

NOTIFICATION OF TRANSMITTAL

To: Virginia Community Flood Preparedness Fund
cfpf@dcr.virginia.gov

From: Northern Virginia Regional Commission
Nora Jackson, Resiliency Planner njackson@novaregion.org
Corey Miles, Senior Environmental Planner cmiles@novaregion.org

Regarding: Application to conduct a Flood Prevention and Protection Study in Northern Virginia

Date: Nov. 5, 2021 Time: 3:00 PM

This transmittal package contains the official and authorized application from the NVRC to DCR for the Virginia Community Flood Preparedness Fund to conduct a Flood Prevention and Protection Study in Northern Virginia.

The electronic file contained herein contains the following information:

- Appendix A- Application Form for Grant Requests for All Categories
- Appendix B- Eligibility Determination Form
- Scope of Work Narrative
- Budget Narrative
- Scope of Work Supporting Documentation
- Budget Supporting Documentation

Cc: ngoulet@novaregion.org

Appendix A: Application Form for Grant Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

Northern Virginia Regional Commission

Category of Grant Being Applied for (check one):

Capacity Building/Planning

Project

Study

NFIP/DCR Community Identification Number (CID) N/A

If a state or federally recognized Indian tribe, Name of tribe _____

Name of Authorized Official: Robert Lazaro

Signature of Authorized Official: 

Mailing Address (1): 3040 Williams Drive Ste 200

Mailing Address (2): _____

City: Fairfax State: VA Zip: 22031

Telephone Number: (703) 642-0700 Cell Phone Number: () _____

Email Address: rlazaro@novaregion.org

Contact Person (If different from authorized official): Nora Jackson

Mailing Address (1): 3040 Williams Drive Ste 200

Mailing Address (2): _____

City: Fairfax State: VA Zip: 22031

Telephone Number: (703) 642-4369 Cell Phone Number: (443) 949-1158

Email Address: njackson@novaregion.org

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes ____ No X

Categories (select applicable project):

Project Grants (Check All that Apply)

- Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development.
- Wetland restoration.
- Floodplain restoration.
- Construction of swales and settling ponds.
- Living shorelines and vegetated buffers.
- Structural floodwalls, levees, berms, flood gates, structural conveyances.
- Storm water system upgrades.
- Medium and large scale Low Impact Development (LID) in urban areas.
- Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool.
- Dam restoration or removal.
- Stream bank restoration or stabilization.
- Restoration of floodplains to natural and beneficial function.
- Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.

Study Grants (Check All that Apply)

- Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.
- Revising other land use ordinances to incorporate flood protection and mitigation goals, standards and practices.
- Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA). For example, a local government might conduct a hydrologic and hydraulic study for an area that had not been studied because the watershed is less than one square mile. Modeling the floodplain in an area that has numerous letters of map change that suggest the current map might not be fully accurate or doing a detailed flood study for an A Zone is another example.
- Studies and Data Collection of Statewide and Regional Significance.
- Revisions to existing resilience plans and modifications to existing comprehensive and hazard.
- Other relevant flood prevention and protection project or study.

Capacity Building and Planning Grants

- Floodplain Staff Capacity.
- Resilience Plan Development
 - Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.
 - Resource assessments, planning, strategies and development.
 - Policy management and/or development.
 - Stakeholder engagement and strategies.

Location of Project (Include Maps): Northern Virginia Regional Commission Member Jurisdictions

NFIP Community Identification Number (CID#):(See appendix F N/A)

Is Project Located in an NFIP Participating Community? Yes No

Is Project Located in a Special Flood Hazard Area? Yes No

Flood Zone(s) (If Applicable): _____

Flood Insurance Rate Map Number(s) (If Applicable): _____

Total Cost of Project: \$122,837.20 _____

Total Amount Requested \$61,418.69 _____

Appendix B: Scoring Criteria for Flood Prevention and Protection Projects

Virginia Department of Conservation and Recreation
 Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:		
Eligibility Information		
Criterion	Description	Check One
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not</u> a town, city, or county, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
N/A	Match not required	

Project Eligible for Consideration		<input type="checkbox"/> Yes	<input type="checkbox"/> No
Applicant Name:			
Scoring Information			
Criterion		Point Value	Points Awarded
6. Eligible Projects (Select all that apply)			
Projects may have components of both 1.a. and 1.b. below; however, only one category may be chosen. The category chosen must be the primary project in the application.			
1.a. Acquisition of property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures.		50	
<input type="checkbox"/> Wetland restoration, floodplain restoration <input type="checkbox"/> Living shorelines and vegetated buffers. <input type="checkbox"/> Permanent conservation of undeveloped lands identified as having flood resilience value by <i>ConserveVirginia</i> Floodplain and Flooding Resilience layer or a similar data driven analytic tool <input type="checkbox"/> Dam removal <input type="checkbox"/> Stream bank restoration or stabilization. <input type="checkbox"/> Restoration of floodplains to natural and beneficial function. <input type="checkbox"/> Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.		45	
1.b. any other nature-based approach		40	
All hybrid approaches whose end result is a nature-based solution		35	
All other projects		25	
7. Is the project area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)			
Very High Social Vulnerability (More than 1.5)		15	
High Social Vulnerability (1.0 to 1.5)		12	
Moderate Social Vulnerability (0.0 to 1.0)		8	
Low Social Vulnerability (-1.0 to 0.0)		0	
Very Low Social Vulnerability (Less than -1.0)		0	
8. Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?			

Yes	10	
No	0	
9. Is the proposed project in a low-income geographic area as defined in this manual?		
Yes	10	
No	0	
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	5	
No	0	
11. Does this project provide “community scale” benefits?		
Yes	20	
No	0	
Total Points		

Appendix C: Scoring Criteria for Studies

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:	Northern Virginia Regional Commission	
Eligibility Information		
Criterion	Description	Check One
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	X
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	X
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	X
No	Not eligible for consideration	
N/A	Match not required	

Studies Eligible for Consideration		<input type="checkbox"/> Yes <input type="checkbox"/> No	
Applicant Name:			
Scoring Information			
Criterion	Point Value	Points Awarded	
6. Eligible Studies (Select all that apply)			
Revising floodplain ordinances to maintain compliance with the NFIP or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks or freeboard, or correcting issues identified in a Corrective Action Plan.	30		
Creating tools or applications to identify, aggregate, or display information on flood risk or creating a crowd-sourced mapping platform that gathers data points about real-time flooding. This could include a locally or regionally based web-based mapping product that allows local residents to better understand their flood risk.	15	15	
Conducting hydrologic and hydraulic studies of floodplains. Applicants who create new maps must apply for a Letter of Map Revision or a Physical Map Revision through the Federal Emergency Management Agency (FEMA).	35		
Studies and Data Collection of Statewide and Regional Significance. Funding of studies of statewide and regional significance and proposals will be considered for the following types of studies:			
<input checked="" type="checkbox"/> Updating precipitation data and IDF information (rain intensity, duration, frequency estimates) including such data at a sub-state or regional scale on a periodic basis.	45	45	
<input type="checkbox"/> Regional relative sea level rise projections for use in determining future impacts.	45		
<input type="checkbox"/> Vulnerability analysis either statewide or regionally to state transportation, water supply, water treatment, impounding structures, or other significant and vital infrastructure from flooding.	45		
<input type="checkbox"/> Flash flood studies and modeling in riverine regions of the state.	45		
<input checked="" type="checkbox"/> Statewide or regional stream gauge monitoring to include expansion of existing gauge networks.	45	45	

