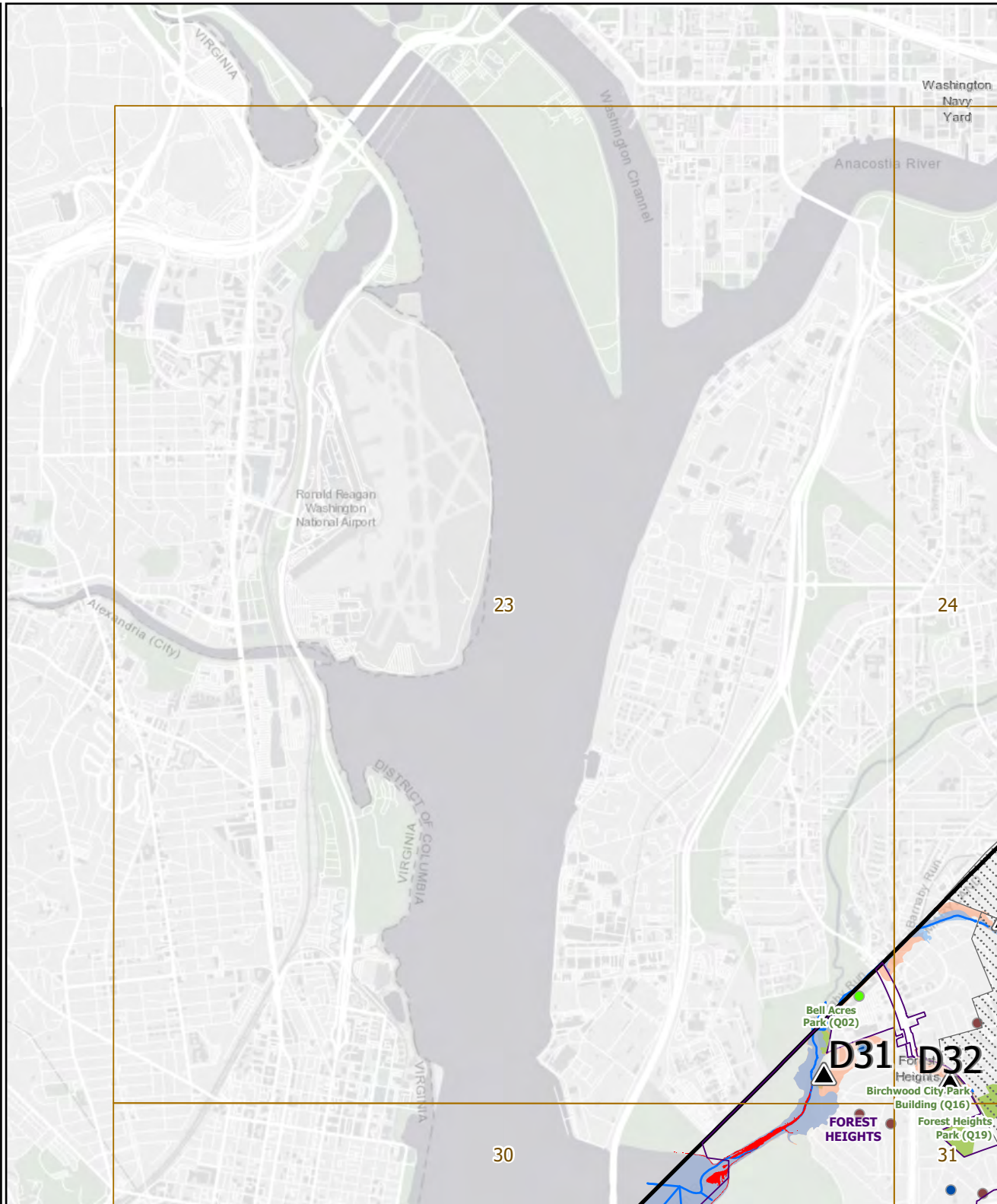
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain





# Overview:

## Panel 24 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

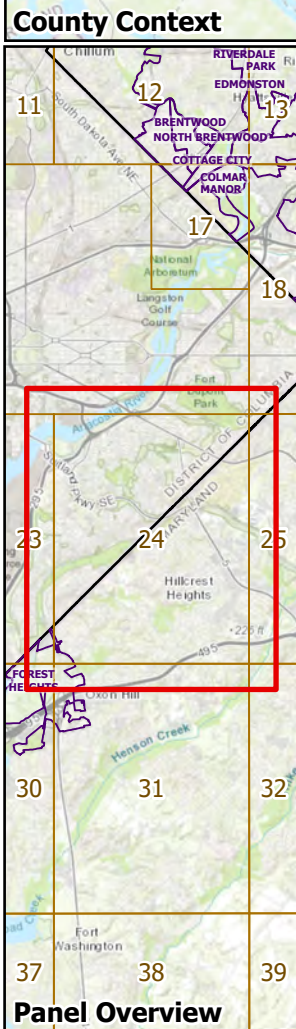
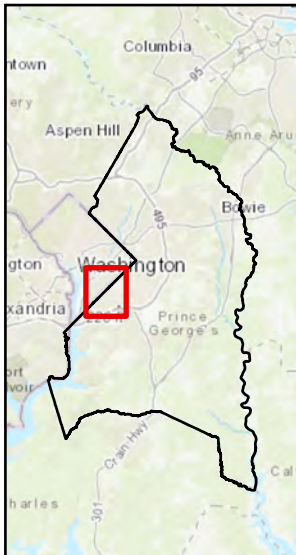
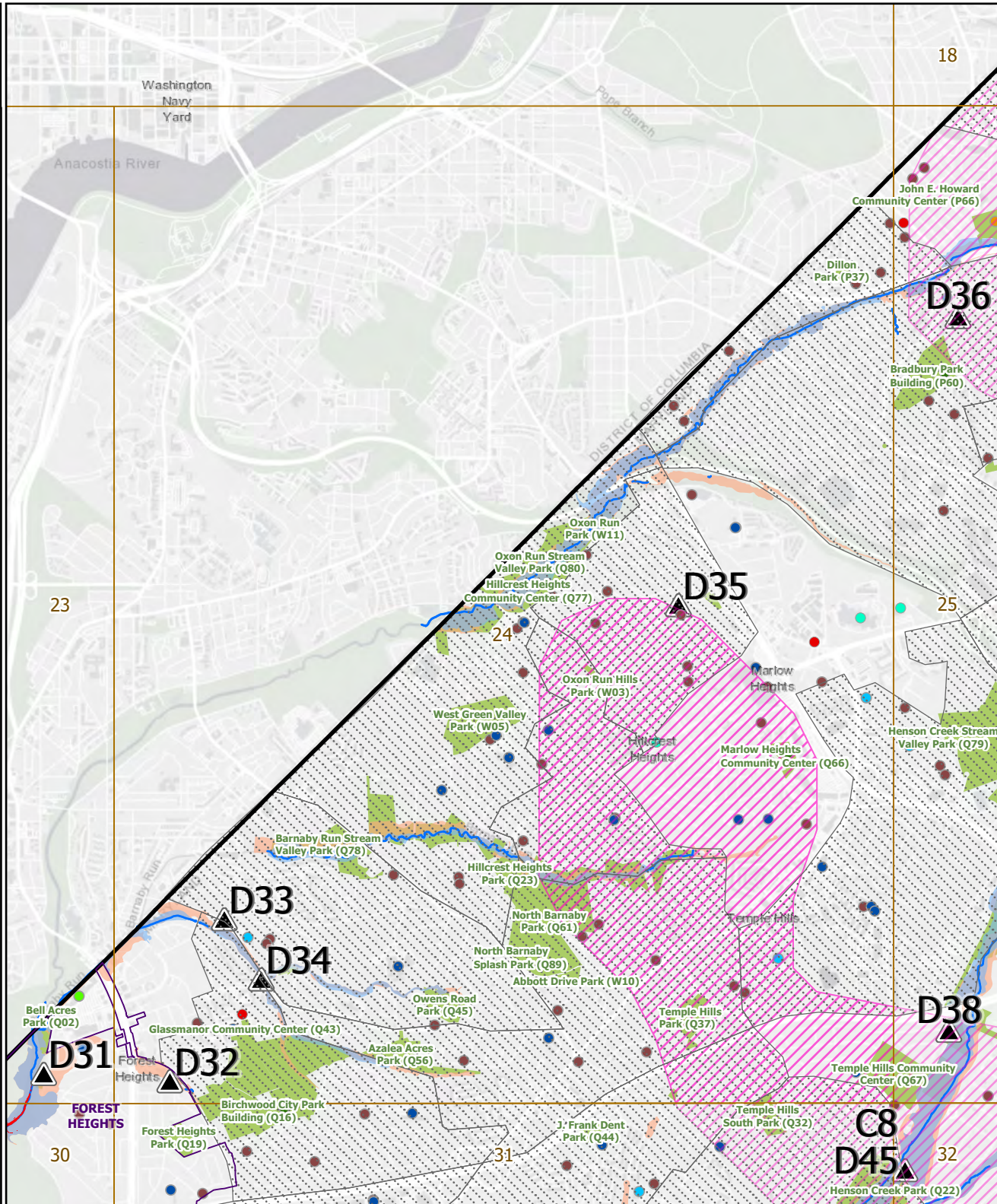
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain





# Overview:

## Panel 25 of 57

- ### Key Features
- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

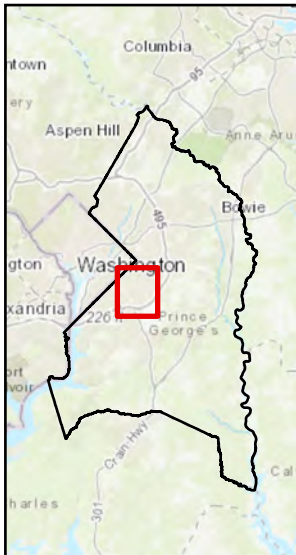
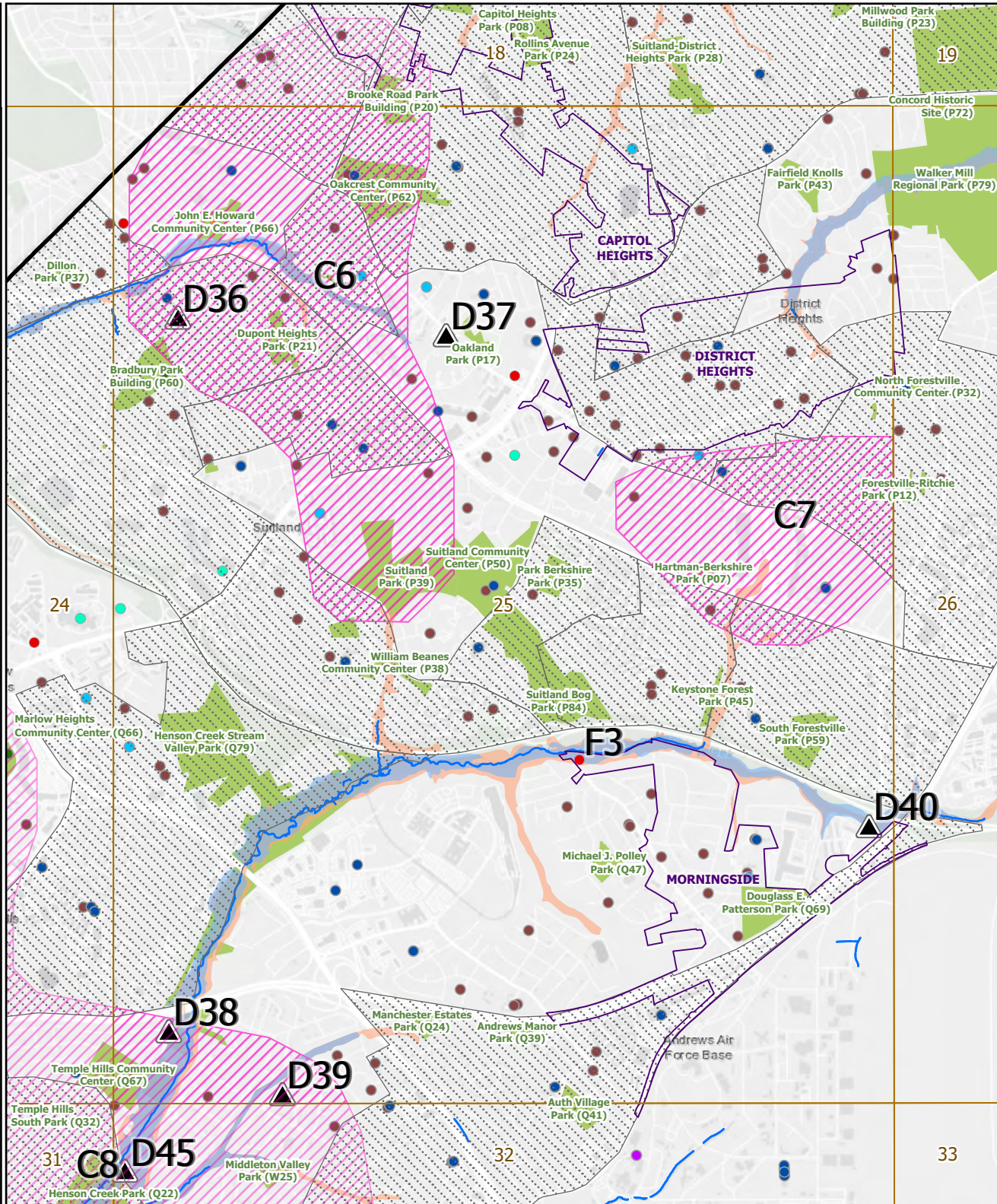
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

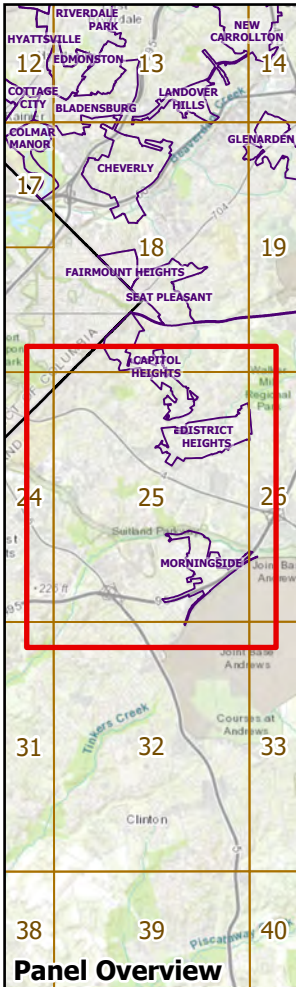
### DPIE Floodplain



Features may not be to scale



### County Context



### Panel Overview



# Overview:

## Panel 26 of 57

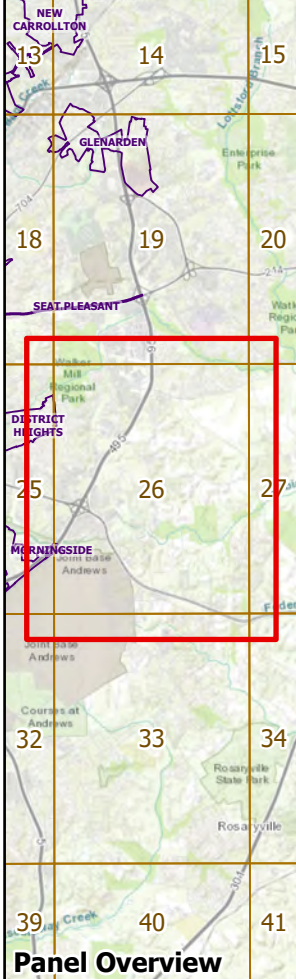
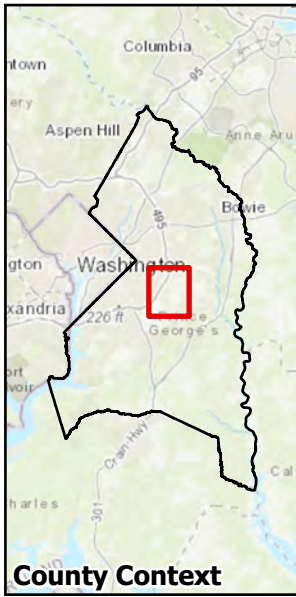
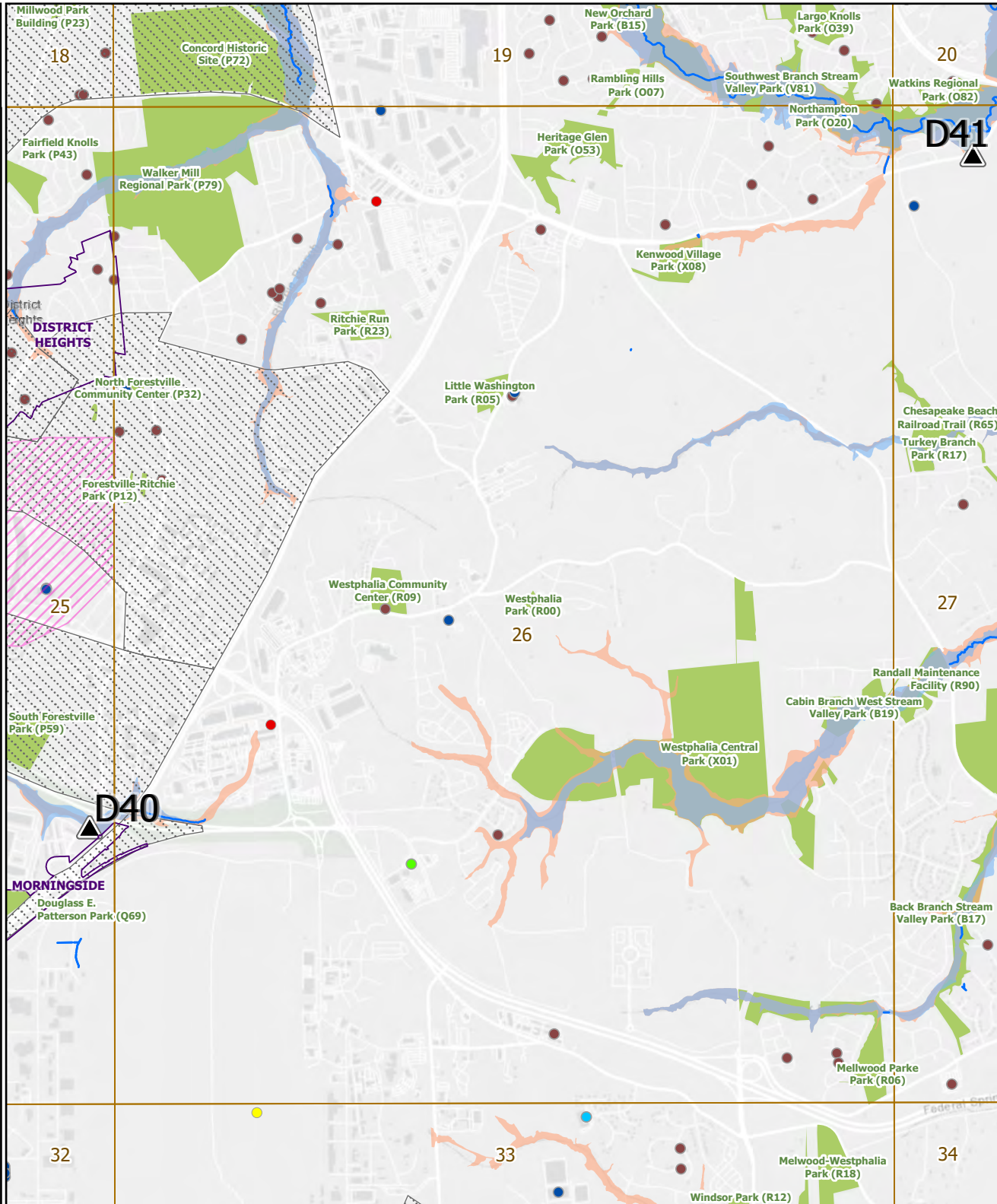
- ### Key Features
- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

Census Tracts with SVI Score > 75%

- ### Boundaries
- Panel
  - Municipal Boundary
  - County Boundary

- ### High Tide Flooding
- NOAA High Tide Flood Threshold
- ### FEMA 100-year Floodplain
- VE - Coastal High Hazard Area
  - A: AE: AH: AO: OPEN WATER
- ### DPIE Floodplain





# Overview:

## Panel 27 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

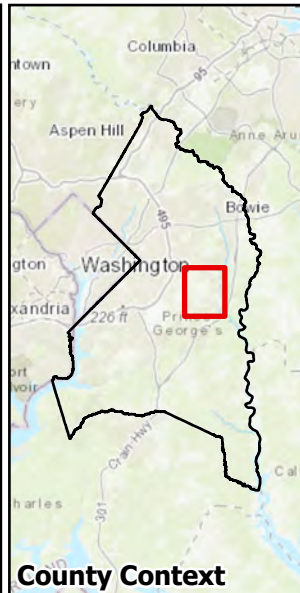
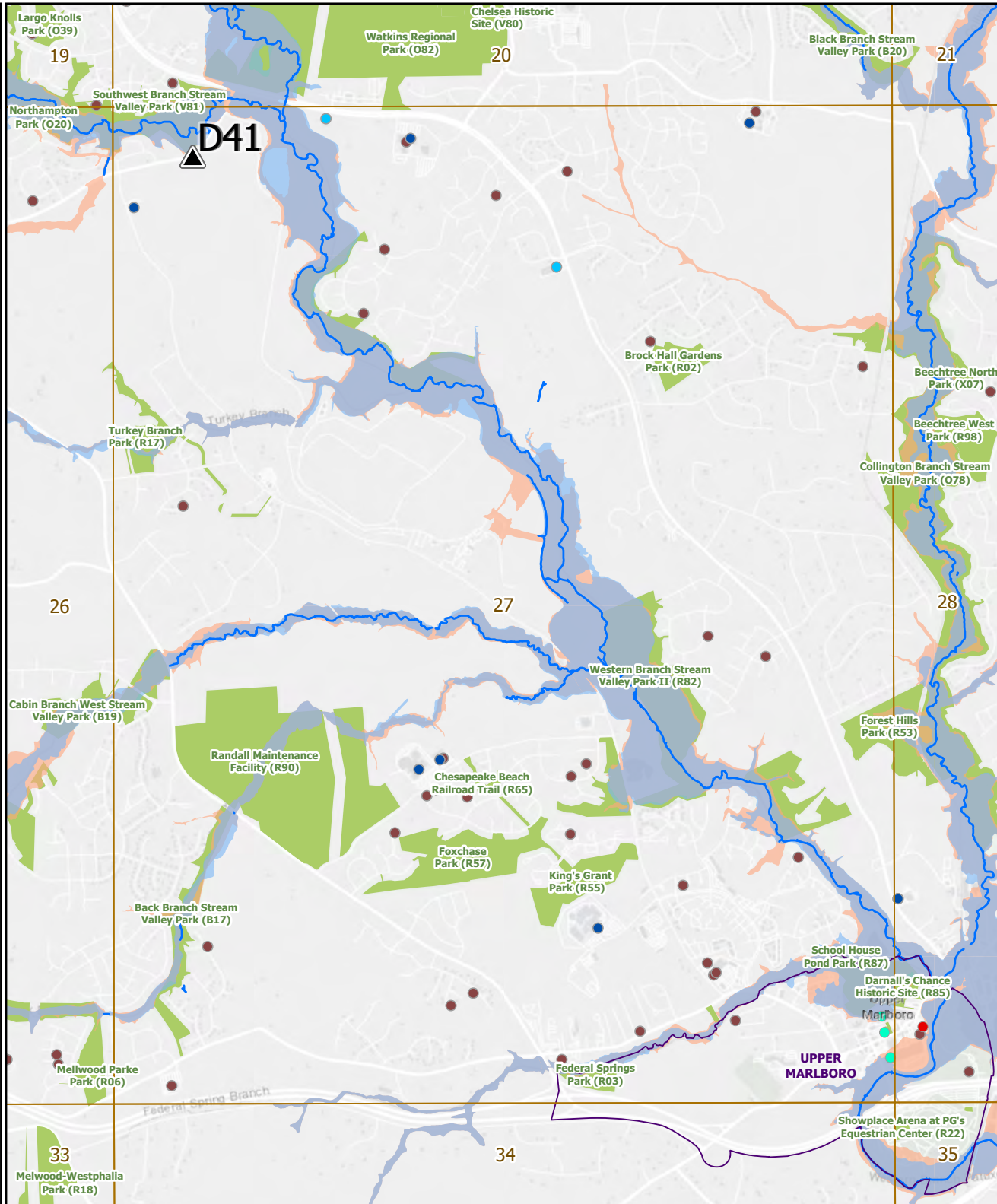
### High Tide Flooding

