1.0 Jurisdiction Executive Summary

Jurisdiction executive summaries highlight some of the background data gathered and analysis completed for the 2011 Richmond-Crater Multi-Regional Hazard Mitigation Plan Update with emphasis on the results from the Hazard Identification and Risk Assessment (HIRA). Additional details on the region, specifics on analysis methodologies and mitigation action details can be found in the Hazard Mitigation Plan.

1.1 Hazards

The information below summarizes the effects of the region's 10 top hazards on Chesterfield County.

(1) Flooding (Significant Threat)

- Repetitive Loss (RL) Structures = 18; Severe Repetitive Loss (SRL) Structures = 1 Number of Claims = 51; Total Building and Contents Payment on RL and SRL Properties = $858,578 (as of 3/22/2011)
- NFIP Flood Policies = 703; Insurance In-Force = $177,821,200; Number of Claims = 169; Total Building and Contents Payment on Claims = $2,577,406 (as of 2/28/2011)
- There are eight critical facilities located in the floodplain.
- High Prone Flood Areas =
    - Flooding of the Appomattox River and its tributary Swift Creek cause potentially $20,000-$40,000 in annual flood damages in the southeastern portion of the county, and up to $10,000 in damages throughout the southern half of the county.
    - The James River borders the county to the north, and the area sees up to $20,000 in annual flood damage in several adjoining census blocks.
    - Annual potential flood damages in some areas exceed $40,000 around the Swift Creek Reservoir.

Critical Facilities: Eight critical facilities are located within mapped floodplains. For this analysis, critical facilities are defined as a facility in either the public or private sector that provides essential products and services to the general public, is otherwise necessary to preserve the welfare and quality of life in the County, or fulfills important public safety, emergency response, and/or disaster recovery functions. Critical facilities examined for Chesterfield County fall into ten categories including: Medical Facilities/Hospitals, Police Stations, Airports, VDOT Fuel Tanks, VDOT Facilities, E911 Centers, Fire/EMS Stations, Cell/Radio Towers, Utilities, and Public Schools.

Significant Historical Events: Several severe flooding events have had a widespread impact in Chesterfield County; these include:

- August 2004: Tropical Storm Gaston produced torrential rains and caused widespread flooding, high waters, power outages, and road closures. Falling Creek toppled two bridges in the county.
- September 2003: Hurricane Isabel produced moderate rainfall and winds for the region. Six homes in the county were destroyed and many required repairs. Three fatalities and 40 injuries were noted in the county. Many roads were closed and water systems infiltrated.
- May 2003: Thunderstorms produced heavy rains and high waters, resulting in road closures and extensive flooding to a motel and trailer park on Jefferson Davis Highway.
- November 1985: Significant rainfall resulted in the closure of Interstate 95 and several local roads due to flooding. Many homes were damaged and 20 families evacuated on Old Gun Road.
- August 1969: Hurricane Camille resulted in Interstate 95 closing due to flooding.

Additional information on flooding can be found in Section 5.6, starting on page 5-9.

(2) Wind (Moderate Threat) This category includes hurricane, thunderstorm and tornado winds.

- Total tornado touchdowns reported at 13 for past 50 years; 2-F2, 7-F1 and 4-F0
- Annualized losses from tornado wind events = $423,282
- Annualized losses from hurricane wind events = $975,603
- Annualized losses from thunderstorm and other wind events (excluding tornadoes and hurricanes) = $9,411

Significant Historical Events: Wind events have had a widespread impact in Chesterfield County; these include:

- September 2003: Hurricane Isabel: wind resulted in downed trees, damaged buildings and snapped power and telephone lines
- September 1999: Hurricane Floyd: produced high winds and rain. Throughout the region tree and power lines were down, roads blocked and homes flooded
- August 1993: Tornadic thunderstorms tracked across the county. Interstate 95 was shut down. Trees were uprooted in Matoaca and tractor trailers overturned on I-295
- April 1990: A F2 tornado caused extensive damage to an auto dealership on route 1 and 301

- May 1984: An F2 tornado touched down in the county and caused $2.5 million in damages

Additional information on wind can be found in Sections 5.7, 5.8 and 5.9, starting on pages 5-9, 5-50, and 5-91, respectively.