<input type="checkbox"/> New or updated delineations of areas of recurrent flooding, stormwater flooding, and storm surge vulnerability in coastal areas that include projections for future conditions based on sea level rise, more intense rainfall events, or other relevant flood risk factors.	45	
<input type="checkbox"/> Regional flood studies in riverine communities that may include watershed-scale evaluation, updated estimates of rainfall intensity, or other information.	50	
<input type="checkbox"/> Regional hydrologic and hydraulic studies of floodplains.	45	
<input type="checkbox"/> Studies of potential land use strategies that could be implemented by a local government to reduce or mitigate damage from coastal or riverine flooding.	40	
<input checked="" type="checkbox"/> Other proposals that will significantly improve protection from flooding on a statewide or regional basis	35	35
7. Is the study area socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)		
Very High Social Vulnerability (More than 1.5)	15	
High Social Vulnerability (1.0 to 1.5)	12	
Moderate Social Vulnerability (0.0 to 1.0)	8	
Low Social Vulnerability (-1.0 to 0.0)	0	0
Very Low Social Vulnerability (Less than -1.0)	0	
8. Is the proposed study part of an effort to join or remedy the community's probation or suspension from the NFIP?		
Yes	10	
No	0	0
9. Is the proposed study in a low-income geographic area as defined in this manual?		
Yes	10	
No	0	0
10. Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?		
Yes	5	
No	0	0
Total Points		140

Appendix D: Scoring Criteria for Capacity Building & Planning

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Applicant Name:		
Eligibility Information		
Criterion	Description	Check One
1. Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
2. Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?		
Yes	Eligible for consideration under all categories	
No	Eligible for consideration for studies, capacity building, and planning only	
3. If the applicant is <u>not a town, city, or county</u>, are letters of support from all affected local governments included in this application?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
4. Has this or any portion of this project been included in any application or program previously funded by the Department?		
Yes	Not eligible for consideration	
No	Eligible for consideration	
5. Has the applicant provided evidence of an ability to provide the required matching funds?		
Yes	Eligible for consideration	
No	Not eligible for consideration	
N/A	Match not required	

Capacity Building and Planning Eligible for Consideration		<input type="checkbox"/> Yes	<input type="checkbox"/> No
Applicant Name:			
Scoring Information			
Criterion	Point Value	Points Awarded	
6. Eligible Capacity Building and Planning Activities (Select all that apply)			
Revisions to existing resilience plans and modifications to existing comprehensive and hazard mitigation plans.	55		
Development of a new resilience plan.	55		
Resource assessments, planning, strategies and development.	45		
Policy management and/or development.	40		
Stakeholder engagement and strategies.	25		
Goal planning, implementation and evaluation.	25		
Long term maintenance strategy.	25		
Other proposals that will significantly improve protection from flooding on a statewide or regional basis.	15		
7. Is the area within the local government to which the grant is targeted socially vulnerable? (Based on ADAPT VA's Social Vulnerability Index Score.)			
Very High Social Vulnerability (More than 1.5)	15		
High Social Vulnerability (1.0 to 1.5)	12		
Moderate Social Vulnerability (0.0 to 1.0)	8		
Low Social Vulnerability (-1.0 to 0.0)	0		
Very Low Social Vulnerability (Less than -1.0)	0		
8. Is the proposed activity part of an effort to join or remedy the community's probation or suspension from the NFIP?			
Yes	10		
No	0		
9. Is the proposed project in a low-income geographic area as defined in this manual?			
Yes	10		
No	0		
10. Does this project provide "community scale" benefits?			
Yes	20		
No			
Total Points			

Appendix D: Checklist All Categories

Virginia Department of Conservation and Recreation

Community Flood Preparedness Fund Grant Program

Scope of Work Narrative	
Supporting Documentation	Included
Detailed map of the project area(s) (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
FIRMette of the project area(s) (Projects/Studies)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Historic flood damage data and/or images (Projects/Studies)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current floodplain ordinance	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Non-Fund financed maintenance and management plan for project extending a minimum of 5 years from project close	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
A link to or a copy of the current hazard mitigation plan	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
A link to or a copy of the current comprehensive plan	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A
Social vulnerability index score(s) for the project area from ADAPT VA's Virginia Vulnerability Viewer	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
If applicant is not a town, city, or county, letters of support from affected communities	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Completed Scoring Criteria Sheet in Appendix B, C, or D	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Budget Narrative	
Supporting Documentation	Included
Authorization to request funding from the Fund from governing body or chief executive of the local government	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
Signed pledge agreement from each contributing organization	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

Study Proposal: Northern Virginia Rain Gauge Network Evaluation

Scope of Work Narrative

1. *The specific type of study proposed including whether the study is new or updates a prior study*

The study proposed includes Data Collection of Regional Significance. The proposed study also includes the Creation of tools or applications to identify, aggregate, or display information on flood risk that gathers data points about real-time flooding. This will include a regionally based web-based dashboard that allows local governments, emergency management agencies, and residents to better understand their flood risk.

This proposal is a new study.

Disparate efforts to monitor the recent trend in extremely localized and very heavy downpours has resulted in development of individual and fragmented rainfall-runoff monitoring and alert systems. The City of Alexandria owns and operates a series of rainfall and flow gauges, sharing the real-time data through their [Rain Gauge and Stream Flow tool](#). Fairfax County has installed 30 rainfall sensors which they use in conjunction with USGS flow station data, and Prince William County is currently adding to their existing network of gauges and other weather instruments.

A common platform for sharing knowledge about community flood risk allows for a better understanding of individual as well as neighboring community risks. There is a strong need for clear communication regarding immediate flood risk, as the vulnerability of one area can spill into its surroundings. To monitor the trends, distribution and variability of intense localized downpours and support a unified approach to flood preparedness, NVRC proposes to conduct an audit of the current rainfall-runoff monitoring capabilities throughout the region as well as flood alert technologies to determine opportunities for interoperability of existing hardware and software. In addition, NVRC proposes to identify and recommend strategies that could be used to optimize the existing gauge networks and host a regional dashboard that aggregates Fairfax, Prince William and Arlington Counties and the City of Alexandria's rainfall runoff technology monitoring data. By leveraging the updated flood alert systems already installed by a number of localities in the region, this study aims to evaluate system performance and data reliability, streamline emergency management, and allow for a coordinated approach in preparing the region for increasing flood risks.

2. *The relationship of the study to the local government's needs for flood prevention and protection, equity, community improvement, identification of nature-based solutions or other priorities contained in this manual.*

Past flooding events and their economic impacts on the region are noted in the 2017 [Northern Virginia Hazard Mitigation Plan](#). However, the most frequent flood events are localized in nature and often overwhelm stormwater systems, leading to infrastructure damages and system disruptions. Historical data on the economic impacts of these types of floods is not available.

Over the last several years, the Northern Virginia region has experienced several extremely localized and very heavy downpours (see Figures 1-3). For example, extreme precipitation events have occurred in one location resulting in rapid urban flooding while another location just a few miles away hardly

receives any precipitation. The recent expansion of the City of Alexandria ALERT2 rain gauge network in the past calendar year has already detected 2 of these types of events. Localized flood risk is less understood and thus less prepared for by the public. Characteristics like topography, land use, overwhelmed and undersized infrastructure compounds risk to the community. Maintaining field observations is necessary for building the foundation to examine these precipitation variations. Local governments and stormwater managers have expressed a need for better information when it comes to the changing hydrologic conditions the region is experiencing because of climate change. The current stormwater systems are designed for historical rain events and do not account for the shift our landscape experienced as we buried streams and hardscaped the region. More timely and reliable information on meteorological and hydrological events is needed to support regional infrastructure resilience planning.