- NOAA High Tide Flood Threshold

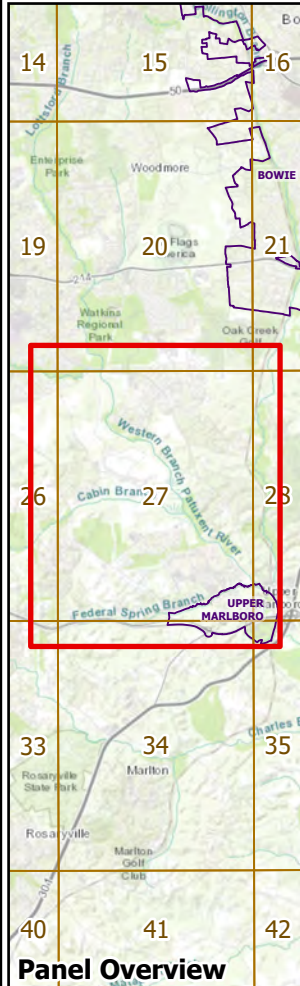
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



County Context



Panel Overview

# Overview:

## Panel 28 of 57

- ### Key Features
- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

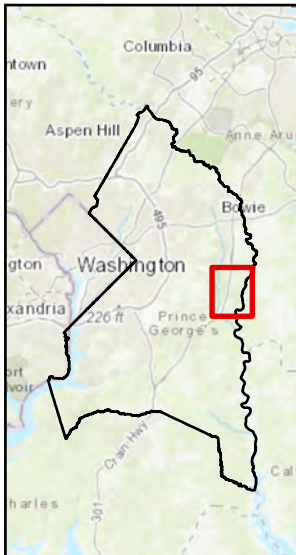
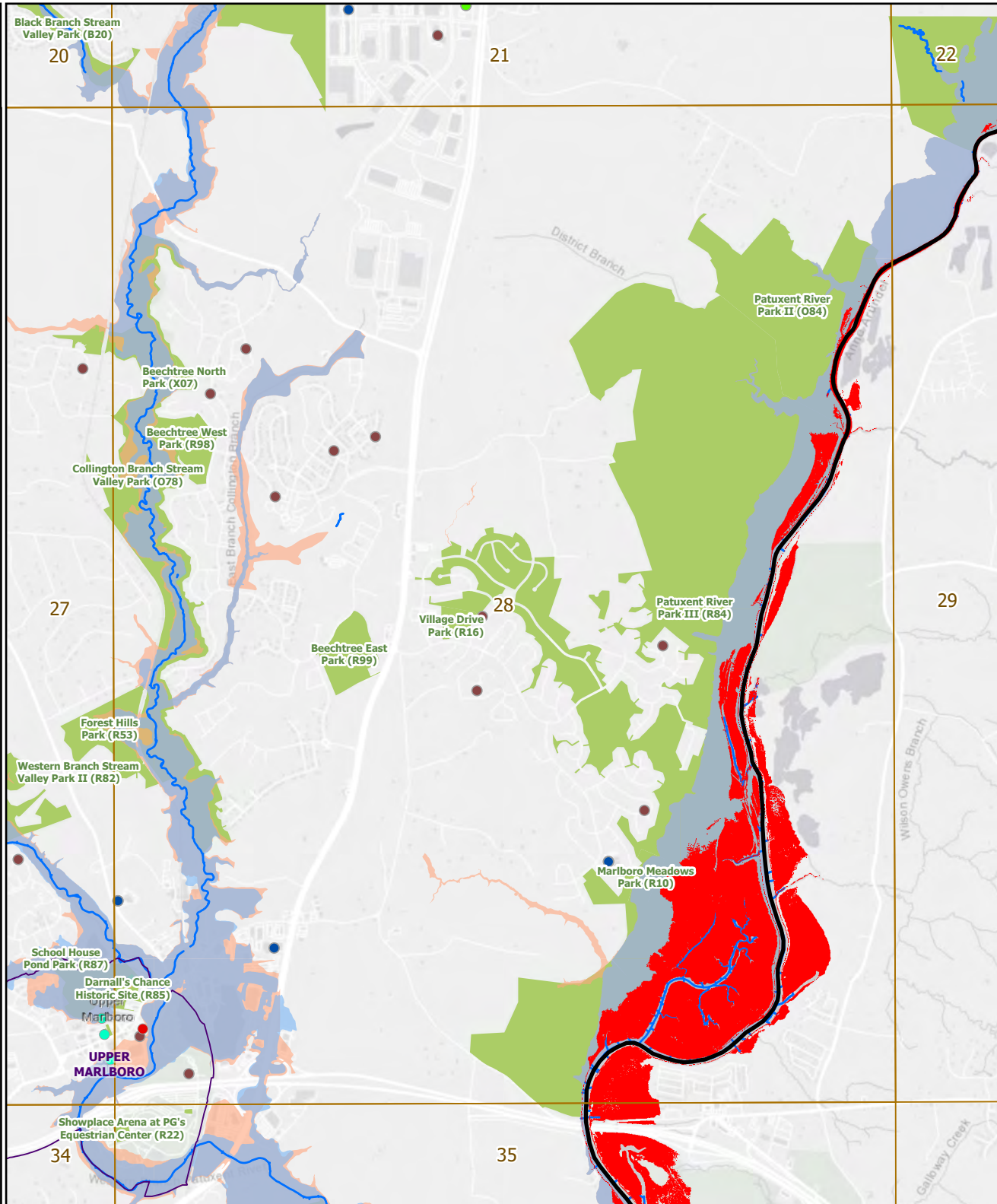
### High Tide Flooding

- NOAA High Tide Flood Threshold

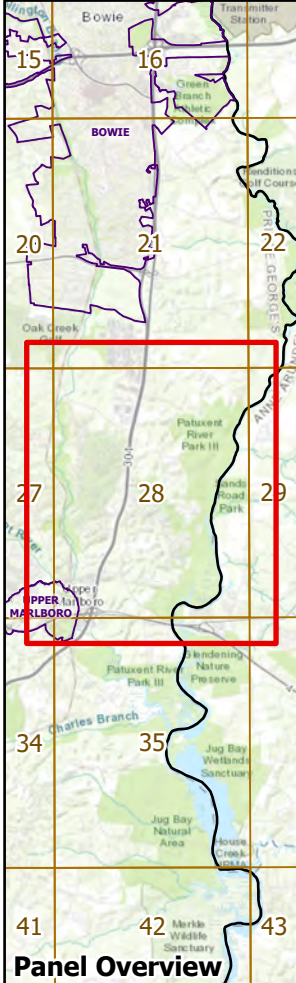
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



### County Context



### Panel Overview



# Overview:

## Panel 29 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

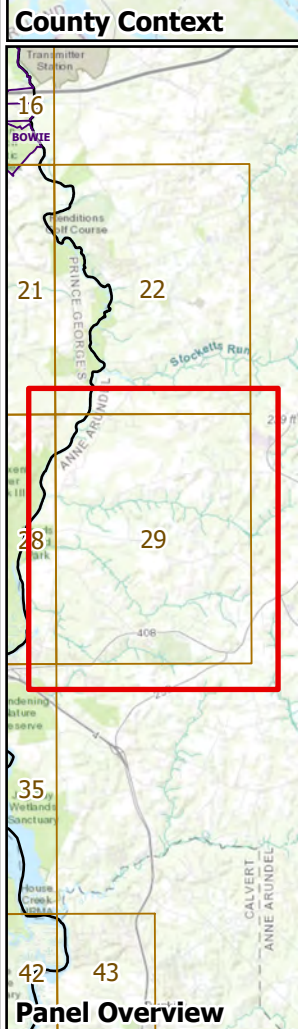
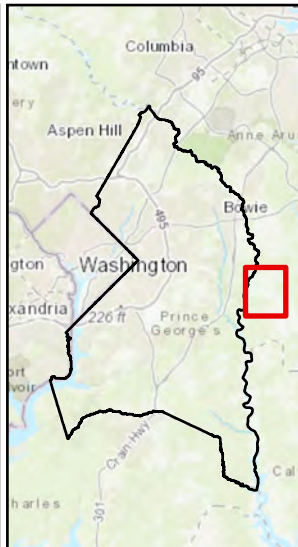
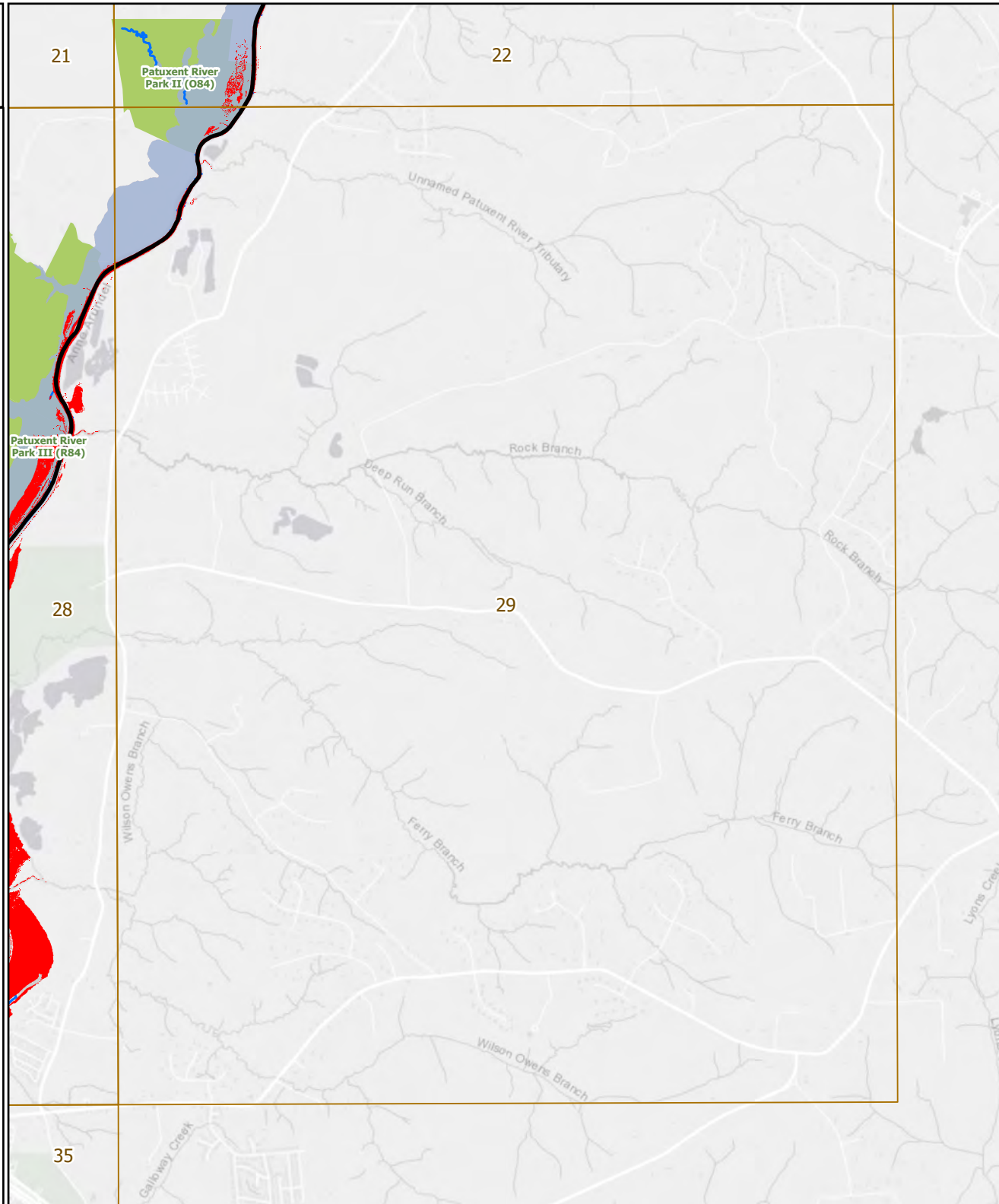
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



N  
Features may  
not be to scale





# Overview:

## Panel 30 of 57

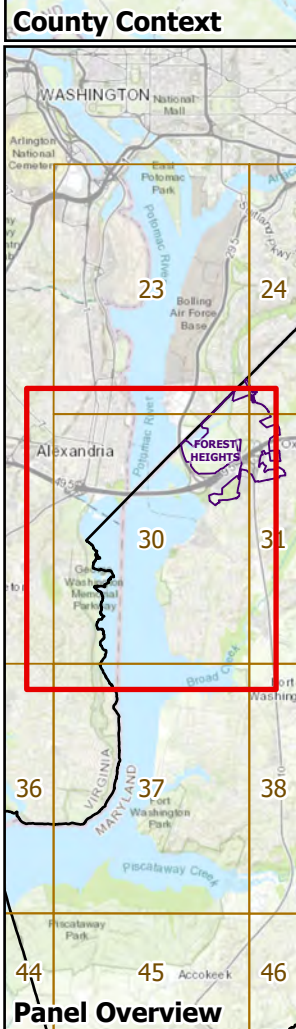
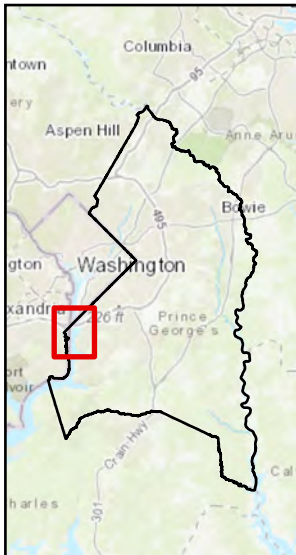
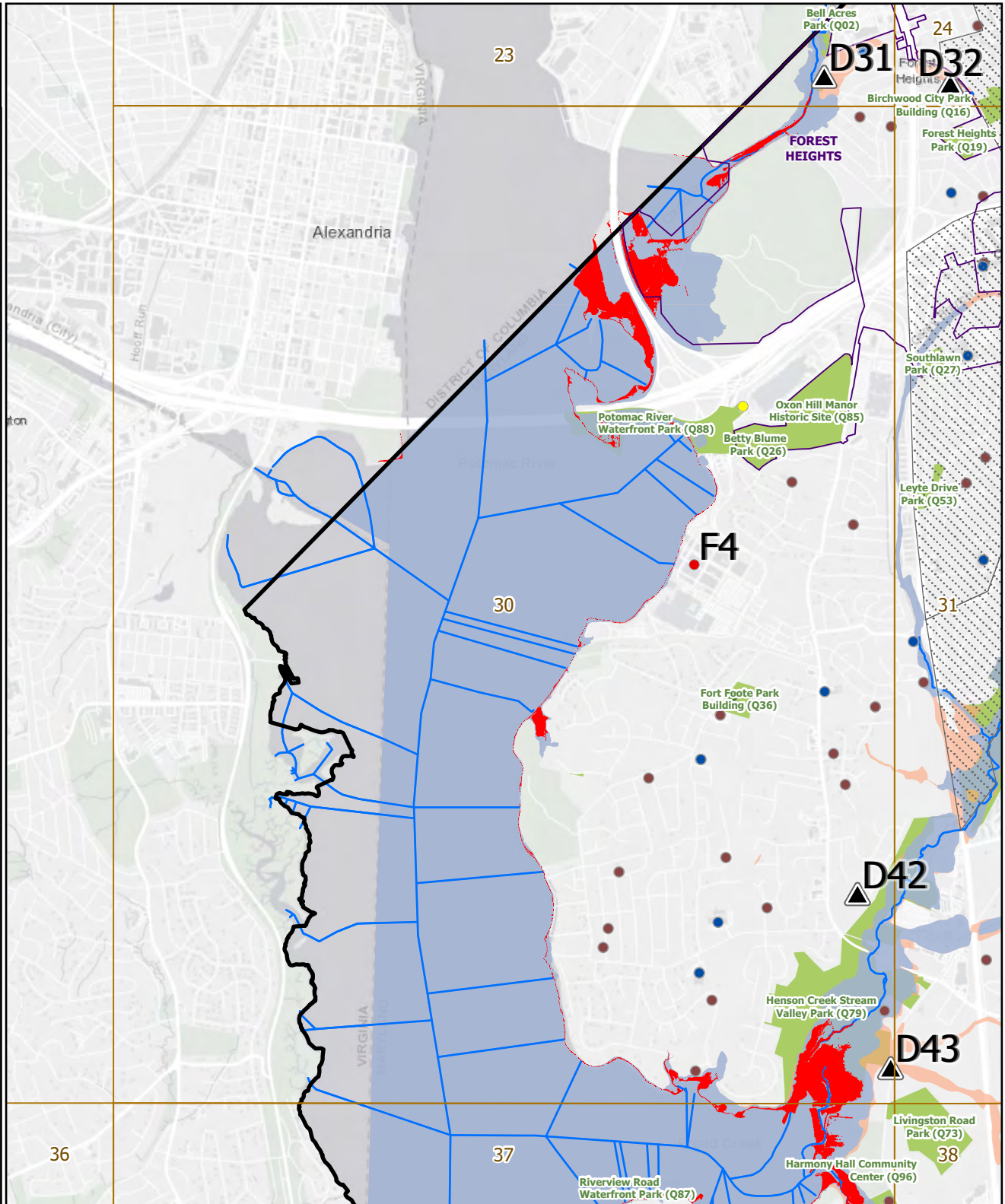
- ### Key Features
- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

Census Tracts with SVI Score > 75%

- ### Boundaries
- Panel
  - Municipal Boundary
  - County Boundary

- ### High Tide Flooding
- NOAA High Tide Flood Threshold
- ### FEMA 100-year Floodplain
- VE - Coastal High Hazard Area
  - A: AE: AH: AO: OPEN WATER
- ### DPIE Floodplain









# Overview:

## Panel 31 of 57

## Key Features

-  DPW&T-Identified Roads and Structures
-  311/911/FEMA Hotspot Areas
-  Stream Centers and Drainage
-  M-NCPPC Parks




## Critical Facilities

- Airports
- Police Stations
- Fire Stations
- Hospitals
- Schools
- Recreation Centers
- Senior Activity Centers
- Libraries
- Day Care Centers
- Senior Housing

## Social Vulnerability Index (SVI)

- 
- Census Tracts with SVI Score > 75%

## Boundaries

-  Panel  
 Municipal Boundary  
 County Boundary

## High Tide Flooding

- 
- NOAA High Tide Flood Threshold

# FEMA 100-year Floodplain

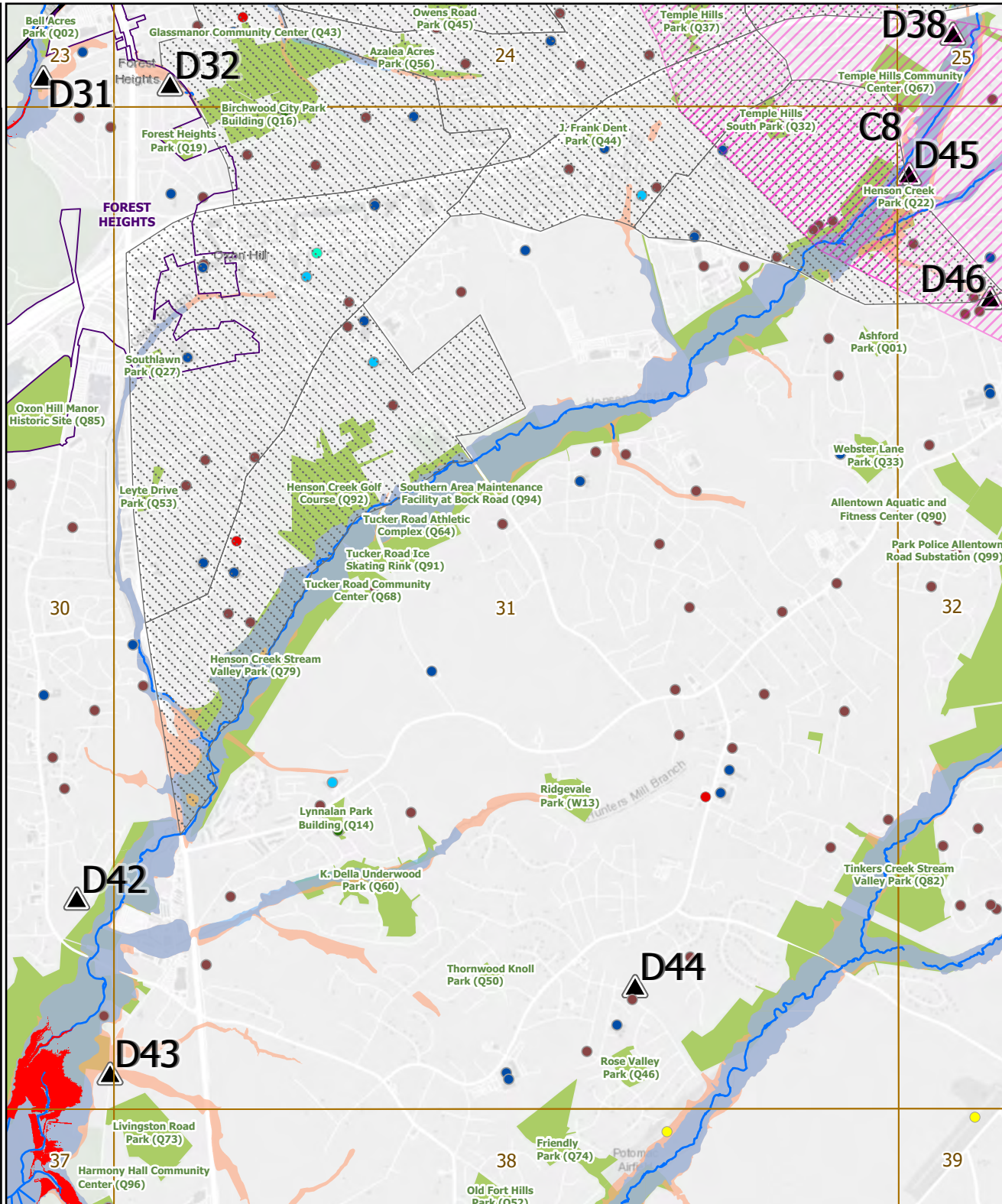
- VE - Coastal High Hazard Area  
A: AE: AH: AO: OPEN WATER