(3) Winter Weather (Moderate Threat)

- 16 National Weather Service Alerts during past 5 years for winter weather
- Annualized all winter weather losses = $21,462

Significant Historical Events

- January – February 2010: Major winter storms impacted the area, bringing significant snowfall and gusting winds.
- January 2000: During a one-week period, two winter storms produced major snowfall (13 to 18 inches with 3.5-foot drifts), blizzard conditions, and damaging ice accumulations. Ice accumulations on January 30 topped ½ inch in spots. This event iced and uprooted trees, disrupted power, and closed schools for several days.
- December 1993: Winter storms resulted in primary and secondary roads being covered with snow, ice and slush. Public transit was shut down and various businesses closed early. This event caused numerous traffic accidents in the county.
- January 1977: Several weeks of ice, snow (11.1 inches) and record low temperatures resulted in one of the coldest winter seasons. The James River and Chesterfield County rivers were frozen. Residences and businesses dealt with frozen and burst pipes.

Additional information on winter weather can be found in Section 5.10, starting on page 5-95.

(4) Thunderstorm (Moderate Threat)

- Annualized losses from thunderstorms including hail and lightning = $7,094
- The NCDC database shows that at least two people in the region have been killed and three others injured as a result of lightning since 1993. One of these fatalities was in Chesterfield County.

Significant Historical Events

- June 1996: Lightning sparked fires which damaged four homes and a large shed. Damage was estimated at $77,000
- August 1993: A man was struck and killed by lightning while mowing grass in his backyard

Additional information on thunderstorms can be found in Section 5.9, starting on page 5-91.

(5) Drought (Moderate Threat)

- Annualized losses from drought = $226
- An extended period of abnormally dry weather occurred over a period of four years, from 1998 to 2002.
- This period saw rainfall levels well below normal and caused many communities throughout the state to institute water restrictions.
- Value of agricultural products sold (in $1,000) in Chesterfield County is $4,487.

Significant Major Events:

- 2007: Unusually dry conditions persisted through a significant portion of the year through much of southern and central Virginia. Virginia as a whole experienced its tenth driest year on record.
- December 2001 – November 2004: Beginning in the winter of 2001, the mid-Atlantic began to show long-term drought conditions. The National Weather Service made reports of moisture starved cold fronts that would continue throughout the winter. Stream levels were below normal with record lows observed at gages for the York, James, and Roanoke River Basins. By November 2002, the US Secretary of Agriculture had approved 45 counties for primary disaster designation, while 36 requests remained pending.
- June – November 1998: A heat wave over the southeast produced warm and dry conditions over much of Virginia. Unusually dry conditions persisted through much of the fall. The drought produced approximately $38.8 million in crop damages over portions of central and south-central Virginia.

- November 1976 – September 1977: Ten months of below average precipitation. The drought began in November of 1976 when rainfall totaled to only 50 to 75% of normal amounts. During the rest of the winter, storms that normally would have brought moisture tracked across the gulf. During the spring and summer, the storms tracked across the Great Lakes. These weather patterns created significant drought throughout most of Virginia.

Additional information on drought can be found in Section 5.11, starting on page 5-109.

(6) Wildfire (Limited Threat)

- Annualized losses from wildfire = $4,129
- Total acres burned in Chesterfield County (1995-2008) = 631.2
- Total dollar damage in Chesterfield County (1995-2008) = $53,675
- Annualized number of events = 18.92
- 189 woodland communities in high fire rank
- 25,142 homes in woodland communities in high fire rank

Critical Facilities: Seventy six critical facilities are located within high potential wildfire areas. For this analysis, critical facilities are defined as a facility in either the public or private sector that provides essential products and services to the general public, is otherwise necessary to preserve the welfare and quality of life in the County, or fulfills important public safety, emergency response, and/or disaster recovery functions. Critical facilities examined for Chesterfield County fall into ten categories including: Medical Facilities/Hospitals, Police Stations, Airports, VDOT Fuel Tanks, VDOT Facilities, E911 Centers, Fire/EMS Stations, Cell/Radio Towers, Utilities, and Public Schools.

Significant Major Events: Within Chesterfield County, wildfires have been experienced every year; counts are provided by year below.

- 2008 – 18
- 2007 – 11
- 2006 – 11
- 2005 – 13
- 2004 – 7
- 2003 – 5
- 2002 – 18
- 2001 – 22
- 2000 – 11
- 1999 – 29
- 1998 – 22
- 1997 – 28
- 1996 – 18
- 1995 – 33

Additional information on wildfire can be found in Section 5.13, starting on page 5-117.

(7) Earthquake (Limited Threat)

- Annualized losses from earthquake = $694,861
- Significant earthquakes were first recorded in Virginia in 1774. Virginia has had over 160 earthquakes since 1977, of which 16% were felt. This averages to approximately one earthquake every month, with two felt each year.
- There have been five significant earthquakes centered in the region

Additional information on earthquake can be found in Section 5.16, starting on page 5-141.