3. *The qualifications of the individuals or organizations charged with conducting the study or the elements of any request for proposal that define those qualifications*

An engineering firm specializing in the design, installation, operation and maintenance of real-time environmental monitoring systems will be conducting the study under direction of NVRC. The firm must provide comprehensive services for real-time water management such as hardware and software support, including data acquisition, management, hosting, and visualization, real-time telemetry, website development, data analysis and reporting, and GIS.

The selected vendor must specialize in ALERT and ALERT2 flood warning systems. This includes installation, troubleshooting and maintaining base station software, and providing relevant training and support, in addition to;

- emergency response support related to flood warning systems
- conducts post-event analyses including estimating peak flow from high water marks.
- analyzes and reports hydrometeorological data, including providing QA/QC for rainfall and streamflow data
- conducts hydrologic analyses to explore watershed response and rainfall/runoff relationships.
- develops stage-discharge ratings for gage sites based upon both field measurements of discharge and theoretical hydraulic modeling developed from stream reach-and-cross-section surveys.

4. *The expected use of the study results in the context of the local resilience plan or, in the case of regional plans, how the study improves any regional approach.*

This regional study results will support state and local resiliency planning in the following ways:

1. Documentation of the existing gauges and flood alert network capabilities,
2. Recommendations of where the existing gauge network could be expanded to provide greater coverage throughout the region,
3. Development of a common platform that will allow real-time rainfall-runoff monitoring data to be aggregated and shared throughout the region,

4. Creation of a web-based data analysis tool for communicating and displaying real-time rainfall-runoff monitoring data that is collected throughout the region.

Consistency in data collection, visualization and messaging supports effective hazard mitigation and emergency planning. The results of the study can be used to develop future regional messages about flood risk, document flooding outside of mapped flood zones, support future risk rating updates, inform resiliency and stormwater modeling in addition to the investigation of regional precipitation trends.

5. *If applicable, how the study may improve Virginia's flood protection and prevention abilities in a statewide context.*

In addition to the benefits described above, the study will support the Virginia Department of Emergency Management (VDEM) and their mission to protect the lives and property of Virginia's citizens from emergencies and disasters by coordinating the state's emergency preparedness, mitigation, response and recovery efforts. Regional emergency managers rely on this type of data for evacuation planning, road closures, or monitoring nearby conditions. The rainfall-runoff sensors across Virginia are owned and operated by a variety of organizations and agencies, many of which are outdated or no longer supported. [Virginia's Flood Observation and Warning Network](#) (IFLOWs) managed by VDEM for example extends only to the western part of the state (see Figure 4), and a recent assessment demonstrated the system does not meet requirements for VDEM to fulfill their mission objectives.

Precipitation and stream gauges benefit communities by providing data needed for municipal functions, including emergency planning, water supply monitoring, sewer and waste treatment operations, navigation, recreation forecasts, power generation, and infrastructure design. This study will identify opportunities to update and expand flood alert systems, and by working in coordination with VDEM, inform their efforts to improve statewide flood hazard identification and planning.

Budget Narrative

Estimated total project cost: \$122,837.20

Amount of funds requested from the Fund: \$61,418.69

Amount of cash funds available: \$61,418.51

Total Budget Worksheet			
Category	CFPF Request	Matching Funds	Total
Personnel	\$ 25,416.33	\$ 28,016.33	\$ 53,432.65
Fringe	\$13,502.37	\$ 14,883.61	\$ 28,385.98
Travel		\$ 75.00	\$ 75.00
Supplies			\$ -
Contractual	\$ 22,500.00		\$ 22,500.00
Total Direct Costs	\$ 61,418.69		\$ 61,418.69
Indirect Costs		\$ 18,443.57	\$ 18,443.57
Total	\$ 61,418.69	\$ 61,418.51	\$ 122,837.20

Personnel Worksheet - CFPF Costs

Title	Name	Annual Salary	Level of Effort (%)	Total Personnel Cost
Resiliency Planner	Nora Jackson	\$ 65,000.00	36%	\$ 23,400.00
Senior Environmental Planner	Corey Miles	\$80,653	2.50%	\$ 2,016.33
Total				\$ 25,416.33

Personnel Worksheet - NVRC Costs

Title	Name	Annual Salary	Level of Effort (%)	Total Personnel Cost
Resiliency Planner	Nora Jackson	\$ 65,000.00	40%	\$ 26,000.00
Senior Environmental Planner	Corey Miles	\$80,653	2.50%	\$ 2,016.33
Total				\$ 28,016.33

Fringe Worksheet - CFPF Costs		
Salary	Rate (%)	Total Fringe Cost
\$ 25,416.33	53.12%	\$13,502.37

Fringe Worksheet - Match Costs		
Salary	Rate (%)	Total Fringe Cost
\$ 28,016.33	0.531247921	14883.61441

Supporting Documents:

1. Study Area: NVRC Member Jurisdictions



2. Evidence of matching funds- Approved NVRC budget that includes funding for Resiliency Planner position and FY21 financial audit resolution
3. Authorization to request and accept funding – signed resolution
4. VDEM Region 7 Letter of support
5. ADAPT VA Social Vulnerability Index Score map

The Northern Virginia region scores range from “very low social vulnerability” to “very high social vulnerability”. The study area encompasses a large number of census tracts, and the majority are classified as “low” or “very low” social vulnerability, contributing to an average score of 0. More recent vulnerability information from the CDC is included for some communities.

Figure 1: Flooding near the Braddock Road Metro on Thursday, September 16, 2021. (Courtesy Kerrin Nishimura)
<https://www.alxnow.com/2021/09/16/flash-flood-watch-issued-for-alexandria-3/>



Figure 2: Heavy rain on Sept. 10 resulted in severe flooding in the front and back yards of several homes along East Monroe Avenue. (Photo/Barbara Mancini) <https://alextimes.com/2020/09/city-experiences-another-100-year-flood/>