## DPIE Floodplain

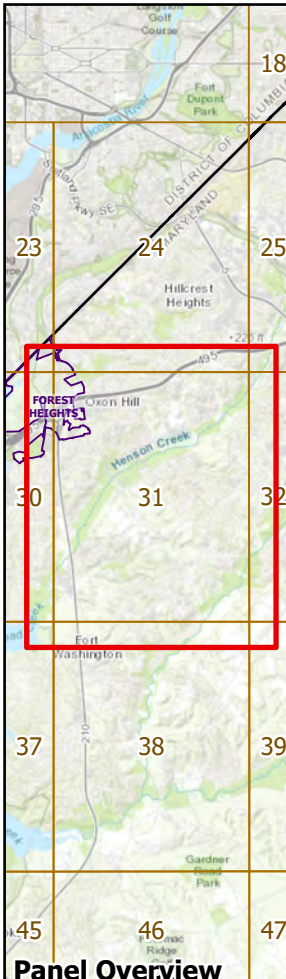
- 



Features may not be to scale



## County Context



## Panel Overview



# Overview:

## Panel 32 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

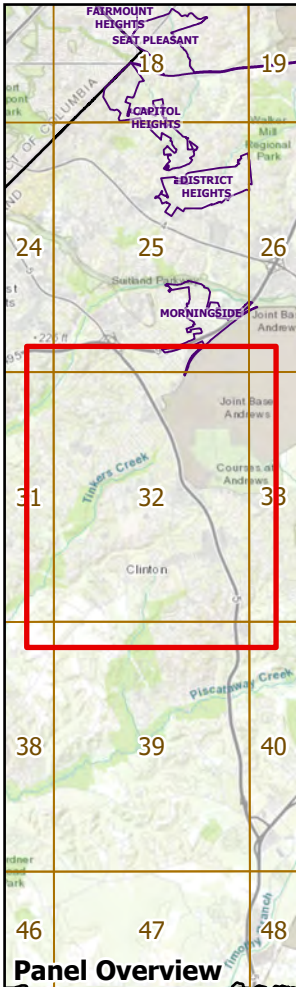
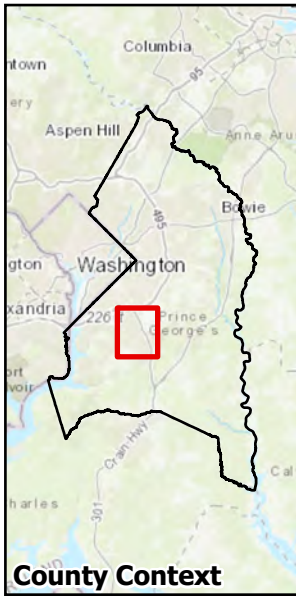
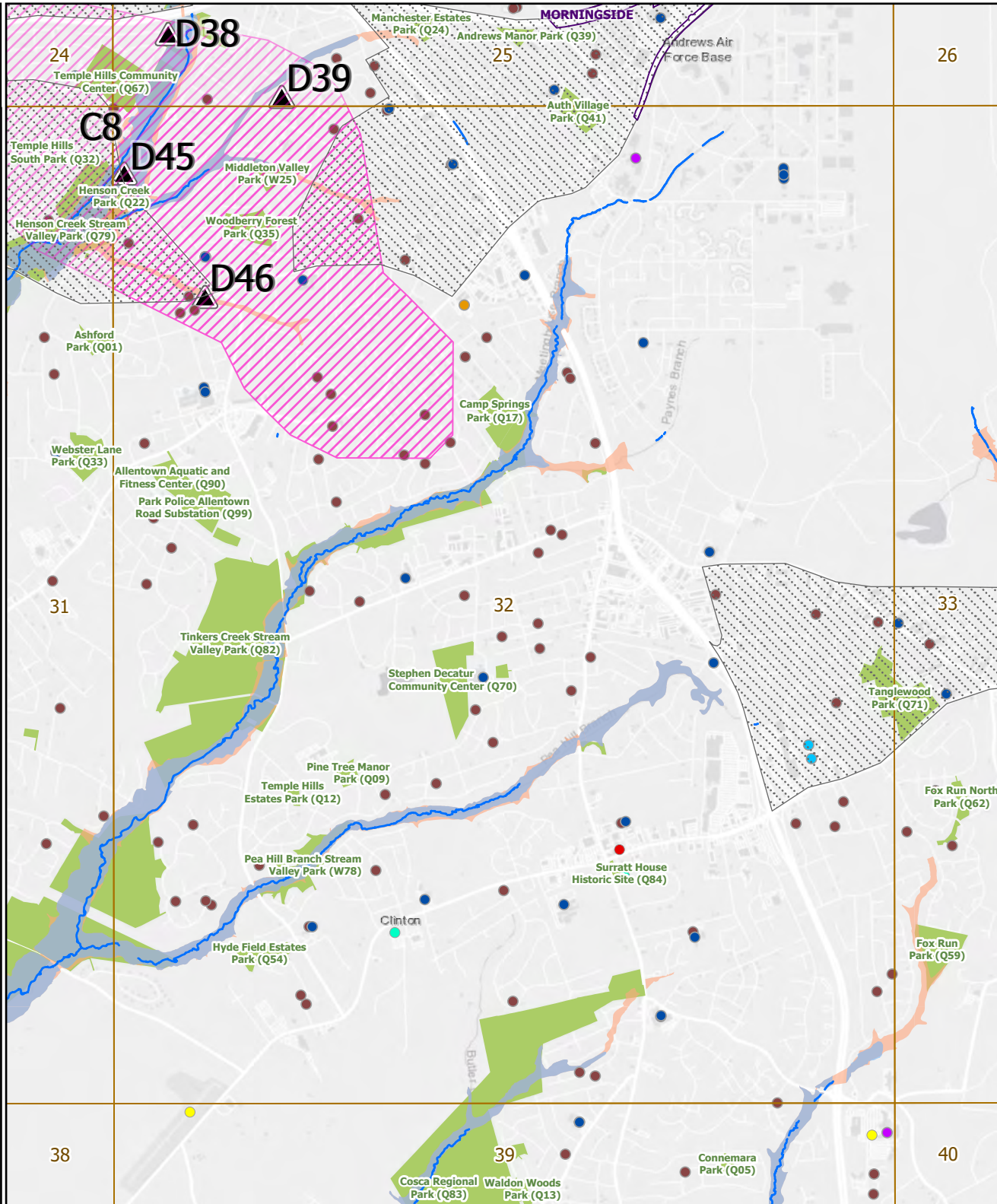
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



Features may not be to scale





# Overview:

## Panel 33 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

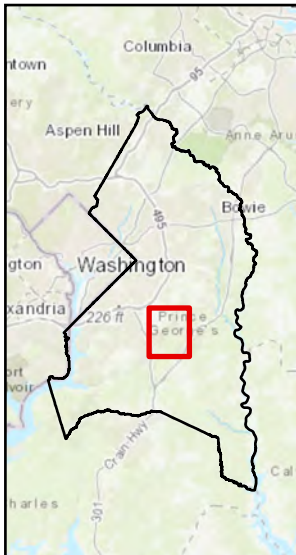
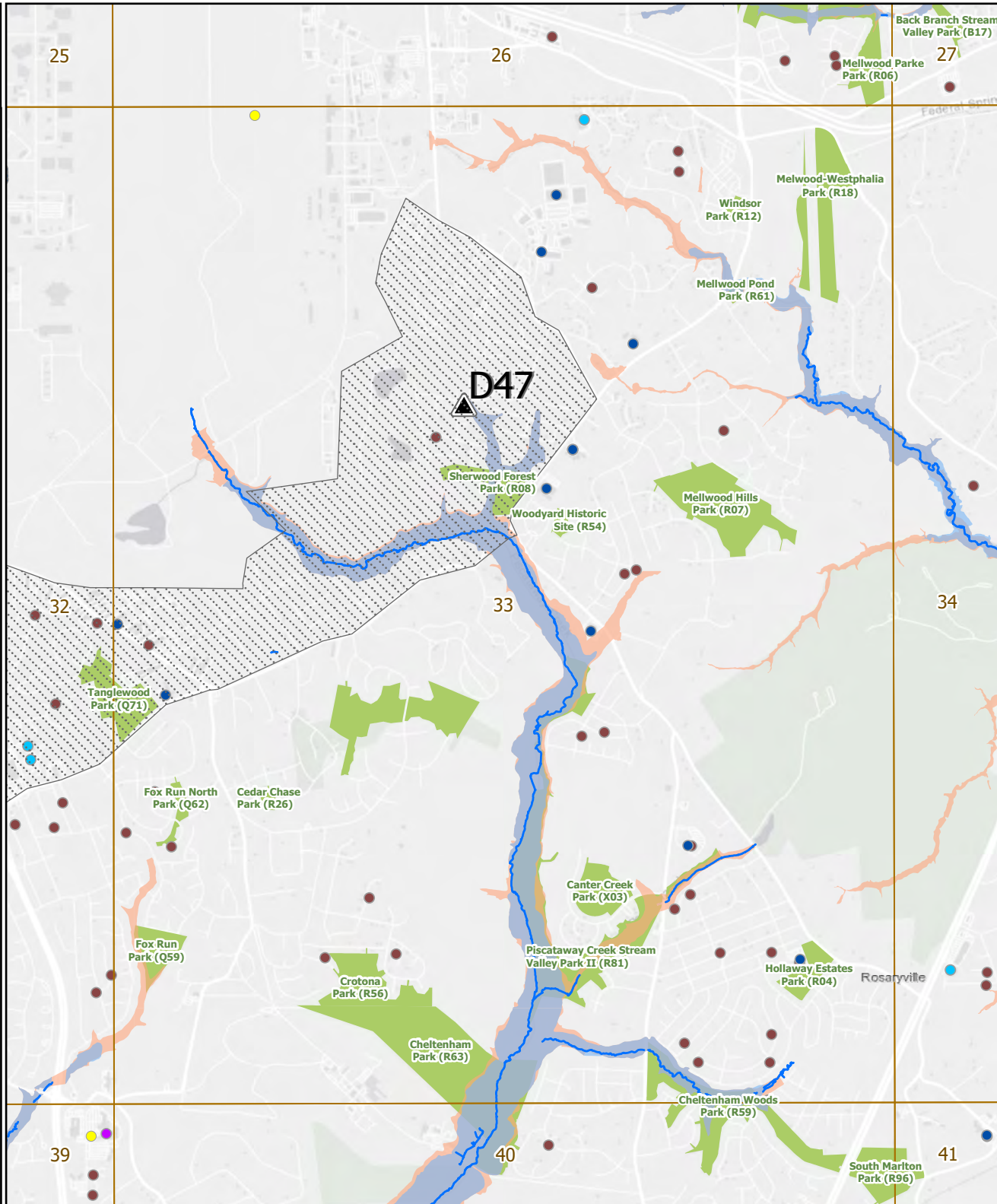
### High Tide Flooding

- NOAA High Tide Flood Threshold

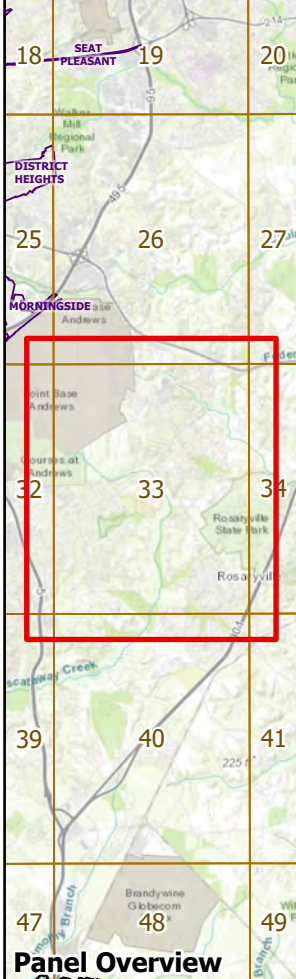
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



County Context



Panel Overview



# Overview:

## Panel 34 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

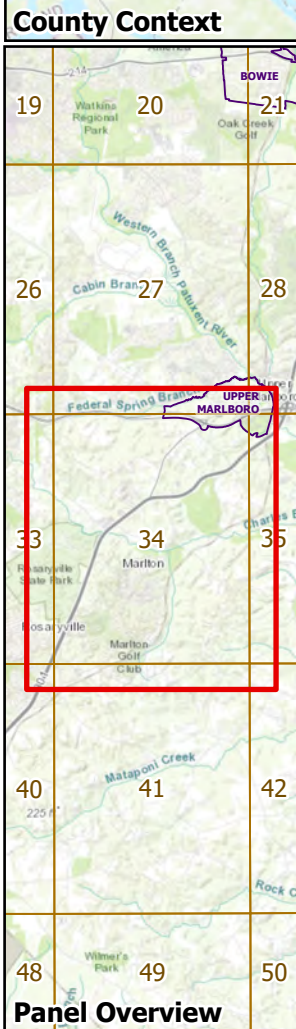
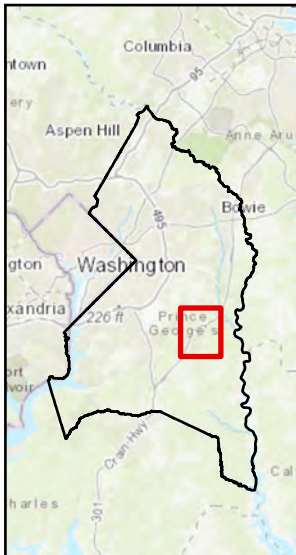
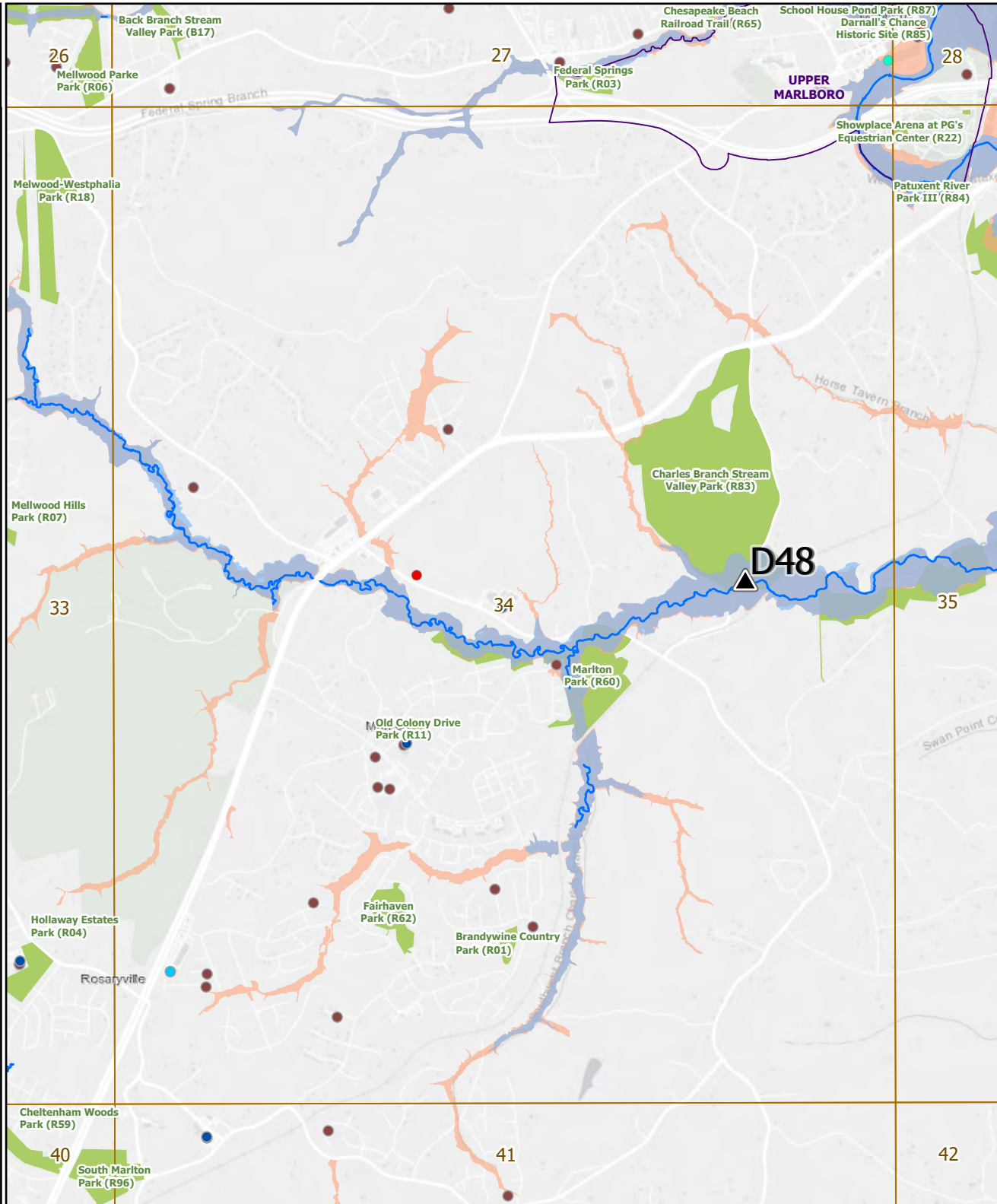
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



# Overview:

## Panel 35 of 57

- ### Key Features
- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

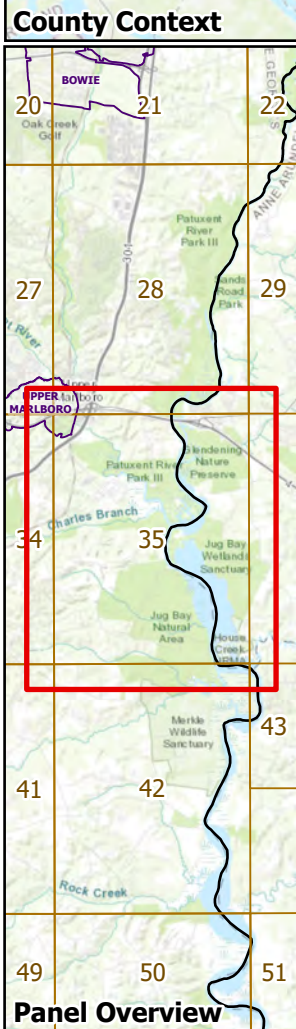
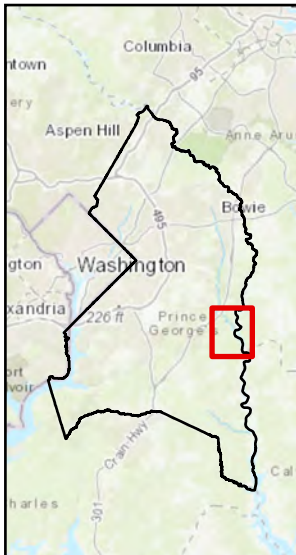
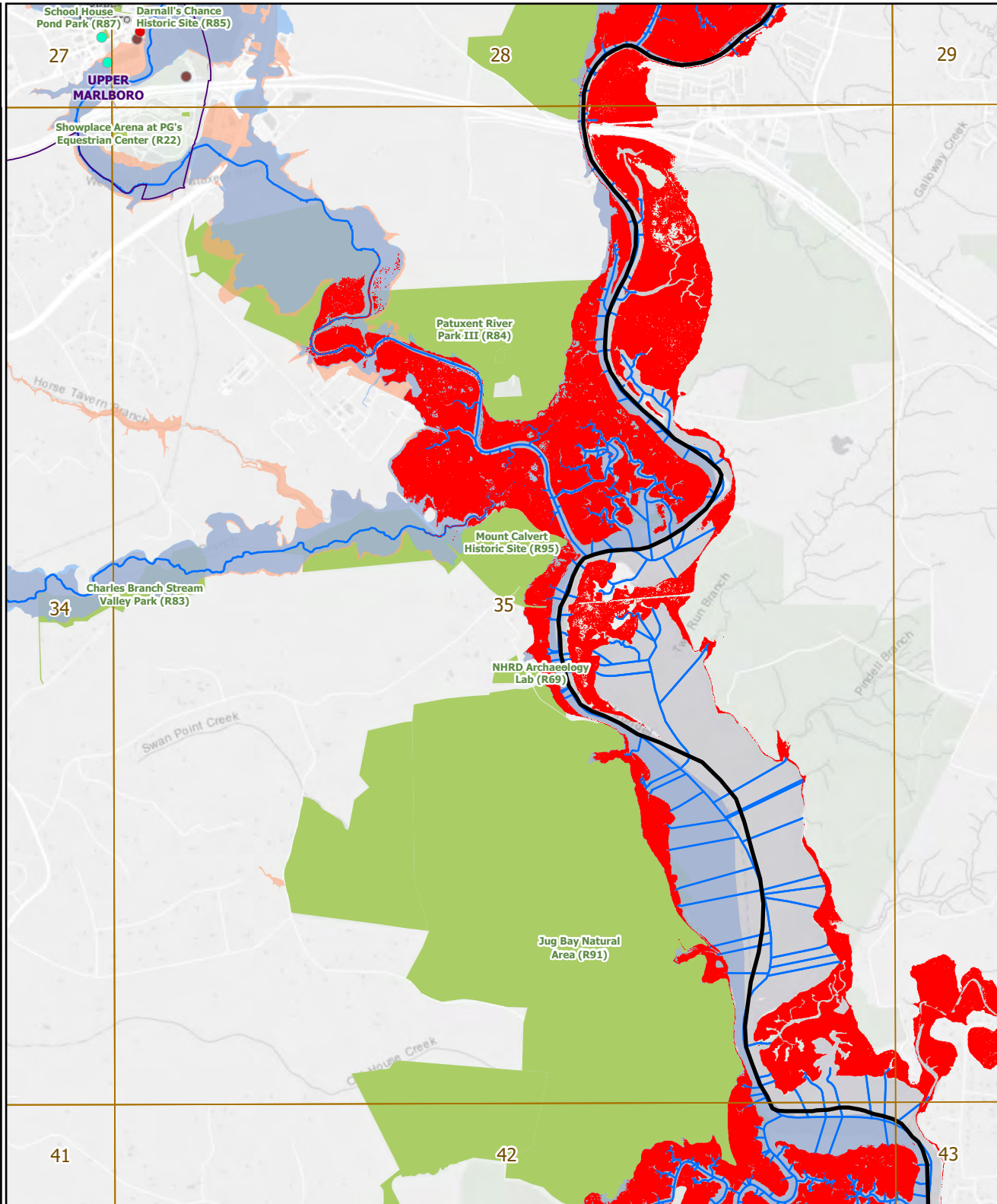
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain









# Overview:

## Panel 36 of 57


### Key Features

-  DPW&T-Identified Roads and Structures
-  311/911/FEMA Hotspot Areas
-  Stream Centers and Drainage
-  M-NCPPC Parks




### Critical Facilities

-  Airports
-  Police Stations
-  Fire Stations
-  Hospitals
-  Schools
-  Recreation Centers
-  Senior Activity Centers
-  Libraries
-  Day Care Centers
-  Senior Housing