(8) Landslide and Shoreline/Coastal Erosion (Limited Threat)

- The greatest landslide hazards are found in the higher elevations of western and southwestern Virginia. Analysis of the hazard here is limited by the availability of data. There is no comprehensive database documenting all landslide occurrences within the Commonwealth
- A strip of High Susceptibility & Moderate Incidence touches portions of Chesterfield County

Additional information on landslide and shoreline/coastal erosion can be found in Section 5.14, starting on page 5-132.

(9) Land Subsidence/Karst/Sinkholes (Limited Threat)

- According to the Virginia State Hazard Mitigation Plan, there have been no Federal Declared Disasters or NCDC recorded events for karst related events in the Commonwealth. Land subsidence is very site-specific. There is no comprehensive long-term record of past events in Virginia.

Past Events: In 2010, within Chesterfield County, sinkholes in the Scottingham neighborhood were reported around storm drain infrastructure (source: WWBT-TV NBC 12 Richmond, VA).

Additional information on land subsidence/karst/sinkholes can be found in Section 5.15, starting on page 5-138.

(10) Mass Evacuation (Medium Threat)

- Mass evacuations from urban areas can strain a community's resources and cause gridlock on major transportation routes, overcrowding of hospitals and shelters, and increased load on local utility infrastructures leading to potential failure.

Additional information on mass evacuation can be found in Section 5.12, starting on page 5-115.

1.2 Demographic Characteristics[1]

- Population (2010): 316,236
- Land Area (2010): 423.30 sq. miles
- Density (2010): 747.1 persons per sq. mile
- Median household income (2009): $70,055
- Percent below poverty level (2009): 6.1%
- Race characteristics (2010)
    - White: 68.3%
    - Black: 21.9%
    - American Indian and Alaska Native: 0.4%
    - Asian: 3.3%
    - Native Hawaiian and other Pacific Islander: 0.1%
    - Persons reporting two or more races: 2.6%
      (of the abovementioned races, 7.2 % are of Hispanic or Latin origin)

[1] Source U.S. Census Bureau: State and County QuickFacts.

1.3 Chesterfield County Mitigation Actions

Number in 2011 Plan	Strategy	Addresses Goals?	Hazards Addressed	Responsible Department	Resources	Timeframe	Priority
Chesterfield-1	Complete adoption of new digital FIRMs.	1	Flood	Environmental Engineering	Staff time	Short-term	Medium
Chesterfield-2	Continue to evaluate existing stormwater system and maintain adequacy for current flood risk.	2	Flood	Environmental Engineering	Staff time	Ongoing	Medium
Chesterfield-3	Continue to work with VDEM and FEMA to mitigate repetitive and severe repetitive loss properties as grant funds are available and owners demonstrate interest in participation.	1	Flood	Emergency Management	Grant funds	As funding becomes available	Low
Chesterfield-4	Enhance and coordinate use of GIS to gather damage assessment information by all county agencies including establishing naming conventions and data categories.	4	All hazards	GIS	Staff time	Short-term	Low
Chesterfield-5	Implement citizen notification system (e.g., Reverse 911).	3	All hazards	Emergency Management	County funds	As funding becomes available	Low
Chesterfield-6	Include 2011 Hazard Mitigation Plan in the reference manual of the Chesterfield Countywide Comprehensive Plan, 2011.	4	All hazards	Planning	Staff time	Short-term	Low
Chesterfield-7	Install quick connects for generators at critical facilities. Work with UASI to retrofit any facilities not funded with UASI grants.	2	All hazards	Emergency Management	Grant funds	As funding becomes available	Medium

Number in 2011 Plan	Strategy	Addresses Goals?	Hazards Addressed	Responsible Department	Resources	Timeframe	Priority
Chesterfield-8	Provide training opportunities to county/municipal enforcement staff. Educate them re: damage assessment, mitigation techniques, and other related topics.	4	All hazards	Emergency Management	Staff time	On-going	Low
Chesterfield-9	Maintain StormReady certification.	3	Flooding, Wind, Winter Weather, Thunderstorm, Wildfire, Drought	Emergency Management	Staff time	On-going	Low
Chesterfield-10	Continue to implement a channel maintenance program consisting of routine inspections and subsequent debris removal to ensure free flow of water in local streams and watercourses. Identify funding opportunities.	1, 2	Flood	Environmental Engineering	Staff time	On-going	Medium
Chesterfield-11	Inspect and clear debris (or encourage VDOT to) from stormwater drainage system.	1, 2	Flood	Environmental Engineering	Staff time	On-going	Medium
Chesterfield-12	Distribute brochures and use other means to educate the public regarding preparedness and mitigation. Conduct annual preparedness days for hazards to include flood, wind, and earthquake.	3	All hazards	Emergency Management	Staff time, free FEMA and other agency publications	Ongoing	Medium