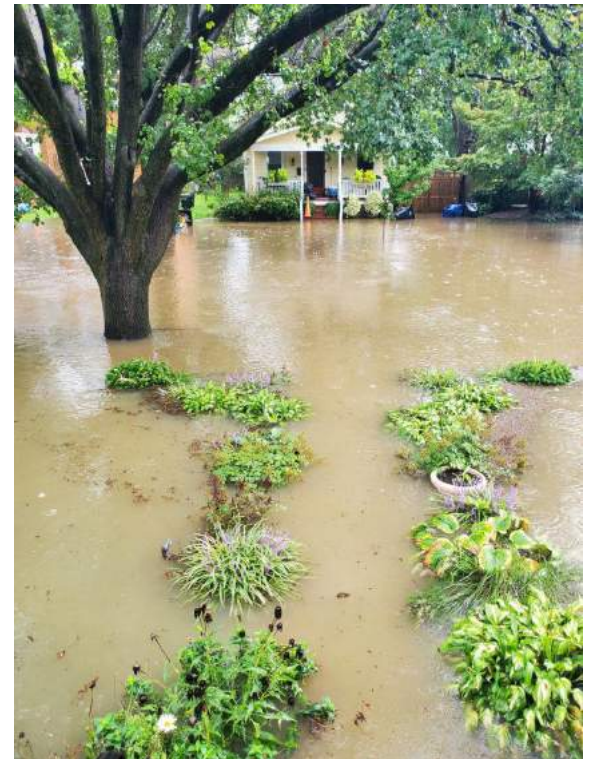
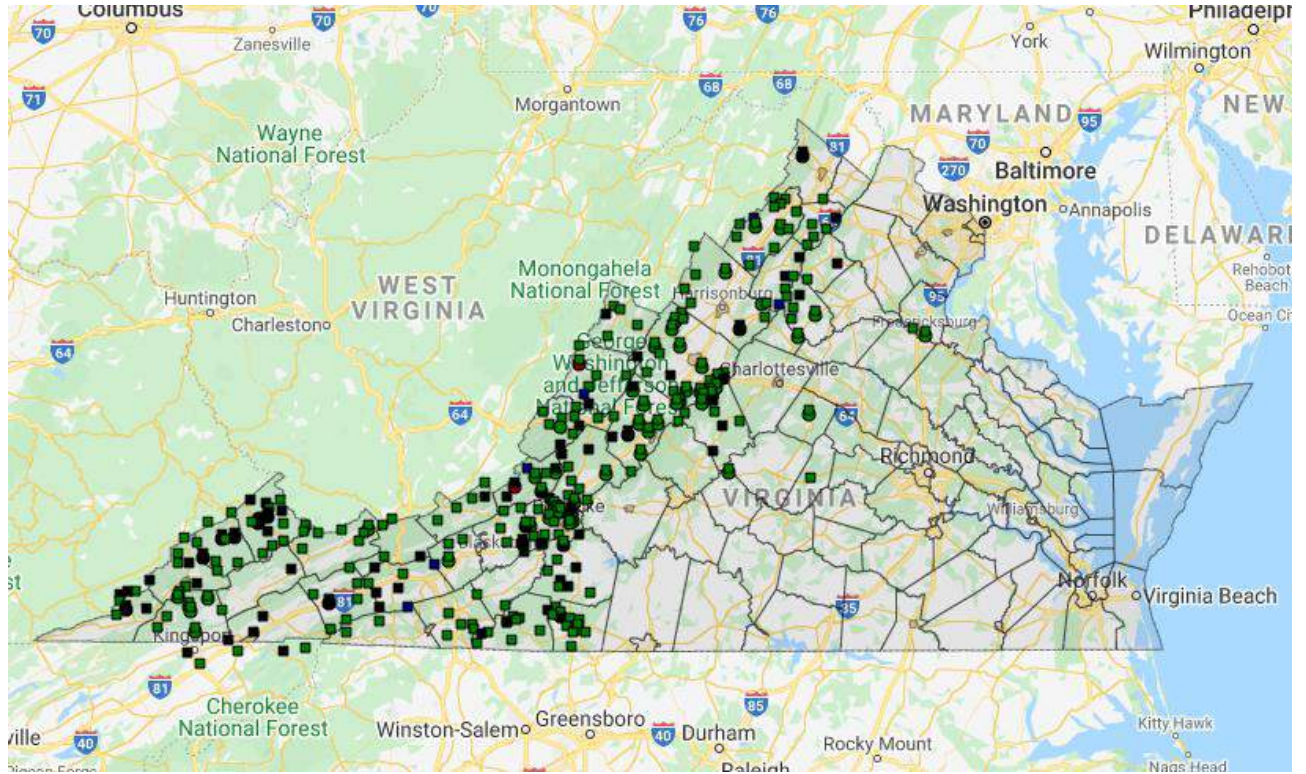


Figure 3: Alexandria sheriff in the alley behind his house after Sunday's flooding in Del Ray. <https://www.alxnow.com/2021/08/20/alxnows-top-stories-this-week-in-alexandria-41/>

Figure 4: Virginia Flood Observation and Warning Network gauge locations



Stormwater Resiliency

- a. Assist in responding to the 2016 Northern Virginia Hazard Mitigation Plan update, which determined that most of the Northern Virginia jurisdictions have a 'Highly Likely' probability of continued flood risk due to a 'High' vulnerability to flood hazards.
- b. Coordinate a regional approach to addressing a critical part of the flood response strategy: communicate with the public about flood risk and provide education about overland relief encroachments, flood insurance and ways to prepare for floods, by
 - Assembling stakeholders to determine education and outreach needs and opportunities.
 - Identifying existing public information efforts.
 - Identifying hazardous areas and properties and hazard types.
 - Assembling flood insurance information.
 - Determining coordinated messages.
 - Creating a website with all relevant information.
 - Delivering messages on various platforms at coordinated times.
 - Developing "Soak it Up" workshop guides/materials.
 - Conducting a series of "Soak it Up" Workshops.
- c. Coordinate a regional approach to addressing the development of potential regional Intensity, Duration, Frequency (IDF) Curves to assist localities in the development of stormwater planning in the context of climate change.

FTE	0.62	Expenses		Revenue	
<small>1 = 2080 hr</small>		Personnel	\$ 68,866	Grants/contracts	\$ -
		Contract	-	Fees	-
		Subgrants	-	Local designated funds	-
		Other	-	Other	-
		Share of indirect costs	31,986	General Funds	100,852
		TOTAL	\$100,852	TOTAL	\$100,852

RESOLUTION

Resolution No. 22-09

PATRON: Robert W. Lazaro, Jr.
Executive Director
DATE: October 28, 2021

FY 2021 AUDITED STATEMENTS

WHEREAS, the public auditor's draft report and financial statements for June 30, 2021, have been submitted by Robinson, Farmer, Certified Public Accountants, covering the financial operations and condition of the Commission for the fiscal year ending June 30, 2021; and

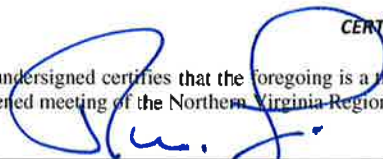
WHEREAS, the auditor has found no material weaknesses and no significant deficiencies have been reported; and

THEREFORE BE IT RESOLVED that, the Northern Virginia Regional Commission accepts the audit report for fiscal year 2021.



CERTIFICATION

The undersigned certifies that the foregoing is a true and correct copy of a resolution adopted at a legally convened meeting of the Northern Virginia Regional Commission on October 28, 2021.


ROBERT W. LAZARO, JR., CERTIFYING OFFICER

RESOLUTION

Resolution No. 22-11

PATRON: Robert W. Lazaro, Jr.
Executive Director

DATE: October 28, 2021

AUTHORIZATION TO SUBMIT A FLOOD EDUCATION AND PREVENTION GRANT PROPOSAL TO THE VIRGINIA DEPARTMENT OF CONSERVATION AND RECREATION

WHEREAS, floods are one of the most common natural hazards in our region and can result in significant damage; and

WHEREAS, floods can be local, impacting a neighborhood or community, or very large, affecting entire river basins; and

WHEREAS, the 2016 Northern Virginia Hazard Mitigation Plan update determined that most of the Northern Virginia jurisdictions have a 'Highly Likely' probability of continued flood risk due to 'High' vulnerability to flood hazard; and

WHEREAS, an increasing number of localized heavy downpour events can quickly overwhelm the stormwater conveyance system resulting in rapid rises in creeks and streams and ponding in poor drainage areas that are outside of a mapped flood zone; and

WHEREAS, to monitor the trends, distribution and variability of the intense localized downpours and provide early flood warnings, Fairfax, Prince William and Arlington Counties as well as the City of Alexandria individually own and operate a network of precipitation gauges; and

WHEREAS, the gauges utilize a technology that allows for real time transmission of precipitation data via a radio network to a receiver and software program where it is collected and displayed; and

WHEREAS, most of the gauges already in place in Northern Virginia are using the same technology; and

WHEREAS, configuring the software platform so that the data can be aggregated and displayed in a single dashboard for the entire region will allow for improved spatio-temporal analysis of intense rainfall events and urban flood warnings; and

WHEREAS, the Virginia Department of Conservation And Recreation has grant funding available for improving flood protection and prevention capabilities; and

THEREFORE BE IT RESOLVED, that the Northern Virginia Regional Commission authorizes the Executive Director to apply for a grant not to exceed \$95,000 from the Department of Conservation And Recreation in support of furthering a regional rainfall and flood information system;

BE IT FURTHER RESOLVED that the Northern Virginia Regional Commission authorizes the Executive Director to enter into a contract with the Virginia Department of Conservation And Recreation, should the proposal be accepted for funding.