### Social Vulnerability Index (SVI)

-  Census Tracts with SVI Score > 75%



### Boundaries

-  Panel
-  Municipal Boundary
-  County Boundary

### High Tide Flooding

-  NOAA High Tide Flood Threshold

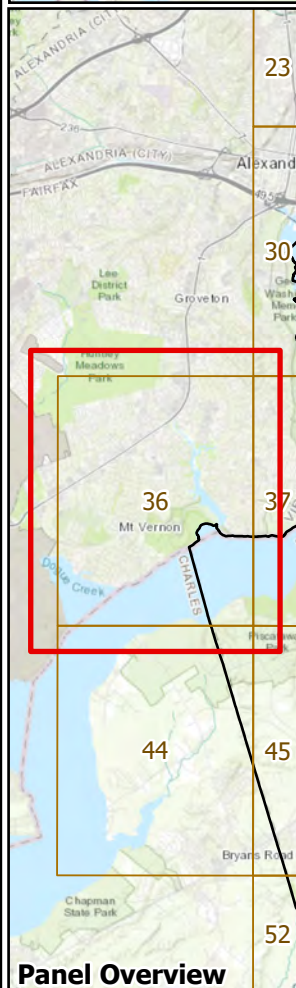
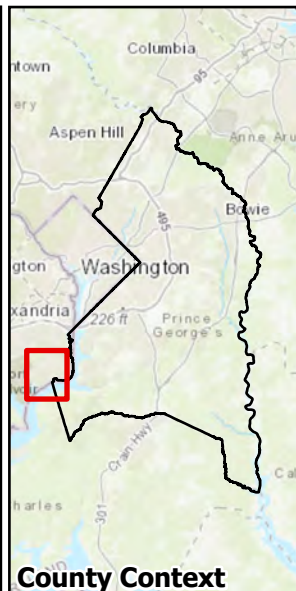
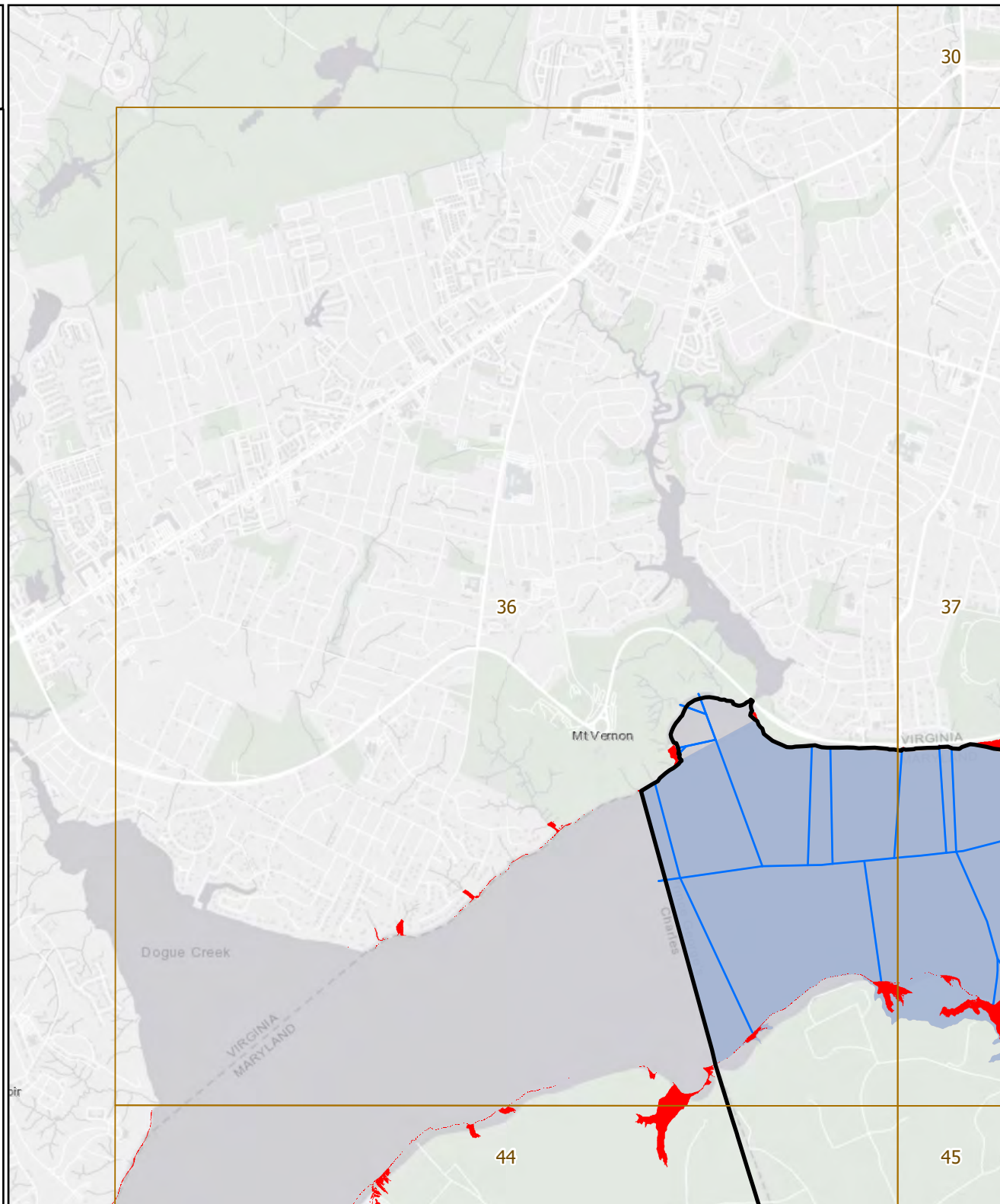
### FEMA 100-year Floodplain

-  VE - Coastal High Hazard Area
-  A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



N  
  
Features may  
not be to scale



# Overview:

## Panel 37 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

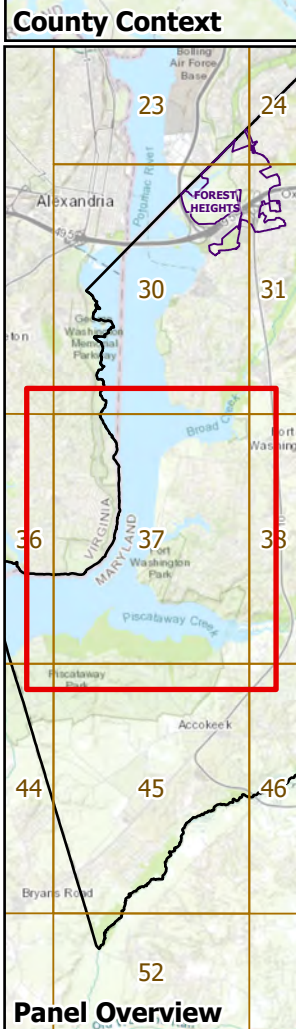
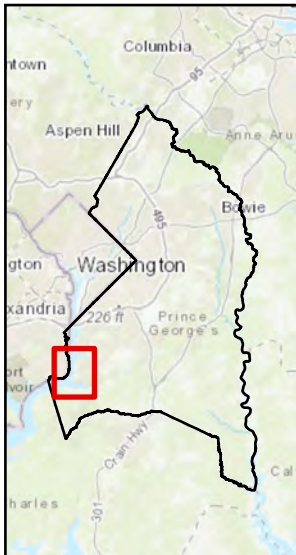
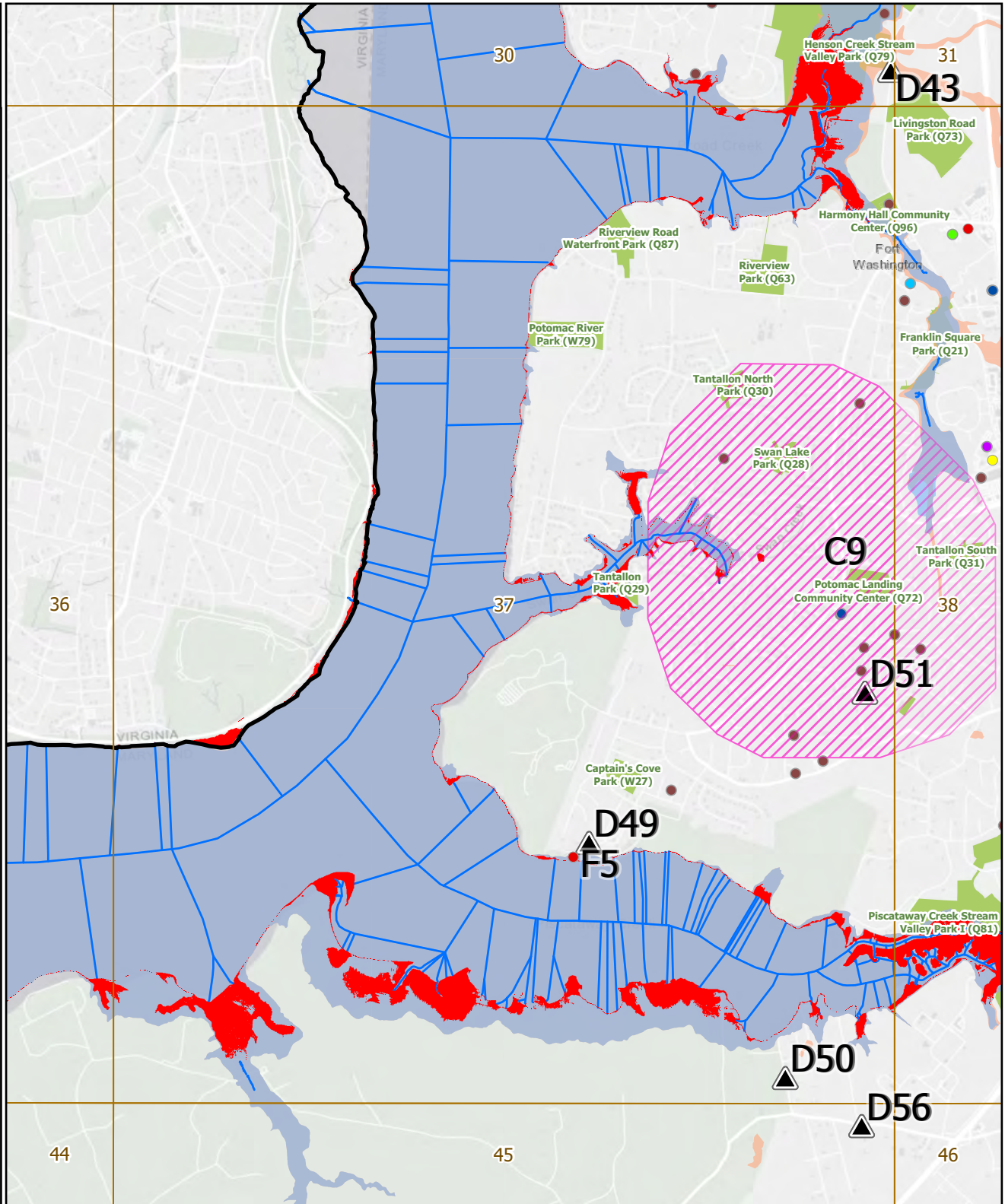
- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain

- 



Features may not be to scale





# Overview:

## Panel 38 of 57

- ### Key Features
- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

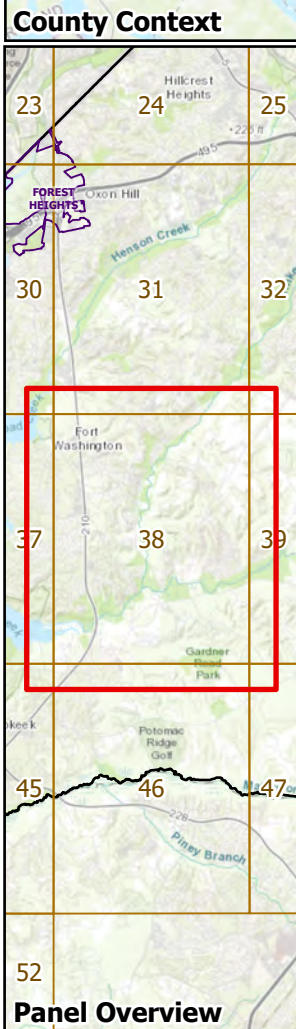
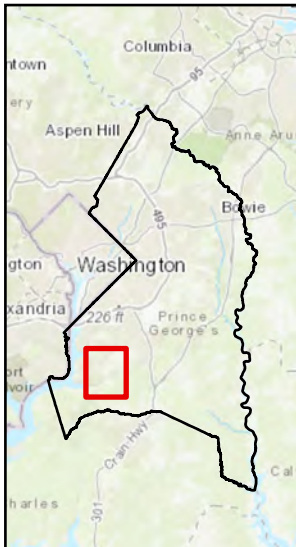
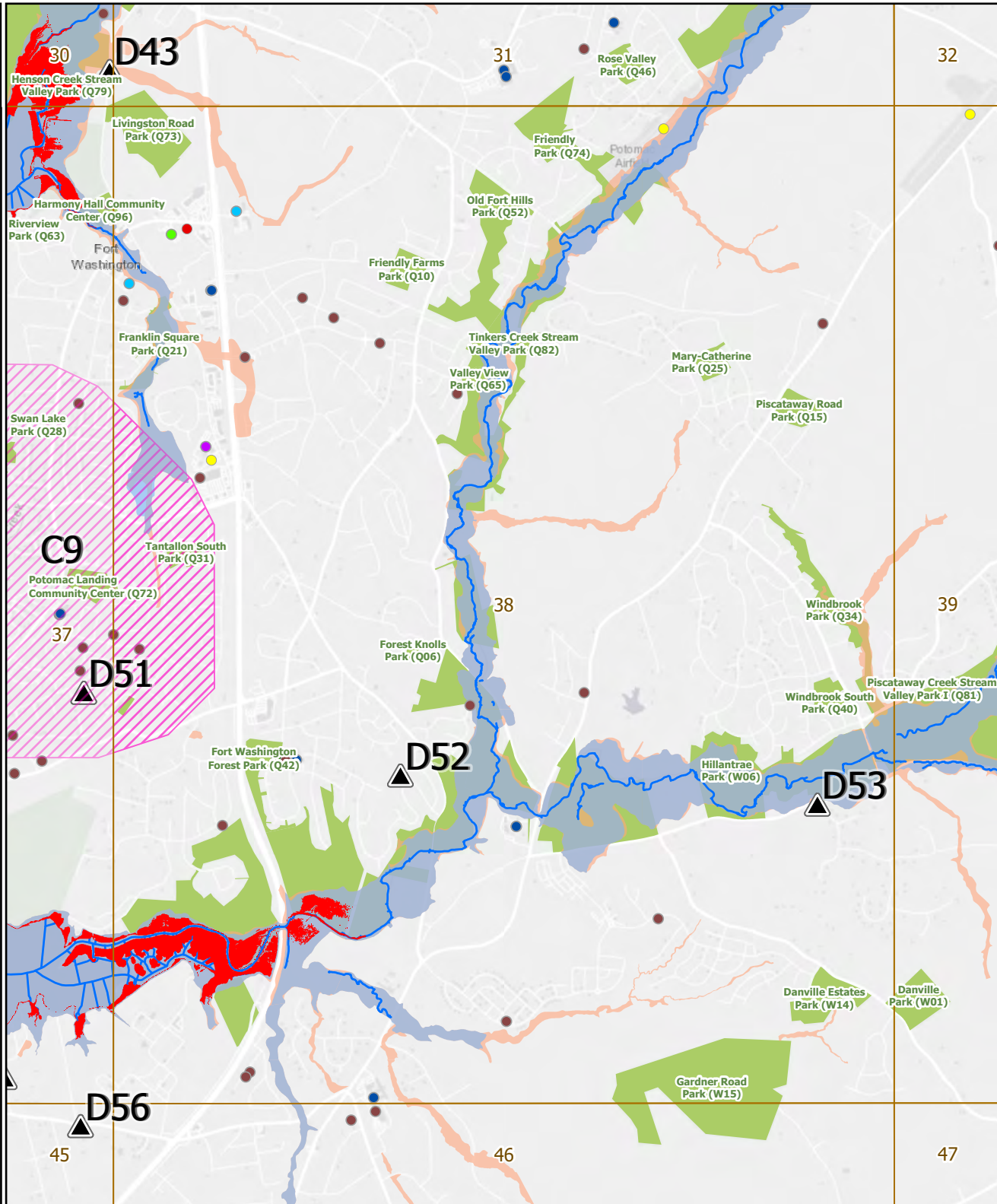
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



N  
Features may  
not be to scale



# Overview:

## Panel 39 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

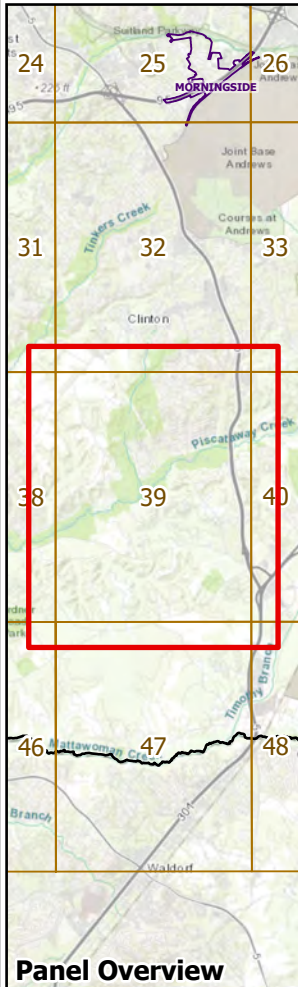
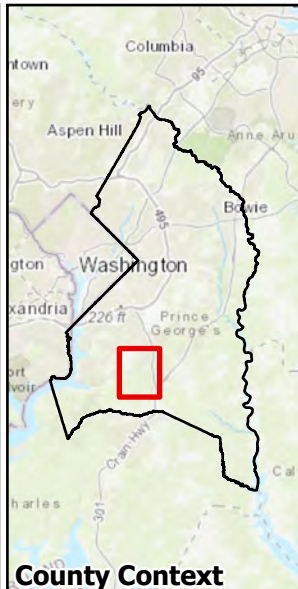
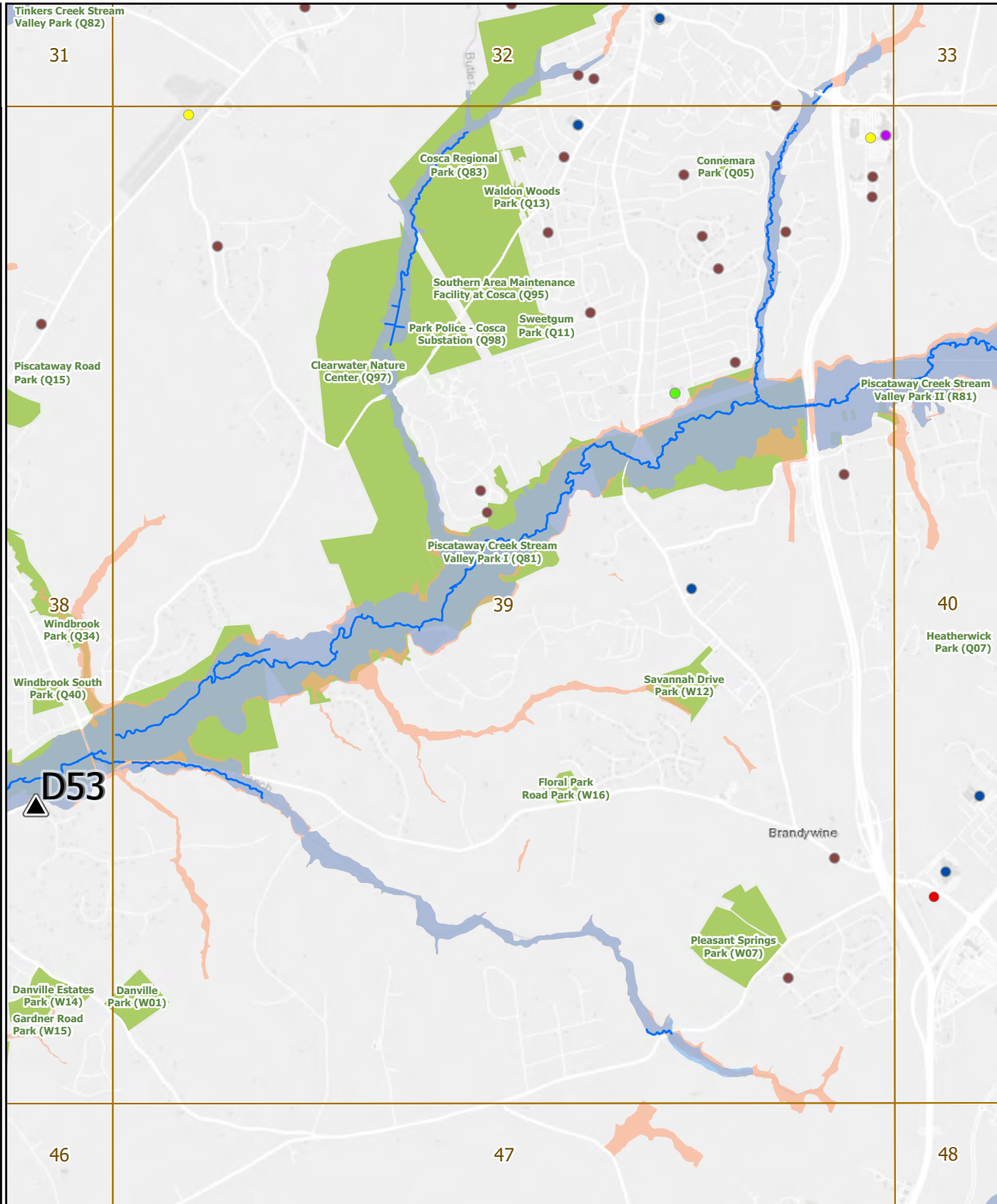
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain





# Overview:

## Panel 40 of 57

- ### Key Features
- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

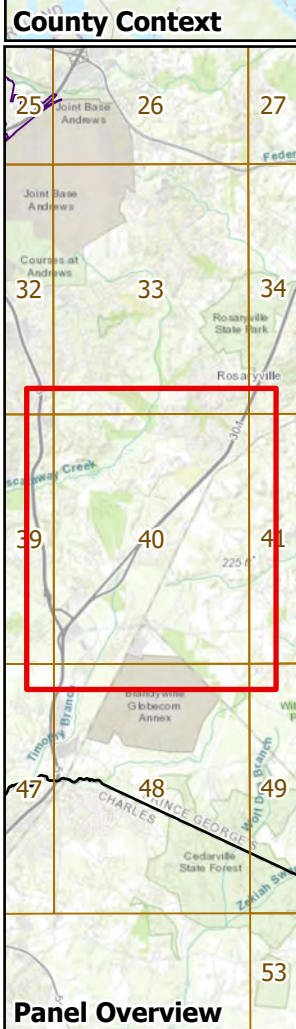
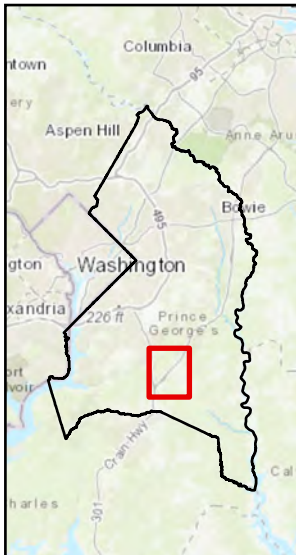
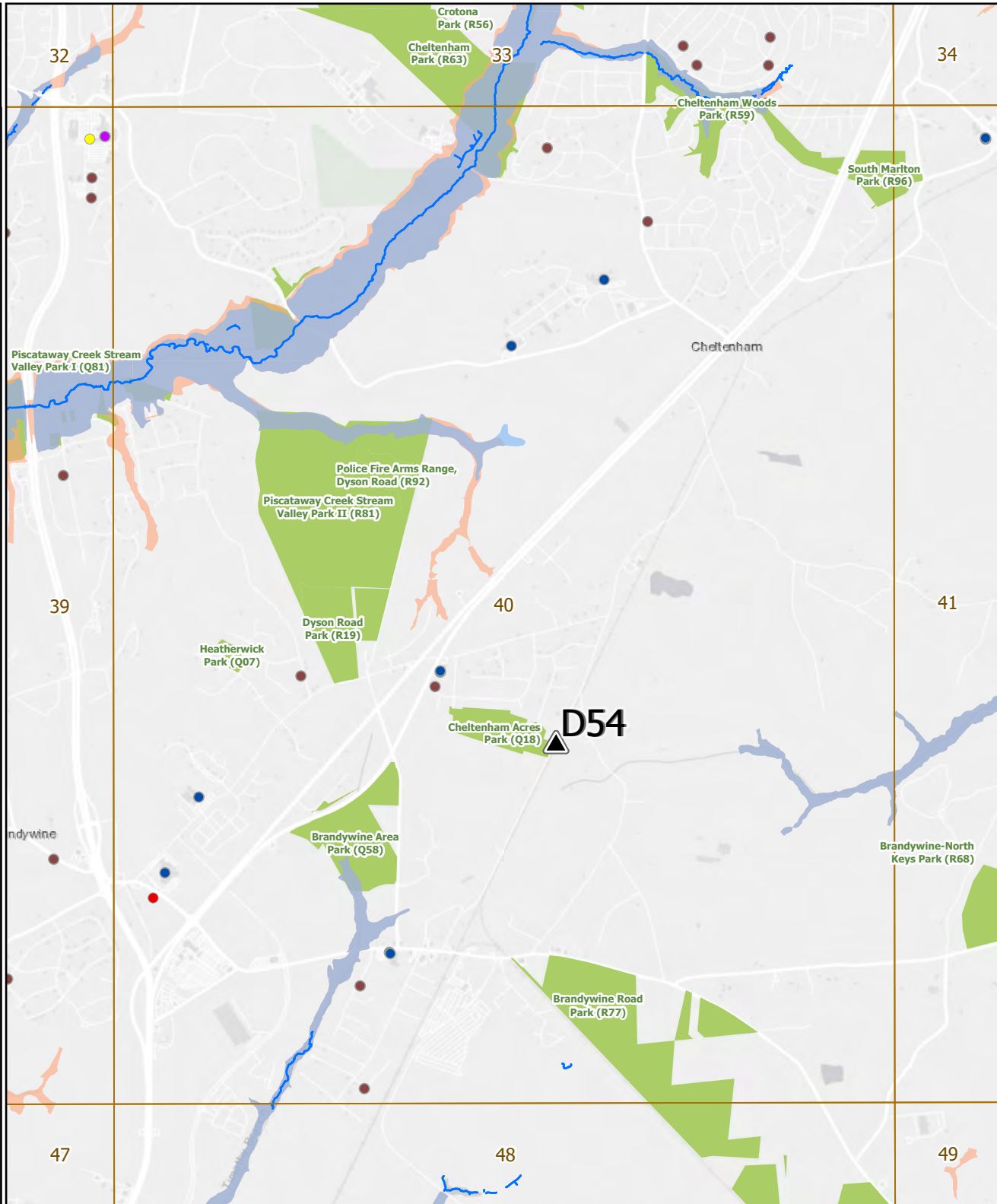
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