Number in 2011 Plan	Strategy	Addresses Goals?	Hazards Addressed	Responsible Department	Resources	Timeframe	Priority
Chesterfield-13	Request list from VDEM/DCR and conduct annual review of repetitive loss and severe repetitive loss property list to ensure accuracy. Review will include verification of the geographic location of each repetitive loss property and determination if mitigated and by what means. Provide corrections if needed by filing form FEMA AW-501.	1	Flood	Emergency Management	Staff time	Ongoing	Low
Chesterfield-14	Continue to enforce zoning and building codes, with emphasis on floodplain management.	1, 2, 4	Flood, wind, earthquake, land subsidence, winter weather	Inspections	Staff time	Ongoing	High
Chesterfield-15	Review locality's compliance with the National Flood Insurance Program with an annual review of the Floodplain Ordinances and any newly permitted activities in the 100-year floodplain.	4	Flood	Emergency Management	Staff time	Ongoing	Medium
Chesterfield-16	Support mitigation of priority structures through promotion of acquisition/demolition, elevation, flood proofing and other mitigation projects where feasible using FEMA HMA programs where appropriate.	1, 2	All hazards	Emergency Management	Staff time	Short-term	Medium
Chesterfield-17	Discuss with mobile home park owners and operators construction of community safe rooms.	1	Tornado	Emergency Management	Staff time	Short-term	Medium

Number in 2011 Plan	Strategy	Addresses Goals?	Hazards Addressed	Responsible Department	Resources	Timeframe	Priority
Chesterfield-18	Determine, in concert, with Chesterfield School District if schools identified as potential shelter sites require retrofitting (e.g., safe rooms, wind load increases).	2	Wind	Emergency Management	Staff time	Short-term	Medium
Chesterfield-19	Review County telework policy pilot and determine effect on ensuring county continuity of government.	4	All hazards	Emergency Management	Staff time	Short-term	Medium
Chesterfield-20	Consider adopting land development policies specific to wildland-urban interface fire (e.g. Firewise principles) and/or requiring review of proposed development plans by Virginia Department of Forestry.	1	Wildfire	Building Inspections	Staff time	Long-term	Low
Chesterfield-21	Work with Virginia Department of Mines, Minerals and Energy to continue to refine the Locations of Abandoned Mines in the Greater Richmond Area maps. Utilize these maps to guide zoning, development and building inspection decisions.	4	Land subsidence	Inspections; Environmental Engineering	Staff time	Short-term	Medium
Chesterfield-22	Expand CERT program to target recruitment of county staff.	3	All hazards	Emergency Management	Staff time	Short-term	Low
Chesterfield-23	Enhance building permitting system (POSSE) to include disaster-related information to more comprehensively capture damage assessment data.	4	All hazards	GIS; Inspections	Agency funds	Long-term	Medium