CERTIFICATION

The undersigned certifies that the foregoing is a true and correct copy of a resolution adopted at a legally convened meeting of the Northern Virginia Regional Commission on October 28, 2021.


ROBERT W. LAZARO, JR., CERTIFYING OFFICER



Virginia Department of Conservation and Recreation
Attention: Virginia Community Flood Preparedness Fund
Division of Dam Safety and Floodplain Management
600 East Main Street, 24th Floor Richmond, Virginia 23219

To the Virginia Department of Conservation and Recreation,

The Virginia Department of Emergency Management Region 7 Office strongly supports the Northern Virginia Regional Commission's proposal for a rain gauge network evaluation and creation of an application to display real-time flood risk.

The 2016 Northern Virginia Hazard Mitigation Plan update determined that most of the Northern Virginia jurisdictions have a 'Highly Likely' probability of continued flood risk due to 'High' vulnerability to flood hazards. The proposed audit of the rainfall-runoff monitoring technology and flood alert systems will support emergency preparedness efforts in the region and inform flood response strategies. The data collected would allow for the investigation of the trends, distribution and variability of intense localized downpours by leveraging existing technology and flood alert networks owned and operated by individual localities. A critical component of a successful flood response strategy is a well-informed and flood-aware public, and by aggregating regional data in web-based platform, NVRC will allow local governments, emergency management agencies, and local residents to better understand and prepare for flood hazards.

Accurate and timely rainfall-runoff data is needed in order to devise effective hazard mitigation policies and emergency response strategies. If successfully implemented, this study will support the Virginia Department of Emergency Management (VDEM) and their mission to protect the lives and property of Virginia's citizens from emergencies and disasters by coordinating the state's emergency preparedness, mitigation, response and recovery efforts.

Thank you for your consideration,







Andy John

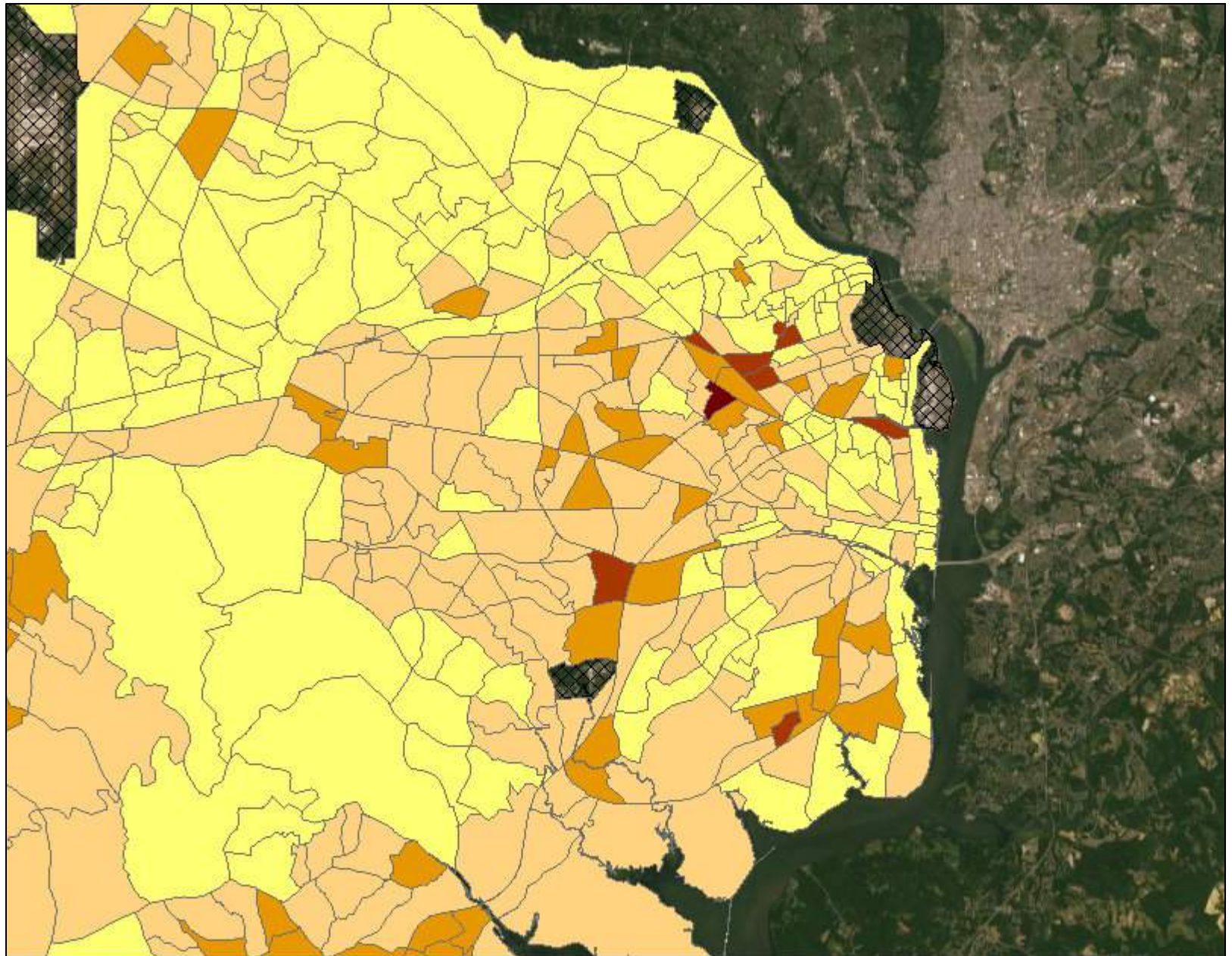
J. Andrew John II

Chief Regional Coordinator
VDEM Region 7 – NOVA/NCR

Northern Virginia Region Social Vulnerability Index Score

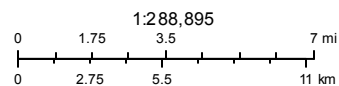
Social Vulnerability Index Score

-  Very Low Social Vulnerability
-  Low Social Vulnerability
-  Moderate Social Vulnerability
-  High Social Vulnerability
-  Very High Social Vulnerability
-  Not included in the analysis



November 3, 2021

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Created from the Virginia Vulnerability Viewer