# Overview:

## Panel 41 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

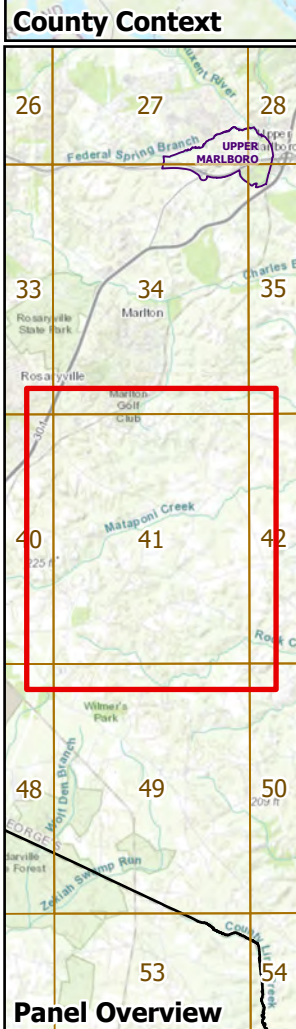
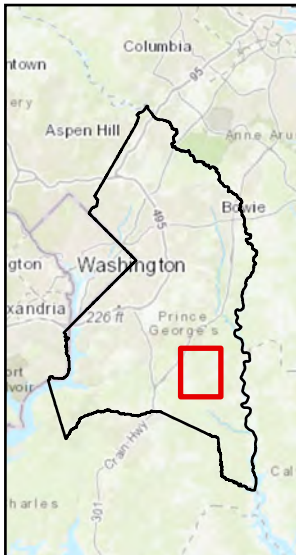
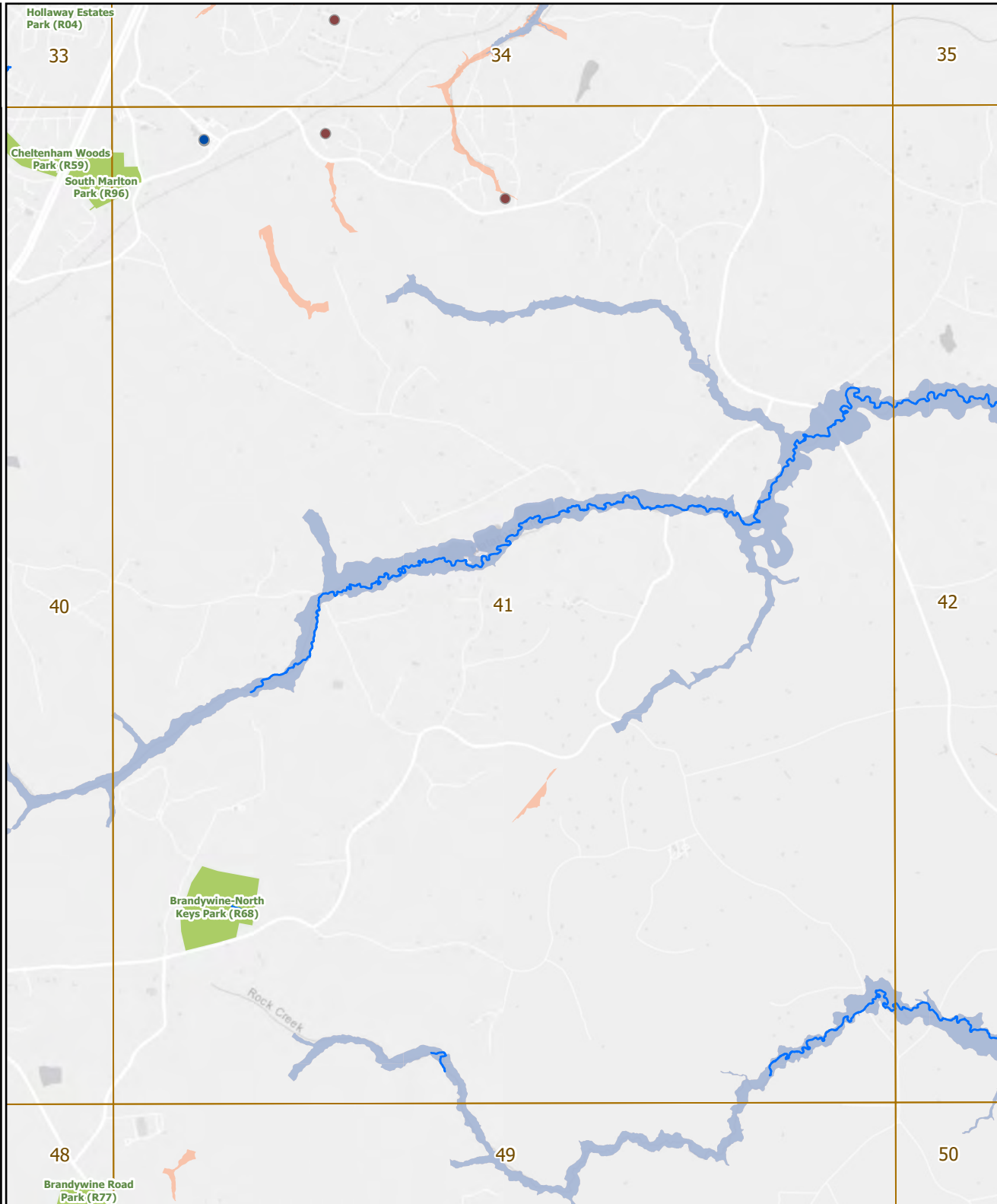
- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain

- 





# Overview:

## Panel 42 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

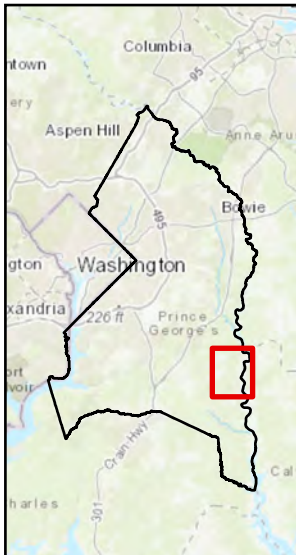
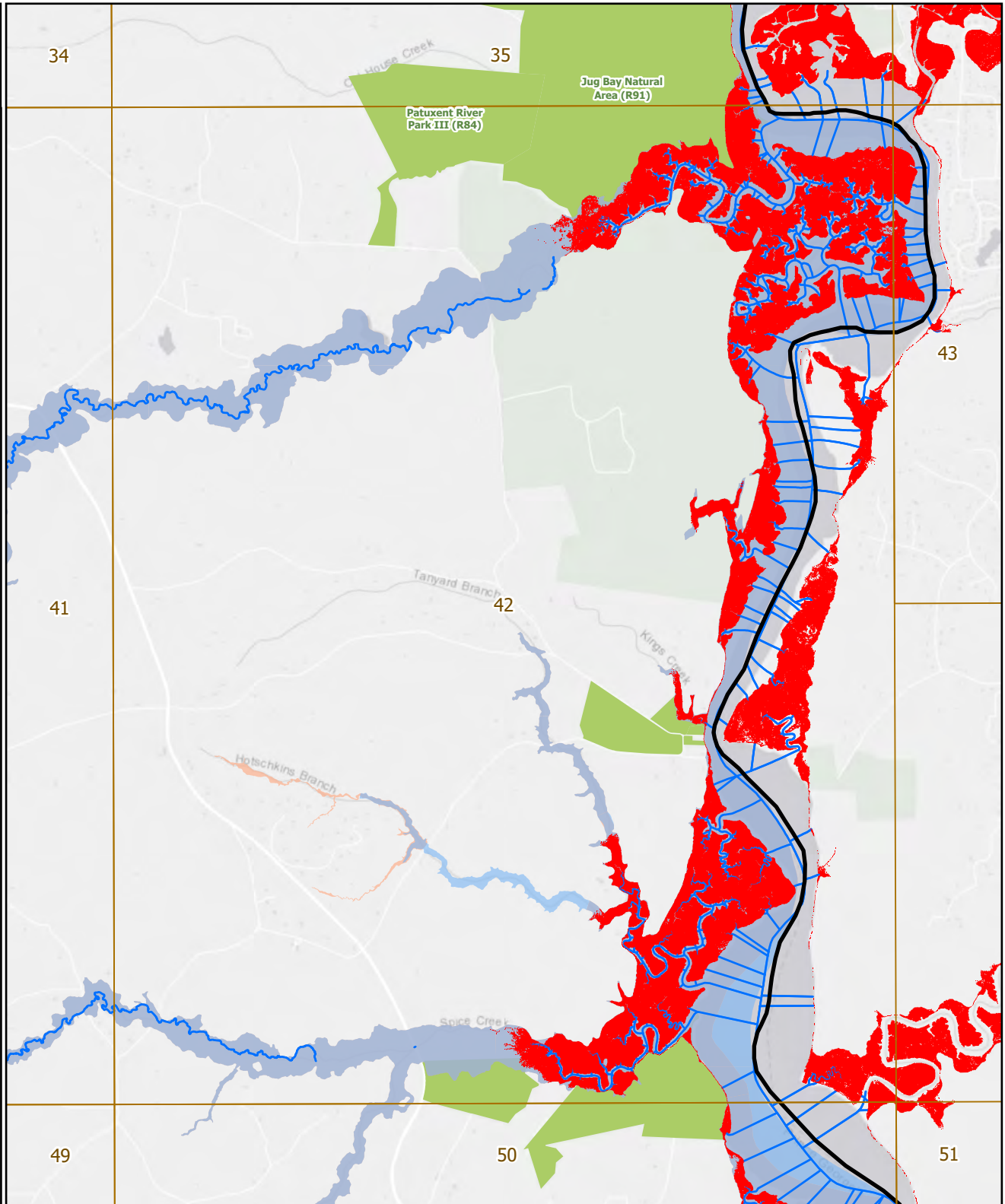
- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

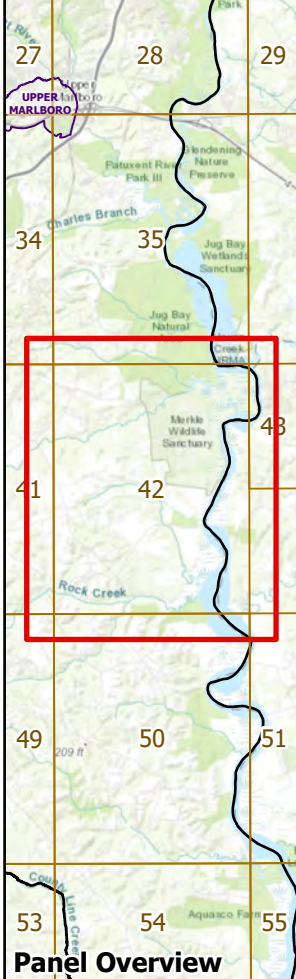
- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain

- 



### County Context



### Panel Overview

# Overview:

## Panel 43 of 57

### Key Features

- DPW&T-Identified Roads and Structures
- 311/911/FEMA Hotspot Areas
- Stream Centers and Drainage
- M-NCPPC Parks

### Critical Facilities

- Airports
- Police Stations
- Fire Stations
- Hospitals
- Schools
- Recreation Centers
- Senior Activity Centers
- Libraries
- Day Care Centers
- Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

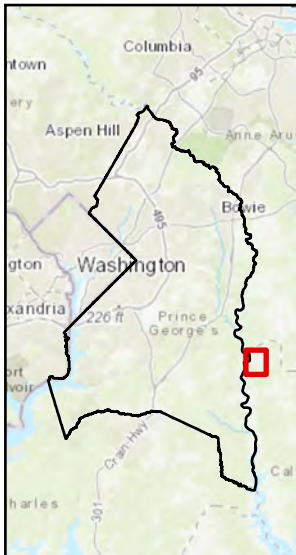
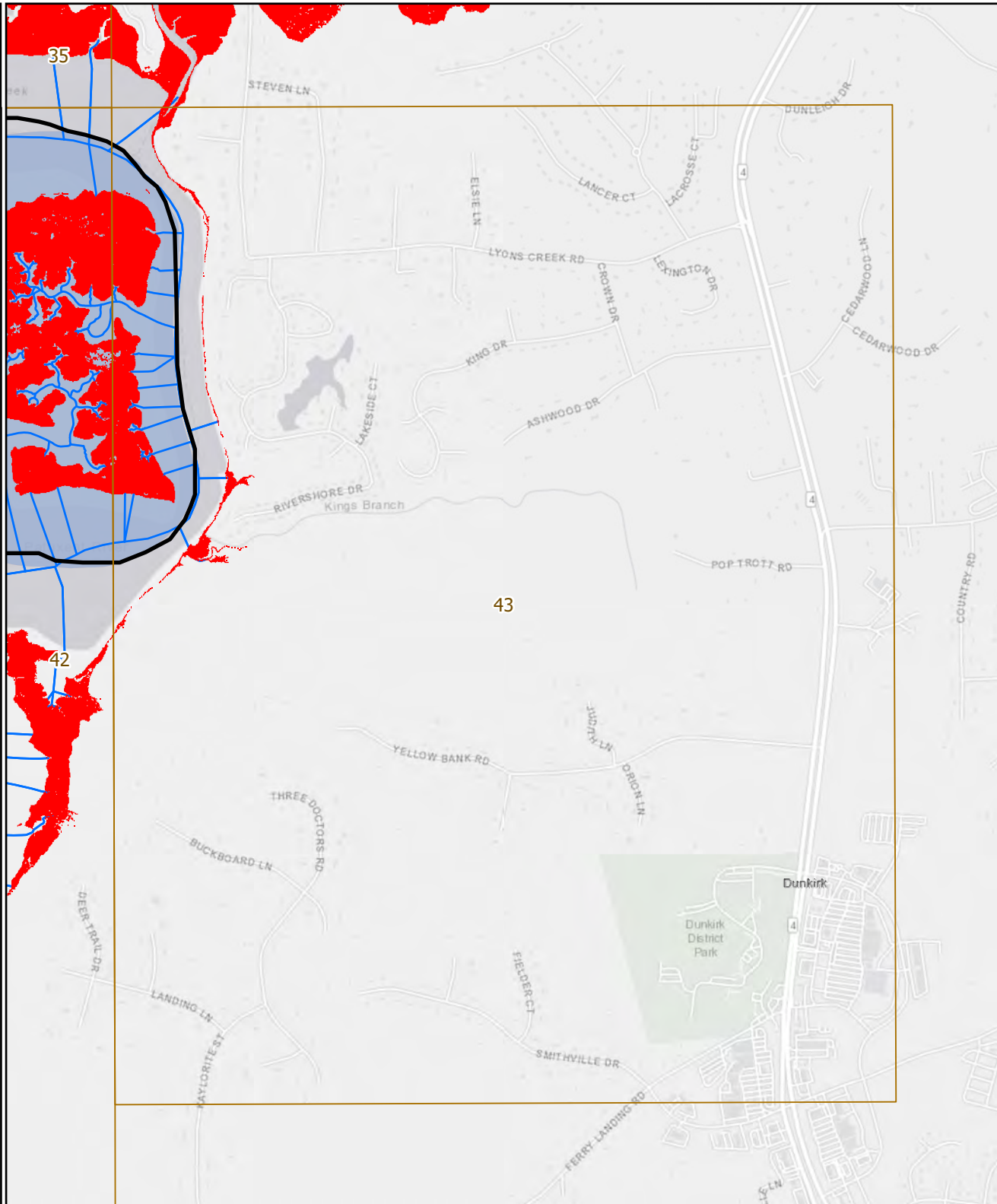
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

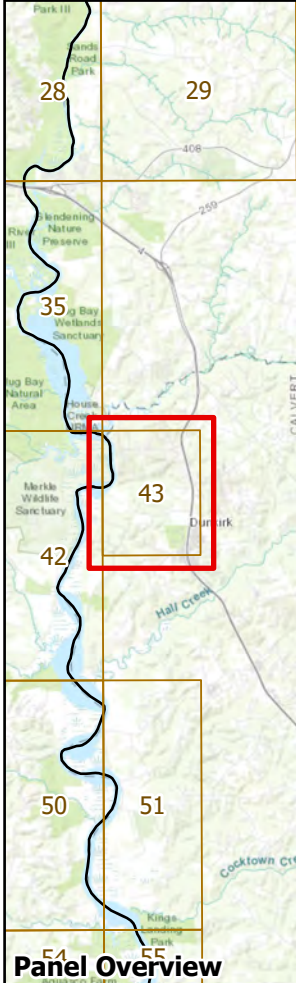
### DPIE Floodplain



Features may  
not be to scale



### County Context



### Panel Overview



# Overview:

## Panel 44 of 57

- ### Key Features
- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

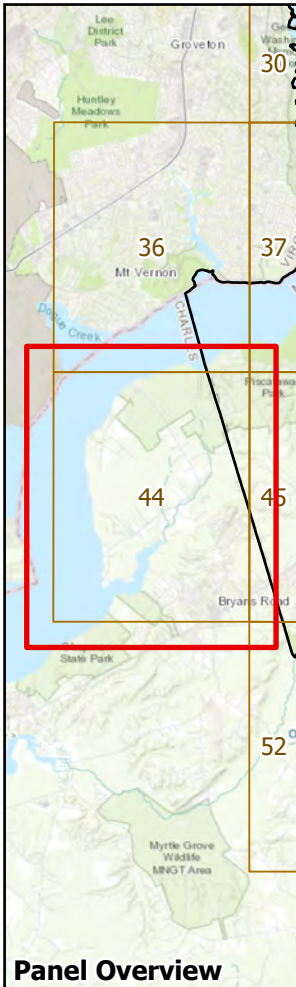
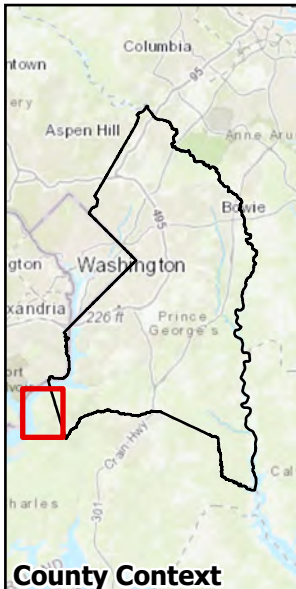
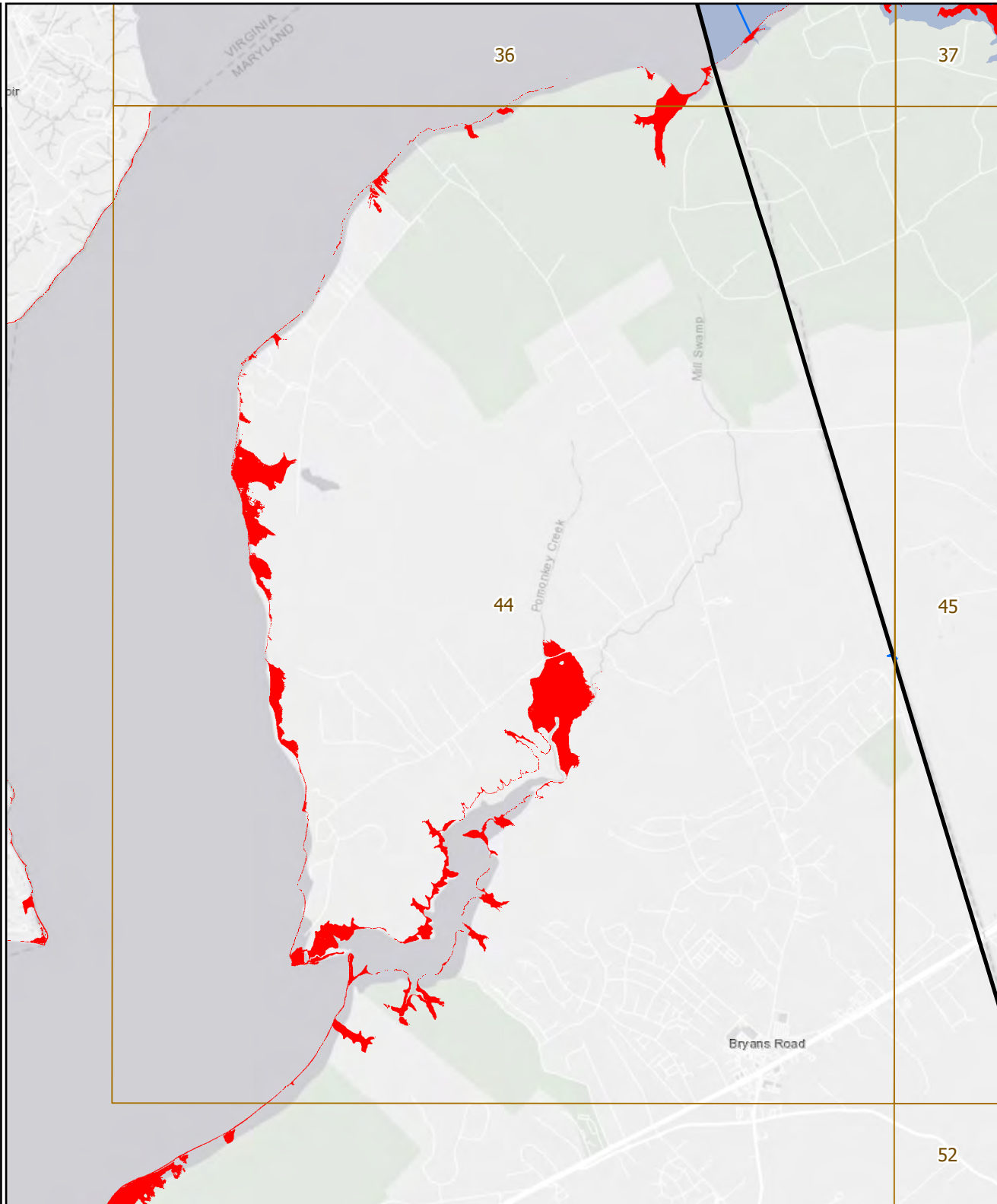
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