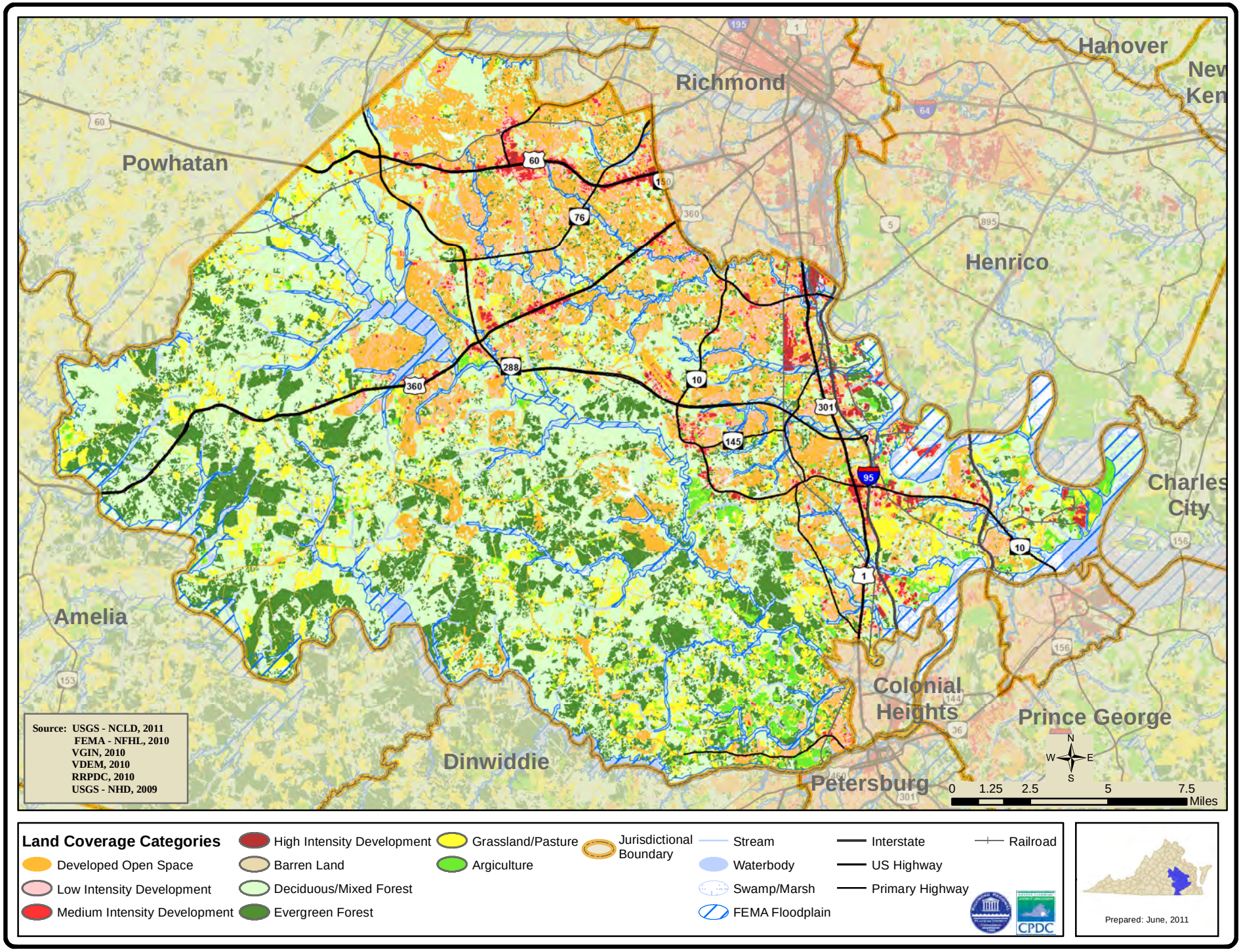
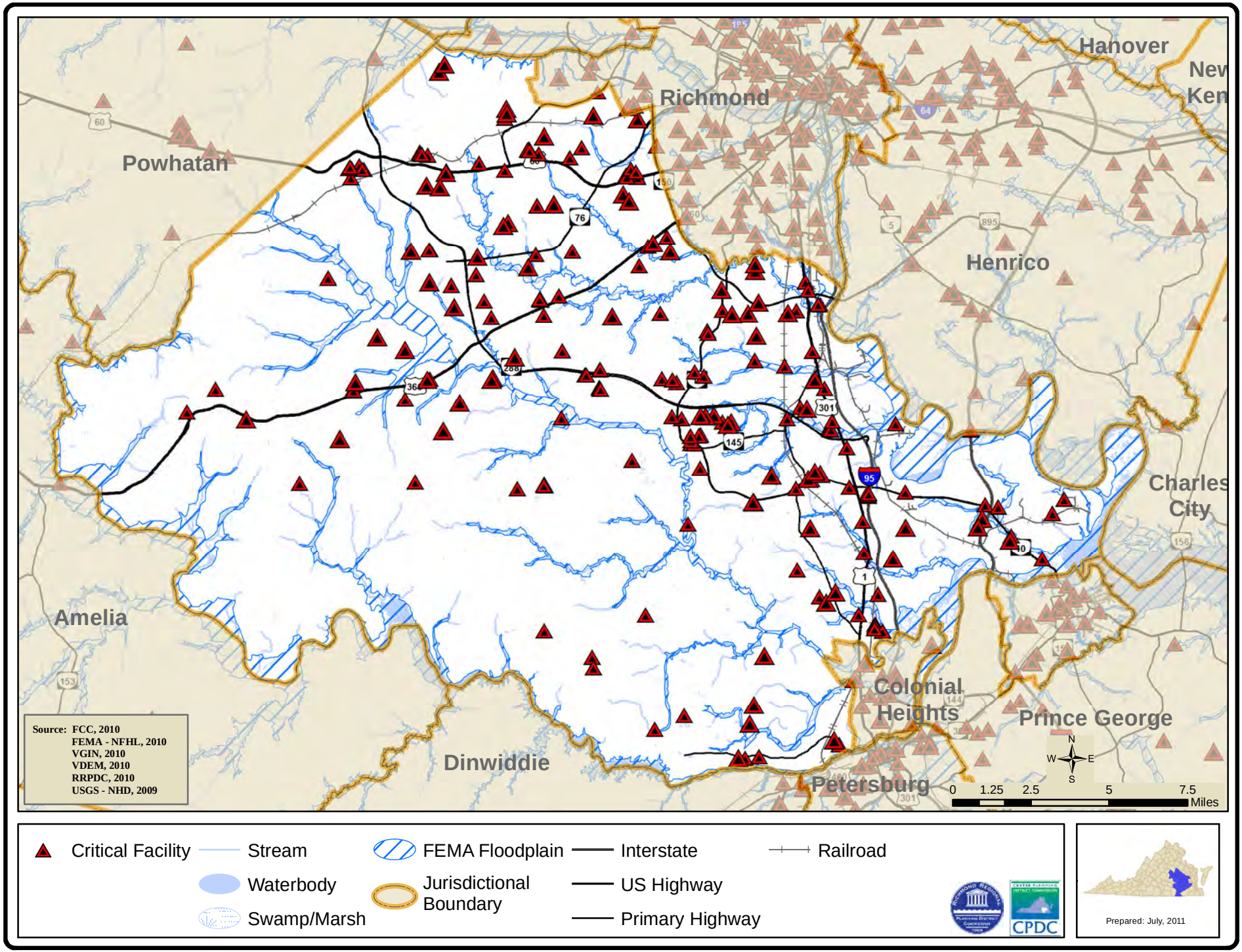