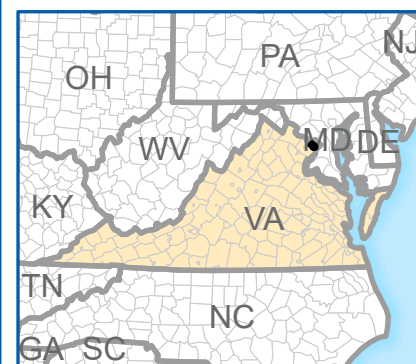
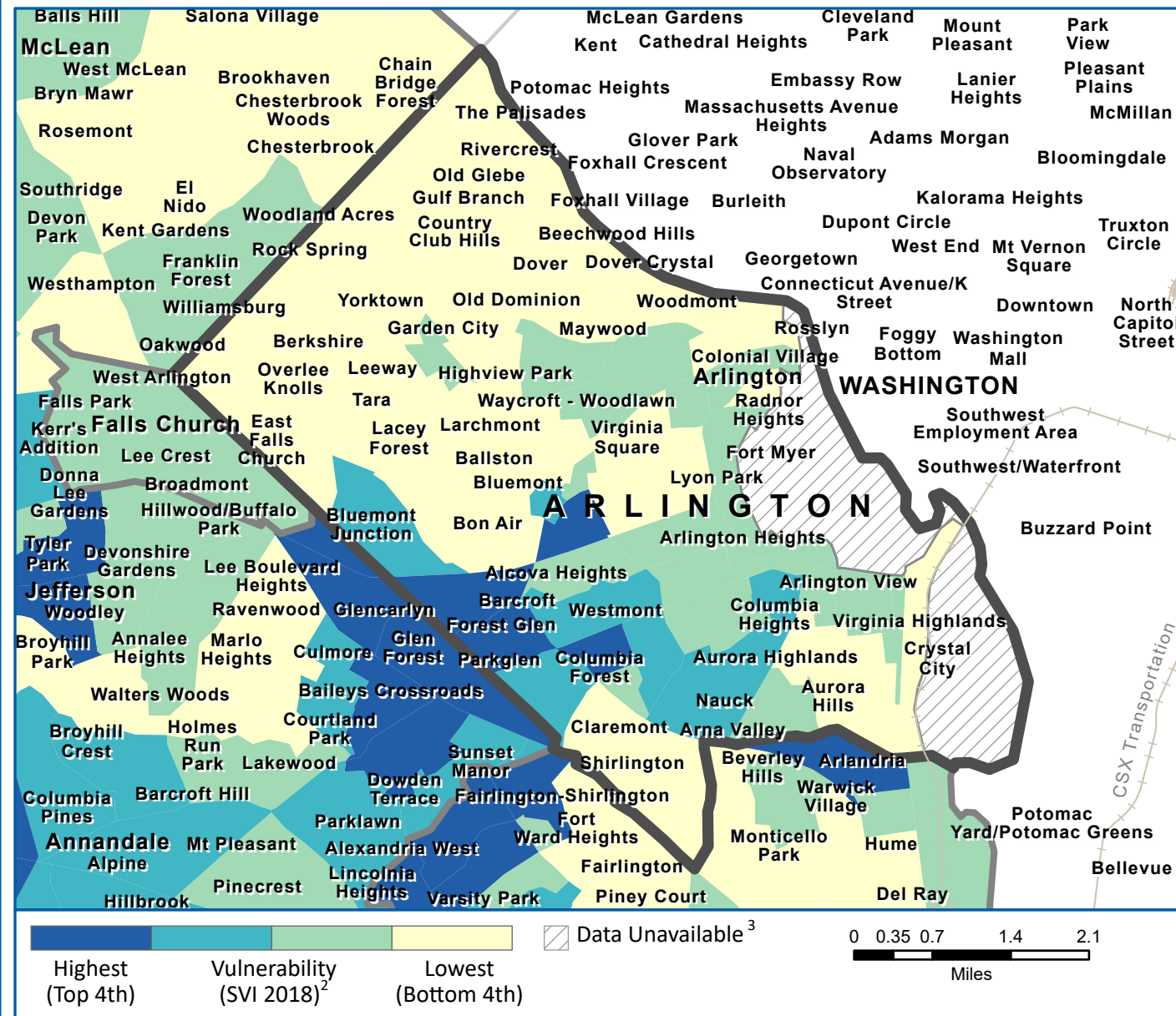
CDC Social Vulnerability Index 2018

Arlington County, Virginia

PART 1



Overall Social Vulnerability¹



Social vulnerability refers to a community's capacity to prepare for and respond to the stress of hazardous events ranging from natural disasters, such as tornadoes or disease outbreaks, to human-caused threats, such as toxic chemical spills. The **CDC Social Vulnerability Index (CDC SVI 2018)**⁴ County Map depicts the social vulnerability of communities, at census tract level, within a specified county. CDC SVI

2018 groups **fifteen census-derived factors** into **four themes** that summarize the extent to which the area is socially vulnerable to disaster. The factors include economic data as well as data regarding education, family characteristics, housing, language ability, ethnicity, and vehicle access. Overall Social Vulnerability combines all the variables to provide a comprehensive assessment.

MAP PRODUCED 3/18/2020

Agency for Toxic Substances and Disease Registry
Division of Toxicology and Human Health Sciences



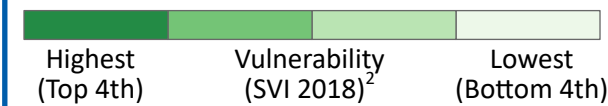
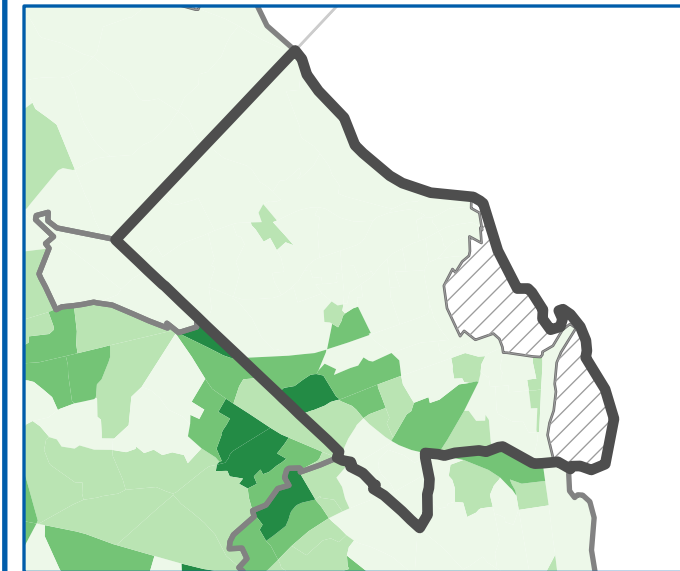
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CDC SVI 2018 – ARLINGTON COUNTY, VIRGINIA

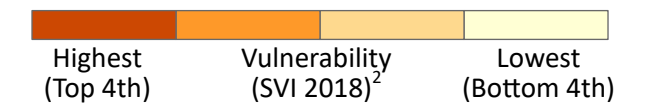
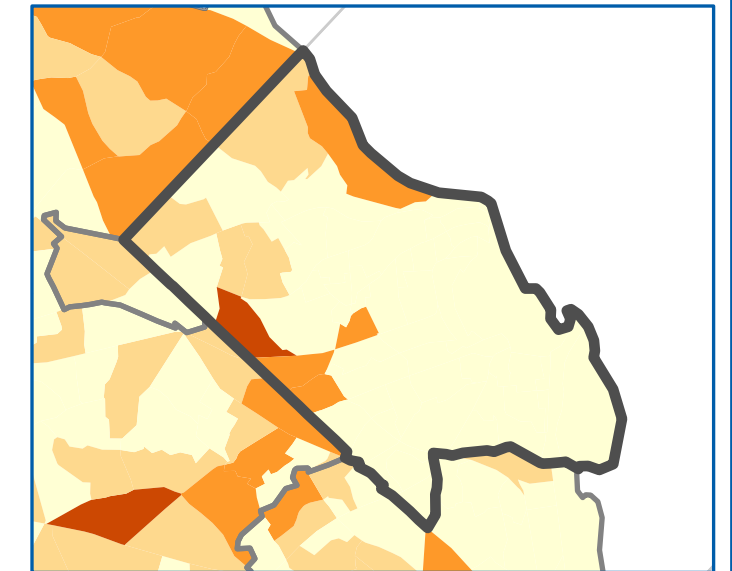
PART 2