N  
Features may  
not be to scale



# Overview:

## Panel 45 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

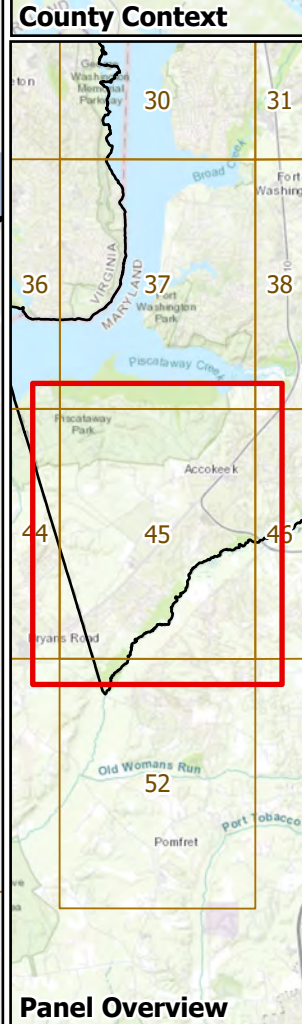
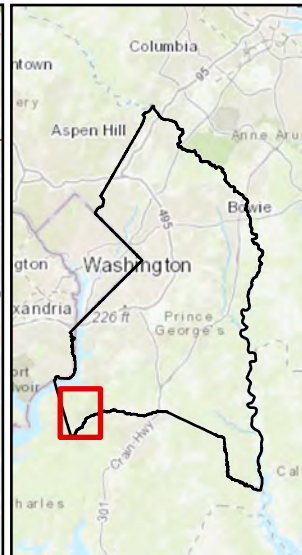
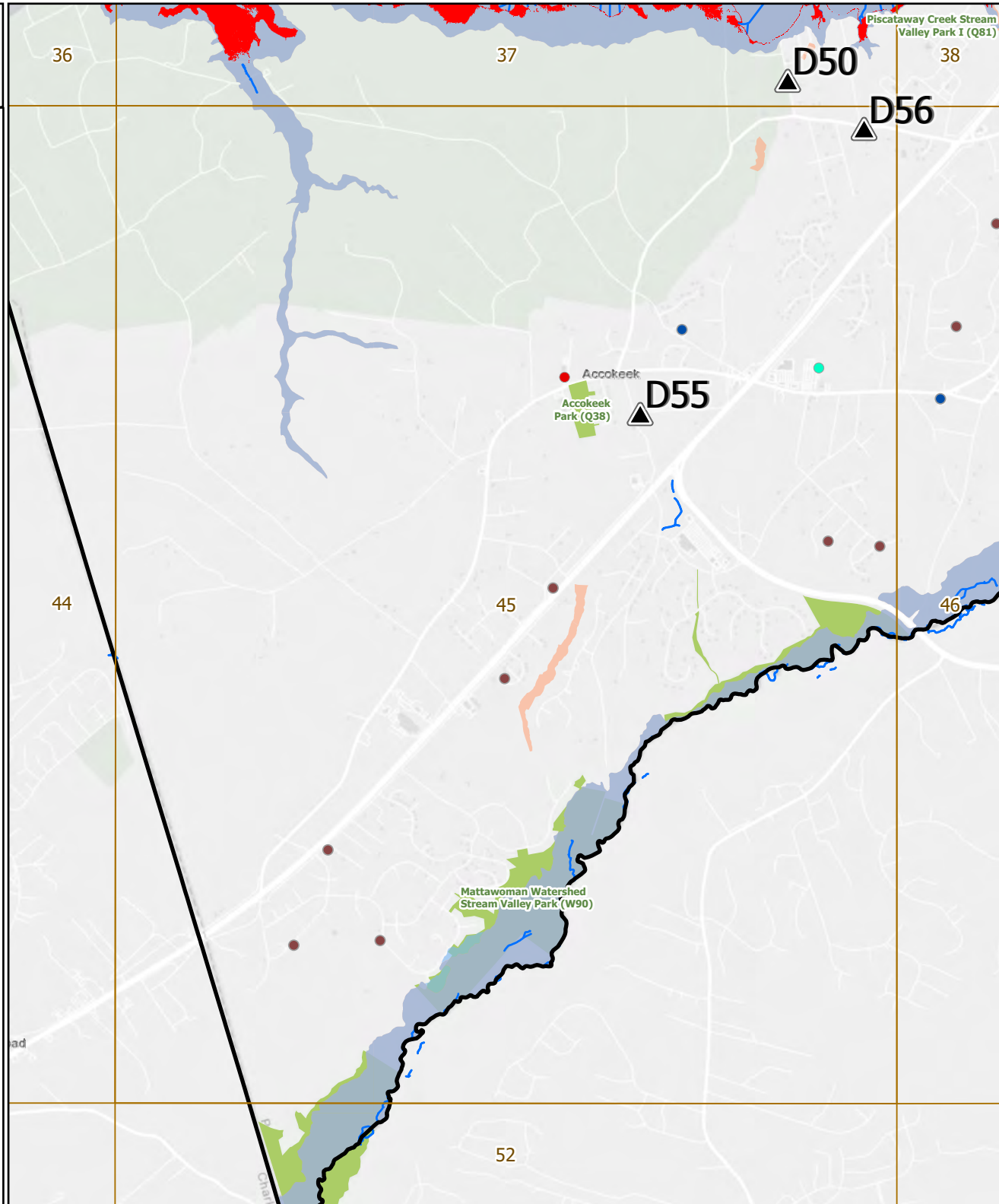
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain





# Overview:

## Panel 46 of 57

- ### Key Features
- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

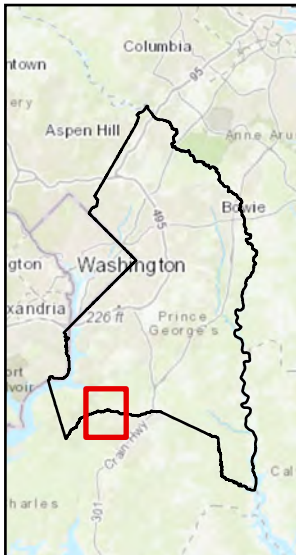
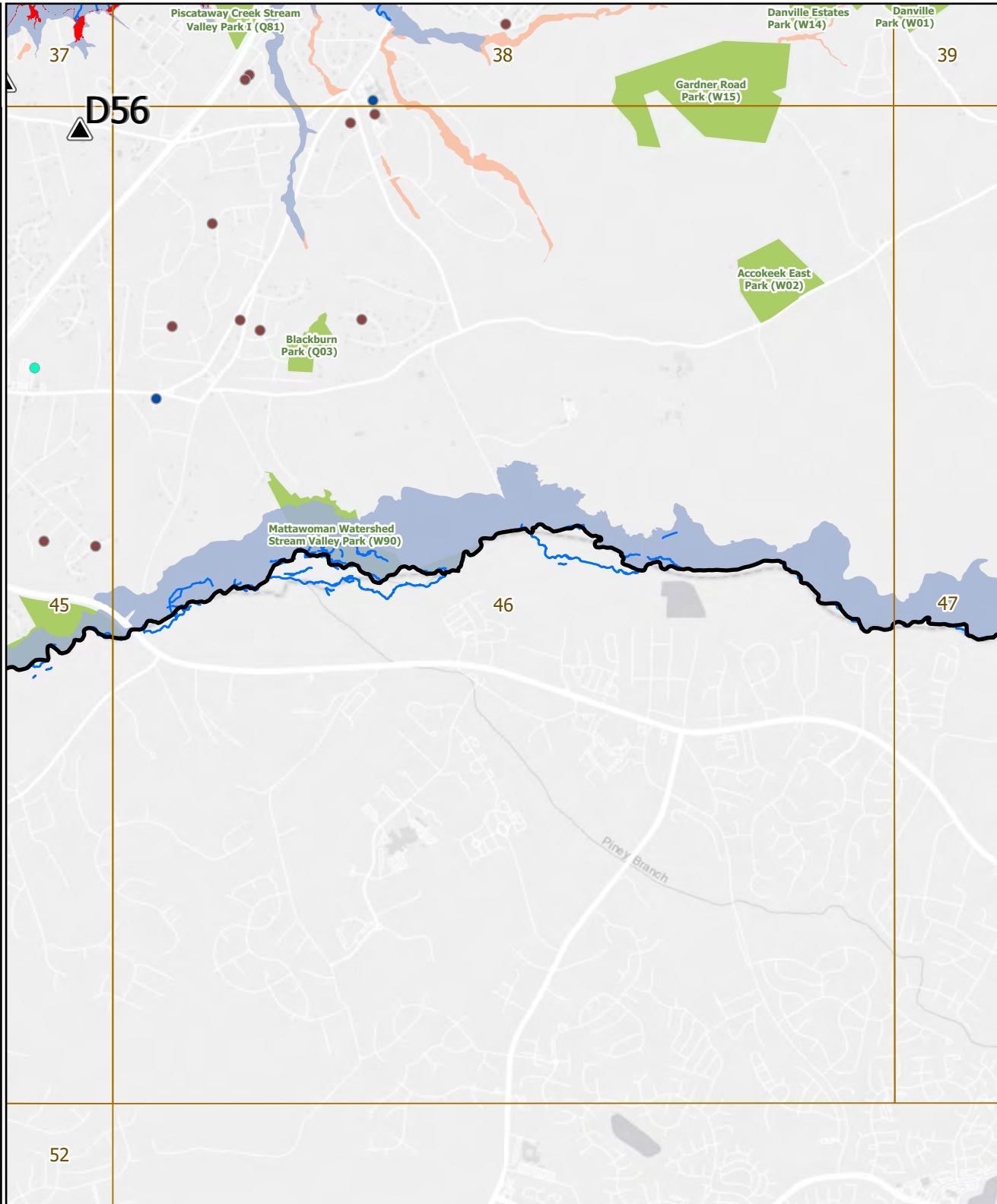
### High Tide Flooding

- NOAA High Tide Flood Threshold

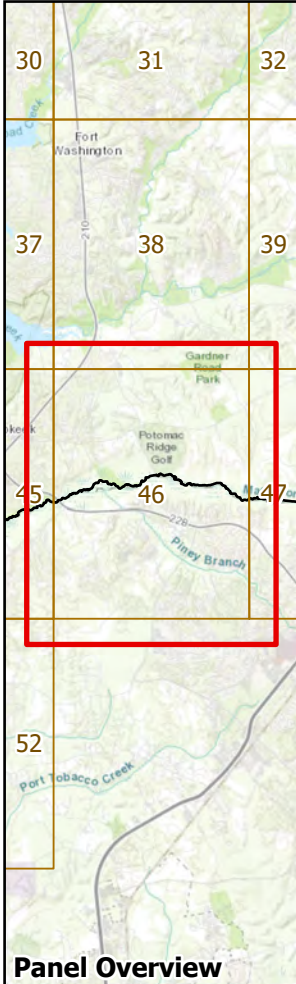
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



### County Context



### Panel Overview

# Overview:

## Panel 47 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

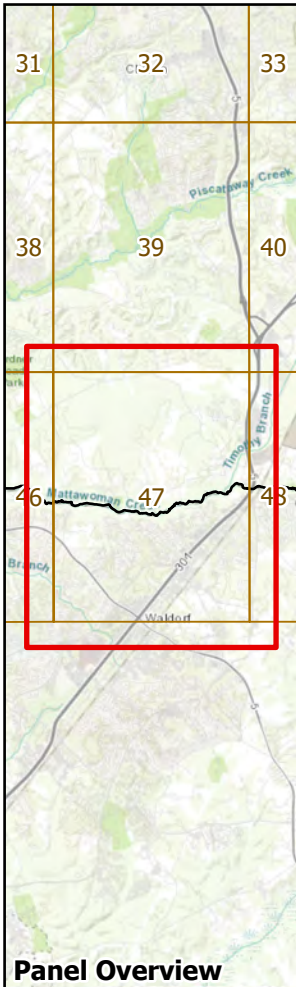
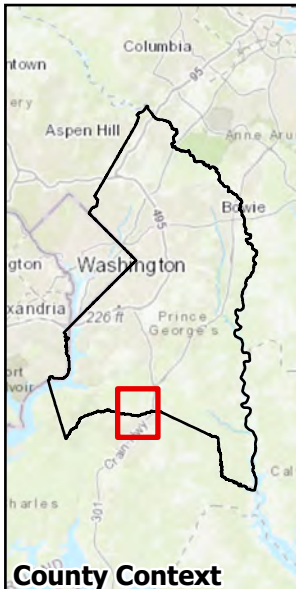
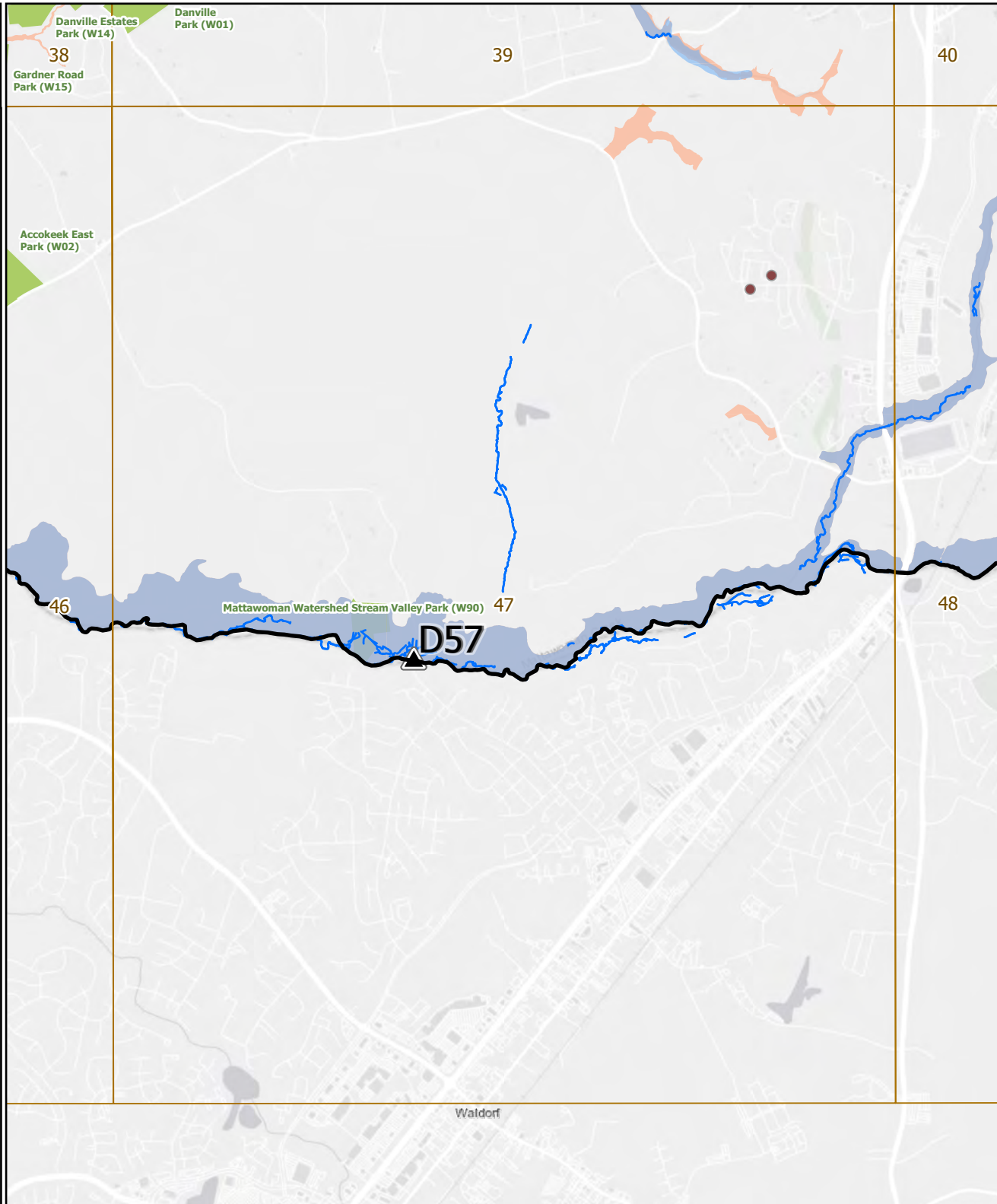
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain





# Overview:

## Panel 48 of 57

### Key Features

- DPW&T-Identified Roads and Structures
- 311/911/FEMA Hotspot Areas
- Stream Centers and Drainage
- M-NCPPC Parks

### Critical Facilities

- Airports
- Police Stations
- Fire Stations
- Hospitals
- Schools
- Recreation Centers
- Senior Activity Centers
- Libraries
- Day Care Centers
- Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

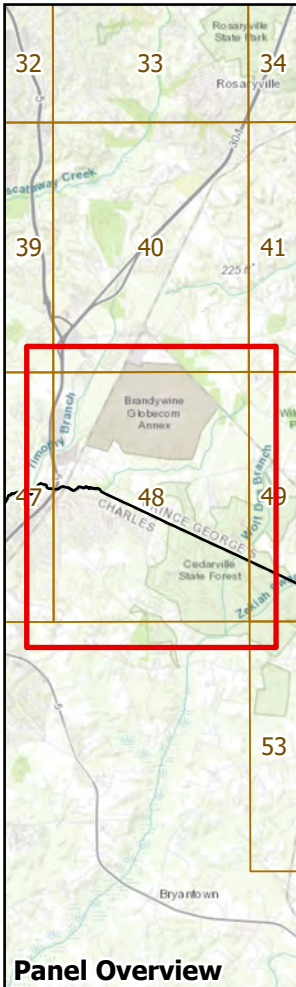
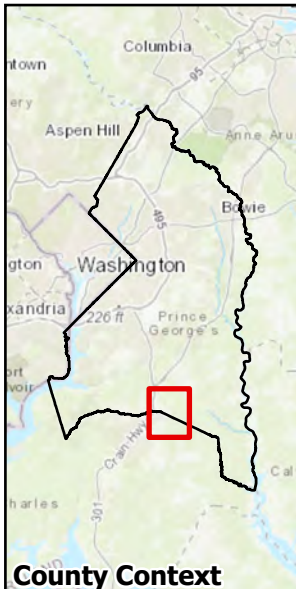
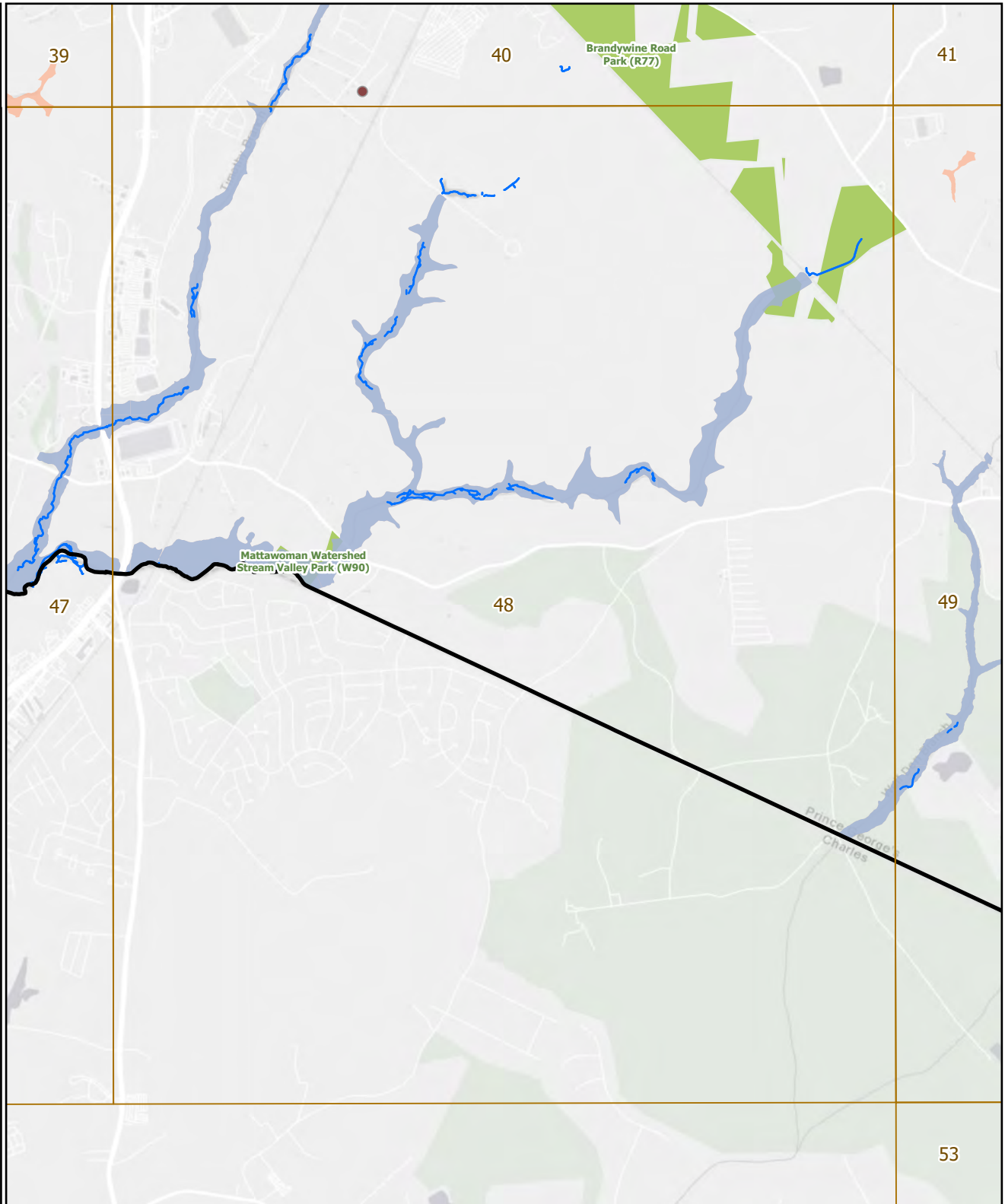
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



Features may not be to scale



# Overview:

## Panel 49 of 57

### Key Features

- DPW&T-Identified Roads and Structures
- 311/911/FEMA Hotspot Areas
- Stream Centers and Drainage
- M-NCPPC Parks

### Critical Facilities

- Airports
- Police Stations
- Fire Stations
- Hospitals
- Schools
- Recreation Centers
- Senior Activity Centers
- Libraries
- Day Care Centers
- Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