Figure . Chesterfield County: Land Coverage and FEMA Mapped Floodplains

Figure . Chesterfield County: Critical Facilities and FEMA Mapped Floodplains



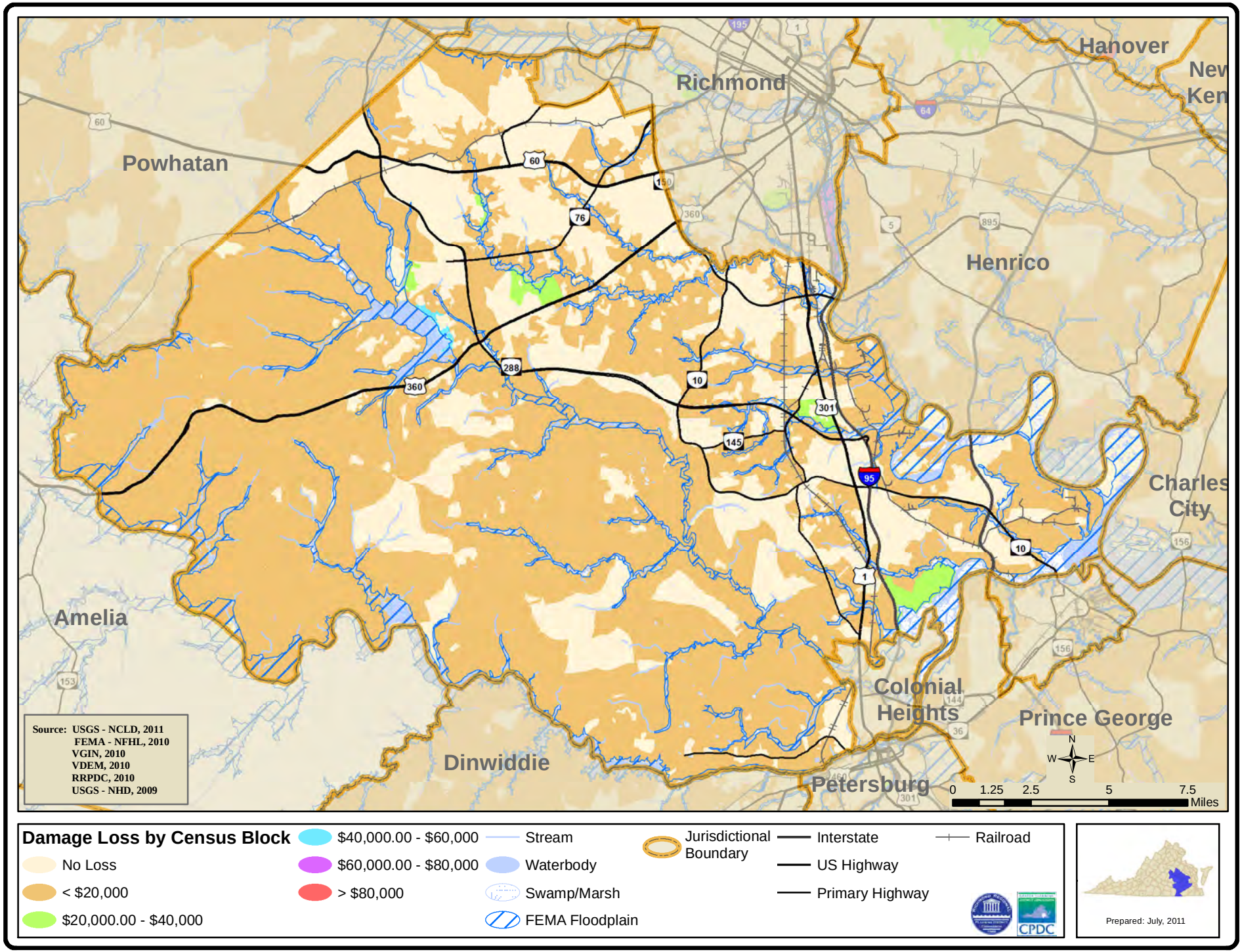


Figure . Chesterfield County: Annualized Flood Loss Damage and FEMA Mapped Floodplains