CDC SVI Themes

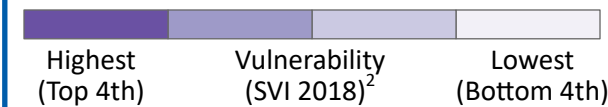
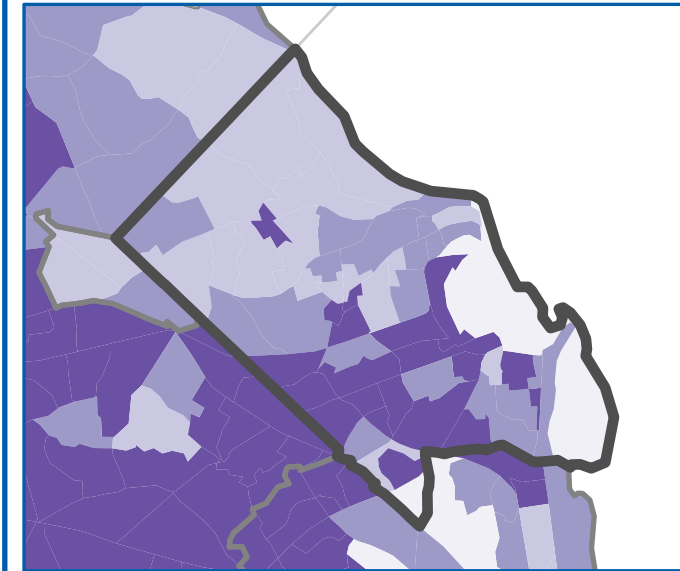
Socioeconomic Status⁵



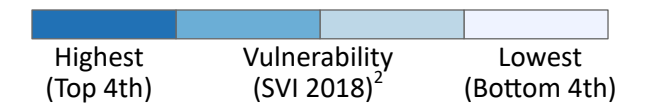
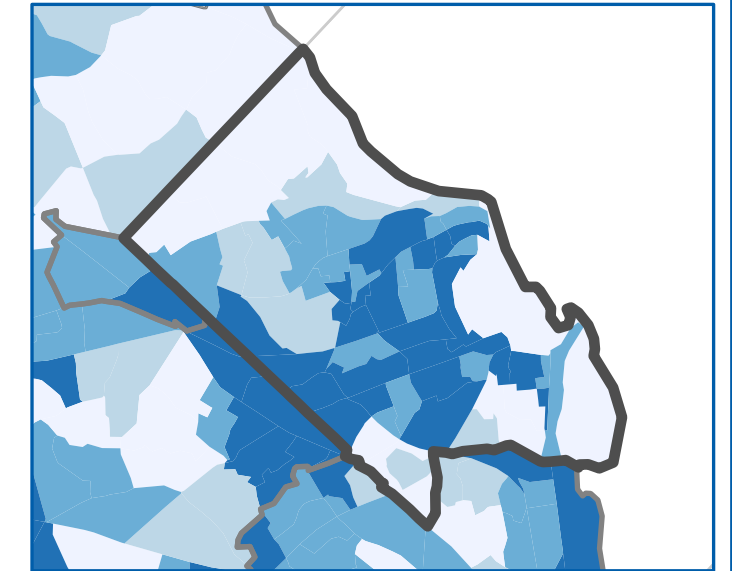
Household Composition/Disability⁶



Race/Ethnicity/Language⁷



Housing Type/Transportation⁸



Data Sources: ²CDC/ATSDR/GRASP, U.S. Census Bureau, Esri® StreetMap™ Premium.
Notes: ¹Overall Social Vulnerability: All 15 variables. ³Census tracts with 0 population. ⁴The CDC SVI combines percentile rankings of US Census American Community Survey (ACS) 2014-2018 variables, for the state, at the census tract level. ⁵Socioeconomic Status: Poverty, Unemployed, Per Capita Income, No High School Diploma. ⁶Household Composition/Disability: Aged 65 and Over, Aged 17 and Younger, Single-parent Household, Aged 5 and over with a Disability. ⁷Race/Ethnicity/Language: Minority, English Language Ability. ⁸Housing Type/Transportation: Multi-unit, Mobile Homes, Crowding, No Vehicle, Group Quarters.
Projection: NAD 1983 Virginia Lambert.
References: Flanagan, B.E., et al., A Social Vulnerability Index for Disaster Management. *Journal of Homeland Security and Emergency Management*, 2011. 8(1).
CDC SVI web page: <http://svi.cdc.gov>.

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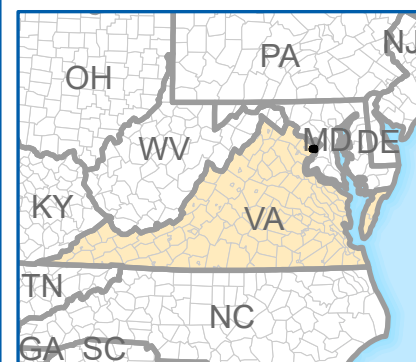
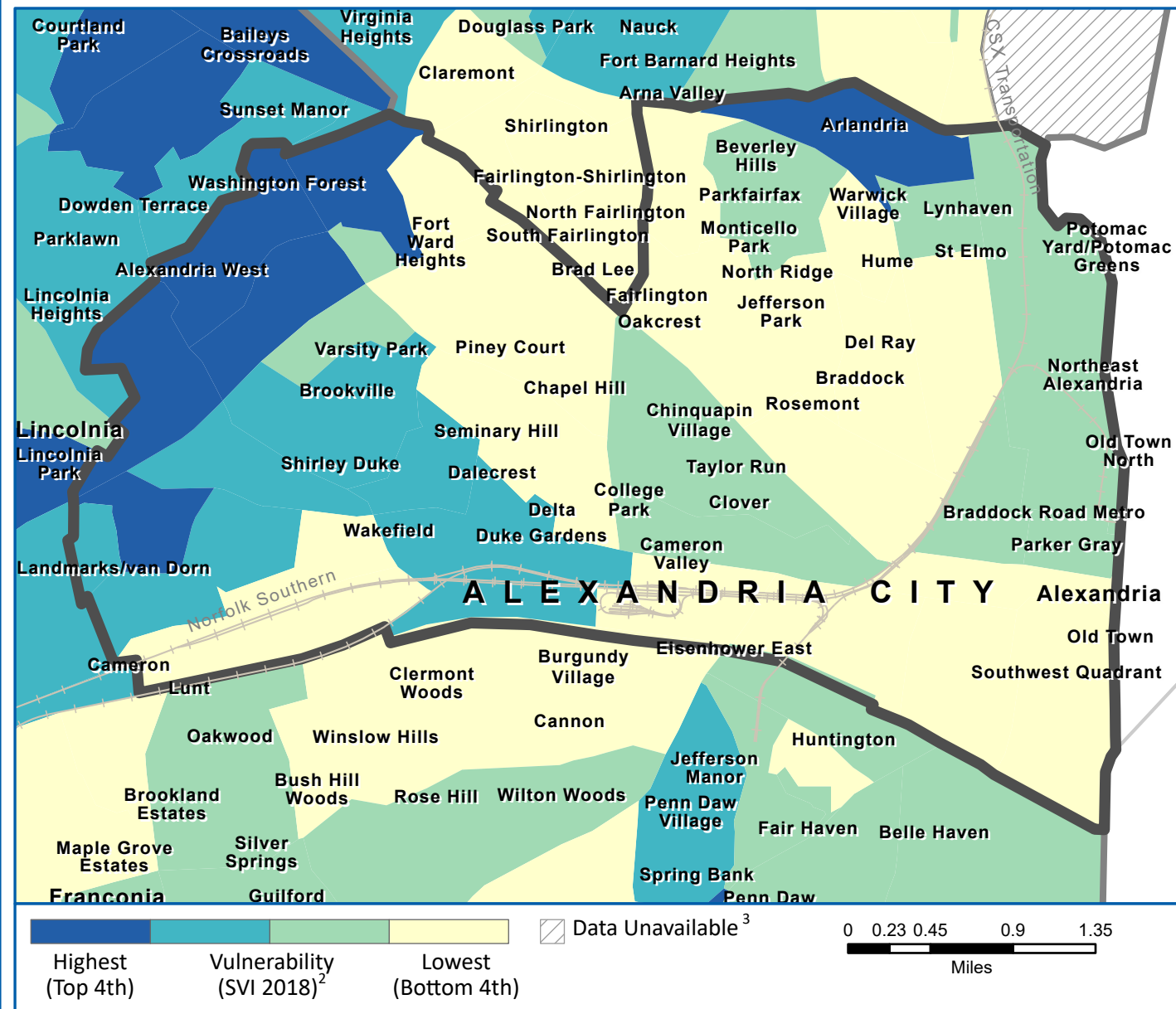
CDC Social Vulnerability Index 2018