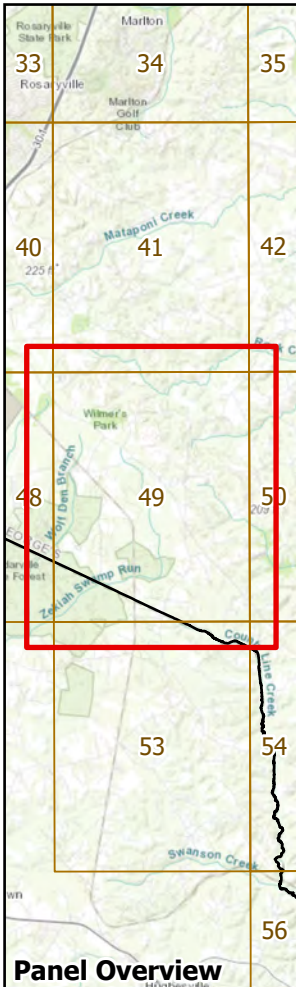
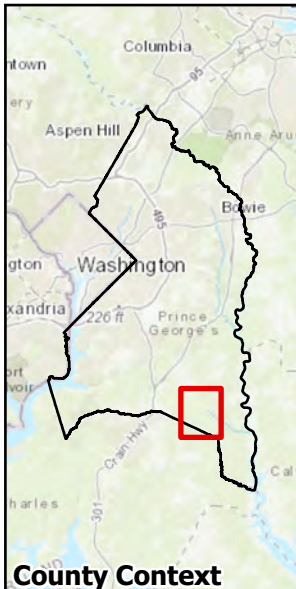
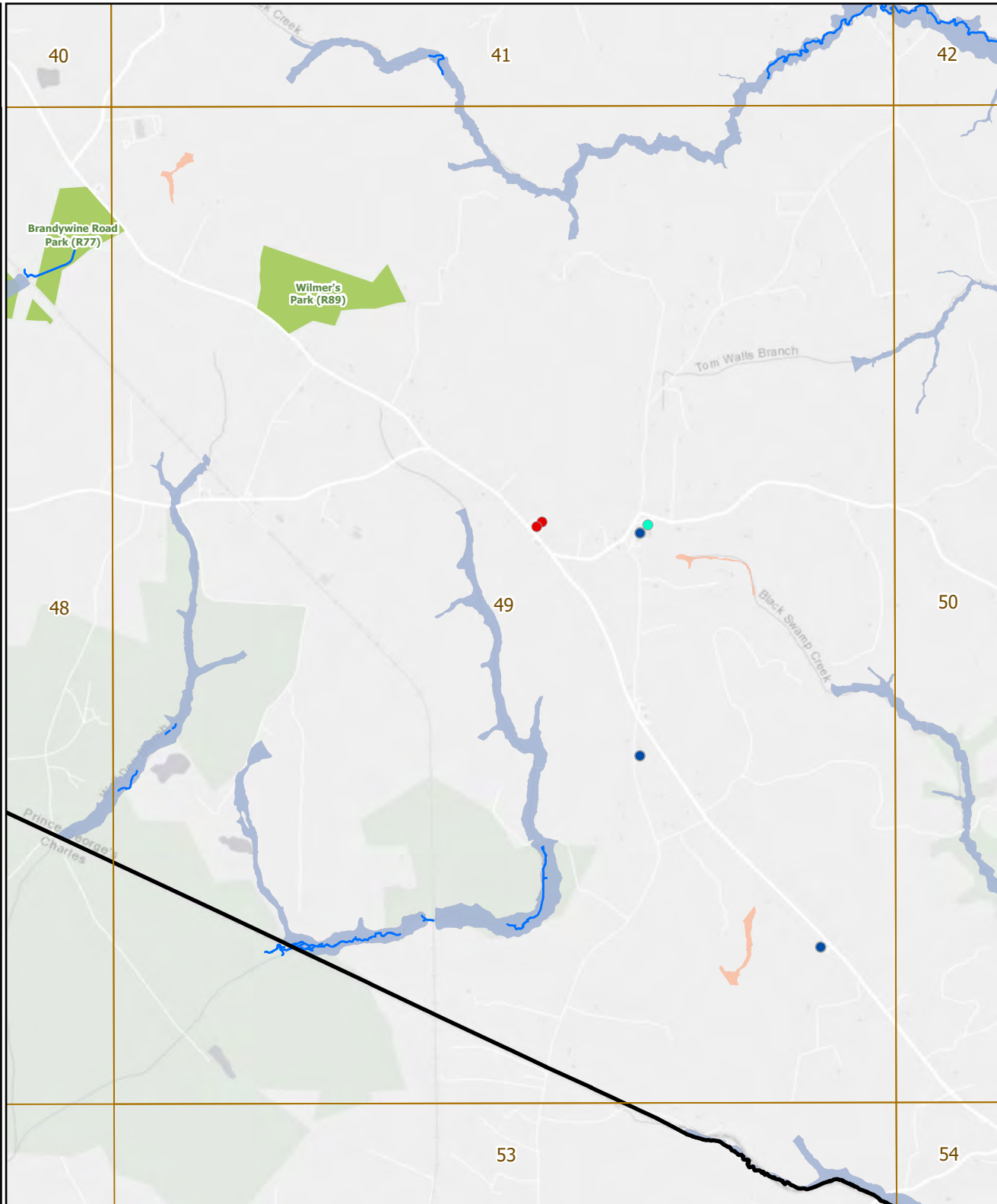
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



Features may  
not be to scale





# Overview: Panel 50 of 57

## Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ## Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

## Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

## Boundaries

- Panel
- Municipal Boundary
- County Boundary

## High Tide Flooding

- NOAA High Tide Flood Threshold

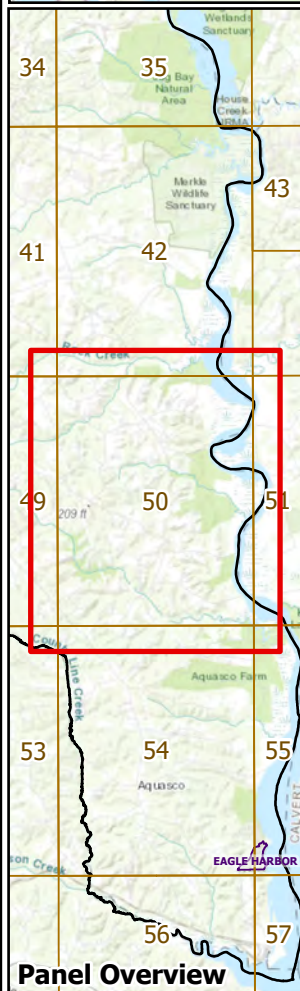
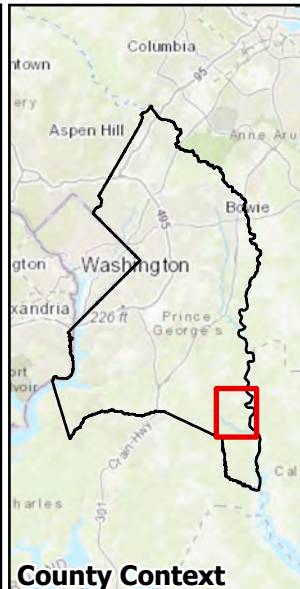
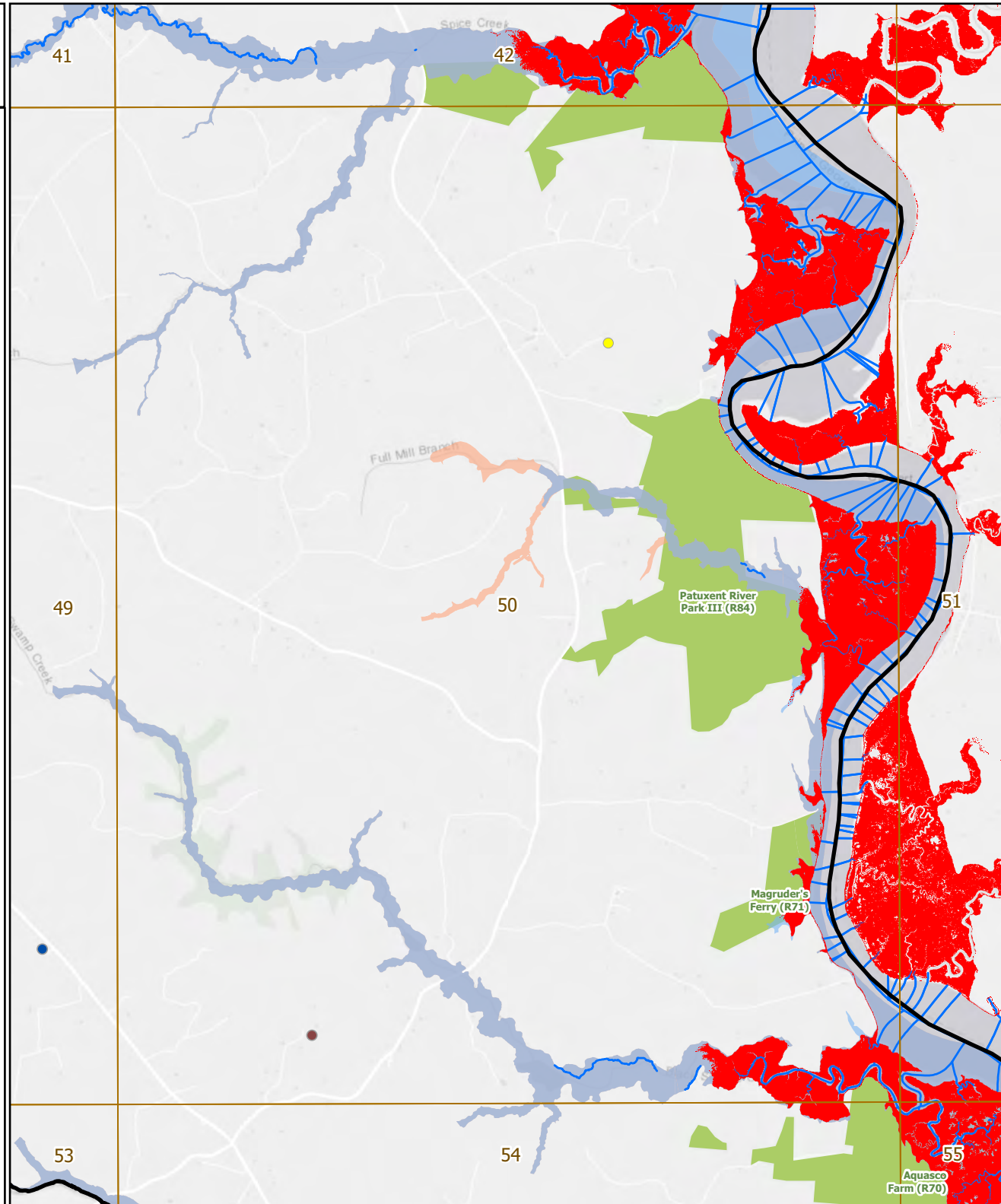
## FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

## DPIE Floodplain



N  
Features may  
not be to scale



# Overview:

## Panel 51 of 57

### Key Features

- DPW&T-Identified Roads and Structures
- 311/911/FEMA Hotspot Areas
- Stream Centers and Drainage
- M-NCPPC Parks

### Critical Facilities

- Airports
- Police Stations
- Fire Stations
- Hospitals
- Schools
- Recreation Centers
- Senior Activity Centers
- Libraries
- Day Care Centers
- Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

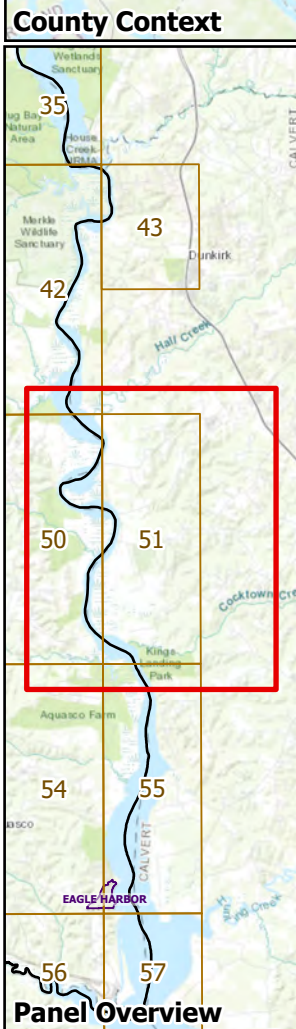
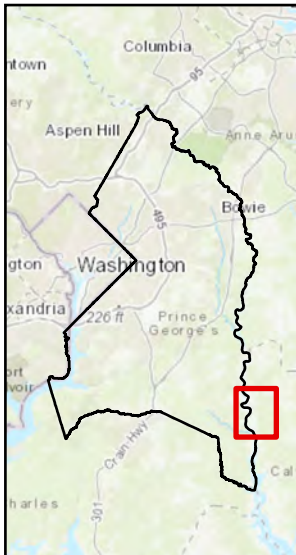
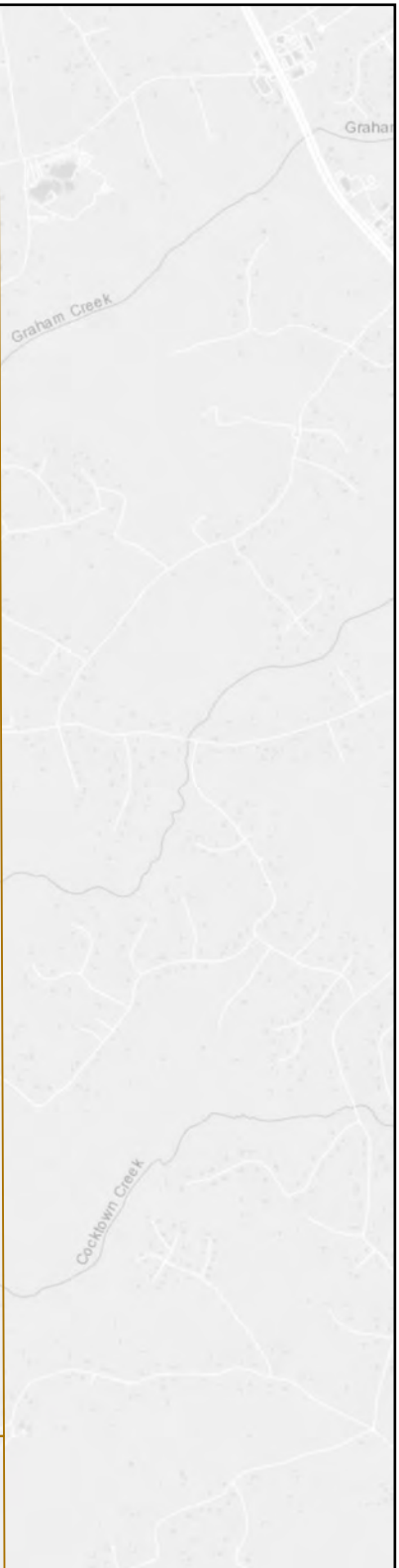
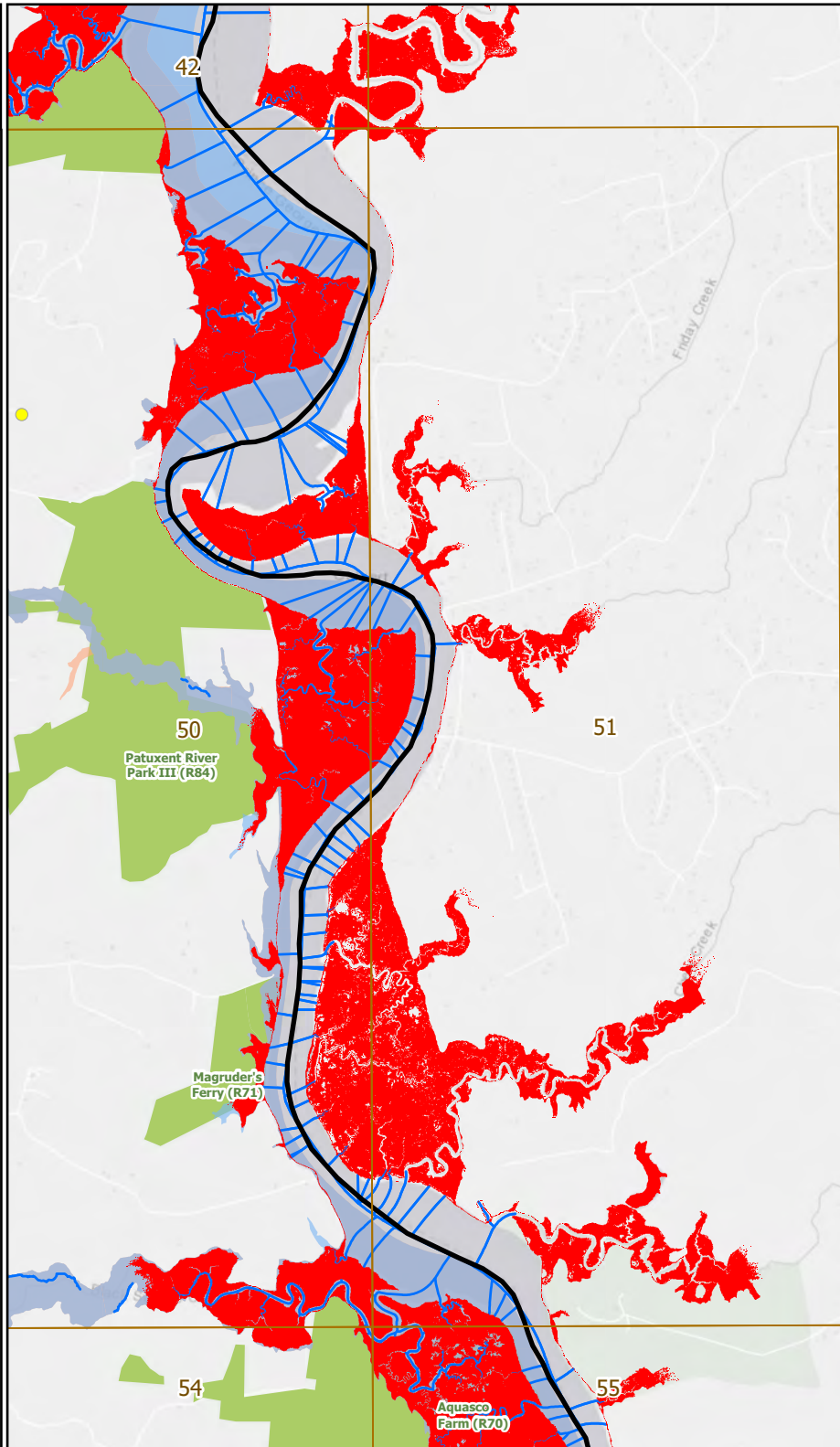
### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



Features may not be to scale









# Overview:

## Panel 52 of 57


### Key Features

-  DPW&T-Identified Roads and Structures
-  311/911/FEMA Hotspot Areas
-  Stream Centers and Drainage
-  M-NCPPC Parks




### Critical Facilities

-  Airports
-  Police Stations
-  Fire Stations
-  Hospitals
-  Schools
-  Recreation Centers
-  Senior Activity Centers
-  Libraries
-  Day Care Centers
-  Senior Housing


### Social Vulnerability Index (SVI)

-  Census Tracts with SVI Score > 75%



### Boundaries

-  Panel
-  Municipal Boundary
-  County Boundary

### High Tide Flooding

-  NOAA High Tide Flood Threshold

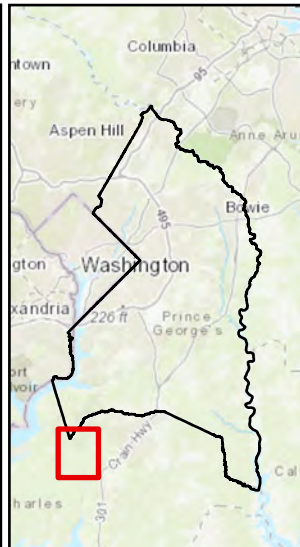
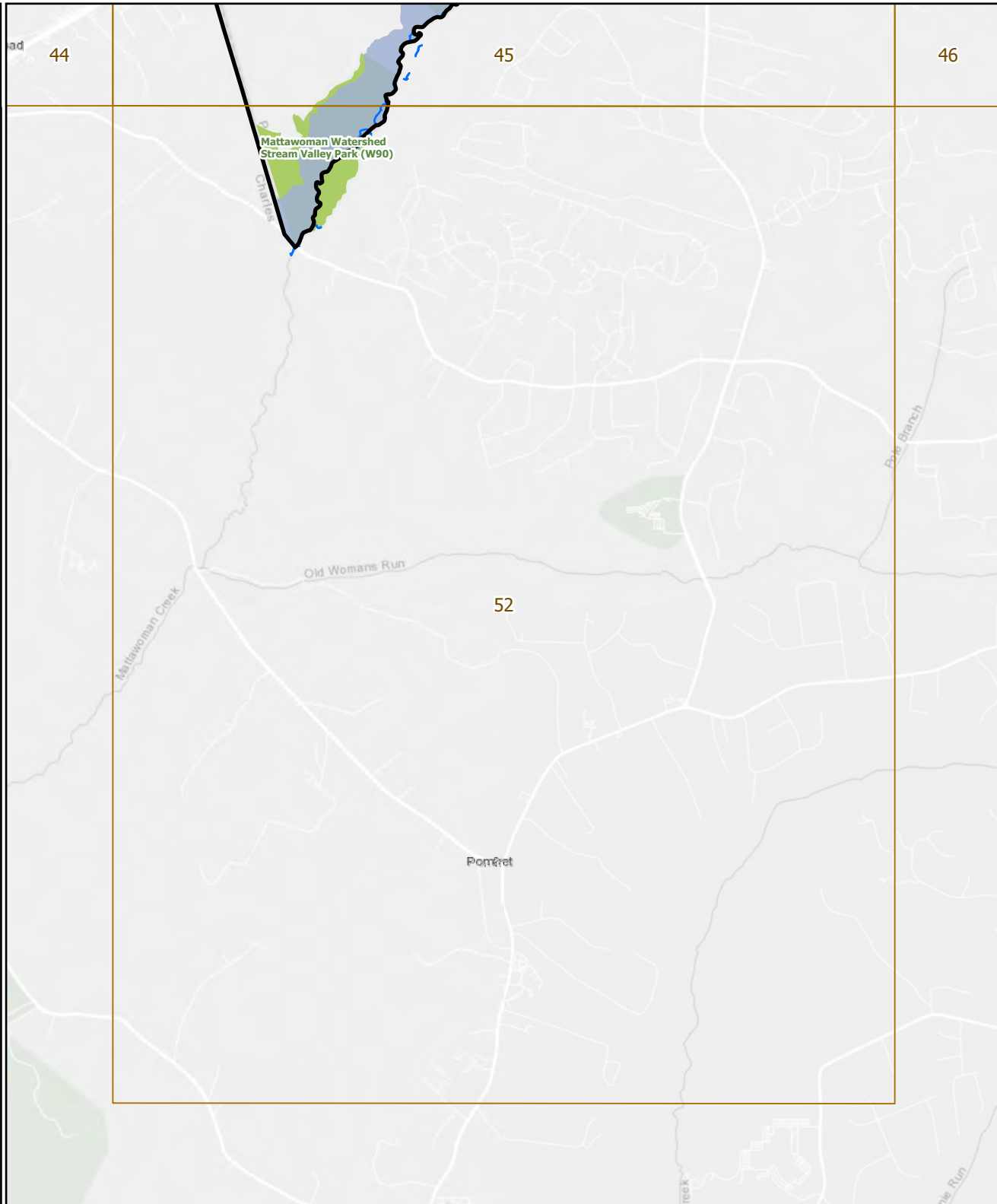
### FEMA 100-year Floodplain

-  VE - Coastal High Hazard Area
-  A: AE: AH: AO: OPEN WATER

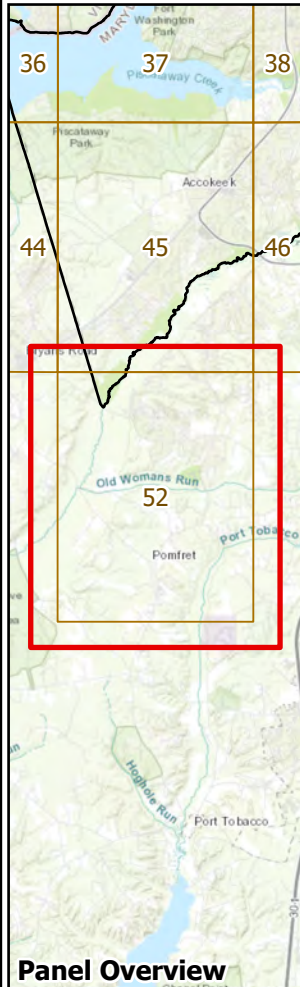
### DPIE Floodplain



Features may  
not be to scale



### County Context



### Panel Overview

# Overview:

## Panel 53 of 57

### Key Features

- DPW&T-Identified Roads and Structures
- 311/911/FEMA Hotspot Areas
- Stream Centers and Drainage
- M-NCPPC Parks