Figure . Chesterfield County:Annualized Loss Due to Wind Damage

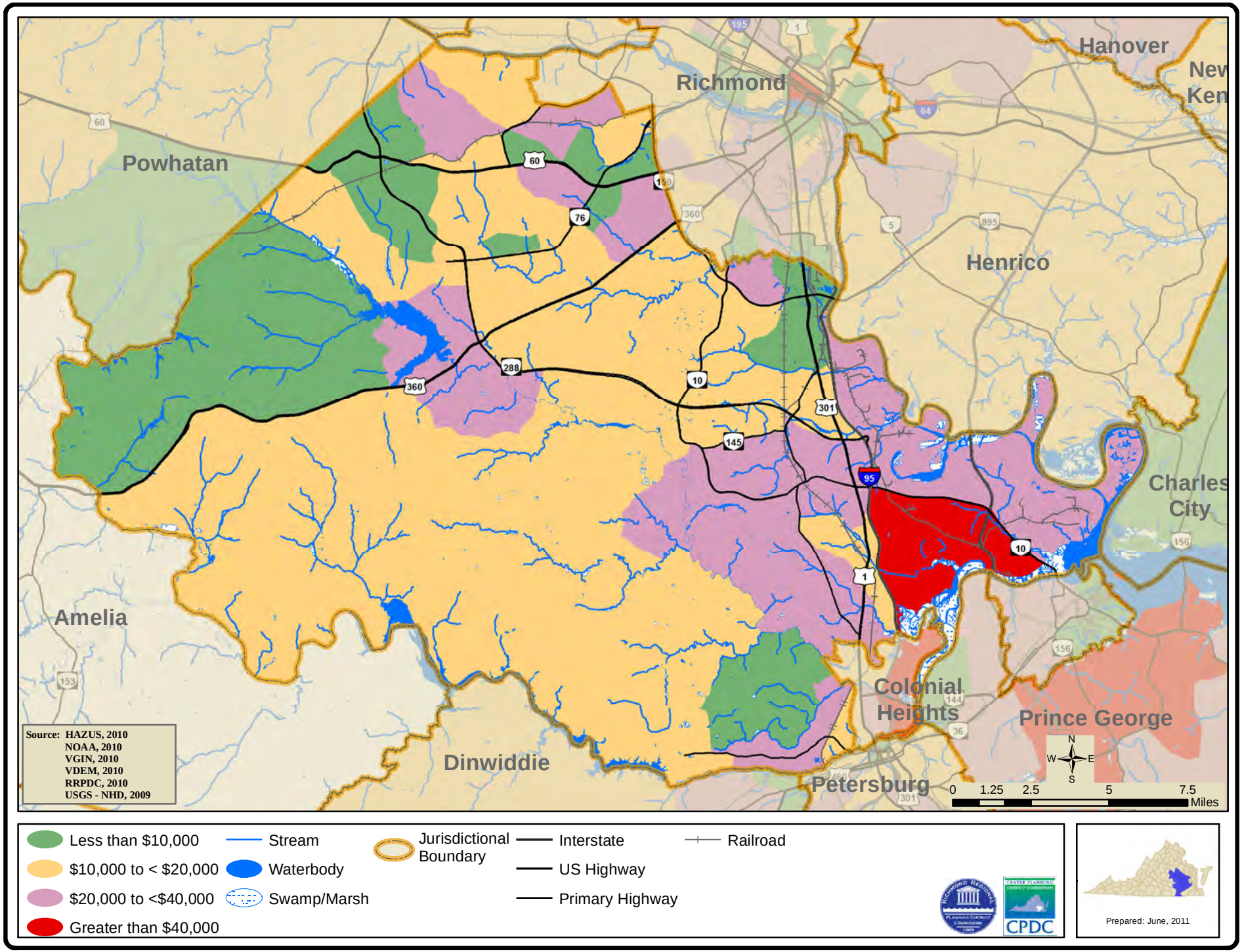


Figure . Chesterfield County: Critical