Alexandria City, Virginia

PART 1



Overall Social Vulnerability¹



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MAP PRODUCED 4/2/2021

Agency for Toxic Substances and Disease Registry
Division of Toxicology and Human Health Sciences



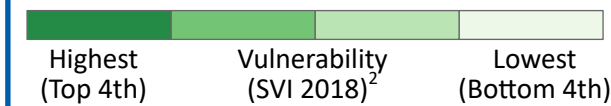
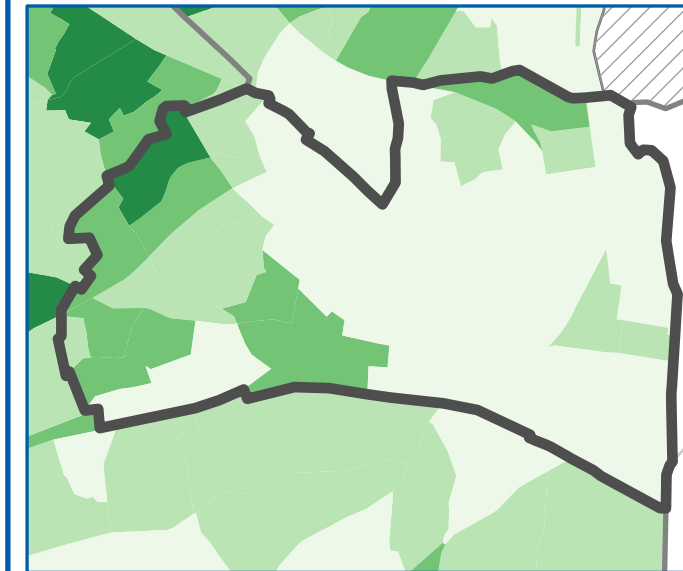
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CDC SVI 2018 – ALEXANDRIA CITY, VIRGINIA

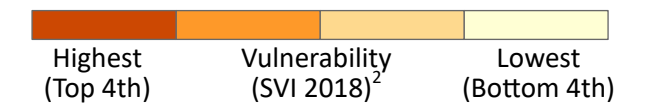
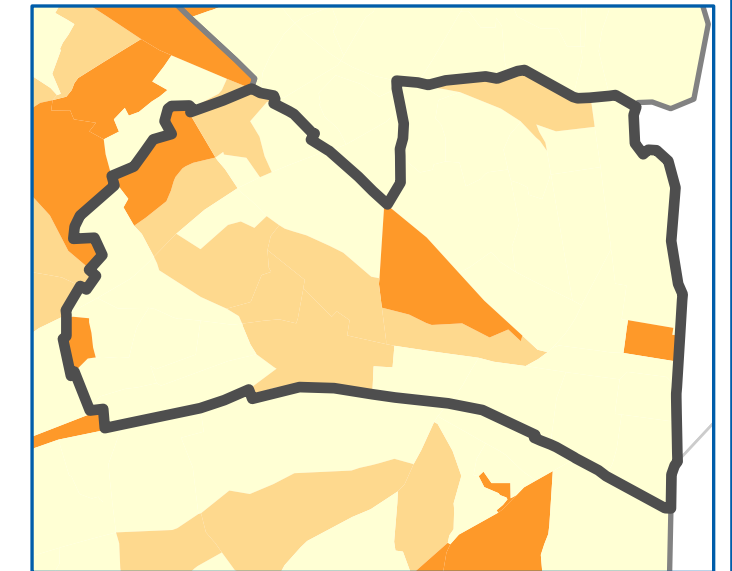
PART 2

CDC SVI Themes

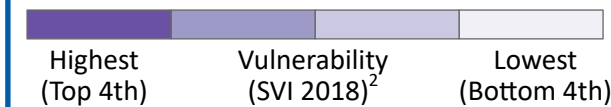
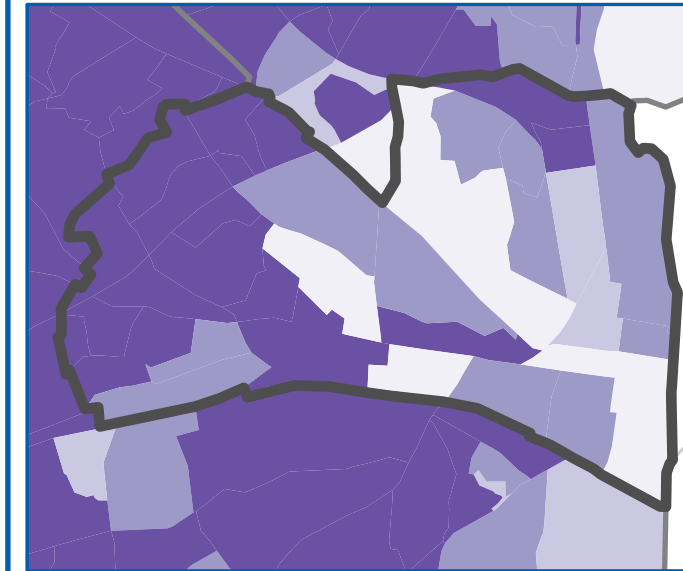
Socioeconomic Status⁵



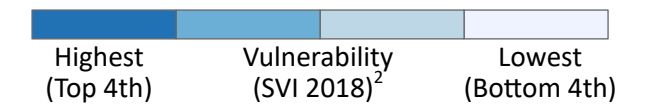
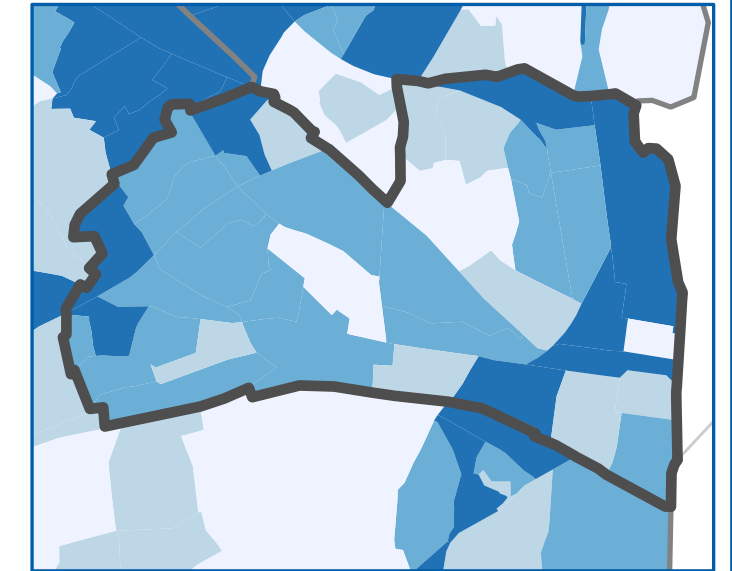
Household Composition/Disability⁶



Race/Ethnicity/Language⁷



Housing Type/Transportation⁸



Data Sources: ²CDC/ATSDR/GRASP, U.S. Census Bureau, Esri® StreetMap™ Premium.
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