### Critical Facilities

- Airports
- Police Stations
- Fire Stations
- Hospitals
- Schools
- Recreation Centers
- Senior Activity Centers
- Libraries
- Day Care Centers
- Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

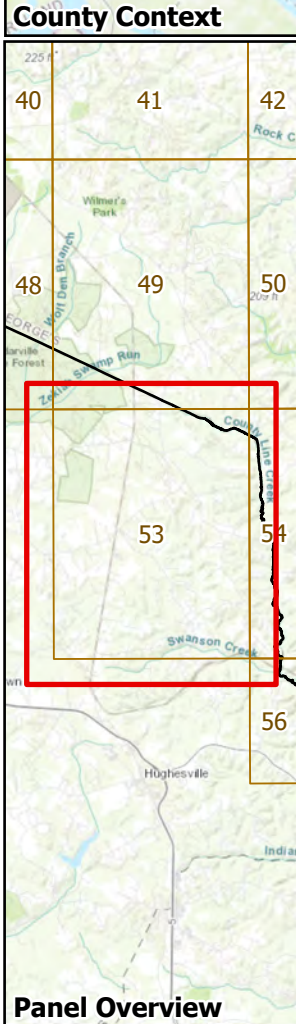
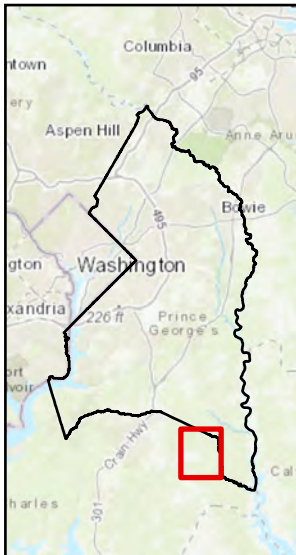
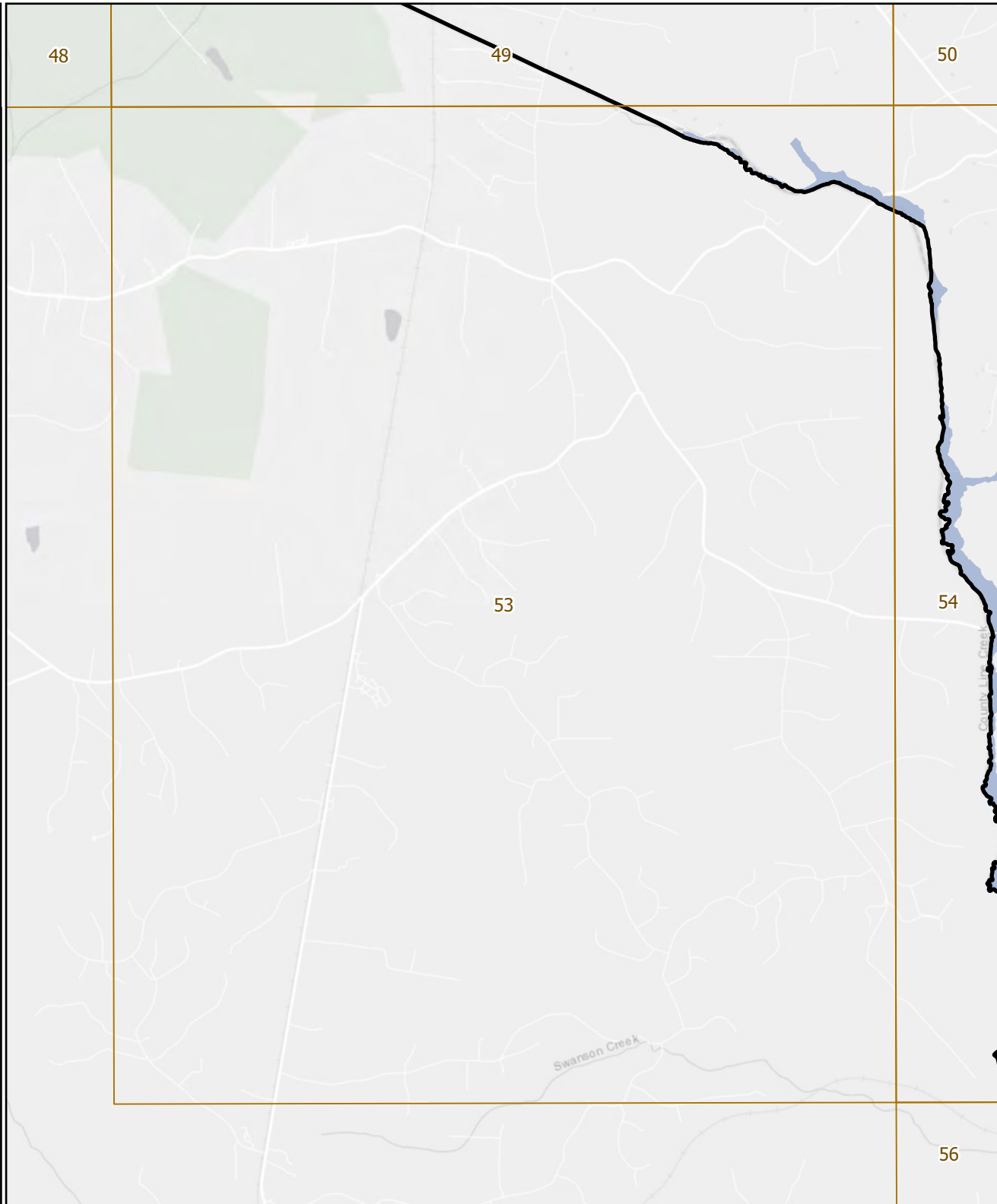
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain





# Overview:

## Panel 54 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

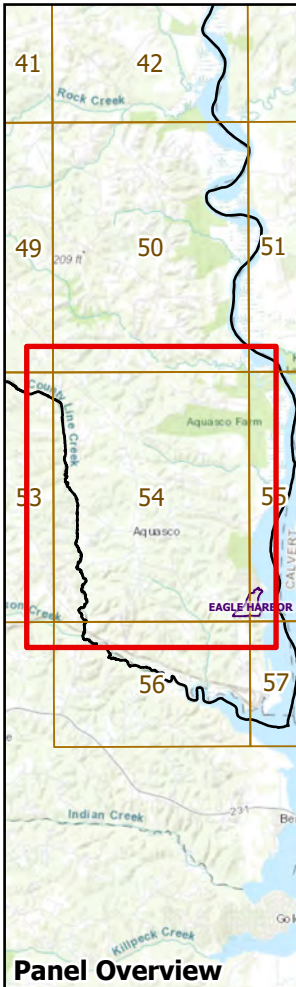
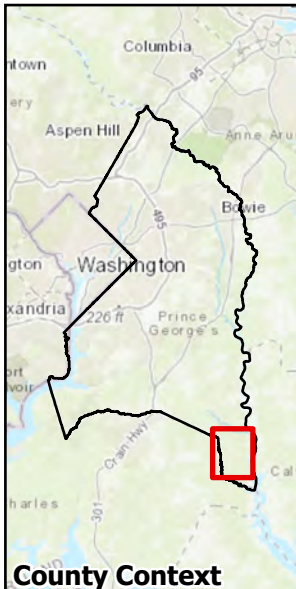
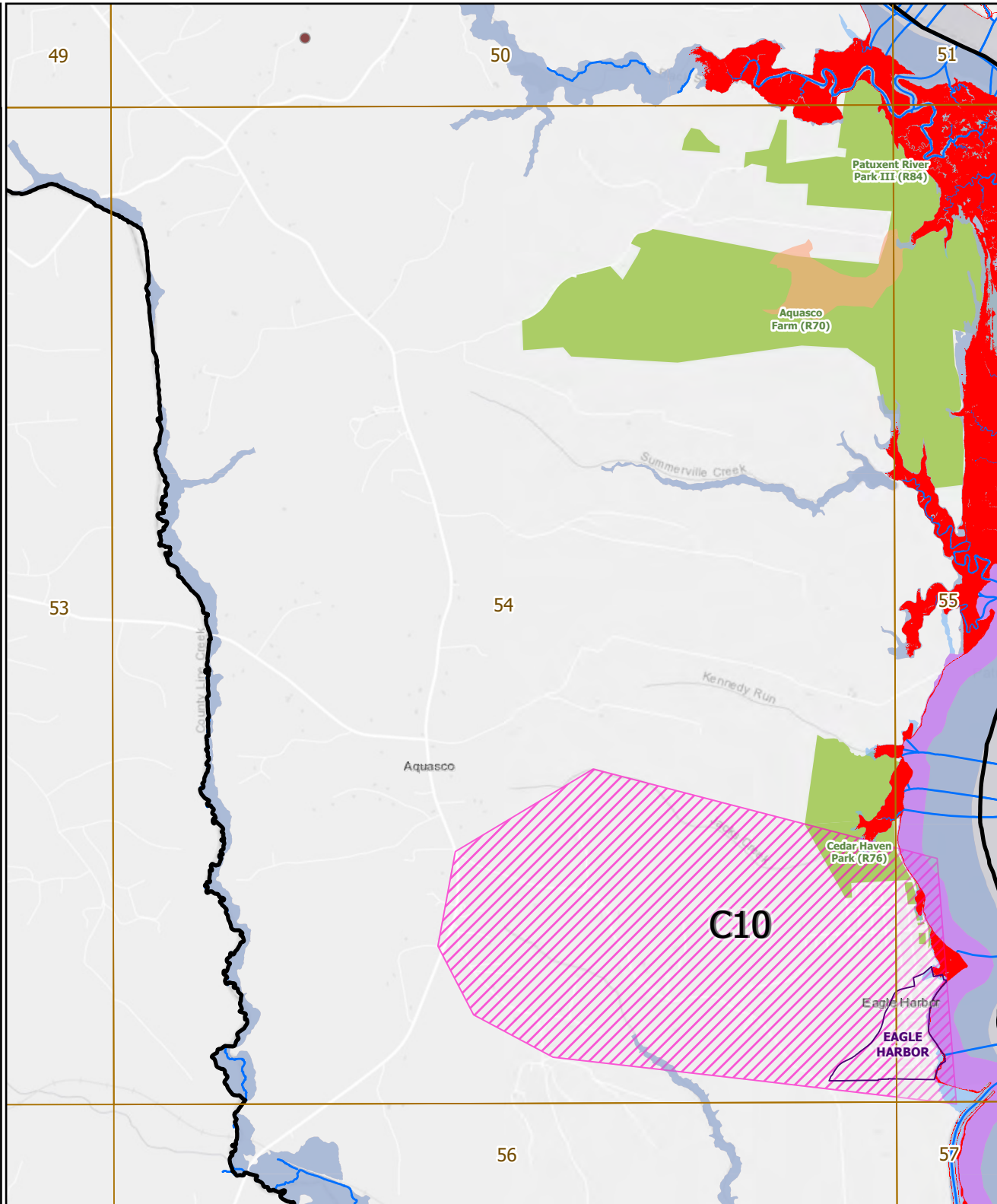
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain





- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



**Overview:**  
**Panel 55 of 57**

## Key Features

-  DPW&T-Identified Roads and Structures
-  311/911/FEMA Hotspot Areas
-  Stream Centers and Drainage
-  M-NCPPC Parks




## Critical Facilities

- Airports
- Police Stations
- Fire Stations
- Hospitals
- Schools
- Recreation Centers
- Senior Activity Centers
- Libraries
- Day Care Centers
- Senior Housing

## Social Vulnerability Index (SVI)

-  Census Tracts with SVI Score > 75%

## Boundaries

-  Panel  
 Municipal Boundary  
 County Boundary

## High Tide Flooding

- 
- NOAA High Tide Flood Threshold

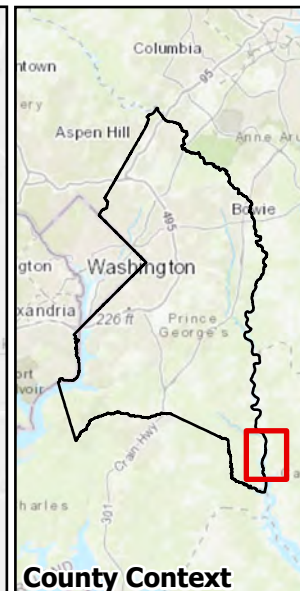
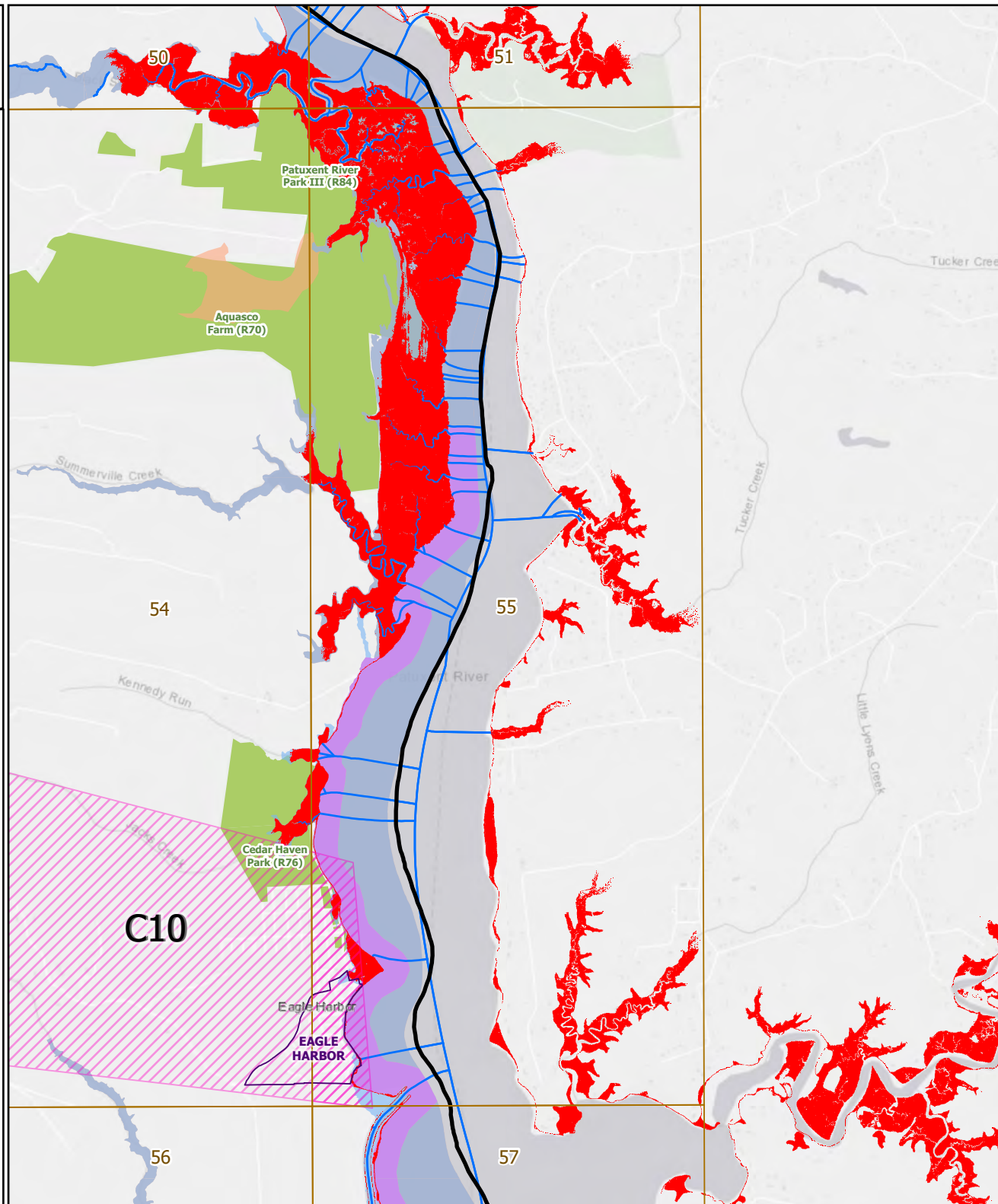
## FEMA 100-year Floodplain

- VE - Coastal High Hazard Area  
A: AE: AH: AO: OPEN WATER

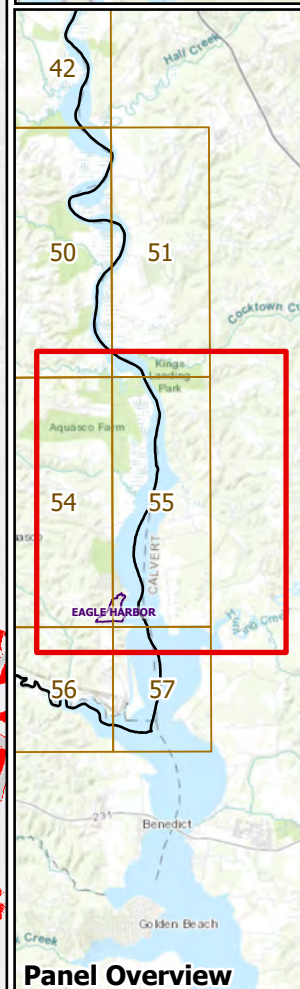
## DPIE Floodplain



Features may not be to scale



## County Context



## Panel Overview



# Overview:

## Panel 56 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

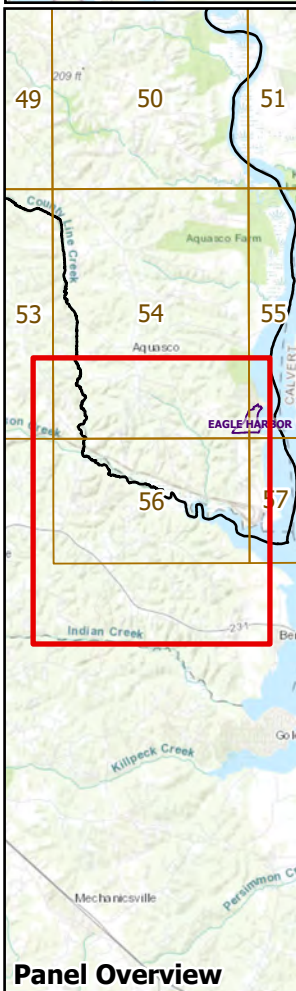
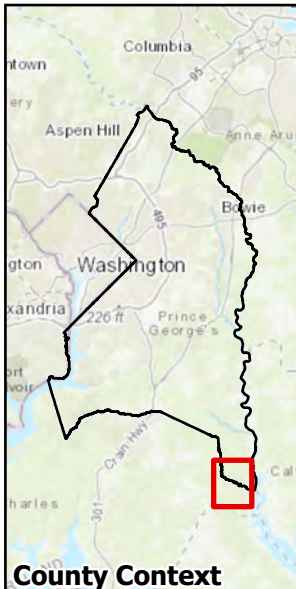
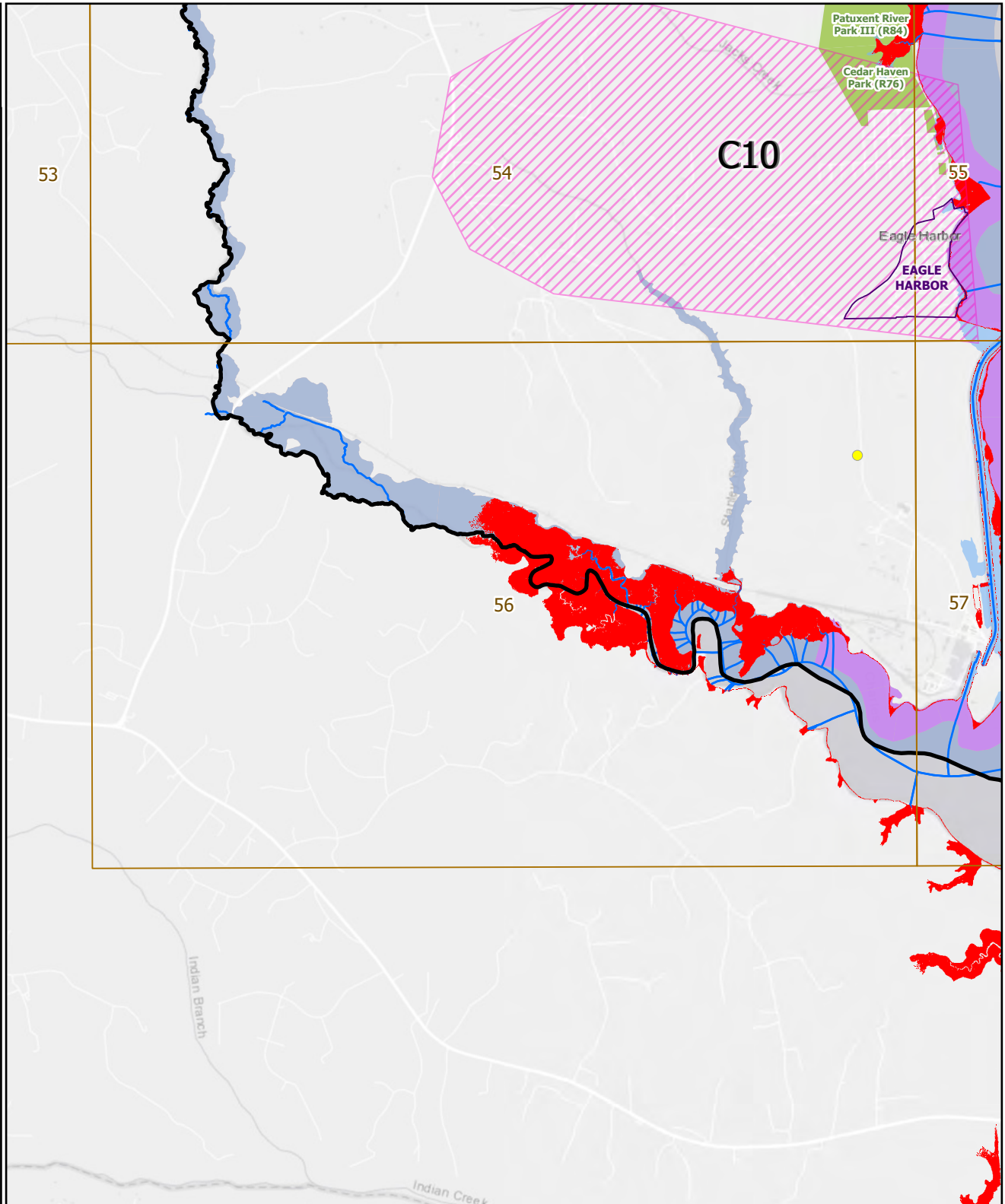
### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain



# Overview:

## Panel 57 of 57

### Key Features

- DPW&T-Identified Roads and Structures
  - 311/911/FEMA Hotspot Areas
  - Stream Centers and Drainage
  - M-NCPPC Parks
- ### Critical Facilities
- Airports
  - Police Stations
  - Fire Stations
  - Hospitals
  - Schools
  - Recreation Centers
  - Senior Activity Centers
  - Libraries
  - Day Care Centers
  - Senior Housing

### Social Vulnerability Index (SVI)

- Census Tracts with SVI Score > 75%

### Boundaries

- Panel
- Municipal Boundary
- County Boundary

### High Tide Flooding

- NOAA High Tide Flood Threshold

### FEMA 100-year Floodplain

- VE - Coastal High Hazard Area
- A: AE: AH: AO: OPEN WATER

### DPIE Floodplain