Facilities and Wildfire Risk Areas

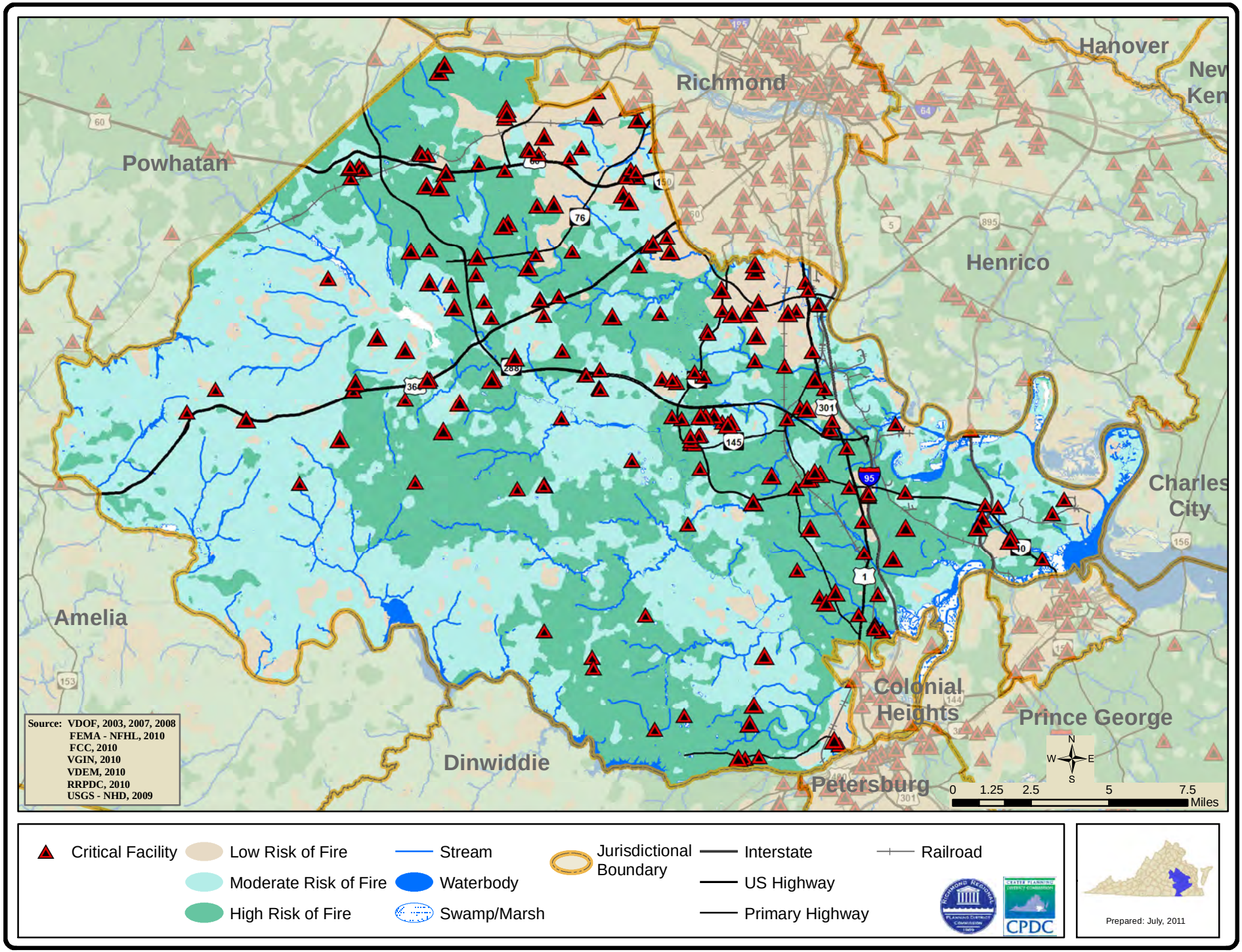


Figure . Chesterfield County:Woodland Home Communities and Wildfire Risk Areas